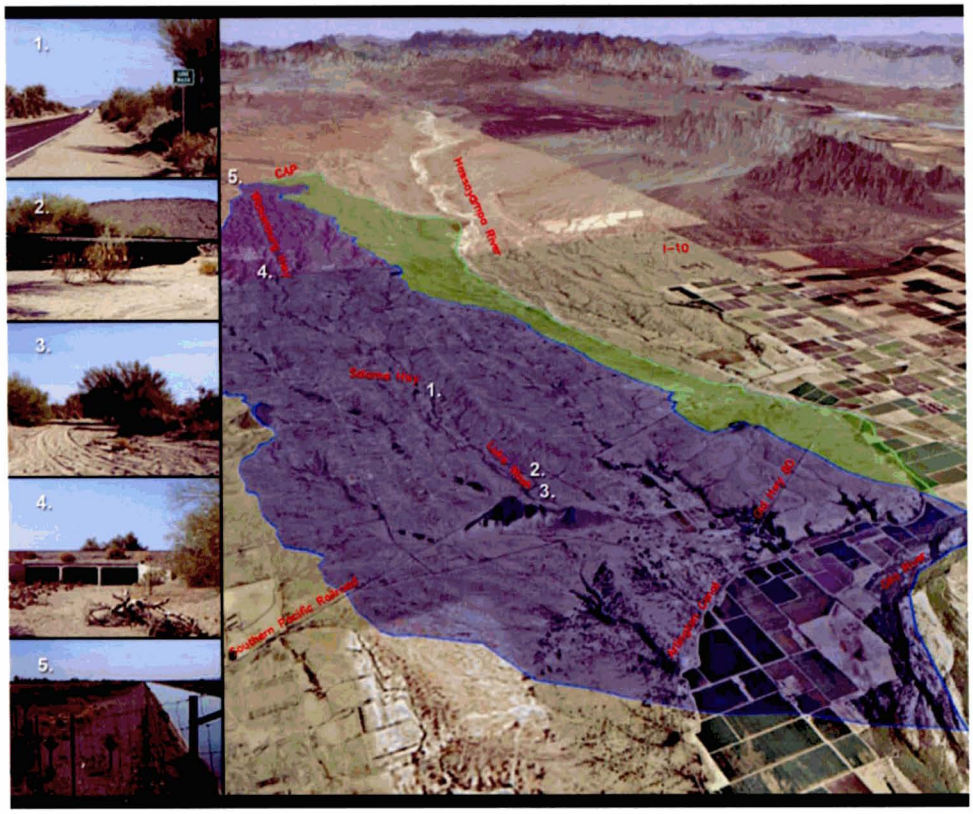
HYDROLOGIC STUDY REPORT
FOR
LUKE WASH WATERSHED ZONE AE FLOODPLAIN DELINEATION STUDY

CONTRACT FCD 2007C020
September 2008

WP #073087



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HEC-1 Models for the 100-Year, 24-Hour Storm without Dike Conditions (EC24NODK, on CD)

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4.0 HYDROLOGY

4.1 Method Description

4.1.1 Purpose of the Hydrologic Study

The primary objectives of this hydrologic study are to develop detailed hydrologic (HEC-1) models for the 100-year, 6-hour and 24-hour storm events in order to delineate approximately 85 linear miles of Zone AE floodplains and floodways of Luke Wash and its tributaries as well as nearby tributaries to the Hassayampa River and the Gila River based on detailed 2-foot topographic mapping.

4.1.2 Methodology and Software

The hydrologic models of the project area were developed using the U.S. Army Corps of Engineers computer program HEC-1, Version 4.1, Flood Hydrograph Package, in conjunction with methods and procedures described in the latest version of Drainage Design Manual for Maricopa County, Arizona: Volume I – Hydrology. Watershed Modeling System (WMS version 8.0) was used to develop the preliminary sub-basin boundary delineations. The latest version of DDMSW (version 3.5.2) was utilized to prepare the input parameters for the HEC-1 models. ArcGIS (version 9.2) was applied to transfer data bases (base files) available from the District, to prepare parameters for modeling purposes, and to present modeling results graphically including sub-basin boundaries, land use, soils, hydrologic routing, peak flows, and HEC-1 schematic. AutoCAD was also used in the modeling processes when necessary. NOAA 14 rainfall data was used to estimate the design rainfall depth for this study. JD and PC cards were used for the HEC-1 model rainfall spatial and temporal distributions (Maricopa County 6-hour local storm distribution for 6-hour model and SCS Type II precipitation distribution for 24-hour model). The Green and Ampt method was utilized for the estimation of rainfall losses. The S-graph method was used for the development of unit hydrographs. The names of the hydrologic models developed for this study are summarized in Section 4.5.

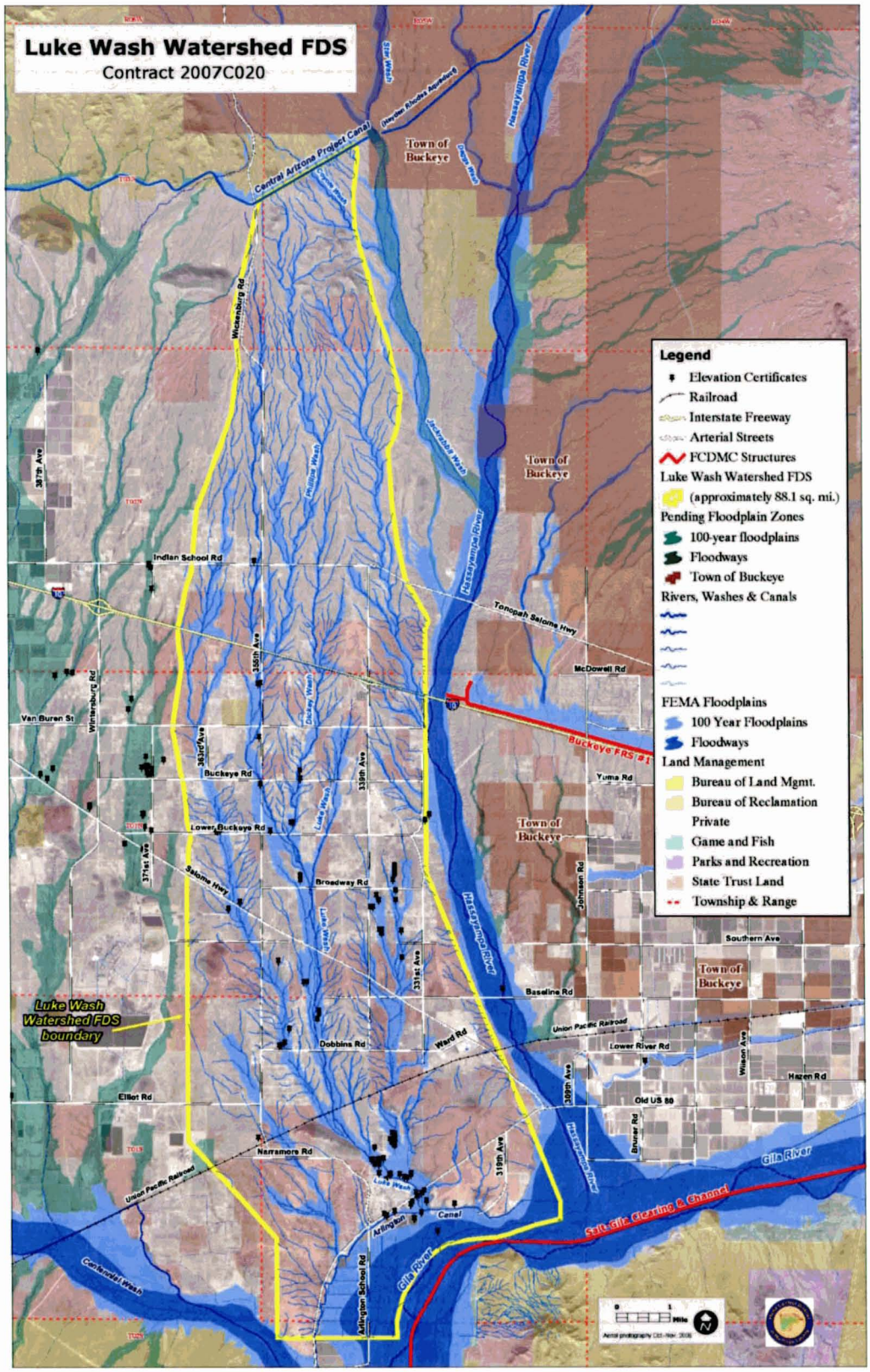
4.2 Parameter Estimation

4.2.1 Drainage Area Boundaries

Watershed Characteristics

The Luke Wash watershed is located in the western part of Maricopa County, roughly from the 371st Avenue alignment east to the Hassayampa River, and from the Gila River north to the CAP canal and has an area of approximately 90 square miles. Figure 4.1 shows the project location and vicinity map. The watershed is primarily natural undeveloped desert with small portions of agricultural farmland and urban development. Most of the agricultural farmland and urban developments are located within the southern portion of the watershed (south of Interstate-10). Elevations range from approximately 1360 feet near the CAP canal, to approximately 800 feet near the northern edge of the Gila River. Surface runoff is generally from north to south through a network of ephemeral sand-bed washes. These washes eventually drain into the Gila River with a few directly tributary to the Hassayampa River. The general slope of the watershed is typically 0.55%. Vegetation throughout the study reaches include trees such as mesquite and little leaf palo verde; cacti including saguaro, ocotillo, barrel, staghorn, and teddy bear cholla; and various shrubs such as creosote, desert broom, jojoba, mormon tea, brittle bush and hackberry.

The main wash that runs into the Gila River is Luke Wash. A major tributary (to the west of Luke Wash) joins Luke Wash just south of the Union Pacific Railroad (UPRR). Dickey Wash and Phillips Wash combine approximately three (3) miles south of I-10 and become Luke Wash.



Project Study Area

The study area has a wide variety of channel and overbank characteristics, varying from well-defined sand-bed and bedrock channels with a majority of the estimated 100-year flow expected to be contained within the defined channel banks, to shallow distributary reaches with very limited channel conveyance capacity. Split flow can occur as side weir or distributary conditions. Stormwater runoff occurs in the study area only in response to significant rainfall events.

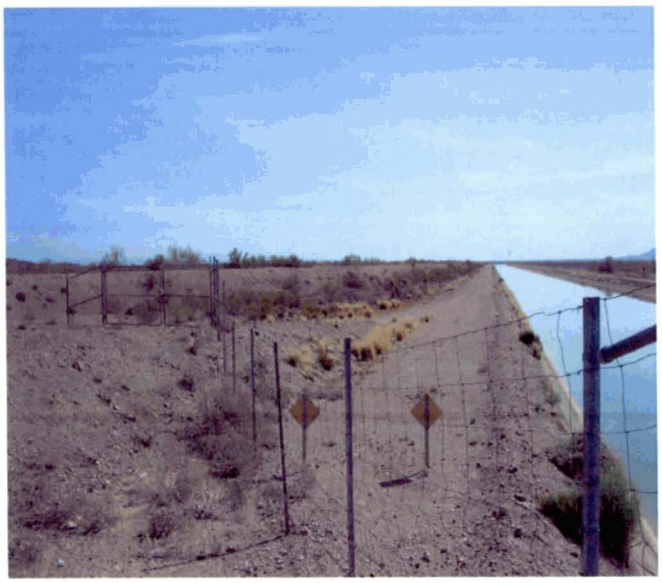


Photo 4.1 CAP Canal (Upstream Study Boundary)

Public transportation infrastructure in the project area is not well developed, including mostly unpaved roads with no formal drainage improvements at the wash crossings. Paved access to the project area is from I-10 to 339th Avenue. Indian School Road and 355th Avenue are paved as well north of I-10. South of I-10, the Salome Highway, Old US 80, 339th Avenue and 355th Avenue are paved roads. The study area is bisected by I-10, Salome Highway, the UPRR, Old US 80 highway and the Arlington Canal.

Photo 4.2 Box Culvert at I-10

Photo 4.3 Luke Wash at Salome Highway

There are few public drainage improvements in the study area. There are existing box culverts/bridges at I-10, UPRR, and Old US 80. I-10 and UPRR are elevated. Salome Highway and other arterial streets are constructed at grade. Ponding occurs upstream of the embankments at I-10 and the UPRR during significant storm events.

Photo 4.4 Luke Wash Bridge at UPRR

Photo 4.5 Luke Wash Bridge at Old US 80

Photo 4.6 Typical Luke Wash Cross-section Sand-Bed

Sub-basin Delineations

Accurate sub-basin boundary delineation is the basis for successful hydrologic modeling. The District's 2-foot contour maps were used to delineate the sub-basin boundaries. Two sub-basin boundary maps were prepared at a scale of 1"=1500,' one for without dike conditions and another for with dike conditions to account for I-10 and the UPRR storage and diversion impacts. Sub-basin sizes were selected such that they can provide sufficient detail regarding the natural drainage pattern and serve to compliment the hydraulic modeling. WMS was applied to delineate the preliminary sub-basin boundaries and estimate some of the HEC-1 input parameters. The sub-basin boundaries were then refined manually in areas where the WMS automated process did not yield satisfactory results. ArcGIS, AutoCAD, and DDMSW were used to refine sub-basin boundaries and estimate input parameters including sub-basin area, flow path length, slopes, rainfall loss parameters, channel routing and storage routing parameters.

4.2.2 Watershed Work Maps

Sub-basin Boundary Maps

Exhibit A1 shows the sub-basin boundaries and HEC-1 schematic for without dike conditions, and Exhibit A2 shows the sub-basin boundaries and HEC-1 schematic for with dike conditions. Both are at a scale of 1" = 1500'. Sub-basin names consist of two numbers and a letter. The two numbers are related to a wash, and the letter refers to a sub-basin starting from downstream to upstream. The combined hydrograph names start with C, channel routing hydrograph names start with R, diversion hydrograph names start with D, and storage routing hydrograph names start with S. Note that the differences between Exhibit A1 (without dike conditions) and Exhibit A2 (with dike conditions) are the boundary limits for Sub-basins 20a, 20b, 72b, and 73a near the railroad.

Soils Maps

Soil hydrologic characteristics within the study area were defined in two Maricopa County soil surveys developed by the Natural Resource Conservation Service (NRCS, formerly Soil Conservation Service): Central Part of Maricopa County and Aguila-Carefree Area. GIS coverage of the soils data was provided by the FCDMC and is presented as Exhibit A3. The top nine (9) soils with highest percentage are as follows:

- Gunsight-Rillito complex (651GYD & 64571)
- Tremant-Gunsight-Rillito complex (645117)
- Chuckawalla-Gunsight complex (64520)
- Gunsight-Cipriano complex (64569)
- Harqua-Gunsight complex (651HLC)
- Perryville-Rillito complex (651PRB)
- Antho sandy loam (651Ac)
- Pinal gravelly loam (651PT)
- Rillito gravelly loam (645102)

The number 651 before the map unit indicates the Central Part of Maricopa County; and the number 645 before the map unit indicates Aguila-Carefree area.

Land Use Maps

Maricopa Association of Governments (MAG) land use coverage provided by the FCDMC has been applied for this study with minor revisions based on recent aerial photography and is shown in Exhibit A4. Vacant land use comprises about 91% of the total project area. The remainder is residential land use.

4.2.3 Gage Data

Streamflow Gaging Data

The US Geological Survey (USGS) publishes annual peak discharges measured at Jackrabbit Wash near Tonopah, AZ (USGS Gage number 09516800). Annual peak flow data is available from 1964 to 1999. The largest flow measured at this site during the period of record occurred in September, 1983, resulting in an estimated discharge of 13,000 cfs. The USGS operates a gage station in the Hassayampa River near Arlington as well (USGS Gage number 09517000). Annual peak flow data is available from 1987 to 2006. The largest flow measured at this site to date occurred on October 27, 2001, resulting in an estimated discharge of 22,200 cfs.

The FCDMC operates two stream gage stations near the project area: Jackrabbit Wash Gage (number 5218) and Hassayampa River Gage (number 5283). The first one was installed October 31, 2000 and the second one has been in operation since November 1994.

