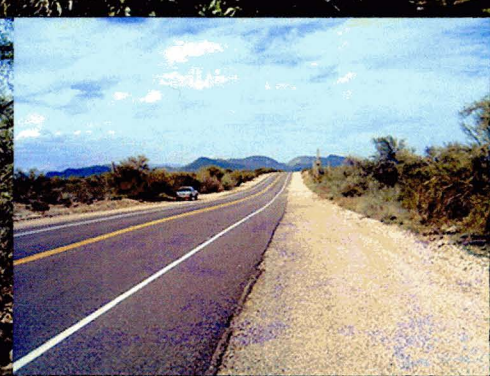
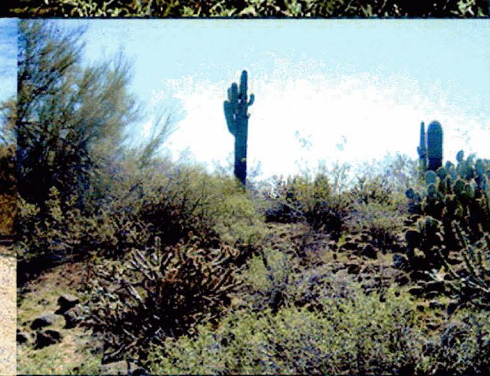
MARICOPA COUNTY
UNINCORPORATED AREAS
040037

DRAFT TDN

New River West Tributaries FDS

Volume III of III





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Mapping NEEDS ASSESSMENT PROCESS

Assessing the Flood Mapping Needs for America's Communities

U.S. DEPARTMENT OF HOMELAND SECURITY

Prepared for
Maricopa County
Flood Control District

Flood Control District of Maricopa County

Prepared by
URS

FCD 2003 C057

September 2005

APPENDIX E: HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION

Digital Files For
New River West Tributaries
Floodplain Delineation Study
Contract FCD 2003C057

This CD contains digital files used in the floodplain delineation study identified above. Both the hydrologic and hydraulic calculations are provided. The hydrology was performed using WMS 7.0 and HEC-1 as outlined in the Section 4 of the Technical Data Notebook. Hydraulic calculations were performed using WISE 2.0.8 as outlined in Section 5 of the Technical Data Notebook.

The files on this CD match the information in the Technical Data Notebook at the time of the CD creation prior to submission to FEMA. Any person using these files should verify that they match the FEMA approved floodplain delineation. URS Corporation does not accept any responsibility for the use of these files.

Hydrology

basin_a_6hr.hc1	HEC-1 input file
basin_a_6hr.doc	HEC-1 output file in a word document
basin_a_24hr.hc1	HEC-1 input file
basin_a_24hr.doc	HEC-1 output file in a word document
basin_b_6hr.hc1	HEC-1 input file
basin_b_6hr.doc	HEC-1 output file in a word document
basin_b_24hr.hc1	HEC-1 input file
basin_b_24hr.doc	HEC-1 output file in a word document
basin_c_6hr.hc1	HEC-1 input file
basin_c_6hr.doc	HEC-1 output file in a word document
basin_c_24hr.hc1	HEC-1 input file
basin_c_24hr.doc	HEC-1 output file in a word document
basin_d_6hr.hc1	HEC-1 input file
basin_d_6hr.doc	HEC-1 output file in a word document
basin_d_24hr.hc1	HEC-1 input file
basin_d_24hr.doc	HEC-1 output file in a word document
basin_e_6hr.hc1	HEC-1 input file
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basin_f_24hr.doc	HEC-1 output file in a word document

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basin_h_6hr.hc1	HEC-1 input file
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basin_i_6hr.hc1	HEC-1 input file
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basin_j_6hr.hc1	HEC-1 input file
basin_j_6hr.doc	HEC-1 output file in a word document
basin_j_24hr.hc1	HEC-1 input file
basin_j_24hr.doc	HEC-1 output file in a word document
basin_k_6hr.hc1	HEC-1 input file
basin_k_6hr.doc	HEC-1 output file in a word document
basin_k_24hr.hc1	HEC-1 input file
basin_k_24hr.doc	HEC-1 output file in a word document

Hydraulics

NRW5.prj	HEC-RAS model
NRW10.prj	HEC-RAS model
NRW15.prj	HEC-RAS model
NRW20.prj	HEC-RAS model
NRW25.prj	HEC-RAS model
NRW30.prj	HEC-RAS model
NRW35.prj	HEC-RAS model
NRW40.prj	HEC-RAS model
NRW45.prj	HEC-RAS model
NRW50.prj	HEC-RAS model
NRW55.prj	HEC-RAS model
NRW55T25A1.prj	HEC-RAS model
NRW55T25A2.prj	HEC-RAS model
NRW55T25A3.prj	HEC-RAS model

E.1 ROUGHNESS COEFFICIENT ESTIMATION

MANNING'S 'n' VALUE DETERMINATIONS REPORT

I. INTRODUCTION

An initial field reconnaissance investigation was conducted in February 25, 2004 to evaluate flooding conditions and direction of flow. Additionally, a second site visit was conducted on March 10, 2004 to collect photographic documentation at representative cross sections and road crossings. This documentation was used to prepare a preliminary photographic log to be used for the estimation of Manning's 'n' values. Photographic documentation for the estimation of Manning's 'n' values was done for the areas in, and adjacent to, the New River Tributary Area.

II. METHODOLOGY

Manning's 'n' values were assigned based on field observation using the methodology described in ***Estimated Manning's Roughness Coefficients for Stream Channels and Flood Plains in Maricopa County, Arizona***, a manual prepared by the U.S. Geological Survey for the FCDMC. A base 'n' value (n_b) was assigned according to the bed material. In accordance with the manual, adjustments to the base value were then made to account for factors affecting the roughness characteristics such as degree of surface irregularity (n_1), effects of obstructions (n_2), and vegetation (n_3). The composite value of n was computed using the following equation:

$$n = n_b + n_1 + n_2 + n_3$$

Typical photographs and calculations for the 'n' values for the areas are included in this report.

III. PHOTOGRAPHS AND 'n' VALUE ASSIGNMENTS

Along with the calculations for the 'n' value assignments, photographs are provided to illustrate typical conditions that exist in the study area, which are the New River Tributary Area. Base n values used in the study reaches are listed in the following table.

Channel Material	'n_b' Value
Firm Soil, Fine Gravel, Coarse Sand and Cobble	0.024 – 0.035

Examples of Manning's 'n' estimates at representative locations of the New River Tributary Area are included in the next pages, followed by a detailed listing of 'n' values and corresponding pictures at each cross section for the washes covered by this study. See enclosed New River FDS study reach ID's map, for stream locations.

LOCATION: **New River TRW55T30 in SEC 24**

CROSS SECTION DESCRIPTION: **Undisturbed Desert** (Photographs 1 - 3).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.028$	
	$n_1 = 0.001$	
	$n_2 = 0.000$	
	$n_3 = 0.045$	**n = 0.074**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.054$	**n = 0.078**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.055$	**n = 0.079**

Photo 1. New River TRW55T30 looking upstream at channel.

Photo 2. New River RW55T30 looking upstream at left overbank.

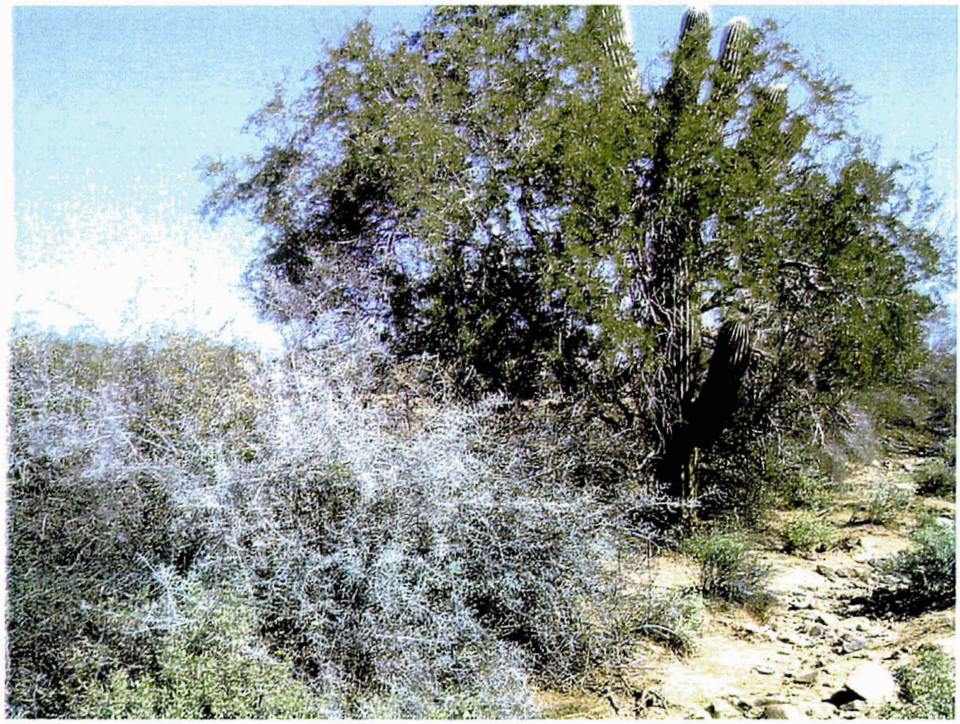


Photo 3. New River RW55T30 looking upstream at right overbank .

LOCATION: **New River NRW55C in SEC 24**

CROSS SECTION DESCRIPTION: (Photographs 4 - 5).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.030$	**n =0.54**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.060$	**n = 0.084**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.060$	**n = 0.084**

Photo 4. New River NRW55C looking upstream.

Photo 5. New River NRW55C looking downstream.

LOCATION: **New River NRW55D downstream of split in SEC 24**

CROSS SECTION DESCRIPTION: (Photographs 6 - 8).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.001$	
	$n_2 = 0.000$	
	$n_3 = 0.030$	**n = 0.055**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.074**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.047$	**n = 0.071**

Photo 6. New River NRW55D looking upstream at channel.

Photo 7. New River NRW55D looking upstream at left overbank.

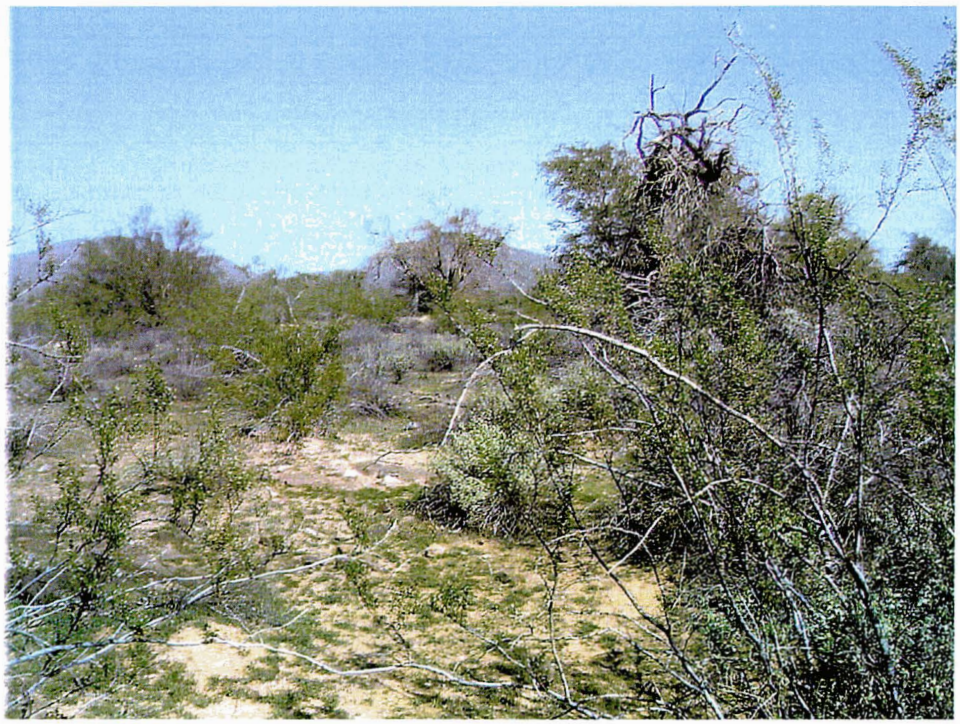


Photo 8. New River NRW55D looking upstream at right overbank.

LOCATION: **New River TRW55TE & pipeline road.**

CROSS SECTION DESCRIPTION: (Photograph 9).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.001$	
	$n_2 = 0.000$	
	$n_3 = 0.025$	**n = 0.049**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.005$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.079**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.005$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.079**

Photo 9. New River TRW55E about 200' downstream of pipeline road looking downstream.

LOCATION: **New River TRW55T20 & pipeline road.**

CROSS SECTION DESCRIPTION: (Photographs 10 - 12).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.032$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.052**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.035$	**n = 0.059**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.064**

Photo 10. New River TRW55T20 20' downstream of pipeline road looking upstream at channel.

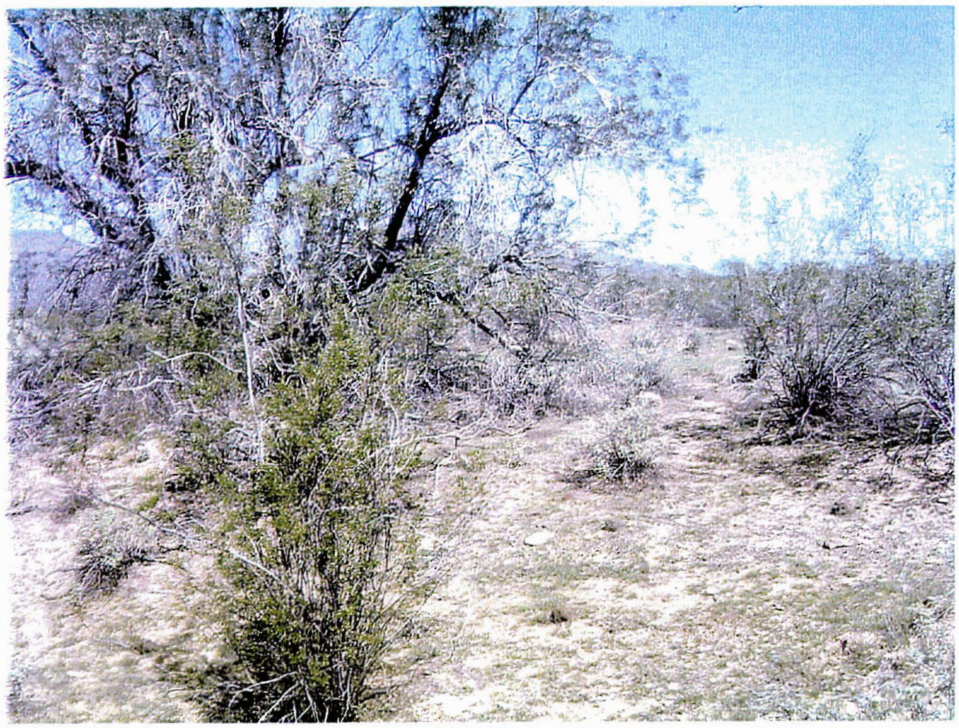


Photo 11. New River TRW55T20 20' downstream of pipeline road looking upstream at left overbank.

Photo 12. New River TRW55T20 20' downstream of pipeline road looking upstream at right overbank.

LOCATION: **New River NRW55T25 & power line road.**

CROSS SECTION DESCRIPTION: (Photographs 13 - 15).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.030$	
	$n_1 = 0.000$	
	$n_2 = 0.005$	
	$n_3 = 0.015$	**n = 0.050**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.045$	**n = 0.069**
Right Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.078**

Photo 13. New River NRW55T25 50' downstream of power line road looking downstream at channel.

Photo 14. New River NRW55T25 50' downstream of power line road looking downstream at left overbank.

Photo 15. New River NRW55T25 50' downstream of power line road looking downstream at right overbank.

LOCATION: **New River TRW55E & power line road.**

CROSS SECTION DESCRIPTION: (Photographs 16 - 18).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.030$	
	$n_1 = 0.000$	
	$n_2 = 0.005$	
	$n_3 = 0.020$	**n = 0.055**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.005$	
	$n_3 = 0.050$	**n = 0.079**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.005$	
	$n_3 = 0.050$	**n = 0.079**

Photo 16. New River TRW55E 500' downstream of power line road looking downstream at channel.

Photo 17. New River TRW55E 500' downstream of power line road looking downstream at left overbank.

Photo 18. New River TRW55E 500' downstream of power line road looking downstream at right overbank.

LOCATION: **New River TRW55T15 & power line road.**

CROSS SECTION DESCRIPTION: (Photographs 19 - 21).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.032$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.052**
Left Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.005$	
	$n_3 = 0.045$	**n = 0.078**
Right Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.005$	
	$n_3 = 0.045$	**n = 0.078**

Photo 19. New River TRW55T15 50' upstream of power line road looking upstream at channel.

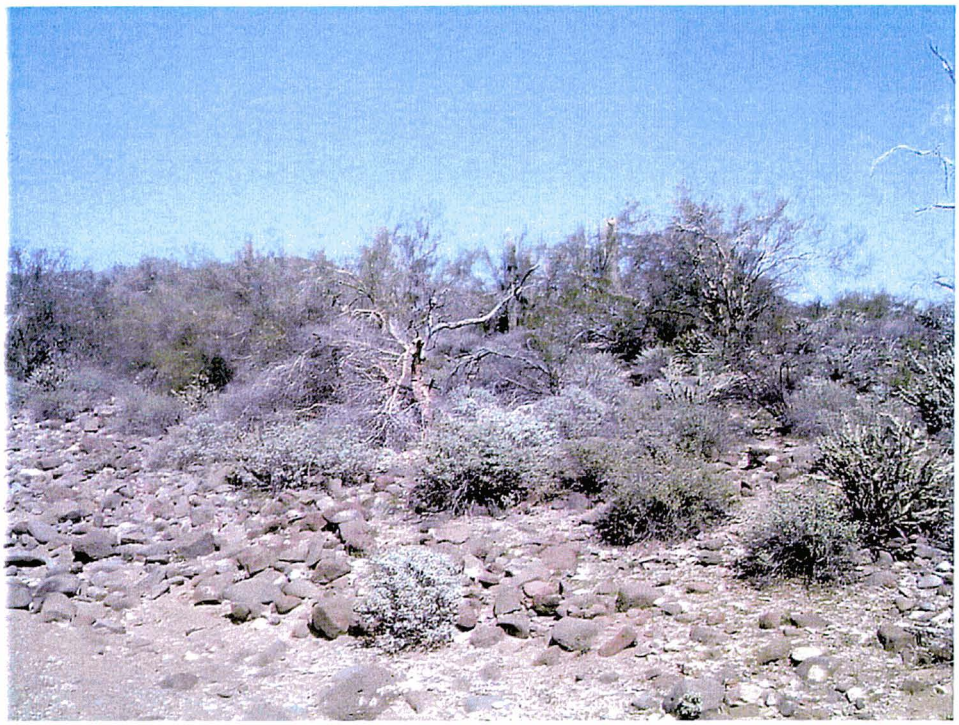


Photo 20. New River TRW55T15 50' upstream of power line road looking upstream at left overbank.

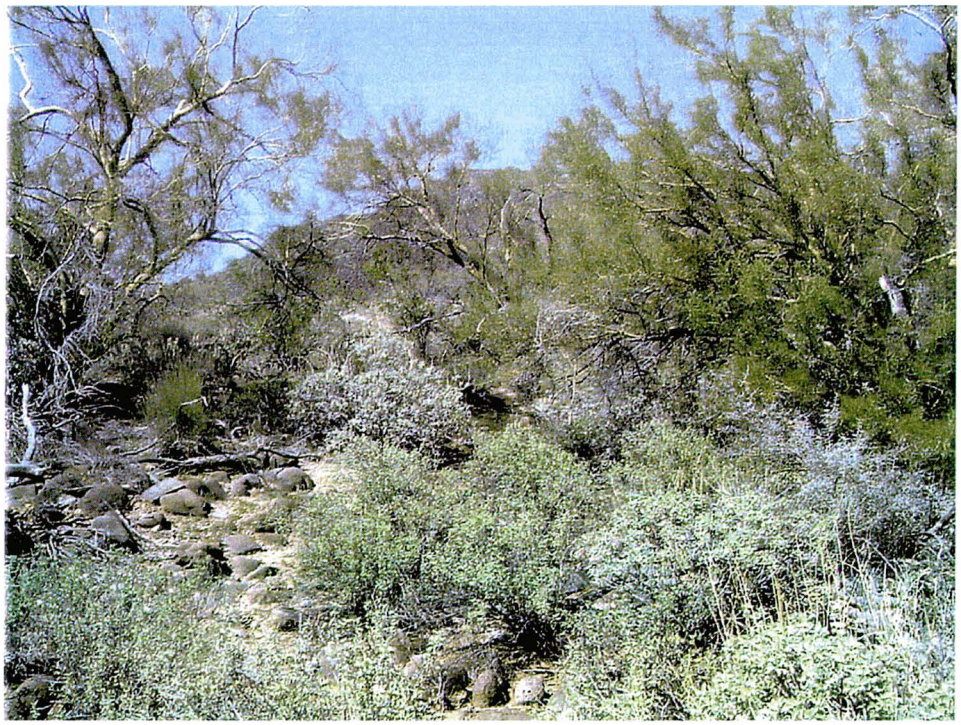


Photo 21. New River TRW55T15 50' upstream of power line road looking upstream at right overbank.

LOCATION: **New River NRW55T5 & power line road.**

CROSS SECTION DESCRIPTION: (Photographs 22 - 24).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.005$	
	$n_3 = 0.010$	**n = 0.043**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.044**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.015$	**n = 0.039**

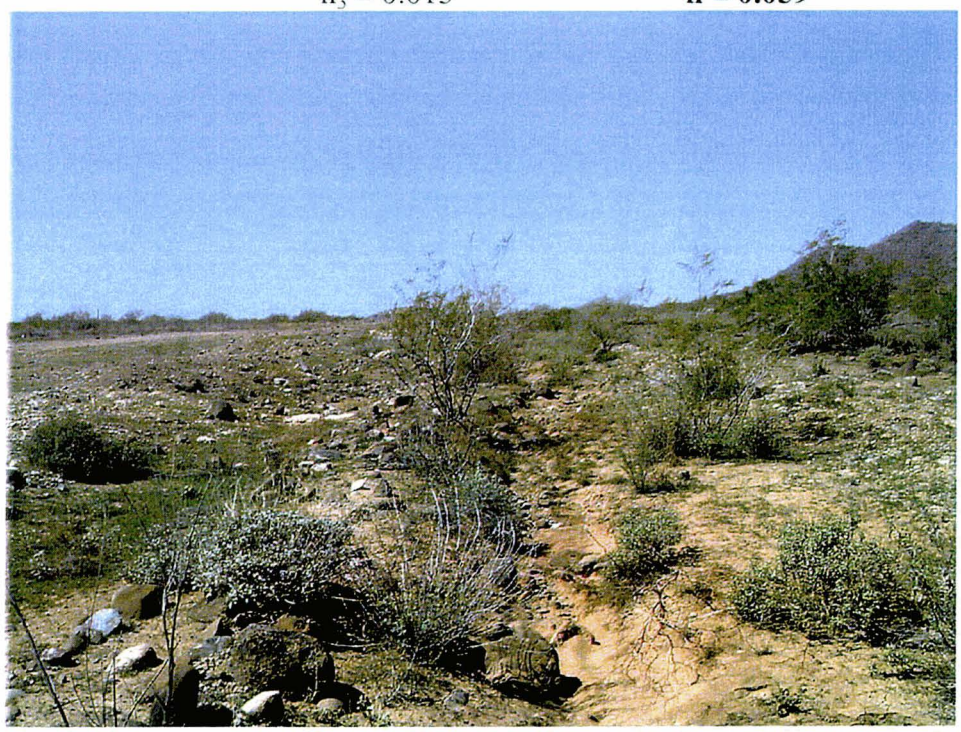


Photo 22. New River NRW55T5 at split upstream of power line road looking upstream at channel.

Photo 23. New River NRW55T5 at split upstream of power line road looking upstream at left overbank.

Photo 24. New River NRW55T5 at split upstream of power line road looking upstream at right overbank.

LOCATION: **New River NRW55A & New River Road**

CROSS SECTION DESCRIPTION: (Photographs 25 - 27).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.015$	**n = 0.043**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.064**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.064**

Photo 25. New River NRW55A 100' upstream of New River Road looking upstream at channel.

Photo 26. New River NRW55A 100' upstream of New River Road looking upstream at left overbank.

Photo 27. New River NRW55A 100' upstream of New River Road looking upstream at right overbank.

LOCATION: **New River NRW50B & New River Road**

CROSS SECTION DESCRIPTION: (Photographs 28 - 30).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.028$	
	$n_1 = 0.002$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.050**
Left Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.078**
Right Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.078**

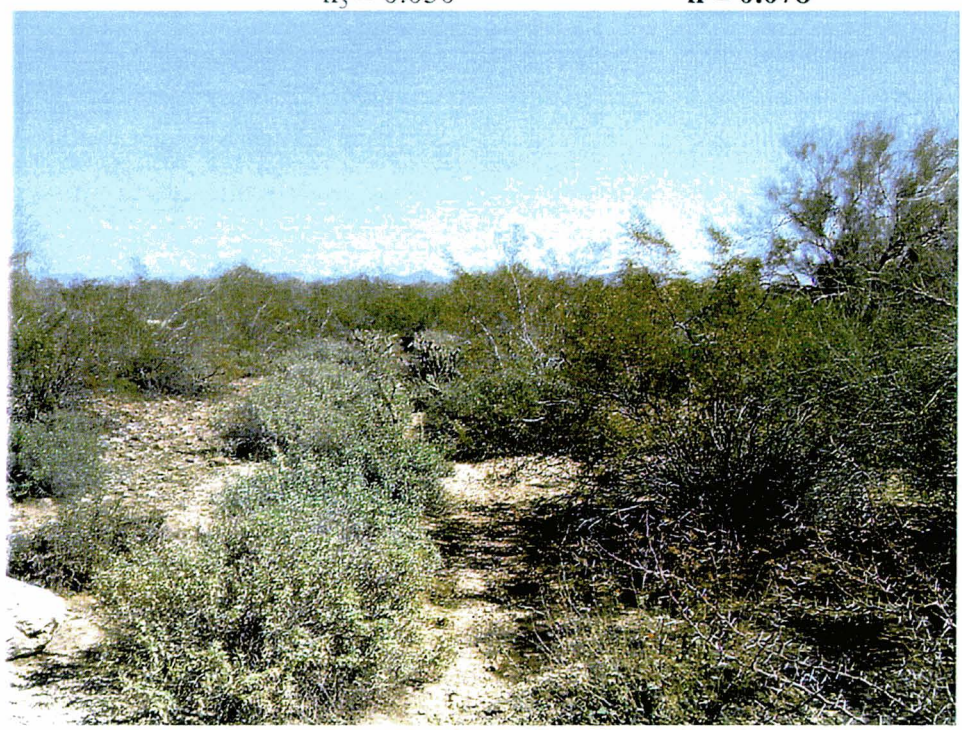


Photo 28. New River NRW50B just downstream of New River Road looking downstream at channel.

Photo 29. New River NRW50B just downstream of New River Road looking downstream at left overbank.

Photo 30. New River NRW50B just downstream of New River Road looking downstream at right overbank.

LOCATION: **New River NRW50T5 & New River Road**

CROSS SECTION DESCRIPTION: (Photographs 31 - 33).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.002$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.046**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.002$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.076**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.002$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.076**

Photo 31. New River NRW50T5 just downstream of New River Road looking downstream at channel.

Photo 32. New River NRW50T5 just downstream of New River Road looking downstream at left overbank.

Photo 33. New River NRW50T5 just downstream of New River Road looking downstream at right overbank.

LOCATION: **New River NRW45 & New River Road**

CROSS SECTION DESCRIPTION: (Photographs 34 - 36).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.028$	
	$n_1 = 0.002$	
	$n_2 = 0.000$	
	$n_3 = 0.010$	**n = 0.040**
Left Overbank	$n_b = 0.028$	
	$n_1 = 0.002$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.070**
Right Overbank	$n_b = 0.028$	
	$n_1 = 0.002$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.070**

Photo 34. New River NRW45 just downstream of New River Road looking downstream at channel.

Photo 35. New River NRW45 just downstream of New River Road looking downstream at left overbank.

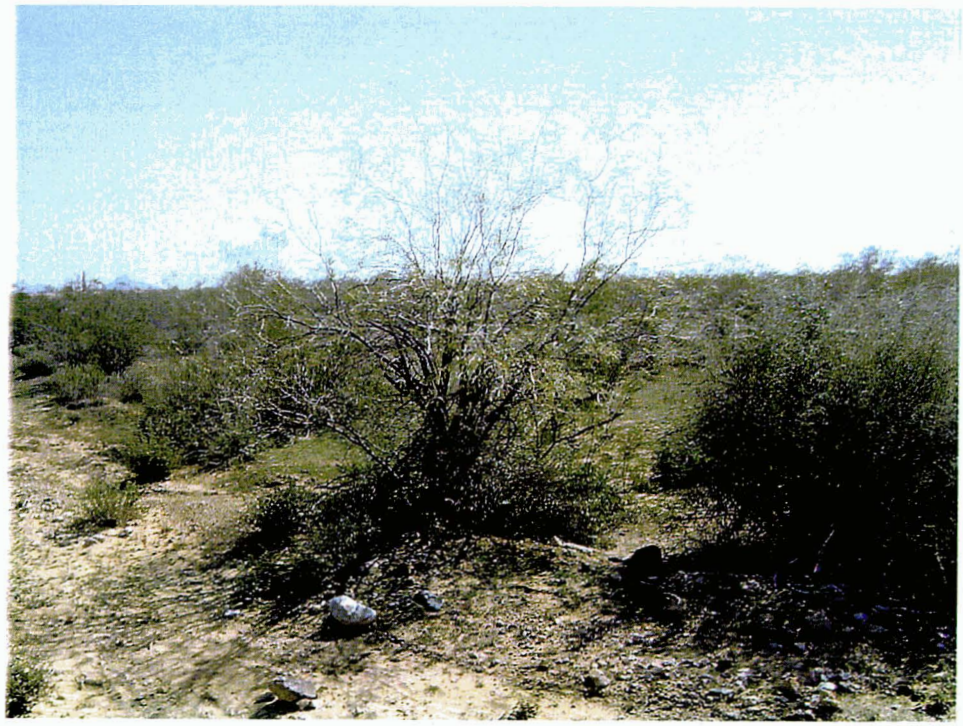


Photo 36. New River NRW45 just downstream of New River Road looking downstream at right overbank.

LOCATION: **New River NRW50T5 & New River Road**

CROSS SECTION DESCRIPTION: (Photographs 37 - 39).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.044**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.074**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.074**

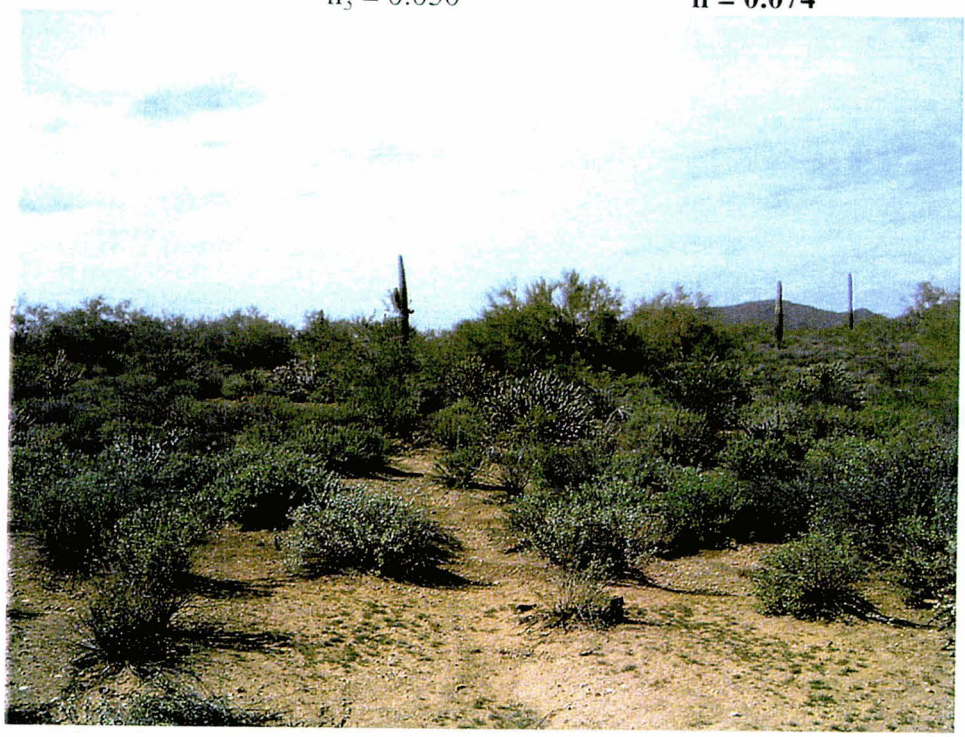


Photo 37. New River NRW50T5 upstream of confluence with NRW50B looking upstream at channel.

Photo 38. New River NRW50T5 upstream of confluence with NRW50B looking upstream at left overbank.

Photo 39. New River NRW50T5 upstream of confluence with NRW50B looking upstream at right overbank.

LOCATION: **New River NRW50B & New River Road**

CROSS SECTION DESCRIPTION: (Photographs 40 - 42).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.030$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.025$	**n = 0.055**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.074**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.074**

Photo 40. New River NRW50B upstream of confluence with NRW50T5 looking upstream at channel.

Photo 41. New River NRW50B upstream of confluence with NRW50T5 looking upstream at left overbank.

Photo 42. New River NRW50B upstream of confluence with NRW50T5 looking upstream at right overbank.

LOCATION: **New River NRW40 & New River Road**

CROSS SECTION DESCRIPTION: (Photographs 43 - 45).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.035$	**n = 0.063**
Left Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.078**
Right Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.078**

Photo 43. New River NRW40 downstream of New River Road looking downstream at channel.

Photo 44. New River NRW40 downstream of New River Road looking downstream at left overbank.

Photo 45. New River NRW40 downstream of New River Road looking downstream at right overbank.

LOCATION: **New River NRW30 & New River Road**

CROSS SECTION DESCRIPTION: (Photographs 46 - 47).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.030$	**n = 0.054**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.074**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.050$	**n = 0.074**

Photo 46. New River NRW30 downstream of New River Road looking upstream at channel and left overbank.

Photo 47. New River NRW30 downstream of New River Road looking upstream at right overbank.

LOCATION: **New River NRW35 & New River Road**

CROSS SECTION DESCRIPTION: (Photograph 48).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.005$	
	$n_3 = 0.045$	**n = 0.073**
Left Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.052$	**n = 0.080**
Right Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.052$	**n = 0.080**

Photo 48. New River NRW35 downstream of New River Road looking upstream at channel and overbanks.

LOCATION: **New River NRW20T10B & New River Road**

CROSS SECTION DESCRIPTION: (Photograph 49).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.035$	**n = 0.059**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.055$	**n = 0.079**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.055$	**n = 0.079**

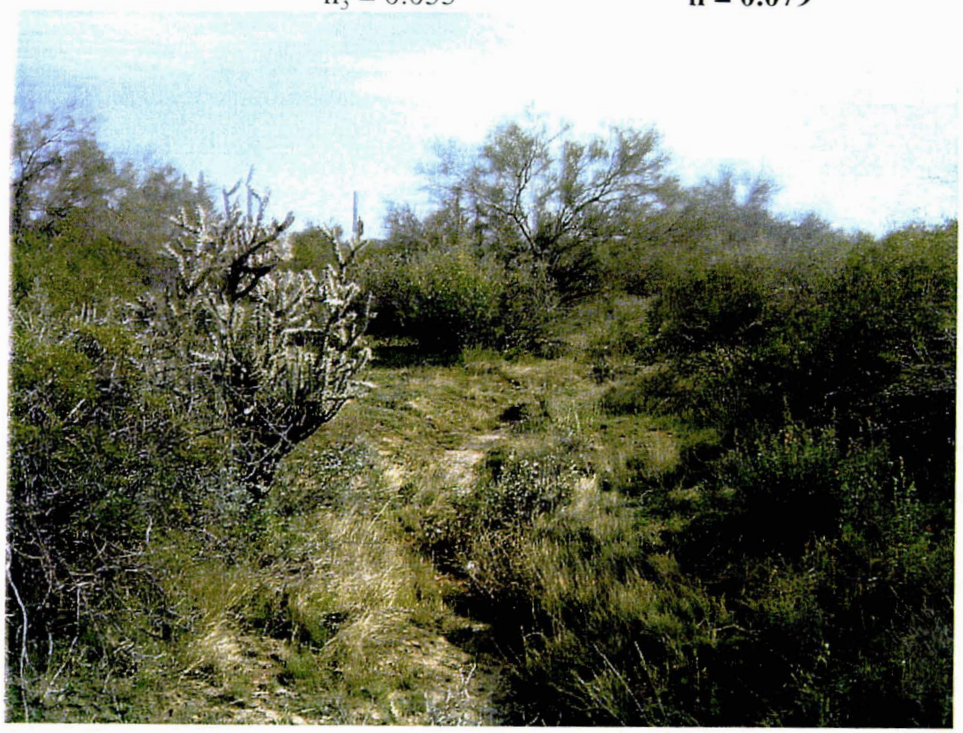


Photo 49. New River NRW20T10B 100' downstream of New River Road looking downstream at channel and overbanks.

LOCATION: **New River NRW20A & New River Road**

CROSS SECTION DESCRIPTION: (Photograph 50).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.030$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.050**
Left Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.052$	**n = 0.080**
Right Overbank	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.052$	**n = 0.080**

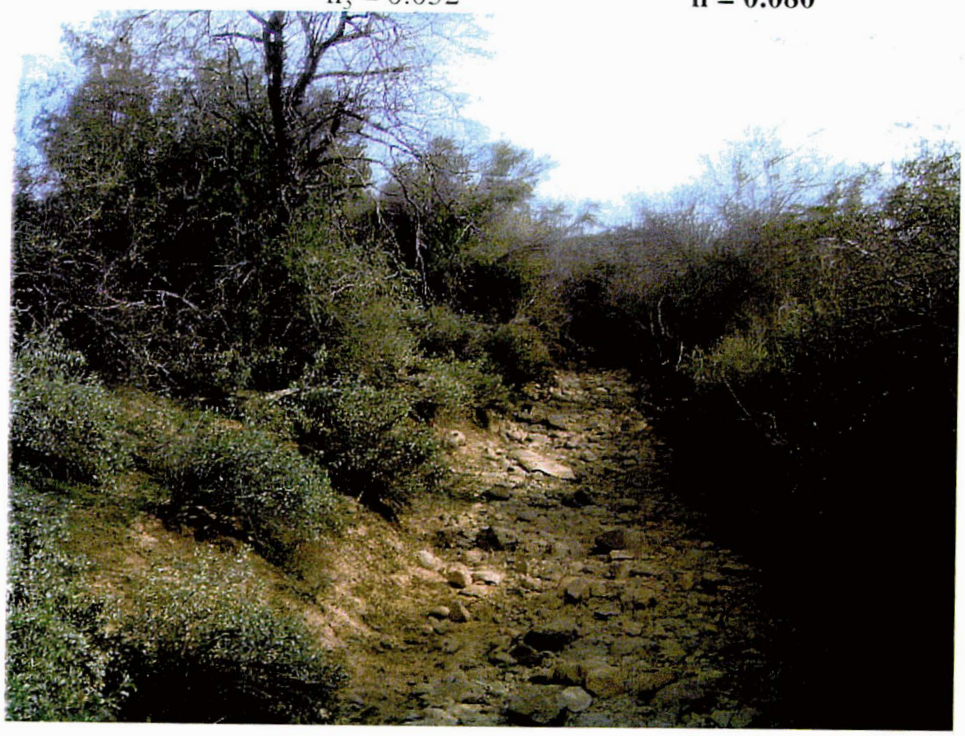


Photo 50. New River NRW20A downstream of New River Rd and 200' north of Carefree Highway looking upstream at channel and overbanks.

LOCATION: **New River NRW5 & Lake Pleasant Road**

CROSS SECTION DESCRIPTION: (Photographs 51 - 53).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.030$	**n = 0.054**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.055$	**n = 0.079**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.055$	**n = 0.079**

Photo 51. New River NRW5 upstream of Lake Pleasant Road looking upstream at channel.

Photo 52. New River NRW5 upstream of Lake Pleasant Road looking upstream at left overbank.

Photo 53. New River NRW5 upstream of Lake Pleasant Road looking upstream at right overbank.

LOCATION: **New River NRW10 & Lake Pleasant Road**

CROSS SECTION DESCRIPTION: (Photograph 54).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.025$	**n = 0.049**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.045$	**n = 0.069**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.030$	**n = 0.054**

Photo 54. New River NRW10 downstream of Lake Pleasant Road looking upstream at channel.

LOCATION: **New River NRW20A & Carefree Freeway**

CROSS SECTION DESCRIPTION: (Photographs 55 - 57).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.030$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.050**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.064**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.064**

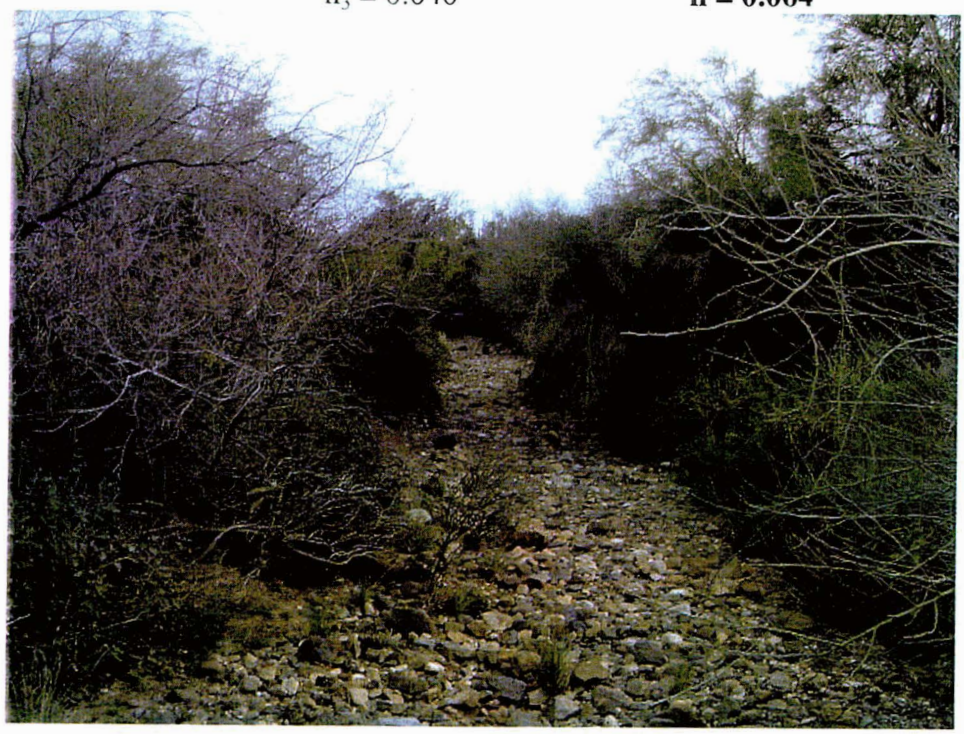


Photo 55. New River NRW20A downstream of Carefree Freeway looking downstream at channel.

Photo 56. New River NRW20A downstream of Carefree Freeway looking downstream at left overbank.

Photo 57. New River NRW20A downstream of Carefree Freeway looking downstream at right overbank.

LOCATION: **New River NRW15 & Carefree Freeway**

CROSS SECTION DESCRIPTION: (Photographs 58 - 60).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.028$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.025$	**n = 0.053**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.037$	**n = 0.061**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.064**

Photo 58. New River NRW15 downstream of Carefree Freeway looking downstream at channel.

Photo 59. New River NRW15 downstream of Carefree Freeway looking downstream at left overbank.

Photo 60. New River NRW15 downstream of Carefree Freeway looking downstream at right overbank.

LOCATION: **New River NRW5 & Lake Pleasant Road**

CROSS SECTION DESCRIPTION: (Photographs 61 - 63).

'n' VALUE CALCULATION

Portion of Cross section	Components	Composite Values
Channel	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.020$	**n = 0.044**
Left Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.064**
Right Overbank	$n_b = 0.024$	
	$n_1 = 0.000$	
	$n_2 = 0.000$	
	$n_3 = 0.040$	**n = 0.064**

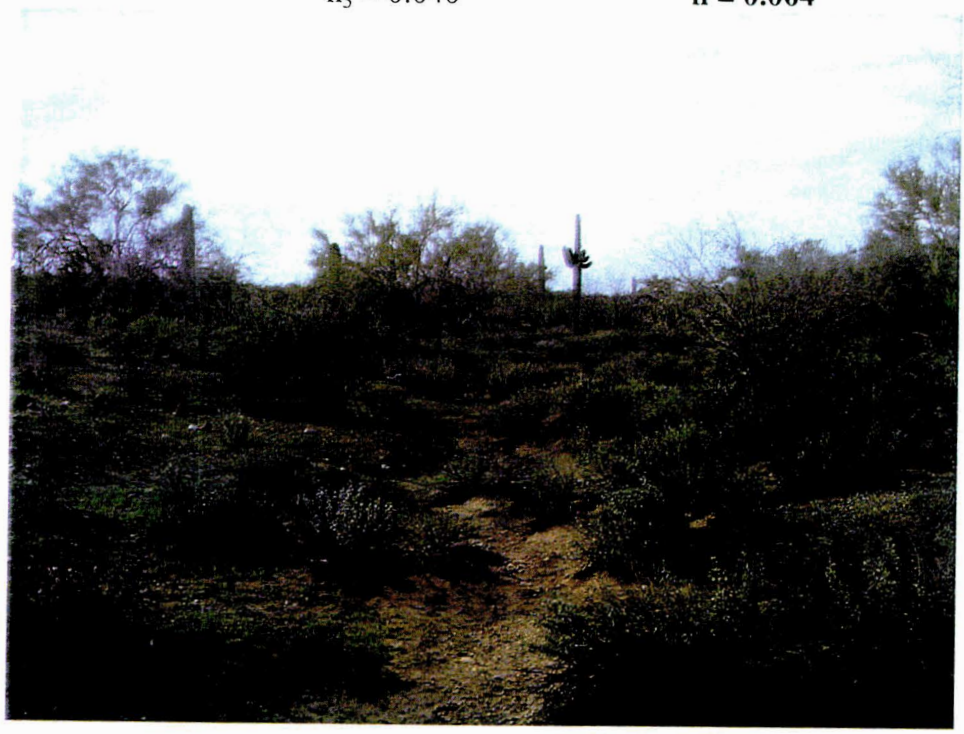
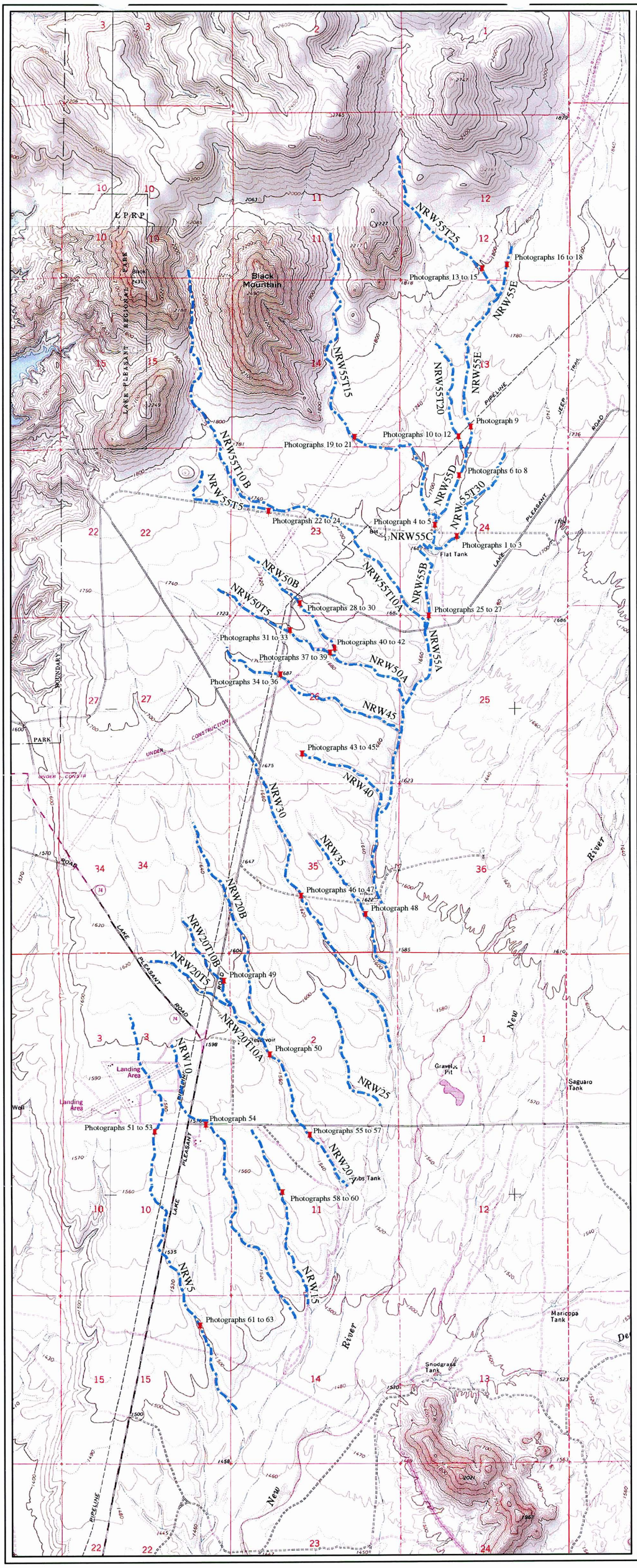


Photo 61. New River NRW5 downstream of Lake Pleasant Road looking upstream at channel.

Photo 62. New River NRW5 downstream of Lake Pleasant Road looking upstream at left overbank.

Photo 63. New River NRW5 downstream of Lake Pleasant Road looking upstream at right overbank.



New River FDS Study Reach IDs

LEGEND

- New River FDS Study Reaches
- Location of Photographs
- Photgraph 4 — Photgraph Reference ID
- NRW5 — Reach ID
- NRW20T5 — Tributary ID

0 1,500 3,000
Feet

Scale 1" = 3,000'

Proj. No: FCD 2003-C057
Date: 04/22/05
PM: E.S.
Checked By: M.M.
May By: D.G.

Data Source:
USGS 7.5"
Biscuit Flat
New River

Horizontal Datum:
NAD83 State Plane
AZ Central
Vertical Datum:
NAVD88

P:\Map_IX_M\New_River_FDS\GIS\mxds\nr_reachid.mxd

E.2 FLO-2D OUTPUT

SUMMARY.OUT FILE

NEGATIVE VOLUME CONSERVATION (ACRE FEET)
INDICATES EXCESS VOLUME (OUTFLOW + STORAGE > INFLOW)

SIMULATION TIME (HOURS)	AVERAGE TIMESTEP (SECONDS)	VOLUME CONSERVATION (ACRE FEET)	PERCENT OF INFLOW
0.10	0.20	0.000000	0.000002
0.20	0.20	0.000000	0.000001
0.30	0.20	0.000000	0.000000
0.40	0.20	0.000000	0.000003
0.50	0.20	0.000000	0.000002
0.60	0.20	0.000000	0.000004
0.70	0.20	0.000000	0.000001
0.80	0.20	0.000000	0.000000
0.90	0.20	0.000000	0.000001
1.00	0.20	0.000000	0.000004
1.10	0.20	0.000000	0.000004
1.20	0.20	0.000000	0.000003
1.30	0.20	0.000000	0.000000
1.40	0.20	0.000000	0.000003
1.50	0.20	0.000000	0.000003
1.60	0.20	0.000000	0.000000
1.70	0.20	0.000000	0.000004
1.80	0.20	0.000000	0.000001
1.90	0.20	0.000000	0.000004
2.00	0.20	0.000000	0.000004
2.10	0.20	0.000000	0.000004
2.20	0.20	0.000000	0.000002
2.30	0.20	0.000000	0.000003
2.40	0.20	0.000000	0.000004
2.50	0.20	0.000000	0.000001
2.60	0.20	0.000000	0.000002
2.70	0.20	0.000001	0.000002
2.80	0.20	0.000000	0.000001
2.90	0.20	-0.000001	0.000002
3.00	0.20	0.000002	0.000005
3.10	0.20	0.000001	0.000002
3.20	0.20	0.000000	0.000001
3.30	0.20	0.000001	0.000002
3.40	0.20	0.000001	0.000002
3.50	0.20	-0.000001	0.000002
3.60	0.20	0.000001	0.000003
3.70	0.20	0.000000	0.000001
3.80	0.20	0.000002	0.000004
3.90	0.20	-0.000001	0.000001
4.00	0.20	-0.000001	0.000002
4.10	0.20	0.000002	0.000004
4.20	0.20	0.000001	0.000002
4.30	0.20	-0.000001	0.000002
4.40	0.20	-0.000001	0.000002
4.50	0.20	0.000000	0.000001
4.60	0.20	0.000001	0.000001
4.70	0.20	-0.000001	0.000003
4.80	0.20	0.000000	0.000001
4.90	0.20	0.000001	0.000003
5.00	0.20	0.000002	0.000005
5.10	0.20	0.000002	0.000005
5.20	0.20	0.000001	0.000001

5.30	0.20	-0.000002	0.000005
5.40	0.20	0.000000	0.000000
5.50	0.20	-0.000001	0.000003
5.60	0.20	0.000001	0.000003
5.70	0.20	-0.000002	0.000005
5.80	0.20	0.000000	0.000001
5.90	0.20	0.000001	0.000001

==========

MASS BALANCE INFLOW - OUTFLOW VOLUME

==========

*** INFLOW (ACRE-FEET) ***

	WATER
INFLOW HYDROGRAPH	45.04

==========

*** OUTFLOW (ACRE-FT) ***

OVERLAND FLOW	WATER
FLOODPLAIN STORAGE	10.73
FLOODPLAIN OUTFLOW HYDROGRAPH	34.31
FLOODPLAIN OUTFLOW AND STORAGE	45.04

==========

*** TOTALS ***

TOTAL OUTFLOW FROM GRID SYSTEM	34.31
TOTAL VOLUME OF OUTFLOW AND STORAGE	45.04

THE MAXIMUM INUNDATED AREA IS: 61.74 ACRES

==========

COMPUTER RUN TIME IS : 4.80166 HRS

THIS OUTPUT FILE WAS TERMINATED ON: 7/11/2005 AT: 21:51:33

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THE MAX Q AT OUTFLOW ELEMENT: 27354  IS:      81.83 CFS AT TIME:     2.97
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THE MAX Q AT OUTFLOW ELEMENT: 27578  IS:      15.29 CFS AT TIME:     2.96
THE MAX Q AT OUTFLOW ELEMENT: 27579  IS:      25.55 CFS AT TIME:     2.97
THE MAX Q AT OUTFLOW ELEMENT: 27803  IS:      20.08 CFS AT TIME:     2.89
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THE MAX Q AT OUTFLOW ELEMENT: 49816  IS:       3.56 CFS AT TIME:     3.34
THE MAX Q AT OUTFLOW ELEMENT: 49817  IS:       0.82 CFS AT TIME:     3.34
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THE MAX Q AT OUTFLOW ELEMENT: 49819  IS:       1.16 CFS AT TIME:     3.46
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THE MAX Q AT OUTFLOW ELEMENT: 49823  IS:       5.46 CFS AT TIME:     3.43
THE MAX Q AT OUTFLOW ELEMENT: 49824  IS:       2.23 CFS AT TIME:     3.29
THE MAX Q AT OUTFLOW ELEMENT: 49825  IS:       4.16 CFS AT TIME:     3.29
THE MAX Q AT OUTFLOW ELEMENT: 49826  IS:       4.59 CFS AT TIME:     3.29
THE MAX Q AT OUTFLOW ELEMENT: 49827  IS:       4.48 CFS AT TIME:     3.29
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THE MAX Q AT OUTFLOW ELEMENT: 49830  IS:       2.53 CFS AT TIME:     3.50
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THE MAX Q AT OUTFLOW ELEMENT: 49834  IS:     83.67 CFS AT TIME:     3.08
THE MAX Q AT OUTFLOW ELEMENT: 49835  IS:     84.23 CFS AT TIME:     3.08
THE MAX Q AT OUTFLOW ELEMENT: 49836  IS:     12.57 CFS AT TIME:     3.08
THE MAX Q AT OUTFLOW ELEMENT: 49837  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49838  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49839  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49840  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49841  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49842  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49843  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49844  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49845  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49846  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49847  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49848  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49849  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49850  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49851  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49852  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49853  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49854  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49855  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49962  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49963  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49964  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49965  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49966  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49967  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49968  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49969  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49970  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49971  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49972  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49973  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49974  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49975  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49976  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49977  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49978  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49979  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49980  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49981  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49982  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49983  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49984  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49985  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49986  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49987  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49988  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49989  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49990  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49991  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49992  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49993  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49994  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49995  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49996  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49997  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49998  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 49999  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50000  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50001  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50002  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50003  IS:      0.16 CFS AT TIME:     3.67
THE MAX Q AT OUTFLOW ELEMENT: 50069  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50070  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50071  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50072  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50073  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50074  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50075  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50076  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50077  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50078  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50079  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50080  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50081  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50082  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50083  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50084  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50085  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50086  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50087  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50088  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50089  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50090  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50091  IS:      0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50092  IS:      0.12 CFS AT TIME:     3.24
THE MAX Q AT OUTFLOW ELEMENT: 50093  IS:      1.90 CFS AT TIME:     3.17
THE MAX Q AT OUTFLOW ELEMENT: 50094  IS:      2.90 CFS AT TIME:     3.16
THE MAX Q AT OUTFLOW ELEMENT: 50095  IS:      3.56 CFS AT TIME:     3.16
THE MAX Q AT OUTFLOW ELEMENT: 50096  IS:      5.10 CFS AT TIME:     3.16
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THE MAX Q AT OUTFLOW ELEMENT: 50097  IS:      25.27 CFS AT TIME:     3.15
THE MAX Q AT OUTFLOW ELEMENT: 50098  IS:      29.17 CFS AT TIME:     3.15
THE MAX Q AT OUTFLOW ELEMENT: 50099  IS:      15.47 CFS AT TIME:     3.15
THE MAX Q AT OUTFLOW ELEMENT: 50100  IS:       0.50 CFS AT TIME:     3.30
THE MAX Q AT OUTFLOW ELEMENT: 50101  IS:       0.23 CFS AT TIME:     3.36
THE MAX Q AT OUTFLOW ELEMENT: 50102  IS:       0.11 CFS AT TIME:     3.36
THE MAX Q AT OUTFLOW ELEMENT: 50103  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50104  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50105  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50106  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50107  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50108  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50109  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50110  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50169  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50170  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50171  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50172  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50173  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50174  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50175  IS:       0.00 CFS AT TIME:     0.00
THE MAX Q AT OUTFLOW ELEMENT: 50176  IS:       0.00 CFS AT TIME:     0.00
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ELEMENT	TIME (HRS)	DISCHARGE (CFS)
27354	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	13.80
	2.80	50.36
	2.90	78.25
	3.00	78.41
	3.10	59.77
	3.20	45.96
	3.30	33.86
	3.40	24.40
	3.50	16.43
	3.60	11.30
	3.70	8.42
	3.80	6.42
	3.90	3.77
	4.00	2.60
	4.10	2.27
	4.20	1.78
	4.30	1.61
	4.40	1.46
	4.50	1.15
	4.60	1.18
	4.70	0.97
	4.80	0.68
	4.90	1.01
	5.00	0.63
	5.10	0.66
	5.20	0.45
	5.30	0.45
	5.40	0.12
	5.50	0.50
	5.60	0.26
	5.70	0.18
	5.80	0.38
	5.90	0.12

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
27577	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00

	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.44
	2.40	0.14
	2.50	0.48
	2.60	1.44
	2.70	11.38
	2.80	19.32
	2.90	26.40
	3.00	23.08
	3.10	17.42
	3.20	12.92
	3.30	9.73
	3.40	5.91
	3.50	3.28
	3.60	2.22
	3.70	1.71
	3.80	1.12
	3.90	0.59
	4.00	0.27
	4.10	0.14
	4.20	0.48
	4.30	0.49
	4.40	0.25
	4.50	0.39
	4.60	0.00
	4.70	0.39
	4.80	0.25
	4.90	0.25
	5.00	0.00
	5.10	0.14
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
27578	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.50
	2.70	3.64
	2.80	9.60
	2.90	15.01
	3.00	13.81
	3.10	9.92
	3.20	7.05
	3.30	5.53
	3.40	3.93
	3.50	2.55
	3.60	1.30
	3.70	0.80
	3.80	1.10
	3.90	0.37
	4.00	0.80
	4.10	0.27

	4.20	0.17
	4.30	0.32
	4.40	0.13
	4.50	0.11
	4.60	0.09
	4.70	0.03
	4.80	0.03
	4.90	0.07
	5.00	0.03
	5.10	0.00
	5.20	0.03
	5.30	0.00
	5.40	0.00
	5.50	0.03
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
27579	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.04
	2.60	0.25
	2.70	5.00
	2.80	15.62
	2.90	23.98
	3.00	23.83
	3.10	17.66
	3.20	13.79
	3.30	11.06
	3.40	8.62
	3.50	5.88
	3.60	4.04
	3.70	3.15
	3.80	1.69
	3.90	1.42
	4.00	1.55
	4.10	0.96
	4.20	0.89
	4.30	0.80
	4.40	0.52
	4.50	0.68
	4.60	0.56
	4.70	0.48
	4.80	0.30
	4.90	0.55
	5.00	0.27
	5.10	0.03
	5.20	0.43
	5.30	0.16
	5.40	0.00
	5.50	0.27
	5.60	0.16
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
27803	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00

1.30	0.00
1.40	0.00
1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.30
2.20	0.49
2.30	0.35
2.40	0.62
2.50	0.49
2.60	2.18
2.70	8.97
2.80	15.03
2.90	19.94
3.00	17.39
3.10	13.60
3.20	11.11
3.30	8.54
3.40	5.79
3.50	3.94
3.60	3.13
3.70	2.65
3.80	1.43
3.90	1.00
4.00	1.36
4.10	0.74
4.20	0.96
4.30	0.80
4.40	0.06
4.50	0.40
4.60	0.68
4.70	0.28
4.80	0.06
4.90	0.37
5.00	0.34
5.10	0.06
5.20	0.09
5.30	0.09
5.40	0.00
5.50	0.28
5.60	0.09
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
28701	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.41
	2.50	0.44
	2.60	0.52
	2.70	5.86
	2.80	9.70
	2.90	14.72
	3.00	13.45
	3.10	10.71
	3.20	8.60
	3.30	6.90
	3.40	5.63
	3.50	5.13
	3.60	3.11
	3.70	1.95
	3.80	1.11
	3.90	1.13
	4.00	1.10
	4.10	0.79
	4.20	0.72
	4.30	0.70
	4.40	0.88
	4.50	0.91

	4.60	0.53
	4.70	0.44
	4.80	0.53
	4.90	0.25
	5.00	0.26
	5.10	0.25
	5.20	0.22
	5.30	0.08
	5.40	0.22
	5.50	0.00
	5.60	0.15
	5.70	0.00
	5.80	0.08
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
38543	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
38544	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00

	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
38756	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00

	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
38968	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
39180	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00

2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	0.00
3.30	0.00
3.40	0.00
3.50	0.00
3.60	0.00
3.70	0.00
3.80	0.00
3.90	0.00
4.00	0.00
4.10	0.00
4.20	0.00
4.30	0.00
4.40	0.00
4.50	0.00
4.60	0.00
4.70	0.00
4.80	0.00
4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
39392	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00

	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
39603	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
39813	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00

	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
39814	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00

	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
40024	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
40234	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00

	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
40444	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)

40654	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
40863	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00

	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
40864	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
41073	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00

	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
41282	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00

	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
41491	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
41700	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00

	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
41909	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00

	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
42118	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
42326	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00

	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
42534	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00

	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
42742	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
42950	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00

	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
43157	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00

	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
43158	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
43365	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00

	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
43572	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00

	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
43778	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
43984	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00

	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
44190	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00

	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
44395	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
44396	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00

	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
44601	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
44806	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
45011	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00

	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
45216	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
45420	0.00	0.00
	0.10	0.00
	0.20	0.00

	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
45421	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00

	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
45625	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
45829	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00

0.70	0.00
0.80	0.00
0.90	0.00
1.00	0.00
1.10	0.00
1.20	0.00
1.30	0.00
1.40	0.00
1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	0.00
3.30	0.00
3.40	0.00
3.50	0.00
3.60	0.00
3.70	0.00
3.80	0.00
3.90	0.00
4.00	0.00
4.10	0.00
4.20	0.00
4.30	0.00
4.40	0.00
4.50	0.00
4.60	0.00
4.70	0.00
4.80	0.00
4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
46033	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00

	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
46237	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
46441	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00

	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
46644	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00

	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
46645	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
46848	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00

	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
47051	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00

	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
47254	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
47457	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00

	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
47660	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00

	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
47861	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
48062	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00

	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
48263	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00

	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
48464	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
48665	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00

	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
48865	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
48866	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49066	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00

	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49266	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49466	0.00	0.00
	0.10	0.00

	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49656	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00

	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49657	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49658	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00

	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49659	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00

	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49660	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49661	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00

	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49662	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00

	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49663	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49664	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00

	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49665	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00

	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49666	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49815	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00

	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	1.38
	3.50	1.87
	3.60	1.48
	3.70	1.24
	3.80	1.09
	3.90	0.77
	4.00	0.72
	4.10	0.59
	4.20	0.50
	4.30	0.49
	4.40	0.26
	4.50	0.18
	4.60	0.14
	4.70	0.13
	4.80	0.12
	4.90	0.10
	5.00	0.09
	5.10	0.08
	5.20	0.05
	5.30	0.08
	5.40	0.08
	5.50	0.00
	5.60	0.05
	5.70	0.21
	5.80	0.04
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49816	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	3.10
	3.50	3.35
	3.60	2.82
	3.70	2.75
	3.80	2.16
	3.90	1.98
	4.00	1.48
	4.10	1.85
	4.20	1.12
	4.30	0.94
	4.40	0.81
	4.50	0.42
	4.60	0.35
	4.70	0.33
	4.80	0.31
	4.90	0.28
	5.00	0.26

	5.10	0.24
	5.20	0.22
	5.30	0.24
	5.40	0.24
	5.50	0.00
	5.60	0.22
	5.70	0.22
	5.80	0.22
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49817	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.44
	3.50	0.55
	3.60	0.32
	3.70	0.40
	3.80	0.34
	3.90	0.24
	4.00	0.25
	4.10	0.35
	4.20	0.04
	4.30	0.18
	4.40	0.18
	4.50	0.11
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.11
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.11
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49818	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00

	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.72
	3.50	0.97
	3.60	0.77
	3.70	0.61
	3.80	0.69
	3.90	0.54
	4.00	0.62
	4.10	0.50
	4.20	0.17
	4.30	0.14
	4.40	0.31
	4.50	0.41
	4.60	0.17
	4.70	0.00
	4.80	0.25
	4.90	0.17
	5.00	0.17
	5.10	0.17
	5.20	0.24
	5.30	0.17
	5.40	0.00
	5.50	0.00
	5.60	0.24
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49819	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.69
	3.50	0.94
	3.60	0.85
	3.70	0.79
	3.80	0.72
	3.90	0.57
	4.00	0.64
	4.10	0.43
	4.20	0.30
	4.30	0.00
	4.40	0.30
	4.50	0.44
	4.60	0.30
	4.70	0.00
	4.80	0.39
	4.90	0.30
	5.00	0.30
	5.10	0.30
	5.20	0.14
	5.30	0.30
	5.40	0.00

	5.50	0.00
	5.60	0.14
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49820	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.16
	3.40	1.48
	3.50	1.47
	3.60	1.40
	3.70	1.70
	3.80	1.10
	3.90	0.94
	4.00	0.87
	4.10	0.82
	4.20	0.68
	4.30	0.44
	4.40	0.61
	4.50	0.54
	4.60	0.53
	4.70	0.31
	4.80	0.49
	4.90	0.40
	5.00	0.40
	5.10	0.40
	5.20	0.27
	5.30	0.21
	5.40	0.00
	5.50	0.19
	5.60	0.00
	5.70	0.00
	5.80	0.19
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49821	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00

	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.56
	3.40	1.63
	3.50	1.62
	3.60	1.62
	3.70	1.76
	3.80	1.55
	3.90	1.31
	4.00	1.15
	4.10	1.03
	4.20	0.90
	4.30	0.81
	4.40	0.67
	4.50	0.56
	4.60	0.55
	4.70	0.49
	4.80	0.25
	4.90	0.41
	5.00	0.40
	5.10	0.37
	5.20	0.34
	5.30	0.00
	5.40	0.00
	5.50	0.25
	5.60	0.08
	5.70	0.00
	5.80	0.32
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49822	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.98
	3.40	4.18
	3.50	4.16
	3.60	4.10
	3.70	3.34
	3.80	2.70
	3.90	1.51
	4.00	1.33
	4.10	1.17
	4.20	0.95
	4.30	0.85
	4.40	0.68
	4.50	0.53
	4.60	0.55
	4.70	0.48
	4.80	0.18
	4.90	0.41
	5.00	0.42
	5.10	0.37
	5.20	0.25
	5.30	0.02
	5.40	0.00
	5.50	0.15
	5.60	0.15
	5.70	0.00
	5.80	0.28

	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49823	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	2.25
	3.40	4.95
	3.50	5.23
	3.60	4.59
	3.70	2.76
	3.80	2.38
	3.90	1.98
	4.00	1.79
	4.10	1.60
	4.20	1.21
	4.30	1.07
	4.40	0.96
	4.50	0.35
	4.60	0.90
	4.70	0.76
	4.80	0.41
	4.90	0.65
	5.00	0.74
	5.10	0.61
	5.20	0.40
	5.30	0.46
	5.40	0.00
	5.50	0.00
	5.60	0.53
	5.70	0.00
	5.80	0.22
	5.90	0.15

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49824	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00

	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	1.78
	3.40	1.91
	3.50	1.90
	3.60	1.90
	3.70	1.84
	3.80	1.47
	3.90	1.31
	4.00	1.23
	4.10	1.16
	4.20	0.95
	4.30	0.77
	4.40	0.74
	4.50	0.18
	4.60	0.66
	4.70	0.56
	4.80	0.40
	4.90	0.31
	5.00	0.39
	5.10	0.23
	5.20	0.34
	5.30	0.54
	5.40	0.00
	5.50	0.11
	5.60	0.23
	5.70	0.00
	5.80	0.00
	5.90	0.29

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49825	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	3.83
	3.40	3.65
	3.50	3.58
	3.60	3.37
	3.70	3.20
	3.80	2.27
	3.90	2.04
	4.00	1.58
	4.10	1.59
	4.20	1.50
	4.30	1.22
	4.40	1.15
	4.50	0.84
	4.60	0.85
	4.70	0.77
	4.80	0.58
	4.90	0.56
	5.00	0.55
	5.10	0.41
	5.20	0.46
	5.30	0.65
	5.40	0.21
	5.50	0.43
	5.60	0.31
	5.70	0.16
	5.80	0.16
	5.90	0.30

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49826	0.00	0.00

0.10	0.00
0.20	0.00
0.30	0.00
0.40	0.00
0.50	0.00
0.60	0.00
0.70	0.00
0.80	0.00
0.90	0.00
1.00	0.00
1.10	0.00
1.20	0.00
1.30	0.00
1.40	0.00
1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	0.00
3.30	3.97
3.40	3.67
3.50	3.59
3.60	3.48
3.70	3.39
3.80	2.72
3.90	2.38
4.00	2.19
4.10	2.02
4.20	1.95
4.30	1.77
4.40	1.07
4.50	0.91
4.60	0.75
4.70	0.68
4.80	0.63
4.90	0.63
5.00	0.62
5.10	0.46
5.20	0.43
5.30	0.53
5.40	0.34
5.50	0.46
5.60	0.31
5.70	0.24
5.80	0.24
5.90	0.06

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49827	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	4.22

	3.40	3.66
	3.50	3.55
	3.60	3.37
	3.70	3.09
	3.80	2.27
	3.90	2.12
	4.00	1.90
	4.10	1.41
	4.20	1.07
	4.30	1.01
	4.40	0.94
	4.50	0.81
	4.60	0.70
	4.70	0.65
	4.80	0.61
	4.90	0.61
	5.00	0.59
	5.10	0.52
	5.20	0.44
	5.30	0.52
	5.40	0.47
	5.50	0.48
	5.60	0.24
	5.70	0.33
	5.80	0.29
	5.90	0.06

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49828	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	2.48
	3.40	2.97
	3.50	2.86
	3.60	2.70
	3.70	2.44
	3.80	1.84
	3.90	1.47
	4.00	1.18
	4.10	0.96
	4.20	0.84
	4.30	0.74
	4.40	0.65
	4.50	0.57
	4.60	0.53
	4.70	0.50
	4.80	0.45
	4.90	0.46
	5.00	0.45
	5.10	0.38
	5.20	0.34
	5.30	0.39
	5.40	0.35
	5.50	0.38
	5.60	0.15
	5.70	0.17
	5.80	0.19
	5.90	0.15

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49829	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00

0.50	0.00
0.60	0.00
0.70	0.00
0.80	0.00
0.90	0.00
1.00	0.00
1.10	0.00
1.20	0.00
1.30	0.00
1.40	0.00
1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	0.00
3.30	0.67
3.40	3.11
3.50	2.97
3.60	2.82
3.70	2.69
3.80	2.27
3.90	2.02
4.00	1.64
4.10	1.32
4.20	0.92
4.30	0.79
4.40	0.71
4.50	0.63
4.60	0.59
4.70	0.56
4.80	0.53
4.90	0.49
5.00	0.47
5.10	0.42
5.20	0.39
5.30	0.36
5.40	0.34
5.50	0.34
5.60	0.23
5.70	0.13
5.80	0.16
5.90	0.18

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49830	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.14
	3.40	2.41
	3.50	2.42
	3.60	2.31
	3.70	2.28

	3.80	1.81
	3.90	1.53
	4.00	0.93
	4.10	0.79
	4.20	0.77
	4.30	0.66
	4.40	0.72
	4.50	0.55
	4.60	0.52
	4.70	0.50
	4.80	0.47
	4.90	0.45
	5.00	0.42
	5.10	0.38
	5.20	0.47
	5.30	0.32
	5.40	0.29
	5.50	0.29
	5.60	0.25
	5.70	0.14
	5.80	0.16
	5.90	0.18

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49831	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.43
	3.50	0.88
	3.60	0.77
	3.70	0.43
	3.80	0.38
	3.90	0.50
	4.00	0.30
	4.10	0.27
	4.20	0.28
	4.30	0.24
	4.40	0.41
	4.50	0.20
	4.60	0.19
	4.70	0.18
	4.80	0.17
	4.90	0.16
	5.00	0.15
	5.10	0.14
	5.20	0.30
	5.30	0.12
	5.40	0.11
	5.50	0.10
	5.60	0.09
	5.70	0.07
	5.80	0.05
	5.90	0.06

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49832	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00

	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.13
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.13
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.13
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49833	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	1.19
	2.80	8.07
	2.90	29.90
	3.00	42.70
	3.10	45.77
	3.20	42.54
	3.30	38.87
	3.40	35.22
	3.50	31.61
	3.60	27.62
	3.70	23.05
	3.80	20.11
	3.90	17.85
	4.00	16.02
	4.10	14.83

	4.20	13.34
	4.30	12.20
	4.40	11.42
	4.50	10.71
	4.60	10.16
	4.70	9.30
	4.80	8.62
	4.90	7.94
	5.00	7.29
	5.10	6.61
	5.20	6.00
	5.30	5.46
	5.40	5.04
	5.50	4.57
	5.60	4.20
	5.70	3.82
	5.80	3.52
	5.90	3.43

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49834	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	1.43
	2.80	11.65
	2.90	45.60
	3.00	75.22
	3.10	83.22
	3.20	74.99
	3.30	65.67
	3.40	57.44
	3.50	49.80
	3.60	42.36
	3.70	35.19
	3.80	30.52
	3.90	26.89
	4.00	23.92
	4.10	21.94
	4.20	19.61
	4.30	17.75
	4.40	16.41
	4.50	15.42
	4.60	14.55
	4.70	13.54
	4.80	12.42
	4.90	11.41
	5.00	10.35
	5.10	9.19
	5.20	8.27
	5.30	7.44
	5.40	6.77
	5.50	6.03
	5.60	5.45
	5.70	4.88
	5.80	4.44
	5.90	4.20

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49835	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00

1.30	0.00
1.40	0.00
1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	1.01
2.80	10.14
2.90	44.03
3.00	75.68
3.10	83.75
3.20	75.36
3.30	65.59
3.40	56.79
3.50	48.17
3.60	40.04
3.70	32.75
3.80	28.07
3.90	24.41
4.00	21.51
4.10	19.58
4.20	17.31
4.30	15.49
4.40	14.17
4.50	13.30
4.60	12.48
4.70	11.51
4.80	10.48
4.90	9.57
5.00	8.59
5.10	7.52
5.20	6.86
5.30	6.07
5.40	5.51
5.50	4.84
5.60	4.32
5.70	3.83
5.80	3.45
5.90	3.21

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49836	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.27
	2.90	4.74
	3.00	10.55
	3.10	12.44
	3.20	10.49
	3.30	8.44
	3.40	6.73
	3.50	5.41
	3.60	4.19
	3.70	3.25
	3.80	2.67
	3.90	2.19
	4.00	1.82
	4.10	1.57
	4.20	1.31
	4.30	1.10
	4.40	0.94
	4.50	0.44

	4.60	0.40
	4.70	0.34
	4.80	0.30
	4.90	0.26
	5.00	0.22
	5.10	0.21
	5.20	0.21
	5.30	0.21
	5.40	0.18
	5.50	0.14
	5.60	0.11
	5.70	0.08
	5.80	0.06
	5.90	0.02

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49837	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49838	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00

	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49839	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00

	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49840	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49841	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00

2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	0.00
3.30	0.00
3.40	0.00
3.50	0.00
3.60	0.00
3.70	0.00
3.80	0.00
3.90	0.00
4.00	0.00
4.10	0.00
4.20	0.00
4.30	0.00
4.40	0.00
4.50	0.00
4.60	0.00
4.70	0.00
4.80	0.00
4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49842	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00

	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49843	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49844	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00

	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49845	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00

	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49846	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49847	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00

	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49848	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)

49849	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49850	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00

	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49851	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49852	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00

	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49853	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00

	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49854	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49855	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00

	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49962	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00

	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49963	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49964	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00

	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49965	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00

	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49966	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49967	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00

	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49968	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00

4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49969	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49970	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00

	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49971	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00

	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49972	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49973	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00

	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49974	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00

	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49975	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49976	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00

	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49977	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49978	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49979	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00

	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49980	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49981	0.00	0.00
	0.10	0.00
	0.20	0.00

	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49982	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00

	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49983	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49984	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00

	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49985	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00

	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49986	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49987	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00

	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49988	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00

	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49989	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49990	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00

1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	0.00
3.30	0.00
3.40	0.00
3.50	0.00
3.60	0.00
3.70	0.00
3.80	0.00
3.90	0.00
4.00	0.00
4.10	0.00
4.20	0.00
4.30	0.00
4.40	0.00
4.50	0.00
4.60	0.00
4.70	0.00
4.80	0.00
4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49991	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00

	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49992	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49993	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00

	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49994	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00

	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49995	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49996	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00

	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49997	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00

	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49998	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
49999	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00

	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50000	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50001	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50002	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00

3.10	0.00
3.20	0.00
3.30	0.00
3.40	0.00
3.50	0.00
3.60	0.00
3.70	0.00
3.80	0.02
3.90	0.00
4.00	0.00
4.10	0.00
4.20	0.00
4.30	0.00
4.40	0.00
4.50	0.00
4.60	0.00
4.70	0.00
4.80	0.00
4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50003	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.16
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50069	0.00	0.00
	0.10	0.00

	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50070	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00

	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50071	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50072	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00

	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50073	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00

	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50074	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50075	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00

	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50076	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00

	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50077	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50078	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00

1.40	0.00
1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	0.00
3.30	0.00
3.40	0.00
3.50	0.00
3.60	0.00
3.70	0.00
3.80	0.00
3.90	0.00
4.00	0.00
4.10	0.00
4.20	0.00
4.30	0.00
4.40	0.00
4.50	0.00
4.60	0.00
4.70	0.00
4.80	0.00
4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50079	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00

	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50080	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50081	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00

	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50082	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00

	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50083	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50084	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00

	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50088	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00

	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50089	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50090	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00

	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50091	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50092	0.00	0.00

	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.04
	3.30	0.03
	3.40	0.02
	3.50	0.00
	3.60	0.01
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50093	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	1.78
	3.30	1.38

	3.40	0.95
	3.50	0.33
	3.60	0.45
	3.70	0.13
	3.80	0.00
	3.90	0.03
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50094	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	2.64
	3.30	1.90
	3.40	1.17
	3.50	0.47
	3.60	0.49
	3.70	0.18
	3.80	0.00
	3.90	0.06
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50095	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00

0.50	0.00
0.60	0.00
0.70	0.00
0.80	0.00
0.90	0.00
1.00	0.00
1.10	0.00
1.20	0.00
1.30	0.00
1.40	0.00
1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	3.25
3.30	2.42
3.40	1.56
3.50	1.03
3.60	0.59
3.70	0.26
3.80	0.04
3.90	0.05
4.00	0.00
4.10	0.00
4.20	0.00
4.30	0.00
4.40	0.00
4.50	0.00
4.60	0.00
4.70	0.00
4.80	0.00
4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50096	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.34
	3.20	4.65
	3.30	3.73
	3.40	3.08
	3.50	1.94
	3.60	0.98
	3.70	0.59

	3.80	0.46
	3.90	0.24
	4.00	0.17
	4.10	0.13
	4.20	0.11
	4.30	0.06
	4.40	0.06
	4.50	0.00
	4.60	0.03
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.03
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50097	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	13.74
	3.20	23.92
	3.30	20.80
	3.40	17.95
	3.50	15.05
	3.60	12.08
	3.70	9.92
	3.80	7.85
	3.90	6.42
	4.00	5.26
	4.10	4.33
	4.20	3.68
	4.30	3.02
	4.40	2.67
	4.50	1.97
	4.60	1.92
	4.70	1.51
	4.80	1.35
	4.90	1.23
	5.00	1.35
	5.10	0.95
	5.20	0.84
	5.30	0.79
	5.40	0.79
	5.50	0.47
	5.60	0.58
	5.70	0.54
	5.80	0.39
	5.90	0.34

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50098	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00

	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	19.45
	3.20	27.85
	3.30	24.63
	3.40	21.38
	3.50	18.53
	3.60	15.41
	3.70	13.02
	3.80	10.66
	3.90	8.76
	4.00	7.25
	4.10	5.99
	4.20	5.10
	4.30	4.09
	4.40	3.49
	4.50	2.78
	4.60	2.50
	4.70	2.14
	4.80	1.91
	4.90	1.74
	5.00	1.69
	5.10	1.34
	5.20	1.19
	5.30	1.04
	5.40	0.96
	5.50	0.62
	5.60	0.65
	5.70	0.67
	5.80	0.55
	5.90	0.48

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50099	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	10.16
	3.20	14.90
	3.30	13.36
	3.40	11.56
	3.50	10.19
	3.60	8.69
	3.70	7.29
	3.80	6.23
	3.90	5.22
	4.00	4.46
	4.10	3.76

	4.20	3.25
	4.30	2.66
	4.40	2.28
	4.50	1.97
	4.60	1.65
	4.70	1.51
	4.80	1.35
	4.90	1.23
	5.00	1.08
	5.10	0.95
	5.20	0.84
	5.30	0.76
	5.40	0.64
	5.50	0.47
	5.60	0.48
	5.70	0.46
	5.80	0.39
	5.90	0.34

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50100	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.09
	3.20	0.45
	3.30	0.42
	3.40	0.25
	3.50	0.15
	3.60	0.07
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50101	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00

	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.09
	3.30	0.10
	3.40	0.11
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50102	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.09
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00

	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50103	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50104	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00

	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50105	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00

	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50106	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50107	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00

	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50108	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00

	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50109	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50110	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00

	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50169	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00

	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50170	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50171	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00

	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50172	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)

50173	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50174	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00

	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50175	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50176	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00

0.40	0.00
0.50	0.00
0.60	0.00
0.70	0.00
0.80	0.00
0.90	0.00
1.00	0.00
1.10	0.00
1.20	0.00
1.30	0.00
1.40	0.00
1.50	0.00
1.60	0.00
1.70	0.00
1.80	0.00
1.90	0.00
2.00	0.00
2.10	0.00
2.20	0.00
2.30	0.00
2.40	0.00
2.50	0.00
2.60	0.00
2.70	0.00
2.80	0.00
2.90	0.00
3.00	0.00
3.10	0.00
3.20	0.00
3.30	0.00
3.40	0.00
3.50	0.00
3.60	0.00
3.70	0.00
3.80	0.00
3.90	0.00
4.00	0.00
4.10	0.00
4.20	0.00
4.30	0.00
4.40	0.00
4.50	0.00
4.60	0.00
4.70	0.00
4.80	0.00
4.90	0.00
5.00	0.00
5.10	0.00
5.20	0.00
5.30	0.00
5.40	0.00
5.50	0.00
5.60	0.00
5.70	0.00
5.80	0.00
5.90	0.00

	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50085	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00

	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

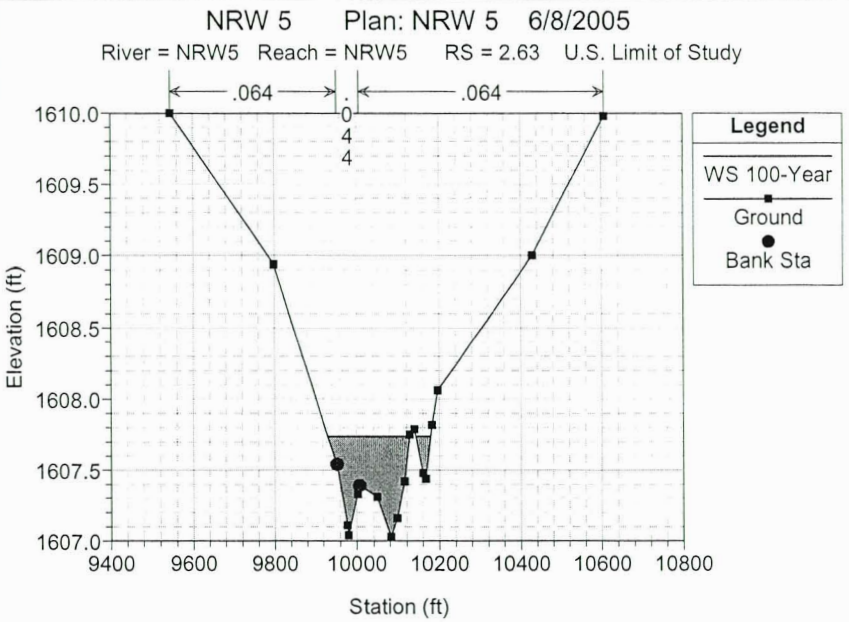
ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50086	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00
	2.60	0.00
	2.70	0.00
	2.80	0.00
	2.90	0.00
	3.00	0.00
	3.10	0.00
	3.20	0.00
	3.30	0.00
	3.40	0.00
	3.50	0.00
	3.60	0.00
	3.70	0.00
	3.80	0.00
	3.90	0.00
	4.00	0.00
	4.10	0.00
	4.20	0.00
	4.30	0.00
	4.40	0.00
	4.50	0.00
	4.60	0.00
	4.70	0.00
	4.80	0.00
	4.90	0.00
	5.00	0.00
	5.10	0.00
	5.20	0.00
	5.30	0.00
	5.40	0.00
	5.50	0.00
	5.60	0.00
	5.70	0.00
	5.80	0.00
	5.90	0.00

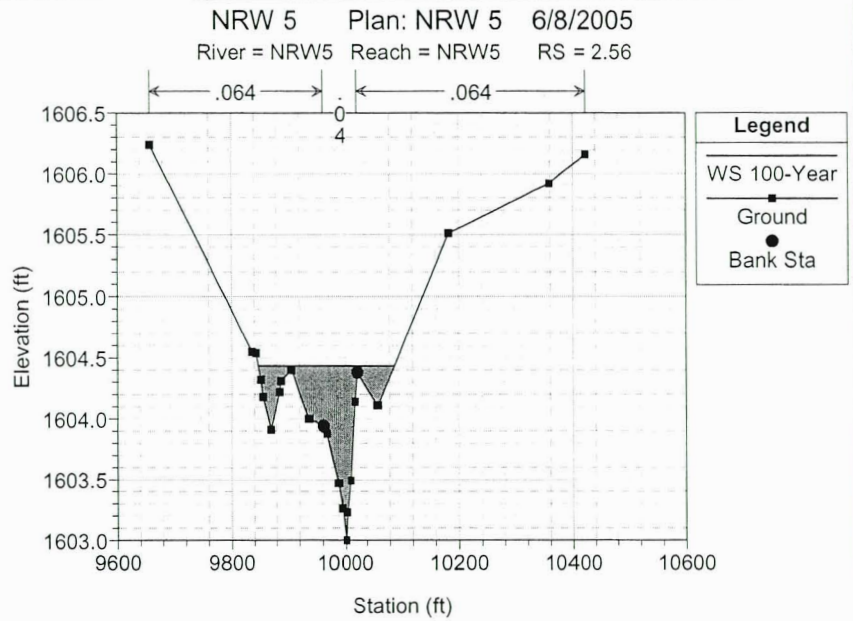
ELEMENT	TIME (HRS)	DISCHARGE (CFS)
50087	0.00	0.00
	0.10	0.00
	0.20	0.00
	0.30	0.00
	0.40	0.00
	0.50	0.00
	0.60	0.00
	0.70	0.00
	0.80	0.00
	0.90	0.00
	1.00	0.00
	1.10	0.00
	1.20	0.00
	1.30	0.00
	1.40	0.00
	1.50	0.00
	1.60	0.00
	1.70	0.00
	1.80	0.00
	1.90	0.00
	2.00	0.00
	2.10	0.00
	2.20	0.00
	2.30	0.00
	2.40	0.00
	2.50	0.00

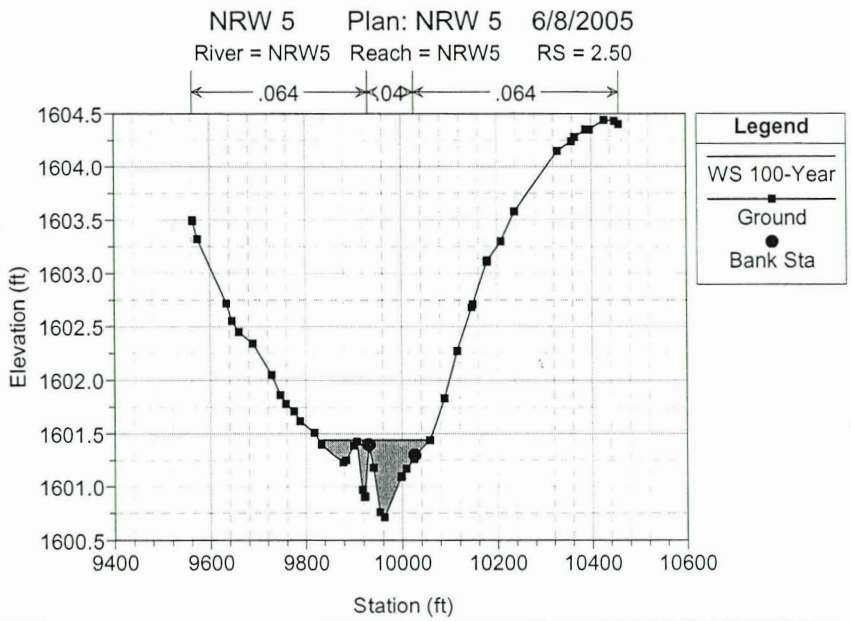
E.3 CROSS SECTION PLOTS

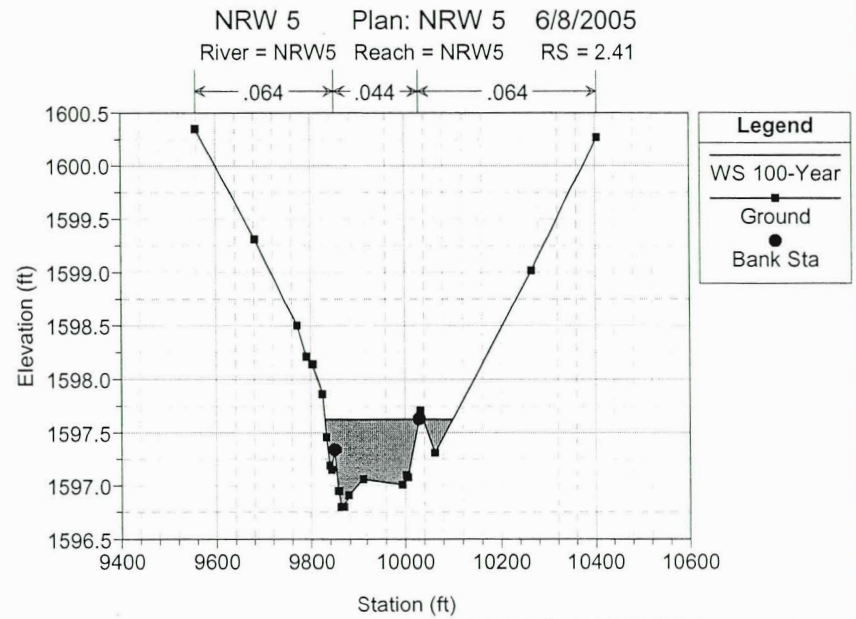
NRW 5

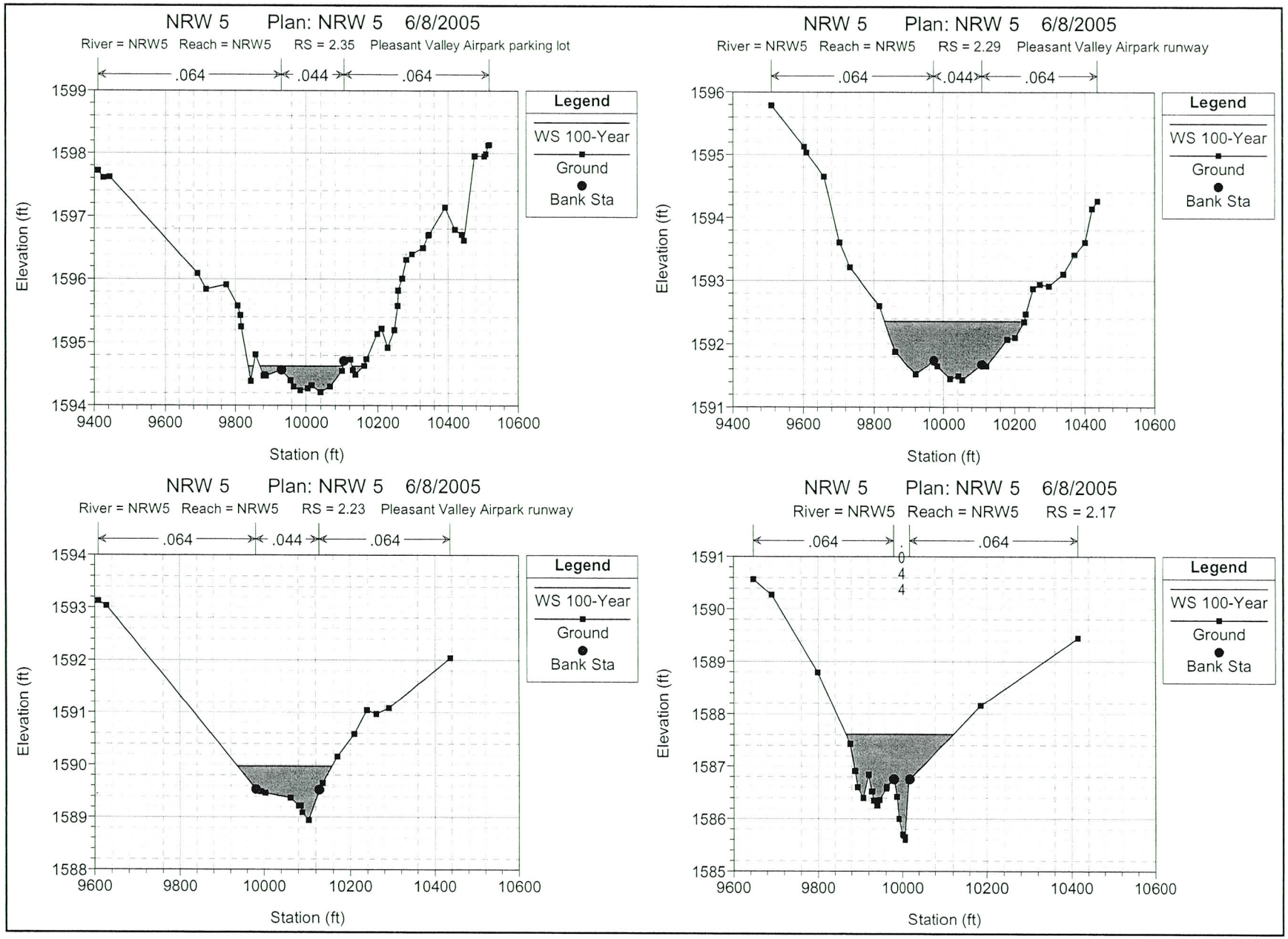
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

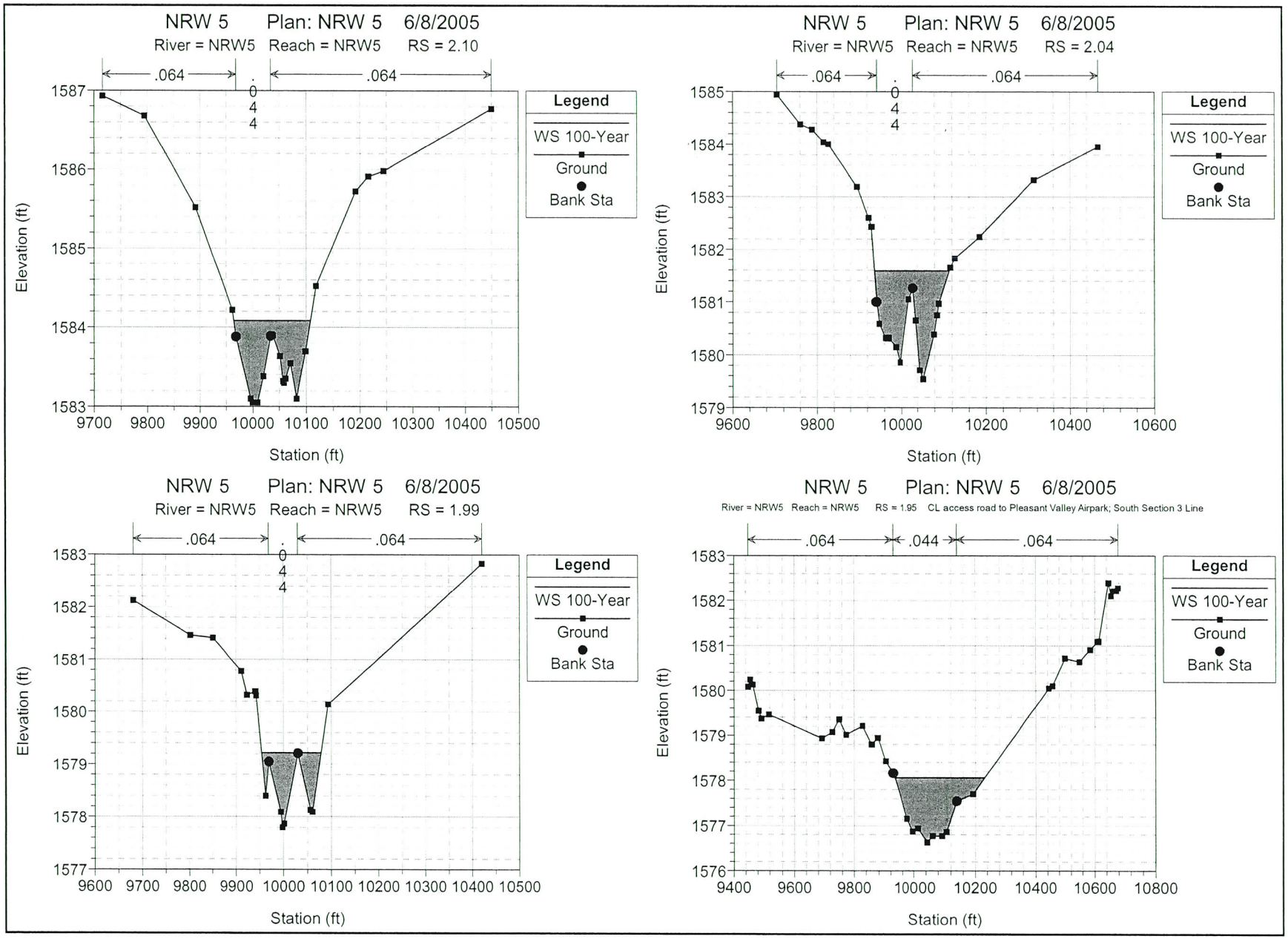

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.63 U.S. Limit of Study
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

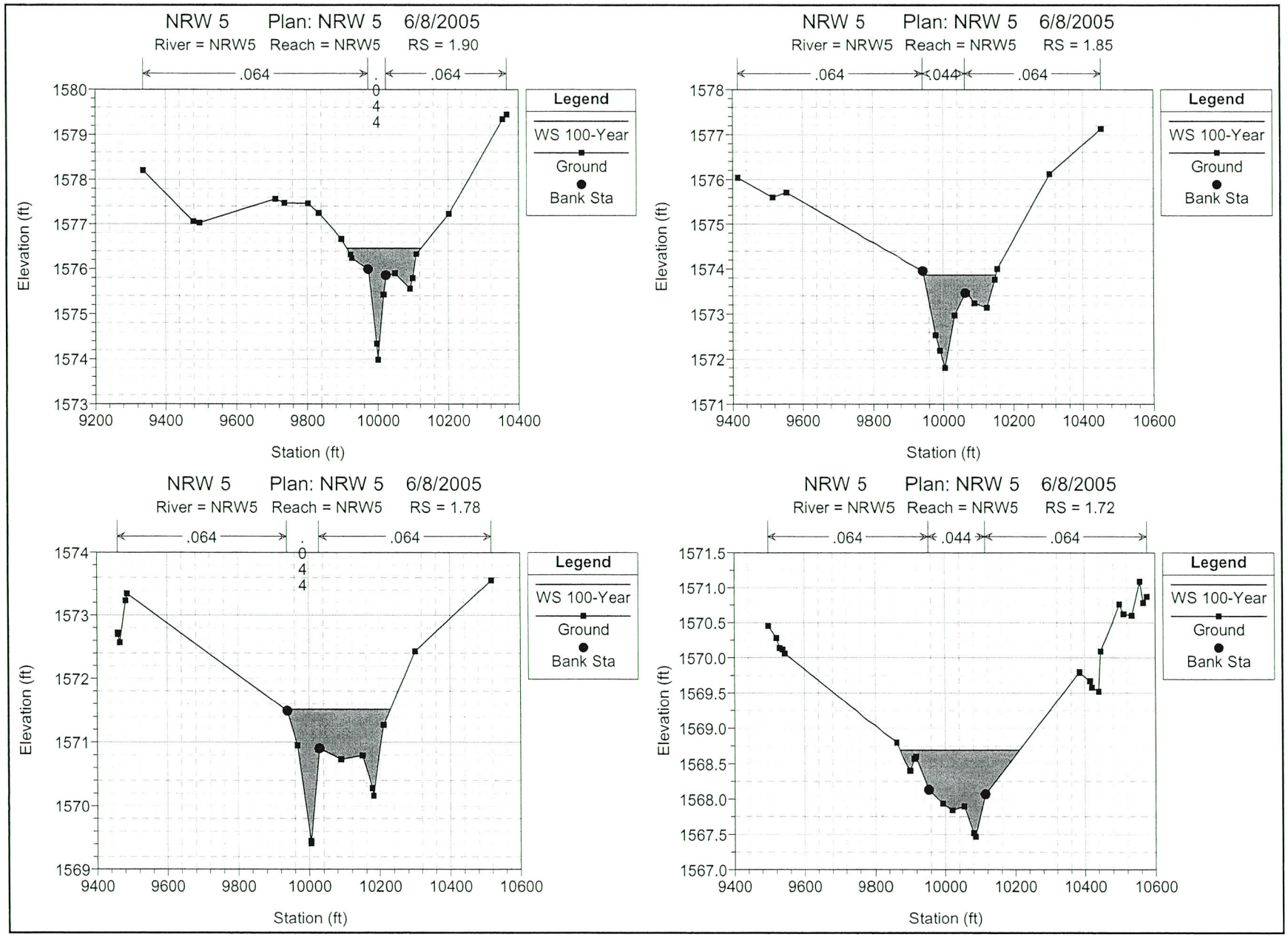

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.56
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

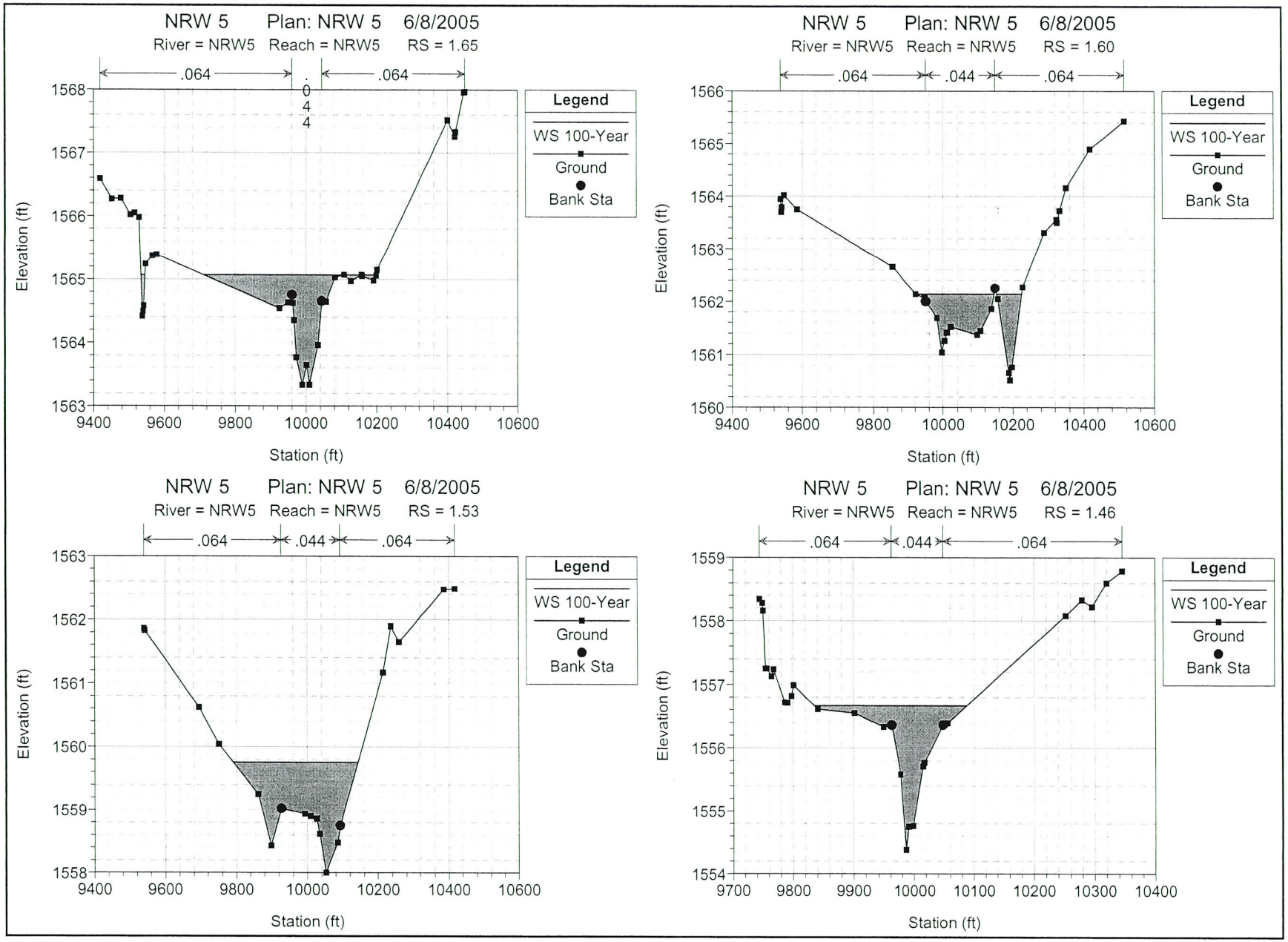

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.50
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

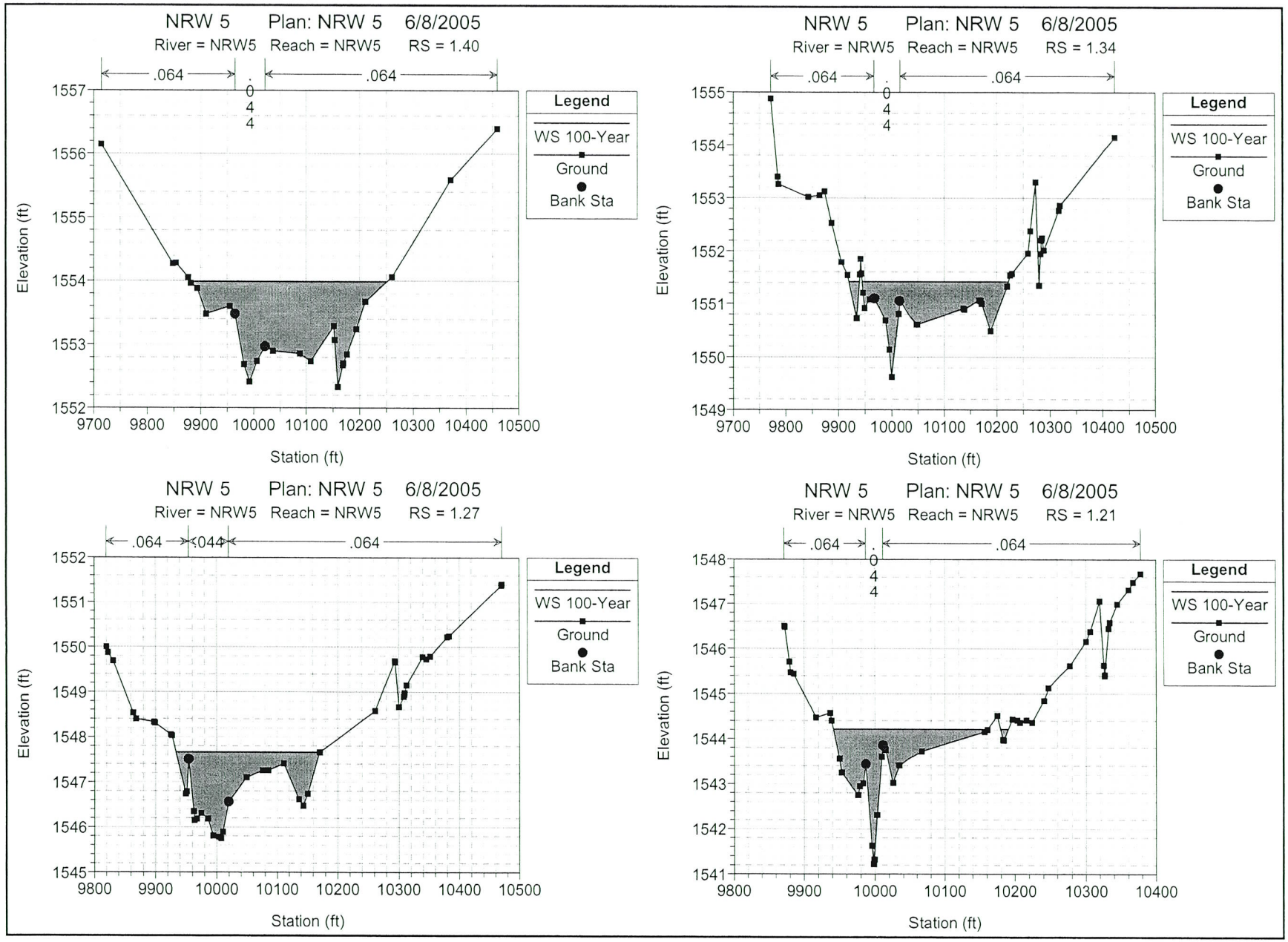

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.41
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

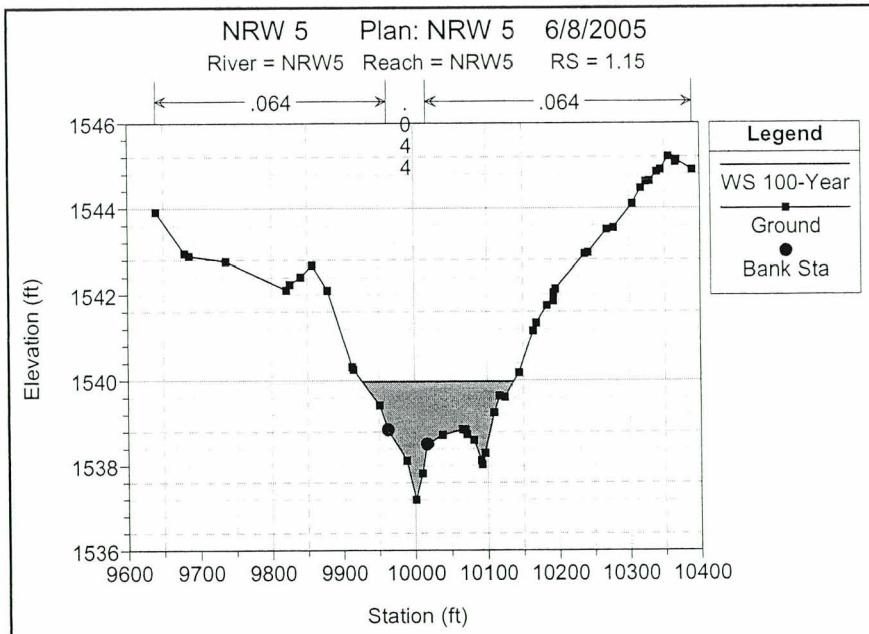

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.35 Pleasant Valley Airpark parking lot
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.29 Pleasant Valley Airpark runway
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.23 Pleasant Valley Airpark runway
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.17
.064
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

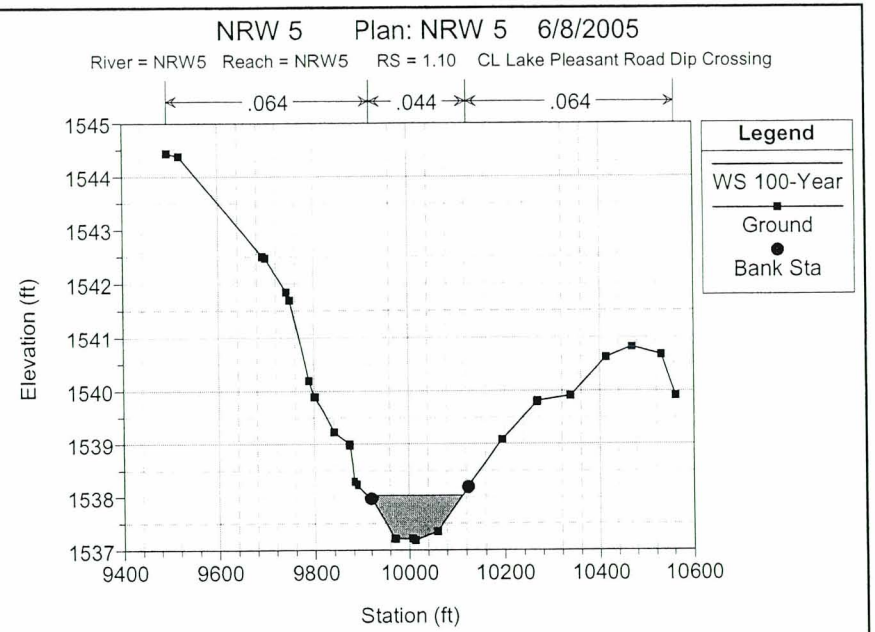

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.10
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 2.04
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.99
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.95 CL access road to Pleasant Valley Airpark; South Section 3 Line
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

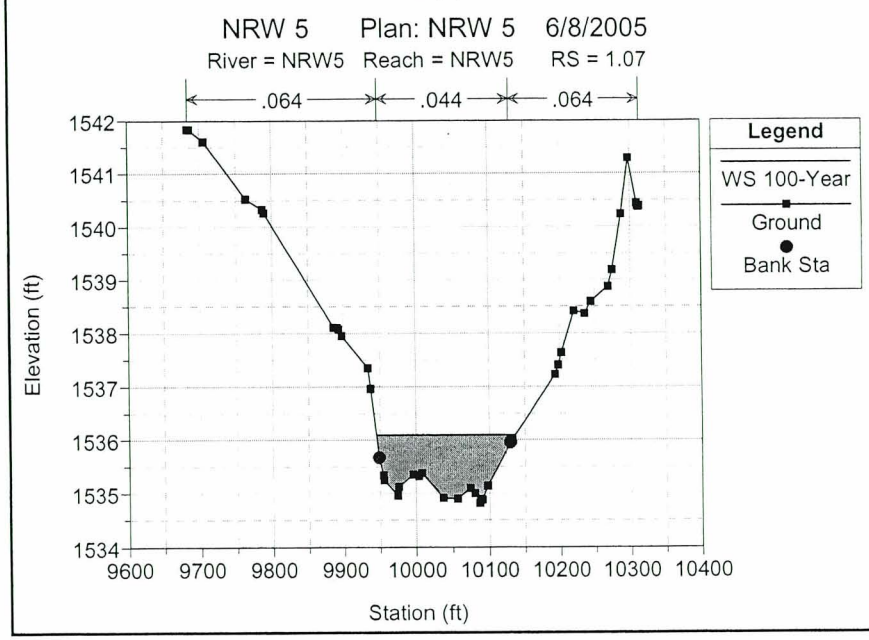

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.90
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.85
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.78
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.72
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

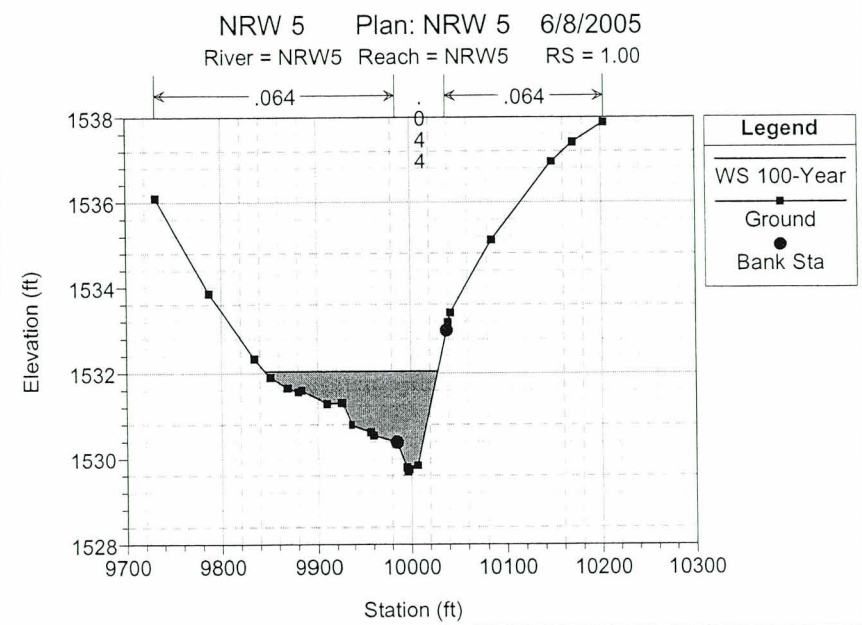

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.65
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.60
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.53
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.46
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

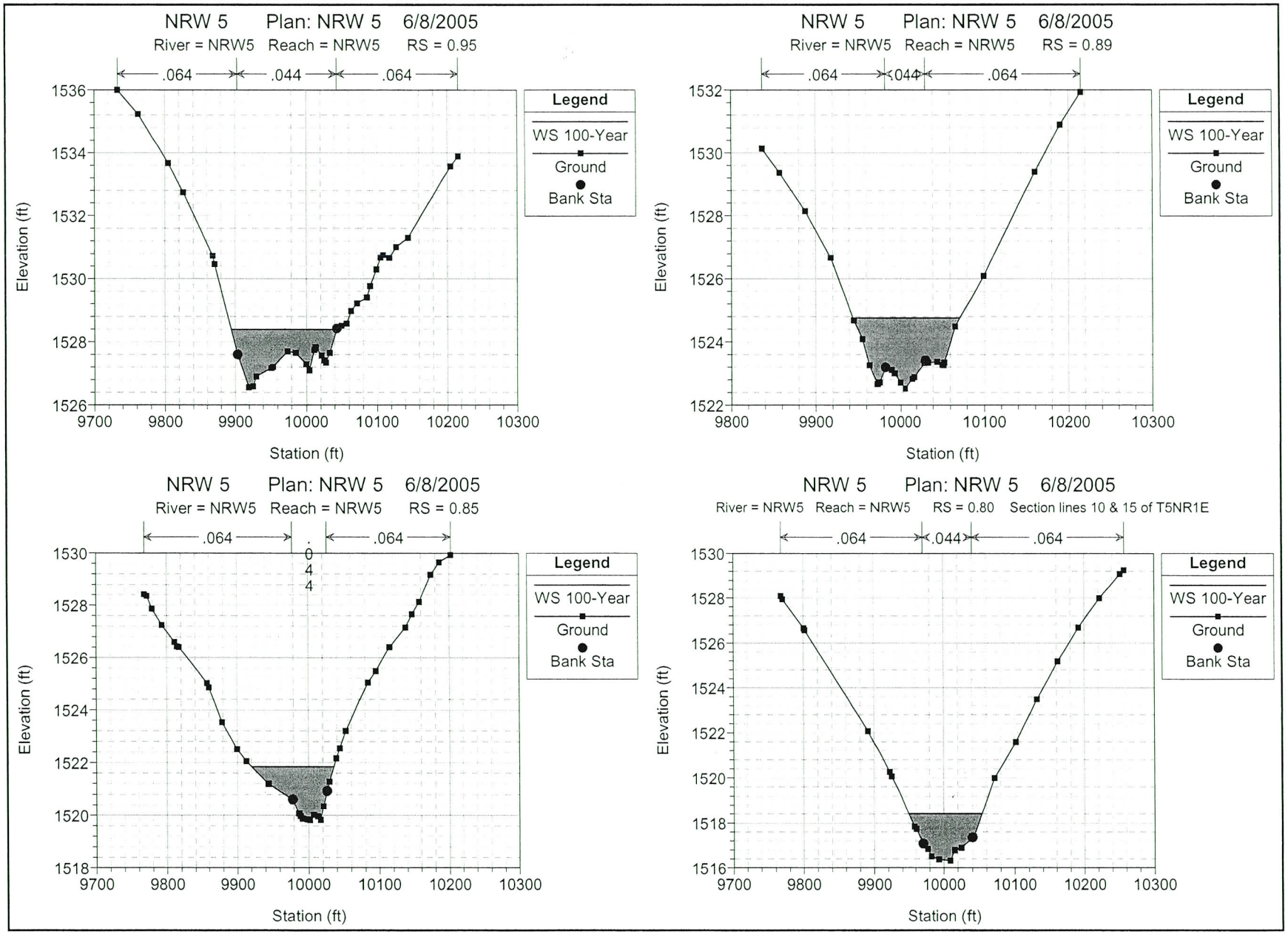

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.40
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.34
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.27
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.21
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

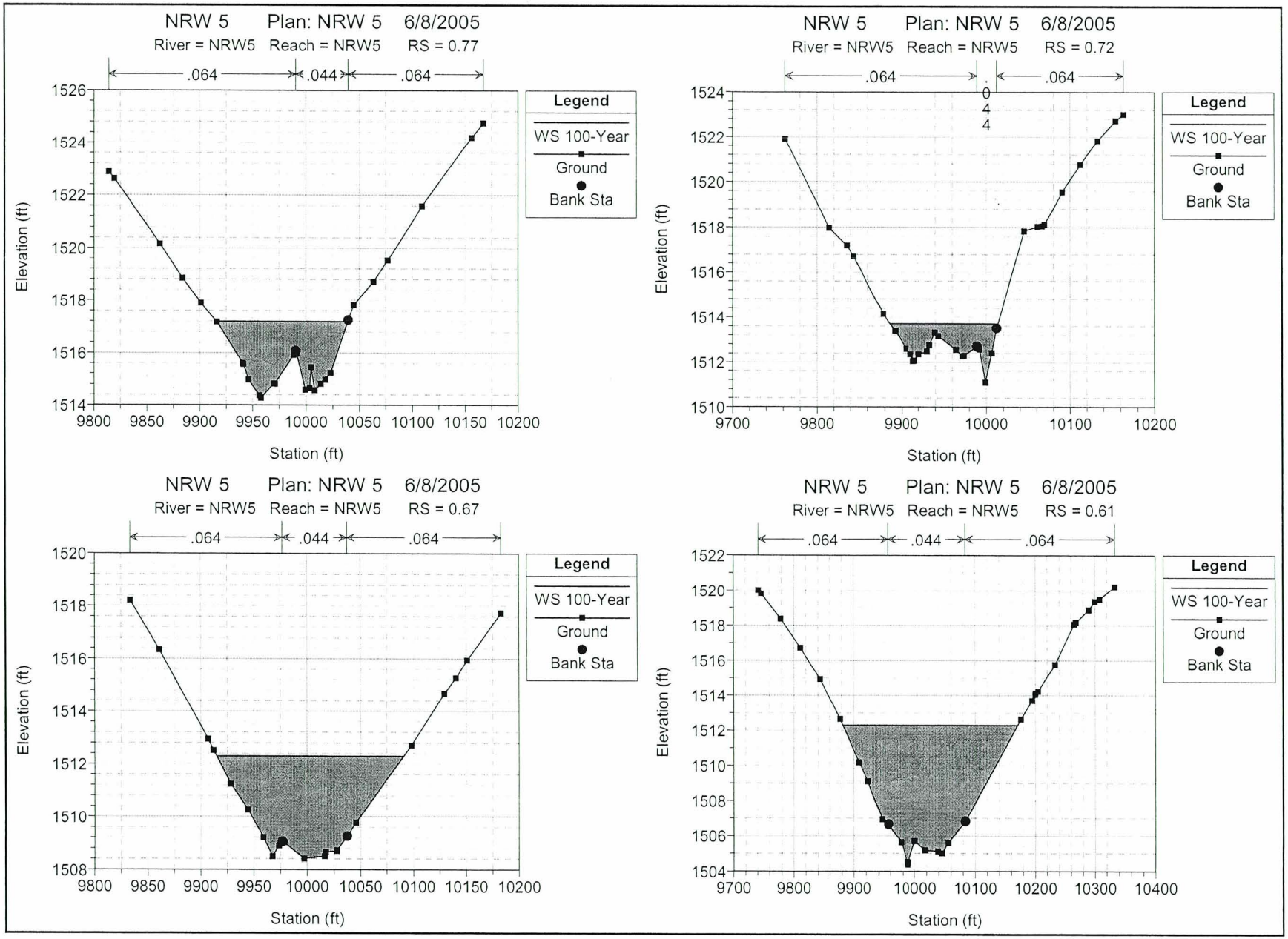

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.15
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

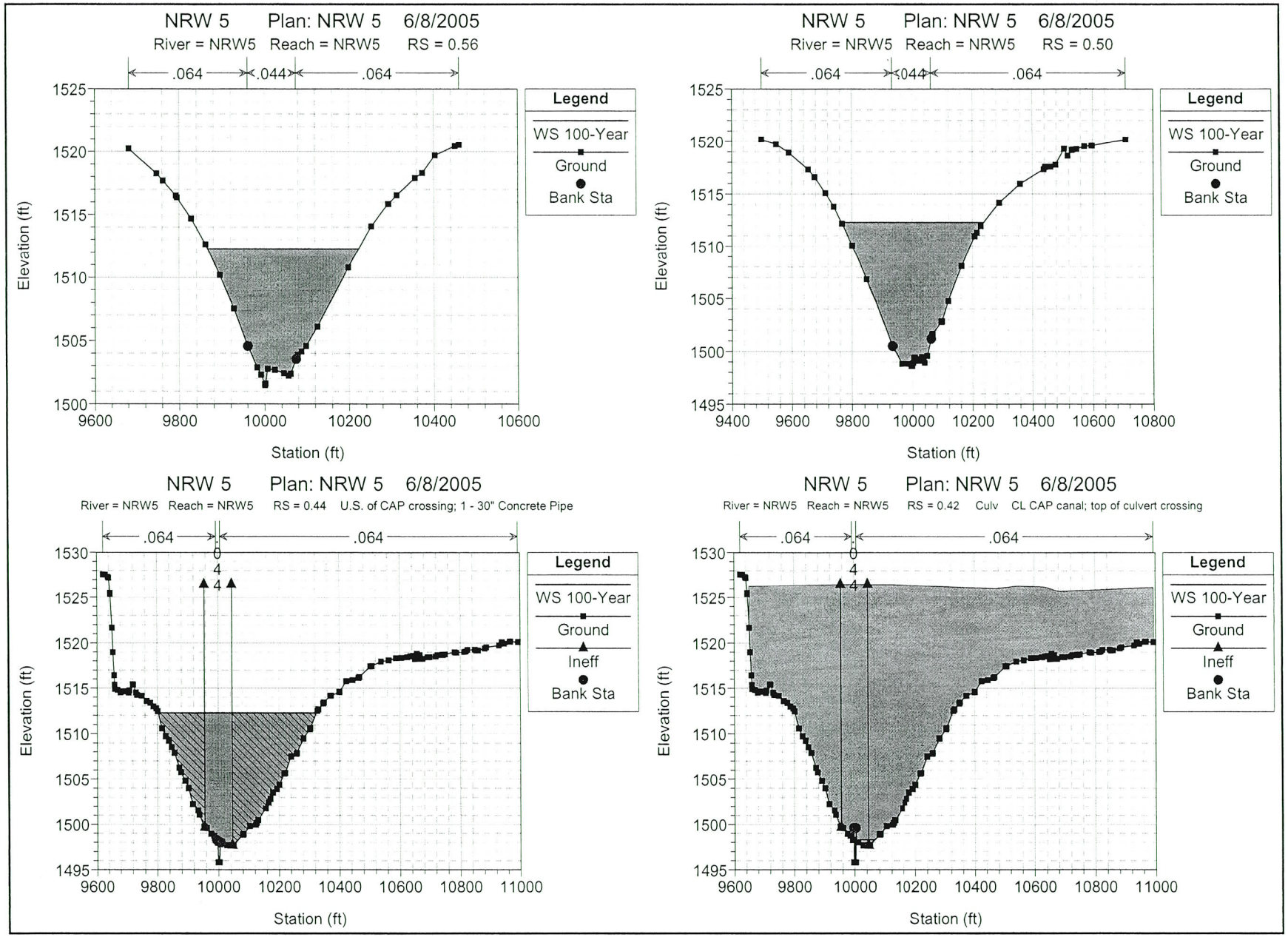

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.10 CL Lake Pleasant Road Dip Crossing
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

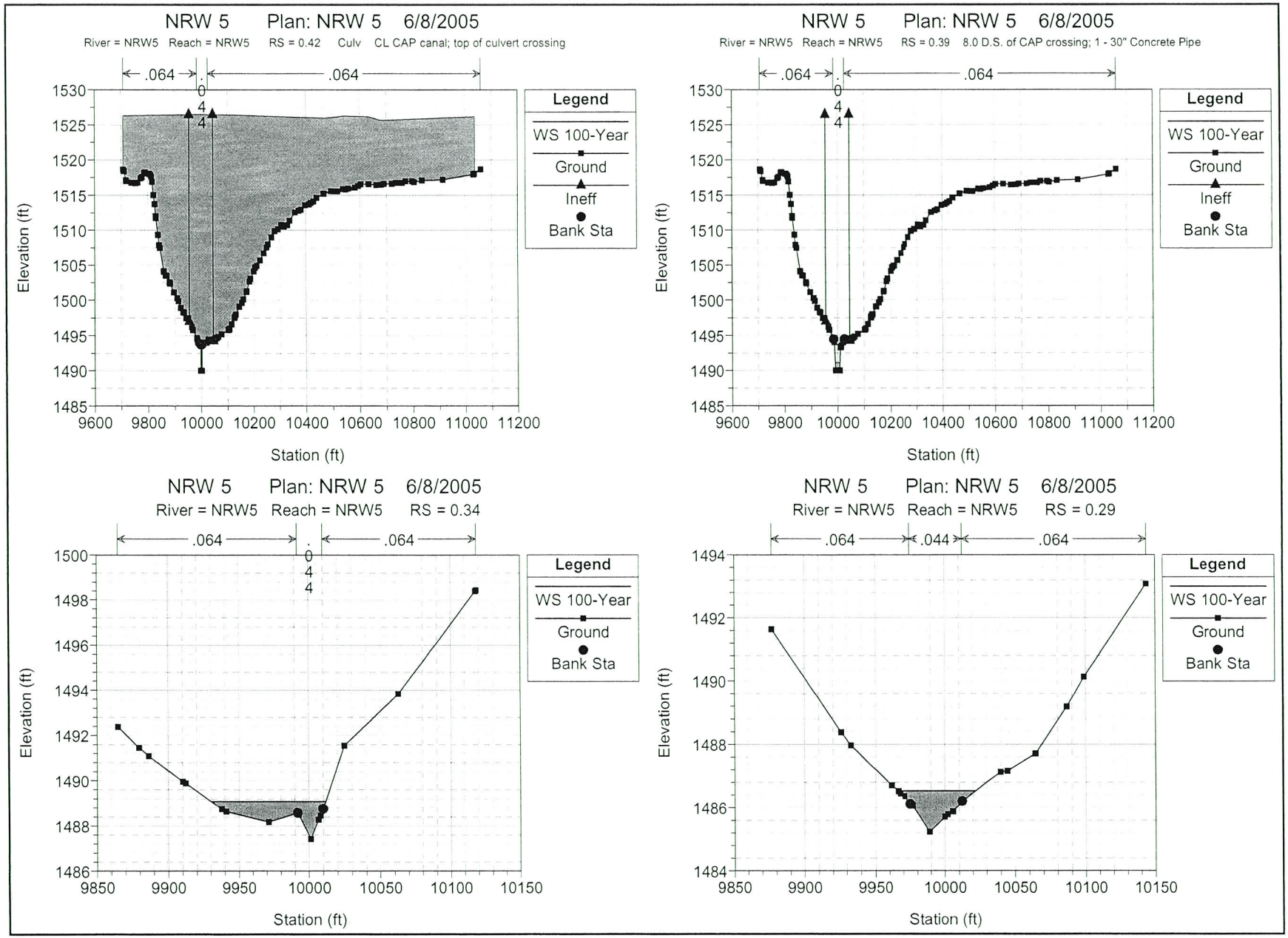

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.07
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

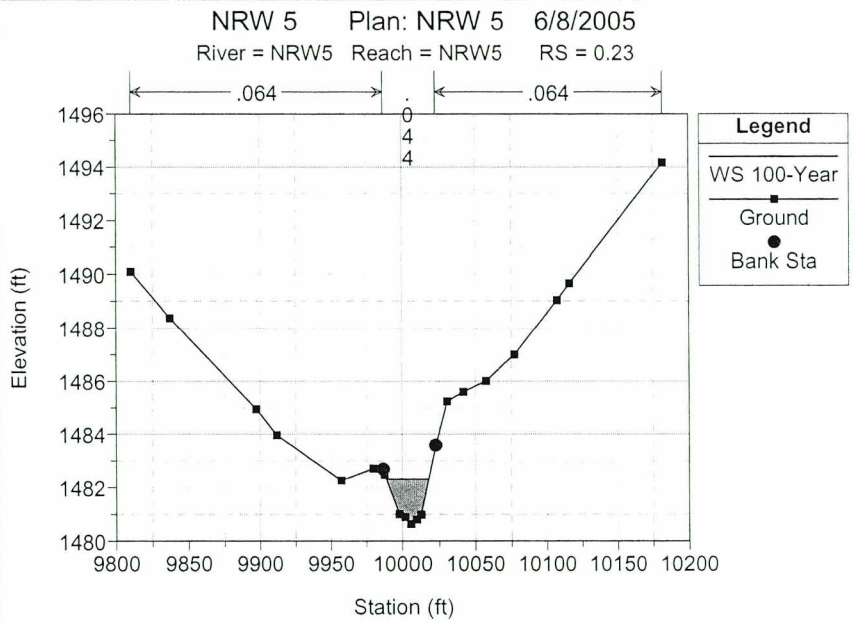

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 1.00
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

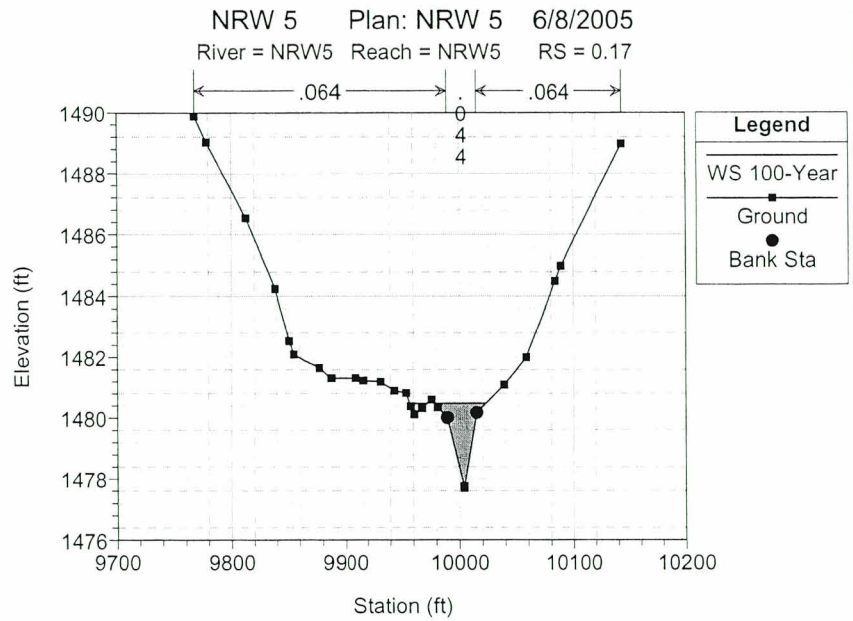

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.95
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.89
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.85
.064
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.80 Section lines 10 & 15 of T5NR1E
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

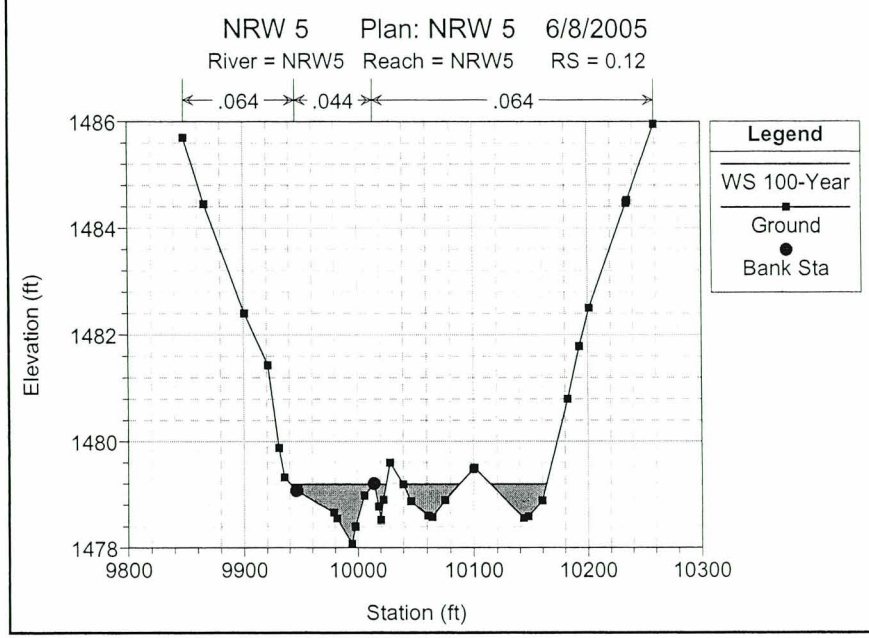

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.77
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.72
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.67
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.61
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

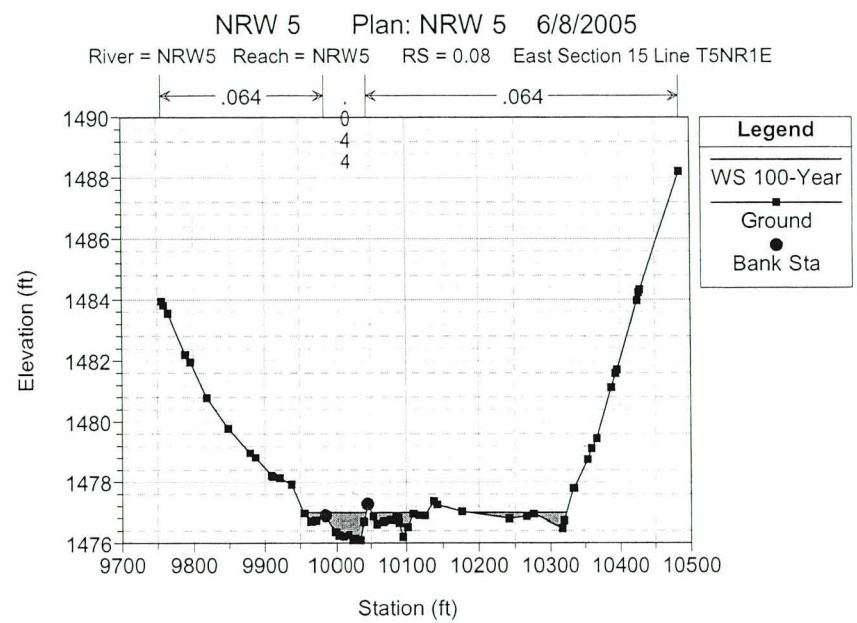

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.56
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.50
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.44 U.S. of CAP crossing; 1 - 30" Concrete Pipe
.064
.064
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.42 Culv CL CAP canal; top of culvert crossing
.064
.064
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

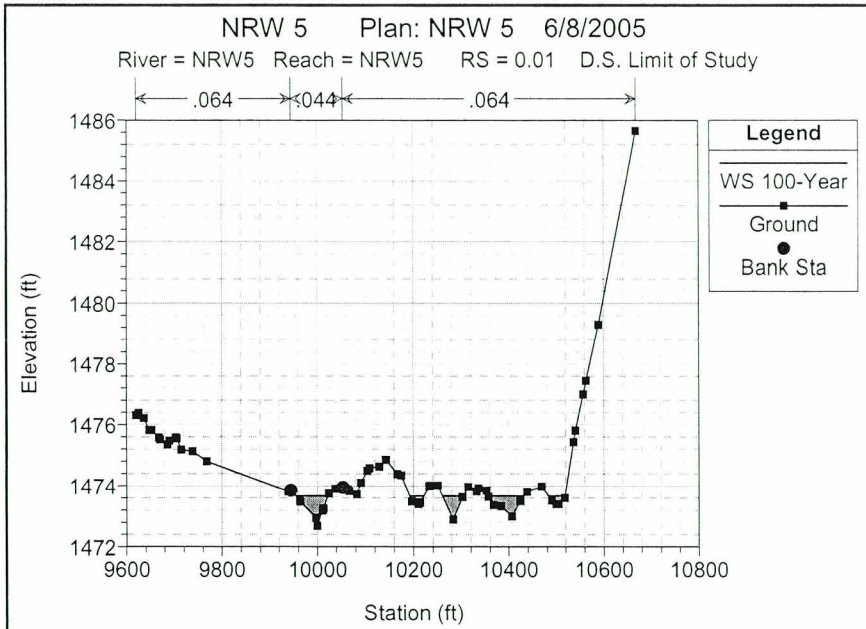

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.42 Culv CL CAP canal; top of culvert crossing
.064
.044
.064
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.39 8.0 D.S. of CAP crossing; 1 - 30" Concrete Pipe
.064
.044
.064
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.34
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.29
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

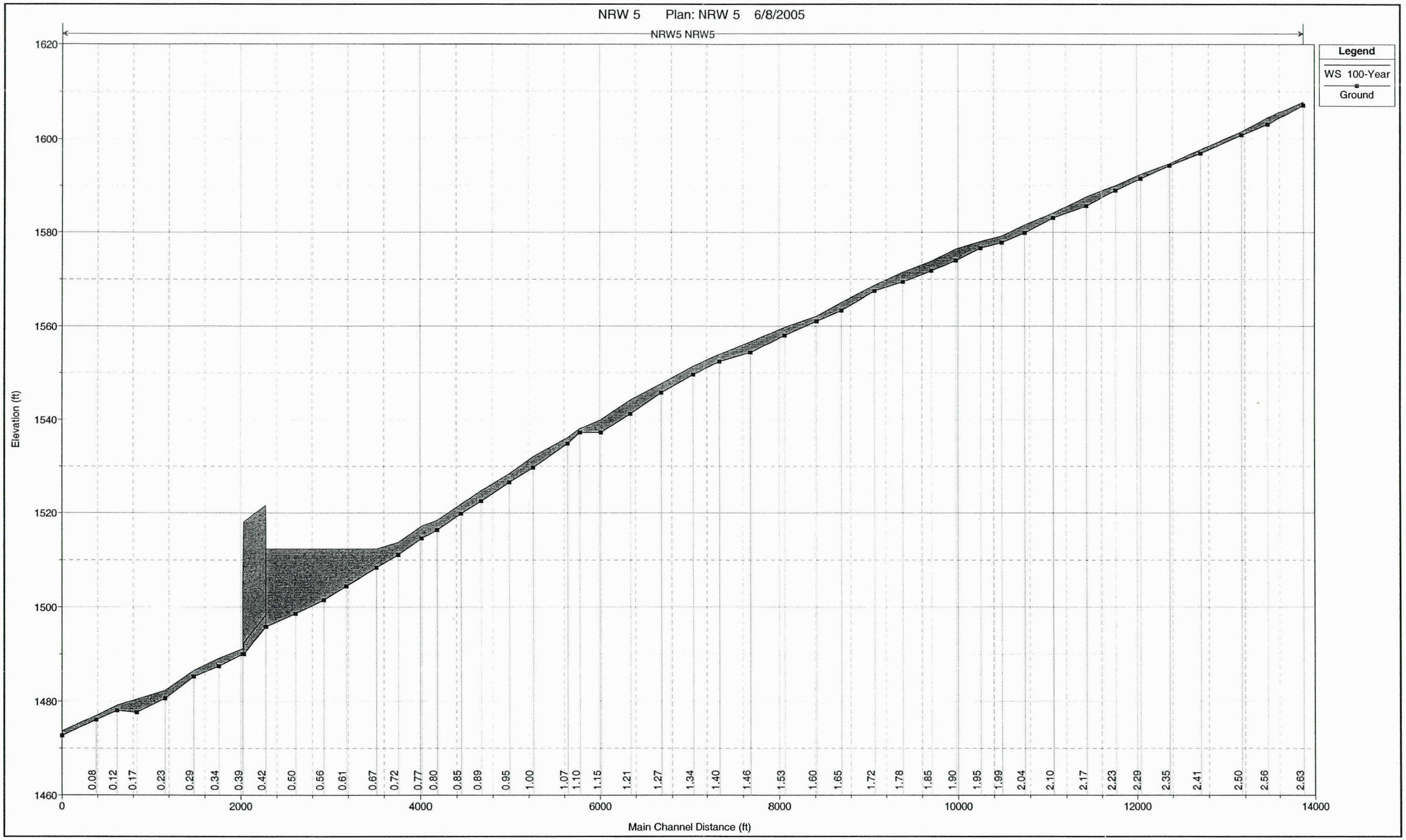

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.23
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.17
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.12
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

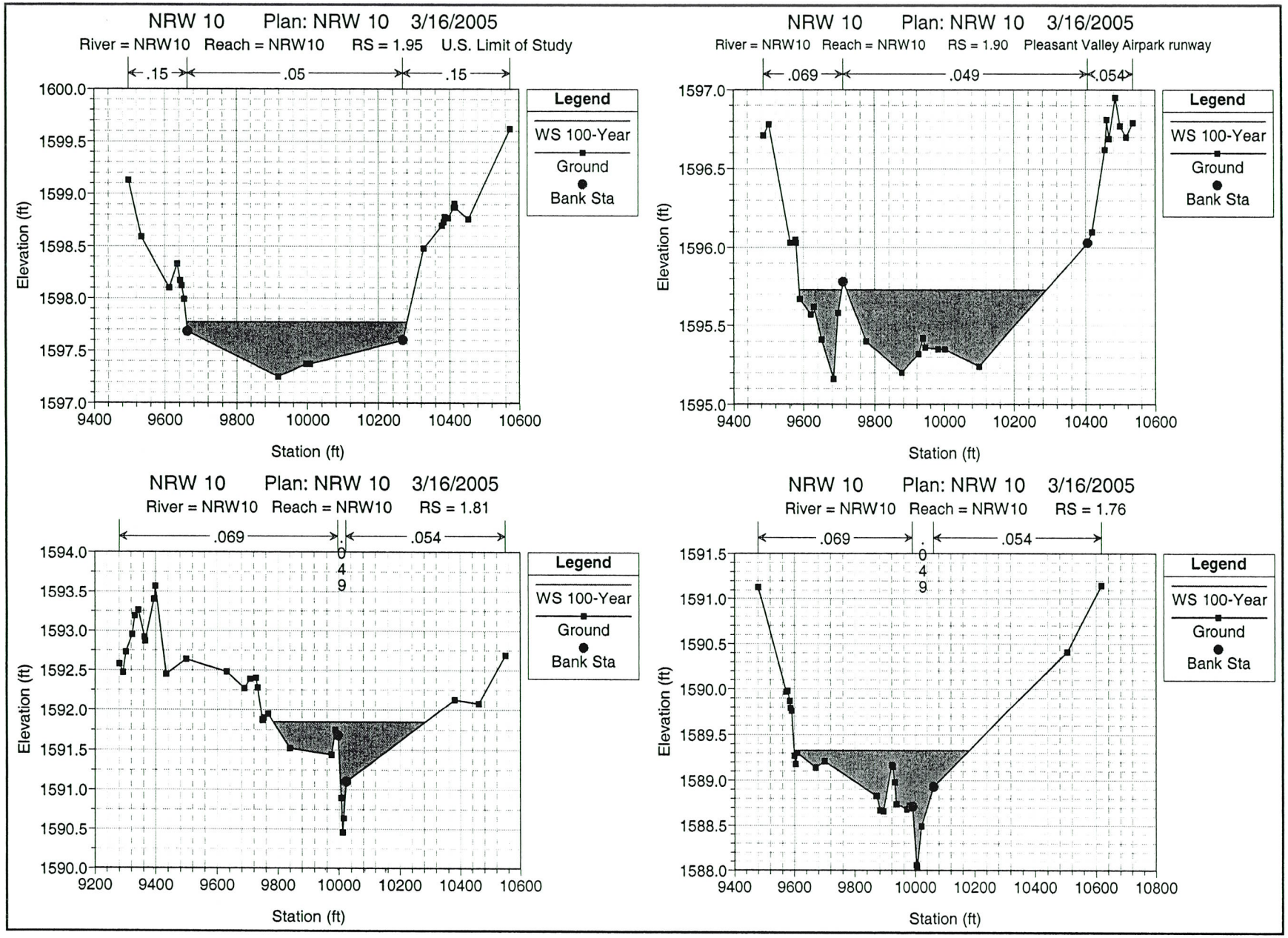

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.08 East Section 15 Line T5NR1E
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

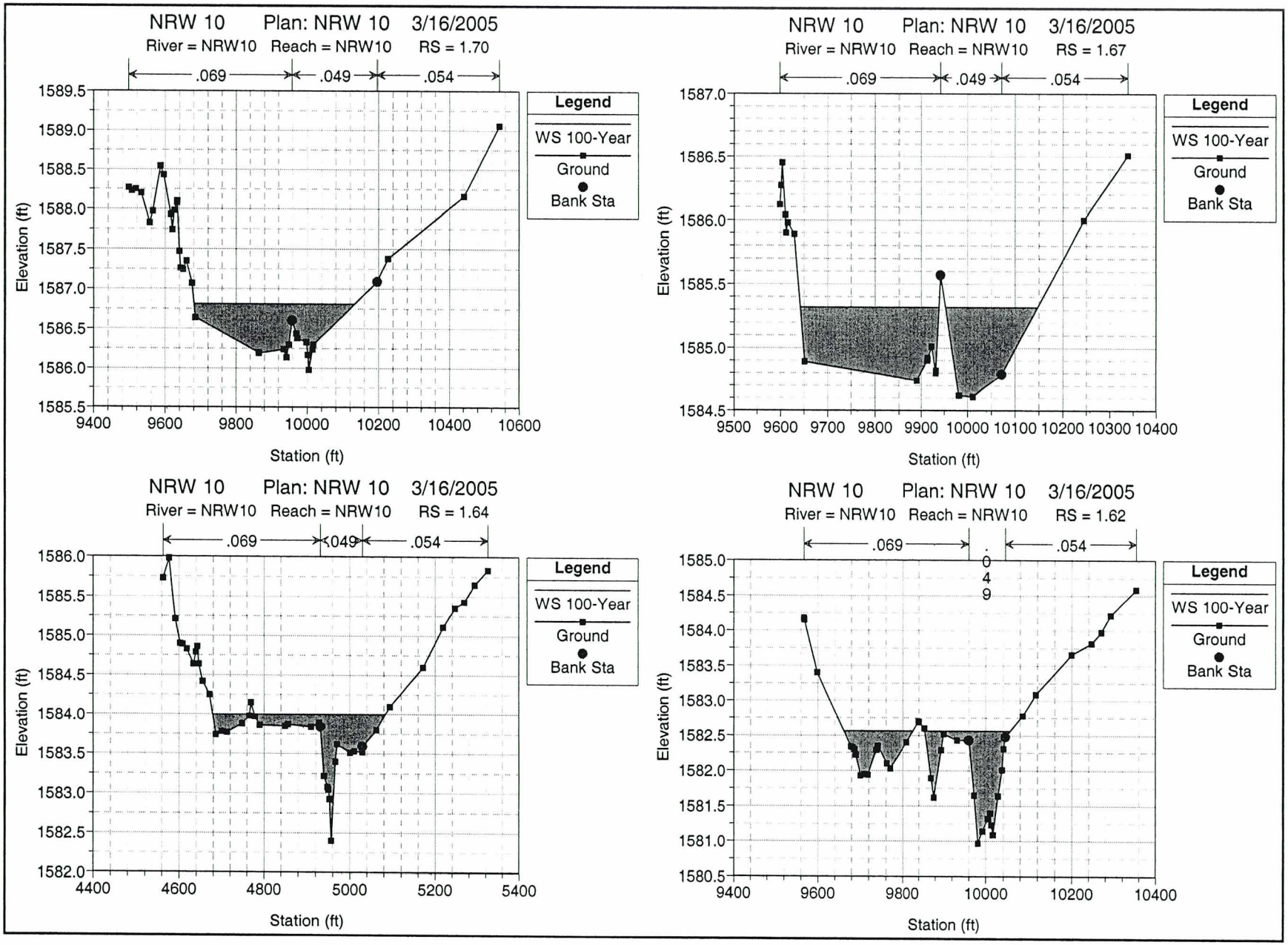

NRW 5 Plan: NRW 5 6/8/2005
River = NRW5 Reach = NRW5 RS = 0.01 D.S. Limit of Study
.064
.044
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
1486
1484
1482
1480
1478
1476
1474
1472
9600
9800
10000
10200
10400
10600
10800
Station (ft)

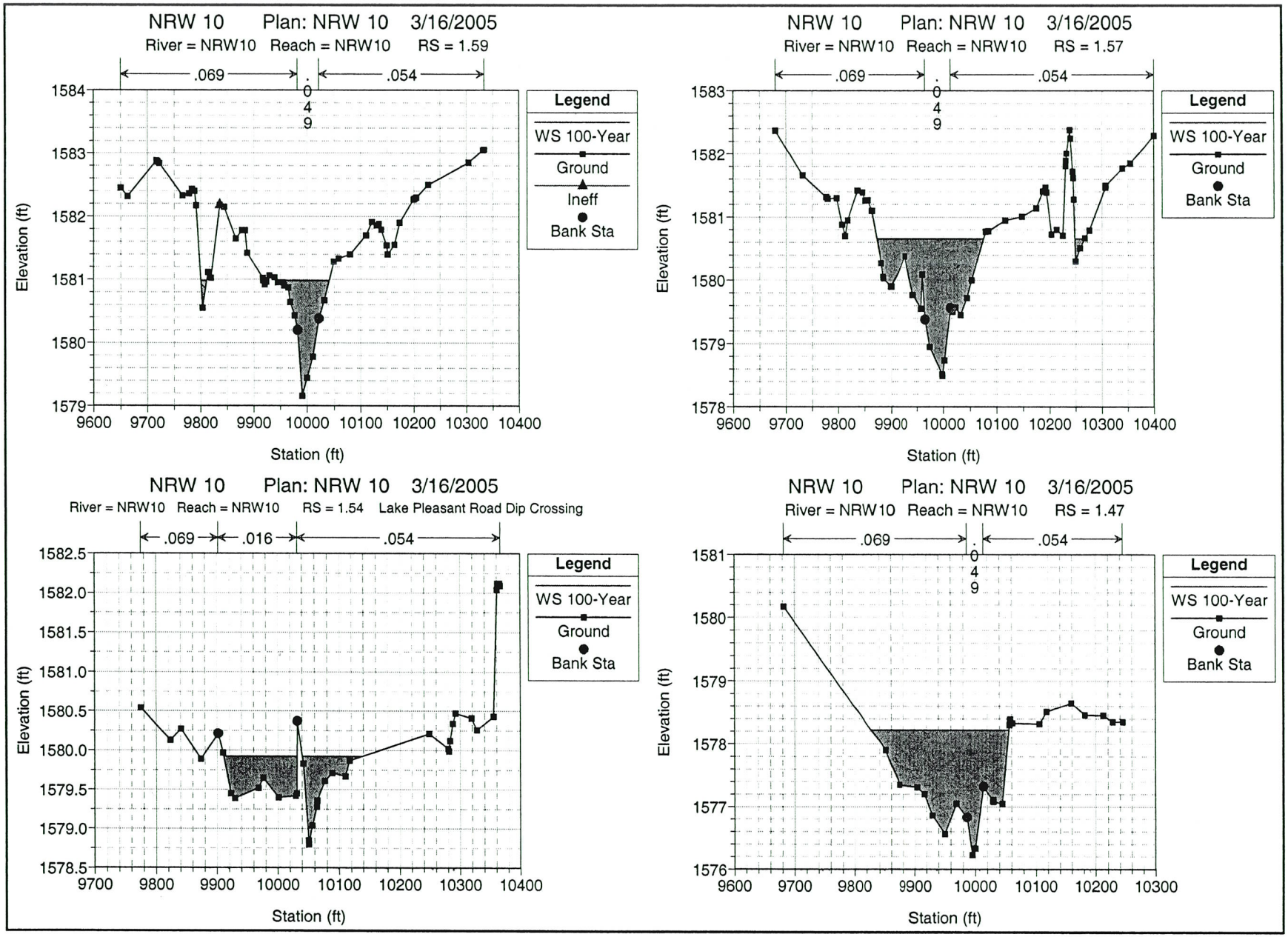

NRW 5 Plan: NRW 5 6/8/2005
NRW5 NRW5
Legend
WS 100-Year
Ground
Elevation (ft)
1620
1600
1580
1560
1540
1520
1500
1480
1460
0
2000
4000
6000
8000
10000
12000
14000
Main Channel Distance (ft)
0.08
0.12
0.17
0.23
0.29
0.34
0.39
0.42
0.50
0.56
0.61
0.67
0.72
0.77
0.80
0.85
0.89
0.95
1.00
1.07
1.10
1.15
1.21
1.27
1.34
1.40
1.46
1.53
1.60
1.65
1.72
1.78
1.85
1.90
1.95
1.99
2.04
2.10
2.17
2.23
2.29
2.35
2.41
2.50
2.56
2.63

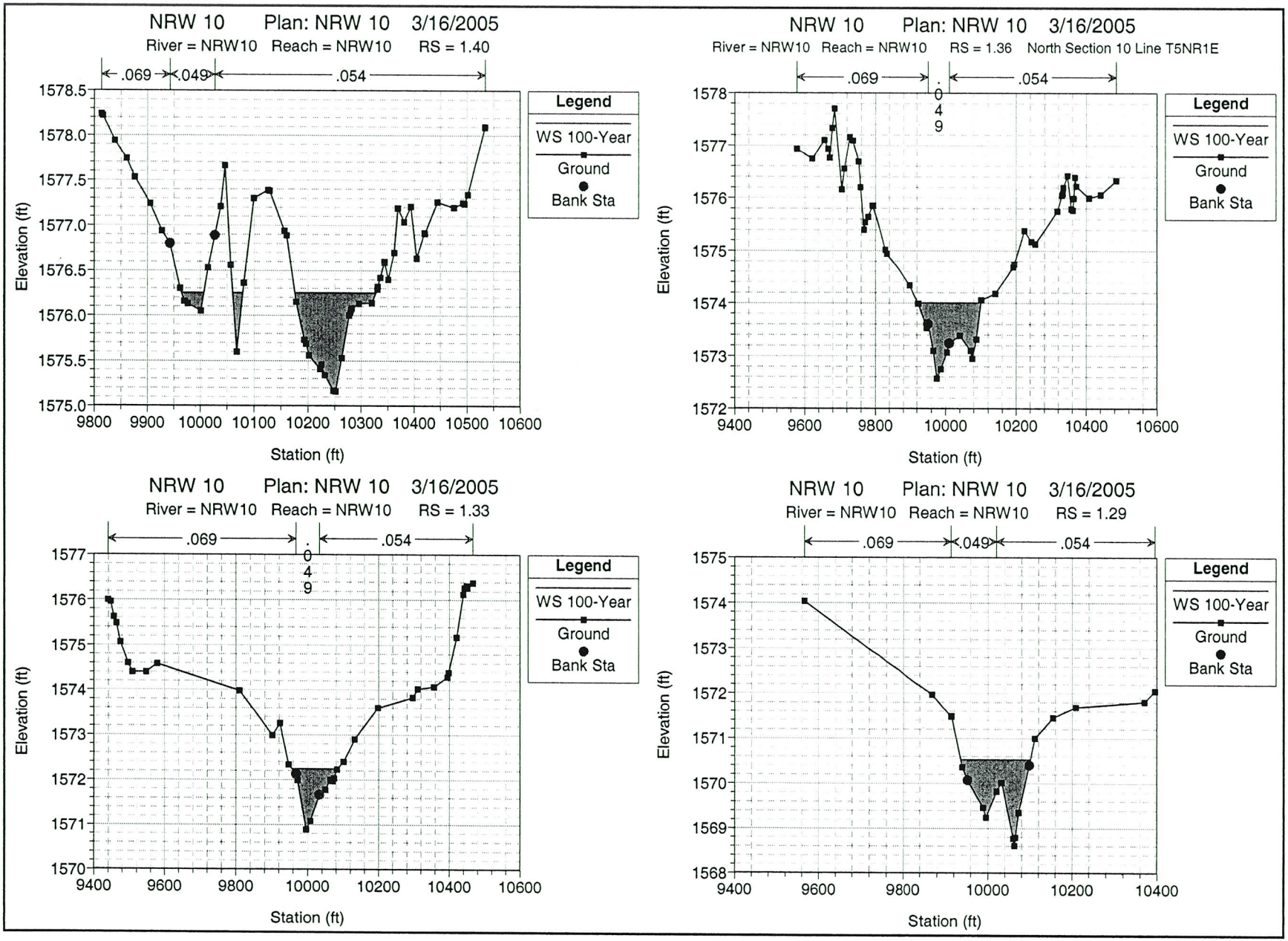
NRW 10

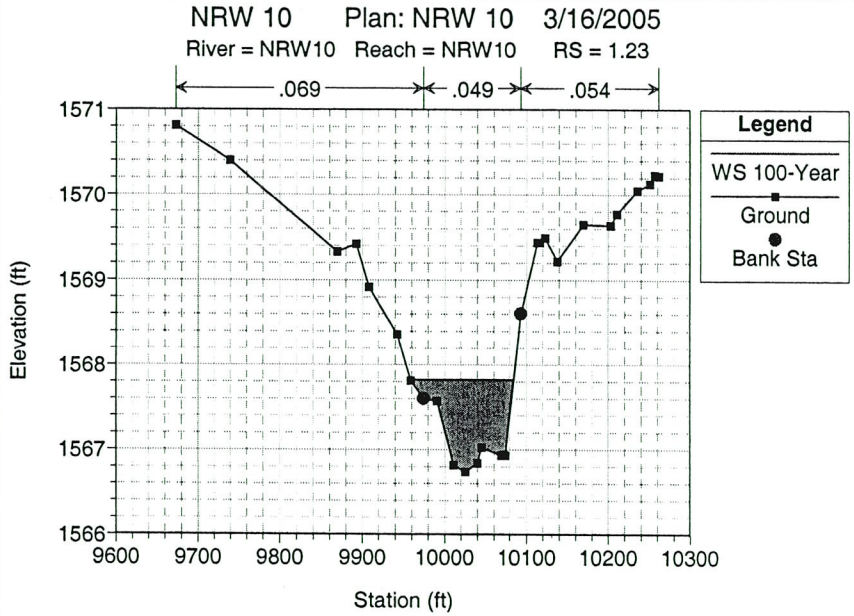
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

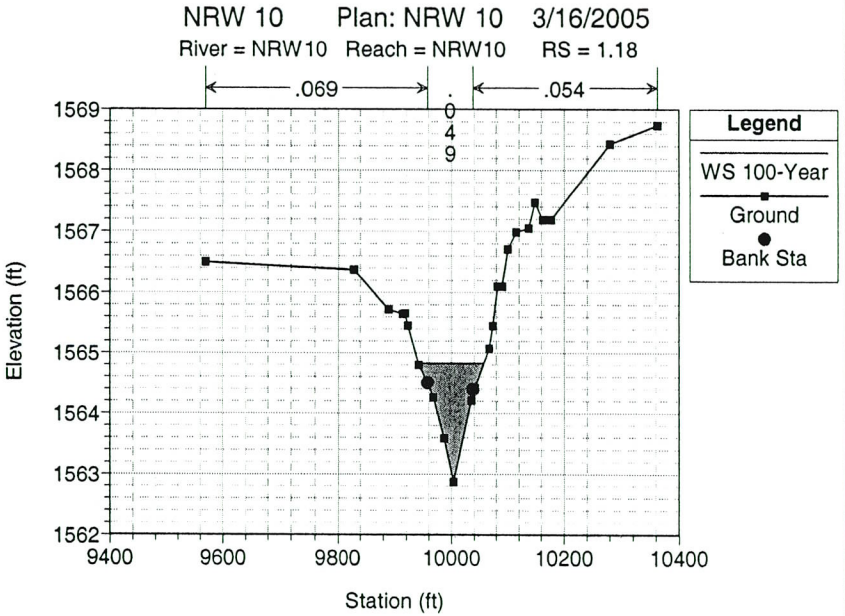

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.95 U.S. Limit of Study
.15
.05
.15
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.90 Pleasant Valley Airpark runway
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.81
.069
.054
.049
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.76
.069
.054
.049
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

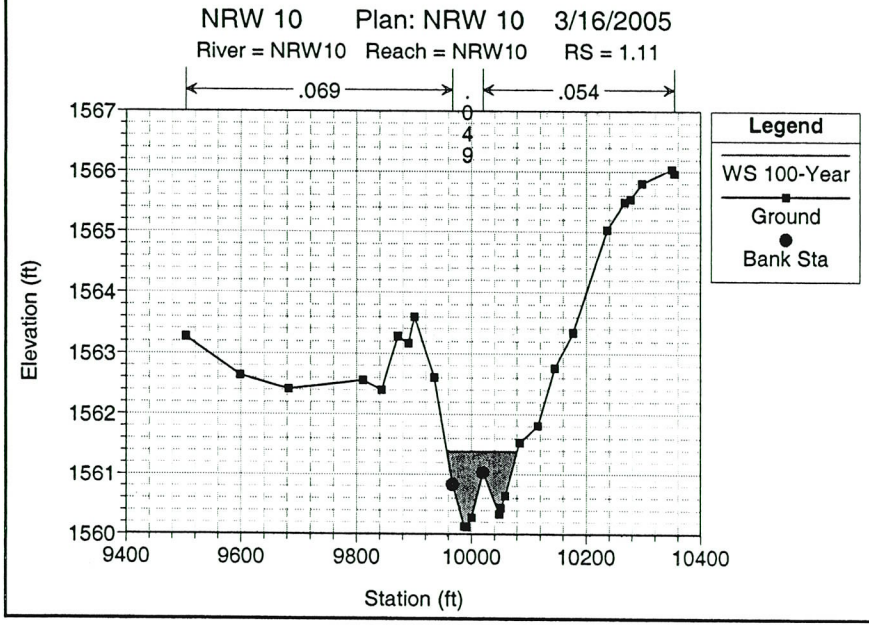

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.70
.069
.049
.054
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.67
.069
.049
.054
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.64
.069
.049
.054
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.62
.069
.049
.054
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta

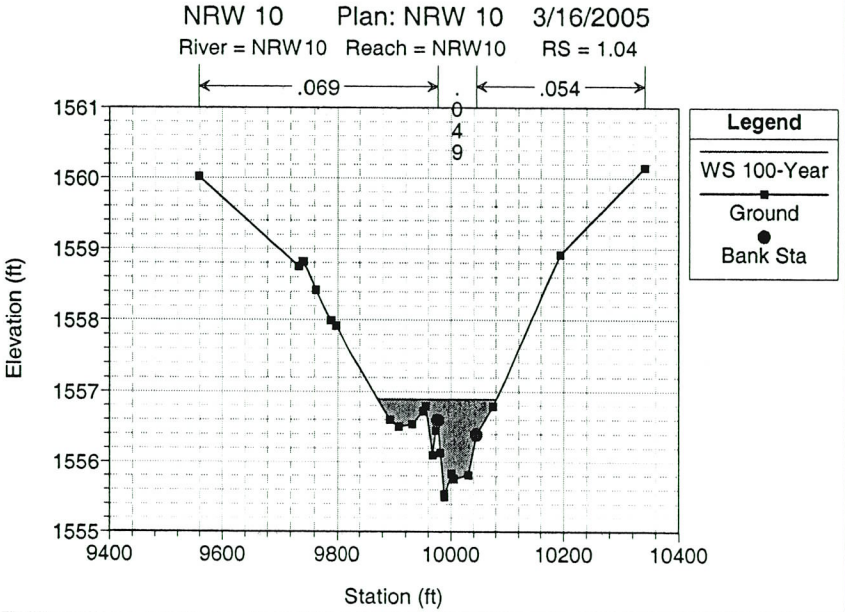

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.59
.069
.049
.054
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.57
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.54 Lake Pleasant Road Dip Crossing
.069
.016
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.47
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

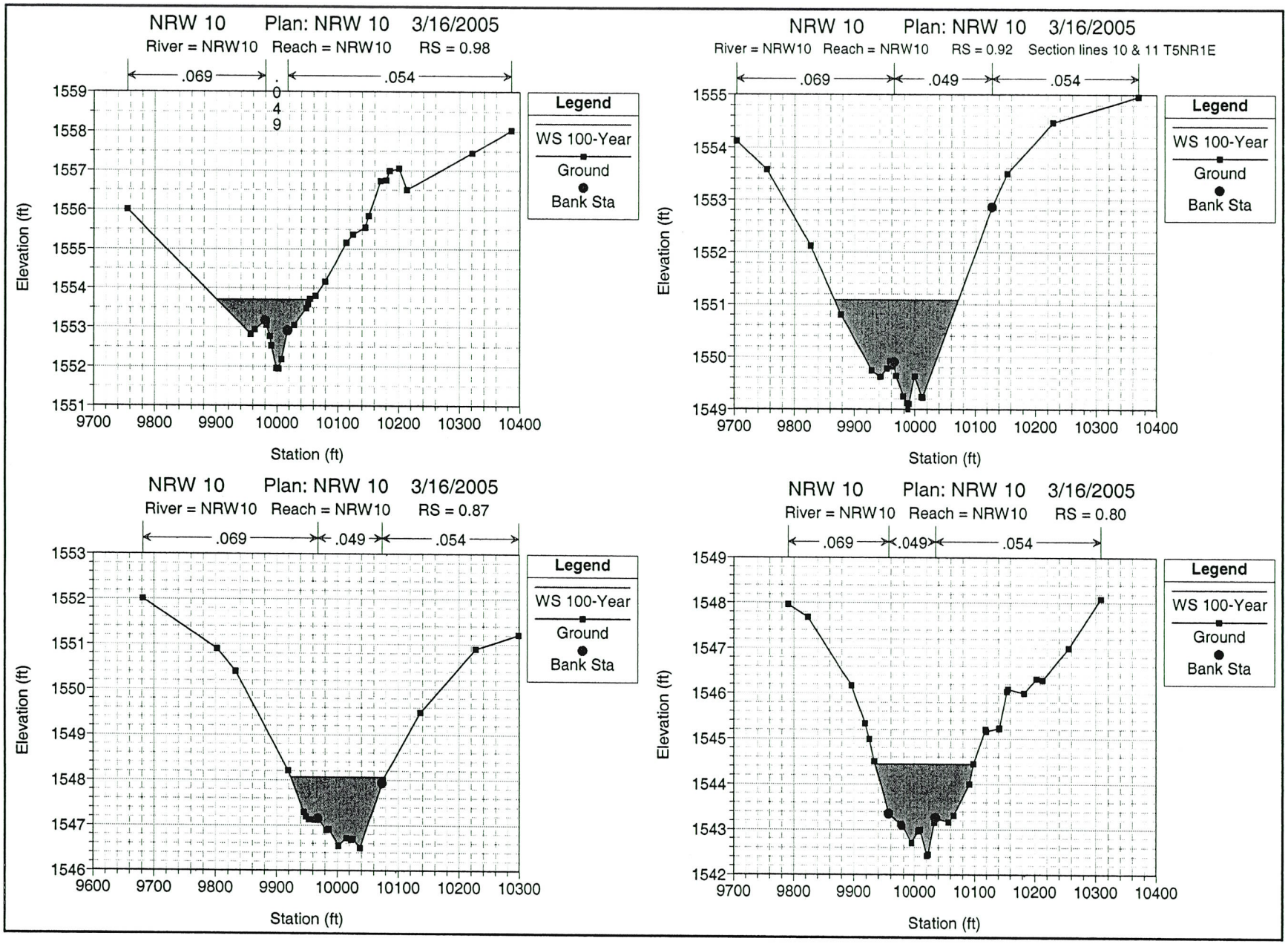

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.40
.069
.049
.054
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.36 North Section 10 Line T5NR1E
.069
.049
.054
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.33
.069
.049
.054
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.29
.069
.049
.054
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta

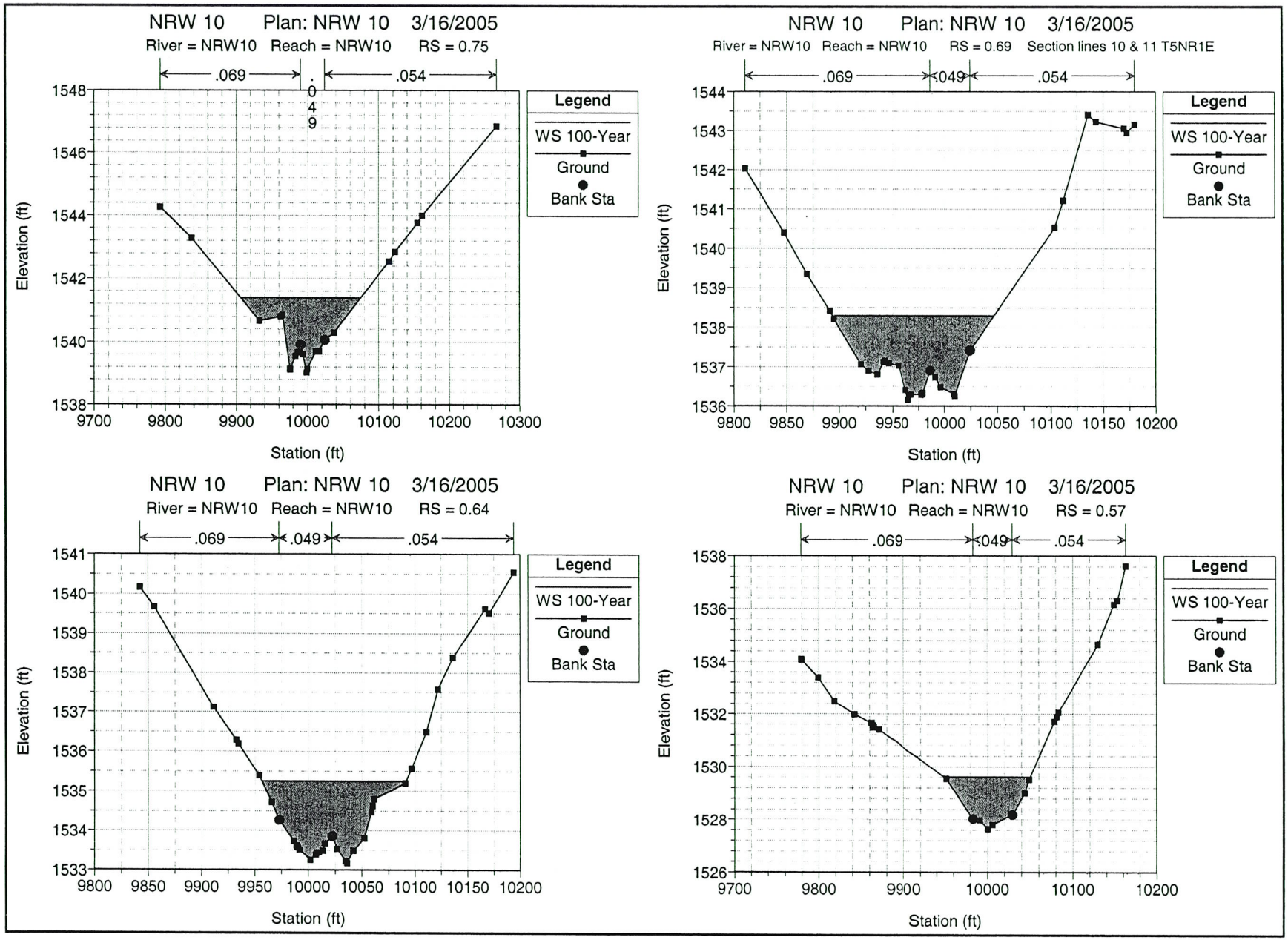

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.23
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

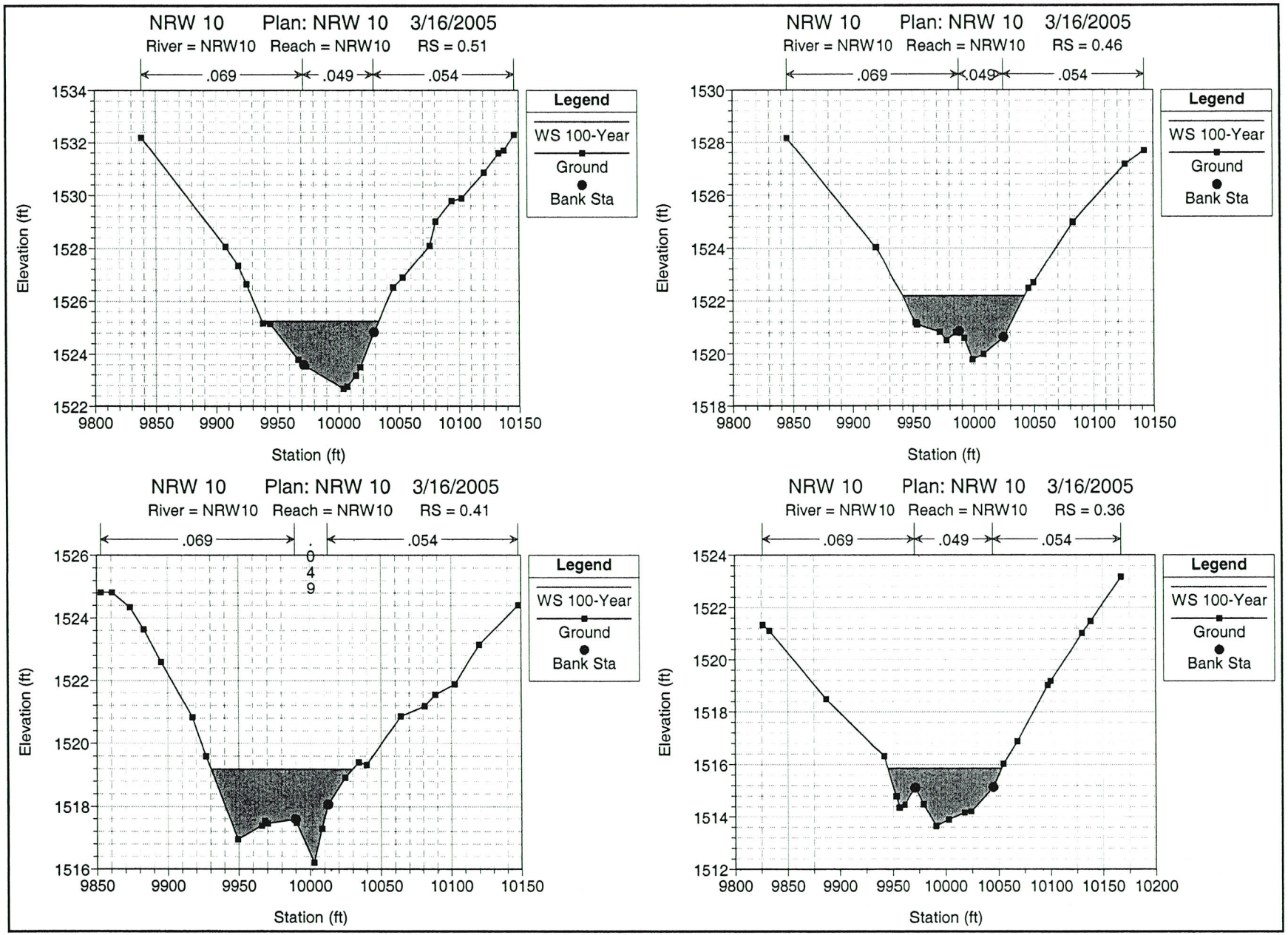

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.18
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

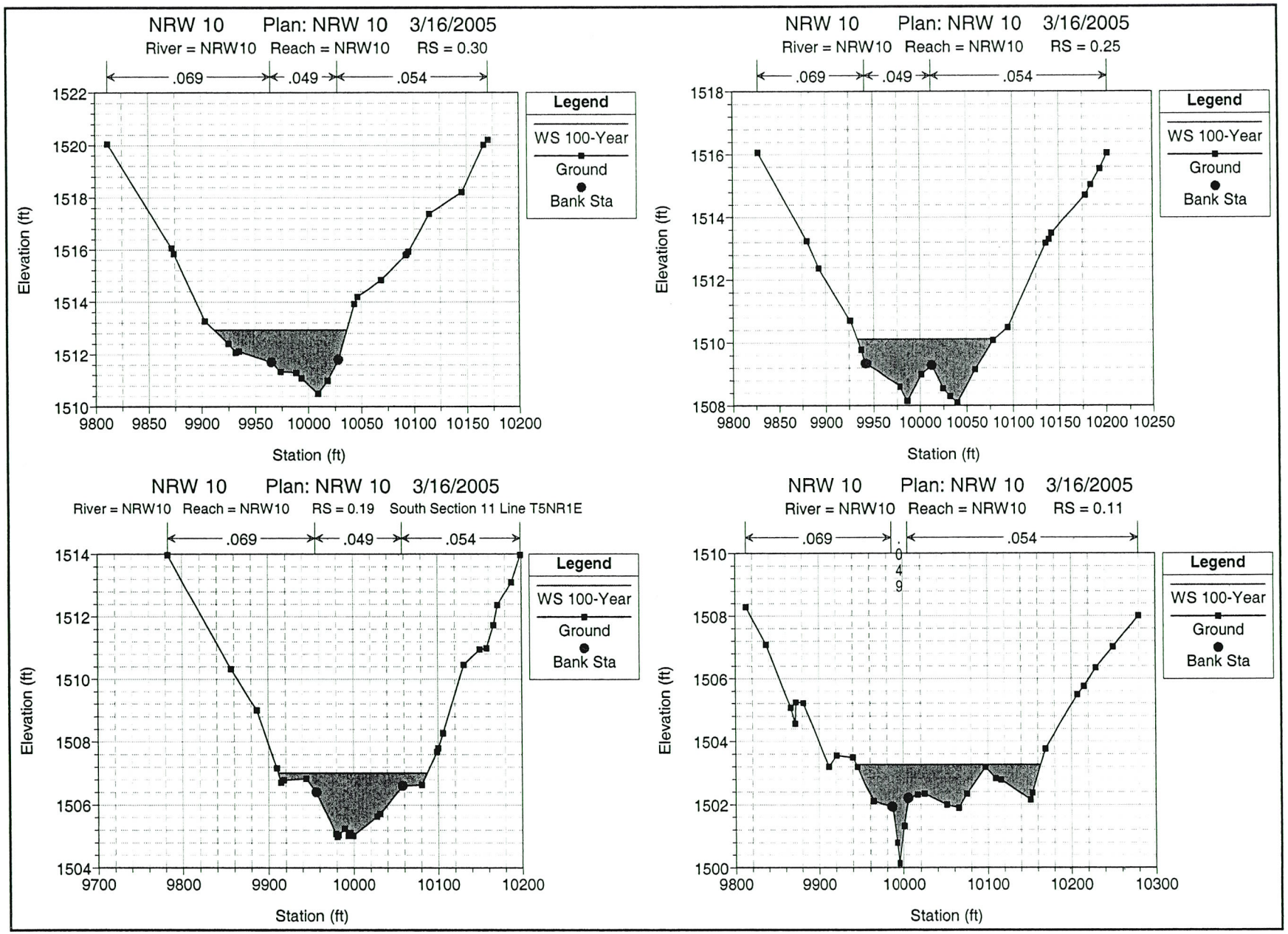

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.11
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

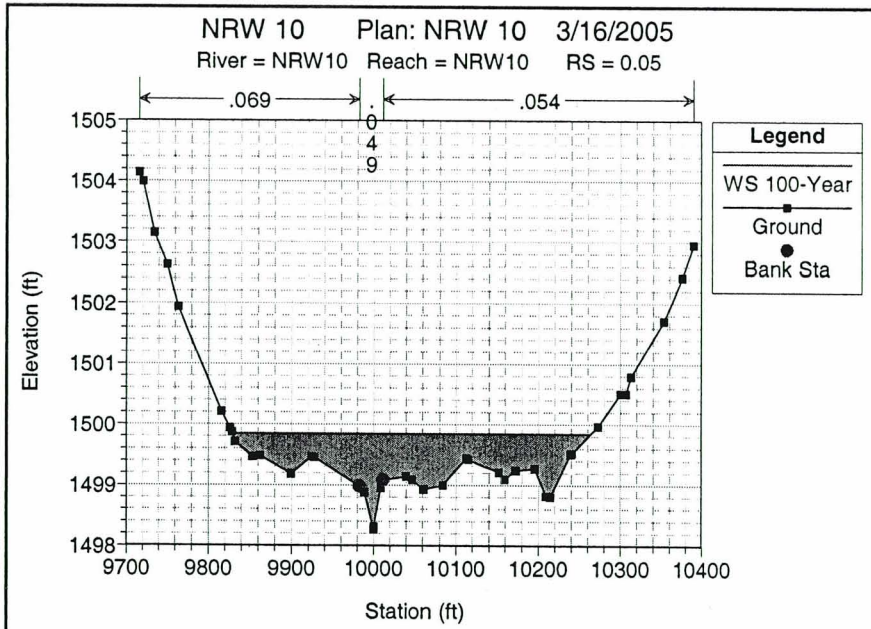

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 1.04
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

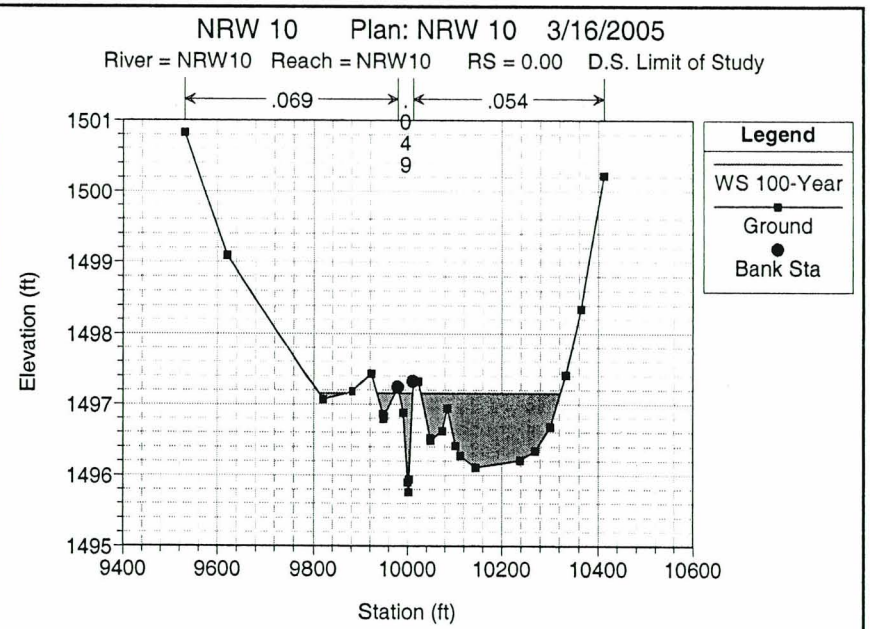

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.98
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.92 Section lines 10 & 11 T5NR1E
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.87
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.80
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

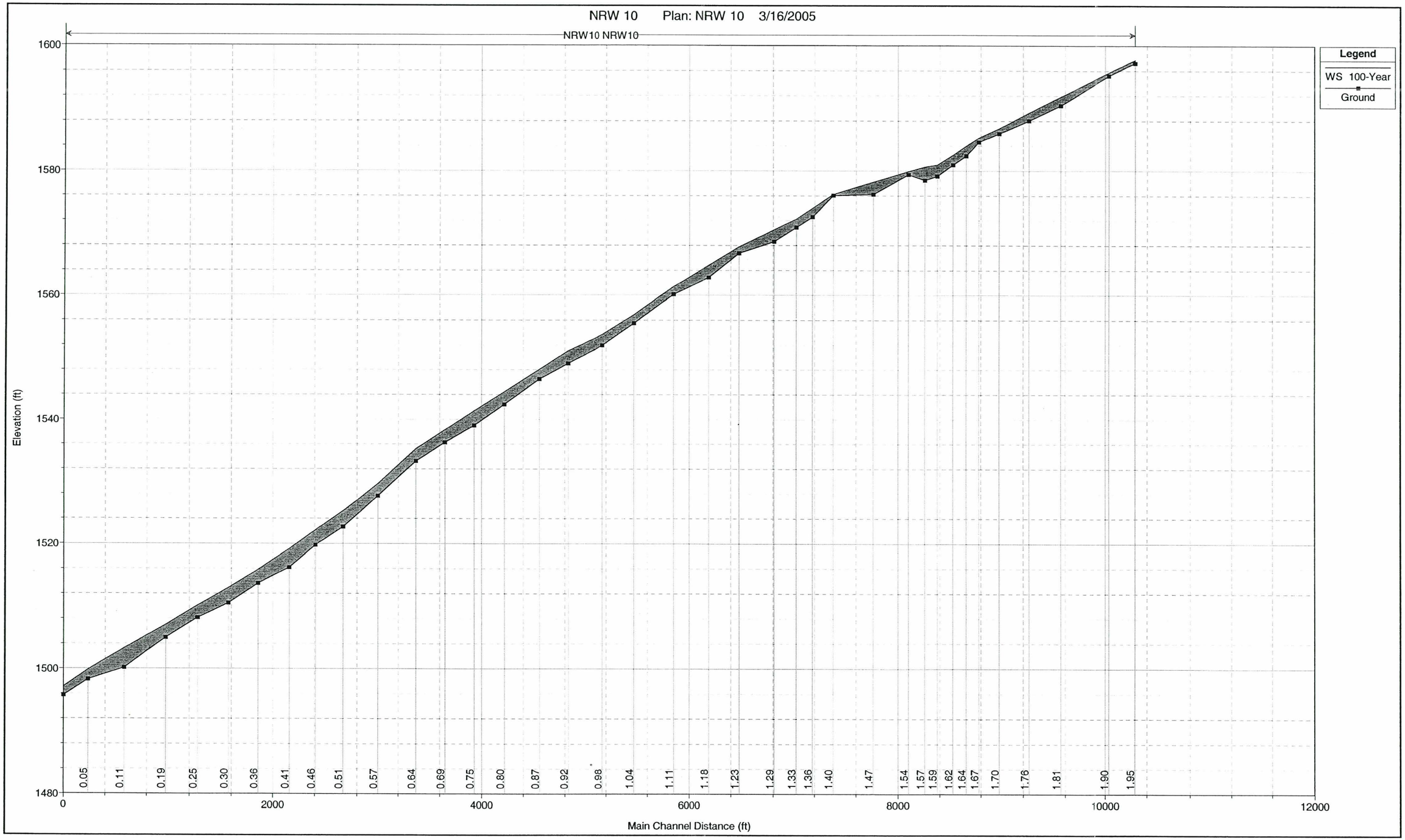

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.75
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.69 Section lines 10 & 11 T5NR1E
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.64
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.57
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.51
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.46
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.41
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.36
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.30
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.25
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.19 South Section 11 Line T5NR1E
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.11
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

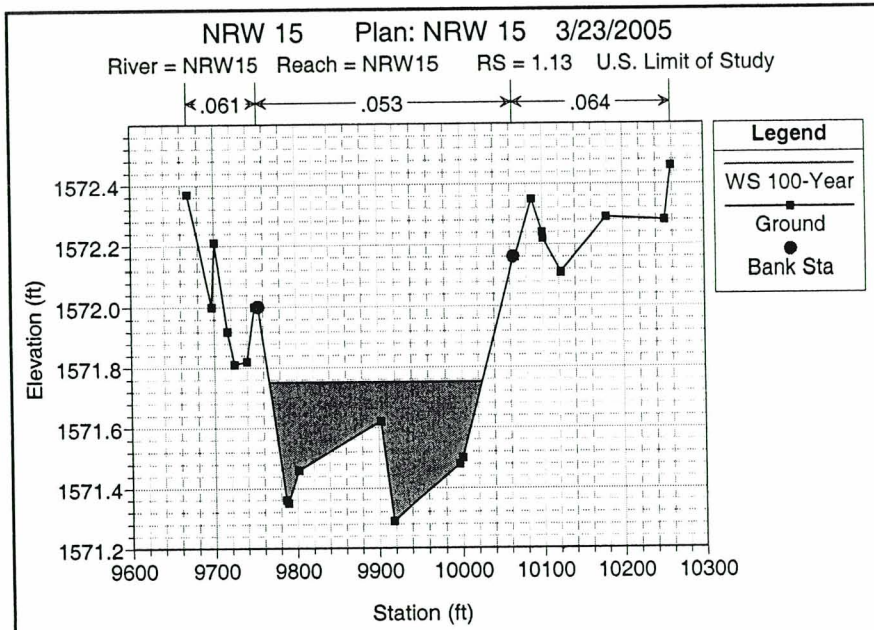

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.05
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
1505
1504
1503
1502
1501
1500
1499
1498
9700
9800
9900
10000
10100
10200
10300
10400

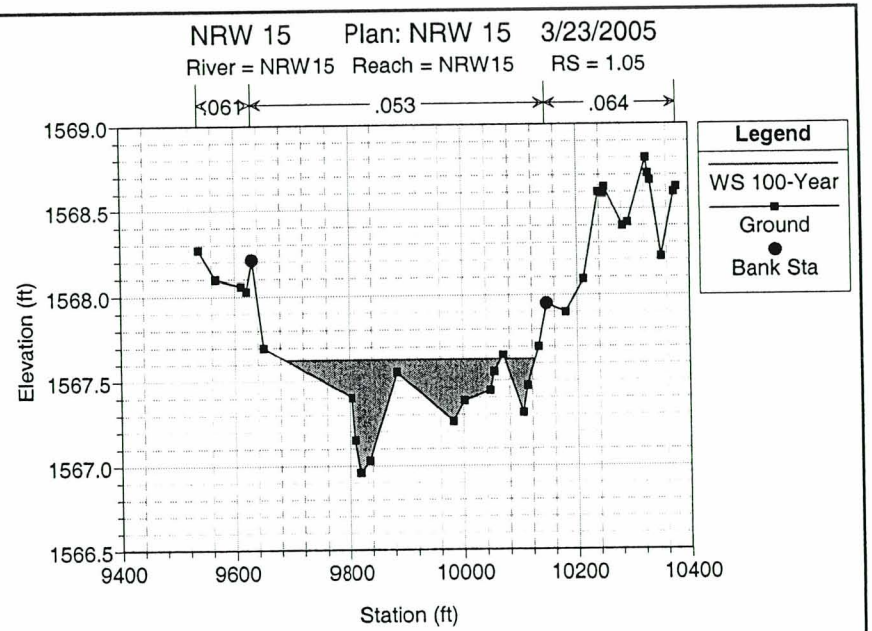

NRW 10 Plan: NRW 10 3/16/2005
River = NRW10 Reach = NRW10 RS = 0.00 D.S. Limit of Study
.069
.049
.054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
1501
1500
1499
1498
1497
1496
1495
9400
9600
9800
10000
10200
10400
10600

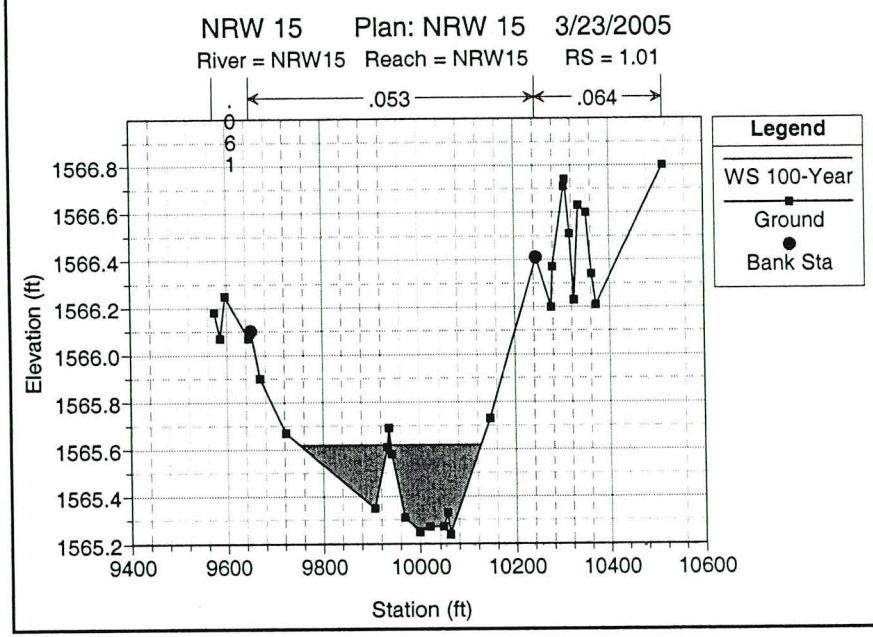

NRW 10 Plan: NRW 10 3/16/2005
NRW10 NRW10
Legend
WS 100-Year
Ground
Elevation (ft)
1600
1580
1560
1540
1520
1500
1480
0.05
0.11
0.19
0.25
0.30
0.36
0.41
0.46
0.51
0.57
0.64
0.69
0.75
0.80
0.87
0.92
0.98
1.04
1.11
1.18
1.23
1.29
1.33
1.36
1.40
1.47
1.54
1.57
1.59
1.62
1.64
1.67
1.70
1.76
1.81
1.90
1.95
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)

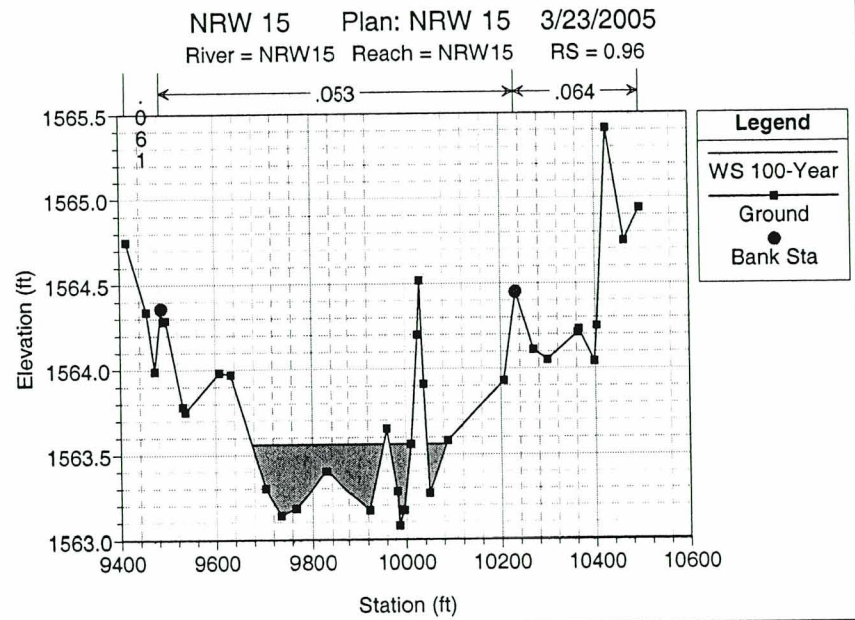
NRW 15

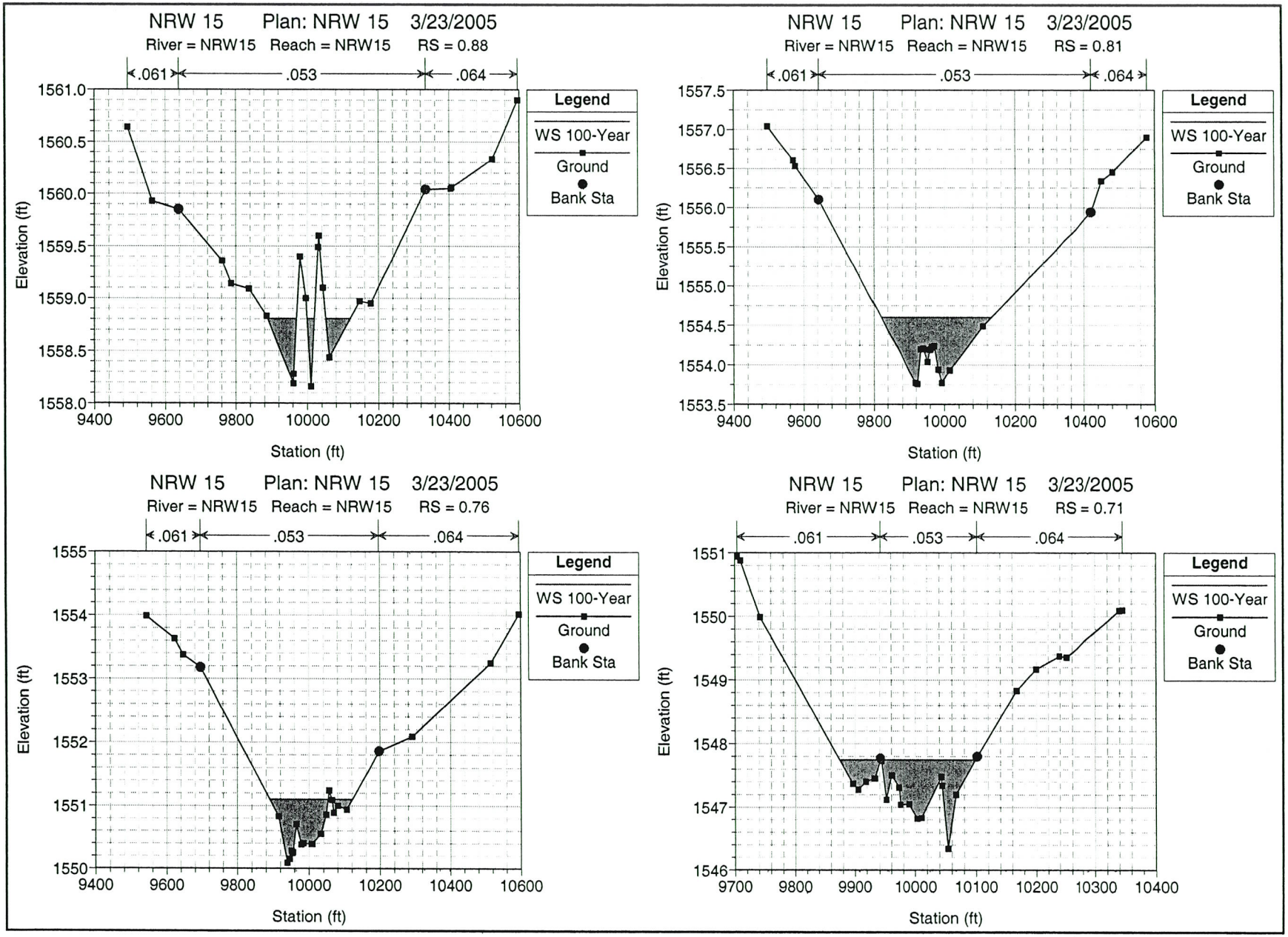
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

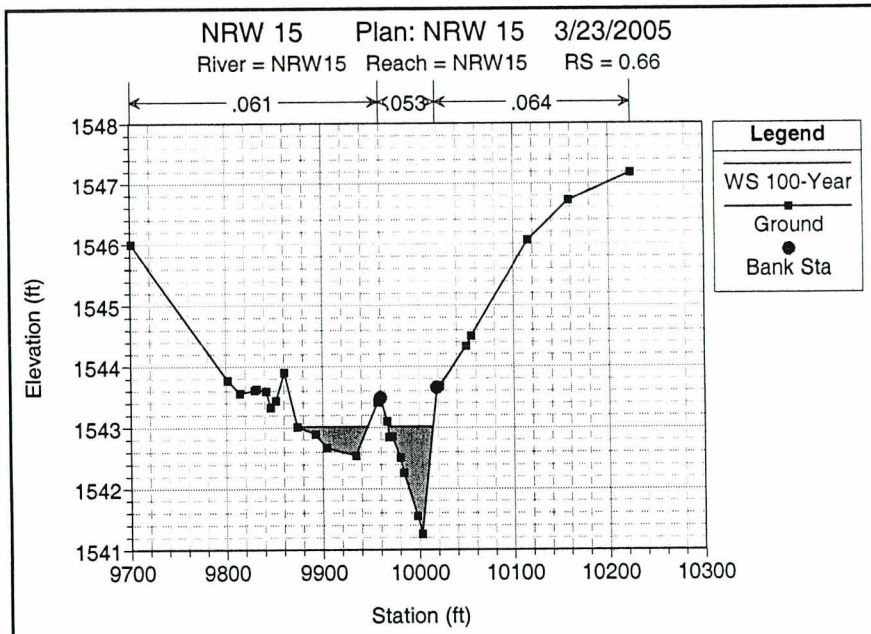

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 1.13 U.S. Limit of Study
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

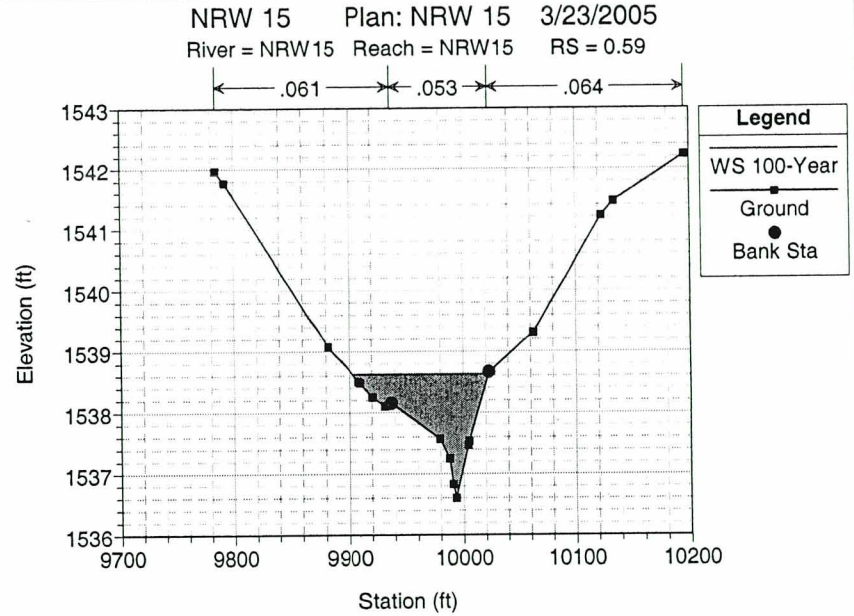

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 1.05
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

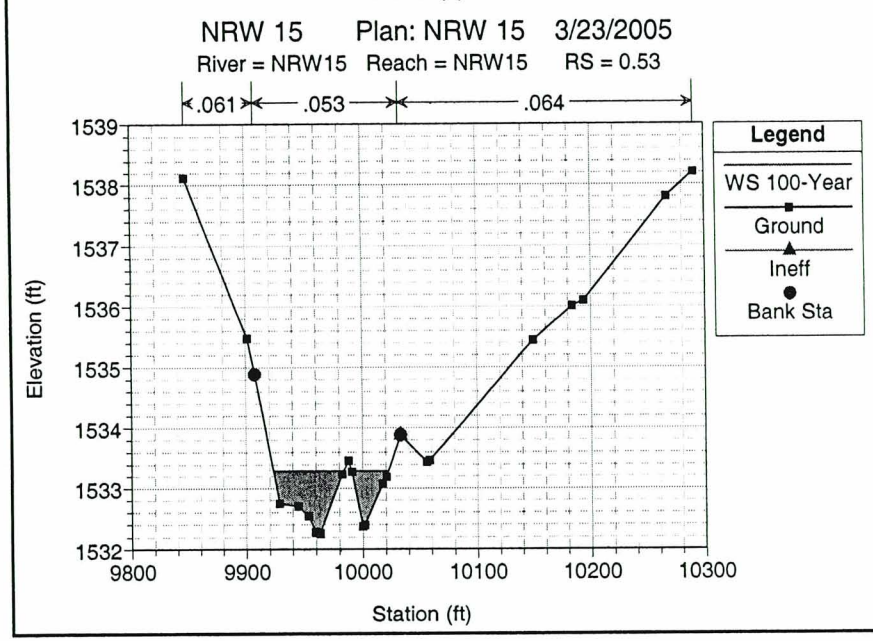

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 1.01
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

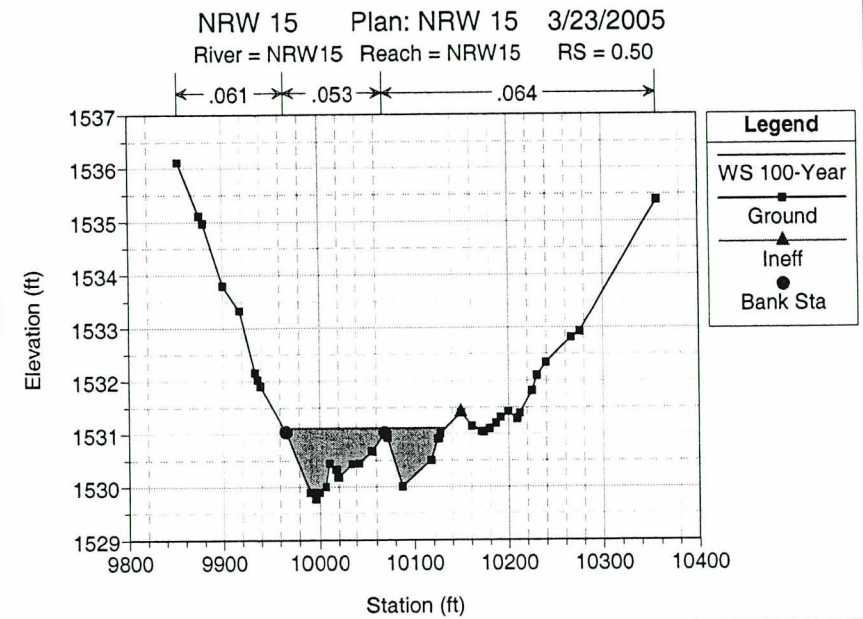

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.96
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

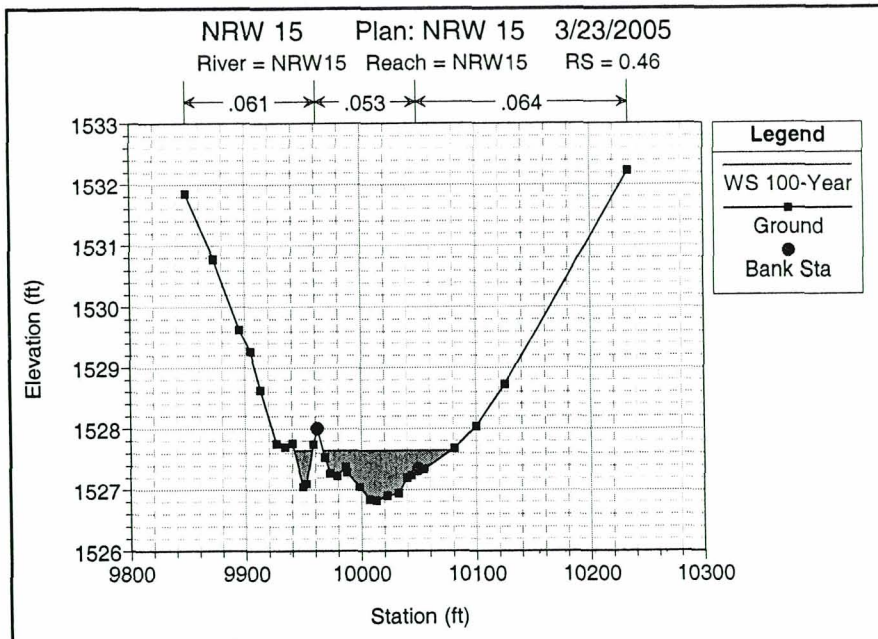

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.88
.061 .053 .064
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.81
.061 .053 .064
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.76
.061 .053 .064
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.71
.061 .053 .064
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta

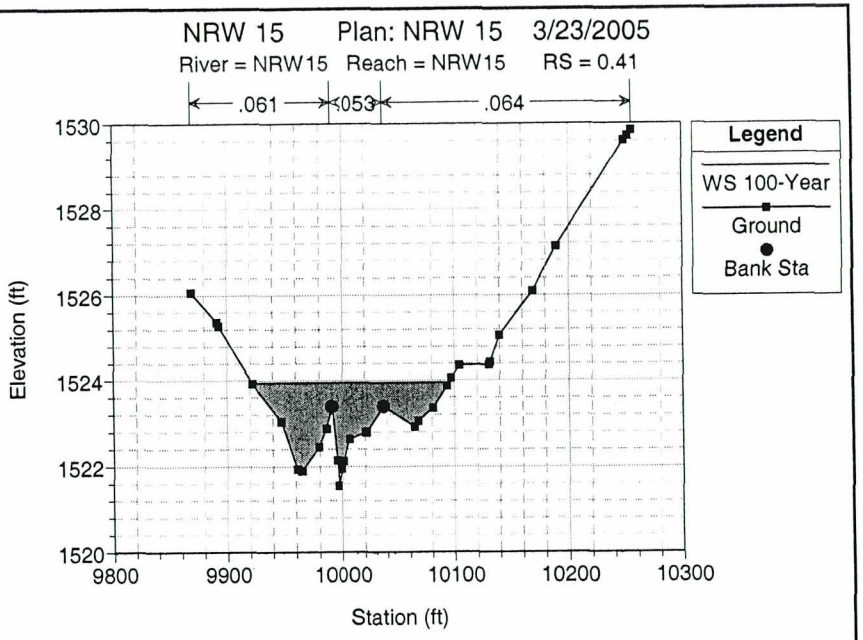

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.66
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

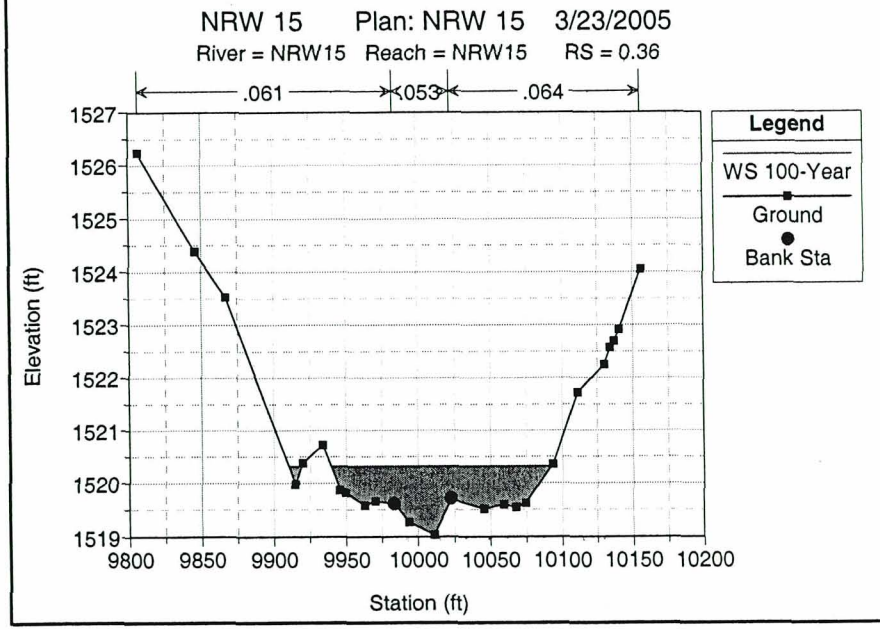

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.59
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

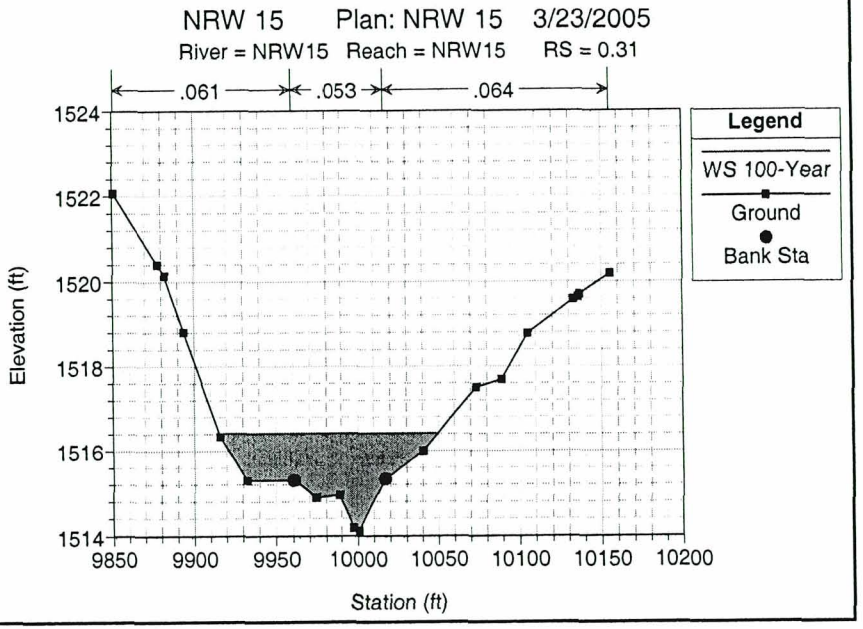

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.53
.061
.053
.064
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

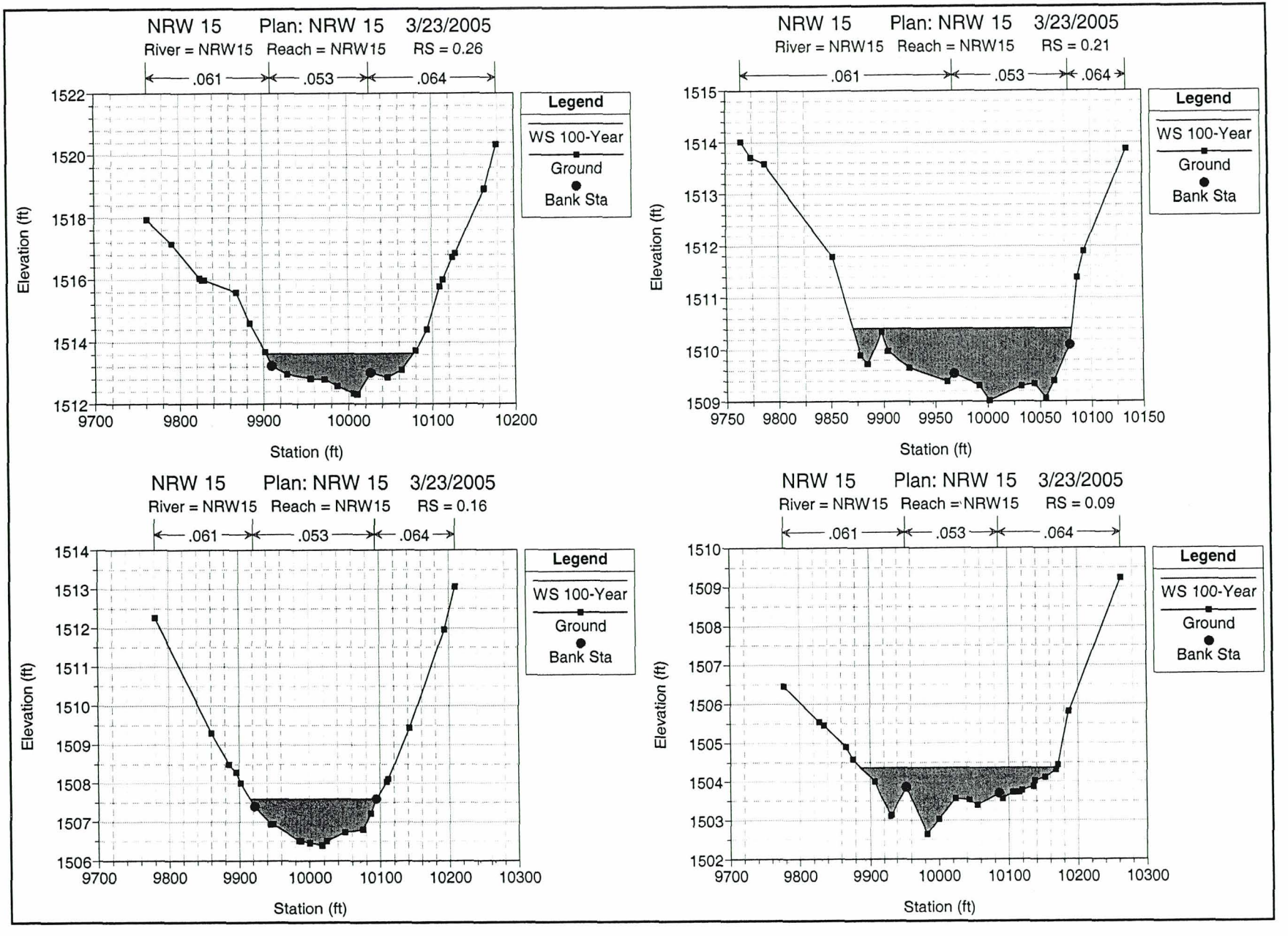

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.50
.061
.053
.064
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

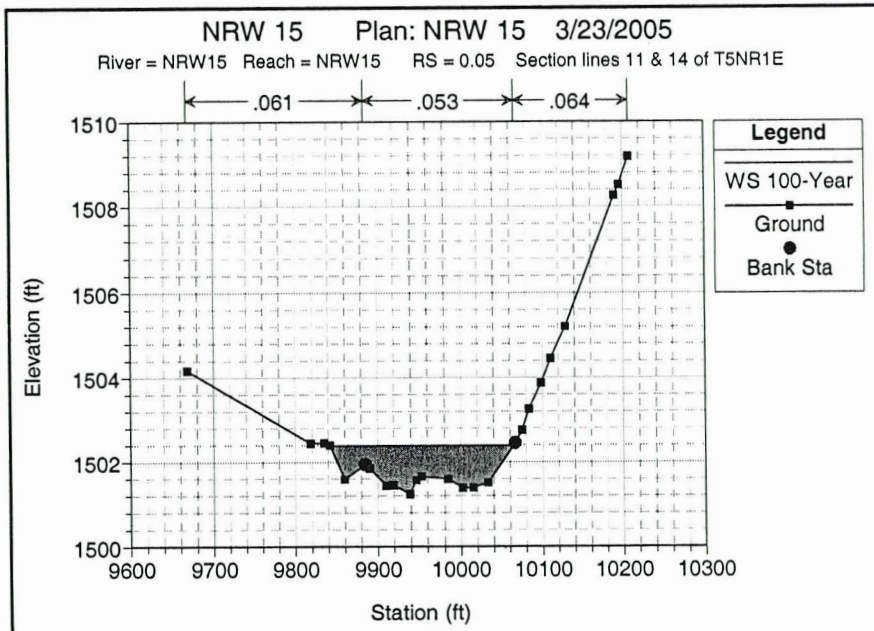

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.46
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

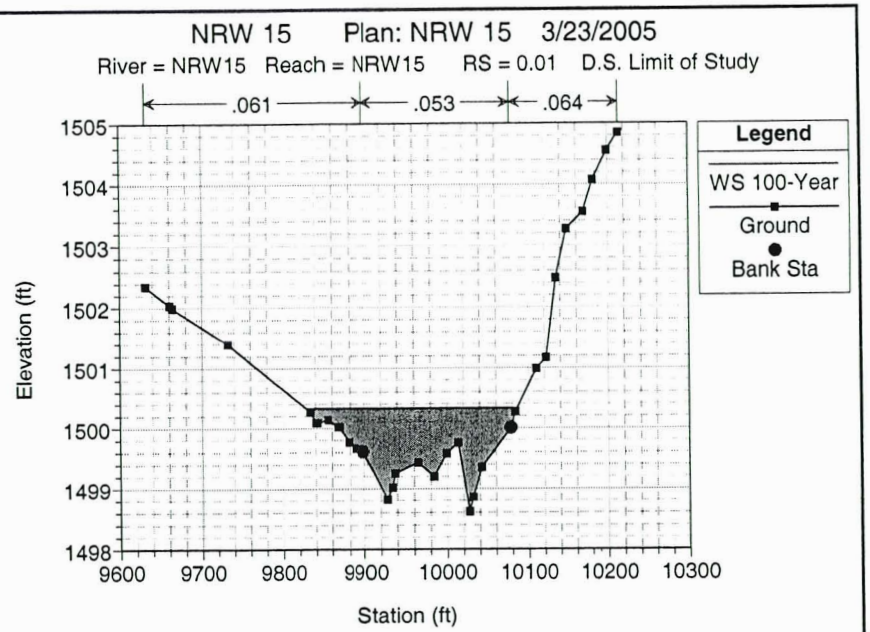

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.41
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

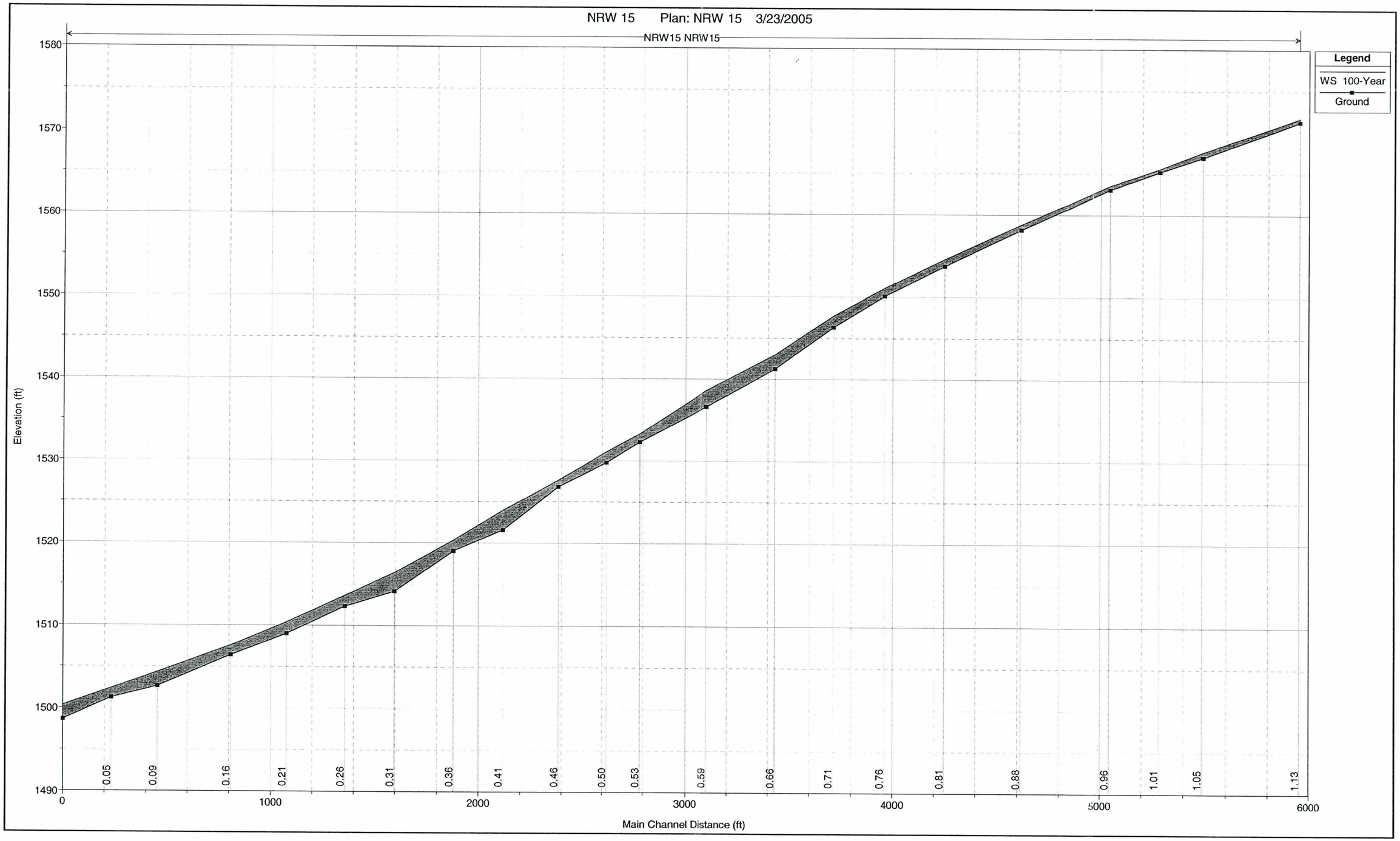

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.36
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.31
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.26
.061 .053 .064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.21
.061 .053 .064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.16
.061 .053 .064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.09
.061 .053 .064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

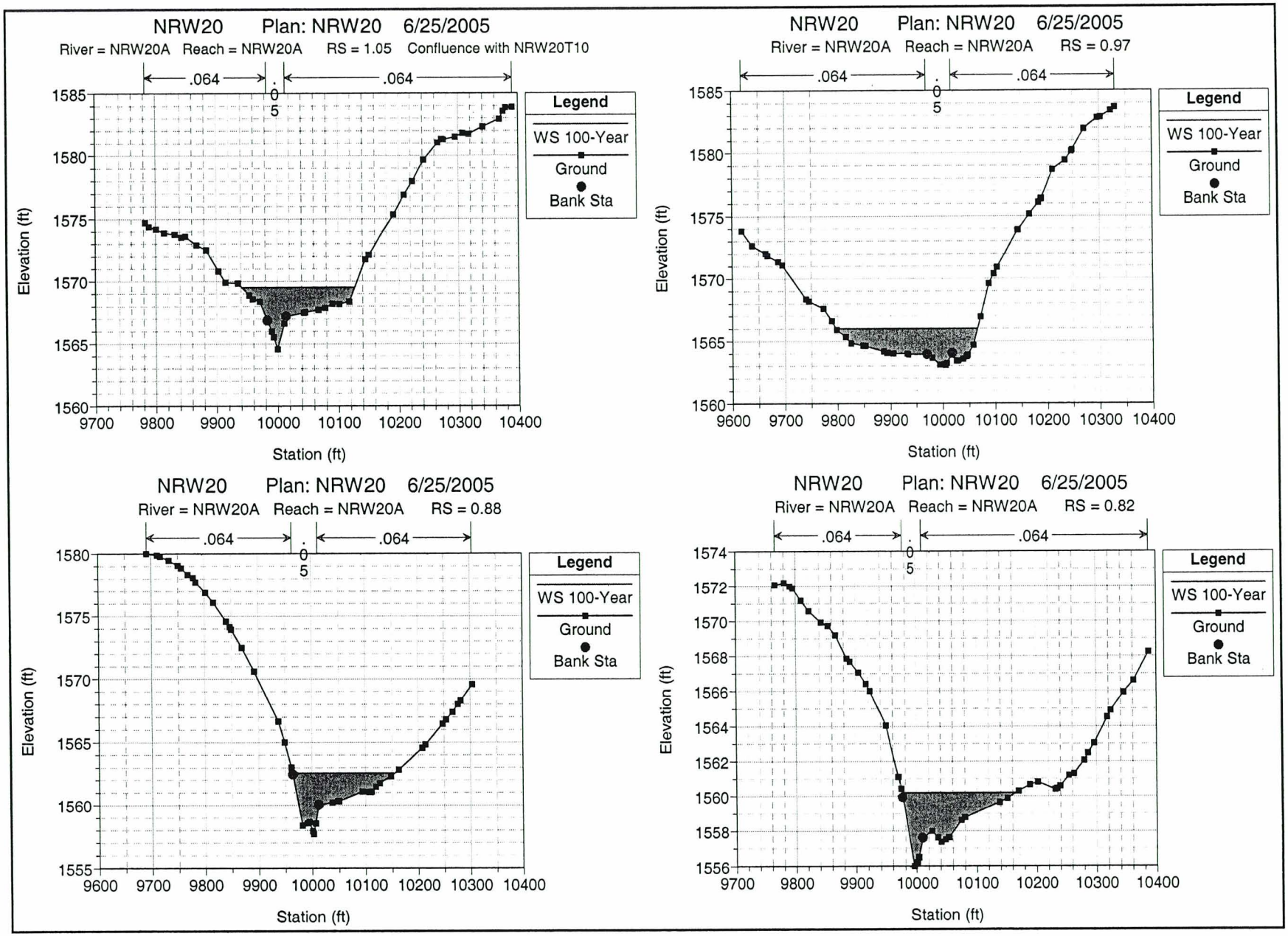

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.05 Section lines 11 & 14 of T5NR1E
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
1510
1508
1506
1504
1502
1500
9600
9700
9800
9900
10000
10100
10200
10300
Station (ft)

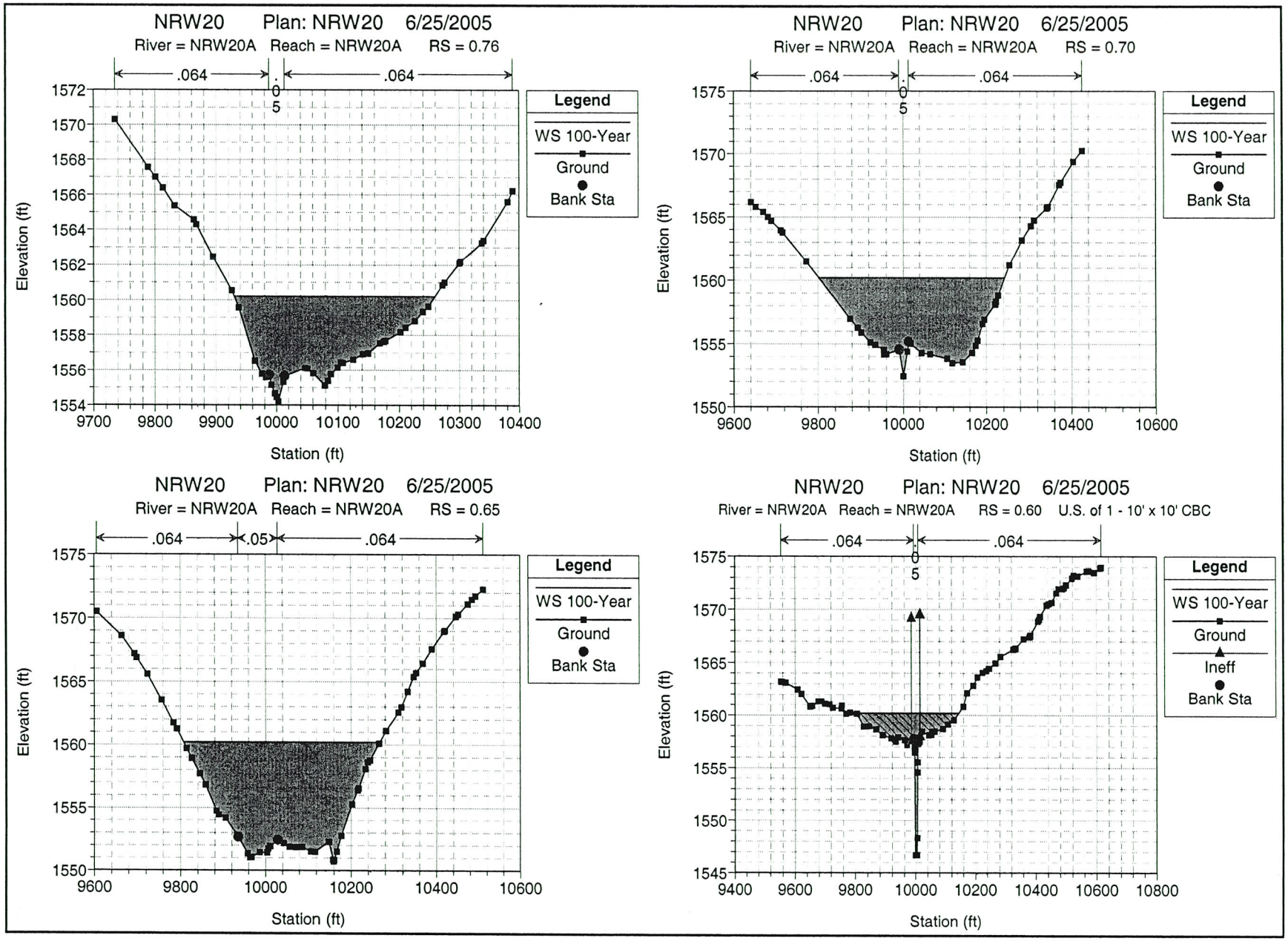

NRW 15 Plan: NRW 15 3/23/2005
River = NRW15 Reach = NRW15 RS = 0.01 D.S. Limit of Study
.061
.053
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
1505
1504
1503
1502
1501
1500
1499
1498
9600
9700
9800
9900
10000
10100
10200
10300
Station (ft)

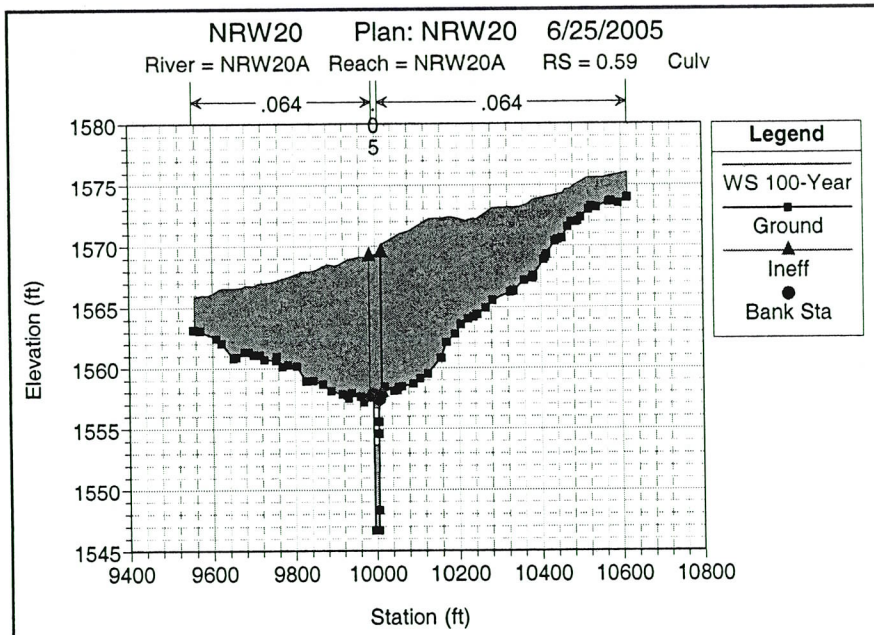

NRW 15 Plan: NRW 15 3/23/2005
NRW15 NRW15
Legend
WS 100-Year
Ground
Elevation (ft)
1580
1570
1560
1550
1540
1530
1520
1510
1500
1490
0.05
0.09
0.16
0.21
0.26
0.31
0.36
0.41
0.46
0.50
0.53
0.59
0.66
0.71
0.76
0.81
0.88
0.96
1.01
1.05
1.13
0
1000
2000
3000
4000
5000
6000
Main Channel Distance (ft)

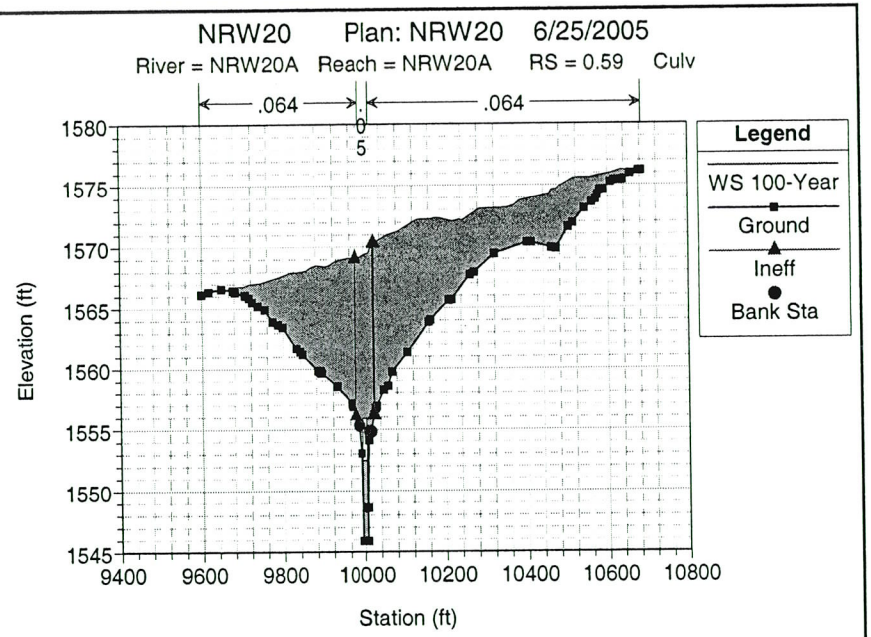
NRW 20

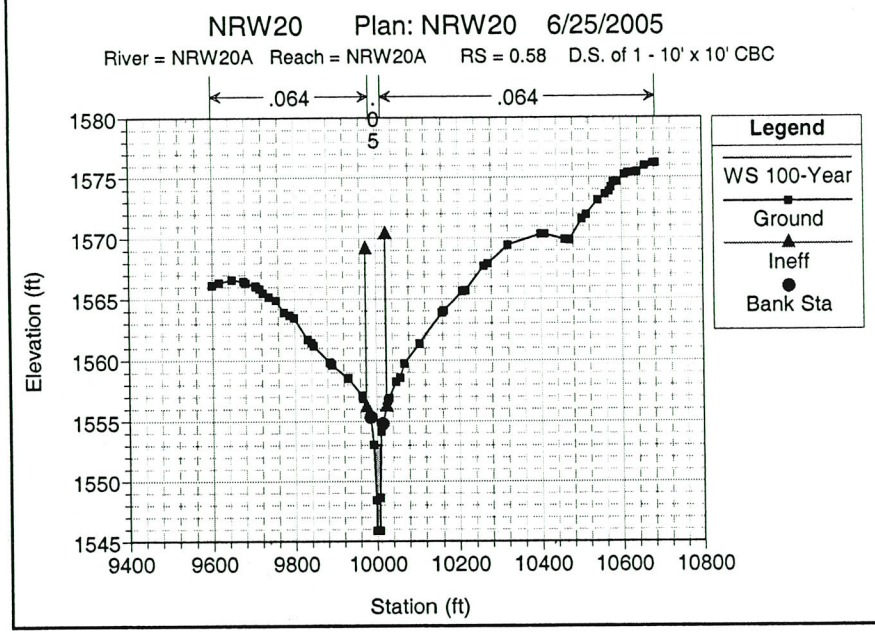
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

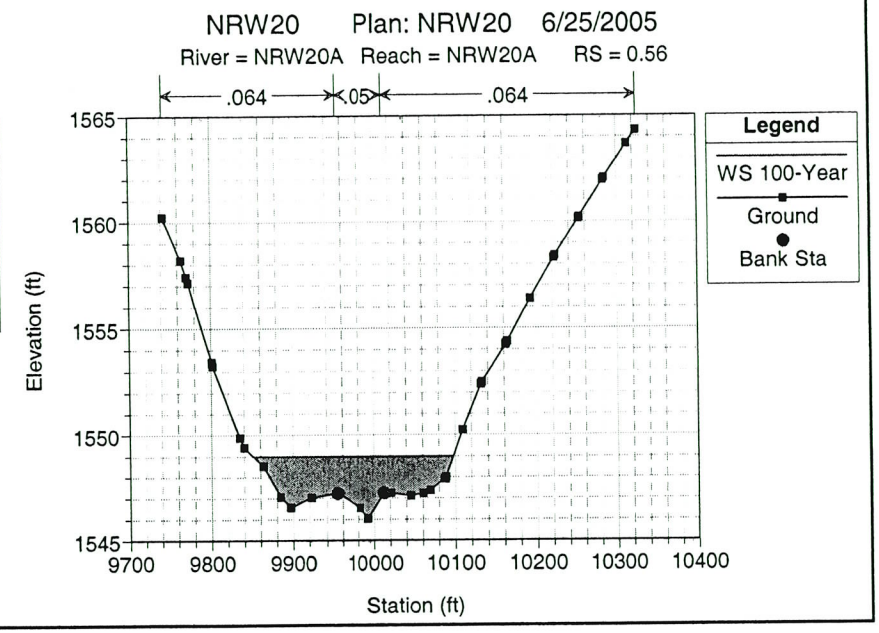

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 1.05 Confluence with NRW20T10
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.97
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.88
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.82
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

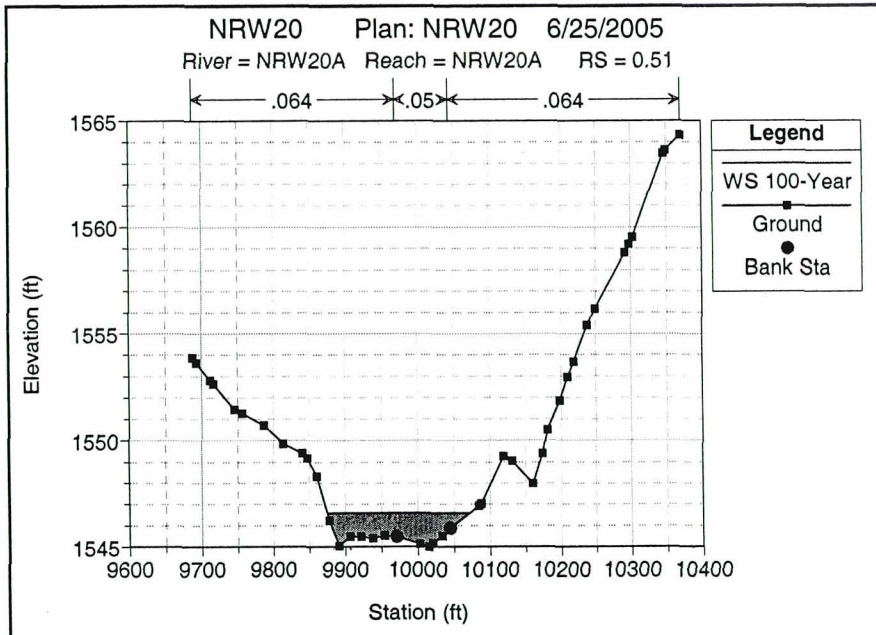

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.76
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.70
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.65
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.60 U.S. of 1 - 10' x 10' CBC
.064
.05
.064
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

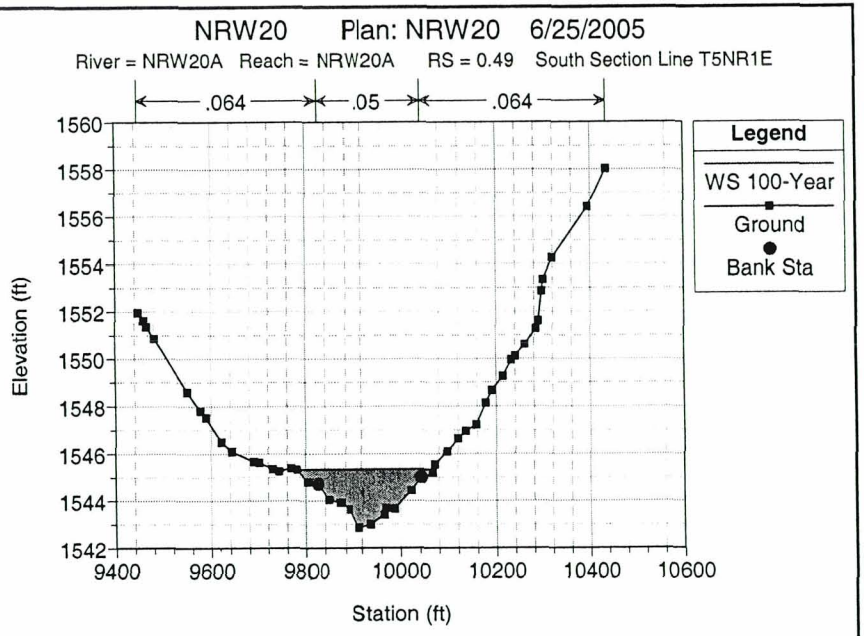

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.59 Culv
.064
.064
0.5
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

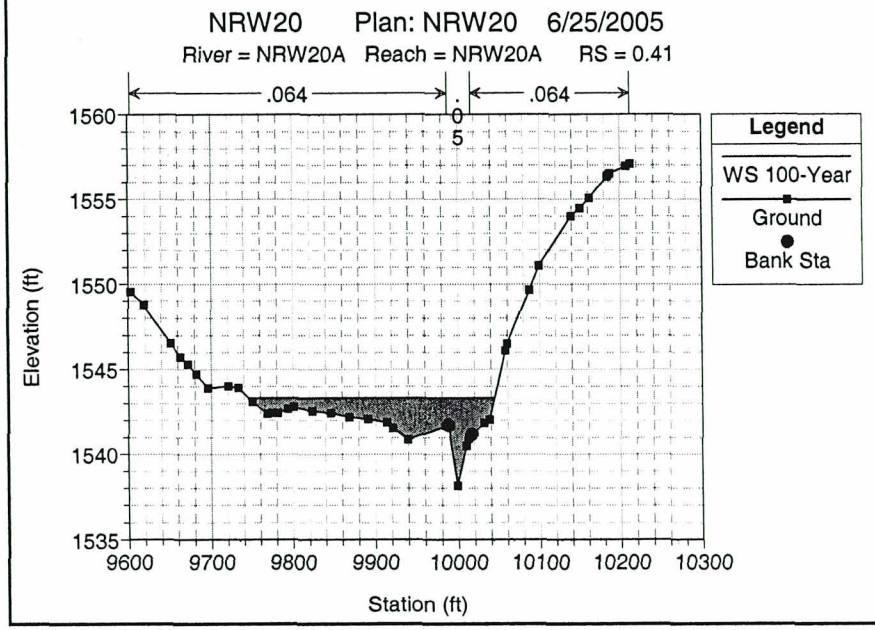

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.59 Culv
.064
.064
0.5
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

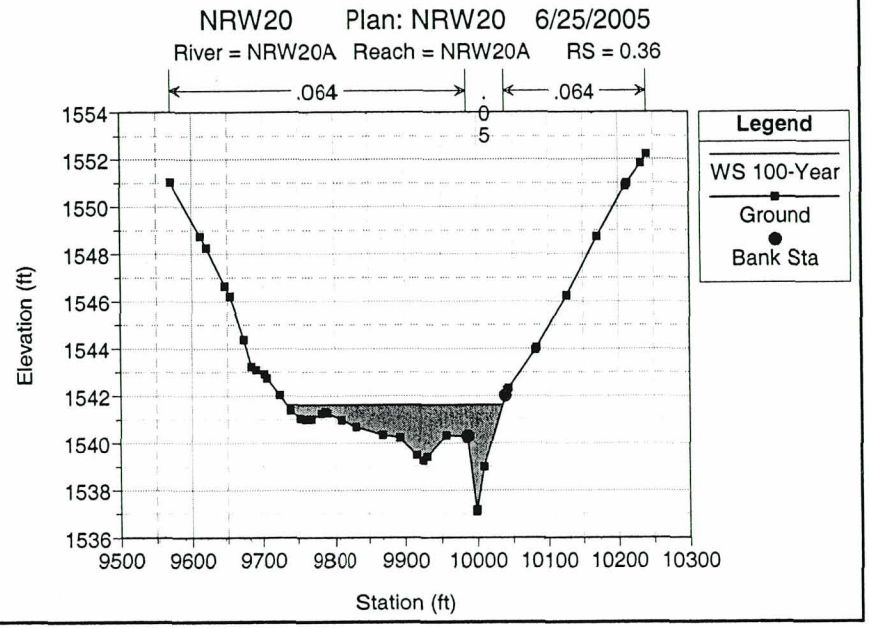

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.58 D.S. of 1 - 10' x 10' CBC
.064
.064
0.5
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

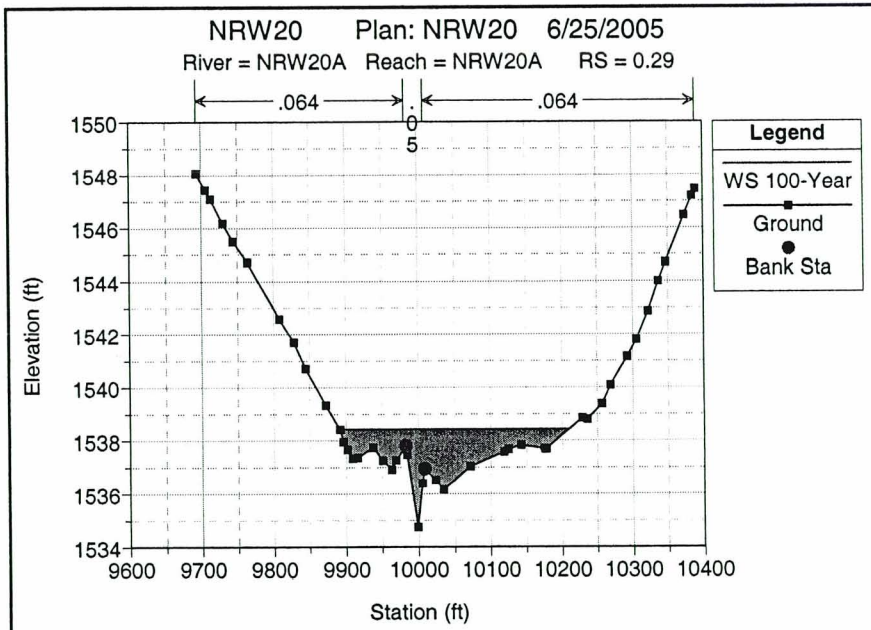

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.56
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

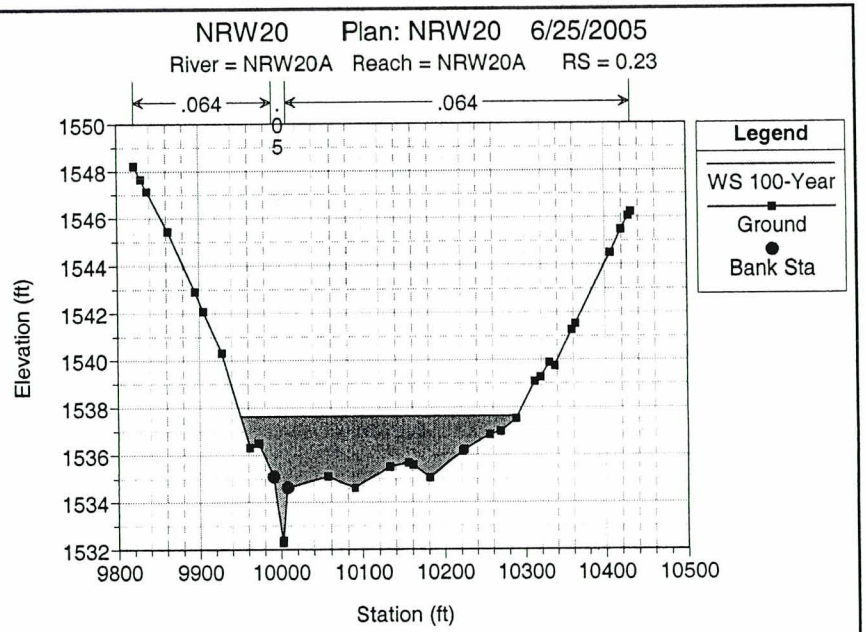

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.51
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

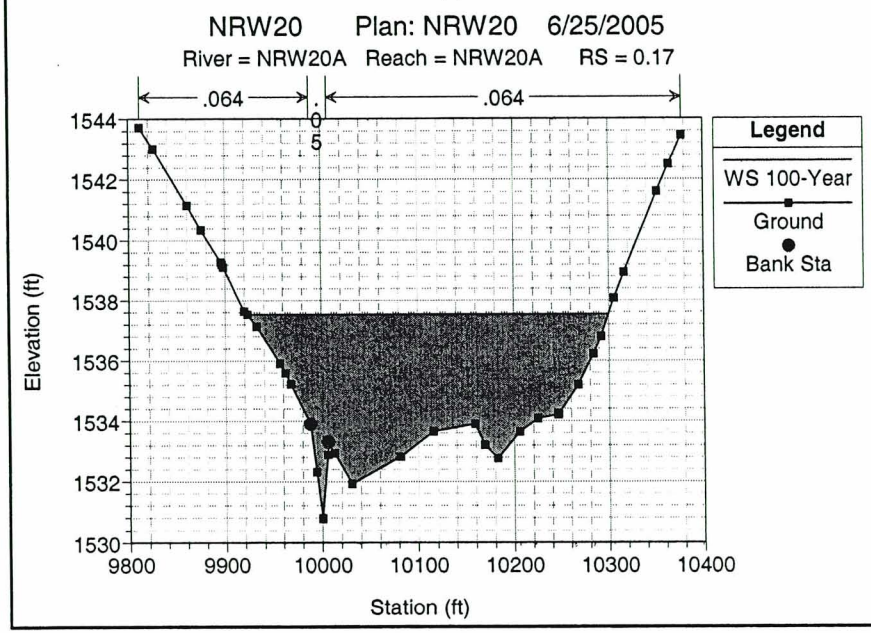

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.49 South Section Line T5NR1E
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

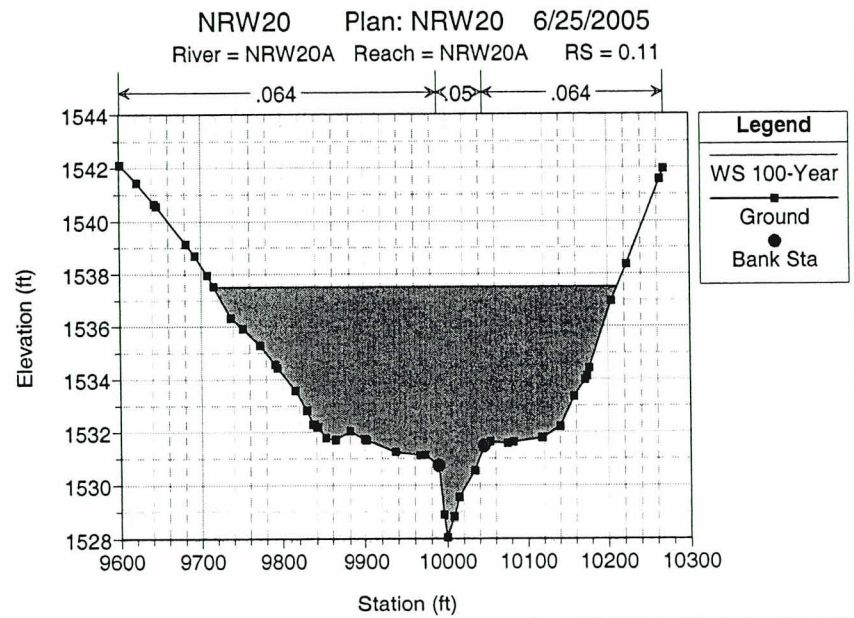

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.41
.064
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

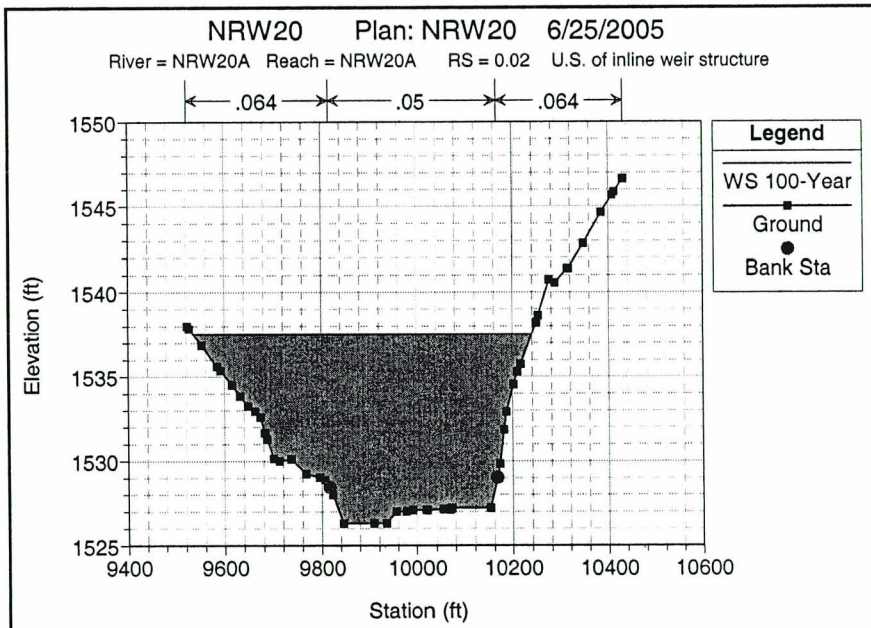

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.36
.064
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

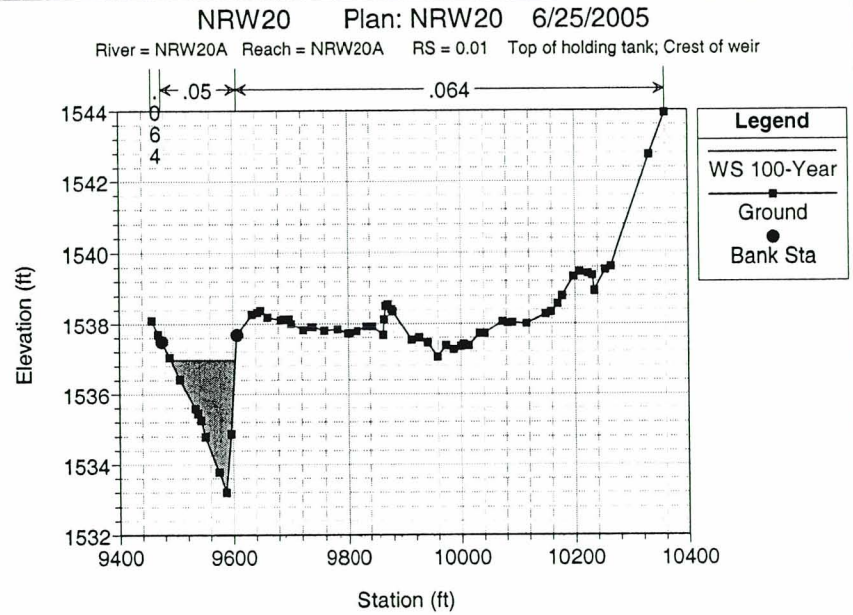

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.29
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

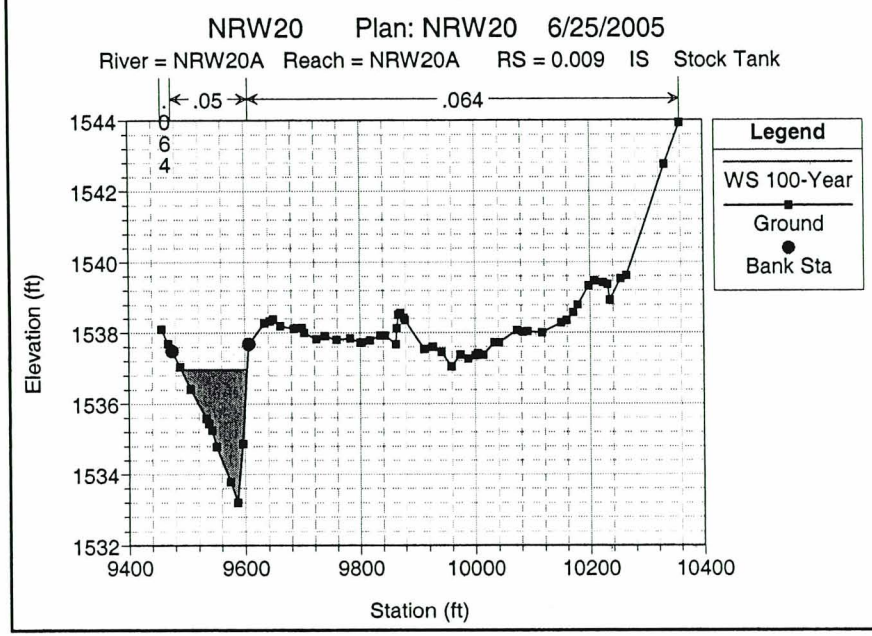

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.23
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

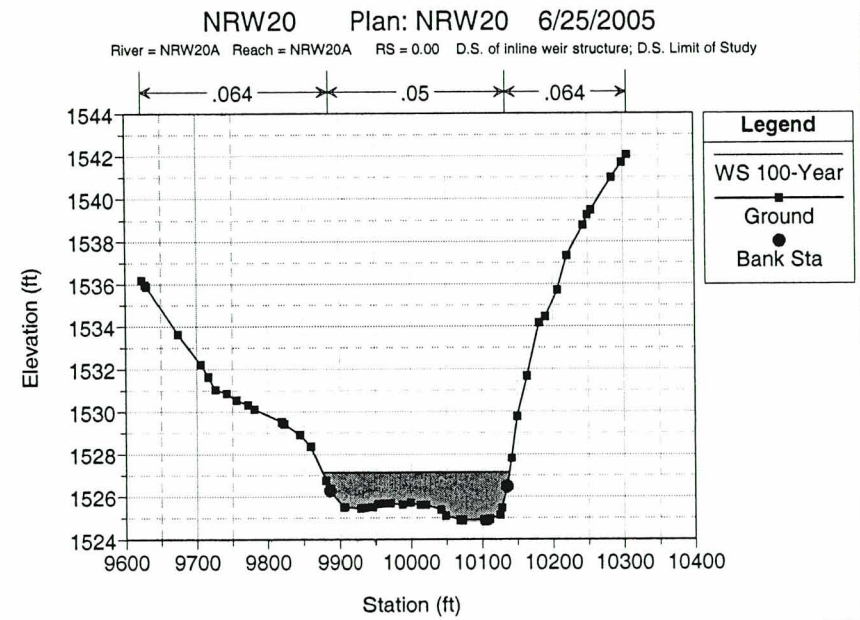

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.17
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

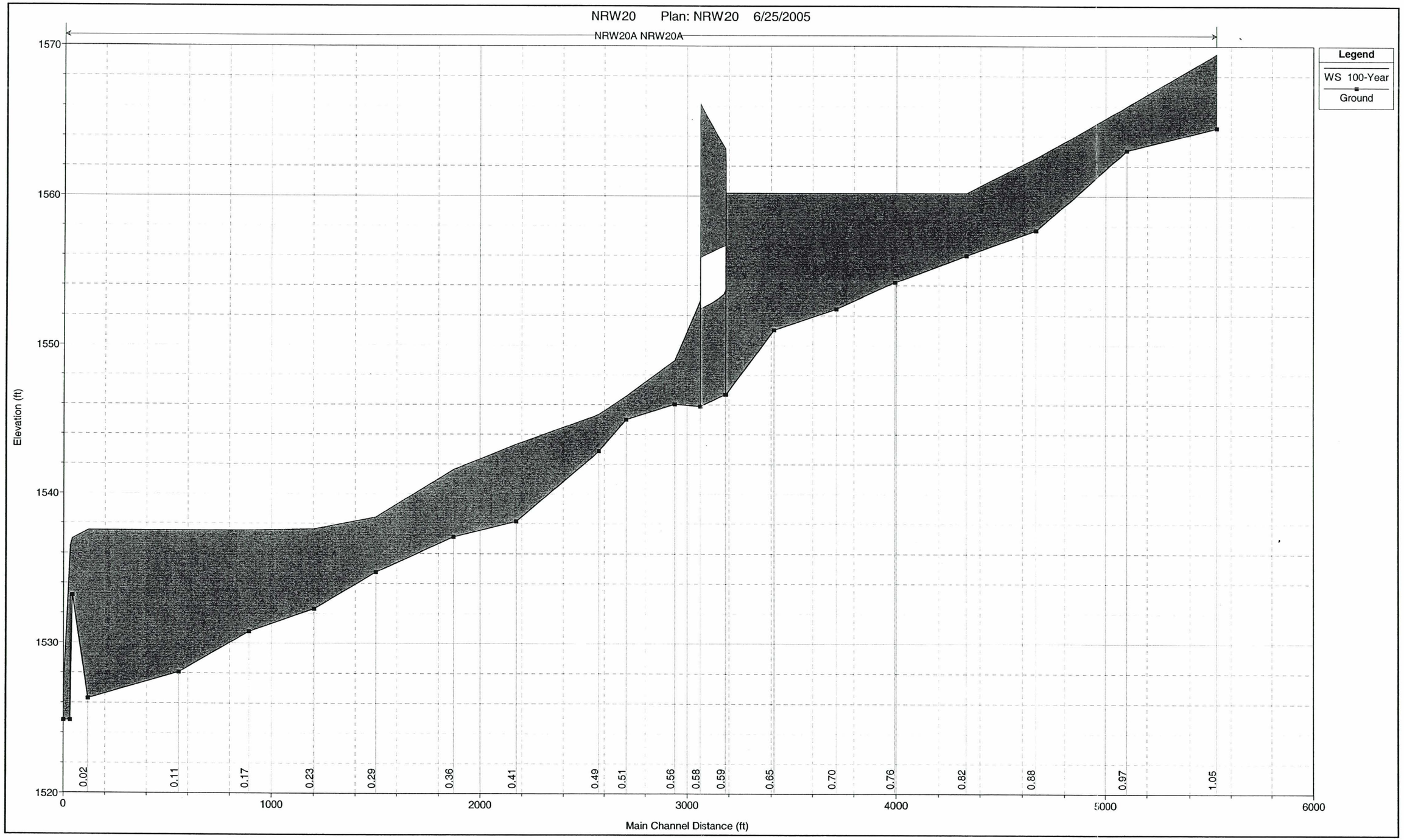

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.11
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

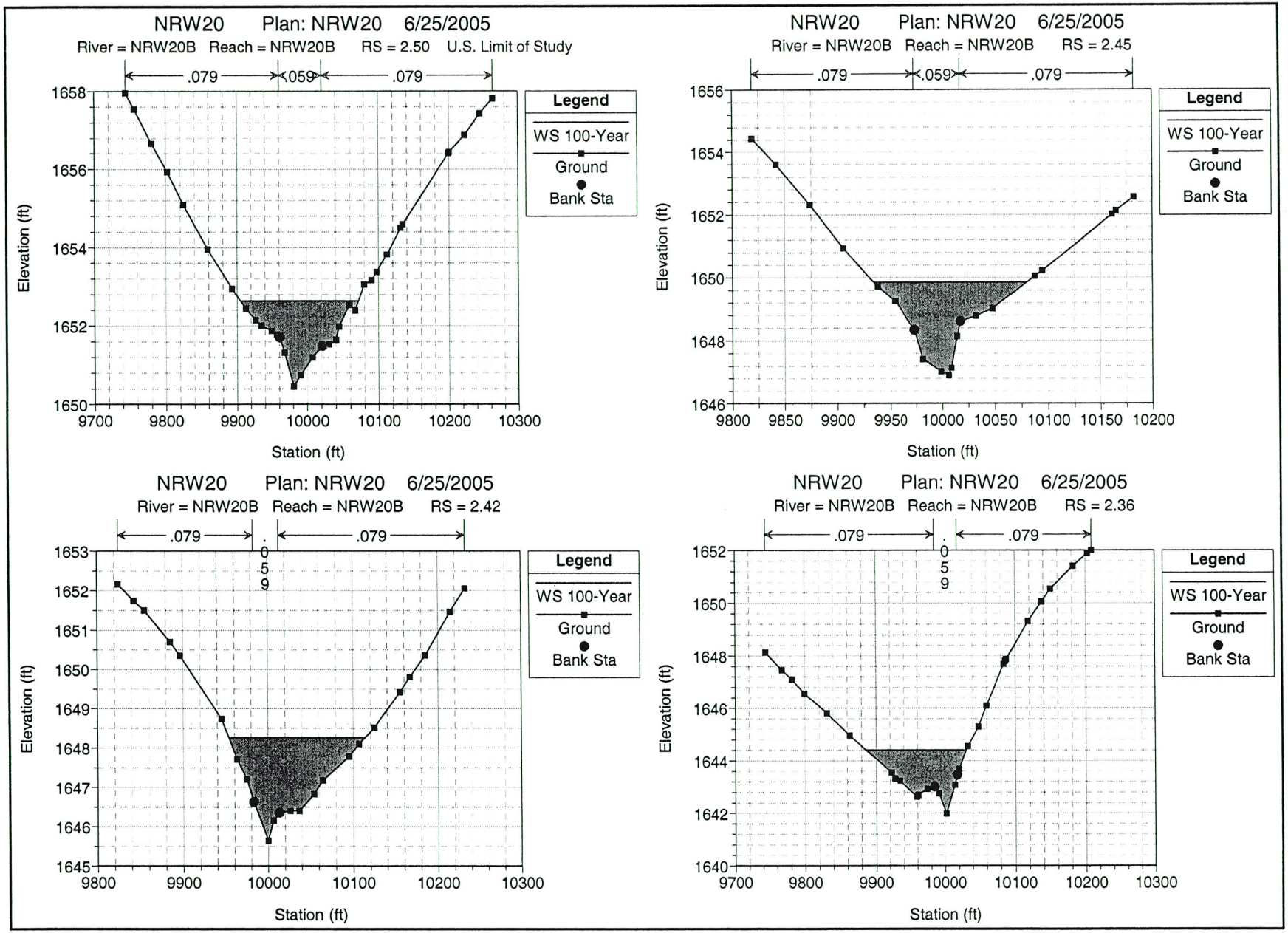

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.02 U.S. of inline weir structure
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

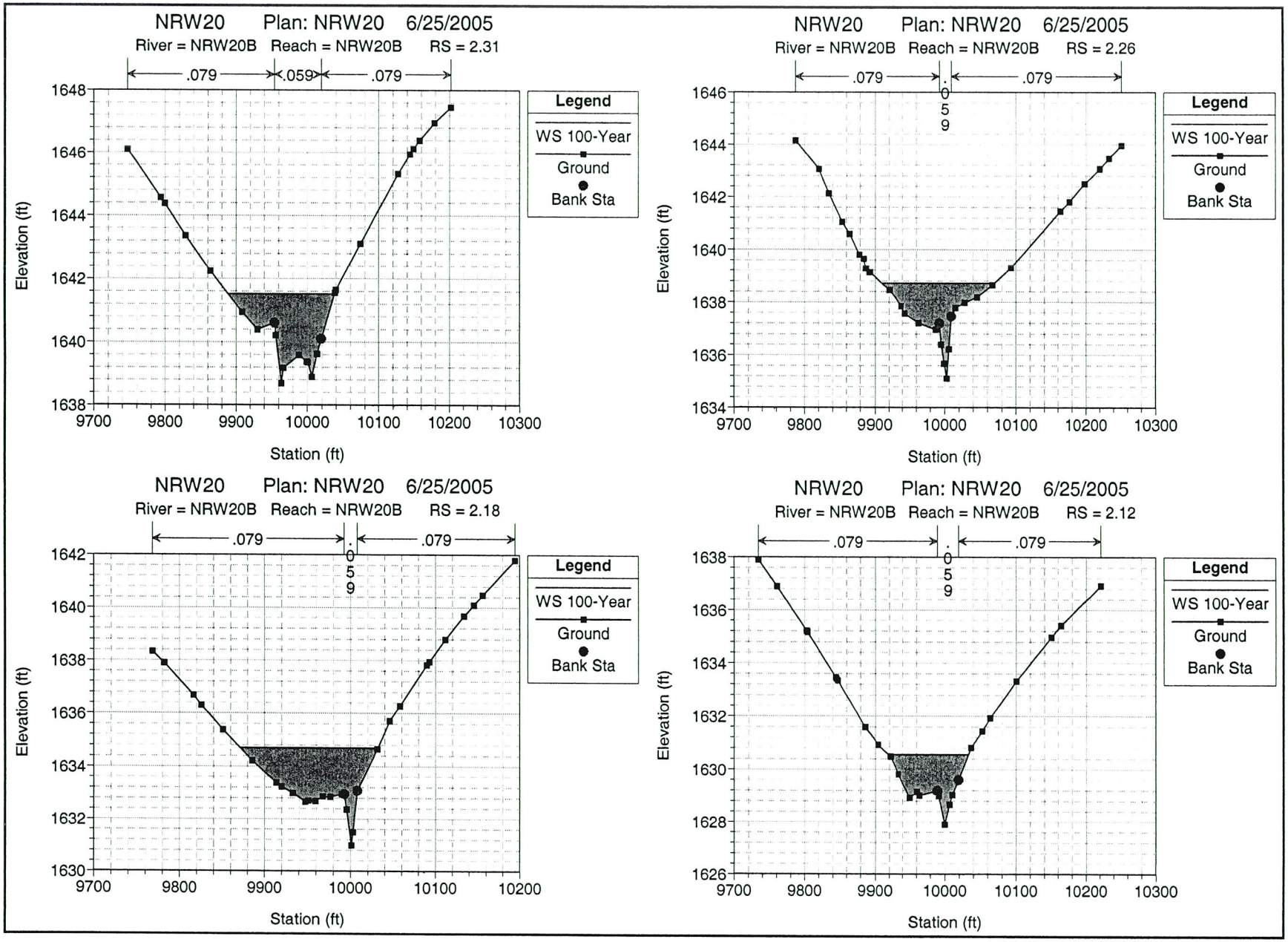

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.01 Top of holding tank; Crest of weir
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

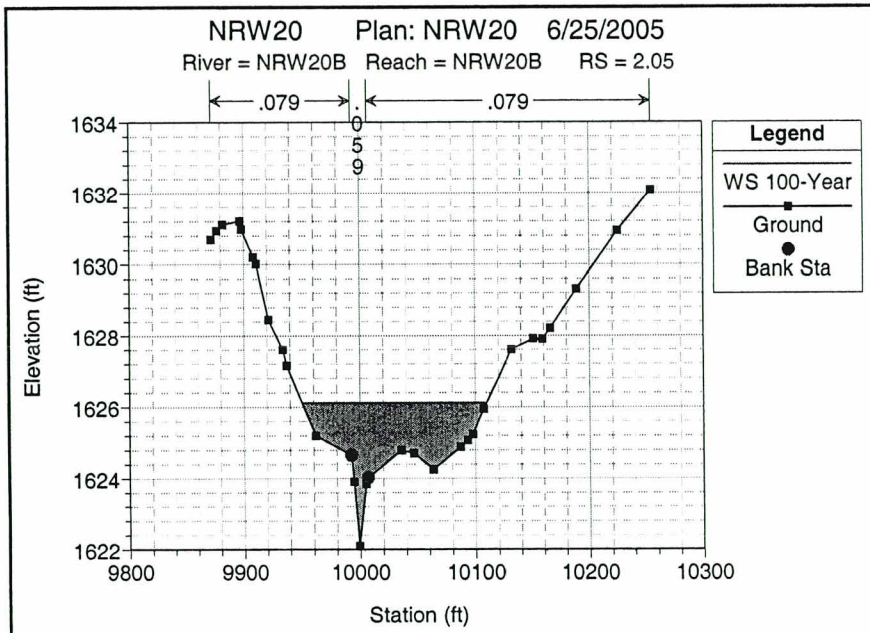

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.009 IS Stock Tank
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

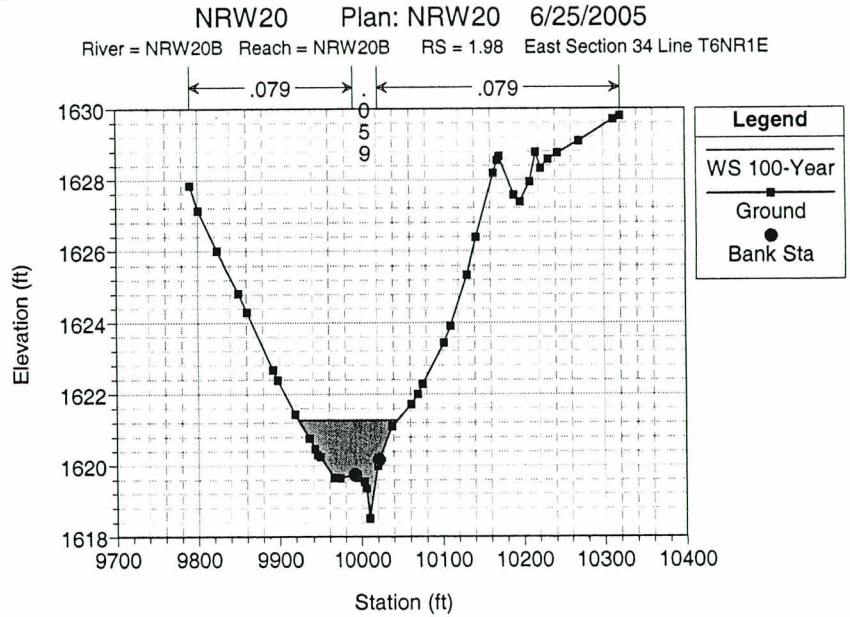

NRW20 Plan: NRW20 6/25/2005
River = NRW20A Reach = NRW20A RS = 0.00 D.S. of inline weir structure; D.S. Limit of Study
.064
.05
.064
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

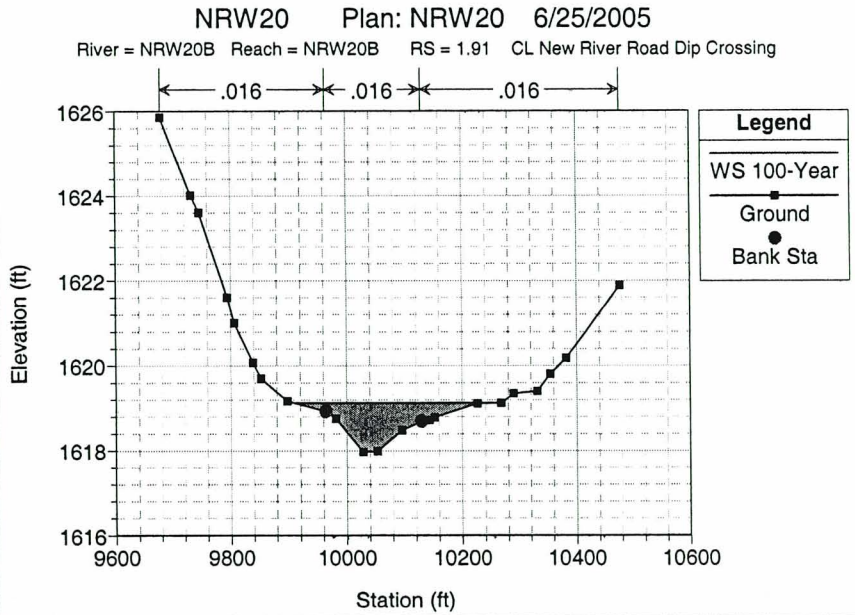

NRW20 Plan: NRW20 6/25/2005
NRW20A NRW20A
Legend
WS 100-Year
Ground
Elevation (ft)
1570
1560
1550
1540
1530
1520
0
1000
2000
3000
4000
5000
6000
Main Channel Distance (ft)
0.02
0.11
0.17
0.23
0.29
0.36
0.41
0.49
0.51
0.56
0.58
0.59
0.65
0.70
0.76
0.82
0.88
0.97
1.05

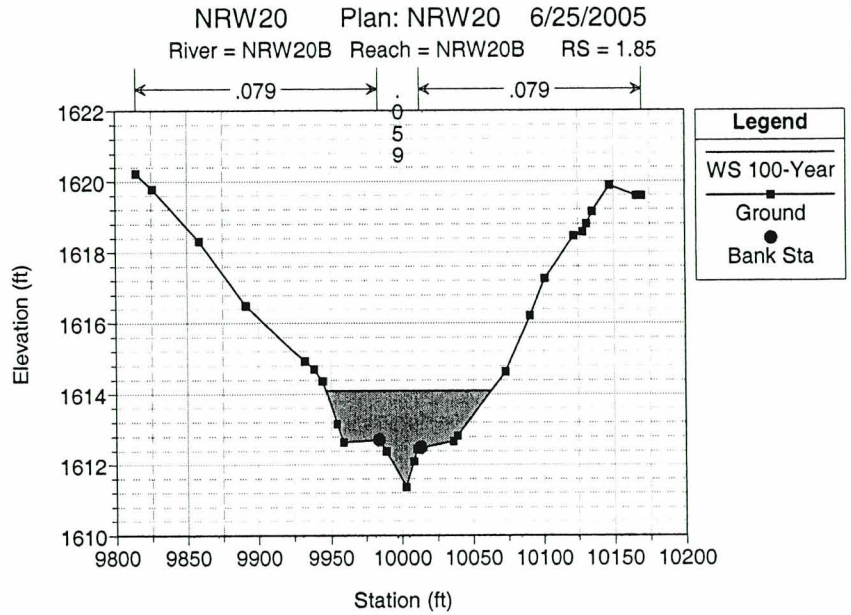

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.50 U.S. Limit of Study
.079
.059
.079
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.45
.079
.059
.079
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.42
.079
.059
.079
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.36
.079
.059
.079
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta

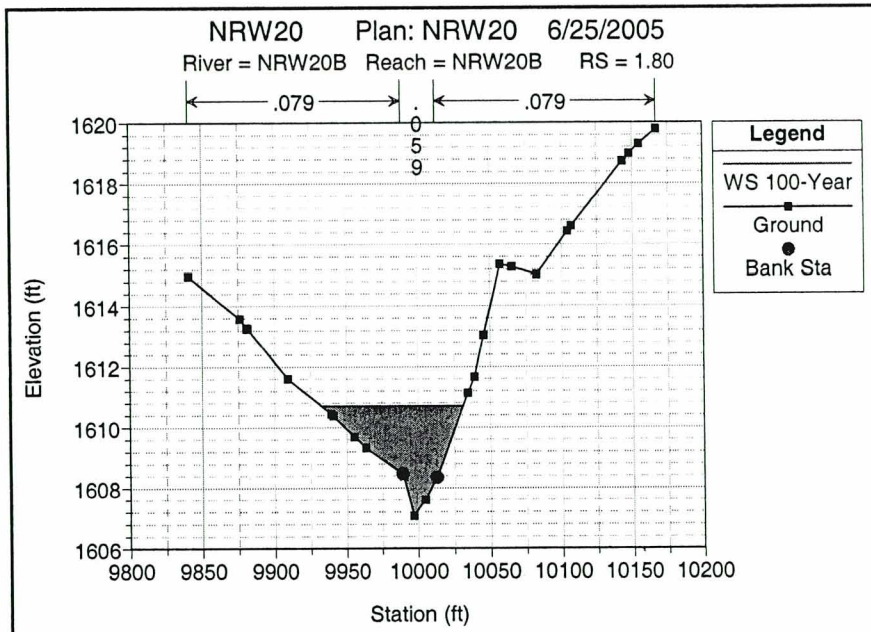

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.31
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.26
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.18
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.12
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

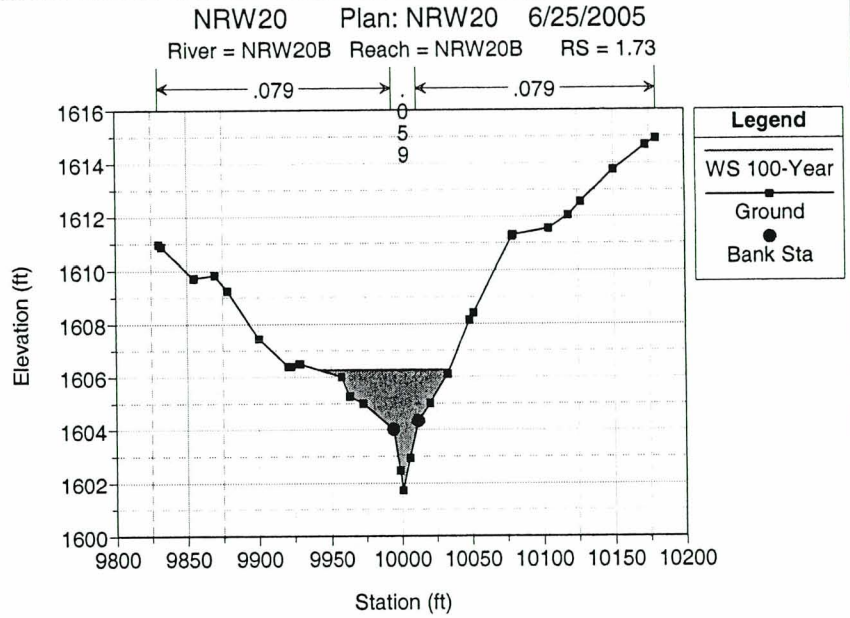

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 2.05
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

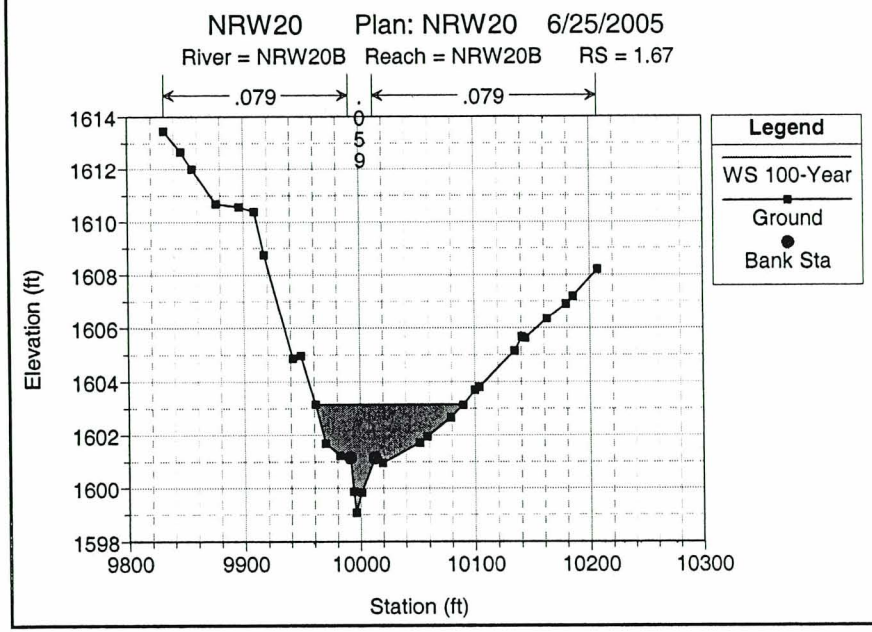

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.98 East Section 34 Line T6NR1E
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

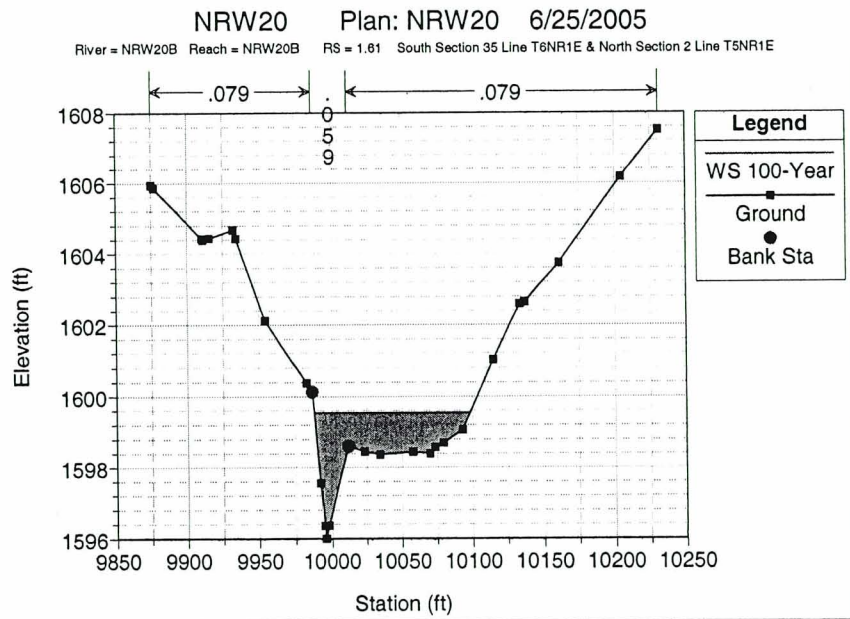

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.91 CL New River Road Dip Crossing
.016
.016
.016
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

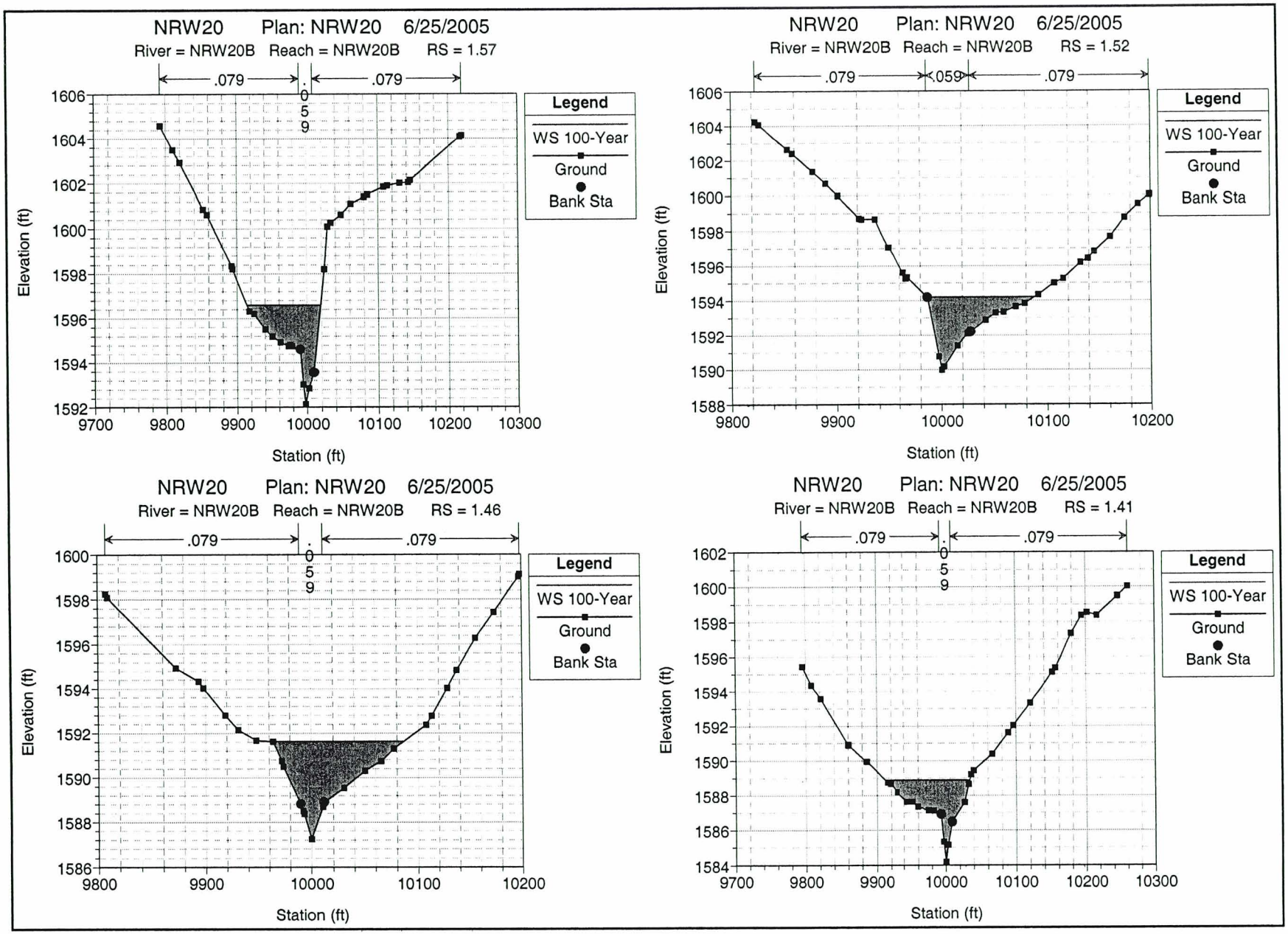

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.85
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

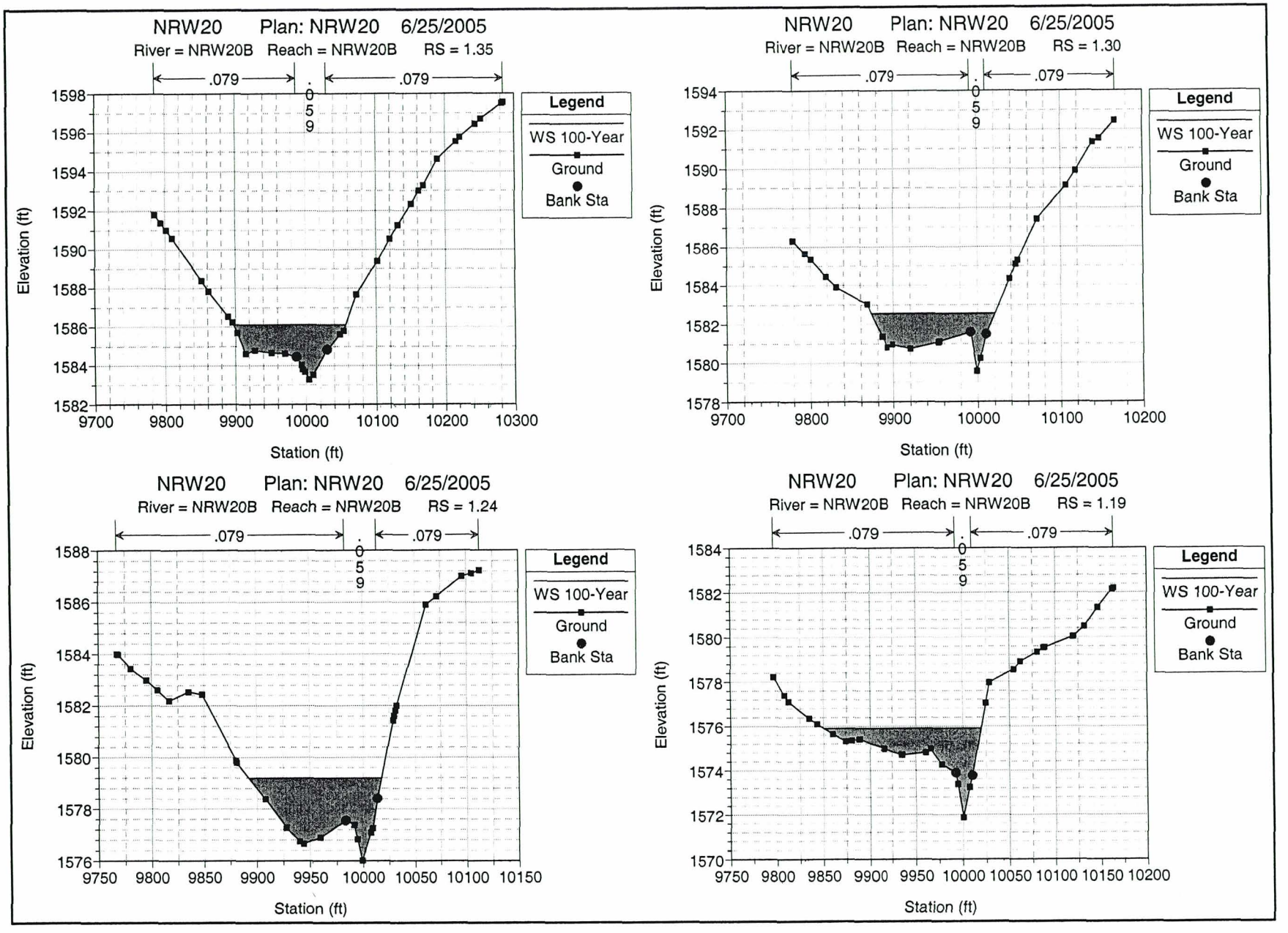

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.80
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

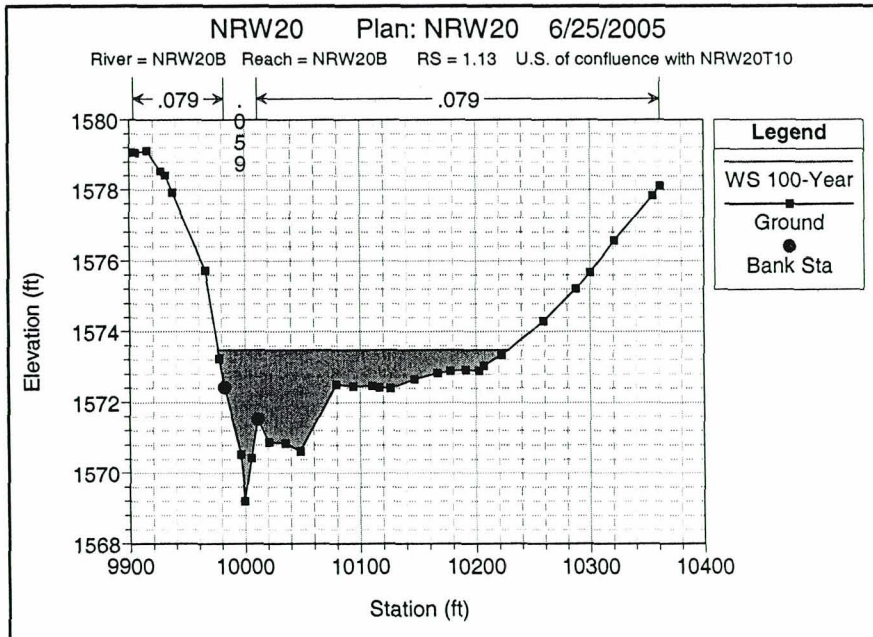

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.73
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

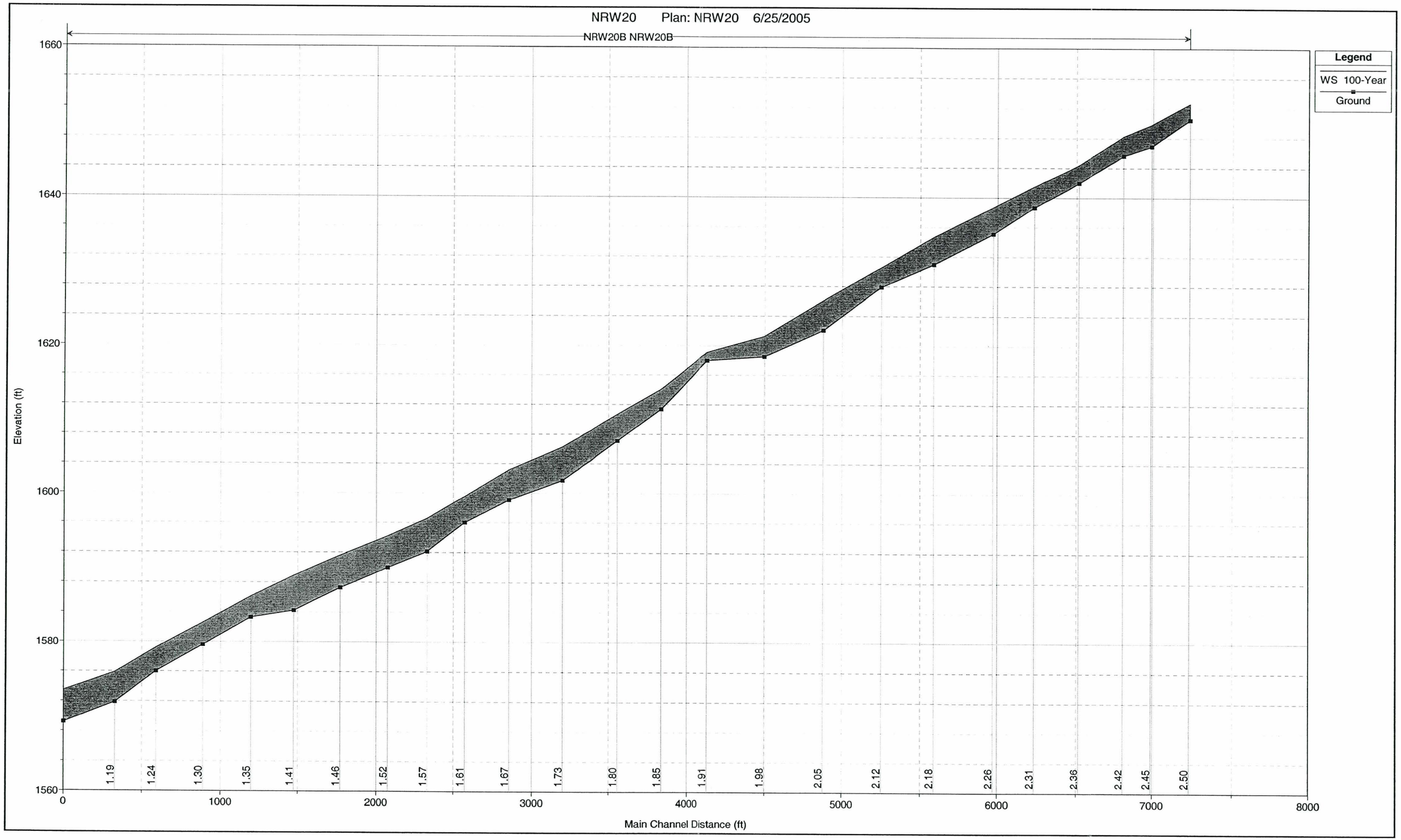

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.67
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

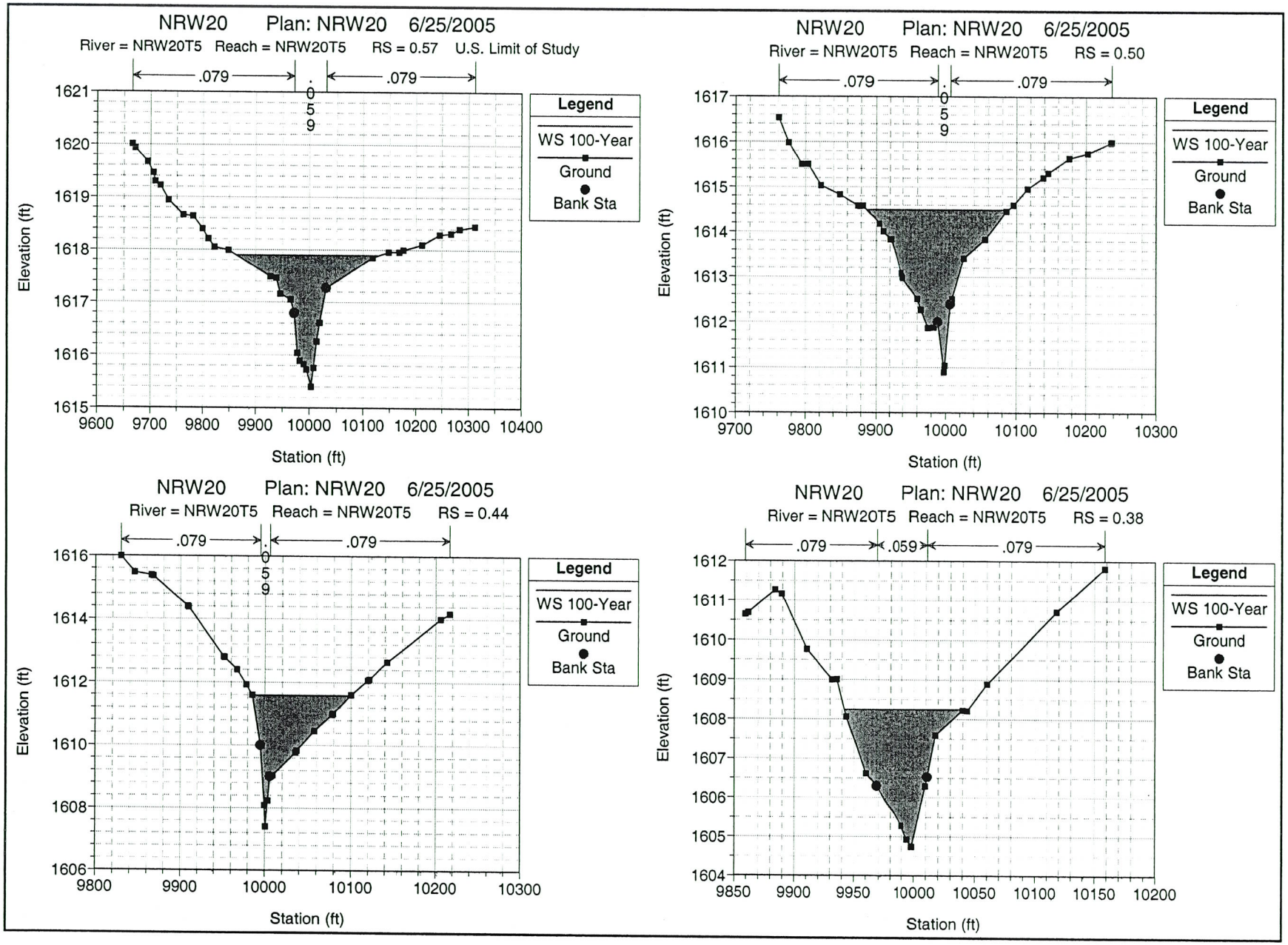

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.61 South Section 35 Line T6NR1E & North Section 2 Line T5NR1E
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

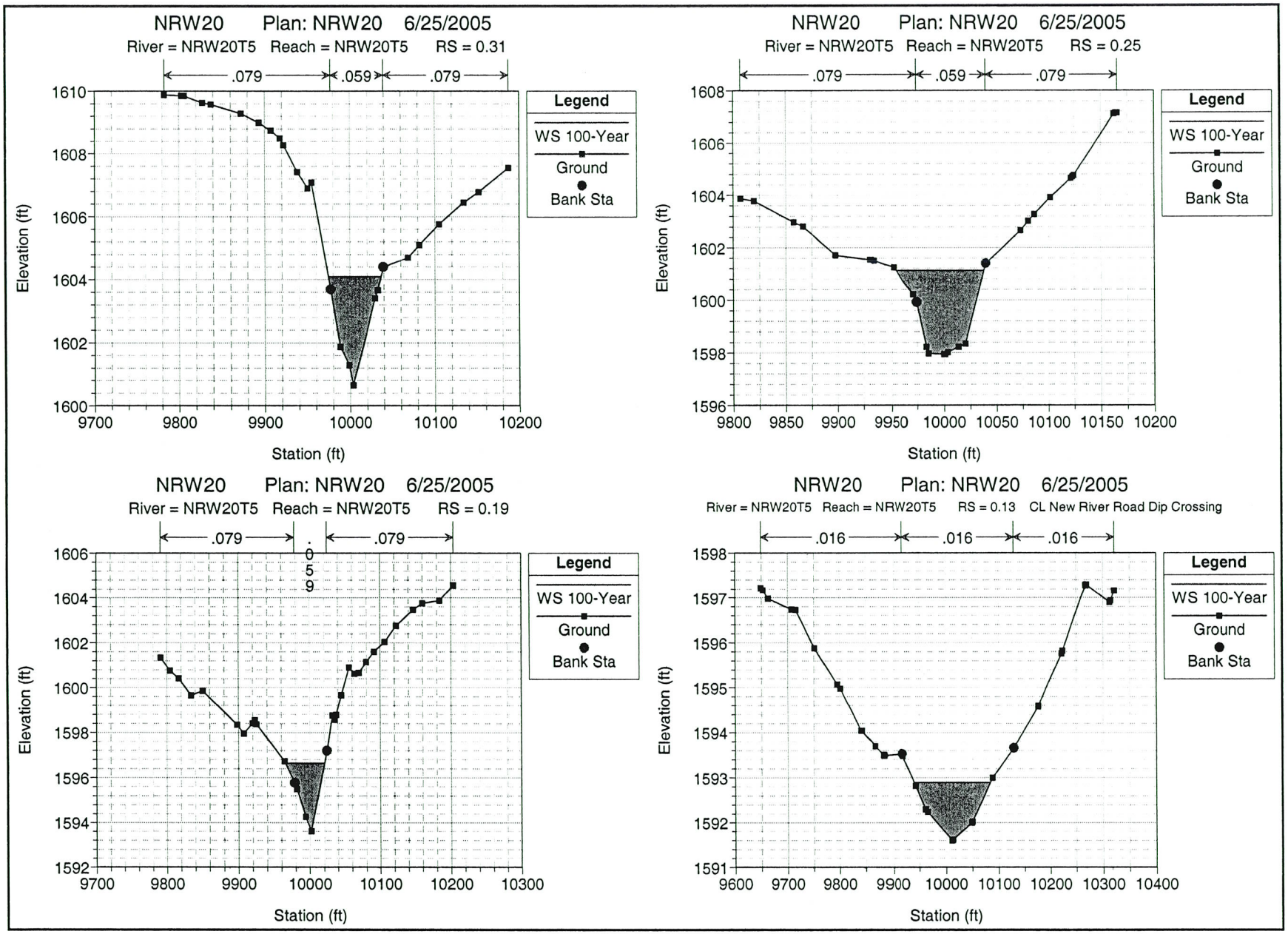

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.57
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.52
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.46
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.41
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

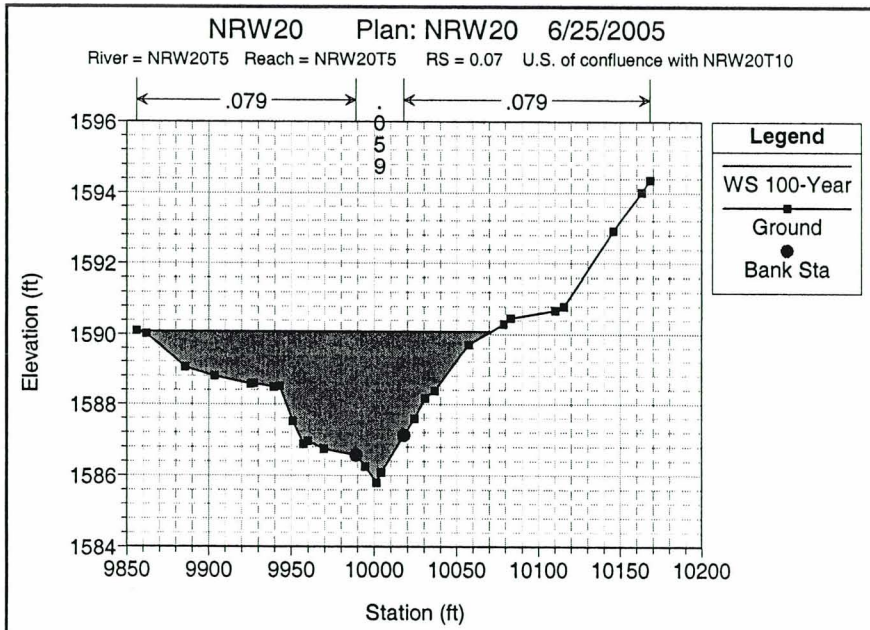

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.35
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.30
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.24
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.19
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

