2004P110

DRAINAGE SUMMARY REPORT
FOR
PECOS & POWER INTERSECTION AT POWER RANCH

March 04, 2005
Job Number: 01-2003-071

PREPARED FOR:

SUN BELT HOLDINGS

PREPARED BY:

Registered Professional Engineer (Civil)
CERTIFICATE NO. 21674
ROBERT DAVIES
Date Signed 3-05-05
ARIZONA, U.S.A.

amec
4435 E. HolmesAvenue
Mesa, Arizona 85206

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4435 E. HolmesAvenue
Mesa, Arizona 85206

Markert, Ben

From: Markert, Ben
Sent: Wednesday, January 10, 2007 8:40 AM
To: 'Shelby Brown - FCDX'
Cc: Coronel, Alex; Wesanen, Jeffrey; Hyland, Natalya
Subject: Pecos & Power Intersection Improvement Project at Rittenhouse Channel
Attachments: Ritt_Pre_Alt_1_9_07.f04; Ritt_Pre_Alt_1_9_07.g07; Ritt_Pre_Alt_1_9_07.O14; Ritt_Pre_Alt_1_9_07.p14; Ritt_Pre_Alt_1_9_07.prj; Ritt_Pre_Alt_1_9_07.r14

Hello Shelby,

Attached is Amec's revised hydraulic model for the Power & Pecos intersection. Please see Alex's email below concerning the results.

We will be submitting an updated plan set in the next week, which includes turn-downs for the channel slopes as you requested by phone in December.

Please let us know if anything further is needed.

Thanks very much,

Ben Markert
Project Engineer
AMEC Infrastructure, Mesa, Arizona
Phone +1 480 648 5315
Fax +1 480 830 3903
ben.markert@amec.com

From: Coronel, Alex
Sent: Tuesday, January 09, 2007 5:33 PM
To: Markert, Ben
Cc: Davies, Robert L (Mesa)
Subject: RE: Pecos & Power - Revised Street Light Plans

Hi Ben,
Attached is the revised hydraulic model per the District's comments dated 11-2-06. There was NO change in water surface elevation in the channel as a result of modifying the culvert lengths at Pecos to match the current design plans.

I will leave the floodplain use permit application in your office. As we discussed a City of Mesa representative should probably sign the Disclaimer of Liability.

Thanks,

Alex Coronel PE, CFM
AMEC
Water Resources, Infrastructure Unit
Mesa, AZ
Phone +1 480 648 5283

Fax +1 480 830 3903
álex.coronel@amec.com

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- HEC-RAS Input / Output

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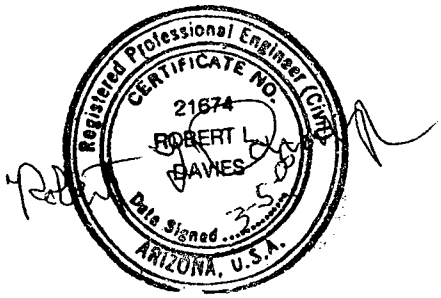


1. INTRODUCTION

This Drainage Summary Report was prepared under a contract with Sunbelt Holdings Management, Inc. for the Pecos and Power Intersection improvements. The purpose of this study is to provide hydrologic and hydraulic analyses for the proposed improvements. These improvements include the widening of Power Road and the placement of the future Pecos Roadway.

The project includes the widening of Power Road and the construction of Pecos Road at the intersection. As described herein, the project also includes ancillary drainage design features including additional culverts under Power Road and Pecos Road Culverts.

2. EXISTING DRAINAGE CONDITIONS

Land use for the contributing off-site watershed is agricultural and residential mixed use in make up. Watershed runoff flows in a westerly direction.

Flood hazard zones were determined in the Queen Creek Area Drainage Master Study (QCADMS) prepared for the Flood Control District of Maricopa County (FCDMC) in 1991. The current FEMA Flood Insurance Rate Map (FIRM) is panel numbers 04013C2695G (Effective date July 19, 2001). Flood hazard zones for the project area are 1) 100-Year Flood Contained in Channel, 2) 100-Year Flood Contained in Culvert, and Shaded Zone X, defined as, Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

3. HYDROLOGIC ANALYSIS

The scope for this work required using the best available information regarding the design discharges. The FCDMC's QCADMS was used as the basis for the off-site hydrologic analysis. The contributing watershed was established in that study. AMEC performed a field reconnaissance and review of aerial photographs confirming the local contributing watershed boundaries. The Project Location has been identified on Exhibit A (Portion of a watershed map prepared for the East Mesa Area Drainage Master Plan).

As shown in Exhibit A, concentration point of sub-areas 81a & 91 is located at the project site. Since the study was originally performed, the HEC-1 model used has been updated several times to incorporate significant new developments in the watershed and to utilize the current land use and hydrologic methodology that is used by the FCDMC. Significant contributors to this update include Huitt Zollars Inc. and staff at the FCDMC. AMEC had discussions with technical staff from the Engineering Division at the FCDMC regarding the most current HEC-1 model. The current hydrologic model was provided to AMEC for our use. Table 1.0 lists four sets of flow rates considered during the hydrologic design process along with a description of how each was obtained. The design flow rates are shaded.

TABLE 1.0

Flow Just Upstream of Power Road	Flow Just Upstream of Pecos Road	Description
(cfs)	(cfs)	
1343	1053	"Effective" flow rates, 100-year flows used in the effective HEC-RAS Model (Rittenhouse Channel LOMR).
1563	1156	50-year flow rate calculated in the HEC-1 model by Huitt-Zollars and revised by the FCD in 2003.
1875	1403	100-year flow rates calculated in the HEC-1 model by Huitt-Zollars and revised by the FCD in 2003.
1500	1400	100-year flow rates provided to AMEC by District Staff on 9-11-03 (See Meeting Minutes in Appendix).

4. HYDRAULIC ANALYSIS

To facilitate the hydraulic design for the Power Road widening as well as the Pecos Road culvert design, the most current version of the hydraulic model for the QCADMS Rittenhouse Road channel was obtained from the FCDMC. AMEC reviewed this model to assess its usability in design. The model was accepted with very minor revisions.

This hydraulic model has a floodway run included in its development. FEMA has mapped the FP/FW special flood hazard in the vicinity of the project as "Contained in Channel". This means that Base Flood Elevations are not depicted on the Flood Insurance Rate Panels. FCDMC staff directed AMEC to provide drainage facilities that would essentially not raise the effective water surface elevations resulting from using the effective HEC-RAS model and the revised discharges. After further discussion with FCDMC staff it was determined that the water surface elevation could be increased, provided that the flow remained within FCDMC right-of-way and that all groups within the FCDMC consented to this. This concession will be obtained through the right-of-way use permit process. See Appendix B for pertinent records of conversation. The discharges to be used, as directed by the Flood Control District included a 100-year discharge of 1500 cfs just upstream of Power Road and 1400 cfs just upstream of Pecos Road.

At least 13 different configurations of combinations of culverts at Power Road and Pecos Road were evaluated to determine the most economical solution to convey the flows and cause a minimal rise in the water surface elevation. The preferred alternative, as described below, was chosen based on input from FCDMC, Town of Gilbert and City of Mesa staff. Table 2.0 summarizes the results of these combinations. The HEC-RAS output for the final hydraulic run is included in the Appendix B.

TABLE 2.0

System Description	Outcomes
• ALL MODELS LOCATED IN HEC-RAS PROJECT: Revised Ritt.prj	•

Revised Model #3 **(Plan: Ritt Chan Revised + Culv)** • **NO** Changes to Power Rd. • Embankment and 3 – 10'x5' CBC added to model Pecos Rd. • Flow Rate throughout the revised system Q=1053 cfs. • Plan: p06 Geom:g05 Flow: f03 (PF#3)	• Water surface in Ponding area between Power and Pecos Rd. is contained with sufficient F.B. • Water surface in Ponding area upstream of Pecos Rd. is contained with approx 1.0' of F.B. • Water surface in Trapezoidal channel is contained within the channel banks with approx 0.7' of F.B.

New Flow Rates (9-11-03)

Revised Model #8 **(Plan: Ritt Chan Revised + Culv)** • **NO** Changes to Power Rd. • Embankment and 3 – 10'x5' CBC added to model Pecos Rd. • Flow Rate Q100 at Power = 1500 cfs. • Flow Rate Q100 at Pecos = 1400 cfs • Plan: p06 Geom:g05 Flow: f03 (PF#5)	• Water surface in Ponding area between Power and Pecos Rd. is contained with approximately 0.5' of F.B. • Water surface in Ponding area upstream of Pecos Rd. overtops Pecos Rd by approximately 0.1'. • Water surface in Trapezoidal channel overtops the channel banks, and overtops the over banks by approx 0.1'.
Revised Model #9 **(Plan: 3-10'x5' at Pecos New 10'x6' at Power)** • **Changed** Existing CBC's at Power Rd. 3-10'x4' converted to 3 –10'x6' CBC's. • Embankment, **3** – 10'x**5**' CBC added to model Pecos Rd. • Flow Rate Q100 at Power = 1500 cfs. • Flow Rate Q100 at Pecos = 1400	• Water surface in Ponding area between Power and Pecos Rd. is contained with approx 2.3' of F.B. • Water surface in Ponding area upstream of Pecos Rd. is contained with approx 0.4' to 0.6' of F.B. • Water surface in Trapezoidal channel contained within the banks with approx 0.25' of F.B.

cfs. • Plan: p19 Geom:g17 Flow: f03 (PF#5)	
Revised Model #10 **(Plan: 3-10'x6' at Pecos New 10'x6' at Power)** • **Changed** Existing CBC's at Power Rd. 3-10'x4' converted to 3 –10'x6' CBC's. • Embankment and **3** – 10'x**6**' CBC added to model Pecos Rd. • Flow Rate Q100 at Power = 1500 cfs. • Flow Rate Q100 at Pecos = 1400 cfs. • Plan: p22 Geom:g20 Flow: f03 (PF#5)	• Water surface in Ponding area between Power and Pecos Rd. is contained with approx 2.3' of F.B. • Water surface in Ponding area upstream of Pecos Rd. is contained with approx 0.65' to 0.85' of F.B. • Water surface in Trapezoidal channel contained within the banks with approx 0.5' of F.B.

Revised Model #11 **(Plan: 4-10'x5' at Pecos New 10'x6' at Power)** • **Changed** Existing CBC's at Power Rd. 3-10'x4' converted to 3 –10'x6' CBC's. • Embankment and **4** – 10'x**5**' CBC added to model Pecos Rd. • Flow Rate Q100 at Power = 1500 cfs. • Flow Rate Q100 at Pecos = 1400 cfs. • Plan: p21 Geom:g22 Flow: f03 (PF#5)	• Water surface in Ponding area between Power and Pecos Rd. is contained with approx 2.3' of F.B. • Water surface in Ponding area upstream of Pecos Rd. is contained with approx 1.20' to 1.40' of F.B. • Water surface in Trapezoidal channel contained within the banks with approx 0.95' to 1.08'of F.B.
Corrected Effective Model #2 **(Plan: Ritt Chan Corr Eff2)** • Ineffective Flow Areas added to Effective Geometry • Revised Flow Rate Q100 at Power = 1500 cfs • Revised Flow Rate Q100 at Pecos = 1400 cfs. • Plan: p03 Geom:g02 Flow: f02 (PF#3)	• Water surface in Ponding Area upstream of Power contained within berm with approx. 0.60' to 0.80' of F.B. • Water surface in trapezoidal channel is contained within the channel banks with approx 0.75' to 0.85' of F.B.

Revised Model #12 **(Plan: 4-10'x5' at Pecos no change at Power)** • **NO Changed** to CBC's at Power Rd. • Embankment and **4** – 10'x**5**' CBC added to model Pecos Rd. • Flow Rate Q100 at Power = 1500 cfs. • Flow Rate Q100 at Pecos = 1400 cfs. • Plan: p23 Geom:g21 Flow: f03 (PF#3)	• Water surface in Ponding area between Power and Pecos Rd. is contained with approx 0.6' of F.B. • Water surface in Ponding area upstream of Pecos Rd. wets a portion of the proposed Pecos Rd. Pavements but does not overtop. • Water surface in Trapezoidal channel overtops the channel banks by approx 0.5', and is contained within the over banks with approx 0.6' of F.B.
PREFERRED ALTERNATIVE **Revised Model #13** **(Plan: Preferred Plan)** • **Changed** Existing CBC's at Power Rd. 3-10'x4' converted to 3 –10'x6' CBC's. • Embankment and **3** – 10'x**5**' CBC and 1-72" RCP added to model Pecos Rd. • Flow Rate Q100 at Power = 1500 cfs. • Flow Rate Q100 at Pecos = 1400 cfs. • Plan: p14 Geom:g07 Flow: f04 (PF#1)	• Water surface in Ponding area between Power and Pecos Rd. is contained with approx 2.5' of F.B to Edge of Pavement. • Water surface in Ponding area upstream of Pecos Rd. is contained with approx 1.1' of F.B. • Water surface in Trapezoidal channel contained with approx 0.8' of F.B.

5. CONCLUSIONS

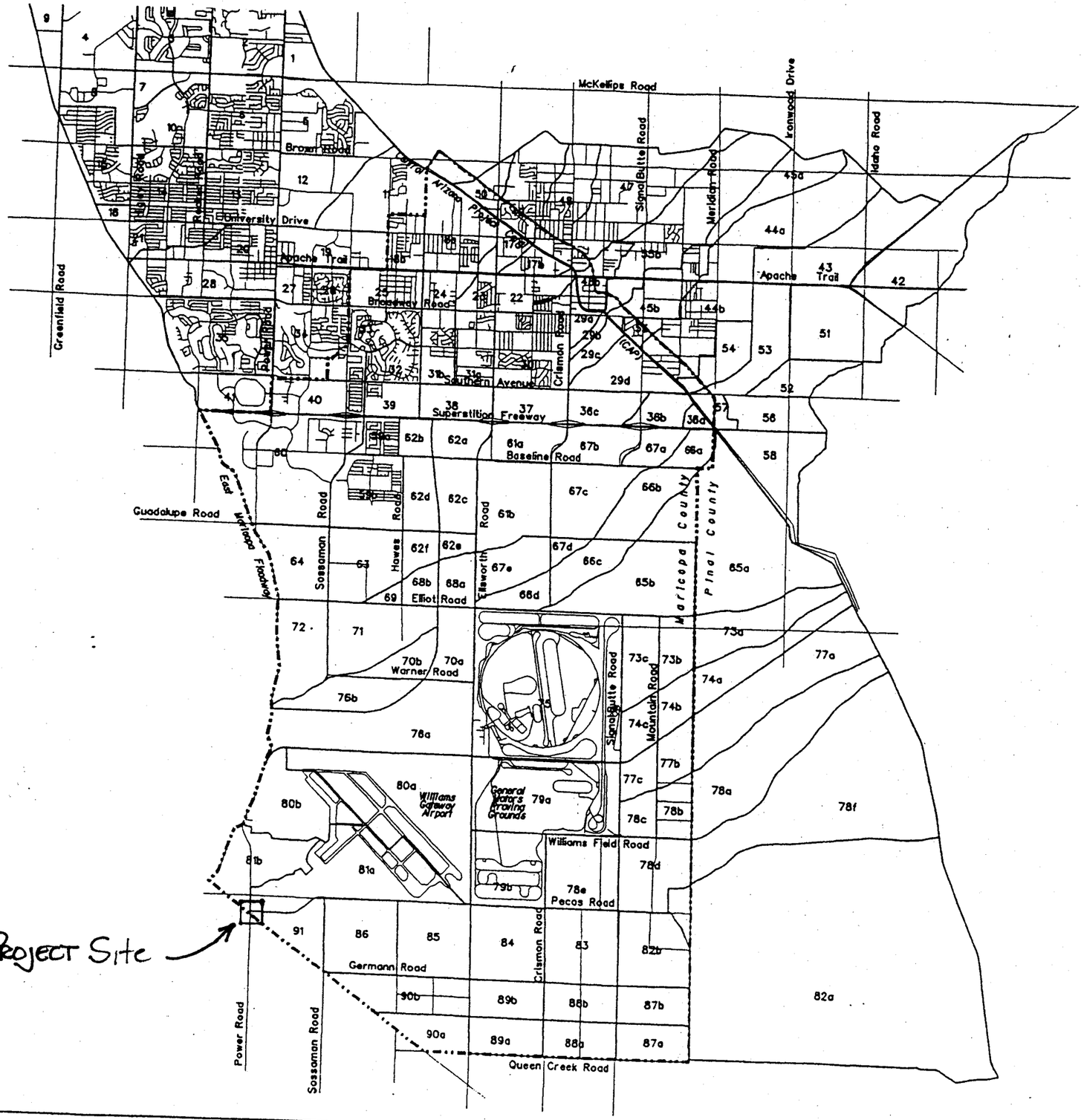
Based on the results of this study, it is concluded that:

- The revised 100-year discharge is 1400 cfs at Pecos Road and 1500 cfs at Power Road
- 3 – 6'x6' and 3-10'x6' RCBCs are required at Power Road (The existing 3-10'x4' RCBC will be converted to a 3-10'x6' RCBC)
- 3 – 10'x5' RCBCs and 1 – 72" RCP are required at Pecos Road.

APPENDIX – A

HYDROLOGY

Project Location Map



OF MARICOPA COUNTY

East Mesa Area
Drainage Master Plan

F.C.D. CONTRACT NO. 95-32

STUDY BOUNDARY
SUB-BASIN BOUNDARY
SUB-BASIN IDENTIFICATION 42

N

1 0 1 2
SCALE IN MILES

DIBBLE & ASSOCIATES
CONSULTING ENGINEERS

Hoskin Engineering Consultants

DRAINAGE SUB-AREA
BOUNDARIES

FIGURE 3

EXHIBIT A

APPENDIX – B

HYDRAULICS

HEC-RAS Version 3.1.2 April 2004
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
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: Rittenhouse Preferred Alt 3-2-05
Project File : Ritt_Pre_Alt_3_2_05.prj
Run Date and Time: 03/04/2005 10:49:32 AM

Project in English units

Project Description:
Rittenhouse channel CLOMR for improved channel - revised cross sections at Sossaman Dr.

Flow at Power and Pecos revised per September 11, 2003 meeting minutes.

Geometry at Power and Pecos Culverts revised to match "Town of Gilbert Pecos Road And Power Road Intersection" current design plans.

****

PLAN DATA

Plan Title: Preferred Plan
Plan File : e:\Mesa\2003\050\0103071\Hydraulics\HEC-RAS\FCD Comments 10-13-03\Preferred Alternative\Ritt_Pre_Alt_3_2_05.p14

Geometry Title: Preferred Geometry
Geometry File : e:\Mesa\2003\050\0103071\Hydraulics\HEC-RAS\FCD Comments 10-13-03\Preferred Alternative\Ritt_Pre_Alt_3_2_05.g07

Flow Title : Preferred Flow
Flow File : e:\Mesa\2003\050\0103071\Hydraulics\HEC-RAS\FCD Comments 10-13-03\Preferred Alternative\Ritt_Pre_Alt_3_2_05.f04

Plan Summary Information:

Number of:	Cross Sections	= 337	Multiple Openings	=	1
	Culverts	= 3	Inline Structures	=	0
	Bridges	= 0	Lateral Structures	=	0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 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: Preferred Flow
Flow File : e:\Mesa\2003\050\0103071\Hydraulics\HEC-RAS\FCD Comments 10-13-03\Preferred Alternative\Ritt_Pre_Alt_3_2_05.f04

Flow Data (cfs)

River	Reach	RS	PF#1
Rittenhouse Chan	Main Channel	23278.81	516
Rittenhouse Chan	Main Channel	20379.70	505
Rittenhouse Chan	Main Channel	16741.00	813
Rittenhouse Chan	Main Channel	11510.53	1053
Rittenhouse Chan	Main Channel	4736	1400
Rittenhouse Chan	Main Channel	4302	1500
Rittenhouse Chan	Main Channel	3640.00	1500

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Rittenhouse Chan	Main Channel	PF#1		Critical

GEOMETRY DATA

Geometry Title: Preferred Geometry
Geometry File : e:\Mesa\2003\050\0103071\Hydraulics\HEC-RAS\FCD Comments 10-13-03\Preferred Alternative\Ritt_Pre_Alt_3_2_05.g07

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 23278.81

INPUT
Description: Just upstream of drop #7-22 & Ellsworth Rd.
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
990	1393.01	991.75	1393.01	991.75	1385.18	995	1384.37	1000	1384.37
1005	1384.37	1008.25	1385.18	1008.25	1393.01	1010	1393.01		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
990	.035	991.75	.035	1008.25	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
991.75	1008.25	21.25	21.25	21.25	.1	.3

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 23257.56

INPUT
Description: Riprap area of drop #7-22 & Ellsworth Rd.
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
975	1393	980	1392.65	980	1388.11	995	1384.36	1000	1384.36
1005	1384.36	1020	1388.11	1020	1392.65	1025	1393		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
975	.035	980	.035	1020	.035

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           980    1020             18.25   18.25   18.25              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 23239.31

INPUT
Description: Downstream riprap area of drop #7-22 & Ellsworth Rd.
Station Elevation Data     num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1392.31   966.2  1392.3   966.2 1391.55     995 1384.35    1000 1384.35
    1005 1384.35  1033.8 1391.55  1033.8  1392.3  1045.8 1392.31

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                 1       1       1              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 23238.31

INPUT
Description: Natural channel downstream of drop #7-22 & Ellsworth Rd.
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1392.31   942.2 1391.46   946.2 1389.46   950.2 1391.46   954.2 1391.96
   966.2 1391.46     995 1384.26    1000 1384.26    1005 1384.26  1033.8 1391.46
  1045.8 1392.31

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             78.65   78.65   78.65              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 23159.6*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1392.31   942.2 1391.46   946.2 1389.46   950.2 1391.46   954.2 1391.96
   966.2 1391.46     995 1384.26    1000 1384.26    1005 1384.26  1033.8 1391.46
  1045.8 1392.31

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             78.65   78.65   78.65              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 23081.00

INPUT
Description: Natural channel Upstream of drop structure #7-21
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1392.31   942.2 1391.46   946.2 1389.46   950.2 1391.46   954.2 1391.96
   966.2 1391.46     995 1384.26    1000 1384.26    1005 1384.26  1033.8 1391.46
  1045.8 1392.31

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8                1       1       1              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 23080.00

INPUT
Description: Upstream riprap area of drop structure #7-21
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1392.32   942.2 1391.47   946.2 1389.47   950.2 1391.47   954.2 1391.97
   966.2 1391.47     995 1384.27    1000 1384.27    1005 1384.27  1033.8 1391.47
  1045.8 1392.32

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8                20      20      20              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 23060.00

INPUT
Description: Upstream of drop structure #7-21
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1392.31   942.2 1391.46   946.2 1389.46   950.2 1391.46   954.2 1391.96
   966.2 1391.46     995 1384.26    1000 1384.26    1005 1384.26  1033.8 1391.46
  1045.8 1392.31

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8                50      50      50              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION
```

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 23010.00

INPUT
Description: Downstream riprap area of drop structure #7-21
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
935	1389.28	942.2	1388.43	946.2	1386.43	950.2	1388.43	954.2	1388.93
966.2	1388.43	995	1381.23	1000	1381.23	1005	1381.23	1033.8	1388.43
1045.8	1389.28								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
935	.035	966.2	.035	1033.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	1	1	1	.1	.3

Left Levee Station= 954.2 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 23009.00

INPUT
Description: Natural channel downstream of drop structure #7-21
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
935	1389.28	942.2	1388.43	946.2	1386.43	950.2	1388.43	954.2	1388.93
966.2	1388.43	995	1381.23	1000	1381.23	1005	1381.23	1033.8	1388.43
1045.8	1389.28								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
935	.035	966.2	.027	1033.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	77.25	77.25	77.25	.1	.3

Left Levee Station= 954.2 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 22931.7*

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
935	1389.24	942.2	1388.39	946.2	1386.39	950.2	1388.39	954.2	1388.89
966.2	1388.39	995	1381.19	1000	1381.19	1005	1381.19	1033.8	1388.39
1045.8	1389.24								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
935	.035	966.2	.027	1033.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	77.25	77.25	77.25	.1	.3

Left Levee Station= 954.2 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 22854.5*

```
INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1389.21   942.2 1388.35   946.2 1386.35   950.2 1388.35   954.2 1388.85
   966.2 1388.35     995 1381.16    1000 1381.16    1005 1381.16  1033.8 1388.35
  1045.8 1389.21

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            77.25   77.25   77.25          .1          .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22777.2*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1389.17   942.2 1388.32   946.2 1386.32   950.2 1388.32   954.2 1388.82
   966.2 1388.32     995 1381.12    1000 1381.12    1005 1381.12  1033.8 1388.32
  1045.8 1389.17

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            77.25   77.25   77.25          .1          .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22700.00

INPUT
Description: End of Sheet 29
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1389.13   942.2 1388.28   946.2 1386.28   950.2 1388.28   954.2 1388.78
   966.2 1388.28     995 1381.08    1000 1381.08    1005 1381.08  1033.8 1388.28
  1045.8 1389.13

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            94.75   94.75   94.75          .1          .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22605.2*

INPUT
```

```
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
     935 1389.08   942.2 1388.23   946.2 1386.23   950.2 1388.23   954.2 1388.73
   966.2 1388.23     995 1381.03    1000 1381.03    1005 1381.03  1033.8 1388.23
  1045.8 1389.08

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             94.75   94.75   94.75            .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 22510.5*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
     935 1389.03   942.2 1388.19   946.2 1386.19   950.2 1388.19   954.2 1388.69
   966.2 1388.19     995 1380.98    1000 1380.98    1005 1380.98  1033.8 1388.19
  1045.8 1389.03

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             94.75   94.75   94.75            .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 22415.7*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
     935 1388.99   942.2 1388.14   946.2 1386.14   950.2 1388.14   954.2 1388.64
   966.2 1388.14     995 1380.94    1000 1380.94    1005 1380.94  1033.8 1388.14
  1045.8 1388.99

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             94.75   94.75   94.75            .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 22321.00

INPUT
Description: Natural channel Upstream of drop structure #7-20
Station Elevation Data     num=       11
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1388.94   942.2 1388.09   946.2 1386.09   950.2 1388.09   954.2 1388.59
   966.2 1388.09     995 1380.89    1000 1380.89    1005 1380.89  1033.8 1388.09
  1045.8 1388.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                1       1       1              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22320.00

INPUT
Description: Upstream riprap area of drop structure #7-20
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1388.94   942.2 1388.09   946.2 1386.09   950.2 1388.09   954.2 1388.59
   966.2 1388.09     995 1380.89    1000 1380.89    1005 1380.89  1033.8 1388.09
  1045.8 1388.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                20      20      20              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22300.00

INPUT
Description: Upstream of drop structure #7-20
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1388.93   942.2 1388.08   946.2 1386.08   950.2 1388.08   954.2 1388.58
   966.2 1388.08     995 1380.88    1000 1380.88    1005 1380.88  1033.8 1388.08
  1045.8 1388.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                50      50      50              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22250.00

INPUT
Description: Downstream riprap area of drop structure #7-20
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
```

```
     935  1385.9   942.2 1385.05   946.2 1383.05   950.2 1385.05   954.2 1385.55
   966.2 1385.05     995 1377.85    1000 1377.85    1005 1377.85  1033.8 1385.05
  1045.8  1385.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8                 1       1       1            .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22249.00

INPUT
Description: Natural channel downstream of drop structure #7-20
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935  1385.9   942.2 1385.05   946.2 1383.05   950.2 1385.05   954.2 1385.55
   966.2 1385.05     995 1377.85    1000 1377.85    1005 1377.85  1033.8 1385.05
  1045.8  1385.9

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              91.5    91.5    91.5            .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22157.5*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.85   942.2 1385.01   946.2 1383.01   950.2 1385.01   954.2 1385.51
   966.2 1385.01     995  1377.8    1000  1377.8    1005  1377.8  1033.8 1385.01
  1045.8 1385.85

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              91.5    91.5    91.5            .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 22066.*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.81   942.2 1384.96   946.2 1382.96   950.2 1384.96   954.2 1385.46
   966.2 1384.96     995 1377.76    1000 1377.76    1005 1377.76  1033.8 1384.96
```

```
  1045.8 1385.81

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
     935    .035    966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          966.2  1033.8             91.5    91.5    91.5            .1        .3
Left Levee       Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21974.5*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
     935 1385.77   942.2 1384.92   946.2 1382.92   950.2 1384.92   954.2 1385.42
   966.2 1384.92     995 1377.71    1000 1377.71    1005 1377.71  1033.8 1384.92
  1045.8 1385.77

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
     935    .035    966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          966.2  1033.8             91.5    91.5    91.5            .1        .3
Left Levee       Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21883.*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
     935 1385.72   942.2 1384.87   946.2 1382.87   950.2 1384.87   954.2 1385.37
   966.2 1384.87     995 1377.67    1000 1377.67    1005 1377.67  1033.8 1384.87
  1045.8 1385.72

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
     935    .035    966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          966.2  1033.8             91.5    91.5    91.5            .1        .3
Left Levee       Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21791.5*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************************
     935 1385.68   942.2 1384.83   946.2 1382.83   950.2 1384.83   954.2 1385.33
   966.2 1384.83     995 1377.62    1000 1377.62    1005 1377.62  1033.8 1384.83
  1045.8 1385.68
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             91.5    91.5    91.5              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21700.00

INPUT
Description: End of Sheet 28
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.63   942.2 1384.78   946.2 1382.78   950.2 1384.78   954.2 1385.28
   966.2 1384.78     995 1377.58    1000 1377.58    1005 1377.58  1033.8 1384.78
  1045.8 1385.63

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             95.8    95.8    95.8              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21604.2*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.58   942.2 1384.73   946.2 1382.73   950.2 1384.73   954.2 1385.23
   966.2 1384.73     995 1377.53    1000 1377.53    1005 1377.53  1033.8 1384.73
  1045.8 1385.58

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             95.8    95.8    95.8              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21508.4*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.53   942.2 1384.68   946.2 1382.68   950.2 1384.68   954.2 1385.18
   966.2 1384.68     995 1377.48    1000 1377.48    1005 1377.48  1033.8 1384.68
  1045.8 1385.53

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             95.8    95.8    95.8              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21412.6*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.49   942.2 1384.64   946.2 1382.64   950.2 1384.64   954.2 1385.14
   966.2 1384.64     995 1377.44    1000 1377.44    1005 1377.44  1033.8 1384.64
  1045.8 1385.49

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             95.8    95.8    95.8              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21316.8*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.44   942.2 1384.59   946.2 1382.59   950.2 1384.59   954.2 1385.09
   966.2 1384.59     995 1377.39    1000 1377.39    1005 1377.39  1033.8 1384.59
  1045.8 1385.44

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             95.8    95.8    95.8              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21221.00

INPUT
Description: Natural Channel Upstream of drop strucure #7-19
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.39   942.2 1384.54   946.2 1382.54   950.2 1384.54   954.2 1385.04
   966.2 1384.54     995 1377.34    1000 1377.34    1005 1377.34  1033.8 1384.54
  1045.8 1385.39

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              1       1       1             .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 21220.00

INPUT
Description: Upstream riprap area of drop strucure #7-19
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.39   942.2 1384.54   946.2 1382.54   950.2 1384.54   954.2 1385.04
   966.2 1384.54     995 1377.34    1000 1377.34    1005 1377.34  1033.8 1384.54
  1045.8 1385.39

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              20      20      20             .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 21200.00

INPUT
Description: Upstream of drop strucure #7-19
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1385.38   942.2 1384.53   946.2 1382.53   950.2 1384.53   954.2 1385.03
   966.2 1384.53     995 1377.33    1000 1377.33    1005 1377.33  1033.8 1384.53
  1045.8 1385.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              50      50      50             .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 21150.00

INPUT
Description: Downstream riprap area of drop strucure #7-19
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.35   942.2  1381.5   946.2  1379.5   950.2  1381.5   954.2    1382
   966.2  1381.5     995  1374.3    1000  1374.3    1005  1374.3  1033.8  1381.5
  1045.8 1382.35

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
        966.2  1033.8                  1        1        1              .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21149.00

INPUT
Description: Natural channel downstream of drop strucure #7-19
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.35   942.2  1381.5   946.2  1379.5   950.2  1381.5   954.2    1382
   966.2  1381.5     995  1374.3    1000  1374.3    1005  1374.3  1033.8  1381.5
  1045.8 1382.35

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        966.2  1033.8             89.8    89.8    89.8              .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 21059.2*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.31   942.2 1381.46   946.2 1379.46   950.2 1381.46   954.2 1381.96
   966.2 1381.46     995 1374.26    1000 1374.26    1005 1374.26  1033.8 1381.46
  1045.8 1382.31

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        966.2  1033.8             89.8    89.8    89.8              .1        .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 20969.4*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.26   942.2 1381.41   946.2 1379.41   950.2 1381.41   954.2 1381.91
   966.2 1381.41     995 1374.21    1000 1374.21    1005 1374.21  1033.8 1381.41
  1045.8 1382.26

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        966.2  1033.8             89.8    89.8    89.8              .1        .3
Left Levee      Station=   954.2      Elevation=
```

```
CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 20879.6*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.22   942.2 1381.37   946.2 1379.37   950.2 1381.37   954.2 1381.87
   966.2 1381.37     995 1374.17    1000 1374.17    1005 1374.17  1033.8 1381.37
  1045.8 1382.22

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             89.8    89.8    89.8              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 20789.8*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.17   942.2 1381.32   946.2 1379.32   950.2 1381.32   954.2 1381.82
   966.2 1381.32     995 1374.12    1000 1374.12    1005 1374.12  1033.8 1381.32
  1045.8 1382.17

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             89.8    89.8    89.8              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 20700.00

INPUT
Description: End of Sheet 27 - Reach 7
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.13   942.2 1381.28   946.2 1379.28   950.2 1381.28   954.2 1381.78
   966.2 1381.28     995 1374.08    1000 1374.08    1005 1374.08  1033.8 1381.28
  1045.8 1382.13

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8            89.44   89.44   89.44              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 20610.5*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.09   942.2 1381.24   946.2 1379.24   950.2 1381.24   954.2 1381.74
   966.2 1381.24     995 1374.04    1000 1374.04    1005 1374.04  1033.8 1381.24
  1045.8 1382.09

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             89.44   89.44   89.44              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 20521.1*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935 1382.04   942.2 1381.19   946.2 1379.19   950.2 1381.19   954.2 1381.69
   966.2 1381.19     995 1373.99    1000 1373.99    1005 1373.99  1033.8 1381.19
  1045.8 1382.04

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             89.44   89.44   89.44              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 20431.69

INPUT
Description: Downstream end of Reach 7
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     935     1382   942.2 1381.15   946.2 1379.15   950.2 1381.15   954.2 1381.65
   966.2 1381.15     995 1373.95    1000 1373.95    1005 1373.95  1033.8 1381.15
  1045.8     1382

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     935    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8               63   51.99      40              .1       .3
Left Levee      Station=   954.2      Elevation=

CROSS SECTION
```

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 20379.70

INPUT
Description: Transistion area -upstream end of riprapped side inlet
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
947.2	1381.84	954.2	1381.48	966.2	1380.98	995	1373.78	1000	1373.78
1005	1373.78	1033.8	1380.98	1037.8	1380.98	1041.8	1378.98	1045.8	1380.98
1052.8	1381.84								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
947.2	.035	1005	.027	1045.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	92.2	79.7	75.93	.1	.3

Right Levee Station= 1037.8 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 20300.00

INPUT
Description: Transistion area - downstream end of riprapped side inlet
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
947.2	1381.8	954.2	1381.44	966.2	1380.94	995	1373.74	1000	1373.74
1005	1373.74	1033.8	1380.94	1037.8	1380.94	1041.8	1378.94	1045.8	1380.94
1052.8	1381.8								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
947.2	.035	1005	.027	1045.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	34	29.39	28	.1	.3

Right Levee Station= 1037.8 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 20270.61

INPUT
Description: Upstream end of reach 6
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
947.2	1381.79	954.2	1381.43	966.2	1380.93	995	1373.73	1000	1373.73
1005	1373.73	1033.8	1380.93	1037.8	1380.93	1041.8	1378.93	1045.8	1380.93
1052.8	1381.79								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
947.2	.035	966.2	.027	1033.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	90.33	90.2	89	.1	.3

Right Levee Station= 1037.8 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 20180.4*

```
INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1381.79   954.2 1381.43   966.2 1380.93     995 1373.73    1000 1373.73
    1005 1373.73  1033.8 1380.93  1037.8 1380.93  1041.8 1378.93  1045.8 1380.93
  1052.8 1381.79

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            90.33    90.2      89              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 20090.2*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1381.79   954.2 1381.43   966.2 1380.93     995 1373.73    1000 1373.73
    1005 1373.73  1033.8 1380.93  1037.8 1380.93  1041.8 1378.93  1045.8 1380.93
  1052.8 1381.79

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            90.33    90.2      89              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 20000.00

INPUT
Description: Downstream end of bend
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1381.79   954.2 1381.43   966.2 1380.93     995 1373.73    1000 1373.73
    1005 1373.73  1033.8 1380.93  1037.8 1380.93  1041.8 1378.93  1045.8 1380.93
  1052.8 1381.79

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            99.67   99.67   99.67              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19900.3*

INPUT
```

```
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1381.74   954.2 1381.38   966.2 1380.88     995 1373.68    1000 1373.68
    1005 1373.68  1033.8 1380.88  1037.8 1380.88  1041.8 1378.88  1045.8 1380.88
  1052.8 1381.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             99.67   99.67   99.67              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19800.6*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1381.69   954.2 1381.33   966.2 1380.83     995 1373.63    1000 1373.63
    1005 1373.63  1033.8 1380.83  1037.8 1380.83  1041.8 1378.83  1045.8 1380.83
  1052.8 1381.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             99.67   99.67   99.67              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19701.00