The gage station information and streamflow data statistics are shown on the following table.

Table 4.1 Stream Gage Data Summary

Stream Gage ID	Sensor Name	Location	Drainage Area (mile²)	Data Duration	Coordinates (Lat., Long.)	Date and Max Streamflow (cfs)		Unit Streamflow (cfs/mile²)
5218 (FCDMC)	Jackrabbit Wash	Aguila Road at Wickenburg Road	120	11/1/2000 to 07/10/2008	33°42'55.6" 112°52'54.4"	09/08/2002	6,000	50
5283 (FCDMC)	Hassayampa River @ I-10	I-10 bridge over Hassayampa River, 12 mi WNW of Buck	1450	11/9/1994 to 07/10/2008	33°27'28.2" 112°45'40.7"	10/27/2000	12,178	8.4
09517000 (USGS)	Hassayampa River near Arlington	Hassayampa River near Arlington	1471	09/11/1961 to 08/12/2006	33°20'50" 112°43'30"	10/27/2001	22,200	15.1
09516800 (USGS)	Jackrabbit Wash	Jackrabbit Wash near Tonopah, AZ	137	08/02/1964 to 07/29/1991	33°39'32" 112°49'40"	09/1983	15,000	95

Precipitation Gaging Data

Two precipitation gages are operated by the FCDMC near the project areas. Gage 5070, at I-10 and 355th Avenue, was installed September 7, 2001, and Gage 5215, at Jackrabbit Wash, was installed September 14, 1982. The rainfall gage station near the study area which has been in operation the longest, No. 021026, is located in Buckeye. It is operated by NOAA and has more than 100 years of data. The gage station information and rainfall data statistics are summarized in the following table.

Table 4.2 Precipitation Gage Data Summary

Precipitation Gage ID	Sensor Name	Location	Data Duration	Coordinates (Lat., Long.)	Date and Max Daily Rainfall (in)		Annual Mean Rainfall (in)
5070 (FCDMC)	I-10 @ 355th Ave	3 miles NW of the Hassayampa River crossing at I-10	09/07/2001 to 07/10/2008	33°28'14.8" 112°48'58.2"	2.40	8/9/2005	5.6
5215 (FCDMC)	Jackrabbit Wash	Aguila Road at Wickenburg Road	01/01/1985 to 07/10/2008	33° 42'55.6" 112°52'54.4"	2.83	8/29/1993	7.7
021026 (NOAA)	Buckeye	Downtown, Buckeye	03/01/1893 to 11/30/2003	33°13'48" 112°21'00"	4.90	9/2/1894	7.2

4.2.4 Statistical Parameters

Historical Precipitation Statistics

Based on the Buckeye rainfall gage data, the annual average rainfall is about 7.2 inches. The maximum daily rainfall was about 4.90 inches on September 2, 1894, while the annual average rain days was 25, and the maximum number of rain days was 58, which occurred in 1941.

Historical Streamflow Statistics

As mentioned previously, only some gaged streamflow data near the project area is available and no gaged streamflow data exists in Luke Wash Watershed. Therefore, no frequency analysis was conducted based on gaged streamflow data as part of this study.

Regional Streamflow Regression Equations

The USGS provides streamflow and statistical data for 138 continuous-record streamflow gaging stations and 176 partial-record gaging stations in Arizona

(Garrett and Gellenbeck, 1991). The streamflow data was analyzed by the USGS by Log-Pearson Type 3 (LP3) analyses and flood magnitude-frequency statistics are provided in regression equations for different regions within Arizona. The study area is within Region 13. The regression equations for this region were applied to evaluate the HEC-1 modeling results.

4.2.5 Precipitation

NOAA 14 rainfall data was used to estimate the design rainfall depth for this study. JD and PC cards were applied for the HEC-1 model rainfall spatial and temporal distributions (Maricopa County 6-hour local storm distribution for 6-hour model and SCS Type II precipitation distribution for 24-hour model). The design precipitation is included in Appendix D1.

4.2.6 Physical Parameters

Sub-basin Physical Parameters

Sub-basin physical parameters include sub-basin area, flow-path length, slope, and watercourse length opposite the sub-basin centroid. These parameters for all of the sub-basins were estimated using either ArcGIS or AutoCAD based on the sub-basin delineations shown in Exhibits A1 and A2. The drainage flow paths and concentration points are shown in Exhibit A5. The computed parameters are shown in Appendix D2 for both without dike and with dike conditions.

Soil Data

Soil data was provided by the FCDMC in GIS format. The total sub-basin area and the portions of each soil group within each sub-basin were computed using ArcGIS software. Infiltration parameters are based on soil data obtained from Appendices A, B, and C of Maricopa County's Hydrology Manual. The DDMSW soil data for each sub-basin within the watershed are provided in Appendix D2. The GIS coverage of the soils data is shown as Exhibit A3.

Land Uses Data

Land use data was also provided by the FCDMC in GIS format. The total sub-basin area and the portions of each land use category within each sub-basin were computed using ArcGIS software. Default rainfall loss parameters provided by

DDMSW were verified, updated, and approved by the FCDMC to represent the watershed conditions. The land use coverage is shown in Exhibit A4. The DDMSW land use data for each sub-basin within the watershed are provided in Appendix D2.

Green and Ampt Rainfall Loss Method

The Green and Ampt rainfall loss methodology was used for all sub-basins. The Green and Ampt parameters for each sub-basin were computed using the DDMSW software, based on the land use and soil data. The "Normal Condition" was applied as the antecedent soil moisture condition. All sub-basin input data is summarized in Appendix D2.

Initial Abstract (IA) and Impervious Area Percentage (RTIMP)

Typical surface retention loss values (Initial Abstract, IA) and directly connected impervious percentages have been suggested for many land uses by the FCDMC Hydrology Manual and were used in this study.

Open Channel Routing

Normal depth channel routing methodology was utilized in the hydrologic model to route surface runoff through sub-basins. A composite channel cross-section (8-points) was developed to represent typical wash cross-section conveyance using the 2-foot contour mapping. The longitudinal slopes were estimated based on general existing wash slopes. Manning's "n" values were based on field reconnaissance estimates. The number of steps used for the routings (NSTPS) was based on the travel time divided by the tabulation interval (NMIN) rounded up to an integer based on the differential time to peak from the HEC-1 output results. Channel routing data is provided in Appendix D3.

Storm Drain Routing

There is no storm drain modeled in this study.

Storage Routing

Storage routing or ponding areas along I-10 and UPRR were modeled using the Modified Puls reservoir routing option of HEC-1. The storage-elevation-discharge relationship curves for storage facilities were developed using the 2-foot contour mapping, as-built plans, and survey data. Initial rating curves were developed by using Dodson software (Version 1.2a). The HEC-1 models were executed to obtain preliminary 100-year peak flows. Then HEC-RAS models were developed for the study washes and preliminary floodplains were delineated to evaluate if lateral flows occur along I-10 and the UPRR. The lateral flow conditions were further verified by field reconnaisance. Hydrologic models and storage routing curves were revised to represent the lateral flow (multiple washes merged flow) conditions. The final storage routing curves were developed using HEC-RAS models for the study washes. The rating curves for non-study washes were refined with Dodson software. Appendix D4 documents the supporting data for the storage-routing rating curves.

Sub-basin Flow Diversions

Surface runoff from each sub-basin may concentrate at more than one point (i.e. I-10). For illustration purposes, it is assumed that the concentration point is located at the hydrologic low point of the sub-basin and one split flow was modeled for a sub-basin with potential split flows. A fixed flow split ratio was assumed based on the potential split flow areas. Appendix D5 presents the sub-basin diversion data.

Cumulative Area Computation Data

When hydrographs generated from diversions are combined, a contributing drainage area is specified on the HC card. This area is used to compute an interpolated hydrograph for the combined hydrograph based on the depth-area relationship defined previously. This relationship is used to compute the aerial reduction factor based on the contributing area experiencing rainfall at any given time. The cumulative combined areas for this study are the HEC-1 default areas since the diversions have little impact on the total contributing area at a specific concentration point.

Interaction with Adjacent Watershed Models

There is a potential flow split from Jackrabbit Wash to one of the study washes of this project: (T2N-R5W-S27N). The FCDMC provided both hydrologic and hydraulic models for Jackrabbit Wash. The hydrologic HEC-1 model was developed by Burgess and Niple and the HEC-RAS hydraulic models were developed by West Consultants, Inc. Wood/Patel developed rating curves using the HEC-RAS models for the Jackrabbit Wash and the 100-year, 24-hour peak flow diversion into Wash T2N-R5W-S27N is 2,835 cfs. The diverted flow hydrograph is coded into the 100-year, 24-hour HEC-1 models using QI cards. There is no split flow for the 100-year, 6-hour storm.

Modeling Control Parameters

The computation time interval is 5 minutes; the number of hydrograph ordinates is 2,000; and the time interval for input time series is 15 minutes for rainfall and 30 minutes for runoff.

4.3 Problems Encountered During the Study

4.3.1 Special Problems and Solutions

The study area is bisected by I-10 and the UPRR. These structures may have a significant impact on the watershed hydrology as well as water course hydraulics. A few box culverts/ bridges exist along I-10 that may remain during a 100-year storm. The I-10 embankment may not be overtopped and the design flow will be pushed through these structures by ponding behind the roadway embankment.

With the disaster caused by the Hurricane Katrina in New Orleans, FEMA has re-evaluated its levee policy. Based on our discussions with Ray Lenaburg, Project Officer, FEMA Region IX, the interpretation of current levee policy can be summarized as follows:

Any levee or levee-like structures not certified by the Corps should be evaluated for the following multiple flood hazard scenarios: a) With Structure Scenario: Ponding created by the base flood behind the structure; and b) Without Structure Scenario: The base flood on the downstream side of the structure is estimated

without accounting for any flood peak attenuation caused by the structure storage (ponding).

To evaluate this issue within the Luke Wash watershed, hydrologic models for four different scenarios were developed: 1) without dike conditions, 2) with both dikes (I-10 and UPRR), 3) with I-10 only, and 4) with UPRR only. Models for both 24-hour and 6-hour storms were developed. The maximum peak flow from all of the eight (8) models at each concentration point was applied for the floodplain delineations.

4.3.2 Modeling Warning and Error Messages

There are no error messages from the HEC-1 models. Two types of warning messages are "Excess at Ponding Less Than Zero for Period. Excess Set to Zero" and "Routed Outflow Is Greater Than Maximum Outflow in Storage-Outflow Table" for small drainage areas on JD cards. These warning messages are not significant to the HEC-1 models.

4.4 Calibration

There was no specific model calibration conducted for this study. However, in order to evaluate the impact of uncertainties inherent in the hydrologic modeling procedures and input parameters on peak flow estimations, both Clark Unit Hydrograph and S-Graph Unit Hydrograph methods were evaluated and a parameter sensitivity analysis of Manning's n-value was conducted for the 100-year, 24-hour model.

S-Graph Unit Hydrograph vs. Clark Unit Hydrograph

Unit hydrographs transform rainfall excess into runoff (discharge hydrographs) and have significant impact on the peak flow estimates. S-Graph and Clark Unit Hydrograph methods are recommended by the FCDMC. Two 100-year, 24-hour models were developed to evaluate the differences of these two methods on the peak flows. The modeling results of the peak flows for all of the sub-basins are shown in Appendix D6 and indicate that S-Graph produces slightly higher peak flows than those generated by Clark Unit Hydrograph method.

Evaluation of Manning's n-Value on Peak Flows

The selection of Manning's "n" values impacts both hydrologic and hydraulic modeling results. In order to evaluate the impact of Manning's n-value on the peak flows, a sensitivity analysis was conducted by reducing the n-values from 0.005 to 0.01 for the channel routing operations in the HEC-1 model for both shallow-and-wide and well-defined wash cases. The modeling results were listed in Appendix D6 which shows that the n-value reduction has more significant impact on the peak flows for shallow-and-wide washes than well-defined washes.

4.5 Final Results

4.5.1 Hydrologic Analysis Results

Eight HEC-1 hydrologic models were developed for four (4) scenarios (without dike, with both dikes, with I-10 only, and with UPRR only); and two (2) storm durations (100-year, 24-hour, and 100-year, 6-hour). Peak flows from all of the 8 models are summarized in Table 4.3 on the following pages. The maximum flow at each of the concentration points and the representative model that produces the maximum flow is identified. Note that if the maximum flow is generated by more than one model the selection order is as follows: 24-hour model first, then without dike model, and finally, with both dikes. The maximum peak flows for the 100-year storm are also shown in Exhibit A6. The output files for all of the HEC-1 models are presented in the Appendix D7.

The HEC-1 model names are summarized below:

Condition	100-year, 24-hour	100-year, 6-hour
No Dike	EC24NODK.DAT	EC06NODK.DAT
With Dike (I-10 & UPRR)	EC24DIKE.DAT	EC06DIKE.DAT
With I-10 Dike	EC24I10.DAT	EC06I10.DAT
With UPRR Dike	EC24UPRR.DAT	EC06UPRR.DAT

The electronic files for the HEC-1 models are provided on the CD in Exhibit A7 (inside front cover).

Table 4.3 Peak Flow Summary Table

	Hydrologic Modeling Peak Flow Summary									
Model =>	EC24DIKE	EC06DIKE	EC24I10	EC06I10	EC24UPRR	EC06UPRR	EC24NODK	EC06NODK	Maximum	Maximum
Hydrograph	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	Flow	Flow
Name									(cfs)	Model
14e	805	936	805	936	805	936	805	936	**936**	EC06NODK
14d	482	655	482	655	482	655	482	655	**655**	EC06NODK
C14d	901	1025	901	1025	901	1025	901	1025	**1025**	EC06NODK
14c	876	1023	876	1023	876	1023	876	1023	**1023**	EC06NODK
C14c	1241	1316	1241	1316	1241	1316	1241	1316	**1316**	EC06NODK
14b	299	404	299	404	299	404	299	404	**404**	EC06NODK
C14b	1138	1206	1215	1281	1138	1206	1215	1281	**1281**	EC06NODK
14a	312	415	312	415	312	415	312	415	**415**	EC06NODK
C14a	1104	1144	1174	1234	1104	1144	1174	1234	**1234**	EC06NODK
12b	397	532	397	532	397	532	397	532	**532**	EC06NODK
12a	649	797	649	797	649	797	649	797	**797**	EC06NODK
C12a	760	921	760	921	760	921	760	921	**921**	EC06NODK
CC12a	1439	1484	1602	1642	1439	1484	1602	1642	**1642**	EC06NODK
10b	583	721	583	721	583	721	583	721	**721**	EC06NODK
C10b	1786	1767	1937	1910	1786	1767	1937	1910	**1937**	EC24NODK
10a	812	982	812	982	812	982	812	982	**982**	EC06NODK
C10a	1771	1703	1887	1828	1771	1703	1887	1828	**1887**	EC24NODK
21d	372	494	372	494	372	494	372	494	**494**	EC06NODK
21c	192	261	192	261	192	261	192	261	**261**	EC06NODK
C21c	320	419	320	419	320	419	320	419	**419**	EC06NODK
21b	368	490	368	490	368	490	368	490	**490**	EC06NODK
C21b	366	420	366	420	366	420	366	420	**420**	EC06NODK
24b	274	369	274	369	274	369	274	369	**369**	EC06NODK
24a	367	498	367	498	367	498	367	498	**498**	EC06NODK
C24a	365	458	365	458	365	458	365	458	**458**	EC06NODK
CC24a	690	710	690	710	690	710	690	710	**710**	EC06NODK
21a	627	770	627	770	627	770	627	770	**770**	EC06NODK
C21a	791	850	791	850	791	850	791	850	**850**	EC06NODK
20l	153	206	153	206	153	206	153	206	**206**	EC06NODK
C20l	661	694	661	694	740	798	740	798	**798**	EC06NODK
20K	200	269	200	269	200	269	200	269	**269**	EC06NODK
20j	233	315	233	315	233	315	233	315	**315**	EC06NODK
C20j	233	315	233	315	234	317	234	317	**317**	EC06NODK
CC20j	688	707	688	707	787	829	787	829	**829**	EC06NODK
20i	277	374	277	374	277	374	277	374	**374**	EC06NODK
C20i	675	695	675	695	767	803	767	803	**803**	EC06NODK
22c	215	290	215	290	215	290	215	290	**290**	EC06NODK
22d	227	310	227	310	227	310	227	310	**310**	EC06NODK
22b	212	287	212	287	212	287	212	287	**287**	EC06NODK
C22b	211	287	211	287	213	293	213	293	**293**	EC06NODK
CC22b	404	519	404	519	407	538	407	538	**538**	EC06NODK
22a	367	499	367	499	367	499	367	499	**499**	EC06NODK
C22a	398	508	398	508	414	543	414	551	**551**	EC06NODK
CC20i	823	809	823	809	1026	1008	1026	1011	**1026**	EC24NODK
20h	885	1017	885	1017	885	1017	885	1017	**1017**	EC06NODK
C20h	1005	910	1005	910	1045	994	1045	997	**1045**	EC24NODK
20g	915	1053	915	1053	915	1053	915	1053	**1053**	EC06NODK
C20g	1139	1037	1139	1037	1104	1013	1104	1013	**1139**	EC24DIKE
20f	1005	1122	1005	1122	1005	1122	1005	1122	**1122**	EC06NODK
C20f	1107	988	1107	988	1097	980	1097	980	**1107**	EC24DIKE
20e	1198	1308	1198	1308	1198	1308	1198	1308	**1308**	EC06NODK
C20e	1190	1034	1190	1034	1204	1044	1204	1044	**1204**	EC24NODK
20d	660	851	660	851	660	851	660	851	**851**	EC06NODK
C20d	1175	994	1175	994	1155	989	1163	995	**1175**	EC24DIKE
20c	1052	1182	1052	1182	1052	1182	1052	1182	**1182**	EC06NODK
C20c	1209	1005	1209	1005	1178	990	1183	997	**1209**	EC24DIKE
20b	871	999	733	868	871	999	733	868	**999**	EC06DIKE