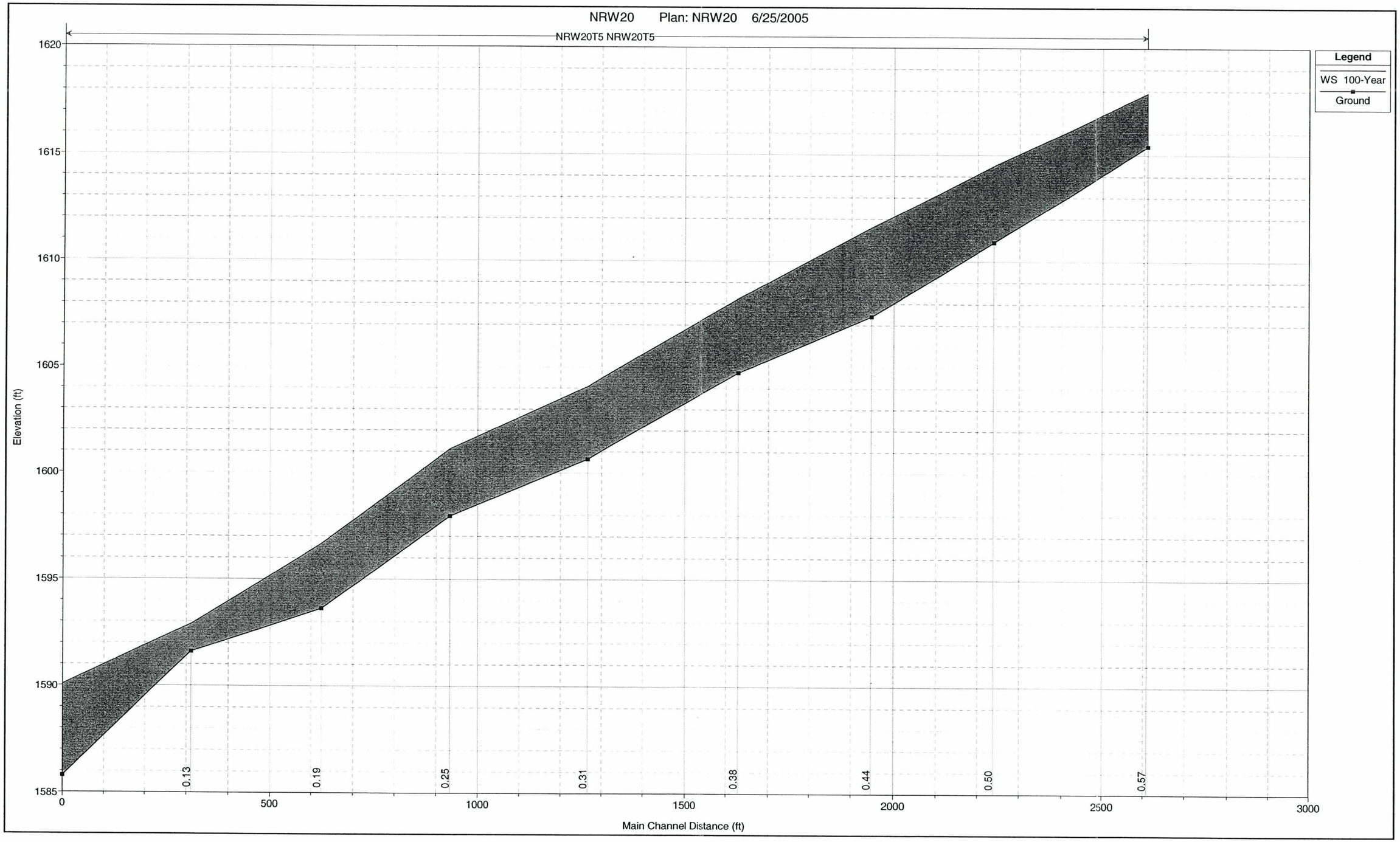

NRW20 Plan: NRW20 6/25/2005
River = NRW20B Reach = NRW20B RS = 1.13 U.S. of confluence with NRW20T10
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
1580
1578
1576
1574
1572
1570
1568
9900
10000
10100
10200
10300
10400
Station (ft)

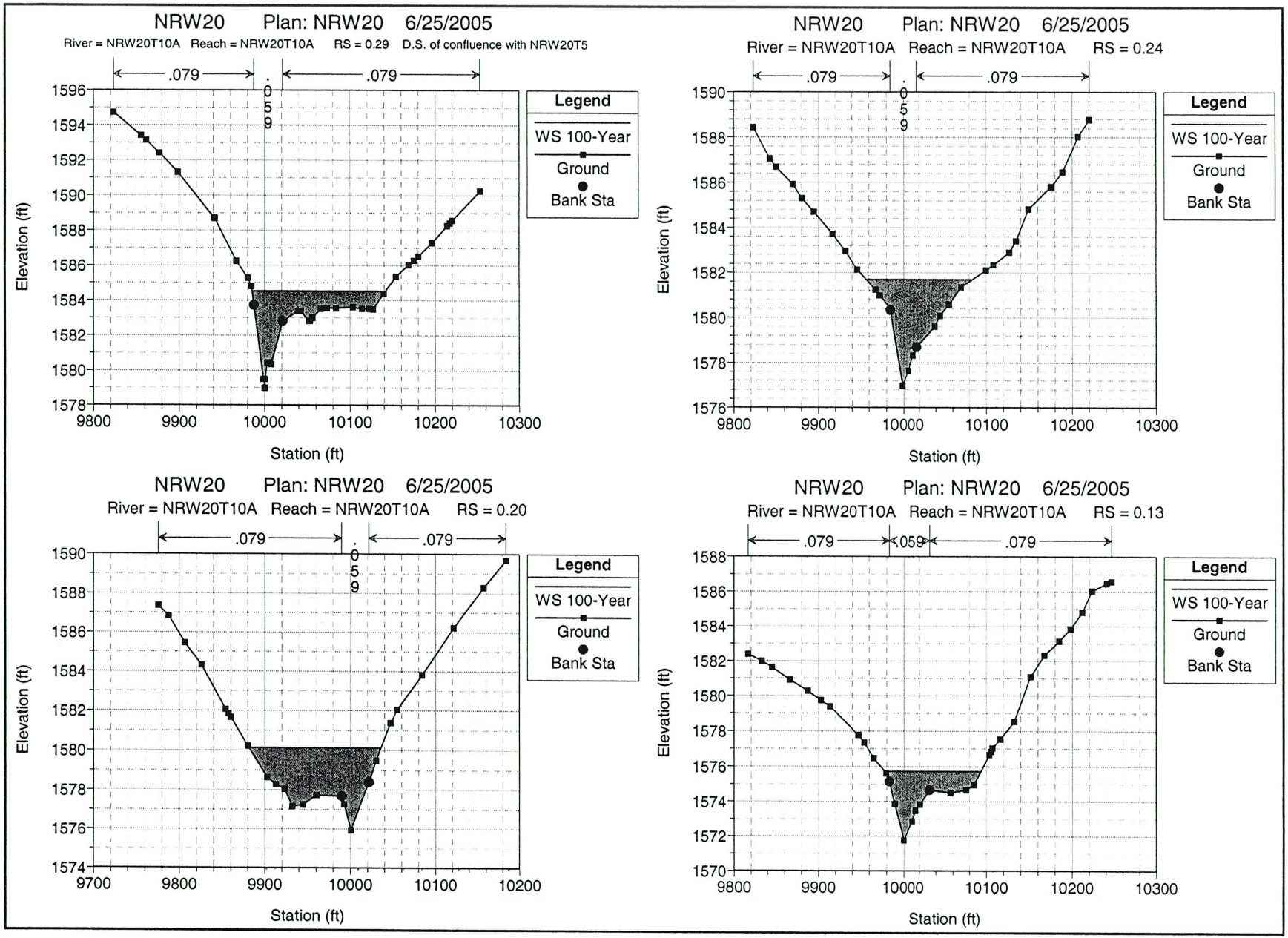

NRW20 Plan: NRW20 6/25/2005
NRW20B NRW20B
Legend
WS 100-Year
Ground
Elevation (ft)
1660
1640
1620
1600
1580
1560
1.19
1.24
1.30
1.35
1.41
1.46
1.52
1.57
1.61
1.67
1.73
1.80
1.85
1.91
1.98
2.05
2.12
2.18
2.26
2.31
2.36
2.42
2.45
2.50
0
1000
2000
3000
4000
5000
6000
7000
8000
Main Channel Distance (ft)

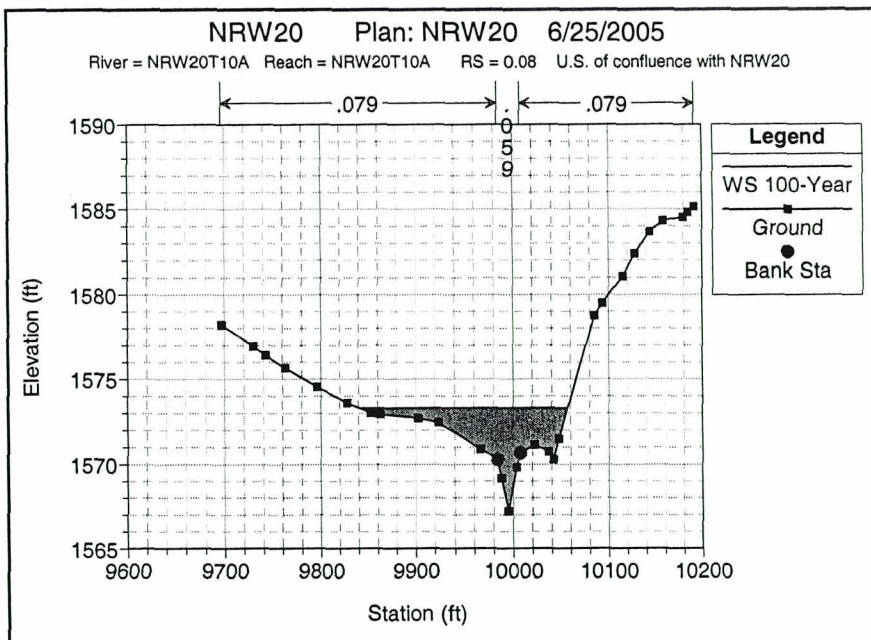

NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.57 U.S. Limit of Study
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.50
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.44
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.38
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

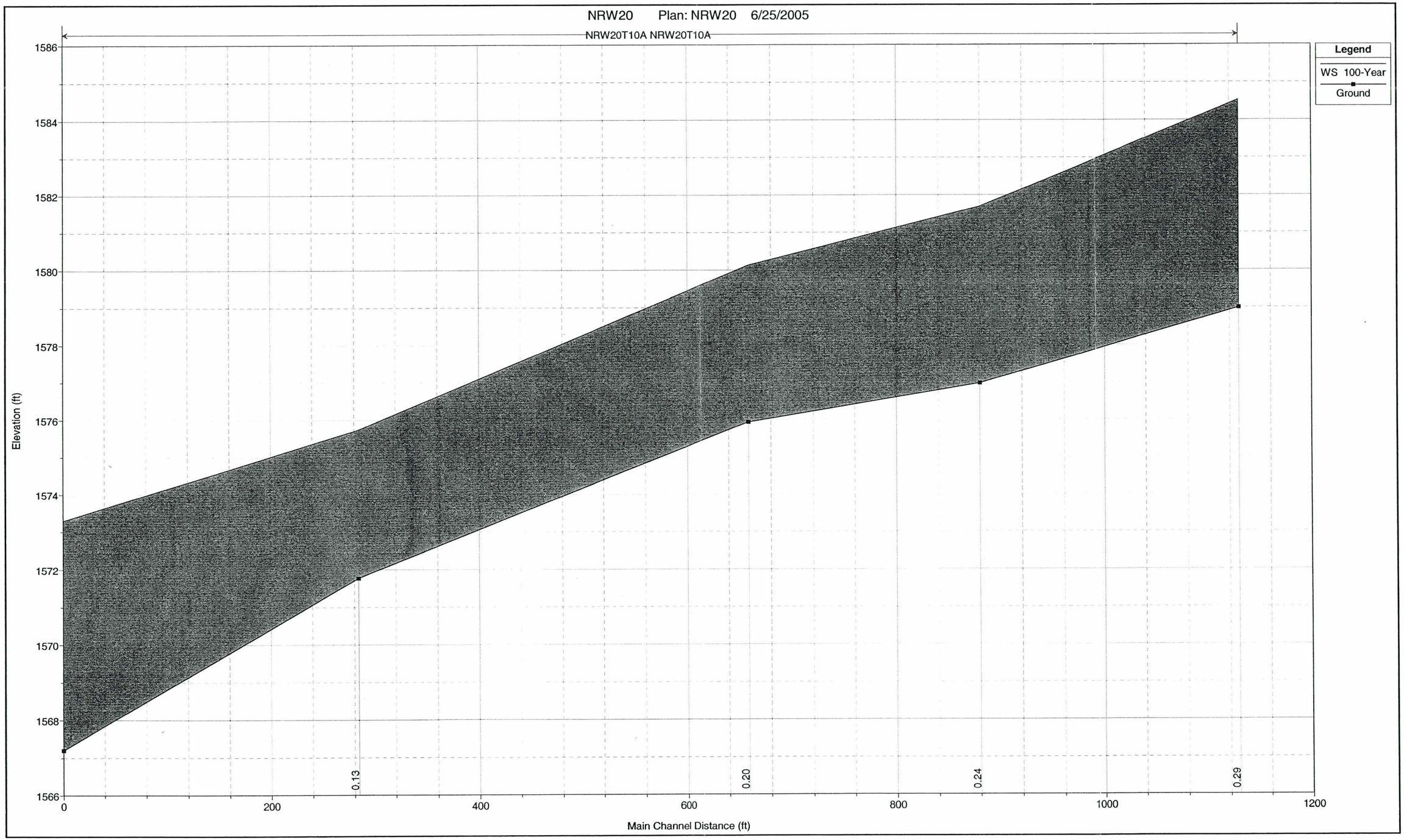

NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.31
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.25
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.19
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.13 CL New River Road Dip Crossing
.016
.016
.016
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

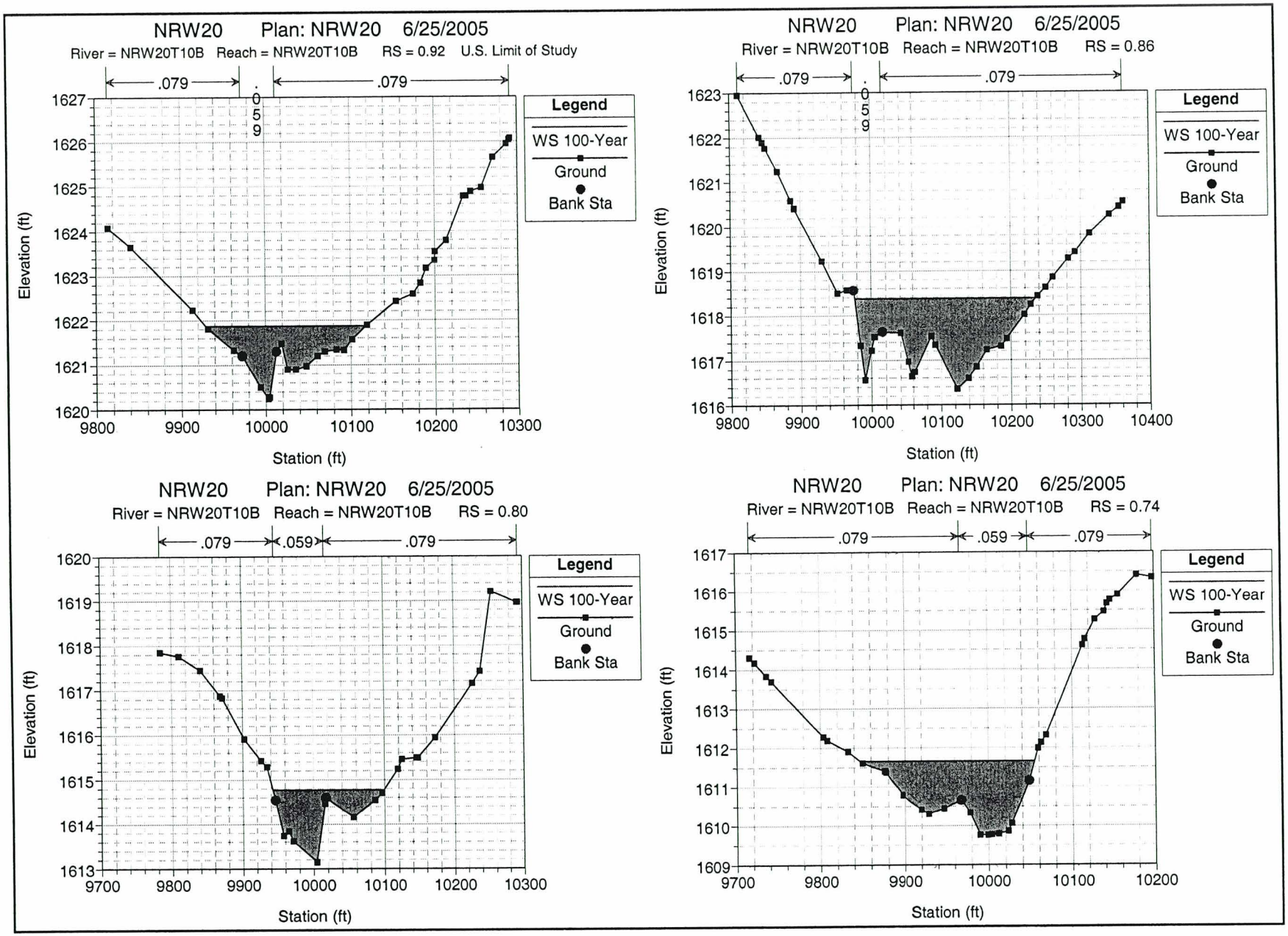

NRW20 Plan: NRW20 6/25/2005
River = NRW20T5 Reach = NRW20T5 RS = 0.07 U.S. of confluence with NRW20T10
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
1596
1594
1592
1590
1588
1586
1584
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)

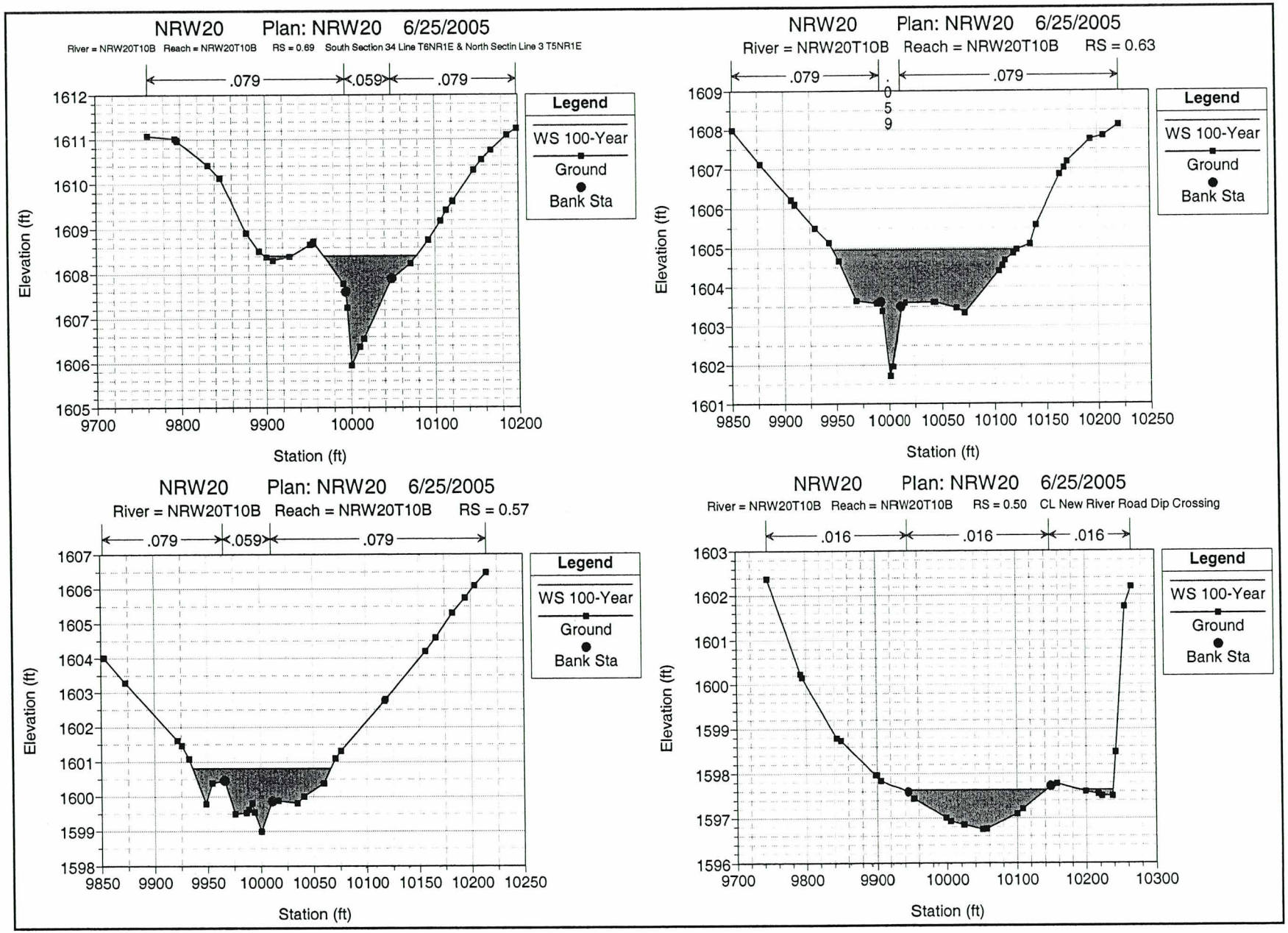

NRW20 Plan: NRW20 6/25/2005
NRW20T5 NRW20T5
Legend
WS 100-Year
Ground
Elevation (ft)
1620
1615
1610
1605
1600
1595
1590
1585
0.13
0.19
0.25
0.31
0.38
0.44
0.50
0.57
0
500
1000
1500
2000
2500
3000
Main Channel Distance (ft)

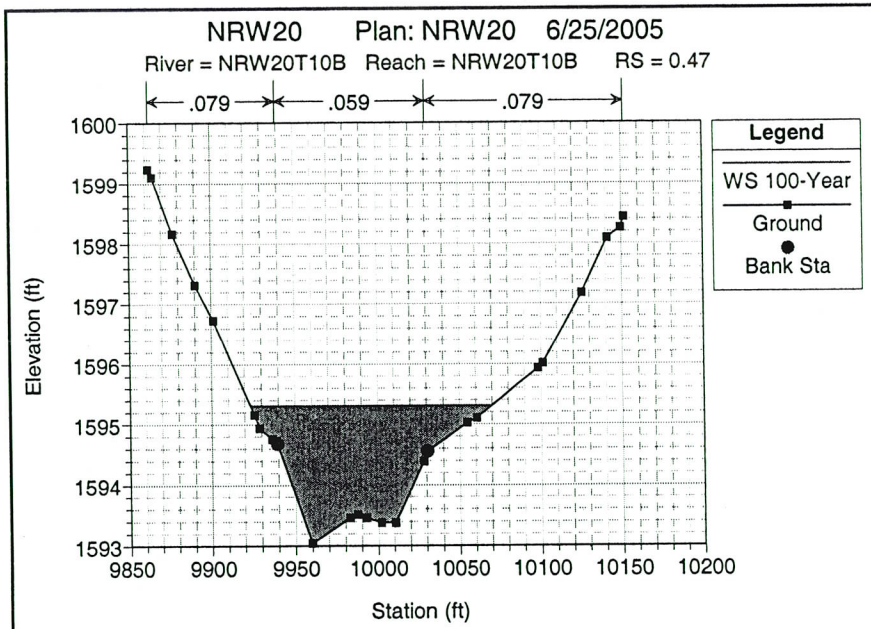

NRW20 Plan: NRW20 6/25/2005
River = NRW20T10A Reach = NRW20T10A RS = 0.29 D.S. of confluence with NRW20T5
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10A Reach = NRW20T10A RS = 0.24
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10A Reach = NRW20T10A RS = 0.20
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10A Reach = NRW20T10A RS = 0.13
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

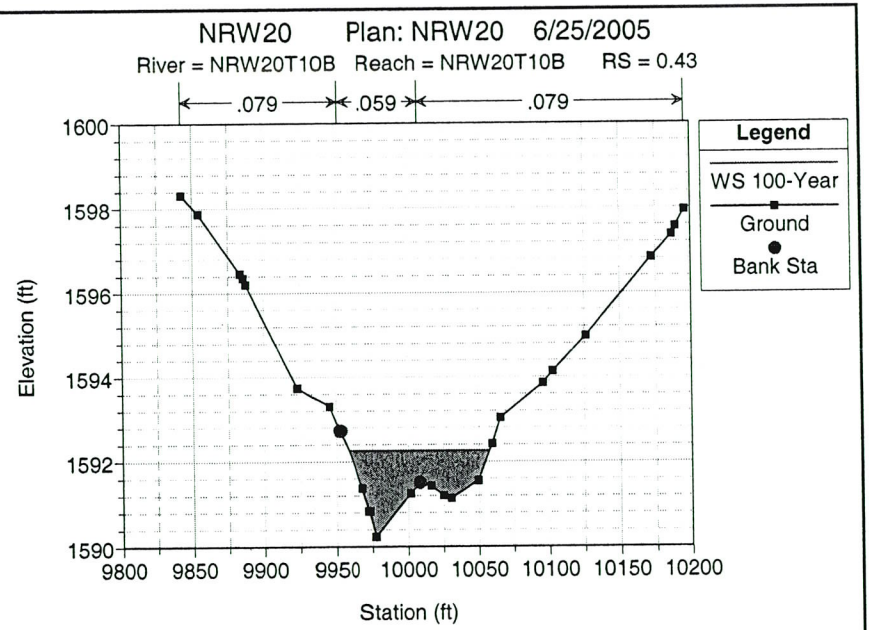

NRW20 Plan: NRW20 6/25/2005
River = NRW20T10A Reach = NRW20T10A RS = 0.08 U.S. of confluence with NRW20
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
1590
1585
1580
1575
1570
1565
9600
9700
9800
9900
10000
10100
10200
Station (ft)

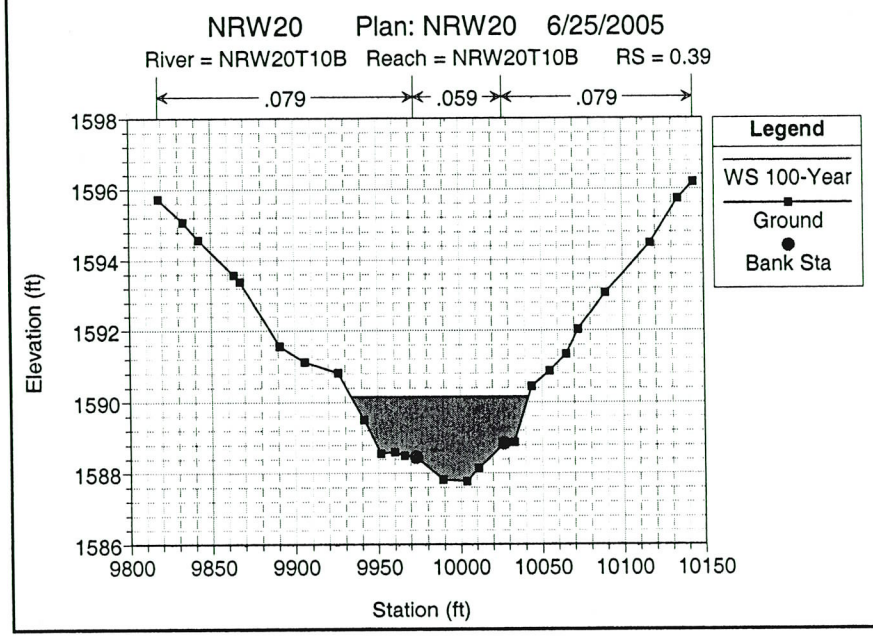

NRW20 Plan: NRW20 6/25/2005
NRW20T10A NRW20T10A
Legend
WS 100-Year
Ground
Elevation (ft)
1586
1584
1582
1580
1578
1576
1574
1572
1570
1568
1566
0.13
0.20
0.24
0.29
0
200
400
600
800
1000
1200
Main Channel Distance (ft)

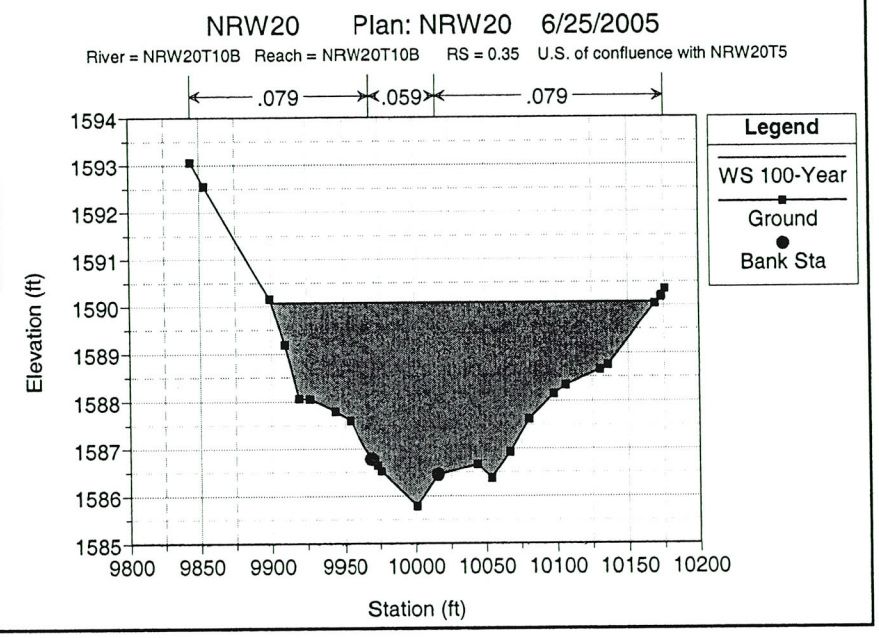

NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.92 U.S. Limit of Study
.079
.059
.079
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.86
.079
.059
.079
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.80
.079
.059
.079
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.74
.079
.059
.079
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta

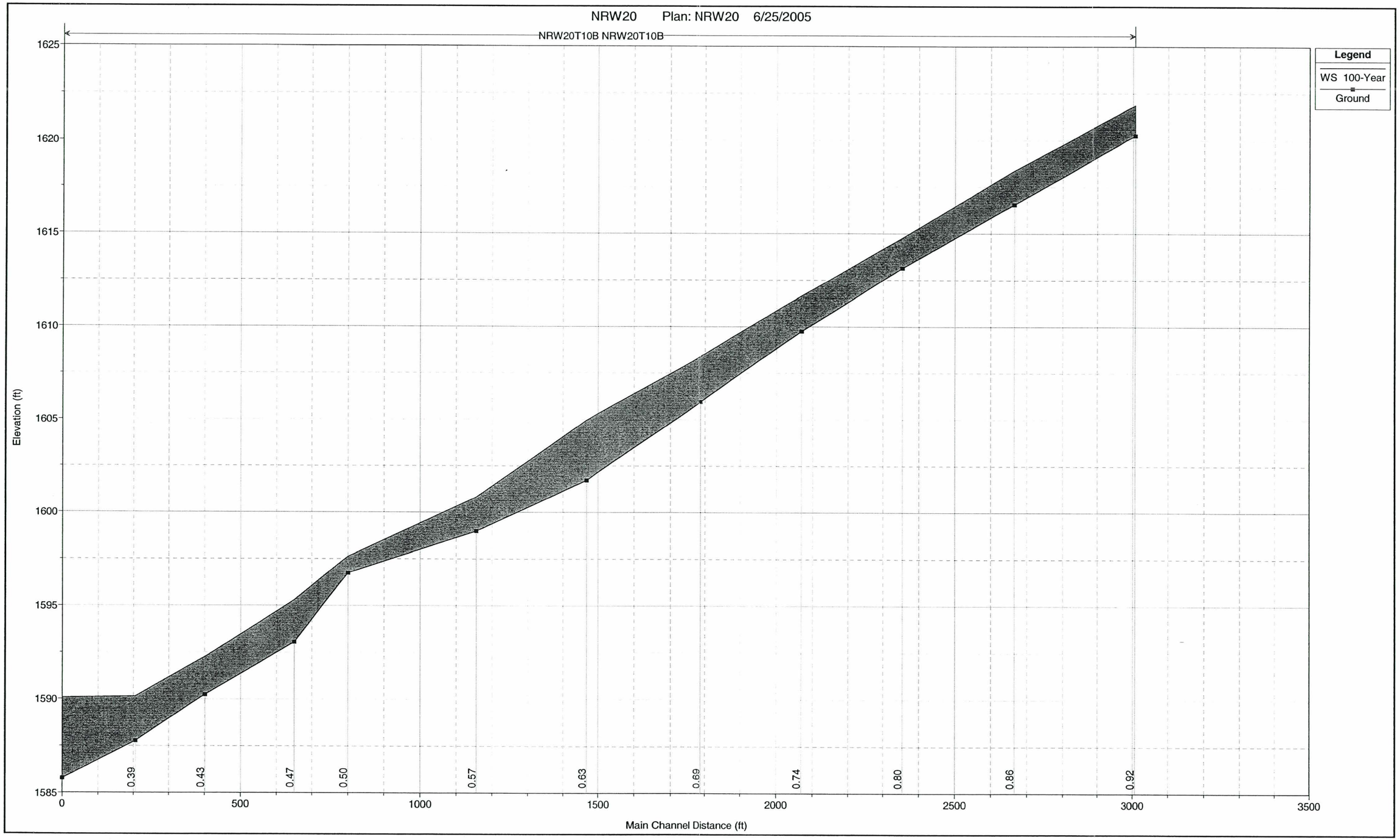

NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.69 South Section 34 Line T6NR1E & North Sectin Line 3 T5NR1E
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.63
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.57
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.50 CL New River Road Dip Crossing
.016
.016
.016
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.47
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.43
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

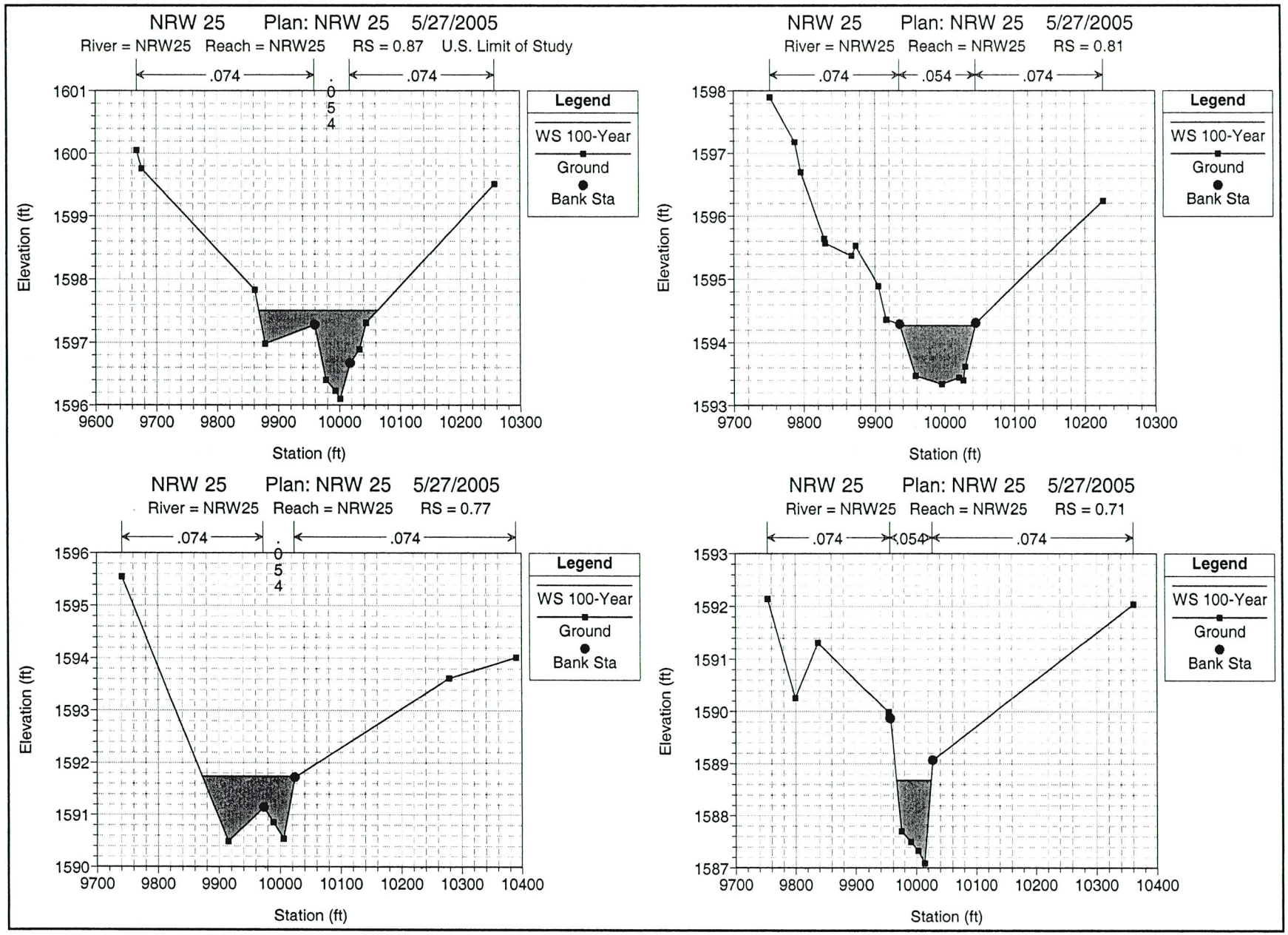

NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.39
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

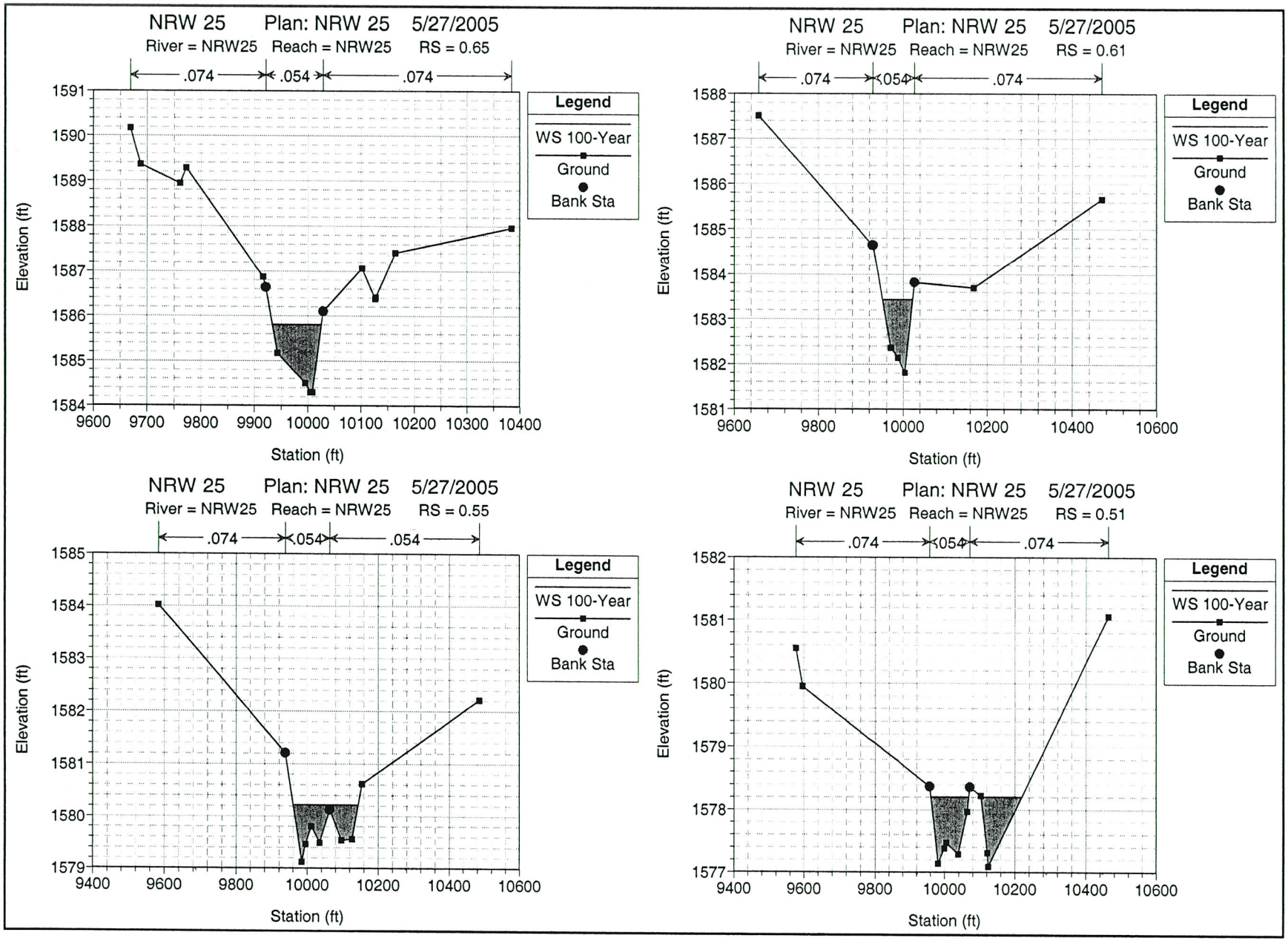

NRW20 Plan: NRW20 6/25/2005
River = NRW20T10B Reach = NRW20T10B RS = 0.35 U.S. of confluence with NRW20T5
.079
.059
.079
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

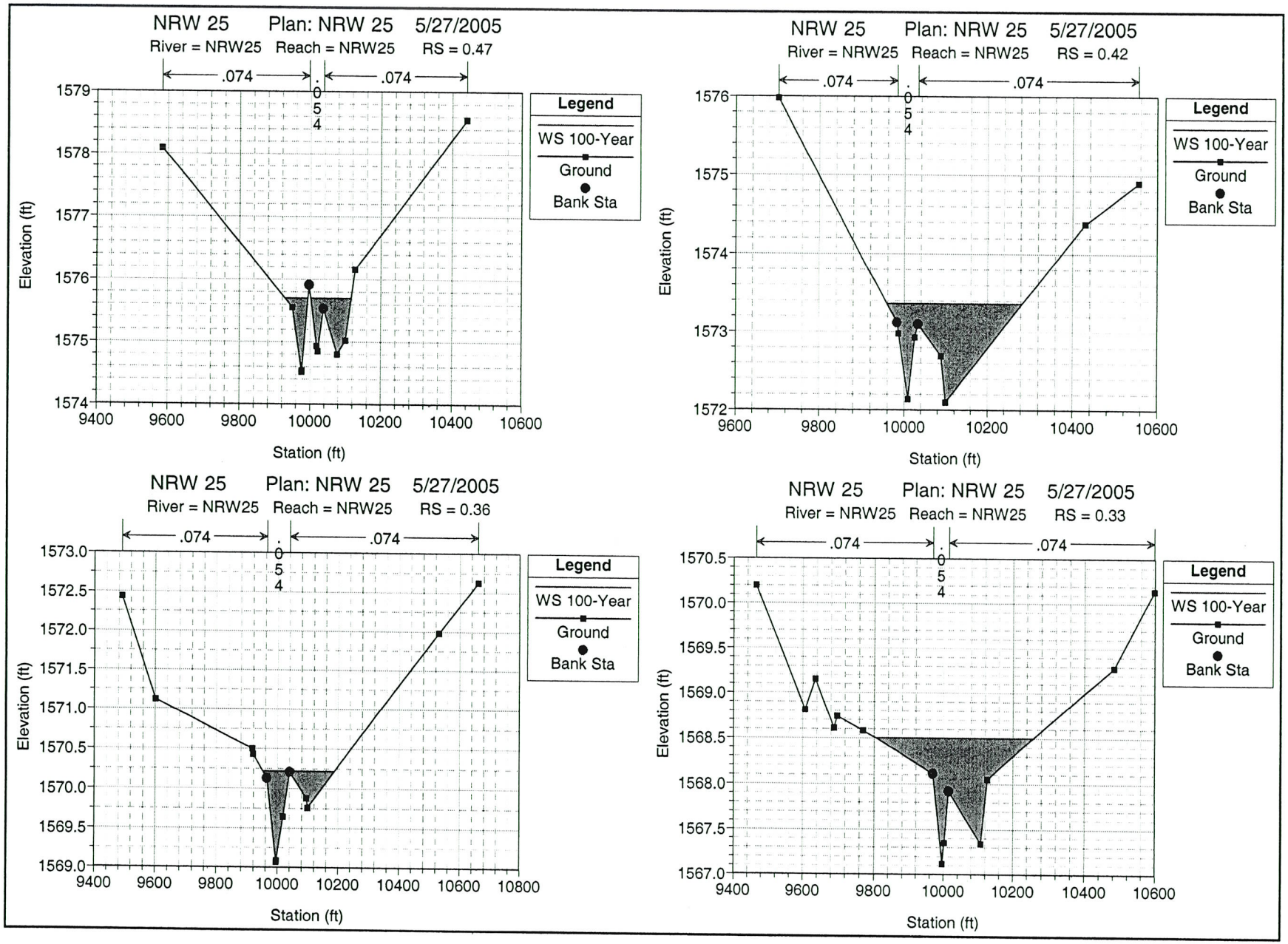

NRW20 Plan: NRW20 6/25/2005
NRW20T10B NRW20T10B
Legend
WS 100-Year
Ground
Elevation (ft)
1625
1620
1615
1610
1605
1600
1595
1590
1585
0.39
0.43
0.47
0.50
0.57
0.63
0.69
0.74
0.80
0.86
0.92
0
500
1000
1500
2000
2500
3000
3500
Main Channel Distance (ft)

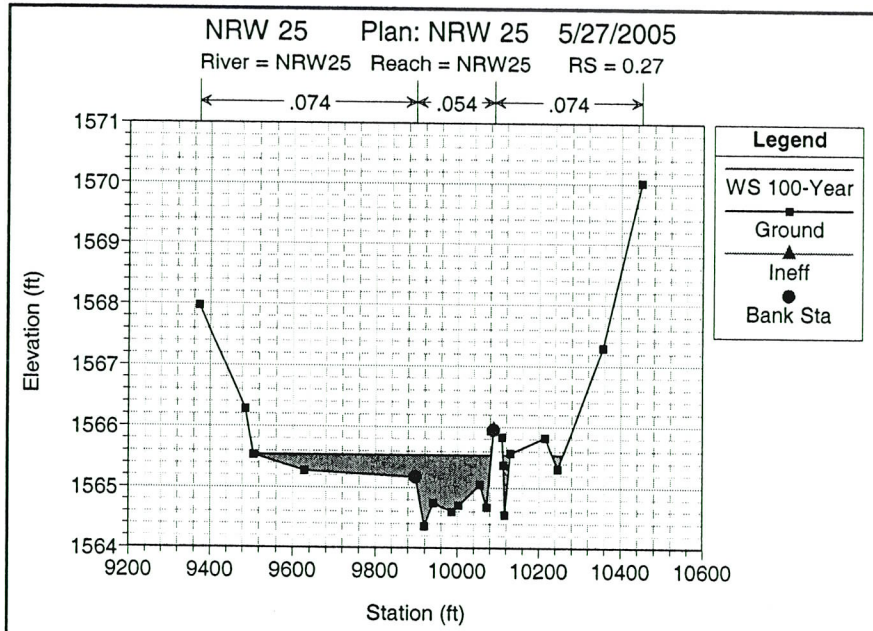
NRW 25

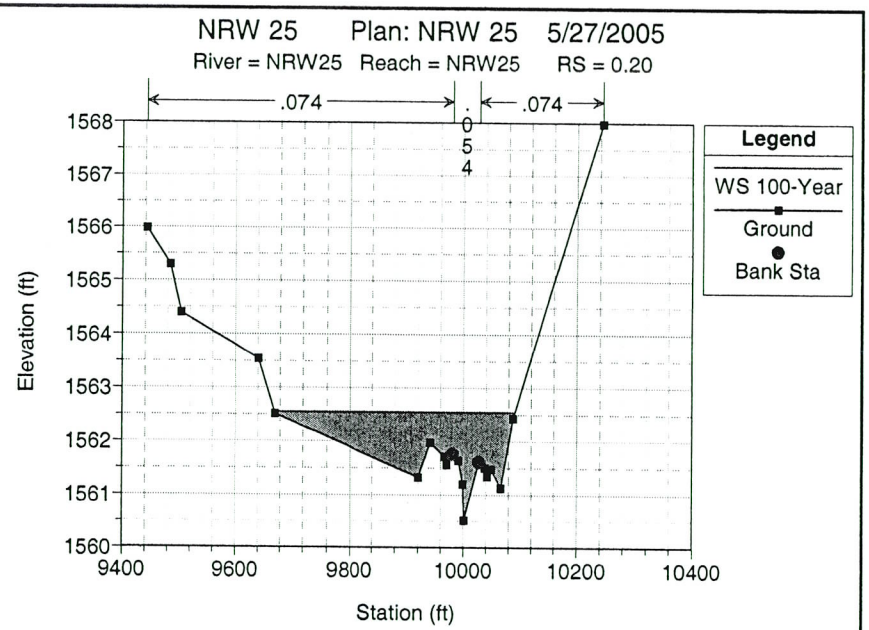
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

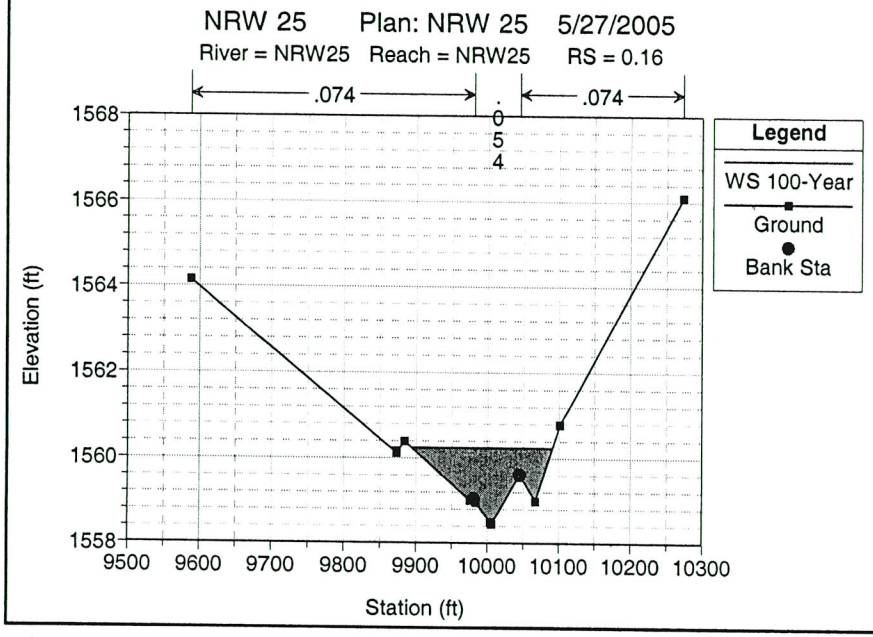

NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.87 U.S. Limit of Study
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.81
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.77
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.71
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

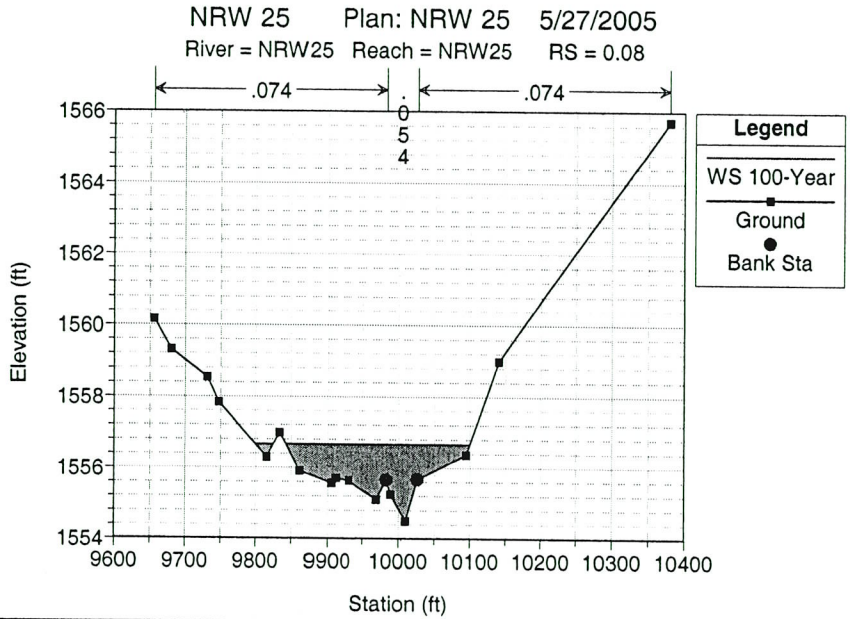

NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.65
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.61
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.55
.074 .054 .054
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.51
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

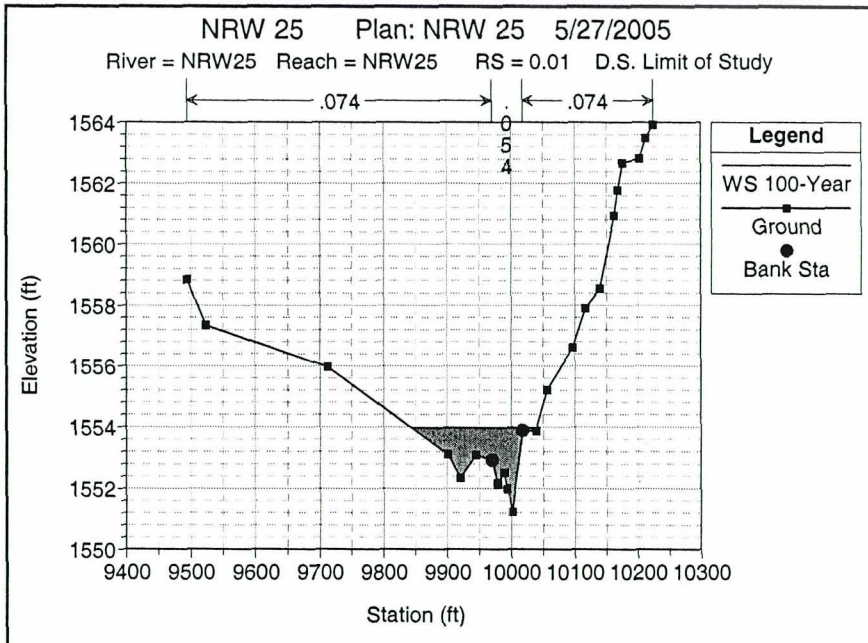

NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.47
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.42
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.36
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.33
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

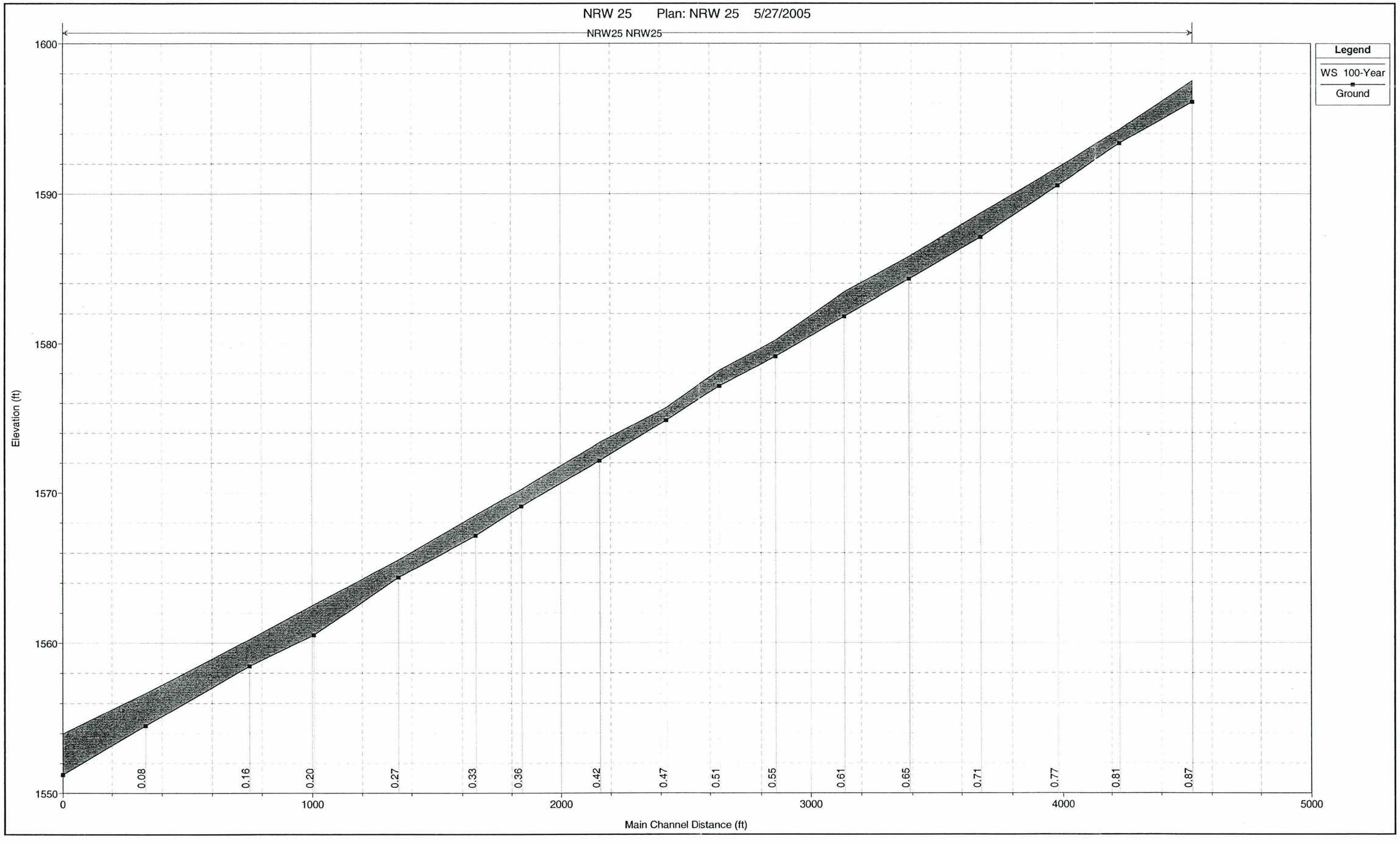

NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.27
.074
.054
.074
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.20
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.16
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

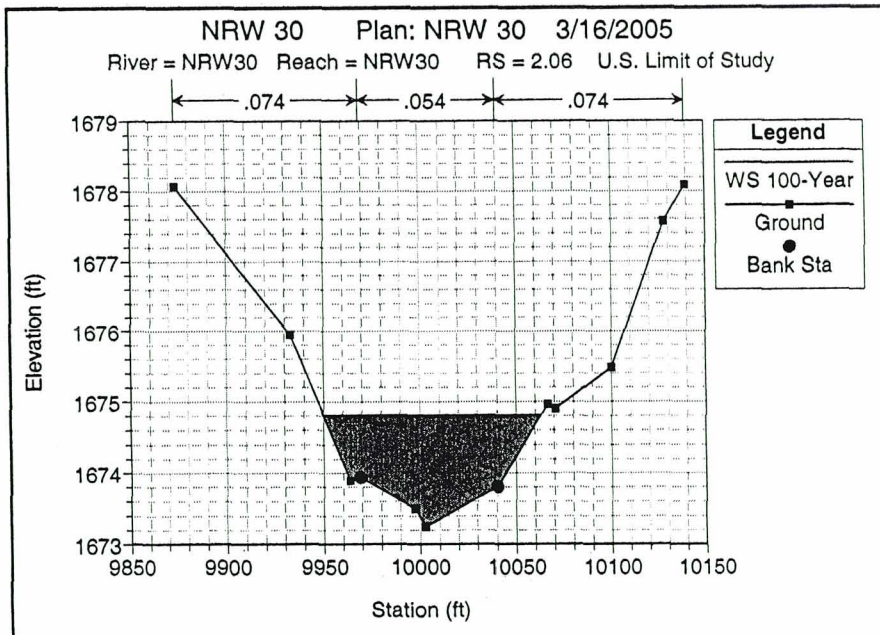

NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.08
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

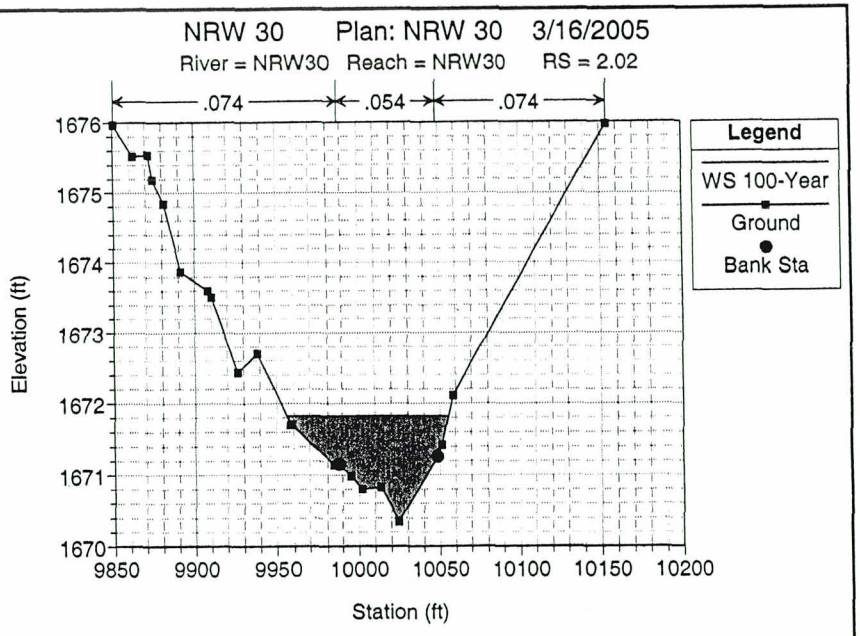

NRW 25 Plan: NRW 25 5/27/2005
River = NRW25 Reach = NRW25 RS = 0.01 D.S. Limit of Study
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
1564
1562
1560
1558
1556
1554
1552
1550
9400 9500 9600 9700 9800 9900 10000 10100 10200 10300
Station (ft)

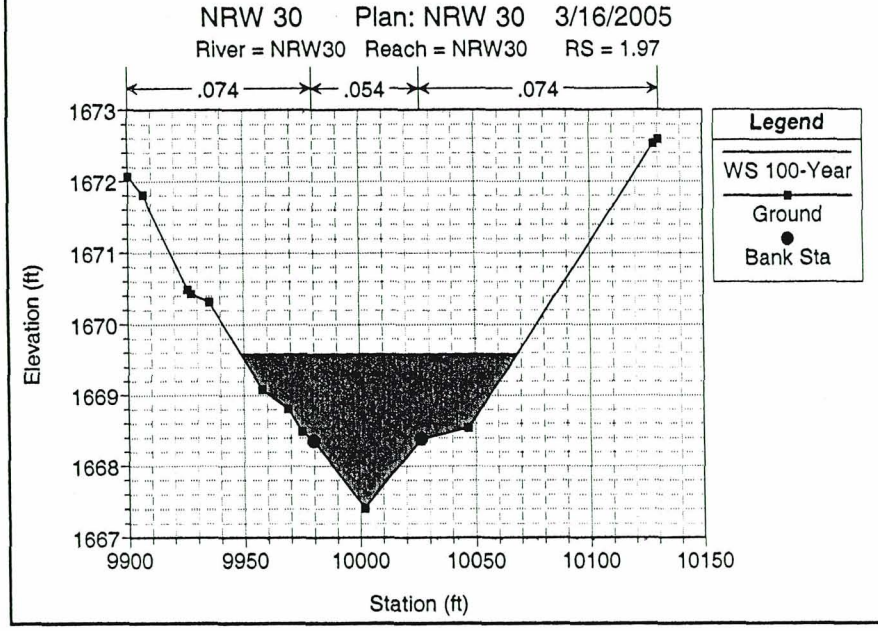

NRW 25 Plan: NRW 25 5/27/2005
NRW25 NRW25
Legend
WS 100-Year
Ground
Elevation (ft)
1600
1590
1580
1570
1560
1550
0.08
0.16
0.20
0.27
0.33
0.36
0.42
0.47
0.51
0.55
0.61
0.65
0.71
0.77
0.81
0.87
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)

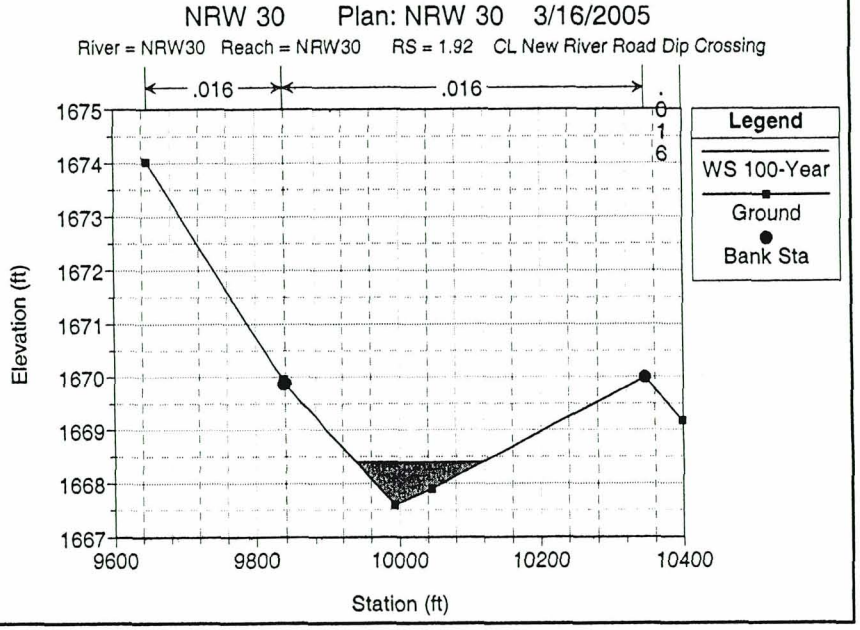
NRW 30

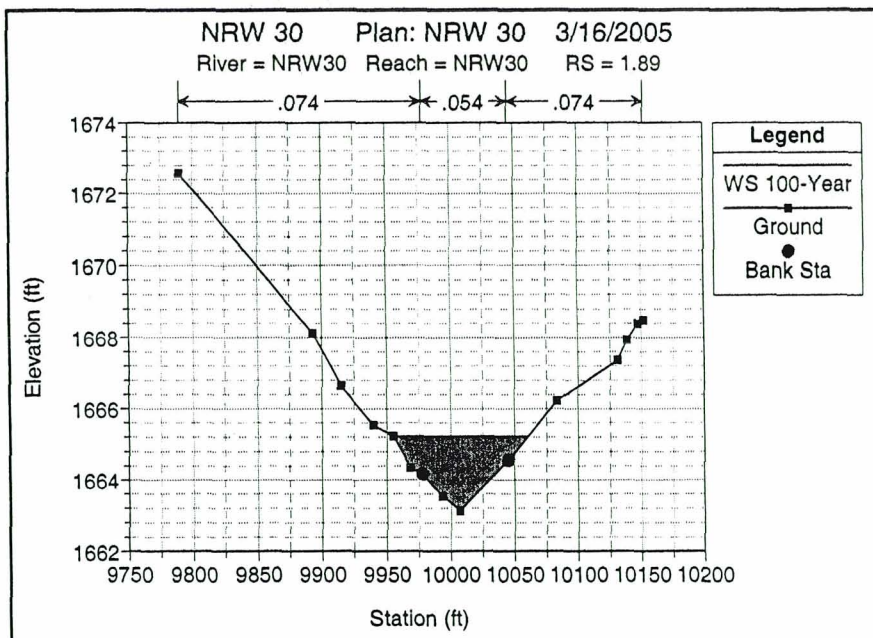
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

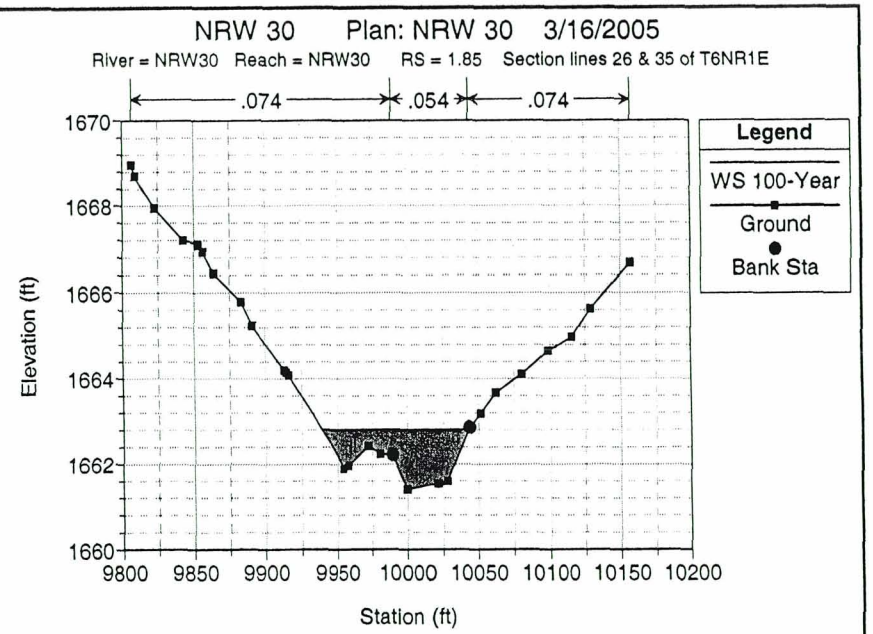

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 2.06 U.S. Limit of Study
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

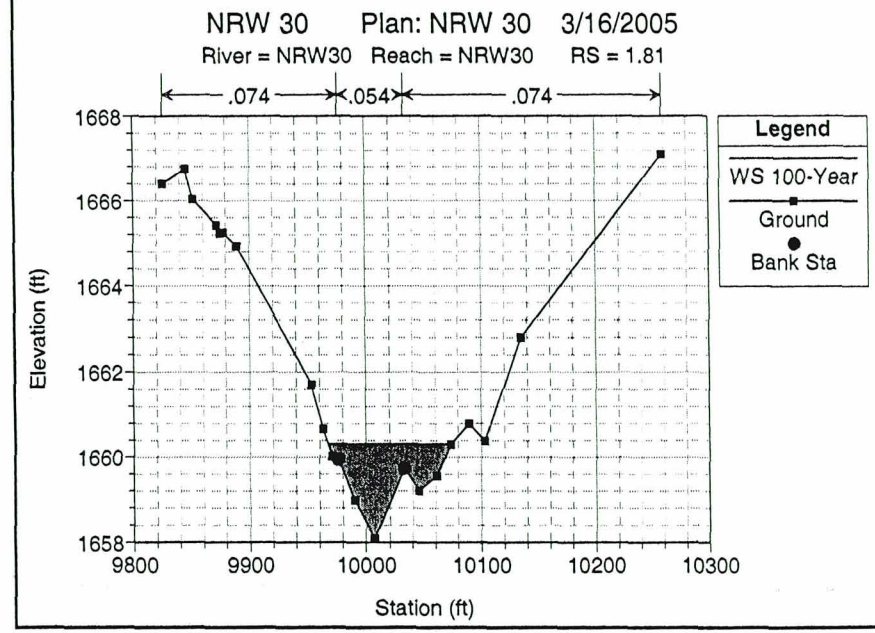

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 2.02
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

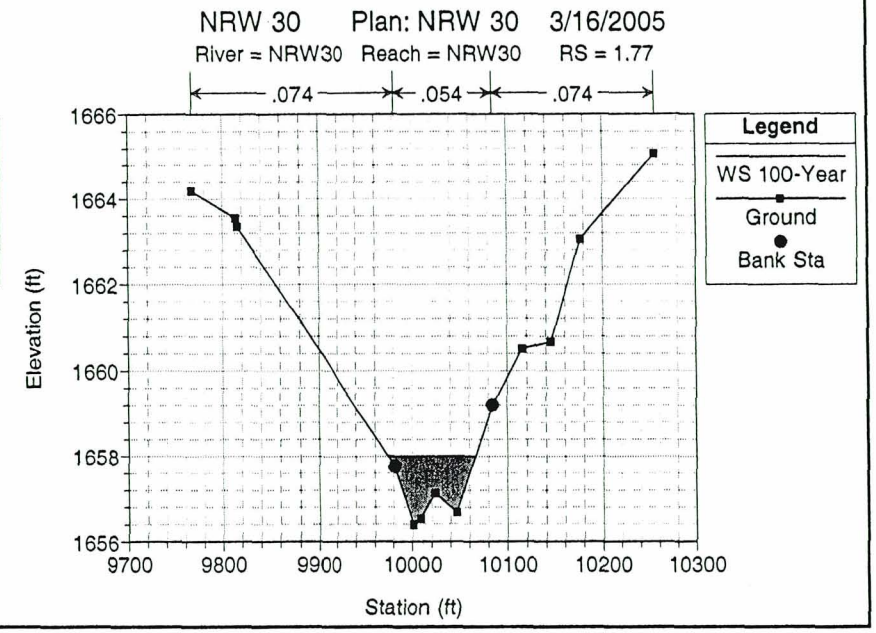

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.97
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

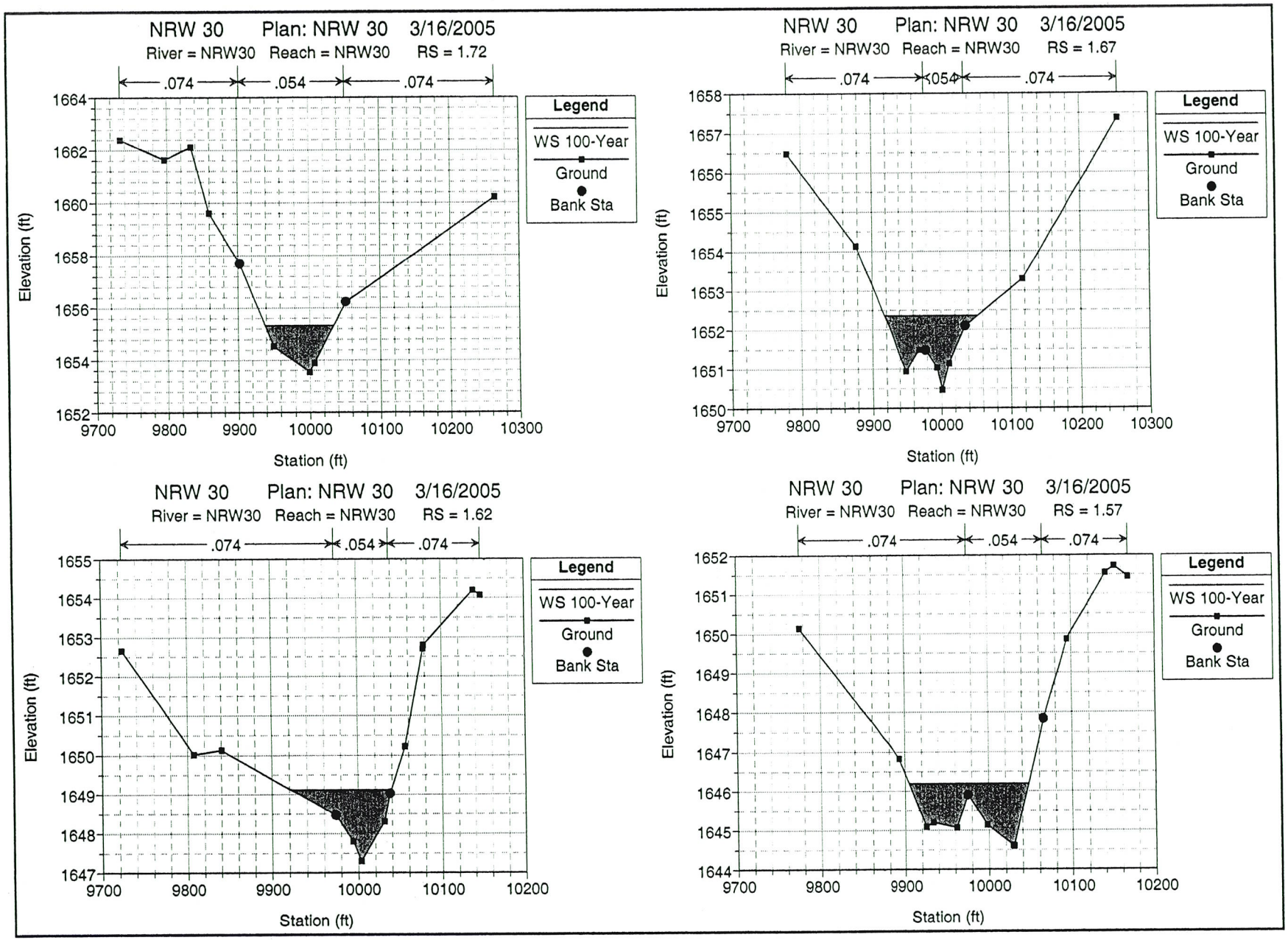

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.92 CL New River Road Dip Crossing
.016
.016
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

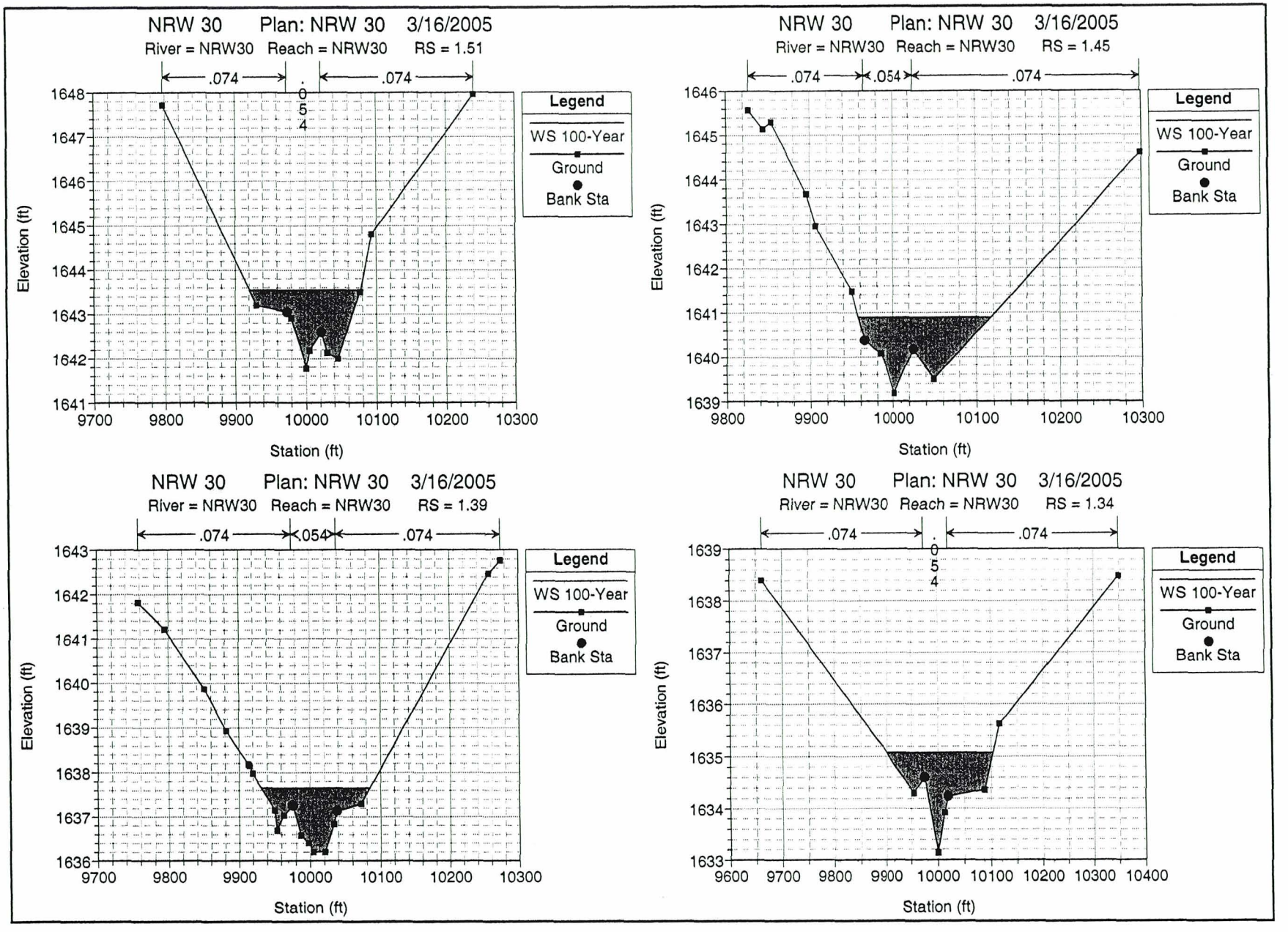

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.89
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

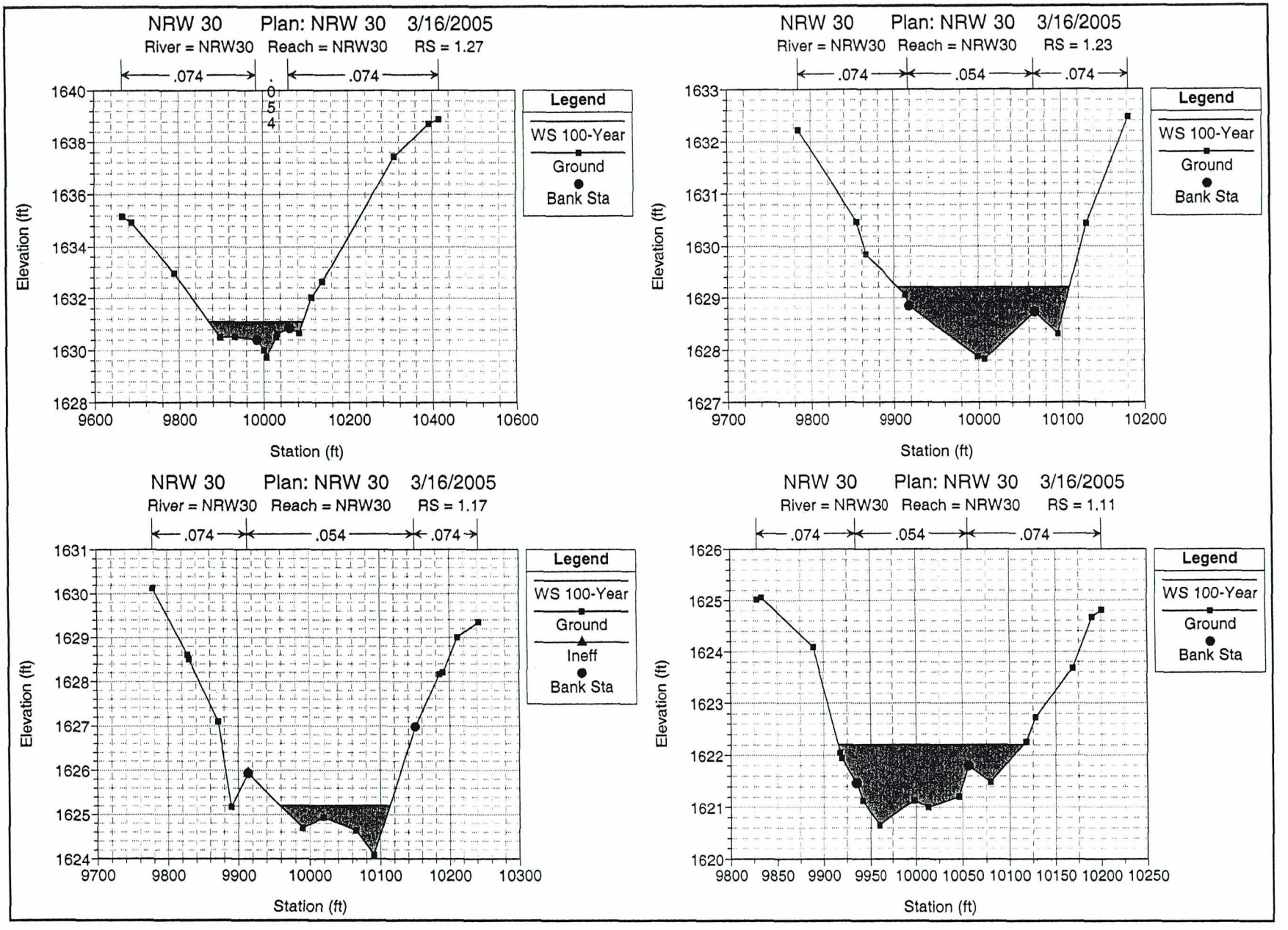

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.85 Section lines 26 & 35 of T6NR1E
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

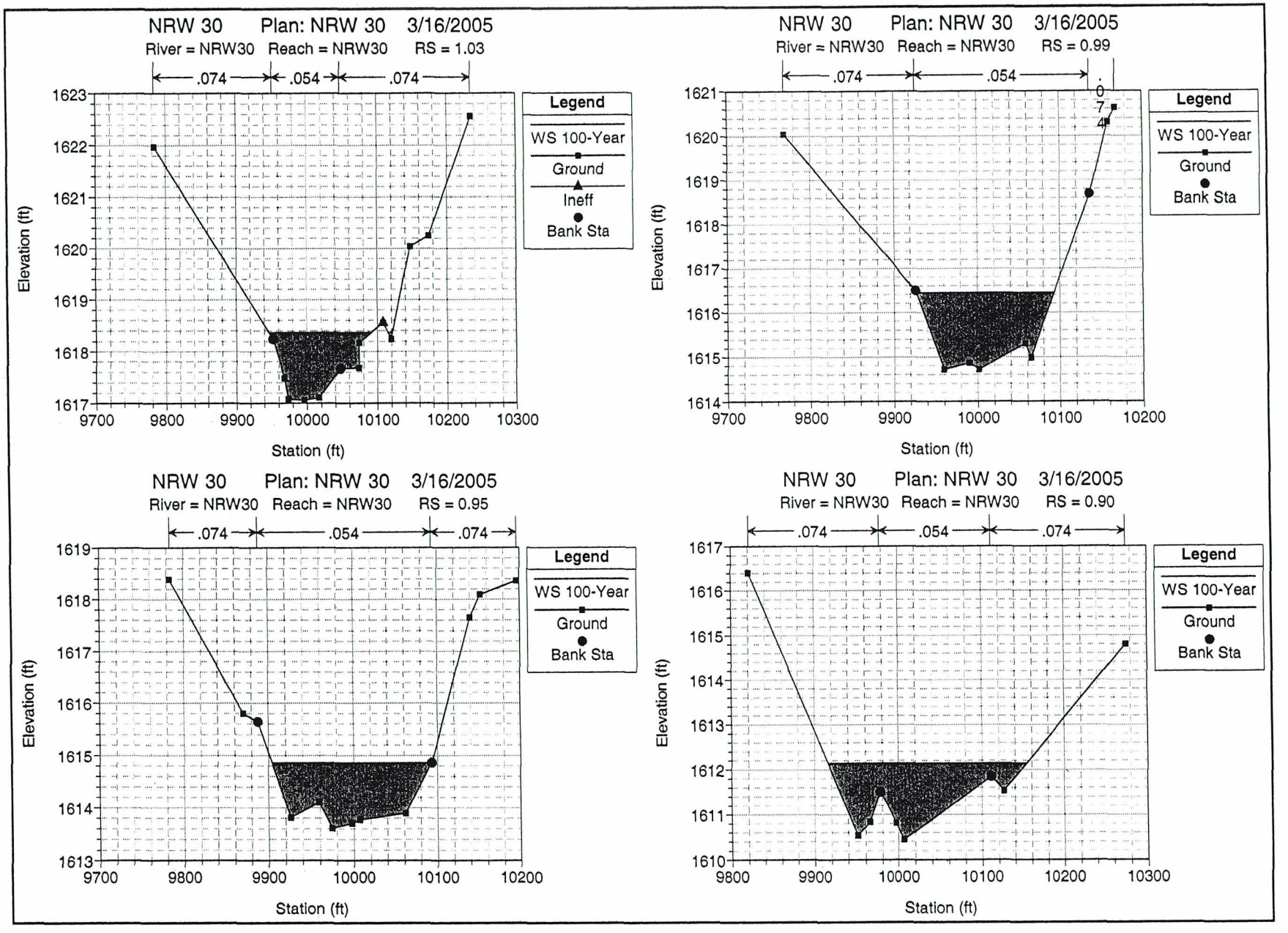

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.81
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

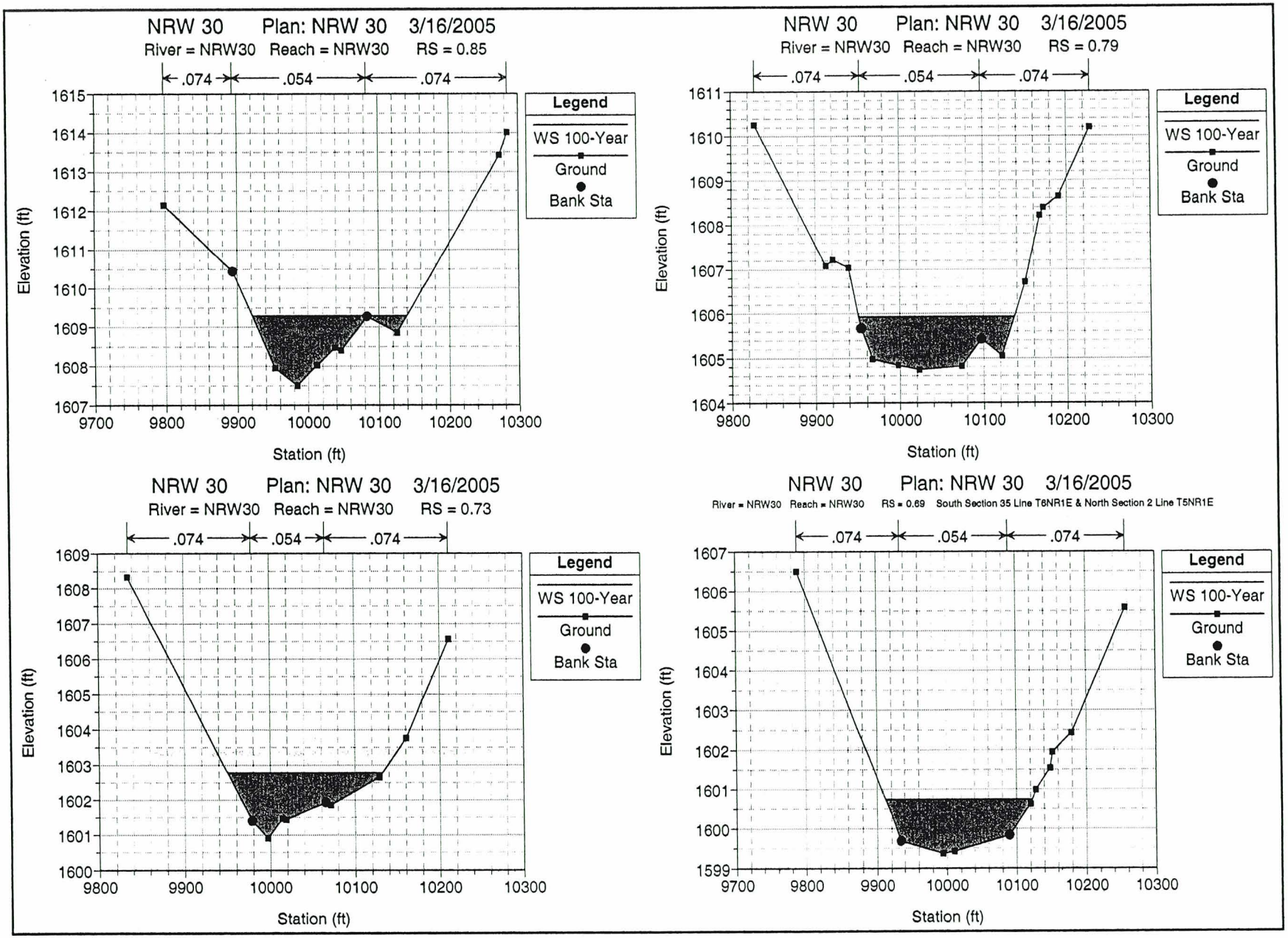

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.77
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

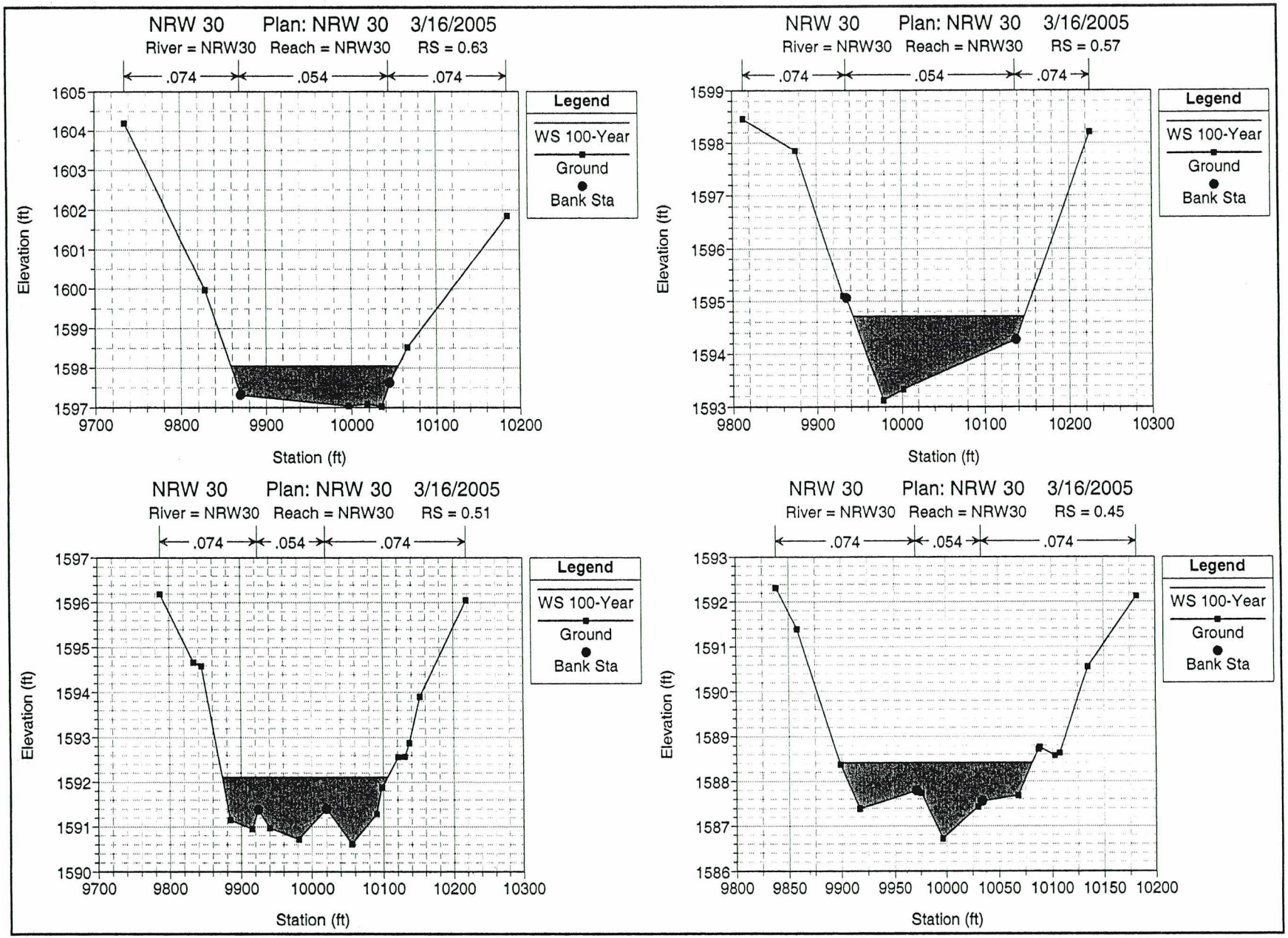

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.72
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.67
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.62
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.57
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

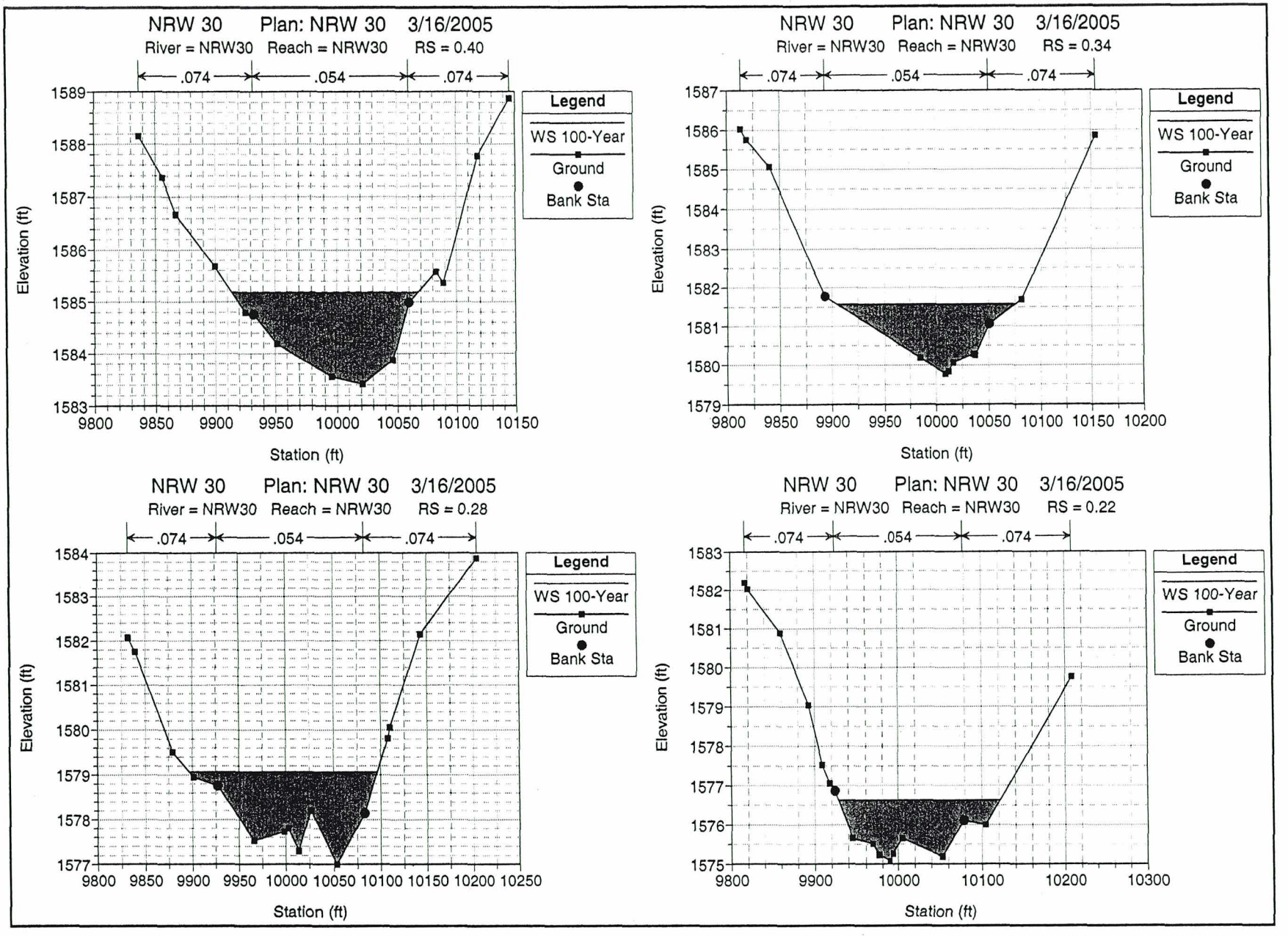

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.51
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.45
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.39
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.34
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

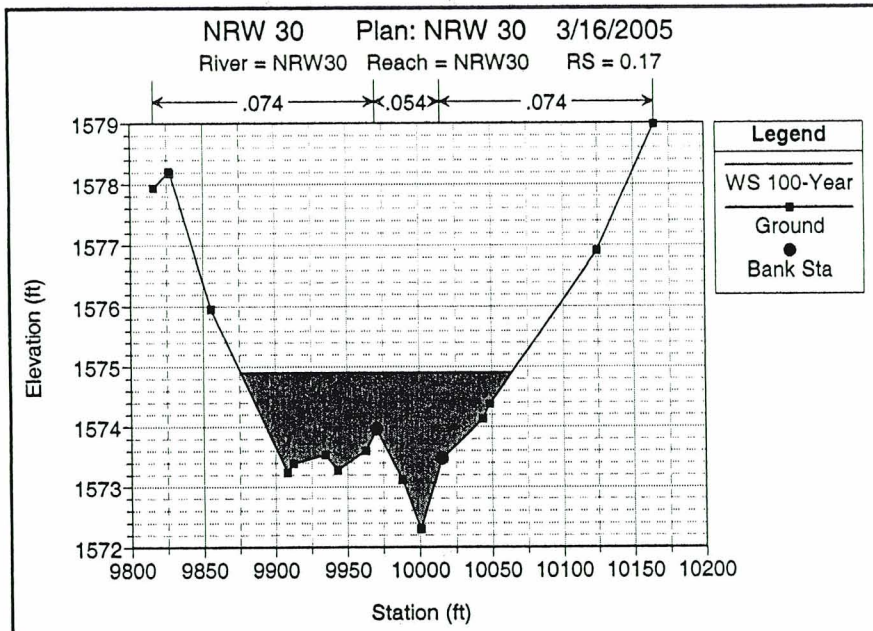

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.27
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.23
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.17
.074
.054
.074
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.11
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

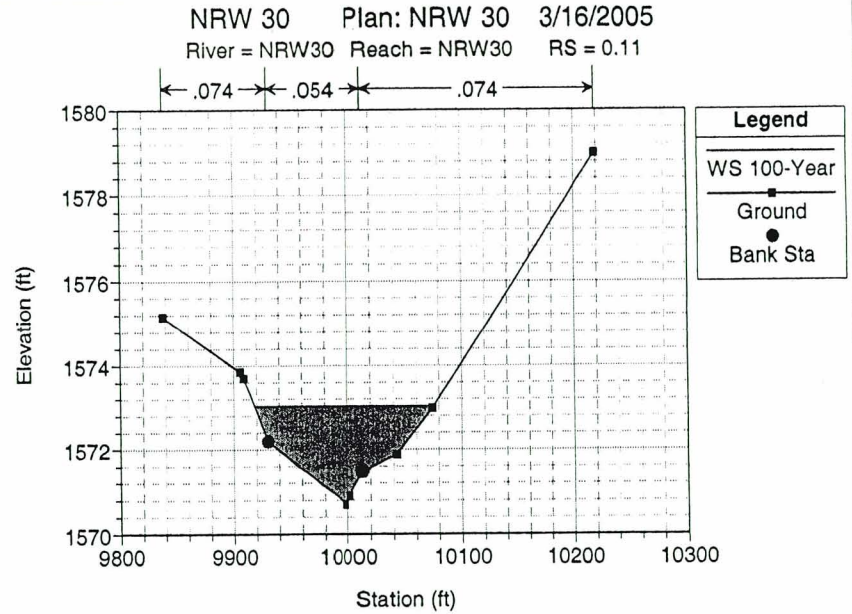

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 1.03
.074 .054 .074
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.99
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.95
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.90
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

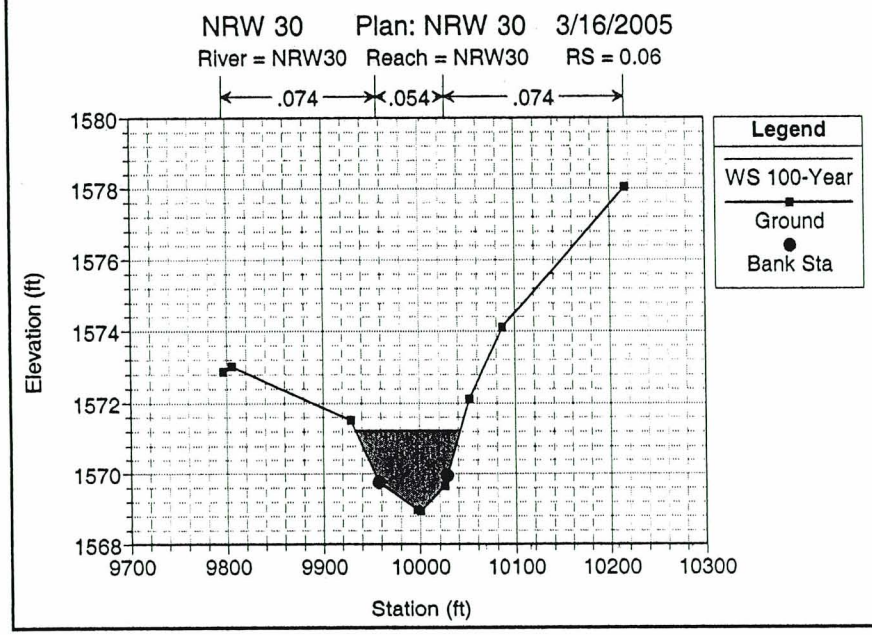

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.85
.074 .054 .074
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.79
.074 .054 .074
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.73
.074 .054 .074
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.69 South Section 35 Line T6NR1E & North Section 2 Line T5NR1E
.074 .054 .074
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta

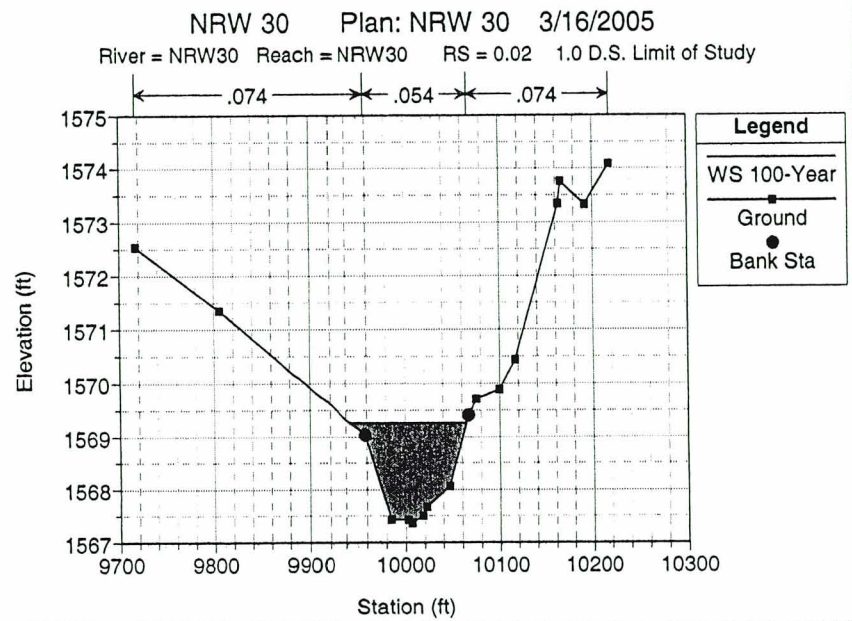

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.63
.074 .054 .074
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.57
.074 .054 .074
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.51
.074 .054 .074
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.45
.074 .054 .074
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta

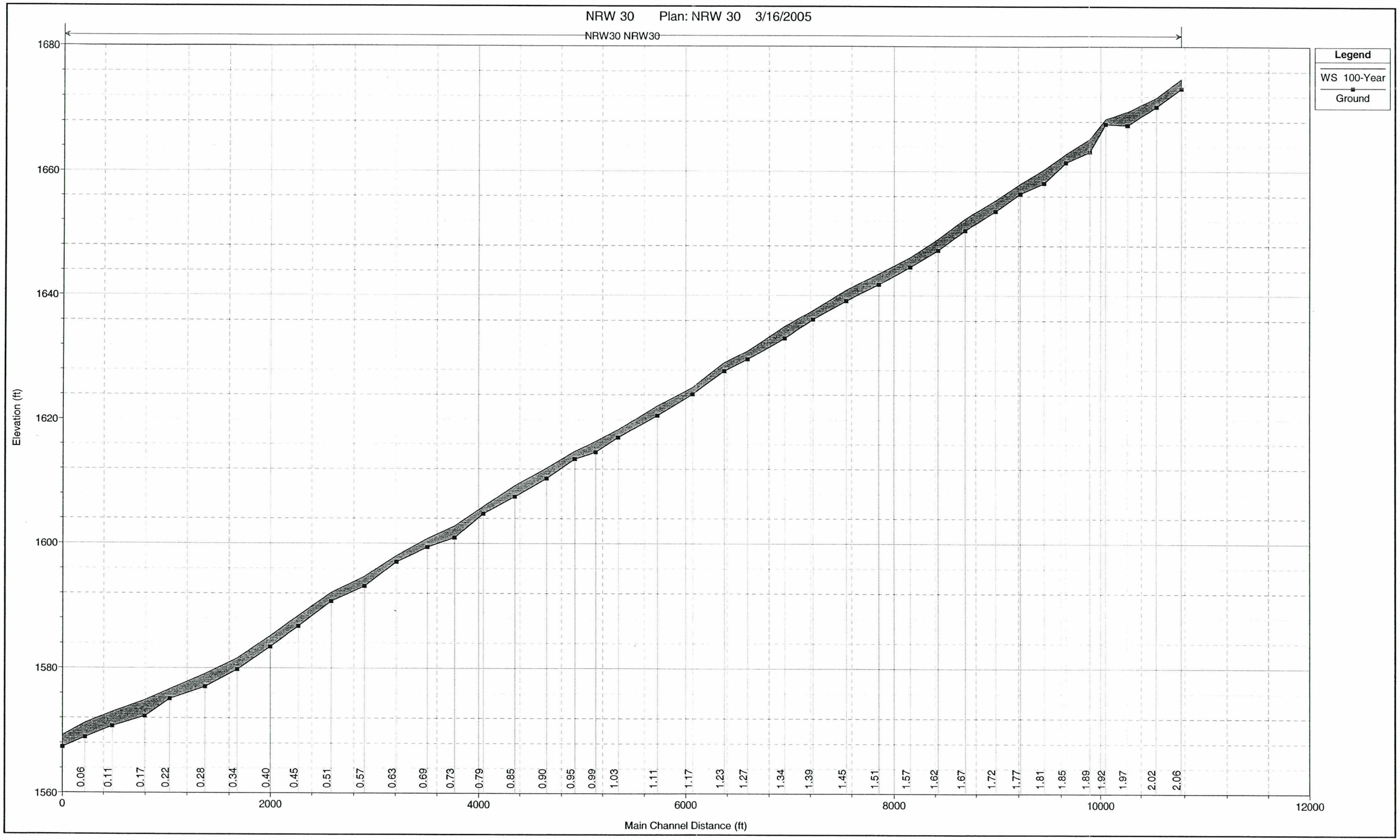

NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.40
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.34
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.28
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.22
.074 .054 .074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.17
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.11
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.06
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 30 Plan: NRW 30 3/16/2005
River = NRW30 Reach = NRW30 RS = 0.02 1.0 D.S. Limit of Study
.074
.054
.074
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 30 Plan: NRW 30 3/16/2005
NRW30 NRW30
Legend
WS 100-Year
Ground
Elevation (ft)
1680
1660
1640
1620
1600
1580
1560
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)
0.06
0.11
0.17
0.22
0.28
0.34
0.40
0.45
0.51
0.57
0.63
0.69
0.73
0.79
0.85
0.90
0.95
0.99
1.03
1.11
1.17
1.23
1.27
1.34
1.39
1.45
1.51
1.57
1.62
1.67
1.72
1.77
1.81
1.85
1.89
1.92
1.97
2.02
2.06

NRW 35

URS Corporation
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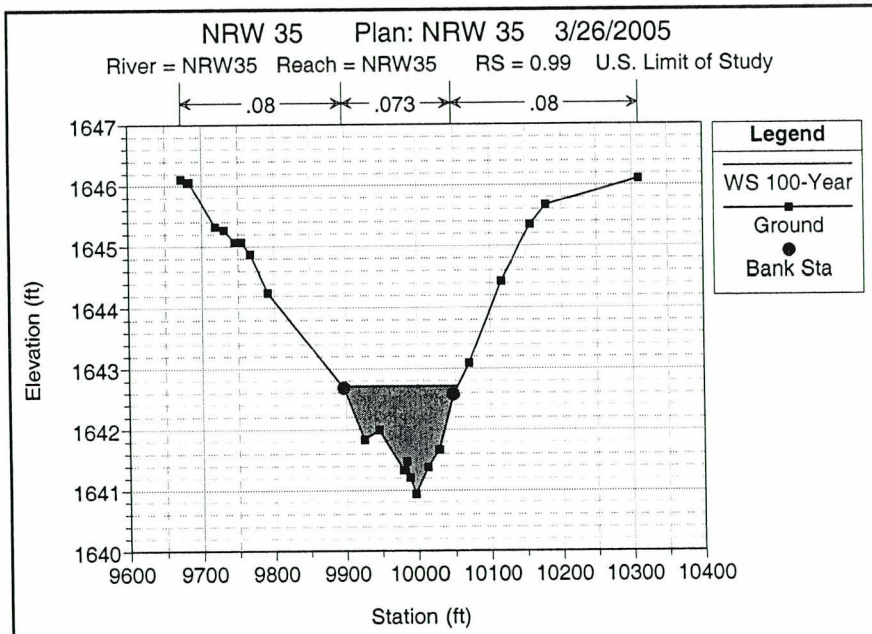
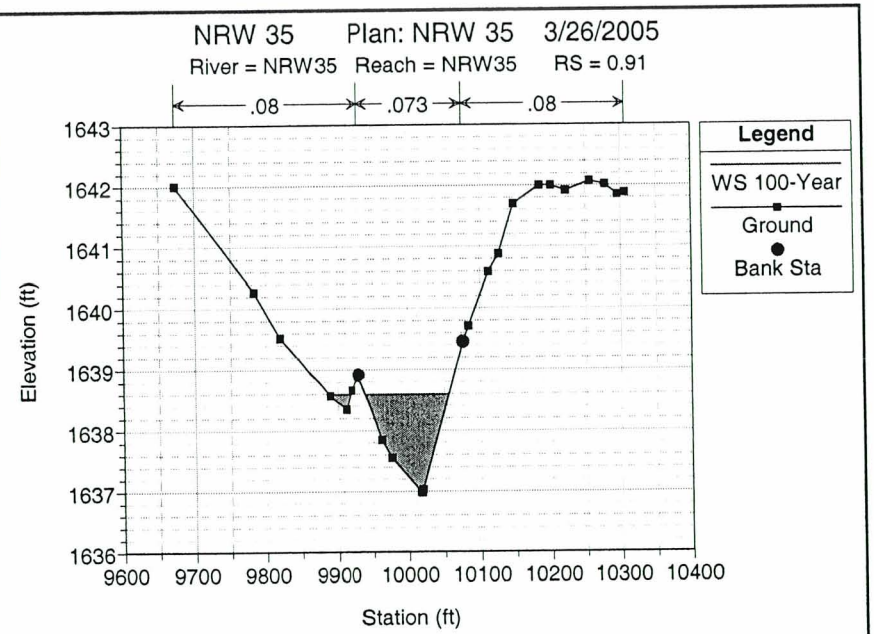
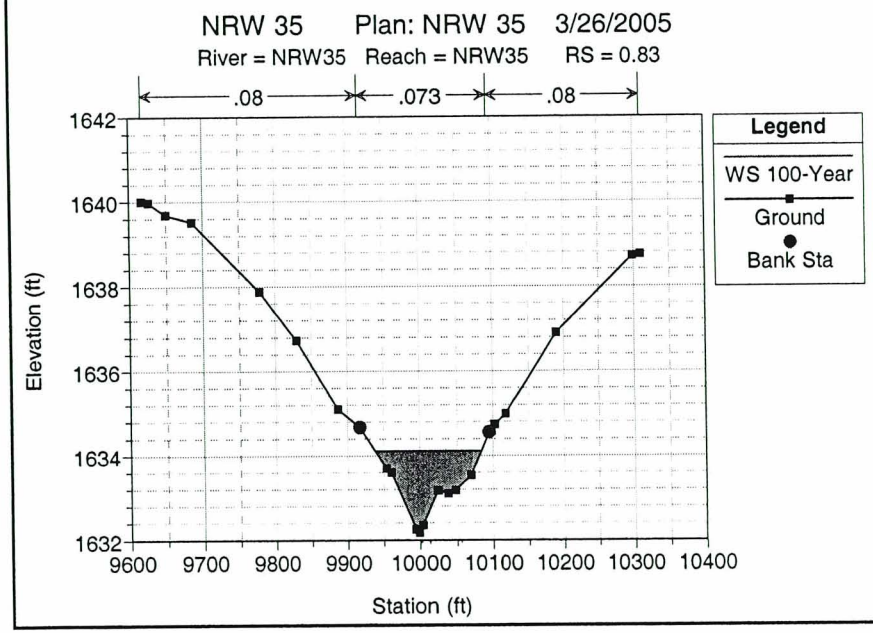
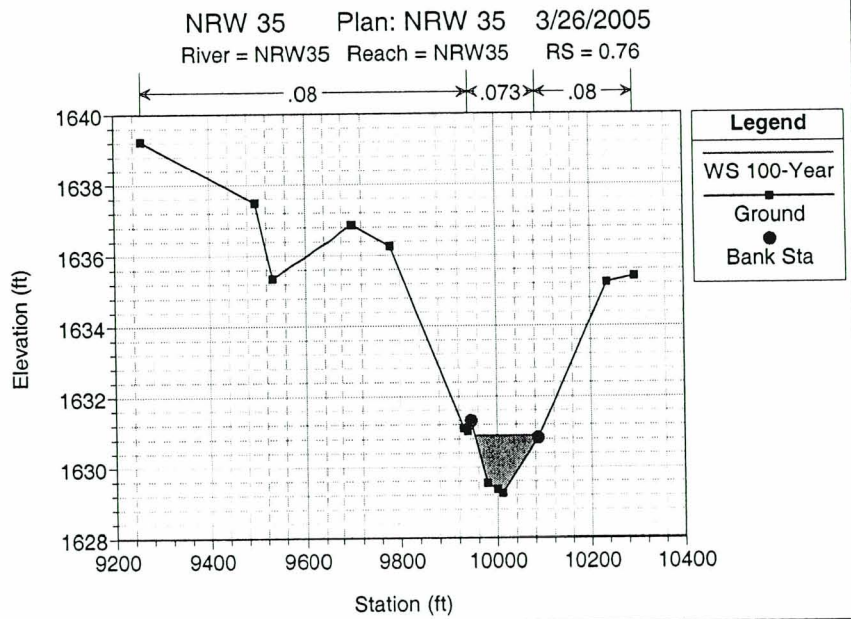
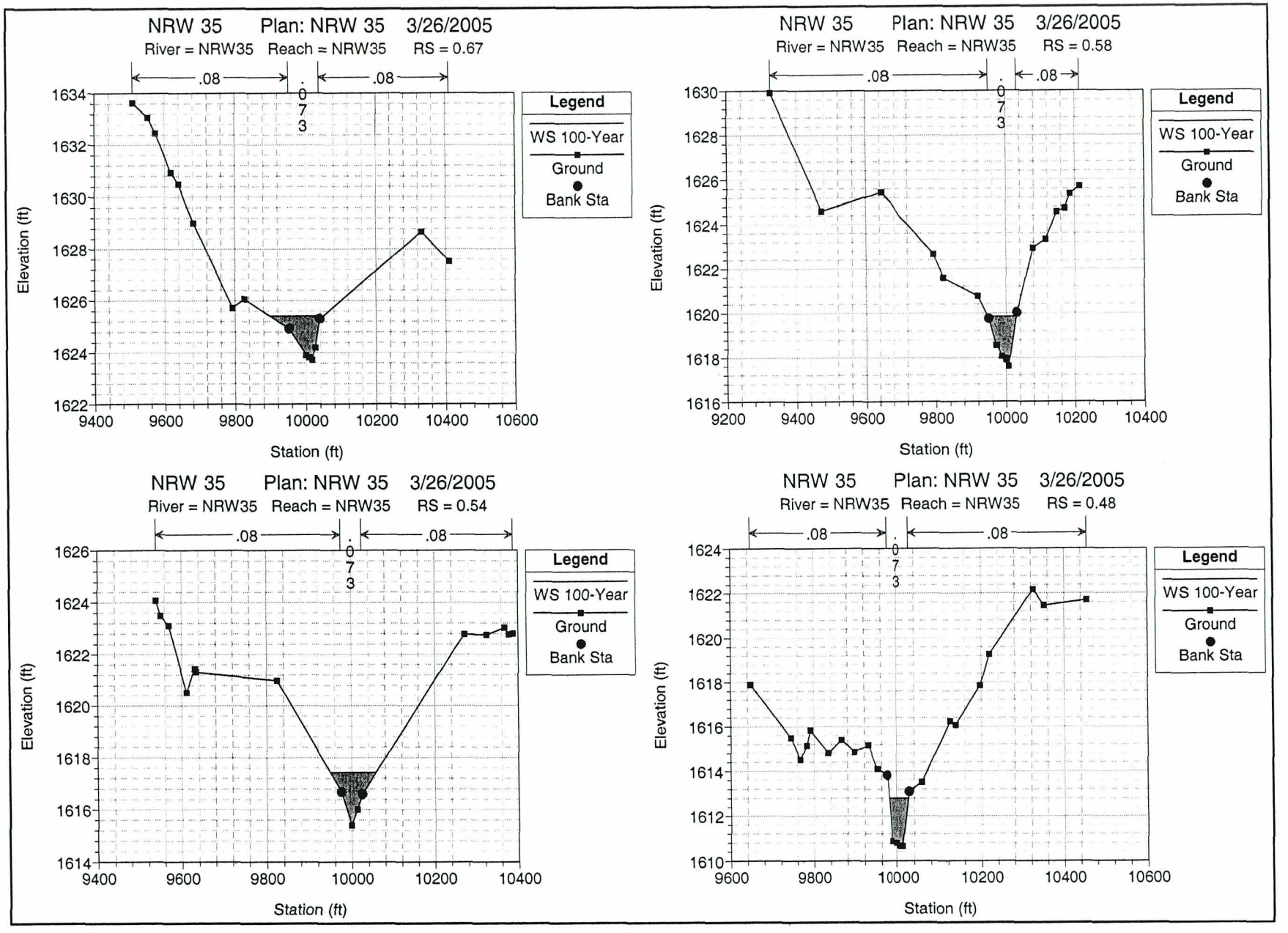
FCD 2003 C057

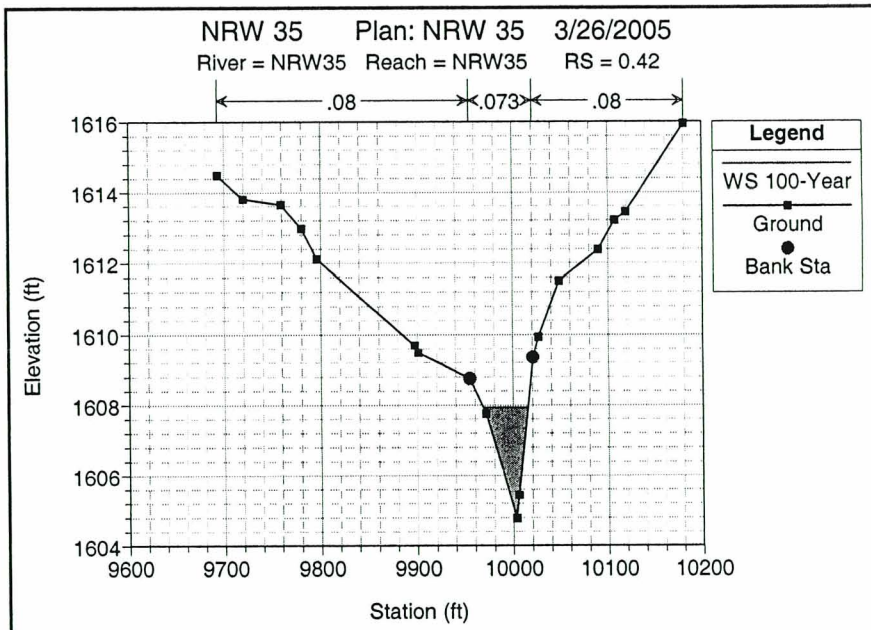

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.99 U.S. Limit of Study
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

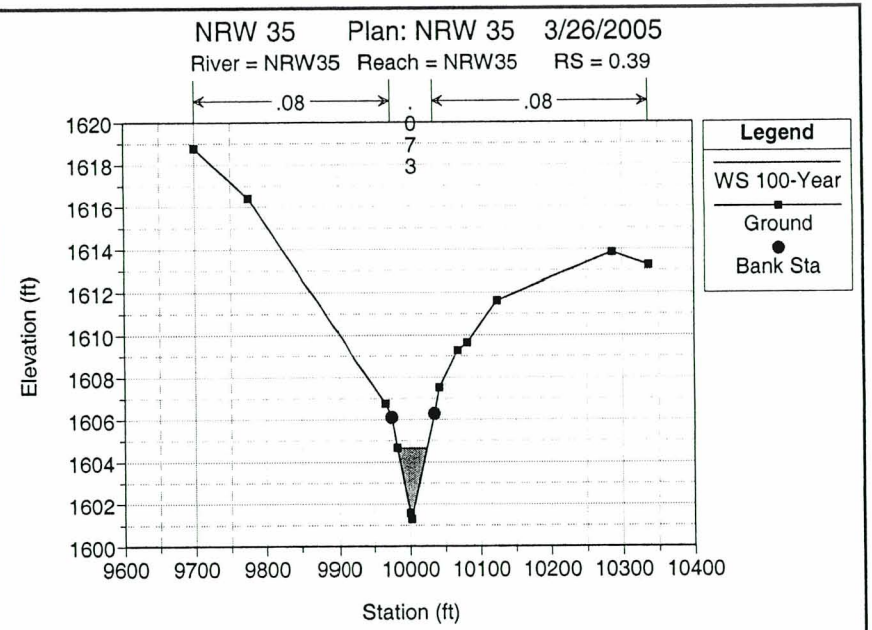

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.91
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

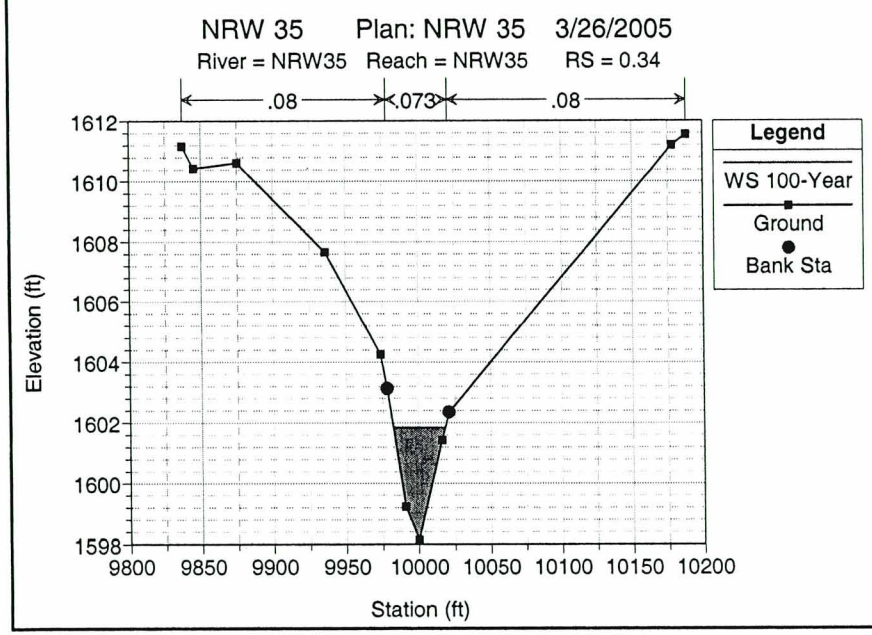

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.83
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

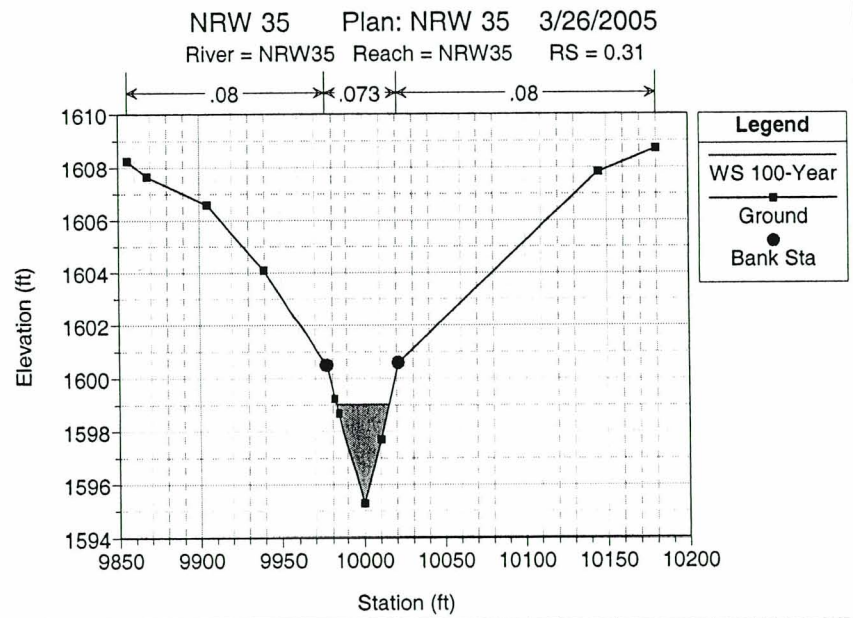

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.76
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

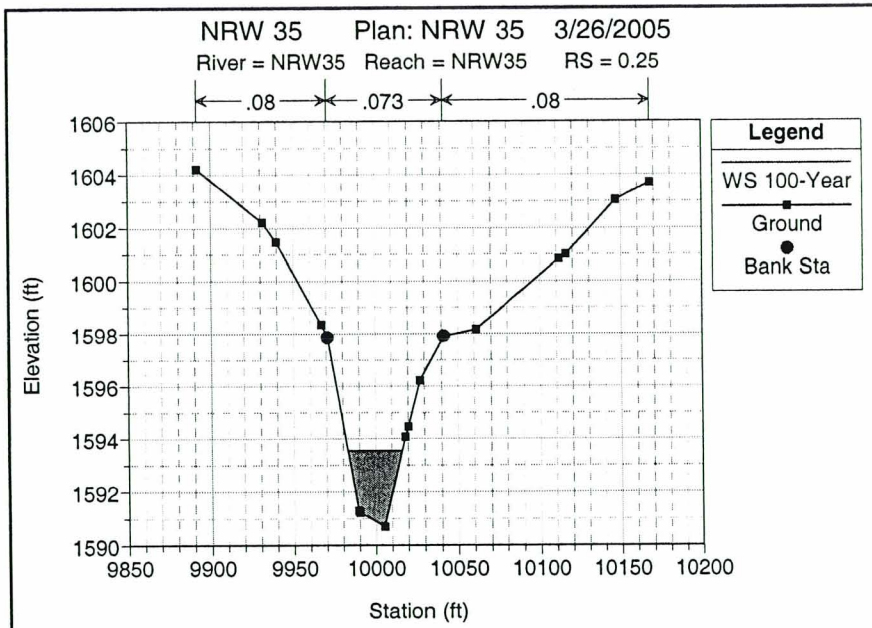

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.67
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.58
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.54
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.48
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

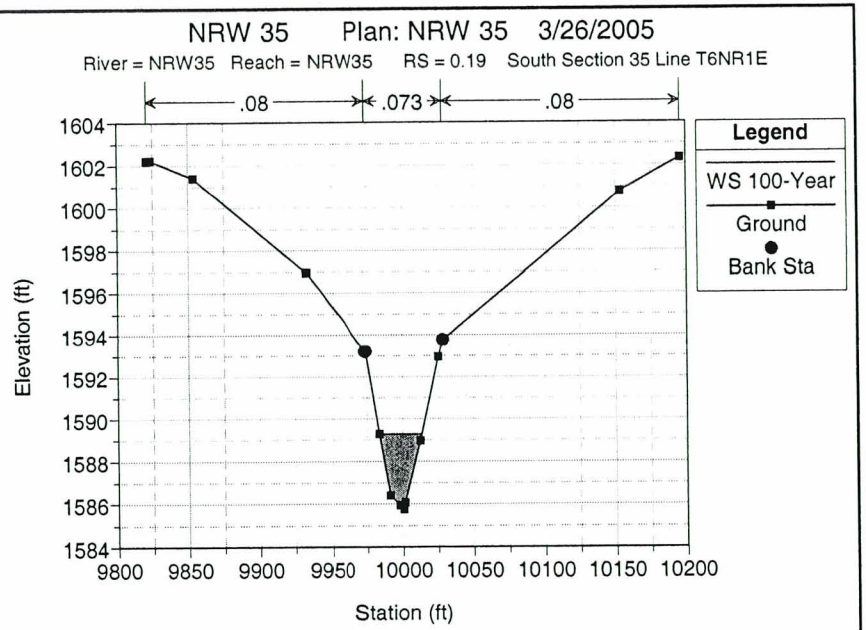

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.42
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

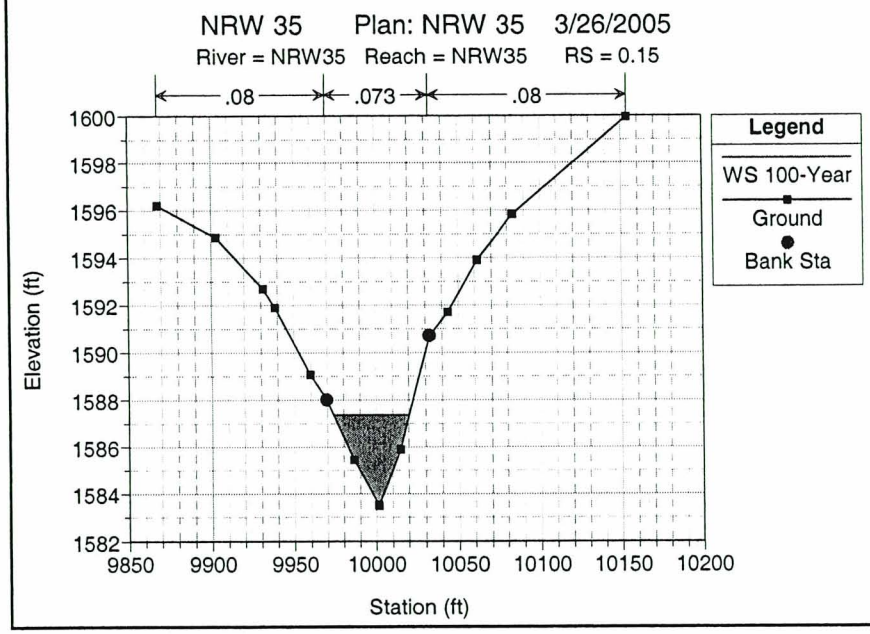

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.39
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

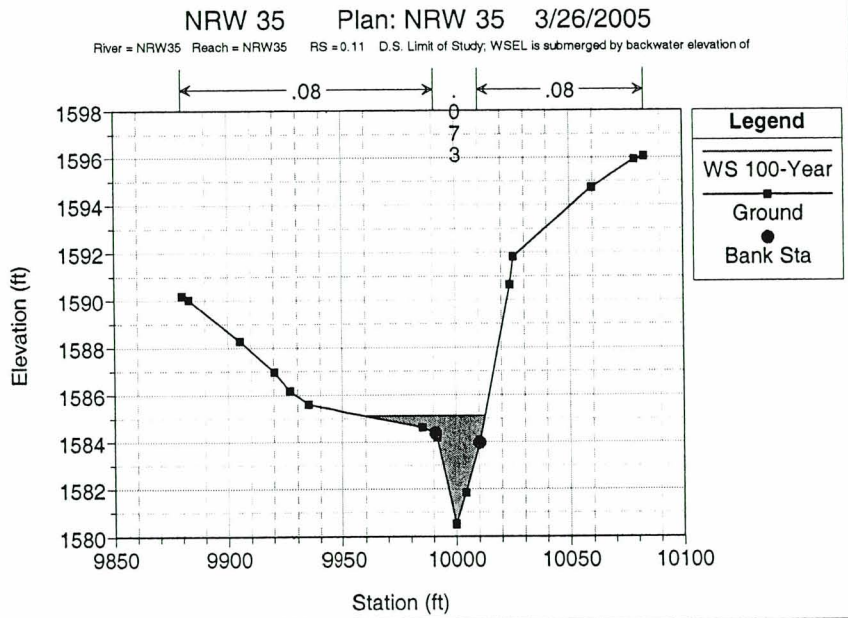

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.34
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

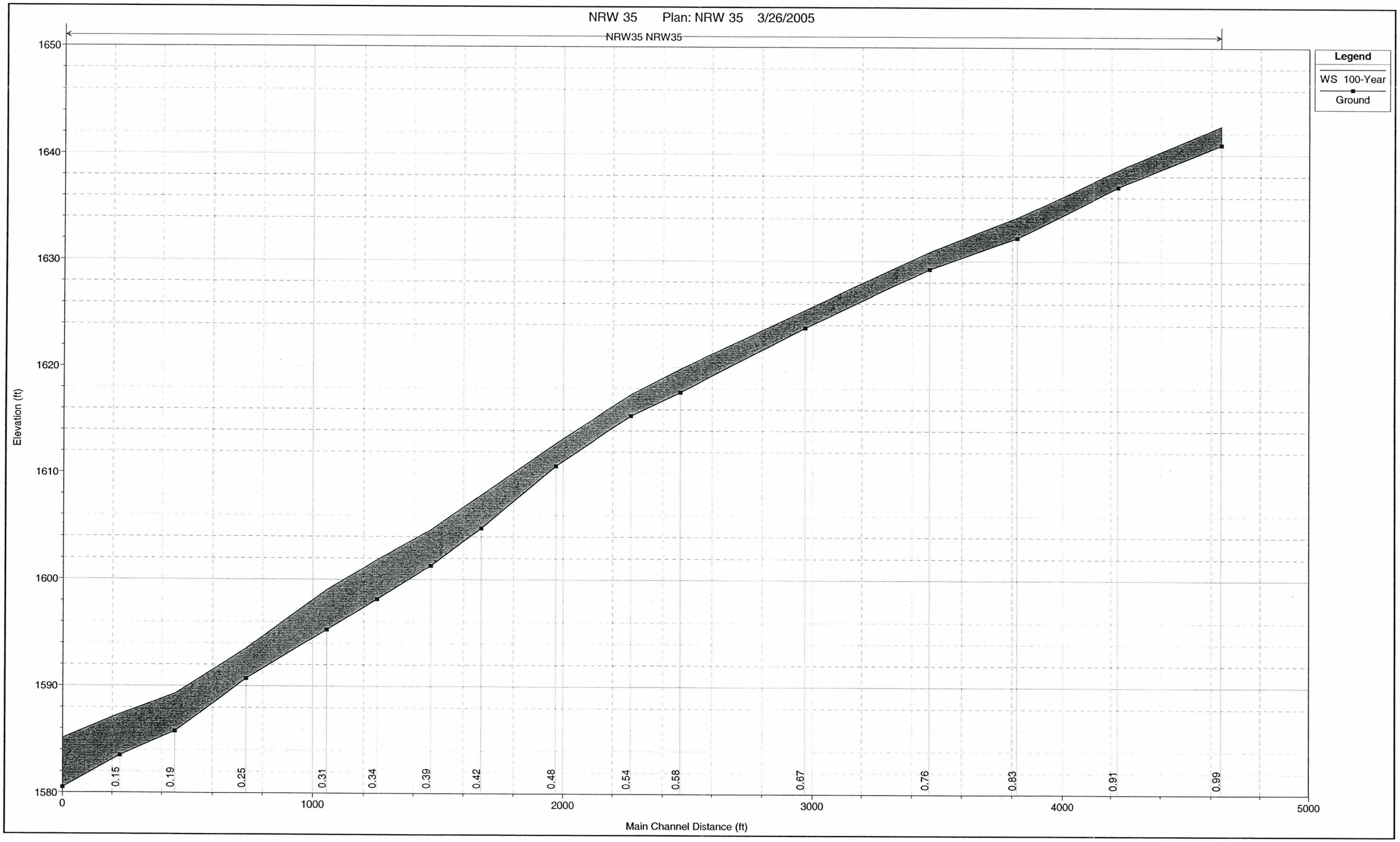

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.31
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.25
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.19 South Section 35 Line T6NR1E
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

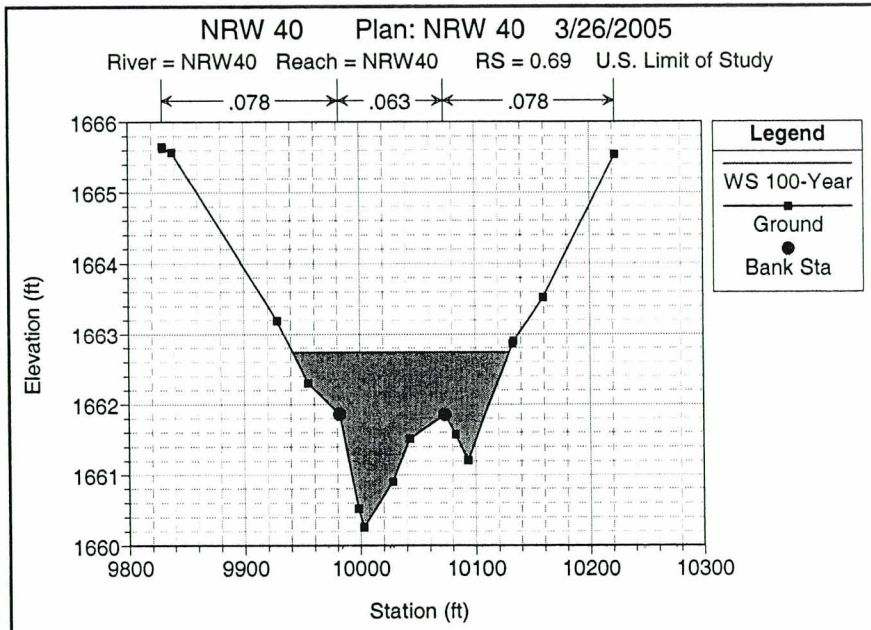

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.15
.08
.073
.08
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

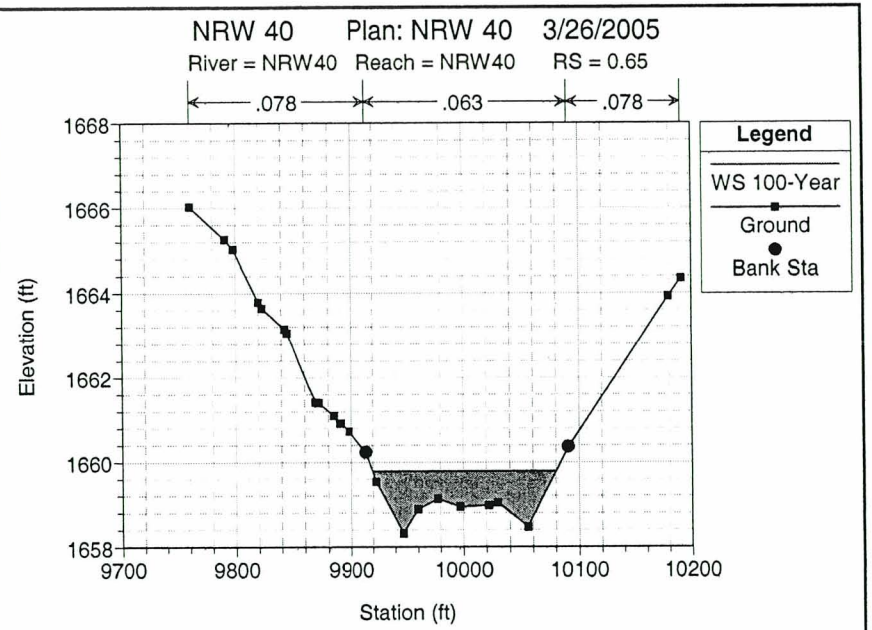

NRW 35 Plan: NRW 35 3/26/2005
River = NRW35 Reach = NRW35 RS = 0.11 D.S. Limit of Study; WSEL is submerged by backwater elevation of
.08
.08
.073
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

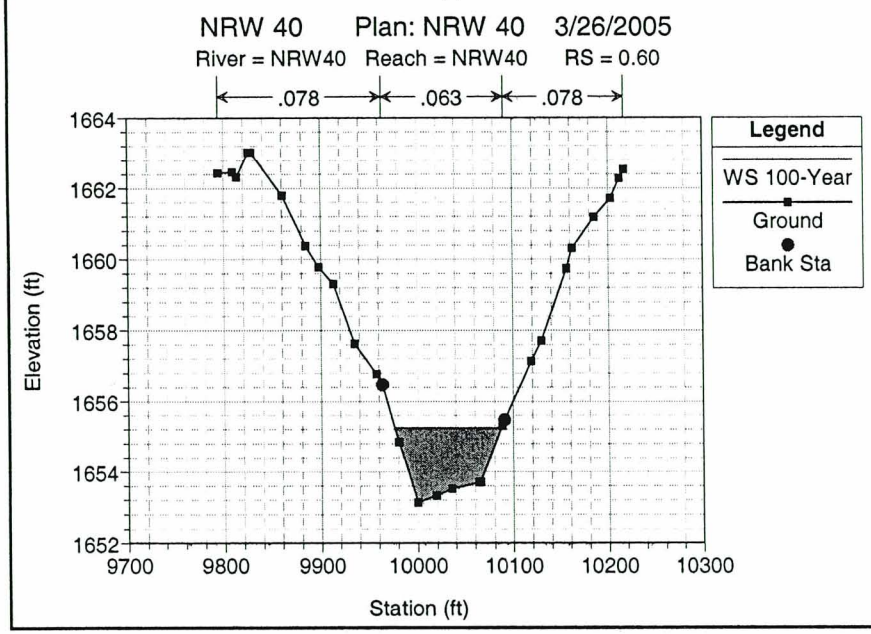

NRW 35 Plan: NRW 35 3/26/2005
NRW35 NRW35
Legend
WS 100-Year
Ground
Elevation (ft)
1650
1640
1630
1620
1610
1600
1590
1580
0.15
0.19
0.25
0.31
0.34
0.39
0.42
0.48
0.54
0.58
0.67
0.76
0.83
0.91
0.99
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)

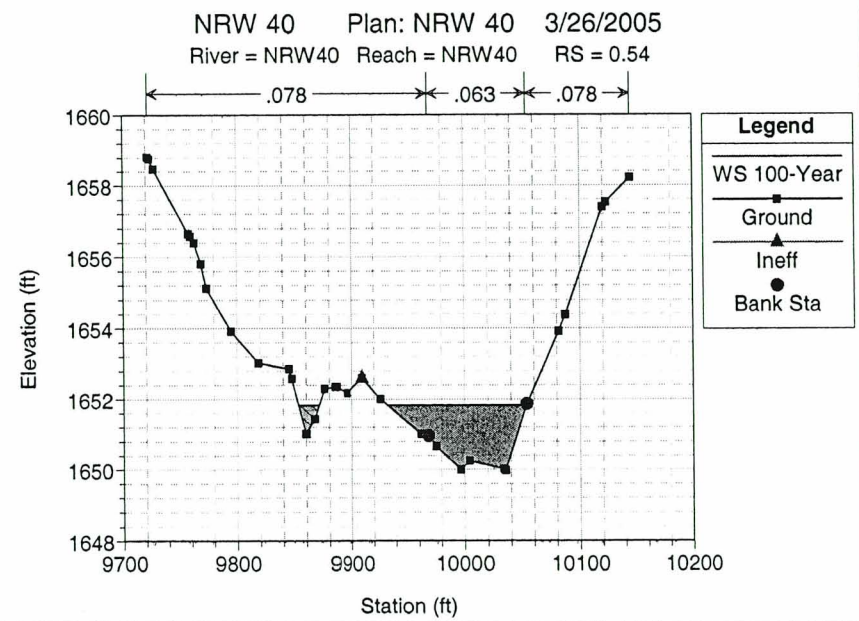
NRW 40

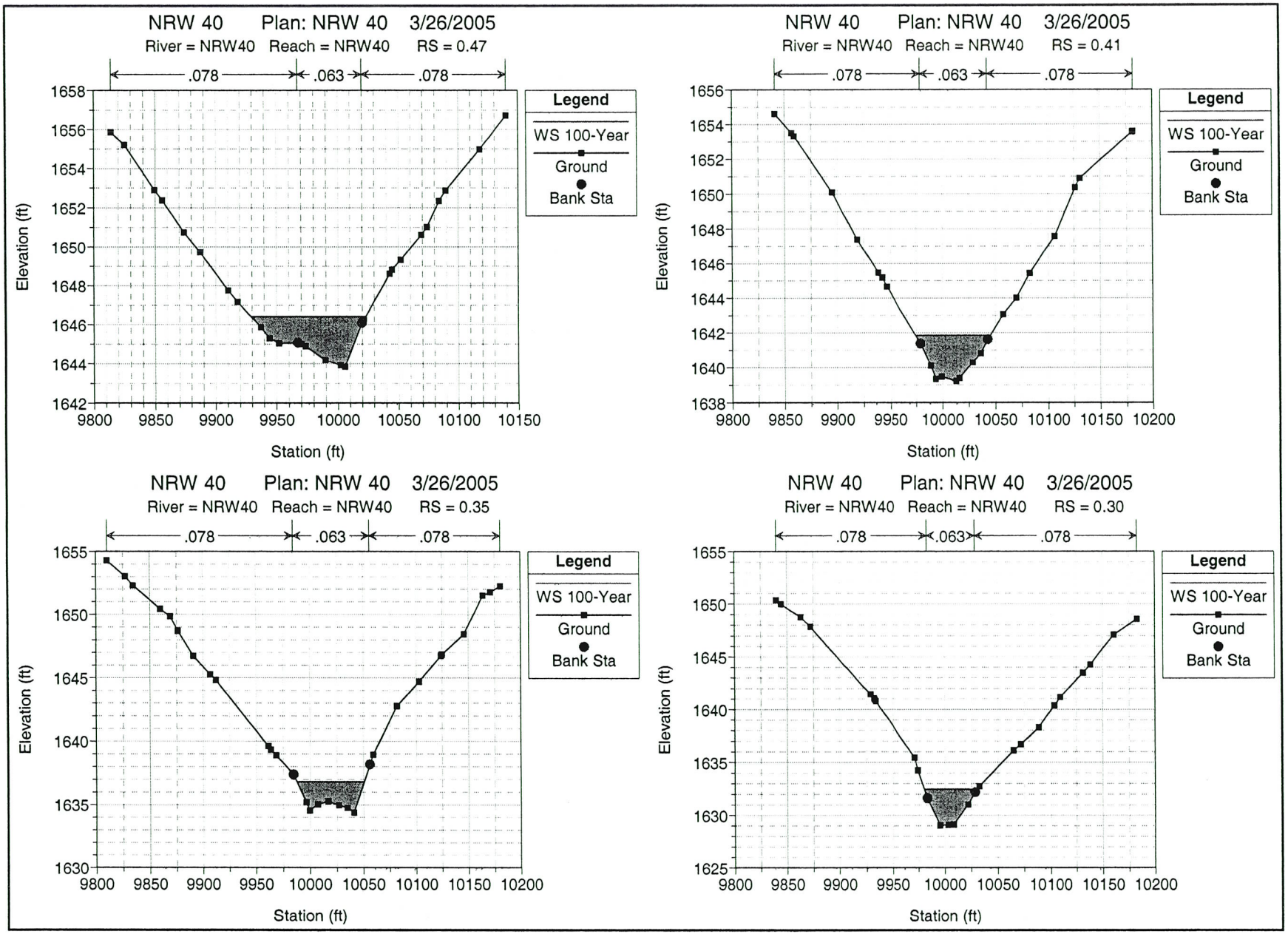
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

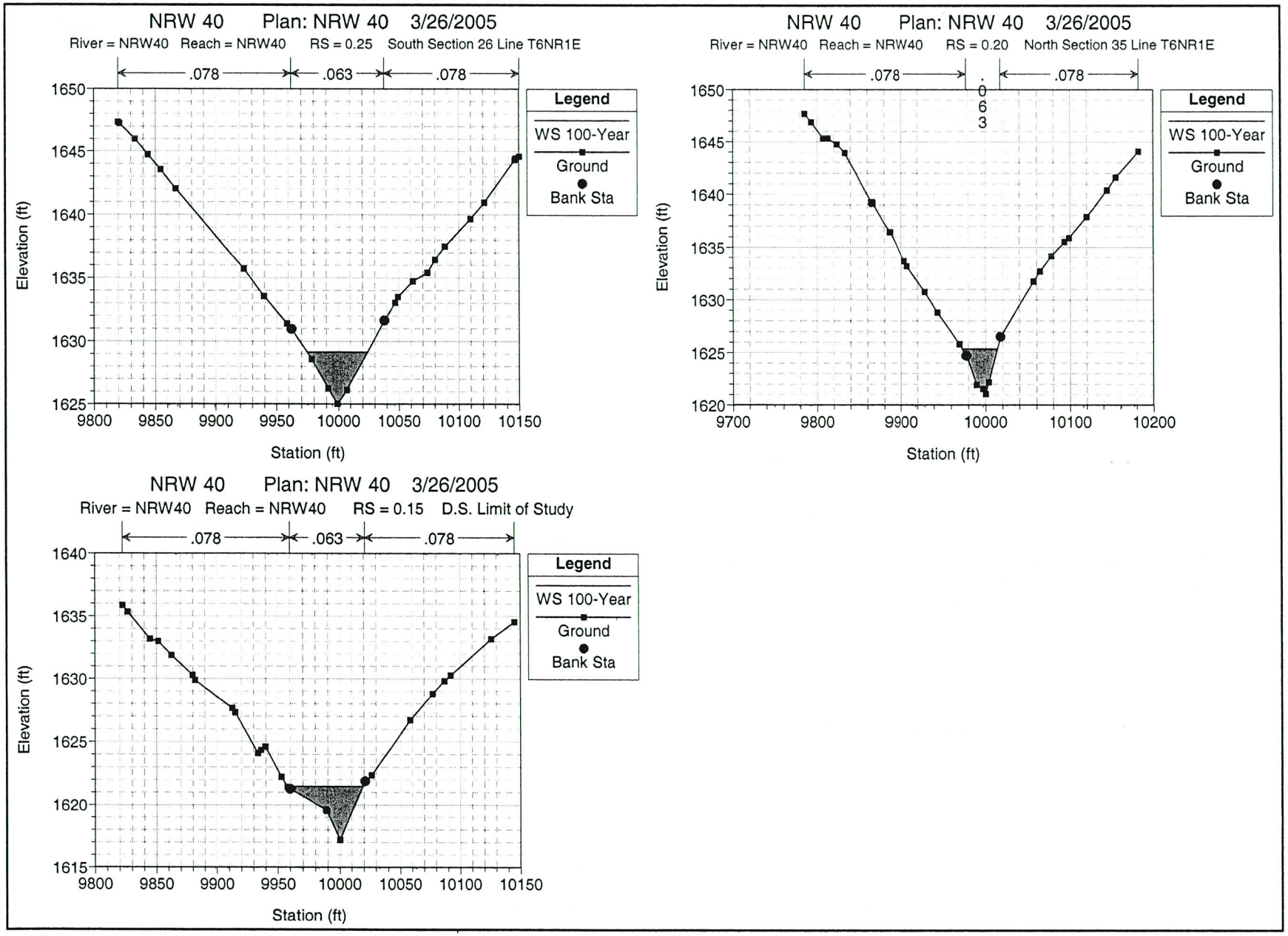

NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.69 U.S. Limit of Study
.078
.063
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

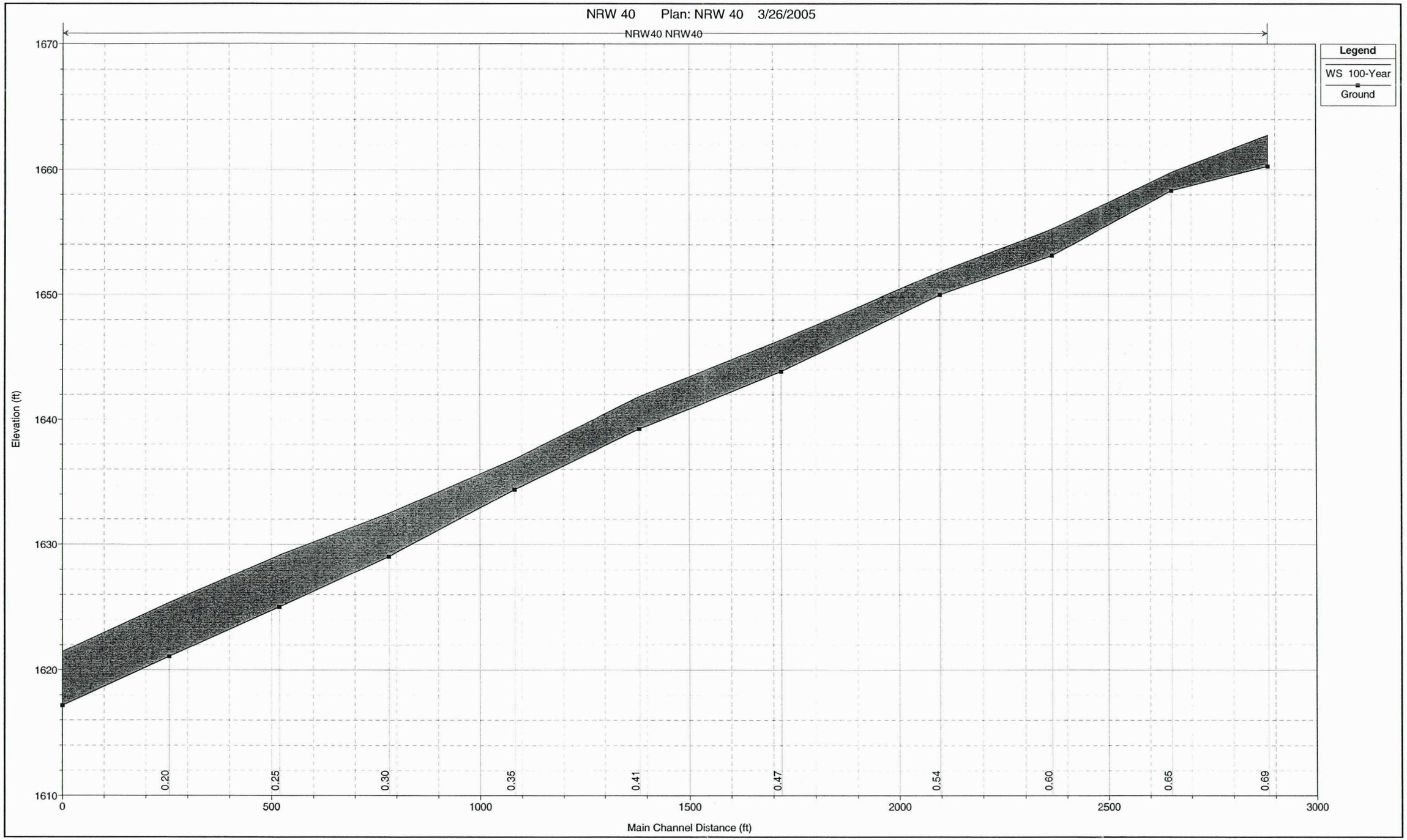

NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.65
.078
.063
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.60
.078
.063
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.54
.078
.063
.078
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

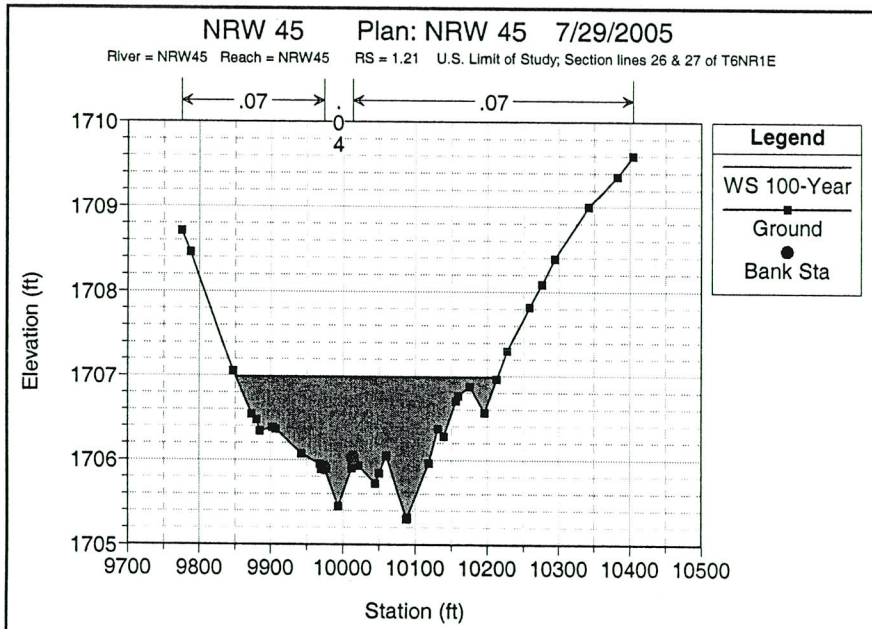

NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.47
.078 .063 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.41
.078 .063 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.35
.078 .063 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.30
.078 .063 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

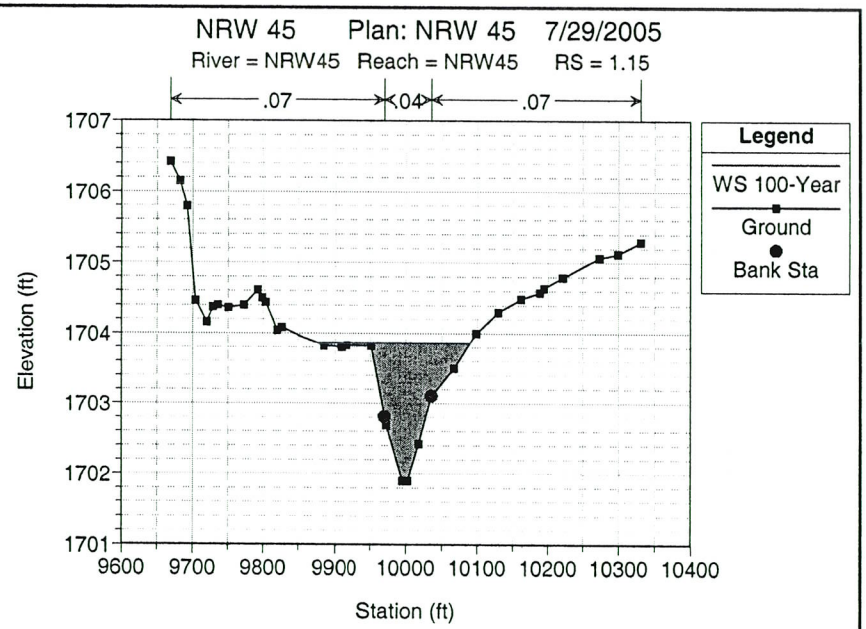

NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.25 South Section 26 Line T6NR1E
.078
.063
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.20 North Section 35 Line T6NR1E
.078
.063
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 40 Plan: NRW 40 3/26/2005
River = NRW40 Reach = NRW40 RS = 0.15 D.S. Limit of Study
.078
.063
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

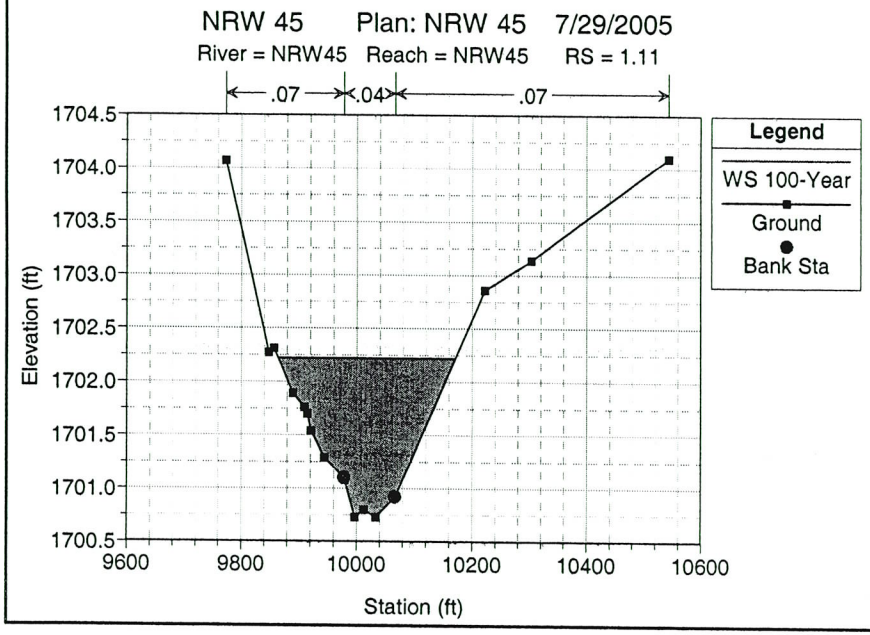

NRW 40 Plan: NRW 40 3/26/2005
NRW40 NRW40
Legend
WS 100-Year
Ground
Elevation (ft)
1670
1660
1650
1640
1630
1620
1610
0.20
0.25
0.30
0.35
0.41
0.47
0.54
0.60
0.65
0.69
0
500
1000
1500
2000
2500
3000
Main Channel Distance (ft)

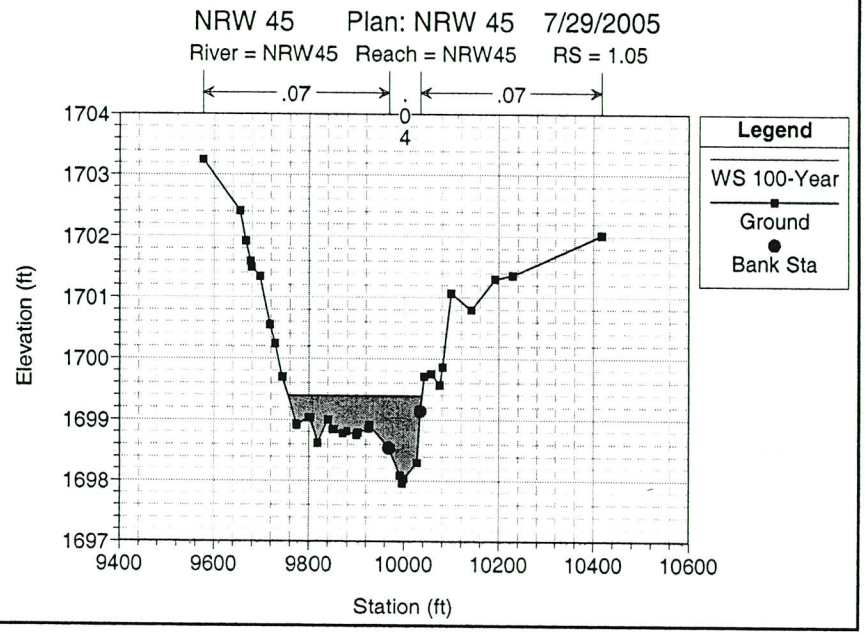
NRW 45

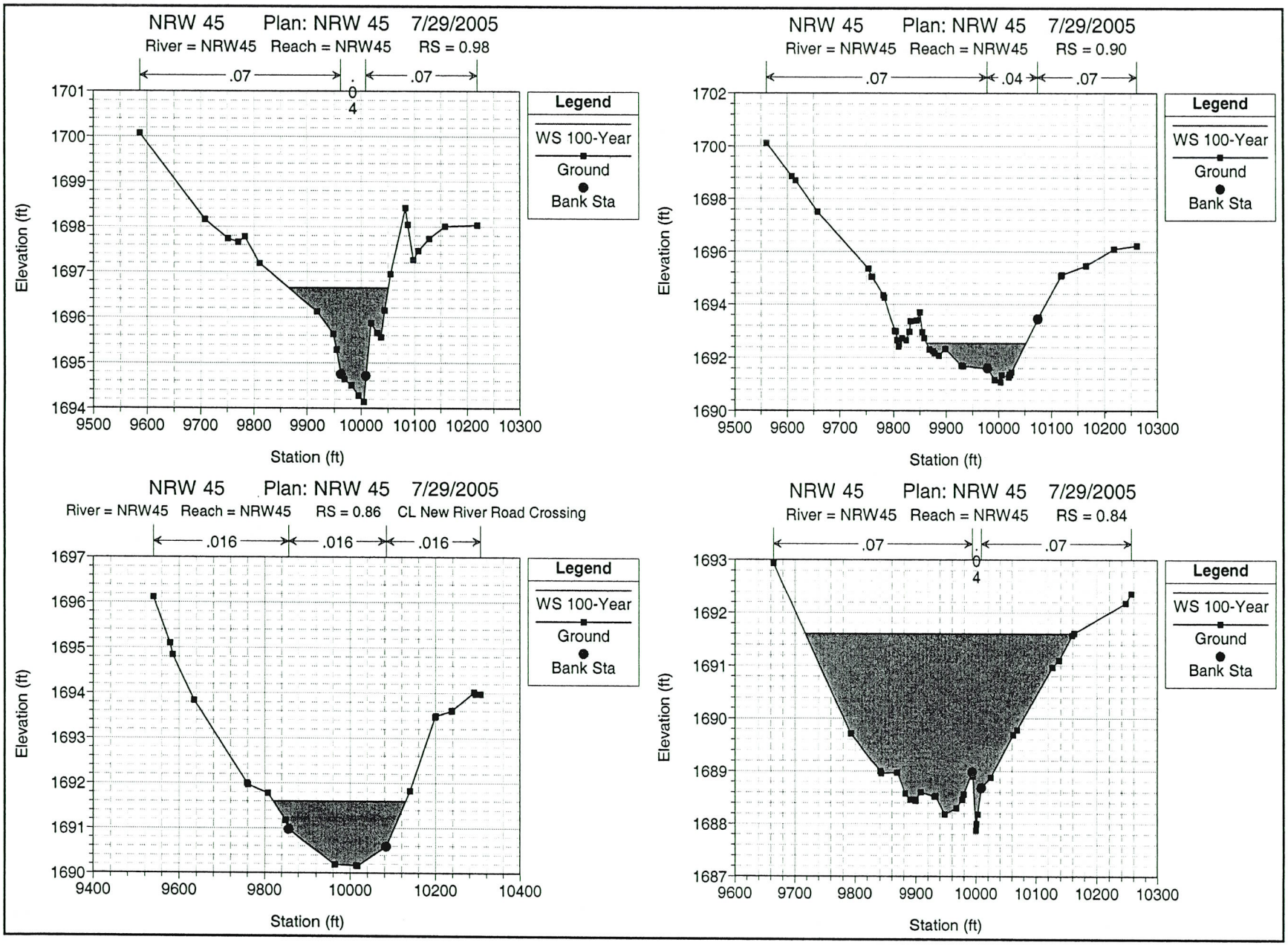
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

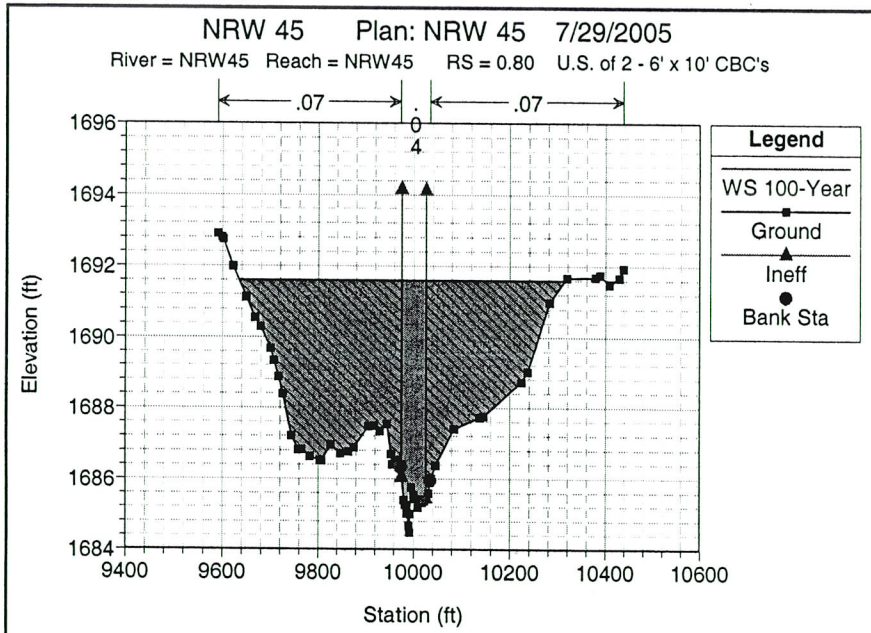

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 1.21 U.S. Limit of Study; Section lines 26 & 27 of T6NR1E
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

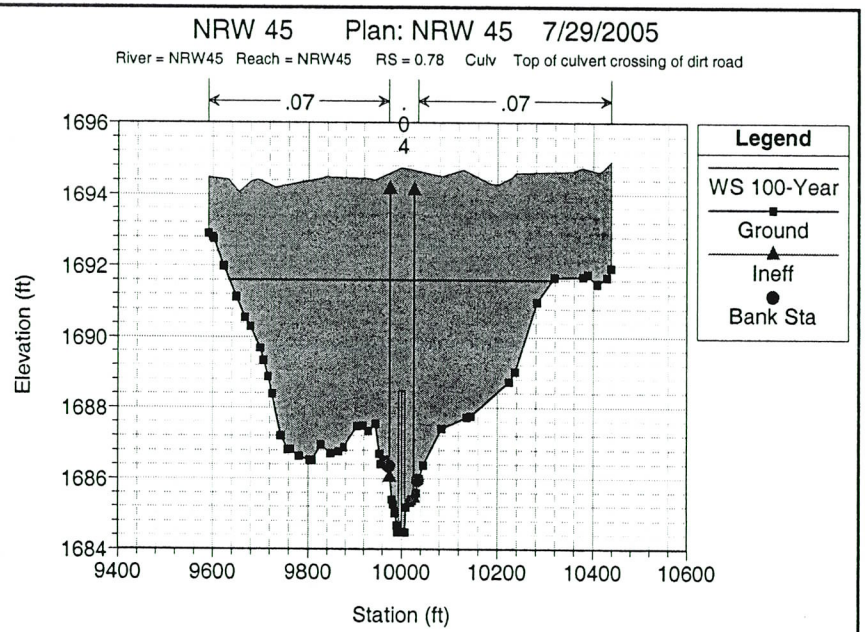

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 1.15
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

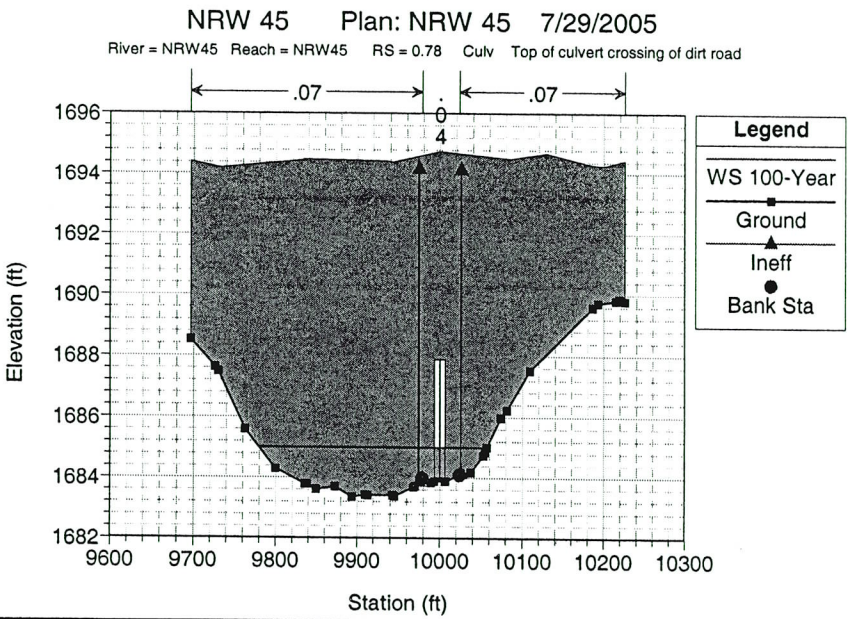

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 1.11
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

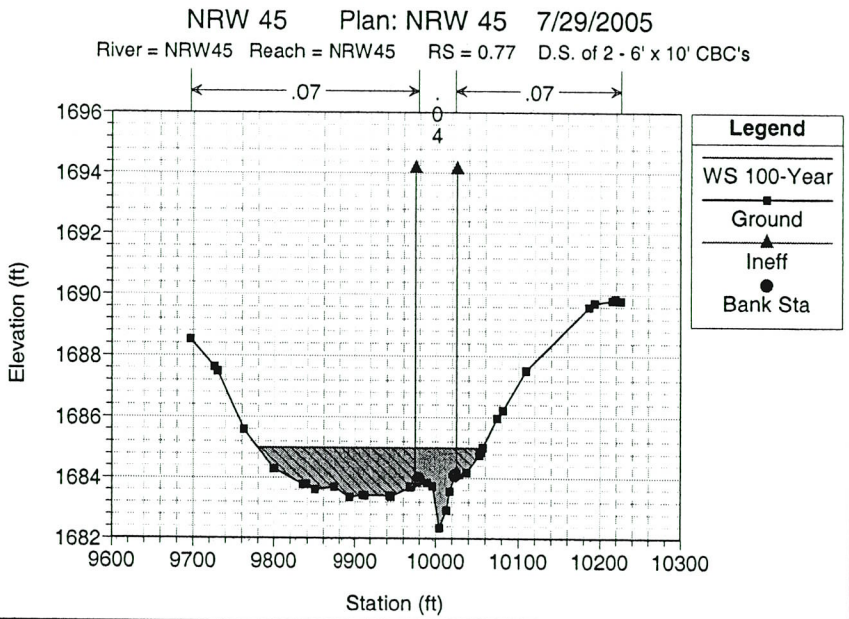

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 1.05
.07
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

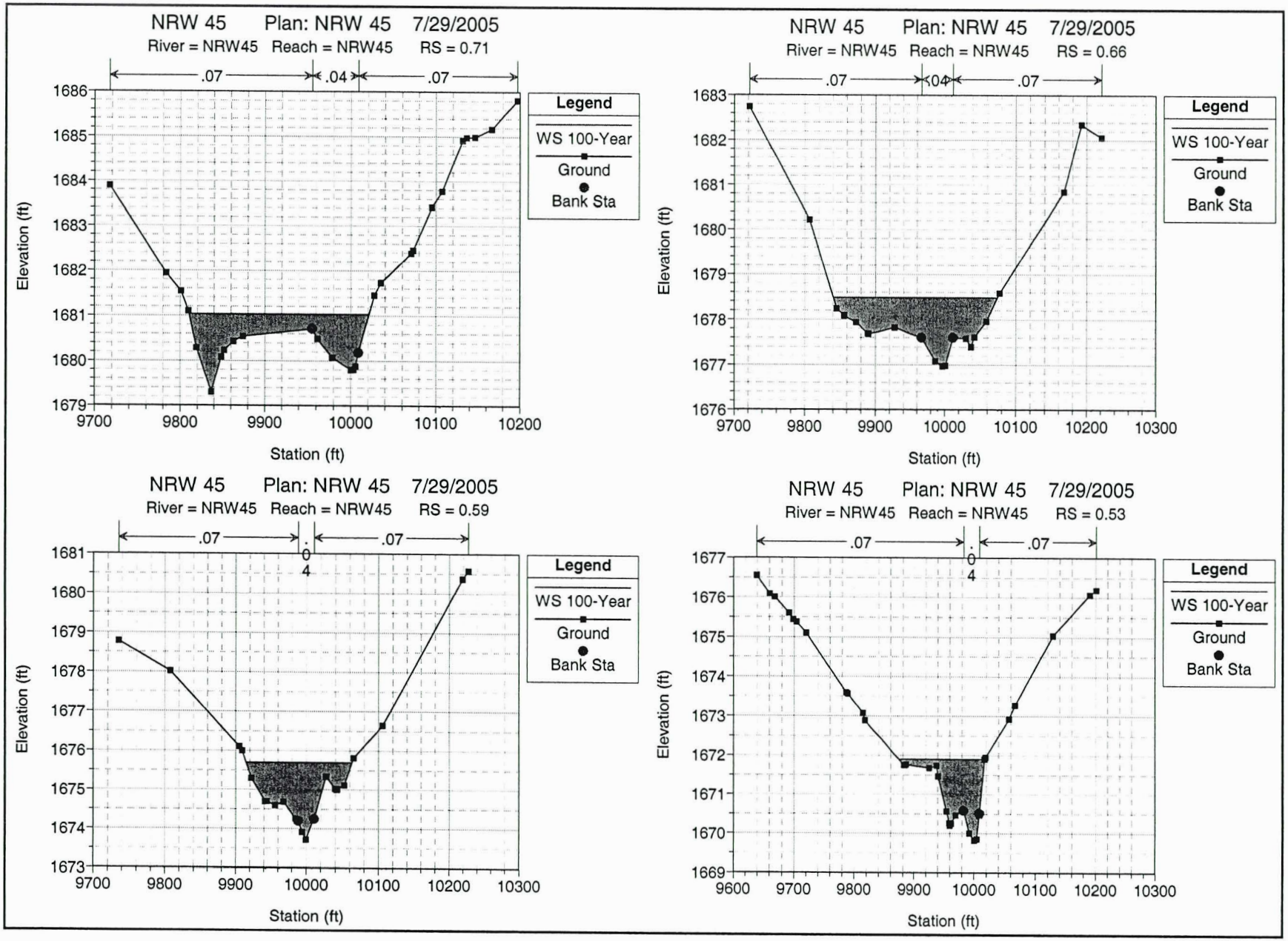

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.98
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.90
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.86 CL New River Road Crossing
.016
.016
.016
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.84
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

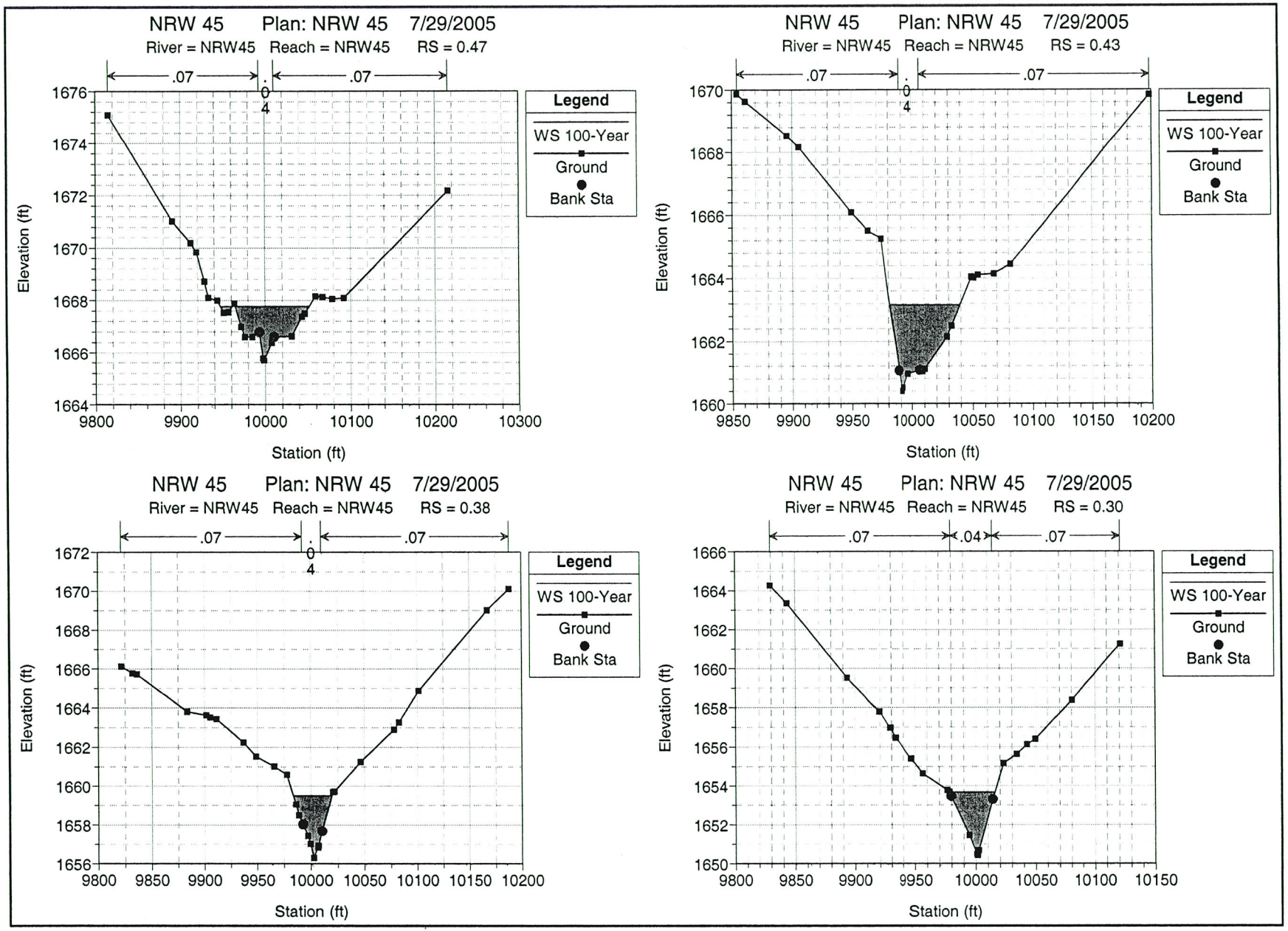

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.80 U.S. of 2 - 6' x 10' CBC's
.07
.04
.07
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

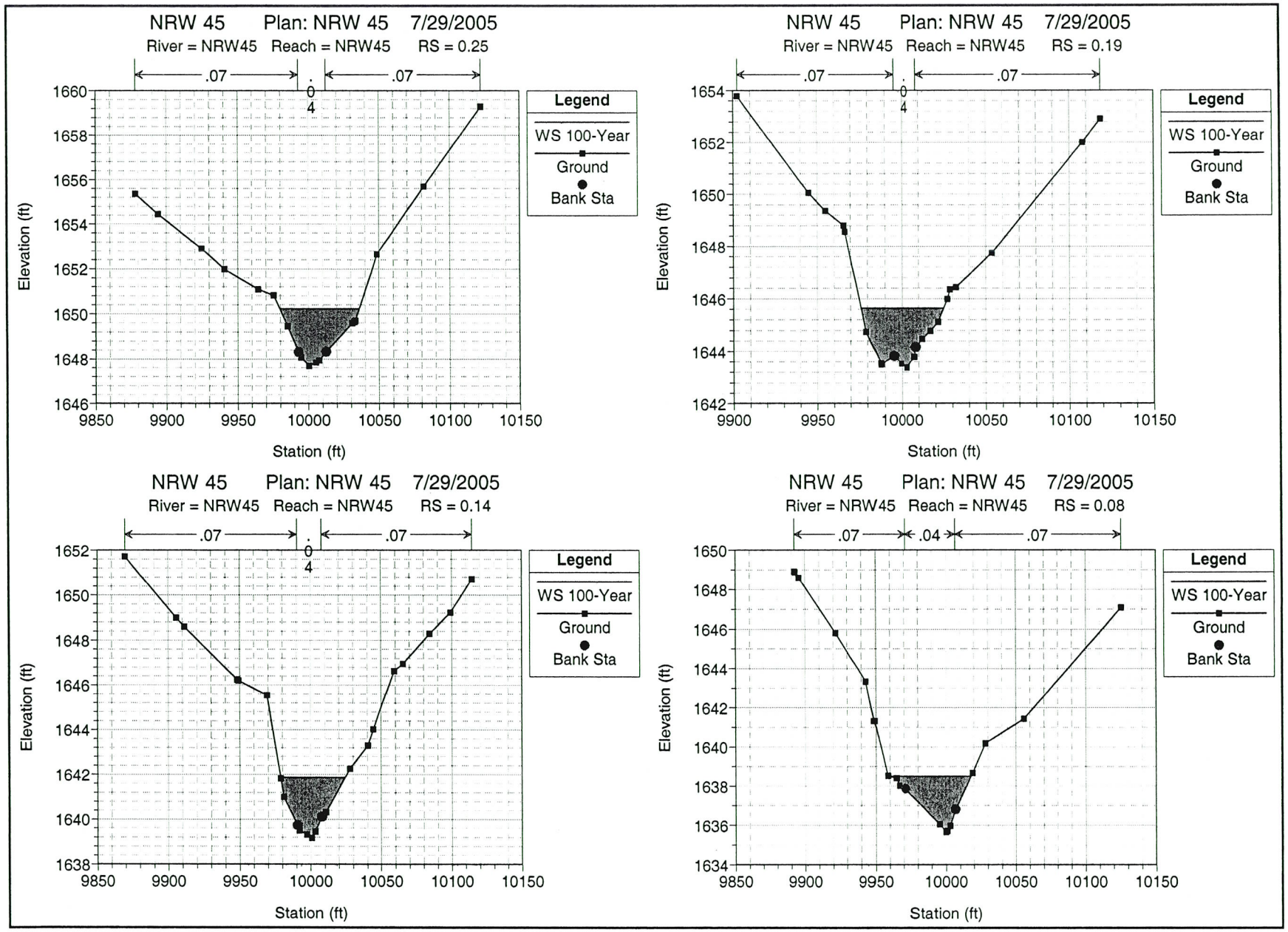

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.78 Culv Top of culvert crossing of dirt road
.07
.04
.07
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

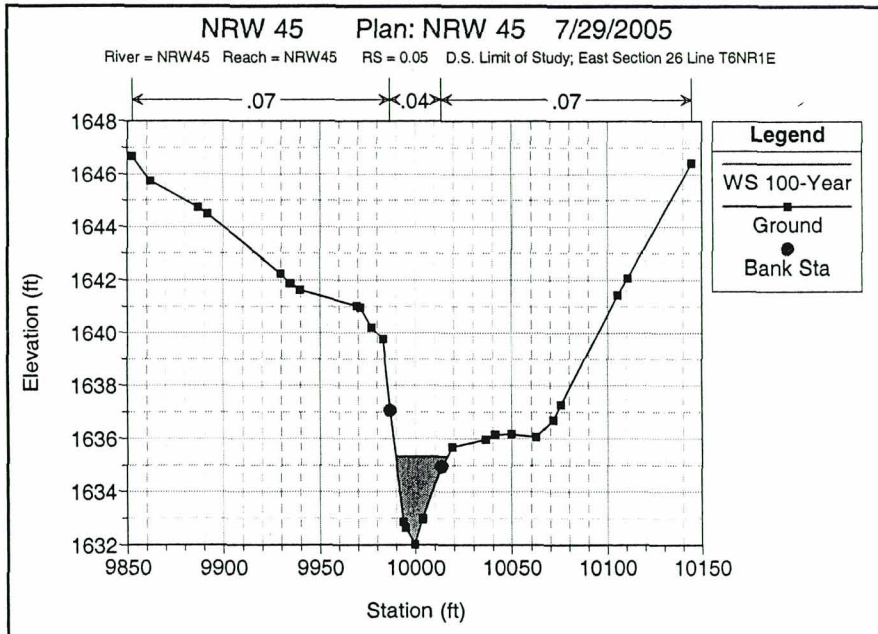

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.78 Culv Top of culvert crossing of dirt road
.07
.04
.07
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

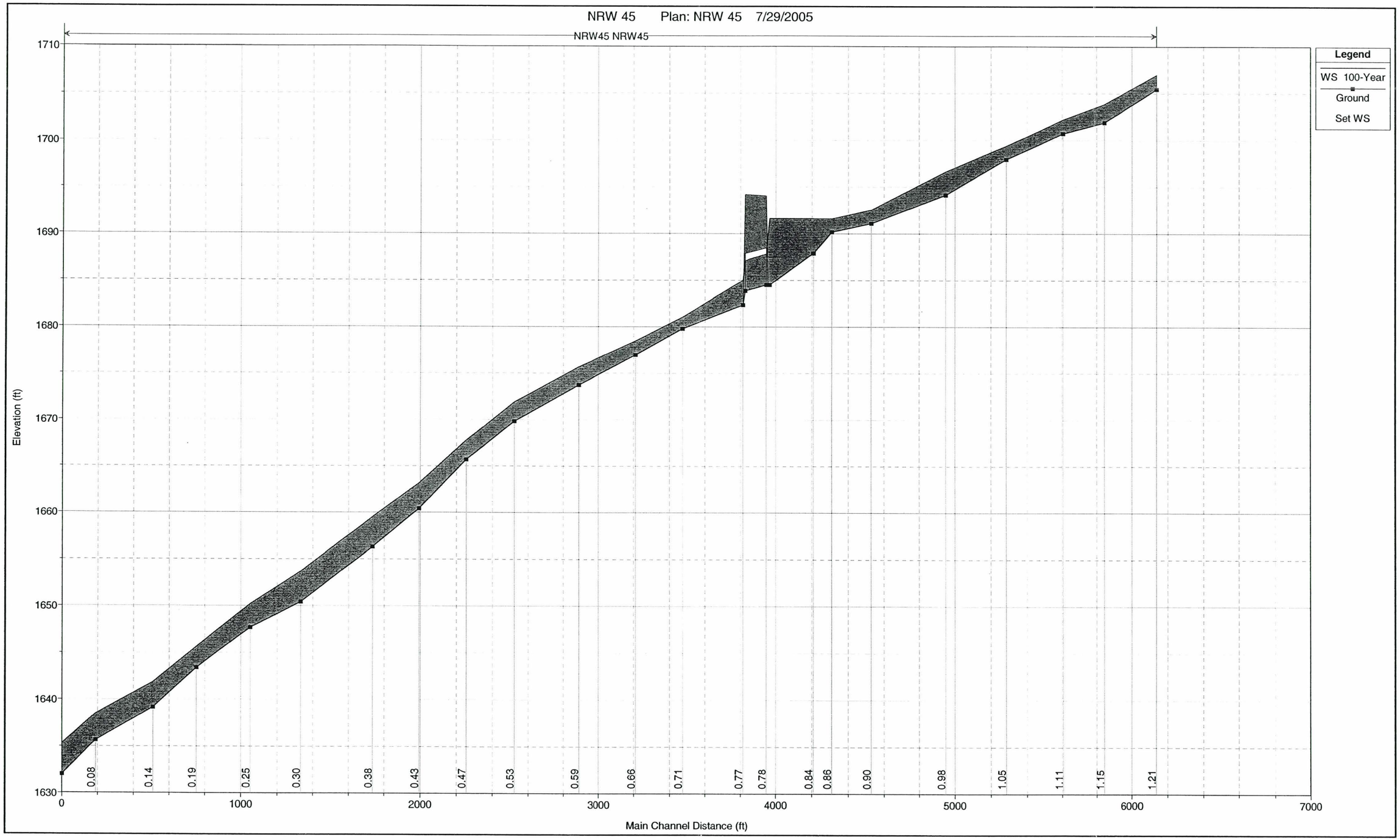

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.77 D.S. of 2 - 6' x 10' CBC's
.07
.04
.07
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.71
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.66
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.59
.07
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.53
.07
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.47
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.43
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.38
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.30
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

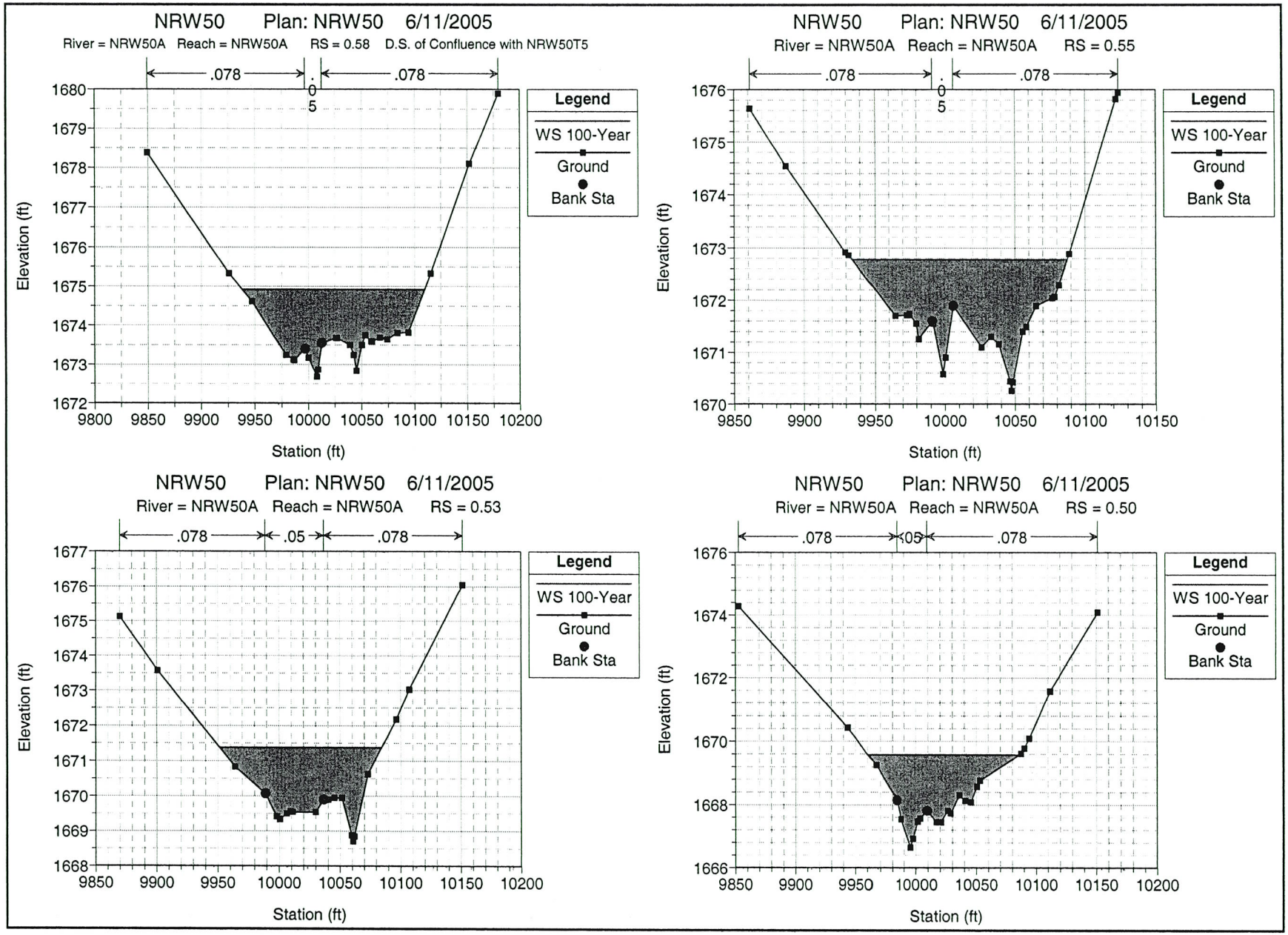

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.25
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.19
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.14
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.08
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

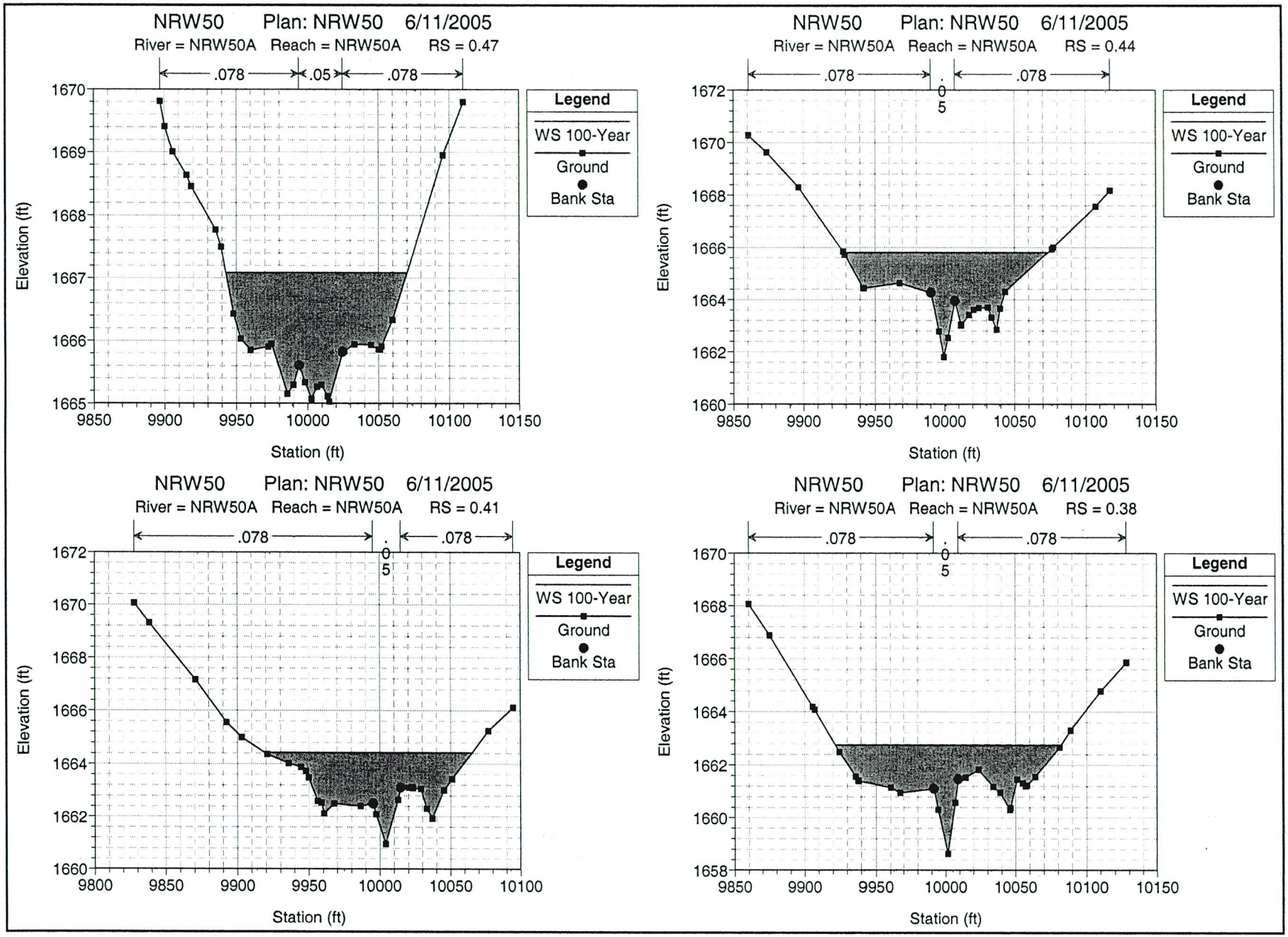

NRW 45 Plan: NRW 45 7/29/2005
River = NRW45 Reach = NRW45 RS = 0.05 D.S. Limit of Study; East Section 26 Line T6NR1E
.07
.04
.07
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
1648
1646
1644
1642
1640
1638
1636
1634
1632
9850
9900
9950
10000
10050
10100
10150
Station (ft)

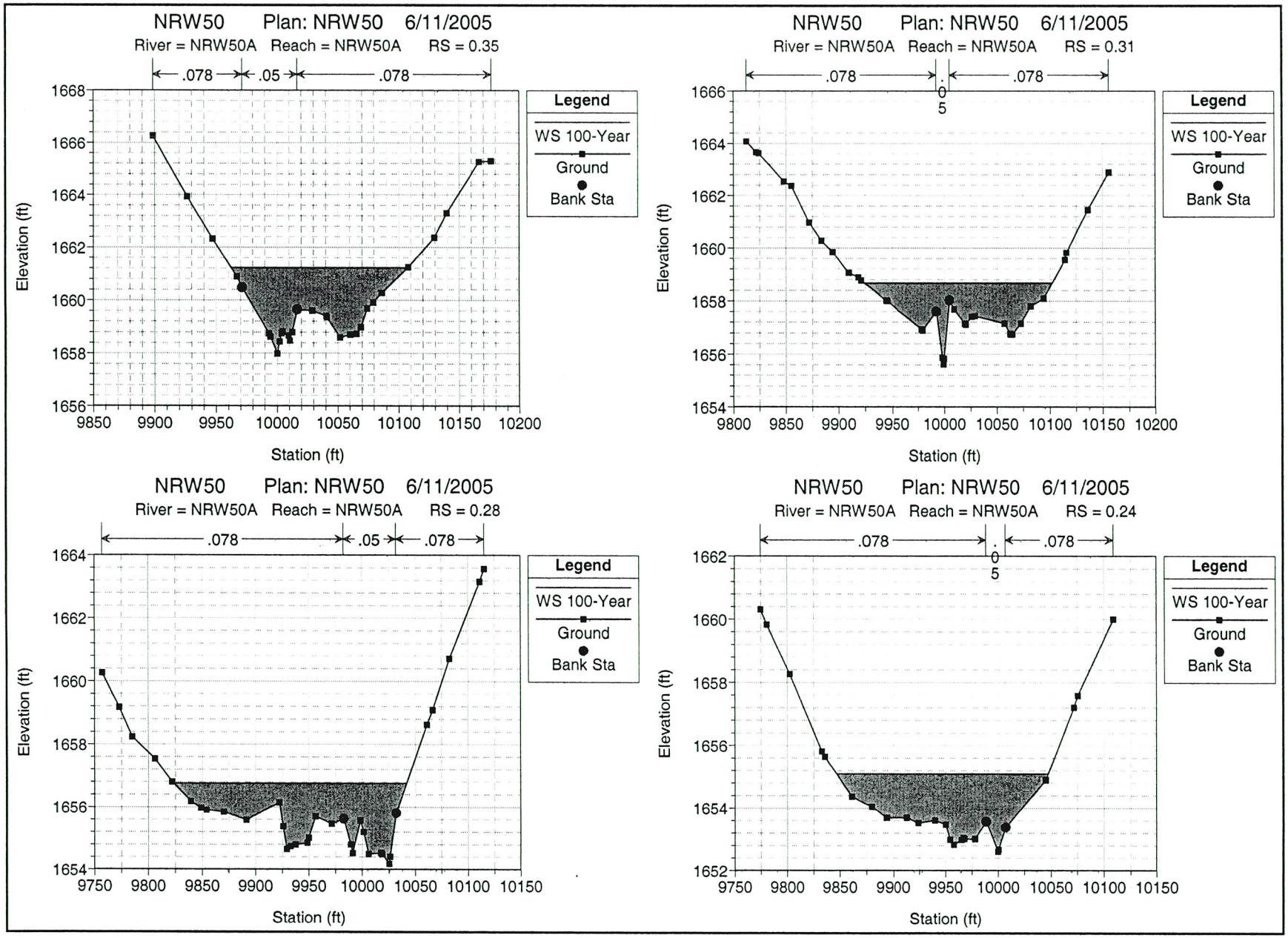

NRW 45 Plan: NRW 45 7/29/2005
NRW45 NRW45
Legend
WS 100-Year
Ground
Set WS
Elevation (ft)
1710
1700
1690
1680
1670
1660
1650
1640
1630
0.08
0.14
0.19
0.25
0.30
0.38
0.43
0.47
0.53
0.59
0.66
0.71
0.77
0.78
0.84
0.86
0.90
0.98
1.05
1.11
1.15
1.21
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)

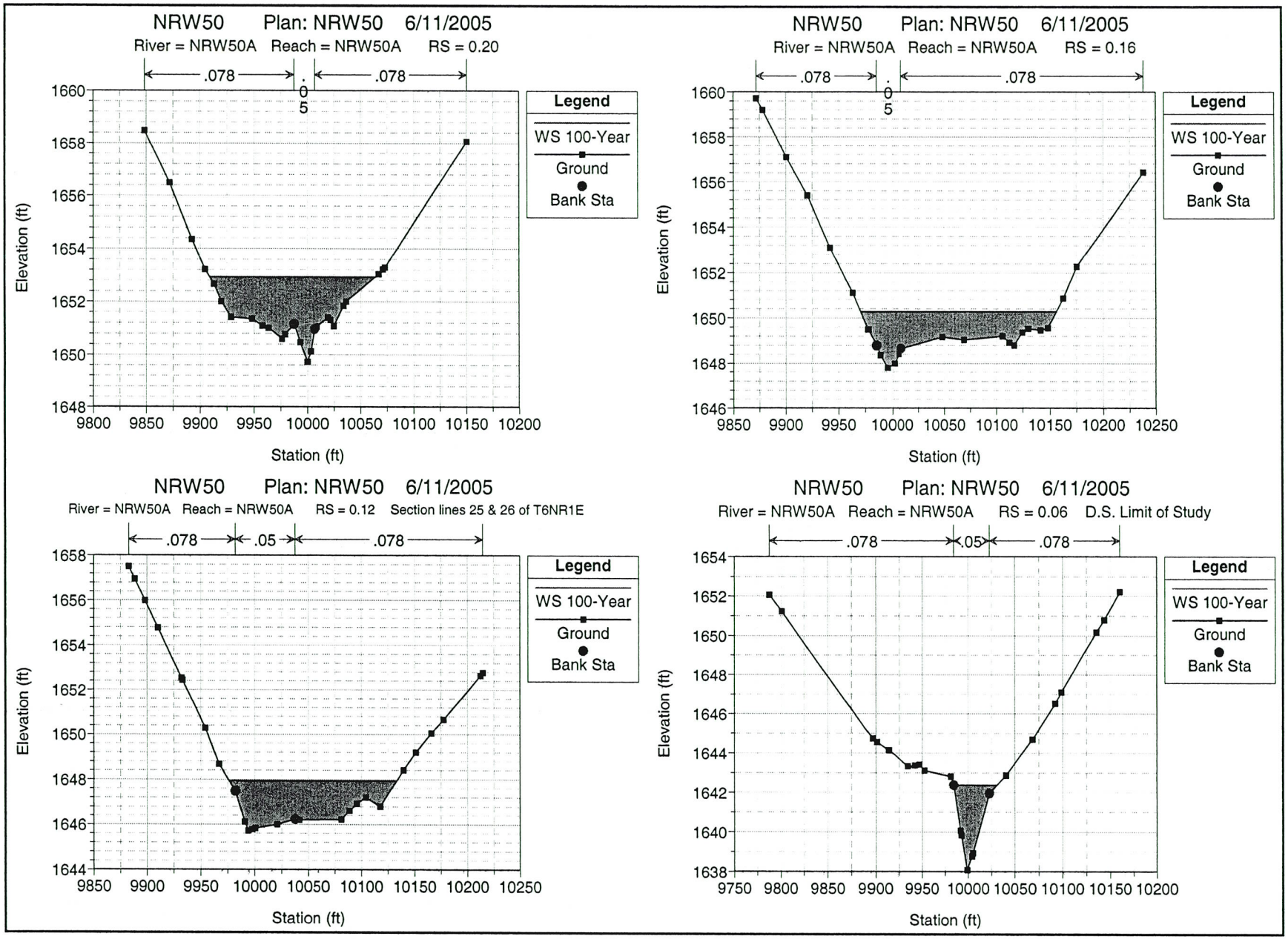
NRW 50

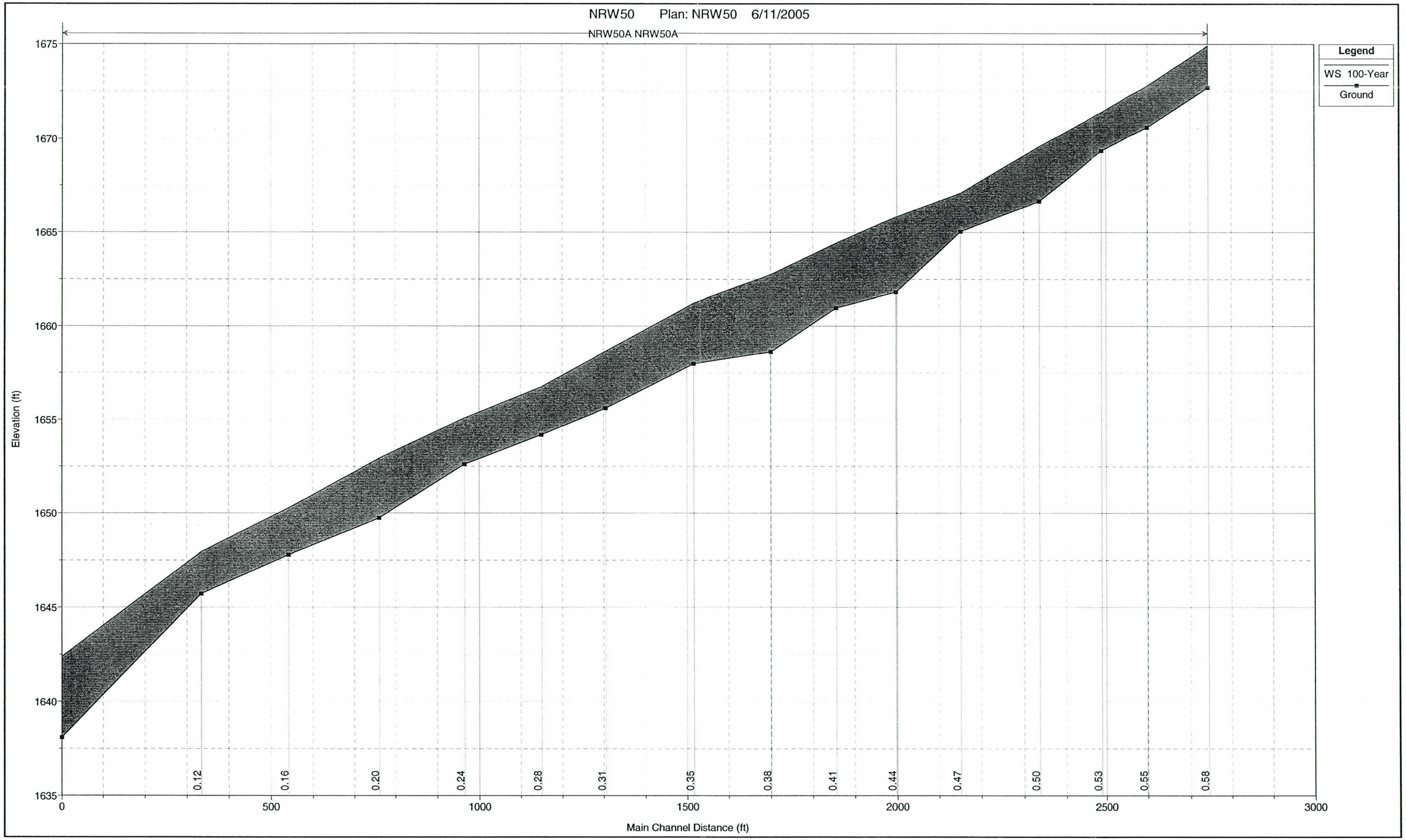
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

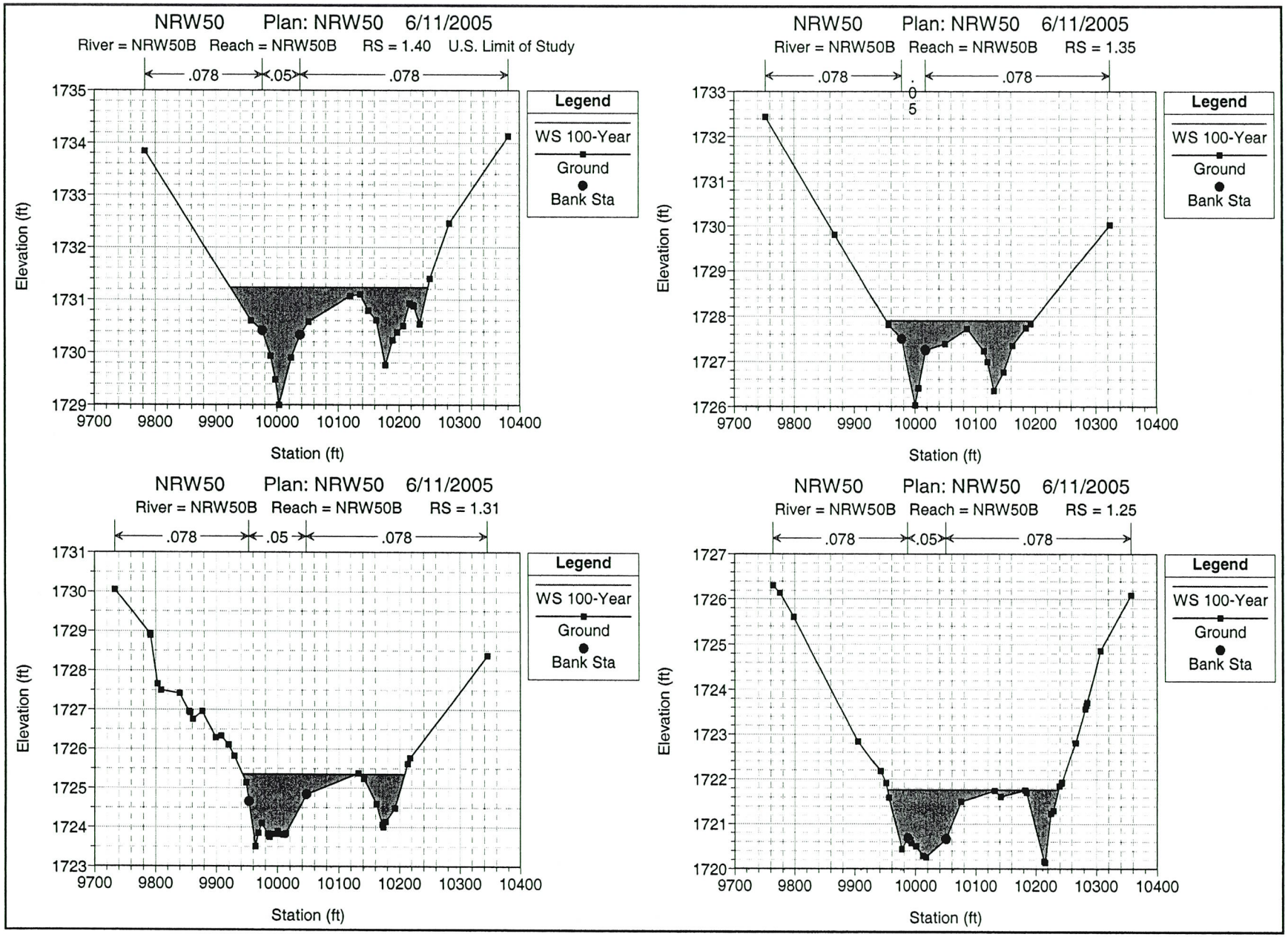

NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.58 D.S. of Confluence with NRW50T5
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.55
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.53
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.50
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

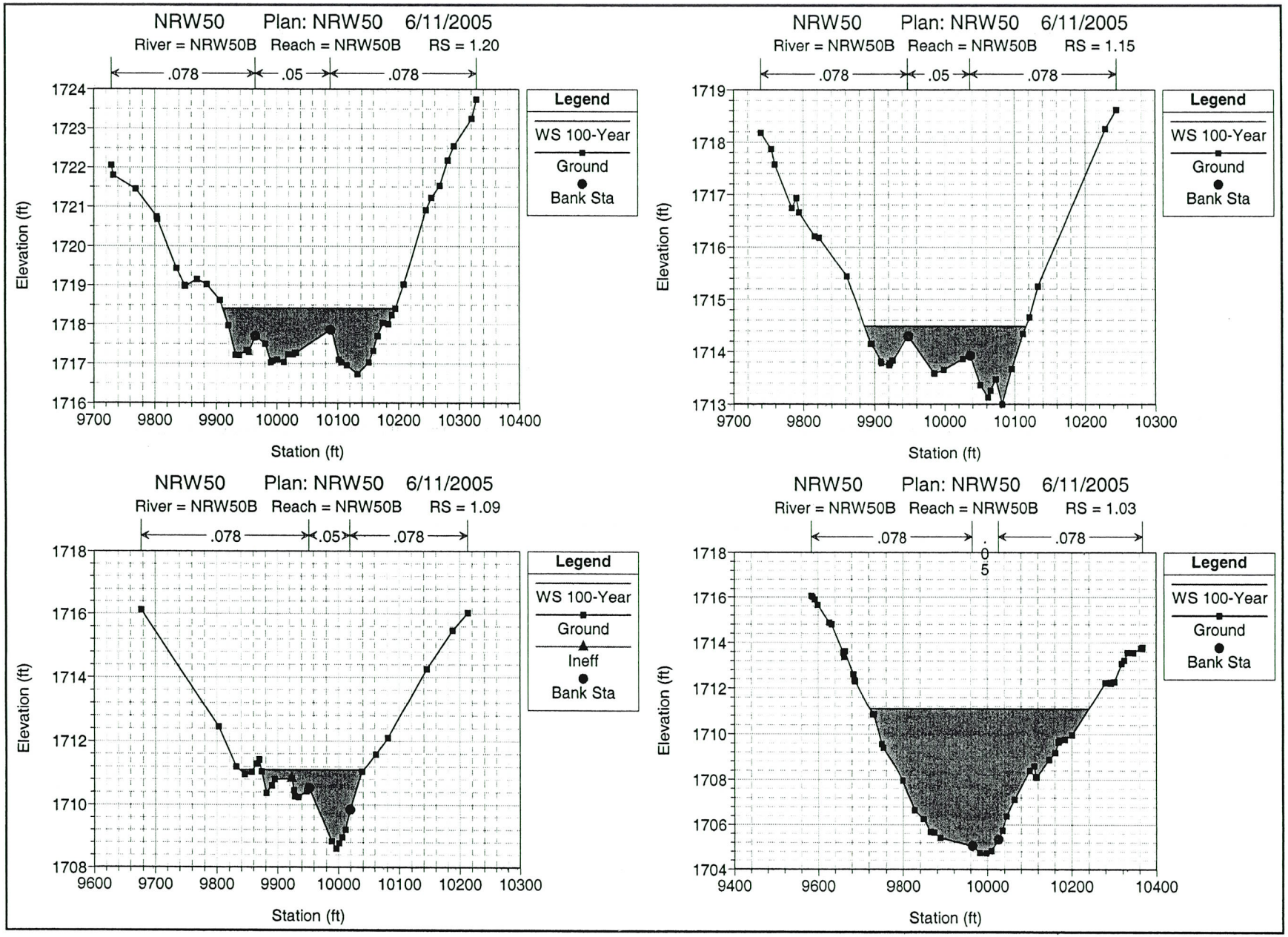

NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.47
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.44
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.41
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.38
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

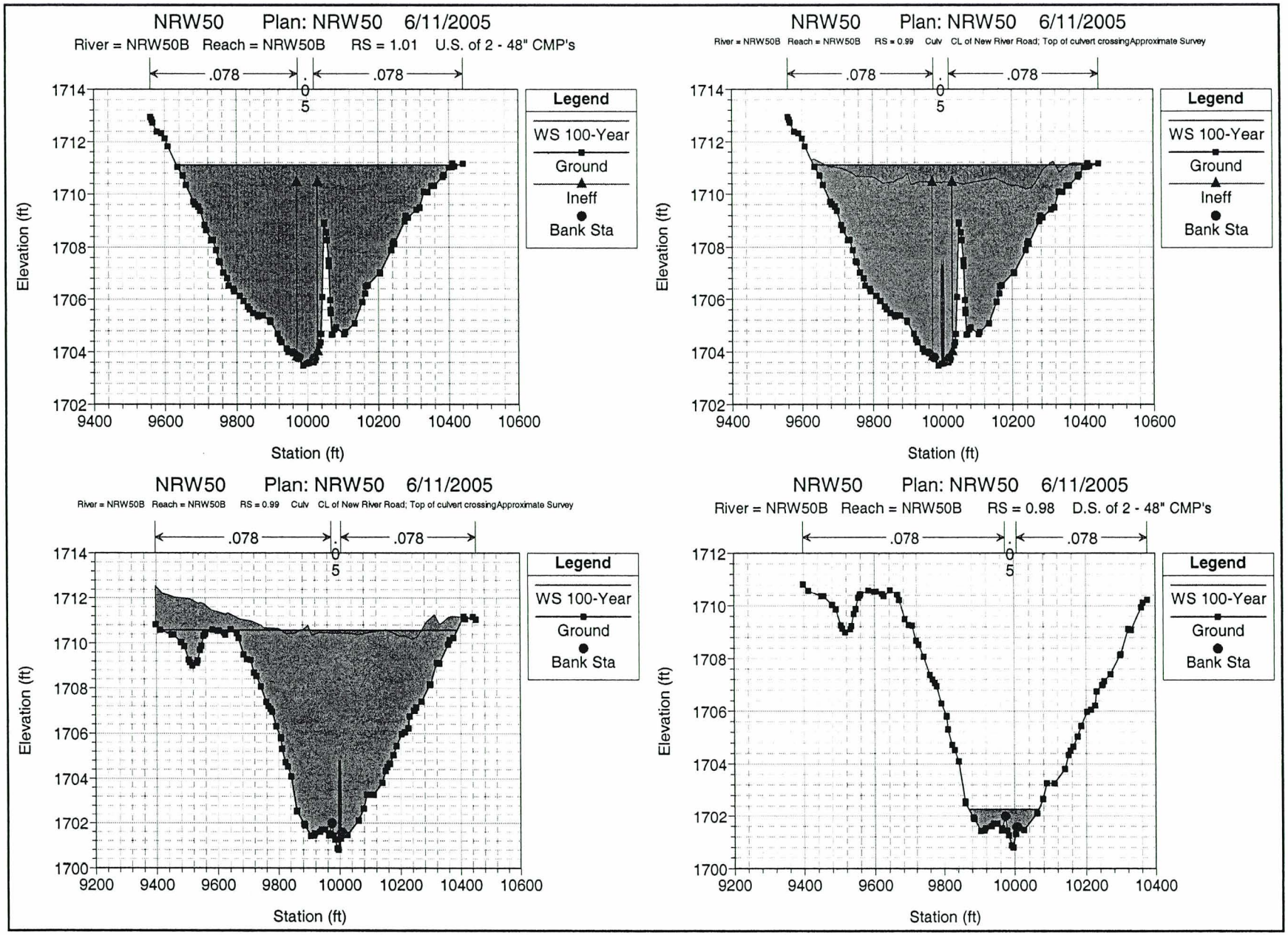

NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.35
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.31
.078
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.28
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.24
.078
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

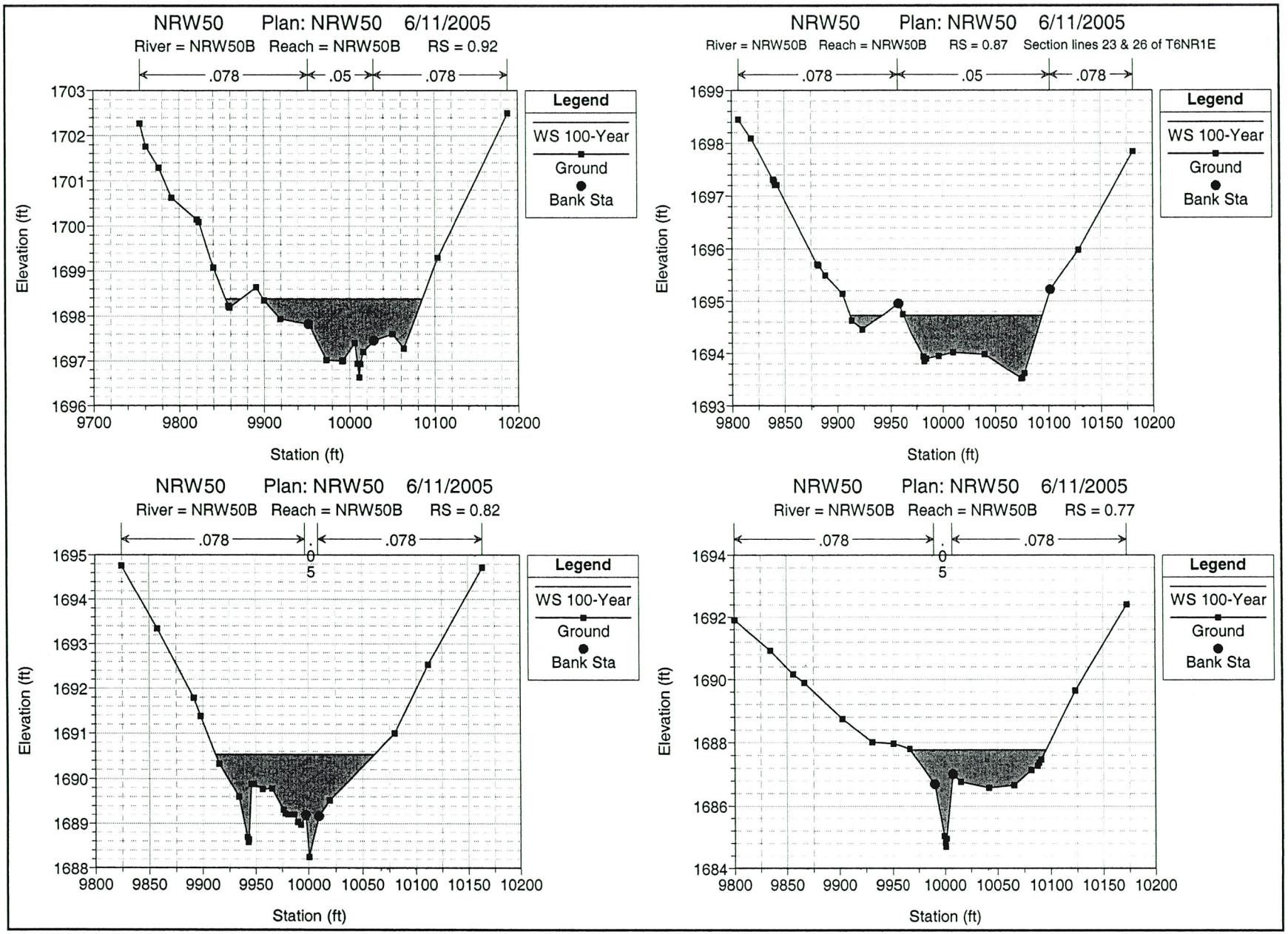

NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.20
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.16
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.12 Section lines 25 & 26 of T6NR1E
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50A Reach = NRW50A RS = 0.06 D.S. Limit of Study
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

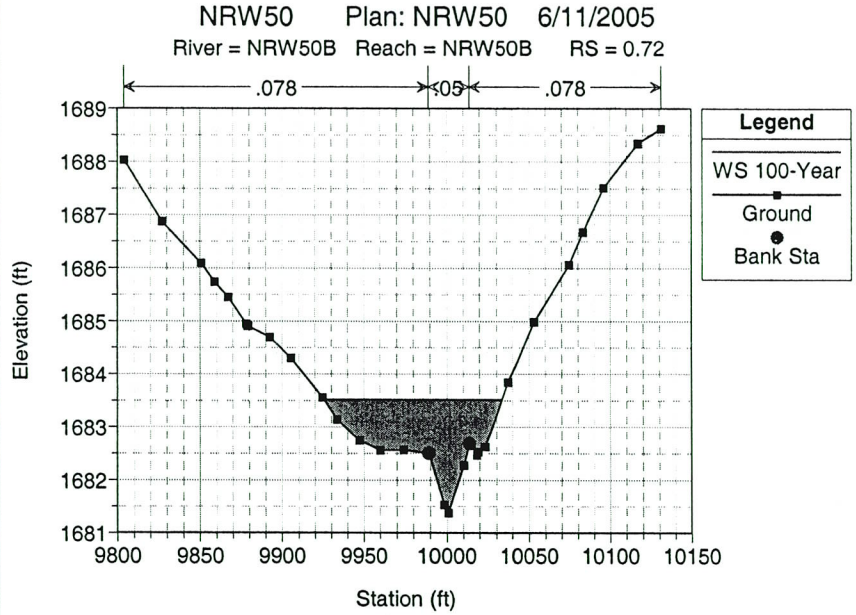

NRW50 Plan: NRW50 6/11/2005
NRW50A NRW50A
Legend
WS 100-Year
Ground
Elevation (ft)
1675
1670
1665
1660
1655
1650
1645
1640
1635
0.12
0.16
0.20
0.24
0.28
0.31
0.35
0.38
0.41
0.44
0.47
0.50
0.53
0.55
0.58
0
500
1000
1500
2000
2500
3000
Main Channel Distance (ft)

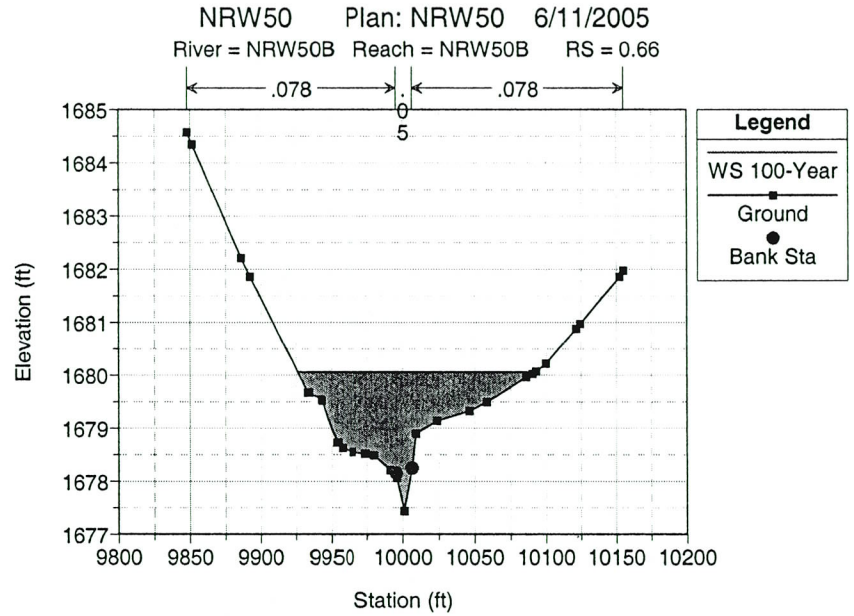

NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.40 U.S. Limit of Study
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.35
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.31
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.25
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

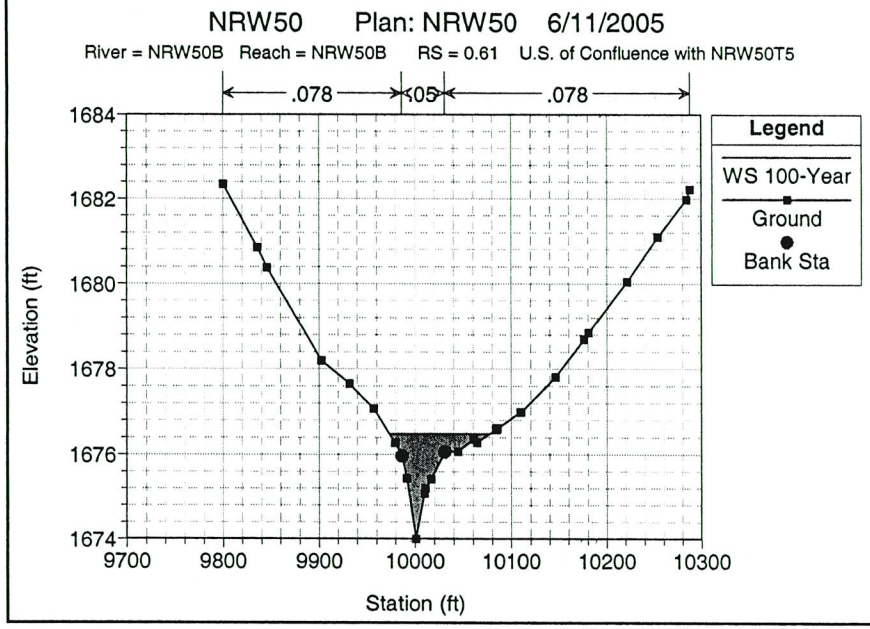

NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.20
.078 .05 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.15
.078 .05 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.09
.078 .05 .078
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.03
.078 .05 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

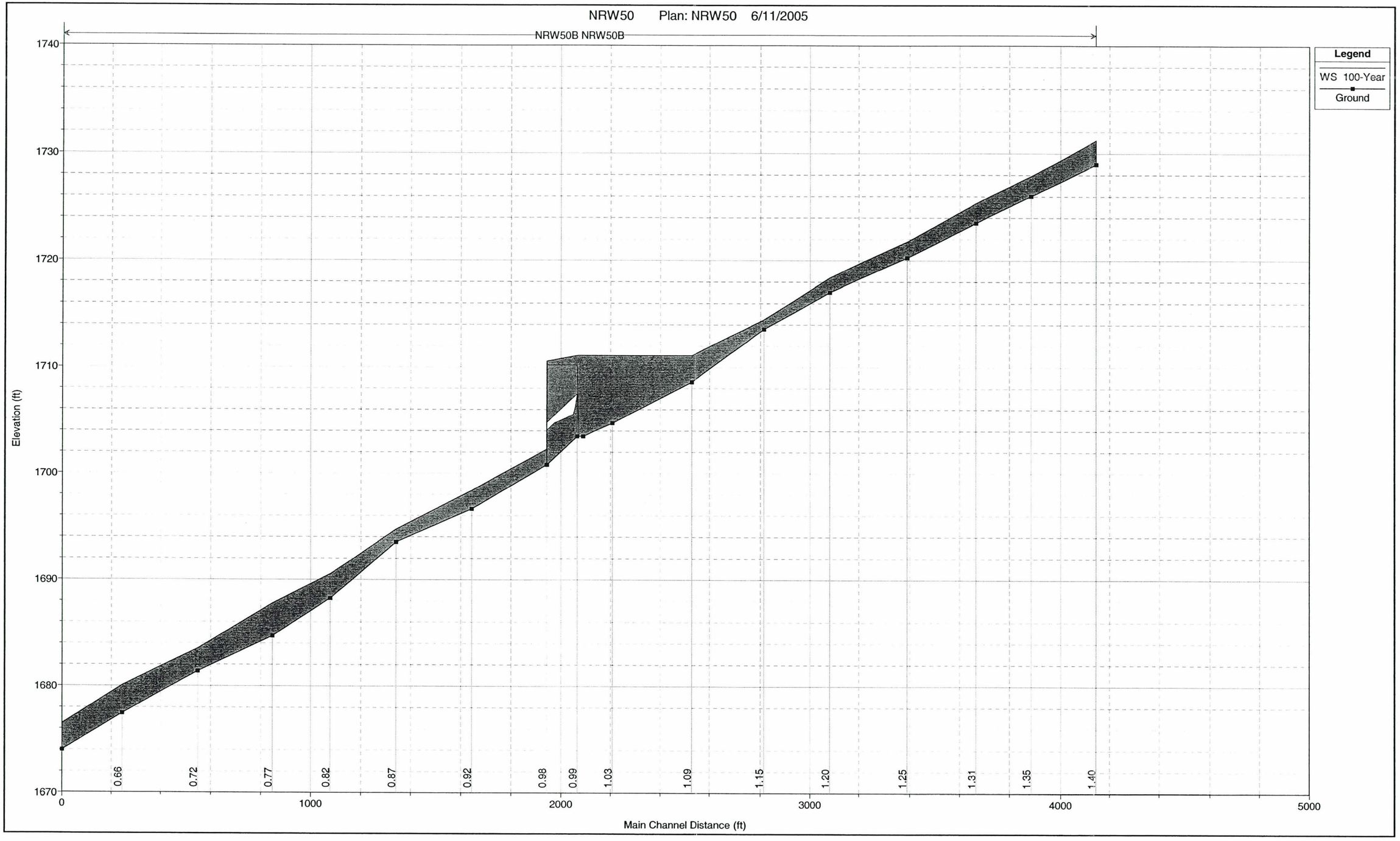

NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 1.01 U.S. of 2 - 48" CMP's
.078
.05
.078
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.99 Culv CL of New River Road; Top of culvert crossingApproximate Survey
.078
.05
.078
Legend
WS 100-Year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.99 Culv CL of New River Road; Top of culvert crossingApproximate Survey
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.98 D.S. of 2 - 48" CMP's
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

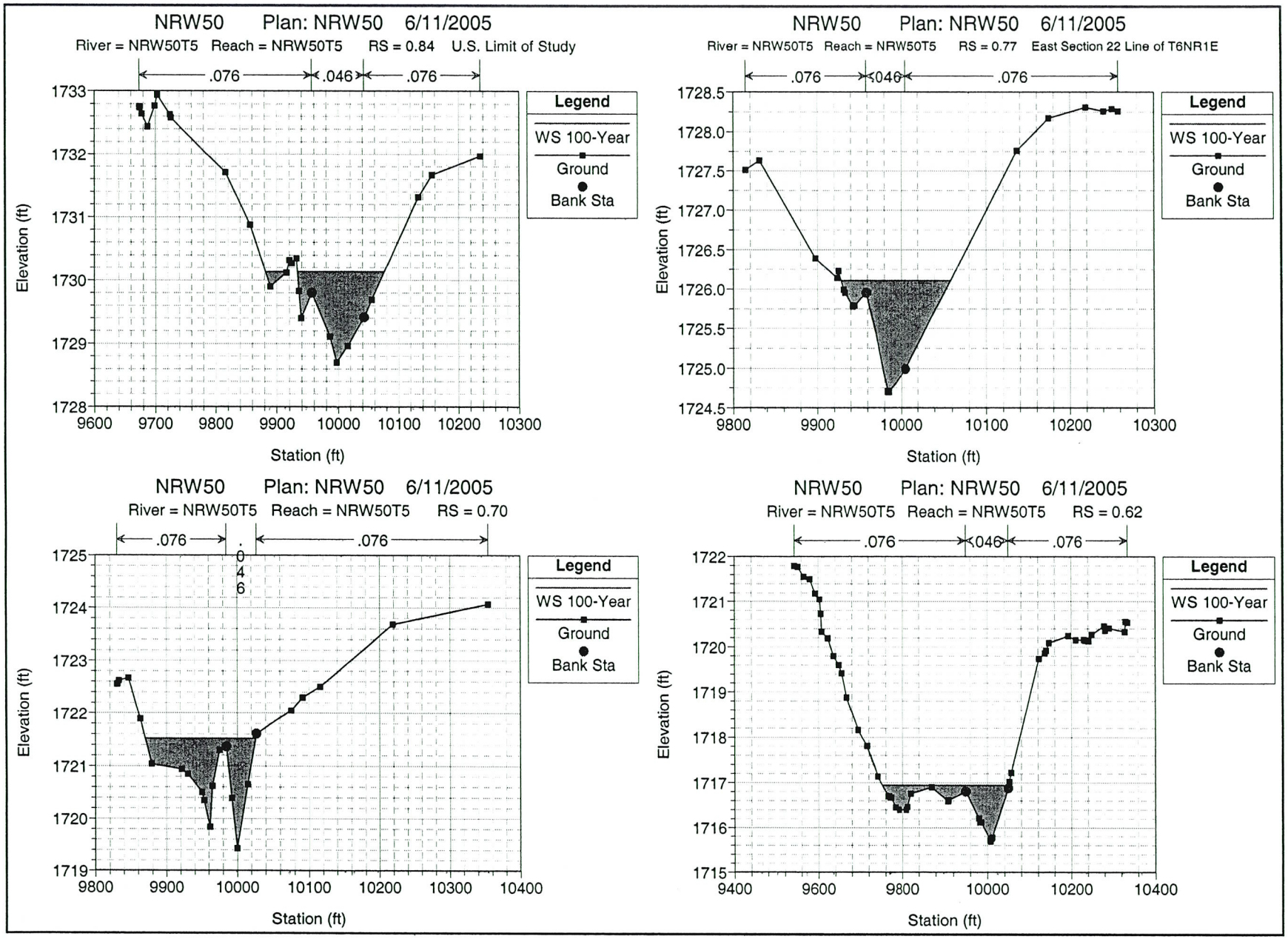

NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.92
.078 .05 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.87 Section lines 23 & 26 of T6NR1E
.078 .05 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.82
.078 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.77
.078 .078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

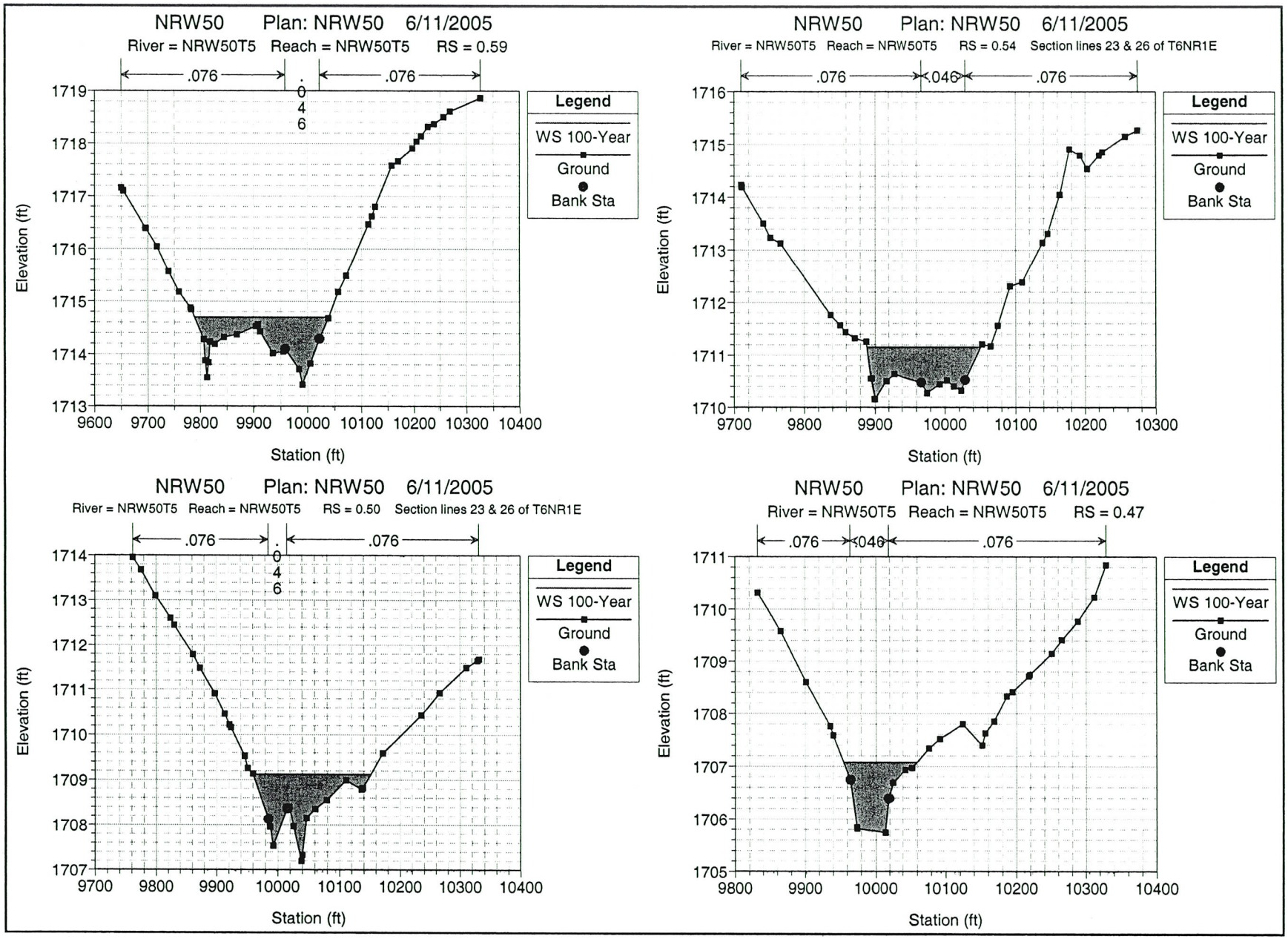

NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.72
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

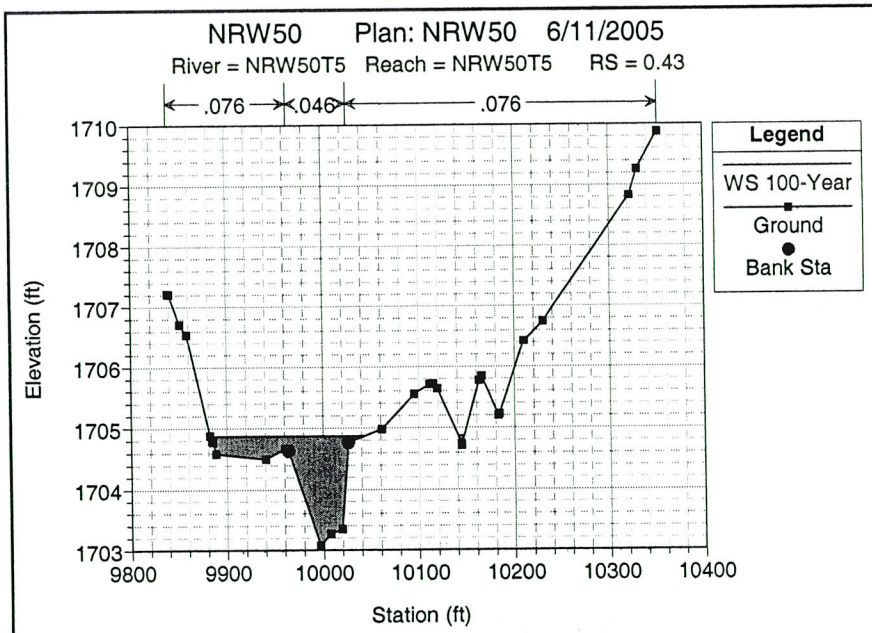

NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.66
.078
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

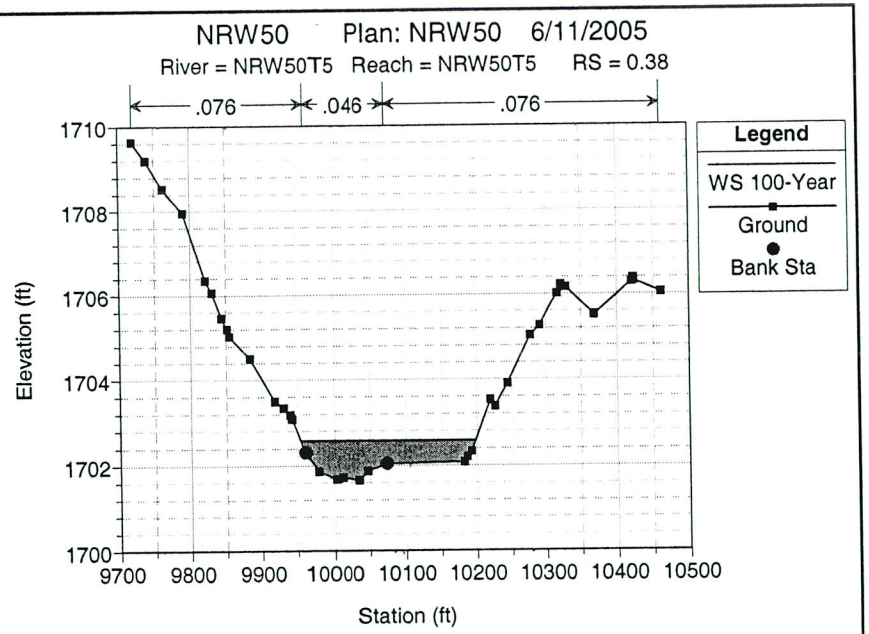

NRW50 Plan: NRW50 6/11/2005
River = NRW50B Reach = NRW50B RS = 0.61 U.S. of Confluence with NRW50T5
.078
.05
.078
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

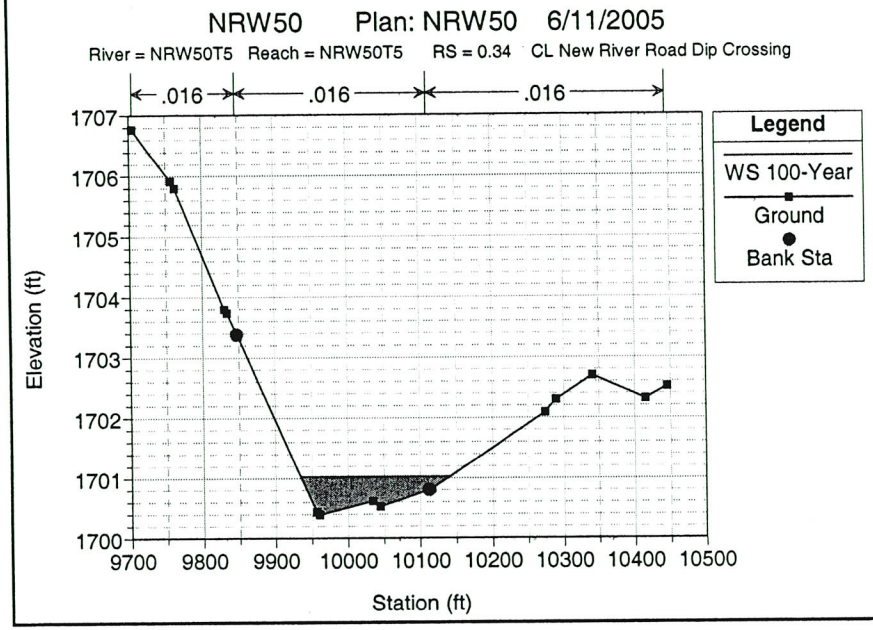

NRW50 Plan: NRW50 6/11/2005
NRW50B NRW50B
Legend
WS 100-Year
Ground
Elevation (ft)
1740
1730
1720
1710
1700
1690
1680
1670
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)
0.66
0.72
0.77
0.82
0.87
0.92
0.98
0.99
1.03
1.09
1.15
1.20
1.25
1.31
1.35
1.40

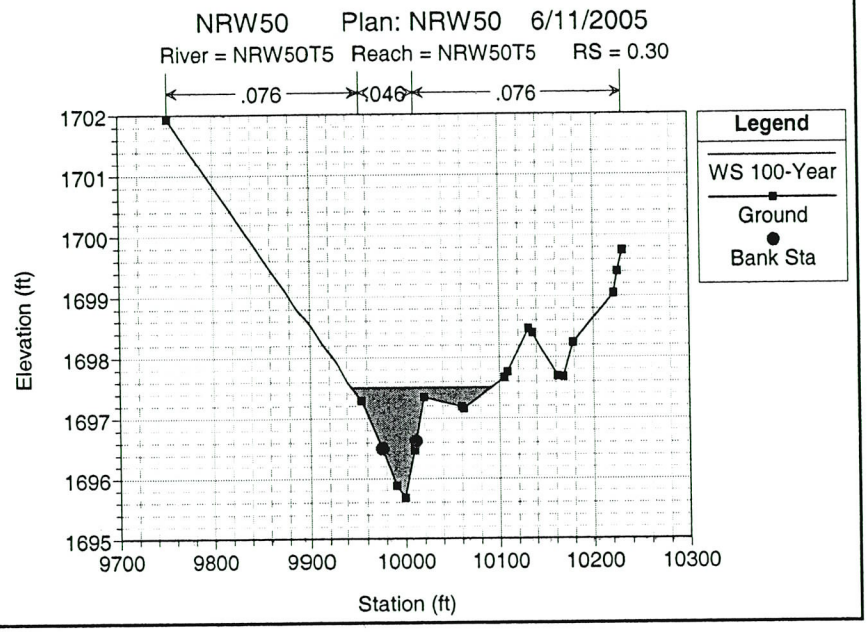

NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.84 U.S. Limit of Study
.076
.046
.076
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.77 East Section 22 Line of T6NR1E
.076
.046
.076
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.70
.076
.046
.076
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.62
.076
.046
.076
Elevation (ft)
Station (ft)
Legend
WS 100-Year
Ground
Bank Sta

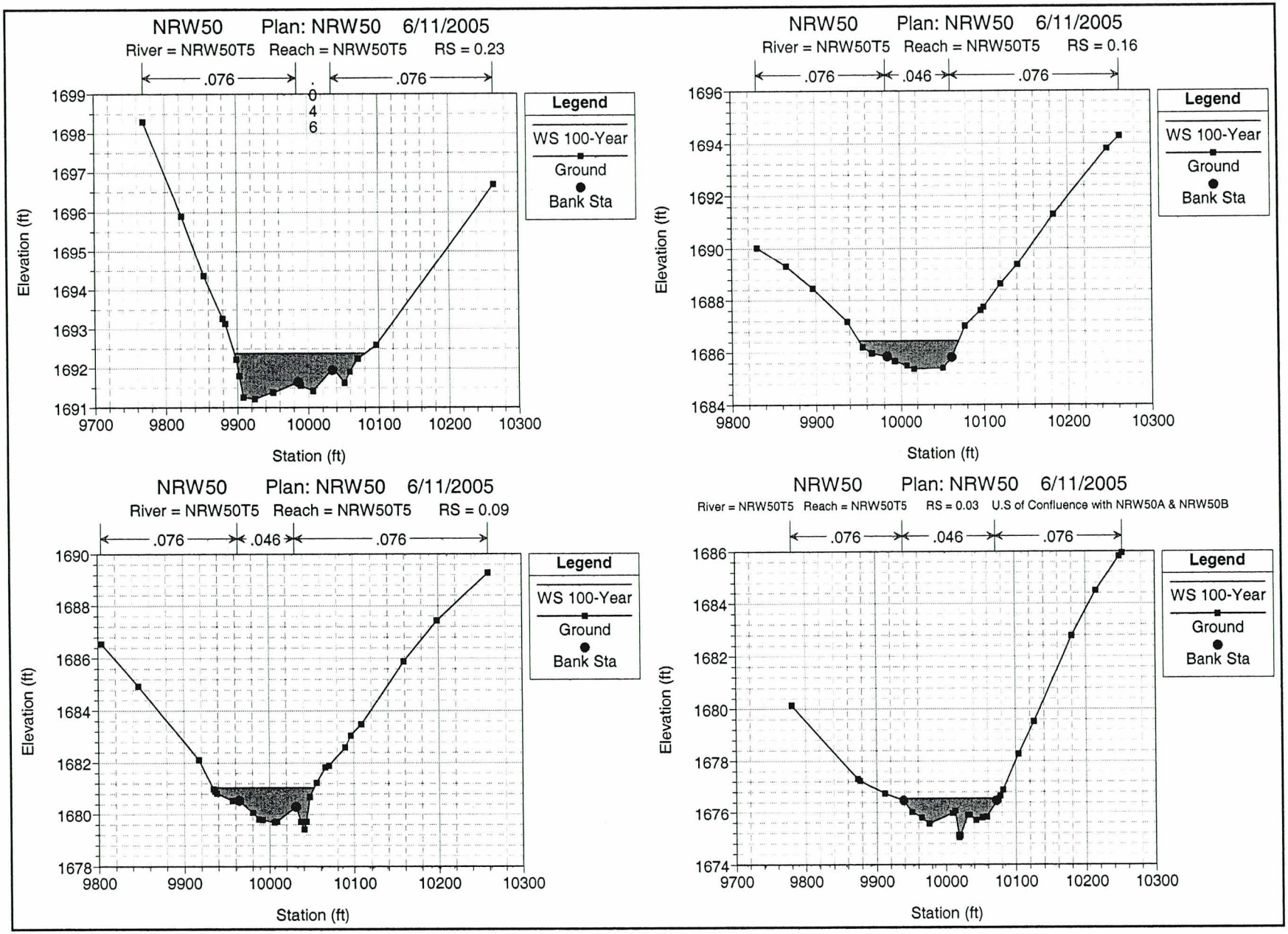

NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.59
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.54 Section lines 23 & 26 of T6NR1E
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.50 Section lines 23 & 26 of T6NR1E
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.47
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

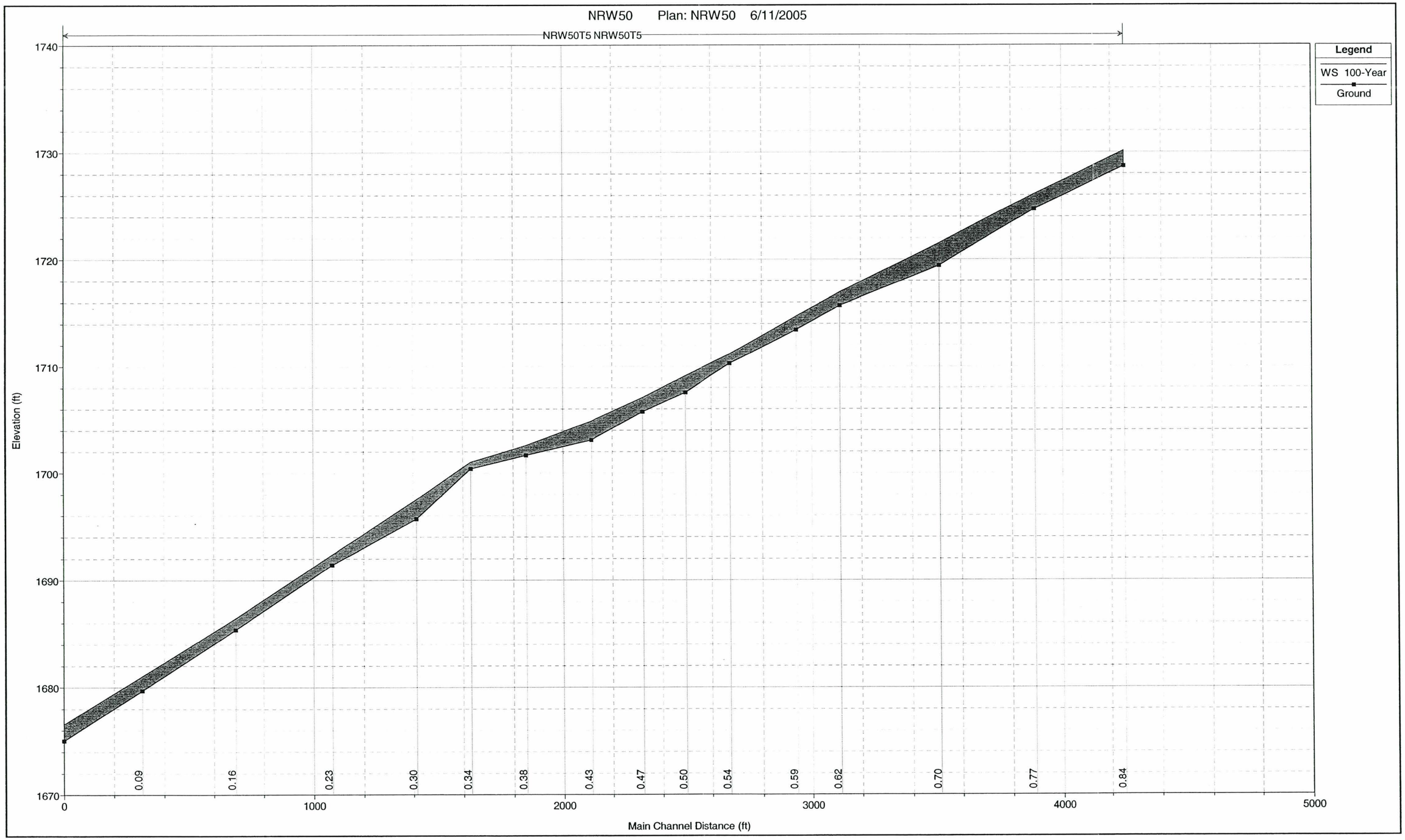

NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.43
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.38
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.34 CL New River Road Dip Crossing
.016
.016
.016
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

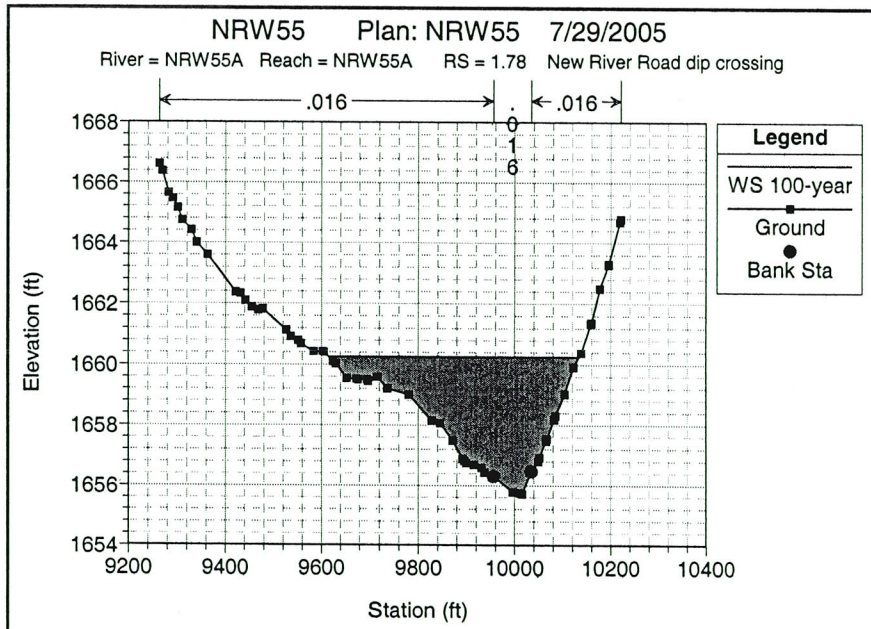

NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.30
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

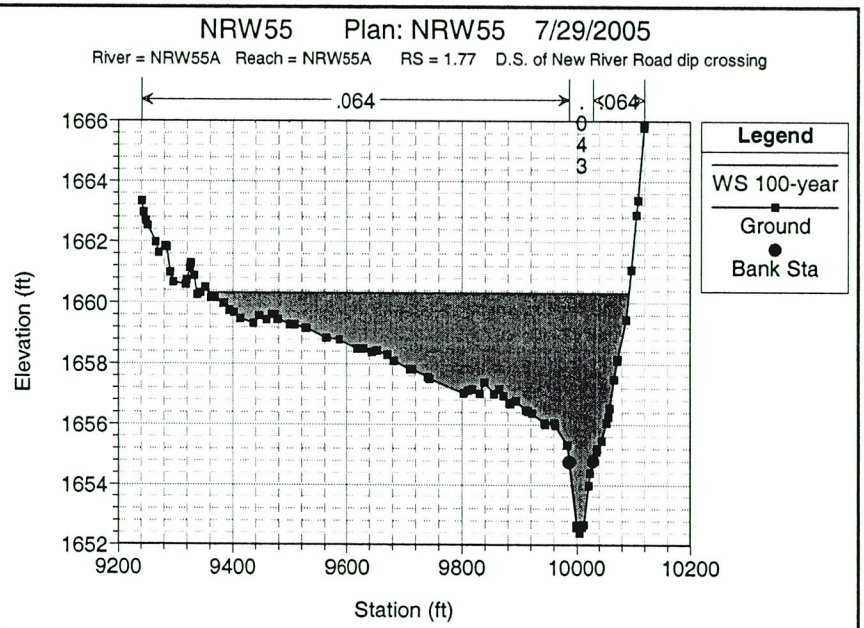

NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.23
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.16
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.09
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW50 Plan: NRW50 6/11/2005
River = NRW50T5 Reach = NRW50T5 RS = 0.03 U.S of Confluence with NRW50A & NRW50B
.076
.046
.076
Legend
WS 100-Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

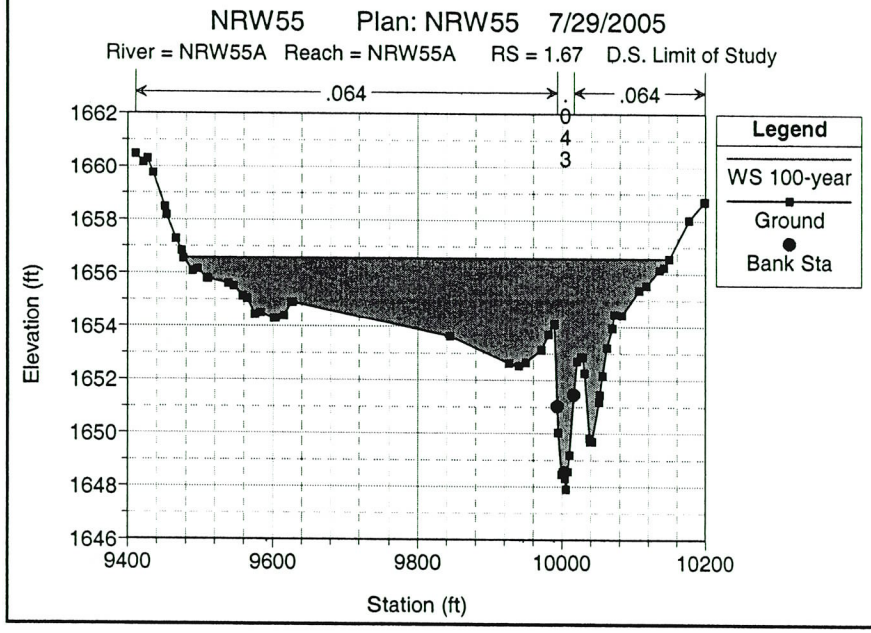

NRW50 Plan: NRW50 6/11/2005
NRW50T5 NRW50T5
Legend
WS 100-Year
Ground
Elevation (ft)
1740
1730
1720
1710
1700
1690
1680
1670
0.09
0.16
0.23
0.30
0.34
0.38
0.43
0.47
0.50
0.54
0.59
0.62
0.70
0.77
0.84
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)

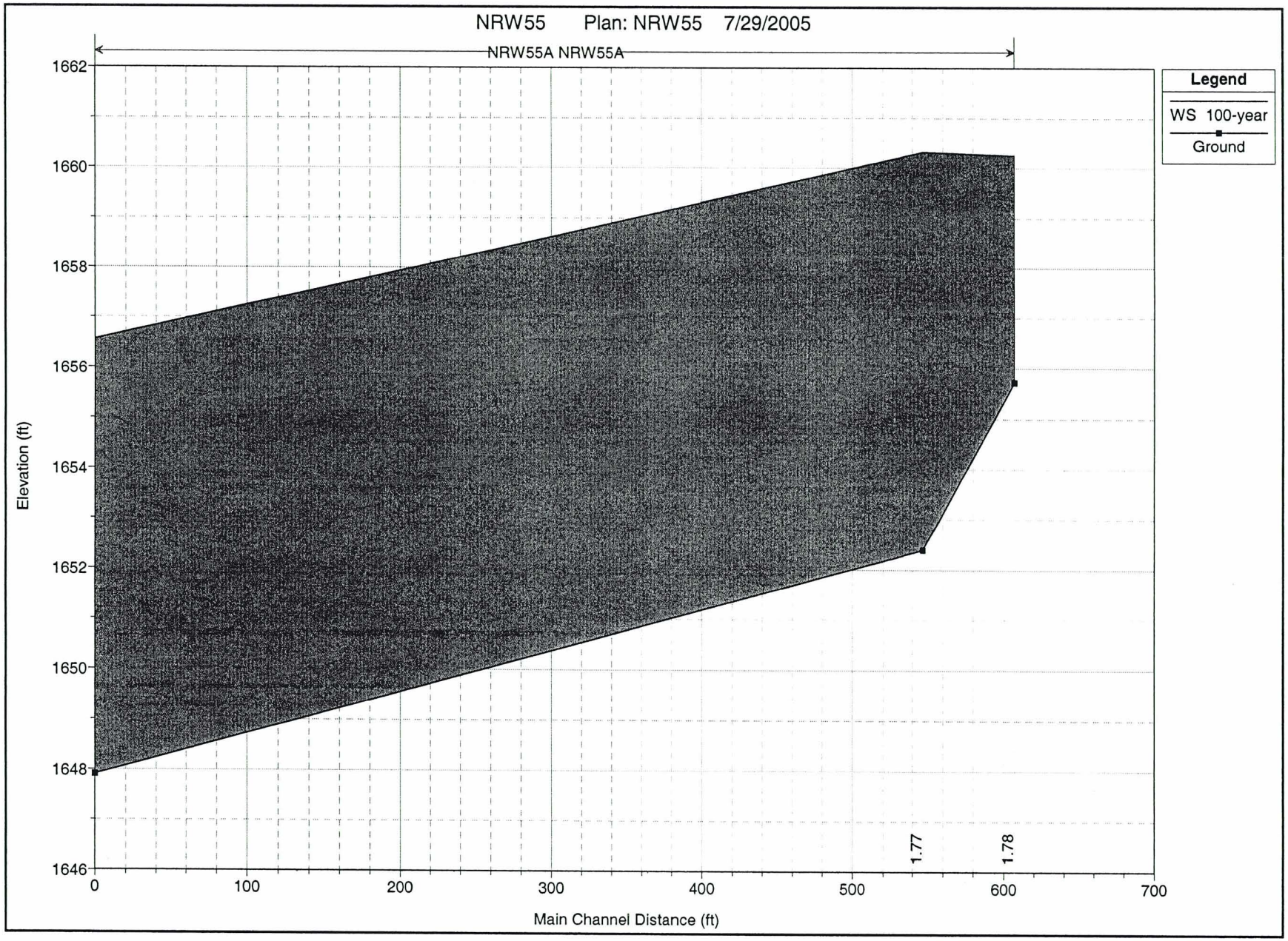
NRW 55

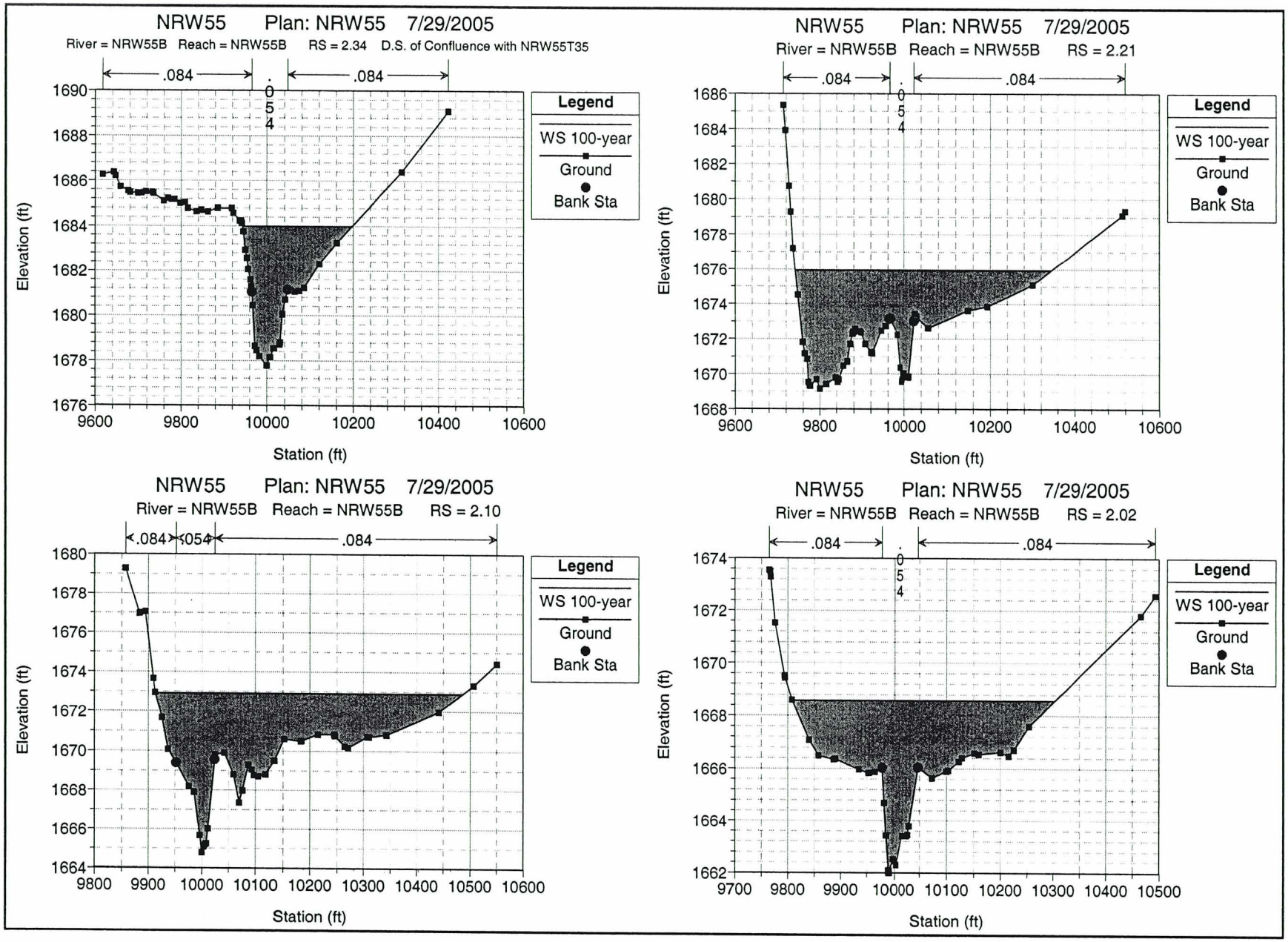
URS Corporation
New River West Tributaries FDS
FCD 2003 C057

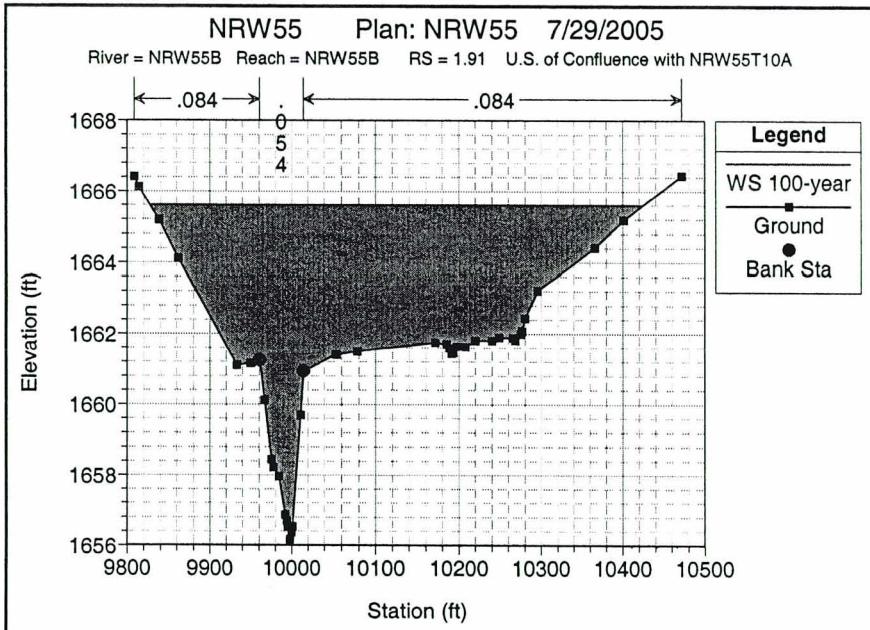

NRW55 Plan: NRW55 7/29/2005
River = NRW55A Reach = NRW55A RS = 1.78 New River Road dip crossing
.016
.016
.016
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

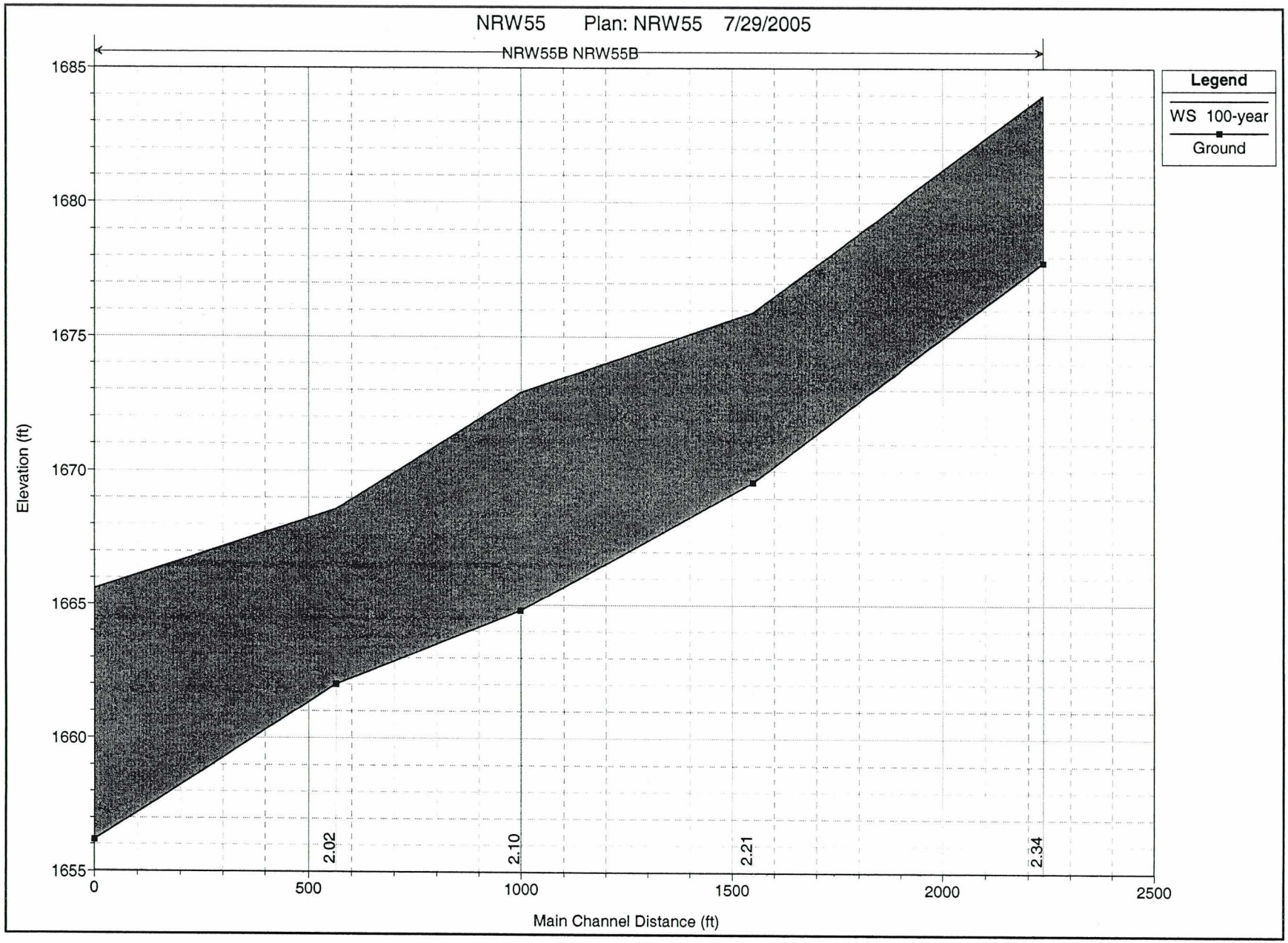

NRW55 Plan: NRW55 7/29/2005
River = NRW55A Reach = NRW55A RS = 1.77 D.S. of New River Road dip crossing
.064
.064
.043
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

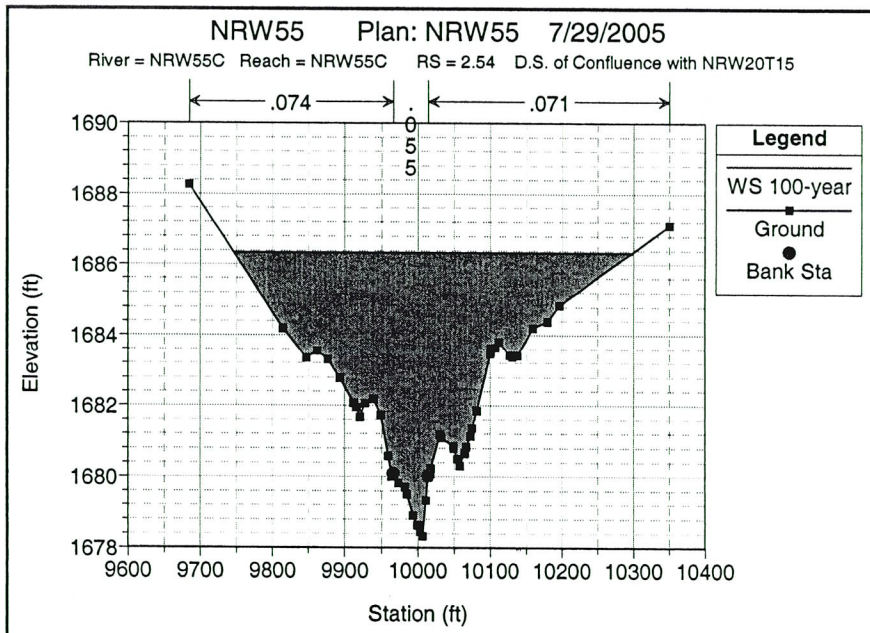

NRW55 Plan: NRW55 7/29/2005
River = NRW55A Reach = NRW55A RS = 1.67 D.S. Limit of Study
.064
.064
.043
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

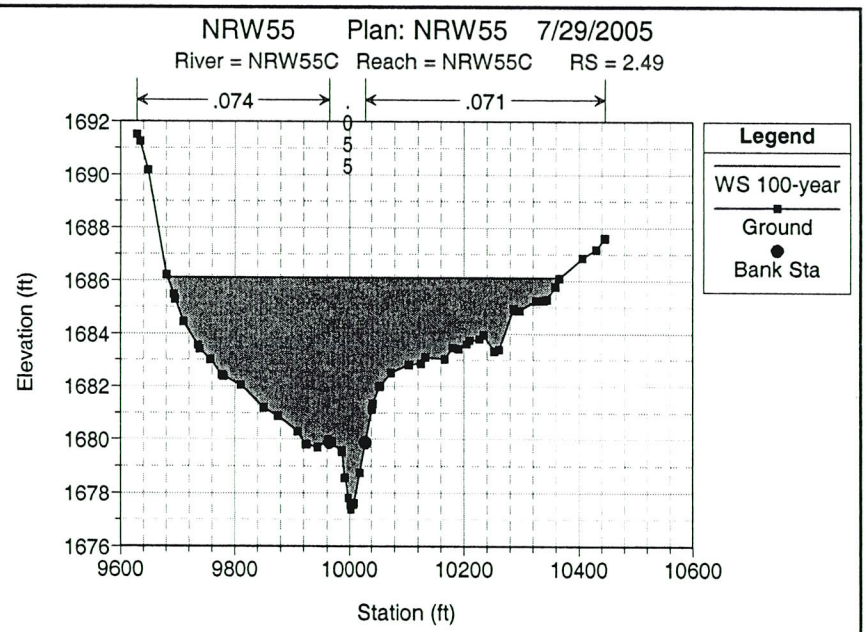

NRW55 Plan: NRW55 7/29/2005
NRW55A NRW55A
Legend
WS 100-year
Ground
Elevation (ft)
1662
1660
1658
1656
1654
1652
1650
1648
1646
0
100
200
300
400
500
600
700
1.77
1.78
Main Channel Distance (ft)

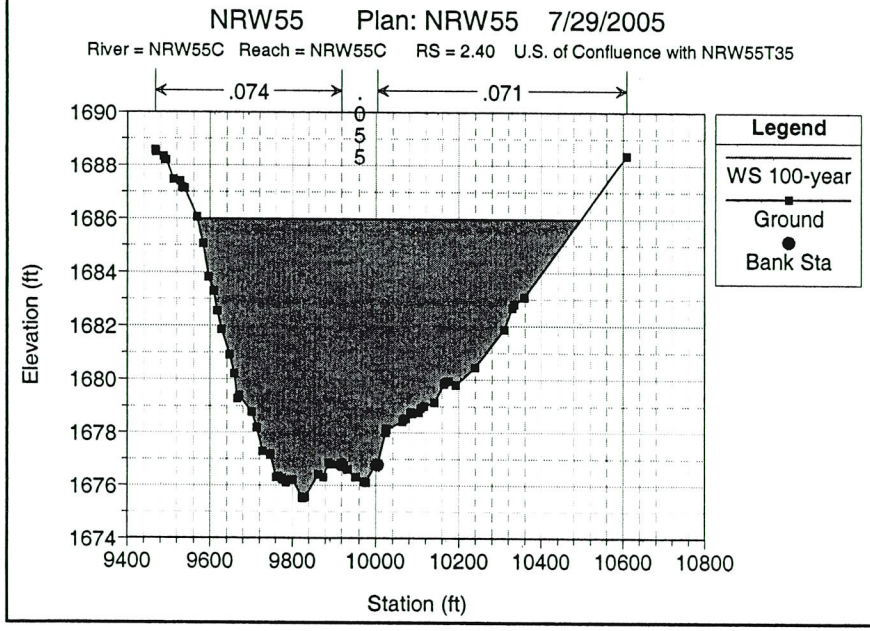

NRW55 Plan: NRW55 7/29/2005
River = NRW55B Reach = NRW55B RS = 2.34 D.S. of Confluence with NRW55T35
.084
.054
.084
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55B Reach = NRW55B RS = 2.21
.084
.054
.084
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55B Reach = NRW55B RS = 2.10
.084
.054
.084
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55B Reach = NRW55B RS = 2.02
.084
.054
.084
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

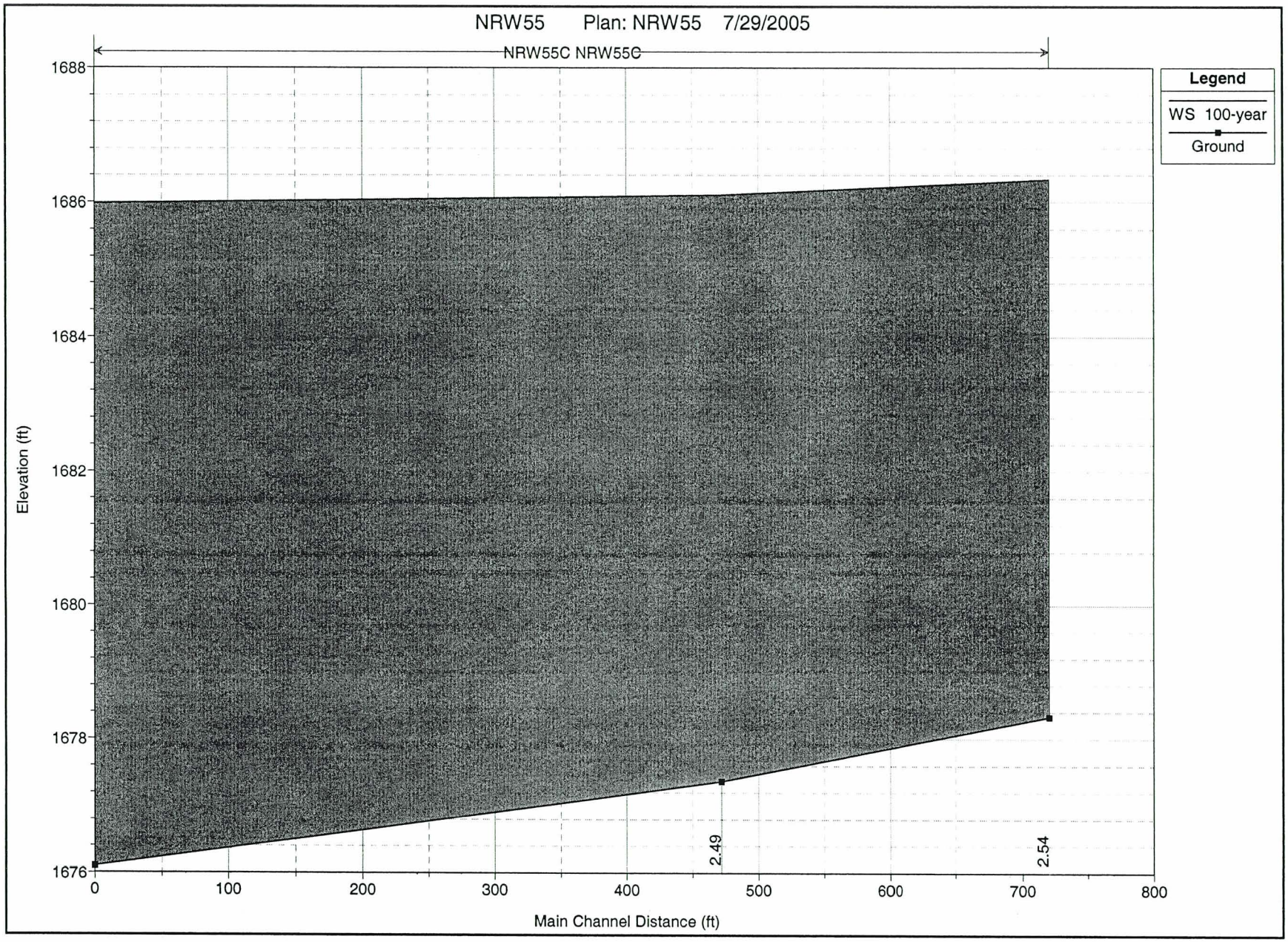

NRW55 Plan: NRW55 7/29/2005
River = NRW55B Reach = NRW55B RS = 1.91 U.S. of Confluence with NRW55T10A
.084
.054
.084
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1668
1666
1664
1662
1660
1658
1656
9800
9900
10000
10100
10200
10300
10400
10500
Station (ft)

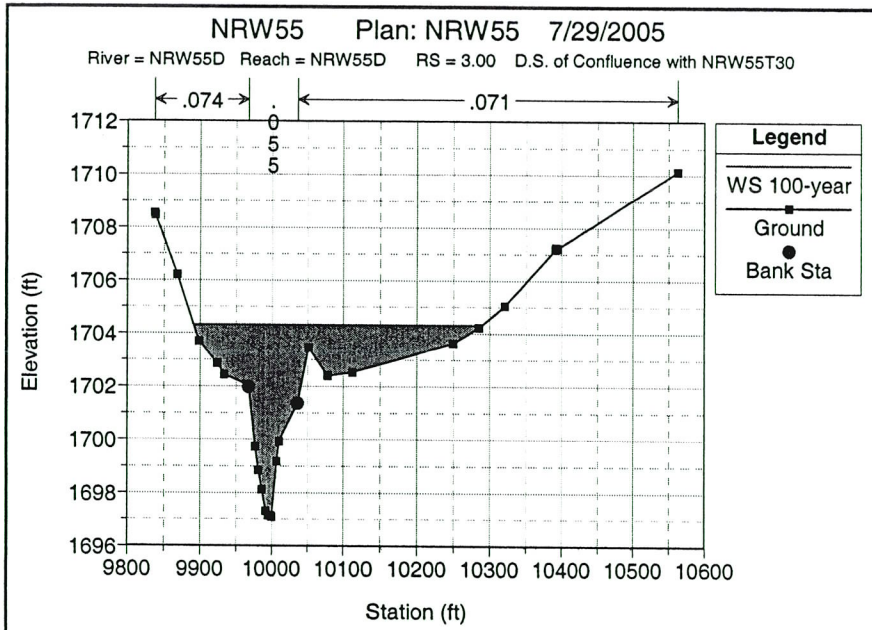

NRW55 Plan: NRW55 7/29/2005
NRW55B NRW55B
Legend
WS 100-year
Ground
Elevation (ft)
1685
1680
1675
1670
1665
1660
1655
0
500
1000
1500
2000
2500
Main Channel Distance (ft)
2.02
2.10
2.21
2.34

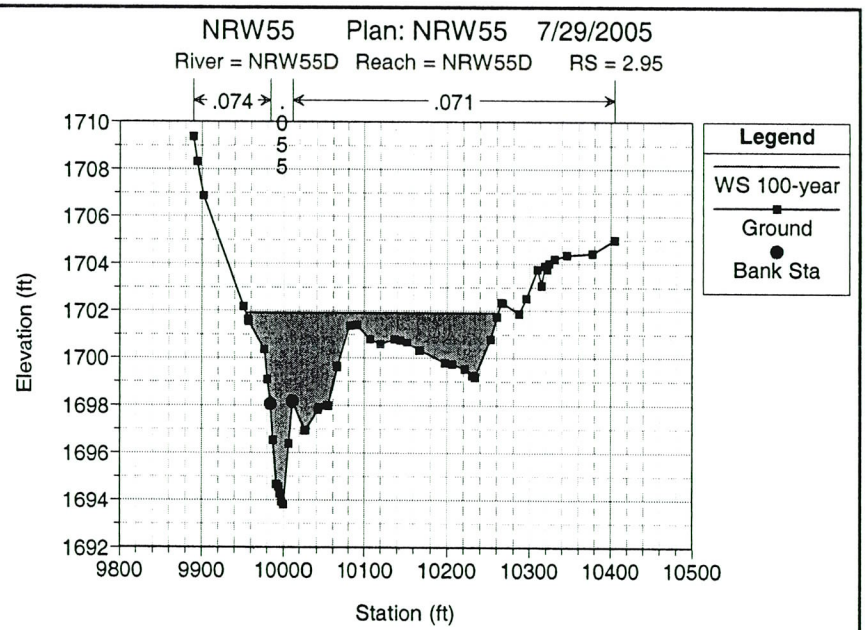

NRW55 Plan: NRW55 7/29/2005
River = NRW55C Reach = NRW55C RS = 2.54 D.S. of Confluence with NRW20T15
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

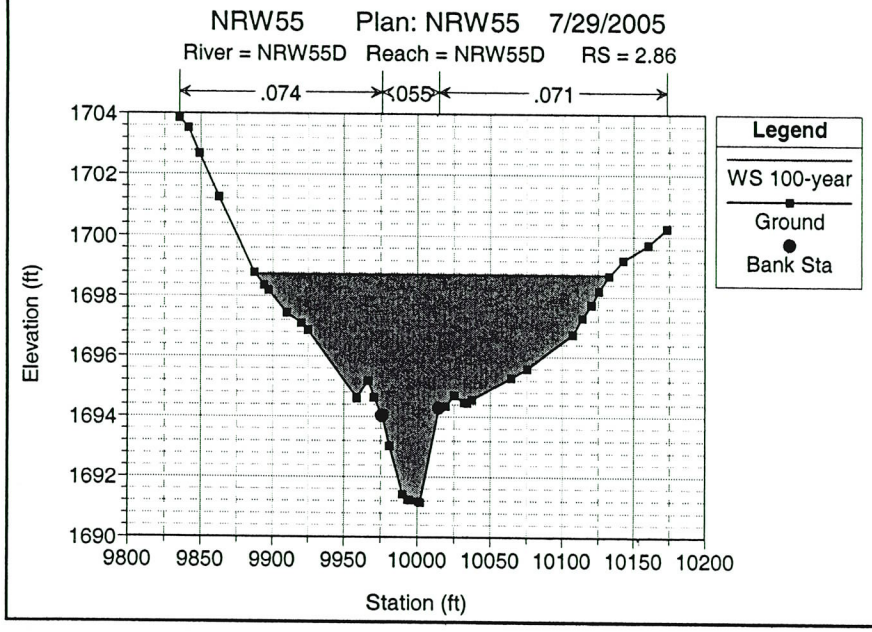

NRW55 Plan: NRW55 7/29/2005
River = NRW55C Reach = NRW55C RS = 2.49
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

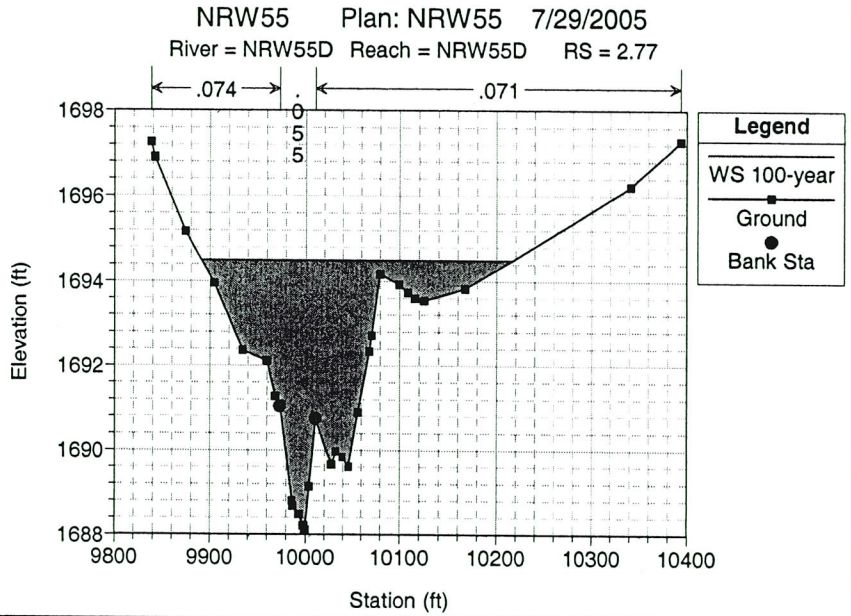

NRW55 Plan: NRW55 7/29/2005
River = NRW55C Reach = NRW55C RS = 2.40 U.S. of Confluence with NRW55T35
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

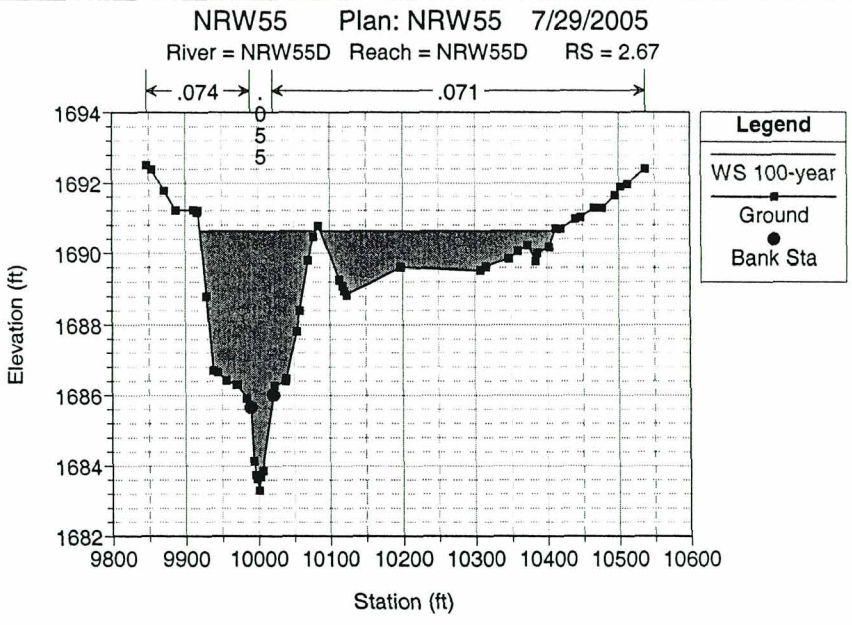

NRW55 Plan: NRW55 7/29/2005
NRW55C NRW55C
Legend
WS 100-year
Ground
Elevation (ft)
1688
1686
1684
1682
1680
1678
1676
0
100
200
300
400
500
600
700
800
Main Channel Distance (ft)
2.49
2.54

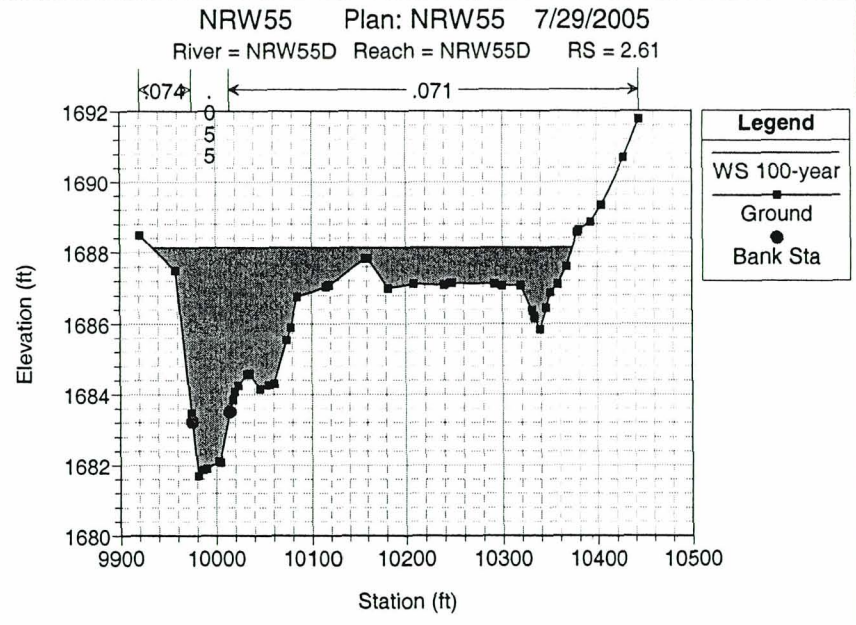

NRW55 Plan: NRW55 7/29/2005
River = NRW55D Reach = NRW55D RS = 3.00 D.S. of Confluence with NRW55T30
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

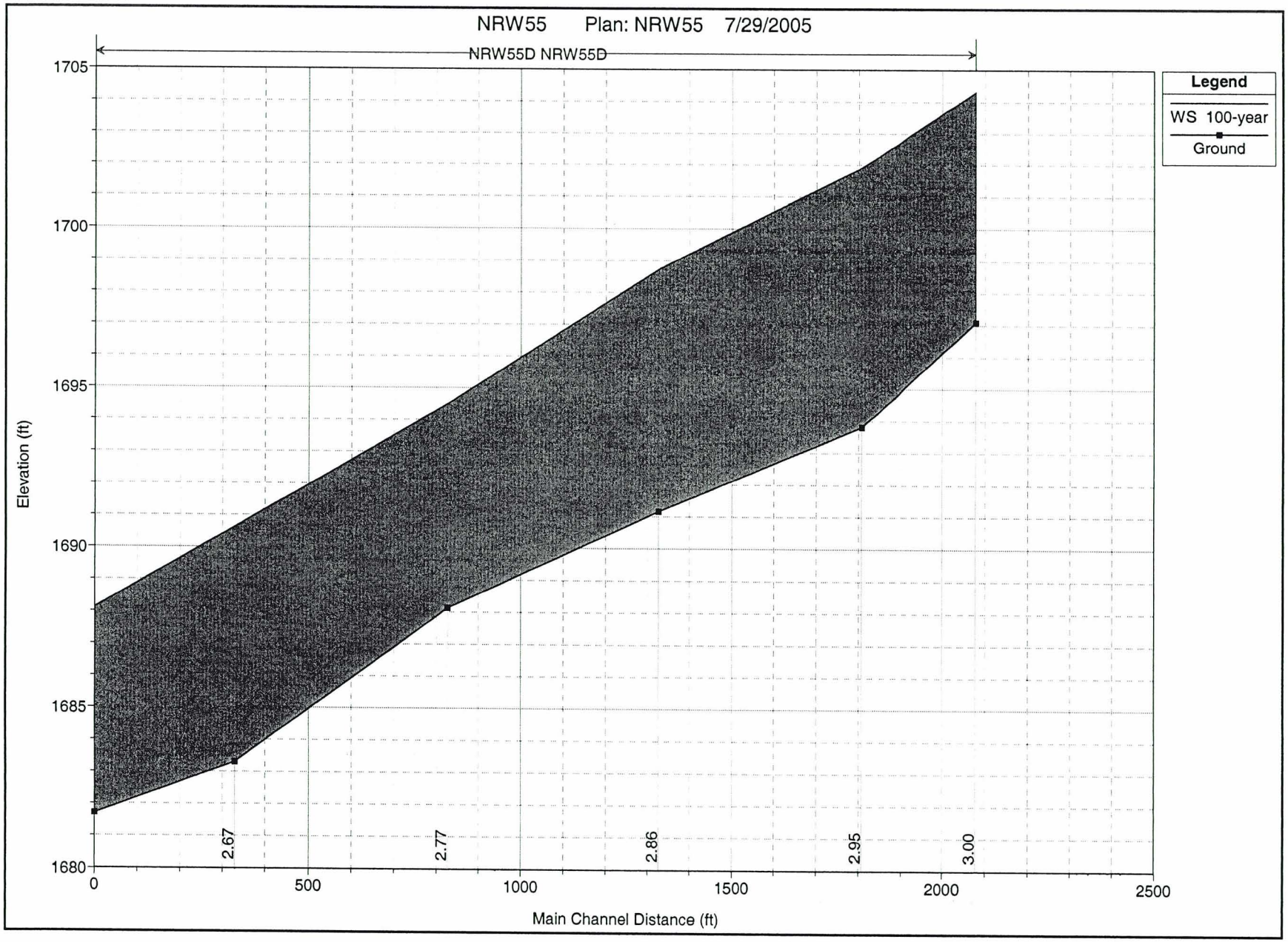

NRW55 Plan: NRW55 7/29/2005
River = NRW55D Reach = NRW55D RS = 2.95
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

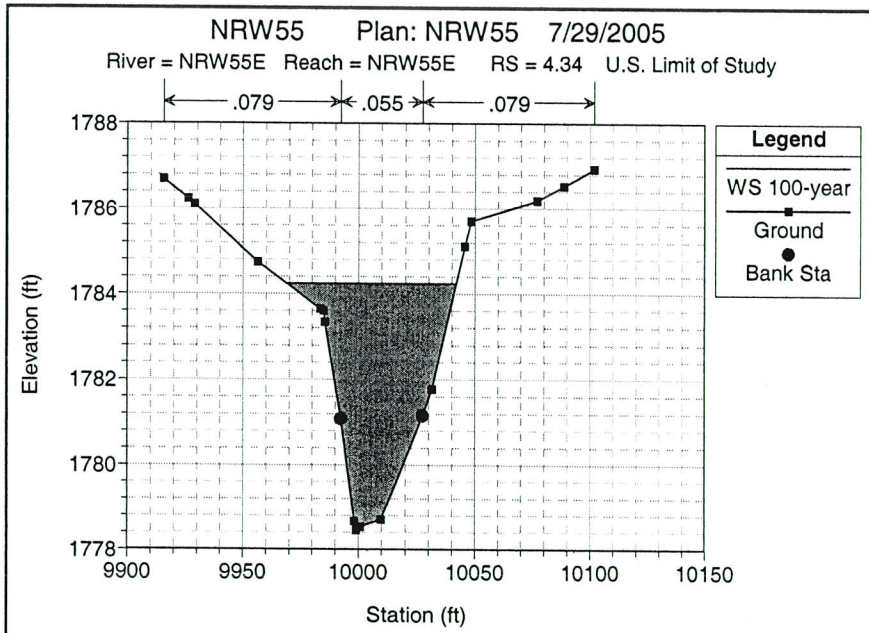

NRW55 Plan: NRW55 7/29/2005
River = NRW55D Reach = NRW55D RS = 2.86
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

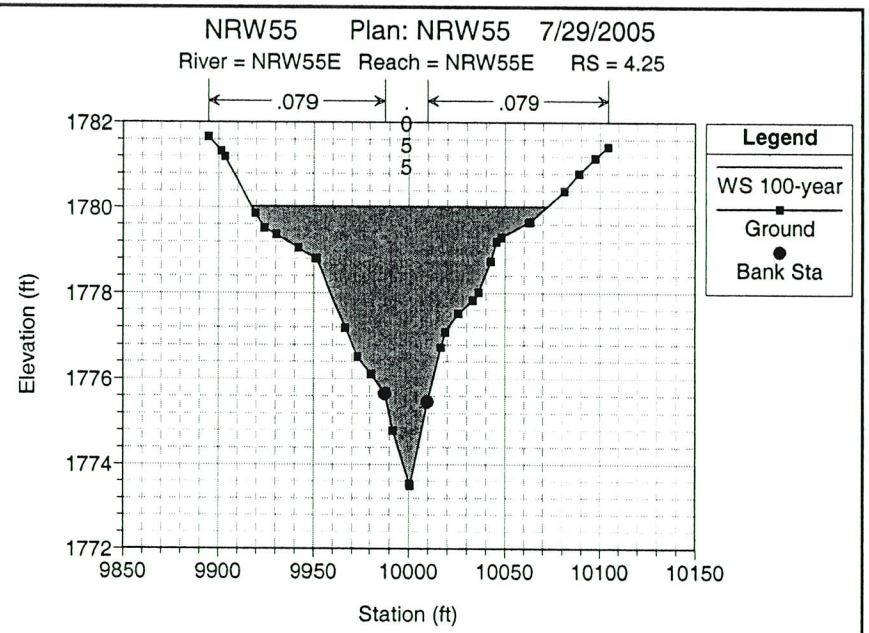

NRW55 Plan: NRW55 7/29/2005
River = NRW55D Reach = NRW55D RS = 2.77
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

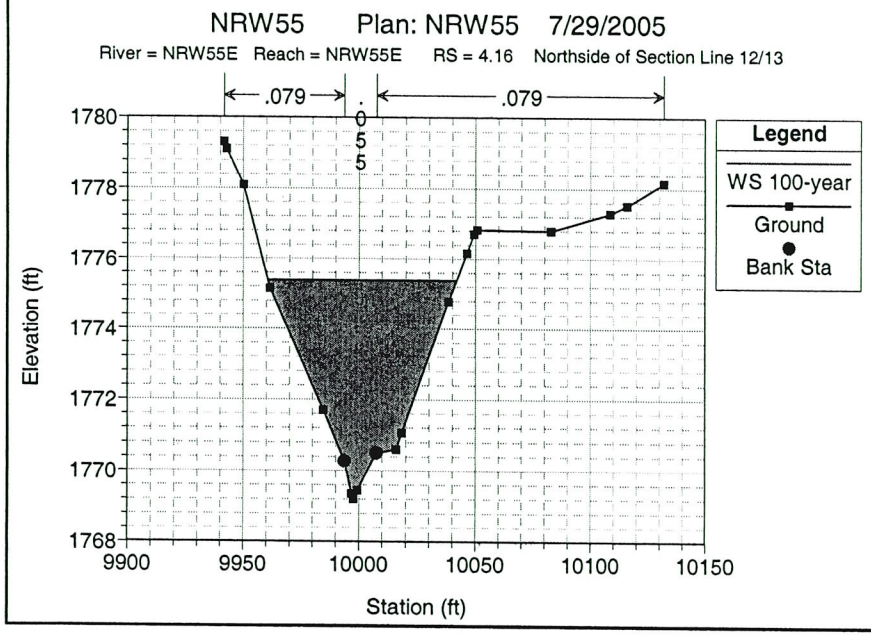

NRW55 Plan: NRW55 7/29/2005
River = NRW55D Reach = NRW55D RS = 2.67
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1694
1692
1690
1688
1686
1684
1682
9800
9900
10000
10100
10200
10300
10400
10500
10600
Station (ft)

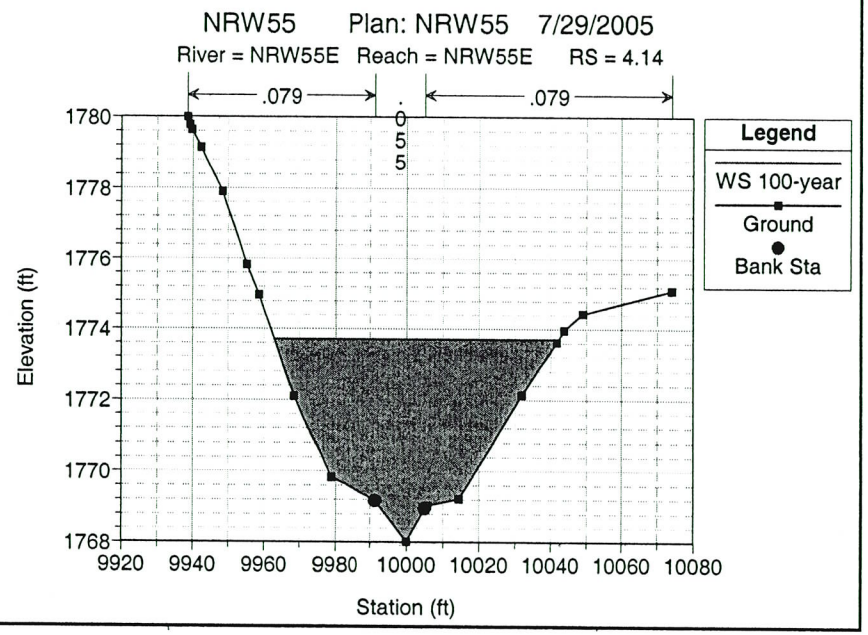

NRW55 Plan: NRW55 7/29/2005
River = NRW55D Reach = NRW55D RS = 2.61
.074
.055
.071
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1692
1690
1688
1686
1684
1682
1680
9900
10000
10100
10200
10300
10400
10500
Station (ft)

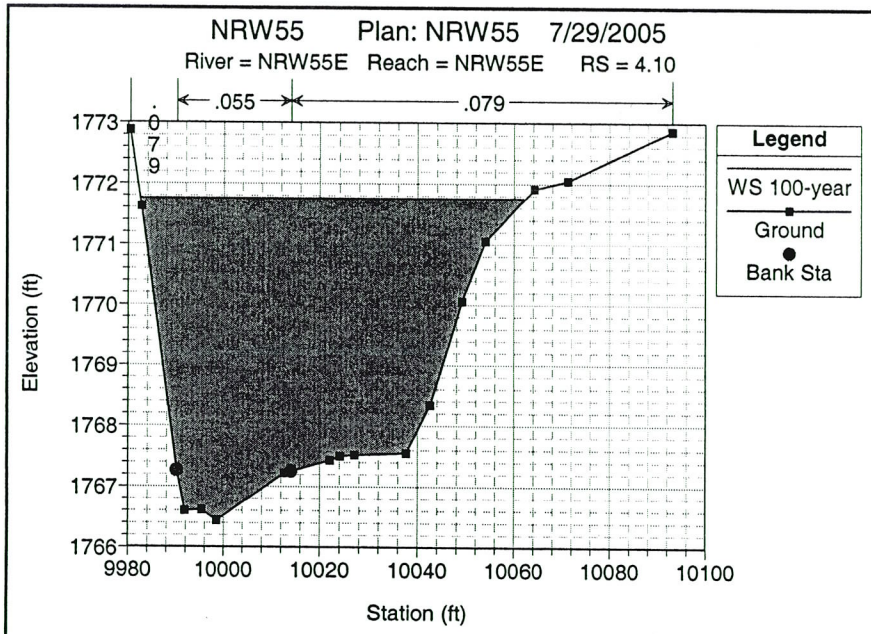

NRW55 Plan: NRW55 7/29/2005
NRW55D NRW55D
Legend
WS 100-year
Ground
Elevation (ft)
1705
1700
1695
1690
1685
1680
2.67
2.77
2.86
2.95
3.00
0
500
1000
1500
2000
2500
Main Channel Distance (ft)

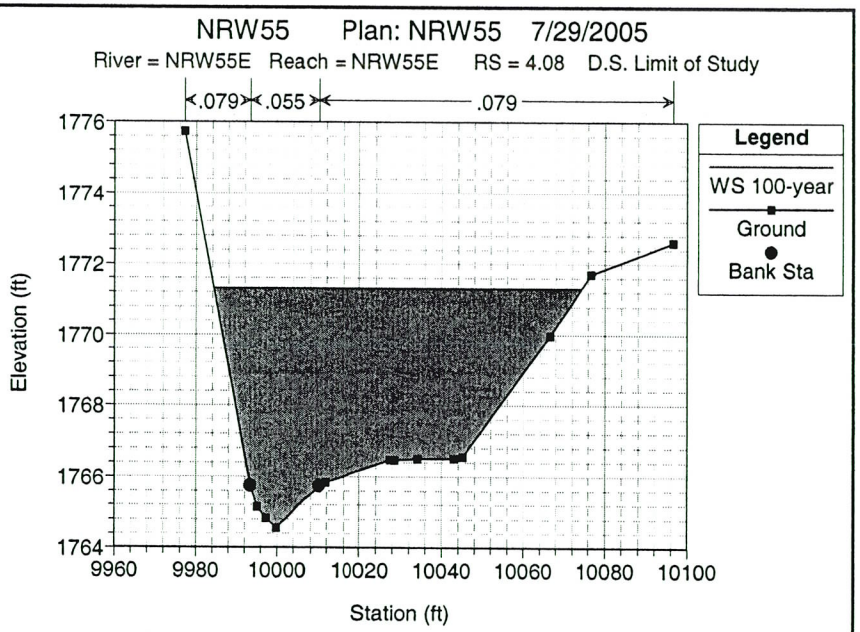

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 4.34 U.S. Limit of Study
.079
.055
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