INPUT
Description: Natural Channel Upstream from Drop Structure #6-18
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1381.64   954.2 1381.28   966.2 1380.78     995 1373.58    1000 1373.58
    1005 1373.58  1033.8 1380.78  1037.8 1380.78  1041.8 1378.78  1045.8 1380.78
  1052.8 1381.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                1       1       1              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19700.00

INPUT
Description: Upstream riprap area from Drop Structure #6-18
Station Elevation Data    num=      11
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1381.64   954.2 1381.28   966.2 1380.78     995 1373.58    1000 1373.58
    1005 1373.58  1033.8 1380.78  1037.8 1380.78  1041.8 1378.78  1045.8 1380.78
  1052.8 1381.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8               20      20      20             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19680.00

INPUT
Description: Upstream from Drop Structure #6-18
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1381.63   954.2 1381.27   966.2 1380.77     995 1373.57    1000 1373.57
    1005 1373.57  1033.8 1380.77  1037.8 1380.77  1041.8 1378.77  1045.8 1380.77
  1052.8 1381.63

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8               50      50      50             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19630.00

INPUT
Description: Downstream riprap area from Drop Structure #6-18
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1378.61   954.2 1378.25   966.2 1377.75     995 1370.55    1000 1370.55
    1005 1370.55  1033.8 1377.75  1037.8 1377.75  1041.8 1375.75  1045.8 1377.75
  1052.8 1378.61

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                1       1       1             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19629.00

INPUT
Description: Natural Channel downstream from Drop Structure #6-18
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
```

```
   947.2 1378.61   954.2 1378.25   966.2 1377.75     995 1370.55    1000 1370.55
    1005 1370.55  1033.8 1377.75  1037.8 1377.75  1041.8 1375.75  1045.8 1377.75
  1052.8 1378.61

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19536.1*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1378.56   954.2  1378.2   966.2  1377.7     995  1370.5    1000  1370.5
    1005  1370.5  1033.8  1377.7  1037.8  1377.7  1041.8  1375.7  1045.8  1377.7
  1052.8 1378.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19443.2*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1378.52   954.2 1378.16   966.2 1377.66     995 1370.46    1000 1370.46
    1005 1370.46  1033.8 1377.66  1037.8 1377.66  1041.8 1375.66  1045.8 1377.66
  1052.8 1378.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19350.3*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1378.47   954.2 1378.11   966.2 1377.61     995 1370.41    1000 1370.41
    1005 1370.41  1033.8 1377.61  1037.8 1377.61  1041.8 1375.61  1045.8 1377.61
```

```
  1052.8 1378.47

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19257.4*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1378.42   954.2 1378.06   966.2 1377.56     995 1370.36    1000 1370.36
    1005 1370.36  1033.8 1377.56  1037.8 1377.56  1041.8 1375.56  1045.8 1377.56
  1052.8 1378.42

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19164.5*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1378.38   954.2 1378.02   966.2 1377.52     995 1370.31    1000 1370.31
    1005 1370.31  1033.8 1377.52  1037.8 1377.52  1041.8 1375.52  1045.8 1377.52
  1052.8 1378.38

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 19071.6*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1378.33   954.2 1377.97   966.2 1377.47     995 1370.27    1000 1370.27
    1005 1370.27  1033.8 1377.47  1037.8 1377.47  1041.8 1375.47  1045.8 1377.47
  1052.8 1378.33
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9              .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 18978.7*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1378.28   954.2 1377.92   966.2 1377.42     995 1370.22    1000 1370.22
    1005 1370.22  1033.8 1377.42  1037.8 1377.42  1041.8 1375.42  1045.8 1377.42
  1052.8 1378.28

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9              .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 18885.8*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1378.23   954.2 1377.87   966.2 1377.37     995 1370.17    1000 1370.17
    1005 1370.17  1033.8 1377.37  1037.8 1377.37  1041.8 1375.37  1045.8 1377.37
  1052.8 1378.23

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          966.2  1033.8             92.9    92.9    92.9              .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 18792.9*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1378.19   954.2 1377.83   966.2 1377.33     995 1370.13    1000 1370.13
    1005 1370.13  1033.8 1377.33  1037.8 1377.33  1041.8 1375.33  1045.8 1377.33
  1052.8 1378.19

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
```

```
*********************************************
   947.2     .035    966.2     .027  1033.8     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
         966.2  1033.8              92.9    92.9    92.9               .1        .3
Right Levee     Station=  1037.8       Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 18700.00

INPUT
Description: End of Sheet #25
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*******************************************************************************
   947.2 1378.14   954.2 1377.78   966.2 1377.28     995 1370.08    1000 1370.08
    1005 1370.08  1033.8 1377.28  1037.8 1377.28  1041.8 1375.28  1045.8 1377.28
  1052.8 1378.14

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2     .035    966.2     .027  1033.8     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
         966.2  1033.8               39      39      39               .1        .3
Right Levee     Station=  1037.8       Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 18661.00

INPUT
Description: Natural channel upstream of drop #6-17
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*******************************************************************************
   947.2 1378.12   954.2 1377.76   966.2 1377.26     995 1370.06    1000 1370.06
    1005 1370.06  1033.8 1377.26  1037.8 1377.26  1041.8 1375.26  1045.8 1377.26
  1052.8 1378.12

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2     .035    966.2     .027  1033.8     .035

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
         966.2  1033.8                1       1       1               .1        .3
Right Levee     Station=  1037.8       Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 18660.00

INPUT
Description: Upstream riprap area of drop #6-17
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*******************************************************************************
   947.2 1378.12   954.2 1377.76   966.2 1377.26     995 1370.06    1000 1370.06
    1005 1370.06  1033.8 1377.26  1037.8 1377.26  1041.8 1375.26  1045.8 1377.26
  1052.8 1378.12

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2     .035    966.2     .035  1033.8     .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8               20      20      20             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 18640.00

INPUT
Description: Upstream of drop #6-17
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1378.11   954.2 1377.75   966.2 1377.25     995 1370.05    1000 1370.05
    1005 1370.05  1033.8 1377.25  1037.8 1377.25  1041.8 1375.25  1045.8 1377.25
  1052.8 1378.11

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8               50      50      50             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 18590.00

INPUT
Description: Downstream riprap area of drop #6-17
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1375.09   954.2 1374.73   966.2 1374.23     995 1367.03    1000 1367.03
    1005 1367.03  1033.8 1374.23  1037.8 1374.23  1041.8 1372.23  1045.8 1374.23
  1052.8 1375.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                1       1       1             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 18589.00

INPUT
Description: Natural channel downstream of drop #6-17
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1375.09   954.2 1374.73   966.2 1374.23     995 1367.03    1000 1367.03
    1005 1367.03  1033.8 1374.23  1037.8 1374.23  1041.8 1372.23  1045.8 1374.23
  1052.8 1375.09

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
        966.2  1033.8            98.78   98.78   98.78             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 18490.2*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
   947.2 1375.04   954.2 1374.68   966.2 1374.18     995 1366.98    1000 1366.98
    1005 1366.98  1033.8 1374.18  1037.8 1374.18  1041.8 1372.18  1045.8 1374.18
  1052.8 1375.04

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        966.2  1033.8            98.78   98.78   98.78             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 18391.4*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
   947.2 1374.99   954.2 1374.63   966.2 1374.13     995 1366.93    1000 1366.93
    1005 1366.93  1033.8 1374.13  1037.8 1374.13  1041.8 1372.13  1045.8 1374.13
  1052.8 1374.99

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        966.2  1033.8            98.78   98.78   98.78             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 18292.6*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
   947.2 1374.94   954.2 1374.58   966.2 1374.08     995 1366.88    1000 1366.88
    1005 1366.88  1033.8 1374.08  1037.8 1374.08  1041.8 1372.08  1045.8 1374.08
  1052.8 1374.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        966.2  1033.8            98.78   98.78   98.78             .1       .3
Right Levee     Station=  1037.8      Elevation=
```

```
CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 18193.8*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1374.89   954.2 1374.53   966.2 1374.03     995 1366.83    1000 1366.83
    1005 1366.83  1033.8 1374.03  1037.8 1374.03  1041.8 1372.03  1045.8 1374.03
  1052.8 1374.89

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            98.78   98.78   98.78              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 18095.1*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1374.84   954.2 1374.48   966.2 1373.98     995 1366.78    1000 1366.78
    1005 1366.78  1033.8 1373.98  1037.8 1373.98  1041.8 1371.98  1045.8 1373.98
  1052.8 1374.84

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            98.78   98.78   98.78              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17996.3*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1374.79   954.2 1374.43   966.2 1373.93     995 1366.73    1000 1366.73
    1005 1366.73  1033.8 1373.93  1037.8 1373.93  1041.8 1371.93  1045.8 1373.93
  1052.8 1374.79

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            98.78   98.78   98.78              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17897.5*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   947.2 1374.74   954.2 1374.38   966.2 1373.88     995 1366.68    1000 1366.68
    1005 1366.68  1033.8 1373.88  1037.8 1373.88  1041.8 1371.88  1045.8 1373.88
  1052.8 1374.74

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            98.78   98.78   98.78            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17798.7*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   947.2 1374.69   954.2 1374.33   966.2 1373.83     995 1366.63    1000 1366.63
    1005 1366.63  1033.8 1373.83  1037.8 1373.83  1041.8 1371.83  1045.8 1373.83
  1052.8 1374.69

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            98.78   98.78   98.78            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17700.00

INPUT
Description: End of sheet #24
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   947.2 1374.64   954.2 1374.28   966.2 1373.78     995 1366.58    1000 1366.58
    1005 1366.58  1033.8 1373.78  1037.8 1373.78  1041.8 1371.78  1045.8 1373.78
  1052.8 1374.64

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            79.67   79.67   79.67            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17620.3*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2  1374.6   954.2 1374.24   966.2 1373.74     995 1366.54    1000 1366.54
    1005 1366.54  1033.8 1373.74  1037.8 1373.74  1041.8 1371.74  1045.8 1373.74
  1052.8  1374.6

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             79.67   79.67   79.67              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17540.6*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1374.56   954.2  1374.2   966.2  1373.7     995  1366.5    1000  1366.5
    1005  1366.5  1033.8  1373.7  1037.8  1373.7  1041.8  1371.7  1045.8  1373.7
  1052.8 1374.56

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             79.67   79.67   79.67              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17461.00

INPUT
Description: Natural channel Upstream of drop structure #6-16
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1374.52   954.2 1374.16   966.2 1373.66     995 1366.46    1000 1366.46
    1005 1366.46  1033.8 1373.66  1037.8 1373.66  1041.8 1371.66  1045.8 1373.66
  1052.8 1374.52

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                 1       1       1              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17460.00
```

```
INPUT
Description: Upstream riprap area of drop structure #6-16
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1374.52   954.2 1374.16   966.2 1373.66     995 1366.46    1000 1366.46
    1005 1366.46  1033.8 1373.66  1037.8 1373.66  1041.8 1371.66  1045.8 1373.66
  1052.8 1374.52

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              20      20      20             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17440.00

INPUT
Description: Upstream of drop structure #6-16
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1374.51   954.2 1374.15   966.2 1373.65     995 1366.45    1000 1366.45
    1005 1366.45  1033.8 1373.65  1037.8 1373.65  1041.8 1371.65  1045.8 1373.65
  1052.8 1374.51

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              50      50      50             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17390.00

INPUT
Description: Downstream riprap area of drop structure #6-16
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1371.48   954.2 1371.12   966.2 1370.62     995 1363.42    1000 1363.42
    1005 1363.42  1033.8 1370.62  1037.8 1370.62  1041.8 1368.62  1045.8 1370.62
  1052.8 1371.48

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8               1       1       1             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 17389.00

INPUT
```

```
Description: Natural channel downstream of drop structure #6-16
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1371.48   954.2 1371.12   966.2 1370.62     995 1363.42    1000 1363.42
    1005 1363.42  1033.8 1370.62  1037.8 1370.62  1041.8 1368.62  1045.8 1370.62
  1052.8 1371.48

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            92.57   92.57   92.57             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 17296.4*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1371.43   954.2 1371.07   966.2 1370.57     995 1363.37    1000 1363.37
    1005 1363.37  1033.8 1370.57  1037.8 1370.57  1041.8 1368.57  1045.8 1370.57
  1052.8 1371.43

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            92.57   92.57   92.57             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 17203.8*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1371.39   954.2 1371.03   966.2 1370.53     995 1363.33    1000 1363.33
    1005 1363.33  1033.8 1370.53  1037.8 1370.53  1041.8 1368.53  1045.8 1370.53
  1052.8 1371.39

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            92.57   92.57   92.57             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 17111.2*

INPUT
Description:
Station Elevation Data     num=      11
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1371.34   954.2 1370.98   966.2 1370.48     995 1363.28    1000 1363.28
    1005 1363.28  1033.8 1370.48  1037.8 1370.48  1041.8 1368.48  1045.8 1370.48
  1052.8 1371.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             92.57   92.57   92.57              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 17018.7*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2  1371.3   954.2 1370.94   966.2 1370.44     995 1363.24    1000 1363.24
    1005 1363.24  1033.8 1370.44  1037.8 1370.44  1041.8 1368.44  1045.8 1370.44
  1052.8  1371.3

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             92.57   92.57   92.57              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 16926.1*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1371.25   954.2 1370.89   966.2 1370.39     995 1363.19    1000 1363.19
    1005 1363.19  1033.8 1370.39  1037.8 1370.39  1041.8 1368.39  1045.8 1370.39
  1052.8 1371.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             92.57   92.57   92.57              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 16833.5*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
```

```
   947.2 1371.21   954.2 1370.85   966.2 1370.35     995 1363.15    1000 1363.15
    1005 1363.15  1033.8 1370.35  1037.8 1370.35  1041.8 1368.35  1045.8 1370.35
  1052.8 1371.21

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            92.57   92.57   92.57          .1          .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 16741.00

INPUT
Description: Natural channel Upstream of drop structure #6-15
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1371.16   954.2  1370.8   966.2  1370.3     995  1363.1    1000  1363.1
    1005  1363.1  1033.8  1370.3  1037.8  1370.3  1041.8  1368.3  1045.8  1370.3
  1052.8 1371.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8                 1       1       1          .1          .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 16740.00

INPUT
Description: Upstream riprap area of drop structure #6-15
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1371.16   954.2  1370.8   966.2  1370.3     995  1363.1    1000  1363.1
    1005  1363.1  1033.8  1370.3  1037.8  1370.3  1041.8  1368.3  1045.8  1370.3
  1052.8 1371.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8                20      20      20          .1          .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 16720.00

INPUT
Description: Upstream of drop structure #6-15
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1371.15   954.2 1370.79   966.2 1370.29     995 1363.09    1000 1363.09
    1005 1363.09  1033.8 1370.29  1037.8 1370.29  1041.8 1368.29  1045.8 1370.29
```

```
  1052.8 1371.15

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
         966.2  1033.8               45      45      45              .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 16675.00

INPUT
Description: Downstream riprap area of drop structure #6-15
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1368.13   954.2 1367.77   966.2 1367.27     995 1360.07    1000 1360.07
    1005 1360.07  1033.8 1367.27  1037.8 1367.27  1041.8 1365.27  1045.8 1367.27
  1052.8 1368.13

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
         966.2  1033.8                1       1       1              .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 16674.00

INPUT
Description: Natural channel downstream of drop structure #6-15
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1368.13   954.2 1367.77   966.2 1367.27     995 1360.07    1000 1360.07
    1005 1360.07  1033.8 1367.27  1037.8 1367.27  1041.8 1365.27  1045.8 1367.27
  1052.8 1368.13

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
         966.2  1033.8               97.4    97.4    97.4              .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 16576.6*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1368.08   954.2 1367.72   966.2 1367.22     995 1360.02    1000 1360.02
    1005 1360.02  1033.8 1367.22  1037.8 1367.22  1041.8 1365.22  1045.8 1367.22
  1052.8 1368.08
```

```
Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             97.4    97.4    97.4            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 16479.2*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1368.03   954.2 1367.67   966.2 1367.17     995 1359.97    1000 1359.97
    1005 1359.97  1033.8 1367.17  1037.8 1367.17  1041.8 1365.17  1045.8 1367.17
  1052.8 1368.03

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             97.4    97.4    97.4            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 16381.8*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1367.98   954.2 1367.62   966.2 1367.12     995 1359.92    1000 1359.92
    1005 1359.92  1033.8 1367.12  1037.8 1367.12  1041.8 1365.12  1045.8 1367.12
  1052.8 1367.98

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             97.4    97.4    97.4            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 16284.4*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1367.93   954.2 1367.57   966.2 1367.07     995 1359.87    1000 1359.87
    1005 1359.87  1033.8 1367.07  1037.8 1367.07  1041.8 1365.07  1045.8 1367.07
  1052.8 1367.93

Manning's n Values          num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
```

```
*********************************************
   947.2     .035    966.2     .027  1033.8     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             97.4    97.4    97.4            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 16187.*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.89   954.2 1367.53   966.2 1367.03     995 1359.82    1000 1359.82
    1005 1359.82  1033.8 1367.03  1037.8 1367.03  1041.8 1365.03  1045.8 1367.03
  1052.8 1367.89

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2     .035    966.2     .027  1033.8     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             97.4    97.4    97.4            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 16089.6*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.84   954.2 1367.48   966.2 1366.98     995 1359.78    1000 1359.78
    1005 1359.78  1033.8 1366.98  1037.8 1366.98  1041.8 1364.98  1045.8 1366.98
  1052.8 1367.84

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2     .035    966.2     .027  1033.8     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             97.4    97.4    97.4            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 15992.2*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.79   954.2 1367.43   966.2 1366.93     995 1359.73    1000 1359.73
    1005 1359.73  1033.8 1366.93  1037.8 1366.93  1041.8 1364.93  1045.8 1366.93
  1052.8 1367.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2     .035    966.2     .027  1033.8     .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             97.4    97.4    97.4              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 15894.8*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.74   954.2 1367.38   966.2 1366.88     995 1359.68    1000 1359.68
    1005 1359.68  1033.8 1366.88  1037.8 1366.88  1041.8 1364.88  1045.8 1366.88
  1052.8 1367.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             97.4    97.4    97.4              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 15797.4*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.69   954.2 1367.33   966.2 1366.83     995 1359.63    1000 1359.63
    1005 1359.63  1033.8 1366.83  1037.8 1366.83  1041.8 1364.83  1045.8 1366.83
  1052.8 1367.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             97.4    97.4    97.4              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 15700.00

INPUT
Description: End of sheet 22
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.64   954.2 1367.28   966.2 1366.78     995 1359.58    1000 1359.58
    1005 1359.58  1033.8 1366.78  1037.8 1366.78  1041.8 1364.78  1045.8 1366.78
  1052.8 1367.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
          966.2  1033.8                100      100      100                .1        .3
Right Levee      Station=  1037.8       Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 15600.*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   947.2 1367.59   954.2 1367.23   966.2 1366.73     995 1359.53    1000 1359.53
    1005 1359.53  1033.8 1366.73  1037.8 1366.73  1041.8 1364.73  1045.8 1366.73
  1052.8 1367.59

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
          966.2  1033.8                100      100      100                .1        .3
Right Levee      Station=  1037.8       Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 15500.*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   947.2 1367.54   954.2 1367.18   966.2 1366.68     995 1359.48    1000 1359.48
    1005 1359.48  1033.8 1366.68  1037.8 1366.68  1041.8 1364.68  1045.8 1366.68
  1052.8 1367.54

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
          966.2  1033.8                100      100      100                .1        .3
Right Levee      Station=  1037.8       Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 15400.*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   947.2 1367.49   954.2 1367.13   966.2 1366.63     995 1359.43    1000 1359.43
    1005 1359.43  1033.8 1366.63  1037.8 1366.63  1041.8 1364.63  1045.8 1366.63
  1052.8 1367.49

Manning's n Values         num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
          966.2  1033.8                100      100      100                .1        .3
Right Levee      Station=  1037.8       Elevation=
```

```
CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 15300.*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.44   954.2 1367.08   966.2 1366.58     995 1359.38    1000 1359.38
    1005 1359.38  1033.8 1366.58  1037.8 1366.58  1041.8 1364.58  1045.8 1366.58
  1052.8 1367.44

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8              100     100     100              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 15200.*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.39   954.2 1367.03   966.2 1366.53     995 1359.33    1000 1359.33
    1005 1359.33  1033.8 1366.53  1037.8 1366.53  1041.8 1364.53  1045.8 1366.53
  1052.8 1367.39

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8              100     100     100              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 15100.*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.34   954.2 1366.98   966.2 1366.48     995 1359.28    1000 1359.28
    1005 1359.28  1033.8 1366.48  1037.8 1366.48  1041.8 1364.48  1045.8 1366.48
  1052.8 1367.34

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8              100     100     100              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 15000.*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1367.29   954.2 1366.93   966.2 1366.43     995 1359.23    1000 1359.23
    1005 1359.23  1033.8 1366.43  1037.8 1366.43  1041.8 1364.43  1045.8 1366.43
  1052.8 1367.29

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              100     100     100              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14900.*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1367.24   954.2 1366.88   966.2 1366.38     995 1359.18    1000 1359.18
    1005 1359.18  1033.8 1366.38  1037.8 1366.38  1041.8 1364.38  1045.8 1366.38
  1052.8 1367.24

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              100     100     100              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14800.*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1367.19   954.2 1366.83   966.2 1366.33     995 1359.13    1000 1359.13
    1005 1359.13  1033.8 1366.33  1037.8 1366.33  1041.8 1364.33  1045.8 1366.33
  1052.8 1367.19

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              100     100     100              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14700.00

INPUT
Description: End of sheet 21
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.14   954.2 1366.78   966.2 1366.28     995 1359.08    1000 1359.08
    1005 1359.08  1033.8 1366.28  1037.8 1366.28  1041.8 1364.28  1045.8 1366.28
  1052.8 1367.14

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            84.75   84.75   84.75            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14615.2*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2  1367.1   954.2 1366.74   966.2 1366.24     995 1359.04    1000 1359.04
    1005 1359.04  1033.8 1366.24  1037.8 1366.24  1041.8 1364.24  1045.8 1366.24
  1052.8  1367.1

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            84.75   84.75   84.75            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14530.5*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.05   954.2  1366.7   966.2  1366.2     995 1358.99    1000 1358.99
    1005 1358.99  1033.8  1366.2  1037.8  1366.2  1041.8  1364.2  1045.8  1366.2
  1052.8 1367.05

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            84.75   84.75   84.75            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14445.7*
```

```
INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1367.01   954.2 1366.65   966.2 1366.15     995 1358.95    1000 1358.95
    1005 1358.95  1033.8 1366.15  1037.8 1366.15  1041.8 1364.15  1045.8 1366.15
  1052.8 1367.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             84.75   84.75   84.75              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 14361.00

INPUT
Description: Natural Channel Upstream of drop structure #6-14
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1366.97   954.2 1366.61   966.2 1366.11     995 1358.91    1000 1358.91
    1005 1358.91  1033.8 1366.11  1037.8 1366.11  1041.8 1364.11  1045.8 1366.11
  1052.8 1366.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                1       1       1              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 14360.00

INPUT
Description: Upstream riprap area of drop structure #6-14
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1366.97   954.2 1366.61   966.2 1366.11     995 1358.91    1000 1358.91
    1005 1358.91  1033.8 1366.11  1037.8 1366.11  1041.8 1364.11  1045.8 1366.11
  1052.8 1366.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8               20      20      20              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 14340.00

INPUT
```

```
Description: Upstream of drop structure #6-14
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1366.96   954.2  1366.6   966.2  1366.1     995  1358.9    1000  1358.9
    1005  1358.9  1033.8  1366.1  1037.8  1366.1  1041.8  1364.1  1045.8  1366.1
  1052.8 1366.96

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8               50      50      50              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14290.00

INPUT
Description: Downstream riprap area of drop structure #6-14
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1363.93   954.2 1363.57   966.2 1363.07     995 1355.87    1000 1355.87
    1005 1355.87  1033.8 1363.07  1037.8 1363.07  1041.8 1361.07  1045.8 1363.07
  1052.8 1363.93

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                1       1       1              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14289.00

INPUT
Description: Natural channel downstream from drop #6-14
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   947.2 1363.93   954.2 1363.57   966.2 1363.07     995 1355.87    1000 1355.87
    1005 1355.87  1033.8 1363.07  1037.8 1363.07  1041.8 1361.07  1045.8 1363.07
  1052.8 1363.93

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8             98.17   98.17   98.17              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 14190.8*

INPUT
Description:
Station Elevation Data     num=       11
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1363.88   954.2 1363.52   966.2 1363.02     995 1355.82    1000 1355.82
    1005 1355.82  1033.8 1363.02  1037.8 1363.02  1041.8 1361.02  1045.8 1363.02
  1052.8 1363.88

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8            98.17   98.17   98.17             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 14092.6*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1363.83   954.2 1363.47   966.2 1362.97     995 1355.77    1000 1355.77
    1005 1355.77  1033.8 1362.97  1037.8 1362.97  1041.8 1360.97  1045.8 1362.97
  1052.8 1363.83

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8            98.17   98.17   98.17             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 13994.5*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1363.79   954.2 1363.43   966.2 1362.93     995 1355.72    1000 1355.72
    1005 1355.72  1033.8 1362.93  1037.8 1362.93  1041.8 1360.93  1045.8 1362.93
  1052.8 1363.79

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8            98.17   98.17   98.17             .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 13896.3*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
```

```
   947.2 1363.74   954.2 1363.38   966.2 1362.88     995 1355.68    1000 1355.68
    1005 1355.68  1033.8 1362.88  1037.8 1362.88  1041.8 1360.88  1045.8 1362.88
  1052.8 1363.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            98.17   98.17   98.17              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 13798.1*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1363.69   954.2 1363.33   966.2 1362.83     995 1355.63    1000 1355.63
    1005 1355.63  1033.8 1362.83  1037.8 1362.83  1041.8 1360.83  1045.8 1362.83
  1052.8 1363.69

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            98.17   98.17   98.17              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 13700.00

INPUT
Description: End of sheet 20
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1363.64   954.2 1363.28   966.2 1362.78     995 1355.58    1000 1355.58
    1005 1355.58  1033.8 1362.78  1037.8 1362.78  1041.8 1360.78  1045.8 1362.78
  1052.8 1363.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            99.83   99.83   99.83              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 13600.1*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   947.2 1363.59   954.2 1363.23   966.2 1362.73     995 1355.53    1000 1355.53
    1005 1355.53  1033.8 1362.73  1037.8 1362.73  1041.8 1360.73  1045.8 1362.73
```

```
  1052.8 1363.59

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ***********************************************
    947.2    .035   966.2    .027  1033.8    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             99.83   99.83   99.83            .1        .3
 Right Levee     Station=  1037.8      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 13500.3*

 INPUT
 Description:
 Station Elevation Data    num=      11
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ***********************************************************************************
    947.2 1363.54   954.2 1363.18   966.2 1362.68     995 1355.48    1000 1355.48
     1005 1355.48  1033.8 1362.68  1037.8 1362.68  1041.8 1360.68  1045.8 1362.68
   1052.8 1363.54

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ***********************************************
    947.2    .035   966.2    .027  1033.8    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             99.83   99.83   99.83            .1        .3
 Right Levee     Station=  1037.8      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 13400.5*

 INPUT
 Description:
 Station Elevation Data    num=      11
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ***********************************************************************************
    947.2 1363.49   954.2 1363.13   966.2 1362.63     995 1355.43    1000 1355.43
     1005 1355.43  1033.8 1362.63  1037.8 1362.63  1041.8 1360.63  1045.8 1362.63
   1052.8 1363.49

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ***********************************************
    947.2    .035   966.2    .027  1033.8    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             99.83   99.83   99.83            .1        .3
 Right Levee     Station=  1037.8      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 13300.6*

 INPUT
 Description:
 Station Elevation Data    num=      11
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ***********************************************************************************
    947.2 1363.44   954.2 1363.08   966.2 1362.58     995 1355.38    1000 1355.38
     1005 1355.38  1033.8 1362.58  1037.8 1362.58  1041.8 1360.58  1045.8 1362.58
   1052.8 1363.44
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             99.83   99.83   99.83              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 13200.8*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   947.2 1363.39   954.2 1363.03   966.2 1362.53     995 1355.33    1000 1355.33
    1005 1355.33  1033.8 1362.53  1037.8 1362.53  1041.8 1360.53  1045.8 1362.53
  1052.8 1363.39

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             99.83   99.83   99.83              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 13101.00

INPUT
Description: Natural channel Upstream of Drop structure #6-13
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   947.2 1363.34   954.2 1362.98   966.2 1362.48     995 1355.28    1000 1355.28
    1005 1355.28  1033.8 1362.48  1037.8 1362.48  1041.8 1360.48  1045.8 1362.48
  1052.8 1363.34

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8                1       1       1              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 13100.00

INPUT
Description: Upstream riprap area for Drop structure #6-13
Station Elevation Data     num=       11
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   947.2 1363.34   954.2 1362.98   966.2 1362.48     995 1355.28    1000 1355.28
    1005 1355.28  1033.8 1362.48  1037.8 1362.48  1041.8 1360.48  1045.8 1362.48
  1052.8 1363.34

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
```

```
**********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              20      20      20            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 13080.00

INPUT
Description: Upstream Drop structure #6-13
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1363.33   954.2 1362.97   966.2 1362.47     995 1355.27    1000 1355.27
    1005 1355.27  1033.8 1362.47  1037.8 1362.47  1041.8 1360.47  1045.8 1362.47
  1052.8 1363.33

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8              50      50      50            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 13030.00

INPUT
Description: Downstream end of riprap for Drop structure #6-13
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1360.16   954.2  1359.8   966.2  1359.3     995  1352.1    1000  1352.1
    1005  1352.1  1033.8  1359.3  1037.8  1359.3  1041.8  1357.3  1045.8  1359.3
  1052.8 1360.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8               1       1       1            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 13029.00

INPUT
Description: Natural channel downstream of Drop structure #6-13
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1360.16   954.2  1359.8   966.2  1359.3     995  1352.1    1000  1352.1
    1005  1352.1  1033.8  1359.3  1037.8  1359.3  1041.8  1357.3  1045.8  1359.3
  1052.8 1360.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   947.2    .035   966.2    .027  1033.8    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            82.25   82.25   82.25          .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 12946.7*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   947.2 1360.16   954.2  1359.8   966.2  1359.3     995 1352.09    1000 1352.09
    1005 1352.09  1033.8  1359.3  1037.8  1359.3  1041.8  1357.3  1045.8  1359.3
  1052.8 1360.16

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .029  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            82.25   82.25   82.25          .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 12864.5*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   947.2 1360.15   954.2 1359.79   966.2 1359.29     995 1352.09    1000 1352.09
    1005 1352.09  1033.8 1359.29  1037.8 1359.29  1041.8 1357.29  1045.8 1359.29
  1052.8 1360.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .031  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            82.25   82.25   82.25          .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 12782.2*

INPUT
Description:
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   947.2 1360.15   954.2 1359.79   966.2 1359.29     995 1352.08    1000 1352.08
    1005 1352.08  1033.8 1359.29  1037.8 1359.29  1041.8 1357.29  1045.8 1359.29
  1052.8 1360.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .033  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
          966.2  1033.8              82.25   82.25   82.25              .1        .3
 Right Levee     Station=  1037.8      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 12700.

 INPUT
 Description: End of sheet 19,  x-sect. #6
 Station Elevation Data    num=      11
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ********************************************************************************
    947.2 1360.14   954.2 1359.78   966.2 1359.28     995 1352.08    1000 1352.08
     1005 1352.08  1033.8 1359.28  1037.8 1359.28  1041.8 1357.28  1045.8 1359.28
   1052.8 1360.14

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ************************************************
    947.2    .035   966.2    .035  1033.8    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             86.33   86.33   86.33              .1        .3
 Right Levee     Station=  1037.8      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 12613.6*

 INPUT
 Description:
 Station Elevation Data    num=      11
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ********************************************************************************
    947.2  1360.1   954.2 1359.74   966.2 1359.24     995 1352.04    1000 1352.04
     1005 1352.04  1033.8 1359.24  1037.8 1359.24  1041.8 1357.24  1045.8 1359.24
   1052.8  1360.1

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ************************************************
    947.2    .035   966.2    .032  1033.8    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             86.33   86.33   86.33              .1        .3
 Right Levee     Station=  1037.8      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 12527.3*

 INPUT
 Description:
 Station Elevation Data    num=      11
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ********************************************************************************
    947.2 1360.05   954.2 1359.69   966.2 1359.19     995 1351.99    1000 1351.99
     1005 1351.99  1033.8 1359.19  1037.8 1359.19  1041.8 1357.19  1045.8 1359.19
   1052.8 1360.05