Table 4.3 Peak Flow Summary Table (continued)

	Hydrologic Modeling Peak Flow Summary									
Model =>	EC24DIKE	EC06DIKE	EC24I10	EC06I10	EC24UPRR	EC06UPRR	EC24NODK	EC06NODK	Maximum	Maximum
Hydrograph	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	Flow	Flow
Name									(cfs)	Model
C20b	1156	983	1165	983	1140	972	1150	978	**1165**	EC24I-10
46k	510	690	510	690	510	690	510	690	**690**	EC06NODK
46j	296	397	296	397	296	397	296	397	**397**	EC06NODK
C46j	469	615	469	615	469	615	469	615	**615**	EC06NODK
46i	290	393	290	393	290	393	290	393	**393**	EC06NODK
C46i	307	432	307	432	307	432	307	432	**432**	EC06NODK
CC46i	753	937	753	937	753	937	753	937	**937**	EC06NODK
46h	351	470	351	470	351	470	351	470	**470**	EC06NODK
C46h	867	1033	867	1033	867	1033	867	1010	**1033**	EC06DIKE
54b	262	357	262	357	262	357	262	357	**357**	EC06NODK
54a	346	472	346	472	346	472	346	472	**472**	EC06NODK
C54a	538	718	538	718	538	718	538	718	**718**	EC06NODK
52a	518	686	518	686	518	686	518	686	**686**	EC06NODK
C52a	981	1126	981	1126	981	1126	981	1126	**1126**	EC06NODK
CC46h	1733	1720	1733	1720	1733	1720	1733	1709	**1733**	EC24NODK
46g	277	372	277	372	277	372	277	372	**372**	EC06NODK
C46g	1523	1591	1523	1591	1523	1591	1523	1562	**1591**	EC06DIKE
46f	415	547	415	547	415	547	415	547	**547**	EC06NODK
C46f	1636	1689	1636	1689	1636	1689	1636	1660	**1689**	EC06DIKE
46e	248	334	248	334	248	334	248	334	**334**	EC06NODK
C46e	1524	1588	1524	1588	1524	1588	1524	1565	**1588**	EC06DIKE
56a	274	374	274	374	274	374	274	374	**374**	EC06NODK
CC46e	1529	1588	1529	1588	1529	1588	1529	1565	**1588**	EC06DIKE
46d	332	451	332	451	332	451	332	451	**451**	EC06NODK
C46d	1401	1424	1401	1424	1401	1424	1401	1421	**1424**	EC06DIKE
46c	186	253	186	253	186	253	186	253	**253**	EC06NODK
C46c	1404	1421	1404	1421	1404	1421	1404	1418	**1421**	EC06DIKE
46b	316	431	316	431	316	431	316	431	**431**	EC06NODK
C46b	1361	1353	1361	1353	1361	1353	1361	1350	**1361**	EC24NODK
50g	168	225	168	225	168	225	168	225	**225**	EC06NODK
50f	268	360	268	360	268	360	268	360	**360**	EC06NODK
C50f	267	360	267	360	267	360	267	360	**360**	EC06NODK
50e	196	264	196	264	196	264	196	264	**264**	EC06NODK
C50e	228	304	228	304	228	304	220	304	**304**	EC06NODK
50d	197	266	197	266	197	266	197	266	**266**	EC06NODK
C50d	206	277	206	277	206	277	206	277	**277**	EC06NODK
50c	325	433	325	433	325	433	325	433	**433**	EC06NODK
C50c	520	614	520	614	520	614	521	614	**614**	EC06NODK
50b	216	290	216	290	216	290	216	290	**290**	EC06NODK
C50b	582	688	582	688	582	688	582	688	**688**	EC06NODK
50a	522	645	522	645	522	645	522	645	**645**	EC06NODK
C50a	752	854	752	854	752	854	761	843	**854**	EC06DIKE
CC46b	1689	1550	1689	1550	1689	1550	1688	1549	**1689**	EC24DIKE
46a	481	595	481	595	481	595	481	595	**595**	EC06NODK
C46a	1617	1497	1617	1497	1617	1497	1616	1503	**1617**	EC24DIKE
48b	187	253	187	253	187	253	187	253	**253**	EC06NODK
48a	213	291	213	291	213	291	213	291	**291**	EC06NODK
C48a	212	291	212	291	212	291	212	291	**291**	EC06NODK
CC48a	1632	1495	1632	1495	N/A	N/A	N/A	N/A	**1632**	EC24DIKE
CC44a					646	696	646	705	**705**	EC06NODK
44f	227	304	227	304	227	304	227	304	**304**	EC06NODK
44e	329	440	329	440	329	440	329	440	**440**	EC06NODK
C44e	542	683	542	683	542	683	542	683	**683**	EC06NODK
44d	522	650	522	650	522	650	522	650	**650**	EC06NODK
C44d	672	813	672	813	672	813	672	803	**813**	EC06DIKE
44c	301	400	301	400	301	400	301	400	**400**	EC06NODK
C44c	635	758	635	758	635	758	635	752	**758**	EC06DIKE

Table 4.3 Peak Flow Summary Table (continued)

	Hydrologic Modeling Peak Flow Summary									
Model =>	EC24DIKE	EC06DIKE	EC24I10	EC06I10	EC24UPRR	EC06UPRR	EC24NODK	EC06NODK	Maximum	Maximum
Hydrograph	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	Flow	Flow
Name									(cfs)	Model
44b	268	359	268	359	268	359	268	359	**359**	EC06NODK
C44b	614	723	614	723	614	723	614	728	**728**	EC06NODK
44a	452	568	452	568	452	568	452	568	**568**	EC06NODK
C44a	615	678	615	678	615	678	615	684	**684**	EC06NODK
CC46a	2085	1839	2085	1839	2173	1879	2173	1889	**2173**	EC24NODK
40d	463	586	463	586	463	586	463	586	**586**	EC06NODK
C40d	2064	1807	2064	1807	2143	1845	2143	1856	**2143**	EC24NODK
42b	278	377	278	377	278	377	278	377	**377**	EC06NODK
42a	360	488	360	488	360	488	360	488	**488**	EC06NODK
C42a	361	459	361	459	361	459	361	459	**459**	EC06NODK
CC40d	2064	1806	2064	1806	2142	1840	2143	1851	**2143**	EC24NODK
40c	520	709	520	709	520	709	520	709	**709**	EC06NODK
C40c	2035	1758	2035	1758	2106	1792	2107	1803	**2107**	EC24NODK
40b	273	371	273	371	273	371	273	371	**371**	EC06NODK
C40b	2013	1719	2013	1719	2073	1751	2074	1762	**2074**	EC24NODK
64d	141	199	141	199	141	199	141	199	**199**	EC06NODK
64c	423	553	423	553	423	553	423	553	**553**	EC06NODK
C64c	422	530	422	530	422	530	422	530	**530**	EC06NODK
64b	525	648	525	648	525	648	525	648	**648**	EC06NODK
C64b	779	853	779	853	779	853	779	853	**853**	EC06NODK
64a	323	442	323	442	323	442	323	442	**442**	EC06NODK
C64a	761	811	761	811	761	811	761	811	**811**	EC06NODK
62b	241	330	241	330	241	330	241	330	**330**	EC06NODK
62a	498	659	498	659	498	659	498	659	**659**	EC06NODK
C62a	529	657	529	657	529	657	529	657	**657**	EC06NODK
CC64a	1002	1031	1002	1031	N/A	N/A	N/A	N/A	**1031**	EC06DIKE
CC62a					1002	1031	1002	1031	**1031**	EC06NODK
60c	678	798	678	798	678	798	678	798	**798**	EC06NODK
C60c	1065	995	1065	995	1336	1229	1336	1229	**1336**	EC24NODK
60b	702	826	702	826	702	826	702	826	**826**	EC06NODK
C60b	1313	1206	1313	1206	1571	1405	1571	1405	**1571**	EC24NODK
60a	603	756	603	756	603	756	603	756	**756**	EC06NODK
C60a	1276	1155	1276	1155	1507	1314	1507	1314	**1507**	EC24NODK
CC40b	2197	1713	2197	1713	2242	1745	2244	1756	**2244**	EC24NODK
40a	242	329	242	329	242	329	242	329	**329**	EC06NODK
C40a	2190	1688	2190	1688	2236	1730	2237	1739	**2237**	EC24NODK
36c	590	702	590	702	590	702	590	702	**702**	EC06NODK
36b	839	987	839	987	839	987	839	987	**987**	EC06NODK
C36b	866	904	866	904	866	904	866	904	**904**	EC06NODK
36a	613	784	613	784	613	784	613	784	**784**	EC06NODK
C36a	988	1044	988	1044	988	1044	1005	1044	**1044**	EC06NODK
CC36a	2291	1681	2291	1681	2482	1720	2483	1729	**2483**	EC24NODK
30g	628	772	628	772	628	772	628	772	**772**	EC06NODK
C30g	2256	1609	2256	1609	2443	1648	2444	1657	**2444**	EC24NODK
34b	365	476	365	476	365	476	365	476	**476**	EC06NODK
34a	294	399	294	399	294	399	294	399	**399**	EC06NODK
C34a	356	455	356	455	356	455	356	448	**455**	EC06DIKE
CC30g	2364	1580	2364	1580	2540	1633	2541	1635	**2541**	EC24NODK
30f	880	963	880	963	880	963	880	963	**963**	EC06NODK
C30f	2339	1540	2339	1540	2504	1589	2505	1589	**2505**	EC24NODK
30e	404	541	404	541	404	541	404	541	**541**	EC06NODK
C30e	2324	1527	2324	1527	2484	1574	2484	1574	**2484**	EC24NODK
30d	406	533	406	533	406	533	406	533	**533**	EC06NODK
C30d	2307	1510	2307	1510	2465	1555	2465	1555	**2465**	EC24NODK
CC20b	3106	1888			3243	1902	N/A	N/A	**3243**	EC24UPRR
CC20a			3154	1899	N/A	N/A	3276	1918	**3276**	EC24NODK
20a	277	377	350	475	277	377	350	475	**475**	EC06NODK

Table 4.3 Peak Flow Summary Table (continued)

	Hydrologic Modeling Peak Flow Summary									
Model =>	EC24DIKE	EC06DIKE	EC24I10	EC06I10	EC24UPRR	EC06UPRR	EC24NODK	EC06NODK	Maximum	Maximum
Hydrograph	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	Flow	Flow
Name									(cfs)	Model
C20a	3087	1870	1147	972	3210	1888	1135	967	**3210**	EC24UPRR
30c	237	321	237	321	237	321	237	321	**321**	EC06NODK
C30c	3084	1863	3146	1894	3207	1880	3266	1911	**3266**	EC24NODK
32b	488	665	488	665	488	665	488	665	**665**	EC06NODK
32a	268	364	268	364	268	364	268	364	**364**	EC06NODK
C32a	406	512	436	559	406	512	436	559	**559**	EC06NODK
CC30c	3084	1863	3145	1894	3206	1878	3266	1908	**3266**	EC24NODK
30b	402	546	402	546	402	546	402	546	**546**	EC06NODK
C30b	3071	1835	3123	1865	3187	1853	3238	1882	**3238**	EC24NODK
78b	429	582	429	582	429	582	429	582	**582**	EC06NODK
78a	177	238	177	238	177	238	177	238	**238**	EC06NODK
C78a	360	489	360	489	360	489	360	489	**489**	EC06NODK
77b	392	533	392	533	392	533	392	533	**533**	EC06NODK
77a	240	326	240	326	240	326	240	326	**326**	EC06NODK
C77a	364	481	364	481	364	481	364	481	**481**	EC06NODK
CC77a	719	847	719	847	719	847	719	847	**847**	EC06NODK
70h	281	382	281	382	281	382	281	382	**382**	EC06NODK
C70h	666	780	666	780	666	780	666	780	**780**	EC06NODK
70g	719	811	719	811	719	811	719	811	**811**	EC06NODK
C70g	1343	1370	1343	1370	1343	1370	1343	1370	**1370**	EC06NODK
70f	336	453	336	453	336	453	336	453	**453**	EC06NODK
C70f	1296	1312	1296	1312	1296	1312	1296	1312	**1312**	EC06NODK
75a	336	455	336	455	336	455	336	455	**455**	EC06NODK
C75a	1352	1358	1352	1358	1352	1358	1352	1358	**1358**	EC06NODK
74b	477	613	477	613	477	613	477	613	**613**	EC06NODK
74a	314	426	314	426	314	426	314	426	**426**	EC06NODK
C74a	450	549	450	549	450	549	450	549	**549**	EC06NODK
CC74a	1623	1565	1623	1565	1623	1565	1623	1570	**1623**	EC24NODK
70e	1061	1171	1061	1171	1061	1171	1061	1171	**1171**	EC06NODK
C70e	1648	1529	1648	1529	1648	1529	1648	1535	**1648**	EC24NODK
73b	474	625	474	625	474	625	474	625	**625**	EC06NODK
73a	251	341	249	336	251	341	249	336	**341**	EC06DIKE
C73a	535	641	452	564	535	641	452	564	**641**	EC06DIKE
CC70e	1901	1692	1856	1669	1901	1692	1856	1674	**1901**	EC24DIKE
70d	449	613	449	613	449	613	449	613	**613**	EC06NODK
C70d	1892	1674	1853	1651	1892	1674	1853	1655	**1892**	EC24DIKE
70c	457	583	457	583	457	583	457	583	**583**	EC06NODK
C70c	1847	1608	1809	1584	1847	1608	1809	1589	**1847**	EC24DIKE
72b	804	918	742	819	804	918	742	819	**918**	EC06DIKE
72a	388	532	388	532	388	532	388	532	**532**	EC06NODK
C72a	718	810	663	718	718	810	663	718	**810**	EC06DIKE
CC70c	1915	1609	1912	1606	1915	1609	1912	1609	**1915**	EC24DIKE
70b	416	566	416	566	416	566	416	566	**566**	EC06NODK
C70b	1895	1582	1895	1580	1895	1582	1895	1583	**1895**	EC24NODK
CC30b	3685	2126	3942	2270	3690	2128	3946	2277	**3946**	EC24NODK
71b	296	406	296	406	296	406	296	406	**406**	EC06NODK
71a	267	366	267	366	267	366	267	366	**366**	EC06NODK
C71a	266	357	266	357	266	357	266	357	**357**	EC06NODK
CC70b	3685	2120	3942	2261	3690	2123	3946	2268	**3946**	EC24NODK
70a	126	171	126	171	126	171	126	171	**171**	EC06NODK
C70a	3676	2108	3932	2253	3682	2110	3937	2257	**3937**	EC24NODK
30a	45	62	45	62	45	62	45	62	**62**	EC06NODK
C30a	3676	2107	3932	2252	3682	2110	3937	2256	**3937**	EC24NODK
15a	546	739	546	739	546	739	546	739	**739**	EC06NODK
16a	247	333	247	333	247	333	247	333	**333**	EC06NODK
23a	321	437	321	437	321	437	321	437	**437**	EC06NODK
33a	133	183	133	183	133	183	133	183	**183**	EC06NODK