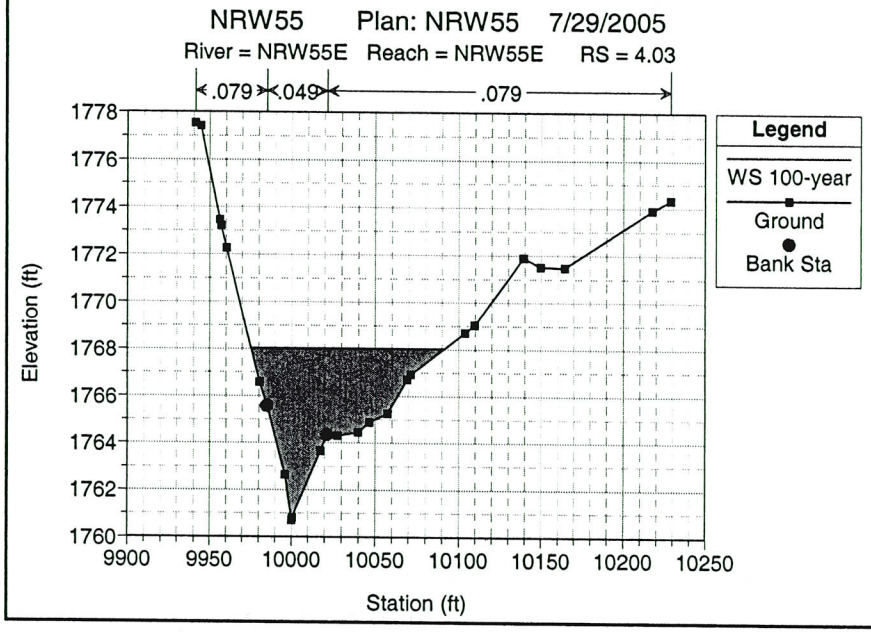

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 4.25
.079
.055
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

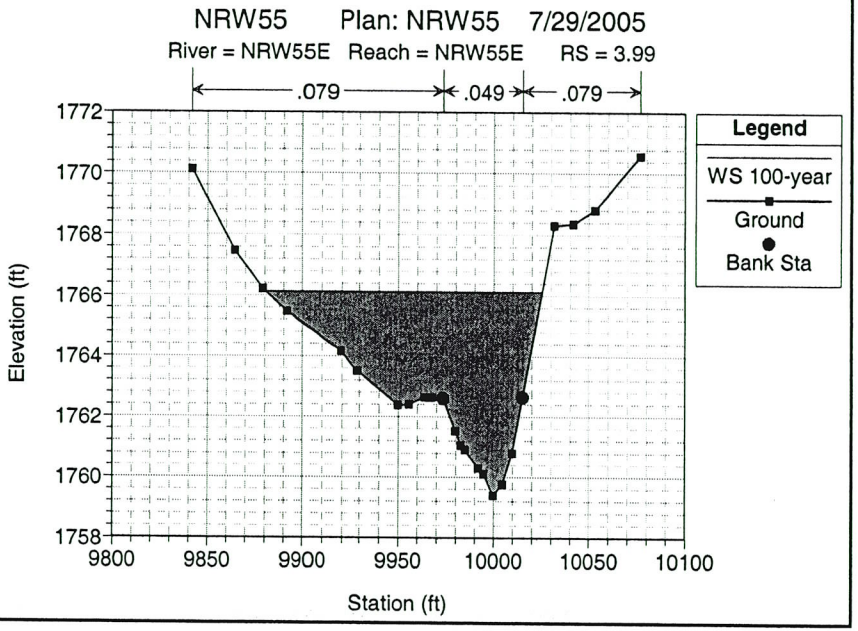

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 4.16 Northside of Section Line 12/13
.079
.055
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

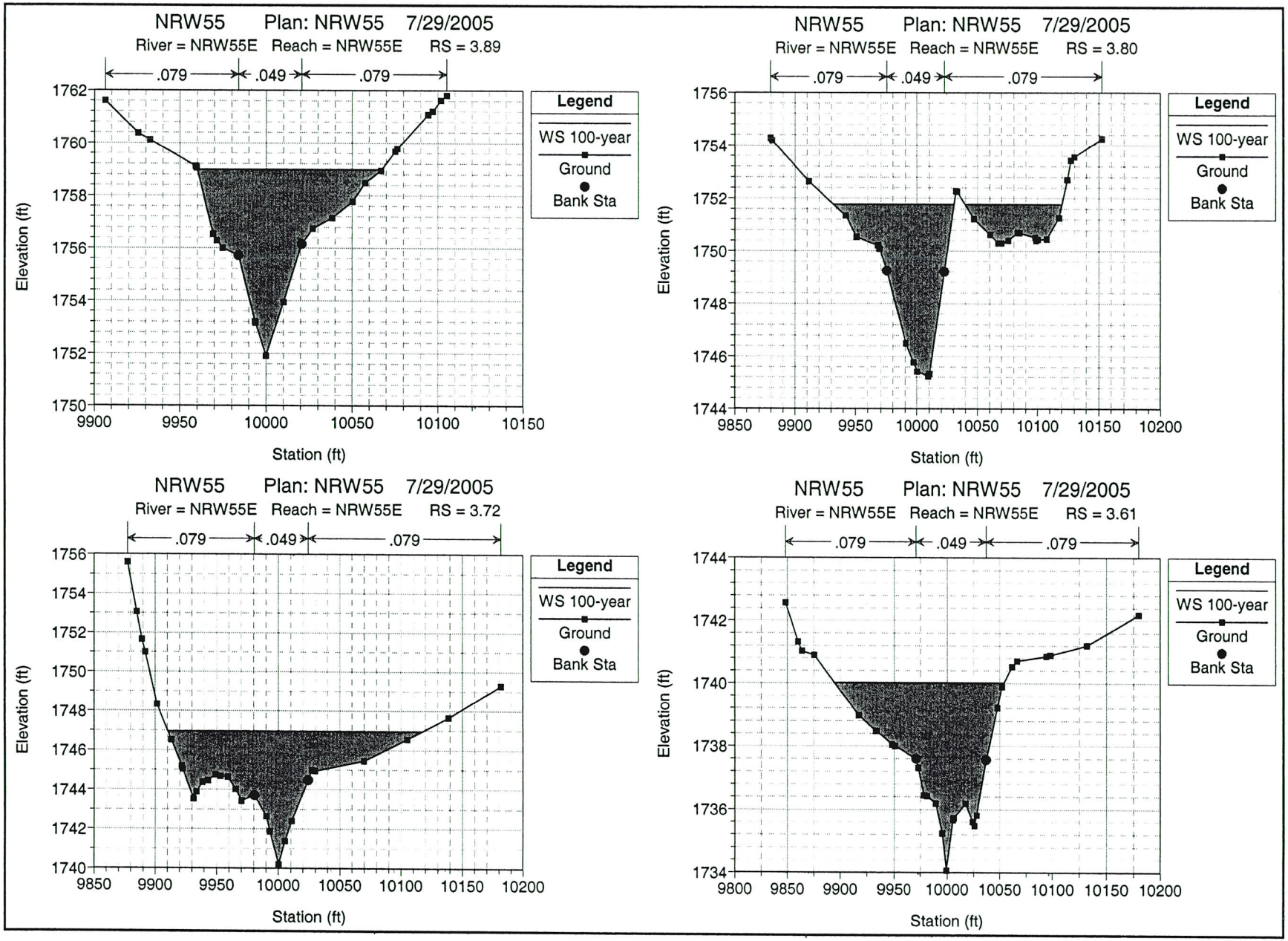

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 4.14
.079
.055
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

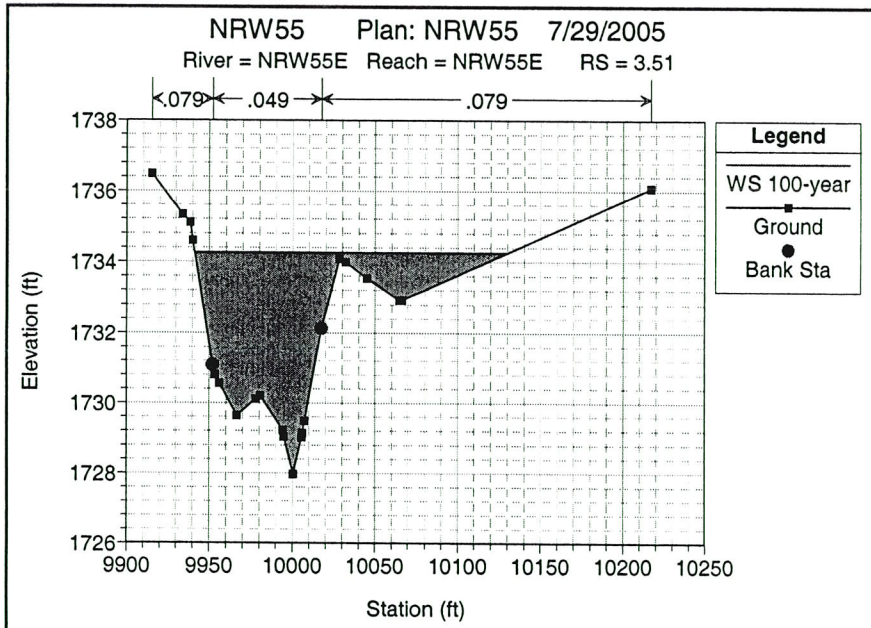

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 4.10
.055
.079
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

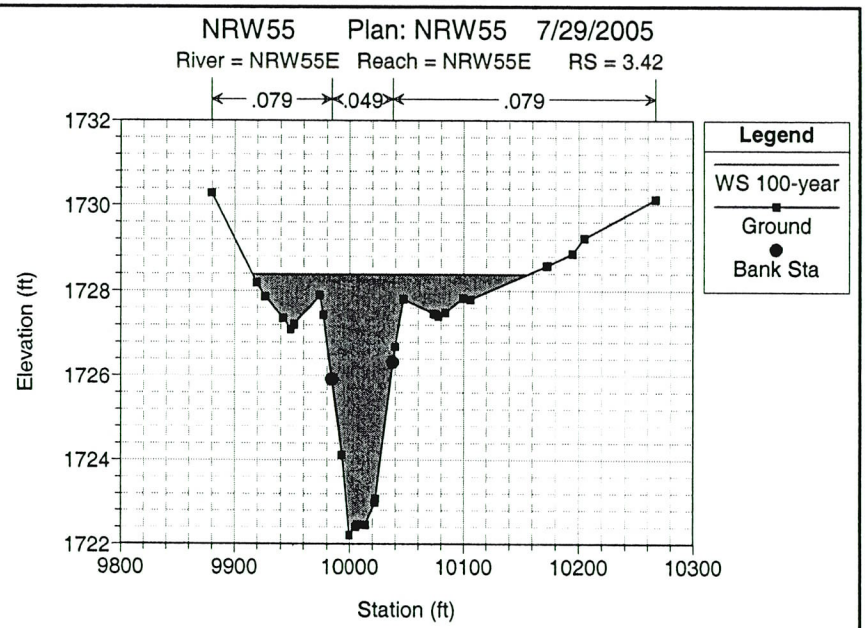

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 4.08 D.S. Limit of Study
.079
.055
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

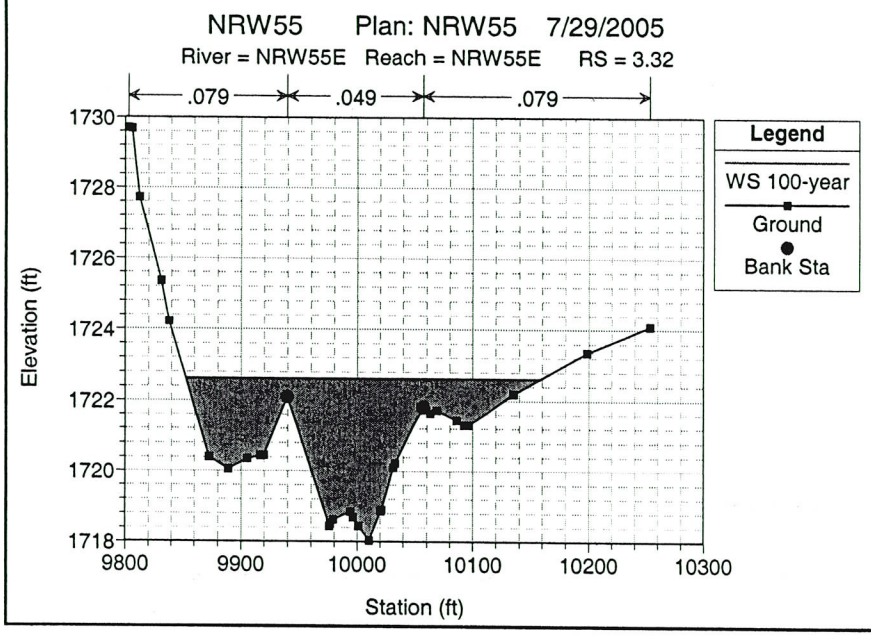

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 4.03
.079
.049
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

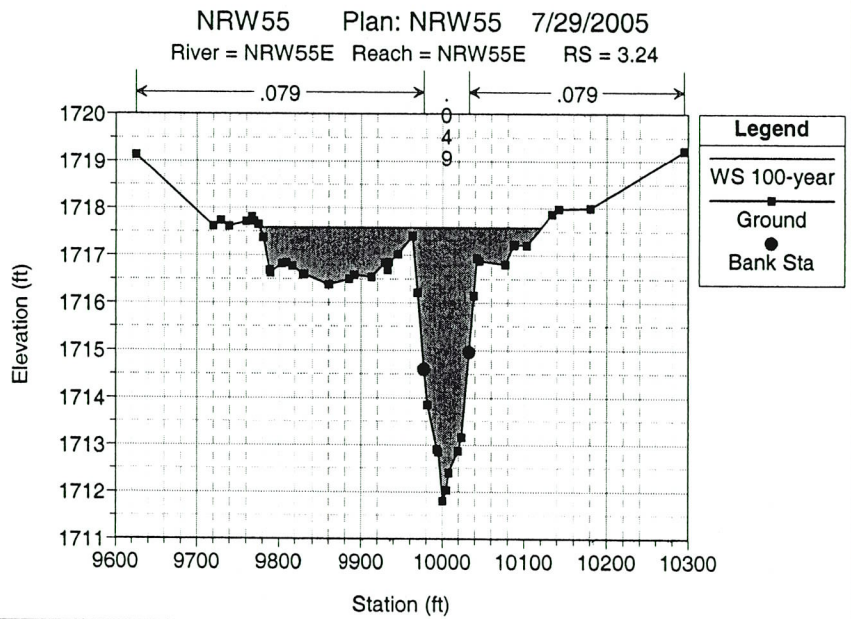

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.99
.079
.049
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

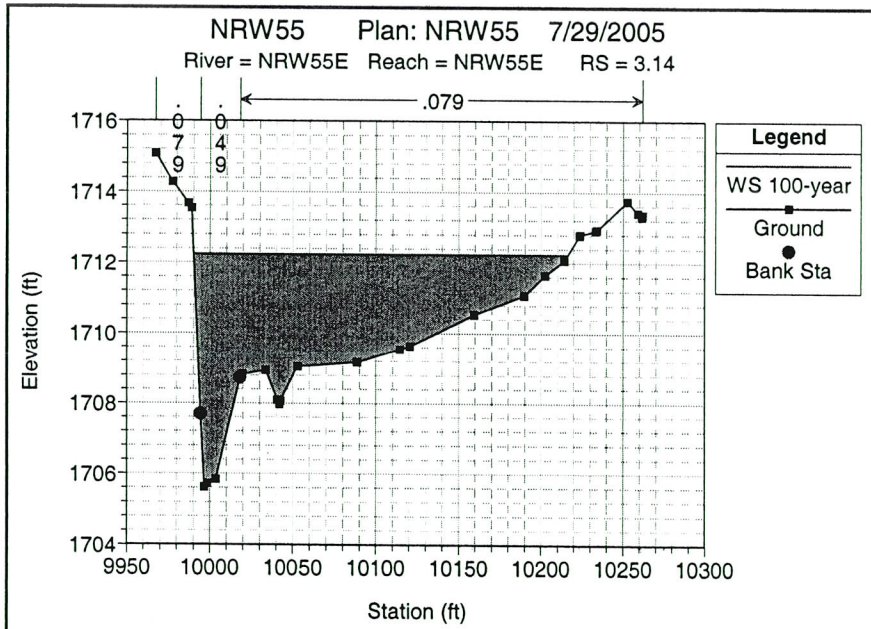

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.89
.079 .049 .079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.80
.079 .049 .079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.72
.079 .049 .079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.61
.079 .049 .079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta

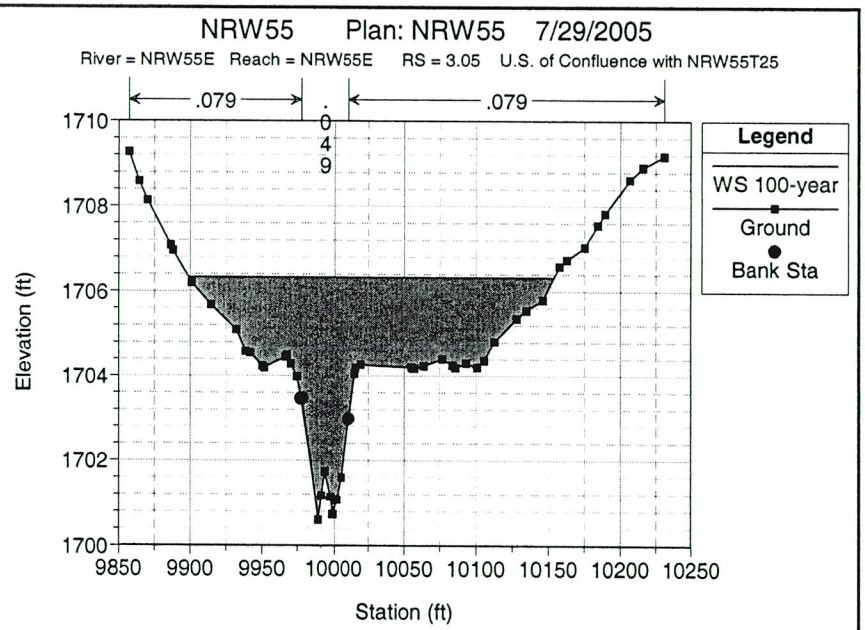

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.51
.079
.049
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

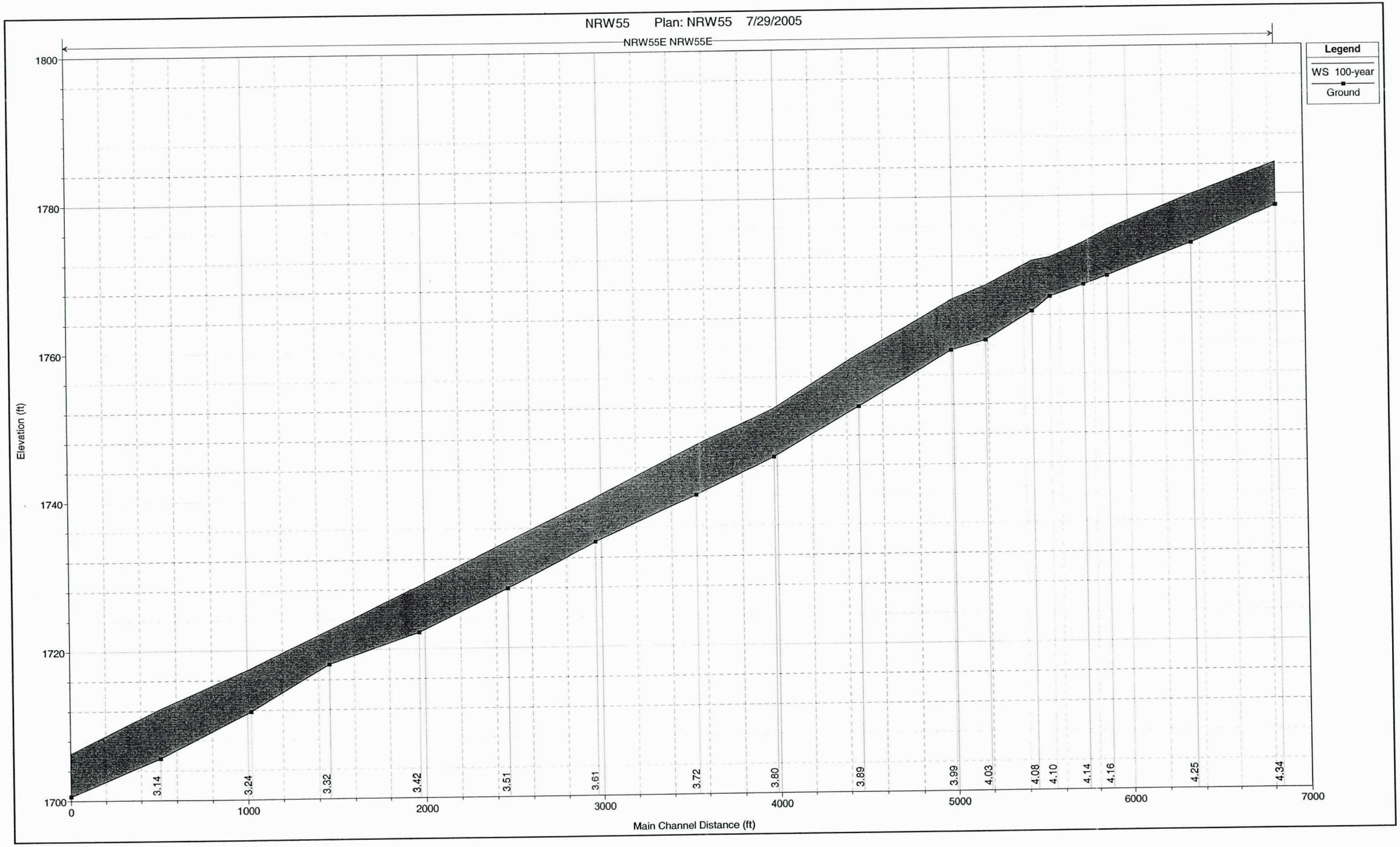

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.42
.079
.049
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

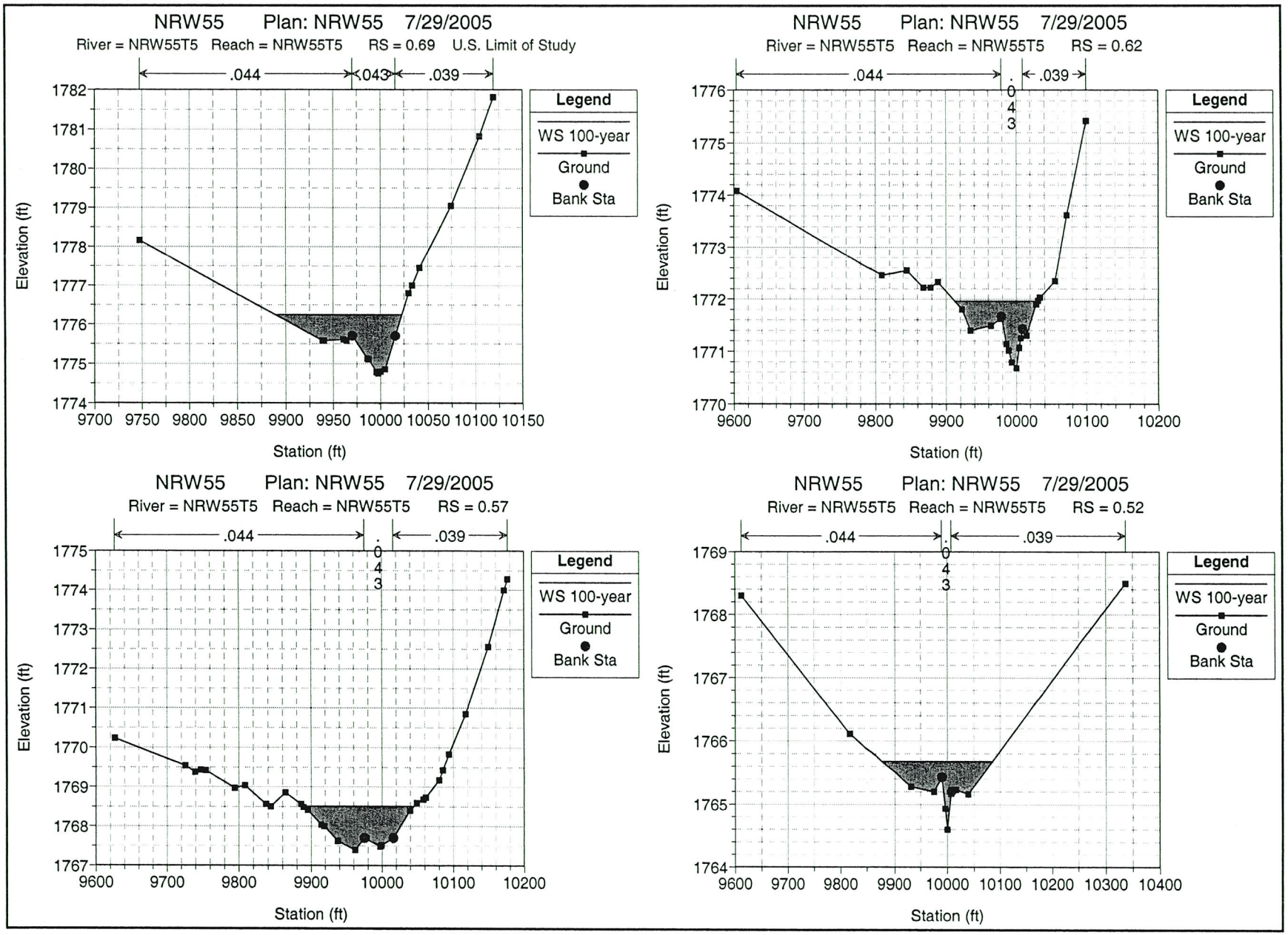

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.32
.079
.049
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

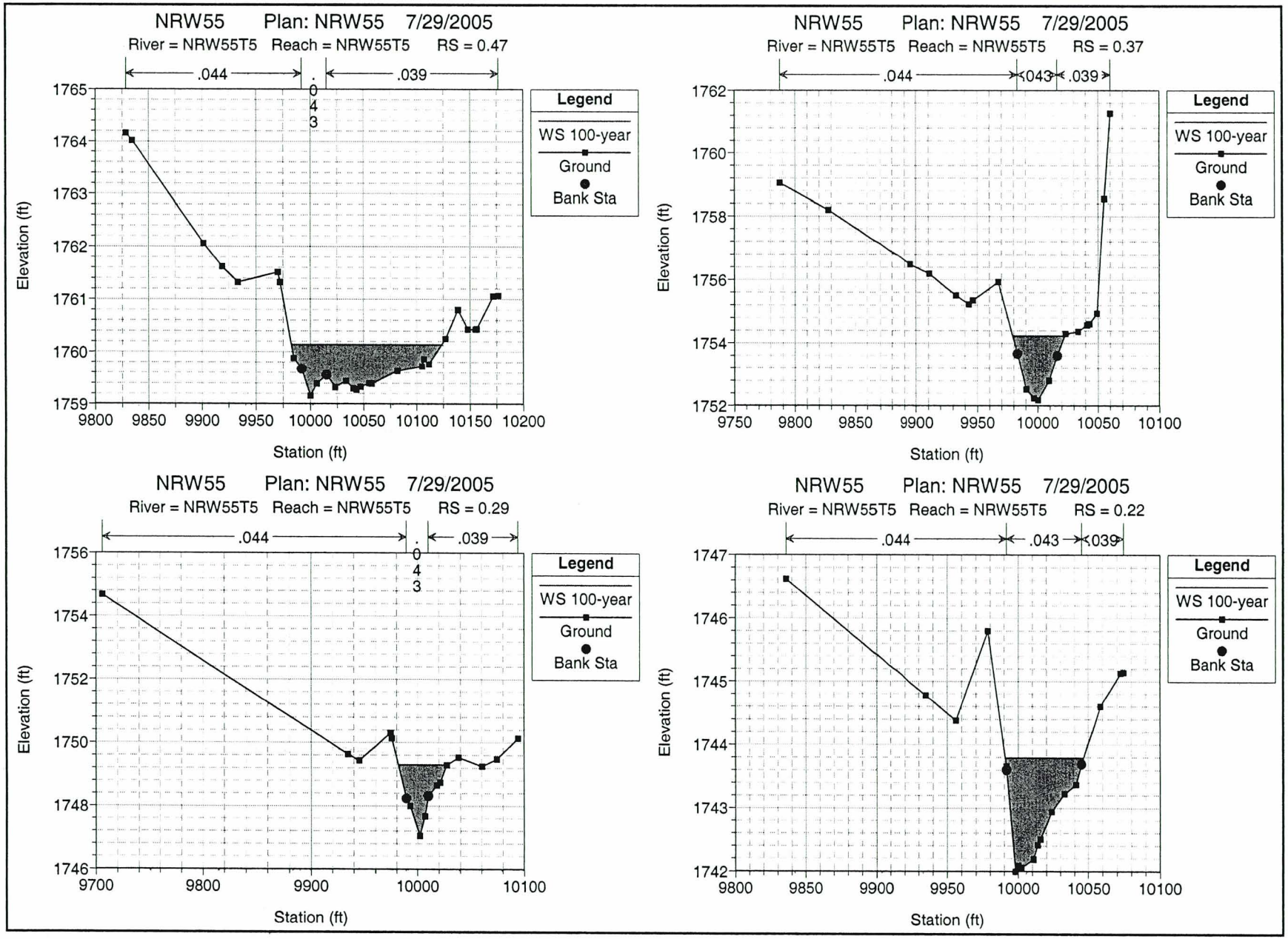

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.24
.079
.049
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

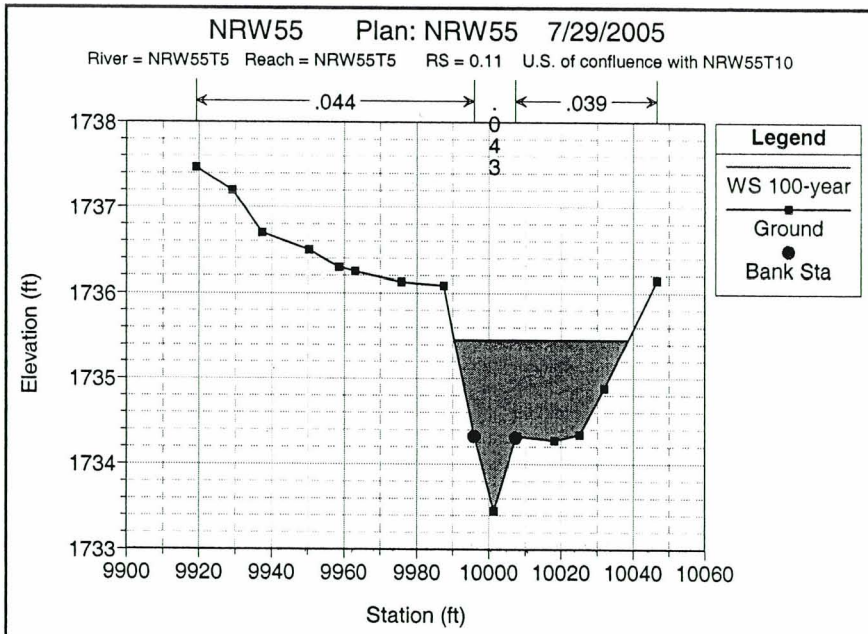

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.14
.079
.079
.049
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
1716
1714
1712
1710
1708
1706
1704
9950
10000
10050
10100
10150
10200
10250
10300

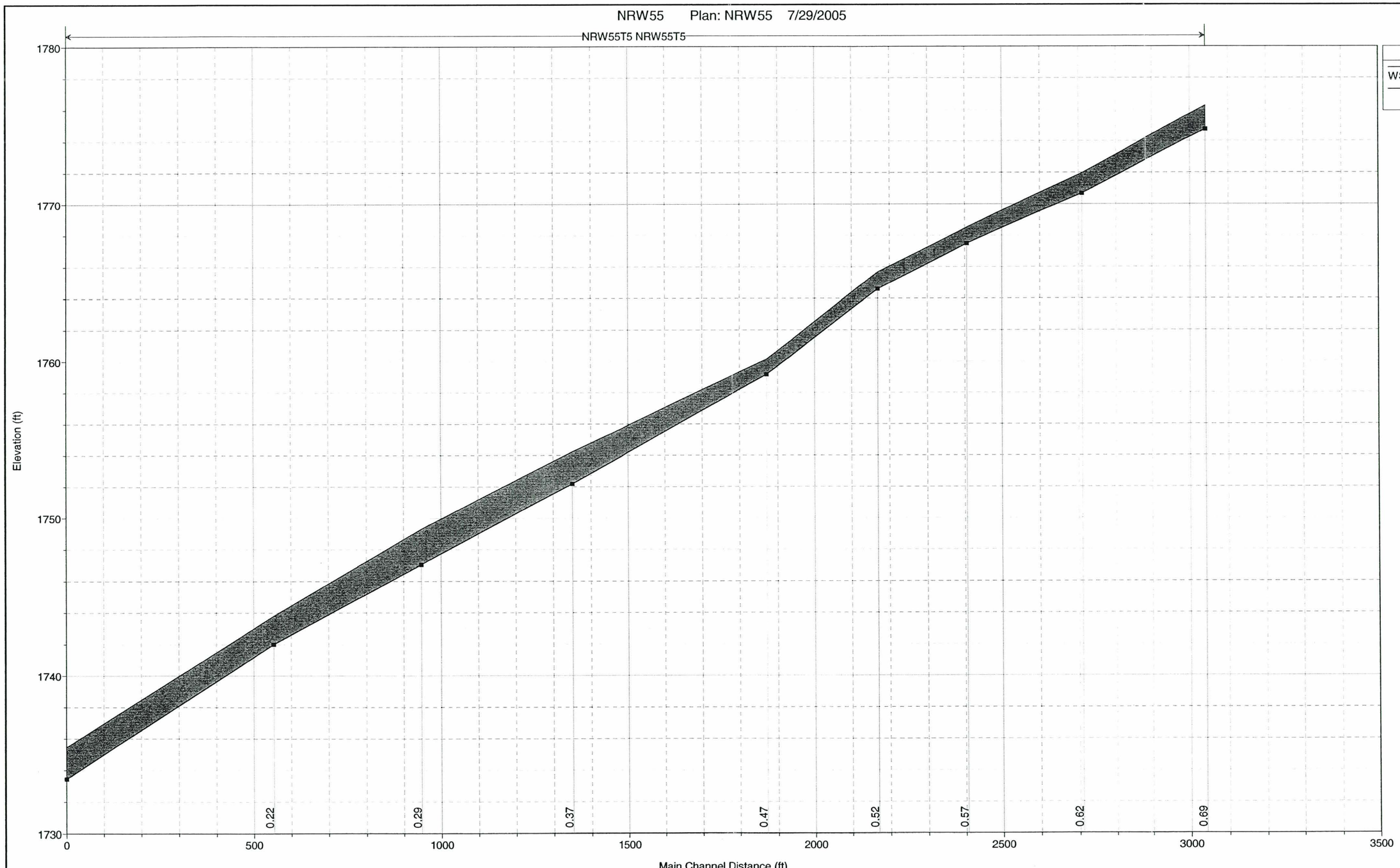

NRW55 Plan: NRW55 7/29/2005
River = NRW55E Reach = NRW55E RS = 3.05 U.S. of Confluence with NRW55T25
.079
.049
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
1710
1708
1706
1704
1702
1700
9850
9900
9950
10000
10050
10100
10150
10200
10250

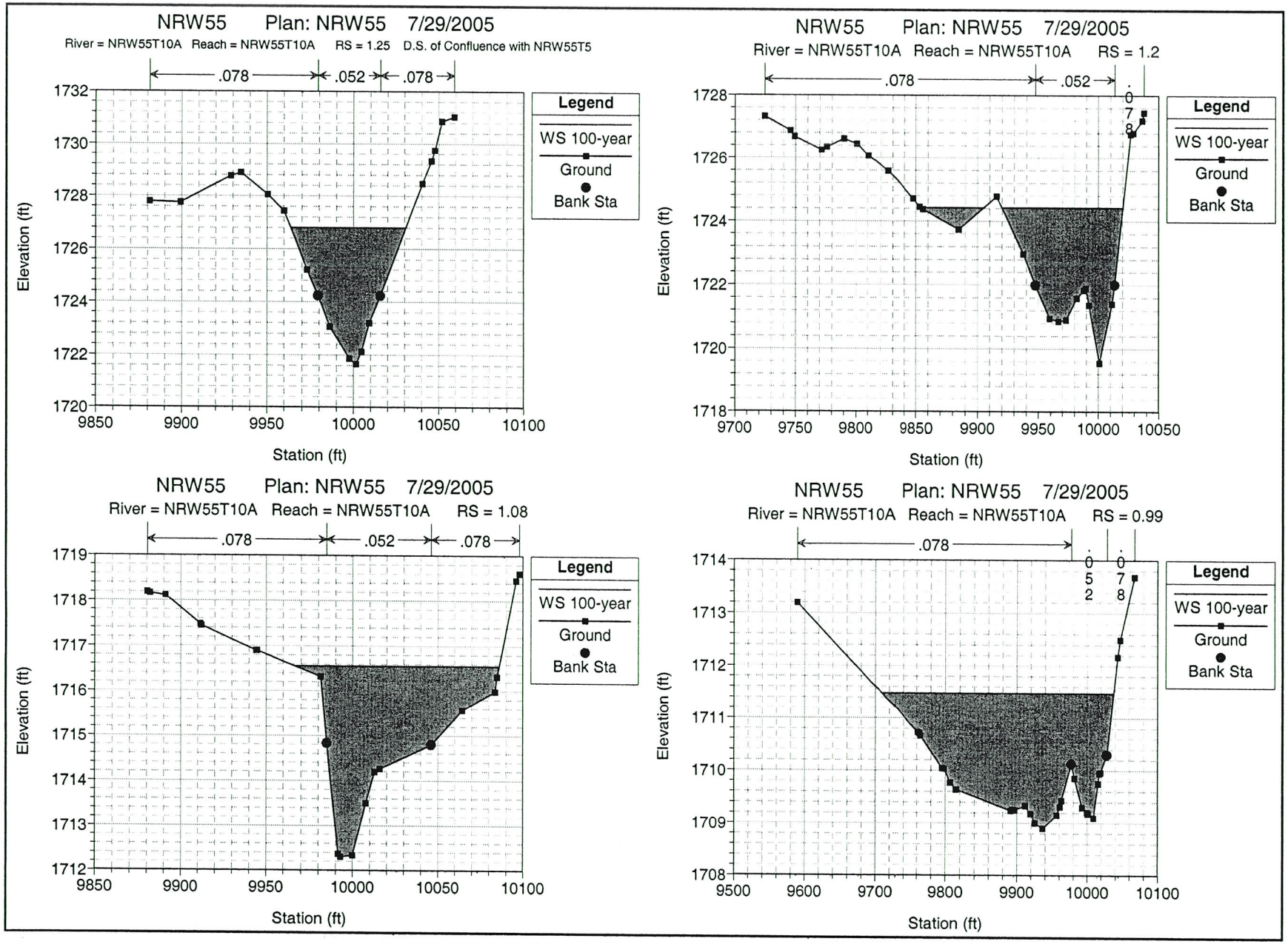

NRW55 Plan: NRW55 7/29/2005
NRW55E NRW55E
Legend
WS 100-year
Ground
Elevation (ft)
1800
1780
1760
1740
1720
1700
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)
3.14
3.24
3.32
3.42
3.51
3.61
3.72
3.80
3.89
3.99
4.03
4.08
4.10
4.14
4.16
4.25
4.34

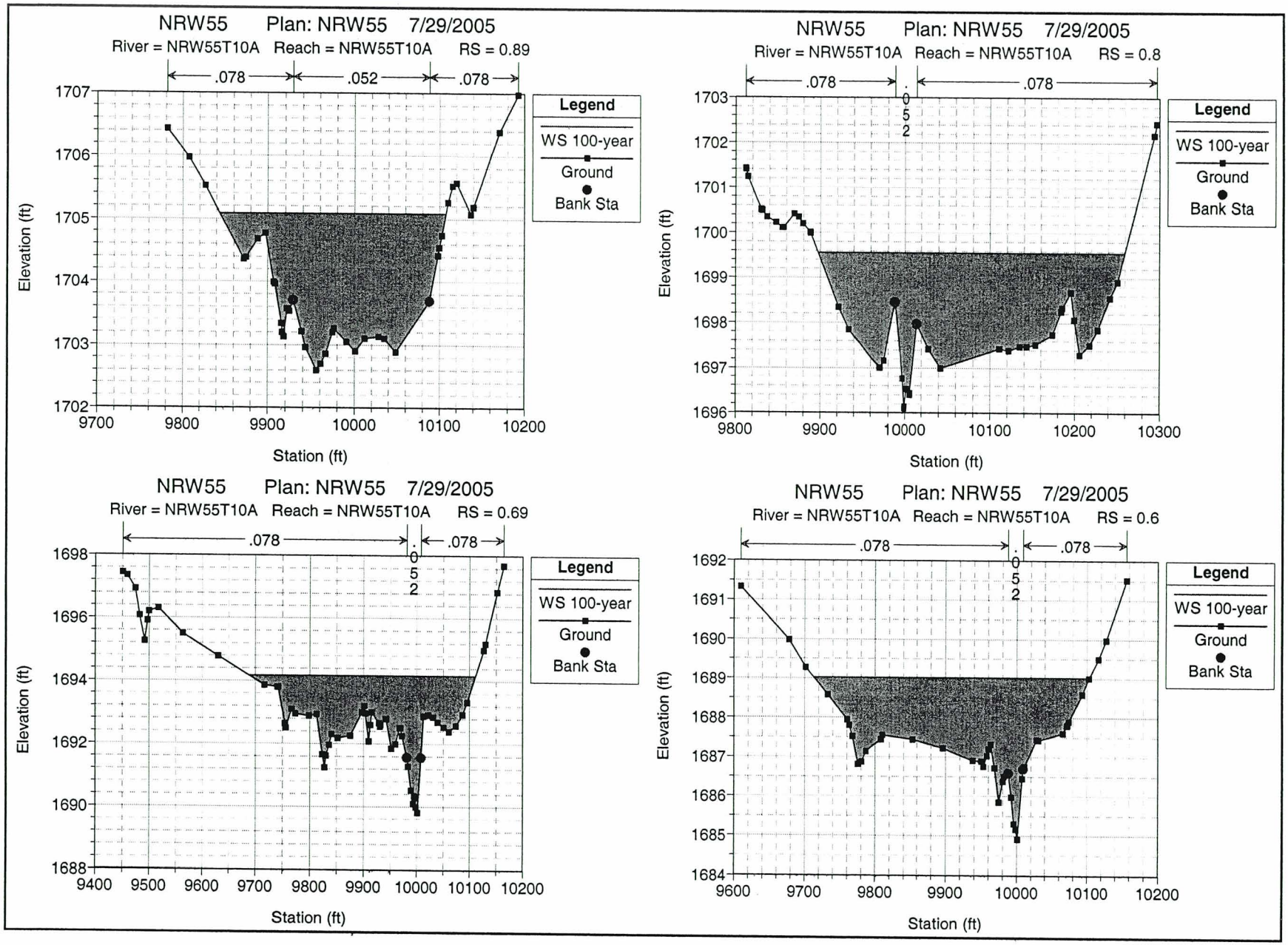

NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.69 U.S. Limit of Study
.044
.043
.039
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.62
.044
.043
.039
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.57
.044
.043
.039
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.52
.044
.043
.039
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

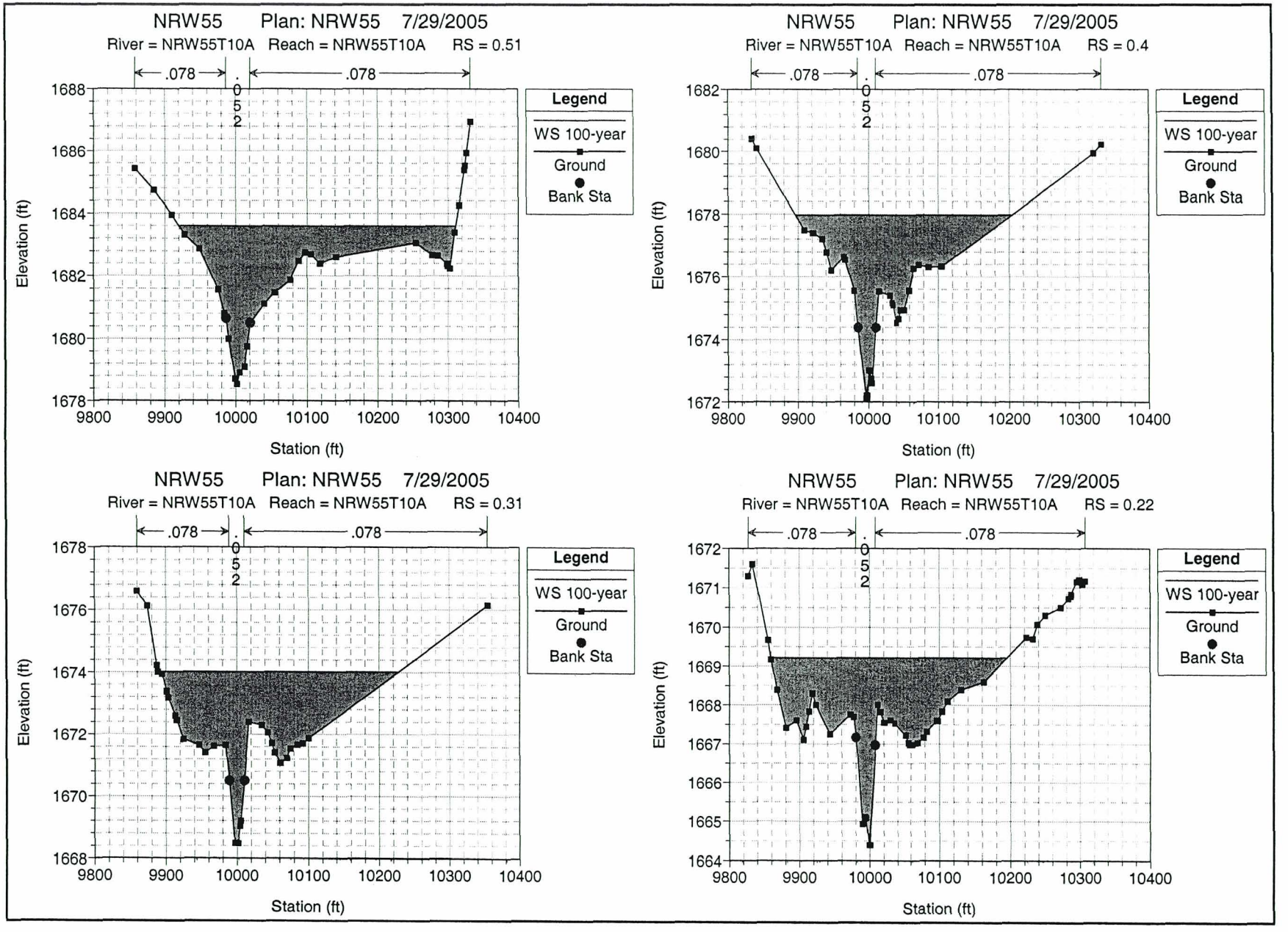

NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.47
.044
.039
.043
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.37
.044
.043
.039
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.29
.044
.039
.043
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.22
.044
.043
.039
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta

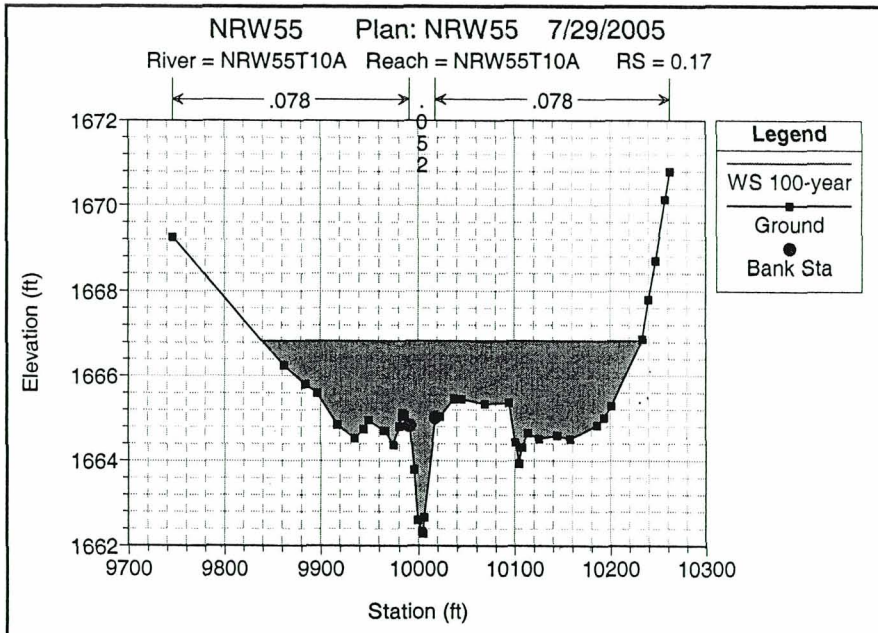

NRW55 Plan: NRW55 7/29/2005
River = NRW55T5 Reach = NRW55T5 RS = 0.11 U.S. of confluence with NRW55T10
.044
.043
.039
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1738
1737
1736
1735
1734
1733
9900
9920
9940
9960
9980
10000
10020
10040
10060
Station (ft)

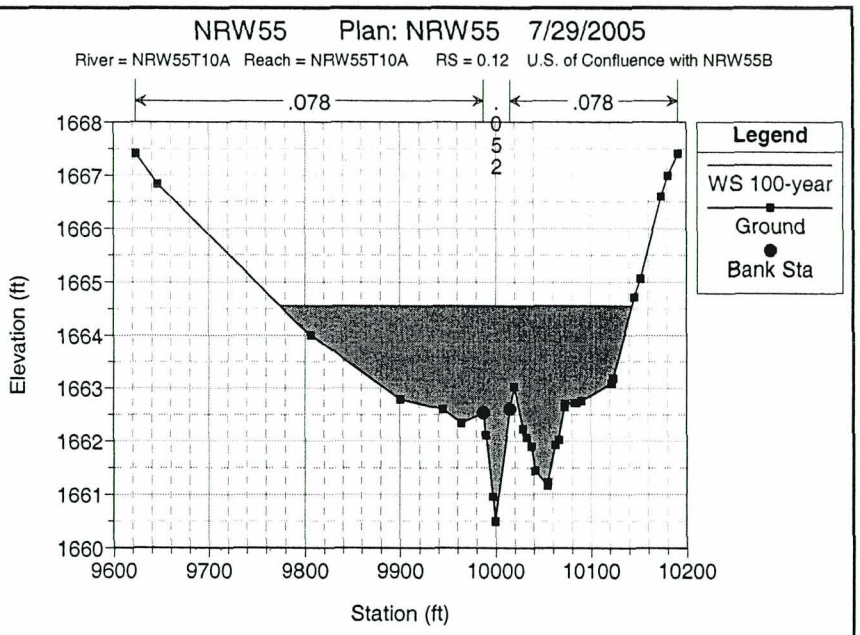

NRW55 Plan: NRW55 7/29/2005
NRW55T5 NRW55T5
Legend
WS 100-year
Ground
Elevation (ft)
1780
1770
1760
1750
1740
1730
0.22
0.29
0.37
0.47
0.52
0.57
0.62
0.69
0
500
1000
1500
2000
2500
3000
3500
Main Channel Distance (ft)

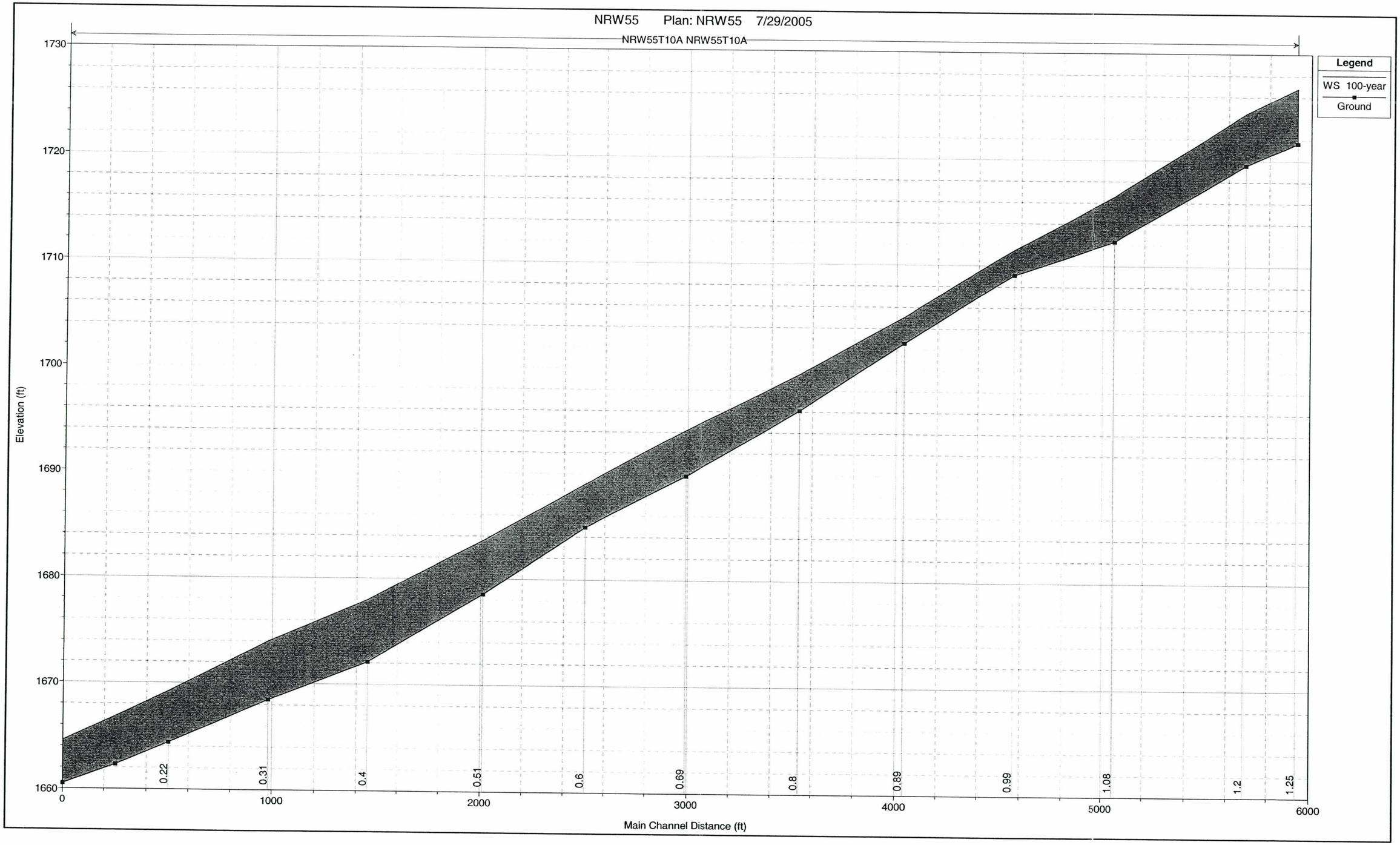

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 1.25 D.S. of Confluence with NRW55T5
.078
.052
.078
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 1.2
.078
.052
.078
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 1.08
.078
.052
.078
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.99
.078
.052
.078
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta

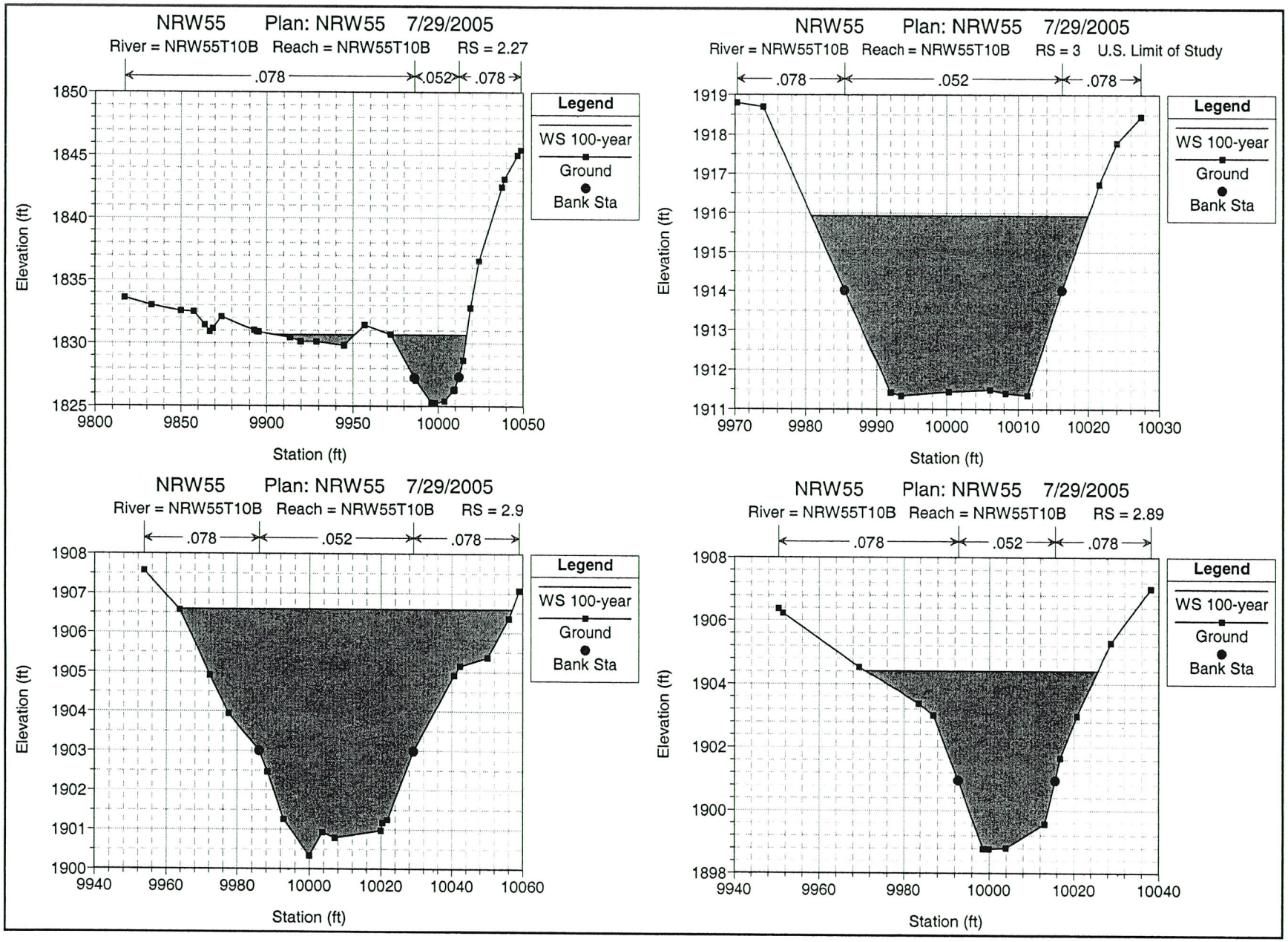

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.89
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.8
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.69
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.6
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

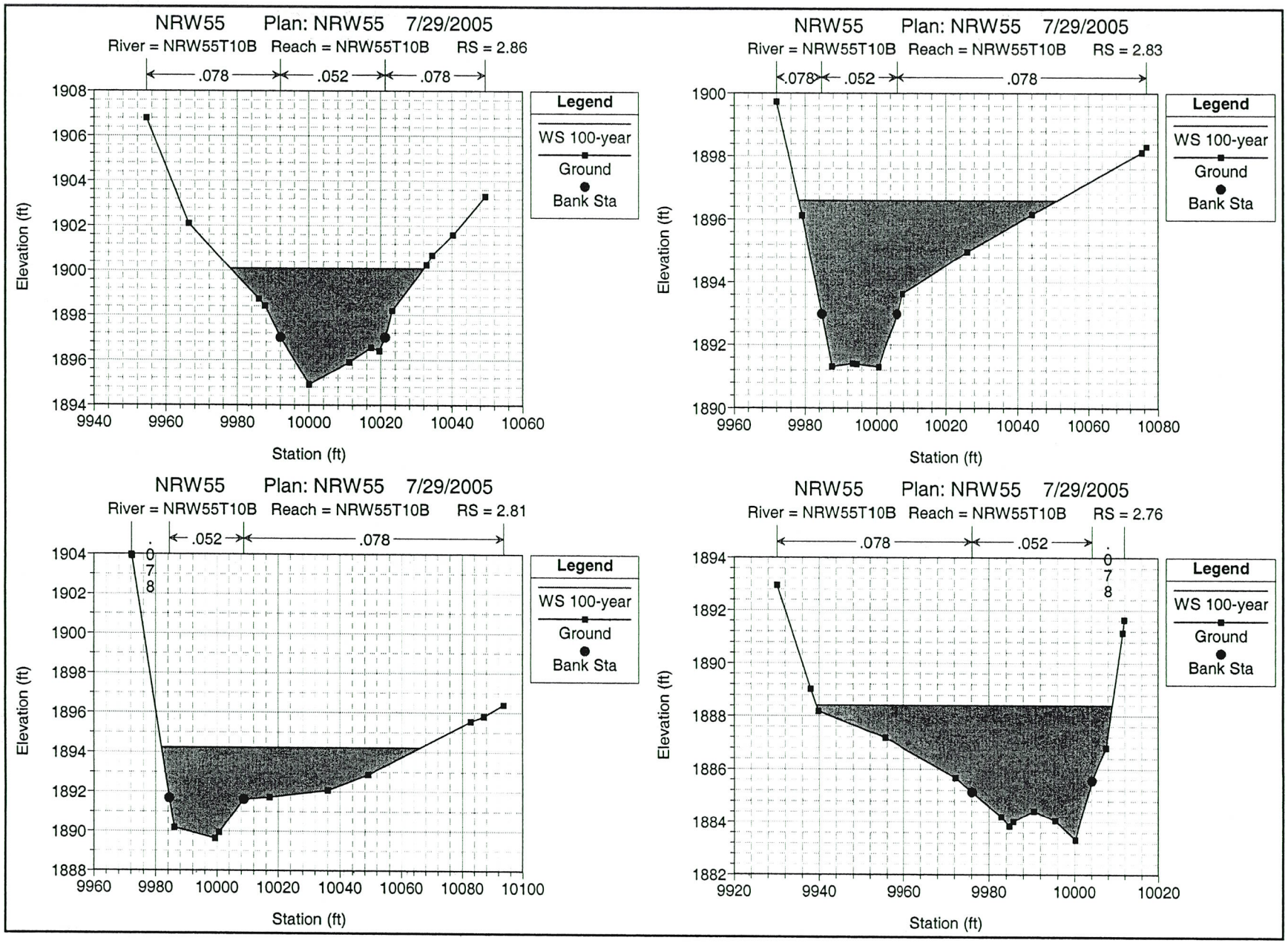

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.51
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.4
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.31
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.22
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

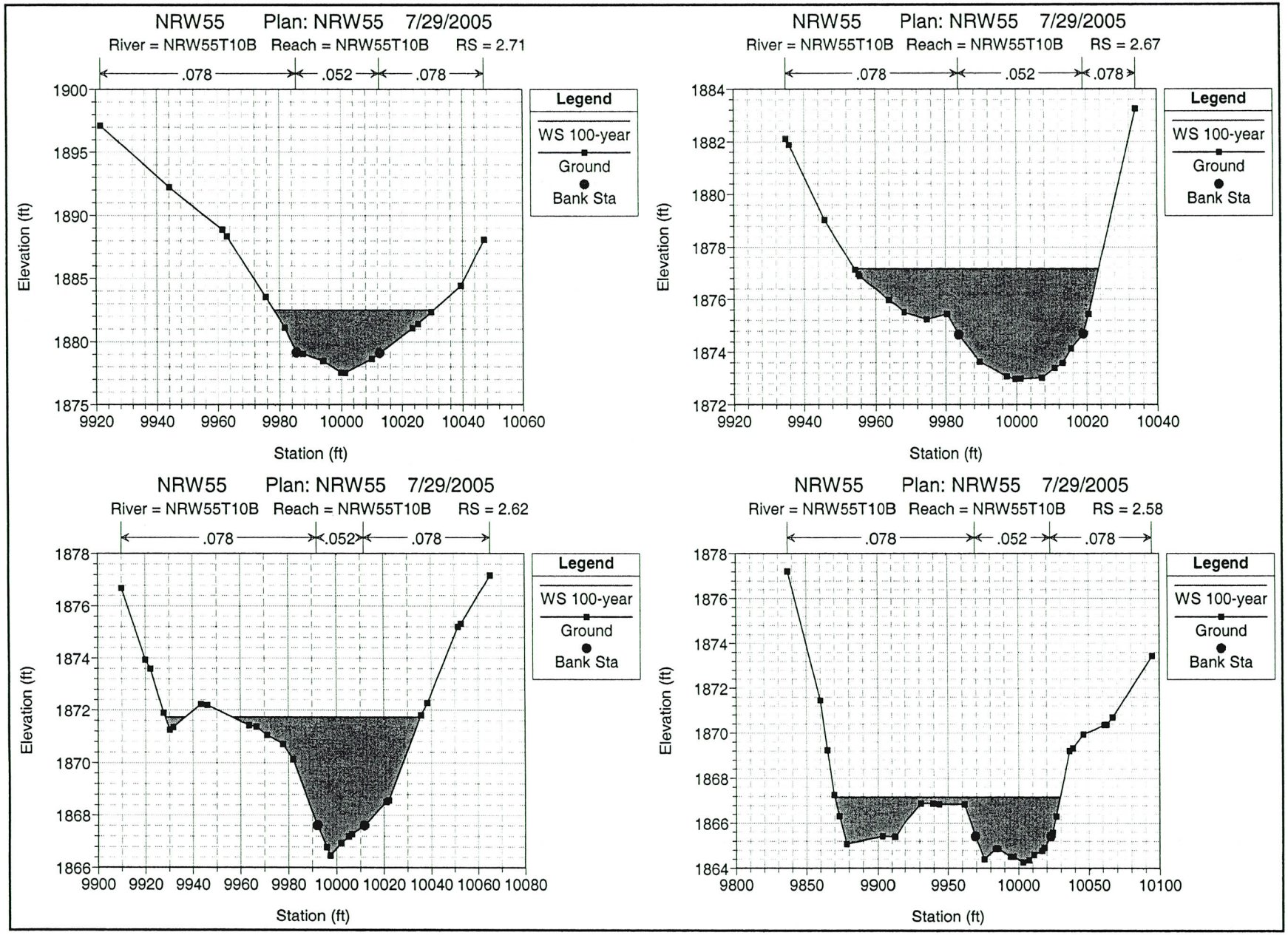

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.17
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1672
1670
1668
1666
1664
1662
9700
9800
9900
10000
10100
10200
10300
Station (ft)

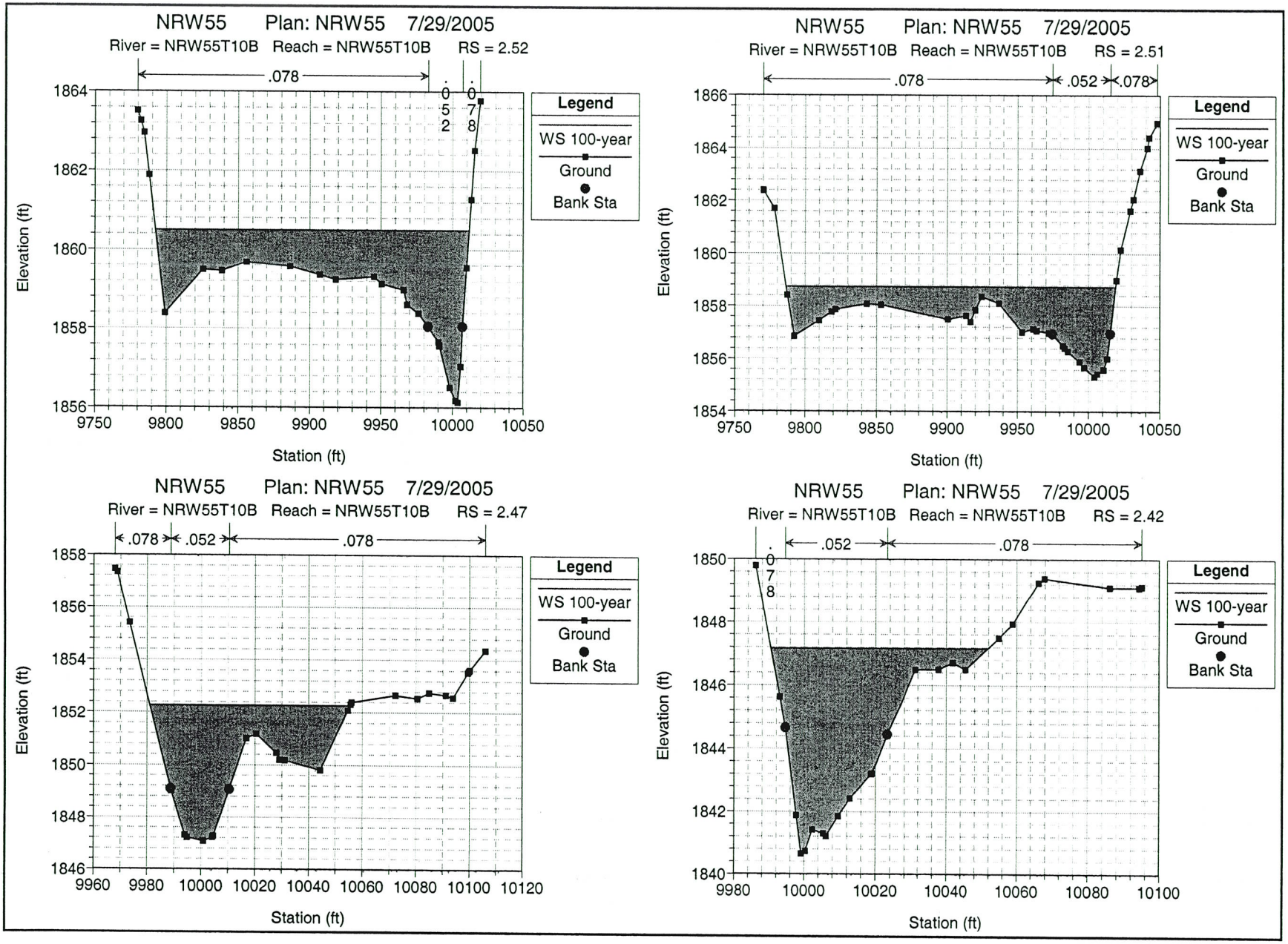

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10A Reach = NRW55T10A RS = 0.12 U.S. of Confluence with NRW55B
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1668
1667
1666
1665
1664
1663
1662
1661
1660
9600
9700
9800
9900
10000
10100
10200
Station (ft)

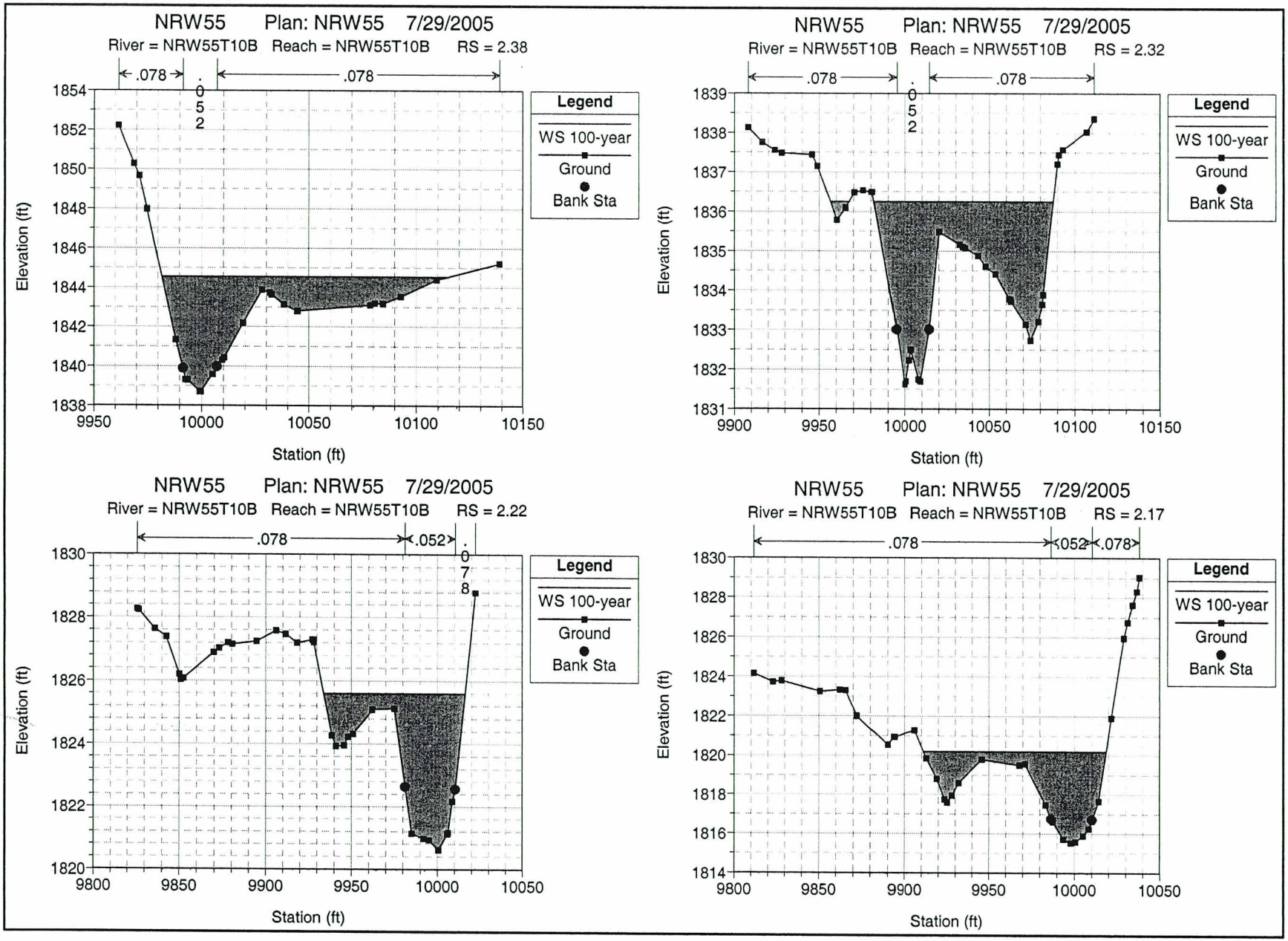

NRW55 Plan: NRW55 7/29/2005
NRW55T10A NRW55T10A
Legend
WS 100-year
Ground
Elevation (ft)
1730
1720
1710
1700
1690
1680
1670
1660
0
1000
2000
3000
4000
5000
6000
Main Channel Distance (ft)
0.22
0.31
0.4
0.51
0.6
0.69
0.8
0.89
0.99
1.08
1.2
1.25

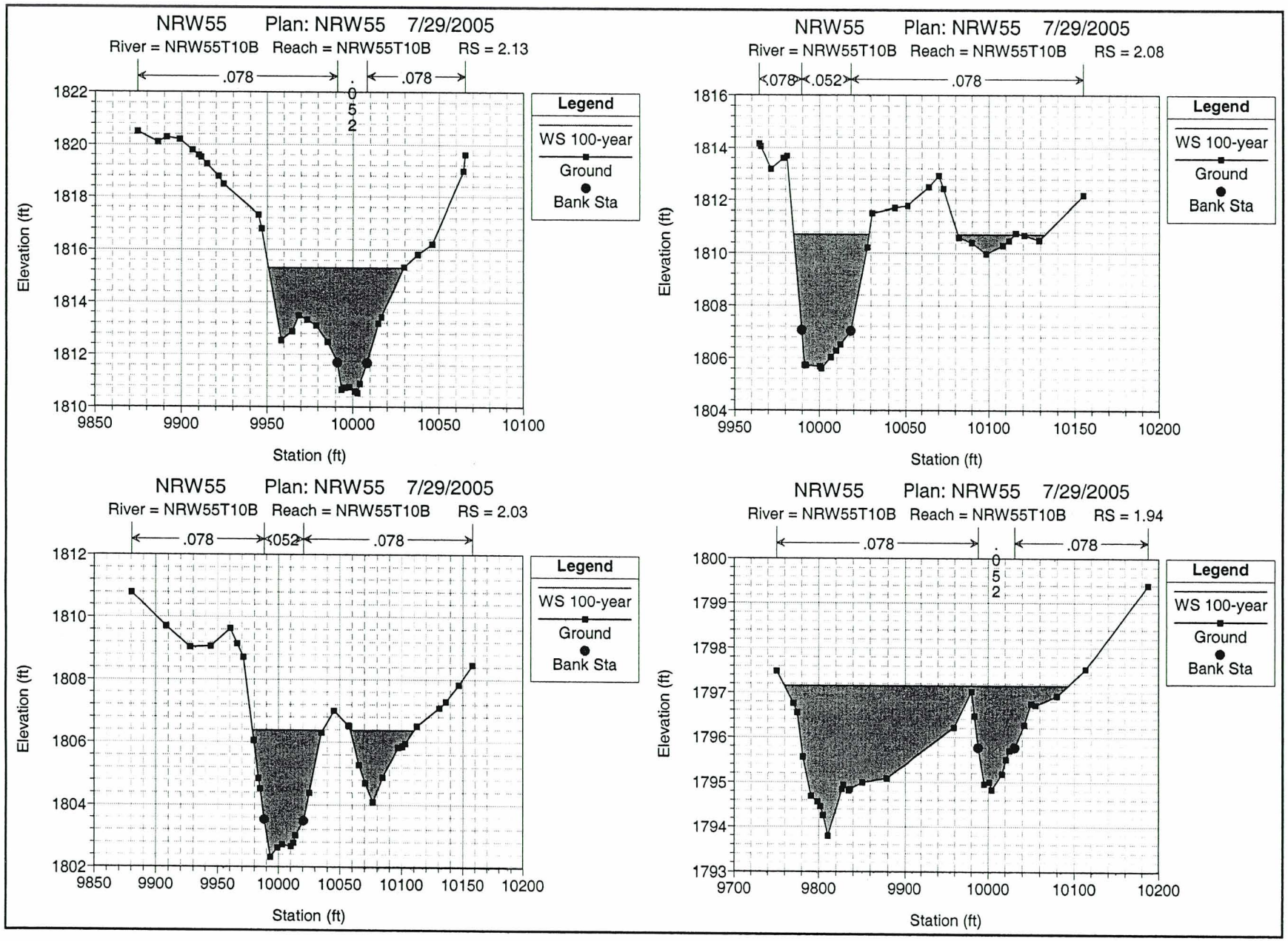

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.27
.078
.052
.078
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 3 U.S. Limit of Study
.078
.052
.078
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.9
.078
.052
.078
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.89
.078
.052
.078
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta

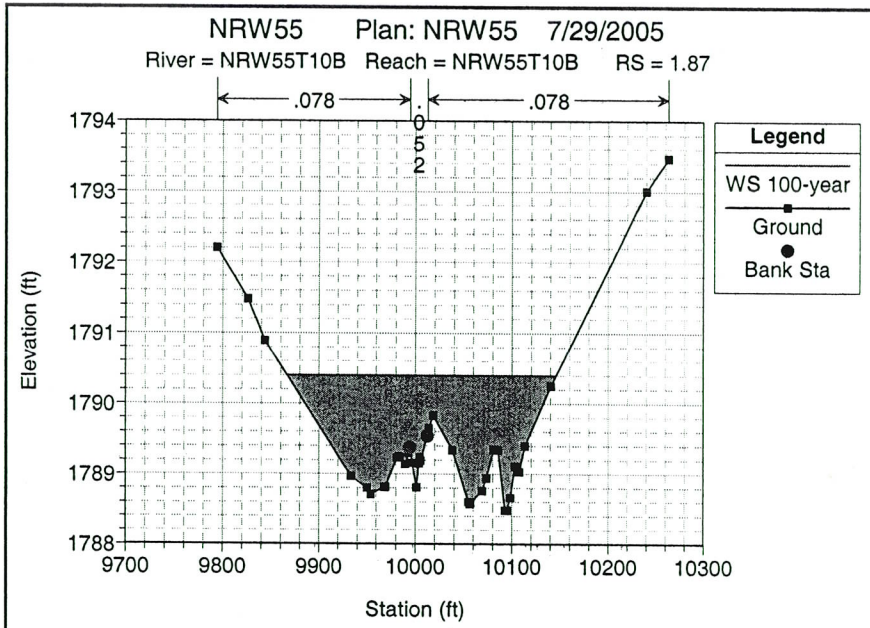

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.86
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.83
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.81
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.76
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

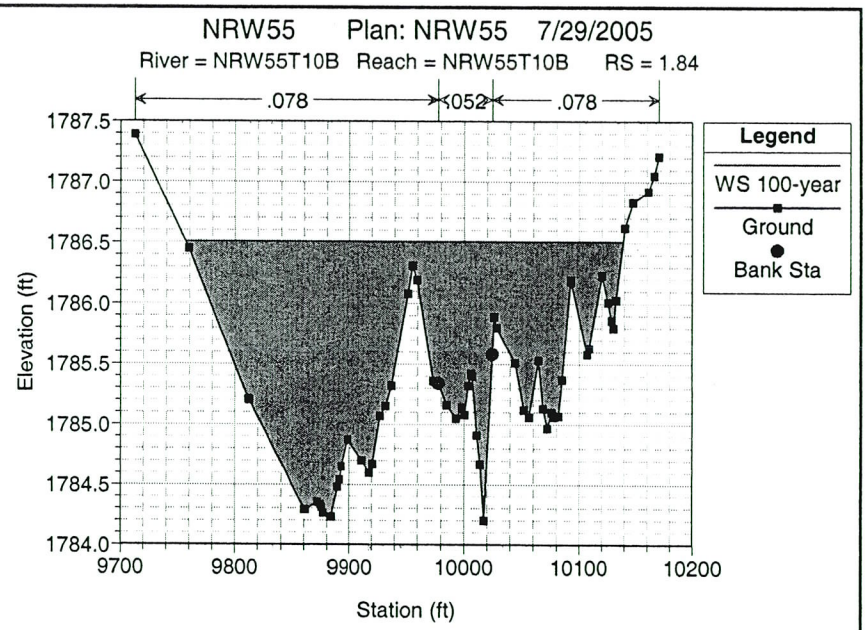

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.71
.078 .052 .078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.67
.078 .052 .078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.62
.078 .052 .078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.58
.078 .052 .078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

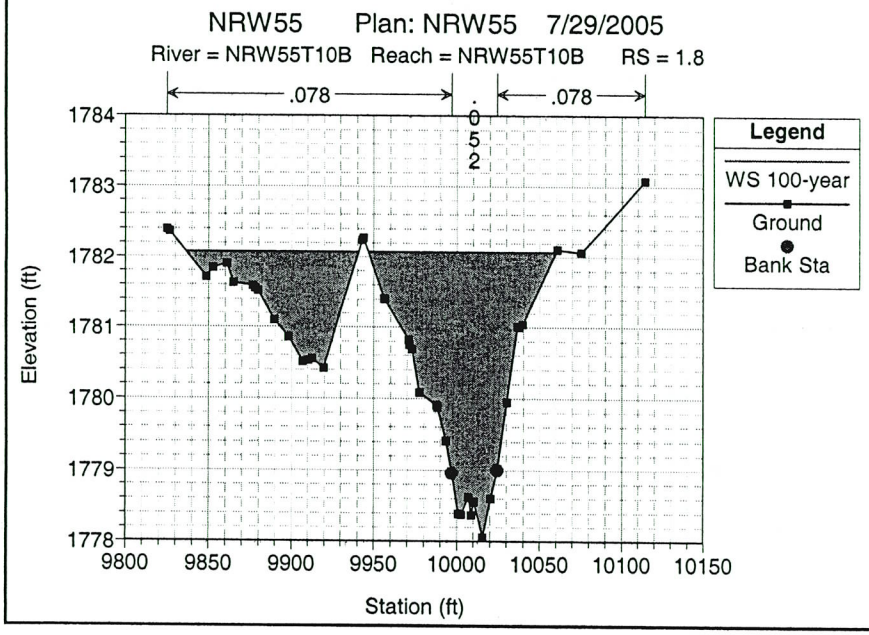

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.52
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.51
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.47
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.42
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

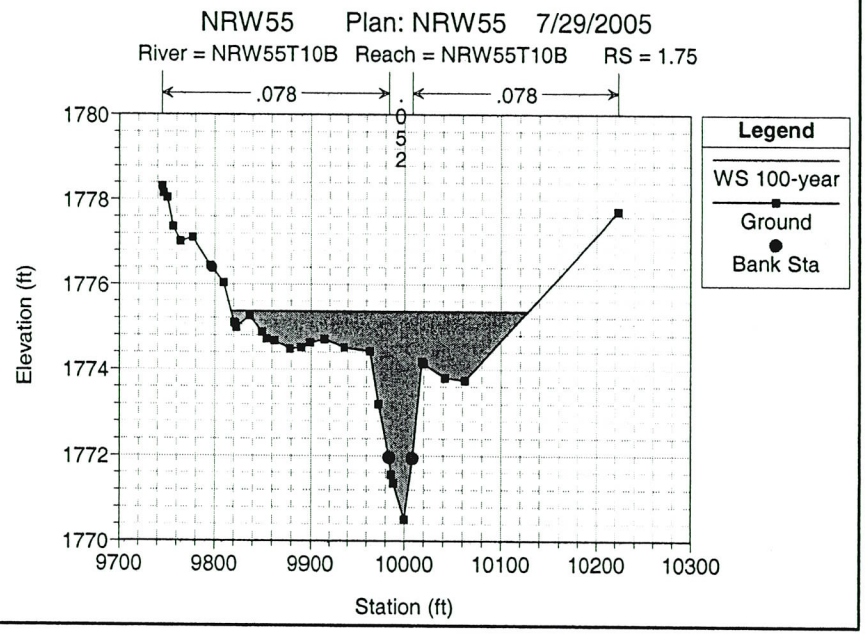

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.38
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.32
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.22
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.17
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

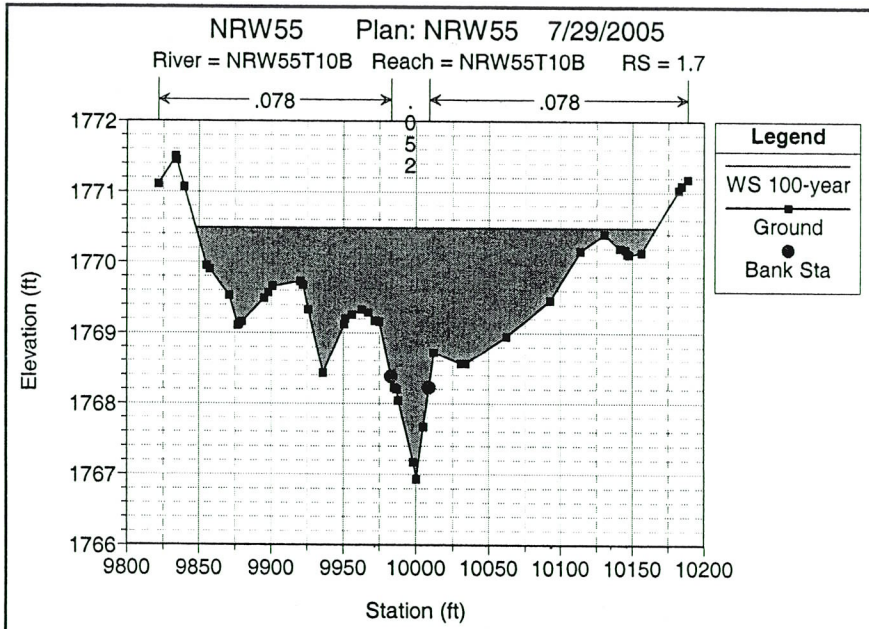

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.13
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.08
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 2.03
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.94
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

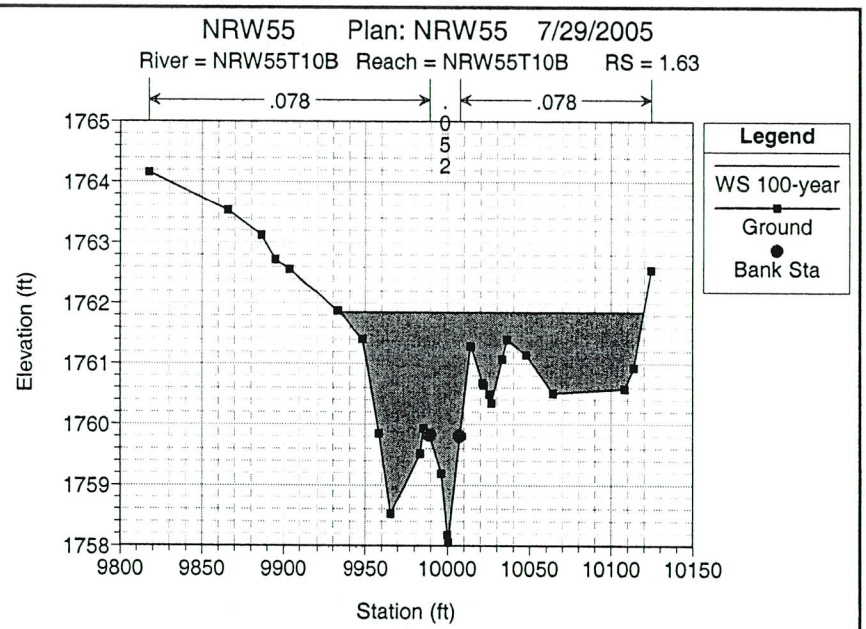

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.87
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

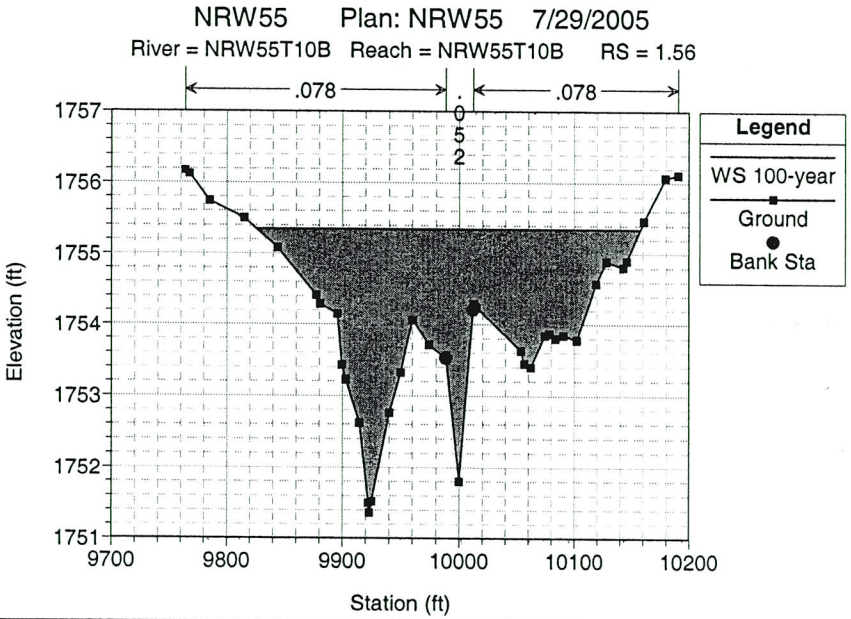

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.84
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

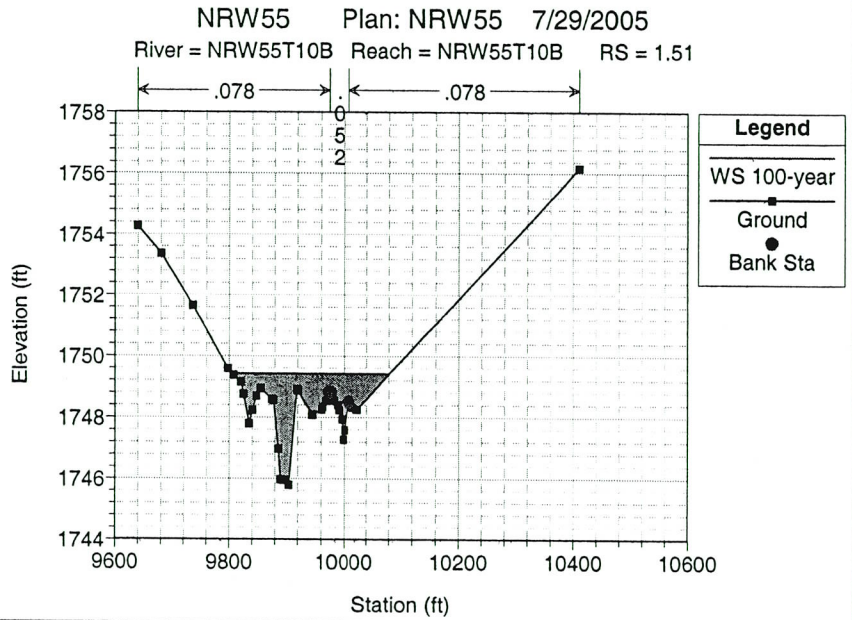

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.8
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

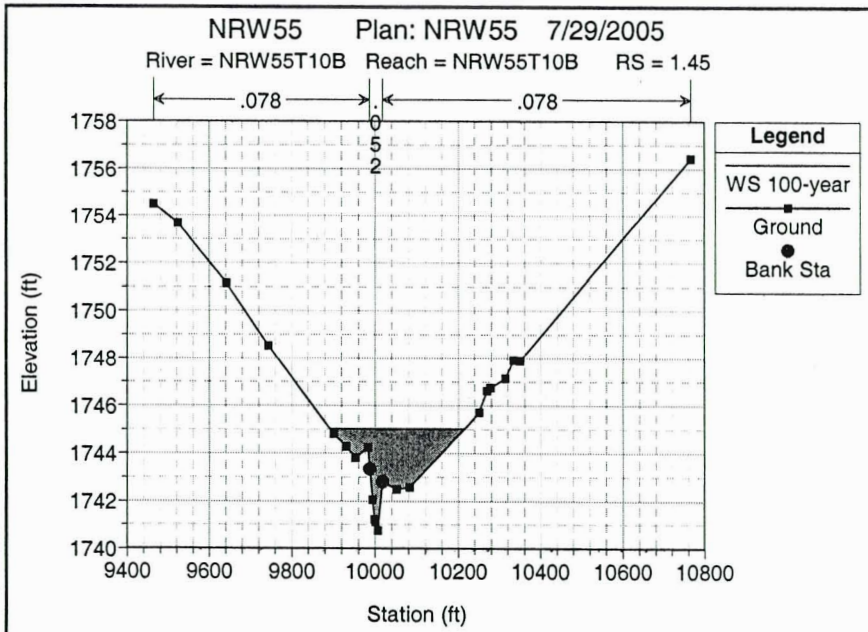

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.75
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

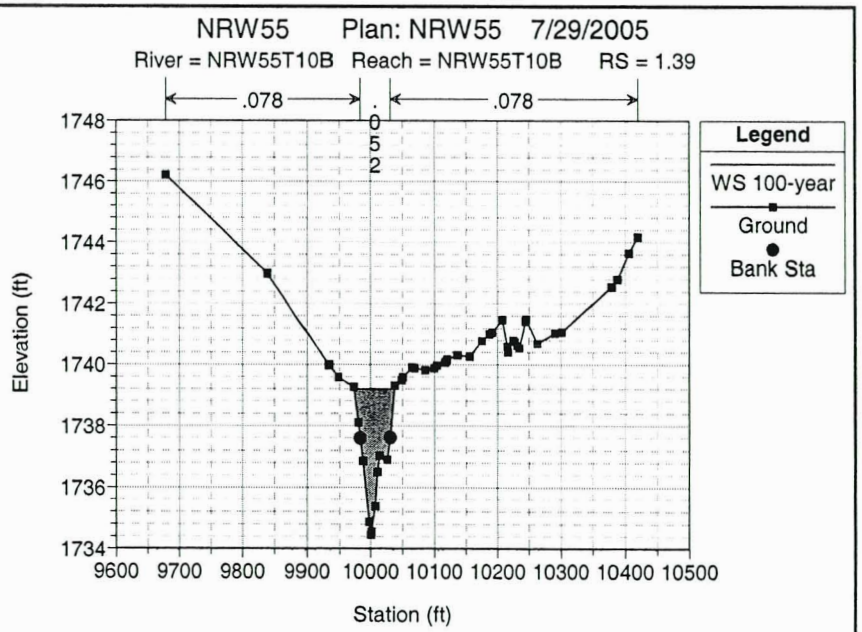

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.7
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1772
1771
1770
1769
1768
1767
1766
9800 9850 9900 9950 10000 10050 10100 10150 10200
Station (ft)

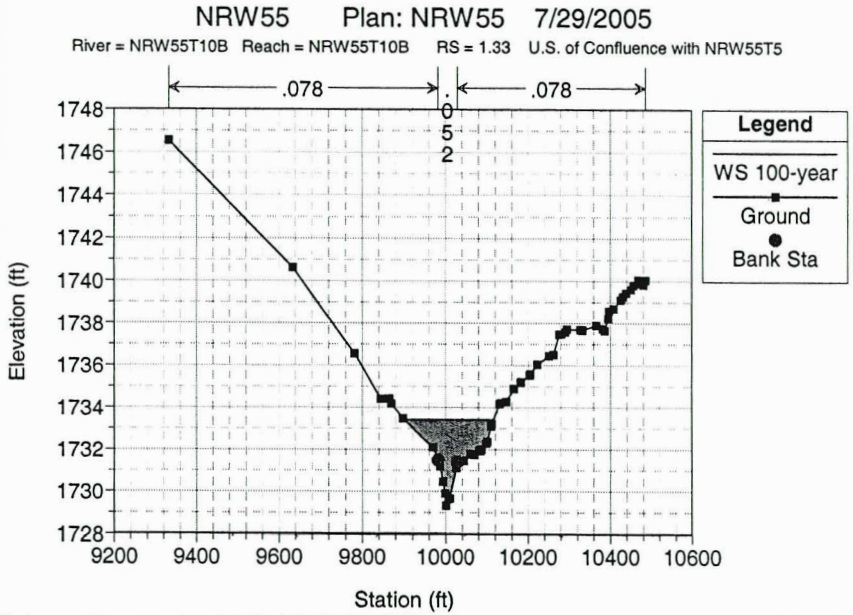

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.63
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1765
1764
1763
1762
1761
1760
1759
1758
9800 9850 9900 9950 10000 10050 10100 10150
Station (ft)

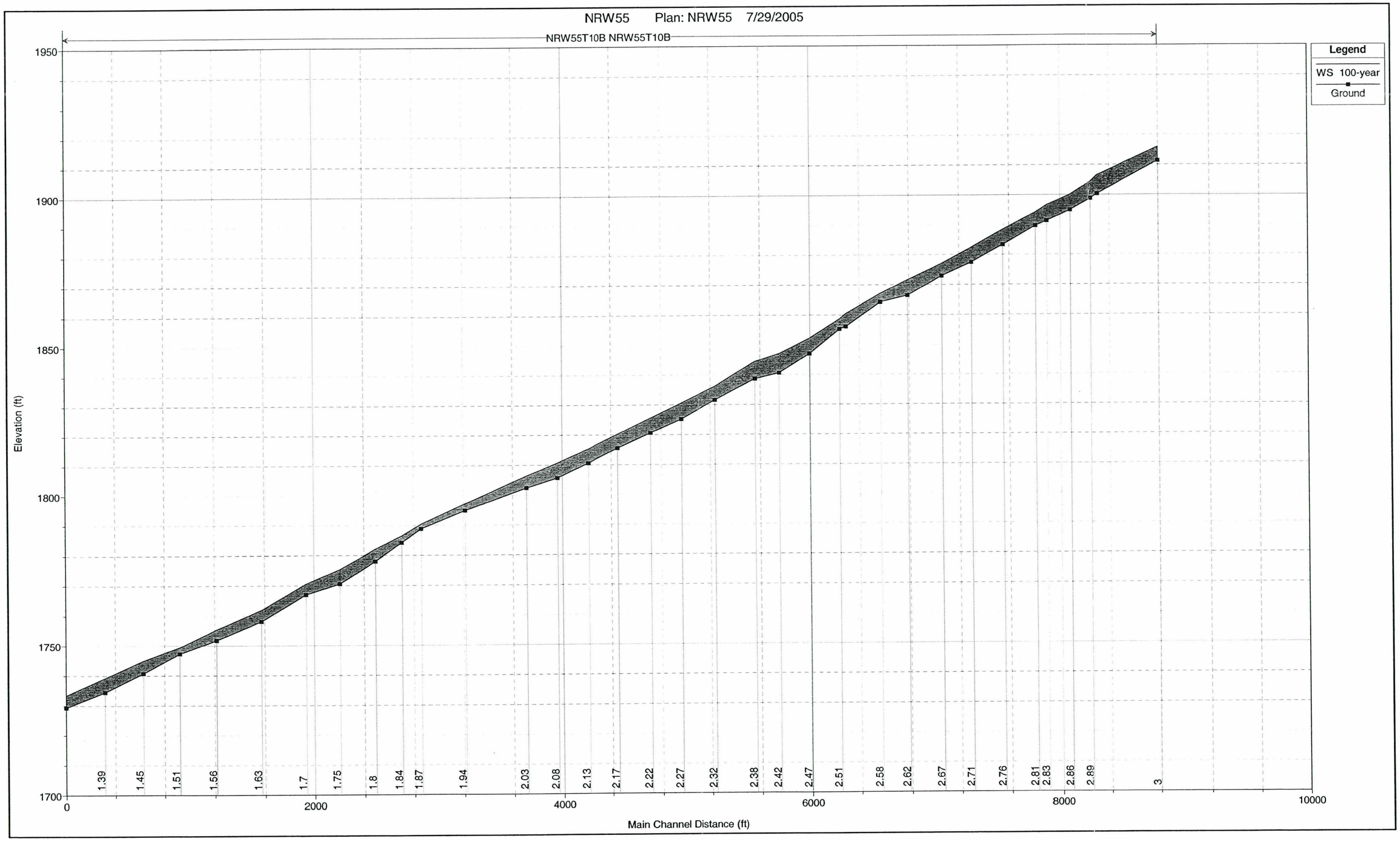

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.56
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1757
1756
1755
1754
1753
1752
1751
9700 9800 9900 10000 10100 10200
Station (ft)

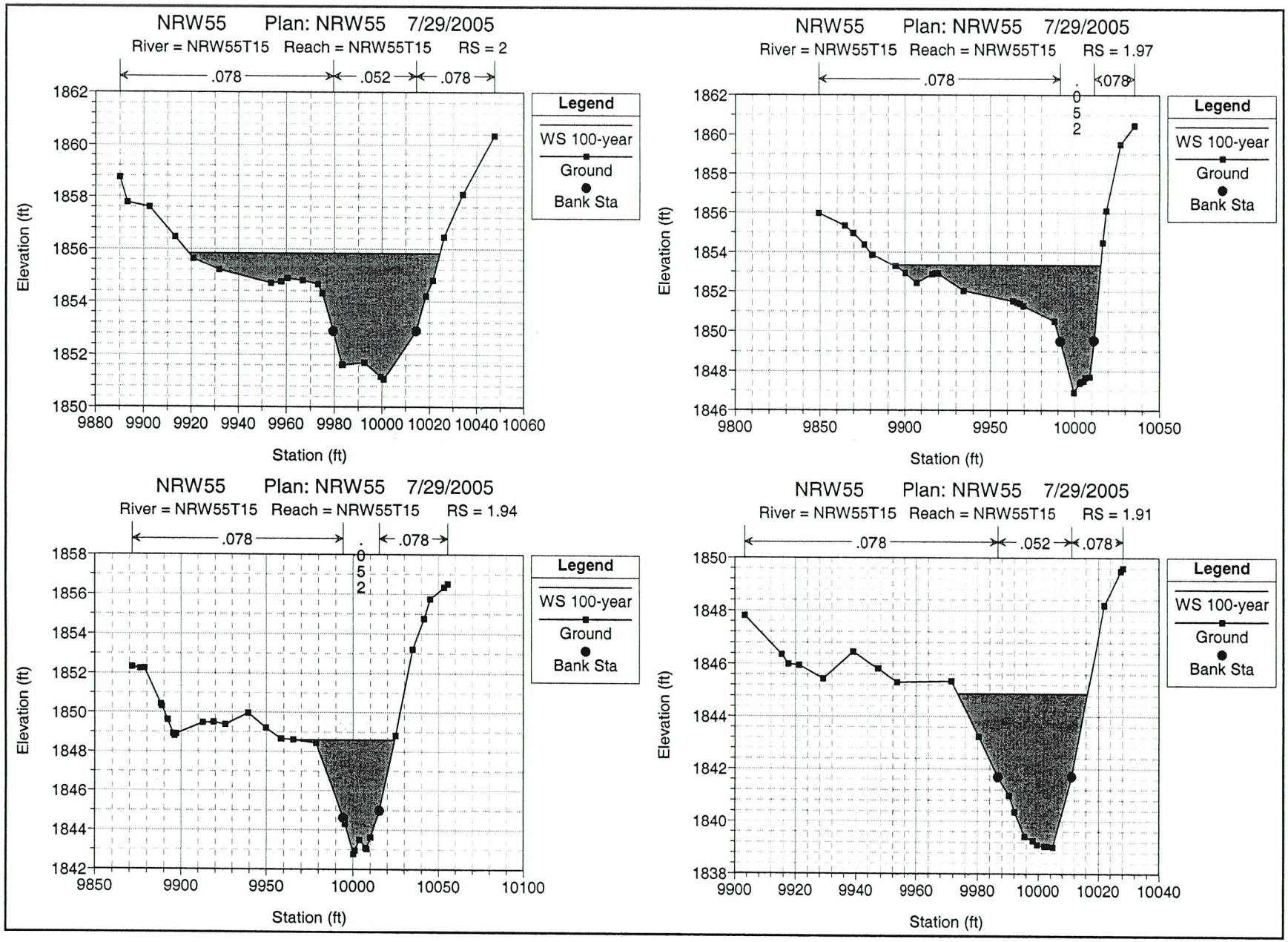

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.51
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1758
1756
1754
1752
1750
1748
1746
1744
9600 9800 10000 10200 10400 10600
Station (ft)

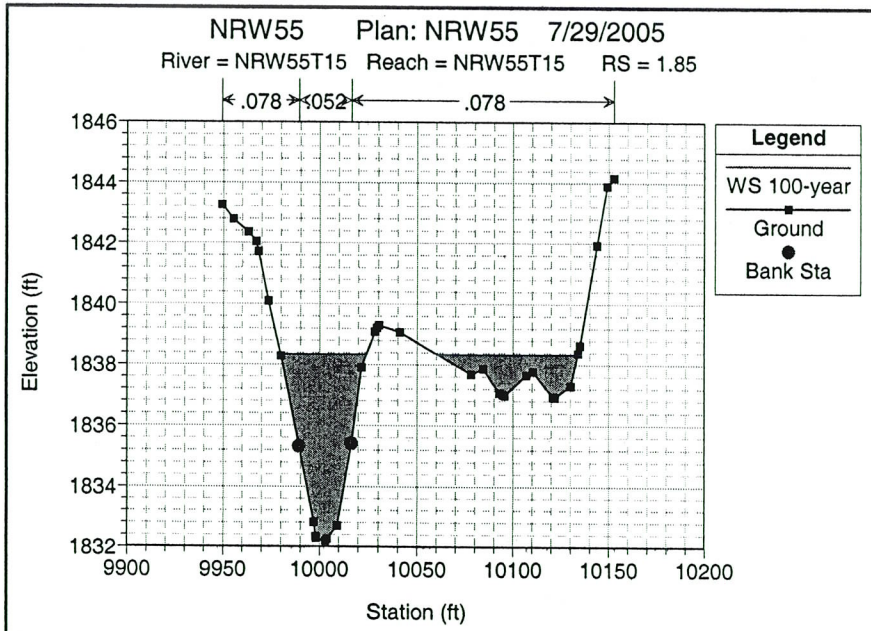

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.45
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

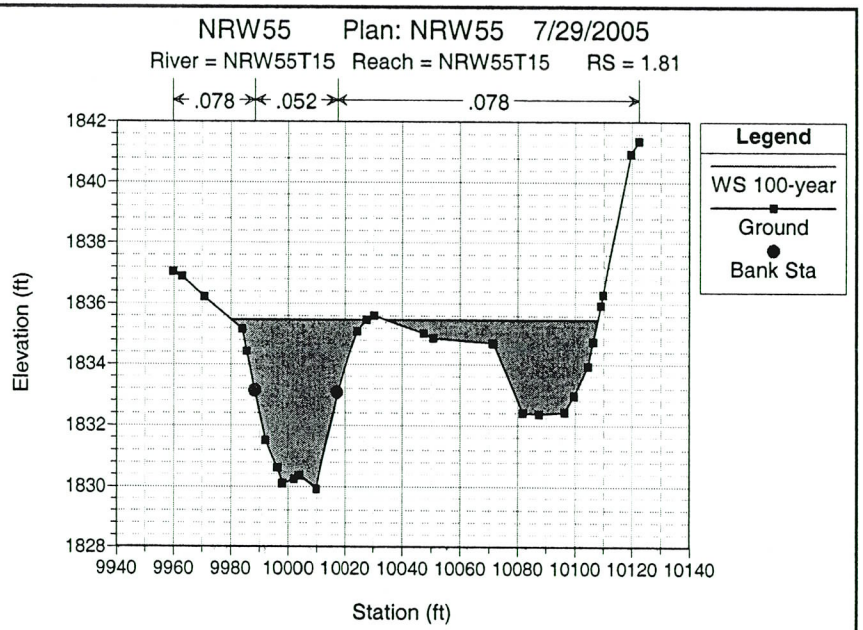

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.39
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

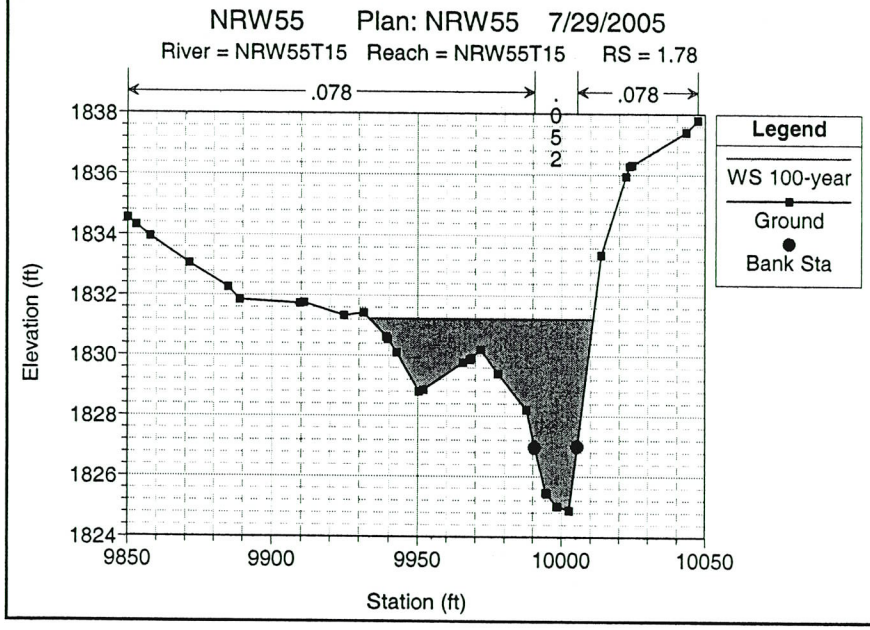

NRW55 Plan: NRW55 7/29/2005
River = NRW55T10B Reach = NRW55T10B RS = 1.33 U.S. of Confluence with NRW55T5
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

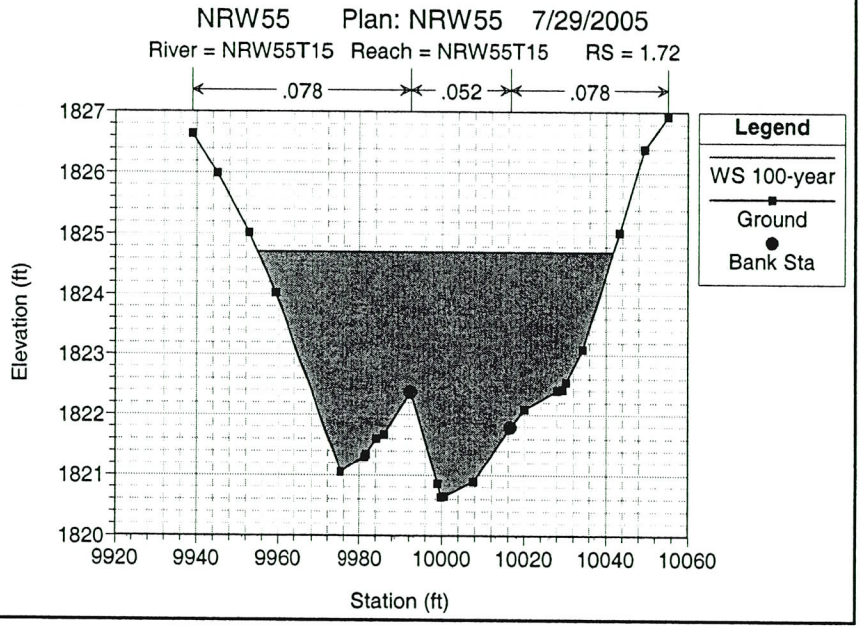

NRW55 Plan: NRW55 7/29/2005
NRW55T10B NRW55T10B
Legend
WS 100-year
Ground
Elevation (ft)
1950
1900
1850
1800
1750
1700
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)
1.39
1.45
1.51
1.56
1.63
1.7
1.75
1.8
1.84
1.87
1.94
2.03
2.08
2.13
2.17
2.22
2.27
2.32
2.38
2.42
2.47
2.51
2.58
2.62
2.67
2.71
2.76
2.81
2.83
2.86
2.89
3

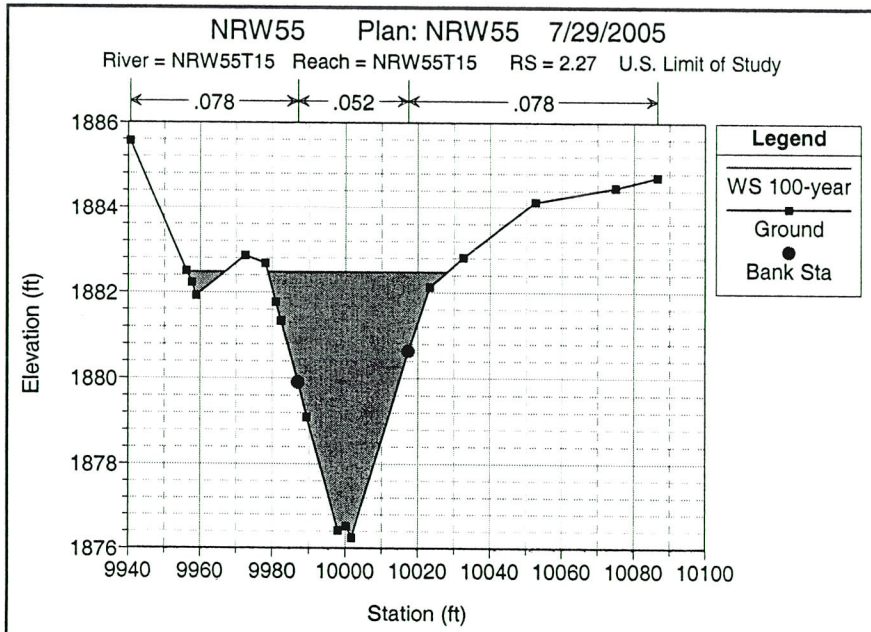

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 2
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.97
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.94
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.91
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

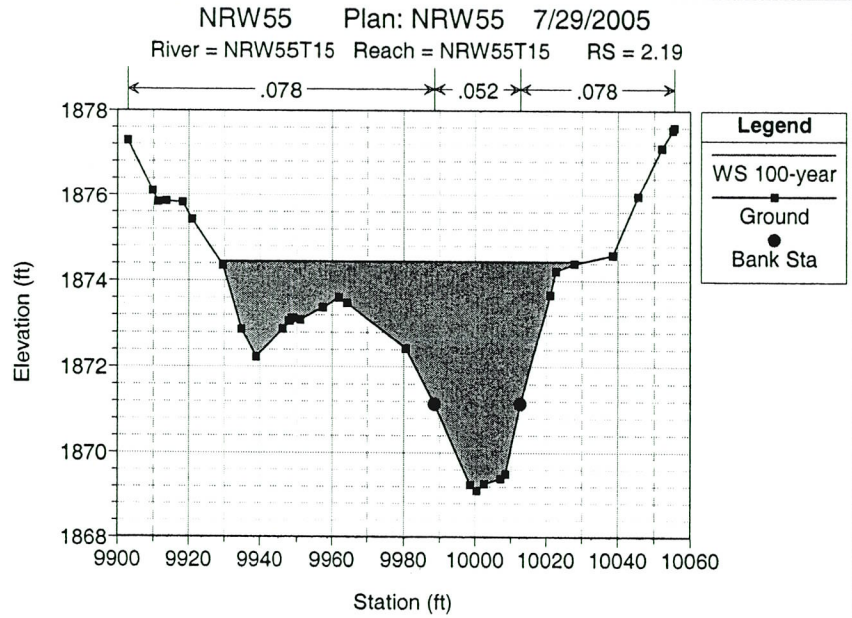

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.85
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

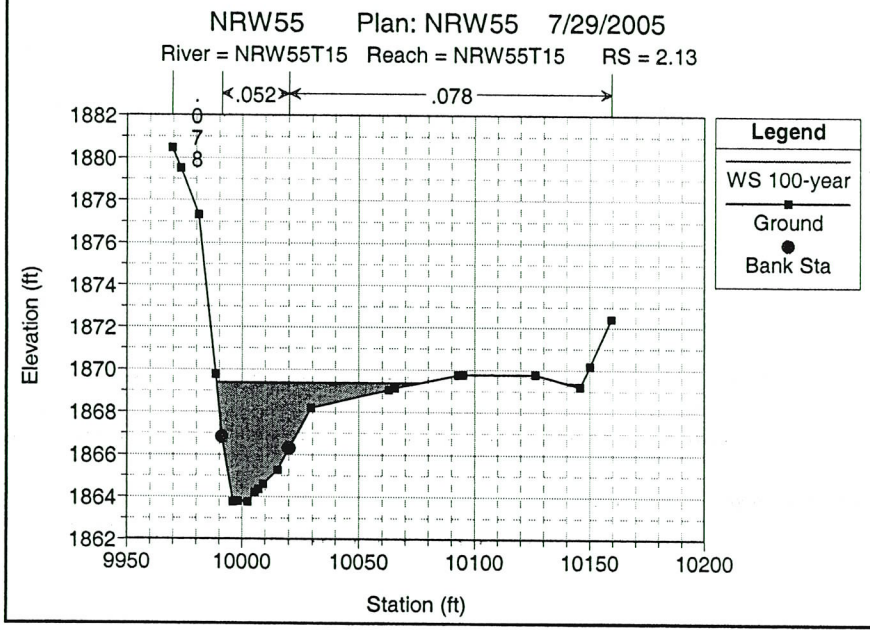

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.81
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

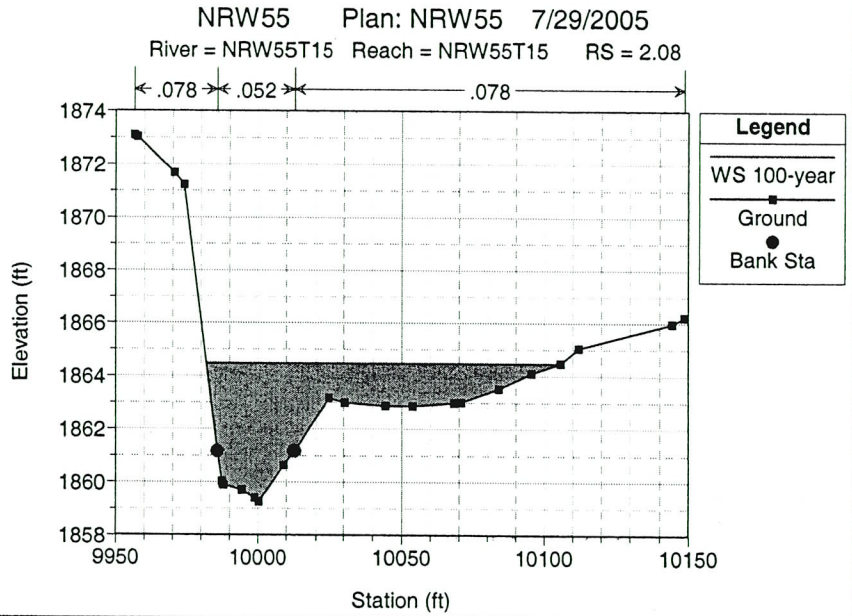

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.78
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

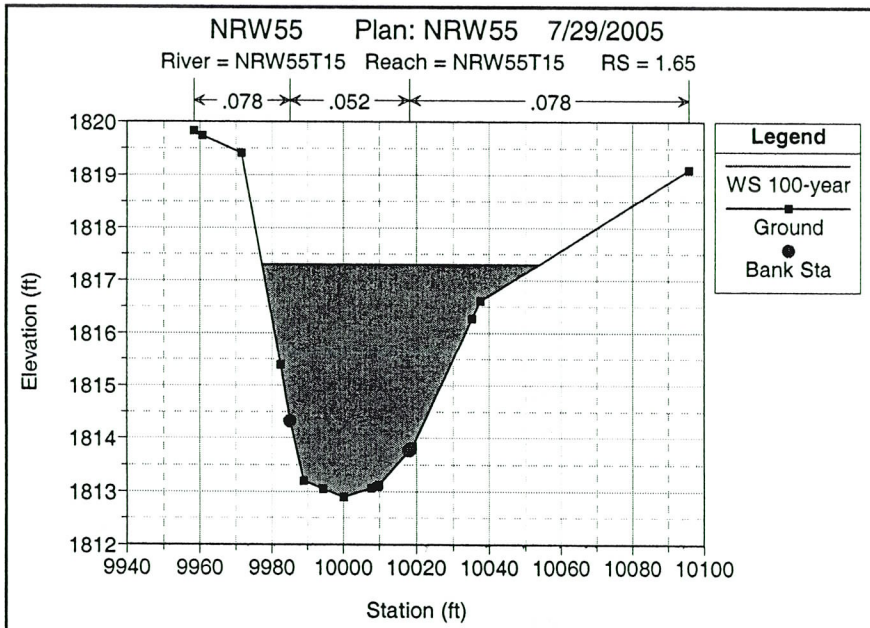

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.72
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

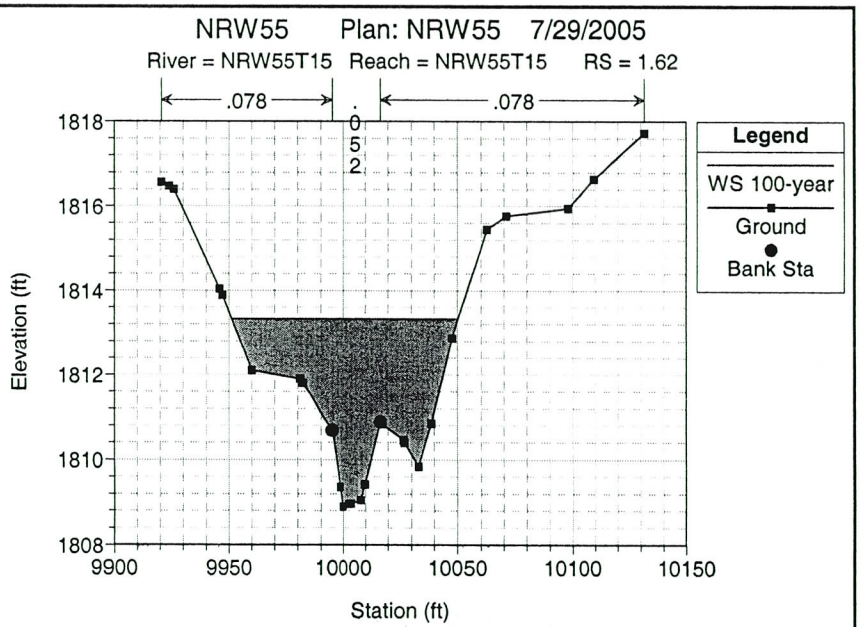

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 2.27 U.S. Limit of Study
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

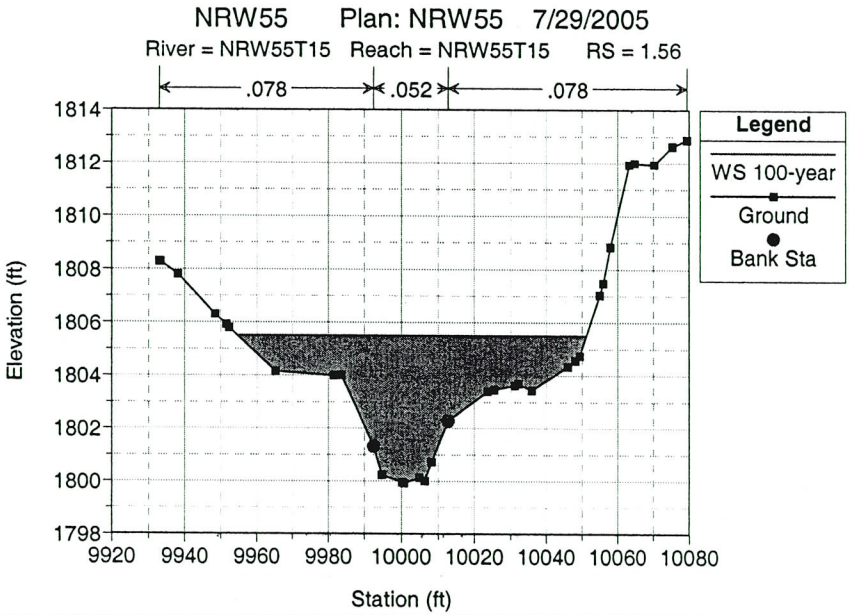

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 2.19
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

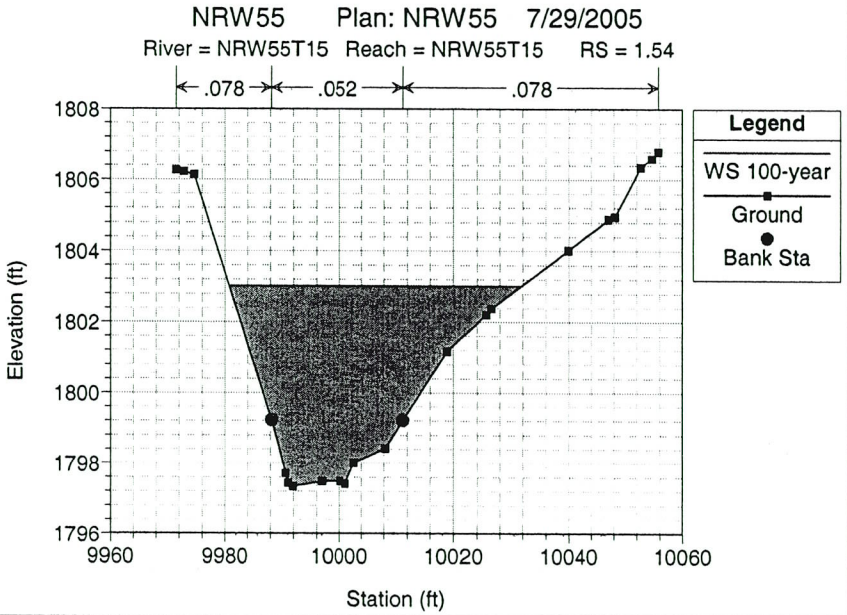

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 2.13
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

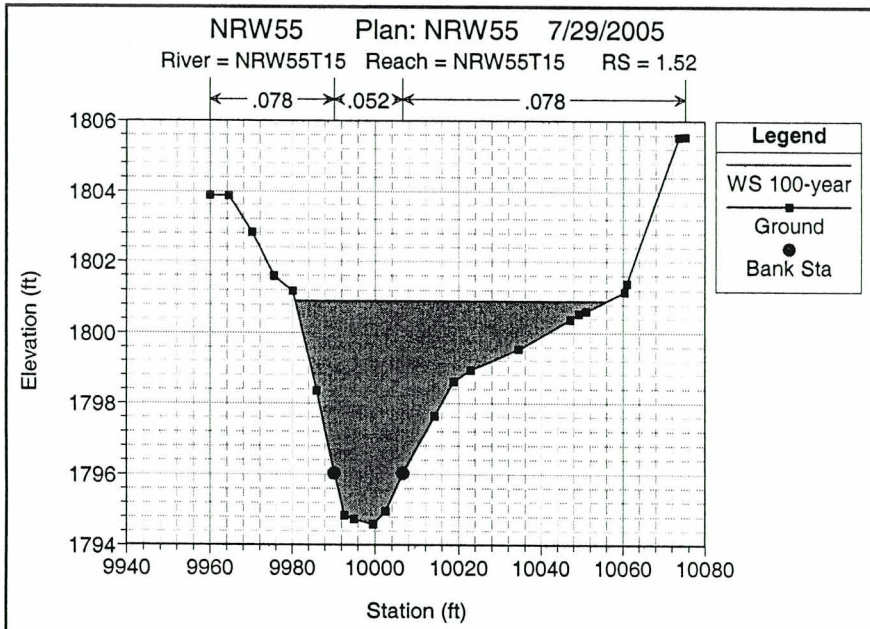

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 2.08
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

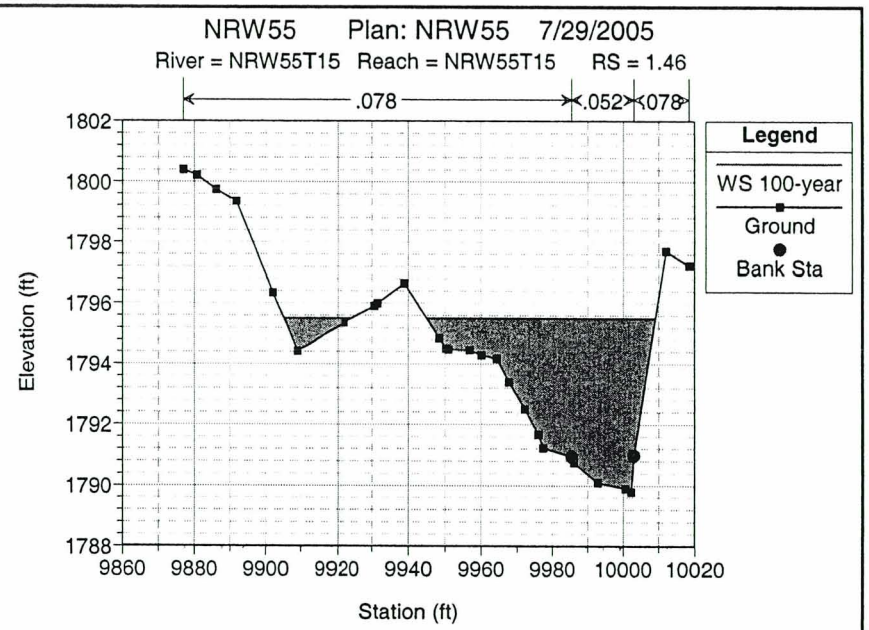

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.65
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

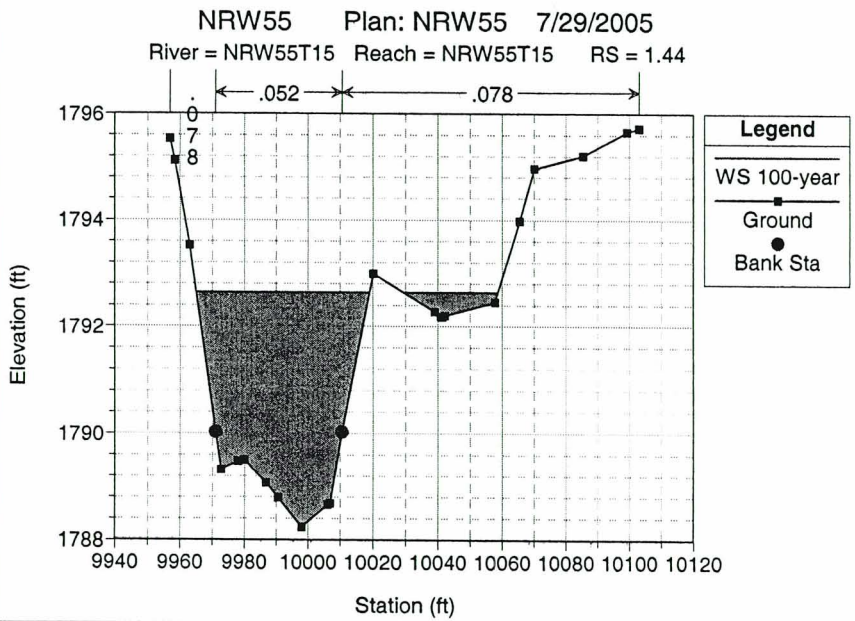

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.62
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

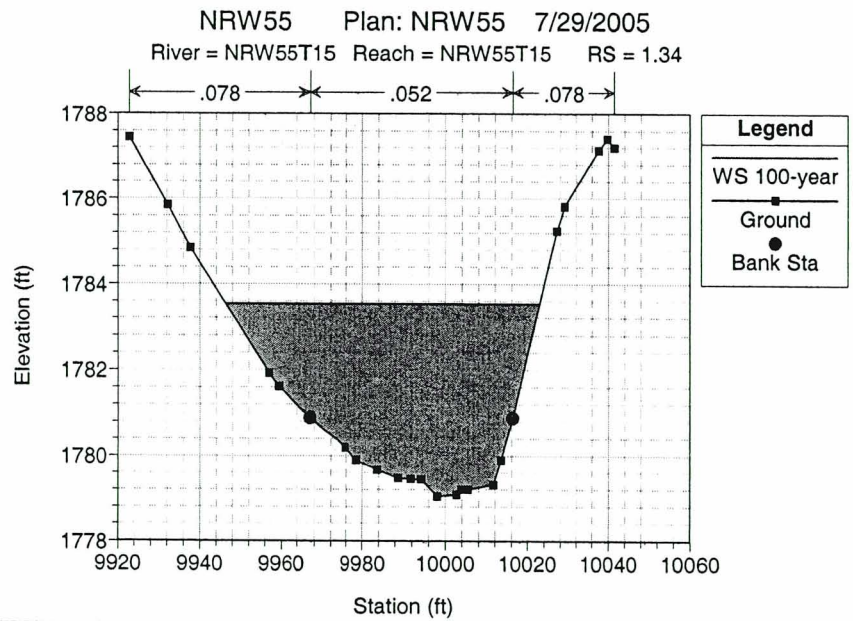

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.56
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

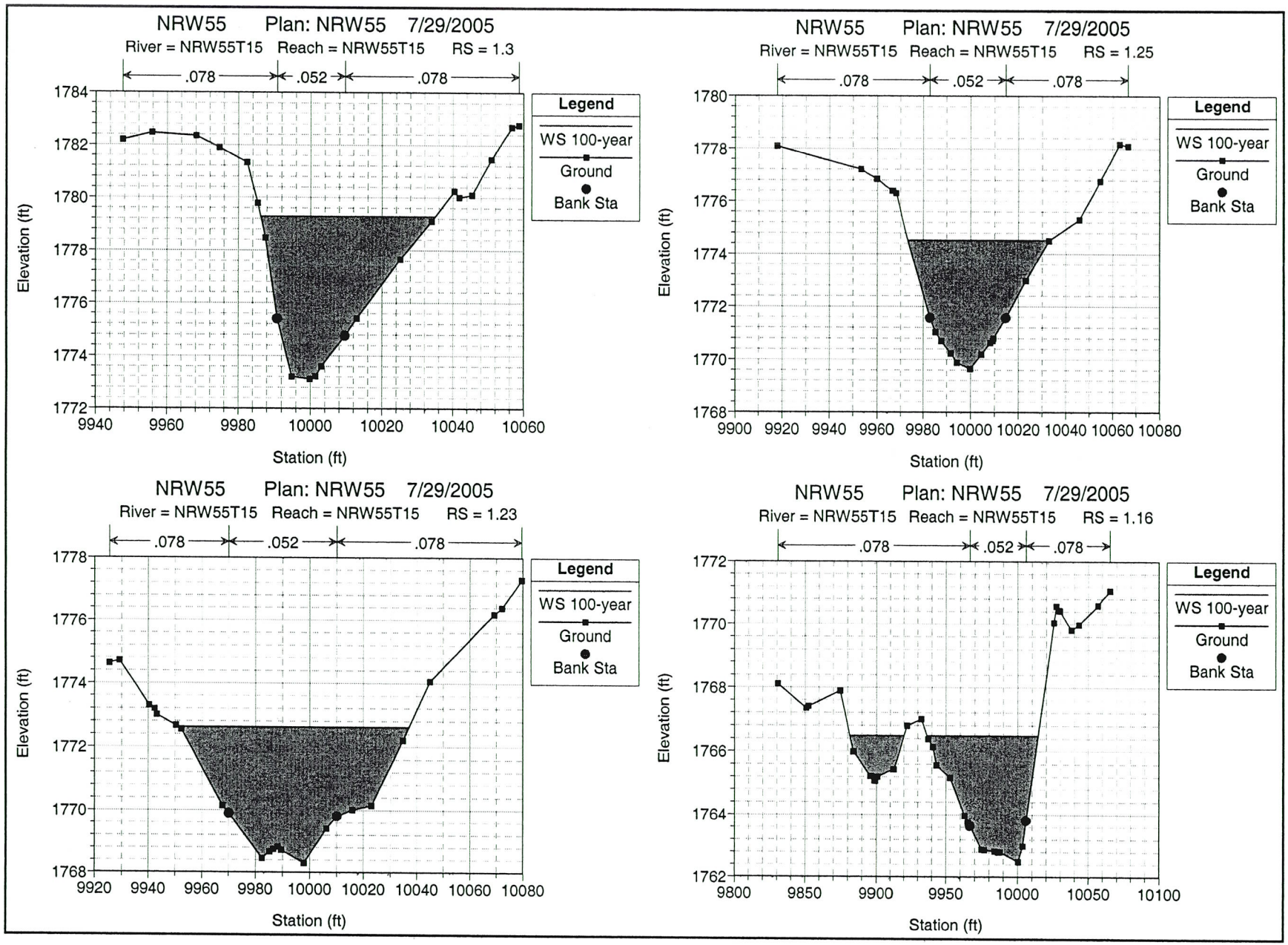

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.54
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

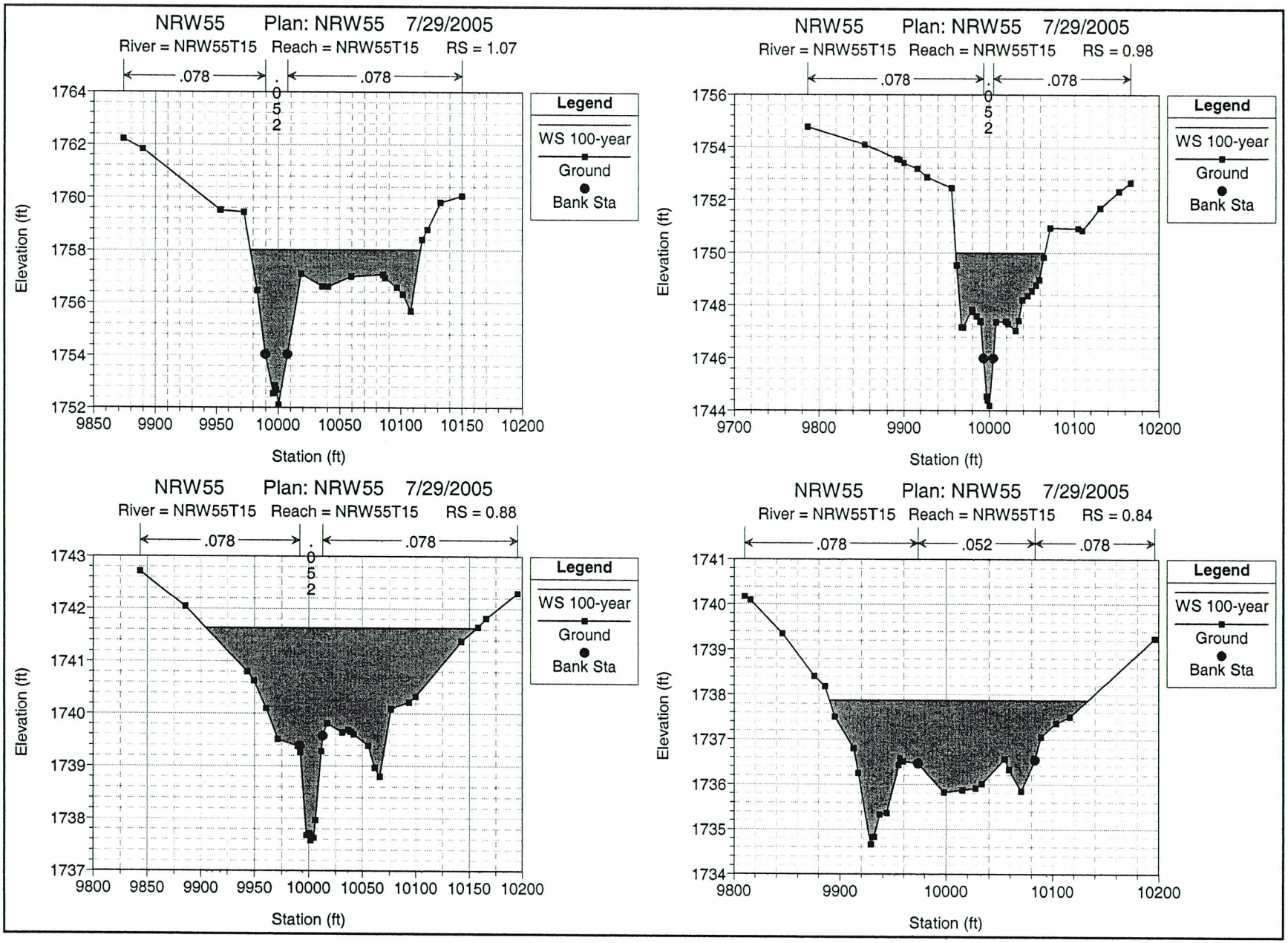

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.52
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

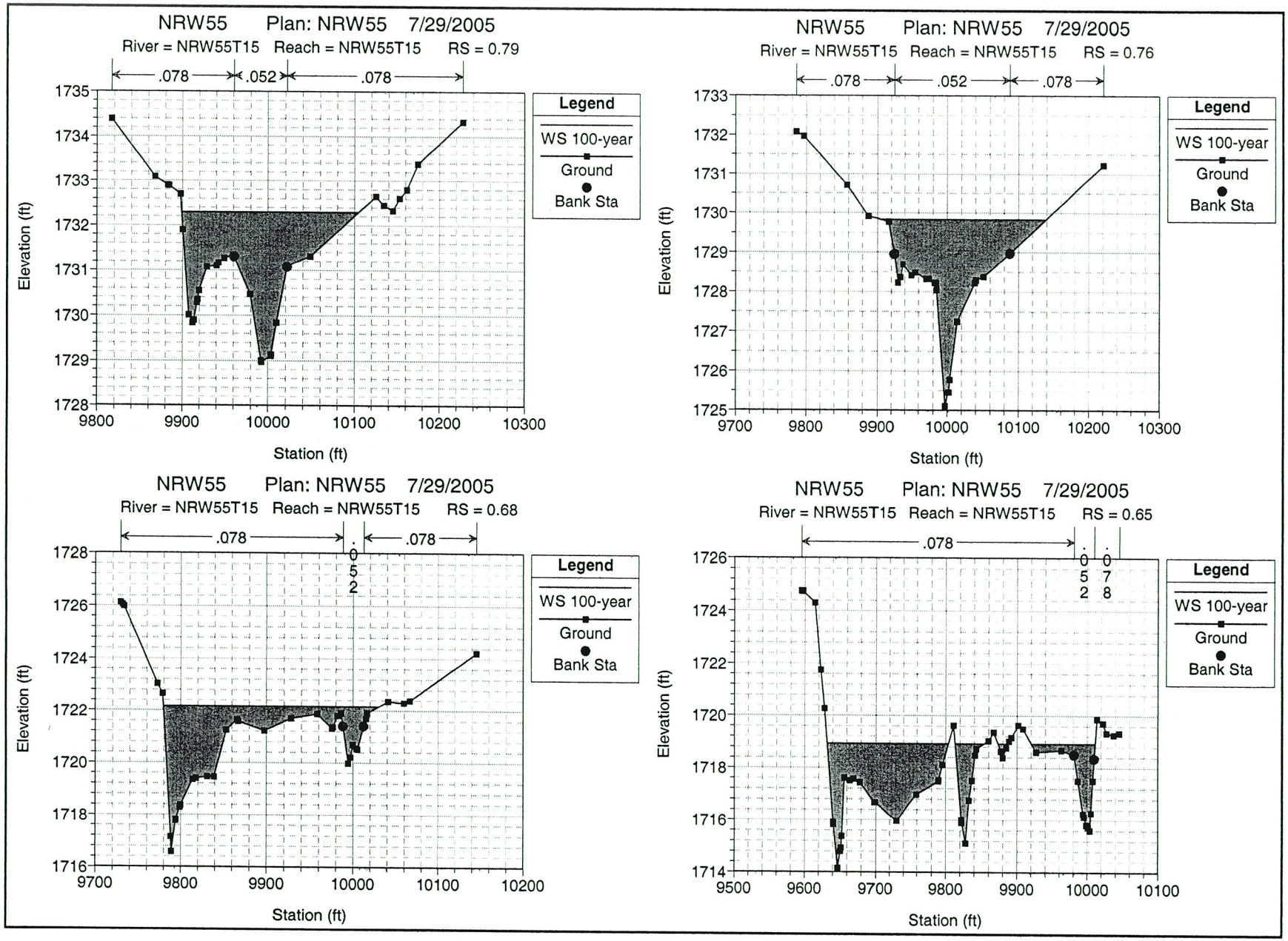

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.46
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

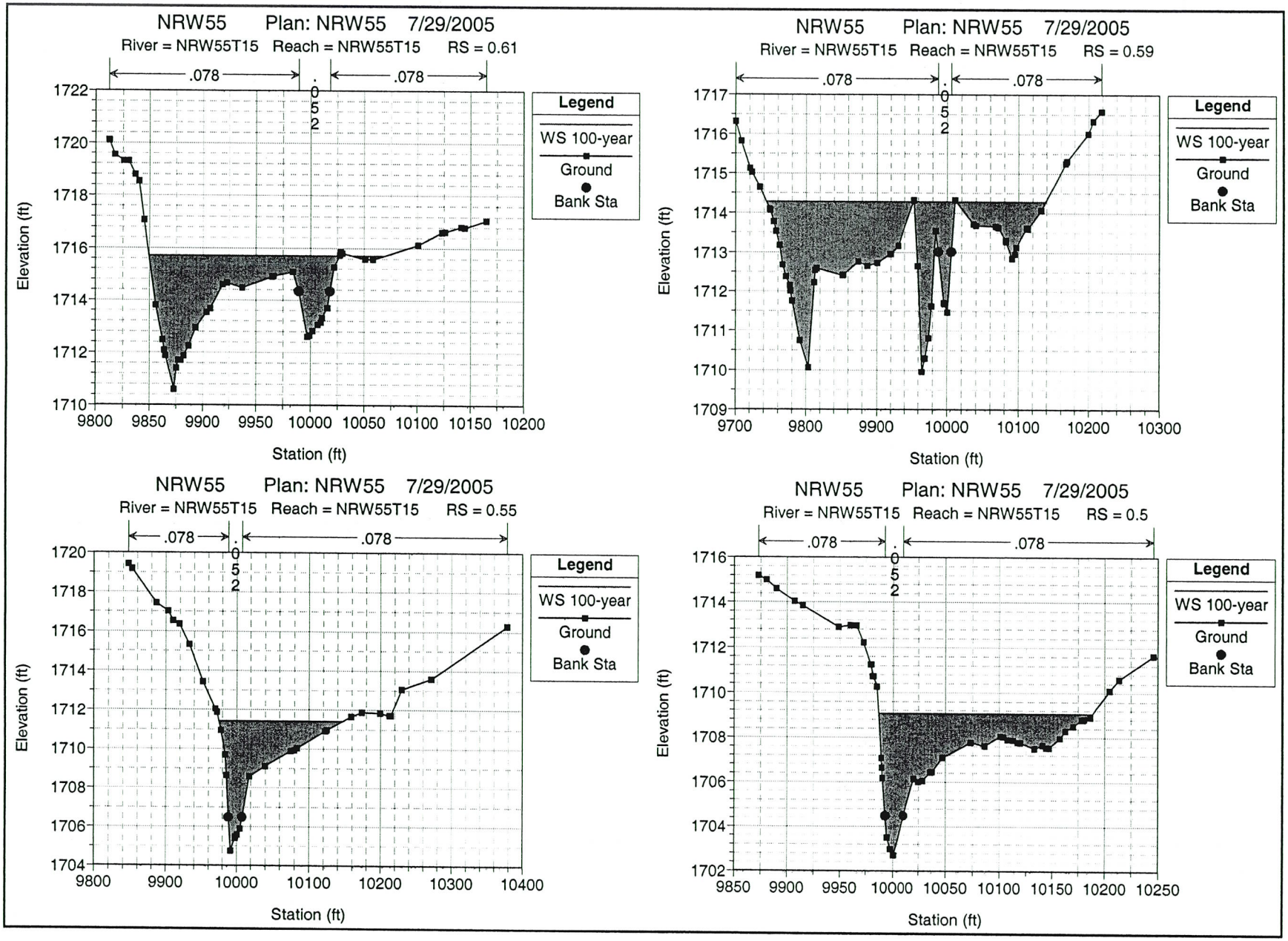

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.44
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

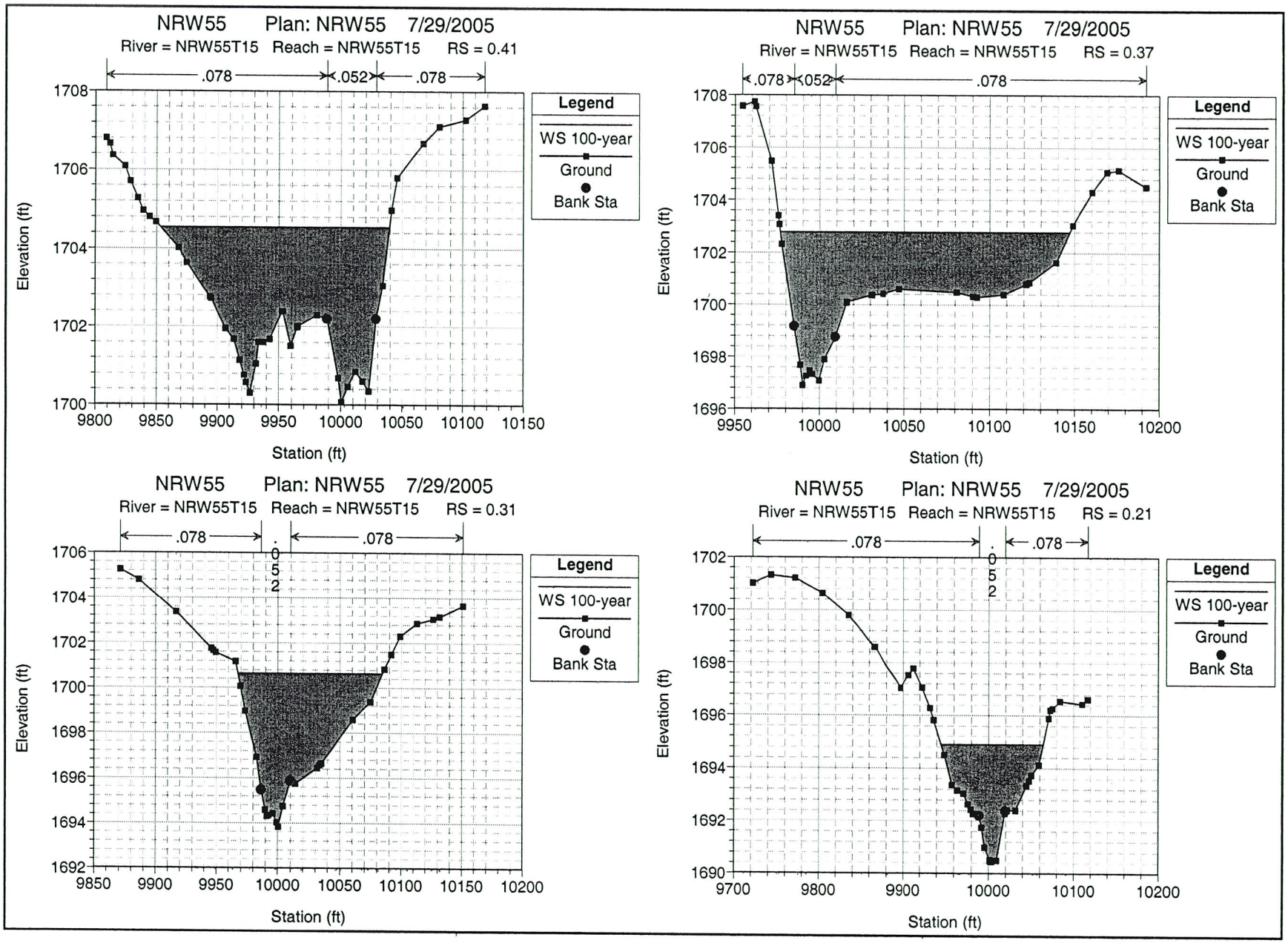

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.34
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

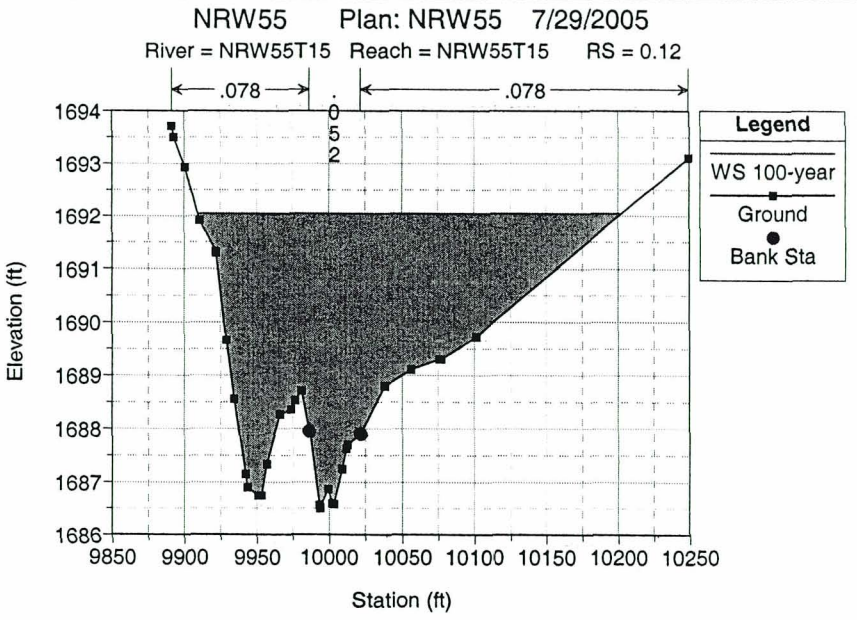

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.3
.078 .052 .078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.25
.078 .052 .078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.23
.078 .052 .078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.16
.078 .052 .078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

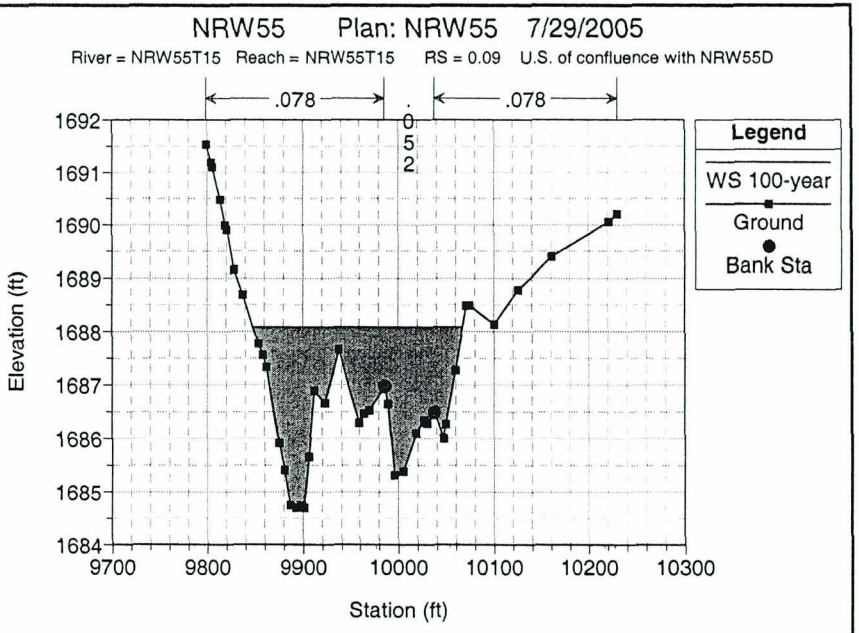

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 1.07
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.98
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.88
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.84
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

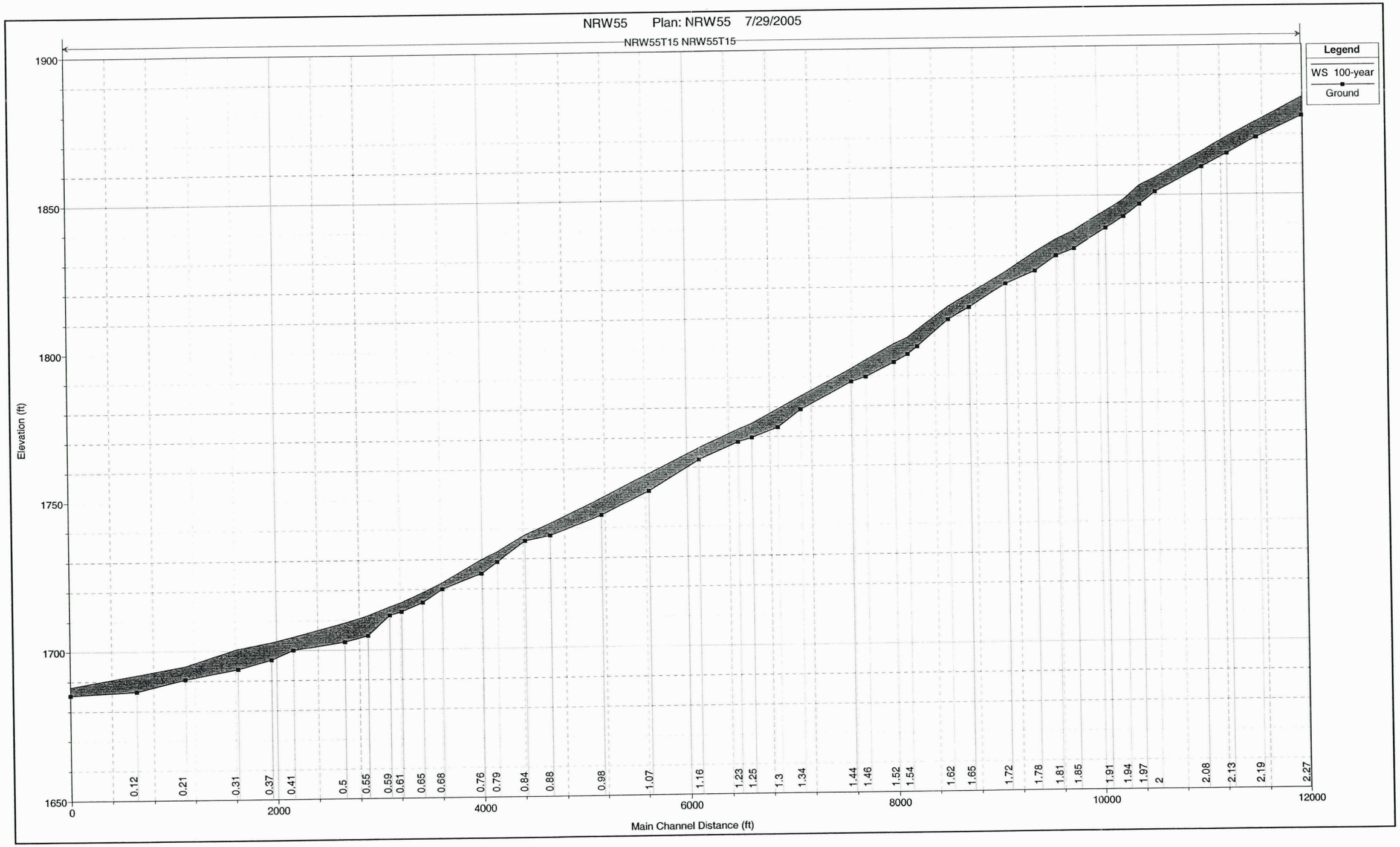

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.79
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.76
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.68
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.65
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

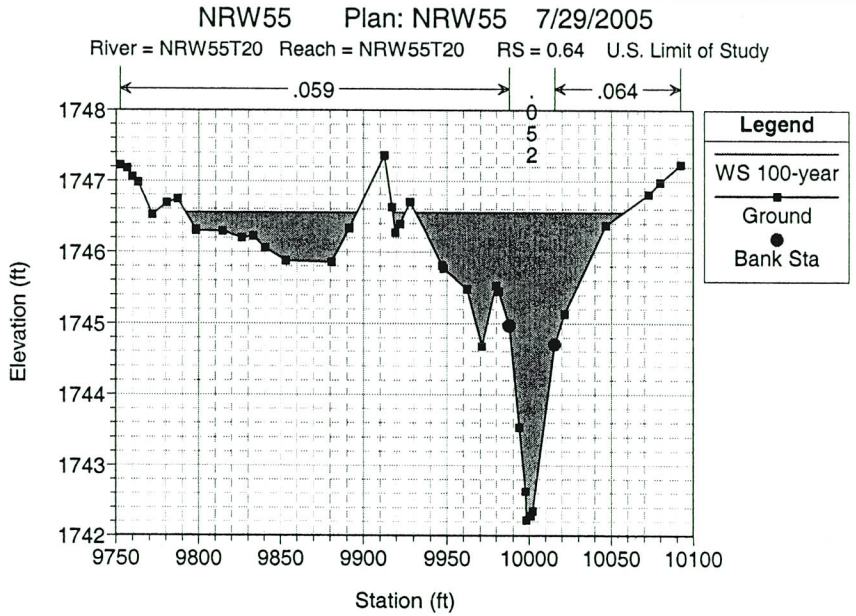

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.61
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.59
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.55
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.5
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

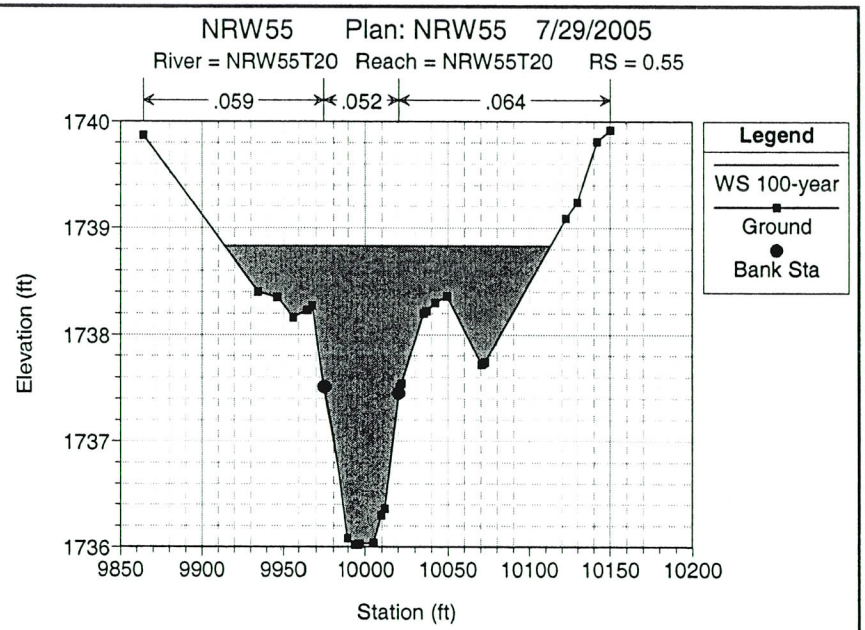

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.41
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.37
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.31
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.21
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

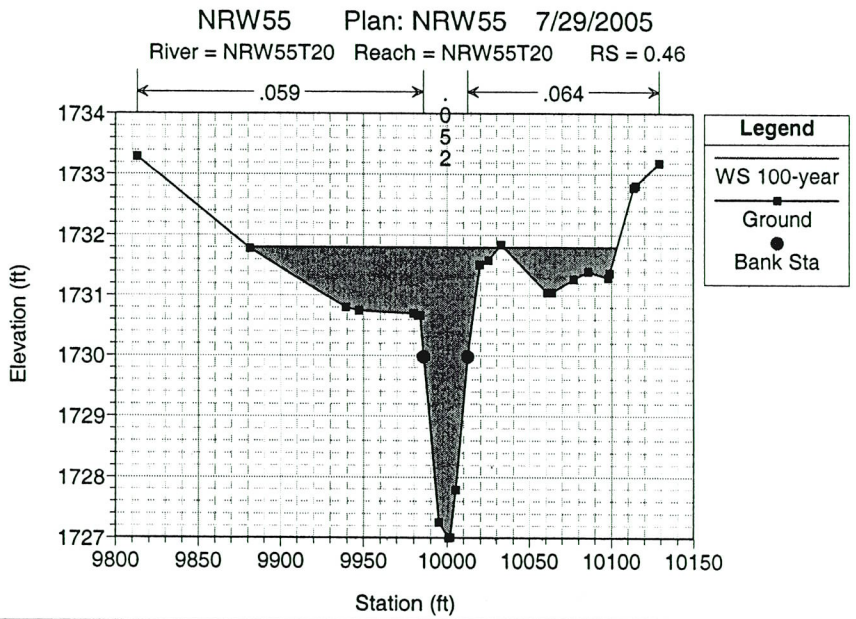

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.12
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1694
1693
1692
1691
1690
1689
1688
1687
1686
9850 9900 9950 10000 10050 10100 10150 10200 10250
Station (ft)

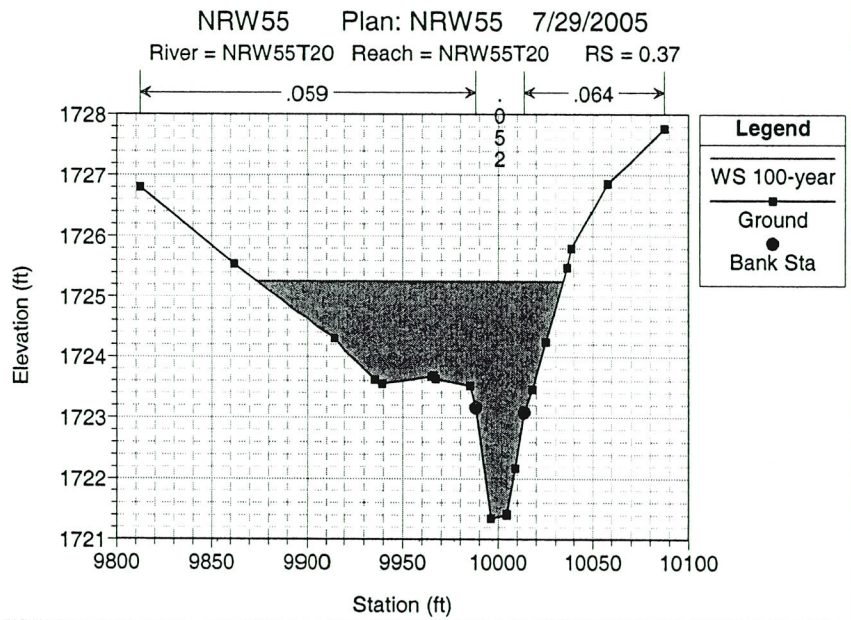

NRW55 Plan: NRW55 7/29/2005
River = NRW55T15 Reach = NRW55T15 RS = 0.09 U.S. of confluence with NRW55D
.078
.052
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1692
1691
1690
1689
1688
1687
1686
1685
1684
9700 9800 9900 10000 10100 10200 10300
Station (ft)

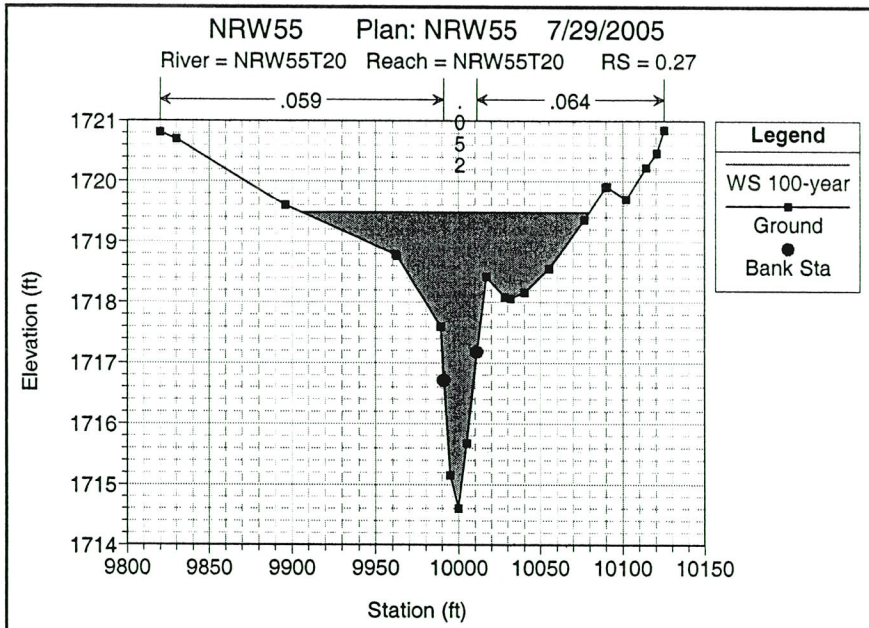

NRW55 Plan: NRW55 7/29/2005
NRW55T15 NRW55T15
Legend
WS 100-year
Ground
Elevation (ft)
1900
1850
1800
1750
1700
1650
0
2000
4000
6000
8000
10000
12000
Main Channel Distance (ft)
0.12
0.21
0.31
0.37
0.41
0.5
0.55
0.59
0.61
0.65
0.68
0.76
0.79
0.84
0.88
0.98
1.07
1.16
1.23
1.25
1.3
1.34
1.44
1.46
1.52
1.54
1.62
1.65
1.72
1.78
1.81
1.85
1.91
1.94
1.97
2
2.08
2.13
2.19
2.27

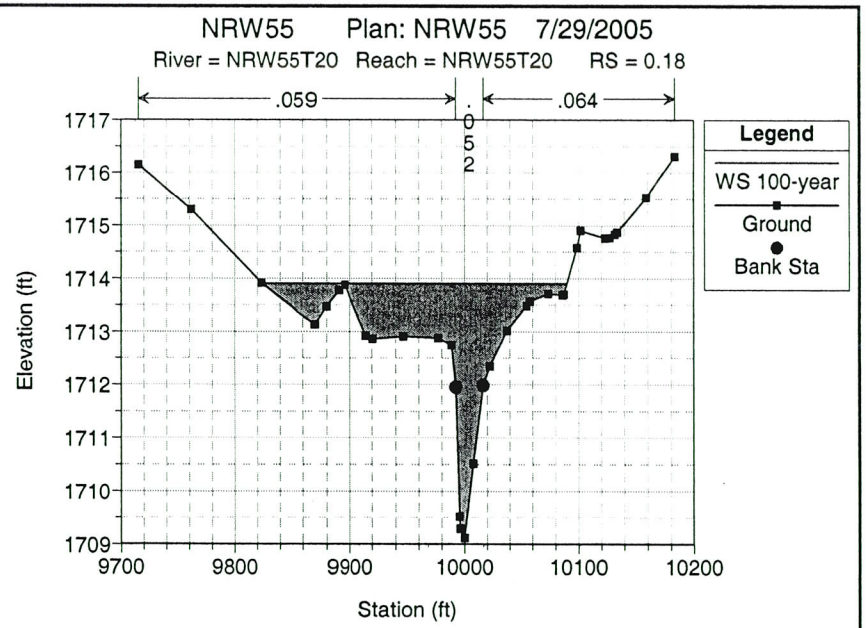

NRW55 Plan: NRW55 7/29/2005
River = NRW55T20 Reach = NRW55T20 RS = 0.64 U.S. Limit of Study
.059
.052
.064
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

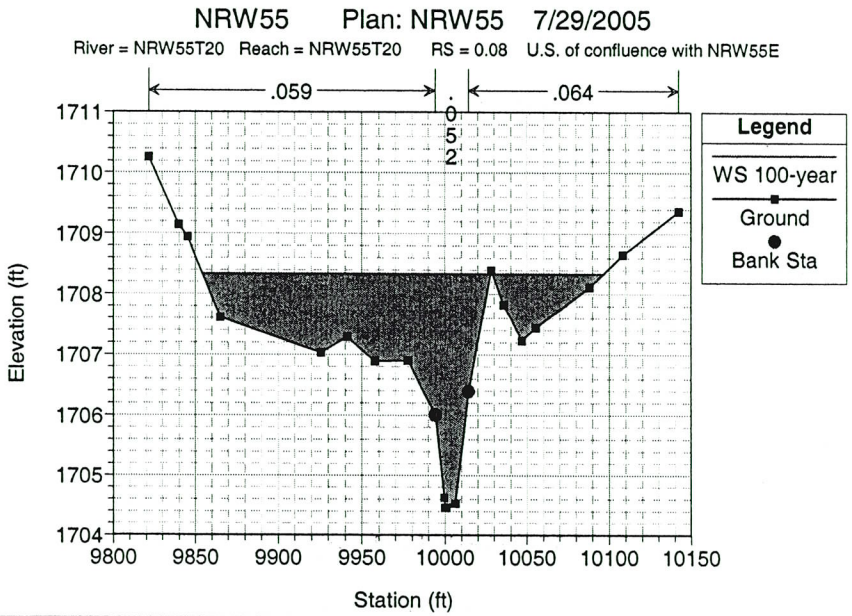

NRW55 Plan: NRW55 7/29/2005
River = NRW55T20 Reach = NRW55T20 RS = 0.55
.059
.052
.064
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

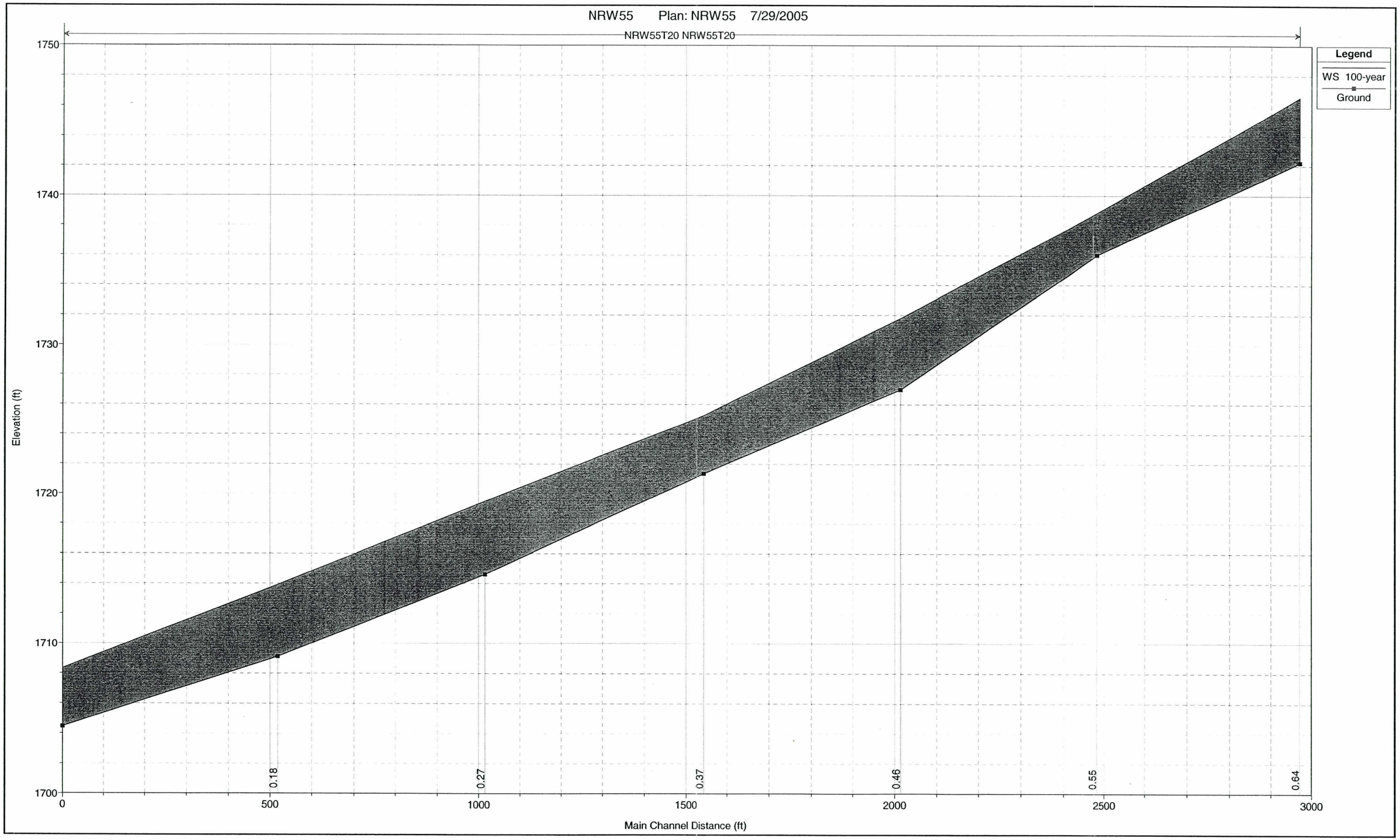

NRW55 Plan: NRW55 7/29/2005
River = NRW55T20 Reach = NRW55T20 RS = 0.46
.059
.052
.064
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

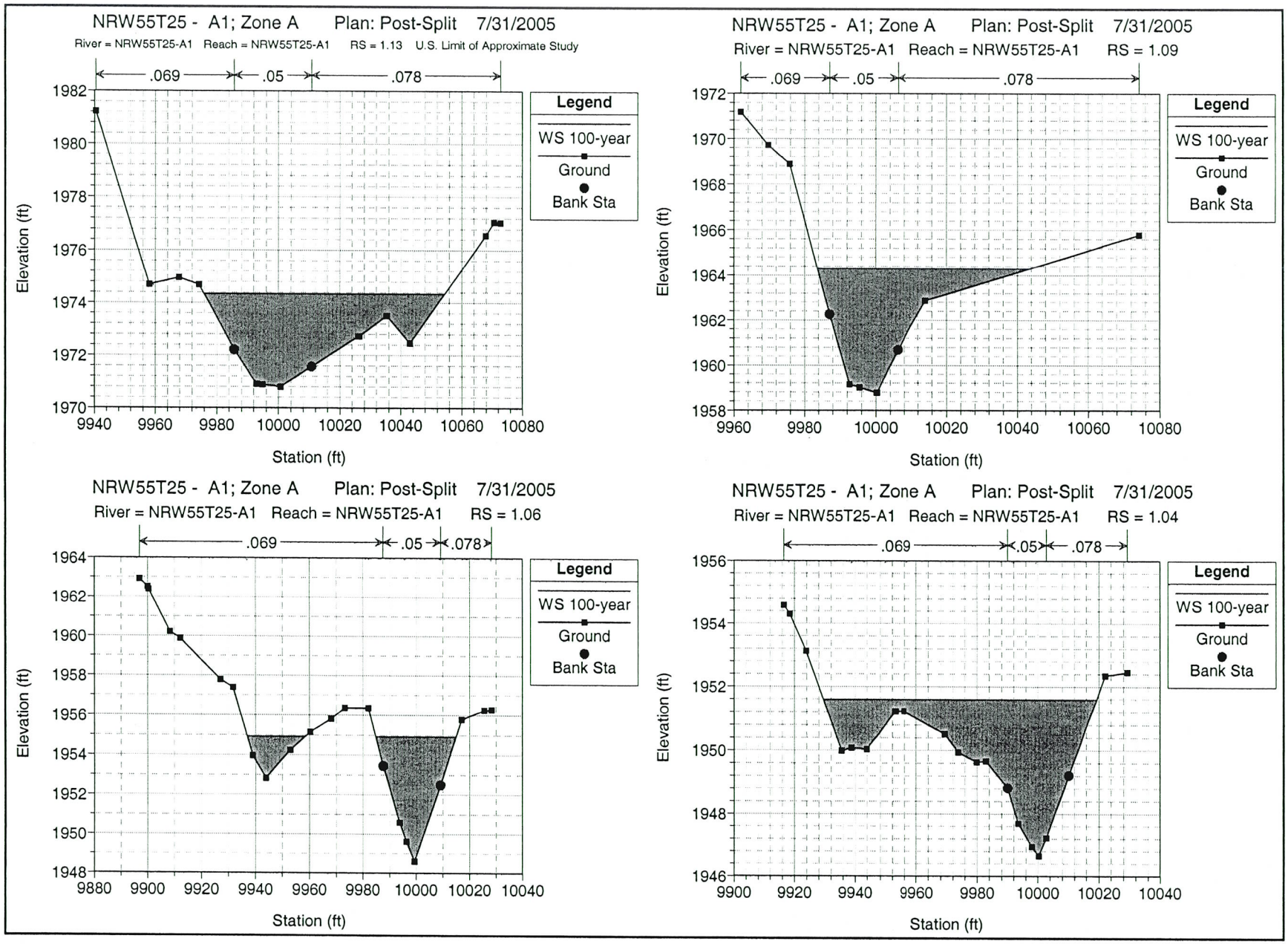

NRW55 Plan: NRW55 7/29/2005
River = NRW55T20 Reach = NRW55T20 RS = 0.37
.059
.052
.064
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

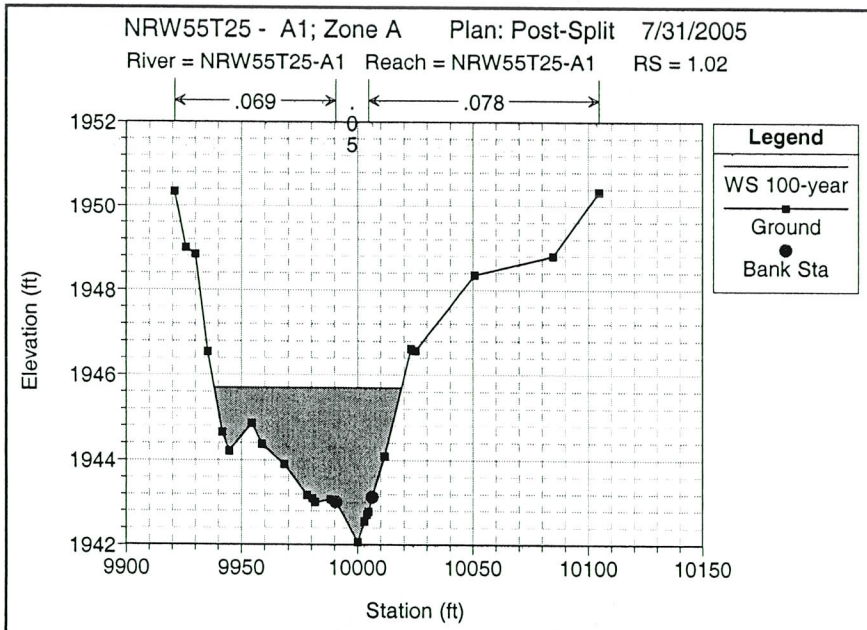

NRW55 Plan: NRW55 7/29/2005
River = NRW55T20 Reach = NRW55T20 RS = 0.27
.059
.052
.064
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

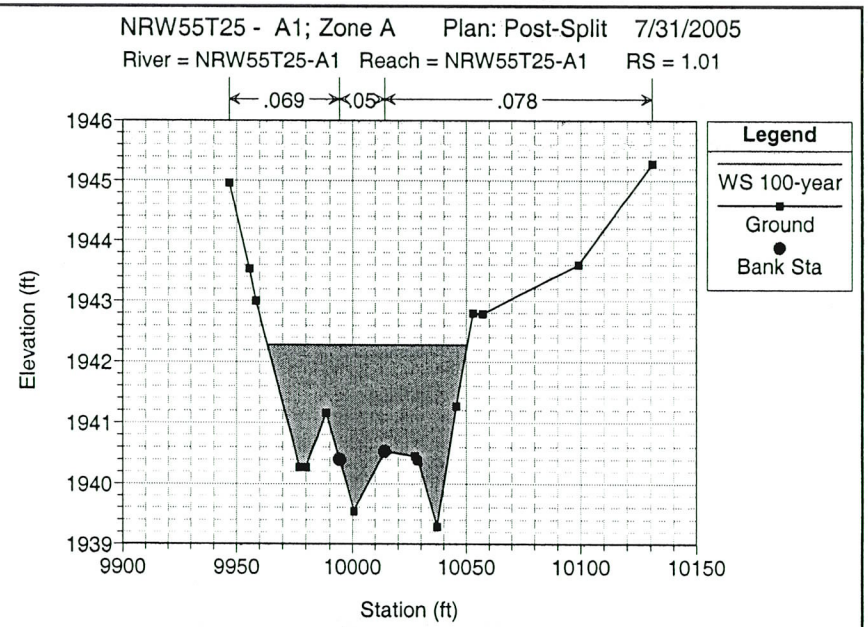

NRW55 Plan: NRW55 7/29/2005
River = NRW55T20 Reach = NRW55T20 RS = 0.18
.059
.052
.064
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

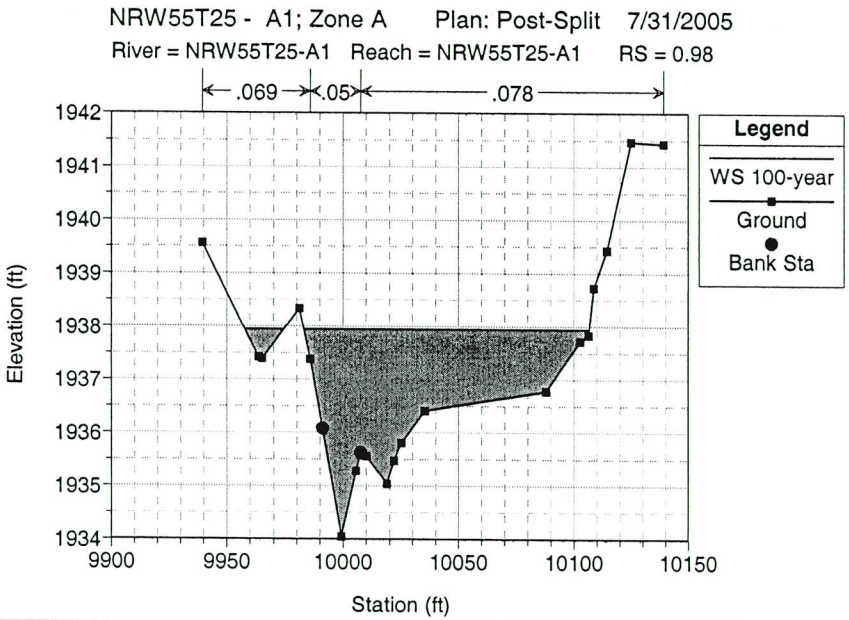

NRW55 Plan: NRW55 7/29/2005
River = NRW55T20 Reach = NRW55T20 RS = 0.08 U.S. of confluence with NRW55E
.059
.052
.064
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

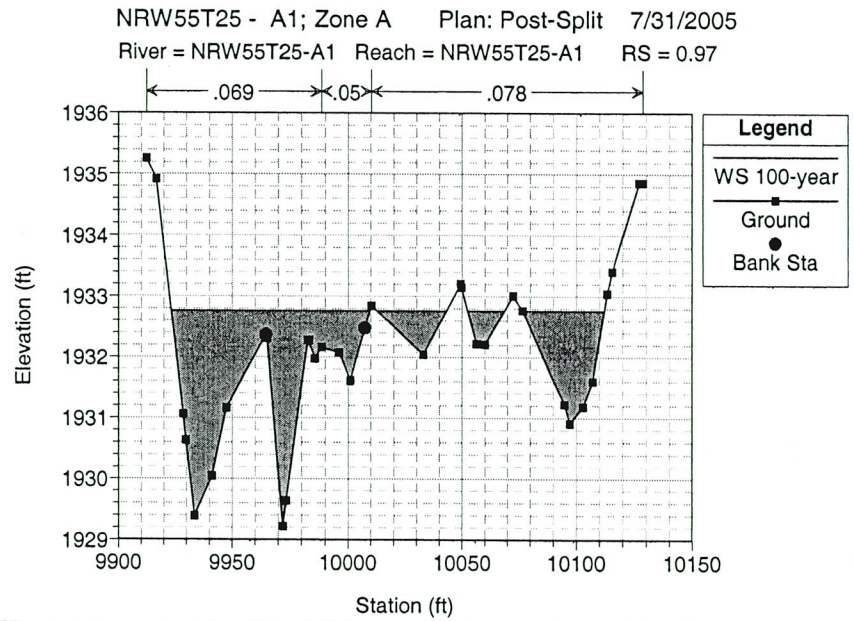

NRW55 Plan: NRW55 7/29/2005
NRW55T20 NRW55T20
Legend
WS 100-year
Ground
Elevation (ft)
1750
1740
1730
1720
1710
1700
0.18
0.27
0.37
0.46
0.55
0.64
0
500
1000
1500
2000
2500
3000
Main Channel Distance (ft)

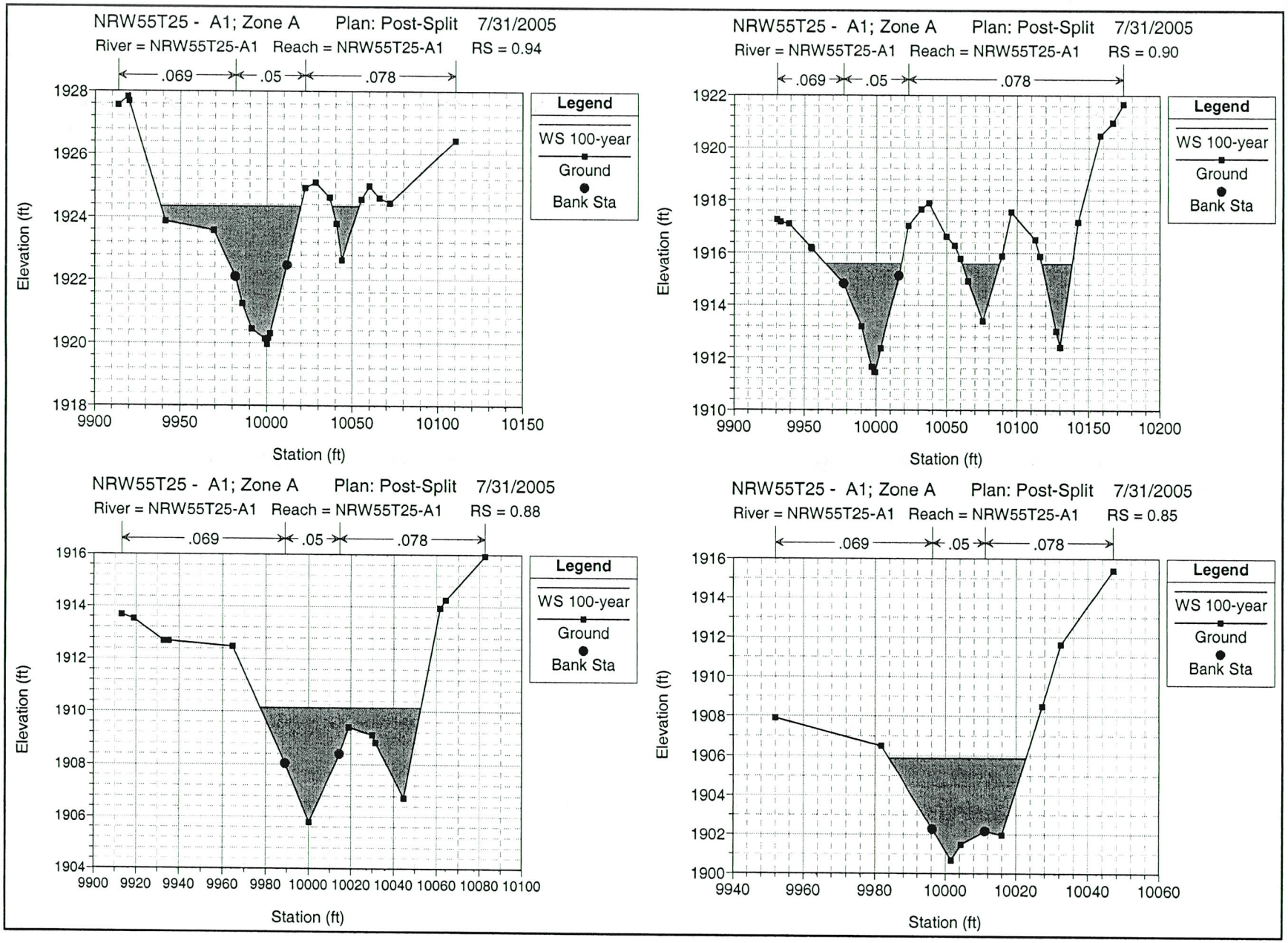

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 1.13 U.S. Limit of Approximate Study
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 1.09
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 1.06
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 1.04
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

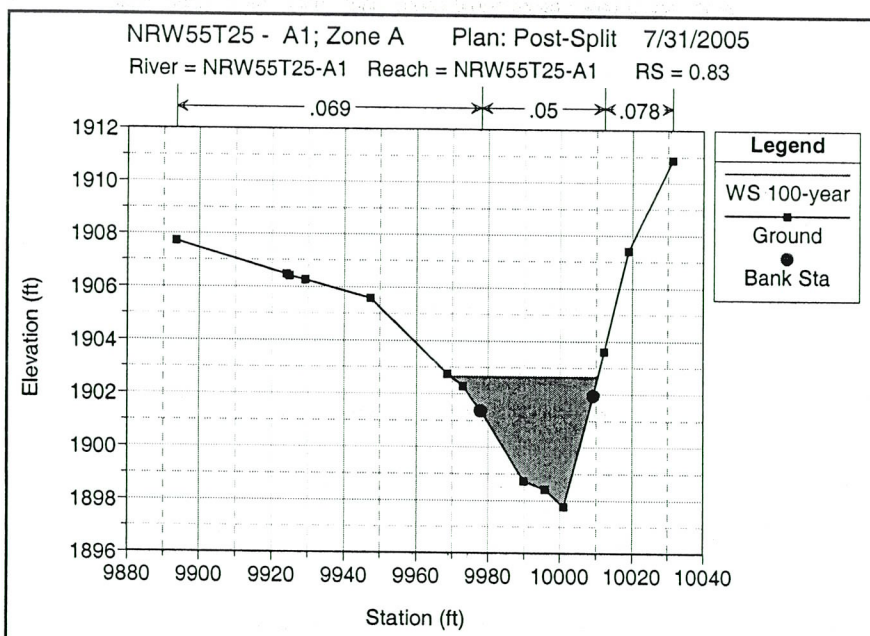

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 1.02
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

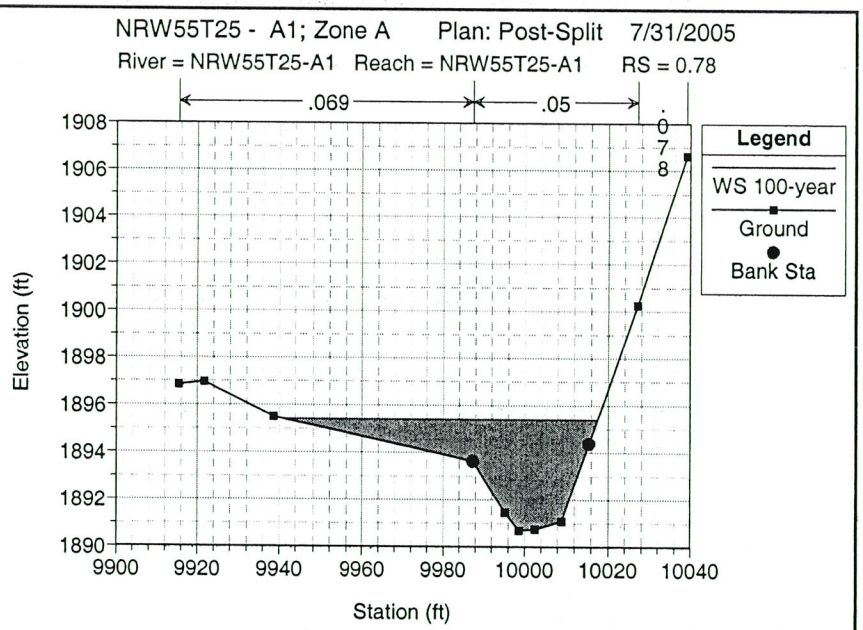

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 1.01
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

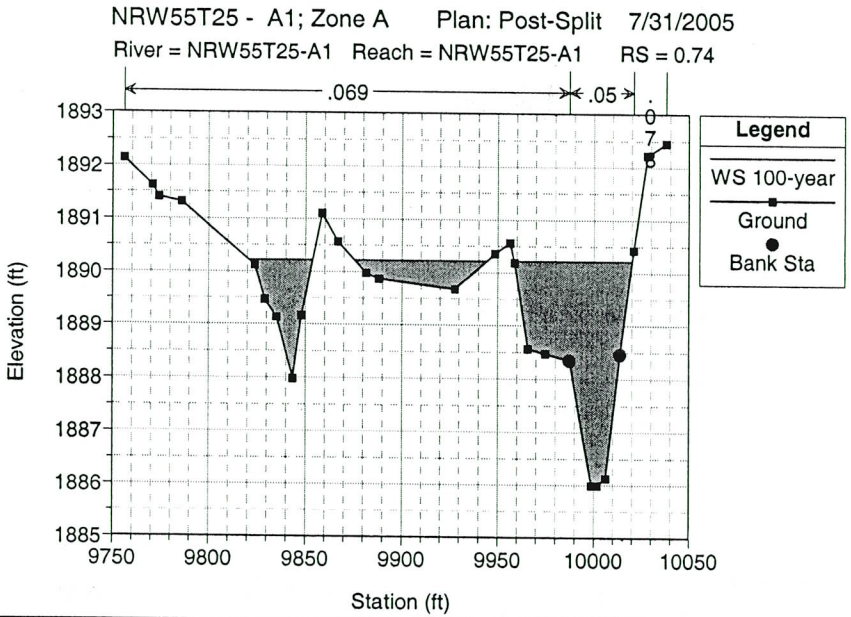

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.98
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

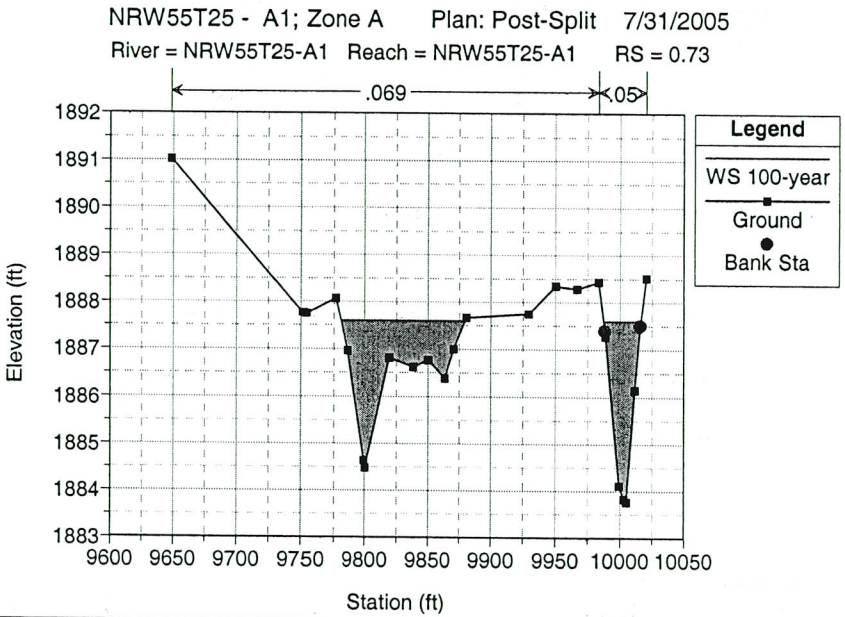

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.97
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

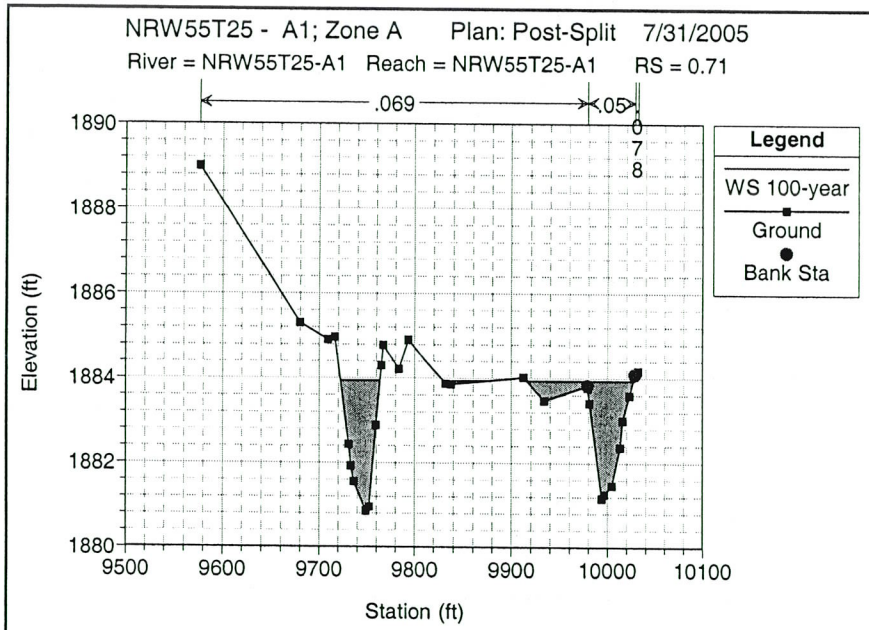

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.94
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.90
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.88
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.85
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

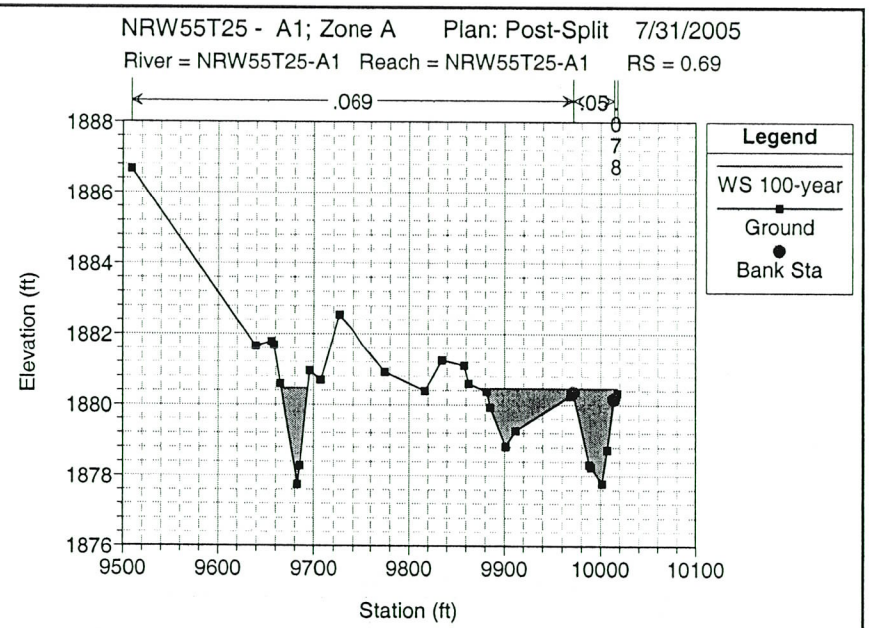

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.83
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

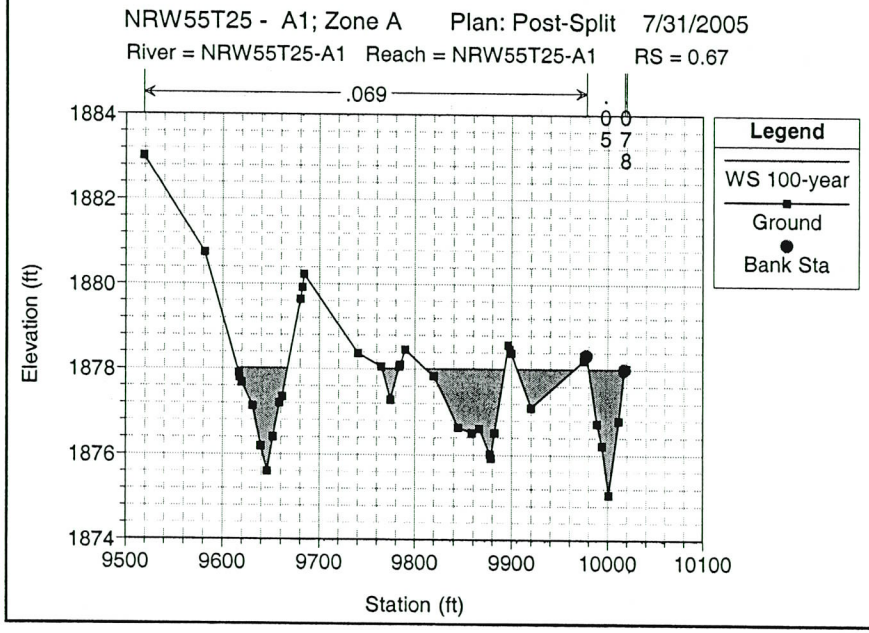

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.78
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

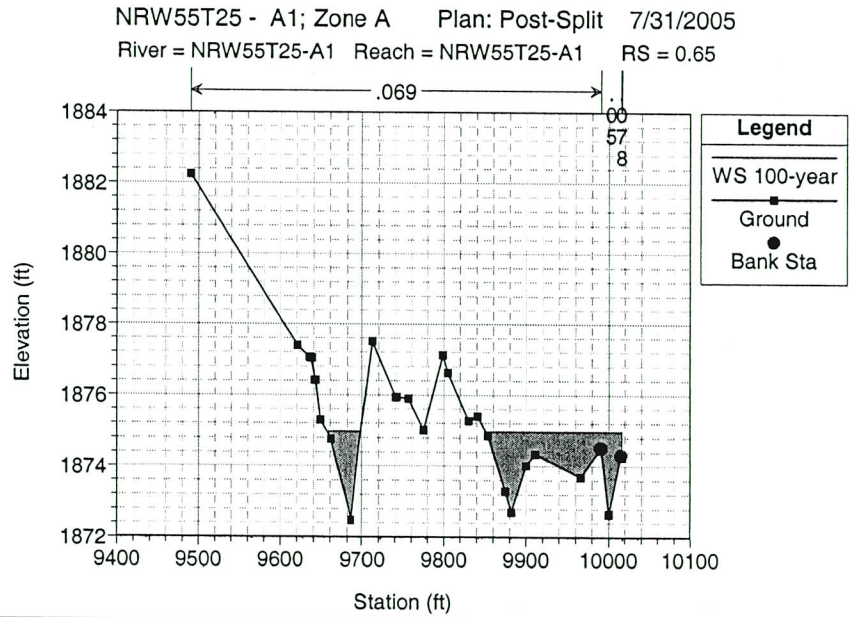

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.74
.069
.05
.07
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

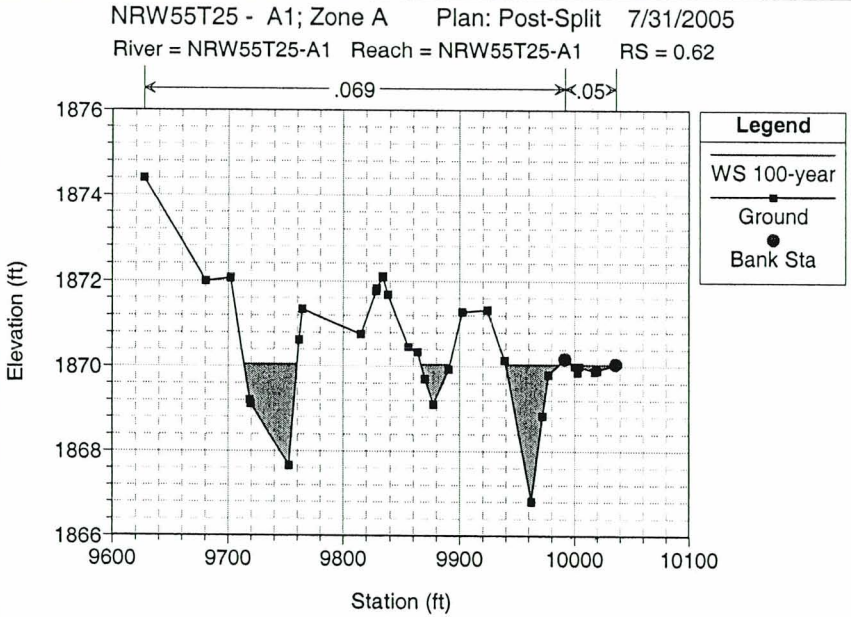

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.73
.069
.05
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

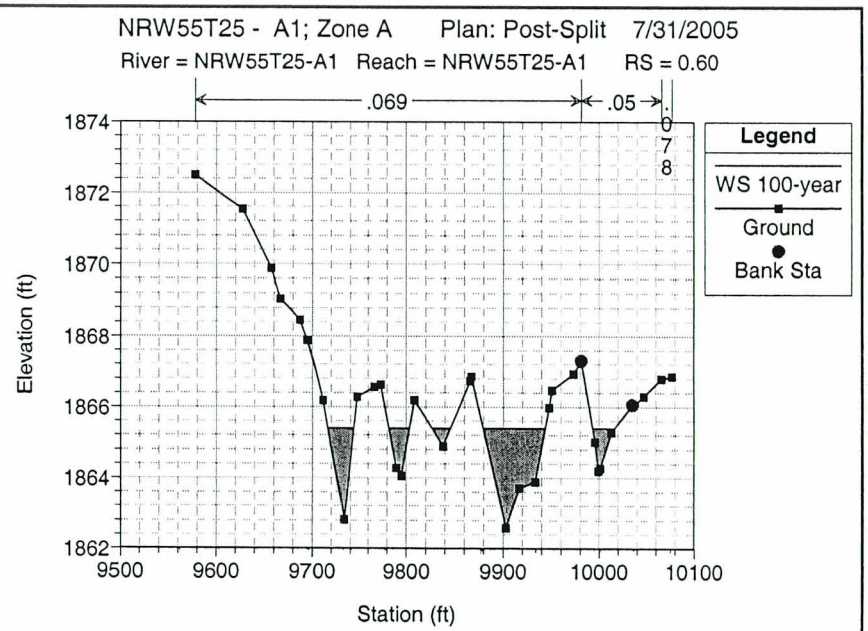

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.71
.069
.05
0
7
8
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

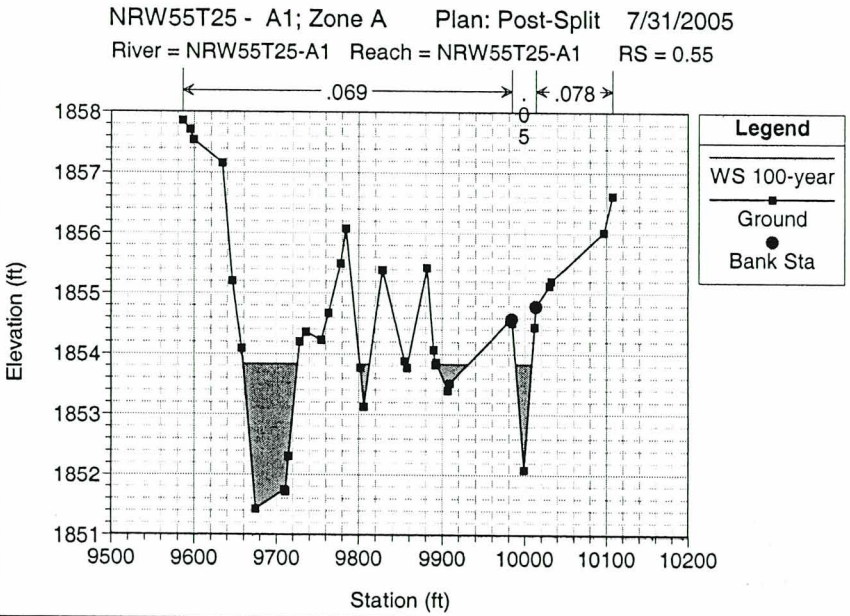

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.69
.069
.05
0
7
8
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

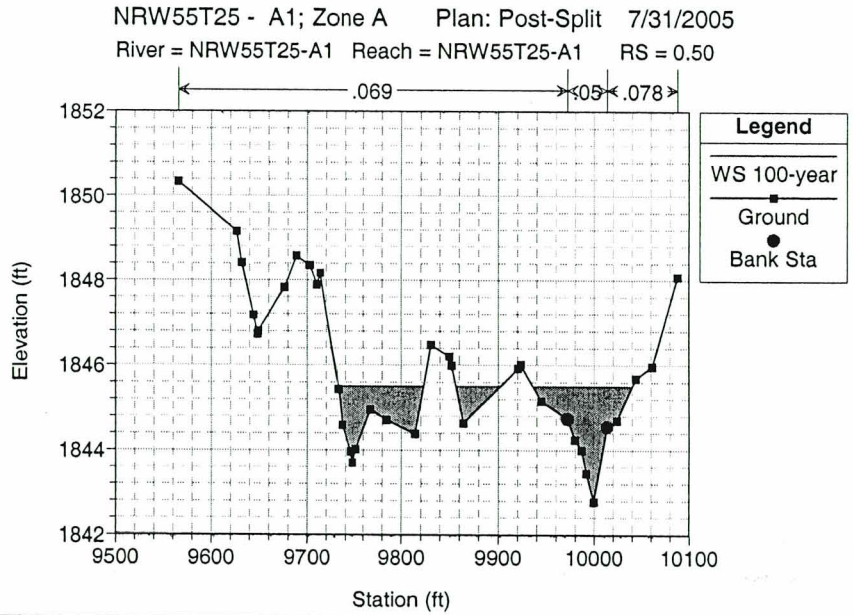

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.67
.069
.
0
5
0
7
8
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

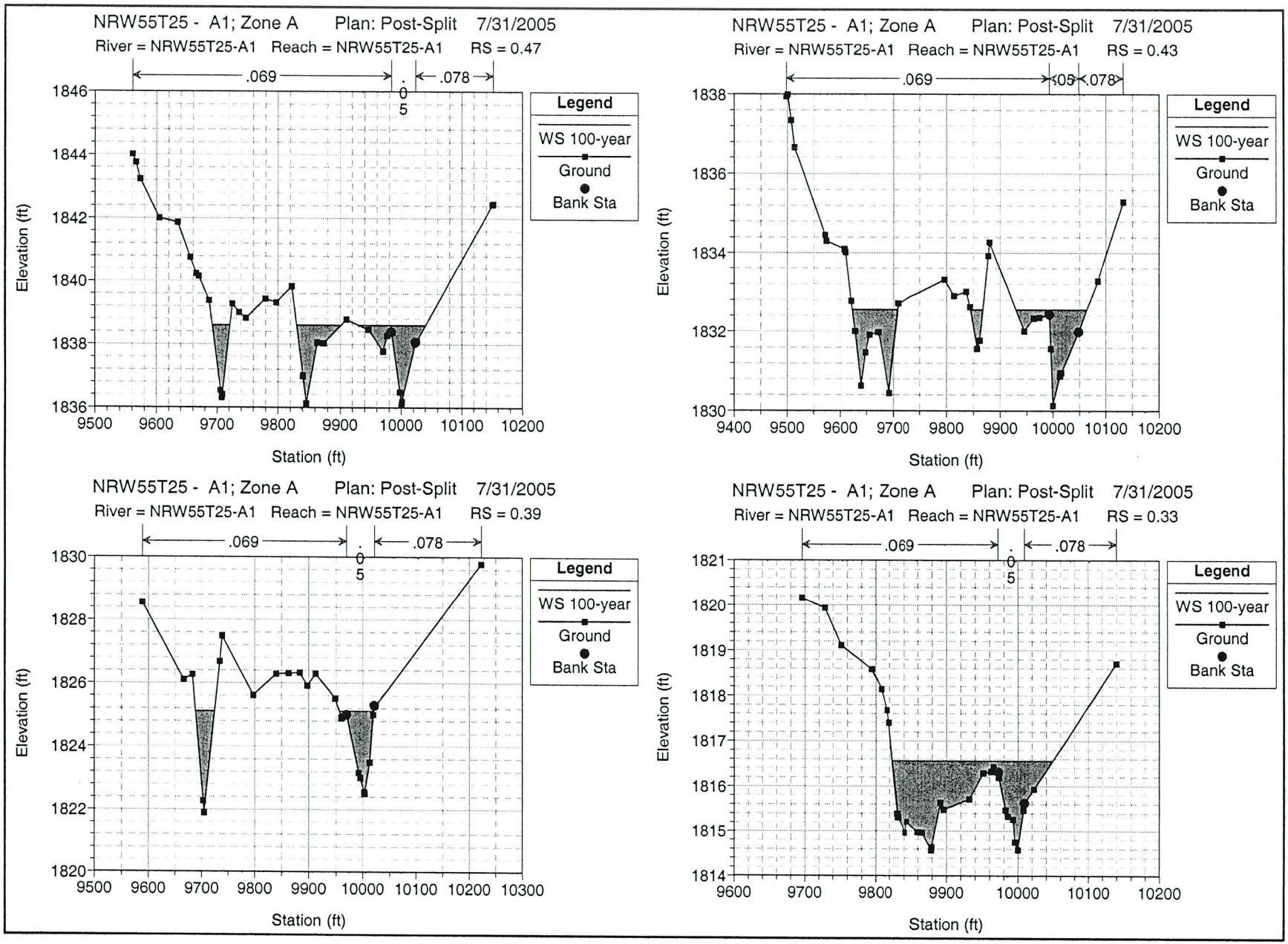

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.65
.069
.
00
57
8
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

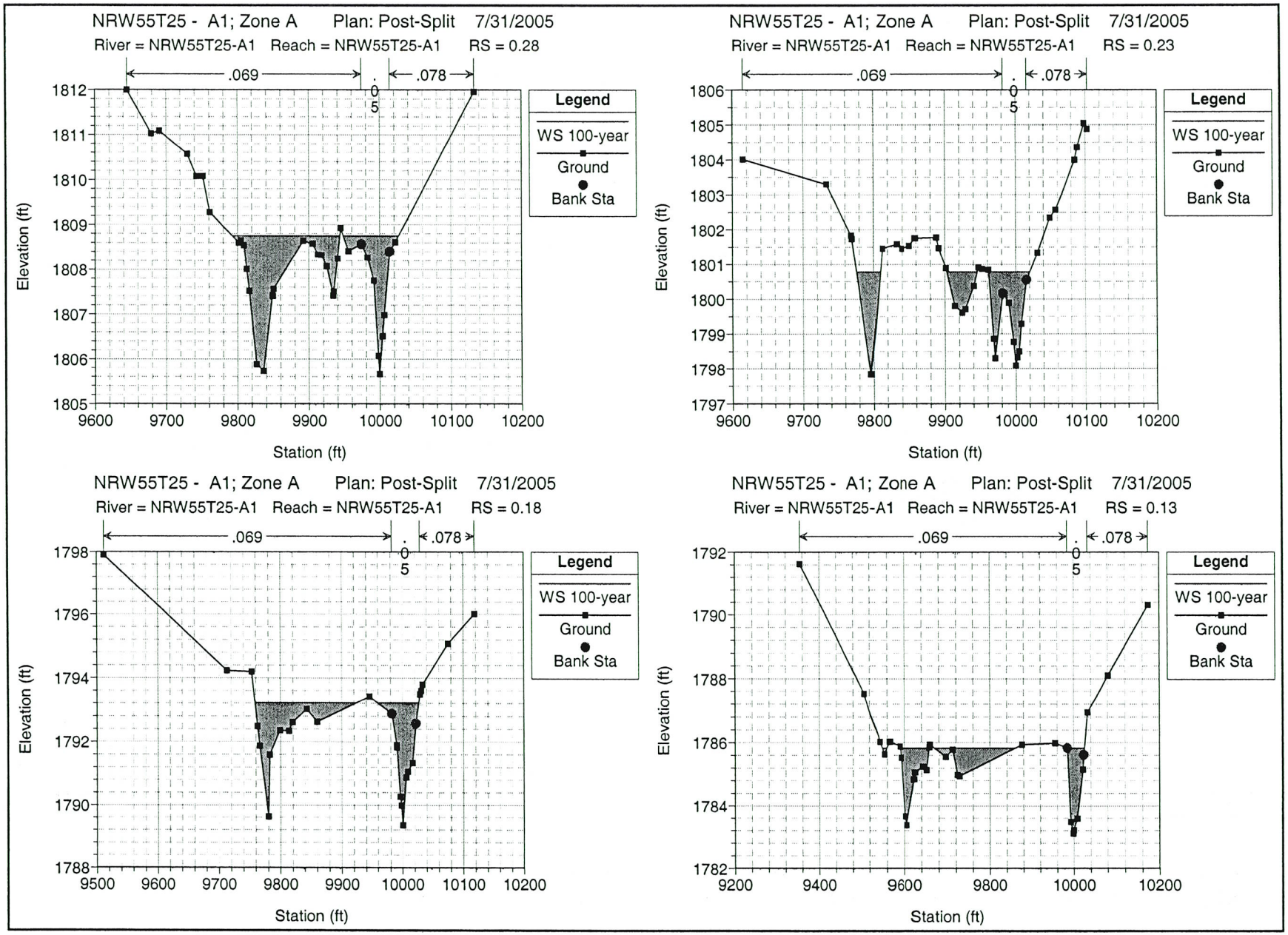

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.62
.069
.05
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

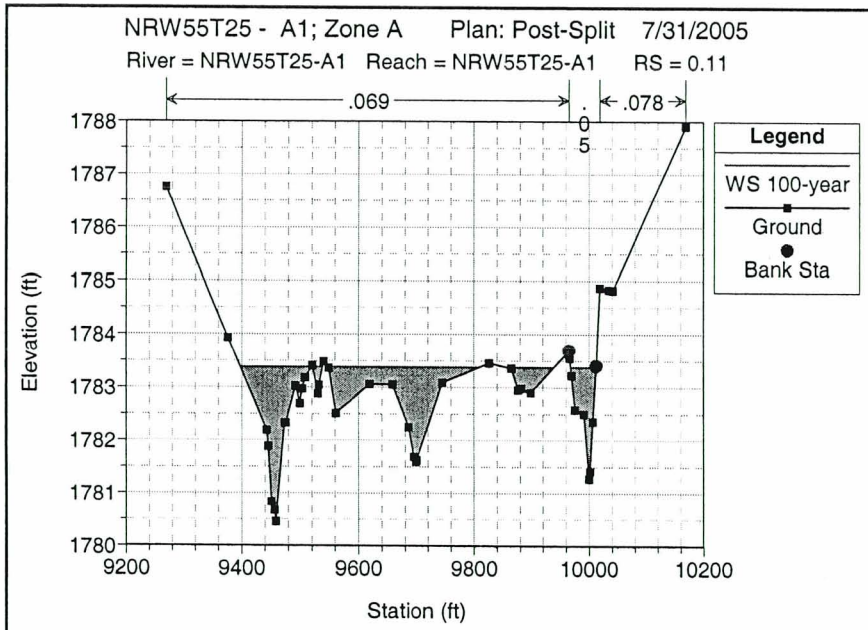

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.60
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

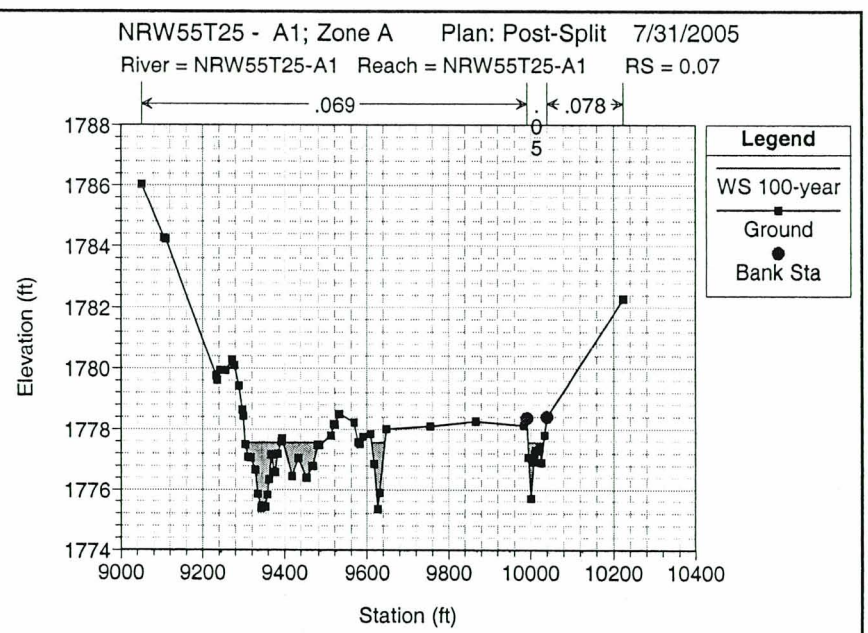

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.55
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

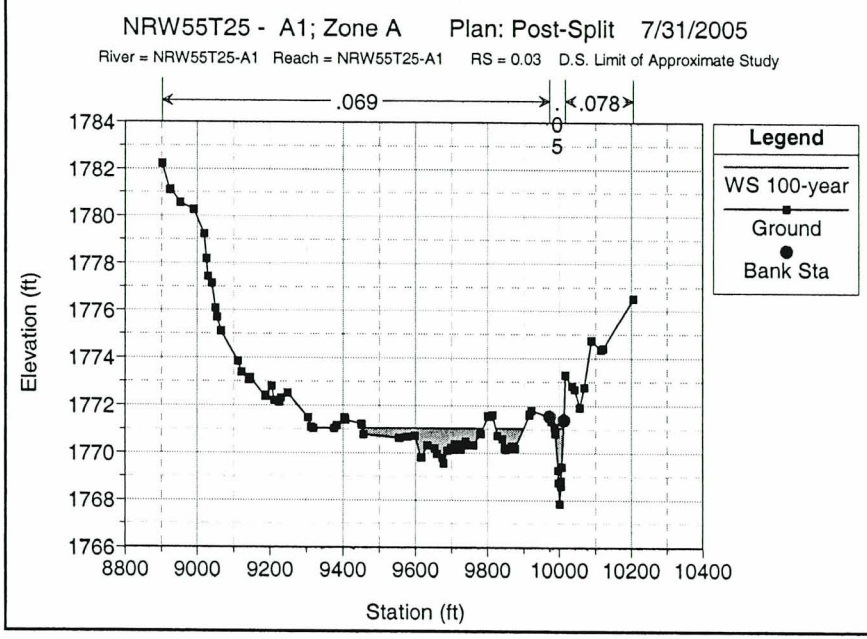

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.50
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

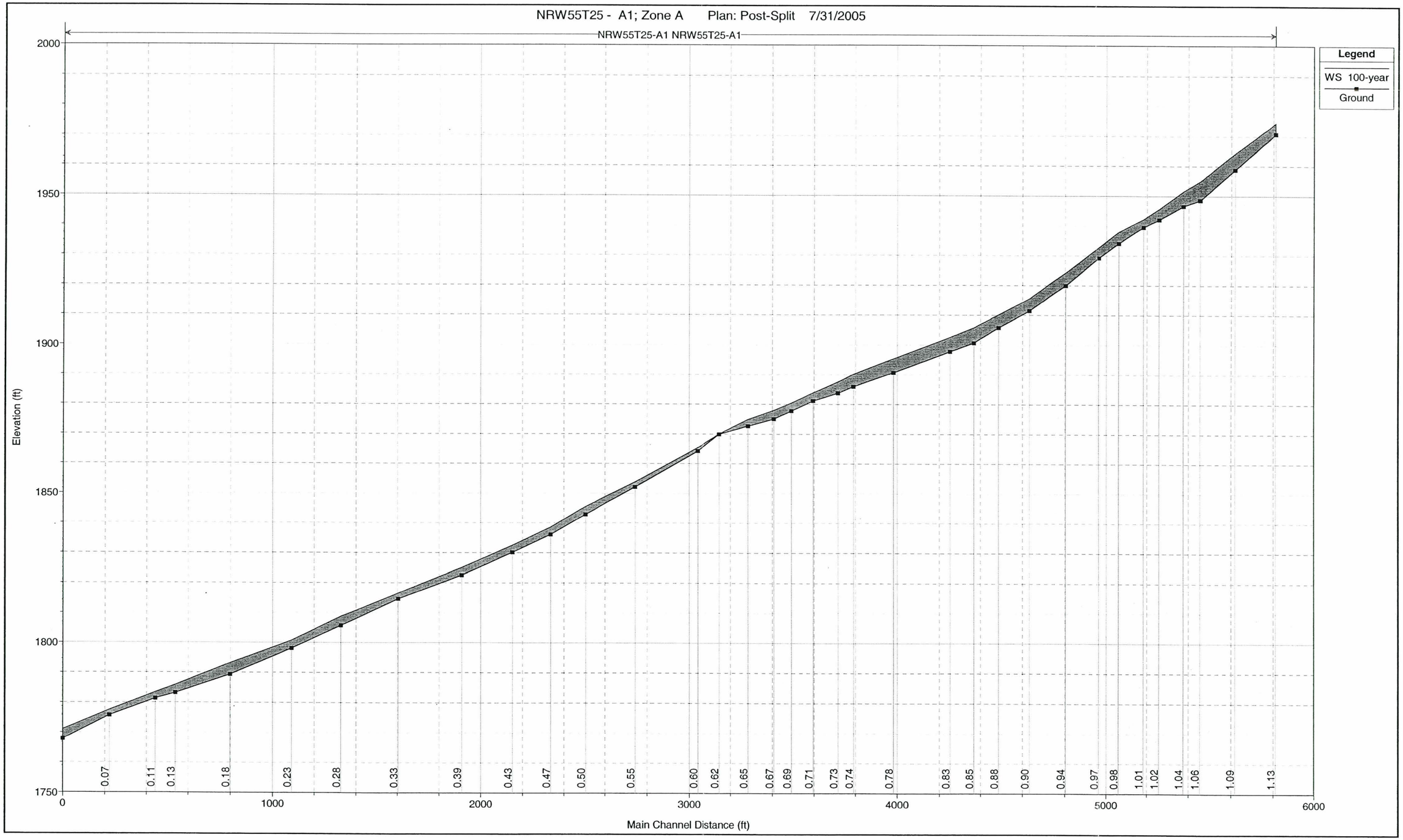

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.47
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.43
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.39
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.33
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

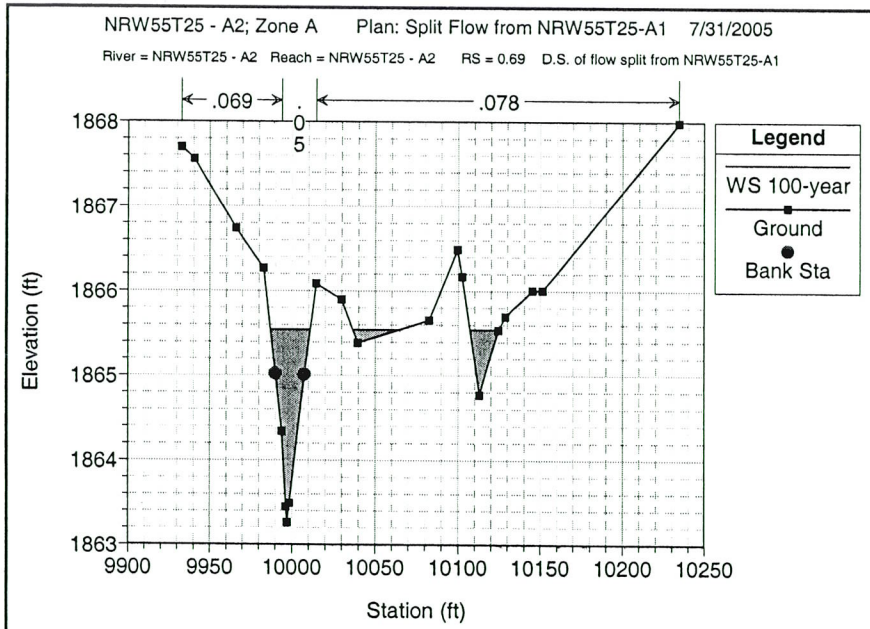

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.28
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.23
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.18
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.13
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

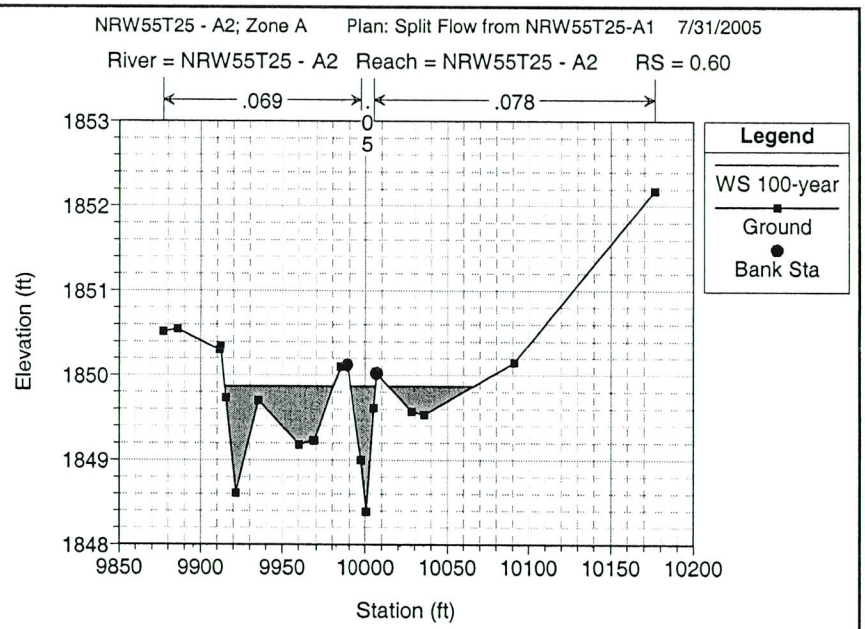

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.11
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

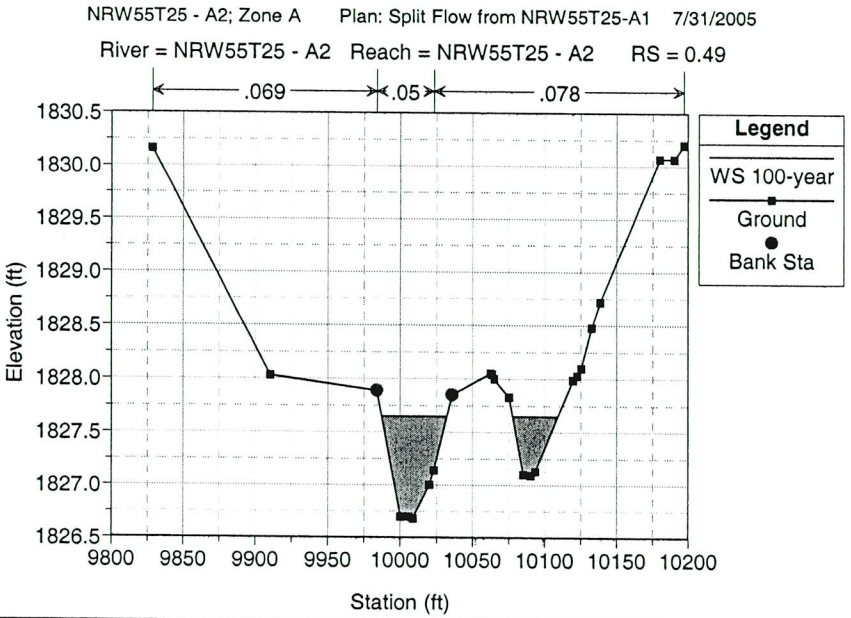

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.07
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

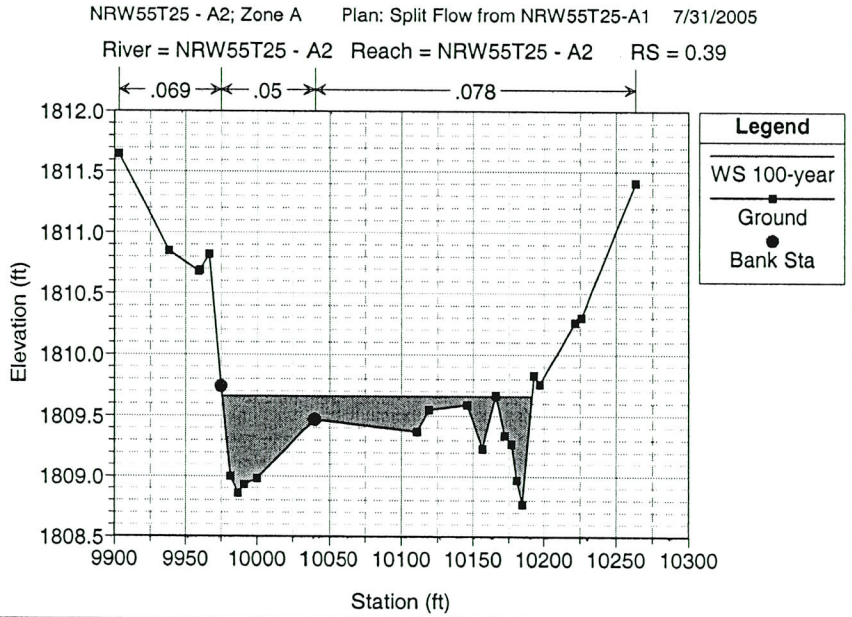

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
River = NRW55T25-A1 Reach = NRW55T25-A1 RS = 0.03 D.S. Limit of Approximate Study
.069
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

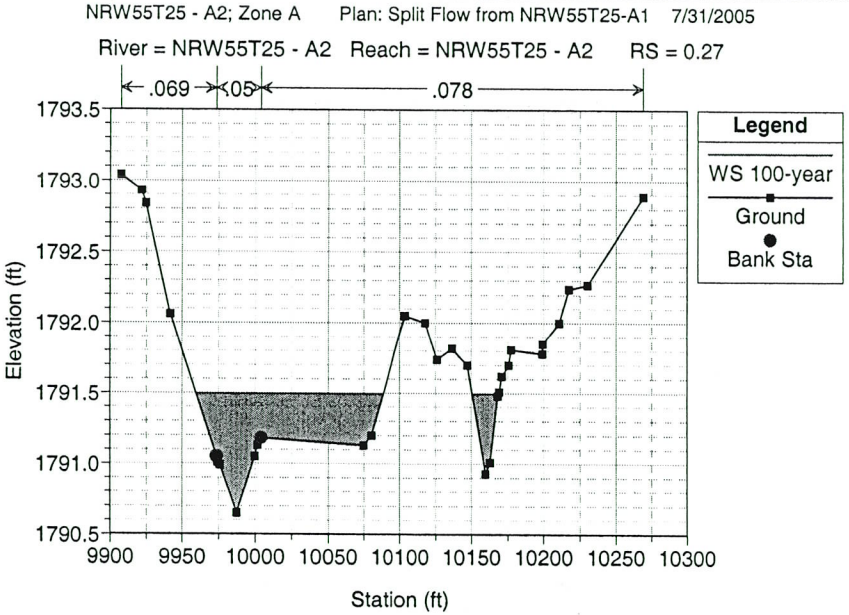

NRW55T25 - A1; Zone A Plan: Post-Split 7/31/2005
NRW55T25-A1 NRW55T25-A1
Legend
WS 100-year
Ground
Elevation (ft)
2000
1950
1900
1850
1800
1750
0
1000
2000
3000
4000
5000
6000
Main Channel Distance (ft)
0.07
0.11
0.13
0.18
0.23
0.28
0.33
0.39
0.43
0.47
0.50
0.55
0.60
0.62
0.65
0.67
0.69
0.71
0.73
0.74
0.78
0.83
0.85
0.88
0.90
0.94
0.97
0.98
1.01
1.02
1.04
1.06
1.09
1.13

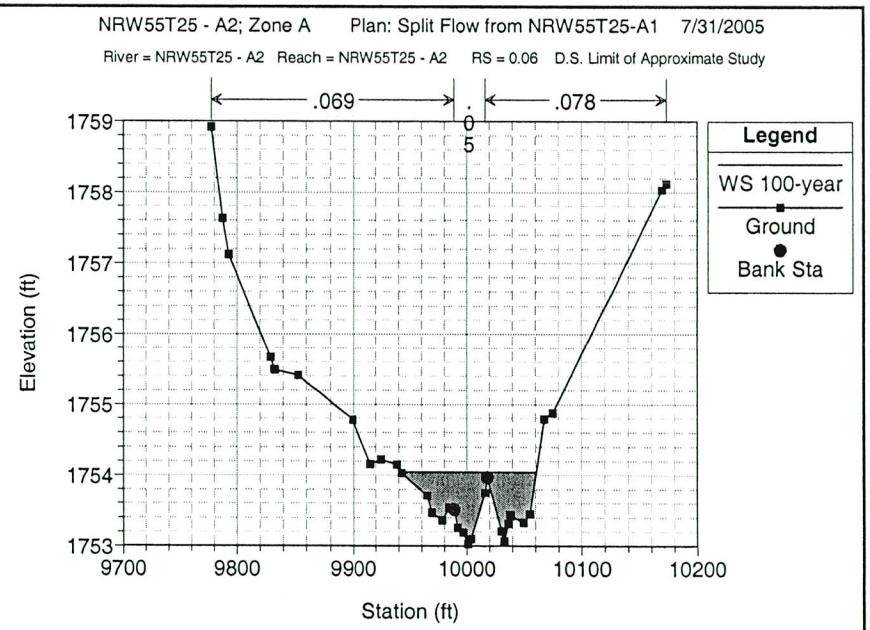

NRW55T25 - A2; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A2 Reach = NRW55T25 - A2 RS = 0.69 D.S. of flow split from NRW55T25-A1
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

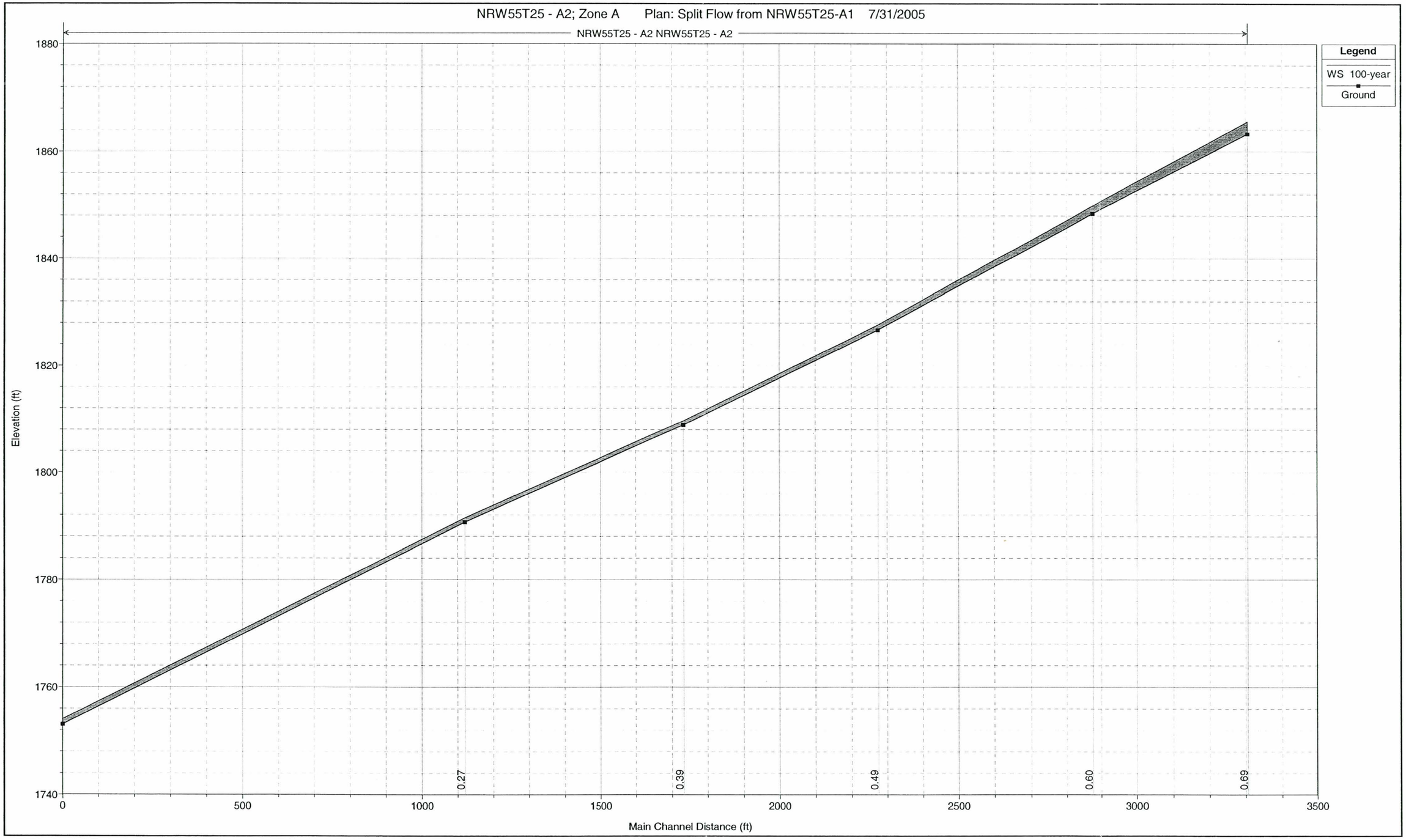

NRW55T25 - A2; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A2 Reach = NRW55T25 - A2 RS = 0.60
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

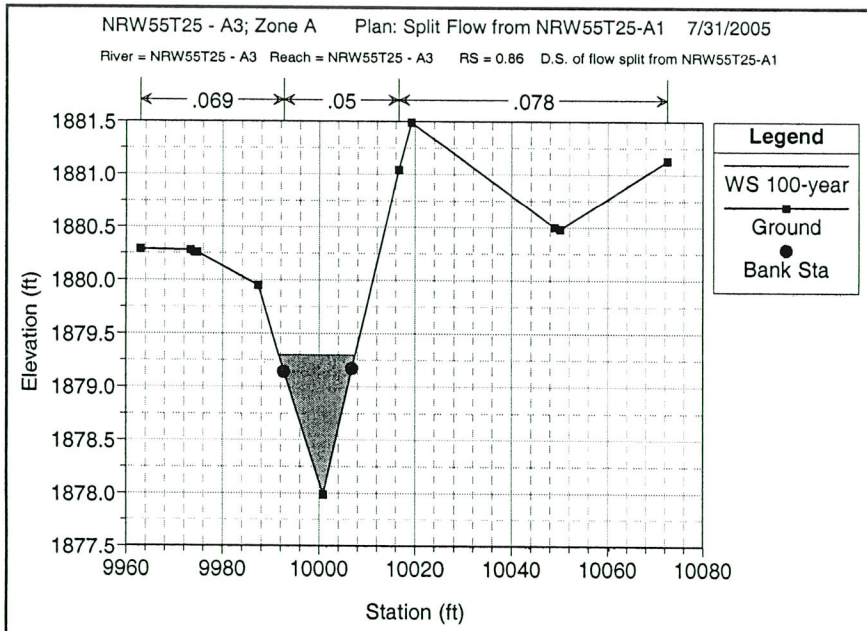

NRW55T25 - A2; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A2 Reach = NRW55T25 - A2 RS = 0.49
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

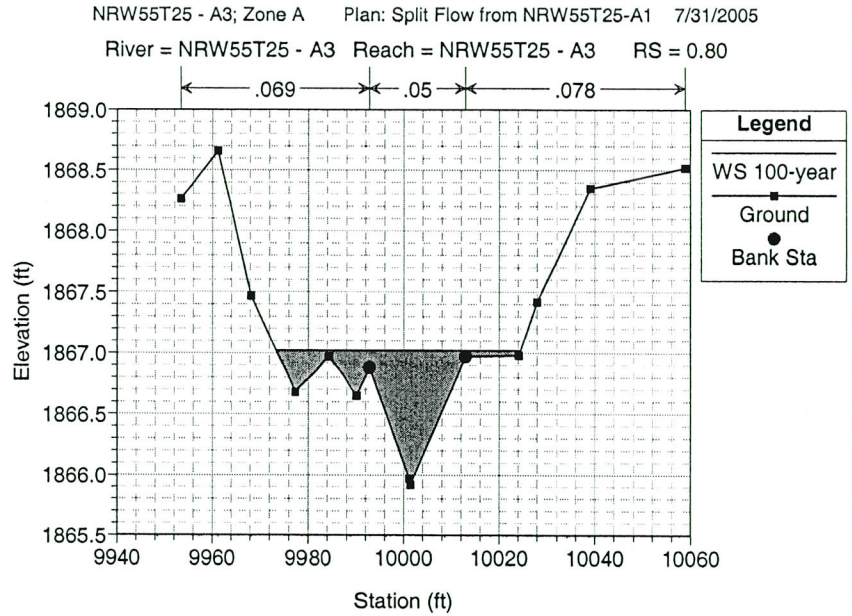

NRW55T25 - A2; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A2 Reach = NRW55T25 - A2 RS = 0.39
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

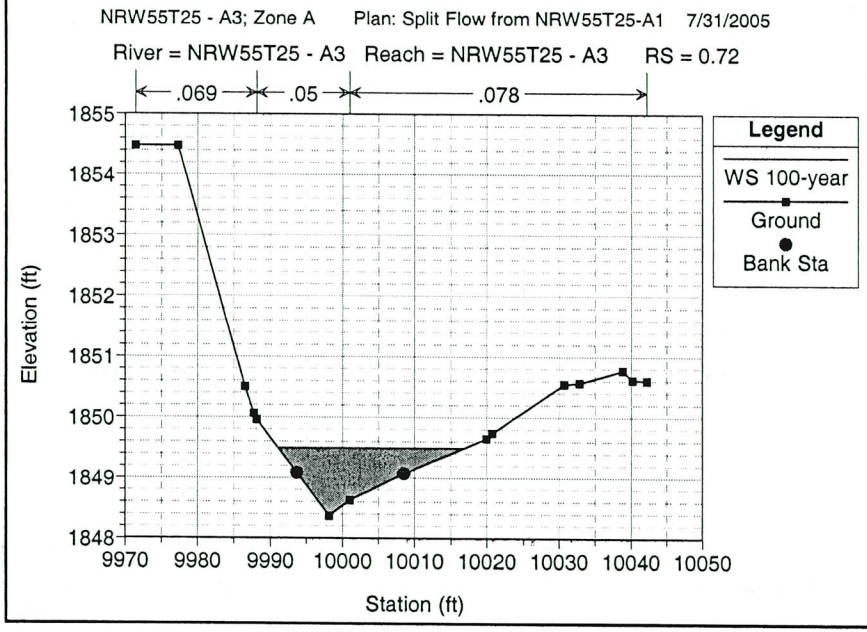

NRW55T25 - A2; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A2 Reach = NRW55T25 - A2 RS = 0.27
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1793.5
1793.0
1792.5
1792.0
1791.5
1791.0
1790.5
9900
9950
10000
10050
10100
10150
10200
10250
10300
Station (ft)

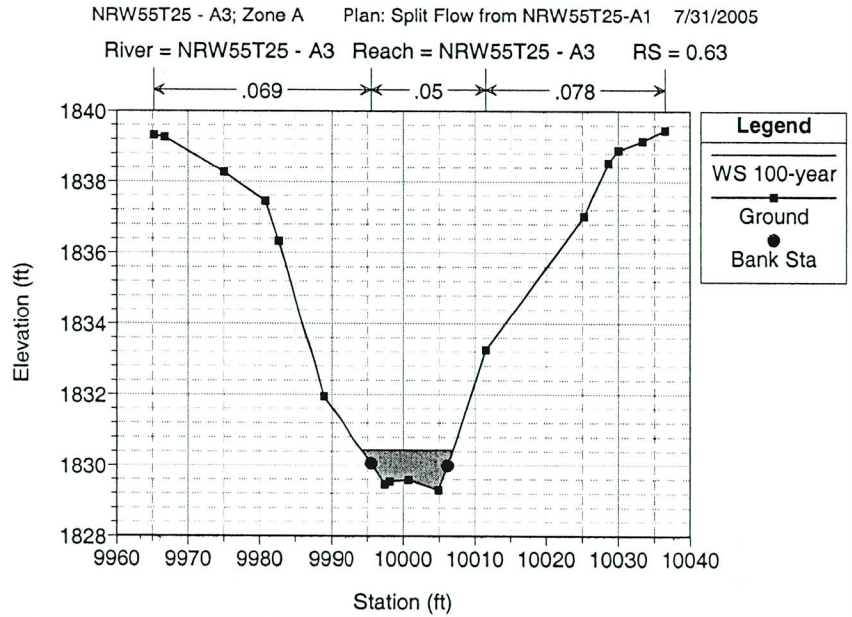

NRW55T25 - A2; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A2 Reach = NRW55T25 - A2 RS = 0.06 D.S. Limit of Approximate Study
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1759
1758
1757
1756
1755
1754
1753
9700
9800
9900
10000
10100
10200
Station (ft)

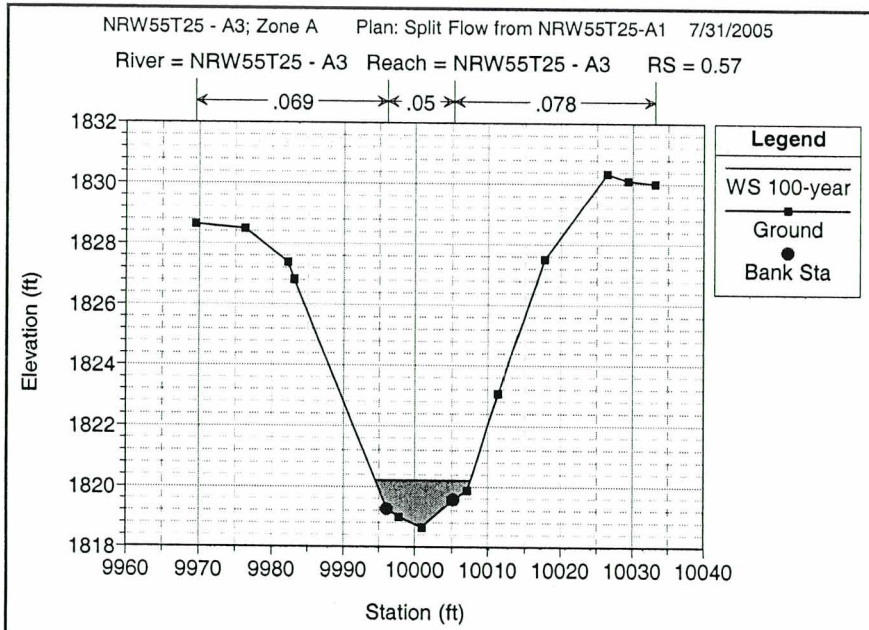

NRW55T25 - A2; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
NRW55T25 - A2 NRW55T25 - A2
Legend
WS 100-year
Ground
Elevation (ft)
1880
1860
1840
1820
1800
1780
1760
1740
0
500
1000
1500
2000
2500
3000
3500
Main Channel Distance (ft)
0.27
0.39
0.49
0.60
0.69

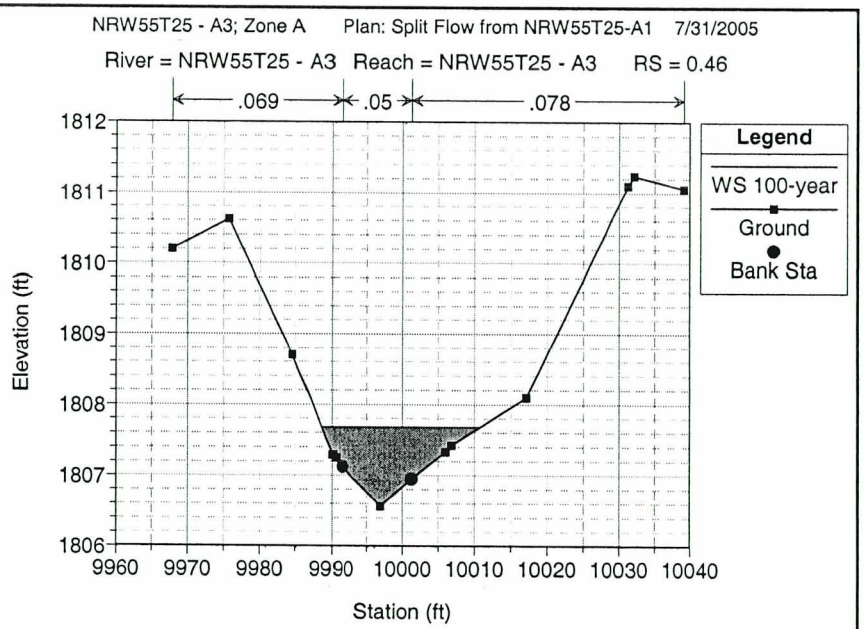

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.86 D.S. of flow split from NRW55T25-A1
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

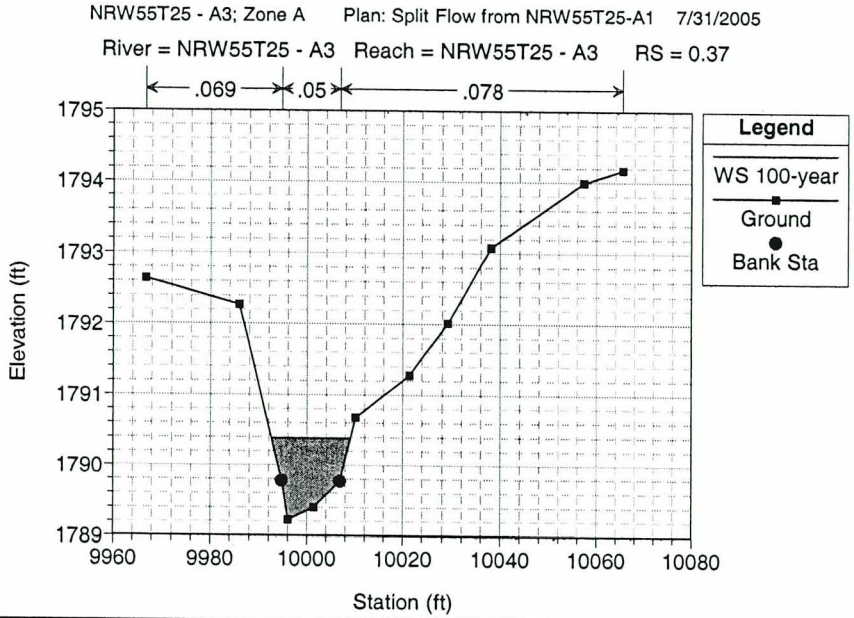

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.80
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

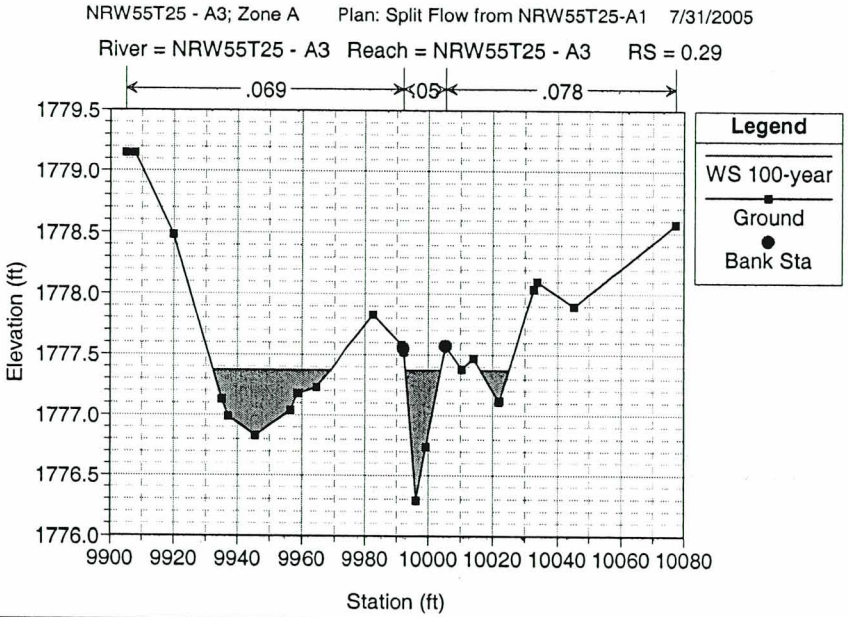

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.72
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

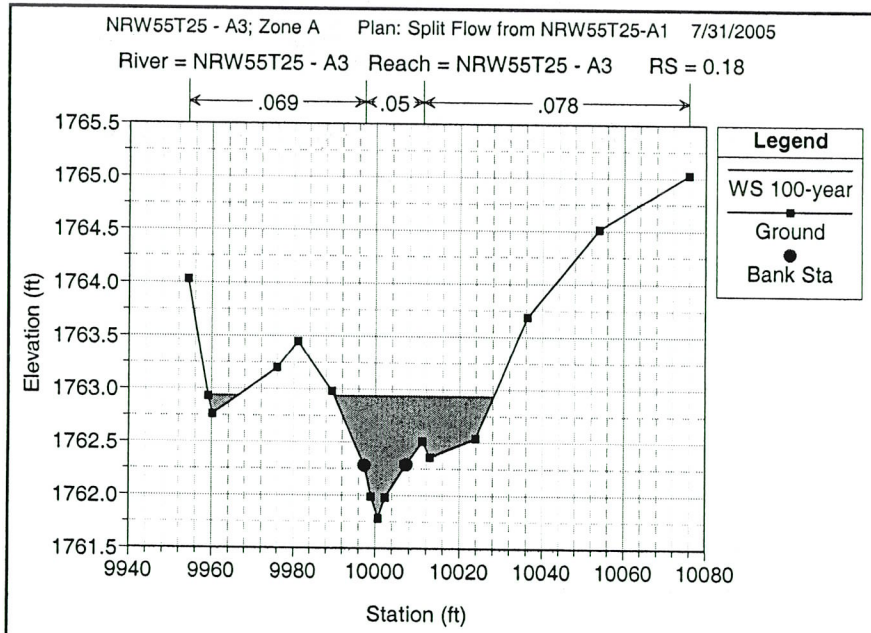

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.63
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

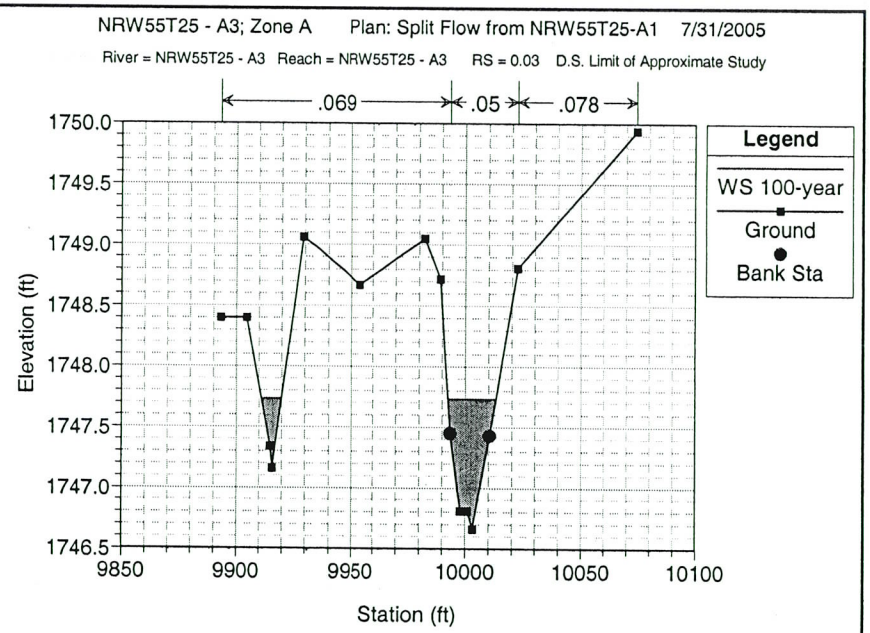

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.57
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

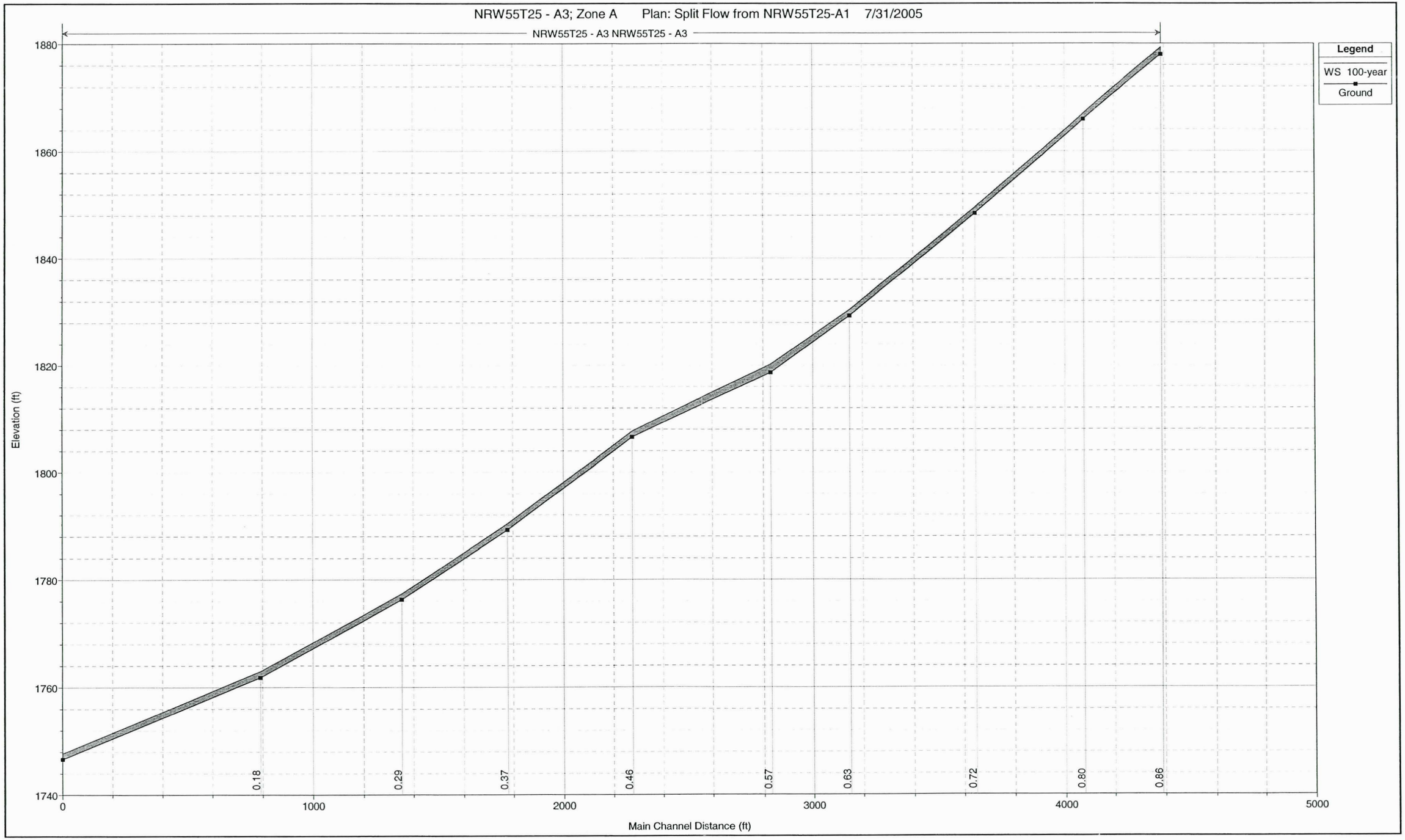

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.46
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

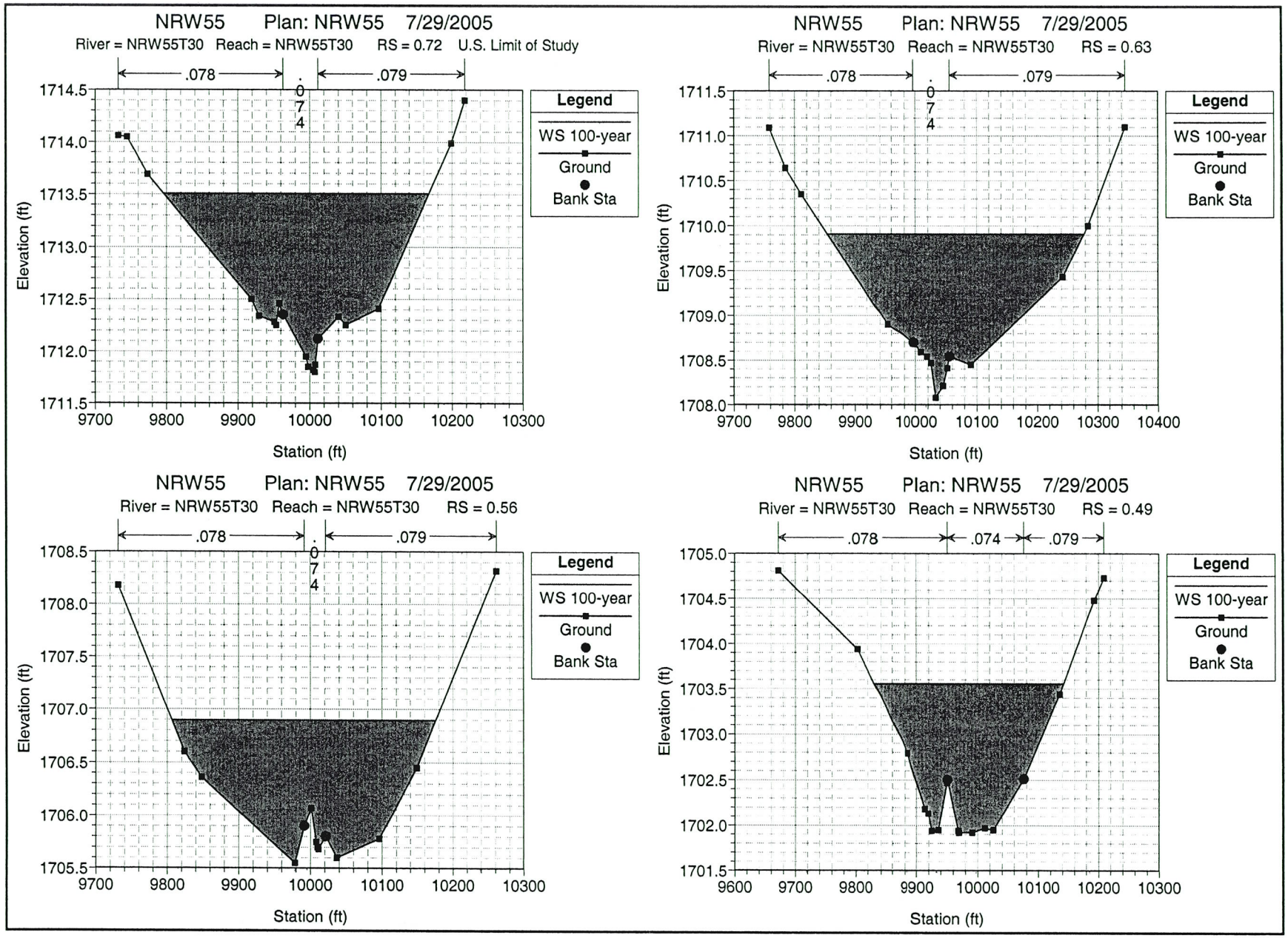

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.37
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

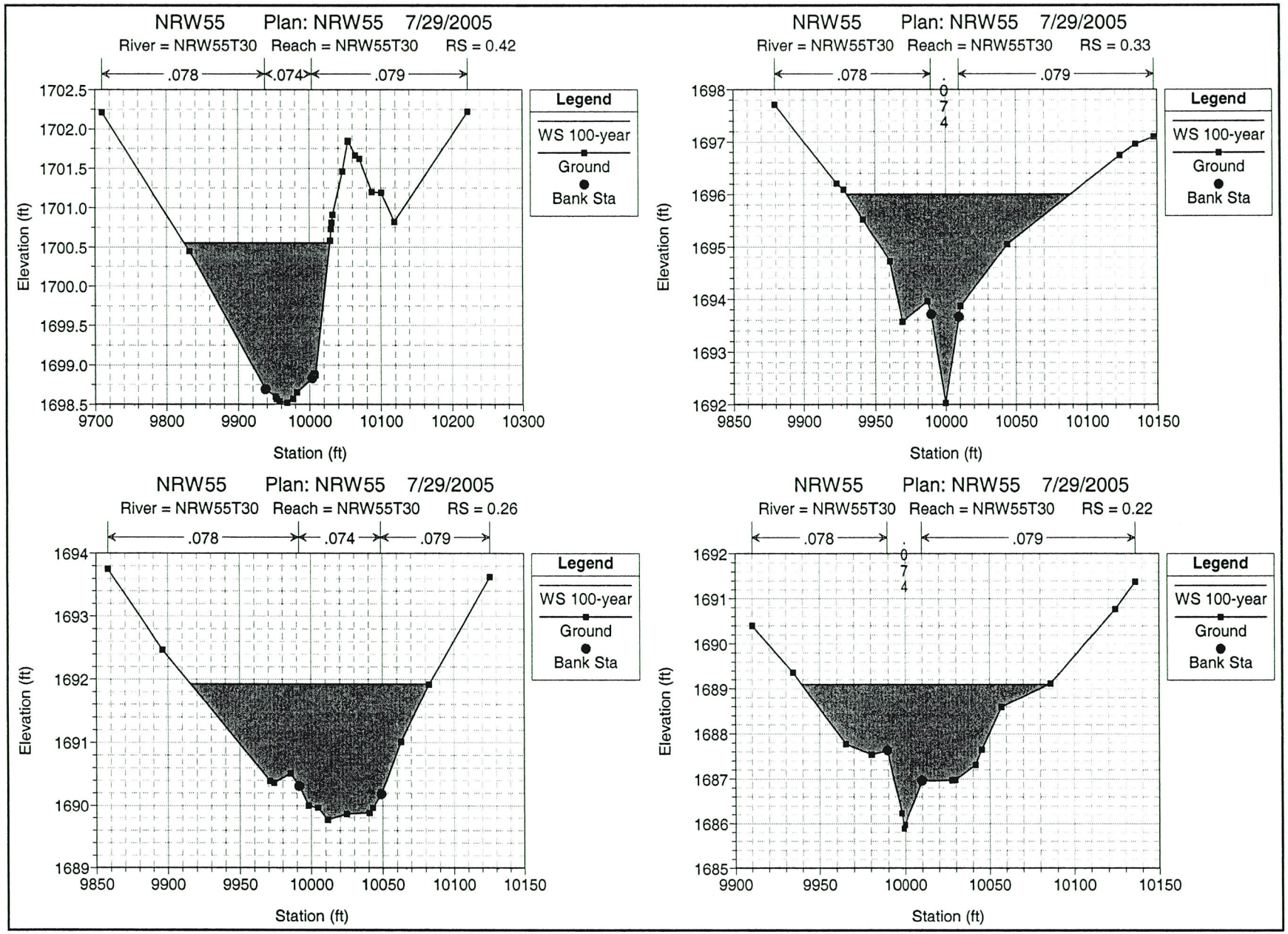

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.29
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)

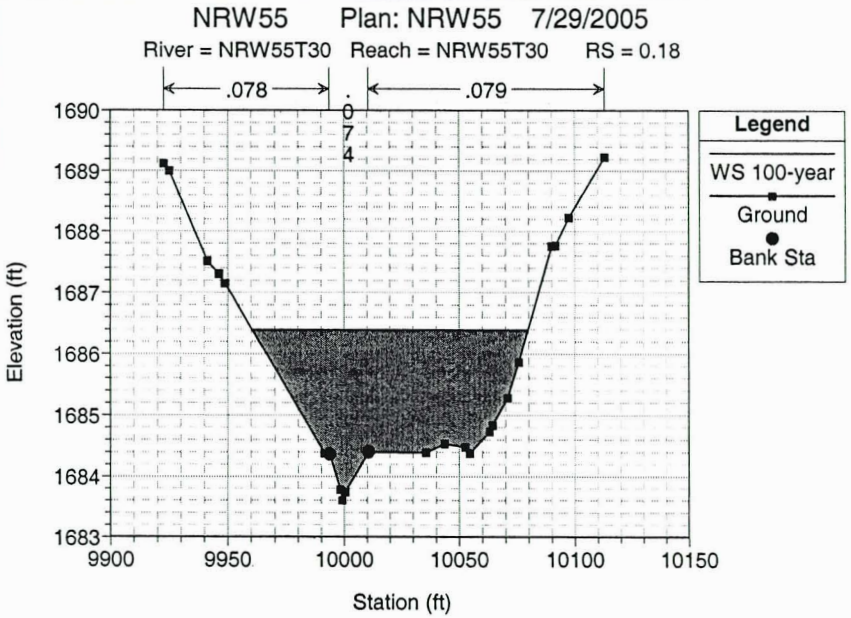

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.18
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1765.5
1765.0
1764.5
1764.0
1763.5
1763.0
1762.5
1762.0
1761.5
9940
9960
9980
10000
10020
10040
10060
10080
Station (ft)

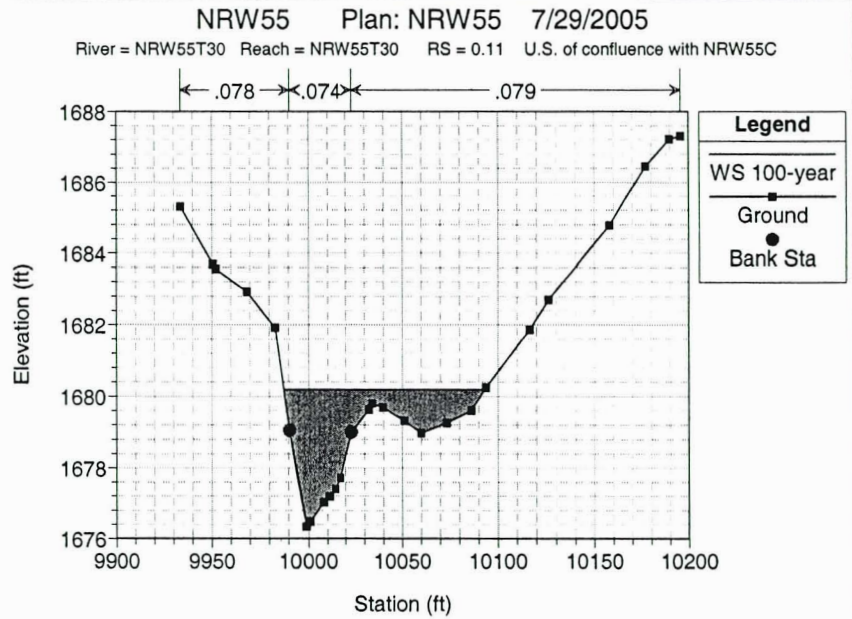

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
River = NRW55T25 - A3 Reach = NRW55T25 - A3 RS = 0.03 D.S. Limit of Approximate Study
.069
.05
.078
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
1750.0
1749.5
1749.0
1748.5
1748.0
1747.5
1747.0
1746.5
9850
9900
9950
10000
10050
10100
Station (ft)

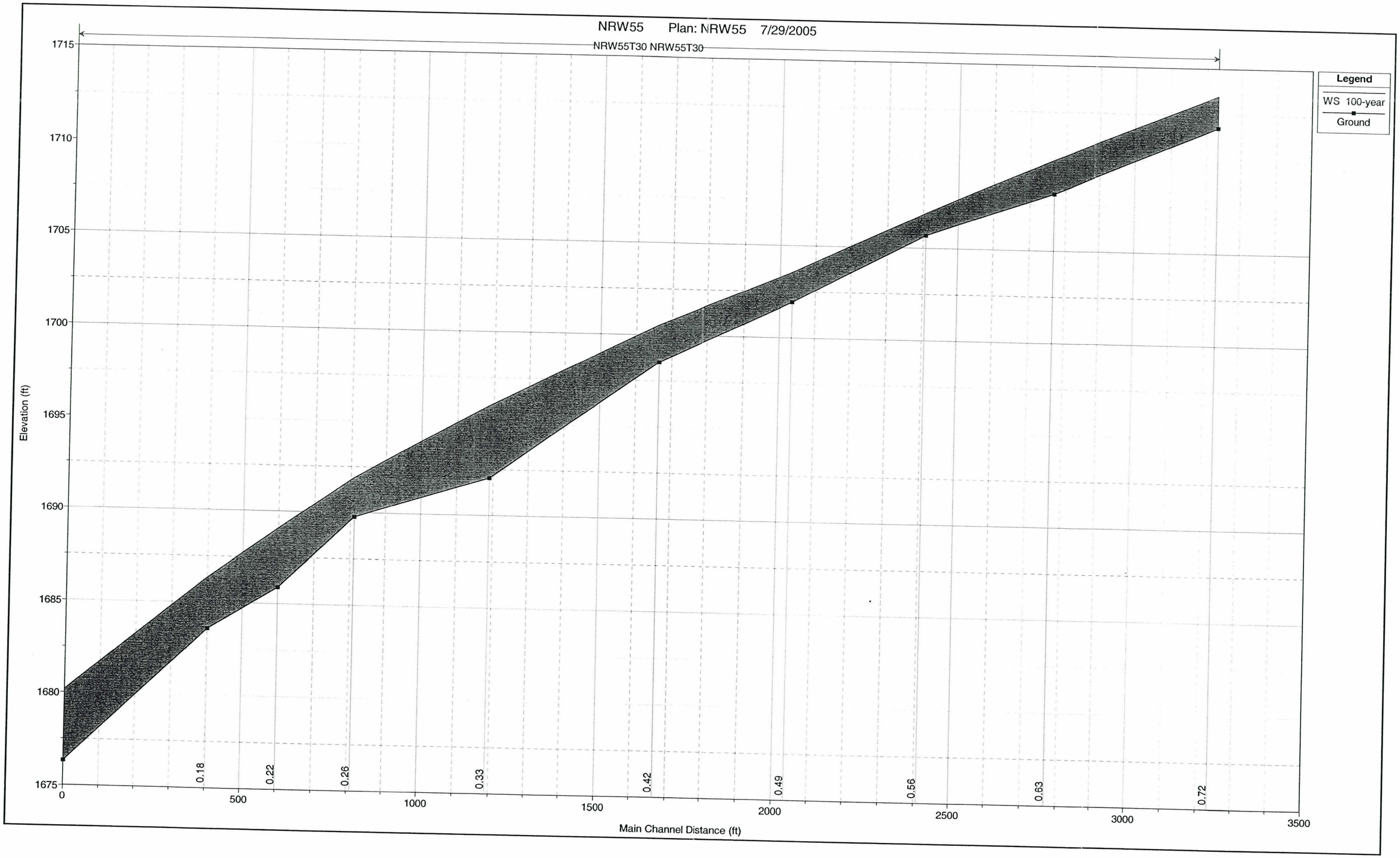

NRW55T25 - A3; Zone A Plan: Split Flow from NRW55T25-A1 7/31/2005
NRW55T25 - A3 NRW55T25 - A3
Legend
WS 100-year
Ground
Elevation (ft)
1880
1860
1840
1820
1800
1780
1760
1740
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)
0.18
0.29
0.37
0.46
0.57
0.63
0.72
0.80
0.86


NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.72 U.S. Limit of Study
.078
.074
.079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.63
.078
.074
.079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.56
.078
.074
.079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.49
.078
.074
.079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta


NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.42
.078
.074
.079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.33
.078
.074
.079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.26
.078
.074
.079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta
NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.22
.078
.074
.079
Elevation (ft)
Station (ft)
Legend
WS 100-year
Ground
Bank Sta


NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.18
.078
.074
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
1690
1689
1688
1687
1686
1685
1684
1683
9900
9950
10000
10050
10100
10150


NRW55 Plan: NRW55 7/29/2005
River = NRW55T30 Reach = NRW55T30 RS = 0.11 U.S. of confluence with NRW55C
.078
.074
.079
Legend
WS 100-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
1688
1686
1684
1682
1680
1678
1676
9900
9950
10000
10050
10100
10150
10200


NRW55 Plan: NRW55 7/29/2005
NRW55T30 NRW55T30
Legend
WS 100-year
Ground
Elevation (ft)
1715
1710
1705
1700
1695
1690
1685
1680
1675
0
500
1000
1500
2000
2500
3000
3500
Main Channel Distance (ft)
0.18
0.22
0.26
0.33
0.42
0.49
0.56
0.63
0.72

E.4 EXPANSION AND CONTRACTION COEFFICIENTS

E.5 ANALYSIS OF STRUCTURES

E.6 HYDRAULIC CALCULATIONS

NRW 5

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW5 River: NRW5 Reach: NRW5 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW5	2.63	154.00	1607.04	1607.74	1607.56	1607.79	0.012993	2.36	89.30	232.95	0.60
NRW5	2.56	154.00	1603.00	1604.44	1604.20	1604.51	0.005415	2.40	95.76	240.71	0.47
NRW5	2.50	154.00	1600.71	1601.45	1601.45	1601.59	0.023775	3.26	60.59	231.86	0.88
NRW5	2.41	154.00	1596.80	1597.63	1597.32	1597.66	0.003644	1.41	120.25	264.16	0.33
NRW5	2.35	154.00	1594.21	1594.63	1594.63	1594.75	0.036526	2.85	61.59	282.98	0.93
NRW5	2.29	349.00	1591.43	1592.36	1592.01	1592.41	0.004289	1.94	245.20	398.25	0.38
NRW5	2.23	349.00	1588.94	1589.97	1589.88	1590.15	0.018778	3.46	111.63	220.96	0.76
NRW5	2.17	349.00	1585.60	1587.62	1587.12	1587.69	0.003940	2.78	208.90	256.27	0.40
NRW5	2.10	349.00	1583.05	1584.09	1584.09	1584.40	0.036055	5.06	86.04	143.40	1.07
NRW5	2.04	349.00	1579.86	1581.59		1581.65	0.003438	2.15	193.83	177.92	0.36
NRW5	1.99	349.00	1577.80	1579.22	1579.22	1579.57	0.036647	5.30	80.96	124.33	1.08
NRW5	1.95	349.00	1576.63	1578.07		1578.10	0.002127	1.58	242.34	300.18	0.28
NRW5	1.90	483.00	1573.98	1576.47	1576.34	1576.75	0.012028	4.80	151.26	212.97	0.70
NRW5	1.85	483.00	1571.80	1573.87	1573.56	1574.01	0.008375	3.27	174.03	204.22	0.55
NRW5	1.78	483.00	1569.41	1571.52	1571.18	1571.60	0.006758	2.81	237.68	296.73	0.49
NRW5	1.72	483.00	1567.47	1568.69	1568.52	1568.84	0.011479	3.21	183.38	339.46	0.62
NRW5	1.65	483.00	1563.33	1565.07		1565.24	0.008125	3.64	204.29	501.18	0.56
NRW5	1.60	483.00	1561.04	1562.15	1561.93	1562.27	0.014564	2.91	177.06	297.46	0.66
NRW5	1.53	483.00	1558.00	1559.76	1559.25	1559.82	0.004003	2.19	277.98	352.40	0.38
NRW5	1.46	483.00	1554.38	1556.67	1556.67	1557.01	0.017817	4.78	122.82	253.49	0.81
NRW5	1.40	483.00	1552.41	1553.99	1553.44	1554.04	0.004392	2.51	301.67	371.23	0.41
NRW5	1.34	483.00	1549.62	1551.42	1551.31	1551.58	0.019815	4.34	178.15	298.07	0.82
NRW5	1.27	483.00	1545.75	1547.66	1547.34	1547.81	0.006572	3.56	199.73	238.27	0.51
NRW5	1.21	483.00	1541.22	1544.21	1544.21	1544.53	0.015312	5.96	153.57	231.32	0.80
NRW5	1.15	483.00	1537.19	1539.97		1540.06	0.003044	2.85	249.91	210.02	0.36
NRW5	1.10	483.00	1537.19	1538.04	1538.04	1538.33	0.034236	4.34	111.45	199.71	1.01
NRW5	1.07	483.00	1534.82	1536.10	1535.77	1536.23	0.008336	2.90	167.38	192.40	0.54
NRW5	1.00	641.00	1529.69	1532.05	1531.82	1532.31	0.011887	5.05	193.47	183.32	0.70
NRW5	0.95	641.00	1526.56	1528.39	1528.20	1528.69	0.015965	4.37	148.82	148.80	0.76
NRW5	0.89	641.00	1522.52	1524.76		1525.03	0.008780	4.75	180.04	127.91	0.62
NRW5	0.85	641.00	1519.82	1521.85		1522.39	0.016566	6.35	129.51	115.78	0.84
NRW5	0.80	641.00	1516.33	1518.42		1518.80	0.010981	5.07	140.60	103.82	0.68
NRW5	0.77	692.00	1514.57	1517.20		1517.38	0.006347	3.95	217.35	123.67	0.52
NRW5	0.72	692.00	1511.10	1513.72	1513.72	1514.23	0.030538	7.72	138.67	127.66	1.10
NRW5	0.67	88.00	1508.41	1512.30		1512.30	0.000012	0.28	431.68	176.01	0.03
NRW5	0.61	88.00	1504.40	1512.30		1512.30	0.000000	0.08	1318.20	289.05	0.01

HEC-RAS Plan: NRW5 River: NRW5 Reach: NRW5 Profile: 100-Year (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW5	0.56	88.00	1501.49	1512.30		1512.30	0.000000	0.06	2129.52	357.82	0.00
NRW5	0.50	88.00	1498.59	1512.30		1512.30	0.000000	0.04	3586.15	473.79	0.00
NRW5	0.44	88.00	1495.83	1512.30		1512.30	0.000000	0.09	1267.07	523.20	0.00
NRW5	0.42	Culvert									
NRW5	0.39	88.00	1489.99	1491.15	1491.00	1491.49	0.018662	4.67	18.84	17.57	0.80
NRW5	0.34	88.00	1487.43	1489.09	1488.74	1489.14	0.004651	2.35	57.21	81.89	0.41
NRW5	0.29	118.00	1485.24	1486.53	1486.39	1486.75	0.015816	3.73	34.19	56.52	0.72
NRW5	0.23	118.00	1480.64	1482.33	1481.98	1482.55	0.011159	3.74	31.63	33.49	0.63
NRW5	0.17	118.00	1477.70	1480.49		1480.60	0.003736	2.78	48.13	60.42	0.39
NRW5	0.12	118.00	1478.07	1479.20		1479.25	0.011390	2.18	70.84	181.34	0.56
NRW5	0.08	118.00	1476.09	1476.99	1476.81	1477.04	0.007790	2.22	86.37	301.69	0.49
NRW5	0.01	118.00	1472.69	1473.68	1473.50	1473.72	0.009697	1.90	86.43	255.50	0.51

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW 5
Project File : NRW5.prj
Run Date and Time: 6/8/2005 7:59:26 PM

Project in English units

Project Description:
NRW 5

New River West Tributaries FDS
Prepared by URS Corp. for the Flood
Control District of Maricopa County
Contract No: FCD 2003 C057
Date: April
29, 2005

Topographic Mapping Source:
Flown and Mapped by DTM Inc.
Flight
Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal - NAD83 Arizona
State Plane, Central Zone, International Feet
Vertical - NAVD 88 (GDACS
Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour storm
event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

154 cfs @ R.S. 2.63
349 cfs @R.S. 2.29
483 cfs @ R.S. 1.90
641 cfs @

R.S. 1.00
692 cfs @ R.S. 0.77
88 cfs @ R.S. 0.61**
118 cfs @ R.S. 0.29

**
88 cfs was used rather than the 692 cfs due to the attenuation casued by the
CAP
embankment. The 88 cfs was obtained from the culvert routing output in the
HEC-1 model.