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ************************************************
    947.2    .035   966.2     .03  1033.8    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             86.33   86.33   86.33              .1        .3
 Right Levee     Station=  1037.8      Elevation=
```

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 12441.00

INPUT
Description: Natural Channel Upstream of drop structure #6-12
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
947.2	1360.01	954.2	1359.65	966.2	1359.15	995	1351.95	1000	1351.95
1005	1351.95	1033.8	1359.15	1037.8	1359.15	1041.8	1357.15	1045.8	1359.15
1052.8	1360.01								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
947.2	.035	966.2	.027	1033.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	1	1	1	.1	.3

Right Levee Station= 1037.8 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 12440.00

INPUT
Description: Upstream end of riprap area of drop structure #6-12
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
947.2	1360.01	954.2	1359.65	966.2	1359.15	995	1351.95	1000	1351.95
1005	1351.95	1033.8	1359.15	1037.8	1359.15	1041.8	1357.15	1045.8	1359.15
1052.8	1360.01								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
947.2	.035	966.2	.035	1033.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	20	20	20	.1	.3

Right Levee Station= 1037.8 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 12420.00

INPUT
Description: Upstream of drop structure #6-12
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
947.2	1360	954.2	1359.64	966.2	1359.14	995	1351.94	1000	1351.94
1005	1351.94	1033.8	1359.14	1037.8	1359.14	1041.8	1357.14	1045.8	1359.14
1052.8	1360								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
947.2	.035	966.2	.035	1033.8	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
966.2	1033.8	50	50	50	.1	.3

Right Levee Station= 1037.8 Elevation=

CROSS SECTION

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 12370

INPUT
Description: Downstream riprap area of drop structure #6-12
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2  1358.5   954.2 1356.68   966.2 1356.18     995 1348.98    1000 1348.98
    1005 1348.98  1033.8 1356.18  1037.8 1356.18  1041.8 1354.18  1045.8 1356.18
  1052.8  1358.5

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .035  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8                 1       1       1              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 12369.00

INPUT
Description: Natural channel Downstream of drop structure #6-12
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2  1358.5   954.2 1356.68   966.2 1356.18     995 1348.98    1000 1348.98
    1005 1348.98  1033.8 1356.18  1037.8 1356.18  1041.8 1354.18  1045.8 1356.18
  1052.8  1358.5

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8              86.5    86.5    86.5              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 12282.5*

INPUT
Description:
Station Elevation Data     num=       11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1358.33   954.2 1356.62   966.2 1356.12     995 1348.93    1000 1348.93
    1005 1348.93  1033.8 1356.12  1037.8 1356.12  1041.8 1354.12  1045.8 1356.12
  1052.8 1358.33

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.2  1033.8              86.5    86.5    86.5              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 12196.*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1358.17   954.2 1356.57   966.2 1356.07     995 1348.87    1000 1348.87
    1005 1348.87  1033.8 1356.07  1037.8 1356.07  1041.8 1354.07  1045.8 1356.07
  1052.8 1358.17

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             86.5    86.5    86.5              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 12109.5*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2    1358   954.2 1356.52   966.2 1356.02     995 1348.81    1000 1348.81
    1005 1348.81  1033.8 1356.02  1037.8 1356.02  1041.8 1354.02  1045.8 1356.02
  1052.8    1358

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             86.5    86.5    86.5              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 12023.*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1357.83   954.2 1356.46   966.2 1355.96     995 1348.76    1000 1348.76
    1005 1348.76  1033.8 1355.96  1037.8 1355.96  1041.8 1353.96  1045.8 1355.96
  1052.8 1357.83

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8             86.5    86.5    86.5              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11936.5*
```

```
INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2 1357.67   954.2 1356.41   966.2 1355.91     995 1348.71    1000 1348.71
    1005 1348.71  1033.8 1355.91  1037.8 1355.91  1041.8 1353.91  1045.8 1355.91
  1052.8 1357.67

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            86.5    86.5    86.5            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11850.00

INPUT
Description: Upstream of curved section - x-sect #6
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2  1357.5   954.2 1356.35   966.2 1355.85     995 1348.65    1000 1348.65
    1005 1348.65  1033.8 1355.85  1037.8 1355.85  1041.8 1353.85  1045.8 1355.85
  1052.8  1357.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            93.5    84.5    72.5            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11765.4*

INPUT
Description:
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2  1357.5   954.2 1356.31   966.2 1355.81     995 1348.61    1000 1348.61
    1005 1348.61  1033.8 1355.81  1037.8 1355.81  1041.8 1353.81  1045.8 1355.81
  1052.8  1357.5

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            93.5    84.5    72.5            .1        .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11680.94

INPUT
```

```
Description: Begin of channel transition - X-sect #5
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   947.2  1357.5   954.2 1356.27   966.2 1355.77     995 1348.57    1000 1348.57
    1005 1348.57  1033.8 1355.77  1037.8 1355.77  1041.8 1353.77  1045.8 1355.77
  1052.8  1357.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   947.2    .035   966.2    .027  1033.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          966.2  1033.8            95.94   95.94   95.94              .1       .3
Right Levee     Station=  1037.8      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 11585.00

INPUT
Description: Upstream of Germann and riprap area - x-sect #5
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.4 1357.03   946.4 1356.42   958.4 1355.92     984 1348.51    1000 1348.51
    1004 1348.51    1012 1348.51  1041.6 1355.76

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.4    .035   958.4    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.4  1041.6            37.47   37.47      32              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 11547.53

INPUT
Description: Upstream of Germann - begin of riprap section
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.4     1356   946.4  1355.4   958.4  1354.9     984 1348.49    1000 1348.49
    1004 1347.49    1012 1347.49  1041.6 1355.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.4    .035   958.4    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.4  1041.6                11      11       8              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 11536.53

INPUT
Description: Upstream of Germann - end of R. bank before prop. channel.
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.4     1356   946.4 1355.39   958.4 1354.89     984 1348.49    1000 1348.49
    1004 1347.49    1012 1347.49  1041.6 1355.74  1074.6 1355.74
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
   940.4    .035   958.4    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.4  1041.6               26      26      22              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11510.53

INPUT
Description: 4th x-sect from culvert at Germann Rd.
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     950    1357     960 1356.75     9601354.677     9841348.477    10001348.477
    10041347.477  1012.81347.477  1031.21347.479  1050.8 1353.62  1050.8 1356.75

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
     950    .035     960    .035  1050.8    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           960  1050.8              16.8   13.73    18.8              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11496.8

INPUT
Description: 3rd x-sect upstream from culverts at Germann Rd.
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     965  1356.5   972.8 1356.11   972.81351.535  985.331348.468     9921348.468
   997.11347.468    10001347.468  1012.81347.468 1029.331347.475 1038.33 1350.97
 1038.33 1356.27

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
     965    .035   972.8    .035 1038.33    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         972.8 1038.33              9.33     6.8   17.33              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11490.00

INPUT
Description: 2 x-sects upstream from Culvert at Germann Rd.
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     975    1356   979.2 1355.53   979.2  1350.2  985.871348.415     9881348.415
   992.81347.465    10001347.465  1012.81347.465 1021.87 1347.47    1032 1349.01
    1032 1355.91    1035    1356

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
     975    .035   979.2    .035    1032    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         979.2    1032             11.2    6.13    20.8             .6       .8

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 11483.87

INPUT
Description: Just upstream from culverts at Germann Rd.
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  987.25    1355  987.25 1347.46    1000 1347.46 1012.75 1347.46 1012.75    1355

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  987.25    .035  987.25    .035 1012.75    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        987.25 1012.75            114.06  114.06  114.06             .6       .8

CULVERT


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 11480.7

INPUT
Description: Culverts at Germann Rd. 3 - 8'x6' for 108'
Distance from Upstream XS =   43.53
Deck/Roadway Width        =      36
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=        2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
***********************************************
     981    1357            1015    1357

Upstream Bridge Cross Section Data
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  987.25    1355  987.25 1347.46    1000 1347.46 1012.75 1347.46 1012.75    1355

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  987.25    .035  987.25    .035 1012.75    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
        987.25 1012.75             .6       .8

Downstream  Deck/Roadway Coordinates
    num=        2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
***********************************************
     981    1357            1015    1357

Downstream Bridge Cross Section Data
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  987.25 1354.95  987.25 1347.41    1000 1347.41 1012.75 1347.41 1012.75 1354.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  987.25    .035  987.25    .035 1012.75    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
        987.25 1012.75             .6       .8
```

```
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         =
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
Germann Rd.          Box       9       8
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
               3.17     108     .012     .012        0                  .2                 1
Number of Barrels =  3
Upstream   Elevation =  1347.46
Centerline Stations
    Sta.    Sta.    Sta.
  991.25    1000 1008.75
Downstream Elevation =  1347.41
Centerline Stations
    Sta.    Sta.    Sta.
  991.25    1000 1008.75

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 11369.81

INPUT
Description: Just downstream from culverts at Germann Rd.
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
  987.25 1354.95  987.25 1347.41    1000 1347.41 1012.75 1347.41 1012.75 1354.95

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************
  987.25    .035  987.25    .035 1012.75    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        987.25 1012.75               16   23.64      36            .6        .8

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 11346.23

INPUT
Description: Riprap begins to bend toward Germann Rd.
Station Elevation Data    num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
     970    1355   974.4 1354.91   974.4  1347.8  976.53  1347.4    1000  1347.4
    1013  1347.4  1016.5 1348.17  1016.5 1354.88    1020    1355

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*****************************************
     970    .035   974.4    .035  1016.5    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         974.4  1016.5            50.67   46.23   50.67            .6        .8

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11300.00

INPUT
Description: Downstream end of riprap, downstream of Germann Rd.
Station Elevation Data     num=       9
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     960    1355   966.7 1354.79     9841348.384     9961348.384    10001347.384
   10131347.384  1036.5 1353.25  1036.5 1354.79    1040    1355

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     960    .035   966.7    .035  1036.5    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         966.7  1036.5                 9     8.5       9              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11291.50

INPUT
Description: Downstream end of riprap, downstream of Germann Rd.
Station Elevation Data     num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.4 1355.84   946.4 1355.27   958.4 1354.77     984 1348.38    1000 1348.38
    1004 1347.38    1012 1347.38  1041.6 1354.77  1047.6 1354.77  1060.6 1356.34

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.4    .035   958.4    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.4  1041.6                95    91.5    91.5              .1       .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11200.00

INPUT
Description: Between Sossaman Rd. and Germann Rd - regular channel
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.4  1355.8   946.4 1355.23   958.4 1354.73     984 1348.34    1000 1348.34
    1004 1347.34    1012 1347.34  1041.6 1354.73  1045.6 1354.73  1049.6 1352.73
  1053.6 1354.73  1060.6  1356.3

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.4    .035   958.4    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.4  1041.6               100     100     100              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 11100.00

INPUT
Description: Between Sossaman Rd. and Germann Rd - regular channel
Station Elevation Data     num=      12
```

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   940.4 1355.79   946.4 1355.22   958.4 1354.72     984 1348.33    1000 1348.33
    1004 1347.33    1012 1347.33  1041.6 1354.72  1045.6 1354.72  1049.6 1352.72
  1053.6 1354.72  1060.6 1356.29

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.4    .035   958.4    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.4  1041.6            96.67   96.67   96.67              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 11003.3*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   940.4 1355.53   946.4 1355.15   958.4 1354.67     984 1348.28    1000 1348.28
    1004 1347.28    1012 1347.28  1041.6 1354.67  1045.6 1354.67  1049.6 1352.67
  1053.6 1354.67  1060.6 1355.86

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.4    .035   958.4    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.4  1041.6            96.67   96.67   96.67              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10906.6*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
   940.4 1355.26   946.4 1355.07   958.4 1354.63     984 1348.23    1000 1348.23
    1004 1347.23    1012 1347.23  1041.6 1354.63  1045.6 1354.63  1049.6 1352.63
  1053.6 1354.63  1060.6 1355.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.4    .035   958.4    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.4  1041.6            96.67   96.67   96.67              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10810.00

INPUT
Description: Upstream of Sossaman Rd. - regular channel
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************************
```

```
   940.4    1355   946.4    1355   958.4 1354.58     984 1348.18    1000 1348.18
    1004 1347.18    1012 1347.18  1041.6 1354.58  1045.6 1354.58  1049.6 1352.58
  1053.6 1354.58  1060.6    1355

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.4    .035   958.4    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.4  1041.6             4.59    4.59    4.59             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10805.41

INPUT
Description: X-sect at upstream end of (wingwall area) upstream of Soss.
Station Elevation Data    num=      10
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     955 1354.65     960 1354.65     9601353.457   989.31348.124    10001348.124
   10041347.124    10121347.124    1040 1354.12    1040 1354.65    1045 1354.65

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     955    .035     960    .035    1040    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            960    1040            19.88      14   19.88             .6       .8

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10791.41

INPUT
Description: X-sect halfway in transition (wingwall area) upstream of Soss.
Station Elevation Data    num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     970 1354.65   974.9 1354.65   974.91350.917   985.31348.317   990.71348.317
   995.51347.117    10001347.117    10121347.117  1025.61353.517  1025.6 1354.65
    1030 1354.65

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     970    .035   974.9    .035  1025.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          974.9  1025.6            16.88      11   16.88             .6       .8

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10780.41

INPUT
Description: Cross-sect just upstream of culverts at Sossaman Rd.
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   986.5 1354.65   986.5 1347.11    1000 1347.11  1013.5 1347.11  1013.5 1354.65

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
```

```
   986.5     .035    986.5     .035   1013.5     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          986.5  1013.5             93.41   93.41   93.41              .6       .8

CULVERT


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 10777.41

INPUT
Description: Sossaman Rd.
Distance from Upstream XS =     14.1
Deck/Roadway Width        =     43.5
Weir Coefficient          =      2.6
Upstream  Deck/Roadway Coordinates
    num=        2
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
*************************************************
   986.5    1355           1013.5    1355

Upstream Bridge Cross Section Data
Station Elevation Data    num=        5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   986.5 1354.65   986.5 1347.11    1000 1347.11  1013.5 1347.11  1013.5 1354.65

Manning's n Values        num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   986.5    .035   986.5    .035  1013.5    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          986.5  1013.5              .6       .8

Downstream  Deck/Roadway Coordinates
    num=        2
     Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
*************************************************
   986.5    1355           1013.5    1355

Downstream Bridge Cross Section Data
Station Elevation Data    num=        5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
   986.5  1354.5   986.5 1347.08    1000 1347.08  1013.5 1347.08  1013.5  1354.5

Manning's n Values        num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   986.5    .035   986.5    .035  1013.5    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
          986.5  1013.5              .6       .8

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         =
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
Sossaman            Box       6       8
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
                  3      90     .012     .012          0                  .2                 1
Number of Barrels =  3
```

```
Upstream   Elevation =  1347.11
Centerline Stations
    Sta.    Sta.    Sta.
     991    1000    1009
Downstream Elevation =  1347.08
Centerline Stations
    Sta.    Sta.    Sta.
     991    1000    1009

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 10687.00

INPUT
Description: Cross-sect just downstream of culverts at Sossaman Rd.
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   986.5  1354.5   986.5 1347.08    1000 1347.08  1013.5 1347.08  1013.5  1354.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   986.5    .035   986.5    .035  1013.5    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          986.5  1013.5             69.09   49.59   53.59              .6       .8

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 10637.41

INPUT
Description: Stilling area of drop structure 4-11 at Sossaman Rd
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     938    1353     941  1352.5     947 1351.94     959 1351.44     984 1345.04
    1000 1345.04    1004 1344.04    1012 1344.04  1041.6 1351.44  1045.6 1351.44
  1049.6 1349.44  1053.6 1351.44  1060.6    1353

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     938    .035     959    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           959  1041.6               10      10      10              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 10627.41

INPUT
Description: Beginning of riprap area for drop structure 4-11
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.4  1352.5   946.4 1351.94   958.4 1351.44     984 1345.04    1000 1345.04
    1004 1344.04    1012 1344.04  1041.6 1351.44  1045.6 1351.44  1049.6 1349.44
  1053.6 1351.44  1060.6    1353

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   940.4    .035   958.4    .035  1041.6    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.4  1041.6               29   27.41      23              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10600

INPUT
Description: Natural channel downstream of drop structure 4-11
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.4 1352.48   946.4 1351.92   958.4 1351.42     984 1345.02    1000 1345.02
    1004 1344.02    1012 1344.02  1041.6 1351.42  1045.6 1351.42  1049.6 1349.42
  1053.6 1351.42  1060.6 1352.98

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.4    .035   958.4    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.4  1041.6               84      84      84              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10516.*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  940.45 1352.87  946.45 1351.87  958.45 1351.37  983.93 1344.99  984.02 1344.97
  999.99 1344.97    1000 1344.97    1004 1343.97    1012 1343.97  1041.6 1351.37
  1045.6 1351.37  1049.6 1349.37  1053.6 1351.37  1060.6 1353.24

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  940.45    .035  958.45    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        958.45  1041.6               84      84      84              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10432.*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.5 1353.26   946.5 1351.82   958.5 1351.32  983.96 1344.93  984.04 1344.92
  999.99 1344.92 1000.01 1344.92    1004 1343.92    1012 1343.92  1041.6 1351.32
  1045.6 1351.32  1049.6 1349.32  1053.6 1351.32  1060.6 1353.51

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.5    .035   958.5    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.5  1041.6               84      84      84              .1       .3
```

```
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10348.*

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  940.55 1353.64  946.55 1351.77  958.55 1351.27  983.98 1344.88  984.07 1344.87
    1000 1344.87 1000.01 1344.87    1004 1343.87    1012 1343.87  1041.6 1351.27
  1045.6 1351.27  1049.6 1349.27  1053.6 1351.27  1060.6 1353.77

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  940.55    .035  958.55    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        958.55  1041.6               84      84      84              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10264.00

INPUT
Description: Natural channel Upstream of drop structure 4-10
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1354.03   946.6 1351.72   958.6 1351.22     984 1344.82    1000 1344.82
    1004 1343.82    1012 1343.82  1041.6 1351.22  1045.6 1351.22  1049.6 1349.22
  1053.6 1351.22  1060.6 1354.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                1       1       1              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 10263.00

INPUT
Description: Upstream riprap area of drop structure 4-10
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1354.03   946.6 1351.72   958.6 1351.22     984 1344.82    1000 1344.82
    1004 1343.82    1012 1343.82  1041.6 1351.22  1045.6 1351.22  1049.6 1349.22
  1053.6 1351.22  1060.6 1354.03

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6               20      20      20              .1       .3
Right Levee     Station=  1045.6      Elevation=
```

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 10243

INPUT
Description: Upstream of drop structure 4-10
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
940.6	1354.02	946.6	1351.71	958.6	1351.21	984	1344.81	1000	1344.81
1004	1343.81	1012	1343.81	1041.6	1351.21	1045.6	1351.21	1049.6	1349.21
1053.6	1351.21	1060.6	1354.02						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
940.6	.035	958.6	.027	1041.6	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
958.6	1041.6	50	50	50	.1	.3

Right Levee Station= 1045.6 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 10193

INPUT
Description: Downstream of drop structure 4-10
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
940.6	1351	946.6	1348.69	958.6	1348.19	984	1341.79	1000	1341.79
1004	1340.79	1012	1340.79	1041.6	1348.19	1045.6	1348.19	1049.6	1346.19
1053.6	1348.19	1060.6	1351						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
940.6	.035	958.6	.035	1041.6	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
958.6	1041.6	10	10	10	.1	.3

Right Levee Station= 1045.6 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 10183.00

INPUT
Description: Downstream riprap area of drop structure 4-10
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
940.6	1351	946.6	1348.69	958.6	1348.19	984	1341.79	1000	1341.79
1004	1340.79	1012	1340.79	1041.6	1348.19	1045.6	1348.19	1049.6	1346.19
1053.6	1348.19	1060.6	1351						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
940.6	.035	958.6	.035	1041.6	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
958.6	1041.6	1	1	1	.1	.3

Right Levee Station= 1045.6 Elevation=

CROSS SECTION

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 10182.00

INPUT
Description: Natural Channel Downstream of drop structure 4-10
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1351   946.6 1348.69   958.6 1348.19     984 1341.79    1000 1341.79
    1004 1340.79    1012 1340.79  1041.6 1348.19  1045.6 1348.19  1049.6 1346.19
  1053.6 1348.19  1060.6    1351

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             96.4    96.4    96.4             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 10085.6*

INPUT
Description:
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1350.67   946.6 1348.65   958.6 1348.15     984 1341.75    1000 1341.75
    1004 1340.75    1012 1340.75  1041.6 1348.15  1045.6 1348.15  1049.6 1346.15
  1053.6 1348.15  1060.6 1350.67

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             96.4    96.4    96.4             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9989.2*

INPUT
Description:
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1350.35   946.6 1348.61   958.6 1348.11     984 1341.71    1000 1341.71
    1004 1340.71    1012 1340.71  1041.6 1348.11  1045.6 1348.11  1049.6 1346.11
  1053.6 1348.11  1060.6 1350.35

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             96.4    96.4    96.4             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
```

```
REACH: Main Channel        RS: 9892.8*

INPUT
Description:
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1350.02   946.6 1348.56   958.6 1348.06     984 1341.66    1000 1341.66
    1004 1340.66    1012 1340.66  1041.6 1348.06  1045.6 1348.06  1049.6 1346.06
  1053.6 1348.06  1060.6 1350.02

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             96.4    96.4    96.4             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9796.4*

INPUT
Description:
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6  1349.7   946.6 1348.52   958.6 1348.02     984 1341.62    1000 1341.62
    1004 1340.62    1012 1340.62  1041.6 1348.02  1045.6 1348.02  1049.6 1346.02
  1053.6 1348.02  1060.6  1349.7

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             96.4    96.4    96.4             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9700

INPUT
Description: End of Sheet 16
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1349.37   946.6 1348.48   958.6 1347.98     984 1341.58    1000 1341.58
    1004 1340.58    1012 1340.58  1041.6 1347.98  1045.6 1347.98  1049.6 1345.98
  1053.6 1347.98  1060.6 1349.37

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6            90.86   90.86   90.86             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9609.14*
```

```
INPUT
Description:
Station Elevation Data     num=       12
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*******************************************************************************************
   940.6 1349.32    946.6 1348.43    958.6 1347.93      984 1341.53     1000 1341.53
    1004 1340.53     1012 1340.53   1041.6 1347.93   1045.6 1347.93   1049.6 1345.93
  1053.6 1347.93   1060.6 1349.32

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   940.6     .035    958.6     .027   1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
          958.6  1041.6             90.86   90.86   90.86               .1        .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9518.28*

INPUT
Description:
Station Elevation Data     num=       12
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*******************************************************************************************
   940.6 1349.27    946.6 1348.38    958.6 1347.88      984 1341.48     1000 1341.48
    1004 1340.48     1012 1340.48   1041.6 1347.88   1045.6 1347.88   1049.6 1345.88
  1053.6 1347.88   1060.6 1349.27

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   940.6     .035    958.6     .027   1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
          958.6  1041.6             90.86   90.86   90.86               .1        .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9427.42*

INPUT
Description:
Station Elevation Data     num=       12
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*******************************************************************************************
   940.6 1349.22    946.6 1348.33    958.6 1347.83      984 1341.43     1000 1341.43
    1004 1340.43     1012 1340.43   1041.6 1347.83   1045.6 1347.83   1049.6 1345.83
  1053.6 1347.83   1060.6 1349.22

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   940.6     .035    958.6     .027   1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.    Expan.
          958.6  1041.6             90.86   90.86   90.86               .1        .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9336.57*

INPUT
Description:
```

```
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1349.16   946.6 1348.27   958.6 1347.77     984 1341.37    1000 1341.37
    1004 1340.37    1012 1340.37  1041.6 1347.77  1045.6 1347.77  1049.6 1345.77
  1053.6 1347.77  1060.6 1349.16

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6            90.86   90.86   90.86             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9245.71*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1349.11   946.6 1348.22   958.6 1347.72     984 1341.32    1000 1341.32
    1004 1340.32    1012 1340.32  1041.6 1347.72  1045.6 1347.72  1049.6 1345.72
  1053.6 1347.72  1060.6 1349.11

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6            90.86   90.86   90.86             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9154.85*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1349.06   946.6 1348.17   958.6 1347.67     984 1341.27    1000 1341.27
    1004 1340.27    1012 1340.27  1041.6 1347.67  1045.6 1347.67  1049.6 1345.67
  1053.6 1347.67  1060.6 1349.06

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6            90.86   90.86   90.86             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 9064.00

INPUT
Description: Natural channel Upstream riprap area of drop structure 4-9
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
*******************************************************************************
   940.6 1349.01   946.6 1348.12   958.6 1347.62     984 1341.22    1000 1341.22
    1004 1340.22    1012 1340.22  1041.6 1347.62  1045.6 1347.62  1049.6 1345.62
  1053.6 1347.62  1060.6 1349.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                1       1       1              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 9063.00

INPUT
Description: Upstream riprap area of drop structure 4-9
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1349.01   946.6 1348.12   958.6 1347.62     984 1341.22    1000 1341.22
    1004 1340.22    1012 1340.22  1041.6 1347.62  1045.6 1347.62  1049.6 1345.62
  1053.6 1347.62  1060.6 1349.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                20      20      20              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 9043

INPUT
Description: Upstream of drop structure 4-9
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1349   946.6 1348.11   958.6 1347.61     984 1341.21    1000 1341.21
    1004 1340.21    1012 1340.21  1041.6 1347.61  1045.6 1347.61  1049.6 1345.61
  1053.6 1347.61  1060.6    1349

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                50      50      50              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8993

INPUT
Description: Downstream of drop structure 4-9
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1347   946.6 1345.09   958.6 1344.59     984 1338.19    1000 1338.19
```

```
    1004 1337.19    1012 1337.19  1041.6 1344.59  1045.6 1344.59  1049.6 1342.59
  1053.6 1344.59  1060.6    1347

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6               10      10      10             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8983.00

INPUT
Description: Downstream riprap area of drop structure 4-9
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1347   946.6 1345.09   958.6 1344.59     984 1338.19    1000 1338.19
    1004 1337.19    1012 1337.19  1041.6 1344.59  1045.6 1344.59  1049.6 1342.59
  1053.6 1344.59  1060.6    1347

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                1       1       1             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8982.00

INPUT
Description: Natural Channel Downstream of drop structure 4-9
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1347   946.6 1345.09   958.6 1344.59     984 1338.19    1000 1338.19
    1004 1337.19    1012 1337.19  1041.6 1344.59  1045.6 1344.59  1049.6 1342.59
  1053.6 1344.59  1060.6    1347

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6               94      94      94             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8888.*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1346.67   946.6 1345.05   958.6 1344.55     984 1338.15    1000 1338.15
    1004 1337.15    1012 1337.15  1041.6 1344.55  1045.6 1344.55  1049.6 1342.55
  1053.6 1344.55  1060.6 1346.67
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6               94       94       94             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 8794.*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   940.6 1346.33   946.6 1345.02   958.6 1344.52     984 1338.12    1000 1338.12
    1004 1337.12    1012 1337.12  1041.6 1344.52  1045.6 1344.52  1049.6 1342.52
  1053.6 1344.52  1060.6 1346.33

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6               94       94       94             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 8700

INPUT
Description: End of Sheet 15
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   940.6     1346   946.6 1344.98   958.6 1344.48     984 1338.08    1000 1338.08
    1004 1337.08    1012 1337.08  1041.6 1344.48  1045.6 1344.48  1049.6 1342.48
  1053.6 1344.48  1060.6     1346

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             90.86    90.86    90.86             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 8609.14*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   940.6 1345.86   946.6 1344.93   958.6 1344.43     984 1338.03    1000 1338.03
    1004 1337.03    1012 1337.03  1041.6 1344.43  1045.6 1344.43  1049.6 1342.43
  1053.6 1344.43  1060.6 1345.86

Manning's n Values          num=        3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             90.86   90.86   90.86             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8518.28*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1345.72   946.6 1344.88   958.6 1344.38     984 1337.98    1000 1337.98
    1004 1336.98    1012 1336.98  1041.6 1344.38  1045.6 1344.38  1049.6 1342.38
  1053.6 1344.38  1060.6 1345.72

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             90.86   90.86   90.86             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8427.42*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1345.58   946.6 1344.83   958.6 1344.33     984 1337.93    1000 1337.93
    1004 1336.93    1012 1336.93  1041.6 1344.33  1045.6 1344.33  1049.6 1342.33
  1053.6 1344.33  1060.6 1345.58

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             90.86   90.86   90.86             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8336.57*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1345.43   946.6 1344.77   958.6 1344.27     984 1337.87    1000 1337.87
    1004 1336.87    1012 1336.87  1041.6 1344.27  1045.6 1344.27  1049.6 1342.27
  1053.6 1344.27  1060.6 1345.43

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
```

```
   940.6     .035    958.6     .027  1041.6     .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           958.6  1041.6            90.86   90.86   90.86            .1        .3
 Right Levee     Station=  1045.6      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 8245.71*

 INPUT
 Description:
 Station Elevation Data    num=      12
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ********************************************************************************
    940.6 1345.29   946.6 1344.72   958.6 1344.22     984 1337.82    1000 1337.82
     1004 1336.82    1012 1336.82  1041.6 1344.22  1045.6 1344.22  1049.6 1342.22
   1053.6 1344.22  1060.6 1345.29

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ***********************************************
    940.6     .035   958.6     .027  1041.6     .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           958.6  1041.6            90.86   90.86   90.86            .1        .3
 Right Levee     Station=  1045.6      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 8154.85*

 INPUT
 Description:
 Station Elevation Data    num=      12
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ********************************************************************************
    940.6 1345.15   946.6 1344.67   958.6 1344.17     984 1337.77    1000 1337.77
     1004 1336.77    1012 1336.77  1041.6 1344.17  1045.6 1344.17  1049.6 1342.17
   1053.6 1344.17  1060.6 1345.15

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ***********************************************
    940.6     .035   958.6     .027  1041.6     .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           958.6  1041.6            90.86   90.86   90.86            .1        .3
 Right Levee     Station=  1045.6      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel       RS: 8064.00

 INPUT
 Description: Natural Channel Upstream of drop structure 4-8
 Station Elevation Data    num=      12
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ********************************************************************************
    940.6 1345.01   946.6 1344.62   958.6 1344.12     984 1337.72    1000 1337.72
     1004 1336.72    1012 1336.72  1041.6 1344.12  1045.6 1344.12  1049.6 1342.12
   1053.6 1344.12  1060.6 1345.01

 Manning's n Values        num=       3
      Sta   n Val     Sta   n Val     Sta   n Val
 ***********************************************
    940.6     .035   958.6     .027  1041.6     .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6               1       1       1             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8063.00

INPUT
Description: Upstream riprap area of drop structure 4-8
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1345.01   946.6 1344.62   958.6 1344.12     984 1337.72    1000 1337.72
    1004 1336.72    1012 1336.72  1041.6 1344.12  1045.6 1344.12  1049.6 1342.12
  1053.6 1344.12  1060.6 1345.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6               20      20      20             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 8043

INPUT
Description: Upstream of drop structure 4-8
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1345   946.6 1344.61   958.6 1344.11     984 1337.71    1000 1337.71
    1004 1336.71    1012 1336.71  1041.6 1344.11  1045.6 1344.11  1049.6 1342.11
  1053.6 1344.11  1060.6    1345

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6               50      50      50             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 7993

INPUT
Description: Downstream of drop structure 4-8
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1344   946.6 1341.59   958.6 1341.09     984 1334.69    1000 1334.69
    1004 1333.69    1012 1333.69  1041.6 1341.09  1045.6 1341.09  1049.6 1339.09
  1053.6 1341.09  1060.6    1344

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6               10      10      10             .1       .3
```

```
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 7983

INPUT
Description: Downstream riprap area of drop structure 4-8
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1344   946.6 1341.59   958.6 1341.09     984 1334.69    1000 1334.69
    1004 1333.69    1012 1333.69  1041.6 1341.09  1045.6 1341.09  1049.6 1339.09
  1053.6 1341.09  1060.6    1344

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6                1       1       1              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 7982.00

INPUT
Description: Natural Channel Downstream of drop structure 4-8
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1344   946.6 1341.59   958.6 1341.09     984 1334.69    1000 1334.69
    1004 1333.69    1012 1333.69  1041.6 1341.09  1045.6 1341.09  1049.6 1339.09
  1053.6 1341.09  1060.6    1344

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6                94      94      94              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 7888.*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1343.43   946.6 1341.55   958.6 1341.05     984 1334.65    1000 1334.65
    1004 1333.65    1012 1333.65  1041.6 1341.05  1045.6 1341.05  1049.6 1339.05
  1053.6 1341.05  1060.6  1343.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6                94      94      94              .1       .3
Right Levee     Station=  1045.6      Elevation=
```

```
CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7794.*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1342.87   946.6 1341.52   958.6 1341.02     984 1334.62    1000 1334.62
    1004 1333.62    1012 1333.62  1041.6 1341.02  1045.6 1341.02  1049.6 1339.02
  1053.6 1341.02  1060.6  1342.2

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6              94       94      94             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7700

INPUT
Description: End of Sheet 14
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6  1342.3   946.6 1341.48   958.6 1340.98     984 1334.58    1000 1334.58
    1004 1333.58    1012 1333.58  1041.6 1340.98  1045.6 1340.98  1049.6 1338.98
  1053.6 1340.98  1060.6  1341.3

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6              99.2     99.2    99.2             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7600.8*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1342.24   946.6 1341.42   958.6 1340.92     984 1334.52    1000 1334.52
    1004 1333.52    1012 1333.52  1041.6 1340.92  1045.6 1340.92  1049.6 1338.92
  1053.6 1340.92  1060.6 1341.24

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6              99.2     99.2    99.2             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7501.6*

INPUT
Description:
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1342.18   946.6 1341.36   958.6 1340.86     984 1334.46    1000 1334.46
    1004 1333.46    1012 1333.46  1041.6 1340.86  1045.6 1340.86  1049.6 1338.86
  1053.6 1340.86  1060.6 1341.18

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             99.2    99.2    99.2             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7402.4*

INPUT
Description:
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1342.13   946.6 1341.31   958.6 1340.81     984 1334.41    1000 1334.41
    1004 1333.41    1012 1333.41  1041.6 1340.81  1045.6 1340.81  1049.6 1338.81
  1053.6 1340.81  1060.6 1341.13

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             99.2    99.2    99.2             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7303.2*

INPUT
Description:
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1342.07   946.6 1341.25   958.6 1340.75     984 1334.35    1000 1334.35
    1004 1333.35    1012 1333.35  1041.6 1340.75  1045.6 1340.75  1049.6 1338.75
  1053.6 1340.75  1060.6 1341.07

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             99.2    99.2    99.2             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
```

```
REACH: Main Channel        RS: 7204.00

INPUT
Description: Natural Channel Upstream of Drop structure 4-7
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1342.01   946.6 1341.19   958.6 1340.69     984 1334.29    1000 1334.29
    1004 1333.29    1012 1333.29  1041.6 1340.69  1045.6 1340.69  1049.6 1338.69
  1053.6 1340.69  1060.6 1341.01

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                1       1       1              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7203.00

INPUT
Description: Upstream riprap area of Drop structure 4-7
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1342.01   946.6 1341.19   958.6 1340.69     984 1334.29    1000 1334.29
    1004 1333.29    1012 1333.29  1041.6 1340.69  1045.6 1340.69  1049.6 1338.69
  1053.6 1340.69  1060.6 1341.01

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6               20      20      20              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7183

INPUT
Description: Upstream of Drop structure 4-7
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1342   946.6 1341.18   958.6 1340.68     984 1334.28    1000 1334.28
    1004 1333.28    1012 1333.28  1041.6 1340.68  1045.6 1340.68  1049.6 1338.68
  1053.6 1340.68  1060.6    1341

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6               50      50      50              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7133
```

```
INPUT
Description: Downstream of Drop structure 4-7
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1340   946.6 1338.16   958.6 1337.66     984 1331.26    1000 1331.26
    1004 1330.26    1012 1330.26  1041.6 1337.66  1045.6 1337.66  1049.6 1335.66
  1053.6 1337.66  1060.6    1340

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                 10       10       10              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7123.00

INPUT
Description: Downstream riprap area of Drop structure 4-7
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1340   946.6 1338.16   958.6 1337.66     984 1331.26    1000 1331.26
    1004 1330.26    1012 1330.26  1041.6 1337.66  1045.6 1337.66  1049.6 1335.66
  1053.6 1337.66  1060.6    1340

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                  1        1        1              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7122.00

INPUT
Description: Natural channel Downstream of Drop structure 4-7
Station Elevation Data     num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1340   946.6 1338.16   958.6 1337.66     984 1331.26    1000 1331.26
    1004 1330.26    1012 1330.26  1041.6 1337.66  1045.6 1337.66  1049.6 1335.66
  1053.6 1337.66  1060.6    1340

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                 84.4     84.4     84.4              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 7037.6*

INPUT
Description:
```

```
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6  1339.8   946.6 1338.12   958.6 1337.62     984 1331.22    1000 1331.22
    1004 1330.22    1012 1330.22  1041.6 1337.62  1045.6 1337.62  1049.6 1335.62
  1053.6 1337.62  1060.6  1339.8

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             84.4    84.4    84.4              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 6953.2*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6  1339.6   946.6 1338.09   958.6 1337.59     984 1331.19    1000 1331.19
    1004 1330.19    1012 1330.19  1041.6 1337.59  1045.6 1337.59  1049.6 1335.59
  1053.6 1337.59  1060.6  1339.6

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             84.4    84.4    84.4              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 6868.8*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6  1339.4   946.6 1338.05   958.6 1337.55     984 1331.15    1000 1331.15
    1004 1330.15    1012 1330.15  1041.6 1337.55  1045.6 1337.55  1049.6 1335.55
  1053.6 1337.55  1060.6  1339.4

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             84.4    84.4    84.4              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 6784.4*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
**********************************************************************************
   940.6  1339.2   946.6 1338.02   958.6 1337.52     984 1331.12    1000 1331.12
    1004 1330.12    1012 1330.12  1041.6 1337.52  1045.6 1337.52  1049.6 1335.52
  1053.6 1337.52  1060.6  1339.2

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   940.6     .035   958.6     .027  1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          958.6  1041.6             84.4    84.4    84.4              .1        .3
Right Levee      Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 6700

INPUT
Description: End of Sheet 13
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   940.6     1339   946.6 1337.98   958.6 1337.48     984 1331.08    1000 1331.08
    1004 1330.08    1012 1330.08  1041.6 1337.48  1045.6 1337.48  1049.6 1335.48
  1053.6 1337.48  1060.6    1339

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   940.6     .035   958.6     .027  1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          958.6  1041.6             100     100     100               .1        .3
Right Levee      Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 6600.*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   940.6  1338.9   946.6 1337.93   958.6 1337.43     984 1331.03    1000 1331.03
    1004 1330.03    1012 1330.03  1041.6 1337.43  1045.6 1337.43  1049.6 1335.43
  1053.6 1337.43  1060.6  1338.9

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   940.6     .035   958.6     .027  1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          958.6  1041.6             100     100     100               .1        .3
Right Levee      Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 6500.*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************************
   940.6  1338.8   946.6 1337.88   958.6 1337.38     984 1330.98    1000 1330.98
```

```
     1004 1329.98     1012 1329.98  1041.6 1337.38  1045.6 1337.38  1049.6 1335.38
   1053.6 1337.38  1060.6  1338.8

 Manning's n Values          num=       3
      Sta   n Val      Sta   n Val      Sta   n Val
 ***********************************************
    940.6    .035   958.6    .027  1041.6    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
           958.6  1041.6              100     100     100              .1        .3
 Right Levee     Station=  1045.6      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel        RS: 6400.*

 INPUT
 Description:
 Station Elevation Data     num=      12
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ***********************************************************************************
    940.6  1338.7   946.6 1337.83   958.6 1337.33     984 1330.93    1000 1330.93
     1004 1329.93    1012 1329.93  1041.6 1337.33  1045.6 1337.33  1049.6 1335.33
   1053.6 1337.33  1060.6  1338.7

 Manning's n Values          num=       3
      Sta   n Val      Sta   n Val      Sta   n Val
 ***********************************************
    940.6    .035   958.6    .027  1041.6    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
           958.6  1041.6              100     100     100              .1        .3
 Right Levee     Station=  1045.6      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel        RS: 6300.*

 INPUT
 Description:
 Station Elevation Data     num=      12
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ***********************************************************************************
    940.6  1338.6   946.6 1337.78   958.6 1337.28     984 1330.88    1000 1330.88
     1004 1329.88    1012 1329.88  1041.6 1337.28  1045.6 1337.28  1049.6 1335.28
   1053.6 1337.28  1060.6  1338.6

 Manning's n Values          num=       3
      Sta   n Val      Sta   n Val      Sta   n Val
 ***********************************************
    940.6    .035   958.6    .027  1041.6    .035

 Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
           958.6  1041.6              100     100     100              .1        .3
 Right Levee     Station=  1045.6      Elevation=

 CROSS SECTION


 RIVER: Rittenhouse Chan
 REACH: Main Channel        RS: 6200.*

 INPUT
 Description:
 Station Elevation Data     num=      12
      Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
 ***********************************************************************************
    940.6  1338.5   946.6 1337.73   958.6 1337.23     984 1330.83    1000 1330.83
     1004 1329.83    1012 1329.83  1041.6 1337.23  1045.6 1337.23  1049.6 1335.23
   1053.6 1337.23  1060.6  1338.5
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6              100     100     100              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 6100.*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*******************************************************************************
   940.6  1338.4   946.6 1337.68   958.6 1337.18     984 1330.78    1000 1330.78
    1004 1329.78    1012 1329.78  1041.6 1337.18  1045.6 1337.18  1049.6 1335.18
  1053.6 1337.18  1060.6  1338.4

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6              100     100     100              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 6000.*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*******************************************************************************
   940.6  1338.3   946.6 1337.63   958.6 1337.13     984 1330.73    1000 1330.73
    1004 1329.73    1012 1329.73  1041.6 1337.13  1045.6 1337.13  1049.6 1335.13
  1053.6 1337.13  1060.6  1338.3

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6              100     100     100              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 5900.*

INPUT
Description:
Station Elevation Data     num=       12
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*******************************************************************************
   940.6  1338.2   946.6 1337.58   958.6 1337.08     984 1330.68    1000 1330.68
    1004 1329.68    1012 1329.68  1041.6 1337.08  1045.6 1337.08  1049.6 1335.08
  1053.6 1337.08  1060.6  1338.2

Manning's n Values          num=        3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6              100     100     100              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5800.*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
   940.6  1338.1   946.6 1337.53   958.6 1337.03     984 1330.63    1000 1330.63
    1004 1329.63    1012 1329.63  1041.6 1337.03  1045.6 1337.03  1049.6 1335.03
  1053.6 1337.03  1060.6  1338.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6              100     100     100              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5700

INPUT
Description: End of Sheet 12
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
   940.6     1338   946.6 1337.48   958.6 1336.98     984 1330.58    1000 1330.58
    1004 1329.58    1012 1329.58  1041.6 1336.98  1045.6 1336.98  1049.6 1334.98
  1053.6 1336.98  1060.6    1338

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6               16      16      16              .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5684.00

INPUT
Description: Natural Channel Upstream of drop structure 4-6
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**********************************************************************************
   940.6 1338.01   946.6 1337.43   958.6 1336.93     984 1330.53    1000 1330.53
    1004 1329.53    1012 1329.53  1041.6 1336.93  1045.6 1336.93  1049.6 1334.93
  1053.6 1336.93  1060.6 1338.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
```

```
   940.6     .035   958.6     .027  1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                1       1       1             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5683.00

INPUT
Description: Upstream riprap area of drop structure 4-6
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6 1338.01   946.6 1337.43   958.6 1336.93     984 1330.53    1000 1330.53
    1004 1329.53    1012 1329.53  1041.6 1336.93  1045.6 1336.93  1049.6 1334.93
  1053.6 1336.93  1060.6 1338.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6     .035   958.6     .035  1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                20      20      20             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5663

INPUT
Description: Upstream of drop structure 4-6
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1338   946.6 1337.42   958.6 1336.92     984 1330.52    1000 1330.52
    1004 1329.52    1012 1329.52  1041.6 1336.92  1045.6 1336.92  1049.6 1334.92
  1053.6 1336.92  1060.6    1338

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6     .035   958.6     .035  1041.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6                50      50      50             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5613

INPUT
Description: Downstream of drop structure 4-6
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1335   946.6  1334.4   958.6  1333.9     984  1327.5    1000  1327.5
    1004  1326.5    1012  1326.5  1041.6  1333.9  1045.6  1333.9  1049.6  1331.9
  1053.6  1333.9  1060.6    1335

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6     .035   958.6     .035  1041.6     .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6              10      10      10            .1        .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5603.00

INPUT
Description: Downstream riprap area of drop structure 4-6
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1335   946.6  1334.4   958.6  1333.9     984  1327.5    1000  1327.5
    1004  1326.5    1012  1326.5  1041.6  1333.9  1045.6  1333.9  1049.6  1331.9
  1053.6  1333.9  1060.6    1335

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .035  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6              1       1       1            .1        .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5602.00

INPUT
Description: Natural Channel Downstream of drop structure 4-6
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1335   946.6  1334.4   958.6  1333.9     984  1327.5    1000  1327.5
    1004  1326.5    1012  1326.5  1041.6  1333.9  1045.6  1333.9  1049.6  1331.9
  1053.6  1333.9  1060.6    1335

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             83.5    83.5    83.5            .1        .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5518.5*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1335   946.6 1334.36   958.6 1333.86     984 1327.46    1000 1327.46
    1004 1326.46    1012 1326.46  1041.6 1333.86  1045.6 1333.86  1049.6 1331.86
  1053.6 1333.86  1060.6    1335

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          958.6  1041.6             83.5    83.5    83.5            .1        .3
```

```
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5435.*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1335   946.6 1334.33   958.6 1333.83     984 1327.43    1000 1327.43
    1004 1326.43    1012 1326.43  1041.6 1333.83  1045.6 1333.83  1049.6 1331.83
  1053.6 1333.83  1060.6    1335

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             83.5    83.5    83.5             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5351.5*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1335   946.6 1334.29   958.6 1333.79     984  1327.4    1000  1327.4
    1004  1326.4    1012  1326.4  1041.6 1333.79  1045.6 1333.79  1049.6 1331.79
  1053.6 1333.79  1060.6    1335

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             83.5    83.5    83.5             .1       .3
Right Levee     Station=  1045.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 5268.*

INPUT
Description:
Station Elevation Data    num=      12
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   940.6    1335   946.6 1334.26   958.6 1333.76     984 1327.36    1000 1327.36
    1004 1326.36    1012 1326.36  1041.6 1333.76  1045.6 1333.76  1049.6 1331.76
  1053.6 1333.76  1060.6    1335

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   940.6    .035   958.6    .027  1041.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         958.6  1041.6             83.5    83.5    83.5             .1       .3
Right Levee     Station=  1045.6      Elevation=
```