Table 4.3 Peak Flow Summary Table (continued)

	Hydrologic Modeling Peak Flow Summary									
Model =>	EC24DIKE	EC06DIKE	EC24I10	EC06I10	EC24UPRR	EC06UPRR	EC24NODK	EC06NODK	Maximum	Maximum
Hydrograph	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	Flow	Flow
Name									(cfs)	Model
35a	69	96	69	96	69	96	69	96	**96**	EC06NODK
DUMMY	1271	1358	1271	1358	1271	1358	1271	1358	**1358**	EC06NODK
DUMMY	3834	2114	4140	2278	3841	2118	4144	2282	**4144**	EC24NODK
79b	427	581	427	581	427	581	427	581	**581**	EC06NODK
79a	486	665	486	665	486	665	486	665	**665**	EC06NODK
C79a	779	948	779	948	779	948	779	948	**948**	EC06NODK
80b	296	404	296	404	296	404	296	404	**404**	EC06NODK
80a	331	450	331	450	331	450	331	450	**450**	EC06NODK
C80a	453	617	453	617	453	617	453	617	**617**	EC06NODK
81b	367	495	367	495	367	495	367	495	**495**	EC06NODK
81a	121	165	121	165	121	165	121	165	**165**	EC06NODK
C81a	345	465	345	465	345	465	345	465	**465**	EC06NODK
DUMMY	3834	2109	4139	2268	3841	2112	4144	2272	**4144**	EC24NODK
82b	268	368	268	368	268	368	268	368	**368**	EC06NODK
82a	508	669	508	669	508	669	508	669	**669**	EC06NODK
C82a	510	619	510	619	689	808	689	815	**815**	EC06NODK
83l	545	719	545	719	545	719	545	719	**719**	EC06NODK
83k	322	442	322	442	322	442	322	442	**442**	EC06NODK
C83k	863	1031	863	1031	863	1031	863	1031	**1031**	EC06NODK
83j	141	195	141	195	141	195	141	195	**195**	EC06NODK
C83j	811	962	811	962	811	962	811	962	**962**	EC06NODK
89b	282	389	282	389	282	389	282	389	**389**	EC06NODK
89a	197	279	197	279	197	279	197	279	**279**	EC06NODK
C89a	349	498	349	498	349	498	349	498	**498**	EC06NODK
CC83j	1119	1191	1119	1191	1119	1191	1119	1191	**1191**	EC06NODK
88a	221	302	221	302	221	302	221	302	**302**	EC06NODK
C88a	1261	1291	1261	1291	1261	1291	1261	1291	**1291**	EC06NODK
83i	319	444	319	444	319	444	319	444	**444**	EC06NODK
C83i	1320	1309	1320	1309	1320	1309	1320	1309	**1320**	EC24NODK
83h	219	299	219	299	219	299	219	299	**299**	EC06NODK
C83h	1489	1432	1489	1432	1489	1432	1489	1432	**1489**	EC24NODK
83g	420	559	420	559	420	559	420	559	**559**	EC06NODK
C83g	1516	1408	1516	1408	1516	1408	1516	1408	**1516**	EC24NODK
83f	156	218	156	218	156	218	156	218	**218**	EC06NODK
C83f	1519	1408	1519	1408	1519	1408	1519	1408	**1519**	EC24NODK
83e	607	743	607	743	607	743	607	743	**743**	EC06NODK
C83e	1457	1261	1457	1261	1457	1261	1428	1261	**1457**	EC24DIKE
83d	205	282	205	282	205	282	205	282	**282**	EC06NODK
C83d	1371	1193	1371	1193	1371	1193	1349	1193	**1371**	EC24DIKE
86a	339	476	339	476	339	476	339	476	**476**	EC06NODK
CC83d	1384	1184	1384	1184	1384	1184	1362	1184	**1384**	EC24DIKE
83c	306	416	306	416	306	416	306	416	**416**	EC06NODK
C83c	1342	1125	1342	1125	1342	1125	1323	1125	**1342**	EC24DIKE
87b	135	190	135	190	135	190	135	190	**190**	EC06NODK
87a	229	312	229	312	229	312	229	312	**312**	EC06NODK
C87a	228	311	228	311	228	311	228	311	**311**	EC06NODK
CC83c	1387	1128	1387	1128	1387	1128	1368	1128	**1387**	EC24DIKE
83b	322	439	322	439	322	439	322	439	**439**	EC06NODK
C83b	1335	1056	1335	1056	1335	1056	1320	1056	**1335**	EC24DIKE
85b	251	344	251	344	251	344	251	344	**344**	EC06NODK
85a	281	382	281	382	281	382	281	382	**382**	EC06NODK
C85a	287	405	287	405	287	405	287	405	**405**	EC06NODK
CC83b	1359	1044	1359	1044	1359	1044	1344	1044	**1359**	EC24DIKE
83a	202	275	202	275	202	275	202	275	**275**	EC06NODK
C83a	1318	1004	1318	1004	1318	1004	1305	1004	**1318**	EC24DIKE
84b	301	411	301	411	301	411	301	411	**411**	EC06NODK
84a	268	366	268	366	268	366	268	366	**366**	EC06NODK

Table 4.3 Peak Flow Summary Table (continued)

	Hydrologic Modeling Peak Flow Summary									
Model =>	**EC24DIKE**	**EC06DIKE**	**EC24I10**	**EC06I10**	**EC24UPRR**	**EC06UPRR**	**EC24NODK**	**EC06NODK**	**Maximum**	**Maximum**
Hydrograph	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	Flow	**Flow**
Name									(cfs)	**Model**
C84a	292	382	292	382	292	382	292	382	**382**	EC06NODK
CC83a	1334	991	1334	991	N/A	N/A	N/A	N/A	**1334**	EC24DIKE
C82b					455	584	455	584	**584**	EC06NODK
91b	307	409	307	409	307	409	307	409	**409**	EC06NODK
91a	411	563	411	563	411	563	411	563	**563**	EC06NODK
C91a	415	477	415	477	415	477	415	477	**477**	EC06NODK
JACKRB	2835		2835		2835	N/A	2835	N/A	**2835**	EC24NODK
92b	568	718	568	718	568	718	568	718	**718**	EC06NODK
C92b	2778		2778		2778	N/A	2778	N/A	**2778**	EC24NODK
92a	512	642	512	642	512	642	512	642	**642**	EC06NODK
C92a	2751	921	2751	921	2751	921	2751	921	**2751**	EC24NODK

4.5.2 Verification of Results

Comparison with Other Studies Adjacent to the Project Area

Verification of modeling results was conducted by comparing the peak flows (model EC24NODK) with studies pertinent to the Luke Wash Watershed FDS. Figure 4.4 presents the results of the 100-year peak flow comparison with the Loop 303/White Tanks ADMS/P study with linear trend lines (flows for sub-basins only). Figure 4.4 shows that in general, the peak flows of these two studies are very comparable.

The maximum peak flows were also compared with the effective Zone A and Zone AE studies. Table 4.4 on the following page shows the peak flow comparison for locations where peak flows exist for both studies. The data indicates that the peak flows by this study are lower than those by the effective studies. One major reason is that this study used more detailed methodologies as well as NOAA 14 rainfall data.

Comparison between 24-Hour and 6-Hour Storm

The peak flows for the 100-year storm were compared between the 24-hour and 6-hour storm durations for the without dike conditions. Figure 4.3 shows the results of the two with linear trend lines. Figure 4.3 indicates that most of the peak flows of the 6-hour storm are higher than those of the 24-hour storm for the smaller sub-basin areas. The main factor causing the differences is the precipitation distribution for the 6-hour storm for small contributing areas (Patterns 1 and 2). With increasing contributing area, the peak flows for both models are similar and even higher for the 24-hour models for drainage areas greater than 10 square miles.

Comparison with USGS Regression Envelope

Peak flows were also compared with the regional USGS regression envelope using DDMSW as shown in Figure 4.4 (Figures 4.4a for the 24-hour model, and Figure 4.4b for the 6-hour model) for without dike condition models. Both Figures 4.4a and 4.4b show that most of the peak flows estimated by this study are below the regional envelope curve and above the low to middle elevation line.

Table 4.4 Comparison of Maximum Peak Flows vs. Flows of Zone A/AE Studies

	Wash Name			Concentration Point			Flow (cfs)	
	(Zone A/AE study)	Current Study	(USGS)	Zone A/AE	Current	Location	Zone A/AE	Current
Zone A	T2N-R6W-S35	T1S-R5W-S17		CP-26	C21a	I-10	1860	850
	T2N-R5W-S31W	Phillips Wash	Phillips Wash	CP-17	C46g	Glendale Ave align	1650	1591
	T2N-R5W-S33E	T2N-R5W-S33E		CP-10C	C88a	Northern Ave align	1360	1291
	T2N-R5W-S31	Dickey Wash	Dickey Wash	CP-28C	CC64a	I-10	1750	1031
	T1S-R5W-S17	T1S-R5W-S17		CP-45C	CC20i	Van Buren St	2590	1026
	T1S-R6W-S13	Phillips Wash	Phillips Wash	CP-54C	CC40d	Van Buren St	4760	2143
	T1N-R6W-S05	Dickey Wash	Dickey Wash	CP-51	C60c	Van Buren St	2180	1336
	T1S-R6W-S13	Phillips Wash	Phillips Wash	CP-53C	CC40b	Confluence Dickey	6260	2244
	T1S-R5W-S17	T1S-R5W-S17		CP-47	C20f	Salome Hwy	3620	1107
	T1S-R5W-S32	Luke Wash	Luke Wash	CP-50C	CC30g	Salome Hwy	7880	2541
	T1N-R5W-S28W	East Main Tributary		CP-34	CC77a	Southern Ave	1070	847
	T1S-R5W-S09	East Main Tributary		CP-56	CC74a	Baseline Rd	2580	1623
	T1S-R5W-S17	T1S-R5W-S17		CP-48	C20b	UPRR	4900	1165
	T1S-R5W-S32	Luke Wash	Luke Wash	CP-49	C30d	UPRR	8390	2465
	T1S-R5W-S09	East Main Tributary		CP-62	C70d	UPRR	3250	1892
	T1S-R5W-S29	T1S-R5W-S29		CP-44	C10a	Arlington Canal	2990	1887
	T1S-R5W-S22N	T1S-R5W-S22N		CP-39	C71a	near Old US 80	600	357
Zone AE	Luke Wash	Luke Wash	Luke Wash	C360	CC30c	339th Ave	6674	3266
	Luke Wash	Luke Wash	Luke Wash	C510	C30a	Arlington Canal	7664	3937
	East Main Tributary	East Main Tributary		C470	CC70c	Narramore Rd	2723	1915
	East Sub Tributary	East Sub Tributary		C460	C72a	Narramore Rd	752	810
	Minor Tributary	Minor Tributary		C355	C32a	Telegram Rd	590	559

FIGURES

Figure 4.1 Project Location and Vicinity Map

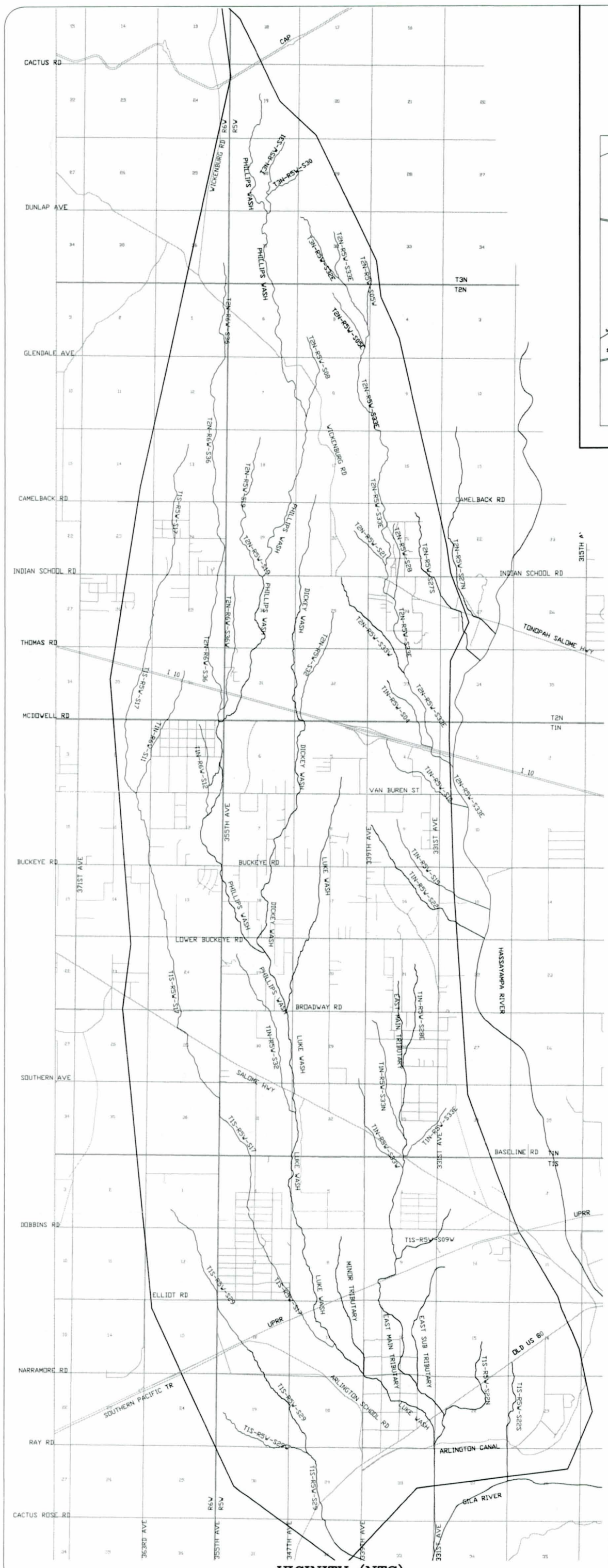
Figure 4.2 100-Year Peak Flow Comparison with Other Studies

Figure 4.3 100-Year Peak Flow Comparison Between 24-Hour and 6-Hour Storm

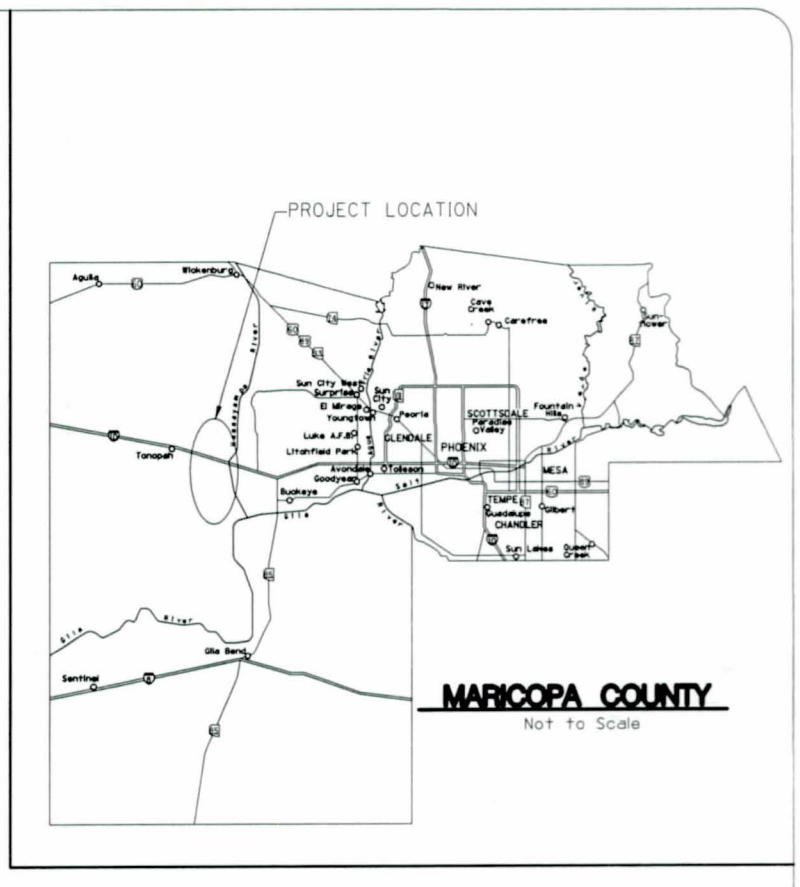
Figure 4.4 100-Year Peak Flow Comparison with USGS Regression Envelope

FIGURE 4.1

Project Location and Vicinity Map



VICINITY (NTS)



PROJECT LOCATION
NTS

N

NTS

LEGEND

STUDY AREA BOUNDARY	
TWP/RNG BOUNDARY	
STUDY REACH AND WASH ID	T6-R5-S36
SECTION BOUNDARY	
ROAD	Broadway Rd.