Study Limits:

U.S. Limit is approximately 1980 feet east,
and 1900 feet south of the NW corner of Section 3, T5NR1E

D.S.
Limit is the New River floodplain

Stationing based upon River Mile distance
from a point downstream of the Hydraulic Baseline confluence with the New River
floodplain

Final Model Run Date:
March 16, 2005

****
****

PLAN DATA

Plan Title: NRW 5
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.p01

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.g01

Flow Title : 100-Year; 6-hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.f03

Plan Summary Information:

Number of:	Cross Sections	= 47	Mulitple Openings	=	0
	Culverts	= 1	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculaton tolerance	=	0.01
Maximum number of interations	=	20
Maximum difference tolerance	=	0.3
Flow tolerance factor	=	0.001

Computation Options

```
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow


*************************************************************************
********

FLOW DATA

Flow Title: 100-Year; 6-hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.f03

Flow Data (cfs)
*************************************************************
* River           Reach           RS      *        100-Year *
* NRW5            NRW5            2.63    *             154 *
* NRW5            NRW5            2.29    *             349 *
* NRW5            NRW5            1.90    *             483 *
* NRW5            NRW5            1.00    *             641 *
* NRW5            NRW5            0.77    *             692 *
* NRW5            NRW5            0.67    *              88 *
* NRW5            NRW5            0.29    *             118 *
*************************************************************

Boundary Conditions
*************************************************************************
********************************
* River           Reach           Profile          *            Upstream
Downstream    *
*************************************************************************
********************************
* NRW5            NRW5            100-Year         *
Normal S = 0.0097 *
*************************************************************************
********************************
Changes in WS and EG
*************************************************************************
********
* River           Reach           RS      Profile         Type
Value *
* NRW5            NRW5            0.67    100-Year  Known WS    1512.3 *
* NRW5            NRW5            0.61    100-Year  Known WS    1512.3 *
* NRW5            NRW5            0.56    100-Year  Known WS    1512.3 *
* NRW5            NRW5            0.50    100-Year  Known WS    1512.3 *
* NRW5            NRW5            0.44    100-Year  Known WS    1512.3 *
*************************************************************************
********


*************************************************************************
********

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5
\NRW5.g01

CROSS SECTION
```

```
RIVER: NRW5
REACH: NRW5                    RS: 2.63

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9544.5    1610  9798.4 1608.94  9952.8 1607.54  9977.4 1607.11  9979.8
1607.04
   10002 1607.33   10007 1607.39 10048.5 1607.31   10082 1607.03   10098
1607.16
 10115.4 1607.42 10128.1 1607.75 10139.6 1607.79 10160.8 1607.48 10167.1
1607.44
 10182.5 1607.82   10196 1608.06 10428.5    1609 10606.6 1609.98

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9544.5    .064  9952.8    .044   10007    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9952.8   10007              410     410     410             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1607.79  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1607.74  * Reach Len. (ft)         *  410.00
*  410.00  *  410.00  *
* Crit W.S. (ft)          * 1607.56  * Flow Area (sq ft)       *    2.18
*   25.97  *   61.14  *
* E.G. Slope (ft/ft)      *0.012993  * Area (sq ft)            *    2.18
*   25.97  *   61.14  *
* Q Total (cfs)           *  154.00  * Flow (cfs)              *    1.24
*   61.22  *   91.54  *
* Top Width (ft)          *  232.95  * Top Width (ft)          *   21.95
*   54.20  *  156.81  *
* Vel Total (ft/s)        *    1.72  * Avg. Vel. (ft/s)        *    0.57
*    2.36  *    1.50  *
* Max Chl Dpth (ft)       *    0.71  * Hydr. Depth (ft)        *    0.10
*    0.48  *    0.39  *
* Conv. Total (cfs)       *  1351.0  * Conv. (cfs)             *    10.9
*   537.1  *   803.1  *
* Length Wtd. (ft)        *  410.00  * Wetted Per. (ft)        *   21.95
*   54.21  *  156.82  *
* Min Ch El (ft)          * 1607.04  * Shear (lb/sq ft)        *    0.08
*    0.39  *    0.32  *
* Alpha                   *    1.19  * Stream Power (lb/ft s) *    0.05
*    0.92  *    0.47  *
* Frctn Loss (ft)         *    3.28  * Cum Volume (acre-ft)    *   29.66
*   51.38  *   44.02  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   20.02
```

```
*   28.01  *   27.40  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 2.56

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9657.6 1606.24  9836.5 1604.55  9843.7 1604.54  9852.1 1604.32    9856
1604.18
  9869.9 1603.91  9885.3 1604.22  9887.6 1604.31  9904.8  1604.4  9906.4
1604.4
  9936.3    1604  9961.3 1603.94  9967.7 1603.88  9987.2 1603.47  9993.6
1603.26
 10000.6    1603 10002.9 1603.23 10010.1 1603.49   10019 1604.14 10023.5
1604.38
   10058 1604.11 10059.7 1604.11   10183 1605.51 10358.7 1605.92 10422.4
1606.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9657.6    .064  9961.3     .04 10023.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9961.3 10023.5              293     293     293             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1604.51  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.07  * Wt. n-Val.              *   0.064
*   0.040  *   0.064  *
* W.S. Elev (ft)         * 1604.44  * Reach Len. (ft)         *  293.00
*  293.00  *  293.00  *
* Crit W.S. (ft)         * 1604.20  * Flow Area (sq ft)       *   32.66
*   51.29  *   11.81  *
* E.G. Slope (ft/ft)     *0.005415  * Area (sq ft)            *   32.66
*   51.29  *   11.81  *
* Q Total (cfs)          *  154.00  * Flow (cfs)              *   24.30
```

```
*  123.22  *    6.48  *
* Top Width (ft)         *  240.71  * Top Width (ft)         *  113.62
*   62.20  *   64.89  *
* Vel Total (ft/s)       *    1.61  * Avg. Vel. (ft/s)       *    0.74
*    2.40  *    0.55  *
* Max Chl Dpth (ft)      *    1.44  * Hydr. Depth (ft)       *    0.29
*    0.82  *    0.18  *
* Conv. Total (cfs)      *  2092.8  * Conv. (cfs)            *   330.2
*  1674.6  *    88.1  *
* Length Wtd. (ft)       *  293.00  * Wetted Per. (ft)       *  113.64
*   62.26  *   64.90  *
* Min Ch El (ft)         * 1603.00  * Shear (lb/sq ft)       *    0.10
*    0.28  *    0.06  *
* Alpha                  *    1.82  * Stream Power (lb/ft s) *    0.07
*    0.67  *    0.03  *
* Frctn Loss (ft)        *    2.91  * Cum Volume (acre-ft)   *   29.49
*   51.02  *   43.68  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *   19.38
*   27.46  *   26.35  *
*************************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 2.50

INPUT
Description:
Station Elevation Data num= 48

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9563.1  1603.5  9563.8 1603.49  9573.3 1603.32  9633.9 1602.72  9645.4
1602.55
    9660 1602.45  9688.9 1602.34  9728.3 1602.05  9746.6 1601.86  9758.3
1601.78
  9775.5 1601.71  9788.3 1601.62  9818.4 1601.51  9833.2  1601.4  9878.4
1601.23
  9883.8 1601.25  9900.3 1601.39  9906.9 1601.43  9918.3 1600.97  9921.9
1600.9
  9923.2 1600.91  9931.1  1601.4  9939.8 1601.18    9953 1600.76  9962.7
1600.71
  9997.9 1601.09  9999.4  1601.1 10008.8 1601.17 10024.8 1601.26 10025.9
1601.28
   10027  1601.3 10058.6 1601.44 10088.6 1601.83 10115.1 1602.27 10146.4
1602.68
 10148.6 1602.71 10178.6 1603.11 10179.6 1603.12 10208.5  1603.3 10237.3
1603.58
 10328.8 1604.15 10358.8 1604.24 10365.3 1604.28 10388.8 1604.35 10396.6
1604.35
```

```
 10427.9 1604.44 10448.9 1604.43 10457.9  1604.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9563.1    .064  9931.1     .04   10027    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9931.1   10027              453     453     453             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1601.59  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.              *   0.064
*   0.040  *   0.064  *
* W.S. Elev (ft)          * 1601.45  * Reach Len. (ft)         *  453.00
*  453.00  *  453.00  *
* Crit W.S. (ft)          * 1601.45  * Flow Area (sq ft)       *   17.04
*   41.18  *    2.37  *
* E.G. Slope (ft/ft)      *0.023775  * Area (sq ft)            *   17.04
*   41.18  *    2.37  *
* Q Total (cfs)           *  154.00  * Flow (cfs)              *   18.27
*  134.23  *    1.50  *
* Top Width (ft)          *  231.86  * Top Width (ft)          *  103.96
*   95.90  *   31.99  *
* Vel Total (ft/s)        *    2.54  * Avg. Vel. (ft/s)        *    1.07
*    3.26  *    0.63  *
* Max Chl Dpth (ft)       *    0.74  * Hydr. Depth (ft)        *    0.16
*    0.43  *    0.07  *
* Conv. Total (cfs)       *   998.8  * Conv. (cfs)             *   118.5
*   870.6  *     9.7  *
* Length Wtd. (ft)        *  453.00  * Wetted Per. (ft)        *  103.99
*   95.91  *   31.99  *
* Min Ch El (ft)          * 1600.71  * Shear (lb/sq ft)        *    0.24
*    0.64  *    0.11  *
* Alpha                   *    1.46  * Stream Power (lb/ft s) *    0.26
*    2.08  *    0.07  *
* Frctn Loss (ft)         *    3.41  * Cum Volume (acre-ft)    *   29.33
*   50.71  *   43.63  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *   18.65
*   26.93  *   26.03  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
```

depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 2.41

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9558.5	1600.35	9682.5	1599.31	9771.4	1598.5	9791.3	1598.21	9803.8	1598.14
9822.1	1597.86	9830.9	1597.46	9838.2	1597.19	9842.6	1597.15	9849.9	1597.34
9857	1596.95	9862.3	1596.8	9866	1596.8	9877.4	1596.91	9911.9	1597.06
9993.7	1597.01	10002.5	1597.1	10005.7	1597.08	10030	1597.63	10032.2	1597.71
10062.6	1597.31	10264.6	1599.02	10404	1600.27				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9558.5	.064	9849.9	.044	10030	.064

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9849.9	10030	345	345	345	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1597.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.	0.064	0.044	0.064
W.S. Elev (ft)	1597.63	Reach Len. (ft)	345.00	345.00	345.00
Crit W.S. (ft)	1597.32	Flow Area (sq ft)	7.31	103.19	9.75
E.G. Slope (ft/ft)	0.003644	Area (sq ft)	7.31	103.19	9.75
Q Total (cfs)	154.00	Flow (cfs)	4.82	145.18	4.00
Top Width (ft)	264.16	Top Width (ft)	22.67	179.96	61.53
Vel Total (ft/s)	1.28	Avg. Vel. (ft/s)	0.66	1.41	0.41
Max Chl Dpth (ft)	0.83	Hydr. Depth (ft)	0.32	0.57	0.16
Conv. Total (cfs)	2551.1	Conv. (cfs)	79.8	2405.1	66.3

```
* Length Wtd. (ft)        *  345.00  * Wetted Per. (ft)        *   22.69
*  179.99  *   61.53  *
* Min Ch El (ft)          * 1596.80  * Shear (lb/sq ft)        *    0.07
*    0.13  *    0.04  *
* Alpha                   *    1.15  * Stream Power (lb/ft s) *    0.05
*    0.18  *    0.01  *
* Frctn Loss (ft)         *    2.90  * Cum Volume (acre-ft)    *   29.20
*   49.96  *   43.57  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   17.99
*   25.50  *   25.54  *
*************************************************************************
************************
```

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 2.35

INPUT
Description: Pleasant Valley Airpark parking lot
Station Elevation Data num= 53

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9411 1597.72  9425.2 1597.61  9442.9 1597.62  9691.8 1596.09  9716.1
1595.84
    9774 1595.91  9807.2 1595.58  9815.1 1595.43  9816.7 1595.25  9844.4
1594.39
  9857.7 1594.81  9880.5 1594.47  9883.1 1594.47  9883.9 1594.49  9887.2
1594.47
  9931.8 1594.56  9956.7  1594.4  9965.1  1594.3  9984.2 1594.24 10005.3
1594.27
 10015.4 1594.32 10039.5 1594.21 10065.1  1594.3 10098.8 1594.55 10104.6
1594.71
 10121.8 1594.73 10128.7 1594.56 10136.4 1594.49 10161.2 1594.63 10167.2
1594.74
 10198.5 1595.14 10210.2 1595.22 10227.4 1594.92   10247  1595.2 10255.8
1595.58
 10257.5 1595.82 10268.6 1596.01 10280.1 1596.31   10296  1596.4 10327.7
1596.5
 10342.6  1596.7 10345.3 1596.71 10390.8 1597.14 10419.6 1596.79   10439
1596.71
 10445.3 1596.62 10475.1 1597.95 10475.3 1597.95 10476.9 1597.96 10502.5
1597.95
 10507.3 1597.99 10514.4 1598.13 10517.4 1598.14
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
    9411    .064  9931.8    .044 10104.6    .064
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9931.8 10104.6              327     327     327             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1594.75  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1594.63  * Reach Len. (ft)         *  327.00
*  327.00  *  327.00  *
* Crit W.S. (ft)          * 1594.63  * Flow Area (sq ft)       *    8.97
*   49.93  *    2.70  *
* E.G. Slope (ft/ft)      *0.036526  * Area (sq ft)            *    8.97
*   49.93  *    2.70  *
* Q Total (cfs)           *  154.00  * Flow (cfs)              *    9.45
*  142.40  *    2.15  *
* Top Width (ft)          *  282.98  * Top Width (ft)          *   77.55
*  169.95  *   35.48  *
* Vel Total (ft/s)        *    2.50  * Avg. Vel. (ft/s)        *    1.05
*    2.85  *    0.80  *
* Max Chl Dpth (ft)       *    0.42  * Hydr. Depth (ft)        *    0.12
*    0.29  *    0.08  *
* Conv. Total (cfs)       *   805.8  * Conv. (cfs)             *    49.5
*   745.1  *    11.2  *
* Length Wtd. (ft)        *  327.00  * Wetted Per. (ft)        *   77.56
*  169.96  *   35.48  *
* Min Ch El (ft)          * 1594.21  * Shear (lb/sq ft)        *    0.26
*    0.67  *    0.17  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    0.28
*    1.91  *    0.14  *
* Frctn Loss (ft)         *    2.20  * Cum Volume (acre-ft)    *   29.14
*   49.35  *   43.52  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   17.59
*   24.11  *   25.16  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.
```

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 2.29

INPUT
Description: Pleasant Valley Airpark runway
Station Elevation Data num= 29

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9509.7 1595.79    9602 1595.13  9608.5 1595.03  9658.2 1594.65  9703.3
1593.61
  9733.2 1593.21  9814.2  1592.6  9859.5 1591.88  9921.3 1591.52  9973.6
1591.74
  9983.7 1591.65   10018 1591.45   10042 1591.49 10052.8 1591.43 10109.3
1591.67
 10120.4 1591.65 10179.7 1592.07 10200.9  1592.1   10227 1592.35   10231
1592.47
 10251.8 1592.87 10271.5 1592.94 10297.1 1592.91 10337.9  1593.1 10369.4
1593.41
 10370.8 1593.41 10401.1 1593.61 10420.3 1594.14 10435.9 1594.26
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9509.7    .064  9973.6    .044 10109.3    .064
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9973.6 10109.3              284     284     284             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
***********************
* E.G. Elev (ft)          * 1592.41  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.04  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1592.36  * Reach Len. (ft)         *  284.00
*  284.00  *  284.00  *
* Crit W.S. (ft)          * 1592.01  * Flow Area (sq ft)       *   86.53
*  111.64  *   47.04  *
* E.G. Slope (ft/ft)      *0.004289  * Area (sq ft)            *   86.53
*  111.64  *   47.04  *
* Q Total (cfs)           *  349.00  * Flow (cfs)              *   93.50
*  216.79  *   38.71  *
* Top Width (ft)          *  398.25  * Top Width (ft)          *  144.44
*  135.70  *  118.11  *
* Vel Total (ft/s)        *    1.42  * Avg. Vel. (ft/s)        *    1.08
*    1.94  *    0.82  *
* Max Chl Dpth (ft)       *    0.93  * Hydr. Depth (ft)        *    0.60
*    0.82  *    0.40  *
* Conv. Total (cfs)       *  5328.9  * Conv. (cfs)             *  1427.6
*  3310.1  *   591.1  *
* Length Wtd. (ft)        *  284.00  * Wetted Per. (ft)        *  144.44
*  135.70  *  118.11  *
```

```
* Min Ch El (ft)          * 1591.43  * Shear (lb/sq ft)        *    0.16
*    0.22  *    0.11  *
* Alpha                   *    1.35  * Stream Power (lb/ft s) *    0.17
*    0.43  *    0.09  *
* Frctn Loss (ft)         *    2.23  * Cum Volume (acre-ft)    *   28.78
*   48.74  *   43.33  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   16.76
*   22.96  *   24.58  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 2.23

INPUT
Description: Pleasant Valley Airpark runway
Station Elevation Data num= 18

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9608.9 1593.12  9627.3 1593.03  9980.9 1589.53  9992.9 1589.49   10003
1589.46
 10061.3 1589.37 10081.1 1589.22   10086 1589.22 10089.3 1589.09 10104.2
1588.94
 10128.4 1589.52 10135.6 1589.65 10169.2 1590.16 10208.7 1590.59 10238.8
1591.04
 10261.1 1590.97 10290.7 1591.08 10436.9 1592.04
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9608.9    .064  9980.9    .044 10128.4    .064
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9980.9 10128.4              329     329     329             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1590.15  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1589.97  * Reach Len. (ft)         *  329.00
*  329.00  *  329.00  *
* Crit W.S. (ft)          * 1589.88  * Flow Area (sq ft)       *    9.97
*   95.39  *    6.27  *
```

```
* E.G. Slope (ft/ft)      *0.018778  * Area (sq ft)            *    9.97
*   95.39  *    6.27  *
* Q Total (cfs)           *  349.00  * Flow (cfs)              *   11.64
*  330.11  *    7.25  *
* Top Width (ft)          *  220.96  * Top Width (ft)          *   44.89
*  147.50  *   28.57  *
* Vel Total (ft/s)        *    3.13  * Avg. Vel. (ft/s)        *    1.17
*    3.46  *    1.16  *
* Max Chl Dpth (ft)       *    1.03  * Hydr. Depth (ft)        *    0.22
*    0.65  *    0.22  *
* Conv. Total (cfs)       *  2546.9  * Conv. (cfs)             *    84.9
*  2409.0  *    52.9  *
* Length Wtd. (ft)        *  329.00  * Wetted Per. (ft)        *   44.89
*  147.51  *   28.57  *
* Min Ch El (ft)          * 1588.94  * Shear (lb/sq ft)        *    0.26
*    0.76  *    0.26  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *    0.30
*    2.62  *    0.30  *
* Frctn Loss (ft)         *    2.44  * Cum Volume (acre-ft)    *   28.46
*   48.07  *   43.16  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *   16.14
*   22.04  *   24.10  *
*************************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 2.17

INPUT
Description:
Station Elevation Data num= 26

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9647.4 1590.57  9690.7 1590.27    9799 1588.79  9875.8 1587.43  9887.3
1586.91
  9893.3  1586.6  9906.8  1586.4  9919.4 1586.84  9926.7 1586.52  9931.8
1586.35
  9938.8 1586.26  9943.6 1586.36  9960.3 1586.58  9961.2 1586.61  9978.1
1586.75
  9984.8 1586.42  9990.1    1586  9999.6  1585.7 10002.1 1585.68 10006.9
1585.6
 10007.1 1585.62 10007.4 1585.65 10016.2 1586.73 10018.8 1586.75   10186
1588.16
 10415.1 1589.45
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
```

```
  9647.4    .064  9978.1    .044 10018.8    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.1 10018.8              366     366     366             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1587.69  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.07  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1587.62  * Reach Len. (ft)         *  366.00
*  366.00  *  366.00  *
* Crit W.S. (ft)          * 1587.12  * Flow Area (sq ft)       *  103.12
*   61.28  *   44.51  *
* E.G. Slope (ft/ft)      *0.003940  * Area (sq ft)            *  103.12
*   61.28  *   44.51  *
* Q Total (cfs)           *  349.00  * Flow (cfs)              *  141.49
*  170.37  *   37.14  *
* Top Width (ft)          *  256.27  * Top Width (ft)          *  112.83
*   40.70  *  102.74  *
* Vel Total (ft/s)        *    1.67  * Avg. Vel. (ft/s)        *    1.37
*    2.78  *    0.83  *
* Max Chl Dpth (ft)       *    2.02  * Hydr. Depth (ft)        *    0.91
*    1.51  *    0.43  *
* Conv. Total (cfs)       *  5559.8  * Conv. (cfs)             *  2254.1
*  2714.0  *   591.7  *
* Length Wtd. (ft)        *  366.00  * Wetted Per. (ft)        *  112.87
*   40.80  *  102.75  *
* Min Ch El (ft)          * 1585.60  * Shear (lb/sq ft)        *    0.22
*    0.37  *    0.11  *
* Alpha                   *    1.65  * Stream Power (lb/ft s) *    0.31
*    1.03  *    0.09  *
* Frctn Loss (ft)         *    3.26  * Cum Volume (acre-ft)    *   28.04
*   47.48  *   42.97  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   15.54
*   21.33  *   23.61  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 2.10

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
```

```
Elev
**********************************************************************
********
  9715.7 1586.93  9794.4 1586.68  9891.4 1585.52  9961.7 1584.22  9968.4
1583.88
  9995.3  1583.1    9999 1583.05   10009 1583.05 10020.2 1583.38 10034.2
1583.89
 10035.9 1583.91 10038.2  1583.9 10051.5 1583.64 10057.1 1583.32 10059.1
1583.3
 10062.2 1583.35 10071.1 1583.55 10082.4  1583.1 10098.7  1583.7 10117.9
1584.52
 10192.2 1585.72 10216.2 1585.91 10244.8 1585.98 10449.6 1586.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9715.7    .064  9968.4    .044 10034.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9968.4 10034.2              316     316     316             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1584.40  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.31  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1584.09  * Reach Len. (ft)         *  316.00
*  316.00  *  316.00  *
* Crit W.S. (ft)          * 1584.09  * Flow Area (sq ft)       *    0.42
*   46.20  *   39.42  *
* E.G. Slope (ft/ft)      *0.036055  * Area (sq ft)            *    0.42
*   46.20  *   39.42  *
* Q Total (cfs)           *  349.00  * Flow (cfs)              *    0.40
*  233.95  *  114.64  *
* Top Width (ft)          *  143.40  * Top Width (ft)          *    4.06
*   65.80  *   73.54  *
* Vel Total (ft/s)        *    4.06  * Avg. Vel. (ft/s)        *    0.97
*    5.06  *    2.91  *
* Max Chl Dpth (ft)       *    1.04  * Hydr. Depth (ft)        *    0.10
*    0.70  *    0.54  *
* Conv. Total (cfs)       *  1838.0  * Conv. (cfs)             *     2.1
*  1232.1  *   603.8  *
* Length Wtd. (ft)        *  316.00  * Wetted Per. (ft)        *    4.06
*   65.83  *   73.58  *
* Min Ch El (ft)          * 1583.05  * Shear (lb/sq ft)        *    0.23
*    1.58  *    1.21  *
* Alpha                   *    1.21  * Stream Power (lb/ft s) *    0.22
*    8.00  *    3.51  *
* Frctn Loss (ft)         *    2.54  * Cum Volume (acre-ft)    *   27.60
*   47.02  *   42.61  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)          *   15.05
*   20.88  *   22.87  *
**********************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
```

```
        program selected the water surface that had the least amount of
error between computed and
        assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
        0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
        depth, the calculated water surface came back below critical
depth.  This indicates that there is
        not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 2.04

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9704.3 1584.94  9760.5 1584.38    9788 1584.28  9815.9 1584.04    9827
1584
  9894.7 1583.19  9923.5  1582.6  9929.5 1582.43  9940.7    1581  9946.7
1580.59
  9962.3 1580.32  9966.9 1580.31    9969 1580.33  9985.8 1580.15  9995.9
1579.86
 10018.7 1581.05 10029.1 1581.26 10035.9 1580.65 10045.5 1579.71 10053.1
1579.54
 10078.9 1580.39   10086 1580.75 10089.9 1580.97 10116.3 1581.65   10127
1581.83
 10184.7 1582.24 10312.8 1583.32 10467.2 1583.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9704.3    .064  9940.7    .044 10029.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9940.7 10029.1              254     254     254             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)         * 1581.65  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.06  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1581.59  * Reach Len. (ft)         *  254.00
*  254.00  *  254.00  *
```

```
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    1.37
*  100.15  *   92.31  *
* E.G. Slope (ft/ft)      *0.003438  * Area (sq ft)            *    1.37
*  100.15  *   92.31  *
* Q Total (cfs)           *  349.00  * Flow (cfs)              *    0.82
*  215.42  *  132.76  *
* Top Width (ft)          *  177.92  * Top Width (ft)          *    4.63
*   88.40  *   84.89  *
* Vel Total (ft/s)        *    1.80  * Avg. Vel. (ft/s)        *    0.60
*    2.15  *    1.44  *
* Max Chl Dpth (ft)       *    2.05  * Hydr. Depth (ft)        *    0.30
*    1.13  *    1.09  *
* Conv. Total (cfs)       *  5952.4  * Conv. (cfs)             *    14.0
*  3674.1  *  2264.4  *
* Length Wtd. (ft)        *  254.00  * Wetted Per. (ft)        *    4.66
*   88.45  *   85.01  *
* Min Ch El (ft)          * 1579.86  * Shear (lb/sq ft)        *    0.06
*    0.24  *    0.23  *
* Alpha                   *    1.12  * Stream Power (lb/ft s) *    0.04
*    0.52  *    0.34  *
* Frctn Loss (ft)         *    2.05  * Cum Volume (acre-ft)    *   27.59
*   46.49  *   42.14  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *   15.02
*   20.32  *   22.29  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.99

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9680.8 1582.12  9801.9 1581.46  9850.7 1581.41  9911.3 1580.78    9923
1580.32
  9940.1 1580.39  9941.5 1580.39  9942.6 1580.31  9962.6  1578.4  9969.6
1579.05
  9994.7 1578.09  9998.1  1577.8 10001.8 1577.87 10030.7 1579.21 10056.2
1578.13
   10060 1578.09 10093.3 1580.14 10420.9 1582.83

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9680.8    .064  9969.6    .044 10030.7    .064
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9969.6 10030.7              238     238     238             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1579.57  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.35  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1579.22  * Reach Len. (ft)         *  238.00
*  238.00  *  238.00  *
* Crit W.S. (ft)          * 1579.22  * Flow Area (sq ft)       *    6.98
*   45.40  *   28.59  *
* E.G. Slope (ft/ft)      *0.036647  * Area (sq ft)            *    6.98
*   45.40  *   28.59  *
* Q Total (cfs)           *  349.00  * Flow (cfs)              *   18.10
*  240.58  *   90.33  *
* Top Width (ft)          *  124.33  * Top Width (ft)          *   15.58
*   61.10  *   47.65  *
* Vel Total (ft/s)        *    4.31  * Avg. Vel. (ft/s)        *    2.59
*    5.30  *    3.16  *
* Max Chl Dpth (ft)       *    1.42  * Hydr. Depth (ft)        *    0.45
*    0.74  *    0.60  *
* Conv. Total (cfs)       *  1823.1  * Conv. (cfs)             *    94.5
*  1256.7  *   471.8  *
* Length Wtd. (ft)        *  238.00  * Wetted Per. (ft)        *   15.65
*   61.16  *   47.71  *
* Min Ch El (ft)          * 1577.80  * Shear (lb/sq ft)        *    1.02
*    1.70  *    1.37  *
* Alpha                   *    1.20  * Stream Power (lb/ft s) *    2.65
*    9.00  *    4.33  *
* Frctn Loss (ft)         *    1.31  * Cum Volume (acre-ft)    *   27.57
*   46.07  *   41.78  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *   14.96
*   19.89  *   21.91  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION
```

```
RIVER: NRW5
REACH: NRW5                RS: 1.95

INPUT
Description: CL access road to Pleasant Valley Airpark; South Section 3
Line
             T5NR1E
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9447.5 1580.08    9455 1580.24  9463.1 1580.13  9482.3 1579.54  9491.3
1579.37
  9516.5 1579.46  9692.7 1578.93  9727.3 1579.07  9749.4 1579.35  9773.4
1579.01
  9827.8 1579.21  9858.4  1578.8    9877 1578.94  9904.8 1578.43  9927.6
1578.16
  9975.3 1577.15  9995.9 1576.87 10013.5 1576.94   10044 1576.63 10061.4
1576.77
 10092.1 1576.77   10106 1576.86 10139.9 1577.54   10193  1577.7 10444.4
1580.05
 10457.3  1580.1 10499.7 1580.72 10549.2 1580.64 10584.6 1580.91 10584.9
1580.91
 10608.2 1581.09 10610.8 1581.09   10612 1581.09   10613  1581.1 10646.2
1582.4
 10646.9  1582.4 10654.4  1582.1 10662.9 1582.22 10672.3 1582.22 10678.3
1582.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9447.5    .064  9927.6    .044 10139.9    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9927.6 10139.9              276     276     276             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1578.10  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.04  * Wt. n-Val.              *
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1578.07  * Reach Len. (ft)         *  276.00
*  276.00  *  276.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*  211.46  *   30.89  *
* E.G. Slope (ft/ft)      *0.002127  * Area (sq ft)            *
*  211.46  *   30.89  *
* Q Total (cfs)           *  349.00  * Flow (cfs)              *
*  333.06  *   15.94  *
* Top Width (ft)          *  300.18  * Top Width (ft)          *
*  207.88  *   92.30  *
* Vel Total (ft/s)        *    1.44  * Avg. Vel. (ft/s)        *
*    1.58  *    0.52  *
* Max Chl Dpth (ft)       *    1.44  * Hydr. Depth (ft)        *
```

```
*    1.02  *    0.33  *
* Conv. Total (cfs)      *  7567.9  * Conv. (cfs)            *
*  7222.3  *   345.6  *
* Length Wtd. (ft)       *  276.00  * Wetted Per. (ft)       *
*  207.90  *   92.30  *
* Min Ch El (ft)         * 1576.63  * Shear (lb/sq ft)       *
*    0.14  *    0.04  *
* Alpha                  *    1.15  * Stream Power (lb/ft s) *
*    0.21  *    0.02  *
* Frctn Loss (ft)        *    1.33  * Cum Volume (acre-ft)   *   27.55
*   45.37  *   41.62  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *   14.92
*   19.15  *   21.52  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 1.90

INPUT
Description:
Station Elevation Data num= 23

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9336  1578.2  9479.1 1577.06  9496.3 1577.03  9711.1 1577.56  9736.7
1577.47
  9803.1 1577.46  9833.8 1577.25  9896.7 1576.67    9922 1576.32  9925.8
1576.24
  9972.5 1575.99  9996.2 1574.34 10000.7 1573.98 10016.8 1575.43 10023.1
1575.85
 10048.4  1575.9 10048.6  1575.9 10091.2 1575.56 10098.8 1575.79 10109.9
1576.33
 10201.9 1577.23 10355.3 1579.34 10366.6 1579.44
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9336    .064  9972.5    .044 10023.1    .064
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9972.5 10023.1              271     271     271             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)         * 1576.75  * Element                 *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.28  * Wt. n-Val.             *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1576.47  * Reach Len. (ft)        *  271.00
*  271.00  *  271.00  *
* Crit W.S. (ft)         * 1576.34  * Flow Area (sq ft)      *   18.08
*   74.94  *   58.23  *
* E.G. Slope (ft/ft)     *0.012028  * Area (sq ft)           *   18.08
*   74.94  *   58.23  *
* Q Total (cfs)          *  483.00  * Flow (cfs)             *   20.40
*  359.94  *  102.66  *
* Top Width (ft)         *  212.97  * Top Width (ft)         *   61.31
*   50.60  *  101.06  *
* Vel Total (ft/s)       *    3.19  * Avg. Vel. (ft/s)       *    1.13
*    4.80  *    1.76  *
* Max Chl Dpth (ft)      *    2.49  * Hydr. Depth (ft)       *    0.29
*    1.48  *    0.58  *
* Conv. Total (cfs)      *  4404.0  * Conv. (cfs)            *   186.0
*  3281.9  *   936.1  *
* Length Wtd. (ft)       *  271.00  * Wetted Per. (ft)       *   61.31
*   50.75  *  101.08  *
* Min Ch El (ft)         * 1573.98  * Shear (lb/sq ft)       *    0.22
*    1.11  *    0.43  *
* Alpha                  *    1.76  * Stream Power (lb/ft s) *    0.25
*    5.33  *    0.76  *
* Frctn Loss (ft)        *    2.70  * Cum Volume (acre-ft)   *   27.49
*   44.46  *   41.34  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *   14.73
*   18.33  *   20.91  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.85

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9415.7 1576.04  9515.3  1575.6  9554.2 1575.71  9942.8 1573.95  9978.1
1572.53
  9989.7 1572.19 10004.5  1571.8 10032.3 1572.97 10062.3 1573.46 10067.4
1573.46
 10088.3 1573.24 10123.1 1573.14 10145.9 1573.76 10153.2    1574 10303.4
1576.12
 10452.9 1577.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9415.7    .064  9942.8    .044 10062.3    .064
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9942.8 10062.3              319     319     319             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1574.01  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.              *
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1573.87  * Reach Len. (ft)         *  319.00
*  319.00  *  319.00  *
* Crit W.S. (ft)          * 1573.56  * Flow Area (sq ft)       *
*  128.02  *   46.01  *
* E.G. Slope (ft/ft)      *0.008375  * Area (sq ft)            *
*  128.02  *   46.01  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *
*  418.98  *   64.02  *
* Top Width (ft)          *  204.22  * Top Width (ft)          *
*  117.41  *   86.82  *
* Vel Total (ft/s)        *    2.78  * Avg. Vel. (ft/s)        *
*    3.27  *    1.39  *
* Max Chl Dpth (ft)       *    2.07  * Hydr. Depth (ft)        *
*    1.09  *    0.53  *
* Conv. Total (cfs)       *  5277.8  * Conv. (cfs)             *
*  4578.2  *   699.6  *
* Length Wtd. (ft)        *  319.00  * Wetted Per. (ft)        *
*  117.47  *   86.83  *
* Min Ch El (ft)          * 1571.80  * Shear (lb/sq ft)        *
*    0.57  *    0.28  *
* Alpha                   *    1.24  * Stream Power (lb/ft s) *
*    1.86  *    0.39  *
* Frctn Loss (ft)         *    2.39  * Cum Volume (acre-ft)    *   27.44
*   43.83  *   41.01  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   14.54
*   17.81  *   20.33  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.78

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9459.4 1572.72  9459.9  1572.7  9465.4 1572.57  9482.4 1573.23  9486.7
1573.34
```

```
  9938.9 1571.49  9967.2 1570.95 10004.7 1569.45 10005.6 1569.41 10006.2
1569.44
 10029.4  1570.9 10089.7 1570.73   10150 1570.79 10177.5 1570.28   10182
1570.16
 10210.3 1571.27 10300.7 1572.43 10518.1 1573.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9459.4    .064  9938.9    .044 10029.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9938.9 10029.4              318     318     318             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1571.60  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1571.52  * Reach Len. (ft)         *  318.00
*  318.00  *  318.00  *
* Crit W.S. (ft)          * 1571.18  * Flow Area (sq ft)       *    0.08
*   92.03  *  145.57  *
* E.G. Slope (ft/ft)      *0.006758  * Area (sq ft)            *    0.08
*   92.03  *  145.57  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *    0.01
*  258.23  *  224.77  *
* Top Width (ft)          *  296.73  * Top Width (ft)          *    6.21
*   90.50  *  200.02  *
* Vel Total (ft/s)        *    2.03  * Avg. Vel. (ft/s)        *    0.10
*    2.81  *    1.54  *
* Max Chl Dpth (ft)       *    2.11  * Hydr. Depth (ft)        *    0.01
*    1.02  *    0.73  *
* Conv. Total (cfs)       *  5875.4  * Conv. (cfs)             *     0.1
*  3141.1  *  2734.1  *
* Length Wtd. (ft)        *  318.00  * Wetted Per. (ft)        *    6.21
*   90.58  *  200.05  *
* Min Ch El (ft)          * 1569.41  * Shear (lb/sq ft)        *    0.01
*    0.43  *    0.31  *
* Alpha                   *    1.29  * Stream Power (lb/ft s) *    0.00
*    1.20  *    0.47  *
* Frctn Loss (ft)         *    2.75  * Cum Volume (acre-ft)    *   27.44
*   43.02  *   40.31  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   14.51
*   17.05  *   19.28  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.72
```

```
INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9497.7 1570.45  9520.7 1570.28  9529.8 1570.14  9538.4 1570.12  9543.8
1570.06
  9860.8  1568.8  9902.9  1568.4  9914.2 1568.57  9918.2  1568.6  9953.6
1568.13
  9993.3 1567.94 10019.9 1567.84 10053.5  1567.9 10080.2 1567.52 10085.8
1567.47
 10113.8 1568.07 10384.9  1569.8 10385.2 1569.79 10415.3 1569.67   10420
1569.58
 10440.2 1569.52 10446.7 1570.09 10499.2 1570.76 10511.4 1570.62 10532.9
1570.6
 10555.9 1571.09 10565.8 1570.78 10575.9 1570.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**************************************************
  9497.7    .064  9953.6    .044 10113.8    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9953.6 10113.8              375     375     375             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1568.84  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1568.69  * Reach Len. (ft)         *  375.00
*  375.00  *  375.00  *
* Crit W.S. (ft)          * 1568.52  * Flow Area (sq ft)       *   18.94
*  133.99  *   30.45  *
* E.G. Slope (ft/ft)      *0.011479  * Area (sq ft)            *   18.94
*  133.99  *   30.45  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *   17.80
*  430.38  *   34.82  *
* Top Width (ft)          *  339.46  * Top Width (ft)          *   81.57
*  160.20  *   97.69  *
* Vel Total (ft/s)        *    2.63  * Avg. Vel. (ft/s)        *    0.94
*    3.21  *    1.14  *
* Max Chl Dpth (ft)       *    1.22  * Hydr. Depth (ft)        *    0.23
*    0.84  *    0.31  *
* Conv. Total (cfs)       *  4508.1  * Conv. (cfs)             *   166.1
*  4016.9  *   325.0  *
* Length Wtd. (ft)        *  375.00  * Wetted Per. (ft)        *   81.58
*  160.21  *   97.69  *
* Min Ch El (ft)          * 1567.47  * Shear (lb/sq ft)        *    0.17
*    0.60  *    0.22  *
* Alpha                   *    1.34  * Stream Power (lb/ft s) *    0.16
*    1.93  *    0.26  *
* Frctn Loss (ft)         *    3.59  * Cum Volume (acre-ft)    *   27.37
*   42.20  *   39.67  *
```

```
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *   14.19
*   16.13  *   18.19  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.65

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9418.1 1566.59  9451.9 1566.27  9477.4 1566.28  9504.7 1566.02    9515
1566.05
    9528 1565.98  9537.8 1564.41  9539.9 1564.49  9541.8 1564.58  9547.6
1565.24
  9566.6 1565.37  9578.4 1565.39  9925.4 1564.54  9949.8 1564.63  9960.6
1564.75
  9962.5 1564.62  9965.8 1564.35  9971.7 1563.77    9989 1563.33 10001.3
1563.65
 10009.3 1563.33 10033.7 1563.96 10045.1 1564.65 10057.1 1564.64 10081.8
1565.03
 10107.1 1565.07 10126.4 1564.97 10156.9 1565.07 10158.3 1565.05 10190.9
1564.98
 10198.3 1565.06 10201.3 1565.15 10400.4 1567.52 10421.2 1567.26 10422.7
1567.34
 10447.2 1567.96 10449.8 1567.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9418.1    .064  9960.6    .044 10045.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9960.6 10045.1              278     278     278             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1565.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.17  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1565.07  * Reach Len. (ft)         *  278.00
*  278.00  *  278.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   77.86
*  110.44  *   16.00  *
* E.G. Slope (ft/ft)     *0.008125  * Area (sq ft)            *   77.86
*  110.44  *   16.00  *
```

```
* Q Total (cfs)          *  483.00  * Flow (cfs)             *   72.38
*  401.59  *    9.04  *
* Top Width (ft)         *  501.18  * Top Width (ft)         *  263.75
*   84.50  *  152.93  *
* Vel Total (ft/s)       *    2.36  * Avg. Vel. (ft/s)       *    0.93
*    3.64  *    0.56  *
* Max Chl Dpth (ft)      *    1.74  * Hydr. Depth (ft)       *    0.30
*    1.31  *    0.10  *
* Conv. Total (cfs)      *  5358.3  * Conv. (cfs)            *   802.9
*  4455.1  *   100.3  *
* Length Wtd. (ft)       *  278.00  * Wetted Per. (ft)       *  263.84
*   84.59  *  152.93  *
* Min Ch El (ft)         * 1563.33  * Shear (lb/sq ft)       *    0.15
*    0.66  *    0.05  *
* Alpha                  *    1.99  * Stream Power (lb/ft s) *    0.14
*    2.41  *    0.03  *
* Frctn Loss (ft)        *    2.96  * Cum Volume (acre-ft)   *   26.95
*   41.15  *   39.47  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *   12.71
*   15.08  *   17.11  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.60

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9539.1 1563.95  9540.5  1563.7    9542 1563.79  9548.1 1564.02  9585.4
1563.75
  9853.9 1562.66  9921.5 1562.14    9947 1562.07  9950.5    1562  9982.7
1561.69
  9997.1 1561.04 10004.5 1561.26 10011.2 1561.41 10021.7 1561.52 10097.6
1561.37
 10107.5 1561.45   10139 1561.86 10149.2 1562.25 10156.7 1562.05 10188.6
1560.65
   10191 1560.51 10196.9 1560.76 10227.1 1562.27 10288.2 1563.31 10323.1
1563.56
 10324.8  1563.5   10332 1563.73 10349.4 1564.16   10417 1564.89 10513.5
1565.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9539.1    .064  9950.5    .044 10149.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
```

```
        9950.5 10149.2                354      354      354              .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1562.27  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1562.15  * Reach Len. (ft)         *  354.00
*  354.00  *  354.00  *
* Crit W.S. (ft)          * 1561.93  * Flow Area (sq ft)       *    1.46
*  118.09  *   57.51  *
* E.G. Slope (ft/ft)      *0.014564  * Area (sq ft)            *    1.46
*  118.09  *   57.51  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *    0.55
*  343.28  *  139.17  *
* Top Width (ft)          *  297.46  * Top Width (ft)          *   29.89
*  196.00  *   71.57  *
* Vel Total (ft/s)        *    2.73  * Avg. Vel. (ft/s)        *    0.37
*    2.91  *    2.42  *
* Max Chl Dpth (ft)       *    1.64  * Hydr. Depth (ft)        *    0.05
*    0.60  *    0.80  *
* Conv. Total (cfs)       *  4002.3  * Conv. (cfs)             *     4.5
*  2844.5  *  1153.2  *
* Length Wtd. (ft)        *  354.00  * Wetted Per. (ft)        *   29.89
*  196.03  *   71.64  *
* Min Ch El (ft)          * 1561.04  * Shear (lb/sq ft)        *    0.04
*    0.55  *    0.73  *
* Alpha                   *    1.03  * Stream Power (lb/ft s) *    0.02
*    1.59  *    1.77  *
* Frctn Loss (ft)         *    2.44  * Cum Volume (acre-ft)    *   26.70
*   40.42  *   39.24  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   11.77
*   14.18  *   16.39  *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.53

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
```

```
    9541 1561.86  9542.5 1561.83  9694.7 1560.62  9750.4 1560.04  9862.2
1559.25
  9898.6 1558.43  9927.8 1559.02  9993.4 1558.94 10009.7  1558.9 10026.2
1558.86
 10034.8 1558.62 10053.1    1558 10085.3 1558.48 10092.2 1558.75 10214.4
1561.17
 10236.9  1561.9 10259.9 1561.65 10387.1 1562.48 10417.8 1562.49

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
    9541    .064  9927.8    .044 10092.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9927.8 10092.2               378     378     378             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1559.82  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1559.76  * Reach Len. (ft)         *  378.00
*  378.00  *  378.00  *
* Crit W.S. (ft)          * 1559.25  * Flow Area (sq ft)       *   81.56
*  170.87  *   25.55  *
* E.G. Slope (ft/ft)      *0.004003  * Area (sq ft)            *   81.56
*  170.87  *   25.55  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *   84.69
*  374.57  *   23.73  *
* Top Width (ft)          *  352.40  * Top Width (ft)          *  137.20
*  164.40  *   50.80  *
* Vel Total (ft/s)        *    1.74  * Avg. Vel. (ft/s)        *    1.04
*    2.19  *    0.93  *
* Max Chl Dpth (ft)       *    1.76  * Hydr. Depth (ft)        *    0.59
*    1.04  *    0.50  *
* Conv. Total (cfs)       *  7634.2  * Conv. (cfs)             *  1338.6
*  5920.5  *   375.1  *
* Length Wtd. (ft)        *  378.00  * Wetted Per. (ft)        *  137.22
*  164.42  *   50.81  *
* Min Ch El (ft)          * 1558.00  * Shear (lb/sq ft)        *    0.15
*    0.26  *    0.13  *
* Alpha                   *    1.31  * Stream Power (lb/ft s) *    0.15
*    0.57  *    0.12  *
* Frctn Loss (ft)         *    2.79  * Cum Volume (acre-ft)    *   26.36
*   39.24  *   38.90  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *   11.09
*   12.72  *   15.90  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 1.46

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9744.2	1558.34	9749	1558.28	9750.1	1558.16	9754.5	1557.25	9756.4	1557.25
9764.3	1557.13	9767.5	1557.24	9786.6	1556.72	9790.7	1556.71	9797.5	1556.82
9800.7	1556.99	9840.8	1556.61	9901.5	1556.55	9948.2	1556.33	9961.8	1556.36
9976.6	1555.58	9986.8	1554.38	9991	1554.75	9998.4	1554.76	10015.1	1555.71
10017	1555.77	10049.4	1556.36	10055.7	1556.39	10252.3	1558.08	10278.8	1558.33
10295.4	1558.22	10319.5	1558.6	10345.1	1558.79				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9744.2	.064	9961.8	.044	10049.4	.064

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9961.8	10049.4	344	344	344	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1557.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.34	Wt. n-Val.	0.064	0.044	0.064
W.S. Elev (ft)	1556.67	Reach Len. (ft)	344.00	344.00	344.00
Crit W.S. (ft)	1556.67	Flow Area (sq ft)	20.63	95.82	6.36
E.G. Slope (ft/ft)	0.017817	Area (sq ft)	20.63	95.82	6.36
Q Total (cfs)	483.00	Flow (cfs)	19.02	458.06	5.92
Top Width (ft)	253.49	Top Width (ft)	127.18	87.60	38.71
Vel Total (ft/s)	3.93	Avg. Vel. (ft/s)	0.92	4.78	0.93
Max Chl Dpth (ft)	2.29	Hydr. Depth (ft)	0.16	1.09	0.16
Conv. Total (cfs)	3618.5	Conv. (cfs)	142.5	3431.7	44.3
Length Wtd. (ft)	344.00	Wetted Per. (ft)	127.18	87.74	38.71

```
* Min Ch El (ft)          * 1554.38  * Shear (lb/sq ft)       *    0.18
*    1.21  *    0.18  *
* Alpha                   *    1.40  * Stream Power (lb/ft s) *    0.17
*    5.81  *    0.17  *
* Frctn Loss (ft)         *    2.70  * Cum Volume (acre-ft)   *   25.92
*   38.09  *   38.76  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)         *    9.94
*   11.63  *   15.51  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.40

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9714.3 1556.15  9848.3 1554.27  9854.2 1554.28  9876.6 1554.05  9881.3
1553.96
  9893.7 1553.88  9909.9 1553.48  9954.8  1553.6  9964.6 1553.48  9981.6
1552.69
    9992 1552.41 10006.3 1552.74 10021.7 1552.97 10036.5  1552.9 10088.1
1552.86
   10109 1552.74   10152 1553.29   10153 1553.07 10158.9 1552.33 10168.6
1552.68
 10169.1 1552.71 10176.1 1552.85 10193.9 1553.24   10211 1553.67 10260.3
1554.06
 10370.9 1555.59 10459.5  1556.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9714.3    .064  9964.6    .044 10021.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
```

```
Expan.
        9964.6 10021.7              301     301     301              .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1554.04  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1553.99  * Reach Len. (ft)         *  301.00
*  301.00  *  301.00  *
* Crit W.S. (ft)          * 1553.44  * Flow Area (sq ft)       *   30.30
*   67.92  *  203.45  *
* E.G. Slope (ft/ft)      *0.004392  * Area (sq ft)            *   30.30
*   67.92  *  203.45  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *   23.49
*  170.61  *  288.90  *
* Top Width (ft)          *  371.23  * Top Width (ft)          *   84.73
*   57.10  *  229.40  *
* Vel Total (ft/s)        *    1.60  * Avg. Vel. (ft/s)        *    0.78
*    2.51  *    1.42  *
* Max Chl Dpth (ft)       *    1.66  * Hydr. Depth (ft)        *    0.36
*    1.19  *    0.89  *
* Conv. Total (cfs)       *  7287.8  * Conv. (cfs)             *   354.4
*  2574.3  *  4359.0  *
* Length Wtd. (ft)        *  301.00  * Wetted Per. (ft)        *   84.73
*   57.13  *  229.50  *
* Min Ch El (ft)          * 1552.41  * Shear (lb/sq ft)        *    0.10
*    0.33  *    0.24  *
* Alpha                   *    1.35  * Stream Power (lb/ft s) *    0.08
*    0.82  *    0.35  *
* Frctn Loss (ft)         *    2.44  * Cum Volume (acre-ft)    *   25.72
*   37.44  *   37.93  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    9.11
*   11.06  *   14.45  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.34

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
```

```
  9772.1 1554.88    9785  1553.4  9786.2 1553.26  9842.5 1553.02  9864.2
1553.05
  9873.6 1553.12  9886.8 1552.53  9905.7 1551.79  9916.9 1551.54  9934.4
1550.73
  9939.8 1551.55  9941.4 1551.85  9943.2 1551.57  9945.8 1551.21  9948.9
1550.92
  9959.4 1551.08  9966.7  1551.1  9987.5 1550.69  9995.1 1550.14  9999.6
1549.62
   10012 1550.81 10014.2 1551.05   10048 1550.61   10049 1550.61   10137
1550.91
   10139 1550.89 10167.1 1551.07 10169.2 1551.05 10171.6    1551 10188.6
1550.49
 10219.6 1551.33 10225.7 1551.54   10229 1551.57   10259 1551.96 10263.7
1552.38
 10273.3  1553.3 10280.3 1551.35   10283 1551.95 10284.6 1552.21 10285.6
1552.25
 10288.4 1552.02 10317.3 1552.77 10319.1 1552.86 10422.1 1554.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9772.1    .064  9966.7    .044 10014.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9966.7 10014.2              355     355     355             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1551.58  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1551.42  * Reach Len. (ft)         *  355.00
*  355.00  *  355.00  *
* Crit W.S. (ft)          * 1551.31  * Flow Area (sq ft)       *   14.86
*   41.59  *  121.70  *
* E.G. Slope (ft/ft)      *0.019815  * Area (sq ft)            *   14.86
*   41.59  *  121.70  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *   24.29
*  180.61  *  278.10  *
* Top Width (ft)          *  298.07  * Top Width (ft)          *   41.92
*   47.50  *  208.64  *
* Vel Total (ft/s)        *    2.71  * Avg. Vel. (ft/s)        *    1.63
*    4.34  *    2.29  *
* Max Chl Dpth (ft)       *    1.80  * Hydr. Depth (ft)        *    0.35
*    0.88  *    0.58  *
* Conv. Total (cfs)       *  3431.2  * Conv. (cfs)             *   172.5
*  1283.0  *  1975.6  *
* Length Wtd. (ft)        *  355.00  * Wetted Per. (ft)        *   42.02
*   47.62  *  208.68  *
* Min Ch El (ft)          * 1549.62  * Shear (lb/sq ft)        *    0.44
*    1.08  *    0.72  *
* Alpha                   *    1.39  * Stream Power (lb/ft s) *    0.72
*    4.69  *    1.65  *
* Frctn Loss (ft)         *    3.76  * Cum Volume (acre-ft)    *   25.56
*   37.06  *   36.81  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    8.67
*   10.69  *   12.94  *
```

```
**************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.27

INPUT
Description:
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9820.1    1550  9822.6 1549.87  9831.3 1549.69  9863.9 1548.53  9868.6
1548.4
  9897.9 1548.33  9899.4 1548.31  9925.3 1548.05  9926.9 1548.03  9949.3
1546.74
  9950.8 1546.79    9954 1547.51  9962.1 1546.35  9963.5 1546.15  9967.3
1546.18
  9974.3 1546.31  9985.4 1546.18    9994 1545.81 10003.4 1545.78 10007.1
1545.75
   10010 1545.89 10019.7 1546.56 10049.3  1547.1 10076.2 1547.26 10085.3
1547.26
 10110.8 1547.41 10136.2 1546.62 10143.7 1546.48 10151.1 1546.74 10171.1
1547.66
 10261.5 1548.58 10293.6 1549.69 10293.8 1549.66 10300.1 1548.67 10308.1
1548.9
 10309.1 1548.95 10309.6 1548.98 10312.8 1549.15 10339.3 1549.78 10345.7
1549.73
 10351.9 1549.79 10379.9 1550.22   10383 1550.24 10469.8 1551.38 10470.7
1551.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9820.1    .064    9954    .044 10019.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9954 10019.7              340     340     340             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)         * 1547.81  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
```

```
* W.S. Elev (ft)          * 1547.66  * Reach Len. (ft)         *  340.00
*  340.00  *  340.00  *
* Crit W.S. (ft)          * 1547.34  * Flow Area (sq ft)       *   10.41
*   97.58  *   91.74  *
* E.G. Slope (ft/ft)      *0.006572  * Area (sq ft)            *   10.41
*   97.58  *   91.74  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *   12.33
*  347.28  *  123.39  *
* Top Width (ft)          *  238.27  * Top Width (ft)          *   20.75
*   65.70  *  151.82  *
* Vel Total (ft/s)        *    2.42  * Avg. Vel. (ft/s)        *    1.18
*    3.56  *    1.35  *
* Max Chl Dpth (ft)       *    1.91  * Hydr. Depth (ft)        *    0.50
*    1.49  *    0.60  *
* Conv. Total (cfs)       *  5957.9  * Conv. (cfs)             *   152.1
*  4283.8  *  1522.0  *
* Length Wtd. (ft)        *  340.00  * Wetted Per. (ft)        *   20.86
*   65.83  *  151.86  *
* Min Ch El (ft)          * 1545.75  * Shear (lb/sq ft)        *    0.20
*    0.61  *    0.25  *
* Alpha                   *    1.64  * Stream Power (lb/ft s) *    0.24
*    2.16  *    0.33  *
* Frctn Loss (ft)         *    3.26  * Cum Volume (acre-ft)    *   25.46
*   36.49  *   35.94  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    8.41
*   10.23  *   11.47  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.21

INPUT
Description:
Station Elevation Data    num=      49
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9872.1  1546.5  9872.6 1546.48  9879.1 1545.71  9880.8 1545.47  9885.5
1545.44
  9916.7 1544.47  9936.7 1544.57  9938.8  1544.4  9950.2 1543.56  9953.1
1543.25
  9976.2 1542.75  9978.7 1542.95  9983.4 1543.01  9987.5 1543.44  9996.2
1541.63
  9998.4 1541.22    9999 1541.32 10002.8 1542.31 10009.2  1543.6 10010.7
1543.85
   10015 1543.75 10025.2 1543.02 10033.7 1543.41 10066.7 1543.72 10156.7
1544.15
 10160.8  1544.2 10174.6 1544.51 10182.9 1543.98 10183.9 1543.96 10196.3
```

```
1544.43
 10203.4 1544.41   10207 1544.36 10216.1 1544.41 10223.9 1544.36 10240.7
1544.85
 10246.7 1545.13 10276.7 1545.62 10300.1 1546.16 10306.3 1546.38 10319.1
1547.06
 10325.2 1545.63 10326.2  1545.4 10326.5 1545.42 10331.8 1546.45 10333.7
1546.58
 10344.5 1546.99 10360.3 1547.32 10366.7 1547.49 10377.4 1547.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9872.1    .064  9987.5    .044 10010.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.5 10010.7              332     332     332             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1544.53  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.32  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1544.21  * Reach Len. (ft)         *  332.00
*  332.00  *  332.00  *
* Crit W.S. (ft)          * 1544.21  * Flow Area (sq ft)       *   46.49
*   40.38  *   66.70  *
* E.G. Slope (ft/ft)      *0.015312  * Area (sq ft)            *   46.49
*   40.38  *   66.70  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *  134.05
*  240.68  *  108.27  *
* Top Width (ft)          *  231.32  * Top Width (ft)          *   46.16
*   23.20  *  161.96  *
* Vel Total (ft/s)        *    3.15  * Avg. Vel. (ft/s)        *    2.88
*    5.96  *    1.62  *
* Max Chl Dpth (ft)       *    2.99  * Hydr. Depth (ft)        *    1.01
*    1.74  *    0.41  *
* Conv. Total (cfs)       *  3903.3  * Conv. (cfs)             *  1083.3
*  1945.0  *   875.0  *
* Length Wtd. (ft)        *  332.00  * Wetted Per. (ft)        *   46.23
*   23.71  *  162.01  *
* Min Ch El (ft)          * 1541.22  * Shear (lb/sq ft)        *    0.96
*    1.63  *    0.39  *
* Alpha                   *    2.08  * Stream Power (lb/ft s) *    2.77
*    9.70  *    0.64  *
* Frctn Loss (ft)         *    1.93  * Cum Volume (acre-ft)    *   25.24
*   35.96  *   35.32  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *    8.15
*    9.89  *   10.24  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
```

```
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.15

INPUT
Description:
Station Elevation Data    num=      50
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9639.9 1543.92  9679.5 1542.95  9685.7 1542.89  9736.3 1542.77  9820.9
1542.11
  9825.8 1542.24    9841 1542.41  9857.1 1542.68  9878.4  1542.1  9912.8
1540.31
  9914.5 1540.25  9950.9 1539.42  9963.1 1538.84  9988.5 1538.12 10001.4
1537.19
 10010.6 1537.82 10017.8  1538.5 10038.1 1538.72 10065.9 1538.85 10069.2
1538.84
 10071.6 1538.74 10080.7  1538.6 10091.3 1538.12 10092.4 1538.03 10096.4
1538.29
 10109.2 1539.24 10116.5 1539.64 10123.8 1539.61 10144.3 1540.18 10163.9
1541.16
 10168.6 1541.34 10183.8 1541.75 10192.7 1541.85 10192.9 1542.04 10195.8
1542.13
 10236.7 1542.94 10241.6 1542.97 10268.3  1543.5   10278 1543.54 10304.3
1544.1
 10304.4  1544.1 10316.5 1544.47 10323.4 1544.63 10328.9 1544.64   10339
1544.85
 10344.4 1544.91 10355.7 1545.21 10365.7 1545.08 10366.8 1545.13 10389.1
1544.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9639.9    .064  9963.1    .044 10017.8    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9963.1 10017.8              237     237     237             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1540.06  * Element                *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.09  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1539.97  * Reach Len. (ft)         *  237.00
*  237.00  *  237.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   16.91
*  103.46  *  129.54  *
* E.G. Slope (ft/ft)     *0.003044  * Area (sq ft)            *   16.91
*  103.46  *  129.54  *
* Q Total (cfs)          *  483.00  * Flow (cfs)              *   12.99
*  294.46  *  175.55  *
* Top Width (ft)         *  210.02  * Top Width (ft)          *   36.35
*   54.70  *  118.97  *
* Vel Total (ft/s)       *    1.93  * Avg. Vel. (ft/s)        *    0.77
*    2.85  *    1.36  *
* Max Chl Dpth (ft)      *    2.78  * Hydr. Depth (ft)        *    0.47
*    1.89  *    1.09  *
* Conv. Total (cfs)      *  8754.7  * Conv. (cfs)             *   235.5
*  5337.3  *  3181.9  *
* Length Wtd. (ft)       *  237.00  * Wetted Per. (ft)        *   36.37
*   54.80  *  119.05  *
* Min Ch El (ft)         * 1537.19  * Shear (lb/sq ft)        *    0.09
*    0.36  *    0.21  *
* Alpha                  *    1.51  * Stream Power (lb/ft s) *    0.07
*    1.02  *    0.28  *
* Frctn Loss (ft)        *    1.71  * Cum Volume (acre-ft)    *   24.99
*   35.41  *   34.57  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *    7.84
*    9.59  *    9.17  *
*****************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 1.10

INPUT
Description: CL Lake Pleasant Road Dip Crossing
Station Elevation Data num= 31

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
  9493.8 1544.43  9519.3 1544.38  9692.1  1542.5    9698 1542.47  9742.8
1541.85
  9749.1  1541.7  9789.8 1540.19  9800.6 1539.89  9839.8 1539.23  9870.8
1539
  9871.1 1538.97  9881.9  1538.3  9882.7 1538.29    9890 1538.24  9890.4
1538.23
  9921.5 1537.97  9969.5 1537.22    9972 1537.21 10007.7 1537.22 10012.9
1537.19
```

```
 10060.1 1537.35 10125.4 1538.19   10127 1538.23 10195.4 1539.09 10267.7
1539.79
 10268.8 1539.81 10337.7 1539.91 10413.7 1540.62 10469.2 1540.81 10531.4
1540.67
 10562.6 1539.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9493.8    .064  9921.5    .044 10125.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9921.5 10125.4              136     136     136             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1538.33  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.29  * Wt. n-Val.              *   0.064
*   0.044  *          *
* W.S. Elev (ft)          * 1538.04  * Reach Len. (ft)         *  136.00
*  136.00  *  136.00  *
* Crit W.S. (ft)          * 1538.04  * Flow Area (sq ft)       *    0.26
*  111.19  *          *
* E.G. Slope (ft/ft)      *0.034236  * Area (sq ft)            *    0.26
*  111.19  *          *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *    0.11
*  482.89  *          *
* Top Width (ft)          *  199.71  * Top Width (ft)          *    7.83
*  191.89  *          *
* Vel Total (ft/s)        *    4.33  * Avg. Vel. (ft/s)        *    0.44
*    4.34  *          *
* Max Chl Dpth (ft)       *    0.85  * Hydr. Depth (ft)        *    0.03
*    0.58  *          *
* Conv. Total (cfs)       *  2610.4  * Conv. (cfs)             *     0.6
*  2609.8  *          *
* Length Wtd. (ft)        *  136.00  * Wetted Per. (ft)        *    7.83
*  191.90  *          *
* Min Ch El (ft)          * 1537.19  * Shear (lb/sq ft)        *    0.07
*    1.24  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *    0.03
*    5.38  *          *
* Frctn Loss (ft)         *    2.03  * Cum Volume (acre-ft)    *   24.95
*   34.82  *   34.22  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    7.72
*    8.92  *    8.85  *
************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.07

INPUT
Description:
Station Elevation Data    num=      46
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9684.2 1541.84  9686.2 1541.83  9705.7 1541.61  9763.8 1540.52  9786.6
1540.33
    9789 1540.26  9885.7 1538.11  9890.3  1538.1  9892.7 1538.07  9897.3
1537.95
  9933.5 1537.35  9937.1 1536.96  9948.6 1535.67  9954.2 1535.34  9955.1
1535.25
    9974 1534.96  9975.6 1535.12  9995.8 1535.35 10003.8 1535.32 10007.9
1535.38
 10036.8 1534.92 10056.2  1534.9 10074.3  1535.1 10080.4    1535 10087.3
1534.82
 10088.7 1534.89 10090.2 1534.88 10097.9 1535.14 10130.4 1535.96 10132.4
1536.03
 10132.7 1536.01 10193.2 1537.23 10197.6  1537.4 10201.9 1537.63 10219.8
1538.41
 10235.2 1538.36   10244 1538.59 10268.5 1538.87 10274.5 1539.18 10287.2
1540.23
 10297.5 1541.29 10309.2 1540.44 10310.3 1540.39 10311.8 1540.37   10312
1540.39
 10312.8 1540.39

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9684.2    .064  9948.6    .044 10130.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9948.6 10130.4              386     386     386             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1536.23  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.13  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1536.10  * Reach Len. (ft)         *  386.00
```

```
*  386.00  *  386.00  *
* Crit W.S. (ft)          * 1535.77  * Flow Area (sq ft)       *    0.82
*  166.12  *    0.43  *
* E.G. Slope (ft/ft)      *0.008336  * Area (sq ft)            *    0.82
*  166.12  *    0.43  *
* Q Total (cfs)           *  483.00  * Flow (cfs)              *    0.62
*  482.23  *    0.15  *
* Top Width (ft)          *  192.40  * Top Width (ft)          *    3.83
*  181.80  *    6.76  *
* Vel Total (ft/s)        *    2.89  * Avg. Vel. (ft/s)        *    0.76
*    2.90  *    0.34  *
* Max Chl Dpth (ft)       *    1.28  * Hydr. Depth (ft)        *    0.21
*    0.91  *    0.06  *
* Conv. Total (cfs)       *  5290.2  * Conv. (cfs)             *     6.8
*  5281.8  *     1.6  *
* Length Wtd. (ft)        *  386.00  * Wetted Per. (ft)        *    3.86
*  181.85  *    6.76  *
* Min Ch El (ft)          * 1534.82  * Shear (lb/sq ft)        *    0.11
*    0.48  *    0.03  *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *    0.08
*    1.38  *    0.01  *
* Frctn Loss (ft)         *    3.91  * Cum Volume (acre-ft)    *   24.95
*   34.39  *   34.22  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    7.70
*    8.33  *    8.84  *
*****************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 1.00

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
    9732  1536.1  9787.5 1533.86  9834.5 1532.34  9851.2  1531.9  9869.2
1531.65
  9880.2 1531.56  9883.9  1531.6  9909.7 1531.28    9925  1531.3    9936
1530.79
  9957.3 1530.62  9960.6 1530.54  9985.4 1530.38  9995.3 1529.79  9996.3
1529.69
  9997.6 1529.74 10006.8 1529.84 10038.1 1532.99 10039.7 1533.18 10042.1
1533.41
 10085.1 1535.12 10148.2 1536.95 10170.2 1537.41   10203 1537.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9732    .064  9985.4    .044 10038.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
```

```
Expan.
        9985.4 10038.1              264     264     264              .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1532.31  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.              *   0.064
*   0.044  *          *
* W.S. Elev (ft)          * 1532.05  * Reach Len. (ft)         *  264.00
*  264.00  *  264.00  *
* Crit W.S. (ft)          * 1531.82  * Flow Area (sq ft)       *  123.56
*   69.92  *          *
* E.G. Slope (ft/ft)      *0.011887  * Area (sq ft)            *  123.56
*   69.92  *          *
* Q Total (cfs)           *  641.00  * Flow (cfs)              *  287.82
*  353.19  *          *
* Top Width (ft)          *  183.32  * Top Width (ft)          *  139.95
*   43.37  *          *
* Vel Total (ft/s)        *    3.31  * Avg. Vel. (ft/s)        *    2.33
*    5.05  *          *
* Max Chl Dpth (ft)       *    2.36  * Hydr. Depth (ft)        *    0.88
*    1.61  *          *
* Conv. Total (cfs)       *  5879.1  * Conv. (cfs)             *  2639.8
*  3239.4  *          *
* Length Wtd. (ft)        *  264.00  * Wetted Per. (ft)        *  139.97
*   43.51  *          *
* Min Ch El (ft)          * 1529.69  * Shear (lb/sq ft)        *    0.66
*    1.19  *          *
* Alpha                   *    1.50  * Stream Power (lb/ft s) *    1.53
*    6.02  *          *
* Frctn Loss (ft)         *    3.62  * Cum Volume (acre-ft)    *   24.39
*   33.34  *   34.22  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    7.06
*    7.34  *    8.81  *
**********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.95

INPUT
Description:
Station Elevation Data    num=      40
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
**********************************************************************
********
    9733     1536  9762.1 1535.23  9804.5 1533.68  9825.8 1532.74  9868.2
1530.73
    9871 1530.46  9903.3  1527.6  9904.2 1527.55  9919.2 1526.56  9925.4
1526.59
```

```
    9930  1526.9  9951.5 1527.17  9953.6 1527.21  9974.3  1527.7  9985.6
1527.65
  9999.8 1527.29   10004 1527.09   10011 1527.74 10012.4 1527.83   10013
1527.82
   10021 1527.57 10024.9 1527.42 10027.5 1527.34 10032.7 1527.65 10043.4
1528.41
   10045 1528.43 10049.7  1528.5 10056.6 1528.57 10062.9 1528.97 10071.7
1529.21
 10085.6  1529.4 10089.7 1529.76 10098.9 1530.29 10104.8 1530.67 10108.5
1530.75
 10117.4 1530.66 10127.2 1531.01   10144  1531.3 10204.8 1533.57   10216
1533.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9733    .064  9903.3    .044 10043.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9903.3 10043.4               315     315     315             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1528.69  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.29  * Wt. n-Val.              *   0.064
*   0.044  *          *
* W.S. Elev (ft)          * 1528.39  * Reach Len. (ft)         *  315.00
*  315.00  *  315.00  *
* Crit W.S. (ft)          * 1528.20  * Flow Area (sq ft)       *    3.54
*  145.27  *          *
* E.G. Slope (ft/ft)      *0.015965  * Area (sq ft)            *    3.54
*  145.27  *          *
* Q Total (cfs)           *  641.00  * Flow (cfs)              *    5.59
*  635.41  *          *
* Top Width (ft)          *  148.80  * Top Width (ft)          *    8.95
*  139.85  *          *
* Vel Total (ft/s)        *    4.31  * Avg. Vel. (ft/s)        *    1.58
*    4.37  *          *
* Max Chl Dpth (ft)       *    1.83  * Hydr. Depth (ft)        *    0.40
*    1.04  *          *
* Conv. Total (cfs)       *  5073.0  * Conv. (cfs)             *    44.3
*  5028.8  *          *
* Length Wtd. (ft)        *  315.00  * Wetted Per. (ft)        *    8.98
*  139.99  *          *
* Min Ch El (ft)          * 1526.56  * Shear (lb/sq ft)        *    0.39
*    1.03  *          *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *    0.62
*    4.52  *          *
* Frctn Loss (ft)         *    3.65  * Cum Volume (acre-ft)    *   24.01
*   32.69  *   34.22  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    6.61
*    6.78  *    8.81  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 0.89

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9836.8	1530.13	9857.4	1529.37	9887.6	1528.15	9917.9	1526.67	9945.2	1524.68
9955.2	1524.08	9964	1523.26	9972.8	1522.66	9975.1	1522.72	9982.4	1523.19
9989.5	1523.11	9992.8	1523	9999.8	1522.71	10006	1522.52	10015.2	1522.83
10017.5	1522.88	10029.9	1523.33	10031.1	1523.41	10034.1	1523.34	10045	1523.37
10051.1	1523.27	10052.3	1523.26	10053	1523.35	10066.1	1524.48	10099.4	1526.09
10159.9	1529.4	10190.1	1530.9	10215	1531.93				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9836.8	.064	9982.4	.044	10031.1	.064

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.4	10031.1	222	222	222	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1525.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.064	0.044	0.064
W.S. Elev (ft)	1524.76	Reach Len. (ft)	222.00	222.00	222.00
Crit W.S. (ft)		Flow Area (sq ft)	47.35	89.61	43.09
E.G. Slope (ft/ft)	0.008780	Area (sq ft)	47.35	89.61	43.09
Q Total (cfs)	641.00	Flow (cfs)	118.35	425.64	97.01
Top Width (ft)	127.91	Top Width (ft)	38.34	48.70	40.86
Vel Total (ft/s)	3.56	Avg. Vel. (ft/s)	2.50	4.75	2.25
Max Chl Dpth (ft)	2.24	Hydr. Depth (ft)	1.23	1.84	1.05
Conv. Total (cfs)	6841.0	Conv. (cfs)	1263.1	4542.6	1035.3
Length Wtd. (ft)	222.00	Wetted Per. (ft)	38.44		

```
*   48.73  *   40.93  *
* Min Ch El (ft)          * 1522.52  * Shear (lb/sq ft)       *    0.68
*    1.01  *    0.58  *
* Alpha                   *    1.33  * Stream Power (lb/ft s) *    1.69
*    4.79  *    1.30  *
* Frctn Loss (ft)         *    2.61  * Cum Volume (acre-ft)   *   23.83
*   31.84  *   34.06  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)         *    6.44
*    6.10  *    8.66  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.85

INPUT
Description:
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9768.2 1528.42  9771.6 1528.35  9779.2 1527.86    9793 1527.24  9810.8
1526.6
  9814.4 1526.43  9817.1 1526.41  9857.1 1525.02  9859.9 1524.86  9878.5
1523.53
  9899.9 1522.51  9912.7 1522.05  9943.9  1521.2  9944.1 1521.19  9944.6
1521.19
  9978.4 1520.61    9987 1520.07  9988.9 1519.97  9991.6 1519.87  9998.1
1519.85
 10001.7 1519.82 10007.2 1520.02 10012.8 1519.96 10016.8 1519.83 10021.2
1520.35
 10026.5 1520.92 10029.5 1521.28 10039.1 1522.16 10044.3 1522.54 10052.7
1523.2
 10084.3 1525.05 10095.2 1525.48   10115 1526.41 10137.7 1527.15 10147.2
1527.66
 10157.7 1528.13 10174.1 1529.18 10186.5 1529.65 10202.3 1529.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9768.2    .064  9978.4    .044 10026.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.4 10026.5              266     266     266             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1522.39  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.54  * Wt. n-Val.              *   0.064
```

```
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1521.85  * Reach Len. (ft)        *  266.00
*  266.00  *  266.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *   40.46
*   85.01  *    4.04  *
* E.G. Slope (ft/ft)     *0.016566  * Area (sq ft)           *   40.46
*   85.01  *    4.04  *
* Q Total (cfs)          *  641.00  * Flow (cfs)             *   94.61
*  539.45  *    6.94  *
* Top Width (ft)         *  115.78  * Top Width (ft)         *   58.44
*   48.10  *    9.24  *
* Vel Total (ft/s)       *    4.95  * Avg. Vel. (ft/s)       *    2.34
*    6.35  *    1.72  *
* Max Chl Dpth (ft)      *    2.03  * Hydr. Depth (ft)       *    0.69
*    1.77  *    0.44  *
* Conv. Total (cfs)      *  4980.3  * Conv. (cfs)            *   735.1
*  4191.3  *    53.9  *
* Length Wtd. (ft)       *  266.00  * Wetted Per. (ft)       *   58.46
*   48.19  *    9.29  *
* Min Ch El (ft)         * 1519.82  * Shear (lb/sq ft)       *    0.72
*    1.82  *    0.45  *
* Alpha                  *    1.42  * Stream Power (lb/ft s) *    1.67
*   11.58  *    0.77  *
* Frctn Loss (ft)        *    3.55  * Cum Volume (acre-ft)   *   23.60
*   31.40  *   33.94  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)         *    6.19
*    5.85  *    8.53  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.80

INPUT
Description: Section lines 10 & 15 of T5NR1E
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9767.9 1528.09  9770.5 1527.94  9800.4 1526.65  9801.8 1526.57  9891.8
1522.07
  9921.8 1520.27  9924.6 1520.07  9958.6 1517.85    9961 1517.74  9970.9
1517.08
  9977.3 1516.84  9982.7 1516.52  9993.4 1516.38   10009 1516.33 10015.4
1516.78
 10015.5  1516.8 10015.8  1516.8 10025.3  1516.9 10040.1 1517.35 10041.8
1517.39
 10071.8 1519.99 10101.8 1521.59 10131.8 1523.49 10161.8 1525.18 10191.8
1526.68
 10221.8 1527.99 10251.8 1529.08 10257.4 1529.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
************************************************
  9767.9    .064  9970.9    .044 10040.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9970.9 10040.1              168     168     168             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1518.80  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.38  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1518.42  * Reach Len. (ft)         *  168.00
*  168.00  *  168.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   13.99
*  118.70  *    7.91  *
* E.G. Slope (ft/ft)      *0.010981  * Area (sq ft)            *   13.99
*  118.70  *    7.91  *
* Q Total (cfs)           *  641.00  * Flow (cfs)              *   25.90
*  601.72  *   13.38  *
* Top Width (ft)          *  103.82  * Top Width (ft)          *   21.03
*   69.20  *   13.58  *
* Vel Total (ft/s)        *    4.56  * Avg. Vel. (ft/s)        *    1.85
*    5.07  *    1.69  *
* Max Chl Dpth (ft)       *    2.09  * Hydr. Depth (ft)        *    0.67
*    1.72  *    0.58  *
* Conv. Total (cfs)       *  6116.8  * Conv. (cfs)             *   247.1
*  5742.0  *   127.7  *
* Length Wtd. (ft)        *  168.00  * Wetted Per. (ft)        *   21.07
*   69.24  *   13.63  *
* Min Ch El (ft)          * 1516.33  * Shear (lb/sq ft)        *    0.46
*    1.18  *    0.40  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *    0.84
*    5.96  *    0.67  *
* Frctn Loss (ft)         *    1.36  * Cum Volume (acre-ft)    *   23.44
*   30.78  *   33.90  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *    5.95
*    5.50  *    8.46  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.77

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
```

```
  9814.3 1522.88  9819.4 1522.62  9862.4 1520.16  9883.7 1518.84  9900.9
1517.89
  9915.9 1517.18  9940.6  1515.6  9940.9 1515.57    9946 1514.97  9956.1
1514.37
  9957.6 1514.27  9969.5 1514.82  9970.9 1514.81  9988.2 1515.92  9990.3
1516.07
    9991 1515.98  9999.3 1514.59 10003.5 1514.65 10004.9 1515.45 10008.2
1514.57
   10014 1514.81 10018.4 1514.97   10023 1515.23 10039.6 1517.25 10044.6
1517.82
 10063.2 1518.71 10076.8 1519.53   10109 1521.59   10156  1524.2 10167.2
1524.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9814.3    .064  9990.3    .044 10039.6    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.3 10039.6              260     260     260             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1517.38  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.064
*   0.044  *          *
* W.S. Elev (ft)          * 1517.20  * Reach Len. (ft)         *  260.00
*  260.00  *  260.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  129.31
*   88.05  *          *
* E.G. Slope (ft/ft)      *0.006347  * Area (sq ft)            *  129.31
*   88.05  *          *
* Q Total (cfs)           *  692.00  * Flow (cfs)              *  344.06
*  347.94  *          *
* Top Width (ft)          *  123.67  * Top Width (ft)          *   74.79
*   48.88  *          *
* Vel Total (ft/s)        *    3.18  * Avg. Vel. (ft/s)        *    2.66
*    3.95  *          *
* Max Chl Dpth (ft)       *    2.93  * Hydr. Depth (ft)        *    1.73
*    1.80  *          *
* Conv. Total (cfs)       *  8685.8  * Conv. (cfs)             *  4318.5
*  4367.3  *          *
* Length Wtd. (ft)        *  260.00  * Wetted Per. (ft)        *   74.95
*   49.46  *          *
* Min Ch El (ft)          * 1514.57  * Shear (lb/sq ft)        *    0.68
*    0.71  *          *
* Alpha                   *    1.12  * Stream Power (lb/ft s) *    1.82
*    2.79  *          *
* Frctn Loss (ft)         *    3.11  * Cum Volume (acre-ft)    *   23.16
*   30.38  *   33.89  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    5.77
*    5.27  *    8.44  *
**************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
```

```
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.72

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9762.3 1521.91  9814.6 1517.97  9835.8  1517.2  9843.9  1516.7  9878.3
1514.14
  9892.5 1513.39  9905.2  1512.6  9910.7 1512.35  9914.1 1512.05  9915.6
1512.07
  9920.4 1512.35  9930.2 1512.48  9933.1 1512.76  9939.5 1513.32  9943.2
1513.16
  9964.2 1512.56  9971.9 1512.27  9973.7 1512.29  9989.2  1512.7  9990.6
1512.68
  9991.8 1512.58  9999.3  1511.1 10006.4 1512.41 10012.4  1513.5   10045
1517.83
 10060.9 1518.03 10066.6 1518.06 10069.4 1518.12 10090.6 1519.54 10111.8
1520.76
 10133.1 1521.83 10154.3 1522.71 10163.6    1523

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9762.3    .064  9989.2    .044 10012.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.2 10012.4              243     243     243             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)         * 1514.23  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.52  * Wt. n-Val.             *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1513.72  * Reach Len. (ft)        *  243.00
*  243.00  *  243.00  *
* Crit W.S. (ft)         * 1513.72  * Flow Area (sq ft)      *  103.23
*   35.27  *    0.17  *
* E.G. Slope (ft/ft)     *0.030538  * Area (sq ft)           *  103.23
*   35.27  *    0.17  *
* Q Total (cfs)          *  692.00  * Flow (cfs)             *  419.55
*  272.30  *    0.16  *
* Top Width (ft)         *  127.66  * Top Width (ft)         *  102.85
*   23.20  *    1.62  *
* Vel Total (ft/s)       *    4.99  * Avg. Vel. (ft/s)       *    4.06
```

```
*    7.72  *    0.91  *
* Max Chl Dpth (ft)      *    2.61  * Hydr. Depth (ft)       *    1.00
*    1.52  *    0.11  *
* Conv. Total (cfs)      *  3959.9  * Conv. (cfs)            *  2400.8
*  1558.2  *     0.9  *
* Length Wtd. (ft)       *  243.00  * Wetted Per. (ft)       *  102.97
*   23.57  *    1.63  *
* Min Ch El (ft)         * 1511.10  * Shear (lb/sq ft)       *    1.91
*    2.85  *    0.20  *
* Alpha                  *    1.34  * Stream Power (lb/ft s) *    7.77
*   22.03  *    0.18  *
* Frctn Loss (ft)        *    0.18  * Cum Volume (acre-ft)   *   22.46
*   30.01  *   33.89  *
* C & E Loss (ft)        *    0.16  * Cum SA (acres)         *    5.24
*    5.05  *    8.43  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.67

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9833.8 1518.21  9860.9 1516.34    9907 1512.94  9911.9 1512.52  9928.2
1511.24
  9944.5 1510.26  9958.9 1509.21  9967.5 1508.49  9973.7  1508.9  9976.9
1509.05
  9997.3 1508.41 10016.8  1508.5 10017.6 1508.65 10027.6  1508.7 10027.9
1508.72
 10037.5 1509.26 10045.7 1509.77   10098 1512.71 10129.4 1514.67 10140.4
1515.27
 10150.8 1515.95 10183.1 1517.74
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9833.8    .064  9976.9    .044 10037.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.9 10037.5              334     334     334             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1512.30  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1512.30  * Reach Len. (ft)         *  334.00
*  334.00  *  334.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  132.02
*  219.89  *   79.77  *
* E.G. Slope (ft/ft)      *0.000012  * Area (sq ft)            *  132.02
*  219.89  *   79.77  *
* Q Total (cfs)           *   88.00  * Flow (cfs)              *   17.79
*   61.68  *    8.53  *
* Top Width (ft)          *  176.01  * Top Width (ft)          *   62.20
*   60.60  *   53.21  *
* Vel Total (ft/s)        *    0.20  * Avg. Vel. (ft/s)        *    0.13
*    0.28  *    0.11  *
* Max Chl Dpth (ft)       *    3.89  * Hydr. Depth (ft)        *    2.12
*    3.63  *    1.50  *
* Conv. Total (cfs)       * 25004.7  * Conv. (cfs)             *  5054.0
* 17527.1  *  2423.6  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   62.36
*   60.64  *   53.29  *
* Min Ch El (ft)          * 1508.41  * Shear (lb/sq ft)        *    0.00
*    0.00  *    0.00  *
* Alpha                   *    1.44  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *   21.81
*   29.30  *   33.67  *
* C & E Loss (ft)         *          * Cum SA (acres)          *    4.78
*    4.82  *    8.28  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Note:    The user has entered a known water surface elevation at this
cross section.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.61

INPUT
```

```
Description:
Station Elevation Data     num=       34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9741.4 1520.01  9746.3 1519.82  9778.7 1518.37  9811.2 1516.72  9843.6
1514.93
  9877.2 1512.65  9908.5 1510.17  9923.1 1509.11  9946.1 1506.93  9956.4
1506.65
  9977.3 1505.63  9987.8 1504.52  9988.8  1504.4  9989.5 1504.49 10000.3
1505.7
 10017.5 1505.18 10038.5 1505.11   10045    1505 10045.1    1505 10045.2
1505.01
   10056  1505.6   10084 1506.83 10175.9 1512.63 10194.7 1513.69 10199.7
1514.05
 10200.6 1514.12 10204.7 1514.24   10233 1515.75 10265.5 1518.07 10267.8
1518.17
 10289.8 1518.88 10299.7 1519.35   10308 1519.48   10333 1520.21

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9741.4    .064  9956.4    .044   10084    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9956.4   10084              252     252     252             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1512.30  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1512.30  * Reach Len. (ft)         *  252.00
*  252.00  *  252.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  222.66
*  858.49  *  237.05  *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)            *  222.66
*  858.49  *  237.05  *
* Q Total (cfs)           *   88.00  * Flow (cfs)              *    7.54
*   72.87  *    7.59  *
* Top Width (ft)          *  289.05  * Top Width (ft)          *   74.78
*  127.60  *   86.67  *
* Vel Total (ft/s)        *    0.07  * Avg. Vel. (ft/s)        *    0.03
*    0.08  *    0.03  *
* Max Chl Dpth (ft)       *    7.90  * Hydr. Depth (ft)        *    2.98
*    6.73  *    2.74  *
* Conv. Total (cfs)       *124634.4  * Conv. (cfs)             * 10677.6
*103207.2  * 10749.6  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   75.01
*  127.82  *   86.84  *
* Min Ch El (ft)          * 1504.40  * Shear (lb/sq ft)        *    0.00
*    0.00  *    0.00  *
* Alpha                   *    1.38  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *   20.45
*   25.16  *   32.45  *
```

```
* C & E Loss (ft)        *          * Cum SA (acres)         *    4.25
*    4.10  *    7.74  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Note:    The user has entered a known water surface elevation at this
cross section.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.56

INPUT
Description:
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9681.7 1520.23    9747 1518.26    9762  1517.7  9792.1 1516.51    9795
1516.37
  9828.1 1514.69  9861.2 1512.63  9894.3 1510.18  9927.3 1507.52  9960.4
1504.56
  9982.1 1502.86  9991.2  1502.3 10000.2 1501.55 10000.7 1501.49 10001.4
1501.63
 10006.8 1502.76 10023.4 1502.67 10045.4 1502.42 10056.7 1502.23 10061.5
1502.38
 10074.9 1503.53 10078.2 1503.89 10078.9 1503.89 10086.9 1504.15 10098.3
1504.58
 10125.8 1506.09 10198.6 1510.78 10252.6 1514.08 10293.2 1515.85 10312.7
1516.56
 10356.1 1517.91 10372.7  1518.3 10402.8  1519.7 10450.5 1520.44   10460
1520.53

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9681.7    .064  9960.4    .044 10074.9    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9960.4 10074.9              316     316     316             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1512.30  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1512.30  * Reach Len. (ft)         *  316.00
*  316.00  *  316.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *  351.42
* 1095.35  *  682.75  *
```

```
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)            *  351.42
* 1095.35  *  682.75  *
* Q Total (cfs)           *   88.00  * Flow (cfs)              *    7.47
*   63.76  *   16.77  *
* Top Width (ft)          *  357.82  * Top Width (ft)          *   94.74
*  114.50  *  148.57  *
* Vel Total (ft/s)        *    0.04  * Avg. Vel. (ft/s)        *    0.02
*    0.06  *    0.02  *
* Max Chl Dpth (ft)       *   10.81  * Hydr. Depth (ft)        *    3.71
*    9.57  *    4.60  *
* Conv. Total (cfs)       *229670.2  * Conv. (cfs)             * 19507.3
*166401.0  * 43761.9  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   95.06
*  114.80  *  148.84  *
* Min Ch El (ft)          * 1501.49  * Shear (lb/sq ft)        *    0.00
*    0.00  *    0.00  *
* Alpha                   *    1.53  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *   18.79
*   19.51  *   29.79  *
* C & E Loss (ft)         *          * Cum SA (acres)          *    3.76
*    3.40  *    7.06  *
***********************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: The user has entered a known water surface elevation at this cross section.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 0.50

INPUT
Description:
Station Elevation Data num= 53

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9499.3 1520.19  9548.5 1519.71    9591 1518.91  9654.6  1517.3  9675.8
1516.59
    9712 1515.07  9739.5 1513.77  9767.2 1512.17  9800.1 1510.06  9848.3
1506.83
  9930.3 1500.49  9960.7 1498.79  9966.7 1498.82  9987.7 1498.79  9996.2
1498.6
  9998.5 1498.59 10001.2 1498.89 10004.8 1499.35 10006.9 1499.42 10012.5
1499.19
 10017.5 1499.08 10019.9 1499.25 10029.9 1499.45   10032 1499.33 10035.3
1499.21
 10038.8 1498.92 10047.4 1499.57 10061.5 1501.17 10063.9 1501.51 10066.3
1501.66
 10095.6 1502.78 10096.7 1502.85 10118.1 1504.74 10163.2  1508.1   10208
1510.95
 10214.7  1511.3 10228.6 1511.93   10290 1514.17   10360 1515.94 10438.5
1517.33
```

```
 10442.5 1517.54   10445 1517.58 10461.6 1517.58 10477.7 1517.75 10505.2
1519.28
 10516.9 1518.61 10530.5 1519.13 10533.8  1519.2 10546.4 1519.25 10572.3
1519.53
 10595.9 1519.58 10597.7 1519.57 10708.5 1520.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9499.3    .064  9930.3    .044 10061.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9930.3 10061.5              332     332     332             .3
.5

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1512.30  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1512.30  * Reach Len. (ft)         *  332.00
*  332.00  *  332.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  933.43
* 1704.12  *  948.59  *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)            *  933.43
* 1704.12  *  948.59  *
* Q Total (cfs)           *   88.00  * Flow (cfs)              *   13.31
*   61.63  *   13.06  *
* Top Width (ft)          *  473.79  * Top Width (ft)          *  165.35
*  131.20  *  177.24  *
* Vel Total (ft/s)        *    0.02  * Avg. Vel. (ft/s)        *    0.01
*    0.04  *    0.01  *
* Max Chl Dpth (ft)       *   13.71  * Hydr. Depth (ft)        *    5.65
*   12.99  *    5.35  *
* Conv. Total (cfs)       *453485.0  * Conv. (cfs)             * 68592.1
*317603.3  * 67289.7  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  165.77
*  131.44  *  177.62  *
* Min Ch El (ft)          * 1498.59  * Shear (lb/sq ft)        *    0.00
*    0.00  *    0.00  *
* Alpha                   *    1.62  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *   14.13
*    9.36  *   23.87  *
* C & E Loss (ft)         *          * Cum SA (acres)          *    2.82
*    2.51  *    5.88  *
************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Note:    The user has entered a known water surface elevation at this
cross section.

CROSS SECTION
```

RIVER: NRW5
REACH: NRW5 RS: 0.44

INPUT
Description: U.S. of CAP crossing; 1 - 30" Concrete Pipe
Station Elevation Data num= 136

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9621	1527.56	9621.7	1527.56	9629	1527.55	9637.3	1527.31	9639.5	1527.2
9644.2	1525.52	9644.6	1525.38	9650.5	1521.67	9653.9	1518.96	9657.9	1516.44
9659.3	1515.38	9660.6	1514.92	9669.5	1514.82	9678.8	1514.53	9689.5	1514.66
9691.5	1514.63	9693.5	1514.63	9706.3	1514.5	9708.5	1514.77	9720	1515.44
9722	1515.4	9730.6	1514.52	9733.9	1514.27	9735	1514.25	9749.5	1514.15
9766.2	1513.57	9777.7	1513.37	9787.7	1512.97	9796.8	1512.77	9801.6	1512.44
9816	1510.56	9827.7	1509.74	9837.5	1509.26	9847.2	1508.55	9856.8	1507.92
9872.3	1506.26	9877.8	1505.77	9891.6	1504.81	9902.3	1504	9916	1502.27
9932.8	1501.54	9937.4	1501.06	9952.7	1499.74	9954.5	1499.69	9960.2	1499.58
9975.7	1498.97	9985.1	1498.75	9993.7	1498.27	9996.7	1497.96	9998.5	1495.83
10000.3	1495.83	10002.5	1495.83	10004.8	1497.81	10006.9	1498	10010.4	1498.03
10027.3	1497.7	10027.7	1497.7	10048.9	1497.7	10049.3	1497.71	10079.6	1498.86
10080.5	1498.88	10082.2	1498.93	10103.2	1499.8	10122.4	1499.95	10125.8	1500.18
10130.1	1500.47	10155.2	1501.77	10164.4	1502.41	10164.9	1502.43	10170.9	1502.85
10179.2	1503.52	10192.3	1503.91	10200.3	1504.37	10216.9	1505.6	10220.2	1505.69
10240.1	1507.48	10240.4	1507.5	10257.6	1507.81	10259.5	1507.87	10281.6	1509.49
10303.1	1510.49	10305	1510.6	10328.2	1512.49	10332.2	1512.67	10348.1	1513.3
10349.8	1513.43	10371.5	1514.17	10372.8	1514.19	10400.3	1514.59	10400.9	1514.6
10422.8	1515.77	10424.1	1515.79	10444.5	1515.9	10444.8	1515.91	10463.5	1516.13
10466.3	1516.24	10502.2	1517.42	10507.5	1517.44	10539.5	1517.94	10564.6	1518.08
10588	1518.32	10605	1518.34	10625.1	1518.41	10635.5	1518.51	10644.9	1518.56
10650.1	1518.21	10657	1518.82	10666.3	1518.65	10669.3	1518.23	10672.7	1518.25
10675.4	1518.23	10692.1	1518.42	10698.2	1518.4	10719.2	1518.48	10724.8	1518.66
10740.1	1518.71	10743	1518.65	10749.5	1518.74	10781.5	1518.96	10787.5	1518.92
10813.2	1519	10818.7	1519.05	10824.4	1519.24	10848.2	1519.26	10852.6	1519.15

```
 10859.4 1519.17 10880.8  1519.4 10886.9 1519.51 10928.7 1519.73 10937.1
1520.08
 10938.3 1520.06 10939.1 1520.07   10946 1519.92 10964.5 1520.14 10967.1
1520.15
 10992.1  1520.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9621    .064  9993.7    .044 10006.9    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.7 10006.9              260     260     260             .3
.5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    9621    9955 1526.47       F
   10045 10992.1 1526.49       F

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1512.30  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1512.30  * Reach Len. (ft)         *  260.00
*  260.00  *  260.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  512.71
*  202.00  *  552.37  *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)            * 1507.22
*  202.00  * 2866.47  *
* Q Total (cfs)           *   88.00  * Flow (cfs)              *   32.29
*   18.76  *   36.96  *
* Top Width (ft)          *  523.20  * Top Width (ft)          *  191.03
*   13.20  *  318.97  *
* Vel Total (ft/s)        *    0.07  * Avg. Vel. (ft/s)        *    0.06
*    0.09  *    0.07  *
* Max Chl Dpth (ft)       *   16.47  * Hydr. Depth (ft)        *   13.25
*   15.30  *   14.50  *
* Conv. Total (cfs)       *181563.4  * Conv. (cfs)             * 66614.8
* 38701.9  * 76246.7  *
* Length Wtd. (ft)        *  260.00  * Wetted Per. (ft)        *   38.73
*   14.95  *   38.10  *
* Min Ch El (ft)          * 1495.83  * Shear (lb/sq ft)        *    0.00
*    0.00  *    0.00  *
* Alpha                   *    1.07  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *    4.83
*    2.09  *    9.34  *
* C & E Loss (ft)         *          * Cum SA (acres)          *    1.46
*    1.96  *    3.99  *
************************************************************************
************************

Note:    The user has entered a known water surface elevation at this
cross section.

CULVERT
```

```
RIVER: NRW5
REACH: NRW5                RS: 0.42

INPUT
Description: CL CAP canal; top of culvert crossing
Distance from Upstream XS =      3.5
Deck/Roadway Width        =      243
Weir Coefficient          =        3
Upstream  Deck/Roadway Coordinates
    num=        8
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
*****************************************************************************
  9650.6 1526.29 1477.38  9989.8 1526.49 1477.38 10123.5 1526.45 1477.38
 10473.1 1526.01 1477.38 10542.3  1526.3 1477.38 10633.8  1526.2 1477.38
 10681.8  1525.7 1477.38 11035.7  1526.2 1477.38

Upstream Bridge Cross Section Data
Station Elevation Data    num=      136
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
    9621 1527.56  9621.7 1527.56    9629 1527.55  9637.3 1527.31  9639.5
1527.2
  9644.2 1525.52  9644.6 1525.38  9650.5 1521.67  9653.9 1518.96  9657.9
1516.44
  9659.3 1515.38  9660.6 1514.92  9669.5 1514.82  9678.8 1514.53  9689.5
1514.66
  9691.5 1514.63  9693.5 1514.63  9706.3  1514.5  9708.5 1514.77    9720
1515.44
    9722  1515.4  9730.6 1514.52  9733.9 1514.27    9735 1514.25  9749.5
1514.15
  9766.2 1513.57  9777.7 1513.37  9787.7 1512.97  9796.8 1512.77  9801.6
1512.44
    9816 1510.56  9827.7 1509.74  9837.5 1509.26  9847.2 1508.55  9856.8
1507.92
  9872.3 1506.26  9877.8 1505.77  9891.6 1504.81  9902.3    1504    9916
1502.27
  9932.8 1501.54  9937.4 1501.06  9952.7 1499.74  9954.5 1499.69  9960.2
1499.58
  9975.7 1498.97  9985.1 1498.75  9993.7 1498.27  9997.5 1499.58  9997.5
1495.83
   10000 1495.83 10002.5 1495.83 10002.5 1499.58 10006.9    1498 10010.4
1498.03
 10027.3  1497.7 10027.7  1497.7 10048.9  1497.7 10049.3 1497.71 10079.6
1498.86
 10080.5 1498.88 10082.2 1498.93 10103.2  1499.8 10122.4 1499.95 10125.8
1500.18
 10130.1 1500.47 10155.2 1501.77 10164.4 1502.41 10164.9 1502.43 10170.9
1502.85
 10179.2 1503.52 10192.3 1503.91 10200.3 1504.37 10216.9  1505.6 10220.2
1505.69
 10240.1 1507.48 10240.4  1507.5 10257.6 1507.81 10259.5 1507.87 10281.6
1509.49
 10303.1 1510.49   10305  1510.6 10328.2 1512.49 10332.2 1512.67 10348.1
1513.3
 10349.8 1513.43 10371.5 1514.17 10372.8 1514.19 10400.3 1514.59 10400.9
1514.6
 10422.8 1515.77 10424.1 1515.79 10444.5  1515.9 10444.8 1515.91 10463.5
1516.13
```

```
 10466.3 1516.24 10502.2 1517.42 10507.5 1517.44 10539.5 1517.94 10564.6
1518.08
   10588 1518.32   10605 1518.34 10625.1 1518.41 10635.5 1518.51 10644.9
1518.56
 10650.1 1518.21   10657 1518.82 10666.3 1518.65 10669.3 1518.23 10672.7
1518.25
 10675.4 1518.23 10692.1 1518.42 10698.2  1518.4 10719.2 1518.48 10724.8
1518.66
 10740.1 1518.71   10743 1518.65 10749.5 1518.74 10781.5 1518.96 10787.5
1518.92
 10813.2    1519 10818.7 1519.05 10824.4 1519.24 10848.2 1519.26 10852.6
1519.15
 10859.4 1519.17 10880.8  1519.4 10886.9 1519.51 10928.7 1519.73 10937.1
1520.08
 10938.3 1520.06 10939.1 1520.07   10946 1519.92 10964.5 1520.14 10967.1
1520.15
 10992.1  1520.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9621    .064  9993.7    .044 10006.9    .064

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9997.5 10002.5             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    9621    9955 1526.47       F
   10045 10992.1 1526.49       F

Downstream  Deck/Roadway Coordinates
    num=       8
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
  9650.6 1526.29 1473.04  9989.8 1526.49 1473.04 10123.5 1526.45 1473.04
 10473.1 1526.01 1473.04 10542.3  1526.3 1473.04 10633.8  1526.2 1473.04
 10681.8  1525.7 1473.04 11035.7  1526.2 1473.04

Downstream Bridge Cross Section Data
Station Elevation Data    num=     126
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9708.1 1518.63  9709.6 1518.47  9712.1 1518.38  9719.1 1517.13  9720.1
1517
  9739.8 1516.78  9745.1  1516.8  9755.9  1516.7  9763.3  1516.8  9774.6
1517.41
  9778.6 1517.58    9787 1518.16  9790.3 1518.26  9803.5 1518.03  9806.4
1518.04
  9810.8 1517.86  9813.3 1517.66  9816.1 1516.92  9821.5 1515.03  9825.8
1513.76
  9829.8    1512  9830.4 1511.81  9830.7 1511.73  9838.6 1509.37  9842.4
1507.91
  9846.2 1507.46  9858.9 1504.13  9860.2 1504.04  9866.8 1503.53  9869.7
1503.47
  9880.9 1502.53  9882.6 1502.36    9897 1501.13  9909.4 1500.28  9914.1
1499.88
  9922.6 1498.93  9931.4 1498.35  9934.8 1498.22  9943.6 1497.48  9950.1
1497.44
  9964.4 1496.22  9968.7 1495.78  9983.3 1494.66  9984.9 1494.44  9986.9
```

```
1494.06
  9997.5 1493.74  9997.5 1489.99   10000 1489.99 10002.5 1489.99 10002.5
1493.74
 10018.7    1494 10019.2 1494.05 10020.2 1494.03   10026 1494.46 10033.1
1494.48
 10044.9 1494.27 10046.5 1494.28 10052.1 1494.37 10058.7 1494.66 10064.2
1494.85
 10076.2  1495.2 10102.7  1495.8 10105.6 1495.89   10106 1495.92 10107.2
1496.01
 10114.8  1496.6 10125.6 1497.53 10127.3 1497.71   10131 1497.99 10144.6
1499.1
 10154.3 1499.63 10159.6  1500.1 10172.2 1501.18 10173.2  1501.3 10184.1
1502.69
 10187.5 1503.07 10201.1  1504.1 10204.9  1504.6 10205.1 1504.62 10205.9
1504.67
 10212.1 1504.88 10224.7 1505.67 10239.3  1506.7 10250.2 1507.54 10255.3
1508
 10268.3 1508.98 10281.4 1509.86 10293.5 1510.15   10306 1510.75 10316.9
1510.51
 10329.6 1510.74 10337.8 1511.37 10358.4 1512.54 10372.7 1512.79 10380.9
1512.98
 10397.2 1513.56 10412.2  1513.7 10419.9 1513.92 10429.1 1514.11 10441.3
1514.62
   10467 1515.22 10493.7 1515.59 10512.1 1515.54 10516.7 1515.55 10538.4
1515.87
 10547.5 1515.83 10558.4 1515.94   10582 1516.07 10594.5 1516.32 10603.4
1516.56
 10633.5 1516.61 10662.4 1516.47 10680.6 1516.49 10691.7 1516.62 10720.9
1516.64
 10736.2 1516.77   10737 1516.78 10760.1 1516.76 10772.5 1517.01 10797.7
1517
 10804.9 1516.85 10834.4 1517.09 10912.8 1517.19 11030.2 1517.96 11033.3
1518.07
 11059.2 1518.67

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9708.1    .064  9984.9    .044   10026    .064

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9997.5 10002.5             .3        .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9708.1    9955 1526.47       F
   10045 11059.2 1526.49       F

Upstream Embankment side slope              =       1 horiz. to 1.0
vertical
Downstream Embankment side slope            =       1 horiz. to 1.0
vertical
Maximum allowable submergence for weir flow =
Elevation at which weir flow begins         =       0
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name     Shape      Rise    Span
Culvert #1      Circular     2.5
```

```
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
Solution Criteria = Inlet control
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance
Loss Coef   Exit Loss Coef
                3.5     243     .015     .015        0
.5                1
Upstream   Elevation =  1495.83
           Centerline Station =  10000
Downstream Elevation =  1489.99
           Centerline Station =  10000

CULVERT OUTPUT  Profile #100-Year  Culv Group:  Culvert #1
***********************************************************************
*
* Q Culv Group (cfs)     *   88.00  * Culv Full Len (ft)     *  243.00
*
* # Barrels              *       1  * Culv Vel US (ft/s)     *   17.93
*
* Q Barrel (cfs)         *   88.00  * Culv Vel DS (ft/s)     *   17.93
*
* E.G. US. (ft)          * 1510.27  * Culv Inv El Up (ft)    * 1495.83
*
* W.S. US. (ft)          * 1512.30  * Culv Inv El Dn (ft)    * 1489.99
*
* E.G. DS (ft)           * 1491.49  * Culv Frctn Ls (ft)     *   10.29
*
* W.S. DS (ft)           * 1491.15  * Culv Exit Loss (ft)    *    5.99
*
* Delta EG (ft)          *   18.78  * Culv Entr Loss (ft)    *    2.50
*
* Delta WS (ft)          *   21.15  * Q Weir (cfs)           *
*
* E.G. IC (ft)           * 1510.27  * Weir Sta Lft (ft)      *
*
* E.G. OC (ft)           * 1514.87  * Weir Sta Rgt (ft)      *
*
* Culvert Control        *   Inlet  * Weir Submerg           *
*
* Culv WS Inlet (ft)     * 1498.33  * Weir Max Depth (ft)    *
*
* Culv WS Outlet (ft)    * 1492.49  * Weir Avg Depth (ft)    *
*
* Culv Nml Depth (ft)    *    2.50  * Weir Flow Area (sq ft) *
*
* Culv Crt Depth (ft)    *    2.50  * Min El Weir Flow (ft)  * 1526.48
*
***********************************************************************
*

Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid,
         energy was used.
Note:    The user has entered known energy, a known water surface, or a
change in water surface.
         Therefore, no hydraulic properties were computed through the
culvert.
Note:    Culvert critical depth exceeds the height of the culvert.

CROSS SECTION
```

RIVER: NRW5
REACH: NRW5 RS: 0.39

INPUT
Description: 8.0 D.S. of CAP crossing; 1 - 30" Concrete Pipe
Station Elevation Data num= 127

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9708.1	1518.63	9709.6	1518.47	9712.1	1518.38	9719.1	1517.13	9720.1	1517
9739.8	1516.78	9745.1	1516.8	9755.9	1516.7	9763.3	1516.8	9774.6	1517.41
9778.6	1517.58	9787	1518.16	9790.3	1518.26	9803.5	1518.03	9806.4	1518.04
9810.8	1517.86	9813.3	1517.66	9816.1	1516.92	9821.5	1515.03	9825.8	1513.76
9829.8	1512	9830.4	1511.81	9830.7	1511.73	9838.6	1509.37	9842.4	1507.91
9846.2	1507.46	9858.9	1504.13	9860.2	1504.04	9866.8	1503.53	9869.7	1503.47
9880.9	1502.53	9882.6	1502.36	9897	1501.13	9909.4	1500.28	9914.1	1499.88
9922.6	1498.93	9931.4	1498.35	9934.8	1498.22	9943.6	1497.48	9950.1	1497.44
9964.4	1496.22	9968.7	1495.78	9983.3	1494.66	9984.9	1494.44	9986.9	1494.06
9992.5	1489.99	9998.5	1489.99	10007.5	1489.99	10010.3	1493.3	10011.9	1493.33
10013.4	1493.54	10018.7	1494	10019.2	1494.05	10020.2	1494.03	10026	1494.46
10033.1	1494.48	10044.9	1494.27	10046.5	1494.28	10052.1	1494.37	10058.7	1494.66
10064.2	1494.85	10076.2	1495.2	10102.7	1495.8	10105.6	1495.89	10106	1495.92
10107.2	1496.01	10114.8	1496.6	10125.6	1497.53	10127.3	1497.71	10131	1497.99
10144.6	1499.1	10154.3	1499.63	10159.6	1500.1	10172.2	1501.18	10173.2	1501.3
10184.1	1502.69	10187.5	1503.07	10201.1	1504.1	10204.9	1504.6	10205.1	1504.62
10205.9	1504.67	10212.1	1504.88	10224.7	1505.67	10239.3	1506.7	10250.2	1507.54
10255.3	1508	10268.3	1508.98	10281.4	1509.86	10293.5	1510.15	10306	1510.75
10316.9	1510.51	10329.6	1510.74	10337.8	1511.37	10358.4	1512.54	10372.7	1512.79
10380.9	1512.98	10397.2	1513.56	10412.2	1513.7	10419.9	1513.92	10429.1	1514.11
10441.3	1514.62	10467	1515.22	10493.7	1515.59	10512.1	1515.54	10516.7	1515.55
10538.4	1515.87	10547.5	1515.83	10558.4	1515.94	10582	1516.07	10594.5	1516.32
10603.4	1516.56	10633.5	1516.61	10662.4	1516.47	10680.6	1516.49	10691.7	1516.62
10720.9	1516.64	10736.2	1516.77	10737	1516.78	10760.1	1516.76	10772.5	1517.01
10797.7	1517	10804.9	1516.85	10834.4	1517.09	10912.8	1517.19	11030.2	1517.96

```
 11033.3 1518.07 11059.2 1518.67

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9708.1    .064  9984.9    .044   10026    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.9   10026              266     266     266             .3
.5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9708.1    9955 1526.47       F
   10045 11059.2 1526.49       F

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)         * 1491.49  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.34  * Wt. n-Val.             *
*   0.044  *          *
* W.S. Elev (ft)         * 1491.15  * Reach Len. (ft)        *  266.00
*  266.00  *  266.00  *
* Crit W.S. (ft)         * 1491.00  * Flow Area (sq ft)      *
*   18.84  *          *
* E.G. Slope (ft/ft)     *0.018662  * Area (sq ft)           *
*   18.84  *          *
* Q Total (cfs)          *   88.00  * Flow (cfs)             *
*   88.00  *          *
* Top Width (ft)         *   17.57  * Top Width (ft)         *
*   17.57  *          *
* Vel Total (ft/s)       *    4.67  * Avg. Vel. (ft/s)       *
*    4.67  *          *
* Max Chl Dpth (ft)      *    1.16  * Hydr. Depth (ft)       *
*    1.07  *          *
* Conv. Total (cfs)      *   644.2  * Conv. (cfs)            *
*   644.2  *          *
* Length Wtd. (ft)       *  266.00  * Wetted Per. (ft)       *
*   18.48  *          *
* Min Ch El (ft)         * 1489.99  * Shear (lb/sq ft)       *
*    1.19  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *
*    5.55  *          *
* Frctn Loss (ft)        *    2.20  * Cum Volume (acre-ft)   *    0.33
*    1.43  *    0.78  *
* C & E Loss (ft)        *    0.14  * Cum SA (acres)         *    0.89
*    1.86  *    3.04  *
************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid,
```

```
          energy was used.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.34

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9864.9 1492.38  9879.7 1491.46  9886.4 1491.09  9910.2 1489.96  9912.1
1489.89
  9937.8 1488.74  9940.8 1488.64  9971.3 1488.18    9992 1488.58  9992.6
1488.51
 10001.3 1487.43 10006.9 1488.28 10008.2 1488.46 10010.1 1488.76 10024.8
1491.55
 10062.8 1493.83 10117.8 1498.38 10118.5 1498.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9864.9    .064    9992    .044 10010.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9992 10010.1              280     280     280             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1489.14  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1489.09  * Reach Len. (ft)         *  280.00
*  280.00  *  280.00  *
* Crit W.S. (ft)          * 1488.74  * Flow Area (sq ft)       *   38.07
*   18.85  *    0.29  *
* E.G. Slope (ft/ft)      *0.004651  * Area (sq ft)            *   38.07
*   18.85  *    0.29  *
* Q Total (cfs)           *   88.00  * Flow (cfs)              *   43.52
*   44.34  *    0.14  *
* Top Width (ft)          *   81.89  * Top Width (ft)          *   62.05
*   18.10  *    1.74  *
* Vel Total (ft/s)        *    1.54  * Avg. Vel. (ft/s)        *    1.14
*    2.35  *    0.47  *
* Max Chl Dpth (ft)       *    1.66  * Hydr. Depth (ft)        *    0.61
*    1.04  *    0.17  *
* Conv. Total (cfs)       *  1290.3  * Conv. (cfs)             *   638.1
*   650.2  *     2.0  *
* Length Wtd. (ft)        *  280.00  * Wetted Per. (ft)        *   62.06
*   18.27  *    1.78  *
* Min Ch El (ft)          * 1487.43  * Shear (lb/sq ft)        *    0.18
*    0.30  *    0.05  *
* Alpha                   *    1.45  * Stream Power (lb/ft s) *    0.20
```

```
*    0.70  *    0.02  *
* Frctn Loss (ft)        *    2.39  * Cum Volume (acre-ft)   *    0.21
*    1.32  *    0.78  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    0.70
*    1.75  *    3.03  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.29

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9876.9 1491.64  9925.9 1488.38  9932.9 1487.97  9961.5  1486.7  9966.1
1486.52
  9967.5 1486.44    9971 1486.36  9975.1 1486.11  9976.7 1486.06  9988.9
1485.24
   10000 1485.71 10002.2 1485.79 10005.9 1485.88 10012.4  1486.2 10039.9
1487.13
 10044.8 1487.16 10064.2  1487.7 10064.5 1487.71 10086.4 1489.19 10098.8
1490.13
 10143.6 1493.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9876.9    .064  9975.1    .044 10012.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.1 10012.4              318     318     318             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1486.75  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.21  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1486.53  * Reach Len. (ft)         *  318.00
*  318.00  *  318.00  *
* Crit W.S. (ft)         * 1486.39  * Flow Area (sq ft)       *    1.77
*   30.77  *    1.65  *
* E.G. Slope (ft/ft)     *0.015816  * Area (sq ft)            *    1.77
*   30.77  *    1.65  *
* Q Total (cfs)          *  118.00  * Flow (cfs)              *    1.70
*  114.84  *    1.46  *
* Top Width (ft)         *   56.52  * Top Width (ft)          *    9.35
```

```
*   37.30  *    9.87  *
* Vel Total (ft/s)       *    3.45  * Avg. Vel. (ft/s)       *    0.96
*    3.73  *    0.88  *
* Max Chl Dpth (ft)      *    1.29  * Hydr. Depth (ft)       *    0.19
*    0.82  *    0.17  *
* Conv. Total (cfs)      *   938.3  * Conv. (cfs)            *    13.5
*   913.1  *    11.6  *
* Length Wtd. (ft)       *  318.00  * Wetted Per. (ft)       *    9.36
*   37.35  *    9.87  *
* Min Ch El (ft)         * 1485.24  * Shear (lb/sq ft)       *    0.19
*    0.81  *    0.16  *
* Alpha                  *    1.14  * Stream Power (lb/ft s) *    0.18
*    3.04  *    0.15  *
* Frctn Loss (ft)        *    4.19  * Cum Volume (acre-ft)   *    0.08
*    1.16  *    0.77  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    0.47
*    1.58  *    2.99  *
***********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.23

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9810.2  1490.1  9837.2 1488.38  9897.2 1484.95  9911.7 1483.97  9957.2
1482.27
    9980 1482.71  9987.1 1482.69  9987.8 1482.49  9997.9 1481.01 10002.1
1480.91
   10006 1480.64 10009.8 1480.81 10012.8 1480.99 10022.7 1483.58 10030.6
1485.24
 10041.8  1485.6 10057.5 1486.01 10077.3    1487 10107.3 1489.04 10115.9
1489.67
 10181.6 1494.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9810.2    .064  9987.1    .044 10022.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.1 10022.7              319     319     319             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***********************************************************************
************************
* E.G. Elev (ft)         * 1482.55  * Element                 *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.22  * Wt. n-Val.             *   0.064
*   0.044  *          *
* W.S. Elev (ft)         * 1482.33  * Reach Len. (ft)        *  319.00
*  319.00  *  319.00  *
* Crit W.S. (ft)         * 1481.98  * Flow Area (sq ft)      *    0.13
*   31.50  *          *
* E.G. Slope (ft/ft)     *0.011159  * Area (sq ft)           *    0.13
*   31.50  *          *
* Q Total (cfs)          *  118.00  * Flow (cfs)             *    0.03
*  117.97  *          *
* Top Width (ft)         *   33.49  * Top Width (ft)         *    4.49
*   29.00  *          *
* Vel Total (ft/s)       *    3.73  * Avg. Vel. (ft/s)       *    0.23
*    3.74  *          *
* Max Chl Dpth (ft)      *    1.69  * Hydr. Depth (ft)       *    0.03
*    1.09  *          *
* Conv. Total (cfs)      *  1117.1  * Conv. (cfs)            *     0.3
*  1116.8  *          *
* Length Wtd. (ft)       *  319.00  * Wetted Per. (ft)       *    4.49
*   29.29  *          *
* Min Ch El (ft)         * 1480.64  * Shear (lb/sq ft)       *    0.02
*    0.75  *          *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *    0.00
*    2.81  *          *
* Frctn Loss (ft)        *    1.91  * Cum Volume (acre-ft)   *    0.08
*    0.93  *    0.77  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *    0.42
*    1.33  *    2.96  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.17

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9767.9 1489.87  9778.5 1489.03  9812.9 1486.54  9838.6 1484.25  9850.5
1482.54
  9854.7 1482.09  9876.4 1481.65  9887.5 1481.32  9909.5 1481.32  9916.3
1481.24
  9931.5 1481.19  9943.6  1480.9    9954 1480.83  9957.9 1480.38  9960.9
1480.12
  9967.7 1480.32  9975.6  1480.6  9980.9 1480.35  9989.3    1480 10003.9
```

```
1477.75
 10004.2  1477.7 10004.3 1477.74 10015.1 1480.17 10038.7  1481.1 10058.3
1482
 10083.5  1484.5 10088.7 1484.98 10142.9 1488.98

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9767.9    .064  9989.3    .044 10015.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.3 10015.1              220     220     220             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1480.60  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1480.49  * Reach Len. (ft)         *  220.00
*  220.00  *  220.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    5.74
*   41.13  *    1.26  *
* E.G. Slope (ft/ft)      *0.003736  * Area (sq ft)            *    5.74
*   41.13  *    1.26  *
* Q Total (cfs)           *  118.00  * Flow (cfs)              *    2.95
*  114.53  *    0.52  *
* Top Width (ft)          *   60.42  * Top Width (ft)          *   26.63
*   25.80  *    7.99  *
* Vel Total (ft/s)        *    2.45  * Avg. Vel. (ft/s)        *    0.51
*    2.78  *    0.41  *
* Max Chl Dpth (ft)       *    2.79  * Hydr. Depth (ft)        *    0.22
*    1.59  *    0.16  *
* Conv. Total (cfs)       *  1930.6  * Conv. (cfs)             *    48.3
*  1873.8  *     8.5  *
* Length Wtd. (ft)        *  220.00  * Wetted Per. (ft)        *   26.66
*   26.25  *    8.00  *
* Min Ch El (ft)          * 1477.70  * Shear (lb/sq ft)        *    0.05
*    0.37  *    0.04  *
* Alpha                   *    1.25  * Stream Power (lb/ft s) *    0.03
*    1.02  *    0.02  *
* Frctn Loss (ft)         *    1.33  * Cum Volume (acre-ft)    *    0.06
*    0.67  *    0.76  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.31
*    1.13  *    2.93  *
**************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW5
REACH: NRW5                RS: 0.12

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9848.5  1485.7  9866.3 1484.45  9900.9  1482.4  9921.2 1481.43  9930.7
1479.88
  9935.4 1479.32  9946.1 1479.07  9978.9 1478.66  9981.6 1478.54  9994.6
1478.07
  9997.9 1478.39 10005.8 1478.98 10014.4  1479.2 10018.4 1478.77 10020.5
1478.52
 10022.5  1478.9 10028.4  1479.6 10039.9 1479.19 10046.7 1478.87 10061.1
1478.6
 10064.6 1478.57 10075.4 1478.89 10099.7 1479.47 10100.5  1479.5 10100.9
1479.5
 10143.2 1478.55 10147.5 1478.58 10159.7 1478.88 10182.5  1480.8 10192.6
1481.78
 10201.4  1482.5 10234.4 1484.47 10234.8 1484.49 10234.9  1484.5 10235.4
1484.52
 10259.1 1485.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9848.5    .064  9946.1    .044 10014.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9946.1 10014.4              236     236     236             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1479.25  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1479.20  * Reach Len. (ft)         *  236.00
*  236.00  *  236.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    0.33
*   32.11  *   38.40  *
* E.G. Slope (ft/ft)      *0.011390  * Area (sq ft)            *    0.33
*   32.11  *   38.40  *
* Q Total (cfs)           *  118.00  * Flow (cfs)              *    0.13
*   70.06  *   47.81  *
* Top Width (ft)          *  181.34  * Top Width (ft)          *    5.34
*   68.10  *  107.89  *
* Vel Total (ft/s)        *    1.67  * Avg. Vel. (ft/s)        *    0.39
*    2.18  *    1.25  *
* Max Chl Dpth (ft)       *    1.12  * Hydr. Depth (ft)        *    0.06
*    0.47  *    0.36  *
* Conv. Total (cfs)       *  1105.7  * Conv. (cfs)             *     1.2
*   656.5  *   448.0  *
```

```
* Length Wtd. (ft)        *  236.00  * Wetted Per. (ft)        *    5.35
*   68.15  *  108.03  *
* Min Ch El (ft)          * 1478.07  * Shear (lb/sq ft)        *    0.04
*    0.33  *    0.25  *
* Alpha                   *    1.25  * Stream Power (lb/ft s) *    0.02
*    0.73  *    0.31  *
* Frctn Loss (ft)         *    2.20  * Cum Volume (acre-ft)    *    0.04
*    0.48  *    0.66  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.22
*    0.90  *    2.64  *
*************************************************************************
************************
```

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW5
REACH: NRW5 RS: 0.08

INPUT
Description: East Section 15 Line T5NR1E
Station Elevation Data num= 59

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9756.5 1483.95    9759 1483.81  9765.4 1483.55    9789  1482.2  9795.7
1481.95
    9819 1480.78    9849 1479.78    9879 1478.97  9886.8 1478.82    9909
1478.22
  9911.1 1478.18  9920.7 1478.13  9937.1 1477.92  9955.8 1476.96  9964.4
1476.7
  9970.8 1476.73  9984.8 1476.89  9998.6 1476.36 10003.1 1476.24 10009.7
1476.21
 10018.2 1476.26 10023.5  1476.1 10028.2 1476.15 10035.4 1476.09 10039.9
1476.69
 10045.5 1477.27 10052.9 1476.85 10058.3  1476.6   10067 1476.68 10068.8
1476.71
 10077.6 1476.75 10085.2 1476.87 10088.7  1476.8 10089.9 1476.65 10095.3
1476.2
 10101.9 1476.52 10109.3 1476.95 10117.3  1476.9 10125.2 1476.89 10137.4
1477.37
 10142.1 1477.26 10176.6 1477.02 10242.1 1476.79 10266.9 1476.86 10276.1
1476.94
 10316.9 1476.47 10319.4 1476.73 10332.2 1477.79 10334.3 1477.79 10353.2
1478.75
 10359.1 1479.13 10366.9 1479.44 10387.3 1481.12 10393.3 1481.58 10395.3
1481.7
 10424.4 1483.97 10426.8 1484.24 10428.4 1484.33 10484.9  1488.2
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9756.5    .064  9984.8    .044 10045.5    .064
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.

```
Expan.
        9984.8 10045.5              383     383     383             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1477.04  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *   0.064
*   0.044  *   0.064  *
* W.S. Elev (ft)          * 1476.99  * Reach Len. (ft)         *  383.00
*  383.00  *  383.00  *
* Crit W.S. (ft)          * 1476.81  * Flow Area (sq ft)       *    5.62
*   37.27  *   43.47  *
* E.G. Slope (ft/ft)      *0.007790  * Area (sq ft)            *    5.62
*   37.27  *   43.47  *
* Q Total (cfs)           *  118.00  * Flow (cfs)              *    3.81
*   82.69  *   31.51  *
* Top Width (ft)          *  301.69  * Top Width (ft)          *   29.55
*   57.98  *  214.16  *
* Vel Total (ft/s)        *    1.37  * Avg. Vel. (ft/s)        *    0.68
*    2.22  *    0.72  *
* Max Chl Dpth (ft)       *    0.90  * Hydr. Depth (ft)        *    0.19
*    0.64  *    0.20  *
* Conv. Total (cfs)       *  1337.0  * Conv. (cfs)             *    43.1
*   936.9  *   357.0  *
* Length Wtd. (ft)        *  383.00  * Wetted Per. (ft)        *   29.56
*   58.05  *  214.25  *
* Min Ch El (ft)          * 1476.09  * Shear (lb/sq ft)        *    0.09
*    0.31  *    0.10  *
* Alpha                   *    1.93  * Stream Power (lb/ft s) *    0.06
*    0.69  *    0.07  *
* Frctn Loss (ft)         *    3.32  * Cum Volume (acre-ft)    *    0.02
*    0.29  *    0.44  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.13
*    0.56  *    1.76  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW5
REACH: NRW5                RS: 0.01

INPUT
Description: D.S. Limit of Study
Station Elevation Data    num=      66
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9619.9 1476.31  9625.8 1476.38  9636.3 1476.21  9647.6 1475.82  9652.6
1475.82
  9667.8 1475.58  9670.1 1475.52  9685.5 1475.35  9689.6 1475.47  9703.1
```

```
1475.58
    9704 1475.55  9705.3 1475.55  9714.7 1475.18  9738.2 1475.13  9768.5
1474.8
  9939.5 1473.82    9945 1473.85  9963.6 1473.53    9965 1473.48  9997.4
1472.95
   10000 1472.69   10011 1473.19   10012 1473.23 10013.2 1473.26 10024.5
1473.75
   10038  1473.9 10053.7 1473.94 10063.5 1473.88 10066.3 1473.83 10082.8
1473.72
 10091.1  1474.1 10104.8 1474.49 10109.3 1474.58 10129.3 1474.63 10143.2
1474.85
 10166.6 1474.39 10174.8 1474.34 10196.7 1473.49 10210.6  1473.4 10214.1
1473.46
 10232.6 1473.98 10234.9 1474.01 10250.9 1474.01 10283.4  1472.9 10302.8
1473.64
 10314.7 1473.96 10332.3 1473.82   10336 1473.92   10353 1473.85 10356.8
1473.65
 10367.3 1473.37   10384 1473.33 10406.3    1473   10424  1473.5 10438.3
1473.81
 10468.5 1473.97   10490 1473.52 10499.5  1473.4 10504.7  1473.4 10517.8
1473.6
 10536.5 1475.43 10540.7 1475.81 10557.4    1477 10563.4 1477.45 10589.6
1479.3
 10668.1 1485.65

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9619.9    .064    9945    .044 10053.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9945 10053.7                 0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)         * 1473.72  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.04  * Wt. n-Val.              *
*   0.044  *   0.064  *
* W.S. Elev (ft)         * 1473.68  * Reach Len. (ft)         *
*         *         *
* Crit W.S. (ft)         * 1473.50  * Flow Area (sq ft)       *
*   29.64  *   56.79  *
* E.G. Slope (ft/ft)     *0.009697  * Area (sq ft)            *
*   29.64  *   56.79  *
* Q Total (cfs)          *  118.00  * Flow (cfs)              *
*   56.46  *   61.54  *
* Top Width (ft)         *  255.50  * Top Width (ft)          *
*   68.33  *  187.17  *
* Vel Total (ft/s)       *    1.37  * Avg. Vel. (ft/s)        *
*    1.90  *    1.08  *
* Max Chl Dpth (ft)      *    0.99  * Hydr. Depth (ft)        *
*    0.43  *    0.30  *
* Conv. Total (cfs)      *  1198.3  * Conv. (cfs)             *
*   573.3  *   625.0  *
* Length Wtd. (ft)       *          * Wetted Per. (ft)        *
*   68.37  *  187.23  *
* Min Ch El (ft)         * 1472.69  * Shear (lb/sq ft)        *
```

```
*    0.26  *    0.18  *
* Alpha                  *    1.26  * Stream Power (lb/ft s) *
*    0.50  *    0.20  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)   *
*          *          *
* C & E Loss (ft)        *          * Cum SA (acres)         *
*          *          *
**************************************************************************
************************
```

Warning: Divided flow computed for this cross-section.

```
**************************************************************************
********
```

SUMMARY OF MANNING'S N VALUES

River:NRW5

Reach	River Sta.	n1	n2	n3
NRW5	2.63	.064	.044	.064
NRW5	2.56	.064	.04	.064
NRW5	2.50	.064	.04	.064
NRW5	2.41	.064	.044	.064
NRW5	2.35	.064	.044	.064
NRW5	2.29	.064	.044	.064
NRW5	2.23	.064	.044	.064
NRW5	2.17	.064	.044	.064
NRW5	2.10	.064	.044	.064
NRW5	2.04	.064	.044	.064
NRW5	1.99	.064	.044	.064
NRW5	1.95	.064	.044	.064
NRW5	1.90	.064	.044	.064
NRW5	1.85	.064	.044	.064
NRW5	1.78	.064	.044	.064
NRW5	1.72	.064	.044	.064
NRW5	1.65	.064	.044	.064
NRW5	1.60	.064	.044	.064
NRW5	1.53	.064	.044	.064
NRW5	1.46	.064	.044	.064
NRW5	1.40	.064	.044	.064
NRW5	1.34	.064	.044	.064
NRW5	1.27	.064	.044	.064
NRW5	1.21	.064	.044	.064
NRW5	1.15	.064	.044	.064
NRW5	1.10	.064	.044	.064
NRW5	1.07	.064	.044	.064
NRW5	1.00	.064	.044	.064
NRW5	0.95	.064	.044	.064
NRW5	0.89	.064	.044	.064
NRW5	0.85	.064	.044	.064
NRW5	0.80	.064	.044	.064
NRW5	0.77	.064	.044	.064
NRW5	0.72	.064	.044	.064
NRW5	0.67	.064	.044	.064
NRW5	0.61	.064	.044	.064
NRW5	0.56	.064	.044	.064
NRW5	0.50	.064	.044	.064
NRW5	0.44	.064	.044	.064
NRW5	0.42	Culvert		

*NRW5	* 0.39	* .064*	.044*	.064*
*NRW5	* 0.34	* .064*	.044*	.064*
*NRW5	* 0.29	* .064*	.044*	.064*
*NRW5	* 0.23	* .064*	.044*	.064*
*NRW5	* 0.17	* .064*	.044*	.064*
*NRW5	* 0.12	* .064*	.044*	.064*
*NRW5	* 0.08	* .064*	.044*	.064*
*NRW5	* 0.01	* .064*	.044*	.064*

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SUMMARY OF REACH LENGTHS

River: NRW5

Reach	River Sta.	Left	Channel	Right
*NRW5	* 2.63	* 410*	410*	410*
*NRW5	* 2.56	* 293*	293*	293*
*NRW5	* 2.50	* 453*	453*	453*
*NRW5	* 2.41	* 345*	345*	345*
*NRW5	* 2.35	* 327*	327*	327*
*NRW5	* 2.29	* 284*	284*	284*
*NRW5	* 2.23	* 329*	329*	329*
*NRW5	* 2.17	* 366*	366*	366*
*NRW5	* 2.10	* 316*	316*	316*
*NRW5	* 2.04	* 254*	254*	254*
*NRW5	* 1.99	* 238*	238*	238*
*NRW5	* 1.95	* 276*	276*	276*
*NRW5	* 1.90	* 271*	271*	271*
*NRW5	* 1.85	* 319*	319*	319*
*NRW5	* 1.78	* 318*	318*	318*
*NRW5	* 1.72	* 375*	375*	375*
*NRW5	* 1.65	* 278*	278*	278*
*NRW5	* 1.60	* 354*	354*	354*
*NRW5	* 1.53	* 378*	378*	378*
*NRW5	* 1.46	* 344*	344*	344*
*NRW5	* 1.40	* 301*	301*	301*
*NRW5	* 1.34	* 355*	355*	355*
*NRW5	* 1.27	* 340*	340*	340*
*NRW5	* 1.21	* 332*	332*	332*
*NRW5	* 1.15	* 237*	237*	237*
*NRW5	* 1.10	* 136*	136*	136*
*NRW5	* 1.07	* 386*	386*	386*
*NRW5	* 1.00	* 264*	264*	264*
*NRW5	* 0.95	* 315*	315*	315*
*NRW5	* 0.89	* 222*	222*	222*
*NRW5	* 0.85	* 266*	266*	266*
*NRW5	* 0.80	* 168*	168*	168*
*NRW5	* 0.77	* 260*	260*	260*
*NRW5	* 0.72	* 243*	243*	243*
*NRW5	* 0.67	* 334*	334*	334*
*NRW5	* 0.61	* 252*	252*	252*
*NRW5	* 0.56	* 316*	316*	316*
*NRW5	* 0.50	* 332*	332*	332*
*NRW5	* 0.44	* 260*	260*	260*
*NRW5	* 0.42	*Culvert *	*	*
*NRW5	* 0.39	* 266*	266*	266*
*NRW5	* 0.34	* 280*	280*	280*

*NRW5	* 0.29	* 318*	318*	318*
*NRW5	* 0.23	* 319*	319*	319*
*NRW5	* 0.17	* 220*	220*	220*
*NRW5	* 0.12	* 236*	236*	236*
*NRW5	* 0.08	* 383*	383*	383*
*NRW5	* 0.01	* 0*	0*	0*

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SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW5

Reach	River Sta.	Contr.	Expan.
*NRW5	* 2.63	* .1*	.3*
*NRW5	* 2.56	* .1*	.3*
*NRW5	* 2.50	* .1*	.3*
*NRW5	* 2.41	* .1*	.3*
*NRW5	* 2.35	* .1*	.3*
*NRW5	* 2.29	* .1*	.3*
*NRW5	* 2.23	* .1*	.3*
*NRW5	* 2.17	* .1*	.3*
*NRW5	* 2.10	* .1*	.3*
*NRW5	* 2.04	* .1*	.3*
*NRW5	* 1.99	* .1*	.3*
*NRW5	* 1.95	* .1*	.3*
*NRW5	* 1.90	* .1*	.3*
*NRW5	* 1.85	* .1*	.3*
*NRW5	* 1.78	* .1*	.3*
*NRW5	* 1.72	* .1*	.3*
*NRW5	* 1.65	* .1*	.3*
*NRW5	* 1.60	* .1*	.3*
*NRW5	* 1.53	* .1*	.3*
*NRW5	* 1.46	* .1*	.3*
*NRW5	* 1.40	* .1*	.3*
*NRW5	* 1.34	* .1*	.3*
*NRW5	* 1.27	* .1*	.3*
*NRW5	* 1.21	* .1*	.3*
*NRW5	* 1.15	* .1*	.3*
*NRW5	* 1.10	* .1*	.3*
*NRW5	* 1.07	* .1*	.3*
*NRW5	* 1.00	* .1*	.3*
*NRW5	* 0.95	* .1*	.3*
*NRW5	* 0.89	* .1*	.3*
*NRW5	* 0.85	* .1*	.3*
*NRW5	* 0.80	* .1*	.3*
*NRW5	* 0.77	* .1*	.3*
*NRW5	* 0.72	* .1*	.3*
*NRW5	* 0.67	* .1*	.3*
*NRW5	* 0.61	* .1*	.3*
*NRW5	* 0.56	* .1*	.3*
*NRW5	* 0.50	* .3*	.5*
*NRW5	* 0.44	* .3*	.5*
*NRW5	* 0.42	*Culvert *	*
*NRW5	* 0.39	* .3*	.5*
*NRW5	* 0.34	* .1*	.3*
*NRW5	* 0.29	* .1*	.3*
*NRW5	* 0.23	* .1*	.3*

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*NRW5              *    0.17    *        .1*        .3*
*NRW5              *    0.12    *        .1*        .3*
*NRW5              *    0.08    *        .1*        .3*
*NRW5              *    0.01    *        .1*        .3*
*****************************************************
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NRW5.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.xs
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:18:15 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW5,NRW5						
2.63	410	410	410	232.95	154	D
2.56	293	293	293	240.71	154	
2.5	453	453	453	231.86	154	C
2.41	345	345	345	264.16	154	D
2.35	327	327	327	282.98	154	D,C
2.29	284	284	284	398.25	349	
2.23	329	329	329	220.96	349	
2.17	366	366	366	256.27	349	
2.1	316	316	316	143.4	349	C
2.04	254	254	254	177.92	349	
1.99	238	238	238	124.33	349	C
1.95	276	276	276	300.18	349	
1.9	271	271	271	212.97	483	
1.85	319	319	319	204.22	483	
1.78	318	318	318	296.73	483	
1.72	375	375	375	339.46	483	
1.65	278	278	278	501.18	483	D
1.6	354	354	354	297.46	483	D
1.53	378	378	378	352.4	483	
1.46	344	344	344	253.49	483	C
1.4	301	301	301	371.23	483	
1.34	355	355	355	298.07	483	D
1.27	340	340	340	238.27	483	
1.21	332	332	332	231.32	483	D,C
1.15	237	237	237	210.02	483	
1.1	136	136	136	199.71	483	C
1.07	386	386	386	192.4	483	
1	264	264	264	183.32	641	
.95	315	315	315	148.8	641	
.89	222	222	222	127.91	641	
.85	266	266	266	115.78	641	
.8	168	168	168	103.82	641	
.77	260	260	260	123.67	692	
.72	243	243	243	127.66	692	C
.67	334	334	334	176.01	88	
.61	252	252	252	289.05	88	
.56	316	316	316	357.82	88	
.5	332	332	332	473.79	88	
.44	260	260	260	90	88	
.42	Culvert #1-Up					
.42	Culvert #1-Dn					
.39	266	266	266	17.57	88	
.34	280	280	280	81.89	88	
.29	318	318	318	56.52	118	
.23	319	319	319	33.49	118	D
.17	220	220	220	60.42	118	D

.12	236	236	236	181.34	118	D
.08	383	383	383	301.69	118	D
.01	0	0	0	255.5	118	D

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: 0.67
XS DC 01 Discharge decreases in the downstream direction. ← Attenuation from CAP crossing; SEE HEC-1 OUTPUT

LOCATION CHECK

RS: 2.17
XS LC 01 Lenchl Up/TopwdthAct Dn = 2.55
MaxChlDpth Up/MaxChlDpth Dn = 1.94
TopwdthAct Up/TopwdthAct Dn = 1.79
This cross section is located too far upstream from the critical depth cross section.

RS: 2.04
XS LC 01 Lenchl Up/TopwdthAct Dn = 2.04
MaxChlDpth Up/MaxChlDpth Dn = 1.44
TopwdthAct Up/TopwdthAct Dn = 1.43
This cross section is located too far upstream from the critical depth cross section.

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is NRW5,NRW5
Normal S = 0.0097 is specified as the downstream boundary for profile 100-Year

LATERAL WEIRS CHECK

---END---

NRW5.br
CHECK-RAS Program: Structure Check

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.br
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:18:16 PM

RS	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
NRW5,NRW5						
2.63			1607.79	1607.74	1607.04	
2.56			1604.51	1604.44	1603	
2.5			1601.59	1601.45	1600.71	
2.41			1597.66	1597.63	1596.8	
2.35			1594.75	1594.63	1594.21	
2.29			1592.41	1592.36	1591.43	
2.23			1590.15	1589.97	1588.94	
2.17			1587.69	1587.62	1585.6	
2.1			1584.4	1584.09	1583.05	
2.04			1581.65	1581.59	1579.86	
1.99			1579.57	1579.22	1577.8	
1.95			1578.1	1578.07	1576.63	
1.9			1576.75	1576.47	1573.98	
1.85			1574.01	1573.87	1571.8	
1.78			1571.6	1571.52	1569.41	
1.72			1568.84	1568.69	1567.47	
1.65			1565.24	1565.07	1563.33	
1.6			1562.27	1562.15	1561.04	
1.53			1559.82	1559.76	1558	
1.46			1557.01	1556.67	1554.38	
1.4			1554.04	1553.99	1552.41	
1.34			1551.58	1551.42	1549.62	
1.27			1547.81	1547.66	1545.75	
1.21			1544.53	1544.21	1541.22	
1.15			1540.06	1539.97	1537.19	
1.1			1538.33	1538.04	1537.19	
1.07			1536.23	1536.1	1534.82	
1			1532.31	1532.05	1529.69	
0.95			1528.69	1528.39	1526.56	
0.89			1525.03	1524.76	1522.52	
0.85			1522.39	1521.85	1519.82	
0.8			1518.8	1518.42	1516.33	
0.77			1517.38	1517.2	1514.57	
0.72			1514.23	1513.72	1511.1	
0.67			1512.3	1512.3	1508.41	
0.61			1512.3	1512.3	1504.4	
0.56			1512.3	1512.3	1501.49	
0.5			1512.3	1512.3	1498.59	
0.44			1512.3	1512.3	1495.83	
0.42	1498.33	1521.59	0	1498.33	1495.83	Culvert #1-Up
0.42	1492.49	1518.13	0	1492.49	1489.99	Culvert #1-Dn
0.39			1491.49	1491.15	1489.99	
0.34			1489.14	1489.09	1487.43	
0.29			1486.75	1486.53	1485.24	
0.23			1482.55	1482.33	1480.64	
0.17			1480.6	1480.49	1477.7	
0.12			1479.25	1479.2	1478.07	
0.08			1477.04	1476.99	1476.09	

0.01 1473.72 1473.68 1472.69

RIVER/REACH: NRW5, NRW5
RIVER STATION: 0.42
TYPE OF STRUCTURE: Culvert

Description:	CL CAP canal; top of culvert crossing
Distance from Upstream XS:	3.5
Deck/Roadway Width:	243
Weir Coefficient:	3
Maximum allowable submergence for weir flow:	0
Elevation at which weir flow begins:	0
Weir crest shape:	Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	0.5	332.00	1512.3		1512.3	473.79	
3	0.44	260.00	1512.3		1512.3	90	
	0.42	243.00	1498.33		0	0	Culvert #1-Up
	0.42	13.50	1492.49		0	0	Culvert #1-Dn
2	0.39	266.00	1491.15		1491.49	17.57	
1	0.34	280.00	1489.09		1489.14	81.89	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	9621	9955	1526.47	9708.1	9955	1526.47
2	10045	10992.1	1526.49	10045	11059.2	1526.49

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
Culvert Group					9955	10045	U
					9955	10045	D

CULVERT:
Culvert Name: Culvert #1
Shape: Circular Rise: 2.5 Span: 0 Barrels: 1
FHWA Chart #: # 1 - Concrete Pipe Culvert
FHWA Scale #: # 1 - Square edge entrance with headwall
Solution Crit:Inlet control

UpstrmDist: 3.5 Length: 243 n-Value: 0.015
EntLossCoef: 0.5 ExtLossCoef: 1 CulvInvElU 1495.83 CulvInvElD 1489.99
LCntStaU: 10000 RCntStaU: 10000 LCntStaD 10000 RCntStaD 10000
Culvert Depth Blocked: 0

Culv Area: 4.91 CulvQ: 88 MinTopRd: 1526.48

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Culvert #1	9998.75	10001.25	1521.59	1525.7	1521.59	1498.33	U
	9998.75	10001.25	1526.32	1518.13	1518.13	1492.49	D

Name	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
Culvert #1		88	0	Inlet control	Pressure Flow

GEOMETRIC CHECK
---------- — DOES NOT OVERTOP OR EXCEED END POINT ELEVATIONS; No changes

RS: 0.42
ST GD 03 The starting station of 9650.6 from upstream road/weir data is greater than the starting station of 9621 from upstream internal section/ secion 3.
The high chord elevation of 1526.29 for the starting road/weir station is greater than the ground elevation of 1521.591 for the same ground station.
The road/weir profile may need to be extended.

RS: 0.42
ST GD 03 The end station of 11035.7 from downstream road/weir data is less than the end station of 11059.2 from downstream internal section.
The high chord elevation of 1526.2 for the end road/weir station is greater than the ground elevation of 1518.126 for the same ground station.
The road/weir profile may need to be extended.

TYPE OF FLOW CHECK

RS: 0.42 This is Culvert #1
CV PF 01 Type of flow is pressure flow because,
1. EGEL 3 of 1512.3 is less than or equal to MinTopRd of 1526.48.
2. CulvWSIn of 1498.33 is greater than or equal to MxLoCdU of 1498.33.
3. CulvWSOut of 1492.49 is greater than or equal to MxLoCdD of 1492.49.

DISTANCE CHECK

CULVERT COEFFICIENT CHECK

CULVERT CRITERIA CHECK

RS: 0.42 This is Culvert #1 ← Highest U.S. EG yielded unreasonable results; INLET CONTROL is actual control
CV SC 01 Inlet control is selected.
Please rerun the plan selecting 'Highest U.S. EG' as the criterion, unless there is a reason not to use this crierion.

INEFFECTIVE FLOW CHECK

---END

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW5\NRW5.nt
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:18:13 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW5,NRW5						
2.63		0.064	0.044	0.064	0.1	0.3
2.56		0.064	0.04	0.064	0.1	0.3
2.5		0.064	0.04	0.064	0.1	0.3
2.41		0.064	0.044	0.064	0.1	0.3
2.35		0.064	0.044	0.064	0.1	0.3
2.29		0.064	0.044	0.064	0.1	0.3
2.23		0.064	0.044	0.064	0.1	0.3
2.17		0.064	0.044	0.064	0.1	0.3
2.1		0.064	0.044	0.064	0.1	0.3
2.04		0.064	0.044	0.064	0.1	0.3
1.99		0.064	0.044	0.064	0.1	0.3
1.95		0.064	0.044	0.064	0.1	0.3
1.9		0.064	0.044	0.064	0.1	0.3
1.85		0.064	0.044	0.064	0.1	0.3
1.78		0.064	0.044	0.064	0.1	0.3
1.72		0.064	0.044	0.064	0.1	0.3
1.65		0.064	0.044	0.064	0.1	0.3
1.6		0.064	0.044	0.064	0.1	0.3
1.53		0.064	0.044	0.064	0.1	0.3
1.46		0.064	0.044	0.064	0.1	0.3
1.4		0.064	0.044	0.064	0.1	0.3
1.34		0.064	0.044	0.064	0.1	0.3
1.27		0.064	0.044	0.064	0.1	0.3
1.21		0.064	0.044	0.064	0.1	0.3
1.15		0.064	0.044	0.064	0.1	0.3
1.1		0.064	0.044	0.064	0.1	0.3
1.07		0.064	0.044	0.064	0.1	0.3
1		0.064	0.044	0.064	0.1	0.3
.95		0.064	0.044	0.064	0.1	0.3
.89		0.064	0.044	0.064	0.1	0.3
.85		0.064	0.044	0.064	0.1	0.3
.8		0.064	0.044	0.064	0.1	0.3
.77		0.064	0.044	0.064	0.1	0.3
.72		0.064	0.044	0.064	0.1	0.3
.67		0.064	0.044	0.064	0.1	0.3
.61		0.064	0.044	0.064	0.1	0.3
.56		0.064	0.044	0.064	0.1	0.3
.5		0.064	0.044	0.064	0.3	0.5
.44		0.064	0.044	0.064	0.3	0.5

.42	Culvert-Up	0.064	0.044	0.064	0.3	0.5
.42	Culvert-Dn	0.064	-----	-----	0.3	0.5
		0.044	-----	-----		
.39		0.064	0.044	0.064	0.3	0.5
.34		0.064	0.044	0.064	0.1	0.3
.29		0.064	0.044	0.064	0.1	0.3
.23		0.064	0.044	0.064	0.1	0.3
.17		0.064	0.044	0.064	0.1	0.3
.12		0.064	0.044	0.064	0.1	0.3
.08		0.064	0.044	0.064	0.1	0.3
.01		0.064	0.044	0.064	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.044	0.064
Right Overbank n Value:	0.064	0.064
Channel n Value:	0.04	0.044
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

ROUGHNESS COEFFICIENT CHECK

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 10

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW10 River: NRW10 Reach: NRW10 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW10	1.95	258.00	1597.25	1597.77	1597.62	1597.80	0.009238	1.33	194.45	620.44	0.42
NRW10	1.90	258.00	1595.20	1595.73	1595.53	1595.75	0.007018	1.23	221.99	689.96	0.37
NRW10	1.81	258.00	1590.46	1591.85	1591.70	1591.90	0.009471	2.71	183.96	498.80	0.51
NRW10	1.76	258.00	1588.03	1589.33	1589.13	1589.37	0.007427	2.24	208.07	581.40	0.44
NRW10	1.70	258.00	1585.98	1586.81	1586.59	1586.84	0.011443	1.56	182.30	451.35	0.48
NRW10	1.67	258.00	1584.61	1585.32	1585.06	1585.34	0.005299	1.53	231.10	491.74	0.35
NRW10	1.64	258.00	1582.40	1584.00	1584.00	1584.15	0.024275	3.41	107.63	393.62	0.77
NRW10	1.62	258.00	1580.97	1582.56		1582.62	0.005056	2.21	174.94	366.17	0.38
NRW10	1.59	258.00	1579.16	1580.98	1580.81	1581.29	0.016904	4.66	66.70	115.95	0.72
NRW10	1.57	258.00	1578.49	1580.66		1580.70	0.001934	1.94	195.87	221.55	0.26
NRW10	1.54	258.00	1579.39	1579.92	1579.92	1580.17	0.006364	4.25	85.09	224.77	1.14
NRW10	1.47	258.00	1576.23	1578.22		1578.24	0.001848	1.77	234.85	228.50	0.25
NRW10	1.40	258.00	1576.05	1576.25	1576.17	1576.39	0.030570	1.35	88.71	212.21	0.66
NRW10	1.36	258.00	1572.57	1574.01		1574.07	0.006023	2.38	131.69	177.03	0.42
NRW10	1.33	258.00	1570.89	1572.24	1572.17	1572.47	0.021113	4.02	73.72	126.65	0.76
NRW10	1.29	258.00	1568.61	1570.53	1570.02	1570.58	0.004586	1.86	141.21	165.74	0.34
NRW10	1.23	258.00	1566.74	1567.82	1567.63	1567.98	0.016589	3.18	82.58	125.80	0.65
NRW10	1.18	258.00	1562.87	1564.83	1564.35	1564.95	0.007229	2.79	97.87	116.28	0.46
NRW10	1.11	258.00	1560.12	1561.39	1561.17	1561.53	0.014350	3.43	88.48	123.46	0.63
NRW10	1.04	258.00	1555.50	1556.89	1556.69	1557.02	0.010011	3.08	111.97	208.98	0.54
NRW10	0.98	258.00	1551.95	1553.70	1553.49	1553.85	0.010600	3.63	105.24	153.06	0.57
NRW10	0.92	577.00	1549.01	1551.08		1551.20	0.007195	3.04	228.74	205.01	0.47
NRW10	0.87	577.00	1546.50	1548.07	1547.83	1548.32	0.016204	4.24	151.36	154.51	0.70
NRW10	0.80	577.00	1542.42	1544.44	1543.99	1544.61	0.007939	3.56	189.62	162.89	0.51
NRW10	0.75	577.00	1539.02	1541.39		1541.66	0.013212	5.20	171.33	168.68	0.68
NRW10	0.69	577.00	1536.26	1538.30	1537.75	1538.47	0.009678	4.17	192.47	153.78	0.57
NRW10	0.64	577.00	1533.25	1535.25		1535.50	0.011750	4.52	156.66	135.21	0.63
NRW10	0.57	577.00	1527.64	1529.61	1529.46	1530.07	0.018843	5.90	120.42	100.95	0.80
NRW10	0.51	577.00	1522.67	1525.24		1525.57	0.010123	4.75	138.09	95.37	0.60
NRW10	0.46	577.00	1519.78	1522.19	1521.87	1522.54	0.013279	5.48	139.72	101.56	0.69
NRW10	0.41	577.00	1516.21	1519.18		1519.47	0.011181	5.37	153.30	99.41	0.64
NRW10	0.36	577.00	1513.65	1515.86		1516.13	0.011190	4.37	146.86	108.03	0.61
NRW10	0.30	577.00	1510.50	1512.94		1513.19	0.009366	4.34	160.39	124.84	0.57
NRW10	0.25	577.00	1508.15	1510.12		1510.30	0.010170	3.60	173.17	146.04	0.56
NRW10	0.19	577.00	1504.99	1507.01	1506.61	1507.23	0.010217	3.85	165.20	175.81	0.57
NRW10	0.11	577.00	1500.14	1503.27	1502.99	1503.44	0.008996	4.75	211.42	221.90	0.57

HEC-RAS Plan: NRW10 River: NRW10 Reach: NRW10 Profile: 100-Year (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW10	0.05	577.00	1498.27	1499.84		1499.93	0.011322	3.52	270.92	434.29	0.58
NRW10	0.00	577.00	1495.76	1497.15	1496.84	1497.24	0.011516	2.26	245.11	416.16	0.52

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW 10
Project File : NRW10.prj
Run Date and Time: 3/16/2005 5:42:24 PM

Project in English units

Project Description:
NRW 10

New River West Tributaries FDS
Prepared by URS Corp. for the Flood
Control District of Maricopa County
Contract No: FCD 2003 C057
Date: April
29, 2005

Topographic Mapping Source:
Flown and Mapped by DTM Inc.
Flight
Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal - NAD83 Arizona
State Plane, Central Zone, International Feet
Vertical - NAVD 88 (GDACS
Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour storm
event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

258 cfs @ R.S. 1.95
258 cfs @R.S. 1.33
577 cfs @ R.S. 0.92

Study
Limits:

U.S. Limit is approximately 760 feet west of the New River Road &
SR74 intersection
D.S. Limit is the New River floodplain

Stationing based
upon River Mile distance from a point downstream of the Hydraulic
Baseline
confluence with the New River floodplain

Final Model Run Date:
March 16,
2005

****
****

PLAN DATA

Plan Title: NRW 10
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10
\NRW10.p01

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW10\NRW10.g01

Flow Title : 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW10\NRW10.f03

Plan Summary Information:

Number of:	Cross Sections	= 38	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10

\NRW10.f03

Flow Data (cfs)

River	Reach	RS	100-Year
NRW10	NRW10	1.95	258
NRW10	NRW10	1.33	258
NRW10	NRW10	0.92	577

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
NRW10	NRW10	100-Year	Normal S = 0.0115	

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.g01

CROSS SECTION

RIVER: NRW10
REACH: NRW10 RS: 1.95

INPUT
Description: U.S. Limit of Study
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9497.1	1599.13	9534.3	1598.59	9611.8	1598.1	9634	1598.33	9642.2	1598.17
9646.1	1598.12	9652.7	1597.99	9662.1	1597.68	9917	1597.25	9996.6	1597.37
10007.3	1597.37	10268.4	1597.6	10327.2	1598.48	10379.1	1598.7	10383.3	1598.73
10387	1598.78	10396.3	1598.77	10412.2	1598.87	10414.6	1598.91	10416	1598.87
10454.1	1598.76	10572.7	1599.62						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9497.1	.15	9662.1	.05	10268.4	.15

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
        9662.1 10268.4              254     254     254             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1597.80  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.03  * Wt. n-Val.              *   0.150
*   0.050  *   0.150  *
* W.S. Elev (ft)          * 1597.77  * Reach Len. (ft)         *  254.00
*  254.00  *  254.00  *
* Crit W.S. (ft)          * 1597.62  * Flow Area (sq ft)       *    0.12
*  193.36  *    0.97  *
* E.G. Slope (ft/ft)      *0.009238  * Area (sq ft)            *    0.12
*  193.36  *    0.97  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *    0.01
*  257.81  *    0.18  *
* Top Width (ft)          *  620.44  * Top Width (ft)          *    2.74
*  606.30  *   11.39  *
* Vel Total (ft/s)        *    1.33  * Avg. Vel. (ft/s)        *    0.12
*    1.33  *    0.18  *
* Max Chl Dpth (ft)       *    0.52  * Hydr. Depth (ft)        *    0.05
*    0.32  *    0.09  *
* Conv. Total (cfs)       *  2684.3  * Conv. (cfs)             *     0.2
*  2682.3  *     1.9  *
* Length Wtd. (ft)        *  254.00  * Wetted Per. (ft)        *    2.74
*  606.30  *   11.40  *
* Min Ch El (ft)          * 1597.25  * Shear (lb/sq ft)        *    0.03
*    0.18  *    0.05  *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *    0.00
*    0.25  *    0.01  *
* Frctn Loss (ft)         *    2.04  * Cum Volume (acre-ft)    *   10.39
*   18.90  *    8.22  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   19.74
*   21.35  *   14.24  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.90

INPUT
Description: Pleasant Valley Airpark runway
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9486.1 1596.71  9500.9 1596.78  9562.3 1596.03  9576.7 1596.05  9578.9
1596.03
  9588.8 1595.67  9620.5 1595.57  9628.8 1595.62  9650.6 1595.41    9684
1595.16
  9697.4 1595.58    9712 1595.78  9776.7  1595.4  9875.9  1595.2  9925.7
```

```
1595.32
  9938.4 1595.42  9944.5 1595.36    9982 1595.35 10001.5 1595.35 10099.9
1595.24
 10406.3 1596.03   10418  1596.1 10454.6 1596.62 10459.9 1596.81 10466.5
1596.69
   10485 1596.95 10498.1 1596.77 10515.2  1596.7 10534.8 1596.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9486.1    .069    9712    .049 10406.3    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9712 10406.3              476     476     476             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1595.75  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *   0.069
*   0.049  *          *
* W.S. Elev (ft)          * 1595.73  * Reach Len. (ft)         *  476.00
*  476.00  *  476.00  *
* Crit W.S. (ft)          * 1595.53  * Flow Area (sq ft)       *   29.73
*  192.25  *          *
* E.G. Slope (ft/ft)      *0.007018  * Area (sq ft)            *   29.73
*  192.25  *          *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *   21.03
*  236.97  *          *
* Top Width (ft)          *  689.96  * Top Width (ft)          *  121.10
*  568.87  *          *
* Vel Total (ft/s)        *    1.16  * Avg. Vel. (ft/s)        *    0.71
*    1.23  *          *
* Max Chl Dpth (ft)       *    0.57  * Hydr. Depth (ft)        *    0.25
*    0.34  *          *
* Conv. Total (cfs)       *  3079.7  * Conv. (cfs)             *   251.0
*  2828.7  *          *
* Length Wtd. (ft)        *  476.00  * Wetted Per. (ft)        *  121.11
*  568.87  *          *
* Min Ch El (ft)          * 1595.20  * Shear (lb/sq ft)        *    0.11
*    0.15  *          *
* Alpha                   *    1.06  * Stream Power (lb/ft s) *    0.08
*    0.18  *          *
* Frctn Loss (ft)         *    3.86  * Cum Volume (acre-ft)    *   10.30
*   17.77  *    8.22  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   19.37
*   17.92  *   14.20  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW10
REACH: NRW10                RS: 1.81

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9280.7 1592.58  9292.1 1592.47  9301.7 1592.73  9323.1 1592.95  9331.5
1593.19
  9343.5 1593.26  9363.4 1592.92  9365.6 1592.87  9395.1  1593.4  9396.2
1593.41
  9399.1 1593.57  9434.8 1592.45  9498.4 1592.64  9631.2 1592.48    9689
1592.27
  9707.9 1592.39  9726.8  1592.4  9732.8 1592.28    9748 1591.88  9749.9
1591.87
  9752.9  1591.9  9766.9 1591.95  9838.9 1591.52    9975 1591.44  9987.7
1591.75
    9997 1591.68 10007.3  1590.9 10011.9 1590.46 10014.8 1590.64 10023.7
1591.1
 10380.6 1592.13 10460.7 1592.08 10549.5 1592.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9280.7    .069    9997    .049 10023.7    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9997 10023.7              302     302     302             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1591.90  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1591.85  * Reach Len. (ft)         *  302.00
*  302.00  *  302.00  *
* Crit W.S. (ft)          * 1591.70  * Flow Area (sq ft)       *   63.50
*   23.58  *   96.88  *
* E.G. Slope (ft/ft)      *0.009471  * Area (sq ft)            *   63.50
*   23.58  *   96.88  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *   59.39
*   63.96  *  134.65  *
* Top Width (ft)          *  498.80  * Top Width (ft)          *  212.99
*   26.70  *  259.11  *
* Vel Total (ft/s)        *    1.40  * Avg. Vel. (ft/s)        *    0.94
*    2.71  *    1.39  *
* Max Chl Dpth (ft)       *    1.39  * Hydr. Depth (ft)        *    0.30
*    0.88  *    0.37  *
* Conv. Total (cfs)       *  2651.1  * Conv. (cfs)             *   610.2
*   657.2  *  1383.6  *
* Length Wtd. (ft)        *  302.00  * Wetted Per. (ft)        *  212.99
*   26.77  *  259.11  *
* Min Ch El (ft)          * 1590.46  * Shear (lb/sq ft)        *    0.18
*    0.52  *    0.22  *
```

```
* Alpha                    *    1.54  * Stream Power (lb/ft s) *    0.16
*    1.41  *    0.31  *
* Frctn Loss (ft)          *    2.52  * Cum Volume (acre-ft)   *    9.79
*   16.60  *    7.69  *
* C & E Loss (ft)          *    0.00  * Cum SA (acres)         *   17.55
*   14.67  *   12.79  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.76

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9479.7 1591.13  9573.1 1589.97  9577.5 1589.98  9584.4 1589.87  9586.8
1589.79
    9591 1589.76    9600 1589.27  9604.5 1589.18  9609.8  1589.3  9670.4
1589.14
  9700.5 1589.21  9870.1 1588.83    9881 1588.67  9891.6 1588.66  9919.9
1589.17
  9923.5 1589.15  9929.7 1588.98  9934.8 1588.74  9971.2 1588.68  9979.2
1588.72
  9990.7 1588.71 10003.5 1588.06 10005.1 1588.05 10006.5 1588.03 10020.6
1588.49
 10061.5 1588.93 10504.3 1590.41 10616.7 1591.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9479.7    .069  9990.7    .049 10061.5    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.7 10061.5              278     278     278             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1589.37  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.04  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1589.33  * Reach Len. (ft)         *  278.00
*  278.00  *  278.00  *
* Crit W.S. (ft)          * 1589.13  * Flow Area (sq ft)       *  128.27
*   56.19  *   23.60  *
* E.G. Slope (ft/ft)      *0.007427  * Area (sq ft)            *  128.27
*   56.19  *   23.60  *
```

```
* Q Total (cfs)          *  258.00  * Flow (cfs)             *  113.09
*  125.86  *   19.05  *
* Top Width (ft)         *  581.40  * Top Width (ft)         *  391.75
*   70.80  *  118.84  *
* Vel Total (ft/s)       *    1.24  * Avg. Vel. (ft/s)       *    0.88
*    2.24  *    0.81  *
* Max Chl Dpth (ft)      *    1.30  * Hydr. Depth (ft)       *    0.33
*    0.79  *    0.20  *
* Conv. Total (cfs)      *  2993.7  * Conv. (cfs)            *  1312.2
*  1460.4  *   221.1  *
* Length Wtd. (ft)       *  278.00  * Wetted Per. (ft)       *  391.77
*   70.83  *  118.85  *
* Min Ch El (ft)         * 1588.03  * Shear (lb/sq ft)       *    0.15
*    0.37  *    0.09  *
* Alpha                  *    1.84  * Stream Power (lb/ft s) *    0.13
*    0.82  *    0.07  *
* Frctn Loss (ft)        *    2.53  * Cum Volume (acre-ft)   *    9.13
*   16.32  *    7.27  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *   15.45
*   14.33  *   11.48  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.70

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9497 1588.27  9506.1 1588.23  9516.7 1588.25  9532.4  1588.2    9556
1587.83
  9564.9 1587.97  9586.7 1588.54  9594.8 1588.43  9615.1 1587.93  9619.8
1587.74
  9625.3 1587.98  9632.5 1588.08  9633.1  1588.1  9639.4 1587.47  9642.5
1587.26
  9649.8 1587.24  9659.5 1587.35  9674.6 1587.07  9684.5 1586.64  9863.8
1586.2
  9864.9 1586.19  9935.3 1586.24  9943.3 1586.14  9949.9  1586.3  9958.7
1586.6
  9969.8 1586.44  9972.7 1586.38  9997.3 1586.33 10001.3 1586.17 10003.9
1585.98
 10014.9 1586.24 10016.8  1586.3 10195.5 1587.09 10225.6 1587.38 10440.8
1588.16
 10542.9 1589.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9497    .069  9958.7    .049 10195.5    .054
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9958.7 10195.5              199     199     199             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1586.84  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.03  * Wt. n-Val.              *   0.069
*   0.049  *          *
* W.S. Elev (ft)          * 1586.81  * Reach Len. (ft)         *  199.00
*  199.00  *  199.00  *
* Crit W.S. (ft)          * 1586.59  * Flow Area (sq ft)       *  124.60
*   57.71  *          *
* E.G. Slope (ft/ft)      *0.011443  * Area (sq ft)            *  124.60
*   57.71  *          *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *  168.06
*   89.94  *          *
* Top Width (ft)          *  451.35  * Top Width (ft)          *  278.09
*  173.26  *          *
* Vel Total (ft/s)        *    1.42  * Avg. Vel. (ft/s)        *    1.35
*    1.56  *          *
* Max Chl Dpth (ft)       *    0.83  * Hydr. Depth (ft)        *    0.45
*    0.33  *          *
* Conv. Total (cfs)       *  2411.8  * Conv. (cfs)             *  1571.0
*   840.8  *          *
* Length Wtd. (ft)        *  199.00  * Wetted Per. (ft)        *  278.11
*  173.27  *          *
* Min Ch El (ft)          * 1585.98  * Shear (lb/sq ft)        *    0.32
*    0.24  *          *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *    0.43
*    0.37  *          *
* Frctn Loss (ft)         *    1.49  * Cum Volume (acre-ft)    *    8.32
*   15.96  *    7.20  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   13.32
*   13.55  *   11.10  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.67

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
```

```
********
  9598.5 1586.12  9601.2 1586.27  9603.5 1586.45    9610 1586.04  9611.7
1585.9
  9615.3 1585.98  9628.6 1585.89  9650.8 1584.89  9890.9 1584.74  9912.7
1584.9
  9913.3 1584.92  9913.6 1584.91  9922.3 1585.01  9931.6  1584.8  9931.9
1584.82
    9942 1585.57    9981 1584.62  9982.8 1584.62   10011 1584.61 10071.1
1584.79
 10244.4    1586 10338.7 1586.51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9598.5    .069    9942    .049 10071.1    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9942 10071.1               121     121     121             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1585.34  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1585.32  * Reach Len. (ft)         *  121.00
*  121.00  *  121.00  *
* Crit W.S. (ft)          * 1585.06  * Flow Area (sq ft)       *  142.87
*   68.25  *   19.98  *
* E.G. Slope (ft/ft)      *0.005299  * Area (sq ft)            *  142.87
*   68.25  *   19.98  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *  137.39
*  104.13  *   16.47  *
* Top Width (ft)          *  491.74  * Top Width (ft)          *  297.32
*  118.77  *   75.65  *
* Vel Total (ft/s)        *    1.12  * Avg. Vel. (ft/s)        *    0.96
*    1.53  *    0.82  *
* Max Chl Dpth (ft)       *    0.71  * Hydr. Depth (ft)        *    0.48
*    0.57  *    0.26  *
* Conv. Total (cfs)       *  3544.4  * Conv. (cfs)             *  1887.5
*  1430.6  *   226.3  *
* Length Wtd. (ft)        *  121.00  * Wetted Per. (ft)        *  297.35
*  118.77  *   75.66  *
* Min Ch El (ft)          * 1584.61  * Shear (lb/sq ft)        *    0.16
*    0.19  *    0.09  *
* Alpha                   *    1.18  * Stream Power (lb/ft s) *    0.15
*    0.29  *    0.07  *
* Frctn Loss (ft)         *    1.19  * Cum Volume (acre-ft)    *    7.71
*   15.67  *    7.15  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   12.00
*   12.88  *   10.93  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
```

```
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.64

INPUT
Description:
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  4562.6 1585.73  4576.5 1585.98  4590.9 1585.21  4602.3  1584.9  4608.4
1584.89
  4617.8 1584.83  4633.5 1584.64  4639.3 1584.79  4642.2 1584.86  4645.7
1584.64
  4654.5 1584.42  4670.8 1584.25  4685.3 1583.74  4699.5 1583.78  4712.5
1583.77
  4748.1 1583.88  4765.3 1583.98  4769.5 1584.15  4778.2 1583.97  4789.6
1583.86
  4849.6 1583.85  4856.4 1583.87  4909.7 1583.84  4927.8 1583.89  4931.5
1583.84
  4939.3 1583.22  4947.6 1583.08  4949.3 1583.05  4951.8 1582.93    4956
1582.4
  4966.1  1583.4  4969.8 1583.62  4999.8 1583.51  5000.2 1583.51    5010
1583.53
  5029.1 1583.52  5029.8 1583.59  5062.1  1583.8  5093.5  1584.1  5171.7
1584.6
    5219 1585.11  5247.1 1585.35  5268.5 1585.43  5293.3 1585.65  5325.1
1585.83

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  4562.6    .069  4931.5    .049  5029.8    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        4931.5  5029.8              130     130     130             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1584.15  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1584.00  * Reach Len. (ft)         *  130.00
*  130.00  *  130.00  *
* Crit W.S. (ft)          * 1584.00  * Flow Area (sq ft)       *   35.40
*   60.43  *   11.80  *
* E.G. Slope (ft/ft)      *0.024275  * Area (sq ft)            *   35.40
*   60.43  *   11.80  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *   33.12
```

```
*  206.28  *   18.60  *
* Top Width (ft)         *  393.62  * Top Width (ft)         *  242.37
*   98.30  *   52.95  *
* Vel Total (ft/s)       *    2.40  * Avg. Vel. (ft/s)       *    0.94
*    3.41  *    1.58  *
* Max Chl Dpth (ft)      *    1.60  * Hydr. Depth (ft)       *    0.15
*    0.61  *    0.22  *
* Conv. Total (cfs)      *  1655.9  * Conv. (cfs)            *   212.5
*  1324.0  *   119.4  *
* Length Wtd. (ft)       *  130.00  * Wetted Per. (ft)       *  242.37
*   98.42  *   52.95  *
* Min Ch El (ft)         * 1582.40  * Shear (lb/sq ft)       *    0.22
*    0.93  *    0.34  *
* Alpha                  *    1.67  * Stream Power (lb/ft s) *    0.21
*    3.18  *    0.53  *
* Frctn Loss (ft)        *    1.24  * Cum Volume (acre-ft)   *    7.46
*   15.49  *    7.11  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *   11.25
*   12.58  *   10.75  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.62

INPUT
Description:
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9567.3 1584.18  9568.2 1584.15  9598.3  1583.4  9677.5 1582.34  9681.3
1582.33
  9685.3  1582.3    9686  1582.3  9688.9 1582.22  9699.8 1581.93  9708.8
1581.95
  9717.7 1581.94  9737.4 1582.29    9740 1582.35  9761.7  1582.1  9769.8
1582.03
```

```
  9808.7  1582.4  9809.3  1582.4  9838.9  1582.7  9839.3  1582.7  9840.3
1582.69
  9853.1  1582.6  9868.9 1581.89  9875.7 1581.62    9894 1582.29  9899.3
1582.52
  9931.7 1582.43  9959.3 1582.43  9971.7 1581.65  9981.1 1580.97  9992.1
1581.14
 10004.3 1581.32 10009.9  1581.4 10012.3 1581.23 10015.7 1581.09 10027.4
1581.64
   10037 1582.01 10040.3 1582.31 10044.5 1582.48 10085.3 1582.78   10116
1583.09
 10199.4 1583.66 10246.9 1583.82 10270.5 1583.98 10292.1 1584.22 10352.9
1584.59

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9567.3    .069  9959.3    .049 10044.5    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9959.3 10044.5              154     154     154             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1582.62  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1582.56  * Reach Len. (ft)         *  154.00
*  154.00  *  154.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   85.79
*   88.69  *    0.46  *
* E.G. Slope (ft/ft)      *0.005056  * Area (sq ft)            *   85.79
*   88.69  *    0.46  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *   61.61
*  196.28  *    0.11  *
* Top Width (ft)          *  366.17  * Top Width (ft)          *  269.78
*   85.20  *   11.19  *
* Vel Total (ft/s)        *    1.47  * Avg. Vel. (ft/s)        *    0.72
*    2.21  *    0.23  *
* Max Chl Dpth (ft)       *    1.59  * Hydr. Depth (ft)        *    0.32
*    1.04  *    0.04  *
* Conv. Total (cfs)       *  3628.2  * Conv. (cfs)             *   866.4
*  2760.3  *     1.5  *
* Length Wtd. (ft)        *  154.00  * Wetted Per. (ft)        *  269.83
*   85.30  *   11.19  *
* Min Ch El (ft)          * 1580.97  * Shear (lb/sq ft)        *    0.10
*    0.33  *    0.01  *
* Alpha                   *    1.77  * Stream Power (lb/ft s) *    0.07
*    0.73  *    0.00  *
* Frctn Loss (ft)         *    1.30  * Cum Volume (acre-ft)    *    7.28
*   15.27  *    7.09  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *   10.49
*   12.31  *   10.65  *
**********************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
```

```
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10                RS: 1.59

INPUT
Description:
Station Elevation Data    num=      57
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
    9650 1582.45  9663.1 1582.32  9717.1 1582.88  9718.4 1582.87  9719.4
1582.86
  9722.5 1582.84    9766 1582.33  9778.2 1582.36  9783.7 1582.43  9788.1
1582.4
  9791.1 1582.17  9803.5 1580.55  9813.5 1581.11  9819.3 1581.02  9835.9
1582.18
  9843.8 1582.15    9866 1581.65  9877.6 1581.78  9883.2 1581.78  9887.2
1581.42
    9917 1581.02  9917.5 1580.98  9920.6 1580.92  9923.6 1580.96  9929.6
1581.06
    9939 1581.03  9945.2 1580.95  9954.6 1580.95  9957.2  1580.9  9964.6
1580.87
  9968.3 1580.64  9976.7 1580.43  9982.6  1580.2    9991 1579.16 10000.2
1579.44
 10010.6 1579.78 10022.3 1580.38 10032.1 1580.67 10049.5 1581.28 10058.7
1581.33
 10079.9  1581.4 10110.3  1581.7 10121.2 1581.91 10129.4 1581.86 10134.4
1581.88
 10138.8 1581.79 10149.2 1581.54 10151.2  1581.4 10163.5 1581.55 10173.4
1581.9
   10200 1582.27 10201.5 1582.28 10204.8  1582.3 10227.6  1582.5 10303.8
1582.85
 10331.1 1583.05 10333.4 1583.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9650    .069  9982.6    .049 10022.3    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.6 10022.3              118     118     118             .1
.3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
    9650  9835.9 1582.18       F

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1581.29  * Element                 *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.31  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)         * 1580.98  * Reach Len. (ft)         *  118.00
*  118.00  *  118.00  *
* Crit W.S. (ft)         * 1580.81  * Flow Area (sq ft)       *    9.81
*   51.09  *    5.80  *
* E.G. Slope (ft/ft)     *0.016904  * Area (sq ft)            *   12.15
*   51.09  *    5.80  *
* Q Total (cfs)          *  258.00  * Flow (cfs)              *   10.49
*  237.97  *    9.54  *
* Top Width (ft)         *  115.95  * Top Width (ft)          *   57.65
*   39.70  *   18.60  *
* Vel Total (ft/s)       *    3.87  * Avg. Vel. (ft/s)        *    1.07
*    4.66  *    1.64  *
* Max Chl Dpth (ft)      *    1.82  * Hydr. Depth (ft)        *    0.21
*    1.29  *    0.31  *
* Conv. Total (cfs)      *  1984.4  * Conv. (cfs)             *    80.7
*  1830.3  *    73.4  *
* Length Wtd. (ft)       *  118.00  * Wetted Per. (ft)        *   46.74
*   39.79  *   18.61  *
* Min Ch El (ft)         * 1579.16  * Shear (lb/sq ft)        *    0.22
*    1.36  *    0.33  *
* Alpha                  *    1.35  * Stream Power (lb/ft s) *    0.24
*    6.31  *    0.54  *
* Frctn Loss (ft)        *    0.51  * Cum Volume (acre-ft)    *    7.11
*   15.02  *    7.08  *
* C & E Loss (ft)        *    0.08  * Cum SA (acres)          *    9.91
*   12.09  *   10.60  *
*****************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid, water
         surface was used.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.57

INPUT
Description:
Station Elevation Data    num=      62
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
    9680 1582.37    9732 1581.66  9776.6 1581.32  9779.1 1581.29  9796.1
1581.3
  9796.5  1581.3  9806.8 1580.88  9812.4  1580.7  9817.4 1580.95  9836.2
1581.42
  9845.3 1581.39  9850.1 1581.26  9856.2 1581.27  9863.8  1581.1    9880
1580.27
  9883.2 1580.05  9884.5 1580.03  9898.8  1579.9  9926.5 1580.38    9942
```

```
1579.77
  9957.3 1579.55  9959.6 1580.09    9965 1579.38    9974 1578.95  9997.6
1578.52
  9998.2 1578.49 10002.1 1578.74 10013.9 1579.56 10017.4  1579.5 10022.5
1579.57
 10032.1 1579.45 10043.6 1579.72 10052.7    1580 10079.5 1580.77 10084.5
1580.78
 10116.1 1580.95 10147.7 1581.01 10174.5 1581.14 10186.7 1581.41 10191.2
1581.42
 10191.9 1581.47 10193.4 1581.39 10203.2 1580.73 10213.4  1580.8 10224.8
1580.71
   10230 1581.81 10230.4 1581.89 10232.1 1582.01 10238.4 1582.38 10239.5
1582.25
 10243.6 1581.72 10244.9 1581.62   10246 1581.28 10249.5  1580.3 10257.7
1580.51
 10267.4 1580.67 10276.3 1580.79   10306 1581.47 10306.7  1581.5 10338.8
1581.77
 10354.2 1581.85 10399.7 1582.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***************************************************
    9680    .069    9965    .049 10013.9    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9965 10013.9              158     158     158             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1580.70  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.04  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1580.66  * Reach Len. (ft)         *  158.00
*  158.00  *  158.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   59.28
*   85.84  *   50.75  *
* E.G. Slope (ft/ft)      *0.001934  * Area (sq ft)            *   59.28
*   85.84  *   50.75  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *   41.67
*  166.49  *   49.84  *
* Top Width (ft)          *  221.55  * Top Width (ft)          *   92.56
*   48.90  *   80.08  *
* Vel Total (ft/s)        *    1.32  * Avg. Vel. (ft/s)        *    0.70
*    1.94  *    0.98  *
* Max Chl Dpth (ft)       *    2.17  * Hydr. Depth (ft)        *    0.64
*    1.76  *    0.63  *
* Conv. Total (cfs)       *  5866.2  * Conv. (cfs)             *   947.5
*  3785.5  *  1133.2  *
* Length Wtd. (ft)        *  158.00  * Wetted Per. (ft)        *   92.71
*   48.95  *   80.16  *
* Min Ch El (ft)          * 1578.49  * Shear (lb/sq ft)        *    0.08
*    0.21  *    0.08  *
* Alpha                   *    1.55  * Stream Power (lb/ft s) *    0.05
*    0.41  *    0.08  *
* Frctn Loss (ft)         *    0.51  * Cum Volume (acre-ft)    *    7.01
*   14.83  *    7.00  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    9.70
```

```
*   11.97  *   10.47  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.54

INPUT
Description: Lake Pleasant Road Dip Crossing
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9775.2 1580.54    9823 1580.13  9840.7 1580.27  9873.3 1579.89  9902.1
1580.21
  9909.8 1579.97  9922.5 1579.45  9929.1 1579.39    9968 1579.52  9975.8
1579.65
 10001.1  1579.4 10029.2 1579.42 10031.4 1579.45 10032.5 1580.37 10041.8
1579.83
 10050.4 1578.85 10050.7  1578.8 10056.4 1579.04 10063.5 1579.28 10064.3
1579.36
 10076.5 1579.61 10088.4 1579.71 10110.2 1579.67   10117 1579.87 10248.5
1580.21
   10280 1580.02 10281.2 1579.99 10282.9 1580.12 10287.7 1580.34 10291.9
1580.47
 10318.5 1580.41 10327.5 1580.26 10355.1 1580.43 10360.9 1582.04 10361.5
1582.12
 10365.1 1582.12 10366.3 1582.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9775.2    .069  9902.1    .016 10032.5    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9902.1 10032.5              333     333     333             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1580.17  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.25  * Wt. n-Val.              *   0.069
*   0.016  *   0.054  *
* W.S. Elev (ft)         * 1579.92  * Reach Len. (ft)         *  333.00
*  333.00  *  333.00  *
* Crit W.S. (ft)         * 1579.92  * Flow Area (sq ft)       *    0.10
*   52.71  *   32.28  *
* E.G. Slope (ft/ft)     *0.006364  * Area (sq ft)            *    0.10
```

```
*   52.71  *   32.28  *
* Q Total (cfs)          *  258.00  * Flow (cfs)             *    0.01
*  224.16  *   33.83  *
* Top Width (ft)         *  224.77  * Top Width (ft)         *    5.99
*  121.05  *   97.74  *
* Vel Total (ft/s)       *    3.03  * Avg. Vel. (ft/s)       *    0.11
*    4.25  *    1.05  *
* Max Chl Dpth (ft)      *    1.12  * Hydr. Depth (ft)       *    0.02
*    0.44  *    0.33  *
* Conv. Total (cfs)      *  3234.0  * Conv. (cfs)            *     0.1
*  2809.8  *   424.1  *
* Length Wtd. (ft)       *  333.00  * Wetted Per. (ft)       *    5.99
*  121.23  *   97.82  *
* Min Ch El (ft)         * 1579.39  * Shear (lb/sq ft)       *    0.01
*    0.17  *    0.13  *
* Alpha                  *    1.72  * Stream Power (lb/ft s) *    0.00
*    0.73  *    0.14  *
* Frctn Loss (ft)        *    1.04  * Cum Volume (acre-ft)   *    6.91
*   14.58  *    6.85  *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)         *    9.53
*   11.66  *   10.14  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.47

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9682.2 1580.17  9850.7  1577.9  9873.1 1577.35  9904.1 1577.31  9916.4
1577.2
  9929.8 1576.86  9950.2 1576.56  9969.3 1577.05  9986.5 1576.83  9995.1
1576.23
   10000 1576.33 10013.9 1577.32 10028.9 1577.09 10029.3 1577.11 10030.3
```

```
1577.08
 10044.6 1577.05 10056.5  1578.3 10057.2 1578.38 10057.4 1578.39 10057.5
1578.39
 10061.1 1578.33 10105.8 1578.32 10117.5 1578.51 10158.7 1578.65 10181.7
1578.46
 10212.1 1578.45 10227.7 1578.35 10244.9 1578.35

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9682.2    .069  9986.5    .049 10013.9    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.5 10013.9              386     386     386             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1578.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1578.22  * Reach Len. (ft)         *  386.00
*  386.00  *  386.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  151.83
*   43.34  *   39.69  *
* E.G. Slope (ft/ft)      *0.001848  * Area (sq ft)            *  151.83
*   43.34  *   39.69  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *  136.12
*   76.59  *   45.30  *
* Top Width (ft)          *  228.50  * Top Width (ft)          *  159.29
*   27.40  *   41.80  *
* Vel Total (ft/s)        *    1.10  * Avg. Vel. (ft/s)        *    0.90
*    1.77  *    1.14  *
* Max Chl Dpth (ft)       *    1.99  * Hydr. Depth (ft)        *    0.95
*    1.58  *    0.95  *
* Conv. Total (cfs)       *  6001.7  * Conv. (cfs)             *  3166.3
*  1781.6  *  1053.7  *
* Length Wtd. (ft)        *  386.00  * Wetted Per. (ft)        *  159.32
*   27.46  *   41.87  *
* Min Ch El (ft)          * 1576.23  * Shear (lb/sq ft)        *    0.11
*    0.18  *    0.11  *
* Alpha                   *    1.31  * Stream Power (lb/ft s) *    0.10
*    0.32  *    0.12  *
* Frctn Loss (ft)         *    1.84  * Cum Volume (acre-ft)    *    6.32
*   14.22  *    6.57  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    8.89
*   11.09  *    9.61  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW10
REACH: NRW10 RS: 1.40

INPUT
Description:
Station Elevation Data num= 61

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9813.3 1578.24  9815.9 1578.22  9838.3 1577.94  9860.6 1577.74  9875.9
1577.53
  9905.3 1577.24  9927.7 1576.94    9943  1576.8  9962.2  1576.3  9969.9
1576.16
  9971.5 1576.16  9976.6 1576.13 10000.9 1576.05 10014.6 1576.53 10027.7
1576.89
 10038.3 1577.21 10046.3 1577.66 10056.8 1576.56 10068.1  1575.6 10081.2
1576.36
 10099.6  1577.3   10126 1577.39   10129 1577.38 10156.7 1576.94 10160.7
1576.89
 10178.7 1576.15 10193.1 1575.73 10196.5 1575.69 10201.9 1575.56 10222.2
1575.41
 10225.2 1575.46 10231.1 1575.34 10247.5 1575.17 10251.9 1575.16 10263.4
1575.53
 10277.1    1576 10279.6 1576.03 10280.9 1576.06 10282.6 1576.08   10296
1576.13
 10320.3 1576.14 10330.8 1576.29 10331.3 1576.32 10336.3 1576.42 10343.8
1576.6
 10344.3 1576.59 10351.1  1576.4 10362.8  1576.7 10369.6 1577.19   10381
1577.04
 10393.8 1577.21 10405.1 1576.64   10420 1576.92 10420.9 1576.91 10444.4
1577.26
 10475.1  1577.2 10491.9 1577.25 10495.1 1577.24 10501.4 1577.34 10533.3
1578.09
 10533.8  1578.1
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9813.3    .069    9943    .049 10027.7    .054
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9943 10027.7              199     199     199             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1576.39  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1576.25  * Reach Len. (ft)         *  199.00
*  199.00  *  199.00  *
* Crit W.S. (ft)          * 1576.17  * Flow Area (sq ft)       *
*    5.35  *   83.36  *
* E.G. Slope (ft/ft)      *0.030570  * Area (sq ft)            *
```

```
*    5.35  *   83.36  *
* Q Total (cfs)          *  258.00  * Flow (cfs)              *
*    7.23  *  250.77  *
* Top Width (ft)         *  212.21  * Top Width (ft)          *
*   41.64  *  170.57  *
* Vel Total (ft/s)       *    2.91  * Avg. Vel. (ft/s)        *
*    1.35  *    3.01  *
* Max Chl Dpth (ft)      *    1.09  * Hydr. Depth (ft)        *
*    0.13  *    0.49  *
* Conv. Total (cfs)      *  1475.6  * Conv. (cfs)             *
*    41.4  *  1434.2  *
* Length Wtd. (ft)       *  199.00  * Wetted Per. (ft)        *
*   41.65  *  170.64  *
* Min Ch El (ft)         * 1576.05  * Shear (lb/sq ft)        *
*    0.25  *    0.93  *
* Alpha                  *    1.05  * Stream Power (lb/ft s) *
*    0.33  *    2.80  *
* Frctn Loss (ft)        *    2.30  * Cum Volume (acre-ft)    *    5.65
*   14.00  *    6.03  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *    8.19
*   10.79  *    8.67  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.36

INPUT
Description: North Section 10 Line T5NR1E
Station Elevation Data    num=      52
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta
Elev
*************************************************************************
********
  9576.9 1576.93  9620.7 1576.74  9655.9  1577.1  9666.8 1576.93  9670.9
1576.76
  9678.4 1577.33  9684.7  1577.7  9705.1 1576.16  9712.3 1576.55  9728.2
1577.16
  9737.5 1577.09  9752.5 1576.69  9757.7  1576.2  9768.5  1575.4    9772
1575.54
  9780.7 1575.64  9792.7 1575.85  9827.8 1575.02  9832.4 1574.94  9899.5
1574.34
  9923.6 1573.99  9946.6 1573.53  9950.3  1573.6  9965.1  1573.1  9975.3
1572.57
  9986.4 1572.75 10003.7 1573.07 10010.4 1573.24 10040.1 1573.38 10070.9
1573.1
 10075.5 1572.95 10087.2 1573.31 10100.6 1574.06 10140.3 1574.18 10191.7
1574.69
 10194.5 1574.74 10223.2 1575.38 10243.6 1575.17 10254.3 1575.13 10316.9
```

```
1575.75
   10330 1576.05 10332.5 1576.08 10333.8  1576.2   10346 1576.42 10356.4
1575.79
 10361.4 1575.77 10364.1 1575.99 10367.4 1576.39 10371.6 1576.22 10407.4
1576
 10440.3 1576.06 10484.1 1576.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9576.9    .069  9950.3    .049 10010.4    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9950.3 10010.4              156     156     156             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1574.07  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.07  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1574.01  * Reach Len. (ft)         *  156.00
*  156.00  *  156.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    7.26
*   61.18  *   63.24  *
* E.G. Slope (ft/ft)      *0.006023  * Area (sq ft)            *    7.26
*   61.18  *   63.24  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *    4.97
*  145.68  *  107.35  *
* Top Width (ft)          *  177.03  * Top Width (ft)          *   27.72
*   60.10  *   89.21  *
* Vel Total (ft/s)        *    1.96  * Avg. Vel. (ft/s)        *    0.68
*    2.38  *    1.70  *
* Max Chl Dpth (ft)       *    1.43  * Hydr. Depth (ft)        *    0.26
*    1.02  *    0.71  *
* Conv. Total (cfs)       *  3324.4  * Conv. (cfs)             *    64.1
*  1877.0  *  1383.3  *
* Length Wtd. (ft)        *  156.00  * Wetted Per. (ft)        *   27.72
*   60.13  *   89.24  *
* Min Ch El (ft)          * 1572.57  * Shear (lb/sq ft)        *    0.10
*    0.38  *    0.27  *
* Alpha                   *    1.15  * Stream Power (lb/ft s) *    0.07
*    0.91  *    0.45  *
* Frctn Loss (ft)         *    1.60  * Cum Volume (acre-ft)    *    5.64
*   13.85  *    5.69  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    8.13
*   10.55  *    8.07  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW10
REACH: NRW10 RS: 1.33

INPUT
Description:
Station Elevation Data num= 38

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9439.8    1576  9446.7 1575.96  9455.7 1575.62  9462.8 1575.48  9474.6
1575.06
  9495.7  1574.6  9507.6  1574.4  9546.7  1574.4  9579.2 1574.58  9810.5
1573.98
  9901.4 1572.99  9922.7 1573.25  9946.9 1572.34  9968.1 1572.13  9971.9
1571.99
  9995.4 1570.89 10006.6 1571.08   10032 1571.67 10048.7 1571.78 10063.1
1572
 10069.7 1571.97 10073.6 1572.03 10081.8 1572.23 10100.8  1572.4 10132.2
1572.9
 10197.9  1573.6 10296.4 1573.83 10310.1 1574.02 10356.4 1574.07 10394.8
1574.29
 10398.4 1574.39 10420.4 1575.18 10439.1 1576.13 10442.4 1576.27 10448.8
1576.32
 10450.5  1576.3 10451.2 1576.27 10466.8 1576.38
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9439.8    .069  9968.1    .049   10032    .054
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9968.1   10032              214     214     214             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1572.47  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1572.24  * Reach Len. (ft)         *  214.00
*  214.00  *  214.00  *
* Crit W.S. (ft)          * 1572.17  * Flow Area (sq ft)       *    0.65
*   55.73  *   17.34  *
* E.G. Slope (ft/ft)      *0.021113  * Area (sq ft)            *    0.65
*   55.73  *   17.34  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *    0.30
*  224.06  *   33.64  *
* Top Width (ft)          *  126.65  * Top Width (ft)          *   11.45
*   63.90  *   51.30  *
* Vel Total (ft/s)        *    3.50  * Avg. Vel. (ft/s)        *    0.46
*    4.02  *    1.94  *
* Max Chl Dpth (ft)       *    1.35  * Hydr. Depth (ft)        *    0.06
*    0.87  *    0.34  *
* Conv. Total (cfs)       *  1775.6  * Conv. (cfs)             *     2.1
```

```
*  1542.0  *   231.5  *
* Length Wtd. (ft)       *  214.00  * Wetted Per. (ft)       *   11.45
*   63.94  *   51.30  *
* Min Ch El (ft)         * 1570.89  * Shear (lb/sq ft)       *    0.07
*    1.15  *    0.45  *
* Alpha                  *    1.19  * Stream Power (lb/ft s) *    0.03
*    4.62  *    0.86  *
* Frctn Loss (ft)        *    1.83  * Cum Volume (acre-ft)   *    5.62
*   13.64  *    5.55  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)         *    8.06
*   10.33  *    7.82  *
***********************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW10
REACH: NRW10 RS: 1.29

INPUT
Description:
Station Elevation Data num= 21

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9565.7 1574.04  9868.1 1571.97  9913.2 1571.48  9914.5 1571.49    9939
1570.36
  9952.2 1570.07    9988 1569.46  9995.2 1569.24 10020.1 1569.82 10030.6
1570.01
 10032.6 1570.01   10060 1568.77 10062.8 1568.61 10064.8 1568.79 10072.5
1569.35
 10098.2  1570.4 10111.2    1571 10154.3 1571.45 10209.1 1571.69 10369.6
1571.81
   10395 1572.05
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9565.7    .069  9913.2    .049 10020.1    .054
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9952.2 10098.2              330     330     330             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
***********************************************************************
***********************
* E.G. Elev (ft)         * 1570.58  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.05  * Wt. n-Val.              *   0.049
```

```
*   0.052  *   0.054  *
* W.S. Elev (ft)          * 1570.53  * Reach Len. (ft)         *  330.00
*  330.00  *  330.00  *
* Crit W.S. (ft)          * 1570.02  * Flow Area (sq ft)       *    4.49
*  136.54  *    0.19  *
* E.G. Slope (ft/ft)      *0.004586  * Area (sq ft)            *    4.49
*  136.54  *    0.19  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *    3.80
*  254.14  *    0.06  *
* Top Width (ft)          *  165.74  * Top Width (ft)          *   16.91
*  146.00  *    2.83  *
* Vel Total (ft/s)        *    1.83  * Avg. Vel. (ft/s)        *    0.85
*    1.86  *    0.30  *
* Max Chl Dpth (ft)       *    1.92  * Hydr. Depth (ft)        *    0.27
*    0.94  *    0.07  *
* Conv. Total (cfs)       *  3810.0  * Conv. (cfs)             *    56.2
*  3753.0  *     0.8  *
* Length Wtd. (ft)        *  330.00  * Wetted Per. (ft)        *   16.91
*  146.10  *    2.84  *
* Min Ch El (ft)          * 1568.61  * Shear (lb/sq ft)        *    0.08
*    0.27  *    0.02  *
* Alpha                   *    1.03  * Stream Power (lb/ft s) *    0.06
*    0.50  *    0.01  *
* Frctn Loss (ft)         *    2.60  * Cum Volume (acre-ft)    *    5.61
*   13.17  *    5.51  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    7.99
*    9.82  *    7.69  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.23

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9673 1570.81  9739.4  1570.4  9869.4 1569.33  9892.5 1569.42  9908.3
1568.92
  9942.2 1568.36    9959 1567.81  9974.5  1567.6  9990.7 1567.57 10010.5
1566.82
   10025 1566.74 10040.1 1566.84 10045.1 1567.02 10068.7 1566.93 10072.8
1566.94
 10074.6 1566.93 10093.3 1568.61 10093.4 1568.61 10093.6 1568.61 10113.4
1569.44
 10116.4 1569.44 10122.9 1569.49 10137.7 1569.22 10169.5 1569.65 10202.8
1569.64
```

```
 10210.4 1569.77 10235.4 1570.05 10250.6 1570.13 10256.4 1570.23 10261.7
1570.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9673    .069  9974.5    .049 10093.3    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.5 10093.3              288     288     288             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1567.98  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.069
*   0.049  *          *
* W.S. Elev (ft)          * 1567.82  * Reach Len. (ft)         *  288.00
*  288.00  *  288.00  *
* Crit W.S. (ft)          * 1567.63  * Flow Area (sq ft)       *    1.78
*   80.81  *          *
* E.G. Slope (ft/ft)      *0.016589  * Area (sq ft)            *    1.78
*   80.81  *          *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *    1.15
*  256.85  *          *
* Top Width (ft)          *  125.80  * Top Width (ft)          *   15.79
*  110.00  *          *
* Vel Total (ft/s)        *    3.12  * Avg. Vel. (ft/s)        *    0.65
*    3.18  *          *
* Max Chl Dpth (ft)       *    1.08  * Hydr. Depth (ft)        *    0.11
*    0.73  *          *
* Conv. Total (cfs)       *  2003.2  * Conv. (cfs)             *     8.9
*  1994.2  *          *
* Length Wtd. (ft)        *  288.00  * Wetted Per. (ft)        *   15.80
*  110.06  *          *
* Min Ch El (ft)          * 1566.74  * Shear (lb/sq ft)        *    0.12
*    0.76  *          *
* Alpha                   *    1.03  * Stream Power (lb/ft s) *    0.08
*    2.42  *          *
* Frctn Loss (ft)         *    3.02  * Cum Volume (acre-ft)    *    5.59
*   12.34  *    5.51  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    7.86
*    8.85  *    7.68  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
```

```
REACH: NRW10                RS: 1.18

INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9569.1  1566.5  9829.5 1566.37  9889.6 1565.72  9913.7 1565.65  9918.1
1565.66
  9922.9 1565.46   9942  1564.8  9957.7  1564.5  9967.8 1564.26  9986.8
1563.59
 10003.6 1562.87   10035 1564.21   10038 1564.39 10041.2 1564.42 10067.3
1565.07
 10073.6 1565.45   10082  1566.1 10089.5  1566.1 10099.4 1566.71 10114.7
1566.99
 10136.8 1567.05 10148.3 1567.47 10162.6 1567.19 10176.3 1567.19 10279.7
1568.43
 10362.2 1568.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9569.1    .069  9957.7    .049   10038    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9957.7   10038              345     345     345             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1564.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1564.83  * Reach Len. (ft)         *  345.00
*  345.00  *  345.00  *
* Crit W.S. (ft)          * 1564.35  * Flow Area (sq ft)       *    2.78
*   90.43  *    4.66  *
* E.G. Slope (ft/ft)      *0.007229  * Area (sq ft)            *    2.78
*   90.43  *    4.66  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *    1.55
*  252.24  *    4.20  *
* Top Width (ft)          *  116.28  * Top Width (ft)          *   16.46
*   80.30  *   19.52  *
* Vel Total (ft/s)        *    2.64  * Avg. Vel. (ft/s)        *    0.56
*    2.79  *    0.90  *
* Max Chl Dpth (ft)       *    1.96  * Hydr. Depth (ft)        *    0.17
*    1.13  *    0.24  *
* Conv. Total (cfs)       *  3034.4  * Conv. (cfs)             *    18.3
*  2966.7  *    49.4  *
* Length Wtd. (ft)        *  345.00  * Wetted Per. (ft)        *   16.47
*   80.36  *   19.52  *
* Min Ch El (ft)          * 1562.87  * Shear (lb/sq ft)        *    0.08
*    0.51  *    0.11  *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *    0.04
*    1.42  *    0.10  *
* Frctn Loss (ft)         *    3.41  * Cum Volume (acre-ft)    *    5.57
```

```
*   11.78  *    5.49  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    7.76
*    8.22  *    7.62  *
***********************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW10
REACH: NRW10 RS: 1.11

INPUT
Description:
Station Elevation Data num= 27

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
    9504 1563.27  9598.4 1562.64  9682.6 1562.42  9811.1 1562.56  9843.7
1562.4
  9871.5 1563.28  9889.8 1563.17  9900.7  1563.6  9935.2 1562.61  9966.5
1560.83
  9986.6 1560.13    9991 1560.12   10000 1560.28 10019.5 1561.03 10047.8
1560.34
 10050.5 1560.44 10057.9 1560.64 10084.5 1561.53 10115.6 1561.81 10145.3
1562.76
 10177.2 1563.34 10236.4 1565.03 10266.8 1565.49   10277 1565.54 10297.1
1565.8
 10349.2 1566.04 10353.8 1565.97
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9504    .069  9966.5    .049 10019.5    .054
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9966.5 10019.5              379     379     379             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
***********************************************************************
***********************
* E.G. Elev (ft)         * 1561.53  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)         * 1561.39  * Reach Len. (ft)         *  379.00
*  379.00  *  379.00  *
* Crit W.S. (ft)         * 1561.17  * Flow Area (sq ft)       *    2.72
*   48.67  *   37.09  *
* E.G. Slope (ft/ft)     *0.014350  * Area (sq ft)            *    2.72
```

```
*   48.67  *   37.09  *
* Q Total (cfs)          *  258.00  * Flow (cfs)             *    2.98
*  167.00  *   88.02  *
* Top Width (ft)         *  123.46  * Top Width (ft)         *    9.77
*   53.00  *   60.69  *
* Vel Total (ft/s)       *    2.92  * Avg. Vel. (ft/s)       *    1.10
*    3.43  *    2.37  *
* Max Chl Dpth (ft)      *    1.27  * Hydr. Depth (ft)       *    0.28
*    0.92  *    0.61  *
* Conv. Total (cfs)      *  2153.7  * Conv. (cfs)            *    24.9
*  1394.1  *   734.8  *
* Length Wtd. (ft)       *  379.00  * Wetted Per. (ft)       *    9.79
*   53.03  *   60.71  *
* Min Ch El (ft)         * 1560.12  * Shear (lb/sq ft)       *    0.25
*    0.82  *    0.55  *
* Alpha                  *    1.12  * Stream Power (lb/ft s) *    0.27
*    2.82  *    1.30  *
* Frctn Loss (ft)        *    4.51  * Cum Volume (acre-ft)   *    5.55
*   11.23  *    5.32  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    7.65
*    7.69  *    7.30  *
**************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 1.04

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9557.9 1560.02  9734.6 1558.75  9741.5 1558.82  9762.8 1558.42  9789.1
1557.99
  9797.7 1557.92  9892.3  1556.6    9908  1556.5  9931.4 1556.54  9950.3
1556.72
  9954.5 1556.79  9967.7  1556.1  9972.8 1556.45  9975.1 1556.61  9976.7
1556.59
  9981.2 1556.13  9987.7 1555.54  9988.1  1555.5 10000.8 1555.83 10005.1
1555.75
 10030.8 1555.81 10044.9 1556.39 10074.8 1556.79 10193.8 1558.92 10340.6
1560.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9557.9    .069  9976.7    .049 10044.9    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.7 10044.9              308     308     308             .1
.3
```

```
CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1557.02  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1556.89  * Reach Len. (ft)         *  308.00
*  308.00  *  308.00  *
* Crit W.S. (ft)          * 1556.69  * Flow Area (sq ft)       *   32.88
*   69.80  *    9.28  *
* E.G. Slope (ft/ft)      *0.010011  * Area (sq ft)            *   32.88
*   69.80  *    9.28  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *   32.62
*  214.95  *   10.44  *
* Top Width (ft)          *  208.98  * Top Width (ft)          *  105.25
*   68.20  *   35.53  *
* Vel Total (ft/s)        *    2.30  * Avg. Vel. (ft/s)        *    0.99
*    3.08  *    1.12  *
* Max Chl Dpth (ft)       *    1.39  * Hydr. Depth (ft)        *    0.31
*    1.02  *    0.26  *
* Conv. Total (cfs)       *  2578.6  * Conv. (cfs)             *   326.0
*  2148.3  *   104.3  *
* Length Wtd. (ft)        *  308.00  * Wetted Per. (ft)        *  105.29
*   68.27  *   35.54  *
* Min Ch El (ft)          * 1555.50  * Shear (lb/sq ft)        *    0.20
*    0.64  *    0.16  *
* Alpha                   *    1.52  * Stream Power (lb/ft s) *    0.19
*    1.97  *    0.18  *
* Frctn Loss (ft)         *    3.17  * Cum Volume (acre-ft)    *    5.39
*   10.71  *    5.12  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    7.15
*    7.16  *    6.88  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.98

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9755.3 1556.01  9956.2 1552.82  9962.6 1552.94  9980.3 1553.16    9982
1553.05
  9987.8 1552.77  9990.3 1552.53  9998.3 1551.96 10002.1 1551.95 10006.9
1552.18
 10017.2 1552.91 10028.2 1553.05 10048.1 1553.48   10051 1553.58 10053.9
1553.72
 10063.4  1553.8 10079.5 1554.16 10113.9 1555.16 10124.6 1555.37 10145.2
```

```
1555.55
 10150.5 1555.84 10169.8 1556.73 10179.4 1556.75 10185.1 1556.99 10200.2
1557.05
 10213.1 1556.51 10320.3 1557.45   10385 1558.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9755.3    .069  9980.3    .049 10017.2    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9980.3 10017.2              328     328     328             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1553.85  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1553.70  * Reach Len. (ft)         *  328.00
*  328.00  *  328.00  *
* Crit W.S. (ft)          * 1553.49  * Flow Area (sq ft)       *   41.48
*   46.39  *   17.37  *
* E.G. Slope (ft/ft)      *0.010600  * Area (sq ft)            *   41.48
*   46.39  *   17.37  *
* Q Total (cfs)           *  258.00  * Flow (cfs)              *   59.45
*  168.49  *   30.06  *
* Top Width (ft)          *  153.06  * Top Width (ft)          *   79.79
*   36.90  *   36.37  *
* Vel Total (ft/s)        *    2.45  * Avg. Vel. (ft/s)        *    1.43
*    3.63  *    1.73  *
* Max Chl Dpth (ft)       *    1.75  * Hydr. Depth (ft)        *    0.52
*    1.26  *    0.48  *
* Conv. Total (cfs)       *  2505.9  * Conv. (cfs)             *   577.4
*  1636.5  *   292.0  *
* Length Wtd. (ft)        *  328.00  * Wetted Per. (ft)        *   79.80
*   36.97  *   36.38  *
* Min Ch El (ft)          * 1551.95  * Shear (lb/sq ft)        *    0.34
*    0.83  *    0.32  *
* Alpha                   *    1.57  * Stream Power (lb/ft s) *    0.49
*    3.02  *    0.55  *
* Frctn Loss (ft)         *    2.64  * Cum Volume (acre-ft)    *    5.13
*   10.30  *    5.03  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    6.50
*    6.79  *    6.62  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW10
REACH: NRW10                RS: 0.92

INPUT
Description: Section lines 10 & 11 T5NR1E
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9703.3 1554.12  9753.6 1553.57  9827.1 1552.12  9877.2  1550.8  9928.4
1549.74
    9942 1549.62  9952.4 1549.78  9957.1 1549.92    9962 1549.82  9963.9
1549.9
  9967.3 1549.64  9978.7 1549.25  9984.7 1549.12  9987.4 1549.01  9990.2
1549.11
  9999.4 1549.63 10010.4 1549.24 10012.4 1549.23   10128 1552.86 10153.4
1553.5
 10228.4 1554.47   10369 1554.96

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9703.3    .069  9963.9    .049   10128    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9963.9   10128              277     277     277             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1551.20  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.069
*   0.049  *          *
* W.S. Elev (ft)          * 1551.08  * Reach Len. (ft)         *  277.00
*  277.00  *  277.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   90.75
*  137.99  *          *
* E.G. Slope (ft/ft)      *0.007195  * Area (sq ft)            *   90.75
*  137.99  *          *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  158.05
*  418.95  *          *
* Top Width (ft)          *  205.01  * Top Width (ft)          *   97.47
*  107.54  *          *
* Vel Total (ft/s)        *    2.52  * Avg. Vel. (ft/s)        *    1.74
*    3.04  *          *
* Max Chl Dpth (ft)       *    2.07  * Hydr. Depth (ft)        *    0.93
*    1.28  *          *
* Conv. Total (cfs)       *  6802.2  * Conv. (cfs)             *  1863.3
*  4939.0  *          *
* Length Wtd. (ft)        *  277.00  * Wetted Per. (ft)        *   97.49
*  107.61  *          *
* Min Ch El (ft)          * 1549.01  * Shear (lb/sq ft)        *    0.42
*    0.58  *          *
* Alpha                   *    1.18  * Stream Power (lb/ft s) *    0.73
*    1.75  *          *
* Frctn Loss (ft)         *    2.87  * Cum Volume (acre-ft)    *    4.63
```

```
*    9.61  *    4.96  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    5.83
*    6.25  *    6.49  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.87

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9681.7 1552.01    9802  1550.9  9832.3  1550.4  9918.9 1548.21  9944.8
1547.3
  9948.6  1547.2  9953.2 1547.13    9963 1547.12    9968 1547.15  9981.9
1546.9
  9985.4 1546.92 10001.7 1546.55 10014.8 1546.72 10022.6 1546.68 10025.6
1546.7
 10037.3  1546.5 10073.7 1547.93 10075.3 1548.01 10136.1 1549.49 10227.2
1550.9
 10298.3 1551.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9681.7    .069    9968    .049 10073.7    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9968 10073.7              335     335     335             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1548.32  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.26  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)         * 1548.07  * Reach Len. (ft)         *  335.00
*  335.00  *  335.00  *
* Crit W.S. (ft)         * 1547.83  * Flow Area (sq ft)       *   29.41
*  121.73  *    0.21  *
* E.G. Slope (ft/ft)     *0.016204  * Area (sq ft)            *   29.41
*  121.73  *    0.21  *
* Q Total (cfs)          *  577.00  * Flow (cfs)              *   60.75
```

```
*  516.15  *    0.11  *
* Top Width (ft)        *  154.51  * Top Width (ft)          *   44.96
*  105.70  *    3.85  *
* Vel Total (ft/s)      *    3.81  * Avg. Vel. (ft/s)        *    2.07
*    4.24  *    0.51  *
* Max Chl Dpth (ft)     *    1.56  * Hydr. Depth (ft)        *    0.65
*    1.15  *    0.06  *
* Conv. Total (cfs)     *  4532.8  * Conv. (cfs)             *   477.2
*  4054.8  *     0.9  *
* Length Wtd. (ft)      *  335.00  * Wetted Per. (ft)        *   44.98
*  105.74  *    3.85  *
* Min Ch El (ft)        * 1546.50  * Shear (lb/sq ft)        *    0.66
*    1.16  *    0.06  *
* Alpha                 *    1.14  * Stream Power (lb/ft s) *    1.37
*    4.94  *    0.03  *
* Frctn Loss (ft)       *    3.68  * Cum Volume (acre-ft)    *    4.25
*    8.78  *    4.96  *
* C & E Loss (ft)       *    0.03  * Cum SA (acres)          *    5.38
*    5.57  *    6.48  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.80

INPUT
Description:
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9790.7 1547.96  9823.6 1547.68  9895.5 1546.17    9918 1545.33  9925.2
1544.99
  9933.6  1544.5  9956.2 1543.35  9974.9 1543.13  9976.1 1543.11  9976.6
1543.1
  9976.9 1543.09  9978.6 1543.06  9995.4  1542.7 10006.7 1542.96 10008.1
1542.99
 10008.8 1542.99 10020.1 1542.42 10022.5 1542.45 10032.9 1543.15 10034.9
1543.26
 10056.2 1543.16 10064.8 1543.31   10091    1544 10097.7 1544.45 10118.1
1545.2
 10119.4 1545.16 10140.6 1545.22 10141.4 1545.23   10154 1546.04 10156.1
1546.09
 10182.2    1546 10202.4 1546.32 10212.7 1546.29 10255.5    1547 10308.1
1548.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
```

```
  9790.7    .069  9956.2    .049 10034.9    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9956.2 10034.9              292     292     292             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1544.61  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1544.44  * Reach Len. (ft)         *  292.00
*  292.00  *  292.00  *
* Crit W.S. (ft)          * 1543.99  * Flow Area (sq ft)       *   11.75
*  119.09  *   58.78  *
* E.G. Slope (ft/ft)      *0.007939  * Area (sq ft)            *   11.75
*  119.09  *   58.78  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *   15.06
*  423.94  *  138.00  *
* Top Width (ft)          *  162.89  * Top Width (ft)          *   21.49
*   78.70  *   62.70  *
* Vel Total (ft/s)        *    3.04  * Avg. Vel. (ft/s)        *    1.28
*    3.56  *    2.35  *
* Max Chl Dpth (ft)       *    2.02  * Hydr. Depth (ft)        *    0.55
*    1.51  *    0.94  *
* Conv. Total (cfs)       *  6475.9  * Conv. (cfs)             *   169.0
*  4758.1  *  1548.8  *
* Length Wtd. (ft)        *  292.00  * Wetted Per. (ft)        *   21.52
*   78.75  *   62.73  *
* Min Ch El (ft)          * 1542.42  * Shear (lb/sq ft)        *    0.27
*    0.75  *    0.46  *
* Alpha                   *    1.15  * Stream Power (lb/ft s) *    0.35
*    2.67  *    1.09  *
* Frctn Loss (ft)         *    2.94  * Cum Volume (acre-ft)    *    4.09
*    7.85  *    4.74  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    5.12
*    4.86  *    6.22  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.75

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9792.9 1544.27  9836.9 1543.29  9932.2 1540.66  9962.5  1540.8    9965
```

```
1540.84
  9975.6 1539.15  9975.9 1539.11  9976.1 1539.14  9983.1 1539.55  9986.6
1539.67
  9990.7  1539.9  9993.2 1539.61  9998.6 1539.02  9999.8 1539.14 10011.6
1539.69
   10016  1539.7 10024.3 1540.05   10037 1540.29 10114.2 1542.55 10122.7
1542.85
 10154.5 1543.77 10161.3    1544 10267.2 1546.86

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9792.9    .069  9990.7    .049 10024.3    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.7 10024.3              280     280     280             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1541.66  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1541.39  * Reach Len. (ft)         *  280.00
*  280.00  *  280.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   73.94
*   61.33  *   36.06  *
* E.G. Slope (ft/ft)      *0.013212  * Area (sq ft)            *   73.94
*   61.33  *   36.06  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  166.74
*  318.83  *   91.43  *
* Top Width (ft)          *  168.68  * Top Width (ft)          *   84.88
*   33.60  *   50.20  *
* Vel Total (ft/s)        *    3.37  * Avg. Vel. (ft/s)        *    2.25
*    5.20  *    2.54  *
* Max Chl Dpth (ft)       *    2.37  * Hydr. Depth (ft)        *    0.87
*    1.83  *    0.72  *
* Conv. Total (cfs)       *  5019.9  * Conv. (cfs)             *  1450.6
*  2773.8  *   795.5  *
* Length Wtd. (ft)        *  280.00  * Wetted Per. (ft)        *   85.05
*   33.67  *   50.22  *
* Min Ch El (ft)          * 1539.02  * Shear (lb/sq ft)        *    0.72
*    1.50  *    0.59  *
* Alpha                   *    1.54  * Stream Power (lb/ft s) *    1.62
*    7.81  *    1.50  *
* Frctn Loss (ft)         *    3.15  * Cum Volume (acre-ft)    *    3.81
*    7.25  *    4.42  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    4.76
*    4.48  *    5.84  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW10
REACH: NRW10                RS: 0.69

INPUT
Description: Section lines 10 & 11 T5NR1E
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9810.9 1542.03  9847.6  1540.4  9869.2 1539.35  9890.9 1538.42  9894.7
1538.21
  9920.3 1537.07  9927.7  1536.9  9935.4  1536.8  9941.3 1537.12  9943.1
1537.16
  9946.3  1537.1  9955.3 1537.03  9962.7 1536.41  9965.3 1536.16  9967.5
1536.29
  9977.5 1536.29  9978.3  1536.3  9978.4  1536.3  9978.9 1536.34  9986.4
1536.9
  9991.1 1536.73  9996.2 1536.48 10009.2 1536.31 10009.9 1536.26 10024.5
1537.42
 10103.7 1540.53 10111.8 1541.21 10135.4  1543.4 10142.8 1543.23 10169.6
1543.06
 10172.4 1542.95 10179.7 1543.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9810.9    .069  9986.4    .049 10024.5    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.4 10024.5              278     278     278             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1538.47  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1538.30  * Reach Len. (ft)         *  278.00
*  278.00  *  278.00  *
* Crit W.S. (ft)          * 1537.75  * Flow Area (sq ft)       *  119.58
*   63.06  *    9.83  *
* E.G. Slope (ft/ft)      *0.009678  * Area (sq ft)            *  119.58
*   63.06  *    9.83  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  298.67
*  262.96  *   15.37  *
* Top Width (ft)          *  153.78  * Top Width (ft)          *   93.30
*   38.10  *   22.37  *
* Vel Total (ft/s)        *    3.00  * Avg. Vel. (ft/s)        *    2.50
*    4.17  *    1.56  *
* Max Chl Dpth (ft)       *    2.14  * Hydr. Depth (ft)        *    1.28
*    1.66  *    0.44  *
* Conv. Total (cfs)       *  5865.3  * Conv. (cfs)             *  3036.0
*  2673.1  *   156.2  *
* Length Wtd. (ft)        *  278.00  * Wetted Per. (ft)        *   93.41
*   38.16  *   22.39  *
* Min Ch El (ft)          * 1536.26  * Shear (lb/sq ft)        *    0.77
```

```
*    1.00  *    0.27  *
* Alpha                  *    1.25  * Stream Power (lb/ft s) *    1.93
*    4.16  *    0.41  *
* Frctn Loss (ft)        *    2.96  * Cum Volume (acre-ft)   *    3.18
*    6.85  *    4.27  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    4.19
*    4.25  *    5.61  *
**************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.64

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9842.4 1540.17  9855.9 1539.66  9911.3 1537.12  9932.6 1536.28  9934.6
1536.19
  9953.9 1535.39  9965.8 1534.72    9973 1534.26  9986.5 1533.73  9989.1
1533.62
  9989.8 1533.59  9990.4 1533.57    9992 1533.51 10002.1 1533.25 10007.2
1533.38
   10008 1533.43 10009.9 1533.44 10013.3 1533.48 10013.7 1533.48 10015.5
1533.67
 10022.4 1533.85 10026.8 1533.53 10034.7 1533.22 10036.1 1533.17   10042
1533.48
 10052.2  1533.8 10058.8 1534.47 10060.1 1534.63 10061.7  1534.8 10090.7
1535.2
 10096.8 1535.57 10110.9 1536.49 10121.7 1537.58 10135.8 1538.39 10166.8
1539.61
 10170.4 1539.51 10193.8 1540.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9842.4    .069    9973    .049 10022.4    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9973 10022.4              369     369     369             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)         * 1535.50  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.25  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)         * 1535.25  * Reach Len. (ft)         *  369.00
```

```
*  369.00  *  369.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    8.00
*   79.79  *   68.86  *
* E.G. Slope (ft/ft)      *0.011750  * Area (sq ft)            *    8.00
*   79.79  *   68.86  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *   11.44
*  360.92  *  204.64  *
* Top Width (ft)          *  135.21  * Top Width (ft)          *   16.65
*   49.40  *   69.16  *
* Vel Total (ft/s)        *    3.68  * Avg. Vel. (ft/s)        *    1.43
*    4.52  *    2.97  *
* Max Chl Dpth (ft)       *    2.08  * Hydr. Depth (ft)        *    0.48
*    1.62  *    1.00  *
* Conv. Total (cfs)       *  5323.1  * Conv. (cfs)             *   105.6
*  3329.7  *  1887.9  *
* Length Wtd. (ft)        *  369.00  * Wetted Per. (ft)        *   16.68
*   49.43  *   69.25  *
* Min Ch El (ft)          * 1533.25  * Shear (lb/sq ft)        *    0.35
*    1.18  *    0.73  *
* Alpha                   *    1.18  * Stream Power (lb/ft s) *    0.50
*    5.36  *    2.17  *
* Frctn Loss (ft)         *    5.41  * Cum Volume (acre-ft)    *    2.78
*    6.39  *    4.02  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    3.84
*    3.97  *    5.32  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.57

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9779.1 1534.09  9779.7 1534.07  9799.1 1533.39  9818.4 1532.49  9841.8
1531.98
  9862.1 1531.66  9863.3 1531.56  9864.2 1531.48  9870.3  1531.4  9951.5
1529.55
  9983.3 1528.02  9990.7 1527.97 10000.2 1527.64   10006 1527.79 10028.1
1528.18
 10029.3 1528.18 10043.6    1529 10048.6 1529.52 10078.3 1531.71   10081
1531.89
 10083.1 1532.05 10129.5 1534.65 10148.9 1536.16   10153 1536.31 10163.2
1537.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9779.1    .069  9983.3    .049 10029.3    .054
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.3 10029.3              331     331     331             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1530.07  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.46  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1529.61  * Reach Len. (ft)         *  331.00
*  331.00  *  331.00  *
* Crit W.S. (ft)          * 1529.46  * Flow Area (sq ft)       *   26.31
*   77.72  *   16.39  *
* E.G. Slope (ft/ft)      *0.018843  * Area (sq ft)            *   26.31
*   77.72  *   16.39  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *   64.97
*  458.83  *   53.20  *
* Top Width (ft)          *  100.95  * Top Width (ft)          *   34.43
*   46.00  *   20.52  *
* Vel Total (ft/s)        *    4.79  * Avg. Vel. (ft/s)        *    2.47
*    5.90  *    3.25  *
* Max Chl Dpth (ft)       *    1.97  * Hydr. Depth (ft)        *    0.76
*    1.69  *    0.80  *
* Conv. Total (cfs)       *  4203.4  * Conv. (cfs)             *   473.3
*  3342.5  *   387.6  *
* Length Wtd. (ft)        *  331.00  * Wetted Per. (ft)        *   34.47
*   46.01  *   20.57  *
* Min Ch El (ft)          * 1527.64  * Shear (lb/sq ft)        *    0.90
*    1.99  *    0.94  *
* Alpha                   *    1.28  * Stream Power (lb/ft s) *    2.22
*   11.73  *    3.04  *
* Frctn Loss (ft)         *    4.46  * Cum Volume (acre-ft)    *    2.63
*    5.73  *    3.66  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    3.62
*    3.57  *    4.94  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.51

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9838.2 1532.19  9907.8 1528.06  9918.2 1527.33    9925 1526.63  9938.4
1525.16
  9944.2 1525.14  9967.1 1523.78  9971.6 1523.58  9973.5 1523.52 10003.8
```

```
1522.67
 10006.9 1522.75 10014.2 1523.17 10017.7 1523.49 10029.1 1524.82   10045
1526.52
   10053 1526.89 10075.5  1528.1 10080.4 1529.01 10093.9 1529.78   10102
1529.88
 10120.6 1530.85   10133 1531.58 10137.2 1531.69 10145.9  1532.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9838.2    .069  9971.6    .049 10029.1    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.6 10029.1              262     262     262             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1525.57  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.33  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1525.24  * Reach Len. (ft)         *  262.00
*  262.00  *  262.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   25.46
*  111.80  *    0.83  *
* E.G. Slope (ft/ft)      *0.010123  * Area (sq ft)            *   25.46
*  111.80  *    0.83  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *   45.52
*  530.67  *    0.81  *
* Top Width (ft)          *   95.37  * Top Width (ft)          *   33.94
*   57.50  *    3.94  *
* Vel Total (ft/s)        *    4.18  * Avg. Vel. (ft/s)        *    1.79
*    4.75  *    0.98  *
* Max Chl Dpth (ft)       *    2.57  * Hydr. Depth (ft)        *    0.75
*    1.94  *    0.21  *
* Conv. Total (cfs)       *  5734.8  * Conv. (cfs)             *   452.4
*  5274.4  *     8.0  *
* Length Wtd. (ft)        *  262.00  * Wetted Per. (ft)        *   33.99
*   57.62  *    3.96  *
* Min Ch El (ft)          * 1522.67  * Shear (lb/sq ft)        *    0.47
*    1.23  *    0.13  *
* Alpha                   *    1.20  * Stream Power (lb/ft s) *    0.85
*    5.82  *    0.13  *
* Frctn Loss (ft)         *    3.02  * Cum Volume (acre-ft)    *    2.43
*    5.01  *    3.59  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.36
*    3.18  *    4.84  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
```

```
REACH: NRW10                RS: 0.46

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9844.9 1528.16  9918.8 1524.04  9952.2 1521.19  9953.1 1521.11  9953.2
1521.1
  9971.6 1520.82  9977.3 1520.51  9985.1  1520.8    9988 1520.84  9992.1
1520.59
  9998.8 1519.78 10007.8 1519.98 10024.5 1520.62 10045.3 1522.48 10049.4
1522.69
 10082.4 1524.97 10082.7 1524.99 10126.1 1527.16 10142.1 1527.67

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9844.9    .069    9988    .049 10024.5    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9988 10024.5              251     251     251             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1522.54  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.35  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1522.19  * Reach Len. (ft)         *  251.00
*  251.00  *  251.00  *
* Crit W.S. (ft)          * 1521.87  * Flow Area (sq ft)       *   54.14
*   71.81  *   13.77  *
* E.G. Slope (ft/ft)      *0.013279  * Area (sq ft)            *   54.14
*   71.81  *   13.77  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  146.46
*  393.49  *   37.05  *
* Top Width (ft)          *  101.56  * Top Width (ft)          *   47.51
*   36.50  *   17.55  *
* Vel Total (ft/s)        *    4.13  * Avg. Vel. (ft/s)        *    2.71
*    5.48  *    2.69  *
* Max Chl Dpth (ft)       *    2.41  * Hydr. Depth (ft)        *    1.14
*    1.97  *    0.78  *
* Conv. Total (cfs)       *  5007.2  * Conv. (cfs)             *  1271.0
*  3414.7  *   321.5  *
* Length Wtd. (ft)        *  251.00  * Wetted Per. (ft)        *   47.57
*   36.57  *   17.62  *
* Min Ch El (ft)          * 1519.78  * Shear (lb/sq ft)        *    0.94
*    1.63  *    0.65  *
* Alpha                   *    1.34  * Stream Power (lb/ft s) *    2.55
*    8.92  *    1.74  *
* Frctn Loss (ft)         *    3.05  * Cum Volume (acre-ft)    *    2.19
*    4.45  *    3.55  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    3.12
*    2.89  *    4.78  *
**********************************************************************
```

```
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10                RS: 0.41

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9852.8 1524.82  9860.7 1524.82  9873.3 1524.34    9883 1523.64  9895.2
1522.59
  9917.3 1520.83    9927 1519.59  9949.4 1516.95  9966.1 1517.38  9968.3
1517.52
  9970.2 1517.45  9989.8 1517.58  9990.5 1517.47 10002.8 1516.21 10008.3
1517.28
 10012.5 1518.06 10024.5 1518.91 10034.2  1519.4 10039.7 1519.32   10064
1520.86
 10081.2 1521.18 10088.7 1521.55 10102.6 1521.88 10119.8 1523.15 10147.9
1524.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9852.8    .069  9989.8    .049 10012.5    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.8 10012.5              298     298     298             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1519.47  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.28  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1519.18  * Reach Len. (ft)         *  298.00
*  298.00  *  298.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   94.50
*   49.71  *    9.09  *
* E.G. Slope (ft/ft)      *0.011181  * Area (sq ft)            *   94.50
*   49.71  *    9.09  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  293.00
*  266.86  *   17.14  *
* Top Width (ft)          *   99.41  * Top Width (ft)          *   59.33
*   22.70  *   17.37  *
* Vel Total (ft/s)        *    3.76  * Avg. Vel. (ft/s)        *    3.10
*    5.37  *    1.89  *
* Max Chl Dpth (ft)       *    2.97  * Hydr. Depth (ft)        *    1.59
*    2.19  *    0.52  *
```

```
* Conv. Total (cfs)       *  5456.8  * Conv. (cfs)            *  2771.0
*  2523.7  *   162.1  *
* Length Wtd. (ft)        *  298.00  * Wetted Per. (ft)       *   59.48
*   22.95  *   17.41  *
* Min Ch El (ft)          * 1516.21  * Shear (lb/sq ft)       *    1.11
*    1.51  *    0.36  *
* Alpha                   *    1.29  * Stream Power (lb/ft s) *    3.44
*    8.12  *    0.69  *
* Frctn Loss (ft)         *    3.33  * Cum Volume (acre-ft)   *    1.77
*    4.10  *    3.48  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *    2.81
*    2.72  *    4.68  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.36

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9826.3 1521.34  9832.8 1521.11  9886.9 1518.49  9941.2 1516.32  9952.8
1514.79
  9955.5 1514.36  9960.9 1514.47  9971.7  1515.1  9979.1 1514.49  9990.8
1513.65
 10002.8 1513.89 10017.6 1514.16   10024 1514.21 10045.1 1515.13 10054.5
1516.03
   10068 1516.88 10097.1 1519.03 10099.9 1519.19 10130.1 1521.02 10138.4
1521.48
 10167.2 1523.18

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9826.3    .069  9971.7    .049 10045.1    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.7 10045.1              287     287     287             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1516.13  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1515.86  * Reach Len. (ft)         *  287.00
*  287.00  *  287.00  *
```

```
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   27.21
*  116.86  *    2.78  *
* E.G. Slope (ft/ft)      *0.011190  * Area (sq ft)            *   27.21
*  116.86  *    2.78  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *   62.11
*  510.77  *    4.12  *
* Top Width (ft)          *  108.03  * Top Width (ft)          *   27.01
*   73.40  *    7.62  *
* Vel Total (ft/s)        *    3.93  * Avg. Vel. (ft/s)        *    2.28
*    4.37  *    1.48  *
* Max Chl Dpth (ft)       *    2.21  * Hydr. Depth (ft)        *    1.01
*    1.59  *    0.36  *
* Conv. Total (cfs)       *  5454.6  * Conv. (cfs)             *   587.2
*  4828.5  *    38.9  *
* Length Wtd. (ft)        *  287.00  * Wetted Per. (ft)        *   27.13
*   73.48  *    7.65  *
* Min Ch El (ft)          * 1513.65  * Shear (lb/sq ft)        *    0.70
*    1.11  *    0.25  *
* Alpha                   *    1.13  * Stream Power (lb/ft s) *    1.60
*    4.86  *    0.38  *
* Frctn Loss (ft)         *    2.93  * Cum Volume (acre-ft)    *    1.35
*    3.53  *    3.44  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    2.52
*    2.39  *    4.59  *
***********************************************************************
***********************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW10
REACH: NRW10 RS: 0.30

INPUT
Description:
Station Elevation Data num= 25

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9811.6 1520.05  9872.2 1516.06  9874.1 1515.85    9903 1513.27  9924.9
1512.41
  9931.6 1512.07  9934.7 1512.12  9965.1  1511.7  9973.6 1511.33  9988.2
1511.29
  9988.5 1511.28  9993.4 1511.08 10009.2  1510.5 10017.9 1510.99 10028.2
1511.8
 10043.4 1513.92 10046.5 1514.19 10069.2 1514.83 10092.2 1515.79 10093.5
1515.84
   10095 1515.93 10114.6 1517.38 10145.2 1518.21 10166.3 1520.02 10170.6
1520.21
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9811.6    .069  9965.1    .049 10028.2    .054
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.

```
Expan.
        9965.1 10028.2              295     295     295             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1513.19  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1512.94  * Reach Len. (ft)         *  295.00
*  295.00  *  295.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   41.99
*  113.77  *    4.63  *
* E.G. Slope (ft/ft)      *0.009366  * Area (sq ft)            *   41.99
*  113.77  *    4.63  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *   74.35
*  494.25  *    8.40  *
* Top Width (ft)          *  124.84  * Top Width (ft)          *   53.60
*   63.10  *    8.15  *
* Vel Total (ft/s)        *    3.60  * Avg. Vel. (ft/s)        *    1.77
*    4.34  *    1.81  *
* Max Chl Dpth (ft)       *    2.44  * Hydr. Depth (ft)        *    0.78
*    1.80  *    0.57  *
* Conv. Total (cfs)       *  5962.2  * Conv. (cfs)             *   768.3
*  5107.1  *    86.8  *
* Length Wtd. (ft)        *  295.00  * Wetted Per. (ft)        *   53.62
*   63.17  *    8.22  *
* Min Ch El (ft)          * 1510.50  * Shear (lb/sq ft)        *    0.46
*    1.05  *    0.33  *
* Alpha                   *    1.28  * Stream Power (lb/ft s) *    0.81
*    4.57  *    0.60  *
* Frctn Loss (ft)         *    2.88  * Cum Volume (acre-ft)    *    1.12
*    2.77  *    3.42  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    2.25
*    1.94  *    4.54  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.25

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9827.5 1516.06  9879.9 1513.25  9892.6 1512.37  9925.9 1510.71  9926.3
1510.71
    9938 1509.78  9942.5 1509.34  9978.4  1508.6  9986.8 1508.15 10001.4
1508.99
```

```
 10012.5 1509.28 10024.3 1508.55 10031.7  1508.3 10039.7  1508.1   10059
1509.15
 10078.3 1510.08 10094.5 1510.49 10135.9 1513.18 10139.2  1513.3   10142
1513.5
 10178.2 1514.71   10184 1515.04 10193.9 1515.55 10201.8 1516.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9827.5    .069  9942.5    .049 10012.5    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9942.5 10012.5              301     301     301             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1510.30  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1510.12  * Reach Len. (ft)         *  301.00
*  301.00  *  301.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    3.23
*   89.34  *   80.60  *
* E.G. Slope (ft/ft)      *0.010170  * Area (sq ft)            *    3.23
*   89.34  *   80.60  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *    3.59
*  321.36  *  252.05  *
* Top Width (ft)          *  146.04  * Top Width (ft)          *    8.75
*   70.00  *   67.29  *
* Vel Total (ft/s)        *    3.33  * Avg. Vel. (ft/s)        *    1.11
*    3.60  *    3.13  *
* Max Chl Dpth (ft)       *    2.02  * Hydr. Depth (ft)        *    0.37
*    1.28  *    1.20  *
* Conv. Total (cfs)       *  5721.4  * Conv. (cfs)             *    35.6
*  3186.5  *  2499.3  *
* Length Wtd. (ft)        *  301.00  * Wetted Per. (ft)        *    8.78
*   70.05  *   67.37  *
* Min Ch El (ft)          * 1508.15  * Shear (lb/sq ft)        *    0.23
*    0.81  *    0.76  *
* Alpha                   *    1.03  * Stream Power (lb/ft s) *    0.26
*    2.91  *    2.38  *
* Frctn Loss (ft)         *    3.07  * Cum Volume (acre-ft)    *    0.97
*    2.09  *    3.13  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    2.04
*    1.49  *    4.28  *
**********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.19
```

```
INPUT
Description: South Section 11 Line T5NR1E
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9783.3 1513.97  9856.7 1510.33  9886.6    1509  9909.9 1507.16  9914.4
1506.71
    9918 1506.78  9944.3 1506.83  9956.4  1506.4  9978.9 1505.08  9980.4
1504.99
  9981.8 1505.04    9989 1505.24  9993.4 1505.02  9995.8 1505.11  9999.1
1505.02
   10028 1505.63 10031.7 1505.71   10058  1506.6 10058.1  1506.6 10080.6
1506.63
 10098.8 1507.68 10100.4 1507.79 10106.1 1508.27 10130.7 1510.46 10149.7
1510.95
 10157.8 1510.99 10166.1 1511.73 10170.9 1512.37 10187.6  1513.1 10198.6
1513.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9783.3    .069  9956.4    .049   10058    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9956.4   10058              394     394     394             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1507.23  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.22  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1507.01  * Reach Len. (ft)         *  394.00
*  394.00  *  394.00  *
* Crit W.S. (ft)          * 1506.61  * Flow Area (sq ft)       *   11.61
*  143.38  *   10.21  *
* E.G. Slope (ft/ft)      *0.010217  * Area (sq ft)            *   11.61
*  143.38  *   10.21  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *   10.24
*  552.68  *   14.08  *
* Top Width (ft)          *  175.81  * Top Width (ft)          *   45.01
*  101.60  *   29.20  *
* Vel Total (ft/s)        *    3.49  * Avg. Vel. (ft/s)        *    0.88
*    3.85  *    1.38  *
* Max Chl Dpth (ft)       *    2.02  * Hydr. Depth (ft)        *    0.26
*    1.41  *    0.35  *
* Conv. Total (cfs)       *  5708.4  * Conv. (cfs)             *   101.3
*  5467.8  *   139.3  *
* Length Wtd. (ft)        *  394.00  * Wetted Per. (ft)        *   45.03
*  101.68  *   29.21  *
* Min Ch El (ft)          * 1504.99  * Shear (lb/sq ft)        *    0.16
*    0.90  *    0.22  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *    0.15
*    3.47  *    0.31  *
* Frctn Loss (ft)         *    3.77  * Cum Volume (acre-ft)    *    0.92
```

```
*    1.28  *    2.82  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    1.85
*    0.90  *    3.95  *
**********************************************************************
**********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.11

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9812.9 1508.29  9836.9 1507.09  9866.1 1505.07  9871.4 1504.56  9872.3
1505.24
  9881.4 1505.22  9911.8  1503.2  9920.9 1503.55  9940.1 1503.49  9945.9
1503.19
  9963.8 1502.11  9985.8 1501.93  9991.3 1500.79  9994.9 1500.14   10001
1501.32
 10005.9  1502.2 10016.4 1502.31 10024.5 1502.34 10050.8    1502 10065.1
1501.9
 10074.8 1502.34 10097.1 1503.18 10109.1 1502.83 10115.7 1502.78 10151.2
1502.16
 10153.4 1502.37 10169.3 1503.76 10207.3  1505.5 10215.3 1505.76 10229.3
1506.35
 10249.7 1507.02 10279.6 1508.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9812.9    .069  9985.8    .049 10005.9    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.8 10005.9              347     347     347             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
**********************
* E.G. Elev (ft)         * 1503.44  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.17  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)         * 1503.27  * Reach Len. (ft)         *  347.00
*  347.00  *  347.00  *
* Crit W.S. (ft)         * 1502.99  * Flow Area (sq ft)       *   38.57
*   43.41  *  129.45  *
* E.G. Slope (ft/ft)     *0.008996  * Area (sq ft)            *   38.57
*   43.41  *  129.45  *
* Q Total (cfs)          *  577.00  * Flow (cfs)              *   74.87
```

```
*  206.11  *  296.02  *
* Top Width (ft)          *  221.90  * Top Width (ft)          *   44.06
*   20.10  *  157.74  *
* Vel Total (ft/s)        *    2.73  * Avg. Vel. (ft/s)        *    1.94
*    4.75  *    2.29  *
* Max Chl Dpth (ft)       *    3.13  * Hydr. Depth (ft)        *    0.88
*    2.16  *    0.82  *
* Conv. Total (cfs)       *  6083.4  * Conv. (cfs)             *   789.4
*  2173.0  *  3121.0  *
* Length Wtd. (ft)        *  347.00  * Wetted Per. (ft)        *   44.10
*   20.47  *  157.83  *
* Min Ch El (ft)          * 1500.14  * Shear (lb/sq ft)        *    0.49
*    1.19  *    0.46  *
* Alpha                   *    1.51  * Stream Power (lb/ft s) *    0.95
*    5.66  *    1.05  *
* Frctn Loss (ft)         *    3.49  * Cum Volume (acre-ft)    *    0.69
*    0.44  *    2.18  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    1.45
*    0.35  *    3.11  *
*****************************************************************************
************************
```

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW10
REACH: NRW10 RS: 0.05

INPUT
Description:
Station Elevation Data num= 41

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
  9715.8 1504.14  9720.2 1503.99  9734.1 1503.14    9750 1502.62  9763.8
1501.94
  9815.7 1500.21  9826.4 1499.94  9828.7 1499.87  9832.2 1499.71    9853
1499.46
  9862.3 1499.48  9898.9 1499.18  9923.9 1499.46  9927.3 1499.45  9982.5
1498.98
  9988.4 1498.88  9999.5 1498.27   10000 1498.31 10008.5 1498.95 10011.4
1499.08
 10039.4 1499.14 10047.2 1499.09   10061 1498.93 10084.1    1499 10112.2
1499.44
 10114.7 1499.42 10151.7 1499.21 10159.2  1499.1 10172.3 1499.24 10195.3
1499.27
 10209.2 1498.82 10214.1  1498.8 10239.3 1499.51 10240.4 1499.52 10272.7
1499.97
 10299.7 1500.51 10306.6 1500.51 10312.8 1500.79 10353.2 1501.71 10375.7
1502.42
 10389.9 1502.95
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
```

```
  9715.8    .069  9982.5    .049 10011.4    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.5 10011.4              235     235     235             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1499.93  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1499.84  * Reach Len. (ft)         *  235.00
*  235.00  *  235.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   76.85
*   32.95  *  161.12  *
* E.G. Slope (ft/ft)      *0.011322  * Area (sq ft)            *   76.85
*   32.95  *  161.12  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  111.17
*  115.89  *  349.94  *
* Top Width (ft)          *  434.29  * Top Width (ft)          *  153.21
*   28.90  *  252.18  *
* Vel Total (ft/s)        *    2.13  * Avg. Vel. (ft/s)        *    1.45
*    3.52  *    2.17  *
* Max Chl Dpth (ft)       *    1.57  * Hydr. Depth (ft)        *    0.50
*    1.14  *    0.64  *
* Conv. Total (cfs)       *  5422.7  * Conv. (cfs)             *  1044.8
*  1089.2  *  3288.8  *
* Length Wtd. (ft)        *  235.00  * Wetted Per. (ft)        *  153.22
*   28.95  *  252.20  *
* Min Ch El (ft)          * 1498.27  * Shear (lb/sq ft)        *    0.35
*    0.80  *    0.45  *
* Alpha                   *    1.27  * Stream Power (lb/ft s) *    0.51
*    2.83  *    0.98  *
* Frctn Loss (ft)         *    2.68  * Cum Volume (acre-ft)    *    0.23
*    0.13  *    1.03  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.67
*    0.15  *    1.47  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW10
REACH: NRW10              RS: 0.00

INPUT
Description: D.S. Limit of Study
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9530.4 1500.83  9619.7 1499.09  9819.7 1497.07  9881.9 1497.18  9922.9
```

```
1497.43
  9946.9 1496.86  9948.3 1496.79  9949.6 1496.83  9978.9 1497.24  9990.5
1496.88
 10000.1  1495.9   10002 1495.76 10002.9 1495.94 10011.2 1497.32 10022.4
1497.32
 10047.6 1496.52 10048.6  1496.5   10049 1496.49 10073.7 1496.62 10084.2
1496.94
 10102.2 1496.41   10112 1496.27   10145 1496.11 10238.2 1496.21 10269.7
1496.34
 10301.2 1496.68 10332.8 1497.41 10364.3 1498.35 10411.9 1500.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9530.4    .069  9978.9    .049 10011.2    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.9 10011.2                0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1497.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.069
*   0.049  *   0.054  *
* W.S. Elev (ft)          * 1497.15  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1496.84  * Flow Area (sq ft)       *    8.77
*   16.65  *  219.69  *
* E.G. Slope (ft/ft)      *0.011516  * Area (sq ft)            *    8.77
*   16.65  *  219.69  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *    5.21
*   37.70  *  534.09  *
* Top Width (ft)          *  416.16  * Top Width (ft)          *   93.60
*   28.51  *  294.05  *
* Vel Total (ft/s)        *    2.35  * Avg. Vel. (ft/s)        *    0.59
*    2.26  *    2.43  *
* Max Chl Dpth (ft)       *    1.39  * Hydr. Depth (ft)        *    0.09
*    0.58  *    0.75  *
* Conv. Total (cfs)       *  5376.9  * Conv. (cfs)             *    48.5
*   351.3  *  4977.1  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   93.61
*   28.69  *  294.08  *
* Min Ch El (ft)          * 1495.76  * Shear (lb/sq ft)        *    0.07
*    0.42  *    0.54  *
* Alpha                   *    1.05  * Stream Power (lb/ft s) *    0.04
*    0.94  *    1.31  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.

************************************************************************
********
```

SUMMARY OF MANNING'S N VALUES

River:NRW10

Reach	River Sta.	n1	n2	n3
NRW10	1.95	.15	.05	.15
NRW10	1.90	.069	.049	.054
NRW10	1.81	.069	.049	.054
NRW10	1.76	.069	.049	.054
NRW10	1.70	.069	.049	.054
NRW10	1.67	.069	.049	.054
NRW10	1.64	.069	.049	.054
NRW10	1.62	.069	.049	.054
NRW10	1.59	.069	.049	.054
NRW10	1.57	.069	.049	.054
NRW10	1.54	.069	.016	.054
NRW10	1.47	.069	.049	.054
NRW10	1.40	.069	.049	.054
NRW10	1.36	.069	.049	.054
NRW10	1.33	.069	.049	.054
NRW10	1.29	.069	.049	.054
NRW10	1.23	.069	.049	.054
NRW10	1.18	.069	.049	.054
NRW10	1.11	.069	.049	.054
NRW10	1.04	.069	.049	.054
NRW10	0.98	.069	.049	.054
NRW10	0.92	.069	.049	.054
NRW10	0.87	.069	.049	.054
NRW10	0.80	.069	.049	.054
NRW10	0.75	.069	.049	.054
NRW10	0.69	.069	.049	.054
NRW10	0.64	.069	.049	.054
NRW10	0.57	.069	.049	.054
NRW10	0.51	.069	.049	.054
NRW10	0.46	.069	.049	.054
NRW10	0.41	.069	.049	.054
NRW10	0.36	.069	.049	.054
NRW10	0.30	.069	.049	.054
NRW10	0.25	.069	.049	.054
NRW10	0.19	.069	.049	.054
NRW10	0.11	.069	.049	.054
NRW10	0.05	.069	.049	.054
NRW10	0.00	.069	.049	.054

****
****

SUMMARY OF REACH LENGTHS

River: NRW10

Reach	River Sta.	Left	Channel	Right
NRW10	1.95	254	254	254
NRW10	1.90	476	476	476
NRW10	1.81	302	302	302
NRW10	1.76	278	278	278
NRW10	1.70	199	199	199

*NRW10	* 1.67	* 121*	121*	121*
*NRW10	* 1.64	* 130*	130*	130*
*NRW10	* 1.62	* 154*	154*	154*
*NRW10	* 1.59	* 118*	118*	118*
*NRW10	* 1.57	* 158*	158*	158*
*NRW10	* 1.54	* 333*	333*	333*
*NRW10	* 1.47	* 386*	386*	386*
*NRW10	* 1.40	* 199*	199*	199*
*NRW10	* 1.36	* 156*	156*	156*
*NRW10	* 1.33	* 214*	214*	214*
*NRW10	* 1.29	* 330*	330*	330*
*NRW10	* 1.23	* 288*	288*	288*
*NRW10	* 1.18	* 345*	345*	345*
*NRW10	* 1.11	* 379*	379*	379*
*NRW10	* 1.04	* 308*	308*	308*
*NRW10	* 0.98	* 328*	328*	328*
*NRW10	* 0.92	* 277*	277*	277*
*NRW10	* 0.87	* 335*	335*	335*
*NRW10	* 0.80	* 292*	292*	292*
*NRW10	* 0.75	* 280*	280*	280*
*NRW10	* 0.69	* 278*	278*	278*
*NRW10	* 0.64	* 369*	369*	369*
*NRW10	* 0.57	* 331*	331*	331*
*NRW10	* 0.51	* 262*	262*	262*
*NRW10	* 0.46	* 251*	251*	251*
*NRW10	* 0.41	* 298*	298*	298*
*NRW10	* 0.36	* 287*	287*	287*
*NRW10	* 0.30	* 295*	295*	295*
*NRW10	* 0.25	* 301*	301*	301*
*NRW10	* 0.19	* 394*	394*	394*
*NRW10	* 0.11	* 347*	347*	347*
*NRW10	* 0.05	* 235*	235*	235*
*NRW10	* 0.00	* 0*	0*	0*

****

****
****

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW10

Reach	River Sta.	Contr.	Expan.
*NRW10	* 1.95	* .1*	.3*
*NRW10	* 1.90	* .1*	.3*
*NRW10	* 1.81	* .1*	.3*
*NRW10	* 1.76	* .1*	.3*
*NRW10	* 1.70	* .1*	.3*
*NRW10	* 1.67	* .1*	.3*
*NRW10	* 1.64	* .1*	.3*
*NRW10	* 1.62	* .1*	.3*
*NRW10	* 1.59	* .1*	.3*
*NRW10	* 1.57	* .1*	.3*
*NRW10	* 1.54	* .1*	.3*
*NRW10	* 1.47	* .1*	.3*
*NRW10	* 1.40	* .1*	.3*
*NRW10	* 1.36	* .1*	.3*
*NRW10	* 1.33	* .1*	.3*
*NRW10	* 1.29	* .1*	.3*
*NRW10	* 1.23	* .1*	.3*

```
*NRW10            *    1.18    *        .1*        .3*
*NRW10            *    1.11    *        .1*        .3*
*NRW10            *    1.04    *        .1*        .3*
*NRW10            *    0.98    *        .1*        .3*
*NRW10            *    0.92    *        .1*        .3*
*NRW10            *    0.87    *        .1*        .3*
*NRW10            *    0.80    *        .1*        .3*
*NRW10            *    0.75    *        .1*        .3*
*NRW10            *    0.69    *        .1*        .3*
*NRW10            *    0.64    *        .1*        .3*
*NRW10            *    0.57    *        .1*        .3*
*NRW10            *    0.51    *        .1*        .3*
*NRW10            *    0.46    *        .1*        .3*
*NRW10            *    0.41    *        .1*        .3*
*NRW10            *    0.36    *        .1*        .3*
*NRW10            *    0.30    *        .1*        .3*
*NRW10            *    0.25    *        .1*        .3*
*NRW10            *    0.19    *        .1*        .3*
*NRW10            *    0.11    *        .1*        .3*
*NRW10            *    0.05    *        .1*        .3*
*NRW10            *    0.00    *        .1*        .3*
*******************************************************
```

NRW10.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.xs
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:25:34 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW10,NRW10						
1.95	254	254	254	620.44	258	
1.9	476	476	476	689.96	258	D
1.81	302	302	302	498.8	258	
1.76	278	278	278	581.4	258	
1.7	199	199	199	451.35	258	
1.67	121	121	121	491.74	258	D
1.64	130	130	130	393.62	258	D,C
1.62	154	154	154	366.17	258	D
1.59	118	118	118	105.02	258	D
1.57	158	158	158	221.55	258	D
1.54	333	333	333	224.77	258	D,C
1.47	386	386	386	228.5	258	
1.4	199	199	199	212.21	258	D
1.36	156	156	156	177.03	258	
1.33	214	214	214	126.65	258	
1.29	330	330	330	165.74	258	
1.23	288	288	288	125.8	258	
1.18	345	345	345	116.28	258	
1.11	379	379	379	123.46	258	
1.04	308	308	308	208.98	258	
.98	328	328	328	153.06	258	
.92	277	277	277	205.01	577	
.87	335	335	335	154.51	577	
.8	292	292	292	162.89	577	
.75	280	280	280	168.68	577	
.69	278	278	278	153.78	577	
.64	369	369	369	135.21	577	
.57	331	331	331	100.95	577	
.51	262	262	262	95.37	577	
.46	251	251	251	101.56	577	
.41	298	298	298	99.41	577	
.36	287	287	287	108.03	577	
.3	295	295	295	124.84	577	
.25	301	301	301	146.04	577	
.19	394	394	394	175.81	577	
.11	347	347	347	221.9	577	D
.05	235	235	235	434.29	577	
0	0	0	0	416.16	577	D

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

```
DISTANCE CHECK
----------------

SPACING CHECK
--------------

INEFFECTIVE FLOW CHECK
------------------------

DISCHARGE CHECK
----------------

LOCATION CHECK
---------------

BOUNDARY CONDITION CHECK
------------------------

XS BC 02 The name of the stream is NRW10,NRW10
         Normal S = 0.0115 is specified as the downstream boundary
         for profile 100-Year

LATERAL WEIRS CHECK
------------------------

---END---
```

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW10\NRW10.nt
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:25:34 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW10,NRW10						
1.95		0.15	0.05	0.15	0.1	0.3
1.9		0.069	0.049	0.054	0.1	0.3
1.81		0.069	0.049	0.054	0.1	0.3
1.76		0.069	0.049	0.054	0.1	0.3
1.7		0.069	0.049	0.054	0.1	0.3
1.67		0.069	0.049	0.054	0.1	0.3
1.64		0.069	0.049	0.054	0.1	0.3
1.62		0.069	0.049	0.054	0.1	0.3
1.59		0.069	0.049	0.054	0.1	0.3
1.57		0.069	0.049	0.054	0.1	0.3
1.54		0.069	0.016	0.054	0.1	0.3
1.47		0.069	0.049	0.054	0.1	0.3
1.4		0.069	0.049	0.054	0.1	0.3
1.36		0.069	0.049	0.054	0.1	0.3
1.33		0.069	0.049	0.054	0.1	0.3
1.29		0.069	0.049	-----	0.1	0.3
		0.049	0.054	-----		
1.23		0.069	0.049	0.054	0.1	0.3
1.18		0.069	0.049	0.054	0.1	0.3
1.11		0.069	0.049	0.054	0.1	0.3
1.04		0.069	0.049	0.054	0.1	0.3
.98		0.069	0.049	0.054	0.1	0.3
.92		0.069	0.049	0.054	0.1	0.3
.87		0.069	0.049	0.054	0.1	0.3
.8		0.069	0.049	0.054	0.1	0.3
.75		0.069	0.049	0.054	0.1	0.3
.69		0.069	0.049	0.054	0.1	0.3
.64		0.069	0.049	0.054	0.1	0.3
.57		0.069	0.049	0.054	0.1	0.3
.51		0.069	0.049	0.054	0.1	0.3
.46		0.069	0.049	0.054	0.1	0.3
.41		0.069	0.049	0.054	0.1	0.3
.36		0.069	0.049	0.054	0.1	0.3
.3		0.069	0.049	0.054	0.1	0.3
.25		0.069	0.049	0.054	0.1	0.3
.19		0.069	0.049	0.054	0.1	0.3
.11		0.069	0.049	0.054	0.1	0.3
.05		0.069	0.049	0.054	0.1	0.3
0		0.069	0.049	0.054	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.049	0.15
Right Overbank n Value:	0.054	0.15
Channel n Value:	0.016	0.054
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

RS: 1.54 – LAKE PLEASANT ROAD CROSSING
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 15

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW 15 River: NRW15 Reach: NRW15 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW15	1.13	81.00	1571.29	1571.75	1571.62	1571.77	0.010755	1.19	67.87	258.06	0.41
NRW15	1.05	81.00	1566.96	1567.62	1567.47	1567.64	0.007437	0.87	92.96	429.62	0.33
NRW15	1.01	81.00	1565.24	1565.62	1565.51	1565.64	0.013573	1.11	72.82	366.45	0.44
NRW15	0.96	81.00	1563.08	1563.56	1563.40	1563.57	0.006012	0.87	92.81	364.84	0.30
NRW15	0.88	81.00	1558.16	1558.81	1558.73	1558.86	0.026133	1.84	44.08	170.71	0.64
NRW15	0.81	205.00	1553.76	1554.60	1554.35	1554.64	0.008935	1.52	135.03	311.38	0.41
NRW15	0.76	205.00	1550.09	1551.10	1550.87	1551.17	0.016822	2.10	97.41	221.20	0.56
NRW15	0.71	205.00	1546.34	1547.75	1547.52	1547.81	0.011209	2.05	108.47	222.05	0.48
NRW15	0.66	205.00	1541.26	1543.02	1543.01	1543.27	0.029957	4.31	59.05	119.96	0.83
NRW15	0.59	205.00	1536.60	1538.62	1538.23	1538.71	0.008264	2.43	90.46	119.24	0.44
NRW15	0.53	205.00	1532.26	1533.28	1533.27	1533.54	0.046141	4.04	50.69	92.01	0.96
NRW15	0.50	205.00	1529.77	1531.11	1530.73	1531.17	0.007623	1.96	114.27	185.97	0.41
NRW15	0.46	205.00	1526.82	1527.64	1527.64	1527.88	0.048127	4.08	55.20	126.82	0.98
NRW15	0.41	419.00	1521.55	1523.94		1524.04	0.008212	2.96	174.58	173.30	0.46
NRW15	0.36	419.00	1519.04	1520.32	1520.26	1520.59	0.032012	5.08	111.39	161.70	0.89
NRW15	0.31	419.00	1514.13	1516.41		1516.56	0.007912	3.41	150.70	134.35	0.47
NRW15	0.26	419.00	1512.31	1513.63	1513.43	1513.80	0.018711	3.50	131.57	173.80	0.66
NRW15	0.21	419.00	1509.02	1510.41		1510.50	0.007866	2.63	183.93	209.49	0.44
NRW15	0.16	419.00	1506.40	1507.60	1507.32	1507.73	0.014292	2.95	142.65	178.78	0.57
NRW15	0.09	419.00	1502.64	1504.36		1504.43	0.006497	2.29	217.82	281.58	0.40
NRW15	0.05	419.00	1501.24	1502.38	1502.10	1502.49	0.012509	2.68	164.00	221.88	0.53
NRW15	0.01	419.00	1498.62	1500.33	1499.90	1500.40	0.006707	2.25	200.73	257.14	0.40

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW 15
Project File : NRW15.prj
Run Date and Time: 3/23/2005 2:52:32 PM

Project in English units

Project Description:
NRW 15

New River West Tributaries FDS
Prepared by URS Corp. for the Flood
Control District of Maricopa County
Contract No: FCD 2003 C057
Date: April
29, 2005

Topographic Mapping Source:
Flown and Mapped by DTM Inc.
Flight
Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal - NAD83 Arizona
State Plane, Central Zone, International Feet
Vertical - NAVD 88 (GDACS
Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour storm
event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June 2004

81
cfs @ R.S. 1.13
205 cfs @R.S. 0.81
2151 cfs @ R.S. 0.41

Study
Limits:

U.S. Limit is approximately 600 feet east, and 150 feet south of the NW corner of
Section 11 T5NR1E
D.S. Limit is the New River floodplain

Stationing based upon River Mile distance from a point downstream of the Hydraulic Baseline confluence with the New River floodplain

Final
Model Run Date:
March 23, 2005

****
****

PLAN DATA

Plan Title: NRW 15
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.p01

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.g01

Flow Title : 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.f03

Plan Summary Information:

Number of:	Cross Sections	= 22	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: 100-Year; 6-Hour

Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15
\NRW15.f03

Flow Data (cfs)

River	Reach	RS	100-Year
NRW15	NRW15	1.13	81
NRW15	NRW15	0.81	205
NRW15	NRW15	0.41	419

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
NRW15	NRW15	100-Year		Normal S = 0.0067

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15
\NRW15.g01

CROSS SECTION

RIVER: NRW15
REACH: NRW15 RS: 1.13

INPUT
Description: U.S. Limit of Study
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9668.6	1572.37	9697.3	1572	9700.7	1572.21	9716	1571.92	9724.3	1571.81
9739.5	1571.82	9749.3	1572	9753.9	1572	9786.4	1571.36	9789	1571.35
9801.6	1571.46	9902.7	1571.62	9917.4	1571.29	9996.5	1571.48	10000.4	1571.5
10064.2	1572.16	10066.7	1572.16	10086.7	1572.35	10099.8	1572.24	10100.4	1572.22
10122.5	1572.11	10178.7	1572.29	10250.9	1572.28	10258.8	1572.46		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9668.6	.061	9753.9	.053	10064.2	.064

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.

```
Expan.
        9753.9 10064.2              466     466     466             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1571.77  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.               *
*   0.053  *          *
* W.S. Elev (ft)          * 1571.75  * Reach Len. (ft)         *  466.00
*  466.00  *  466.00  *
* Crit W.S. (ft)          * 1571.62  * Flow Area (sq ft)       *
*   67.87  *          *
* E.G. Slope (ft/ft)      *0.010755  * Area (sq ft)            *
*   67.87  *          *
* Q Total (cfs)           *   81.00  * Flow (cfs)              *
*   81.00  *          *
* Top Width (ft)          *  258.06  * Top Width (ft)          *
*  258.06  *          *
* Vel Total (ft/s)        *    1.19  * Avg. Vel. (ft/s)        *
*    1.19  *          *
* Max Chl Dpth (ft)       *    0.46  * Hydr. Depth (ft)        *
*    0.26  *          *
* Conv. Total (cfs)       *   781.0  * Conv. (cfs)             *
*   781.0  *          *
* Length Wtd. (ft)        *  466.00  * Wetted Per. (ft)        *
*  258.07  *          *
* Min Ch El (ft)          * 1571.29  * Shear (lb/sq ft)        *
*    0.18  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    0.21  *          *
* Frctn Loss (ft)         *    4.13  * Cum Volume (acre-ft)    *    1.99
*   12.07  *    1.14  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.39
*   23.73  *    2.10  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 1.05

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9536.9 1568.27  9566.6  1568.1  9611.2 1568.06  9620.6 1568.03  9630.9
1568.21
  9650.3  1567.7  9650.4  1567.7  9804.4  1567.4  9810.6 1567.15  9819.6
1566.96
```

```
  9835.6 1567.03    9885 1567.55  9982.1 1567.26 10001.6 1567.38 10046.8
1567.44
 10054.1 1567.55 10069.5 1567.65   10104 1567.31 10111.6 1567.47 10132.1
1567.7
 10146.5 1567.95 10179.9  1567.9 10211.6 1568.09   10239  1568.6 10246.7
1568.59
 10249.7 1568.63 10281.9  1568.4 10291.3 1568.42 10324.1  1568.8 10327.3
1568.71
 10330.5 1568.67 10349.9 1568.22 10372.4  1568.6 10377.2 1568.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9536.9    .061  9630.9    .053 10146.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9630.9 10146.5              204     204     204             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1567.64  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.01  * Wt. n-Val.              *
*   0.053  *          *
* W.S. Elev (ft)          * 1567.62  * Reach Len. (ft)         *  204.00
*  204.00  *  204.00  *
* Crit W.S. (ft)          * 1567.47  * Flow Area (sq ft)       *
*   92.96  *          *
* E.G. Slope (ft/ft)      *0.007437  * Area (sq ft)            *
*   92.96  *          *
* Q Total (cfs)           *   81.00  * Flow (cfs)              *
*   81.00  *          *
* Top Width (ft)          *  429.62  * Top Width (ft)          *
*  429.62  *          *
* Vel Total (ft/s)        *    0.87  * Avg. Vel. (ft/s)        *
*    0.87  *          *
* Max Chl Dpth (ft)       *    0.66  * Hydr. Depth (ft)        *
*    0.22  *          *
* Conv. Total (cfs)       *   939.3  * Conv. (cfs)             *
*   939.3  *          *
* Length Wtd. (ft)        *  204.00  * Wetted Per. (ft)        *
*  429.63  *          *
* Min Ch El (ft)          * 1566.96  * Shear (lb/sq ft)        *
*    0.10  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    0.09  *          *
* Frctn Loss (ft)         *    2.00  * Cum Volume (acre-ft)    *    1.99
*   11.21  *    1.14  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.39
*   20.05  *    2.10  *
**********************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW15
REACH: NRW15 RS: 1.01

INPUT
Description:
Station Elevation Data num= 31

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9574.2 1566.18  9585.4 1566.07  9596.3 1566.25  9645.1 1566.07  9649.6
1566.09
  9650.8  1566.1    9669  1565.9  9722.6 1565.67    9907 1565.35  9933.3
1565.61
  9937.2 1565.69  9942.2 1565.58  9968.5 1565.31  9999.2 1565.25 10019.7
1565.27
   10047 1565.27 10055.7 1565.33 10060.9 1565.24 10145.4 1565.73 10245.1
1566.41
 10275.9  1566.2 10279.7 1566.37 10304.2 1566.71 10306.6 1566.74 10316.3
1566.51
 10324.7 1566.23 10334.5 1566.63 10350.8  1566.6 10361.8 1566.34 10370.5
1566.21
   10514  1566.8
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9574.2    .061  9650.8    .053 10245.1    .064
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9650.8 10245.1              238     238     238             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1565.64  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *
*   0.053  *          *
* W.S. Elev (ft)          * 1565.62  * Reach Len. (ft)         *  238.00
*  238.00  *  238.00  *
* Crit W.S. (ft)          * 1565.51  * Flow Area (sq ft)       *
*   72.82  *          *
* E.G. Slope (ft/ft)      *0.013573  * Area (sq ft)            *
*   72.82  *          *
* Q Total (cfs)           *   81.00  * Flow (cfs)              *
*   81.00  *          *
* Top Width (ft)          *  366.45  * Top Width (ft)          *
*  366.45  *          *
* Vel Total (ft/s)        *    1.11  * Avg. Vel. (ft/s)        *
*    1.11  *          *
* Max Chl Dpth (ft)       *    0.38  * Hydr. Depth (ft)        *
*    0.20  *          *
* Conv. Total (cfs)       *   695.3  * Conv. (cfs)             *
*   695.3  *          *
* Length Wtd. (ft)        *  238.00  * Wetted Per. (ft)        *
```

```
*  366.46  *          *
* Min Ch El (ft)         * 1565.24  * Shear (lb/sq ft)       *
*    0.17  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *
*    0.19  *          *
* Frctn Loss (ft)        *    2.06  * Cum Volume (acre-ft)   *    1.99
*   10.82  *    1.14  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    3.39
*   18.18  *    2.10  *
*************************************************************************
************************
```

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW15
REACH: NRW15 RS: 0.96

INPUT
Description:
Station Elevation Data num= 36

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9414.2 1564.75  9455.2 1564.34  9471.8 1563.99  9486.8 1564.36    9490
1564.28
  9494.9 1564.29  9530.4 1563.78  9535.5 1563.75  9607.7 1563.98  9631.8
1563.97
  9703.9  1563.3  9735.7 1563.14  9767.1 1563.18  9829.8  1563.4  9923.8
1563.17
  9960.6 1563.65  9982.3 1563.28  9986.5 1563.08  9996.1 1563.17 10010.6
1563.56
 10025.3  1564.2 10030.6 1564.52   10038 1563.91 10049.2 1563.27 10088.8
1563.58
 10205.9 1563.93   10232 1564.45 10268.6 1564.11 10298.6 1564.05 10362.9
1564.21
 10365.2 1564.23 10397.9 1564.04 10403.9 1564.25 10425.4 1565.41 10462.9
1564.75
 10496.1 1564.94
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9414.2    .061  9486.8    .053   10232    .064
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9486.8   10232               429     429     429             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1563.57  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.01  * Wt. n-Val.              *
*   0.053  *          *
* W.S. Elev (ft)          * 1563.56  * Reach Len. (ft)         *  429.00
*  429.00  *  429.00  *
* Crit W.S. (ft)          * 1563.40  * Flow Area (sq ft)       *
*   92.81  *          *
* E.G. Slope (ft/ft)      *0.006012  * Area (sq ft)            *
*   92.81  *          *
* Q Total (cfs)           *   81.00  * Flow (cfs)              *
*   81.00  *          *
* Top Width (ft)          *  364.84  * Top Width (ft)          *
*  364.84  *          *
* Vel Total (ft/s)        *    0.87  * Avg. Vel. (ft/s)        *
*    0.87  *          *
* Max Chl Dpth (ft)       *    0.48  * Hydr. Depth (ft)        *
*    0.25  *          *
* Conv. Total (cfs)       *  1044.7  * Conv. (cfs)             *
*  1044.7  *          *
* Length Wtd. (ft)        *  429.00  * Wetted Per. (ft)        *
*  364.87  *          *
* Min Ch El (ft)          * 1563.08  * Shear (lb/sq ft)        *
*    0.10  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    0.08  *          *
* Frctn Loss (ft)         *    4.71  * Cum Volume (acre-ft)    *    1.99
*   10.36  *    1.14  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.39
*   16.19  *    2.10  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.88

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9492.3 1560.64  9562.2 1559.93  9637.2 1559.85  9761.5 1559.36  9786.4
1559.14
  9836.1 1559.09  9885.9 1558.83  9961.1 1558.19  9962.1 1558.28  9979.8
1559.4
```

```
  9995.9    1559 10010.2 1558.16 10029.9 1559.49 10032.1  1559.6 10043.1
1559.1
   10060 1558.44 10146.2 1558.97 10177.1 1558.95 10333.6 1560.04 10405.2
1560.05
 10407.3 1560.06 10522.8 1560.33 10594.6  1560.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9492.3    .061  9637.2    .053 10333.6    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9637.2 10333.6              367     367     367             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1558.86  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *
*   0.053  *          *
* W.S. Elev (ft)          * 1558.81  * Reach Len. (ft)         *  367.00
*  367.00  *  367.00  *
* Crit W.S. (ft)          * 1558.73  * Flow Area (sq ft)       *
*   44.08  *          *
* E.G. Slope (ft/ft)      *0.026133  * Area (sq ft)            *
*   44.08  *          *
* Q Total (cfs)           *   81.00  * Flow (cfs)              *
*   81.00  *          *
* Top Width (ft)          *  170.71  * Top Width (ft)          *
*  170.71  *          *
* Vel Total (ft/s)        *    1.84  * Avg. Vel. (ft/s)        *
*    1.84  *          *
* Max Chl Dpth (ft)       *    0.64  * Hydr. Depth (ft)        *
*    0.26  *          *
* Conv. Total (cfs)       *   501.1  * Conv. (cfs)             *
*   501.1  *          *
* Length Wtd. (ft)        *  367.00  * Wetted Per. (ft)        *
*  170.78  *          *
* Min Ch El (ft)          * 1558.16  * Shear (lb/sq ft)        *
*    0.42  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    0.77  *          *
* Frctn Loss (ft)         *    4.21  * Cum Volume (acre-ft)    *    1.99
*    9.69  *    1.14  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.39
*   13.55  *    2.10  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW15
REACH: NRW15 RS: 0.81

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9496.2	1557.04	9569.1	1556.6	9575.3	1556.53	9642.7	1556.1	9918.9	1553.77
9924.1	1553.76	9933.4	1554.2	9940.3	1554.21	9940.5	1554.2	9940.9	1554.2
9952.3	1554.04	9959.4	1554.19	9961.1	1554.2	9964.4	1554.23	9971.4	1554.24
9982.7	1553.94	9992.5	1553.77	10015	1553.93	10108	1554.49	10420.3	1555.94
10449.4	1556.34	10480.4	1556.45	10576.9	1556.9				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9496.2	.061	9642.7	.053	10420.3	.064

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9642.7	10420.3	289	289	289	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1554.64	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.053	
W.S. Elev (ft)	1554.60	Reach Len. (ft)	289.00	289.00	289.00
Crit W.S. (ft)	1554.35	Flow Area (sq ft)		135.03	
E.G. Slope (ft/ft)	0.008935	Area (sq ft)		135.03	
Q Total (cfs)	205.00	Flow (cfs)		205.00	
Top Width (ft)	311.38	Top Width (ft)		311.38	
Vel Total (ft/s)	1.52	Avg. Vel. (ft/s)		1.52	
Max Chl Dpth (ft)	0.84	Hydr. Depth (ft)		0.43	
Conv. Total (cfs)	2168.7	Conv. (cfs)		2168.7	
Length Wtd. (ft)	289.00	Wetted Per. (ft)		311.40	
Min Ch El (ft)	1553.76	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)			

```
*    0.37  *          *
* Frctn Loss (ft)        *    3.46  * Cum Volume (acre-ft)    *    1.99
*    8.94  *    1.14  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)          *    3.39
*   11.52  *    2.10  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.76

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9543.5 1553.99  9622.7 1553.63  9646.8 1553.38  9696.6 1553.18  9915.6
1550.83
  9939.5 1550.09  9946.1 1550.15  9951.7 1550.28  9953.9 1550.24  9955.6
1550.26
  9965.1  1550.7  9978.7 1550.38  9984.7  1550.4 10006.8 1550.39 10009.5
1550.39
   10033 1550.55 10047.8 1550.86 10055.4 1551.24 10063.6 1551.09 10068.3
1550.89
 10080.3    1551 10105.4 1550.94 10197.2 1551.86 10291.1 1552.09 10291.6
1552.09
   10515 1553.25 10594.7 1554.02

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9543.5    .061  9696.6    .053 10197.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9696.6 10197.2              247     247     247             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1551.17  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.07  * Wt. n-Val.              *
*   0.053  *          *
* W.S. Elev (ft)         * 1551.10  * Reach Len. (ft)         *  247.00
*  247.00  *  247.00  *
* Crit W.S. (ft)         * 1550.87  * Flow Area (sq ft)       *
*   97.41  *          *
* E.G. Slope (ft/ft)     *0.016822  * Area (sq ft)            *
*   97.41  *          *
* Q Total (cfs)          *  205.00  * Flow (cfs)              *
```

```
*  205.00  *          *
* Top Width (ft)         *  221.20  * Top Width (ft)         *
*  221.20  *          *
* Vel Total (ft/s)       *    2.10  * Avg. Vel. (ft/s)       *
*    2.10  *          *
* Max Chl Dpth (ft)      *    1.01  * Hydr. Depth (ft)       *
*    0.44  *          *
* Conv. Total (cfs)      *  1580.6  * Conv. (cfs)            *
*  1580.6  *          *
* Length Wtd. (ft)       *  247.00  * Wetted Per. (ft)       *
*  221.24  *          *
* Min Ch El (ft)         * 1550.09  * Shear (lb/sq ft)       *
*    0.46  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *
*    0.97  *          *
* Frctn Loss (ft)        *    3.36  * Cum Volume (acre-ft)   *    1.99
*    8.17  *    1.14  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    3.39
*    9.75  *    2.10  *
***************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.71

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9704.1 1550.94  9709.3 1550.88    9742 1549.99  9896.5 1547.37  9905.5
1547.28
  9918.7  1547.4  9932.3 1547.45  9941.6 1547.77  9943.4 1547.73  9951.7
1547.12
  9960.4  1547.5  9971.6 1547.31  9974.6 1547.04  9990.1 1547.05 10003.6
1546.82
 10010.6 1546.83 10043.1 1547.48 10044.2 1547.34 10053.8 1546.34 10066.7
1547.2
 10101.5  1547.8 10101.7  1547.8 10167.1 1548.83 10199.8 1549.17 10238.7
1549.38
 10251.3 1549.36 10340.1 1550.09 10345.1  1550.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9704.1    .061  9941.6    .053 10101.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9941.6 10101.5              157     278     157             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
************************************************************************
************************
* E.G. Elev (ft)          * 1547.81  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *   0.061
*   0.053  *          *
* W.S. Elev (ft)          * 1547.75  * Reach Len. (ft)         *  157.00
*  278.00  *  157.00  *
* Crit W.S. (ft)          * 1547.52  * Flow Area (sq ft)       *   18.88
*   89.59  *          *
* E.G. Slope (ft/ft)      *0.011209  * Area (sq ft)            *   18.88
*   89.59  *          *
* Q Total (cfs)           *  205.00  * Flow (cfs)              *   21.04
*  183.96  *          *
* Top Width (ft)          *  222.05  * Top Width (ft)          *   66.48
*  155.57  *          *
* Vel Total (ft/s)        *    1.89  * Avg. Vel. (ft/s)        *    1.11
*    2.05  *          *
* Max Chl Dpth (ft)       *    1.40  * Hydr. Depth (ft)        *    0.28
*    0.58  *          *
* Conv. Total (cfs)       *  1936.3  * Conv. (cfs)             *   198.7
*  1737.6  *          *
* Length Wtd. (ft)        *  261.93  * Wetted Per. (ft)        *   66.48
*  155.72  *          *
* Min Ch El (ft)          * 1546.34  * Shear (lb/sq ft)        *    0.20
*    0.40  *          *
* Alpha                   *    1.09  * Stream Power (lb/ft s) *    0.22
*    0.83  *          *
* Frctn Loss (ft)         *    4.52  * Cum Volume (acre-ft)    *    1.93
*    7.64  *    1.14  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    3.20
*    8.68  *    2.10  *
************************************************************************
************************
```

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW15
REACH: NRW15 RS: 0.66

INPUT
Description:
Station Elevation Data num= 30

```
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
************************************************************************
********
    9701     1546  9801.7 1543.77  9814.3 1543.56  9829.6 1543.61  9831.6
1543.63
```

```
  9841.3 1543.59  9846.2 1543.33  9851.6 1543.44  9860.5  1543.9  9860.7
1543.9
  9874.1 1543.01  9892.9 1542.89  9904.2 1542.67  9934.3 1542.54  9956.6
1543.41
  9960.1 1543.48  9966.7  1543.1  9968.9 1542.84  9972.3 1542.85  9980.6
1542.51
  9983.9 1542.26  9997.5 1541.55 10002.8 1541.26 10019.2 1543.65 10022.2
1543.68
 10049.7 1544.33   10055  1544.5 10115.4 1546.06 10158.7 1546.72 10223.1
1547.18

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9701    .061  9960.1    .053 10019.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9960.1 10019.2              187     333     187             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1543.27  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.              *   0.061
*   0.053  *          *
* W.S. Elev (ft)          * 1543.02  * Reach Len. (ft)         *  187.00
*  333.00  *  187.00  *
* Crit W.S. (ft)          * 1543.01  * Flow Area (sq ft)       *   19.22
*   39.83  *          *
* E.G. Slope (ft/ft)      *0.029957  * Area (sq ft)            *   19.22
*   39.83  *          *
* Q Total (cfs)           *  205.00  * Flow (cfs)              *   33.42
*  171.58  *          *
* Top Width (ft)          *  119.96  * Top Width (ft)          *   72.51
*   47.45  *          *
* Vel Total (ft/s)        *    3.47  * Avg. Vel. (ft/s)        *    1.74
*    4.31  *          *
* Max Chl Dpth (ft)       *    1.76  * Hydr. Depth (ft)        *    0.26
*    0.84  *          *
* Conv. Total (cfs)       *  1184.4  * Conv. (cfs)             *   193.1
*   991.3  *          *
* Length Wtd. (ft)        *  317.12  * Wetted Per. (ft)        *   72.52
*   47.63  *          *
* Min Ch El (ft)          * 1541.26  * Shear (lb/sq ft)        *    0.50
*    1.56  *          *
* Alpha                   *    1.33  * Stream Power (lb/ft s) *    0.86
*    6.74  *          *
* Frctn Loss (ft)         *    4.51  * Cum Volume (acre-ft)    *    1.86
*    7.22  *    1.14  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    2.95
*    8.04  *    2.10  *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
```

```
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.59

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9784.2 1541.97    9792 1541.77  9882.2 1539.07  9908.7  1538.5  9910.2
1538.48
  9920.8 1538.25  9931.2  1538.1  9937.1 1538.15  9979.2 1537.57  9987.8
1537.25
  9990.8 1536.83  9993.2  1536.6 10004.3 1537.47   10005 1537.53 10022.9
1538.66
 10062.7 1539.31 10122.8 1541.22 10133.7 1541.46   10195 1542.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9784.2    .061  9937.1    .053 10022.9    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9937.1 10022.9              316     316     316             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1538.71  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.061
*   0.053  *          *
* W.S. Elev (ft)          * 1538.62  * Reach Len. (ft)         *  316.00
*  316.00  *  316.00  *
* Crit W.S. (ft)          * 1538.23  * Flow Area (sq ft)       *   10.83
*   79.63  *          *
* E.G. Slope (ft/ft)      *0.008264  * Area (sq ft)            *   10.83
*   79.63  *          *
* Q Total (cfs)           *  205.00  * Flow (cfs)              *   11.18
*  193.82  *          *
* Top Width (ft)          *  119.24  * Top Width (ft)          *   34.05
*   85.19  *          *
* Vel Total (ft/s)        *    2.27  * Avg. Vel. (ft/s)        *    1.03
*    2.43  *          *
* Max Chl Dpth (ft)       *    2.02  * Hydr. Depth (ft)        *    0.32
*    0.93  *          *
* Conv. Total (cfs)       *  2255.1  * Conv. (cfs)             *   122.9
*  2132.2  *          *
* Length Wtd. (ft)        *  316.00  * Wetted Per. (ft)        *   34.05
*   85.31  *          *
```

```
* Min Ch El (ft)          * 1536.60  * Shear (lb/sq ft)       *    0.16
*    0.48  *          *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *    0.17
*    1.17  *          *
* Frctn Loss (ft)         *    5.16  * Cum Volume (acre-ft)   *    1.80
*    6.77  *    1.14  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *    2.72
*    7.53  *    2.10  *
************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.53

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9847.3 1538.12  9901.4 1535.48  9907.9 1534.88  9928.6 1532.75  9944.8
1532.7
  9953.3 1532.54  9959.5 1532.28  9963.4 1532.26  9982.3 1533.23    9988
1533.46
  9990.9 1533.27   10000 1532.37 10001.7 1532.39 10017.4 1533.07 10020.8
1533.19
 10033.3 1533.88 10055.8 1533.44 10058.3 1533.47 10149.3 1535.44 10183.9
1536.01
 10193.9  1536.1 10266.4  1537.8 10290.1 1538.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9847.3    .061  9907.9    .053 10033.3    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9907.9 10033.3               67     164      67             .1
.3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 10033.3 10290.1 1533.88       F

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1533.54  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.             *
```

```
*   0.053  *          *
* W.S. Elev (ft)         * 1533.28  * Reach Len. (ft)        *   67.00
*  164.00  *   67.00  *
* Crit W.S. (ft)         * 1533.27  * Flow Area (sq ft)      *
*   50.69  *          *
* E.G. Slope (ft/ft)     *0.046141  * Area (sq ft)           *
*   50.69  *          *
* Q Total (cfs)          *  205.00  * Flow (cfs)             *
*  205.00  *          *
* Top Width (ft)         *   92.01  * Top Width (ft)         *
*   92.01  *          *
* Vel Total (ft/s)       *    4.04  * Avg. Vel. (ft/s)       *
*    4.04  *          *
* Max Chl Dpth (ft)      *    1.02  * Hydr. Depth (ft)       *
*    0.55  *          *
* Conv. Total (cfs)      *   954.4  * Conv. (cfs)            *
*   954.4  *          *
* Length Wtd. (ft)       *  149.98  * Wetted Per. (ft)       *
*   92.13  *          *
* Min Ch El (ft)         * 1532.26  * Shear (lb/sq ft)       *
*    1.58  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *
*    6.41  *          *
* Frctn Loss (ft)        *    2.31  * Cum Volume (acre-ft)   *    1.76
*    6.29  *    1.14  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *    2.60
*    6.89  *    2.10  *
*************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid, water
         surface was used.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.50

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9853.2 1536.12  9875.4 1535.11  9879.4 1534.97  9899.8  1533.8  9917.5
1533.33
  9933.6 1532.16  9936.3 1532.03  9939.4 1531.91  9966.1 1531.04  9991.4
1529.89
  9996.1 1529.77  9999.9 1529.89 10006.8    1530   10011 1530.44 10017.4
1530.33
```

```
 10019.6 1530.18 10033.8 1530.43 10043.1 1530.44   10056 1530.68 10069.2
1531.02
 10071.8 1530.93 10087.1 1530.01 10117.7 1530.51 10124.8 1530.91 10126.1
1530.92
 10127.5 1531.01 10148.8  1531.4 10149.4  1531.4 10160.6 1531.15 10170.9
1531.05
 10173.7 1531.04 10179.9  1531.1 10186.6  1531.2 10191.4 1531.31 10199.6
1531.42
 10209.1 1531.28 10209.7  1531.3 10211.9 1531.39 10224.9 1531.81 10230.2
1532.1
 10239.7 1532.34 10266.1 1532.81 10275.5 1532.93 10356.6 1535.39

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9853.2    .061  9966.1    .053 10069.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9966.1 10069.2               97     237      97             .1
.3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 10148.8 10356.6  1531.4       F

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1531.17  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
* W.S. Elev (ft)          * 1531.11  * Reach Len. (ft)         *   97.00
*  237.00  *   97.00  *
* Crit W.S. (ft)          * 1530.73  * Flow Area (sq ft)       *    0.08
*   74.18  *   40.00  *
* E.G. Slope (ft/ft)      *0.007623  * Area (sq ft)            *    0.08
*   74.18  *   40.69  *
* Q Total (cfs)           *  205.00  * Flow (cfs)              *    0.02
*  145.73  *   59.25  *
* Top Width (ft)          *  185.97  * Top Width (ft)          *    2.28
*  103.10  *   80.59  *
* Vel Total (ft/s)        *    1.79  * Avg. Vel. (ft/s)        *    0.24
*    1.96  *    1.48  *
* Max Chl Dpth (ft)       *    1.34  * Hydr. Depth (ft)        *    0.04
*    0.72  *    0.63  *
* Conv. Total (cfs)       *  2348.0  * Conv. (cfs)             *     0.2
*  1669.2  *   678.6  *
* Length Wtd. (ft)        *  209.41  * Wetted Per. (ft)        *    2.28
*  103.17  *   64.05  *
* Min Ch El (ft)          * 1529.77  * Shear (lb/sq ft)        *    0.02
*    0.34  *    0.30  *
* Alpha                   *    1.05  * Stream Power (lb/ft s) *    0.00
*    0.67  *    0.44  *
* Frctn Loss (ft)         *    3.27  * Cum Volume (acre-ft)    *    1.76
*    6.06  *    1.11  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    2.60
*    6.52  *    2.04  *
************************************************************************
************************
```

```
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid, water
         surface was used.

CROSS SECTION


RIVER: NRW15
REACH: NRW15               RS: 0.46

INPUT
Description:
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
    9849 1531.85  9872.9 1530.78  9894.9 1529.63  9904.4 1529.26    9913
1528.63
  9926.6 1527.75  9933.8  1527.7  9940.1 1527.76  9949.5 1527.05  9952.4
1527.1
  9958.3 1527.74  9961.9    1528  9968.1 1527.53  9972.8 1527.27  9979.4
1527.23
  9986.3 1527.38  9987.8 1527.29  9998.7 1527.05 10007.4 1526.84 10013.2
1526.82
 10022.5  1526.9 10022.8  1526.9 10032.7 1526.94 10040.1  1527.2   10044
1527.24
   10050 1527.34 10054.9 1527.34 10080.8 1527.68   10100 1528.04   10125
1528.72
 10233.7 1532.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9849    .061  9961.9    .053   10050    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9961.9   10050              267     267     267             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1527.88  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.24  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
* W.S. Elev (ft)          * 1527.64  * Reach Len. (ft)         *  267.00
*  267.00  *  267.00  *
* Crit W.S. (ft)          * 1527.64  * Flow Area (sq ft)       *    5.29
*   45.00  *    4.91  *
* E.G. Slope (ft/ft)      *0.048127  * Area (sq ft)            *    5.29
```

```
*   45.00  *    4.91  *
* Q Total (cfs)          *  205.00  * Flow (cfs)             *   13.67
*  183.47  *    7.87  *
* Top Width (ft)         *  126.82  * Top Width (ft)         *   15.70
*   83.35  *   27.77  *
* Vel Total (ft/s)       *    3.71  * Avg. Vel. (ft/s)       *    2.58
*    4.08  *    1.60  *
* Max Chl Dpth (ft)      *    0.82  * Hydr. Depth (ft)       *    0.34
*    0.54  *    0.18  *
* Conv. Total (cfs)      *   934.5  * Conv. (cfs)            *    62.3
*   836.3  *    35.9  *
* Length Wtd. (ft)       *  267.00  * Wetted Per. (ft)       *   15.75
*   83.38  *   27.77  *
* Min Ch El (ft)         * 1526.82  * Shear (lb/sq ft)       *    1.01
*    1.62  *    0.53  *
* Alpha                  *    1.12  * Stream Power (lb/ft s) *    2.61
*    6.61  *    0.85  *
* Frctn Loss (ft)        *    3.37  * Cum Volume (acre-ft)   *    1.75
*    5.73  *    1.06  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *    2.58
*    6.01  *    1.92  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.41

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9869 1526.07  9891.1 1525.38  9892.7 1525.29  9922.3 1523.92  9947.2
1523.04
  9961.1 1521.94  9964.4  1521.9  9979.2 1522.45  9985.9 1522.87  9990.9
1523.38
  9994.9 1522.14  9996.6 1521.55  9999.7 1521.95 10001.7 1522.13   10007
```

```
1522.63
 10020.6 1522.78 10021.9  1522.8 10037.1 1523.38 10064.2 1522.92 10067.6
1523.05
 10080.8 1523.35 10093.7 1523.87 10097.2 1524.05 10104.2 1524.35 10130.1
1524.37
 10130.5 1524.38 10131.4 1524.43 10139.8 1525.06 10169.4 1526.09   10189
1527.13
 10248.5 1529.61 10251.9 1529.71 10255.2 1529.84

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9869    .061  9990.9    .053 10037.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.9 10037.1               238     238     238             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1524.04  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
* W.S. Elev (ft)          * 1523.94  * Reach Len. (ft)         *  238.00
*  238.00  *  238.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   77.23
*   58.47  *   38.88  *
* E.G. Slope (ft/ft)      *0.008212  * Area (sq ft)            *   77.23
*   58.47  *   38.88  *
* Q Total (cfs)           *  419.00  * Flow (cfs)              *  183.45
*  172.92  *   62.63  *
* Top Width (ft)          *  173.30  * Top Width (ft)          *   69.09
*   46.20  *   58.01  *
* Vel Total (ft/s)        *    2.40  * Avg. Vel. (ft/s)        *    2.38
*    2.96  *    1.61  *
* Max Chl Dpth (ft)       *    2.39  * Hydr. Depth (ft)        *    1.12
*    1.27  *    0.67  *
* Conv. Total (cfs)       *  4623.7  * Conv. (cfs)             *  2024.3
*  1908.2  *   691.2  *
* Length Wtd. (ft)        *  238.00  * Wetted Per. (ft)        *   69.20
*   46.56  *   58.03  *
* Min Ch El (ft)          * 1521.55  * Shear (lb/sq ft)        *    0.57
*    0.64  *    0.34  *
* Alpha                   *    1.12  * Stream Power (lb/ft s) *    1.36
*    1.90  *    0.55  *
* Frctn Loss (ft)         *    3.44  * Cum Volume (acre-ft)    *    1.50
*    5.42  *    0.92  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    2.32
*    5.61  *    1.65  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW15
REACH: NRW15 RS: 0.36

INPUT
Description:
Station Elevation Data num= 27

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9806.4 1526.24  9845.9 1524.39  9867.2 1523.53  9914.6 1519.98  9919.8
1520.38
  9933.9 1520.73  9945.6 1519.87  9949.8 1519.82    9963 1519.58  9970.3
1519.66
  9983.5 1519.61  9993.8 1519.28   10011 1519.04 10022.5 1519.69 10022.7
1519.71
 10022.9  1519.7 10045.5 1519.51 10059.4  1519.6 10067.9 1519.54 10074.7
1519.62
 10093.4 1520.36 10111.3 1521.72 10129.9 1522.25 10133.8 1522.57 10136.8
1522.69
 10140.3 1522.91 10155.7 1524.05
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9806.4    .061  9983.5    .053 10022.7    .064
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.5 10022.7              283     283     283             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1520.59  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
* W.S. Elev (ft)          * 1520.32  * Reach Len. (ft)         *  283.00
*  283.00  *  283.00  *
* Crit W.S. (ft)          * 1520.26  * Flow Area (sq ft)       *   27.09
*   39.97  *   44.33  *
* E.G. Slope (ft/ft)      *0.032012  * Area (sq ft)            *   27.09
*   39.97  *   44.33  *
* Q Total (cfs)           *  419.00  * Flow (cfs)              *   79.71
*  203.01  *  136.28  *
* Top Width (ft)          *  161.70  * Top Width (ft)          *   52.88
*   39.20  *   69.62  *
* Vel Total (ft/s)        *    3.76  * Avg. Vel. (ft/s)        *    2.94
*    5.08  *    3.07  *
* Max Chl Dpth (ft)       *    1.28  * Hydr. Depth (ft)        *    0.51
*    1.02  *    0.64  *
* Conv. Total (cfs)       *  2341.9  * Conv. (cfs)             *   445.5
*  1134.6  *   761.7  *
* Length Wtd. (ft)        *  283.00  * Wetted Per. (ft)        *   52.92
```

```
*   39.23  *   69.64  *
* Min Ch El (ft)          * 1519.04  * Shear (lb/sq ft)       *    1.02
*    2.04  *    1.27  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    3.01
*   10.34  *    3.91  *
* Frctn Loss (ft)         *    4.00  * Cum Volume (acre-ft)   *    1.22
*    5.15  *    0.69  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)         *    1.98
*    5.38  *    1.31  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.31

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9850.7 1522.07  9877.8  1520.4  9882.3 1520.15  9893.8 1518.81  9916.1
1516.34
  9932.4  1515.3  9960.4  1515.3  9973.9 1514.89  9989.1 1514.95  9997.2
1514.19
 10000.7 1514.13 10016.7 1515.33 10040.3 1515.99 10040.6    1516 10040.9
1516
 10073.4  1517.5 10089.1 1517.69 10105.2 1518.77 10133.1 1519.59 10136.1
1519.64
 10137.1  1519.7 10155.3 1520.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9850.7    .061  9960.4    .053 10016.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9960.4 10016.7              237     237     237             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1516.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
```

```
* W.S. Elev (ft)          * 1516.41  * Reach Len. (ft)         *  237.00
*  237.00  *  237.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   40.77
*   90.12  *   19.81  *
* E.G. Slope (ft/ft)      *0.007912  * Area (sq ft)            *   40.77
*   90.12  *   19.81  *
* Q Total (cfs)           *  419.00  * Flow (cfs)              *   82.73
*  307.24  *   29.03  *
* Top Width (ft)          *  134.35  * Top Width (ft)          *   44.94
*   56.30  *   33.11  *
* Vel Total (ft/s)        *    2.78  * Avg. Vel. (ft/s)        *    2.03
*    3.41  *    1.47  *
* Max Chl Dpth (ft)       *    2.28  * Hydr. Depth (ft)        *    0.91
*    1.60  *    0.60  *
* Conv. Total (cfs)       *  4710.6  * Conv. (cfs)             *   930.1
*  3454.1  *   326.4  *
* Length Wtd. (ft)        *  237.00  * Wetted Per. (ft)        *   44.98
*   56.39  *   33.13  *
* Min Ch El (ft)          * 1514.13  * Shear (lb/sq ft)        *    0.45
*    0.79  *    0.30  *
* Alpha                   *    1.23  * Stream Power (lb/ft s) *    0.91
*    2.69  *    0.43  *
* Frctn Loss (ft)         *    2.75  * Cum Volume (acre-ft)    *    1.00
*    4.72  *    0.49  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    1.66
*    5.07  *    0.97  *
*****************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.26

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
  9761.7 1517.94  9791.2 1517.15    9824 1516.04  9826.8 1515.98  9829.6
1515.98
  9867.7 1515.59  9883.4  1514.6  9902.3 1513.69  9909.9 1513.23    9928
1512.96
  9955.1 1512.82  9956.2 1512.81  9971.8 1512.79  9986.7 1512.57 10005.6
1512.33
 10009.3 1512.31 10010.3 1512.32 10026.1    1513 10046.1 1512.85   10063
1513.09
 10079.8 1513.73 10093.3  1514.4 10109.1 1515.77 10113.1 1515.99 10125.2
1516.71
 10128.5 1516.84 10163.3 1518.89 10164.1 1518.92 10178.2 1520.34
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9761.7    .061  9909.9    .053 10026.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9909.9 10026.1              283     283     283             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1513.80  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
* W.S. Elev (ft)          * 1513.63  * Reach Len. (ft)         *  283.00
*  283.00  *  283.00  *
* Crit W.S. (ft)          * 1513.43  * Flow Area (sq ft)       *    1.31
*  101.29  *   28.98  *
* E.G. Slope (ft/ft)      *0.018711  * Area (sq ft)            *    1.31
*  101.29  *   28.98  *
* Q Total (cfs)           *  419.00  * Flow (cfs)              *    1.48
*  354.41  *   63.10  *
* Top Width (ft)          *  173.80  * Top Width (ft)          *    6.58
*  116.20  *   51.02  *
* Vel Total (ft/s)        *    3.18  * Avg. Vel. (ft/s)        *    1.13
*    3.50  *    2.18  *
* Max Chl Dpth (ft)       *    1.32  * Hydr. Depth (ft)        *    0.20
*    0.87  *    0.57  *
* Conv. Total (cfs)       *  3063.2  * Conv. (cfs)             *    10.9
*  2591.0  *   461.3  *
* Length Wtd. (ft)        *  283.00  * Wetted Per. (ft)        *    6.59
*  116.22  *   51.03  *
* Min Ch El (ft)          * 1512.31  * Shear (lb/sq ft)        *    0.23
*    1.02  *    0.66  *
* Alpha                   *    1.09  * Stream Power (lb/ft s) *    0.26
*    3.56  *    1.44  *
* Frctn Loss (ft)         *    3.28  * Cum Volume (acre-ft)    *    0.88
*    4.20  *    0.35  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    1.52
*    4.60  *    0.74  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.21
```

```
INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9764.6 1514.02  9773.9 1513.71  9786.8 1513.59  9852.1 1511.79  9878.1
1509.9
  9884.7 1509.73  9897.6 1510.35  9903.7 1509.98  9925.2 1509.65  9961.3
1509.39
  9968.2 1509.54    9992 1509.31 10001.5 1509.02   10032  1509.3 10044.5
1509.34
 10055.5 1509.07 10063.5  1509.4 10078.7  1510.1 10086.3 1511.39 10093.1
1511.9
 10134.5 1513.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9764.6    .061  9968.2    .053 10078.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9968.2 10078.7               268     268     268             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1510.50  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
* W.S. Elev (ft)          * 1510.41  * Reach Len. (ft)         *  268.00
*  268.00  *  268.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   63.67
*  119.98  *    0.29  *
* E.G. Slope (ft/ft)      *0.007866  * Area (sq ft)            *   63.67
*  119.98  *    0.29  *
* Q Total (cfs)           *  419.00  * Flow (cfs)              *  103.74
*  315.09  *    0.17  *
* Top Width (ft)          *  209.49  * Top Width (ft)          *   97.15
*  110.50  *    1.84  *
* Vel Total (ft/s)        *    2.28  * Avg. Vel. (ft/s)        *    1.63
*    2.63  *    0.59  *
* Max Chl Dpth (ft)       *    1.39  * Hydr. Depth (ft)        *    0.66
*    1.09  *    0.16  *
* Conv. Total (cfs)       *  4724.3  * Conv. (cfs)             *  1169.7
*  3552.8  *     1.9  *
* Length Wtd. (ft)        *  268.00  * Wetted Per. (ft)        *   97.20
*  110.53  *    1.87  *
* Min Ch El (ft)          * 1509.02  * Shear (lb/sq ft)        *    0.32
*    0.53  *    0.08  *
* Alpha                   *    1.13  * Stream Power (lb/ft s) *    0.52
*    1.40  *    0.04  *
* Frctn Loss (ft)         *    2.78  * Cum Volume (acre-ft)    *    0.67
*    3.49  *    0.26  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    1.19
*    3.87  *    0.57  *
**************************************************************************
```

```
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15                RS: 0.16

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9780.7 1512.27  9860.4  1509.3  9885.4  1508.5  9895.8 1508.29  9902.1
1508.01
  9922.2  1507.4  9945.2 1506.94  9948.9 1506.95  9985.3 1506.51  9988.3
1506.5
 10000.8 1506.46 10017.8  1506.4 10023.7  1506.5 10049.9 1506.73 10075.4
1506.8
   10086 1507.22 10094.4 1507.59 10109.7 1508.04 10111.5 1508.11 10142.3
1509.43
 10193.3 1511.96 10209.4 1513.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9780.7    .061  9922.2    .053 10094.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9922.2 10094.4              354     354     354             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1507.73  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *   0.061
*   0.053  *   0.000  *
* W.S. Elev (ft)          * 1507.60  * Reach Len. (ft)         *  354.00
*  354.00  *  354.00  *
* Crit W.S. (ft)          * 1507.32  * Flow Area (sq ft)       *    0.62
*  142.03  *    0.00  *
* E.G. Slope (ft/ft)      *0.014292  * Area (sq ft)            *    0.62
*  142.03  *    0.00  *
* Q Total (cfs)           *  419.00  * Flow (cfs)              *    0.38
*  418.62  *    0.00  *
* Top Width (ft)          *  178.78  * Top Width (ft)          *    6.42
*  172.20  *    0.16  *
* Vel Total (ft/s)        *    2.94  * Avg. Vel. (ft/s)        *    0.62
*    2.95  *    0.05  *
* Max Chl Dpth (ft)       *    1.19  * Hydr. Depth (ft)        *    0.10
*    0.82  *    0.00  *
* Conv. Total (cfs)       *  3504.8  * Conv. (cfs)             *     3.2
```

```
*  3501.6  *     0.0  *
* Length Wtd. (ft)       *  354.00  * Wetted Per. (ft)       *    6.42
*  172.23  *    0.16  *
* Min Ch El (ft)         * 1506.40  * Shear (lb/sq ft)       *    0.09
*    0.74  *          *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *    0.05
*    2.17  *          *
* Frctn Loss (ft)        *    3.28  * Cum Volume (acre-ft)   *    0.47
*    2.68  *    0.26  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    0.87
*    3.00  *    0.56  *
***************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.09

INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9777.4 1506.46  9828.4 1505.54  9835.2 1505.46  9866.6  1504.9  9876.2
1504.58
  9906.9    1504  9929.1 1503.11  9931.5 1503.14  9953.6 1503.86  9983.3
1502.64
  9999.5 1503.03 10023.9 1503.57 10043.7 1503.53 10055.4  1503.4 10086.8
1503.7
 10091.5 1503.57 10106.4 1503.73 10115.4 1503.74 10119.1 1503.78 10135.9
1503.88
 10137.9 1504.02 10152.7 1504.11 10168.3 1504.31 10170.7 1504.44 10187.2
1505.81
 10263.5 1509.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9777.4    .061  9953.6    .053 10086.8    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9953.6 10086.8              222     222     222             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1504.43  * Element                 *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.07  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
* W.S. Elev (ft)         * 1504.36  * Reach Len. (ft)         *  222.00
*  222.00  *  222.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   43.45
*  135.85  *   38.52  *
* E.G. Slope (ft/ft)     *0.006497  * Area (sq ft)            *   43.45
*  135.85  *   38.52  *
* Q Total (cfs)          *  419.00  * Flow (cfs)              *   64.61
*  311.00  *   43.38  *
* Top Width (ft)         *  281.58  * Top Width (ft)          *   65.90
*  133.20  *   82.47  *
* Vel Total (ft/s)       *    1.92  * Avg. Vel. (ft/s)        *    1.49
*    2.29  *    1.13  *
* Max Chl Dpth (ft)      *    1.72  * Hydr. Depth (ft)        *    0.66
*    1.02  *    0.47  *
* Conv. Total (cfs)      *  5198.3  * Conv. (cfs)             *   801.6
*  3858.4  *   538.2  *
* Length Wtd. (ft)       *  222.00  * Wetted Per. (ft)        *   65.94
*  133.24  *   82.49  *
* Min Ch El (ft)         * 1502.64  * Shear (lb/sq ft)        *    0.27
*    0.41  *    0.19  *
* Alpha                  *    1.18  * Stream Power (lb/ft s) *    0.40
*    0.95  *    0.21  *
* Frctn Loss (ft)        *    1.95  * Cum Volume (acre-ft)    *    0.29
*    1.55  *    0.10  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)          *    0.57
*    1.75  *    0.23  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.05

INPUT
Description: Section lines 11 & 14 of T5NR1E
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9668.4 1504.17  9818.7 1502.44  9835.1 1502.45  9842.2  1502.4  9859.6
1501.59
  9885.2 1501.94  9890.5 1501.85  9910.3 1501.43    9919 1501.44  9938.7
1501.24
  9946.6 1501.57  9953.2 1501.65  9984.1 1501.59 10002.2 1501.38 10014.8
1501.39
 10033.1 1501.51 10066.7 1502.44 10075.1 1502.75 10083.4 1503.25 10098.4
1503.87
 10110.2 1504.45 10128.7  1505.2 10189.4 1508.26 10195.2 1508.51 10207.4
1509.18

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9668.4    .061  9885.2    .053 10066.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9885.2 10066.7              232     232     232             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1502.49  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *   0.061
*   0.053  *          *
* W.S. Elev (ft)          * 1502.38  * Reach Len. (ft)         *  232.00
*  232.00  *  232.00  *
* Crit W.S. (ft)          * 1502.10  * Flow Area (sq ft)       *   22.43
*  141.57  *          *
* E.G. Slope (ft/ft)      *0.012509  * Area (sq ft)            *   22.43
*  141.57  *          *
* Q Total (cfs)           *  419.00  * Flow (cfs)              *   39.87
*  379.13  *          *
* Top Width (ft)          *  221.88  * Top Width (ft)          *   42.56
*  179.32  *          *
* Vel Total (ft/s)        *    2.55  * Avg. Vel. (ft/s)        *    1.78
*    2.68  *          *
* Max Chl Dpth (ft)       *    1.14  * Hydr. Depth (ft)        *    0.53
*    0.79  *          *
* Conv. Total (cfs)       *  3746.3  * Conv. (cfs)             *   356.5
*  3389.9  *          *
* Length Wtd. (ft)        *  232.00  * Wetted Per. (ft)        *   42.58
*  179.35  *          *
* Min Ch El (ft)          * 1501.24  * Shear (lb/sq ft)        *    0.41
*    0.62  *          *
* Alpha                   *    1.04  * Stream Power (lb/ft s) *    0.73
*    1.65  *          *
* Frctn Loss (ft)         *    2.07  * Cum Volume (acre-ft)    *    0.13
*    0.84  *    0.00  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.30
*    0.96  *    0.02  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW15
REACH: NRW15              RS: 0.01

INPUT
Description: D.S. Limit of Study
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
```

```
********
  9631.1 1502.35  9660.8 1502.04  9663.8 1501.99  9732.3  1501.4  9833.9
1500.27
  9841.1 1500.09  9854.9 1500.14  9867.7 1500.02  9879.8 1499.77  9888.2
1499.67
  9898.3 1499.61  9927.8 1498.82  9933.8 1499.02    9937 1499.25    9965
1499.43
    9984  1499.2  9999.3 1499.58 10013.5 1499.75 10027.2 1498.62 10031.7
1498.86
 10042.1 1499.35 10078.8    1500 10083.8 1500.27 10110.1 1500.99 10122.1
1501.17
 10134.6 1502.48   10148 1503.27 10169.1 1503.55 10181.6 1504.07 10199.2
1504.55
 10213.7 1504.84

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9631.1    .061  9898.3    .053 10078.8    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9898.3 10078.8                0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100~Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1500.40  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.07  * Wt. n-Val.              *   0.061
*   0.053  *   0.064  *
* W.S. Elev (ft)          * 1500.33  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1499.90  * Flow Area (sq ft)       *   24.57
*  175.14  *    1.02  *
* E.G. Slope (ft/ft)      *0.006707  * Area (sq ft)            *   24.57
*  175.14  *    1.02  *
* Q Total (cfs)           *  419.00  * Flow (cfs)              *   24.50
*  393.97  *    0.53  *
* Top Width (ft)          *  257.14  * Top Width (ft)          *   69.55
*  180.50  *    7.09  *
* Vel Total (ft/s)        *    2.09  * Avg. Vel. (ft/s)        *    1.00
*    2.25  *    0.52  *
* Max Chl Dpth (ft)       *    1.71  * Hydr. Depth (ft)        *    0.35
*    0.97  *    0.14  *
* Conv. Total (cfs)       *  5116.3  * Conv. (cfs)             *   299.2
*  4810.6  *     6.5  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   69.55
*  180.60  *    7.10  *
* Min Ch El (ft)          * 1498.62  * Shear (lb/sq ft)        *    0.15
*    0.41  *    0.06  *
* Alpha                   *    1.11  * Stream Power (lb/ft s) *    0.15
*    0.91  *    0.03  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
**************************************************************************
************************
```

****
****

SUMMARY OF MANNING'S N VALUES

River:NRW15

Reach	River Sta.	n1	n2	n3
NRW15	1.13	.061	.053	.064
NRW15	1.05	.061	.053	.064
NRW15	1.01	.061	.053	.064
NRW15	0.96	.061	.053	.064
NRW15	0.88	.061	.053	.064
NRW15	0.81	.061	.053	.064
NRW15	0.76	.061	.053	.064
NRW15	0.71	.061	.053	.064
NRW15	0.66	.061	.053	.064
NRW15	0.59	.061	.053	.064
NRW15	0.53	.061	.053	.064
NRW15	0.50	.061	.053	.064
NRW15	0.46	.061	.053	.064
NRW15	0.41	.061	.053	.064
NRW15	0.36	.061	.053	.064
NRW15	0.31	.061	.053	.064
NRW15	0.26	.061	.053	.064
NRW15	0.21	.061	.053	.064
NRW15	0.16	.061	.053	.064
NRW15	0.09	.061	.053	.064
NRW15	0.05	.061	.053	.064
NRW15	0.01	.061	.053	.064

****
****

SUMMARY OF REACH LENGTHS

River: NRW15

Reach	River Sta.	Left	Channel	Right
NRW15	1.13	466	466	466
NRW15	1.05	204	204	204
NRW15	1.01	238	238	238
NRW15	0.96	429	429	429
NRW15	0.88	367	367	367
NRW15	0.81	289	289	289
NRW15	0.76	247	247	247
NRW15	0.71	157	278	157
NRW15	0.66	187	333	187
NRW15	0.59	316	316	316
NRW15	0.53	67	164	67
NRW15	0.50	97	237	97
NRW15	0.46	267	267	267
NRW15	0.41	238	238	238
NRW15	0.36	283	283	283
NRW15	0.31	237	237	237
NRW15	0.26	283	283	283
NRW15	0.21	268	268	268
NRW15	0.16	354	354	354

*NRW15	* 0.09	* 222*	222*	222*
*NRW15	* 0.05	* 232*	232*	232*
*NRW15	* 0.01	* 0*	0*	0*

****

****
****

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW15

Reach	River Sta.	Contr.	Expan.
*NRW15	* 1.13	* .1*	.3*
*NRW15	* 1.05	* .1*	.3*
*NRW15	* 1.01	* .1*	.3*
*NRW15	* 0.96	* .1*	.3*
*NRW15	* 0.88	* .1*	.3*
*NRW15	* 0.81	* .1*	.3*
*NRW15	* 0.76	* .1*	.3*
*NRW15	* 0.71	* .1*	.3*
*NRW15	* 0.66	* .1*	.3*
*NRW15	* 0.59	* .1*	.3*
*NRW15	* 0.53	* .1*	.3*
*NRW15	* 0.50	* .1*	.3*
*NRW15	* 0.46	* .1*	.3*
*NRW15	* 0.41	* .1*	.3*
*NRW15	* 0.36	* .1*	.3*
*NRW15	* 0.31	* .1*	.3*
*NRW15	* 0.26	* .1*	.3*
*NRW15	* 0.21	* .1*	.3*
*NRW15	* 0.16	* .1*	.3*
*NRW15	* 0.09	* .1*	.3*
*NRW15	* 0.05	* .1*	.3*
*NRW15	* 0.01	* .1*	.3*

NRW15.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.xs
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:28:08 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW15,NRW15						
1.13	466	466	466	258.06	81	
1.05	204	204	204	429.62	81	D
1.01	238	238	238	366.45	81	D
.96	429	429	429	364.84	81	D
.88	367	367	367	170.71	81	D
.81	289	289	289	311.38	205	
.76	247	247	247	221.2	205	D
.71	157	278	157	222.05	205	D
.66	187	333	187	119.96	205	D
.59	316	316	316	119.24	205	
.53	67	164	67	92.01	205	D
.5	97	237	97	169.38	205	
.46	267	267	267	126.82	205	D,C
.41	238	238	238	173.3	419	
.36	283	283	283	161.7	419	D
.31	237	237	237	134.35	419	
.26	283	283	283	173.8	419	
.21	268	268	268	209.49	419	
.16	354	354	354	178.78	419	
.09	222	222	222	281.58	419	
.05	232	232	232	221.88	419	
.01	0	0	0	257.14	419	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

LOCATION CHECK

```
RS:       0.5
XS LC 01 Lenchl Up/TopwdthAct Dn = 1.87
         MaxChlDpth Up/MaxChlDpth Dn = 1.63
         TopwdthAct Up/TopwdthAct Dn = 1.34
         This cross section is located too far upstream from the
         critical depth cross section.
```

BOUNDARY CONDITION CHECK

```
XS BC 02 The name of the stream is NRW15,NRW15
         Normal S = 0.0067 is specified as the downstream boundary
         for profile 100-Year
```

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW15\NRW15.nt
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:28:07 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW15,NRW15						
1.13		0.061	0.053	0.064	0.1	0.3
1.05		0.061	0.053	0.064	0.1	0.3
1.01		0.061	0.053	0.064	0.1	0.3
.96		0.061	0.053	0.064	0.1	0.3
.88		0.061	0.053	0.064	0.1	0.3
.81		0.061	0.053	0.064	0.1	0.3
.76		0.061	0.053	0.064	0.1	0.3
.71		0.061	0.053	0.064	0.1	0.3
.66		0.061	0.053	0.064	0.1	0.3
.59		0.061	0.053	0.064	0.1	0.3
.53		0.061	0.053	0.064	0.1	0.3
.5		0.061	0.053	0.064	0.1	0.3
.46		0.061	0.053	0.064	0.1	0.3
.41		0.061	0.053	0.064	0.1	0.3
.36		0.061	0.053	0.064	0.1	0.3
.31		0.061	0.053	0.064	0.1	0.3
.26		0.061	0.053	0.064	0.1	0.3
.21		0.061	0.053	0.064	0.1	0.3
.16		0.061	0.053	0.064	0.1	0.3
.09		0.061	0.053	0.064	0.1	0.3
.05		0.061	0.053	0.064	0.1	0.3
.01		0.061	0.053	0.064	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.061	0.061
Right Overbank n Value:	0.064	0.064
Channel n Value:	0.053	0.053
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 20

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW20 River: NRW20A Reach: NRW20A Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW20A	1.05	1579.00	1564.56	1569.50		1570.02	0.011014	7.39	343.77	185.58	0.68
NRW20A	0.97	1579.00	1563.05	1565.99	1565.24	1566.19	0.007148	4.68	487.79	269.00	0.52
NRW20A	0.88	1579.00	1557.69	1562.57		1562.92	0.007644	5.78	392.30	191.91	0.55
NRW20A	0.82	1046.00	1556.01	1560.20		1560.43	0.007236	4.95	322.18	191.10	0.52
NRW20A	0.76	1046.00	1554.22	1560.20		1560.22	0.000334	1.65	1058.47	329.25	0.13
NRW20A	0.70	1046.00	1552.44	1560.20		1560.21	0.000061	0.80	2008.79	440.94	0.06
NRW20A	0.65	1046.00	1551.03	1560.20		1560.20	0.000017	0.51	2871.28	460.47	0.03
NRW20A	0.60	1046.00	1546.69	1560.20		1560.82	0.006561	6.63	175.95	359.53	0.38
NRW20A	0.59	Culvert									
NRW20A	0.58	1046.00	1545.89	1553.03	1553.03	1555.42	0.036197	12.41	84.30	17.51	1.00
NRW20A	0.56	1046.00	1546.04	1548.99		1549.10	0.004020	3.28	435.16	246.35	0.38
NRW20A	0.51	1046.00	1545.00	1546.58	1546.51	1547.03	0.031451	6.15	206.86	196.43	0.97
NRW20A	0.49	1059.00	1542.87	1545.35		1545.48	0.005491	2.99	371.62	316.43	0.42
NRW20A	0.41	1059.00	1538.14	1543.32		1543.48	0.004617	4.49	436.79	298.91	0.43
NRW20A	0.36	1059.00	1537.10	1541.63	1541.10	1541.78	0.006985	4.20	394.79	302.42	0.50
NRW20A	0.29	1059.00	1534.76	1538.42		1538.61	0.010469	5.22	364.70	318.00	0.61
NRW20A	0.23	1059.00	1532.30	1537.63		1537.68	0.001398	2.72	702.64	339.76	0.24
NRW20A	0.17	1059.00	1530.79	1537.53		1537.54	0.000188	1.20	1343.22	376.82	0.09
NRW20A	0.11	1059.00	1528.06	1537.51		1537.52	0.000037	0.70	2401.22	495.07	0.04
NRW20A	0.02	1059.00	1526.30	1537.51		1537.51	0.000003	0.24	5397.10	703.93	0.01
NRW20A	0.01	1059.00	1533.20	1536.96	1536.46	1537.38	0.014415	5.24	202.00	112.92	0.69
NRW20A	0.009	Inl Struct									
NRW20A	0.00	1059.00	1524.84	1527.14	1526.21	1527.23	0.003201	2.43	439.88	263.88	0.32

HEC-RAS Plan: NRW20 River: NRW20B Reach: NRW20B Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW20B	2.50	549.00	1650.46	1652.64	1652.38	1652.91	0.017639	4.57	158.02	166.45	0.64
NRW20B	2.45	549.00	1646.90	1649.86		1650.09	0.008467	4.18	179.76	145.96	0.47
NRW20B	2.42	549.00	1645.64	1648.26		1648.43	0.010181	4.23	202.55	160.39	0.51
NRW20B	2.36	549.00	1641.99	1644.41		1644.63	0.016474	4.73	169.44	144.59	0.63
NRW20B	2.31	549.00	1638.69	1641.51	1640.78	1641.67	0.007063	3.45	197.79	149.19	0.42
NRW20B	2.26	549.00	1635.10	1638.72	1638.47	1639.02	0.016192	5.93	170.12	160.50	0.65
NRW20B	2.18	549.00	1630.99	1634.69		1634.82	0.007634	4.16	230.57	160.59	0.45
NRW20B	2.12	549.00	1627.90	1630.56	1630.21	1630.86	0.020855	5.37	143.40	114.32	0.70
NRW20B	2.05	549.00	1622.10	1626.11	1625.54	1626.25	0.007953	4.33	226.90	159.57	0.45
NRW20B	1.98	549.00	1618.52	1621.27		1621.59	0.021159	5.48	143.20	120.94	0.71
NRW20B	1.91	549.00	1617.97	1619.12	1619.12	1619.37	0.002811	4.08	152.69	357.09	0.83
NRW20B	1.85	549.00	1611.37	1614.10	1613.67	1614.36	0.015248	5.01	158.85	116.49	0.62
NRW20B	1.80	549.00	1607.08	1610.70	1610.03	1610.99	0.009725	5.14	159.39	98.09	0.52
NRW20B	1.73	558.00	1601.72	1606.27	1605.87	1606.75	0.014659	6.56	134.40	92.14	0.64
NRW20B	1.67	558.00	1599.07	1603.15		1603.32	0.006880	4.28	211.32	128.92	0.43
NRW20B	1.61	558.00	1596.01	1599.54	1599.44	1599.95	0.024897	6.27	133.69	110.48	0.77
NRW20B	1.57	558.00	1592.14	1596.59		1596.85	0.007587	5.02	179.26	105.05	0.47
NRW20B	1.52	659.00	1589.99	1594.21		1594.55	0.010745	5.01	166.12	101.87	0.54
NRW20B	1.46	659.00	1587.25	1591.62		1591.87	0.007197	4.94	217.87	123.87	0.46
NRW20B	1.41	659.00	1584.21	1588.89		1589.21	0.011417	5.94	192.29	121.91	0.56
NRW20B	1.35	659.00	1583.28	1586.12		1586.29	0.009328	4.07	228.70	158.93	0.49
NRW20B	1.30	659.00	1579.58	1582.56		1582.75	0.014542	4.79	209.40	147.95	0.59
NRW20B	1.24	659.00	1576.02	1579.19		1579.35	0.009214	3.99	221.18	125.07	0.48
NRW20B	1.19	659.00	1571.87	1575.90		1576.27	0.015211	6.41	195.68	169.01	0.65
NRW20B	1.13	659.00	1569.20	1573.48		1573.57	0.004936	3.33	345.25	251.48	0.36

HEC-RAS Plan: NRW20 River: NRW20T5 Reach: NRW20T5 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW20T5	0.57	559.00	1615.40	1617.90	1617.66	1618.17	0.015124	4.53	178.17	268.43	0.60
NRW20T5	0.50	559.00	1610.90	1614.49		1614.62	0.006475	4.14	256.14	200.07	0.42
NRW20T5	0.44	559.00	1607.40	1611.59		1611.88	0.014744	6.18	163.92	113.97	0.62
NRW20T5	0.38	559.00	1604.74	1608.25		1608.50	0.007939	4.31	158.92	102.24	0.46
NRW20T5	0.31	559.00	1600.65	1604.09	1603.50	1604.47	0.016490	4.93	113.87	62.45	0.63
NRW20T5	0.25	559.00	1597.95	1601.12		1601.31	0.005984	3.52	166.76	83.64	0.40
NRW20T5	0.19	559.00	1593.62	1596.65	1596.65	1597.45	0.038760	7.25	81.08	55.20	0.96
NRW20T5	0.13	559.00	1591.60	1592.90	1592.90	1593.29	0.004191	5.04	110.84	144.26	1.01
NRW20T5	0.07	559.00	1585.80	1590.08		1590.13	0.001529	2.36	406.27	213.25	0.22

HEC-RAS Plan: NRW20 River: NRW20T10A Reach: NRW20T10A Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW20T10A	0.29	949.00	1578.99	1584.53	1584.18	1584.93	0.011412	5.84	245.70	156.10	0.56
NRW20T10A	0.24	949.00	1576.97	1581.69		1582.13	0.011030	6.04	225.79	126.91	0.57
NRW20T10A	0.20	949.00	1575.93	1580.13		1580.29	0.006004	4.11	334.82	154.63	0.41
NRW20T10A	0.13	949.00	1571.77	1575.73	1575.57	1576.32	0.022814	6.68	178.64	116.12	0.77
NRW20T10A	0.08	949.00	1567.20	1573.30		1573.50	0.005171	4.74	365.79	216.14	0.40

HEC-RAS Plan: NRW20 River: NRW20T10B Reach: NRW20T10B Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW20T10B	0.92	435.00	1620.25	1621.87	1621.83	1622.16	0.035657	5.26	125.57	188.57	0.86
NRW20T10B	0.86	435.00	1616.56	1618.37		1618.41	0.005134	1.84	287.72	258.31	0.32
NRW20T10B	0.80	435.00	1613.15	1614.77	1614.73	1615.10	0.032756	4.87	108.83	156.57	0.82
NRW20T10B	0.74	435.00	1609.76	1611.66	1610.99	1611.74	0.005831	2.54	222.05	207.42	0.36
NRW20T10B	0.69	435.00	1605.95	1608.41	1608.23	1608.78	0.023448	5.04	100.95	140.95	0.72
NRW20T10B	0.63	435.00	1601.72	1604.96	1604.36	1605.06	0.006686	3.58	213.91	174.62	0.41
NRW20T10B	0.57	435.00	1598.99	1600.81	1600.72	1601.13	0.032249	5.19	112.02	130.37	0.82
NRW20T10B	0.50	435.00	1596.75	1597.64	1597.64	1597.88	0.004187	4.01	111.40	251.08	0.96
NRW20T10B	0.47	435.00	1593.05	1595.31		1595.41	0.005596	2.69	176.92	146.26	0.36
NRW20T10B	0.43	435.00	1590.24	1592.26	1592.14	1592.59	0.033255	5.16	101.16	99.93	0.83
NRW20T10B	0.39	435.00	1587.77	1590.15		1590.28	0.005813	3.08	171.74	108.19	0.38
NRW20T10B	0.35	435.00	1585.79	1590.08		1590.09	0.000279	1.04	657.67	269.82	0.09

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW20
Project File : NRW20.prj
Run Date and Time: 6/25/2005 2:34:34 PM

Project in English units

Project Description:
NRW 20, NRW20T5 & NRW20T10

New River West Tributaries FDS
Prepared by URS
Corp. for the Flood Control District of Maricopa County
Contract No: FCD 2003
C057
Date: April 29, 2005

Topographic Mapping Source:
Flown and Mapped by
DTM Inc.
Flight Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal
- NAD83 Arizona State Plane, Central Zone, International Feet
Vertical - NAVD
88 (GDACS Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour
storm event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

NRW20
549 cfs @ R.S. 2.50
558 cfs @ R.S. 1.73
659 cfs @ R.S.

1.52
1579 cfs @ R.S. 1.05
1049 cfs @ R.S. 0.76**
1059 cfs @ R.S. 0.49

**
1049 cfs was used rather than 1579 cfs due to the attenuation caused by the
culvert
crossing embankment. The 1049 cfs was obtained from the culvert
routing output in the
HEC-1 model

NRW20T5
559 cfs @ R.S.
0.57

NRW20T10
435 cfs @ R.S. 0.92
949 cfs @ R.S. 0.29

Study
Limits:

NRW20
U.S. Limit is approximately 1200 feet west, and 1100 feet
south of the NW corner of
Section 34 T6NR1E
D.S. Limit is the New River
floodplain

NRW20T5
U.S. Limit is approximately 2525 feet west, and 250 feet
south of the NW corner of
Section 3 T5NR1E
D.S. Limit is the confluence with
NRW20T10

NRW20T10
U.S. Limit is approximately 1300 feet west, and 1100 feet
north of the SW corner of
Section 34 T6NR1E
D.S. Limit is the confluence
with NRW20

Stationing for NRW20 based upon River Mile distance of the
Hydraulic Baseline confluence with the New River West Split
Thalweg

Stationing based upon River Mile distance from a point downstream of
the Hydraulic Baseline confluence with the New River floodplain

Final Model
Run Date:
April 20, 2005

****
****

PLAN DATA

Plan Title: NRW20
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20
\NRW20.p01

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW20\NRW20.g01

Flow Title : 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW20\NRW20.f03

Plan Summary Information:

Number of:	Cross Sections	= 72	Mulitple Openings	=	0
	Culverts	= 1	Inline Structures	=	1
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20
\NRW20.f03

Flow Data (cfs)

River	Reach	RS	100-Year
NRW20B	NRW20B	2.50	549
NRW20B	NRW20B	1.73	558
NRW20B	NRW20B	1.52	659
NRW20T10B	NRW20T10B	0.92	435
NRW20T5	NRW20T5	0.57	559
NRW20T10A	NRW20T10A	0.29	949
NRW20A	NRW20A	1.05	1579
NRW20A	NRW20A	0.82	1046
NRW20A	NRW20A	0.49	1059

Boundary Conditions

River	Reach	Profile	Upstream	Downstream

```
*************************************************************************
********************************
* NRW20A          NRW20A          100-Year         *
Normal S = 0.0032 *
*************************************************************************
********************************
Changes in WS and EG
*************************************************************************
********
* River           Reach           RS      Profile         Type
Value *
* NRW20A          NRW20A          0.82    100-Year  Known WS    1560.2 *
* NRW20A          NRW20A          0.76    100-Year  Known WS    1560.2 *
* NRW20A          NRW20A          0.70    100-Year  Known WS    1560.2 *
* NRW20A          NRW20A          0.65    100-Year  Known WS    1560.2 *
* NRW20A          NRW20A          0.60    100-Year  Known WS    1560.2 *
*************************************************************************
********

*************************************************************************
********

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20
\NRW20.g01

Reach Connection Table
*************************************************************************
*********
* River            Reach            *  Upstream Boundary  * Downstream
Boundary *
*************************************************************************
*********
* NRW20B           NRW20B           *                     *   2
*
* NRW20T10B        NRW20T10B        *                     *   4
*
* NRW20T5          NRW20T5          *                     *   4
*
* NRW20T10A        NRW20T10A        *   4                 *   2
*
* NRW20A           NRW20A           *   2                 *
*
*************************************************************************
**********

JUNCTION INFORMATION

Name: 2
Description: Confluence NRW20 & NRW20T10
Energy computation Method

    Length across Junction             Tributary
     River           Reach               River           Reach
Length   Angle
NRW20B          NRW20B           to NRW20A          NRW20A
416.876
NRW20T10A       NRW20T10A        to NRW20A          NRW20A
429.97
```

```
Name: 4
Description: Confluence NRW20T10 & NRW20T5
Momentum computation Method
      Add Friction
      Do Not Add Weight

    Length across Junction              Tributary
     River            Reach                River            Reach
Length   Angle
NRW20T10B       NRW20T10B        to NRW20T10A       NRW20T10A
309.812       0
NRW20T5         NRW20T5          to NRW20T10A       NRW20T10A
393.635      75

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 2.50

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9744.2 1657.96  9756.3 1657.54  9779.7 1656.66  9801.9 1655.93  9824.5
1655.09
  9858.6 1653.96  9892.7 1652.95  9912.6 1652.44  9926.7 1652.14  9934.7
1652
  9949.5 1651.87  9956.9 1651.78  9960.8 1651.71  9967.4 1651.32  9980.7
1650.46
  9990.3 1650.74 10007.8  1651.2 10021.4 1651.49 10030.1 1651.53   10040
1651.65
 10044.2 1651.98 10058.8 1652.53 10066.7 1652.39 10079.3 1653.05 10089.7
1653.16
 10097.2 1653.37 10111.9 1653.82 10131.2  1654.5   10134 1654.59 10199.4
1656.41
 10200.4 1656.43 10222.6 1656.88 10244.7 1657.43 10263.2 1657.81

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9744.2    .079  9960.8    .059 10021.4    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9960.8 10021.4              238     238     238             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1652.91  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.27  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1652.64  * Reach Len. (ft)         *  238.00
*  238.00  *  238.00  *
```

```
* Crit W.S. (ft)          * 1652.38  * Flow Area (sq ft)       *   30.01
*   96.88  *   31.13  *
* E.G. Slope (ft/ft)      *0.017639  * Area (sq ft)            *   30.01
*   96.88  *   31.13  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *   49.53
*  442.79  *   56.68  *
* Top Width (ft)          *  166.45  * Top Width (ft)          *   55.85
*   60.60  *   50.00  *
* Vel Total (ft/s)        *    3.47  * Avg. Vel. (ft/s)        *    1.65
*    4.57  *    1.82  *
* Max Chl Dpth (ft)       *    2.18  * Hydr. Depth (ft)        *    0.54
*    1.60  *    0.62  *
* Conv. Total (cfs)       *  4133.7  * Conv. (cfs)             *   373.0
*  3334.0  *   426.7  *
* Length Wtd. (ft)        *  238.00  * Wetted Per. (ft)        *   55.86
*   60.65  *   50.03  *
* Min Ch El (ft)          * 1650.46  * Shear (lb/sq ft)        *    0.59
*    1.76  *    0.69  *
* Alpha                   *    1.44  * Stream Power (lb/ft s) *    0.98
*    8.04  *    1.25  *
* Frctn Loss (ft)         *    2.81  * Cum Volume (acre-ft)    *   12.25
*   12.25  *    9.77  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   10.58
*    5.58  *    8.07  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 2.45

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9819.1 1654.45    9842  1653.6  9873.9 1652.32  9905.8 1650.94  9937.7
1649.72
  9954.3 1649.25  9973.2 1648.34  9981.3 1647.42  9998.7 1647.02   10006
1646.9
 10008.4 1647.14 10014.3 1648.14 10017.4 1648.61 10032.4 1648.78 10047.9
1649.02
 10087.5 1650.05 10094.7 1650.22 10161.2 1652.02 10164.9 1652.13 10181.9
1652.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9819.1    .079  9973.2    .059 10017.4    .079
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.2 10017.4              177     177     177             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1650.09  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1649.86  * Reach Len. (ft)         *  177.00
*  177.00  *  177.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   26.50
*  107.53  *   45.73  *
* E.G. Slope (ft/ft)      *0.008467  * Area (sq ft)            *   26.50
*  107.53  *   45.73  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *   35.37
*  449.49  *   64.14  *
* Top Width (ft)          *  145.96  * Top Width (ft)          *   39.08
*   44.20  *   62.68  *
* Vel Total (ft/s)        *    3.05  * Avg. Vel. (ft/s)        *    1.33
*    4.18  *    1.40  *
* Max Chl Dpth (ft)       *    2.96  * Hydr. Depth (ft)        *    0.68
*    2.43  *    0.73  *
* Conv. Total (cfs)       *  5966.2  * Conv. (cfs)             *   384.4
*  4884.8  *   697.0  *
* Length Wtd. (ft)        *  177.00  * Wetted Per. (ft)        *   39.12
*   44.39  *   62.69  *
* Min Ch El (ft)          * 1646.90  * Shear (lb/sq ft)        *    0.36
*    1.28  *    0.39  *
* Alpha                   *    1.57  * Stream Power (lb/ft s) *    0.48
*    5.35  *    0.54  *
* Frctn Loss (ft)         *    1.64  * Cum Volume (acre-ft)    *   12.09
*   11.69  *    9.56  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   10.32
*    5.29  *    7.76  *
**********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 2.42

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9824.8 1652.17  9843.1 1651.74  9854.9  1651.5  9884.9  1650.7  9896.7
1650.35
```

```
  9944.9 1648.74  9963.1 1647.71  9974.9  1647.2    9983 1646.63   10000
1645.64
 10006.3 1646.15 10013.3 1646.35 10026.2  1646.4 10036.9  1646.4 10054.7
1646.83
 10064.9 1647.18 10094.9 1647.78 10106.7  1648.1 10124.9 1648.52 10154.9
1649.42
 10166.7 1649.81 10184.9 1650.36 10214.9 1651.46 10232.7 1652.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9824.8    .079    9983    .059 10013.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9983 10013.3              298     298     298             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1648.43  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1648.26  * Reach Len. (ft)         *  298.00
*  298.00  *  298.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   23.13
*   65.16  *  114.25  *
* E.G. Slope (ft/ft)      *0.010181  * Area (sq ft)            *   23.13
*   65.16  *  114.25  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *   37.16
*  275.57  *  236.27  *
* Top Width (ft)          *  160.39  * Top Width (ft)          *   29.66
*   30.30  *  100.43  *
* Vel Total (ft/s)        *    2.71  * Avg. Vel. (ft/s)        *    1.61
*    4.23  *    2.07  *
* Max Chl Dpth (ft)       *    2.62  * Hydr. Depth (ft)        *    0.78
*    2.15  *    1.14  *
* Conv. Total (cfs)       *  5440.9  * Conv. (cfs)             *   368.3
*  2731.0  *  2341.5  *
* Length Wtd. (ft)        *  298.00  * Wetted Per. (ft)        *   29.70
*   30.35  *  100.45  *
* Min Ch El (ft)          * 1645.64  * Shear (lb/sq ft)        *    0.49
*    1.36  *    0.72  *
* Alpha                   *    1.50  * Stream Power (lb/ft s) *    0.80
*    5.77  *    1.50  *
* Frctn Loss (ft)         *    3.80  * Cum Volume (acre-ft)    *   11.99
*   11.34  *    9.23  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   10.18
*    5.14  *    7.43  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW20B
REACH: NRW20B              RS: 2.36

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9743.8 1648.14  9767.4 1647.46  9781.3  1647.1  9799.3 1646.56  9831.2
1645.81
  9863.1 1644.96  9921.9 1643.55  9926.9 1643.32  9933.8 1643.24  9959.3
1642.63
  9961.4  1642.7  9974.3 1642.92    9985    1643  9990.9 1642.76 10001.6
1641.99
   10014 1643.08 10017.8 1643.46 10020.5 1643.68 10032.8 1644.55 10048.3
1645.29
 10059.6 1646.09 10084.3 1647.69 10086.5 1647.81 10087.7 1647.87 10118.4
1649.32
 10137.7 1650.05 10150.3 1650.55 10182.2 1651.41   10203 1651.89 10208.8
1652

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9743.8    .079    9985    .059 10017.8    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9985 10017.8              285     285     285             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1644.63  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.22  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1644.41  * Reach Len. (ft)         *  285.00
*  285.00  *  285.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  105.18
*   58.27  *    5.99  *
* E.G. Slope (ft/ft)      *0.016474  * Area (sq ft)            *  105.18
*   58.27  *    5.99  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *  264.65
*  275.73  *    8.62  *
* Top Width (ft)          *  144.59  * Top Width (ft)          *   98.82
*   32.80  *   12.97  *
* Vel Total (ft/s)        *    3.24  * Avg. Vel. (ft/s)        *    2.52
*    4.73  *    1.44  *
* Max Chl Dpth (ft)       *    2.42  * Hydr. Depth (ft)        *    1.06
*    1.78  *    0.46  *
* Conv. Total (cfs)       *  4277.3  * Conv. (cfs)             *  2061.9
*  2148.2  *    67.2  *
* Length Wtd. (ft)        *  285.00  * Wetted Per. (ft)        *   98.85
*   32.90  *   13.01  *
* Min Ch El (ft)          * 1641.99  * Shear (lb/sq ft)        *    1.09
*    1.82  *    0.47  *
* Alpha                   *    1.36  * Stream Power (lb/ft s) *    2.75
```

```
*    8.62  *    0.68  *
* Frctn Loss (ft)        *    2.94  * Cum Volume (acre-ft)    *   11.55
*   10.92  *    8.82  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *    9.74
*    4.92  *    7.04  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 2.31

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9746.8  1646.1  9793.4 1644.56  9799.2 1644.38  9828.5 1643.36  9863.5
1642.24
  9908.5 1640.93  9930.3 1640.39    9954  1640.6  9954.2 1640.58  9954.6
1640.55
  9955.9 1640.21  9963.8 1638.69  9966.9 1639.18  9988.4 1639.58  9999.1
1639.38
 10000.7 1639.36 10006.5 1638.89 10013.4 1639.62 10019.1  1640.1 10038.2
1641.55
 10039.6 1641.64 10073.6 1643.11   10127 1645.32 10143.7 1645.95 10148.9
1646.13
 10157.5 1646.39 10178.7 1646.96 10202.1 1647.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9746.8    .079    9954    .059 10019.1    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9954 10019.1              258     258     258             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1641.67  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.16  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1641.51  * Reach Len. (ft)         *  258.00
*  258.00  *  258.00  *
* Crit W.S. (ft)         * 1640.78  * Flow Area (sq ft)       *   48.50
```

```
*  136.16  *   13.13  *
* E.G. Slope (ft/ft)      *0.007063  * Area (sq ft)            *   48.50
*  136.16  *   13.13  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *   62.74
*  469.83  *   16.43  *
* Top Width (ft)          *  149.19  * Top Width (ft)          *   65.49
*   65.10  *   18.60  *
* Vel Total (ft/s)        *    2.78  * Avg. Vel. (ft/s)        *    1.29
*    3.45  *    1.25  *
* Max Chl Dpth (ft)       *    2.82  * Hydr. Depth (ft)        *    0.74
*    2.09  *    0.71  *
* Conv. Total (cfs)       *  6532.6  * Conv. (cfs)             *   746.5
*  5590.6  *   195.5  *
* Length Wtd. (ft)        *  258.00  * Wetted Per. (ft)        *   65.51
*   65.41  *   18.65  *
* Min Ch El (ft)          * 1638.69  * Shear (lb/sq ft)        *    0.33
*    0.92  *    0.31  *
* Alpha                   *    1.35  * Stream Power (lb/ft s) *    0.42
*    3.17  *    0.39  *
* Frctn Loss (ft)         *    2.64  * Cum Volume (acre-ft)    *   11.05
*   10.28  *    8.76  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    9.20
*    4.60  *    6.94  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 2.26

INPUT
Description:
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9787.2 1644.15  9820.4 1643.05  9834.4 1642.13  9853.7 1641.05  9864.1
1640.59
  9878.5  1639.8  9884.7 1639.65  9887.8 1639.28  9892.6 1639.13  9920.6
1638.45
  9937.6 1637.84  9943.3 1637.57  9963.2  1637.2  9987.6 1636.96  9992.6
1637.19
  9994.9 1636.39    9999 1635.67 10002.7  1635.1 10005.6 1636.22 10009.1
1637.45
 10014.9 1637.77 10027.8 1637.97 10045.4 1638.18 10067.2 1638.64 10092.9
1639.3
 10163.1 1641.46 10176.3 1641.81 10198.2  1642.5   10220 1643.06 10233.4
1643.46
 10251.4 1643.96
```

```
Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  9787.2    .079  9992.6    .059 10009.1    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.6 10009.1              387     387     387             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1639.02  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.30  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1638.72  * Reach Len. (ft)         *  387.00
*  387.00  *  387.00  *
* Crit W.S. (ft)          * 1638.47  * Flow Area (sq ft)       *   91.53
*   43.21  *   35.38  *
* E.G. Slope (ft/ft)      *0.016192  * Area (sq ft)            *   91.53
*   43.21  *   35.38  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *  233.85
*  256.29  *   58.85  *
* Top Width (ft)          *  160.50  * Top Width (ft)          *   82.95
*   16.50  *   61.05  *
* Vel Total (ft/s)        *    3.23  * Avg. Vel. (ft/s)        *    2.56
*    5.93  *    1.66  *
* Max Chl Dpth (ft)       *    3.62  * Hydr. Depth (ft)        *    1.10
*    2.62  *    0.58  *
* Conv. Total (cfs)       *  4314.5  * Conv. (cfs)             *  1837.8
*  2014.2  *   462.5  *
* Length Wtd. (ft)        *  387.00  * Wetted Per. (ft)        *   82.98
*   17.16  *   61.07  *
* Min Ch El (ft)          * 1635.10  * Shear (lb/sq ft)        *    1.11
*    2.55  *    0.59  *
* Alpha                   *    1.87  * Stream Power (lb/ft s) *    2.85
*   15.10  *    0.97  *
* Frctn Loss (ft)         *    4.15  * Cum Volume (acre-ft)    *   10.63
*    9.75  *    8.62  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    8.76
*    4.36  *    6.70  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B              RS: 2.18

INPUT
```

```
Description:
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9768.2 1638.33  9781.7  1637.9    9782 1637.89  9816.6 1636.68  9825.7
1636.3
  9851.1 1635.38  9885.6 1634.22  9913.7 1633.38  9920.1 1633.23  9932.9
1632.99
  9947.5 1632.65  9951.1  1632.7  9959.2 1632.68  9967.7 1632.86  9976.2
1632.84
  9989.8 1632.95  9992.5 1632.95  9995.3 1632.36 10000.9 1630.99 10002.8
1631.49
 10007.8 1633.08 10031.5 1634.65 10045.8 1635.71 10058.1 1636.28 10089.8
1637.83
 10092.6 1637.95 10111.8  1638.8 10133.8 1639.67 10145.5 1640.09 10155.8
1640.48
 10194.2 1641.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9768.2    .079  9992.5    .059 10007.8    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.5 10007.8              333     333     333             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1634.82  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1634.69  * Reach Len. (ft)         *  333.00
*  333.00  *  333.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  169.69
*   41.22  *   19.66  *
* E.G. Slope (ft/ft)      *0.007634  * Area (sq ft)            *  169.69
*   41.22  *   19.66  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *  349.34
*  171.64  *   28.02  *
* Top Width (ft)          *  160.59  * Top Width (ft)          *  121.00
*   15.30  *   24.29  *
* Vel Total (ft/s)        *    2.38  * Avg. Vel. (ft/s)        *    2.06
*    4.16  *    1.43  *
* Max Chl Dpth (ft)       *    3.70  * Hydr. Depth (ft)        *    1.40
*    2.69  *    0.81  *
* Conv. Total (cfs)       *  6283.3  * Conv. (cfs)             *  3998.2
*  1964.4  *   320.7  *
* Length Wtd. (ft)        *  333.00  * Wetted Per. (ft)        *  121.03
*   15.84  *   24.35  *
* Min Ch El (ft)          * 1630.99  * Shear (lb/sq ft)        *    0.67
*    1.24  *    0.38  *
* Alpha                   *    1.45  * Stream Power (lb/ft s) *    1.38
*    5.17  *    0.55  *
* Frctn Loss (ft)         *    3.95  * Cum Volume (acre-ft)    *    9.47
*    9.37  *    8.37  *
```