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 5184.5*

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
940.6	1335	946.6	1334.22	958.6	1333.72	984	1327.33	1000	1327.33
1004	1326.33	1012	1326.33	1041.6	1333.72	1045.6	1333.72	1049.6	1331.72
1053.6	1333.72	1060.6	1335						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
940.6	.035	958.6	.027	1041.6	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
958.6	1041.6	83.5	83.5	83.5	.1	.3

Right Levee Station= 1045.6 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 5101

INPUT
Description: Beginning of Reach 4
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
940.6	1335	946.6	1334.19	958.6	1333.69	984	1327.29	1000	1327.29
1004	1326.29	1012	1326.29	1041.6	1333.69	1045.6	1333.69	1049.6	1331.69
1053.6	1333.69	1060.6	1335						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
940.6	.035	958.6	.027	1041.6	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
958.6	1041.6	1	1	1	.1	.3

Right Levee Station= 1045.6 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 5100

INPUT
Description: End of Reach 3
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
941	1335.05	947	1334.05	959	1333.69	985	1327.29	1000	1327.29
1004	1326.29	1012	1326.29	1016	1327.29	1041.6	1333.69	1053.6	1333.69
1060.6	1334								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
941	.035	959	.027	1041.6	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
959	1041.6	100	100	185	.1	.3

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 5028

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
849.66	1337.3	890.75	1335.94	945.27	1333.87	946.71	1333.93	948.17	1333.87
948.73	1333.9	961.01	1330.95	976.07	1327.4	992	1327.4	996	1326.4
1000	1326.4	1004	1326.4	1008	1327.4	1026.53	1327.35	1074.26	1327.47
1076.09	1327.7	1114.04	1332.54	1139.01	1335.85				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
849.66	.035	890.75	.027	1139.01	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
890.75	1139.01	70	70	70	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
849.66	945.27	1337.76	F
1050	1139.01	1337.76	F

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 4958

INPUT
Description: Cross-Section 5000
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
849.68	1337	875	1336.16	920.74	1334.65	939.56	1333.93	943.29	1334.09
947.04	1333.94	948.49	1333.9	967.98	1329.28	975.68	1327.34	981.08	1327.34
989.19	1327.34	990.43	1327.34	992	1327.34	996	1326.34	1000	1326.34
1004	1326.34	1008	1327.34	1021.52	1327.22	1054.45	1327.22	1132.8	1327.41
1163.04	1327.4	1178.27	1329.42	1226	1336.15				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
849.68	.035	875	.027	1226	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
875	1226	70	70	70	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
849.68	943.29	1337.76	F
1100	1226	1337.76	F

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 4888

INPUT
Description: Cross-Section 4862.65
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
840.53	1336.6	843.5	1336.72	875	1335.68	890.56	1335.17	894.89	1335.11
931.39	1334.05	933.14	1334.1	936.4	1334.25	941.4	1334.05	942.12	1333.99
942.68	1333.9	952.08	1331.51	961.22	1329.08	968.74	1327.15	987.54	1326.99
989.33	1327	992.1	1326.38	992.4	1326.32	1000	1326.26	1003.06	1326.25
1003.16	1326.3	1005.8	1327.04	1026.47	1327.09	1110.38	1327.1	1150.78	1327.35
1175.98	1333.82	1240.98	1335.45						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
*********************************************
  840.53    .035     875    .027 1175.98    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           875 1175.98               68      68      72             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  840.53   936.4 1337.76       F
    1100 1240.98 1337.76       F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4820

INPUT
Description: Cross-Section 4845.83
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  851.69  1336.3  869.06 1336.07     885 1335.57  909.78 1334.79  933.23  1334.1
  935.07 1334.17  938.23  1334.3  940.09 1334.22  943.23  1334.1  943.36 1333.97
  944.21 1333.91  958.74  1330.2     959 1330.14  970.14  1327.4  990.61 1327.18
   991.5 1327.02  994.23  1326.6    1000 1326.25 1007.86 1326.21 1009.71 1326.78
  1010.8 1327.04 1089.98 1327.02 1115.72 1333.72 1180.72 1335.35

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
  851.69    .035     885    .027 1115.72    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           885 1115.72              118      84      51             .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  851.69  938.23 1337.76       F
    1066 1180.72 1337.76       F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4736

INPUT
Description: New Topo - (Includes Pecos Rd.) - Just Upstream of Pecos Rd.
Station Elevation Data    num=      21
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     775    1336     780    1335     785    1334  884.86  1334.3  895.78 1334.19
  902.69 1334.43  907.33 1334.33  909.61  1334.3  911.77 1333.87  912.42 1333.81
  925.13 1331.54   949.9    1327  977.62 1327.04  987.55 1327.12  996.46 1326.43
    1000 1326.05 1000.32 1326.18 1002.81    1327 1082.48 1326.96  1108.1 1333.62
  1173.1 1335.25

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     775    .035     780    .027  1108.1    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           780  1108.1               30      30      30             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     775  902.69 1337.76       F
    1040  1173.1 1337.76       F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4706
```

```
INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************
  953.16 1334.74  953.16 1326.04 1016.84 1326.04 1016.84 1334.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  953.16     .035  953.16     .027 1016.84     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        953.16 1016.84              160     160     160              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  952.91   957.6 1334.91       F
   963.6     984 1334.91       F

CULVERT


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4640

INPUT
Description: Culvert at Pecos Rd [3 - 10' x 5', L=142']
Distance from Upstream XS =       7
Deck/Roadway Width        =     130
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=       3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
  953.16 1335.39            1000 1335.19            1017 1334.99

Upstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************
  953.16 1334.74  953.16 1326.04 1016.84 1326.04 1016.84 1334.74

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  953.16     .035  953.16     .027 1016.84     .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
        953.16 1016.84              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  952.91   957.6 1334.91       F
   963.6     984 1334.91       F

Downstream  Deck/Roadway Coordinates
    num=       3
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************************************
  953.16 1335.39            1000 1335.19            1017 1334.99

Downstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************
  953.16 1334.75  953.16 1325.98 1016.84 1325.98 1016.84 1334.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  953.16     .027  953.16     .027 1016.84     .027

Bank Sta: Left   Right    Coeff Contr.   Expan.
        953.16 1016.84              .3       .5
Ineffective Flow     num=       2
```

```
   Sta L   Sta R    Elev  Permanent
  952.91   957.6 1334.94       F
   963.6     984 1334.94       F

Upstream Embankment side slope              =       3 horiz. to 1.0 vertical
Downstream Embankment side slope            =       3 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 =  2

Culvert Name     Shape      Rise    Span
Culvert #2      Circular       6
FHWA Chart # 1 - Concrete Pipe Culvert
FHWA Scale # 1 - Square edge entrance with headwall
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                 1     158     .013     .013        0                   .5                 1
Upstream   Elevation =  1326.04
           Centerline Station =  960.6
Downstream Elevation =  1325.98
           Centerline Station =  960.6

Culvert Name     Shape      Rise    Span
Culvert #1           Box       5      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     158     .013     .013        0                   .4                 1
Number of Barrels =  3
Upstream   Elevation =  1326.04
Centerline Stations
    Sta.    Sta.    Sta.
  989.08    1000 1010.92
Downstream Elevation =  1325.98
Centerline Stations
    Sta.    Sta.    Sta.
  989.08    1000 1010.92

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4562

INPUT
Description:
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************
  953.16 1334.75  953.16 1325.98 1016.84 1325.98 1016.84 1334.75

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  953.16    .027  953.16    .027 1016.84    .027

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        953.16 1016.84               25      25      25              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  952.91   957.6 1334.94       F
   963.6     984 1334.94       F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4521
```

```
INPUT
Description: New Topo - (Includes Pecos Rd.) - Just Downstream of Pecos Rd.
Station Elevation Data     num=      11
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  900.04 1333.38     925  1326.9     992 1326.98     996 1325.98    1004 1325.98
    1008 1326.98 1047.05 1326.98 1060.94  1331.1 1073.76 1333.11 1075.42 1333.59
 1079.69 1333.57

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
  900.04    .035  900.04    .027 1075.42    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        900.04 1075.42               60      95     127              .3       .5
Ineffective Flow     num=       1
   Sta L   Sta R    Elev  Permanent
  900.04     970 1334.76        F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 4426

INPUT
Description: New Topo - (Includes Pecos Rd.)
Station Elevation Data     num=      28
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   856.8 1333.47   882.3  1326.9  970.78 1326.92  987.26 1326.92     992 1326.92
     996 1325.92    1000 1325.92 1003.31 1325.92    1008 1326.92 1018.44 1327.29
 1022.63 1327.37 1029.39 1327.52 1031.15  1327.6 1031.65 1329.62 1032.57 1333.41
 1034.59 1333.06 1037.09  1332.6 1057.88  1331.3 1062.43 1330.34 1068.17 1329.62
 1069.58 1329.45 1075.48 1329.92 1079.21    1331 1096.25 1333.04 1109.28 1334.11
 1136.81 1336.33 1147.94 1337.52 1162.97  1339.8

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   856.8    .035   856.8    .027 1032.57     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         856.8 1032.57               43      60      66              .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   856.8     940 1334.76        F
 1032.57 1162.97 1334.76        F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 4365

INPUT
Description: Upstream from Power Road. - curved area - New Topo (Includes Pecos
             Rd.)
Station Elevation Data     num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  833.71 1333.57  859.51  1326.9  870.26 1326.93  971.97  1326.9     992  1326.9
     996  1325.9    1000  1325.9    1004  1325.9    1008 1326.79 1008.36    1327
 1009.06 1326.99 1015.53 1327.25 1030.74  1327.9 1031.13  1327.9 1031.15 1327.96
 1031.57 1328.79 1032.77 1331.25 1034.96    1331 1036.65 1330.86 1037.92 1330.73
 1039.61 1330.52 1040.16  1330.4 1040.57 1330.36 1040.86  1330.3 1041.06 1330.25
 1041.18  1330.2 1041.24  1330.2 1041.33 1329.87 1046.42 1329.93 1051.42 1330.41
 1057.21 1331.03 1075.17  1333.4 1089.38 1335.12 1098.53 1335.92 1126.67 1338.06
 1133.23 1338.83

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
```

```
  833.71    .035  833.71    .027 1032.77     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        833.71 1032.77              51      63      70            .1        .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
  833.71     935 1334.76        F
 1032.77 1133.23 1334.76        F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4302

INPUT
Description: Revised Topo (Includes Pecos Rd.)
Station Elevation Data    num=      27
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   822.1 1333.68   847.3  1327.2  924.63 1326.84  977.68 1326.84  985.03 1326.84
     992 1326.84     996 1325.84    1000 1325.84    1004 1325.84    1008 1326.78
 1029.67 1328.07  1033.8 1328.19 1036.16 1328.27 1037.51  1330.5 1037.96 1331.28
 1038.21 1330.52 1051.33  1330.7 1051.94  1330.8 1057.82 1331.39  1078.6 1332.64
 1087.81 1333.27 1091.73 1333.52 1095.09  1333.5 1147.94 1336.55 1165.02 1337.65
 1192.19 1339.12 1195.25 1339.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   822.1    .035   822.1    .027 1037.96     .05

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         822.1 1037.96             10.18   10.18   10.18            .1        .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
   822.1     960 1334.76        F
 1037.96 1195.25 1334.76        F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4291.82

INPUT
Description: Beginning of Reach 2 - upstream of Power Rd.
Station Elevation Data    num=       8
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
     973 1334.43  989.33 1325.84    1000 1325.84    1008 1325.84    1009 1325.84
 1043.16 1325.84 1043.16 1334.43 1049.16 1334.76

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     973    .035     973    .035 1043.16    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            973 1043.16             26.82    26.8   26.82            .1        .3

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4265

INPUT
Description: Just upstream of culverts at Power Road.
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  985.33 1334.82  985.33 1325.84    1008 1325.84    1009 1325.84    1044 1325.84
    1044 1334.82
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  985.33    .035  985.33    .035    1044    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        985.33    1044               144     144     144              .6       .8
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
  985.33  985.33 1334.82        F
    1044    1044 1334.82        F

MULTIPLE OPENING


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 4213.18

INPUT
Description: Culverts at Power Rd.  3-6'x6'x79' new and 3-10'x4'79 old
             (Extended Culverts 50 ' upstream and 12' downstream)
Distance from Upstream XS =   21.87
Deck/Roadway Width        =   105.5
Weir Coefficient          =     2.6
Upstream  Deck/Roadway Coordinates
    num=        2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
***********************************************
     984    1335            1045    1335

Upstream Bridge Cross Section Data
Station Elevation Data    num=        6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  985.33 1334.82  985.33 1325.84    1008 1325.84    1009 1325.84    1044 1325.84
    1044 1334.82

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  985.33    .035  985.33    .035    1044    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
        985.33    1044              .6       .8
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
  985.33  985.33 1334.82        F
    1044    1044 1334.82        F

Downstream  Deck/Roadway Coordinates
    num=        2
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
***********************************************
     984    1335            1045    1335

Downstream Bridge Cross Section Data
Station Elevation Data    num=        4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
***************************************************************
  985.33 1334.56  985.33 1325.58    1044 1325.58    1044 1334.56

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
  985.33    .035  985.33    .035    1044    .035

Bank Sta: Left   Right    Coeff Contr.   Expan.
        985.33    1044              .6       .8
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
  985.33  985.33 1334.56        F
    1044    1044 1334.56        F
```

```
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         =
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
Power - new          Box       6       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
                  1     142     .012     .012        0                  .4                 1
Number of Barrels =  3
Upstream   Elevation =  1325.9
Centerline Stations
    Sta.    Sta.    Sta.
  989.83  997.33 1004.83
Downstream Elevation =  1325.52
Centerline Stations
    Sta.    Sta.    Sta.
  989.83  997.33 1004.83

Culvert Name     Shape      Rise    Span
Power - old          Box       6      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     142     .012     .012        0                  .4                 1
Number of Barrels =  3
Upstream   Elevation =  1325.9
Centerline Stations
    Sta.    Sta.    Sta.
  1014.5    1026  1037.5
Downstream Elevation =  1325.52
Centerline Stations
    Sta.    Sta.    Sta.
  1014.5    1026  1037.5

Multiple Opening Stagnation Limits
*****************************************************************
*              *       Upstream        *      Downstream       *
*****************************************************************
* Opening Type *  Sta. Left* Sta. Right*  Sta. Left* Sta. Right*
*****************************************************************
*Culvert Group *        985*       1010*        985*       1010*
*Culvert Group *       1006*       1045*       1006*       1045*
*****************************************************************

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 4121

INPUT
Description: Just downstream of culverts at Power Road. (before drop) Moved
             D.S. 12' to account for widening of Power Rd.
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************
  985.33 1334.56  985.33 1325.58    1044 1325.58    1044 1334.56

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  985.33    .035  985.33    .035    1044    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
        985.33    1044              2.48    2.48    2.48              .6        .8
Ineffective Flow     num=        2
   Sta L   Sta R    Elev  Permanent
  985.33  985.33 1334.56        F
    1044    1044 1334.56        F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 4118.5

INPUT
Description: Just downstream of drop at Power Road. Extended D.S. 12' to
             account for Widening of Power Rd.
Station Elevation Data    num=        4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************
  985.33 1334.56  985.33 1322.41    1044 1322.41    1044 1334.56

Manning's n Values        num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  985.33    .035  985.33    .035    1044    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        985.33    1044             19.48   11.07       5              .6       .8

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 4107.43

INPUT
Description: @ 26' downstream from Power Rd.
Station Elevation Data    num=        7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
  972.57  1333.6   977.9 1323.41     996 1323.41    1000 1322.41  1013.3 1322.41
    1032 1323.41  1032.4  1332.4

Manning's n Values        num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  972.57    .035  972.57    .035  1032.4    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        972.57  1032.4              33.1      16     5.3              .6       .8
Ineffective Flow     num=        1
   Sta L   Sta R    Elev  Permanent
  972.57   977.7    1332        F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 4091.43

INPUT
Description: Rip rap area before Power Rd. - 1 x-section downstream
Station Elevation Data    num=        7
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   951.4 1332.65     977  1323.4    1000  1323.4    1004  1322.4    1030  1322.4
    1039 1324.65    1039 1332.65

Manning's n Values        num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   951.4    .035   951.4    .035    1039    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4    1039             29.3      28      28              .1       .3
```

```
Ineffective Flow      num=        1
   Sta L    Sta R     Elev  Permanent
   951.4    977.7     1332        F

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 4063.43

INPUT
Description: End of Reach #1 downstream of drop structure 1-5
Station Elevation Data     num=       13
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*******************************************************************************************
   933.4 1331.13    939.4 1330.29    951.4 1329.79      977 1323.39     1000 1323.39
    1007 1323.39     1010 1322.39     1019 1322.39   1048.6 1329.79   1052.6 1329.79
  1056.6 1327.79   1060.6 1329.79   1068.6 1331.13

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   933.4     .035    951.4     .035   1048.6     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          951.4   1048.6                  1        1        1              .1        .3
Ineffective Flow      num=        2
   Sta L    Sta R     Elev  Permanent
   933.4      977     1330        F
    1037   1068.6     1330        F
Right Levee      Station=  1052.6       Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 4062.43

INPUT
Description: Natural Channel downstream of drop structure 1-5
Station Elevation Data     num=       13
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*******************************************************************************************
   933.4 1331.13    939.4 1330.29    951.4 1329.79      977 1323.39     1000 1323.39
    1007 1323.39     1010 1322.39     1019 1322.39   1048.6 1329.79   1052.6 1329.79
  1056.6 1327.79   1060.6 1329.79   1068.6 1331.13

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   933.4     .035    951.4     .027   1048.6     .035

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          951.4   1048.6                 80.29    80.29    80.29              .1        .3
Right Levee      Station=  1052.6       Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 3982.14*

INPUT
Description:
Station Elevation Data     num=       13
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*******************************************************************************************
   933.4 1331.09    939.4 1330.25    951.4 1329.75      977 1323.35     1000 1323.35
    1007 1323.35     1010 1322.35     1019 1322.35   1048.6 1329.75   1052.6 1329.75
  1056.6 1327.75   1060.6 1329.75   1068.6 1331.09

Manning's n Values         num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
```

```
   933.4     .035    951.4     .027  1048.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             80.29   80.29   80.29              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3901.85*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1331.05   939.4 1330.21   951.4 1329.71     977 1323.31    1000 1323.31
    1007 1323.31    1010 1322.31    1019 1322.31  1048.6 1329.71  1052.6 1329.71
  1056.6 1327.71  1060.6 1329.71  1068.6 1331.05

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4     .035    951.4     .027  1048.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             80.29   80.29   80.29              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3821.57*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1331.01   939.4 1330.17   951.4 1329.67     977 1323.27    1000 1323.27
    1007 1323.27    1010 1322.27    1019 1322.27  1048.6 1329.67  1052.6 1329.67
  1056.6 1327.67  1060.6 1329.67  1068.6 1331.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4     .035    951.4     .027  1048.6     .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             80.29   80.29   80.29              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3741.28*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1330.97   939.4 1330.13   951.4 1329.63     977 1323.23    1000 1323.23
    1007 1323.23    1010 1322.23    1019 1322.23  1048.6 1329.63  1052.6 1329.63
  1056.6 1327.63  1060.6 1329.63  1068.6 1330.97

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4     .035    951.4     .027  1048.6     .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6             80.29   80.29   80.29          .1        .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3661.00

INPUT
Description: Natural Channel Upstream of drop structure 1-4
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1330.93   939.4 1330.09   951.4 1329.59     977 1323.19    1000 1323.19
    1007 1323.19    1010 1322.19    1019 1322.19  1048.6 1329.59  1052.6 1329.59
  1056.6 1327.59  1060.6 1329.59  1068.6 1330.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6                1       1       1          .1        .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3660.00

INPUT
Description: Upstream riprap area of drop structure 1-4
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1330.93   939.4 1330.09   951.4 1329.59     977 1323.19    1000 1323.19
    1007 1323.19    1010 1322.19    1019 1322.19  1048.6 1329.59  1052.6 1329.59
  1056.6 1327.59  1060.6 1329.59  1068.6 1330.93

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6                20      20      20          .1        .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3640.00

INPUT
Description: Upstream of drop structure 1-4
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1330.92   939.4 1330.08   951.4 1329.58     977 1323.18    1000 1323.18
    1007 1323.18    1010 1322.18    1019 1322.18  1048.6 1329.58  1052.6 1329.58
  1056.6 1327.58  1060.6 1329.58  1068.6 1330.92

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6                50      50      50          .1        .3
```

```
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3590.00

INPUT
Description: Downstream of drop structure 1-4
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1329   939.4 1327.06   951.4 1326.56     977 1320.16    1000 1320.16
    1007 1320.16    1010 1319.16    1019 1319.16  1048.6 1326.56  1052.6 1326.56
  1056.6 1324.56  1060.6 1326.56  1068.6    1329

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6               10      10      10              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3580.00

INPUT
Description: Downstream riprap area of drop structure 1-4
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1329   939.4 1327.06   951.4 1326.56     977 1320.16    1000 1320.16
    1007 1320.16    1010 1319.16    1019 1319.16  1048.6 1326.56  1052.6 1326.56
  1056.6 1324.56  1060.6 1326.56  1068.6    1329

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6                1       1       1              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 3579.00

INPUT
Description: Natural channel downstream of drop structure 1-4
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1329   939.4 1327.06   951.4 1326.56     977 1320.16    1000 1320.16
    1007 1320.16    1010 1319.16    1019 1319.16  1048.6 1326.56  1052.6 1326.56
  1056.6 1324.56  1060.6 1326.56  1068.6    1329

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             95.33   95.33   95.33              .1       .3
Right Levee     Station=  1052.6      Elevation=
```

```
CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 3483.66*

INPUT
Description:
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1328.78   939.4 1327.01   951.4 1326.51     977 1320.11    1000 1320.11
    1007 1320.11    1010 1319.11    1019 1319.11  1048.6 1326.51  1052.6 1326.51
  1056.6 1324.51  1060.6 1326.51  1068.6 1328.78

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             95.33   95.33   95.33              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 3388.33*

INPUT
Description:
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1328.56   939.4 1326.96   951.4 1326.46     977 1320.06    1000 1320.06
    1007 1320.06    1010 1319.06    1019 1319.06  1048.6 1326.46  1052.6 1326.46
  1056.6 1324.46  1060.6 1326.46  1068.6 1328.56

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             95.33   95.33   95.33              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 3293.*

INPUT
Description:
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1328.34   939.4 1326.91   951.4 1326.41     977 1320.01    1000 1320.01
    1007 1320.01    1010 1319.01    1019 1319.01  1048.6 1326.41  1052.6 1326.41
  1056.6 1324.41  1060.6 1326.41  1068.6 1328.34

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             95.33   95.33   95.33              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION
```

```
RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 3197.66*

INPUT
Description:
Station Elevation Data     num=       13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1328.12   939.4 1326.86   951.4 1326.36     977 1319.96    1000 1319.96
    1007 1319.96    1010 1318.96    1019 1318.96  1048.6 1326.36  1052.6 1326.36
  1056.6 1324.36  1060.6 1326.36  1068.6 1328.12

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.33   95.33   95.33            .1        .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 3102.33*

INPUT
Description:
Station Elevation Data     num=       13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1327.89   939.4 1326.82   951.4 1326.32     977 1319.92    1000 1319.92
    1007 1319.92    1010 1318.92    1019 1318.92  1048.6 1326.32  1052.6 1326.32
  1056.6 1324.32  1060.6 1326.32  1068.6 1327.89

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.33   95.33   95.33            .1        .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 3007.*

INPUT
Description:
Station Elevation Data     num=       13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1327.67   939.4 1326.77   951.4 1326.27     977 1319.87    1000 1319.87
    1007 1319.87    1010 1318.87    1019 1318.87  1048.6 1326.27  1052.6 1326.27
  1056.6 1324.27  1060.6 1326.27  1068.6 1327.67

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.33   95.33   95.33            .1        .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
```

```
REACH: Main Channel        RS: 2911.66*

INPUT
Description:
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1327.45   939.4 1326.72   951.4 1326.22     977 1319.82    1000 1319.82
    1007 1319.82    1010 1318.82    1019 1318.82  1048.6 1326.22  1052.6 1326.22
  1056.6 1324.22  1060.6 1326.22  1068.6 1327.45

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.33   95.33   95.33             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2816.33*

INPUT
Description:
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1327.23   939.4 1326.67   951.4 1326.17     977 1319.77    1000 1319.77
    1007 1319.77    1010 1318.77    1019 1318.77  1048.6 1326.17  1052.6 1326.17
  1056.6 1324.17  1060.6 1326.17  1068.6 1327.23

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.33   95.33   95.33             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2721.00

INPUT
Description: Natural channel Upstream of drop structure 1-3
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1327.01   939.4 1326.62   951.4 1326.12     977 1319.72    1000 1319.72
    1007 1319.72    1010 1318.72    1019 1318.72  1048.6 1326.12  1052.6 1326.12
  1056.6 1324.12  1060.6 1326.12  1068.6 1327.01

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6               1       1       1             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2720.00
```

```
INPUT
Description: Upstream riprap area of drop structure 1-3
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1327.01   939.4 1326.62   951.4 1326.12     977 1319.72    1000 1319.72
    1007 1319.72    1010 1318.72    1019 1318.72  1048.6 1326.12  1052.6 1326.12
  1056.6 1324.12  1060.6 1326.12  1068.6 1327.01

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6               20      20      20              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2700.00

INPUT
Description: Upstream of drop structure 1-3
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1327   939.4 1326.61   951.4 1326.11     977 1319.71    1000 1319.71
    1007 1319.71    1010 1318.71    1019 1318.71  1048.6 1326.11  1052.6 1326.11
  1056.6 1324.11  1060.6 1326.11  1068.6    1327

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6               55      55      55              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2645.00

INPUT
Description: Downstream of drop structure 1-3
Station Elevation Data     num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1325   939.4 1323.58   951.4 1323.08     977 1316.68    1000 1316.68
    1007 1316.68    1010 1315.68    1019 1315.68  1048.6 1323.08  1052.6 1323.08
  1056.6 1321.08  1060.6 1323.08  1068.6    1325

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6               10      10      10              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2635.00

INPUT
Description: Downstream end of riprap area of drop structure 1-3
```

```
Station Elevation Data     num=       13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1325   939.4 1323.58   951.4 1323.08     977 1316.68    1000 1316.68
    1007 1316.68    1010 1315.68    1019 1315.68  1048.6 1323.08  1052.6 1323.08
  1056.6 1321.08  1060.6 1323.08  1068.6    1325

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6                 1       1       1              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2634.00

INPUT
Description: Natural Channel Downstream of drop structure 1-3
Station Elevation Data     num=       13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1325   939.4 1323.58   951.4 1323.08     977 1316.68    1000 1316.68
    1007 1316.68    1010 1315.68    1019 1315.68  1048.6 1323.08  1052.6 1323.08
  1056.6 1321.08  1060.6 1323.08  1068.6    1325

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6            79.79   79.79   79.79              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2554.20*

INPUT
Description:
Station Elevation Data     num=       13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1325   939.4 1323.54   951.4 1323.04     977 1316.64    1000 1316.64
    1007 1316.64    1010 1315.64    1019 1315.64  1048.6 1323.04  1052.6 1323.04
  1056.6 1321.04  1060.6 1323.04  1068.6    1325

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6            79.79   79.79   79.79              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel        RS: 2474.41*

INPUT
Description:
Station Elevation Data     num=       13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
*****************************************************************************
   933.4    1325   939.4  1323.5   951.4    1323     977  1316.6    1000  1316.6
    1007  1316.6    1010  1315.6    1019  1315.6  1048.6    1323  1052.6    1323
  1056.6    1321  1060.6    1323  1068.6    1325

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             79.79   79.79   79.79              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 2394.62*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   933.4    1325   939.4 1323.46   951.4 1322.96     977 1316.56    1000 1316.56
    1007 1316.56    1010 1315.56    1019 1315.56  1048.6 1322.96  1052.6 1322.96
  1056.6 1320.96  1060.6 1322.96  1068.6    1325

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             79.79   79.79   79.79              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 2314.84

INPUT
Description: End of curved section
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   933.4    1325   939.4 1323.42   951.4 1322.92     977 1316.52    1000 1316.52
    1007 1316.52    1010 1315.52    1019 1315.52  1048.6 1322.92  1052.6 1322.92
  1056.6 1320.92  1060.6 1322.92  1068.6    1325

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6             99.24   97.95   98.93              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 2216.89*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   933.4 1324.67   939.4 1323.37   951.4 1322.87     977 1316.47    1000 1316.47
```

```
    1007 1316.47    1010 1315.47    1019 1315.47  1048.6 1322.87  1052.6 1322.87
  1056.6 1320.87  1060.6 1322.87  1068.6 1324.67

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            99.24   97.95   98.93            .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 2118.94*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1324.34   939.4 1323.32   951.4 1322.82     977 1316.42    1000 1316.42
    1007 1316.42    1010 1315.42    1019 1315.42  1048.6 1322.82  1052.6 1322.82
  1056.6 1320.82  1060.6 1322.82  1068.6 1324.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            99.24   97.95   98.93            .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 2021.00

INPUT
Description: Natural Channel Upstream of drop structure 1-2
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1324.01   939.4 1323.27   951.4 1322.77     977 1316.37    1000 1316.37
    1007 1316.37    1010 1315.37    1019 1315.37  1048.6 1322.77  1052.6 1322.77
  1056.6 1320.77  1060.6 1322.77  1068.6 1324.01

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6               1       1       1            .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 2020.00

INPUT
Description: Upstream riprap area of drop structure 1-2
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1324.01   939.4 1323.27   951.4 1322.77     977 1316.37    1000 1316.37
    1007 1316.37    1010 1315.37    1019 1315.37  1048.6 1322.77  1052.6 1322.77
  1056.6 1320.77  1060.6 1322.77  1068.6 1324.01
```

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6               18      20      22             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 2000.00

INPUT
Description: Upstream of drop structure 1-2
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1324   939.4 1323.26   951.4 1322.76     977 1316.36    1000 1316.36
    1007 1316.36    1010 1315.36    1019 1315.36  1048.6 1322.76  1052.6 1322.76
  1056.6 1320.76  1060.6 1322.76  1068.6    1324

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6               54      55      57             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1945.00

INPUT
Description: Downstream of drop structure 1-2
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1322   939.4 1321.23   951.4 1320.73     977 1314.33    1000 1314.33
    1007 1314.33    1010 1313.33    1019 1313.33  1048.6 1320.73  1052.6 1320.73
  1056.6 1318.73  1060.6 1320.73  1068.6    1322

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         951.4  1048.6               10      10      10             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1935.00

INPUT
Description: Downstream riprap area of drop structure 1-2
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1322   939.4 1321.23   951.4 1320.73     977 1314.33    1000 1314.33
    1007 1314.33    1010 1313.33    1019 1313.33  1048.6 1320.73  1052.6 1320.73
  1056.6 1318.73  1060.6 1320.73  1068.6    1322

Manning's n Values        num=       3
```

```
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   933.4    .035   951.4    .035  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6                1       1       1             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1934.00

INPUT
Description: Natural Channel Downstream of drop structure 1-2
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4    1322   939.4 1321.23   951.4 1320.73     977 1314.33    1000 1314.33
    1007 1314.33    1010 1313.33    1019 1313.33  1048.6 1320.73  1052.6 1320.73
  1056.6 1318.73  1060.6 1320.73  1068.6    1322

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.52   94.92   94.29             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1839.08*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1321.88   939.4 1321.18   951.4 1320.68     977 1314.28    1000 1314.28
    1007 1314.28    1010 1313.28    1019 1313.28  1048.6 1320.68  1052.6 1320.68
  1056.6 1318.68  1060.6 1320.68  1068.6 1321.88

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.52   94.92   94.29             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1744.16*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1321.76   939.4 1321.13   951.4 1320.63     977 1314.23    1000 1314.23
    1007 1314.23    1010 1313.23    1019 1313.23  1048.6 1320.63  1052.6 1320.63
  1056.6 1318.63  1060.6 1320.63  1068.6 1321.76

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
**********************************************
```

```
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.52   94.92   94.29            .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1649.24*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   933.4 1321.64   939.4 1321.08   951.4 1320.58     977 1314.19    1000 1314.19
    1007 1314.19    1010 1313.19    1019 1313.19  1048.6 1320.58  1052.6 1320.58
  1056.6 1318.58  1060.6 1320.58  1068.6 1321.64

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.52   94.92   94.29            .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1554.32*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   933.4 1321.52   939.4 1321.04   951.4 1320.54     977 1314.14    1000 1314.14
    1007 1314.14    1010 1313.14    1019 1313.14  1048.6 1320.54  1052.6 1320.54
  1056.6 1318.54  1060.6 1320.54  1068.6 1321.52

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            95.52   94.92   94.29            .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1459.40*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*****************************************************************************
   933.4  1321.4   939.4 1320.99   951.4 1320.49     977 1314.09    1000 1314.09
    1007 1314.09    1010 1313.09    1019 1313.09  1048.6 1320.49  1052.6 1320.49
  1056.6 1318.49  1060.6 1320.49  1068.6  1321.4

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   933.4    .035   951.4    .027  1048.6    .035
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6             95.52   94.92   94.29              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1364.49

INPUT
Description: Beginning of curved section
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1321.28   939.4 1320.94   951.4 1320.44     977 1314.04    1000 1314.04
    1007 1314.04    1010 1313.04    1019 1313.04  1048.6 1320.44  1052.6 1320.44
  1056.6 1318.44  1060.6 1320.44  1068.6 1321.28

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6             90.58   90.58   90.58              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1273.90*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1321.23   939.4  1320.9   951.4  1320.4     977 1313.99    1000 1313.99
    1007 1313.99    1010 1312.99    1019 1312.99  1048.6  1320.4  1052.6  1320.4
  1056.6  1318.4  1060.6  1320.4  1068.6 1321.23

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6             90.58   90.58   90.58              .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1183.32*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1321.19   939.4 1320.85   951.4 1320.35     977 1313.95    1000 1313.95
    1007 1313.95    1010 1312.95    1019 1312.95  1048.6 1320.35  1052.6 1320.35
  1056.6 1318.35  1060.6 1320.35  1068.6 1321.19

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6             90.58   90.58   90.58              .1       .3
```

```
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1092.74*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1321.15   939.4 1320.81   951.4 1320.31     977 1313.91    1000 1313.91
    1007 1313.91    1010 1312.91    1019 1312.91  1048.6 1320.31  1052.6 1320.31
  1056.6 1318.31  1060.6 1320.31  1068.6 1321.15

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            90.58   90.58   90.58             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 1002.16*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4  1321.1   939.4 1320.76   951.4 1320.26     977 1313.86    1000 1313.86
    1007 1313.86    1010 1312.86    1019 1312.86  1048.6 1320.26  1052.6 1320.26
  1056.6 1318.26  1060.6 1320.26  1068.6  1321.1

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            90.58   90.58   90.58             .1       .3
Right Levee     Station=  1052.6      Elevation=

CROSS SECTION


RIVER: Rittenhouse Chan
REACH: Main Channel       RS: 911.581*

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*******************************************************************************
   933.4 1321.06   939.4 1320.72   951.4 1320.22     977 1313.82    1000 1313.82
    1007 1313.82    1010 1312.82    1019 1312.82  1048.6 1320.22  1052.6 1320.22
  1056.6 1318.22  1060.6 1320.22  1068.6 1321.06

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
   933.4    .035   951.4    .027  1048.6    .035

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          951.4  1048.6            90.58   90.58   90.58             .1       .3
Right Levee     Station=  1052.6      Elevation=
```