H:\2007Projects\073087_Luke Wash\Project Support\Reports\HydrologyReport\Figures\ Location & Vicinity Map.dwg - Sep 04,2008 3:53pm

LUKE WASH WATERSHED FDS
PROJECT LOCATION AND VICINITY MAP
FCD 2007C020

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FIGURE 4.1

FIGURE 4.2

100-Year Peak Flow Comparison with Other Studies

Fig. 4.2 100-Year Peak Flow Comparison with Other Studies

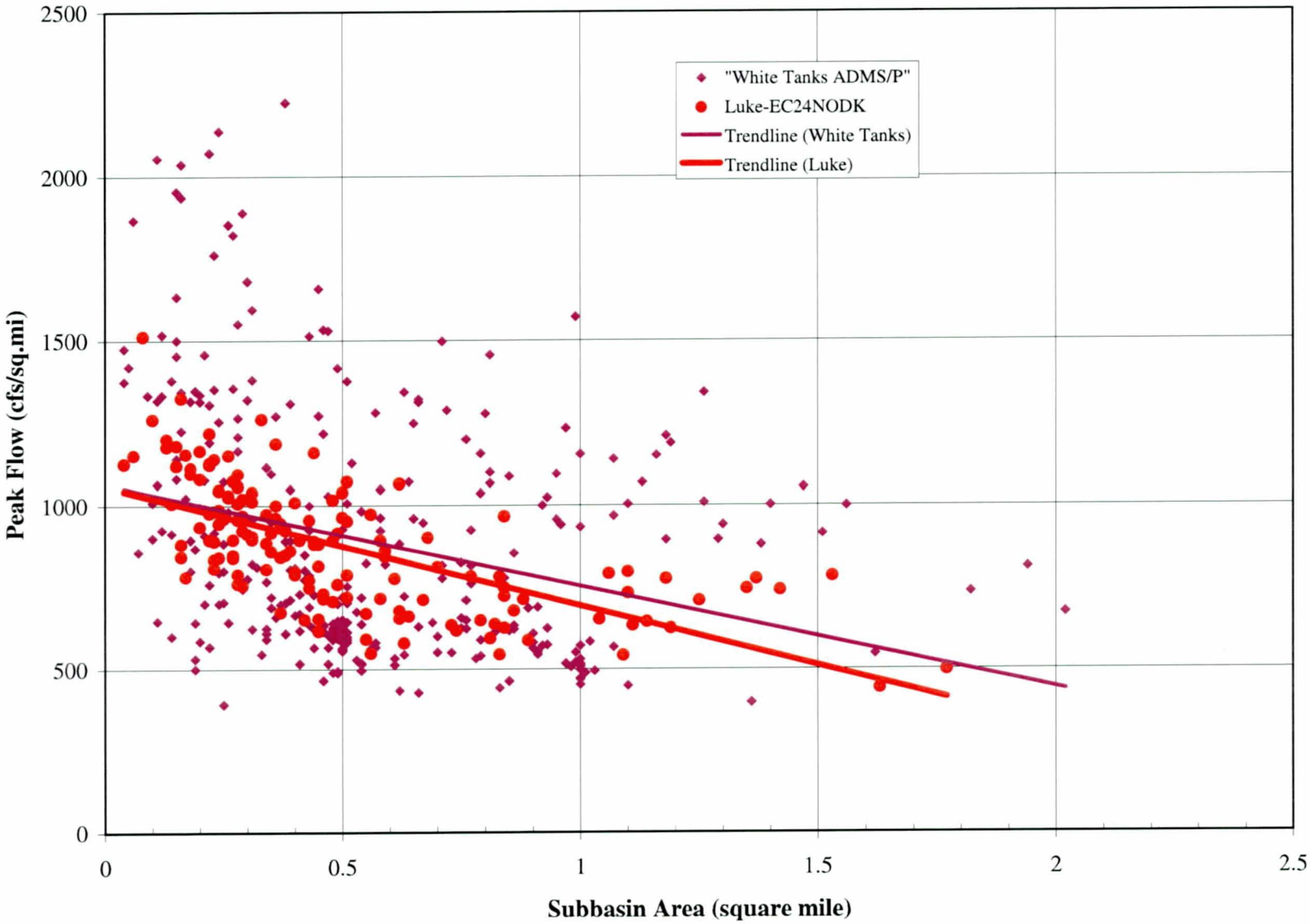

FIGURE 4.3

100-Year Peak Flow Comparison Between 24-Hour and 6-Hour Storm

Fig. 4.3 100-Year Peak Flow Comparison: 24-hour vs. 6-hour

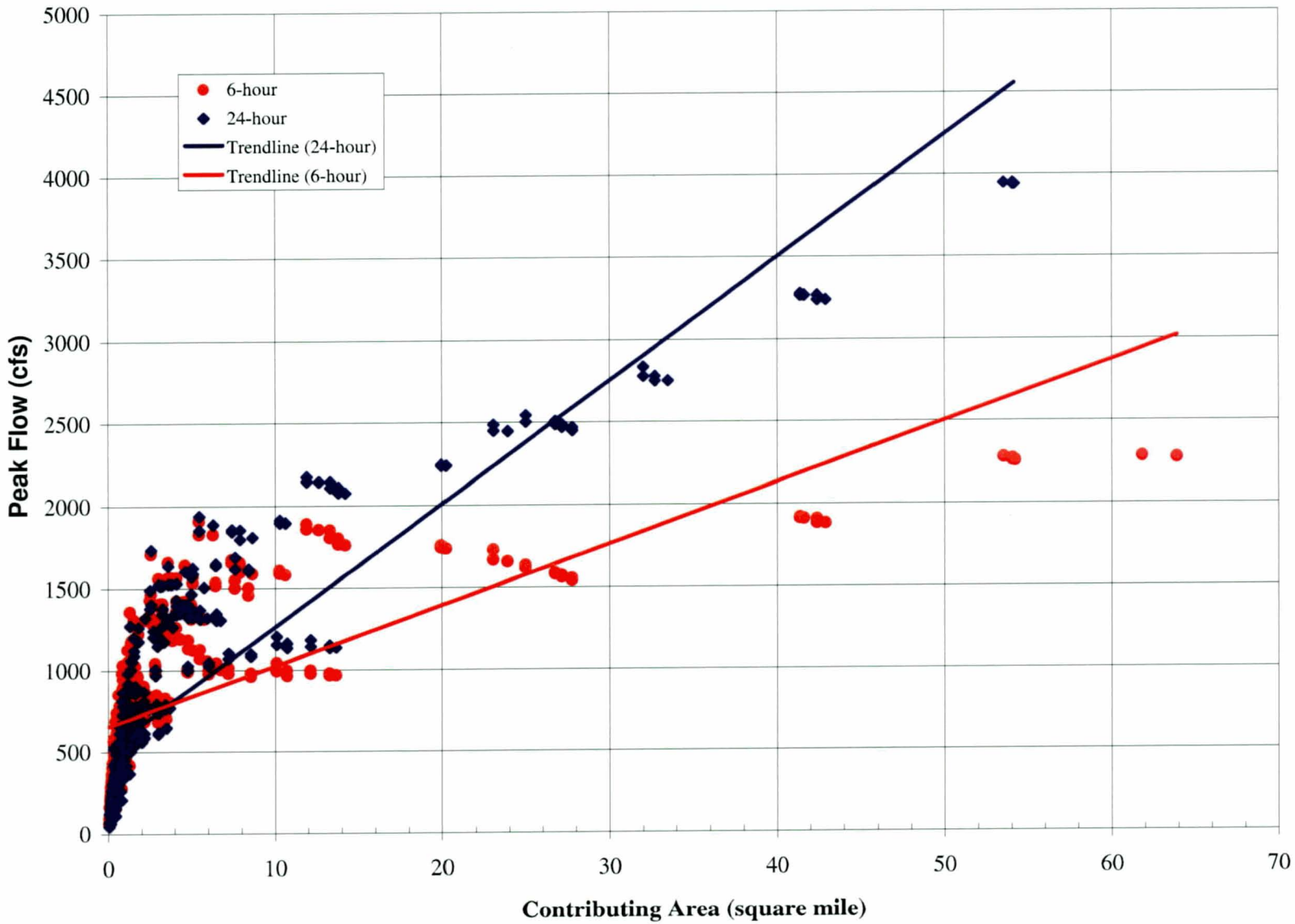

FIGURE 4.4

100-Year Peak Flow Comparison with USGS Regression Envelope

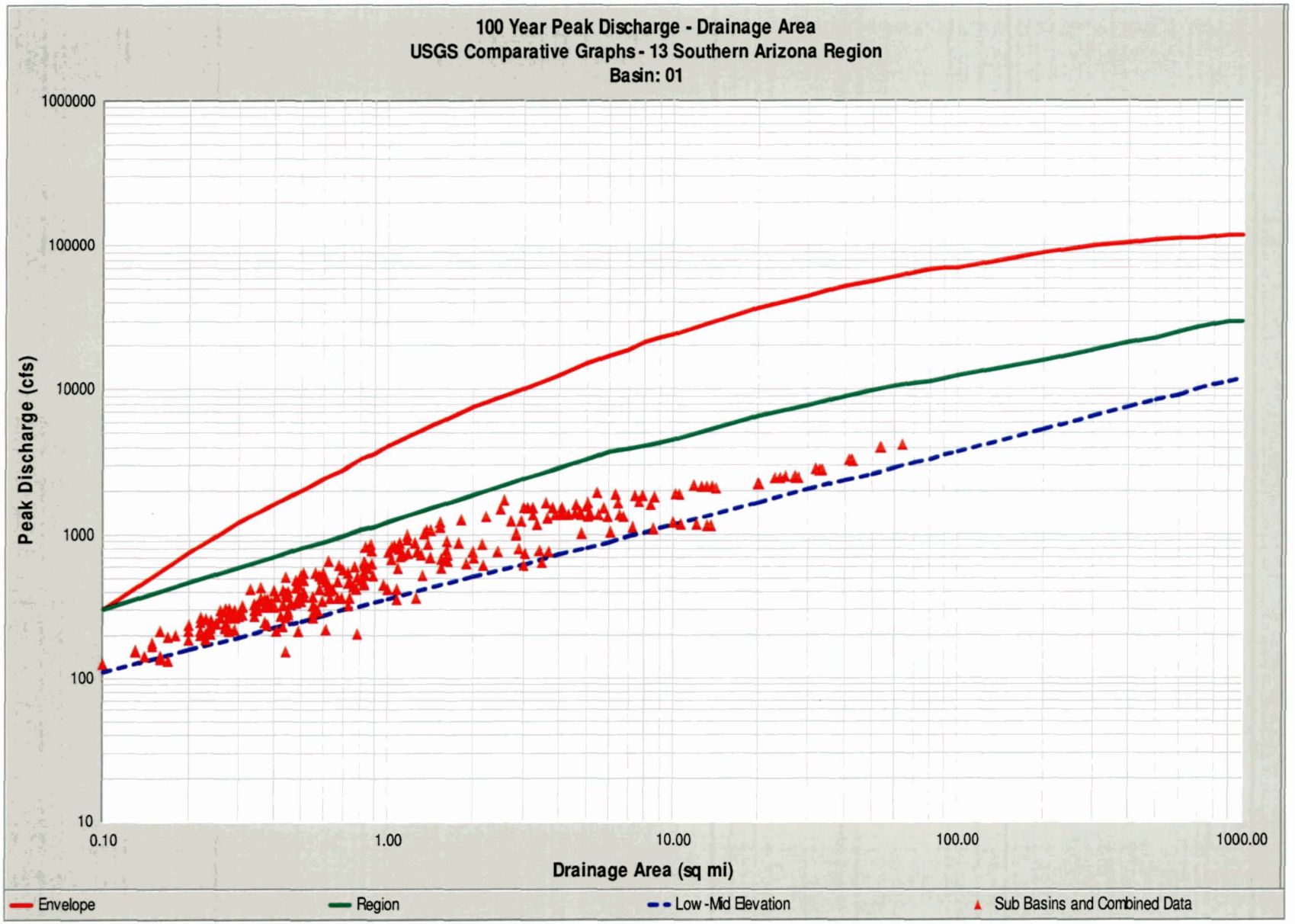

Figure 4.4a for Model EC24NODK

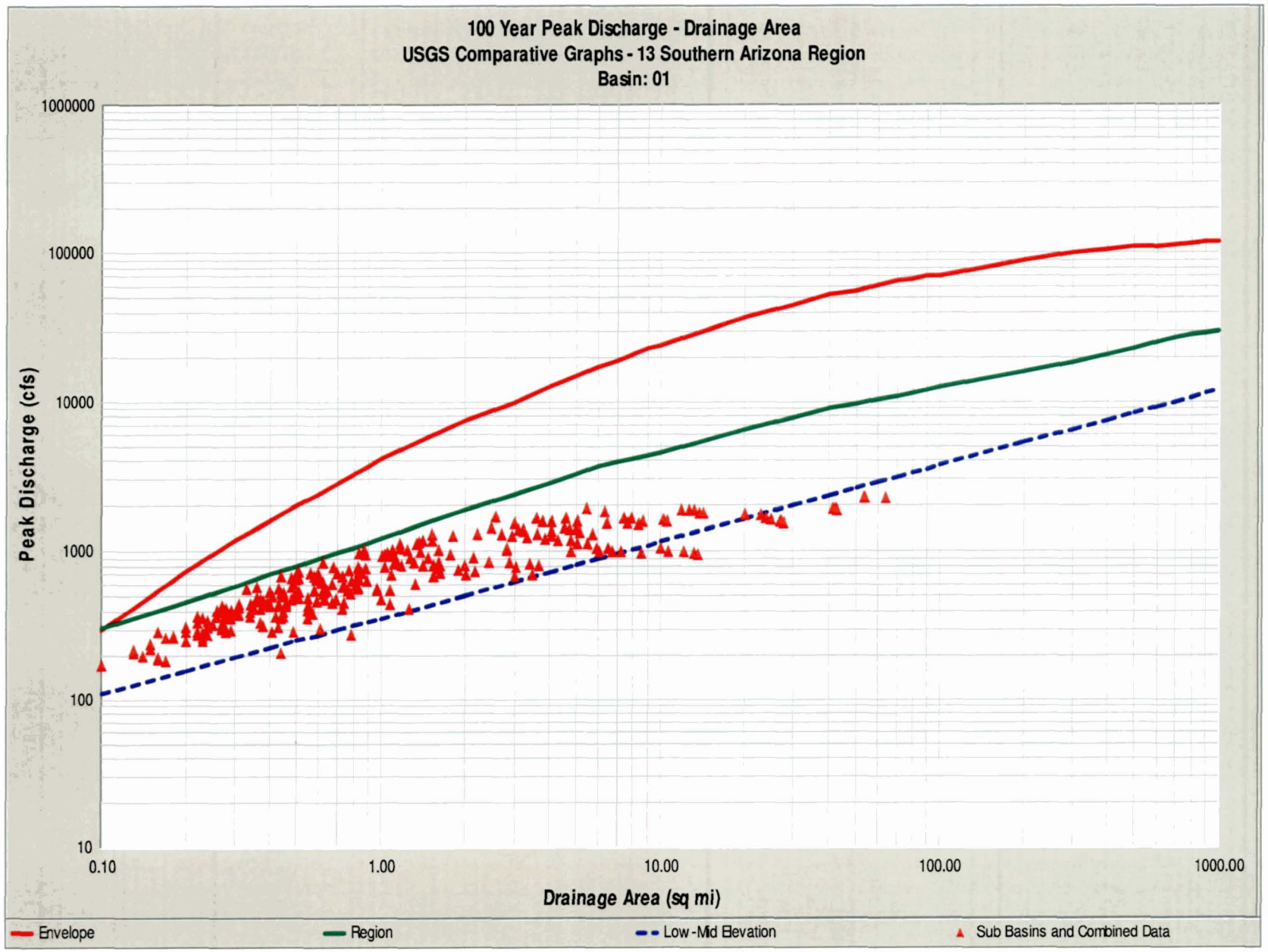

Figure 4.4b for Model EC06NODK

APPENDIX D

Hydrologic Analysis Supporting Documentation

APPENDIX D1

Precipitation Data

Flood Control District of Maricopa County
Drainage Design Management System
RAINFALL DATA
Project Reference: LUKE WASH -EC24NODK