```
* C & E Loss (ft)          *    0.02  * Cum SA (acres)          *    7.86
*    4.22  *    6.32  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B              RS: 2.12

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9734.3  1637.9  9760.7  1636.9  9802.7 1635.21  9803.3  1635.2  9803.8
1635.17
  9844.3 1633.46  9845.3 1633.41  9847.3 1633.34  9886.5 1631.59  9904.2
1630.92
  9921.4 1630.49    9933 1629.81  9950.4 1628.92  9960.3 1629.15  9964.3
1629.01
  9987.4 1629.17  9989.6 1629.19  9991.2 1628.99  9999.7  1627.9 10006.3
1628.66
   10010 1629.03   10019 1629.59 10036.5 1630.81 10052.2 1631.44 10063.5
1631.93
 10100.2 1633.32   10150 1634.98 10163.8 1635.41 10221.2 1636.92

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9734.3    .079  9989.6    .059   10019    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.6   10019              375     375     375             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1630.86  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.30  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1630.56  * Reach Len. (ft)         *  375.00
*  375.00  *  375.00  *
* Crit W.S. (ft)          * 1630.21  * Flow Area (sq ft)       *   83.67
*   52.98  *    6.75  *
* E.G. Slope (ft/ft)      *0.020855  * Area (sq ft)            *   83.67
*   52.98  *    6.75  *
```

```
* Q Total (cfs)          *  549.00  * Flow (cfs)              *  253.41
*  284.28  *   11.30  *
* Top Width (ft)         *  114.32  * Top Width (ft)          *   71.01
*   29.40  *   13.92  *
* Vel Total (ft/s)       *    3.83  * Avg. Vel. (ft/s)        *    3.03
*    5.37  *    1.67  *
* Max Chl Dpth (ft)      *    2.66  * Hydr. Depth (ft)        *    1.18
*    1.80  *    0.49  *
* Conv. Total (cfs)      *  3801.6  * Conv. (cfs)             *  1754.8
*  1968.6  *    78.3  *
* Length Wtd. (ft)       *  375.00  * Wetted Per. (ft)        *   71.06
*   29.56  *   13.95  *
* Min Ch El (ft)         * 1627.90  * Shear (lb/sq ft)        *    1.53
*    2.33  *    0.63  *
* Alpha                  *    1.31  * Stream Power (lb/ft s) *    4.64
*   12.52  *    1.05  *
* Frctn Loss (ft)        *    4.56  * Cum Volume (acre-ft)    *    8.51
*    9.01  *    8.27  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)          *    7.12
*    4.05  *    6.18  *
*************************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW20B
REACH: NRW20B RS: 2.05

INPUT
Description:
Station Elevation Data num= 31

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9871.4  1630.7  9876.4 1630.94  9881.9 1631.11  9896.6 1631.21  9898.1
1630.99
  9908.2  1630.2  9910.6 1630.02  9921.5 1628.45  9933.7 1627.61  9937.1
1627.16
  9961.7  1625.2  9992.7 1624.65  9994.7 1623.91  9999.1  1622.1 10005.2
1623.85
 10005.8    1624 10007.1 1624.02 10035.8 1624.79 10046.6 1624.71 10063.5
1624.25
 10087.2 1624.89 10093.3 1625.08 10097.9 1625.24 10107.4 1625.95 10131.9
1627.61
 10150.7 1627.92   10159 1627.91   10166 1628.21 10188.7 1629.31 10224.8
1630.94
 10254.1 1632.08
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
```

```
  9871.4    .079  9992.7    .059 10007.1    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.7 10007.1              380     380     380             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1626.25  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1626.11  * Reach Len. (ft)         *  380.00
*  380.00  *  380.00  *
* Crit W.S. (ft)          * 1625.54  * Flow Area (sq ft)       *   42.07
*   40.53  *  144.31  *
* E.G. Slope (ft/ft)      *0.007953  * Area (sq ft)            *   42.07
*   40.53  *  144.31  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *   70.08
*  175.40  *  303.52  *
* Top Width (ft)          *  159.57  * Top Width (ft)          *   42.46
*   14.40  *  102.71  *
* Vel Total (ft/s)        *    2.42  * Avg. Vel. (ft/s)        *    1.67
*    4.33  *    2.10  *
* Max Chl Dpth (ft)       *    4.01  * Hydr. Depth (ft)        *    0.99
*    2.81  *    1.40  *
* Conv. Total (cfs)       *  6156.1  * Conv. (cfs)             *   785.8
*  1966.8  *  3403.5  *
* Length Wtd. (ft)        *  380.00  * Wetted Per. (ft)        *   42.50
*   15.15  *  102.77  *
* Min Ch El (ft)          * 1622.10  * Shear (lb/sq ft)        *    0.49
*    1.33  *    0.70  *
* Alpha                   *    1.50  * Stream Power (lb/ft s) *    0.82
*    5.75  *    1.47  *
* Frctn Loss (ft)         *    4.65  * Cum Volume (acre-ft)    *    7.96
*    8.61  *    7.62  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    6.63
*    3.86  *    5.68  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.98

INPUT
Description: East Section 34 Line T6NR1E
Station Elevation Data    num=      43
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
```

```
Elev
**************************************************************************
********
  9790.6 1627.84    9801 1627.13  9823.8 1626.01  9850.3 1624.82  9860.9
1624.3
  9892.3 1622.67    9898 1622.39  9919.2 1621.44  9935.9 1620.76  9942.4
1620.46
  9945.7  1620.3  9949.1 1620.24  9966.1 1619.66  9973.4 1619.65    9992
1619.74
  9995.1 1619.66 10003.3 1619.55 10005.9 1619.36 10009.8 1618.52 10019.9
1619.99
 10020.6  1620.1 10021.8 1620.16 10037.7  1621.1 10061.4 1621.72 10069.7
1622
 10075.3 1622.28 10102.2 1623.43 10110.4 1623.91 10131.1 1625.34 10141.8
1626.38
 10164.1 1628.19   10169 1628.55 10171.1 1628.66 10188.7 1627.57 10196.8
1627.38
 10208.8 1627.95 10216.2 1628.78 10222.4 1628.33 10231.9 1628.58 10243.2
1628.76
 10270.1 1629.09   10312  1629.7 10320.2 1629.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9790.6    .079    9992    .059 10021.8    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9992 10021.8              364     364     364             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1621.59  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.31  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1621.27  * Reach Len. (ft)         *  364.00
*  364.00  *  364.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   77.47
*   54.96  *   10.77  *
* E.G. Slope (ft/ft)      *0.021159  * Area (sq ft)            *   77.47
*   54.96  *   10.77  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *  229.64
*  301.33  *   18.03  *
* Top Width (ft)          *  120.94  * Top Width (ft)          *   68.67
*   29.80  *   22.47  *
* Vel Total (ft/s)        *    3.83  * Avg. Vel. (ft/s)        *    2.96
*    5.48  *    1.67  *
* Max Chl Dpth (ft)       *    2.75  * Hydr. Depth (ft)        *    1.13
*    1.84  *    0.48  *
* Conv. Total (cfs)       *  3774.2  * Conv. (cfs)             *  1578.7
*  2071.6  *   124.0  *
* Length Wtd. (ft)        *  364.00  * Wetted Per. (ft)        *   68.70
*   30.01  *   22.50  *
* Min Ch El (ft)          * 1618.52  * Shear (lb/sq ft)        *    1.49
*    2.42  *    0.63  *
* Alpha                   *    1.38  * Stream Power (lb/ft s) *    4.42
*   13.26  *    1.06  *
* Frctn Loss (ft)         *    2.20  * Cum Volume (acre-ft)    *    7.44
```

```
*    8.19  *    6.94  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    6.15
*    3.67  *    5.13  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.91

INPUT
Description: CL New River Road Dip Crossing
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9678.9 1625.86    9732 1624.02  9745.6 1623.61  9794.1 1621.61    9806
1621.01
  9838.6 1620.07  9852.3  1619.7  9897.6 1619.17  9964.4 1618.92  9981.4
1618.75
 10028.6 1617.97 10052.8 1617.99 10096.1 1618.48 10130.3 1618.69   10143
1618.72
 10151.7 1618.78 10226.4 1619.11 10267.4 1619.12 10289.2 1619.35 10331.4
1619.4
 10354.1 1619.81 10382.3 1620.18 10476.5 1621.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9678.9    .016  9964.4    .016 10130.3    .016

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9964.4 10130.3              298     298     298             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1619.37  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.24  * Wt. n-Val.              *   0.016
*   0.016  *   0.016  *
* W.S. Elev (ft)         * 1619.12  * Reach Len. (ft)         *  298.00
*  298.00  *  298.00  *
* Crit W.S. (ft)         * 1619.12  * Flow Area (sq ft)       *    5.44
*  125.23  *   22.02  *
* E.G. Slope (ft/ft)     *0.002811  * Area (sq ft)            *    5.44
*  125.23  *   22.02  *
* Q Total (cfs)          *  549.00  * Flow (cfs)              *    5.81
```

```
*  511.19  *   32.01  *
* Top Width (ft)          *  357.09  * Top Width (ft)          *   53.92
*  165.90  *  137.27  *
* Vel Total (ft/s)        *    3.60  * Avg. Vel. (ft/s)        *    1.07
*    4.08  *    1.45  *
* Max Chl Dpth (ft)       *    1.15  * Hydr. Depth (ft)        *    0.10
*    0.75  *    0.16  *
* Conv. Total (cfs)       * 10354.3  * Conv. (cfs)             *   109.5
*  9641.1  *   603.6  *
* Length Wtd. (ft)        *  298.00  * Wetted Per. (ft)        *   53.92
*  165.91  *  137.28  *
* Min Ch El (ft)          * 1617.97  * Shear (lb/sq ft)        *    0.02
*    0.13  *    0.03  *
* Alpha                   *    1.21  * Stream Power (lb/ft s) *    0.02
*    0.54  *    0.04  *
* Frctn Loss (ft)         *    1.64  * Cum Volume (acre-ft)    *    7.10
*    7.44  *    6.81  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    5.64
*    2.85  *    4.46  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.85

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9814.6 1620.23    9826 1619.78  9858.8 1618.32  9891.1 1616.51  9891.7
1616.48
    9932 1614.93  9938.5 1614.71  9944.4 1614.37  9954.4 1613.16  9959.4
1612.64
  9984.4 1612.71  9989.3 1612.39   10003 1611.37 10008.5  1612.1 10010.9
1612.46
 10013.3 1612.49 10036.1 1612.67 10039.1 1612.82   10073 1614.63 10090.6
1616.21
```

```
 10101.2 1617.26 10122.1 1618.46 10128.3 1618.57 10130.9  1618.8   10135
1619.14
   10147 1619.88 10165.9 1619.58 10168.6 1619.59 10169.5 1619.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9814.6    .079  9984.4    .059 10013.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.4 10013.3              279     279     279             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1614.36  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1614.10  * Reach Len. (ft)         *  279.00
*  279.00  *  279.00  *
* Crit W.S. (ft)          * 1613.67  * Flow Area (sq ft)       *   45.35
*   59.34  *   54.16  *
* E.G. Slope (ft/ft)      *0.015248  * Area (sq ft)            *   45.35
*   59.34  *   54.16  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *  118.78
*  297.28  *  132.95  *
* Top Width (ft)          *  116.49  * Top Width (ft)          *   37.78
*   28.90  *   49.81  *
* Vel Total (ft/s)        *    3.46  * Avg. Vel. (ft/s)        *    2.62
*    5.01  *    2.45  *
* Max Chl Dpth (ft)       *    2.73  * Hydr. Depth (ft)        *    1.20
*    2.05  *    1.09  *
* Conv. Total (cfs)       *  4446.0  * Conv. (cfs)             *   961.9
*  2407.4  *  1076.6  *
* Length Wtd. (ft)        *  279.00  * Wetted Per. (ft)        *   37.87
*   29.02  *   49.85  *
* Min Ch El (ft)          * 1611.37  * Shear (lb/sq ft)        *    1.14
*    1.95  *    1.03  *
* Alpha                   *    1.38  * Stream Power (lb/ft s) *    2.99
*    9.75  *    2.54  *
* Frctn Loss (ft)         *    3.35  * Cum Volume (acre-ft)    *    6.92
*    6.81  *    6.55  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    5.32
*    2.18  *    3.82  *
**********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B              RS: 1.80

INPUT
```

```
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9840.9 1614.97  9876.1 1613.58  9880.8 1613.28  9881.2 1613.26  9881.5
1613.25
  9909.3 1611.61  9939.5 1610.45  9940.7 1610.38  9955.4 1609.69  9963.5
1609.33
  9989.2 1608.46  9989.7 1608.38  9996.8 1607.08   10005 1607.61 10012.9
1608.34
 10034.6 1611.13 10039.3 1611.66 10045.7 1613.04 10057.1 1615.35 10065.8
1615.27
 10082.6 1615.02 10104.3 1616.43 10107.1  1616.6   10143 1618.73 10147.6
1618.98
 10154.7 1619.29 10166.9 1619.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9840.9    .079  9989.2    .059 10012.9    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.2 10012.9              357     357     357             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1610.99  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.30  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1610.70  * Reach Len. (ft)         *  357.00
*  357.00  *  357.00  *
* Crit W.S. (ft)          * 1610.03  * Flow Area (sq ft)       *   66.68
*   71.15  *   21.57  *
* E.G. Slope (ft/ft)      *0.009725  * Area (sq ft)            *   66.68
*   71.15  *   21.57  *
* Q Total (cfs)           *  549.00  * Flow (cfs)              *  138.73
*  365.91  *   44.36  *
* Top Width (ft)          *   98.09  * Top Width (ft)          *   56.08
*   23.70  *   18.32  *
* Vel Total (ft/s)        *    3.44  * Avg. Vel. (ft/s)        *    2.08
*    5.14  *    2.06  *
* Max Chl Dpth (ft)       *    3.61  * Hydr. Depth (ft)        *    1.19
*    3.00  *    1.18  *
* Conv. Total (cfs)       *  5567.2  * Conv. (cfs)             *  1406.8
*  3710.5  *   449.9  *
* Length Wtd. (ft)        *  357.00  * Wetted Per. (ft)        *   56.12
*   23.88  *   18.47  *
* Min Ch El (ft)          * 1607.08  * Shear (lb/sq ft)        *    0.72
*    1.81  *    0.71  *
* Alpha                   *    1.61  * Stream Power (lb/ft s) *    1.50
*    9.30  *    1.46  *
* Frctn Loss (ft)         *    4.22  * Cum Volume (acre-ft)    *    6.56
*    6.39  *    6.30  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    5.02
*    2.01  *    3.60  *
```

```
**************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B              RS: 1.73

INPUT
Description:
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9830.5 1610.97  9832.3 1610.88  9854.7 1609.71  9855.3 1609.72  9869.7
1609.84
  9878.5 1609.26  9900.3 1607.45  9920.6  1606.4  9922.9  1606.4  9928.6
1606.49
  9957.4    1606  9963.3 1605.26  9972.8    1605  9994.1 1604.02  9998.6
1602.47
 10000.7 1601.72 10005.7 1602.95 10011.9 1604.33 10020.1 1605.01 10032.6
1606.1
 10048.6 1608.14 10051.5 1608.41 10078.9 1611.26 10079.3 1611.31 10079.7
1611.31
 10104.3 1611.55 10118.2 1612.04   10127 1612.55 10149.7 1613.75 10172.3
1614.67
 10179.6 1614.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9830.5    .079  9994.1    .059 10011.9    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9994.1 10011.9              344     344     344             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)         * 1606.75  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.48  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1606.27  * Reach Len. (ft)         *  344.00
*  344.00  *  344.00  *
* Crit W.S. (ft)         * 1605.87  * Flow Area (sq ft)       *   54.03
*   58.29  *   22.08  *
* E.G. Slope (ft/ft)     *0.014659  * Area (sq ft)            *   54.03
*   58.29  *   22.08  *
* Q Total (cfs)          *  558.00  * Flow (cfs)              *  125.55
*  382.17  *   50.28  *
* Top Width (ft)         *   92.14  * Top Width (ft)          *   52.33
*   17.80  *   22.00  *
```

```
* Vel Total (ft/s)        *    4.15  * Avg. Vel. (ft/s)        *    2.32
*    6.56  *    2.28  *
* Max Chl Dpth (ft)       *    4.55  * Hydr. Depth (ft)        *    1.03
*    3.27  *    1.00  *
* Conv. Total (cfs)       *  4608.7  * Conv. (cfs)             *  1037.0
*  3156.5  *   415.3  *
* Length Wtd. (ft)        *  344.00  * Wetted Per. (ft)        *   52.41
*   18.49  *   22.09  *
* Min Ch El (ft)          * 1601.72  * Shear (lb/sq ft)        *    0.94
*    2.89  *    0.91  *
* Alpha                   *    1.81  * Stream Power (lb/ft s) *    2.19
*   18.92  *    2.08  *
* Frctn Loss (ft)         *    3.33  * Cum Volume (acre-ft)    *    6.07
*    5.86  *    6.12  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *    4.58
*    1.84  *    3.44  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW20B
REACH: NRW20B RS: 1.67

INPUT
Description:
Station Elevation Data num= 31

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9831.6 1613.46  9846.4 1612.67  9855.9    1612  9876.6 1610.68  9896.1
1610.56
    9909 1610.38  9917.4 1608.75    9942 1604.87  9948.9 1604.96  9961.1
1603.15
  9969.8 1601.69  9982.1 1601.23  9991.4 1601.15  9993.9 1599.87  9996.1
1599.07
 10001.1 1599.83 10012.8 1601.14 10019.5 1600.96 10052.3 1601.72 10058.3
1601.96
 10078.9 1602.66 10089.6 1603.13   10100 1603.69 10103.7  1603.8 10134.4
1605.14
 10140.4 1605.68 10143.6 1605.62 10162.6 1606.35 10179.4 1606.91 10185.5
1607.18
 10206.9 1608.21
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9831.6    .079  9991.4    .059 10012.8    .079
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
        9991.4 10012.8              284     284     284             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1603.32  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1603.15  * Reach Len. (ft)         *  284.00
*  284.00  *  284.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   45.42
*   64.41  *  101.48  *
* E.G. Slope (ft/ft)      *0.006880  * Area (sq ft)            *   45.42
*   64.41  *  101.48  *
* Q Total (cfs)           *  558.00  * Flow (cfs)              *   92.53
*  275.56  *  189.90  *
* Top Width (ft)          *  128.92  * Top Width (ft)          *   30.31
*   21.40  *   77.21  *
* Vel Total (ft/s)        *    2.64  * Avg. Vel. (ft/s)        *    2.04
*    4.28  *    1.87  *
* Max Chl Dpth (ft)       *    4.08  * Hydr. Depth (ft)        *    1.50
*    3.01  *    1.31  *
* Conv. Total (cfs)       *  6727.4  * Conv. (cfs)             *  1115.6
*  3322.3  *  2289.5  *
* Length Wtd. (ft)        *  284.00  * Wetted Per. (ft)        *   30.44
*   21.98  *   77.24  *
* Min Ch El (ft)          * 1599.07  * Shear (lb/sq ft)        *    0.64
*    1.26  *    0.56  *
* Alpha                   *    1.57  * Stream Power (lb/ft s) *    1.31
*    5.38  *    1.06  *
* Frctn Loss (ft)         *    3.36  * Cum Volume (acre-ft)    *    5.68
*    5.38  *    5.64  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    4.25
*    1.69  *    3.05  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.61

INPUT
Description: South Section 35 Line T6NR1E & North Section 2 Line T5NR1E
Station Elevation Data    num=      28
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
************************************************************************
********
    9875 1605.95  9876.9 1605.86  9910.5 1604.43  9911.3 1604.39  9915.6
```

```
1604.44
  9932.4 1604.68  9934.4 1604.43  9954.3 1602.12  9982.5 1600.38  9986.5
1600.13
  9992.2 1597.56  9995.1 1596.35  9995.7 1596.01  9997.5 1596.36 10012.3
1598.6
 10023.4 1598.45 10034.4 1598.37 10057.5 1598.44 10069.9  1598.4 10073.4
1598.57
 10079.3  1598.7   10093 1599.07 10114.8 1601.02 10133.6  1602.6   10137
1602.65
   10161 1603.75 10204.3 1606.17 10230.7 1607.51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9875    .079  9986.5    .059 10012.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.5 10012.3              242     242     242             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1599.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.40  * Wt. n-Val.              *
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1599.54  * Reach Len. (ft)         *  242.00
*  242.00  *  242.00  *
* Crit W.S. (ft)          * 1599.44  * Flow Area (sq ft)       *
*   50.44  *   83.25  *
* E.G. Slope (ft/ft)      *0.024897  * Area (sq ft)            *
*   50.44  *   83.25  *
* Q Total (cfs)           *  558.00  * Flow (cfs)              *
*  316.25  *  241.75  *
* Top Width (ft)          *  110.48  * Top Width (ft)          *
*   24.50  *   85.98  *
* Vel Total (ft/s)        *    4.17  * Avg. Vel. (ft/s)        *
*    6.27  *    2.90  *
* Max Chl Dpth (ft)       *    3.53  * Hydr. Depth (ft)        *
*    2.06  *    0.97  *
* Conv. Total (cfs)       *  3536.4  * Conv. (cfs)             *
*  2004.3  *  1532.1  *
* Length Wtd. (ft)        *  242.00  * Wetted Per. (ft)        *
*   25.46  *   86.01  *
* Min Ch El (ft)          * 1596.01  * Shear (lb/sq ft)        *
*    3.08  *    1.50  *
* Alpha                   *    1.49  * Stream Power (lb/ft s) *
*   19.31  *    4.37  *
* Frctn Loss (ft)         *    3.05  * Cum Volume (acre-ft)    *    5.53
*    5.00  *    5.03  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    4.15
*    1.54  *    2.51  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B              RS: 1.57

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9792.1 1604.59  9809.7  1603.5  9819.8 1602.93  9852.3 1600.86  9857.7
1600.63
  9892.3 1598.35  9893.6 1598.21  9917.4 1596.32  9924.2  1596.2  9940.4
1595.5
    9950 1595.19  9961.8 1594.94  9973.4 1594.76  9975.9 1594.82  9978.6
1594.76
  9990.3 1594.61  9994.3 1593.02  9997.8 1592.14 10002.7 1592.85 10009.5
1593.56
 10024.1  1598.2 10028.9  1600.1 10033.3 1600.27 10047.7 1600.62 10061.7
1601.1
 10080.2 1601.41 10084.6  1601.5 10107.5 1601.84 10112.8 1601.89 10130.4
1602.01
 10142.4 1602.04 10145.6 1602.14 10216.5 1604.09 10219.3 1604.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9792.1    .079  9990.3    .059 10009.5    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.3 10009.5              254     254     254             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1596.85  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1596.59  * Reach Len. (ft)         *  254.00
*  254.00  *  254.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   96.56
*   68.24  *   14.45  *
* E.G. Slope (ft/ft)      *0.007587  * Area (sq ft)            *   96.56
*   68.24  *   14.45  *
* Q Total (cfs)           *  558.00  * Flow (cfs)              *  185.02
*  342.72  *   30.26  *
* Top Width (ft)          *  105.05  * Top Width (ft)          *   76.32
*   19.20  *    9.54  *
* Vel Total (ft/s)        *    3.11  * Avg. Vel. (ft/s)        *    1.92
*    5.02  *    2.09  *
* Max Chl Dpth (ft)       *    4.45  * Hydr. Depth (ft)        *    1.27
```

```
*    3.55  *    1.52  *
* Conv. Total (cfs)      *  6406.0  * Conv. (cfs)            *  2124.0
*  3934.5  *   347.4  *
* Length Wtd. (ft)       *  254.00  * Wetted Per. (ft)       *   76.35
*   19.70  *   10.01  *
* Min Ch El (ft)         * 1592.14  * Shear (lb/sq ft)       *    0.60
*    1.64  *    0.68  *
* Alpha                  *    1.75  * Stream Power (lb/ft s) *    1.15
*    8.24  *    1.43  *
* Frctn Loss (ft)        *    2.31  * Cum Volume (acre-ft)   *    5.26
*    4.67  *    4.76  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    3.94
*    1.42  *    2.25  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.52

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9823 1604.25  9826.7 1604.08  9853.5 1602.63  9858.2  1602.4  9877.3
1601.39
  9889.7 1600.69  9901.2    1600  9921.3 1598.71  9923.7 1598.66  9935.8
1598.66
  9948.6 1597.06  9963.4 1595.62    9966 1595.27  9967.2 1595.34  9986.3
1594.19
  9997.5 1590.78 10000.2 1589.99 10002.4 1590.18 10015.5 1591.41 10024.5
1592.1
 10027.6 1592.21 10041.7 1592.88 10051.2  1593.3 10058.5 1593.34 10070.1
1593.65
 10078.6 1593.84 10091.3 1594.34 10106.6 1595.01 10115.1 1595.26 10131.8
1596.18
   10139 1596.41 10145.1 1596.83 10160.4 1597.66 10174.3 1598.75 10187.5
1599.52
 10198.5 1600.04 10198.8 1600.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9823    .079  9986.3    .059 10027.6    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.3 10027.6              304     304     304             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
```

```
************************
* E.G. Elev (ft)          * 1594.55  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.34  * Wt. n-Val.              *   0.000
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1594.21  * Reach Len. (ft)         *  304.00
*  304.00  *  304.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    0.00
*  111.76  *   54.36  *
* E.G. Slope (ft/ft)      *0.010745  * Area (sq ft)            *    0.00
*  111.76  *   54.36  *
* Q Total (cfs)           *  659.00  * Flow (cfs)              *    0.00
*  560.13  *   98.87  *
* Top Width (ft)          *  101.87  * Top Width (ft)          *    0.27
*   41.30  *   60.30  *
* Vel Total (ft/s)        *    3.97  * Avg. Vel. (ft/s)        *    0.08
*    5.01  *    1.82  *
* Max Chl Dpth (ft)       *    4.22  * Hydr. Depth (ft)        *    0.01
*    2.71  *    0.90  *
* Conv. Total (cfs)       *  6357.5  * Conv. (cfs)             *     0.0
*  5403.7  *   953.8  *
* Length Wtd. (ft)        *  304.00  * Wetted Per. (ft)        *    0.27
*   42.01  *   60.34  *
* Min Ch El (ft)          * 1589.99  * Shear (lb/sq ft)        *
*    1.78  *    0.60  *
* Alpha                   *    1.39  * Stream Power (lb/ft s) *
*    8.94  *    1.10  *
* Frctn Loss (ft)         *    2.65  * Cum Volume (acre-ft)    *    4.98
*    4.15  *    4.56  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    3.72
*    1.24  *    2.05  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW20B
REACH: NRW20B RS: 1.46

INPUT
Description:
Station Elevation Data num= 29

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9807.3 1598.25  9809.2 1598.09  9872.3 1594.94  9893.6 1594.33  9898.1
1594.03
  9918.7  1592.8    9931 1592.14    9948 1591.67  9963.8 1591.62  9972.1
1590.75
  9973.7  1590.5    9990 1588.82  9992.5  1588.5  9993.3 1588.38 10000.3
1587.25
 10010.4 1588.69 10011.7  1588.9 10030.1 1589.54 10049.9 1590.31 10065.2
1590.74
 10077.2  1591.3   10108 1592.37 10113.3 1592.77 10128.3 1594.03 10137.2
1594.84
```

```
 10155.2 1596.28 10173.1 1597.42 10197.2 1599.02 10198.1 1599.12

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9807.3    .079    9990    .059 10011.7    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9990 10011.7              296     296     296             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1591.87  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1591.62  * Reach Len. (ft)         *  296.00
*  296.00  *  296.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   37.25
*   77.20  *  103.42  *
* E.G. Slope (ft/ft)      *0.007197  * Area (sq ft)            *   37.25
*   77.20  *  103.42  *
* Q Total (cfs)           *  659.00  * Flow (cfs)              *   72.75
*  381.57  *  204.68  *
* Top Width (ft)          *  123.87  * Top Width (ft)          *   27.36
*   21.70  *   74.82  *
* Vel Total (ft/s)        *    3.02  * Avg. Vel. (ft/s)        *    1.95
*    4.94  *    1.98  *
* Max Chl Dpth (ft)       *    4.37  * Hydr. Depth (ft)        *    1.36
*    3.56  *    1.38  *
* Conv. Total (cfs)       *  7768.1  * Conv. (cfs)             *   857.5
*  4497.8  *  2412.7  *
* Length Wtd. (ft)        *  296.00  * Wetted Per. (ft)        *   27.51
*   21.94  *   74.87  *
* Min Ch El (ft)          * 1587.25  * Shear (lb/sq ft)        *    0.61
*    1.58  *    0.62  *
* Alpha                   *    1.73  * Stream Power (lb/ft s) *    1.19
*    7.81  *    1.23  *
* Frctn Loss (ft)         *    2.65  * Cum Volume (acre-ft)    *    4.85
*    3.49  *    4.01  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    3.62
*    1.02  *    1.57  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.41

INPUT
Description:
Station Elevation Data    num=      37
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9795.2 1595.45  9808.1 1594.37  9821.3 1593.57  9859.8 1590.93  9860.2
1590.91
  9860.6 1590.89    9886 1589.94    9916 1588.75  9919.4 1588.67  9929.5
1588.19
  9944.1 1587.64  9951.9 1587.64  9959.9 1587.35  9974.7 1587.14  9982.7
1587.12
  9992.8 1586.92  9996.9 1585.33 10000.2 1584.21 10003.4 1585.16 10009.2
1586.47
 10027.3 1587.61   10033 1588.66 10036.2 1589.21   10040 1589.44 10066.1
1590.39
 10088.9 1591.62 10096.2 1592.03 10120.3 1593.33 10151.7 1595.12 10156.2
1595.36
 10179.1 1597.36 10194.1 1598.37   10202 1598.54 10216.3 1598.38   10246
1599.49
 10246.3  1599.5 10260.9 1600.04

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9795.2    .079  9992.8    .059 10009.2    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.8 10009.2              280     280     280             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1589.21  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.32  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1588.89  * Reach Len. (ft)         *  280.00
*  280.00  *  280.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   98.07
*   56.25  *   37.98  *
* E.G. Slope (ft/ft)      *0.011417  * Area (sq ft)            *   98.07
*   56.25  *   37.98  *
* Q Total (cfs)           *  659.00  * Flow (cfs)              *  225.02
*  333.91  *  100.07  *
* Top Width (ft)          *  121.91  * Top Width (ft)          *   80.36
*   16.40  *   25.15  *
* Vel Total (ft/s)        *    3.43  * Avg. Vel. (ft/s)        *    2.29
*    5.94  *    2.63  *
* Max Chl Dpth (ft)       *    4.68  * Hydr. Depth (ft)        *    1.22
*    3.43  *    1.51  *
* Conv. Total (cfs)       *  6167.4  * Conv. (cfs)             *  2105.9
*  3125.0  *   936.5  *
* Length Wtd. (ft)        *  280.00  * Wetted Per. (ft)        *   80.40
*   17.17  *   25.30  *
* Min Ch El (ft)          * 1584.21  * Shear (lb/sq ft)        *    0.87
*    2.34  *    1.07  *
* Alpha                   *    1.76  * Stream Power (lb/ft s) *    2.00
*   13.86  *    2.82  *
* Frctn Loss (ft)         *    2.88  * Cum Volume (acre-ft)    *    4.39
*    3.04  *    3.53  *
```

```
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    3.26
*    0.89  *    1.23  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.35

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev    , Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9784.9  1591.8  9793.5 1591.37  9801.3 1591.01  9809.7 1590.59  9851.7
1588.38
  9861.4 1587.83  9889.4 1586.54  9895.3 1586.25  9902.5 1585.69    9915
1584.63
  9928.3  1584.8  9951.4 1584.67  9970.8 1584.63  9986.9 1584.45  9993.9
1584.03
  9995.2 1583.81  9998.5 1583.68 10004.5 1583.28 10009.9 1583.51 10029.8
1584.84
 10047.5 1585.62 10052.8  1585.8 10071.5 1587.67 10101.5 1589.38 10119.7
1590.54
 10131.5 1591.25 10150.7 1592.34 10161.5    1593 10167.8 1593.27 10188.8
1594.62
 10215.9 1595.53 10221.6 1595.76 10243.7 1596.43 10251.6  1596.7 10281.6
1597.51
 10283.7 1597.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9784.9    .079  9986.9    .059 10029.8    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.9 10029.8              308     308     308             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1586.29  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.18  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1586.12  * Reach Len. (ft)         *  308.00
*  308.00  *  308.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *  117.44
*   92.93  *   18.33  *
* E.G. Slope (ft/ft)     *0.009328  * Area (sq ft)            *  117.44
*   92.93  *   18.33  *
```

```
* Q Total (cfs)          *  659.00  * Flow (cfs)              *  254.87
*  377.89  *   26.24  *
* Top Width (ft)         *  158.93  * Top Width (ft)          *   89.87
*   42.90  *   26.16  *
* Vel Total (ft/s)       *    2.88  * Avg. Vel. (ft/s)        *    2.17
*    4.07  *    1.43  *
* Max Chl Dpth (ft)      *    2.84  * Hydr. Depth (ft)        *    1.31
*    2.17  *    0.70  *
* Conv. Total (cfs)      *  6823.3  * Conv. (cfs)             *  2638.9
*  3912.7  *   271.7  *
* Length Wtd. (ft)       *  308.00  * Wetted Per. (ft)        *   89.94
*   43.00  *   26.19  *
* Min Ch El (ft)         * 1583.28  * Shear (lb/sq ft)        *    0.76
*    1.26  *    0.41  *
* Alpha                  *    1.37  * Stream Power (lb/ft s) *    1.65
*    5.12  *    0.58  *
* Frctn Loss (ft)        *    3.54  * Cum Volume (acre-ft)    *    3.70
*    2.56  *    3.35  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)          *    2.71
*    0.70  *    1.07  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.30

INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9778.7 1586.31  9793.2 1585.65  9800.3 1585.35  9818.6 1584.46  9830.9
1583.91
  9867.7 1583.03    9885 1581.37  9890.6 1580.82  9898.4 1580.97  9919.8
1580.75
  9953.3 1581.08  9954.5 1581.12  9991.4  1581.6  9991.5  1581.6  9998.8
1579.58
 10003.2 1580.26 10009.8 1581.49 10038.3 1584.34 10045.3  1585.1 10047.9
1585.3
 10071.6 1587.42 10106.5 1589.13 10118.5 1589.89 10139.6 1591.36 10147.4
1591.55
 10166.4 1592.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9778.7    .079  9991.4    .059 10009.8    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.4 10009.8              297     297     297             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1582.75  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.19  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1582.56  * Reach Len. (ft)         *  297.00
*  297.00  *  297.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  166.39
*   37.26  *    5.75  *
* E.G. Slope (ft/ft)      *0.014542  * Area (sq ft)            *  166.39
*   37.26  *    5.75  *
* Q Total (cfs)           *  659.00  * Flow (cfs)              *  472.12
*  178.30  *    8.58  *
* Top Width (ft)          *  147.95  * Top Width (ft)          *  118.83
*   18.40  *   10.73  *
* Vel Total (ft/s)        *    3.15  * Avg. Vel. (ft/s)        *    2.84
*    4.79  *    1.49  *
* Max Chl Dpth (ft)       *    2.98  * Hydr. Depth (ft)        *    1.40
*    2.03  *    0.54  *
* Conv. Total (cfs)       *  5464.8  * Conv. (cfs)             *  3915.1
*  1478.5  *    71.2  *
* Length Wtd. (ft)        *  297.00  * Wetted Per. (ft)        *  118.92
*   18.84  *   10.78  *
* Min Ch El (ft)          * 1579.58  * Shear (lb/sq ft)        *    1.27
*    1.80  *    0.48  *
* Alpha                   *    1.21  * Stream Power (lb/ft s) *    3.60
*    8.59  *    0.72  *
* Frctn Loss (ft)         *    3.39  * Cum Volume (acre-ft)    *    2.69
*    2.10  *    3.27  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.97
*    0.49  *    0.94  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW20B
REACH: NRW20B RS: 1.24

INPUT
Description:
Station Elevation Data num= 31

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9767.5    1584  9768.6 1583.98  9780.6 1583.43  9795.4 1582.99  9805.9
1582.61
  9816.8 1582.19  9835.4 1582.53  9848.3 1582.43  9880.4 1579.87  9881.2
1579.8
    9908 1578.38  9927.9 1577.27  9940.5 1576.73  9944.1 1576.64  9959.5
1576.89
  9983.2 1577.54  9991.4 1577.38  9994.5 1576.81  9998.9 1576.02 10007.6
```

```
1577.08
 10009.2 1577.25 10013.7  1578.4 10029.2 1581.43 10030.1 1581.61 10031.3
1581.82
 10032.5    1582 10061.3  1585.9 10071.5 1586.22 10095.6    1587 10104.8
1587.11
 10112.4 1587.23

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9767.5    .079  9983.2    .059 10013.7    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.2 10013.7              263     263     263             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1579.35  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1579.19  * Reach Len. (ft)         *  263.00
*  263.00  *  263.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  154.28
*   65.29  *    1.60  *
* E.G. Slope (ft/ft)      *0.009214  * Area (sq ft)            *  154.28
*   65.29  *    1.60  *
* Q Total (cfs)           *  659.00  * Flow (cfs)              *  397.21
*  260.25  *    1.54  *
* Top Width (ft)          *  125.07  * Top Width (ft)          *   90.52
*   30.50  *    4.05  *
* Vel Total (ft/s)        *    2.98  * Avg. Vel. (ft/s)        *    2.57
*    3.99  *    0.96  *
* Max Chl Dpth (ft)       *    3.17  * Hydr. Depth (ft)        *    1.70
*    2.14  *    0.40  *
* Conv. Total (cfs)       *  6865.5  * Conv. (cfs)             *  4138.1
*  2711.3  *    16.1  *
* Length Wtd. (ft)        *  263.00  * Wetted Per. (ft)        *   90.60
*   30.84  *    4.13  *
* Min Ch El (ft)          * 1576.02  * Shear (lb/sq ft)        *    0.98
*    1.22  *    0.22  *
* Alpha                   *    1.16  * Stream Power (lb/ft s) *    2.52
*    4.85  *    0.21  *
* Frctn Loss (ft)         *    3.07  * Cum Volume (acre-ft)    *    1.60
*    1.75  *    3.24  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    1.26
*    0.32  *    0.89  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
```

```
REACH: NRW20B              RS: 1.19

INPUT
Description:
Station Elevation Data     num=       34
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta
Elev
**************************************************************************
********
  9796.6 1578.23  9808.1  1577.4  9812.4 1577.11  9834.5 1576.36    9843
1576.1
  9859.8 1575.65  9873.7 1575.32  9880.8 1575.35  9888.2 1575.41    9914
1574.99
  9915.1 1574.96  9935.1 1574.71  9935.5  1574.7  9960.8  1574.8  9965.8
1574.96
  9977.7 1574.27  9992.7 1573.87  9994.5 1573.38 10000.1 1571.87 10007.1
1573.24
 10010.3 1573.76 10024.5 1577.04 10028.5 1577.97 10054.6 1578.55 10061.8
1578.9
 10080.3 1579.33 10087.1 1579.52 10088.5 1579.54 10119.2 1580.03 10120.3
1580.04
 10131.9 1580.48 10146.7 1581.33 10162.3 1582.15   10164 1582.21

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  9796.6    .079  9992.7    .059 10010.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.7 10010.3              327     327     327             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1576.27  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.37  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1575.90  * Reach Len. (ft)         *  327.00
*  327.00  *  327.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  132.30
*   53.49  *    9.89  *
* E.G. Slope (ft/ft)      *0.015211  * Area (sq ft)            *  132.30
*   53.49  *    9.89  *
* Q Total (cfs)           *  659.00  * Flow (cfs)              *  292.48
*  342.94  *   23.58  *
* Top Width (ft)          *  169.01  * Top Width (ft)          *  142.16
*   17.60  *    9.26  *
* Vel Total (ft/s)        *    3.37  * Avg. Vel. (ft/s)        *    2.21
*    6.41  *    2.38  *
* Max Chl Dpth (ft)       *    4.03  * Hydr. Depth (ft)        *    0.93
*    3.04  *    1.07  *
* Conv. Total (cfs)       *  5343.3  * Conv. (cfs)             *  2371.5
*  2780.6  *   191.2  *
* Length Wtd. (ft)        *  327.00  * Wetted Per. (ft)        *  142.20
*   18.04  *    9.50  *
* Min Ch El (ft)          * 1571.87  * Shear (lb/sq ft)        *    0.88
*    2.82  *    0.99  *
* Alpha                   *    2.10  * Stream Power (lb/ft s) *    1.95
```

```
*   18.05  *    2.36  *
* Frctn Loss (ft)        *    2.62  * Cum Volume (acre-ft)   *    0.73
*    1.39  *    3.21  *
* C & E Loss (ft)        *    0.08  * Cum SA (acres)         *    0.56
*    0.17  *    0.85  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20B
REACH: NRW20B             RS: 1.13

INPUT
Description: U.S. of confluence with NRW20T10
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9903.7 1579.06  9905.3 1579.06  9915.5 1579.11  9927.1 1578.53  9931.1
1578.42
  9937.1 1577.92  9965.6 1575.74  9977.9 1573.23  9982.5 1572.42    9996
1570.53
  9999.4  1569.2 10005.4 1570.43 10011.3 1571.52 10020.9 1570.88 10035.1
1570.84
 10048.3 1570.62 10079.4  1572.5 10094.2 1572.44 10110.6 1572.46 10116.7
1572.42
 10126.3  1572.4 10147.1 1572.65 10166.9 1572.82 10177.9 1572.89 10191.3
1572.91
 10202.8  1572.9   10207 1573.03 10222.7 1573.33 10258.8  1574.3 10287.6
1575.21
 10300.1 1575.67 10321.3 1576.56   10355 1577.83 10361.4  1578.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9903.7    .079  9982.5    .059 10011.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.5 10011.3                0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1573.57  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.09  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1573.48  * Reach Len. (ft)         *  416.88
```

```
*  416.88  *  416.88  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    3.15
*   76.04  *  266.06  *
* E.G. Slope (ft/ft)      *0.004936  * Area (sq ft)            *    3.15
*   76.04  *  266.06  *
* Q Total (cfs)           *  659.00  * Flow (cfs)              *    2.73
*  253.46  *  402.80  *
* Top Width (ft)          *  251.48  * Top Width (ft)          *    5.81
*   28.80  *  216.87  *
* Vel Total (ft/s)        *    1.91  * Avg. Vel. (ft/s)        *    0.87
*    3.33  *    1.51  *
* Max Chl Dpth (ft)       *    4.28  * Hydr. Depth (ft)        *    0.54
*    2.64  *    1.23  *
* Conv. Total (cfs)       *  9380.2  * Conv. (cfs)             *    38.9
*  3607.7  *  5733.5  *
* Length Wtd. (ft)        *  416.88  * Wetted Per. (ft)        *    5.91
*   29.41  *  216.96  *
* Min Ch El (ft)          * 1569.20  * Shear (lb/sq ft)        *    0.16
*    0.80  *    0.38  *
* Alpha                   *    1.56  * Stream Power (lb/ft s) *    0.14
*    2.66  *    0.57  *
* Frctn Loss (ft)         *    3.50  * Cum Volume (acre-ft)    *    0.23
*    0.90  *    2.17  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *
*          *          *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.92

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9814.2 1624.09  9840.9 1623.66  9913.4 1622.23  9931.8 1621.81  9962.1
1621.33
  9972.2  1621.2  9993.7  1620.5 10003.2 1620.25 10004.6 1620.28 10012.8
1621.3
 10018.9 1621.48 10025.6  1620.9 10035.2  1620.9 10047.8 1620.97 10061.1
1621.2
 10069.6  1621.3   10083 1621.34 10091.5 1621.33 10101.5 1621.57 10118.7
1621.89
 10153.3 1622.42 10173.7 1622.58 10182.6 1622.83 10189.5 1623.16 10199.6
1623.34
 10200.3 1623.54 10213.7 1623.79 10234.7 1624.77 10237.9 1624.78 10243.7
1624.88
 10256.3 1624.96 10270.4 1625.64 10286.3 1625.95 10289.8 1626.04 10290.9
1626.07

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9814.2    .079  9972.2    .059 10012.8    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9972.2 10012.8              341     341     341             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1622.16  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.28  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1621.87  * Reach Len. (ft)         *  341.00
*  341.00  *  341.00  *
* Crit W.S. (ft)          * 1621.83  * Flow Area (sq ft)       *   15.33
*   47.28  *   62.95  *
* E.G. Slope (ft/ft)      *0.035657  * Area (sq ft)            *   15.33
*   47.28  *   62.95  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *   27.35
*  248.60  *  159.05  *
* Top Width (ft)          *  188.57  * Top Width (ft)          *   43.08
*   40.60  *  104.89  *
* Vel Total (ft/s)        *    3.46  * Avg. Vel. (ft/s)        *    1.78
*    5.26  *    2.53  *
* Max Chl Dpth (ft)       *    1.62  * Hydr. Depth (ft)        *    0.36
*    1.16  *    0.60  *
* Conv. Total (cfs)       *  2303.7  * Conv. (cfs)             *   144.8
*  1316.5  *   842.3  *
* Length Wtd. (ft)        *  341.00  * Wetted Per. (ft)        *   43.09
*   40.68  *  104.93  *
* Min Ch El (ft)          * 1620.25  * Shear (lb/sq ft)        *    0.79
*    2.59  *    1.34  *
* Alpha                   *    1.53  * Stream Power (lb/ft s) *    1.41
*   13.60  *    3.37  *
* Frctn Loss (ft)         *    3.68  * Cum Volume (acre-ft)    *    2.31
*    6.73  *    6.43  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *    2.39
*    4.49  *    5.22  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.86

INPUT
Description:
```

```
Station Elevation Data     num=       39
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta
Elev
**************************************************************************
********
  9810.9 1622.96  9841.7 1622.02  9845.8  1621.9  9849.7 1621.77  9867.1
1621.24
  9885.7 1620.59  9890.7 1620.42  9929.7 1619.23    9952  1618.5  9965.3
1618.57
  9975.1 1618.56  9984.5 1617.33  9990.6 1616.56   10000 1617.22 10004.1
1617.52
 10014.8 1617.63 10040.2 1617.61 10052.8 1616.97 10058.1 1616.64 10061.7
1616.74
 10086.2 1617.53 10091.5 1617.34 10122.9 1616.36 10138.9 1616.59 10150.4
1616.85
   10165 1617.23 10185.5 1617.31 10193.8 1617.48 10218.7 1618.01 10227.9
1618.24
 10237.8 1618.43 10249.1 1618.62 10259.7 1618.85 10281.9 1619.28 10291.6
1619.42
 10312.8 1619.84 10341.7 1620.26 10355.3 1620.43 10361.6 1620.54

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  9810.9    .079  9975.1    .059 10014.8    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.1 10014.8               311     311     311              .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1618.41  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.04  * Wt. n-Val.              *
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1618.37  * Reach Len. (ft)         *  311.00
*  311.00  *  311.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*   39.47  *  248.25  *
* E.G. Slope (ft/ft)      *0.005134  * Area (sq ft)            *
*   39.47  *  248.25  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *
*   72.50  *  362.50  *
* Top Width (ft)          *  258.31  * Top Width (ft)          *
*   38.27  *  220.04  *
* Vel Total (ft/s)        *    1.51  * Avg. Vel. (ft/s)        *
*    1.84  *    1.46  *
* Max Chl Dpth (ft)       *    2.01  * Hydr. Depth (ft)        *
*    1.03  *    1.13  *
* Conv. Total (cfs)       *  6071.1  * Conv. (cfs)             *
*  1011.8  *  5059.3  *
* Length Wtd. (ft)        *  311.00  * Wetted Per. (ft)        *
*   38.42  *  220.12  *
* Min Ch El (ft)          * 1616.56  * Shear (lb/sq ft)        *
*    0.33  *    0.36  *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *
*    0.60  *    0.53  *
* Frctn Loss (ft)         *    3.28  * Cum Volume (acre-ft)    *    2.25
```

```
*    6.39  *    5.21  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *    2.22
*    4.18  *    3.95  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.80

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9784 1617.85  9810.2 1617.76  9840.9 1617.45  9868.7 1616.88  9871.6
1616.83
  9902.3 1615.91  9926.4 1615.43  9934.5 1615.29  9946.4 1614.54  9957.9
1613.74
  9964.7 1613.84  9971.3 1613.62 10004.4 1613.15 10016.4 1614.46 10017.5
1614.59
 10055.6 1614.16 10086.3 1614.54 10096.3  1614.7 10118.5 1615.24 10124.8
1615.46
 10145.5 1615.49 10147.6 1615.49 10172.2 1615.94 10226.7 1617.15 10237.7
1617.42
 10254.8 1619.21 10291.4 1618.96 10292.5 1618.96

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9784    .079  9946.4    .059 10017.5    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9946.4 10017.5              285     285     285             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1615.10  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.33  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1614.77  * Reach Len. (ft)         *  285.00
*  285.00  *  285.00  *
* Crit W.S. (ft)         * 1614.73  * Flow Area (sq ft)       *    0.43
*   78.65  *   29.75  *
* E.G. Slope (ft/ft)     *0.032756  * Area (sq ft)            *    0.43
```

```
*   78.65  *   29.75  *
* Q Total (cfs)          *  435.00  * Flow (cfs)              *    0.35
*  383.04  *   51.62  *
* Top Width (ft)         *  156.57  * Top Width (ft)          *    3.69
*   71.10  *   81.79  *
* Vel Total (ft/s)       *    4.00  * Avg. Vel. (ft/s)        *    0.81
*    4.87  *    1.73  *
* Max Chl Dpth (ft)      *    1.62  * Hydr. Depth (ft)        *    0.12
*    1.11  *    0.36  *
* Conv. Total (cfs)      *  2403.5  * Conv. (cfs)             *     1.9
*  2116.4  *   285.2  *
* Length Wtd. (ft)       *  285.00  * Wetted Per. (ft)        *    3.70
*   71.21  *   81.79  *
* Min Ch El (ft)         * 1613.15  * Shear (lb/sq ft)        *    0.24
*    2.26  *    0.74  *
* Alpha                  *    1.33  * Stream Power (lb/ft s) *    0.19
*   11.00  *    1.29  *
* Frctn Loss (ft)        *    3.29  * Cum Volume (acre-ft)    *    2.25
*    5.97  *    4.22  *
* C & E Loss (ft)        *    0.08  * Cum SA (acres)          *    2.21
*    3.79  *    2.87  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.74

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9716.5 1614.31  9722.3 1614.18  9735.9 1613.84  9742.3  1613.7  9803.5
1612.28
  9808.2 1612.19    9833 1611.91  9850.1 1611.61    9875  1611.4  9876.5
1611.41
  9877.2 1611.37  9896.8  1610.8    9897 1610.79  9920.1 1610.42    9929
1610.31
  9947.1 1610.45  9967.7 1610.66  9977.9 1610.34  9989.7 1609.76  9999.3
1609.76
 10003.5 1609.77 10011.7 1609.79 10023.2 1609.86 10027.3 1610.06 10048.3
1611.16
 10058.8 1611.99 10062.5 1612.13 10068.3 1612.32   10113 1614.61 10115.9
1614.77
 10128.3 1615.26 10139.3 1615.47 10143.1 1615.67 10146.7 1615.77 10156.1
1615.9
   10179 1616.41 10197.1 1616.34
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  9716.5    .079  9967.7    .059 10048.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9967.7 10048.3              282     282     282             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*********************************************************************
***********************
* E.G. Elev (ft)          * 1611.74  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1611.66  * Reach Len. (ft)         *  282.00
*  282.00  *  282.00  *
* Crit W.S. (ft)          * 1610.99  * Flow Area (sq ft)       *   97.85
*  122.62  *    1.59  *
* E.G. Slope (ft/ft)      *0.005831  * Area (sq ft)            *   97.85
*  122.62  *    1.59  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *  122.32
*  311.78  *    0.90  *
* Top Width (ft)          *  207.42  * Top Width (ft)          *  120.49
*   80.60  *    6.33  *
* Vel Total (ft/s)        *    1.96  * Avg. Vel. (ft/s)        *    1.25
*    2.54  *    0.57  *
* Max Chl Dpth (ft)       *    1.90  * Hydr. Depth (ft)        *    0.81
*    1.52  *    0.25  *
* Conv. Total (cfs)       *  5696.7  * Conv. (cfs)             *  1601.9
*  4083.0  *    11.8  *
* Length Wtd. (ft)        *  282.00  * Wetted Per. (ft)        *  120.50
*   80.65  *    6.35  *
* Min Ch El (ft)          * 1609.76  * Shear (lb/sq ft)        *    0.30
*    0.55  *    0.09  *
* Alpha                   *    1.32  * Stream Power (lb/ft s) *    0.37
*    1.41  *    0.05  *
* Frctn Loss (ft)         *    2.93  * Cum Volume (acre-ft)    *    1.93
*    5.31  *    4.11  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    1.80
*    3.29  *    2.59  *
*********************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.69

INPUT
```

```
Description: South Section 34 Line T6NR1E & North Sectin Line 3 T5NR1E
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9760.9 1611.08  9793.2 1611.02  9795.2 1610.99  9795.9 1610.97  9796.5
1610.96
    9832 1610.41  9846.2 1610.13  9846.3 1610.13  9877.4 1608.91  9892.1
1608.51
  9900.8 1608.38  9908.4  1608.3  9928.3 1608.39  9952.6 1608.66  9955.3
1608.68
  9956.6 1608.72  9991.2 1607.78  9994.1  1607.6  9995.4 1607.25 10000.2
1605.95
 10010.2 1606.37 10015.2 1606.55 10048.4  1607.9 10070.9 1608.23 10092.2
1608.76
 10106.8 1609.18 10113.5 1609.42 10121.2 1609.61 10146.4  1610.3   10156
1610.53
 10167.1 1610.75 10186.1 1611.09 10197.9 1611.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9760.9    .079  9994.1    .059 10048.4    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9994.1 10048.4              321     321     321             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1608.78  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.37  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1608.41  * Reach Len. (ft)         *  321.00
*  321.00  *  321.00  *
* Crit W.S. (ft)          * 1608.23  * Flow Area (sq ft)       *   11.15
*   81.45  *    8.35  *
* E.G. Slope (ft/ft)      *0.023448  * Area (sq ft)            *   11.15
*   81.45  *    8.35  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *   14.37
*  410.30  *   10.34  *
* Top Width (ft)          *  140.95  * Top Width (ft)          *   57.00
*   54.30  *   29.65  *
* Vel Total (ft/s)        *    4.31  * Avg. Vel. (ft/s)        *    1.29
*    5.04  *    1.24  *
* Max Chl Dpth (ft)       *    2.46  * Hydr. Depth (ft)        *    0.20
*    1.50  *    0.28  *
* Conv. Total (cfs)       *  2840.8  * Conv. (cfs)             *    93.8
*  2679.4  *    67.5  *
* Length Wtd. (ft)        *  321.00  * Wetted Per. (ft)        *   57.02
*   54.56  *   29.66  *
* Min Ch El (ft)          * 1605.95  * Shear (lb/sq ft)        *    0.29
*    2.19  *    0.41  *
* Alpha                   *    1.29  * Stream Power (lb/ft s) *    0.37
*   11.01  *    0.51  *
* Frctn Loss (ft)         *    3.65  * Cum Volume (acre-ft)    *    1.57
*    4.65  *    4.08  *
```

```
* C & E Loss (ft)          *    0.08  * Cum SA (acres)          *    1.23
*    2.85  *    2.47  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.63

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9851.6    1608  9877.6 1607.12  9907.3 1606.21  9910.6  1606.1    9930
1605.5
  9943.5 1605.14  9952.5 1604.66  9969.2 1603.65  9988.8 1603.58  9991.7
1603.62
    9993 1603.39 10000.9 1601.72 10002.8 1601.96 10010.6  1603.5 10015.4
1603.6
 10042.3 1603.61 10043.9 1603.61 10063.8 1603.47 10071.5 1603.34 10104.7
1604.41
   10108 1604.54 10110.6 1604.68 10118.6 1604.86 10121.7 1604.96 10134.7
1605.1
 10140.6 1605.58 10163.3 1606.86 10167.7 1607.02 10170.8 1607.18 10193.4
1607.76
 10205.5 1607.85 10220.5 1608.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9851.6    .079  9991.7    .059 10010.6    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.7 10010.6              310     310     310             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1605.06  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1604.96  * Reach Len. (ft)         *  310.00
*  310.00  *  310.00  *
* Crit W.S. (ft)          * 1604.36  * Flow Area (sq ft)       *   44.41
```

```
*   44.13  *  125.37  *
* E.G. Slope (ft/ft)     *0.006686  * Area (sq ft)           *   44.41
*   44.13  *  125.37  *
* Q Total (cfs)          *  435.00  * Flow (cfs)             *   67.92
*  157.98  *  209.10  *
* Top Width (ft)         *  174.62  * Top Width (ft)         *   44.75
*   18.90  *  110.98  *
* Vel Total (ft/s)       *    2.03  * Avg. Vel. (ft/s)       *    1.53
*    3.58  *    1.67  *
* Max Chl Dpth (ft)      *    3.24  * Hydr. Depth (ft)       *    0.99
*    2.34  *    1.13  *
* Conv. Total (cfs)      *  5319.9  * Conv. (cfs)            *   830.6
*  1932.0  *  2557.3  *
* Length Wtd. (ft)       *  310.00  * Wetted Per. (ft)       *   44.79
*   19.26  *  111.01  *
* Min Ch El (ft)         * 1601.72  * Shear (lb/sq ft)       *    0.41
*    0.96  *    0.47  *
* Alpha                  *    1.54  * Stream Power (lb/ft s) *    0.63
*    3.42  *    0.79  *
* Frctn Loss (ft)        *    3.91  * Cum Volume (acre-ft)   *    1.37
*    4.19  *    3.59  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    0.86
*    2.58  *    1.95  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.57

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9852.3 1604.02  9852.9 1604.01  9872.7 1603.29  9921.7 1601.61  9925.7
1601.47
  9932.4 1601.09  9948.3 1599.79  9954.4 1600.39  9966.2 1600.46  9975.7
1599.49
  9986.5 1599.53  9988.8 1599.62    9992 1599.81  9993.8 1599.54 10000.5
1598.99
 10010.5 1599.85 10011.1 1599.86 10016.6 1599.88 10034.6 1599.81   10041
1600
 10059.5 1600.38 10070.6  1601.1 10075.9 1601.31 10117.3 1602.75   10118
1602.78
 10118.6 1602.81 10156.5  1604.2 10166.5 1604.59 10182.3  1605.3 10194.5
1605.74
 10203.7  1606.1   10215 1606.48
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  9852.3    .079  9966.2    .059 10011.1    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9966.2 10011.1              356     356     356             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1601.13  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.31  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1600.81  * Reach Len. (ft)         *  356.00
*  356.00  *  356.00  *
* Crit W.S. (ft)          * 1600.72  * Flow Area (sq ft)       *   15.37
*   55.29  *   41.36  *
* E.G. Slope (ft/ft)      *0.032249  * Area (sq ft)            *   15.37
*   55.29  *   41.36  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *   32.89
*  286.71  *  115.39  *
* Top Width (ft)          *  130.37  * Top Width (ft)          *   30.40
*   44.90  *   55.07  *
* Vel Total (ft/s)        *    3.88  * Avg. Vel. (ft/s)        *    2.14
*    5.19  *    2.79  *
* Max Chl Dpth (ft)       *    1.82  * Hydr. Depth (ft)        *    0.51
*    1.23  *    0.75  *
* Conv. Total (cfs)       *  2422.3  * Conv. (cfs)             *   183.2
*  1596.6  *   642.6  *
* Length Wtd. (ft)        *  356.00  * Wetted Per. (ft)        *   30.48
*   45.04  *   55.09  *
* Min Ch El (ft)          * 1598.99  * Shear (lb/sq ft)        *    1.02
*    2.47  *    1.51  *
* Alpha                   *    1.34  * Stream Power (lb/ft s) *    2.17
*   12.82  *    4.22  *
* Frctn Loss (ft)         *    3.22  * Cum Volume (acre-ft)    *    1.16
*    3.84  *    2.99  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.59
*    2.36  *    1.36  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.50

INPUT
```

```
Description: CL New River Road Dip Crossing
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9744.7 1602.38  9791.7 1600.24  9794.1 1600.16  9843.5 1598.79  9849.5
1598.74
  9899.1 1597.97  9905.2 1597.84  9945.7 1597.59  9954.1 1597.44  9998.5
1597.01
   10005 1596.93 10023.3 1596.85 10024.2 1596.85 10050.4 1596.75 10056.4
1596.76
 10100.3  1597.1 10108.3 1597.21 10148.8 1597.72 10157.5 1597.78 10199.4
1597.6
 10217.7 1597.54 10222.1  1597.5 10237.5  1597.5 10242.2 1598.48 10256.5
1601.75
   10266  1602.2

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9744.7    .016  9945.7    .016 10148.8    .016

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9945.7 10148.8              150     150     150             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1597.88  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.              *   0.016
*   0.016  *   0.016  *
* W.S. Elev (ft)          * 1597.64  * Reach Len. (ft)         *  150.00
*  150.00  *  150.00  *
* Crit W.S. (ft)          * 1597.64  * Flow Area (sq ft)       *    0.17
*  107.21  *    4.01  *
* E.G. Slope (ft/ft)      *0.004187  * Area (sq ft)            *    0.17
*  107.21  *    4.01  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *    0.08
*  430.25  *    4.66  *
* Top Width (ft)          *  251.08  * Top Width (ft)          *    7.48
*  196.44  *   47.16  *
* Vel Total (ft/s)        *    3.90  * Avg. Vel. (ft/s)        *    0.49
*    4.01  *    1.16  *
* Max Chl Dpth (ft)       *    0.89  * Hydr. Depth (ft)        *    0.02
*    0.55  *    0.09  *
* Conv. Total (cfs)       *  6722.9  * Conv. (cfs)             *     1.3
*  6649.5  *    72.1  *
* Length Wtd. (ft)        *  150.00  * Wetted Per. (ft)        *    7.48
*  196.45  *   47.17  *
* Min Ch El (ft)          * 1596.75  * Shear (lb/sq ft)        *    0.01
*    0.14  *    0.02  *
* Alpha                   *    1.05  * Stream Power (lb/ft s) *    0.00
*    0.57  *    0.03  *
* Frctn Loss (ft)         *    0.72  * Cum Volume (acre-ft)    *    1.09
*    3.17  *    2.81  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    0.43
*    1.37  *    0.94  *
```

```
**********************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.47

INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9862.1 1599.24  9864.4 1599.11  9876.8 1598.17  9890.2 1597.32  9901.5
1596.73
  9925.9 1595.16  9928.8 1594.94  9936.3 1594.76  9938.8 1594.73  9939.3
1594.68
  9959.8 1593.05  9982.8 1593.46  9987.4 1593.51  9992.6 1593.46 10001.9
1593.38
 10010.6 1593.38 10028.5 1594.39 10030.7 1594.55 10054.7 1595.02 10060.6
1595.1
 10098.3 1595.93 10101.3 1596.01 10125.6 1597.18 10141.1 1598.09 10149.4
1598.26
 10151.3 1598.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9862.1    .079  9939.3    .059 10030.7    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9939.3 10030.7              249     249     249             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1595.41  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.11  * Wt. n-Val.             *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1595.31  * Reach Len. (ft)        *  249.00
```

```
*  249.00  *  249.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    6.01
*  156.03  *   14.88  *
* E.G. Slope (ft/ft)      *0.005596  * Area (sq ft)            *    6.01
*  156.03  *   14.88  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *    4.47
*  419.56  *   10.97  *
* Top Width (ft)          *  146.26  * Top Width (ft)          *   15.65
*   91.40  *   39.21  *
* Vel Total (ft/s)        *    2.46  * Avg. Vel. (ft/s)        *    0.74
*    2.69  *    0.74  *
* Max Chl Dpth (ft)       *    2.25  * Hydr. Depth (ft)        *    0.38
*    1.71  *    0.38  *
* Conv. Total (cfs)       *  5815.2  * Conv. (cfs)             *    59.7
*  5608.8  *   146.6  *
* Length Wtd. (ft)        *  249.00  * Wetted Per. (ft)        *   15.67
*   91.50  *   39.22  *
* Min Ch El (ft)          * 1593.05  * Shear (lb/sq ft)        *    0.13
*    0.60  *    0.13  *
* Alpha                   *    1.16  * Stream Power (lb/ft s) *    0.10
*    1.60  *    0.10  *
* Frctn Loss (ft)         *    2.80  * Cum Volume (acre-ft)    *    1.08
*    2.72  *    2.78  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.39
*    0.88  *    0.79  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.43

INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9842.6 1598.32  9854.6 1597.87  9883.9 1596.46  9885.9 1596.36  9887.7
1596.21
  9923.2 1593.74  9945.1  1593.3  9952.5 1592.72  9968.2 1591.37  9972.9
1590.83
  9977.3 1590.24 10001.7 1591.25 10008.6  1591.5 10016.3 1591.43 10025.1
1591.2
 10030.3 1591.14 10049.6 1591.55 10059.7 1592.42 10065.7 1593.03 10095.9
1593.85
 10102.9 1594.13   10126 1594.98   10172 1596.83 10186.3 1597.37 10189.1
1597.56
 10195.5 1597.95
```

```
Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  9842.6    .079  9952.5    .059 10008.6    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9952.5 10008.6              195     195     195             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*********************************************************************
***********************
* E.G. Elev (ft)          * 1592.59  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.34  * Wt. n-Val.              *
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1592.26  * Reach Len. (ft)         *  195.00
*  195.00  *  195.00  *
* Crit W.S. (ft)          * 1592.14  * Flow Area (sq ft)       *
*   60.59  *   40.56  *
* E.G. Slope (ft/ft)      *0.033255  * Area (sq ft)            *
*   60.59  *   40.56  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *
*  312.75  *  122.25  *
* Top Width (ft)          *   99.93  * Top Width (ft)          *
*   50.72  *   49.21  *
* Vel Total (ft/s)        *    4.30  * Avg. Vel. (ft/s)        *
*    5.16  *    3.01  *
* Max Chl Dpth (ft)       *    2.02  * Hydr. Depth (ft)        *
*    1.19  *    0.82  *
* Conv. Total (cfs)       *  2385.4  * Conv. (cfs)             *
*  1715.0  *   670.4  *
* Length Wtd. (ft)        *  195.00  * Wetted Per. (ft)        *
*   50.85  *   49.25  *
* Min Ch El (ft)          * 1590.24  * Shear (lb/sq ft)        *
*    2.47  *    1.71  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *
*   12.77  *    5.15  *
* Frctn Loss (ft)         *    2.25  * Cum Volume (acre-ft)    *    1.07
*    2.10  *    2.62  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *    0.35
*    0.47  *    0.54  *
*********************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.39

INPUT
```

```
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9818.2 1595.73    9833 1595.08  9842.7 1594.58  9863.9 1593.58  9867.6
1593.39
  9890.9 1591.57    9906 1591.12  9925.9 1590.81  9941.4  1589.5  9951.6
1588.56
    9960  1588.6    9966  1588.5  9973.5 1588.44  9989.3 1587.82 10003.7
1587.77
 10011.1 1588.14 10027.2 1588.84 10033.2 1588.88 10043.8 1590.44 10054.9
1590.87
 10065.2 1591.34 10072.6 1592.03 10089.3 1593.07   10117 1594.48 10134.1
1595.73
 10143.8 1596.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9818.2    .079  9973.5    .059 10027.2    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.5 10027.2              206     206     206             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1590.28  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1590.15  * Reach Len. (ft)         *  206.00
*  206.00  *  206.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   49.46
*  109.00  *   13.28  *
* E.G. Slope (ft/ft)      *0.005813  * Area (sq ft)            *   49.46
*  109.00  *   13.28  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *   81.85
*  335.40  *   17.75  *
* Top Width (ft)          *  108.19  * Top Width (ft)          *   39.83
*   53.70  *   14.66  *
* Vel Total (ft/s)        *    2.53  * Avg. Vel. (ft/s)        *    1.65
*    3.08  *    1.34  *
* Max Chl Dpth (ft)       *    2.38  * Hydr. Depth (ft)        *    1.24
*    2.03  *    0.91  *
* Conv. Total (cfs)       *  5705.3  * Conv. (cfs)             *  1073.5
*  4399.0  *   232.8  *
* Length Wtd. (ft)        *  206.00  * Wetted Per. (ft)        *   39.91
*   53.74  *   14.75  *
* Min Ch El (ft)          * 1587.77  * Shear (lb/sq ft)        *    0.45
*    0.74  *    0.33  *
* Alpha                   *    1.23  * Stream Power (lb/ft s) *    0.74
*    2.27  *    0.44  *
* Frctn Loss (ft)         *    0.15  * Cum Volume (acre-ft)    *    0.95
*    1.72  *    2.50  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    0.26
*    0.24  *    0.40  *
```

```
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.

CROSS SECTION


RIVER: NRW20T10B
REACH: NRW20T10B          RS: 0.35

INPUT
Description: U.S. of confluence with NRW20T5
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9844.1 1593.06  9853.5 1592.55  9899.2 1590.16  9909.5 1589.19    9919
1588.06
  9926.5 1588.05    9944 1587.78  9953.9 1587.59  9969.9 1586.78  9973.4
1586.64
  9975.9 1586.53 10000.8 1585.79 10015.9 1586.45 10043.8 1586.66 10053.9
1586.38
   10067 1586.93 10080.6 1587.62 10097.8 1588.15 10106.1 1588.33 10130.3
1588.65
 10135.9 1588.75 10168.8 1590.04 10172.8 1590.18 10173.5 1590.21 10175.6
1590.35

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9844.1    .079  9969.9    .059 10015.9    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9969.9 10015.9                0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1590.09  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.01  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1590.08  * Reach Len. (ft)         *  309.81
*  309.81  *  309.81  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  141.00
*  177.85  *  338.82  *
* E.G. Slope (ft/ft)      *0.000279  * Area (sq ft)            *  141.00
*  177.85  *  338.82  *
* Q Total (cfs)           *  435.00  * Flow (cfs)              *   70.69
*  184.25  *  180.05  *
* Top Width (ft)          *  269.82  * Top Width (ft)          *   69.83
*   46.00  *  153.99  *
* Vel Total (ft/s)        *    0.66  * Avg. Vel. (ft/s)        *    0.50
*    1.04  *    0.53  *
```

```
* Max Chl Dpth (ft)       *    4.29  * Hydr. Depth (ft)        *    2.02
*    3.87  *    2.20  *
* Conv. Total (cfs)       * 26038.0  * Conv. (cfs)             *  4231.5
* 11028.9  * 10777.6  *
* Length Wtd. (ft)        *  309.81  * Wetted Per. (ft)        *   69.96
*   46.03  *  154.06  *
* Min Ch El (ft)          * 1585.79  * Shear (lb/sq ft)        *    0.04
*    0.07  *    0.04  *
* Alpha                   *    1.40  * Stream Power (lb/ft s) *    0.02
*    0.07  *    0.02  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *    0.50
*    1.04  *    1.66  *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*              *          *
*************************************************************************
************************

CROSS SECTION


RIVER: NRW20T5
REACH: NRW20T5            RS: 0.57

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9665.7 1620.01  9671.2 1619.93  9694.6 1619.67  9705.6 1619.46  9708.9
1619.3
  9718.9 1619.22  9734.4 1618.94  9762.8 1618.66    9781 1618.64  9799.3
1618.4
  9810.6 1618.21  9822.3 1618.05  9848.5 1617.99  9927.5 1617.49  9938.5
1617.46
  9946.1 1617.16  9965.2 1617.05  9971.7 1616.79  9977.6 1616.04  9982.2
1615.89
  9989.5 1615.83  9994.6 1615.73 10003.5  1615.4 10008.2 1615.76 10013.9
1616.26
 10019.2 1616.61 10030.7 1617.27 10118.6 1617.85 10148.6 1617.96 10168.7
1617.96
   10176    1618 10211.8  1618.1 10245.2 1618.29 10266.9 1618.31 10283.5
1618.4
 10311.8 1618.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9665.7    .079  9971.7    .059 10030.7    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.7 10030.7              370     370     370             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1618.17  * Element                 *  Left OB
*  Channel * Right OB *
```

```
* Vel Head (ft)          *    0.27  * Wt. n-Val.             *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1617.90  * Reach Len. (ft)        *  370.00
*  370.00  *  370.00  *
* Crit W.S. (ft)         * 1617.66  * Flow Area (sq ft)      *   43.72
*  104.48  *   29.97  *
* E.G. Slope (ft/ft)     *0.015124  * Area (sq ft)           *   43.72
*  104.48  *   29.97  *
* Q Total (cfs)          *  559.00  * Flow (cfs)             *   55.13
*  472.99  *   30.87  *
* Top Width (ft)         *  268.43  * Top Width (ft)         *  108.58
*   59.00  *  100.85  *
* Vel Total (ft/s)       *    3.14  * Avg. Vel. (ft/s)       *    1.26
*    4.53  *    1.03  *
* Max Chl Dpth (ft)      *    2.50  * Hydr. Depth (ft)       *    0.40
*    1.77  *    0.30  *
* Conv. Total (cfs)      *  4545.5  * Conv. (cfs)            *   448.3
*  3846.1  *   251.0  *
* Length Wtd. (ft)       *  370.00  * Wetted Per. (ft)       *  108.59
*   59.12  *  100.85  *
* Min Ch El (ft)         * 1615.40  * Shear (lb/sq ft)       *    0.38
*    1.67  *    0.28  *
* Alpha                  *    1.78  * Stream Power (lb/ft s) *    0.48
*    7.55  *    0.29  *
* Frctn Loss (ft)        *    3.50  * Cum Volume (acre-ft)   *    3.53
*    6.73  *    2.74  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *    2.23
*    3.18  *    2.15  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T5
REACH: NRW20T5            RS: 0.50

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9761.5 1616.53  9775.4 1615.98  9794.2  1615.5  9803.2  1615.5  9821.6
1615.03
  9849.2 1614.83  9874.9 1614.58  9878.3 1614.57  9882.6 1614.58  9905.1
1614.18
  9911.2 1614.01  9921.2 1613.83    9937 1613.08  9938.2 1613.01  9938.7
1612.99
  9939.2 1612.97    9960 1612.51  9965.2 1612.27  9974.7 1611.87  9983.2
1611.88
  9988.6    1612  9997.8  1610.9  9998.7 1611.04 10006.3 1612.39 10008.8
```

```
1612.51
 10025.3 1613.41 10055.4 1613.83 10085.4 1614.46 10095.4  1614.6 10115.5
1614.96
 10138.3 1615.21 10145.6 1615.31 10175.6 1615.64 10202.5 1615.75 10235.7
1615.99
 10237.1    1616

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9761.5    .079  9988.6    .059 10006.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.6 10006.3              291     291     291             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1614.62  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1614.49  * Reach Len. (ft)         *  291.00
*  291.00  *  291.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  136.85
*   52.25  *   67.03  *
* E.G. Slope (ft/ft)      *0.006475  * Area (sq ft)            *  136.85
*   52.25  *   67.03  *
* Q Total (cfs)           *  559.00  * Flow (cfs)              *  253.52
*  216.33  *   89.15  *
* Top Width (ft)          *  200.07  * Top Width (ft)          *  101.02
*   17.70  *   81.35  *
* Vel Total (ft/s)        *    2.18  * Avg. Vel. (ft/s)        *    1.85
*    4.14  *    1.33  *
* Max Chl Dpth (ft)       *    3.59  * Hydr. Depth (ft)        *    1.35
*    2.95  *    0.82  *
* Conv. Total (cfs)       *  6946.8  * Conv. (cfs)             *  3150.5
*  2688.4  *  1107.9  *
* Length Wtd. (ft)        *  291.00  * Wetted Per. (ft)        *  101.07
*   17.90  *   81.39  *
* Min Ch El (ft)          * 1610.90  * Shear (lb/sq ft)        *    0.55
*    1.18  *    0.33  *
* Alpha                   *    1.78  * Stream Power (lb/ft s) *    1.01
*    4.89  *    0.44  *
* Frctn Loss (ft)         *    2.73  * Cum Volume (acre-ft)    *    2.76
*    6.07  *    2.33  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    1.34
*    2.86  *    1.38  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW20T5
REACH: NRW20T5 RS: 0.44

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9829.5	1615.99	9845.4	1615.48	9865.5	1615.39	9867.6	1615.37	9908.4	1614.41
9909.6	1614.38	9951.2	1612.81	9951.6	1612.8	9952.1	1612.79	9967.1	1612.4
9978.1	1611.93	9985.1	1611.6	9994.8	1610	9999.4	1608.09	10000.5	1607.4
10003.3	1608.23	10005.8	1609	10008.8	1609.04	10035.6	1609.77	10037	1609.83
10057.5	1610.46	10077.6	1610.98	10078.7	1611.01	10099.9	1611.61	10119.6	1612.07
10121.1	1612.1	10142.4	1612.65	10206	1614.01	10216.6	1614.18		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9829.5	.079	9994.8	.059	10005.8	.079

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.8	10005.8	319	319	319	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1611.88	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.	0.079	0.059	0.079
W.S. Elev (ft)	1611.59	Reach Len. (ft)	319.00	319.00	319.00
Crit W.S. (ft)		Flow Area (sq ft)	7.65	33.93	122.34
E.G. Slope (ft/ft)	0.014744	Area (sq ft)	7.65	33.93	122.34
Q Total (cfs)	559.00	Flow (cfs)	14.85	209.60	334.56
Top Width (ft)	113.97	Top Width (ft)	9.63	11.00	93.34
Vel Total (ft/s)	3.41	Avg. Vel. (ft/s)	1.94	6.18	2.73
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)	0.79	3.08	1.31
Conv. Total (cfs)	4603.7	Conv. (cfs)	122.3	1726.2	2755.3
Length Wtd. (ft)	319.00	Wetted Per. (ft)	9.76	11.82	93.38
Min Ch El (ft)	1607.40	Shear (lb/sq ft)	0.72		

```
*    2.64  *    1.21  *
* Alpha                  *    1.62  * Stream Power (lb/ft s) *    1.40
*   16.33  *    3.30  *
* Frctn Loss (ft)        *    3.37  * Cum Volume (acre-ft)   *    2.28
*    5.78  *    1.70  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *    0.97
*    2.76  *    0.79  *
**********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T5
REACH: NRW20T5            RS: 0.38

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9858.9 1610.65  9861.3 1610.69  9883.8 1611.27  9889.3 1611.17  9910.4
1609.77
  9931.5    1609  9935.7 1609.01  9943.5 1608.06  9960.3 1606.62  9968.5
1606.29
  9989.5 1605.28  9994.5 1604.93  9998.2 1604.74 10009.4 1606.29   10011
1606.53
 10017.6 1607.59 10039.9 1608.23 10043.6 1608.22   10060 1608.89 10117.8
1610.72
 10158.3 1611.82

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9858.9    .079  9968.5    .059   10011    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9968.5   10011              364     364     364             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1608.50  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.26  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)         * 1608.25  * Reach Len. (ft)         *  364.00
*  364.00  *  364.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   30.03
*  113.50  *   15.39  *
* E.G. Slope (ft/ft)     *0.007939  * Area (sq ft)            *   30.03
*  113.50  *   15.39  *
* Q Total (cfs)          *  559.00  * Flow (cfs)              *   54.57
```

```
*  489.02  *   15.41  *
* Top Width (ft)          *  102.24  * Top Width (ft)          *   26.52
*   42.50  *   33.22  *
* Vel Total (ft/s)        *    3.52  * Avg. Vel. (ft/s)        *    1.82
*    4.31  *    1.00  *
* Max Chl Dpth (ft)       *    3.51  * Hydr. Depth (ft)        *    1.13
*    2.67  *    0.46  *
* Conv. Total (cfs)       *  6273.6  * Conv. (cfs)             *   612.4
*  5488.3  *   172.9  *
* Length Wtd. (ft)        *  364.00  * Wetted Per. (ft)        *   26.60
*   42.67  *   33.31  *
* Min Ch El (ft)          * 1604.74  * Shear (lb/sq ft)        *    0.56
*    1.32  *    0.23  *
* Alpha                   *    1.34  * Stream Power (lb/ft s) *    1.02
*    5.68  *    0.23  *
* Frctn Loss (ft)         *    4.03  * Cum Volume (acre-ft)    *    2.14
*    5.24  *    1.19  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.84
*    2.56  *    0.33  *
***************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T5
REACH: NRW20T5            RS: 0.31

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9782.4 1609.88  9802.7 1609.86  9805.9 1609.85  9827.7 1609.63  9837.5
1609.58
  9872.4 1609.28  9893.4    1609  9907.3 1608.75  9917.9  1608.5  9922.2
1608.28
  9938.1 1607.42  9950.2  1606.9  9955.1 1607.08  9976.8 1603.69  9987.9
1601.87
  9998.5 1601.29 10003.4 1600.65 10029.7  1603.4 10033.1 1603.66 10039.3
1604.4
 10039.6  1604.4 10068.5 1604.69 10081.8  1605.1 10104.9 1605.76 10134.2
1606.45
 10151.6 1606.78   10187 1607.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9782.4    .079  9976.8    .059 10039.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
```

```
Expan.
        9976.8 10039.3              332     332     332             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1604.47  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.38  * Wt. n-Val.              *   0.079
*   0.059  *          *
* W.S. Elev (ft)          * 1604.09  * Reach Len. (ft)         *  332.00
*  332.00  *  332.00  *
* Crit W.S. (ft)          * 1603.50  * Flow Area (sq ft)       *    0.51
*  113.36  *          *
* E.G. Slope (ft/ft)      *0.016490  * Area (sq ft)            *    0.51
*  113.36  *          *
* Q Total (cfs)           *  559.00  * Flow (cfs)              *    0.42
*  558.58  *          *
* Top Width (ft)          *   62.45  * Top Width (ft)          *    2.55
*   59.89  *          *
* Vel Total (ft/s)        *    4.91  * Avg. Vel. (ft/s)        *    0.82
*    4.93  *          *
* Max Chl Dpth (ft)       *    3.44  * Hydr. Depth (ft)        *    0.20
*    1.89  *          *
* Conv. Total (cfs)       *  4353.2  * Conv. (cfs)             *     3.2
*  4349.9  *          *
* Length Wtd. (ft)        *  332.00  * Wetted Per. (ft)        *    2.59
*   60.28  *          *
* Min Ch El (ft)          * 1600.65  * Shear (lb/sq ft)        *    0.20
*    1.94  *          *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *    0.17
*    9.54  *          *
* Frctn Loss (ft)         *    3.09  * Cum Volume (acre-ft)    *    2.01
*    4.29  *    1.13  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *    0.72
*    2.14  *    0.19  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T5
REACH: NRW20T5            RS: 0.25

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
```

```
    9807 1603.87  9819.6 1603.78  9857.7 1602.98  9866.7 1602.81  9897.5
1601.72
  9897.9 1601.71  9930.8 1601.54  9933.9  1601.5  9952.2 1601.24  9970.9
1600.22
  9974.2 1599.92  9983.3 1598.23  9985.2 1597.97  9999.7 1597.95 10000.9
1597.95
 10003.3 1598.02 10013.7 1598.23 10020.1 1598.34 10039.7 1601.39   10073
1602.66
 10080.4 1603.02 10086.3 1603.28 10101.8 1603.92 10121.6 1604.65 10123.2
1604.71
 10124.4 1604.76 10162.2 1607.11 10164.1 1607.15 10165.4 1607.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    9807    .079  9974.2    .059 10039.7    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.2 10039.7               308     308     308             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*********************************************************************
***********************
* E.G. Elev (ft)          * 1601.31  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.19  * Wt. n-Val.              *   0.079
*   0.059  *          *
* W.S. Elev (ft)          * 1601.12  * Reach Len. (ft)         *  308.00
*  308.00  *  308.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   10.95
*  155.81  *          *
* E.G. Slope (ft/ft)      *0.005984  * Area (sq ft)            *   10.95
*  155.81  *          *
* Q Total (cfs)           *  559.00  * Flow (cfs)              *   10.70
*  548.30  *          *
* Top Width (ft)          *   83.64  * Top Width (ft)          *   19.85
*   63.78  *          *
* Vel Total (ft/s)        *    3.35  * Avg. Vel. (ft/s)        *    0.98
*    3.52  *          *
* Max Chl Dpth (ft)       *    3.17  * Hydr. Depth (ft)        *    0.55
*    2.44  *          *
* Conv. Total (cfs)       *  7226.6  * Conv. (cfs)             *   138.3
*  7088.3  *          *
* Length Wtd. (ft)        *  308.00  * Wetted Per. (ft)        *   19.89
*   64.18  *          *
* Min Ch El (ft)          * 1597.95  * Shear (lb/sq ft)        *    0.21
*    0.91  *          *
* Alpha                   *    1.08  * Stream Power (lb/ft s) *    0.20
*    3.19  *          *
* Frctn Loss (ft)         *    3.80  * Cum Volume (acre-ft)    *    1.97
*    3.27  *    1.13  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *    0.63
*    1.66  *    0.19  *
*********************************************************************
***********************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
```

```
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T5
REACH: NRW20T5            RS: 0.19

INPUT
Description:
.Station Elevation Data    num=      31
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
    9791 1601.33  9804.4 1600.76  9816.7 1600.42  9834.2 1599.65  9850.4
1599.86
  9898.1 1598.35  9907.6 1597.95    9920 1598.41  9922.9 1598.55  9925.2
1598.37
  9964.4 1596.73  9978.5 1595.77  9981.5 1595.49  9994.1 1594.26 10002.1
1593.62
 10024.1 1597.19   10032 1598.76 10035.1 1598.57 10037.3 1598.79 10044.6
1599.67
 10055.5  1600.9 10063.4 1600.63 10069.5 1600.67 10079.8 1601.14 10091.4
1601.6
 10106.1 1602.04 10122.8 1602.75 10146.7 1603.47   10160 1603.75 10184.1
1603.88
 10203.9 1604.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9791    .079  9978.5    .059 10024.1    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.5 10024.1              314     314     314             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1597.45  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.80  * Wt. n-Val.              *   0.079
*   0.059  *          *
* W.S. Elev (ft)         * 1596.65  * Reach Len. (ft)         *  314.00
*  314.00  *  314.00  *
* Crit W.S. (ft)         * 1596.65  * Flow Area (sq ft)       *    5.69
*   75.39  *          *
* E.G. Slope (ft/ft)     *0.038760  * Area (sq ft)            *    5.69
*   75.39  *          *
* Q Total (cfs)          *  559.00  * Flow (cfs)              *   12.16
*  546.84  *          *
* Top Width (ft)         *   55.20  * Top Width (ft)          *   12.92
```

```
*   42.27  *          *
* Vel Total (ft/s)       *    6.89  * Avg. Vel. (ft/s)       *    2.14
*    7.25  *          *
* Max Chl Dpth (ft)      *    3.03  * Hydr. Depth (ft)       *    0.44
*    1.78  *          *
* Conv. Total (cfs)      *  2839.4  * Conv. (cfs)            *    61.8
*  2777.6  *          *
* Length Wtd. (ft)       *  314.00  * Wetted Per. (ft)       *   12.95
*   42.62  *          *
* Min Ch El (ft)         * 1593.62  * Shear (lb/sq ft)       *    1.06
*    4.28  *          *
* Alpha                  *    1.08  * Stream Power (lb/ft s) *    2.27
*   31.05  *          *
* Frctn Loss (ft)        *    2.98  * Cum Volume (acre-ft)   *    1.91
*    2.45  *    1.13  *
* C & E Loss (ft)        *    0.12  * Cum SA (acres)         *    0.52
*    1.29  *    0.19  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW20T5
REACH: NRW20T5            RS: 0.13

INPUT
Description: CL New River Road Dip Crossing
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9649 1597.22  9653.3 1597.17  9662.8 1596.98  9707.8 1596.74  9715.7
1596.73
  9751.6 1595.88  9795.1 1595.07  9801.2 1594.98  9841.1 1594.04  9842.5
1594.04
  9865.9  1593.7  9882.3 1593.51  9883.2 1593.49  9917.8 1593.53    9919
1593.48
  9942.6 1592.82  9942.7 1592.82  9961.2  1592.3  9961.4  1592.3  9965.3
1592.24
 10010.6  1591.6 10012.5 1591.62 10048.7    1592 10050.1 1592.02 10088.3
1593
```

```
 10129.3 1593.66 10175.9 1594.58 10176.6  1594.6 10221.3 1595.76   10223
1595.82
 10267.2 1597.28 10268.4 1597.29 10312.6  1596.9   10314 1596.94 10321.5
1597.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9649    .016  9917.8    .016 10129.3    .016

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9917.8 10129.3              311     311     311             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1593.29  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.39  * Wt. n-Val.              *
*   0.016  *          *
* W.S. Elev (ft)          * 1592.90  * Reach Len. (ft)         *  311.00
*  311.00  *  311.00  *
* Crit W.S. (ft)          * 1592.90  * Flow Area (sq ft)       *
*  110.84  *          *
* E.G. Slope (ft/ft)      *0.004191  * Area (sq ft)            *
*  110.84  *          *
* Q Total (cfs)           *  559.00  * Flow (cfs)              *
*  559.00  *          *
* Top Width (ft)          *  144.26  * Top Width (ft)          *
*  144.26  *          *
* Vel Total (ft/s)        *    5.04  * Avg. Vel. (ft/s)        *
*    5.04  *          *
* Max Chl Dpth (ft)       *    1.29  * Hydr. Depth (ft)        *
*    0.77  *          *
* Conv. Total (cfs)       *  8634.5  * Conv. (cfs)             *
*  8634.5  *          *
* Length Wtd. (ft)        *  311.00  * Wetted Per. (ft)        *
*  144.28  *          *
* Min Ch El (ft)          * 1591.60  * Shear (lb/sq ft)        *
*    0.20  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    1.01  *          *
* Frctn Loss (ft)         *    0.74  * Cum Volume (acre-ft)    *    1.89
*    1.78  *    1.13  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *    0.47
*    0.62  *    0.19  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW20T5
REACH: NRW20T5 RS: 0.07

INPUT
Description: U.S. of confluence with NRW20T10
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9856.09	1590.1	9861.9	1590.02	9885.5	1589.05	9903.5	1588.8	9925.5	1588.57
9927	1588.59	9939.3	1588.48	9942.7	1588.51	9950.8	1587.52	9957.1	1586.88
9959.7	1586.96	9969.5	1586.74	9989.1	1586.56	9994.4	1586.24	10001.4	1585.8
10004.1	1586.08	10017.7	1587.12	10024.2	1587.59	10030.7	1588.16	10036.6	1588.37
10057.5	1589.7	10078.8	1590.3	10083.1	1590.46	10110.3	1590.68	10115.5	1590.79
10145.7	1592.91	10163.1	1594.02	10168.1	1594.36				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9856.09	.079	9989.1	.059	10017.7	.079

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.1	10017.7	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1590.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.	0.079	0.059	0.079
W.S. Elev (ft)	1590.08	Reach Len. (ft)	393.64	393.64	393.64
Crit W.S. (ft)		Flow Area (sq ft)	232.83	106.38	67.06
E.G. Slope (ft/ft)	0.001529	Area (sq ft)	232.83	106.38	67.06
Q Total (cfs)	559.00	Flow (cfs)	250.54	251.00	57.46
Top Width (ft)	213.25	Top Width (ft)	131.42	28.60	53.22
Vel Total (ft/s)	1.38	Avg. Vel. (ft/s)	1.08		

```
*    2.36  *    0.86  *
* Max Chl Dpth (ft)      *    4.28  * Hydr. Depth (ft)        *    1.77
*    3.72  *    1.26  *
* Conv. Total (cfs)      * 14297.7  * Conv. (cfs)             *  6408.2
*  6419.9  *  1469.6  *
* Length Wtd. (ft)       *  393.64  * Wetted Per. (ft)        *  131.54
*   28.68  *   53.32  *
* Min Ch El (ft)         * 1585.80  * Shear (lb/sq ft)        *    0.17
*    0.35  *    0.12  *
* Alpha                  *    1.63  * Stream Power (lb/ft s) *    0.18
*    0.84  *    0.10  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)    *    1.06
*    1.00  *    0.89  *
* C & E Loss (ft)        *          * Cum SA (acres)          *
*          *          *
***************************************************************************
************************

CROSS SECTION


RIVER: NRW20T10A
REACH: NRW20T10A          RS: 0.29

INPUT
Description: D.S. of confluence with NRW20T5
Station Elevation Data    num=      42
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9823.4 1594.72  9855.9 1593.42  9861.8 1593.15  9877.1 1592.42  9898.4
1591.32
  9940.4 1588.73  9941.4 1588.68  9966.4 1586.26  9980.1 1585.27  9984.4
1584.8
  9987.3 1583.71  9998.4 1579.49  9999.5 1579.49  9999.8 1578.99 10000.3
1578.99
 10000.5 1579.49 10003.2 1580.45 10006.2 1580.43 10007.8 1580.35 10021.6
1582.8
 10039.3 1583.38 10041.9 1583.37 10051.5 1582.82 10053.1 1582.83 10055.8
1582.99
 10065.8 1583.51 10072.9 1583.55 10083.4 1583.54 10103.2 1583.61 10114.1
1583.51
 10122.3 1583.51 10126.6 1583.48 10139.3  1584.4 10153.6 1585.36 10168.6
1586.02
 10174.8 1586.28 10180.2 1586.53 10196.1  1587.3 10214.3 1588.27 10217.3
1588.43
   10220 1588.58 10253.2 1590.26

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9823.4    .079  9987.3    .059 10021.6    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.3 10021.6              249     249     249             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
```

```
************************
* E.G. Elev (ft)          * 1584.93  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.40  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1584.53  * Reach Len. (ft)         *  249.00
*  249.00  *  249.00  *
* Crit W.S. (ft)          * 1584.18  * Flow Area (sq ft)       *    0.89
*  115.42  *  129.38  *
* E.G. Slope (ft/ft)      *0.011412  * Area (sq ft)            *    0.89
*  115.42  *  129.38  *
* Q Total (cfs)           *  949.00  * Flow (cfs)              *    0.95
*  674.24  *  273.81  *
* Top Width (ft)          *  156.10  * Top Width (ft)          *    2.18
*   34.30  *  119.62  *
* Vel Total (ft/s)        *    3.86  * Avg. Vel. (ft/s)        *    1.06
*    5.84  *    2.12  *
* Max Chl Dpth (ft)       *    5.54  * Hydr. Depth (ft)        *    0.41
*    3.37  *    1.08  *
* Conv. Total (cfs)       *  8883.4  * Conv. (cfs)             *     8.9
*  6311.5  *  2563.1  *
* Length Wtd. (ft)        *  249.00  * Wetted Per. (ft)        *    2.33
*   36.08  *  119.70  *
* Min Ch El (ft)          * 1578.99  * Shear (lb/sq ft)        *    0.27
*    2.28  *    0.77  *
* Alpha                   *    1.71  * Stream Power (lb/ft s) *    0.29
*   13.31  *    1.63  *
* Frctn Loss (ft)         *    2.79  * Cum Volume (acre-ft)    *    3.16
*    3.87  *    3.22  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    1.41
*    0.94  *    1.42  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW20T10A
REACH: NRW20T10A RS: 0.24

INPUT
Description:
Station Elevation Data num= 32

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9823.3 1588.44  9842.8 1587.04    9850 1586.68  9869.8 1585.92  9880.4
1585.3
  9894.8  1584.7  9916.8 1583.72  9932.1 1582.96  9946.2 1582.12  9967.6
1581.24
  9972.2 1580.98  9984.2  1580.4  9984.5 1580.33  9998.5 1576.97 10006.2
1577.65
   10012 1578.32 10017.1 1578.68 10038.6  1579.6 10045.3 1580.08 10055.7
1580.58
 10069.8 1581.35 10099.8  1582.1 10108.3 1582.34 10126.8  1582.9 10134.7
1583.41
```

```
 10149.3 1584.83   10175  1585.8 10175.3 1585.81 10175.6 1585.82 10188.7
1586.46
 10207.1 1588.03 10220.3 1588.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9823.3    .079  9984.5    .059 10017.1    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.5 10017.1              221     221     221             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*********************************************************************
************************
* E.G. Elev (ft)          * 1582.13  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.44  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1581.69  * Reach Len. (ft)         *  221.00
*  221.00  *  221.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   17.60
*  114.13  *   94.07  *
* E.G. Slope (ft/ft)      *0.011030  * Area (sq ft)            *   17.60
*  114.13  *   94.07  *
* Q Total (cfs)           *  949.00  * Flow (cfs)              *   25.54
*  689.25  *  234.21  *
* Top Width (ft)          *  126.91  * Top Width (ft)          *   27.90
*   32.60  *   66.40  *
* Vel Total (ft/s)        *    4.20  * Avg. Vel. (ft/s)        *    1.45
*    6.04  *    2.49  *
* Max Chl Dpth (ft)       *    4.72  * Hydr. Depth (ft)        *    0.63
*    3.50  *    1.42  *
* Conv. Total (cfs)       *  9036.0  * Conv. (cfs)             *   243.2
*  6562.7  *  2230.1  *
* Length Wtd. (ft)        *  221.00  * Wetted Per. (ft)        *   27.94
*   33.08  *   66.48  *
* Min Ch El (ft)          * 1576.97  * Shear (lb/sq ft)        *    0.43
*    2.38  *    0.97  *
* Alpha                   *    1.59  * Stream Power (lb/ft s) *    0.63
*   14.35  *    2.43  *
* Frctn Loss (ft)         *    1.76  * Cum Volume (acre-ft)    *    3.11
*    3.22  *    2.58  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)          *    1.33
*    0.75  *    0.89  *
*********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10A
REACH: NRW20T10A          RS: 0.20

INPUT
```

```
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9775.8 1587.36  9787.4 1586.83  9806.4 1585.45  9825.6 1584.32  9853.9
1582.06
  9857.3 1581.85  9859.7 1581.66  9879.8 1580.21  9902.9 1578.63    9913
1578.27
  9923.3 1578.04  9932.5 1577.16  9944.5 1577.24  9960.2 1577.73    9990
1577.68
  9992.6 1577.27 10000.5 1575.93 10021.5 1578.39 10029.9 1579.49 10046.9
1581.39
 10054.9 1582.06 10084.1 1583.81 10121.5 1586.22 10157.4  1588.3 10183.5
1589.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9775.8    .079    9990    .059 10021.5    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9990 10021.5              375     375     375             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1580.29  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1580.13  * Reach Len. (ft)         *  375.00
*  375.00  *  375.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  225.88
*   97.13  *   11.82  *
* E.G. Slope (ft/ft)      *0.006004  * Area (sq ft)            *  225.88
*   97.13  *   11.82  *
* Q Total (cfs)           *  949.00  * Flow (cfs)              *  534.68
*  399.11  *   15.22  *
* Top Width (ft)          *  154.63  * Top Width (ft)          *  109.02
*   31.50  *   14.12  *
* Vel Total (ft/s)        *    2.83  * Avg. Vel. (ft/s)        *    2.37
*    4.11  *    1.29  *
* Max Chl Dpth (ft)       *    4.20  * Hydr. Depth (ft)        *    2.07
*    3.08  *    0.84  *
* Conv. Total (cfs)       * 12247.5  * Conv. (cfs)             *  6900.4
*  5150.8  *   196.4  *
* Length Wtd. (ft)        *  375.00  * Wetted Per. (ft)        *  109.13
*   31.79  *   14.23  *
* Min Ch El (ft)          * 1575.93  * Shear (lb/sq ft)        *    0.78
*    1.15  *    0.31  *
* Alpha                   *    1.28  * Stream Power (lb/ft s) *    1.84
*    4.71  *    0.40  *
* Frctn Loss (ft)         *    3.93  * Cum Volume (acre-ft)    *    2.49
*    2.68  *    2.31  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    0.98
*    0.58  *    0.68  *
***************************************************************************
```

```
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10A
REACH: NRW20T10A          RS: 0.13

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9816.7 1582.38  9832.6 1581.99  9844.9 1581.63  9866.1 1580.91  9887.3
1580.28
  9902.8 1579.75  9913.8  1579.4  9947.3 1577.76    9954 1577.34  9965.5
1576.47
  9979.4 1575.61  9983.2 1575.15  9989.7 1573.86  9999.9 1571.77 10011.3
1572.87
 10015.5 1573.48 10020.9 1573.83 10032.4 1574.66 10057.2 1574.51 10075.7
1574.66
 10085.6 1574.96 10103.3 1576.66 10105.5 1576.84 10106.9 1577.03 10116.1
1577.53
 10132.4 1578.54 10151.3 1581.09 10167.5 1582.32 10184.9 1583.14 10198.1
1583.84
 10211.7 1584.79 10223.6 1586.04 10240.7 1586.46 10246.7 1586.57

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9816.7    .079  9983.2    .059 10032.4    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.2 10032.4              284     284     284             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1576.32  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.59  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1575.73  * Reach Len. (ft)         *  284.00
*  284.00  *  284.00  *
* Crit W.S. (ft)          * 1575.57  * Flow Area (sq ft)       *    1.44
*  115.52  *   61.69  *
* E.G. Slope (ft/ft)      *0.022814  * Area (sq ft)            *    1.44
*  115.52  *   61.69  *
* Q Total (cfs)           *  949.00  * Flow (cfs)              *    1.62
```

```
*  771.28  *  176.10  *
* Top Width (ft)          *  116.12  * Top Width (ft)          *    5.72
*   49.20  *   61.20  *
* Vel Total (ft/s)        *    5.31  * Avg. Vel. (ft/s)        *    1.13
*    6.68  *    2.85  *
* Max Chl Dpth (ft)       *    3.96  * Hydr. Depth (ft)        *    0.25
*    2.35  *    1.01  *
* Conv. Total (cfs)       *  6283.0  * Conv. (cfs)             *    10.7
*  5106.3  *  1165.9  *
* Length Wtd. (ft)        *  284.00  * Wetted Per. (ft)        *    5.75
*   49.68  *   61.24  *
* Min Ch El (ft)          * 1571.77  * Shear (lb/sq ft)        *    0.36
*    3.31  *    1.43  *
* Alpha                   *    1.34  * Stream Power (lb/ft s) *    0.40
*   22.11  *    4.10  *
* Frctn Loss (ft)         *    2.70  * Cum Volume (acre-ft)    *    1.51
*    1.77  *    2.00  *
* C & E Loss (ft)         *    0.11  * Cum SA (acres)          *    0.49
*    0.24  *    0.36  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20T10A
REACH: NRW20T10A          RS: 0.08

INPUT
Description: U.S. of confluence with NRW20
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9696.4 1578.23  9696.8 1578.21  9697.2  1578.2    9730 1576.93  9742.6
1576.41
  9762.8 1575.66  9795.6 1574.54  9828.4 1573.59  9852.8 1573.01  9860.3
1572.97
    9863 1572.94  9902.4 1572.71  9903.2  1572.7  9924.1 1572.44    9966
1570.88
  9984.3 1570.28  9988.1 1569.18  9994.6  1567.2 10003.8 1569.82 10007.5
1570.64
 10022.1 1571.13 10036.5 1570.73 10041.9  1570.3 10047.6 1571.49 10085.2
1578.76
 10093.9 1579.49 10115.3 1581.09 10128.1 1582.38 10144.1 1583.69 10157.8
1584.33
 10179.1 1584.53 10184.3 1584.82   10191 1585.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9696.4    .079  9984.3    .059 10007.5    .079
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.3 10007.5                0       0       0              .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1573.50  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.21  * Wt. n-Val.              *   0.079
*   0.059  *   0.079  *
* W.S. Elev (ft)          * 1573.30  * Reach Len. (ft)         *  429.97
*  429.97  *  429.97  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  157.31
*  102.10  *  106.38  *
* E.G. Slope (ft/ft)      *0.005171  * Area (sq ft)            *  157.31
*  102.10  *  106.38  *
* Q Total (cfs)           *  949.00  * Flow (cfs)              *  226.16
*  484.07  *  238.77  *
* Top Width (ft)          *  216.14  * Top Width (ft)          *  143.51
*   23.20  *   49.44  *
* Vel Total (ft/s)        *    2.59  * Avg. Vel. (ft/s)        *    1.44
*    4.74  *    2.24  *
* Max Chl Dpth (ft)       *    6.10  * Hydr. Depth (ft)        *    1.10
*    4.40  *    2.15  *
* Conv. Total (cfs)       * 13196.9  * Conv. (cfs)             *  3145.0
*  6731.5  *  3320.3  *
* Length Wtd. (ft)        *  429.97  * Wetted Per. (ft)        *  143.55
*   24.11  *   49.76  *
* Min Ch El (ft)          * 1567.20  * Shear (lb/sq ft)        *    0.35
*    1.37  *    0.69  *
* Alpha                   *    1.96  * Stream Power (lb/ft s) *    0.51
*    6.48  *    1.55  *
* Frctn Loss (ft)         *    3.45  * Cum Volume (acre-ft)    *    0.99
*    1.06  *    1.45  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *
*            *          *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A             RS: 1.05

INPUT
Description: Confluence with NRW20T10
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9782.8  1574.7  9789.3 1574.38    9801 1574.19  9814.1 1573.89  9831.9
1573.77
```

```
  9842.2 1573.53    9849 1573.62  9867.5 1572.91  9883.4 1572.51  9903.4
1570.8
  9914.5 1569.89  9935.1 1569.82  9953.6 1568.86  9958.7 1568.56  9970.6
1568.37
  9983.2 1566.85    9990 1565.98  9993.2 1565.53  9999.4 1564.56 10010.7
1566.62
 10013.6 1567.17 10043.1 1567.47 10045.5  1567.5 10067.1  1567.7 10078.2
1567.85
 10089.8 1568.18 10101.4 1568.17 10117.8 1568.35 10144.6 1571.75 10150.2
1572.11
 10191.2 1575.34 10209.2 1576.89 10223.2 1577.97   10242 1579.67   10266
1581.05
 10272.1 1581.34 10274.7  1581.3 10294.8 1581.52 10307.5 1581.82 10317.6
1581.73
 10340.8 1582.32 10368.5 1582.92 10374.4 1583.56   10379 1583.85 10389.7
1583.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9782.8    .064  9983.2     .05 10013.6    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.2 10013.6              427     427     427             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1570.02  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.53  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1569.50  * Reach Len. (ft)         *  427.00
*  427.00  *  427.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   44.08
*  112.30  *  187.40  *
* E.G. Slope (ft/ft)      *0.011014  * Area (sq ft)            *   44.08
*  112.30  *  187.40  *
* Q Total (cfs)           * 1579.00  * Flow (cfs)              *  110.84
*  829.69  *  638.46  *
* Top Width (ft)          *  185.58  * Top Width (ft)          *   41.92
*   30.40  *  113.26  *
* Vel Total (ft/s)        *    4.59  * Avg. Vel. (ft/s)        *    2.51
*    7.39  *    3.41  *
* Max Chl Dpth (ft)       *    4.94  * Hydr. Depth (ft)        *    1.05
*    3.69  *    1.65  *
* Conv. Total (cfs)       * 15045.3  * Conv. (cfs)             *  1056.2
*  7905.7  *  6083.5  *
* Length Wtd. (ft)        *  427.00  * Wetted Per. (ft)        *   42.04
*   30.80  *  113.34  *
* Min Ch El (ft)          * 1564.56  * Shear (lb/sq ft)        *    0.72
*    2.51  *    1.14  *
* Alpha                   *    1.60  * Stream Power (lb/ft s) *    1.81
*   18.52  *    3.87  *
* Frctn Loss (ft)         *    3.74  * Cum Volume (acre-ft)    *   40.53
*   43.96  *   52.11  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *   15.96
*    8.12  *   17.19  *
************************************************************************
```

```
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A             RS: 0.97

INPUT
Description:
Station Elevation Data    num=      56
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9617.9 1573.83    9638 1572.65  9663.3 1572.03  9667.2 1571.86  9687.1
1571.35
  9695.2 1571.09  9740.5 1568.35  9745.8 1568.19  9773.3  1567.6  9789.1
1566.62
  9798.4  1565.9  9815.2 1565.33  9825.9 1564.82  9848.7 1564.63    9853
1564.62
  9886.7 1564.16  9892.6 1564.04  9894.2 1564.05  9904.8    1564  9930.9
1563.97
  9934.1 1563.92  9970.2 1563.93  9973.3 1563.86  9979.7 1563.65  9994.8
1563.09
   10003 1563.13 10005.5 1563.05 10007.6 1563.23 10018.1 1564.02 10026.4
1563.44
 10027.3 1563.42   10029 1563.43 10038.3 1563.56 10044.8 1563.76 10045.7
1563.8
 10046.9 1563.88 10058.2 1564.67 10072.1 1566.94 10088.2  1569.6   10098
1570.39
   10104  1570.9 10144.1 1573.89 10144.8 1573.94 10166.4 1575.18 10183.6
1576.11
   10188 1576.37   10189 1576.42   10211 1578.69 10234.5 1579.42 10247.3
1580.13
   10249 1580.23 10271.3 1581.95 10296.8 1582.81 10302.4 1582.87 10321.9
1583.39
 10329.6 1583.66

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9617.9    .064  9970.2     .05 10018.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9970.2 10018.1              440     440     440             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1566.19  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.20  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)         * 1565.99  * Reach Len. (ft)         *  440.00
```

```
*  440.00  *  440.00  *
* Crit W.S. (ft)          * 1565.24  * Flow Area (sq ft)      *  272.90
*  121.94  *   92.95  *
* E.G. Slope (ft/ft)      *0.007148  * Area (sq ft)           *  272.90
*  121.94  *   92.95  *
* Q Total (cfs)           * 1579.00  * Flow (cfs)             *  726.05
*  570.79  *  282.16  *
* Top Width (ft)          *  269.00  * Top Width (ft)         *  172.93
*   47.90  *   48.17  *
* Vel Total (ft/s)        *    3.24  * Avg. Vel. (ft/s)       *    2.66
*    4.68  *    3.04  *
* Max Chl Dpth (ft)       *    2.94  * Hydr. Depth (ft)       *    1.58
*    2.55  *    1.93  *
* Conv. Total (cfs)       * 18675.7  * Conv. (cfs)            *  8587.4
*  6751.1  *  3337.3  *
* Length Wtd. (ft)        *  440.00  * Wetted Per. (ft)       *  172.96
*   47.95  *   48.33  *
* Min Ch El (ft)          * 1563.05  * Shear (lb/sq ft)       *    0.70
*    1.13  *    0.86  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    1.87
*    5.31  *    2.61  *
* Frctn Loss (ft)         *    3.25  * Cum Volume (acre-ft)   *   38.98
*   42.82  *   50.73  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *   14.91
*    7.73  *   16.40  *
*********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A             RS: 0.88

INPUT
Description:
Station Elevation Data    num=      46
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*********************************************************************
********
  9691.8    1580  9711.6 1579.86  9717.6 1579.77  9734.1 1579.45  9750.7
1579.06
  9756.7 1578.85  9769.5 1578.33  9779.3 1578.08  9783.8 1577.74  9801.8
1576.88
  9816.9  1576.1  9840.4 1574.59    9847 1574.16    9850 1573.94  9869.6
1572.49
  9892.1 1570.61  9937.3 1566.66    9949 1565.02  9961.6 1563.01  9964.3
1562.45
  9981.6 1558.37  9990.6 1558.55  9994.4 1558.65 10000.9 1557.93 10002.8
1557.69
 10006.7 1558.54 10012.6 1560.02 10037.5  1560.2 10047.4 1560.31 10050.1
1560.31
 10094.3 1561.07 10106.8 1561.03 10109.2 1561.03 10111.3 1561.08   10120
1561.46
 10127.3 1561.74   10148  1562.3   10163 1562.82 10208.1 1564.55 10214.2
1564.83
```

```
 10247.3 1566.47 10253.3 1566.78 10266.1 1567.39 10276.3    1568 10281.7
1568.29
   10304 1569.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9691.8    .064  9964.3     .05 10012.6    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9964.3 10012.6              330     330     330             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1562.92  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.36  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1562.57  * Reach Len. (ft)         *  330.00
*  330.00  *  330.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    0.03
*  162.87  *  229.40  *
* E.G. Slope (ft/ft)      *0.007644  * Area (sq ft)            *    0.03
*  162.87  *  229.40  *
* Q Total (cfs)           * 1579.00  * Flow (cfs)              *    0.01
*  941.11  *  637.88  *
* Top Width (ft)          *  191.91  * Top Width (ft)          *    0.56
*   48.30  *  143.05  *
* Vel Total (ft/s)        *    4.02  * Avg. Vel. (ft/s)        *    0.30
*    5.78  *    2.78  *
* Max Chl Dpth (ft)       *    4.88  * Hydr. Depth (ft)        *    0.06
*    3.37  *    1.60  *
* Conv. Total (cfs)       * 18060.3  * Conv. (cfs)             *     0.1
* 10764.2  *  7296.0  *
* Length Wtd. (ft)        *  330.00  * Wetted Per. (ft)        *    0.57
*   49.11  *  143.09  *
* Min Ch El (ft)          * 1557.69  * Shear (lb/sq ft)        *    0.03
*    1.58  *    0.77  *
* Alpha                   *    1.42  * Stream Power (lb/ft s) *    0.01
*    9.15  *    2.13  *
* Frctn Loss (ft)         *    2.47  * Cum Volume (acre-ft)    *   37.60
*   41.38  *   49.11  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *   14.03
*    7.25  *   15.43  *
************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW20A
REACH: NRW20A              RS: 0.82

INPUT
Description:
Station Elevation Data    num=      49
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9765.8 1572.08  9781.2  1572.2  9790.7    1572  9795.4 1571.89  9809.6
1571.18
  9822.3 1570.58  9842.8 1569.93  9853.9 1569.72  9866.5  1569.2  9885.5
1567.86
  9890.3 1567.69  9904.4 1567.06  9917.2 1566.41  9923.5    1566  9948.8
1564.05
  9968.7  1561.1  9973.3 1560.43  9975.8 1559.94  9996.3 1556.01 10000.8
1556.15
 10001.6 1556.25 10003.3  1556.5 10009.9  1557.6 10025.2    1558 10035.2
1557.61
 10040.6 1557.37 10047.7 1557.51 10052.8 1557.63   10054 1557.63 10074.1
1558.62
   10080 1558.78 10138.5 1559.65 10151.1 1559.88 10170.1  1560.3   10189
1560.66
 10202.2 1560.81 10231.6  1560.4 10234.6 1560.45 10239.6 1560.59 10254.1
1561.2
 10263.1 1561.29 10280.1 1562.07 10286.2 1562.48 10296.5 1563.04 10317.8
1564.52
 10323.6 1564.91 10345.3 1565.94 10361.9  1566.6 10387.1 1568.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9765.8    .064  9975.8     .05 10009.9    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.8 10009.9              338     338     338             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1560.43  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1560.20  * Reach Len. (ft)         *  338.00
*  338.00  *  338.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    0.17
*   94.65  *  227.36  *
* E.G. Slope (ft/ft)      *0.007236  * Area (sq ft)            *    0.17
*   94.65  *  227.36  *
* Q Total (cfs)           * 1046.00  * Flow (cfs)              *    0.09
*  468.04  *  577.88  *
* Top Width (ft)          *  191.10  * Top Width (ft)          *    1.33
*   34.10  *  155.67  *
* Vel Total (ft/s)        *    3.25  * Avg. Vel. (ft/s)        *    0.50
*    4.95  *    2.54  *
* Max Chl Dpth (ft)       *    4.19  * Hydr. Depth (ft)        *    0.13
*    2.78  *    1.46  *
```

```
* Conv. Total (cfs)       * 12296.9  * Conv. (cfs)             *     1.0
*  5502.3  *  6793.6  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *    1.35
*   34.59  *  155.73  *
* Min Ch El (ft)          * 1556.01  * Shear (lb/sq ft)        *    0.06
*    1.24  *    0.66  *
* Alpha                   *    1.38  * Stream Power (lb/ft s) *    0.03
*    6.11  *    1.68  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *   37.60
*   40.40  *   47.37  *
* C & E Loss (ft)         *          * Cum SA (acres)          *   14.02
*    6.93  *   14.30  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: The user has entered a known water surface elevation at this cross section.

CROSS SECTION

RIVER: NRW20A
REACH: NRW20A RS: 0.76

INPUT
Description:
Station Elevation Data num= 48

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9734.9  1570.3  9788.9 1567.56  9800.7 1567.01    9813  1566.4  9832.1
1565.37
  9863.4 1564.57  9867.4  1564.3  9894.7 1562.46    9926 1560.54  9937.3
1559.56
  9963.8 1556.54  9975.3 1555.78  9982.1 1555.59  9987.6 1555.73  9990.9
1555.15
  9996.8 1554.66  9999.7 1554.46 10002.6 1554.22 10011.1 1555.33 10013.4
1555.66
 10047.3 1556.12 10051.2 1556.09 10060.5 1555.82   10079 1555.12 10083.5
1555.39
 10088.4 1555.76 10099.7 1556.14 10104.8 1556.44 10108.1 1556.42 10125.1
1556.6
 10140.7 1556.92 10149.5 1556.96 10168.3 1557.54 10175.3 1557.62 10177.6
1557.68
 10202.3 1558.17 10210.4 1558.42 10225.9 1558.81 10239.3 1559.34 10248.2
1559.64
 10271.9 1560.85 10275.3 1561.01 10299.8  1562.1 10301.5 1562.18 10336.9
1563.26
 10340.1 1563.39 10380.3  1565.6 10388.7 1566.23
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9734.9    .064  9987.6     .05 10013.4    .064
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.

```
Expan.
        9987.6 10013.4              280     280     280             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1560.22  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1560.20  * Reach Len. (ft)         *  280.00
*  280.00  *  280.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  161.46
*  137.23  *  759.77  *
* E.G. Slope (ft/ft)      *0.000334  * Area (sq ft)            *  161.46
*  137.23  *  759.77  *
* Q Total (cfs)           * 1046.00  * Flow (cfs)              *  135.76
*  226.11  *  684.12  *
* Top Width (ft)          *  329.25  * Top Width (ft)          *   57.68
*   25.80  *  245.77  *
* Vel Total (ft/s)        *    0.99  * Avg. Vel. (ft/s)        *    0.84
*    1.65  *    0.90  *
* Max Chl Dpth (ft)       *    5.98  * Hydr. Depth (ft)        *    2.80
*    5.32  *    3.09  *
* Conv. Total (cfs)       * 57217.9  * Conv. (cfs)             *  7426.5
* 12368.7  * 37422.6  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   57.91
*   25.98  *  245.88  *
* Min Ch El (ft)          * 1554.22  * Shear (lb/sq ft)        *    0.06
*    0.11  *    0.06  *
* Alpha                   *    1.24  * Stream Power (lb/ft s) *    0.05
*    0.18  *    0.06  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *   36.97
*   39.50  *   43.55  *
* C & E Loss (ft)         *          * Cum SA (acres)          *   13.79
*    6.70  *   12.74  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Note:    The user has entered a known water surface elevation at this
cross section.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A              RS: 0.70

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9640.6 1566.17    9652  1565.8  9670.2  1565.4  9681.3 1565.01  9689.6
```

```
1564.7
  9711.6 1563.95  9716.1 1563.79  9772.2  1561.5  9875.2 1556.98  9893.4
1556.25
  9901.7 1555.89  9923.7  1555.1  9934.8 1554.93  9953.4 1554.53  9954.1
1554.16
  9959.7 1554.18  9990.4 1554.55  9999.9 1552.44 10009.5  1554.4   10013
1555.16
 10018.4 1555.02 10044.9 1554.28 10064.7 1554.18 10105.7 1553.82 10117.8
1553.48
 10142.8 1553.57 10165.1  1554.3 10173.5 1554.86 10178.7 1555.26 10190.7
1556.58
 10195.1 1556.92 10219.9  1558.1 10222.2 1558.34 10227.3 1558.82 10254.2
1561.22
 10284.3 1563.18   10305 1564.31 10312.1 1564.74 10342.6  1565.7 10344.6
1565.81
 10370.9 1567.55 10374.5 1567.74 10403.8 1569.39 10425.1 1570.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9640.6    .064  9990.4     .05   10013    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.4   10013              300     300     300             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1560.21  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1560.20  * Reach Len. (ft)         *  300.00
*  300.00  *  300.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  697.46
*  147.75  * 1163.58  *
* E.G. Slope (ft/ft)      *0.000061  * Area (sq ft)            *  697.46
*  147.75  * 1163.58  *
* Q Total (cfs)           * 1046.00  * Flow (cfs)              *  303.38
*  118.57  *  624.05  *
* Top Width (ft)          *  440.94  * Top Width (ft)          *  188.58
*   22.60  *  229.77  *
* Vel Total (ft/s)        *    0.52  * Avg. Vel. (ft/s)        *    0.43
*    0.80  *    0.54  *
* Max Chl Dpth (ft)       *    7.76  * Hydr. Depth (ft)        *    3.70
*    6.54  *    5.06  *
* Conv. Total (cfs)       *133429.1  * Conv. (cfs)             * 38699.5
* 15125.3  * 79604.4  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  188.78
*   23.11  *  230.04  *
* Min Ch El (ft)          * 1552.44  * Shear (lb/sq ft)        *    0.01
*    0.02  *    0.02  *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *    0.01
*    0.02  *    0.01  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *   34.21
*   38.59  *   37.36  *
* C & E Loss (ft)         *          * Cum SA (acres)          *   13.00
*    6.55  *   11.21  *
************************************************************************
```

```
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Note:    The user has entered a known water surface elevation at this
cross section.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A              RS: 0.65

INPUT
Description:
Station Elevation Data    num=      62
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9605.7 1570.49  9662.9  1568.6  9693.1  1567.2  9698.4  1566.9  9723.4
1565.59
  9756.3 1563.54    9784 1561.72  9791.4 1561.26  9814.2  1559.7  9826.4
1558.92
  9844.5 1557.69  9858.3 1556.81  9883.9 1554.73  9888.7 1554.43  9905.1
1554.16
  9931.7 1552.82  9935.4 1552.65  9957.4 1551.33  9963.3 1551.03  9967.1
1551.06
    9986 1551.43 10003.3 1551.42 10006.3 1551.74 10009.4 1551.92   10011
1551.93
 10028.7 1552.43 10043.2 1552.17 10056.5 1551.89 10071.4 1551.85 10086.8
1551.87
   10107  1551.5   10117 1551.49 10147.8 1552.28 10157.8 1550.86 10159.1
1550.74
 10160.5 1550.84 10166.5 1551.51   10177 1552.77 10202.1 1555.28 10215.8
1556.39
 10217.6 1556.54 10233.9 1558.06 10239.3 1558.62   10244 1558.76 10264.6
1560.08
 10265.8  1560.1 10281.4  1561.1 10310.3 1562.58 10317.1 1562.97 10332.6
1564.23
 10346.2  1565.4 10352.1 1565.71 10367.9 1566.45 10389.4 1567.59 10418.4
1568.97
 10420.5 1569.03 10446.2 1570.13 10451.7  1570.3 10475.1 1571.12 10484.3
1571.47
 10492.8 1571.73 10510.9 1572.31

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9605.7    .064  9935.4     .05 10028.7    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9935.4 10028.7              228     228     228             .3
.5

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
```

```
* E.G. Elev (ft)          * 1560.20  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1560.20  * Reach Len. (ft)         *  228.00
*  228.00  *  228.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  531.02
*  796.68  * 1543.58  *
* E.G. Slope (ft/ft)      *0.000017  * Area (sq ft)            *  531.02
*  796.68  * 1543.58  *
* Q Total (cfs)           * 1046.00  * Flow (cfs)              *  130.18
*  405.85  *  509.97  *
* Top Width (ft)          *  460.47  * Top Width (ft)          *  128.51
*   93.30  *  238.66  *
* Vel Total (ft/s)        *    0.36  * Avg. Vel. (ft/s)        *    0.25
*    0.51  *    0.33  *
* Max Chl Dpth (ft)       *    9.46  * Hydr. Depth (ft)        *    4.13
*    8.54  *    6.47  *
* Conv. Total (cfs)       *254772.5  * Conv. (cfs)             * 31707.7
* 98853.4  *124211.4  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  128.75
*   93.38  *  239.22  *
* Min Ch El (ft)          * 1551.03  * Shear (lb/sq ft)        *    0.00
*    0.01  *    0.01  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *   29.98
*   35.33  *   28.04  *
* C & E Loss (ft)         *          * Cum SA (acres)          *   11.91
*    6.15  *    9.60  *
*****************************************************************************
************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: During the standard step calculations, the final energy answer
that was computed is less than the
         downstream energy.  This is not physically possible.  Please
check your data.
Note:    The user has entered a known water surface elevation at this
cross section.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A              RS: 0.60

INPUT
Description: U.S. of 1 - 10' x 10' CBC
Station Elevation Data    num=      85
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
  9553.7 1563.18    9558 1563.16  9569.6 1563.11  9609.2 1562.44  9621.6
```

```
1562.04
    9650 1560.82  9657.5 1560.89  9677.4 1561.31    9688 1561.31  9698.6
1561.11
  9699.2 1561.08  9714.5 1561.05  9725.7  1560.7  9753.2 1560.63  9754.9
1560.93
  9768.9 1560.13  9782.6 1560.26  9804.4 1560.14    9827 1558.92  9844.9
1558.94
  9868.8 1558.64  9888.9  1558.1  9916.8  1557.8  9928.6 1557.72  9932.4
1557.48
  9939.5  1557.9  9961.8 1557.63  9969.7 1557.17  9982.5 1557.53    9991
1557.61
  9993.4 1557.77  9995.2  1556.9  9995.6 1556.47  9999.3 1546.69 10004.9
1546.69
 10005.2 1548.32 10006.7 1554.57   10007 1555.55 10008.2  1557.4 10020.8
1558.43
 10021.2 1558.43 10043.7  1558.1 10051.9 1558.14 10054.6 1558.42 10062.9
1558.45
 10091.5 1558.69 10108.1 1559.12 10127.6 1559.52 10159.8 1560.82 10172.1
1562.12
 10192.1 1562.82 10206.1 1563.61 10223.6 1564.05 10236.5 1564.21 10244.5
1564.43
   10246 1564.44 10266.8 1564.96 10282.9 1565.56 10326.4 1566.24 10330.4
1566.29
 10334.1 1566.35 10360.6 1567.21 10379.7 1567.39   10382 1567.52 10382.7
1567.56
 10407.4  1568.9 10411.4 1569.06 10414.7 1569.31 10435.9 1570.39 10442.6
1570.53
 10451.7 1570.64 10466.8 1571.55 10474.9 1571.96   10486 1571.94 10491.6
1572.04
 10499.1 1572.32 10518.3 1572.95 10524.1 1573.21 10538.1 1573.14 10567.8
1573.59
 10571.3  1573.6 10574.3 1573.63 10591.7 1573.49   10612 1573.89 10614.9
1573.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9553.7    .064  9993.4     .05 10008.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.4 10008.2              123     123     123             .3
.5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9553.7    9985 1569.19       F
   10015 10614.9  1569.5       F

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)         * 1560.82  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.62  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)         * 1560.20  * Reach Len. (ft)         *  123.00
*  123.00  *  123.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   21.73
*  137.07  *   17.15  *
* E.G. Slope (ft/ft)     *0.006561  * Area (sq ft)            *  369.52
*  137.07  *  200.92  *
```

```
* Q Total (cfs)          * 1046.00  * Flow (cfs)              *   77.00
*  909.38  *   59.62  *
* Top Width (ft)         *  359.53  * Top Width (ft)          *  208.48
*   14.80  *  136.24  *
* Vel Total (ft/s)       *    5.94  * Avg. Vel. (ft/s)        *    3.54
*    6.63  *    3.48  *
* Max Chl Dpth (ft)      *   13.51  * Hydr. Depth (ft)        *    2.59
*    9.26  *    2.52  *
* Conv. Total (cfs)      * 12913.4  * Conv. (cfs)             *   950.6
* 11226.7  *   736.1  *
* Length Wtd. (ft)       *  123.00  * Wetted Per. (ft)        *    8.41
*   29.96  *    6.82  *
* Min Ch El (ft)         * 1546.69  * Shear (lb/sq ft)        *    1.06
*    1.87  *    1.03  *
* Alpha                  *    1.13  * Stream Power (lb/ft s) *    3.75
*   12.43  *    3.58  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)    *   27.62
*   32.89  *   23.48  *
* C & E Loss (ft)        *          * Cum SA (acres)          *   11.03
*    5.86  *    8.62  *
*************************************************************************
***********************
```

Note: The user has entered a known water surface elevation at this cross section.

CULVERT

RIVER: NRW20A
REACH: NRW20A RS: 0.59

INPUT
Description:
Distance from Upstream XS = 1
Deck/Roadway Width = 121
Weir Coefficient = 2.6
Upstream Deck/Roadway Coordinates
num= 66

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9557.2	1565.86	1528.51	9575.9	1566.01	1528.51	9589.1	1565.98	1528.51
9603.7	1566.2	1528.51	9619.8	1566.53	1528.51	9629.8	1566.57	1528.51
9655.2	1566.56	1528.51	9667.9	1566.63	1528.51	9672.4	1566.65	1528.51
9682.1	1566.77	1528.51	9699.6	1566.77	1528.51	9701	1566.77	1528.51
9715.8	1566.96	1528.51	9742.3	1567.06	1528.51	9754.6	1567.17	1528.51
9770.2	1567.36	1528.51	9781.9	1567.47	1528.51	9791.4	1567.58	1528.51
9818.3	1567.92	1528.51	9841	1567.96	1528.51	9855.1	1568.08	1528.51
9870	1568.37	1528.51	9883	1568.48	1528.51	9900.1	1568.41	1528.51
9911.8	1568.53	1528.51	9928	1568.83	1528.51	9957.3	1569.1	1528.51
9980.1	1569.11	1528.51	9989.3	1569.18	1528.51	9993.9	1569.27	1528.51
10008.4	1569.49	1528.51	10009.4	1569.5	1528.51	10012.5	1569.5	1528.51
10015.7	1569.84	1528.51	10017.2	1570.19	1528.51	10027.6	1570.36	1528.51
10060.7	1571.03	1528.51	10083.8	1571.26	1528.51	10129.5	1572.2	1528.51
10134.1	1572.24	1528.51	10145.2	1572.26	1528.51	10164.7	1572.26	1528.51
10177.2	1572.36	1528.51	10187.3	1572.37	1528.51	10219.3	1572.09	1528.51
10236.4	1572.25	1528.51	10243	1572.19	1528.51	10245.1	1572.21	1528.51
10285.2	1573.12	1528.51	10350.2	1573.2	1528.51	10369	1573.4	1528.51
10382.6	1573.76	1528.51	10420.8	1574.06	1528.51	10422.9	1574.06	1528.51
10454.8	1574.29	1528.51	10460.6	1574.62	1528.51	10463.8	1574.64	1528.51
10473.7	1574.7	1528.51	10480.9	1574.93	1528.51	10514.2	1575.56	1528.51

```
 10527.5 1575.62 1528.51 10555.4 1575.62 1528.51 10569.8 1575.76 1528.51
 10602.8 1575.94 1528.51 10635.3 1576.24 1528.51 10646.1  1576.2 1528.51

Upstream Bridge Cross Section Data
Station Elevation Data    num=      84
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9553.7 1563.18    9558 1563.16  9569.6 1563.11  9609.2 1562.44  9621.6
1562.04
    9650 1560.82  9657.5 1560.89  9677.4 1561.31    9688 1561.31  9698.6
1561.11
  9699.2 1561.08  9714.5 1561.05  9725.7  1560.7  9753.2 1560.63  9754.9
1560.93
  9768.9 1560.13  9782.6 1560.26  9804.4 1560.14    9827 1558.92  9844.9
1558.94
  9868.8 1558.64  9888.9  1558.1  9916.8  1557.8  9928.6 1557.72  9932.4
1557.48
  9939.5  1557.9  9961.8 1557.63  9969.7 1557.17  9982.5 1557.53    9991
1557.61
  9993.4 1557.77    9995 1546.69  9999.3 1546.69 10004.9 1546.69 10005.2
1548.32
 10006.7 1554.57   10007 1555.55 10008.2  1557.4 10020.8 1558.43 10021.2
1558.43
 10043.7  1558.1 10051.9 1558.14 10054.6 1558.42 10062.9 1558.45 10091.5
1558.69
 10108.1 1559.12 10127.6 1559.52 10159.8 1560.82 10172.1 1562.12 10192.1
1562.82
 10206.1 1563.61 10223.6 1564.05 10236.5 1564.21 10244.5 1564.43   10246
1564.44
 10266.8 1564.96 10282.9 1565.56 10326.4 1566.24 10330.4 1566.29 10334.1
1566.35
 10360.6 1567.21 10379.7 1567.39   10382 1567.52 10382.7 1567.56 10407.4
1568.9
 10411.4 1569.06 10414.7 1569.31 10435.9 1570.39 10442.6 1570.53 10451.7
1570.64
 10466.8 1571.55 10474.9 1571.96   10486 1571.94 10491.6 1572.04 10499.1
1572.32
 10518.3 1572.95 10524.1 1573.21 10538.1 1573.14 10567.8 1573.59 10571.3
1573.6
 10574.3 1573.63 10591.7 1573.49   10612 1573.89 10614.9 1573.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9553.7    .064  9993.4     .05 10008.2    .064

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9993.4 10008.2             .3        .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9553.7    9985 1569.19        F
   10015 10614.9  1569.5        F

Downstream  Deck/Roadway Coordinates
    num=      66
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
***************************************************************************
  9557.2 1565.86 1527.26  9575.9 1566.01 1527.26  9589.1 1565.98 1527.26
  9603.7  1566.2 1527.26  9619.8 1566.53 1527.26  9629.8 1566.57 1527.26
```

9655.2	1566.56	1527.26	9667.9	1566.63	1527.26	9672.4	1566.65	1527.26
9682.1	1566.77	1527.26	9699.6	1566.77	1527.26	9701	1566.77	1527.26
9715.8	1566.96	1527.26	9742.3	1567.06	1527.26	9754.6	1567.17	1527.26
9770.2	1567.36	1527.26	9781.9	1567.47	1527.26	9791.4	1567.58	1527.26
9818.3	1567.92	1527.26	9841	1567.96	1527.26	9855.1	1568.08	1527.26
9870	1568.37	1527.26	9883	1568.48	1527.26	9900.1	1568.41	1527.26
9911.8	1568.53	1527.26	9928	1568.83	1527.26	9957.3	1569.1	1527.26
9980.1	1569.11	1527.26	9989.3	1569.18	1527.26	9993.9	1569.27	1527.26
10008.4	1569.49	1527.26	10009.4	1569.5	1527.26	10012.5	1569.5	1527.26
10015.7	1569.84	1527.26	10017.2	1570.19	1527.26	10027.6	1570.36	1527.26
10060.7	1571.03	1527.26	10083.8	1571.26	1527.26	10129.5	1572.2	1527.26
10134.1	1572.24	1527.26	10145.2	1572.26	1527.26	10164.7	1572.26	1527.26
10177.2	1572.36	1527.26	10187.3	1572.37	1527.26	10219.3	1572.09	1527.26
10236.4	1572.25	1527.26	10243	1572.19	1527.26	10245.1	1572.21	1527.26
10285.2	1573.12	1527.26	10350.2	1573.2	1527.26	10369	1573.4	1527.26
10382.6	1573.76	1527.26	10420.8	1574.06	1527.26	10422.9	1574.06	1527.26
10454.8	1574.29	1527.26	10460.6	1574.62	1527.26	10463.8	1574.64	1527.26
10473.7	1574.7	1527.26	10480.9	1574.93	1527.26	10514.2	1575.56	1527.26
10527.5	1575.62	1527.26	10555.4	1575.62	1527.26	10569.8	1575.76	1527.26
10602.8	1575.94	1527.26	10635.3	1576.24	1527.26	10646.1	1576.2	1527.26

Downstream Bridge Cross Section Data
Station Elevation Data num= 71

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9599.4	1566.15	9616.8	1566.35	9647.9	1566.6	9676.2	1566.45	9681.2	1566.32
9705.2	1566.08	9706.5	1566.03	9715.3	1565.84	9723.4	1565.52	9737	1565.2
9754.4	1564.89	9773.7	1563.9	9787.4	1563.66	9798.1	1563.44	9831.5	1561.68
9840.3	1561.42	9846.2	1561.17	9885.3	1559.84	9888.1	1559.76	9890.9	1559.61
9929.6	1558.54	9930.3	1558.52	9964.8	1557.12	9965.4	1557.06	9965.8	1557.02
9966.9	1556.86	9986.2	1555.32	9991.8	1553.04	9995	1545.89	9998.2	1545.89
10000.2	1545.89	10006.4	1545.89	10007	1548.61	10009.9	1554.12	10015.1	1554.79
10024.2	1556.22	10027.4	1556.71	10030.3	1556.9	10047.8	1558.26	10057.7	1558.58
10068	1559.74	10106.3	1561.35	10160.5	1563.88	10163.9	1564.03	10209.8	1565.63
10216.8	1565.7	10261.3	1567.71	10271.6	1567.91	10320	1569.42	10400.3	1570.35
10409.4	1570.35	10459.1	1569.89	10469.1	1569.86	10470.7	1569.84	10501	1571.57
10512.1	1571.92	10541.1	1573.11	10559.4	1573.61	10569.4	1573.84	10573.7	1574.18
10579.4	1574.6	10589.2	1574.63	10607	1575.21	10615.1	1575.38	10633.4	1575.4
10638.2	1575.46	10655.8	1575.94	10657.2	1575.97	10677.5	1576.18	10681.3	1576.16
10683.3	1576.2								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9599.4	.064	9986.2	.05	10015.1	.064

```
Bank Sta: Left   Right    Coeff Contr.   Expan.
        9986.2 10015.1             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9599.4    9976 1569.11       F
   10024 10683.3  1570.3       F

Upstream Embankment side slope              =       1 horiz. to 1.0
vertical
Downstream Embankment side slope            =       1 horiz. to 1.0
vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts = 1

Culvert Name     Shape      Rise    Span
Culvert #1           Box      10      10
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance
Loss Coef   Exit Loss Coef
                 1     121     .015     .015        0
.4               1
Upstream   Elevation =  1546.69
           Centerline Station =  10000
Downstream Elevation =  1545.89
           Centerline Station =  10000

CULVERT OUTPUT  Profile #100-Year  Culv Group:  Culvert #1
*************************************************************************
*
* Q Culv Group (cfs)     * 1046.00  * Culv Full Len (ft)     *
*
* # Barrels              *       1  * Culv Vel US (ft/s)     *   14.99
*
* Q Barrel (cfs)         * 1046.00  * Culv Vel DS (ft/s)     *   15.97
*
* E.G. US. (ft)          * 1558.55  * Culv Inv El Up (ft)    * 1546.69
*
* W.S. US. (ft)          * 1560.20  * Culv Inv El Dn (ft)    * 1545.89
*
* E.G. DS (ft)           * 1555.42  * Culv Frctn Ls (ft)     *    0.76
*
* W.S. DS (ft)           * 1553.03  * Culv Exit Loss (ft)    *    0.98
*
* Delta EG (ft)          *    3.13  * Culv Entr Loss (ft)    *    1.40
*
* Delta WS (ft)          *    7.17  * Q Weir (cfs)           *
*
* E.G. IC (ft)           * 1557.98  * Weir Sta Lft (ft)      *
*
* E.G. OC (ft)           * 1558.55  * Weir Sta Rgt (ft)      *
*
* Culvert Control        *  Outlet  * Weir Submerg           *
*
```

```
* Culv WS Inlet (ft)      * 1553.67  * Weir Max Depth (ft)    *
*
* Culv WS Outlet (ft)     * 1552.44  * Weir Avg Depth (ft)    *
*
* Culv Nml Depth (ft)     *    6.50  * Weir Flow Area (sq ft) *
*
* Culv Crt Depth (ft)     *    6.98  * Min El Weir Flow (ft)  * 1569.16
*
*************************************************************************
*
```

Note: The user has entered known energy, a known water surface, or a change in water surface.
Therefore, no hydraulic properties were computed through the culvert.

CROSS SECTION

RIVER: NRW20A
REACH: NRW20A RS: 0.58

INPUT
Description: D.S. of 1 - 10' x 10' CBC
Station Elevation Data num= 71

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9599.4 1566.15  9616.8 1566.35  9647.9  1566.6  9676.2 1566.45  9681.2
1566.32
  9705.2 1566.08  9706.5 1566.03  9715.3 1565.84  9723.4 1565.52    9737
1565.2
  9754.4 1564.89  9773.7  1563.9  9787.4 1563.66  9798.1 1563.44  9831.5
1561.68
  9840.3 1561.42  9846.2 1561.17  9885.3 1559.84  9888.1 1559.76  9890.9
1559.61
  9929.6 1558.54  9930.3 1558.52  9964.8 1557.12  9965.4 1557.06  9965.8
1557.02
  9966.9 1556.86  9986.2 1555.32  9991.8 1553.04  9997.5 1548.44  9998.2
1545.89
 10000.2 1545.89 10006.4 1545.89   10007 1548.61 10009.9 1554.12 10015.1
1554.79
 10024.2 1556.22 10027.4 1556.71 10030.3  1556.9 10047.8 1558.26 10057.7
1558.58
   10068 1559.74 10106.3 1561.35 10160.5 1563.88 10163.9 1564.03 10209.8
1565.63
 10216.8  1565.7 10261.3 1567.71 10271.6 1567.91   10320 1569.42 10400.3
1570.35
 10409.4 1570.35 10459.1 1569.89 10469.1 1569.86 10470.7 1569.84   10501
1571.57
 10512.1 1571.92 10541.1 1573.11 10559.4 1573.61 10569.4 1573.84 10573.7
1574.18
 10579.4  1574.6 10589.2 1574.63   10607 1575.21 10615.1 1575.38 10633.4
1575.4
 10638.2 1575.46 10655.8 1575.94 10657.2 1575.97 10677.5 1576.18 10681.3
1576.16
 10683.3  1576.2
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
************************************************
  9599.4    .064  9986.2     .05 10015.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.2 10015.1              122     122     122             .3
.5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9599.4    9976 1569.11       F
   10024 10683.3  1570.3       F

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1555.42  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    2.39  * Wt. n-Val.              *
*   0.050  *          *
* W.S. Elev (ft)          * 1553.03  * Reach Len. (ft)         *  122.00
*  122.00  *  122.00  *
* Crit W.S. (ft)          * 1553.03  * Flow Area (sq ft)       *
*   84.30  *          *
* E.G. Slope (ft/ft)      *0.036197  * Area (sq ft)            *
*   84.30  *          *
* Q Total (cfs)           * 1046.00  * Flow (cfs)              *
* 1046.00  *          *
* Top Width (ft)          *   17.51  * Top Width (ft)          *
*   17.51  *          *
* Vel Total (ft/s)        *   12.41  * Avg. Vel. (ft/s)        *
*   12.41  *          *
* Max Chl Dpth (ft)       *    7.14  * Hydr. Depth (ft)        *
*    4.81  *          *
* Conv. Total (cfs)       *  5497.9  * Conv. (cfs)             *
*  5497.9  *          *
* Length Wtd. (ft)        *  122.00  * Wetted Per. (ft)        *
*   25.93  *          *
* Min Ch El (ft)          * 1545.89  * Shear (lb/sq ft)        *
*    7.35  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*   91.16  *          *
* Frctn Loss (ft)         *    1.10  * Cum Volume (acre-ft)    *   27.10
*   32.58  *   23.19  *
* C & E Loss (ft)         *    1.14  * Cum SA (acres)          *   10.73
*    5.82  *    8.43  *
**************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

```
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid,
         energy was used.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A             RS: 0.56

INPUT
Description:
Station Elevation Data    num=      42
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
    9742 1560.24  9764.1 1558.22  9770.3 1557.42  9772.8 1557.14  9800.8
1553.45
  9801.3 1553.38  9802.1 1553.26  9834.8 1549.88  9839.9 1549.44  9863.5
1548.53
  9884.6 1547.06  9896.7 1546.57  9922.7 1547.03  9951.2 1547.22  9953.1
1547.19
  9954.1 1547.21  9982.5 1546.54  9992.6 1546.04 10012.3 1547.24 10020.6
1547.25
 10045.4 1547.11 10060.6 1547.23 10069.6 1547.37 10086.6 1547.93   10088
1547.91
 10088.8    1548 10109.5 1550.25 10131.8  1552.4   10133 1552.49   10162
1554.23
 10162.7 1554.29 10164.1 1554.38 10192.8 1556.39 10221.5  1558.3 10223.2
1558.41
 10252.2 1560.15 10253.5 1560.21 10282.5 1561.95 10282.6 1561.95 10284.1
1562.04
 10312.8 1563.67 10324.7  1564.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9742    .064  9954.1     .05 10012.3    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9954.1 10012.3              234     234     234             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1549.10  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1548.99  * Reach Len. (ft)         *  234.00
*  234.00  *  234.00  *
```

```
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  169.60
*  133.66  *  131.90  *
* E.G. Slope (ft/ft)      *0.004020  * Area (sq ft)            *  169.60
*  133.66  *  131.90  *
* Q Total (cfs)           * 1046.00  * Flow (cfs)              *  349.01
*  438.11  *  258.88  *
* Top Width (ft)          *  246.35  * Top Width (ft)          *  102.54
*   58.20  *   85.61  *
* Vel Total (ft/s)        *    2.40  * Avg. Vel. (ft/s)        *    2.06
*    3.28  *    1.96  *
* Max Chl Dpth (ft)       *    2.95  * Hydr. Depth (ft)        *    1.65
*    2.30  *    1.54  *
* Conv. Total (cfs)       * 16496.8  * Conv. (cfs)             *  5504.3
*  6909.6  *  4082.9  *
* Length Wtd. (ft)        *  234.00  * Wetted Per. (ft)        *  102.62
*   58.26  *   85.68  *
* Min Ch El (ft)          * 1546.04  * Shear (lb/sq ft)        *    0.41
*    0.58  *    0.39  *
* Alpha                   *    1.19  * Stream Power (lb/ft s) *    0.85
*    1.89  *    0.76  *
* Frctn Loss (ft)         *    2.04  * Cum Volume (acre-ft)    *   26.86
*   32.27  *   23.01  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *   10.59
*    5.71  *    8.31  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A              RS: 0.51

INPUT
Description:
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9688.2 1553.87  9693.1 1553.62  9712.2 1552.82  9716.8 1552.64  9745.6
1551.45
  9756.6 1551.27  9786.6 1550.71  9786.8 1550.71  9813.9 1549.86  9840.8
1549.42
  9847.6  1549.2  9860.6 1548.34  9877.7 1546.24  9890.9 1545.05  9906.8
1545.48
  9921.7 1545.49  9937.9  1545.4  9953.8 1545.53  9971.1 1545.48 10002.5
1545.13
 10015.4    1545 10020.7 1545.17 10033.3 1545.52 10044.8 1545.87 10084.3
1546.92
 10087.3 1547.01 10087.7 1547.02 10088.2 1547.04 10119.2 1549.27 10131.6
1549.05
 10160.1 1547.98 10174.5  1549.4 10180.8 1550.51 10198.4 1551.87 10209.8
```

```
1552.97
 10218.4 1553.67 10237.8 1555.41 10248.4 1556.17 10291.3 1558.79 10297.4
1559.2
 10302.6 1559.53 10345.6 1563.47   10346 1563.49 10348.5 1563.63 10369.4
1564.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9688.2    .064  9971.1     .05 10044.8    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.1 10044.8              133     133     133             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1547.03  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.45  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1546.58  * Reach Len. (ft)         *  133.00
*  133.00  *  133.00  *
* Crit W.S. (ft)          * 1546.51  * Flow Area (sq ft)       *  104.45
*   93.01  *    9.40  *
* E.G. Slope (ft/ft)      *0.031451  * Area (sq ft)            *  104.45
*   93.01  *    9.40  *
* Q Total (cfs)           * 1046.00  * Flow (cfs)              *  454.25
*  572.41  *   19.34  *
* Top Width (ft)          *  196.43  * Top Width (ft)          *   96.14
*   73.70  *   26.59  *
* Vel Total (ft/s)        *    5.06  * Avg. Vel. (ft/s)        *    4.35
*    6.15  *    2.06  *
* Max Chl Dpth (ft)       *    1.58  * Hydr. Depth (ft)        *    1.09
*    1.26  *    0.35  *
* Conv. Total (cfs)       *  5898.1  * Conv. (cfs)             *  2561.4
*  3227.6  *   109.1  *
* Length Wtd. (ft)        *  133.00  * Wetted Per. (ft)        *   96.22
*   73.72  *   26.60  *
* Min Ch El (ft)          * 1545.00  * Shear (lb/sq ft)        *    2.13
*    2.48  *    0.69  *
* Alpha                   *    1.13  * Stream Power (lb/ft s) *    9.27
*   15.25  *    1.43  *
* Frctn Loss (ft)         *    1.45  * Cum Volume (acre-ft)    *   26.13
*   31.66  *   22.63  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *   10.06
*    5.36  *    8.01  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW20A
REACH: NRW20A              RS: 0.49

INPUT
Description: South Section Line T5NR1E
Station Elevation Data    num=      47
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9446.9 1551.96  9458.1 1551.62  9465.2 1551.36    9481 1550.87  9549.3
1548.6
  9576.7  1547.8  9588.4 1547.53  9620.5 1546.49  9643.3  1546.1  9689.6
1545.68
  9701.3 1545.64    9730 1545.36    9743 1545.27  9768.5 1545.39  9781.7
1545.34
  9805.2 1544.81  9824.1 1544.72  9848.7 1544.04  9870.3 1543.91  9890.7
1543.63
  9913.2 1542.87  9937.4 1543.01  9966.3 1543.41  9969.7 1543.69  9987.9
1543.65
 10022.8 1544.45 10043.5 1545.01 10066.9  1545.2 10071.9 1545.55 10096.9
1546.1
 10119.1 1546.64 10135.5 1546.95 10157.4 1547.22 10177.7 1548.14 10191.1
1548.67
 10213.6 1549.26 10232.2 1549.95 10240.4 1550.11 10260.5  1550.6 10284.7
1551.29
 10288.7  1551.6   10289 1551.61 10296.2 1552.86 10299.9 1553.35 10319.3
1554.26
 10395.8 1556.42 10434.7 1558.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**************************************************
  9446.9    .064  9824.1     .05 10043.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9824.1 10043.5              400     400     400             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)         * 1545.48  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.14  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)         * 1545.35  * Reach Len. (ft)         *  400.00
*  400.00  *  400.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   18.43
*  347.38  *    5.81  *
* E.G. Slope (ft/ft)     *0.005491  * Area (sq ft)            *   18.43
*  347.38  *    5.81  *
* Q Total (cfs)          * 1059.00  * Flow (cfs)              *   16.26
* 1039.01  *    3.73  *
* Top Width (ft)         *  316.43  * Top Width (ft)          *   71.54
*  219.40  *   25.50  *
* Vel Total (ft/s)       *    2.85  * Avg. Vel. (ft/s)        *    0.88
*    2.99  *    0.64  *
```

```
* Max Chl Dpth (ft)       *    2.48  * Hydr. Depth (ft)        *    0.26
*    1.58  *    0.23  *
* Conv. Total (cfs)       * 14291.7  * Conv. (cfs)             *   219.5
* 14021.9  *    50.3  *
* Length Wtd. (ft)        *  400.00  * Wetted Per. (ft)        *   71.54
*  219.46  *   25.50  *
* Min Ch El (ft)          * 1542.87  * Shear (lb/sq ft)        *    0.09
*    0.54  *    0.08  *
* Alpha                   *    1.08  * Stream Power (lb/ft s) *    0.08
*    1.62  *    0.05  *
* Frctn Loss (ft)         *    2.01  * Cum Volume (acre-ft)    *   25.94
*   30.99  *   22.60  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    9.80
*    4.91  *    7.93  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A              RS: 0.41

INPUT
Description:
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9602.6 1549.55  9618.5 1548.78  9651.3 1546.53    9663  1545.7  9671.8
1545.29
  9682.2 1544.71  9696.3  1543.9  9720.9 1544.01  9732.9 1543.92    9750
1543.09
  9768.1  1542.4  9773.7 1542.43    9781 1542.42  9793.4 1542.67  9800.6
1542.78
  9823.2 1542.55  9845.8 1542.42  9868.4 1542.19    9891 1542.07  9913.5
1541.86
  9920.5 1541.55  9939.4 1540.89  9988.1 1541.69    9999 1538.14 10010.1
1540.5
 10012.4 1540.92 10016.3 1541.16 10031.5 1541.85 10038.1 1542.04 10057.5
1546.1
 10059.9 1546.51 10087.3 1549.66 10099.5 1551.11 10139.3    1554 10150.2
1554.48
 10161.9 1555.07 10183.3 1556.32 10184.5 1556.41 10187.1 1556.52 10207.1
1556.95
 10212.1 1557.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9602.6    .064  9988.1     .05 10016.3    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.1 10016.3               301     301     301             .1
```

.3

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1543.48  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1543.32  * Reach Len. (ft)         *  301.00
*  301.00  *  301.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  299.90
*   96.36  *   40.53  *
* E.G. Slope (ft/ft)      *0.004617  * Area (sq ft)            *  299.90
*   96.36  *   40.53  *
* Q Total (cfs)           * 1059.00  * Flow (cfs)              *  544.56
*  432.73  *   81.71  *
* Top Width (ft)          *  298.91  * Top Width (ft)          *  242.80
*   28.20  *   27.91  *
* Vel Total (ft/s)        *    2.42  * Avg. Vel. (ft/s)        *    1.82
*    4.49  *    2.02  *
* Max Chl Dpth (ft)       *    5.18  * Hydr. Depth (ft)        *    1.24
*    3.42  *    1.45  *
* Conv. Total (cfs)       * 15585.6  * Conv. (cfs)             *  8014.5
*  6368.6  *  1202.5  *
* Length Wtd. (ft)        *  301.00  * Wetted Per. (ft)        *  242.86
*   29.06  *   28.06  *
* Min Ch El (ft)          * 1538.14  * Shear (lb/sq ft)        *    0.36
*    0.96  *    0.42  *
* Alpha                   *    1.74  * Stream Power (lb/ft s) *    0.65
*    4.29  *    0.84  *
* Frctn Loss (ft)         *    1.69  * Cum Volume (acre-ft)    *   24.48
*   28.95  *   22.39  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    8.36
*    3.77  *    7.68  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW20A
REACH: NRW20A RS: 0.36

INPUT
Description:
Station Elevation Data num= 43

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9570.4 1551.04  9612.8 1548.74  9621.3 1548.26  9646.5 1546.64  9653.8
1546.22
  9673.2 1544.37  9683.6 1543.24  9690.5  1543.1  9701.9 1542.92  9705.7
1542.74
  9723.3 1542.04  9738.4 1541.39  9752.3 1541.04  9760.7    1541  9765.9
1541.01
```

```
  9780.6 1541.24  9786.8 1541.32  9790.2 1541.27    9808 1540.97  9832.4
1540.69
  9868.6 1540.34  9892.8 1540.23    9916 1539.49  9924.7 1539.27  9930.2
1539.42
  9956.5 1540.32  9986.2 1540.27  9998.2 1537.17  9998.5  1537.1    9999
1537.18
 10009.5    1539 10039.1 1542.01 10041.3 1542.25 10043.4 1542.33 10081.8
1543.96
 10083.7 1544.05 10126.2 1546.25 10170.1 1548.73 10209.7 1550.87   10211
1550.94
 10212.3    1551 10232.2 1551.84 10240.7 1552.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9570.4    .064  9986.2     .05 10039.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.2 10039.1               373     373     373             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1541.78  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.064
*   0.050  *          *
* W.S. Elev (ft)          * 1541.63  * Reach Len. (ft)         *  373.00
*  373.00  *  373.00  *
* Crit W.S. (ft)          * 1541.10  * Flow Area (sq ft)       *  285.28
*  109.51  *          *
* E.G. Slope (ft/ft)      *0.006985  * Area (sq ft)            *  285.28
*  109.51  *          *
* Q Total (cfs)           * 1059.00  * Flow (cfs)              *  599.17
*  459.83  *          *
* Top Width (ft)          *  302.42  * Top Width (ft)          *  253.29
*   49.13  *          *
* Vel Total (ft/s)        *    2.68  * Avg. Vel. (ft/s)        *    2.10
*    4.20  *          *
* Max Chl Dpth (ft)       *    4.53  * Hydr. Depth (ft)        *    1.13
*    2.23  *          *
* Conv. Total (cfs)       * 12670.6  * Conv. (cfs)             *  7168.9
*  5501.7  *          *
* Length Wtd. (ft)        *  373.00  * Wetted Per. (ft)        *  253.34
*   49.83  *          *
* Min Ch El (ft)          * 1537.10  * Shear (lb/sq ft)        *    0.49
*    0.96  *          *
* Alpha                   *    1.41  * Stream Power (lb/ft s) *    1.03
*    4.02  *          *
* Frctn Loss (ft)         *    3.16  * Cum Volume (acre-ft)    *   22.46
*   28.24  *   22.25  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    6.64
*    3.51  *    7.58  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW20A
REACH: NRW20A RS: 0.29

INPUT
Description:
Station Elevation Data num= 46

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9693.3 1548.07  9705.8 1547.43  9712.9 1547.09  9730.7 1546.17  9744.5
1545.5
  9764.3 1544.72  9808.4 1542.59    9829  1541.7  9845.1 1540.71  9872.6
1539.33
  9891.8 1538.42  9896.2 1537.96  9902.2 1537.67  9908.8 1537.34  9915.8
1537.37
  9937.3 1537.74  9950.9 1537.26  9963.4 1536.92  9969.2 1537.27  9982.9
1537.8
  9984.5 1537.48    9999 1534.76   10006  1536.4 10008.9 1536.94 10023.9
1536.52
 10034.6 1536.16   10072 1537.04 10118.8 1537.58 10124.9 1537.68 10142.7
1537.84
 10175.6  1537.7 10176.7  1537.7 10177.3 1537.69 10178.1 1537.71 10228.7
1538.85
 10235.8  1538.8 10256.6 1539.38 10268.7 1540.08 10291.7 1541.15 10304.6
1541.8
 10321.2 1542.87 10336.1    1544 10346.8  1544.7 10372.6 1546.46 10383.8
1547.19
 10388.3 1547.44
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
**************************************************
  9693.3    .064  9982.9     .05 10008.9    .064
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.9 10008.9              297     297     297             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
***********************
* E.G. Elev (ft)         * 1538.61  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.19  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)         * 1538.42  * Reach Len. (ft)         *  297.00
*  297.00  *  297.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   85.94
*   59.63  *  219.14  *
* E.G. Slope (ft/ft)     *0.010469  * Area (sq ft)            *   85.94
*   59.63  *  219.14  *
* Q Total (cfs)          * 1059.00  * Flow (cfs)              *  196.18
*  311.15  *  551.67  *
* Top Width (ft)         *  318.00  * Top Width (ft)          *   91.16
*   26.00  *  200.84  *
```

```
* Vel Total (ft/s)        *    2.90  * Avg. Vel. (ft/s)        *    2.28
*    5.22  *    2.52  *
* Max Chl Dpth (ft)       *    3.66  * Hydr. Depth (ft)        *    0.94
*    2.29  *    1.09  *
* Conv. Total (cfs)       * 10349.9  * Conv. (cfs)             *  1917.3
*  3041.0  *  5391.6  *
* Length Wtd. (ft)        *  297.00  * Wetted Per. (ft)        *   91.24
*   26.52  *  200.88  *
* Min Ch El (ft)          * 1534.76  * Shear (lb/sq ft)        *    0.62
*    1.47  *    0.71  *
* Alpha                   *    1.45  * Stream Power (lb/ft s) *    1.41
*    7.67  *    1.79  *
* Frctn Loss (ft)         *    0.89  * Cum Volume (acre-ft)    *   20.87
*   27.52  *   21.31  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    5.17
*    3.19  *    6.72  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A             RS: 0.23

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9820.9 1548.24  9829.5 1547.66  9836.9 1547.13  9862.3 1545.44  9895.1
1542.92
  9905.2 1542.08  9927.8 1540.31  9961.4 1536.31    9972 1536.49  9972.4
1536.5
  9990.8 1535.09    9991 1535.03 10002.2  1532.3 10002.7  1532.4 10007.8
1534.6
 10008.6 1534.62 10056.2 1535.11 10089.1 1534.61 10132.8  1535.5 10155.5
1535.68
   10161 1535.59 10181.4 1535.05 10221.6 1536.15 10223.8 1536.22 10255.6
1536.84
 10269.3 1536.98 10288.4 1537.52 10311.8 1539.08 10318.9 1539.26 10329.9
1539.87
   10337 1539.74 10358.2 1541.27 10362.8 1541.53   10406 1544.49 10419.5
1545.48
 10428.6 1546.05 10431.6 1546.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9820.9    .064  9990.8     .05 10008.6    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.8 10008.6              310     310     310             .1
```

.3

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1537.68  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1537.63  * Reach Len. (ft)         *  310.00
*  310.00  *  310.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   54.62
*   71.06  *  576.97  *
* E.G. Slope (ft/ft)      *0.001398  * Area (sq ft)            *   54.62
*   71.06  *  576.97  *
* Q Total (cfs)           * 1059.00  * Flow (cfs)              *   57.76
*  192.99  *  808.25  *
* Top Width (ft)          *  339.76  * Top Width (ft)          *   40.50
*   17.80  *  281.47  *
* Vel Total (ft/s)        *    1.51  * Avg. Vel. (ft/s)        *    1.06
*    2.72  *    1.40  *
* Max Chl Dpth (ft)       *    5.33  * Hydr. Depth (ft)        *    1.35
*    3.99  *    2.05  *
* Conv. Total (cfs)       * 28318.6  * Conv. (cfs)             *  1544.5
*  5160.6  * 21613.4  *
* Length Wtd. (ft)        *  310.00  * Wetted Per. (ft)        *   40.63
*   18.60  *  281.53  *
* Min Ch El (ft)          * 1532.30  * Shear (lb/sq ft)        *    0.12
*    0.33  *    0.18  *
* Alpha                   *    1.28  * Stream Power (lb/ft s) *    0.12
*    0.91  *    0.25  *
* Frctn Loss (ft)         *    0.12  * Cum Volume (acre-ft)    *   20.39
*   27.07  *   18.60  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    4.72
*    3.04  *    5.08  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW20A
REACH: NRW20A RS: 0.17

INPUT
Description:
Station Elevation Data num= 38

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9811.5 1543.72  9825.4 1543.02  9860.5 1541.15  9874.9 1540.35  9895.5
1539.28
  9896.7 1539.21  9897.9 1539.11  9919.5 1537.63    9923 1537.53  9932.4
1537.13
  9956.5  1535.9  9962.3 1535.59  9967.9 1535.23  9987.9  1533.9  9994.3
```

```
1532.31
 10000.3 1530.79 10006.1 1532.88 10006.9  1533.3 10012.8 1532.93 10030.5
1531.92
 10081.7 1532.82 10115.3 1533.65   10159  1533.9   10169 1533.21 10182.5
1532.77
 10205.7 1533.64 10224.5 1534.08 10245.9  1534.2 10246.4 1534.21 10246.9
1534.23
 10267.5 1535.19 10283.8 1536.22   10292 1536.79 10305.6 1538.08   10316
1538.94
   10351  1541.6 10363.4  1542.5 10377.2 1543.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9811.5    .064  9987.9     .05 10006.9    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.9 10006.9              338     338     338             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1537.54  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.01  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1537.53  * Reach Len. (ft)         *  338.00
*  338.00  *  338.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  107.90
*  100.79  * 1134.53  *
* E.G. Slope (ft/ft)      *0.000188  * Area (sq ft)            *  107.90
*  100.79  * 1134.53  *
* Q Total (cfs)           * 1059.00  * Flow (cfs)              *   48.11
*  121.23  *  889.66  *
* Top Width (ft)          *  376.82  * Top Width (ft)          *   64.92
*   19.00  *  292.91  *
* Vel Total (ft/s)        *    0.79  * Avg. Vel. (ft/s)        *    0.45
*    1.20  *    0.78  *
* Max Chl Dpth (ft)       *    6.74  * Hydr. Depth (ft)        *    1.66
*    5.30  *    3.87  *
* Conv. Total (cfs)       * 77292.9  * Conv. (cfs)             *  3511.4
*  8848.2  * 64933.3  *
* Length Wtd. (ft)        *  338.00  * Wetted Per. (ft)        *   65.02
*   19.85  *  293.13  *
* Min Ch El (ft)          * 1530.79  * Shear (lb/sq ft)        *    0.02
*    0.06  *    0.05  *
* Alpha                   *    1.11  * Stream Power (lb/ft s) *    0.01
*    0.07  *    0.04  *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)    *   19.81
*   26.46  *   12.51  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    4.34
*    2.91  *    3.04  *
************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
```

CROSS SECTION

RIVER: NRW20A
REACH: NRW20A RS: 0.11

INPUT
Description:
Station Elevation Data num= 47

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9600.6  1542.1  9621.5 1541.44  9643.1 1540.65  9645.6 1540.56  9681.9
1539.14
  9692.5  1538.7  9708.1 1537.95  9715.9 1537.53  9736.7 1536.31  9751.8
1535.91
  9772.5 1535.29  9791.1 1534.57  9794.1 1534.43  9815.7 1533.57  9829.5
1532.82
  9836.8 1532.29  9841.4  1532.2  9851.3 1531.79  9863.5 1531.72  9880.4
1532.04
  9900.2 1531.74    9902 1531.71  9936.6 1531.26  9966.7 1531.13  9972.4
1531.14
  9989.6 1530.73  9995.8 1528.89  9999.5 1528.06   10008 1528.82 10014.3
1529.54
 10033.8 1530.55 10045.7 1531.47 10053.1 1531.64 10074.6 1531.58 10082.1
1531.63
 10116.8 1531.79 10117.8 1531.79 10118.2  1531.8 10140.3 1532.21 10157.7
1533.34
 10171.7 1533.98 10174.3 1534.12 10177.3 1534.42 10204.1 1536.98 10222.9
1538.37
   10264 1541.56 10268.7 1541.95
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9600.6    .064  9989.6     .05 10045.7    .064
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9989.6 10045.7              437     437     437             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1537.52  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1537.51  * Reach Len. (ft)         *  437.00
*  437.00  *  437.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       * 1215.71
*  433.74  *  751.77  *
* E.G. Slope (ft/ft)      *0.000037  * Area (sq ft)            * 1215.71
*  433.74  *  751.77  *
* Q Total (cfs)           * 1059.00  * Flow (cfs)              *  463.80
*  304.56  *  290.64  *
* Top Width (ft)          *  495.07  * Top Width (ft)          *  273.38
*   56.10  *  165.59  *
```

```
* Vel Total (ft/s)        *    0.44  * Avg. Vel. (ft/s)        *    0.38
*    0.70  *    0.39  *
* Max Chl Dpth (ft)       *    9.45  * Hydr. Depth (ft)        *    4.45
*    7.73  *    4.54  *
* Conv. Total (cfs)       *174220.1  * Conv. (cfs)             * 76301.0
* 50105.1  * 47813.9  *
* Length Wtd. (ft)        *  437.00  * Wetted Per. (ft)        *  273.53
*   56.60  *  165.81  *
* Min Ch El (ft)          * 1528.06  * Shear (lb/sq ft)        *    0.01
*    0.02  *    0.01  *
* Alpha                   *    1.27  * Stream Power (lb/ft s) *    0.00
*    0.01  *    0.00  *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)    *   14.67
*   24.39  *    5.19  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.03
*    2.61  *    1.26  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW20A
REACH: NRW20A RS: 0.02

INPUT
Description: U.S. of inline weir structure
Station Elevation Data num= 55

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9522.8    1538  9526.8 1537.83  9553.1 1536.86  9584.6  1535.6  9591.5
1535.36
    9615 1534.51  9631.9 1533.84  9648.3 1533.24  9662.7 1532.94  9673.6
1532.57
  9682.2 1531.66    9687 1531.28  9700.3 1530.15  9712.7 1529.99  9736.3
1530.1
  9736.5  1530.1  9736.6  1530.1  9767.6 1529.24  9795.4 1529.03    9807
1528.86
  9817.1 1528.43  9822.9 1527.98  9844.9  1526.3  9908.9  1526.3  9935.5
1526.3
  9956.2    1527  9977.3 1526.99  9991.7 1527.08 10019.9  1527.1 10021.5
1527.08
   10054 1527.13 10067.5 1527.12 10068.8 1527.17 10071.4  1527.2 10151.9
1527.2
   10167 1529.01 10172.3 1529.83 10180.7 1531.85 10186.3  1532.9 10201.9
1534.53
 10209.6 1535.27 10216.7 1535.72   10248 1538.19 10249.3 1538.26   10253
1538.63
 10275.5 1540.72 10287.5 1540.56 10313.9 1541.39 10316.6  1541.4 10347.8
1542.83
 10385.3 1544.65 10408.1 1545.66   10413 1545.85   10431 1546.62 10431.8
1546.65
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9522.8    .064  9817.1     .05   10167    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9817.1   10167               75      75      75             .3
.5

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1537.51  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1537.51  * Reach Len. (ft)         *   75.00
*   75.00  *   75.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       * 1458.86
* 3696.63  *  241.61  *
* E.G. Slope (ft/ft)      *0.000003  * Area (sq ft)            * 1458.86
* 3696.63  *  241.61  *
* Q Total (cfs)           * 1059.00  * Flow (cfs)              *  167.03
*  871.43  *   20.53  *
* Top Width (ft)          *  703.93  * Top Width (ft)          *  281.64
*  349.90  *   72.39  *
* Vel Total (ft/s)        *    0.20  * Avg. Vel. (ft/s)        *    0.11
*    0.24  *    0.08  *
* Max Chl Dpth (ft)       *   11.21  * Hydr. Depth (ft)        *    5.18
*   10.56  *    3.34  *
* Conv. Total (cfs)       *642539.9  * Conv. (cfs)             *101346.4
*528734.6  * 12459.0  *
* Length Wtd. (ft)        *   75.00  * Wetted Per. (ft)        *  281.87
*  350.10  *   73.00  *
* Min Ch El (ft)          * 1526.30  * Shear (lb/sq ft)        *    0.00
*    0.00  *    0.00  *
* Alpha                   *    1.25  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)    *    1.26
*    3.67  *    0.21  *
* C & E Loss (ft)         *    0.13  * Cum SA (acres)          *    0.25
*    0.58  *    0.06  *
************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A             RS: 0.01

INPUT
Description: Top of holding tank; Crest of weir
Station Elevation Data    num=      69
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
```

```
*************************************************************************
********
  9456.8  1538.1  9468.1 1537.69  9475.1 1537.48  9488.4 1537.04  9506.4
1536.42
  9532.8 1535.58  9537.6 1535.44  9542.8 1535.25  9550.5 1534.79  9574.3
1533.78
  9586.7  1533.2  9596.3 1534.87  9606.2 1537.64  9607.5 1537.67  9608.8
1537.72
  9633.4 1538.27  9642.8 1538.33  9648.7 1538.38  9660.8 1538.19  9684.2
1538.11
  9689.5 1538.14  9698.2 1538.14  9702.3    1538  9723.7 1537.82  9738.1
1537.91
  9739.3  1537.9  9758.4  1537.8  9782.5 1537.84  9800.6 1537.72    9803
1537.73
  9817.3 1537.78  9835.3 1537.92  9843.8 1537.92  9862.7 1537.67  9864.4
1538.13
  9866.9 1538.51  9870.7 1538.55  9877.3 1538.42  9879.2 1538.35  9913.1
1537.54
  9926.2  1537.6  9926.6 1537.59  9941.2 1537.46  9958.6 1537.05    9974
1537.38
  9987.1 1537.27   10000 1537.36 10004.4 1537.41 10010.1 1537.38 10013.4
1537.38
 10032.8 1537.72 10041.4 1537.72 10073.3 1538.06 10082.9 1538.02 10090.5
1538.04
 10115.7    1538 10149.3 1538.28 10158.9 1538.34 10170.4 1538.57   10178
1538.79
 10197.8 1539.33 10207.7 1539.47 10222.9 1539.42 10230.7 1539.37 10234.9
1538.93
 10253.7 1539.53 10263.7 1539.62 10331.1 1542.75 10358.5 1543.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9456.8    .064  9475.1     .05  9607.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9475.1  9607.5               43      43      43             .3
.5

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1537.38  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.43  * Wt. n-Val.             *
*   0.050  *          *
* W.S. Elev (ft)         * 1536.96  * Reach Len. (ft)        *   43.00
*   43.00  *   43.00  *
* Crit W.S. (ft)         * 1536.46  * Flow Area (sq ft)      *
*  202.00  *          *
* E.G. Slope (ft/ft)     *0.014415  * Area (sq ft)           *
*  202.00  *          *
* Q Total (cfs)          * 1059.00  * Flow (cfs)             *
* 1059.00  *          *
* Top Width (ft)         *  112.92  * Top Width (ft)         *
*  112.92  *          *
* Vel Total (ft/s)       *    5.24  * Avg. Vel. (ft/s)       *
*    5.24  *          *
* Max Chl Dpth (ft)      *    3.76  * Hydr. Depth (ft)       *
*    1.79  *          *
```

```
* Conv. Total (cfs)       *  8820.4  * Conv. (cfs)            *
*  8820.4  *          *
* Length Wtd. (ft)        *   43.00  * Wetted Per. (ft)       *
*  113.42  *          *
* Min Ch El (ft)          * 1533.20  * Shear (lb/sq ft)       *
*    1.60  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    8.40  *          *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)   *    0.00
*    0.31  *    0.00  *
* C & E Loss (ft)         *          * Cum SA (acres)         *    0.01
*    0.18  *    0.00  *
*************************************************************************
************************
```

INLINE STRUCTURE

RIVER: NRW20A
REACH: NRW20A RS: 0.009

INPUT
Description: Stock Tank
Distance from Upstream XS = 1
Deck/Roadway Width = 10
Weir Coefficient = 2.6
Weir Embankment Coordinates num = 69

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9456.8  1538.1  9468.1 1537.69  9475.1 1537.48  9488.4 1537.04  9506.4
1536.42
  9532.8 1535.58  9537.6 1535.44  9542.8 1535.25  9550.5 1534.79  9574.3
1533.78
  9586.7  1533.2  9596.3 1534.87  9606.2 1537.64  9607.5 1537.67  9608.8
1537.72
  9633.4 1538.27  9642.8 1538.33  9648.7 1538.38  9660.8 1538.19  9684.2
1538.11
  9689.5 1538.14  9698.2 1538.14  9702.3    1538  9723.7 1537.82  9738.1
1537.91
  9739.3  1537.9  9758.4  1537.8  9782.5 1537.84  9800.6 1537.72    9803
1537.73
  9817.3 1537.78  9835.3 1537.92  9843.8 1537.92  9862.7 1537.67  9864.4
1538.13
  9866.9 1538.51  9870.7 1538.55  9877.3 1538.42  9879.2 1538.35  9913.1
1537.54
  9926.2  1537.6  9926.6 1537.59  9941.2 1537.46  9958.6 1537.05    9974
1537.38
  9987.1 1537.27   10000 1537.36 10004.4 1537.41 10010.1 1537.38 10013.4
1537.38
 10032.8 1537.72 10041.4 1537.72 10073.3 1538.06 10082.9 1538.02 10090.5
1538.04
 10115.7    1538 10149.3 1538.28 10158.9 1538.34 10170.4 1538.57   10178
1538.79
 10197.8 1539.33 10207.7 1539.47 10222.9 1539.42 10230.7 1539.37 10234.9
1538.93
 10253.7 1539.53 10263.7 1539.62 10331.1 1542.75 10358.5 1543.93
```

Upstream Embankment side slope = 0 horiz. to 1.0
vertical

```
Downstream Embankment side slope            =       0 horiz. to 1.0
vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Weir crest shape                            = Broad Crested


INLINE STRUCTURE OUTPUT  Profile #100-Year  Inl Struct:
**********************************************************************
*
* E.G. Elev (ft)         * 1537.38  * Q Gates (cfs)          *
*
* W.S. Elev (ft)         * 1536.96  * Q Gate Group (cfs)     * 1536.46
*
* Q Total (cfs)          * 1059.00  * Gate Open Ht (ft)      *    1.00
*
* Q Weir (cfs)           * 1059.00  * Gate #Open             *    1536
*
* Weir Flow Area (sq ft) *  259.83  * Gate Area (sq ft)      *
*
* Weir Sta Lft (ft)      * 9478.04  * Gate Submerg           *
*
* Weir Sta Rgt (ft)      *10013.56  * Gate Invert (ft)       * 1537.23
*
* Weir Max Depth (ft)    *    4.18  *                        *
*
* Weir Avg Depth (ft)    *    1.38  *                        *
*
* Weir Submerg           *    0.00  *                        *
*
* Min El Weir Flow (ft)  * 1533.21  *                        *
*
* Wr Top Wdth (ft)       *  188.77  *                        *
*
**********************************************************************
*

CROSS SECTION


RIVER: NRW20A
REACH: NRW20A             RS: 0.00

INPUT
Description: D.S. of inline weir structure; D.S. Limit of Study
Station Elevation Data    num=      54
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9623.4 1536.18  9627.8 1535.97    9630 1535.88  9674.1 1533.64  9705.7
1532.22
  9716.5 1531.65  9726.3 1531.04    9742 1530.87  9756.1 1530.54  9772.3
1530.32
  9781.5 1530.13  9819.4 1529.53    9820  1529.5  9823.1 1529.43  9844.7
1528.92
  9859.5 1528.37  9879.3 1526.75  9885.8 1526.27  9905.4 1525.49  9928.9
1525.43
  9931.9 1525.45  9935.2 1525.47    9946 1525.49  9952.7 1525.64  9959.5
1525.66
  9970.4 1525.67  9987.4 1525.62  9999.2 1525.71 10013.1  1525.6 10020.4
```

```
1525.6
 10042.1 1525.38 10048.5 1525.09   10069  1524.9 10072.5 1524.89 10102.3
1524.9
 10104.3 1524.84 10107.4 1524.88   10111 1524.95 10125.4 1525.13 10127.9
1525.47
 10135.2 1526.46 10141.6 1527.81 10149.7 1529.77 10164.1 1531.68 10181.4
1534.16
 10189.8 1534.46 10207.5 1535.72 10220.6 1537.33   10243 1538.77 10249.2
1539.25
 10254.7 1539.47 10283.6 1540.99 10298.6 1541.69 10305.6 1542.05

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9623.4    .064  9885.8     .05 10135.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9885.8 10135.2                5       5       5             .3
.5

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1527.23  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.064
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1527.14  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1526.21  * Flow Area (sq ft)       *    5.02
*  433.77  *    1.09  *
* E.G. Slope (ft/ft)      *0.003201  * Area (sq ft)            *    5.02
*  433.77  *    1.09  *
* Q Total (cfs)           * 1059.00  * Flow (cfs)              *    3.84
* 1054.48  *    0.69  *
* Top Width (ft)          *  263.88  * Top Width (ft)          *   11.26
*  249.40  *    3.22  *
* Vel Total (ft/s)        *    2.41  * Avg. Vel. (ft/s)        *    0.76
*    2.43  *    0.63  *
* Max Chl Dpth (ft)       *    2.30  * Hydr. Depth (ft)        *    0.45
*    1.74  *    0.34  *
* Conv. Total (cfs)       * 18717.3  * Conv. (cfs)             *    67.8
* 18637.4  *    12.2  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   11.29
*  249.52  *    3.29  *
* Min Ch El (ft)          * 1524.84  * Shear (lb/sq ft)        *    0.09
*    0.35  *    0.07  *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *    0.07
*    0.84  *    0.04  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
************************************************************************
***********************

************************************************************************
********

SUMMARY OF MANNING'S N VALUES
```

River:NRW20B

Reach	River Sta.	n1	n2	n3
NRW20B	2.50	.079	.059	.079
NRW20B	2.45	.079	.059	.079
NRW20B	2.42	.079	.059	.079
NRW20B	2.36	.079	.059	.079
NRW20B	2.31	.079	.059	.079
NRW20B	2.26	.079	.059	.079
NRW20B	2.18	.079	.059	.079
NRW20B	2.12	.079	.059	.079
NRW20B	2.05	.079	.059	.079
NRW20B	1.98	.079	.059	.079
NRW20B	1.91	.016	.016	.016
NRW20B	1.85	.079	.059	.079
NRW20B	1.80	.079	.059	.079
NRW20B	1.73	.079	.059	.079
NRW20B	1.67	.079	.059	.079
NRW20B	1.61	.079	.059	.079
NRW20B	1.57	.079	.059	.079
NRW20B	1.52	.079	.059	.079
NRW20B	1.46	.079	.059	.079
NRW20B	1.41	.079	.059	.079
NRW20B	1.35	.079	.059	.079
NRW20B	1.30	.079	.059	.079
NRW20B	1.24	.079	.059	.079
NRW20B	1.19	.079	.059	.079
NRW20B	1.13	.079	.059	.079

River:NRW20T10B

Reach	River Sta.	n1	n2	n3
NRW20T10B	0.92	.079	.059	.079
NRW20T10B	0.86	.079	.059	.079
NRW20T10B	0.80	.079	.059	.079
NRW20T10B	0.74	.079	.059	.079
NRW20T10B	0.69	.079	.059	.079
NRW20T10B	0.63	.079	.059	.079
NRW20T10B	0.57	.079	.059	.079
NRW20T10B	0.50	.016	.016	.016
NRW20T10B	0.47	.079	.059	.079
NRW20T10B	0.43	.079	.059	.079
NRW20T10B	0.39	.079	.059	.079
NRW20T10B	0.35	.079	.059	.079

River:NRW20T5

Reach	River Sta.	n1	n2	n3
NRW20T5	0.57	.079	.059	.079
NRW20T5	0.50	.079	.059	.079
NRW20T5	0.44	.079	.059	.079
NRW20T5	0.38	.079	.059	.079
NRW20T5	0.31	.079	.059	.079
NRW20T5	0.25	.079	.059	.079
NRW20T5	0.19	.079	.059	.079

*NRW20T5	* 0.13	* .016*	.016*	.016*
*NRW20T5	* 0.07	* .079*	.059*	.079*

River:NRW20T10A

* Reach	* River Sta.	* n1	* n2	* n3 *
*NRW20T10A	* 0.29	* .079*	.059*	.079*
*NRW20T10A	* 0.24	* .079*	.059*	.079*
*NRW20T10A	* 0.20	* .079*	.059*	.079*
*NRW20T10A	* 0.13	* .079*	.059*	.079*
*NRW20T10A	* 0.08	* .079*	.059*	.079*

River:NRW20A

* Reach	* River Sta.	* n1	* n2	* n3 *
*NRW20A	* 1.05	* .064*	.05*	.064*
*NRW20A	* 0.97	* .064*	.05*	.064*
*NRW20A	* 0.88	* .064*	.05*	.064*
*NRW20A	* 0.82	* .064*	.05*	.064*
*NRW20A	* 0.76	* .064*	.05*	.064*
*NRW20A	* 0.70	* .064*	.05*	.064*
*NRW20A	* 0.65	* .064*	.05*	.064*
*NRW20A	* 0.60	* .064*	.05*	.064*
*NRW20A	* 0.59	*Culvert *	*	*
*NRW20A	* 0.58	* .064*	.05*	.064*
*NRW20A	* 0.56	* .064*	.05*	.064*
*NRW20A	* 0.51	* .064*	.05*	.064*
*NRW20A	* 0.49	* .064*	.05*	.064*
*NRW20A	* 0.41	* .064*	.05*	.064*
*NRW20A	* 0.36	* .064*	.05*	.064*
*NRW20A	* 0.29	* .064*	.05*	.064*
*NRW20A	* 0.23	* .064*	.05*	.064*
*NRW20A	* 0.17	* .064*	.05*	.064*
*NRW20A	* 0.11	* .064*	.05*	.064*
*NRW20A	* 0.02	* .064*	.05*	.064*
*NRW20A	* 0.01	* .064*	.05*	.064*
*NRW20A	* 0.009	*Inl Struct*	*	*
*NRW20A	* 0.00	* .064*	.05*	.064*

****
****

SUMMARY OF REACH LENGTHS

River: NRW20B

* Reach	* River Sta.	* Left	* Channel *	Right *
*NRW20B	* 2.50	* 238*	238*	238*
*NRW20B	* 2.45	* 177*	177*	177*
*NRW20B	* 2.42	* 298*	298*	298*
*NRW20B	* 2.36	* 285*	285*	285*
*NRW20B	* 2.31	* 258*	258*	258*
*NRW20B	* 2.26	* 387*	387*	387*
*NRW20B	* 2.18	* 333*	333*	333*
*NRW20B	* 2.12	* 375*	375*	375*

Reach	River Sta.	Left	Channel	Right
NRW20B	2.05	380	380	380
NRW20B	1.98	364	364	364
NRW20B	1.91	298	298	298
NRW20B	1.85	279	279	279
NRW20B	1.80	357	357	357
NRW20B	1.73	344	344	344
NRW20B	1.67	284	284	284
NRW20B	1.61	242	242	242
NRW20B	1.57	254	254	254
NRW20B	1.52	304	304	304
NRW20B	1.46	296	296	296
NRW20B	1.41	280	280	280
NRW20B	1.35	308	308	308
NRW20B	1.30	297	297	297
NRW20B	1.24	263	263	263
NRW20B	1.19	327	327	327
NRW20B	1.13	0	0	0

River: NRW20T10B

Reach	River Sta.	Left	Channel	Right
NRW20T10B	0.92	341	341	341
NRW20T10B	0.86	311	311	311
NRW20T10B	0.80	285	285	285
NRW20T10B	0.74	282	282	282
NRW20T10B	0.69	321	321	321
NRW20T10B	0.63	310	310	310
NRW20T10B	0.57	356	356	356
NRW20T10B	0.50	150	150	150
NRW20T10B	0.47	249	249	249
NRW20T10B	0.43	195	195	195
NRW20T10B	0.39	206	206	206
NRW20T10B	0.35	0	0	0

River: NRW20T5

Reach	River Sta.	Left	Channel	Right
NRW20T5	0.57	370	370	370
NRW20T5	0.50	291	291	291
NRW20T5	0.44	319	319	319
NRW20T5	0.38	364	364	364
NRW20T5	0.31	332	332	332
NRW20T5	0.25	308	308	308
NRW20T5	0.19	314	314	314
NRW20T5	0.13	311	311	311
NRW20T5	0.07	0	0	0

River: NRW20T10A

Reach	River Sta.	Left	Channel	Right
NRW20T10A	0.29	249	249	249
NRW20T10A	0.24	221	221	221
NRW20T10A	0.20	375	375	375
NRW20T10A	0.13	284	284	284
NRW20T10A	0.08	0	0	0

River: NRW20A

Reach	River Sta.	Left	Channel	Right
NRW20A	1.05	427	427	427
NRW20A	0.97	440	440	440
NRW20A	0.88	330	330	330
NRW20A	0.82	338	338	338
NRW20A	0.76	280	280	280
NRW20A	0.70	300	300	300
NRW20A	0.65	228	228	228
NRW20A	0.60	123	123	123
NRW20A	0.59	Culvert		
NRW20A	0.58	122	122	122
NRW20A	0.56	234	234	234
NRW20A	0.51	133	133	133
NRW20A	0.49	400	400	400
NRW20A	0.41	301	301	301
NRW20A	0.36	373	373	373
NRW20A	0.29	297	297	297
NRW20A	0.23	310	310	310
NRW20A	0.17	338	338	338
NRW20A	0.11	437	437	437
NRW20A	0.02	75	75	75
NRW20A	0.01	43	43	43
NRW20A	0.009	Inl Struct		
NRW20A	0.00	5	5	5

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW20B

Reach	River Sta.	Contr.	Expan.
NRW20B	2.50	.1	.3
NRW20B	2.45	.1	.3
NRW20B	2.42	.1	.3
NRW20B	2.36	.1	.3
NRW20B	2.31	.1	.3
NRW20B	2.26	.1	.3
NRW20B	2.18	.1	.3
NRW20B	2.12	.1	.3
NRW20B	2.05	.1	.3
NRW20B	1.98	.1	.3
NRW20B	1.91	.1	.3
NRW20B	1.85	.1	.3
NRW20B	1.80	.1	.3
NRW20B	1.73	.1	.3
NRW20B	1.67	.1	.3
NRW20B	1.61	.1	.3
NRW20B	1.57	.1	.3
NRW20B	1.52	.1	.3
NRW20B	1.46	.1	.3
NRW20B	1.41	.1	.3
NRW20B	1.35	.1	.3

```
*NRW20B          *    1.30    *        .1*        .3*
*NRW20B          *    1.24    *        .1*        .3*
*NRW20B          *    1.19    *        .1*        .3*
*NRW20B          *    1.13    *        .1*        .3*
*****************************************************
River: NRW20T10B

*****************************************************
*     Reach      *   River Sta.   * Contr.  * Expan.  *
*****************************************************
*NRW20T10B       *    0.92    *        .1*        .3*
*NRW20T10B       *    0.86    *        .1*        .3*
*NRW20T10B       *    0.80    *        .1*        .3*
*NRW20T10B       *    0.74    *        .1*        .3*
*NRW20T10B       *    0.69    *        .1*        .3*
*NRW20T10B       *    0.63    *        .1*        .3*
*NRW20T10B       *    0.57    *        .1*        .3*
*NRW20T10B       *    0.50    *        .1*        .3*
*NRW20T10B       *    0.47    *        .1*        .3*
*NRW20T10B       *    0.43    *        .1*        .3*
*NRW20T10B       *    0.39    *        .1*        .3*
*NRW20T10B       *    0.35    *        .1*        .3*
*****************************************************
River: NRW20T5

*****************************************************
*     Reach      *   River Sta.   * Contr.  * Expan.  *
*****************************************************
*NRW20T5         *    0.57    *        .1*        .3*
*NRW20T5         *    0.50    *        .1*        .3*
*NRW20T5         *    0.44    *        .1*        .3*
*NRW20T5         *    0.38    *        .1*        .3*
*NRW20T5         *    0.31    *        .1*        .3*
*NRW20T5         *    0.25    *        .1*        .3*
*NRW20T5         *    0.19    *        .1*        .3*
*NRW20T5         *    0.13    *        .1*        .3*
*NRW20T5         *    0.07    *        .1*        .3*
*****************************************************
River: NRW20T10A

*****************************************************
*     Reach      *   River Sta.   * Contr.  * Expan.  *
*****************************************************
*NRW20T10A       *    0.29    *        .1*        .3*
*NRW20T10A       *    0.24    *        .1*        .3*
*NRW20T10A       *    0.20    *        .1*        .3*
*NRW20T10A       *    0.13    *        .1*        .3*
*NRW20T10A       *    0.08    *        .1*        .3*
*****************************************************
River: NRW20A

*****************************************************
*     Reach      *   River Sta.   * Contr.  * Expan.  *
*****************************************************
*NRW20A          *    1.05    *        .1*        .3*
*NRW20A          *    0.97    *        .1*        .3*
*NRW20A          *    0.88    *        .1*        .3*
*NRW20A          *    0.82    *        .1*        .3*
*NRW20A          *    0.76    *        .1*        .3*
*NRW20A          *    0.70    *        .1*        .3*
*NRW20A          *    0.65    *        .3*        .5*
```

```
*NRW20A          *    0.60    *        .3*        .5*
*NRW20A          *    0.59    *Culvert  *          *
*NRW20A          *    0.58    *        .3*        .5*
*NRW20A          *    0.56    *        .1*        .3*
*NRW20A          *    0.51    *        .1*        .3*
*NRW20A          *    0.49    *        .1*        .3*
*NRW20A          *    0.41    *        .1*        .3*
*NRW20A          *    0.36    *        .1*        .3*
*NRW20A          *    0.29    *        .1*        .3*
*NRW20A          *    0.23    *        .1*        .3*
*NRW20A          *    0.17    *        .1*        .3*
*NRW20A          *    0.11    *        .1*        .3*
*NRW20A          *    0.02    *        .3*        .5*
*NRW20A          *    0.01    *        .3*        .5*
*NRW20A          *    0.009   *Inl Struct*          *
*NRW20A          *    0.00    *        .3*        .5*
*****************************************************
```

NRW20.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.xs
Selected profiles: 100-Year
Date: 6/25/2005
Time: 2:22:57 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW20B,NRW20B						
2.5	238	238	238	166.45	549	
2.45	177	177	177	145.96	549	
2.42	298	298	298	160.39	549	
2.36	285	285	285	144.59	549	
2.31	258	258	258	149.19	549	
2.26	387	387	387	160.5	549	
2.18	333	333	333	160.59	549	
2.12	375	375	375	114.32	549	
2.05	380	380	380	159.57	549	
1.98	364	364	364	120.94	549	
1.91	298	298	298	357.09	549	C
1.85	279	279	279	116.49	549	
1.8	357	357	357	98.1	549	
1.73	344	344	344	92.14	558	
1.67	284	284	284	128.92	558	
1.61	242	242	242	110.48	558	
1.57	254	254	254	105.04	558	
1.52	304	304	304	101.96	659	
1.46	296	296	296	122.22	659	
1.41	280	280	280	122.55	659	
1.35	308	308	308	158.33	659	
1.3	297	297	297	148.93	659	
1.24	263	263	263	122.99	659	
1.19	327	327	327	174.02	659	
1.13	0	0	0	246.11	659	
NRW20T10B,NRW20T10B						
.92	341	341	341	188.57	435	
.86	311	311	311	258.31	435	
.8	285	285	285	156.57	435	
.74	282	282	282	207.42	435	
.69	321	321	321	140.95	435	D
.63	310	310	310	174.62	435	
.57	356	356	356	130.37	435	
.5	150	150	150	251.08	435	D,C
.47	249	249	249	146.26	435	
.43	195	195	195	99.92	435	
.39	206	206	206	108.21	435	
.35	0	0	0	269.86	435	
NRW20T5,NRW20T5						
.57	370	370	370	268.43	559	
.5	291	291	291	200.07	559	
.44	319	319	319	113.97	559	
.38	364	364	364	102.24	559	
.31	332	332	332	62.45	559	
.25	308	308	308	83.64	559	
.19	314	314	314	55.2	559	C

```
                                        NRW20.xs
.13       311       311       311       144.26       559       C
.07       0         0         0         213.35       559
NRW20T10A,NRW20T10A
.29       249       249       249       155.99       949
.24       221       221       221       127.86       949
.2        375       375       375       153.36       949
.13       284       284       284       119.04       949
.08       0         0         0         209.93       949
NRW20A,NRW20A
1.05      427       427       427       189.99       1579
.97       440       440       440       263.6        1579
.88       330       330       330       206.63       1579
.82       338       338       338       191.1        1579
.76       280       280       280       329.25       1046
.7        300       300       300       440.94       1046
.65       228       228       228       460.47       1046
.6        123       123       123       30           1046
.59     Culvert #1-Up
.59     Culvert #1-Dn
.58       122       122       122       17.51        1046      C
.56       234       234       234       246.35       1046
.51       133       133       133       196.43       1046
.49       400       400       400       316.43       1059      D
.41       301       301       301       298.91       1059
.36       373       373       373       302.42       1059
.29       297       297       297       318          1059
.23       310       310       310       339.76       1059
.17       338       338       338       376.82       1059
.11       437       437       437       495.07       1059
.02       75        75        75        703.93       1059
.01       43        43        43        112.92       1059
.009    Inline Weir-Up
.009    Inline Weir-Dn
0         5         5         5         263.88       1059
-----------------------------------------------------------------------------
B=blocked obstruction       XS SC 05
C=critial depth             XS SC 03
D=divided flow              XS SC 01
E=cross section extended    XS SC 02
K=known water-surface       XS SC 04


DISTANCE CHECK
----------------
XS JT 01 Junction option is used.
         For flood insurance study, this option should be used
         if the tributary and main stream can have coincident peaks,
         or it may be used for the stream without floodway.
         It may also be used if the discharges at different time periods
         are known from the rainfall-runoff model.
         How to remove the junction is explained under Help.


SPACING CHECK
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INEFFECTIVE FLOW CHECK
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DISCHARGE CHECK
```

RS: 0.76
XS DC 01 Discharge decreases in the downstream direction. DUE TO STORAGE ATTENUATION ASSOCIATED W/ SR 74 CULVERT XING, SEE HEC-1 OUTPUT

XS DC 02 Constant dicharge used for the NRW20T10B,NRW20T10B

XS DC 02 Constant dicharge used for the NRW20T5,NRW20T5

XS DC 02 Constant dicharge used for the NRW20T10A,NRW20T10A

LOCATION CHECK

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is NRW20A,NRW20A
Normal S = 0.0032 is specified as the downstream boundary
for profile 100-Year

LATERAL WEIRS CHECK

---END---

NRW20.br
CHECK-RAS Program: Structure Check

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.br
Selected profiles: 100-Year
Date: 6/25/2005
Time: 2:22:57 PM

RS	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
NRW20B,NRW20B						
2.5			1652.91	1652.64	1650.46	
2.45			1650.09	1649.86	1646.9	
2.42			1648.43	1648.26	1645.64	
2.36			1644.63	1644.41	1641.99	
2.31			1641.67	1641.51	1638.69	
2.26			1639.02	1638.72	1635.1	
2.18			1634.82	1634.69	1630.99	
2.12			1630.86	1630.56	1627.9	
2.05			1626.25	1626.11	1622.1	
1.98			1621.59	1621.27	1618.52	
1.91			1619.37	1619.12	1617.97	
1.85			1614.36	1614.1	1611.37	
1.8			1610.99	1610.7	1607.08	
1.73			1606.75	1606.27	1601.72	
1.67			1603.32	1603.15	1599.07	
1.61			1599.95	1599.54	1596.01	
1.57			1596.85	1596.59	1592.14	
1.52			1594.55	1594.21	1589.99	
1.46			1591.86	1591.61	1587.25	
1.41			1589.23	1588.91	1584.21	
1.35			1586.27	1586.09	1583.28	
1.3			1582.78	1582.61	1579.58	
1.24			1579.28	1579.11	1576.02	
1.19			1576.31	1576.02	1571.87	
1.13			1573.46	1573.35	1569.2	
NRW20T10B,NRW20T10B						
0.92			1622.16	1621.87	1620.25	
0.86			1618.41	1618.37	1616.56	
0.8			1615.1	1614.77	1613.15	
0.74			1611.74	1611.66	1609.76	
0.69			1608.78	1608.41	1605.95	
0.63			1605.06	1604.96	1601.72	
0.57			1601.13	1600.81	1598.99	
0.5			1597.88	1597.64	1596.75	
0.47			1595.41	1595.31	1593.05	
0.43			1592.59	1592.26	1590.24	
0.39			1590.28	1590.16	1587.77	
0.35			1590.09	1590.08	1585.79	
NRW20T5,NRW20T5						
0.57			1618.17	1617.9	1615.4	
0.5			1614.62	1614.49	1610.9	
0.44			1611.88	1611.59	1607.4	
0.38			1608.5	1608.25	1604.74	
0.31			1604.47	1604.09	1600.65	
0.25			1601.31	1601.12	1597.95	
0.19			1597.45	1596.65	1593.62	
0.13			1593.29	1592.9	1591.6	
0.07			1590.13	1590.08	1585.8	

NRW20T10A,NRW20T10A						
0.29			1584.92	1584.52	1578.99	
0.24			1582.14	1581.71	1576.97	
0.2			1580.24	1580.08	1575.93	
0.13			1576.35	1575.84	1571.77	
0.08			1573.41	1573.16	1567.2	
NRW20A,NRW20A						
1.05			1570.1	1569.66	1564.56	
0.97			1566.05	1565.8	1563.05	
0.88			1563.25	1563.02	1557.69	
0.82			1560.71	1560.2	1556.01	
0.76			1560.22	1560.2	1554.22	
0.7			1560.21	1560.2	1552.44	
0.65			1560.2	1560.2	1551.03	
0.6			1560.82	1560.2	1546.69	
0.59	1556.69	1563.16	0	1553.67	1546.69	Culvert #1-Up
0.59	1555.89	1566.15	0	1552.44	1545.89	Culvert #1-Dn
0.58			1555.42	1553.03	1545.89	
0.56			1549.1	1548.99	1546.04	
0.51			1547.03	1546.58	1545	
0.49			1545.48	1545.35	1542.87	
0.41			1543.48	1543.32	1538.14	
0.36			1541.78	1541.63	1537.1	
0.29			1538.61	1538.42	1534.76	
0.23			1537.68	1537.63	1532.3	
0.17			1537.54	1537.53	1530.79	
0.11			1537.52	1537.51	1528.06	
0.02			1537.51	1537.51	1526.3	
0.01			1537.38	1536.96	1533.2	
0.009		-9999	1537.38	1536.96	1533.2	Inline-Up
0.009		-9999				Inline-Dn
0			1527.23	1527.14	1524.84	

RIVER/REACH: NRW20A, NRW20A
RIVER STATION: 0.59
TYPE OF STRUCTURE: Culvert

Description:
Distance from Upstream XS: 1
Deck/Roadway Width: 121
Weir Coefficient: 2.6
Maximum allowable submergence for weir flow: 0.95
Elevation at which weir flow begins: 0
Weir crest shape: Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	0.65	228.00	1560.2		1560.2	460.47	
3	0.6	123.00	1560.2		1560.82	30	
	0.59	121.00	1553.67		0	0	Culvert #1-Up
	0.59	1.00	1552.44		0	0	Culvert #1-Dn
2	0.58	122.00	1553.03		1555.42	17.51	
1	0.56	234.00	1548.99		1549.1	246.35	

Ineffective Flow, Section 3 Ineffective Flow, Section 2

	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	9553.7	9985	1569.19	9599.4	9976	1569.11
2	10015	10614.9	1569.5	10024	10683.3	1570.3

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS	
Culvert Group					9985	10015	U
					9976	10024	D

CULVERT:
Culvert Name: Culvert #1
Shape: Box Rise: 10 Span: 10 Barrels: 1
FHWA Chart #: # 8 - flared wingwalls
FHWA Scale #: # 1 - Wingwall flared 30 to 75 deg.
Solution Crit:Highest U.S. EG

UpstrmDist: 1 Length: 121 n-Value: 0.015
EntLossCoef: 0.4 ExtLossCoef: 1 CulvInvElU 1546.69 CulvInvElD 1545.89
LCntStaU: 10000 RCntStaU: 10000 LCntStaD 10000 RCntStaD 10000
Culvert Depth Blocked: 0

Culv Area: 100 CulvQ: 1046 MinTopRd: 1569.16

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Culvert #1	9995	10005	1563.16	1569.29	1563.16	1556.69	U
	9995	10005	1566.15	1569.29	1566.15	1555.89	D

Name	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
Culvert #1		1046	0	Highest U.S. EG	Low Flow

GEOMETRIC CHECK

RS: 0.59
ST GD 03 The starting station of 9557.2 from upstream road/weir data is greater than the starting station of 9553.7 from upstream internal section/ secion 3.
The high chord elevation of 1565.86 for the starting road/weir station is greater than the ground elevation of 1563.164 for the same ground station.
The road/weir profile may need to be extended.

RS: 0.59
ST GD 03 The end station of 10646.1 from downstream road/weir data is less than the end station of 10683.3 from downstream internal section.
The high chord elevation of 1576.2 for the end road/weir station is greater than the ground elevation of 1575.675 for the same ground station.
The road/weir profile may need to be extended.

ROAD DOES NOT OVERTOP OK EXCEED END XSECTION ELEVATIONS. NO CHECK

TYPE OF FLOW CHECK

RS: 0.59 This is Culvert #1
CV LF 01 Type of flow is low flow because,
1. EGEL 3 of 1560.82 is less than or equal to MinTopRd of 1569.16.
2. CulvWSIn of 1553.67 is less than MxLoCdU of 1556.69.
3. CulvWSout of 1552.44 is less than MxLoCdD of 1555.89.
4. Q/AD^0.5 of 3.31 is less than 4.0.

DISTANCE CHECK

RS: 0.59 This is Culvert #1
ST DT 01 'Culvert Upstrm Dist' of 1 is less than the height of the culvert opening of 10 .
Section 3 should be placed at the foot of the road embankment or wing walls.
Distances at Sections 4 & 3, and 'Distance from Upstream XS' should be adjusted.

— XSECTION PLACED @ FOOT OF EMBANKMENT NO CHANNEL

RS: 0.59 This is Culvert #1
ST DT 02 The channel distance of 1 at Downstream Internal Section is less than the height of the culvert opening of 10
Section 2 should be placed at the foot of the road embankment or wing walls.
Distances at Sections 4, 3 & 2 should be adjusted.

— SAME AS ABOVE

CULVERT COEFFICIENT CHECK

CULVERT CRITERIA CHECK

INEFFECTIVE FLOW CHECK

RIVER/REACH: NRW20A, NRW20A
RIVER STATION: 0.009
TYPE OF STRUCTURE: Inline

Description:	Stock Tank
Distance from Upstream XS:	1
Deck/Roadway Width:	10
Weir Coefficient:	2.6
Maximum allowable submergence for weir flow:	0.95
Elevation at which weir flow begins:	0
Weir crest shape:	Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	0.02	75.00	1537.51		1537.51	703.93	
3	0.01	43.00	1536.96		1537.38	112.92	
	0.009	10.00	1536.96		1537.38	122.99	Inline Weir-Up
	0.009	1.00				174.02	Inline Weir-Dn
2	0	5.00	1527.14		1527.23	263.88	

```
---------------------------------------------------------------------------

        Ineffective Flow, Section 3            Ineffective Flow, Section 2
        Sta L     Sta R     Elev               Sta L     Sta R     Elev
---------------------------------------------------------------------------
---------------------------------------------------------------------------


INLINE WEIR:
Inline Weir Gate:
Dist IwD:       1        Height:        0        Width          0        Invert:
     0
Gate Coeff:     0        GateType:               TrunExp        0        OpenExp:
     0
HeadExp:        0        TrunHght:      0        Weir Coeff:    0        WeirShape:

GateNumber:     0
LCntStaU:       0        RCntStaU:      0        LCntStaD       0        RCntStaD
     0

---------------------------------------------------------------------------
MinTopRd:       1533.21

Gate ID            Gate #    Open      Gate Q    Q Weir    Q Total    Flow Type
                   Open      Hght
---------------------------------------------------------------------------
                    1536      1        1536.46   1059      1059       Weir Flow
---------------------------------------------------------------------------

Opening Type       StagStaL    StagStaR  EncStaL   EncStaR   LIfStaS   RIfStaS
---------------------------------------------------------------------------
Inline                                                        0         0      U
                                                              0         0      D
---------------------------------------------------------------------------
                   LAbutSt     RAbutSt   LMnTpRd   RMnTpRd   MnTpRd    MxLoCd
---------------------------------------------------------------------------
                   0.00        0.00      -9999.00  1533.20   -9999.00  0.00    U
                   0.00        0.00      -9999.00  1533.20   -9999.00  0.00    D

GEOMETRIC CHECK
-----------------

TYPE OF FLOW CHECK
------------------

RS:        0.009
IW TF 01   Type of flow is Weir Flow because,
           1. Gate Flow discharge is equal to 1536.46
           2. Weir Flow discharge is equal to 1059

RS:        0.009 This is Inline.
IW TF 05   A value of 0 is specified in the MinWeirFlowEl box under
           Inline Weir Station Elevation Editor window.
           It is greater than the computed MnTpRd of -9999 from the ground
           and weir data.                                  NO BOX FOUND
           The WSEL upstream of the weir may be changed if the box is left blank.
           Please delete this value and rerun the plan, unless there is a
           reason to specify this value.

DISTANCE CHECK
```

INEFFECTIVE FLOW CHECK

---END

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW20\NRW20.nt
Selected profiles: 100-Year
Date: 6/25/2005
Time: 2:22:56 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW20B,NRW20B						
2.5		0.079	0.059	0.079	0.1	0.3
2.45		0.079	0.059	0.079	0.1	0.3
2.42		0.079	0.059	0.079	0.1	0.3
2.36		0.079	0.059	0.079	0.1	0.3
2.31		0.079	0.059	0.079	0.1	0.3
2.26		0.079	0.059	0.079	0.1	0.3
2.18		0.079	0.059	0.079	0.1	0.3
2.12		0.079	0.059	0.079	0.1	0.3
2.05		0.079	0.059	0.079	0.1	0.3
1.98		0.079	0.059	0.079	0.1	0.3
1.91		0.016	0.016	0.016	0.1	0.3
1.85		0.079	0.059	0.079	0.1	0.3
1.8		0.079	0.059	0.079	0.1	0.3
1.73		0.079	0.059	0.079	0.1	0.3
1.67		0.079	0.059	0.079	0.1	0.3
1.61		0.079	0.059	0.079	0.1	0.3
1.57		0.079	0.059	0.079	0.1	0.3
1.52		0.079	0.059	0.079	0.1	0.3
1.46		0.079	0.059	0.079	0.1	0.3
1.41		0.079	0.059	0.079	0.1	0.3
1.35		0.079	0.059	0.079	0.1	0.3
1.3		0.079	0.059	0.079	0.1	0.3
1.24		0.079	0.059	0.079	0.1	0.3
1.19		0.079	0.059	0.079	0.1	0.3
NRW20T10B,NRW20T10B						
1.13		0.079	0.059	0.079	0.1	0.3
.92		0.079	0.059	0.079	0.1	0.3
.86		0.079	0.059	0.079	0.1	0.3
.8		0.079	0.059	0.079	0.1	0.3
.74		0.079	0.059	0.079	0.1	0.3
.69		0.079	0.059	0.079	0.1	0.3
.63		0.079	0.059	0.079	0.1	0.3
.57		0.079	0.059	0.079	0.1	0.3
.5		0.016	0.016	0.016	0.1	0.3
.47		0.079	0.059	0.079	0.1	0.3
.43		0.079	0.059	0.079	0.1	0.3
.39		0.079	0.059	0.079	0.1	0.3
NRW20T5,NRW20T5						
.35		0.079	0.059	0.079	0.1	0.3

.57		0.079	0.059	0.079	0.1	0.3
.5		0.079	0.059	0.079	0.1	0.3
.44		0.079	0.059	0.079	0.1	0.3
.38		0.079	0.059	0.079	0.1	0.3
.31		0.079	0.059	0.079	0.1	0.3
.25		0.079	0.059	0.079	0.1	0.3
.19		0.079	0.059	0.079	0.1	0.3
.13		0.016	0.016	0.016	0.1	0.3
NRW20T10A,NRW20T10A						
.07		0.079	0.059	0.079	0.1	0.3
.29		0.079	0.059	0.079	0.1	0.3
.24		0.079	0.059	0.079	0.1	0.3
.2		0.079	0.059	0.079	0.1	0.3
.13		0.079	0.059	0.079	0.1	0.3
NRW20A,NRW20A						
.08		0.079	0.059	0.079	0.1	0.3
1.05		0.064	0.05	0.064	0.1	0.3
.97		0.064	0.05	0.064	0.1	0.3
.88		0.064	0.05	0.064	0.1	0.3
.82		0.064	0.05	0.064	0.1	0.3
.76		0.064	0.05	0.064	0.1	0.3
.7		0.064	0.05	0.064	0.1	0.3
.65		0.064	0.05	0.064	0.3	0.5
.6		0.064	0.05	0.064	0.3	0.5
.59	Culvert-Up	0.064	0.05	0.064	0.3	0.5
.59	Culvert-Dn	0.064	0.05	0.064	0.3	0.5
.58		0.064	0.05	0.064	0.3	0.5
.56		0.064	0.05	0.064	0.1	0.3
.51		0.064	0.05	0.064	0.1	0.3
.49		0.064	0.05	0.064	0.1	0.3
.41		0.064	0.05	0.064	0.1	0.3
.36		0.064	0.05	0.064	0.1	0.3
.29		0.064	0.05	0.064	0.1	0.3
.23		0.064	0.05	0.064	0.1	0.3
.17		0.064	0.05	0.064	0.1	0.3
.11		0.064	0.05	0.064	0.1	0.3
.02		0.064	0.05	0.064	0.3	0.5
.01		0.064	0.05	0.064	0.3	0.5
.009	Inline Weir-Up	0.064	0.05	0.064	0.3	0.5
.009	Inline Weir-Dn	0.064	0.05	0.064	0.3	0.5
0		0.064	0.05	0.064	0.3	0.5

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.016	0.079
Right Overbank n Value:	0.016	0.079
Channel n Value:	0.016	0.059
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

ROUGHNESS COEFFICIENT CHECK @ NEW RIVER ROAD CROSSING

RS: 1.91
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

```
RS:       1.91
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        1.91
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       1.91
NT RC 05 The left overbank n value of 0.016 and the right overbank n
value
         of 0.016 are less than or equal to the channel n value of 0.016
         The overbank n values should be reevaluated.

RS:       0.5
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       0.5
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        0.5
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       0.5
NT RC 05 The left overbank n value of 0.016 and the right overbank n
value
         of 0.016 are less than or equal to the channel n value of 0.016
         The overbank n values should be reevaluated.

RS:       0.13
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       0.13
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        0.13
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       0.13
NT RC 05 The left overbank n value of 0.016 and the right overbank n
value
         of 0.016 are less than or equal to the channel n value of 0.016
         The overbank n values should be reevaluated.
```

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 25

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW25 River: NRW25 Reach: NRW25 Profile: 100-Year

Reach	River Sta.	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW25	0.87	201.00	1596.10	1597.51		1597.59	0.008324	2.56	110.55	194.91	0.44
NRW25	0.81	201.00	1593.34	1594.27	1594.02	1594.38	0.015197	2.67	75.25	107.66	0.56
NRW25	0.77	201.00	1590.54	1591.74	1591.27	1591.79	0.007414	2.03	120.79	154.36	0.40
NRW25	0.71	201.00	1587.09	1588.69		1588.85	0.013141	3.26	61.66	58.51	0.56
NRW25	0.65	201.00	1584.30	1585.80	1585.35	1585.89	0.008078	2.35	85.45	92.03	0.43
NRW25	0.61	201.00	1581.81	1583.44	1582.98	1583.56	0.010447	2.78	72.35	73.59	0.49
NRW25	0.55	201.00	1579.12	1580.22	1580.00	1580.29	0.013554	2.17	96.21	183.49	0.51
NRW25	0.51	201.00	1577.14	1578.20		1578.24	0.006590	1.75	138.79	224.21	0.37
NRW25	0.47	201.00	1574.85	1575.70	1575.47	1575.78	0.025718	2.70	91.37	179.85	0.69
NRW25	0.42	201.00	1572.14	1573.36		1573.38	0.004425	1.46	191.93	324.79	0.30
NRW25	0.36	201.00	1569.07	1570.22	1570.20	1570.38	0.033013	3.54	77.28	237.08	0.81
NRW25	0.33	201.00	1567.12	1568.50		1568.53	0.004604	1.78	200.72	453.82	0.33
NRW25	0.27	486.00	1564.36	1565.54	1565.40	1565.63	0.013966	2.72	243.95	620.11	0.55
NRW25	0.20	486.00	1560.52	1562.54		1562.59	0.006079	2.53	325.26	421.26	0.39
NRW25	0.16	486.00	1558.45	1560.24	1559.90	1560.40	0.012919	3.76	178.20	210.51	0.58
NRW25	0.08	486.00	1554.50	1556.66	1556.17	1556.74	0.006326	3.01	258.54	282.49	0.42
NRW25	0.01	486.00	1551.24	1553.98	1553.55	1554.13	0.009708	3.80	186.57	196.77	0.52

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW 25
Project File : NRW25.prj
Run Date and Time: 5/27/2005 3:51:19 PM

Project in English units

Project Description:
NRW 25

New River West Tributaries FDS
Prepared by URS Corp. for the Flood
Control District of Maricopa County
Contract No: FCD 2003 C057
Date: April
29, 2005

Topographic Mapping Source:
Flown and Mapped by DTM Inc.
Flight
Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal - NAD83 Arizona
State Plane, Central Zone, International Feet
Vertical - NAVD 88 (GDACS
Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour storm
event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

201 cfs @ R.S. 0.87
486 cfs @ R.S. 0.27

Study Limits:

U.S. Limit
is approximately 2780 feet east, and 1150 feet south of the NE corner of Section 2 T5NR1E

D.S. Limit is the New River floodplain

Stationing based
upon River Mile distance from a point downstream of the Hydraulic Baseline
confluence with the New River Thalweg

Final Model Run Date:
March 16,
2005

****
****

PLAN DATA

Plan Title: NRW 25
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25
\NRW25.p01

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW25\NRW25.g01

Flow Title : 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW25\NRW25.f03

Plan Summary Information:

Number of:	Cross Sections	= 17	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25

```
\NRW25.f03

Flow Data (cfs)
*************************************************************
* River           Reach           RS      *        100-Year *
* NRW25           NRW25           0.87    *             201 *
* NRW25           NRW25           0.27    *             486 *
*************************************************************

Boundary Conditions
***********************************************************************
********************************
* River           Reach           Profile          *            Upstream
Downstream    *
***********************************************************************
********************************
* NRW25           NRW25           100-Year         *
Normal S = 0.0097 *
***********************************************************************
********************************

***********************************************************************
********

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25
\NRW25.g01

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.87

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9667.7 1600.05  9675.9 1599.76  9861.5 1597.83  9878.5 1596.98  9959.2
1597.28
  9977.3  1596.4  9993.6 1596.23 10001.1  1596.1 10017.5 1596.67   10033
1596.89
 10043.9 1597.31 10257.1 1599.51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9667.7    .074  9959.2    .054 10017.5    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9959.2 10017.5              291     291     291             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***********************************************************************
```

```
************************
* E.G. Elev (ft)          * 1597.59  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1597.51  * Reach Len. (ft)         *  291.00
*  291.00  *  291.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   33.11
*   59.91  *   17.54  *
* E.G. Slope (ft/ft)      *0.008324  * Area (sq ft)            *   33.11
*   59.91  *   17.54  *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *   30.86
*  153.10  *   17.04  *
* Top Width (ft)          *  194.91  * Top Width (ft)          *   91.22
*   58.30  *   45.39  *
* Vel Total (ft/s)        *    1.82  * Avg. Vel. (ft/s)        *    0.93
*    2.56  *    0.97  *
* Max Chl Dpth (ft)       *    1.41  * Hydr. Depth (ft)        *    0.36
*    1.03  *    0.39  *
* Conv. Total (cfs)       *  2203.1  * Conv. (cfs)             *   338.2
*  1678.0  *   186.8  *
* Length Wtd. (ft)        *  291.00  * Wetted Per. (ft)        *   91.23
*   58.33  *   45.40  *
* Min Ch El (ft)          * 1596.10  * Shear (lb/sq ft)        *    0.19
*    0.53  *    0.20  *
* Alpha                   *    1.57  * Stream Power (lb/ft s) *    0.18
*    1.36  *    0.20  *
* Frctn Loss (ft)         *    3.20  * Cum Volume (acre-ft)    *    5.24
*    6.89  *    3.94  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   10.20
*    7.72  *    7.39  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.81

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9751.6  1597.9  9787.3 1597.18  9795.8  1596.7  9829.1 1595.64  9830.4
1595.57
  9867.6 1595.37  9873.7 1595.53  9904.9 1594.89  9915.7 1594.36  9935.3
1594.29
  9958.1 1593.47  9995.7 1593.34 10020.3 1593.44 10026.4  1593.4 10029.3
1593.62
 10044.3 1594.31 10225.5 1596.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
************************************************
  9751.6    .074  9935.3    .054 10044.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9935.3 10044.3              251     251     251             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1594.38  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *
*   0.054  *          *
* W.S. Elev (ft)          * 1594.27  * Reach Len. (ft)         *  251.00
*  251.00  *  251.00  *
* Crit W.S. (ft)          * 1594.02  * Flow Area (sq ft)       *
*   75.25  *          *
* E.G. Slope (ft/ft)      *0.015197  * Area (sq ft)            *
*   75.25  *          *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *
*  201.00  *          *
* Top Width (ft)          *  107.66  * Top Width (ft)          *
*  107.66  *          *
* Vel Total (ft/s)        *    2.67  * Avg. Vel. (ft/s)        *
*    2.67  *          *
* Max Chl Dpth (ft)       *    0.93  * Hydr. Depth (ft)        *
*    0.70  *          *
* Conv. Total (cfs)       *  1630.5  * Conv. (cfs)             *
*  1630.5  *          *
* Length Wtd. (ft)        *  251.00  * Wetted Per. (ft)        *
*  107.70  *          *
* Min Ch El (ft)          * 1593.34  * Shear (lb/sq ft)        *
*    0.66  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    1.77  *          *
* Frctn Loss (ft)         *    2.58  * Cum Volume (acre-ft)    *    5.13
*    6.44  *    3.88  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    9.90
*    7.17  *    7.24  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.77

INPUT
Description:
Station Elevation Data    num=       8
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9741.5 1595.55    9915 1590.49  9973.7 1591.14  9989.1 1590.85 10005.4
1590.54
   10024 1591.72 10278.9 1593.62 10390.4 1594.02

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9741.5    .074  9973.7    .054   10024    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.7   10024              303     303     303             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1591.79  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1591.74  * Reach Len. (ft)         *  303.00
*  303.00  *  303.00  *
* Crit W.S. (ft)          * 1591.27  * Flow Area (sq ft)       *   80.97
*   39.80  *    0.02  *
* E.G. Slope (ft/ft)      *0.007414  * Area (sq ft)            *   80.97
*   39.80  *    0.02  *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *  120.39
*   80.61  *    0.00  *
* Top Width (ft)          *  154.36  * Top Width (ft)          *  101.52
*   50.30  *    2.54  *
* Vel Total (ft/s)        *    1.66  * Avg. Vel. (ft/s)        *    1.49
*    2.03  *    0.08  *
* Max Chl Dpth (ft)       *    1.25  * Hydr. Depth (ft)        *    0.80
*    0.79  *    0.01  *
* Conv. Total (cfs)       *  2334.4  * Conv. (cfs)             *  1398.2
*   936.2  *     0.0  *
* Length Wtd. (ft)        *  303.00  * Wetted Per. (ft)        *  101.54
*   50.34  *    2.54  *
* Min Ch El (ft)          * 1590.54  * Shear (lb/sq ft)        *    0.37
*    0.37  *    0.00  *
* Alpha                   *    1.07  * Stream Power (lb/ft s) *    0.55
*    0.74  *    0.00  *
* Frctn Loss (ft)         *    2.93  * Cum Volume (acre-ft)    *    4.90
*    6.11  *    3.88  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    9.60
*    6.71  *    7.23  *
**************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW25
REACH: NRW25                RS: 0.71

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9753.6 1592.14  9799.6 1590.26  9837.6 1591.31  9952.9 1589.99  9955.7
1589.87
  9974.8  1587.7  9990.6  1587.5 10002.8 1587.33 10013.6 1587.09 10027.3
1589.07
   10361 1592.04

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9753.6    .074  9955.7    .054 10027.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9955.7 10027.3              289     289     289             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1588.85  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *
*   0.054  *          *
* W.S. Elev (ft)          * 1588.69  * Reach Len. (ft)         *  289.00
*  289.00  *  289.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*   61.66  *          *
* E.G. Slope (ft/ft)      *0.013141  * Area (sq ft)            *
*   61.66  *          *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *
*  201.00  *          *
* Top Width (ft)          *   58.51  * Top Width (ft)          *
*   58.51  *          *
* Vel Total (ft/s)        *    3.26  * Avg. Vel. (ft/s)        *
*    3.26  *          *
* Max Chl Dpth (ft)       *    1.60  * Hydr. Depth (ft)        *
*    1.05  *          *
* Conv. Total (cfs)       *  1753.4  * Conv. (cfs)             *
*  1753.4  *          *
* Length Wtd. (ft)        *  289.00  * Wetted Per. (ft)        *
*   58.69  *          *
* Min Ch El (ft)          * 1587.09  * Shear (lb/sq ft)        *
*    0.86  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    2.81  *          *
* Frctn Loss (ft)         *    2.93  * Cum Volume (acre-ft)    *    4.61
*    5.76  *    3.88  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    9.25
*    6.34  *    7.22  *
**************************************************************************
************************
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25                RS: 0.65

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9669.4 1590.17  9687.9 1589.36    9761 1588.94  9772.5 1589.28  9916.4
1586.87
  9921.2 1586.64  9942.8 1585.17  9995.3  1584.5 10004.8  1584.3 10008.5
1584.3
 10028.9  1586.1 10102.5 1587.06 10126.9 1586.38 10127.7 1586.42 10164.5
1587.41
 10383.7 1587.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9669.4    .074  9921.2    .054 10028.9    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9921.2 10028.9              254     254     254             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1585.89  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *
*   0.054  *          *
* W.S. Elev (ft)          * 1585.80  * Reach Len. (ft)         *  254.00
*  254.00  *  254.00  *
* Crit W.S. (ft)          * 1585.35  * Flow Area (sq ft)       *
*   85.45  *          *
* E.G. Slope (ft/ft)      *0.008078  * Area (sq ft)            *
*   85.45  *          *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *
*  201.00  *          *
* Top Width (ft)          *   92.03  * Top Width (ft)          *
*   92.03  *          *
* Vel Total (ft/s)        *    2.35  * Avg. Vel. (ft/s)        *
*    2.35  *          *
* Max Chl Dpth (ft)       *    1.50  * Hydr. Depth (ft)        *
*    0.93  *          *
* Conv. Total (cfs)       *  2236.3  * Conv. (cfs)             *
*  2236.3  *          *
* Length Wtd. (ft)        *  254.00  * Wetted Per. (ft)        *
*   92.13  *          *
```

```
* Min Ch El (ft)          * 1584.30  * Shear (lb/sq ft)       *
*    0.47  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    1.10  *          *
* Frctn Loss (ft)         *    2.32  * Cum Volume (acre-ft)   *    4.61
*    5.27  *    3.88  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *    9.25
*    5.84  *    7.22  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25               RS: 0.61

INPUT
Description:
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9657.4 1587.51  9927.2 1584.65  9969.1 1582.36  9985.2 1582.14 10003.7
1581.81
 10027.6 1583.82 10168.4  1583.7   10469 1585.66

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9657.4    .074  9927.2    .054 10027.6    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9927.2 10027.6              275     275     275             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1583.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *
*   0.054  *          *
* W.S. Elev (ft)          * 1583.44  * Reach Len. (ft)         *  275.00
*  275.00  *  275.00  *
* Crit W.S. (ft)          * 1582.98  * Flow Area (sq ft)       *
*   72.35  *          *
* E.G. Slope (ft/ft)      *0.010447  * Area (sq ft)            *
*   72.35  *          *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *
*  201.00  *          *
* Top Width (ft)          *   73.59  * Top Width (ft)          *
*   73.59  *          *
* Vel Total (ft/s)        *    2.78  * Avg. Vel. (ft/s)        *
*    2.78  *          *
```

```
* Max Chl Dpth (ft)       *    1.62  * Hydr. Depth (ft)        *
*    0.98  *          *
* Conv. Total (cfs)       *  1966.5  * Conv. (cfs)             *
*  1966.5  *          *
* Length Wtd. (ft)        *  275.00  * Wetted Per. (ft)        *
*   73.69  *          *
* Min Ch El (ft)          * 1581.81  * Shear (lb/sq ft)        *
*    0.64  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    1.78  *          *
* Frctn Loss (ft)         *    3.26  * Cum Volume (acre-ft)    *    4.61
*    4.81  *    3.88  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    9.25
*    5.35  *    7.22  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.55

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9583.8 1584.02  9937.7 1581.21  9984.1 1579.12  9994.5 1579.46 10010.4
1579.8
 10034.4 1579.49 10063.3 1580.12   10096 1579.54 10125.9 1579.56 10153.9
1580.62
 10485.2 1582.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9583.8    .074  9937.7    .054 10063.3    .054

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9937.7 10063.3              222     222     222             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1580.29  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.07  * Wt. n-Val.              *
*   0.054  *   0.054  *
* W.S. Elev (ft)          * 1580.22  * Reach Len. (ft)         *  222.00
*  222.00  *  222.00  *
* Crit W.S. (ft)          * 1580.00  * Flow Area (sq ft)       *
*   57.93  *   38.27  *
```

```
* E.G. Slope (ft/ft)      *0.013554  * Area (sq ft)            *
*   57.93  *   38.27  *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *
*  125.98  *   75.02  *
* Top Width (ft)          *  183.49  * Top Width (ft)          *
*  103.55  *   79.95  *
* Vel Total (ft/s)        *    2.09  * Avg. Vel. (ft/s)        *
*    2.17  *    1.96  *
* Max Chl Dpth (ft)       *    1.10  * Hydr. Depth (ft)        *
*    0.56  *    0.48  *
* Conv. Total (cfs)       *  1726.5  * Conv. (cfs)             *
*  1082.1  *   644.3  *
* Length Wtd. (ft)        *  222.00  * Wetted Per. (ft)        *
*  103.59  *   79.96  *
* Min Ch El (ft)          * 1579.12  * Shear (lb/sq ft)        *
*    0.47  *    0.40  *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *
*    1.03  *    0.79  *
* Frctn Loss (ft)         *    2.03  * Cum Volume (acre-ft)    *    4.61
*    4.40  *    3.76  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    9.25
*    4.79  *    6.97  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.51

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9576.8 1580.55  9595.9 1579.95  9956.9 1578.37  9981.5 1577.14    9999
1577.38
 10004.9 1577.47   10038 1577.29 10063.5 1577.97 10071.2 1578.36 10102.3
1578.22
 10121.3 1577.31 10123.8 1577.09 10462.7 1581.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9576.8    .074  9956.9    .054 10071.2    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9956.9 10071.2              212     212     212             .1
.3
```

```
CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1578.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.04  * Wt. n-Val.              *
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1578.20  * Reach Len. (ft)         *  212.00
*  212.00  *  212.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*   74.93  *   63.86  *
* E.G. Slope (ft/ft)      *0.006590  * Area (sq ft)            *
*   74.93  *   63.86  *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *
*  131.20  *   69.80  *
* Top Width (ft)          *  224.21  * Top Width (ft)          *
*  107.91  *  116.30  *
* Vel Total (ft/s)        *    1.45  * Avg. Vel. (ft/s)        *
*    1.75  *    1.09  *
* Max Chl Dpth (ft)       *    1.11  * Hydr. Depth (ft)        *
*    0.69  *    0.55  *
* Conv. Total (cfs)       *  2475.9  * Conv. (cfs)             *
*  1616.2  *   859.8  *
* Length Wtd. (ft)        *  212.00  * Wetted Per. (ft)        *
*  107.96  *  116.34  *
* Min Ch El (ft)          * 1577.14  * Shear (lb/sq ft)        *
*    0.29  *    0.23  *
* Alpha                   *    1.15  * Stream Power (lb/ft s) *
*    0.50  *    0.25  *
* Frctn Loss (ft)         *    2.46  * Cum Volume (acre-ft)    *    4.61
*    4.06  *    3.50  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    9.25
*    4.26  *    6.47  *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.47

INPUT
Description:
Station Elevation Data    num=      12
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
************************************************************************
********
  9583.9 1578.09  9949.9 1575.55  9975.7 1574.52  9976.3 1574.54  9996.8
1575.91
```

```
 10017.8 1574.93 10021.2 1574.85 10037.5 1575.53   10077  1574.8 10100.3
1575.02
 10127.5 1576.16 10441.5 1578.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9583.9    .074  9996.8    .054 10037.5    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9996.8 10037.5              269     269     269             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1575.78  * Element              *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.            *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1575.70  * Reach Len. (ft)       *  269.00
*  269.00  *  269.00  *
* Crit W.S. (ft)          * 1575.47  * Flow Area (sq ft)     *   29.31
*   17.29  *   44.77  *
* E.G. Slope (ft/ft)      *0.025718  * Area (sq ft)          *   29.31
*   17.29  *   44.77  *
* Q Total (cfs)           *  201.00  * Flow (cfs)            *   55.59
*   46.65  *   98.76  *
* Top Width (ft)          *  179.85  * Top Width (ft)        *   64.79
*   36.12  *   78.94  *
* Vel Total (ft/s)        *    2.20  * Avg. Vel. (ft/s)      *    1.90
*    2.70  *    2.21  *
* Max Chl Dpth (ft)       *    1.18  * Hydr. Depth (ft)      *    0.45
*    0.48  *    0.57  *
* Conv. Total (cfs)       *  1253.4  * Conv. (cfs)           *   346.6
*   290.9  *   615.8  *
* Length Wtd. (ft)        *  269.00  * Wetted Per. (ft)      *   64.85
*   36.16  *   78.96  *
* Min Ch El (ft)          * 1574.85  * Shear (lb/sq ft)      *    0.73
*    0.77  *    0.91  *
* Alpha                   *    1.05  * Stream Power (lb/ft s) *    1.38
*    2.07  *    2.01  *
* Frctn Loss (ft)         *    2.38  * Cum Volume (acre-ft)  *    4.54
*    3.83  *    3.23  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *    9.09
*    3.91  *    6.00  *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW25
REACH: NRW25                RS: 0.42

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9701.6 1575.98  9981.4 1573.12  9984.8 1572.98 10009.6 1572.14 10025.6
1572.93
 10032.7  1573.1 10088.3 1572.69 10099.5  1572.1 10429.8 1574.38 10554.9
1574.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9701.6    .074  9981.4    .054 10032.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9981.4 10032.7              315     315     315             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1573.38  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1573.36  * Reach Len. (ft)         *  315.00
*  315.00  *  315.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    2.88
*   36.69  *  152.36  *
* E.G. Slope (ft/ft)      *0.004425  * Area (sq ft)            *    2.88
*   36.69  *  152.36  *
* Q Total (cfs)           *  201.00  * Flow (cfs)              *    0.94
*   53.67  *  146.38  *
* Top Width (ft)          *  324.79  * Top Width (ft)          *   23.75
*   51.30  *  249.74  *
* Vel Total (ft/s)        *    1.05  * Avg. Vel. (ft/s)        *    0.33
*    1.46  *    0.96  *
* Max Chl Dpth (ft)       *    1.26  * Hydr. Depth (ft)        *    0.12
*    0.72  *    0.61  *
* Conv. Total (cfs)       *  3021.7  * Conv. (cfs)             *    14.2
*   806.9  *  2200.6  *
* Length Wtd. (ft)        *  315.00  * Wetted Per. (ft)        *   23.76
*   51.34  *  249.76  *
* Min Ch El (ft)          * 1572.14  * Shear (lb/sq ft)        *    0.03
*    0.20  *    0.17  *
* Alpha                   *    1.13  * Stream Power (lb/ft s) *    0.01
*    0.29  *    0.16  *
* Frctn Loss (ft)         *    2.99  * Cum Volume (acre-ft)    *    4.44
*    3.67  *    2.62  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    8.82
*    3.64  *    4.98  *
**********************************************************************
************************
```

```
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.36

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9489.8 1572.44  9601.8 1571.12  9916.2  1570.5  9918.7 1570.43    9964
1570.13
  9995.4 1569.07  9996.3 1569.09 10017.8 1569.65 10039.5 1570.21 10094.3
1569.88
 10098.2 1569.76   10530 1571.98 10660.7 1572.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9489.8    .074    9964    .054 10039.5    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9964 10039.5              186     186     186             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)         * 1570.38  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.16  * Wt. n-Val.             *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)         * 1570.22  * Reach Len. (ft)        *  186.00
*  186.00  *  186.00  *
* Crit W.S. (ft)         * 1570.20  * Flow Area (sq ft)      *    0.60
*   45.02  *   31.65  *
* E.G. Slope (ft/ft)     *0.033013  * Area (sq ft)           *    0.60
*   45.02  *   31.65  *
* Q Total (cfs)          *  201.00  * Flow (cfs)             *    0.28
*  159.44  *   41.29  *
* Top Width (ft)         *  237.08  * Top Width (ft)         *   13.51
*   75.50  *  148.07  *
* Vel Total (ft/s)       *    2.60  * Avg. Vel. (ft/s)       *    0.46
*    3.54  *    1.30  *
* Max Chl Dpth (ft)      *    1.15  * Hydr. Depth (ft)       *    0.04
*    0.60  *    0.21  *
* Conv. Total (cfs)      *  1106.3  * Conv. (cfs)            *     1.5
*   877.5  *   227.2  *
```

```
* Length Wtd. (ft)        *  186.00  * Wetted Per. (ft)        *   13.51
*   75.53  *  148.08  *
* Min Ch El (ft)          * 1569.07  * Shear (lb/sq ft)        *    0.09
*    1.23  *    0.44  *
* Alpha                   *    1.52  * Stream Power (lb/ft s) *    0.04
*    4.35  *    0.57  *
* Frctn Loss (ft)         *    1.82  * Cum Volume (acre-ft)    *    4.43
*    3.37  *    1.96  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    8.69
*    3.18  *    3.54  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.33

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9465.1  1570.2  9606.8 1568.81  9635.6 1569.15  9688.4 1568.61    9697
1568.74
  9770.5 1568.58  9968.8 1568.11    9996 1567.12   10002 1567.35 10014.2
1567.92
 10106.4 1567.34 10126.3 1568.05 10482.9 1569.28 10597.5 1570.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9465.1    .074  9968.8    .054 10014.2    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9968.8 10014.2              307     307     307             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1568.53  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.03  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1568.50  * Reach Len. (ft)         *  307.00
*  307.00  *  307.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   32.39
*   42.30  *  126.03  *
```

```
* E.G. Slope (ft/ft)      *0.004604  * Area (sq ft)           *   32.39
*   42.30  *  126.03  *
* Q Total (cfs)           *  201.00  * Flow (cfs)             *   14.89
*   75.30  *  110.81  *
* Top Width (ft)          *  453.82  * Top Width (ft)         *  165.34
*   45.40  *  243.08  *
* Vel Total (ft/s)        *    1.00  * Avg. Vel. (ft/s)       *    0.46
*    1.78  *    0.88  *
* Max Chl Dpth (ft)       *    1.38  * Hydr. Depth (ft)       *    0.20
*    0.93  *    0.52  *
* Conv. Total (cfs)       *  2962.2  * Conv. (cfs)            *   219.4
*  1109.7  *  1633.1  *
* Length Wtd. (ft)        *  307.00  * Wetted Per. (ft)       *  165.34
*   45.44  *  243.10  *
* Min Ch El (ft)          * 1567.12  * Shear (lb/sq ft)       *    0.06
*    0.27  *    0.15  *
* Alpha                   *    1.62  * Stream Power (lb/ft s) *    0.03
*    0.48  *    0.13  *
* Frctn Loss (ft)         *    2.89  * Cum Volume (acre-ft)   *    4.36
*    3.19  *    1.62  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *    8.30
*    2.92  *    2.71  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.27

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9372.5 1567.97  9486.7 1566.28  9507.4 1565.53  9627.8 1565.27  9896.7
1565.17
  9918.6 1564.36  9940.6 1564.75  9986.3  1564.6 10002.1 1564.71 10054.9
1565.05
 10071.9 1564.68 10087.9 1565.95 10108.9 1565.83 10111.9 1565.37 10115.9
1564.55
 10129.6 1565.57 10215.1 1565.82 10246.3 1565.31 10355.9  1567.3 10449.4
1570.02

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9372.5    .074  9896.7    .054 10087.9    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9896.7 10087.9              343     343     343              .1
.3
Ineffective Flow     num=       1
```

```
   Sta L   Sta R    Elev  Permanent
 10087.9 10449.4 1565.95       F

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1565.63  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.074
*   0.054  *          *
* W.S. Elev (ft)          * 1565.54  * Reach Len. (ft)         *  343.00
*  343.00  *  343.00  *
* Crit W.S. (ft)          * 1565.40  * Flow Area (sq ft)       *  101.48
*  142.46  *          *
* E.G. Slope (ft/ft)      *0.013966  * Area (sq ft)            *  101.48
*  142.46  *   11.91  *
* Q Total (cfs)           *  486.00  * Flow (cfs)              *   98.24
*  387.76  *          *
* Top Width (ft)          *  620.11  * Top Width (ft)          *  389.47
*  185.99  *   44.65  *
* Vel Total (ft/s)        *    1.99  * Avg. Vel. (ft/s)        *    0.97
*    2.72  *          *
* Max Chl Dpth (ft)       *    1.18  * Hydr. Depth (ft)        *    0.26
*    0.77  *          *
* Conv. Total (cfs)       *  4112.5  * Conv. (cfs)             *   831.3
*  3281.1  *          *
* Length Wtd. (ft)        *  343.00  * Wetted Per. (ft)        *  389.48
*  186.05  *          *
* Min Ch El (ft)          * 1564.36  * Shear (lb/sq ft)        *    0.23
*    0.67  *          *
* Alpha                   *    1.54  * Stream Power (lb/ft s) *    0.22
*    1.82  *          *
* Frctn Loss (ft)         *    3.03  * Cum Volume (acre-ft)    *    3.89
*    2.53  *    1.13  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    6.35
*    2.10  *    1.69  *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid, water
         surface was used.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.20

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
```

```
Elev
*************************************************************************
********
    9443 1565.98  9484.6  1565.3  9504.1  1564.4  9640.8 1563.54  9670.6
1562.51
  9920.3 1561.33  9941.6 1561.98  9966.3 1561.72  9970.6 1561.56  9980.7
1561.76
  9991.1 1561.64    9999  1561.2 10001.3 1560.52 10027.1 1561.61 10037.7
1561.5
   10042 1561.34 10048.6 1561.48 10065.9 1561.13 10087.7 1562.43 10244.1
1567.98

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9443    .074  9980.7    .054 10027.1    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9980.7 10027.1              255     255     255             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1562.59  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1562.54  * Reach Len. (ft)         *  255.00
*  255.00  *  255.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  204.56
*   59.66  *   61.04  *
* E.G. Slope (ft/ft)      *0.006079  * Area (sq ft)            *  204.56
*   59.66  *   61.04  *
* Q Total (cfs)           *  486.00  * Flow (cfs)              *  242.18
*  151.07  *   92.75  *
* Top Width (ft)          *  421.26  * Top Width (ft)          *  311.07
*   46.40  *   63.80  *
* Vel Total (ft/s)        *    1.49  * Avg. Vel. (ft/s)        *    1.18
*    2.53  *    1.52  *
* Max Chl Dpth (ft)       *    2.02  * Hydr. Depth (ft)        *    0.66
*    1.29  *    0.96  *
* Conv. Total (cfs)       *  6233.1  * Conv. (cfs)             *  3106.0
*  1937.6  *  1189.5  *
* Length Wtd. (ft)        *  255.00  * Wetted Per. (ft)        *  311.09
*   46.53  *   63.85  *
* Min Ch El (ft)          * 1560.52  * Shear (lb/sq ft)        *    0.25
*    0.49  *    0.36  *
* Alpha                   *    1.40  * Stream Power (lb/ft s) *    0.30
*    1.23  *    0.55  *
* Frctn Loss (ft)         *    2.18  * Cum Volume (acre-ft)    *    2.68
*    1.74  *    0.85  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    3.59
*    1.19  *    1.27  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
```

```
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25               RS: 0.16

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
    9588 1564.15  9872.6 1560.12  9883.9 1560.39  9975.4    1559  9980.4
1559.04
  9983.1 1558.96 10004.2  1558.5 10005.5 1558.45 10044.9 1559.61 10067.3
1558.99
 10101.7 1560.78 10272.7 1566.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9588    .074  9980.4    .054 10044.9    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9980.4 10044.9               416     416     416             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1560.40  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1560.24  * Reach Len. (ft)         *  416.00
*  416.00  *  416.00  *
* Crit W.S. (ft)          * 1559.90  * Flow Area (sq ft)       *   57.25
*   85.01  *   35.94  *
* E.G. Slope (ft/ft)      *0.012919  * Area (sq ft)            *   57.25
*   85.01  *   35.94  *
* Q Total (cfs)           *  486.00  * Flow (cfs)              *   97.30
*  319.51  *   69.19  *
* Top Width (ft)          *  210.51  * Top Width (ft)          *   99.64
*   64.50  *   46.37  *
* Vel Total (ft/s)        *    2.73  * Avg. Vel. (ft/s)        *    1.70
*    3.76  *    1.92  *
* Max Chl Dpth (ft)       *    1.79  * Hydr. Depth (ft)        *    0.57
*    1.32  *    0.78  *
* Conv. Total (cfs)       *  4275.8  * Conv. (cfs)             *   856.1
*  2811.0  *   608.7  *
* Length Wtd. (ft)        *  416.00  * Wetted Per. (ft)        *   99.65
*   64.52  *   46.41  *
* Min Ch El (ft)          * 1558.45  * Shear (lb/sq ft)        *    0.46
*    1.06  *    0.62  *
```

```
* Alpha                    *    1.40  * Stream Power (lb/ft s) *    0.79
*    3.99  *    1.20  *
* Frctn Loss (ft)           *    3.64  * Cum Volume (acre-ft)   *    1.92
*    1.32  *    0.56  *
* C & E Loss (ft)           *    0.02  * Cum SA (acres)         *    2.39
*    0.86  *    0.94  *
*********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.08

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*********************************************************************
********
  9655.8 1560.16  9680.3 1559.31  9731.5 1558.54  9747.5 1557.84  9815.3
1556.3
  9833.6 1556.99  9862.1 1555.91  9904.8 1555.57  9910.4  1555.7  9929.3
1555.64
  9968.8  1555.1  9968.9  1555.1  9982.8 1555.66  9988.9 1555.25 10009.2
1554.5
 10026.1 1555.67 10094.8 1556.37 10140.2    1559 10379.3 1565.72

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9655.8    .074  9982.8    .054 10026.1    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.8 10026.1              335     335     335             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*********************************************************************
***********************
* E.G. Elev (ft)          * 1556.74  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1556.66  * Reach Len. (ft)         *  335.00
*  335.00  *  335.00  *
* Crit W.S. (ft)          * 1556.17  * Flow Area (sq ft)       *  144.05
*   70.05  *   44.43  *
* E.G. Slope (ft/ft)      *0.006326  * Area (sq ft)            *  144.05
```

```
*   70.05  *   44.43  *
* Q Total (cfs)          *  486.00  * Flow (cfs)             *  224.26
*  211.07  *   50.67  *
* Top Width (ft)         *  282.49  * Top Width (ft)         *  165.55
*   43.30  *   73.65  *
* Vel Total (ft/s)       *    1.88  * Avg. Vel. (ft/s)       *    1.56
*    3.01  *    1.14  *
* Max Chl Dpth (ft)      *    2.16  * Hydr. Depth (ft)       *    0.87
*    1.62  *    0.60  *
* Conv. Total (cfs)      *  6110.2  * Conv. (cfs)            *  2819.5
*  2653.6  *   637.0  *
* Length Wtd. (ft)       *  335.00  * Wetted Per. (ft)       *  165.59
*   43.37  *   73.66  *
* Min Ch El (ft)         * 1554.50  * Shear (lb/sq ft)       *    0.34
*    0.64  *    0.24  *
* Alpha                  *    1.47  * Stream Power (lb/ft s) *    0.53
*    1.92  *    0.27  *
* Frctn Loss (ft)        *    2.60  * Cum Volume (acre-ft)   *    0.96
*    0.57  *    0.18  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    1.12
*    0.35  *    0.37  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW25
REACH: NRW25              RS: 0.01

INPUT
Description: D.S. Limit of Study
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9493.8 1558.83  9523.2 1557.35  9712.4 1555.97  9900.9  1553.1  9920.2
1552.34
  9944.3 1553.08  9969.8 1552.91    9978 1552.17  9979.2 1552.12  9988.1
1552.51
  9993.1 1551.98 10001.3 1551.24 10017.3 1553.88 10038.7 1553.86 10056.3
1555.2
 10096.9 1556.61 10116.3 1557.91 10140.2 1558.55 10162.9 1560.93 10168.3
1561.77
 10175.9 1562.67 10203.3 1562.82 10212.8 1563.48 10224.7 1563.92

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9493.8    .074  9969.8    .054 10017.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9969.8 10017.3                 0       0       0             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1554.13	Element	Left OB
Channel	Right OB		
Vel Head (ft)	0.16	Wt. n-Val.	0.074
0.054	0.074		
W.S. Elev (ft)	1553.98	Reach Len. (ft)	
Crit W.S. (ft)	1553.55	Flow Area (sq ft)	104.82
79.41	2.33		
E.G. Slope (ft/ft)	0.009708	Area (sq ft)	104.82
79.41	2.33		
Q Total (cfs)	486.00	Flow (cfs)	183.07
301.93	1.00		
Top Width (ft)	196.77	Top Width (ft)	126.36
47.50	22.91		
Vel Total (ft/s)	2.60	Avg. Vel. (ft/s)	1.75
3.80	0.43		
Max Chl Dpth (ft)	2.73	Hydr. Depth (ft)	0.83
1.67	0.10		
Conv. Total (cfs)	4932.6	Conv. (cfs)	1858.0
3064.4	10.2		
Length Wtd. (ft)		Wetted Per. (ft)	126.39
47.82	22.91		
Min Ch El (ft)	1551.24	Shear (lb/sq ft)	0.50
1.01	0.06		
Alpha	1.49	Stream Power (lb/ft s)	0.88
3.83	0.03		
Frctn Loss (ft)		Cum Volume (acre-ft)	
C & E Loss (ft)		Cum SA (acres)	

SUMMARY OF MANNING'S N VALUES

River:NRW25

Reach	River Sta.	n1	n2	n3
NRW25	0.87	.074	.054	.074
NRW25	0.81	.074	.054	.074
NRW25	0.77	.074	.054	.074
NRW25	0.71	.074	.054	.074
NRW25	0.65	.074	.054	.074
NRW25	0.61	.074	.054	.074
NRW25	0.55	.074	.054	.054
NRW25	0.51	.074	.054	.074
NRW25	0.47	.074	.054	.074
NRW25	0.42	.074	.054	.074
NRW25	0.36	.074	.054	.074
NRW25	0.33	.074	.054	.074
NRW25	0.27	.074	.054	.074
NRW25	0.20	.074	.054	.074
NRW25	0.16	.074	.054	.074

*NRW25	* 0.08	* .074*	.054*	.074*
*NRW25	* 0.01	* .074*	.054*	.074*

****
****

SUMMARY OF REACH LENGTHS

River: NRW25

Reach	River Sta.	Left	Channel	Right
*NRW25	* 0.87	* 291*	291*	291*
*NRW25	* 0.81	* 251*	251*	251*
*NRW25	* 0.77	* 303*	303*	303*
*NRW25	* 0.71	* 289*	289*	289*
*NRW25	* 0.65	* 254*	254*	254*
*NRW25	* 0.61	* 275*	275*	275*
*NRW25	* 0.55	* 222*	222*	222*
*NRW25	* 0.51	* 212*	212*	212*
*NRW25	* 0.47	* 269*	269*	269*
*NRW25	* 0.42	* 315*	315*	315*
*NRW25	* 0.36	* 186*	186*	186*
*NRW25	* 0.33	* 307*	307*	307*
*NRW25	* 0.27	* 343*	343*	343*
*NRW25	* 0.20	* 255*	255*	255*
*NRW25	* 0.16	* 416*	416*	416*
*NRW25	* 0.08	* 335*	335*	335*
*NRW25	* 0.01	* 0*	0*	0*

****
****

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW25

Reach	River Sta.	Contr.	Expan.
*NRW25	* 0.87	* .1*	.3*
*NRW25	* 0.81	* .1*	.3*
*NRW25	* 0.77	* .1*	.3*
*NRW25	* 0.71	* .1*	.3*
*NRW25	* 0.65	* .1*	.3*
*NRW25	* 0.61	* .1*	.3*
*NRW25	* 0.55	* .1*	.3*
*NRW25	* 0.51	* .1*	.3*
*NRW25	* 0.47	* .1*	.3*
*NRW25	* 0.42	* .1*	.3*
*NRW25	* 0.36	* .1*	.3*
*NRW25	* 0.33	* .1*	.3*
*NRW25	* 0.27	* .1*	.3*
*NRW25	* 0.20	* .1*	.3*
*NRW25	* 0.16	* .1*	.3*
*NRW25	* 0.08	* .1*	.3*
*NRW25	* 0.01	* .1*	.3*

NRW25.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.xs
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:35:21 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW25,NRW25						
.87	291	291	291	194.91	201	
.81	251	251	251	107.66	201	
.77	303	303	303	154.36	201	
.71	289	289	289	58.51	201	
.65	254	254	254	92.03	201	
.61	275	275	275	73.59	201	
.55	222	222	222	183.49	201	
.51	212	212	212	224.21	201	D
.47	269	269	269	179.85	201	D
.42	315	315	315	324.79	201	
.36	186	186	186	237.08	201	
.33	307	307	307	453.82	201	
.27	343	343	343	575.46	486	
.2	255	255	255	421.26	486	
.16	416	416	416	210.51	486	D
.08	335	335	335	282.49	486	D
.01	0	0	0	196.77	486	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

LOCATION CHECK

BOUNDARY CONDITION CHECK

```
XS BC 02 The name of the stream is NRW25,NRW25
         Normal S = 0.0097 is specified as the downstream boundary
         for profile 100-Year
```

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW25\NRW25.nt
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:35:20 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW25,NRW25						
.87		0.074	0.054	0.074	0.1	0.3
.81		0.074	0.054	0.074	0.1	0.3
.77		0.074	0.054	0.074	0.1	0.3
.71		0.074	0.054	0.074	0.1	0.3
.65		0.074	0.054	0.074	0.1	0.3
.61		0.074	0.054	0.074	0.1	0.3
.55		0.074	0.054	0.054	0.1	0.3
.51		0.074	0.054	0.074	0.1	0.3
.47		0.074	0.054	0.074	0.1	0.3
.42		0.074	0.054	0.074	0.1	0.3
.36		0.074	0.054	0.074	0.1	0.3
.33		0.074	0.054	0.074	0.1	0.3
.27		0.074	0.054	0.074	0.1	0.3
.2		0.074	0.054	0.074	0.1	0.3
.16		0.074	0.054	0.074	0.1	0.3
.08		0.074	0.054	0.074	0.1	0.3
.01		0.074	0.054	0.074	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.074	0.074
Right Overbank n Value:	0.054	0.074
Channel n Value:	0.054	0.054
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 30

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW30 River: NRW30 Reach: NRW30 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW30	2.06	273.00	1673.25	1674.81		1674.93	0.008130	2.83	109.54	113.23	0.45
NRW30	2.02	273.00	1670.35	1671.82	1671.66	1672.06	0.021081	4.04	76.87	99.27	0.71
NRW30	1.97	273.00	1667.41	1669.58		1669.67	0.004668	2.67	133.63	119.49	0.36
NRW30	1.92	273.00	1667.60	1668.40	1668.40	1668.61	0.005115	3.69	74.03	178.93	1.01
NRW30	1.89	283.00	1663.12	1665.22	1664.55	1665.32	0.005412	2.63	119.95	105.40	0.38
NRW30	1.85	283.00	1661.41	1662.80	1662.65	1663.02	0.020621	4.08	84.22	104.32	0.70
NRW30	1.81	283.00	1658.10	1660.32		1660.44	0.007923	3.03	110.58	106.41	0.45
NRW30	1.77	283.00	1656.39	1658.01	1657.65	1658.17	0.013727	3.26	87.57	92.63	0.57
NRW30	1.72	283.00	1653.54	1655.33	1654.86	1655.46	0.010259	2.86	99.12	95.52	0.49
NRW30	1.67	283.00	1650.47	1652.36		1652.47	0.010102	2.95	117.58	134.85	0.49
NRW30	1.62	283.00	1647.30	1649.12		1649.31	0.013980	3.58	90.78	117.41	0.59
NRW30	1.57	283.00	1644.60	1646.19		1646.28	0.008818	2.56	130.86	142.62	0.45
NRW30	1.51	283.00	1641.77	1643.54	1643.04	1643.64	0.008925	2.85	130.99	156.48	0.47
NRW30	1.45	283.00	1639.18	1640.90		1640.97	0.008291	2.61	138.89	159.47	0.45
NRW30	1.39	283.00	1636.20	1637.65	1637.39	1637.80	0.012025	3.30	109.45	152.73	0.54
NRW30	1.34	283.00	1633.14	1635.08	1634.76	1635.16	0.007849	2.87	150.43	204.69	0.45
NRW30	1.27	283.00	1629.74	1631.10	1630.90	1631.20	0.016380	2.89	128.74	221.11	0.59
NRW30	1.23	283.00	1627.83	1629.21		1629.26	0.005389	1.89	162.44	205.04	0.35
NRW30	1.17	283.00	1624.09	1625.20	1625.20	1625.44	0.054434	3.88	72.93	156.54	1.00
NRW30	1.11	283.00	1620.65	1622.21		1622.26	0.003611	1.83	175.85	199.80	0.30
NRW30	1.03	471.00	1617.06	1618.36	1618.17	1618.64	0.024134	4.39	118.90	150.09	0.76
NRW30	0.99	471.00	1614.72	1616.45		1616.53	0.005027	2.27	207.72	165.70	0.36
NRW30	0.95	471.00	1613.61	1614.86	1614.52	1614.98	0.012552	2.83	166.30	188.81	0.53
NRW30	0.90	471.00	1610.45	1612.14	1611.65	1612.22	0.008320	2.55	212.21	238.06	0.44
NRW30	0.85	471.00	1607.50	1609.29		1609.41	0.010299	2.81	176.85	218.61	0.49
NRW30	0.79	471.00	1604.74	1605.93	1605.59	1606.06	0.011667	2.99	169.05	185.69	0.52
NRW30	0.73	471.00	1600.91	1602.77		1602.93	0.010736	3.42	169.17	181.94	0.53
NRW30	0.69	471.00	1599.37	1600.75	1600.22	1600.83	0.006162	2.42	211.54	211.02	0.39
NRW30	0.63	471.00	1597.03	1598.05	1597.77	1598.19	0.013950	3.00	161.08	196.04	0.56
NRW30	0.57	471.00	1593.12	1594.71	1594.29	1594.81	0.008851	2.52	188.69	204.36	0.45
NRW30	0.51	503.00	1590.72	1592.10	1591.59	1592.18	0.007775	2.61	237.20	232.25	0.44
NRW30	0.45	503.00	1586.72	1588.41		1588.61	0.017643	4.16	162.79	183.15	0.67
NRW30	0.40	503.00	1583.41	1585.18		1585.32	0.008823	3.05	169.33	153.40	0.47
NRW30	0.34	503.00	1579.77	1581.57	1581.21	1581.74	0.014637	3.36	154.24	170.74	0.59
NRW30	0.28	503.00	1577.00	1579.06		1579.15	0.005414	2.43	215.93	199.65	0.37
NRW30	0.22	503.00	1575.08	1576.64	1576.23	1576.76	0.009725	2.89	185.84	193.44	0.49

HEC-RAS Plan: NRW30 River: NRW30 Reach: NRW30 Profile: 100-Year (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW30	0.17	503.00	1572.30	1574.90		1574.99	0.005790	3.10	234.64	188.04	0.41
NRW30	0.11	503.00	1570.70	1573.03		1573.15	0.006098	3.00	200.12	156.67	0.41
NRW30	0.06	503.00	1568.94	1571.23		1571.41	0.006985	3.52	159.69	108.34	0.45
NRW30	0.02	503.00	1567.37	1569.27	1568.77	1569.47	0.011804	3.59	141.40	120.84	0.55

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X      X  XXXXXX    XXXX        XXXX        XX       XXXX
X      X  X         X    X      X   X      X  X     X
X      X  X         X           X   X     X    X    X
XXXXXXX   XXXX      X       XXX XXXX      XXXXXX     XXXX
X      X  X         X           X  X      X    X         X
X      X  X         X    X      X   X     X    X         X
X      X  XXXXXX    XXXX        X    X    X    X    XXXXX
```

****
****

PROJECT DATA
Project Title: NRW 30
Project File : NRW30.prj
Run Date and Time: 3/16/2005 5:25:42 PM

Project in English units

Project Description:
NRW 30

New River West Tributaries FDS
Prepared by URS Corp. for the Flood
Control District of Maricopa County
Contract No: FCD 2003 C057
Date: April
29, 2005

Topographic Mapping Source:
Flown and Mapped by DTM Inc.
Flight
Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal - NAD83 Arizona
State Plane, Central Zone, International Feet
Vertical - NAVD 88 (GDACS
Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour storm
event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

273 cfs @ R.S. 10879
283 cfs @ R.S. 10004
471 cfs @ R.S. 5461
503

cfs @ R.S. 2697

Study Limits:
U.S. Limit is approximately 875 feet east,
and 910 feet north of the SW corner of
Section 26 T6NR1E
D.S. Limit is the
New River floodplain

Stationing based upon River Mile distance from a point
downstream of the Hydraulic Baseline confluence with the New River
floodplain

Final Model Run Date:
March 16, 2005

****
****

PLAN DATA

Plan Title: NRW 30
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30
\NRW30.p01

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW30\NRW30.g01

Flow Title : 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW30\NRW30.f03

Plan Summary Information:

Number of:	Cross Sections	= 40	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: 100-Year; 6-Hour

Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30
\NRW30.f03

Flow Data (cfs)

River	Reach	RS	100-Year
NRW30	NRW30	2.06	273
NRW30	NRW30	1.89	283
NRW30	NRW30	1.03	471
NRW30	NRW30	0.51	503

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
NRW30	NRW30	100-Year		Normal S = 0.0118

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30
\NRW30.g01

CROSS SECTION

RIVER: NRW30
REACH: NRW30 RS: 2.06

INPUT
Description: U.S. Limit of Study
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9873.3	1678.07	9933.1	1675.95	9963.6	1673.89	9969.2	1673.93	9997.7	1673.5
10002.7	1673.25	10040.2	1673.8	10066.6	1674.96	10070.5	1674.9	10100.1	1675.48
10127.9	1677.57	10139.3	1678.09						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9873.3	.074	9969.2	.054	10040.2	.074

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.2	10040.2	231	231	231	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

```
**********************************************************************
***********************
* E.G. Elev (ft)          * 1674.93  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1674.81  * Reach Len. (ft)         *  231.00
*  231.00  *  231.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   11.32
*   86.61  *   11.62  *
* E.G. Slope (ft/ft)      *0.008130  * Area (sq ft)            *   11.32
*   86.61  *   11.62  *
* Q Total (cfs)           *  273.00  * Flow (cfs)              *   14.37
*  245.29  *   13.34  *
* Top Width (ft)          *  113.23  * Top Width (ft)          *   19.23
*   71.00  *   23.00  *
* Vel Total (ft/s)        *    2.49  * Avg. Vel. (ft/s)        *    1.27
*    2.83  *    1.15  *
* Max Chl Dpth (ft)       *    1.56  * Hydr. Depth (ft)        *    0.59
*    1.22  *    0.51  *
* Conv. Total (cfs)       *  3027.7  * Conv. (cfs)             *   159.4
*  2720.4  *   147.9  *
* Length Wtd. (ft)        *  231.00  * Wetted Per. (ft)        *   19.26
*   71.01  *   23.02  *
* Min Ch El (ft)          * 1673.25  * Shear (lb/sq ft)        *    0.30
*    0.62  *    0.26  *
* Alpha                   *    1.18  * Stream Power (lb/ft s) *    0.38
*    1.75  *    0.29  *
* Frctn Loss (ft)         *    2.86  * Cum Volume (acre-ft)    *    4.60
*   27.99  *    4.88  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    7.25
*   26.03  *    8.05  *
**********************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW30
REACH: NRW30 RS: 2.02

INPUT
Description:
Station Elevation Data num= 22

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9850.6 1675.97  9862.4 1675.52  9871.8 1675.54  9874.5 1675.19    9881
1674.84
  9891.5 1673.88  9908.3  1673.6  9910.4 1673.51  9926.4 1672.44  9938.6
```

```
1672.7
  9958.8  1671.7    9959  1671.7  9984.3 1671.14  9988.3 1671.15    9995
1670.98
   10002  1670.8 10013.4 1670.83 10024.5 1670.35 10048.9 1671.26 10051.6
1671.42
 10058.4 1672.11   10154 1675.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**************************************************
  9850.6    .074  9988.3    .054 10048.9    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.3 10048.9              271     271     271             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1672.06  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1671.82  * Reach Len. (ft)         *  271.00
*  271.00  *  271.00  *
* Crit W.S. (ft)          * 1671.66  * Flow Area (sq ft)       *   13.10
*   61.66  *    2.11  *
* E.G. Slope (ft/ft)      *0.021081  * Area (sq ft)            *   13.10
*   61.66  *    2.11  *
* Q Total (cfs)           *  273.00  * Flow (cfs)              *   21.06
*  249.10  *    2.84  *
* Top Width (ft)          *   99.27  * Top Width (ft)          *   32.00
*   60.60  *    6.68  *
* Vel Total (ft/s)        *    3.55  * Avg. Vel. (ft/s)        *    1.61
*    4.04  *    1.35  *
* Max Chl Dpth (ft)       *    1.47  * Hydr. Depth (ft)        *    0.41
*    1.02  *    0.32  *
* Conv. Total (cfs)       *  1880.3  * Conv. (cfs)             *   145.0
*  1715.7  *    19.6  *
* Length Wtd. (ft)        *  271.00  * Wetted Per. (ft)        *   32.00
*   60.63  *    6.70  *
* Min Ch El (ft)          * 1670.35  * Shear (lb/sq ft)        *    0.54
*    1.34  *    0.41  *
* Alpha                   *    1.20  * Stream Power (lb/ft s) *    0.87
*    5.41  *    0.56  *
* Frctn Loss (ft)         *    2.34  * Cum Volume (acre-ft)    *    4.54
*   27.59  *    4.85  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    7.12
*   25.68  *    7.97  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW30
REACH: NRW30 RS: 1.97

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9900	1672.07	9906.6	1671.81	9926	1670.49	9927.6	1670.43	9935.3	1670.31
9957.8	1669.08	9968.8	1668.81	9974.9	1668.49	9979.8	1668.35	10001.9	1667.41
10026.4	1668.38	10046.9	1668.54	10128.2	1672.53	10130.4	1672.59		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9900	.074	9979.8	.054	10026.4	.074

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9979.8	10026.4	215	215	215	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1669.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.	0.074	0.054	0.074
W.S. Elev (ft)	1669.58	Reach Len. (ft)	215.00	215.00	215.00
Crit W.S. (ft)		Flow Area (sq ft)	20.67	78.92	34.04
E.G. Slope (ft/ft)	0.004668	Area (sq ft)	20.67	78.92	34.04
Q Total (cfs)	273.00	Flow (cfs)	21.56	210.69	40.76
Top Width (ft)	119.49	Top Width (ft)	31.17	46.60	41.72
Vel Total (ft/s)	2.04	Avg. Vel. (ft/s)	1.04	2.67	1.20
Max Chl Dpth (ft)	2.17	Hydr. Depth (ft)	0.66	1.69	0.82
Conv. Total (cfs)	3995.7	Conv. (cfs)	315.5	3083.7	596.5
Length Wtd. (ft)	215.00	Wetted Per. (ft)	31.20	46.64	41.74
Min Ch El (ft)	1667.41	Shear (lb/sq ft)	0.19	0.49	0.24
Alpha	1.39	Stream Power (lb/ft s)	0.20	1.32	0.28
Frctn Loss (ft)	1.05	Cum Volume (acre-ft)	4.43	27.15	4.74
C & E Loss (ft)	0.01	Cum SA (acres)	6.92		

```
*   25.35  *    7.82  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.92

INPUT
Description: CL New River Road Dip Crossing
Station Elevation Data    num=       7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9647 1674.02  9837.3 1669.96  9838.9 1669.88  9992.7  1667.6   10046
1667.9
 10346.4 1669.99 10398.2 1669.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9647    .016  9838.9    .016 10346.4    .016

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9838.9 10346.4              158     158     158             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1668.61  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.21  * Wt. n-Val.             *
*   0.016  *          *
* W.S. Elev (ft)         * 1668.40  * Reach Len. (ft)        *  158.00
*  158.00  *  158.00  *
* Crit W.S. (ft)         * 1668.40  * Flow Area (sq ft)      *
*   74.03  *          *
* E.G. Slope (ft/ft)     *0.005115  * Area (sq ft)           *
*   74.03  *          *
* Q Total (cfs)          *  273.00  * Flow (cfs)             *
*  273.00  *          *
* Top Width (ft)         *  178.93  * Top Width (ft)         *
*  178.93  *          *
* Vel Total (ft/s)       *    3.69  * Avg. Vel. (ft/s)       *
*    3.69  *          *
* Max Chl Dpth (ft)      *    0.80  * Hydr. Depth (ft)       *
*    0.41  *          *
* Conv. Total (cfs)      *  3817.0  * Conv. (cfs)            *
*  3817.0  *          *
* Length Wtd. (ft)       *  158.00  * Wetted Per. (ft)       *
*  178.94  *          *
* Min Ch El (ft)         * 1667.60  * Shear (lb/sq ft)       *
```

```
*    0.13  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    0.49  *          *
* Frctn Loss (ft)         *    0.83  * Cum Volume (acre-ft)   *    4.38
*   26.78  *    4.65  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)         *    6.84
*   24.79  *    7.71  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.89

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9789.6 1672.58  9893.1 1668.13    9915 1666.65  9940.1 1665.54  9954.8
1665.23
  9968.4 1664.34  9978.1 1664.16  9993.3 1663.53 10006.9 1663.12 10045.1
1664.55
 10083.4 1666.23   10131 1667.37 10138.6 1667.94 10147.4 1668.39   10152
1668.49

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9789.6    .074  9978.1    .054 10045.1    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.1 10045.1              242     242     242             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1665.32  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
```

```
* W.S. Elev (ft)          * 1665.22  * Reach Len. (ft)         *  242.00
*  242.00  *  242.00  *
* Crit W.S. (ft)          * 1664.55  * Flow Area (sq ft)       *   15.31
*   99.53  *    5.11  *
* E.G. Slope (ft/ft)      *0.005412  * Area (sq ft)            *   15.31
*   99.53  *    5.11  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *   17.16
*  262.21  *    3.63  *
* Top Width (ft)          *  105.40  * Top Width (ft)          *   23.14
*   67.00  *   15.26  *
* Vel Total (ft/s)        *    2.36  * Avg. Vel. (ft/s)        *    1.12
*    2.63  *    0.71  *
* Max Chl Dpth (ft)       *    2.10  * Hydr. Depth (ft)        *    0.66
*    1.49  *    0.33  *
* Conv. Total (cfs)       *  3847.0  * Conv. (cfs)             *   233.3
*  3564.3  *    49.4  *
* Length Wtd. (ft)        *  242.00  * Wetted Per. (ft)        *   23.17
*   67.05  *   15.27  *
* Min Ch El (ft)          * 1663.12  * Shear (lb/sq ft)        *    0.22
*    0.50  *    0.11  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *    0.25
*    1.32  *    0.08  *
* Frctn Loss (ft)         *    2.29  * Cum Volume (acre-ft)    *    4.36
*   26.46  *    4.64  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    6.80
*   24.34  *    7.69  *
*****************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW30
REACH: NRW30 RS: 1.85

INPUT
Description: Section lines 26 & 35 of T6NR1E
Station Elevation Data num= 29

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
  9806.5 1668.97    9809  1668.7  9822.8 1667.95  9842.5  1667.2  9852.6
1667.11
    9853 1667.08  9856.3 1666.94  9864.2 1666.44  9883.1 1665.79  9890.9
1665.24
    9913 1664.19  9914.5 1664.15  9916.2 1664.08  9954.8 1661.89  9958.5
1661.96
  9972.3 1662.42  9980.5 1662.24  9989.8 1662.21   10000 1661.41 10021.9
1661.54
 10028.1  1661.6 10043.7 1662.86 10051.7 1663.18 10062.3 1663.67 10080.4
1664.1
   10099 1664.65 10115.5 1664.98 10128.8 1665.63 10157.1 1666.68
```

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9806.5    .074  9989.8    .054 10043.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.8 10043.7              211     211     211             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1663.02  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.22  * Wt. n-Val.              *   0.074
*   0.054  *          *
* W.S. Elev (ft)          * 1662.80  * Reach Len. (ft)         *  211.00
*  211.00  *  211.00  *
* Crit W.S. (ft)          * 1662.65  * Flow Area (sq ft)       *   28.36
*   55.87  *          *
* E.G. Slope (ft/ft)      *0.020621  * Area (sq ft)            *   28.36
*   55.87  *          *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *   55.18
*  227.82  *          *
* Top Width (ft)          *  104.32  * Top Width (ft)          *   51.11
*   53.21  *          *
* Vel Total (ft/s)        *    3.36  * Avg. Vel. (ft/s)        *    1.95
*    4.08  *          *
* Max Chl Dpth (ft)       *    1.39  * Hydr. Depth (ft)        *    0.55
*    1.05  *          *
* Conv. Total (cfs)       *  1970.8  * Conv. (cfs)             *   384.3
*  1586.5  *          *
* Length Wtd. (ft)        *  211.00  * Wetted Per. (ft)        *   51.15
*   53.29  *          *
* Min Ch El (ft)          * 1661.41  * Shear (lb/sq ft)        *    0.71
*    1.35  *          *
* Alpha                   *    1.25  * Stream Power (lb/ft s) *    1.39
*    5.50  *          *
* Frctn Loss (ft)         *    2.55  * Cum Volume (acre-ft)    *    4.23
*   26.03  *    4.63  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    6.59
*   24.01  *    7.64  *
**********************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.81
```

```
INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9825.8  1666.4  9845.1 1666.75  9851.7 1666.04  9871.9 1665.42  9874.9
1665.23
  9877.6 1665.25  9889.2 1664.93  9953.3  1661.7    9963 1660.67  9970.8
1660.02
  9976.4 1659.94  9990.3 1658.98 10007.4  1658.1 10033.2 1659.73 10045.5
1659.21
 10061.1 1659.55 10073.1  1660.3 10089.4 1660.79 10102.8 1660.38   10135
1662.8
 10258.3  1667.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9825.8    .074  9976.4    .054 10033.2    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.4 10033.2              221     221     221             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1660.44  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1660.32  * Reach Len. (ft)         *  221.00
*  221.00  *  221.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    2.41
*   78.45  *   29.72  *
* E.G. Slope (ft/ft)      *0.007923  * Area (sq ft)            *    2.41
*   78.45  *   29.72  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *    1.77
*  237.99  *   43.24  *
* Top Width (ft)          *  106.41  * Top Width (ft)          *    9.16
*   56.80  *   40.45  *
* Vel Total (ft/s)        *    2.56  * Avg. Vel. (ft/s)        *    0.73
*    3.03  *    1.45  *
* Max Chl Dpth (ft)       *    2.22  * Hydr. Depth (ft)        *    0.26
*    1.38  *    0.73  *
* Conv. Total (cfs)       *  3179.3  * Conv. (cfs)             *    19.9
*  2673.7  *   485.7  *
* Length Wtd. (ft)        *  221.00  * Wetted Per. (ft)        *    9.17
*   56.91  *   40.49  *
* Min Ch El (ft)          * 1658.10  * Shear (lb/sq ft)        *    0.13
*    0.68  *    0.36  *
* Alpha                   *    1.23  * Stream Power (lb/ft s) *    0.10
*    2.07  *    0.53  *
* Frctn Loss (ft)         *    2.26  * Cum Volume (acre-ft)    *    4.16
*   25.71  *    4.56  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    6.45
*   23.74  *    7.55  *
**************************************************************************
```

```
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.77

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9767.3  1664.2  9813.7 1663.55  9815.2 1663.35  9981.5 1657.75 10001.1
1656.39
   10009 1656.52 10023.4 1657.12 10046.1 1656.67 10084.7  1659.2 10115.3
1660.5
 10145.1 1660.67 10176.5 1663.06 10255.1 1665.07

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9767.3    .074  9981.5    .054 10084.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9981.5 10084.7               229     229     229             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1658.17  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.074
*   0.054  *          *
* W.S. Elev (ft)          * 1658.01  * Reach Len. (ft)         *  229.00
*  229.00  *  229.00  *
* Crit W.S. (ft)          * 1657.65  * Flow Area (sq ft)       *    0.98
*   86.59  *          *
* E.G. Slope (ft/ft)      *0.013727  * Area (sq ft)            *    0.98
*   86.59  *          *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *    0.59
*  282.41  *          *
* Top Width (ft)          *   92.63  * Top Width (ft)          *    7.63
*   85.00  *          *
* Vel Total (ft/s)        *    3.23  * Avg. Vel. (ft/s)        *    0.60
*    3.26  *          *
* Max Chl Dpth (ft)       *    1.62  * Hydr. Depth (ft)        *    0.13
*    1.02  *          *
* Conv. Total (cfs)       *  2415.4  * Conv. (cfs)             *     5.0
*  2410.4  *          *
* Length Wtd. (ft)        *  229.00  * Wetted Per. (ft)        *    7.64
*   85.11  *          *
* Min Ch El (ft)          * 1656.39  * Shear (lb/sq ft)        *    0.11
```

```
*    0.87  *          *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *    0.07
*    2.84  *          *
* Frctn Loss (ft)         *    2.70  * Cum Volume (acre-ft)   *    4.15
*   25.29  *    4.48  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *    6.41
*   23.38  *    7.44  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.72

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9733.8  1662.4  9795.9 1661.63  9833.4 1662.12  9859.7 1659.61  9902.8
1657.69
  9950.4 1654.54  9999.4 1653.54 10006.5 1653.89 10051.2 1656.23 10264.8
1660.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9733.8    .074  9902.8    .054 10051.2    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9902.8 10051.2              293     293     293             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1655.46  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *
*   0.054  *          *
* W.S. Elev (ft)          * 1655.33  * Reach Len. (ft)         *  293.00
*  293.00  *  293.00  *
* Crit W.S. (ft)          * 1654.86  * Flow Area (sq ft)       *
*   99.12  *          *
* E.G. Slope (ft/ft)      *0.010259  * Area (sq ft)            *
*   99.12  *          *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *
*  283.00  *          *
* Top Width (ft)          *   95.52  * Top Width (ft)          *
*   95.52  *          *
* Vel Total (ft/s)        *    2.86  * Avg. Vel. (ft/s)        *
*    2.86  *          *
```

```
* Max Chl Dpth (ft)       *    1.79  * Hydr. Depth (ft)        *
*    1.04  *          *
* Conv. Total (cfs)       *  2794.0  * Conv. (cfs)             *
*  2794.0  *          *
* Length Wtd. (ft)        *  293.00  * Wetted Per. (ft)        *
*   95.60  *          *
* Min Ch El (ft)          * 1653.54  * Shear (lb/sq ft)        *
*    0.66  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    1.90  *          *
* Frctn Loss (ft)         *    2.98  * Cum Volume (acre-ft)    *    4.15
*   24.80  *    4.48  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    6.39
*   22.91  *    7.44  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.67

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9779.8 1656.48  9878.1 1654.14  9949.2 1650.94  9968.4 1651.49  9977.6
1651.48
  9994.1 1651.03 10001.1 1650.47 10011.5 1651.14 10034.7  1652.1 10116.9
1653.3
 10254.8 1657.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9779.8    .074  9977.6    .054 10034.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9977.6 10034.7              267     267     267             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1652.47  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1652.36  * Reach Len. (ft)         *  267.00
*  267.00  *  267.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   52.43
*   62.84  *    2.31  *
```

```
* E.G. Slope (ft/ft)      *0.010102  * Area (sq ft)            *   52.43
*   62.84  *    2.31  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *   96.72
*  185.08  *    1.20  *
* Top Width (ft)          *  134.85  * Top Width (ft)          *   59.95
*   57.10  *   17.80  *
* Vel Total (ft/s)        *    2.41  * Avg. Vel. (ft/s)        *    1.84
*    2.95  *    0.52  *
* Max Chl Dpth (ft)       *    1.89  * Hydr. Depth (ft)        *    0.87
*    1.10  *    0.13  *
* Conv. Total (cfs)       *  2815.7  * Conv. (cfs)             *   962.4
*  1841.5  *    11.9  *
* Length Wtd. (ft)        *  267.00  * Wetted Per. (ft)        *   59.99
*   57.17  *   17.80  *
* Min Ch El (ft)          * 1650.47  * Shear (lb/sq ft)        *    0.55
*    0.69  *    0.08  *
* Alpha                   *    1.18  * Stream Power (lb/ft s) *    1.02
*    2.04  *    0.04  *
* Frctn Loss (ft)         *    3.15  * Cum Volume (acre-ft)    *    3.97
*   24.25  *    4.47  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    6.18
*   22.39  *    7.38  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.62

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9723.8 1652.66  9807.3 1650.02  9840.5 1650.13  9973.7 1648.47  9993.8
1647.8
 10003.1  1647.3 10030.8 1648.31 10037.7 1649.03   10056 1650.22 10078.2
1652.71
 10078.7  1652.8 10138.8  1654.2 10147.6 1654.07

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9723.8    .074  9973.7    .054 10037.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.7 10037.7              274     274     274             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
```

```
* E.G. Elev (ft)          * 1649.31  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.19  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1649.12  * Reach Len. (ft)         *  274.00
*  274.00  *  274.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   16.88
*   73.84  *    0.06  *
* E.G. Slope (ft/ft)      *0.013980  * Area (sq ft)            *   16.88
*   73.84  *    0.06  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *   18.92
*  264.06  *    0.02  *
* Top Width (ft)          *  117.41  * Top Width (ft)          *   52.05
*   64.00  *    1.36  *
* Vel Total (ft/s)        *    3.12  * Avg. Vel. (ft/s)        *    1.12
*    3.58  *    0.30  *
* Max Chl Dpth (ft)       *    1.82  * Hydr. Depth (ft)        *    0.32
*    1.15  *    0.04  *
* Conv. Total (cfs)       *  2393.5  * Conv. (cfs)             *   160.0
*  2233.3  *     0.2  *
* Length Wtd. (ft)        *  274.00  * Wetted Per. (ft)        *   52.05
*   64.08  *    1.37  *
* Min Ch El (ft)          * 1647.30  * Shear (lb/sq ft)        *    0.28
*    1.01  *    0.04  *
* Alpha                   *    1.24  * Stream Power (lb/ft s) *    0.32
*    3.60  *    0.01  *
* Frctn Loss (ft)         *    3.00  * Cum Volume (acre-ft)    *    3.76
*   23.84  *    4.47  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    5.84
*   22.02  *    7.33  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.57

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9775.1 1650.14  9892.9 1646.83  9925.3 1645.09  9933.9  1645.2    9962
1645.07
  9975.3  1645.9  9998.1 1645.14 10028.6 1644.62 10029.4  1644.6 10029.8
1644.61
 10065.6 1647.84 10094.8 1649.86 10141.3 1651.55   10152 1651.72 10168.5
1651.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9775.1    .074  9975.3    .054 10065.6    .074
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.3 10065.6              297     297     297             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1646.28  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.074
*   0.054  *          *
* W.S. Elev (ft)          * 1646.19  * Reach Len. (ft)         *  297.00
*  297.00  *  297.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   59.58
*   71.28  *          *
* E.G. Slope (ft/ft)      *0.008818  * Area (sq ft)            *   59.58
*   71.28  *          *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *  100.31
*  182.69  *          *
* Top Width (ft)          *  142.62  * Top Width (ft)          *   70.56
*   72.06  *          *
* Vel Total (ft/s)        *    2.16  * Avg. Vel. (ft/s)        *    1.68
*    2.56  *          *
* Max Chl Dpth (ft)       *    1.59  * Hydr. Depth (ft)        *    0.84
*    0.99  *          *
* Conv. Total (cfs)       *  3013.7  * Conv. (cfs)             *  1068.3
*  1945.4  *          *
* Length Wtd. (ft)        *  297.00  * Wetted Per. (ft)        *   70.62
*   72.15  *          *
* Min Ch El (ft)          * 1644.60  * Shear (lb/sq ft)        *    0.46
*    0.54  *          *
* Alpha                   *    1.12  * Stream Power (lb/ft s) *    0.78
*    1.39  *          *
* Frctn Loss (ft)         *    2.63  * Cum Volume (acre-ft)    *    3.52
*   23.38  *    4.47  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    5.45
*   21.60  *    7.32  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.51

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9796.4 1647.71  9930.7  1643.2  9974.6 1643.05    9980 1642.91   10000
1641.77
```

```
 10004.4 1642.18 10021.3 1642.59 10029.3 1642.13 10044.2 1641.99 10076.4
1643.5
 10093.2 1644.81 10240.4 1647.96

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9796.4    .074  9974.6    .054 10021.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.6 10021.3              309     309     309             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1643.64  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1643.54  * Reach Len. (ft)         *  309.00
*  309.00  *  309.00  *
* Crit W.S. (ft)          * 1643.04  * Flow Area (sq ft)       *   20.12
*   53.58  *   57.29  *
* E.G. Slope (ft/ft)      *0.008925  * Area (sq ft)            *   20.12
*   53.58  *   57.29  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *   19.73
*  152.55  *  110.72  *
* Top Width (ft)          *  156.48  * Top Width (ft)          *   54.13
*   46.70  *   55.66  *
* Vel Total (ft/s)        *    2.16  * Avg. Vel. (ft/s)        *    0.98
*    2.85  *    1.93  *
* Max Chl Dpth (ft)       *    1.77  * Hydr. Depth (ft)        *    0.37
*    1.15  *    1.03  *
* Conv. Total (cfs)       *  2995.6  * Conv. (cfs)             *   208.9
*  1614.7  *  1172.0  *
* Length Wtd. (ft)        *  309.00  * Wetted Per. (ft)        *   54.13
*   46.76  *   55.71  *
* Min Ch El (ft)          * 1641.77  * Shear (lb/sq ft)        *    0.21
*    0.64  *    0.57  *
* Alpha                   *    1.26  * Stream Power (lb/ft s) *    0.20
*    1.82  *    1.11  *
* Frctn Loss (ft)         *    2.66  * Cum Volume (acre-ft)    *    3.25
*   22.95  *    4.27  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    5.03
*   21.19  *    7.13  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.45

INPUT
```

```
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9826.8 1645.57  9844.1 1645.14  9853.8  1645.3  9895.6 1643.67  9906.7
1642.96
  9949.7 1641.48  9964.8 1640.37  9983.4 1640.08 10001.5 1639.18 10025.3
1640.17
 10049.1  1639.5 10297.9  1644.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***************************************************
  9826.8    .074  9964.8    .054 10025.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9964.8 10025.3              321     321     321             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1640.97  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1640.90  * Reach Len. (ft)         *  321.00
*  321.00  *  321.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    1.87
*   64.37  *   72.65  *
* E.G. Slope (ft/ft)      *0.008291  * Area (sq ft)            *    1.87
*   64.37  *   72.65  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *    1.40
*  167.99  *  113.61  *
* Top Width (ft)          *  159.47  * Top Width (ft)          *    7.14
*   60.50  *   91.83  *
* Vel Total (ft/s)        *    2.04  * Avg. Vel. (ft/s)        *    0.75
*    2.61  *    1.56  *
* Max Chl Dpth (ft)       *    1.71  * Hydr. Depth (ft)        *    0.26
*    1.06  *    0.79  *
* Conv. Total (cfs)       *  3107.9  * Conv. (cfs)             *    15.4
*  1844.9  *  1247.7  *
* Length Wtd. (ft)        *  321.00  * Wetted Per. (ft)        *    7.15
*   60.55  *   91.86  *
* Min Ch El (ft)          * 1639.18  * Shear (lb/sq ft)        *    0.14
*    0.55  *    0.41  *
* Alpha                   *    1.21  * Stream Power (lb/ft s) *    0.10
*    1.44  *    0.64  *
* Frctn Loss (ft)         *    3.18  * Cum Volume (acre-ft)    *    3.17
*   22.53  *    3.81  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    4.81
*   20.81  *    6.61  *
**************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW30
REACH: NRW30 RS: 1.39

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9758	1641.82	9794.1	1641.21	9850.6	1639.87	9881.9	1638.93	9913.1	1638.18
9915	1638.15	9919.7	1637.98	9950.7	1637.15	9954.1	1636.69	9963.9	1637.03
9975.7	1637.25	9986.7	1636.58	9997.2	1636.4	10004.2	1636.2	10020.7	1636.2
10033.5	1636.83	10038.2	1637.13	10072.1	1637.3	10257	1642.47	10273.9	1642.77

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9758	.074	9975.7	.054	10038.2	.074

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9975.7	10038.2	273	273	273	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1637.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.074	0.054	0.074
W.S. Elev (ft)	1637.65	Reach Len. (ft)	273.00	273.00	273.00
Crit W.S. (ft)	1637.39	Flow Area (sq ft)	20.99	71.43	17.02
E.G. Slope (ft/ft)	0.012025	Area (sq ft)	20.99	71.43	17.02
Q Total (cfs)	283.00	Flow (cfs)	28.31	235.51	19.18
Top Width (ft)	152.73	Top Width (ft)	43.74	62.50	46.48
Vel Total (ft/s)	2.59	Avg. Vel. (ft/s)	1.35	3.30	1.13
Max Chl Dpth (ft)	1.45	Hydr. Depth (ft)	0.48	1.14	0.37
Conv. Total (cfs)	2580.8	Conv. (cfs)	258.2	2147.7	174.9
Length Wtd. (ft)	273.00	Wetted Per. (ft)	43.79	62.55	46.49
Min Ch El (ft)	1636.20	Shear (lb/sq ft)	0.36	0.86	0.27
Alpha	1.39	Stream Power (lb/ft s)	0.49		

```
*    2.83  *    0.31  *
* Frctn Loss (ft)        *    2.62  * Cum Volume (acre-ft)   *    3.09
*   22.03  *    3.48  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    4.63
*   20.36  *    6.10  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.34

INPUT
Description:
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9661.5  1638.4  9955.2  1634.3  9974.7  1634.6  9999.2 1633.14 10012.7
1633.92
 10019.7 1634.24   10088 1634.36 10116.5 1635.63   10349 1638.48

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9661.5    .074  9974.7    .054 10019.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.7 10019.7              362     362     362             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1635.16  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.09  * Wt. n-Val.             *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)         * 1635.08  * Reach Len. (ft)        *  362.00
*  362.00  *  362.00  *
* Crit W.S. (ft)         * 1634.76  * Flow Area (sq ft)      *   33.96
*   57.50  *   58.96  *
* E.G. Slope (ft/ft)     *0.007849  * Area (sq ft)           *   33.96
*   57.50  *   58.96  *
* Q Total (cfs)          *  283.00  * Flow (cfs)             *   35.54
*  164.90  *   82.57  *
* Top Width (ft)         *  204.69  * Top Width (ft)         *   75.26
*   45.00  *   84.42  *
* Vel Total (ft/s)       *    1.88  * Avg. Vel. (ft/s)       *    1.05
*    2.87  *    1.40  *
* Max Chl Dpth (ft)      *    1.94  * Hydr. Depth (ft)       *    0.45
*    1.28  *    0.70  *
* Conv. Total (cfs)      *  3194.2  * Conv. (cfs)            *   401.1
```

```
*  1861.2  *   931.9  *
* Length Wtd. (ft)       *  362.00  * Wetted Per. (ft)       *   75.27
*   45.07  *   84.44  *
* Min Ch El (ft)         * 1633.14  * Shear (lb/sq ft)       *    0.22
*    0.63  *    0.34  *
* Alpha                  *    1.55  * Stream Power (lb/ft s) *    0.23
*    1.79  *    0.48  *
* Frctn Loss (ft)        *    3.97  * Cum Volume (acre-ft)   *    2.91
*   21.63  *    3.24  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    4.25
*   20.02  *    5.69  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.27

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9665.2 1635.18  9666.3 1635.16  9687.7 1634.94  9788.6 1632.96  9896.8
1630.51
  9897.1  1630.5  9933.1 1630.52  9984.2  1630.4 10000.9 1630.01 10007.5
1629.74
 10030.3 1630.51 10033.2 1630.63 10060.9 1630.84   10082 1630.66   10112
1632.02
 10137.5 1632.63 10308.4 1637.44 10393.1 1638.71 10417.2 1638.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9665.2    .074  9984.2    .054 10060.9    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.2 10060.9              221     221     221             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)         * 1631.20  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.09  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)         * 1631.10  * Reach Len. (ft)         *  221.00
```

```
*  221.00  *  221.00  *
* Crit W.S. (ft)          * 1630.90  * Flow Area (sq ft)       *   62.07
*   57.08  *    9.59  *
* E.G. Slope (ft/ft)      *0.016380  * Area (sq ft)            *   62.07
*   57.08  *    9.59  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *  106.63
*  165.07  *   11.31  *
* Top Width (ft)          *  221.11  * Top Width (ft)          *  113.56
*   76.70  *   30.86  *
* Vel Total (ft/s)        *    2.20  * Avg. Vel. (ft/s)        *    1.72
*    2.89  *    1.18  *
* Max Chl Dpth (ft)       *    1.36  * Hydr. Depth (ft)        *    0.55
*    0.74  *    0.31  *
* Conv. Total (cfs)       *  2211.2  * Conv. (cfs)             *   833.1
*  1289.8  *    88.3  *
* Length Wtd. (ft)        *  221.00  * Wetted Per. (ft)        *  113.57
*   76.73  *   30.87  *
* Min Ch El (ft)          * 1629.74  * Shear (lb/sq ft)        *    0.56
*    0.76  *    0.32  *
* Alpha                   *    1.25  * Stream Power (lb/ft s) *    0.96
*    2.20  *    0.37  *
* Frctn Loss (ft)         *    1.92  * Cum Volume (acre-ft)    *    2.51
*   21.15  *    2.96  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    3.47
*   19.51  *    5.21  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.23

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9784.8 1632.22  9854.5 1630.47  9864.9 1629.84  9913.8 1629.06  9918.2
1628.84
  9998.8 1627.88 10007.1 1627.83 10066.7 1628.73 10094.6 1628.31 10130.3
1630.44
 10181.6 1632.47

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9784.8    .074  9918.2    .054 10066.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
```

```
Expan.
        9918.2 10066.7              305     305     305             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1629.26  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1629.21  * Reach Len. (ft)         *  305.00
*  305.00  *  305.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    1.81
*  134.73  *   25.90  *
* E.G. Slope (ft/ft)      *0.005389  * Area (sq ft)            *    1.81
*  134.73  *   25.90  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *    0.69
*  255.05  *   27.25  *
* Top Width (ft)          *  205.04  * Top Width (ft)          *   13.61
*  148.50  *   42.93  *
* Vel Total (ft/s)        *    1.74  * Avg. Vel. (ft/s)        *    0.38
*    1.89  *    1.05  *
* Max Chl Dpth (ft)       *    1.38  * Hydr. Depth (ft)        *    0.13
*    0.91  *    0.60  *
* Conv. Total (cfs)       *  3854.9  * Conv. (cfs)             *     9.4
*  3474.2  *   371.3  *
* Length Wtd. (ft)        *  305.00  * Wetted Per. (ft)        *   13.61
*  148.51  *   42.96  *
* Min Ch El (ft)          * 1627.83  * Shear (lb/sq ft)        *    0.04
*    0.31  *    0.20  *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *    0.02
*    0.58  *    0.21  *
* Frctn Loss (ft)         *    3.80  * Cum Volume (acre-ft)    *    2.35
*   20.67  *    2.87  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    3.14
*   18.94  *    5.02  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.17

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
```

```
  9778.7 1630.13  9827.8 1628.61  9829.7 1628.51  9871.2  1627.1  9890.1
1625.17
  9913.7 1625.93  9990.1 1624.69   10019 1624.93 10065.3 1624.64 10090.6
1624.09
 10150.1 1626.97 10185.8 1628.16 10190.8  1628.2 10211.3    1629 10242.3
1629.35

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9778.7    .074  9913.7    .054 10150.1    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9913.7 10150.1              340     340     340             .1
.3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
  9778.7  9913.7 1625.93       F

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1625.44  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *
*   0.054  *          *
* W.S. Elev (ft)          * 1625.20  * Reach Len. (ft)         *  340.00
*  340.00  *  340.00  *
* Crit W.S. (ft)          * 1625.20  * Flow Area (sq ft)       *
*   72.93  *          *
* E.G. Slope (ft/ft)      *0.054434  * Area (sq ft)            *    0.02
*   72.93  *          *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *
*  283.00  *          *
* Top Width (ft)          *  156.54  * Top Width (ft)          *    1.38
*  155.16  *          *
* Vel Total (ft/s)        *    3.88  * Avg. Vel. (ft/s)        *
*    3.88  *          *
* Max Chl Dpth (ft)       *    1.11  * Hydr. Depth (ft)        *
*    0.47  *          *
* Conv. Total (cfs)       *  1213.0  * Conv. (cfs)             *
*  1213.0  *          *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *
*  155.20  *          *
* Min Ch El (ft)          * 1624.09  * Shear (lb/sq ft)        *
*    1.60  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    6.20  *          *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *    2.35
*   19.94  *    2.78  *
* C & E Loss (ft)         *          * Cum SA (acres)          *    3.09
*   17.88  *    4.87  *
************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
```

```
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid, water
         surface was used.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.11

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9828.6 1625.02  9833.8 1625.06  9889.1 1624.09  9917.5 1622.05  9919.5
1621.94
  9935.1 1621.46  9941.1 1621.13  9959.1 1620.65  9998.3 1621.13 10013.2
1621
 10046.1 1621.21 10056.3 1621.79 10079.5 1621.49 10117.7 1622.26 10127.8
1622.73
 10168.9 1623.68 10190.2 1624.67 10200.7 1624.81

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9828.6    .074  9935.1    .054 10056.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9935.1 10056.3              378     378     378             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1622.26  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1622.21  * Reach Len. (ft)         *  378.00
*  378.00  *  378.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    8.52
*  141.38  *   25.95  *
* E.G. Slope (ft/ft)      *0.003611  * Area (sq ft)            *    8.52
*  141.38  *   25.95  *
* Q Total (cfs)           *  283.00  * Flow (cfs)              *    5.86
*  258.99  *   18.15  *
* Top Width (ft)          *  199.80  * Top Width (ft)          *   19.79
*  121.20  *   58.81  *
* Vel Total (ft/s)        *    1.61  * Avg. Vel. (ft/s)        *    0.69
*    1.83  *    0.70  *
```

```
* Max Chl Dpth (ft)       *    1.56  * Hydr. Depth (ft)        *    0.43
*    1.17  *    0.44  *
* Conv. Total (cfs)       *  4709.6  * Conv. (cfs)             *    97.5
*  4310.2  *   302.0  *
* Length Wtd. (ft)        *  378.00  * Wetted Per. (ft)        *   19.81
*  121.24  *   58.82  *
* Min Ch El (ft)          * 1620.65  * Shear (lb/sq ft)        *    0.10
*    0.26  *    0.10  *
* Alpha                   *    1.20  * Stream Power (lb/ft s) *    0.07
*    0.48  *    0.07  *
* Frctn Loss (ft)         *    3.59  * Cum Volume (acre-ft)    *    2.31
*   19.10  *    2.67  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    3.01
*   16.80  *    4.64  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 1.03

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9783 1621.97  9952.4 1618.24  9968.1 1617.48  9973.6 1617.08  9996.1
1617.06
 10016.3 1617.11 10047.7 1617.66 10073.2 1617.68 10073.5 1618.17 10107.8
1618.55
 10119.4 1618.24 10147.3 1620.04 10173.5 1620.25 10234.8 1622.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9783    .074  9952.4    .054 10047.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9952.4 10047.7              217     217     217             .1
.3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
 10107.8 10234.8 1618.55       F

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1618.64  * Element                 *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.28  * Wt. n-Val.             *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)         * 1618.36  * Reach Len. (ft)        *  217.00
*  217.00  *  217.00  *
* Crit W.S. (ft)         * 1618.17  * Flow Area (sq ft)      *    0.33
*   99.21  *   19.36  *
* E.G. Slope (ft/ft)     *0.024134  * Area (sq ft)           *    0.33
*   99.21  *   19.75  *
* Q Total (cfs)          *  471.00  * Flow (cfs)             *    0.16
*  435.49  *   35.35  *
* Top Width (ft)         *  150.09  * Top Width (ft)         *    5.46
*   95.30  *   49.33  *
* Vel Total (ft/s)       *    3.96  * Avg. Vel. (ft/s)       *    0.48
*    4.39  *    1.83  *
* Max Chl Dpth (ft)      *    1.30  * Hydr. Depth (ft)       *    0.06
*    1.04  *    0.45  *
* Conv. Total (cfs)      *  3031.8  * Conv. (cfs)            *     1.0
*  2803.2  *   227.6  *
* Length Wtd. (ft)       *  217.00  * Wetted Per. (ft)       *    5.46
*   95.34  *   43.24  *
* Min Ch El (ft)         * 1617.06  * Shear (lb/sq ft)       *    0.09
*    1.57  *    0.67  *
* Alpha                  *    1.15  * Stream Power (lb/ft s) *    0.04
*    6.88  *    1.23  *
* Frctn Loss (ft)        *    2.06  * Cum Volume (acre-ft)   *    2.27
*   18.06  *    2.48  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *    2.90
*   15.86  *    4.17  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid, water
         surface was used.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.99

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9768.5 1620.05  9926.4 1616.49  9959.4 1614.72  9989.6 1614.86 10001.1
1614.72
 10057.4  1615.3 10064.3 1614.98 10136.7 1618.69 10158.8 1620.31 10167.6
1620.63
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9768.5    .074  9926.4    .054 10136.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9926.4 10136.7              204     204     204             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1616.53  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *
*   0.054  *          *
* W.S. Elev (ft)          * 1616.45  * Reach Len. (ft)         *  204.00
*  204.00  *  204.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*  207.72  *          *
* E.G. Slope (ft/ft)      *0.005027  * Area (sq ft)            *
*  207.72  *          *
* Q Total (cfs)           *  471.00  * Flow (cfs)              *
*  471.00  *          *
* Top Width (ft)          *  165.70  * Top Width (ft)          *
*  165.70  *          *
* Vel Total (ft/s)        *    2.27  * Avg. Vel. (ft/s)        *
*    2.27  *          *
* Max Chl Dpth (ft)       *    1.73  * Hydr. Depth (ft)        *
*    1.25  *          *
* Conv. Total (cfs)       *  6642.9  * Conv. (cfs)             *
*  6642.9  *          *
* Length Wtd. (ft)        *  204.00  * Wetted Per. (ft)        *
*  165.80  *          *
* Min Ch El (ft)          * 1614.72  * Shear (lb/sq ft)        *
*    0.39  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    0.89  *          *
* Frctn Loss (ft)         *    1.54  * Cum Volume (acre-ft)    *    2.27
*   17.30  *    2.43  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    2.89
*   15.21  *    4.05  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.95
```

```
INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9783.6 1618.39  9870.5  1615.8  9888.1 1615.64  9926.1 1613.81  9959.2
1614.1
  9974.2 1613.61  9997.8  1613.7 10007.1 1613.77 10061.8 1613.89 10093.3
1614.86
   10140 1617.65 10152.4 1618.09   10196 1618.36

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9783.6    .074  9888.1    .054 10093.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9888.1 10093.3              272     272     272             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1614.98  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *
*   0.054  *          *
* W.S. Elev (ft)          * 1614.86  * Reach Len. (ft)         *  272.00
*  272.00  *  272.00  *
* Crit W.S. (ft)          * 1614.52  * Flow Area (sq ft)       *
*  166.30  *          *
* E.G. Slope (ft/ft)      *0.012552  * Area (sq ft)            *
*  166.30  *          *
* Q Total (cfs)           *  471.00  * Flow (cfs)              *
*  471.00  *          *
* Top Width (ft)          *  188.81  * Top Width (ft)          *
*  188.81  *          *
* Vel Total (ft/s)        *    2.83  * Avg. Vel. (ft/s)        *
*    2.83  *          *
* Max Chl Dpth (ft)       *    1.25  * Hydr. Depth (ft)        *
*    0.88  *          *
* Conv. Total (cfs)       *  4204.0  * Conv. (cfs)             *
*  4204.0  *          *
* Length Wtd. (ft)        *  272.00  * Wetted Per. (ft)        *
*  188.86  *          *
* Min Ch El (ft)          * 1613.61  * Shear (lb/sq ft)        *
*    0.69  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    1.95  *          *
* Frctn Loss (ft)         *    2.75  * Cum Volume (acre-ft)    *    2.27
*   16.42  *    2.43  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    2.89
*   14.38  *    4.05  *
**************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW30
REACH: NRW30 RS: 0.90

INPUT
Description:
Station Elevation Data num= 9

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9821.2 1616.41  9951.4 1610.54  9965.4 1610.84  9977.9  1611.5  9996.9
1610.82
 10006.9 1610.45 10111.4 1611.85 10126.6 1611.53 10274.9  1614.8
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9821.2    .074  9977.9    .054 10111.4    .074
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9977.9 10111.4              304     304     304             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1612.22  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1612.14  * Reach Len. (ft)         *  304.00
*  304.00  *  304.00  *
* Crit W.S. (ft)          * 1611.65  * Flow Area (sq ft)       *   60.55
*  136.56  *   15.09  *
* E.G. Slope (ft/ft)      *0.008320  * Area (sq ft)            *   60.55
*  136.56  *   15.09  *
* Q Total (cfs)           *  471.00  * Flow (cfs)              *  109.23
*  347.94  *   13.83  *
* Top Width (ft)          *  238.06  * Top Width (ft)          *   61.89
*  133.50  *   42.67  *
* Vel Total (ft/s)        *    2.22  * Avg. Vel. (ft/s)        *    1.80
*    2.55  *    0.92  *
* Max Chl Dpth (ft)       *    1.69  * Hydr. Depth (ft)        *    0.98
*    1.02  *    0.35  *
* Conv. Total (cfs)       *  5163.5  * Conv. (cfs)             *  1197.5
*  3814.5  *   151.6  *
* Length Wtd. (ft)        *  304.00  * Wetted Per. (ft)        *   61.95
*  133.53  *   42.68  *
* Min Ch El (ft)          * 1610.45  * Shear (lb/sq ft)        *    0.51
*    0.53  *    0.18  *
* Alpha                   *    1.13  * Stream Power (lb/ft s) *    0.92
*    1.35  *    0.17  *
* Frctn Loss (ft)         *    2.81  * Cum Volume (acre-ft)    *    2.08
*   15.47  *    2.38  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    2.69
```

```
*   13.38  *    3.92  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.85

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9797.8 1612.15  9893.9 1610.44  9952.6 1607.95  9984.1  1607.5 10012.2
1608.02
   10038 1608.47 10046.2  1608.4 10083.6 1609.27 10125.6 1608.85 10272.2
1613.42
 10283.5 1614.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9797.8    .074  9893.9    .054 10083.6    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9893.9 10083.6              306     306     306             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1609.41  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1609.29  * Reach Len. (ft)         *  306.00
*  306.00  *  306.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*  164.17  *   12.67  *
* E.G. Slope (ft/ft)      *0.010299  * Area (sq ft)            *
*  164.17  *   12.67  *
* Q Total (cfs)           *  471.00  * Flow (cfs)              *
*  461.42  *    9.58  *
* Top Width (ft)          *  218.61  * Top Width (ft)          *
*  162.55  *   56.06  *
* Vel Total (ft/s)        *    2.66  * Avg. Vel. (ft/s)        *
*    2.81  *    0.76  *
* Max Chl Dpth (ft)       *    1.79  * Hydr. Depth (ft)        *
*    1.01  *    0.23  *
* Conv. Total (cfs)       *  4641.1  * Conv. (cfs)             *
*  4546.7  *    94.4  *
* Length Wtd. (ft)        *  306.00  * Wetted Per. (ft)        *
```

```
*  162.60  *   56.07  *
* Min Ch El (ft)         * 1607.50  * Shear (lb/sq ft)       *
*    0.65  *    0.15  *
* Alpha                  *    1.09  * Stream Power (lb/ft s) *
*    1.82  *    0.11  *
* Frctn Loss (ft)        *    3.35  * Cum Volume (acre-ft)   *    1.87
*   14.43  *    2.28  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    2.48
*   12.34  *    3.57  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.79

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9827.8 1610.26  9912.3 1607.09  9920.8 1607.22  9939.5 1607.04  9953.5
1605.67
  9966.3 1604.98  9997.8 1604.84   10023 1604.74 10073.3 1604.82 10097.3
1605.42
 10121.8 1605.05 10149.8 1606.71 10167.7 1608.22   10172 1608.39 10190.2
1608.64
 10227.8  1610.2

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9827.8    .074  9953.5    .054 10097.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9953.5 10097.3              279     279     279             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1606.06  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.13  * Wt. n-Val.             *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)         * 1605.93  * Reach Len. (ft)        *  279.00
*  279.00  *  279.00  *
* Crit W.S. (ft)         * 1605.59  * Flow Area (sq ft)      *    0.33
*  145.32  *   23.40  *
* E.G. Slope (ft/ft)     *0.011667  * Area (sq ft)           *    0.33
*  145.32  *   23.40  *
* Q Total (cfs)          *  471.00  * Flow (cfs)             *    0.18
```

```
*  434.90  *   35.92  *
* Top Width (ft)          *  185.69  * Top Width (ft)          *    2.62
*  143.80  *   39.28  *
* Vel Total (ft/s)        *    2.79  * Avg. Vel. (ft/s)        *    0.55
*    2.99  *    1.53  *
* Max Chl Dpth (ft)       *    1.19  * Hydr. Depth (ft)        *    0.13
*    1.01  *    0.60  *
* Conv. Total (cfs)       *  4360.6  * Conv. (cfs)             *     1.7
*  4026.3  *   332.5  *
* Length Wtd. (ft)        *  279.00  * Wetted Per. (ft)        *    2.63
*  143.83  *   39.31  *
* Min Ch El (ft)          * 1604.74  * Shear (lb/sq ft)        *    0.09
*    0.74  *    0.43  *
* Alpha                   *    1.09  * Stream Power (lb/ft s) *    0.05
*    2.20  *    0.67  *
* Frctn Loss (ft)         *    3.12  * Cum Volume (acre-ft)    *    1.87
*   13.34  *    2.16  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    2.47
*   11.27  *    3.24  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.73

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9834.8 1608.33  9978.6  1601.4    9997 1600.91 10014.2 1601.46 10018.6
1601.43
 10065.5 1601.93 10071.2 1601.85 10128.4 1602.65 10160.7 1603.76 10211.2
1606.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9834.8    .074  9978.6    .054 10065.5    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.6 10065.5              261     261     261             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1602.93  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
```

```
* W.S. Elev (ft)          * 1602.77  * Reach Len. (ft)         *  261.00
*  261.00  *  261.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   19.60
*  114.31  *   35.26  *
* E.G. Slope (ft/ft)      *0.010736  * Area (sq ft)            *   19.60
*  114.31  *   35.26  *
* Q Total (cfs)           *  471.00  * Flow (cfs)              *   31.73
*  391.22  *   48.05  *
* Top Width (ft)          *  181.94  * Top Width (ft)          *   28.52
*   86.90  *   66.52  *
* Vel Total (ft/s)        *    2.78  * Avg. Vel. (ft/s)        *    1.62
*    3.42  *    1.36  *
* Max Chl Dpth (ft)       *    1.86  * Hydr. Depth (ft)        *    0.69
*    1.32  *    0.53  *
* Conv. Total (cfs)       *  4545.7  * Conv. (cfs)             *   306.2
*  3775.7  *   463.8  *
* Length Wtd. (ft)        *  261.00  * Wetted Per. (ft)        *   28.55
*   86.92  *   66.53  *
* Min Ch El (ft)          * 1600.91  * Shear (lb/sq ft)        *    0.46
*    0.88  *    0.36  *
* Alpha                   *    1.30  * Stream Power (lb/ft s) *    0.74
*    3.02  *    0.48  *
* Frctn Loss (ft)         *    2.08  * Cum Volume (acre-ft)    *    1.81
*   12.51  *    1.97  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    2.37
*   10.53  *    2.90  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.69

INPUT
Description: South Section 35 Line T6NR1E & North Section 2 Line T5NR1E
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9788  1606.5  9934.7 1599.68  9994.7 1599.37 10010.4 1599.42 10089.8
1599.83
 10120.5 1600.63 10127.7 1600.99 10148.4 1601.54   10152 1601.95 10179.2
1602.43
 10257.1 1605.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9788    .074  9934.7    .054 10089.8    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9934.7 10089.8              297     297     297             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
************************************************************************
************************
* E.G. Elev (ft)          * 1600.83  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1600.75  * Reach Len. (ft)         *  297.00
*  297.00  *  297.00  *
* Crit W.S. (ft)          * 1600.22  * Flow Area (sq ft)       *   12.21
*  183.38  *   15.96  *
* E.G. Slope (ft/ft)      *0.006162  * Area (sq ft)            *   12.21
*  183.38  *   15.96  *
* Q Total (cfs)           *  471.00  * Flow (cfs)              *   12.63
*  442.88  *   15.49  *
* Top Width (ft)          *  211.02  * Top Width (ft)          *   22.92
*  155.10  *   33.01  *
* Vel Total (ft/s)        *    2.23  * Avg. Vel. (ft/s)        *    1.03
*    2.42  *    0.97  *
* Max Chl Dpth (ft)       *    1.38  * Hydr. Depth (ft)        *    0.53
*    1.18  *    0.48  *
* Conv. Total (cfs)       *  6000.2  * Conv. (cfs)             *   160.9
*  5642.0  *   197.3  *
* Length Wtd. (ft)        *  297.00  * Wetted Per. (ft)        *   22.94
*  155.10  *   33.02  *
* Min Ch El (ft)          * 1599.37  * Shear (lb/sq ft)        *    0.20
*    0.45  *    0.19  *
* Alpha                   *    1.12  * Stream Power (lb/ft s) *    0.21
*    1.10  *    0.18  *
* Frctn Loss (ft)         *    2.64  * Cum Volume (acre-ft)    *    1.71
*   11.61  *    1.81  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    2.21
*    9.80  *    2.60  *
************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW30
REACH: NRW30 RS: 0.63

INPUT
Description:
Station Elevation Data num= 9

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9734.8  1604.2  9828.2 1599.97  9869.7 1597.32  9996.1 1597.04 10017.9
1597.09
 10034.9 1597.03 10044.3 1597.62 10065.4 1598.52 10185.3 1601.85
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9734.8    .074  9869.7    .054 10044.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9869.7 10044.3              307     307     307             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1598.19  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1598.05  * Reach Len. (ft)         *  307.00
*  307.00  *  307.00  *
* Crit W.S. (ft)          * 1597.77  * Flow Area (sq ft)       *    4.15
*  154.78  *    2.15  *
* E.G. Slope (ft/ft)      *0.013950  * Area (sq ft)            *    4.15
*  154.78  *    2.15  *
* Q Total (cfs)           *  471.00  * Flow (cfs)              *    5.02
*  464.16  *    1.82  *
* Top Width (ft)          *  196.04  * Top Width (ft)          *   11.41
*  174.60  *   10.04  *
* Vel Total (ft/s)        *    2.92  * Avg. Vel. (ft/s)        *    1.21
*    3.00  *    0.85  *
* Max Chl Dpth (ft)       *    1.02  * Hydr. Depth (ft)        *    0.36
*    0.89  *    0.21  *
* Conv. Total (cfs)       *  3987.8  * Conv. (cfs)             *    42.5
*  3929.9  *    15.4  *
* Length Wtd. (ft)        *  307.00  * Wetted Per. (ft)        *   11.43
*  174.62  *   10.05  *
* Min Ch El (ft)          * 1597.03  * Shear (lb/sq ft)        *    0.32
*    0.77  *    0.19  *
* Alpha                   *    1.04  * Stream Power (lb/ft s) *    0.38
*    2.32  *    0.16  *
* Frctn Loss (ft)         *    3.37  * Cum Volume (acre-ft)    *    1.66
*   10.46  *    1.75  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    2.10
*    8.68  *    2.45  *
**********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.57

INPUT
Description:
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
```

```
Elev
*************************************************************************
********
    9813 1598.46  9874.9 1597.85  9931.1  1595.1  9934.9 1595.06  9977.7
1593.12
 10001.7 1593.33 10137.2 1594.27 10225.4 1598.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9813    .074  9934.9    .054 10137.2    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9934.9 10137.2              317     317     317             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1594.81  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1594.71  * Reach Len. (ft)         *  317.00
*  317.00  *  317.00  *
* Crit W.S. (ft)          * 1594.29  * Flow Area (sq ft)       *
*  186.54  *    2.15  *
* E.G. Slope (ft/ft)      *0.008851  * Area (sq ft)            *
*  186.54  *    2.15  *
* Q Total (cfs)           *  471.00  * Flow (cfs)              *
*  469.52  *    1.48  *
* Top Width (ft)          *  204.36  * Top Width (ft)          *
*  194.54  *    9.82  *
* Vel Total (ft/s)        *    2.50  * Avg. Vel. (ft/s)        *
*    2.52  *    0.69  *
* Max Chl Dpth (ft)       *    1.59  * Hydr. Depth (ft)        *
*    0.96  *    0.22  *
* Conv. Total (cfs)       *  5006.3  * Conv. (cfs)             *
*  4990.6  *    15.7  *
* Length Wtd. (ft)        *  317.00  * Wetted Per. (ft)        *
*  194.58  *    9.83  *
* Min Ch El (ft)          * 1593.12  * Shear (lb/sq ft)        *
*    0.53  *    0.12  *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *
*    1.33  *    0.08  *
* Frctn Loss (ft)         *    2.62  * Cum Volume (acre-ft)    *    1.64
*    9.26  *    1.74  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    2.06
*    7.38  *    2.38  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
```

```
REACH: NRW30                RS: 0.51

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9787.6 1596.19  9833.7 1594.67  9844.4 1594.59  9884.3 1591.15  9915.2
1590.95
  9924.3 1591.38  9940.4 1590.97  9981.7 1590.72   10020  1591.4 10020.1
1591.4
 10055.3 1590.61 10090.1 1591.29 10097.9 1591.88 10120.9 1592.56 10130.3
1592.57
 10136.7 1592.87 10152.3  1593.9 10218.5 1596.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9787.6    .074  9924.3    .054   10020    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9924.3   10020              317     317     317             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1592.18  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1592.10  * Reach Len. (ft)         *  317.00
*  317.00  *  317.00  *
* Crit W.S. (ft)          * 1591.59  * Flow Area (sq ft)       *   46.40
*  106.96  *   83.83  *
* E.G. Slope (ft/ft)      *0.007775  * Area (sq ft)            *   46.40
*  106.96  *   83.83  *
* Q Total (cfs)           *  503.00  * Flow (cfs)              *   77.03
*  279.50  *  146.47  *
* Top Width (ft)          *  232.25  * Top Width (ft)          *   51.07
*   95.70  *   85.48  *
* Vel Total (ft/s)        *    2.12  * Avg. Vel. (ft/s)        *    1.66
*    2.61  *    1.75  *
* Max Chl Dpth (ft)       *    1.49  * Hydr. Depth (ft)        *    0.91
*    1.12  *    0.98  *
* Conv. Total (cfs)       *  5704.3  * Conv. (cfs)             *   873.6
*  3169.7  *  1661.0  *
* Length Wtd. (ft)        *  317.00  * Wetted Per. (ft)        *   51.12
*   95.71  *   85.53  *
* Min Ch El (ft)          * 1590.72  * Shear (lb/sq ft)        *    0.44
*    0.54  *    0.48  *
* Alpha                   *    1.14  * Stream Power (lb/ft s) *    0.73
*    1.42  *    0.83  *
* Frctn Loss (ft)         *    3.56  * Cum Volume (acre-ft)    *    1.47
*    8.19  *    1.42  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.87
*    6.32  *    2.04  *
**********************************************************************
```