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 821.00

INPUT
Description: Natural Channel Upstream of Drop structure #1-1
Drop structure 1-1
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
933.4	1321.01	939.4	1320.67	951.4	1320.17	977	1313.77	1000	1313.77
1007	1313.77	1010	1312.77	1019	1312.77	1048.6	1320.17	1052.6	1320.17
1056.6	1318.17	1060.6	1320.17	1068.6	1321.01				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
933.4	.035	951.4	.027	1048.6	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
951.4	1048.6	1	1	1	.1	.3

Right Levee Station= 1052.6 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 820.00

INPUT
Description: Upstream riprap area of Drop structure #1-1
Drop structure 1-1
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
933.4	1321.01	939.4	1320.67	951.4	1320.17	977	1313.77	1000	1313.77
1007	1313.77	1010	1312.77	1019	1312.77	1048.6	1320.17	1052.6	1320.17
1056.6	1318.17	1060.6	1320.17	1068.6	1321.01				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
933.4	.035	951.4	.035	1048.6	.035

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
951.4	1048.6	20	20	20	.1	.3

Right Levee Station= 1052.6 Elevation=

CROSS SECTION

RIVER: Rittenhouse Chan
REACH: Main Channel RS: 800.00

INPUT
Description: Before confluence (drop structure) with EMF US drop 1-1
Drop
structure 1-1
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
933.4	1321	939.4	1320.66	951.4	1320.16	977	1313.76	1000	1313.76
1007	1313.76	1010	1312.76	1019	1312.76	1048.6	1320.16	1052.6	1320.16
1056.6	1318.16	1060.6	1320.16	1068.6	1321				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
933.4	.035	951.4	.035	1048.6	.035

Bank Sta: Left	Right	Coeff Contr.	Expan.
951.4	1048.6	.1	.3

Right Levee Station= 1052.6 Elevation=

****

SUMMARY OF MANNING'S N VALUES

River:Rittenhouse Chan

Reach	River Sta.	n1	n2	n3
Main Channel	23278.81	.035	.035	.035
Main Channel	23257.56	.035	.035	.035
Main Channel	23239.31	.035	.035	.035
Main Channel	23238.31	.035	.027	.035
Main Channel	23159.6	.035	.027	.035
Main Channel	23081.00	.035	.027	.035
Main Channel	23080.00	.035	.035	.035
Main Channel	23060.00	.035	.035	.035
Main Channel	23010.00	.035	.035	.035
Main Channel	23009.00	.035	.027	.035
Main Channel	22931.7	.035	.027	.035
Main Channel	22854.5	.035	.027	.035
Main Channel	22777.2	.035	.027	.035
Main Channel	22700.00	.035	.027	.035
Main Channel	22605.2	.035	.027	.035
Main Channel	22510.5	.035	.027	.035
Main Channel	22415.7	.035	.027	.035
Main Channel	22321.00	.035	.027	.035
Main Channel	22320.00	.035	.035	.035
Main Channel	22300.00	.035	.035	.035
Main Channel	22250.00	.035	.035	.035
Main Channel	22249.00	.035	.027	.035
Main Channel	22157.5	.035	.027	.035
Main Channel	22066.	.035	.027	.035
Main Channel	21974.5	.035	.027	.035
Main Channel	21883.	.035	.027	.035
Main Channel	21791.5	.035	.027	.035
Main Channel	21700.00	.035	.027	.035
Main Channel	21604.2	.035	.027	.035
Main Channel	21508.4	.035	.027	.035
Main Channel	21412.6	.035	.027	.035
Main Channel	21316.8	.035	.027	.035
Main Channel	21221.00	.035	.027	.035
Main Channel	21220.00	.035	.035	.035
Main Channel	21200.00	.035	.035	.035
Main Channel	21150.00	.035	.035	.035
Main Channel	21149.00	.035	.027	.035
Main Channel	21059.2	.035	.027	.035
Main Channel	20969.4	.035	.027	.035
Main Channel	20879.6	.035	.027	.035
Main Channel	20789.8	.035	.027	.035
Main Channel	20700.00	.035	.027	.035
Main Channel	20610.5	.035	.027	.035
Main Channel	20521.1	.035	.027	.035
Main Channel	20431.69	.035	.027	.035
Main Channel	20379.70	.035	.027	.035
Main Channel	20300.00	.035	.027	.035
Main Channel	20270.61	.035	.027	.035
Main Channel	20180.4	.035	.027	.035
Main Channel	20090.2	.035	.027	.035
Main Channel	20000.00	.035	.027	.035
Main Channel	19900.3	.035	.027	.035
Main Channel	19800.6	.035	.027	.035
Main Channel	19701.00	.035	.027	.035
Main Channel	19700.00	.035	.035	.035
Main Channel	19680.00	.035	.035	.035
Main Channel	19630.00	.035	.035	.035
Main Channel	19629.00	.035	.027	.035
Main Channel	19536.1	.035	.027	.035
Main Channel	19443.2	.035	.027	.035
Main Channel	19350.3	.035	.027	.035
Main Channel	19257.4	.035	.027	.035
Main Channel	19164.5	.035	.027	.035
Main Channel	19071.6	.035	.027	.035

*Main Channel	*	18978.7*	*	.035*	.027*	.035*
*Main Channel	*	18885.8*	*	.035*	.027*	.035*
*Main Channel	*	18792.9*	*	.035*	.027*	.035*
*Main Channel	*	18700.00	*	.035*	.027*	.035*
*Main Channel	*	18661.00	*	.035*	.027*	.035*
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*Main Channel	*	17700.00	*	.035*	.027*	.035*
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*Main Channel	*	11480.7	*Culvert	*	*	*
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*Main Channel	*	10780.41	*	.035*	.035*	.035*
*Main Channel	*	10777.41	*Culvert	*	*	*
*Main Channel	*	10687.00	*	.035*	.035*	.035*
*Main Channel	*	10637.41	*	.035*	.035*	.035*
*Main Channel	*	10627.41	*	.035*	.035*	.035*
*Main Channel	*	10600	*	.035*	.027*	.035*
*Main Channel	*	10516.*	*	.035*	.027*	.035*
*Main Channel	*	10432.*	*	.035*	.027*	.035*
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*Main Channel	*	10263.00	*	.035*	.035*	.035*
*Main Channel	*	10243	*	.035*	.027*	.035*
*Main Channel	*	10193	*	.035*	.035*	.035*
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*Main Channel	*	9154.85*	*	.035*	.027*	.035*
*Main Channel	*	9064.00	*	.035*	.027*	.035*
*Main Channel	*	9063.00	*	.035*	.035*	.035*
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*Main Channel	*	8993	*	.035*	.035*	.035*

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*Main Channel	*	7983	*	.035*	.035*	.035*
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*Main Channel	*	7204.00	*	.035*	.027*	.035*
*Main Channel	*	7203.00	*	.035*	.035*	.035*
*Main Channel	*	7183	*	.035*	.035*	.035*
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*Main Channel	*	6400.*	*	.035*	.027*	.035*
*Main Channel	*	6300.*	*	.035*	.027*	.035*
*Main Channel	*	6200.*	*	.035*	.027*	.035*
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*Main Channel	*	6000.*	*	.035*	.027*	.035*
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*Main Channel	*	5518.5*	*	.035*	.027*	.035*
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*Main Channel	*	5184.5*	*	.035*	.027*	.035*
*Main Channel	*	5101	*	.035*	.027*	.035*
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*Main Channel	*	4958	*	.035*	.027*	.035*
*Main Channel	*	4888	*	.035*	.027*	.035*
*Main Channel	*	4820	*	.035*	.027*	.035*
*Main Channel	*	4736	*	.035*	.027*	.035*
*Main Channel	*	4706	*	.035*	.027*	.035*
*Main Channel	*	4640	*Culvert	*	*	*
*Main Channel	*	4562	*	.027*	.027*	.027*
*Main Channel	*	4521	*	.035*	.027*	.035*
*Main Channel	*	4426	*	.035*	.027*	.05*
*Main Channel	*	4365	*	.035*	.027*	.05*
*Main Channel	*	4302	*	.035*	.027*	.05*
*Main Channel	*	4291.82	*	.035*	.035*	.035*
*Main Channel	*	4265	*	.035*	.035*	.035*
*Main Channel	*	4213.18	*Mult Open*		*	*
*Main Channel	*	4121	*	.035*	.035*	.035*

*Main Channel	*	4118.5	* .035*	.035*	.035*
*Main Channel	*	4107.43	* .035*	.035*	.035*
*Main Channel	*	4091.43	* .035*	.035*	.035*
*Main Channel	*	4063.43	* .035*	.035*	.035*
*Main Channel	*	4062.43	* .035*	.027*	.035*
*Main Channel	*	3982.14*	* .035*	.027*	.035*
*Main Channel	*	3901.85*	* .035*	.027*	.035*
*Main Channel	*	3821.57*	* .035*	.027*	.035*
*Main Channel	*	3741.28*	* .035*	.027*	.035*
*Main Channel	*	3661.00	* .035*	.027*	.035*
*Main Channel	*	3660.00	* .035*	.035*	.035*
*Main Channel	*	3640.00	* .035*	.035*	.035*
*Main Channel	*	3590.00	* .035*	.035*	.035*
*Main Channel	*	3580.00	* .035*	.035*	.035*
*Main Channel	*	3579.00	* .035*	.027*	.035*
*Main Channel	*	3483.66*	* .035*	.027*	.035*
*Main Channel	*	3388.33*	* .035*	.027*	.035*
*Main Channel	*	3293.*	* .035*	.027*	.035*
*Main Channel	*	3197.66*	* .035*	.027*	.035*
*Main Channel	*	3102.33*	* .035*	.027*	.035*
*Main Channel	*	3007.*	* .035*	.027*	.035*
*Main Channel	*	2911.66*	* .035*	.027*	.035*
*Main Channel	*	2816.33*	* .035*	.027*	.035*
*Main Channel	*	2721.00	* .035*	.027*	.035*
*Main Channel	*	2720.00	* .035*	.035*	.035*
*Main Channel	*	2700.00	* .035*	.027*	.035*
*Main Channel	*	2645.00	* .035*	.035*	.035*
*Main Channel	*	2635.00	* .035*	.035*	.035*
*Main Channel	*	2634.00	* .035*	.027*	.035*
*Main Channel	*	2554.20*	* .035*	.027*	.035*
*Main Channel	*	2474.41*	* .035*	.027*	.035*
*Main Channel	*	2394.62*	* .035*	.027*	.035*
*Main Channel	*	2314.84	* .035*	.027*	.035*
*Main Channel	*	2216.89*	* .035*	.027*	.035*
*Main Channel	*	2118.94*	* .035*	.027*	.035*
*Main Channel	*	2021.00	* .035*	.027*	.035*
*Main Channel	*	2020.00	* .035*	.035*	.035*
*Main Channel	*	2000.00	* .035*	.035*	.035*
*Main Channel	*	1945.00	* .035*	.035*	.035*
*Main Channel	*	1935.00	* .035*	.035*	.035*
*Main Channel	*	1934.00	* .035*	.027*	.035*
*Main Channel	*	1839.08*	* .035*	.027*	.035*
*Main Channel	*	1744.16*	* .035*	.027*	.035*
*Main Channel	*	1649.24*	* .035*	.027*	.035*
*Main Channel	*	1554.32*	* .035*	.027*	.035*
*Main Channel	*	1459.40*	* .035*	.027*	.035*
*Main Channel	*	1364.49	* .035*	.027*	.035*
*Main Channel	*	1273.90*	* .035*	.027*	.035*
*Main Channel	*	1183.32*	* .035*	.027*	.035*
*Main Channel	*	1092.74*	* .035*	.027*	.035*
*Main Channel	*	1002.16*	* .035*	.027*	.035*
*Main Channel	*	911.581*	* .035*	.027*	.035*
*Main Channel	*	821.00	* .035*	.027*	.035*
*Main Channel	*	820.00	* .035*	.035*	.035*
*Main Channel	*	800.00	* .035*	.035*	.035*

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SUMMARY OF REACH LENGTHS

River: Rittenhouse Chan

Reach	River Sta.	Left	Channel	Right
*Main Channel	* 23278.81	* 21.25*	21.25*	21.25*
*Main Channel	* 23257.56	* 18.25*	18.25*	18.25*
*Main Channel	* 23239.31	* 1*	1*	1*
*Main Channel	* 23238.31	* 78.65*	78.65*	78.65*
*Main Channel	* 23159.6*	* 78.65*	78.65*	78.65*
*Main Channel	* 23081.00	* 1*	1*	1*
*Main Channel	* 23080.00	* 20*	20*	20*
*Main Channel	* 23060.00	* 50*	50*	50*
*Main Channel	* 23010.00	* 1*	1*	1*

*Main Channel	*	23009.00	*	77.25*	77.25*	77.25*
*Main Channel	*	22931.7*	*	77.25*	77.25*	77.25*
*Main Channel	*	22854.5*	*	77.25*	77.25*	77.25*
*Main Channel	*	22777.2*	*	77.25*	77.25*	77.25*
*Main Channel	*	22700.00	*	94.75*	94.75*	94.75*
*Main Channel	*	22605.2*	*	94.75*	94.75*	94.75*
*Main Channel	*	22510.5*	*	94.75*	94.75*	94.75*
*Main Channel	*	22415.7*	*	94.75*	94.75*	94.75*
*Main Channel	*	22321.00	*	1*	1*	1*
*Main Channel	*	22320.00	*	20*	20*	20*
*Main Channel	*	22300.00	*	50*	50*	50*
*Main Channel	*	22250.00	*	1*	1*	1*
*Main Channel	*	22249.00	*	91.5*	91.5*	91.5*
*Main Channel	*	22157.5*	*	91.5*	91.5*	91.5*
*Main Channel	*	22066.*	*	91.5*	91.5*	91.5*
*Main Channel	*	21974.5*	*	91.5*	91.5*	91.5*
*Main Channel	*	21883.*	*	91.5*	91.5*	91.5*
*Main Channel	*	21791.5*	*	91.5*	91.5*	91.5*
*Main Channel	*	21700.00	*	95.8*	95.8*	95.8*
*Main Channel	*	21604.2*	*	95.8*	95.8*	95.8*
*Main Channel	*	21508.4*	*	95.8*	95.8*	95.8*
*Main Channel	*	21412.6*	*	95.8*	95.8*	95.8*
*Main Channel	*	21316.8*	*	95.8*	95.8*	95.8*
*Main Channel	*	21221.00	*	1*	1*	1*
*Main Channel	*	21220.00	*	20*	20*	20*
*Main Channel	*	21200.00	*	50*	50*	50*
*Main Channel	*	21150.00	*	1*	1*	1*
*Main Channel	*	21149.00	*	89.8*	89.8*	89.8*
*Main Channel	*	21059.2*	*	89.8*	89.8*	89.8*
*Main Channel	*	20969.4*	*	89.8*	89.8*	89.8*
*Main Channel	*	20879.6*	*	89.8*	89.8*	89.8*
*Main Channel	*	20789.8*	*	89.8*	89.8*	89.8*
*Main Channel	*	20700.00	*	89.44*	89.44*	89.44*
*Main Channel	*	20610.5*	*	89.44*	89.44*	89.44*
*Main Channel	*	20521.1*	*	89.44*	89.44*	89.44*
*Main Channel	*	20431.69	*	63*	51.99*	40*
*Main Channel	*	20379.70	*	92.2*	79.7*	75.93*
*Main Channel	*	20300.00	*	34*	29.39*	28*
*Main Channel	*	20270.61	*	90.33*	90.2*	89*
*Main Channel	*	20180.4*	*	90.33*	90.2*	89*
*Main Channel	*	20090.2*	*	90.33*	90.2*	89*
*Main Channel	*	20000.00	*	99.67*	99.67*	99.67*
*Main Channel	*	19900.3*	*	99.67*	99.67*	99.67*
*Main Channel	*	19800.6*	*	99.67*	99.67*	99.67*
*Main Channel	*	19701.00	*	1*	1*	1*
*Main Channel	*	19700.00	*	20*	20*	20*
*Main Channel	*	19680.00	*	50*	50*	50*
*Main Channel	*	19630.00	*	1*	1*	1*
*Main Channel	*	19629.00	*	92.9*	92.9*	92.9*
*Main Channel	*	19536.1*	*	92.9*	92.9*	92.9*
*Main Channel	*	19443.2*	*	92.9*	92.9*	92.9*
*Main Channel	*	19350.3*	*	92.9*	92.9*	92.9*
*Main Channel	*	19257.4*	*	92.9*	92.9*	92.9*
*Main Channel	*	19164.5*	*	92.9*	92.9*	92.9*
*Main Channel	*	19071.6*	*	92.9*	92.9*	92.9*
*Main Channel	*	18978.7*	*	92.9*	92.9*	92.9*
*Main Channel	*	18885.8*	*	92.9*	92.9*	92.9*
*Main Channel	*	18792.9*	*	92.9*	92.9*	92.9*
*Main Channel	*	18700.00	*	39*	39*	39*
*Main Channel	*	18661.00	*	1*	1*	1*
*Main Channel	*	18660.00	*	20*	20*	20*
*Main Channel	*	18640.00	*	50*	50*	50*
*Main Channel	*	18590.00	*	1*	1*	1*
*Main Channel	*	18589.00	*	98.78*	98.78*	98.78*
*Main Channel	*	18490.2*	*	98.78*	98.78*	98.78*
*Main Channel	*	18391.4*	*	98.78*	98.78*	98.78*
*Main Channel	*	18292.6*	*	98.78*	98.78*	98.78*
*Main Channel	*	18193.8*	*	98.78*	98.78*	98.78*
*Main Channel	*	18095.1*	*	98.78*	98.78*	98.78*
*Main Channel	*	17996.3*	*	98.78*	98.78*	98.78*
*Main Channel	*	17897.5*	*	98.78*	98.78*	98.78*
*Main Channel	*	17798.7*	*	98.78*	98.78*	98.78*
*Main Channel	*	17700.00	*	79.67*	79.67*	79.67*
*Main Channel	*	17620.3*	*	79.67*	79.67*	79.67*

*Main Channel	*	17540.6*	*	79.67*	79.67*	79.67*
*Main Channel	*	17461.00	*	1*	1*	1*
*Main Channel	*	17460.00	*	20*	20*	20*
*Main Channel	*	17440.00	*	50*	50*	50*
*Main Channel	*	17390.00	*	1*	1*	1*
*Main Channel	*	17389.00	*	92.57*	92.57*	92.57*
*Main Channel	*	17296.4*	*	92.57*	92.57*	92.57*
*Main Channel	*	17203.8*	*	92.57*	92.57*	92.57*
*Main Channel	*	17111.2*	*	92.57*	92.57*	92.57*
*Main Channel	*	17018.7*	*	92.57*	92.57*	92.57*
*Main Channel	*	16926.1*	*	92.57*	92.57*	92.57*
*Main Channel	*	16833.5*	*	92.57*	92.57*	92.57*
*Main Channel	*	16741.00	*	1*	1*	1*
*Main Channel	*	16740.00	*	20*	20*	20*
*Main Channel	*	16720.00	*	45*	45*	45*
*Main Channel	*	16675.00	*	1*	1*	1*
*Main Channel	*	16674.00	*	97.4*	97.4*	97.4*
*Main Channel	*	16576.6*	*	97.4*	97.4*	97.4*
*Main Channel	*	16479.2*	*	97.4*	97.4*	97.4*
*Main Channel	*	16381.8*	*	97.4*	97.4*	97.4*
*Main Channel	*	16284.4*	*	97.4*	97.4*	97.4*
*Main Channel	*	16187.*	*	97.4*	97.4*	97.4*
*Main Channel	*	16089.6*	*	97.4*	97.4*	97.4*
*Main Channel	*	15992.2*	*	97.4*	97.4*	97.4*
*Main Channel	*	15894.8*	*	97.4*	97.4*	97.4*
*Main Channel	*	15797.4*	*	97.4*	97.4*	97.4*
*Main Channel	*	15700.00	*	100*	100*	100*
*Main Channel	*	15600.*	*	100*	100*	100*
*Main Channel	*	15500.*	*	100*	100*	100*
*Main Channel	*	15400.*	*	100*	100*	100*
*Main Channel	*	15300.*	*	100*	100*	100*
*Main Channel	*	15200.*	*	100*	100*	100*
*Main Channel	*	15100.*	*	100*	100*	100*
*Main Channel	*	15000.*	*	100*	100*	100*
*Main Channel	*	14900.*	*	100*	100*	100*
*Main Channel	*	14800.*	*	100*	100*	100*
*Main Channel	*	14700.00	*	84.75*	84.75*	84.75*
*Main Channel	*	14615.2*	*	84.75*	84.75*	84.75*
*Main Channel	*	14530.5*	*	84.75*	84.75*	84.75*
*Main Channel	*	14445.7*	*	84.75*	84.75*	84.75*
*Main Channel	*	14361.00	*	1*	1*	1*
*Main Channel	*	14360.00	*	20*	20*	20*
*Main Channel	*	14340.00	*	50*	50*	50*
*Main Channel	*	14290.00	*	1*	1*	1*
*Main Channel	*	14289.00	*	98.17*	98.17*	98.17*
*Main Channel	*	14190.8*	*	98.17*	98.17*	98.17*
*Main Channel	*	14092.6*	*	98.17*	98.17*	98.17*
*Main Channel	*	13994.5*	*	98.17*	98.17*	98.17*
*Main Channel	*	13896.3*	*	98.17*	98.17*	98.17*
*Main Channel	*	13798.1*	*	98.17*	98.17*	98.17*
*Main Channel	*	13700.00	*	99.83*	99.83*	99.83*
*Main Channel	*	13600.1*	*	99.83*	99.83*	99.83*
*Main Channel	*	13500.3*	*	99.83*	99.83*	99.83*
*Main Channel	*	13400.5*	*	99.83*	99.83*	99.83*
*Main Channel	*	13300.6*	*	99.83*	99.83*	99.83*
*Main Channel	*	13200.8*	*	99.83*	99.83*	99.83*
*Main Channel	*	13101.00	*	1*	1*	1*
*Main Channel	*	13100.00	*	20*	20*	20*
*Main Channel	*	13080.00	*	50*	50*	50*
*Main Channel	*	13030.00	*	1*	1*	1*
*Main Channel	*	13029.00	*	82.25*	82.25*	82.25*
*Main Channel	*	12946.7*	*	82.25*	82.25*	82.25*
*Main Channel	*	12864.5*	*	82.25*	82.25*	82.25*
*Main Channel	*	12782.2*	*	82.25*	82.25*	82.25*
*Main Channel	*	12700.	*	86.33*	86.33*	86.33*
*Main Channel	*	12613.6*	*	86.33*	86.33*	86.33*
*Main Channel	*	12527.3*	*	86.33*	86.33*	86.33*
*Main Channel	*	12441.00	*	1*	1*	1*
*Main Channel	*	12440.00	*	20*	20*	20*
*Main Channel	*	12420.00	*	50*	50*	50*
*Main Channel	*	12370	*	1*	1*	1*
*Main Channel	*	12369.00	*	86.5*	86.5*	86.5*
*Main Channel	*	12282.5*	*	86.5*	86.5*	86.5*
*Main Channel	*	12196.*	*	86.5*	86.5*	86.5*

*Main Channel	*	12109.5*	*	86.5*	86.5*	86.5*
*Main Channel	*	12023.*	*	86.5*	86.5*	86.5*
*Main Channel	*	11936.5*	*	86.5*	86.5*	86.5*
*Main Channel	*	11850.00	*	93.5*	84.5*	72.5*
*Main Channel	*	11765.4*	*	93.5*	84.5*	72.5*
*Main Channel	*	11680.94	*	95.94*	95.94*	95.94*
*Main Channel	*	11585.00	*	37.47*	37.47*	32*
*Main Channel	*	11547.53	*	11*	11*	8*
*Main Channel	*	11536.53	*	26*	26*	22*
*Main Channel	*	11510.53	*	16.8*	13.73*	18.8*
*Main Channel	*	11496.8	*	9.33*	6.8*	17.33*
*Main Channel	*	11490.00	*	11.2*	6.13*	20.8*
*Main Channel	*	11483.87	*	114.06*	114.06*	114.06*
*Main Channel	*	11480.7	*Culvert	*	*	*
*Main Channel	*	11369.81	*	16*	23.64*	36*
*Main Channel	*	11346.23	*	50.67*	46.23*	50.67*
*Main Channel	*	11300.00	*	9*	8.5*	9*
*Main Channel	*	11291.50	*	95*	91.5*	91.5*
*Main Channel	*	11200.00	*	100*	100*	100*
*Main Channel	*	11100.00	*	96.67*	96.67*	96.67*
*Main Channel	*	11003.3*	*	96.67*	96.67*	96.67*
*Main Channel	*	10906.6*	*	96.67*	96.67*	96.67*
*Main Channel	*	10810.00	*	4.59*	4.59*	4.59*
*Main Channel	*	10805.41	*	19.88*	14*	19.88*
*Main Channel	*	10791.41	*	16.88*	11*	16.88*
*Main Channel	*	10780.41	*	93.41*	93.41*	93.41*
*Main Channel	*	10777.41	*Culvert	*	*	*
*Main Channel	*	10687.00	*	69.09*	49.59*	53.59*
*Main Channel	*	10637.41	*	10*	10*	10*
*Main Channel	*	10627.41	*	29*	27.41*	23*
*Main Channel	*	10600	*	84*	84*	84*
*Main Channel	*	10516.*	*	84*	84*	84*
*Main Channel	*	10432.*	*	84*	84*	84*
*Main Channel	*	10348.*	*	84*	84*	84*
*Main Channel	*	10264.00	*	1*	1*	1*
*Main Channel	*	10263.00	*	20*	20*	20*
*Main Channel	*	10243	*	50*	50*	50*
*Main Channel	*	10193	*	10*	10*	10*
*Main Channel	*	10183.00	*	1*	1*	1*
*Main Channel	*	10182.00	*	96.4*	96.4*	96.4*
*Main Channel	*	10085.6*	*	96.4*	96.4*	96.4*
*Main Channel	*	9989.2*	*	96.4*	96.4*	96.4*
*Main Channel	*	9892.8*	*	96.4*	96.4*	96.4*
*Main Channel	*	9796.4*	*	96.4*	96.4*	96.4*
*Main Channel	*	9700	*	90.86*	90.86*	90.86*
*Main Channel	*	9609.14*	*	90.86*	90.86*	90.86*
*Main Channel	*	9518.28*	*	90.86*	90.86*	90.86*
*Main Channel	*	9427.42*	*	90.86*	90.86*	90.86*
*Main Channel	*	9336.57*	*	90.86*	90.86*	90.86*
*Main Channel	*	9245.71*	*	90.86*	90.86*	90.86*
*Main Channel	*	9154.85*	*	90.86*	90.86*	90.86*
*Main Channel	*	9064.00	*	1*	1*	1*
*Main Channel	*	9063.00	*	20*	20*	20*
*Main Channel	*	9043	*	50*	50*	50*
*Main Channel	*	8993	*	10*	10*	10*
*Main Channel	*	8983.00	*	1*	1*	1*
*Main Channel	*	8982.00	*	94*	94*	94*
*Main Channel	*	8888.*	*	94*	94*	94*
*Main Channel	*	8794.*	*	94*	94*	94*
*Main Channel	*	8700	*	90.86*	90.86*	90.86*
*Main Channel	*	8609.14*	*	90.86*	90.86*	90.86*
*Main Channel	*	8518.28*	*	90.86*	90.86*	90.86*
*Main Channel	*	8427.42*	*	90.86*	90.86*	90.86*
*Main Channel	*	8336.57*	*	90.86*	90.86*	90.86*
*Main Channel	*	8245.71*	*	90.86*	90.86*	90.86*
*Main Channel	*	8154.85*	*	90.86*	90.86*	90.86*
*Main Channel	*	8064.00	*	1*	1*	1*
*Main Channel	*	8063.00	*	20*	20*	20*
*Main Channel	*	8043	*	50*	50*	50*
*Main Channel	*	7993	*	10*	10*	10*
*Main Channel	*	7983	*	1*	1*	1*
*Main Channel	*	7982.00	*	94*	94*	94*
*Main Channel	*	7888.*	*	94*	94*	94*
*Main Channel	*	7794.*	*	94*	94*	94*

*Main Channel	*	7700	* 99.2*	99.2*	99.2*
*Main Channel	*	7600.8*	* 99.2*	99.2*	99.2*
*Main Channel	*	7501.6*	* 99.2*	99.2*	99.2*
*Main Channel	*	7402.4*	* 99.2*	99.2*	99.2*
*Main Channel	*	7303.2*	* 99.2*	99.2*	99.2*
*Main Channel	*	7204.00	* 1*	1*	1*
*Main Channel	*	7203.00	* 20*	20*	20*
*Main Channel	*	7183	* 50*	50*	50*
*Main Channel	*	7133	* 10*	10*	10*
*Main Channel	*	7123.00	* 1*	1*	1*
*Main Channel	*	7122.00	* 84.4*	84.4*	84.4*
*Main Channel	*	7037.6*	* 84.4*	84.4*	84.4*
*Main Channel	*	6953.2*	* 84.4*	84.4*	84.4*
*Main Channel	*	6868.8*	* 84.4*	84.4*	84.4*
*Main Channel	*	6784.4*	* 84.4*	84.4*	84.4*
*Main Channel	*	6700	* 100*	100*	100*
*Main Channel	*	6600.*	* 100*	100*	100*
*Main Channel	*	6500.*	* 100*	100*	100*
*Main Channel	*	6400.*	* 100*	100*	100*
*Main Channel	*	6300.*	* 100*	100*	100*
*Main Channel	*	6200.*	* 100*	100*	100*
*Main Channel	*	6100.*	* 100*	100*	100*
*Main Channel	*	6000.*	* 100*	100*	100*
*Main Channel	*	5900.*	* 100*	100*	100*
*Main Channel	*	5800.*	* 100*	100*	100*
*Main Channel	*	5700	* 16*	16*	16*
*Main Channel	*	5684.00	* 1*	1*	1*
*Main Channel	*	5683.00	* 20*	20*	20*
*Main Channel	*	5663	* 50*	50*	50*
*Main Channel	*	5613	* 10*	10*	10*
*Main Channel	*	5603.00	* 1*	1*	1*
*Main Channel	*	5602.00	* 83.5*	83.5*	83.5*
*Main Channel	*	5518.5*	* 83.5*	83.5*	83.5*
*Main Channel	*	5435.*	* 83.5*	83.5*	83.5*
*Main Channel	*	5351.5*	* 83.5*	83.5*	83.5*
*Main Channel	*	5268.*	* 83.5*	83.5*	83.5*
*Main Channel	*	5184.5*	* 83.5*	83.5*	83.5*
*Main Channel	*	5101	* 1*	1*	1*
*Main Channel	*	5100	* 100*	100*	185*
*Main Channel	*	5028	* 70*	70*	70*
*Main Channel	*	4958	* 70*	70*	70*
*Main Channel	*	4888	* 68*	68*	72*
*Main Channel	*	4820	* 118*	84*	51*
*Main Channel	*	4736	* 30*	30*	30*
*Main Channel	*	4706	* 160*	160*	160*
*Main Channel	*	4640	*Culvert *	*	*
*Main Channel	*	4562	* 25*	25*	25*
*Main Channel	*	4521	* 60*	95*	127*
*Main Channel	*	4426	* 43*	60*	66*
*Main Channel	*	4365	* 51*	63*	70*
*Main Channel	*	4302	* 10.18*	10.18*	10.18*
*Main Channel	*	4291.82	* 26.82*	26.8*	26.82*
*Main Channel	*	4265	* 144*	144*	144*
*Main Channel	*	4213.18	*Mult Open*	*	*
*Main Channel	*	4121	* 2.48*	2.48*	2.48*
*Main Channel	*	4118.5	* 19.48*	11.07*	5*
*Main Channel	*	4107.43	* 33.1*	16*	5.3*
*Main Channel	*	4091.43	* 29.3*	28*	28*
*Main Channel	*	4063.43	* 1*	1*	1*
*Main Channel	*	4062.43	* 80.29*	80.29*	80.29*
*Main Channel	*	3982.14*	* 80.29*	80.29*	80.29*
*Main Channel	*	3901.85*	* 80.29*	80.29*	80.29*
*Main Channel	*	3821.57*	* 80.29*	80.29*	80.29*
*Main Channel	*	3741.28*	* 80.29*	80.29*	80.29*
*Main Channel	*	3661.00	* 1*	1*	1*
*Main Channel	*	3660.00	* 20*	20*	20*
*Main Channel	*	3640.00	* 50*	50*	50*
*Main Channel	*	3590.00	* 10*	10*	10*
*Main Channel	*	3580.00	* 1*	1*	1*
*Main Channel	*	3579.00	* 95.33*	95.33*	95.33*
*Main Channel	*	3483.66*	* 95.33*	95.33*	95.33*
*Main Channel	*	3388.33*	* 95.33*	95.33*	95.33*
*Main Channel	*	3293.*	* 95.33*	95.33*	95.33*
*Main Channel	*	3197.66*	* 95.33*	95.33*	95.33*

*Main Channel	*	3102.33*	* 95.33*	95.33*	95.33*
*Main Channel	*	3007.*	* 95.33*	95.33*	95.33*
*Main Channel	*	2911.66*	* 95.33*	95.33*	95.33*
*Main Channel	*	2816.33*	* 95.33*	95.33*	95.33*
*Main Channel	*	2721.00	* 1*	1*	1*
*Main Channel	*	2720.00	* 20*	20*	20*
*Main Channel	*	2700.00	* 55*	55*	55*
*Main Channel	*	2645.00	* 10*	10*	10*
*Main Channel	*	2635.00	* 1*	1*	1*
*Main Channel	*	2634.00	* 79.79*	79.79*	79.79*
*Main Channel	*	2554.20*	* 79.79*	79.79*	79.79*
*Main Channel	*	2474.41*	* 79.79*	79.79*	79.79*
*Main Channel	*	2394.62*	* 79.79*	79.79*	79.79*
*Main Channel	*	2314.84	* 99.24*	97.95*	98.93*
*Main Channel	*	2216.89*	* 99.24*	97.95*	98.93*
*Main Channel	*	2118.94*	* 99.24*	97.95*	98.93*
*Main Channel	*	2021.00	* 1*	1*	1*
*Main Channel	*	2020.00	* 18*	20*	22*
*Main Channel	*	2000.00	* 54*	55*	57*
*Main Channel	*	1945.00	* 10*	10*	10*
*Main Channel	*	1935.00	* 1*	1*	1*
*Main Channel	*	1934.00	* 95.52*	94.92*	94.29*
*Main Channel	*	1839.08*	* 95.52*	94.92*	94.29*
*Main Channel	*	1744.16*	* 95.52*	94.92*	94.29*
*Main Channel	*	1649.24*	* 95.52*	94.92*	94.29*
*Main Channel	*	1554.32*	* 95.52*	94.92*	94.29*
*Main Channel	*	1459.40*	* 95.52*	94.92*	94.29*
*Main Channel	*	1364.49	* 90.58*	90.58*	90.58*
*Main Channel	*	1273.90*	* 90.58*	90.58*	90.58*
*Main Channel	*	1183.32*	* 90.58*	90.58*	90.58*
*Main Channel	*	1092.74*	* 90.58*	90.58*	90.58*
*Main Channel	*	1002.16*	* 90.58*	90.58*	90.58*
*Main Channel	*	911.581*	* 90.58*	90.58*	90.58*
*Main Channel	*	821.00	* 1*	1*	1*
*Main Channel	*	820.00	* 20*	20*	20*
*Main Channel	*	800.00	* *	*	*

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SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Rittenhouse Chan