Duration	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year
Rainfall Method: NOAA14						
5 MIN	0.273	0.374	0.449	0.548	0.621	0.696
10 MIN	0.415	0.569	0.684	0.834	0.946	1.059
15 MIN	0.514	0.706	0.847	1.034	1.173	1.313
30 MIN	0.693	0.950	1.141	1.392	1.579	1.769
1 HOUR	0.857	1.176	1.412	1.723	1.954	2.189
2 HOUR	0.960	1.304	1.567	1.927	2.204	2.496
3 HOUR	1.011	1.358	1.632	2.017	2.330	2.661
6 HOUR	1.169	1.536	1.830	2.240	2.565	2.911
12 HOUR	1.280	1.667	1.972	2.393	2.723	3.071
24 HOUR	1.476	1.952	2.327	2.847	3.259	3.693

APPENDIX D2

Physical Parameter Calculations

Sub-basin Data – without Dike and with Dike Conditions

Soils Data – without Dike and with Dike Conditions

Land Use Data – without Dike and with Dike Conditions

APPENDIX D2A

Physical Parameter Calculations

Area ID	Sub Basin Parameters									Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Lag Ratio	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01														
10a	0.838	1.47	35.5	DESERT/RANGE	0.61	31.50	-	4.09	0.05	0.30	0.25	5.60	0.22	
10b	0.855	2.06	29.1	DESERT/RANGE	1.04	45.60	-	3.97	0.05	0.30	0.25	4.55	0.35	12
12a	0.831	2.04	32.3	DESERT/RANGE	1.09	45.40	-	3.96	0.05	0.30	0.21	6.40	0.16	
12b	0.451	1.62	32.1	DESERT/RANGE	0.77	36.50	-	3.91	0.05	0.30	0.25	5.70	0.20	
14a	0.367	1.72	31.4	DESERT/RANGE	0.82	38.40	-	3.94	0.05	0.30	0.25	5.70	0.20	
14b	0.259	0.88	34.1	DESERT/RANGE	0.40	22.30	-	3.48	0.05	0.30	0.25	4.60	0.34	
14c	1.095	1.97	32.6	DESERT/RANGE	0.65	36.70	-	4.71	0.05	0.30	0.25	4.90	0.29	
14d	0.505	1.43	34.9	DESERT/RANGE	0.53	30.40	-	4.15	0.05	0.30	0.25	4.90	0.29	4
14e	1.101	1.81	34.2	DESERT/RANGE	0.92	40.20	-	3.97	0.05	0.30	0.25	4.65	0.32	1
15a	0.514	1.19	45.3	DESERT/RANGE	0.49	25.60	-	4.10	0.05	0.30	0.25	4.65	0.32	1
16a	0.218	0.93	47.2	DESERT/RANGE	0.46	23.10	-	3.55	0.05	0.29	0.25	4.60	0.34	3
20a	0.373	1.46	31.5	DESERT/RANGE	0.61	32.20	-	3.99	0.05	0.30	0.25	4.35	0.40	23
20b	1.142	2.28	25.5	DESERT/RANGE	1.02	48.20	-	4.15	0.05	0.30	0.25	4.90	0.29	3
20c	1.422	2.41	34.8	DESERT/RANGE	0.89	44.10	-	4.81	0.05	0.30	0.25	5.40	0.23	4
20d	0.623	1.26	41.2	DESERT/RANGE	0.49	26.60	-	4.17	0.05	0.30	0.25	5.00	0.28	1
20e	1.534	1.92	34.3	DESERT/RANGE	0.89	40.60	-	4.17	0.05	0.30	0.25	5.30	0.24	3
20f	1.346	1.95	37.0	DESERT/RANGE	0.89	40.20	-	4.26	0.05	0.30	0.25	4.90	0.29	1
20g	1.178	2.02	33.7	DESERT/RANGE	0.69	38.50	-	4.61	0.05	0.30	0.25	4.80	0.30	3
20h	1.250	2.14	32.8	DESERT/RANGE	0.86	42.10	-	4.47	0.05	0.30	0.25	4.70	0.31	2
20i	0.291	1.20	33.5	DESERT/RANGE	0.59	29.10	-	3.61	0.05	0.30	0.25	4.65	0.32	
20j	0.203	0.82	31.9	DESERT/RANGE	0.42	22.30	-	3.21	0.05	0.30	0.25	4.55	0.35	
20k	0.176	0.86	32.4	DESERT/RANGE	0.44	23.20	-	3.28	0.05	0.30	0.25	4.65	0.32	1
20l	0.129	0.76	29.1	DESERT/RANGE	0.42	22.10	-	3.01	0.05	0.30	0.25	4.65	0.32	
21a	0.882	1.97	30.4	DESERT/RANGE	0.88	41.80	-	4.16	0.05	0.30	0.25	4.70	0.31	1
21b	0.547	2.05	30.3	DESERT/RANGE	1.11	46.30	-	3.89	0.05	0.30	0.25	5.00	0.28	2
21c	0.234	1.47	29.9	DESERT/RANGE	0.77	35.60	-	3.64	0.05	0.30	0.25	4.80	0.30	
21d	0.494	2.04	34.2	DESERT/RANGE	1.09	44.90	-	4.01	0.05	0.30	0.25	5.80	0.19	
22a	0.451	1.56	32.1	DESERT/RANGE	0.82	36.80	-	3.73	0.05	0.30	0.25	5.00	0.28	1
22b	0.164	0.69	31.8	DESERT/RANGE	0.36	19.80	-	3.07	0.05	0.30	0.25	4.70	0.31	
22c	0.220	1.12	35.7	DESERT/RANGE	0.62	28.60	-	3.45	0.05	0.30	0.25	4.70	0.31	
22d	0.244	1.32	30.3	DESERT/RANGE	0.55	30.00	-	3.87	0.05	0.30	0.25	4.65	0.32	1
23a	0.353	1.10	34.7	DESERT/RANGE	0.49	30.70	-	3.14	0.05	0.32	0.25	4.65	0.35	5
24a	0.409	1.29	31.0	DESERT/RANGE	0.64	32.10	-	3.54	0.05	0.30	0.25	4.70	0.31	1
24b	0.335	1.80	31.2	DESERT/RANGE	0.74	37.50	-	4.21	0.05	0.30	0.25	5.10	0.26	
30a	0.036	0.35	28.2	DESERT/RANGE	0.19	18.10	-	1.72	0.07	0.36	0.25	4.25	0.53	17
30b	0.508	1.64	31.7	DESERT/RANGE	0.85	38.10	-	3.79	0.05	0.29	0.25	4.60	0.34	9
30c	0.243	1.14	28.1	DESERT/RANGE	0.53	28.40	-	3.53	0.05	0.30	0.25	4.40	0.38	9
30d	0.615	2.11	37.0	DESERT/RANGE	1.00	43.30	-	4.28	0.05	0.30	0.25	4.50	0.36	
30e	0.400	1.26	39.8	DESERT/RANGE	0.62	29.30	-	3.78	0.05	0.30	0.25	5.30	0.24	1
30f	1.771	3.46	27.2	DESERT/RANGE	1.20	59.40	11.88	5.12	0.05	0.30	0.25	4.55	0.35	1

Area ID	Sub Basin Parameters									Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Lag Ratio	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01														
30g	0.844	1.84	38.0	DESERT/RANGE	0.92	38.80	-	4.18	0.04	0.29	0.25	4.50	0.36	4
32a	0.289	1.24	37.1	DESERT/RANGE	0.61	29.30	-	3.72	0.05	0.30	0.25	4.55	0.35	1
32b	0.476	1.19	50.3	DESERT/RANGE	0.55	26.20	-	4.01	0.05	0.30	0.25	4.60	0.34	
33a	0.167	0.70	34.4	DESERT/RANGE	0.33	29.40	-	2.08	0.07	0.39	0.25	4.35	0.50	
34a	0.446	2.28	28.0	DESERT/RANGE	1.00	47.10	-	4.27	0.05	0.29	0.25	4.70	0.31	5
34b	0.631	2.36	28.8	DESERT/RANGE	1.26	51.80	-	4.01	0.05	0.30	0.25	4.55	0.35	3
35a	0.057	0.38	52.5	DESERT/RANGE	0.17	16.30	3.26	2.06	0.07	0.38	0.24	4.20	0.54	
36a	0.677	1.51	38.4	DESERT/RANGE	0.64	32.00	-	4.16	0.05	0.29	0.25	4.70	0.31	3
36b	1.059	1.73	38.1	DESERT/RANGE	0.79	36.60	-	4.17	0.05	0.30	0.25	4.65	0.32	2
36c	1.085	2.99	32.8	DESERT/RANGE	1.17	53.70	-	4.90	0.05	0.30	0.25	4.45	0.37	2
40a	0.268	1.15	29.7	DESERT/RANGE	0.67	30.80	-	3.28	0.05	0.30	0.25	4.55	0.35	2
40b	0.416	1.89	28.5	DESERT/RANGE	1.13	45.80	-	3.64	0.05	0.29	0.25	4.60	0.34	4
40c	0.501	1.06	39.5	DESERT/RANGE	0.53	25.90	-	3.61	0.05	0.30	0.25	4.60	0.34	1
40d	0.728	1.88	26.6	DESERT/RANGE	1.04	44.90	-	3.69	0.05	0.30	0.25	4.40	0.38	1
42a	0.360	1.23	37.5	DESERT/RANGE	0.56	27.60	-	3.91	0.04	0.29	0.25	4.60	0.34	3
42b	0.309	1.34	32.8	DESERT/RANGE	0.67	32.00	-	3.68	0.05	0.30	0.25	4.70	0.31	1
44a	0.833	3.04	31.0	DESERT/RANGE	1.41	58.60	11.72	4.56	0.05	0.29	0.25	4.90	0.29	3
44b	0.279	1.35	32.5	DESERT/RANGE	0.64	31.70	-	3.76	0.05	0.30	0.25	5.30	0.24	1
44c	0.338	1.57	33.1	DESERT/RANGE	0.73	35.10	-	3.94	0.05	0.30	0.25	5.60	0.22	
44d	0.821	2.97	35.7	DESERT/RANGE	1.24	53.90	-	4.85	0.05	0.30	0.25	5.80	0.19	
44e	0.463	2.25	36.5	DESERT/RANGE	1.07	45.60	-	4.33	0.05	0.30	0.25	5.40	0.23	
44f	0.267	1.67	38.3	DESERT/RANGE	0.86	37.20	-	3.96	0.05	0.30	0.25	5.40	0.23	
46a	0.807	1.95	31.7	DESERT/RANGE	1.07	44.50	-	3.87	0.05	0.30	0.25	4.10	0.46	
46b	0.401	1.67	35.8	DESERT/RANGE	0.83	37.20	-	3.96	0.05	0.30	0.25	4.70	0.31	
46c	0.226	1.51	35.7	DESERT/RANGE	0.84	36.00	-	3.70	0.05	0.30	0.25	5.00	0.28	
46d	0.431	1.81	38.7	DESERT/RANGE	0.86	38.30	-	4.16	0.05	0.30	0.25	4.70	0.31	
46e	0.220	0.97	37.1	DESERT/RANGE	0.51	25.00	-	3.42	0.05	0.30	0.25	5.10	0.26	
46f	0.576	2.12	34.9	DESERT/RANGE	1.00	43.90	-	4.25	0.05	0.30	0.25	5.20	0.25	
46g	0.451	2.49	32.1	DESERT/RANGE	1.28	52.10	-	4.21	0.05	0.30	0.25	5.10	0.26	
46h	0.384	1.48	40.5	DESERT/RANGE	0.76	33.50	-	3.88	0.05	0.30	0.25	5.30	0.24	
46i	0.270	1.12	46.6	DESERT/RANGE	0.60	26.20	-	3.75	0.04	0.29	0.24	4.90	0.29	
46j	0.294	1.24	41.9	DESERT/RANGE	0.72	29.20	-	3.74	0.04	0.28	0.23	5.00	0.27	
46k	0.442	1.08	37.0	DESERT/RANGE	0.45	24.30	-	3.92	0.04	0.29	0.24	5.20	0.25	
48a	0.283	1.44	30.5	DESERT/RANGE	0.74	35.50	-	3.58	0.05	0.30	0.25	4.25	0.42	1
48b	0.204	1.18	30.5	DESERT/RANGE	0.54	28.50	-	3.64	0.05	0.30	0.25	4.35	0.40	
50a	0.891	2.33	30.1	DESERT/RANGE	1.40	53.10	-	3.85	0.05	0.30	0.25	5.00	0.28	
50b	0.205	1.06	37.8	DESERT/RANGE	0.58	27.00	-	3.45	0.05	0.30	0.25	5.00	0.28	
50c	0.548	2.70	33.3	DESERT/RANGE	1.23	52.60	-	4.53	0.05	0.30	0.25	5.00	0.28	
50d	0.178	0.94	34.0	DESERT/RANGE	0.51	25.10	-	3.30	0.05	0.30	0.25	5.00	0.28	
50e	0.171	0.88	34.3	DESERT/RANGE	0.47	23.60	-	3.26	0.05	0.30	0.25	5.00	0.28	