```
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.45

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9838.5 1592.32  9858.4 1591.39  9899.1 1588.37  9917.1 1587.39  9971.5
1587.79
  9975.7 1587.73  9996.2 1586.72 10030.2 1587.43 10034.3 1587.55 10068.2
1587.68
 10087.3 1588.72 10088.5 1588.76 10102.9 1588.57 10107.2 1588.63 10134.8
1590.55
 10181.7 1592.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9838.5    .074  9971.5    .054 10034.3    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.5 10034.3              271     271     271             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1588.61  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1588.41  * Reach Len. (ft)         *  271.00
*  271.00  *  271.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   54.40
*   76.39  *   32.00  *
* E.G. Slope (ft/ft)      *0.017643  * Area (sq ft)            *   54.40
*   76.39  *   32.00  *
* Q Total (cfs)           *  503.00  * Flow (cfs)              *  119.25
*  318.06  *   65.69  *
* Top Width (ft)          *  183.15  * Top Width (ft)          *   72.98
*   62.80  *   47.37  *
* Vel Total (ft/s)        *    3.09  * Avg. Vel. (ft/s)        *    2.19
*    4.16  *    2.05  *
* Max Chl Dpth (ft)       *    1.69  * Hydr. Depth (ft)        *    0.75
```

```
*    1.22  *    0.68  *
* Conv. Total (cfs)       *  3786.9  * Conv. (cfs)             *   897.8
*  2394.6  *   494.6  *
* Length Wtd. (ft)        *  271.00  * Wetted Per. (ft)        *   73.01
*   62.83  *   47.39  *
* Min Ch El (ft)          * 1586.72  * Shear (lb/sq ft)        *    0.82
*    1.34  *    0.74  *
* Alpha                   *    1.33  * Stream Power (lb/ft s) *    1.80
*    5.58  *    1.53  *
* Frctn Loss (ft)         *    3.28  * Cum Volume (acre-ft)    *    1.11
*    7.52  *    1.00  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    1.42
*    5.75  *    1.55  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.40

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9836.4 1588.16  9855.7 1587.36    9867 1586.67  9899.5 1585.68  9925.2
1584.79
  9932.1 1584.75  9951.3 1584.19  9995.5 1583.55   10021 1583.41 10046.4
1583.87
 10059.8 1584.98 10082.8 1585.57   10089 1585.36   10118 1587.77 10144.9
1588.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9836.4    .074  9932.1    .054 10059.8    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9932.1 10059.8              320     320     320             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1585.32  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1585.18  * Reach Len. (ft)         *  320.00
*  320.00  *  320.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    4.95
*  163.63  *    0.75  *
```

```
* E.G. Slope (ft/ft)      *0.008823  * Area (sq ft)            *    4.95
*  163.63  *    0.75  *
* Q Total (cfs)            *  503.00  * Flow (cfs)              *    3.95
*  498.75  *    0.30  *
* Top Width (ft)           *  153.40  * Top Width (ft)          *   18.05
*  127.70  *    7.65  *
* Vel Total (ft/s)         *    2.97  * Avg. Vel. (ft/s)        *    0.80
*    3.05  *    0.40  *
* Max Chl Dpth (ft)        *    1.77  * Hydr. Depth (ft)        *    0.27
*    1.28  *    0.10  *
* Conv. Total (cfs)        *  5355.0  * Conv. (cfs)             *    42.0
*  5309.8  *     3.2  *
* Length Wtd. (ft)         *  320.00  * Wetted Per. (ft)        *   18.06
*  127.76  *    7.65  *
* Min Ch El (ft)           * 1583.41  * Shear (lb/sq ft)        *    0.15
*    0.71  *    0.05  *
* Alpha                    *    1.04  * Stream Power (lb/ft s) *    0.12
*    2.15  *    0.02  *
* Frctn Loss (ft)          *    3.58  * Cum Volume (acre-ft)    *    0.92
*    6.78  *    0.90  *
* C & E Loss (ft)          *    0.00  * Cum SA (acres)          *    1.14
*    5.15  *    1.38  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.34

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9813.2 1586.03  9818.8 1585.76  9840.5 1585.06  9893.5 1581.77  9985.1
1580.18
   10009 1579.77   10012 1579.83 10016.6 1580.06 10035.6 1580.28 10037.3
1580.25
 10050.8 1581.06 10081.5 1581.69 10154.5 1585.86

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9813.2    .074  9893.5    .054 10050.8    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9893.5 10050.8              307     307     307             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
```

```
* E.G. Elev (ft)          * 1581.74  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1581.57  * Reach Len. (ft)         *  307.00
*  307.00  *  307.00  *
* Crit W.S. (ft)          * 1581.21  * Flow Area (sq ft)       *
*  147.88  *    6.36  *
* E.G. Slope (ft/ft)      *0.014637  * Area (sq ft)            *
*  147.88  *    6.36  *
* Q Total (cfs)           *  503.00  * Flow (cfs)              *
*  496.78  *    6.22  *
* Top Width (ft)          *  170.74  * Top Width (ft)          *
*  145.84  *   24.91  *
* Vel Total (ft/s)        *    3.26  * Avg. Vel. (ft/s)        *
*    3.36  *    0.98  *
* Max Chl Dpth (ft)       *    1.80  * Hydr. Depth (ft)        *
*    1.01  *    0.26  *
* Conv. Total (cfs)       *  4157.6  * Conv. (cfs)             *
*  4106.1  *    51.4  *
* Length Wtd. (ft)        *  307.00  * Wetted Per. (ft)        *
*  145.88  *   24.91  *
* Min Ch El (ft)          * 1579.77  * Shear (lb/sq ft)        *
*    0.93  *    0.23  *
* Alpha                   *    1.05  * Stream Power (lb/ft s) *
*    3.11  *    0.23  *
* Frctn Loss (ft)         *    2.57  * Cum Volume (acre-ft)    *    0.90
*    5.63  *    0.88  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    1.07
*    4.15  *    1.26  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.28

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9831.9 1582.08  9832.3 1582.06  9839.5 1581.75  9879.1 1579.51  9901.2
1578.95
  9927.3 1578.76  9966.3 1577.53  9998.5 1577.73 10002.8  1577.8 10013.9
1577.3
 10026.4  1578.2 10052.8    1577 10082.7 1578.14 10107.5 1579.81 10109.6
1580.05
 10143.1 1582.14 10204.5 1583.88
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9831.9    .074  9927.3    .054 10082.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9927.3 10082.7              337     337     337             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1579.15  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1579.06  * Reach Len. (ft)         *  337.00
*  337.00  *  337.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    5.67
*  203.94  *    6.32  *
* E.G. Slope (ft/ft)      *0.005414  * Area (sq ft)            *    5.67
*  203.94  *    6.32  *
* Q Total (cfs)           *  503.00  * Flow (cfs)              *    2.73
*  494.71  *    5.57  *
* Top Width (ft)          *  199.65  * Top Width (ft)          *   30.55
*  155.40  *   13.70  *
* Vel Total (ft/s)        *    2.33  * Avg. Vel. (ft/s)        *    0.48
*    2.43  *    0.88  *
* Max Chl Dpth (ft)       *    2.06  * Hydr. Depth (ft)        *    0.19
*    1.31  *    0.46  *
* Conv. Total (cfs)       *  6836.0  * Conv. (cfs)             *    37.0
*  6723.3  *    75.7  *
* Length Wtd. (ft)        *  337.00  * Wetted Per. (ft)        *   30.55
*  155.51  *   13.73  *
* Min Ch El (ft)          * 1577.00  * Shear (lb/sq ft)        *    0.06
*    0.44  *    0.16  *
* Alpha                   *    1.07  * Stream Power (lb/ft s) *    0.03
*    1.08  *    0.14  *
* Frctn Loss (ft)         *    2.39  * Cum Volume (acre-ft)    *    0.88
*    4.39  *    0.83  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.96
*    3.09  *    1.13  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.22

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
```

```
Elev
**********************************************************************
********
    9817  1582.2  9820.4 1582.03  9859.2 1580.88  9892.8 1579.04    9909
1577.53
  9917.9 1577.06  9924.2 1576.87  9944.6 1575.66  9968.8 1575.51  9976.2
1575.23
  9989.3 1575.08  9993.8 1575.26   10005 1575.65   10053 1575.19 10078.6
1576.11
 10103.9    1576 10208.7 1579.76

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9817    .074  9924.2    .054 10078.6    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9924.2 10078.6               239     239     239             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1576.76  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1576.64  * Reach Len. (ft)         *  239.00
*  239.00  *  239.00  *
* Crit W.S. (ft)          * 1576.23  * Flow Area (sq ft)       *
*  165.54  *   20.30  *
* E.G. Slope (ft/ft)      *0.009725  * Area (sq ft)            *
*  165.54  *   20.30  *
* Q Total (cfs)           *  503.00  * Flow (cfs)              *
*  478.63  *   24.37  *
* Top Width (ft)          *  193.44  * Top Width (ft)          *
*  150.44  *   43.00  *
* Vel Total (ft/s)        *    2.71  * Avg. Vel. (ft/s)        *
*    2.89  *    1.20  *
* Max Chl Dpth (ft)       *    1.56  * Hydr. Depth (ft)        *
*    1.10  *    0.47  *
* Conv. Total (cfs)       *  5100.7  * Conv. (cfs)             *
*  4853.6  *   247.1  *
* Length Wtd. (ft)        *  239.00  * Wetted Per. (ft)        *
*  150.50  *   43.01  *
* Min Ch El (ft)          * 1575.08  * Shear (lb/sq ft)        *
*    0.67  *    0.29  *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *
*    1.93  *    0.34  *
* Frctn Loss (ft)         *    1.76  * Cum Volume (acre-ft)    *    0.86
*    2.96  *    0.73  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.84
*    1.90  *    0.91  *
**********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW30
REACH: NRW30 RS: 0.17

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9816.2	1577.94	9826.8	1578.21	9827.4	1578.18	9855.6	1575.96	9908.2	1573.24
9912.3	1573.39	9934.5	1573.53	9943.3	1573.28	9962.8	1573.6	9970.4	1573.96
9987.9	1573.12	10000.5	1572.31	10000.7	1572.3	10000.8	1572.3	10015.5	1573.47
10043.7	1574.13	10048.8	1574.38	10124.3	1576.91	10164.6	1578.98		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9816.2	.074	9970.4	.054	10015.5	.074

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970.4	10015.5	311	311	311	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1574.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.	0.074	0.054	0.074
W.S. Elev (ft)	1574.90	Reach Len. (ft)	311.00	311.00	311.00
Crit W.S. (ft)		Flow Area (sq ft)	114.91	81.57	38.17
E.G. Slope (ft/ft)	0.005790	Area (sq ft)	114.91	81.57	38.17
Q Total (cfs)	503.00	Flow (cfs)	200.30	253.16	49.55
Top Width (ft)	188.04	Top Width (ft)	94.23	45.10	48.71
Vel Total (ft/s)	2.14	Avg. Vel. (ft/s)	1.74	3.10	1.30
Max Chl Dpth (ft)	2.60	Hydr. Depth (ft)	1.22	1.81	0.78
Conv. Total (cfs)	6610.7	Conv. (cfs)	2632.4	3327.1	651.2
Length Wtd. (ft)	311.00	Wetted Per. (ft)	94.29	45.19	48.73
Min Ch El (ft)	1572.30	Shear (lb/sq ft)	0.44	0.65	0.28
Alpha	1.35	Stream Power (lb/ft s)	0.77	2.02	0.37
Frctn Loss (ft)	1.85	Cum Volume (acre-ft)	0.55		

```
*    2.29  *    0.57  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    0.59
*    1.37  *    0.66  *
**********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.11

INPUT
Description:            .
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9837.9 1575.16  9905.5 1573.85  9908.7  1573.7  9930.2 1572.19  9998.3
1570.7
 10002.5  1570.9 10013.7 1571.48 10042.8 1571.88 10073.9 1572.98 10218.6
1579

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9837.9    .074  9930.2    .054 10013.7    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9930.2 10013.7              265     265     265             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)         * 1573.15  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.12  * Wt. n-Val.             *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)         * 1573.03  * Reach Len. (ft)        *  265.00
*  265.00  *  265.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *    4.96
*  137.49  *   57.66  *
* E.G. Slope (ft/ft)     *0.006098  * Area (sq ft)           *    4.96
*  137.49  *   57.66  *
* Q Total (cfs)          *  503.00  * Flow (cfs)             *    4.34
*  411.86  *   86.80  *
* Top Width (ft)         *  156.67  * Top Width (ft)         *   11.89
*   83.50  *   61.28  *
* Vel Total (ft/s)       *    2.51  * Avg. Vel. (ft/s)       *    0.87
*    3.00  *    1.51  *
* Max Chl Dpth (ft)      *    2.32  * Hydr. Depth (ft)       *    0.42
*    1.65  *    0.94  *
* Conv. Total (cfs)      *  6441.1  * Conv. (cfs)            *    55.6
*  5274.0  *  1111.6  *
```

```
* Length Wtd. (ft)        *  265.00  * Wetted Per. (ft)        *   11.92
*   83.54  *   61.30  *
* Min Ch El (ft)          * 1570.70  * Shear (lb/sq ft)        *    0.16
*    0.63  *    0.36  *
* Alpha                   *    1.23  * Stream Power (lb/ft s) *    0.14
*    1.88  *    0.54  *
* Frctn Loss (ft)         *    1.73  * Cum Volume (acre-ft)    *    0.12
*    1.50  *    0.23  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.21
*    0.91  *    0.26  *
***************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30               RS: 0.06

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9796.3 1572.88  9805.2 1573.02  9928.9 1571.52  9957.8 1569.75  9997.3
1568.98
 10000.7 1568.94 10025.6 1569.66   10028 1569.95 10051.7 1572.12 10086.6
1574.1
 10216.3 1578.04

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9796.3    .074  9957.8    .054   10028    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9957.8   10028              218     218     218             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1571.41  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.074
*   0.054  *   0.074  *
* W.S. Elev (ft)          * 1571.23  * Reach Len. (ft)         *  218.00
*  218.00  *  218.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   17.88
*  132.86  *    8.95  *
* E.G. Slope (ft/ft)      *0.006985  * Area (sq ft)            *   17.88
*  132.86  *    8.95  *
* Q Total (cfs)           *  503.00  * Flow (cfs)              *   24.52
*  467.36  *   11.12  *
```

```
* Top Width (ft)          *  108.34  * Top Width (ft)          *   24.16
*   70.20  *   13.98  *
* Vel Total (ft/s)        *    3.15  * Avg. Vel. (ft/s)        *    1.37
*    3.52  *    1.24  *
* Max Chl Dpth (ft)       *    2.29  * Hydr. Depth (ft)        *    0.74
*    1.89  *    0.64  *
* Conv. Total (cfs)       *  6018.4  * Conv. (cfs)             *   293.4
*  5592.0  *   133.1  *
* Length Wtd. (ft)        *  218.00  * Wetted Per. (ft)        *   24.21
*   70.24  *   14.04  *
* Min Ch El (ft)          * 1568.94  * Shear (lb/sq ft)        *    0.32
*    0.82  *    0.28  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *    0.44
*    2.90  *    0.35  *
* Frctn Loss (ft)         *    1.95  * Cum Volume (acre-ft)    *    0.05
*    0.68  *    0.02  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.10
*    0.44  *    0.03  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW30
REACH: NRW30              RS: 0.02

INPUT
Description: 1.0 D.S. Limit of Study
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9717.1 1572.54  9805.5 1571.35  9958.9 1569.04  9984.8 1567.43 10002.6
1567.42
 10006.7 1567.37 10018.2  1567.5 10022.4 1567.67 10046.5 1568.07 10066.9
1569.4
 10074.9 1569.71 10099.4 1569.89 10116.7 1570.44 10163.1 1573.34 10165.9
1573.76
 10192.2 1573.33 10217.8 1574.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9717.1    .074  9958.9    .054 10066.9    .074

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9958.9 10066.9                 0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1569.47  * Element                 *  Left OB
*  Channel * Right OB *
```

```
* Vel Head (ft)          *    0.20  * Wt. n-Val.              *   0.074
*   0.054  *          *
* W.S. Elev (ft)         * 1569.27  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)         * 1568.77  * Flow Area (sq ft)       *    1.68
*  139.73  *          *
* E.G. Slope (ft/ft)     *0.011804  * Area (sq ft)            *    1.68
*  139.73  *          *
* Q Total (cfs)          *  503.00  * Flow (cfs)              *    0.85
*  502.15  *          *
* Top Width (ft)         *  120.84  * Top Width (ft)          *   14.92
*  105.92  *          *
* Vel Total (ft/s)       *    3.56  * Avg. Vel. (ft/s)        *    0.51
*    3.59  *          *
* Max Chl Dpth (ft)      *    1.89  * Hydr. Depth (ft)        *    0.11
*    1.32  *          *
* Conv. Total (cfs)      *  4629.7  * Conv. (cfs)             *     7.8
*  4621.9  *          *
* Length Wtd. (ft)       *          * Wetted Per. (ft)        *   14.92
*  106.02  *          *
* Min Ch El (ft)         * 1567.37  * Shear (lb/sq ft)        *    0.08
*    0.97  *          *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *    0.04
*    3.49  *          *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)        *          * Cum SA (acres)          *
*          *          *
*************************************************************************
************************

*************************************************************************
********

SUMMARY OF MANNING'S N VALUES

River:NRW30
*****************************************************************
*     Reach       *   River Sta.   *   n1    *   n2    *   n3    *
*****************************************************************
*NRW30            *    2.06        *     .074*     .054*     .074*
*NRW30            *    2.02        *     .074*     .054*     .074*
*NRW30            *    1.97        *     .074*     .054*     .074*
*NRW30            *    1.92        *     .016*     .016*     .016*
*NRW30            *    1.89        *     .074*     .054*     .074*
*NRW30            *    1.85        *     .074*     .054*     .074*
*NRW30            *    1.81        *     .074*     .054*     .074*
*NRW30            *    1.77        *     .074*     .054*     .074*
*NRW30            *    1.72        *     .074*     .054*     .074*
*NRW30            *    1.67        *     .074*     .054*     .074*
*NRW30            *    1.62        *     .074*     .054*     .074*
*NRW30            *    1.57        *     .074*     .054*     .074*
*NRW30            *    1.51        *     .074*     .054*     .074*
*NRW30            *    1.45        *     .074*     .054*     .074*
*NRW30            *    1.39        *     .074*     .054*     .074*
*NRW30            *    1.34        *     .074*     .054*     .074*
*NRW30            *    1.27        *     .074*     .054*     .074*
*NRW30            *    1.23        *     .074*     .054*     .074*
*NRW30            *    1.17        *     .074*     .054*     .074*
*NRW30            *    1.11        *     .074*     .054*     .074*
*NRW30            *    1.03        *     .074*     .054*     .074*
```

*NRW30	0.99	.074*	.054*	.074*
*NRW30	0.95	.074*	.054*	.074*
*NRW30	0.90	.074*	.054*	.074*
*NRW30	0.85	.074*	.054*	.074*
*NRW30	0.79	.074*	.054*	.074*
*NRW30	0.73	.074*	.054*	.074*
*NRW30	0.69	.074*	.054*	.074*
*NRW30	0.63	.074*	.054*	.074*
*NRW30	0.57	.074*	.054*	.074*
*NRW30	0.51	.074*	.054*	.074*
*NRW30	0.45	.074*	.054*	.074*
*NRW30	0.40	.074*	.054*	.074*
*NRW30	0.34	.074*	.054*	.074*
*NRW30	0.28	.074*	.054*	.074*
*NRW30	0.22	.074*	.054*	.074*
*NRW30	0.17	.074*	.054*	.074*
*NRW30	0.11	.074*	.054*	.074*
*NRW30	0.06	.074*	.054*	.074*
*NRW30	0.02	.074*	.054*	.074*

****

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****

SUMMARY OF REACH LENGTHS

River: NRW30

Reach	River Sta.	Left	Channel	Right
*NRW30	2.06	231*	231*	231*
*NRW30	2.02	271*	271*	271*
*NRW30	1.97	215*	215*	215*
*NRW30	1.92	158*	158*	158*
*NRW30	1.89	242*	242*	242*
*NRW30	1.85	211*	211*	211*
*NRW30	1.81	221*	221*	221*
*NRW30	1.77	229*	229*	229*
*NRW30	1.72	293*	293*	293*
*NRW30	1.67	267*	267*	267*
*NRW30	1.62	274*	274*	274*
*NRW30	1.57	297*	297*	297*
*NRW30	1.51	309*	309*	309*
*NRW30	1.45	321*	321*	321*
*NRW30	1.39	273*	273*	273*
*NRW30	1.34	362*	362*	362*
*NRW30	1.27	221*	221*	221*
*NRW30	1.23	305*	305*	305*
*NRW30	1.17	340*	340*	340*
*NRW30	1.11	378*	378*	378*
*NRW30	1.03	217*	217*	217*
*NRW30	0.99	204*	204*	204*
*NRW30	0.95	272*	272*	272*
*NRW30	0.90	304*	304*	304*
*NRW30	0.85	306*	306*	306*
*NRW30	0.79	279*	279*	279*
*NRW30	0.73	261*	261*	261*
*NRW30	0.69	297*	297*	297*
*NRW30	0.63	307*	307*	307*
*NRW30	0.57	317*	317*	317*
*NRW30	0.51	317*	317*	317*

*NRW30	* 0.45	* 271*	271*	271*
*NRW30	* 0.40	* 320*	320*	320*
*NRW30	* 0.34	* 307*	307*	307*
*NRW30	* 0.28	* 337*	337*	337*
*NRW30	* 0.22	* 239*	239*	239*
*NRW30	* 0.17	* 311*	311*	311*
*NRW30	* 0.11	* 265*	265*	265*
*NRW30	* 0.06	* 218*	218*	218*
*NRW30	* 0.02	* 0*	0*	0*

****

****
****

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW30

Reach	River Sta.	Contr.	Expan.
*NRW30	* 2.06	* .1*	.3*
*NRW30	* 2.02	* .1*	.3*
*NRW30	* 1.97	* .1*	.3*
*NRW30	* 1.92	* .1*	.3*
*NRW30	* 1.89	* .1*	.3*
*NRW30	* 1.85	* .1*	.3*
*NRW30	* 1.81	* .1*	.3*
*NRW30	* 1.77	* .1*	.3*
*NRW30	* 1.72	* .1*	.3*
*NRW30	* 1.67	* .1*	.3*
*NRW30	* 1.62	* .1*	.3*
*NRW30	* 1.57	* .1*	.3*
*NRW30	* 1.51	* .1*	.3*
*NRW30	* 1.45	* .1*	.3*
*NRW30	* 1.39	* .1*	.3*
*NRW30	* 1.34	* .1*	.3*
*NRW30	* 1.27	* .1*	.3*
*NRW30	* 1.23	* .1*	.3*
*NRW30	* 1.17	* .1*	.3*
*NRW30	* 1.11	* .1*	.3*
*NRW30	* 1.03	* .1*	.3*
*NRW30	* 0.99	* .1*	.3*
*NRW30	* 0.95	* .1*	.3*
*NRW30	* 0.90	* .1*	.3*
*NRW30	* 0.85	* .1*	.3*
*NRW30	* 0.79	* .1*	.3*
*NRW30	* 0.73	* .1*	.3*
*NRW30	* 0.69	* .1*	.3*
*NRW30	* 0.63	* .1*	.3*
*NRW30	* 0.57	* .1*	.3*
*NRW30	* 0.51	* .1*	.3*
*NRW30	* 0.45	* .1*	.3*
*NRW30	* 0.40	* .1*	.3*
*NRW30	* 0.34	* .1*	.3*
*NRW30	* 0.28	* .1*	.3*
*NRW30	* 0.22	* .1*	.3*
*NRW30	* 0.17	* .1*	.3*
*NRW30	* 0.11	* .1*	.3*
*NRW30	* 0.06	* .1*	.3*
*NRW30	* 0.02	* .1*	.3*

NRW30.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.xs
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:37:47 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW30,NRW30						
2.06	231	231	231	113.23	273	
2.02	271	271	271	99.27	273	
1.97	215	215	215	119.49	273	
1.92	158	158	158	178.93	273	C
1.89	242	242	242	105.4	283	
1.85	211	211	211	104.32	283	
1.81	221	221	221	106.41	283	
1.77	229	229	229	92.63	283	
1.72	293	293	293	95.52	283	
1.67	267	267	267	134.85	283	
1.62	274	274	274	117.41	283	
1.57	297	297	297	142.62	283	
1.51	309	309	309	156.48	283	
1.45	321	321	321	159.47	283	
1.39	273	273	273	152.73	283	
1.34	362	362	362	204.69	283	
1.27	221	221	221	221.11	283	
1.23	305	305	305	205.04	283	
1.17	340	340	340	155.16	283	C
1.11	378	378	378	199.8	283	
1.03	217	217	217	143.73	471	
.99	204	204	204	165.7	471	
.95	272	272	272	188.81	471	
.9	304	304	304	238.06	471	
.85	306	306	306	218.61	471	
.79	279	279	279	185.69	471	
.73	261	261	261	181.94	471	
.69	297	297	297	211.02	471	
.63	307	307	307	196.04	471	
.57	317	317	317	204.36	471	
.51	317	317	317	232.25	503	
.45	271	271	271	183.15	503	
.4	320	320	320	153.4	503	
.34	307	307	307	170.74	503	
.28	337	337	337	199.65	503	
.22	239	239	239	193.44	503	
.17	311	311	311	188.04	503	
.11	265	265	265	156.67	503	
.06	218	218	218	108.34	503	
.02	0	0	0	120.84	503	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

LOCATION CHECK

```
RS:       1.23
XS LC 01 Lenchl Up/TopwdthAct Dn = 1.97
         MaxChlDpth Up/MaxChlDpth Dn = 1.24
         TopwdthAct Up/TopwdthAct Dn = 1.32
         This cross section is located too far upstream from the
         critical depth cross section.
```

BOUNDARY CONDITION CHECK

```
XS BC 02 The name of the stream is NRW30,NRW30
         Normal S = 0.0118 is specified as the downstream boundary
         for profile 100-Year
```

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW30\NRW30.nt
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:37:46 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW30,NRW30						
2.06		0.074	0.054	0.074	0.1	0.3
2.02		0.074	0.054	0.074	0.1	0.3
1.97		0.074	0.054	0.074	0.1	0.3
1.92		0.016	0.016	0.016	0.1	0.3
1.89		0.074	0.054	0.074	0.1	0.3
1.85		0.074	0.054	0.074	0.1	0.3
1.81		0.074	0.054	0.074	0.1	0.3
1.77		0.074	0.054	0.074	0.1	0.3
1.72		0.074	0.054	0.074	0.1	0.3
1.67		0.074	0.054	0.074	0.1	0.3
1.62		0.074	0.054	0.074	0.1	0.3
1.57		0.074	0.054	0.074	0.1	0.3
1.51		0.074	0.054	0.074	0.1	0.3
1.45		0.074	0.054	0.074	0.1	0.3
1.39		0.074	0.054	0.074	0.1	0.3
1.34		0.074	0.054	0.074	0.1	0.3
1.27		0.074	0.054	0.074	0.1	0.3
1.23		0.074	0.054	0.074	0.1	0.3
1.17		0.074	0.054	0.074	0.1	0.3
1.11		0.074	0.054	0.074	0.1	0.3
1.03		0.074	0.054	0.074	0.1	0.3
.99		0.074	0.054	0.074	0.1	0.3
.95		0.074	0.054	0.074	0.1	0.3
.9		0.074	0.054	0.074	0.1	0.3
.85		0.074	0.054	0.074	0.1	0.3
.79		0.074	0.054	0.074	0.1	0.3
.73		0.074	0.054	0.074	0.1	0.3
.69		0.074	0.054	0.074	0.1	0.3
.63		0.074	0.054	0.074	0.1	0.3
.57		0.074	0.054	0.074	0.1	0.3
.51		0.074	0.054	0.074	0.1	0.3
.45		0.074	0.054	0.074	0.1	0.3
.4		0.074	0.054	0.074	0.1	0.3
.34		0.074	0.054	0.074	0.1	0.3
.28		0.074	0.054	0.074	0.1	0.3
.22		0.074	0.054	0.074	0.1	0.3
.17		0.074	0.054	0.074	0.1	0.3
.11		0.074	0.054	0.074	0.1	0.3
.06		0.074	0.054	0.074	0.1	0.3

```
 .02                          0.074     0.054     0.074     0.1       0.3
-------------------------------------------------------------------------
--------

---Summary of Statistics---
                              Minimum          Maximum
Left Overbank n Value:         0.016            0.074
Right Overbank n Value:        0.016            0.074
Channel n Value:               0.016            0.054
Contraction Coefficient:       0.1              0.1
Expansion   Coefficient:       0.3              0.3


ROUGHNESS COEFFICIENT CHECK
-----------------------------------

RS:       1.92
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       1.92
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        1.92
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       1.92
NT RC 05 The left overbank n value of 0.016 and the right overbank n
value
         of 0.016 are less than or equal to the channel n value of 0.016
         The overbank n values should be reevaluated.

TRANSITION LOSS COEFFICIENT CHECK
----------------------------------

ROUGHNESS COEFFICIENT AT STRUCTURES
-----------------------------------

---END---
```

NEW RIVER ROAD XING

NRW 35

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW35 River: NRW35 Reach: NRW35 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW35	0.99	249.00	1640.94	1642.71	1642.09	1642.76	0.007348	1.70	146.55	159.34	0.31
NRW35	0.91	249.00	1636.98	1638.59	1638.08	1638.68	0.014013	2.29	111.56	146.43	0.42
NRW35	0.83	249.00	1632.18	1634.11	1633.50	1634.17	0.008953	1.84	135.65	145.72	0.34
NRW35	0.76	249.00	1629.26	1630.90		1630.95	0.009399	1.93	129.15	135.76	0.35
NRW35	0.67	249.00	1623.73	1625.41	1624.90	1625.50	0.012754	2.47	110.45	151.13	0.41
NRW35	0.58	249.00	1617.62	1619.84		1619.93	0.009820	2.40	103.89	82.58	0.37
NRW35	0.54	249.00	1615.40	1617.43	1616.96	1617.56	0.014830	3.13	93.72	108.42	0.46
NRW35	0.48	249.00	1610.65	1612.79	1612.07	1612.97	0.015544	3.36	74.02	48.14	0.48
NRW35	0.42	249.00	1604.78	1607.93		1608.12	0.016841	3.48	71.48	46.64	0.50
NRW35	0.39	249.00	1601.30	1604.65		1604.85	0.015931	3.59	69.30	41.36	0.49
NRW35	0.34	249.00	1598.14	1601.84		1602.02	0.010838	3.37	73.81	35.91	0.41
NRW35	0.31	249.00	1595.29	1599.02		1599.28	0.018149	4.09	60.88	32.56	0.53
NRW35	0.25	249.00	1590.71	1593.54	1592.69	1593.78	0.016160	3.93	63.37	33.10	0.50
NRW35	0.19	249.00	1585.76	1589.28		1589.52	0.014067	3.91	63.67	29.85	0.47
NRW35	0.15	249.00	1583.50	1587.36		1587.46	0.006447	2.61	95.27	46.43	0.32
NRW35	0.11	249.00	1580.52	1585.12	1584.00	1585.40	0.012912	4.38	65.46	53.04	0.46

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW 35
Project File : NRW35.prj
Run Date and Time: 3/26/2005 5:05:21 PM

Project in English units

Project Description:
NRW 35

New River West Tributaries FDS
Prepared by URS Corp. for the Flood
Control District of Maricopa County
Contract No: FCD 2003 C057
Date: April
29, 2005

Topographic Mapping Source:
Flown and Mapped by DTM Inc.
Flight
Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal - NAD83 Arizona
State Plane, Central Zone, International Feet
Vertical - NAVD 88 (GDACS
Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour storm
event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

249 cfs @ R.S. 0.99

Study Limits:
U.S. Limit is approximately 2520

feet east, and 1670 feet south of the NW corner of
Section 35 T6NR1E
D.S.
Limit is the New River floodplain

Stationing based upon River Mile distance
of the Hydraulic Baseline confluence with the NRW55 Thalwag

Final Model Run
Date:
March 26, 2005

```
************************************************************************
********

PLAN DATA

Plan Title: NRW 35
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35
\NRW35.p01

          Geometry Title: Existing Conditions
          Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW35\NRW35.g01

          Flow Title    : 100-Year; 6-Hour
          Flow File     : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW35\NRW35.f03

Plan Summary Information:
Number of:  Cross Sections =   16    Mulitple Openings  =    0
            Culverts       =    0    Inline Structures  =    0
            Bridges        =    0    Lateral Structures =    0

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow


************************************************************************
********

FLOW DATA

Flow Title: 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35
\NRW35.f03

Flow Data (cfs)
************************************************************
```

```
* River            Reach            RS       *         100-Year *
* NRW35            NRW35            0.99     *               249 *
*************************************************************

Boundary Conditions
***********************************************************************
********************************
* River            Reach            Profile          *            Upstream
Downstream    *
***********************************************************************
********************************
* NRW35            NRW35            100-Year         *
Normal S = 0.0129 *
***********************************************************************
********************************

***********************************************************************
********

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35
\NRW35.g01

CROSS SECTION


RIVER: NRW35
REACH: NRW35                RS: 0.99

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9671.9 1646.11  9680.6 1646.05    9683 1646.06  9719.1 1645.32  9731.1
1645.27
  9745.5 1645.07  9755.1 1645.07  9767.2 1644.87  9791.2 1644.25    9897
1642.68
  9925.4 1641.83  9945.7 1641.99  9979.3 1641.33  9984.3 1641.48  9988.2
1641.21
  9996.5 1640.94 10013.5 1641.38 10028.9 1641.67 10048.4 1642.57   10070
1643.09
 10115.7 1644.43 10156.6 1645.35 10178.2 1645.67 10309.3  1646.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9671.9     .08    9897    .073 10048.4     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9897 10048.4              413     413     413             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***********************************************************************
***********************
```

```
* E.G. Elev (ft)          * 1642.76  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.080
*   0.073  *   0.080  *
* W.S. Elev (ft)          * 1642.71  * Reach Len. (ft)         *  413.00
*  413.00  *  413.00  *
* Crit W.S. (ft)          * 1642.09  * Flow Area (sq ft)       *    0.03
*  146.11  *    0.41  *
* E.G. Slope (ft/ft)      *0.007348  * Area (sq ft)            *    0.03
*  146.11  *    0.41  *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *    0.00
*  248.88  *    0.11  *
* Top Width (ft)          *  159.34  * Top Width (ft)          *    2.08
*  151.40  *    5.86  *
* Vel Total (ft/s)        *    1.70  * Avg. Vel. (ft/s)        *    0.10
*    1.70  *    0.27  *
* Max Chl Dpth (ft)       *    1.77  * Hydr. Depth (ft)        *    0.02
*    0.97  *    0.07  *
* Conv. Total (cfs)       *  2904.9  * Conv. (cfs)             *     0.0
*  2903.5  *     1.3  *
* Length Wtd. (ft)        *  413.00  * Wetted Per. (ft)        *    2.08
*  151.47  *    5.86  *
* Min Ch El (ft)          * 1640.94  * Shear (lb/sq ft)        *    0.01
*    0.44  *    0.03  *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *    0.00
*    0.75  *    0.01  *
* Frctn Loss (ft)         *    4.08  * Cum Volume (acre-ft)    *    0.28
*    9.89  *    0.09  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    1.18
*    8.15  *    0.36  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.91

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9673.5 1642.01  9783.3 1640.27  9819.8 1639.52  9889.8 1638.57  9911.4
1638.35
    9920 1638.66  9930.8 1638.91    9962 1637.85  9976.2 1637.55 10016.9
1636.99
 10018.3 1636.98 10019.6 1637.03 10076.5 1639.45 10083.8 1639.71   10112
1640.59
 10126.9 1640.88 10148.5  1641.7 10185.1    1642 10201.1    1642 10221.6
1641.92
 10256.3 1642.07 10277.8 1642.02 10295.4 1641.85 10306.1 1641.88

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9673.5     .08  9930.8    .073 10076.5     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9930.8 10076.5              407     407     407             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1638.68  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.08  * Wt. n-Val.              *   0.080
*   0.073  *          *
* W.S. Elev (ft)         * 1638.59  * Reach Len. (ft)         *  407.00
*  407.00  *  407.00  *
* Crit W.S. (ft)         * 1638.08  * Flow Area (sq ft)       *    3.75
*  107.82  *          *
* E.G. Slope (ft/ft)     *0.014013  * Area (sq ft)            *    3.75
*  107.82  *          *
* Q Total (cfs)          *  249.00  * Flow (cfs)              *    2.05
*  246.95  *          *
* Top Width (ft)         *  146.43  * Top Width (ft)          *   30.15
*  116.28  *          *
* Vel Total (ft/s)       *    2.23  * Avg. Vel. (ft/s)        *    0.55
*    2.29  *          *
* Max Chl Dpth (ft)      *    1.61  * Hydr. Depth (ft)        *    0.12
*    0.93  *          *
* Conv. Total (cfs)      *  2103.4  * Conv. (cfs)             *    17.3
*  2086.1  *          *
* Length Wtd. (ft)       *  407.00  * Wetted Per. (ft)        *   30.16
*  116.33  *          *
* Min Ch El (ft)         * 1636.98  * Shear (lb/sq ft)        *    0.11
*    0.81  *          *
* Alpha                  *    1.04  * Stream Power (lb/ft s) *    0.06
*    1.86  *          *
* Frctn Loss (ft)        *    4.50  * Cum Volume (acre-ft)    *    0.26
*    8.69  *    0.09  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *    1.03
*    6.88  *    0.33  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.83

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
```

```
**********************************************************************
********
  9616.8 1640.01    9627 1639.98  9649.4 1639.69  9685.4 1639.52  9778.5
1637.88
  9829.3 1636.73  9886.8  1635.1  9917.5 1634.67  9954.1  1633.7  9960.6
1633.6
  9994.1 1632.26  9999.1 1632.18 10004.2 1632.35 10024.3 1633.17 10037.5
1633.1
   10048 1633.18 10069.5 1633.53 10095.3 1634.55 10102.6 1634.74 10118.3
1634.99
 10189.8  1636.9   10298 1638.71 10309.3 1638.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9616.8     .08  9917.5    .073 10095.3     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9917.5 10095.3              349     349     349             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1634.17  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *
*   0.073  *          *
* W.S. Elev (ft)          * 1634.11  * Reach Len. (ft)         *  349.00
*  349.00  *  349.00  *
* Crit W.S. (ft)          * 1633.50  * Flow Area (sq ft)       *
*  135.65  *          *
* E.G. Slope (ft/ft)      *0.008953  * Area (sq ft)            *
*  135.65  *          *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *
*  249.00  *          *
* Top Width (ft)          *  145.72  * Top Width (ft)          *
*  145.72  *          *
* Vel Total (ft/s)        *    1.84  * Avg. Vel. (ft/s)        *
*    1.84  *          *
* Max Chl Dpth (ft)       *    1.93  * Hydr. Depth (ft)        *
*    0.93  *          *
* Conv. Total (cfs)       *  2631.6  * Conv. (cfs)             *
*  2631.6  *          *
* Length Wtd. (ft)        *  349.00  * Wetted Per. (ft)        *
*  145.79  *          *
* Min Ch El (ft)          * 1632.18  * Shear (lb/sq ft)        *
*    0.52  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    0.95  *          *
* Frctn Loss (ft)         *    3.20  * Cum Volume (acre-ft)    *    0.24
*    7.55  *    0.09  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.89
*    5.65  *    0.33  *
**********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW35
REACH: NRW35 RS: 0.76

INPUT
Description:
Station Elevation Data num= 14

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9257.8 1639.23  9497.3 1637.48  9532.8 1635.36  9701.4 1636.86  9781.4
1636.26
    9930  1631.1  9937.9 1631.02  9945.2  1631.3  9978.6 1629.55   10000
1629.37
 10010.2 1629.26 10086.4 1630.83 10235.6 1635.23 10294.3  1635.4
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9257.8     .08  9945.2    .073 10086.4     .08
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9945.2 10086.4               500     500     500             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**********************************************************************
************************
* E.G. Elev (ft)          * 1630.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *
*   0.073  *   0.080  *
* W.S. Elev (ft)          * 1630.90  * Reach Len. (ft)         *  500.00
*  500.00  *  500.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*  129.07  *    0.08  *
* E.G. Slope (ft/ft)      *0.009399  * Area (sq ft)            *
*  129.07  *    0.08  *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *
*  248.99  *    0.01  *
* Top Width (ft)          *  135.76  * Top Width (ft)          *
*  133.50  *    2.26  *
* Vel Total (ft/s)        *    1.93  * Avg. Vel. (ft/s)        *
*    1.93  *    0.19  *
* Max Chl Dpth (ft)       *    1.64  * Hydr. Depth (ft)        *
*    0.97  *    0.03  *
* Conv. Total (cfs)       *  2568.3  * Conv. (cfs)             *
*  2568.2  *     0.1  *
* Length Wtd. (ft)        *  500.00  * Wetted Per. (ft)        *
*  133.55  *    2.26  *
* Min Ch El (ft)          * 1629.26  * Shear (lb/sq ft)        *
*    0.57  *    0.02  *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    1.09  *    0.00  *
* Frctn Loss (ft)         *    5.44  * Cum Volume (acre-ft)    *    0.24
*    6.49  *    0.09  *
```

```
* C & E Loss (ft)          *    0.00  * Cum SA (acres)          *    0.89
*    4.54  *    0.32  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.67

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9508.8 1633.63  9552.1 1633.07  9573.8 1632.46  9617.1 1630.93  9638.8
1630.49
  9682.1    1629  9792.9 1625.72  9826.8 1626.05  9952.5 1624.91   10000
1623.9
 10008.7 1623.82 10017.6 1623.73 10025.4 1624.19 10038.6  1625.3   10331
1628.67
 10410.2 1627.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9508.8     .08  9952.5    .073 10038.6     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9952.5 10038.6              500     500     500             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1625.50  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.080
*   0.073  *   0.080  *
* W.S. Elev (ft)          * 1625.41  * Reach Len. (ft)         *  500.00
*  500.00  *  500.00  *
* Crit W.S. (ft)          * 1624.90  * Flow Area (sq ft)       *   13.88
*   96.02  *    0.54  *
* E.G. Slope (ft/ft)      *0.012754  * Area (sq ft)            *   13.88
*   96.02  *    0.54  *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *   11.59
*  237.25  *    0.17  *
* Top Width (ft)          *  151.13  * Top Width (ft)          *   55.33
*   86.10  *    9.70  *
* Vel Total (ft/s)        *    2.25  * Avg. Vel. (ft/s)        *    0.83
*    2.47  *    0.31  *
* Max Chl Dpth (ft)       *    1.68  * Hydr. Depth (ft)        *    0.25
*    1.12  *    0.06  *
```

```
* Conv. Total (cfs)       *  2204.8  * Conv. (cfs)            *   102.6
*  2100.8  *     1.5  *
* Length Wtd. (ft)        *  500.00  * Wetted Per. (ft)       *   55.34
*   86.17  *    9.70  *
* Min Ch El (ft)          * 1623.73  * Shear (lb/sq ft)       *    0.20
*    0.89  *    0.04  *
* Alpha                   *    1.15  * Stream Power (lb/ft s) *    0.17
*    2.19  *    0.01  *
* Frctn Loss (ft)         *    5.57  * Cum Volume (acre-ft)   *    0.16
*    5.20  *    0.08  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *    0.57
*    3.27  *    0.25  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.58

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9325.5 1629.92  9472.2  1624.6  9643.7 1625.44  9792.7 1622.67  9820.6
1621.58
  9919.5 1620.76  9949.4 1619.75  9969.4 1618.54  9972.4 1618.54  9986.1
1618.06
  9998.3 1617.96   10000 1617.89 10006.8 1617.62   10031 1620.02 10078.4
1622.94
 10115.4 1623.34 10148.2 1624.57 10171.2 1624.72 10185.7 1625.37 10214.6
1625.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9325.5     .08  9949.4    .073   10031     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9949.4   10031              198     198     198             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1619.93  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *   0.080
*   0.073  *          *
* W.S. Elev (ft)          * 1619.84  * Reach Len. (ft)         *  198.00
*  198.00  *  198.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    0.13
```

```
*  103.76  *          *
* E.G. Slope (ft/ft)     *0.009820  * Area (sq ft)           *    0.13
*  103.76  *          *
* Q Total (cfs)          *  249.00  * Flow (cfs)             *    0.03
*  248.97  *          *
* Top Width (ft)         *   82.58  * Top Width (ft)         *    2.76
*   79.82  *          *
* Vel Total (ft/s)       *    2.40  * Avg. Vel. (ft/s)       *    0.24
*    2.40  *          *
* Max Chl Dpth (ft)      *    2.22  * Hydr. Depth (ft)       *    0.05
*    1.30  *          *
* Conv. Total (cfs)      *  2512.7  * Conv. (cfs)            *     0.3
*  2512.4  *          *
* Length Wtd. (ft)       *  198.00  * Wetted Per. (ft)       *    2.76
*   79.98  *          *
* Min Ch El (ft)         * 1617.62  * Shear (lb/sq ft)       *    0.03
*    0.80  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *    0.01
*    1.91  *          *
* Frctn Loss (ft)        *    2.36  * Cum Volume (acre-ft)   *    0.08
*    4.05  *    0.08  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    0.24
*    2.32  *    0.20  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.54

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9538.8 1624.07  9549.9 1623.49  9569.4 1623.11    9612 1620.51  9630.5
1621.43
  9633.4 1621.31  9825.7 1620.98  9975.5 1616.68  9998.4  1615.4 10012.9
1616
   10025  1616.6 10271.2 1622.78 10324.2 1622.75 10367.3 1623.02 10377.2
1622.77
 10387.3  1622.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9538.8     .08  9975.5    .073   10025     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.5   10025              302     302     302             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1617.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *   0.080
*   0.073  *   0.080  *
* W.S. Elev (ft)          * 1617.43  * Reach Len. (ft)         *  302.00
*  302.00  *  302.00  *
* Crit W.S. (ft)          * 1616.96  * Flow Area (sq ft)       *    9.70
*   70.41  *   13.60  *
* E.G. Slope (ft/ft)      *0.014830  * Area (sq ft)            *    9.70
*   70.41  *   13.60  *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *   11.37
*  220.56  *   17.07  *
* Top Width (ft)          *  108.42  * Top Width (ft)          *   26.00
*   49.50  *   32.92  *
* Vel Total (ft/s)        *    2.66  * Avg. Vel. (ft/s)        *    1.17
*    3.13  *    1.25  *
* Max Chl Dpth (ft)       *    2.03  * Hydr. Depth (ft)        *    0.37
*    1.42  *    0.41  *
* Conv. Total (cfs)       *  2044.7  * Conv. (cfs)             *    93.4
*  1811.1  *   140.1  *
* Length Wtd. (ft)        *  302.00  * Wetted Per. (ft)        *   26.01
*   49.56  *   32.93  *
* Min Ch El (ft)          * 1615.40  * Shear (lb/sq ft)        *    0.35
*    1.32  *    0.38  *
* Alpha                   *    1.26  * Stream Power (lb/ft s) *    0.40
*    4.12  *    0.48  *
* Frctn Loss (ft)         *    4.58  * Cum Volume (acre-ft)    *    0.06
*    3.66  *    0.05  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.17
*    2.03  *    0.12  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW35
REACH: NRW35 RS: 0.48

INPUT
Description:
Station Elevation Data num= 27

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9647.3 1617.91  9648.5 1617.89  9744.1 1615.49  9766.9 1614.52  9782.4
1615.14
  9790.8 1615.83  9833.5 1614.83  9834.7 1614.83  9865.9  1615.4  9897.3
1614.86
  9929.2 1615.16  9951.8  1614.1  9973.6 1613.81  9987.7 1610.87   10000
1610.79
 10008.1 1610.67 10012.3 1610.65 10028.6 1613.09 10028.7  1613.1 10058.2
1613.52
```

```
 10125.5 1616.23 10138.3 1616.06 10197.2 1617.86   10219 1619.26 10325.1
1622.17
   10352 1621.46 10455.4  1621.7

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9647.3     .08  9973.6    .073 10028.6     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
       9973.6 10028.6              300     300     300             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1612.97  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *
*   0.073  *          *
* W.S. Elev (ft)          * 1612.79  * Reach Len. (ft)         *  300.00
*  300.00  *  300.00  *
* Crit W.S. (ft)          * 1612.07  * Flow Area (sq ft)       *
*   74.02  *          *
* E.G. Slope (ft/ft)      *0.015544  * Area (sq ft)            *
*   74.02  *          *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *
*  249.00  *          *
* Top Width (ft)          *   48.14  * Top Width (ft)          *
*   48.14  *          *
* Vel Total (ft/s)        *    3.36  * Avg. Vel. (ft/s)        *
*    3.36  *          *
* Max Chl Dpth (ft)       *    2.14  * Hydr. Depth (ft)        *
*    1.54  *          *
* Conv. Total (cfs)       *  1997.2  * Conv. (cfs)             *
*  1997.2  *          *
* Length Wtd. (ft)        *  300.00  * Wetted Per. (ft)        *
*   48.50  *          *
* Min Ch El (ft)          * 1610.65  * Shear (lb/sq ft)        *
*    1.48  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    4.98  *          *
* Frctn Loss (ft)         *    4.85  * Cum Volume (acre-ft)    *    0.03
*    3.15  *    0.00  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.08
*    1.69  *    0.01  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.42

INPUT
```

```
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9692.9 1614.49  9719.6 1613.81  9759.2 1613.65  9780.1 1612.98    9796
1612.12
  9897.8 1609.69  9901.2 1609.49  9954.7 1608.75  9971.3 1607.76 10003.3
1604.78
 10005.5 1605.44 10020.6 1609.35 10026.7 1609.94 10048.5  1611.5 10089.6
1612.38
 10107.2  1613.2   10119 1613.44 10180.2 1615.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9692.9     .08  9954.7    .073 10020.6     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9954.7 10020.6              200     200     200             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1608.12  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.19  * Wt. n-Val.              *
*   0.073  *          *
* W.S. Elev (ft)          * 1607.93  * Reach Len. (ft)         *  200.00
*  200.00  *  200.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*   71.48  *          *
* E.G. Slope (ft/ft)      *0.016841  * Area (sq ft)            *
*   71.48  *          *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *
*  249.00  *          *
* Top Width (ft)          *   46.64  * Top Width (ft)          *
*   46.64  *          *
* Vel Total (ft/s)        *    3.48  * Avg. Vel. (ft/s)        *
*    3.48  *          *
* Max Chl Dpth (ft)       *    3.15  * Hydr. Depth (ft)        *
*    1.53  *          *
* Conv. Total (cfs)       *  1918.7  * Conv. (cfs)             *
*  1918.7  *          *
* Length Wtd. (ft)        *  200.00  * Wetted Per. (ft)        *
*   47.20  *          *
* Min Ch El (ft)          * 1604.78  * Shear (lb/sq ft)        *
*    1.59  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    5.55  *          *
* Frctn Loss (ft)         *    3.28  * Cum Volume (acre-ft)    *    0.03
*    2.65  *    0.00  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.08
*    1.36  *    0.01  *
**********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
```

current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW35
REACH: NRW35 RS: 0.39

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9699.9	1618.78	9775.7	1616.43	9965.6	1606.76	9974.5	1606.09	9982.1	1604.68
10000	1601.57	10001.6	1601.3	10034.4	1606.28	10041.6	1607.53	10068.3	1609.27
10081.9	1609.65	10124.3	1611.62	10285.8	1613.84	10336.5	1613.25		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9699.9	.08	9974.5	.073	10034.4	.08

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.5	10034.4	217	217	217	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1604.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.073	
W.S. Elev (ft)	1604.65	Reach Len. (ft)	217.00	217.00	217.00
Crit W.S. (ft)		Flow Area (sq ft)		69.30	
E.G. Slope (ft/ft)	0.015931	Area (sq ft)		69.30	
Q Total (cfs)	249.00	Flow (cfs)		249.00	
Top Width (ft)	41.36	Top Width (ft)		41.36	
Vel Total (ft/s)	3.59	Avg. Vel. (ft/s)		3.59	
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)		1.68	
Conv. Total (cfs)	1972.8	Conv. (cfs)		1972.8	
Length Wtd. (ft)	217.00	Wetted Per. (ft)		41.90	
Min Ch El (ft)	1601.30	Shear (lb/sq ft)		1.64	
Alpha	1.00	Stream Power (lb/ft s)		5.91	

```
* Frctn Loss (ft)        *    2.83  * Cum Volume (acre-ft)   *    0.03
*    2.33  *    0.00  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    0.08
*    1.16  *    0.01  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.34

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9837 1611.17  9845.1 1610.44  9875.4 1610.62  9935.8 1607.66  9973.9
1604.25
  9978.3 1603.13  9990.7 1599.24  9999.9 1598.14 10016.2 1601.43 10020.9
1602.35
 10177.8  1611.2   10188 1611.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9837     .08  9978.3    .073 10020.9     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.3 10020.9              198     198     198             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1602.02  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.18  * Wt. n-Val.              *
*   0.073  *          *
* W.S. Elev (ft)         * 1601.84  * Reach Len. (ft)         *  198.00
*  198.00  *  198.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *
*   73.81  *          *
* E.G. Slope (ft/ft)     *0.010838  * Area (sq ft)            *
*   73.81  *          *
* Q Total (cfs)          *  249.00  * Flow (cfs)              *
*  249.00  *          *
* Top Width (ft)         *   35.91  * Top Width (ft)          *
*   35.91  *          *
* Vel Total (ft/s)       *    3.37  * Avg. Vel. (ft/s)        *
*    3.37  *          *
* Max Chl Dpth (ft)      *    3.70  * Hydr. Depth (ft)        *
*    2.06  *          *
```

```
* Conv. Total (cfs)       *  2391.8  * Conv. (cfs)              *
*  2391.8  *          *
* Length Wtd. (ft)        *  198.00  * Wetted Per. (ft)         *
*   36.75  *          *
* Min Ch El (ft)          * 1598.14  * Shear (lb/sq ft)         *
*    1.36  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    4.58  *          *
* Frctn Loss (ft)         *    2.73  * Cum Volume (acre-ft)    *    0.03
*    1.97  *    0.00  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.08
*    0.97  *    0.01  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.31

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9855.7 1608.25  9867.8 1607.65  9904.8 1606.59  9939.5  1604.1  9976.8
1600.49
  9981.4 1599.24  9984.6 1598.68   10000 1595.29 10010.3 1597.71 10021.1
1600.59
 10145.1 1607.83 10180.1 1608.71

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9855.7     .08  9976.8    .073 10021.1     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.8 10021.1              321     321     321             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1599.28  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.              *
*   0.073  *          *
* W.S. Elev (ft)          * 1599.02  * Reach Len. (ft)         *  321.00
*  321.00  *  321.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*   60.88  *          *
* E.G. Slope (ft/ft)      *0.018149  * Area (sq ft)            *
*   60.88  *          *
```

```
* Q Total (cfs)          *  249.00  * Flow (cfs)              *
*  249.00  *          *
* Top Width (ft)         *   32.56  * Top Width (ft)          *
*   32.56  *          *
* Vel Total (ft/s)       *    4.09  * Avg. Vel. (ft/s)        *
*    4.09  *          *
* Max Chl Dpth (ft)      *    3.73  * Hydr. Depth (ft)        *
*    1.87  *          *
* Conv. Total (cfs)      *  1848.3  * Conv. (cfs)             *
*  1848.3  *          *
* Length Wtd. (ft)       *  321.00  * Wetted Per. (ft)        *
*   33.42  *          *
* Min Ch El (ft)         * 1595.29  * Shear (lb/sq ft)        *
*    2.06  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *
*    8.44  *          *
* Frctn Loss (ft)        *    5.49  * Cum Volume (acre-ft)    *    0.03
*    1.67  *    0.00  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *    0.08
*    0.81  *    0.01  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.25

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9891.9 1604.22  9931.3 1602.21  9939.8 1601.47  9967.2 1598.35  9970.8
1597.85
  9989.5 1591.29  9990.1 1591.23 10005.5 1590.71 10018.2 1594.08 10020.1
1594.47
 10027.6 1596.21 10041.3 1597.86 10041.7  1597.9 10061.1 1598.17 10111.6
1600.84
   10116    1601 10146.7 1603.04 10167.7 1603.71

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9891.9     .08  9970.8    .073 10041.7     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9970.8 10041.7               283     283     283             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
```

```
* E.G. Elev (ft)          * 1593.78  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.24  * Wt. n-Val.              *
*   0.073  *          *
* W.S. Elev (ft)          * 1593.54  * Reach Len. (ft)         *  283.00
*  283.00  *  283.00  *
* Crit W.S. (ft)          * 1592.69  * Flow Area (sq ft)       *
*   63.37  *          *
* E.G. Slope (ft/ft)      *0.016160  * Area (sq ft)            *
*   63.37  *          *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *
*  249.00  *          *
* Top Width (ft)          *   33.10  * Top Width (ft)          *
*   33.10  *          *
* Vel Total (ft/s)        *    3.93  * Avg. Vel. (ft/s)        *
*    3.93  *          *
* Max Chl Dpth (ft)       *    2.83  * Hydr. Depth (ft)        *
*    1.91  *          *
* Conv. Total (cfs)       *  1958.8  * Conv. (cfs)             *
*  1958.8  *          *
* Length Wtd. (ft)        *  283.00  * Wetted Per. (ft)        *
*   33.87  *          *
* Min Ch El (ft)          * 1590.71  * Shear (lb/sq ft)        *
*    1.89  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    7.42  *          *
* Frctn Loss (ft)         *    4.26  * Cum Volume (acre-ft)    *    0.03
*    1.21  *    0.00  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.08
*    0.57  *    0.01  *
*****************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.19

INPUT
Description: South Section 35 Line T6NR1E
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
  9820.8 1602.22  9821.2 1602.21  9823.7 1602.23  9853.8  1601.4  9932.8
1596.96
    9974  1593.2  9983.4 1589.29    9991  1586.4  9997.8 1585.94 10000.5
1585.76
 10001.4 1586.06 10012.3 1588.98 10025.3 1592.96 10028.7 1593.76 10153.4
1600.77
 10195.6 1602.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
```

```
  9820.8     .08    9974    .073 10028.7     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9974 10028.7              220     220     220             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1589.52  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.24  * Wt. n-Val.              *
*   0.073  *          *
* W.S. Elev (ft)          * 1589.28  * Reach Len. (ft)         *  220.00
*  220.00  *  220.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*   63.67  *          *
* E.G. Slope (ft/ft)      *0.014067  * Area (sq ft)            *
*   63.67  *          *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *
*  249.00  *          *
* Top Width (ft)          *   29.85  * Top Width (ft)          *
*   29.85  *          *
* Vel Total (ft/s)        *    3.91  * Avg. Vel. (ft/s)        *
*    3.91  *          *
* Max Chl Dpth (ft)       *    3.52  * Hydr. Depth (ft)        *
*    2.13  *          *
* Conv. Total (cfs)       *  2099.4  * Conv. (cfs)             *
*  2099.4  *          *
* Length Wtd. (ft)        *  220.00  * Wetted Per. (ft)        *
*   30.88  *          *
* Min Ch El (ft)          * 1585.76  * Shear (lb/sq ft)        *
*    1.81  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    7.08  *          *
* Frctn Loss (ft)         *    2.02  * Cum Volume (acre-ft)    *    0.03
*    0.80  *    0.00  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    0.08
*    0.37  *    0.01  *
************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW35
REACH: NRW35              RS: 0.15

INPUT
Description:
Station Elevation Data    num=      15
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
```

```
Elev
*************************************************************************
********
  9867.8 1596.21  9902.9 1594.87  9931.3  1592.7  9938.6 1591.89  9959.9
1589.07
  9969.6    1588  9986.2 1585.45 10001.3 1583.54 10001.6  1583.5 10014.8
1585.9
 10032.6  1590.7 10043.8 1591.71 10061.5  1593.9 10083.2 1595.83 10153.5
1599.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9867.8     .08  9969.6    .073 10032.6     .08

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9969.6 10032.6              231     231     231             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1587.46  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *
*   0.073  *          *
* W.S. Elev (ft)          * 1587.36  * Reach Len. (ft)         *  231.00
*  231.00  *  231.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*   95.27  *          *
* E.G. Slope (ft/ft)      *0.006447  * Area (sq ft)            *
*   95.27  *          *
* Q Total (cfs)           *  249.00  * Flow (cfs)              *
*  249.00  *          *
* Top Width (ft)          *   46.43  * Top Width (ft)          *
*   46.43  *          *
* Vel Total (ft/s)        *    2.61  * Avg. Vel. (ft/s)        *
*    2.61  *          *
* Max Chl Dpth (ft)       *    3.86  * Hydr. Depth (ft)        *
*    2.05  *          *
* Conv. Total (cfs)       *  3101.0  * Conv. (cfs)             *
*  3101.0  *          *
* Length Wtd. (ft)        *  231.00  * Wetted Per. (ft)        *
*   47.11  *          *
* Min Ch El (ft)          * 1583.50  * Shear (lb/sq ft)        *
*    0.81  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    2.13  *          *
* Frctn Loss (ft)         *    2.05  * Cum Volume (acre-ft)    *    0.03
*    0.40  *    0.00  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.08
*    0.17  *    0.01  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
```

current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW35
REACH: NRW35 RS: 0.11

INPUT
Description: D.S. Limit of Study; WSEL is submerged by backwater elevation of
New River, therefore this cross section is not shown on the hydraulic workmap.

Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9879.9	1590.19	9882.8	1590.03	9905.1	1588.28	9920.2	1586.98	9926.9	1586.17
9934.7	1585.6	9985	1584.62	9990.9	1584.36	9991.5	1584.19	9999.9	1580.52
10004.2	1581.83	10010.3	1583.97	10023.8	1590.64	10025.3	1591.82	10059.8	1594.73
10078.7	1595.92	10083	1596.06						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9879.9	.08	9990.9	.073	10010.3	.08

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.9	10010.3	536.47	536.47	536.47	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1585.40	Element	Left OB	Channel	Right OB		
Vel Head (ft)	0.29	Wt. n-Val.	0.080	0.073	0.080		
W.S. Elev (ft)	1585.12	Reach Len. (ft)					
Crit W.S. (ft)	1584.00	Flow Area (sq ft)	9.98	54.15	1.33		
E.G. Slope (ft/ft)	0.012912	Area (sq ft)	9.98	54.15	1.33		
Q Total (cfs)	249.00	Flow (cfs)	9.83	237.37	1.80		
Top Width (ft)	53.04	Top Width (ft)	31.32	19.40	2.32		
Vel Total (ft/s)	3.80	Avg. Vel. (ft/s)	0.98	4.38	1.35		
Max Chl Dpth (ft)	4.60	Hydr. Depth (ft)	0.32	2.79	0.57		
Conv. Total (cfs)	2191.3	Conv. (cfs)	86.5	2089.0	15.8		
Length Wtd. (ft)		Wetted Per. (ft)	31.33				

```
*   20.75  *    2.59  *
* Min Ch El (ft)         * 1580.52  * Shear (lb/sq ft)       *    0.26
*    2.10  *    0.41  *
* Alpha                  *    1.27  * Stream Power (lb/ft s) *    0.25
*    9.22  *    0.56  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)   *
*          *          *
* C & E Loss (ft)        *          * Cum SA (acres)         *
*          *          *
*************************************************************************
***********************

*************************************************************************
********
```

SUMMARY OF MANNING'S N VALUES

River:NRW35

Reach	River Sta.	n1	n2	n3
NRW35	0.99	.08	.073	.08
NRW35	0.91	.08	.073	.08
NRW35	0.83	.08	.073	.08
NRW35	0.76	.08	.073	.08
NRW35	0.67	.08	.073	.08
NRW35	0.58	.08	.073	.08
NRW35	0.54	.08	.073	.08
NRW35	0.48	.08	.073	.08
NRW35	0.42	.08	.073	.08
NRW35	0.39	.08	.073	.08
NRW35	0.34	.08	.073	.08
NRW35	0.31	.08	.073	.08
NRW35	0.25	.08	.073	.08
NRW35	0.19	.08	.073	.08
NRW35	0.15	.08	.073	.08
NRW35	0.11	.08	.073	.08

****
****

SUMMARY OF REACH LENGTHS

River: NRW35

Reach	River Sta.	Left	Channel	Right
NRW35	0.99	413	413	413
NRW35	0.91	407	407	407
NRW35	0.83	349	349	349
NRW35	0.76	500	500	500
NRW35	0.67	500	500	500
NRW35	0.58	198	198	198
NRW35	0.54	302	302	302
NRW35	0.48	300	300	300
NRW35	0.42	200	200	200
NRW35	0.39	217	217	217
NRW35	0.34	198	198	198
NRW35	0.31	321	321	321
NRW35	0.25	283	283	283

*NRW35	* 0.19	* 220*	220*	220*
*NRW35	* 0.15	* 231*	231*	231*
*NRW35	* 0.11	* 536.47*	536.47*	536.47*

****

****
****

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW35

Reach	River Sta.	Contr.	Expan.
*NRW35	* 0.99	* .1*	.3*
*NRW35	* 0.91	* .1*	.3*
*NRW35	* 0.83	* .1*	.3*
*NRW35	* 0.76	* .1*	.3*
*NRW35	* 0.67	* .1*	.3*
*NRW35	* 0.58	* .1*	.3*
*NRW35	* 0.54	* .1*	.3*
*NRW35	* 0.48	* .1*	.3*
*NRW35	* 0.42	* .1*	.3*
*NRW35	* 0.39	* .1*	.3*
*NRW35	* 0.34	* .1*	.3*
*NRW35	* 0.31	* .1*	.3*
*NRW35	* 0.25	* .1*	.3*
*NRW35	* 0.19	* .1*	.3*
*NRW35	* 0.15	* .1*	.3*
*NRW35	* 0.11	* .1*	.3*

NRW35.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.xs
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:41:18 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW35,NRW35						
.99	413	413	413	159.34	249	
.91	407	407	407	146.43	249	D
.83	349	349	349	145.72	249	
.76	500	500	500	135.76	249	
.67	500	500	500	151.13	249	
.58	198	198	198	82.58	249	
.54	302	302	302	108.42	249	
.48	300	300	300	48.14	249	
.42	200	200	200	46.64	249	
.39	217	217	217	41.36	249	
.34	198	198	198	35.91	249	
.31	321	321	321	32.56	249	
.25	283	283	283	33.1	249	
.19	220	220	220	29.85	249	
.15	231	231	231	46.43	249	
.11	536.47	536.47	536.47	53.04	249	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: 0.99 - ALL FLOW CONTAINED IN CHANNEL
XS DC 05 There is no flow on the right overbank at the downstream cross section. There is no flow on the left overbank at this section.

XS DC 02 Constant dicharge used for the NRW35,NRW35

LOCATION CHECK

BOUNDARY CONDITION CHECK

```
XS BC 02 The name of the stream is NRW35,NRW35
         Normal S = 0.0129 is specified as the downstream boundary
         for profile 100-Year
```

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW35\NRW35.nt
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:41:18 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW35,NRW35						
.99		0.08	0.073	0.08	0.1	0.3
.91		0.08	0.073	0.08	0.1	0.3
.83		0.08	0.073	0.08	0.1	0.3
.76		0.08	0.073	0.08	0.1	0.3
.67		0.08	0.073	0.08	0.1	0.3
.58		0.08	0.073	0.08	0.1	0.3
.54		0.08	0.073	0.08	0.1	0.3
.48		0.08	0.073	0.08	0.1	0.3
.42		0.08	0.073	0.08	0.1	0.3
.39		0.08	0.073	0.08	0.1	0.3
.34		0.08	0.073	0.08	0.1	0.3
.31		0.08	0.073	0.08	0.1	0.3
.25		0.08	0.073	0.08	0.1	0.3
.19		0.08	0.073	0.08	0.1	0.3
.15		0.08	0.073	0.08	0.1	0.3
.11		0.08	0.073	0.08	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.08	0.08
Right Overbank n Value:	0.08	0.08
Channel n Value:	0.073	0.073
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 40

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW40 River: NRW40 Reach: NRW40 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW40	0.69	482.00	1660.26	1662.74	1662.05	1662.83	0.006793	2.65	217.52	187.70	0.37
NRW40	0.65	482.00	1658.32	1659.79	1659.58	1659.99	0.028771	3.57	135.15	160.48	0.68
NRW40	0.60	482.00	1653.13	1655.24	1654.53	1655.38	0.010132	3.02	159.38	110.71	0.44
NRW40	0.54	482.00	1649.98	1651.83	1651.39	1652.04	0.015729	3.75	139.19	138.18	0.55
NRW40	0.47	482.00	1643.85	1646.42	1645.85	1646.64	0.012982	4.07	136.75	93.80	0.52
NRW40	0.41	482.00	1639.24	1641.85		1642.12	0.013893	4.13	117.81	71.13	0.54
NRW40	0.35	482.00	1634.38	1636.83	1636.35	1637.16	0.019952	4.61	104.45	63.52	0.63
NRW40	0.30	482.00	1629.04	1632.49		1632.79	0.011045	4.40	110.67	50.50	0.50
NRW40	0.25	482.00	1625.02	1629.15		1629.48	0.014436	4.62	104.39	49.51	0.56
NRW40	0.20	482.00	1621.06	1625.36		1625.77	0.013740	5.11	95.49	41.00	0.56
NRW40	0.15	482.00	1617.18	1621.47	1620.83	1621.79	0.017507	4.56	105.96	61.49	0.60

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW 40
Project File : NRW40.prj
Run Date and Time: 3/26/2005 5:54:19 PM

Project in English units

Project Description:
NRW 40

New River West Tributaries FDS
Prepared by URS Corp. for the Flood
Control District of Maricopa County
Contract No: FCD 2003 C057
Date: April
29, 2005

Topographic Mapping Source:
Flown and Mapped by DTM Inc.
Flight
Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal - NAD83 Arizona
State Plane, Central Zone, International Feet
Vertical - NAVD 88 (GDACS
Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour storm
event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

482 cfs @ R.S. 0.69

Study Limits:
U.S. Limit is approximately 2240

feet east, and 930 feet north of the SW corner of
Section 26 T6NR1E
D.S.
Limit is the New River floodplain

Stationing based upon River Mile distance
of the Hydraulic Baseline confluence with the NRW55 Thalwag

Final Model Run
Date:
March 26, 2005

```
*************************************************************************
********

PLAN DATA

Plan Title: NRW 40
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40
\NRW40.p01

          Geometry Title: Existing Conditions
          Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW40\NRW40.g01

          Flow Title    : 100-Year; 6-Hour
          Flow File     : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW40\NRW40.f03

Plan Summary Information:
Number of:  Cross Sections =   11    Mulitple Openings  =    0
            Culverts       =    0    Inline Structures  =    0
            Bridges        =    0    Lateral Structures =    0

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow


*************************************************************************
********

FLOW DATA

Flow Title: 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40
\NRW40.f03

Flow Data (cfs)
*************************************************************
```

```
* River            Reach            RS       *         100-Year *
* NRW40            NRW40            0.69     *               482 *
*************************************************************

Boundary Conditions
***********************************************************************
********************************
* River            Reach            Profile          *             Upstream
Downstream    *
***********************************************************************
********************************
* NRW40            NRW40            100-Year         *
Normal S = 0.0175 *
***********************************************************************
********************************

***********************************************************************
********

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40
\NRW40.g01

CROSS SECTION


RIVER: NRW40
REACH: NRW40               RS: 0.69

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9829.6 1665.65  9830.2 1665.63  9838.4 1665.57  9928.4 1663.19  9954.8
1662.3
    9982 1661.86    9998 1660.52 10002.7 1660.26 10028.2  1660.9 10042.8
1661.51
 10073.2 1661.85 10082.8 1661.57 10093.2 1661.21 10132.5 1662.86 10133.4
1662.9
 10159.5 1663.52 10222.6 1665.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9829.6    .078    9982    .063 10073.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9982 10073.2              231     231     231             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***********************************************************************
***********************
* E.G. Elev (ft)         * 1662.83  * Element                 *  Left OB
*  Channel * Right OB *
```

```
* Vel Head (ft)          *    0.09  * Wt. n-Val.             *   0.078
*   0.063  *   0.078  *
* W.S. Elev (ft)         * 1662.74  * Reach Len. (ft)        *  231.00
*  231.00  *  231.00  *
* Crit W.S. (ft)         * 1662.05  * Flow Area (sq ft)      *   20.68
*  145.24  *   51.61  *
* E.G. Slope (ft/ft)     *0.006793  * Area (sq ft)           *   20.68
*  145.24  *   51.61  *
* Q Total (cfs)          *  482.00  * Flow (cfs)             *   20.86
*  384.77  *   76.37  *
* Top Width (ft)         *  187.70  * Top Width (ft)         *   40.15
*   91.20  *   56.36  *
* Vel Total (ft/s)       *    2.22  * Avg. Vel. (ft/s)       *    1.01
*    2.65  *    1.48  *
* Max Chl Dpth (ft)      *    2.48  * Hydr. Depth (ft)       *    0.52
*    1.59  *    0.92  *
* Conv. Total (cfs)      *  5848.2  * Conv. (cfs)            *   253.1
*  4668.5  *   926.6  *
* Length Wtd. (ft)       *  231.00  * Wetted Per. (ft)       *   40.16
*   91.29  *   56.40  *
* Min Ch El (ft)         * 1660.26  * Shear (lb/sq ft)       *    0.22
*    0.67  *    0.39  *
* Alpha                  *    1.22  * Stream Power (lb/ft s) *    0.22
*    1.79  *    0.57  *
* Frctn Loss (ft)        *    2.84  * Cum Volume (acre-ft)   *    0.58
*    7.69  *    0.15  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    0.90
*    4.85  *    0.21  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.65

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9760.3 1666.03  9790.8 1665.26    9798 1665.03  9819.8 1663.79  9822.9
1663.65
  9842.6 1663.15  9844.8 1663.06  9869.4 1661.42  9871.5  1661.4  9884.9
1661.1
  9890.3 1660.92  9898.1 1660.73  9914.1 1660.23  9922.8 1659.54  9947.3
1658.32
  9960.1 1658.88  9977.3 1659.12  9997.1 1658.94   10022 1658.97 10029.5
1659.03
 10055.6 1658.47 10090.8 1660.36 10179.1 1663.93 10190.9 1664.35
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9760.3    .078  9914.1    .063 10090.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9914.1 10090.8              287     287     287             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1659.99  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.              *
*   0.063  *          *
* W.S. Elev (ft)          * 1659.79  * Reach Len. (ft)         *  287.00
*  287.00  *  287.00  *
* Crit W.S. (ft)          * 1659.58  * Flow Area (sq ft)       *
*  135.15  *          *
* E.G. Slope (ft/ft)      *0.028771  * Area (sq ft)            *
*  135.15  *          *
* Q Total (cfs)           *  482.00  * Flow (cfs)              *
*  482.00  *          *
* Top Width (ft)          *  160.48  * Top Width (ft)          *
*  160.48  *          *
* Vel Total (ft/s)        *    3.57  * Avg. Vel. (ft/s)        *
*    3.57  *          *
* Max Chl Dpth (ft)       *    1.47  * Hydr. Depth (ft)        *
*    0.84  *          *
* Conv. Total (cfs)       *  2841.6  * Conv. (cfs)             *
*  2841.6  *          *
* Length Wtd. (ft)        *  287.00  * Wetted Per. (ft)        *
*  160.58  *          *
* Min Ch El (ft)          * 1658.32  * Shear (lb/sq ft)        *
*    1.51  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    5.39  *          *
* Frctn Loss (ft)         *    4.58  * Cum Volume (acre-ft)    *    0.52
*    6.95  *    0.01  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.79
*    4.19  *    0.06  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.60
```

```
INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9794.1 1662.43  9809.4 1662.46  9813.2 1662.32  9825.8 1663.02  9828.5
1663.02
  9860.4  1661.8  9884.2 1660.38  9897.7 1659.78  9913.2 1659.31  9935.3
1657.63
  9957.8 1656.78    9964 1656.47  9980.4 1654.84  9999.6 1653.13   10019
1653.32
 10035.4 1653.52 10063.8  1653.7 10065.7 1653.72 10087.9  1655.3 10090.5
1655.47
 10118.8 1657.14 10129.7 1657.71 10156.1 1659.75 10162.1 1660.32 10185.2
1661.19
 10202.8 1661.72 10212.2 1662.28 10216.9 1662.53

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9794.1    .078    9964    .063 10090.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9964 10090.5              268     268     268             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1655.38  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *
*   0.063  *          *
* W.S. Elev (ft)          * 1655.24  * Reach Len. (ft)         *  268.00
*  268.00  *  268.00  *
* Crit W.S. (ft)          * 1654.53  * Flow Area (sq ft)       *
*  159.38  *          *
* E.G. Slope (ft/ft)      *0.010132  * Area (sq ft)            *
*  159.38  *          *
* Q Total (cfs)           *  482.00  * Flow (cfs)              *
*  482.00  *          *
* Top Width (ft)          *  110.71  * Top Width (ft)          *
*  110.71  *          *
* Vel Total (ft/s)        *    3.02  * Avg. Vel. (ft/s)        *
*    3.02  *          *
* Max Chl Dpth (ft)       *    2.11  * Hydr. Depth (ft)        *
*    1.44  *          *
* Conv. Total (cfs)       *  4788.5  * Conv. (cfs)             *
*  4788.5  *          *
* Length Wtd. (ft)        *  268.00  * Wetted Per. (ft)        *
*  110.86  *          *
* Min Ch El (ft)          * 1653.13  * Shear (lb/sq ft)        *
*    0.91  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    2.75  *          *
* Frctn Loss (ft)         *    3.34  * Cum Volume (acre-ft)    *    0.52
*    5.98  *    0.01  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.79
```

```
*    3.29  *    0.06  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.54

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9721.8 1658.81  9723.2 1658.76  9727.2 1658.47  9757.8 1656.65  9759.5
1656.58
  9762.9  1656.4  9768.8 1655.81  9773.5 1655.12  9794.7 1653.92  9818.5
1653.03
    9845 1652.86  9847.6 1652.59  9859.9 1651.02  9866.8 1651.44  9875.5
1652.3
  9885.2 1652.35  9895.5 1652.18  9909.5  1652.6  9926.1 1652.01  9961.8
1651.01
  9968.3 1650.96  9975.2 1650.67  9996.7    1650 10004.5 1650.24 10033.9
1650.02
 10035.2 1649.98 10053.9 1651.86 10081.5 1653.92 10087.4 1654.38 10120.2
1657.39
 10123.1 1657.53 10144.4 1658.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9721.8    .078  9968.3    .063 10053.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9968.3 10053.9              378     378     378             .1
.3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
  9721.8  9909.5  1652.6       F

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1652.04  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.21  * Wt. n-Val.              *   0.078
*   0.063  *          *
* W.S. Elev (ft)          * 1651.83  * Reach Len. (ft)         *  378.00
*  378.00  *  378.00  *
* Crit W.S. (ft)          * 1651.39  * Flow Area (sq ft)       *   17.45
*  121.75  *          *
* E.G. Slope (ft/ft)      *0.015729  * Area (sq ft)            *   24.90
*  121.75  *          *
```

```
* Q Total (cfs)          *  482.00  * Flow (cfs)              *   25.84
*  456.16  *          *
* Top Width (ft)         *  138.18  * Top Width (ft)          *   52.89
*   85.29  *          *
* Vel Total (ft/s)       *    3.46  * Avg. Vel. (ft/s)        *    1.48
*    3.75  *          *
* Max Chl Dpth (ft)      *    1.85  * Hydr. Depth (ft)        *    0.49
*    1.43  *          *
* Conv. Total (cfs)      *  3843.2  * Conv. (cfs)             *   206.0
*  3637.2  *          *
* Length Wtd. (ft)       *  378.00  * Wetted Per. (ft)        *   35.74
*   85.40  *          *
* Min Ch El (ft)         * 1649.98  * Shear (lb/sq ft)        *    0.48
*    1.40  *          *
* Alpha                  *    1.12  * Stream Power (lb/ft s) *    0.71
*    5.24  *          *
* Frctn Loss (ft)        *    5.39  * Cum Volume (acre-ft)    *    0.45
*    5.11  *    0.01  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)          *    0.63
*    2.69  *    0.06  *
*************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid, water
         surface was used.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.47

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9813.9 1655.87  9824.8  1655.2  9849.4  1652.9  9855.9 1652.38  9873.8
1650.75
    9887 1649.72  9910.2 1647.76  9918.1 1647.16  9937.3 1645.87  9944.3
1645.31
  9951.9 1645.05  9967.1 1645.08  9970.1 1645.01  9973.5  1644.9  9989.5
1644.19
   10002 1643.92 10005.7 1643.85 10019.7 1646.08 10021.3 1646.23 10042.6
1648.61
 10044.6 1648.82 10051.9 1649.33   10069 1650.62 10073.7 1651.01 10083.9
1652.34
 10089.3 1652.87 10117.8 1654.97 10139.8 1656.72

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9813.9    .078  9967.1    .063 10019.7    .078
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9967.1 10019.7              336     336     336             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1646.64  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.078
*   0.063  *   0.078  *
* W.S. Elev (ft)          * 1646.42  * Reach Len. (ft)         *  336.00
*  336.00  *  336.00  *
* Crit W.S. (ft)          * 1645.85  * Flow Area (sq ft)       *   37.94
*   98.23  *    0.57  *
* E.G. Slope (ft/ft)      *0.012982  * Area (sq ft)            *   37.94
*   98.23  *    0.57  *
* Q Total (cfs)           *  482.00  * Flow (cfs)              *   82.31
*  399.30  *    0.39  *
* Top Width (ft)          *   93.80  * Top Width (ft)          *   37.93
*   52.60  *    3.27  *
* Vel Total (ft/s)        *    3.52  * Avg. Vel. (ft/s)        *    2.17
*    4.07  *    0.68  *
* Max Chl Dpth (ft)       *    2.57  * Hydr. Depth (ft)        *    1.00
*    1.87  *    0.18  *
* Conv. Total (cfs)       *  4230.4  * Conv. (cfs)             *   722.4
*  3504.6  *     3.4  *
* Length Wtd. (ft)        *  336.00  * Wetted Per. (ft)        *   37.98
*   52.80  *    3.28  *
* Min Ch El (ft)          * 1643.85  * Shear (lb/sq ft)        *    0.81
*    1.51  *    0.14  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *    1.76
*    6.13  *    0.10  *
* Frctn Loss (ft)         *    4.51  * Cum Volume (acre-ft)    *    0.17
*    4.16  *    0.01  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.23
*    2.09  *    0.04  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.41

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9840.8 1654.63  9856.8 1653.52  9859.1 1653.34  9895.3  1650.1  9918.8
1647.39
  9938.3 1645.47  9942.2  1645.2  9946.3 1644.66    9979 1641.38  9988.8
```

```
1640.1
  9993.5 1639.36    9999 1639.48   10013 1639.24 10016.2  1639.4 10028.5
1640.3
 10036.4 1640.82   10043 1641.61 10057.4 1643.07 10069.9 1644.02 10082.7
1645.44
 10106.1 1647.59 10126.1 1650.36 10130.4  1650.9 10180.3 1653.59 10180.9
1653.61

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9840.8    .078    9979    .063   10043    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9979   10043              300     300     300             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1642.12  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.              *   0.078
*   0.063  *   0.078  *
* W.S. Elev (ft)          * 1641.85  * Reach Len. (ft)         *  300.00
*  300.00  *  300.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    1.12
*  116.39  *    0.29  *
* E.G. Slope (ft/ft)      *0.013893  * Area (sq ft)            *    1.12
*  116.39  *    0.29  *
* Q Total (cfs)           *  482.00  * Flow (cfs)              *    0.96
*  480.88  *    0.16  *
* Top Width (ft)          *   71.13  * Top Width (ft)          *    4.72
*   64.00  *    2.41  *
* Vel Total (ft/s)        *    4.09  * Avg. Vel. (ft/s)        *    0.86
*    4.13  *    0.55  *
* Max Chl Dpth (ft)       *    2.61  * Hydr. Depth (ft)        *    0.24
*    1.82  *    0.12  *
* Conv. Total (cfs)       *  4089.4  * Conv. (cfs)             *     8.1
*  4079.9  *     1.4  *
* Length Wtd. (ft)        *  300.00  * Wetted Per. (ft)        *    4.75
*   64.25  *    2.42  *
* Min Ch El (ft)          * 1639.24  * Shear (lb/sq ft)        *    0.20
*    1.57  *    0.11  *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *    0.18
*    6.49  *    0.06  *
* Frctn Loss (ft)         *    4.95  * Cum Volume (acre-ft)    *    0.02
*    3.33  *    0.00  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.07
*    1.64  *    0.02  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW40
REACH: NRW40                RS: 0.35

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9810.3  1654.3  9827.3 1653.04  9834.5 1652.33  9859.9 1650.44  9869.2
1649.86
  9876.5 1648.72  9890.9 1646.74  9906.9 1645.27  9912.1 1644.84  9961.5
1639.61
  9963.8 1639.34  9968.7  1638.9  9984.5 1637.37  9996.5 1635.18  9999.5
1634.55
 10007.2 1635.04 10016.8 1635.28 10026.9 1634.96 10034.8 1634.76 10041.2
1634.38
 10056.3 1638.17 10059.5 1638.94 10081.7 1642.76 10081.9 1642.79 10103.1
1644.7
 10123.7 1646.75 10124.3 1646.81   10125 1646.86 10145.6 1648.46 10163.9
1651.5
   10171 1651.75 10180.5 1652.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9810.3    .078  9984.5    .063 10056.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.5 10056.3              301     301     301             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1637.16  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.33  * Wt. n-Val.              *
*   0.063  *          *
* W.S. Elev (ft)          * 1636.83  * Reach Len. (ft)         *  301.00
*  301.00  *  301.00  *
* Crit W.S. (ft)          * 1636.35  * Flow Area (sq ft)       *
*  104.45  *          *
* E.G. Slope (ft/ft)      *0.019952  * Area (sq ft)            *
*  104.45  *          *
* Q Total (cfs)           *  482.00  * Flow (cfs)              *
*  482.00  *          *
* Top Width (ft)          *   63.52  * Top Width (ft)          *
*   63.52  *          *
* Vel Total (ft/s)        *    4.61  * Avg. Vel. (ft/s)        *
*    4.61  *          *
* Max Chl Dpth (ft)       *    2.45  * Hydr. Depth (ft)        *
*    1.64  *          *
* Conv. Total (cfs)       *  3412.4  * Conv. (cfs)             *
*  3412.4  *          *
* Length Wtd. (ft)        *  301.00  * Wetted Per. (ft)        *
*   64.08  *          *
* Min Ch El (ft)          * 1634.38  * Shear (lb/sq ft)        *
*    2.03  *          *
```

```
* Alpha                    *    1.00  * Stream Power (lb/ft s) *
*    9.37  *           *
* Frctn Loss (ft)          *    4.37  * Cum Volume (acre-ft)   *    0.02
*    2.57  *    0.00  *
* C & E Loss (ft)          *    0.01  * Cum SA (acres)         *    0.05
*    1.20  *    0.01  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.30

INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9839.7 1650.35  9844.4 1649.98  9863.1 1648.75  9872.5 1647.86  9928.7
1641.44
  9931.8 1641.06  9932.6 1640.96  9933.7  1640.8  9971.1 1635.45  9974.3
1634.26
  9983.2 1631.63  9995.2 1629.04 10003.1  1629.1 10008.4 1629.12 10021.8
1631.03
 10028.8  1632.2 10032.7 1632.76   10065 1636.14 10071.9  1636.7   10089
1638.3
 10103.4 1640.38 10109.1 1641.17 10131.1 1643.48   10138 1644.25 10160.3
1647.1
 10182.9 1648.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9839.7    .078  9983.2    .063 10028.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.2 10028.8              263     263     263             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1632.79  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.30  * Wt. n-Val.              *   0.078
*   0.063  *   0.078  *
* W.S. Elev (ft)          * 1632.49  * Reach Len. (ft)         *  263.00
*  263.00  *  263.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    1.24
*  109.14  *    0.29  *
* E.G. Slope (ft/ft)      *0.011045  * Area (sq ft)            *    1.24
*  109.14  *    0.29  *
```

```
* Q Total (cfs)          *  482.00  * Flow (cfs)             *    1.38
*  480.47  *    0.16  *
* Top Width (ft)         *   50.50  * Top Width (ft)         *    2.90
*   45.60  *    2.00  *
* Vel Total (ft/s)       *    4.36  * Avg. Vel. (ft/s)       *    1.11
*    4.40  *    0.55  *
* Max Chl Dpth (ft)      *    3.45  * Hydr. Depth (ft)       *    0.43
*    2.39  *    0.14  *
* Conv. Total (cfs)      *  4586.4  * Conv. (cfs)            *    13.1
*  4571.8  *     1.5  *
* Length Wtd. (ft)       *  263.00  * Wetted Per. (ft)       *    3.02
*   46.11  *    2.02  *
* Min Ch El (ft)         * 1629.04  * Shear (lb/sq ft)       *    0.28
*    1.63  *    0.10  *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *    0.31
*    7.19  *    0.05  *
* Frctn Loss (ft)        *    3.31  * Cum Volume (acre-ft) .. *    0.01
*    1.83  *    0.00  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    0.04
*    0.83  *    0.01  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.25

INPUT
Description: South Section 26 Line T6NR1E
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9819.6 1647.35  9820.8 1647.24  9833.2 1646.01  9843.9 1644.74  9854.5
1643.55
  9866.8 1642.04  9923.2  1635.7  9939.6 1633.54  9958.6  1631.4  9962.1
1630.95
  9978.2 1628.58  9991.4 1626.24    9999 1625.02 10006.8 1626.12 10037.9
1631.63
 10046.8 1633.04 10049.2 1633.48 10061.7 1634.72 10073.7  1635.4 10080.1
1636.43
 10088.5  1637.5 10109.8 1639.67 10121.3 1640.96 10146.3 1644.33 10147.1
1644.45
   10150 1644.59

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9819.6    .078  9962.1    .063 10037.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9962.1 10037.9              263     263     263             .1
.3
```

```
CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1629.48  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.33  * Wt. n-Val.              *
*   0.063  *          *
* W.S. Elev (ft)          * 1629.15  * Reach Len. (ft)         *  263.00
*  263.00  *  263.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*  104.39  *          *
* E.G. Slope (ft/ft)      *0.014436  * Area (sq ft)            *
*  104.39  *          *
* Q Total (cfs)           *  482.00  * Flow (cfs)              *
*  482.00  *          *
* Top Width (ft)          *   49.51  * Top Width (ft)          *
*   49.51  *          *
* Vel Total (ft/s)        *    4.62  * Avg. Vel. (ft/s)        *
*    4.62  *          *
* Max Chl Dpth (ft)       *    4.12  * Hydr. Depth (ft)        *
*    2.11  *          *
* Conv. Total (cfs)       *  4011.6  * Conv. (cfs)             *
*  4011.6  *          *
* Length Wtd. (ft)        *  263.00  * Wetted Per. (ft)        *
*   50.20  *          *
* Min Ch El (ft)          * 1625.02  * Shear (lb/sq ft)        *
*    1.87  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    8.65  *          *
* Frctn Loss (ft)         *    3.70  * Cum Volume (acre-ft)    *    0.01
*    1.19  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.03
*    0.54  *          *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.20

INPUT
Description: North Section 35 Line T6NR1E
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9785.1 1647.68  9792.9 1646.88  9807.2 1645.33  9812.8 1645.33  9823.5
1644.75
  9833.3 1643.92  9864.4 1639.27    9865  1639.2  9865.7 1639.11  9886.3
1636.43
  9904.3 1633.65  9907.5  1633.2  9928.8 1630.74  9944.2 1628.81  9969.7
1625.82
  9977.6  1624.7  9989.4 1621.92  9996.8 1621.53   10000 1621.06 10003.5
```

```
1622.17
 10017.6 1626.49 10056.3 1631.75 10063.9  1632.7 10077.6 1634.15 10093.2
1635.51
 10098.9 1635.89 10120.1 1637.87 10144.4 1640.38 10154.8  1641.6 10182.1
1644.04

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9785.1    .078  9977.6    .063 10017.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9977.6 10017.6              256     256     256             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1625.77  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.40  * Wt. n-Val.              *   0.078
*   0.063  *          *
* W.S. Elev (ft)          * 1625.36  * Reach Len. (ft)         *  256.00
*  256.00  *  256.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    1.55
*   93.93  *          *
* E.G. Slope (ft/ft)      *0.013740  * Area (sq ft)            *    1.55
*   93.93  *          *
* Q Total (cfs)           *  482.00  * Flow (cfs)              *    1.65
*  480.35  *          *
* Top Width (ft)          *   41.00  * Top Width (ft)          *    4.68
*   36.32  *          *
* Vel Total (ft/s)        *    5.05  * Avg. Vel. (ft/s)        *    1.06
*    5.11  *          *
* Max Chl Dpth (ft)       *    4.30  * Hydr. Depth (ft)        *    0.33
*    2.59  *          *
* Conv. Total (cfs)       *  4112.0  * Conv. (cfs)             *    14.1
*  4098.0  *          *
* Length Wtd. (ft)        *  256.00  * Wetted Per. (ft)        *    4.73
*   37.34  *          *
* Min Ch El (ft)          * 1621.06  * Shear (lb/sq ft)        *    0.28
*    2.16  *          *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *    0.30
*   11.03  *          *
* Frctn Loss (ft)         *    3.96  * Cum Volume (acre-ft)    *    0.01
*    0.59  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.02
*    0.28  *          *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW40
REACH: NRW40              RS: 0.15
```

```
INPUT
Description: D.S. Limit of Study
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9822.3 1635.85  9826.3 1635.35  9844.8 1633.19  9851.7 1633.01  9862.6
1631.89
  9879.7 1630.29  9881.8  1629.9  9912.7 1627.66  9914.9 1627.32  9933.5
1624.08
    9936 1624.33  9939.7 1624.59  9952.9 1622.22  9957.8 1621.43    9960
1621.25
  9988.2 1619.61  9988.7 1619.59  9988.9 1619.57    9989 1619.57  9989.4
1619.48
 10000.1 1617.18 10020.9 1621.88 10026.2 1622.35 10058.3 1626.68 10077.1
1628.81
 10086.9 1629.81   10092 1630.28 10125.7 1633.19   10145 1634.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9822.3    .078    9960    .063 10020.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9960 10020.9           776.97  776.97  776.97            .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)         * 1621.79  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.32  * Wt. n-Val.              *   0.078
*   0.063  *          *
* W.S. Elev (ft)         * 1621.47  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)         * 1620.83  * Flow Area (sq ft)       *    0.28
*  105.68  *          *
* E.G. Slope (ft/ft)     *0.017507  * Area (sq ft)            *    0.28
*  105.68  *          *
* Q Total (cfs)          *  482.00  * Flow (cfs)              *    0.17
*  481.83  *          *
* Top Width (ft)         *   61.49  * Top Width (ft)          *    2.42
*   59.07  *          *
* Vel Total (ft/s)       *    4.55  * Avg. Vel. (ft/s)        *    0.60
*    4.56  *          *
* Max Chl Dpth (ft)      *    4.29  * Hydr. Depth (ft)        *    0.12
*    1.79  *          *
* Conv. Total (cfs)      *  3642.9  * Conv. (cfs)             *     1.3
*  3641.6  *          *
* Length Wtd. (ft)       *          * Wetted Per. (ft)        *    2.43
*   59.85  *          *
* Min Ch El (ft)         * 1617.18  * Shear (lb/sq ft)        *    0.13
*    1.93  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *    0.08
*    8.80  *          *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)    *
*          *          *
```

```
* C & E Loss (ft)        *          * Cum SA (acres)         *
*          *          *
*************************************************************************
************************

*************************************************************************
********
```

SUMMARY OF MANNING'S N VALUES

River:NRW40

Reach	River Sta.	n1	n2	n3
NRW40	0.69	.078	.063	.078
NRW40	0.65	.078	.063	.078
NRW40	0.60	.078	.063	.078
NRW40	0.54	.078	.063	.078
NRW40	0.47	.078	.063	.078
NRW40	0.41	.078	.063	.078
NRW40	0.35	.078	.063	.078
NRW40	0.30	.078	.063	.078
NRW40	0.25	.078	.063	.078
NRW40	0.20	.078	.063	.078
NRW40	0.15	.078	.063	.078

```
*************************************************************************
********
```

SUMMARY OF REACH LENGTHS

River: NRW40

Reach	River Sta.	Left	Channel	Right
NRW40	0.69	231	231	231
NRW40	0.65	287	287	287
NRW40	0.60	268	268	268
NRW40	0.54	378	378	378
NRW40	0.47	336	336	336
NRW40	0.41	300	300	300
NRW40	0.35	301	301	301
NRW40	0.30	263	263	263
NRW40	0.25	263	263	263
NRW40	0.20	256	256	256
NRW40	0.15	776.97	776.97	776.97

```
*************************************************************************
********
```

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW40

Reach	River Sta.	Contr.	Expan.
NRW40	0.69	.1	.3
NRW40	0.65	.1	.3
NRW40	0.60	.1	.3

```
*NRW40            *    0.54    *        .1*        .3*
*NRW40            *    0.47    *        .1*        .3*
*NRW40            *    0.41    *        .1*        .3*
*NRW40            *    0.35    *        .1*        .3*
*NRW40            *    0.30    *        .1*        .3*
*NRW40            *    0.25    *        .1*        .3*
*NRW40            *    0.20    *        .1*        .3*
*NRW40            *    0.15    *        .1*        .3*
*******************************************************
```

NRW40.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.xs
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:43:45 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW40,NRW40						
.69	231	231	231	187.7	482	
.65	287	287	287	160.48	482	
.6	268	268	268	110.71	482	
.54	378	378	378	121.01	482	
.47	336	336	336	93.8	482	
.41	300	300	300	71.13	482	
.35	301	301	301	63.52	482	
.3	263	263	263	50.5	482	
.25	263	263	263	49.51	482	
.2	256	256	256	41	482	
.15	776.97	776.97	776.97	61.49	482	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

XS DC 02 Constant dicharge used for the NRW40,NRW40

LOCATION CHECK

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is NRW40,NRW40

Normal S = 0.0175 is specified as the downstream boundary
for profile 100-Year

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW40\NRW40.nt
Selected profiles: 100-Year
Date: 7/31/2005
Time: 3:43:44 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW40,NRW40						
.69		0.078	0.063	0.078	0.1	0.3
.65		0.078	0.063	0.078	0.1	0.3
.6		0.078	0.063	0.078	0.1	0.3
.54		0.078	0.063	0.078	0.1	0.3
.47		0.078	0.063	0.078	0.1	0.3
.41		0.078	0.063	0.078	0.1	0.3
.35		0.078	0.063	0.078	0.1	0.3
.3		0.078	0.063	0.078	0.1	0.3
.25		0.078	0.063	0.078	0.1	0.3
.2		0.078	0.063	0.078	0.1	0.3
.15		0.078	0.063	0.078	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.078	0.078
Right Overbank n Value:	0.078	0.078
Channel n Value:	0.063	0.063
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 45

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW45 River: NRW45 Reach: NRW45 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW45	1.21	577.00	1705.45	1706.98	1706.58	1707.08	0.007256	3.77	301.40	362.94	0.58
NRW45	1.15	577.00	1701.90	1703.87	1703.74	1704.30	0.012579	5.47	134.24	215.80	0.79
NRW45	1.11	577.00	1700.73	1702.22		1702.35	0.005238	3.36	263.29	306.21	0.50
NRW45	1.05	577.00	1697.96	1699.39	1699.35	1699.66	0.015265	5.01	190.97	281.16	0.83
NRW45	0.98	577.00	1694.14	1696.64	1696.13	1696.90	0.005149	4.50	197.69	185.36	0.54
NRW45	0.90	577.00	1691.08	1692.55	1692.55	1692.91	0.022502	5.56	146.28	193.45	0.98
NRW45	0.86	378.00	1690.16	1691.60		1691.63	0.000167	1.33	299.58	309.23	0.22
NRW45	0.84	378.00	1687.88	1691.60		1691.60	0.000124	0.90	914.80	444.58	0.09
NRW45	0.80	378.00	1684.48	1691.60		1691.62	0.000088	1.18	319.89	702.64	0.08
NRW45	0.78	Culvert									
NRW45	0.77	378.00	1682.36	1685.00	1684.69	1685.39	0.010092	5.07	77.90	277.54	0.71
NRW45	0.71	383.00	1679.80	1681.03	1680.91	1681.21	0.014303	4.20	145.55	210.82	0.77
NRW45	0.66	383.00	1676.97	1678.48	1678.24	1678.61	0.007270	3.69	181.71	233.00	0.58
NRW45	0.59	383.00	1673.72	1675.70	1675.51	1675.94	0.009341	5.18	139.73	147.95	0.69
NRW45	0.53	383.00	1669.82	1671.90		1672.27	0.010845	5.75	118.16	143.82	0.75
NRW45	0.47	383.00	1665.69	1667.76	1667.76	1668.29	0.021430	7.44	91.13	101.45	1.03
NRW45	0.43	383.00	1660.41	1663.16	1662.83	1663.62	0.010023	6.43	90.70	58.54	0.75
NRW45	0.38	383.00	1656.30	1659.52	1659.52	1660.44	0.015030	8.08	58.37	35.69	0.92
NRW45	0.30	383.00	1650.43	1653.69	1653.50	1654.32	0.014546	6.41	60.18	37.38	0.86
NRW45	0.25	383.00	1647.68	1650.22		1650.78	0.010926	6.72	82.05	56.05	0.78
NRW45	0.19	383.00	1643.38	1645.64	1645.64	1646.39	0.020441	8.48	70.06	48.66	1.05
NRW45	0.14	383.00	1639.17	1641.87	1641.72	1642.56	0.012380	7.36	71.96	45.49	0.84
NRW45	0.08	383.00	1635.66	1638.50	1638.18	1638.95	0.009928	5.54	78.14	57.82	0.72
NRW45	0.05	383.00	1632.02	1635.34	1635.34	1636.34	0.019587	8.03	48.18	26.59	1.00

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW 45
Project File : NRW45.prj
Run Date and Time: 7/29/2005 4:31:23 PM

Project in English units

Project Description:
NRW 45

New River West Tributaries FDS
Prepared by URS Corp. for the Flood
Control District of Maricopa County
Contract No: FCD 2003 C057
Date: April
29, 2005

Topographic Mapping Source:
Flown and Mapped by DTM Inc.
Flight
Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal - NAD83 Arizona
State Plane, Central Zone, International Feet
Vertical - NAVD 88 (GDACS
Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour storm
event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

577 cfs @ R.S. 1.21
378 cfs @ R.S. 0.84**
383 cfs @ R.S. 0.71

**
378 cfs was used rather than 577 cfs due to the attenuation caused by the
culvert
crossing embankment. The 378 cfs was obtained from the culvert routing output in the
HEC-1 model

Study Limits:
U.S. Limit is approximately 75
feet west, and 930 feet south of the SW corner of
Section 27 T6NR1E
D.S.
Limit is the New River floodplain

Stationing based upon River Mile distance
of the Hydraulic Baseline confluence with the NRW55 Thalwag

Final Model Run
Date:
April 9, 2005

****
****

PLAN DATA

Plan Title: NRW 45
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45
\NRW45.p01

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW45\NRW45.g01

Flow Title : 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW45\NRW45.f03

Plan Summary Information:

Number of:	Cross Sections	= 23	Mulitple Openings	=	0
	Culverts	= 1	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****

****

FLOW DATA

Flow Title: 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45
\NRW45.f03

Flow Data (cfs)

River	Reach	RS	100-Year
NRW45	NRW45	1.21	577
NRW45	NRW45	0.86	378
NRW45	NRW45	0.84	378
NRW45	NRW45	0.71	383

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
NRW45	NRW45	100-Year		Normal S = 0.0206

Changes in WS and EG

River	Reach	RS	Profile	Type	Value
NRW45	NRW45	0.84	100-Year	Known WS	1691.6
NRW45	NRW45	0.80	100-Year	Known WS	1691.6

****

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45
\NRW45.g01

CROSS SECTION

RIVER: NRW45
REACH: NRW45 RS: 1.21

INPUT
Description: U.S. Limit of Study; Section lines 26 & 27 of T6NR1E
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9775	1708.71	9787.5	1708.46	9847.5	1707.05	9872.8	1706.54	9880.2	

****

```
1706.47
  9884.7 1706.34    9902 1706.38    9903 1706.38  9906.9 1706.36  9942.7
1706.07
  9967.8 1705.95  9969.4 1705.89  9972.2 1705.93  9973.3  1705.9    9993
1705.45
 10011.8  1705.9 10013.1 1706.02 10015.7 1706.01 10021.5 1705.93 10044.6
1705.72
 10049.8 1705.84 10059.9 1706.05 10087.4  1705.3 10088.2 1705.31 10088.7
1705.32
 10118.7 1705.96 10131.3 1706.37 10139.3 1706.28 10156.4  1706.7 10159.5
1706.76
 10175.4 1706.87 10196.2 1706.56 10212.7 1706.96   10228  1707.3 10258.7
1707.82
 10276.5 1708.09 10294.2 1708.39 10341.8    1709 10382.2 1709.36 10403.7
1709.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
    9775     .07  9973.3     .04 10013.1     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.3 10013.1              293     293     293             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1707.08  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1706.98  * Reach Len. (ft)         *  293.00
*  293.00  *  293.00  *
* Crit W.S. (ft)          * 1706.58  * Flow Area (sq ft)       *   82.61
*   51.70  *  167.10  *
* E.G. Slope (ft/ft)      *0.007256  * Area (sq ft)            *   82.61
*   51.70  *  167.10  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  114.87
*  194.71  *  267.41  *
* Top Width (ft)          *  362.94  * Top Width (ft)          *  122.49
*   39.80  *  200.65  *
* Vel Total (ft/s)        *    1.91  * Avg. Vel. (ft/s)        *    1.39
*    3.77  *    1.60  *
* Max Chl Dpth (ft)       *    1.68  * Hydr. Depth (ft)        *    0.67
*    1.30  *    0.83  *
* Conv. Total (cfs)       *  6773.5  * Conv. (cfs)             *  1348.5
*  2285.8  *  3139.2  *
* Length Wtd. (ft)        *  293.00  * Wetted Per. (ft)        *  122.50
*   39.82  *  200.69  *
* Min Ch El (ft)          * 1705.45  * Shear (lb/sq ft)        *    0.31
*    0.59  *    0.38  *
* Alpha                   *    1.74  * Stream Power (lb/ft s) *    0.42
*    2.22  *    0.60  *
* Frctn Loss (ft)         *    2.75  * Cum Volume (acre-ft)    *   15.30
*   10.67  *    8.06  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *   12.89
*    6.21  *    6.32  *
**********************************************************************
************************
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45                RS: 1.15

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
    9669 1706.42  9682.1 1706.15  9691.9 1705.79  9704.3 1704.46  9720.3
1704.16
  9728.8 1704.37  9735.9  1704.4  9750.8 1704.36  9772.4  1704.4  9792.1
1704.61
  9798.3  1704.5  9803.2 1704.44  9820.1 1704.04  9826.2 1704.08  9884.5
1703.82
  9908.3 1703.81  9909.4  1703.8  9916.9 1703.83  9951.4 1703.82  9969.9
1702.82
  9970.2 1702.81  9972.3 1702.69  9994.9  1701.9 10002.1  1701.9   10018
1702.42
 10035.6  1703.1 10067.1  1703.5 10098.6    1704 10130.2  1704.3 10161.7
1704.49
 10188.6 1704.58 10194.5 1704.64 10220.6 1704.79 10221.4 1704.79 10272.6
1705.07
 10298.6 1705.12 10330.5 1705.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9669     .07  9970.2     .04 10035.6     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9970.2 10035.6              239     239     239             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1704.30  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.44  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1703.87  * Reach Len. (ft)         *  239.00
*  239.00  *  239.00  *
* Crit W.S. (ft)          * 1703.74  * Flow Area (sq ft)       *   13.67
*   98.55  *   22.01  *
* E.G. Slope (ft/ft)      *0.012579  * Area (sq ft)            *   13.67
*   98.55  *   22.01  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *    8.88
*  539.49  *   28.63  *
* Top Width (ft)          *  215.80  * Top Width (ft)          *   95.88
*   65.40  *   54.52  *
```

```
* Vel Total (ft/s)        *    4.30  * Avg. Vel. (ft/s)        *    0.65
*    5.47  *    1.30  *
* Max Chl Dpth (ft)       *    1.97  * Hydr. Depth (ft)        *    0.14
*    1.51  *    0.40  *
* Conv. Total (cfs)       *  5144.5  * Conv. (cfs)             *    79.2
*  4810.0  *   255.3  *
* Length Wtd. (ft)        *  239.00  * Wetted Per. (ft)        *   95.91
*   65.44  *   54.52  *
* Min Ch El (ft)          * 1701.90  * Shear (lb/sq ft)        *    0.11
*    1.18  *    0.32  *
* Alpha                   *    1.52  * Stream Power (lb/ft s) *    0.07
*    6.47  *    0.41  *
* Frctn Loss (ft)         *    1.85  * Cum Volume (acre-ft)    *   14.97
*   10.16  *    7.42  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *   12.16
*    5.86  *    5.46  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 1.11

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9773.2 1704.07  9847.8 1702.27  9857.1 1702.31  9890.1 1701.89  9909.5
1701.76
  9914.8  1701.7  9920.6 1701.54  9943.5 1701.29  9977.6  1701.1  9978.7
1701.08
  9996.5 1700.73 10011.8  1700.8 10012.3  1700.8 10013.1  1700.8 10032.9
1700.73
 10066.7 1700.92 10221.7 1702.86 10302.6 1703.14 10543.8  1704.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9773.2     .07  9977.6     .04 10066.7     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9977.6 10066.7              321     321     321             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
```

```
* E.G. Elev (ft)          * 1702.35  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1702.22  * Reach Len. (ft)         *  321.00
*  321.00  *  321.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   71.28
*  124.62  *   67.39  *
* E.G. Slope (ft/ft)      *0.005238  * Area (sq ft)            *   71.28
*  124.62  *   67.39  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *   80.37
*  418.99  *   77.64  *
* Top Width (ft)          *  306.21  * Top Width (ft)          *  113.34
*   89.10  *  103.78  *
* Vel Total (ft/s)        *    2.19  * Avg. Vel. (ft/s)        *    1.13
*    3.36  *    1.15  *
* Max Chl Dpth (ft)       *    1.49  * Hydr. Depth (ft)        *    0.63
*    1.40  *    0.65  *
* Conv. Total (cfs)       *  7972.7  * Conv. (cfs)             *  1110.5
*  5789.4  *  1072.8  *
* Length Wtd. (ft)        *  321.00  * Wetted Per. (ft)        *  113.34
*   89.11  *  103.78  *
* Min Ch El (ft)          * 1700.73  * Shear (lb/sq ft)        *    0.21
*    0.46  *    0.21  *
* Alpha                   *    1.78  * Stream Power (lb/ft s) *    0.23
*    1.54  *    0.24  *
* Frctn Loss (ft)         *    2.67  * Cum Volume (acre-ft)    *   14.74
*    9.55  *    7.18  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   11.58
*    5.43  *    5.03  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 1.05

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9576.1 1703.25  9654.7 1702.41  9666.8 1701.92    9677 1701.59  9679.2
1701.49
  9697.2 1701.34  9717.5 1700.55  9729.2 1700.24  9744.8  1699.7  9773.7
1698.93
  9774.9 1698.91  9776.3 1698.92  9800.6 1699.03  9816.9 1698.62  9839.8
1699
  9850.3 1698.84  9869.3 1698.78  9879.5 1698.81  9901.7 1698.75  9903.9
```

```
1698.79
  9925.7 1698.86  9927.9 1698.91  9968.6 1698.54  9991.6 1698.09  9996.3
1697.96
  9999.5 1698.03 10027.7  1698.3 10033.9 1699.14 10041.9 1699.71 10056.8
1699.75
 10074.1 1699.57 10080.6 1699.86 10098.8 1701.07 10141.5  1700.8 10191.5
1701.3
 10228.6 1701.36 10417.2 1702.02

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***************************************************
  9576.1     .07  9968.6     .04 10033.9     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9968.6 10033.9              335     335     335             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1699.66  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1699.39  * Reach Len. (ft)         *  335.00
*  335.00  *  335.00  *
* Crit W.S. (ft)          * 1699.35  * Flow Area (sq ft)       *  115.98
*   74.54  *    0.45  *
* E.G. Slope (ft/ft)      *0.015265  * Area (sq ft)            *  115.98
*   74.54  *    0.45  *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  203.25
*  373.45  *    0.30  *
* Top Width (ft)          *  281.16  * Top Width (ft)          *  212.30
*   65.30  *    3.56  *
* Vel Total (ft/s)        *    3.02  * Avg. Vel. (ft/s)        *    1.75
*    5.01  *    0.66  *
* Max Chl Dpth (ft)       *    1.43  * Hydr. Depth (ft)        *    0.55
*    1.14  *    0.13  *
* Conv. Total (cfs)       *  4670.1  * Conv. (cfs)             *  1645.0
*  3022.6  *     2.4  *
* Length Wtd. (ft)        *  335.00  * Wetted Per. (ft)        *  212.32
*   65.37  *    3.57  *
* Min Ch El (ft)          * 1697.96  * Shear (lb/sq ft)        *    0.52
*    1.09  *    0.12  *
* Alpha                   *    1.90  * Stream Power (lb/ft s) *    0.91
*    5.44  *    0.08  *
* Frctn Loss (ft)         *    2.76  * Cum Volume (acre-ft)    *   14.05
*    8.81  *    6.93  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   10.38
*    4.86  *    4.63  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW45
REACH: NRW45 RS: 0.98

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9586.9	1700.07	9707.8	1698.16	9751.1	1697.74	9770.6	1697.66	9783.1	1697.78
9810.5	1697.19	9917.8	1696.12	9947.8	1695.63	9954.3	1695.29	9962.3	1694.75
9968.9	1694.64	9982	1694.5	9995.3	1694.28	10004.9	1694.14	10009.1	1694.71
10019.1	1695.87	10030.2	1695.65	10037.3	1695.56	10043.7	1696.15	10054.9	1696.95
10083.2	1698.42	10087.7	1698.05	10097.8	1697.27	10107.5	1697.47	10127.8	1697.74
10157.8	1698.01	10218.5	1698.04						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9586.9	.07	9962.3	.04	10009.1	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9962.3	10009.1	422	422	422	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1696.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.070	0.040	0.070
W.S. Elev (ft)	1696.64	Reach Len. (ft)	422.00	422.00	422.00
Crit W.S. (ft)	1696.13	Flow Area (sq ft)	57.52	102.69	37.48
E.G. Slope (ft/ft)	0.005149	Area (sq ft)	57.52	102.69	37.48
Q Total (cfs)	577.00	Flow (cfs)	61.81	461.96	53.24
Top Width (ft)	185.36	Top Width (ft)	97.04	46.80	41.52
Vel Total (ft/s)	2.92	Avg. Vel. (ft/s)	1.07	4.50	1.42
Max Chl Dpth (ft)	2.50	Hydr. Depth (ft)	0.59	2.19	0.90
Conv. Total (cfs)	8041.1	Conv. (cfs)	861.3	6437.8	741.9
Length Wtd. (ft)	422.00	Wetted Per. (ft)	97.08		

```
*   46.84  *   41.63  *
* Min Ch El (ft)          * 1694.14  * Shear (lb/sq ft)       *    0.19
*    0.70  *    0.29  *
* Alpha                   *    1.94  * Stream Power (lb/ft s) *    0.20
*    3.17  *    0.41  *
* Frctn Loss (ft)         *    3.98  * Cum Volume (acre-ft)   *   13.38
*    8.13  *    6.78  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *    9.19
*    4.43  *    4.46  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.90

INPUT
Description:
Station Elevation Data    num=      44
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9560.9 1700.12  9608.8 1698.85  9615.9  1698.7  9657.9 1697.51  9753.8
1695.35
  9759.6 1695.04  9780.2 1694.34  9782.4 1694.25  9802.1    1693  9803.5
1692.98
  9806.3 1692.65  9808.7 1692.42  9810.1 1692.51  9815.2 1692.73    9817
1692.72
  9824.3 1692.65  9830.9 1692.97  9832.8 1693.37    9844 1693.39  9849.8
1693.7
  9854.6 1692.95    9858 1692.73  9867.6 1692.31  9875.1 1692.24  9877.7
1692.16
    9886 1692.07  9898.1 1692.33  9929.2  1691.7  9932.3 1691.68  9978.7
1691.59
  9992.2 1691.16 10003.6 1691.08   10006 1691.33 10019.3 1691.26 10020.7
1691.36
 10022.5 1691.35 10024.5 1691.45 10074.8 1693.45 10076.3 1693.52 10118.1
1695.08
 10119.3 1695.11 10165.6 1695.46 10217.3  1696.1 10260.5 1696.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9560.9     .07  9978.7     .04 10074.8     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.7 10074.8              219     219     219             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1692.91  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.36  * Wt. n-Val.              *   0.070
*   0.040  *          *
* W.S. Elev (ft)          * 1692.55  * Reach Len. (ft)         *  219.00
*  219.00  *  219.00  *
* Crit W.S. (ft)          * 1692.55  * Flow Area (sq ft)       *   73.04
*   73.23  *          *
* E.G. Slope (ft/ft)      *0.022502  * Area (sq ft)            *   73.04
*   73.23  *          *
* Q Total (cfs)           *  577.00  * Flow (cfs)              *  169.64
*  407.36  *          *
* Top Width (ft)          *  193.45  * Top Width (ft)          *  120.07
*   73.38  *          *
* Vel Total (ft/s)        *    3.94  * Avg. Vel. (ft/s)        *    2.32
*    5.56  *          *
* Max Chl Dpth (ft)       *    1.47  * Hydr. Depth (ft)        *    0.61
*    1.00  *          *
* Conv. Total (cfs)       *  3846.5  * Conv. (cfs)             *  1130.9
*  2715.6  *          *
* Length Wtd. (ft)        *  219.00  * Wetted Per. (ft)        *  120.10
*   73.43  *          *
* Min Ch El (ft)          * 1691.08  * Shear (lb/sq ft)        *    0.85
*    1.40  *          *
* Alpha                   *    1.51  * Stream Power (lb/ft s) *    1.98
*    7.79  *          *
* Frctn Loss (ft)         *    0.18  * Cum Volume (acre-ft)    *   12.75
*    7.28  *    6.60  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *    8.14
*    3.85  *    4.26  *
*************************************************************************
************************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW45
REACH: NRW45 RS: 0.86

```
INPUT
Description: CL New River Road Crossing
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9540.3 1696.12  9578.6  1695.1  9584.7 1694.84  9634.6 1693.84  9758.5
1692
  9761.1 1691.97  9807.3 1691.78  9849.2 1691.19  9849.4 1691.17  9855.1
1690.97
  9856.6 1690.97  9963.2 1690.19  9964.1 1690.19 10014.1 1690.17 10016.7
1690.16
 10083.9 1690.59 10139.9 1691.83 10198.7 1693.47 10200.6 1693.49 10237.6
1693.6
 10238.5 1693.61 10290.5 1694.02 10293.7 1693.98 10305.5 1693.98

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9540.3    .016  9856.6    .016 10083.9    .016

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9856.6 10083.9              100     100     100             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1691.63  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.03  * Wt. n-Val.              *   0.016
*   0.016  *   0.016  *
* W.S. Elev (ft)          * 1691.60  * Reach Len. (ft)         *  100.00
*  100.00  *  100.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    9.96
*  266.66  *   22.96  *
* E.G. Slope (ft/ft)      *0.000167  * Area (sq ft)            *    9.96
*  266.66  *   22.96  *
* Q Total (cfs)           *  378.00  * Flow (cfs)              *    5.03
*  355.54  *   17.43  *
* Top Width (ft)          *  309.23  * Top Width (ft)          *   36.39
*  227.30  *   45.54  *
* Vel Total (ft/s)        *    1.26  * Avg. Vel. (ft/s)        *    0.51
*    1.33  *    0.76  *
* Max Chl Dpth (ft)       *    1.44  * Hydr. Depth (ft)        *    0.27
*    1.17  *    0.50  *
* Conv. Total (cfs)       * 29287.0  * Conv. (cfs)             *   389.6
* 27547.1  *  1350.3  *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)        *   36.40
*  227.31  *   45.55  *
* Min Ch El (ft)          * 1690.16  * Shear (lb/sq ft)        *    0.00
*    0.01  *    0.01  *
* Alpha                   *    1.07  * Stream Power (lb/ft s) *    0.00
*    0.02  *    0.00  *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)    *   12.54
*    6.43  *    6.54  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    7.75
*    3.09  *    4.15  *
**************************************************************************
```

```
************************

CROSS SECTION


RIVER: NRW45
REACH: NRW45                RS: 0.84

INPUT
Description:
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9664.4 1692.93  9792.7 1689.71  9840.5    1689    9842 1688.96  9867.7
1688.97
  9882.2 1688.58  9891.4 1688.46  9899.3 1688.44  9899.6 1688.46  9907.6
1688.6
  9930.5 1688.52  9932.3 1688.53  9947.5 1688.18  9967.3  1688.3    9977
1688.46
  9979.4 1688.56  9993.5 1688.98  9994.4  1688.9  9999.8 1687.88 10000.3
1688
 10002.9 1688.18 10008.7 1688.68 10024.3 1688.88 10061.8 1689.69 10068.4
1689.78
 10126.7 1690.97 10137.3  1691.1 10159.2 1691.57 10162.9 1691.61 10246.9
1692.18
 10256.1 1692.36

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9664.4     .07  9993.5     .04 10008.7     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.5 10008.7              242     242     242             .3
.5

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1691.60  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1691.60  * Reach Len. (ft)         *  242.00
*  242.00  *  242.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  639.36
*   49.07  *  226.36  *
* E.G. Slope (ft/ft)      *0.000124  * Area (sq ft)            *  639.36
*   49.07  *  226.36  *
* Q Total (cfs)           *  378.00  * Flow (cfs)              *  264.54
*   44.07  *   69.39  *
* Top Width (ft)          *  444.58  * Top Width (ft)          *  276.10
*   15.20  *  153.28  *
* Vel Total (ft/s)        *    0.41  * Avg. Vel. (ft/s)        *    0.41
*    0.90  *    0.31  *
* Max Chl Dpth (ft)       *    3.72  * Hydr. Depth (ft)        *    2.32
*    3.23  *    1.48  *
* Conv. Total (cfs)       * 33940.3  * Conv. (cfs)             * 23752.4
```

```
*  3957.2  *  6230.7  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)       *  276.16
*   15.34  *  153.30  *
* Min Ch El (ft)          * 1687.88  * Shear (lb/sq ft)       *    0.02
*    0.02  *    0.01  *
* Alpha                   *    1.35  * Stream Power (lb/ft s) *    0.01
*    0.02  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)   *   11.80
*    6.06  *    6.25  *
* C & E Loss (ft)         *          * Cum SA (acres)         *    7.39
*    2.82  *    3.92  *
*****************************************************************************
***********************

Warning: During the standard step calculations, the final energy answer
that was computed is less than the
         downstream energy.  This is not physically possible.  Please
check your data.
Note:    The user has entered a known water surface elevation at this
cross section.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.80

INPUT
Description: U.S. of 2 - 6' x 10' CBC's
Station Elevation Data    num=      62
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
  9589.6  1692.9  9598.6  1692.8  9600.9 1692.74  9621.4 1691.99  9622.1
1691.98
  9648.5 1691.13    9649 1691.12  9666.5 1690.55  9679.1  1690.3  9699.6
1689.68
  9706.2 1689.33  9716.7 1688.87  9725.4 1688.38  9743.4  1687.2  9757.6
1686.81
  9764.5 1686.82  9781.8 1686.62  9803.5 1686.52    9807 1686.51  9826.7
1686.95
  9846.4 1686.71  9864.1 1686.76  9875.5 1686.88  9905.3 1687.47  9918.2
1687.48
  9930.3 1687.34  9944.8 1687.54  9953.5  1686.7  9956.5 1686.41  9963.5
1686.53
  9972.5 1686.34  9978.9  1685.4  9982.1 1685.26  9985.4 1685.01  9985.8
1685.04
  9989.5 1684.67  9990.3 1684.48  9991.8    1685  9994.7 1685.76  9999.7
1685.55
 10004.2 1685.43   10009 1685.18 10017.1 1685.31 10019.8 1685.42 10022.2
1685.36
 10031.1 1685.59 10033.9 1685.95 10037.1    1686 10045.4 1686.37 10084.1
1687.4
 10084.2  1687.4 10136.6 1687.72 10144.9 1687.76 10223.7 1688.72 10236.5
1689.01
   10282 1690.99 10318.4 1691.67 10379.1 1691.69   10388 1691.76 10408.3
1691.48
 10429.2 1691.67 10438.1 1691.94

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9589.6     .07  9972.5     .04 10033.9     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9972.5 10033.9              152     152     152             .3
.5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9589.6  9974.5 1694.15       F
 10025.5 10438.1 1694.12       F

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1691.62  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *
*   0.040  *          *
* W.S. Elev (ft)          * 1691.60  * Reach Len. (ft)         *  152.00
*  152.00  *  152.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*  319.89  *          *
* E.G. Slope (ft/ft)      *0.000088  * Area (sq ft)            * 1272.15
*  381.09  *  873.41  *
* Q Total (cfs)           *  378.00  * Flow (cfs)              *
*  378.00  *          *
* Top Width (ft)          *  702.64  * Top Width (ft)          *  338.60
*   61.40  *  302.64  *
* Vel Total (ft/s)        *    1.18  * Avg. Vel. (ft/s)        *
*    1.18  *          *
* Max Chl Dpth (ft)       *    7.12  * Hydr. Depth (ft)        *
*    6.27  *          *
* Conv. Total (cfs)       * 40255.9  * Conv. (cfs)             *
* 40255.9  *          *
* Length Wtd. (ft)        *  152.00  * Wetted Per. (ft)        *
*   51.30  *          *
* Min Ch El (ft)          * 1684.48  * Shear (lb/sq ft)        *
*    0.03  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *
*    0.04  *          *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *    6.49
*    4.87  *    3.20  *
* C & E Loss (ft)         *          * Cum SA (acres)          *    5.68
*    2.60  *    2.65  *
**************************************************************************
***********************
```

Note: The user has entered a known water surface elevation at this cross section.

CULVERT

RIVER: NRW45
REACH: NRW45 RS: 0.78

INPUT
Description: Top of culvert crossing of dirt road
Distance from Upstream XS = 19

```
Deck/Roadway Width          =      120
Weir Coefficient            =        3
Upstream  Deck/Roadway Coordinates
    num=       28
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
*************************************************************************
  9536.2 1693.95 1664.48    9556 1694.35 1664.48  9568.5 1694.51 1664.48
  9581.7 1694.49 1664.48  9632.1 1694.42 1664.48  9654.4 1694.06 1664.48
  9680.1 1694.37 1664.48  9695.2 1694.42 1664.48    9732  1694.2 1664.48
    9831 1694.46 1664.48  9834.5 1694.49 1664.48  9936.1 1694.44 1664.48
  9941.8  1694.4 1664.48  9998.3 1694.74 1664.48   10003 1694.74 1664.48
 10084.7 1694.51 1664.48 10129.3 1694.69 1664.48 10185.8 1694.31 1664.48
 10200.4 1694.28 1664.48 10230.2 1694.49 1664.48 10236.6  1694.6 1664.48
 10358.4 1694.64 1664.48 10376.5 1694.75 1664.48 10412.2 1694.62 1664.48
 10419.3 1694.67 1664.48 10445.2 1695.01 1664.48 10455.4 1694.73 1664.48
 10463.9 1694.63 1664.48

Upstream Bridge Cross Section Data
Station Elevation Data    num=      60
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9589.6  1692.9  9598.6  1692.8  9600.9 1692.74  9621.4 1691.99  9622.1
1691.98
  9648.5 1691.13    9649 1691.12  9666.5 1690.55  9679.1  1690.3  9699.6
1689.68
  9706.2 1689.33  9716.7 1688.87  9725.4 1688.38  9743.4  1687.2  9757.6
1686.81
  9764.5 1686.82  9781.8 1686.62  9803.5 1686.52    9807 1686.51  9826.7
1686.95
  9846.4 1686.71  9864.1 1686.76  9875.5 1686.88  9905.3 1687.47  9918.2
1687.48
  9930.3 1687.34  9944.8 1687.54  9953.5  1686.7  9956.5 1686.41  9963.5
1686.53
  9972.5 1686.34  9978.9  1685.4  9982.1 1685.26  9985.4 1685.01  9985.8
1685.04
  9989.5 1684.67  9990.3 1684.48  9991.8 1684.48 10006.5 1684.48   10009
1685.18
 10017.1 1685.31 10019.8 1685.42 10022.2 1685.36 10031.1 1685.59 10033.9
1685.95
 10037.1    1686 10045.4 1686.37 10084.1  1687.4 10084.2  1687.4 10136.6
1687.72
 10144.9 1687.76 10223.7 1688.72 10236.5 1689.01   10282 1690.99 10318.4
1691.67
 10379.1 1691.69   10388 1691.76 10408.3 1691.48 10429.2 1691.67 10438.1
1691.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9589.6     .07  9972.5     .04 10033.9     .07

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9972.5 10033.9             .3        .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9589.6  9974.5 1694.15        F
 10025.5 10438.1 1694.12        F

Downstream  Deck/Roadway Coordinates
```

```
    num=      28
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
  9536.2 1693.95 1663.88    9556 1694.35 1663.88  9568.5 1694.51 1663.88
  9581.7 1694.49 1663.88  9632.1 1694.42 1663.88  9654.4 1694.06 1663.88
  9680.1 1694.37 1663.88  9695.2 1694.42 1663.88    9732  1694.2 1663.88
    9831 1694.46 1663.88  9834.5 1694.49 1663.88  9936.1 1694.44 1663.88
  9941.8  1694.4 1663.88  9998.3 1694.74 1663.88   10003 1694.74 1663.88
 10084.7 1694.51 1663.88 10129.3 1694.69 1663.88 10185.8 1694.31 1663.88
 10200.4 1694.28 1663.88 10230.2 1694.49 1663.88 10236.6  1694.6 1663.88
 10358.4 1694.64 1663.88 10376.5 1694.75 1663.88 10412.2 1694.62 1663.88
 10419.3 1694.67 1663.88 10445.2 1695.01 1663.88 10455.4 1694.73 1663.88
 10463.9 1694.63 1663.88

Downstream Bridge Cross Section Data
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9696.6 1688.53  9726.1 1687.63    9730 1687.49  9762.3 1685.59  9799.6
1684.29
  9835.5 1683.78  9838.2 1683.78  9849.3 1683.62  9872.7  1683.7  9893.4
1683.36
  9909.8 1683.44    9913 1683.42  9942.7 1683.42  9944.4 1683.38  9967.8
1683.69
    9968 1683.69  9969.8 1683.72  9978.4 1683.97  9979.9 1683.92  9989.2
1683.84
  9993.5 1683.88 10006.5 1683.88 10023.6 1684.08 10025.6 1684.14 10037.3
1684.18
 10052.4 1684.74 10054.9 1684.86 10056.8 1685.01 10073.9 1685.97   10081
1686.22
 10109.3 1687.52 10186.2 1689.59 10192.9 1689.73 10214.7 1689.81 10218.7
1689.87
 10225.7  1689.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9696.6     .07  9978.4     .04 10023.6     .07

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9978.4 10023.6             .3        .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9696.6  9974.5 1694.15       F
 10025.5 10225.7 1694.12       F

Upstream Embankment side slope              =       1 horiz. to 1.0
vertical
Downstream Embankment side slope            =       1 horiz. to 1.0
vertical
Maximum allowable submergence for weir flow =
Elevation at which weir flow begins         = 1694.31
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  2

Culvert Name     Shape      Rise    Span
```

```
Culvert #1            Box       4       6
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance
Loss Coef   Exit Loss Coef
                19     120     .015     .015        0
.4               1
Upstream   Elevation =  1684.48
           Centerline Station =  9996.5
Downstream Elevation =  1683.88
           Centerline Station =  9996.5

Culvert Name     Shape      Rise    Span
Culvert #2            Box       4       6
FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance
Loss Coef   Exit Loss Coef
                19     120     .015     .015        0
.4               1
Upstream   Elevation =  1684.48
           Centerline Station =  10003.5
Downstream Elevation =  1683.88
           Centerline Station =  10003.5

CULVERT OUTPUT  Profile #100-Year  Culv Group:  Culvert #1
*************************************************************************
*
* Q Culv Group (cfs)     *  189.00  * Culv Full Len (ft)     *
*
* # Barrels              *       1  * Culv Vel US (ft/s)     *    9.48
*
* Q Barrel (cfs)         *  189.00  * Culv Vel DS (ft/s)     *   10.05
*
* E.G. US. (ft)          * 1690.00  * Culv Inv El Up (ft)    * 1684.48
*
* W.S. US. (ft)          * 1691.60  * Culv Inv El Dn (ft)    * 1683.88
*
* E.G. DS (ft)           * 1685.39  * Culv Frctn Ls (ft)     *    0.62
*
* W.S. DS (ft)           * 1685.00  * Culv Exit Loss (ft)    *    3.19
*
* Delta EG (ft)          *    4.61  * Culv Entr Loss (ft)    *    0.80
*
* Delta WS (ft)          *    6.60  * Q Weir (cfs)           *
*
* E.G. IC (ft)           * 1690.00  * Weir Sta Lft (ft)      *
*
* E.G. OC (ft)           * 1689.76  * Weir Sta Rgt (ft)      *
*
* Culvert Control        *   Inlet  * Weir Submerg           *
*
* Culv WS Inlet (ft)     * 1687.80  * Weir Max Depth (ft)    *
*
* Culv WS Outlet (ft)    * 1687.02  * Weir Avg Depth (ft)    *
*
* Culv Nml Depth (ft)    *    3.32  * Weir Flow Area (sq ft) *
*
* Culv Crt Depth (ft)    *    3.14  * Min El Weir Flow (ft)  * 1694.31
```

```
*
**********************************************************************
*

Note:    The user has entered known energy, a known water surface, or a
change in water surface.
         Therefore, no hydraulic properties were computed through the
culvert.
Note:    During subcritical analysis, the culvert direct step method,
the solution went to normal depth.

CULVERT OUTPUT  Profile #100-Year  Culv Group:  Culvert #2
**********************************************************************
*
* Q Culv Group (cfs)     *  189.00  * Culv Full Len (ft)     *
*
* # Barrels              *       1  * Culv Vel US (ft/s)     *    9.48
*
* Q Barrel (cfs)         *  189.00  * Culv Vel DS (ft/s)     *   10.05
*
* E.G. US. (ft)          * 1690.00  * Culv Inv El Up (ft)    * 1684.48
*
* W.S. US. (ft)          * 1691.60  * Culv Inv El Dn (ft)    * 1683.88
*
* E.G. DS (ft)           * 1685.39  * Culv Frctn Ls (ft)     *    0.62
*
* W.S. DS (ft)           * 1685.00  * Culv Exit Loss (ft)    *    3.19
*
* Delta EG (ft)          *    4.61  * Culv Entr Loss (ft)    *    0.80
*
* Delta WS (ft)          *    6.60  * Q Weir (cfs)           *
*
* E.G. IC (ft)           * 1690.00  * Weir Sta Lft (ft)      *
*
* E.G. OC (ft)           * 1689.76  * Weir Sta Rgt (ft)      *
*
* Culvert Control        *   Inlet  * Weir Submerg           *
*
* Culv WS Inlet (ft)     * 1687.80  * Weir Max Depth (ft)    *
*
* Culv WS Outlet (ft)    * 1687.02  * Weir Avg Depth (ft)    *
*
* Culv Nml Depth (ft)    *    3.32  * Weir Flow Area (sq ft) *
*
* Culv Crt Depth (ft)    *    3.14  * Min El Weir Flow (ft)  * 1694.31
*
**********************************************************************
*

Note:    The user has entered known energy, a known water surface, or a
change in water surface.
         Therefore, no hydraulic properties were computed through the
culvert.
Note:    During subcritical analysis, the culvert direct step method,
the solution went to normal depth.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.77
```

```
INPUT
Description: D.S. of 2 - 6' x 10' CBC's
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9696.6 1688.53  9726.1 1687.63    9730 1687.49  9762.3 1685.59  9799.6
1684.29
  9835.5 1683.78  9838.2 1683.78  9849.3 1683.62  9872.7  1683.7  9893.4
1683.36
  9909.8 1683.44    9913 1683.42  9942.7 1683.42  9944.4 1683.38  9967.8
1683.69
    9968 1683.69  9969.8 1683.72  9978.4 1683.97  9979.9 1683.92  9989.2
1683.84
  9995.6 1683.73 10004.4 1682.36 10012.8 1682.94   10017 1683.56 10023.6
1684.08
 10025.6 1684.14 10037.3 1684.18 10052.4 1684.74 10054.9 1684.86 10056.8
1685.01
 10073.9 1685.97   10081 1686.22 10109.3 1687.52 10186.2 1689.59 10192.9
1689.73
 10214.7 1689.81 10218.7 1689.87 10225.7  1689.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9696.6     .07  9978.4     .04 10023.6     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.4 10023.6              342     342     342             .3
.5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9696.6  9974.5 1694.15       F
 10025.5 10225.7 1694.12       F

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1685.39  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.39  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1685.00  * Reach Len. (ft)         *  342.00
*  342.00  *  342.00  *
* Crit W.S. (ft)          * 1684.69  * Flow Area (sq ft)       *    4.25
*   71.96  *    1.70  *
* E.G. Slope (ft/ft)      *0.010092  * Area (sq ft)            *  249.54
*   71.96  *   20.46  *
* Q Total (cfs)           *  378.00  * Flow (cfs)              *    9.58
*  365.06  *    3.36  *
* Top Width (ft)          *  277.54  * Top Width (ft)          *  199.24
*   45.20  *   33.10  *
* Vel Total (ft/s)        *    4.85  * Avg. Vel. (ft/s)        *    2.26
*    5.07  *    1.98  *
* Max Chl Dpth (ft)       *    2.64  * Hydr. Depth (ft)        *    1.09
*    1.59  *    0.89  *
* Conv. Total (cfs)       *  3762.8  * Conv. (cfs)             *    95.4
*  3634.0  *    33.4  *
```

```
* Length Wtd. (ft)        *  342.00  * Wetted Per. (ft)        *    3.90
*   45.39  *    1.90  *
* Min Ch El (ft)          * 1682.36  * Shear (lb/sq ft)        *    0.69
*    1.00  *    0.56  *
* Alpha                   *    1.06  * Stream Power (lb/ft s) *    1.55
*    5.07  *    1.11  *
* Frctn Loss (ft)         *    4.08  * Cum Volume (acre-ft)    *    3.83
*    4.08  *    1.64  *
* C & E Loss (ft)         *    0.11  * Cum SA (acres)          *    4.74
*    2.42  *    2.07  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The
critical depth with the lowest, valid,
         energy was used.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.71

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9717.2 1683.89  9783.2 1681.94  9800.8 1681.54  9809.4  1681.1  9818.7
1680.29
  9836.5  1679.3  9848.4 1680.08  9851.6 1680.23  9862.8 1680.43  9873.9
1680.54
  9955.5 1680.71  9961.8 1680.49  9978.1 1680.07   10000  1679.8   10003
1679.81
 10005.2 1679.88 10008.6 1680.18   10027 1681.45   10035 1681.73 10070.7
1682.39
   10073 1682.46 10095.3 1683.42 10107.3 1683.77 10131.6 1684.92 10136.2
1684.98
 10146.4 1684.99 10166.5 1685.17 10196.7 1685.81

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9717.2     .07  9955.5     .04 10008.6     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9955.5 10008.6              261     261     261             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1681.21  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.070
```

```
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1681.03  * Reach Len. (ft)         *  261.00
*  261.00  *  261.00  *
* Crit W.S. (ft)          * 1680.91  * Flow Area (sq ft)       *   91.43
*   48.83  *    5.29  *
* E.G. Slope (ft/ft)      *0.014303  * Area (sq ft)            *   91.43
*   48.83  *    5.29  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *  170.35
*  205.05  *    7.60  *
* Top Width (ft)          *  210.82  * Top Width (ft)          *  145.35
*   53.10  *   12.38  *
* Vel Total (ft/s)        *    2.63  * Avg. Vel. (ft/s)        *    1.86
*    4.20  *    1.44  *
* Max Chl Dpth (ft)       *    1.73  * Hydr. Depth (ft)        *    0.63
*    0.92  *    0.43  *
* Conv. Total (cfs)       *  3202.4  * Conv. (cfs)             *  1424.4
*  1714.5  *    63.5  *
* Length Wtd. (ft)        *  261.00  * Wetted Per. (ft)        *  145.44
*   53.12  *   12.41  *
* Min Ch El (ft)          * 1679.80  * Shear (lb/sq ft)        *    0.56
*    0.82  *    0.38  *
* Alpha                   *    1.59  * Stream Power (lb/ft s) *    1.05
*    3.45  *    0.55  *
* Frctn Loss (ft)         *    2.59  * Cum Volume (acre-ft)    *    2.49
*    3.60  *    1.54  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    3.39
*    2.03  *    1.89  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW45
REACH: NRW45 RS: 0.66

INPUT
Description:
Station Elevation Data num= 22

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9721.9 1682.74  9806.7 1680.22  9845.3 1678.24  9855.8 1678.09  9856.2
1678.08
  9872.9 1677.94  9889.7 1677.69  9890.8 1677.68  9926.9 1677.82  9966.5
1677.6
  9986.2 1677.08  9996.7 1676.97 10000.9 1676.98 10012.2  1677.6 10030.1
1677.58
 10037.4  1677.4 10042.4 1677.61 10058.6 1677.96 10077.2 1678.58 10167.3
1680.84
 10192.6 1682.35 10221.1 1682.06
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9721.9     .07  9966.5     .04 10012.2     .07
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9966.5 10012.2              324     324     324             .1
.3

CROSS SECTION OUTPUT  Profile #100~Year
************************************************************************
************************
* E.G. Elev (ft)          * 1678.61  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1678.48  * Reach Len. (ft)         *  324.00
*  324.00  *  324.00  *
* Crit W.S. (ft)          * 1678.24  * Flow Area (sq ft)       *   80.81
*   57.52  *   43.37  *
* E.G. Slope (ft/ft)      *0.007270  * Area (sq ft)            *   80.81
*   57.52  *   43.37  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *  108.85
*  212.32  *   61.84  *
* Top Width (ft)          *  233.60  * Top Width (ft)          *  125.89
*   45.70  *   62.01  *
* Vel Total (ft/s)        *    2.11  * Avg. Vel. (ft/s)        *    1.35
*    3.69  *    1.43  *
* Max Chl Dpth (ft)       *    1.51  * Hydr. Depth (ft)        *    0.64
*    1.26  *    0.70  *
* Conv. Total (cfs)       *  4491.9  * Conv. (cfs)             *  1276.6
*  2490.1  *   725.3  *
* Length Wtd. (ft)        *  324.00  * Wetted Per. (ft)        *  125.90
*   45.72  *   62.03  *
* Min Ch El (ft)          * 1676.97  * Shear (lb/sq ft)        *    0.29
*    0.57  *    0.32  *
* Alpha                   *    1.89  * Stream Power (lb/ft s) *    0.39
*    2.11  *    0.45  *
* Frctn Loss (ft)         *    2.66  * Cum Volume (acre-ft)    *    1.98
*    3.29  *    1.39  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    2.58
*    1.74  *    1.66  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.59

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9735.3 1678.78  9807.1 1678.02  9905.3 1676.11  9909.2    1676    9922
1675.3
```

```
  9941.3  1674.7  9944.1  1674.7  9955.7  1674.6  9967.9 1674.69  9984.8
1674.26
  9988.5  1674.2  9993.9 1673.91  9999.2 1673.72 10009.5 1674.21 10010.8
1674.25
   10027 1675.34 10039.2 1675.03 10041.5    1675 10042.3 1675.02 10051.9
1675.12
 10064.9 1675.82 10105.7 1676.65   10219 1680.37 10227.1 1680.57

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9735.3     .07  9988.5     .04 10010.8     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.5 10010.8              363     363     363             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1675.94  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.24  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1675.70  * Reach Len. (ft)         *  363.00
*  363.00  *  363.00  *
* Crit W.S. (ft)          * 1675.51  * Flow Area (sq ft)       *   68.90
*   38.63  *   32.20  *
* E.G. Slope (ft/ft)      *0.009341  * Area (sq ft)            *   68.90
*   38.63  *   32.20  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *  135.00
*  199.96  *   48.04  *
* Top Width (ft)          *  147.95  * Top Width (ft)          *   73.80
*   22.30  *   51.86  *
* Vel Total (ft/s)        *    2.74  * Avg. Vel. (ft/s)        *    1.96
*    5.18  *    1.49  *
* Max Chl Dpth (ft)       *    1.98  * Hydr. Depth (ft)        *    0.93
*    1.73  *    0.62  *
* Conv. Total (cfs)       *  3962.7  * Conv. (cfs)             *  1396.8
*  2068.9  *   497.1  *
* Length Wtd. (ft)        *  363.00  * Wetted Per. (ft)        *   73.82
*   22.32  *   51.91  *
* Min Ch El (ft)          * 1673.72  * Shear (lb/sq ft)        *    0.54
*    1.01  *    0.36  *
* Alpha                   *    2.08  * Stream Power (lb/ft s) *    1.07
*    5.22  *    0.54  *
* Frctn Loss (ft)         *    3.65  * Cum Volume (acre-ft)    *    1.42
*    2.93  *    1.11  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.83
*    1.48  *    1.24  *
**********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW45
REACH: NRW45                RS: 0.53

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9638.7 1676.55  9660.4 1676.09  9668.2 1676.01  9691.6  1675.6  9691.9
1675.6
  9698.7 1675.44  9703.9 1675.38  9720.1  1675.1  9786.6  1673.6  9789.4
1673.57
  9814.2 1673.07  9817.9 1672.89    9881 1671.76  9883.6 1671.75  9886.4
1671.77
  9925.5 1671.68  9937.4 1671.74  9940.4 1671.47  9954.4 1670.57  9958.8
1670.26
  9959.6  1670.2    9962 1670.25  9969.4 1670.46  9982.2 1670.59  9982.7
1670.58
  9992.1    1670 10000.4 1669.82 10004.3 1669.85 10008.1 1670.46 10008.7
1670.51
   10017  1671.9 10018.4 1671.95 10056.9 1672.93 10066.6 1673.28 10128.4
1675.04
 10190.2 1676.07 10200.8 1676.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9638.7     .07  9982.7     .04 10008.7     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.7 10008.7              269     269     269             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1672.27  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.37  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1671.90  * Reach Len. (ft)         *  269.00
*  269.00  *  269.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   65.21
*   47.19  *    5.77  *
* E.G. Slope (ft/ft)      *0.010845  * Area (sq ft)            *   65.21
*   47.19  *    5.77  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *  101.98
*  271.10  *    9.91  *
* Top Width (ft)          *  143.82  * Top Width (ft)          *  109.52
*   26.00  *    8.30  *
* Vel Total (ft/s)        *    3.24  * Avg. Vel. (ft/s)        *    1.56
*    5.75  *    1.72  *
* Max Chl Dpth (ft)       *    2.08  * Hydr. Depth (ft)        *    0.60
*    1.81  *    0.70  *
* Conv. Total (cfs)       *  3677.7  * Conv. (cfs)             *   979.3
*  2603.3  *    95.2  *
* Length Wtd. (ft)        *  269.00  * Wetted Per. (ft)        *  109.58
*   26.07  *    8.42  *
```

```
* Min Ch El (ft)          * 1669.82  * Shear (lb/sq ft)        *    0.40
*    1.23  *    0.46  *
* Alpha                   *    2.29  * Stream Power (lb/ft s) *    0.63
*    7.04  *    0.80  *
* Frctn Loss (ft)         *    3.98  * Cum Volume (acre-ft)    *    0.86
*    2.57  *    0.95  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.07
*    1.28  *    0.99  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.47

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9814.8 1675.09  9890.1 1671.02  9912.1 1670.19  9918.7 1669.84  9928.2
1668.72
  9932.8  1668.1  9943.3 1667.99  9950.8 1667.53  9956.6 1667.55  9963.8
1667.87
  9971.9 1666.99  9976.2  1666.6  9984.8  1666.6  9993.2 1666.78  9997.5
1665.77
  9998.5 1665.69 10007.8 1666.38 10010.5  1666.6 10011.1  1666.6 10031.4
1666.62
 10043.3 1667.38 10046.7 1667.49 10059.1 1668.15 10067.3 1668.13 10078.2
1668.05
 10091.7 1668.09 10215.5 1672.18

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9814.8     .07  9993.2     .04 10010.5     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.2 10010.5              262     262     262             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1668.29  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.52  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
```

```
* W.S. Elev (ft)          * 1667.76  * Reach Len. (ft)         *  262.00
*  262.00  *  262.00  *
* Crit W.S. (ft)          * 1667.76  * Flow Area (sq ft)       *   28.18
*   27.94  *   35.01  *
* E.G. Slope (ft/ft)      *0.021430  * Area (sq ft)            *   28.18
*   27.94  *   35.01  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *   77.73
*  207.94  *   97.33  *
* Top Width (ft)          *  101.45  * Top Width (ft)          *   42.82
*   17.30  *   41.33  *
* Vel Total (ft/s)        *    4.20  * Avg. Vel. (ft/s)        *    2.76
*    7.44  *    2.78  *
* Max Chl Dpth (ft)       *    2.07  * Hydr. Depth (ft)        *    0.66
*    1.62  *    0.85  *
* Conv. Total (cfs)       *  2616.3  * Conv. (cfs)             *   531.0
*  1420.4  *   664.9  *
* Length Wtd. (ft)        *  262.00  * Wetted Per. (ft)        *   42.89
*   17.45  *   41.37  *
* Min Ch El (ft)          * 1665.69  * Shear (lb/sq ft)        *    0.88
*    2.14  *    1.13  *
* Alpha                   *    1.90  * Stream Power (lb/ft s) *    2.42
*   15.94  *    3.15  *
* Frctn Loss (ft)         *    3.70  * Cum Volume (acre-ft)    *    0.57
*    2.34  *    0.83  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.60
*    1.15  *    0.84  *
*************************************************************************
************************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW45
REACH: NRW45 RS: 0.43

INPUT
Description:
Station Elevation Data num= 22

```
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
*************************************************************************
********
```

```
  9854.2 1669.87  9861.1 1669.63  9895.7 1668.54  9905.6 1668.17  9949.5
1666.09
  9963.3 1665.51  9973.6 1665.26  9988.3 1661.05  9991.1 1660.41  9991.9
1660.51
  9996.4 1660.95 10006.1 1661.07 10008.1 1661.03 10010.1 1661.11 10028.6
1662.14
 10032.5 1662.49 10048.9 1664.05 10050.8 1664.02 10054.4 1664.11 10067.7
1664.15
 10081.3 1664.45   10198 1669.84

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9854.2     .07  9988.3     .04 10006.1     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.3 10006.1              258     258     258             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1663.62  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.47  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1663.16  * Reach Len. (ft)         *  258.00
*  258.00  *  258.00  *
* Crit W.S. (ft)          * 1662.83  * Flow Area (sq ft)       *    7.74
*   40.67  *   42.29  *
* E.G. Slope (ft/ft)      *0.010023  * Area (sq ft)            *    7.74
*   40.67  *   42.29  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *   16.57
*  261.39  *  105.04  *
* Top Width (ft)          *   58.54  * Top Width (ft)          *    7.35
*   17.80  *   33.39  *
* Vel Total (ft/s)        *    4.22  * Avg. Vel. (ft/s)        *    2.14
*    6.43  *    2.48  *
* Max Chl Dpth (ft)       *    2.75  * Hydr. Depth (ft)        *    1.05
*    2.28  *    1.27  *
* Conv. Total (cfs)       *  3825.6  * Conv. (cfs)             *   165.5
*  2610.9  *  1049.2  *
* Length Wtd. (ft)        *  258.00  * Wetted Per. (ft)        *    7.65
*   17.90  *   33.47  *
* Min Ch El (ft)          * 1660.41  * Shear (lb/sq ft)        *    0.63
*    1.42  *    0.79  *
* Alpha                   *    1.69  * Stream Power (lb/ft s) *    1.36
*    9.14  *    1.96  *
* Frctn Loss (ft)         *    3.13  * Cum Volume (acre-ft)    *    0.47
*    2.13  *    0.59  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    0.45
*    1.04  *    0.61  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW45
REACH: NRW45                RS: 0.38

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9821.7 1666.12  9831.9 1665.77  9836.2 1665.73  9883.5 1663.81  9901.7
1663.63
  9905.3 1663.52  9911.3 1663.43  9936.9 1662.25  9948.9 1661.53  9965.9
1661.02
  9977.7  1660.6  9986.2 1659.07  9988.8  1658.5  9992.7 1658.03  9997.4
1657.43
  9999.5 1657.03 10002.8  1656.3 10006.7 1656.83 10007.2 1656.93 10010.6
1657.68
 10020.3  1659.7 10021.6 1659.73 10046.4 1661.25 10077.9 1662.89 10082.6
1663.26
 10101.5 1664.87 10166.9 1669.01   10188 1670.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9821.7     .07  9992.7     .04 10010.6     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.7 10010.6              403     403     403             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1660.44  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.93  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1659.52  * Reach Len. (ft)         *  403.00
*  403.00  *  403.00  *
* Crit W.S. (ft)          * 1659.52  * Flow Area (sq ft)       *    7.33
*   42.95  *    8.09  *
* E.G. Slope (ft/ft)      *0.015030  * Area (sq ft)            *    7.33
*   42.95  *    8.09  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *   16.51
*  346.87  *   19.62  *
* Top Width (ft)          *   35.69  * Top Width (ft)          *    8.98
*   17.90  *    8.82  *
* Vel Total (ft/s)        *    6.56  * Avg. Vel. (ft/s)        *    2.25
*    8.08  *    2.42  *
* Max Chl Dpth (ft)       *    3.22  * Hydr. Depth (ft)        *    0.82
*    2.40  *    0.92  *
* Conv. Total (cfs)       *  3124.1  * Conv. (cfs)             *   134.7
*  2829.4  *   160.0  *
* Length Wtd. (ft)        *  403.00  * Wetted Per. (ft)        *    9.11
*   18.18  *    9.01  *
* Min Ch El (ft)          * 1656.30  * Shear (lb/sq ft)        *    0.76
*    2.22  *    0.84  *
```

```
* Alpha                    *    1.38  * Stream Power (lb/ft s) *    1.70
*   17.90  *    2.04  *
* Frctn Loss (ft)           *    5.96  * Cum Volume (acre-ft)   *    0.42
*    1.88  *    0.45  *
* C & E Loss (ft)           *    0.09  * Cum SA (acres)         *    0.40
*    0.94  *    0.49  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.30

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9829.3 1664.27  9843.3 1663.34  9893.5 1659.53  9919.4  1657.8  9919.9
1657.79
  9929.1 1656.97  9933.1 1656.47  9947.1 1655.41  9956.2 1654.64  9976.6
1653.79
  9978.4  1653.7  9979.7 1653.48  9994.6 1651.46 10000.8 1650.49 10001.3
1650.43
 10001.5 1650.48 10002.4 1650.67 10014.1 1653.32   10023 1655.16   10034
1655.63
 10042.7 1656.13 10049.6 1656.41 10080.3 1658.38 10121.1 1661.26

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9829.3     .07  9979.7     .04 10014.1     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9979.7 10014.1              280     280     280             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1654.32  * Element                 *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.64  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)         * 1653.69  * Reach Len. (ft)         *  280.00
*  280.00  *  280.00  *
* Crit W.S. (ft)         * 1653.50  * Flow Area (sq ft)       *    0.12
*   59.73  *    0.32  *
* E.G. Slope (ft/ft)     *0.014546  * Area (sq ft)            *    0.12
*   59.73  *    0.32  *
* Q Total (cfs)          *  383.00  * Flow (cfs)              *    0.07
*  382.67  *    0.26  *
* Top Width (ft)         *   37.38  * Top Width (ft)          *    1.21
*   34.40  *    1.77  *
* Vel Total (ft/s)       *    6.36  * Avg. Vel. (ft/s)        *    0.56
*    6.41  *    0.81  *
* Max Chl Dpth (ft)      *    3.25  * Hydr. Depth (ft)        *    0.10
*    1.74  *    0.18  *
* Conv. Total (cfs)      *  3175.6  * Conv. (cfs)             *     0.6
*  3172.9  *     2.2  *
* Length Wtd. (ft)       *  280.00  * Wetted Per. (ft)        *    1.23
*   34.94  *    1.80  *
* Min Ch El (ft)         * 1650.43  * Shear (lb/sq ft)        *    0.09
*    1.55  *    0.16  *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *    0.05
*    9.95  *    0.13  *
* Frctn Loss (ft)        *    3.51  * Cum Volume (acre-ft)    *    0.39
*    1.41  *    0.41  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *    0.35
*    0.69  *    0.44  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.25

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9878.2 1655.35    9894 1654.45  9924.7  1652.9  9940.7 1651.99  9964.4
1651.09
  9975.4 1650.82  9985.3 1649.45    9993  1648.3  9994.7 1648.07 10000.3
1647.68
 10005.4 1647.84 10007.6 1647.93 10012.4 1648.32 10030.8 1649.59 10032.3
1649.64
 10033.1  1649.7 10048.4 1652.64 10081.7 1655.69 10122.1 1659.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9878.2     .07    9993     .04 10012.4     .07
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9993 10012.4              300     300     300             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1650.78  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.56  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1650.22  * Reach Len. (ft)         *  300.00
*  300.00  *  300.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   12.47
*   44.29  *   25.28  *
* E.G. Slope (ft/ft)      *0.010926  * Area (sq ft)            *   12.47
*   44.29  *   25.28  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *   26.40
*  297.69  *   58.91  *
* Top Width (ft)          *   56.05  * Top Width (ft)          *   13.25
*   19.40  *   23.40  *
* Vel Total (ft/s)        *    4.67  * Avg. Vel. (ft/s)        *    2.12
*    6.72  *    2.33  *
* Max Chl Dpth (ft)       *    2.54  * Hydr. Depth (ft)        *    0.94
*    2.28  *    1.08  *
* Conv. Total (cfs)       *  3664.2  * Conv. (cfs)             *   252.6
*  2848.1  *   563.6  *
* Length Wtd. (ft)        *  300.00  * Wetted Per. (ft)        *   13.39
*   19.45  *   23.49  *
* Min Ch El (ft)          * 1647.68  * Shear (lb/sq ft)        *    0.64
*    1.55  *    0.73  *
* Alpha                   *    1.66  * Stream Power (lb/ft s) *    1.34
*   10.44  *    1.71  *
* Frctn Loss (ft)         *    4.38  * Cum Volume (acre-ft)    *    0.35
*    1.08  *    0.32  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.31
*    0.52  *    0.36  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45              RS: 0.19

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9902.4 1653.78  9944.8 1650.05  9954.9 1649.37  9965.8  1648.8  9966.5
1648.56
```

```
    9979 1644.74  9987.4 1643.55  9987.6 1643.49  9987.8 1643.51  9995.3
1643.82
  9999.5 1643.53 10003.2 1643.38 10007.6 1643.79 10008.5 1644.16 10012.1
1644.47
 10017.1 1644.78 10021.5 1645.12 10026.9 1645.99 10028.5 1646.35 10032.1
1646.43
 10053.6 1647.75 10107.9 1652.01 10118.6 1652.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9902.4     .07  9995.3     .04 10008.5     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9995.3 10008.5              243     243     243             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1646.39  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.75  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1645.64  * Reach Len. (ft)         *  243.00
*  243.00  *  243.00  *
* Crit W.S. (ft)          * 1645.64  * Flow Area (sq ft)       *   29.51
*   26.86  *   13.69  *
* E.G. Slope (ft/ft)      *0.020441  * Area (sq ft)            *   29.51
*   26.86  *   13.69  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *  118.19
*  227.81  *   37.00  *
* Top Width (ft)          *   48.66  * Top Width (ft)          *   19.24
*   13.20  *   16.22  *
* Vel Total (ft/s)        *    5.47  * Avg. Vel. (ft/s)        *    4.00
*    8.48  *    2.70  *
* Max Chl Dpth (ft)       *    2.26  * Hydr. Depth (ft)        *    1.53
*    2.03  *    0.84  *
* Conv. Total (cfs)       *  2678.8  * Conv. (cfs)             *   826.7
*  1593.4  *   258.8  *
* Length Wtd. (ft)        *  243.00  * Wetted Per. (ft)        *   19.47
*   13.31  *   16.30  *
* Min Ch El (ft)          * 1643.38  * Shear (lb/sq ft)        *    1.93
*    2.58  *    1.07  *
* Alpha                   *    1.62  * Stream Power (lb/ft s) *    7.75
*   21.85  *    2.90  *
* Frctn Loss (ft)         *    3.81  * Cum Volume (acre-ft)    *    0.20
*    0.83  *    0.19  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.20
*    0.41  *    0.22  *
**********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
```

```
        not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW45
REACH: NRW45                RS: 0.14

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9869.6 1651.71  9905.6 1648.99  9911.3  1648.6  9948.2 1646.25  9949.3
1646.2
  9969.4 1645.55  9978.9 1641.82  9981.1    1641  9990.6 1639.73  9991.9
1639.5
  9997.4 1639.32 10000.9 1639.17 10003.3 1639.45 10008.1 1640.11 10010.7
1640.31
 10027.6 1642.25 10040.4  1643.3 10044.3 1644.02 10059.2 1646.63 10065.5
1646.95
 10084.3 1648.29 10099.2 1649.22 10114.4 1650.71

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9869.6     .07  9990.6     .04 10008.1     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.6 10008.1              320     320     320             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1642.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.70  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1641.87  * Reach Len. (ft)         *  320.00
*  320.00  *  320.00  *
* Crit W.S. (ft)          * 1641.72  * Flow Area (sq ft)       *   15.29
*   41.79  *   14.88  *
* E.G. Slope (ft/ft)      *0.012380  * Area (sq ft)            *   15.29
*   41.79  *   14.88  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *   42.29
*  307.58  *   33.13  *
* Top Width (ft)          *   45.49  * Top Width (ft)          *   11.82
*   17.50  *   16.17  *
* Vel Total (ft/s)        *    5.32  * Avg. Vel. (ft/s)        *    2.77
*    7.36  *    2.23  *
* Max Chl Dpth (ft)       *    2.70  * Hydr. Depth (ft)        *    1.29
*    2.39  *    0.92  *
* Conv. Total (cfs)       *  3442.3  * Conv. (cfs)             *   380.1
*  2764.4  *   297.8  *
* Length Wtd. (ft)        *  320.00  * Wetted Per. (ft)        *   12.06
*   17.59  *   16.27  *
```

```
* Min Ch El (ft)          * 1639.17  * Shear (lb/sq ft)        *    0.98
*    1.84  *    0.71  *
* Alpha                   *    1.58  * Stream Power (lb/ft s) *    2.71
*   13.52  *    1.57  *
* Frctn Loss (ft)         *    3.54  * Cum Volume (acre-ft)    *    0.08
*    0.64  *    0.11  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *    0.11
*    0.32  *    0.13  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW45
REACH: NRW45               RS: 0.08

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9892.3 1648.92  9892.7 1648.88  9895.5  1648.6  9921.7  1645.8  9943.4
1643.34
  9949.1 1641.33  9958.6 1638.53  9964.3  1638.4  9966.5 1638.03  9971.2
1637.87
  9995.3 1636.05  9999.9 1635.66 10000.9 1635.73 10002.9 1635.97 10006.7
1636.81
 10018.9 1638.67 10028.1 1640.19 10055.8 1641.44 10125.3 1647.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9892.3     .07  9971.2     .04 10006.7     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.2 10006.7               189     189     189             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1638.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.45  * Wt. n-Val.              *   0.070
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1638.50  * Reach Len. (ft)         *  189.00
*  189.00  *  189.00  *
* Crit W.S. (ft)          * 1638.18  * Flow Area (sq ft)       *    3.42
*   65.37  *    9.36  *
* E.G. Slope (ft/ft)      *0.009928  * Area (sq ft)            *    3.42
*   65.37  *    9.36  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *    3.27
*  362.19  *   17.54  *
```

```
* Top Width (ft)          *   57.82  * Top Width (ft)          *   11.24
*   35.50  *   11.08  *
* Vel Total (ft/s)        *    4.90  * Avg. Vel. (ft/s)        *    0.95
*    5.54  *    1.88  *
* Max Chl Dpth (ft)       *    2.84  * Hydr. Depth (ft)        *    0.30
*    1.84  *    0.84  *
* Conv. Total (cfs)       *  3843.8  * Conv. (cfs)             *    32.8
*  3634.9  *   176.1  *
* Length Wtd. (ft)        *  189.00  * Wetted Per. (ft)        *   11.28
*   35.69  *   11.21  *
* Min Ch El (ft)          * 1635.66  * Shear (lb/sq ft)        *    0.19
*    1.14  *    0.52  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    0.18
*    6.29  *    0.97  *
* Frctn Loss (ft)         *    2.56  * Cum Volume (acre-ft)    *    0.01
*    0.25  *    0.02  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    0.02
*    0.13  *    0.03  *
*************************************************************************
************************
```

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW45
REACH: NRW45 RS: 0.05

INPUT
Description: D.S. Limit of Study; East Section 26 Line T6NR1E
Station Elevation Data num= 29

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9852.5 1646.67  9861.9 1645.74  9886.8 1644.73  9891.8 1644.49  9929.7
1642.25
  9934.3 1641.88    9935 1641.87  9939.7 1641.63  9969.3 1641.02  9971.1
1640.96
    9977  1640.2  9983.2 1639.76    9987 1637.06  9993.7 1632.87  9994.8
1632.64
  9999.6 1632.02 10003.9 1632.95 10004.1    1633 10013.5 1634.95 10018.9
1635.68
 10036.4 1635.97   10041 1636.15 10049.8 1636.17 10062.4 1636.07 10071.6
1636.69
 10075.6 1637.27 10105.4 1641.43 10110.7 1642.07 10144.4 1646.42
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9852.5     .07    9987     .04 10013.5     .07
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9987 10013.5           251.52  251.52  251.52             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1636.34  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.00  * Wt. n-Val.              *
*   0.040  *   0.070  *
* W.S. Elev (ft)          * 1635.34  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1635.34  * Flow Area (sq ft)       *
*   47.63  *    0.55  *
* E.G. Slope (ft/ft)      *0.019587  * Area (sq ft)            *
*   47.63  *    0.55  *
* Q Total (cfs)           *  383.00  * Flow (cfs)              *
*  382.46  *    0.54  *
* Top Width (ft)          *   26.59  * Top Width (ft)          *
*   23.74  *    2.85  *
* Vel Total (ft/s)        *    7.95  * Avg. Vel. (ft/s)        *
*    8.03  *    0.98  *
* Max Chl Dpth (ft)       *    3.32  * Hydr. Depth (ft)        *
*    2.01  *    0.19  *
* Conv. Total (cfs)       *  2736.6  * Conv. (cfs)             *
*  2732.8  *     3.9  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *
*   24.82  *    2.87  *
* Min Ch El (ft)          * 1632.02  * Shear (lb/sq ft)        *
*    2.35  *    0.23  *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *
*   18.84  *    0.23  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
************************************************************************
***********************

Warning: Slope too steep for slope area to converge during supercritical
flow calculations (normal depth is
         below critical depth). Water surface set to critical depth.

************************************************************************
********

SUMMARY OF MANNING'S N VALUES

River:NRW45
*****************************************************************
*     Reach       *   River Sta.   *   n1    *   n2    *   n3    *
*****************************************************************
*NRW45            *    1.21        *      .07*      .04*      .07*
*NRW45            *    1.15        *      .07*      .04*      .07*
*NRW45            *    1.11        *      .07*      .04*      .07*
*NRW45            *    1.05        *      .07*      .04*      .07*
*NRW45            *    0.98        *      .07*      .04*      .07*
*NRW45            *    0.90        *      .07*      .04*      .07*
```

*NRW45	0.86	.016	.016	.016
*NRW45	0.84	.07	.04	.07
*NRW45	0.80	.07	.04	.07
*NRW45	0.78	Culvert		
*NRW45	0.77	.07	.04	.07
*NRW45	0.71	.07	.04	.07
*NRW45	0.66	.07	.04	.07
*NRW45	0.59	.07	.04	.07
*NRW45	0.53	.07	.04	.07
*NRW45	0.47	.07	.04	.07
*NRW45	0.43	.07	.04	.07
*NRW45	0.38	.07	.04	.07
*NRW45	0.30	.07	.04	.07
*NRW45	0.25	.07	.04	.07
*NRW45	0.19	.07	.04	.07
*NRW45	0.14	.07	.04	.07
*NRW45	0.08	.07	.04	.07
*NRW45	0.05	.07	.04	.07

SUMMARY OF REACH LENGTHS

River: NRW45

Reach	River Sta.	Left	Channel	Right
NRW45	1.21	293	293	293
NRW45	1.15	239	239	239
NRW45	1.11	321	321	321
NRW45	1.05	335	335	335
NRW45	0.98	422	422	422
NRW45	0.90	219	219	219
NRW45	0.86	100	100	100
NRW45	0.84	242	242	242
NRW45	0.80	152	152	152
NRW45	0.78	Culvert		
NRW45	0.77	342	342	342
NRW45	0.71	261	261	261
NRW45	0.66	324	324	324
NRW45	0.59	363	363	363
NRW45	0.53	269	269	269
NRW45	0.47	262	262	262
NRW45	0.43	258	258	258
NRW45	0.38	403	403	403
NRW45	0.30	280	280	280
NRW45	0.25	300	300	300
NRW45	0.19	243	243	243
NRW45	0.14	320	320	320
NRW45	0.08	189	189	189
NRW45	0.05	251.52	251.52	251.52

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW45

Reach	River Sta.	Contr.	Expan.
NRW45	1.21	.1	.3
NRW45	1.15	.1	.3
NRW45	1.11	.1	.3
NRW45	1.05	.1	.3
NRW45	0.98	.1	.3
NRW45	0.90	.1	.3
NRW45	0.86	.1	.3
NRW45	0.84	.3	.5
NRW45	0.80	.3	.5
NRW45	0.78	Culvert	
NRW45	0.77	.3	.5
NRW45	0.71	.1	.3
NRW45	0.66	.1	.3
NRW45	0.59	.1	.3
NRW45	0.53	.1	.3
NRW45	0.47	.1	.3
NRW45	0.43	.1	.3
NRW45	0.38	.1	.3
NRW45	0.30	.1	.3
NRW45	0.25	.1	.3
NRW45	0.19	.1	.3
NRW45	0.14	.1	.3
NRW45	0.08	.1	.3
NRW45	0.05	.1	.3

NRW45.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.xs
Selected profiles: 100-Year
Date: 7/29/2005
Time: 4:33:51 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW45,NRW45						
1.21	293	293	293	362.94	577	
1.15	239	239	239	215.8	577	
1.11	321	321	321	306.21	577	
1.05	335	335	335	281.16	577	
.98	422	422	422	185.36	577	
.9	219	219	219	193.45	577	D,C
.86	100	100	100	309.23	378	
.84	242	242	242	444.58	378	
.8	152	152	152	51	378	
.78	Culvert #1-Up					
.78	Culvert #1-Dn					
.78	Culvert #2-Up					
.78	Culvert #2-Dn					
.77	342	342	342	51	378	
.71	261	261	261	210.82	383	
.66	324	324	324	233.6	383	
.59	363	363	363	147.95	383	
.53	269	269	269	143.82	383	
.47	262	262	262	101.45	383	D,C
.43	258	258	258	58.54	383	
.38	403	403	403	35.69	383	C
.3	280	280	280	37.38	383	
.25	300	300	300	56.05	383	
.19	243	243	243	48.66	383	C
.14	320	320	320	45.49	383	
.08	189	189	189	57.82	383	
.05	251.52	251.52	251.52	26.59	383	C

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: 0.86
XS DC 01 Discharge decreases in the downstream direction. / ATTENUATED FLOW FROM CULVERT XING STORAGE; SEE HEC-1 OUTPUT

LOCATION CHECK

RS: 0.25
XS LC 01 Lenchl Up/TopwdthAct Dn = 6.17
MaxChlDpth Up/MaxChlDpth Dn = 1.12
TopwdthAct Up/TopwdthAct Dn = 1.15
This cross section is located too far upstream from the critical depth cross section.

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is NRW45,NRW45
Normal S = 0.0206 is specified as the downstream boundary for profile 100-Year

LATERAL WEIRS CHECK

---END---

NRW45.br
CHECK-RAS Program: Structure Check

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.br
Selected profiles: 100-Year
Date: 7/29/2005
Time: 4:33:52 PM

RS	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
NRW45,NRW45						
1.21			1707.08	1706.98	1705.45	
1.15			1704.3	1703.87	1701.9	
1.11			1702.35	1702.22	1700.73	
1.05			1699.66	1699.39	1697.96	
0.98			1696.9	1696.64	1694.14	
0.9			1692.91	1692.55	1691.08	
0.86			1691.63	1691.6	1690.16	
0.84			1691.6	1691.6	1687.88	
0.8			1691.62	1691.6	1684.48	
0.78	1688.48	1694.06	0	1687.8	1684.48	Culvert #1-Up
0.78	1687.88	1694.2	0	1687.02	1683.88	Culvert #1-Dn
0.78	1688.48	1694.06	0	1687.8	1684.48	Culvert #2-Up
0.78	1687.88	1694.2	0	1687.02	1683.88	Culvert #2-Dn
0.77			1685.39	1685	1682.36	
0.71			1681.21	1681.03	1679.8	
0.66			1678.61	1678.48	1676.97	
0.59			1675.94	1675.7	1673.72	
0.53			1672.27	1671.9	1669.82	
0.47			1668.29	1667.76	1665.69	
0.43			1663.62	1663.16	1660.41	
0.38			1660.44	1659.52	1656.3	
0.3			1654.32	1653.69	1650.43	
0.25			1650.78	1650.22	1647.68	
0.19			1646.39	1645.64	1643.38	
0.14			1642.56	1641.87	1639.17	
0.08			1638.95	1638.5	1635.66	
0.05			1636.34	1635.34	1632.02	

RIVER/REACH: NRW45, NRW45
RIVER STATION: 0.78
TYPE OF STRUCTURE: Culvert

Description:	Top of culvert crossing of dirt road
Distance from Upstream XS:	19
Deck/Roadway Width:	120
Weir Coefficient:	3
Maximum allowable submergence for weir flow:	0
Elevation at which weir flow begins:	1694.31
Weir crest shape:	Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual

4	0.84	242.00	1691.6	1691.6	444.58	
3	0.8	152.00	1691.6	1691.62	51	
	0.78	120.00	1687.8	0	0	Culvert #1-Up
	0.78	13.00	1687.02	0	0	Culvert #1-Dn
	0.78	120.00	1687.8	0	0	Culvert #2-Up
	0.78	13.00	1687.02	0	0	Culvert #2-Dn
2	0.77	342.00	1685	1685.39	51	
1	0.71	261.00	1681.03	1681.21	210.82	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	9589.6	9974.5	1694.15	9696.6	9974.5	1694.15
2	10025.5	10438.1	1694.12	10025.5	10225.7	1694.12

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS
Culvert Group					9974.5	10025.5U
					9974.5	10025.5D

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS
Culvert Group					9974.5	10025.5U
					9974.5	10025.5D

CULVERT:
Culvert Name: Culvert #1
Shape: Box Rise: 4 Span: 6 Barrels: 1
FHWA Chart #: # 8 - flared wingwalls
FHWA Scale #: # 1 - Wingwall flared 30 to 75 deg.
Solution Crit:Highest U.S. EG

UpstrmDist: 19 Length: 120 n-Value: 0.015
EntLossCoef: 0.4 ExtLossCoef: 1 CulvInvElU 1684.48 CulvInvElD 1683.88
LCntStaU: 9996.5 RCntStaU: 9996.5 LCntStaD 9996.5 RCntStaD 9996.5
Culvert Depth Blocked: 0

Culv Area: 24 CulvQ: 189 MinTopRd: 1694.31

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Culvert #1	9993.5	9999.5	1694.06	1694.28	1694.06	1688.48	U
	9993.5	9999.5	1694.2	1694.28	1694.2	1687.88	D

CULVERT:
Culvert Name: Culvert #2
Shape: Box Rise: 4 Span: 6 Barrels: 1
FHWA Chart #: # 8 - flared wingwalls
FHWA Scale #: # 1 - Wingwall flared 30 to 75 deg.

Solution Crit:Highest U.S. EG

UpstrmDist:	19	Length:	120	n-Value:	0.015		
EntLossCoef:	0.4	ExtLossCoef:	1	CulvInvElU	1684.48	CulvInvElD	1683.88
LCntStaU:	10003	RCntStaU:	10003	LCntStaD	10003	RCntStaD	10003

Culvert Depth Blocked: 0

Culv Area:	24	CulvQ:	189	MinTopRd:	1694.31

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Culvert #2	10000	10006	1694.06	1694.28	1694.06	1688.48	U
	10000	10006	1694.2	1694.28	1694.2	1687.88	D

Name	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
Culvert #1		189	0	Highest U.S. EG	Low Flow
Culvert #2		189	0	Highest U.S. EG	Low Flow

GEOMETRIC CHECK

RS: 0.78
ST GD 03 The starting station of 9536.2 from downstream road/weir data is less than the starting station of 9696.6 from downstream internal section.
The high chord elevation of 1693.95 for the starting road/weir station is greater than the ground elevation of 1688.53 for the starting ground station.
The EGEL at section 3 of 1691.62 is greater than the ground elevation.
The road/weir data should be included in the ground data

RS: 0.78
ST GD 03 The end station of 10463.9 from downstream road/weir data is greater than the end station of 10225.7 from downstream internal section.
The high chord elevation of 1694.63 for the end road/weir station is greater than the ground elevation of 1689.8 for the end ground station.
The EGEL at section 3 of 1691.62 is greater than the ground elevation.
The road/weir data should be included in the ground data

DOES NOT OVERTOP OR EXCEED END POINT ELEVATIONS ~~OR~~ No Change

TYPE OF FLOW CHECK

RS: 0.78 This is Culvert #1
CV LF 01 Type of flow is low flow because,
1. EGEL 3 of 1691.62 is less than or equal to MinTopRd of 1694.31.
2. CulvWSIn of 1687.80 is less than MxLoCdU of 1688.48.
3. CulvWSout of 1687.02 is less than MxLoCdD of 1687.88.
4. Q/AD^0.5 of 3.94 is less than 4.0.

RS: 0.78 This is Culvert #2
CV LF 01 Type of flow is low flow because,
1. EGEL 3 of 1691.62 is less than or equal to MinTopRd of 1694.31.
2. CulvWSIn of 1687.80 is less than MxLoCdU of 1688.48.

3. CulvWSout of 1687.02 is less than MxLoCdD of 1687.88.
4. Q/AD^0.5 of 3.94 is less than 4.0.

DISTANCE CHECK

CULVERT COEFFICIENT CHECK

CULVERT CRITERIA CHECK

INEFFECTIVE FLOW CHECK

---END

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW45\NRW45.nt
Selected profiles: 100-Year
Date: 7/29/2005
Time: 4:33:50 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW45,NRW45						
1.21		0.07	0.04	0.07	0.1	0.3
1.15		0.07	0.04	0.07	0.1	0.3
1.11		0.07	0.04	0.07	0.1	0.3
1.05		0.07	0.04	0.07	0.1	0.3
.98		0.07	0.04	0.07	0.1	0.3
.9		0.07	0.04	0.07	0.1	0.3
.86		0.016	0.016	0.016	0.1	0.3
.84		0.07	0.04	0.07	0.3	0.5
.8		0.07	0.04	0.07	0.3	0.5
.78	Culvert-Up	0.07	0.04	0.07	0.3	0.5
.78	Culvert-Dn	0.07	0.04	0.07	0.3	0.5
.77		0.07	0.04	0.07	0.3	0.5
.71		0.07	0.04	0.07	0.1	0.3
.66		0.07	0.04	0.07	0.1	0.3
.59		0.07	0.04	0.07	0.1	0.3
.53		0.07	0.04	0.07	0.1	0.3
.47		0.07	0.04	0.07	0.1	0.3
.43		0.07	0.04	0.07	0.1	0.3
.38		0.07	0.04	0.07	0.1	0.3
.3		0.07	0.04	0.07	0.1	0.3
.25		0.07	0.04	0.07	0.1	0.3
.19		0.07	0.04	0.07	0.1	0.3
.14		0.07	0.04	0.07	0.1	0.3
.08		0.07	0.04	0.07	0.1	0.3
.05		0.07	0.04	0.07	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.016	0.07
Right Overbank n Value:	0.016	0.07
Channel n Value:	0.016	0.04
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

ROUGHNESS COEFFICIENT CHECK

RS: 0.86
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 0.86
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 0.86
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 0.86
NT RC 05 The left overbank n value of 0.016 and the right overbank n
value
of 0.016 are less than or equal to the channel n value of 0.016
The overbank n values should be reevaluated.

NEW RIVER RD DIP XING

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 50

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW50 River: NRW50A Reach: NRW50A Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW50A	0.58	553.00	1672.69	1674.92		1675.08	0.011904	4.89	208.28	171.37	0.63
NRW50A	0.55	553.00	1670.58	1672.77		1672.98	0.018158	5.45	175.71	153.13	0.76
NRW50A	0.53	553.00	1669.34	1671.38		1671.59	0.009373	4.25	178.23	133.19	0.56
NRW50A	0.50	553.00	1666.65	1669.58	1669.17	1669.91	0.012974	5.76	158.12	125.70	0.68
NRW50A	0.47	553.00	1665.03	1667.08		1667.36	0.014637	5.28	161.46	127.43	0.70
NRW50A	0.44	553.00	1661.80	1665.81		1665.97	0.005931	4.48	229.61	145.46	0.47
NRW50A	0.41	719.00	1660.96	1664.43		1664.73	0.012429	6.12	213.93	146.21	0.67
NRW50A	0.38	719.00	1658.63	1662.75		1663.01	0.009870	5.75	239.26	160.34	0.60
NRW50A	0.35	719.00	1657.99	1661.22		1661.41	0.007446	4.19	241.37	145.18	0.51
NRW50A	0.31	719.00	1655.61	1658.67	1658.40	1658.93	0.021149	6.53	210.22	178.00	0.82
NRW50A	0.28	719.00	1654.18	1656.76		1656.93	0.008461	4.22	270.21	218.46	0.53
NRW50A	0.24	719.00	1652.61	1655.09		1655.24	0.009871	4.74	273.86	200.51	0.58
NRW50A	0.20	719.00	1649.73	1652.93		1653.18	0.010232	5.59	233.04	155.22	0.62
NRW50A	0.16	719.00	1647.79	1650.28	1650.04	1650.54	0.014236	5.83	227.21	185.49	0.71
NRW50A	0.12	719.00	1645.72	1647.94	1647.41	1648.15	0.009359	4.33	228.49	157.05	0.56
NRW50A	0.06	719.00	1638.09	1642.39	1642.26	1643.37	0.023708	7.95	91.94	46.79	0.91

HEC-RAS Plan: NRW50 River: NRW50B Reach: NRW50B Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW50B	1.40	453.00	1729.00	1731.23		1731.35	0.007824	3.37	227.69	324.28	0.49
NRW50B	1.35	453.00	1726.03	1727.90	1727.85	1728.13	0.022061	4.95	158.72	245.34	0.80
NRW50B	1.31	453.00	1723.51	1725.35		1725.48	0.007562	3.08	194.53	259.55	0.48
NRW50B	1.25	583.00	1720.26	1721.76	1721.49	1722.05	0.019809	4.99	183.27	285.10	0.77
NRW50B	1.20	583.00	1717.03	1718.42		1718.49	0.007356	2.57	284.96	284.54	0.45
NRW50B	1.15	583.00	1713.58	1714.49	1714.36	1714.71	0.037172	4.36	162.53	229.07	0.94
NRW50B	1.09	364.00	1708.60	1711.10		1711.21	0.004255	2.79	169.49	189.16	0.37
NRW50B	1.03	364.00	1704.73	1711.10		1711.10	0.000012	0.34	1921.77	517.78	0.02
NRW50B	1.01	364.00	1703.48	1711.10		1711.10	0.000004	0.24	3177.63	790.09	0.02
NRW50B	0.99	Culvert									
NRW50B	0.98	364.00	1700.80	1702.27	1702.18	1702.48	0.024622	4.83	129.22	196.99	0.83
NRW50B	0.92	340.00	1696.63	1698.38	1698.01	1698.49	0.007865	2.93	155.04	204.60	0.48
NRW50B	0.87	340.00	1693.52	1694.73	1694.56	1694.91	0.019828	3.43	102.66	162.70	0.70
NRW50B	0.82	340.00	1688.25	1690.53	1690.27	1690.71	0.013050	5.02	137.45	148.97	0.65
NRW50B	0.77	340.00	1684.70	1687.77	1687.52	1687.97	0.010823	4.80	129.73	128.51	0.60
NRW50B	0.72	340.00	1681.38	1683.52	1683.39	1683.83	0.018534	5.43	100.34	108.15	0.77
NRW50B	0.66	340.00	1677.44	1680.06		1680.20	0.008053	4.55	162.44	166.22	0.53
NRW50B	0.61	340.00	1674.00	1676.48	1676.48	1676.95	0.025458	5.62	72.54	103.79	0.87

HEC-RAS Plan: NRW50 River: NRW50T5 Reach: NRW50T5 Profile: 100-Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW50T5	0.84	252.00	1728.70	1730.14	1729.81	1730.24	0.007483	2.73	111.01	176.91	0.49
NRW50T5	0.77	252.00	1724.70	1726.11	1725.96	1726.33	0.016585	4.17	83.06	129.80	0.73
NRW50T5	0.70	252.00	1719.43	1721.52	1721.24	1721.63	0.009503	3.28	118.85	156.35	0.56
NRW50T5	0.62	252.00	1715.69	1716.94	1716.81	1717.06	0.014330	3.00	118.04	298.49	0.64
NRW50T5	0.59	252.00	1713.41	1714.70	1714.52	1714.80	0.011286	3.08	128.35	250.34	0.59
NRW50T5	0.54	252.00	1710.27	1711.15	1710.96	1711.28	0.015595	3.34	102.63	160.86	0.68
NRW50T5	0.50	252.00	1707.54	1709.12		1709.23	0.008768	3.41	133.96	190.95	0.55
NRW50T5	0.47	282.00	1705.74	1707.08	1706.85	1707.34	0.013627	4.22	75.75	105.05	0.68
NRW50T5	0.43	282.00	1703.08	1704.87	1704.47	1705.04	0.008878	3.46	101.31	167.87	0.55
NRW50T5	0.38	282.00	1701.66	1702.58	1702.36	1702.66	0.009153	2.53	145.15	244.23	0.52
NRW50T5	0.34	282.00	1700.39	1701.02	1701.02	1701.23	0.004760	3.64	79.35	206.09	0.98
NRW50T5	0.30	322.00	1695.68	1697.51	1697.51	1697.87	0.016141	5.22	84.39	146.38	0.77
NRW50T5	0.23	322.00	1691.42	1692.39		1692.48	0.013388	3.13	140.20	184.63	0.63
NRW50T5	0.16	322.00	1685.37	1686.45	1686.31	1686.69	0.016780	4.03	90.70	119.34	0.73
NRW50T5	0.09	322.00	1679.69	1681.05	1680.76	1681.24	0.012660	3.78	102.06	119.03	0.65
NRW50T5	0.03	322.00	1675.04	1676.56	1676.39	1676.73	0.016505	3.33	97.08	145.17	0.69

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW50
Project File : NRW50.prj
Run Date and Time: 6/11/2005 1:06:47 PM

Project in English units

Project Description:
NRW 50 & NRW 50T5

New River West Tributaries FDS
Prepared by URS Corp. for
the Flood Control District of Maricopa County
Contract No: FCD 2003
C057
Date: April 29, 2005

Topographic Mapping Source:
Flown and Mapped by
DTM Inc.
Flight Date - 4/10/2003
2 foot Contour Interval
Datum:
Horizontal
- NAD83 Arizona State Plane, Central Zone, International Feet
Vertical - NAVD
88 (GDACS Control)

Discharge Source:
HEC-1 Analysis for the 100-Year 6-hour
storm event
Performed by URS Corp. as part of the New River West Tributaries
FDS
Approved by the Flood Control District of Maricopa County, June
2004

NRW50
453 cfs @ R.S. 1.40
583 cfs @ R.S. 1.25
364 cfs @ R.S.

1.03**
340 cfs @ R.S. 0.92
553 cfs @ R.S. 0.58
719 cfs @ R.S. 0.41

** 364
cfs was used rather than 583 cfs due to the attenuation caused by the culvert
crossing embankment. The 364 cfs was obtained from the culvert routing output in the
HEC-1 model

NRW50T5
252 cfs @ R.S. 0.84
282 cfs @ R.S.
0.47
322 cfs @ R.S. 0.30

Study Limits:

NRW50
U.S. Limit is
approximately 550 feet east, and 910 feet north of the SW corner of Section
23 T6NR1E
D.S. Limit is the New River floodplain

NRW50T5
U.S. Limit is
approximately 370 feet west, and 875 feet north of the SW corner of Section
22 T6NR1E
D.S. Limit is the confluence with NRW50

Stationing for NRW50
based upon River Mile distance of the Hydraulic Baseline confluence with the
NRW55 Thalwag

Stationing for NRW50T5 based upon River Mile distance of the
Hydraulic Baseline confluence with the NRW50

Final Model Run Date:
April 7,
2005
WILLCOX FPMS; COCHISE AND GRAHAM COUNTY, AZ; HCM 5/91

WATER SURFACE PROFILES, PRESENT CONDITIONS
STREAM CHANNEL NO. 3700
Q=1650 CFS FLOODWAY FILE BY MBJ 5/12/99

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PLAN DATA

Plan Title: NRW50
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5
\NRW50.p01

```
          Geometry Title: Existing Conditions
          Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW50_NRW50T5\NRW50.g01

          Flow Title    : 100-Year; 6-Hour
          Flow File     : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile
\NRW50_NRW50T5\NRW50.f03

Plan Summary Information:
Number of:  Cross Sections =   49    Mulitple Openings  =    0
            Culverts       =    1    Inline Structures  =    0
            Bridges        =    0    Lateral Structures =    0

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow


*************************************************************************
********

FLOW DATA

Flow Title: 100-Year; 6-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5
\NRW50.f03

Flow Data (cfs)
*************************************************************
* River           Reach           RS      *        100-Year *
* NRW50B          NRW50B          1.40    *             453 *
* NRW50B          NRW50B          1.25    *             583 *
* NRW50B          NRW50B          1.09    *             364 *
* NRW50B          NRW50B          1.03    *             364 *
* NRW50B          NRW50B          0.92    *             340 *
* NRW50T5         NRW50T5         0.84    *             252 *
* NRW50T5         NRW50T5         0.47    *             282 *
* NRW50T5         NRW50T5         0.30    *             322 *
* NRW50A          NRW50A          0.58    *             553 *
* NRW50A          NRW50A          0.41    *             719 *
*************************************************************

Boundary Conditions
*************************************************************************
********************************
* River           Reach           Profile          *            Upstream
Downstream    *
*************************************************************************
********************************
* NRW50B          NRW50B          100-Year         *
Known WS = 1674.92 *
```

```
* NRW50T5          NRW50T5          100-Year          *
Normal S = 0.0165 *
* NRW50A           NRW50A           100-Year          *
Normal S = 0.0237 *
**************************************************************************
*******************************
Changes in WS and EG
**************************************************************************
********
* River            Reach            RS       Profile          Type
Value *
* NRW50B           NRW50B           1.09     100-Year  Known WS     1711.1 *
* NRW50B           NRW50B           1.03     100-Year  Known WS     1711.1 *
* NRW50B           NRW50B           1.01     100-Year  Known WS     1711.1 *
**************************************************************************
********

**************************************************************************
********

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50
_NRW50T5\NRW50.g01

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B              RS: 1.40

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9782.8 1733.84  9957.2  1730.6  9976.1 1730.41  9989.4 1729.93  9997.1
1729.48
 10003.6    1729 10022.7  1729.9 10037.3 1730.33 10051.2 1730.58   10120
1731.07
 10136.1  1731.1 10149.3 1730.79 10162.7 1730.61 10177.6 1729.76 10189.7
1730.23
 10196.9 1730.38 10207.1  1730.5 10217.6 1730.93 10222.8  1730.9 10224.4
1730.88
 10234.2 1730.54 10250.9  1731.4 10282.9 1732.46 10380.9 1734.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9782.8    .078  9976.1     .05 10037.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.1 10037.3              261     261     261             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
```

```
************************
* E.G. Elev (ft)          * 1731.35  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1731.23  * Reach Len. (ft)         *  261.00
*  261.00  *  261.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   24.36
*   89.03  *  114.30  *
* E.G. Slope (ft/ft)      *0.007824  * Area (sq ft)            *   24.36
*   89.03  *  114.30  *
* Q Total (cfs)           *  453.00  * Flow (cfs)              *   24.52
*  300.24  *  128.24  *
* Top Width (ft)          *  324.28  * Top Width (ft)          *   52.79
*   61.20  *  210.29  *
* Vel Total (ft/s)        *    1.99  * Avg. Vel. (ft/s)        *    1.01
*    3.37  *    1.12  *
* Max Chl Dpth (ft)       *    2.23  * Hydr. Depth (ft)        *    0.46
*    1.45  *    0.54  *
* Conv. Total (cfs)       *  5121.3  * Conv. (cfs)             *   277.2
*  3394.3  *  1449.8  *
* Length Wtd. (ft)        *  261.00  * Wetted Per. (ft)        *   52.80
*   61.27  *  210.37  *
* Min Ch El (ft)          * 1729.00  * Shear (lb/sq ft)        *    0.23
*    0.71  *    0.27  *
* Alpha                   *    2.01  * Stream Power (lb/ft s) *    0.23
*    2.39  *    0.30  *
* Frctn Loss (ft)         *    3.21  * Cum Volume (acre-ft)    *   12.56
*    9.09  *   11.54  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    7.07
*    5.75  *    9.75  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW50B
REACH: NRW50B RS: 1.35

INPUT
Description:
Station Elevation Data num= 19

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9752.4 1732.44  9867.4 1729.81  9955.2 1727.81  9976.7  1727.5  9976.8
1727.49
 10000.3 1726.03 10005.6  1726.4 10005.7 1726.41 10017.6 1727.25 10049.5
1727.39
 10085.9 1727.72 10114.3 1727.23   10120 1726.99   10131 1726.35 10147.5
1726.76
```

```
 10162.2 1727.35 10184.7 1727.74 10192.5 1727.83 10323.4 1730.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9752.4    .078  9976.7     .05 10017.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.7 10017.6              218     218     218             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1728.13  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1727.90  * Reach Len. (ft)         *  218.00
*  218.00  *  218.00  *
* Crit W.S. (ft)          * 1727.85  * Flow Area (sq ft)       *    5.43
*   48.61  *  104.68  *
* E.G. Slope (ft/ft)      *0.022061  * Area (sq ft)            *    5.43
*   48.61  *  104.68  *
* Q Total (cfs)           *  453.00  * Flow (cfs)              *    5.48
*  240.43  *  207.08  *
* Top Width (ft)          *  245.34  * Top Width (ft)          *   25.42
*   40.90  *  179.03  *
* Vel Total (ft/s)        *    2.85  * Avg. Vel. (ft/s)        *    1.01
*    4.95  *    1.98  *
* Max Chl Dpth (ft)       *    1.87  * Hydr. Depth (ft)        *    0.21
*    1.19  *    0.58  *
* Conv. Total (cfs)       *  3049.9  * Conv. (cfs)             *    36.9
*  1618.8  *  1394.2  *
* Length Wtd. (ft)        *  218.00  * Wetted Per. (ft)        *   25.42
*   40.99  *  179.08  *
* Min Ch El (ft)          * 1726.03  * Shear (lb/sq ft)        *    0.29
*    1.63  *    0.81  *
* Alpha                   *    1.81  * Stream Power (lb/ft s) *    0.30
*    8.08  *    1.59  *
* Frctn Loss (ft)         *    2.62  * Cum Volume (acre-ft)    *   12.47
*    8.68  *   10.88  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    6.83
*    5.44  *    8.58  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B              RS: 1.31
```

```
INPUT
Description:
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9733.1 1730.05  9790.6 1728.93  9791.4 1728.89  9803.4 1727.66  9809.2
1727.5
  9839.5 1727.42  9854.9 1726.96  9856.7 1726.93  9861.3 1726.76  9876.9
1726.96
  9898.7 1726.29  9907.7 1726.33  9919.2 1726.11  9928.9 1725.82  9948.2
1725.14
  9952.9 1724.66  9963.4 1723.51  9968.7 1723.85  9974.3  1724.1    9984
1723.83
  9985.8 1723.77    9987 1723.75  9995.4 1723.82 10000.4 1723.89 10004.3
1723.82
 10009.8  1723.8 10011.3 1723.81 10013.2 1723.84   10047 1724.84 10132.2
1725.38
 10141.2 1725.24 10161.8  1724.6 10171.8 1724.07 10173.3 1724.01 10176.9
1724.14
 10192.5 1724.49 10213.3 1725.62 10217.4 1725.77 10345.3 1728.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9733.1    .078  9952.9     .05   10047    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9952.9   10047              278     278     278             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
***********************
* E.G. Elev (ft)         * 1725.48  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.12  * Wt. n-Val.             *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1725.35  * Reach Len. (ft)        *  278.00
*  278.00  *  278.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *    2.75
*  122.29  *   69.50  *
* E.G. Slope (ft/ft)     *0.007562  * Area (sq ft)           *    2.75
*  122.29  *   69.50  *
* Q Total (cfs)          *  453.00  * Flow (cfs)             *    1.84
*  376.08  *   75.08  *
* Top Width (ft)         *  259.55  * Top Width (ft)         *   10.67
*   94.10  *  154.78  *
* Vel Total (ft/s)       *    2.33  * Avg. Vel. (ft/s)       *    0.67
*    3.08  *    1.08  *
* Max Chl Dpth (ft)      *    1.84  * Hydr. Depth (ft)       *    0.26
*    1.30  *    0.45  *
* Conv. Total (cfs)      *  5209.2  * Conv. (cfs)            *    21.1
*  4324.6  *   863.4  *
* Length Wtd. (ft)       *  278.00  * Wetted Per. (ft)       *   10.70
*   94.20  *  154.84  *
* Min Ch El (ft)         * 1723.51  * Shear (lb/sq ft)       *    0.12
*    0.61  *    0.21  *
```

```
* Alpha                    *    1.48  * Stream Power (lb/ft s) *    0.08
*    1.88  *    0.23  *
* Frctn Loss (ft)          *    3.41  * Cum Volume (acre-ft)   *   12.45
*    8.25  *   10.45  *
* C & E Loss (ft)          *    0.02  * Cum SA (acres)         *    6.74
*    5.10  *    7.74  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B             RS: 1.25

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9764.2 1726.31  9775.3 1726.14  9798.4  1725.6    9905 1722.84  9941.3
1722.18
  9950.4 1721.91    9955 1721.59  9975.9 1720.44  9986.9 1720.68  9991.2
1720.63
  9992.9 1720.57 10000.6  1720.5 10012.2 1720.29   10017 1720.26 10050.2
1720.66
 10075.6  1721.5 10131.2 1721.74 10141.7 1721.61   10182 1721.75 10184.5
1721.7
   10214 1720.17 10215.9 1720.14 10225.6 1721.24 10229.4  1721.3 10239.1
1721.85
 10242.7 1721.91 10243.6 1721.93 10266.1 1722.81   10282 1723.57 10283.3
1723.65
 10285.1 1723.71 10306.8 1724.86 10357.3 1726.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9764.2    .078  9986.9     .05 10050.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.9 10050.2              308     308     308             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1722.05  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.29  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1721.76  * Reach Len. (ft)         *  308.00
*  308.00  *  308.00  *
* Crit W.S. (ft)          * 1721.49  * Flow Area (sq ft)       *   29.13
```

```
*   82.56  *   71.58  *
* E.G. Slope (ft/ft)      *0.019809  * Area (sq ft)            *   29.13
*   82.56  *   71.58  *
* Q Total (cfs)           *  583.00  * Flow (cfs)              *   69.85
*  412.16  *  100.99  *
* Top Width (ft)          *  285.10  * Top Width (ft)          *   34.41
*   63.30  *  187.39  *
* Vel Total (ft/s)        *    3.18  * Avg. Vel. (ft/s)        *    2.40
*    4.99  *    1.41  *
* Max Chl Dpth (ft)       *    1.62  * Hydr. Depth (ft)        *    0.85
*    1.30  *    0.38  *
* Conv. Total (cfs)       *  4142.3  * Conv. (cfs)             *   496.3
*  2928.5  *   717.5  *
* Length Wtd. (ft)        *  308.00  * Wetted Per. (ft)        *   34.45
*   63.31  *  187.52  *
* Min Ch El (ft)          * 1720.26  * Shear (lb/sq ft)        *    1.05
*    1.61  *    0.47  *
* Alpha                   *    1.84  * Stream Power (lb/ft s) *    2.51
*    8.05  *    0.67  *
* Frctn Loss (ft)         *    3.50  * Cum Volume (acre-ft)    *   12.35
*    7.59  *   10.00  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *    6.60
*    4.60  *    6.65  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B             RS: 1.20

INPUT
Description:
Station Elevation Data    num=      48
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9729 1722.05  9732.2  1721.8  9768.8 1721.45  9803.1 1720.75  9804.5
1720.68
  9835.8 1719.43  9849.1    1719  9849.5 1718.98  9849.8 1718.98    9869
1719.15
  9884.7 1719.02  9906.2 1718.62  9919.8 1717.97  9931.4 1717.22  9937.5
1717.21
  9949.5 1717.34  9953.3 1717.29  9964.2  1717.7  9980.3  1717.5  9989.9
1717.03
  9992.9 1717.07 10000.3  1717.1 10011.4 1717.04 10018.2 1717.23 10026.2
1717.23
 10029.5 1717.27 10031.9 1717.27 10088.2 1717.86 10090.2 1717.85 10101.9
1717.1
 10105.8 1717.03 10114.9 1716.96 10132.6 1716.73 10150.8 1717.03 10158.8
1717.33
```

```
   10166  1717.7 10174.4 1718.04 10182.8 1718.01 10188.7 1718.24 10194.7
1718.4
 10208.5 1719.02 10244.9 1720.92 10253.9 1721.23 10267.9 1721.53 10281.1
1722.18
 10291.1 1722.55 10320.7 1723.25 10328.4 1723.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9729    .078  9964.2     .05 10088.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9964.2 10088.2              267     267     267             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1718.49  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1718.42  * Reach Len. (ft)         *  267.00
*  267.00  *  267.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   46.79
*  125.65  *  112.52  *
* E.G. Slope (ft/ft)      *0.007356  * Area (sq ft)            *   46.79
*  125.65  *  112.52  *
* Q Total (cfs)           *  583.00  * Flow (cfs)              *   69.69
*  323.06  *  190.25  *
* Top Width (ft)          *  284.54  * Top Width (ft)          *   53.71
*  124.00  *  106.83  *
* Vel Total (ft/s)        *    2.05  * Avg. Vel. (ft/s)        *    1.49
*    2.57  *    1.69  *
* Max Chl Dpth (ft)       *    1.68  * Hydr. Depth (ft)        *    0.87
*    1.01  *    1.05  *
* Conv. Total (cfs)       *  6797.5  * Conv. (cfs)             *   812.6
*  3766.8  *  2218.2  *
* Length Wtd. (ft)        *  267.00  * Wetted Per. (ft)        *   53.75
*  124.02  *  106.89  *
* Min Ch El (ft)          * 1717.03  * Shear (lb/sq ft)        *    0.40
*    0.47  *    0.48  *
* Alpha                   *    1.16  * Stream Power (lb/ft s) *    0.60
*    1.20  *    0.82  *
* Frctn Loss (ft)         *    3.76  * Cum Volume (acre-ft)    *   12.08
*    6.86  *    9.35  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    6.29
*    3.94  *    5.61  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW50B
REACH: NRW50B              RS: 1.15

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9739.2 1718.18    9754 1717.87  9759.1 1717.57  9783.3 1716.74  9789.7
1716.93
  9793.4 1716.66  9815.9 1716.21  9821.9 1716.18  9861.9 1715.44  9895.8
1714.15
  9908.6 1713.81  9909.6 1713.78  9920.4 1713.74  9921.6 1713.78    9925
1713.83
  9948.3 1714.29  9984.6 1713.59  9985.1 1713.58  9998.4 1713.65 10025.9
1713.86
 10036.5 1713.92 10050.5 1713.36 10061.8 1713.13 10065.4 1713.26 10072.6
1713.47
 10081.8    1713 10095.4 1713.67 10111.6 1714.34 10120.9 1714.66 10133.1
1715.25
 10228.9 1718.26 10244.7 1718.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9739.2    .078  9948.3     .05 10036.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9948.3 10036.5              287     287     287             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1714.71  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.22  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1714.49  * Reach Len. (ft)         *  287.00
*  287.00  *  287.00  *
* Crit W.S. (ft)          * 1714.36  * Flow Area (sq ft)       *   29.82
*   58.58  *   74.13  *
* E.G. Slope (ft/ft)      *0.037172  * Area (sq ft)            *   29.82
*   58.58  *   74.13  *
* Q Total (cfs)           *  583.00  * Flow (cfs)              *   67.64
*  255.52  *  259.84  *
* Top Width (ft)          *  229.07  * Top Width (ft)          *   61.42
*   88.20  *   79.45  *
* Vel Total (ft/s)        *    3.59  * Avg. Vel. (ft/s)        *    2.27
*    4.36  *    3.51  *
* Max Chl Dpth (ft)       *    1.49  * Hydr. Depth (ft)        *    0.49
*    0.66  *    0.93  *
* Conv. Total (cfs)       *  3023.8  * Conv. (cfs)             *   350.8
*  1325.3  *  1347.7  *
* Length Wtd. (ft)        *  287.00  * Wetted Per. (ft)        *   61.44
*   88.21  *   79.51  *
```

```
* Min Ch El (ft)          * 1713.58  * Shear (lb/sq ft)        *    1.13
*    1.54  *    2.16  *
* Alpha                   *    1.12  * Stream Power (lb/ft s) *    2.55
*    6.72  *    7.58  *
* Frctn Loss (ft)         *    3.48  * Cum Volume (acre-ft)    *   11.85
*    6.29  *    8.77  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    5.93
*    3.29  *    5.04  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B              RS: 1.09

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9677.1 1716.12  9802.9 1712.45  9831.7  1711.2  9845.5 1710.96  9857.1
1711.03
  9864.7 1711.29  9869.6 1711.42  9873.5 1711.05  9881.3 1710.37  9890.3
1710.6
  9894.7  1710.8  9922.9 1710.82  9926.8 1710.45  9928.2 1710.26    9934
1710.24
  9948.2 1710.42  9952.6 1710.52  9988.7 1708.83    9996  1708.6 10000.8
1708.77
 10005.8 1708.96 10011.3  1709.2 10019.1 1709.84 10038.2 1711.05 10061.9
1711.58
 10080.9  1712.1 10145.1 1714.26 10187.9 1715.47 10212.7 1716.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9677.1    .078  9952.6     .05 10019.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9952.6 10019.1              320     320     320             .1
.3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
  9677.1  9922.9 1710.82       F

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1711.21  * Element                 *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.11  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1711.10  * Reach Len. (ft)         *  320.00
*  320.00  *  320.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   41.87
*  115.05  *   12.57  *
* E.G. Slope (ft/ft)     *0.004255  * Area (sq ft)            *   41.87
*  115.05  *   12.57  *
* Q Total (cfs)          *  364.00  * Flow (cfs)              *   31.86
*  321.18  *   10.96  *
* Top Width (ft)         *  189.16  * Top Width (ft)          *  101.32
*   66.50  *   21.33  *
* Vel Total (ft/s)       *    2.15  * Avg. Vel. (ft/s)        *    0.76
*    2.79  *    0.87  *
* Max Chl Dpth (ft)      *    2.50  * Hydr. Depth (ft)        *    0.41
*    1.73  *    0.59  *
* Conv. Total (cfs)      *  5580.1  * Conv. (cfs)             *   488.5
*  4923.7  *   168.0  *
* Length Wtd. (ft)       *          * Wetted Per. (ft)        *  101.40
*   66.58  *   21.37  *
* Min Ch El (ft)         * 1708.60  * Shear (lb/sq ft)        *    0.11
*    0.46  *    0.16  *
* Alpha                  *    1.51  * Stream Power (lb/ft s) *    0.08
*    1.28  *    0.14  *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)    *   11.61
*    5.72  *    8.49  *
* C & E Loss (ft)        *          * Cum SA (acres)          *    5.40
*    2.78  *    4.71  *
*************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Note:    The user has entered a known water surface elevation at this
cross section.

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B             RS: 1.03

INPUT
Description:
Station Elevation Data    num=      52
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9583.7 1716.07  9586.5 1716.02  9591.8  1715.9  9598.4 1715.66    9626
1714.88
  9631.8  1714.8    9659 1713.56  9661.6 1713.38    9664 1713.62  9683.4
1712.61
  9686.3 1712.34    9687  1712.3  9729.7 1710.85  9747.9 1709.55  9752.4
1709.39
  9799.1 1707.96    9827 1706.65  9847.9 1706.25  9864.3 1705.69    9865
1705.68
```

```
  9872.8 1705.65    9887 1705.41    9964 1705.05  9981.6 1704.74    9997
1704.73
 10009.1 1704.82   10026 1705.34 10035.2 1705.74 10044.8 1706.38 10064.1
1707.13
 10100.7 1708.39 10111.1 1708.59   10115 1708.13 10116.6  1708.1   10147
1708.88
 10160.7 1709.17 10168.8 1709.65 10171.2 1709.72 10183.7 1709.76 10200.7
1709.95
 10279.2 1712.24 10288.4 1712.25 10289.6 1712.23 10292.9 1712.21 10300.7
1712.28
 10317.6 1713.08 10324.2 1713.22 10331.8 1713.55 10345.4 1713.55   10363
1713.74
 10365.7 1713.75 10367.2 1713.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9583.7    .078    9964     .05   10026    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9964   10026              119     119     119             .3
.5

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1711.10  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1711.10  * Reach Len. (ft)         *  119.00
*  119.00  *  119.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       * 1002.34
*  385.50  *  533.93  *
* E.G. Slope (ft/ft)      *0.000012  * Area (sq ft)            * 1002.34
*  385.50  *  533.93  *
* Q Total (cfs)           *  364.00  * Flow (cfs)              *  168.09
*  132.13  *   63.78  *
* Top Width (ft)          *  517.78  * Top Width (ft)          *  241.66
*   62.00  *  214.12  *
* Vel Total (ft/s)        *    0.19  * Avg. Vel. (ft/s)        *    0.17
*    0.34  *    0.12  *
* Max Chl Dpth (ft)       *    6.37  * Hydr. Depth (ft)        *    4.15
*    6.22  *    2.49  *
* Conv. Total (cfs)       *106705.5  * Conv. (cfs)             * 49276.5
* 38733.3  * 18695.7  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  241.78
*   62.01  *  214.26  *
* Min Ch El (ft)          * 1704.73  * Shear (lb/sq ft)        *    0.00
*    0.00  *    0.00  *
* Alpha                   *    1.62  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *    7.77
*    3.88  *    6.48  *
* C & E Loss (ft)         *          * Cum SA (acres)          *    4.14
*    2.31  *    3.84  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
```

conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: The user has entered a known water surface elevation at this cross section.

CROSS SECTION

RIVER: NRW50B
REACH: NRW50B RS: 1.01

INPUT
Description: U.S. of 2 - 48" CMP's
Station Elevation Data num= 111

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9559.7	1712.94	9563.2	1712.84	9565.8	1712.73	9577.9	1712.39	9589.6	1712.33
9599.9	1712.13	9607.5	1711.82	9634.5	1711.03	9649.5	1710.7	9658.3	1710.34
9678.7	1709.71	9682.9	1709.62	9692.6	1709.53	9697.5	1709.38	9709.5	1708.84
9714.5	1708.65	9729.2	1708.26	9733.9	1708.27	9742.4	1707.88	9750.6	1707.46
9753.9	1707.4	9762.9	1707.01	9773.4	1706.8	9777.5	1706.52	9790.7	1706.4
9793	1706.3	9808.1	1706.13	9819.1	1705.93	9831.3	1705.72	9836.1	1705.61
9846.4	1705.47	9859.3	1705.39	9861.1	1705.35	9874.7	1705.38	9894.1	1705.19
9894.2	1705.19	9895.2	1705.17	9895.6	1705.17	9896.4	1705.13	9916.1	1704.69
9922.5	1704.47	9927.2	1704.36	9927.4	1704.36	9942	1704.12	9942.2	1704.12
9946.2	1704	9958.5	1704	9958.6	1704	9959.9	1703.95	9973.7	1703.78
9975	1703.78	9987.6	1703.48	9997.6	1703.55	10002.6	1703.57	10005.8	1703.6
10007	1703.6	10017.4	1703.6	10019	1703.73	10019.3	1703.73	10019.5	1703.75
10019.9	1703.71	10021.8	1703.69	10033.3	1704.24	10036.7	1704.36	10039.2	1704.68
10042.5	1706.08	10047.7	1708.9	10047.8	1708.93	10053.1	1708.56	10055.5	1708.26
10060.1	1707.49	10060.3	1707.48	10061	1707.27	10064.1	1705.96	10065	1705.59
10065.5	1705.47	10068.3	1704.65	10069.1	1704.66	10071.1	1704.67	10076.6	1704.85
10081.1	1704.92	10103.3	1704.67	10106.8	1704.75	10133.1	1705.08	10154.7	1705.89
10163.1	1706.22	10165	1706.49	10170.1	1706.53	10204.3	1707.02	10205.1	1706.99
10236.4	1707.88	10240.7	1708.13	10243.4	1708.22	10245.2	1708.13	10274.8	1708.98
10277.6	1709.19	10284	1709.12	10307.5	1709.42	10317.5	1709.49	10330	1710.08
10340.2	1710.07	10350.7	1710.31	10358.5	1710.32	10382.5	1710.65	10385.8	1710.72

```
 10386.5 1710.72 10400.9 1711.01 10409.8 1711.02 10411.1 1711.17 10416.4
1711.06
 10440.9 1711.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9559.7    .078    9975     .05 10019.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9975 10019.5              145     145     145             .3
.5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9559.7  9971.5 1710.43       F
 10028.5 10440.9 1710.43       F

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1711.10  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1711.10  * Reach Len. (ft)         *  145.00
*  145.00  *  145.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       * 1480.77
*  334.30  * 1362.56  *
* E.G. Slope (ft/ft)      *0.000004  * Area (sq ft)            * 1480.77
*  334.30  * 1362.56  *
* Q Total (cfs)           *  364.00  * Flow (cfs)              *  157.95
*   80.46  *  125.59  *
* Top Width (ft)          *  790.09  * Top Width (ft)          *  342.89
*   44.50  *  402.70  *
* Vel Total (ft/s)        *    0.11  * Avg. Vel. (ft/s)        *    0.11
*    0.24  *    0.09  *
* Max Chl Dpth (ft)       *    7.62  * Hydr. Depth (ft)        *    4.32
*    7.51  *    3.38  *
* Conv. Total (cfs)       *172360.3  * Conv. (cfs)             * 74790.3
* 38101.5  * 59468.5  *
* Length Wtd. (ft)        *  145.00  * Wetted Per. (ft)        *  343.01
*   44.51  *  404.46  *
* Min Ch El (ft)          * 1703.48  * Shear (lb/sq ft)        *    0.00
*    0.00  *    0.00  *
* Alpha                   *    1.58  * Stream Power (lb/ft s) *    0.00
*    0.00  *    0.00  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *    4.38
*    2.90  *    3.89  *
* C & E Loss (ft)         *          * Cum SA (acres)          *    3.34
*    2.16  *    3.00  *
************************************************************************
***********************

Note:    The user has entered a known water surface elevation at this
cross section.

CULVERT


RIVER: NRW50B
```

REACH: NRW50B RS: 0.99

INPUT
Description: CL of New River Road; Top of culvert crossingApproximate Survey

Structure
Distance from Upstream XS = 24
Deck/Roadway Width = 120
Weir Coefficient = 3
Upstream Deck/Roadway Coordinates
num= 57

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9351.3	1712.77	1683.48	9367.1	1712.7	1683.48	9367.7	1712.68	1683.48
9370.8	1712.89	1683.48	9378.4	1712.84	1683.48	9420.2	1712.24	1683.48
9460.5	1712.04	1683.48	9507.9	1711.97	1683.48	9536	1711.76	1683.48
9543	1711.8	1683.48	9555.1	1711.74	1683.48	9579.3	1711.47	1683.48
9626.6	1711.29	1683.48	9633.7	1711.34	1683.48	9635.5	1711.33	1683.48
9673.1	1711.06	1683.48	9715	1710.97	1683.48	9716.4	1710.95	1683.48
9743.8	1710.79	1683.48	9751.7	1710.68	1683.48	9797	1710.65	1683.48
9798.9	1710.64	1683.48	9804.5	1710.63	1683.48	9826.5	1710.41	1683.48
9859.3	1710.46	1683.48	9872.5	1710.59	1683.48	9881.7	1710.61	1683.48
9897.8	1710.8	1683.48	9905.8	1710.48	1683.48	9910.1	1710.36	1683.48
9935.8	1710.47	1683.48	9999.7	1710.43	1683.48	10001.8	1710.45	1683.48
10002.7	1710.46	1683.48	10038.2	1710.43	1683.48	10040.2	1710.44	1683.48
10060.6	1710.38	1683.48	10151.8	1710.6	1683.48	10195.9	1710.33	1683.48
10207.2	1710.32	1683.48	10211.6	1710.34	1683.48	10238.1	1710.19	1683.48
10254	1710.25	1683.48	10263	1710.4	1683.48	10285.4	1710.93	1683.48
10286.8	1710.96	1683.48	10310.7	1711.22	1683.48	10311.6	1711.24	1683.48
10314.7	1711.25	1683.48	10330.2	1710.84	1683.48	10333	1710.84	1683.48
10360.5	1711.16	1683.48	10364.8	1711.15	1683.48	10367.3	1711.18	1683.48
10411.1	1711.17	1683.48	10416.4	1711.17	1683.48	10440.9	1711.16	1683.48

Upstream Bridge Cross Section Data
Station Elevation Data num= 111

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9559.7	1712.94	9563.2	1712.84	9565.8	1712.73	9577.9	1712.39	9589.6	1712.33
9599.9	1712.13	9607.5	1711.82	9634.5	1711.03	9649.5	1710.7	9658.3	1710.34
9678.7	1709.71	9682.9	1709.62	9692.6	1709.53	9697.5	1709.38	9709.5	1708.84
9714.5	1708.65	9729.2	1708.26	9733.9	1708.27	9742.4	1707.88	9750.6	1707.46
9753.9	1707.4	9762.9	1707.01	9773.4	1706.8	9777.5	1706.52	9790.7	1706.4
9793	1706.3	9808.1	1706.13	9819.1	1705.93	9831.3	1705.72	9836.1	1705.61
9846.4	1705.47	9859.3	1705.39	9861.1	1705.35	9874.7	1705.38	9894.1	1705.19
9894.2	1705.19	9895.2	1705.17	9895.6	1705.17	9896.4	1705.13	9916.1	1704.69
9922.5	1704.47	9927.2	1704.36	9927.4	1704.36	9942	1704.12	9942.2	1704.12
9946.2	1704	9958.5	1704	9958.6	1704	9959.9	1703.95	9973.7	1703.78
9975	1703.78	9987.6	1703.48	9997.6	1703.55	10002.6	1703.57	10005.8	1703.6

```
   10007  1703.6 10017.4  1703.6   10019 1703.73 10019.3 1703.73 10019.5
1703.75
 10019.9 1703.71 10021.8 1703.69 10033.3 1704.24 10036.7 1704.36 10039.2
1704.68
 10042.5 1706.08 10047.7  1708.9 10047.8 1708.93 10053.1 1708.56 10055.5
1708.26
 10060.1 1707.49 10060.3 1707.48   10061 1707.27 10064.1 1705.96   10065
1705.59
 10065.5 1705.47 10068.3 1704.65 10069.1 1704.66 10071.1 1704.67 10076.6
1704.85
 10081.1 1704.92 10103.3 1704.67 10106.8 1704.75 10133.1 1705.08 10154.7
1705.89
 10163.1 1706.22   10165 1706.49 10170.1 1706.53 10204.3 1707.02 10205.1
1706.99
 10236.4 1707.88 10240.7 1708.13 10243.4 1708.22 10245.2 1708.13 10274.8
1708.98
 10277.6 1709.19   10284 1709.12 10307.5 1709.42 10317.5 1709.49   10330
1710.08
 10340.2 1710.07 10350.7 1710.31 10358.5 1710.32 10382.5 1710.65 10385.8
1710.72
 10386.5 1710.72 10400.9 1711.01 10409.8 1711.02 10411.1 1711.17 10416.4
1711.06
 10440.9 1711.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9559.7    .078    9975     .05 10019.5    .078

Bank Sta: Left   Right    Coeff Contr.   Expan.
          9975 10019.5            .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  9559.7  9971.5 1710.43        F
 10028.5 10440.9 1710.43        F

Downstream  Deck/Roadway Coordinates
    num=      58
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*********************************************************************
  9351.3 1712.77 1682.88  9367.1  1712.7 1682.88  9367.7 1712.68 1682.88
  9370.8 1712.89 1682.88  9378.4 1712.84 1682.88  9420.2 1712.24 1682.88
  9460.5 1712.04 1682.88  9507.9 1711.97 1682.88    9536 1711.76 1682.88
    9543  1711.8 1682.88  9555.1 1711.74 1682.88  9579.3 1711.47 1682.88
  9626.6 1711.29 1682.88  9633.7 1711.34 1682.88  9635.5 1711.33 1682.88
  9673.1 1711.06 1682.88    9715 1710.97 1682.88  9716.4 1710.95 1682.88
  9743.8 1710.79 1682.88  9751.7 1710.68 1682.88    9797 1710.65 1682.88
  9798.9 1710.64 1682.88  9804.5 1710.63 1682.88  9826.5 1710.41 1682.88
  9859.3 1710.46 1682.88  9872.5 1710.59 1682.88  9881.7 1710.61 1682.88
  9897.8  1710.8 1682.88  9905.8 1710.48 1682.88  9910.1 1710.36 1682.88
  9935.8 1710.47 1682.88  9999.7 1710.43 1682.88 10001.8 1710.45 1682.88
 10002.7 1710.46 1682.88 10038.2 1710.43 1682.88 10040.2 1710.44 1682.88
 10060.6 1710.38 1682.88 10151.8  1710.6 1682.88 10195.9 1710.33 1682.88
 10207.2 1710.32 1682.88 10211.6 1710.34 1682.88 10238.1 1710.19 1682.88
   10254 1710.25 1682.88   10263  1710.4 1682.88 10285.4 1710.93 1682.88
 10286.8 1710.96 1682.88 10310.7 1711.22 1682.88 10311.6 1711.24 1682.88
 10314.7 1711.25 1682.88 10330.2 1710.84 1682.88   10333 1710.84 1682.88
 10360.5 1711.16 1682.88 10364.8 1711.15 1682.88 10367.3 1711.18 1682.88
 10411.1 1711.17 1682.88 10416.4 1711.06 1682.88 10440.9 1711.16 1682.88
 10451.6 1711.04 1682.88
```

Downstream Bridge Cross Section Data
Station Elevation Data num= 99

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9398.1	1710.82	9412.6	1710.58	9449.7	1710.37	9455.2	1710.37	9479.4	1710.04
9480.4	1710.03	9490	1709.86	9504.2	1709.26	9508.1	1709.14	9516.1	1709
9531	1709.11	9534.2	1709.23	9541.5	1709.69	9546.5	1709.87	9553.7	1710.31
9558	1710.39	9559.1	1710.45	9560	1710.45	9582.8	1710.59	9599.8	1710.54
9603.4	1710.55	9620.4	1710.46	9624.6	1710.37	9642.7	1710.6	9662.5	1710.43
9668	1710.22	9684.1	1709.49	9695.4	1709.28	9707.5	1709.25	9718.8	1708.68
9726.1	1708.53	9741	1708.07	9759.3	1707.38	9766.6	1707.2	9773.5	1707.07
9778.8	1706.95	9791.7	1706.3	9806.7	1705.82	9807.6	1705.79	9810.8	1705.31
9822.9	1704.72	9830.3	1704.53	9841.7	1704.1	9859.6	1702.57	9860	1702.54
9860.5	1702.51	9882.4	1701.95	9882.7	1701.94	9884.3	1701.9	9884.9	1701.88
9903.7	1701.42	9914.6	1701.44	9917.1	1701.53	9934.7	1701.6	9940.6	1701.7
9950.8	1701.7	9963	1701.44	9964.8	1701.52	9965.1	1701.53	9974.3	1701.99
9979.1	1701.44	9983.9	1701.26	9991.5	1700.87	9995.8	1700.8	10003.2	1701.3
10007.3	1701.56	10024.7	1701.46	10061.6	1702.1	10061.9	1702.11	10062.2	1702.11
10078.1	1702.66	10089.1	1703.27	10110.7	1703.27	10139.7	1703.81	10150.4	1704.34
10156	1704.51	10163.6	1704.65	10164.2	1704.66	10175.8	1705.04	10186.2	1705.44
10203.2	1705.97	10214.5	1706.05	10225.9	1706.22	10230	1706.75	10245.2	1706.99
10247.5	1707	10251.9	1707.14	10270.2	1707.4	10297.4	1708.14	10299.4	1708.17
10321.1	1709.12	10329.6	1709.09	10358.5	1709.95	10363	1710.12	10376.2	1710.23
10411.1	1711.17	10416.4	1711.06	10440.9	1711.16	10451.6	1711.04		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9398.1	.078	9974.3	.05	10007.3	.078

Bank Sta: Left	Right	Coeff Contr.	Expan.
9974.3	10007.3	.3	.5

Upstream Embankment side slope = 1 horiz. to 1.0 vertical
Downstream Embankment side slope = 1 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =
Elevation at which weir flow begins = 1710.43
Energy head used in spillway design =

```
Spillway height used in design                =
Weir crest shape                              = Broad Crested

Number of Culverts =  2

Culvert Name     Shape      Rise    Span
Culvert #1      Circular       4
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 2 - Mitered to conform to slope
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance
Loss Coef   Exit Loss Coef
                 24     120     .024     .024        0
.7                1
Upstream   Elevation =  1703.5
           Centerline Station =  9997.5
Downstream Elevation =  1700.8
           Centerline Station =  9997.5

Culvert Name     Shape      Rise    Span
Culvert #2      Circular       4
FHWA Chart # 2 - Corrugated Metal Pipe Culvert
FHWA Scale # 2 - Mitered to conform to slope
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance
Loss Coef   Exit Loss Coef
                 24     120     .024     .024        0
.7                1
Upstream   Elevation =  1703.5
           Centerline Station =  10002.5
Downstream Elevation =  1700.8
           Centerline Station =  10002.5

CULVERT OUTPUT  Profile #100-Year  Culv Group:  Culvert #1
***********************************************************************
*
* Q Culv Group (cfs)     *  118.11  * Culv Full Len (ft)     *
*
* # Barrels              *       1  * Culv Vel US (ft/s)     *    9.40
*
* Q Barrel (cfs)         *  118.11  * Culv Vel DS (ft/s)     *   10.73
*
* E.G. US. (ft)          * 1710.65  * Culv Inv El Up (ft)    * 1703.50
*
* W.S. US. (ft)          * 1711.10  * Culv Inv El Dn (ft)    * 1700.80
*
* E.G. DS (ft)           * 1702.48  * Culv Frctn Ls (ft)     *    3.83
*
* W.S. DS (ft)           * 1702.27  * Culv Exit Loss (ft)    *    3.39
*
* Delta EG (ft)          *    8.18  * Culv Entr Loss (ft)    *    0.96
*
* Delta WS (ft)          *    8.83  * Q Weir (cfs)           *  127.78
*
* E.G. IC (ft)           * 1710.65  * Weir Sta Lft (ft)      * 9798.90
*
* E.G. OC (ft)           * 1709.78  * Weir Sta Rgt (ft)      *10273.14
*
* Culvert Control        *   Inlet  * Weir Submerg           *    0.00
*
* Culv WS Inlet (ft)     * 1707.50  * Weir Max Depth (ft)    *    0.45
```

```
*
* Culv WS Outlet (ft)     * 1704.08  * Weir Avg Depth (ft)     *    0.20
*
* Culv Nml Depth (ft)     *    3.32  * Weir Flow Area (sq ft) *   90.12
*
* Culv Crt Depth (ft)     *    3.27  * Min El Weir Flow (ft)  * 1710.44
*
**********************************************************************
*
```

Note: The user has entered known energy, a known water surface, or a change in water surface.
Therefore, no hydraulic properties were computed through the culvert.

CULVERT OUTPUT Profile #100-Year Culv Group: Culvert #2

```
**********************************************************************
*
* Q Culv Group (cfs)      *  118.11  * Culv Full Len (ft)      *
*
* # Barrels               *       1  * Culv Vel US (ft/s)      *    9.40
*
* Q Barrel (cfs)          *  118.11  * Culv Vel DS (ft/s)      *   10.73
*
* E.G. US. (ft)           * 1710.65  * Culv Inv El Up (ft)     * 1703.50
*
* W.S. US. (ft)           * 1711.10  * Culv Inv El Dn (ft)     * 1700.80
*
* E.G. DS (ft)            * 1702.48  * Culv Frctn Ls (ft)      *    3.83
*
* W.S. DS (ft)            * 1702.27  * Culv Exit Loss (ft)     *    3.39
*
* Delta EG (ft)           *    8.18  * Culv Entr Loss (ft)     *    0.96
*
* Delta WS (ft)           *    8.83  * Q Weir (cfs)            *  127.78
*
* E.G. IC (ft)            * 1710.65  * Weir Sta Lft (ft)       * 9798.90
*
* E.G. OC (ft)            * 1709.78  * Weir Sta Rgt (ft)       *10273.14
*
* Culvert Control         *   Inlet  * Weir Submerg            *    0.00
*
* Culv WS Inlet (ft)      * 1707.50  * Weir Max Depth (ft)     *    0.45
*
* Culv WS Outlet (ft)     * 1704.08  * Weir Avg Depth (ft)     *    0.20
*
* Culv Nml Depth (ft)     *    3.32  * Weir Flow Area (sq ft) *   90.12
*
* Culv Crt Depth (ft)     *    3.27  * Min El Weir Flow (ft)  * 1710.44
*
**********************************************************************
*
```

Note: The user has entered known energy, a known water surface, or a change in water surface.
Therefore, no hydraulic properties were computed through the culvert.

CROSS SECTION

```
RIVER: NRW50B
REACH: NRW50B              RS: 0.98

INPUT
Description: D.S. of 2 - 48" CMP's
Station Elevation Data    num=      95
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9398.1 1710.82  9412.6 1710.58  9449.7 1710.37  9455.2 1710.37  9479.4
1710.04
  9480.4 1710.03    9490 1709.86  9504.2 1709.26  9508.1 1709.14  9516.1
1709
    9531 1709.11  9534.2 1709.23  9541.5 1709.69  9546.5 1709.87  9553.7
1710.31
    9558 1710.39  9559.1 1710.45    9560 1710.45  9582.8 1710.59  9599.8
1710.54
  9603.4 1710.55  9620.4 1710.46  9624.6 1710.37  9642.7  1710.6  9662.5
1710.43
    9668 1710.22  9684.1 1709.49  9695.4 1709.28  9707.5 1709.25  9718.8
1708.68
  9726.1 1708.53    9741 1708.07  9759.3 1707.38  9766.6  1707.2  9773.5
1707.07
  9778.8 1706.95  9791.7  1706.3  9806.7 1705.82  9807.6 1705.79  9810.8
1705.31
  9822.9 1704.72  9830.3 1704.53  9841.7  1704.1  9859.6 1702.57    9860
1702.54
  9860.5 1702.51  9882.4 1701.95  9882.7 1701.94  9884.3  1701.9  9884.9
1701.88
  9903.7 1701.42  9914.6 1701.44  9917.1 1701.53  9934.7  1701.6  9940.6
1701.7
  9950.8  1701.7    9963 1701.44  9964.8 1701.52  9965.1 1701.53  9974.3
1701.99
  9979.1 1701.44  9983.9 1701.26  9991.5 1700.87  9995.8  1700.8 10003.2
1701.3
 10007.3 1701.56 10024.7 1701.46 10061.6  1702.1 10061.9 1702.11 10062.2
1702.11
 10078.1 1702.66 10089.1 1703.27 10110.7 1703.27 10139.7 1703.81 10150.4
1704.34
   10156 1704.51 10163.6 1704.65 10164.2 1704.66 10175.8 1705.04 10186.2
1705.44
 10203.2 1705.97 10214.5 1706.05 10225.9 1706.22   10230 1706.75 10245.2
1706.99
 10247.5    1707 10251.9 1707.14 10270.2  1707.4 10297.4 1708.14 10299.4
1708.17
 10321.1 1709.12 10329.6 1709.09 10358.5 1709.95   10363 1710.12 10376.2
1710.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9398.1    .078  9974.3     .05 10007.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.3 10007.3              300     300     300             .3
.5

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
```

```
***********************
* E.G. Elev (ft)          * 1702.48  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1702.27  * Reach Len. (ft)         *  300.00
*  300.00  *  300.00  *
* Crit W.S. (ft)          * 1702.18  * Flow Area (sq ft)       *   62.50
*   34.90  *   31.82  *
* E.G. Slope (ft/ft)      *0.024622  * Area (sq ft)            *   62.50
*   34.90  *   31.82  *
* Q Total (cfs)           *  364.00  * Flow (cfs)              *  132.64
*  168.73  *   62.62  *
* Top Width (ft)          *  196.99  * Top Width (ft)          *  104.44
*   33.00  *   59.55  *
* Vel Total (ft/s)        *    2.82  * Avg. Vel. (ft/s)        *    2.12
*    4.83  *    1.97  *
* Max Chl Dpth (ft)       *    1.47  * Hydr. Depth (ft)        *    0.60
*    1.06  *    0.53  *
* Conv. Total (cfs)       *  2319.7  * Conv. (cfs)             *   845.3
*  1075.3  *   399.1  *
* Length Wtd. (ft)        *  300.00  * Wetted Per. (ft)        *  104.47
*   33.07  *   59.56  *
* Min Ch El (ft)          * 1700.80  * Shear (lb/sq ft)        *    0.92
*    1.62  *    0.82  *
* Alpha                   *    1.66  * Stream Power (lb/ft s) *    1.95
*    7.84  *    1.62  *
* Frctn Loss (ft)         *    3.93  * Cum Volume (acre-ft)    *    1.81
*    2.29  *    1.57  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    2.59
*    2.03  *    2.23  *
*************************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW50B
REACH: NRW50B RS: 0.92

INPUT
Description:
Station Elevation Data num= 30

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9754 1702.27  9760.8 1701.76  9776.1 1701.29  9790.8 1700.63  9820.5
1700.15
  9822.6 1700.09    9840 1699.08  9857.4 1698.23  9857.7 1698.21  9858.7
1698.19
  9890.8 1698.64  9899.9 1698.35  9919.2 1697.94  9952.8 1697.82  9953.6
1697.81
```

```
  9954.4 1697.79  9973.6 1697.02    9991 1696.99  9991.5    1697  9992.1
1697.01
 10005.9  1697.4 10008.9 1696.94 10011.1 1696.63 10012.6 1696.93   10016
1697.2
 10028.2 1697.45 10050.1  1697.6 10063.2 1697.28 10103.6  1699.3 10187.4
1702.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**************************************************
    9754    .078  9952.8     .05 10028.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9952.8 10028.2              301     301     301             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1698.49  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1698.38  * Reach Len. (ft)         *  301.00
*  301.00  *  301.00  *
* Crit W.S. (ft)          * 1698.01  * Flow Area (sq ft)       *   23.32
*   88.40  *   43.31  *
* E.G. Slope (ft/ft)      *0.007865  * Area (sq ft)            *   23.32
*   88.40  *   43.31  *
* Q Total (cfs)           *  340.00  * Flow (cfs)              *   20.35
*  258.79  *   60.87  *
* Top Width (ft)          *  204.60  * Top Width (ft)          *   72.14
*   75.40  *   57.06  *
* Vel Total (ft/s)        *    2.19  * Avg. Vel. (ft/s)        *    0.87
*    2.93  *    1.41  *
* Max Chl Dpth (ft)       *    1.75  * Hydr. Depth (ft)        *    0.32
*    1.17  *    0.76  *
* Conv. Total (cfs)       *  3833.9  * Conv. (cfs)             *   229.5
*  2918.1  *   686.3  *
* Length Wtd. (ft)        *  301.00  * Wetted Per. (ft)        *   72.16
*   75.52  *   57.09  *
* Min Ch El (ft)          * 1696.63  * Shear (lb/sq ft)        *    0.16
*    0.57  *    0.37  *
* Alpha                   *    1.44  * Stream Power (lb/ft s) *    0.14
*    1.68  *    0.52  *
* Frctn Loss (ft)         *    3.56  * Cum Volume (acre-ft)    *    1.52
*    1.86  *    1.31  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.99
*    1.66  *    1.83  *
**************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW50B
REACH: NRW50B RS: 0.87

INPUT
Description: Section lines 23 & 26 of T6NR1E
Station Elevation Data num= 27

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
    9806 1698.45  9818.4 1698.09  9839.2 1697.31  9839.8  1697.3  9840.5
1697.27
  9841.1 1697.21  9842.8 1697.21  9880.9  1695.7    9882 1695.68  9888.6
1695.49
  9904.7 1695.14  9913.5 1694.63  9923.4 1694.46  9957.2 1694.95  9961.1
1694.75
  9981.5 1693.94  9982.3 1693.85  9984.2  1693.9  9995.9 1693.95 10009.9
1694.02
 10040.1 1693.98 10074.1 1693.52 10075.2 1693.53 10077.3 1693.62 10101.8
1695.22
 10128.4 1695.98 10180.8 1697.84
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9806    .078  9957.2     .05 10101.8    .078
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9957.2 10101.8              264     264     264             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1694.91  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.078
*   0.050  *          *
* W.S. Elev (ft)          * 1694.73  * Reach Len. (ft)         *  264.00
*  264.00  *  264.00  *
* Crit W.S. (ft)          * 1694.56  * Flow Area (sq ft)       *    4.37
*   98.29  *          *
* E.G. Slope (ft/ft)      *0.019828  * Area (sq ft)            *    4.37
*   98.29  *          *
* Q Total (cfs)           *  340.00  * Flow (cfs)              *    3.24
*  336.76  *          *
* Top Width (ft)          *  162.70  * Top Width (ft)          *   30.08
*  132.61  *          *
* Vel Total (ft/s)        *    3.31  * Avg. Vel. (ft/s)        *    0.74
*    3.43  *          *
* Max Chl Dpth (ft)       *    1.21  * Hydr. Depth (ft)        *    0.15
*    0.74  *          *
* Conv. Total (cfs)       *  2414.6  * Conv. (cfs)             *    23.0
*  2391.5  *          *
* Length Wtd. (ft)        *  264.00  * Wetted Per. (ft)        *   30.09
*  132.68  *          *
```

```
* Min Ch El (ft)          * 1693.52  * Shear (lb/sq ft)        *    0.18
*    0.92  *          *
* Alpha                   *    1.06  * Stream Power (lb/ft s) *    0.13
*    3.14  *          *
* Frctn Loss (ft)         *    4.20  * Cum Volume (acre-ft)    *    1.42
*    1.22  *    1.16  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    1.63
*    0.94  *    1.63  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B             RS: 0.82

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9824.7 1694.76  9857.7 1693.34  9891.6 1691.79  9897.9 1691.38  9915.2
1690.33
  9933.8  1689.6    9942 1688.69  9942.8 1688.58  9943.2 1688.64  9945.8
1689.88
  9948.1 1689.88  9956.5 1689.77  9965.3 1689.78  9976.2 1689.31  9977.9
1689.22
  9980.3  1689.2  9986.1  1689.2  9989.7 1689.03  9992.7 1688.97  9997.4
1689.19
  9997.6 1689.14 10000.6 1688.25 10009.8 1689.16 10019.4 1689.52 10079.9
1691
 10111.7 1692.53 10163.6 1694.72

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9824.7    .078  9997.4     .05 10009.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9997.4 10009.8              231     231     231             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1690.71  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1690.53  * Reach Len. (ft)         *  231.00
*  231.00  *  231.00  *
* Crit W.S. (ft)          * 1690.27  * Flow Area (sq ft)       *   82.40
```

```
*   22.61  *   32.44  *
* E.G. Slope (ft/ft)     *0.013050  * Area (sq ft)           *   82.40
*   22.61  *   32.44  *
* Q Total (cfs)          *  340.00  * Flow (cfs)             *  174.35
*  113.46  *   52.19  *
* Top Width (ft)         *  148.97  * Top Width (ft)         *   85.55
*   12.40  *   51.02  *
* Vel Total (ft/s)       *    2.47  * Avg. Vel. (ft/s)       *    2.12
*    5.02  *    1.61  *
* Max Chl Dpth (ft)      *    2.28  * Hydr. Depth (ft)       *    0.96
*    1.82  *    0.64  *
* Conv. Total (cfs)      *  2976.3  * Conv. (cfs)            *  1526.3
*   993.2  *   456.9  *
* Length Wtd. (ft)       *  231.00  * Wetted Per. (ft)       *   85.94
*   12.58  *   51.04  *
* Min Ch El (ft)         * 1688.25  * Shear (lb/sq ft)       *    0.78
*    1.46  *    0.52  *
* Alpha                  *    1.81  * Stream Power (lb/ft s) *    1.65
*    7.35  *    0.83  *
* Frctn Loss (ft)        *    2.74  * Cum Volume (acre-ft)   *    1.16
*    0.85  *    1.06  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    1.28
*    0.50  *    1.48  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B             RS: 0.77

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9800.3  1691.9  9834.4 1690.93  9856.1 1690.17  9866.5  1689.9  9902.6
1688.74
  9930.7 1688.01  9950.3 1687.97  9966.4  1687.8  9990.2 1686.69  9999.1
1685.03
 10000.2 1684.82 10000.7  1684.7 10001.4 1684.95 10007.6    1687 10015.2
1686.77
 10042.1 1686.58 10065.4 1686.66 10081.8 1687.14 10087.9 1687.27 10089.1
1687.37
 10091.2 1687.47 10123.3 1689.65 10172.7 1692.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9800.3    .078  9990.2     .05 10007.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.2 10007.6              298     298     298             .1
```

.3

CROSS SECTION OUTPUT Profile #100-Year

```
************************************************************************
************************
* E.G. Elev (ft)          * 1687.97  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1687.77  * Reach Len. (ft)         *  298.00
*  298.00  *  298.00  *
* Crit W.S. (ft)          * 1687.52  * Flow Area (sq ft)       *   12.46
*   34.79  *   82.47  *
* E.G. Slope (ft/ft)      *0.010823  * Area (sq ft)            *   12.46
*   34.79  *   82.47  *
* Q Total (cfs)           *  340.00  * Flow (cfs)              *   16.35
*  167.16  *  156.49  *
* Top Width (ft)          *  128.51  * Top Width (ft)          *   23.12
*   17.40  *   87.99  *
* Vel Total (ft/s)        *    2.62  * Avg. Vel. (ft/s)        *    1.31
*    4.80  *    1.90  *
* Max Chl Dpth (ft)       *    3.07  * Hydr. Depth (ft)        *    0.54
*    2.00  *    0.94  *
* Conv. Total (cfs)       *  3268.2  * Conv. (cfs)             *   157.2
*  1606.8  *  1504.3  *
* Length Wtd. (ft)        *  298.00  * Wetted Per. (ft)        *   23.14
*   17.96  *   88.02  *
* Min Ch El (ft)          * 1684.70  * Shear (lb/sq ft)        *    0.36
*    1.31  *    0.63  *
* Alpha                   *    1.91  * Stream Power (lb/ft s) *    0.48
*    6.29  *    1.20  *
* Frctn Loss (ft)         *    4.15  * Cum Volume (acre-ft)    *    0.91
*    0.70  *    0.76  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.99
*    0.42  *    1.11  *
************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW50B
REACH: NRW50B RS: 0.72

INPUT
Description:
Station Elevation Data num= 31

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9803.9 1688.03  9826.9 1686.87  9850.9 1686.09  9858.9 1685.74  9867.1
1685.45
  9878.2 1684.95  9878.9 1684.91  9879.3 1684.91  9892.5  1684.7  9905.4
1684.3
  9924.5 1683.56  9933.6 1683.14  9947.2 1682.75  9959.9 1682.56    9974
1682.57
```

```
  9989.2 1682.51  9998.2 1681.53 10000.8 1681.38 10010.2 1682.28 10013.7
1682.69
 10014.8 1682.65 10018.3 1682.47 10019.1 1682.53 10023.1 1682.63 10037.4
1683.84
 10053.3 1684.99 10074.6 1686.06 10083.1 1686.68 10095.8 1687.51   10117
1688.34
 10131.3 1688.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9803.9    .078  9989.2     .05 10013.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.2 10013.7              305     305     305             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1683.83  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.31  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1683.52  * Reach Len. (ft)         *  305.00
*  305.00  *  305.00  *
* Crit W.S. (ft)          * 1683.39  * Flow Area (sq ft)       *   48.55
*   38.31  *   13.49  *
* E.G. Slope (ft/ft)      *0.018534  * Area (sq ft)            *   48.55
*   38.31  *   13.49  *
* Q Total (cfs)           *  340.00  * Flow (cfs)              *  104.95
*  208.07  *   26.98  *
* Top Width (ft)          *  108.15  * Top Width (ft)          *   63.77
*   24.50  *   19.88  *
* Vel Total (ft/s)        *    3.39  * Avg. Vel. (ft/s)        *    2.16
*    5.43  *    2.00  *
* Max Chl Dpth (ft)       *    2.14  * Hydr. Depth (ft)        *    0.76
*    1.56  *    0.68  *
* Conv. Total (cfs)       *  2497.4  * Conv. (cfs)             *   770.9
*  1528.3  *   198.2  *
* Length Wtd. (ft)        *  305.00  * Wetted Per. (ft)        *   63.79
*   24.62  *   19.93  *
* Min Ch El (ft)          * 1681.38  * Shear (lb/sq ft)        *    0.88
*    1.80  *    0.78  *
* Alpha                   *    1.73  * Stream Power (lb/ft s) *    1.90
*    9.78  *    1.57  *
* Frctn Loss (ft)         *    3.57  * Cum Volume (acre-ft)    *    0.70
*    0.45  *    0.43  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    0.70
*    0.28  *    0.74  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW50B
REACH: NRW50B RS: 0.66

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9848	1684.57	9851.7	1684.35	9886.1	1682.21	9892.4	1681.86	9933.5	1679.67
9942.2	1679.54	9942.8	1679.52	9953.6	1678.73	9956.8	1678.63	9964.9	1678.55
9974	1678.52	9979.9	1678.49	9991.2	1678.21	9995.6	1678.15	9995.9	1678.07
10001.1	1677.44	10006.4	1678.25	10009.2	1678.9	10023.6	1679.14	10046.5	1679.32
10058.5	1679.49	10086.1	1679.96	10090.5	1680.02	10093	1680.07	10100	1680.22
10121.3	1680.88	10124.3	1680.97	10152.1	1681.86	10154.8	1681.98		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9848	.078	9995.6	.05	10006.4	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9995.6	10006.4	244	244	244	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1680.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.	0.078	0.050	0.078
W.S. Elev (ft)	1680.06	Reach Len. (ft)	244.00	244.00	244.00
Crit W.S. (ft)		Flow Area (sq ft)	82.67	24.30	55.47
E.G. Slope (ft/ft)	0.008053	Area (sq ft)	82.67	24.30	55.47
Q Total (cfs)	340.00	Flow (cfs)	158.76	110.50	70.74
Top Width (ft)	166.22	Top Width (ft)	69.39	10.80	86.03
Vel Total (ft/s)	2.09	Avg. Vel. (ft/s)	1.92	4.55	1.28
Max Chl Dpth (ft)	2.62	Hydr. Depth (ft)	1.19	2.25	0.64
Conv. Total (cfs)	3788.8	Conv. (cfs)	1769.2	1231.3	788.3
Length Wtd. (ft)	244.00	Wetted Per. (ft)	69.44	10.91	86.11

```
* Min Ch El (ft)          * 1677.44  * Shear (lb/sq ft)        *    0.60
*    1.12  *    0.32  *
* Alpha                   *    2.00  * Stream Power (lb/ft s) *    1.15
*    5.09  *    0.41  *
* Frctn Loss (ft)         *    3.22  * Cum Volume (acre-ft)   *    0.24
*    0.23  *    0.19  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)         *    0.23
*    0.15  *    0.37  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50B
REACH: NRW50B             RS: 0.61

INPUT
Description: U.S. of Confluence with NRW50T5
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9799.8 1682.34  9835.9 1680.85  9845.9 1680.38  9902.4 1678.19  9931.9
1677.65
    9957 1677.07  9979.5 1676.27  9986.7 1675.96  9991.2 1675.43   10001
1674
 10010.1 1675.07 10010.9  1675.2 10016.8 1675.41 10030.8 1676.05 10044.4
1676.07
 10060.8 1676.35   10064 1676.28 10083.7 1676.58 10084.8 1676.61 10110.1
1676.99
   10146 1677.81 10176.1 1678.69 10180.8 1678.85 10221.6 1680.05 10253.6
1681.1
 10283.9 1681.98 10287.6 1682.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9799.8    .078  9986.7     .05 10030.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.7 10030.8              179     179     179             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1676.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.46  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
```

```
* W.S. Elev (ft)          * 1676.48  * Reach Len. (ft)        *
*          *          *
* Crit W.S. (ft)          * 1676.48  * Flow Area (sq ft)      *    3.28
*   57.15  *   12.11  *
* E.G. Slope (ft/ft)      *0.025458  * Area (sq ft)           *    3.28
*   57.15  *   12.11  *
* Q Total (cfs)           *  340.00  * Flow (cfs)             *    3.95
*  321.05  *   15.00  *
* Top Width (ft)          *  103.79  * Top Width (ft)         *   13.18
*   44.10  *   46.51  *
* Vel Total (ft/s)        *    4.69  * Avg. Vel. (ft/s)       *    1.20
*    5.62  *    1.24  *
* Max Chl Dpth (ft)       *    2.48  * Hydr. Depth (ft)       *    0.25
*    1.30  *    0.26  *
* Conv. Total (cfs)       *  2130.9  * Conv. (cfs)            *    24.7
*  2012.2  *    94.0  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)       *   13.19
*   44.33  *   46.51  *
* Min Ch El (ft)          * 1674.00  * Shear (lb/sq ft)       *    0.40
*    2.05  *    0.41  *
* Alpha                   *    1.36  * Stream Power (lb/ft s) *    0.48
*   11.51  *    0.51  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)   *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)         *
*          *          *
*************************************************************************
************************

Warning: User specified water surface is not possible for the specified
flow regime. The program used
         critical depth as the starting water surface.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.84

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9673.6 1732.76  9674.2 1732.74  9677.6 1732.64  9687.4 1732.44  9698.9
1732.77
  9703.1 1732.94  9724.1 1732.63  9725.4 1732.58    9816 1731.71  9856.7
1730.88
  9889.7  1729.9  9915.2 1730.12  9919.9 1730.32  9923.7 1730.27  9931.3
1730.35
  9935.3 1729.83  9938.7  1729.4  9956.1  1729.8  9985.9 1729.11  9997.1
1728.7
 10015.2 1728.96 10042.3 1729.41 10054.8 1729.69 10132.8 1731.32 10155.5
1731.67
 10235.6 1731.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
```

```
  9673.6    .076  9956.1    .046 10042.3    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9956.1 10042.3              365     365     365             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1730.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1730.14  * Reach Len. (ft)         *  365.00
*  365.00  *  365.00  *
* Crit W.S. (ft)          * 1729.81  * Flow Area (sq ft)       *   15.55
*   83.41  *   12.05  *
* E.G. Slope (ft/ft)      *0.007483  * Area (sq ft)            *   15.55
*   83.41  *   12.05  *
* Q Total (cfs)           *  252.00  * Flow (cfs)              *   13.78
*  227.97  *   10.25  *
* Top Width (ft)          *  176.91  * Top Width (ft)          *   56.91
*   86.20  *   33.80  *
* Vel Total (ft/s)        *    2.27  * Avg. Vel. (ft/s)        *    0.89
*    2.73  *    0.85  *
* Max Chl Dpth (ft)       *    1.44  * Hydr. Depth (ft)        *    0.27
*    0.97  *    0.36  *
* Conv. Total (cfs)       *  2913.1  * Conv. (cfs)             *   159.3
*  2635.3  *   118.5  *
* Length Wtd. (ft)        *  365.00  * Wetted Per. (ft)        *   56.97
*   86.22  *   33.81  *
* Min Ch El (ft)          * 1728.70  * Shear (lb/sq ft)        *    0.13
*    0.45  *    0.17  *
* Alpha                   *    1.33  * Stream Power (lb/ft s) *    0.11
*    1.24  *    0.14  *
* Frctn Loss (ft)         *    3.91  * Cum Volume (acre-ft)    *    2.92
*    5.98  *    1.56  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    6.20
*    6.97  *    3.62  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.77

INPUT
Description: East Section 22 Line of T6NR1E
Station Elevation Data    num=      20
```

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta
Elev
***************************************************************************
********
  9814.5 1727.51  9831.1 1727.63  9897.4 1726.39  9923.5 1726.14    9925
1726.23
  9931.4 1725.99  9932.9 1725.95  9942.1 1725.78    9944 1725.79  9958.6
1725.95
  9983.6 1724.71  9983.9  1724.7  9984.2  1724.7 10005.3 1724.99 10136.2
1727.76
 10174.3 1728.17   10219 1728.31 10240.4 1728.26 10250.6 1728.29 10257.8
1728.26

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  9814.5    .076  9958.6    .046 10005.3    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9958.6 10005.3               378     378     378             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1726.33  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.22  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1726.11  * Reach Len. (ft)         *  378.00
*  378.00  *  378.00  *
* Crit W.S. (ft)          * 1725.96  * Flow Area (sq ft)       *    6.68
*   46.89  *   29.48  *
* E.G. Slope (ft/ft)      *0.016585  * Area (sq ft)            *    6.68
*   46.89  *   29.48  *
* Q Total (cfs)           *  252.00  * Flow (cfs)              *    6.14
*  195.53  *   50.33  *
* Top Width (ft)          *  129.80  * Top Width (ft)          *   30.32
*   46.70  *   52.78  *
* Vel Total (ft/s)        *    3.03  * Avg. Vel. (ft/s)        *    0.92
*    4.17  *    1.71  *
* Max Chl Dpth (ft)       *    1.41  * Hydr. Depth (ft)        *    0.22
*    1.00  *    0.56  *
* Conv. Total (cfs)       *  1956.8  * Conv. (cfs)             *    47.7
*  1518.3  *   390.8  *
* Length Wtd. (ft)        *  378.00  * Wetted Per. (ft)        *   30.32
*   46.73  *   52.79  *
* Min Ch El (ft)          * 1724.70  * Shear (lb/sq ft)        *    0.23
*    1.04  *    0.58  *
* Alpha                   *    1.53  * Stream Power (lb/ft s) *    0.21
*    4.33  *    0.99  *
* Frctn Loss (ft)         *    4.65  * Cum Volume (acre-ft)    *    2.83
*    5.43  *    1.38  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    5.84
*    6.41  *    3.26  *
***************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW50T5
REACH: NRW50T5 RS: 0.70

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9830.1	1722.55	9831.3	1722.56	9832.8	1722.62	9846.3	1722.67	9863	1721.89
9878.7	1721.04	9921.2	1720.94	9930	1720.85	9950.3	1720.5	9953.2	1720.35
9961.6	1719.84	9964.8	1720.62	9975.1	1721.3	9984.6	1721.36	9992	1720.39
9999.8	1719.43	10014.7	1720.65	10027.3	1721.61	10075.2	1722.05	10091.1	1722.3
10115.7	1722.5	10218.5	1723.69	10354.2	1724.07				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9830.1	.076	9984.6	.046	10027.3	.076

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.6	10027.3	396	396	396	.1	.3

CROSS SECTION OUTPUT Profile #100-Year

E.G. Elev (ft)	1721.63	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.	0.076	0.046	
W.S. Elev (ft)	1721.52	Reach Len. (ft)	396.00	396.00	396.00
Crit W.S. (ft)	1721.24	Flow Area (sq ft)	74.41	44.44	
E.G. Slope (ft/ft)	0.009503	Area (sq ft)	74.41	44.44	
Q Total (cfs)	252.00	Flow (cfs)	106.11	145.89	
Top Width (ft)	156.35	Top Width (ft)	114.81	41.55	
Vel Total (ft/s)	2.12	Avg. Vel. (ft/s)	1.43	3.28	
Max Chl Dpth (ft)	2.09	Hydr. Depth (ft)	0.65	1.07	
Conv. Total (cfs)	2585.1	Conv. (cfs)	1088.6	1496.6	
Length Wtd. (ft)	396.00	Wetted Per. (ft)	114.96	41.75	
Min Ch El (ft)	1719.43	Shear (lb/sq ft)	0.38		

```
*    0.63  *          *
* Alpha                   *    1.58  * Stream Power (lb/ft s) *    0.55
*    2.07  *          *
* Frctn Loss (ft)         *    4.57  * Cum Volume (acre-ft)   *    2.47
*    5.04  *    1.26  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *    5.21
*    6.03  *    3.03  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.62

INPUT
Description:
Station Elevation Data    num=      53
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9542.4 1721.79  9550.8 1721.77  9564.6 1721.55  9579.1  1721.5  9592.4
1721.18
  9602.8 1721.05  9605.5 1720.73  9607.6 1720.33  9622.4 1720.19  9635.6
1719.8
  9648.8  1719.6  9655.1 1719.42  9667.2 1718.88  9694.3 1718.16  9716.4
1717.81
  9740.4 1717.14  9765.8  1716.7  9770.4 1716.67  9781.7 1716.45  9791.2
1716.4
  9809.8  1716.4  9813.3 1716.46  9821.5 1716.76  9870.2  1716.9  9908.1
1716.59
  9908.8 1716.61  9949.2  1716.8  9979.7 1716.21  9982.7 1716.12  9985.7
1716.12
 10006.1 1715.72 10007.1 1715.69 10009.9 1715.76 10011.4 1715.78 10049.3
1716.88
 10051.6 1717.02   10056 1717.22 10122.4 1719.74 10136.1 1719.86 10139.8
1719.92
 10146.1 1720.09 10192.6 1720.24 10211.3 1720.15   10231 1720.16 10234.2
1720.14
   10242 1720.13 10249.2 1720.27 10279.5 1720.46 10281.6 1720.36 10291.2
1720.41
 10328.4 1720.33 10330.1 1720.56 10334.9 1720.54

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9542.4    .076  9949.2    .046 10049.3    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9949.2 10049.3              177     177     177             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
```

```
************************
* E.G. Elev (ft)          * 1717.06  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1716.94  * Reach Len. (ft)         *  177.00
*  177.00  *  177.00  *
* Crit W.S. (ft)          * 1716.81  * Flow Area (sq ft)       *   49.43
*   68.57  *    0.03  *
* E.G. Slope (ft/ft)      *0.014330  * Area (sq ft)            *   49.43
*   68.57  *    0.03  *
* Q Total (cfs)           *  252.00  * Flow (cfs)              *   45.97
*  206.02  *    0.01  *
* Top Width (ft)          *  298.49  * Top Width (ft)          *  197.37
*  100.10  *    1.02  *
* Vel Total (ft/s)        *    2.13  * Avg. Vel. (ft/s)        *    0.93
*    3.00  *    0.23  *
* Max Chl Dpth (ft)       *    1.25  * Hydr. Depth (ft)        *    0.25
*    0.69  *    0.03  *
* Conv. Total (cfs)       *  2105.1  * Conv. (cfs)             *   384.0
*  1721.0  *     0.1  *
* Length Wtd. (ft)        *  177.00  * Wetted Per. (ft)        *  197.38
*  100.13  *    1.02  *
* Min Ch El (ft)          * 1715.69  * Shear (lb/sq ft)        *    0.22
*    0.61  *    0.03  *
* Alpha                   *    1.65  * Stream Power (lb/ft s) *    0.21
*    1.84  *    0.01  *
* Frctn Loss (ft)         *    2.24  * Cum Volume (acre-ft)    *    1.91
*    4.52  *    1.26  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.79
*    5.39  *    3.03  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW50T5
REACH: NRW50T5 RS: 0.59

INPUT
Description:
Station Elevation Data num= 46

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9649.8 1717.16  9653.3 1717.11  9653.7  1717.1  9695.4  1716.4  9695.7
1716.4
  9695.9 1716.39  9716.9 1716.04  9739.1 1715.57  9759.3 1715.18  9780.5
1714.88
  9782.4 1714.84  9805.9 1714.28  9808.8 1713.88  9812.4 1713.55    9815
1713.84
  9818.2 1714.23  9826.6 1714.19  9844.2 1714.32  9868.4 1714.37  9904.3
1714.53
  9907.8 1714.56    9912 1714.43    9935 1714.02  9954.6 1714.05  9957.5
1714.08
```

```
  9958.1  1714.1  9983.8 1713.71  9990.1 1713.41 10004.8 1713.82 10022.1
1714.29
 10038.1 1714.68 10056.4 1715.18 10071.3 1715.49 10113.1 1716.47   10120
1716.62
 10126.2  1716.8 10157.2 1717.58 10169.4 1717.66 10196.6 1717.91 10204.9
1718.04
 10213.4 1718.14 10226.1 1718.32 10238.4 1718.37 10256.5  1718.5 10268.5
1718.61
 10325.6 1718.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9649.8    .076  9958.1    .046 10022.1    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9958.1 10022.1              267     267     267             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1714.80  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1714.70  * Reach Len. (ft)         *  267.00
*  267.00  *  267.00  *
* Crit W.S. (ft)          * 1714.52  * Flow Area (sq ft)       *   70.41
*   54.55  *    3.40  *
* E.G. Slope (ft/ft)      *0.011286  * Area (sq ft)            *   70.41
*   54.55  *    3.40  *
* Q Total (cfs)           *  252.00  * Flow (cfs)              *   81.31
*  168.24  *    2.45  *
* Top Width (ft)          *  250.34  * Top Width (ft)          *  169.71
*   64.00  *   16.63  *
* Vel Total (ft/s)        *    1.96  * Avg. Vel. (ft/s)        *    1.15
*    3.08  *    0.72  *
* Max Chl Dpth (ft)       *    1.29  * Hydr. Depth (ft)        *    0.41
*    0.85  *    0.20  *
* Conv. Total (cfs)       *  2372.1  * Conv. (cfs)             *   765.4
*  1583.6  *    23.1  *
* Length Wtd. (ft)        *  267.00  * Wetted Per. (ft)        *  169.80
*   64.02  *   16.63  *
* Min Ch El (ft)          * 1713.41  * Shear (lb/sq ft)        *    0.29
*    0.60  *    0.14  *
* Alpha                   *    1.76  * Stream Power (lb/ft s) *    0.34
*    1.85  *    0.10  *
* Frctn Loss (ft)         *    3.52  * Cum Volume (acre-ft)    *    1.67
*    4.27  *    1.25  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.04
*    5.05  *    2.99  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW50T5
REACH: NRW50T5            RS: 0.54

INPUT
Description: Section lines 23 & 26 of T6NR1E
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9710.2 1714.23  9710.5 1714.21  9711.2 1714.19  9741.4  1713.5  9751.7
1713.23
  9766.2 1713.12  9837.3 1711.76  9851.2 1711.57  9858.8 1711.44  9872.1
1711.32
  9888.6 1711.26    9895 1710.55  9899.9 1710.16  9916.8  1710.5  9927.1
1710.64
  9966.9 1710.47    9975 1710.27  9992.5 1710.44 10002.8 1710.51 10012.3
1710.4
 10022.8 1710.32 10028.6 1710.52 10052.4 1711.21 10064.4 1711.17 10074.5
1711.56
   10092 1712.31 10109.2 1712.39 10138.4 1713.14 10146.1 1713.31 10162.8
1714.05
 10176.9 1714.91 10191.9 1714.79 10202.9 1714.54 10219.8 1714.79 10224.5
1714.85
 10256.7 1715.15 10273.8 1715.27

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9710.2    .076  9966.9    .046 10028.6    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9966.9 10028.6               178     178     178             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1711.28  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.13  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)         * 1711.15  * Reach Len. (ft)         *  178.00
*  178.00  *  178.00  *
* Crit W.S. (ft)         * 1710.96  * Flow Area (sq ft)       *   49.24
*   46.48  *    6.90  *
* E.G. Slope (ft/ft)     *0.015596  * Area (sq ft)            *   49.24
*   46.48  *    6.90  *
* Q Total (cfs)          *  252.00  * Flow (cfs)              *   88.94
*  155.23  *    7.82  *
* Top Width (ft)         *  160.86  * Top Width (ft)          *   77.33
*   61.70  *   21.83  *
* Vel Total (ft/s)       *    2.46  * Avg. Vel. (ft/s)        *    1.81
*    3.34  *    1.13  *
* Max Chl Dpth (ft)      *    0.99  * Hydr. Depth (ft)        *    0.64
*    0.75  *    0.32  *
* Conv. Total (cfs)      *  2017.9  * Conv. (cfs)             *   712.2
*  1243.0  *    62.7  *
```

```
* Length Wtd. (ft)        *  178.00  * Wetted Per. (ft)        *   77.39
*   61.71  *   21.84  *
* Min Ch El (ft)          * 1710.27  * Shear (lb/sq ft)        *    0.62
*    0.73  *    0.31  *
* Alpha                   *    1.34  * Stream Power (lb/ft s) *    1.12
*    2.45  *    0.35  *
* Frctn Loss (ft)         *    2.04  * Cum Volume (acre-ft)    *    1.30
*    3.97  *    1.22  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    2.29
*    4.67  *    2.87  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.50

INPUT
Description: Section lines 23 & 26 of T6NR1E
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9761.8 1713.95  9775.4 1713.68    9799 1713.11  9824.1  1712.6  9830.1
1712.45
  9861.3 1711.79  9872.7 1711.48  9897.1 1710.91  9913.4 1710.46  9921.2
1710.22
  9924.2 1710.16  9946.2 1709.53  9951.4 1709.26  9960.2 1709.14  9985.1
1708.13
  9987.4 1707.96  9992.4 1707.54 10015.1 1708.36 10018.6  1708.4 10025.5
1707.97
 10038.3  1707.2 10039.8 1707.33 10046.8 1708.15   10061 1708.35 10079.4
1708.55
 10110.6 1708.99   10136 1708.79   10137  1708.8 10138.5 1708.82 10171.6
1709.59
 10235.3 1710.43 10266.4 1710.93 10310.5 1711.49 10328.7 1711.65 10331.3
1711.68

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9761.8    .076  9985.1    .046 10015.1    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.1 10015.1              171     171     171             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1709.23  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *   0.076
```

```
*   0.046  *   0.076  *
* W.S. Elev (ft)         * 1709.12  * Reach Len. (ft)        *  171.00
*  171.00  *  171.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *   12.17
*   35.99  *   85.80  *
* E.G. Slope (ft/ft)     *0.008768  * Area (sq ft)           *   12.17
*   35.99  *   85.80  *
* Q Total (cfs)          *  252.00  * Flow (cfs)             *   13.97
*  122.80  *  115.23  *
* Top Width (ft)         *  190.95  * Top Width (ft)         *   24.50
*   30.00  *  136.46  *
* Vel Total (ft/s)       *    1.88  * Avg. Vel. (ft/s)       *    1.15
*    3.41  *    1.34  *
* Max Chl Dpth (ft)      *    1.92  * Hydr. Depth (ft)       *    0.50
*    1.20  *    0.63  *
* Conv. Total (cfs)      *  2691.3  * Conv. (cfs)            *   149.2
*  1311.5  *  1230.6  *
* Length Wtd. (ft)       *  171.00  * Wetted Per. (ft)       *   24.52
*   30.04  *  136.56  *
* Min Ch El (ft)         * 1707.54  * Shear (lb/sq ft)       *    0.27
*    0.66  *    0.34  *
* Alpha                  *    1.86  * Stream Power (lb/ft s) *    0.31
*    2.24  *    0.46  *
* Frctn Loss (ft)        *    1.87  * Cum Volume (acre-ft)   *    1.18
*    3.80  *    1.03  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    2.08
*    4.48  *    2.55  *
*********************************************************************
**********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.47

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*********************************************************************
********
  9832.2 1710.32  9865.1 1709.58    9901  1708.6  9935.7 1707.76  9940.1
1707.59
  9964.6 1706.74  9973.6 1705.84  9973.9 1705.82  9974.2 1705.82 10014.3
1705.74
   10019 1706.39 10024.2 1706.69 10043.8 1706.93 10053.2 1706.97 10076.7
1707.34
 10091.9 1707.52 10123.7  1707.8 10151.2  1707.4 10155.6 1707.63 10168.1
1707.85
 10186.3 1708.33 10194.2 1708.41 10217.7 1708.71 10219.2 1708.74   10251
1709.15
 10264.8 1709.41 10288.3 1709.77 10311.8 1710.23 10328.9 1710.84

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
************************************************
  9832.2     .076  9964.6     .046   10019     .076

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.
Expan.
        9964.6   10019               209      209      209              .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1707.34  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1707.08  * Reach Len. (ft)         *  209.00
*  209.00  *  209.00  *
* Crit W.S. (ft)          * 1706.85  * Flow Area (sq ft)       *    1.63
*   64.56  *    9.55  *
* E.G. Slope (ft/ft)      *0.013627  * Area (sq ft)            *    1.63
*   64.56  *    9.55  *
* Q Total (cfs)           *  282.00  * Flow (cfs)              *    1.13
*  272.60  *    8.26  *
* Top Width (ft)          *  105.05  * Top Width (ft)          *    9.69
*   54.40  *   40.95  *
* Vel Total (ft/s)        *    3.72  * Avg. Vel. (ft/s)        *    0.70
*    4.22  *    0.86  *
* Max Chl Dpth (ft)       *    1.34  * Hydr. Depth (ft)        *    0.17
*    1.19  *    0.23  *
* Conv. Total (cfs)       *  2415.8  * Conv. (cfs)             *     9.7
*  2335.3  *    70.8  *
* Length Wtd. (ft)        *  209.00  * Wetted Per. (ft)        *    9.70
*   54.49  *   40.96  *
* Min Ch El (ft)          * 1705.74  * Shear (lb/sq ft)        *    0.14
*    1.01  *    0.20  *
* Alpha                   *    1.25  * Stream Power (lb/ft s)  *    0.10
*    4.26  *    0.17  *
* Frctn Loss (ft)         *    2.27  * Cum Volume (acre-ft)    *    1.15
*    3.60  *    0.84  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    2.01
*    4.32  *    2.20  *
**************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.43

INPUT
Description:
Station Elevation Data    num=      31
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
**************************************************************************
********
```

```
  9838.4 1707.22  9840.1 1707.21  9851.4 1706.71  9858.2 1706.54    9882
1704.88
  9884.2  1704.8  9885.3 1704.78  9888.4 1704.59  9940.4  1704.5  9960.7
1704.67
  9964.4 1704.63  9996.3 1703.08 10007.1 1703.27 10019.2 1703.35 10026.7
1704.77
 10061.6 1704.98 10095.3 1705.55 10111.8 1705.71 10115.3 1705.72 10119.5
1705.64
 10143.8 1704.74 10144.3 1704.72 10162.8 1705.77 10165.4 1705.84 10182.5
1705.2
 10183.3 1705.23 10209.8 1706.42 10229.9 1706.75 10321.4 1708.83 10330.1
1709.26
 10351.6 1709.88

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9838.4    .076  9964.4    .046 10026.7    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9964.4 10026.7              262     262     262             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1705.04  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1704.87  * Reach Len. (ft)         *  262.00
*  262.00  *  262.00  *
* Crit W.S. (ft)          * 1704.47  * Flow Area (sq ft)       *   24.29
*   75.68  *    1.34  *
* E.G. Slope (ft/ft)      *0.008878  * Area (sq ft)            *   24.29
*   75.68  *    1.34  *
* Q Total (cfs)           *  282.00  * Flow (cfs)              *   19.86
*  261.77  *    0.38  *
* Top Width (ft)          *  167.87  * Top Width (ft)          *   82.15
*   62.30  *   23.42  *
* Vel Total (ft/s)        *    2.78  * Avg. Vel. (ft/s)        *    0.82
*    3.46  *    0.28  *
* Max Chl Dpth (ft)       *    1.79  * Hydr. Depth (ft)        *    0.30
*    1.21  *    0.06  *
* Conv. Total (cfs)       *  2992.9  * Conv. (cfs)             *   210.7
*  2778.2  *     4.0  *
* Length Wtd. (ft)        *  262.00  * Wetted Per. (ft)        *   82.15
*   62.47  *   23.43  *
* Min Ch El (ft)          * 1703.08  * Shear (lb/sq ft)        *    0.16
*    0.67  *    0.03  *
* Alpha                   *    1.44  * Stream Power (lb/ft s) *    0.13
*    2.32  *    0.01  *
* Frctn Loss (ft)         *    2.36  * Cum Volume (acre-ft)    *    1.09
*    3.26  *    0.81  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    1.79
*    4.04  *    2.05  *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.38

INPUT
Description:
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9719.2 1709.64  9738.6  1709.2  9761.9 1708.54  9790.2 1707.96  9821.6
1706.36
  9831.1 1706.07  9843.9 1705.47  9851.4 1705.21  9854.6 1705.04  9883.5
1704.5
  9918.5 1703.49  9930.6 1703.34  9939.7 1703.18  9941.4  1703.1  9942.3
1703.08
  9960.8 1702.31  9977.4 1701.86 10002.4 1701.68 10011.1 1701.72 10035.6
1701.66
 10047.1 1701.87   10074 1702.04 10182.8 1702.08 10186.9  1702.2 10193.1
1702.33
 10219.8 1703.52 10226.5 1703.37 10244.5  1703.9 10276.9 1705.04 10290.7
1705.27
 10316.5 1706.02 10321.4 1706.23 10328.3 1706.17 10367.5 1705.53   10368
1705.51
 10420.8  1706.3 10422.9 1706.38 10423.4 1706.32 10461.3 1706.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9719.2    .076  9960.8    .046   10074    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9960.8   10074              221     221     221             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1702.66  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1702.58  * Reach Len. (ft)         *  221.00
*  221.00  *  221.00  *
* Crit W.S. (ft)          * 1702.36  * Flow Area (sq ft)       *    0.85
*   83.71  *   60.59  *
* E.G. Slope (ft/ft)      *0.009153  * Area (sq ft)            *    0.85
*   83.71  *   60.59  *
* Q Total (cfs)           *  282.00  * Flow (cfs)              *    0.42
*  211.52  *   70.07  *
* Top Width (ft)          *  244.23  * Top Width (ft)          *    6.40
*  113.20  *  124.63  *
* Vel Total (ft/s)        *    1.94  * Avg. Vel. (ft/s)        *    0.49
```

```
*    2.53  *    1.16  *
* Max Chl Dpth (ft)      *    0.92  * Hydr. Depth (ft)       *    0.13
*    0.74  *    0.49  *
* Conv. Total (cfs)      *  2947.6  * Conv. (cfs)            *     4.3
*  2210.9  *   732.4  *
* Length Wtd. (ft)       *  221.00  * Wetted Per. (ft)       *    6.41
*  113.21  *  124.64  *
* Min Ch El (ft)         * 1701.66  * Shear (lb/sq ft)       *    0.08
*    0.42  *    0.28  *
* Alpha                  *    1.36  * Stream Power (lb/ft s) *    0.04
*    1.07  *    0.32  *
* Frctn Loss (ft)        *    1.42  * Cum Volume (acre-ft)   *    1.01
*    2.78  *    0.63  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    1.53
*    3.51  *    1.60  *
***************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.34

INPUT
Description: CL New River Road Dip Crossing
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9703.8 1706.77  9757.1 1705.92  9762.5  1705.8  9830.4  1703.8    9834
1703.74
  9847.5 1703.38  9848.8 1703.36  9956.3 1700.44    9960 1700.39 10034.3
1700.62
 10044.8 1700.53 10112.9  1700.8 10274.3 1702.09 10289.7  1702.3 10340.4
1702.7
 10414.6 1702.32 10444.9 1702.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9703.8    .016  9847.5    .016 10112.9    .016

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9847.5 10112.9              217     217     217             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)         * 1701.23  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.20  * Wt. n-Val.              *
*   0.016  *   0.016  *
* W.S. Elev (ft)         * 1701.02  * Reach Len. (ft)         *  217.00
```

```
*  217.00  *  217.00  *
* Crit W.S. (ft)          * 1701.02  * Flow Area (sq ft)      *
*   76.22  *    3.13  *
* E.G. Slope (ft/ft)      *0.004760  * Area (sq ft)           *
*   76.22  *    3.13  *
* Q Total (cfs)           *  282.00  * Flow (cfs)             *
*  277.34  *    4.66  *
* Top Width (ft)          *  206.09  * Top Width (ft)         *
*  178.09  *   28.00  *
* Vel Total (ft/s)        *    3.55  * Avg. Vel. (ft/s)       *
*    3.64  *    1.49  *
* Max Chl Dpth (ft)       *    0.63  * Hydr. Depth (ft)       *
*    0.43  *    0.11  *
* Conv. Total (cfs)       *  4087.2  * Conv. (cfs)            *
*  4019.7  *    67.5  *
* Length Wtd. (ft)        *  217.00  * Wetted Per. (ft)       *
*  178.10  *   28.00  *
* Min Ch El (ft)          * 1700.39  * Shear (lb/sq ft)       *
*    0.13  *    0.03  *
* Alpha                   *    1.03  * Stream Power (lb/ft s) *
*    0.46  *    0.05  *
* Frctn Loss (ft)         *    1.81  * Cum Volume (acre-ft)   *    1.01
*    2.38  *    0.47  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *    1.51
*    2.77  *    1.21  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.30

INPUT
Description:
Station Elevation Data    num=      22
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
*************************************************************************
********
  9752.2 1701.93  9954.3 1697.29  9954.6 1697.29  9975.9  1696.5  9990.3
1695.88
```

```
  9999.4 1695.68 10009.5 1696.48 10009.8  1696.5   10011 1696.62 10019.9
1697.35
 10059.8 1697.19 10062.1 1697.16 10105.2 1697.67 10108.7 1697.76 10131.2
1698.47
 10135.5  1698.4 10161.8 1697.69 10168.7 1697.68 10178.9 1698.24 10221.5
1699.05
 10225.5 1699.41   10231 1699.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9752.2    .076  9954.3    .046   10011    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.9   10011              339     339     339             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1697.87  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.36  * Wt. n-Val.               *   0.046
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1697.51  * Reach Len. (ft)          *  339.00
*  339.00  *  339.00  *
* Crit W.S. (ft)          * 1697.51  * Flow Area (sq ft)        *   14.08
*   50.48  *   19.83  *
* E.G. Slope (ft/ft)      *0.016141  * Area (sq ft)             *   14.08
*   50.48  *   19.83  *
* Q Total (cfs)           *  322.00  * Flow (cfs)               *   38.91
*  263.70  *   19.39  *
* Top Width (ft)          *  146.38  * Top Width (ft)           *   30.99
*   35.10  *   80.29  *
* Vel Total (ft/s)        *    3.82  * Avg. Vel. (ft/s)         *    2.76
*    5.22  *    0.98  *
* Max Chl Dpth (ft)       *    1.83  * Hydr. Depth (ft)         *    0.45
*    1.44  *    0.25  *
* Conv. Total (cfs)       *  2534.5  * Conv. (cfs)              *   306.3
*  2075.6  *   152.6  *
* Length Wtd. (ft)        *  339.00  * Wetted Per. (ft)         *   31.00
*   35.15  *   80.33  *
* Min Ch El (ft)          * 1695.68  * Shear (lb/sq ft)         *    0.46
*    1.45  *    0.25  *
* Alpha                   *    1.60  * Stream Power (lb/ft s)   *    1.26
*    7.56  *    0.24  *
* Frctn Loss (ft)         *    4.97  * Cum Volume (acre-ft)     *    0.97
*    2.06  *    0.41  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)           *    1.43
*    2.24  *    0.94  *
************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

```
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.23

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9769.3  1698.3  9822.5  1695.9  9853.5 1694.37  9879.6 1693.27  9883.3
1693.14
  9898.4 1692.23  9902.3  1691.8  9908.2 1691.26  9924.4 1691.22    9950
1691.39
  9950.8 1691.38  9985.9 1691.64  9989.2 1691.56 10006.4 1691.42 10032.7
1691.96
 10034.3 1691.95 10035.3 1691.98 10035.8 1691.97 10050.9 1691.63 10058.9
1691.91
 10070.4 1692.25 10096.1  1692.6 10264.6 1696.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9769.3    .076  9985.9    .046 10034.3    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.9 10034.3               387     387     387             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1692.48  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1692.39  * Reach Len. (ft)         *  387.00
*  387.00  *  387.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   84.54
*   37.03  *   18.63  *
* E.G. Slope (ft/ft)      *0.013388  * Area (sq ft)            *   84.54
*   37.03  *   18.63  *
* Q Total (cfs)           *  322.00  * Flow (cfs)              *  183.23
*  115.75  *   23.02  *
* Top Width (ft)          *  184.63  * Top Width (ft)          *   90.10
*   48.40  *   46.13  *
* Vel Total (ft/s)        *    2.30  * Avg. Vel. (ft/s)        *    2.17
*    3.13  *    1.24  *
* Max Chl Dpth (ft)       *    1.17  * Hydr. Depth (ft)        *    0.94
```

```
*    0.77  *    0.40  *
* Conv. Total (cfs)       *  2782.9  * Conv. (cfs)            *  1583.6
*  1000.4  *   198.9  *
* Length Wtd. (ft)        *  387.00  * Wetted Per. (ft)       *   90.15
*   48.41  *   46.15  *
* Min Ch El (ft)          * 1691.42  * Shear (lb/sq ft)       *    0.78
*    0.64  *    0.34  *
* Alpha                   *    1.19  * Stream Power (lb/ft s) *    1.70
*    2.00  *    0.42  *
* Frctn Loss (ft)         *    5.78  * Cum Volume (acre-ft)   *    0.59
*    1.72  *    0.26  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *    0.96
*    1.91  *    0.45  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.16

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9830.3 1690.04  9864.7 1689.32  9896.4 1688.46  9937.2 1687.19  9954.9
1686.21
    9966 1685.97  9983.4 1685.85  9992.5 1685.67 10007.6  1685.5 10016.1
1685.37
 10050.9 1685.41 10061.8 1685.82 10077.1 1687.02 10096.1 1687.61 10099.6
1687.74
 10120.1 1688.63 10140.4 1689.38 10183.2  1691.3 10246.9  1693.8 10261.9
1694.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9830.3    .076  9983.4    .046 10061.8    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.4 10061.8              375     375     375             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1686.69  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.24  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1686.45  * Reach Len. (ft)         *  375.00
*  375.00  *  375.00  *
```

```
* Crit W.S. (ft)          * 1686.31  * Flow Area (sq ft)       *   14.00
*   74.15  *    2.55  *
* E.G. Slope (ft/ft)      *0.016780  * Area (sq ft)            *   14.00
*   74.15  *    2.55  *
* Q Total (cfs)           *  322.00  * Flow (cfs)              *   20.05
*  298.95  *    2.99  *
* Top Width (ft)          *  119.34  * Top Width (ft)          *   32.88
*   78.40  *    8.06  *
* Vel Total (ft/s)        *    3.55  * Avg. Vel. (ft/s)        *    1.43
*    4.03  *    1.17  *
* Max Chl Dpth (ft)       *    1.08  * Hydr. Depth (ft)        *    0.43
*    0.95  *    0.32  *
* Conv. Total (cfs)       *  2485.8  * Conv. (cfs)             *   154.8
*  2307.8  *    23.1  *
* Length Wtd. (ft)        *  375.00  * Wetted Per. (ft)        *   32.89
*   78.41  *    8.09  *
* Min Ch El (ft)          * 1685.37  * Shear (lb/sq ft)        *    0.45
*    0.99  *    0.33  *
* Alpha                   *    1.21  * Stream Power (lb/ft s) *    0.64
*    3.99  *    0.39  *
* Frctn Loss (ft)         *    5.44  * Cum Volume (acre-ft)    *    0.15
*    1.23  *    0.17  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.41
*    1.35  *    0.21  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.09

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9804.1 1686.55  9847.2 1684.94  9917.2 1682.12  9934.4 1680.99    9936
1680.9
  9938.3 1680.81  9956.4 1680.53  9964.2 1680.53  9980.1 1680.07  9987.5
1679.81
  9991.6 1679.78 10005.9 1679.69 10007.9 1679.72 10008.8 1679.72 10031.3
1680.29
 10036.6 1679.71 10040.6 1679.42 10042.9 1679.72 10047.3 1680.68 10055.3
1681.23
 10065.6 1681.83 10070.1 1681.89   10089  1682.6 10096.3 1683.05 10108.6
1683.48
 10158.9 1685.88 10198.5 1687.43 10259.9 1689.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9804.1    .076  9964.2    .046 10031.3    .076
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9964.2 10031.3              313     313     313             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1681.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.19  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1681.05  * Reach Len. (ft)         *  313.00
*  313.00  *  313.00  *
* Crit W.S. (ft)          * 1680.76  * Flow Area (sq ft)       *   11.41
*   71.12  *   19.53  *
* E.G. Slope (ft/ft)      *0.012660  * Area (sq ft)           *   11.41
*   71.12  *   19.53  *
* Q Total (cfs)           *  322.00  * Flow (cfs)              *   12.99
*  268.69  *   40.32  *
* Top Width (ft)          *  119.03  * Top Width (ft)          *   30.63
*   67.10  *   21.30  *
* Vel Total (ft/s)        *    3.15  * Avg. Vel. (ft/s)        *    1.14
*    3.78  *    2.06  *
* Max Chl Dpth (ft)       *    1.62  * Hydr. Depth (ft)        *    0.37
*    1.06  *    0.92  *
* Conv. Total (cfs)       *  2861.8  * Conv. (cfs)             *   115.5
*  2388.0  *   358.3  *
* Length Wtd. (ft)        *  313.00  * Wetted Per. (ft)        *   30.64
*   67.12  *   21.48  *
* Min Ch El (ft)          * 1679.69  * Shear (lb/sq ft)        *    0.29
*    0.84  *    0.72  *
* Alpha                   *    1.26  * Stream Power (lb/ft s) *    0.34
*    3.16  *    1.48  *
* Frctn Loss (ft)         *    4.50  * Cum Volume (acre-ft)    *    0.04
*    0.60  *    0.07  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.14
*    0.72  *    0.09  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50T5
REACH: NRW50T5            RS: 0.03

INPUT
Description: U.S of Confluence with NRW50A & NRW50B
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
    9780 1680.14  9873.9 1677.31  9876.9 1677.24  9911.4 1676.74  9938.6
1676.47
  9950.9 1676.02  9965.3  1675.8  9975.8 1675.57 10009.8 1675.97 10013.2
```

```
1676.07
 10018.1 1675.12 10018.7 1675.04 10020.1  1675.1   10031  1675.9 10033.1
1675.9
 10042.6  1675.7 10051.5 1675.79 10051.7 1675.79   10052  1675.8 10058.2
1675.83
 10072.7 1676.46 10077.7 1676.65 10081.8 1676.88 10103.9 1678.27 10126.1
1679.52
 10180.3 1682.78 10214.7  1684.5 10248.4 1685.82 10252.6 1685.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9780    .076  9938.6    .046 10072.7    .076

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9938.6 10072.7              161     161     161             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1676.73  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.076
*   0.046  *   0.076  *
* W.S. Elev (ft)          * 1676.56  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1676.39  * Flow Area (sq ft)       *    0.36
*   96.59  *    0.12  *
* E.G. Slope (ft/ft)      *0.016505  * Area (sq ft)            *    0.36
*   96.59  *    0.12  *
* Q Total (cfs)           *  322.00  * Flow (cfs)              *    0.11
*  321.85  *    0.04  *
* Top Width (ft)          *  145.17  * Top Width (ft)          *    8.57
*  134.10  *    2.50  *
* Vel Total (ft/s)        *    3.32  * Avg. Vel. (ft/s)        *    0.31
*    3.33  *    0.33  *
* Max Chl Dpth (ft)       *    1.52  * Hydr. Depth (ft)        *    0.04
*    0.72  *    0.05  *
* Conv. Total (cfs)       *  2506.4  * Conv. (cfs)             *     0.9
*  2505.2  *     0.3  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *    8.57
*  134.26  *    2.50  *
* Min Ch El (ft)          * 1675.04  * Shear (lb/sq ft)        *    0.04
*    0.74  *    0.05  *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *    0.01
*    2.47  *    0.02  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
************************************************************************
************************

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A              RS: 0.58
```

```
INPUT
Description: D.S. of Confluence with NRW50T5
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9849.3 1678.38  9925.9 1675.33  9947.5 1674.61  9978.9 1673.24  9985.6
1673.12
  9986.5 1673.11  9996.8  1673.4  9999.9 1673.17   10008 1672.69 10009.1
1672.87
 10012.8 1673.55 10026.2 1673.68 10027.1 1673.68 10039.1  1673.5 10042.4
1673.24
 10045.2 1672.84 10050.2  1673.5 10053.4 1673.75 10058.7  1673.6 10060.2
1673.59
 10067.4 1673.69 10074.1 1673.65 10084.1 1673.81 10094.1 1673.82 10115.4
1675.33
 10151.7  1678.1 10179.4 1679.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9849.3    .078  9996.8     .05 10012.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9996.8 10012.8              144     144     144             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**************************************************************************
************************
* E.G. Elev (ft)          * 1675.08  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1674.92  * Reach Len. (ft)         *  144.00
*  144.00  *  144.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   63.05
*   29.85  *  115.38  *
* E.G. Slope (ft/ft)      *0.011904  * Area (sq ft)            *   63.05
*   29.85  *  115.38  *
* Q Total (cfs)           *  553.00  * Flow (cfs)              *  137.58
*  146.07  *  269.35  *
* Top Width (ft)          *  171.37  * Top Width (ft)          *   58.57
*   16.00  *   96.80  *
* Vel Total (ft/s)        *    2.66  * Avg. Vel. (ft/s)        *    2.18
*    4.89  *    2.33  *
* Max Chl Dpth (ft)       *    2.23  * Hydr. Depth (ft)        *    1.08
*    1.87  *    1.19  *
* Conv. Total (cfs)       *  5068.5  * Conv. (cfs)             *  1261.0
*  1338.8  *  2468.7  *
* Length Wtd. (ft)        *  144.00  * Wetted Per. (ft)        *   58.61
*   16.10  *   96.94  *
* Min Ch El (ft)          * 1672.69  * Shear (lb/sq ft)        *    0.80
*    1.38  *    0.88  *
* Alpha                   *    1.44  * Stream Power (lb/ft s) *    1.74
*    6.74  *    2.06  *
* Frctn Loss (ft)         *    2.09  * Cum Volume (acre-ft)    *    4.12
*    3.89  *    5.34  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.48
```

```
*    1.86  *    4.36  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A              RS: 0.55

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9861.3 1675.64  9886.8 1674.54  9929.5 1672.92  9931.8 1672.86  9964.3
1671.7
  9972.9 1671.71  9974.1 1671.71  9974.9 1671.74  9979.8 1671.55  9981.6
1671.26
    9991  1671.6  9991.5 1671.55  9998.5 1670.58 10000.3  1670.9 10005.9
1671.89
   10026  1671.1 10032.6  1671.3 10038.2 1671.16 10046.2 1670.44 10047.3
1670.26
 10048.2 1670.42 10055.4  1671.4   10058 1671.49 10065.1 1671.89 10076.7
1672.04
 10078.3 1672.07 10081.4 1672.29 10088.8 1672.89 10121.9 1675.82 10123.6
1675.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9861.3    .078    9991     .05 10005.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9991 10005.9              110     110     110             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1672.98  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1672.77  * Reach Len. (ft)         *  110.00
*  110.00  *  110.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   48.05
*   23.93  *  103.72  *
* E.G. Slope (ft/ft)      *0.018158  * Area (sq ft)            *   48.05
*   23.93  *  103.72  *
* Q Total (cfs)           *  553.00  * Flow (cfs)              *  110.32
*  130.39  *  312.30  *
* Top Width (ft)          *  153.13  * Top Width (ft)          *   56.77
*   14.90  *   81.46  *
```

```
* Vel Total (ft/s)        *    3.15  * Avg. Vel. (ft/s)        *    2.30
*    5.45  *    3.01  *
* Max Chl Dpth (ft)       *    2.51  * Hydr. Depth (ft)        *    0.85
*    1.61  *    1.27  *
* Conv. Total (cfs)       *  4103.8  * Conv. (cfs)             *   818.7
*   967.6  *  2317.5  *
* Length Wtd. (ft)        *  110.00  * Wetted Per. (ft)        *   56.82
*   15.08  *   81.65  *
* Min Ch El (ft)          * 1670.58  * Shear (lb/sq ft)        *    0.96
*    1.80  *    1.44  *
* Alpha                   *    1.33  * Stream Power (lb/ft s) *    2.20
*    9.80  *    4.34  *
* Frctn Loss (ft)         *    1.40  * Cum Volume (acre-ft)    *    3.93
*    3.80  *    4.98  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.29
*    1.81  *    4.07  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A             RS: 0.53

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9870 1675.13  9900.8 1673.57  9963.9 1670.83    9989 1670.07  9998.1
1669.42
 10000.5 1669.34   10006  1669.5 10009.1 1669.57   10011 1669.55 10029.8
1669.54
 10036.8  1669.9 10040.4  1669.9 10045.5 1669.95 10051.6 1669.95 10059.4
1668.88
 10060.6 1668.71 10061.7 1668.85 10072.9 1670.62 10096.5 1672.18 10107.1
1673.03
 10151.3 1676.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9870    .078    9989     .05 10036.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9989 10036.8              152     152     152             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
************************
* E.G. Elev (ft)          * 1671.59  * Element                 *  Left OB
*  Channel * Right OB *
```

```
* Vel Head (ft)          *    0.21  * Wt. n-Val.             *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1671.38  * Reach Len. (ft)        *  152.00
*  152.00  *  152.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *   26.86
*   85.79  *   65.59  *
* E.G. Slope (ft/ft)     *0.009373  * Area (sq ft)           *   26.86
*   85.79  *   65.59  *
* Q Total (cfs)          *  553.00  * Flow (cfs)             *   39.43
*  364.33  *  149.24  *
* Top Width (ft)         *  133.19  * Top Width (ft)         *   37.78
*   47.80  *   47.61  *
* Vel Total (ft/s)       *    3.10  * Avg. Vel. (ft/s)       *    1.47
*    4.25  *    2.28  *
* Max Chl Dpth (ft)      *    2.67  * Hydr. Depth (ft)       *    0.71
*    1.79  *    1.38  *
* Conv. Total (cfs)      *  5712.0  * Conv. (cfs)            *   407.3
*  3763.2  *  1541.5  *
* Length Wtd. (ft)       *  152.00  * Wetted Per. (ft)       *   37.81
*   47.84  *   47.87  *
* Min Ch El (ft)         * 1669.34  * Shear (lb/sq ft)       *    0.42
*    1.05  *    0.80  *
* Alpha                  *    1.40  * Stream Power (lb/ft s) *    0.61
*    4.46  *    1.82  *
* Frctn Loss (ft)        *    1.67  * Cum Volume (acre-ft)   *    3.84
*    3.67  *    4.77  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    3.17
*    1.73  *    3.90  *
*************************************************************************
***********************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW50A
REACH: NRW50A RS: 0.50

INPUT
Description:
Station Elevation Data num= 24

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9852.8 1674.28  9943.6 1670.43  9966.7 1669.25  9983.9 1668.14  9987.2
1667.54
  9995.5 1666.65  9997.9 1666.92 10001.7 1667.46 10003.6 1667.56 10009.4
1667.8
 10016.8 1667.45 10020.7 1667.45 10026.2 1667.81 10028.6 1667.73 10036.1
1668.3
 10040.9 1668.13 10045.6 1668.08 10050.6 1668.57 10053.2 1668.76 10087.4
1669.61
 10090.2 1669.78 10094.3 1670.09 10111.8 1671.57 10151.1 1674.09
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
```

```
  9852.8    .078  9983.9     .05 10009.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.9 10009.4              185     185     185             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)          * 1669.91  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.34  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1669.58  * Reach Len. (ft)         *  185.00
*  185.00  *  185.00  *
* Crit W.S. (ft)          * 1669.17  * Flow Area (sq ft)       *   16.19
*   57.00  *   84.92  *
* E.G. Slope (ft/ft)      *0.012974  * Area (sq ft)            *   16.19
*   57.00  *   84.92  *
* Q Total (cfs)           *  553.00  * Flow (cfs)              *   27.31
*  328.49  *  197.20  *
* Top Width (ft)          *  125.70  * Top Width (ft)          *   23.58
*   25.50  *   76.63  *
* Vel Total (ft/s)        *    3.50  * Avg. Vel. (ft/s)        *    1.69
*    5.76  *    2.32  *
* Max Chl Dpth (ft)       *    2.93  * Hydr. Depth (ft)        *    0.69
*    2.24  *    1.11  *
* Conv. Total (cfs)       *  4855.0  * Conv. (cfs)             *   239.7
*  2883.9  *  1731.3  *
* Length Wtd. (ft)        *  185.00  * Wetted Per. (ft)        *   23.62
*   25.66  *   76.71  *
* Min Ch El (ft)          * 1666.65  * Shear (lb/sq ft)        *    0.56
*    1.80  *    0.90  *
* Alpha                   *    1.78  * Stream Power (lb/ft s) *    0.94
*   10.37  *    2.08  *
* Frctn Loss (ft)         *    2.55  * Cum Volume (acre-ft)    *    3.76
*    3.42  *    4.50  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    3.07
*    1.60  *    3.69  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A             RS: 0.47

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9896.8 1669.81  9900.1 1669.41  9905.6 1669.01  9915.4 1668.64  9918.5
```

```
1668.46
  9935.5 1667.77  9939.4  1667.5  9947.8 1666.43    9953 1666.03    9960
1665.85
  9972.3  1665.9  9974.5 1665.95  9985.6 1665.15  9989.9 1665.29    9994
1665.6
    9998 1665.33 10002.6 1665.07 10006.6 1665.26 10009.5 1665.29 10013.9
1665.11
 10015.1 1665.03 10024.6 1665.82 10032.9 1665.94 10044.6 1665.93   10050
1665.86
 10050.9 1665.86   10052 1665.91 10059.8 1666.33 10095.6 1668.95 10109.9
1669.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9896.8    .078    9994     .05 10024.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9994 10024.6              154     154     154             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1667.36  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1667.08  * Reach Len. (ft)         *  154.00
*  154.00  *  154.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   63.28
*   54.52  *   43.66  *
* E.G. Slope (ft/ft)      *0.014637  * Area (sq ft)            *   63.28
*   54.52  *   43.66  *
* Q Total (cfs)           *  553.00  * Flow (cfs)              *  167.48
*  287.68  *   97.84  *
* Top Width (ft)          *  127.43  * Top Width (ft)          *   51.33
*   30.60  *   45.50  *
* Vel Total (ft/s)        *    3.43  * Avg. Vel. (ft/s)        *    2.65
*    5.28  *    2.24  *
* Max Chl Dpth (ft)       *    2.05  * Hydr. Depth (ft)        *    1.23
*    1.78  *    0.96  *
* Conv. Total (cfs)       *  4570.8  * Conv. (cfs)             *  1384.3
*  2377.8  *   808.7  *
* Length Wtd. (ft)        *  154.00  * Wetted Per. (ft)        *   51.43
*   30.66  *   45.54  *
* Min Ch El (ft)          * 1665.03  * Shear (lb/sq ft)        *    1.12
*    1.62  *    0.88  *
* Alpha                   *    1.49  * Stream Power (lb/ft s) *    2.98
*    8.57  *    1.96  *
* Frctn Loss (ft)         *    1.35  * Cum Volume (acre-ft)    *    3.59
*    3.18  *    4.23  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    2.91
*    1.48  *    3.43  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
```

```
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A             RS: 0.44

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9860.8 1670.28  9873.6 1669.62  9896.2  1668.3  9927.9 1665.85  9929.1
1665.71
  9942.1 1664.43  9967.8 1664.62  9990.1 1664.26  9995.8 1662.78  9999.4
1661.8
 10002.4 1662.53 10007.3 1663.95 10011.5 1663.05 10011.6    1663 10011.9
1663.01
 10017.4 1663.41 10020.8  1663.6 10024.4 1663.67 10030.8 1663.69 10033.4
1663.31
   10037 1662.85 10039.6 1663.66 10043.3  1664.3 10076.2 1665.94 10077.2
1666.01
 10107.3 1667.57 10117.1 1668.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9860.8    .078  9990.1     .05 10007.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.1 10007.3              142     142     142             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)         * 1665.97  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.16  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1665.81  * Reach Len. (ft)         *  142.00
*  142.00  *  142.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   73.48
*   49.32  *  106.80  *
* E.G. Slope (ft/ft)     *0.005831  * Area (sq ft)            *   73.48
*   49.32  *  106.80  *
* Q Total (cfs)          *  553.00  * Flow (cfs)              *  119.77
*  220.74  *  212.49  *
* Top Width (ft)         *  145.46  * Top Width (ft)          *   61.89
*   17.20  *   66.37  *
* Vel Total (ft/s)       *    2.41  * Avg. Vel. (ft/s)        *    1.63
*    4.48  *    1.99  *
* Max Chl Dpth (ft)      *    4.01  * Hydr. Depth (ft)        *    1.19
*    2.87  *    1.61  *
```

```
* Conv. Total (cfs)       *  7241.7  * Conv. (cfs)            *  1568.4
*  2890.6  *  2782.7  *
* Length Wtd. (ft)        *  142.00  * Wetted Per. (ft)       *   61.96
*   17.81  *   66.77  *
* Min Ch El (ft)          * 1661.80  * Shear (lb/sq ft)       *    0.43
*    1.01  *    0.58  *
* Alpha                   *    1.74  * Stream Power (lb/ft s) *    0.70
*    4.51  *    1.16  *
* Frctn Loss (ft)         *    1.23  * Cum Volume (acre-ft)   *    3.35
*    3.00  *    3.97  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *    2.71
*    1.40  *    3.23  *
***************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A             RS: 0.41

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9827.9 1670.06  9838.4 1669.31  9870.7 1667.17  9892.4 1665.56    9903
1665
  9920.9 1664.36  9935.7 1664.02  9944.5 1663.87  9947.9 1663.73  9949.8
1663.48
  9956.2  1662.6  9958.7 1662.53  9960.5 1662.12  9967.8  1662.5  9986.4
1662.41
  9995.3  1662.5  9997.3 1662.09 10003.9 1660.96 10012.8 1662.64 10014.9
1663.1
 10020.5  1663.1 10022.7 1663.13 10023.4 1663.09   10029 1663.06 10033.1
1662.31
 10036.9 1661.93 10045.4    1663   10051 1663.43 10076.8 1665.24 10094.6
1666.12

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9827.9    .078  9995.3     .05 10014.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9995.3 10014.9              155     155     155             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
************************
* E.G. Elev (ft)          * 1664.73  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.30  * Wt. n-Val.              *   0.078
```

```
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1664.43  * Reach Len. (ft)        *  155.00
*  155.00  *  155.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *   98.55
*   50.08  *   65.30  *
* E.G. Slope (ft/ft)     *0.012429  * Area (sq ft)           *   98.55
*   50.08  *   65.30  *
* Q Total (cfs)          *  719.00  * Flow (cfs)             *  247.94
*  306.52  *  164.54  *
* Top Width (ft)         *  146.21  * Top Width (ft)         *   76.29
*   19.60  *   50.32  *
* Vel Total (ft/s)       *    3.36  * Avg. Vel. (ft/s)       *    2.52
*    6.12  *    2.52  *
* Max Chl Dpth (ft)      *    3.47  * Hydr. Depth (ft)       *    1.29
*    2.56  *    1.30  *
* Conv. Total (cfs)      *  6449.4  * Conv. (cfs)            *  2224.0
*  2749.5  *  1475.9  *
* Length Wtd. (ft)       *  155.00  * Wetted Per. (ft)       *   76.43
*   19.95  *   50.53  *
* Min Ch El (ft)         * 1660.96  * Shear (lb/sq ft)       *    1.00
*    1.95  *    1.00  *
* Alpha                  *    1.74  * Stream Power (lb/ft s) *    2.52
*   11.92  *    2.53  *
* Frctn Loss (ft)        *    1.71  * Cum Volume (acre-ft)   *    3.07
*    2.83  *    3.68  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    2.48
*    1.34  *    3.04  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A             RS: 0.38

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9860.1 1668.06    9875 1666.89  9905.7 1664.18  9907.2 1664.07  9924.5
1662.49
    9936 1661.57  9937.7 1661.42  9938.2  1661.4  9960.2 1661.15  9967.5
1660.95
  9991.5  1661.1  9994.4 1660.31 10001.5 1658.63 10006.8 1660.58   10009
1661.47
 10014.3 1661.53 10023.7 1661.82 10033.8 1661.19 10038.9 1660.96   10046
1660.3
 10046.4 1660.38 10051.2 1661.46 10054.9 1661.32   10057  1661.2 10058.2
1661.23
 10064.1 1661.56 10080.9 1662.67 10088.9  1663.3 10110.1 1664.79 10128.1
1665.86

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9860.1    .078  9991.5     .05   10009    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.5   10009              185     185     185             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
**********************************************************************
************************
* E.G. Elev (ft)          * 1663.01  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1662.75  * Reach Len. (ft)         *  185.00
*  185.00  *  185.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   97.94
*   49.74  *   91.59  *
* E.G. Slope (ft/ft)      *0.009870  * Area (sq ft)            *   97.94
*   49.74  *   91.59  *
* Q Total (cfs)           *  719.00  * Flow (cfs)              *  231.99
*  285.75  *  201.26  *
* Top Width (ft)          *  160.34  * Top Width (ft)          *   69.88
*   17.50  *   72.96  *
* Vel Total (ft/s)        *    3.01  * Avg. Vel. (ft/s)        *    2.37
*    5.75  *    2.20  *
* Max Chl Dpth (ft)       *    4.12  * Hydr. Depth (ft)        *    1.40
*    2.84  *    1.26  *
* Conv. Total (cfs)       *  7237.3  * Conv. (cfs)             *  2335.1
*  2876.3  *  2025.8  *
* Length Wtd. (ft)        *  185.00  * Wetted Per. (ft)        *   69.94
*   18.32  *   73.20  *
* Min Ch El (ft)          * 1658.63  * Shear (lb/sq ft)        *    0.86
*    1.67  *    0.77  *
* Alpha                   *    1.80  * Stream Power (lb/ft s) *    2.04
*    9.61  *    1.69  *
* Frctn Loss (ft)         *    1.58  * Cum Volume (acre-ft)    *    2.72
*    2.66  *    3.41  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    2.22
*    1.27  *    2.82  *
**********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A              RS: 0.35

INPUT
Description:
Station Elevation Data     num=      33
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
**********************************************************************
```

```
********
  9898.6 1666.26  9926.2 1663.94  9946.9 1662.33    9967 1660.89  9971.3
1660.47
  9993.4 1658.75  9994.4 1658.62   10000 1657.99 10001.9 1658.44 10003.4
1658.75
 10004.3 1658.81 10009.2 1658.67 10010.3 1658.48 10012.4  1658.8 10016.5
1659.65
   10029 1659.61 10029.2  1659.6 10040.5  1659.4   10041 1659.36 10051.7
1658.6
 10060.1  1658.7 10060.8 1658.71 10065.4 1658.73 10068.9 1658.98 10074.3
1659.68
 10079.3 1659.91 10086.2 1660.27 10107.9 1661.24 10129.5 1662.37 10139.6
1663.3
 10166.4 1665.27 10176.2  1665.3 10176.6 1665.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9898.6    .078  9971.3     .05 10016.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.3 10016.5              211     211     211             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1661.41  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.19  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1661.22  * Reach Len. (ft)         *  211.00
*  211.00  *  211.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *    3.11
*   95.09  *  143.17  *
* E.G. Slope (ft/ft)      *0.007446  * Area (sq ft)            *    3.11
*   95.09  *  143.17  *
* Q Total (cfs)           *  719.00  * Flow (cfs)              *    2.52
*  398.46  *  318.02  *
* Top Width (ft)          *  145.18  * Top Width (ft)          *    8.95
*   45.20  *   91.03  *
* Vel Total (ft/s)        *    2.98  * Avg. Vel. (ft/s)        *    0.81
*    4.19  *    2.22  *
* Max Chl Dpth (ft)       *    3.23  * Hydr. Depth (ft)        *    0.35
*    2.10  *    1.57  *
* Conv. Total (cfs)       *  8332.1  * Conv. (cfs)             *    29.2
*  4617.5  *  3685.4  *
* Length Wtd. (ft)        *  211.00  * Wetted Per. (ft)        *    8.98
*   45.53  *   91.15  *
* Min Ch El (ft)          * 1657.99  * Shear (lb/sq ft)        *    0.16
*    0.97  *    0.73  *
* Alpha                   *    1.34  * Stream Power (lb/ft s) *    0.13
*    4.07  *    1.62  *
* Frctn Loss (ft)         *    2.48  * Cum Volume (acre-ft)    *    2.51
*    2.35  *    2.91  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    2.05
*    1.14  *    2.47  *
************************************************************************
************************
```

```
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A              RS: 0.31

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9812.4 1664.07  9821.4 1663.66  9824.1 1663.62  9848.1 1662.54  9855.3
1662.37
  9872.2 1660.97  9883.8 1660.28  9894.4 1659.85  9909.6 1659.06  9918.4
1658.89
  9921.1 1658.77  9944.4 1658.01  9944.8 1658.01    9945    1658    9978
1656.93
  9979.2  1656.9  9992.3  1657.6    9998 1655.86  9999.1 1655.61  9999.5
1655.83
 10004.9 1658.03 10009.2 1657.68 10019.5 1657.15 10020.4 1657.11   10026
1657.4
   10029 1657.43 10057.3 1657.15 10062.6 1656.77 10063.3 1656.74 10064.8
1656.75
 10072.8 1657.15   10082  1657.8 10094.3 1658.09 10114.1 1659.55 10115.6
1659.82
 10135.8 1661.45 10155.6 1662.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9812.4    .078  9992.3     .05 10004.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.3 10004.9              155     155     155             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1658.93  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1658.67  * Reach Len. (ft)         *  155.00
*  155.00  *  155.00  *
* Crit W.S. (ft)          * 1658.40  * Flow Area (sq ft)       *   67.55
*   24.86  *  117.81  *
* E.G. Slope (ft/ft)      *0.021149  * Area (sq ft)            *   67.55
*   24.86  *  117.81  *
* Q Total (cfs)           *  719.00  * Flow (cfs)              *  185.98
```

```
*  162.46  *  370.56  *
* Top Width (ft)         *  178.00  * Top Width (ft)         *   68.13
*   12.60  *   97.27  *
* Vel Total (ft/s)       *    3.42  * Avg. Vel. (ft/s)       *    2.75
*    6.53  *    3.15  *
* Max Chl Dpth (ft)      *    3.06  * Hydr. Depth (ft)       *    0.99
*    1.97  *    1.21  *
* Conv. Total (cfs)      *  4944.0  * Conv. (cfs)            *  1278.8
*  1117.1  *  2548.0  *
* Length Wtd. (ft)       *  155.00  * Wetted Per. (ft)       *   68.18
*   13.38  *   97.38  *
* Min Ch El (ft)         * 1655.61  * Shear (lb/sq ft)       *    1.31
*    2.45  *    1.60  *
* Alpha                  *    1.43  * Stream Power (lb/ft s) *    3.60
*   16.04  *    5.02  *
* Frctn Loss (ft)        *    1.97  * Cum Volume (acre-ft)   *    2.34
*    2.06  *    2.27  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    1.87
*    1.00  *    2.02  *
*************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A             RS: 0.28

INPUT
Description:
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9757.1 1660.27    9773 1659.17    9785 1658.24  9806.3 1657.54  9822.2
1656.8
  9839.3 1656.18  9848.8 1655.97    9854  1655.9    9870 1655.84  9891.2
1655.58
  9922.1 1656.14  9925.6 1655.38  9929.3 1654.65  9932.9 1654.74  9937.4
1654.79
  9948.7 1654.85  9949.9 1655.01  9956.3  1655.7  9971.4 1655.46  9982.8
1655.62
  9989.6  1654.8  9991.4 1654.52  9998.5 1655.57 10001.4  1655.2 10006.4
1654.49
 10017.8 1654.53 10018.9 1654.48 10025.4 1654.18 10026.2 1654.41 10032.1
1655.8
 10061.1 1658.62 10066.4 1659.09 10082.4 1660.72 10111.1 1663.17 10115.4
1663.57

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
```

```
  9757.1     .078  9982.8     .05 10032.1     .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.8 10032.1              185     185     185             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1656.93  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1656.76  * Reach Len. (ft)         *  185.00
*  185.00  *  185.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  170.08
*   95.45  *    4.68  *
* E.G. Slope (ft/ft)      *0.008461  * Area (sq ft)            *  170.08
*   95.45  *    4.68  *
* Q Total (cfs)           *  719.00  * Flow (cfs)              *  310.98
*  403.02  *    5.00  *
* Top Width (ft)          *  218.46  * Top Width (ft)          *  159.34
*   49.30  *    9.82  *
* Vel Total (ft/s)        *    2.66  * Avg. Vel. (ft/s)        *    1.83
*    4.22  *    1.07  *
* Max Chl Dpth (ft)       *    2.57  * Hydr. Depth (ft)        *    1.07
*    1.94  *    0.48  *
* Conv. Total (cfs)       *  7816.5  * Conv. (cfs)             *  3380.8
*  4381.4  *    54.3  *
* Length Wtd. (ft)        *  185.00  * Wetted Per. (ft)        *  159.57
*   49.72  *    9.86  *
* Min Ch El (ft)          * 1654.18  * Shear (lb/sq ft)        *    0.56
*    1.01  *    0.25  *
* Alpha                   *    1.62  * Stream Power (lb/ft s) *    1.03
*    4.28  *    0.27  *
* Frctn Loss (ft)         *    1.69  * Cum Volume (acre-ft)    *    1.91
*    1.84  *    2.06  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.46
*    0.89  *    1.83  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A              RS: 0.24

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9774.8 1660.31  9780.6 1659.83  9802.5 1658.27  9832.9 1655.81  9835.7
```

```
1655.64
  9861.1 1654.37  9879.4 1654.04  9893.5 1653.69  9912.9 1653.69  9923.8
1653.52
  9939.8 1653.61    9950 1653.47  9954.2 1652.99  9957.9 1652.83  9965.3
1652.98
    9967 1653.05  9967.9 1653.01  9977.6    1653  9977.8    1653  9978.1
1653.02
  9988.6 1653.56  9999.8 1652.61 10000.6 1652.67 10007.3 1653.38 10044.9
1654.89
 10045.1  1654.9 10045.2 1654.91 10071.6 1657.21 10075.4 1657.59 10108.7
1660

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9774.8    .078  9988.6     .05 10007.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.6 10007.3               204     204     204             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
***********************
* E.G. Elev (ft)         * 1655.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1655.09  * Reach Len. (ft)         *  204.00
*  204.00  *  204.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *  199.56
*   38.22  *   36.08  *
* E.G. Slope (ft/ft)     *0.009871  * Area (sq ft)            *  199.56
*   38.22  *   36.08  *
* Q Total (cfs)          *  719.00  * Flow (cfs)              *  474.01
*  181.22  *   63.77  *
* Top Width (ft)         *  200.51  * Top Width (ft)          *  141.86
*   18.70  *   39.95  *
* Vel Total (ft/s)       *    2.63  * Avg. Vel. (ft/s)        *    2.38
*    4.74  *    1.77  *
* Max Chl Dpth (ft)      *    2.48  * Hydr. Depth (ft)        *    1.41
*    2.04  *    0.90  *
* Conv. Total (cfs)      *  7236.8  * Conv. (cfs)             *  4770.9
*  1824.0  *   641.9  *
* Length Wtd. (ft)       *  204.00  * Wetted Per. (ft)        *  141.94
*   18.78  *   39.99  *
* Min Ch El (ft)         * 1652.61  * Shear (lb/sq ft)        *    0.87
*    1.25  *    0.56  *
* Alpha                  *    1.40  * Stream Power (lb/ft s) *    2.06
*    5.95  *    0.98  *
* Frctn Loss (ft)        *    2.05  * Cum Volume (acre-ft)    *    1.13
*    1.56  *    1.97  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *    0.82
*    0.75  *    1.72  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW50A
REACH: NRW50A RS: 0.20

INPUT
Description:
Station Elevation Data num= 27

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9848.6 1658.48    9872 1656.49  9892.2 1654.35  9904.5 1653.22  9912.8
1652.66
  9919.6    1652  9928.7 1651.41  9948.2 1651.35  9957.8 1651.09  9963.4
1651
    9976  1650.6  9979.1 1650.76  9987.4 1651.15  9993.2 1650.47  9999.9
1649.73
 10003.2 1650.13   10007 1650.96 10009.2 1651.05 10019.5 1651.39 10021.7
1651.3
 10024.7 1651.08 10034.3 1651.84 10036.7    1652 10067.3 1653.04   10071
1653.22
   10073 1653.29 10150.2 1658.06
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9848.6    .078  9987.4     .05   10007    .078
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.4   10007              219     219     219             .1
.3
```

CROSS SECTION OUTPUT Profile #100-Year

```
**************************************************************************
***********************
* E.G. Elev (ft)          * 1653.18  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1652.93  * Reach Len. (ft)         *  219.00
*  219.00  *  219.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  123.09
*   50.20  *   59.75  *
* E.G. Slope (ft/ft)      *0.010232  * Area (sq ft)            *  123.09
*   50.20  *   59.75  *
* Q Total (cfs)           *  719.00  * Flow (cfs)              *  319.67
*  280.64  *  118.69  *
* Top Width (ft)          *  155.22  * Top Width (ft)          *   78.59
*   19.60  *   57.03  *
* Vel Total (ft/s)        *    3.09  * Avg. Vel. (ft/s)        *    2.60
*    5.59  *    1.99  *
* Max Chl Dpth (ft)       *    3.20  * Hydr. Depth (ft)        *    1.57
*    2.56  *    1.05  *
* Conv. Total (cfs)       *  7108.0  * Conv. (cfs)             *  3160.3
*  2774.4  *  1173.4  *
* Length Wtd. (ft)        *  219.00  * Wetted Per. (ft)        *   78.67
*   19.79  *   57.10  *
```

```
* Min Ch El (ft)          * 1649.73  * Shear (lb/sq ft)        *    1.00
*    1.62  *    0.67  *
* Alpha                   *    1.66  * Stream Power (lb/ft s) *    2.60
*    9.06  *    1.33  *
* Frctn Loss (ft)         *    2.63  * Cum Volume (acre-ft)   *    0.37
*    1.35  *    1.75  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *    0.31
*    0.66  *    1.49  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A             RS: 0.16

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9871.9 1659.72  9878.1  1659.2  9900.6 1657.09  9920.6  1655.4  9941.9
1653.09
    9963 1651.11  9977.4 1649.49    9985 1648.79  9988.5 1648.36  9995.5
1647.79
   10002 1647.99 10006.3 1648.42 10008.2 1648.65 10047.9 1649.17 10069.1
1649.04
 10105.8  1649.2 10112.1 1648.92 10116.8  1648.8 10124.6 1649.37 10130.1
1649.53
 10141.3 1649.46 10148.1 1649.56 10162.3 1650.87 10175.2 1652.27 10237.9
1656.42

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9871.9    .078    9985     .05 10008.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9985 10008.2              208     208     208             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1650.54  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1650.28  * Reach Len. (ft)         *  208.00
*  208.00  *  208.00  *
* Crit W.S. (ft)          * 1650.04  * Flow Area (sq ft)       *   11.41
*   49.13  *  166.67  *
* E.G. Slope (ft/ft)      *0.014236  * Area (sq ft)            *   11.41
```

```
*   49.13  *  166.67  *
* Q Total (cfs)          *  719.00  * Flow (cfs)              *   21.92
*  286.57  *  410.51  *
* Top Width (ft)         *  185.49  * Top Width (ft)          *   14.61
*   23.20  *  147.68  *
* Vel Total (ft/s)       *    3.16  * Avg. Vel. (ft/s)        *    1.92
*    5.83  *    2.46  *
* Max Chl Dpth (ft)      *    2.49  * Hydr. Depth (ft)        *    0.78
*    2.12  *    1.13  *
* Conv. Total (cfs)      *  6026.0  * Conv. (cfs)             *   183.7
*  2401.7  *  3440.6  *
* Length Wtd. (ft)       *  208.00  * Wetted Per. (ft)        *   14.68
*   23.29  *  147.75  *
* Min Ch El (ft)         * 1647.79  * Shear (lb/sq ft)        *    0.69
*    1.88  *    1.00  *
* Alpha                  *    1.71  * Stream Power (lb/ft s) *    1.33
*   10.94  *    2.47  *
* Frctn Loss (ft)        *    2.37  * Cum Volume (acre-ft)    *    0.04
*    1.10  *    1.18  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *    0.07
*    0.55  *    0.98  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW50A
REACH: NRW50A              RS: 0.12

INPUT
Description: Section lines 25 & 26 of T6NR1E
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9882.9  1657.5  9888.5 1656.96  9898.2 1655.98  9910.4 1654.78  9932.3
1652.53
  9933.1 1652.44  9954.2 1650.28  9966.8 1648.68  9982.1 1647.47  9990.5
1646.11
    9994 1645.72  9997.6 1645.77 10000.5 1645.83 10020.7    1646 10037.7
1646.23
 10041.7  1646.2   10081 1646.22 10088.9 1646.61 10095.8 1646.92 10104.4
1647.2
 10117.7 1646.81 10117.8 1646.81 10139.5 1648.41 10151.2  1649.2   10166
1650.05
 10177.3 1650.66 10212.2 1652.64 10214.4 1652.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9882.9    .078  9982.1     .05 10037.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.1 10037.7              334     334     334             .1
```

.3

CROSS SECTION OUTPUT Profile #100-Year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1648.15  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.21  * Wt. n-Val.              *   0.078
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1647.94  * Reach Len. (ft)         *  334.00
*  334.00  *  334.00  *
* Crit W.S. (ft)          * 1647.41  * Flow Area (sq ft)       *    1.42
*  102.96  *  124.12  *
* E.G. Slope (ft/ft)      *0.009359  * Area (sq ft)            *    1.42
*  102.96  *  124.12  *
* Q Total (cfs)           *  719.00  * Flow (cfs)              *    1.00
*  445.66  *  272.35  *
* Top Width (ft)          *  157.05  * Top Width (ft)          *    5.98
*   55.60  *   95.47  *
* Vel Total (ft/s)        *    3.15  * Avg. Vel. (ft/s)        *    0.70
*    4.33  *    2.19  *
* Max Chl Dpth (ft)       *    2.22  * Hydr. Depth (ft)        *    0.24
*    1.85  *    1.30  *
* Conv. Total (cfs)       *  7432.2  * Conv. (cfs)             *    10.3
*  4606.7  *  2815.2  *
* Length Wtd. (ft)        *  334.00  * Wetted Per. (ft)        *    6.00
*   55.73  *   95.54  *
* Min Ch El (ft)          * 1645.72  * Shear (lb/sq ft)        *    0.14
*    1.08  *    0.76  *
* Alpha                   *    1.36  * Stream Power (lb/ft s) *    0.10
*    4.67  *    1.67  *
* Frctn Loss (ft)         *    4.72  * Cum Volume (acre-ft)    *    0.01
*    0.74  *    0.48  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)          *    0.02
*    0.36  *    0.40  *
*************************************************************************
************************
```

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW50A
REACH: NRW50A RS: 0.06

INPUT
Description: D.S. Limit of Study
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

****

```
********
  9787.6 1652.06  9801.1 1651.22  9897.1 1644.73  9901.4 1644.55  9913.9
1644.14
  9934.8 1643.33  9942.3 1643.37  9947.1 1643.42  9952.6 1643.12  9981.1
1642.82
  9984.4 1642.38  9991.7 1640.07  9992.3 1639.89  9992.6 1639.83  9998.9
1638.09
   10004 1638.77 10004.8 1638.93 10022.8 1641.96 10040.7 1642.87 10068.6
1644.69
 10092.2 1646.52 10098.8 1647.11 10135.5 1650.17 10143.6 1650.79   10160
1652.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9787.6    .078  9984.4     .05 10022.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.4 10022.8              312     312     312             .1
.3

CROSS SECTION OUTPUT  Profile #100-Year
************************************************************************
************************
* E.G. Elev (ft)          * 1643.37  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.98  * Wt. n-Val.              *
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1642.39  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1642.26  * Flow Area (sq ft)       *
*   90.16  *    1.78  *
* E.G. Slope (ft/ft)      *0.023708  * Area (sq ft)            *    0.00
*   90.16  *    1.78  *
* Q Total (cfs)           *  719.00  * Flow (cfs)              *
*  717.15  *    1.85  *
* Top Width (ft)          *   46.79  * Top Width (ft)          *    0.04
*   38.40  *    8.36  *
* Vel Total (ft/s)        *    7.82  * Avg. Vel. (ft/s)        *
*    7.95  *    1.04  *
* Max Chl Dpth (ft)       *    4.29  * Hydr. Depth (ft)        *
*    2.35  *    0.21  *
* Conv. Total (cfs)       *  4669.6  * Conv. (cfs)             *
*  4657.6  *    12.0  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *
*   39.34  *    8.37  *
* Min Ch El (ft)          * 1638.09  * Shear (lb/sq ft)        *
*    3.39  *    0.31  *
* Alpha                   *    1.03  * Stream Power (lb/ft s) *
*   26.98  *    0.33  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
************************************************************************
************************

************************************************************************
********
```

SUMMARY OF MANNING'S N VALUES

River:NRW50B

Reach	River Sta.	n1	n2	n3
NRW50B	1.40	.078	.05	.078
NRW50B	1.35	.078	.05	.078
NRW50B	1.31	.078	.05	.078
NRW50B	1.25	.078	.05	.078
NRW50B	1.20	.078	.05	.078
NRW50B	1.15	.078	.05	.078
NRW50B	1.09	.078	.05	.078
NRW50B	1.03	.078	.05	.078
NRW50B	1.01	.078	.05	.078
NRW50B	0.99	Culvert		
NRW50B	0.98	.078	.05	.078
NRW50B	0.92	.078	.05	.078
NRW50B	0.87	.078	.05	.078
NRW50B	0.82	.078	.05	.078
NRW50B	0.77	.078	.05	.078
NRW50B	0.72	.078	.05	.078
NRW50B	0.66	.078	.05	.078
NRW50B	0.61	.078	.05	.078

River:NRW50T5

Reach	River Sta.	n1	n2	n3
NRW50T5	0.84	.076	.046	.076
NRW50T5	0.77	.076	.046	.076
NRW50T5	0.70	.076	.046	.076
NRW50T5	0.62	.076	.046	.076
NRW50T5	0.59	.076	.046	.076
NRW50T5	0.54	.076	.046	.076
NRW50T5	0.50	.076	.046	.076
NRW50T5	0.47	.076	.046	.076
NRW50T5	0.43	.076	.046	.076
NRW50T5	0.38	.076	.046	.076
NRW50T5	0.34	.016	.016	.016
NRW50T5	0.30	.076	.046	.076
NRW50T5	0.23	.076	.046	.076
NRW50T5	0.16	.076	.046	.076
NRW50T5	0.09	.076	.046	.076
NRW50T5	0.03	.076	.046	.076

River:NRW50A

Reach	River Sta.	n1	n2	n3
NRW50A	0.58	.078	.05	.078
NRW50A	0.55	.078	.05	.078
NRW50A	0.53	.078	.05	.078
NRW50A	0.50	.078	.05	.078
NRW50A	0.47	.078	.05	.078
NRW50A	0.44	.078	.05	.078
NRW50A	0.41	.078	.05	.078
NRW50A	0.38	.078	.05	.078
NRW50A	0.35	.078	.05	.078

*NRW50A	0.31	.078*	.05*	.078*
*NRW50A	0.28	.078*	.05*	.078*
*NRW50A	0.24	.078*	.05*	.078*
*NRW50A	0.20	.078*	.05*	.078*
*NRW50A	0.16	.078*	.05*	.078*
*NRW50A	0.12	.078*	.05*	.078*
*NRW50A	0.06	.078*	.05*	.078*

****

****

SUMMARY OF REACH LENGTHS

River: NRW50B

Reach	River Sta.	Left	Channel	Right
*NRW50B	1.40	261*	261*	261*
*NRW50B	1.35	218*	218*	218*
*NRW50B	1.31	278*	278*	278*
*NRW50B	1.25	308*	308*	308*
*NRW50B	1.20	267*	267*	267*
*NRW50B	1.15	287*	287*	287*
*NRW50B	1.09	320*	320*	320*
*NRW50B	1.03	119*	119*	119*
*NRW50B	1.01	145*	145*	145*
*NRW50B	0.99	*Culvert *	*	*
*NRW50B	0.98	300*	300*	300*
*NRW50B	0.92	301*	301*	301*
*NRW50B	0.87	264*	264*	264*
*NRW50B	0.82	231*	231*	231*
*NRW50B	0.77	298*	298*	298*
*NRW50B	0.72	305*	305*	305*
*NRW50B	0.66	244*	244*	244*
*NRW50B	0.61	179*	179*	179*

River: NRW50T5

Reach	River Sta.	Left	Channel	Right
*NRW50T5	0.84	365*	365*	365*
*NRW50T5	0.77	378*	378*	378*
*NRW50T5	0.70	396*	396*	396*
*NRW50T5	0.62	177*	177*	177*
*NRW50T5	0.59	267*	267*	267*
*NRW50T5	0.54	178*	178*	178*
*NRW50T5	0.50	171*	171*	171*
*NRW50T5	0.47	209*	209*	209*
*NRW50T5	0.43	262*	262*	262*
*NRW50T5	0.38	221*	221*	221*
*NRW50T5	0.34	217*	217*	217*
*NRW50T5	0.30	339*	339*	339*
*NRW50T5	0.23	387*	387*	387*
*NRW50T5	0.16	375*	375*	375*
*NRW50T5	0.09	313*	313*	313*
*NRW50T5	0.03	161*	161*	161*

River: NRW50A

Reach	River Sta.	Left	Channel	Right
NRW50A	0.58	144	144	144
NRW50A	0.55	110	110	110
NRW50A	0.53	152	152	152
NRW50A	0.50	185	185	185
NRW50A	0.47	154	154	154
NRW50A	0.44	142	142	142
NRW50A	0.41	155	155	155
NRW50A	0.38	185	185	185
NRW50A	0.35	211	211	211
NRW50A	0.31	155	155	155
NRW50A	0.28	185	185	185
NRW50A	0.24	204	204	204
NRW50A	0.20	219	219	219
NRW50A	0.16	208	208	208
NRW50A	0.12	334	334	334
NRW50A	0.06	312	312	312

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW50B

Reach	River Sta.	Contr.	Expan.
NRW50B	1.40	.1	.3
NRW50B	1.35	.1	.3
NRW50B	1.31	.1	.3
NRW50B	1.25	.1	.3
NRW50B	1.20	.1	.3
NRW50B	1.15	.1	.3
NRW50B	1.09	.1	.3
NRW50B	1.03	.3	.5
NRW50B	1.01	.3	.5
NRW50B	0.99	Culvert	
NRW50B	0.98	.3	.5
NRW50B	0.92	.1	.3
NRW50B	0.87	.1	.3
NRW50B	0.82	.1	.3
NRW50B	0.77	.1	.3
NRW50B	0.72	.1	.3
NRW50B	0.66	.1	.3
NRW50B	0.61	.1	.3

River: NRW50T5

Reach	River Sta.	Contr.	Expan.
NRW50T5	0.84	.1	.3
NRW50T5	0.77	.1	.3
NRW50T5	0.70	.1	.3
NRW50T5	0.62	.1	.3
NRW50T5	0.59	.1	.3
NRW50T5	0.54	.1	.3
NRW50T5	0.50	.1	.3

NRW50T5	0.47	.1	.3
NRW50T5	0.43	.1	.3
NRW50T5	0.38	.1	.3
NRW50T5	0.34	.1	.3
NRW50T5	0.30	.1	.3
NRW50T5	0.23	.1	.3
NRW50T5	0.16	.1	.3
NRW50T5	0.09	.1	.3
NRW50T5	0.03	.1	.3

River: NRW50A

Reach	River Sta.	Contr.	Expan.
NRW50A	0.58	.1	.3
NRW50A	0.55	.1	.3
NRW50A	0.53	.1	.3
NRW50A	0.50	.1	.3
NRW50A	0.47	.1	.3
NRW50A	0.44	.1	.3
NRW50A	0.41	.1	.3
NRW50A	0.38	.1	.3
NRW50A	0.35	.1	.3
NRW50A	0.31	.1	.3
NRW50A	0.28	.1	.3
NRW50A	0.24	.1	.3
NRW50A	0.20	.1	.3
NRW50A	0.16	.1	.3
NRW50A	0.12	.1	.3
NRW50A	0.06	.1	.3

NRW50.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File:
P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.prj
Plan File:
P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.p01
Geometry File:
P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.g01
Flow File:
P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.xs
Selected profiles: 100-Year
Date: 7/29/2005
Time: 5:23:46 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW50B,NRW50B						
1.4	261	261	261	324.28	453	
1.35	218	218	218	245.34	453	
1.31	278	278	278	259.55	453	D
1.25	308	308	308	285.1	583	
1.2	267	267	267	284.54	583	
1.15	287	287	287	229.07	583	
1.09	320	320	320	189.16	364	D
1.03	119	119	119	517.78	364	
1.01	145	145	145	790.09	364	D
.99	Culvert #1-Up					
.99	Culvert #1-Dn					
.99	Culvert #2-Up					
.99	Culvert #2-Dn					
.98	300	300	300	196.99	364	
.92	301	301	301	204.6	340	D
.87	264	264	264	162.7	340	D
.82	231	231	231	148.97	340	
.77	298	298	298	128.51	340	
.72	305	305	305	108.15	340	
.66	244	244	244	166.22	340	
.61	179	179	179	103.79	340	C
NRW50T5,NRW50T5						
.84	365	365	365	176.91	252	D
.77	378	378	378	129.8	252	
.7	396	396	396	156.35	252	
.62	177	177	177	298.49	252	
.59	267	267	267	250.34	252	
.54	178	178	178	160.86	252	
.5	171	171	171	190.95	252	
.47	209	209	209	105.05	282	
.43	262	262	262	167.87	282	D
.38	221	221	221	244.23	282	
.34	217	217	217	206.09	282	C
.3	339	339	339	146.38	322	C
.23	387	387	387	184.63	322	
.16	375	375	375	119.34	322	
.09	313	313	313	119.03	322	
.03	161	161	161	145.17	322	
NRW50A,NRW50A						
.58	144	144	144	171.37	553	
.55	110	110	110	153.13	553	
.53	152	152	152	133.19	553	

.5	185	185	185	125.7	553
.47	154	154	154	127.43	553
.44	142	142	142	145.46	553
.41	155	155	155	146.21	719
.38	185	185	185	160.34	719
.35	211	211	211	145.18	719
.31	155	155	155	178	719
.28	185	185	185	218.46	719
.24	204	204	204	200.51	719
.2	219	219	219	155.22	719
.16	208	208	208	185.49	719
.12	334	334	334	157.05	719
.06	312	312	312	46.79	719

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: 1.09
XS DC 01 Discharge decreases in the downstream direction.

RS: 0.92
XS DC 01 Discharge decreases in the downstream direction.

DUE TO ATTENUATION FROM CULVERT XING; SEE HEC-1 OUTPUT

LOCATION CHECK

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is NRW50B,NRW50B
Known WS = 1674.92 is specified as the downstream boundary
for profile 100-Year

XS BC 02 The name of the stream is NRW50T5,NRW50T5
Normal S = 0.0165 is specified as the downstream boundary
for profile 100-Year

XS BC 02 The name of the stream is NRW50A,NRW50A
Normal S = 0.0237 is specified as the downstream boundary
for profile 100-Year

LATERAL WEIRS CHECK

---END---

NRW50.br
CHECK-RAS Program: Structure Check

Project File:
P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.prj
Plan File:
P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.p01
Geometry File:
P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.g01
Flow File:
P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.br
Selected profiles: 100-Year
Date: 7/29/2005
Time: 5:23:47 PM

RS	MaxLoChord	MnTpRd	EGEL	WSEL	MinChEl	Structure
NRW50B,NRW50B						
1.4			1731.35	1731.23	1729	
1.35			1728.13	1727.9	1726.03	
1.31			1725.48	1725.35	1723.51	
1.25			1722.05	1721.76	1720.26	
1.2			1718.49	1718.42	1717.03	
1.15			1714.71	1714.49	1713.58	
1.09			1711.21	1711.1	1708.6	
1.03			1711.1	1711.1	1704.73	
1.01			1711.1	1711.1	1703.48	
0.99	1707.5	1710.19	0	1707.5	1703.5	Culvert #1-Up
0.99	1704.8	1710.19	0	1704.08	1700.8	Culvert #1-Dn
0.99	1707.5	1710.19	0	1707.5	1703.5	Culvert #2-Up
0.99	1704.8	1710.19	0	1704.08	1700.8	Culvert #2-Dn
0.98			1702.48	1702.27	1700.8	
0.92			1698.49	1698.38	1696.63	
0.87			1694.91	1694.73	1693.52	
0.82			1690.71	1690.53	1688.25	
0.77			1687.97	1687.77	1684.7	
0.72			1683.83	1683.52	1681.38	
0.66			1680.2	1680.06	1677.44	
0.61			1676.95	1676.48	1674	
NRW50T5,NRW50T5						
0.84			1730.24	1730.14	1728.7	
0.77			1726.33	1726.11	1724.7	
0.7			1721.63	1721.52	1719.43	
0.62			1717.06	1716.94	1715.69	
0.59			1714.8	1714.7	1713.41	
0.54			1711.28	1711.15	1710.27	
0.5			1709.23	1709.12	1707.54	
0.47			1707.34	1707.08	1705.74	
0.43			1705.04	1704.87	1703.08	
0.38			1702.66	1702.58	1701.66	
0.34			1701.23	1701.02	1700.39	
0.3			1697.87	1697.51	1695.68	
0.23			1692.48	1692.39	1691.42	
0.16			1686.69	1686.45	1685.37	
0.09			1681.24	1681.05	1679.69	
0.03			1676.73	1676.56	1675.04	
NRW50A,NRW50A						
0.58			1675.08	1674.92	1672.69	
0.55			1672.98	1672.77	1670.58	
0.53			1671.59	1671.38	1669.34	
0.5			1669.91	1669.58	1666.65	
0.47			1667.36	1667.08	1665.03	

0.44	1665.97	1665.81	1661.8
0.41	1664.73	1664.43	1660.96
0.38	1663.01	1662.75	1658.63
0.35	1661.41	1661.22	1657.99
0.31	1658.93	1658.67	1655.61
0.28	1656.93	1656.76	1654.18
0.24	1655.24	1655.09	1652.61
0.2	1653.18	1652.93	1649.73
0.16	1650.54	1650.28	1647.79
0.12	1648.15	1647.94	1645.72
0.06	1643.37	1642.39	1638.09

RIVER/REACH: NRW50B, NRW50B
RIVER STATION: 0.99
TYPE OF STRUCTURE: Culvert

Description:	CL of New River Road; Top of culvert crossingAppr
Distance from Upstream XS:	24
Deck/Roadway Width:	120
Weir Coefficient:	3
Maximum allowable submergence for weir flow:	0
Elevation at which weir flow begins:	1710.43
Weir crest shape:	Broad Crested

Sec	River Station	Length Channel	WSEL	Surch.	EGEL	TopWidth Actual	
4	1.03	119.00	1711.1		1711.1	517.78	
3	1.01	145.00	1711.1		1711.1	790.09	
	0.99	120.00	1707.5		0	0	Culvert #1-Up
	0.99	1.00	1704.08		0	0	Culvert #1-Dn
	0.99	120.00	1707.5		0	0	Culvert #2-Up
	0.99	1.00	1704.08		0	0	Culvert #2-Dn
2	0.98	300.00	1702.27		1702.48	196.99	
1	0.92	301.00	1698.38		1698.49	204.6	

	Ineffective Flow, Section 3			Ineffective Flow, Section 2		
	Sta L	Sta R	Elev	Sta L	Sta R	Elev
1	9559.7	9971.5	1710.43			
2	10028.5	10440.9	1710.43			

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS
Culvert Group					9971.5	10028.5UD

Opening Type	StagStaL	StagStaR	EncStaL	EncStaR	LIfStaS	RIfStaS
Culvert Group					9971.5	10028.5UD

CULVERT:
Culvert Name: Culvert #1
Shape: Circular Rise: 4 Span: 0 Barrels: 1
FHWA Chart #: # 2 - Corrugated Metal Pipe C
FHWA Scale #: # 2 - Mitered to conform to slope
Solution Crit:Highest U.S. EG

UpstrmDist: 24 Length: 120 n-Value: 0.024
EntLossCoef: 0.7 ExtLossCoef: 1 CulvInvElU 1703.5 CulvInvElD 1700.8
LCntStaU: 9997.5 RCntStaU: 9997.5 LCntStaD 9997.5 RCntStaD 9997.5
Culvert Depth Blocked: 0

Culv Area: 12.57 CulvQ: 118.11 MinTopRd: 1710.44

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Culvert #1	9995.5	9999.5	1710.36	1710.19	1710.19	1707.5	U
	9995.5	9999.5	1710.36	1710.19	1710.19	1704.8	D

CULVERT:
Culvert Name: Culvert #2
Shape: Circular Rise: 4 Span: 0 Barrels: 1
FHWA Chart #: # 2 - Corrugated Metal Pipe C
FHWA Scale #: # 2 - Mitered to conform to slope
Solution Crit:Highest U.S. EG

UpstrmDist: 24 Length: 120 n-Value: 0.024
EntLossCoef: 0.7 ExtLossCoef: 1 CulvInvElU 1703.5 CulvInvElD 1700.8
LCntStaU: 10002 RCntStaU: 10002 LCntStaD 10002 RCntStaD 10002
Culvert Depth Blocked: 0

Culv Area: 12.57 CulvQ: 118.11 MinTopRd: 1710.44

	LAbutSt	RAbutSt	LMnTpRd	RMnTpRd	MnTpRd	MxLoCd	
Culvert #2	10000	10004	1710.36	1710.19	1710.19	1707.5	U
	10000	10004	1710.36	1710.19	1710.19	1704.8	D

Name	Q Total.	Q Struc	Q Weir	Selected Method	Flow Type
Culvert #1		118.11	127.78	Highest U.S. EG	Pressure and Weir Flow
Culvert #2		118.11	127.78	Highest U.S. EG	Pressure and Weir Flow

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GEOMETRIC CHECK

```
RS:        0.99
ST GD 03   The starting station of 9351.3 from downstream road/weir data
           is less than the starting station of 9398.1 from downstream internal
           section.
           The high chord elevation of 1712.77 for the starting road/weir station is
           greater than the ground elevation of 1710.82 for the starting ground
station.
           The EGEL at section 3 of 1711.1 is greater than the ground elevation.
           The road/weir data should be included in the ground data

TYPE OF FLOW CHECK
------------------

RS:        0.99 This is Culvert #1
CV PW 01   Type of flow is pressure and weir flow because,
           1. EGEL 3 of 1711.1 is greater than MinTopRd of 1710.44.
           2. CulvWSIn of 1707.50 is greater than or equal to MxLoCdU of 1707.50.
           3. CulvWSOut of 1704.08 is less than MxLoCdD of 1704.80.
           4. Q/AD^0.5 of 4.70 is greater than or equal to 4.0.