Reach	River Sta.	Contr.	Expan.
*Main Channel	* 23278.81*	.1*	.3*
*Main Channel	* 23257.56*	.1*	.3*
*Main Channel	* 23239.31*	.1*	.3*
*Main Channel	* 23238.31*	.1*	.3*
*Main Channel	* 23159.6**	.1*	.3*
*Main Channel	* 23081.00*	.1*	.3*
*Main Channel	* 23080.00*	.1*	.3*
*Main Channel	* 23060.00*	.1*	.3*
*Main Channel	* 23010.00*	.1*	.3*
*Main Channel	* 23009.00*	.1*	.3*
*Main Channel	* 22931.7**	.1*	.3*
*Main Channel	* 22854.5**	.1*	.3*
*Main Channel	* 22777.2**	.1*	.3*
*Main Channel	* 22700.00*	.1*	.3*
*Main Channel	* 22605.2**	.1*	.3*
*Main Channel	* 22510.5**	.1*	.3*
*Main Channel	* 22415.7**	.1*	.3*
*Main Channel	* 22321.00*	.1*	.3*
*Main Channel	* 22320.00*	.1*	.3*
*Main Channel	* 22300.00*	.1*	.3*
*Main Channel	* 22250.00*	.1*	.3*
*Main Channel	* 22249.00*	.1*	.3*
*Main Channel	* 22157.5**	.1*	.3*
*Main Channel	* 22066.* *	.1*	.3*
*Main Channel	* 21974.5**	.1*	.3*
*Main Channel	* 21883.* *	.1*	.3*
*Main Channel	* 21791.5**	.1*	.3*
*Main Channel	* 21700.00*	.1*	.3*

*Main Channel	*	21604.2**	.1*	.3*
*Main Channel	*	21508.4**	.1*	.3*
*Main Channel	*	21412.6**	.1*	.3*
*Main Channel	*	21316.8**	.1*	.3*
*Main Channel	*	21221.00*	.1*	.3*
*Main Channel	*	21220.00*	.1*	.3*
*Main Channel	*	21200.00*	.1*	.3*
*Main Channel	*	21150.00*	.1*	.3*
*Main Channel	*	21149.00*	.1*	.3*
*Main Channel	*	21059.2**	.1*	.3*
*Main Channel	*	20969.4**	.1*	.3*
*Main Channel	*	20879.6**	.1*	.3*
*Main Channel	*	20789.8**	.1*	.3*
*Main Channel	*	20700.00*	.1*	.3*
*Main Channel	*	20610.5**	.1*	.3*
*Main Channel	*	20521.1**	.1*	.3*
*Main Channel	*	20431.69*	.1*	.3*
*Main Channel	*	20379.70*	.1*	.3*
*Main Channel	*	20300.00*	.1*	.3*
*Main Channel	*	20270.61*	.1*	.3*
*Main Channel	*	20180.4**	.1*	.3*
*Main Channel	*	20090.2**	.1*	.3*
*Main Channel	*	20000.00*	.1*	.3*
*Main Channel	*	19900.3**	.1*	.3*
*Main Channel	*	19800.6**	.1*	.3*
*Main Channel	*	19701.00*	.1*	.3*
*Main Channel	*	19700.00*	.1*	.3*
*Main Channel	*	19680.00*	.1*	.3*
*Main Channel	*	19630.00*	.1*	.3*
*Main Channel	*	19629.00*	.1*	.3*
*Main Channel	*	19536.1**	.1*	.3*
*Main Channel	*	19443.2**	.1*	.3*
*Main Channel	*	19350.3**	.1*	.3*
*Main Channel	*	19257.4**	.1*	.3*
*Main Channel	*	19164.5**	.1*	.3*
*Main Channel	*	19071.6**	.1*	.3*
*Main Channel	*	18978.7**	.1*	.3*
*Main Channel	*	18885.8**	.1*	.3*
*Main Channel	*	18792.9**	.1*	.3*
*Main Channel	*	18700.00*	.1*	.3*
*Main Channel	*	18661.00*	.1*	.3*
*Main Channel	*	18660.00*	.1*	.3*
*Main Channel	*	18640.00*	.1*	.3*
*Main Channel	*	18590.00*	.1*	.3*
*Main Channel	*	18589.00*	.1*	.3*
*Main Channel	*	18490.2**	.1*	.3*
*Main Channel	*	18391.4**	.1*	.3*
*Main Channel	*	18292.6**	.1*	.3*
*Main Channel	*	18193.8**	.1*	.3*
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*Main Channel	*	17996.3**	.1*	.3*
*Main Channel	*	17897.5**	.1*	.3*
*Main Channel	*	17798.7**	.1*	.3*
*Main Channel	*	17700.00*	.1*	.3*
*Main Channel	*	17620.3**	.1*	.3*
*Main Channel	*	17540.6**	.1*	.3*
*Main Channel	*	17461.00*	.1*	.3*
*Main Channel	*	17460.00*	.1*	.3*
*Main Channel	*	17440.00*	.1*	.3*
*Main Channel	*	17390.00*	.1*	.3*
*Main Channel	*	17389.00*	.1*	.3*
*Main Channel	*	17296.4**	.1*	.3*
*Main Channel	*	17203.8**	.1*	.3*
*Main Channel	*	17111.2**	.1*	.3*
*Main Channel	*	17018.7**	.1*	.3*
*Main Channel	*	16926.1**	.1*	.3*
*Main Channel	*	16833.5**	.1*	.3*
*Main Channel	*	16741.00*	.1*	.3*
*Main Channel	*	16740.00*	.1*	.3*
*Main Channel	*	16720.00*	.1*	.3*
*Main Channel	*	16675.00*	.1*	.3*
*Main Channel	*	16674.00*	.1*	.3*
*Main Channel	*	16576.6**	.1*	.3*
*Main Channel	*	16479.2**	.1*	.3*

*Main Channel	*	16381.8**	.1*	.3*
*Main Channel	*	16284.4**	.1*	.3*
*Main Channel	*	16187.* *	.1*	.3*
*Main Channel	*	16089.6**	.1*	.3*
*Main Channel	*	15992.2**	.1*	.3*
*Main Channel	*	15894.8**	.1*	.3*
*Main Channel	*	15797.4**	.1*	.3*
*Main Channel	*	15700.00*	.1*	.3*
*Main Channel	*	15600.* *	.1*	.3*
*Main Channel	*	15500.* *	.1*	.3*
*Main Channel	*	15400.* *	.1*	.3*
*Main Channel	*	15300.* *	.1*	.3*
*Main Channel	*	15200.* *	.1*	.3*
*Main Channel	*	15100.* *	.1*	.3*
*Main Channel	*	15000.* *	.1*	.3*
*Main Channel	*	14900.* *	.1*	.3*
*Main Channel	*	14800.* *	.1*	.3*
*Main Channel	*	14700.00*	.1*	.3*
*Main Channel	*	14615.2**	.1*	.3*
*Main Channel	*	14530.5**	.1*	.3*
*Main Channel	*	14445.7**	.1*	.3*
*Main Channel	*	14361.00*	.1*	.3*
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*Main Channel	*	14340.00*	.1*	.3*
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*Main Channel	*	14289.00*	.1*	.3*
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*Main Channel	*	13896.3**	.1*	.3*
*Main Channel	*	13798.1**	.1*	.3*
*Main Channel	*	13700.00*	.1*	.3*
*Main Channel	*	13600.1**	.1*	.3*
*Main Channel	*	13500.3**	.1*	.3*
*Main Channel	*	13400.5**	.1*	.3*
*Main Channel	*	13300.6**	.1*	.3*
*Main Channel	*	13200.8**	.1*	.3*
*Main Channel	*	13101.00*	.1*	.3*
*Main Channel	*	13100.00*	.1*	.3*
*Main Channel	*	13080.00*	.1*	.3*
*Main Channel	*	13030.00*	.1*	.3*
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*Main Channel	*	12864.5**	.1*	.3*
*Main Channel	*	12782.2**	.1*	.3*
*Main Channel	*	12700. *	.1*	.3*
*Main Channel	*	12613.6**	.1*	.3*
*Main Channel	*	12527.3**	.1*	.3*
*Main Channel	*	12441.00*	.1*	.3*
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*Main Channel	*	12420.00*	.1*	.3*
*Main Channel	*	12370 *	.1*	.3*
*Main Channel	*	12369.00*	.1*	.3*
*Main Channel	*	12282.5**	.1*	.3*
*Main Channel	*	12196.* *	.1*	.3*
*Main Channel	*	12109.5**	.1*	.3*
*Main Channel	*	12023.* *	.1*	.3*
*Main Channel	*	11936.5**	.1*	.3*
*Main Channel	*	11850.00*	.1*	.3*
*Main Channel	*	11765.4**	.1*	.3*
*Main Channel	*	11680.94*	.1*	.3*
*Main Channel	*	11585.00*	.1*	.3*
*Main Channel	*	11547.53*	.1*	.3*
*Main Channel	*	11536.53*	.1*	.3*
*Main Channel	*	11510.53*	.1*	.3*
*Main Channel	*	11496.8 *	.1*	.3*
*Main Channel	*	11490.00*	.6*	.8*
*Main Channel	*	11483.87*	.6*	.8*
*Main Channel	*	11480.7 *Culvert	*	*
*Main Channel	*	11369.81*	.6*	.8*
*Main Channel	*	11346.23*	.6*	.8*
*Main Channel	*	11300.00*	.1*	.3*
*Main Channel	*	11291.50*	.1*	.3*
*Main Channel	*	11200.00*	.1*	.3*