Area ID	Sub Basin Parameters									Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Lag Ratio	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01														
50f	0.292	1.41	35.4	DESERT/RANGE	0.70	32.80	-	3.79	0.05	0.30	0.25	5.10	0.26	
50g	0.146	1.11	41.4	DESERT/RANGE	0.47	24.90	-	3.92	0.05	0.30	0.25	5.30	0.24	
52a	0.577	1.56	89.9	DESERT/RANGE	0.95	32.00	-	4.29	0.05	0.30	0.25	4.15	0.44	18
54a	0.360	1.35	44.5	DESERT/RANGE	0.66	30.10	-	3.94	0.05	0.30	0.25	4.80	0.30	6
54b	0.235	1.16	34.4	DESERT/RANGE	0.38	24.30	-	4.22	0.05	0.30	0.25	4.70	0.31	4
56a	0.297	1.29	37.2	DESERT/RANGE	0.64	30.30	-	3.75	0.05	0.30	0.25	4.65	0.32	
60a	0.771	1.70	35.3	DESERT/RANGE	0.92	39.00	-	3.83	0.05	0.29	0.25	4.90	0.29	4
60b	1.111	2.31	32.0	DESERT/RANGE	1.05	47.00	-	4.33	0.05	0.29	0.25	4.55	0.35	4
60c	1.044	2.20	35.5	DESERT/RANGE	0.90	42.60	-	4.54	0.05	0.30	0.25	4.35	0.40	1
62a	0.586	1.38	46.5	DESERT/RANGE	0.66	30.10	-	4.02	0.05	0.30	0.25	4.15	0.44	
62b	0.245	1.04	38.5	DESERT/RANGE	0.51	25.40	-	3.60	0.05	0.30	0.25	4.15	0.44	
64a	0.377	1.35	40.1	DESERT/RANGE	0.62	30.00	-	3.95	0.05	0.30	0.25	4.20	0.43	
64b	0.836	2.19	37.5	DESERT/RANGE	1.06	44.80	-	4.29	0.05	0.30	0.25	3.92	0.41	
64c	0.637	1.96	36.8	DESERT/RANGE	0.98	41.80	-	4.12	0.05	0.30	0.25	3.92	0.41	
64d	0.144	0.82	34.2	DESERT/RANGE	0.41	21.90	-	3.29	0.05	0.30	0.27	3.31	0.62	
70a	0.103	0.46	26.0	DESERT/RANGE	0.25	19.10	-	2.13	0.06	0.34	0.25	4.45	0.41	1
70b	0.333	0.84	123.2	MOUNTAIN	0.39	17.00	3.40	4.36	0.05	0.30	0.25	4.40	0.38	2
70c	0.742	2.29	33.2	DESERT/RANGE	1.02	48.00	-	4.20	0.05	0.30	0.25	4.60	0.34	2
70d	0.486	1.35	42.9	DESERT/RANGE	0.67	30.50	-	3.89	0.05	0.30	0.25	4.70	0.31	
70e	1.372	1.82	35.3	DESERT/RANGE	0.71	36.30	-	4.41	0.05	0.30	0.25	4.60	0.34	
70f	0.392	1.51	34.5	DESERT/RANGE	0.79	35.40	-	3.76	0.05	0.30	0.25	5.10	0.26	1
70g	1.633	3.51	33.0	DESERT/RANGE	1.87	69.70	13.94	4.43	0.05	0.29	0.25	4.55	0.35	4
70h	0.293	1.32	37.9	DESERT/RANGE	0.70	30.80	-	3.77	0.04	0.29	0.25	5.00	0.28	5
71a	0.262	0.95	84.6	MOUNTAIN	0.56	21.90	-	3.80	0.05	0.30	0.25	4.10	0.46	1
71b	0.290	1.26	166.3	MOUNTAIN	0.59	21.90	-	5.07	0.05	0.30	0.25	4.00	0.47	2
72a	0.443	1.36	118.0	MOUNTAIN	0.66	26.80	-	4.46	0.05	0.31	0.25	4.20	0.45	1
72b	1.187	1.92	44.8	MOUNTAIN	0.78	41.60	-	4.06	0.05	0.32	0.25	4.15	0.47	2
73a	0.368	1.61	26.1	DESERT/RANGE	0.77	40.30	-	3.51	0.05	0.31	0.25	4.35	0.41	
73b	0.606	1.62	28.4	DESERT/RANGE	0.70	36.00	-	3.96	0.05	0.30	0.25	4.60	0.34	
74a	0.309	1.19	38.6	DESERT/RANGE	0.50	26.60	-	3.94	0.05	0.30	0.25	4.60	0.34	
74b	0.665	1.81	36.5	DESERT/RANGE	0.90	39.40	-	4.04	0.05	0.30	0.25	4.45	0.37	1
75a	0.460	1.85	32.5	DESERT/RANGE	0.95	41.40	-	3.93	0.05	0.30	0.25	4.80	0.30	2
77a	0.245	1.17	39.4	DESERT/RANGE	0.59	27.40	-	3.75	0.04	0.29	0.25	4.40	0.38	3
77b	0.442	1.50	35.9	DESERT/RANGE	0.63	32.20	-	4.12	0.05	0.30	0.25	4.65	0.32	1
78a	0.151	0.85	35.5	DESERT/RANGE	0.46	24.00	-	3.10	0.05	0.30	0.25	5.30	0.24	2
78b	0.479	1.54	37.6	DESERT/RANGE	0.65	32.60	-	4.17	0.05	0.30	0.25	4.80	0.30	2
79a	0.515	1.28	89.2	DESERT/RANGE	0.60	26.10	-	4.31	0.05	0.30	0.25	4.00	0.47	
79b	0.362	1.06	213.4	MOUNTAIN	0.49	18.20	-	5.11	0.05	0.30	0.25	3.95	0.40	1
80a	0.337	1.19	45.5	DESERT/RANGE	0.55	27.30	-	3.83	0.05	0.30	0.25	4.45	0.37	2
80b	0.278	1.04	44.2	DESERT/RANGE	0.46	24.40	-	3.76	0.05	0.30	0.25	4.50	0.36	1

Area ID	Sub Basin Parameters									Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Lag Ratio	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01														
81a	0.078	0.52	61.1	DESERT/RANGE	0.29	13.90	2.78	3.33	0.04	0.28	0.25	4.30	0.41	8
81b	0.512	2.05	39.0	DESERT/RANGE	0.86	40.10	-	4.51	0.05	0.30	0.25	4.45	0.37	3
82a	0.588	1.49	49.8	DESERT/RANGE	0.71	31.50	-	4.16	0.05	0.30	0.25	4.45	0.37	
82b	0.265	1.04	44.3	DESERT/RANGE	0.49	24.40	-	3.75	0.05	0.30	0.25	4.20	0.43	
83a	0.242	1.38	42.0	DESERT/RANGE	0.71	31.60	-	3.84	0.05	0.30	0.25	4.25	0.42	
83b	0.432	1.57	39.6	DESERT/RANGE	0.80	35.10	-	3.93	0.05	0.30	0.25	4.15	0.44	
83c	0.278	0.98	53.0	DESERT/RANGE	0.47	22.70	-	3.80	0.05	0.30	0.25	3.92	0.41	
83d	0.230	1.16	44.8	DESERT/RANGE	0.59	27.30	-	3.75	0.05	0.30	0.26	3.55	0.52	
83e	0.837	1.54	41.7	DESERT/RANGE	0.67	32.20	-	4.19	0.05	0.30	0.27	3.38	0.59	
83f	0.132	0.62	61.6	DESERT/RANGE	0.36	16.70	3.34	3.25	0.05	0.30	0.27	3.35	0.60	
83g	0.619	1.60	41.3	DESERT/RANGE	0.75	34.20	-	4.11	0.05	0.30	0.27	3.35	0.60	
83h	0.289	1.64	37.7	DESERT/RANGE	0.81	36.20	-	3.99	0.05	0.30	0.25	3.92	0.41	
83i	0.404	1.41	41.1	DESERT/RANGE	0.63	30.60	-	4.06	0.05	0.30	0.26	3.48	0.55	
83j	0.163	1.15	41.9	DESERT/RANGE	0.59	27.50	-	3.67	0.05	0.30	0.26	3.48	0.55	
83k	0.315	1.30	109.4	DESERT/RANGE	0.66	25.00	-	4.56	0.05	0.30	0.25	4.10	0.46	8
83l	0.555	1.28	62.6	DESERT/RANGE	0.75	29.00	-	3.87	0.05	0.30	0.25	4.80	0.30	4
84a	0.223	0.71	36.5	DESERT/RANGE	0.38	19.90	-	3.15	0.05	0.30	0.25	4.30	0.41	
84b	0.347	1.32	42.6	DESERT/RANGE	0.61	29.20	-	3.96	0.05	0.30	0.25	4.15	0.44	
85a	0.315	1.21	44.7	DESERT/RANGE	0.64	28.50	-	3.72	0.05	0.30	0.25	4.15	0.44	
85b	0.237	0.98	42.9	DESERT/RANGE	0.41	22.40	-	3.84	0.05	0.30	0.25	4.10	0.46	
86a	0.479	1.55	41.4	DESERT/RANGE	0.71	33.10	-	4.11	0.05	0.30	0.27	3.38	0.59	
87a	0.273	1.41	39.8	DESERT/RANGE	0.71	32.20	-	3.85	0.05	0.30	0.25	3.88	0.42	
87b	0.161	1.09	36.9	DESERT/RANGE	0.56	27.00	-	3.53	0.05	0.30	0.27	3.33	0.61	
88a	0.276	1.52	40.8	DESERT/RANGE	0.66	32.10	-	4.17	0.05	0.30	0.25	4.00	0.47	
89a	0.215	1.01	47.7	DESERT/RANGE	0.47	23.40	-	3.79	0.05	0.30	0.27	3.29	0.63	
89b	0.283	1.16	74.0	DESERT/RANGE	0.57	24.50	-	4.18	0.05	0.30	0.25	4.00	0.47	2
91a	0.434	1.20	56.6	DESERT/RANGE	0.60	26.60	-	3.98	0.05	0.30	0.25	4.15	0.44	
91b	0.561	2.53	43.6	DESERT/RANGE	1.34	50.30	-	4.42	0.05	0.30	0.25	4.20	0.43	
92a	0.785	2.35	45.2	DESERT/RANGE	1.08	44.70	-	4.62	0.05	0.30	0.25	4.60	0.34	
92b	0.700	1.83	61.3	DESERT/RANGE	0.79	34.10	-	4.72	0.05	0.30	0.25	4.50	0.36	

APPENDIX D2B

Sub-basin Data –without Dike and with Dike Conditions

Area ID	Sub Basin Parameters									Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Lag Ratio	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01														
10a	0.838	1.47	35.5	DESERT/RANGE	0.61	31.50	-	4.09	0.05	0.30	0.25	5.60	0.22	
10b	0.855	2.06	29.1	DESERT/RANGE	1.04	45.60	-	3.97	0.05	0.30	0.25	4.55	0.35	12
12a	0.831	2.04	32.3	DESERT/RANGE	1.09	45.40	-	3.96	0.05	0.30	0.21	6.40	0.16	
12b	0.451	1.62	32.1	DESERT/RANGE	0.77	36.50	-	3.91	0.05	0.30	0.25	5.70	0.20	
14a	0.367	1.72	31.4	DESERT/RANGE	0.82	38.40	-	3.94	0.05	0.30	0.25	5.70	0.20	
14b	0.259	0.88	34.1	DESERT/RANGE	0.40	22.30	-	3.48	0.05	0.30	0.25	4.60	0.34	
14c	1.095	1.97	32.6	DESERT/RANGE	0.65	36.70	-	4.71	0.05	0.30	0.25	4.90	0.29	
14d	0.505	1.43	34.9	DESERT/RANGE	0.53	30.40	-	4.15	0.05	0.30	0.25	4.90	0.29	4
14e	1.101	1.81	34.2	DESERT/RANGE	0.92	40.20	-	3.97	0.05	0.30	0.25	4.65	0.32	1
15a	0.514	1.19	45.3	DESERT/RANGE	0.49	25.60	-	4.10	0.05	0.30	0.25	4.65	0.32	1
16a	0.218	0.93	47.2	DESERT/RANGE	0.46	23.10	-	3.55	0.05	0.29	0.25	4.60	0.34	3
20a	0.239	1.05	32.4	DESERT/RANGE	0.46	25.40	-	3.64	0.05	0.30	0.25	4.10	0.46	36
20b	1.275	2.28	25.5	DESERT/RANGE	0.84	44.80	-	4.47	0.05	0.30	0.25	4.90	0.29	2
20c	1.422	2.41	34.8	DESERT/RANGE	0.89	44.10	-	4.81	0.05	0.30	0.25	5.40	0.23	4
20d	0.623	1.26	41.2	DESERT/RANGE	0.49	26.60	-	4.17	0.05	0.30	0.25	5.00	0.28	1
20e	1.534	1.92	34.3	DESERT/RANGE	0.89	40.60	-	4.17	0.05	0.30	0.25	5.30	0.24	3
20f	1.346	1.95	37.0	DESERT/RANGE	0.89	40.20	-	4.26	0.05	0.30	0.25	4.90	0.29	1
20g	1.178	2.02	33.7	DESERT/RANGE	0.69	38.50	-	4.61	0.05	0.30	0.25	4.80	0.30	3
20h	1.250	2.14	32.8	DESERT/RANGE	0.86	42.10	-	4.47	0.05	0.30	0.25	4.70	0.31	2
20i	0.291	1.20	33.5	DESERT/RANGE	0.59	29.10	-	3.61	0.05	0.30	0.25	4.65	0.32	
20j	0.203	0.82	31.9	DESERT/RANGE	0.42	22.30	-	3.21	0.05	0.30	0.25	4.55	0.35	
20k	0.176	0.86	32.4	DESERT/RANGE	0.44	23.20	-	3.28	0.05	0.30	0.25	4.65	0.32	1
20l	0.129	0.76	29.1	DESERT/RANGE	0.42	22.10	-	3.01	0.05	0.30	0.25	4.65	0.32	
21a	0.882	1.97	30.4	DESERT/RANGE	0.88	41.80	-	4.16	0.05	0.30	0.25	4.70	0.31	1
21b	0.547	2.05	30.3	DESERT/RANGE	1.11	46.30	-	3.89	0.05	0.30	0.25	5.00	0.28	2
21c	0.234	1.47	29.9	DESERT/RANGE	0.77	35.60	-	3.64	0.05	0.30	0.25	4.80	0.30	
21d	0.494	2.04	34.2	DESERT/RANGE	1.09	44.90	-	4.01	0.05	0.30	0.25	5.80	0.19	
22a	0.451	1.56	32.1	DESERT/RANGE	0.82	36.80	-	3.73	0.05	0.30	0.25	5.00	0.28	1
22b	0.164	0.69	31.8	DESERT/RANGE	0.36	19.80	-	3.07	0.05	0.30	0.25	4.70	0.31	
22c	0.220	1.12	35.7	DESERT/RANGE	0.62	28.60	-	3.45	0.05	0.30	0.25	4.70	0.31	
22d	0.244	1.32	30.3	DESERT/RANGE	0.55	30.00	-	3.87	0.05	0.30	0.25	4.65	0.32	1
23a	0.353	1.10	34.7	DESERT/RANGE	0.49	30.70	-	3.14	0.05	0.32	0.25	4.65	0.35	5
24a	0.409	1.29	31.0	DESERT/RANGE	0.64	32.10	-	3.54	0.05	0.30	0.25	4.70	0.31	1
24b	0.335	1.80	31.2	DESERT/RANGE	0.74	37.50	-	4.21	0.05	0.30	0.25	5.10	0.26	
30a	0.036	0.35	28.2	DESERT/RANGE	0.19	18.10	-	1.72	0.07	0.36	0.25	4.25	0.53	17
30b	0.508	1.64	31.7	DESERT/RANGE	0.85	38.10	-	3.79	0.05	0.29	0.25	4.60	0.34	9
30c	0.243	1.14	28.1	DESERT/RANGE	0.53	28.40	-	3.53	0.05	0.30	0.25	4.40	0.38	9
30d	0.615	2.11	37.0	DESERT/RANGE	1.00	43.30	-	4.28	0.05	0.30	0.25	4.50	0.36	
30e	0.400	1.26	39.8	DESERT/RANGE	0.62	29.30	-	3.78	0.05	0.30	0.25	5.30	0.24	1
30f	1.771	3.46	27.2	DESERT/RANGE	1.20	59.40	11.88	5.12	0.05	0.30	0.25	4.55	0.35	1