RS:        0.99 This is Culvert #2
CV PW 01   Type of flow is pressure and weir flow because,
           1. EGEL 3 of 1711.1 is greater than MinTopRd of 1710.44.
           2. CulvWSIn of 1707.50 is greater than or equal to MxLoCdU of 1707.50.
           3. CulvWSOut of 1704.08 is less than MxLoCdD of 1704.80.
           4. Q/AD^0.5 of 4.70 is greater than or equal to 4.0.

DISTANCE CHECK
--------------

RS:        0.99 This is Culvert #1
ST DT 02   The channel distance of 1 at Downstream Internal Section is less than
           the height of the culvert opening of 4
           Section 2 should be placed at the foot of the road embankment or
           wing walls.
           Distances at Sections 4, 3 & 2 should be adjusted.

RS:        0.99 This is Culvert #2
ST DT 02   The channel distance of 1 at Downstream Internal Section is less than
           the height of the culvert opening of 4
           Section 2 should be placed at the foot of the road embankment or
           wing walls.
           Distances at Sections 4, 3 & 2 should be adjusted.

CULVERT COEFFICIENT CHECK
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CULVERT CRITERIA CHECK
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INEFFECTIVE FLOW CHECK
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---END
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Sections placed @ proper location
- No Changes

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.f03
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW50_NRW50T5\NRW50.nt
Selected profiles: 100-Year
Date: 7/29/2005
Time: 5:23:49 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW50B,NRW50B						
1.4		0.078	0.05	0.078	0.1	0.3
1.35		0.078	0.05	0.078	0.1	0.3
1.31		0.078	0.05	0.078	0.1	0.3
1.25		0.078	0.05	0.078	0.1	0.3
1.2		0.078	0.05	0.078	0.1	0.3
1.15		0.078	0.05	0.078	0.1	0.3
1.09		0.078	0.05	0.078	0.1	0.3
1.03		0.078	0.05	0.078	0.3	0.5
1.01		0.078	0.05	0.078	0.3	0.5
.99	Culvert-Up	0.078	0.05	0.078	0.3	0.5
.99	Culvert-Dn	0.078	0.05	0.078	0.3	0.5
.98		0.078	0.05	0.078	0.3	0.5
.92		0.078	0.05	0.078	0.1	0.3
.87		0.078	0.05	0.078	0.1	0.3
.82		0.078	0.05	0.078	0.1	0.3
.77		0.078	0.05	0.078	0.1	0.3
.72		0.078	0.05	0.078	0.1	0.3
.66		0.078	0.05	0.078	0.1	0.3
NRW50T5,NRW50T5						
.61		0.078	0.05	0.078	0.1	0.3
.84		0.076	0.046	0.076	0.1	0.3
.77		0.076	0.046	0.076	0.1	0.3
.7		0.076	0.046	0.076	0.1	0.3
.62		0.076	0.046	0.076	0.1	0.3
.59		0.076	0.046	0.076	0.1	0.3
.54		0.076	0.046	0.076	0.1	0.3
.5		0.076	0.046	0.076	0.1	0.3
.47		0.076	0.046	0.076	0.1	0.3
.43		0.076	0.046	0.076	0.1	0.3
.38		0.076	0.046	0.076	0.1	0.3
.34		0.016	0.016	0.016	0.1	0.3
.3		0.076	-----	-----	0.1	0.3
		0.046	-----	-----		
.23		0.076	0.046	0.076	0.1	0.3
.16		0.076	0.046	0.076	0.1	0.3
.09		0.076	0.046	0.076	0.1	0.3
NRW50A,NRW50A						
.03		0.076	0.046	0.076	0.1	0.3
.58		0.078	0.05	0.078	0.1	0.3

.55	0.078	0.05	0.078	0.1	0.3
.53	0.078	0.05	0.078	0.1	0.3
.5	0.078	0.05	0.078	0.1	0.3
.47	0.078	0.05	0.078	0.1	0.3
.44	0.078	0.05	0.078	0.1	0.3
.41	0.078	0.05	0.078	0.1	0.3
.38	0.078	0.05	0.078	0.1	0.3
.35	0.078	0.05	0.078	0.1	0.3
.31	0.078	0.05	0.078	0.1	0.3
.28	0.078	0.05	0.078	0.1	0.3
.24	0.078	0.05	0.078	0.1	0.3
.2	0.078	0.05	0.078	0.1	0.3
.16	0.078	0.05	0.078	0.1	0.3
.12	0.078	0.05	0.078	0.1	0.3
.06	0.078	0.05	0.078	0.1	0.3

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.016	0.078
Right Overbank n Value:	0.016	0.078
Channel n Value:	0.016	0.05
Contraction Coefficient:	0.1	0.3
Expansion Coefficient:	0.3	0.5

ROUGHNESS COEFFICIENT CHECK

RS: 0.34
NT RC 01 Left overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 0.34
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 0.34
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 0.34
NT RC 05 The left overbank n value of 0.016 and the right overbank n value
of 0.016 are less than or equal to the channel n value of 0.016
The overbank n values should be reevaluated.

NEW RIVER RD
DIP KING

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW 55

URS Corporation
New River West Tributaries FDS
FCD 2003 C057

HEC-RAS Plan: NRW55 River: NRW55A Reach: NRW55A Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55A	1.78	7869.00	1655.72	1660.25		1661.19	0.001652	9.94	1139.21	518.59	0.85
NRW55A	1.77	7869.00	1652.40	1660.32		1660.92	0.005786	9.50	1916.62	741.99	0.64
NRW55A	1.67	7775.00	1647.91	1656.56	1656.29	1657.21	0.008003	11.26	1738.88	673.07	0.73

HEC-RAS Plan: NRW55 River: NRW55B Reach: NRW55B Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55B	2.34	5670.00	1677.78	1684.00	1684.00	1685.64	0.018889	11.20	704.43	253.80	0.87
NRW55B	2.21	5670.00	1669.58	1675.92		1676.10	0.003796	4.72	1970.78	602.33	0.38
NRW55B	2.10	5670.00	1664.78	1672.91	1671.97	1673.31	0.006651	6.89	1561.63	573.54	0.52
NRW55B	2.02	5670.00	1662.00	1668.58		1669.33	0.012616	8.98	1173.61	495.14	0.71
NRW55B	1.91	5670.00	1656.17	1665.60	1663.74	1665.85	0.003257	5.80	2015.48	596.73	0.38

HEC-RAS Plan: NRW55 River: NRW55C Reach: NRW55C Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55C	2.54	5670.00	1678.33	1686.34		1686.64	0.004084	6.35	1711.87	552.37	0.42
NRW55C	2.49	5670.00	1677.37	1686.11		1686.23	0.001583	4.04	2508.15	684.85	0.26
NRW55C	2.40	5670.00	1676.10	1685.98	1678.79	1686.00	0.000169	1.58	5751.31	926.49	0.09

HEC-RAS Plan: NRW55 River: NRW55D Reach: NRW55D Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55D	3.00	3272.00	1697.09	1704.32		1704.86	0.008118	6.92	763.01	397.41	0.55
NRW55D	2.95	3272.00	1693.81	1701.91		1702.52	0.009180	8.57	733.38	310.29	0.60
NRW55D	2.86	3272.00	1691.15	1698.73		1699.16	0.005217	6.72	801.80	245.47	0.46
NRW55D	2.77	3272.00	1688.12	1694.50		1695.24	0.012410	8.99	669.86	325.02	0.69
NRW55D	2.67	3272.00	1683.30	1690.63		1691.00	0.005759	6.82	938.88	485.28	0.48
NRW55D	2.61	3272.00	1681.70	1688.13		1688.70	0.008080	7.87	826.07	438.93	0.57

HEC-RAS Plan: NRW55 River: NRW55E Reach: NRW55E Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55E	4.34	1454.00	1778.45	1784.24		1785.20	0.011592	8.12	209.95	72.87	0.66
NRW55E	4.25	1454.00	1773.49	1780.03		1780.56	0.007532	7.26	358.42	154.84	0.54
NRW55E	4.16	1454.00	1769.20	1775.38		1776.14	0.011818	9.12	263.82	81.15	0.68
NRW55E	4.14	1454.00	1768.02	1773.71		1774.43	0.012785	9.05	260.71	79.34	0.70
NRW55E	4.10	1454.00	1766.44	1771.76		1772.34	0.008769	7.34	281.89	79.82	0.58
NRW55E	4.08	1454.00	1764.55	1771.32		1771.65	0.004537	6.11	375.71	90.08	0.43
NRW55E	4.03	2587.00	1760.71	1768.02		1769.34	0.013932	10.41	358.43	115.76	0.81
NRW55E	3.99	2587.00	1759.40	1766.13		1766.99	0.008396	8.46	456.00	144.49	0.64
NRW55E	3.89	2587.00	1751.91	1758.98	1758.98	1760.72	0.016804	11.47	308.63	107.31	0.89
NRW55E	3.80	2587.00	1745.23	1751.77	1751.67	1753.04	0.012052	9.59	379.41	179.48	0.76
NRW55E	3.72	2587.00	1740.21	1746.95		1747.76	0.010895	8.59	488.79	206.99	0.71
NRW55E	3.61	2587.00	1734.07	1740.02		1741.01	0.012460	8.49	394.09	159.57	0.75
NRW55E	3.51	2587.00	1727.97	1734.25		1735.26	0.010643	8.35	389.61	188.57	0.70
NRW55E	3.42	2587.00	1722.21	1728.39	1728.39	1729.61	0.011778	9.24	387.86	240.64	0.75
NRW55E	3.32	2587.00	1718.04	1722.62	1721.99	1723.07	0.009078	5.91	584.92	305.84	0.61
NRW55E	3.24	2587.00	1711.81	1717.58	1717.58	1718.55	0.010866	8.58	492.40	344.08	0.71
NRW55E	3.14	2587.00	1705.62	1712.23	1711.59	1712.80	0.008575	8.47	609.86	226.42	0.64
NRW55E	3.05	2587.00	1700.60	1706.32	1706.32	1707.24	0.013706	9.74	511.62	254.83	0.80

HEC-RAS Plan: NRW55 River: NRW55T5 Reach: NRW55T5 Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T5	0.69	219.00	1774.75	1776.24		1776.36	0.007464	3.14	87.37	133.11	0.53
NRW55T5	0.62	235.00	1770.68	1771.96	1771.96	1772.23	0.023230	4.92	62.35	118.54	0.91
NRW55T5	0.57	235.00	1767.49	1768.52	1768.18	1768.60	0.006219	2.58	107.46	157.59	0.47
NRW55T5	0.52	235.00	1764.60	1765.68	1765.68	1765.86	0.028078	4.58	74.90	208.37	0.96
NRW55T5	0.47	235.00	1759.16	1760.14	1759.98	1760.27	0.011592	3.03	82.65	141.03	0.62
NRW55T5	0.37	235.00	1752.18	1754.23	1753.90	1754.56	0.010352	4.61	52.98	43.28	0.66
NRW55T5	0.29	235.00	1747.05	1749.30	1749.20	1749.73	0.013896	5.64	48.60	52.54	0.78
NRW55T5	0.22	235.00	1742.00	1743.79	1743.59	1744.07	0.014661	4.25	55.38	56.13	0.74
NRW55T5	0.11	235.00	1733.45	1735.46	1735.34	1735.84	0.015013	5.69	49.46	48.16	0.80

HEC-RAS Plan: NRW55 River: NRW55T10A Reach: NRW55T10A Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T10A	1.25	1365.00	1721.66	1726.80		1727.88	0.014721	8.65	184.97	66.91	0.76
NRW55T10A	1.2	1365.00	1719.55	1724.43		1724.91	0.008165	5.75	279.69	151.65	0.55
NRW55T10A	1.08	1365.00	1712.30	1716.56	1716.34	1717.37	0.018605	7.53	212.28	119.80	0.81
NRW55T10A	0.99	1365.00	1709.10	1711.48		1711.60	0.007449	3.77	538.92	328.66	0.48
NRW55T10A	0.89	1951.00	1702.60	1705.09	1704.74	1705.56	0.015753	5.67	394.07	264.31	0.71
NRW55T10A	0.8	1951.00	1696.10	1699.56	1698.68	1699.71	0.008630	4.88	679.56	362.39	0.54
NRW55T10A	0.69	1951.00	1689.82	1694.17		1694.47	0.010543	6.83	635.20	422.40	0.63
NRW55T10A	0.6	1951.00	1684.91	1689.02	1688.51	1689.26	0.010643	6.48	639.27	390.24	0.63
NRW55T10A	0.51	1951.00	1678.54	1683.60	1683.48	1684.10	0.010008	7.44	559.47	391.01	0.64
NRW55T10A	0.4	1951.00	1672.10	1677.97		1678.51	0.010027	8.03	526.29	307.98	0.64
NRW55T10A	0.31	1951.00	1668.48	1674.02		1674.34	0.007459	6.88	635.53	339.22	0.56
NRW55T10A	0.22	1915.00	1664.39	1669.22		1669.66	0.013279	7.72	521.00	335.75	0.71
NRW55T10A	0.17	1915.00	1662.29	1666.83		1667.02	0.007842	5.60	690.41	393.42	0.54
NRW55T10A	0.12	1915.00	1660.50	1664.56	1663.92	1664.78	0.010001	5.94	622.84	368.44	0.60

HEC-RAS Plan: NRW55 River: NRW55T10B Reach: NRW55T10B Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T10B	3	1395.00	1911.33	1915.93	1915.93	1917.81	0.024546	11.07	132.11	39.15	0.97
NRW55T10B	2.9	1395.00	1900.34	1906.59		1906.99	0.003874	5.37	321.90	93.46	0.41
NRW55T10B	2.89	1395.00	1898.77	1904.41	1904.41	1906.18	0.018470	11.15	154.69	54.73	0.88
NRW55T10B	2.86	1395.00	1894.91	1900.09	1900.05	1901.72	0.020662	10.59	154.12	54.04	0.91
NRW55T10B	2.83	1395.00	1891.30	1896.60	1896.60	1898.09	0.017590	10.76	184.84	72.89	0.85
NRW55T10B	2.81	1395.00	1889.64	1894.23	1894.23	1895.45	0.021283	10.22	199.34	84.22	0.90
NRW55T10B	2.76	1395.00	1883.33	1888.41	1888.41	1889.74	0.019011	10.01	181.81	69.68	0.86
NRW55T10B	2.71	1395.00	1877.51	1882.49	1882.49	1884.15	0.022191	10.92	154.96	52.10	0.95
NRW55T10B	2.67	1395.00	1872.97	1877.17	1877.11	1878.46	0.020320	9.60	175.94	69.22	0.89
NRW55T10B	2.62	1395.00	1866.46	1871.72	1871.72	1873.09	0.018742	10.82	195.83	87.13	0.89
NRW55T10B	2.58	1395.00	1864.26	1867.16	1867.16	1867.92	0.022410	7.85	248.69	159.59	0.88
NRW55T10B	2.52	1395.00	1856.14	1860.49	1860.49	1861.11	0.017921	8.45	322.37	219.24	0.81
NRW55T10B	2.51	1395.00	1855.32	1858.73	1858.73	1859.31	0.018811	7.60	315.00	232.39	0.81
NRW55T10B	2.47	1395.00	1847.08	1852.27	1852.27	1853.64	0.018530	10.57	191.70	74.42	0.87
NRW55T10B	2.42	1395.00	1840.65	1847.17	1846.47	1848.52	0.014716	9.54	169.36	61.35	0.76
NRW55T10B	2.38	1395.00	1838.71	1844.54	1844.54	1845.59	0.014183	10.26	263.44	132.88	0.78
NRW55T10B	2.32	1395.00	1831.63	1836.24	1836.24	1837.18	0.018998	9.83	239.66	116.91	0.86
NRW55T10B	2.27	1395.00	1825.23	1830.65	1830.65	1832.11	0.016530	10.18	177.36	90.79	0.83
NRW55T10B	2.22	1395.00	1820.61	1825.60	1825.60	1826.92	0.016341	9.69	186.65	82.36	0.81
NRW55T10B	2.17	1395.00	1815.52	1820.21		1821.50	0.019148	10.34	210.77	107.43	0.88
NRW55T10B	2.13	1395.00	1810.54	1815.31		1816.58	0.021355	11.08	200.10	78.49	0.93
NRW55T10B	2.08	1395.00	1805.61	1810.71	1810.35	1812.06	0.015376	9.70	176.06	91.75	0.80
NRW55T10B	2.03	1395.00	1802.32	1806.38	1806.38	1807.55	0.020779	9.58	207.48	109.67	0.89
NRW55T10B	1.94	1395.00	1794.83	1797.16	1796.27	1797.31	0.009528	4.29	496.11	333.48	0.55
NRW55T10B	1.87	1393.00	1788.81	1790.40	1790.21	1790.75	0.047779	7.08	304.11	278.96	1.13
NRW55T10B	1.84	1393.00	1784.20	1786.51	1785.98	1786.68	0.016038	4.63	462.12	382.36	0.68
NRW55T10B	1.8	1393.00	1778.06	1782.07	1782.07	1782.90	0.017998	8.94	289.60	218.26	0.83
NRW55T10B	1.75	1393.00	1770.51	1775.36	1775.36	1775.95	0.011218	7.85	388.07	310.49	0.67
NRW55T10B	1.7	1393.00	1766.93	1770.49	1770.31	1770.91	0.017767	7.57	387.91	318.68	0.79
NRW55T10B	1.63	1393.00	1758.06	1761.86	1761.86	1762.56	0.030504	9.74	270.18	186.43	1.03
NRW55T10B	1.56	1393.00	1751.80	1755.35		1755.53	0.010964	5.47	487.15	332.39	0.61
NRW55T10B	1.51	1393.00	1747.28	1749.42	1749.24	1749.80	0.042824	6.73	302.12	274.95	1.07
NRW55T10B	1.45	1393.00	1740.76	1745.02	1744.36	1745.26	0.007706	5.48	491.15	321.84	0.53
NRW55T10B	1.39	1393.00	1734.46	1739.20	1739.20	1740.68	0.029091	9.88	150.26	63.11	1.02
NRW55T10B	1.33	1393.00	1729.33	1733.42	1733.08	1733.90	0.012094	6.56	335.21	216.03	0.66

HEC-RAS Plan: NRW55 River: NRW55T15 Reach: NRW55T15 Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T15	2.27	1488.00	1876.25	1882.48	1882.42	1884.22	0.020744	10.77	154.24	59.98	0.91
NRW55T15	2.19	1488.00	1869.10	1874.45		1875.71	0.017029	10.18	222.65	101.52	0.84
NRW55T15	2.13	1488.00	1863.76	1869.37	1869.37	1870.86	0.017057	10.16	185.73	93.28	0.83
NRW55T15	2.08	1488.00	1859.27	1864.46	1864.46	1865.52	0.014815	9.34	250.09	123.47	0.78
NRW55T15	2	1488.00	1851.06	1855.84	1855.84	1857.01	0.016219	9.20	214.32	105.34	0.80
NRW55T15	1.97	1488.00	1846.91	1853.34	1853.34	1854.46	0.013250	9.85	257.41	122.59	0.74
NRW55T15	1.94	1488.00	1842.79	1848.60	1848.37	1850.79	0.023914	12.60	153.69	57.90	1.00
NRW55T15	1.91	1488.00	1839.01	1844.88	1844.88	1846.82	0.020781	11.57	148.80	42.96	0.92
NRW55T15	1.85	1488.00	1832.20	1838.34	1838.34	1839.61	0.013706	9.60	218.45	117.57	0.75
NRW55T15	1.81	1488.00	1829.92	1835.47		1836.46	0.013670	8.92	252.53	121.31	0.74
NRW55T15	1.78	1488.00	1824.88	1831.24	1831.24	1832.99	0.020202	12.40	196.66	77.53	0.92
NRW55T15	1.72	1488.00	1820.64	1824.71	1824.42	1825.69	0.022136	9.74	222.75	86.95	0.92
NRW55T15	1.65	1488.00	1812.90	1817.30	1817.02	1818.61	0.017751	9.70	193.63	76.57	0.85
NRW55T15	1.62	1488.00	1808.89	1813.32	1813.32	1814.46	0.023625	10.49	221.70	99.05	0.95
NRW55T15	1.56	1488.00	1799.92	1805.51	1805.51	1806.69	0.015479	10.20	234.00	96.65	0.80
NRW55T15	1.54	1488.00	1797.34	1803.02		1804.79	0.018580	11.28	164.18	50.98	0.88
NRW55T15	1.52	1488.00	1794.59	1800.90	1800.90	1802.46	0.015687	11.45	204.90	75.27	0.83
NRW55T15	1.46	1488.00	1789.80	1795.50	1795.50	1796.92	0.017248	11.13	207.29	83.08	0.85
NRW55T15	1.44	1488.00	1788.23	1792.64	1792.64	1794.06	0.020922	9.76	172.16	83.23	0.90
NRW55T15	1.34	1488.00	1779.04	1783.55		1784.33	0.010906	7.31	229.51	76.66	0.66
NRW55T15	1.3	1488.00	1773.11	1779.28	1779.22	1781.12	0.018518	11.82	167.01	48.79	0.89
NRW55T15	1.25	1488.00	1769.65	1774.52	1774.45	1776.06	0.020592	10.40	169.91	59.55	0.91
NRW55T15	1.23	1488.00	1768.30	1772.61		1773.54	0.015091	8.36	224.27	85.73	0.77
NRW55T15	1.16	1488.00	1762.49	1766.49	1766.42	1767.50	0.017174	8.77	230.38	116.31	0.81
NRW55T15	1.07	1488.00	1752.12	1758.02		1759.22	0.017168	10.72	259.22	138.62	0.85
NRW55T15	0.98	1488.00	1744.19	1750.00		1750.95	0.017795	10.87	259.79	104.29	0.85
NRW55T15	0.88	1488.00	1737.58	1741.63	1741.39	1742.13	0.016716	8.17	376.01	252.86	0.79
NRW55T15	0.84	1488.00	1735.82	1737.87		1738.21	0.015242	5.17	356.03	243.31	0.68
NRW55T15	0.79	1488.00	1728.97	1732.29	1732.27	1732.98	0.024967	7.67	277.52	205.75	0.91
NRW55T15	0.76	1488.00	1725.11	1729.83	1729.35	1730.18	0.012700	4.83	327.64	233.85	0.63
NRW55T15	0.68	1594.00	1719.98	1722.16	1721.74	1722.54	0.035005	6.94	338.10	250.91	1.00
NRW55T15	0.65	1594.00	1715.61	1718.92		1719.10	0.010653	4.80	499.24	318.39	0.58
NRW55T15	0.61	1594.00	1712.61	1715.72		1716.15	0.019688	7.24	341.92	208.28	0.81
NRW55T15	0.59	1594.00	1711.47	1714.28		1714.43	0.010729	4.88	558.15	391.26	0.59
NRW55T15	0.55	1594.00	1704.76	1711.43		1712.21	0.009364	8.82	354.21	171.81	0.64
NRW55T15	0.5	1755.00	1702.71	1709.05	1709.05	1709.88	0.011956	9.67	389.42	202.50	0.72
NRW55T15	0.41	1755.00	1700.07	1704.54		1704.89	0.007941	6.02	456.20	186.35	0.55

HEC-RAS Plan: NRW55 River: NRW55T15 Reach: NRW55T15 Profile: 100-year (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T15	0.37	1755.00	1696.90	1702.78		1703.24	0.007545	7.16	439.50	170.42	0.56
NRW55T15	0.31	1755.00	1693.83	1700.63	1699.16	1701.12	0.005699	7.03	407.09	117.12	0.51
NRW55T15	0.21	1755.00	1690.44	1694.90	1694.90	1696.01	0.020772	9.97	266.81	118.84	0.90
NRW55T15	0.12	1755.00	1686.50	1692.04		1692.17	0.002489	4.06	779.43	293.34	0.33
NRW55T15	0.09	1755.00	1685.32	1688.08		1688.55	0.022774	7.07	366.04	218.93	0.86

HEC-RAS Plan: NRW55 River: NRW55T20 Reach: NRW55T20 Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T20	0.64	905.00	1742.22	1746.55	1746.55	1747.07	0.013097	6.90	220.81	240.45	0.69
NRW55T20	0.55	905.00	1736.02	1738.83	1738.83	1739.36	0.016661	6.52	199.96	198.96	0.75
NRW55T20	0.46	905.00	1727.00	1731.80	1731.80	1732.36	0.010681	6.86	219.55	220.66	0.63
NRW55T20	0.37	905.00	1721.35	1725.26	1724.83	1725.60	0.008765	5.88	242.30	160.33	0.57
NRW55T20	0.27	905.00	1714.60	1719.48		1720.12	0.012303	7.66	205.61	173.89	0.69
NRW55T20	0.18	905.00	1709.12	1713.91	1713.91	1714.37	0.010704	6.68	252.81	265.52	0.62
NRW55T20	0.08	905.00	1704.46	1708.33	1708.10	1708.62	0.009004	5.86	280.97	241.16	0.57

HEC-RAS Plan: Post-Split River: NRW55T25-A1 Reach: NRW55T25-A1 Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T25-A1	1.13	1009.00	1970.79	1974.35	1974.35	1975.36	0.020896	9.22	156.60	78.60	0.91
NRW55T25-A1	1.09	1009.00	1958.77	1964.29	1964.29	1965.74	0.016655	10.20	131.97	59.78	0.84
NRW55T25-A1	1.06	1009.00	1948.60	1954.93	1954.93	1956.37	0.018674	10.06	122.94	51.71	0.86
NRW55T25-A1	1.04	1009.00	1946.65	1951.60	1951.60	1952.47	0.021792	8.73	166.94	89.76	0.78
NRW55T25-A1	1.02	1009.00	1942.07	1945.69	1945.69	1946.60	0.027110	9.77	156.91	80.72	0.97
NRW55T25-A1	1.01	1009.00	1939.54	1942.29	1942.29	1943.18	0.036470	9.78	153.24	87.11	1.14
NRW55T25-A1	0.98	1009.00	1934.05	1937.94	1937.94	1938.60	0.021787	8.96	206.80	140.28	0.91
NRW55T25-A1	0.97	1009.00	1929.22	1932.77	1932.77	1933.34	0.048570	6.18	178.97	168.41	0.97
NRW55T25-A1	0.94	1009.00	1919.96	1924.34	1924.34	1925.29	0.015634	8.37	160.74	97.08	0.80
NRW55T25-A1	0.90	1009.00	1911.44	1915.58	1915.58	1916.48	0.027334	8.50	158.29	100.92	0.98
NRW55T25-A1	0.88	1009.00	1905.79	1910.15	1910.15	1911.16	0.021377	9.19	154.39	75.26	0.92
NRW55T25-A1	0.85	1009.00	1900.67	1905.88	1905.88	1907.50	0.022135	11.53	118.17	38.88	0.98
NRW55T25-A1	0.83	1009.00	1897.76	1902.65	1902.65	1904.12	0.023894	9.81	106.83	40.83	0.96
NRW55T25-A1	0.78	1009.00	1890.71	1895.40	1895.40	1896.51	0.017186	8.91	142.76	76.19	0.83
NRW55T25-A1	0.74	1009.00	1885.99	1890.22	1890.22	1890.98	0.015437	8.12	194.98	163.40	0.78
NRW55T25-A1	0.73	1009.00	1883.77	1887.60	1887.60	1888.33	0.030248	8.61	177.11	127.88	1.01
NRW55T25-A1	0.71	971.28	1881.17	1883.94	1883.94	1884.46	0.027684	6.68	175.42	199.90	0.94
NRW55T25-A1	0.69	968.82	1877.78	1880.47	1880.47	1881.06	0.033351	7.56	185.41	179.59	1.03
NRW55T25-A1	0.67	964.34	1875.06	1878.02	1877.87	1878.36	0.027108	6.33	234.08	248.37	0.91
NRW55T25-A1	0.65	890.51	1872.64	1874.97	1874.69	1875.24	0.023779	5.83	232.35	208.79	0.85
NRW55T25-A1	0.62	823.64	1869.86	1870.04	1870.04	1870.56	0.051395	1.32	144.94	155.14	0.79
NRW55T25-A1	0.60	823.64	1864.20	1865.39	1865.20	1865.77	0.036855	3.88	168.15	155.52	0.91
NRW55T25-A1	0.55	823.64	1852.09	1853.83	1853.83	1854.34	0.040104	5.37	143.35	137.87	1.01
NRW55T25-A1	0.50	823.64	1842.78	1845.50	1845.50	1845.91	0.023844	6.51	205.73	239.69	0.88
NRW55T25-A1	0.47	823.64	1836.09	1838.60	1838.60	1839.08	0.034668	7.06	176.14	210.42	1.03
NRW55T25-A1	0.43	823.64	1830.13	1832.55	1832.48	1832.91	0.026403	5.87	197.91	241.98	0.89
NRW55T25-A1	0.39	823.64	1822.50	1825.12	1825.03	1825.74	0.032964	6.90	134.32	100.08	1.01
NRW55T25-A1	0.33	823.64	1814.58	1816.56	1816.27	1816.83	0.025349	5.46	218.55	225.86	0.86
NRW55T25-A1	0.28	823.64	1805.66	1808.75	1808.50	1809.09	0.031602	6.14	197.51	228.40	0.96
NRW55T25-A1	0.23	823.64	1798.09	1800.78	1800.66	1801.26	0.034129	6.85	157.87	135.01	1.02
NRW55T25-A1	0.18	823.64	1789.35	1793.22	1793.22	1793.69	0.020381	6.66	203.27	232.61	0.83
NRW55T25-A1	0.13	823.64	1783.11	1785.82	1785.82	1786.22	0.023434	6.48	215.81	309.56	0.87
NRW55T25-A1	0.11	823.64	1781.28	1783.38	1783.03	1783.49	0.018628	3.95	331.93	524.34	0.71
NRW55T25-A1	0.07	823.64	1775.71	1777.56	1777.39	1777.80	0.037339	4.11	209.79	256.91	0.93
NRW55T25-A1	0.03	823.64	1767.84	1771.05	1771.05	1771.28	0.023849	6.07	287.35	497.03	0.85

HEC-RAS Plan: Zone A Split River: NRW55T25 - A2 Reach: NRW55T25 - A2 Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T25 - A2	0.69	140.00	1863.26	1865.54	1865.54	1865.95	0.022426	5.34	34.17	68.81	0.81
NRW55T25 - A2	0.60	140.00	1848.39	1849.87	1849.79	1850.00	0.035446	3.55	54.94	133.69	0.75
NRW55T25 - A2	0.49	140.00	1826.68	1827.65	1827.65	1827.91	0.038226	4.35	38.42	76.48	0.98
NRW55T25 - A2	0.39	140.00	1808.86	1809.66		1809.76	0.023068	2.90	70.02	215.49	0.71
NRW55T25 - A2	0.27	140.00	1790.65	1791.50	1791.50	1791.67	0.039235	4.21	54.19	146.79	0.95
NRW55T25 - A2	0.06	140.00	1753.03	1754.05	1753.86	1754.15	0.018197	3.26	63.62	118.61	0.68

HEC-RAS Plan: Zone A Split River: NRW55T25 - A3 Reach: NRW55T25 - A3 Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T25 - A3	0.86	50.00	1877.99	1879.30	1879.30	1879.66	0.041167	4.83	10.46	15.93	1.00
NRW55T25 - A3	0.80	50.00	1865.92	1867.02	1867.02	1867.22	0.032257	3.75	16.33	51.02	0.86
NRW55T25 - A3	0.72	50.00	1848.37	1849.50	1849.46	1849.75	0.038379	4.17	13.49	25.84	0.85
NRW55T25 - A3	0.63	50.00	1829.29	1830.44	1830.44	1830.86	0.037449	5.22	9.88	12.74	0.98
NRW55T25 - A3	0.57	50.00	1818.64	1820.22	1819.99	1820.49	0.016337	4.28	12.88	13.10	0.68
NRW55T25 - A3	0.46	50.00	1806.56	1807.68	1807.68	1808.01	0.033211	4.95	12.85	22.16	0.93
NRW55T25 - A3	0.37	50.00	1789.22	1790.39	1790.26	1790.66	0.022836	4.25	12.66	16.50	0.78
NRW55T25 - A3	0.29	50.00	1776.29	1777.37	1777.37	1777.53	0.044363	4.07	18.76	56.54	0.98
NRW55T25 - A3	0.18	50.00	1761.78	1762.94		1763.07	0.016672	3.54	21.16	45.74	0.66
NRW55T25 - A3	0.03	50.00	1746.66	1747.73	1747.63	1747.93	0.022215	3.64	15.64	29.47	0.74

HEC-RAS Plan: NRW55 River: NRW55T30 Reach: NRW55T30 Profile: 100-year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NRW55T30	0.72	592.00	1711.80	1713.51	1712.96	1713.57	0.009750	2.54	325.99	371.96	0.37
NRW55T30	0.63	592.00	1708.08	1709.91		1709.95	0.006340	2.09	391.60	423.58	0.30
NRW55T30	0.56	592.00	1705.68	1706.90	1706.39	1706.95	0.011433	2.21	319.31	369.53	0.38
NRW55T30	0.49	592.00	1701.92	1703.56	1702.83	1703.62	0.007182	2.19	322.93	311.46	0.32
NRW55T30	0.42	592.00	1698.52	1700.55	1699.79	1700.65	0.008926	2.93	255.50	203.64	0.37
NRW55T30	0.33	592.00	1692.03	1696.00	1695.17	1696.17	0.009936	4.26	218.98	158.45	0.42
NRW55T30	0.26	592.00	1689.77	1691.93	1691.26	1692.07	0.011697	3.45	215.54	166.82	0.43
NRW55T30	0.22	592.00	1685.89	1689.09		1689.28	0.015160	4.52	193.15	145.18	0.50
NRW55T30	0.18	592.00	1683.60	1686.39	1685.61	1686.55	0.012515	3.98	193.36	119.15	0.46
NRW55T30	0.11	592.00	1676.34	1680.19	1679.85	1680.55	0.018011	5.24	146.47	105.51	0.56

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

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X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
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X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
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PROJECT DATA
Project Title: NRW55
Project File : NRW55.prj
Run Date and Time: 7/29/2005 2:19:54 PM

Project in English units

Project Description:
NRW55, NRW55T5, NRW55T10, NRW55T15, NRW55T20, & NRW55T30
**NRW55T25 is
contained in seperate model - see NRW55T25.prj

New River West Tributaries
FDS
Prepared by URS Corp. for the Flood Control District of Maricopa
County
Contract No: FCD 2003 C057
Date: April 29, 2005

Topographic Mapping
Source:
Flown and Mapped by DTM Inc.
Flight Date - 4/10/2003
2 foot Contour
Interval
Datum:
Horizontal - NAD83 Arizona State Plane, Central Zone,
International Feet
Vertical - NAVD 88 (GDACS Control)

Discharge
Source:
HEC-1 Analysis for the 100-Year 24-hour storm event
Performed by URS
Corp. as part of the New River West Tributaries FDS
Approved by the Flood
Control District of Maricopa County, June 2004

Study Limits:
Downstream

study limit approximately 607 feet downstream of New River Road dip crossing,
upstream study limit approximately 548 feet upstream of Section Line 11/12

Discharge:
NRW55: 7869 cfs @ R.S. 1.78 and 7775 cfs @ R.S. 1.67
NRW55T5: 219 cfs @ R.S. 0.69 and 235 cfs @ R.S. 0.62
NRW55T10: 1395 cfs @ R.S. 3, 1393 cfs @ R.S. 1.87, 1365 cfs @ R.S. 1.25, 1951 cfs @ R.S. 0.89 and 1915 cfs @ R.S. 0.22
NRW55T15: 1488 cfs @ R.S. 2.27, 1594 cfs @ R.S. 0.68 and 1755 cfs @ R.S. 0.5
NRW55T20: 1009 cfs @ R.S. 3.37, 2587 cfs @ R.S. 2.24, 3272 cfs @ R.S. 1.21 and 5670 cfs @ R.S. 0.75
NRW55T25: 905 cfs @ R.S. 0.64
NRW55T30: 1454 cfs @ R.S. 0.29
NRW55T35: 592 cfs @ R.S. 0.72

Dip
roadway crossing on NRW55 at R.S. 1.78

Stationing based upon River Mile
distance from the Hydraulic Baseline confluence with the New River
Thalweg

Final Model Run Date: March 8, 2005

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PLAN DATA

Plan Title: NRW55
Plan File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.p01

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.g01

Flow Title : 100-Year; 24-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.f01

Plan Summary Information:

Number of:	Cross Sections	= 152	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information

Water surface calculation tolerance	=	0.01
Critical depth calculaton tolerance	=	0.01
Maximum number of interations	=	20
Maximum difference tolerance	=	0.3
Flow tolerance factor	=	0.001

Computation Options
    Critical depth computed only where necessary
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method: Average Conveyance
    Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: 100-Year; 24-Hour
Flow File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55
\NRW55.f01

Flow Data (cfs)

River	Reach	RS	100-year
NRW55T15	NRW55T15	2.27	1488
NRW55T15	NRW55T15	0.68	1594
NRW55T15	NRW55T15	0.5	1755
NRW55D	NRW55D	3.00	3272
NRW55T5	NRW55T5	0.69	219
NRW55T5	NRW55T5	0.62	235
NRW55T10A	NRW55T10A	1.25	1365
NRW55T10A	NRW55T10A	0.89	1951
NRW55T10A	NRW55T10A	0.22	1915
NRW55T10B	NRW55T10B	3	1395
NRW55T10B	NRW55T10B	1.87	1393
NRW55A	NRW55A	1.78	7869
NRW55A	NRW55A	1.67	7775
NRW55B	NRW55B	2.34	5670
NRW55C	NRW55C	2.54	5670
NRW55T20	NRW55T20	0.64	905
NRW55T25	NRW55T25	0.72	592
NRW55E	NRW55E	4.34	1454
NRW55E	NRW55E	4.03	2587
NRW55T30	NRW55T30	0.72	592

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
NRW55T30	NRW55T30	100-year		Normal S = 0.018
NRW55T5	NRW55T5	100-year		Normal S = 0.015
NRW55T10A	NRW55T10A	100-year		Normal S = 0.01
NRW55T10B	NRW55T10B	100-year		Known WS = 1733.42
NRW55A	NRW55A	100-year		Normal S = 0.008
NRW55B	NRW55B	100-year		Known WS = 1665.6

```
* NRW55C          NRW55C          100-year         *
Known WS = 1685.98 *
* NRW55T20        NRW55T20        100-year         *
Normal S = 0.009 *
* NRW55E          NRW55E          100-year         *
Known WS = 1706.31 *
************************************************************************
********************************

************************************************************************
********

GEOMETRY DATA

Geometry Title: Existing Conditions
Geometry File : p:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55
\NRW55.g01

Reach Connection Table
************************************************************************
*********
* River            Reach            *  Upstream Boundary  * Downstream
Boundary *
************************************************************************
*********
* NRW55T15         NRW55T15         *                     *   Junct 1
*
* NRW55D           NRW55D           *                     *   Junct 1
*
* NRW55T30         NRW55T30         *                     *
*
* NRW55T5          NRW55T5          *                     *
*
* NRW55T10A        NRW55T10A        *                     *
*
* NRW55T10B        NRW55T10B        *                     *
*
* NRW55A           NRW55A           *                     *
*
* NRW55B           NRW55B           *                     *
*
* NRW55C           NRW55C           *   Junct 1           *
*
* NRW55T20         NRW55T20         *                     *
*
* NRW55E           NRW55E           *                     *
*
************************************************************************
*********

JUNCTION INFORMATION

Name: Junct 1
Description:
Energy computation Method

    Length across Junction              Tributary
     River           Reach                River           Reach
Length   Angle
NRW55T15        NRW55T15         to NRW55C          NRW55C
340
```

```
NRW55D          NRW55D           to NRW55C          NRW55C
377.027

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 2.27

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9940.5 1885.56  9956.1  1882.5  9957.6 1882.23  9958.8 1881.93  9972.5
1882.86
  9978.1 1882.68    9981 1881.78  9982.4 1881.34    9987  1879.9  9989.3
1879.09
  9998.1 1876.42 10000.2 1876.52 10001.7 1876.25 10017.3 1880.63 10023.3
1882.12
 10032.5 1882.82 10052.6 1884.13 10052.7 1884.13   10075 1884.47 10086.6
1884.72

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9940.5    .078    9987    .052 10017.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9987 10017.3              446     446     446             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1884.22  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.74  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1882.48  * Reach Len. (ft)         *  446.00
*  446.00  *  446.00  *
* Crit W.S. (ft)          * 1882.42  * Flow Area (sq ft)       *   13.52
*  133.24  *    7.48  *
* E.G. Slope (ft/ft)      *0.020744  * Area (sq ft)            *   13.52
*  133.24  *    7.48  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   36.77
* 1435.28  *   15.95  *
* Top Width (ft)          *   59.98  * Top Width (ft)          *   18.95
*   30.30  *   10.73  *
* Vel Total (ft/s)        *    9.65  * Avg. Vel. (ft/s)        *    2.72
*   10.77  *    2.13  *
* Max Chl Dpth (ft)       *    6.23  * Hydr. Depth (ft)        *    0.71
*    4.40  *    0.70  *
* Conv. Total (cfs)       * 10331.2  * Conv. (cfs)             *   255.3
*  9965.2  *   110.7  *
* Length Wtd. (ft)        *  446.00  * Wetted Per. (ft)        *   19.42
*   31.46  *   10.93  *
* Min Ch El (ft)          * 1876.25  * Shear (lb/sq ft)        *    0.90
```

```
*    5.48  *    0.89  *
* Alpha                  *    1.21  * Stream Power (lb/ft s) *    2.45
*   59.08  *    1.89  *
* Frctn Loss (ft)        *    8.36  * Cum Volume (acre-ft)   *   28.02
*   34.90  *   27.53  *
* C & E Loss (ft)        *    0.14  * Cum SA (acres)         *   14.40
*    9.08  *   15.94  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 2.19

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9902.8 1877.29  9909.8 1876.11  9911.3 1875.84  9913.7 1875.86  9918.2
1875.83
  9920.9 1875.43  9929.5 1874.36  9934.8 1872.87    9939 1872.22  9946.4
1872.88
  9948.1 1873.06    9949 1873.13    9951 1873.09  9957.3 1873.38  9962.1
1873.6
  9964.4 1873.48  9980.5 1872.42  9988.5 1871.13  9998.6 1869.24 10000.4
1869.1
 10002.5 1869.26 10007.1 1869.39 10008.4  1869.5 10012.7 1871.14 10021.1
1873.67
 10022.7 1874.22 10027.9  1874.4 10038.6  1874.6 10045.5 1875.97   10052
1877.12
   10055 1877.54 10055.5  1877.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9902.8    .078  9988.5    .052 10012.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.5 10012.7              283     283     283             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)         * 1875.71  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.26  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1874.45  * Reach Len. (ft)         *  283.00
*  283.00  *  283.00  *
```

```
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   92.57
*  111.38  *   18.70  *
* E.G. Slope (ft/ft)      *0.017029  * Area (sq ft)            *   92.57
*  111.38  *   18.70  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  306.76
* 1133.73  *   47.51  *
* Top Width (ft)          *  101.52  * Top Width (ft)          *   59.69
*   24.20  *   17.63  *
* Vel Total (ft/s)        *    6.68  * Avg. Vel. (ft/s)        *    3.31
*   10.18  *    2.54  *
* Max Chl Dpth (ft)       *    5.35  * Hydr. Depth (ft)        *    1.55
*    4.60  *    1.06  *
* Conv. Total (cfs)       * 11402.8  * Conv. (cfs)             *  2350.8
*  8687.9  *   364.1  *
* Length Wtd. (ft)        *  283.00  * Wetted Per. (ft)        *   60.14
*   24.70  *   18.10  *
* Min Ch El (ft)          * 1869.10  * Shear (lb/sq ft)        *    1.64
*    4.79  *    1.10  *
* Alpha                   *    1.82  * Stream Power (lb/ft s) *    5.42
*   48.81  *    2.79  *
* Frctn Loss (ft)         *    4.82  * Cum Volume (acre-ft)    *   27.48
*   33.65  *   27.40  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   14.00
*    8.80  *   15.80  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 2.13

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9969.5 1880.47  9973.1 1879.53  9980.9 1877.33  9988.4 1869.77    9991
1866.82
  9995.9 1863.76    9998  1863.8 10002.3 1863.77 10005.3  1864.2   10007
1864.35
   10009 1864.59 10015.5 1865.28 10020.1  1866.3 10029.3 1868.19 10062.8
1869.04
 10065.4 1869.13 10092.8 1869.75 10094.8 1869.77 10126.4 1869.78 10145.7
1869.21
 10150.1 1870.17 10159.4 1872.42

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9969.5    .078    9991    .052 10020.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
```

```
          9991 10020.1              250     250     250             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1870.86  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.49  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1869.37  * Reach Len. (ft)         *  250.00
*  250.00  *  250.00  *
* Crit W.S. (ft)          * 1869.37  * Flow Area (sq ft)       *    2.86
*  135.61  *   47.26  *
* E.G. Slope (ft/ft)      *0.017057  * Area (sq ft)            *    2.86
*  135.61  *   47.26  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *    6.35
* 1378.27  *  103.38  *
* Top Width (ft)          *   93.28  * Top Width (ft)          *    2.25
*   29.10  *   61.94  *
* Vel Total (ft/s)        *    8.01  * Avg. Vel. (ft/s)        *    2.22
*   10.16  *    2.19  *
* Max Chl Dpth (ft)       *    5.61  * Hydr. Depth (ft)        *    1.27
*    4.66  *    0.76  *
* Conv. Total (cfs)       * 11393.3  * Conv. (cfs)             *    48.6
* 10553.1  *   791.5  *
* Length Wtd. (ft)        *  250.00  * Wetted Per. (ft)        *    3.40
*   30.18  *   62.16  *
* Min Ch El (ft)          * 1863.76  * Shear (lb/sq ft)        *    0.90
*    4.79  *    0.81  *
* Alpha                   *    1.50  * Stream Power (lb/ft s) *    1.99
*   48.64  *    1.77  *
* Frctn Loss (ft)         *    3.97  * Cum Volume (acre-ft)    *   27.17
*   32.84  *   27.18  *
* C & E Loss (ft)         *    0.13  * Cum SA (acres)          *   13.80
*    8.62  *   15.54  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 2.08

INPUT
```

```
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9956.5  1873.1  9957.5 1873.03  9970.5 1871.68    9974 1871.22  9985.6
1861.17
  9987.2 1860.03  9987.5 1859.92  9987.8 1859.89  9994.3  1859.7  9998.8
1859.41
 10000.3 1859.27   10009 1860.64 10012.5 1861.17 10024.5 1863.17 10030.4
1863
 10044.3 1862.88 10053.8 1862.86 10068.2 1862.98 10070.6 1863.01 10083.9
1863.51
 10095.5 1864.11 10105.7 1864.48   10112 1865.05 10144.2 1865.97 10148.6
1866.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9956.5    .078  9985.6    .052 10012.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.6 10012.5              456     456     456             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1865.52  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.05  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1864.46  * Reach Len. (ft)         *  456.00
*  456.00  *  456.00  *
* Crit W.S. (ft)          * 1864.46  * Flow Area (sq ft)       *    6.26
*  120.72  *  123.11  *
* E.G. Slope (ft/ft)      *0.014815  * Area (sq ft)            *    6.26
*  120.72  *  123.11  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   16.81
* 1126.97  *  344.22  *
* Top Width (ft)          *  123.47  * Top Width (ft)          *    3.80
*   26.90  *   92.77  *
* Vel Total (ft/s)        *    5.95  * Avg. Vel. (ft/s)        *    2.68
*    9.34  *    2.80  *
* Max Chl Dpth (ft)       *    5.19  * Hydr. Depth (ft)        *    1.65
*    4.49  *    1.33  *
* Conv. Total (cfs)       * 12225.1  * Conv. (cfs)             *   138.1
*  9259.0  *  2828.1  *
* Length Wtd. (ft)        *  456.00  * Wetted Per. (ft)        *    5.03
*   27.45  *   92.97  *
* Min Ch El (ft)          * 1859.27  * Shear (lb/sq ft)        *    1.15
*    4.07  *    1.22  *
* Alpha                   *    1.92  * Stream Power (lb/ft s) *    3.09
*   37.97  *    3.42  *
* Frctn Loss (ft)         *    7.06  * Cum Volume (acre-ft)    *   27.14
*   32.11  *   26.69  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   13.78
*    8.46  *   15.09  *
**************************************************************************
```

```
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 2

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
    9890 1858.74  9893.2 1857.78  9902.4  1857.6  9913.2 1856.46  9920.9
1855.64
  9931.8  1855.2  9953.8  1854.7    9958 1854.75  9960.4 1854.88  9966.8
1854.8
  9973.1 1854.65    9975 1854.31  9979.5 1852.88  9983.2 1851.62  9983.5
1851.61
  9992.5 1851.69  9999.4 1851.16 10000.7 1851.06 10014.5 1852.89 10018.4
1854.2
 10021.4  1854.8 10026.1 1856.45 10034.1 1858.09 10047.5 1860.35

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9890    .078  9979.5    .052 10014.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9979.5 10014.5              153     153     153             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)         * 1857.01  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.17  * Wt. n-Val.             *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1855.84  * Reach Len. (ft)        *  153.00
*  153.00  *  153.00  *
* Crit W.S. (ft)         * 1855.84  * Flow Area (sq ft)      *   57.60
*  142.21  *   14.51  *
* E.G. Slope (ft/ft)     *0.016219  * Area (sq ft)           *   57.60
```

```
*  142.21  *   14.51  *
* Q Total (cfs)          * 1488.00  * Flow (cfs)              *  134.85
* 1308.94  *   44.21  *
* Top Width (ft)         *  105.34  * Top Width (ft)          *   60.48
*   35.00  *    9.86  *
* Vel Total (ft/s)       *    6.94  * Avg. Vel. (ft/s)        *    2.34
*    9.20  *    3.05  *
* Max Chl Dpth (ft)      *    4.78  * Hydr. Depth (ft)        *    0.95
*    4.06  *    1.47  *
* Conv. Total (cfs)      * 11684.0  * Conv. (cfs)             *  1058.9
* 10278.0  *   347.1  *
* Length Wtd. (ft)       *  153.00  * Wetted Per. (ft)        *   60.76
*   35.35  *   10.31  *
* Min Ch El (ft)         * 1851.06  * Shear (lb/sq ft)        *    0.96
*    4.07  *    1.42  *
* Alpha                  *    1.56  * Stream Power (lb/ft s) *    2.25
*   37.49  *    4.34  *
* Frctn Loss (ft)        *    2.24  * Cum Volume (acre-ft)    *   26.81
*   30.73  *   25.97  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *   13.44
*    8.14  *   14.56  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.97

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9849.1 1855.98  9864.6 1855.34  9869.7 1854.97  9876.2 1854.38  9880.9
1853.87
  9893.9 1853.29  9900.1 1852.93  9907.2 1852.43  9916.3 1852.87  9918.3
1852.92
  9919.6  1852.9  9934.5 1852.03  9963.3 1851.52  9965.7 1851.44  9967.4
1851.38
  9969.4 1851.26  9987.9  1850.5  9991.3  1849.5  9999.5 1846.91 10002.9
1847.37
 10004.1 1847.46 10005.5 1847.49 10006.5 1847.65 10008.8  1847.7 10011.4
```

```
1849.54
 10016.7 1854.48 10018.8 1856.11 10027.3 1859.51 10035.4 1860.45

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9849.1    .078  9991.3    .052 10011.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.3 10011.4              155     155     155             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1854.46  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.12  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1853.34  * Reach Len. (ft)         *  155.00
*  155.00  *  155.00  *
* Crit W.S. (ft)          * 1853.34  * Flow Area (sq ft)       *  140.19
*  109.49  *    7.73  *
* E.G. Slope (ft/ft)      *0.013250  * Area (sq ft)            *  140.19
*  109.49  *    7.73  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  388.55
* 1078.36  *   21.09  *
* Top Width (ft)          *  122.59  * Top Width (ft)          *   98.42
*   20.10  *    4.07  *
* Vel Total (ft/s)        *    5.78  * Avg. Vel. (ft/s)        *    2.77
*    9.85  *    2.73  *
* Max Chl Dpth (ft)       *    6.43  * Hydr. Depth (ft)        *    1.42
*    5.45  *    1.90  *
* Conv. Total (cfs)       * 12927.1  * Conv. (cfs)             *  3375.5
*  9368.3  *   183.2  *
* Length Wtd. (ft)        *  155.00  * Wetted Per. (ft)        *   98.66
*   21.13  *    5.57  *
* Min Ch El (ft)          * 1846.91  * Shear (lb/sq ft)        *    1.18
*    4.29  *    1.15  *
* Alpha                   *    2.17  * Stream Power (lb/ft s) *    3.26
*   42.21  *    3.13  *
* Frctn Loss (ft)         *    2.70  * Cum Volume (acre-ft)    *   26.46
*   30.29  *   25.93  *
* C & E Loss (ft)         *    0.11  * Cum SA (acres)          *   13.16
*    8.04  *   14.53  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
```

surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T15
REACH: NRW55T15 RS: 1.94

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9871.5	1852.33	9876.1	1852.24	9878.6	1852.26	9888.2	1850.44	9888.7	1850.32
9892	1849.62	9895.2	1848.92	9896	1848.8	9897.1	1848.9	9912.7	1849.48
9919	1849.51	9925.9	1849.38	9939.4	1849.96	9949.8	1849.22	9958.5	1848.66
9965.3	1848.61	9978.5	1848.43	9994.3	1844.62	9995.3	1844.31	10000.1	1842.79
10001	1842.95	10003.6	1843.5	10007.1	1843.1	10007.7	1843.04	10009.9	1843.63
10015.3	1844.99	10024.6	1848.82	10034.8	1853.22	10041.4	1854.76	10045.1	1855.74
10053.4	1856.35	10055.4	1856.51						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9871.5	.078	9994.3	.052	10015.3	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.3	10015.3	175	175	175	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1850.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.20	Wt. n-Val.	0.078	0.052	0.078
W.S. Elev (ft)	1848.60	Reach Len. (ft)	175.00	175.00	175.00
Crit W.S. (ft)	1848.37	Flow Area (sq ft)	33.79	104.09	15.81
E.G. Slope (ft/ft)	0.023914	Area (sq ft)	33.79	104.09	15.81
Q Total (cfs)	1488.00	Flow (cfs)	111.29	1311.21	65.50
Top Width (ft)	57.90	Top Width (ft)	28.14	21.00	8.76
Vel Total (ft/s)	9.68	Avg. Vel. (ft/s)	3.29		

```
*   12.60  *    4.14  *
* Max Chl Dpth (ft)       *    5.81  * Hydr. Depth (ft)        *    1.20
*    4.96  *    1.80  *
* Conv. Total (cfs)       *  9622.3  * Conv. (cfs)             *   719.7
*  8479.1  *   423.5  *
* Length Wtd. (ft)        *  175.00  * Wetted Per. (ft)        *   28.59
*   21.63  *    9.48  *
* Min Ch El (ft)          * 1842.79  * Shear (lb/sq ft)        *    1.76
*    7.19  *    2.49  *
* Alpha                   *    1.51  * Stream Power (lb/ft s) *    5.81
*   90.52  *   10.32  *
* Frctn Loss (ft)         *    3.90  * Cum Volume (acre-ft)    *   26.15
*   29.91  *   25.89  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *   12.94
*    7.97  *   14.51  *
***************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.91

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9903.3 1847.81  9915.4 1846.35  9917.6 1845.99  9921.2 1845.95  9929.1
1845.44
  9939.1 1846.45  9947.2 1845.82  9953.3  1845.3  9971.5 1845.35  9980.3
1843.23
  9986.6 1841.68  9990.3 1840.98  9992.1 1840.36  9995.4 1839.41  9998.1
1839.25
  9999.5  1839.1 10001.9 1839.04 10002.7 1839.04 10004.8 1839.01 10011.1
1841.7
   10022  1848.2 10027.5 1849.49 10028.2  1849.6

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9903.3    .078  9986.6    .052 10011.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.6 10011.1              312     312     312             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)          * 1846.82  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.95  * Wt. n-Val.              *   0.078
```

```
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1844.88  * Reach Len. (ft)         *  312.00
*  312.00  *  312.00  *
* Crit W.S. (ft)          * 1844.88  * Flow Area (sq ft)       *   20.87
*  119.48  *    8.46  *
* E.G. Slope (ft/ft)      *0.020781  * Area (sq ft)            *   20.87
*  119.48  *    8.46  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   76.57
* 1382.88  *   28.56  *
* Top Width (ft)          *   42.96  * Top Width (ft)          *   13.13
*   24.50  *    5.33  *
* Vel Total (ft/s)        *   10.00  * Avg. Vel. (ft/s)        *    3.67
*   11.57  *    3.38  *
* Max Chl Dpth (ft)       *    5.87  * Hydr. Depth (ft)        *    1.59
*    4.88  *    1.59  *
* Conv. Total (cfs)       * 10322.0  * Conv. (cfs)             *   531.1
*  9592.8  *   198.1  *
* Length Wtd. (ft)        *  312.00  * Wetted Per. (ft)        *   13.51
*   25.37  *    6.20  *
* Min Ch El (ft)          * 1839.01  * Shear (lb/sq ft)        *    2.00
*    6.11  *    1.77  *
* Alpha                   *    1.25  * Stream Power (lb/ft s) *    7.35
*   70.73  *    5.98  *
* Frctn Loss (ft)         *    5.21  * Cum Volume (acre-ft)    *   26.04
*   29.46  *   25.84  *
* C & E Loss (ft)         *    0.20  * Cum SA (acres)          *   12.86
*    7.88  *   14.48  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.85

INPUT
Description:
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9949.3 1843.25  9955.3 1842.78  9963.1 1842.36  9967.1 1842.04  9968.2
```

```
1841.71
  9973.6  1840.1  9980.1 1838.28  9989.3 1835.32  9996.9 1832.81  9997.9
1832.35
  9998.3 1832.29 10003.1  1832.2 10003.9 1832.26 10009.2  1832.7 10016.5
1835.41
 10021.7  1837.9 10028.4 1839.09 10029.4 1839.22 10030.3 1839.31   10041
1839.07
 10077.9 1837.68 10084.3 1837.86 10092.7 1837.07 10094.3 1837.01 10095.4
1836.98
 10106.8 1837.65 10110.3 1837.76 10120.7 1836.94 10121.7 1836.92   10130
1837.3
 10133.9 1838.38 10134.9 1838.64 10143.7 1841.94 10149.2  1843.9 10152.7
1844.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9949.3    .078  9989.3    .052 10016.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.3 10016.5               177     177     177              .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1839.61  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.27  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1838.34  * Reach Len. (ft)         *  177.00
*  177.00  *  177.00  *
* Crit W.S. (ft)          * 1838.34  * Flow Area (sq ft)       *   14.15
*  137.07  *   67.22  *
* E.G. Slope (ft/ft)      *0.013706  * Area (sq ft)            *   14.15
*  137.07  *   67.22  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   40.11
* 1315.31  *  132.58  *
* Top Width (ft)          *  117.57  * Top Width (ft)          *    9.41
*   27.20  *   80.97  *
* Vel Total (ft/s)        *    6.81  * Avg. Vel. (ft/s)        *    2.83
*    9.60  *    1.97  *
* Max Chl Dpth (ft)       *    6.14  * Hydr. Depth (ft)        *    1.50
*    5.04  *    0.83  *
* Conv. Total (cfs)       * 12710.0  * Conv. (cfs)             *   342.6
* 11235.0  *  1132.4  *
* Length Wtd. (ft)        *  177.00  * Wetted Per. (ft)        *    9.88
*   28.22  *   81.83  *
* Min Ch El (ft)          * 1832.20  * Shear (lb/sq ft)        *    1.23
*    4.16  *    0.70  *
* Alpha                   *    1.77  * Stream Power (lb/ft s) *    3.47
*   39.89  *    1.39  *
* Frctn Loss (ft)         *    2.42  * Cum Volume (acre-ft)    *   25.91
*   28.54  *   25.57  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *   12.77
*    7.69  *   14.17  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
```

```
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.81

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9959.6 1837.05  9959.8 1837.05  9962.9 1836.89  9970.6 1836.22  9983.9
1835.17
  9985.5 1834.43  9988.4 1833.13  9992.1  1831.5  9996.3 1830.62  9997.9
1830.1
 10002.1 1830.24 10003.9 1830.35 10009.7 1829.92 10016.9 1833.07 10024.5
1835.1
 10027.8 1835.47 10030.3 1835.61 10047.3 1835.03 10050.6 1834.87 10071.1
1834.71
 10071.3  1834.7 10071.5 1834.67 10081.7 1832.41 10087.4 1832.37 10096.3
1832.43
 10099.6 1832.96 10104.6 1833.93 10106.4 1834.76   10109 1835.95 10109.8
1836.3
 10119.6 1840.94 10122.5 1841.37

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9959.6    .078  9988.4    .052 10016.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.4 10016.9              206     206     206             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1836.46  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.98  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1835.47  * Reach Len. (ft)         *  206.00
*  206.00  *  206.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *    6.55
```

```
*  129.54  *  116.44  *
* E.G. Slope (ft/ft)     *0.013670  * Area (sq ft)           *    6.55
*  129.54  *  116.44  *
* Q Total (cfs)          * 1488.00  * Flow (cfs)             *   12.02
* 1155.38  *  320.60  *
* Top Width (ft)         *  121.31  * Top Width (ft)         *    8.31
*   28.50  *   84.50  *
* Vel Total (ft/s)       *    5.89  * Avg. Vel. (ft/s)       *    1.83
*    8.92  *    2.75  *
* Max Chl Dpth (ft)      *    5.55  * Hydr. Depth (ft)       *    0.79
*    4.55  *    1.38  *
* Conv. Total (cfs)      * 12726.8  * Conv. (cfs)            *   102.8
*  9881.9  *  2742.1  *
* Length Wtd. (ft)       *  206.00  * Wetted Per. (ft)       *    8.76
*   29.70  *   85.52  *
* Min Ch El (ft)         * 1829.92  * Shear (lb/sq ft)       *    0.64
*    3.72  *    1.16  *
* Alpha                  *    1.83  * Stream Power (lb/ft s) *    1.17
*   33.20  *    3.20  *
* Frctn Loss (ft)        *    3.39  * Cum Volume (acre-ft)   *   25.87
*   28.00  *   25.20  *
* C & E Loss (ft)        *    0.08  * Cum SA (acres)         *   12.74
*    7.58  *   13.84  *
*************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.78

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9850 1834.55  9852.9 1834.31  9857.8 1833.95  9871.4 1833.07  9884.9
1832.27
    9889 1831.86  9909.7 1831.74    9911 1831.76  9924.9 1831.34  9931.7
1831.42
  9939.1 1830.62  9939.7 1830.54  9942.7 1830.09  9950.3  1828.8    9952
1828.86
  9965.7 1829.76  9968.1 1829.86  9968.7 1829.91  9971.8  1830.2  9977.8
1829.39
  9987.6  1828.2  9990.5 1826.96  9994.4 1825.47  9994.8 1825.43  9998.3
1825.01
  9998.6    1825 10002.6 1824.88 10005.4 1826.99 10013.7 1833.36 10022.4
1835.95
 10023.6 1836.29 10024.5 1836.33 10043.2 1837.41 10047.3  1837.8
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9850    .078  9990.5    .052 10005.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.5 10005.4              286     286     286             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1832.99  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.76  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1831.24  * Reach Len. (ft)         *  286.00
*  286.00  *  286.00  *
* Crit W.S. (ft)          * 1831.24  * Flow Area (sq ft)       *  100.06
*   84.85  *   11.74  *
* E.G. Slope (ft/ft)      *0.020202  * Area (sq ft)            *  100.06
*   84.85  *   11.74  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  391.05
* 1051.93  *   45.02  *
* Top Width (ft)          *   77.53  * Top Width (ft)          *   57.10
*   14.90  *    5.53  *
* Vel Total (ft/s)        *    7.57  * Avg. Vel. (ft/s)        *    3.91
*   12.40  *    3.83  *
* Max Chl Dpth (ft)       *    6.36  * Hydr. Depth (ft)        *    1.75
*    5.69  *    2.12  *
* Conv. Total (cfs)       * 10469.0  * Conv. (cfs)             *  2751.3
*  7401.0  *   316.7  *
* Length Wtd. (ft)        *  286.00  * Wetted Per. (ft)        *   57.71
*   15.91  *    6.97  *
* Min Ch El (ft)          * 1824.88  * Shear (lb/sq ft)        *    2.19
*    6.73  *    2.12  *
* Alpha                   *    1.98  * Stream Power (lb/ft s) *    8.55
*   83.39  *    8.14  *
* Frctn Loss (ft)         *    6.04  * Cum Volume (acre-ft)    *   25.62
*   27.49  *   24.90  *
* C & E Loss (ft)         *    0.23  * Cum SA (acres)          *   12.58
*    7.48  *   13.62  *
************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
```

critical depth.

CROSS SECTION

RIVER: NRW55T15
REACH: NRW55T15 RS: 1.72

INPUT
Description:
Station Elevation Data num= 23

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9938.9 1826.64    9945 1825.99  9952.8 1825.02  9959.3 1824.03    9975
1821.05
  9981.3  1821.3  9981.7 1821.34  9984.2  1821.6    9986 1821.67  9992.3
1822.37
  9998.9 1820.86  9999.8 1820.64 10000.6 1820.65 10007.6 1820.89 10016.6
1821.79
 10020.1 1822.09 10028.1  1822.4 10029.3 1822.42 10030.2 1822.54 10034.3
1823.09
 10043.3 1825.03 10049.4  1826.4 10055.1 1826.93
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9938.9    .078  9992.3    .052 10016.6    .078
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9992.3 10016.6              357     357     357             .1
.3
```

CROSS SECTION OUTPUT Profile #100-year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1825.69  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.98  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1824.71  * Reach Len. (ft)         *  357.00
*  357.00  *  357.00  *
* Crit W.S. (ft)          * 1824.42  * Flow Area (sq ft)       *   89.69
*   85.09  *   47.97  *
* E.G. Slope (ft/ft)      *0.022136  * Area (sq ft)            *   89.69
*   85.09  *   47.97  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  451.94
*  828.53  *  207.53  *
* Top Width (ft)          *   86.95  * Top Width (ft)          *   37.45
*   24.30  *   25.20  *
* Vel Total (ft/s)        *    6.68  * Avg. Vel. (ft/s)        *    5.04
*    9.74  *    4.33  *
* Max Chl Dpth (ft)       *    4.07  * Hydr. Depth (ft)        *    2.40
*    3.50  *    1.90  *
* Conv. Total (cfs)       * 10001.3  * Conv. (cfs)             *  3037.6
*  5568.8  *  1394.9  *
* Length Wtd. (ft)        *  357.00  * Wetted Per. (ft)        *   37.84
*   24.55  *   25.44  *
* Min Ch El (ft)          * 1820.64  * Shear (lb/sq ft)        *    3.28
```

```
*    4.79  *    2.61  *
* Alpha                  *    1.41  * Stream Power (lb/ft s) *   16.51
*   46.65  *   11.27  *
* Frctn Loss (ft)        *    7.06  * Cum Volume (acre-ft)   *   25.00
*   26.94  *   24.70  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *   12.27
*    7.35  *   13.52  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.65

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9958.3 1819.83  9960.6 1819.74  9971.5 1819.41  9982.4 1815.39  9985.1
1814.32
  9988.9  1813.2  9994.3 1813.05 10000.1  1812.9 10007.7 1813.06 10009.3
1813.09
 10009.6  1813.1 10009.9 1813.12 10018.1 1813.77 10018.9 1813.84 10035.2
1816.27
 10037.6 1816.61 10095.7  1819.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9958.3    .078  9985.1    .052 10018.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.1 10018.1               201     201     201             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1818.61  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.30  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1817.30  * Reach Len. (ft)         *  201.00
*  201.00  *  201.00  *
* Crit W.S. (ft)         * 1817.02  * Flow Area (sq ft)       *   11.57
*  134.92  *   47.14  *
* E.G. Slope (ft/ft)     *0.017751  * Area (sq ft)            *   11.57
*  134.92  *   47.14  *
* Q Total (cfs)          * 1488.00  * Flow (cfs)              *   36.28
* 1308.28  *  143.45  *
* Top Width (ft)         *   76.57  * Top Width (ft)          *    7.89
```

```
*   33.00  *   35.68  *
* Vel Total (ft/s)       *    7.68  * Avg. Vel. (ft/s)       *    3.13
*    9.70  *    3.04  *
* Max Chl Dpth (ft)      *    4.40  * Hydr. Depth (ft)       *    1.47
*    4.09  *    1.32  *
* Conv. Total (cfs)      * 11168.3  * Conv. (cfs)            *   272.3
*  9819.4  *  1076.6  *
* Length Wtd. (ft)       *  201.00  * Wetted Per. (ft)       *    8.43
*   33.19  *   35.91  *
* Min Ch El (ft)         * 1812.90  * Shear (lb/sq ft)       *    1.52
*    4.50  *    1.45  *
* Alpha                  *    1.42  * Stream Power (lb/ft s) *    4.77
*   43.68  *    4.43  *
* Frctn Loss (ft)        *    4.10  * Cum Volume (acre-ft)   *   24.58
*   26.03  *   24.31  *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)         *   12.09
*    7.11  *   13.27  *
***************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.62

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9920.5 1816.57  9923.9 1816.48    9926  1816.4  9945.8 1814.04    9947
1813.9
    9960  1812.1    9981  1811.9    9982  1811.8  9994.8 1810.68  9998.4
1809.36
  9999.7 1808.89 10002.5 1808.95 10003.6 1808.96   10008 1809.05 10009.8
1809.42
 10016.7 1810.88 10017.5 1810.83 10026.5 1810.45 10026.9 1810.39 10033.1
1809.84
 10038.7 1810.84 10047.6 1812.87 10062.4 1815.45 10070.9 1815.77 10097.9
1815.95
 10109.4 1816.64 10131.6 1817.73

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9920.5    .078  9994.8    .052 10016.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9994.8 10016.7              305     305     305             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
```

```
************************
* E.G. Elev (ft)          * 1814.46  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.14  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1813.32  * Reach Len. (ft)         *  305.00
*  305.00  *  305.00  *
* Crit W.S. (ft)          * 1813.32  * Flow Area (sq ft)       *   61.37
*   82.76  *   77.57  *
* E.G. Slope (ft/ft)      *0.023625  * Area (sq ft)            *   61.37
*   82.76  *   77.57  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  225.09
*  868.49  *  394.42  *
* Top Width (ft)          *   99.05  * Top Width (ft)          *   43.64
*   21.90  *   33.50  *
* Vel Total (ft/s)        *    6.71  * Avg. Vel. (ft/s)        *    3.67
*   10.49  *    5.08  *
* Max Chl Dpth (ft)       *    4.43  * Hydr. Depth (ft)        *    1.41
*    3.78  *    2.32  *
* Conv. Total (cfs)       *  9680.8  * Conv. (cfs)             *  1464.4
*  5650.3  *  2566.1  *
* Length Wtd. (ft)        *  305.00  * Wetted Per. (ft)        *   43.78
*   22.41  *   33.90  *
* Min Ch El (ft)          * 1808.89  * Shear (lb/sq ft)        *    2.07
*    5.45  *    3.38  *
* Alpha                   *    1.62  * Stream Power (lb/ft s) *    7.58
*   57.16  *   17.16  *
* Frctn Loss (ft)         *    5.77  * Cum Volume (acre-ft)    *   24.41
*   25.53  *   24.02  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   11.97
*    6.99  *   13.11  *
*********************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.56

INPUT
Description:
Station Elevation Data    num=      33
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta
Elev
*********************************************************************
********
```

```
    9933 1808.29  9933.3 1808.28  9938.1 1807.81  9948.4  1806.3  9951.5
1805.91
  9952.3  1805.8  9965.3 1804.15  9981.5    1804  9983.6 1804.01  9992.5
1801.32
  9994.8 1800.23 10000.1 1799.96 10000.6 1799.92 10004.9 1800.12 10006.3
1800
 10008.2 1800.73 10012.7 1802.27 10023.6  1803.4 10025.5 1803.47 10031.2
1803.62
 10032.1  1803.7 10035.9 1803.44   10046 1804.34 10048.1 1804.57 10049.4
1804.75
   10055 1807.04 10055.9 1807.49   10058 1808.83 10063.2 1811.92 10064.7
1811.98
 10070.2 1811.94 10075.3 1812.62 10079.3 1812.87

Manning's n Values.        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9933    .078  9992.5    .052 10012.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.5 10012.7               92      92      92             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1806.69  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.18  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1805.51  * Reach Len. (ft)         *   92.00
*   92.00  *   92.00  *
* Crit W.S. (ft)          * 1805.51  * Flow Area (sq ft)       *   58.95
*  101.40  *   73.66  *
* E.G. Slope (ft/ft)      *0.015479  * Area (sq ft)            *   58.95
*  101.40  *   73.66  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  185.96
* 1034.58  *  267.46  *
* Top Width (ft)          *   96.65  * Top Width (ft)          *   37.90
*   20.20  *   38.55  *
* Vel Total (ft/s)        *    6.36  * Avg. Vel. (ft/s)        *    3.15
*   10.20  *    3.63  *
* Max Chl Dpth (ft)       *    5.59  * Hydr. Depth (ft)        *    1.56
*    5.02  *    1.91  *
* Conv. Total (cfs)       * 11959.9  * Conv. (cfs)             *  1494.7
*  8315.5  *  2149.7  *
* Length Wtd. (ft)        *   92.00  * Wetted Per. (ft)        *   38.38
*   20.86  *   38.84  *
* Min Ch El (ft)          * 1799.92  * Shear (lb/sq ft)        *    1.48
*    4.70  *    1.83  *
* Alpha                   *    1.88  * Stream Power (lb/ft s) *    4.68
*   47.94  *    6.65  *
* Frctn Loss (ft)         *    1.56  * Cum Volume (acre-ft)    *   23.99
*   24.89  *   23.49  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *   11.68
*    6.84  *   12.86  *
**********************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
```

number of iterations. The
program selected the water surface that had the least amount of error between computed and
assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T15
REACH: NRW55T15 RS: 1.54

INPUT
Description:
Station Elevation Data num= 22
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev
****
9971.5 1806.26 9972.8 1806.22 9974.6 1806.14 9988.2 1799.22 9990.6 1797.71
9991 1797.44 9991.9 1797.34 9996.9 1797.48 10000.1 1797.48 10001.1 1797.41
10002.7 1798.01 10008.2 1798.42 10011.2 1799.21 10018.9 1801.17 10025.6 1802.21
10026.5 1802.38 10039.9 1804.02 10047 1804.89 10048.2 1804.96 10052.7 1806.34
10054.6 1806.6 10055.7 1806.8

Manning's n Values num= 3
Sta n Val Sta n Val Sta n Val
****
9971.5 .078 9988.2 .052 10011.2 .078

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
9988.2 10011.2 133 133 133 .1 .3

CROSS SECTION OUTPUT Profile #100-year
****
* E.G. Elev (ft) * 1804.79 * Element * Left OB * Channel * Right OB *
* Vel Head (ft) * 1.77 * Wt. n-Val. * 0.078 * 0.052 * 0.078 *
* W.S. Elev (ft) * 1803.02 * Reach Len. (ft) * 133.00 * 133.00 * 133.00 *
* Crit W.S. (ft) * * Flow Area (sq ft) * 14.17 * 117.02 * 32.98 *

```
* E.G. Slope (ft/ft)      *0.018580  * Area (sq ft)            *   14.17
*  117.02  *   32.98  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   52.27
* 1319.60  *  116.12  *
* Top Width (ft)          *   50.98  * Top Width (ft)          *    7.46
*   23.00  *   20.51  *
* Vel Total (ft/s)        *    9.06  * Avg. Vel. (ft/s)        *    3.69
*   11.28  *    3.52  *
* Max Chl Dpth (ft)       *    5.68  * Hydr. Depth (ft)        *    1.90
*    5.09  *    1.61  *
* Conv. Total (cfs)       * 10916.5  * Conv. (cfs)             *   383.5
*  9681.1  *   851.9  *
* Length Wtd. (ft)        *  133.00  * Wetted Per. (ft)        *    8.37
*   23.75  *   20.89  *
* Min Ch El (ft)          * 1797.34  * Shear (lb/sq ft)        *    1.96
*    5.71  *    1.83  *
* Alpha                   *    1.39  * Stream Power (lb/ft s) *    7.24
*   64.44  *    6.45  *
* Frctn Loss (ft)         *    2.27  * Cum Volume (acre-ft)    *   23.92
*   24.66  *   23.38  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *   11.64
*    6.79  *   12.80  *
***********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.52

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9959.9 1803.88  9964.4 1803.87  9970.1 1802.82  9975.4 1801.59  9980.1
1801.18
  9985.9 1798.35  9990.2 1796.03  9992.7 1794.83    9995 1794.73  9999.5
1794.59
 10002.5 1794.95 10006.6 1796.03 10014.1 1797.63 10018.8 1798.61 10022.9
1798.93
 10034.5 1799.53 10047.1 1800.37 10049.2 1800.53   10051 1800.61 10060.4
1801.16
   10061 1801.39 10073.6 1805.54 10075.2 1805.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9959.9    .078  9990.2    .052 10006.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.2 10006.6              272     272     272             .1
.3
```

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1802.46  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.56  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1800.90  * Reach Len. (ft)         *  272.00
*  272.00  *  272.00  *
* Crit W.S. (ft)          * 1800.90  * Flow Area (sq ft)       *   22.61
*   96.39  *   85.89  *
* E.G. Slope (ft/ft)      *0.015687  * Area (sq ft)            *   22.61
*   96.39  *   85.89  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   88.84
* 1103.96  *  295.20  *
* Top Width (ft)          *   75.27  * Top Width (ft)          *    9.53
*   16.40  *   49.35  *
* Vel Total (ft/s)        *    7.26  * Avg. Vel. (ft/s)        *    3.93
*   11.45  *    3.44  *
* Max Chl Dpth (ft)       *    6.31  * Hydr. Depth (ft)        *    2.37
*    5.88  *    1.74  *
* Conv. Total (cfs)       * 11880.3  * Conv. (cfs)             *   709.3
*  8814.1  *  2356.9  *
* Length Wtd. (ft)        *  272.00  * Wetted Per. (ft)        *   10.70
*   16.84  *   49.69  *
* Min Ch El (ft)          * 1794.59  * Shear (lb/sq ft)        *    2.07
*    5.61  *    1.69  *
* Alpha                   *    1.91  * Stream Power (lb/ft s) *    8.13
*   64.21  *    5.82  *
* Frctn Loss (ft)         *    4.47  * Cum Volume (acre-ft)    *   23.86
*   24.33  *   23.20  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *   11.61
*    6.73  *   12.69  *
*************************************************************************
************************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T15
REACH: NRW55T15 RS: 1.46

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta

```
Elev
*************************************************************************
********
    9877  1800.4  9880.7 1800.22  9886.1 1799.75  9891.8 1799.35  9902.1
1796.34
  9909.1 1794.42    9922 1795.37  9930.7 1795.91  9931.6 1795.99  9938.9
1796.65
  9948.4 1794.85  9950.3  1794.5  9950.9 1794.47  9956.8 1794.45  9960.1
1794.28
  9964.3 1794.17  9967.7 1793.39  9972.1  1792.5    9976 1791.67  9977.3
1791.22
  9985.4 1790.94    9986 1790.76  9992.8  1790.1 10000.6  1789.9 10002.2
1789.8
   10003 1790.97   10012  1797.7 10018.4 1797.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9877    .078  9985.4    .052   10003    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.4   10003              141     141     141             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1796.92  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.41  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1795.50  * Reach Len. (ft)         *  141.00
*  141.00  *  141.00  *
* Crit W.S. (ft)          * 1795.50  * Flow Area (sq ft)       *  100.22
*   93.34  *   13.74  *
* E.G. Slope (ft/ft)      *0.017248  * Area (sq ft)            *  100.22
*   93.34  *   13.74  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  398.28
* 1038.60  *   51.13  *
* Top Width (ft)          *   83.08  * Top Width (ft)          *   59.42
*   17.60  *    6.06  *
* Vel Total (ft/s)        *    7.18  * Avg. Vel. (ft/s)        *    3.97
*   11.13  *    3.72  *
* Max Chl Dpth (ft)       *    5.70  * Hydr. Depth (ft)        *    1.69
*    5.30  *    2.27  *
* Conv. Total (cfs)       * 11330.3  * Conv. (cfs)             *  3032.7
*  7908.3  *   389.3  *
* Length Wtd. (ft)        *  141.00  * Wetted Per. (ft)        *   60.05
*   18.28  *    7.57  *
* Min Ch El (ft)          * 1789.80  * Shear (lb/sq ft)        *    1.80
*    5.50  *    1.95  *
* Alpha                   *    1.77  * Stream Power (lb/ft s) *    7.14
*   61.17  *    7.27  *
* Frctn Loss (ft)         *    2.67  * Cum Volume (acre-ft)    *   23.48
*   23.74  *   22.89  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   11.39
*    6.63  *   12.52  *
*************************************************************************
************************
```

```
Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.44

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9956.9 1795.53  9958.4 1795.12    9963 1793.52    9971 1790.03  9972.7
1789.32
    9978 1789.48    9980  1789.5  9986.7 1789.07  9990.5 1788.79  9997.9
1788.23
   10006 1788.66 10006.8 1788.68 10010.6 1790.03 10020.1 1792.99   10039
1792.28
 10040.9 1792.18 10041.4 1792.17 10042.1  1792.2 10057.7 1792.46 10065.4
1793.98
 10070.1 1794.97 10085.3 1795.21 10099.2 1795.66   10103 1795.73

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9956.9    .078    9971    .052 10010.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9971 10010.6              487     487     487             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1794.06  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.42  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1792.64  * Reach Len. (ft)         *  487.00
*  487.00  *  487.00  *
* Crit W.S. (ft)         * 1792.64  * Flow Area (sq ft)       *    7.82
*  145.37  *   18.98  *
* E.G. Slope (ft/ft)     *0.020922  * Area (sq ft)            *    7.82
```

```
*  145.37  *   18.98  *
* Q Total (cfs)          * 1488.00  * Flow (cfs)             *   24.29
* 1419.42  *   44.29  *
* Top Width (ft)         *   83.23  * Top Width (ft)         *    5.99
*   39.60  *   37.64  *
* Vel Total (ft/s)       *    8.64  * Avg. Vel. (ft/s)       *    3.11
*    9.76  *    2.33  *
* Max Chl Dpth (ft)      *    4.41  * Hydr. Depth (ft)       *    1.31
*    3.67  *    0.50  *
* Conv. Total (cfs)      * 10287.3  * Conv. (cfs)            *   167.9
*  9813.2  *   306.2  *
* Length Wtd. (ft)       *  487.00  * Wetted Per. (ft)       *    6.53
*   40.03  *   38.07  *
* Min Ch El (ft)         * 1788.23  * Shear (lb/sq ft)       *    1.56
*    4.74  *    0.65  *
* Alpha                  *    1.22  * Stream Power (lb/ft s) *    4.86
*   46.31  *    1.52  *
* Frctn Loss (ft)        *    7.16  * Cum Volume (acre-ft)   *   23.30
*   23.35  *   22.83  *
* C & E Loss (ft)        *    0.19  * Cum SA (acres)         *   11.29
*    6.53  *   12.45  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.34

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9922.8 1787.45  9932.1 1785.85  9937.6 1784.85    9957 1781.92  9959.4
1781.61
    9967 1780.88  9975.7 1780.19  9978.5  1779.9  9983.6 1779.67  9988.7
1779.47
  9991.7 1779.45  9994.1 1779.44    9998 1779.04 10002.7 1779.08 10003.8
1779.2
```

```
 10005.4  1779.2 10011.6 1779.31 10013.5  1779.9 10016.3 1780.88 10027.1
1785.25
 10029.1 1785.82 10037.6 1787.14 10039.8 1787.41 10041.5 1787.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9922.8    .078    9967    .052 10016.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9967 10016.3              223     223     223             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1784.33  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.78  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1783.55  * Reach Len. (ft)         *  223.00
*  223.00  *  223.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   30.53
*  190.20  *    8.79  *
* E.G. Slope (ft/ft)      *0.010906  * Area (sq ft)            *   30.53
*  190.20  *    8.79  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   78.07
* 1389.80  *   20.13  *
* Top Width (ft)          *   76.66  * Top Width (ft)          *   20.77
*   49.30  *    6.59  *
* Vel Total (ft/s)        *    6.48  * Avg. Vel. (ft/s)        *    2.56
*    7.31  *    2.29  *
* Max Chl Dpth (ft)       *    4.51  * Hydr. Depth (ft)        *    1.47
*    3.86  *    1.33  *
* Conv. Total (cfs)       * 14248.8  * Conv. (cfs)             *   747.5
* 13308.5  *   192.8  *
* Length Wtd. (ft)        *  223.00  * Wetted Per. (ft)        *   20.95
*   49.64  *    7.11  *
* Min Ch El (ft)          * 1779.04  * Shear (lb/sq ft)        *    0.99
*    2.61  *    0.84  *
* Alpha                   *    1.20  * Stream Power (lb/ft s) *    2.54
*   19.06  *    1.93  *
* Frctn Loss (ft)         *    3.11  * Cum Volume (acre-ft)    *   23.09
*   21.48  *   22.68  *
* C & E Loss (ft)         *    0.11  * Cum SA (acres)          *   11.14
*    6.04  *   12.20  *
************************************************************************
************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
```

```
REACH: NRW55T15            RS: 1.3

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9947.5 1782.19  9955.8 1782.47  9968.1 1782.34  9974.7  1781.9  9982.4
1781.33
  9985.4 1779.78  9987.6 1778.47  9990.8 1775.39  9994.8  1773.2  9999.8
1773.11
 10001.3 1773.21   10003  1773.6 10009.6 1774.76 10012.9 1775.41 10025.1
1777.66
   10034  1779.1 10040.4 1780.24 10041.8 1780.01 10045.4  1780.1 10050.9
1781.46
 10056.6  1782.7 10058.6 1782.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9947.5    .078  9990.8    .052 10009.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.8 10009.6              255     255     255             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1781.12  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.83  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1779.28  * Reach Len. (ft)         *  255.00
*  255.00  *  255.00  *
* Crit W.S. (ft)          * 1779.22  * Flow Area (sq ft)       *    8.08
*  103.44  *   55.49  *
* E.G. Slope (ft/ft)      *0.018518  * Area (sq ft)            *    8.08
*  103.44  *   55.49  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   25.47
* 1222.96  *  239.56  *
* Top Width (ft)          *   48.79  * Top Width (ft)          *    4.56
*   18.80  *   25.42  *
* Vel Total (ft/s)        *    8.91  * Avg. Vel. (ft/s)        *    3.15
*   11.82  *    4.32  *
* Max Chl Dpth (ft)       *    6.17  * Hydr. Depth (ft)        *    1.77
*    5.50  *    2.18  *
* Conv. Total (cfs)       * 10934.6  * Conv. (cfs)             *   187.2
*  8987.0  *  1760.4  *
* Length Wtd. (ft)        *  255.00  * Wetted Per. (ft)        *    6.03
*   19.51  *   25.82  *
* Min Ch El (ft)          * 1773.11  * Shear (lb/sq ft)        *    1.55
*    6.13  *    2.48  *
* Alpha                   *    1.49  * Stream Power (lb/ft s) *    4.89
*   72.47  *   10.72  *
* Frctn Loss (ft)         *    4.98  * Cum Volume (acre-ft)    *   22.99
*   20.72  *   22.51  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *   11.07
```

```
*    5.86  *   12.12  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.25

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9917.8 1778.09  9953.3  1777.2  9959.9 1776.84  9966.5 1776.39  9967.9
1776.3
  9982.8 1771.57  9985.2 1771.03  9987.7  1770.7  9991.7 1770.23  9994.3
1769.88
  9999.8 1769.65 10004.4 1770.19 10008.2 1770.62 10009.2 1770.71 10009.5
1770.8
 10014.7 1771.57 10023.1 1772.98 10032.8  1774.5 10045.8  1775.3 10054.6
1776.76
 10062.9 1778.17 10066.5  1778.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9917.8    .078  9982.8    .052 10014.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.8 10014.7               133     133     133             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1776.06  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.54  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1774.52  * Reach Len. (ft)         *  133.00
*  133.00  *  133.00  *
* Crit W.S. (ft)          * 1774.45  * Flow Area (sq ft)       *   13.68
*  129.87  *   26.37  *
* E.G. Slope (ft/ft)      *0.020592  * Area (sq ft)            *   13.68
*  129.87  *   26.37  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   46.88
* 1350.19  *   90.93  *
* Top Width (ft)          *   59.55  * Top Width (ft)          *    9.28
*   31.90  *   18.37  *
* Vel Total (ft/s)        *    8.76  * Avg. Vel. (ft/s)        *    3.43
*   10.40  *    3.45  *
* Max Chl Dpth (ft)       *    4.87  * Hydr. Depth (ft)        *    1.47
```

```
*    4.07  *    1.44  *
* Conv. Total (cfs)      * 10369.5  * Conv. (cfs)            *   326.7
*  9409.1  *   633.7  *
* Length Wtd. (ft)       *  133.00  * Wetted Per. (ft)       *    9.74
*   32.17  *   18.61  *
* Min Ch El (ft)         * 1769.65  * Shear (lb/sq ft)       *    1.81
*    5.19  *    1.82  *
* Alpha                  *    1.29  * Stream Power (lb/ft s) *    6.19
*   53.96  *    6.28  *
* Frctn Loss (ft)        *    2.33  * Cum Volume (acre-ft)   *   22.92
*   20.04  *   22.27  *
* C & E Loss (ft)        *    0.18  * Cum SA (acres)         *   11.03
*    5.72  *   11.99  *
***************************************************************************
************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.23

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9925.5 1774.63  9929.2 1774.71  9940.3  1773.3  9942.4 1773.19  9943.2
1773
  9950.4 1772.66  9952.3 1772.55  9967.7 1770.14  9970.1 1769.89  9982.4
1768.45
  9985.3 1768.66  9986.6 1768.74  9988.2 1768.82  9989.4 1768.72  9997.8
1768.3
 10006.1 1769.41   10010  1769.8 10015.8 1770.01 10022.9 1770.15 10034.7
1772.21
 10044.9 1774.06 10069.2 1776.19 10072.1 1776.39 10079.5  1777.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9925.5    .078  9970.1    .052   10010    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9970.1   10010              375     375     375             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)         * 1773.54  * Element                *  Left OB
*  Channel * Right OB *
```

```
* Vel Head (ft)          *    0.93  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1772.61  * Reach Len. (ft)         *  375.00
*  375.00  *  375.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   25.81
*  147.38  *   51.08  *
* E.G. Slope (ft/ft)     *0.015091  * Area (sq ft)            *   25.81
*  147.38  *   51.08  *
* Q Total (cfs)          * 1488.00  * Flow (cfs)              *   73.83
* 1232.00  *  182.17  *
* Top Width (ft)         *   85.73  * Top Width (ft)          *   18.90
*   39.90  *   26.93  *
* Vel Total (ft/s)       *    6.63  * Avg. Vel. (ft/s)        *    2.86
*    8.36  *    3.57  *
* Max Chl Dpth (ft)      *    4.31  * Hydr. Depth (ft)        *    1.37
*    3.69  *    1.90  *
* Conv. Total (cfs)      * 12112.6  * Conv. (cfs)             *   601.0
* 10028.7  *  1482.9  *
* Length Wtd. (ft)       *  375.00  * Wetted Per. (ft)        *   19.11
*   40.10  *   27.15  *
* Min Ch El (ft)         * 1768.30  * Shear (lb/sq ft)        *    1.27
*    3.46  *    1.77  *
* Alpha                  *    1.36  * Stream Power (lb/ft s) *    3.64
*   28.94  *    6.32  *
* Frctn Loss (ft)        *    6.03  * Cum Volume (acre-ft)    *   22.86
*   19.62  *   22.16  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *   10.99
*    5.61  *   11.92  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 1.16

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9830.7 1768.11  9850.7 1767.35  9852.5 1767.41  9874.7 1767.89  9884.1
1765.98
  9896.2 1765.21    9899 1765.07  9900.7 1765.19  9912.1 1765.43  9922.5
1766.79
  9932.5    1767  9937.4 1766.38  9940.7 1766.13  9943.1 1765.57  9952.8
1765.17
    9963 1763.97  9965.1 1763.75  9966.6 1763.64  9974.7 1762.88  9976.4
1762.87
  9983.8 1762.82  9986.3 1762.79  9987.4  1762.8 10000.3 1762.49 10003.5
1762.99
 10005.8  1763.8 10025.4 1770.05   10027 1770.57 10029.1 1770.44 10029.6
1770.42
 10037.9 1769.81 10043.3 1769.98 10056.7 1770.59 10065.2 1771.07
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9830.7    .078  9966.6    .052 10005.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9966.6 10005.8              481     481     481             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1767.50  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.01  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1766.49  * Reach Len. (ft)         *  481.00
*  481.00  *  481.00  *
* Crit W.S. (ft)          * 1766.42  * Flow Area (sq ft)       *   77.79
*  141.25  *   11.34  *
* E.G. Slope (ft/ft)      *0.017174  * Area (sq ft)            *   77.79
*  141.25  *   11.34  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  215.89
* 1238.71  *   33.40  *
* Top Width (ft)          *  116.31  * Top Width (ft)          *   68.67
*   39.20  *    8.43  *
* Vel Total (ft/s)        *    6.46  * Avg. Vel. (ft/s)        *    2.78
*    8.77  *    2.94  *
* Max Chl Dpth (ft)       *    4.00  * Hydr. Depth (ft)        *    1.13
*    3.60  *    1.34  *
* Conv. Total (cfs)       * 11354.5  * Conv. (cfs)             *  1647.4
*  9452.2  *   254.9  *
* Length Wtd. (ft)        *  481.00  * Wetted Per. (ft)        *   69.00
*   39.42  *    8.85  *
* Min Ch El (ft)          * 1762.49  * Shear (lb/sq ft)        *    1.21
*    3.84  *    1.37  *
* Alpha                   *    1.57  * Stream Power (lb/ft s) *    3.35
*   33.69  *    4.05  *
* Frctn Loss (ft)         *    8.26  * Cum Volume (acre-ft)    *   22.42
*   18.38  *   21.89  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   10.61
*    5.26  *   11.77  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15            RS: 1.07

INPUT
Description:
Station Elevation Data     num=       25
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9873.6 1762.22  9889.6 1761.83  9952.9 1759.52  9953.5 1759.51  9972.5
1759.44
  9983.2 1756.45  9989.7 1754.04  9995.9 1752.54  9997.5 1752.84  9998.3
1752.68
 10000.2 1752.12 10007.6 1754.04 10018.6 1757.09 10035.7 1756.61 10040.6
1756.6
 10059.4 1756.99 10085.4 1757.06 10086.9 1756.94 10096.6 1756.57 10101.6
1756.31
 10108.1 1755.68 10117.5  1758.4 10121.7 1758.78 10132.4 1759.81 10150.1
1760.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9873.6    .078  9989.7    .052 10007.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.7 10007.6              469     469     469             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***********************************************************************
************************
* E.G. Elev (ft)          * 1759.22  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.20  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1758.02  * Reach Len. (ft)         *  469.00
*  469.00  *  469.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   22.48
*   89.33  *  147.41  *
* E.G. Slope (ft/ft)      *0.017168  * Area (sq ft)            *   22.48
*   89.33  *  147.41  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *   81.76
*  957.36  *  448.88  *
* Top Width (ft)          *  138.62  * Top Width (ft)          *   12.13
*   17.90  *  108.59  *
* Vel Total (ft/s)        *    5.74  * Avg. Vel. (ft/s)        *    3.64
*   10.72  *    3.05  *
* Max Chl Dpth (ft)       *    5.90  * Hydr. Depth (ft)        *    1.85
*    4.99  *    1.36  *
* Conv. Total (cfs)       * 11356.3  * Conv. (cfs)             *   624.0
*  7306.5  *  3425.8  *
* Length Wtd. (ft)        *  469.00  * Wetted Per. (ft)        *   12.77
*   18.45  *  109.40  *
* Min Ch El (ft)          * 1752.12  * Shear (lb/sq ft)        *    1.89
*    5.19  *    1.44  *
* Alpha                   *    2.35  * Stream Power (lb/ft s) *    6.86
*   55.62  *    4.40  *
* Frctn Loss (ft)         *    8.20  * Cum Volume (acre-ft)    *   21.86
*   17.10  *   21.01  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)          *   10.17
*    4.95  *   11.12  *
***********************************************************************
************************
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15            RS: 0.98

INPUT
Description:
Station Elevation Data     num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9786.2 1754.78  9854.1  1754.1  9890.9 1753.56  9894.6 1753.52  9899.8
1753.4
  9916.1 1753.18  9927.6 1752.86  9955.7 1752.46  9961.9 1749.51  9967.5
1747.18
  9969.5 1747.16  9979.4 1747.84  9980.2 1747.76  9985.1 1747.58  9989.1
1747.41
  9989.8 1747.38  9993.1 1745.99  9996.6 1744.53  9997.7  1744.4   10000
1744.19
 10004.7 1745.99 10007.8 1747.37 10019.2 1747.39   10020 1747.38 10021.8
1747.3
 10030.7 1747.04 10034.4 1747.42 10038.7  1748.2 10044.8 1748.35 10049.9
1748.54
 10054.8 1748.76 10058.8 1748.97   10064 1749.83 10071.5 1750.95 10104.8
1750.92
 10109.8 1750.85 10131.3 1751.69 10152.8 1752.33 10166.4 1752.65

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9786.2    .078  9993.1    .052 10004.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.1 10004.7               504     504     504             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)          * 1750.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.95  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1750.00  * Reach Len. (ft)         *  504.00
*  504.00  *  504.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   75.98
*   58.91  *  124.89  *
* E.G. Slope (ft/ft)      *0.017795  * Area (sq ft)            *   75.98
*   58.91  *  124.89  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  335.83
*  640.11  *  512.07  *
* Top Width (ft)          *  104.29  * Top Width (ft)          *   32.24
*   11.60  *   60.46  *
* Vel Total (ft/s)        *    5.73  * Avg. Vel. (ft/s)        *    4.42
```

```
*   10.87  *    4.10  *
* Max Chl Dpth (ft)      *    5.81  * Hydr. Depth (ft)       *    2.36
*    5.08  *    2.07  *
* Conv. Total (cfs)      * 11154.5  * Conv. (cfs)            *  2517.5
*  4798.4  *  3838.6  *
* Length Wtd. (ft)       *  504.00  * Wetted Per. (ft)       *   33.13
*   12.24  *   60.95  *
* Min Ch El (ft)         * 1744.19  * Shear (lb/sq ft)       *    2.55
*    5.35  *    2.28  *
* Alpha                  *    1.86  * Stream Power (lb/ft s) *   11.26
*   58.08  *    9.33  *
* Frctn Loss (ft)        *    8.69  * Cum Volume (acre-ft)   *   21.33
*   16.30  *   19.55  *
* C & E Loss (ft)        *    0.14  * Cum SA (acres)         *    9.93
*    4.79  *   10.21  *
***************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.88

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9843.3 1742.71  9885.5 1742.04  9943.4  1740.8  9949.7 1740.63  9960.6
1740.1
  9971.2 1739.51  9989.5 1739.38  9991.6 1739.38  9992.1 1739.26  9997.7
1737.68
 10000.7 1737.72 10001.5 1737.58 10004.4 1737.63 10006.1 1737.97 10011.6
1739.28
 10012.8 1739.57 10016.9 1739.81   10031 1739.64 10036.7 1739.69 10038.5
1739.65
 10039.6 1739.65 10041.7  1739.6 10055.2 1739.39 10061.3 1738.97 10066.1
1738.8
 10076.4 1740.08 10076.6  1740.1 10093.4 1740.22 10099.7 1740.33 10142.6
1741.38
 10158.2 1741.65 10165.8 1741.82 10195.4  1742.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9843.3    .078  9991.6    .052 10012.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.6 10012.8              243     243     243             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
```

```
************************
* E.G. Elev (ft)          * 1742.13  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.49  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1741.63  * Reach Len. (ft)         *  243.00
*  243.00  *  243.00  *
* Crit W.S. (ft)          * 1741.39  * Flow Area (sq ft)       *  100.07
*   71.28  *  204.66  *
* E.G. Slope (ft/ft)      *0.016716  * Area (sq ft)            *  100.07
*   71.28  *  204.66  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  270.18
*  582.43  *  635.39  *
* Top Width (ft)          *  252.86  * Top Width (ft)          *   87.16
*   21.20  *  144.50  *
* Vel Total (ft/s)        *    3.96  * Avg. Vel. (ft/s)        *    2.70
*    8.17  *    3.10  *
* Max Chl Dpth (ft)       *    4.05  * Hydr. Depth (ft)        *    1.15
*    3.36  *    1.42  *
* Conv. Total (cfs)       * 11508.9  * Conv. (cfs)             *  2089.7
*  4504.8  *  4914.4  *
* Length Wtd. (ft)        *  243.00  * Wetted Per. (ft)        *   87.20
*   21.67  *  144.62  *
* Min Ch El (ft)          * 1737.58  * Shear (lb/sq ft)        *    1.20
*    3.43  *    1.48  *
* Alpha                   *    2.02  * Stream Power (lb/ft s) *    3.23
*   28.05  *    4.58  *
* Frctn Loss (ft)         *    3.88  * Cum Volume (acre-ft)    *   20.32
*   15.55  *   17.64  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    9.24
*    4.60  *    9.03  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.84

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9810 1740.17  9815.4 1740.09  9845.6 1739.35  9875.7 1738.41  9885.9
1738.18
  9894.9  1737.5  9912.8  1736.8  9916.9 1736.25  9929.1 1734.66  9931.7
1734.83
  9936.9 1735.33  9943.9 1735.36  9954.8 1736.43    9956 1736.57  9959.7
1736.51
  9973.7 1736.46  9997.9 1735.82   10015 1735.87 10027.2 1735.91   10033
1736.01
 10054.5 1736.56 10058.7 1736.33 10070.2 1735.85 10083.2 1736.54 10088.9
1737.05
```

```
 10103.1 1737.36 10116.1  1737.5 10195.9 1739.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9810    .078  9973.7    .052 10083.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.7 10083.2              270     270     270             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1738.21  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.33  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1737.87  * Reach Len. (ft)         *  270.00
*  270.00  *  270.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  136.91
*  194.49  *   24.64  *
* E.G. Slope (ft/ft)      *0.015242  * Area (sq ft)            *  136.91
*  194.49  *   24.64  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  445.91
* 1005.98  *   36.10  *
* Top Width (ft)          *  243.31  * Top Width (ft)          *   83.75
*  109.50  *   50.06  *
* Vel Total (ft/s)        *    4.18  * Avg. Vel. (ft/s)        *    3.26
*    5.17  *    1.47  *
* Max Chl Dpth (ft)       *    3.21  * Hydr. Depth (ft)        *    1.63
*    1.78  *    0.49  *
* Conv. Total (cfs)       * 12052.8  * Conv. (cfs)             *  3611.9
*  8148.4  *   292.4  *
* Length Wtd. (ft)        *  270.00  * Wetted Per. (ft)        *   84.01
*  109.55  *   50.09  *
* Min Ch El (ft)          * 1735.82  * Shear (lb/sq ft)        *    1.55
*    1.69  *    0.47  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    5.05
*    8.74  *    0.69  *
* Frctn Loss (ft)         *    5.19  * Cum Volume (acre-ft)    *   19.65
*   14.81  *   17.00  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    8.76
*    4.24  *    8.48  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.79

INPUT
Description:
Station Elevation Data    num=      35
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9816.8 1734.39  9867.7 1733.09  9882.6  1732.9  9884.3 1732.89  9897.6
1732.7
  9900.1  1731.9  9907.5 1730.01  9911.8 1729.84  9913.4  1729.9    9917
1730.28
  9917.9 1730.35  9919.6 1730.55    9929 1731.07  9940.5  1731.1  9942.7
1731.17
  9949.4 1731.27  9959.5 1731.34    9961  1731.3  9979.2 1730.47    9992
1729.01
  9992.5 1728.97 10003.4 1729.11 10003.6 1729.14 10009.6 1729.84 10021.7
1731.07
 10021.9 1731.09   10022  1731.1 10048.4 1731.31 10125.2 1732.65 10134.3
1732.45
 10144.8 1732.33   10153 1732.61 10161.6  1732.8 10174.5 1733.38 10227.6
1734.33

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9816.8    .078    9961    .052 10021.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9961 10021.7              156     156     156             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1732.98  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.69  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1732.29  * Reach Len. (ft)         *  156.00
*  156.00  *  156.00  *
* Crit W.S. (ft)          * 1732.27  * Flow Area (sq ft)       *   85.93
*  134.98  *   56.61  *
* E.G. Slope (ft/ft)      *0.024967  * Area (sq ft)            *   85.93
*  134.98  *   56.61  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *  319.90
* 1036.00  *  132.10  *
* Top Width (ft)          *  205.75  * Top Width (ft)          *   62.12
*   60.70  *   82.92  *
* Vel Total (ft/s)        *    5.36  * Avg. Vel. (ft/s)        *    3.72
*    7.67  *    2.33  *
* Max Chl Dpth (ft)       *    3.32  * Hydr. Depth (ft)        *    1.38
*    2.22  *    0.68  *
* Conv. Total (cfs)       *  9417.1  * Conv. (cfs)             *  2024.6
*  6556.5  *   836.0  *
* Length Wtd. (ft)        *  156.00  * Wetted Per. (ft)        *   62.48
*   60.91  *   82.93  *
* Min Ch El (ft)          * 1728.97  * Shear (lb/sq ft)        *    2.14
*    3.45  *    1.06  *
* Alpha                   *    1.55  * Stream Power (lb/ft s) *    7.98
*   26.51  *    2.48  *
* Frctn Loss (ft)         *    2.70  * Cum Volume (acre-ft)    *   18.96
*   13.79  *   16.75  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *    8.31
```

```
*    3.71  *    8.07  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.76

INPUT
Description:
Station Elevation Data    num=      26
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9786 1732.08  9796.6 1731.97  9857.8 1730.71  9888.4 1729.91  9916.5
1729.77
  9924.2 1728.95  9929.1 1728.23  9933.3 1728.36    9937 1728.69  9949.9
1728.41
  9955.5 1728.48  9970.6 1728.32  9974.4 1728.32  9981.9 1728.22  9983.9
1728.21
  9984.7 1728.04    9997 1725.11 10001.3 1725.46 10002.3 1725.46 10003.7
1725.78
   10014 1727.25 10038.7 1728.22 10040.2 1728.29 10050.5 1728.37 10087.9
1728.97
 10220.9 1731.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9786    .078  9924.2    .052 10087.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9924.2 10087.9               380     380     380             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1730.18  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.36  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1729.83  * Reach Len. (ft)         *  380.00
*  380.00  *  380.00  *
* Crit W.S. (ft)          * 1729.35  * Flow Area (sq ft)       *    3.95
*  301.91  *   21.78  *
* E.G. Slope (ft/ft)      *0.012700  * Area (sq ft)            *    3.95
*  301.91  *   21.78  *
* Q Total (cfs)           * 1488.00  * Flow (cfs)              *    2.93
* 1458.47  *   26.60  *
* Top Width (ft)          *  233.85  * Top Width (ft)          *   19.41
*  163.70  *   50.74  *
* Vel Total (ft/s)        *    4.54  * Avg. Vel. (ft/s)        *    0.74
```

```
*    4.83  *    1.22  *
* Max Chl Dpth (ft)      *    4.72  * Hydr. Depth (ft)       *    0.20
*    1.84  *    0.43  *
* Conv. Total (cfs)      * 13204.1  * Conv. (cfs)            *    26.0
* 12942.0  *   236.0  *
* Length Wtd. (ft)       *  380.00  * Wetted Per. (ft)       *   19.45
*  164.32  *   50.75  *
* Min Ch El (ft)         * 1725.11  * Shear (lb/sq ft)       *    0.16
*    1.46  *    0.34  *
* Alpha                  *    1.11  * Stream Power (lb/ft s) *    0.12
*    7.04  *    0.42  *
* Frctn Loss (ft)        *    7.65  * Cum Volume (acre-ft)   *   18.80
*   13.01  *   16.61  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    8.16
*    3.31  *    7.83  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.68

INPUT
Description:
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9729.1 1726.13  9731.4 1726.05    9733 1725.98  9772.5 1723.03  9778.4
1722.65
    9788 1717.16  9788.9 1716.58  9793.8 1717.77    9794 1717.81  9798.8
1718.29
  9799.7 1718.37  9813.9 1719.35  9817.7 1719.39    9831 1719.46    9839
1719.45
  9853.5 1721.25  9865.9 1721.65  9867.3 1721.58  9897.5 1721.22  9927.8
1721.7
  9958.1 1721.87  9975.2 1721.31  9976.3 1721.37  9981.9  1721.8  9985.8
1721.9
  9988.1  1721.4  9994.2 1719.98  9996.9 1720.22  9999.6  1720.7 10003.7
1720.55
 10004.9 1720.52 10012.4  1721.4 10015.3  1721.7 10016.4  1721.9 10040.9
1722.36
 10059.7  1722.3 10066.6 1722.39 10145.1 1724.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9729.1    .078  9988.1    .052 10012.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
```

```
Expan.
        9988.1 10012.4              191     191     191             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1722.54  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.38  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1722.16  * Reach Len. (ft)         *  191.00
*  191.00  *  191.00  *
* Crit W.S. (ft)          * 1721.74  * Flow Area (sq ft)       *  297.84
*   36.33  *    3.94  *
* E.G. Slope (ft/ft)      *0.035005  * Area (sq ft)            *  297.84
*   36.33  *    3.94  *
* Q Total (cfs)           * 1594.00  * Flow (cfs)              * 1336.83
*  252.03  *    5.13  *
* Top Width (ft)          *  250.91  * Top Width (ft)          *  208.84
*   24.30  *   17.76  *
* Vel Total (ft/s)        *    4.71  * Avg. Vel. (ft/s)        *    4.49
*    6.94  *    1.30  *
* Max Chl Dpth (ft)       *    5.58  * Hydr. Depth (ft)        *    1.43
*    1.49  *    0.22  *
* Conv. Total (cfs)       *  8519.7  * Conv. (cfs)             *  7145.2
*  1347.1  *    27.4  *
* Length Wtd. (ft)        *  191.00  * Wetted Per. (ft)        *  210.76
*   24.57  *   17.80  *
* Min Ch El (ft)          * 1719.98  * Shear (lb/sq ft)        *    3.09
*    3.23  *    0.48  *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *   13.86
*   22.42  *    0.63  *
* Frctn Loss (ft)         *    3.38  * Cum Volume (acre-ft)    *   17.49
*   11.53  *   16.50  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *    7.17
*    2.49  *    7.53  *
************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.65

INPUT
Description:
Station Elevation Data    num=      56
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
```

```
  9595.3 1724.76  9597.4 1724.75  9614.3  1724.3  9622.8 1721.75  9628.1
1720.26
  9640.2 1715.91  9640.5 1715.82    9647 1714.15  9650.5 1714.79  9651.5
1714.92
  9652.6 1715.38    9656  1717.6  9663.9  1717.5  9669.2 1717.57    9678
1717.43
  9698.8 1716.67    9729 1715.96  9759.1 1716.97  9789.2 1717.48  9789.7
1717.52
  9795.4 1718.11    9811 1719.62  9821.5 1716.01  9821.8 1715.91  9821.9
1715.89
  9827.7 1715.11  9832.3 1716.75  9836.5 1717.51  9841.1 1718.48  9842.6
1718.72
  9859.6 1719.03  9866.9 1719.36  9876.9 1718.63  9879.6 1718.39  9884.7
1718.76
  9888.6 1719.01    9892 1719.16  9901.4 1719.63  9908.2 1719.49  9926.7
1718.61
  9962.9 1718.68  9980.7  1718.5  9986.5 1717.51  9994.2 1716.24  9995.3
1716.13
  9998.7 1715.81 10001.1 1715.74 10003.4 1715.61 10005.2 1716.27 10007.9
1717.51
 10009.8 1718.35 10013.8 1719.87 10022.2 1719.71   10027 1719.33 10037.2
1719.26
 10045.2 1719.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9595.3    .078  9980.7    .052 10009.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9980.7 10009.8              207     207     207             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1719.10  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1718.92  * Reach Len. (ft)         *  207.00
*  207.00  *  207.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  436.85
*   61.96  *    0.43  *
* E.G. Slope (ft/ft)      *0.010653  * Area (sq ft)            *  436.85
*   61.96  *    0.43  *
* Q Total (cfs)           * 1594.00  * Flow (cfs)              * 1296.52
*  297.13  *    0.36  *
* Top Width (ft)          *  318.39  * Top Width (ft)          *  287.78
*   29.10  *    1.51  *
* Vel Total (ft/s)        *    3.19  * Avg. Vel. (ft/s)        *    2.97
*    4.80  *    0.82  *
* Max Chl Dpth (ft)       *    4.77  * Hydr. Depth (ft)        *    1.52
*    2.13  *    0.29  *
* Conv. Total (cfs)       * 15444.0  * Conv. (cfs)             * 12561.7
*  2878.8  *     3.4  *
* Length Wtd. (ft)        *  207.00  * Wetted Per. (ft)        *  290.55
*   29.88  *    1.62  *
* Min Ch El (ft)          * 1715.61  * Shear (lb/sq ft)        *    1.00
*    1.38  *    0.18  *
```

```
* Alpha                    *    1.12  * Stream Power (lb/ft s) *    2.97
*    6.61  *    0.15  *
* Frctn Loss (ft)          *    2.93  * Cum Volume (acre-ft)   *   15.88
*   11.32  *   16.49  *
* C & E Loss (ft)          *    0.03  * Cum SA (acres)         *    6.08
*    2.37  *    7.49  *
*************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.61

INPUT
Description:
Station Elevation Data    num=      50
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9812.2 1720.11  9812.6 1720.09  9817.5 1719.55  9825.8  1719.3  9830.2
1719.3
  9836.5 1718.79    9840 1718.54  9844.8 1717.07  9855.8  1713.8  9862.1
1712.48
  9863.6 1712.08  9864.8 1711.88  9872.7  1710.6    9875 1711.41  9876.8
1711.7
  9879.2  1711.7  9881.9 1711.87  9886.6 1712.24  9893.3 1712.93  9903.7
1713.53
    9907 1713.67    9919  1714.6  9922.9 1714.66  9937.1 1714.47  9965.2
1714.9
  9965.7 1714.91    9966 1714.92  9966.5 1714.92  9983.7 1715.09  9989.1
1714.34
  9997.2 1712.61  9998.9 1712.65 10001.8 1712.82 10006.7 1713.06 10009.5
1713.15
 10010.6 1713.32 10015.6  1713.7 10017.9 1714.34 10021.7 1715.27 10027.4
1715.74
 10027.9 1715.86 10029.5 1715.81 10050.9 1715.58 10058.1 1715.57 10100.6
1716.14
 10123.2 1716.61 10125.8 1716.62 10141.2 1716.81 10144.6 1716.79 10164.7
1717.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9812.2    .078  9989.1    .052 10017.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.1 10017.9              115     115     115             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
```

```
* E.G. Elev (ft)          * 1716.15  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.43  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1715.72  * Reach Len. (ft)         *  115.00
*  115.00  *  115.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  264.04
*   70.58  *    7.29  *
* E.G. Slope (ft/ft)      *0.019688  * Area (sq ft)            *  264.04
*   70.58  *    7.29  *
* Q Total (cfs)           * 1594.00  * Flow (cfs)              * 1074.00
*  510.79  *    9.21  *
* Top Width (ft)          *  208.28  * Top Width (ft)          *  139.74
*   28.80  *   39.74  *
* Vel Total (ft/s)        *    4.66  * Avg. Vel. (ft/s)        *    4.07
*    7.24  *    1.26  *
* Max Chl Dpth (ft)       *    5.11  * Hydr. Depth (ft)        *    1.89
*    2.45  *    0.18  *
* Conv. Total (cfs)       * 11360.2  * Conv. (cfs)             *  7654.2
*  3640.3  *    65.7  *
* Length Wtd. (ft)        *  115.00  * Wetted Per. (ft)        *  140.66
*   29.11  *   39.87  *
* Min Ch El (ft)          * 1712.61  * Shear (lb/sq ft)        *    2.31
*    2.98  *    0.22  *
* Alpha                   *    1.29  * Stream Power (lb/ft s) *    9.39
*   21.57  *    0.28  *
* Frctn Loss (ft)         *    1.63  * Cum Volume (acre-ft)    *   14.21
*   11.00  *   16.47  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)          *    5.06
*    2.23  *    7.39  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.59

INPUT
Description:
Station Elevation Data    num=      59
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9700.3 1716.32  9708.2 1715.82  9720.6 1715.12  9723.2 1715.02  9734.4
1714.65
  9748.4 1714.09  9749.3 1714.07  9753.8 1713.78  9757.4 1713.53  9762.1
1713.18
  9766.7 1712.68  9771.4 1712.38  9776.9 1712.15  9777.7 1712.01  9779.9
1711.76
  9790.8 1710.75  9803.1 1710.07  9811.5 1712.23    9813 1712.54  9814.8
1712.59
  9851.8 1712.41  9853.3 1712.42  9874.4 1712.76  9887.5 1712.65  9900.8
1712.72
```

```
  9919.7 1712.96  9930.4 1713.17  9953.6 1714.32  9958.9 1712.65  9964.9
1709.96
  9969.5  1710.3  9974.2 1710.81  9978.5 1711.62  9984.1 1713.54  9987.8
1713.02
  9995.3 1711.71  9996.2 1711.68 10000.2 1711.47   10006 1713.02   10011
1714.32
 10036.3 1713.72 10039.7 1713.68 10067.3 1713.66 10069.8 1713.64 10071.2
1713.62
 10081.6  1713.3   10082 1713.28 10090.7 1712.85 10094.7 1712.96 10096.6
1713.13
 10111.1 1713.62 10112.9  1713.6 10131.7 1714.07 10166.8 1715.25 10168.1
1715.3
 10168.8 1715.31 10199.4 1716.01 10206.8 1716.33 10218.9 1716.57

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9700.3    .078  9987.8    .052   10006    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.8   10006              215     215     215             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1714.43  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1714.28  * Reach Len. (ft)         *  215.00
*  215.00  *  215.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  437.51
*   39.27  *   81.37  *
* E.G. Slope (ft/ft)      *0.010729  * Area (sq ft)            *  437.51
*   39.27  *   81.37  *
* Q Total (cfs)           * 1594.00  * Flow (cfs)              * 1284.77
*  191.84  *  117.39  *
* Top Width (ft)          *  391.26  * Top Width (ft)          *  243.11
*   18.20  *  129.95  *
* Vel Total (ft/s)        *    2.86  * Avg. Vel. (ft/s)        *    2.94
*    4.88  *    1.44  *
* Max Chl Dpth (ft)       *    4.32  * Hydr. Depth (ft)        *    1.80
*    2.16  *    0.63  *
* Conv. Total (cfs)       * 15389.2  * Conv. (cfs)             * 12403.8
*  1852.1  *  1133.3  *
* Length Wtd. (ft)        *  215.00  * Wetted Per. (ft)        *  244.92
*   18.52  *  130.16  *
* Min Ch El (ft)          * 1711.47  * Shear (lb/sq ft)        *    1.20
*    1.42  *    0.42  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    3.51
*    6.94  *    0.60  *
* Frctn Loss (ft)         *    2.15  * Cum Volume (acre-ft)    *   13.29
*   10.86  *   16.35  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *    4.56
*    2.17  *    7.17  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
```

```
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.55

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9847.2 1719.42  9852.4 1719.19  9886.5 1717.43  9902.9 1717.02    9910
1716.52
  9918.8 1716.35  9932.7 1715.33    9952 1713.43  9969.7 1712.05  9972.2
1711.88
  9977.8 1710.95  9983.8 1709.69  9985.4 1708.63  9988.5 1706.48  9991.4
1704.76
  9997.4 1705.41  9998.1  1705.5 10000.5 1705.58 10004.3  1705.9 10007.7
1706.48
 10017.6 1708.57 10039.4 1709.11 10074.7 1709.89 10079.5 1709.93 10083.2
1710.03
 10122.3 1710.92 10124.2 1710.98 10158.6 1711.66 10173.7 1711.88 10199.1
1711.84
 10212.3 1711.72 10214.2 1711.72 10229.6 1713.07 10271.3 1713.61 10271.9
1713.6
   10378 1716.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9847.2    .078  9988.5    .052 10007.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.5 10007.7              220     220     220             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1712.21  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.79  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1711.43  * Reach Len. (ft)         *  220.00
*  220.00  *  220.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   22.94
*  112.59  *  218.68  *
* E.G. Slope (ft/ft)     *0.009364  * Area (sq ft)            *   22.94
*  112.59  *  218.68  *
* Q Total (cfs)          * 1594.00  * Flow (cfs)              *   56.82
*  992.65  *  544.52  *
```

```
* Top Width (ft)          *  171.81  * Top Width (ft)          *   13.56
*   19.20  *  139.04  *
* Vel Total (ft/s)        *    4.50  * Avg. Vel. (ft/s)        *    2.48
*    8.82  *    2.49  *
* Max Chl Dpth (ft)       *    6.67  * Hydr. Depth (ft)        *    1.69
*    5.86  *    1.57  *
* Conv. Total (cfs)       * 16472.8  * Conv. (cfs)             *   587.2
* 10258.3  *  5627.2  *
* Length Wtd. (ft)        *  220.00  * Wetted Per. (ft)        *   14.73
*   19.78  *  139.29  *
* Min Ch El (ft)          * 1704.76  * Shear (lb/sq ft)        *    0.91
*    3.33  *    0.92  *
* Alpha                   *    2.51  * Stream Power (lb/ft s) *    2.26
*   29.34  *    2.29  *
* Frctn Loss (ft)         *    2.33  * Cum Volume (acre-ft)    *   12.15
*   10.48  *   15.61  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.92
*    2.08  *    6.51  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.5

INPUT
Description:
Station Elevation Data    num=      48
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9872.9 1715.19  9880.4    1715  9889.7 1714.61  9906.9 1714.04  9914.6
1713.85
  9948.7  1712.9  9960.2 1712.97  9965.6 1712.96  9972.8 1712.22  9979.6
1711.25
  9981.4 1710.72  9984.7 1710.27    9989 1707.07  9989.4 1706.63  9990.1
1706.17
  9992.8 1704.48  9994.6  1703.5  9997.7 1702.98 10000.2 1702.71   10010
1704.48
 10020.3 1706.14 10024.4    1706 10028.5 1706.04 10035.7 1706.42 10037.3
1706.44
 10047.1 1707.09   10073 1707.76 10085.9 1707.62 10100.8 1708.05 10103.5
1708.02
 10107.6 1707.89 10112.6 1707.87 10116.9 1707.78 10119.4 1707.76 10132.7
1707.5
 10140.6 1707.65 10143.8 1707.54 10146.7 1707.53   10157 1707.97 10162.4
1708.29
 10169.9  1708.5 10178.4 1708.79 10179.4 1708.79 10180.6 1708.82 10186.6
1708.9
 10204.4 1710.11 10213.4 1710.59 10245.6 1711.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
```

```
  9872.9     .078  9992.8     .052   10010     .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.8   10010              503     503     503             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1709.88  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.83  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1709.05  * Reach Len. (ft)         *  503.00
*  503.00  *  503.00  *
* Crit W.S. (ft)          * 1709.05  * Flow Area (sq ft)       *   15.44
*   96.13  *  277.85  *
* E.G. Slope (ft/ft)      *0.011956  * Area (sq ft)            *   15.44
*   96.13  *  277.85  *
* Q Total (cfs)           * 1755.00  * Flow (cfs)              *   50.11
*  929.16  *  775.73  *
* Top Width (ft)          *  202.50  * Top Width (ft)          *    6.46
*   17.20  *  178.84  *
* Vel Total (ft/s)        *    4.51  * Avg. Vel. (ft/s)        *    3.25
*    9.67  *    2.79  *
* Max Chl Dpth (ft)       *    6.34  * Hydr. Depth (ft)        *    2.39
*    5.59  *    1.55  *
* Conv. Total (cfs)       * 16050.6  * Conv. (cfs)             *   458.3
*  8497.8  *  7094.5  *
* Length Wtd. (ft)        *  503.00  * Wetted Per. (ft)        *    7.94
*   17.67  *  179.06  *
* Min Ch El (ft)          * 1702.71  * Shear (lb/sq ft)        *    1.45
*    4.06  *    1.16  *
* Alpha                   *    2.62  * Stream Power (lb/ft s) *    4.71
*   39.26  *    3.23  *
* Frctn Loss (ft)         *    4.85  * Cum Volume (acre-ft)    *   12.05
*    9.95  *   14.36  *
* C & E Loss (ft)         *    0.14  * Cum SA (acres)          *    3.87
*    1.99  *    5.70  *
**************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15            RS: 0.41

INPUT
Description:
Station Elevation Data    num=      46
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9808.8  1706.8  9811.6 1706.66  9813.9 1706.36  9823.8 1706.08  9828.3
```

```
1705.7
  9834.3 1705.27  9838.8 1704.96  9844.1  1704.8  9849.4 1704.67  9867.9
1704.02
  9874.6 1703.63  9893.8 1702.76  9894.8 1702.72  9906.6 1701.95  9913.4
1701.68
  9918.1 1701.14  9921.8 1700.76  9923.3 1700.57  9926.6  1700.3  9931.5
1701.05
  9933.7  1701.6  9937.4  1701.6  9942.8 1701.68  9952.7 1702.39    9953
1702.39
  9959.3 1701.51  9964.3 1701.98  9964.5    1702  9964.9 1702.01  9980.5
1702.29
  9988.3  1702.2  9988.5  1702.2    9998 1700.68 10000.4 1700.07 10005.6
1700.46
 10011.7 1700.85 10017.6  1700.6 10022.6 1700.35 10028.7  1702.2 10034.3
1703.05
   10041 1704.98 10045.7  1705.8 10067.5 1706.68 10080.6 1707.11 10102.4
1707.28
   10118 1707.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9808.8    .078  9988.5    .052 10028.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.5 10028.7              212     212     212             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1704.89  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.35  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1704.54  * Reach Len. (ft)         *  212.00
*  212.00  *  212.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  293.53
*  148.10  *   14.57  *
* E.G. Slope (ft/ft)      *0.007941  * Area (sq ft)            *  293.53
*  148.10  *   14.57  *
* Q Total (cfs)           * 1755.00  * Flow (cfs)              *  833.21
*  892.04  *   29.75  *
* Top Width (ft)          *  186.35  * Top Width (ft)          *  135.38
*   40.20  *   10.77  *
* Vel Total (ft/s)        *    3.85  * Avg. Vel. (ft/s)        *    2.84
*    6.02  *    2.04  *
* Max Chl Dpth (ft)       *    4.47  * Hydr. Depth (ft)        *    2.17
*    3.68  *    1.35  *
* Conv. Total (cfs)       * 19693.9  * Conv. (cfs)             *  9350.0
* 10010.1  *   333.9  *
* Length Wtd. (ft)        *  212.00  * Wetted Per. (ft)        *  135.76
*   40.71  *   11.04  *
* Min Ch El (ft)          * 1700.07  * Shear (lb/sq ft)        *    1.07
*    1.80  *    0.65  *
* Alpha                   *    1.51  * Stream Power (lb/ft s) *    3.04
*   10.86  *    1.34  *
* Frctn Loss (ft)         *    1.64  * Cum Volume (acre-ft)    *   10.27
*    8.54  *   12.67  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    3.05
```

```
*    1.65  *    4.61  *
**********************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.37

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9954.4 1707.57  9954.6 1707.58  9961.5 1707.74  9962.4 1707.56  9971.4
1705.47
  9975.5  1703.4  9976.1 1703.07  9977.4 1702.32  9984.8 1699.17  9988.6
1697.68
  9989.9  1696.9    9992 1697.26  9994.1 1697.47  9995.6 1697.32  9999.7
1697.08
 10002.9 1697.89 10009.2 1698.75 10015.9 1700.06 10016.2  1700.1 10030.8
1700.36
 10037.3 1700.42 10046.3  1700.6 10046.6  1700.6 10046.8  1700.6   10081
1700.48
 10090.2 1700.32 10092.5 1700.29 10108.2 1700.39 10121.2 1700.79 10121.8
1700.81
 10123.2 1700.86 10139.1 1701.63 10148.9 1703.05 10160.3 1704.31 10169.1
1705.07
 10175.8 1705.14 10192.1 1704.51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9954.4    .078  9984.8    .052 10009.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.8 10009.2              324     324     324             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1703.24  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.46  * Wt. n-Val.             *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1702.78  * Reach Len. (ft)        *  324.00
*  324.00  *  324.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *   15.23
*  122.98  *  301.30  *
* E.G. Slope (ft/ft)     *0.007545  * Area (sq ft)           *   15.23
*  122.98  *  301.30  *
* Q Total (cfs)          * 1755.00  * Flow (cfs)             *   35.88
```

```
*  880.29  *  838.83  *
* Top Width (ft)          *  170.42  * Top Width (ft)          *    8.19
*   24.40  *  137.82  *
* Vel Total (ft/s)        *    3.99  * Avg. Vel. (ft/s)        *    2.36
*    7.16  *    2.78  *
* Max Chl Dpth (ft)       *    5.88  * Hydr. Depth (ft)        *    1.86
*    5.04  *    2.19  *
* Conv. Total (cfs)       * 20204.0  * Conv. (cfs)             *   413.1
* 10134.1  *  9656.8  *
* Length Wtd. (ft)        *  324.00  * Wetted Per. (ft)        *    8.96
*   25.11  *  138.07  *
* Min Ch El (ft)          * 1696.90  * Shear (lb/sq ft)        *    0.80
*    2.31  *    1.03  *
* Alpha                   *    1.85  * Stream Power (lb/ft s) *    1.89
*   16.51  *    2.86  *
* Frctn Loss (ft)         *    2.11  * Cum Volume (acre-ft)    *    9.52
*    7.88  *   11.90  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    2.70
*    1.50  *    4.25  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.31

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9870.9 1705.25  9886.1  1704.8  9916.6 1703.37  9945.5 1701.76  9947.1
1701.66
  9949.2 1701.57  9965.6 1701.17  9969.4 1700.07  9973.3 1698.97  9982.6
1696.92
  9986.4 1695.47  9989.6 1694.59  9991.1  1694.3  9992.5 1694.35    9996
1694.43
  9999.1 1694.03 10000.4 1693.83   10004 1694.74 10009.8 1695.88 10013.7
1695.75
 10031.5 1696.45 10033.3 1696.57 10034.3 1696.63 10034.9 1696.65 10060.4
1698.58
 10074.7 1699.38 10086.2 1700.84 10091.6 1701.49   10099  1702.3 10112.9
1702.87
 10126.4 1703.06 10131.7 1703.17   10151 1703.67

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9870.9    .078  9986.4    .052 10009.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.4 10009.8              515     515     515             .1
```

.3

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1701.12  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.49  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1700.63  * Reach Len. (ft)         *  515.00
*  515.00  *  515.00  *
* Crit W.S. (ft)          * 1699.16  * Flow Area (sq ft)       *   46.76
*  140.19  *  220.14  *
* E.G. Slope (ft/ft)      *0.005699  * Area (sq ft)            *   46.76
*  140.19  *  220.14  *
* Q Total (cfs)           * 1755.00  * Flow (cfs)              *  119.79
*  986.00  *  649.21  *
* Top Width (ft)          *  117.12  * Top Width (ft)          *   18.95
*   23.40  *   74.77  *
* Vel Total (ft/s)        *    4.31  * Avg. Vel. (ft/s)        *    2.56
*    7.03  *    2.95  *
* Max Chl Dpth (ft)       *    6.80  * Hydr. Depth (ft)        *    2.47
*    5.99  *    2.94  *
* Conv. Total (cfs)       * 23247.5  * Conv. (cfs)             *  1586.8
* 13061.0  *  8599.7  *
* Length Wtd. (ft)        *  515.00  * Wetted Per. (ft)        *   19.67
*   23.81  *   74.97  *
* Min Ch El (ft)          * 1693.83  * Shear (lb/sq ft)        *    0.85
*    2.09  *    1.04  *
* Alpha                   *    1.69  * Stream Power (lb/ft s) *    2.17
*   14.73  *    3.08  *
* Frctn Loss (ft)         *    5.06  * Cum Volume (acre-ft)    *    9.29
*    6.91  *    9.96  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *    2.60
*    1.32  *    3.46  *
*************************************************************************
************************
```

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T15
REACH: NRW55T15 RS: 0.21

INPUT
Description:
Station Elevation Data num= 40

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

****

```
********
  9722.1 1701.01  9743.2 1701.32  9771.8 1701.21  9804.4 1700.64    9835
1699.8
  9865.6  1698.6  9896.2 1697.04  9906.3 1697.53  9912.4 1697.78  9922.5
1697.06
  9932.1 1696.28  9936.1 1695.82  9948.5 1694.51  9957.4 1693.37  9963.7
1693.16
  9970.9 1693.04  9975.7 1692.63  9979.1 1692.43  9981.6 1692.27  9988.5
1692.2
  9991.3 1691.75  9994.9 1690.99   10001 1690.52 10001.5 1690.46 10003.2
1690.44
 10009.1 1690.49 10018.7 1692.28 10019.5 1692.38 10021.6  1692.4 10031.3
1692.4
   10044 1693.34 10047.2 1693.52 10049.9 1693.73 10058.7 1694.13 10070.1
1695.89
 10072.2  1696.2 10074.9 1696.26 10083.8 1696.55 10110.4 1696.44 10116.7
1696.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9722.1    .078  9988.5    .052 10019.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.5 10019.5              471     471     471             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1696.01  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.11  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1694.90  * Reach Len. (ft)         *  471.00
*  471.00  *  471.00  *
* Crit W.S. (ft)          * 1694.90  * Flow Area (sq ft)       *   75.16
*  117.85  *   73.80  *
* E.G. Slope (ft/ft)      *0.020772  * Area (sq ft)            *   75.16
*  117.85  *   73.80  *
* Q Total (cfs)           * 1755.00  * Flow (cfs)              *  295.77
* 1174.41  *  284.82  *
* Top Width (ft)          *  118.84  * Top Width (ft)          *   43.67
*   31.00  *   44.17  *
* Vel Total (ft/s)        *    6.58  * Avg. Vel. (ft/s)        *    3.94
*    9.97  *    3.86  *
* Max Chl Dpth (ft)       *    4.46  * Hydr. Depth (ft)        *    1.72
*    3.80  *    1.67  *
* Conv. Total (cfs)       * 12177.0  * Conv. (cfs)             *  2052.2
*  8148.6  *  1976.2  *
* Length Wtd. (ft)        *  471.00  * Wetted Per. (ft)        *   43.80
*   31.31  *   44.29  *
* Min Ch El (ft)          * 1690.44  * Shear (lb/sq ft)        *    2.23
*    4.88  *    2.16  *
* Alpha                   *    1.65  * Stream Power (lb/ft s) *    8.76
*   48.64  *    8.34  *
* Frctn Loss (ft)         *    2.59  * Cum Volume (acre-ft)    *    8.57
*    5.38  *    8.22  *
* C & E Loss (ft)         *    0.29  * Cum SA (acres)          *    2.23
*    1.00  *    2.75  *
```

```
**************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T15
REACH: NRW55T15           RS: 0.12

INPUT
Description:
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9891.2 1693.71  9892.4  1693.5  9900.4 1692.93  9910.5 1691.91  9921.4
1691.32
  9921.7  1691.3  9928.8 1689.66  9934.4 1688.56  9942.2 1687.15  9943.5
1686.9
    9951 1686.74  9953.4 1686.74    9957 1687.34  9966.4 1688.27  9973.9
1688.36
  9976.8 1688.53    9981 1688.71  9986.6 1687.95  9993.5 1686.56  9993.8
1686.5
  9994.1 1686.52  9999.4 1686.86   10002 1686.59 10003.7 1686.58 10009.1
1687.25
   10012 1687.63   10013  1687.7 10022.1  1687.9 10038.1  1688.8 10038.2
1688.8
 10056.3 1689.11 10075.8  1689.3 10077.4  1689.3 10101.1 1689.72 10249.2
1693.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**************************************************
  9891.2    .078  9986.6    .052 10022.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.6 10022.1               639     639     639             .1
.3
```

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1692.17  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1692.04  * Reach Len. (ft)         *  639.00
*  639.00  *  639.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  254.90
*  171.81  *  352.72  *
* E.G. Slope (ft/ft)      *0.002489  * Area (sq ft)            *  254.90
*  171.81  *  352.72  *
* Q Total (cfs)           * 1755.00  * Flow (cfs)              *  533.35
*  697.67  *  523.98  *
* Top Width (ft)          *  293.34  * Top Width (ft)          *   77.40
*   35.50  *  180.43  *
* Vel Total (ft/s)        *    2.25  * Avg. Vel. (ft/s)        *    2.09
*    4.06  *    1.49  *
* Max Chl Dpth (ft)       *    5.54  * Hydr. Depth (ft)        *    3.29
*    4.84  *    1.95  *
* Conv. Total (cfs)       * 35177.8  * Conv. (cfs)             * 10690.7
* 13984.2  * 10502.9  *
* Length Wtd. (ft)        *  639.00  * Wetted Per. (ft)        *   78.03
*   35.74  *  180.49  *
* Min Ch El (ft)          * 1686.50  * Shear (lb/sq ft)        *    0.51
*    0.75  *    0.30  *
* Alpha                   *    1.69  * Stream Power (lb/ft s) *    1.06
*    3.03  *    0.45  *
* Frctn Loss (ft)         *    3.59  * Cum Volume (acre-ft)    *    6.78
*    3.81  *    5.92  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    1.58
*    0.64  *    1.54  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T15
REACH: NRW55T15 RS: 0.09

INPUT
Description: U.S. of confluence with NRW55D
Station Elevation Data num= 45

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9798.9 1691.53  9804.1 1691.19  9805.7  1691.1  9813.8 1690.48  9819.1
1689.99
  9820.7  1689.9  9828.2 1689.16  9837.6 1688.69  9853.6 1687.77  9858.2
```

```
1687.56
  9862.1 1687.33  9875.2 1685.92  9880.7 1685.41  9887.3 1684.75  9893.5
1684.7
  9898.5 1684.74  9900.7  1684.7  9905.8 1685.66  9911.8 1686.89  9922.7
1686.66
  9936.7 1687.67  9959.8 1686.29  9964.6 1686.46  9970.5 1686.52  9986.1
1686.97
  9989.2 1686.64  9996.1 1685.32 10005.1 1685.39 10018.8  1686.1   10027
1686.34
 10028.7  1686.3 10030.2 1686.28 10037.7 1686.48 10038.2 1686.47 10046.8
1686
 10047.2 1686.01 10049.5 1686.27 10059.6 1687.27 10070.8 1688.48 10074.3
1688.49
 10100.4 1688.13 10125.4 1688.78 10160.9  1689.4 10221.4 1690.05   10230
1690.2

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9798.9    .078  9986.1    .052 10037.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.1 10037.7                0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1688.55  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.47  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1688.08  * Reach Len. (ft)         *  340.00
*  340.00  *  340.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  219.04
*  108.72  *   38.28  *
* E.G. Slope (ft/ft)      *0.022774  * Area (sq ft)            *  219.04
*  108.72  *   38.28  *
* Q Total (cfs)           * 1755.00  * Flow (cfs)              *  855.29
*  768.90  *  130.81  *
* Top Width (ft)          *  218.93  * Top Width (ft)          *  137.92
*   51.60  *   29.41  *
* Vel Total (ft/s)        *    4.79  * Avg. Vel. (ft/s)        *    3.90
*    7.07  *    3.42  *
* Max Chl Dpth (ft)       *    3.38  * Hydr. Depth (ft)        *    1.59
*    2.11  *    1.30  *
* Conv. Total (cfs)       * 11629.4  * Conv. (cfs)             *  5667.6
*  5095.1  *   866.8  *
* Length Wtd. (ft)        *  340.00  * Wetted Per. (ft)        *  138.38
*   51.77  *   29.53  *
* Min Ch El (ft)          * 1685.32  * Shear (lb/sq ft)        *    2.25
*    2.99  *    1.84  *
* Alpha                   *    1.31  * Stream Power (lb/ft s) *    8.79
*   21.12  *    6.30  *
* Frctn Loss (ft)         *    1.86  * Cum Volume (acre-ft)    *    3.30
*    1.76  *    3.05  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *
*          *          *
************************************************************************
************************
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55D
REACH: NRW55D              RS: 3.00

INPUT
Description: D.S. of Confluence with NRW55T30
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9837.4 1708.53  9838.3 1708.45  9868.3 1706.21  9898.3  1703.7  9923.4
1702.85
    9933 1702.43  9964.1 1702.07  9967.2 1701.97  9976.6 1699.74  9981.3
1698.85
  9985.8 1698.12  9991.5  1697.3  9995.1 1697.13  9997.3 1697.14  9998.6
1697.13
  9999.8 1697.09 10007.1 1699.19 10010.4 1699.93 10035.3  1701.3   10036
1701.36
 10051.3 1703.45 10077.9 1702.41 10078.4  1702.4 10112.8 1702.53 10249.3
1703.63
 10284.7 1704.23 10320.1 1705.05 10390.9 1707.18   10392 1707.24 10393.8
1707.22
 10562.2 1710.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9837.4    .074  9967.2    .055   10036    .071

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9967.2   10036              270     270     270             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1704.86  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.55  * Wt. n-Val.              *   0.074
*   0.055  *   0.071  *
* W.S. Elev (ft)         * 1704.32  * Reach Len. (ft)         *  270.00
*  270.00  *  270.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *  115.76
*  334.30  *  312.94  *
* E.G. Slope (ft/ft)     *0.008118  * Area (sq ft)            *  115.76
*  334.30  *  312.94  *
* Q Total (cfs)          * 3272.00  * Flow (cfs)              *  276.51
* 2314.69  *  680.80  *
* Top Width (ft)         *  397.41  * Top Width (ft)          *   76.25
*   68.80  *  252.36  *
* Vel Total (ft/s)       *    4.29  * Avg. Vel. (ft/s)        *    2.39
*    6.92  *    2.18  *
```

```
* Max Chl Dpth (ft)       *    7.22  * Hydr. Depth (ft)        *    1.52
*    4.86  *    1.24  *
* Conv. Total (cfs)       * 36316.0  * Conv. (cfs)             *  3069.0
* 25690.8  *  7556.2  *
* Length Wtd. (ft)        *  270.00  * Wetted Per. (ft)        *   76.30
*   69.68  *  252.53  *
* Min Ch El (ft)          * 1697.09  * Shear (lb/sq ft)        *    0.77
*    2.43  *    0.63  *
* Alpha                   *    1.92  * Stream Power (lb/ft s) *    1.84
*   16.83  *    1.37  *
* Frctn Loss (ft)         *    2.33  * Cum Volume (acre-ft)    *   10.29
*   12.79  *   25.33  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    3.26
*    1.76  *   11.64  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55D
REACH: NRW55D             RS: 2.95

INPUT
Description:
Station Elevation Data    num=      53
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9889.3 1709.38    9894 1708.31  9901.9 1706.86  9950.6 1702.18  9956.1
1701.64
  9956.7 1701.59  9957.2 1701.56  9976.4 1700.35  9980.3 1699.09  9984.2
1698.05
  9987.3 1696.54  9991.6 1694.67  9994.1 1694.57  9995.9 1694.27  9997.6
1693.93
   10000 1693.81 10006.8 1696.39 10011.5 1698.15   10026 1696.94 10041.4
1697.81
 10042.5  1697.9   10053 1697.99 10054.2 1697.97 10064.4  1699.6 10064.7
1699.64
 10081.8 1701.36 10090.8  1701.4 10107.1  1700.8 10120.2 1700.58 10137.1
1700.8
 10143.6 1700.74 10152.4 1700.65 10167.2 1700.31 10197.2 1699.78 10206.4
1699.73
 10221.6 1699.52 10230.5 1699.25 10234.1  1699.2   10253  1700.8 10260.2
1701.74
 10265.6 1702.36 10267.5 1702.33 10287.3 1701.88   10296 1702.54 10309.8
1703.76
 10314.8 1703.08 10318.6  1703.9 10321.8 1703.75   10324 1704.02 10330.5
1704.2
 10345.9 1704.36 10377.3 1704.44   10405 1705.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9889.3    .074  9984.2    .055 10011.5    .071
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.2 10011.5              482     482     482             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1702.52  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.61  * Wt. n-Val.              *   0.074
*   0.055  *   0.071  *
* W.S. Elev (ft)          * 1701.91  * Reach Len. (ft)         *  482.00
*  482.00  *  482.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   40.72
*  173.90  *  518.76  *
* E.G. Slope (ft/ft)      *0.009180  * Area (sq ft)            *   40.72
*  173.90  *  518.76  *
* Q Total (cfs)           * 3272.00  * Flow (cfs)              *   93.41
* 1489.48  * 1689.11  *
* Top Width (ft)          *  310.29  * Top Width (ft)          *   30.88
*   27.30  *  252.11  *
* Vel Total (ft/s)        *    4.46  * Avg. Vel. (ft/s)        *    2.29
*    8.57  *    3.26  *
* Max Chl Dpth (ft)       *    8.10  * Hydr. Depth (ft)        *    1.32
*    6.37  *    2.06  *
* Conv. Total (cfs)       * 34150.0  * Conv. (cfs)             *   974.9
* 15545.8  * 17629.4  *
* Length Wtd. (ft)        *  482.00  * Wetted Per. (ft)        *   31.27
*   28.89  *  252.58  *
* Min Ch El (ft)          * 1693.81  * Shear (lb/sq ft)        *    0.75
*    3.45  *    1.18  *
* Alpha                   *    1.96  * Stream Power (lb/ft s) *    1.71
*   29.55  *    3.83  *
* Frctn Loss (ft)         *    3.27  * Cum Volume (acre-ft)    *    9.81
*   11.21  *   22.75  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *    2.92
*    1.46  *   10.08  *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55D
REACH: NRW55D             RS: 2.86

INPUT
Description:
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9835.2 1703.85  9841.6 1703.53    9849 1702.69  9862.7 1701.25  9887.2
1698.78
```

```
  9894.2 1698.36  9897.3 1698.19    9910 1697.44  9920.1 1697.09  9924.8
1696.86
  9958.9 1694.62    9959 1694.61  9959.2  1694.6  9966.7 1695.18  9970.5
1694.63
  9975.9 1694.03  9980.7 1693.03  9989.5 1691.43  9993.1 1691.25  9994.5
1691.22
 10000.6 1691.18 10001.7 1691.15 10014.7 1694.29 10019.3 1694.35 10025.1
1694.7
 10031.7 1694.48 10033.9 1694.46 10037.2 1694.57 10064.4 1695.29 10075.4
1695.6
 10075.5  1695.6 10107.3 1696.74   10114 1697.29 10120.4 1697.74 10125.5
1698.19
 10132.8  1698.7 10142.8 1699.22 10160.3 1699.72 10173.1 1700.26

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9835.2    .074  9975.9    .055 10014.7    .071

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.9 10014.7              499     499     499             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1699.16  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.43  * Wt. n-Val.              *   0.074
*   0.055  *   0.071  *
* W.S. Elev (ft)          * 1698.73  * Reach Len. (ft)         *  499.00
*  499.00  *  499.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  207.83
*  251.78  *  342.19  *
* E.G. Slope (ft/ft)      *0.005217  * Area (sq ft)            *  207.83
*  251.78  *  342.19  *
* Q Total (cfs)           * 3272.00  * Flow (cfs)              *  534.00
* 1691.25  * 1046.75  *
* Top Width (ft)          *  245.47  * Top Width (ft)          *   87.93
*   38.80  *  118.75  *
* Vel Total (ft/s)        *    4.08  * Avg. Vel. (ft/s)        *    2.57
*    6.72  *    3.06  *
* Max Chl Dpth (ft)       *    7.58  * Hydr. Depth (ft)        *    2.36
*    6.49  *    2.88  *
* Conv. Total (cfs)       * 45298.7  * Conv. (cfs)             *  7392.8
* 23414.2  * 14491.6  *
* Length Wtd. (ft)        *  499.00  * Wetted Per. (ft)        *   88.15
*   39.43  *  118.87  *
* Min Ch El (ft)          * 1691.15  * Shear (lb/sq ft)        *    0.77
*    2.08  *    0.94  *
* Alpha                   *    1.64  * Stream Power (lb/ft s) *    1.97
*   13.97  *    2.87  *
* Frctn Loss (ft)         *    3.83  * Cum Volume (acre-ft)    *    8.43
*    8.86  *   17.98  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *    2.27
*    1.09  *    8.03  *
**************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
```

```
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55D
REACH: NRW55D             RS: 2.77

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9838.3 1697.26  9841.9 1696.92    9842  1696.9  9842.2 1696.89  9874.2
1695.17
  9904.2 1693.96  9934.2 1692.36    9959 1692.11    9960  1692.1  9968.6
1691.27
  9973.5 1691.04  9986.4  1688.8  9987.2 1688.68  9987.4 1688.68  9993.4
1688.48
  9998.1 1688.22  9999.5 1688.12 10003.6 1689.14 10010.5 1690.74 10026.8
1689.66
 10031.4 1689.97 10038.7 1689.83 10046.5 1689.61 10056.5 1690.89 10068.5
1692.34
   10071 1692.71 10079.7 1694.17 10099.3 1693.93 10108.7 1693.74 10115.8
1693.6
 10125.1 1693.55 10167.2 1693.83 10341.3 1696.22 10393.5 1697.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9838.3    .074  9973.5    .055 10010.5    .071

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.5 10010.5              498     498     498             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)         * 1695.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.74  * Wt. n-Val.              *   0.074
*   0.055  *   0.071  *
* W.S. Elev (ft)         * 1694.50  * Reach Len. (ft)         *  498.00
*  498.00  *  498.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *  142.83
*  193.60  *  333.43  *
* E.G. Slope (ft/ft)     *0.012410  * Area (sq ft)            *  142.83
*  193.60  *  333.43  *
* Q Total (cfs)          * 3272.00  * Flow (cfs)              *  459.76
* 1739.77  * 1072.47  *
* Top Width (ft)         *  325.02  * Top Width (ft)          *   82.64
*   37.00  *  205.38  *
```

```
* Vel Total (ft/s)        *    4.88  * Avg. Vel. (ft/s)        *    3.22
*    8.99  *    3.22  *
* Max Chl Dpth (ft)       *    6.38  * Hydr. Depth (ft)        *    1.73
*    5.23  *    1.62  *
* Conv. Total (cfs)       * 29371.9  * Conv. (cfs)             *  4127.1
* 15617.5  *  9627.3  *
* Length Wtd. (ft)        *  498.00  * Wetted Per. (ft)        *   82.74
*   37.52  *  205.75  *
* Min Ch El (ft)          * 1688.12  * Shear (lb/sq ft)        *    1.34
*    4.00  *    1.26  *
* Alpha                   *    2.00  * Stream Power (lb/ft s) *    4.30
*   35.92  *    4.04  *
* Frctn Loss (ft)         *    4.06  * Cum Volume (acre-ft)    *    6.42
*    6.31  *   14.11  *
* C & E Loss (ft)         *    0.18  * Cum SA (acres)          *    1.29
*    0.66  *    6.17  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55D
REACH: NRW55D              RS: 2.67

INPUT
Description:
Station Elevation Data    num=      55
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9847.7 1692.51  9854.8 1692.39  9871.1 1691.78    9887 1691.21  9910.8
1691.22
  9915.7 1691.15    9917  1691.2  9928.6  1688.8    9938  1686.7  9944.5
1686.65
  9956.4 1686.42  9969.9  1686.3    9972  1686.3  9983.2 1685.91  9989.5
1685.66
  9994.2 1684.14    9996 1683.75  9997.9 1683.63 10001.1  1683.3 10002.9
1683.68
 10005.8 1683.86 10021.1 1686.01 10022.7 1686.27 10038.5  1686.4 10038.6
1686.4
 10039.4 1686.47 10053.8 1687.82 10058.6  1688.4 10069.3  1689.8 10078.1
1690.45
 10084.7 1690.77 10113.4 1689.27 10113.8 1689.24 10118.1 1689.09 10120.5
1688.95
 10124.5 1688.83 10197.5 1689.61 10306.9 1689.52 10314.6 1689.62 10346.3
1689.85
   10359 1690.05 10373.3 1690.21 10383.6 1689.77 10386.2    1690 10403.1
1690.16
 10412.1  1690.7 10418.7 1690.68 10439.1 1690.97 10446.7 1691.01 10465.7
1691.28
   10477 1691.28   10495 1691.64 10502.4 1691.89   10512 1691.97 10537.2
```

1692.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9847.7	.074	9989.5	.055	10021.1	.071

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.5	10021.1	329	329	329	.3	.5

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1691.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.074	0.055	0.071
W.S. Elev (ft)	1690.63	Reach Len. (ft)	329.00	329.00	329.00
Crit W.S. (ft)		Flow Area (sq ft)	257.16	194.78	486.94
E.G. Slope (ft/ft)	0.005759	Area (sq ft)	257.16	194.78	486.94
Q Total (cfs)	3272.00	Flow (cfs)	931.64	1328.62	1011.74
Top Width (ft)	485.28	Top Width (ft)	69.72	31.60	383.96
Vel Total (ft/s)	3.48	Avg. Vel. (ft/s)	3.62	6.82	2.08
Max Chl Dpth (ft)	7.32	Hydr. Depth (ft)	3.69	6.16	1.27
Conv. Total (cfs)	43116.5	Conv. (cfs)	12276.6	17507.8	13332.1
Length Wtd. (ft)	329.00	Wetted Per. (ft)	70.15	32.10	384.29
Min Ch El (ft)	1683.30	Shear (lb/sq ft)	1.32	2.18	0.46
Alpha	1.97	Stream Power (lb/ft s)	4.77	14.88	0.95
Frctn Loss (ft)	2.23	Cum Volume (acre-ft)	4.14	4.09	9.43
C & E Loss (ft)	0.06	Cum SA (acres)	0.42	0.27	2.80

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55D
REACH: NRW55D RS: 2.61

INPUT
Description:

```
Station Elevation Data    num=      48
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9920.9 1688.48  9958.1 1687.49  9974.4 1683.47  9975.4 1683.22  9981.4
1681.7
  9986.3 1681.86  9989.9  1681.9 10002.6 1682.11 10004.2 1682.08 10014.7
1683.5
 10017.6 1683.85 10019.1 1684.07 10023.2 1684.24   10033 1684.55 10035.6
1684.58
   10046 1684.15   10055 1684.26 10061.4  1684.3 10074.3 1685.54 10078.4
1685.89
 10085.7 1686.75 10115.3 1687.03 10118.5 1687.08   10158 1687.83   10161
1687.83
 10182.2 1686.99 10208.2 1687.11   10240 1687.09 10246.3 1687.14 10247.8
1687.14
 10291.7 1687.11 10299.4 1687.07   10319 1687.07 10330.7 1686.36 10332.5
1686.22
 10333.2 1686.15 10338.9 1685.85 10345.7 1686.44 10350.2 1686.87   10358
1687.1
   10367 1687.61 10378.2 1688.56 10378.7 1688.56   10380 1688.62   10393
1688.85
 10404.2 1689.32   10428 1690.69 10444.3 1691.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9920.9    .074  9975.4    .055 10014.7    .071

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.4 10014.7              377     377     377             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
************************
* E.G. Elev (ft)          * 1688.70  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.58  * Wt. n-Val.              *   0.074
*   0.055  *   0.071  *
* W.S. Elev (ft)          * 1688.13  * Reach Len. (ft)         *  377.03
*  377.03  *  377.03  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   55.55
*  231.03  *  539.49  *
* E.G. Slope (ft/ft)      *0.008080  * Area (sq ft)            *   55.55
*  231.03  *  539.49  *
* Q Total (cfs)           * 3272.00  * Flow (cfs)              *  121.28
* 1818.52  * 1332.21  *
* Top Width (ft)          *  438.93  * Top Width (ft)          *   41.24
*   39.30  *  358.39  *
* Vel Total (ft/s)        *    3.96  * Avg. Vel. (ft/s)        *    2.18
*    7.87  *    2.47  *
* Max Chl Dpth (ft)       *    6.43  * Hydr. Depth (ft)        *    1.35
*    5.88  *    1.51  *
* Conv. Total (cfs)       * 36401.1  * Conv. (cfs)             *  1349.2
* 20231.0  * 14820.9  *
* Length Wtd. (ft)        *  377.03  * Wetted Per. (ft)        *   41.76
*   39.59  *  358.72  *
* Min Ch El (ft)          * 1681.70  * Shear (lb/sq ft)        *    0.67
```

```
*    2.94  *    0.76  *
* Alpha                    *    2.36  * Stream Power (lb/ft s) *    1.46
*   23.17  *    1.87  *
* Frctn Loss (ft)          *    1.93  * Cum Volume (acre-ft)   *    2.96
*    2.48  *    5.55  *
* C & E Loss (ft)          *    0.14  * Cum SA (acres)         *
*          *          *
**********************************************************************
***********************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T30
REACH: NRW55T30 RS: 0.72

INPUT
Description: U.S. Limit of Study
Station Elevation Data num= 20

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
    9732 1714.06  9744.4 1714.05  9773.1 1713.69  9918.9  1712.5  9929.4
1712.34
  9950.7 1712.28  9953.5 1712.25  9957.7 1712.46  9962.9 1712.35  9994.6
1711.95
  9997.8 1711.85 10005.1 1711.82 10007.1  1711.8 10007.8 1711.87 10011.8
1712.12
 10039.8 1712.33   10050 1712.25 10096.2 1712.41 10198.7 1713.99 10218.1
1714.4
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
    9732    .078  9962.9    .074 10011.8    .079
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9962.9 10011.8              465     465     465             .1
.3
```

CROSS SECTION OUTPUT Profile #100-year

```
**********************************************************************
***********************
* E.G. Elev (ft)          * 1713.57  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)          * 1713.51  * Reach Len. (ft)         *  465.00
*  465.00  *  465.00  *
* Crit W.S. (ft)          * 1712.96  * Flow Area (sq ft)       *  113.18
*   71.01  *  141.81  *
* E.G. Slope (ft/ft)      *0.009750  * Area (sq ft)            *  113.18
*   71.01  *  141.81  *
* Q Total (cfs)           *  592.00  * Flow (cfs)              *  163.95
*  180.49  *  247.56  *
```

```
* Top Width (ft)          *  371.96  * Top Width (ft)          *  167.46
*   48.90  *  155.60  *
* Vel Total (ft/s)        *    1.82  * Avg. Vel. (ft/s)        *    1.45
*    2.54  *    1.75  *
* Max Chl Dpth (ft)       *    1.71  * Hydr. Depth (ft)        *    0.68
*    1.45  *    0.91  *
* Conv. Total (cfs)       *  5995.4  * Conv. (cfs)             *  1660.4
*  1827.9  *  2507.1  *
* Length Wtd. (ft)        *  465.00  * Wetted Per. (ft)        *  167.47
*   48.91  *  155.61  *
* Min Ch El (ft)          * 1711.80  * Shear (lb/sq ft)        *    0.41
*    0.88  *    0.55  *
* Alpha                   *    1.16  * Stream Power (lb/ft s) *    0.60
*    2.25  *    0.97  *
* Frctn Loss (ft)         *    3.61  * Cum Volume (acre-ft)    *    6.52
*    6.57  *    6.80  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    7.50
*    3.71  *    7.19  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30           RS: 0.63

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9757.9 1711.09  9784.2 1710.64  9810.9 1710.35  9952.9  1708.9  9996.7
1708.7
 10008.5 1708.59 10018.6 1708.54 10025.1 1708.47   10033 1708.08 10044.8
1708.21
   10052 1708.41 10055.5 1708.54 10090.2 1708.45 10241.9 1709.43 10284.1
1710
 10345.6  1711.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9757.9    .078  9996.7    .074 10055.5    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9996.7 10055.5              360     360     360             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1709.95  * Element                 *  Left OB
*  Channel * Right OB *
```

```
* Vel Head (ft)          *    0.04  * Wt. n-Val.             *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)         * 1709.91  * Reach Len. (ft)        *  360.00
*  360.00  *  360.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *   98.68
*   87.98  *  204.95  *
* E.G. Slope (ft/ft)     *0.006340  * Area (sq ft)           *   98.68
*   87.98  *  204.95  *
* Q Total (cfs)          *  592.00  * Flow (cfs)             *  117.00
*  183.98  *  291.02  *
* Top Width (ft)         *  423.58  * Top Width (ft)         *  142.79
*   58.80  *  221.99  *
* Vel Total (ft/s)       *    1.51  * Avg. Vel. (ft/s)       *    1.19
*    2.09  *    1.42  *
* Max Chl Dpth (ft)      *    1.83  * Hydr. Depth (ft)       *    0.69
*    1.50  *    0.92  *
* Conv. Total (cfs)      *  7434.7  * Conv. (cfs)            *  1469.3
*  2310.5  *  3654.9  *
* Length Wtd. (ft)       *  360.00  * Wetted Per. (ft)       *  142.79
*   58.82  *  222.00  *
* Min Ch El (ft)         * 1708.08  * Shear (lb/sq ft)       *    0.27
*    0.59  *    0.37  *
* Alpha                  *    1.15  * Stream Power (lb/ft s) *    0.32
*    1.24  *    0.52  *
* Frctn Loss (ft)        *    3.00  * Cum Volume (acre-ft)   *    5.39
*    5.72  *    4.95  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    5.85
*    3.14  *    5.18  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30           RS: 0.56

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9731.2 1708.18  9823.7  1706.6  9848.3 1706.36  9978.2 1705.55  9991.8
1705.9
 10001.1 1706.07 10007.9 1705.75 10009.8  1705.7 10011.3 1705.68 10021.2
1705.8
 10036.3  1705.6   10096 1705.78   10149 1706.45 10261.4 1708.32

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9731.2    .078  9991.8    .074 10021.2    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
```

```
        9991.8 10021.2              373     373     373             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1706.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)          * 1706.90  * Reach Len. (ft)         *  373.00
*  373.00  *  373.00  *
* Crit W.S. (ft)          * 1706.39  * Flow Area (sq ft)       *  151.09
*   30.68  *  137.54  *
* E.G. Slope (ft/ft)      *0.011433  * Area (sq ft)            *  151.09
*   30.68  *  137.54  *
* Q Total (cfs)           *  592.00  * Flow (cfs)              *  268.44
*   67.74  *  255.81  *
* Top Width (ft)          *  369.53  * Top Width (ft)          *  185.47
*   29.40  *  154.65  *
* Vel Total (ft/s)        *    1.85  * Avg. Vel. (ft/s)        *    1.78
*    2.21  *    1.86  *
* Max Chl Dpth (ft)       *    1.35  * Hydr. Depth (ft)        *    0.81
*    1.04  *    0.89  *
* Conv. Total (cfs)       *  5536.5  * Conv. (cfs)             *  2510.6
*   633.5  *  2392.4  *
* Length Wtd. (ft)        *  373.00  * Wetted Per. (ft)        *  185.48
*   29.41  *  154.66  *
* Min Ch El (ft)          * 1705.68  * Shear (lb/sq ft)        *    0.58
*    0.74  *    0.63  *
* Alpha                   *    1.01  * Stream Power (lb/ft s) *    1.03
*    1.64  *    1.18  *
* Frctn Loss (ft)         *    3.33  * Cum Volume (acre-ft)    *    4.35
*    5.23  *    3.54  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    4.49
*    2.77  *    3.62  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30           RS: 0.49

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9671.9 1704.81  9802.9 1703.94  9885.3 1702.79  9913.3 1702.18  9919.5
1702.13
  9925.1 1701.94  9936.1 1701.95  9950.1 1702.47  9950.8  1702.5  9968.1
1701.94
  9969.6 1701.92  9990.8 1701.92 10011.8 1701.97 10025.6 1701.95 10075.7
```

```
1702.51
 10135.6 1703.44 10192.9 1704.48 10209.2 1704.73

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9671.9    .078  9950.8    .074 10075.7    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9950.8 10075.7               370     370     370             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1703.62  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)          * 1703.56  * Reach Len. (ft)         *  370.00
*  370.00  *  370.00  *
* Crit W.S. (ft)          * 1702.83  * Flow Area (sq ft)       *  105.41
*  182.41  *   35.11  *
* E.G. Slope (ft/ft)      *0.007182  * Area (sq ft)            *  105.41
*  182.41  *   35.11  *
* Q Total (cfs)           *  592.00  * Flow (cfs)              *  155.80
*  399.54  *   36.65  *
* Top Width (ft)          *  311.46  * Top Width (ft)          *  120.32
*  124.90  *   66.24  *
* Vel Total (ft/s)        *    1.83  * Avg. Vel. (ft/s)        *    1.48
*    2.19  *    1.04  *
* Max Chl Dpth (ft)       *    1.64  * Hydr. Depth (ft)        *    0.88
*    1.46  *    0.53  *
* Conv. Total (cfs)       *  6985.3  * Conv. (cfs)             *  1838.4
*  4714.4  *   432.5  *
* Length Wtd. (ft)        *  370.00  * Wetted Per. (ft)        *  120.35
*  124.91  *   66.25  *
* Min Ch El (ft)          * 1701.92  * Shear (lb/sq ft)        *    0.39
*    0.65  *    0.24  *
* Alpha                   *    1.15  * Stream Power (lb/ft s) *    0.58
*    1.43  *    0.25  *
* Frctn Loss (ft)         *    2.95  * Cum Volume (acre-ft)    *    3.26
*    4.32  *    2.80  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    3.18
*    2.11  *    2.68  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30           RS: 0.42

INPUT
Description:
```

```
Station Elevation Data     num=       27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9709.8 1702.21  9831.9 1700.45  9937.8 1698.69  9938.1 1698.69  9951.7
1698.6
  9953.3 1698.57  9957.4 1698.54  9968.4 1698.52  9976.8 1698.57  9981.9
1698.65
 10003.5 1698.83 10006.1 1698.89 10007.2 1698.89 10008.3 1698.87 10028.7
1700.58
 10029.7 1700.73 10030.5 1700.81 10032.1 1700.91 10045.9 1701.46 10053.6
1701.84
 10053.9 1701.85 10063.8 1701.66 10069.8 1701.62   10087  1701.2 10100.4
1701.19
 10118.5 1700.82 10222.1 1702.22

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9709.8    .078  9937.8    .074 10003.5    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9937.8 10003.5               475     475     475             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1700.65  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)          * 1700.55  * Reach Len. (ft)         *  475.00
*  475.00  *  475.00  *
* Crit W.S. (ft)          * 1699.79  * Flow Area (sq ft)       *  104.48
*  126.05  *   24.97  *
* E.G. Slope (ft/ft)      *0.008926  * Area (sq ft)            *  104.48
*  126.05  *   24.97  *
* Q Total (cfs)           *  592.00  * Flow (cfs)              *  178.41
*  369.20  *   44.40  *
* Top Width (ft)          *  203.64  * Top Width (ft)          *  113.06
*   65.70  *   24.88  *
* Vel Total (ft/s)        *    2.32  * Avg. Vel. (ft/s)        *    1.71
*    2.93  *    1.78  *
* Max Chl Dpth (ft)       *    2.03  * Hydr. Depth (ft)        *    0.92
*    1.92  *    1.00  *
* Conv. Total (cfs)       *  6266.0  * Conv. (cfs)             *  1888.4
*  3907.7  *   469.9  *
* Length Wtd. (ft)        *  475.00  * Wetted Per. (ft)        *  113.07
*   65.70  *   24.95  *
* Min Ch El (ft)          * 1698.52  * Shear (lb/sq ft)        *    0.51
*    1.07  *    0.56  *
* Alpha                   *    1.20  * Stream Power (lb/ft s) *    0.88
*    3.13  *    0.99  *
* Frctn Loss (ft)         *    4.47  * Cum Volume (acre-ft)    *    2.36
*    3.01  *    2.54  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    2.19
*    1.30  *    2.29  *
**************************************************************************
```

```
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30           RS: 0.33

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9879.4 1697.71  9923.3 1696.21  9928.1 1696.09  9941.7 1695.52  9960.4
1694.72
  9968.5 1693.57  9969.3 1693.57  9986.8 1693.96  9989.5 1693.71  9999.6
1692.03
 10009.3 1693.66 10010.3 1693.87 10043.9 1695.05 10123.2 1696.74 10134.3
1696.96
 10147.3  1697.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9879.4    .078  9989.5    .074 10009.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.5 10009.3              380     380     380             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)          * 1696.17  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)          * 1696.00  * Reach Len. (ft)         *  380.00
*  380.00  *  380.00  *
* Crit W.S. (ft)          * 1695.17  * Flow Area (sq ft)       *   81.31
*   62.28  *   75.39  *
* E.G. Slope (ft/ft)      *0.009936  * Area (sq ft)            *   81.31
*   62.28  *   75.39  *
* Q Total (cfs)           *  592.00  * Flow (cfs)              *  190.26
*  265.14  *  136.59  *
* Top Width (ft)          *  158.45  * Top Width (ft)          *   59.33
*   19.80  *   79.32  *
* Vel Total (ft/s)        *    2.70  * Avg. Vel. (ft/s)        *    2.34
*    4.26  *    1.81  *
* Max Chl Dpth (ft)       *    3.97  * Hydr. Depth (ft)        *    1.37
*    3.15  *    0.95  *
* Conv. Total (cfs)       *  5938.9  * Conv. (cfs)             *  1908.7
*  2659.9  *  1370.3  *
* Length Wtd. (ft)        *  380.00  * Wetted Per. (ft)        *   59.45
```

```
*   20.07  *   79.37  *
* Min Ch El (ft)          * 1692.03  * Shear (lb/sq ft)       *    0.85
*    1.92  *    0.59  *
* Alpha                   *    1.46  * Stream Power (lb/ft s) *    1.99
*    8.19  *    1.07  *
* Frctn Loss (ft)         *    4.09  * Cum Volume (acre-ft)   *    1.35
*    1.98  *    2.00  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *    1.25
*    0.84  *    1.72  *
***************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30           RS: 0.26

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9858.1 1693.75  9896.3 1692.47    9971 1690.39  9973.8 1690.36  9985.5
1690.51
  9991.7 1690.31  9998.1    1690 10004.6 1689.96 10011.4 1689.77 10024.7
1689.86
 10040.4 1689.88 10042.8 1689.96 10048.9 1690.18 10062.7 1691.01 10082.5
1691.92
 10125.7 1693.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9858.1    .078  9991.7    .074 10048.9    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.7 10048.9              210     210     210             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)          * 1692.07  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)          * 1691.93  * Reach Len. (ft)         *  210.00
*  210.00  *  210.00  *
* Crit W.S. (ft)          * 1691.26  * Flow Area (sq ft)       *   73.55
*  114.49  *   27.50  *
* E.G. Slope (ft/ft)      *0.011697  * Area (sq ft)            *   73.55
*  114.49  *   27.50  *
* Q Total (cfs)           *  592.00  * Flow (cfs)              *  148.42
```

```
*  394.83  *   48.74  *
* Top Width (ft)          *  166.82  * Top Width (ft)          *   75.87
*   57.20  *   33.75  *
* Vel Total (ft/s)        *    2.75  * Avg. Vel. (ft/s)        *    2.02
*    3.45  *    1.77  *
* Max Chl Dpth (ft)       *    2.16  * Hydr. Depth (ft)        *    0.97
*    2.00  *    0.81  *
* Conv. Total (cfs)       *  5473.7  * Conv. (cfs)             *  1372.3
*  3650.7  *   450.7  *
* Length Wtd. (ft)        *  210.00  * Wetted Per. (ft)        *   75.89
*   57.22  *   33.80  *
* Min Ch El (ft)          * 1689.77  * Shear (lb/sq ft)        *    0.71
*    1.46  *    0.59  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    1.43
*    5.04  *    1.05  *
* Frctn Loss (ft)         *    2.78  * Cum Volume (acre-ft)    *    0.68
*    1.21  *    1.55  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    0.66
*    0.50  *    1.23  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30           RS: 0.22

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9910.1  1690.4  9934.3 1689.36  9965.4 1687.77  9980.5 1687.54  9989.5
1687.63
  9997.5 1686.23  9999.1 1685.89  9999.9 1685.97 10009.9 1686.96 10027.6
1686.97
 10029.6 1686.98 10041.7 1687.31 10045.2 1687.65 10057.1 1688.59 10086.1
1689.12
 10124.1 1690.77 10135.8 1691.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9910.1    .078  9989.5    .074 10009.9    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.5 10009.9              198     198     198             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1689.28  * Element                *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.19  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)         * 1689.09  * Reach Len. (ft)         *  198.00
*  198.00  *  198.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   52.46
*   50.99  *   89.70  *
* E.G. Slope (ft/ft)     *0.015160  * Area (sq ft)            *   52.46
*   50.99  *   89.70  *
* Q Total (cfs)          *  592.00  * Flow (cfs)              *  126.99
*  230.62  *  234.39  *
* Top Width (ft)         *  145.18  * Top Width (ft)          *   50.00
*   20.40  *   74.78  *
* Vel Total (ft/s)       *    3.06  * Avg. Vel. (ft/s)        *    2.42
*    4.52  *    2.61  *
* Max Chl Dpth (ft)      *    3.20  * Hydr. Depth (ft)        *    1.05
*    2.50  *    1.20  *
* Conv. Total (cfs)      *  4808.0  * Conv. (cfs)             *  1031.4
*  1873.0  *  1903.7  *
* Length Wtd. (ft)       *  198.00  * Wetted Per. (ft)        *   50.04
*   20.61  *   74.85  *
* Min Ch El (ft)         * 1685.89  * Shear (lb/sq ft)        *    0.99
*    2.34  *    1.13  *
* Alpha                  *    1.27  * Stream Power (lb/ft s) *    2.40
*   10.59  *    2.96  *
* Frctn Loss (ft)        *    2.72  * Cum Volume (acre-ft)    *    0.37
*    0.81  *    1.26  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *    0.36
*    0.31  *    0.97  *
*****************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30            RS: 0.18

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*****************************************************************************
********
  9922.8 1689.12  9925.1    1689  9941.3 1687.51  9946.4  1687.3  9948.8
1687.15
  9991.4 1684.38  9993.6 1684.36  9998.3 1683.78  9999.2  1683.6 10000.5
1683.74
 10010.6  1684.4 10035.5 1684.39 10043.6 1684.53 10052.6 1684.48 10054.5
1684.38
   10063 1684.73 10064.4 1684.83 10070.8 1685.28 10075.6 1685.86 10089.9
1687.75
 10091.6 1687.76 10097.4 1688.22 10112.9 1689.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
************************************************
  9922.8    .078  9993.6    .074 10010.6    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.6 10010.6              402     402     402             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1686.55  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)          * 1686.39  * Reach Len. (ft)         *  402.00
*  402.00  *  402.00  *
* Crit W.S. (ft)          * 1685.61  * Flow Area (sq ft)       *   35.55
*   40.33  *  117.49  *
* E.G. Slope (ft/ft)      *0.012515  * Area (sq ft)            *   35.55
*   40.33  *  117.49  *
* Q Total (cfs)           *  592.00  * Flow (cfs)              *   79.32
*  160.60  *  352.09  *
* Top Width (ft)          *  119.15  * Top Width (ft)          *   33.13
*   17.00  *   69.02  *
* Vel Total (ft/s)        *    3.06  * Avg. Vel. (ft/s)        *    2.23
*    3.98  *    3.00  *
* Max Chl Dpth (ft)       *    2.79  * Hydr. Depth (ft)        *    1.07
*    2.37  *    1.70  *
* Conv. Total (cfs)       *  5291.8  * Conv. (cfs)             *   709.0
*  1435.6  *  3147.3  *
* Length Wtd. (ft)        *  402.00  * Wetted Per. (ft)        *   33.20
*   17.08  *   69.12  *
* Min Ch El (ft)          * 1683.60  * Shear (lb/sq ft)        *    0.84
*    1.84  *    1.33  *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *    1.87
*    7.35  *    3.98  *
* Frctn Loss (ft)         *    5.99  * Cum Volume (acre-ft)    *    0.17
*    0.60  *    0.79  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.17
*    0.23  *    0.64  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T30
REACH: NRW55T30           RS: 0.11

INPUT
Description: U.S. of confluence with NRW55C
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
```

```
  9933.6  1685.3  9950.4 1683.69    9952 1683.56  9968.5 1682.92    9983
1681.92
  9990.5 1679.05  9998.9 1676.34 10000.9 1676.48 10008.1 1677.02 10011.1
1677.19
 10014.1  1677.4   10017 1677.72 10023.2    1679 10032.4 1679.63 10034.1
1679.8
 10039.6 1679.69   10051 1679.32   10060 1678.98 10073.3 1679.26 10086.1
1679.6
 10093.6 1680.24 10116.4 1681.86   10126 1682.71 10157.8 1684.78 10176.8
1686.45
 10189.6 1687.21 10195.5  1687.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9933.6    .078  9990.5    .074 10023.2    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.5 10023.2                0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1680.55  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.35  * Wt. n-Val.              *   0.078
*   0.074  *   0.079  *
* W.S. Elev (ft)          * 1680.19  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1679.85  * Flow Area (sq ft)       *    1.70
*   90.23  *   54.54  *
* E.G. Slope (ft/ft)      *0.018011  * Area (sq ft)            *    1.70
*   90.23  *   54.54  *
* Q Total (cfs)           *  592.00  * Flow (cfs)              *    2.86
*  472.47  *  116.67  *
* Top Width (ft)          *  105.51  * Top Width (ft)          *    2.98
*   32.70  *   69.82  *
* Vel Total (ft/s)        *    4.04  * Avg. Vel. (ft/s)        *    1.68
*    5.24  *    2.14  *
* Max Chl Dpth (ft)       *    3.85  * Hydr. Depth (ft)        *    0.57
*    2.76  *    0.78  *
* Conv. Total (cfs)       *  4411.2  * Conv. (cfs)             *    21.3
*  3520.5  *   869.4  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *    3.19
*   33.31  *   69.90  *
* Min Ch El (ft)          * 1676.34  * Shear (lb/sq ft)        *    0.60
*    3.05  *    0.88  *
* Alpha                   *    1.40  * Stream Power (lb/ft s) *    1.01
*   15.95  *    1.88  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
**************************************************************************
************************

CROSS SECTION
```

```
RIVER: NRW55T5
REACH: NRW55T5            RS: 0.69

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9747.5 1778.16  9938.5 1775.58  9940.3 1775.58  9960.8 1775.61    9964
1775.58
  9970.2  1775.7    9986 1775.13  9987.2 1775.11  9995.3 1774.78  9997.3
1774.75
   10000 1774.79 10004.4 1774.85 10015.6  1775.7 10029.7  1776.8 10033.4
1777
   10041 1777.45 10074.3 1779.05 10104.3 1780.83 10119.1 1781.81

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9747.5    .044  9970.2    .043 10015.6    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9970.2 10015.6              332     332     332             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1776.36  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.12  * Wt. n-Val.              *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)         * 1776.24  * Reach Len. (ft)         *  332.00
*  332.00  *  332.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   36.53
*   48.96  *    1.89  *
* E.G. Slope (ft/ft)     *0.007464  * Area (sq ft)            *   36.53
*   48.96  *    1.89  *
* Q Total (cfs)          *  219.00  * Flow (cfs)              *   62.80
*  153.60  *    2.60  *
* Top Width (ft)         *  133.11  * Top Width (ft)          *   80.75
*   45.40  *    6.96  *
* Vel Total (ft/s)       *    2.51  * Avg. Vel. (ft/s)        *    1.72
*    3.14  *    1.38  *
* Max Chl Dpth (ft)      *    1.49  * Hydr. Depth (ft)        *    0.45
*    1.08  *    0.27  *
* Conv. Total (cfs)      *  2534.8  * Conv. (cfs)             *   726.9
*  1777.9  *    30.1  *
* Length Wtd. (ft)       *  332.00  * Wetted Per. (ft)        *   80.76
*   45.45  *    6.98  *
* Min Ch El (ft)         * 1774.75  * Shear (lb/sq ft)        *    0.21
*    0.50  *    0.13  *
* Alpha                  *    1.24  * Stream Power (lb/ft s) *    0.36
*    1.57  *    0.17  *
* Frctn Loss (ft)        *    4.12  * Cum Volume (acre-ft)    *    1.01
*    2.41  *    1.19  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *    2.28
*    2.17  *    2.36  *
```

```
**********************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T5
REACH: NRW55T5            RS: 0.62

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9604.1 1774.08  9809.5 1772.46  9845.1 1772.55  9868.3 1772.22  9878.2
1772.22
  9888.8 1772.33  9922.2  1771.8  9934.3  1771.4  9963.5 1771.49  9977.6
1771.62
  9978.7 1771.66  9985.7 1771.14  9988.9 1771.02  9993.2 1770.79   10000
1770.68
 10003.9 1771.07 10006.2 1771.25 10009.1 1771.42   10015  1771.3 10028.6
1771.9
 10030.9 1771.97 10033.6 1772.03 10055.1 1772.35 10072.1 1773.62 10100.2
1775.42

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9604.1    .044  9978.7    .043 10009.1    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.7 10009.1               303     303     303             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1772.23  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)          * 1771.96  * Reach Len. (ft)         *  303.00
*  303.00  *  303.00  *
* Crit W.S. (ft)          * 1771.96  * Flow Area (sq ft)       *   26.32
*   27.51  *    8.51  *
* E.G. Slope (ft/ft)      *0.023230  * Area (sq ft)            *   26.32
*   27.51  *    8.51  *
* Q Total (cfs)           *  235.00  * Flow (cfs)              *   72.94
*  135.41  *   26.65  *
* Top Width (ft)          *  118.54  * Top Width (ft)          *   66.64
```

```
*   30.40  *   21.50  *
* Vel Total (ft/s)       *    3.77  * Avg. Vel. (ft/s)       *    2.77
*    4.92  *    3.13  *
* Max Chl Dpth (ft)      *    1.28  * Hydr. Depth (ft)       *    0.40
*    0.91  *    0.40  *
* Conv. Total (cfs)      *  1541.9  * Conv. (cfs)            *   478.6
*   888.5  *   174.8  *
* Length Wtd. (ft)       *  303.00  * Wetted Per. (ft)       *   66.65
*   30.46  *   21.52  *
* Min Ch El (ft)         * 1770.68  * Shear (lb/sq ft)       *    0.57
*    1.31  *    0.57  *
* Alpha                  *    1.23  * Stream Power (lb/ft s) *    1.59
*    6.45  *    1.80  *
* Frctn Loss (ft)        *    3.27  * Cum Volume (acre-ft)   *    0.77
*    2.12  *    1.15  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *    1.72
*    1.88  *    2.25  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T5
REACH: NRW55T5            RS: 0.57

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9626.4 1770.23  9725.5 1769.54  9739.2 1769.38  9747.2 1769.43    9754
1769.42
  9794.3 1768.97  9808.3 1769.04  9837.5 1768.57  9843.8 1768.51  9864.1
1768.86
  9886.1 1768.57  9889.4 1768.49  9895.3 1768.41  9914.1 1768.04  9918.3
1768
  9937.3 1767.63  9961.8  1767.4  9975.4  1767.7  9997.2 1767.49  9998.9
1767.52
 10015.9  1767.7 10039.4  1768.4 10048.8  1768.6 10058.3 1768.69 10061.5
1768.74
```

```
   10080 1769.18 10085.6 1769.43 10093.7 1769.83 10117.5 1770.85 10149.5
1772.56
 10171.7    1774 10176.6 1774.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9626.4    .044  9975.4    .043 10015.9    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9975.4 10015.9              237     237     237             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1768.60  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.              *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)          * 1768.52  * Reach Len. (ft)         *  237.00
*  237.00  *  237.00  *
* Crit W.S. (ft)          * 1768.18  * Flow Area (sq ft)       *   58.97
*   37.21  *   11.28  *
* E.G. Slope (ft/ft)      *0.006219  * Area (sq ft)            *   58.97
*   37.21  *   11.28  *
* Q Total (cfs)           *  235.00  * Flow (cfs)              *  121.09
*   95.85  *   18.06  *
* Top Width (ft)          *  157.59  * Top Width (ft)          *   88.12
*   40.50  *   28.97  *
* Vel Total (ft/s)        *    2.19  * Avg. Vel. (ft/s)        *    2.05
*    2.58  *    1.60  *
* Max Chl Dpth (ft)       *    1.12  * Hydr. Depth (ft)        *    0.67
*    0.92  *    0.39  *
* Conv. Total (cfs)       *  2979.9  * Conv. (cfs)             *  1535.4
*  1215.4  *   229.0  *
* Length Wtd. (ft)        *  237.00  * Wetted Per. (ft)        *   88.14
*   40.50  *   28.98  *
* Min Ch El (ft)          * 1767.49  * Shear (lb/sq ft)        *    0.26
*    0.36  *    0.15  *
* Alpha                   *    1.06  * Stream Power (lb/ft s) *    0.53
*    0.92  *    0.24  *
* Frctn Loss (ft)         *    2.73  * Cum Volume (acre-ft)    *    0.47
*    1.90  *    1.08  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.18
*    1.63  *    2.07  *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW55T5
REACH: NRW55T5            RS: 0.52

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
    9612  1768.3  9817.7 1766.11    9932 1765.28  9975.1  1765.2  9989.7
1765.43
  9996.1 1764.93  9999.9  1764.6   10007 1765.17 10007.5  1765.2 10016.1
1765.23
 10039.1 1765.16 10337.1  1768.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9612    .044  9989.7    .043 10007.5    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.7 10007.5              298     298     298             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1765.86  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)          * 1765.68  * Reach Len. (ft)         *  298.00
*  298.00  *  298.00  *
* Crit W.S. (ft)          * 1765.68  * Flow Area (sq ft)       *   35.21
*   12.55  *   27.14  *
* E.G. Slope (ft/ft)      *0.028078  * Area (sq ft)            *   35.21
*   12.55  *   27.14  *
* Q Total (cfs)           *  235.00  * Flow (cfs)              *   91.74
*   57.46  *   85.80  *
* Top Width (ft)          *  208.37  * Top Width (ft)          *  112.66
*   17.80  *   77.91  *
* Vel Total (ft/s)        *    3.14  * Avg. Vel. (ft/s)        *    2.61
*    4.58  *    3.16  *
* Max Chl Dpth (ft)       *    1.08  * Hydr. Depth (ft)        *    0.31
*    0.71  *    0.35  *
* Conv. Total (cfs)       *  1402.4  * Conv. (cfs)             *   547.5
*   342.9  *   512.0  *
* Length Wtd. (ft)        *  298.00  * Wetted Per. (ft)        *  112.66
*   17.86  *   77.91  *
* Min Ch El (ft)          * 1764.60  * Shear (lb/sq ft)        *    0.55
*    1.23  *    0.61  *
* Alpha                   *    1.16  * Stream Power (lb/ft s) *    1.43
*    5.64  *    1.93  *
* Frctn Loss (ft)         *    5.12  * Cum Volume (acre-ft)    *    0.22
*    1.76  *    0.98  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.63
*    1.48  *    1.78  *
**************************************************************************
```

```
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T5
REACH: NRW55T5            RS: 0.47

INPUT
Description:
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9828.4 1764.16  9834.1 1764.02  9901.5 1762.06    9919 1761.62  9933.4
1761.32
  9970.3 1761.51  9972.2 1761.32  9984.6 1759.88  9991.9 1759.67 10000.1
1759.16
 10006.1 1759.39 10015.1 1759.55   10023 1759.32 10033.3 1759.44 10040.2
1759.3
   10043 1759.27 10046.8 1759.33 10055.1  1759.4 10057.3 1759.39 10081.5
1759.63
 10104.9 1759.72 10106.8 1759.86 10111.5 1759.76   10127 1760.25 10138.6
1760.8
 10138.8  1760.8 10147.9 1760.43 10155.2 1760.43 10156.3 1760.44 10171.5
1761.06
 10176.5 1761.07

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9828.4    .044  9991.9    .043 10015.1    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.9 10015.1              520     520     520             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)         * 1760.27  * Element                 *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.13  * Wt. n-Val.             *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)         * 1760.14  * Reach Len. (ft)        *  520.00
*  520.00  *  520.00  *
* Crit W.S. (ft)         * 1759.98  * Flow Area (sq ft)      *    2.92
*   17.09  *   62.64  *
* E.G. Slope (ft/ft)     *0.011592  * Area (sq ft)           *    2.92
*   17.09  *   62.64  *
* Q Total (cfs)          *  235.00  * Flow (cfs)             *    4.84
*   51.82  *  178.34  *
* Top Width (ft)         *  141.03  * Top Width (ft)         *    9.51
*   23.20  *  108.32  *
* Vel Total (ft/s)       *    2.84  * Avg. Vel. (ft/s)       *    1.65
*    3.03  *    2.85  *
* Max Chl Dpth (ft)      *    0.98  * Hydr. Depth (ft)       *    0.31
*    0.74  *    0.58  *
* Conv. Total (cfs)      *  2182.6  * Conv. (cfs)            *    44.9
*   481.3  *  1656.4  *
* Length Wtd. (ft)       *  520.00  * Wetted Per. (ft)       *    9.53
*   23.22  *  108.34  *
* Min Ch El (ft)         * 1759.16  * Shear (lb/sq ft)       *    0.22
*    0.53  *    0.42  *
* Alpha                  *    1.02  * Stream Power (lb/ft s) *    0.37
*    1.62  *    1.19  *
* Frctn Loss (ft)        *    5.69  * Cum Volume (acre-ft)   *    0.09
*    1.66  *    0.67  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    0.22
*    1.34  *    1.15  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T5
REACH: NRW55T5            RS: 0.37

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9787.3 1759.05  9827.6  1758.2  9895.3 1756.49  9910.9 1756.19  9932.6
1755.51
  9943.1 1755.23  9946.4 1755.35  9967.4 1755.93  9983.1 1753.66  9990.4
1752.53
  9996.6 1752.24 10000.1 1752.18 10009.2  1752.8 10016.2  1753.6 10023.1
1754.3
 10033.6 1754.37 10041.1 1754.57 10042.8 1754.61 10049.2 1754.94 10055.3
1758.55
   10060 1761.27

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
************************************************
  9787.3    .044  9983.1    .043 10016.2    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.1 10016.2              404     404     404             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1754.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.32  * Wt. n-Val.              *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)          * 1754.23  * Reach Len. (ft)         *  404.00
*  404.00  *  404.00  *
* Crit W.S. (ft)          * 1753.90  * Flow Area (sq ft)       *    1.13
*   49.89  *    1.97  *
* E.G. Slope (ft/ft)      *0.010352  * Area (sq ft)            *    1.13
*   49.89  *    1.97  *
* Q Total (cfs)           *  235.00  * Flow (cfs)              *    1.67
*  229.81  *    3.52  *
* Top Width (ft)          *   43.28  * Top Width (ft)          *    3.95
*   33.10  *    6.22  *
* Vel Total (ft/s)        *    4.44  * Avg. Vel. (ft/s)        *    1.48
*    4.61  *    1.79  *
* Max Chl Dpth (ft)       *    2.05  * Hydr. Depth (ft)        *    0.29
*    1.51  *    0.32  *
* Conv. Total (cfs)       *  2309.7  * Conv. (cfs)             *    16.4
*  2258.7  *    34.6  *
* Length Wtd. (ft)        *  404.00  * Wetted Per. (ft)        *    3.99
*   33.26  *    6.26  *
* Min Ch El (ft)          * 1752.18  * Shear (lb/sq ft)        *    0.18
*    0.97  *    0.20  *
* Alpha                   *    1.06  * Stream Power (lb/ft s) *    0.27
*    4.47  *    0.36  *
* Frctn Loss (ft)         *    4.82  * Cum Volume (acre-ft)    *    0.06
*    1.26  *    0.28  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.14
*    1.00  *    0.46  *
**************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T5
REACH: NRW55T5            RS: 0.29

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
```

```
  9705.7 1754.67  9934.3 1749.63  9945.1 1749.43  9974.3  1750.3  9975.4
1750.13
  9989.3 1748.23  9992.8    1748 10002.1 1747.05   10007 1747.67 10010.1
1748.31
 10018.1 1748.65 10021.3 1748.74 10027.4 1749.29 10038.4 1749.53 10060.5
1749.25
 10074.3 1749.48 10093.9 1750.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9705.7    .044  9989.3    .043 10010.1    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.3 10010.1              393     393     393             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1749.73  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.43  * Wt. n-Val.              *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)          * 1749.30  * Reach Len. (ft)         *  393.00
*  393.00  *  393.00  *
* Crit W.S. (ft)          * 1749.20  * Flow Area (sq ft)       *    4.16
*   34.14  *   10.31  *
* E.G. Slope (ft/ft)      *0.013896  * Area (sq ft)            *    4.16
*   34.14  *   10.31  *
* Q Total (cfs)           *  235.00  * Flow (cfs)              *   10.81
*  192.48  *   31.71  *
* Top Width (ft)          *   52.54  * Top Width (ft)          *    7.80
*   20.80  *   23.95  *
* Vel Total (ft/s)        *    4.84  * Avg. Vel. (ft/s)        *    2.60
*    5.64  *    3.08  *
* Max Chl Dpth (ft)       *    2.25  * Hydr. Depth (ft)        *    0.53
*    1.64  *    0.43  *
* Conv. Total (cfs)       *  1993.5  * Conv. (cfs)             *    91.7
*  1632.9  *   269.0  *
* Length Wtd. (ft)        *  393.00  * Wetted Per. (ft)        *    7.87
*   20.96  *   23.98  *
* Min Ch El (ft)          * 1747.05  * Shear (lb/sq ft)        *    0.46
*    1.41  *    0.37  *
* Alpha                   *    1.18  * Stream Power (lb/ft s) *    1.19
*    7.97  *    1.15  *
* Frctn Loss (ft)         *    5.61  * Cum Volume (acre-ft)    *    0.04
*    0.87  *    0.23  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    0.08
*    0.75  *    0.32  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW55T5
REACH: NRW55T5              RS: 0.22

INPUT
Description:
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
    9836 1746.62  9934.8 1744.78    9956 1744.38  9978.3  1745.8  9991.4
1743.66
  9991.7  1743.6  9997.9    1742   10000 1742.09 10002.3 1742.06 10010.7
1742.19
 10013.7 1742.41 10015.8  1742.5 10023.8 1742.94 10032.9 1743.22 10041.1
1743.37
 10045.3 1743.69 10058.3  1744.6 10072.5 1745.13 10074.6 1745.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9836    .044  9991.7    .043 10045.3    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.7 10045.3              554     554     554             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1744.07  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.28  * Wt. n-Val.              *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)          * 1743.79  * Reach Len. (ft)         *  554.00
*  554.00  *  554.00  *
* Crit W.S. (ft)          * 1743.59  * Flow Area (sq ft)       *    0.10
*   55.21  *    0.07  *
* E.G. Slope (ft/ft)      *0.014661  * Area (sq ft)            *    0.10
*   55.21  *    0.07  *
* Q Total (cfs)           *  235.00  * Flow (cfs)              *    0.08
*  234.87  *    0.05  *
* Top Width (ft)          *   56.13  * Top Width (ft)          *    1.10
*   53.60  *    1.44  *
* Vel Total (ft/s)        *    4.24  * Avg. Vel. (ft/s)        *    0.82
*    4.25  *    0.63  *
* Max Chl Dpth (ft)       *    1.79  * Hydr. Depth (ft)        *    0.09
*    1.03  *    0.05  *
* Conv. Total (cfs)       *  1940.8  * Conv. (cfs)             *     0.7
*  1939.8  *     0.4  *
* Length Wtd. (ft)        *  554.00  * Wetted Per. (ft)        *    1.12
*   53.85  *    1.44  *
* Min Ch El (ft)          * 1742.00  * Shear (lb/sq ft)        *    0.08
*    0.94  *    0.05  *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *    0.07
*    3.99  *    0.03  *
* Frctn Loss (ft)         *    8.22  * Cum Volume (acre-ft)    *    0.02
*    0.47  *    0.18  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.04
```

```
*    0.41  *    0.21  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T5
REACH: NRW55T5            RS: 0.11

INPUT
Description: U.S. of confluence with NRW55T10
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9919.2 1737.47  9929.1  1737.2  9937.4  1736.7  9950.3  1736.5  9958.6
1736.3
    9963 1736.25  9975.7 1736.13  9987.4 1736.09  9995.8 1734.32 10001.3
1733.45
 10007.3  1734.3 10007.5 1734.31 10007.7 1734.32 10018.1 1734.27 10025.1
1734.34
 10031.9 1734.88 10046.6 1736.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9919.2    .044  9995.8    .043 10007.3    .039

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9995.8 10007.3                0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1735.84  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.38  * Wt. n-Val.             *   0.044
*   0.043  *   0.039  *
* W.S. Elev (ft)         * 1735.46  * Reach Len. (ft)        *
*          *          *
* Crit W.S. (ft)         * 1735.34  * Flow Area (sq ft)      *    3.06
*   18.13  *   28.26  *
* E.G. Slope (ft/ft)     *0.015013  * Area (sq ft)           *    3.06
*   18.13  *   28.26  *
* Q Total (cfs)          *  235.00  * Flow (cfs)             *    8.57
*  103.19  *  123.24  *
* Top Width (ft)         *   48.16  * Top Width (ft)         *    5.39
*   11.50  *   31.27  *
* Vel Total (ft/s)       *    4.75  * Avg. Vel. (ft/s)       *    2.80
*    5.69  *    4.36  *
* Max Chl Dpth (ft)      *    2.01  * Hydr. Depth (ft)       *    0.57
*    1.58  *    0.90  *
* Conv. Total (cfs)      *  1917.9  * Conv. (cfs)            *    69.9
```

```
*   842.2  *  1005.8  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)       *    5.51
*   11.63  *   31.31  *
* Min Ch El (ft)          * 1733.45  * Shear (lb/sq ft)       *    0.52
*    1.46  *    0.85  *
* Alpha                   *    1.08  * Stream Power (lb/ft s) *    1.46
*    8.32  *    3.69  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)   *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)         *
*          *          *
*************************************************************************
************************

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 1.25

INPUT
Description: D.S. of Confluence with NRW55T5
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9881.2 1727.79  9899.2 1727.76    9929 1728.76  9934.8 1728.89  9950.5
1728.05
    9960 1727.44  9972.9  1725.2  9979.3 1724.23  9986.1 1723.06  9997.6
1721.86
 10001.3 1721.66 10004.6 1722.12 10009.1  1723.2 10015.7 1724.23 10040.3
1728.47
 10045.7 1729.34 10047.7 1729.75 10051.9 1730.86 10059.2 1731.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9881.2    .078  9979.3    .052 10015.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9979.3 10015.7              249     249     249             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1727.88  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.08  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1726.80  * Reach Len. (ft)         *  249.00
*  249.00  *  249.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   20.69
*  145.15  *   19.14  *
* E.G. Slope (ft/ft)      *0.014721  * Area (sq ft)            *   20.69
*  145.15  *   19.14  *
* Q Total (cfs)           * 1365.00  * Flow (cfs)              *   57.20
* 1256.05  *   51.75  *
* Top Width (ft)          *   66.91  * Top Width (ft)          *   15.60
```

```
*   36.40  *   14.90  *
* Vel Total (ft/s)       *    7.38  * Avg. Vel. (ft/s)       *    2.76
*    8.65  *    2.70  *
* Max Chl Dpth (ft)      *    5.14  * Hydr. Depth (ft)       *    1.33
*    3.99  *    1.28  *
* Conv. Total (cfs)      * 11250.4  * Conv. (cfs)            *   471.4
* 10352.5  *   426.5  *
* Length Wtd. (ft)       *  249.00  * Wetted Per. (ft)       *   15.82
*   36.81  *   15.12  *
* Min Ch El (ft)         * 1721.66  * Shear (lb/sq ft)       *    1.20
*    3.62  *    1.16  *
* Alpha                  *    1.28  * Stream Power (lb/ft s) *    3.32
*   31.36  *    3.15  *
* Frctn Loss (ft)        *    2.67  * Cum Volume (acre-ft)   *   26.05
*   18.28  *   25.64  *
* C & E Loss (ft)        *    0.30  * Cum SA (acres)         *   18.34
*    6.32  *   17.52  *
*************************************************************************
************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 1.2

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9724.4 1727.32  9745.6 1726.87  9749.1 1726.68  9771.4 1726.25  9775.7
1726.35
  9790.1 1726.61  9800.7 1726.45  9810.5 1726.07  9826.5 1725.59  9847.9
1724.71
  9853.2 1724.45  9855.9 1724.37  9884.7 1723.74  9915.5 1724.78  9937.5
1722.97
  9947.5 1721.99  9959.3 1720.95  9966.6 1720.86  9972.8  1720.9  9982.1
1721.58
  9987.8 1721.83  9989.6 1721.89  9992.1 1721.36   10001 1719.55 10011.2
1721.4
 10013.4    1722 10026.9 1726.76   10029  1726.8 10036.5  1727.2 10037.8
1727.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9724.4    .078  9947.5    .052 10013.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9947.5 10013.4              630     630     630             .3
```

.5

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1724.91  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.48  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1724.43  * Reach Len. (ft)         *  630.00
*  630.00  *  630.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   50.22
*  221.11  *    8.36  *
* E.G. Slope (ft/ft)      *0.008165  * Area (sq ft)            *   50.22
*  221.11  *    8.36  *
* Q Total (cfs)           * 1365.00  * Flow (cfs)              *   76.91
* 1272.34  *   15.75  *
* Top Width (ft)          *  151.65  * Top Width (ft)          *   78.86
*   65.90  *    6.89  *
* Vel Total (ft/s)        *    4.88  * Avg. Vel. (ft/s)        *    1.53
*    5.75  *    1.88  *
* Max Chl Dpth (ft)       *    4.88  * Hydr. Depth (ft)        *    0.64
*    3.36  *    1.21  *
* Conv. Total (cfs)       * 15106.0  * Conv. (cfs)             *   851.1
* 14080.6  *   174.3  *
* Length Wtd. (ft)        *  630.00  * Wetted Per. (ft)        *   78.99
*   66.46  *    7.30  *
* Min Ch El (ft)          * 1719.55  * Shear (lb/sq ft)        *    0.32
*    1.70  *    0.58  *
* Alpha                   *    1.30  * Stream Power (lb/ft s) *    0.50
*    9.76  *    1.10  *
* Frctn Loss (ft)         *    7.44  * Cum Volume (acre-ft)    *   25.84
*   17.23  *   25.56  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *   18.07
*    6.02  *   17.46  *
*************************************************************************
************************
```

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T10A
REACH: NRW55T10A RS: 1.08

INPUT
Description:
Station Elevation Data num= 21

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9880.4  1718.2  9881.9 1718.17  9890.9 1718.12  9911.5 1717.48  9912.2
```

```
1717.45
  9944.2  1716.9  9944.8  1716.9  9981.2 1716.32  9984.7 1714.83  9991.4
1712.37
  9992.7  1712.3  9999.8 1712.34 10007.6  1713.5 10012.8 1714.19 10015.8
1714.26
 10046.1  1714.8 10064.4 1715.57 10083.6 1715.99 10084.8 1716.32 10095.9
1718.46
 10097.8 1718.61

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9880.4    .078  9984.7    .052 10046.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.7 10046.1              486     486     486             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1717.37  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.82  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1716.56  * Reach Len. (ft)         *  486.00
*  486.00  *  486.00  *
* Crit W.S. (ft)          * 1716.34  * Flow Area (sq ft)       *    5.23
*  166.35  *   40.71  *
* E.G. Slope (ft/ft)      *0.018605  * Area (sq ft)            *    5.23
*  166.35  *   40.71  *
* Q Total (cfs)           * 1365.00  * Flow (cfs)              *    5.79
* 1252.23  *  106.98  *
* Top Width (ft)          *  119.80  * Top Width (ft)          *   18.46
*   61.40  *   39.94  *
* Vel Total (ft/s)        *    6.43  * Avg. Vel. (ft/s)        *    1.11
*    7.53  *    2.63  *
* Max Chl Dpth (ft)       *    4.26  * Hydr. Depth (ft)        *    0.28
*    2.71  *    1.02  *
* Conv. Total (cfs)       * 10007.5  * Conv. (cfs)             *    42.4
*  9180.7  *   784.3  *
* Length Wtd. (ft)        *  486.00  * Wetted Per. (ft)        *   18.77
*   61.98  *   40.02  *
* Min Ch El (ft)          * 1712.30  * Shear (lb/sq ft)        *    0.32
*    3.12  *    1.18  *
* Alpha                   *    1.27  * Stream Power (lb/ft s) *    0.36
*   23.47  *    3.10  *
* Frctn Loss (ft)         *    5.43  * Cum Volume (acre-ft)    *   25.44
*   14.43  *   25.20  *
* C & E Loss (ft)         *    0.35  * Cum SA (acres)          *   17.37
*    5.10  *   17.12  *
*************************************************************************
************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
```

```
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.99

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9589.5 1713.19  9761.3 1710.73  9763.3 1710.71  9765.1 1710.66  9795.2
1710.04
    9798 1710.03  9806.8 1709.77  9814.5 1709.64  9890.8 1709.24  9893.1
1709.26
  9896.4 1709.25  9911.3 1709.33    9919 1709.18  9924.8    1709  9935.9
1708.9
    9956 1709.15  9960.8 1709.31  9962.8 1709.43  9976.8 1710.12  9981.5
1709.85
  9992.4  1709.3  9999.5 1709.21 10000.5 1709.18 10000.8 1709.19 10001.1
1709.19
 10008.9  1709.1 10015.9 1709.75 10017.4 1709.94   10019 1709.96 10027.8
1710.3
 10043.2 1712.17 10046.6  1712.5 10067.1 1713.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9589.5    .078  9976.8    .052 10027.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.8 10027.8              531     531     531             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
***********************************************************************
***********************
* E.G. Elev (ft)          * 1711.60  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1711.48  * Reach Len. (ft)         *  531.00
*  531.00  *  531.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  436.51
*   96.67  *    5.74  *
* E.G. Slope (ft/ft)      *0.007449  * Area (sq ft)            *  436.51
*   96.67  *    5.74  *
* Q Total (cfs)           * 1365.00  * Flow (cfs)              *  993.57
*  364.82  *    6.61  *
* Top Width (ft)          *  328.66  * Top Width (ft)          *  267.94
*   51.00  *    9.72  *
* Vel Total (ft/s)        *    2.53  * Avg. Vel. (ft/s)        *    2.28
*    3.77  *    1.15  *
```

```
* Max Chl Dpth (ft)       *    2.58  * Hydr. Depth (ft)        *    1.63
*    1.90  *    0.59  *
* Conv. Total (cfs)       * 15815.6  * Conv. (cfs)             * 11512.1
*  4227.0  *    76.6  *
* Length Wtd. (ft)        *  531.00  * Wetted Per. (ft)        *  267.99
*   51.07  *    9.80  *
* Min Ch El (ft)          * 1709.10  * Shear (lb/sq ft)        *    0.76
*    0.88  *    0.27  *
* Alpha                   *    1.18  * Stream Power (lb/ft s) *    1.72
*    3.32  *    0.31  *
* Frctn Loss (ft)         *    5.94  * Cum Volume (acre-ft)    *   22.98
*   12.96  *   24.94  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *   15.77
*    4.48  *   16.84  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.89

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9781.7 1706.43  9807.3 1705.97  9826.8 1705.52  9872.1 1704.36  9874.7
1704.39
  9888.3 1704.68  9897.5 1704.77  9907.1 1703.99  9908.4 1703.96  9915.6
1703.34
  9916.3  1703.2  9918.1 1703.13  9921.8 1703.57  9924.3 1703.53  9928.5
1703.7
  9938.3 1703.21  9942.8 1702.96  9955.6  1702.6  9960.5  1702.7  9966.5
1702.86
  9974.3  1703.2  9976.1 1703.26  9990.4 1703.05 10000.9  1702.9 10011.9
1703.1
 10028.1 1703.13 10034.9  1703.1 10048.1 1702.89 10088.1 1703.69 10098.1
1704.42
 10099.5 1704.55 10102.6 1704.74 10109.7 1705.26 10115.5 1705.52 10120.1
1705.57
 10136.9 1705.08 10139.7 1705.19   10140 1705.19 10170.3 1706.39 10192.3
1706.98

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9781.7    .078  9928.5    .052 10088.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9928.5 10088.1              499     499     499             .3
.5
```

```
CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1705.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.47  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1705.09  * Reach Len. (ft)         *  499.00
*  499.00  *  499.00  *
* Crit W.S. (ft)          * 1704.74  * Flow Area (sq ft)       *   62.97
*  317.69  *   13.40  *
* E.G. Slope (ft/ft)      *0.015753  * Area (sq ft)            *   62.97
*  317.69  *   13.40  *
* Q Total (cfs)           * 1951.00  * Flow (cfs)              *  123.28
* 1802.62  *   25.10  *
* Top Width (ft)          *  264.31  * Top Width (ft)          *   84.88
*  159.60  *   19.83  *
* Vel Total (ft/s)        *    4.95  * Avg. Vel. (ft/s)        *    1.96
*    5.67  *    1.87  *
* Max Chl Dpth (ft)       *    2.49  * Hydr. Depth (ft)        *    0.74
*    1.99  *    0.68  *
* Conv. Total (cfs)       * 15544.4  * Conv. (cfs)             *   982.2
* 14362.2  *   200.0  *
* Length Wtd. (ft)        *  499.00  * Wetted Per. (ft)        *   85.00
*  159.65  *   19.88  *
* Min Ch El (ft)          * 1702.60  * Shear (lb/sq ft)        *    0.73
*    1.96  *    0.66  *
* Alpha                   *    1.23  * Stream Power (lb/ft s) *    1.43
*   11.10  *    1.24  *
* Frctn Loss (ft)         *    5.69  * Cum Volume (acre-ft)    *   19.94
*   10.44  *   24.83  *
* C & E Loss (ft)         *    0.16  * Cum SA (acres)          *   13.62
*    3.19  *   16.66  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.8

INPUT
Description:
Station Elevation Data    num=      46
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
Elev
************************************************************************
********
  9811.9 1701.42  9812.2  1701.4  9814.4 1701.23  9830.1 1700.51  9831.3
1700.49
    9837 1700.35  9847.8 1700.23    9855 1700.11  9856.7 1700.11    9869
1700.42
  9874.3 1700.35  9879.4  1700.2    9888 1700.01  9888.6 1699.99  9921.6
1698.34
  9933.7 1697.85  9969.9 1697.01  9974.5 1697.16  9987.7 1698.45  9996.1
```

```
1696.76
  9998.7  1696.1    9999 1696.14 10001.8 1696.53   10006  1696.4 10006.1
1696.41
 10006.2 1696.44 10014.6 1697.97 10028.1 1697.42 10042.3    1697 10110.8
1697.43
 10121.5 1697.39 10134.7 1697.48 10142.6 1697.48 10153.1 1697.52 10173.6
1697.74
   10184 1698.25 10185.1 1698.33 10195.3 1698.67 10199.4 1698.07 10205.7
1697.3
 10217.6 1697.51 10227.2 1697.85 10241.9 1698.55 10251.1 1698.91 10293.6
1702.17
 10296.3 1702.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9811.9    .078  9987.7    .052 10014.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.7 10014.6              547     547     547             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1699.71  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1699.56  * Reach Len. (ft)         *  547.00
*  547.00  *  547.00  *
* Crit W.S. (ft)          * 1698.68  * Flow Area (sq ft)       *  144.31
*   68.04  *  467.21  *
* E.G. Slope (ft/ft)      *0.008630  * Area (sq ft)            *  144.31
*   68.04  *  467.21  *
* Q Total (cfs)           * 1951.00  * Flow (cfs)              *  348.24
*  331.84  * 1270.92  *
* Top Width (ft)          *  362.39  * Top Width (ft)          *   90.51
*   26.90  *  244.98  *
* Vel Total (ft/s)        *    2.87  * Avg. Vel. (ft/s)        *    2.41
*    4.88  *    2.72  *
* Max Chl Dpth (ft)       *    3.46  * Hydr. Depth (ft)        *    1.59
*    2.53  *    1.91  *
* Conv. Total (cfs)       * 21001.9  * Conv. (cfs)             *  3748.7
*  3572.1  * 13681.0  *
* Length Wtd. (ft)        *  547.00  * Wetted Per. (ft)        *   90.63
*   27.32  *  245.17  *
* Min Ch El (ft)          * 1696.10  * Shear (lb/sq ft)        *    0.86
*    1.34  *    1.03  *
* Alpha                   *    1.20  * Stream Power (lb/ft s) *    2.07
*    6.54  *    2.79  *
* Frctn Loss (ft)         *    5.20  * Cum Volume (acre-ft)    *   18.75
*    8.23  *   22.07  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *   12.61
*    2.13  *   15.15  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T10A
REACH: NRW55T10A RS: 0.69

INPUT
Description:
Station Elevation Data num= 65

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9450.8	1697.44	9458.9	1697.35	9474.1	1696.93	9482.1	1696.07	9491.3	1695.26
9496.9	1695.9	9499.4	1696.2	9517	1696.3	9562.9	1695.5	9563	1695.5
9630.2	1694.79	9717.6	1693.86	9741.2	1693.81	9742.5	1693.8	9754.2	1692.64
9755.4	1692.5	9766.1	1693.1	9772.8	1692.95	9798.1	1692.88	9812.4	1692.93
9823	1691.66	9826.9	1691.24	9829.8	1691.62	9835.7	1691.96	9840.3	1692.3
9851.7	1692.18	9875	1692.25	9897	1693	9901.4	1693.2	9902.6	1692.97
9909.4	1692.08	9912.5	1692.6	9915.2	1693	9928.2	1692.66	9930.6	1692.55
9931.8	1692.6	9941	1692.79	9942.2	1692.79	9951.9	1691.85	9959.3	1691.99
9967.2	1692.51	9969.2	1692.5	9972	1692.25	9981.1	1691.57	9983.4	1691.28
9989.1	1690.52	9993.1	1690.1	9994.9	1690.34	9995.9	1690.29	9998.2	1689.99
10000.9	1689.82	10007.8	1691.56	10012.5	1692.88	10021.8	1692.92	10030.9	1692.85
10039.1	1692.69	10050.5	1692.53	10060.6	1692.39	10073.7	1692.58	10086.6	1692.93
10095.5	1693.33	10126.8	1695	10129.8	1695.2	10151.4	1696.85	10163.8	1697.69

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9450.8	.078	9981.1	.052	10007.8	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.1	10007.8	488	488	488	.3	.5

CROSS SECTION OUTPUT Profile #100-year

* E.G. Elev (ft)	* 1694.47	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.30	* Wt. n-Val.	* 0.078	* 0.052	* 0.078 *
* W.S. Elev (ft)	* 1694.17	* Reach Len. (ft)	* 488.00	* 488.00	* 488.00 *

```
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  404.08
*   96.06  *  135.05  *
* E.G. Slope (ft/ft)      *0.010543  * Area (sq ft)            *  404.08
*   96.06  *  135.05  *
* Q Total (cfs)           * 1951.00  * Flow (cfs)              *  979.67
*  656.10  *  315.23  *
* Top Width (ft)          *  422.40  * Top Width (ft)          *  292.32
*   26.70  *  103.38  *
* Vel Total (ft/s)        *    3.07  * Avg. Vel. (ft/s)        *    2.42
*    6.83  *    2.33  *
* Max Chl Dpth (ft)       *    4.35  * Hydr. Depth (ft)        *    1.38
*    3.60  *    1.31  *
* Conv. Total (cfs)       * 19001.3  * Conv. (cfs)             *  9541.2
*  6390.0  *  3070.1  *
* Length Wtd. (ft)        *  488.00  * Wetted Per. (ft)        *  292.83
*   27.05  *  103.60  *
* Min Ch El (ft)          * 1689.82  * Shear (lb/sq ft)        *    0.91
*    2.34  *    0.86  *
* Alpha                   *    2.07  * Stream Power (lb/ft s) *    2.20
*   15.96  *    2.00  *
* Frctn Loss (ft)         *    5.17  * Cum Volume (acre-ft)    *   15.30
*    7.20  *   18.29  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *   10.21
*    1.79  *   12.96  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.6

INPUT
Description:
Station Elevation Data    num=      43
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9609.6 1691.33  9677.8 1689.98  9701.7 1689.27  9732.9 1688.58  9760.4
1687.94
  9763.4  1687.8    9768 1687.52  9775.9 1686.81  9780.7 1686.87  9787.2
1687.14
  9807.8 1687.44  9809.5 1687.55  9853.6 1687.44  9896.1 1687.22  9937.5
1686.91
  9949.6 1686.89  9952.7 1686.76  9957.5 1687.03  9959.9  1687.2  9962.9
1687.32
  9968.3 1686.72  9974.2 1685.85  9979.8 1686.38  9981.3  1686.5  9987.6
1686.58
  9991.8 1685.98  9995.5  1685.3  9998.2 1685.16 10000.5 1684.91 10007.3
1686.45
 10008.5 1686.69 10010.6 1686.76   10028 1687.44 10030.6 1687.42 10065.6
1687.6
 10071.1 1687.79 10072.2 1687.81 10073.9  1687.9   10093  1688.6 10102.8
1689.01
 10116.4  1689.5 10127.3 1689.98 10156.3 1691.52
```

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  9609.6    .078  9987.6    .052 10008.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.6 10008.5              492     492     492             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1689.26  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1689.02  * Reach Len. (ft)         *  492.00
*  492.00  *  492.00  *
* Crit W.S. (ft)          * 1688.51  * Flow Area (sq ft)       *  447.30
*   69.11  *  122.86  *
* E.G. Slope (ft/ft)      *0.010643  * Area (sq ft)            *  447.30
*   69.11  *  122.86  *
* Q Total (cfs)           * 1951.00  * Flow (cfs)              * 1216.05
*  447.71  *  287.24  *
* Top Width (ft)          *  390.24  * Top Width (ft)          *  274.70
*   20.90  *   94.64  *
* Vel Total (ft/s)        *    3.05  * Avg. Vel. (ft/s)        *    2.72
*    6.48  *    2.34  *
* Max Chl Dpth (ft)       *    4.11  * Hydr. Depth (ft)        *    1.63
*    3.31  *    1.30  *
* Conv. Total (cfs)       * 18911.7  * Conv. (cfs)             * 11787.6
*  4339.8  *  2784.3  *
* Length Wtd. (ft)        *  492.00  * Wetted Per. (ft)        *  274.92
*   21.22  *   94.68  *
* Min Ch El (ft)          * 1684.91  * Shear (lb/sq ft)        *    1.08
*    2.16  *    0.86  *
* Alpha                   *    1.61  * Stream Power (lb/ft s) *    2.94
*   14.02  *    2.02  *
* Frctn Loss (ft)         *    5.08  * Cum Volume (acre-ft)    *   10.54
*    6.27  *   16.85  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)          *    7.03
*    1.52  *   11.85  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.51

INPUT
Description:
Station Elevation Data    num=      37
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
```

```
Elev
*************************************************************************
********
  9857.9 1685.43    9885 1684.74  9909.5 1683.95  9927.7 1683.31  9948.9
1682.87
  9975.2 1681.56  9983.7  1680.8  9986.6 1680.65  9990.1 1679.99    9999
1678.71
 10001.8 1678.54 10005.6 1678.91 10012.3 1679.09 10012.4  1679.1 10016.4
1679.75
 10020.8  1680.5 10040.3  1681.1   10055 1681.47 10076.2 1681.87 10088.7
1682.47
 10097.4 1682.74 10105.8 1682.69 10118.4 1682.39 10118.7 1682.39 10141.4
1682.6
 10254.1 1683.06 10277.1 1682.67 10285.6 1682.65 10298.3 1682.38 10299.6
1682.31
 10302.8 1682.24 10309.1 1683.39 10315.3 1684.25 10323.1 1685.38 10324.1
1685.53
 10326.1 1685.93 10331.7 1686.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9857.9    .078  9986.6    .052 10020.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.6 10020.8              557     557     557             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1684.10  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.51  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1683.60  * Reach Len. (ft)         *  557.00
*  557.00  *  557.00  *
* Crit W.S. (ft)          * 1683.48  * Flow Area (sq ft)       *   77.06
*  144.88  *  337.53  *
* E.G. Slope (ft/ft)      *0.010008  * Area (sq ft)            *   77.06
*  144.88  *  337.53  *
* Q Total (cfs)           * 1951.00  * Flow (cfs)              *  161.03
* 1078.12  *  711.84  *
* Top Width (ft)          *  391.01  * Top Width (ft)          *   67.03
*   34.20  *  289.78  *
* Vel Total (ft/s)        *    3.49  * Avg. Vel. (ft/s)        *    2.09
*    7.44  *    2.11  *
* Max Chl Dpth (ft)       *    5.06  * Hydr. Depth (ft)        *    1.15
*    4.24  *    1.16  *
* Conv. Total (cfs)       * 19502.1  * Conv. (cfs)             *  1609.7
* 10776.9  *  7115.6  *
* Length Wtd. (ft)        *  557.00  * Wetted Per. (ft)        *   67.11
*   34.50  *  289.95  *
* Min Ch El (ft)          * 1678.54  * Shear (lb/sq ft)        *    0.72
*    2.62  *    0.73  *
* Alpha                   *    2.68  * Stream Power (lb/ft s) *    1.50
*   19.53  *    1.53  *
* Frctn Loss (ft)         *    5.58  * Cum Volume (acre-ft)    *    7.57
*    5.06  *   14.25  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    5.10
```

```
*    1.21  *    9.68  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.4

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9833.6 1680.42  9840.6  1680.1  9908.6 1677.48  9920.5 1677.39  9921.5
1677.39
  9934.5  1677.2  9940.5 1676.78  9947.5  1676.2  9965.6 1676.62  9967.2
1676.53
  9979.9 1675.55  9985.9 1674.39  9997.6  1672.1  9997.9  1672.2 10000.9
1673
 10003.4 1672.75 10004.4  1672.6 10010.6 1674.38 10014.7 1675.54 10029.6
1675.4
 10032.9 1675.17 10034.4  1675.1 10040.3 1674.54 10044.3 1674.66 10046.7
1674.93
 10052.5 1674.94 10059.5 1675.56 10066.5 1676.25 10073.3 1676.37 10087.1
1676.3
 10104.4 1676.32 10105.3 1676.32 10321.2 1679.94 10332.3 1680.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9833.6    .078  9985.9    .052 10010.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.9 10010.6              473     473     473             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1678.51  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.54  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1677.97  * Reach Len. (ft)         *  473.00
*  473.00  *  473.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  108.22
*  118.99  *  299.08  *
* E.G. Slope (ft/ft)      *0.010027  * Area (sq ft)            *  108.22
*  118.99  *  299.08  *
* Q Total (cfs)           * 1951.00  * Flow (cfs)              *  232.97
*  955.35  *  762.68  *
* Top Width (ft)          *  307.98  * Top Width (ft)          *   90.07
```

```
*   24.70  *  193.22  *
* Vel Total (ft/s)       *    3.71  * Avg. Vel. (ft/s)       *    2.15
*    8.03  *    2.55  *
* Max Chl Dpth (ft)      *    5.87  * Hydr. Depth (ft)       *    1.20
*    4.82  *    1.55  *
* Conv. Total (cfs)      * 19483.3  * Conv. (cfs)            *  2326.5
*  9540.4  *  7616.3  *
* Length Wtd. (ft)       *  473.00  * Wetted Per. (ft)       *   90.27
*   25.32  *  193.51  *
* Min Ch El (ft)         * 1672.10  * Shear (lb/sq ft)       *    0.75
*    2.94  *    0.97  *
* Alpha                  *    2.52  * Stream Power (lb/ft s) *    1.62
*   23.62  *    2.47  *
* Frctn Loss (ft)        *    4.07  * Cum Volume (acre-ft)   *    6.39
*    3.38  *   10.18  *
* C & E Loss (ft)        *    0.11  * Cum SA (acres)         *    4.10
*    0.83  *    6.59  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.31

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9859.7  1676.6  9873.6 1676.13  9887.1 1674.22  9888.5 1674.01  9888.8
1674.01
  9894.6 1673.94  9900.5 1673.39  9900.7 1673.37    9903 1673.18  9912.8
1672.59
  9914.4 1672.45  9915.6 1672.44    9925 1671.83  9946.8 1671.65  9955.4
1671.41
  9967.9 1671.62    9984 1671.65    9989  1670.5    9997 1668.49  9997.7
1668.49
 10001.5 1668.48 10004.3 1669.03 10005.3  1669.2 10010.7  1670.5 10016.9
1672.4
   10035  1672.3 10043.6 1672.05 10049.7 1671.71 10053.8 1671.41 10060.7
1671.07
 10069.6 1671.23 10075.1 1671.54 10085.1 1671.66 10092.5 1671.71 10100.3
1671.87
 10354.2 1676.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9859.7    .078    9989    .052 10010.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9989 10010.7              477     477     477             .3
```

.5

CROSS SECTION OUTPUT Profile #100-year

```
************************************************************************
************************
* E.G. Elev (ft)          * 1674.34  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.32  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1674.02  * Reach Len. (ft)         *  477.00
*  477.00  *  477.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  192.59
*  103.21  *  339.73  *
* E.G. Slope (ft/ft)      *0.007459  * Area (sq ft)            *  192.59
*  103.21  *  339.73  *
* Q Total (cfs)           * 1951.00  * Flow (cfs)              *  488.02
*  710.09  *  752.89  *
* Top Width (ft)          *  339.22  * Top Width (ft)          *  100.55
*   21.70  *  216.97  *
* Vel Total (ft/s)        *    3.07  * Avg. Vel. (ft/s)        *    2.53
*    6.88  *    2.22  *
* Max Chl Dpth (ft)       *    5.54  * Hydr. Depth (ft)        *    1.92
*    4.76  *    1.57  *
* Conv. Total (cfs)       * 22590.5  * Conv. (cfs)             *  5650.8
*  8222.1  *  8717.7  *
* Length Wtd. (ft)        *  477.00  * Wetted Per. (ft)        *  100.76
*   22.17  *  217.32  *
* Min Ch El (ft)          * 1668.48  * Shear (lb/sq ft)        *    0.89
*    2.17  *    0.73  *
* Alpha                   *    2.20  * Stream Power (lb/ft s) *    2.26
*   14.91  *    1.61  *
* Frctn Loss (ft)         *    4.64  * Cum Volume (acre-ft)    *    4.76
*    2.17  *    6.71  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    3.06
*    0.58  *    4.36  *
************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T10A
REACH: NRW55T10A RS: 0.22

INPUT
Description:
Station Elevation Data num= 51

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9827.2  1671.3  9833.2  1671.6  9855.4 1669.67  9859.5 1669.17    9868
1668.39
  9880.9 1667.41  9895.6  1667.6    9906  1667.1  9909.7 1667.44  9913.7
1667.83
  9918.1  1668.3  9923.2    1668  9943.6 1667.25  9972.7 1667.75  9977.4
1667.69
```

```
  9980.8 1667.16  9990.6 1664.93  9993.4 1665.11  9994.7 1665.08  9999.9
1664.39
 10008.1 1666.97 10011.2    1668 10015.3 1667.82 10020.4 1667.55 10028.8
1667.61
 10034.7 1667.53 10052.9 1667.22 10056.9 1667.03 10059.2 1666.98 10062.4
1666.98
 10069.9 1667.02 10078.5 1667.16 10082.6 1667.31 10096.5  1667.6 10097.7
1667.59
 10103.6 1667.83 10111.2 1668.09 10130.2  1668.4 10162.4  1668.6 10222.4
1669.74
 10231.9  1669.7 10238.1 1670.07 10249.5  1670.3 10271.5  1670.5 10282.7
1670.73
 10286.4 1670.79 10287.1 1670.83 10295.9 1671.16 10299.2 1671.21 10303.4
1671.08
 10307.1 1671.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9827.2    .078  9980.8    .052 10008.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9980.8 10008.1              251     251     251             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1669.66  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.44  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1669.22  * Reach Len. (ft)         *  251.00
*  251.00  *  251.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  184.88
*  100.50  *  235.61  *
* E.G. Slope (ft/ft)      *0.013279  * Area (sq ft)            *  184.88
*  100.50  *  235.61  *
* Q Total (cfs)           * 1915.00  * Flow (cfs)              *  535.76
*  775.81  *  603.42  *
* Top Width (ft)          *  335.75  * Top Width (ft)          *  121.68
*   27.30  *  186.76  *
* Vel Total (ft/s)        *    3.68  * Avg. Vel. (ft/s)        *    2.90
*    7.72  *    2.56  *
* Max Chl Dpth (ft)       *    4.83  * Hydr. Depth (ft)        *    1.52
*    3.68  *    1.26  *
* Conv. Total (cfs)       * 16618.4  * Conv. (cfs)             *  4649.4
*  6732.5  *  5236.5  *
* Length Wtd. (ft)        *  251.00  * Wetted Per. (ft)        *  121.90
*   28.00  *  186.98  *
* Min Ch El (ft)          * 1664.39  * Shear (lb/sq ft)        *    1.26
*    2.98  *    1.04  *
* Alpha                   *    2.11  * Stream Power (lb/ft s) *    3.64
*   22.97  *    2.68  *
* Frctn Loss (ft)         *    2.52  * Cum Volume (acre-ft)    *    2.69
*    1.05  *    3.56  *
* C & E Loss (ft)         *    0.13  * Cum SA (acres)          *    1.85
*    0.31  *    2.15  *
************************************************************************
************************
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.17

INPUT
Description:
Station Elevation Data    num=      43
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9746.3 1669.25  9862.1 1666.24  9884.2 1665.79  9896.4 1665.59  9917.4
1664.84
  9935.5 1664.53  9944.6 1664.74  9949.6 1664.95  9965.5  1664.7  9966.1
1664.7
    9974 1664.37  9980.2  1664.8    9983 1665.04  9983.8 1665.12  9985.8
1665.07
  9991.1 1664.82  9995.4 1663.79  9999.5  1662.6 10003.8 1662.34 10004.9
1662.29
 10006.1 1662.66 10017.9    1665 10022.2 1665.03 10036.8 1665.47 10037.7
1665.45
 10044.6 1665.45   10069 1665.33 10093.8 1665.36 10100.5 1664.43 10104.3
1663.93
 10107.3 1664.31 10113.9 1664.65 10125.1 1664.51 10144.6 1664.59 10157.8
1664.5
 10186.1 1664.83 10193.5    1665 10201.2 1665.29 10233.5 1666.87 10239.7
1667.8
 10247.1  1668.7 10257.1 1670.14 10262.2  1670.8

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9746.3    .078  9991.1    .052 10017.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.1 10017.9              253     253     253             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1667.02  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.19  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1666.83  * Reach Len. (ft)         *  253.00
*  253.00  *  253.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  227.02
*   90.16  *  373.23  *
* E.G. Slope (ft/ft)      *0.007842  * Area (sq ft)            *  227.02
*   90.16  *  373.23  *
* Q Total (cfs)           * 1915.00  * Flow (cfs)              *  500.67
*  504.92  *  909.41  *
```

```
* Top Width (ft)          *  393.42  * Top Width (ft)          *  151.79
*   26.80  *  214.83  *
* Vel Total (ft/s)        *    2.77  * Avg. Vel. (ft/s)        *    2.21
*    5.60  *    2.44  *
* Max Chl Dpth (ft)       *    4.54  * Hydr. Depth (ft)        *    1.50
*    3.36  *    1.74  *
* Conv. Total (cfs)       * 21625.6  * Conv. (cfs)             *  5654.0
*  5702.0  * 10269.7  *
* Length Wtd. (ft)        *  253.00  * Wetted Per. (ft)        *  151.87
*   27.39  *  215.01  *
* Min Ch El (ft)          * 1662.29  * Shear (lb/sq ft)        *    0.73
*    1.61  *    0.85  *
* Alpha                   *    1.61  * Stream Power (lb/ft s) *    1.61
*    9.03  *    2.07  *
* Frctn Loss (ft)         *    2.23  * Cum Volume (acre-ft)    *    1.50
*    0.51  *    1.80  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.06
*    0.16  *    1.00  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10A
REACH: NRW55T10A          RS: 0.12

INPUT
Description: U.S. of Confluence with NRW55B
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9623.4 1667.41  9646.2 1666.84  9806.1    1664  9900.8 1662.79  9944.7
1662.6
  9964.4 1662.34  9987.6 1662.53  9989.6 1662.12  9996.9 1660.96  9999.5
1660.5
 10015.3  1662.6 10019.2 1663.02   10029 1662.23 10032.2 1662.07 10037.3
1661.9
 10041.2 1661.45 10054.4 1661.17 10054.7 1661.23 10062.5 1661.93 10066.1
1662.03
 10072.4 1662.64 10072.6 1662.66 10072.9  1662.7 10082.5 1662.72 10085.1
1662.72
 10090.1 1662.76   10122 1663.09 10123.3 1663.18 10145.6 1664.72 10151.9
1665.07
 10173.3  1666.6 10180.3 1666.99 10190.6 1667.41

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9623.4    .078  9987.6    .052 10015.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.6 10015.3              660     660     660             .3
.5
```

```
CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1664.78  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1664.56  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1663.92  * Flow Area (sq ft)       *  290.68
*   83.93  *  248.24  *
* E.G. Slope (ft/ft)      *0.010001  * Area (sq ft)            *  290.68
*   83.93  *  248.24  *
* Q Total (cfs)           * 1915.00  * Flow (cfs)              *  681.68
*  498.42  *  734.90  *
* Top Width (ft)          *  368.44  * Top Width (ft)          *  212.81
*   27.70  *  127.93  *
* Vel Total (ft/s)        *    3.07  * Avg. Vel. (ft/s)        *    2.35
*    5.94  *    2.96  *
* Max Chl Dpth (ft)       *    4.06  * Hydr. Depth (ft)        *    1.37
*    3.03  *    1.94  *
* Conv. Total (cfs)       * 19149.5  * Conv. (cfs)             *  6816.6
*  4984.1  *  7348.8  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  212.83
*   28.01  *  128.14  *
* Min Ch El (ft)          * 1660.50  * Shear (lb/sq ft)        *    0.85
*    1.87  *    1.21  *
* Alpha                   *    1.53  * Stream Power (lb/ft s) *    2.00
*   11.11  *    3.58  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
************************************************************************
************************

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 3

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9970.3  1918.8    9974  1918.7  9985.5 1914.01    9992 1911.42  9993.4
1911.33
  9993.5 1911.34 10000.3 1911.44   10006 1911.49 10008.2  1911.4 10011.3
1911.35
 10016.2 1914.01 10021.5 1916.73   10024 1917.79 10027.4 1918.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9970.3    .078  9985.5    .052 10016.2    .078
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.5 10016.2              493     493     493             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1917.81  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.88  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1915.93  * Reach Len. (ft)         *  493.00
*  493.00  *  493.00  *
* Crit W.S. (ft)          * 1915.93  * Flow Area (sq ft)       *    4.52
*  123.99  *    3.59  *
* E.G. Slope (ft/ft)      *0.024546  * Area (sq ft)            *    4.52
*  123.99  *    3.59  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   12.48
* 1372.86  *    9.66  *
* Top Width (ft)          *   39.15  * Top Width (ft)          *    4.71
*   30.70  *    3.74  *
* Vel Total (ft/s)        *   10.56  * Avg. Vel. (ft/s)        *    2.76
*   11.07  *    2.69  *
* Max Chl Dpth (ft)       *    4.60  * Hydr. Depth (ft)        *    0.96
*    4.04  *    0.96  *
* Conv. Total (cfs)       *  8903.9  * Conv. (cfs)             *    79.7
*  8762.6  *    61.6  *
* Length Wtd. (ft)        *  493.00  * Wetted Per. (ft)        *    5.09
*   31.88  *    4.21  *
* Min Ch El (ft)          * 1911.33  * Shear (lb/sq ft)        *    1.36
*    5.96  *    1.31  *
* Alpha                   *    1.08  * Stream Power (lb/ft s) *    3.76
*   65.99  *    3.52  *
* Frctn Loss (ft)         *    3.91  * Cum Volume (acre-ft)    *   19.37
*   20.55  *   14.60  *
* C & E Loss (ft)         *    0.74  * Cum SA (acres)          *   15.30
*    5.96  *   11.88  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.
```

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 2.9

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9953.7	1907.57	9963.7	1906.57	9972.2	1904.92	9977.6	1903.94	9986	1903
9988.3	1902.47	9992.8	1901.26	9999.9	1900.34	10003.5	1900.93	10007	1900.79
10019.9	1900.98	10020.4	1901.17	10021.7	1901.25	10029.1	1902.99	10040.6	1904.92
10042.3	1905.15	10050.1	1905.37	10056	1906.35	10058.9	1907.07		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9953.7	.078	9986	.052	10029.1	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986	10029.1	54	54	54	.3	.5

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1906.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.40	Wt. n-Val.	0.078	0.052	0.078
W.S. Elev (ft)	1906.59	Reach Len. (ft)	54.00	54.00	54.00
Crit W.S. (ft)		Flow Area (sq ft)	45.05	229.13	47.73
E.G. Slope (ft/ft)	0.003874	Area (sq ft)	45.05	229.13	47.73
Q Total (cfs)	1395.00	Flow (cfs)	84.10	1230.44	80.45
Top Width (ft)	93.46	Top Width (ft)	22.50	43.10	27.87
Vel Total (ft/s)	4.33	Avg. Vel. (ft/s)	1.87	5.37	1.69
Max Chl Dpth (ft)	6.25	Hydr. Depth (ft)	2.00	5.32	1.71
Conv. Total (cfs)	22414.0	Conv. (cfs)	1351.3	19770.0	1292.7
Length Wtd. (ft)	54.00	Wetted Per. (ft)	22.80	43.67	28.15
Min Ch El (ft)	1900.34	Shear (lb/sq ft)	0.48	1.27	0.41
Alpha	1.37	Stream Power (lb/ft s)	0.89	6.81	0.69

```
* Frctn Loss (ft)        *    0.39  * Cum Volume (acre-ft)   *   19.09
*   18.56  *   14.31  *
* C & E Loss (ft)        *    0.41  * Cum SA (acres)         *   15.15
*    5.54  *   11.70  *
**********************************************************************
***********************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.89

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9950.4 1906.37  9951.4 1906.23  9969.4 1904.53  9983.6 1903.38    9987
1903
  9992.8 1900.94  9998.5 1898.78  9999.9 1898.77 10003.9  1898.8   10013
1899.56
 10015.5 1900.94 10016.7 1901.65 10020.7 1902.98 10028.7 1905.29 10038.1
1907.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9950.4    .078  9992.8    .052 10015.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.8 10015.5              169     169     169             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1906.18  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.78  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1904.41  * Reach Len. (ft)         *  169.00
*  169.00  *  169.00  *
* Crit W.S. (ft)         * 1904.41  * Flow Area (sq ft)       *   24.80
*  114.26  *   15.64  *
* E.G. Slope (ft/ft)     *0.018470  * Area (sq ft)            *   24.80
*  114.26  *   15.64  *
* Q Total (cfs)          * 1395.00  * Flow (cfs)              *   68.89
* 1274.16  *   51.94  *
* Top Width (ft)         *   54.73  * Top Width (ft)          *   21.89
```

```
*   22.70  *   10.14  *
* Vel Total (ft/s)       *    9.02  * Avg. Vel. (ft/s)       *    2.78
*   11.15  *    3.32  *
* Max Chl Dpth (ft)      *    5.64  * Hydr. Depth (ft)       *    1.13
*    5.03  *    1.54  *
* Conv. Total (cfs)      * 10264.7  * Conv. (cfs)            *   506.9
*  9375.6  *   382.2  *
* Length Wtd. (ft)       *  169.00  * Wetted Per. (ft)       *   22.31
*   23.48  *   10.76  *
* Min Ch El (ft)         * 1898.77  * Shear (lb/sq ft)       *    1.28
*    5.61  *    1.68  *
* Alpha                  *    1.41  * Stream Power (lb/ft s) *    3.56
*   62.56  *    5.57  *
* Frctn Loss (ft)        *    3.30  * Cum Volume (acre-ft)   *   19.04
*   18.34  *   14.27  *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)         *   15.12
*    5.50  *   11.68  *
***********************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.86

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9954.5  1906.8  9966.3  1902.1    9986 1898.72  9987.7 1898.41  9992.1
1897
 10000.1 1894.91 10011.1  1895.9 10017.2 1896.55 10019.6 1896.41 10021.2
1897
 10023.1 1898.19 10032.8 1900.25 10034.4 1900.69 10040.3  1901.6 10049.4
1903.31

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9954.5    .078  9992.1    .052 10021.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
```

```
Expan.
        9992.1 10021.2              187     187     187             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1901.72  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.63  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1900.09  * Reach Len. (ft)         *  187.00
*  187.00  *  187.00  *
* Crit W.S. (ft)          * 1900.05  * Flow Area (sq ft)       *   18.57
*  122.30  *   13.25  *
* E.G. Slope (ft/ft)      *0.020662  * Area (sq ft)            *   18.57
*  122.30  *   13.25  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   60.09
* 1294.78  *   40.13  *
* Top Width (ft)          *   54.04  * Top Width (ft)          *   14.09
*   29.10  *   10.85  *
* Vel Total (ft/s)        *    9.05  * Avg. Vel. (ft/s)        *    3.24
*   10.59  *    3.03  *
* Max Chl Dpth (ft)       *    5.18  * Hydr. Depth (ft)        *    1.32
*    4.20  *    1.22  *
* Conv. Total (cfs)       *  9704.9  * Conv. (cfs)             *   418.0
*  9007.7  *   279.2  *
* Length Wtd. (ft)        *  187.00  * Wetted Per. (ft)        *   14.46
*   29.56  *   11.39  *
* Min Ch El (ft)          * 1894.91  * Shear (lb/sq ft)        *    1.66
*    5.34  *    1.50  *
* Alpha                   *    1.28  * Stream Power (lb/ft s) *    5.36
*   56.51  *    4.54  *
* Frctn Loss (ft)         *    3.56  * Cum Volume (acre-ft)    *   18.96
*   17.88  *   14.21  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *   15.05
*    5.40  *   11.64  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.83

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
    9972 1899.73  9979.1 1896.12  9984.7 1892.97  9987.6 1891.31  9993.5
1891.4
  9994.5 1891.39 10000.6  1891.3 10005.9 1892.97 10007.6 1893.62   10026
1894.97
```

```
   10044 1896.16 10075.3 1898.12 10076.6  1898.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9972    .078  9984.7    .052 10005.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.7 10005.9               87      87      87             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1898.09  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.49  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1896.60  * Reach Len. (ft)         *   87.00
*   87.00  *   87.00  *
* Crit W.S. (ft)          * 1896.60  * Flow Area (sq ft)       *   11.74
*  104.83  *   68.26  *
* E.G. Slope (ft/ft)      *0.017590  * Area (sq ft)            *   11.74
*  104.83  *   68.26  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   40.06
* 1128.47  *  226.47  *
* Top Width (ft)          *   72.89  * Top Width (ft)          *    6.55
*   21.20  *   45.15  *
* Vel Total (ft/s)        *    7.55  * Avg. Vel. (ft/s)        *    3.41
*   10.76  *    3.32  *
* Max Chl Dpth (ft)       *    5.30  * Hydr. Depth (ft)        *    1.79
*    4.94  *    1.51  *
* Conv. Total (cfs)       * 10518.2  * Conv. (cfs)             *   302.0
*  8508.6  *  1707.6  *
* Length Wtd. (ft)        *   87.00  * Wetted Per. (ft)        *    7.49
*   21.90  *   45.37  *
* Min Ch El (ft)          * 1891.30  * Shear (lb/sq ft)        *    1.72
*    5.26  *    1.65  *
* Alpha                   *    1.68  * Stream Power (lb/ft s) *    5.88
*   56.59  *    5.48  *
* Frctn Loss (ft)         *    1.68  * Cum Volume (acre-ft)    *   18.90
*   17.40  *   14.04  *
* C & E Loss (ft)         *    0.13  * Cum SA (acres)          *   15.01
*    5.29  *   11.52  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
```

critical depth.

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 2.81

INPUT
Description:
Station Elevation Data num= 13

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9972.1 1903.98  9972.3 1903.91  9984.4 1891.68    9986 1890.18  9999.3
1889.64
 10000.6 1889.94 10008.8 1891.62 10017.2 1891.73   10036 1892.08 10049.1
1892.88
 10082.8 1895.55 10087.2 1895.81 10093.7  1896.4
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9972.1    .078  9984.4    .052 10008.8    .078
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9984.4 10008.8              255     255     255             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1895.45  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.22  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1894.23  * Reach Len. (ft)         *  255.00
*  255.00  *  255.00  *
* Crit W.S. (ft)          * 1894.23  * Flow Area (sq ft)       *    3.21
*   96.72  *   99.42  *
* E.G. Slope (ft/ft)      *0.021283  * Area (sq ft)            *    3.21
*   96.72  *   99.42  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *    8.29
*  988.15  *  398.57  *
* Top Width (ft)          *   84.22  * Top Width (ft)          *    2.52
*   24.40  *   57.30  *
* Vel Total (ft/s)        *    7.00  * Avg. Vel. (ft/s)        *    2.58
*   10.22  *    4.01  *
* Max Chl Dpth (ft)       *    4.59  * Hydr. Depth (ft)        *    1.27
*    3.96  *    1.74  *
* Conv. Total (cfs)       *  9562.2  * Conv. (cfs)             *    56.8
*  6773.4  *  2732.0  *
* Length Wtd. (ft)        *  255.00  * Wetted Per. (ft)        *    3.58
*   25.21  *   57.38  *
* Min Ch El (ft)          * 1889.64  * Shear (lb/sq ft)        *    1.19
*    5.10  *    2.30  *
* Alpha                   *    1.60  * Stream Power (lb/ft s) *    3.07
*   52.08  *    9.23  *
* Frctn Loss (ft)         *    5.13  * Cum Volume (acre-ft)    *   18.88
```

```
*   17.19  *   13.87  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *   15.00
*    5.25  *   11.42  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.76

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9930.1 1892.95    9938 1889.02  9939.8 1888.17  9955.5 1887.18  9972.2
1885.67
  9976.1 1885.13  9982.8  1884.2  9984.7 1883.85  9985.6 1884.02  9990.4
1884.42
  9995.4 1884.05 10000.2 1883.33 10004.2 1885.57 10007.5  1886.8 10011.5
1891.15
 10011.9 1891.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9930.1    .078  9976.1    .052 10004.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.1 10004.2              254     254     254             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1889.74  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.33  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1888.41  * Reach Len. (ft)         *  254.00
*  254.00  *  254.00  *
* Crit W.S. (ft)         * 1888.41  * Flow Area (sq ft)       *   56.41
```

```
*  116.88  *    8.52  *
* E.G. Slope (ft/ft)     *0.019011  * Area (sq ft)           *   56.41
*  116.88  *    8.52  *
* Q Total (cfs)          * 1395.00  * Flow (cfs)             *  196.30
* 1169.44  *   29.26  *
* Top Width (ft)         *   69.68  * Top Width (ft)         *   36.80
*   28.10  *    4.78  *
* Vel Total (ft/s)       *    7.67  * Avg. Vel. (ft/s)       *    3.48
*   10.01  *    3.43  *
* Max Chl Dpth (ft)      *    5.08  * Hydr. Depth (ft)       *    1.53
*    4.16  *    1.78  *
* Conv. Total (cfs)      * 10117.4  * Conv. (cfs)            *  1423.7
*  8481.5  *   212.2  *
* Length Wtd. (ft)       *  254.00  * Wetted Per. (ft)       *   36.99
*   28.88  *    5.71  *
* Min Ch El (ft)         * 1883.33  * Shear (lb/sq ft)       *    1.81
*    4.80  *    1.77  *
* Alpha                  *    1.46  * Stream Power (lb/ft s) *    6.30
*   48.06  *    6.09  *
* Frctn Loss (ft)        *    5.21  * Cum Volume (acre-ft)   *   18.71
*   16.57  *   13.56  *
* C & E Loss (ft)        *    0.10  * Cum SA (acres)         *   14.88
*    5.09  *   11.23  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.71

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9921.4 1897.13  9944.1 1892.24  9961.5 1888.89    9963 1888.36  9975.6
1883.53
  9981.7 1881.09  9985.5 1879.12  9987.6 1879.04  9994.1 1878.46  9999.9
1877.52
 10001.2 1877.51   10010 1878.64 10012.6 1879.09 10023.4 1881.05 10025.3
1881.4
 10029.6 1882.34 10039.5  1884.4 10047.1  1888.1
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9921.4    .078  9985.5    .052 10012.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.5 10012.6              237     237     237             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1884.15  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.66  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1882.49  * Reach Len. (ft)         *  237.00
*  237.00  *  237.00  *
* Crit W.S. (ft)          * 1882.49  * Flow Area (sq ft)       *   11.49
*  112.25  *   31.22  *
* E.G. Slope (ft/ft)      *0.022191  * Area (sq ft)            *   11.49
*  112.25  *   31.22  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   41.39
* 1225.90  *  127.71  *
* Top Width (ft)          *   52.10  * Top Width (ft)          *    7.29
*   27.10  *   17.71  *
* Vel Total (ft/s)        *    9.00  * Avg. Vel. (ft/s)        *    3.60
*   10.92  *    4.09  *
* Max Chl Dpth (ft)       *    4.98  * Hydr. Depth (ft)        *    1.58
*    4.14  *    1.76  *
* Conv. Total (cfs)       *  9364.6  * Conv. (cfs)             *   277.8
*  8229.4  *   857.3  *
* Length Wtd. (ft)        *  237.00  * Wetted Per. (ft)        *    8.04
*   27.31  *   18.03  *
* Min Ch El (ft)          * 1877.51  * Shear (lb/sq ft)        *    1.98
*    5.69  *    2.40  *
* Alpha                   *    1.32  * Stream Power (lb/ft s) *    7.13
*   62.18  *    9.81  *
* Frctn Loss (ft)         *    5.03  * Cum Volume (acre-ft)    *   18.51
*   15.90  *   13.44  *
* C & E Loss (ft)         *    0.18  * Cum SA (acres)          *   14.75
*    4.93  *   11.17  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.
```

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 2.67

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9934.8	1882.12	9935.7	1881.88	9945.8	1879.03	9954.4	1877.13	9955.3	1876.96
9955.7	1876.89	9963.8	1875.97	9968.3	1875.51	9974.6	1875.24	9980.3	1875.44
9983.6	1874.66	9989.5	1873.64	9997.2	1873.07	9999.6	1872.97	10001.1	1872.98
10007.2	1873.01	10010.8	1873.39	10013	1873.58	10015.4	1874.14	10019	1874.7
10020.5	1875.44	10033.9	1883.25						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9934.8	.078	9983.6	.052	10019	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.6	10019	274	274	274	.3	.5

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1878.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.29	Wt. n-Val.	0.078	0.052	0.078
W.S. Elev (ft)	1877.17	Reach Len. (ft)	274.00	274.00	274.00
Crit W.S. (ft)	1877.11	Flow Area (sq ft)	41.24	129.00	5.70
E.G. Slope (ft/ft)	0.020320	Area (sq ft)	41.24	129.00	5.70
Q Total (cfs)	1395.00	Flow (cfs)	139.84	1238.50	16.66
Top Width (ft)	69.22	Top Width (ft)	29.36	35.40	4.46
Vel Total (ft/s)	7.93	Avg. Vel. (ft/s)	3.39	9.60	2.92
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)	1.40	3.64	1.28
Conv. Total (cfs)	9786.1	Conv. (cfs)	981.0	8688.3	116.9
Length Wtd. (ft)	274.00	Wetted Per. (ft)	29.56	35.65	5.10
Min Ch El (ft)	1872.97	Shear (lb/sq ft)	1.77	4.59	1.42
Alpha	1.32	Stream Power (lb/ft s)	6.00		

```
*   44.07  *    4.14  *
* Frctn Loss (ft)        *    5.34  * Cum Volume (acre-ft)   *   18.36
*   15.25  *   13.34  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *   14.66
*    4.76  *   11.11  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.62

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9910 1876.69    9920 1873.94  9922.1 1873.59  9927.6 1871.89  9930.2
1871.25
  9931.7 1871.35  9943.5 1872.23  9946.1 1872.19  9963.6 1871.42  9966.7
1871.37
  9971.1 1871.05  9977.7 1870.71  9981.9 1870.13  9992.1 1867.61  9995.9
1866.78
  9997.4 1866.46 10001.9 1866.93 10005.1 1867.19 10006.4 1867.28 10011.7
1867.6
   10021 1868.52   10022 1868.57 10035.7  1871.8 10038.3 1872.27 10051.6
1875.2
 10052.8 1875.32 10065.2 1877.18

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9910    .078  9992.1    .052 10011.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.1 10011.7              218     218     218             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)         * 1873.09  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.36  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1871.72  * Reach Len. (ft)         *  218.00
*  218.00  *  218.00  *
* Crit W.S. (ft)         * 1871.72  * Flow Area (sq ft)       *   46.52
*   90.96  *   58.35  *
* E.G. Slope (ft/ft)     *0.018742  * Area (sq ft)            *   46.52
*   90.96  *   58.35  *
* Q Total (cfs)          * 1395.00  * Flow (cfs)              *  136.18
```

```
*  984.36  *  274.45  *
* Top Width (ft)          *   87.13  * Top Width (ft)          *   43.85
*   19.60  *   23.68  *
* Vel Total (ft/s)        *    7.12  * Avg. Vel. (ft/s)        *    2.93
*   10.82  *    4.70  *
* Max Chl Dpth (ft)       *    5.26  * Hydr. Depth (ft)        *    1.06
*    4.64  *    2.46  *
* Conv. Total (cfs)       * 10189.9  * Conv. (cfs)             *   994.8
*  7190.4  *  2004.8  *
* Length Wtd. (ft)        *  218.00  * Wetted Per. (ft)        *   44.30
*   19.77  *   24.09  *
* Min Ch El (ft)          * 1866.46  * Shear (lb/sq ft)        *    1.23
*    5.38  *    2.83  *
* Alpha                   *    1.73  * Stream Power (lb/ft s) *    3.60
*   58.25  *   13.33  *
* Frctn Loss (ft)         *    4.46  * Cum Volume (acre-ft)    *   18.09
*   14.55  *   13.14  *
* C & E Loss (ft)         *    0.30  * Cum SA (acres)          *   14.42
*    4.59  *   11.02  *
***************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.58

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
    9837 1877.22    9860 1871.45    9865 1869.24  9869.6 1867.26  9873.3
1866.31
  9878.4 1865.08  9903.4 1865.43  9912.1  1865.4  9930.8 1866.88  9939.4
1866.88
  9943.9 1866.85  9961.5 1866.85  9969.3 1865.42  9975.6  1864.4  9983.4
1864.85
  9984.4  1864.9  9985.4 1864.87  9994.2 1864.52  9996.2 1864.52 10003.1
```

```
1864.26
 10007.2 1864.36   10011 1864.59 10016.6 1864.78 10018.3 1864.91 10022.9
1865.41
 10024.3 1865.58 10026.8  1866.3 10036.1 1869.21 10038.5 1869.32 10046.2
1869.93
 10061.2 1870.36 10062.7 1870.37 10066.9 1870.68 10094.7 1873.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9837    .078  9969.3    .052 10022.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9969.3 10022.9              279     279     279             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1867.92  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.76  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1867.16  * Reach Len. (ft)         *  279.00
*  279.00  *  279.00  *
* Crit W.S. (ft)          * 1867.16  * Flow Area (sq ft)       *  108.38
*  133.71  *    6.59  *
* E.G. Slope (ft/ft)      *0.022410  * Area (sq ft)            *  108.38
*  133.71  *    6.59  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *  326.63
* 1050.15  *   18.22  *
* Top Width (ft)          *  159.59  * Top Width (ft)          *   99.33
*   53.60  *    6.66  *
* Vel Total (ft/s)        *    5.61  * Avg. Vel. (ft/s)        *    3.01
*    7.85  *    2.76  *
* Max Chl Dpth (ft)       *    2.90  * Hydr. Depth (ft)        *    1.09
*    2.49  *    0.99  *
* Conv. Total (cfs)       *  9318.6  * Conv. (cfs)             *  2181.9
*  7014.9  *   121.7  *
* Length Wtd. (ft)        *  279.00  * Wetted Per. (ft)        *   99.77
*   53.75  *    6.91  *
* Min Ch El (ft)          * 1864.26  * Shear (lb/sq ft)        *    1.52
*    3.48  *    1.34  *
* Alpha                   *    1.55  * Stream Power (lb/ft s) *    4.58
*   27.33  *    3.69  *
* Frctn Loss (ft)         *    5.57  * Cum Volume (acre-ft)    *   17.70
*   13.99  *   12.98  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *   14.07
*    4.40  *   10.94  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
```

surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 2.52

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9779.8	1863.52	9782.2	1863.26	9784.5	1862.96	9787.9	1861.88	9799.1	1858.39
9825.6	1859.49	9838.7	1859.46	9855.9	1859.68	9886.2	1859.57	9907.2	1859.36
9918.4	1859.24	9944.9	1859.31	9950.5	1859.13	9965.8	1858.98	9968.1	1858.61
9976.1	1858.39	9982.8	1858.05	9990	1857.67	9990.6	1857.6	9990.8	1857.57
9998.1	1856.51	10002.3	1856.18	10003.7	1856.14	10005.7	1857.05	10007.1	1858.05
10009.9	1859.55	10013	1861.27	10015.3	1862.52	10019.4	1863.78		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9779.8	.078	9982.8	.052	10007.1	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.8	10007.1	52	52	52	.3	.5

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1861.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.	0.078	0.052	0.078
W.S. Elev (ft)	1860.49	Reach Len. (ft)	52.00	52.00	52.00
Crit W.S. (ft)	1860.49	Flow Area (sq ft)	235.00	81.84	5.54
E.G. Slope (ft/ft)	0.017921	Area (sq ft)	235.00	81.84	5.54
Q Total (cfs)	1395.00	Flow (cfs)	688.51	691.61	14.89
Top Width (ft)	219.24	Top Width (ft)	190.45	24.30	4.50
Vel Total (ft/s)	4.33	Avg. Vel. (ft/s)	2.93	8.45	2.69
Max Chl Dpth (ft)	4.35	Hydr. Depth (ft)	1.23		

```
*    3.37  *    1.23  *
* Conv. Total (cfs)      * 10420.6  * Conv. (cfs)            *  5143.2
*  5166.3  *   111.2  *
* Length Wtd. (ft)       *   52.00  * Wetted Per. (ft)       *  190.84
*   24.92  *    5.12  *
* Min Ch El (ft)         * 1856.14  * Shear (lb/sq ft)       *    1.38
*    3.67  *    1.21  *
* Alpha                  *    2.12  * Stream Power (lb/ft s) *    4.04
*   31.05  *    3.25  *
* Frctn Loss (ft)        *    0.95  * Cum Volume (acre-ft)   *   16.60
*   13.30  *   12.94  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *   13.14
*    4.15  *   10.91  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.51

INPUT
Description:
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9770.1  1862.4  9770.3 1862.37  9777.9  1861.7  9787.3 1858.41  9792.3
1856.85
    9810 1857.44  9818.8 1857.77  9821.4 1857.86  9843.5 1858.07  9853.1
1858.04
  9900.5  1857.5  9913.3 1857.63  9916.4  1857.4  9919.9 1857.85  9924.5
1858.35
    9937  1858.1  9953.3 1857.01  9961.1 1857.13  9963.4 1857.07    9972
1856.99
  9974.7 1856.94  9982.1 1856.51  9983.3 1856.42  9985.5 1856.29  9993.9
1855.9
    9997 1855.68 10004.1 1855.32 10006.1 1855.43 10010.6 1855.59 10013.1
1856.02
 10015.2 1856.96 10019.3 1858.99 10022.4 1860.15 10029.1 1861.63 10031.2
1862.06
 10035.7 1863.14 10040.8 1864.02   10042 1864.42 10047.6 1864.96

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
************************************************
  9770.1    .078  9974.7    .052 10015.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.7 10015.2              243     243     243             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1859.31  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.58  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1858.73  * Reach Len. (ft)         *  243.00
*  243.00  *  243.00  *
* Crit W.S. (ft)          * 1858.73  * Flow Area (sq ft)       *  201.70
*  110.14  *    3.16  *
* E.G. Slope (ft/ft)      *0.018811  * Area (sq ft)            *  201.70
*  110.14  *    3.16  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *  550.87
*  837.05  *    7.07  *
* Top Width (ft)          *  232.39  * Top Width (ft)          *  188.31
*   40.50  *    3.57  *
* Vel Total (ft/s)        *    4.43  * Avg. Vel. (ft/s)        *    2.73
*    7.60  *    2.24  *
* Max Chl Dpth (ft)       *    3.41  * Hydr. Depth (ft)        *    1.07
*    2.72  *    0.88  *
* Conv. Total (cfs)       * 10171.1  * Conv. (cfs)             *  4016.5
*  6103.1  *    51.6  *
* Length Wtd. (ft)        *  243.00  * Wetted Per. (ft)        *  188.73
*   40.79  *    3.99  *
* Min Ch El (ft)          * 1855.32  * Shear (lb/sq ft)        *    1.26
*    3.17  *    0.93  *
* Alpha                   *    1.92  * Stream Power (lb/ft s) *    3.43
*   24.10  *    2.08  *
* Frctn Loss (ft)         *    4.54  * Cum Volume (acre-ft)    *   16.34
*   13.19  *   12.93  *
* C & E Loss (ft)         *    0.23  * Cum SA (acres)          *   12.91
*    4.12  *   10.90  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.
```

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 2.47

INPUT
Description:
Station Elevation Data num= 29

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9967.9 1857.46  9968.8 1857.34  9973.4  1855.4  9988.7 1849.09  9988.9
1849
  9993.9  1847.3  9994.8 1847.21 10000.8 1847.08 10004.1 1847.22 10004.6
1847.27
 10010.4 1849.06 10016.7 1851.01 10020.5 1851.18 10027.9 1850.46 10029.1
1850.2
   10031 1850.18 10044.3 1849.81 10054.6 1852.08 10055.6 1852.32   10056
1852.4
 10072.3 1852.67 10080.5 1852.55 10084.8 1852.76 10091.1 1852.68 10093.8
1852.58
 10099.4 1853.53 10099.8 1853.58 10100.1 1853.63   10106 1854.36
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9967.9    .078  9988.7    .052 10010.4    .078
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.7 10010.4               243     243     243             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1853.64  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.36  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1852.27  * Reach Len. (ft)         *  243.00
*  243.00  *  243.00  *
* Crit W.S. (ft)          * 1852.27  * Flow Area (sq ft)       *   12.28
*   99.78  *   79.64  *
* E.G. Slope (ft/ft)      *0.018530  * Area (sq ft)            *   12.28
*   99.78  *   79.64  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   41.19
* 1054.45  *  299.37  *
* Top Width (ft)          *   74.42  * Top Width (ft)          *    7.72
*   21.70  *   45.00  *
* Vel Total (ft/s)        *    7.28  * Avg. Vel. (ft/s)        *    3.35
*   10.57  *    3.76  *
* Max Chl Dpth (ft)       *    5.19  * Hydr. Depth (ft)        *    1.59
*    4.60  *    1.77  *
* Conv. Total (cfs)       * 10248.1  * Conv. (cfs)             *   302.6
*  7746.3  *  2199.2  *
* Length Wtd. (ft)        *  243.00  * Wetted Per. (ft)        *    8.35
*   22.28  *   45.64  *
* Min Ch El (ft)          * 1847.08  * Shear (lb/sq ft)        *    1.70
```

```
*    5.18  *    2.02  *
* Alpha                  *    1.66  * Stream Power (lb/ft s) *    5.71
*   54.74  *    7.59  *
* Frctn Loss (ft)        *    4.00  * Cum Volume (acre-ft)   *   15.74
*   12.60  *   12.70  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *   12.37
*    3.94  *   10.77  *
**********************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.42

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9986.1 1849.79    9993 1845.63  9994.6 1844.65  9997.7 1841.88  9999.1
1840.65
 10000.3 1840.73 10002.3 1841.41 10005.4 1841.29 10006.2 1841.21 10009.6
1841.85
 10012.9 1842.41 10018.9 1843.19 10019.1 1843.21 10023.2 1844.44 10031.3
1846.49
 10037.8  1846.5 10041.8 1846.71 10045.4  1846.5 10054.9 1847.49 10058.8
1847.94
 10066.1 1849.25 10067.8 1849.39 10086.1 1849.11 10094.3  1849.1   10095
1849.13

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9986.1    .078  9994.6    .052 10023.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9994.6 10023.2              193     193     193             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
```

```
* E.G. Elev (ft)          * 1848.52  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.35  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1847.17  * Reach Len. (ft)         *  193.00
*  193.00  *  193.00  *
* Crit W.S. (ft)          * 1846.47  * Flow Area (sq ft)       *    5.20
*  139.59  *   24.57  *
* E.G. Slope (ft/ft)      *0.014716  * Area (sq ft)            *    5.20
*  139.59  *   24.57  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   12.60
* 1331.45  *   50.95  *
* Top Width (ft)          *   61.35  * Top Width (ft)          *    4.15
*   28.60  *   28.60  *
* Vel Total (ft/s)        *    8.24  * Avg. Vel. (ft/s)        *    2.42
*    9.54  *    2.07  *
* Max Chl Dpth (ft)       *    6.52  * Hydr. Depth (ft)        *    1.25
*    4.88  *    0.86  *
* Conv. Total (cfs)       * 11499.7  * Conv. (cfs)             *   103.8
* 10975.9  *   420.0  *
* Length Wtd. (ft)        *  193.00  * Wetted Per. (ft)        *    4.85
*   30.58  *   28.91  *
* Min Ch El (ft)          * 1840.65  * Shear (lb/sq ft)        *    0.98
*    4.19  *    0.78  *
* Alpha                   *    1.28  * Stream Power (lb/ft s) *    2.38
*   40.00  *    1.62  *
* Frctn Loss (ft)         *    2.79  * Cum Volume (acre-ft)    *   15.70
*   11.93  *   12.41  *
* C & E Loss (ft)         *    0.15  * Cum SA (acres)          *   12.33
*    3.80  *   10.56  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.38

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9961.5 1852.23  9968.8 1850.27  9971.3 1849.66  9974.9 1847.98  9988.2
1841.34
  9991.5 1839.89  9992.6 1839.32  9993.6 1839.29  9999.2 1838.71  9999.6
1838.71
   10005 1839.58   10007 1839.98 10009.5 1840.32 10010.4 1840.44 10019.1
1842.19
   10028 1843.88 10031.6 1843.73 10032.5 1843.63 10038.2 1843.13 10044.4
1842.79
 10044.8  1842.8 10078.4  1843.1 10080.9 1843.19 10084.5 1843.18 10092.8
1843.54
 10109.5 1844.39 10138.9 1845.21
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9961.5    .078  9991.5    .052   10007    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.5   10007              324     324     324             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1845.59  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.05  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1844.54  * Reach Len. (ft)         *  324.00
*  324.00  *  324.00  *
* Crit W.S. (ft)          * 1844.54  * Flow Area (sq ft)       *   23.15
*   82.59  *  157.70  *
* E.G. Slope (ft/ft)      *0.014183  * Area (sq ft)            *   23.15
*   82.59  *  157.70  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   87.58
*  847.28  *  460.14  *
* Top Width (ft)          *  132.88  * Top Width (ft)          *    9.70
*   15.50  *  107.68  *
* Vel Total (ft/s)        *    5.30  * Avg. Vel. (ft/s)        *    3.78
*   10.26  *    2.92  *
* Max Chl Dpth (ft)       *    5.82  * Hydr. Depth (ft)        *    2.39
*    5.33  *    1.46  *
* Conv. Total (cfs)       * 11713.6  * Conv. (cfs)             *   735.4
*  7114.5  *  3863.7  *
* Length Wtd. (ft)        *  324.00  * Wetted Per. (ft)        *   10.76
*   15.78  *  108.12  *
* Min Ch El (ft)          * 1838.71  * Shear (lb/sq ft)        *    1.91
*    4.63  *    1.29  *
* Alpha                   *    2.41  * Stream Power (lb/ft s) *    7.21
*   47.55  *    3.77  *
* Frctn Loss (ft)         *    5.29  * Cum Volume (acre-ft)    *   15.63
*   11.44  *   12.01  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *   12.30
*    3.70  *   10.26  *
************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.
```

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 2.32

INPUT
Description:
Station Elevation Data num= 39

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9908.1 1838.14  9916.4 1837.76  9923.9 1837.55  9927.9 1837.48  9945.7
1837.44
  9948.8 1837.15  9960.4 1835.79  9965.5 1836.09  9970.5 1836.48  9975.6
1836.53
  9980.5 1836.49  9994.7 1833.01   10000 1831.63 10000.7  1831.7 10002.5
1832.23
 10003.5  1832.5 10007.8 1831.74   10009  1831.7 10014.3 1833.01 10020.3
1835.48
 10032.4 1835.17 10034.2 1835.11 10035.6 1835.08 10043.3 1834.88 10047.7
1834.6
 10053.7 1834.41 10061.6 1833.79 10062.4 1833.77 10062.7 1833.72 10071.4
1833.14
 10074.3 1832.74 10078.8 1833.21   10081 1833.65 10081.6 1833.89 10089.9
1837.2
 10090.8 1837.44   10093 1837.57 10106.9 1838.03 10111.1 1838.36
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9908.1    .078  9994.7    .052 10014.3    .078
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9994.7 10014.3              275     275     275             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1837.18  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.94  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1836.24  * Reach Len. (ft)         *  275.00
*  275.00  *  275.00  *
* Crit W.S. (ft)          * 1836.24  * Flow Area (sq ft)       *   23.88
*   79.33  *  136.44  *
* E.G. Slope (ft/ft)      *0.018998  * Area (sq ft)            *   23.88
*   79.33  *  136.44  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   78.17
*  779.81  *  537.02  *
* Top Width (ft)          *  116.91  * Top Width (ft)          *   24.11
*   19.60  *   73.20  *
* Vel Total (ft/s)        *    5.82  * Avg. Vel. (ft/s)        *    3.27
*    9.83  *    3.94  *
* Max Chl Dpth (ft)       *    4.61  * Hydr. Depth (ft)        *    0.99
*    4.05  *    1.86  *
* Conv. Total (cfs)       * 10120.9  * Conv. (cfs)             *   567.1
```

```
*  5657.6  *  3896.1  *
* Length Wtd. (ft)       *  275.00  * Wetted Per. (ft)       *   24.54
*   20.12  *   74.35  *
* Min Ch El (ft)         * 1831.63  * Shear (lb/sq ft)       *    1.15
*    4.68  *    2.18  *
* Alpha                  *    1.79  * Stream Power (lb/ft s) *    3.78
*   45.97  *    8.57  *
* Frctn Loss (ft)        *    4.87  * Cum Volume (acre-ft)   *   15.46
*   10.84  *   10.91  *
* C & E Loss (ft)        *    0.15  * Cum SA (acres)         *   12.18
*    3.57  *    9.59  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.27

INPUT
Description:
Station Elevation Data    num=      40
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9817.1 1833.59  9832.7    1833  9849.9 1832.54  9857.5 1832.48  9863.9
1831.43
    9867  1830.9  9868.8 1831.15    9874 1832.07  9892.7 1831.01  9894.3
1830.9
  9894.7 1830.91  9895.3 1830.89  9913.5 1830.43  9919.5 1830.12  9919.7
1830.11
  9919.9  1830.1  9928.6  1830.1  9928.8  1830.1  9944.7 1829.81  9944.9
1829.85
  9956.8 1831.42    9972  1830.7    9986 1827.25  9986.5 1827.15  9986.9
1827.03
    9996 1825.31  9996.7 1825.23  9998.1 1825.26 10003.6 1825.42 10009.1
1826.25
 10009.5 1826.29 10009.6 1826.36 10012.2 1827.32 10014.8 1828.65 10019.1
1832.81
 10024.2 1836.56 10037.5  1842.5   10039 1843.12 10046.6 1845.02 10048.5
```

```
1845.43

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
  9817.1    .078    9986    .052 10012.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9986 10012.2              244     244     244             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1832.11  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.46  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1830.65  * Reach Len. (ft)         *  244.00
*  244.00  *  244.00  *
* Crit W.S. (ft)          * 1830.65  * Flow Area (sq ft)       *   45.36
*  123.01  *    8.99  *
* E.G. Slope (ft/ft)      *0.016530  * Area (sq ft)            *   45.36
*  123.01  *    8.99  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *  112.85
* 1252.64  *   29.51  *
* Top Width (ft)          *   90.79  * Top Width (ft)          *   59.92
*   26.20  *    4.67  *
* Vel Total (ft/s)        *    7.87  * Avg. Vel. (ft/s)        *    2.49
*   10.18  *    3.28  *
* Max Chl Dpth (ft)       *    5.42  * Hydr. Depth (ft)        *    0.76
*    4.69  *    1.93  *
* Conv. Total (cfs)       * 10850.2  * Conv. (cfs)             *   877.7
*  9743.0  *   229.6  *
* Length Wtd. (ft)        *  244.00  * Wetted Per. (ft)        *   60.40
*   26.65  *    5.80  *
* Min Ch El (ft)          * 1825.23  * Shear (lb/sq ft)        *    0.78
*    4.76  *    1.60  *
* Alpha                   *    1.52  * Stream Power (lb/ft s) *    1.93
*   48.50  *    5.26  *
* Frctn Loss (ft)         *    4.01  * Cum Volume (acre-ft)    *   15.24
*   10.20  *   10.45  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *   11.91
*    3.43  *    9.34  *
**************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
```

not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 2.22

INPUT
Description:
Station Elevation Data num= 37

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9825.8 1828.26  9826.8 1828.23    9836 1827.63  9842.6 1827.38  9850.1
1826.2
  9850.9 1826.03  9852.4 1826.08  9869.8 1826.89  9872.8 1827.03    9878
1827.2
  9880.5 1827.16  9894.6 1827.25    9906 1827.58  9911.6 1827.47  9918.3
1827.2
  9927.4  1827.3    9928 1827.29  9928.2 1827.22  9938.4 1824.27    9941
1823.93
  9945.6 1823.95  9947.9 1824.22  9950.9 1824.31    9962 1825.08  9962.2
1825.1
    9975 1825.12  9981.2 1822.63  9984.9 1821.14  9991.9 1820.97  9994.9
1820.93
 10000.5 1820.61 10000.6 1820.61 10005.7 1821.12 10006.2 1821.17 10008.6
1822.17
 10010.4 1822.56 10022.2 1828.79
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9825.8    .078  9981.2    .052 10010.4    .078
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9981.2 10010.4              264     264     264             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
**********************************************************************
************************
* E.G. Elev (ft)          * 1826.92  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.32  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1825.60  * Reach Len. (ft)         *  264.00
*  264.00  *  264.00  *
* Crit W.S. (ft)          * 1825.60  * Flow Area (sq ft)       *   49.20
*  128.69  *    8.75  *
* E.G. Slope (ft/ft)      *0.016341  * Area (sq ft)            *   49.20
*  128.69  *    8.75  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *  121.59
* 1247.45  *   25.96  *
* Top Width (ft)          *   82.36  * Top Width (ft)          *   47.40
*   29.20  *    5.76  *
* Vel Total (ft/s)        *    7.47  * Avg. Vel. (ft/s)        *    2.47
*    9.69  *    2.97  *
```

```
* Max Chl Dpth (ft)      *    4.99  * Hydr. Depth (ft)       *    1.04
*    4.41  *    1.52  *
* Conv. Total (cfs)      * 10912.8  * Conv. (cfs)            *   951.1
*  9758.5  *   203.1  *
* Length Wtd. (ft)       *  264.00  * Wetted Per. (ft)       *   48.14
*   29.77  *    6.51  *
* Min Ch El (ft)         * 1820.61  * Shear (lb/sq ft)       *    1.04
*    4.41  *    1.37  *
* Alpha                  *    1.52  * Stream Power (lb/ft s) *    2.58
*   42.75  *    4.07  *
* Frctn Loss (ft)        *    4.66  * Cum Volume (acre-ft)   *   14.97
*    9.50  *   10.40  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *   11.61
*    3.27  *    9.31  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.17

INPUT
Description:
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9811.7 1824.15    9823 1823.72  9828.2 1823.78  9850.7 1823.25  9862.3
1823.33
  9865.7  1823.3    9872 1822.02  9872.1    1822  9872.2 1821.99    9890
1820.54
  9893.6 1820.94  9905.9 1821.28  9912.8 1819.85    9919  1818.8  9923.6
1817.75
  9925.1  1817.6  9927.9 1817.94  9931.9 1818.58  9945.6 1819.79  9945.8
1819.79
  9967.8  1819.5  9971.2 1819.56  9983.3 1817.47  9986.4 1816.75  9987.5
1816.61
  9993.6 1815.71  9997.9 1815.52 10000.6 1815.57 10005.1 1815.88 10008.2
1816.24
 10010.2  1816.7 10014.2 1817.67 10021.4 1821.91 10028.8 1825.96   10031
1826.74
 10033.9 1827.62 10036.4 1828.31 10037.9 1829.03

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9811.7    .078  9986.4    .052 10010.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9986.4 10010.2              243     243     243             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1821.50  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.29  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1820.21  * Reach Len. (ft)         *  243.00
*  243.00  *  243.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   91.85
*  101.38  *   17.55  *
* E.G. Slope (ft/ft)      *0.019148  * Area (sq ft)            *   91.85
*  101.38  *   17.55  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *  274.79
* 1048.62  *   71.59  *
* Top Width (ft)          *  107.43  * Top Width (ft)          *   75.32
*   23.80  *    8.31  *
* Vel Total (ft/s)        *    6.62  * Avg. Vel. (ft/s)        *    2.99
*   10.34  *    4.08  *
* Max Chl Dpth (ft)       *    4.69  * Hydr. Depth (ft)        *    1.22
*    4.26  *    2.11  *
* Conv. Total (cfs)       * 10081.3  * Conv. (cfs)             *  1985.9
*  7578.1  *   517.3  *
* Length Wtd. (ft)        *  243.00  * Wetted Per. (ft)        *   75.96
*   23.96  *    9.11  *
* Min Ch El (ft)          * 1815.52  * Shear (lb/sq ft)        *    1.45
*    5.06  *    2.30  *
* Alpha                   *    1.90  * Stream Power (lb/ft s) *    4.32
*   52.31  *    9.39  *
* Frctn Loss (ft)         *    4.91  * Cum Volume (acre-ft)    *   14.55
*    8.80  *   10.32  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   11.24
*    3.11  *    9.27  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.13

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
```

```
********
  9874.5  1820.5  9886.3  1820.1  9891.3 1820.29  9898.8  1820.2  9906.2
1819.79
  9909.8 1819.59  9911.2 1819.51  9914.6 1819.25  9921.5 1818.78  9924.4
1818.48
  9944.8 1817.32  9946.7  1816.8  9958.3 1812.54  9964.9 1812.88  9968.8
1813.48
  9973.5 1813.32  9978.9  1813.1  9985.4 1812.48    9991  1811.7  9993.4
1810.67
  9995.5 1810.73  9997.9 1810.76 10001.1  1810.6 10002.6 1810.54   10004
1810.88
 10008.2 1811.68 10014.5 1813.19 10016.3 1813.42 10029.5 1815.34 10037.5
1815.82
 10046.1 1816.22 10064.2 1818.99 10065.3 1819.62

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9874.5    .078    9991    .052 10008.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9991 10008.2              250     250     250             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1816.58  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.27  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1815.31  * Reach Len. (ft)         *  250.00
*  250.00  *  250.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   90.45
*   75.75  *   33.90  *
* E.G. Slope (ft/ft)      *0.021355  * Area (sq ft)            *   90.45
*   75.75  *   33.90  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *  427.68
*  839.03  *  128.29  *
* Top Width (ft)          *   78.49  * Top Width (ft)          *   40.23
*   17.20  *   21.06  *
* Vel Total (ft/s)        *    6.97  * Avg. Vel. (ft/s)        *    4.73
*   11.08  *    3.78  *
* Max Chl Dpth (ft)       *    4.77  * Hydr. Depth (ft)        *    2.25
*    4.40  *    1.61  *
* Conv. Total (cfs)       *  9546.0  * Conv. (cfs)             *  2926.6
*  5741.5  *   877.9  *
* Length Wtd. (ft)        *  250.00  * Wetted Per. (ft)        *   40.87
*   17.53  *   21.39  *
* Min Ch El (ft)          * 1810.54  * Shear (lb/sq ft)        *    2.95
*    5.76  *    2.11  *
* Alpha                   *    1.69  * Stream Power (lb/ft s) *   13.95
*   63.80  *    8.00  *
* Frctn Loss (ft)         *    4.50  * Cum Volume (acre-ft)    *   14.04
*    8.30  *   10.18  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   10.92
*    3.00  *    9.19  *
************************************************************************
************************
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.08

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9964.4 1814.15  9965.4 1814.05  9971.3 1813.18  9978.7 1813.59  9980.8
1813.68
  9989.6 1807.06  9991.2 1805.74  9992.2 1805.73 10000.2 1805.68   10001
1805.61
 10006.6 1806.03 10009.7 1806.27 10012.1 1806.51 10018.2 1807.02 10027.8
1810.21
 10030.7 1811.51 10043.6 1811.71 10051.2 1811.78 10064.1  1812.5   10070
1812.93
 10072.8 1812.43 10081.9 1810.59 10089.8  1810.4 10098.3 1809.97 10108.2
1810.29
 10111.8 1810.47 10115.6 1810.75 10120.7 1810.68 10129.1 1810.49 10154.9
1812.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9964.4    .078  9989.6    .052 10018.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.6 10018.2              249     249     249             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1812.06  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.35  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1810.71  * Reach Len. (ft)         *  249.00
*  249.00  *  249.00  *
* Crit W.S. (ft)          * 1810.35  * Flow Area (sq ft)       *    8.85
*  131.90  *   35.31  *
* E.G. Slope (ft/ft)      *0.015376  * Area (sq ft)            *    8.85
*  131.90  *   35.31  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   26.88
* 1278.90  *   89.22  *
* Top Width (ft)          *   91.75  * Top Width (ft)          *    4.85
*   28.60  *   58.30  *
* Vel Total (ft/s)        *    7.92  * Avg. Vel. (ft/s)        *    3.04
*    9.70  *    2.53  *
* Max Chl Dpth (ft)       *    5.10  * Hydr. Depth (ft)        *    1.82
*    4.61  *    0.61  *
```

```
* Conv. Total (cfs)       * 11250.1  * Conv. (cfs)            *   216.8
* 10313.8  *   719.5  *
* Length Wtd. (ft)        *  249.00  * Wetted Per. (ft)       *    6.07
*   29.14  *   58.98  *
* Min Ch El (ft)          * 1805.61  * Shear (lb/sq ft)       *    1.40
*    4.35  *    0.57  *
* Alpha                   *    1.38  * Stream Power (lb/ft s) *    4.25
*   42.13  *    1.45  *
* Frctn Loss (ft)         *    4.43  * Cum Volume (acre-ft)   *   13.75
*    7.71  *    9.98  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)         *   10.79
*    2.87  *    8.96  *
***************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 2.03

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9880.3 1810.79  9908.3 1809.71  9927.5 1809.04  9944.3 1809.07  9960.4
1809.63
  9965.9 1809.15  9971.1 1808.72  9979.3 1806.05  9983.2 1804.84  9984.6
1804.52
    9988 1803.52  9993.1 1802.32  9999.2 1802.62   10003 1802.72 10010.3
1802.66
 10012.4 1802.78   10014 1803.01 10020.6 1803.48 10025.1 1804.38 10035.3
1806.3
 10045.2    1807 10056.8 1806.53 10057.7 1806.51 10065.4 1805.27 10070.4
1804.7
 10076.4  1804.1 10084.6 1804.88   10097 1805.82 10100.3 1805.85 10100.6
1805.88
 10102.9 1805.95 10112.4 1806.51 10130.8 1807.09 10136.2  1807.3 10146.7
1807.84
 10158.1 1808.48

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9880.3    .078    9988    .052 10020.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9988 10020.6              495     495     495             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
```

```
************************
* E.G. Elev (ft)          * 1807.55  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.17  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1806.38  * Reach Len. (ft)         *  495.00
*  495.00  *  495.00  *
* Crit W.S. (ft)          * 1806.38  * Flow Area (sq ft)       *   14.18
*  116.35  *   76.95  *
* E.G. Slope (ft/ft)      *0.020779  * Area (sq ft)            *   14.18
*  116.35  *   76.95  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              *   48.76
* 1115.12  *  231.12  *
* Top Width (ft)          *  109.67  * Top Width (ft)          *    9.70
*   32.60  *   67.37  *
* Vel Total (ft/s)        *    6.72  * Avg. Vel. (ft/s)        *    3.44
*    9.58  *    3.00  *
* Max Chl Dpth (ft)       *    4.06  * Hydr. Depth (ft)        *    1.46
*    3.57  *    1.14  *
* Conv. Total (cfs)       *  9677.5  * Conv. (cfs)             *   338.3
*  7735.9  *  1603.3  *
* Length Wtd. (ft)        *  495.00  * Wetted Per. (ft)        *   10.12
*   32.78  *   67.88  *
* Min Ch El (ft)          * 1802.32  * Shear (lb/sq ft)        *    1.82
*    4.60  *    1.47  *
* Alpha                   *    1.67  * Stream Power (lb/ft s) *    6.25
*   44.12  *    4.42  *
* Frctn Loss (ft)         *    6.71  * Cum Volume (acre-ft)    *   13.69
*    7.00  *    9.66  *
* C & E Loss (ft)         *    0.51  * Cum SA (acres)          *   10.75
*    2.69  *    8.60  *
*************************************************************************
************************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 1.94

```
INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9750.6 1797.48  9770.1 1796.76  9774.7 1796.54  9781.3 1795.56  9790.7
1794.69
  9798.3 1794.56  9801.6 1794.46  9804.6 1794.26  9810.3 1793.79  9826.8
1794.84
  9828.4 1794.93  9834.9 1794.81  9836.3 1794.84  9850.7 1794.99  9878.7
1795.08
    9959 1796.21  9980.3 1797.02  9983.6 1796.47  9987.9 1795.76  9994.9
1794.96
   10001    1795 10003.7 1794.83 10016.4 1795.18 10021.1  1795.5 10024.8
1795.7
 10030.9 1795.76   10042 1796.27 10050.3 1796.75 10054.8 1796.71 10079.9
1796.92
 10113.5 1797.53 10187.1  1799.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***************************************************
  9750.6    .078  9987.9    .052 10030.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.9 10030.9              357     357     357             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)          * 1797.31  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1797.16  * Reach Len. (ft)         *  357.00
*  357.00  *  357.00  *
* Crit W.S. (ft)          * 1796.27  * Flow Area (sq ft)       *  383.92
*   82.18  *   30.01  *
* E.G. Slope (ft/ft)      *0.009528  * Area (sq ft)            *  383.92
*   82.18  *   30.01  *
* Q Total (cfs)           * 1395.00  * Flow (cfs)              * 1007.97
*  352.64  *   34.39  *
* Top Width (ft)          *  333.48  * Top Width (ft)          *  228.51
*   43.00  *   61.97  *
* Vel Total (ft/s)        *    2.81  * Avg. Vel. (ft/s)        *    2.63
*    4.29  *    1.15  *
* Max Chl Dpth (ft)       *    3.37  * Hydr. Depth (ft)        *    1.68
*    1.91  *    0.48  *
* Conv. Total (cfs)       * 14291.7  * Conv. (cfs)             * 10326.5
*  3612.8  *   352.4  *
* Length Wtd. (ft)        *  357.00  * Wetted Per. (ft)        *  228.83
*   43.07  *   62.00  *
* Min Ch El (ft)          * 1794.83  * Shear (lb/sq ft)        *    1.00
*    1.13  *    0.29  *
* Alpha                   *    1.22  * Stream Power (lb/ft s) *    2.62
*    4.87  *    0.33  *
```

```
* Frctn Loss (ft)          *    6.50  * Cum Volume (acre-ft)    *   11.43
*    5.87  *    9.05  *
* C & E Loss (ft)          *    0.06  * Cum SA (acres)          *    9.39
*    2.26  *    7.87  *
**********************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 1.87

INPUT
Description:
Station Elevation Data num= 39

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9793.8  1792.2  9825.9 1791.48  9843.5 1790.89  9933.5 1788.97  9950.1
1788.8
  9954.1 1788.71  9968.5 1788.81  9969.1 1788.82    9981 1789.23  9983.3
1789.25
  9983.8 1789.24  9989.2 1789.14    9993  1789.3  9994.2 1789.37  9996.4
1789.16
 10001.1 1788.81 10003.5 1789.15 10004.4 1789.24 10005.4 1789.19 10012.3
1789.54
 10013.7 1789.65 10018.2 1789.83   10038 1789.34 10054.9  1788.6 10056.2
1788.57
 10057.1 1788.59 10068.8 1788.76 10073.1 1788.94 10080.9 1789.35 10085.1
1789.34
 10092.7 1788.48 10094.8 1788.48 10098.3 1788.66 10102.8 1789.11 10107.2
1789.03
 10113.2  1789.4 10140.3 1790.25 10240.1 1793.01 10262.9 1793.47
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
**************************************************
  9793.8    .078  9994.2    .052 10012.3    .078
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
        9994.2 10012.3              155     155     155             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
**********************************************************************
************************
* E.G. Elev (ft)          * 1790.75  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.35  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
```

```
* W.S. Elev (ft)          * 1790.40  * Reach Len. (ft)        *  155.00
*  155.00  *  155.00  *
* Crit W.S. (ft)          * 1790.21  * Flow Area (sq ft)      *  135.68
*   21.90  *  146.53  *
* E.G. Slope (ft/ft)      *0.047779  * Area (sq ft)           *  135.68
*   21.90  *  146.53  *
* Q Total (cfs)           * 1393.00  * Flow (cfs)             *  588.59
*  155.00  *  649.41  *
* Top Width (ft)          *  278.96  * Top Width (ft)         *  127.57
*   18.10  *  133.30  *
* Vel Total (ft/s)        *    4.58  * Avg. Vel. (ft/s)       *    4.34
*    7.08  *    4.43  *
* Max Chl Dpth (ft)       *    1.92  * Hydr. Depth (ft)       *    1.06
*    1.21  *    1.10  *
* Conv. Total (cfs)       *  6372.8  * Conv. (cfs)            *  2692.8
*   709.1  *  2971.0  *
* Length Wtd. (ft)        *  155.00  * Wetted Per. (ft)       *  127.60
*   18.16  *  133.45  *
* Min Ch El (ft)          * 1788.81  * Shear (lb/sq ft)       *    3.17
*    3.60  *    3.28  *
* Alpha                   *    1.08  * Stream Power (lb/ft s) *   13.76
*   25.46  *   14.52  *
* Frctn Loss (ft)         *    3.99  * Cum Volume (acre-ft)   *    9.30
*    5.44  *    8.33  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)         *    7.93
*    2.01  *    7.07  *
*************************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 1.84

INPUT
Description:
Station Elevation Data num= 63

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9712.6 1787.39  9759.4 1786.45  9811.6 1785.21  9812.3  1785.2  9860.7
1784.29
  9871.2 1784.35  9873.9 1784.33    9875 1784.31  9876.4 1784.26    9883
1784.23
  9888.8 1784.48  9890.6 1784.54  9892.4 1784.65  9898.8 1784.87  9910.9
1784.7
  9911.1  1784.7  9917.4  1784.6  9920.5 1784.67  9926.9 1785.07  9931.9
1785.15
  9937.1 1785.32  9951.7 1786.08  9955.6 1786.31  9959.3 1786.19  9973.2
1785.36
  9977.5 1785.34  9984.7 1785.16  9992.7 1785.05  9997.8 1785.14 10000.1
```