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*Main Channel    *    11100.00*        .1*        .3*
*Main Channel    *    11003.3**        .1*        .3*
*Main Channel    *    10906.6**        .1*        .3*
*Main Channel    *    10810.00*        .1*        .3*
*Main Channel    *    10805.41*        .6*        .8*
*Main Channel    *    10791.41*        .6*        .8*
*Main Channel    *    10780.41*        .6*        .8*
*Main Channel    *    10777.41*Culvert  *          *
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*Main Channel    *    10637.41*        .1*        .3*
*Main Channel    *    10627.41*        .1*        .3*
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*Main Channel    *    9518.28**        .1*        .3*
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*Main Channel    *    9043    *        .1*        .3*
*Main Channel    *    8993    *        .1*        .3*
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*Main Channel    *    8888.*  *        .1*        .3*
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*Main Channel    *    7982.00 *        .1*        .3*
*Main Channel    *    7888.*  *        .1*        .3*
*Main Channel    *    7794.*  *        .1*        .3*
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*Main Channel    *    7600.8* *        .1*        .3*
*Main Channel    *    7501.6* *        .1*        .3*
*Main Channel    *    7402.4* *        .1*        .3*
*Main Channel    *    7303.2* *        .1*        .3*
*Main Channel    *    7204.00 *        .1*        .3*
*Main Channel    *    7203.00 *        .1*        .3*
*Main Channel    *    7183    *        .1*        .3*
*Main Channel    *    7133    *        .1*        .3*
*Main Channel    *    7123.00 *        .1*        .3*
*Main Channel    *    7122.00 *        .1*        .3*
*Main Channel    *    7037.6* *        .1*        .3*
*Main Channel    *    6953.2* *        .1*        .3*
*Main Channel    *    6868.8* *        .1*        .3*
*Main Channel    *    6784.4* *        .1*        .3*
*Main Channel    *    6700    *        .1*        .3*
*Main Channel    *    6600.*  *        .1*        .3*
*Main Channel    *    6500.*  *        .1*        .3*
*Main Channel    *    6400.*  *        .1*        .3*
```

*Main Channel	*	6300.*	*	.1*	.3*
*Main Channel	*	6200.*	*	.1*	.3*
*Main Channel	*	6100.*	*	.1*	.3*
*Main Channel	*	6000.*	*	.1*	.3*
*Main Channel	*	5900.*	*	.1*	.3*
*Main Channel	*	5800.*	*	.1*	.3*
*Main Channel	*	5700	*	.1*	.3*
*Main Channel	*	5684.00	*	.1*	.3*
*Main Channel	*	5683.00	*	.1*	.3*
*Main Channel	*	5663	*	.1*	.3*
*Main Channel	*	5613	*	.1*	.3*
*Main Channel	*	5603.00	*	.1*	.3*
*Main Channel	*	5602.00	*	.1*	.3*
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*Main Channel	*	5351.5*	*	.1*	.3*
*Main Channel	*	5268.*	*	.1*	.3*
*Main Channel	*	5184.5*	*	.1*	.3*
*Main Channel	*	5101	*	.1*	.3*
*Main Channel	*	5100	*	.1*	.3*
*Main Channel	*	5028	*	.1*	.3*
*Main Channel	*	4958	*	.1*	.3*
*Main Channel	*	4888	*	.1*	.3*
*Main Channel	*	4820	*	.1*	.3*
*Main Channel	*	4736	*	.3*	.5*
*Main Channel	*	4706	*	.3*	.5*
*Main Channel	*	4640	*Culvert	*	*
*Main Channel	*	4562	*	.3*	.5*
*Main Channel	*	4521	*	.3*	.5*
*Main Channel	*	4426	*	.1*	.3*
*Main Channel	*	4365	*	.1*	.3*
*Main Channel	*	4302	*	.1*	.3*
*Main Channel	*	4291.82	*	.1*	.3*
*Main Channel	*	4265	*	.6*	.8*
*Main Channel	*	4213.18	*Mult Open	*	*
*Main Channel	*	4121	*	.6*	.8*
*Main Channel	*	4118.5	*	.6*	.8*
*Main Channel	*	4107.43	*	.6*	.8*
*Main Channel	*	4091.43	*	.1*	.3*
*Main Channel	*	4063.43	*	.1*	.3*
*Main Channel	*	4062.43	*	.1*	.3*
*Main Channel	*	3982.14**		.1*	.3*
*Main Channel	*	3901.85**		.1*	.3*
*Main Channel	*	3821.57**		.1*	.3*
*Main Channel	*	3741.28**		.1*	.3*
*Main Channel	*	3661.00	*	.1*	.3*
*Main Channel	*	3660.00	*	.1*	.3*
*Main Channel	*	3640.00	*	.1*	.3*
*Main Channel	*	3590.00	*	.1*	.3*
*Main Channel	*	3580.00	*	.1*	.3*
*Main Channel	*	3579.00	*	.1*	.3*
*Main Channel	*	3483.66**		.1*	.3*
*Main Channel	*	3388.33**		.1*	.3*
*Main Channel	*	3293.*	*	.1*	.3*
*Main Channel	*	3197.66**		.1*	.3*
*Main Channel	*	3102.33**		.1*	.3*
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*Main Channel	*	2911.66**		.1*	.3*
*Main Channel	*	2816.33**		.1*	.3*
*Main Channel	*	2721.00	*	.1*	.3*
*Main Channel	*	2720.00	*	.1*	.3*
*Main Channel	*	2700.00	*	.1*	.3*
*Main Channel	*	2645.00	*	.1*	.3*
*Main Channel	*	2635.00	*	.1*	.3*
*Main Channel	*	2634.00	*	.1*	.3*
*Main Channel	*	2554.20**		.1*	.3*
*Main Channel	*	2474.41**		.1*	.3*
*Main Channel	*	2394.62**		.1*	.3*
*Main Channel	*	2314.84	*	.1*	.3*
*Main Channel	*	2216.89**		.1*	.3*
*Main Channel	*	2118.94**		.1*	.3*
*Main Channel	*	2021.00	*	.1*	.3*
*Main Channel	*	2020.00	*	.1*	.3*
*Main Channel	*	2000.00	*	.1*	.3*

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*Main Channel     *    1945.00 *        .1*        .3*
*Main Channel     *    1935.00 *        .1*        .3*
*Main Channel     *    1934.00 *        .1*        .3*
*Main Channel     *    1839.08**        .1*        .3*
*Main Channel     *    1744.16**        .1*        .3*
*Main Channel     *    1649.24**        .1*        .3*
*Main Channel     *    1554.32**        .1*        .3*
*Main Channel     *    1459.40**        .1*        .3*
*Main Channel     *    1364.49 *        .1*        .3*
*Main Channel     *    1273.90**        .1*        .3*
*Main Channel     *    1183.32**        .1*        .3*
*Main Channel     *    1092.74**        .1*        .3*
*Main Channel     *    1002.16**        .1*        .3*
*Main Channel     *    911.581**        .1*        .3*
*Main Channel     *    821.00  *        .1*        .3*
*Main Channel     *    820.00  *        .1*        .3*
*Main Channel     *    800.00  *        .1*        .3*
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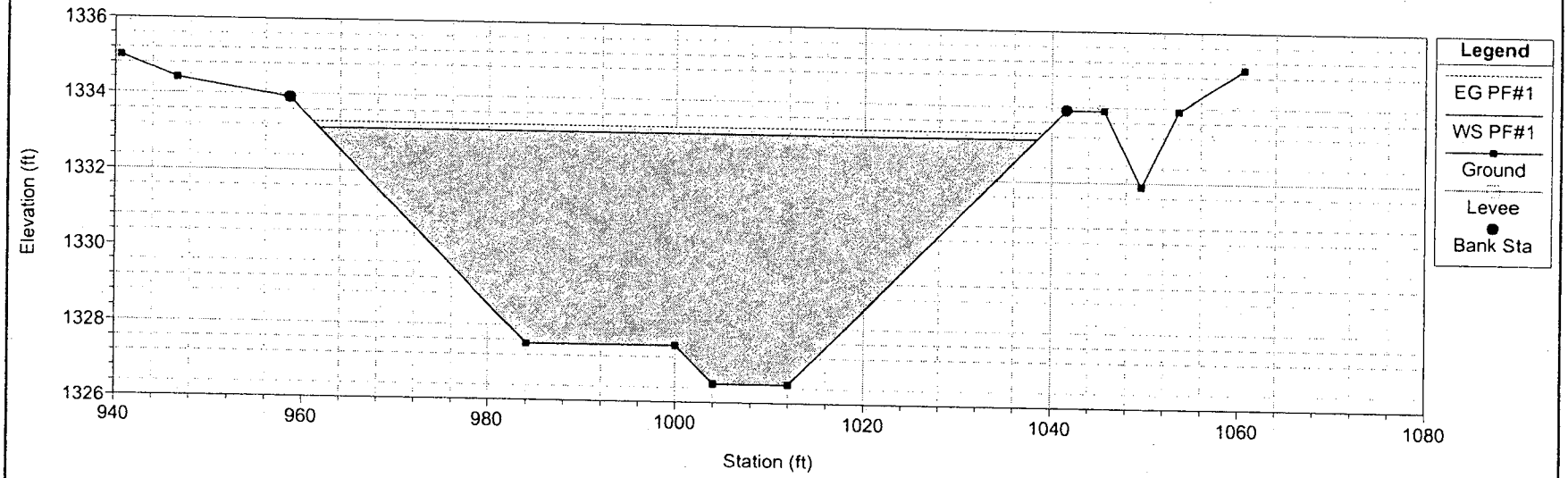
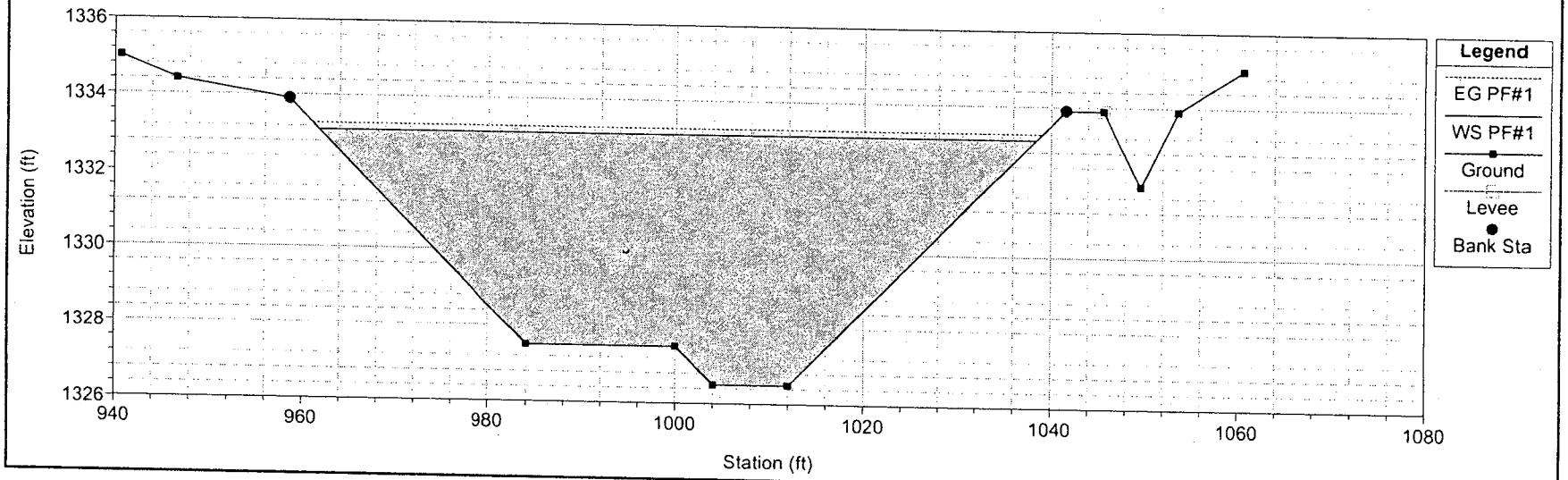
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 5613 Downstream of drop structure 4-6



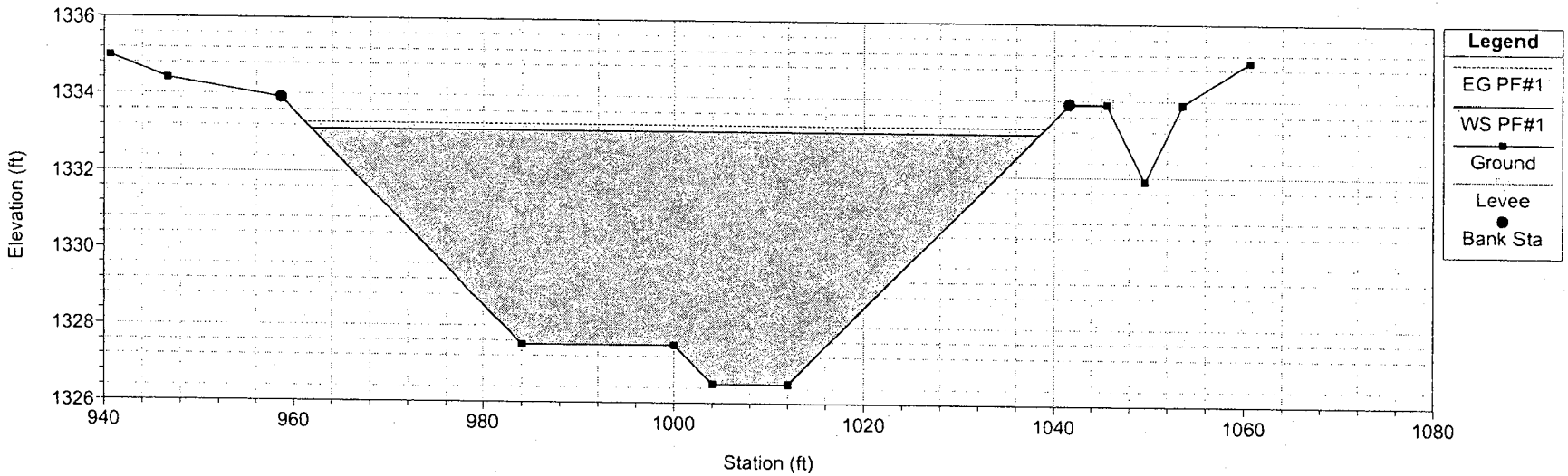
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 5603.00 Downstream riprap area of drop structure 4-6



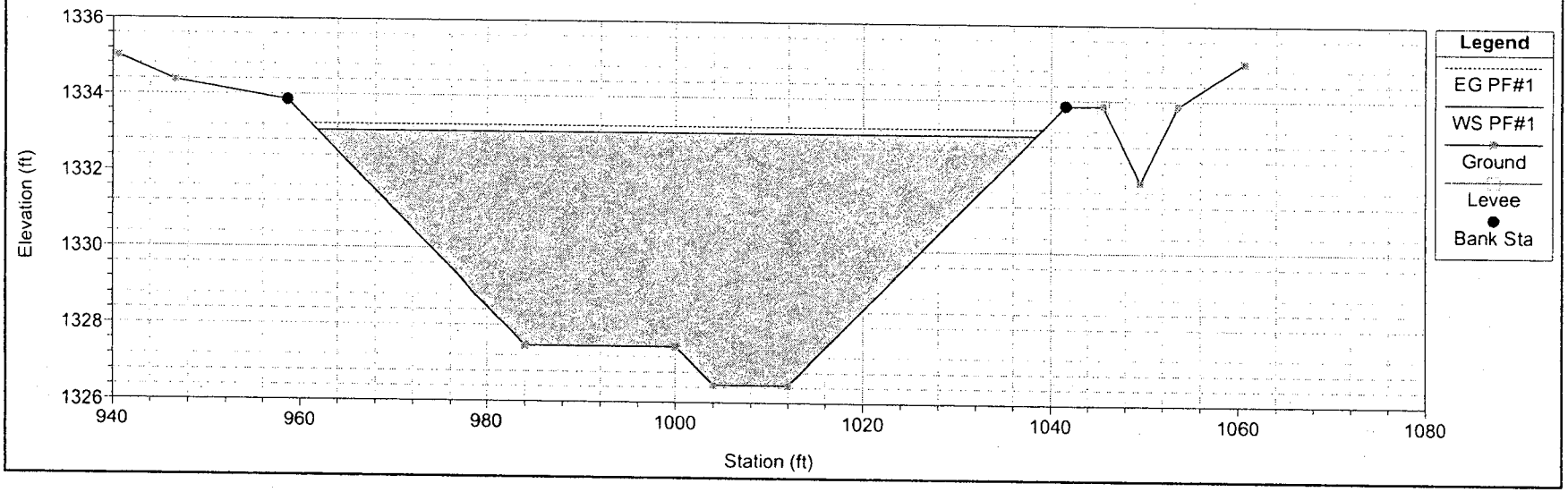
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

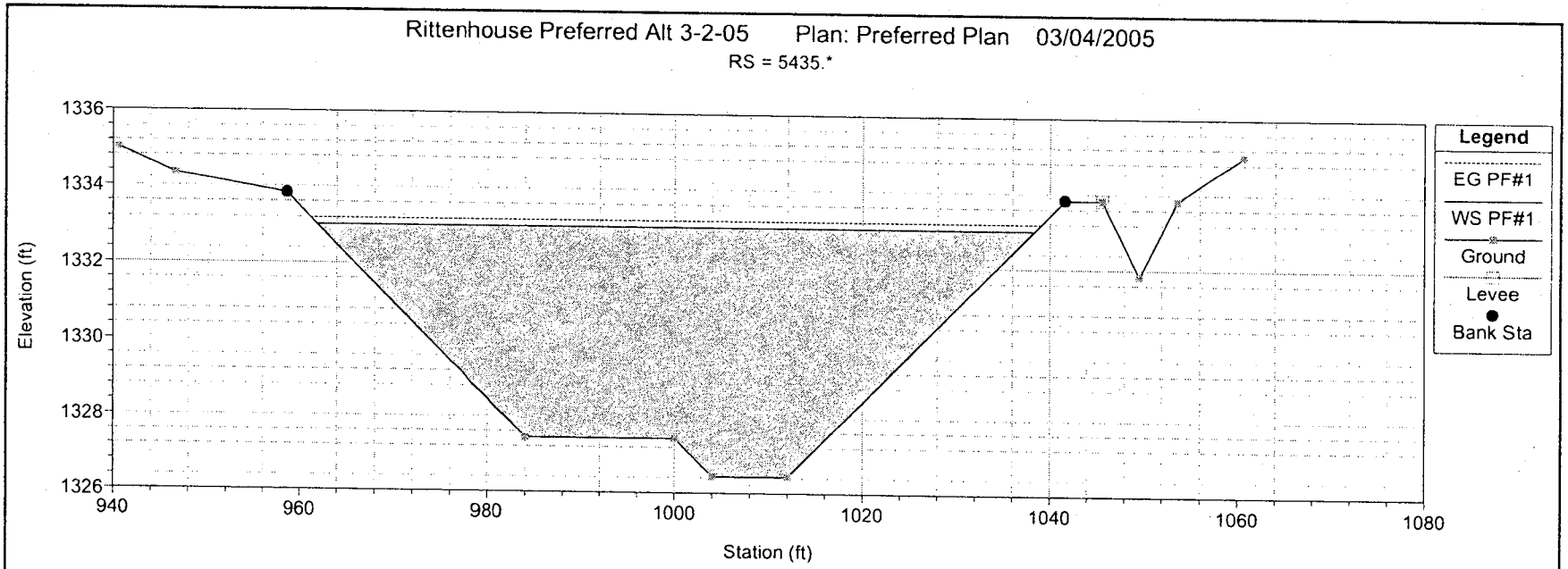
RS = 5602.00 Natural Channel Downstream of drop structure 4-6

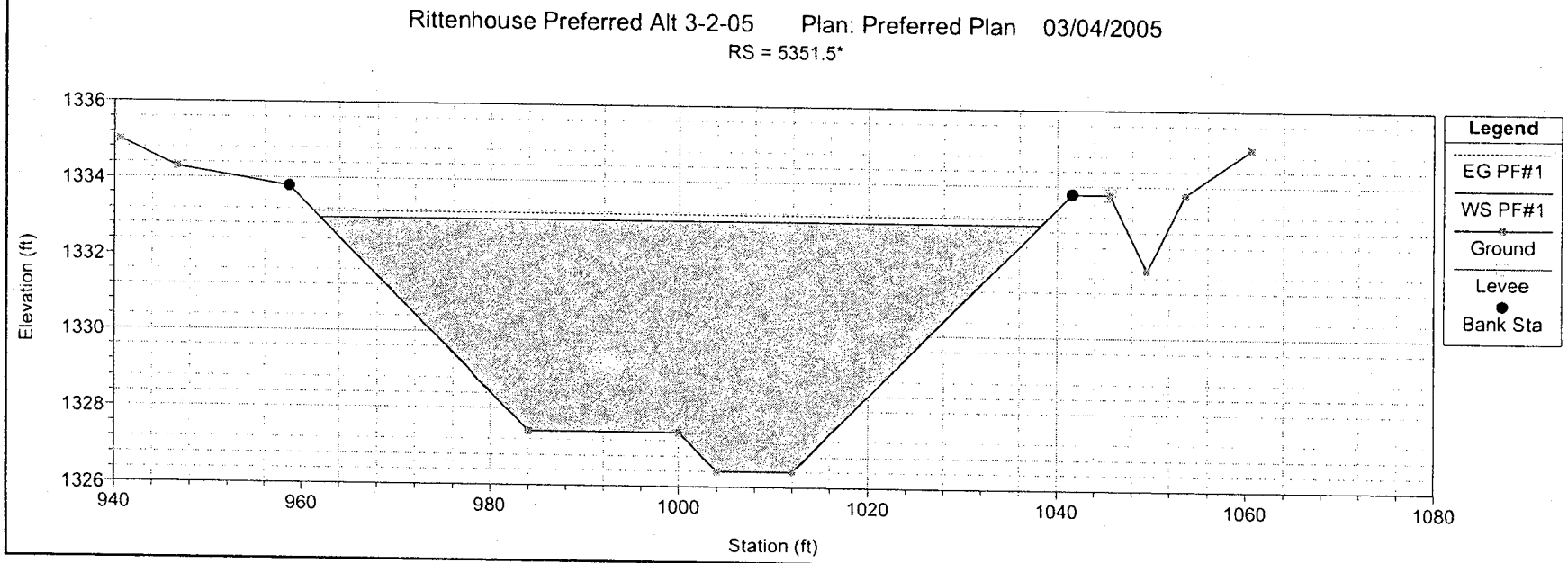


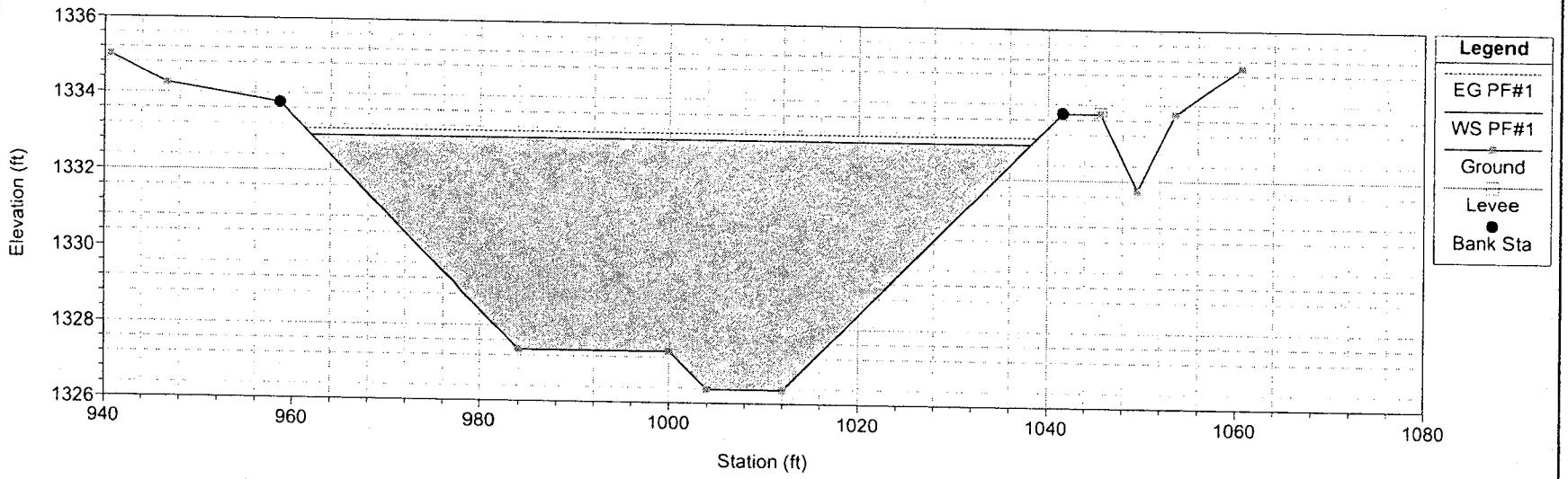
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

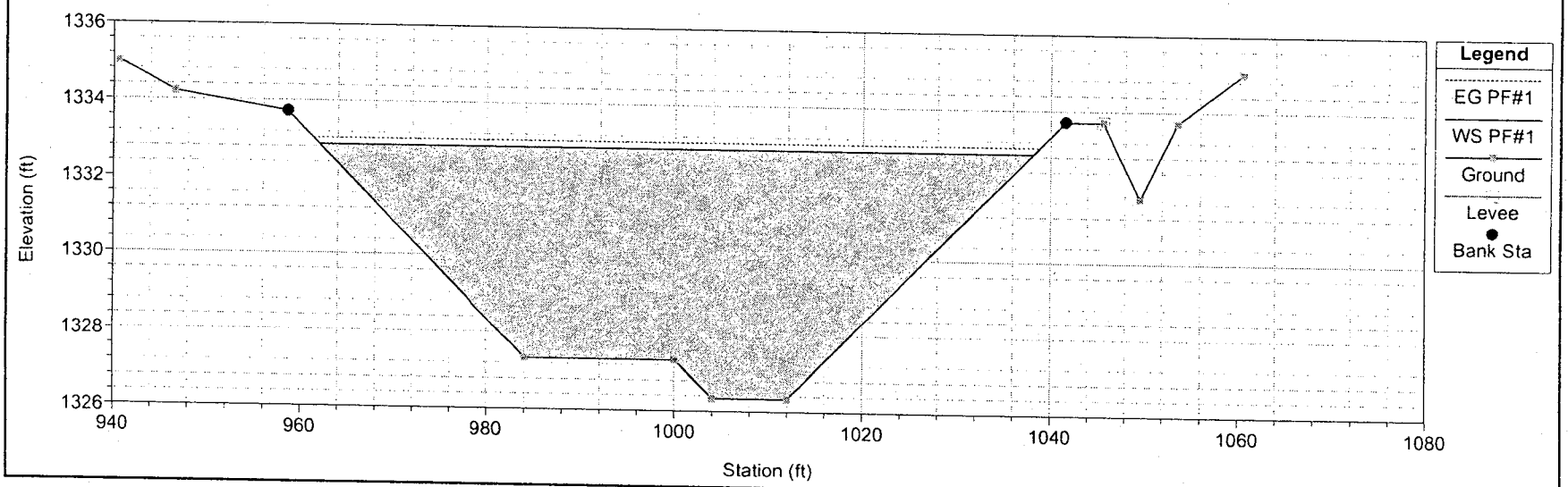
RS = 5518.5*

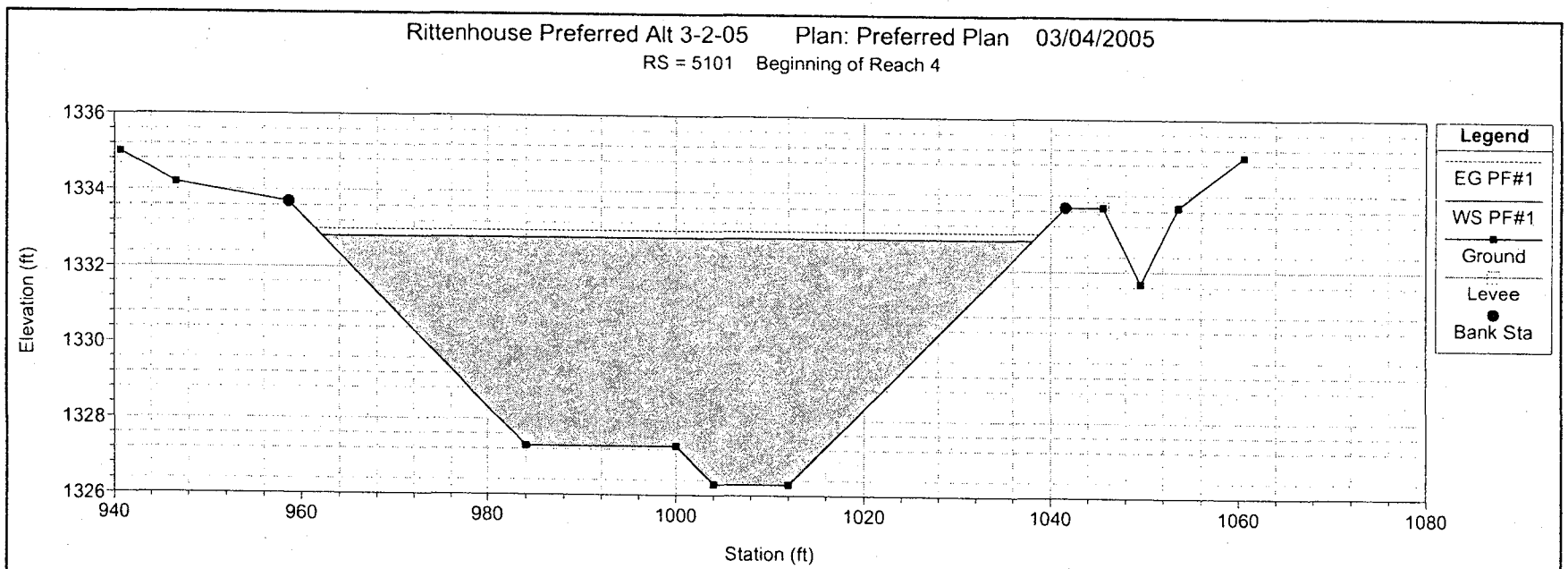


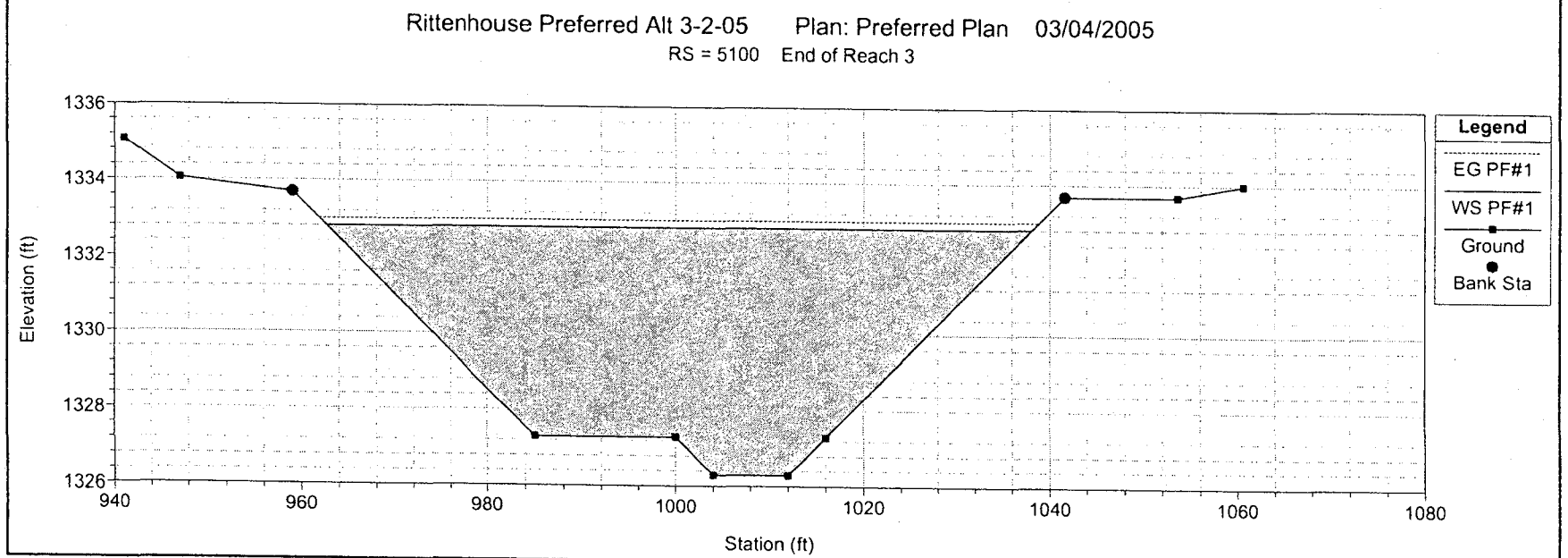

Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 5435.*
Elevation (ft)
1336
1334
1332
1330
1328
1326
940
960
980
1000
1020
1040
1060
1080
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Levee
Bank Sta

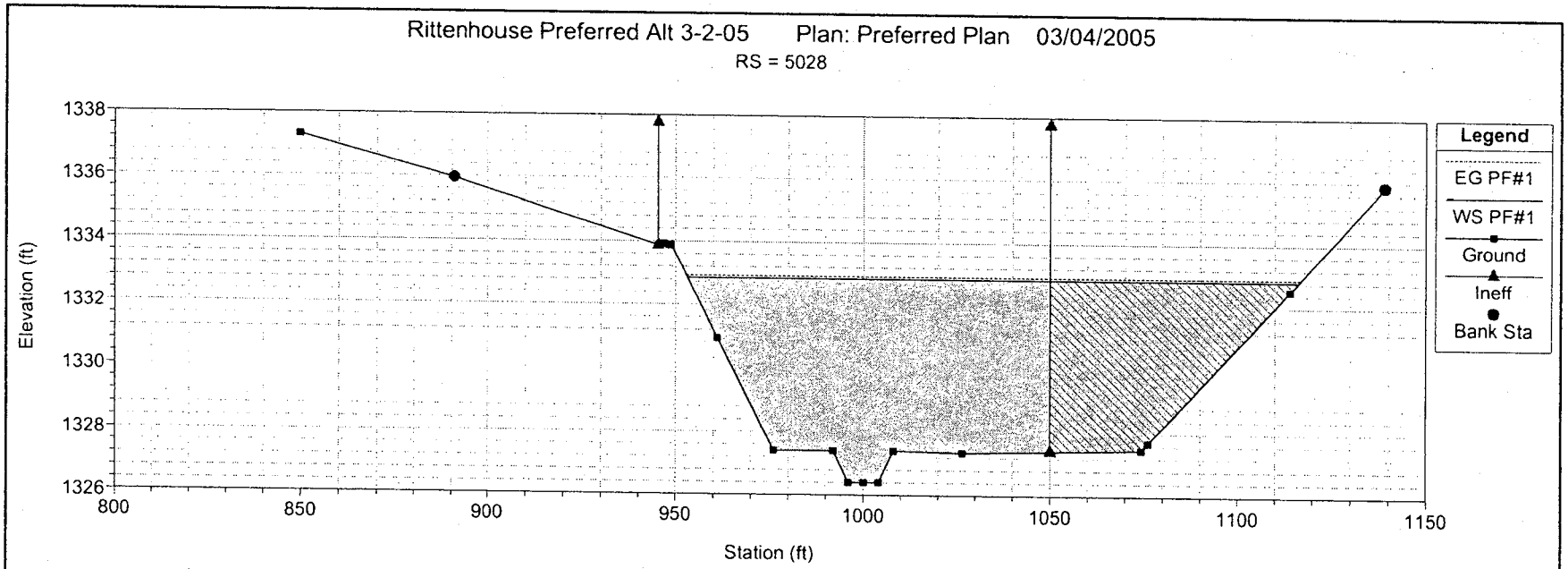

Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 5351.5*
Elevation (ft)
1336
1334
1332
1330
1328
1326
940
960
980
1000
1020
1040
1060
1080
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Levee
Bank Sta

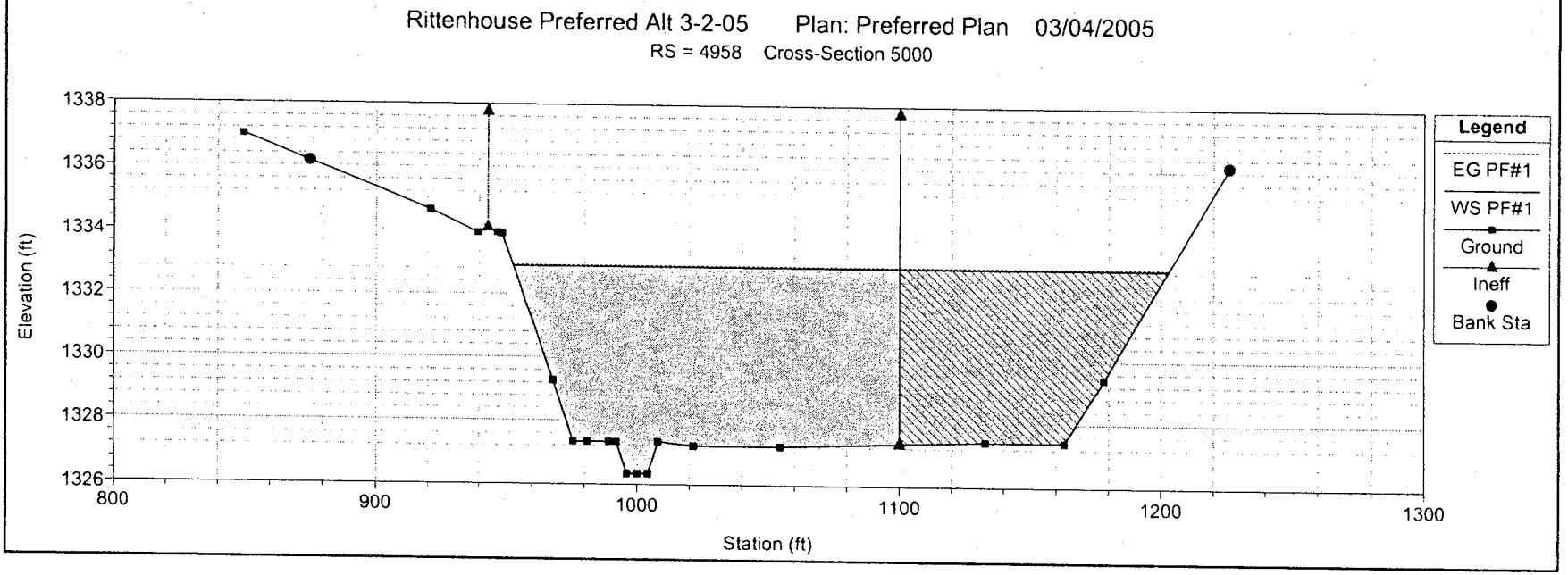

Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 5268.*
Elevation (ft)
1336
1334
1332
1330
1328
1326
940
960
980
1000
1020
1040
1060
1080
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Levee
Bank Sta


Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 5184.5*
Elevation (ft)
1336
1334
1332
1330
1328
1326
940
960
980
1000
1020
1040
1060
1080
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Levee
Bank Sta


Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 5101 Beginning of Reach 4
Elevation (ft)
1336
1334
1332
1330
1328
1326
940
960
980
1000
1020
1040
1060
1080
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Levee
Bank Sta

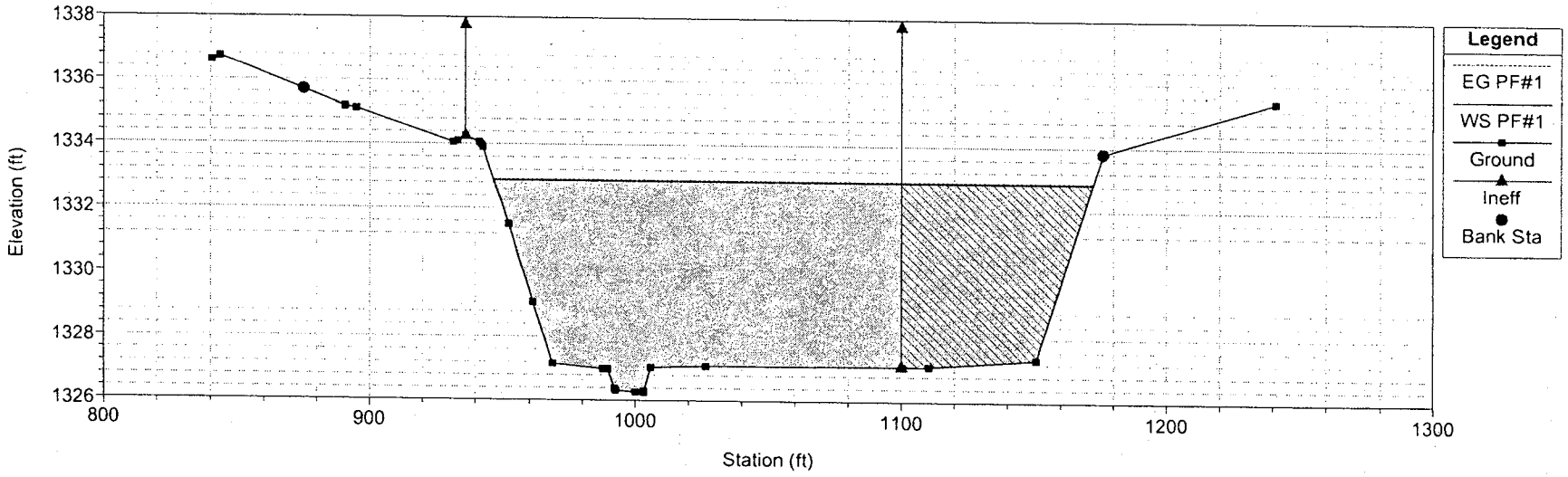

Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 5100 End of Reach 3
Elevation (ft)
1336
1334
1332
1330
1328
1326
940
960
980
1000
1020
1040
1060
1080
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Bank Sta


Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 5028
Elevation (ft)
1338
1336
1334
1332
1330
1328
1326
800
850
900
950
1000
1050
1100
1150
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Ineff
Bank Sta


Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 4958 Cross-Section 5000
Elevation (ft)
1338
1336
1334
1332
1330
1328
1326
800
900
1000
1100
1200
1300
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Ineff
Bank Sta

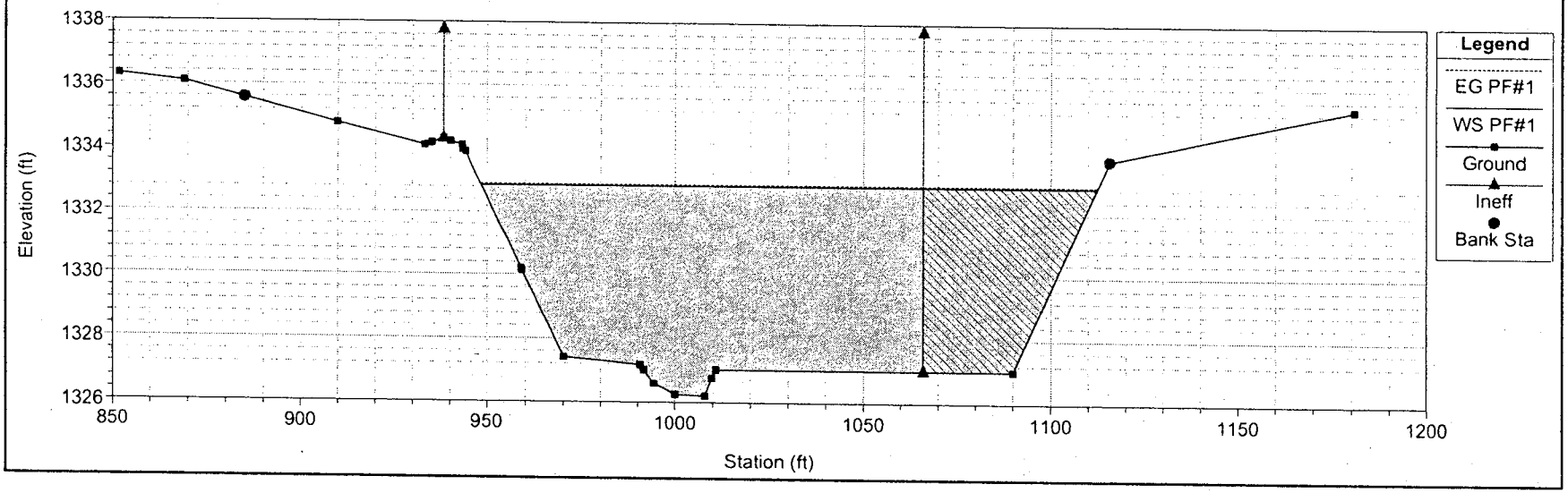
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4888 Cross-Section 4862.65



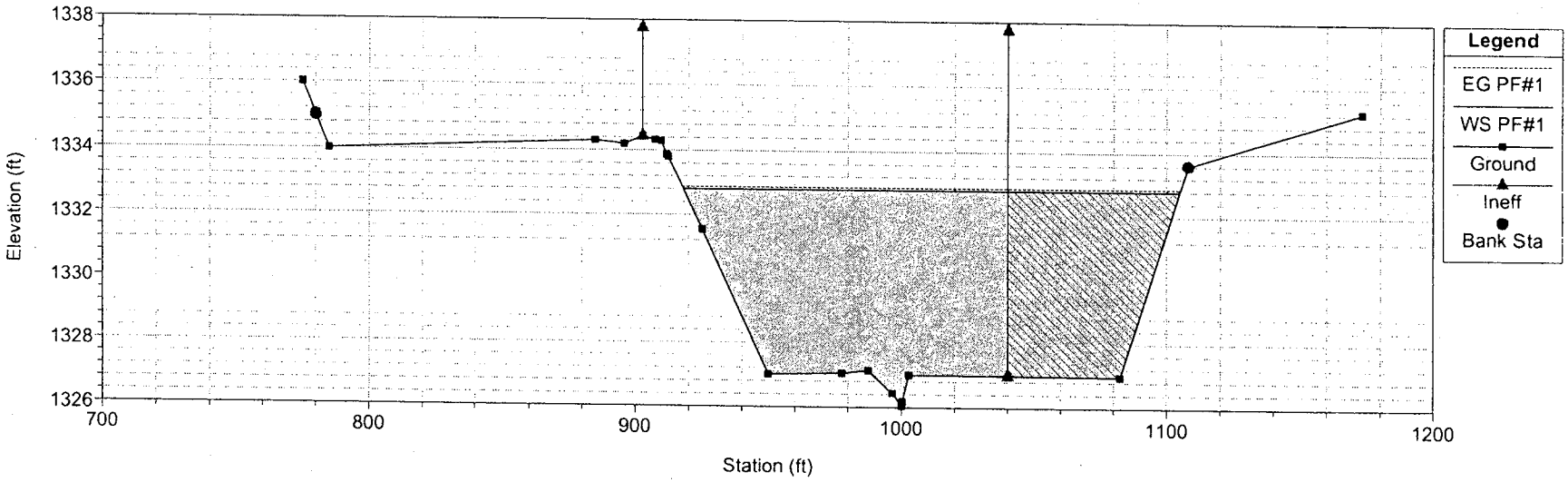
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4820 Cross-Section 4845.83



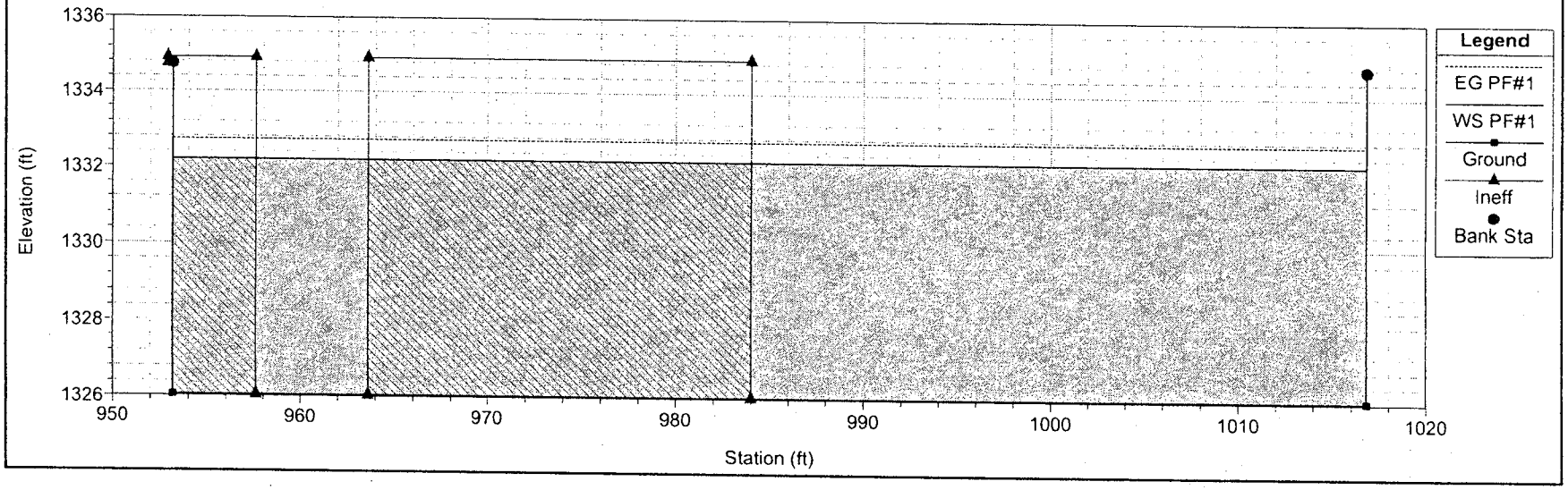
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

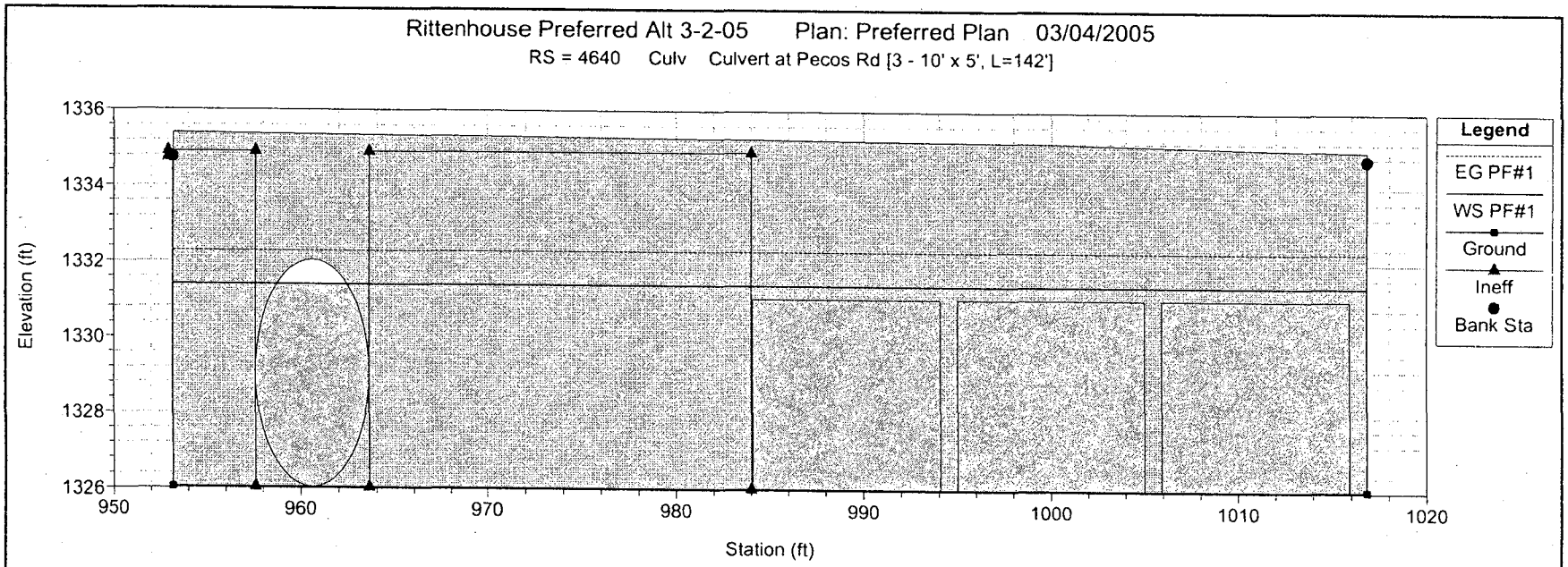
RS = 4736 New Topo - (Includes Pecos Rd.) - Just Upstream of Pecos Rd.

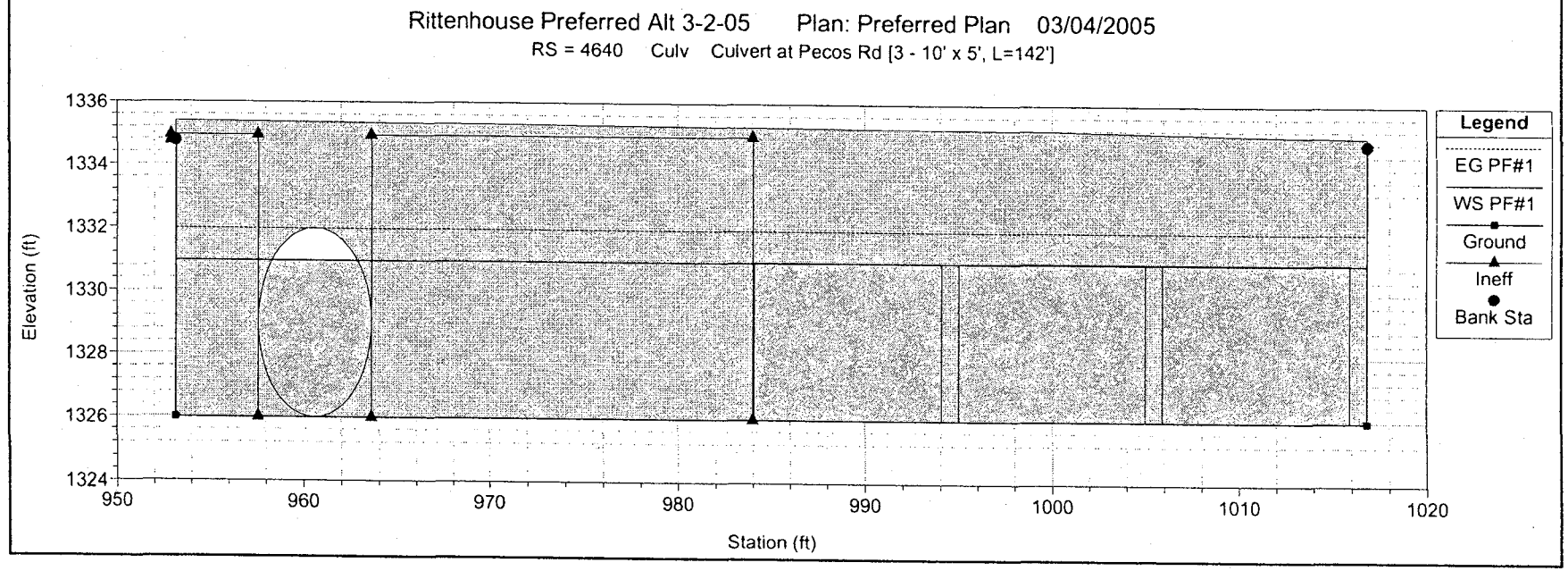


Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4706

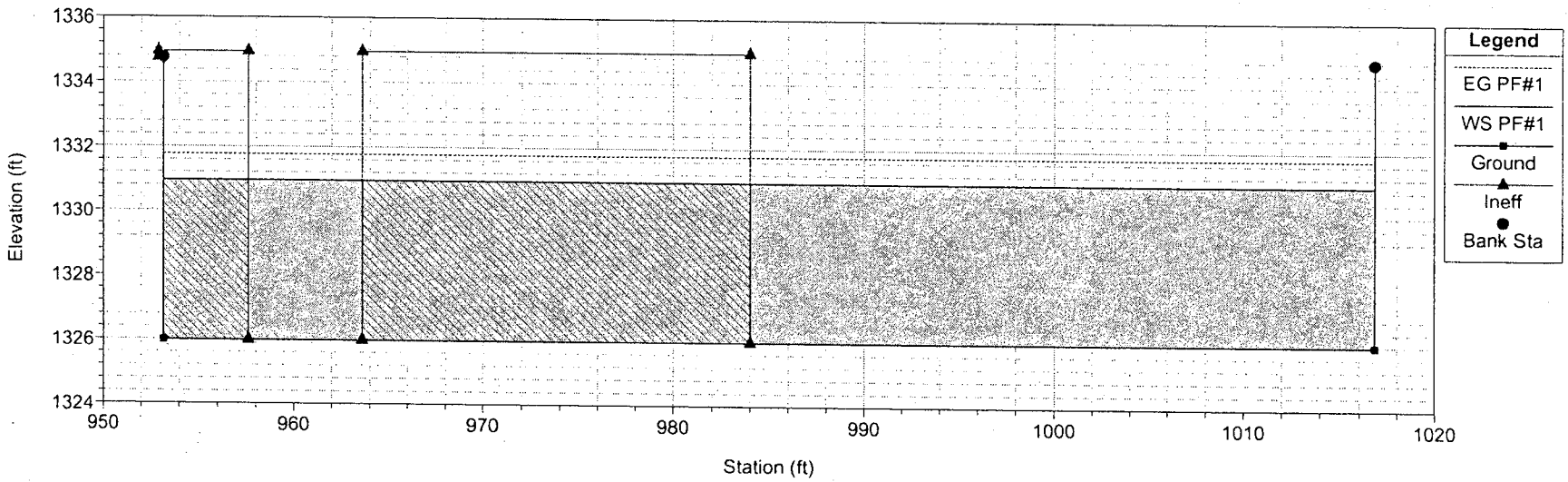



Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 4640 Culv Culvert at Pecos Rd [3 - 10' x 5', L=142']
Elevation (ft)
1336
1334
1332
1330
1328
1326
950
960
970
980
990
1000
1010
1020
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Ineff
Bank Sta


Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
RS = 4640 Culv Culvert at Pecos Rd [3 - 10' x 5', L=142']
Elevation (ft)
1336
1334
1332
1330
1328
1326
1324
950
960
970
980
990
1000
1010
1020
Station (ft)
Legend
EG PF#1
WS PF#1
Ground
Ineff
Bank Sta

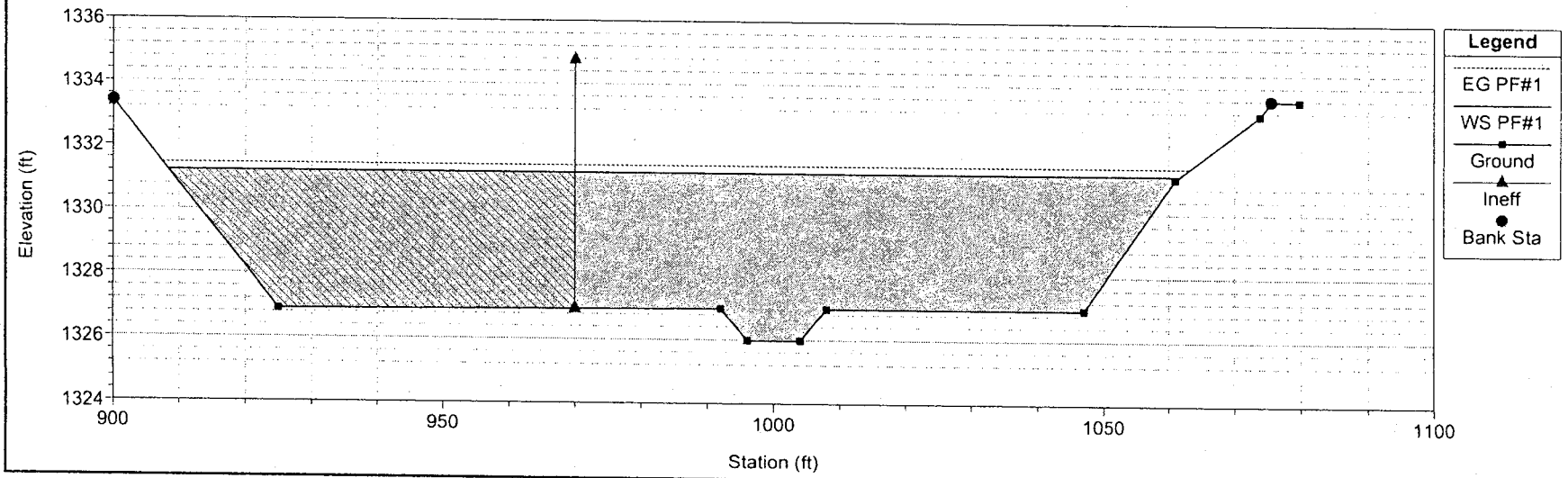
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4562



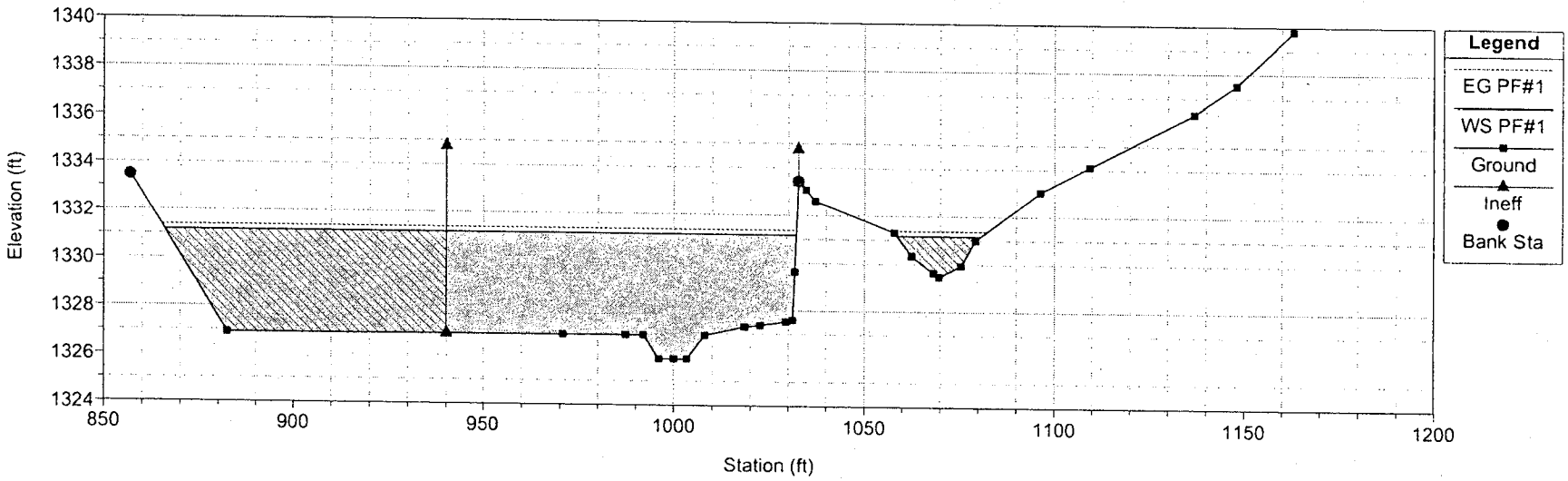
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4521 New Topo - (Includes Pecos Rd.) - Just Downstream of Pecos Rd.



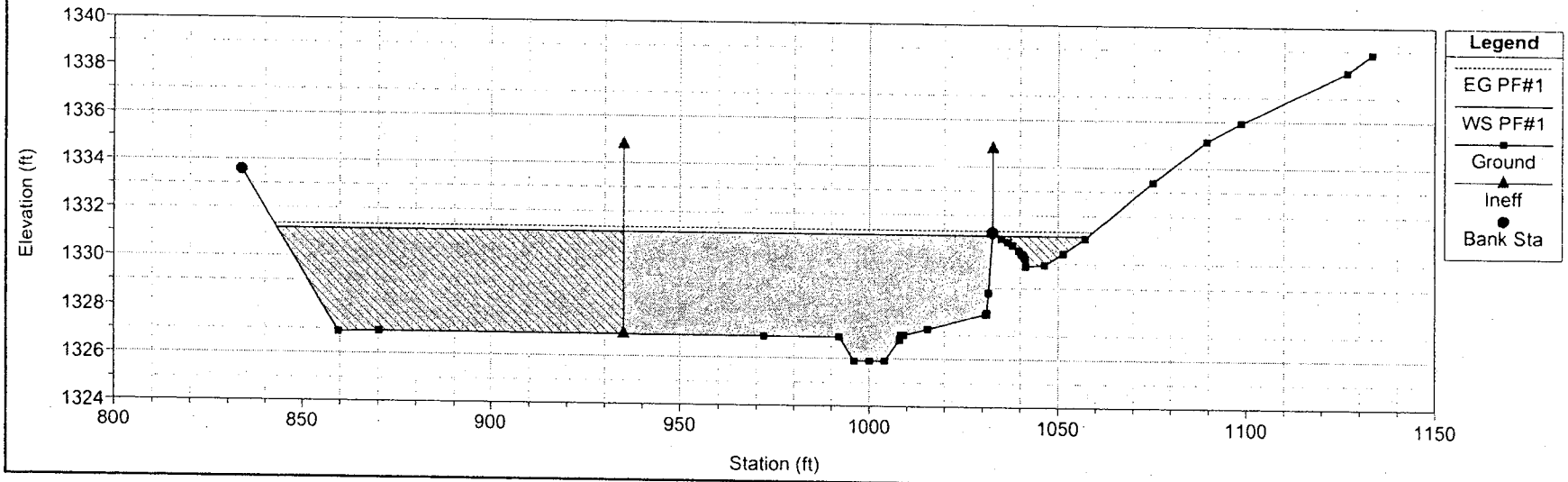
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4426 New Topo - (Includes Pecos Rd.)



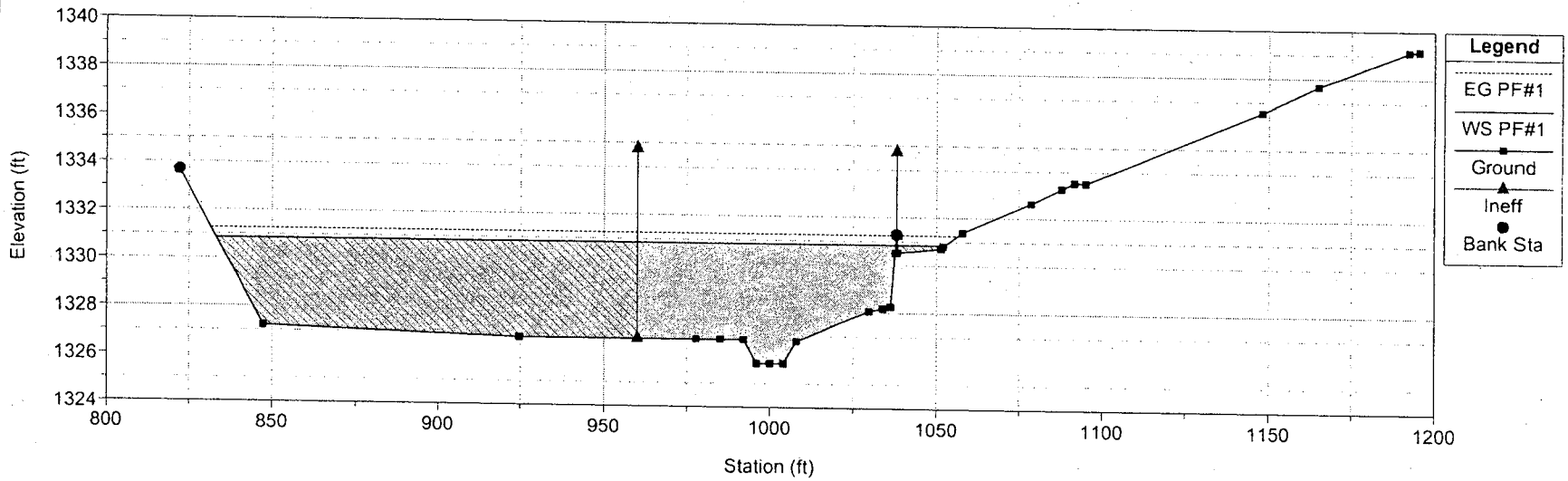
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4365 Upstream from Power Road. - curved area - New Topo (Includes Pec



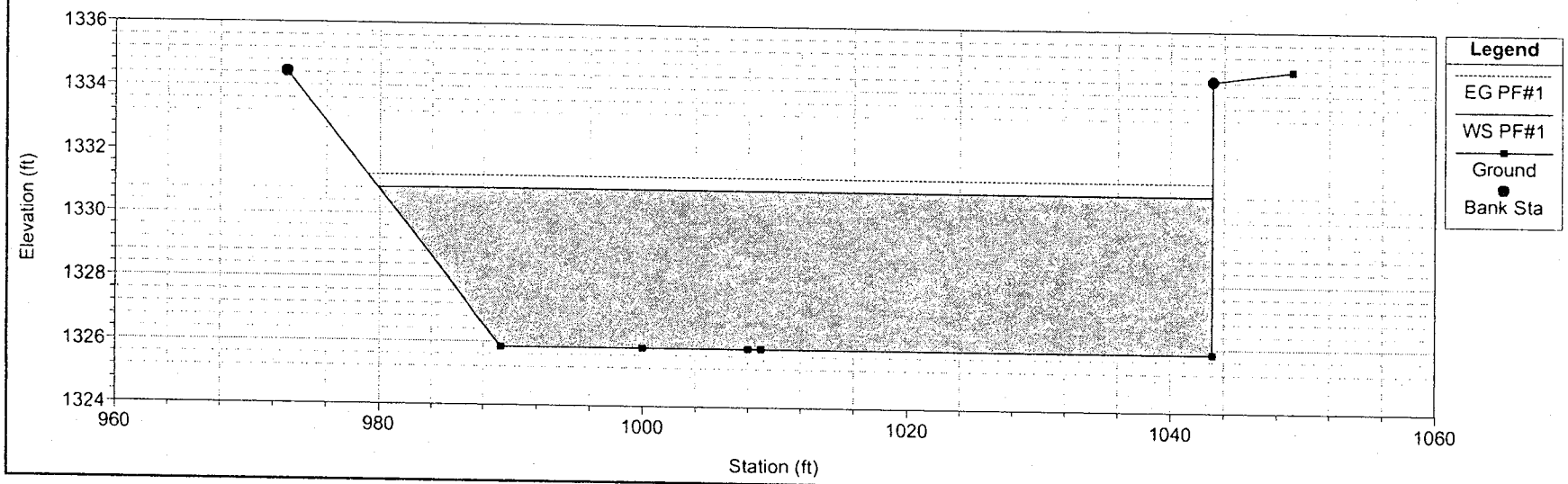
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4302 Revised Topo (Includes Pecos Rd.)



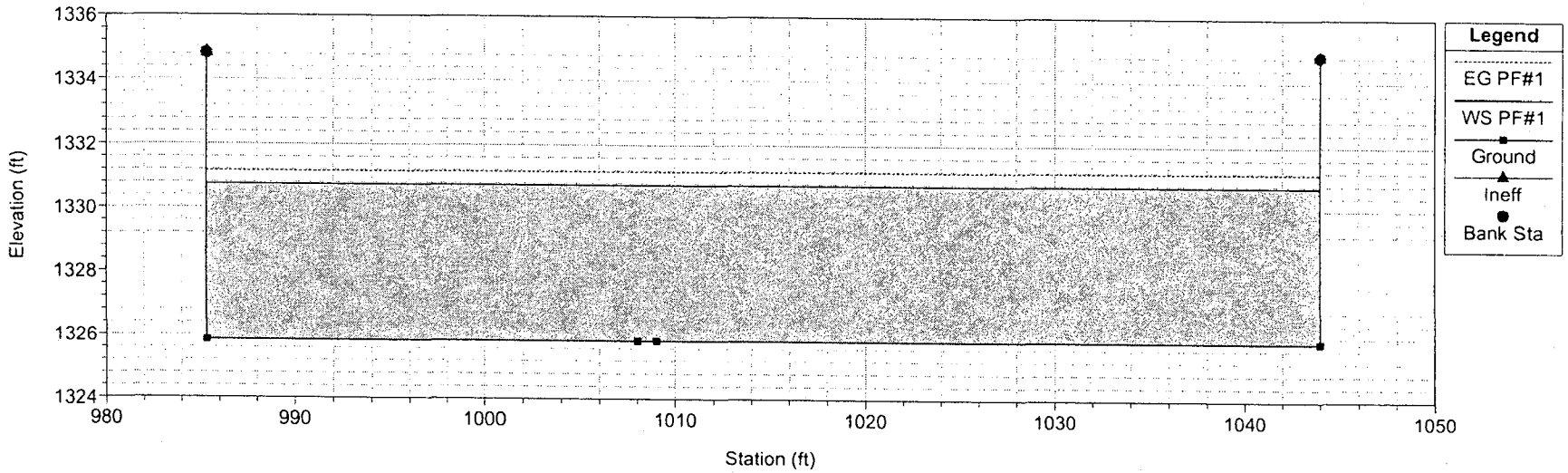
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4291.82 Beginning of Reach 2 - upstream of Power Rd.



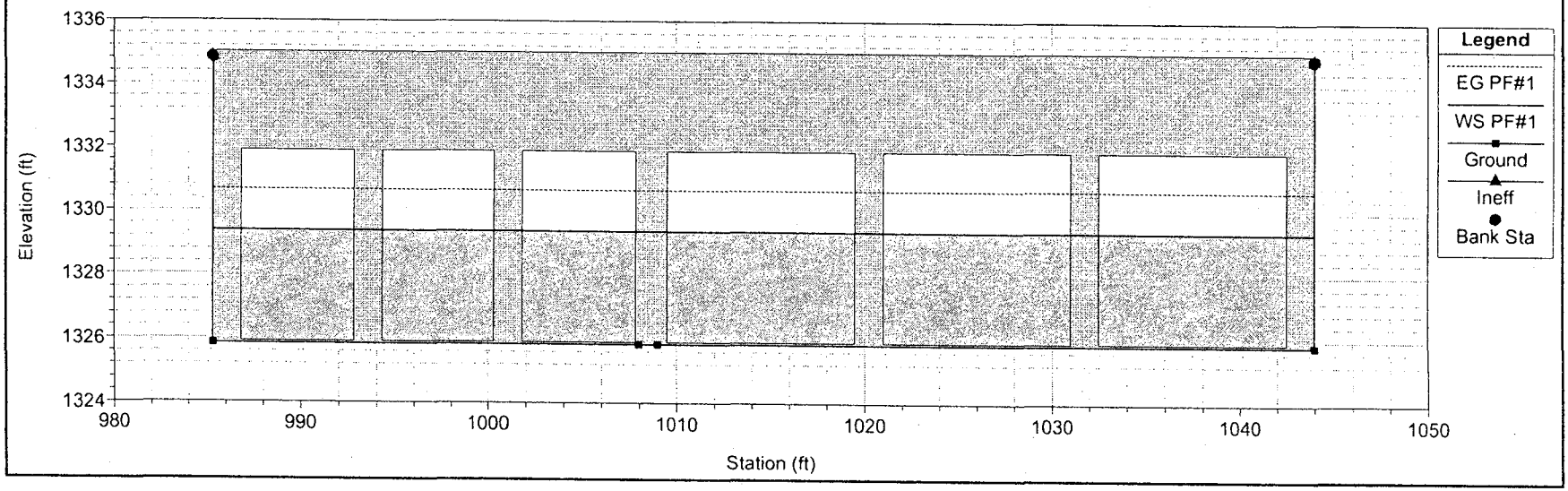
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4265 Just upstream of culverts at Power Road.



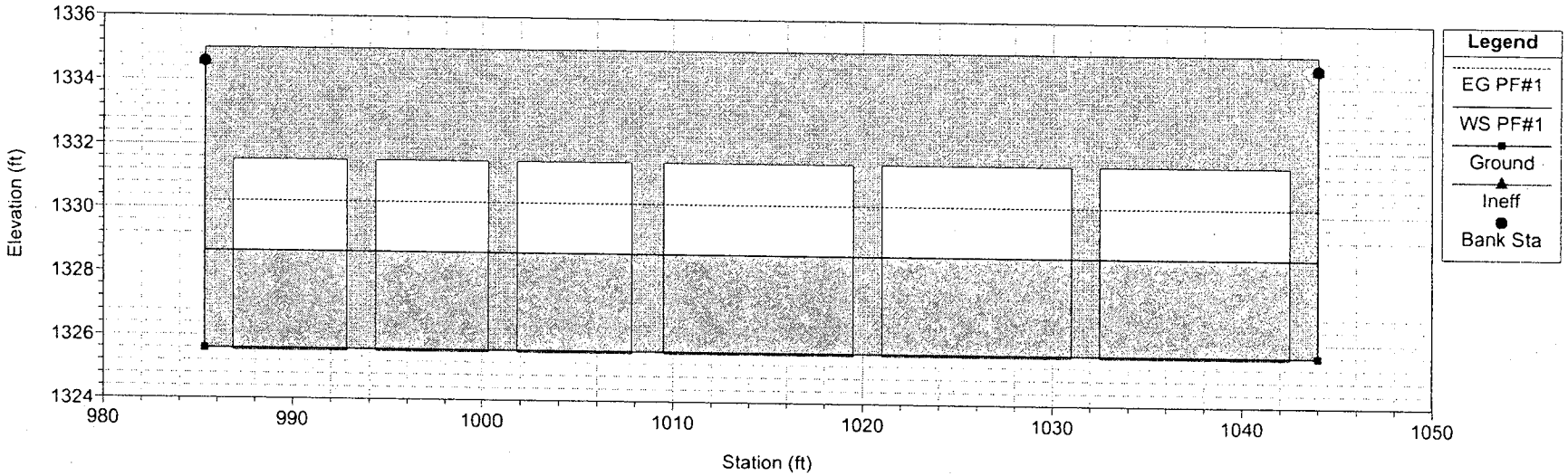
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4213.18 MO Culverts at Power Rd. 3-6'x6'x79' new and 3-10'x4'79 old (Exten



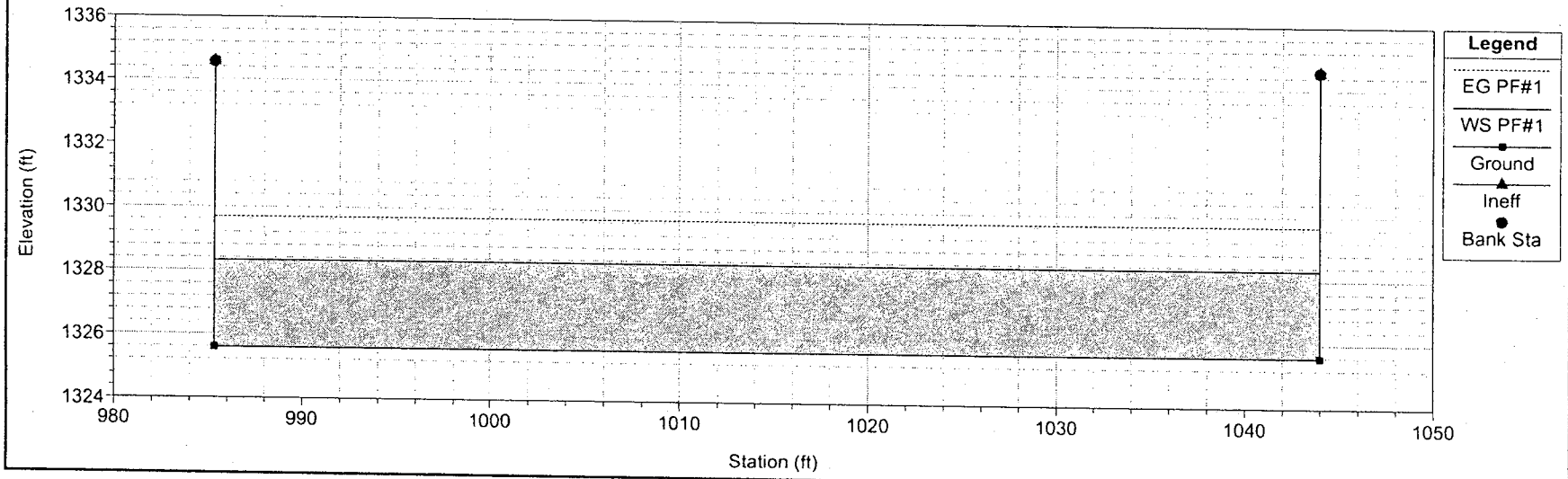
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4213.18 MO Culverts at Power Rd. 3-6'x6'x79' new and 3-10'x4'79 old (Exten



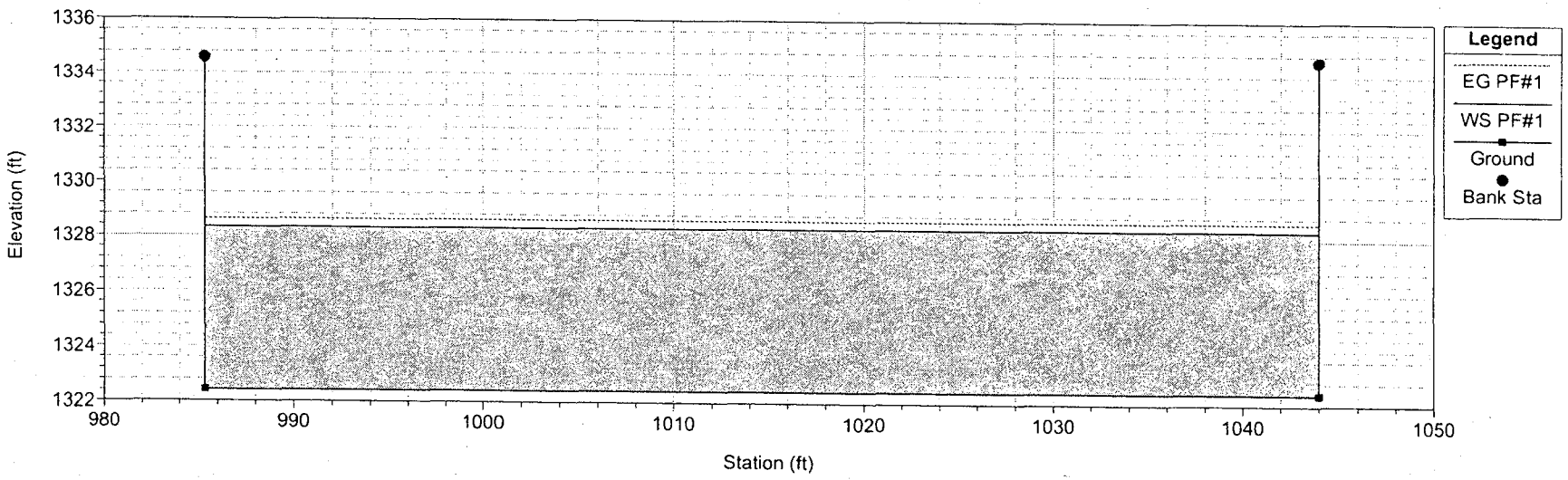
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4121 Just downstream of culverts at Power Road. (before drop) Moved D



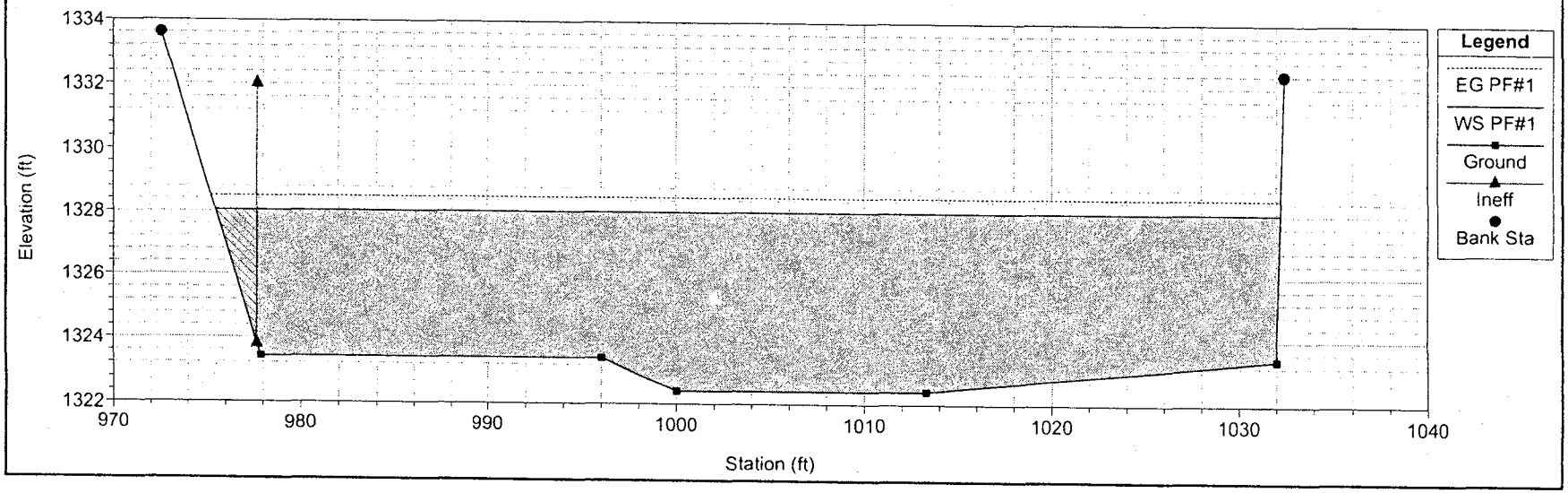
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4118.5 Just downstream of drop at Power Road. Extended D.S. 12' to acco



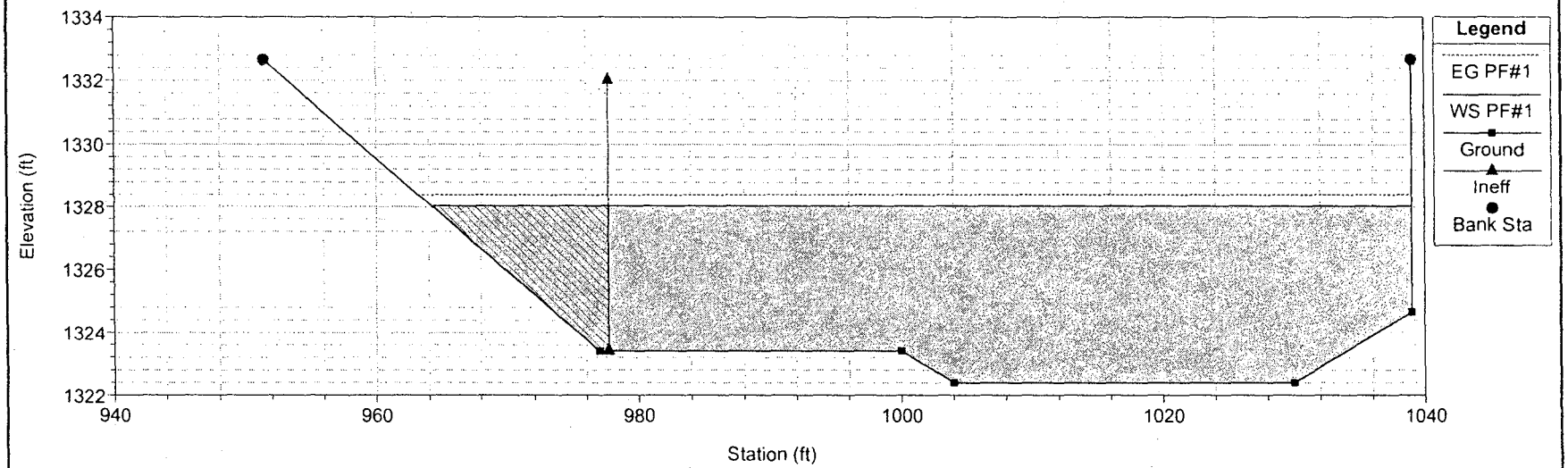
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4107.43 @ 26' downstream from Power Rd.



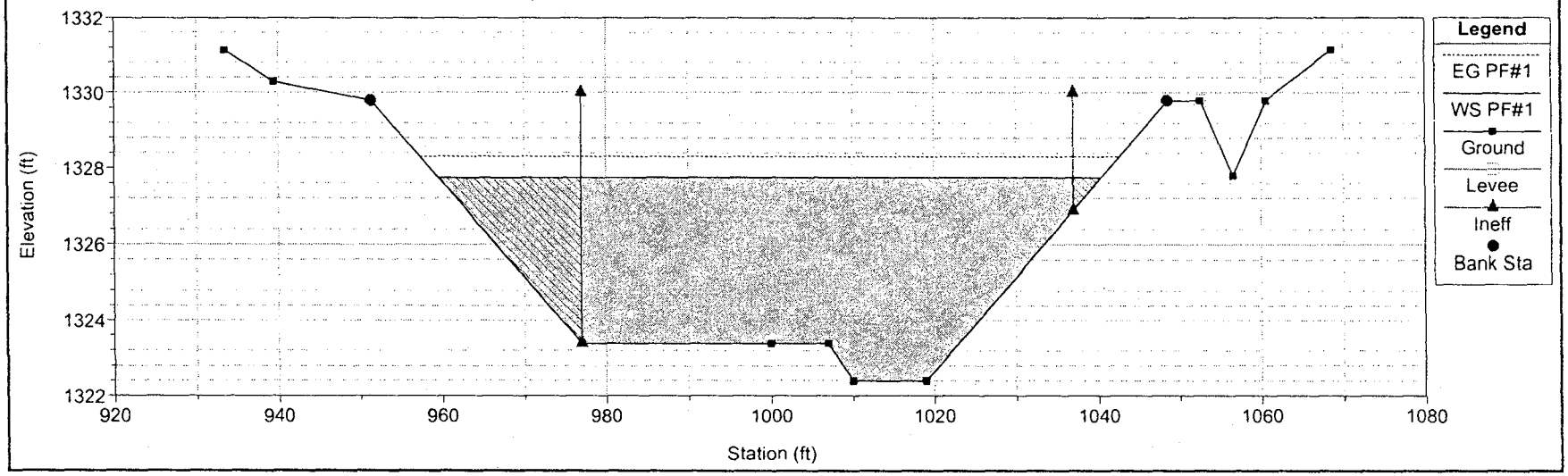
Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

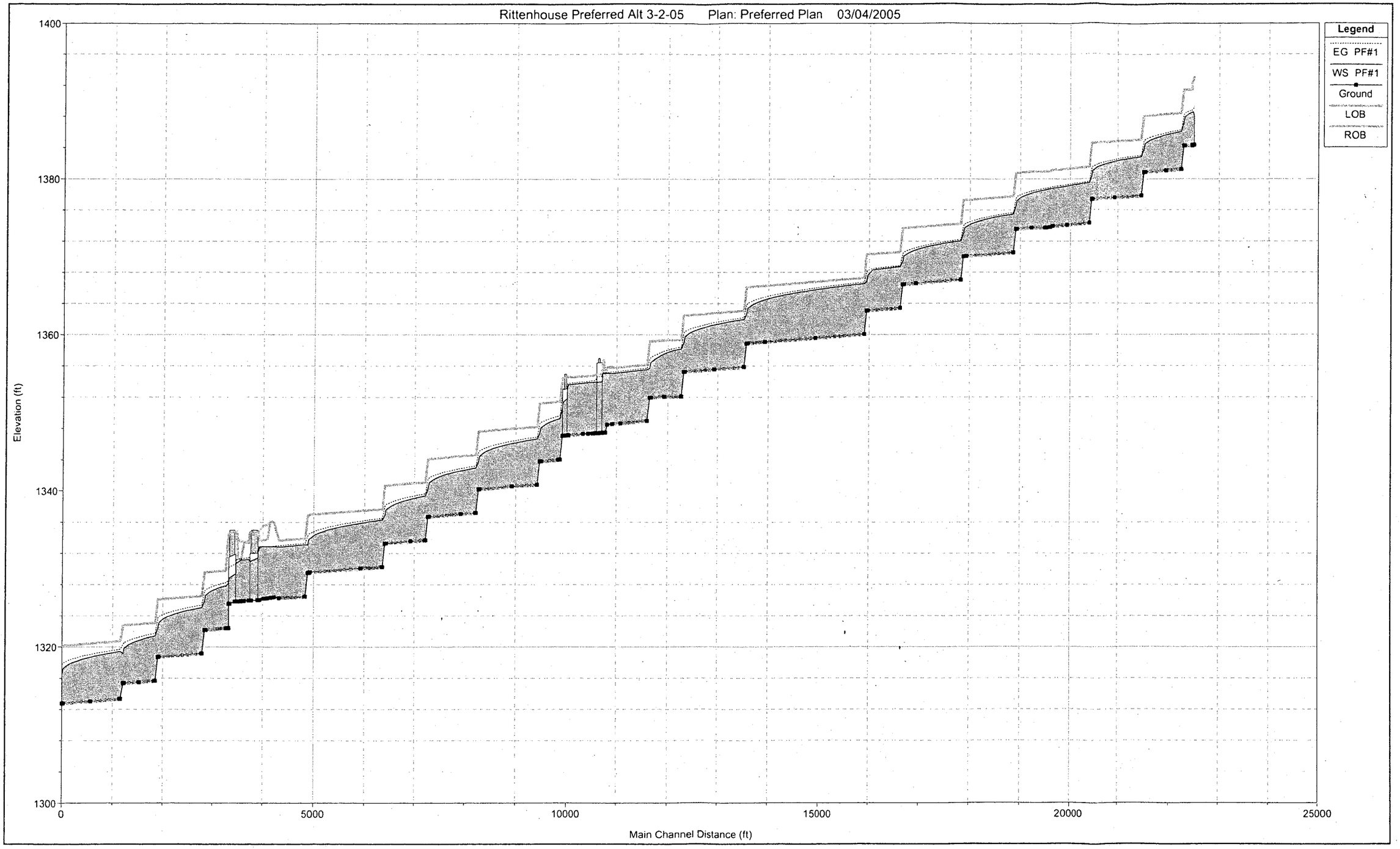
RS = 4091.43 Rip rap area before Power Rd. - 1 x-section downstream



Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005

RS = 4063.43 End of Reach #1 downstream of drop structure 1-5




Rittenhouse Preferred Alt 3-2-05 Plan: Preferred Plan 03/04/2005
Legend
EG PF#1
WS PF#1
Ground
LOB
ROB
Elevation (ft)
1400
1380
1360
1340
1320
1300
0
5000
10000
15000
20000
25000
Main Channel Distance (ft)

APPENDIX – C

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Minutes of Meeting

Date/Time	September 11, 2003	**File no.**	01-2003-071
Location	FCDMC Offices	**Written by**	Elijah Williams
Subject	Rittenhouse Channel CBCs	**Signature**	

Present	Angie Hardesty	FCDMC
	Cathy Register	FCDMC
	Amir Motamedi	FCDMC
	Lynn Thomas	FCDMC
	Shelby Brown	FCDMC
	Todd Williams	FCDMC
	Warren Rosebraugh	FCDMC
	Mike Ramirez	FCDMC
	Kelly Jensen	City of Mesa
	Steve Ketchum	City of Mesa
	Rick Allred	Town of Gilbert
	Joan Scarbrough	Sunbelt Holdings
	Vaughn Bennett	AMEC
	Elijah Williams	AMEC
	Bob Davies	AMEC
Other Distribution	Alex Cornell, File	

	Items	Action
1.	Steve began the meeting by summarizing the two projects affecting the Rittenhouse Channel (Pecos Road Construction & Pecos and Power Road Intersection). He then discussed the current status of the City of Mesa project and the City's responses to FCDMC comments on the plans. Lynn explained that additional forms needed to be completed for the floodplain use permit. There were no other additional comments.	City of Mesa to complete and submit additional forms for floodplain use permit.
2.	As an introduction to the discussion of the channel hydraulics, Cathy explained the history of the hydrologic studies performed in the area. She identified several studies that each had different assumptions about the areas contributing to the Rittenhouse Channel at Power Road. She stated that much of the variation in the flow rates was the result of changing conditions in this quickly developing region of the valley. Of particular interest was the variation in conditions at Williams Gateway Airport (WGA).	

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ITEMS	ACTION
She explained that the original assumption was that 55% of the airport would be impervious material (roads, runways, roofs, etc.). Currently, this is not the case. She found that the actual value is closer to 17%. This reduction in impervious surface area greatly reduced the amount of runoff coming from WGA and altered the time to peak flow.	
3. Elijah then explained the various models that AMEC had run in the Rittenhouse Channel. He explained that for the City of Mesa project, AMEC had received a flow rate of 1343 cfs from FCDMC. This value was used in HY8 to design the 3-10'x5' CBCs under the future Pecos Road. He then explained that during the design of the Pecos and Power Road Intersection, that AMEC was provided flow rates of 1050 cfs for the LOMR, 1875 cfs at Power Road, and 1403 cfs in the upstream trapezoidal channel. Using these new flows in the existing condition, results in the overtopping of the ponding area upstream of Power Road and the overtopping of the trapezoidal channel bank (see model summary handout). He then explained that if these flow rates are used, that the problem becomes worse with the addition of the Pecos Road CBCs because of the losses through the boxes. A model was run with the addition of the Pecos Road culverts and extension of the Power Road culverts and the problem became severe. A check was made with the 1050 cfs flow used in the LOMR and the proposed system handled this flow with sufficient freeboard. Elijah then presented the various solutions that AMEC prepared to address the insufficient capacity at Power Road (see model summary handout). These alternatives included modifying the 3-10'x4' CBCs at Power Rd to 3-10'x6' CBCs. Adding an additional 6'x6' CBC at Power Rd, and converting the 3-10'x5' CBCs at Pecos Road to 3-10'x6' CBCs. These modifications successfully kept the flows within the channel but with little freeboard in some locations.	

ITEMS	ACTION
4. In reviewing these alternative scenarios, the hydrology was again discussed. Of particular interest were the refinements to the model that Cathy made for the WGA flows. Cathy felt that if she could receive assurances from the City of Mesa and the Town of Gilbert that as future development occurs at WGA, that these developments will be required to retain their own runoff; she would be willing to revise the flow rate at Power Road from 1875 cfs to 1500 cfs. Kelly and Rick both concurred that their respective development policies required developers to retain their own runoff. Elijah added that he was aware that a large detention facility was planned within WGA. Cathy then said that it would be acceptable to FCDMC to use 1500 cfs at Power Road and 1400 cfs in the upstream trapezoidal channel	
5. AMEC agreed to modify the model to reflect these new flow rates, but questioned at which point (in terms of channel freeboard) would the design concept be acceptable to FCDMC. Cathy explained that the concept would be evaluated based on its effects to the existing conditions with the new flow rates.	AMEC to revise models to reflect new flow rates.
6. Shelby brought up the meeting already scheduled with FCDMC on the following Tuesday and questioned whether or not it was still needed. Steve felt that it would be a good opportunity to review the work AMEC had completed with the new flow rates. Everyone agreed to attend, except Rick Allred who was unavailable at that time.	Attendants to attend additional meeting to review new model runs.

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Minutes of Meeting

Date/Time	September 16, 2003	**File no.**	01-2003-071
Location	FCDMC Engineering Conf Room	**Written by**	Elijah Williams
Subject	Rittenhouse Channel Revised Models	**Signature**	

Present	Angie Hardesty	FCDMC
	Cathy Register	FCDMC
	Amir Motamedi	FCDMC
	Lynn Thomas	FCDMC
	Shelby Brown	FCDMC
	Warren Rosebraugh	FCDMC
	Mike Ramirez	FCDMC
	Steve Ketchum	City of Mesa
	Elijah Williams	AMEC
	Bob Davies	AMEC

Other Distribution File

	Items	Action
1.	To follow-up on the meeting held 9-11-03, Elijah presented the results of the analyses made with the new flow rates. In general, the models presented were the same as those shown previously, with the exception of one that made improvements to Pecos Road only. All of the revised models showed improvement with respect to those using the higher flow rates. Replacing the 3-10'x4' CBCs at Power Rd with 3-10'x6' CBCs resulted in the same or better freeboard heights throughout the system, as compared to the existing conditions. The one exception was in the trapezoidal channel, where the available freeboard was reduced from about 0.75' to 0.45'. Modifying the Pecos Rd culverts to 3-10'x'6' CBCs provided a negligible benefit. Adding an additional CBC on Pecos Rd benefited the system dramatically. The freeboard provided by this alternative was approximately twice that of the existing case. Making improvements at Pecos Rd only resulted in overtopping of the channel.	

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ITEMS	ACTION
2. AMEC recommended only replacing the 3-10'x4' culverts on Power Rd with 3-10'x6' culverts. The reason for this recommendation was that this system provided at least 0.5' of freeboard throughout the system and Modifying the culverts at Pecos Rd had a negligible benefit. In addition, adding an additional culvert at Pecos Road seemed excessive given that development is to occur in the area within a few years (reducing the flows to the Rittenhouse Channel).	
3. Amir felt that this recommendation was reasonable and felt that it would most likely be acceptable to FCDMC, but he wanted an opportunity to review the HEC-RAS models and present the results to others at FCDMC before making a final decision. AMEC agreed to send the models to Cathy Register.	AMEC to send models to Cathy R. FCDMC to review models and reach consensus.
4. Add a construction note for no staging within the floodplain.	

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Record of Telephone Conversation

Date/Time	9-3-03	**W.O./File no.**	01-2003-071
Between	Alex Coronel	**of:**	AMEC
and	Kathy Register	**of:**	MCFCD
Subject	Modeling and Design Issues for Rittenhouse Rd. Channel		
Distribution	Elijah Williams, Robert Davies		

9-3-03
2:00 P.M. – I called Kathy and asked her if we could raise the CWESL as a result of our design, and whether or not we could use the over bank area adjacent to the trapezoidal channel as conveyance area, I also asked her if she had any idea as to why the "ponding" area, upstream of Power to the trapezoidal channel, is there and why it is not reflected on the FIRM panel.

Kathy suggested that I speak with Lynn Thomas in the Regulatory Group regarding the water surface elevation. Her phone number is 602-506-4779.

As to the "ponding" area she said that she had looked into this before and had determined that the area is not included in the HEC-1 model and is therefore not included for hydrologic purposes as far as she can tell it is there to help the water make the turn as it flows through the CBC's passing below Power Rd. As far as mapping goes she pointed out that the channel is currently shown on the effective FIRM panel as a solid line with the callout "100-year flood contained in channel", this is a simpler way to map a floodplain that is contained within an engineered channel. We speculated that the mapping contractor may have simply viewed this area as un-likely to be developed and chose not to include the width or water surface elevation of the "ponding area".

SIGNATURE: _____ CONFIRMATION: (YES) / (NO)

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Record of Telephone Conversation

Date/Time	9-3-03	**W.O./File no.**	01-2003-071
Between	Alex Coronel	**of:**	AMEC
and	Lynn Thomas	**of:**	MCFCD
Subject	Regulatory Issues for Rittenhouse Rd. Channel		
Distribution	Elijah Williams, Robert Davies		

9-3-03
2:30 P.M. (Approx)
I called and left Lynn a message regarding the Rittenhouse Rd. Channel.

3:00 P.M. (Approx)
Lynn called me back.
I asked Lynn if we could raise the computed water surface elevation within the channel, and if we could use the over-banks within the trapezoidal channel as conveyance area. I let her know that we will be using a higher flow rate at the request of the Flood Control District.

Lynn said that we should design for the higher flow rate, and that we should not expect to be able to match the effective water surface elevation because of the simple fact that we are using a higher flow rate. She alluded to the fact that she hopes that we won't have to change the note "100-year flood contained in channel" and that we could raise the water surface elevation within the channel slightly.

As far a Lynn is concerned (from a regulatory standpoint) it is O.K. to use the over bank area that is outside of the trapezoidal channel banks as conveyance area for the 100-year flood as long as the water stays within flood control district right-of-way. She did however state that she does not have the final say on this issue. The final determination will come from the Engineering group as FCD maintenance and access will be affected by this decision. She suggested that we contact the Engineering group regarding this matter.

SIGNATURE: _____ CONFIRMATION: (YES) / (NO)

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