```
1785.08
 10003.4 1785.32 10005.7 1785.42 10006.7  1785.4 10010.8 1784.91 10013.5
1784.67
 10017.2  1784.2 10024.4 1785.58 10025.8 1785.89 10027.9  1785.8 10044.2
1785.51
 10051.5 1785.12 10055.9 1785.06 10064.3 1785.53 10068.2 1785.13   10072
1784.97
 10075.8  1785.1 10077.8 1785.06 10081.4 1785.07 10084.8 1785.37 10092.3
1786.19
 10092.6 1786.18 10107.4 1785.58   10109 1785.63 10120.1 1786.23 10125.5
1786.01
 10128.9 1785.86 10130.5  1785.8 10132.9 1786.03 10140.3 1786.62 10147.4
1786.83
 10160.9 1786.92 10166.1 1787.05 10170.4 1787.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9712.6    .078  9977.5    .052 10024.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9977.5 10024.4               211     211     211             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1786.68  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1786.51  * Reach Len. (ft)         *  211.00
*  211.00  *  211.00  *
* Crit W.S. (ft)          * 1785.98  * Flow Area (sq ft)       *  293.58
*   68.22  *  100.32  *
* E.G. Slope (ft/ft)      *0.016038  * Area (sq ft)            *  293.58
*   68.22  *  100.32  *
* Q Total (cfs)           * 1393.00  * Flow (cfs)              *  855.68
*  315.97  *  221.35  *
* Top Width (ft)          *  382.36  * Top Width (ft)          *  220.97
*   46.90  *  114.49  *
* Vel Total (ft/s)        *    3.01  * Avg. Vel. (ft/s)        *    2.91
*    4.63  *    2.21  *
* Max Chl Dpth (ft)       *    2.31  * Hydr. Depth (ft)        *    1.33
*    1.45  *    0.88  *
* Conv. Total (cfs)       * 10999.7  * Conv. (cfs)             *  6756.8
*  2495.0  *  1747.9  *
* Length Wtd. (ft)        *  211.00  * Wetted Per. (ft)        *  221.08
*   47.12  *  114.70  *
* Min Ch El (ft)          * 1784.20  * Shear (lb/sq ft)        *    1.33
*    1.45  *    0.88  *
* Alpha                   *    1.19  * Stream Power (lb/ft s) *    3.88
*    6.71  *    1.93  *
* Frctn Loss (ft)         *    3.58  * Cum Volume (acre-ft)    *    8.53
*    5.28  *    7.89  *
* C & E Loss (ft)         *    0.20  * Cum SA (acres)          *    7.31
*    1.90  *    6.63  *
**********************************************************************
***********************
```

```
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 1.8

INPUT
Description:
Station Elevation Data    num=      43
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9824.8 1782.39  9826.5 1782.36  9848.6 1781.71  9852.6 1781.84  9860.9
1781.9
  9864.8 1781.63  9876.5 1781.59  9877.8 1781.55  9879.7 1781.52  9889.6
1781.1
    9898 1780.86  9906.9 1780.51  9910.2 1780.53  9912.5 1780.55  9919.4
1780.42
    9943 1782.24  9943.7 1782.27  9956.3 1781.41  9956.6  1781.4    9971
1780.82
  9971.4 1780.75  9972.9 1780.69  9977.4 1780.08  9987.6 1779.91    9988
1779.9
  9988.2 1779.88  9993.2 1779.41  9996.7 1778.96 10000.6 1778.39 10002.7
1778.38
 10007.1 1778.62 10008.7 1778.37 10010.3 1778.56 10015.5 1778.06 10020.4
1778.6
 10024.3    1779 10030.1 1779.95 10036.6 1781.01 10037.5    1781 10039.6
1781.04
 10060.9 1782.11 10075.4 1782.07 10114.3 1783.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9824.8    .078  9996.7    .052 10024.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9996.7 10024.3              283     283     283             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)          * 1782.90  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.83  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1782.07  * Reach Len. (ft)         *  283.00
*  283.00  *  283.00  *
* Crit W.S. (ft)          * 1782.07  * Flow Area (sq ft)       *  151.64
*   98.82  *   39.13  *
* E.G. Slope (ft/ft)      *0.017998  * Area (sq ft)            *  151.64
*   98.82  *   39.13  *
```

```
* Q Total (cfs)          * 1393.00  * Flow (cfs)             *  403.84
*  883.44  *  105.72  *
* Top Width (ft)         *  218.26  * Top Width (ft)         *  154.55
*   27.60  *   36.11  *
* Vel Total (ft/s)       *    4.81  * Avg. Vel. (ft/s)       *    2.66
*    8.94  *    2.70  *
* Max Chl Dpth (ft)      *    4.01  * Hydr. Depth (ft)       *    0.98
*    3.58  *    1.08  *
* Conv. Total (cfs)      * 10383.3  * Conv. (cfs)            *  3010.2
*  6585.0  *   788.0  *
* Length Wtd. (ft)       *  283.00  * Wetted Per. (ft)       *  154.79
*   27.75  *   36.30  *
* Min Ch El (ft)         * 1778.06  * Shear (lb/sq ft)       *    1.10
*    4.00  *    1.21  *
* Alpha                  *    2.30  * Stream Power (lb/ft s) *    2.93
*   35.77  *    3.27  *
* Frctn Loss (ft)        *    3.97  * Cum Volume (acre-ft)   *    7.45
*    4.88  *    7.55  *
* C & E Loss (ft)        *    0.12  * Cum SA (acres)         *    6.40
*    1.72  *    6.26  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 1.75

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9744.8 1778.31  9746.4 1778.15  9750.2 1778.05  9756.2 1777.37  9763.9
1777.02
  9776.8 1777.11    9795 1776.45  9796.4 1776.41  9797.8 1776.38  9809.2
1776.04
  9820.3 1775.09  9821.4 1775.06  9822.6 1774.98  9836.4 1775.25  9849.6
1774.87
  9854.1 1774.71  9862.6 1774.67  9878.5 1774.47  9890.4 1774.51  9899.2
1774.62
  9914.3  1774.7  9935.5 1774.51  9963.3 1774.42  9972.5  1773.2  9983.7
1771.96
```

```
  9985.6 1771.55  9987.9 1771.36  9999.8 1770.51 10008.3 1771.94   10018
1774.18
 10019.8 1774.13 10041.6  1773.8 10062.4 1773.74   10223 1777.73

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9744.8    .078  9983.7    .052 10008.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.7 10008.3              275     275     275             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1775.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.59  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1775.36  * Reach Len. (ft)         *  275.00
*  275.00  *  275.00  *
* Crit W.S. (ft)          * 1775.36  * Flow Area (sq ft)       *  143.59
*  103.65  *  140.84  *
* E.G. Slope (ft/ft)      *0.011218  * Area (sq ft)            *  143.59
*  103.65  *  140.84  *
* Q Total (cfs)           * 1393.00  * Flow (cfs)              *  262.25
*  813.88  *  316.87  *
* Top Width (ft)          *  310.49  * Top Width (ft)          *  166.56
*   24.60  *  119.33  *
* Vel Total (ft/s)        *    3.59  * Avg. Vel. (ft/s)        *    1.83
*    7.85  *    2.25  *
* Max Chl Dpth (ft)       *    4.85  * Hydr. Depth (ft)        *    0.86
*    4.21  *    1.18  *
* Conv. Total (cfs)       * 13152.1  * Conv. (cfs)             *  2476.1
*  7684.3  *  2991.8  *
* Length Wtd. (ft)        *  275.00  * Wetted Per. (ft)        *  166.74
*   24.80  *  119.60  *
* Min Ch El (ft)          * 1770.51  * Shear (lb/sq ft)        *    0.60
*    2.93  *    0.82  *
* Alpha                   *    2.93  * Stream Power (lb/ft s) *    1.10
*   22.98  *    1.86  *
* Frctn Loss (ft)         *    3.83  * Cum Volume (acre-ft)    *    6.50
*    4.22  *    6.97  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)          *    5.36
*    1.55  *    5.76  *
************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
```

not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 1.7

INPUT
Description:
Station Elevation Data num= 48

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9821.6	1771.11	9833.2	1771.49	9833.5	1771.5	9834.1	1771.45	9839.5	1771.07
9855	1769.95	9857.3	1769.9	9870.9	1769.53	9876.8	1769.11	9877.7	1769.12
9879.6	1769.16	9895.3	1769.49	9898.1	1769.57	9901	1769.66	9920.3	1769.73
9922.1	1769.68	9925.7	1769.33	9936	1768.43	9950.7	1769.12	9951.4	1769.2
9956	1769.26	9962.8	1769.33	9967.2	1769.29	9971.7	1769.17	9974.9	1769.16
9982.9	1768.38	9985.1	1768.22	9986.7	1768.2	9987.6	1768.04	9998.1	1767.17
10000.2	1766.93	10005.1	1767.67	10008.8	1768.22	10012	1768.72	10030.7	1768.56
10033.7	1768.56	10062.1	1768.95	10092.6	1769.46	10113.6	1770.16	10130.3	1770.4
10141.1	1770.2	10144.9	1770.18	10146.2	1770.12	10147.6	1770.11	10156.2	1770.14
10182.1	1771.03	10184.1	1771.09	10188.3	1771.18				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9821.6	.078	9982.9	.052	10008.8	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.9	10008.8	361	361	361	.3	.5

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1770.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.	0.078	0.052	0.078
W.S. Elev (ft)	1770.49	Reach Len. (ft)	361.00	361.00	361.00
Crit W.S. (ft)	1770.31	Flow Area (sq ft)	153.33	73.05	161.53
E.G. Slope (ft/ft)	0.017767	Area (sq ft)	153.33	73.05	161.53
Q Total (cfs)	1393.00	Flow (cfs)	422.81	553.12	417.06

```
* Top Width (ft)          *  318.68  * Top Width (ft)          *  135.32
*   25.90  *  157.46  *
* Vel Total (ft/s)        *    3.59  * Avg. Vel. (ft/s)        *    2.76
*    7.57  *    2.58  *
* Max Chl Dpth (ft)       *    3.56  * Hydr. Depth (ft)        *    1.13
*    2.82  *    1.03  *
* Conv. Total (cfs)       * 10450.7  * Conv. (cfs)             *  3172.1
*  4149.7  *  3128.9  *
* Length Wtd. (ft)        *  361.00  * Wetted Per. (ft)        *  135.48
*   26.07  *  157.53  *
* Min Ch El (ft)          * 1766.93  * Shear (lb/sq ft)        *    1.26
*    3.11  *    1.14  *
* Alpha                   *    2.10  * Stream Power (lb/ft s) *    3.46
*   23.54  *    2.94  *
* Frctn Loss (ft)         *    8.25  * Cum Volume (acre-ft)    *    5.56
*    3.66  *    6.01  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *    4.41
*    1.39  *    4.88  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 1.63

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9817.4 1764.16  9865.6 1763.53  9886.2 1763.12  9894.7 1762.72  9903.5
1762.56
  9932.6 1761.88  9948.3 1761.41  9958.3 1759.85  9965.7 1758.52  9983.6
1759.51
  9983.8 1759.52  9985.6 1759.93  9989.1 1759.82    9996 1759.19  9999.9
1758.18
 10000.4 1758.06 10007.5  1759.8 10013.9 1761.29 10014.2 1761.28 10021.3
1760.68
   10022 1760.64 10025.3 1760.49 10026.6 1760.35 10033.3 1761.07 10036.1
1761.4
 10047.7 1761.14 10064.1 1760.51 10108.2 1760.58 10113.8 1760.93 10124.4
1762.55

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9817.4    .078  9989.1    .052 10007.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9989.1 10007.5              358     358     358             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1762.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.71  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1761.86  * Reach Len. (ft)         *  358.00
*  358.00  *  358.00  *
* Crit W.S. (ft)          * 1761.86  * Flow Area (sq ft)       *   97.39
*   51.22  *  121.57  *
* E.G. Slope (ft/ft)      *0.030504  * Area (sq ft)            *   97.39
*   51.22  *  121.57  *
* Q Total (cfs)           * 1393.00  * Flow (cfs)              *  468.68
*  498.94  *  425.38  *
* Top Width (ft)          *  186.43  * Top Width (ft)          *   55.67
*   18.40  *  112.35  *
* Vel Total (ft/s)        *    5.16  * Avg. Vel. (ft/s)        *    4.81
*    9.74  *    3.50  *
* Max Chl Dpth (ft)       *    3.80  * Hydr. Depth (ft)        *    1.75
*    2.78  *    1.08  *
* Conv. Total (cfs)       *  7975.8  * Conv. (cfs)             *  2683.5
*  2856.7  *  2435.6  *
* Length Wtd. (ft)        *  358.00  * Wetted Per. (ft)        *   55.99
*   18.78  *  112.72  *
* Min Ch El (ft)          * 1758.06  * Shear (lb/sq ft)        *    3.31
*    5.19  *    2.05  *
* Alpha                   *    1.71  * Stream Power (lb/ft s) *   15.94
*   50.59  *    7.19  *
* Frctn Loss (ft)         *    6.14  * Cum Volume (acre-ft)    *    4.52
*    3.15  *    4.84  *
* C & E Loss (ft)         *    0.26  * Cum SA (acres)          *    3.62
*    1.20  *    3.76  *
*************************************************************************
************************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T10B

```
REACH: NRW55T10B          RS: 1.56

INPUT
Description:
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9763.7 1756.17  9767.3 1756.12  9784.9 1755.74  9814.8  1755.5    9844
1755.08
  9877.3 1754.41  9880.6 1754.29  9895.6 1754.15  9899.6 1753.43  9902.8
1753.22
  9914.4 1752.62  9922.3  1751.5  9923.1 1751.36  9925.1 1751.52    9940
1752.76
  9949.9 1753.32    9960 1754.06  9973.9 1753.71  9988.4 1753.53  9999.7
1751.8
 10011.9 1754.21 10012.5 1754.29 10014.3 1754.25 10053.1 1753.63 10056.2
1753.45
 10061.8  1753.4 10074.2 1753.84 10078.6 1753.87 10083.5  1753.8 10090.5
1753.84
   10102 1753.78   10119 1754.58 10128.2 1754.89 10142.9 1754.81   10146
1754.9
 10160.5 1755.46 10179.3 1756.07 10190.2 1756.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9763.7    .078  9988.4    .052 10011.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.4 10011.9              293     293     293             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1755.53  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1755.35  * Reach Len. (ft)         *  293.00
*  293.00  *  293.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  253.64
*   58.94  *  174.57  *
* E.G. Slope (ft/ft)      *0.010964  * Area (sq ft)            *  253.64
*   58.94  *  174.57  *
* Q Total (cfs)           * 1393.00  * Flow (cfs)              *  678.15
*  322.20  *  392.65  *
* Top Width (ft)          *  332.39  * Top Width (ft)          *  163.15
*   23.50  *  145.74  *
* Vel Total (ft/s)        *    2.86  * Avg. Vel. (ft/s)        *    2.67
*    5.47  *    2.25  *
* Max Chl Dpth (ft)       *    3.99  * Hydr. Depth (ft)        *    1.55
*    2.51  *    1.20  *
* Conv. Total (cfs)       * 13303.5  * Conv. (cfs)             *  6476.5
*  3077.1  *  3749.9  *
* Length Wtd. (ft)        *  293.00  * Wetted Per. (ft)        *  163.44
*   23.87  *  145.80  *
* Min Ch El (ft)          * 1751.80  * Shear (lb/sq ft)        *    1.06
```

```
*    1.69  *    0.82  *
* Alpha                  *    1.45  * Stream Power (lb/ft s) *    2.84
*    9.24  *    1.84  *
* Frctn Loss (ft)        *    5.67  * Cum Volume (acre-ft)   *    3.08
*    2.70  *    3.62  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *    2.72
*    1.03  *    2.70  *
***************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T10B
REACH: NRW55T10B RS: 1.51

INPUT
Description:
Station Elevation Data num= 35

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9639.4 1754.27  9680.7 1753.36  9735.9 1751.65  9797.4 1749.58  9807.7
1749.37
  9820.4 1749.15  9824.9 1748.76    9834  1747.8  9840.5 1748.23  9846.7
1748.7
  9854.7 1748.94  9874.4 1748.59  9877.2 1748.56  9885.6 1746.98  9889.7
1745.97
  9894.8 1745.95  9903.7  1745.8  9918.7 1748.91  9920.8 1748.88  9944.3
1748.09
  9960.9 1748.25  9962.3 1748.34  9968.4 1748.54  9974.8 1748.81  9978.2
1748.64
  9981.5 1748.55  9988.5  1748.4  9990.7 1748.23  9995.6 1747.94  9998.7
1747.28
 10000.9 1747.59 10008.2  1748.5 10015.7 1748.32 10023.3 1748.26 10410.3
1756.17
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9639.4    .078  9974.8    .052 10008.2    .078
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
        9974.8 10008.2              294     294     294             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
***************************************************************************
************************
* E.G. Elev (ft)         * 1749.80  * Element                 *  Left OB
*  Channel * Right OB *
```

```
* Vel Head (ft)          *    0.38  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)         * 1749.42  * Reach Len. (ft)         *  294.00
*  294.00  *  294.00  *
* Crit W.S. (ft)         * 1749.24  * Flow Area (sq ft)       *  212.19
*   40.74  *   49.19  *
* E.G. Slope (ft/ft)     *0.042824  * Area (sq ft)            *  212.19
*   40.74  *   49.19  *
* Q Total (cfs)          * 1393.00  * Flow (cfs)              *  968.42
*  274.09  *  150.50  *
* Top Width (ft)         *  274.95  * Top Width (ft)          *  169.63
*   33.40  *   71.93  *
* Vel Total (ft/s)       *    4.61  * Avg. Vel. (ft/s)        *    4.56
*    6.73  *    3.06  *
* Max Chl Dpth (ft)      *    3.62  * Hydr. Depth (ft)        *    1.25
*    1.22  *    0.68  *
* Conv. Total (cfs)      *  6731.4  * Conv. (cfs)             *  4679.7
*  1324.5  *   727.2  *
* Length Wtd. (ft)       *  294.00  * Wetted Per. (ft)        *  170.35
*   33.57  *   71.94  *
* Min Ch El (ft)         * 1747.28  * Shear (lb/sq ft)        *    3.33
*    3.24  *    1.83  *
* Alpha                  *    1.15  * Stream Power (lb/ft s) *   15.20
*   21.83  *    5.59  *
* Frctn Loss (ft)        *    4.47  * Cum Volume (acre-ft)    *    1.51
*    2.36  *    2.87  *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)          *    1.60
*    0.84  *    1.97  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 1.45

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9464  1754.5    9523 1753.67  9641.4 1751.14  9743.5 1748.52  9901.3
1744.81
    9931 1744.28  9952.4 1743.81    9982 1744.24  9986.8 1743.34  9993.7
1742.06
    9998 1741.22 10000.2 1741.11 10006.5 1740.76 10017.8 1742.73 10018.2
1742.8
   10019 1742.78 10052.1  1742.5 10082.4 1742.58 10251.6 1745.72 10270.4
1746.63
   10278 1746.76 10314.8 1747.16 10334.6 1747.91 10349.4 1747.89 10766.2
```

1756.44

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9464	.078	9986.8	.052	10018.2	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.8	10018.2	313	313	313	.3	.5

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1745.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.078	0.052	0.078
W.S. Elev (ft)	1745.02	Reach Len. (ft)	313.00	313.00	313.00
Crit W.S. (ft)	1744.36	Flow Area (sq ft)	71.59	102.78	316.79
E.G. Slope (ft/ft)	0.007706	Area (sq ft)	71.59	102.78	316.79
Q Total (cfs)	1393.00	Flow (cfs)	99.37	563.72	729.91
Top Width (ft)	321.84	Top Width (ft)	94.58	31.40	195.87
Vel Total (ft/s)	2.84	Avg. Vel. (ft/s)	1.39	5.48	2.30
Max Chl Dpth (ft)	4.26	Hydr. Depth (ft)	0.76	3.27	1.62
Conv. Total (cfs)	15868.0	Conv. (cfs)	1131.9	6421.5	8314.6
Length Wtd. (ft)	313.00	Wetted Per. (ft)	94.68	31.79	195.89
Min Ch El (ft)	1740.76	Shear (lb/sq ft)	0.36	1.56	0.78
Alpha	1.88	Stream Power (lb/ft s)	0.50	8.53	1.79
Frctn Loss (ft)	4.21	Cum Volume (acre-ft)	0.55	1.88	1.64
C & E Loss (ft)	0.37	Cum SA (acres)	0.71	0.62	1.07

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

```
RIVER: NRW55T10B
REACH: NRW55T10B          RS: 1.39

INPUT
Description:
Station Elevation Data    num=      52
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9678.4 1746.22  9839.2 1742.97  9933.5    1740  9934.2 1739.97    9948
1739.59
  9974.1 1739.27    9981 1738.11    9984 1737.59  9988.2 1736.86  9998.1
1734.88
 10000.6 1734.46 10001.8 1734.56 10007.3 1735.38 10011.2  1736.5 10013.9
1737.03
 10025.8  1736.9   10031 1737.61 10038.1 1739.31 10048.3 1739.49 10050.3
1739.58
 10065.2  1739.9 10068.4 1739.88 10068.9 1739.88 10085.4 1739.82 10099.6
1739.88
 10104.1 1739.97 10116.5 1740.06 10117.8 1740.09 10119.7 1740.17   10136
1740.3
 10136.9  1740.3   10137  1740.3 10155.6 1740.26   10175 1740.78 10186.7
1741.01
 10191.4 1741.06 10207.7 1741.48 10215.8  1740.6   10217 1740.41 10224.6
1740.8
 10227.2 1740.75 10231.4 1740.62 10234.9 1740.55 10244.2 1741.43 10245.1
1741.49
 10263.1 1740.69 10290.2 1741.04   10301 1741.07 10379.4 1742.55 10387.9
1742.8
 10405.7 1743.64   10419 1744.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9678.4    .078    9984    .052   10031    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9984   10031              316     316     316             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1740.68  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.48  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1739.20  * Reach Len. (ft)         *  316.00
*  316.00  *  316.00  *
* Crit W.S. (ft)          * 1739.20  * Flow Area (sq ft)       *    7.57
*  137.42  *    5.27  *
* E.G. Slope (ft/ft)      *0.029091  * Area (sq ft)            *    7.57
*  137.42  *    5.27  *
* Q Total (cfs)           * 1393.00  * Flow (cfs)              *   20.98
* 1357.60  *   14.42  *
* Top Width (ft)          *   63.11  * Top Width (ft)          *    9.48
*   47.00  *    6.63  *
* Vel Total (ft/s)        *    9.27  * Avg. Vel. (ft/s)        *    2.77
```

```
*    9.88  *    2.74  *
* Max Chl Dpth (ft)      *    4.74  * Hydr. Depth (ft)       *    0.80
*    2.92  *    0.79  *
* Conv. Total (cfs)      *  8167.2  * Conv. (cfs)            *   123.0
*  7959.7  *    84.5  *
* Length Wtd. (ft)       *  316.00  * Wetted Per. (ft)       *    9.61
*   47.62  *    6.82  *
* Min Ch El (ft)         * 1734.46  * Shear (lb/sq ft)       *    1.43
*    5.24  *    1.40  *
* Alpha                  *    1.11  * Stream Power (lb/ft s) *    3.96
*   51.78  *    3.84  *
* Frctn Loss (ft)        *    5.65  * Cum Volume (acre-ft)   *    0.27
*    1.01  *    0.48  *
* C & E Loss (ft)        *    0.50  * Cum SA (acres)         *    0.33
*    0.34  *    0.34  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T10B
REACH: NRW55T10B          RS: 1.33

INPUT
Description: U.S. of Confluence with NRW55T5
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9332.4 1746.54  9633.8 1740.62  9781.3 1736.55  9844.9 1734.41  9864.2
1734.43
  9865.2 1734.41  9869.4 1734.19  9896.6 1733.47  9968.4 1732.11  9981.3
1731.48
  9985.7  1731.3  9986.6 1731.19  9993.6 1730.46  9998.4  1729.9 10001.2
1729.33
 10006.8 1729.63 10009.7 1729.66 10025.3  1731.1 10028.2  1731.4 10044.6
1731.47
 10060.2 1731.78 10063.7 1731.75 10069.8 1731.74 10081.7 1731.95 10084.5
```

```
1731.92
 10086.2 1731.99 10098.5 1732.29 10100.8 1732.38 10109.6 1733.11 10110.6
1733.17
 10111.1 1733.22 10130.9 1734.17 10132.8 1734.21 10147.1 1734.28 10164.9
1734.9
 10181.2 1735.18 10182.9 1735.21   10204 1735.53 10205.5 1735.58 10222.8
1736.04
 10251.5 1736.44   10262 1736.51 10276.1 1737.47 10281.5 1737.49 10290.5
1737.58
 10294.3 1737.72 10327.5  1737.7 10331.9 1737.67 10332.9 1737.68 10366.1
1737.9
 10381.5 1737.75   10386 1737.65 10394.7 1738.22 10397.4 1738.57 10407.8
1738.69
 10424.9  1739.1 10430.4 1739.27 10438.6 1739.43   10450  1739.6 10455.9
1739.79
 10467.6 1740.05 10471.3  1739.9 10480.3 1739.83 10485.9 1740.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9332.4    .078  9981.3    .052 10028.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9981.3 10028.2              434     434     434             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1733.90  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.48  * Wt. n-Val.              *   0.078
*   0.052  *   0.078  *
* W.S. Elev (ft)          * 1733.42  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1733.08  * Flow Area (sq ft)       *   66.27
*  141.99  *  126.95  *
* E.G. Slope (ft/ft)      *0.012094  * Area (sq ft)            *   66.27
*  141.99  *  126.95  *
* Q Total (cfs)           * 1393.00  * Flow (cfs)              *  120.36
*  930.80  *  341.84  *
* Top Width (ft)          *  216.03  * Top Width (ft)          *   82.06
*   46.90  *   87.07  *
* Vel Total (ft/s)        *    4.16  * Avg. Vel. (ft/s)        *    1.82
*    6.56  *    2.69  *
* Max Chl Dpth (ft)       *    4.09  * Hydr. Depth (ft)        *    0.81
*    3.03  *    1.46  *
* Conv. Total (cfs)       * 12666.9  * Conv. (cfs)             *  1094.5
*  8464.0  *  3108.4  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   82.09
*   47.13  *   87.12  *
* Min Ch El (ft)          * 1729.33  * Shear (lb/sq ft)        *    0.61
*    2.27  *    1.10  *
* Alpha                   *    1.78  * Stream Power (lb/ft s) *    1.11
*   14.91  *    2.96  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
**************************************************************************
```

```
************************

CROSS SECTION


RIVER: NRW55A
REACH: NRW55A              RS: 1.78

INPUT
Description: New River Road dip crossing
U.S. Limit of Study
Station Elevation Data    num=      64
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9263.1 1666.62  9269.3 1666.38  9282.2 1665.66  9290.5 1665.47  9300.4
1665.15
  9310.2 1664.74  9329.2 1664.41    9340    1664  9362.8  1663.6  9421.2
1662.37
  9431.4 1662.33  9441.3  1662.1  9454.5 1661.89  9467.8 1661.79  9477.2
1661.82
  9526.6 1661.14  9535.9 1660.93  9550.8  1660.8  9556.8 1660.69  9583.7
1660.43
  9602.7 1660.43  9605.8 1660.41  9624.1  1660.1  9630.4 1660.03  9652.9
1659.54
  9672.9 1659.52  9675.9  1659.5  9695.3  1659.5  9697.2 1659.45  9715.3
1659.59
  9735.5  1659.2  9779.9    1659  9827.7 1658.15  9844.4 1658.06  9871.2
1657.49
  9891.4 1656.88  9894.5 1656.82  9898.5 1656.74  9914.4 1656.68  9914.6
1656.68
  9930.8 1656.59  9936.4 1656.43  9951.8 1656.29    9956  1656.3  9995.6
1655.78
 10011.1 1655.75 10015.2 1655.72 10034.5 1656.46 10048.4  1656.8 10050.9
1656.92
 10064.2 1657.47 10066.3 1657.55   10082 1658.18 10084.4 1658.31 10103.9
1659.03
 10122.2 1659.92 10138.3 1660.39 10158.5 1661.35 10159.4 1661.38 10176.7
1662.5
 10194.9 1663.27 10195.7  1663.3 10219.2 1664.69 10221.1 1664.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9263.1    .016    9956    .016 10034.5    .016

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9956 10034.5               60      60      60             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)          * 1661.19  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.93  * Wt. n-Val.              *   0.016
*   0.016  *   0.016  *
* W.S. Elev (ft)          * 1660.25  * Reach Len. (ft)         *   60.00
*   60.00  *   60.00  *
```

```
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  609.26
*  335.31  *  194.64  *
* E.G. Slope (ft/ft)      *0.001652  * Area (sq ft)            *  609.26
*  335.31  *  194.64  *
* Q Total (cfs)           * 7869.00  * Flow (cfs)              * 3386.07
* 3331.46  * 1151.46  *
* Top Width (ft)          *  518.59  * Top Width (ft)          *  340.96
*   78.50  *   99.13  *
* Vel Total (ft/s)        *    6.91  * Avg. Vel. (ft/s)        *    5.56
*    9.94  *    5.92  *
* Max Chl Dpth (ft)       *    4.53  * Hydr. Depth (ft)        *    1.79
*    4.27  *    1.96  *
* Conv. Total (cfs)       *193608.9  * Conv. (cfs)             * 83310.9
* 81967.3  * 28330.6  *
* Length Wtd. (ft)        *   60.00  * Wetted Per. (ft)        *  341.00
*   78.52  *   99.20  *
* Min Ch El (ft)          * 1655.72  * Shear (lb/sq ft)        *    0.18
*    0.44  *    0.20  *
* Alpha                   *    1.26  * Stream Power (lb/ft s) *    1.02
*    4.38  *    1.20  *
* Frctn Loss (ft)         *    0.17  * Cum Volume (acre-ft)    *   17.96
*    3.33  *    3.77  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *    7.91
*    0.49  *    1.34  *
*************************************************************************
************************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.

CROSS SECTION


RIVER: NRW55A
REACH: NRW55A             RS: 1.77

INPUT
Description: D.S. of New River Road dip crossing
Station Elevation Data    num=      95
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9241.1 1663.33  9243.9 1662.97  9247.8 1662.69  9250.9 1662.53  9264.7
1661.98
  9270.6 1661.63  9281.8 1661.84  9282.8 1661.85  9284.1 1661.82  9290.3
1660.99
  9295.9 1660.67  9317.4 1660.59  9319.2 1660.74  9324.6 1661.14  9325.9
1661.26
  9326.8 1661.29    9332 1660.88  9337.9 1660.26  9343.2 1660.32  9351.6
1660.5
  9361.2 1660.16    9368 1660.16  9383.6 1659.97  9393.1 1659.75  9401.4
1659.68
  9412.7 1659.47  9435.6 1659.33    9446 1659.57  9458.9 1659.44    9468
1659.61
  9473.1 1659.61  9478.1 1659.45  9499.2 1659.28  9508.5 1659.27    9527
1659.17
  9562.2 1658.85  9585.1 1658.79  9619.7 1658.48  9629.6 1658.48  9644.5
1658.38
```

```
    9653 1658.42  9671.3 1658.28  9682.5 1658.09  9710.3 1657.82  9714.7
1657.82
  9740.8 1657.55  9743.9  1657.5  9802.7 1657.03  9810.3 1657.12  9816.9
1657.15
  9830.2 1657.01    9839 1657.38  9855.5    1657    9864 1657.16  9871.3
1656.94
  9882.1 1656.71  9883.9 1656.68  9893.2 1656.77  9910.4 1656.48  9913.9
1656.45
  9914.5 1656.43  9921.3 1656.37  9942.9 1656.04  9944.5    1656  9960.8
1656.05
  9961.5 1656.03  9962.7 1655.97  9983.8 1655.33  9986.8 1654.79    9987
1654.76
  9998.9 1652.66  9999.1  1652.6  9999.5 1652.58 10004.7  1652.4 10009.1
1652.59
 10012.4 1652.68 10021.2 1653.98 10023.7  1654.4 10029.1 1654.79 10031.8
1654.8
   10035  1655.1 10036.2  1655.2   10044 1655.46 10052.8 1656.05 10056.5
1656.25
 10058.6 1656.54 10066.5 1657.49 10071.6  1658.1 10072.2 1658.16 10088.1
1659.45
 10096.7 1661.08 10105.5 1662.89 10108.4 1663.37 10118.9 1665.79 10119.5
1665.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9241.1    .064    9987    .043 10029.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9987 10029.1               547     547     547             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1660.92  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.59  * Wt. n-Val.              *   0.064
*   0.043  *   0.064  *
* W.S. Elev (ft)          * 1660.32  * Reach Len. (ft)         *  547.00
*  547.00  *  547.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       * 1417.50
*  291.59  *  207.53  *
* E.G. Slope (ft/ft)      *0.005786  * Area (sq ft)            * 1417.50
*  291.59  *  207.53  *
* Q Total (cfs)           * 7869.00  * Flow (cfs)              * 4295.37
* 2769.80  *  803.83  *
* Top Width (ft)          *  741.99  * Top Width (ft)          *  636.29
*   42.10  *   63.60  *
* Vel Total (ft/s)        *    4.11  * Avg. Vel. (ft/s)        *    3.03
*    9.50  *    3.87  *
* Max Chl Dpth (ft)       *    7.92  * Hydr. Depth (ft)        *    2.23
*    6.93  *    3.26  *
* Conv. Total (cfs)       *103451.9  * Conv. (cfs)             * 56470.2
* 36413.9  * 10567.8  *
* Length Wtd. (ft)        *  547.00  * Wetted Per. (ft)        *  636.41
*   42.45  *   63.89  *
* Min Ch El (ft)          * 1652.40  * Shear (lb/sq ft)        *    0.80
*    2.48  *    1.17  *
* Alpha                   *    2.27  * Stream Power (lb/ft s) *    2.44
```

```
*   23.57  *    4.54  *
* Frctn Loss (ft)        *    3.69  * Cum Volume (acre-ft)    *   16.56
*    2.90  *    3.49  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *    7.24
*    0.41  *    1.23  *
*************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55A
REACH: NRW55A             RS: 1.67

INPUT
Description: D.S. Limit of Study
Station Elevation Data    num=      63
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9410.7 1660.47  9421.5 1660.16  9427.2  1660.3  9434.8 1659.75  9450.5
1658.48
  9452.8 1658.17  9465.5 1657.28  9473.7 1656.84  9475.9 1656.55    9489
1656.08
  9495.5 1656.15  9508.5  1655.8  9509.9 1655.78  9537.9 1655.61  9545.5
1655.51
  9558.1 1655.14  9564.2 1655.04  9575.1 1654.45  9582.6 1654.51  9601.1
1654.29
  9603.9  1654.3  9615.4 1654.39  9625.6 1654.91  9627.1  1654.9  9844.2
1653.64
  9926.1 1652.63    9940 1652.53  9949.2 1652.65    9971 1653.13  9980.7
1653.71
  9988.6  1654.1  9992.8 1651.02  9994.2 1650.04    9999 1648.46 10000.8
1648.57
 10002.4 1648.63 10003.8  1648.3 10005.2 1647.91 10007.9 1648.57   10010
1649.2
 10016.1 1651.45 10020.5  1652.7 10026.3 1652.87 10028.6 1652.85 10030.9
1652.26
 10037.9 1649.82 10038.9  1649.7 10041.4 1649.71 10051.1 1651.19 10052.2
1651.45
   10056 1652.17 10062.3 1653.21 10069.9 1653.95 10072.5 1654.46 10082.8
1654.44
 10107.3 1655.37 10117.2 1655.56 10135.7 1656.15 10141.4 1656.25   10149
1656.57
 10176.6 1658.02 10197.6 1658.69 10198.5 1658.71

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9410.7    .064  9992.8    .043 10016.1    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.8 10016.1                 0       0       0              .1
.3
```

CROSS SECTION OUTPUT Profile #100-year

```
************************************************************************
************************
* E.G. Elev (ft)          * 1657.21  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.65  * Wt. n-Val.              *   0.064
*   0.043  *   0.064  *
* W.S. Elev (ft)          * 1656.56  * Reach Len. (ft)         *
*          *         *
* Crit W.S. (ft)          * 1656.29  * Flow Area (sq ft)       * 1220.18
*  170.63  *  348.08  *
* E.G. Slope (ft/ft)      *0.008003  * Area (sq ft)            * 1220.18
*  170.63  *  348.08  *
* Q Total (cfs)           * 7775.00  * Flow (cfs)              * 4485.92
* 1921.95  * 1367.13  *
* Top Width (ft)          *  673.07  * Top Width (ft)          *  517.01
*   23.30  *  132.76  *
* Vel Total (ft/s)        *    4.47  * Avg. Vel. (ft/s)        *    3.68
*   11.26  *    3.93  *
* Max Chl Dpth (ft)       *    8.65  * Hydr. Depth (ft)        *    2.36
*    7.32  *    2.62  *
* Conv. Total (cfs)       * 86913.2  * Conv. (cfs)             * 50146.1
* 21484.7  * 15282.5  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  518.11
*   24.53  *  133.85  *
* Min Ch El (ft)          * 1647.91  * Shear (lb/sq ft)        *    1.18
*    3.47  *    1.30  *
* Alpha                   *    2.09  * Stream Power (lb/ft s) *    4.33
*   39.14  *    5.10  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *         *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *         *
************************************************************************
************************
```

CROSS SECTION

RIVER: NRW55B
REACH: NRW55B RS: 2.34

INPUT
Description: D.S. of Confluence with NRW55T35
Station Elevation Data num= 59

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9617.2 1686.26    9643 1686.37  9646.6 1686.21  9658.1 1685.72  9676.2
1685.54
  9680.7 1685.47  9698.5 1685.44  9698.7 1685.43  9707.1 1685.44  9716.9
1685.5
  9732.8 1685.48  9734.8 1685.43  9759.1  1685.1  9769.4 1685.22  9777.2
1685.16
  9782.1 1685.16  9784.2 1685.16  9797.5    1685  9808.5 1685.04  9815.3
1684.78
  9835.4 1684.65  9835.8 1684.65  9847.2  1684.7  9862.3 1684.64  9885.6
1684.8
  9918.3 1684.78  9922.4 1684.58  9937.6 1684.25  9939.1 1684.24  9940.7
```

```
1684.22
  9942.2 1684.13  9945.5 1683.76    9950 1682.94  9953.8 1682.58  9956.9
1682.06
  9962.3  1681.6  9964.1 1681.29  9965.6 1681.05  9967.6 1680.45  9972.5
1678.65
  9976.3 1678.46  9982.8  1678.2  9999.4 1677.78 10006.5 1678.15   10015
1678.54
 10027.6 1678.71 10028.9  1678.8 10034.7 1680.04   10041  1680.7 10047.4
1681.14
 10050.1 1681.13 10053.9 1681.13 10063.3 1681.06 10073.9 1681.09 10084.9
1681.23
 10120.6  1682.3 10161.2 1683.25 10312.9  1686.4 10422.8  1689.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9617.2    .084  9965.6    .054 10047.4    .084

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9965.6 10047.4              685     685     685             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1685.64  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.65  * Wt. n-Val.              *   0.084
*   0.054  *   0.084  *
* W.S. Elev (ft)          * 1684.00  * Reach Len. (ft)         *  685.00
*  685.00  *  685.00  *
* Crit W.S. (ft)          * 1684.00  * Flow Area (sq ft)       *   33.60
*  420.00  *  250.84  *
* E.G. Slope (ft/ft)      *0.018889  * Area (sq ft)            *   33.60
*  420.00  *  250.84  *
* Q Total (cfs)           * 5670.00  * Flow (cfs)              *  106.96
* 4703.18  *  859.86  *
* Top Width (ft)          *  253.80  * Top Width (ft)          *   22.21
*   81.80  *  149.78  *
* Vel Total (ft/s)        *    8.05  * Avg. Vel. (ft/s)        *    3.18
*   11.20  *    3.43  *
* Max Chl Dpth (ft)       *    6.22  * Hydr. Depth (ft)        *    1.51
*    5.13  *    1.67  *
* Conv. Total (cfs)       * 41255.7  * Conv. (cfs)             *   778.2
* 34221.0  *  6256.5  *
* Length Wtd. (ft)        *  685.00  * Wetted Per. (ft)        *   22.43
*   82.43  *  149.82  *
* Min Ch El (ft)          * 1677.78  * Shear (lb/sq ft)        *    1.77
*    6.01  *    1.97  *
* Alpha                   *    1.64  * Stream Power (lb/ft s) *    5.62
*   67.28  *    6.77  *
* Frctn Loss (ft)         *    4.96  * Cum Volume (acre-ft)    *   22.63
*   18.19  *   36.86  *
* C & E Loss (ft)         *    0.74  * Cum SA (acres)          *    6.59
*    3.44  *   16.55  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
```

program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55B
REACH: NRW55B RS: 2.21

INPUT
Description:
Station Elevation Data num= 57

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9713.4	1685.35	9717.5	1683.93	9726.5	1680.75	9730.3	1679.29	9736	1677.2
9747.5	1674.52	9758.5	1671.82	9763.3	1671.18	9763.6	1671.17	9769.4	1670.87
9772	1669.54	9774.7	1669.34	9777	1669.31	9791.4	1669.69	9799.8	1669.15
9814.1	1669.41	9814.9	1669.41	9815.3	1669.41	9837.3	1669.78	9841.7	1669.55
9845	1669.69	9856	1670.47	9864.8	1670.7	9865.2	1670.74	9871.8	1671.71
9877.5	1672.29	9878.5	1672.38	9882.8	1672.56	9890	1672.41	9893.9	1672.43
9897.7	1672.36	9907.5	1671.7	9921.5	1671.24	9922.1	1671.2	9944.6	1672.47
9954.4	1672.72	9963.9	1673.14	9981	1672.23	9989.1	1670.38	9993	1669.58
9994.4	1669.69	9999.5	1670.05	10009.7	1669.81	10010.1	1669.8	10010.5	1669.86
10023.4	1673.01	10025.2	1673.42	10028	1673.3	10029.1	1673.27	10055.2	1672.62
10055.4	1672.62	10056.2	1672.61	10147.6	1673.6	10192.8	1673.84	10300.2	1675.1
10512.6	1679.11	10519.2	1679.35						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9713.4	.084	9963.9	.054	10023.4	.084

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9963.9 10023.4              552     552     552             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1676.10  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.084
*   0.054  *   0.084  *
* W.S. Elev (ft)          * 1675.92  * Reach Len. (ft)         *  552.00
*  552.00  *  552.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       * 1064.00
*  279.56  *  627.23  *
* E.G. Slope (ft/ft)      *0.003796  * Area (sq ft)            * 1064.00
*  279.56  *  627.23  *
* Q Total (cfs)           * 5670.00  * Flow (cfs)              * 3281.35
* 1319.02  * 1069.63  *
* Top Width (ft)          *  602.33  * Top Width (ft)          *  222.42
*   59.50  *  320.41  *
* Vel Total (ft/s)        *    2.88  * Avg. Vel. (ft/s)        *    3.08
*    4.72  *    1.71  *
* Max Chl Dpth (ft)       *    6.77  * Hydr. Depth (ft)        *    4.78
*    4.70  *    1.96  *
* Conv. Total (cfs)       * 92023.9  * Conv. (cfs)             * 53256.2
* 21407.6  * 17360.1  *
* Length Wtd. (ft)        *  552.00  * Wetted Per. (ft)        *  223.55
*   60.22  *  320.49  *
* Min Ch El (ft)          * 1669.58  * Shear (lb/sq ft)        *    1.13
*    1.10  *    0.46  *
* Alpha                   *    1.36  * Stream Power (lb/ft s) *    3.48
*    5.19  *    0.79  *
* Frctn Loss (ft)         *    2.72  * Cum Volume (acre-ft)    *   14.00
*   12.69  *   29.96  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *    4.66
*    2.33  *   12.85  *
**************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55B
REACH: NRW55B             RS: 2.10

INPUT
Description:
Station Elevation Data    num=      47
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9857.1 1679.27  9882.9 1676.96  9884.4    1677    9894 1677.06  9909.4
1673.65
  9912.3 1672.94  9925.1 1671.67  9936.8 1670.07  9951.9 1669.39  9975.4
```

```
1668.19
  9984.8 1667.92  9985.3  1667.9  9995.8 1665.66  9999.6 1664.78   10003
1665.07
   10004 1665.14 10006.5 1665.21 10008.4 1665.24 10011.1 1666.01   10024
1669.56
 10024.8  1669.8 10042.1  1669.9 10059.2  1668.8 10070.1 1667.37   10076
1667.98
 10086.9  1669.3 10092.8 1669.04 10097.2 1668.77 10105.3 1668.71 10118.3
1668.8
 10118.6  1668.8 10118.9 1668.81   10134  1669.5 10151.9  1670.6   10183
1670.49
 10184.3 1670.52 10214.5 1670.83 10244.7 1670.83 10246.3 1670.77 10264.3
1670.24
 10271.2 1670.17   10307 1670.72 10310.1 1670.71 10342.9 1670.82 10441.3
1671.98
 10506.8 1673.33 10550.3 1674.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9857.1    .084  9951.9    .054   10024    .084

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9951.9   10024              434     434     434             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1673.31  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.40  * Wt. n-Val.              *   0.084
*   0.054  *   0.084  *
* W.S. Elev (ft)          * 1672.91  * Reach Len. (ft)         *  434.00
*  434.00  *  434.00  *
* Crit W.S. (ft)          * 1671.97  * Flow Area (sq ft)       *   79.45
*  392.87  * 1089.32  *
* E.G. Slope (ft/ft)      *0.006651  * Area (sq ft)            *   79.45
*  392.87  * 1089.32  *
* Q Total (cfs)           * 5670.00  * Flow (cfs)              *  182.82
* 2705.60  * 2781.58  *
* Top Width (ft)          *  573.54  * Top Width (ft)          *   39.25
*   72.10  *  462.19  *
* Vel Total (ft/s)        *    3.63  * Avg. Vel. (ft/s)        *    2.30
*    6.89  *    2.55  *
* Max Chl Dpth (ft)       *    8.13  * Hydr. Depth (ft)        *    2.02
*    5.45  *    2.36  *
* Conv. Total (cfs)       * 69526.9  * Conv. (cfs)             *  2241.7
* 33176.7  * 34108.5  *
* Length Wtd. (ft)        *  434.00  * Wetted Per. (ft)        *   39.44
*   73.07  *  462.56  *
* Min Ch El (ft)          * 1664.78  * Shear (lb/sq ft)        *    0.84
*    2.23  *    0.98  *
* Alpha                   *    1.97  * Stream Power (lb/ft s) *    1.92
*   15.37  *    2.50  *
* Frctn Loss (ft)         *    3.88  * Cum Volume (acre-ft)    *    6.76
*    8.43  *   19.08  *
* C & E Loss (ft)         *    0.11  * Cum SA (acres)          *    3.01
*    1.50  *    7.89  *
************************************************************************
```

```
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55B
REACH: NRW55B              RS: 2.02

INPUT
Description:
Station Elevation Data    num=      41
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***********************************************************************
********
  9764.9 1673.55  9766.4  1673.5  9767.5 1673.29  9775.8 1671.52  9793.8
1669.51
  9794.7 1669.43    9808  1668.6    9840 1667.08  9858.2 1666.49  9886.7
1666.34
  9890.1 1666.36  9934.4 1665.96  9952.9 1665.83  9964.3 1665.87  9978.4
1666.02
  9981.9 1664.69  9985.5 1663.43  9989.7  1662.1  9990.3    1662  9990.4
1662.01
  9997.3 1662.52  9999.5 1662.43 10003.2  1662.3 10015.9  1663.4 10025.3
1663.4
 10027.7 1663.45 10030.5 1663.78 10047.3 1666.04 10072.9 1665.64 10099.5
1665.89
   10103 1665.93 10122.5 1666.27 10128.2 1666.41 10151.7 1666.59 10159.5
1666.54
   10200 1666.62 10215.6 1666.48   10225 1666.71 10254.2  1667.6   10466
1671.8
 10492.4 1672.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9764.9    .084  9978.4    .054 10047.3    .084

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.4 10047.3              564     564     564             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
***********************************************************************
************************
* E.G. Elev (ft)          * 1669.33  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.75  * Wt. n-Val.              *   0.084
*   0.054  *   0.084  *
* W.S. Elev (ft)          * 1668.58  * Reach Len. (ft)         *  564.00
*  564.00  *  564.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  350.67
*  345.89  *  477.05  *
* E.G. Slope (ft/ft)      *0.012616  * Area (sq ft)            *  350.67
*  345.89  *  477.05  *
* Q Total (cfs)           * 5670.00  * Flow (cfs)              * 1128.94
```

```
* 3106.94  * 1434.12  *
* Top Width (ft)          *  495.14  * Top Width (ft)          *  169.96
*   68.90  *  256.28  *
* Vel Total (ft/s)        *    4.83  * Avg. Vel. (ft/s)        *    3.22
*    8.98  *    3.01  *
* Max Chl Dpth (ft)       *    6.58  * Hydr. Depth (ft)        *    2.06
*    5.02  *    1.86  *
* Conv. Total (cfs)       * 50481.1  * Conv. (cfs)             * 10051.2
* 27661.7  * 12768.3  *
* Length Wtd. (ft)        *  564.00  * Wetted Per. (ft)        *  170.01
*   69.81  *  256.32  *
* Min Ch El (ft)          * 1662.00  * Shear (lb/sq ft)        *    1.62
*    3.90  *    1.47  *
* Alpha                   *    2.08  * Stream Power (lb/ft s) *    5.23
*   35.05  *    4.41  *
* Frctn Loss (ft)         *    3.23  * Cum Volume (acre-ft)    *    4.62
*    4.75  *   11.28  *
* C & E Loss (ft)         *    0.25  * Cum SA (acres)          *    1.96
*    0.79  *    4.31  *
*************************************************************************
***********************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55B
REACH: NRW55B             RS: 1.91

INPUT
Description: U.S. of Confluence with NRW55T10A
Station Elevation Data    num=      42
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9808.7 1666.41    9814 1666.13    9838 1665.19  9861.4 1664.11  9932.7
1661.11
  9932.8  1661.1  9949.7 1661.16  9950.8 1661.16  9960.8 1661.24  9966.7
1660.12
    9975 1658.44  9977.7 1658.22  9984.2 1657.96  9991.9 1656.86  9993.8
1656.7
  9995.1 1656.52  9997.7 1656.17  9999.7 1656.37 10000.7 1656.53 10010.9
1659.69
 10014.4 1660.93 10053.8  1661.4 10078.2 1661.49 10171.5 1661.75 10185.1
1661.7
   10188 1661.58 10190.9 1661.44 10193.1 1661.46   10197 1661.63 10207.8
1661.62
 10219.8  1661.8 10240.3  1661.8 10248.8 1661.89 10265.8 1661.88 10268.6
1661.81
 10275.5 1661.99 10276.5 1662.07   10280 1662.43 10295.8 1663.21   10366
```

```
1664.41
 10401.2 1665.19 10471.5 1666.44

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  9808.7    .084  9960.8    .054 10014.4    .084

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9960.8 10014.4              652     652     652             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1665.85  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.              *   0.084
*   0.054  *   0.084  *
* W.S. Elev (ft)          * 1665.60  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1663.74  * Flow Area (sq ft)       *  362.44
*  388.23  * 1264.82  *
* E.G. Slope (ft/ft)      *0.003257  * Area (sq ft)            *  362.44
*  388.23  * 1264.82  *
* Q Total (cfs)           * 5670.00  * Flow (cfs)              *  712.59
* 2251.08  * 2706.33  *
* Top Width (ft)          *  596.73  * Top Width (ft)          *  133.27
*   53.60  *  409.86  *
* Vel Total (ft/s)        *    2.81  * Avg. Vel. (ft/s)        *    1.97
*    5.80  *    2.14  *
* Max Chl Dpth (ft)       *    9.43  * Hydr. Depth (ft)        *    2.72
*    7.24  *    3.09  *
* Conv. Total (cfs)       * 99346.4  * Conv. (cfs)             * 12485.6
* 39442.1  * 47418.8  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  133.36
*   54.72  *  409.94  *
* Min Ch El (ft)          * 1656.17  * Shear (lb/sq ft)        *    0.55
*    1.44  *    0.63  *
* Alpha                   *    2.02  * Stream Power (lb/ft s) *    1.09
*    8.37  *    1.34  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
*************************************************************************
************************

CROSS SECTION


RIVER: NRW55C
REACH: NRW55C              RS: 2.54

INPUT
Description: D.S. of Confluence with NRW20T15
Station Elevation Data    num=      52
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
```

```
********
    9684 1688.26    9815 1684.18  9847.5 1683.35    9862 1683.55  9876.9
1683.3
  9893.8 1682.78  9912.3 1682.06  9912.4 1682.06  9915.5 1681.95  9920.4
1681.67
  9927.4 1682.05  9938.7 1682.17  9948.5 1681.73  9958.6 1680.58  9963.1
1680
    9966 1680.08  9972.7 1679.82  9981.6  1679.7  9984.6 1679.51  9992.7
1678.9
  9998.5 1678.63 10000.9 1678.62 10002.6 1678.45 10006.7 1678.33 10011.2
1679.33
 10014.2 1680.02 10017.6 1680.23 10030.1 1681.17   10032 1681.09 10048.7
1680.84
 10049.5 1680.79 10054.3  1680.5 10057.8 1680.31   10064 1680.64 10064.8
1680.67
 10066.6 1680.83 10072.2 1681.13 10074.8 1681.36 10081.1 1681.85 10099.7
1683.47
 10100.6 1683.53 10101.3 1683.62 10106.9 1683.64 10111.8  1683.8 10126.9
1683.42
 10131.1 1683.38 10132.6 1683.43 10137.7 1683.41 10159.6  1684.2 10179.6
1684.38
 10196.2 1684.84   10350  1687.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***************************************************
    9684    .074    9966    .055 10014.2    .071

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9966 10014.2               67     248      67             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)         * 1686.64  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.30  * Wt. n-Val.             *   0.074
*   0.055  *   0.071  *
* W.S. Elev (ft)         * 1686.34  * Reach Len. (ft)        *   67.00
*  248.00  *   67.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *  627.75
*  341.36  *  742.76  *
* E.G. Slope (ft/ft)     *0.004084  * Area (sq ft)           *  627.75
*  341.36  *  742.76  *
* Q Total (cfs)          * 5670.00  * Flow (cfs)             * 1618.33
* 2166.42  * 1885.25  *
* Top Width (ft)         *  552.37  * Top Width (ft)         *  220.27
*   48.20  *  283.90  *
* Vel Total (ft/s)       *    3.31  * Avg. Vel. (ft/s)       *    2.58
*    6.35  *    2.54  *
* Max Chl Dpth (ft)      *    8.01  * Hydr. Depth (ft)       *    2.85
*    7.08  *    2.62  *
* Conv. Total (cfs)      * 88719.1  * Conv. (cfs)            * 25322.2
* 33898.2  * 29498.7  *
* Length Wtd. (ft)       *  132.00  * Wetted Per. (ft)       *  220.47
*   48.44  *  284.14  *
* Min Ch El (ft)         * 1678.33  * Shear (lb/sq ft)       *    0.73
*    1.80  *    0.67  *
* Alpha                  *    1.77  * Stream Power (lb/ft s) *    1.87
```

```
*   11.40  *    1.69  *
* Frctn Loss (ft)        *    0.32  * Cum Volume (acre-ft)    *   21.92
*    9.23  *   18.54  *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)          *    3.81
*    1.13  *    4.98  *
*************************************************************************
***********************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55C
REACH: NRW55C RS: 2.49

INPUT
Description:
Station Elevation Data num= 60

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9628.8  1691.5  9634.5 1691.24  9648.4 1690.18  9680.3 1686.21  9693.1
1685.48
  9695.4 1685.29  9710.2 1684.45  9735.4 1683.55  9738.2 1683.41  9757.3
1683
  9776.9 1682.43  9779.7 1682.38  9810.1 1682.04    9850 1681.19  9875.5
1680.88
  9909.5 1680.28  9924.2 1679.81  9942.3 1679.71  9962.5 1679.98  9964.3
1679.88
  9984.4 1679.57  9984.9 1679.53  9989.6 1678.56    9991 1678.56  9997.6
1677.8
 10000.6 1677.52 10002.1 1677.37 10007.4 1677.54 10008.7  1677.6 10019.1
1678.75
 10028.9 1679.87 10040.7 1681.13 10042.3 1681.33 10053.2 1681.97 10054.3
1682.01
 10073.4  1682.5   10105 1682.81 10124.8 1682.85 10132.7 1683.08 10166.4
1683.02
   10181 1683.45 10190.4 1683.41 10204.8  1683.6 10209.8 1683.73 10226.9
1683.8
 10233.7 1683.96 10252.1 1683.31 10260.3 1683.38 10285.8 1684.94 10292.5
1684.87
 10296.5 1684.87 10325.2 1685.24 10339.2 1685.25 10344.4 1685.29 10359.4
1685.77
 10365.9 1686.09 10405.5 1686.86 10430.1 1687.18 10444.6 1687.59 10445.8
1687.61
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9628.8    .074  9964.3    .055 10028.9    .071
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
        9964.3 10028.9              472     472     472              .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1686.23  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.074
*   0.055  *   0.071  *
* W.S. Elev (ft)          * 1686.11  * Reach Len. (ft)         *  472.00
*  472.00  *  472.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       * 1173.44
*  472.20  *  862.52  *
* E.G. Slope (ft/ft)      *0.001583  * Area (sq ft)            * 1173.44
*  472.20  *  862.52  *
* Q Total (cfs)           * 5670.00  * Flow (cfs)              * 2423.42
* 1905.92  * 1340.66  *
* Top Width (ft)          *  684.85  * Top Width (ft)          *  282.24
*   64.60  *  338.01  *
* Vel Total (ft/s)        *    2.26  * Avg. Vel. (ft/s)        *    2.07
*    4.04  *    1.55  *
* Max Chl Dpth (ft)       *    8.74  * Hydr. Depth (ft)        *    4.16
*    7.31  *    2.55  *
* Conv. Total (cfs)       *142502.5  * Conv. (cfs)             * 60907.1
* 47900.9  * 33694.5  *
* Length Wtd. (ft)        *  472.00  * Wetted Per. (ft)        *  282.35
*   64.90  *  338.21  *
* Min Ch El (ft)          * 1677.37  * Shear (lb/sq ft)        *    0.41
*    0.72  *    0.25  *
* Alpha                   *    1.54  * Stream Power (lb/ft s) *    0.85
*    2.90  *    0.39  *
* Frctn Loss (ft)         *    0.18  * Cum Volume (acre-ft)    *   20.53
*    6.91  *   17.30  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    3.43
*    0.81  *    4.50  *
*************************************************************************
************************
```

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55C
REACH: NRW55C RS: 2.40

INPUT
Description: U.S. of Confluence with NRW55T35
Station Elevation Data num= 68

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9466.7 1688.58  9468.7 1688.52  9487.2 1688.35  9489.9 1688.22    9493
1688.21
  9511.2 1687.46  9527.6 1687.39  9532.4 1687.16  9537.7 1687.13  9568.1
1686.06
  9582.4 1685.06  9596.1 1683.82  9608.6 1683.29  9616.7 1682.55  9627.1
1681.86
    9646 1680.92  9658.2 1680.21  9665.8 1679.29  9670.7  1679.4    9701
```

```
1678.77
  9712.9 1678.19  9727.1  1677.3  9745.9  1677.2  9746.6 1677.16  9760.2
1676.3
  9765.2 1676.34  9773.4 1676.27  9776.3 1676.21  9784.6  1676.1  9792.1
1676.2
    9800 1676.21  9822.8 1675.53  9825.3 1675.52  9830.7 1675.56  9862.5
1676.4
  9874.8  1676.3  9887.8 1676.86  9895.2 1676.79  9919.5 1676.78  9933.2
1676.6
  9951.8  1676.3  9971.1 1676.14  9973.9 1676.15  9976.8  1676.1  9997.4
1676.77
 10003.7 1676.77   10023    1678 10024.5 1678.14 10025.6 1678.12 10063.1
1678.42
 10066.6 1678.49 10071.8 1678.54 10083.3 1678.78 10087.1 1678.71 10102.8
1678.76
 10107.6 1678.92 10116.2    1679   10141 1679.14 10164.2 1679.83 10168.7
1679.91
 10174.4 1679.94 10192.7 1679.79   10239 1680.46 10309.4 1681.87 10330.1
1682.68
   10335 1682.82   10359 1683.07 10608.5 1688.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9466.7    .074  9919.5    .055 10003.7    .071

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9919.5 10003.7              346     346     346             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1686.00  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *   0.074
*   0.055  *   0.071  *
* W.S. Elev (ft)          * 1685.98  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1678.79  * Flow Area (sq ft)       * 2616.59
*  803.67  * 2331.06  *
* E.G. Slope (ft/ft)      *0.000169  * Area (sq ft)            * 2616.59
*  803.67  * 2331.06  *
* Q Total (cfs)           * 5670.00  * Flow (cfs)              * 2609.79
* 1270.59  * 1789.62  *
* Top Width (ft)          *  926.49  * Top Width (ft)          *  350.25
*   84.20  *  492.03  *
* Vel Total (ft/s)        *    0.99  * Avg. Vel. (ft/s)        *    1.00
*    1.58  *    0.77  *
* Max Chl Dpth (ft)       *   10.46  * Hydr. Depth (ft)        *    7.47
*    9.54  *    4.74  *
* Conv. Total (cfs)       *435918.8  * Conv. (cfs)             *200644.8
* 97685.3  *137588.7  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  350.63
*   84.22  *  492.17  *
* Min Ch El (ft)          * 1676.10  * Shear (lb/sq ft)        *    0.08
*    0.10  *    0.05  *
* Alpha                   *    1.24  * Stream Power (lb/ft s) *    0.08
*    0.16  *    0.04  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
```

```
*          *          *
* C & E Loss (ft)        *          * Cum SA (acres)         *
*          *          *
************************************************************************
***********************

CROSS SECTION


RIVER: NRW55T20
REACH: NRW55T20           RS: 0.64

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9752.3 1747.22  9756.5 1747.18  9759.5 1747.06  9763.1 1746.98  9771.6
1746.52
  9780.3 1746.69  9786.9 1746.74    9798 1746.31  9798.2  1746.3  9814.3
1746.29
  9825.9  1746.2  9833.1 1746.22  9840.4 1746.06  9853.1 1745.88  9880.7
1745.86
  9891.4 1746.33  9912.5 1747.36  9917.1 1746.63  9919.1 1746.27    9922
1746.39
  9927.9  1746.7  9946.9 1745.81  9947.9 1745.77  9962.1 1745.48  9971.1
1744.68
  9979.8 1745.53  9981.4 1745.45  9987.6 1744.97  9993.7 1743.54  9997.7
1742.63
  9998.2 1742.22   10001 1742.28 10002.2 1742.35 10015.5  1744.7 10021.5
1745.13
 10046.6 1746.37 10072.7 1746.81 10079.6 1746.98 10092.1 1747.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9752.3    .059  9987.6    .052 10015.5    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.6 10015.5              489     489     489             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)         * 1747.07  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.52  * Wt. n-Val.              *   0.059
*   0.052  *   0.064  *
* W.S. Elev (ft)         * 1746.55  * Reach Len. (ft)         *  489.00
*  489.00  *  489.00  *
* Crit W.S. (ft)         * 1746.55  * Flow Area (sq ft)       *  102.50
*   87.35  *   30.96  *
* E.G. Slope (ft/ft)     *0.013097  * Area (sq ft)            *  102.50
*   87.35  *   30.96  *
* Q Total (cfs)          *  905.00  * Flow (cfs)              *  235.44
*  602.41  *   67.15  *
* Top Width (ft)         *  240.45  * Top Width (ft)          *  170.61
```

```
*   27.90  *   41.93  *
* Vel Total (ft/s)       *    4.10  * Avg. Vel. (ft/s)       *    2.30
*    6.90  *    2.17  *
* Max Chl Dpth (ft)      *    4.33  * Hydr. Depth (ft)       *    0.60
*    3.13  *    0.74  *
* Conv. Total (cfs)      *  7907.8  * Conv. (cfs)            *  2057.2
*  5263.8  *   586.8  *
* Length Wtd. (ft)       *  489.00  * Wetted Per. (ft)       *  170.79
*   28.52  *   41.98  *
* Min Ch El (ft)         * 1742.22  * Shear (lb/sq ft)       *    0.49
*    2.50  *    0.60  *
* Alpha                  *    1.99  * Stream Power (lb/ft s) *    1.13
*   17.27  *    1.31  *
* Frctn Loss (ft)        *    7.20  * Cum Volume (acre-ft)   *    6.35
*    6.00  *    3.27  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *    7.86
*    1.88  *    4.58  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T20
REACH: NRW55T20           RS: 0.55

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9864 1739.87  9934.4  1738.4  9946.3 1738.35  9956.5 1738.16  9964.4
1738.23
  9967.3 1738.27  9974.9 1737.51  9989.4 1736.08  9994.3 1736.02  9995.6
1736.02
  9996.7 1736.03   10005 1736.04 10009.6  1736.3 10011.7 1736.36 10020.3
1737.45
   10021 1737.51 10021.8 1737.54 10035.2  1738.2 10036.8 1738.22   10042
1738.3
 10049.3 1738.36 10070.5 1737.72 10071.5 1737.73 10072.5 1737.74 10122.4
1739.09
 10129.6 1739.24   10142 1739.81 10150.2 1739.92

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
    9864    .059  9974.9    .052 10020.3    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.9 10020.3              468     468     468             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1739.36  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.53  * Wt. n-Val.              *   0.059
*   0.052  *   0.064  *
* W.S. Elev (ft)          * 1738.83  * Reach Len. (ft)         *  468.00
*  468.00  *  468.00  *
* Crit W.S. (ft)          * 1738.83  * Flow Area (sq ft)       *   29.53
*  107.09  *   63.34  *
* E.G. Slope (ft/ft)      *0.016661  * Area (sq ft)            *   29.53
*  107.09  *   63.34  *
* Q Total (cfs)           *  905.00  * Flow (cfs)              *   59.11
*  698.45  *  147.44  *
* Top Width (ft)          *  198.96  * Top Width (ft)          *   61.08
*   45.40  *   92.48  *
* Vel Total (ft/s)        *    4.53  * Avg. Vel. (ft/s)        *    2.00
*    6.52  *    2.33  *
* Max Chl Dpth (ft)       *    2.81  * Hydr. Depth (ft)        *    0.48
*    2.36  *    0.68  *
* Conv. Total (cfs)       *  7011.3  * Conv. (cfs)             *   457.9
*  5411.1  *  1142.3  *
* Length Wtd. (ft)        *  468.00  * Wetted Per. (ft)        *   61.12
*   45.55  *   92.53  *
* Min Ch El (ft)          * 1736.02  * Shear (lb/sq ft)        *    0.50
*    2.45  *    0.71  *
* Alpha                   *    1.66  * Stream Power (lb/ft s) *    1.01
*   15.95  *    1.66  *
* Frctn Loss (ft)         *    6.17  * Cum Volume (acre-ft)    *    5.61
*    4.91  *    2.74  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    6.56
*    1.47  *    3.83  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION
```

```
RIVER: NRW55T20
REACH: NRW55T20            RS: 0.46

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9812.9 1733.29  9881.1 1731.78  9939.2  1730.8  9947.2 1730.75    9980
1730.7
  9982.5 1730.67  9983.5 1730.67  9985.6 1729.98  9994.9 1727.26 10000.8
1727
 10001.9 1727.01 10005.1 1727.79 10012.4 1729.98 10019.7 1731.51 10025.1
1731.58
 10032.7 1731.84 10060.8 1731.05 10063.7 1731.05   10077 1731.27   10086
1731.4
 10097.9 1731.29 10098.9 1731.37 10113.5 1732.78 10114.9 1732.81   10129
1733.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9812.9    .059  9985.6    .052 10012.4    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.6 10012.4              470     470     470             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1732.36  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.56  * Wt. n-Val.              *   0.059
*   0.052  *   0.064  *
* W.S. Elev (ft)          * 1731.80  * Reach Len. (ft)         *  470.00
*  470.00  *  470.00  *
* Crit W.S. (ft)          * 1731.80  * Flow Area (sq ft)       *   80.20
*   97.78  *   41.57  *
* E.G. Slope (ft/ft)      *0.010681  * Area (sq ft)            *   80.20
*   97.78  *   41.57  *
* Q Total (cfs)           *  905.00  * Flow (cfs)              *  173.79
*  670.92  *   60.28  *
* Top Width (ft)          *  220.66  * Top Width (ft)          *  105.44
*   26.80  *   88.42  *
* Vel Total (ft/s)        *    4.12  * Avg. Vel. (ft/s)        *    2.17
*    6.86  *    1.45  *
* Max Chl Dpth (ft)       *    4.80  * Hydr. Depth (ft)        *    0.76
*    3.65  *    0.47  *
* Conv. Total (cfs)       *  8756.9  * Conv. (cfs)             *  1681.6
*  6492.0  *   583.3  *
* Length Wtd. (ft)        *  470.00  * Wetted Per. (ft)        *  105.56
*   27.61  *   88.62  *
* Min Ch El (ft)          * 1727.00  * Shear (lb/sq ft)        *    0.51
*    2.36  *    0.31  *
* Alpha                   *    2.12  * Stream Power (lb/ft s) *    1.10
*   16.20  *    0.45  *
```

```
* Frctn Loss (ft)        *    4.54  * Cum Volume (acre-ft)   *    5.02
*    3.81  *    2.17  *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)         *    5.67
*    1.08  *    2.86  *
**********************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T20
REACH: NRW55T20           RS: 0.37

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9812.4  1726.8  9861.9 1725.54  9914.1  1724.3  9935.5 1723.62  9939.4
1723.55
  9964.8 1723.67    9966 1723.69    9967 1723.63    9985 1723.52    9988
1723.16
  9995.9 1721.35 10004.3  1721.4 10004.5 1721.42 10008.7 1722.17 10013.6
1723.08
   10018 1723.46 10024.9 1724.24 10036.3 1725.48 10038.6  1725.8 10058.1
1726.86
 10087.3 1727.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9812.4    .059    9988    .052 10013.6    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9988 10013.6               529     529     529             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1725.60  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.34  * Wt. n-Val.             *   0.059
```

```
*   0.052  *   0.064  *
* W.S. Elev (ft)          * 1725.26  * Reach Len. (ft)         *  529.00
*  529.00  *  529.00  *
* Crit W.S. (ft)          * 1724.83  * Flow Area (sq ft)       *  134.66
*   84.48  *   23.16  *
* E.G. Slope (ft/ft)      *0.008765  * Area (sq ft)            *  134.66
*   84.48  *   23.16  *
* Q Total (cfs)           *  905.00  * Flow (cfs)              *  354.49
*  496.32  *   54.19  *
* Top Width (ft)          *  160.33  * Top Width (ft)          *  114.10
*   25.60  *   20.63  *
* Vel Total (ft/s)        *    3.74  * Avg. Vel. (ft/s)        *    2.63
*    5.88  *    2.34  *
* Max Chl Dpth (ft)       *    3.90  * Hydr. Depth (ft)        *    1.18
*    3.30  *    1.12  *
* Conv. Total (cfs)       *  9666.7  * Conv. (cfs)             *  3786.5
*  5301.4  *   578.8  *
* Length Wtd. (ft)        *  529.00  * Wetted Per. (ft)        *  114.14
*   25.96  *   20.75  *
* Min Ch El (ft)          * 1721.35  * Shear (lb/sq ft)        *    0.65
*    1.78  *    0.61  *
* Alpha                   *    1.58  * Stream Power (lb/ft s) *    1.70
*   10.46  *    1.43  *
* Frctn Loss (ft)         *    5.45  * Cum Volume (acre-ft)    *    3.86
*    2.82  *    1.82  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    4.48
*    0.80  *    2.27  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T20
REACH: NRW55T20           RS: 0.27

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9819.8 1720.81  9829.9  1720.7  9895.9  1719.6  9961.7 1718.79  9962.6
1718.76
  9989.1  1717.6  9990.9 1716.71  9994.7 1715.15  9999.8  1714.6 10005.1
1715.68
 10011.2 1717.18   10017 1718.42 10028.2 1718.08 10031.9 1718.06 10040.3
1718.16
 10055.2 1718.55 10076.7 1719.36 10089.6  1719.9 10090.5 1719.91 10102.1
1719.7
   10114 1720.23 10120.7 1720.47 10125.1 1720.85

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9819.8    .059  9990.9    .052 10011.2    .064
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.9 10011.2              497     497     497             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1720.12  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.64  * Wt. n-Val.              *   0.059
*   0.052  *   0.064  *
* W.S. Elev (ft)          * 1719.48  * Reach Len. (ft)         *  497.00
*  497.00  *  497.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   58.59
*   78.58  *   68.45  *
* E.G. Slope (ft/ft)      *0.012303  * Area (sq ft)            *   58.59
*   78.58  *   68.45  *
* Q Total (cfs)           *  905.00  * Flow (cfs)              *  127.23
*  601.62  *  176.14  *
* Top Width (ft)          *  173.89  * Top Width (ft)          *   85.23
*   20.30  *   68.36  *
* Vel Total (ft/s)        *    4.40  * Avg. Vel. (ft/s)        *    2.17
*    7.66  *    2.57  *
* Max Chl Dpth (ft)       *    4.88  * Hydr. Depth (ft)        *    0.69
*    3.87  *    1.00  *
* Conv. Total (cfs)       *  8159.1  * Conv. (cfs)             *  1147.1
*  5424.0  *  1588.0  *
* Length Wtd. (ft)        *  497.00  * Wetted Per. (ft)        *   85.47
*   20.93  *   68.52  *
* Min Ch El (ft)          * 1714.60  * Shear (lb/sq ft)        *    0.53
*    2.88  *    0.77  *
* Alpha                   *    2.11  * Stream Power (lb/ft s) *    1.14
*   22.08  *    1.97  *
* Frctn Loss (ft)         *    5.70  * Cum Volume (acre-ft)    *    2.69
*    1.83  *    1.27  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    3.27
*    0.52  *    1.73  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T20
REACH: NRW55T20           RS: 0.18

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9715.3 1716.15  9761.6  1715.3  9823.5 1713.92  9869.4 1713.13  9879.9
1713.47
```

```
  9890.1 1713.78  9895.4 1713.88  9914.6 1712.92  9920.5 1712.86  9946.6
1712.91
  9976.9 1712.88  9988.6 1712.74  9992.1 1711.95  9995.5 1709.52    9996
1709.3
  9996.2 1709.29  9999.9 1709.12 10007.5 1710.52 10016.2 1711.98 10022.1
1712.34
 10037.5 1713.02 10054.5 1713.48 10057.6 1713.57 10073.4 1713.71 10085.9
1713.69
 10087.2  1713.7 10098.4 1714.58 10101.8  1714.9 10123.1 1714.76 10127.6
1714.77
 10131.7 1714.83 10133.9 1714.87 10158.7 1715.53 10183.2 1716.31

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9715.3    .059  9992.1    .052 10016.2    .064

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.1 10016.2              518     518     518             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1714.37  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.46  * Wt. n-Val.              *   0.059
*   0.052  *   0.064  *
* W.S. Elev (ft)          * 1713.91  * Reach Len. (ft)         *  518.00
*  518.00  *  518.00  *
* Crit W.S. (ft)          * 1713.91  * Flow Area (sq ft)       *  118.44
*   85.51  *   48.86  *
* E.G. Slope (ft/ft)      *0.010704  * Area (sq ft)            *  118.44
*   85.51  *   48.86  *
* Q Total (cfs)           *  905.00  * Flow (cfs)              *  244.54
*  571.21  *   89.25  *
* Top Width (ft)          *  265.52  * Top Width (ft)          *  167.80
*   24.10  *   73.63  *
* Vel Total (ft/s)        *    3.58  * Avg. Vel. (ft/s)        *    2.06
*    6.68  *    1.83  *
* Max Chl Dpth (ft)       *    4.79  * Hydr. Depth (ft)        *    0.71
*    3.55  *    0.66  *
* Conv. Total (cfs)       *  8747.3  * Conv. (cfs)             *  2363.6
*  5521.1  *   862.7  *
* Length Wtd. (ft)        *  518.00  * Wetted Per. (ft)        *  167.93
*   25.18  *   73.67  *
* Min Ch El (ft)          * 1709.12  * Shear (lb/sq ft)        *    0.47
*    2.27  *    0.44  *
* Alpha                   *    2.31  * Stream Power (lb/ft s) *    0.97
*   15.16  *    0.81  *
* Frctn Loss (ft)         *    5.08  * Cum Volume (acre-ft)    *    1.68
*    0.90  *    0.60  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    1.83
*    0.26  *    0.92  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
```

on with the calculations.
Warning: The energy loss was greater`than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T20
REACH: NRW55T20 RS: 0.08

INPUT
Description: U.S. of confluence with NRW55E
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9821.6	1710.26	9839.6	1709.14	9845.1	1708.94	9865	1707.61	9925.6	1707.03
9941.2	1707.29	9957.7	1706.89	9977.3	1706.9	9977.5	1706.9	9993.5	1706.04
9994.1	1706	9999.4	1704.63	9999.8	1704.46	10001	1704.46	10006.3	1704.53
10014.3	1706.39	10028.2	1708.39	10035.7	1707.82	10046.8	1707.23	10055.4	1707.44
10088.2	1708.11	10108.2	1708.65	10142.3	1709.37				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9821.6	.059	9994.1	.052	10014.3	.064

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9994.1	10014.3	0	0	0	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1708.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.059	0.052	0.064
W.S. Elev (ft)	1708.33	Reach Len. (ft)			
Crit W.S. (ft)	1708.10	Flow Area (sq ft)	163.82	65.49	51.66
E.G. Slope (ft/ft)	0.009004	Area (sq ft)	163.82	65.49	51.66
Q Total (cfs)	905.00	Flow (cfs)	434.79	383.66	86.55
Top Width (ft)	241.16	Top Width (ft)	139.92	20.20	81.04

```
* Vel Total (ft/s)        *    3.22  * Avg. Vel. (ft/s)        *    2.65
*    5.86  *    1.68  *
* Max Chl Dpth (ft)       *    3.87  * Hydr. Depth (ft)        *    1.17
*    3.24  *    0.64  *
* Conv. Total (cfs)       *  9537.4  * Conv. (cfs)             *  4582.0
*  4043.2  *   912.1  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *  139.98
*   20.62  *   81.22  *
* Min Ch El (ft)          * 1704.46  * Shear (lb/sq ft)        *    0.66
*    1.79  *    0.36  *
* Alpha                   *    1.75  * Stream Power (lb/ft s) *    1.75
*   10.46  *    0.60  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
*************************************************************************
************************

Warning: Divided flow computed for this cross-section.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 4.34

INPUT
Description: U.S. Limit of Study
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9915.6 1786.69  9926.1 1786.23  9928.8  1786.1  9956.3 1784.74  9983.5
1783.65
  9984.9  1783.6  9985.5 1783.34  9992.4 1781.08  9998.2 1778.66    9999
1778.45
 10000.9 1778.53 10009.7  1778.7 10027.4 1781.15 10031.4 1781.77 10045.5
1785.12
 10048.3  1785.7 10076.9 1786.19 10088.5 1786.53 10101.9 1786.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9915.6    .079  9992.4    .055 10027.4    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.4 10027.4              488     488     488             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1785.20  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.96  * Wt. n-Val.              *   0.079
*   0.055  *   0.079  *
* W.S. Elev (ft)          * 1784.24  * Reach Len. (ft)         *  488.00
*  488.00  *  488.00  *
```

```
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   19.55
*  166.52  *   23.88  *
* E.G. Slope (ft/ft)      *0.011592  * Area (sq ft)            *   19.55
*  166.52  *   23.88  *
* Q Total (cfs)           * 1454.00  * Flow (cfs)              *   34.62
* 1352.57  *   66.82  *
* Top Width (ft)          *   72.87  * Top Width (ft)          *   23.50
*   35.00  *   14.37  *
* Vel Total (ft/s)        *    6.93  * Avg. Vel. (ft/s)        *    1.77
*    8.12  *    2.80  *
* Max Chl Dpth (ft)       *    5.78  * Hydr. Depth (ft)        *    0.83
*    4.76  *    1.66  *
* Conv. Total (cfs)       * 13504.6  * Conv. (cfs)             *   321.5
* 12562.5  *   620.6  *
* Length Wtd. (ft)        *  488.00  * Wetted Per. (ft)        *   23.92
*   35.68  *   14.71  *
* Min Ch El (ft)          * 1778.45  * Shear (lb/sq ft)        *    0.59
*    3.38  *    1.18  *
* Alpha                   *    1.29  * Stream Power (lb/ft s) *    1.05
*   27.43  *    3.29  *
* Frctn Loss (ft)         *    4.51  * Cum Volume (acre-ft)    *   14.40
*   32.25  *   18.45  *
* C & E Loss (ft)         *    0.13  * Cum SA (acres)          *    9.19
*    7.26  *   12.67  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55E
REACH: NRW55E RS: 4.25

INPUT
Description:
Station Elevation Data num= 32

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9894.8 1781.66  9901.4 1781.32  9903.4 1781.19  9919.4 1779.86  9924.2
1779.51
  9930.6 1779.37    9942 1779.06    9951 1778.81  9951.2  1778.8  9966.2
1777.19
  9973.4 1776.51  9980.7 1776.11  9987.7 1775.65  9991.6 1774.79 10000.4
1773.54
 10000.6 1773.49 10009.7 1775.46 10009.8 1775.48 10016.6 1776.73   10019
1777.09
 10025.6 1777.52 10033.2 1777.83 10036.2 1778.02 10042.5 1778.74 10045.5
1779.2
 10047.9  1779.3 10062.4 1779.65 10063.3 1779.66 10081.2 1780.39 10088.9
1780.8
 10097.4 1781.16 10104.4 1781.43
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
```

```
  9894.8    .079  9987.7    .055 10009.7    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.7 10009.7              472     472     472             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1780.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.53  * Wt. n-Val.              *   0.079
*   0.055  *   0.079  *
* W.S. Elev (ft)          * 1780.03  * Reach Len. (ft)         *  472.00
*  472.00  *  472.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  134.27
*  122.11  *  102.03  *
* E.G. Slope (ft/ft)      *0.007532  * Area (sq ft)            *  134.27
*  122.11  *  102.03  *
* Q Total (cfs)           * 1454.00  * Flow (cfs)              *  336.92
*  886.93  *  230.16  *
* Top Width (ft)          *  154.84  * Top Width (ft)          *   70.29
*   22.00  *   62.55  *
* Vel Total (ft/s)        *    4.06  * Avg. Vel. (ft/s)        *    2.51
*    7.26  *    2.26  *
* Max Chl Dpth (ft)       *    6.54  * Hydr. Depth (ft)        *    1.91
*    5.55  *    1.63  *
* Conv. Total (cfs)       * 16753.4  * Conv. (cfs)             *  3882.1
* 10219.4  *  2651.9  *
* Length Wtd. (ft)        *  472.00  * Wetted Per. (ft)        *   70.46
*   22.40  *   62.81  *
* Min Ch El (ft)          * 1773.49  * Shear (lb/sq ft)        *    0.90
*    2.56  *    0.76  *
* Alpha                   *    2.09  * Stream Power (lb/ft s) *    2.25
*   18.62  *    1.72  *
* Frctn Loss (ft)         *    4.40  * Cum Volume (acre-ft)    *   13.54
*   30.63  *   17.74  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    8.67
*    6.94  *   12.24  *
************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 4.16

INPUT
Description: Northside of Section Line 12/13
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9941.6  1779.3  9942.7 1779.11  9950.1 1778.09  9961.5 1775.15  9984.6
```

```
1771.7
  9993.8 1770.27  9996.8 1769.36  9997.7  1769.2  9999.4 1769.45 10007.7
1770.5
 10015.9  1770.6 10018.2 1771.06 10038.3 1774.78 10046.2 1776.16 10049.3
1776.71
 10050.7 1776.82 10082.6  1776.8 10082.8  1776.8 10108.5 1777.29 10115.9
1777.52
 10131.8 1778.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9941.6    .079  9993.8    .055 10007.7    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.8 10007.7              138     138     138             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
************************
* E.G. Elev (ft)          * 1776.14  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.76  * Wt. n-Val.              *   0.079
*   0.055  *   0.079  *
* W.S. Elev (ft)          * 1775.38  * Reach Len. (ft)         *  138.00
*  138.00  *  138.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   85.79
*   77.38  *  100.65  *
* E.G. Slope (ft/ft)      *0.011818  * Area (sq ft)            *   85.79
*   77.38  *  100.65  *
* Q Total (cfs)           * 1454.00  * Flow (cfs)              *  327.74
*  706.02  *  420.25  *
* Top Width (ft)          *   81.15  * Top Width (ft)          *   33.20
*   13.90  *   34.05  *
* Vel Total (ft/s)        *    5.51  * Avg. Vel. (ft/s)        *    3.82
*    9.12  *    4.18  *
* Max Chl Dpth (ft)       *    6.18  * Hydr. Depth (ft)        *    2.58
*    5.57  *    2.96  *
* Conv. Total (cfs)       * 13374.8  * Conv. (cfs)             *  3014.7
*  6494.4  *  3865.7  *
* Length Wtd. (ft)        *  138.00  * Wetted Per. (ft)        *   33.60
*   14.13  *   34.49  *
* Min Ch El (ft)          * 1769.20  * Shear (lb/sq ft)        *    1.88
*    4.04  *    2.15  *
* Alpha                   *    1.60  * Stream Power (lb/ft s) *    7.20
*   36.86  *    8.99  *
* Frctn Loss (ft)         *    1.70  * Cum Volume (acre-ft)    *   12.35
*   29.55  *   16.64  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    8.11
*    6.74  *   11.72  *
**********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW55E
REACH: NRW55E              RS: 4.14

INPUT
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9938.6 1779.99  9939.2 1779.77  9939.7 1779.64  9942.3 1779.15  9948.3
1777.9
  9955.2 1775.83  9958.6 1774.97  9968.4  1772.1  9978.8 1769.83  9991.1
1769.2
  9991.3 1769.17  9999.9 1768.02   10005 1768.95 10005.3    1769 10005.8
1769.03
 10014.4 1769.22 10031.9 1772.14 10041.7 1773.63 10043.8 1773.96   10049
1774.43
   10074  1775.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9938.6    .079  9991.3    .055   10005    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.3   10005              196     196     196             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1774.43  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.72  * Wt. n-Val.              *   0.079
*   0.055  *   0.079  *
* W.S. Elev (ft)          * 1773.71  * Reach Len. (ft)         *  196.00
*  196.00  *  196.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   85.57
*   70.68  *  104.46  *
* E.G. Slope (ft/ft)      *0.012785  * Area (sq ft)            *   85.57
*   70.68  *  104.46  *
* Q Total (cfs)           * 1454.00  * Flow (cfs)              *  375.24
*  639.72  *  439.04  *
* Top Width (ft)          *   79.34  * Top Width (ft)          *   28.41
*   13.70  *   37.23  *
* Vel Total (ft/s)        *    5.58  * Avg. Vel. (ft/s)        *    4.39
*    9.05  *    4.20  *
* Max Chl Dpth (ft)       *    5.69  * Hydr. Depth (ft)        *    3.01
*    5.16  *    2.81  *
* Conv. Total (cfs)       * 12859.1  * Conv. (cfs)             *  3318.6
*  5657.7  *  3882.8  *
* Length Wtd. (ft)        *  196.00  * Wetted Per. (ft)        *   28.90
*   13.86  *   37.60  *
* Min Ch El (ft)          * 1768.02  * Shear (lb/sq ft)        *    2.36
*    4.07  *    2.22  *
* Alpha                   *    1.49  * Stream Power (lb/ft s) *   10.36
*   36.84  *    9.32  *
* Frctn Loss (ft)         *    2.06  * Cum Volume (acre-ft)    *   12.08
```

```
*   29.31  *   16.32  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *    8.01
*    6.70  *   11.61  *
*************************************************************************
***********************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 4.10

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9980.4 1772.88  9982.7 1771.62  9990.1 1767.26  9991.8  1766.6  9995.3
1766.61
  9998.5 1766.44 10012.7 1767.22 10014.1 1767.25 10022.1 1767.43 10024.1
1767.5
 10027.1 1767.52 10037.7 1767.55 10042.6 1768.34 10049.1 1770.06   10054
1771.05
 10064.2 1771.92 10071.2 1772.05   10093 1772.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9980.4    .079  9990.1    .055 10014.1    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.1 10014.1              100     100     100             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
* E.G. Elev (ft)         * 1772.34  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.58  * Wt. n-Val.              *   0.079
*   0.055  *   0.079  *
* W.S. Elev (ft)         * 1771.76  * Reach Len. (ft)         *  100.00
*  100.00  *  100.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   17.15
*  119.25  *  145.48  *
* E.G. Slope (ft/ft)     *0.008769  * Area (sq ft)            *   17.15
*  119.25  *  145.48  *
* Q Total (cfs)          * 1454.00  * Flow (cfs)              *   46.89
*  874.84  *  532.26  *
* Top Width (ft)         *   79.82  * Top Width (ft)          *    7.65
*   24.00  *   48.18  *
* Vel Total (ft/s)       *    5.16  * Avg. Vel. (ft/s)        *    2.73
*    7.34  *    3.66  *
* Max Chl Dpth (ft)      *    5.32  * Hydr. Depth (ft)        *    2.24
```

```
*    4.97  *    3.02  *
* Conv. Total (cfs)      * 15527.3  * Conv. (cfs)            *   500.8
*  9342.4  *  5684.0  *
* Length Wtd. (ft)       *  100.00  * Wetted Per. (ft)       *    8.87
*   24.15  *   48.60  *
* Min Ch El (ft)         * 1766.44  * Shear (lb/sq ft)       *    1.06
*    2.70  *    1.64  *
* Alpha                  *    1.41  * Stream Power (lb/ft s) *    2.89
*   19.83  *    6.00  *
* Frctn Loss (ft)        *    0.61  * Cum Volume (acre-ft)   *   11.84
*   28.89  *   15.76  *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)         *    7.93
*    6.62  *   11.41  *
*************************************************************************
************************

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E            RS: 4.08

INPUT
Description: D.S. Limit of Study
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9977.2 1775.74  9993.3 1765.75    9995 1765.14  9997.2 1764.82  9999.8
1764.55
   10010 1765.74 10010.6  1765.8 10011.7 1765.84 10027.4 1766.47 10028.5
1766.46
 10034.1  1766.5   10043 1766.51 10045.1 1766.55 10066.6 1769.97 10076.7
1771.71
 10096.5 1772.61

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9977.2    .079  9993.3    .055   10010    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.3   10010              257     257     257             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)         * 1771.65  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.33  * Wt. n-Val.             *   0.079
*   0.055  *   0.079  *
* W.S. Elev (ft)         * 1771.32  * Reach Len. (ft)        *  257.00
*  257.00  *  257.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *   24.96
*  104.10  *  246.64  *
* E.G. Slope (ft/ft)     *0.004537  * Area (sq ft)           *   24.96
*  104.10  *  246.64  *
* Q Total (cfs)          * 1454.00  * Flow (cfs)             *   56.13
```

```
*  636.26  *  761.60  *
* Top Width (ft)          *   90.08  * Top Width (ft)          *    8.97
*   16.70  *   64.41  *
* Vel Total (ft/s)        *    3.87  * Avg. Vel. (ft/s)        *    2.25
*    6.11  *    3.09  *
* Max Chl Dpth (ft)       *    6.77  * Hydr. Depth (ft)        *    2.78
*    6.23  *    3.83  *
* Conv. Total (cfs)       * 21587.4  * Conv. (cfs)             *   833.4
*  9446.5  * 11307.5  *
* Length Wtd. (ft)        *  257.00  * Wetted Per. (ft)        *   10.56
*   16.91  *   64.82  *
* Min Ch El (ft)          * 1764.55  * Shear (lb/sq ft)        *    0.67
*    1.74  *    1.08  *
* Alpha                   *    1.44  * Stream Power (lb/ft s) *    1.51
*   10.65  *    3.33  *
* Frctn Loss (ft)         *    2.22  * Cum Volume (acre-ft)    *   11.80
*   28.63  *   15.31  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *    7.91
*    6.57  *   11.28  *
*************************************************************************
************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 4.03

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9941 1777.54  9944.2 1777.41  9956.2 1773.45  9956.9 1773.21  9960.3
1772.27
  9980.4 1766.58  9984.8 1765.57    9996 1762.64   10000 1760.71 10000.5
1760.82
 10017.6 1763.66 10021.3 1764.35 10027.5  1764.3 10039.7 1764.45 10046.4
1764.88
 10057.3 1765.25 10069.2  1766.7 10071.3 1766.92 10103.7 1768.72 10109.5
1769.04
 10139.2 1771.89 10149.5 1771.51 10164.3 1771.49 10217.5  1773.9 10228.9
1774.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9941    .079  9984.8    .049 10021.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.8 10021.3               199     199     199              .3
```

.5

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1769.34  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.32  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1768.02  * Reach Len. (ft)         *  199.00
*  199.00  *  199.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *   12.21
*  186.50  *  159.73  *
* E.G. Slope (ft/ft)      *0.013932  * Area (sq ft)            *   12.21
*  186.50  *  159.73  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *   31.38
* 1940.52  *  615.10  *
* Top Width (ft)          *  115.76  * Top Width (ft)          *    9.48
*   36.50  *   69.77  *
* Vel Total (ft/s)        *    7.22  * Avg. Vel. (ft/s)        *    2.57
*   10.41  *    3.85  *
* Max Chl Dpth (ft)       *    7.31  * Hydr. Depth (ft)        *    1.29
*    5.11  *    2.29  *
* Conv. Total (cfs)       * 21917.2  * Conv. (cfs)             *   265.9
* 16440.2  *  5211.1  *
* Length Wtd. (ft)        *  199.00  * Wetted Per. (ft)        *    9.80
*   37.63  *   69.93  *
* Min Ch El (ft)          * 1760.71  * Shear (lb/sq ft)        *    1.08
*    4.31  *    1.99  *
* Alpha                   *    1.63  * Stream Power (lb/ft s) *    2.79
*   44.86  *    7.65  *
* Frctn Loss (ft)         *    2.12  * Cum Volume (acre-ft)    *   11.69
*   27.77  *   14.11  *
* C & E Loss (ft)         *    0.23  * Cum SA (acres)          *    7.85
*    6.41  *   10.89  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55E
REACH: NRW55E RS: 3.99

INPUT
Description:
Station Elevation Data num= 25

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9841.8 1770.12  9864.5 1767.47  9879.1 1766.23  9891.7 1765.48  9919.6
1764.16
  9928.9 1763.51  9949.6 1762.38  9955.5  1762.4  9963.8 1762.63  9965.9
1762.62
  9967.4 1762.63  9973.3 1762.59  9979.7 1761.53  9982.4 1761.05  9984.6
1760.91
```

```
  9991.6 1760.29  9994.4  1760.1  9999.6  1759.4 10004.5 1759.76 10009.6
1760.8
 10015.1 1762.63 10031.5  1768.3 10041.6 1768.36 10053.3 1768.81 10076.5
1770.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9841.8    .079  9973.3    .049 10015.1    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.3 10015.1              521     521     521             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1766.99  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.85  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1766.13  * Reach Len. (ft)         *  521.00
*  521.00  *  521.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  213.02
*  225.25  *   17.74  *
* E.G. Slope (ft/ft)      *0.008396  * Area (sq ft)            *  213.02
*  225.25  *   17.74  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  639.50
* 1904.73  *   42.77  *
* Top Width (ft)          *  144.49  * Top Width (ft)          *   92.56
*   41.80  *   10.13  *
* Vel Total (ft/s)        *    5.67  * Avg. Vel. (ft/s)        *    3.00
*    8.46  *    2.41  *
* Max Chl Dpth (ft)       *    6.73  * Hydr. Depth (ft)        *    2.30
*    5.39  *    1.75  *
* Conv. Total (cfs)       * 28232.6  * Conv. (cfs)             *  6979.0
* 20786.8  *   466.8  *
* Length Wtd. (ft)        *  521.00  * Wetted Per. (ft)        *   92.66
*   42.43  *   10.72  *
* Min Ch El (ft)          * 1759.40  * Shear (lb/sq ft)        *    1.21
*    2.78  *    0.87  *
* Alpha                   *    1.71  * Stream Power (lb/ft s) *    3.62
*   23.53  *    2.09  *
* Frctn Loss (ft)         *    6.01  * Cum Volume (acre-ft)    *   11.17
*   26.83  *   13.70  *
* C & E Loss (ft)         *    0.26  * Cum SA (acres)          *    7.62
*    6.23  *   10.71  *
**************************************************************************
************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: NRW55E
REACH: NRW55E RS: 3.89

INPUT
Description:
Station Elevation Data num= 26

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9906.3  1761.6  9925.5 1760.37  9932.4 1760.12  9959.1 1759.11  9959.5
1759.1
  9959.7 1759.05  9969.3 1756.53  9971.5 1756.29  9974.8    1756  9983.9
1755.71
  9993.5 1753.21  9993.8 1753.16  9999.9 1751.91   10010 1753.94 10020.7
1756.15
 10026.9 1756.74 10038.2 1757.14 10050.1 1757.77 10057.6 1758.48 10066.9
1758.95
 10075.1 1759.67 10076.3 1759.78 10094.4 1761.08   10097  1761.2 10101.9
1761.62
 10105.2 1761.81
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9906.3    .079  9983.9    .049 10020.7    .079
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9983.9 10020.7               486     486     486             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
**************************************************************************
************************
* E.G. Elev (ft)          * 1760.72  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.74  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1758.98  * Reach Len. (ft)         *  486.00
*  486.00  *  486.00  *
* Crit W.S. (ft)          * 1758.98  * Flow Area (sq ft)       *   54.94
*  187.79  *   65.91  *
* E.G. Slope (ft/ft)      *0.016804  * Area (sq ft)            *   54.94
*  187.79  *   65.91  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  230.80
* 2153.93  *  202.27  *
* Top Width (ft)          *  107.31  * Top Width (ft)          *   23.94
*   36.80  *   46.57  *
* Vel Total (ft/s)        *    8.38  * Avg. Vel. (ft/s)        *    4.20
*   11.47  *    3.07  *
* Max Chl Dpth (ft)       *    7.07  * Hydr. Depth (ft)        *    2.29
*    5.10  *    1.42  *
* Conv. Total (cfs)       * 19956.6  * Conv. (cfs)             *  1780.4
* 16615.8  *  1560.4  *
* Length Wtd. (ft)        *  486.00  * Wetted Per. (ft)        *   24.29
*   37.68  *   46.67  *
```

```
* Min Ch El (ft)          * 1751.91  * Shear (lb/sq ft)        *    2.37
*    5.23  *    1.48  *
* Alpha                   *    1.59  * Stream Power (lb/ft s) *    9.97
*   59.97  *    4.55  *
* Frctn Loss (ft)         *    6.87  * Cum Volume (acre-ft)   *    9.57
*   24.36  *   13.20  *
* C & E Loss (ft)         *    0.23  * Cum SA (acres)         *    6.92
*    5.76  *   10.37  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 3.80

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9879.5 1754.27  9880.8 1754.19  9911.3 1752.63  9941.8 1751.34  9950.9
1750.53
  9967.8 1750.21  9969.1 1750.08  9974.8 1749.24  9990.4 1746.49  9997.5
1745.77
 10000.3 1745.41 10009.3 1745.23 10010.2 1745.32 10022.5  1749.2 10031.9
1752.27
 10032.9 1752.25   10047 1751.21 10060.3 1750.62 10067.1  1750.3   10070
1750.3
 10075.5  1750.4 10083.3  1750.7 10084.8 1750.69   10098 1750.52 10098.8
1750.4
 10100.4 1750.43 10107.6 1750.45 10117.8 1751.26 10124.2 1752.71 10127.1
1753.43
 10130.1 1753.56 10152.5 1754.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9879.5    .079  9974.8    .049 10022.5    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.8 10022.5              441     441     441             .3
.5
```

```
CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1753.04  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.27  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1751.77  * Reach Len. (ft)         *  441.00
*  441.00  *  441.00  *
* Crit W.S. (ft)          * 1751.67  * Flow Area (sq ft)       *   47.68
*  237.74  *   93.99  *
* E.G. Slope (ft/ft)      *0.012052  * Area (sq ft)            *   47.68
*  237.74  *   93.99  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  104.93
* 2280.68  *  201.39  *
* Top Width (ft)          *  179.48  * Top Width (ft)          *   43.22
*   47.70  *   88.56  *
* Vel Total (ft/s)        *    6.82  * Avg. Vel. (ft/s)        *    2.20
*    9.59  *    2.14  *
* Max Chl Dpth (ft)       *    6.54  * Hydr. Depth (ft)        *    1.10
*    4.98  *    1.06  *
* Conv. Total (cfs)       * 23564.5  * Conv. (cfs)             *   955.8
* 20774.3  *  1834.4  *
* Length Wtd. (ft)        *  441.00  * Wetted Per. (ft)        *   43.34
*   48.60  *   89.12  *
* Min Ch El (ft)          * 1745.23  * Shear (lb/sq ft)        *    0.83
*    3.68  *    0.79  *
* Alpha                   *    1.76  * Stream Power (lb/ft s) *    1.82
*   35.31  *    1.70  *
* Frctn Loss (ft)         *    5.05  * Cum Volume (acre-ft)    *    9.00
*   21.99  *   12.31  *
* C & E Loss (ft)         *    0.23  * Cum SA (acres)          *    6.55
*    5.29  *    9.61  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 3.72

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9877.4  1755.6  9884.7 1753.06  9889.1 1751.66  9891.8 1751.01  9901.4
1748.32
  9913.2 1746.52  9921.7 1745.19  9922.4 1745.03  9931.2 1743.53  9933.6
1743.88
  9938.5 1744.37  9943.1 1744.45    9949 1744.74  9952.9 1744.67  9958.8
1744.63
```

```
  9965.2 1744.02  9970.1 1743.43  9980.6  1743.7  9990.2 1742.64    9993
1741.87
 10000.1 1740.21 10005.1 1741.39 10010.8  1742.4 10024.2 1744.48 10027.2
1744.98
 10029.7 1744.94 10069.7 1745.45 10105.1 1746.55 10138.9 1747.66 10181.5
1749.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9877.4    .079  9980.6    .049 10024.2    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9980.6 10024.2              575     575     575             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1747.76  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.81  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1746.95  * Reach Len. (ft)         *  575.00
*  575.00  *  575.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  172.55
*  198.10  *  118.14  *
* E.G. Slope (ft/ft)      *0.010895  * Area (sq ft)            *  172.55
*  198.10  *  118.14  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  614.42
* 1700.97  *  271.60  *
* Top Width (ft)          *  206.99  * Top Width (ft)          *   70.23
*   43.60  *   93.16  *
* Vel Total (ft/s)        *    5.29  * Avg. Vel. (ft/s)        *    3.56
*    8.59  *    2.30  *
* Max Chl Dpth (ft)       *    6.74  * Hydr. Depth (ft)        *    2.46
*    4.54  *    1.27  *
* Conv. Total (cfs)       * 24784.7  * Conv. (cfs)             *  5886.5
* 16296.1  *  2602.1  *
* Length Wtd. (ft)        *  575.00  * Wetted Per. (ft)        *   70.64
*   44.34  *   93.22  *
* Min Ch El (ft)          * 1740.21  * Shear (lb/sq ft)        *    1.66
*    3.04  *    0.86  *
* Alpha                   *    1.86  * Stream Power (lb/ft s) *    5.92
*   26.09  *    1.98  *
* Frctn Loss (ft)         *    6.69  * Cum Volume (acre-ft)    *    7.88
*   19.78  *   11.24  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    5.97
*    4.83  *    8.69  *
**************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55E
```

```
REACH: NRW55E              RS: 3.61

INPUT
Description:
Station Elevation Data     num=       32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9848.1 1742.57  9860.1 1741.32    9864 1741.03  9875.4 1740.89  9917.4
1738.97
  9933.5 1738.47  9947.8 1738.04  9950.6    1738  9970.9  1737.6  9972.9
1737.31
  9978.1 1736.44  9980.9 1736.41  9989.2 1736.19  9995.1 1735.24  9999.2
1734.07
 10005.3 1735.66 10005.6 1735.71 10006.2 1735.73 10017.4 1736.18   10024
1735.6
 10025.7 1735.48 10027.9 1735.81 10036.9 1737.56 10047.8 1739.21 10052.1
1739.89
 10061.4 1740.53 10066.1 1740.71 10094.3 1740.86 10097.7  1740.9 10098.3
1740.9
 10132.1 1741.21 10179.6 1742.18

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9848.1    .079  9970.9    .049 10036.9    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9970.9 10036.9              499     499     499             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
***********************
* E.G. Elev (ft)          * 1741.01  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.99  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1740.02  * Reach Len. (ft)         *  499.00
*  499.00  *  499.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *  108.92
*  265.21  *   19.97  *
* E.G. Slope (ft/ft)      *0.012460  * Area (sq ft)            *  108.92
*  265.21  *   19.97  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  289.37
* 2251.45  *   46.18  *
* Top Width (ft)          *  159.57  * Top Width (ft)          *   76.47
*   66.00  *   17.09  *
* Vel Total (ft/s)        *    6.56  * Avg. Vel. (ft/s)        *    2.66
*    8.49  *    2.31  *
* Max Chl Dpth (ft)       *    5.95  * Hydr. Depth (ft)        *    1.42
*    4.02  *    1.17  *
* Conv. Total (cfs)       * 23175.5  * Conv. (cfs)             *  2592.3
* 20169.5  *   413.7  *
* Length Wtd. (ft)        *  499.00  * Wetted Per. (ft)        *   76.52
*   66.78  *   17.27  *
* Min Ch El (ft)          * 1734.07  * Shear (lb/sq ft)        *    1.11
*    3.09  *    0.90  *
* Alpha                   *    1.48  * Stream Power (lb/ft s) *    2.94
```

```
*   26.23  *    2.08  *
* Frctn Loss (ft)        *    5.74  * Cum Volume (acre-ft)   *    6.02
*   16.72  *   10.33  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *    5.01
*    4.11  *    7.97  *
**********************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 3.51

INPUT
Description:
Station Elevation Data    num=      23
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9915.2 1736.48  9933.8 1735.33  9938.5  1735.1  9940.1  1734.6    9952
1731.08
  9953.3  1730.8  9955.9 1730.55  9966.4 1729.64  9977.9 1730.11  9980.7
1730.2
  9994.2 1729.22  9994.8 1729.04 10000.5 1727.97 10005.5 1729.02 10005.8
1729.14
 10007.3 1729.48 10017.3 1732.13 10028.1 1734.08 10031.8 1733.99 10044.8
1733.54
 10064.7 1732.92 10066.5 1732.92   10217 1736.08

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9915.2    .079    9952    .049 10017.3    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9952 10017.3              500     500     500             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
************************
* E.G. Elev (ft)         * 1735.26  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.01  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)         * 1734.25  * Reach Len. (ft)         *  500.00
*  500.00  *  500.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)       *   16.99
*  288.31  *   84.31  *
* E.G. Slope (ft/ft)     *0.010643  * Area (sq ft)            *   16.99
*  288.31  *   84.31  *
* Q Total (cfs)          * 2587.00  * Flow (cfs)              *   43.59
* 2408.65  *  134.76  *
* Top Width (ft)         *  188.57  * Top Width (ft)          *   10.72
```

```
*   65.30  *  112.55  *
* Vel Total (ft/s)       *    6.64  * Avg. Vel. (ft/s)       *    2.57
*    8.35  *    1.60  *
* Max Chl Dpth (ft)      *    6.28  * Hydr. Depth (ft)       *    1.59
*    4.42  *    0.75  *
* Conv. Total (cfs)      * 25076.4  * Conv. (cfs)            *   422.5
* 23347.6  *  1306.3  *
* Length Wtd. (ft)       *  500.00  * Wetted Per. (ft)       *   11.18
*   66.07  *  112.76  *
* Min Ch El (ft)         * 1727.97  * Shear (lb/sq ft)       *    1.01
*    2.90  *    0.50  *
* Alpha                  *    1.48  * Stream Power (lb/ft s) *    2.59
*   24.22  *    0.79  *
* Frctn Loss (ft)        *    5.59  * Cum Volume (acre-ft)   *    5.30
*   13.55  *    9.73  *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *    4.51
*    3.35  *    7.22  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 3.42

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9879.7 1730.29  9918.9 1728.19  9926.4 1727.87  9942.1 1727.36  9948.7
1727.1
  9951.7  1727.2  9952.1 1727.22  9973.1  1727.9  9976.4 1727.44  9984.1
1725.91
  9992.3 1724.11  9999.5 1722.21 10005.2 1722.41 10007.3 1722.46 10013.6
1722.45
 10021.9 1722.98 10022.4 1723.08 10037.8 1726.31 10039.7 1726.68 10046.9
1727.81
 10073.4 1727.47 10074.7 1727.45 10075.2 1727.45 10077.4 1727.41 10083.5
1727.49
 10099.5 1727.83 10105.8  1727.8   10172 1728.58 10172.8 1728.59 10194.6
1728.87
 10204.9 1729.23 10266.8 1730.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9879.7    .079  9984.1    .049 10037.8    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9984.1 10037.8              505     505     505             .3
.5
```

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1729.61  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.22  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1728.39  * Reach Len. (ft)         *  505.00
*  505.00  *  505.00  *
* Crit W.S. (ft)          * 1728.39  * Flow Area (sq ft)       *   60.05
*  256.57  *   71.23  *
* E.G. Slope (ft/ft)      *0.011778  * Area (sq ft)            *   60.05
*  256.57  *   71.23  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  111.59
* 2371.64  *  103.77  *
* Top Width (ft)          *  240.64  * Top Width (ft)          *   68.92
*   53.70  *  118.02  *
* Vel Total (ft/s)        *    6.67  * Avg. Vel. (ft/s)        *    1.86
*    9.24  *    1.46  *
* Max Chl Dpth (ft)       *    6.18  * Hydr. Depth (ft)        *    0.87
*    4.78  *    0.60  *
* Conv. Total (cfs)       * 23837.4  * Conv. (cfs)             *  1028.2
* 21853.0  *   956.2  *
* Length Wtd. (ft)        *  505.00  * Wetted Per. (ft)        *   69.14
*   54.51  *  118.15  *
* Min Ch El (ft)          * 1722.21  * Shear (lb/sq ft)        *    0.64
*    3.46  *    0.44  *
* Alpha                   *    1.77  * Stream Power (lb/ft s) *    1.19
*   31.99  *    0.65  *
* Frctn Loss (ft)         *    5.20  * Cum Volume (acre-ft)    *    4.86
*   10.43  *    8.84  *
* C & E Loss (ft)         *    0.39  * Cum SA (acres)          *    4.05
*    2.67  *    5.90  *
*************************************************************************
************************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55E
REACH: NRW55E RS: 3.32

INPUT
Description:

```
Station Elevation Data     num=       31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9802.9  1729.7  9805.7 1729.68  9812.3 1727.72  9831.1 1725.36    9838
1724.22
  9872.3  1720.4  9888.7 1720.05  9905.1 1720.35  9916.5 1720.43  9919.6
1720.45
  9939.7  1722.1  9975.5 1718.44  9976.5 1718.52  9978.9 1718.62  9993.9
1718.84
  9996.2 1718.69 10000.8 1718.44 10010.3 1718.04 10020.3 1718.86 10020.8
1718.9
 10031.2  1720.1 10032.8 1720.23 10056.9 1721.81 10062.7 1721.64 10068.6
1721.73
 10085.9 1721.44 10092.1  1721.3 10096.4  1721.3 10134.8 1722.19 10198.5
1723.36
 10253.1 1724.09

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9802.9    .079  9939.7    .049 10056.9    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9939.7 10056.9               440     440     440             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1723.07  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.45  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1722.62  * Reach Len. (ft)         *  440.00
*  440.00  *  440.00  *
* Crit W.S. (ft)          * 1721.99  * Flow Area (sq ft)       *  160.30
*  343.96  *   80.66  *
* E.G. Slope (ft/ft)      *0.009078  * Area (sq ft)            *  160.30
*  343.96  *   80.66  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  429.99
* 2032.85  *  124.16  *
* Top Width (ft)          *  305.84  * Top Width (ft)          *   87.33
*  117.20  *  101.31  *
* Vel Total (ft/s)        *    4.42  * Avg. Vel. (ft/s)        *    2.68
*    5.91  *    1.54  *
* Max Chl Dpth (ft)       *    4.58  * Hydr. Depth (ft)        *    1.84
*    2.93  *    0.80  *
* Conv. Total (cfs)       * 27151.8  * Conv. (cfs)             *  4513.0
* 21335.7  *  1303.1  *
* Length Wtd. (ft)        *  440.00  * Wetted Per. (ft)        *   87.53
*  117.58  *  101.33  *
* Min Ch El (ft)          * 1718.04  * Shear (lb/sq ft)        *    1.04
*    1.66  *    0.45  *
* Alpha                   *    1.47  * Stream Power (lb/ft s) *    2.78
*    9.80  *    0.69  *
* Frctn Loss (ft)         *    4.36  * Cum Volume (acre-ft)    *    3.58
*    6.94  *    7.95  *
* C & E Loss (ft)         *    0.16  * Cum SA (acres)          *    3.14
```

```
*    1.68  *    4.63  *
**********************************************************************
***********************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 3.24

INPUT
Description:
Station Elevation Data    num=      46
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9624.9 1719.13  9719.5 1717.62    9729 1717.73  9739.2 1717.61    9760
1717.71
  9767.1 1717.81  9769.7 1717.72  9774.9 1717.65  9780.5 1717.37  9788.5
1716.68
  9789.4 1716.63  9803.6 1716.82  9808.8 1716.84  9816.3 1716.77  9829.4
1716.59
    9860 1716.38  9885.5  1716.5  9891.6 1716.58  9912.8 1716.54  9929.4
1716.84
  9932.5 1716.69    9934 1716.85  9945.2 1717.02  9962.8 1717.41  9968.9
1716.21
  9976.8  1714.6  9981.1 1713.85  9992.8 1712.91  9994.5 1712.85   10000
1711.81
 10004.7 1712.04 10007.6  1712.4   10019 1712.87 10023.4 1713.16 10032.9
1714.96
 10038.6 1716.15 10042.4 1716.94 10045.7 1716.88   10077  1716.8   10087
1717.21
 10088.4 1717.23 10103.2 1717.21 10133.7 1717.87 10141.9 1717.98 10180.5
1718
 10294.7 1719.22

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9624.9    .079  9976.8    .049 10032.9    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9976.8 10032.9              512     512     512             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)         * 1718.55  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.96  * Wt. n-Val.             *   0.079
*   0.049  *   0.079  *
```

```
* W.S. Elev (ft)          * 1717.58  * Reach Len. (ft)         *  512.00
*  512.00  *  512.00  *
* Crit W.S. (ft)          * 1717.58  * Flow Area (sq ft)       *  184.18
*  252.52  *   55.70  *
* E.G. Slope (ft/ft)      *0.010866  * Area (sq ft)            *  184.18
*  252.52  *   55.70  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  340.84
* 2165.46  *   80.70  *
* Top Width (ft)          *  344.08  * Top Width (ft)          *  200.52
*   56.10  *   87.45  *
* Vel Total (ft/s)        *    5.25  * Avg. Vel. (ft/s)        *    1.85
*    8.58  *    1.45  *
* Max Chl Dpth (ft)       *    5.77  * Hydr. Depth (ft)        *    0.92
*    4.50  *    0.64  *
* Conv. Total (cfs)       * 24817.2  * Conv. (cfs)             *  3269.7
* 20773.3  *   774.2  *
* Length Wtd. (ft)        *  512.00  * Wetted Per. (ft)        *  200.86
*   56.52  *   87.67  *
* Min Ch El (ft)          * 1711.81  * Shear (lb/sq ft)        *    0.62
*    3.03  *    0.43  *
* Alpha                   *    2.25  * Stream Power (lb/ft s) *    1.15
*   25.99  *    0.62  *
* Frctn Loss (ft)         *    4.92  * Cum Volume (acre-ft)    *    1.84
*    3.93  *    7.27  *
* C & E Loss (ft)         *    0.20  * Cum SA (acres)          *    1.69
*    0.81  *    3.67  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55E
REACH: NRW55E             RS: 3.14

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9967 1715.08  9977.3 1714.28  9986.7 1713.67  9988.6 1713.54  9994.1
1707.69
  9996.4 1705.62  9998.4 1705.72 10003.7 1705.84 10018.2 1708.72 10018.7
1708.8
 10019.7 1708.82 10033.6 1708.94 10040.6 1708.09 10041.8 1707.97 10042.7
```

```
1708.06
 10052.9 1709.05 10088.4 1709.18 10114.6 1709.54 10120.5 1709.63 10159.4
1710.53
 10189.7 1711.08 10202.5 1711.65 10214.1 1712.07 10223.5 1712.78 10223.8
1712.8
 10233.3 1712.91 10234.2 1712.93 10252.7 1713.75   10259 1713.41 10261.3
1713.3
 10261.7 1713.33 10261.9 1713.36

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9967    .079  9994.1    .049 10018.2    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9994.1 10018.2              510     510     510             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1712.80  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.57  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1712.23  * Reach Len. (ft)         *  510.00
*  510.00  *  510.00  *
* Crit W.S. (ft)          * 1711.59  * Flow Area (sq ft)       *    9.70
*  131.96  *  468.20  *
* E.G. Slope (ft/ft)      *0.008575  * Area (sq ft)            *    9.70
*  131.96  *  468.20  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *   22.68
* 1117.94  * 1446.38  *
* Top Width (ft)          *  226.42  * Top Width (ft)          *    4.27
*   24.10  *  198.05  *
* Vel Total (ft/s)        *    4.24  * Avg. Vel. (ft/s)        *    2.34
*    8.47  *    3.09  *
* Max Chl Dpth (ft)       *    6.61  * Hydr. Depth (ft)        *    2.27
*    5.48  *    2.36  *
* Conv. Total (cfs)       * 27937.3  * Conv. (cfs)             *   244.9
* 12072.7  * 15619.7  *
* Length Wtd. (ft)        *  510.00  * Wetted Per. (ft)        *    6.23
*   25.18  *  198.21  *
* Min Ch El (ft)          * 1705.62  * Shear (lb/sq ft)        *    0.83
*    2.81  *    1.26  *
* Alpha                   *    2.02  * Stream Power (lb/ft s) *    1.95
*   23.77  *    3.91  *
* Frctn Loss (ft)         *    5.45  * Cum Volume (acre-ft)    *    0.71
*    1.67  *    4.19  *
* C & E Loss (ft)         *    0.11  * Cum SA (acres)          *    0.49
*    0.33  *    2.00  *
************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: NRW55E
REACH: NRW55E              RS: 3.05

INPUT
Description: U.S. of Confluence with NRW55T25
Station Elevation Data    num=      50
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9857.3 1709.27  9864.4 1708.59  9870.1 1708.14  9886.5 1707.08  9887.9
1706.96
  9900.8  1706.2  9914.3 1705.68  9932.2  1705.1  9938.5 1704.58  9941.6
1704.54
  9950.4 1704.23  9951.6 1704.19  9966.4 1704.44  9967.5 1704.49    9970
1704.28
  9974.5 1703.98  9977.5 1703.46  9988.8  1700.6  9991.2 1701.17  9993.5
1701.73
  9997.3 1701.14  9998.8 1700.73 10001.5 1701.07   10005 1701.59 10010.5
1702.97
   10015 1704.05 10015.6 1704.18 10019.4 1704.26 10055.1  1704.2 10056.2
1704.18
 10057.4 1704.18 10063.8 1704.23 10076.7  1704.4 10083.7 1704.25 10085.7
1704.19
   10093  1704.3 10100.6  1704.2 10105.6 1704.36 10112.9 1704.81 10128.2
1705.36
 10134.9 1705.55 10145.9  1705.8 10157.4 1706.59 10162.6 1706.74 10175.1
1707.04
 10184.3 1707.56 10189.4 1707.83 10206.7 1708.63 10215.9 1708.92   10231
1709.18

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9857.3    .079  9977.5    .049 10010.5    .079

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9977.5 10010.5              223     223     223             .3
.5

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1707.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.92  * Wt. n-Val.              *   0.079
*   0.049  *   0.079  *
* W.S. Elev (ft)          * 1706.32  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1706.32  * Flow Area (sq ft)       *  110.74
*  153.81  *  247.07  *
* E.G. Slope (ft/ft)      *0.013706  * Area (sq ft)            *  110.74
*  153.81  *  247.07  *
* Q Total (cfs)           * 2587.00  * Flow (cfs)              *  305.64
* 1498.81  *  782.55  *
* Top Width (ft)          *  254.83  * Top Width (ft)          *   78.80
*   33.00  *  143.02  *
* Vel Total (ft/s)        *    5.06  * Avg. Vel. (ft/s)        *    2.76
*    9.74  *    3.17  *
```

```
* Max Chl Dpth (ft)       *    5.72  * Hydr. Depth (ft)        *    1.41
*    4.66  *    1.73  *
* Conv. Total (cfs)       * 22097.6  * Conv. (cfs)             *  2610.7
* 12802.5  *  6684.4  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   78.92
*   33.82  *  143.22  *
* Min Ch El (ft)          * 1700.60  * Shear (lb/sq ft)        *    1.20
*    3.89  *    1.48  *
* Alpha                   *    2.31  * Stream Power (lb/ft s) *    3.31
*   37.92  *    4.68  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
*****************************************************************************
***********************
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Warning: User specified water surface is not possible for the specified flow regime. The program used
critical depth as the starting water surface.

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*****************************************************************************
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SUMMARY OF MANNING'S N VALUES

River:NRW55T15

Reach	River Sta.	n1	n2	n3
NRW55T15	2.27	.078	.052	.078
NRW55T15	2.19	.078	.052	.078
NRW55T15	2.13	.078	.052	.078
NRW55T15	2.08	.078	.052	.078
NRW55T15	2	.078	.052	.078
NRW55T15	1.97	.078	.052	.078
NRW55T15	1.94	.078	.052	.078
NRW55T15	1.91	.078	.052	.078
NRW55T15	1.85	.078	.052	.078
NRW55T15	1.81	.078	.052	.078
NRW55T15	1.78	.078	.052	.078
NRW55T15	1.72	.078	.052	.078
NRW55T15	1.65	.078	.052	.078
NRW55T15	1.62	.078	.052	.078
NRW55T15	1.56	.078	.052	.078
NRW55T15	1.54	.078	.052	.078
NRW55T15	1.52	.078	.052	.078
NRW55T15	1.46	.078	.052	.078
NRW55T15	1.44	.078	.052	.078
NRW55T15	1.34	.078	.052	.078
NRW55T15	1.3	.078	.052	.078
NRW55T15	1.25	.078	.052	.078
NRW55T15	1.23	.078	.052	.078
NRW55T15	1.16	.078	.052	.078
NRW55T15	1.07	.078	.052	.078
NRW55T15	0.98	.078	.052	.078
NRW55T15	0.88	.078	.052	.078
NRW55T15	0.84	.078	.052	.078
NRW55T15	0.79	.078	.052	.078
NRW55T15	0.76	.078	.052	.078
NRW55T15	0.68	.078	.052	.078

*NRW55T15	* 0.65	* .078*	.052*	.078*
*NRW55T15	* 0.61	* .078*	.052*	.078*
*NRW55T15	* 0.59	* .078*	.052*	.078*
*NRW55T15	* 0.55	* .078*	.052*	.078*
*NRW55T15	* 0.5	* .078*	.052*	.078*
*NRW55T15	* 0.41	* .078*	.052*	.078*
*NRW55T15	* 0.37	* .078*	.052*	.078*
*NRW55T15	* 0.31	* .078*	.052*	.078*
*NRW55T15	* 0.21	* .078*	.052*	.078*
*NRW55T15	* 0.12	* .078*	.052*	.078*
*NRW55T15	* 0.09	* .078*	.052*	.078*

River:NRW55D

* Reach	* River Sta.	* n1	* n2	* n3 *
*NRW55D	* 3.00	* .074*	.055*	.071*
*NRW55D	* 2.95	* .074*	.055*	.071*
*NRW55D	* 2.86	* .074*	.055*	.071*
*NRW55D	* 2.77	* .074*	.055*	.071*
*NRW55D	* 2.67	* .074*	.055*	.071*
*NRW55D	* 2.61	* .074*	.055*	.071*

River:NRW55T30

* Reach	* River Sta.	* n1	* n2	* n3 *
*NRW55T30	* 0.72	* .078*	.074*	.079*
*NRW55T30	* 0.63	* .078*	.074*	.079*
*NRW55T30	* 0.56	* .078*	.074*	.079*
*NRW55T30	* 0.49	* .078*	.074*	.079*
*NRW55T30	* 0.42	* .078*	.074*	.079*
*NRW55T30	* 0.33	* .078*	.074*	.079*
*NRW55T30	* 0.26	* .078*	.074*	.079*
*NRW55T30	* 0.22	* .078*	.074*	.079*
*NRW55T30	* 0.18	* .078*	.074*	.079*
*NRW55T30	* 0.11	* .078*	.074*	.079*

River:NRW55T5

* Reach	* River Sta.	* n1	* n2	* n3 *
*NRW55T5	* 0.69	* .044*	.043*	.039*
*NRW55T5	* 0.62	* .044*	.043*	.039*
*NRW55T5	* 0.57	* .044*	.043*	.039*
*NRW55T5	* 0.52	* .044*	.043*	.039*
*NRW55T5	* 0.47	* .044*	.043*	.039*
*NRW55T5	* 0.37	* .044*	.043*	.039*
*NRW55T5	* 0.29	* .044*	.043*	.039*
*NRW55T5	* 0.22	* .044*	.043*	.039*
*NRW55T5	* 0.11	* .044*	.043*	.039*

River:NRW55T10A

* Reach	* River Sta.	* n1	* n2	* n3 *
*NRW55T10A	* 1.25	* .078*	.052*	.078*

*NRW55T10A	1.2	.078	.052	.078
*NRW55T10A	1.08	.078	.052	.078
*NRW55T10A	0.99	.078	.052	.078
*NRW55T10A	0.89	.078	.052	.078
*NRW55T10A	0.8	.078	.052	.078
*NRW55T10A	0.69	.078	.052	.078
*NRW55T10A	0.6	.078	.052	.078
*NRW55T10A	0.51	.078	.052	.078
*NRW55T10A	0.4	.078	.052	.078
*NRW55T10A	0.31	.078	.052	.078
*NRW55T10A	0.22	.078	.052	.078
*NRW55T10A	0.17	.078	.052	.078
*NRW55T10A	0.12	.078	.052	.078

River:NRW55T10B

Reach	River Sta.	n1	n2	n3
*NRW55T10B	3	.078	.052	.078
*NRW55T10B	2.9	.078	.052	.078
*NRW55T10B	2.89	.078	.052	.078
*NRW55T10B	2.86	.078	.052	.078
*NRW55T10B	2.83	.078	.052	.078
*NRW55T10B	2.81	.078	.052	.078
*NRW55T10B	2.76	.078	.052	.078
*NRW55T10B	2.71	.078	.052	.078
*NRW55T10B	2.67	.078	.052	.078
*NRW55T10B	2.62	.078	.052	.078
*NRW55T10B	2.58	.078	.052	.078
*NRW55T10B	2.52	.078	.052	.078
*NRW55T10B	2.51	.078	.052	.078
*NRW55T10B	2.47	.078	.052	.078
*NRW55T10B	2.42	.078	.052	.078
*NRW55T10B	2.38	.078	.052	.078
*NRW55T10B	2.32	.078	.052	.078
*NRW55T10B	2.27	.078	.052	.078
*NRW55T10B	2.22	.078	.052	.078
*NRW55T10B	2.17	.078	.052	.078
*NRW55T10B	2.13	.078	.052	.078
*NRW55T10B	2.08	.078	.052	.078
*NRW55T10B	2.03	.078	.052	.078
*NRW55T10B	1.94	.078	.052	.078
*NRW55T10B	1.87	.078	.052	.078
*NRW55T10B	1.84	.078	.052	.078
*NRW55T10B	1.8	.078	.052	.078
*NRW55T10B	1.75	.078	.052	.078
*NRW55T10B	1.7	.078	.052	.078
*NRW55T10B	1.63	.078	.052	.078
*NRW55T10B	1.56	.078	.052	.078
*NRW55T10B	1.51	.078	.052	.078
*NRW55T10B	1.45	.078	.052	.078
*NRW55T10B	1.39	.078	.052	.078
*NRW55T10B	1.33	.078	.052	.078

River:NRW55A

Reach	River Sta.	n1	n2	n3
*NRW55A	1.78	.016	.016	.016

*NRW55A	* 1.77	* .064*	.043*	.064*
*NRW55A	* 1.67	* .064*	.043*	.064*

River:NRW55B

Reach	River Sta.	n1	n2	n3
*NRW55B	* 2.34	* .084*	.054*	.084*
*NRW55B	* 2.21	* .084*	.054*	.084*
*NRW55B	* 2.10	* .084*	.054*	.084*
*NRW55B	* 2.02	* .084*	.054*	.084*
*NRW55B	* 1.91	* .084*	.054*	.084*

River:NRW55C

Reach	River Sta.	n1	n2	n3
*NRW55C	* 2.54	* .074*	.055*	.071*
*NRW55C	* 2.49	* .074*	.055*	.071*
*NRW55C	* 2.40	* .074*	.055*	.071*

River:NRW55T20

Reach	River Sta.	n1	n2	n3
*NRW55T20	* 0.64	* .059*	.052*	.064*
*NRW55T20	* 0.55	* .059*	.052*	.064*
*NRW55T20	* 0.46	* .059*	.052*	.064*
*NRW55T20	* 0.37	* .059*	.052*	.064*
*NRW55T20	* 0.27	* .059*	.052*	.064*
*NRW55T20	* 0.18	* .059*	.052*	.064*
*NRW55T20	* 0.08	* .059*	.052*	.064*

River:NRW55E

Reach	River Sta.	n1	n2	n3
*NRW55E	* 4.34	* .079*	.055*	.079*
*NRW55E	* 4.25	* .079*	.055*	.079*
*NRW55E	* 4.16	* .079*	.055*	.079*
*NRW55E	* 4.14	* .079*	.055*	.079*
*NRW55E	* 4.10	* .079*	.055*	.079*
*NRW55E	* 4.08	* .079*	.055*	.079*
*NRW55E	* 4.03	* .079*	.049*	.079*
*NRW55E	* 3.99	* .079*	.049*	.079*
*NRW55E	* 3.89	* .079*	.049*	.079*
*NRW55E	* 3.80	* .079*	.049*	.079*
*NRW55E	* 3.72	* .079*	.049*	.079*
*NRW55E	* 3.61	* .079*	.049*	.079*
*NRW55E	* 3.51	* .079*	.049*	.079*
*NRW55E	* 3.42	* .079*	.049*	.079*
*NRW55E	* 3.32	* .079*	.049*	.079*
*NRW55E	* 3.24	* .079*	.049*	.079*
*NRW55E	* 3.14	* .079*	.049*	.079*
*NRW55E	* 3.05	* .079*	.049*	.079*

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****

SUMMARY OF REACH LENGTHS

River: NRW55T15

Reach	River Sta.	Left	Channel	Right
NRW55T15	2.27	446	446	446
NRW55T15	2.19	283	283	283
NRW55T15	2.13	250	250	250
NRW55T15	2.08	456	456	456
NRW55T15	2	153	153	153
NRW55T15	1.97	155	155	155
NRW55T15	1.94	175	175	175
NRW55T15	1.91	312	312	312
NRW55T15	1.85	177	177	177
NRW55T15	1.81	206	206	206
NRW55T15	1.78	286	286	286
NRW55T15	1.72	357	357	357
NRW55T15	1.65	201	201	201
NRW55T15	1.62	305	305	305
NRW55T15	1.56	92	92	92
NRW55T15	1.54	133	133	133
NRW55T15	1.52	272	272	272
NRW55T15	1.46	141	141	141
NRW55T15	1.44	487	487	487
NRW55T15	1.34	223	223	223
NRW55T15	1.3	255	255	255
NRW55T15	1.25	133	133	133
NRW55T15	1.23	375	375	375
NRW55T15	1.16	481	481	481
NRW55T15	1.07	469	469	469
NRW55T15	0.98	504	504	504
NRW55T15	0.88	243	243	243
NRW55T15	0.84	270	270	270
NRW55T15	0.79	156	156	156
NRW55T15	0.76	380	380	380
NRW55T15	0.68	191	191	191
NRW55T15	0.65	207	207	207
NRW55T15	0.61	115	115	115
NRW55T15	0.59	215	215	215
NRW55T15	0.55	220	220	220
NRW55T15	0.5	503	503	503
NRW55T15	0.41	212	212	212
NRW55T15	0.37	324	324	324
NRW55T15	0.31	515	515	515
NRW55T15	0.21	471	471	471
NRW55T15	0.12	639	639	639
NRW55T15	0.09	0	0	0

River: NRW55D

Reach	River Sta.	Left	Channel	Right
NRW55D	3.00	270	270	270
NRW55D	2.95	482	482	482
NRW55D	2.86	499	499	499
NRW55D	2.77	498	498	498

*NRW55D	2.67	329*	329*	329*
*NRW55D	2.61	377*	377*	377*

River: NRW55T30

Reach	River Sta.	Left	Channel	Right
*NRW55T30	0.72	465*	465*	465*
*NRW55T30	0.63	360*	360*	360*
*NRW55T30	0.56	373*	373*	373*
*NRW55T30	0.49	370*	370*	370*
*NRW55T30	0.42	475*	475*	475*
*NRW55T30	0.33	380*	380*	380*
*NRW55T30	0.26	210*	210*	210*
*NRW55T30	0.22	198*	198*	198*
*NRW55T30	0.18	402*	402*	402*
*NRW55T30	0.11	0*	0*	0*

River: NRW55T5

Reach	River Sta.	Left	Channel	Right
*NRW55T5	0.69	332*	332*	332*
*NRW55T5	0.62	303*	303*	303*
*NRW55T5	0.57	237*	237*	237*
*NRW55T5	0.52	298*	298*	298*
*NRW55T5	0.47	520*	520*	520*
*NRW55T5	0.37	404*	404*	404*
*NRW55T5	0.29	393*	393*	393*
*NRW55T5	0.22	554*	554*	554*
*NRW55T5	0.11	0*	0*	0*

River: NRW55T10A

Reach	River Sta.	Left	Channel	Right
*NRW55T10A	1.25	249*	249*	249*
*NRW55T10A	1.2	630*	630*	630*
*NRW55T10A	1.08	486*	486*	486*
*NRW55T10A	0.99	531*	531*	531*
*NRW55T10A	0.89	499*	499*	499*
*NRW55T10A	0.8	547*	547*	547*
*NRW55T10A	0.69	488*	488*	488*
*NRW55T10A	0.6	492*	492*	492*
*NRW55T10A	0.51	557*	557*	557*
*NRW55T10A	0.4	473*	473*	473*
*NRW55T10A	0.31	477*	477*	477*
*NRW55T10A	0.22	251*	251*	251*
*NRW55T10A	0.17	253*	253*	253*
*NRW55T10A	0.12	660*	660*	660*

River: NRW55T10B

Reach	River Sta.	Left	Channel	Right
*NRW55T10B	3	493*	493*	493*
*NRW55T10B	2.9	54*	54*	54*

NRW55T10B	2.89	169	169	169
NRW55T10B	2.86	187	187	187
NRW55T10B	2.83	87	87	87
NRW55T10B	2.81	255	255	255
NRW55T10B	2.76	254	254	254
NRW55T10B	2.71	237	237	237
NRW55T10B	2.67	274	274	274
NRW55T10B	2.62	218	218	218
NRW55T10B	2.58	279	279	279
NRW55T10B	2.52	52	52	52
NRW55T10B	2.51	243	243	243
NRW55T10B	2.47	243	243	243
NRW55T10B	2.42	193	193	193
NRW55T10B	2.38	324	324	324
NRW55T10B	2.32	275	275	275
NRW55T10B	2.27	244	244	244
NRW55T10B	2.22	264	264	264
NRW55T10B	2.17	243	243	243
NRW55T10B	2.13	250	250	250
NRW55T10B	2.08	249	249	249
NRW55T10B	2.03	495	495	495
NRW55T10B	1.94	357	357	357
NRW55T10B	1.87	155	155	155
NRW55T10B	1.84	211	211	211
NRW55T10B	1.8	283	283	283
NRW55T10B	1.75	275	275	275
NRW55T10B	1.7	361	361	361
NRW55T10B	1.63	358	358	358
NRW55T10B	1.56	293	293	293
NRW55T10B	1.51	294	294	294
NRW55T10B	1.45	313	313	313
NRW55T10B	1.39	316	316	316
NRW55T10B	1.33	434	434	434

River: NRW55A

Reach	River Sta.	Left	Channel	Right
NRW55A	1.78	60	60	60
NRW55A	1.77	547	547	547
NRW55A	1.67	0	0	0

River: NRW55B

Reach	River Sta.	Left	Channel	Right
NRW55B	2.34	685	685	685
NRW55B	2.21	552	552	552
NRW55B	2.10	434	434	434
NRW55B	2.02	564	564	564
NRW55B	1.91	652	652	652

River: NRW55C

Reach	River Sta.	Left	Channel	Right
NRW55C	2.54	67	248	67
NRW55C	2.49	472	472	472

*NRW55C	2.40	346*	346*	346*

River: NRW55T20

Reach	River Sta.	Left	Channel	Right
*NRW55T20	0.64	489*	489*	489*
*NRW55T20	0.55	468*	468*	468*
*NRW55T20	0.46	470*	470*	470*
*NRW55T20	0.37	529*	529*	529*
*NRW55T20	0.27	497*	497*	497*
*NRW55T20	0.18	518*	518*	518*
*NRW55T20	0.08	0*	0*	0*

River: NRW55E

Reach	River Sta.	Left	Channel	Right
*NRW55E	4.34	488*	488*	488*
*NRW55E	4.25	472*	472*	472*
*NRW55E	4.16	138*	138*	138*
*NRW55E	4.14	196*	196*	196*
*NRW55E	4.10	100*	100*	100*
*NRW55E	4.08	257*	257*	257*
*NRW55E	4.03	199*	199*	199*
*NRW55E	3.99	521*	521*	521*
*NRW55E	3.89	486*	486*	486*
*NRW55E	3.80	441*	441*	441*
*NRW55E	3.72	575*	575*	575*
*NRW55E	3.61	499*	499*	499*
*NRW55E	3.51	500*	500*	500*
*NRW55E	3.42	505*	505*	505*
*NRW55E	3.32	440*	440*	440*
*NRW55E	3.24	512*	512*	512*
*NRW55E	3.14	510*	510*	510*
*NRW55E	3.05	223*	223*	223*

****
****

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW55T15

Reach	River Sta.	Contr.	Expan.
*NRW55T15	2.27	.1*	.3*
*NRW55T15	2.19	.1*	.3*
*NRW55T15	2.13	.1*	.3*
*NRW55T15	2.08	.1*	.3*
*NRW55T15	2	.1*	.3*
*NRW55T15	1.97	.1*	.3*
*NRW55T15	1.94	.1*	.3*
*NRW55T15	1.91	.1*	.3*
*NRW55T15	1.85	.1*	.3*
*NRW55T15	1.81	.1*	.3*
*NRW55T15	1.78	.1*	.3*
*NRW55T15	1.72	.1*	.3*

*NRW55T15	*	1.65	* .1*	.3*
*NRW55T15	*	1.62	* .1*	.3*
*NRW55T15	*	1.56	* .1*	.3*
*NRW55T15	*	1.54	* .1*	.3*
*NRW55T15	*	1.52	* .1*	.3*
*NRW55T15	*	1.46	* .1*	.3*
*NRW55T15	*	1.44	* .1*	.3*
*NRW55T15	*	1.34	* .1*	.3*
*NRW55T15	*	1.3	* .1*	.3*
*NRW55T15	*	1.25	* .1*	.3*
*NRW55T15	*	1.23	* .1*	.3*
*NRW55T15	*	1.16	* .1*	.3*
*NRW55T15	*	1.07	* .1*	.3*
*NRW55T15	*	0.98	* .1*	.3*
*NRW55T15	*	0.88	* .1*	.3*
*NRW55T15	*	0.84	* .1*	.3*
*NRW55T15	*	0.79	* .1*	.3*
*NRW55T15	*	0.76	* .1*	.3*
*NRW55T15	*	0.68	* .1*	.3*
*NRW55T15	*	0.65	* .1*	.3*
*NRW55T15	*	0.61	* .1*	.3*
*NRW55T15	*	0.59	* .1*	.3*
*NRW55T15	*	0.55	* .1*	.3*
*NRW55T15	*	0.5	* .1*	.3*
*NRW55T15	*	0.41	* .1*	.3*
*NRW55T15	*	0.37	* .1*	.3*
*NRW55T15	*	0.31	* .1*	.3*
*NRW55T15	*	0.21	* .1*	.3*
*NRW55T15	*	0.12	* .1*	.3*
*NRW55T15	*	0.09	* .1*	.3*

River: NRW55D

Reach	River Sta.	Contr.	Expan.
*NRW55D	* 3.00	* .3*	.5*
*NRW55D	* 2.95	* .3*	.5*
*NRW55D	* 2.86	* .3*	.5*
*NRW55D	* 2.77	* .3*	.5*
*NRW55D	* 2.67	* .3*	.5*
*NRW55D	* 2.61	* .3*	.5*

River: NRW55T30

Reach	River Sta.	Contr.	Expan.
*NRW55T30	* 0.72	* .1*	.3*
*NRW55T30	* 0.63	* .1*	.3*
*NRW55T30	* 0.56	* .1*	.3*
*NRW55T30	* 0.49	* .1*	.3*
*NRW55T30	* 0.42	* .1*	.3*
*NRW55T30	* 0.33	* .1*	.3*
*NRW55T30	* 0.26	* .1*	.3*
*NRW55T30	* 0.22	* .1*	.3*
*NRW55T30	* 0.18	* .1*	.3*
*NRW55T30	* 0.11	* .1*	.3*

River: NRW55T5

Reach	River Sta.	Contr.	Expan.
NRW55T5	0.69	.1	.3
NRW55T5	0.62	.1	.3
NRW55T5	0.57	.1	.3
NRW55T5	0.52	.1	.3
NRW55T5	0.47	.1	.3
NRW55T5	0.37	.1	.3
NRW55T5	0.29	.1	.3
NRW55T5	0.22	.1	.3
NRW55T5	0.11	.1	.3

River: NRW55T10A

Reach	River Sta.	Contr.	Expan.
NRW55T10A	1.25	.3	.5
NRW55T10A	1.2	.3	.5
NRW55T10A	1.08	.3	.5
NRW55T10A	0.99	.3	.5
NRW55T10A	0.89	.3	.5
NRW55T10A	0.8	.3	.5
NRW55T10A	0.69	.3	.5
NRW55T10A	0.6	.3	.5
NRW55T10A	0.51	.3	.5
NRW55T10A	0.4	.3	.5
NRW55T10A	0.31	.3	.5
NRW55T10A	0.22	.3	.5
NRW55T10A	0.17	.3	.5
NRW55T10A	0.12	.3	.5

River: NRW55T10B

Reach	River Sta.	Contr.	Expan.
NRW55T10B	3	.3	.5
NRW55T10B	2.9	.3	.5
NRW55T10B	2.89	.3	.5
NRW55T10B	2.86	.3	.5
NRW55T10B	2.83	.3	.5
NRW55T10B	2.81	.3	.5
NRW55T10B	2.76	.3	.5
NRW55T10B	2.71	.3	.5
NRW55T10B	2.67	.3	.5
NRW55T10B	2.62	.3	.5
NRW55T10B	2.58	.3	.5
NRW55T10B	2.52	.3	.5
NRW55T10B	2.51	.3	.5
NRW55T10B	2.47	.3	.5
NRW55T10B	2.42	.3	.5
NRW55T10B	2.38	.3	.5
NRW55T10B	2.32	.3	.5
NRW55T10B	2.27	.3	.5
NRW55T10B	2.22	.3	.5
NRW55T10B	2.17	.3	.5
NRW55T10B	2.13	.3	.5
NRW55T10B	2.08	.3	.5
NRW55T10B	2.03	.3	.5

```
*NRW55T10B        *    1.94     *        .3*        .5*
*NRW55T10B        *    1.87     *        .3*        .5*
*NRW55T10B        *    1.84     *        .3*        .5*
*NRW55T10B        *    1.8      *        .3*        .5*
*NRW55T10B        *    1.75     *        .3*        .5*
*NRW55T10B        *    1.7      *        .3*        .5*
*NRW55T10B        *    1.63     *        .3*        .5*
*NRW55T10B        *    1.56     *        .3*        .5*
*NRW55T10B        *    1.51     *        .3*        .5*
*NRW55T10B        *    1.45     *        .3*        .5*
*NRW55T10B        *    1.39     *        .3*        .5*
*NRW55T10B        *    1.33     *        .3*        .5*
*******************************************************
River: NRW55A

*******************************************************
*     Reach       *   River Sta.    * Contr.   * Expan.   *
*******************************************************
*NRW55A            *    1.78     *        .1*        .3*
*NRW55A            *    1.77     *        .1*        .3*
*NRW55A            *    1.67     *        .1*        .3*
*******************************************************
River: NRW55B

*******************************************************
*     Reach       *   River Sta.    * Contr.   * Expan.   *
*******************************************************
*NRW55B            *    2.34     *        .3*        .5*
*NRW55B            *    2.21     *        .3*        .5*
*NRW55B            *    2.10     *        .3*        .5*
*NRW55B            *    2.02     *        .3*        .5*
*NRW55B            *    1.91     *        .3*        .5*
*******************************************************
River: NRW55C

*******************************************************
*     Reach       *   River Sta.    * Contr.   * Expan.   *
*******************************************************
*NRW55C            *    2.54     *        .3*        .5*
*NRW55C            *    2.49     *        .3*        .5*
*NRW55C            *    2.40     *        .3*        .5*
*******************************************************
River: NRW55T20

*******************************************************
*     Reach       *   River Sta.    * Contr.   * Expan.   *
*******************************************************
*NRW55T20          *    0.64     *        .1*        .3*
*NRW55T20          *    0.55     *        .1*        .3*
*NRW55T20          *    0.46     *        .1*        .3*
*NRW55T20          *    0.37     *        .1*        .3*
*NRW55T20          *    0.27     *        .1*        .3*
*NRW55T20          *    0.18     *        .1*        .3*
*NRW55T20          *    0.08     *        .1*        .3*
*******************************************************
River: NRW55E

*******************************************************
*     Reach       *   River Sta.    * Contr.   * Expan.   *
*******************************************************
*NRW55E            *    4.34     *        .1*        .3*
```

```
*NRW55E          *    4.25    *       .1*       .3*
*NRW55E          *    4.16    *       .1*       .3*
*NRW55E          *    4.14    *       .1*       .3*
*NRW55E          *    4.10    *       .1*       .3*
*NRW55E          *    4.08    *       .1*       .3*
*NRW55E          *    4.03    *       .3*       .5*
*NRW55E          *    3.99    *       .3*       .5*
*NRW55E          *    3.89    *       .3*       .5*
*NRW55E          *    3.80    *       .3*       .5*
*NRW55E          *    3.72    *       .3*       .5*
*NRW55E          *    3.61    *       .3*       .5*
*NRW55E          *    3.51    *       .3*       .5*
*NRW55E          *    3.42    *       .3*       .5*
*NRW55E          *    3.32    *       .3*       .5*
*NRW55E          *    3.24    *       .3*       .5*
*NRW55E          *    3.14    *       .3*       .5*
*NRW55E          *    3.05    *       .3*       .5*
*******************************************************
```

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW55T25 - A1; Zone A
Project File : NRW55T25A1.prj
Run Date and Time: 7/31/2005 8:58:49 PM

Project in English units

Project Description:
NRW55T25 - A1
(Approximate Zone A Delineation)

New River West Tributaries
FDS
Prepared by URS Corp. for the Flood Control District of Maricopa
County
Contract No: FCD 2003 C057
Date: August 3, 2005

Topographic Mapping
Source:
Flown and Mapped by DTM Inc.
Flight Date - 4/10/2003
2 foot Contour
Interval
Datum:
Horizontal - NAD83 Arizona State Plane, Central Zone,
International Feet
Vertical - NAVD 88 (GDACS Control)

Discharge
Source:
HEC-1 Analysis for the 100-Year 24-hour storm event
Performed by URS
Corp. as part of the New River West Tributaries FDS
Approved by the Flood
Control District of Maricopa County, June 2004

1009 cfs @ R.S.
1.13**

Study Limits:
U.S. Limit is approximately 550 feet upstream of
Section Line 11/12 T6NR1E
D.S. Limit is the confluence with NRW55E

Final
Model Run Date:
July 31, 2005

****
****

PLAN DATA

Plan Title: Post-Split
Plan File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A1.p03

Geometry Title: Post-Split
Geometry File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A1.g03

Flow Title : Post-Split
Flow File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A1.f03

Plan Description:
Post-Split plan is for floodplain mapping purposes only; River Stationing has
been changed from feet to river mile distances

Plan Summary Information:

Number of:	Cross Sections	= 35	Mulitple Openings	=	0
	Culverts	= 0	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: Post-Split
Flow File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A1.f03

Flow Data (cfs)

River	Reach	RS	100-year
NRW55T20	Reach-1	5946	1009
NRW55T20	Reach-1	3731	971.28
NRW55T20	Reach-1	3626	968.82
NRW55T20	Reach-1	3542	964.34
NRW55T20	Reach-1	3420	890.51
NRW55T20	Reach-1	3280	823.64
NRW55T25-A1	NRW55T25-A1	1.13	1009
NRW55T25-A1	NRW55T25-A1	0.71	971.28
NRW55T25-A1	NRW55T25-A1	0.69	968.82
NRW55T25-A1	NRW55T25-A1	0.67	964.34
NRW55T25-A1	NRW55T25-A1	0.65	890.51
NRW55T25-A1	NRW55T25-A1	0.62	823.64

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
NRW55T25-A1	NRW55T25-A1	100-year		Normal S = 0.0377

GEOMETRY DATA

Geometry Title: Post-Split
Geometry File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A1.g03

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 1.13

INPUT
Description: U.S. Limit of Approximate Study
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9940.4	1981.22	9958	1974.7	9967.7	1974.96	9974.3	1974.69	9985.6	1972.21
9992.8	1970.9	9994.8	1970.88	10000.7	1970.79	10010.2	1971.54	10010.8	1971.57

```
 10026.1 1972.72 10026.4 1972.72 10035.4  1973.5   10043 1972.46 10067.9
1976.56
 10070.6 1977.06 10072.8 1977.04

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9940.4    .069  9985.6     .05 10010.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9985.6 10010.8              194     194     194             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1975.36  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.01  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1974.35  * Reach Len. (ft)         *  194.00
*  194.00  *  194.00  *
* Crit W.S. (ft)          * 1974.35  * Flow Area (sq ft)       *   10.41
*   79.66  *   66.54  *
* E.G. Slope (ft/ft)      *0.020896  * Area (sq ft)            *   10.41
*   79.66  *   66.54  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *   33.35
*  734.12  *  241.53  *
* Top Width (ft)          *   78.60  * Top Width (ft)          *    9.74
*   25.20  *   43.66  *
* Vel Total (ft/s)        *    6.44  * Avg. Vel. (ft/s)        *    3.20
*    9.22  *    3.63  *
* Max Chl Dpth (ft)       *    3.56  * Hydr. Depth (ft)        *    1.07
*    3.16  *    1.52  *
* Conv. Total (cfs)       *  6980.1  * Conv. (cfs)             *   230.7
*  5078.5  *  1670.9  *
* Length Wtd. (ft)        *  194.00  * Wetted Per. (ft)        *    9.97
*   25.35  *   43.97  *
* Min Ch El (ft)          * 1970.79  * Shear (lb/sq ft)        *    1.36
*    4.10  *    1.97  *
* Alpha                   *    1.57  * Stream Power (lb/ft s) *    4.36
*   37.78  *    7.17  *
* Frctn Loss (ft)         *    3.61  * Cum Volume (acre-ft)    *   13.80
*    8.21  *    1.95  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *   16.72
*    4.47  *    2.04  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
```

```
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 1.09

INPUT
Description:
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9961.9 1971.18  9969.7 1969.72  9975.8 1968.89  9987.1 1962.26  9992.7
1959.14
  9995.5    1959 10000.3 1958.77 10006.2 1960.68 10014.1 1962.87 10074.2
1965.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9961.9    .069  9987.1     .05 10006.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.1 10006.2              165     165     165             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
***********************
* E.G. Elev (ft)         * 1965.74  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.44  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1964.29  * Reach Len. (ft)         *  165.00
*  165.00  *  165.00  *
* Crit W.S. (ft)         * 1964.29  * Flow Area (sq ft)       *    3.53
*   87.68  *   40.77  *
* E.G. Slope (ft/ft)     *0.016655  * Area (sq ft)            *    3.53
*   87.68  *   40.77  *
* Q Total (cfs)          * 1009.00  * Flow (cfs)              *    8.98
*  894.12  *  105.90  *
* Top Width (ft)         *   59.78  * Top Width (ft)          *    3.47
*   19.10  *   37.21  *
* Vel Total (ft/s)       *    7.65  * Avg. Vel. (ft/s)        *    2.55
*   10.20  *    2.60  *
* Max Chl Dpth (ft)      *    5.52  * Hydr. Depth (ft)        *    1.02
*    4.59  *    1.10  *
* Conv. Total (cfs)      *  7818.4  * Conv. (cfs)             *    69.6
*  6928.2  *   820.5  *
* Length Wtd. (ft)       *  165.00  * Wetted Per. (ft)        *    4.02
*   20.22  *   37.54  *
* Min Ch El (ft)         * 1958.77  * Shear (lb/sq ft)        *    0.91
*    4.51  *    1.13  *
* Alpha                  *    1.59  * Stream Power (lb/ft s) *    2.32
*   45.98  *    2.93  *
* Frctn Loss (ft)        *    2.91  * Cum Volume (acre-ft)    *   13.77
```

```
*    7.84  *    1.71  *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *   16.69
*    4.38  *    1.86  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 1.06

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9897 1962.91    9900 1962.51  9900.3 1962.38  9908.3 1960.21  9912.1
1959.87
    9927 1957.78  9931.7 1957.39    9939 1953.96  9943.8 1952.83  9952.9
1954.24
  9960.3 1955.15  9968.1 1955.82  9973.2 1956.37    9982 1956.36  9987.6
1953.45
  9993.7  1950.6  9996.3 1949.62  9999.3  1948.6 10009.2  1952.5   10017
1955.8
 10025.5 1956.26 10028.3 1956.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    9897    .069  9987.6     .05 10009.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.6 10009.2               77      77      77             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)         * 1956.37  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.44  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1954.93  * Reach Len. (ft)         *   77.00
```

```
*   77.00  *   77.00  *
* Crit W.S. (ft)          * 1954.93  * Flow Area (sq ft)       *   25.00
*   90.98  *    6.95  *
* E.G. Slope (ft/ft)      *0.018674  * Area (sq ft)            *   25.00
*   90.98  *    6.95  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *   73.84
*  915.67  *   19.49  *
* Top Width (ft)          *   51.71  * Top Width (ft)          *   24.37
*   21.60  *    5.73  *
* Vel Total (ft/s)        *    8.21  * Avg. Vel. (ft/s)        *    2.95
*   10.06  *    2.80  *
* Max Chl Dpth (ft)       *    6.33  * Hydr. Depth (ft)        *    1.03
*    4.21  *    1.21  *
* Conv. Total (cfs)       *  7383.7  * Conv. (cfs)             *   540.4
*  6700.7  *   142.6  *
* Length Wtd. (ft)        *   77.00  * Wetted Per. (ft)        *   25.23
*   23.32  *    6.23  *
* Min Ch El (ft)          * 1948.60  * Shear (lb/sq ft)        *    1.16
*    4.55  *    1.30  *
* Alpha                   *    1.38  * Stream Power (lb/ft s) *    3.41
*   45.77  *    3.65  *
* Frctn Loss (ft)         *    1.55  * Cum Volume (acre-ft)    *   13.71
*    7.50  *    1.62  *
* C & E Loss (ft)         *    0.17  * Cum SA (acres)          *   16.63
*    4.30  *    1.77  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 1.04

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9916.5 1954.58  9918.4  1954.3  9923.8 1953.13  9935.5 1949.98  9938.8
1950.07
```

```
  9943.8 1950.03  9952.9 1951.22  9955.8 1951.23  9969.3 1950.51  9973.7
1949.94
  9979.9 1949.63  9982.9 1949.66    9990 1948.81  9993.5 1947.69    9998
1946.94
 10000.3 1946.65 10002.8 1947.2310010.19 1949.21 10022.1 1952.35 10029.3
1952.46

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9916.5    .069    9990     .05 10002.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          999010010.19              117     117     117             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1952.47  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.87  * Wt. n-Val.              *   0.069
*   0.061  *   0.078  *
* W.S. Elev (ft)          * 1951.60  * Reach Len. (ft)         *  117.00
*  117.00  *  117.00  *
* Crit W.S. (ft)          * 1951.60  * Flow Area (sq ft)       *   77.48
*   78.65  *   10.81  *
* E.G. Slope (ft/ft)      *0.021792  * Area (sq ft)            *   77.48
*   78.65  *   10.81  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *  289.12
*  686.41  *   33.47  *
* Top Width (ft)          *   89.76  * Top Width (ft)          *   60.51
*   20.19  *    9.06  *
* Vel Total (ft/s)        *    6.04  * Avg. Vel. (ft/s)        *    3.73
*    8.73  *    3.09  *
* Max Chl Dpth (ft)       *    4.95  * Hydr. Depth (ft)        *    1.28
*    3.90  *    1.19  *
* Conv. Total (cfs)       *  6835.1  * Conv. (cfs)             *  1958.6
*  4649.8  *   226.7  *
* Length Wtd. (ft)        *  117.00  * Wetted Per. (ft)        *   60.92
*   20.77  *    9.37  *
* Min Ch El (ft)          * 1946.65  * Shear (lb/sq ft)        *    1.73
*    5.15  *    1.57  *
* Alpha                   *    1.54  * Stream Power (lb/ft s) *    6.46
*   44.95  *    4.86  *
* Frctn Loss (ft)         *    2.84  * Cum Volume (acre-ft)    *   13.62
*    7.35  *    1.61  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *   16.56
*    4.26  *    1.76  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
```

surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 1.02

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9920.9	1950.34	9925.8	1949	9929.9	1948.84	9935.4	1946.55	9941.6	1944.65
9944.7	1944.21	9954.4	1944.86	9958.7	1944.37	9968.2	1943.9	9978.1	1943.18
9980.4	1943.1	9981.6	1943.01	9988.4	1943.08	9990.6	1943.01	10000	1942.07
10002.9	1942.55	10004	1942.71	10004.8	1942.78	10006.46	1943.13	10011.7	1944.09
10023.1	1946.62	10025	1946.58	10050.6	1948.36	10084.6	1948.8	10104.6	1950.34

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9920.9	.069	9990.6	.05	10004.8	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.6	10006.46	76	76	76	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1946.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.	0.069	0.053	0.078
W.S. Elev (ft)	1945.69	Reach Len. (ft)	76.00	76.00	76.00
Crit W.S. (ft)	1945.69	Flow Area (sq ft)	90.50	49.71	16.70
E.G. Slope (ft/ft)	0.027110	Area (sq ft)	90.50	49.71	16.70
Q Total (cfs)	1009.00	Flow (cfs)	460.31	485.92	62.77
Top Width (ft)	80.72	Top Width (ft)	52.40	15.86	12.46
Vel Total (ft/s)	6.43	Avg. Vel. (ft/s)	5.09	9.77	3.76

```
* Max Chl Dpth (ft)       *    3.62  * Hydr. Depth (ft)        *    1.73
*    3.13  *    1.34  *
* Conv. Total (cfs)       *  6128.1  * Conv. (cfs)             *  2795.7
*  2951.2  *   381.2  *
* Length Wtd. (ft)        *   76.00  * Wetted Per. (ft)        *   52.68
*   16.00  *   12.72  *
* Min Ch El (ft)          * 1942.07  * Shear (lb/sq ft)        *    2.91
*    5.26  *    2.22  *
* Alpha                   *    1.42  * Stream Power (lb/ft s) *   14.79
*   51.41  *    8.35  *
* Frctn Loss (ft)         *    2.38  * Cum Volume (acre-ft)    *   13.40
*    7.17  *    1.57  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   16.41
*    4.21  *    1.73  *
***************************************************************************
************************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 1.01

INPUT
Description:
Station Elevation Data num= 18

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9946.7 1944.96  9955.6 1943.53  9958.4    1943  9977.1 1940.27  9980.1
1940.27
  9988.4 1941.16  9994.2  1940.4 10000.6 1939.54 10014.2 1940.53 10027.4
1940.45
 10028.1  1940.4 10028.7 1940.37 10037.1 1939.29 10045.5 1941.27 10052.9
1942.8
 10057.1 1942.79   10099  1943.6 10130.6 1945.28
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9946.7    .069  9994.2     .05 10014.2    .078
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
        9994.2 10014.2              123     123     123             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1943.18  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.89  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1942.29  * Reach Len. (ft)         *  123.00
*  123.00  *  123.00  *
* Crit W.S. (ft)          * 1942.29  * Flow Area (sq ft)       *   41.72
*   45.42  *   66.10  *
* E.G. Slope (ft/ft)      *0.036470  * Area (sq ft)            *   41.72
*   45.42  *   66.10  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *  208.48
*  444.00  *  356.53  *
* Top Width (ft)          *   87.11  * Top Width (ft)          *   30.90
*   20.00  *   36.21  *
* Vel Total (ft/s)        *    6.58  * Avg. Vel. (ft/s)        *    5.00
*    9.78  *    5.39  *
* Max Chl Dpth (ft)       *    3.00  * Hydr. Depth (ft)        *    1.35
*    2.27  *    1.83  *
* Conv. Total (cfs)       *  5283.6  * Conv. (cfs)             *  1091.7
*  2324.9  *  1866.9  *
* Length Wtd. (ft)        *  123.00  * Wetted Per. (ft)        *   31.15
*   20.09  *   36.62  *
* Min Ch El (ft)          * 1939.54  * Shear (lb/sq ft)        *    3.05
*    5.15  *    4.11  *
* Alpha                   *    1.33  * Stream Power (lb/ft s) *   15.24
*   50.31  *   22.17  *
* Frctn Loss (ft)         *    3.41  * Cum Volume (acre-ft)    *   13.28
*    7.09  *    1.50  *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)          *   16.33
*    4.18  *    1.69  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.98

INPUT
```

```
Description:
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9939.4 1939.56  9963.6 1937.42    9965 1937.39  9981.1 1938.34  9985.7
1937.38
 9991.07 1936.08  9999.2 1934.05 10005.6 1935.28 10007.6 1935.62   10010
1935.56
 10018.8 1935.04   10022 1935.48 10025.2 1935.81 10035.3 1936.41 10087.9
1936.78
 10102.7 1937.72 10106.3 1937.84 10108.5 1938.73 10114.2 1939.43 10124.7
1941.47
   10139 1941.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9939.4    .069  9985.7     .05 10007.6    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
       9991.07 10007.6               95      95      95             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1938.60  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.66  * Wt. n-Val.              *   0.054
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1937.94  * Reach Len. (ft)         *   95.00
*   95.00  *   95.00  *
* Crit W.S. (ft)          * 1937.94  * Flow Area (sq ft)       *   12.19
*   49.38  *  145.23  *
* E.G. Slope (ft/ft)      *0.021787  * Area (sq ft)            *   12.19
*   49.38  *  145.23  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *   39.85
*  442.27  *  526.89  *
* Top Width (ft)          *  140.28  * Top Width (ft)          *   24.79
*   16.53  *   98.96  *
* Vel Total (ft/s)        *    4.88  * Avg. Vel. (ft/s)        *    3.27
*    8.96  *    3.63  *
* Max Chl Dpth (ft)       *    3.89  * Hydr. Depth (ft)        *    0.49
*    2.99  *    1.47  *
* Conv. Total (cfs)       *  6835.8  * Conv. (cfs)             *   270.0
*  2996.3  *  3569.6  *
* Length Wtd. (ft)        *   95.00  * Wetted Per. (ft)        *   25.04
*   16.92  *   99.09  *
* Min Ch El (ft)          * 1934.05  * Shear (lb/sq ft)        *    0.66
*    3.97  *    1.99  *
* Alpha                   *    1.78  * Stream Power (lb/ft s) *    2.16
*   35.54  *    7.23  *
* Frctn Loss (ft)         *    2.97  * Cum Volume (acre-ft)    *   13.21
*    6.96  *    1.20  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *   16.26
*    4.13  *    1.50  *
**************************************************************************
************************
```

```
Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.97

INPUT
Description:
Station Elevation Data    num=      34
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9912.3 1935.26  9916.7 1934.92  9928.5 1931.06  9929.5 1930.63  9933.5
1929.39
  9941.1 1930.04  9947.4 1931.16  9964.6 1932.37    9965 1932.31  9971.9
1929.22
  9973.3 1929.64  9982.8 1932.28  9985.4 1931.97  9988.4 1932.16  9995.8
1932.07
 10000.9 1931.61 10001.1 1931.6210007.47 1932.48 10010.3 1932.85 10032.9
1932.04
 10049.3 1933.21 10049.7 1933.15 10056.2 1932.22   10060 1932.21 10072.5
1933.01
 10076.6 1932.77 10094.6 1931.22   10097 1930.91 10102.8 1931.18 10107.1
1931.6
 10113.1 1933.05 10115.3 1933.41 10126.9 1934.86 10128.5 1934.86

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9912.3    .069  9988.4     .05 10010.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9964.610007.47              161     161     161             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
***********************
* E.G. Elev (ft)         * 1933.34  * Element                *  Left OB
```

```
*  Channel * Right OB *
* Vel Head (ft)          *    0.57  * Wt. n-Val.             *   0.069
*   0.065  *   0.078  *
* W.S. Elev (ft)         * 1932.77  * Reach Len. (ft)        *  161.00
*  161.00  *  161.00  *
* Crit W.S. (ft)         * 1932.77  * Flow Area (sq ft)      *   71.45
*   53.91  *   53.60  *
* E.G. Slope (ft/ft)     *0.048570  * Area (sq ft)           *   71.45
*   53.91  *   53.60  *
* Q Total (cfs)          * 1009.00  * Flow (cfs)             *  483.03
*  333.17  *  192.80  *
* Top Width (ft)         *  168.41  * Top Width (ft)         *   41.32
*   42.87  *   84.22  *
* Vel Total (ft/s)       *    5.64  * Avg. Vel. (ft/s)       *    6.76
*    6.18  *    3.60  *
* Max Chl Dpth (ft)      *    3.55  * Hydr. Depth (ft)       *    1.73
*    1.26  *    0.64  *
* Conv. Total (cfs)      *  4578.3  * Conv. (cfs)            *  2191.7
*  1511.8  *   874.8  *
* Length Wtd. (ft)       *  161.00  * Wetted Per. (ft)       *   42.03
*   44.06  *   84.59  *
* Min Ch El (ft)         * 1929.22  * Shear (lb/sq ft)       *    5.15
*    3.71  *    1.92  *
* Alpha                  *    1.16  * Stream Power (lb/ft s) *   34.85
*   22.93  *    6.91  *
* Frctn Loss (ft)        *    4.10  * Cum Volume (acre-ft)   *   13.11
*    6.85  *    0.98  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *   16.18
*    4.07  *    1.30  *
*****************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.94

INPUT
Description:
Station Elevation Data    num=      24
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta
```

```
Elev
*********************************************************************
********
  9913.6 1927.56  9919.3 1927.83    9920 1927.68  9941.5 1923.87  9969.3
1923.58
  9969.4 1923.57  9981.7  1922.1  9985.8 1921.25  9991.1 1920.45  9998.9
1920.13
 10000.2 1919.96   10001 1920.16   10002  1920.310012.01 1922.47 10022.2
1924.92
 10028.3  1925.1 10036.7 1924.62 10040.6 1923.79 10043.8 1922.64 10055.4
1924.56
 10059.9 1924.98   10066 1924.61 10072.1 1924.45 10110.3 1926.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9913.6    .069  9981.7     .05 10022.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9981.710012.01              170     170     170             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*********************************************************************
**********************
* E.G. Elev (ft)          * 1925.29  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.95  * Wt. n-Val.              *   0.069
*   0.050  *   0.064  *
* W.S. Elev (ft)          * 1924.34  * Reach Len. (ft)         *  170.00
*  170.00  *  170.00  *
* Crit W.S. (ft)          * 1924.34  * Flow Area (sq ft)       *   36.49
*  103.84  *   20.41  *
* E.G. Slope (ft/ft)      *0.015634  * Area (sq ft)            *   36.49
*  103.84  *   20.41  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *   88.06
*  868.64  *   52.30  *
* Top Width (ft)          *   97.08  * Top Width (ft)          *   42.88
*   30.31  *   23.90  *
* Vel Total (ft/s)        *    6.28  * Avg. Vel. (ft/s)        *    2.41
*    8.37  *    2.56  *
* Max Chl Dpth (ft)       *    4.38  * Hydr. Depth (ft)        *    0.85
*    3.43  *    0.85  *
* Conv. Total (cfs)       *  8069.7  * Conv. (cfs)             *   704.3
*  6947.1  *   418.3  *
* Length Wtd. (ft)        *  170.00  * Wetted Per. (ft)        *   43.01
*   30.74  *   24.52  *
* Min Ch El (ft)          * 1919.96  * Shear (lb/sq ft)        *    0.83
*    3.30  *    0.81  *
* Alpha                   *    1.55  * Stream Power (lb/ft s) *    2.00
*   27.58  *    2.08  *
* Frctn Loss (ft)         *    3.45  * Cum Volume (acre-ft)    *   12.91
*    6.55  *    0.85  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *   16.03
*    3.93  *    1.10  *
*********************************************************************
**********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
```

```
        program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
        depth, the calculated water surface came back below critical
depth.  This indicates that there is
        not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.90

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9930.5 1917.27    9933 1917.18    9939  1917.1  9954.6  1916.2  9954.8
1916.21
  9955.2 1916.15  9977.6 1914.81  9990.1 1913.19  9997.4 1911.65  9999.3
1911.44
 10003.3 1912.3510015.94 1915.11   10023 1917.03   10032 1917.66 10037.4
1917.89
 10049.8 1916.62 10055.7 1916.28 10059.7 1915.78 10064.9 1914.91 10075.4
1913.39
 10089.1 1915.89 10095.7 1917.56 10112.6 1916.51 10115.9 1915.87 10127.2
1913.01
 10130.1 1912.41 10142.6 1917.18 10157.9 1920.47 10166.5 1920.96 10173.9
1921.67

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9930.5    .069  9977.6     .05   10023    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9977.610015.94              146     146     146             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1916.48  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.89  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1915.58  * Reach Len. (ft)         *  146.00
*  146.00  *  146.00  *
* Crit W.S. (ft)         * 1915.58  * Flow Area (sq ft)       *    4.99
*   88.72  *   64.58  *
* E.G. Slope (ft/ft)     *0.027334  * Area (sq ft)            *    4.99
```

```
*   88.72  *   64.58  *
* Q Total (cfs)          * 1009.00  * Flow (cfs)              *    9.42
*  753.79  *  245.80  *
* Top Width (ft)         *  100.92  * Top Width (ft)          *   12.92
*   38.34  *   49.66  *
* Vel Total (ft/s)       *    6.37  * Avg. Vel. (ft/s)        *    1.89
*    8.50  *    3.81  *
* Max Chl Dpth (ft)      *    4.14  * Hydr. Depth (ft)        *    0.39
*    2.31  *    1.30  *
* Conv. Total (cfs)      *  6102.9  * Conv. (cfs)             *    57.0
*  4559.3  *  1486.7  *
* Length Wtd. (ft)       *  146.00  * Wetted Per. (ft)        *   12.94
*   39.02  *   51.05  *
* Min Ch El (ft)         * 1911.44  * Shear (lb/sq ft)        *    0.66
*    3.88  *    2.16  *
* Alpha                  *    1.41  * Stream Power (lb/ft s) *    1.24
*   32.97  *    8.22  *
* Frctn Loss (ft)        *    3.52  * Cum Volume (acre-ft)    *   12.83
*    6.18  *    0.68  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *   15.92
*    3.80  *    0.96  *
*************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.88

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9913.1 1913.68  9918.9 1913.52    9933 1912.69  9935.2 1912.69  9964.6
1912.48
    9989 1908.04 10000.1 1905.79 10014.4  1908.4   10019  1909.4 10029.9
1909.11
 10031.4 1908.82 10044.6 1906.72 10061.6 1913.95 10064.2 1914.26 10082.6
1915.95

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**************************************************
  9913.1    .069    9989     .05 10014.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9989 10014.4              121     121     121             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1911.16  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.01  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1910.15  * Reach Len. (ft)         *  121.00
*  121.00  *  121.00  *
* Crit W.S. (ft)          * 1910.15  * Flow Area (sq ft)       *   12.24
*   79.61  *   62.54  *
* E.G. Slope (ft/ft)      *0.021377  * Area (sq ft)            *   12.24
*   79.61  *   62.54  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *   39.50
*  731.91  *  237.58  *
* Top Width (ft)          *   75.26  * Top Width (ft)          *   11.60
*   25.40  *   38.27  *
* Vel Total (ft/s)        *    6.54  * Avg. Vel. (ft/s)        *    3.23
*    9.19  *    3.80  *
* Max Chl Dpth (ft)       *    4.36  * Hydr. Depth (ft)        *    1.06
*    3.13  *    1.63  *
* Conv. Total (cfs)       *  6901.0  * Conv. (cfs)             *   270.2
*  5005.9  *  1625.0  *
* Length Wtd. (ft)        *  121.00  * Wetted Per. (ft)        *   11.79
*   25.86  *   39.27  *
* Min Ch El (ft)          * 1905.79  * Shear (lb/sq ft)        *    1.39
*    4.11  *    2.13  *
* Alpha                   *    1.52  * Stream Power (lb/ft s) *    4.47
*   37.77  *    8.07  *
* Frctn Loss (ft)         *    2.63  * Cum Volume (acre-ft)    *   12.80
*    5.90  *    0.47  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *   15.88
*    3.69  *    0.81  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).
This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.
```

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 0.85

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9952	1907.89	9981.7	1906.5	9996.2	1902.28	10001.5	1900.67	10004.3	1901.47
10011.1	1902.17	10015.9	1901.97	10027.3	1908.49	10032.4	1911.62	10047	1915.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9952	.069	9996.2	.05	10011.1	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9996.2	10011.1	114	114	114	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1907.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.62	Wt. n-Val.	0.069	0.050	0.078
W.S. Elev (ft)	1905.88	Reach Len. (ft)	114.00	114.00	114.00
Crit W.S. (ft)	1905.88	Flow Area (sq ft)	22.21	64.35	31.60
E.G. Slope (ft/ft)	0.022135	Area (sq ft)	22.21	64.35	31.60
Q Total (cfs)	1009.00	Flow (cfs)	102.40	741.85	164.75
Top Width (ft)	38.88	Top Width (ft)	12.35	14.90	11.63
Vel Total (ft/s)	8.54	Avg. Vel. (ft/s)	4.61	11.53	5.21
Max Chl Dpth (ft)	5.21	Hydr. Depth (ft)	1.80	4.32	2.72
Conv. Total (cfs)	6782.0	Conv. (cfs)	688.3	4986.3	1107.3
Length Wtd. (ft)	114.00	Wetted Per. (ft)	12.87	15.29	12.67
Min Ch El (ft)	1900.67	Shear (lb/sq ft)	2.39	5.82	3.45
Alpha	1.43	Stream Power (lb/ft s)	11.00	67.06	17.97
Frctn Loss (ft)	2.62	Cum Volume (acre-ft)	12.76	5.70	0.34
C & E Loss (ft)	0.04	Cum SA (acres)	15.84		

```
*    3.63  *    0.74  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.83

INPUT
Description:
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9893.5 1907.72    9924 1906.47  9924.8 1906.41  9929.2 1906.27  9947.3
1905.59
  9968.6 1902.75  9972.9 1902.29  9977.9 1901.37  9989.8 1898.74  9995.8
1898.42
   10001 1897.7610009.16 1901.95 10012.1 1903.61 10018.9  1907.4 10031.2
1910.86

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9893.5    .069  9977.9     .05 10012.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9977.910009.16              269     269     269             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)         * 1904.12  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    1.48  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
* W.S. Elev (ft)         * 1902.65  * Reach Len. (ft)         *  269.00
*  269.00  *  269.00  *
* Crit W.S. (ft)         * 1902.65  * Flow Area (sq ft)       *    4.68
*  101.72  *    0.43  *
* E.G. Slope (ft/ft)     *0.023894  * Area (sq ft)            *    4.68
```

```
*  101.72  *    0.43  *
* Q Total (cfs)          * 1009.00  * Flow (cfs)              *   10.51
*  997.60  *    0.89  *
* Top Width (ft)         *   40.83  * Top Width (ft)          *    8.34
*   31.26  *    1.23  *
* Vel Total (ft/s)       *    9.44  * Avg. Vel. (ft/s)        *    2.25
*    9.81  *    2.07  *
* Max Chl Dpth (ft)      *    4.89  * Hydr. Depth (ft)        *    0.56
*    3.25  *    0.35  *
* Conv. Total (cfs)      *  6527.5  * Conv. (cfs)             *    68.0
*  6453.7  *     5.8  *
* Length Wtd. (ft)       *  269.00  * Wetted Per. (ft)        *    8.44
*   32.61  *    1.42  *
* Min Ch El (ft)         * 1897.76  * Shear (lb/sq ft)        *    0.83
*    4.65  *    0.45  *
* Alpha                  *    1.07  * Stream Power (lb/ft s) *    1.86
*   45.63  *    0.94  *
* Frctn Loss (ft)        *    5.41  * Cum Volume (acre-ft)    *   12.72
*    5.48  *    0.30  *
* C & E Loss (ft)        *    0.11  * Cum SA (acres)          *   15.82
*    3.57  *    0.72  *
**********************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.78

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9915.4 1896.86  9921.7 1896.97  9938.6  1895.5  9987.3 1893.64  9995.2
1891.47
  9998.6 1890.71 10002.5 1890.76 10008.9  1891.110015.42 1894.38 10027.1
1900.26
 10039.1 1906.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9915.4    .069  9987.3     .05 10027.1    .078
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.310015.42              192     192     192             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1896.51  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    1.11  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
* W.S. Elev (ft)          * 1895.40  * Reach Len. (ft)         *  192.00
*  192.00  *  192.00  *
* Crit W.S. (ft)          * 1895.40  * Flow Area (sq ft)       *   40.49
*  101.24  *    1.03  *
* E.G. Slope (ft/ft)      *0.017186  * Area (sq ft)            *   40.49
*  101.24  *    1.03  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *  104.87
*  901.76  *    2.38  *
* Top Width (ft)          *   76.19  * Top Width (ft)          *   46.05
*   28.12  *    2.02  *
* Vel Total (ft/s)        *    7.07  * Avg. Vel. (ft/s)        *    2.59
*    8.91  *    2.30  *
* Max Chl Dpth (ft)       *    4.69  * Hydr. Depth (ft)        *    0.88
*    3.60  *    0.51  *
* Conv. Total (cfs)       *  7696.8  * Conv. (cfs)             *   800.0
*  6878.7  *    18.1  *
* Length Wtd. (ft)        *  192.00  * Wetted Per. (ft)        *   46.08
*   29.28  *    2.27  *
* Min Ch El (ft)          * 1890.71  * Shear (lb/sq ft)        *    0.94
*    3.71  *    0.49  *
* Alpha                   *    1.43  * Stream Power (lb/ft s) *    2.44
*   33.04  *    1.12  *
* Frctn Loss (ft)         *    3.13  * Cum Volume (acre-ft)    *   12.58
*    4.85  *    0.29  *
* C & E Loss (ft)         *    0.11  * Cum SA (acres)          *   15.65
*    3.39  *    0.71  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.74
```

```
INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
    9756 1892.14  9770.7 1891.62    9774  1891.4    9786 1891.31  9823.7
1890.12
  9829.1 1889.47  9835.1 1889.13  9843.6 1887.98  9848.1 1889.17  9858.6
1891.1
  9866.8 1890.57  9881.6 1889.98  9888.2 1889.87  9927.7 1889.68  9948.5
1890.36
  9956.2 1890.56  9958.6 1890.19  9965.6 1888.56  9974.8 1888.47  9987.2
1888.34
  9998.8 1885.99 10001.7 1885.99 10006.2 1886.1310013.67 1888.46 10020.8
1890.43
 10028.1 1892.22 10037.9 1892.45

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9756    .069  9987.2     .05 10020.8    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.210013.67               76      76      76             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1890.98  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.76  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
* W.S. Elev (ft)          * 1890.22  * Reach Len. (ft)         *   76.00
*   76.00  *   76.00  *
* Crit W.S. (ft)          * 1890.22  * Flow Area (sq ft)       *  101.15
*   88.24  *    5.60  *
* E.G. Slope (ft/ft)      *0.015437  * Area (sq ft)            *  101.15
*   88.24  *    5.60  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *  274.12
*  716.37  *   18.50  *
* Top Width (ft)          *  163.40  * Top Width (ft)          *  130.57
*   26.47  *    6.36  *
* Vel Total (ft/s)        *    5.17  * Avg. Vel. (ft/s)        *    2.71
*    8.12  *    3.31  *
* Max Chl Dpth (ft)       *    4.23  * Hydr. Depth (ft)        *    0.77
*    3.33  *    0.88  *
* Conv. Total (cfs)       *  8120.9  * Conv. (cfs)             *  2206.3
*  5765.7  *   148.9  *
* Length Wtd. (ft)        *   76.00  * Wetted Per. (ft)        *  131.15
*   27.06  *    6.60  *
* Min Ch El (ft)          * 1885.99  * Shear (lb/sq ft)        *    0.74
*    3.14  *    0.82  *
* Alpha                   *    1.83  * Stream Power (lb/ft s) *    2.01
*   25.51  *    2.70  *
* Frctn Loss (ft)         *    1.60  * Cum Volume (acre-ft)    *   12.27
*    4.43  *    0.28  *
```

```
* C & E Loss (ft)          *     0.01  * Cum SA (acres)          *   15.26
*    3.27  *    0.69  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.73

INPUT
Description:
Station Elevation Data    num=      25
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9648.4 1891.02  9751.5 1887.77  9753.9 1887.75  9776.5 1888.07  9786.3
1886.96
  9799.4 1884.64  9800.2 1884.48  9819.2 1886.81  9838.3 1886.62    9850
1886.76
  9863.2 1886.39  9870.4    1887  9880.4 1887.66  9929.1 1887.75  9950.4
1888.35
  9966.9 1888.29  9983.1 1888.44  9987.8 1887.39  9988.3 1887.27  9999.1
1884.11
 10002.9 1883.83 10004.8 1883.77 10011.2 1886.1510015.49  1887.5 10020.4
1888.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9648.4    .069  9983.1     .05 10020.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9987.810015.49              119     119     119             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1888.33  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.73  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
```

```
* W.S. Elev (ft)          * 1887.60  * Reach Len. (ft)         *  119.00
*  119.00  *  119.00  *
* Crit W.S. (ft)          * 1887.60  * Flow Area (sq ft)       *  115.15
*   61.93  *    0.02  *
* E.G. Slope (ft/ft)      *0.030248  * Area (sq ft)            *  115.15
*   61.93  *    0.02  *
* Q Total (cfs)           * 1009.00  * Flow (cfs)              *  475.71
*  533.28  *    0.02  *
* Top Width (ft)          *  127.88  * Top Width (ft)          *   99.71
*   27.69  *    0.47  *
* Vel Total (ft/s)        *    5.70  * Avg. Vel. (ft/s)        *    4.13
*    8.61  *    0.68  *
* Max Chl Dpth (ft)       *    3.83  * Hydr. Depth (ft)        *    1.15
*    2.24  *    0.05  *
* Conv. Total (cfs)       *  5801.5  * Conv. (cfs)             *  2735.2
*  3066.2  *     0.1  *
* Length Wtd. (ft)        *  119.00  * Wetted Per. (ft)        *  100.19
*   28.80  *    0.48  *
* Min Ch El (ft)          * 1883.77  * Shear (lb/sq ft)        *    2.17
*    4.06  *    0.09  *
* Alpha                   *    1.46  * Stream Power (lb/ft s) *    8.97
*   34.96  *    0.06  *
* Frctn Loss (ft)         *    3.44  * Cum Volume (acre-ft)    *   12.08
*    4.30  *    0.27  *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)          *   15.06
*    3.22  *    0.69  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.71

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9576.2    1889  9679.9 1885.31  9709.2 1884.91  9716.3 1884.97  9730.6
1882.43
    9733 1881.92  9736.1 1881.55  9748.6 1880.85  9752.4 1880.95  9759.4
```

```
1882.88
  9765.2 1884.29  9767.1 1884.78  9783.5 1884.21  9793.5 1884.91  9831.5
1883.87
  9836.9 1883.85  9912.1 1884.02  9933.5 1883.47  9978.7 1883.82  9978.9
1883.77
  9980.9 1883.41  9993.7 1881.17  9996.3 1881.26 10004.6 1881.47 10013.1
1882.37
 10015.9    1883 10022.7 1883.59 10028.3 1884.08 10031.6 1884.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9576.2    .069  9978.7     .05 10028.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9978.7 10028.3              105     105     105             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1884.46  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.52  * Wt. n-Val.              *   0.069
*   0.050  *          *
* W.S. Elev (ft)          * 1883.94  * Reach Len. (ft)         *  105.00
*  105.00  *  105.00  *
* Crit W.S. (ft)          * 1883.94  * Flow Area (sq ft)       *   99.44
*   75.98  *          *
* E.G. Slope (ft/ft)      *0.027684  * Area (sq ft)            *   99.44
*   75.98  *          *
* Q Total (cfs)           *  971.28  * Flow (cfs)              *  463.57
*  507.71  *          *
* Top Width (ft)          *  199.90  * Top Width (ft)          *  151.92
*   47.98  *          *
* Vel Total (ft/s)        *    5.54  * Avg. Vel. (ft/s)        *    4.66
*    6.68  *          *
* Max Chl Dpth (ft)       *    3.09  * Hydr. Depth (ft)        *    0.65
*    1.58  *          *
* Conv. Total (cfs)       *  5837.5  * Conv. (cfs)             *  2786.1
*  3051.4  *          *
* Length Wtd. (ft)        *  105.00  * Wetted Per. (ft)        *  152.55
*   48.37  *          *
* Min Ch El (ft)          * 1881.17  * Shear (lb/sq ft)        *    1.13
*    2.71  *          *
* Alpha                   *    1.10  * Stream Power (lb/ft s) *    5.25
*   18.14  *          *
* Frctn Loss (ft)         *    3.18  * Cum Volume (acre-ft)    *   11.79
*    4.11  *    0.27  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   14.72
*    3.12  *    0.69  *
**************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
```

```
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.69

INPUT
Description:
Station Elevation Data    num=      29
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9508.5 1886.67  9639.2 1881.66  9655.7 1881.78  9658.6 1881.68  9665.3
1880.59
  9682.7 1877.75  9685.4 1878.28  9696.1 1880.96  9706.5  1880.7  9726.5
1882.54
  9774.2 1880.92  9816.7 1880.39  9834.4 1881.25  9834.6 1881.26  9857.9
1881.1
  9862.6  1880.6  9881.4 1880.37    9885 1879.93  9900.9 1878.81  9901.3
1878.82
  9911.5 1879.27  9968.2 1880.24  9971.1 1880.34  9987.9 1878.32  9989.8
1878.24
 10001.5 1877.78 10006.7 1878.72 10013.7 1880.16 10017.5 1880.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9508.5    .069  9971.1     .05 10013.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.1 10013.7               84      84      84             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
***********************
* E.G. Elev (ft)         * 1881.06  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.59  * Wt. n-Val.             *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1880.47  * Reach Len. (ft)        *   84.00
*   84.00  *   84.00  *
* Crit W.S. (ft)         * 1880.47  * Flow Area (sq ft)      *  113.91
*   70.66  *    0.84  *
* E.G. Slope (ft/ft)     *0.033351  * Area (sq ft)           *  113.91
*   70.66  *    0.84  *
* Q Total (cfs)          *  968.82  * Flow (cfs)             *  433.43
*  534.35  *    1.04  *
* Top Width (ft)         *  179.59  * Top Width (ft)         *  133.19
```

```
*   42.60  *    3.80  *
* Vel Total (ft/s)       *    5.23  * Avg. Vel. (ft/s)       *    3.81
*    7.56  *    1.24  *
* Max Chl Dpth (ft)      *    2.72  * Hydr. Depth (ft)       *    0.86
*    1.66  *    0.22  *
* Conv. Total (cfs)      *  5305.0  * Conv. (cfs)            *  2373.4
*  2926.0  *     5.7  *
* Length Wtd. (ft)       *   84.00  * Wetted Per. (ft)       *  133.82
*   42.96  *    3.94  *
* Min Ch El (ft)         * 1877.78  * Shear (lb/sq ft)       *    1.77
*    3.42  *    0.44  *
* Alpha                  *    1.39  * Stream Power (lb/ft s) *    6.74
*   25.90  *    0.55  *
* Frctn Loss (ft)        *    2.52  * Cum Volume (acre-ft)   *   11.53
*    3.94  *    0.27  *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)         *   14.37
*    3.01  *    0.68  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for
the computed water surface.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.67

INPUT
Description:
Station Elevation Data    num=      39
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9518.5 1883.02  9581.1 1880.75  9616.6  1877.9  9617.3 1877.79  9619.7
1877.67
  9630.8 1877.13  9639.1 1876.19  9645.8  1875.6  9651.7  1876.4  9658.5
1877.2
  9661.5 1877.34  9680.1 1879.64    9682 1879.92  9683.9 1880.23  9740.3
1878.37
  9764.8 1878.06  9774.5 1877.28  9783.5 1878.06  9784.2  1878.1  9789.6
1878.46
  9819.8 1877.84  9844.4 1876.63  9858.4  1876.5  9865.8 1876.61  9877.3
1876.01
```

```
  9878.4 1875.92  9881.9 1876.51  9895.8 1878.57    9898 1878.47  9899.9
1878.38
  9919.5  1877.1  9974.6 1878.21  9977.4 1878.33  9988.6 1876.73  9993.8
1876.22
 10000.9 1875.06 10011.4  1876.8 10017.3    1878 10019.4 1878.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9518.5    .069  9977.4     .05 10017.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9977.4 10017.3              122     122     122             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
************************
* E.G. Elev (ft)         * 1878.36  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.34  * Wt. n-Val.              *   0.069
*   0.050  *   0.000  *
* W.S. Elev (ft)         * 1878.02  * Reach Len. (ft)         *  122.00
*  122.00  *  122.00  *
* Crit W.S. (ft)         * 1877.87  * Flow Area (sq ft)       *  177.90
*   56.17  *    0.01  *
* E.G. Slope (ft/ft)     *0.027108  * Area (sq ft)            *  177.90
*   56.17  *    0.01  *
* Q Total (cfs)          *  964.34  * Flow (cfs)              *  608.74
*  355.60  *    0.00  *
* Top Width (ft)         *  248.37  * Top Width (ft)          *  209.63
*   37.70  *    1.05  *
* Vel Total (ft/s)       *    4.12  * Avg. Vel. (ft/s)        *    3.42
*    6.33  *    0.12  *
* Max Chl Dpth (ft)      *    2.95  * Hydr. Depth (ft)        *    0.85
*    1.49  *    0.01  *
* Conv. Total (cfs)      *  5857.1  * Conv. (cfs)             *  3697.3
*  2159.8  *     0.0  *
* Length Wtd. (ft)       *  122.00  * Wetted Per. (ft)        *  210.19
*   38.17  *    1.05  *
* Min Ch El (ft)         * 1875.06  * Shear (lb/sq ft)        *    1.43
*    2.49  *          *
* Alpha                  *    1.31  * Stream Power (lb/ft s) *    4.90
*   15.77  *          *
* Frctn Loss (ft)        *    3.10  * Cum Volume (acre-ft)    *   11.25
*    3.82  *    0.27  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)          *   14.04
*    2.93  *    0.68  *
**********************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25-A1
```

```
REACH: NRW55T25-A1        RS: 0.65

INPUT
Description:
Station Elevation Data    num=      30
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9490.3 1882.24  9620.7 1877.39  9635.6 1877.07  9637.4 1877.04  9641.6
1876.42
  9647.4 1875.29  9660.7 1874.76  9685.3 1872.47  9712.2 1877.51  9740.8
1875.94
  9741.8 1875.95  9756.1  1875.9  9774.9 1875.01  9798.5 1877.12  9804.6
1876.62
  9829.9 1875.28  9840.9  1875.4  9853.3 1874.86  9874.5 1873.29  9882.1
1872.71
  9882.2 1872.71    9900 1874.02  9911.2 1874.34  9965.8 1873.69  9989.5
1874.48
  9990.4 1874.52  9999.8 1872.64   10000 1872.66 10015.4 1874.32 10016.5
1874.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9490.3    .069  9990.4     .05 10015.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9990.4 10015.4              140     140     140             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)          * 1875.24  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1874.97  * Reach Len. (ft)         *  140.00
*  140.00  *  140.00  *
* Crit W.S. (ft)          * 1874.69  * Flow Area (sq ft)       *  195.34
*   36.25  *    0.75  *
* E.G. Slope (ft/ft)      *0.023779  * Area (sq ft)            *  195.34
*   36.25  *    0.75  *
* Q Total (cfs)           *  890.51  * Flow (cfs)              *  677.98
*  211.31  *    1.22  *
* Top Width (ft)          *  208.79  * Top Width (ft)          *  182.69
*   25.00  *    1.10  *
* Vel Total (ft/s)        *    3.83  * Avg. Vel. (ft/s)        *    3.47
*    5.83  *    1.63  *
* Max Chl Dpth (ft)       *    2.50  * Hydr. Depth (ft)        *    1.07
*    1.45  *    0.68  *
* Conv. Total (cfs)       *  5774.8  * Conv. (cfs)             *  4396.6
*  1370.3  *     7.9  *
* Length Wtd. (ft)        *  140.00  * Wetted Per. (ft)        *  183.19
*   25.28  *    1.82  *
* Min Ch El (ft)          * 1872.64  * Shear (lb/sq ft)        *    1.58
*    2.13  *    0.61  *
* Alpha                   *    1.17  * Stream Power (lb/ft s) *    5.49
*   12.41  *    1.00  *
```

```
* Frctn Loss (ft)          *    4.65  * Cum Volume (acre-ft)    *   10.73
*    3.69  *    0.27  *
* C & E Loss (ft)          *    0.02  * Cum SA (acres)          *   13.49
*    2.85  *    0.67  *
*********************************************************************
**********************
```

Warning: Divided flow computed for this cross-section.
Warning: The cross-section end points had to be extended vertically for the computed water surface.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 0.62

INPUT
Description:
Station Elevation Data num= 33

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*********************************************************************
********
  9626.8  1874.4  9680.1    1872  9701.7 1872.07  9718.6  1869.2  9719.3
1869.11
  9752.6 1867.66  9761.4 1870.62  9764.3 1871.35  9815.4 1870.76  9828.3
1871.77
  9828.9 1871.84  9833.8  1872.1  9838.1 1871.69  9855.6 1870.46  9863.5
1870.34
  9869.6  1869.7  9877.1  1869.1  9890.1 1869.93  9902.3 1871.29  9923.4
1871.33
  9938.9 1870.14  9962.1 1866.81  9971.9 1868.83  9977.2  1869.8  9990.5
1870.14
  9991.5 1870.17  9999.9    1870 10002.5 1869.86 10004.1    1870 10017.7
1869.88
   10019 1869.93 10019.7  1869.9 10036.1 1870.05
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  9626.8    .069  9991.5     .05 10036.1    .078
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

```
        9991.5 10036.1              104     104     104             .1
.3
```

CROSS SECTION OUTPUT Profile #100-year

```
*********************************************************************
**********************
* E.G. Elev (ft)          * 1870.56  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.52  * Wt. n-Val.              *   0.069
```

```
*   0.050  *          *
* W.S. Elev (ft)         * 1870.04  * Reach Len. (ft)        *  104.00
*  104.00  *  104.00  *
* Crit W.S. (ft)         * 1870.04  * Flow Area (sq ft)      *  141.69
*    3.25  *          *
* E.G. Slope (ft/ft)     *0.051395  * Area (sq ft)           *  141.69
*    3.25  *          *
* Q Total (cfs)          *  823.64  * Flow (cfs)             *  819.34
*    4.30  *          *
* Top Width (ft)         *  155.14  * Top Width (ft)         *  117.84
*   37.30  *          *
* Vel Total (ft/s)       *    5.68  * Avg. Vel. (ft/s)       *    5.78
*    1.32  *          *
* Max Chl Dpth (ft)      *    3.23  * Hydr. Depth (ft)       *    1.20
*    0.09  *          *
* Conv. Total (cfs)      *  3633.1  * Conv. (cfs)            *  3614.1
*    18.9  *          *
* Length Wtd. (ft)       *  104.00  * Wetted Per. (ft)       *  118.94
*   37.31  *          *
* Min Ch El (ft)         * 1869.86  * Shear (lb/sq ft)       *    3.82
*    0.28  *          *
* Alpha                  *    1.03  * Stream Power (lb/ft s) *   22.10
*    0.37  *          *
* Frctn Loss (ft)        *    4.50  * Cum Volume (acre-ft)   *   10.19
*    3.62  *    0.27  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *   13.01
*    2.75  *    0.67  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.60

INPUT
Description:
Station Elevation Data    num=      33
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9577.9  1872.5  9627.5 1871.53  9657.5 1869.88    9667 1869.04  9687.8
1868.45
```

```
  9695.3 1867.88  9711.1 1866.18    9733 1862.81  9747.9 1866.28  9766.7
1866.56
  9773.3 1866.62  9789.3 1864.27  9794.9 1864.05  9808.4 1866.19  9838.1
1864.89
  9865.9 1866.73  9867.4 1866.85  9902.7 1862.59  9916.4 1863.71  9933.1
1863.89
  9947.6 1865.98  9950.4 1866.47  9973.2 1866.93  9981.1  1867.3  9995.5
1865.01
  9999.2  1864.2   10001 1864.27 10012.8 1865.28   10035 1866.06 10036.7
1866.06
 10046.9  1866.3 10065.7  1866.8 10076.7 1866.86

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9577.9    .069  9981.1     .05 10065.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9981.1   10035              297     297     297             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)         * 1865.77  * Element                *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.38  * Wt. n-Val.             *   0.069
*   0.050  *          *
* W.S. Elev (ft)         * 1865.39  * Reach Len. (ft)        *  297.00
*  297.00  *  297.00  *
* Crit W.S. (ft)         * 1865.20  * Flow Area (sq ft)      *  155.24
*   12.91  *          *
* E.G. Slope (ft/ft)     *0.036855  * Area (sq ft)           *  155.24
*   12.91  *          *
* Q Total (cfs)          *  823.64  * Flow (cfs)             *  773.61
*   50.03  *          *
* Top Width (ft)         *  155.52  * Top Width (ft)         *  132.64
*   22.88  *          *
* Vel Total (ft/s)       *    4.90  * Avg. Vel. (ft/s)       *    4.98
*    3.88  *          *
* Max Chl Dpth (ft)      *    2.80  * Hydr. Depth (ft)       *    1.17
*    0.56  *          *
* Conv. Total (cfs)      *  4290.3  * Conv. (cfs)            *  4029.7
*   260.6  *          *
* Length Wtd. (ft)       *  297.00  * Wetted Per. (ft)       *  133.68
*   23.04  *          *
* Min Ch El (ft)         * 1864.20  * Shear (lb/sq ft)       *    2.67
*    1.29  *          *
* Alpha                  *    1.01  * Stream Power (lb/ft s) *   13.32
*    5.00  *          *
* Frctn Loss (ft)        *   11.41  * Cum Volume (acre-ft)   *    9.83
*    3.60  *    0.27  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *   12.71
*    2.67  *    0.67  *
************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 0.55

INPUT
Description:
Station Elevation Data num= 38

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9585.9	1857.86	9594.6	1857.71	9598.9	1857.54	9633.5	1857.16	9646.1	1855.2
9657.4	1854.09	9674.4	1851.43	9709.4	1851.75	9710.4	1851.72	9711.1	1851.73
9714.5	1852.31	9728	1854.2	9735.7	1854.36	9754.4	1854.23	9763.2	1854.68
9778.3	1855.5	9784.2	1856.08	9801.9	1853.77	9806.2	1853.13	9828.3	1855.39
9854.2	1853.88	9857.3	1853.77	9881.6	1855.43	9889.7	1854.07	9891.4	1853.82
9892.9	1853.86	9906.5	1853.4	9908.9	1853.52	9980.4	1854.54	9984.2	1854.58
9984.6	1854.51	9998.9	1852.09	10012	1854.44	10013.5	1854.79	10030	1855.13
10032	1855.21	10096.7	1856.02	10107.6	1856.62				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9585.9	.069	9984.2	.05	10013.5	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.2	10013.5	240	240	240	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1854.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.51	Wt. n-Val.	0.069	0.050	
W.S. Elev (ft)	1853.83	Reach Len. (ft)	240.00	240.00	240.00
Crit W.S. (ft)	1853.83	Flow Area (sq ft)	125.96	17.40	
E.G. Slope (ft/ft)	0.040104	Area (sq ft)	125.96	17.40	
Q Total (cfs)	823.64	Flow (cfs)	730.20	93.44	
Top Width (ft)	137.87	Top Width (ft)	117.88	19.99	
Vel Total (ft/s)	5.75	Avg. Vel. (ft/s)	5.80	5.37	
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)	1.07		

```
*    0.87  *          *
* Conv. Total (cfs)      *  4112.8  * Conv. (cfs)            *  3646.3
*   466.6  *          *
* Length Wtd. (ft)       *  240.00  * Wetted Per. (ft)       *  118.33
*   20.29  *          *
* Min Ch El (ft)         * 1852.09  * Shear (lb/sq ft)       *    2.67
*    2.15  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *   15.45
*   11.53  *          *
* Frctn Loss (ft)        *    7.30  * Cum Volume (acre-ft)   *    8.87
*    3.50  *    0.27  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *   11.86
*    2.53  *    0.67  *
***************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.50

INPUT
Description:
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9565.7 1850.34  9626.6 1849.16  9631.7 1848.42  9644.1 1847.17  9648.4
1846.73
  9649.3  1846.8  9676.4 1847.83  9689.4 1848.58  9702.4 1848.36  9709.5
1847.89
  9713.3 1848.17  9732.5 1845.43  9736.5 1844.59  9745.6 1843.96  9748.2
1843.7
  9751.8 1844.01  9767.7 1844.95  9784.2 1844.71  9813.9 1844.38  9830.5
1846.48
  9849.7  1846.2  9852.1 1845.99    9864 1844.63  9920.1 1845.92  9923.3
1846.01
  9944.6 1845.15  9971.9 1844.74  9979.6 1844.24  9986.4    1844  9991.5
1843.45
  9999.3 1842.78 10013.1 1844.53 10013.3 1844.55 10023.6 1844.69 10043.6
1845.69
 10060.9 1845.97 10061.1 1845.97 10087.7 1848.08

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9565.7    .069  9971.9     .05 10013.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9971.9 10013.3              168     168     168             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1845.91  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.42  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1845.50  * Reach Len. (ft)         *  168.00
*  168.00  *  168.00  *
* Crit W.S. (ft)          * 1845.50  * Flow Area (sq ft)       *  119.86
*   70.33  *   15.54  *
* E.G. Slope (ft/ft)      *0.023844  * Area (sq ft)            *  119.86
*   70.33  *   15.54  *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  333.46
*  458.12  *   32.06  *
* Top Width (ft)          *  239.69  * Top Width (ft)          *  171.86
*   41.40  *   26.43  *
* Vel Total (ft/s)        *    4.00  * Avg. Vel. (ft/s)        *    2.78
*    6.51  *    2.06  *
* Max Chl Dpth (ft)       *    2.72  * Hydr. Depth (ft)        *    0.70
*    1.70  *    0.59  *
* Conv. Total (cfs)       *  5333.9  * Conv. (cfs)             *  2159.5
*  2966.8  *   207.6  *
* Length Wtd. (ft)        *  168.00  * Wetted Per. (ft)        *  172.17
*   41.59  *   26.46  *
* Min Ch El (ft)          * 1842.78  * Shear (lb/sq ft)        *    1.04
*    2.52  *    0.87  *
* Alpha                   *    1.68  * Stream Power (lb/ft s) *    2.88
*   16.40  *    1.80  *
* Frctn Loss (ft)         *    4.79  * Cum Volume (acre-ft)    *    8.20
*    3.26  *    0.22  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *   11.06
*    2.36  *    0.60  *
**************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.
```

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 0.47

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9560.6	1844.01	9565.9	1843.75	9572.9	1843.23	9604.6	1842	9634.9	1841.87
9655.4	1840.76	9665.6	1840.23	9669.6	1840.15	9686.7	1839.38	9705.5	1836.53
9707.4	1836.31	9708.6	1836.4	9725.3	1839.27	9736.5	1839	9747.7	1838.82
9779.5	1839.43	9797.1	1839.32	9822.6	1839.83	9840.1	1837.01	9840.2	1836.99
9840.4	1836.98	9845.8	1836.13	9863.9	1838.05	9873.6	1838.03	9910.2	1838.78
9946.1	1838.46	9970.4	1837.78	9977.2	1838.27	9983.8	1838.39	9997.5	1836.48
10000.4	1836.09	10001.2	1836.18	10023.8	1838.06	10026	1838.1	10150.2	1842.44
10151.8	1842.46								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9560.6	.069	9983.8	.05	10023.8	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.8	10023.8	184	184	184	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1839.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.069	0.050	0.078
W.S. Elev (ft)	1838.60	Reach Len. (ft)	184.00	184.00	184.00
Crit W.S. (ft)	1838.60	Flow Area (sq ft)	113.39	58.05	4.70
E.G. Slope (ft/ft)	0.034668	Area (sq ft)	113.39	58.05	4.70
Q Total (cfs)	823.64	Flow (cfs)	406.35	410.06	7.23
Top Width (ft)	210.42	Top Width (ft)	153.94	40.00	16.48
Vel Total (ft/s)	4.68	Avg. Vel. (ft/s)	3.58	7.06	1.54
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)	0.74	1.45	0.29
Conv. Total (cfs)	4423.6	Conv. (cfs)	2182.4		

```
*  2202.3  *    38.8  *
* Length Wtd. (ft)       *  184.00  * Wetted Per. (ft)       *  154.64
*   40.24  *   16.49  *
* Min Ch El (ft)         * 1836.09  * Shear (lb/sq ft)       *    1.59
*    3.12  *    0.62  *
* Alpha                  *    1.43  * Stream Power (lb/ft s) *    5.69
*   22.05  *    0.95  *
* Frctn Loss (ft)        *    5.54  * Cum Volume (acre-ft)   *    7.75
*    3.01  *    0.19  *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)         *   10.43
*    2.20  *    0.52  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program selected the water surface that had the least amount of
error between computed and
         assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.43

INPUT
Description:
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9498.3 1837.94  9500.2 1837.99    9507 1837.34    9513 1836.66  9571.4
1834.45
  9573.8  1834.3  9607.9  1834.1  9608.7 1834.07  9609.9 1834.01  9620.5
1832.77
  9627.8 1832.01  9638.8 1830.63  9647.6 1831.47  9655.5 1831.91  9670.6
1831.98
  9692.3 1830.44  9707.9 1832.71  9795.9 1833.31  9813.8  1832.9  9836.6
1833.01
  9843.7 1832.62  9856.7 1831.57  9861.7 1831.77  9877.3 1833.93  9879.6
1834.27
  9944.9 1832.01  9962.8 1832.34  9963.5 1832.33  9973.4 1832.35  9992.1
1832.43
  9995.1 1831.57  9999.5 1830.13 10012.6 1830.87 10013.3 1830.96 10014.9
1830.96
 10048.1 1831.99 10084.6 1833.28 10131.9  1835.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
************************************************
  9498.3    .069  9992.1     .05 10048.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.1 10048.1              243     243     243             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1832.91  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.36  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1832.55  * Reach Len. (ft)         *  243.00
*  243.00  *  243.00  *
* Crit W.S. (ft)          * 1832.48  * Flow Area (sq ft)       *  117.82
*   75.59  *    4.50  *
* E.G. Slope (ft/ft)      *0.026403  * Area (sq ft)            *  117.82
*   75.59  *    4.50  *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  373.87
*  443.78  *    5.99  *
* Top Width (ft)          *  241.98  * Top Width (ft)          *  170.02
*   56.00  *   15.96  *
* Vel Total (ft/s)        *    4.16  * Avg. Vel. (ft/s)        *    3.17
*    5.87  *    1.33  *
* Max Chl Dpth (ft)       *    2.42  * Hydr. Depth (ft)        *    0.69
*    1.35  *    0.28  *
* Conv. Total (cfs)       *  5068.9  * Conv. (cfs)             *  2300.9
*  2731.1  *    36.9  *
* Length Wtd. (ft)        *  243.00  * Wetted Per. (ft)        *  170.51
*   56.39  *   15.97  *
* Min Ch El (ft)          * 1830.13  * Shear (lb/sq ft)        *    1.14
*    2.21  *    0.46  *
* Alpha                   *    1.34  * Stream Power (lb/ft s) *    3.61
*   12.97  *    0.62  *
* Frctn Loss (ft)         *    7.15  * Cum Volume (acre-ft)    *    7.26
*    2.73  *    0.17  *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)          *    9.75
*    2.00  *    0.45  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.39

INPUT
Description:
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
```

```
********
  9588.3 1828.55  9666.2 1826.11  9682.6 1826.27  9702.8 1822.26  9704.7
1821.89
    9734 1826.68  9738.5 1827.49  9797.6 1825.62  9839.8 1826.29  9862.5
1826.31
  9883.6 1826.33  9897.4 1825.92  9912.7  1826.3  9948.6 1825.52  9959.7
1824.91
  9960.5 1824.89  9968.2 1824.99  9969.1 1825.01  9991.9 1823.17  9995.2
1823.01
 10002.1 1822.56   10003  1822.5 10012.1  1823.5 10019.2    1825 10021.1
1825.3
 10023.6 1825.28 10222.1 1829.78

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9588.3    .069  9969.1     .05 10021.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9969.1 10021.1              306     306     306             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1825.74  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.62  * Wt. n-Val.              *   0.069
*   0.050  *          *
* W.S. Elev (ft)          * 1825.12  * Reach Len. (ft)         *  306.00
*  306.00  *  306.00  *
* Crit W.S. (ft)          * 1825.03  * Flow Area (sq ft)       *   60.28
*   74.05  *          *
* E.G. Slope (ft/ft)      *0.032964  * Area (sq ft)            *   60.28
*   74.05  *          *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  312.47
*  511.17  *          *
* Top Width (ft)          *  100.08  * Top Width (ft)          *   49.23
*   50.85  *          *
* Vel Total (ft/s)        *    6.13  * Avg. Vel. (ft/s)        *    5.18
*    6.90  *          *
* Max Chl Dpth (ft)       *    3.23  * Hydr. Depth (ft)        *    1.22
*    1.46  *          *
* Conv. Total (cfs)       *  4536.5  * Conv. (cfs)             *  1721.0
*  2815.4  *          *
* Length Wtd. (ft)        *  306.00  * Wetted Per. (ft)        *   49.82
*   51.16  *          *
* Min Ch El (ft)          * 1822.50  * Shear (lb/sq ft)        *    2.49
*    2.98  *          *
* Alpha                   *    1.06  * Stream Power (lb/ft s) *   12.91
*   20.56  *          *
* Frctn Loss (ft)         *    8.81  * Cum Volume (acre-ft)    *    6.76
*    2.31  *    0.15  *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)          *    9.13
*    1.70  *    0.40  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
```

current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 0.33

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9696	1820.16	9728.6	1819.94	9751.6	1819.11	9794.7	1818.58	9807.7	1818.14
9816	1817.68	9818.7	1817.4	9829.7	1815.39	9830.6	1815.31	9841.2	1814.96
9844	1815.21	9859.7	1814.97	9865.4	1814.96	9878.4	1814.57	9878.9	1814.64
9891.5	1815.63	9895.8	1815.48	9931.5	1815.71	9951.4	1816.29	9961.8	1816.32
9962.7	1816.33	9965.1	1816.43	9971.8	1816.32	9972.6	1816.21	9973	1816.19
9981.9	1815.47	9985.3	1815.33	9992.4	1815.26	9995.2	1814.75	9999.7	1814.58
10007.4	1815.46	10009	1815.62	10022.5	1815.93	10139.7	1818.71		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9696	.069	9971.8	.05	10009	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9971.8	10009	274	274	274	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1816.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.069	0.050	0.078
W.S. Elev (ft)	1816.56	Reach Len. (ft)	274.00	274.00	274.00
Crit W.S. (ft)	1816.27	Flow Area (sq ft)	153.26	46.25	19.04
E.G. Slope (ft/ft)	0.025349	Area (sq ft)	153.26	46.25	19.04
Q Total (cfs)	823.64	Flow (cfs)	536.16	252.36	35.13
Top Width (ft)	225.86	Top Width (ft)	148.51	37.20	40.14
Vel Total (ft/s)	3.77	Avg. Vel. (ft/s)	3.50	5.46	1.84
Max Chl Dpth (ft)	1.99	Hydr. Depth (ft)	1.03	1.24	0.47

```
* Conv. Total (cfs)       *  5173.1  * Conv. (cfs)            *  3367.5
*  1585.0  *   220.6  *
* Length Wtd. (ft)        *  274.00  * Wetted Per. (ft)       *  148.71
*   37.35  *   40.15  *
* Min Ch El (ft)          * 1814.58  * Shear (lb/sq ft)       *    1.63
*    1.96  *    0.75  *
* Alpha                   *    1.21  * Stream Power (lb/ft s) *    5.71
*   10.69  *    1.38  *
* Frctn Loss (ft)         *    7.73  * Cum Volume (acre-ft)   *    6.01
*    1.89  *    0.09  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *    8.44
*    1.39  *    0.26  *
*************************************************************************
************************
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: NRW55T25-A1
REACH: NRW55T25-A1 RS: 0.28

INPUT
Description:
Station Elevation Data num= 38

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9644.8    1812  9645.1    1812  9678.8 1811.03  9690.2 1811.09    9730
1810.57
  9742.6 1810.08  9751.4 1810.08  9761.2 1809.28  9801.8  1808.6  9804.9
1808.65
  9809.2 1808.54  9812.6 1808.01  9816.5 1807.52  9826.5 1805.88  9836.1
1805.73
  9848.8 1807.42  9849.3  1807.4  9850.5 1807.56    9892 1808.64  9905.3
1808.58
  9912.8 1808.33  9917.3 1808.32  9924.5 1808.07  9933.7 1807.41  9934.4
1807.5
  9940.1 1808.24  9944.4 1808.93  9954.8 1808.41  9973.6 1808.57    9982
1808.27
  9990.8 1807.75  9997.5 1806.07  9999.3 1805.66 10003.4 1806.51 10005.8
1806.98
 10013.6  1808.4 10021.5 1808.61 10132.8 1811.96
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9644.8    .069  9973.6     .05 10013.6    .078
```

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr.
Expan.

```
        9973.6 10013.6              238     238     238             .1
.3
```

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
```

```
* E.G. Elev (ft)          * 1809.09  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.34  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1808.75  * Reach Len. (ft)         *  238.00
*  238.00  *  238.00  *
* Crit W.S. (ft)          * 1808.50  * Flow Area (sq ft)       *  144.52
*   50.75  *    2.24  *
* E.G. Slope (ft/ft)      *0.031602  * Area (sq ft)            *  144.52
*   50.75  *    2.24  *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  509.80
*  311.43  *    2.41  *
* Top Width (ft)          *  228.40  * Top Width (ft)          *  175.90
*   40.00  *   12.50  *
* Vel Total (ft/s)        *    4.17  * Avg. Vel. (ft/s)        *    3.53
*    6.14  *    1.08  *
* Max Chl Dpth (ft)       *    3.09  * Hydr. Depth (ft)        *    0.82
*    1.27  *    0.18  *
* Conv. Total (cfs)       *  4633.2  * Conv. (cfs)             *  2867.8
*  1751.9  *    13.6  *
* Length Wtd. (ft)        *  238.00  * Wetted Per. (ft)        *  176.38
*   40.54  *   12.50  *
* Min Ch El (ft)          * 1805.66  * Shear (lb/sq ft)        *    1.62
*    2.47  *    0.35  *
* Alpha                   *    1.26  * Stream Power (lb/ft s) *    5.70
*   15.16  *    0.38  *
* Frctn Loss (ft)         *    7.81  * Cum Volume (acre-ft)    *    5.07
*    1.58  *    0.02  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    7.42
*    1.15  *    0.10  *
*************************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.23

INPUT
Description:
Station Elevation Data    num=      38
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9614.7 1804.01  9733.2  1803.3  9768.4 1801.83  9769.4 1801.74  9796.3
1797.84
  9812.5 1801.46  9832.2 1801.59  9839.2 1801.46  9850.8 1801.54  9858.6
1801.76
  9888.1 1801.78  9891.4 1801.47  9901.4 1800.89  9913.8  1799.8  9924.1
1799.61
  9928.7 1799.71  9940.5 1800.37    9947 1800.91  9952.3 1800.87  9961.1
1800.84
  9968.1 1798.86  9970.4  1798.3  9981.5 1800.16  9983.8 1800.12    9990
1799.89
```

```
  9996.5 1798.77  9999.5 1798.09 10001.9 1798.33 10004.5  1798.5 10007.8
1799.29
 10015.5 1800.55 10031.2 1801.34 10048.9 1802.35 10057.1 1802.57 10084.7
1804
 10088.4 1804.36 10097.7 1805.05 10102.5 1804.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9614.7    .069  9981.5     .05 10015.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9981.5 10015.5              292     292     292             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1801.26  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.48  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1800.78  * Reach Len. (ft)         *  292.00
*  292.00  *  292.00  *
* Crit W.S. (ft)          * 1800.66  * Flow Area (sq ft)       *  109.41
*   47.93  *    0.53  *
* E.G. Slope (ft/ft)      *0.034129  * Area (sq ft)            *  109.41
*   47.93  *    0.53  *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  494.88
*  328.32  *    0.44  *
* Top Width (ft)          *  135.01  * Top Width (ft)          *   96.43
*   34.00  *    4.58  *
* Vel Total (ft/s)        *    5.22  * Avg. Vel. (ft/s)        *    4.52
*    6.85  *    0.83  *
* Max Chl Dpth (ft)       *    2.94  * Hydr. Depth (ft)        *    1.13
*    1.41  *    0.12  *
* Conv. Total (cfs)       *  4458.3  * Conv. (cfs)             *  2678.8
*  1777.2  *     2.4  *
* Length Wtd. (ft)        *  292.00  * Wetted Per. (ft)        *   97.53
*   34.39  *    4.59  *
* Min Ch El (ft)          * 1798.09  * Shear (lb/sq ft)        *    2.39
*    2.97  *    0.25  *
* Alpha                   *    1.14  * Stream Power (lb/ft s) *   10.81
*   20.34  *    0.20  *
* Frctn Loss (ft)         *    7.57  * Cum Volume (acre-ft)    *    4.38
*    1.31  *    0.01  *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    6.68
*    0.95  *    0.05  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25-A1
```

```
REACH: NRW55T25-A1        RS: 0.18

INPUT
Description:
Station Elevation Data    num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
***************************************************************************
********
  9511.7  1797.9  9712.8 1794.24  9753.4  1794.2  9762.5 1792.48  9766.2
1791.87
  9780.2 1789.63  9782.5 1791.59  9799.3 1792.35  9813.8 1792.34  9819.7
1792.61
  9843.1 1793.02  9860.1 1792.62  9945.5 1793.42  9982.6 1792.88  9990.3
1791.89
  9990.6 1791.82  9996.2 1790.27    9998 1789.99 10000.2 1789.35 10005.8
1790.88
 10008.6 1791.06 10016.3 1791.33 10021.9 1792.57 10028.7 1793.49 10030.5
1793.6
 10033.1  1793.8 10075.2 1795.08 10118.6 1796.02

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9511.7    .069  9982.6     .05 10028.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9982.6 10021.9              260     260     260             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
***************************************************************************
************************
* E.G. Elev (ft)          * 1793.69  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.47  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
* W.S. Elev (ft)          * 1793.22  * Reach Len. (ft)         *  260.00
*  260.00  *  260.00  *
* Crit W.S. (ft)          * 1793.22  * Flow Area (sq ft)       *  123.02
*   78.70  *    1.55  *
* E.G. Slope (ft/ft)      *0.020381  * Area (sq ft)            *  123.02
*   78.70  *    1.55  *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  296.72
*  523.83  *    3.08  *
* Top Width (ft)          *  232.61  * Top Width (ft)          *  188.52
*   39.30  *    4.79  *
* Vel Total (ft/s)        *    4.05  * Avg. Vel. (ft/s)        *    2.41
*    6.66  *    1.99  *
* Max Chl Dpth (ft)       *    3.87  * Hydr. Depth (ft)        *    0.65
*    2.00  *    0.32  *
* Conv. Total (cfs)       *  5769.3  * Conv. (cfs)             *  2078.4
*  3669.2  *    21.6  *
* Length Wtd. (ft)        *  260.00  * Wetted Per. (ft)        *  189.57
*   40.05  *    4.83  *
* Min Ch El (ft)          * 1789.35  * Shear (lb/sq ft)        *    0.83
*    2.50  *    0.41  *
* Alpha                   *    1.84  * Stream Power (lb/ft s) *    1.99
*   16.64  *    0.81  *
* Frctn Loss (ft)         *    5.68  * Cum Volume (acre-ft)    *    3.60
```

```
*    0.89  *    0.01  *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *    5.72
*    0.70  *    0.02  *
**************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.13

INPUT
Description:
Station Elevation Data    num=      31
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9354.2 1791.62  9506.8 1787.53  9541.9 1786.02  9553.6 1785.63  9565.8
1786.03
  9588.4 1785.88  9591.3 1785.52  9602.2 1783.66  9606.1 1783.37  9623.5
1784.84
  9625.4 1785.06  9643.5 1785.24  9651.6 1785.14  9658.6 1785.85  9659.4
1785.94
  9696.2 1785.55  9712.1 1785.78  9723.3 1784.98  9728.3 1784.94  9875.8
1785.94
  9955.5 1785.98    9984 1785.83  9992.7 1783.48  9998.3 1783.11  9999.9
1783.21
 10007.9 1783.58 10021.2 1785.15 10023.8 1785.61 10032.4 1786.95 10080.8
1788.11
 10173.5 1790.32

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
  9354.2    .069    9984     .05 10032.4    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          9984 10023.8               96      96      96             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
```

```
* E.G. Elev (ft)          * 1786.22  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.40  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
* W.S. Elev (ft)          * 1785.82  * Reach Len. (ft)         *   96.00
*   96.00  *   96.00  *
* Crit W.S. (ft)          * 1785.82  * Flow Area (sq ft)       *  147.22
*   68.45  *    0.14  *
* E.G. Slope (ft/ft)      *0.023434  * Area (sq ft)            *  147.22
*   68.45  *    0.14  *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  379.74
*  443.76  *    0.14  *
* Top Width (ft)          *  309.56  * Top Width (ft)          *  268.44
*   39.76  *    1.35  *
* Vel Total (ft/s)        *    3.82  * Avg. Vel. (ft/s)        *    2.58
*    6.48  *    1.01  *
* Max Chl Dpth (ft)       *    2.71  * Hydr. Depth (ft)        *    0.55
*    1.72  *    0.11  *
* Conv. Total (cfs)       *  5380.4  * Conv. (cfs)             *  2480.6
*  2898.8  *     0.9  *
* Length Wtd. (ft)        *   96.00  * Wetted Per. (ft)        *  268.78
*   40.23  *    1.37  *
* Min Ch El (ft)          * 1783.11  * Shear (lb/sq ft)        *    0.80
*    2.49  *    0.15  *
* Alpha                   *    1.77  * Stream Power (lb/ft s) *    2.07
*   16.14  *    0.15  *
* Frctn Loss (ft)         *    2.00  * Cum Volume (acre-ft)    *    2.79
*    0.45  *    0.00  *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)          *    4.36
*    0.46  *    0.00  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.11

INPUT
Description:
Station Elevation Data    num=      45
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
```

```
  9268.8 1786.76    9376 1783.93  9442.5 1782.19  9445.3 1781.89  9450.9
1780.83
  9456.6 1780.67  9458.4 1780.46  9473.4 1782.33  9475.8 1782.33  9492.5
1783.03
  9499.5 1782.69  9503.3 1782.97  9508.3 1783.18  9520.6 1783.41  9530.3
1782.88
  9531.8 1783.04  9540.2 1783.48  9549.2 1783.36  9561.4 1782.51  9619.2
1783.06
  9658.2 1783.05  9685.5 1782.25    9695 1781.69  9698.9  1781.6  9700.5
1781.63
  9744.4 1783.09  9826.2 1783.46  9864.9 1783.36  9876.1 1782.95  9881.6
1782.98
  9898.2  1782.9  9965.1 1783.69  9965.5 1783.62  9966.4 1783.55  9969.2
1783.23
  9975.5 1782.58  9990.8  1782.5  9999.8 1781.28 10001.2 1781.42 10006.4
1782.36
10012.31 1783.41 10018.7 1784.87 10034.3 1784.83 10041.1 1784.82 10168.3
1787.91

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9268.8    .069  9965.1     .05 10018.7    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9965.110012.31              222     222     222             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1783.49  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.              *   0.069
*   0.050  *          *
* W.S. Elev (ft)          * 1783.38  * Reach Len. (ft)         *  222.00
*  222.00  *  222.00  *
* Crit W.S. (ft)          * 1783.03  * Flow Area (sq ft)       *  289.13
*   42.80  *          *
* E.G. Slope (ft/ft)      *0.018628  * Area (sq ft)            *  289.13
*   42.80  *          *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  654.60
*  169.04  *          *
* Top Width (ft)          *  524.34  * Top Width (ft)          *  480.11
*   44.23  *          *
* Vel Total (ft/s)        *    2.48  * Avg. Vel. (ft/s)        *    2.26
*    3.95  *          *
* Max Chl Dpth (ft)       *    2.92  * Hydr. Depth (ft)        *    0.60
*    0.97  *          *
* Conv. Total (cfs)       *  6034.6  * Conv. (cfs)             *  4796.1
*  1238.5  *          *
* Length Wtd. (ft)        *  222.00  * Wetted Per. (ft)        *  480.54
*   44.53  *          *
* Min Ch El (ft)          * 1781.28  * Shear (lb/sq ft)        *    0.70
*    1.12  *          *
* Alpha                   *    1.18  * Stream Power (lb/ft s) *    1.58
*    4.41  *          *
* Frctn Loss (ft)         *    5.68  * Cum Volume (acre-ft)    *    2.31
*    0.33  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    3.53
```

```
*    0.37  *          *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.07

INPUT
Description:
Station Elevation Data    num=      61
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9050.6 1786.04  9104.7 1784.26  9109.3 1784.22  9232.9 1779.75  9235.2
1779.62
  9242.7 1779.93  9255.7 1779.93  9272.3 1780.27  9277.7 1780.09  9288.6
1779.43
  9296.4 1778.63  9298.8 1778.43  9303.8 1777.49    9311 1777.08  9317.1
1777.06
    9328 1776.66    9334 1775.86  9342.3 1775.38  9344.2 1775.46  9353.5
1775.43
  9358.2 1775.83  9362.3 1776.34  9367.1 1777.17  9375.2 1776.59  9377.4
1776.58
  9383.5 1777.19  9392.1 1777.59  9394.1  1777.7  9417.8 1776.45  9433.2
1777.05
  9452.6  1776.4  9466.9 1776.79  9478.2 1777.49  9481.5 1777.47  9510.6
1777.79
  9517.2 1778.17  9519.7 1778.16  9530.1  1778.5  9568.1 1778.22    9578
1777.57
    9583 1777.52  9590.7 1777.76  9609.1 1777.84  9617.8 1776.86  9627.2
1775.35
  9631.3  1775.9  9647.9 1778.01  9754.3 1778.11    9866 1778.27  9983.4
1778.13
  9991.1 1778.36  9994.7 1777.07 10000.3 1775.71 10007.7 1776.93 10010.1
1777.2
 10012.5  1777.3 10022.5 1777.38 10026.5  1776.9 10033.9  1777.8 10040.1
1778.4
 10223.8 1782.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9050.6    .069  9991.1     .05 10040.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.1 10040.1               221     221     221             .1
.3
```

```
CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1777.80  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.24  * Wt. n-Val.              *   0.069
*   0.050  *          *
* W.S. Elev (ft)          * 1777.56  * Reach Len. (ft)         *  221.00
*  221.00  *  221.00  *
* Crit W.S. (ft)          * 1777.39  * Flow Area (sq ft)       *  186.22
*   23.57  *          *
* E.G. Slope (ft/ft)      *0.037339  * Area (sq ft)            *  186.22
*   23.57  *          *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  726.87
*   96.77  *          *
* Top Width (ft)          *  256.91  * Top Width (ft)          *  218.34
*   38.57  *          *
* Vel Total (ft/s)        *    3.93  * Avg. Vel. (ft/s)        *    3.90
*    4.11  *          *
* Max Chl Dpth (ft)       *    2.21  * Hydr. Depth (ft)        *    0.85
*    0.61  *          *
* Conv. Total (cfs)       *  4262.4  * Conv. (cfs)             *  3761.6
*   500.8  *          *
* Length Wtd. (ft)        *  221.00  * Wetted Per. (ft)        *  219.00
*   39.00  *          *
* Min Ch El (ft)          * 1775.71  * Shear (lb/sq ft)        *    1.98
*    1.41  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *    7.74
*    5.78  *          *
* Frctn Loss (ft)         *    6.51  * Cum Volume (acre-ft)    *    1.10
*    0.16  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)          *    1.75
*    0.16  *          *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25-A1
REACH: NRW55T25-A1        RS: 0.03

INPUT
Description: D.S. Limit of Approximate Study
Station Elevation Data    num=      91
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  8902.1 1782.23  8922.8 1781.08  8925.4 1781.12  8952.5 1780.55  8990.3
1780.27
  9019.4 1779.23  9025.9 1778.19    9030 1777.43  9040.5 1777.14  9050.1
1776.09
  9054.8  1775.7  9065.6 1775.11  9111.5 1773.84    9121 1773.38  9141.4
1773.07
```

```
  9145.6 1773.16  9187.2 1772.36  9187.6 1772.42  9204.6  1772.8  9212.3
1772.2
  9225.8 1772.14  9230.5 1772.31  9249.5 1772.51  9304.3 1771.48  9312.6
1771.09
  9318.6 1771.04  9376.6 1771.04  9383.3 1771.16  9383.5 1771.16  9403.6
1771.48
  9405.1 1771.46  9406.2 1771.39  9449.8 1771.23  9451.4 1771.18  9455.9
1770.78
  9553.6 1770.63  9553.7 1770.63  9576.2 1770.69  9576.5 1770.68  9598.2
1770.73
  9615.5 1769.82  9616.5 1769.81  9632.7 1770.31  9652.4  1770.2  9658.8
1769.97
  9673.3  1769.8    9677 1769.57  9687.5  1770.1  9698.6 1770.22  9705.5
1770.14
  9708.9 1770.37  9717.1 1770.37  9725.2 1770.16  9738.7  1770.5  9745.5
1770.33
  9760.6 1770.33  9780.4 1770.82  9781.4 1770.81  9800.8 1771.57  9802.4
1771.54
    9813 1771.61  9826.2 1770.73  9840.7 1770.59    9847 1770.21  9849.5
1770.15
  9864.6  1770.2  9866.9 1770.29    9875  1770.2  9915.6 1771.61  9915.9
1771.65
  9921.3  1771.8    9973 1771.54  9977.3 1771.34  9986.4 1771.09    9988
1770.82
  9995.7 1769.27  9997.2 1768.74 10000.1 1767.84 10003.8 1768.59 10004.4
1768.81
 10006.6 1769.4210012.51 1771.39 10016.5 1773.29 10035.3 1772.83 10042.4
1772.69
 10056.5 1771.92 10068.9 1772.78 10088.4 1774.74 10114.7 1774.36 10120.9
1774.41
 10205.6 1776.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  8902.1    .069    9973     .05 10016.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
          997310012.51                 0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1771.28  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.23  * Wt. n-Val.              *   0.069
*   0.050  *          *
* W.S. Elev (ft)          * 1771.05  * Reach Len. (ft)         *
*         *          *
* Crit W.S. (ft)          * 1771.05  * Flow Area (sq ft)       *  248.27
*   39.08  *          *
* E.G. Slope (ft/ft)      *0.023849  * Area (sq ft)            *  248.27
*   39.08  *          *
* Q Total (cfs)           *  823.64  * Flow (cfs)              *  586.51
*  237.13  *          *
* Top Width (ft)          *  497.03  * Top Width (ft)          *  472.19
*   24.84  *          *
* Vel Total (ft/s)        *    2.87  * Avg. Vel. (ft/s)        *    2.36
*    6.07  *          *
```

```
* Max Chl Dpth (ft)      *    3.21  * Hydr. Depth (ft)       *    0.53
*    1.57  *          *
* Conv. Total (cfs)      *  5333.4  * Conv. (cfs)            *  3797.9
*  1535.5  *          *
* Length Wtd. (ft)       *          * Wetted Per. (ft)       *  472.33
*   25.70  *          *
* Min Ch El (ft)         * 1767.84  * Shear (lb/sq ft)       *    0.78
*    2.26  *          *
* Alpha                  *    1.77  * Stream Power (lb/ft s) *    1.85
*   13.74  *          *
* Frctn Loss (ft)        *          * Cum Volume (acre-ft)   *
*          *          *
* C & E Loss (ft)        *          * Cum SA (acres)         *
*          *          *
***************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: Slope too steep for slope area to converge during supercritical
flow calculations (normal depth is
         below critical depth). Water surface set to critical depth.

***************************************************************************
********

SUMMARY OF MANNING'S N VALUES

River:NRW55T25-A1
*****************************************************************
*     Reach       *   River Sta.   *   n1    *   n2    *   n3    *
*****************************************************************
*NRW55T25-A1      *    1.13        *     .069*      .05*     .078*
*NRW55T25-A1      *    1.09        *     .069*      .05*     .078*
*NRW55T25-A1      *    1.06        *     .069*      .05*     .078*
*NRW55T25-A1      *    1.04        *     .069*      .05*     .078*
*NRW55T25-A1      *    1.02        *     .069*      .05*     .078*
*NRW55T25-A1      *    1.01        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.98        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.97        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.94        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.90        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.88        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.85        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.83        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.78        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.74        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.73        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.71        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.69        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.67        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.65        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.62        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.60        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.55        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.50        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.47        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.43        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.39        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.33        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.28        *     .069*      .05*     .078*
*NRW55T25-A1      *    0.23        *     .069*      .05*     .078*
```

NRW55T25-A1	0.18	.069	.05	.078
NRW55T25-A1	0.13	.069	.05	.078
NRW55T25-A1	0.11	.069	.05	.078
NRW55T25-A1	0.07	.069	.05	.078
NRW55T25-A1	0.03	.069	.05	.078

SUMMARY OF REACH LENGTHS

River: NRW55T25-A1

Reach	River Sta.	Left	Channel	Right
NRW55T25-A1	1.13	194	194	194
NRW55T25-A1	1.09	165	165	165
NRW55T25-A1	1.06	77	77	77
NRW55T25-A1	1.04	117	117	117
NRW55T25-A1	1.02	76	76	76
NRW55T25-A1	1.01	123	123	123
NRW55T25-A1	0.98	95	95	95
NRW55T25-A1	0.97	161	161	161
NRW55T25-A1	0.94	170	170	170
NRW55T25-A1	0.90	146	146	146
NRW55T25-A1	0.88	121	121	121
NRW55T25-A1	0.85	114	114	114
NRW55T25-A1	0.83	269	269	269
NRW55T25-A1	0.78	192	192	192
NRW55T25-A1	0.74	76	76	76
NRW55T25-A1	0.73	119	119	119
NRW55T25-A1	0.71	105	105	105
NRW55T25-A1	0.69	84	84	84
NRW55T25-A1	0.67	122	122	122
NRW55T25-A1	0.65	140	140	140
NRW55T25-A1	0.62	104	104	104
NRW55T25-A1	0.60	297	297	297
NRW55T25-A1	0.55	240	240	240
NRW55T25-A1	0.50	168	168	168
NRW55T25-A1	0.47	184	184	184
NRW55T25-A1	0.43	243	243	243
NRW55T25-A1	0.39	306	306	306
NRW55T25-A1	0.33	274	274	274
NRW55T25-A1	0.28	238	238	238
NRW55T25-A1	0.23	292	292	292
NRW55T25-A1	0.18	260	260	260
NRW55T25-A1	0.13	96	96	96
NRW55T25-A1	0.11	222	222	222
NRW55T25-A1	0.07	221	221	221
NRW55T25-A1	0.03	0	0	0

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW55T25-A1

Reach	River Sta.	Contr.	Expan.

```
*******************************************************
*NRW55T25-A1      *    1.13    *       .1*       .3*
*NRW55T25-A1      *    1.09    *       .1*       .3*
*NRW55T25-A1      *    1.06    *       .1*       .3*
*NRW55T25-A1      *    1.04    *       .1*       .3*
*NRW55T25-A1      *    1.02    *       .1*       .3*
*NRW55T25-A1      *    1.01    *       .1*       .3*
*NRW55T25-A1      *    0.98    *       .1*       .3*
*NRW55T25-A1      *    0.97    *       .1*       .3*
*NRW55T25-A1      *    0.94    *       .1*       .3*
*NRW55T25-A1      *    0.90    *       .1*       .3*
*NRW55T25-A1      *    0.88    *       .1*       .3*
*NRW55T25-A1      *    0.85    *       .1*       .3*
*NRW55T25-A1      *    0.83    *       .1*       .3*
*NRW55T25-A1      *    0.78    *       .1*       .3*
*NRW55T25-A1      *    0.74    *       .1*       .3*
*NRW55T25-A1      *    0.73    *       .1*       .3*
*NRW55T25-A1      *    0.71    *       .1*       .3*
*NRW55T25-A1      *    0.69    *       .1*       .3*
*NRW55T25-A1      *    0.67    *       .1*       .3*
*NRW55T25-A1      *    0.65    *       .1*       .3*
*NRW55T25-A1      *    0.62    *       .1*       .3*
*NRW55T25-A1      *    0.60    *       .1*       .3*
*NRW55T25-A1      *    0.55    *       .1*       .3*
*NRW55T25-A1      *    0.50    *       .1*       .3*
*NRW55T25-A1      *    0.47    *       .1*       .3*
*NRW55T25-A1      *    0.43    *       .1*       .3*
*NRW55T25-A1      *    0.39    *       .1*       .3*
*NRW55T25-A1      *    0.33    *       .1*       .3*
*NRW55T25-A1      *    0.28    *       .1*       .3*
*NRW55T25-A1      *    0.23    *       .1*       .3*
*NRW55T25-A1      *    0.18    *       .1*       .3*
*NRW55T25-A1      *    0.13    *       .1*       .3*
*NRW55T25-A1      *    0.11    *       .1*       .3*
*NRW55T25-A1      *    0.07    *       .1*       .3*
*NRW55T25-A1      *    0.03    *       .1*       .3*
*******************************************************
```

Plan: Lateral Weir NRW55T25-A1 NRW55T25-A1 RS: 3925 Lat Struct Profile: 100-year

E.G. US. (ft)	1890.94	Weir Sta US (ft)	98.72
W.S. US. (ft)	1890.18	Weir Sta DS (ft)	383.00
E.G. DS (ft)	1878.41	Weir Max Depth (ft)	0.50
W.S. DS (ft)	1878.07	Weir Avg Depth (ft)	0.17
Q US (cfs)	1009.00	Weir Submerg	0.00
Q Leaving Total (cfs)	53.78	Min El Weir Flow (ft)	1878.03
Q DS (cfs)	1009.00	Wr Top Wdth (ft)	214.02
Perc Q Leaving	5.33	Q Gate Group (cfs)	
Q Weir (cfs)	53.78	Gate Open Ht (ft)	
Q Gates (cfs)		Gate #Open	
Q Culv (cfs)		Gate Area (sq ft)	
Q Lat RC (cfs)		Gate Submerg	
Weir Flow Area (sq ft)	36.78	Gate Invert (ft)	

Plan: Lateral Weir NRW55T25-A1 NRW55T25-A1 RS: 3540 Lat Struct Profile: 100-year

E.G. US. (ft)	1878.38	Weir Sta US (ft)	0.00
W.S. US. (ft)	1878.04	Weir Sta DS (ft)	264.36
E.G. DS (ft)	1865.94	Weir Max Depth (ft)	0.72
W.S. DS (ft)	1865.53	Weir Avg Depth (ft)	0.39
Q US (cfs)	1009.00	Weir Submerg	0.00
Q Leaving Total (cfs)	213.28	Min El Weir Flow (ft)	1866.86
Q DS (cfs)	1009.00	Wr Top Wdth (ft)	264.36
Perc Q Leaving	21.14	Q Gate Group (cfs)	
Q Weir (cfs)	213.28	Gate Open Ht (ft)	
Q Gates (cfs)		Gate #Open	
Q Culv (cfs)		Gate Area (sq ft)	
Q Lat RC (cfs)		Gate Submerg	
Weir Flow Area (sq ft)	103.60	Gate Invert (ft)	

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW55T25 - A2; Zone A
Project File : NRW55T25A2.prj
Run Date and Time: 7/31/2005 9:18:03 PM

Project in English units

Project Description:
NRW55T25 - A2
(Approximate Zone A Floodplain)

New River West Tributaries
FDS
Prepared by URS Corp. for the Flood Control District of Maricopa
County
Contract No: FCD 2003 C057
Date: August 3, 2005

Topographic Mapping
Source:
Flown and Mapped by DTM Inc.
Flight Date - 4/10/2003
2 foot Contour
Interval
Datum:
Horizontal - NAD83 Arizona State Plane, Central Zone,
International Feet
Vertical - NAVD 88 (GDACS Control)

Discharge
Source:
HEC-1 Analysis for the 100-Year 24-hour storm event
Performed by URS
Corp. as part of the New River West Tributaries FDS
Approved by the Flood
Control District of Maricopa County, June 2004

140 cfs @ R.S. 0.69**

**

140 cfs obtained from flow split calculations of NRW55T25 - A1

Study
Limits:
U.S. Limit is NRW55T25 - A1
D.S. Limit is the confluence with
NRW55E

Final Model Run Date:
July 31, 2005

****
****

PLAN DATA

Plan Title: Split Flow from NRW55T25-A1
Plan File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.p01

Geometry Title: Split Flow from NRW55T25-A1
Geometry File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.g01

Flow Title : Split Flow from NRW55T25-A1
Flow File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.f01

Plan Summary Information:

Number of:	Cross Sections =	6	Mulitple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: Split Flow from NRW55T25-A1
Flow File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.f01

Flow Data (cfs)

River	Reach	RS	100-year
NRW55F_Middle	Reach-1	0.69	140
NRW55T25 - A2	NRW55T25 - A2	0.69	140

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
NRW55T25 - A2	NRW55T25 - A2	100-year	Normal S = 0.0182	

GEOMETRY DATA

Geometry Title: Split Flow from NRW55T25-A1
Geometry File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.g01

CROSS SECTION

RIVER: NRW55T25 - A2
REACH: NRW55T25 - A2 RS: 0.69

INPUT
Description: D.S. of flow split from NRW55T25-A1
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9932.4	1867.7	9940.2	1867.56	9965.9	1866.74	9982.8	1866.27	9990.02	1865.02
9993.8	1864.34	9996.3	1863.45	9997.2	1863.26	9998.4	1863.49	10007.4	1865.01
10014.4	1866.09	10029.8	1865.9	10039.5	1865.39	10082.6	1865.66	10099.5	1866.49
10102.2	1866.17	10112.9	1864.77	10124.3	1865.54	10128.6	1865.7	10145.1	1866.01
10151.4	1866.01	10234.3	1867.99						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9932.4	.069	9993.8	.05	10014.4	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.02	10007.4	431	431	431	.1	

.3

CROSS SECTION OUTPUT Profile #100-year

```
*************************************************************************
************************
* E.G. Elev (ft)          * 1865.95  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.40  * Wt. n-Val.              *   0.069
*   0.051  *   0.074  *
* W.S. Elev (ft)          * 1865.54  * Reach Len. (ft)         *  431.00
*  431.00  *  431.00  *
* Crit W.S. (ft)          * 1865.54  * Flow Area (sq ft)       *    0.79
*   23.61  *    9.77  *
* E.G. Slope (ft/ft)      *0.022426  * Area (sq ft)            *    0.79
*   23.61  *    9.77  *
* Q Total (cfs)           *  140.00  * Flow (cfs)              *    1.04
*  126.04  *   12.93  *
* Top Width (ft)          *   68.81  * Top Width (ft)          *    3.03
*   17.38  *   48.41  *
* Vel Total (ft/s)        *    4.10  * Avg. Vel. (ft/s)        *    1.31
*    5.34  *    1.32  *
* Max Chl Dpth (ft)       *    2.28  * Hydr. Depth (ft)        *    0.26
*    1.36  *    0.20  *
* Conv. Total (cfs)       *   934.9  * Conv. (cfs)             *     6.9
*   841.6  *    86.3  *
* Length Wtd. (ft)        *  431.00  * Wetted Per. (ft)        *    3.07
*   17.76  *   48.53  *
* Min Ch El (ft)          * 1863.26  * Shear (lb/sq ft)        *    0.36
*    1.86  *    0.28  *
* Alpha                   *    1.54  * Stream Power (lb/ft s) *    0.47
*    9.93  *    0.37  *
* Frctn Loss (ft)         *   11.99  * Cum Volume (acre-ft)    *    0.70
*    1.68  *    1.77  *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)          *    1.67
*    2.69  *    5.86  *
*************************************************************************
************************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T25 - A2
REACH: NRW55T25 - A2 RS: 0.60

INPUT
Description:

```
Station Elevation Data    num=      19
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9876.8 1850.52  9885.8 1850.55  9911.5  1850.3  9912.2 1850.35  9915.3
1849.73
  9921.5 1848.61  9935.3  1849.7  9960.2 1849.18  9968.7 1849.23  9984.7
1850.1
  9988.8 1850.12  9997.6    1849 10000.7 1848.39 10005.2 1849.61 10006.9
1850.02
 10028.2 1849.57 10035.6 1849.53 10091.1 1850.15 10176.5 1852.18

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9876.8    .069  9997.6     .05 10005.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.8 10006.9              600     600     600             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)          * 1850.00  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.12  * Wt. n-Val.              *   0.069
*   0.061  *   0.078  *
* W.S. Elev (ft)          * 1849.87  * Reach Len. (ft)         *  600.00
*  600.00  *  600.00  *
* Crit W.S. (ft)          * 1849.79  * Flow Area (sq ft)       *   34.49
*   10.70  *    9.75  *
* E.G. Slope (ft/ft)      *0.035446  * Area (sq ft)            *   34.49
*   10.70  *    9.75  *
* Q Total (cfs)           *  140.00  * Flow (cfs)              *   90.63
*   37.94  *   11.43  *
* Top Width (ft)          *  133.69  * Top Width (ft)          *   65.91
*   15.53  *   52.25  *
* Vel Total (ft/s)        *    2.55  * Avg. Vel. (ft/s)        *    2.63
*    3.55  *    1.17  *
* Max Chl Dpth (ft)       *    1.48  * Hydr. Depth (ft)        *    0.52
*    0.69  *    0.19  *
* Conv. Total (cfs)       *   743.6  * Conv. (cfs)             *   481.4
*   201.5  *    60.7  *
* Length Wtd. (ft)        *  600.00  * Wetted Per. (ft)        *   66.09
*   15.84  *   52.26  *
* Min Ch El (ft)          * 1848.39  * Shear (lb/sq ft)        *    1.15
*    1.49  *    0.41  *
* Alpha                   *    1.23  * Stream Power (lb/ft s) *    3.03
*    5.30  *    0.48  *
* Frctn Loss (ft)         *   22.08  * Cum Volume (acre-ft)    *    0.53
*    1.51  *    1.67  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    1.33
*    2.53  *    5.37  *
**************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
```

current and previous cross section.
This may indicate the need for additional cross sections.
Note: Manning's n values were composited to a single value in the main channel.

CROSS SECTION

RIVER: NRW55T25 - A2
REACH: NRW55T25 - A2 RS: 0.49

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9828.5	1830.16	9910.6	1828.03	9983.9	1827.89	9999.9	1826.7	10006	1826.7
10008.8	1826.68	10020	1827	10023.1	1827.14	10035.5	1827.85	10062.1	1828.05
10063.5	1828.04	10065	1828	10075.1	1827.83	10085	1827.1	10090.2	1827.09
10093.2	1827.13	10119.5	1827.99	10122.3	1828.03	10125.2	1828.1	10132.5	1828.48
10138.5	1828.72	10179.7	1830.07	10189.9	1830.07	10196.8	1830.2		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9828.5	.069	9983.9	.05	10023.1	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.9	10035.5	543	543	543	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1827.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.051	0.078	
W.S. Elev (ft)	1827.65	Reach Len. (ft)	543.00	543.00	543.00
Crit W.S. (ft)	1827.65	Flow Area (sq ft)	27.71	10.71	
E.G. Slope (ft/ft)	0.038226	Area (sq ft)	27.71	10.71	
Q Total (cfs)	140.00	Flow (cfs)	120.62	19.38	
Top Width (ft)	76.48	Top Width (ft)	44.90	31.58	
Vel Total (ft/s)	3.64	Avg. Vel. (ft/s)	4.35	1.81	
Max Chl Dpth (ft)	0.97	Hydr. Depth (ft)	0.62	0.34	
Conv. Total (cfs)	716.1	Conv. (cfs)	616.9	99.1	

```
* Length Wtd. (ft)        *  543.00  * Wetted Per. (ft)        *
*   44.95  *   31.61  *
* Min Ch El (ft)          * 1826.68  * Shear (lb/sq ft)        *
*    1.47  *    0.81  *
* Alpha                   *    1.26  * Stream Power (lb/ft s) *
*    6.40  *    1.46  *
* Frctn Loss (ft)         *   15.87  * Cum Volume (acre-ft)    *    0.29
*    1.24  *    1.53  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    0.88
*    2.11  *    4.79  *
*************************************************************************
***********************
```

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section.
This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T25 - A2
REACH: NRW55T25 - A2 RS: 0.39

INPUT
Description:
Station Elevation Data num= 25

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9902.9 1811.65  9938.1 1810.85    9959 1810.68  9960.2 1810.69  9966.6
1810.82
  9974.9 1809.74  9981.2    1809  9986.6 1808.86    9991 1808.93 10000.2
1808.98
 10039.7 1809.47 10110.7 1809.37 10118.8 1809.55 10145.7 1809.59 10156.7
1809.23
 10165.7 1809.67 10171.9 1809.34 10176.8 1809.27 10180.6 1808.97 10184.6
1808.77
 10192.6 1809.83 10196.8 1809.76 10221.5 1810.26 10225.9  1810.3 10263.2
1811.41
```

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9902.9    .069  9974.9     .05 10039.7    .078
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9974.9 10039.7               612     612     612             .1
.3
```

```
CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1809.76  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1809.66  * Reach Len. (ft)         *  612.00
*  612.00  *  612.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *
*   33.00  *   37.02  *
* E.G. Slope (ft/ft)      *0.023068  * Area (sq ft)            *
*   33.00  *   37.02  *
* Q Total (cfs)           *  140.00  * Flow (cfs)              *
*   95.58  *   44.42  *
* Top Width (ft)          *  215.49  * Top Width (ft)          *
*   64.14  *  151.34  *
* Vel Total (ft/s)        *    2.00  * Avg. Vel. (ft/s)        *
*    2.90  *    1.20  *
* Max Chl Dpth (ft)       *    0.89  * Hydr. Depth (ft)        *
*    0.51  *    0.24  *
* Conv. Total (cfs)       *   921.8  * Conv. (cfs)             *
*   629.3  *   292.4  *
* Length Wtd. (ft)        *  612.00  * Wetted Per. (ft)        *
*   64.18  *  151.45  *
* Min Ch El (ft)          * 1808.86  * Shear (lb/sq ft)        *
*    0.74  *    0.35  *
* Alpha                   *    1.55  * Stream Power (lb/ft s) *
*    2.14  *    0.42  *
* Frctn Loss (ft)         *   18.09  * Cum Volume (acre-ft)    *    0.29
*    0.87  *    1.23  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.88
*    1.43  *    3.65  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25 - A2
REACH: NRW55T25 - A2      RS: 0.27

INPUT
Description:
Station Elevation Data    num=      32
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9907.3 1793.04  9921.6 1792.93  9924.7 1792.84  9941.7 1792.06    9942
1792.06
  9973.5 1791.05  9974.1 1791.01  9975.7 1790.99  9987.2 1790.65  9999.6
1791.05
 10001.7 1791.13   10004 1791.18 10074.6 1791.13 10080.2  1791.2 10103.4
1792.05
```

```
 10117.6    1792 10125.9 1791.74 10136.5 1791.82 10147.1  1791.7 10159.5
1790.93
 10162.9 1791.01 10168.1 1791.48 10169.1 1791.51 10170.8 1791.62 10175.4
1791.7
 10177.3 1791.81   10199 1791.78 10199.3 1791.85 10210.5    1792 10217.1
1792.24
 10230.1 1792.27   10269 1792.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9907.3    .069  9973.5     .05   10004    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9973.5   10004             1120    1120    1120             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1791.67  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.17  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1791.50  * Reach Len. (ft)         * 1120.00
* 1120.00  * 1120.00  *
* Crit W.S. (ft)          * 1791.50  * Flow Area (sq ft)       *    3.08
*   18.45  *   32.66  *
* E.G. Slope (ft/ft)      *0.039235  * Area (sq ft)            *    3.08
*   18.45  *   32.66  *
* Q Total (cfs)           *  140.00  * Flow (cfs)              *    4.82
*   77.67  *   57.51  *
* Top Width (ft)          *  146.79  * Top Width (ft)          *   13.87
*   30.50  *  102.42  *
* Vel Total (ft/s)        *    2.58  * Avg. Vel. (ft/s)        *    1.56
*    4.21  *    1.76  *
* Max Chl Dpth (ft)       *    0.84  * Hydr. Depth (ft)        *    0.22
*    0.60  *    0.32  *
* Conv. Total (cfs)       *   706.8  * Conv. (cfs)             *    24.3
*   392.1  *   290.3  *
* Length Wtd. (ft)        * 1120.00  * Wetted Per. (ft)        *   13.87
*   30.52  *  102.47  *
* Min Ch El (ft)          * 1790.65  * Shear (lb/sq ft)        *    0.54
*    1.48  *    0.78  *
* Alpha                   *    1.68  * Stream Power (lb/ft s) *    0.85
*    6.23  *    1.37  *
* Frctn Loss (ft)         *   28.85  * Cum Volume (acre-ft)    *    0.27
*    0.50  *    0.74  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.78
*    0.77  *    1.86  *
************************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
```

```
        0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
        This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
        depth, the calculated water surface came back below critical
depth.  This indicates that there is
        not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25 - A2
REACH: NRW55T25 - A2      RS: 0.06

INPUT
Description: D.S. Limit of Approximate Study
Station Elevation Data    num=      35
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9777.3 1758.92  9787.3 1757.63  9792.7 1757.12  9828.9 1755.67  9832.1
1755.5
    9833 1755.49  9852.8 1755.41  9899.2 1754.78  9915.1 1754.16  9924.6
1754.22
  9938.4 1754.15  9942.6 1754.03  9964.6 1753.71  9968.8 1753.47    9978
1753.36
  9984.2 1753.54  9984.9 1753.54  9988.7 1753.51  9991.6 1753.26  9996.6
1753.19
 10000.7 1753.03 10003.6  1753.1   10016 1753.75   10018 1753.97 10030.1
1753.21
 10032.8 1753.07 10036.4 1753.31 10037.8 1753.44 10038.5 1753.42 10049.5
1753.33
 10055.2 1753.45 10067.4 1754.79 10074.9 1754.88 10168.9 1758.03 10172.8
1758.12

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9777.3    .069  9988.7     .05   10016    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9988.7   10018                0       0       0             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1754.15  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1754.05  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1753.86  * Flow Area (sq ft)       *   17.65
*   20.79  *   25.18  *
```

```
* E.G. Slope (ft/ft)      *0.018197  * Area (sq ft)            *   17.65
*   20.79  *   25.18  *
* Q Total (cfs)           *  140.00  * Flow (cfs)              *   26.81
*   67.71  *   45.49  *
* Top Width (ft)          *  118.61  * Top Width (ft)          *   46.68
*   29.30  *   42.63  *
* Vel Total (ft/s)        *    2.20  * Avg. Vel. (ft/s)        *    1.52
*    3.26  *    1.81  *
* Max Chl Dpth (ft)       *    1.02  * Hydr. Depth (ft)        *    0.38
*    0.71  *    0.59  *
* Conv. Total (cfs)       *  1037.8  * Conv. (cfs)             *   198.7
*   501.9  *   337.2  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *   46.69
*   29.34  *   42.71  *
* Min Ch El (ft)          * 1753.03  * Shear (lb/sq ft)        *    0.43
*    0.80  *    0.67  *
* Alpha                   *    1.37  * Stream Power (lb/ft s) *    0.65
*    2.62  *    1.21  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
*************************************************************************
************************

*************************************************************************
********
```

SUMMARY OF MANNING'S N VALUES

River:NRW55T25 - A2

Reach	River Sta.	n1	n2	n3
NRW55T25 - A2	0.69	.069	.05	.078
NRW55T25 - A2	0.60	.069	.05	.078
NRW55T25 - A2	0.49	.069	.05	.078
NRW55T25 - A2	0.39	.069	.05	.078
NRW55T25 - A2	0.27	.069	.05	.078
NRW55T25 - A2	0.06	.069	.05	.078

```
*************************************************************************
********
```

SUMMARY OF REACH LENGTHS

River: NRW55T25 - A2

Reach	River Sta.	Left	Channel	Right
NRW55T25 - A2	0.69	431	431	431
NRW55T25 - A2	0.60	600	600	600
NRW55T25 - A2	0.49	543	543	543
NRW55T25 - A2	0.39	612	612	612
NRW55T25 - A2	0.27	1120	1120	1120
NRW55T25 - A2	0.06	0	0	0

```
*************************************************************************
********
```

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW55T25 - A2

Reach	River Sta.	Contr.	Expan.
NRW55T25 - A2	0.69	.1	.3
NRW55T25 - A2	0.60	.1	.3
NRW55T25 - A2	0.49	.1	.3
NRW55T25 - A2	0.39	.1	.3
NRW55T25 - A2	0.27	.1	.3
NRW55T25 - A2	0.06	.1	.3

HEC-RAS Version 3.1.1 May 2003
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

****
****

PROJECT DATA
Project Title: NRW55T25 - A3; Zone A
Project File : NRW55T25A3.prj
Run Date and Time: 7/31/2005 9:18:48 PM

Project in English units

Project Description:
NRW55T25 - A3
(Approximate Zone A Delineation)

New River West Tributaries
FDS
Prepared by URS Corp. for the Flood Control District of Maricopa
County
Contract No: FCD 2003 C057
Date: August 3, 2005

Topographic Mapping
Source:
Flown and Mapped by DTM Inc.
Flight Date - 4/10/2003
2 foot Contour
Interval
Datum:
Horizontal - NAD83 Arizona State Plane, Central Zone,
International Feet
Vertical - NAVD 88 (GDACS Control)

Discharge
Source:
HEC-1 Analysis for the 100-Year 24-hour storm event
Performed by URS
Corp. as part of the New River West Tributaries FDS
Approved by the Flood
Control District of Maricopa County, June 2004

50 cfs @ R.S. 0.86**

**50

cfs obtained from flow split calculations of NRW55T25 - A1

Study
Limits:
U.S. Limit is NRW55T25 - A1
D.S. Limit is the U.S. limit of
NRW55T20

Final Model Run Date:
July 31, 2005

****
****

PLAN DATA

Plan Title: Split Flow from NRW55T25-A1
Plan File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.p01

Geometry Title: Split Flow from NRW55T25-A1
Geometry File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.g01

Flow Title : Split Flow from NRW55T25-A1
Flow File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.f01

Plan Summary Information:

Number of:	Cross Sections =	10	Mulitple Openings =	0
	Culverts =	0	Inline Structures =	0
	Bridges =	0	Lateral Structures =	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculaton tolerance = 0.01
Maximum number of interations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****
****

FLOW DATA

Flow Title: Split Flow from NRW55T25-A1
Flow File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.f01

Flow Data (cfs)

River	Reach	RS	100-year
NRW55F_West	Reach-1	0.86	50
NRW55T25 - A3	NRW55T25 - A3	0.86	50

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
NRW55T25 - A3	NRW55T25 - A3	100-year		Normal S = 0.0222

GEOMETRY DATA

Geometry Title: Split Flow from NRW55T25-A1
Geometry File : p:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.g01

CROSS SECTION

RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3 RS: 0.86

INPUT
Description: D.S. of flow split from NRW55T25-A1
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9962.9	1880.29	9973.3	1880.28	9974.1	1880.26	9974.7	1880.26	9987.3	1879.95
9992.6	1879.14	10000.8	1877.99	10006.83	1879.17	10016.6	1881.04	10019.2	1881.49
10048.9	1880.5	10050	1880.48	10072.5	1881.13				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9962.9	.069	9992.6	.05	10016.6	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9992.6	10006.83	311	311	311	.1	.3

CROSS SECTION OUTPUT Profile #100-year

```
************************
* E.G. Elev (ft)          * 1879.66  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.36  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
* W.S. Elev (ft)          * 1879.30  * Reach Len. (ft)         *  311.00
*  311.00  *  311.00  *
* Crit W.S. (ft)          * 1879.30  * Flow Area (sq ft)       *    0.08
*   10.33  *    0.04  *
* E.G. Slope (ft/ft)      *0.041167  * Area (sq ft)            *    0.08
*   10.33  *    0.04  *
* Q Total (cfs)           *   50.00  * Flow (cfs)              *    0.06
*   49.89  *    0.04  *
* Top Width (ft)          *   15.93  * Top Width (ft)          *    1.03
*   14.23  *    0.67  *
* Vel Total (ft/s)        *    4.78  * Avg. Vel. (ft/s)        *    0.80
*    4.83  *    0.95  *
* Max Chl Dpth (ft)       *    1.31  * Hydr. Depth (ft)        *    0.08
*    0.73  *    0.06  *
* Conv. Total (cfs)       *   246.4  * Conv. (cfs)             *     0.3
*   245.9  *     0.2  *
* Length Wtd. (ft)        *  311.00  * Wetted Per. (ft)        *    1.04
*   14.43  *    0.68  *
* Min Ch El (ft)          * 1877.99  * Shear (lb/sq ft)        *    0.20
*    1.84  *    0.16  *
* Alpha                   *    1.02  * Stream Power (lb/ft s) *    0.16
*    8.89  *    0.15  *
* Frctn Loss (ft)         *   11.29  * Cum Volume (acre-ft)    *    0.27
*    1.00  *    0.24  *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)          *    1.02
*    1.25  *    0.81  *
*********************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3      RS: 0.80

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*********************************************************************
********
```

```
  9953.4 1868.26  9961.2 1868.66  9968.2 1867.47  9977.4 1866.68  9984.3
1866.97
  9990.2 1866.65  9992.8 1866.88 10001.1 1865.97 10001.4 1865.92 10012.9
1866.97
 10024.1 1866.98   10028 1867.42 10039.1 1868.35 10058.8 1868.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9953.4    .069  9992.8     .05 10012.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.8 10012.9              430     430     430             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1867.22  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1867.02  * Reach Len. (ft)         *  430.00
*  430.00  *  430.00  *
* Crit W.S. (ft)          * 1867.02  * Flow Area (sq ft)       *    3.93
*   11.88  *    0.52  *
* E.G. Slope (ft/ft)      *0.032257  * Area (sq ft)            *    3.93
*   11.88  *    0.52  *
* Q Total (cfs)           *   50.00  * Flow (cfs)              *    5.24
*   44.53  *    0.22  *
* Top Width (ft)          *   51.02  * Top Width (ft)          *   19.36
*   20.10  *   11.56  *
* Vel Total (ft/s)        *    3.06  * Avg. Vel. (ft/s)        *    1.33
*    3.75  *    0.43  *
* Max Chl Dpth (ft)       *    1.10  * Hydr. Depth (ft)        *    0.20
*    0.59  *    0.04  *
* Conv. Total (cfs)       *   278.4  * Conv. (cfs)             *    29.2
*   248.0  *     1.2  *
* Length Wtd. (ft)        *  430.00  * Wetted Per. (ft)        *   19.40
*   20.20  *   11.56  *
* Min Ch El (ft)          * 1865.92  * Shear (lb/sq ft)        *    0.41
*    1.18  *    0.09  *
* Alpha                   *    1.35  * Stream Power (lb/ft s) *    0.54
*    4.44  *    0.04  *
* Frctn Loss (ft)         *   15.10  * Cum Volume (acre-ft)    *    0.26
*    0.92  *    0.24  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.95
*    1.13  *    0.76  *
************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
```

depth, the calculated water surface came back below critical depth. This indicates that there is
not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3 RS: 0.72

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9971.4	1854.48	9977.3	1854.48	9986.5	1850.5	9987.7	1850.06	9988.1	1849.96
9993.67	1849.08	9998.1	1848.37	10001	1848.63	10008.53	1849.07	10019.9	1849.65
10020.7	1849.74	10030.7	1850.55	10032.8	1850.57	10038.8	1850.77	10040.2	1850.62
10042.2	1850.61								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9971.4	.069	9988.1	.05	10001	.078

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9993.67	10008.53	498	498	498	.1	.3

CROSS SECTION OUTPUT Profile #100-year

E.G. Elev (ft)	1849.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.	0.050	0.058	0.078
W.S. Elev (ft)	1849.50	Reach Len. (ft)	498.00	498.00	498.00
Crit W.S. (ft)	1849.46	Flow Area (sq ft)	0.55	11.17	1.78
E.G. Slope (ft/ft)	0.038379	Area (sq ft)	0.55	11.17	1.78
Q Total (cfs)	50.00	Flow (cfs)	1.11	46.53	2.36
Top Width (ft)	25.84	Top Width (ft)	2.63	14.86	8.35
Vel Total (ft/s)	3.71	Avg. Vel. (ft/s)	2.03	4.17	1.33
Max Chl Dpth (ft)	1.13	Hydr. Depth (ft)	0.21	0.75	0.21
Conv. Total (cfs)	255.2	Conv. (cfs)	5.7	237.5	12.1
Length Wtd. (ft)	498.00	Wetted Per. (ft)	2.67	14.94	8.36

```
* Min Ch El (ft)          * 1848.37  * Shear (lb/sq ft)        *    0.49
*    1.79  *    0.51  *
* Alpha                   *    1.19  * Stream Power (lb/ft s) *    1.00
*    7.46  *    0.68  *
* Frctn Loss (ft)         *   18.88  * Cum Volume (acre-ft)    *    0.23
*    0.81  *    0.23  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.84
*    0.96  *    0.66  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3      RS: 0.63

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9965.2 1839.32  9966.7 1839.27    9975 1838.27  9980.8 1837.45  9982.7
1836.33
  9988.9 1831.95  9995.5 1830.05  9997.4 1829.46  9998.1 1829.54 10000.7
1829.58
 10004.9 1829.2910006.16 1829.99 10011.5 1833.26 10025.2 1837.02 10028.6
1838.53
   10030  1838.9 10033.3 1839.16 10036.4 1839.47

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9965.2    .069  9995.5     .05 10011.5    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9995.510006.16              319     319     319             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)          * 1830.86  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.42  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
* W.S. Elev (ft)          * 1830.44  * Reach Len. (ft)         *  319.00
*  319.00  *  319.00  *
* Crit W.S. (ft)          * 1830.44  * Flow Area (sq ft)       *    0.26
*    9.46  *    0.16  *
* E.G. Slope (ft/ft)      *0.037449  * Area (sq ft)            *    0.26
*    9.46  *    0.16  *
* Q Total (cfs)           *   50.00  * Flow (cfs)              *    0.36
*   49.33  *    0.31  *
```

```
* Top Width (ft)          *   12.74  * Top Width (ft)          *    1.35
*   10.66  *    0.73  *
* Vel Total (ft/s)        *    5.06  * Avg. Vel. (ft/s)        *    1.36
*    5.22  *    1.91  *
* Max Chl Dpth (ft)       *    1.15  * Hydr. Depth (ft)        *    0.19
*    0.89  *    0.22  *
* Conv. Total (cfs)       *   258.4  * Conv. (cfs)             *     1.8
*   254.9  *     1.6  *
* Length Wtd. (ft)        *  319.00  * Wetted Per. (ft)        *    1.40
*   10.95  *    0.86  *
* Min Ch El (ft)          * 1829.29  * Shear (lb/sq ft)        *    0.44
*    2.02  *    0.45  *
* Alpha                   *    1.05  * Stream Power (lb/ft s) *    0.59
*   10.54  *    0.85  *
* Frctn Loss (ft)         *    7.56  * Cum Volume (acre-ft)    *    0.23
*    0.69  *    0.22  *
* C & E Loss (ft)         *    0.04  * Cum SA (acres)          *    0.81
*    0.81  *    0.61  *
*************************************************************************
************************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3      RS: 0.57

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
  9969.5 1828.63  9976.3 1828.48  9982.2 1827.38  9983.1 1826.83  9996.1
1819.26
  9997.8 1818.98   10001 1818.64 10005.2 1819.57 10007.1 1819.88 10011.3
1823.07
 10017.7  1827.5 10026.4 1830.34 10029.3 1830.11 10033.1 1830.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
```

```
  9969.5    .069  9996.1     .05 10005.2    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9996.1 10005.2              553     553     553             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
***********************
* E.G. Elev (ft)          * 1820.49  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1820.22  * Reach Len. (ft)         *  553.00
*  553.00  *  553.00  *
* Crit W.S. (ft)          * 1819.99  * Flow Area (sq ft)       *    0.79
*   11.07  *    1.02  *
* E.G. Slope (ft/ft)      *0.016337  * Area (sq ft)            *    0.79
*   11.07  *    1.02  *
* Q Total (cfs)           *   50.00  * Flow (cfs)              *    1.21
*   47.42  *    1.37  *
* Top Width (ft)          *   13.10  * Top Width (ft)          *    1.65
*    9.10  *    2.35  *
* Vel Total (ft/s)        *    3.88  * Avg. Vel. (ft/s)        *    1.53
*    4.28  *    1.34  *
* Max Chl Dpth (ft)       *    1.58  * Hydr. Depth (ft)        *    0.48
*    1.22  *    0.43  *
* Conv. Total (cfs)       *   391.2  * Conv. (cfs)             *     9.5
*   371.0  *    10.7  *
* Length Wtd. (ft)        *  553.00  * Wetted Per. (ft)        *    1.91
*    9.24  *    2.49  *
* Min Ch El (ft)          * 1818.64  * Shear (lb/sq ft)        *    0.42
*    1.22  *    0.42  *
* Alpha                   *    1.16  * Stream Power (lb/ft s) *    0.65
*    5.23  *    0.56  *
* Frctn Loss (ft)         *   12.48  * Cum Volume (acre-ft)    *    0.23
*    0.62  *    0.21  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)          *    0.80
*    0.74  *    0.60  *
************************************************************************
***********************

Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3      RS: 0.46

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
```

```
Elev
**********************************************************************
********
  9967.8  1810.2  9975.7 1810.62  9984.6  1808.7  9990.1 1807.29  9990.6
1807.25
  9991.5 1807.12  9996.9 1806.56 10001.3 1806.95   10006 1807.33 10006.8
1807.42
 10017.1  1808.1 10031.2  1811.1 10032.1 1811.24 10039.1 1811.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9967.8    .069  9991.5     .05 10001.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9991.5 10001.3              499     499     499             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**********************************************************************
***********************
* E.G. Elev (ft)          * 1808.01  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.33  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)          * 1807.68  * Reach Len. (ft)         *  499.00
*  499.00  *  499.00  *
* Crit W.S. (ft)          * 1807.68  * Flow Area (sq ft)       *    0.95
*    8.61  *    3.29  *
* E.G. Slope (ft/ft)      *0.033211  * Area (sq ft)            *    0.95
*    8.61  *    3.29  *
* Q Total (cfs)           *   50.00  * Flow (cfs)              *    1.73
*   42.61  *    5.66  *
* Top Width (ft)          *   22.16  * Top Width (ft)          *    2.92
*    9.80  *    9.44  *
* Vel Total (ft/s)        *    3.89  * Avg. Vel. (ft/s)        *    1.83
*    4.95  *    1.72  *
* Max Chl Dpth (ft)       *    1.12  * Hydr. Depth (ft)        *    0.32
*    0.88  *    0.35  *
* Conv. Total (cfs)       *   274.4  * Conv. (cfs)             *     9.5
*   233.8  *    31.1  *
* Length Wtd. (ft)        *  499.00  * Wetted Per. (ft)        *    2.98
*    9.85  *    9.47  *
* Min Ch El (ft)          * 1806.56  * Shear (lb/sq ft)        *    0.66
*    1.81  *    0.72  *
* Alpha                   *    1.41  * Stream Power (lb/ft s) *    1.20
*    8.97  *    1.24  *
* Frctn Loss (ft)         *   13.62  * Cum Volume (acre-ft)    *    0.22
*    0.49  *    0.19  *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)          *    0.77
*    0.62  *    0.53  *
**********************************************************************
***********************

Warning: The energy equation could not be balanced within the specified
number of iterations.  The
         program used critical depth for the water surface and continued
on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
```

```
         This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water
surface was set equal to critical
         depth, the calculated water surface came back below critical
depth.  This indicates that there is
         not a valid subcritical answer.  The program defaulted to
critical depth.

CROSS SECTION


RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3      RS: 0.37

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**************************************************************************
********
  9966.7 1792.64  9985.9 1792.27  9994.7 1789.78    9996 1789.22 10001.4
1789.4
 10006.9 1789.77 10010.1 1790.68 10021.4 1791.28 10029.1 1792.02   10038
1793.08
 10057.3 1793.99 10065.5 1794.17

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9966.7    .069  9994.7     .05 10006.9    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9994.7 10006.9              423     423     423             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
**************************************************************************
************************
* E.G. Elev (ft)         * 1790.66  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.27  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1790.39  * Reach Len. (ft)         *  423.00
*  423.00  *  423.00  *
* Crit W.S. (ft)         * 1790.26  * Flow Area (sq ft)       *    0.65
*   11.35  *    0.66  *
* E.G. Slope (ft/ft)     *0.022836  * Area (sq ft)            *    0.65
*   11.35  *    0.66  *
* Q Total (cfs)          *   50.00  * Flow (cfs)              *    0.92
*   48.23  *    0.85  *
* Top Width (ft)         *   16.50  * Top Width (ft)          *    2.14
*   12.20  *    2.16  *
* Vel Total (ft/s)       *    3.95  * Avg. Vel. (ft/s)        *    1.43
*    4.25  *    1.28  *
* Max Chl Dpth (ft)      *    1.16  * Hydr. Depth (ft)        *    0.30
*    0.93  *    0.31  *
* Conv. Total (cfs)      *   330.9  * Conv. (cfs)             *     6.1
*   319.2  *     5.6  *
* Length Wtd. (ft)       *  423.00  * Wetted Per. (ft)        *    2.22
```

```
*   12.33  *    2.25  *
* Min Ch El (ft)         * 1789.22  * Shear (lb/sq ft)       *    0.41
*    1.31  *    0.42  *
* Alpha                  *    1.12  * Stream Power (lb/ft s) *    0.59
*    5.58  *    0.54  *
* Frctn Loss (ft)        *   13.10  * Cum Volume (acre-ft)   *    0.21
*    0.38  *    0.16  *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)         *    0.74
*    0.49  *    0.46  *
*************************************************************************
************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3      RS: 0.29

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
*************************************************************************
********
    9905 1779.15  9907.8 1779.15  9919.9 1778.48    9935 1777.13    9937
1776.99
  9945.4 1776.83  9956.6 1777.04  9958.8 1777.18  9964.5 1777.23  9982.5
1777.83
  9991.6 1777.58  9992.1 1777.55  9992.3 1777.52  9996.1 1776.29  9999.2
1776.74
 10005.3 1777.57 10010.3 1777.38   10014 1777.47 10021.8 1777.11 10022.1
1777.12
 10032.6 1778.04 10033.7  1778.1 10045.1  1777.9 10077.2 1778.57

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
************************************************
    9905    .069  9992.1     .05 10005.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9992.1 10005.3              564     564     564             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
************************
* E.G. Elev (ft)         * 1777.53  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)          *    0.16  * Wt. n-Val.              *   0.069
*   0.050  *   0.078  *
* W.S. Elev (ft)         * 1777.37  * Reach Len. (ft)         *  564.00
*  564.00  *  564.00  *
* Crit W.S. (ft)         * 1777.37  * Flow Area (sq ft)       *   11.61
*    5.95  *    1.20  *
* E.G. Slope (ft/ft)     *0.044363  * Area (sq ft)            *   11.61
```

```
*    5.95  *    1.20  *
* Q Total (cfs)          *   50.00  * Flow (cfs)              *   24.53
*   24.22  *    1.26  *
* Top Width (ft)         *   56.54  * Top Width (ft)          *   36.53
*   11.10  *    8.90  *
* Vel Total (ft/s)       *    2.67  * Avg. Vel. (ft/s)        *    2.11
*    4.07  *    1.05  *
* Max Chl Dpth (ft)      *    1.08  * Hydr. Depth (ft)        *    0.32
*    0.54  *    0.13  *
* Conv. Total (cfs)      *   237.4  * Conv. (cfs)             *   116.4
*   115.0  *     6.0  *
* Length Wtd. (ft)       *  564.00  * Wetted Per. (ft)        *   36.56
*   11.35  *    8.92  *
* Min Ch El (ft)         * 1776.29  * Shear (lb/sq ft)        *    0.88
*    1.45  *    0.37  *
* Alpha                  *    1.44  * Stream Power (lb/ft s) *    1.86
*    5.91  *    0.39  *
* Frctn Loss (ft)        *   14.46  * Cum Volume (acre-ft)    *    0.15
*    0.29  *    0.15  *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)          *    0.56
*    0.38  *    0.41  *
**********************************************************************
***********************

Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream
conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for
additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3      RS: 0.18

INPUT
Description:
Station Elevation Data    num=      17
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
**********************************************************************
********
  9954.2 1764.03  9959.1 1762.93  9960.1 1762.76    9976  1763.2    9981
1763.45
  9989.4 1762.98  9997.3 1762.28  9998.9 1761.99 10000.7 1761.78 10002.4
1761.98
10007.29 1762.29 10011.1 1762.51 10012.9 1762.36 10023.9 1762.54 10036.3
1763.69
 10053.9 1764.51 10075.9 1765.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
  9954.2    .069  9997.3     .05 10011.1    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
```

```
        9997.310007.29              791     791     791             .1
.3

CROSS SECTION OUTPUT  Profile #100-year
************************************************************************
************************
* E.G. Elev (ft)          * 1763.07  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.               *   0.069
*   0.050  *   0.068  *
* W.S. Elev (ft)          * 1762.94  * Reach Len. (ft)          *  791.00
*  791.00  *  791.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)        *    3.10
*    8.90  *    9.16  *
* E.G. Slope (ft/ft)      *0.016672  * Area (sq ft)             *    3.10
*    8.90  *    9.16  *
* Q Total (cfs)           *   50.00  * Flow (cfs)               *    3.58
*   31.48  *   14.93  *
* Top Width (ft)          *   45.74  * Top Width (ft)           *   14.86
*    9.99  *   20.89  *
* Vel Total (ft/s)        *    2.36  * Avg. Vel. (ft/s)         *    1.16
*    3.54  *    1.63  *
* Max Chl Dpth (ft)       *    1.16  * Hydr. Depth (ft)         *    0.21
*    0.89  *    0.44  *
* Conv. Total (cfs)       *   387.2  * Conv. (cfs)              *    27.8
*   243.8  *   115.7  *
* Length Wtd. (ft)        *  791.00  * Wetted Per. (ft)         *   14.90
*   10.05  *   20.93  *
* Min Ch El (ft)          * 1761.78  * Shear (lb/sq ft)         *    0.22
*    0.92  *    0.46  *
* Alpha                   *    1.57  * Stream Power (lb/ft s)   *    0.25
*    3.26  *    0.74  *
* Frctn Loss (ft)         *   15.14  * Cum Volume (acre-ft)     *    0.05
*    0.20  *    0.09  *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)           *    0.22
*    0.24  *    0.21  *
************************************************************************
************************

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the
current and previous cross section.
         This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: NRW55T25 - A3
REACH: NRW55T25 - A3      RS: 0.03

INPUT
Description: D.S. Limit of Approximate Study
Station Elevation Data    num=      15
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta
Elev
************************************************************************
********
  9893.1  1748.4  9904.5  1748.4  9914.8 1747.34  9915.8 1747.16  9929.4
1749.06
  9954.1 1748.67  9982.3 1749.05  9989.2 1748.72  9993.4 1747.45  9997.9
1746.81
```

```
 10000.9 1746.81 10003.1 1746.6610010.38 1747.43 10022.3 1748.81 10074.5
1749.94

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  9893.1    .069  9993.4     .05 10022.3    .078

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.
Expan.
        9993.410010.38                 0       0       0              .1
.3

CROSS SECTION OUTPUT  Profile #100-year
*************************************************************************
***********************
* E.G. Elev (ft)          * 1747.93  * Element                 *  Left OB
*  Channel * Right OB *
* Vel Head (ft)           *    0.19  * Wt. n-Val.              *   0.069
*   0.050  *   0.050  *
* W.S. Elev (ft)          * 1747.73  * Reach Len. (ft)         *
*          *          *
* Crit W.S. (ft)          * 1747.63  * Flow Area (sq ft)       *    2.55
*   12.70  *    0.40  *
* E.G. Slope (ft/ft)      *0.022215  * Area (sq ft)            *    2.55
*   12.70  *    0.40  *
* Q Total (cfs)           *   50.00  * Flow (cfs)              *    3.33
*   46.17  *    0.50  *
* Top Width (ft)          *   29.47  * Top Width (ft)          *    9.87
*   16.98  *    2.62  *
* Vel Total (ft/s)        *    3.20  * Avg. Vel. (ft/s)        *    1.31
*    3.64  *    1.25  *
* Max Chl Dpth (ft)       *    1.07  * Hydr. Depth (ft)        *    0.26
*    0.75  *    0.15  *
* Conv. Total (cfs)       *   335.5  * Conv. (cfs)             *    22.4
*   309.7  *     3.4  *
* Length Wtd. (ft)        *          * Wetted Per. (ft)        *    9.99
*   17.07  *    2.64  *
* Min Ch El (ft)          * 1746.66  * Shear (lb/sq ft)        *    0.35
*    1.03  *    0.21  *
* Alpha                   *    1.21  * Stream Power (lb/ft s) *    0.46
*    3.75  *    0.26  *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)    *
*          *          *
* C & E Loss (ft)         *          * Cum SA (acres)          *
*          *          *
*************************************************************************
***********************

Warning: Divided flow computed for this cross-section.

*************************************************************************
********

SUMMARY OF MANNING'S N VALUES

River:NRW55T25 - A3
*****************************************************************
*     Reach      *   River Sta.   *   n1    *   n2    *   n3    *
*****************************************************************
*NRW55T25 - A3   *    0.86        *     .069*      .05*     .078*
```

*NRW55T25 - A3	* 0.80	* .069*	.05*	.078*
*NRW55T25 - A3	* 0.72	* .069*	.05*	.078*
*NRW55T25 - A3	* 0.63	* .069*	.05*	.078*
*NRW55T25 - A3	* 0.57	* .069*	.05*	.078*
*NRW55T25 - A3	* 0.46	* .069*	.05*	.078*
*NRW55T25 - A3	* 0.37	* .069*	.05*	.078*
*NRW55T25 - A3	* 0.29	* .069*	.05*	.078*
*NRW55T25 - A3	* 0.18	* .069*	.05*	.078*
*NRW55T25 - A3	* 0.03	* .069*	.05*	.078*

****
****

SUMMARY OF REACH LENGTHS

River: NRW55T25 - A3

Reach	River Sta.	Left	Channel	Right
*NRW55T25 - A3	* 0.86	* 311*	311*	311*
*NRW55T25 - A3	* 0.80	* 430*	430*	430*
*NRW55T25 - A3	* 0.72	* 498*	498*	498*
*NRW55T25 - A3	* 0.63	* 319*	319*	319*
*NRW55T25 - A3	* 0.57	* 553*	553*	553*
*NRW55T25 - A3	* 0.46	* 499*	499*	499*
*NRW55T25 - A3	* 0.37	* 423*	423*	423*
*NRW55T25 - A3	* 0.29	* 564*	564*	564*
*NRW55T25 - A3	* 0.18	* 791*	791*	791*
*NRW55T25 - A3	* 0.03	* 0*	0*	0*

****
****

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: NRW55T25 - A3

Reach	River Sta.	Contr.	Expan.
*NRW55T25 - A3	* 0.86	* .1*	.3*
*NRW55T25 - A3	* 0.80	* .1*	.3*
*NRW55T25 - A3	* 0.72	* .1*	.3*
*NRW55T25 - A3	* 0.63	* .1*	.3*
*NRW55T25 - A3	* 0.57	* .1*	.3*
*NRW55T25 - A3	* 0.46	* .1*	.3*
*NRW55T25 - A3	* 0.37	* .1*	.3*
*NRW55T25 - A3	* 0.29	* .1*	.3*
*NRW55T25 - A3	* 0.18	* .1*	.3*
*NRW55T25 - A3	* 0.03	* .1*	.3*

NRW55.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.f01
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.xs
Selected profiles: 100-year
Date: 7/29/2005
Time: 2:26:06 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW55T15,NRW55T15						
2.27	446	446	446	59.98	1488	D
2.19	283	283	283	101.52	1488	
2.13	250	250	250	93.28	1488	D,C
2.08	456	456	456	123.47	1488	C
2	153	153	153	105.34	1488	C
1.97	155	155	155	122.59	1488	C
1.94	175	175	175	57.9	1488	
1.91	312	312	312	42.96	1488	C
1.85	177	177	177	117.57	1488	D,C
1.81	206	206	206	121.31	1488	D
1.78	286	286	286	77.53	1488	C
1.72	357	357	357	86.95	1488	
1.65	201	201	201	76.57	1488	
1.62	305	305	305	99.05	1488	C
1.56	92	92	92	96.65	1488	C
1.54	133	133	133	50.98	1488	
1.52	272	272	272	75.27	1488	C
1.46	141	141	141	83.08	1488	D,C
1.44	487	487	487	83.23	1488	D,C
1.34	223	223	223	76.66	1488	
1.3	255	255	255	48.79	1488	
1.25	133	133	133	59.55	1488	
1.23	375	375	375	85.73	1488	
1.16	481	481	481	116.31	1488	D
1.07	469	469	469	138.62	1488	
.98	504	504	504	104.29	1488	
.88	243	243	243	252.86	1488	
.84	270	270	270	243.31	1488	
.79	156	156	156	205.75	1488	
.76	380	380	380	233.85	1488	
.68	191	191	191	250.91	1594	
.65	207	207	207	318.39	1594	D
.61	115	115	115	208.28	1594	D
.59	215	215	215	391.26	1594	D
.55	220	220	220	171.81	1594	
.5	503	503	503	202.5	1755	C
.41	212	212	212	186.35	1755	
.37	324	324	324	170.42	1755	
.31	515	515	515	117.12	1755	
.21	471	471	471	118.84	1755	C
.12	639	639	639	293.34	1755	
.09	0	0	0	218.93	1755	
NRW55D,NRW55D						
3	270	270	270	397.41	3272	
2.95	482	482	482	310.29	3272	D
2.86	499	499	499	245.47	3272	

2.77	498	498	498	325.02	3272	
2.67	329	329	329	485.28	3272	D
2.61	377	377	377	438.93	3272	
NRW55T30,NRW55T30						
.72	465	465	465	371.96	592	
.63	360	360	360	423.58	592	
.56	373	373	373	369.53	592	
.49	370	370	370	311.46	592	
.42	475	475	475	203.64	592	
.33	380	380	380	158.45	592	
.26	210	210	210	166.82	592	
.22	198	198	198	145.18	592	
.18	402	402	402	119.15	592	
.11	0	0	0	105.51	592	
NRW55T5,NRW55T5						
.69	332	332	332	133.11	219	
.62	303	303	303	118.54	235	C
.57	237	237	237	157.59	235	D
.52	298	298	298	208.37	235	C
.47	520	520	520	141.03	235	
.37	404	404	404	43.28	235	
.29	393	393	393	52.54	235	D
.22	554	554	554	56.13	235	
.11	0	0	0	48.16	235	
NRW55T10A,NRW55T10A						
1.25	249	249	249	66.91	1365	
1.2	630	630	630	151.65	1365	D
1.08	486	486	486	119.8	1365	
.99	531	531	531	328.66	1365	
.89	499	499	499	264.31	1951	D
.8	547	547	547	362.39	1951	
.69	488	488	488	422.4	1951	
.6	492	492	492	390.24	1951	
.51	557	557	557	391.01	1951	
.4	473	473	473	307.98	1951	
.31	477	477	477	339.22	1951	
.22	251	251	251	335.75	1915	
.17	253	253	253	393.42	1915	
.12	660	660	660	368.44	1915	
NRW55T10B,NRW55T10B						
3	493	493	493	39.15	1395	C
2.9	54	54	54	93.46	1395	
2.89	169	169	169	54.73	1395	C
2.86	187	187	187	54.04	1395	
2.83	87	87	87	72.89	1395	C
2.81	255	255	255	84.22	1395	C
2.76	254	254	254	69.68	1395	C
2.71	237	237	237	52.1	1395	C
2.67	274	274	274	69.22	1395	
2.62	218	218	218	87.13	1395	D,C
2.58	279	279	279	159.59	1395	C
2.52	52	52	52	219.24	1395	C
2.51	243	243	243	232.39	1395	C
2.47	243	243	243	74.42	1395	C
2.42	193	193	193	61.35	1395	
2.38	324	324	324	132.88	1395	C
2.32	275	275	275	116.91	1395	D,C
2.27	244	244	244	90.79	1395	D,C
2.22	264	264	264	82.36	1395	C
2.17	243	243	243	107.43	1395	
2.13	250	250	250	78.49	1395	
2.08	249	249	249	91.75	1395	D
2.03	495	495	495	109.67	1395	D,C

1.94	357	357	357	333.48	1395	
1.87	155	155	155	278.96	1393	
1.84	211	211	211	382.36	1393	
1.8	283	283	283	218.26	1393	D,C
1.75	275	275	275	310.49	1393	C
1.7	361	361	361	318.68	1393	
1.63	358	358	358	186.43	1393	C
1.56	293	293	293	332.39	1393	
1.51	294	294	294	274.95	1393	
1.45	313	313	313	321.84	1393	
1.39	316	316	316	63.11	1393	C
1.33	434	434	434	216.03	1393	
NRW55A,NRW55A						
1.78	60	60	60	518.59	7869	
1.77	547	547	547	741.99	7869	D
1.67	0	0	0	673.07	7775	
NRW55B,NRW55B						
2.34	685	685	685	253.8	5670	C
2.21	552	552	552	602.33	5670	
2.1	434	434	434	573.54	5670	
2.02	564	564	564	495.14	5670	
1.91	652	652	652	596.73	5670	
NRW55C,NRW55C						
2.54	67	248	67	552.37	5670	
2.49	472	472	472	684.85	5670	
2.4	346	346	346	926.49	5670	
NRW55T20,NRW55T20						
.64	489	489	489	240.45	905	D,C
.55	468	468	468	198.96	905	C
.46	470	470	470	220.66	905	D,C
.37	529	529	529	160.33	905	
.27	497	497	497	173.89	905	
.18	518	518	518	265.52	905	C
.08	0	0	0	241.16	905	D
NRW55E,NRW55E						
4.34	488	488	488	72.87	1454	
4.25	472	472	472	154.84	1454	
4.16	138	138	138	81.15	1454	
4.14	196	196	196	79.34	1454	
4.1	100	100	100	79.82	1454	
4.08	257	257	257	90.08	1454	
4.03	199	199	199	115.76	2587	
3.99	521	521	521	144.49	2587	
3.89	486	486	486	107.31	2587	C
3.8	441	441	441	179.48	2587	D
3.72	575	575	575	206.99	2587	
3.61	499	499	499	159.57	2587	
3.51	500	500	500	188.57	2587	
3.42	505	505	505	240.64	2587	C
3.32	440	440	440	305.84	2587	
3.24	512	512	512	344.08	2587	C
3.14	510	510	510	226.42	2587	
3.05	223	223	223	254.83	2587	C

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

XS JT 01 Junction option is used.
For flood insurance study, this option should be used
if the tributary and main stream can have coincident peaks,
or it may be used for the stream without floodway.
It may also be used if the discharges at different time periods
are known from the rainfall-runoff model.
How to remove the junction is explained under Help.

XS JT 03 The name of junction is : Junct 1
The reach length at the most downstream cross section for the
'NRW55D and NRW55D' is not equal to zero.
Please set the reach length equal to zero if juction can be considered.

XS JT 03 The name of junction is : Junct 1
The reach length at the most downstream cross section for the
'NRW55C and NRW55C' is not equal to zero.
Please set the reach length equal to zero if juction can be considered.

XS JT 03 The name of junction is : Junct 1
The reach length at the most downstream cross section for the
'NRW55C and NRW55C' is not equal to zero.
Please set the reach length equal to zero if juction can be considered.

SPACING CHECK

RS: 0.12
XS SP 01 Diff. HV = 1.65 ; Kratio = 0.46 ; Depth Ratio = 1.13
TopWdthAct ratio = 0.11 ; Length Chl Up / 500 = 1.32
Change in HV > 0.5
K ratio < 0.7 or K ratio > 1.4
Depth ratio < 0.9 or Depth ratio > 1.1
TopWdthAct ratio < 0.5 or TopWdthAct ratio > 2.0
and Length Chnl up / 500 > 1.1
addtional cross sections may need to be added between
river station up and river station dn.

@ confluence;
U.S. Sec 253 ft away
No. D.S. SEC.

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: 0.22
XS DC 01 Discharge decreases in the downstream direction. – Attenuation of Q from HEC-1

RS: 1.87
XS DC 01 Discharge decreases in the downstream direction. – " " " " "

RS: 1.67
XS DC 01 Discharge decreases in the downstream direction. – " " " " "

XS DC 02 Constant dicharge used for the NRW55D,NRW55D

XS DC 02 Constant dicharge used for the NRW55T30,NRW55T30

XS DC 02 Constant dicharge used for the NRW55B,NRW55B

XS DC 02 Constant dicharge used for the NRW55C,NRW55C

```
XS BC 02 The name of the stream is NRW55C,NRW55C
         Known WS = 1685.98 is specified as the downstream boundary
         for profile 100-year

XS BC 02 The name of the stream is NRW55T20,NRW55T20
         Normal S = 0.009 is specified as the downstream boundary
         for profile 100-year

XS BC 02 The name of the stream is NRW55E,NRW55E
         Known WS = 1706.31 is specified as the downstream boundary
         for profile 100-year


LATERAL WEIRS CHECK
-----------------------

---END---
```

XS DC 02 Constant dicharge used for the NRW55T20,NRW55T20

LOCATION CHECK

RS: 0.69
XS LC 01 Lenchl Up/TopwdthAct Dn = 2.80
MaxChlDpth Up/MaxChlDpth Dn = 1.16
TopwdthAct Up/TopwdthAct Dn = 1.12
This cross section is located too far upstream from the critical depth cross section.

RS: 2.38
XS LC 01 Lenchl Up/TopwdthAct Dn = 2.77
MaxChlDpth Up/MaxChlDpth Dn = 1.26
TopwdthAct Up/TopwdthAct Dn = 1.14
This cross section is located too far upstream from the critical depth cross section.

RS: 2.4
XS LC 01 Lenchl Up/TopwdthAct Dn = 1.44
MaxChlDpth Up/MaxChlDpth Dn = 2.42
TopwdthAct Up/TopwdthAct Dn = 3.85
This cross section is located too far upstream from the critical depth cross section.

RS: 0.64
XS LC 01 Lenchl Up/TopwdthAct Dn = 2.46
MaxChlDpth Up/MaxChlDpth Dn = 1.54
TopwdthAct Up/TopwdthAct Dn = 1.21
This cross section is located too far upstream from the critical depth cross section.

ADDITIONAL SECTIONS DID NOT SOLVE ISSUE.

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is NRW55T30,NRW55T30
Normal S = 0.018 is specified as the downstream boundary for profile 100-year

XS BC 02 The name of the stream is NRW55T5,NRW55T5
Normal S = 0.015 is specified as the downstream boundary for profile 100-year

XS BC 02 The name of the stream is NRW55T10A,NRW55T10A
Normal S = 0.01 is specified as the downstream boundary for profile 100-year

XS BC 02 The name of the stream is NRW55T10B,NRW55T10B
Known WS = 1733.42 is specified as the downstream boundary for profile 100-year

XS BC 02 The name of the stream is NRW55A,NRW55A
Normal S = 0.008 is specified as the downstream boundary for profile 100-year

XS BC 02 The name of the stream is NRW55B,NRW55B
Known WS = 1665.6 is specified as the downstream boundary for profile 100-year

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.prj
Plan File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.p01
Geometry File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.g01
Flow File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.f01
Report File: P:\New_River_FDS\Hydraulics\HEC-RAS_rivermile\NRW55\NRW55.nt
Selected profiles: 100-year
Date: 7/29/2005
Time: 2:25:52 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW55T15,NRW55T15						
2.27		0.078	0.052	0.078	0.1	0.3
2.19		0.078	0.052	0.078	0.1	0.3
2.13		0.078	0.052	0.078	0.1	0.3
2.08		0.078	0.052	0.078	0.1	0.3
2		0.078	0.052	0.078	0.1	0.3
1.97		0.078	0.052	0.078	0.1	0.3
1.94		0.078	0.052	0.078	0.1	0.3
1.91		0.078	0.052	0.078	0.1	0.3
1.85		0.078	0.052	0.078	0.1	0.3
1.81		0.078	0.052	0.078	0.1	0.3
1.78		0.078	0.052	0.078	0.1	0.3
1.72		0.078	0.052	0.078	0.1	0.3
1.65		0.078	0.052	0.078	0.1	0.3
1.62		0.078	0.052	0.078	0.1	0.3
1.56		0.078	0.052	0.078	0.1	0.3
1.54		0.078	0.052	0.078	0.1	0.3
1.52		0.078	0.052	0.078	0.1	0.3
1.46		0.078	0.052	0.078	0.1	0.3
1.44		0.078	0.052	0.078	0.1	0.3
1.34		0.078	0.052	0.078	0.1	0.3
1.3		0.078	0.052	0.078	0.1	0.3
1.25		0.078	0.052	0.078	0.1	0.3
1.23		0.078	0.052	0.078	0.1	0.3
1.16		0.078	0.052	0.078	0.1	0.3
1.07		0.078	0.052	0.078	0.1	0.3
.98		0.078	0.052	0.078	0.1	0.3
.88		0.078	0.052	0.078	0.1	0.3
.84		0.078	0.052	0.078	0.1	0.3
.79		0.078	0.052	0.078	0.1	0.3
.76		0.078	0.052	0.078	0.1	0.3
.68		0.078	0.052	0.078	0.1	0.3
.65		0.078	0.052	0.078	0.1	0.3
.61		0.078	0.052	0.078	0.1	0.3
.59		0.078	0.052	0.078	0.1	0.3
.55		0.078	0.052	0.078	0.1	0.3
.5		0.078	0.052	0.078	0.1	0.3
.41		0.078	0.052	0.078	0.1	0.3
.37		0.078	0.052	0.078	0.1	0.3
.31		0.078	0.052	0.078	0.1	0.3

.21	0.078	0.052	0.078	0.1	0.3
.12	0.078	0.052	0.078	0.1	0.3
NRW55D,NRW55D					
.09	0.078	0.052	0.078	0.1	0.3
3	0.074	0.055	0.071	0.3	0.5
2.95	0.074	0.055	0.071	0.3	0.5
2.86	0.074	0.055	0.071	0.3	0.5
2.77	0.074	0.055	0.071	0.3	0.5
2.67	0.074	0.055	0.071	0.3	0.5
NRW55T30,NRW55T30					
2.61	0.074	0.055	0.071	0.3	0.5
.72	0.078	0.074	0.079	0.1	0.3
.63	0.078	0.074	0.079	0.1	0.3
.56	0.078	0.074	0.079	0.1	0.3
.49	0.078	0.074	0.079	0.1	0.3
.42	0.078	0.074	0.079	0.1	0.3
.33	0.078	0.074	0.079	0.1	0.3
.26	0.078	0.074	0.079	0.1	0.3
.22	0.078	0.074	0.079	0.1	0.3
.18	0.078	0.074	0.079	0.1	0.3
NRW55T5,NRW55T5					
.11	0.078	0.074	0.079	0.1	0.3
.69	0.044	0.043	0.039	0.1	0.3
.62	0.044	0.043	0.039	0.1	0.3
.57	0.044	0.043	0.039	0.1	0.3
.52	0.044	0.043	0.039	0.1	0.3
.47	0.044	0.043	0.039	0.1	0.3
.37	0.044	0.043	0.039	0.1	0.3
.29	0.044	0.043	0.039	0.1	0.3
.22	0.044	0.043	0.039	0.1	0.3
NRW55T10A,NRW55T10A					
.11	0.044	0.043	0.039	0.1	0.3
1.25	0.078	0.052	0.078	0.3	0.5
1.2	0.078	0.052	0.078	0.3	0.5
1.08	0.078	0.052	0.078	0.3	0.5
.99	0.078	0.052	0.078	0.3	0.5
.89	0.078	0.052	0.078	0.3	0.5
.8	0.078	0.052	0.078	0.3	0.5
.69	0.078	0.052	0.078	0.3	0.5
.6	0.078	0.052	0.078	0.3	0.5
.51	0.078	0.052	0.078	0.3	0.5
.4	0.078	0.052	0.078	0.3	0.5
.31	0.078	0.052	0.078	0.3	0.5
.22	0.078	0.052	0.078	0.3	0.5
.17	0.078	0.052	0.078	0.3	0.5
NRW55T10B,NRW55T10B					
.12	0.078	0.052	0.078	0.3	0.5
3	0.078	0.052	0.078	0.3	0.5
2.9	0.078	0.052	0.078	0.3	0.5
2.89	0.078	0.052	0.078	0.3	0.5
2.86	0.078	0.052	0.078	0.3	0.5
2.83	0.078	0.052	0.078	0.3	0.5
2.81	0.078	0.052	0.078	0.3	0.5
2.76	0.078	0.052	0.078	0.3	0.5
2.71	0.078	0.052	0.078	0.3	0.5
2.67	0.078	0.052	0.078	0.3	0.5
2.62	0.078	0.052	0.078	0.3	0.5
2.58	0.078	0.052	0.078	0.3	0.5
2.52	0.078	0.052	0.078	0.3	0.5
2.51	0.078	0.052	0.078	0.3	0.5
2.47	0.078	0.052	0.078	0.3	0.5

2.42	0.078	0.052	0.078	0.3	0.5
2.38	0.078	0.052	0.078	0.3	0.5
2.32	0.078	0.052	0.078	0.3	0.5
2.27	0.078	0.052	0.078	0.3	0.5
2.22	0.078	0.052	0.078	0.3	0.5
2.17	0.078	0.052	0.078	0.3	0.5
2.13	0.078	0.052	0.078	0.3	0.5
2.08	0.078	0.052	0.078	0.3	0.5
2.03	0.078	0.052	0.078	0.3	0.5
1.94	0.078	0.052	0.078	0.3	0.5
1.87	0.078	0.052	0.078	0.3	0.5
1.84	0.078	0.052	0.078	0.3	0.5
1.8	0.078	0.052	0.078	0.3	0.5
1.75	0.078	0.052	0.078	0.3	0.5
1.7	0.078	0.052	0.078	0.3	0.5
1.63	0.078	0.052	0.078	0.3	0.5
1.56	0.078	0.052	0.078	0.3	0.5
1.51	0.078	0.052	0.078	0.3	0.5
1.45	0.078	0.052	0.078	0.3	0.5
1.39	0.078	0.052	0.078	0.3	0.5
NRW55A,NRW55A					
1.33	0.078	0.052	0.078	0.3	0.5
1.78	0.016	0.016	0.016	0.1	0.3
1.77	0.064	0.043	0.064	0.1	0.3
NRW55B,NRW55B					
1.67	0.064	0.043	0.064	0.1	0.3
2.34	0.084	0.054	0.084	0.3	0.5
2.21	0.084	0.054	0.084	0.3	0.5
2.1	0.084	0.054	0.084	0.3	0.5
2.02	0.084	0.054	0.084	0.3	0.5
NRW55C,NRW55C					
1.91	0.084	0.054	0.084	0.3	0.5
2.54	0.074	0.055	0.071	0.3	0.5
2.49	0.074	0.055	0.071	0.3	0.5
NRW55T20,NRW55T20					
2.4	0.074	0.055	0.071	0.3	0.5
.64	0.059	0.052	0.064	0.1	0.3
.55	0.059	0.052	0.064	0.1	0.3
.46	0.059	0.052	0.064	0.1	0.3
.37	0.059	0.052	0.064	0.1	0.3
.27	0.059	0.052	0.064	0.1	0.3
.18	0.059	0.052	0.064	0.1	0.3
NRW55E,NRW55E					
.08	0.059	0.052	0.064	0.1	0.3
4.34	0.079	0.055	0.079	0.1	0.3
4.25	0.079	0.055	0.079	0.1	0.3
4.16	0.079	0.055	0.079	0.1	0.3
4.14	0.079	0.055	0.079	0.1	0.3
4.1	0.079	0.055	0.079	0.1	0.3
4.08	0.079	0.055	0.079	0.1	0.3
4.03	0.079	0.049	0.079	0.3	0.5
3.99	0.079	0.049	0.079	0.3	0.5
3.89	0.079	0.049	0.079	0.3	0.5
3.8	0.079	0.049	0.079	0.3	0.5
3.72	0.079	0.049	0.079	0.3	0.5
3.61	0.079	0.049	0.079	0.3	0.5
3.51	0.079	0.049	0.079	0.3	0.5
3.42	0.079	0.049	0.079	0.3	0.5
3.32	0.079	0.049	0.079	0.3	0.5
3.24	0.079	0.049	0.079	0.3	0.5
3.14	0.079	0.049	0.079	0.3	0.5

```
 3.05                          0.079     0.049     0.079     0.3       0.5
-------------------------------------------------------------------------
--------

---Summary of Statistics---
                                 Minimum          Maximum
Left Overbank n Value:            0.016            0.084
Right Overbank n Value:           0.016            0.084
Channel n Value:                  0.016            0.074
Contraction Coefficient:          0.1              0.3
Expansion   Coefficient:          0.3              0.5


ROUGHNESS COEFFICIENT CHECK
-----------------------------------

RS:       1.78
NT RC 01 Left overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       1.78
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:        1.78
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:       1.78
NT RC 05 The left overbank n value of 0.016 and the right overbank n
value
         of 0.016 are less than or equal to the channel n value of 0.016
         The overbank n values should be reevaluated.

TRANSITION LOSS COEFFICIENT CHECK
-----------------------------------

RS:       3
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
         respectively. However, this cross section is not at the
structure.
         They should be equal to 0.1 and 0.3.

RS:       2.95
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
         respectively. However, this cross section is not at the
structure.
         They should be equal to 0.1 and 0.3.

RS:       2.86
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
         respectively. However, this cross section is not at the
structure.
         They should be equal to 0.1 and 0.3.

RS:       2.77
```

New River Rd (King (DIP))

— C&E coefficients increased due to varying channel geometry and excessive slope so that

NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 2.67
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 2.61
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 1.25
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 1.2
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 1.08
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 0.99
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 0.89
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 0.8
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 0.69
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 0.6
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5

respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 0.51
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 0.4
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 0.31
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 0.22
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 0.17
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 0.12
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 3
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.9
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.89
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.86
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the

structure.
They should be equal to 0.1 and 0.3.

RS: 2.83
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.81
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.76
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.71
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.67
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.62
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.58
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.52
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.51
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.47
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.

They should be equal to 0.1 and 0.3.

RS: 2.42
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.38
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.32
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.27
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.22
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.17
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.13
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.08
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.03
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.94
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.87
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.84
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.8
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.75
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.7
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.63
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.56
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.51
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.45
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.39
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.33
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.34
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.21
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.1
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.02
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1.91
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.54
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.49
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2.4
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 4.03
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5 respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 3.99

NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.89
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.8
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.72
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.61
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.51
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.42
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.32
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.24
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.14
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5
respectively. However, this cross section is not at the
structure.
They should be equal to 0.1 and 0.3.

RS: 3.05
NT TL 02 Contraction and expansion loss coefficients are 0.3 and 0.5

respectively. However, this cross section is not at the structure.

They should be equal to 0.1 and 0.3.

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW55T25A1.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A1.prj
Plan File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A1.p03
Geometry File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A1.g03
Flow File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A1.f03
Report File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A1.xs
Selected profiles: 100-year
Date: 8/3/2005
Time: 12:30:34 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW55T25-A1,NRW55T25-A1						
1.13	194	194	194	78.6	1009	C
1.09	165	165	165	59.78	1009	C
1.06	77	77	77	51.71	1009	D,C
1.04	117	117	117	89.76	1009	C
1.02	76	76	76	80.72	1009	C
1.01	123	123	123	87.11	1009	C
.98	95	95	95	140.28	1009	D,C
.97	161	161	161	168.41	1009	D,C
.94	170	170	170	97.08	1009	D,C
.9	146	146	146	100.92	1009	D,C
.88	121	121	121	75.26	1009	C
.85	114	114	114	38.88	1009	C
.83	269	269	269	40.83	1009	C
.78	192	192	192	76.19	1009	C
.74	76	76	76	163.4	1009	D,C
.73	119	119	119	127.88	1009	D,C
.71	105	105	105	199.9	971.28	D,C
.69	84	84	84	179.59	968.82	D,E,C
.67	122	122	122	248.37	964.34	D
.65	140	140	140	208.79	890.51	D,E
.62	104	104	104	155.14	823.64	D,C
.6	297	297	297	155.52	823.64	D
.55	240	240	240	137.87	823.64	D,C
.5	168	168	168	239.69	823.64	D,C
.47	184	184	184	210.42	823.64	D,C
.43	243	243	243	241.98	823.64	D
.39	306	306	306	100.08	823.64	D
.33	274	274	274	225.86	823.64	
.28	238	238	238	228.4	823.64	D
.23	292	292	292	135.01	823.64	D
.18	260	260	260	232.61	823.64	D,C
.13	96	96	96	309.56	823.64	D,C
.11	222	222	222	524.34	823.64	D
.07	221	221	221	256.91	823.64	D
.03	0	0	0	497.03	823.64	D,C

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

RS: 0.71
XS DC 01 Discharge decreases in the downstream direction.

RS: 0.69
XS DC 01 Discharge decreases in the downstream direction.

RS: 0.67
XS DC 01 Discharge decreases in the downstream direction.

RS: 0.65
XS DC 01 Discharge decreases in the downstream direction.

RS: 0.62
XS DC 01 Discharge decreases in the downstream direction.

RESULTING FROM SPLIT FLOW LOSSES

LOCATION CHECK

RS: 1.04
XS LC 01 Lenchl Up/TopwdthAct Dn = 1.45
MaxChlDpth Up/MaxChlDpth Dn = 1.37
TopwdthAct Up/TopwdthAct Dn = 1.11
This cross section is located too far upstream from the critical depth cross section.

RS: 0.6
XS LC 01 Lenchl Up/TopwdthAct Dn = 2.15
MaxChlDpth Up/MaxChlDpth Dn = 1.17
TopwdthAct Up/TopwdthAct Dn = 1.13
This cross section is located too far upstream from the critical depth cross section.

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is NRW55T25-A1,NRW55T25-A1
Normal S = 0.0377 is specified as the downstream boundary for profile 100-year

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A1.prj
Plan File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A1.p03
Geometry File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A1.g03
Flow File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A1.f03
Report File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A1.nt
Selected profiles: 100-year
Date: 8/3/2005
Time: 12:30:32 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW55T25-A1,NRW55T25-A1						
1.13		0.069	0.05	0.078	0.1	0.3
1.09		0.069	0.05	0.078	0.1	0.3
1.06		0.069	0.05	0.078	0.1	0.3
1.04		0.069	0.05	-----	0.1	0.3
		-----	0.078	-----		
1.02		0.069	0.05	-----	0.1	0.3
		-----	0.078	-----		
1.01		0.069	0.05	0.078	0.1	0.3
.98		0.069	-----	-----	0.1	0.3
		0.05	-----	-----		
.97		0.069	0.069	0.05	0.1	0.3
		-----	0.05	0.078		
.94		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.9		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.88		0.069	0.05	0.078	0.1	0.3
.85		0.069	0.05	0.078	0.1	0.3
.83		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.78		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.74		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.73		0.069	-----	-----	0.1	0.3
		0.05	-----	-----		
.71		0.069	0.05	0.078	0.1	0.3
.69		0.069	0.05	0.078	0.1	0.3
.67		0.069	0.05	0.078	0.1	0.3
.65		0.069	0.05	0.078	0.1	0.3
.62		0.069	0.05	0.078	0.1	0.3
.6		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.55		0.069	0.05	0.078	0.1	0.3

.5	0.069	0.05	0.078	0.1	0.3
.47	0.069	0.05	0.078	0.1	0.3
.43	0.069	0.05	0.078	0.1	0.3
.39	0.069	0.05	0.078	0.1	0.3
.33	0.069	0.05	0.078	0.1	0.3
.28	0.069	0.05	0.078	0.1	0.3
.23	0.069	0.05	0.078	0.1	0.3
.18	0.069	0.05	0.05	0.1	0.3
	---	---	0.078		
.13	0.069	0.05	0.05	0.1	0.3
	---	---	0.078		
.11	0.069	0.05	0.05	0.1	0.3
	---	---	0.078		
.07	0.069	0.05	0.078	0.1	0.3
.03	0.069	0.05	0.05	0.1	0.3
	---	---	0.078		

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.05	0.069
Right Overbank n Value:	0.05	0.078
Channel n Value:	0.05	0.078
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW55T25A2.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.prj
Plan File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.p01
Geometry File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.g01
Flow File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.f01
Report File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A2.xs
Selected profiles: 100-year
Date: 8/3/2005
Time: 12:28:44 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW55T25 - A2,NRW55T25 - A2						
.69	431	431	431	68.81	140	D,C
.6	600	600	600	133.69	140	D
.49	543	543	543	76.48	140	D,C
.39	612	612	612	215.49	140	D
.27	1120	1120	1120	146.79	140	D,C
.06	0	0	0	118.61	140	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

XS DC 02 Constant dicharge used for the NRW55T25 - A2,NRW55T25 - A2

LOCATION CHECK

RS: 0.6
XS LC 01 Lenchl Up/TopwdthAct Dn = 7.85
MaxChlDpth Up/MaxChlDpth Dn = 1.53
TopwdthAct Up/TopwdthAct Dn = 1.75
This cross section is located too far upstream from the

```
        critical depth cross section.

BOUNDARY CONDITION CHECK
------------------------

XS BC 02 The name of the stream is NRW55T25 - A2,NRW55T25 - A2
         Normal S = 0.0182 is specified as the downstream boundary
         for profile 100-year

LATERAL WEIRS CHECK
-----------------------

---END---
```

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A2.prj
Plan File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A2.p01
Geometry File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A2.g01
Flow File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A2.f01
Report File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55 \NRW55T25A2.nt
Selected profiles: 100-year
Date: 8/3/2005
Time: 12:28:44 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW55T25 - A2,NRW55T25 - A2						
.69		0.069	0.069	0.05	0.1	0.3
		-----	0.05	0.078		
.6		0.069	0.069	-----	0.1	0.3
		-----	0.05	-----		
		-----	0.078	-----		
.49		0.069	0.05	-----	0.1	0.3
		-----	0.078	-----		
.39		0.069	0.05	0.078	0.1	0.3
.27		0.069	0.05	0.078	0.1	0.3
.06		0.069	0.05	-----	0.1	0.3
		-----	0.078	-----		

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.069	0.069
Right Overbank n Value:	0.05	0.078
Channel n Value:	0.05	0.078
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

NRW55T25A3.xs
CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.prj
Plan File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.p01
Geometry File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.g01
Flow File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.f01
Report File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.xs
Selected profiles: 100-year
Date: 8/3/2005
Time: 12:26:44 PM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
NRW55T25 - A3,NRW55T25 - A3						
.86	311	311	311	15.93	50	C
.8	430	430	430	51.02	50	C
.72	498	498	498	25.84	50	
.63	319	319	319	12.74	50	C
.57	553	553	553	13.1	50	
.46	499	499	499	22.16	50	C
.37	423	423	423	16.5	50	
.29	564	564	564	56.54	50	D,C
.18	791	791	791	45.74	50	D
.03	0	0	0	29.47	50	D

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

XS DC 02 Constant dicharge used for the NRW55T25 - A3,NRW55T25 - A3

LOCATION CHECK

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is NRW55T25 - A3,NRW55T25 - A3
Normal S = 0.0222 is specified as the downstream boundary
for profile 100-year

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.prj
Plan File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.p01
Geometry File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.g01
Flow File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.f01
Report File: P:\New_River_FDS\TDN\AppendixE - Hydraulic Analysis Supporting Documentation\E.5 - Hydraulic calculations\HEC-RAS\NRW55\NRW55T25A3.nt
Selected profiles: 100-year
Date: 8/3/2005
Time: 12:26:44 PM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
NRW55T25 - A3,NRW55T25 - A3						
.86		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.8		0.069	0.05	0.078	0.1	0.3
.72		0.069	0.05	-----	0.1	0.3
		0.05	0.078	-----		
.63		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.57		0.069	0.05	0.078	0.1	0.3
.46		0.069	0.05	0.078	0.1	0.3
.37		0.069	0.05	0.078	0.1	0.3
.29		0.069	0.05	0.078	0.1	0.3
.18		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		
.03		0.069	0.05	0.05	0.1	0.3
		-----	-----	0.078		

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	0.05	0.069
Right Overbank n Value:	0.05	0.078
Channel n Value:	0.05	0.078
Contraction Coefficient:	0.1	0.1
Expansion Coefficient:	0.3	0.3

ROUGHNESS COEFFICIENT CHECK

TRANSITION LOSS COEFFICIENT CHECK

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---