Area ID	Sub Basin Parameters									Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Lag Ratio	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01														
30g	0.844	1.84	38.0	DESERT/RANGE	0.92	38.80	-	4.18	0.04	0.29	0.25	4.50	0.36	4
32a	0.289	1.24	37.1	DESERT/RANGE	0.61	29.30	-	3.72	0.05	0.30	0.25	4.55	0.35	1
32b	0.476	1.19	50.3	DESERT/RANGE	0.55	26.20	-	4.01	0.05	0.30	0.25	4.60	0.34	
33a	0.167	0.70	34.4	DESERT/RANGE	0.33	29.40	-	2.08	0.07	0.39	0.25	4.35	0.50	
34a	0.446	2.28	28.0	DESERT/RANGE	1.00	47.10	-	4.27	0.05	0.29	0.25	4.70	0.31	5
34b	0.631	2.36	28.8	DESERT/RANGE	1.26	51.80	-	4.01	0.05	0.30	0.25	4.55	0.35	3
35a	0.057	0.38	52.5	DESERT/RANGE	0.17	16.30	3.26	2.06	0.07	0.38	0.24	4.20	0.54	
36a	0.677	1.51	38.4	DESERT/RANGE	0.64	32.00	-	4.16	0.05	0.29	0.25	4.70	0.31	3
36b	1.059	1.73	38.1	DESERT/RANGE	0.79	36.60	-	4.17	0.05	0.30	0.25	4.65	0.32	2
36c	1.085	2.99	32.8	DESERT/RANGE	1.17	53.70	-	4.90	0.05	0.30	0.25	4.45	0.37	2
40a	0.268	1.15	29.7	DESERT/RANGE	0.67	30.80	-	3.28	0.05	0.30	0.25	4.55	0.35	2
40b	0.416	1.89	28.5	DESERT/RANGE	1.13	45.80	-	3.64	0.05	0.29	0.25	4.60	0.34	4
40c	0.501	1.06	39.5	DESERT/RANGE	0.53	25.90	-	3.61	0.05	0.30	0.25	4.60	0.34	1
40d	0.728	1.88	26.6	DESERT/RANGE	1.04	44.90	-	3.69	0.05	0.30	0.25	4.40	0.38	1
42a	0.360	1.23	37.5	DESERT/RANGE	0.56	27.60	-	3.91	0.04	0.29	0.25	4.60	0.34	3
42b	0.309	1.34	32.8	DESERT/RANGE	0.67	32.00	-	3.68	0.05	0.30	0.25	4.70	0.31	1
44a	0.833	3.04	31.0	DESERT/RANGE	1.41	58.60	11.72	4.56	0.05	0.29	0.25	4.90	0.29	3
44b	0.279	1.35	32.5	DESERT/RANGE	0.64	31.70	-	3.76	0.05	0.30	0.25	5.30	0.24	1
44c	0.338	1.57	33.1	DESERT/RANGE	0.73	35.10	-	3.94	0.05	0.30	0.25	5.60	0.22	
44d	0.821	2.97	35.7	DESERT/RANGE	1.24	53.90	-	4.85	0.05	0.30	0.25	5.80	0.19	
44e	0.463	2.25	36.5	DESERT/RANGE	1.07	45.60	-	4.33	0.05	0.30	0.25	5.40	0.23	
44f	0.267	1.67	38.3	DESERT/RANGE	0.86	37.20	-	3.96	0.05	0.30	0.25	5.40	0.23	
46a	0.807	1.95	31.7	DESERT/RANGE	1.07	44.50	-	3.87	0.05	0.30	0.25	4.10	0.46	
46b	0.401	1.67	35.8	DESERT/RANGE	0.83	37.20	-	3.96	0.05	0.30	0.25	4.70	0.31	
46c	0.226	1.51	35.7	DESERT/RANGE	0.84	36.00	-	3.70	0.05	0.30	0.25	5.00	0.28	
46d	0.431	1.81	38.7	DESERT/RANGE	0.86	38.30	-	4.16	0.05	0.30	0.25	4.70	0.31	
46e	0.220	0.97	37.1	DESERT/RANGE	0.51	25.00	-	3.42	0.05	0.30	0.25	5.10	0.26	
46f	0.576	2.12	34.9	DESERT/RANGE	1.00	43.90	-	4.25	0.05	0.30	0.25	5.20	0.25	
46g	0.451	2.49	32.1	DESERT/RANGE	1.28	52.10	-	4.21	0.05	0.30	0.25	5.10	0.26	
46h	0.384	1.48	40.5	DESERT/RANGE	0.76	33.50	-	3.88	0.05	0.30	0.25	5.30	0.24	
46i	0.270	1.12	46.6	DESERT/RANGE	0.60	26.20	-	3.75	0.04	0.29	0.24	4.90	0.29	
46j	0.294	1.24	41.9	DESERT/RANGE	0.72	29.20	-	3.74	0.04	0.28	0.23	5.00	0.27	
46k	0.442	1.08	37.0	DESERT/RANGE	0.45	24.30	-	3.92	0.04	0.29	0.24	5.20	0.25	
48a	0.283	1.44	30.5	DESERT/RANGE	0.74	35.50	-	3.58	0.05	0.30	0.25	4.25	0.42	1
48b	0.204	1.18	30.5	DESERT/RANGE	0.54	28.50	-	3.64	0.05	0.30	0.25	4.35	0.40	
50a	0.891	2.33	30.1	DESERT/RANGE	1.40	53.10	-	3.85	0.05	0.30	0.25	5.00	0.28	
50b	0.205	1.06	37.8	DESERT/RANGE	0.58	27.00	-	3.45	0.05	0.30	0.25	5.00	0.28	
50c	0.548	2.70	33.3	DESERT/RANGE	1.23	52.60	-	4.53	0.05	0.30	0.25	5.00	0.28	
50d	0.178	0.94	34.0	DESERT/RANGE	0.51	25.10	-	3.30	0.05	0.30	0.25	5.00	0.28	
50e	0.171	0.88	34.3	DESERT/RANGE	0.47	23.60	-	3.26	0.05	0.30	0.25	5.00	0.28	

Area ID	Sub Basin Parameters									Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Lag Ratio	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01														
50f	0.292	1.41	35.4	DESERT/RANGE	0.70	32.80	-	3.79	0.05	0.30	0.25	5.10	0.26	
50g	0.146	1.11	41.4	DESERT/RANGE	0.47	24.90	-	3.92	0.05	0.30	0.25	5.30	0.24	
52a	0.577	1.56	89.9	DESERT/RANGE	0.95	32.00	-	4.29	0.05	0.30	0.25	4.15	0.44	18
54a	0.360	1.35	44.5	DESERT/RANGE	0.66	30.10	-	3.94	0.05	0.30	0.25	4.80	0.30	6
54b	0.235	1.16	34.4	DESERT/RANGE	0.38	24.30	-	4.22	0.05	0.30	0.25	4.70	0.31	4
56a	0.297	1.29	37.2	DESERT/RANGE	0.64	30.30	-	3.75	0.05	0.30	0.25	4.65	0.32	
60a	0.771	1.70	35.3	DESERT/RANGE	0.92	39.00	-	3.83	0.05	0.29	0.25	4.90	0.29	4
60b	1.111	2.31	32.0	DESERT/RANGE	1.05	47.00	-	4.33	0.05	0.29	0.25	4.55	0.35	4
60c	1.044	2.20	35.5	DESERT/RANGE	0.90	42.60	-	4.54	0.05	0.30	0.25	4.35	0.40	1
62a	0.586	1.38	46.5	DESERT/RANGE	0.66	30.10	-	4.02	0.05	0.30	0.25	4.15	0.44	
62b	0.245	1.04	38.5	DESERT/RANGE	0.51	25.40	-	3.60	0.05	0.30	0.25	4.15	0.44	
64a	0.377	1.35	40.1	DESERT/RANGE	0.62	30.00	-	3.95	0.05	0.30	0.25	4.20	0.43	
64b	0.836	2.19	37.5	DESERT/RANGE	1.06	44.80	-	4.29	0.05	0.30	0.25	3.92	0.41	
64c	0.637	1.96	36.8	DESERT/RANGE	0.98	41.80	-	4.12	0.05	0.30	0.25	3.92	0.41	
64d	0.144	0.82	34.2	DESERT/RANGE	0.41	21.90	-	3.29	0.05	0.30	0.27	3.31	0.62	
70a	0.103	0.46	26.0	DESERT/RANGE	0.25	19.10	-	2.13	0.06	0.34	0.25	4.45	0.41	1
70b	0.333	0.84	123.2	MOUNTAIN	0.39	17.00	3.40	4.36	0.05	0.30	0.25	4.40	0.38	2
70c	0.742	2.29	33.2	DESERT/RANGE	1.02	48.00	-	4.20	0.05	0.30	0.25	4.60	0.34	2
70d	0.486	1.35	42.9	DESERT/RANGE	0.67	30.50	-	3.89	0.05	0.30	0.25	4.70	0.31	
70e	1.372	1.82	35.3	DESERT/RANGE	0.71	36.30	-	4.41	0.05	0.30	0.25	4.60	0.34	
70f	0.392	1.51	34.5	DESERT/RANGE	0.79	35.40	-	3.76	0.05	0.30	0.25	5.10	0.26	1
70g	1.633	3.51	33.0	DESERT/RANGE	1.87	69.70	13.94	4.43	0.05	0.29	0.25	4.55	0.35	4
70h	0.293	1.32	37.9	DESERT/RANGE	0.70	30.80	-	3.77	0.04	0.29	0.25	5.00	0.28	5
71a	0.262	0.95	84.6	MOUNTAIN	0.56	21.90	-	3.80	0.05	0.30	0.25	4.10	0.46	1
71b	0.290	1.26	166.3	MOUNTAIN	0.59	21.90	-	5.07	0.05	0.30	0.25	4.00	0.47	2
72a	0.443	1.36	118.0	MOUNTAIN	0.66	26.80	-	4.46	0.05	0.31	0.25	4.20	0.45	1
72b	1.047	1.67	46.7	MOUNTAIN	0.68	32.80	-	4.49	0.05	0.30	0.25	4.20	0.43	2
73a	0.508	1.61	26.1	DESERT/RANGE	0.79	51.80	-	2.73	0.06	0.36	0.25	4.30	0.48	
73b	0.606	1.62	28.4	DESERT/RANGE	0.70	36.00	-	3.96	0.05	0.30	0.25	4.60	0.34	
74a	0.309	1.19	38.6	DESERT/RANGE	0.50	26.60	-	3.94	0.05	0.30	0.25	4.60	0.34	
74b	0.665	1.81	36.5	DESERT/RANGE	0.90	39.40	-	4.04	0.05	0.30	0.25	4.45	0.37	1
75a	0.460	1.85	32.5	DESERT/RANGE	0.95	41.40	-	3.93	0.05	0.30	0.25	4.80	0.30	2
77a	0.245	1.17	39.4	DESERT/RANGE	0.59	27.40	-	3.75	0.04	0.29	0.25	4.40	0.38	3
77b	0.442	1.50	35.9	DESERT/RANGE	0.63	32.20	-	4.12	0.05	0.30	0.25	4.65	0.32	1
78a	0.151	0.85	35.5	DESERT/RANGE	0.46	24.00	-	3.10	0.05	0.30	0.25	5.30	0.24	2
78b	0.479	1.54	37.6	DESERT/RANGE	0.65	32.60	-	4.17	0.05	0.30	0.25	4.80	0.30	2
79a	0.515	1.28	89.2	DESERT/RANGE	0.60	26.10	-	4.31	0.05	0.30	0.25	4.00	0.47	
79b	0.362	1.06	213.4	MOUNTAIN	0.49	18.20	-	5.11	0.05	0.30	0.25	3.95	0.40	1
80a	0.337	1.19	45.5	DESERT/RANGE	0.55	27.30	-	3.83	0.05	0.30	0.25	4.45	0.37	2
80b	0.278	1.04	44.2	DESERT/RANGE	0.46	24.40	-	3.76	0.05	0.30	0.25	4.50	0.36	1

Area ID	Sub Basin Parameters									Rainfall Losses				
	Area (sq mi)	Length (mi)	Slope (ft/mi)	S-Graph	Lca (mi)	Lag (min)	Lag Ratio	Velocity (f/s)	Kn	IA (in)	DTHETA	PSIF (in)	XKSAT (in/hr)	RTIMP (%)
Major Basin ID: 01														
81a	0.078	0.52	61.1	DESERT/RANGE	0.29	13.90	2.78	3.33	0.04	0.28	0.25	4.30	0.41	8
81b	0.512	2.05	39.0	DESERT/RANGE	0.86	40.10	-	4.51	0.05	0.30	0.25	4.45	0.37	3
82a	0.588	1.49	49.8	DESERT/RANGE	0.71	31.50	-	4.16	0.05	0.30	0.25	4.45	0.37	
82b	0.265	1.04	44.3	DESERT/RANGE	0.49	24.40	-	3.75	0.05	0.30	0.25	4.20	0.43	
83a	0.242	1.38	42.0	DESERT/RANGE	0.71	31.60	-	3.84	0.05	0.30	0.25	4.25	0.42	
83b	0.432	1.57	39.6	DESERT/RANGE	0.80	35.10	-	3.93	0.05	0.30	0.25	4.15	0.44	
83c	0.278	0.98	53.0	DESERT/RANGE	0.47	22.70	-	3.80	0.05	0.30	0.25	3.92	0.41	
83d	0.230	1.16	44.8	DESERT/RANGE	0.59	27.30	-	3.75	0.05	0.30	0.26	3.55	0.52	
83e	0.837	1.54	41.7	DESERT/RANGE	0.67	32.20	-	4.19	0.05	0.30	0.27	3.38	0.59	
83f	0.132	0.62	61.6	DESERT/RANGE	0.36	16.70	3.34	3.25	0.05	0.30	0.27	3.35	0.60	
83g	0.619	1.60	41.3	DESERT/RANGE	0.75	34.20	-	4.11	0.05	0.30	0.27	3.35	0.60	
83h	0.289	1.64	37.7	DESERT/RANGE	0.81	36.20	-	3.99	0.05	0.30	0.25	3.92	0.41	
83i	0.404	1.41	41.1	DESERT/RANGE	0.63	30.60	-	4.06	0.05	0.30	0.26	3.48	0.55	
83j	0.163	1.15	41.9	DESERT/RANGE	0.59	27.50	-	3.67	0.05	0.30	0.26	3.48	0.55	
83k	0.315	1.30	109.4	DESERT/RANGE	0.66	25.00	-	4.56	0.05	0.30	0.25	4.10	0.46	8
83l	0.555	1.28	62.6	DESERT/RANGE	0.75	29.00	-	3.87	0.05	0.30	0.25	4.80	0.30	4
84a	0.223	0.71	36.5	DESERT/RANGE	0.38	19.90	-	3.15	0.05	0.30	0.25	4.30	0.41	
84b	0.347	1.32	42.6	DESERT/RANGE	0.61	29.20	-	3.96	0.05	0.30	0.25	4.15	0.44	
85a	0.315	1.21	44.7	DESERT/RANGE	0.64	28.50	-	3.72	0.05	0.30	0.25	4.15	0.44	
85b	0.237	0.98	42.9	DESERT/RANGE	0.41	22.40	-	3.84	0.05	0.30	0.25	4.10	0.46	
86a	0.479	1.55	41.4	DESERT/RANGE	0.71	33.10	-	4.11	0.05	0.30	0.27	3.38	0.59	
87a	0.273	1.41	39.8	DESERT/RANGE	0.71	32.20	-	3.85	0.05	0.30	0.25	3.88	0.42	
87b	0.161	1.09	36.9	DESERT/RANGE	0.56	27.00	-	3.53	0.05	0.30	0.27	3.33	0.61	
88a	0.276	1.52	40.8	DESERT/RANGE	0.66	32.10	-	4.17	0.05	0.30	0.25	4.00	0.47	
89a	0.215	1.01	47.7	DESERT/RANGE	0.47	23.40	-	3.79	0.05	0.30	0.27	3.29	0.63	
89b	0.283	1.16	74.0	DESERT/RANGE	0.57	24.50	-	4.18	0.05	0.30	0.25	4.00	0.47	2
91a	0.434	1.20	56.6	DESERT/RANGE	0.60	26.60	-	3.98	0.05	0.30	0.25	4.15	0.44	
91b	0.561	2.53	43.6	DESERT/RANGE	1.34	50.30	-	4.42	0.05	0.30	0.25	4.20	0.43	
92a	0.785	2.35	45.2	DESERT/RANGE	1.08	44.70	-	4.62	0.05	0.30	0.25	4.60	0.34	
92b	0.700	1.83	61.3	DESERT/RANGE	0.79	34.10	-	4.72	0.05	0.30	0.25	4.50	0.36	

APPENDIX D2C

Soils Data –without Dike and with Dike Conditions

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
10a	651	Ch	6512435	0.081	9.70	0.24	-	100
	651	Dn	6512647	0.051	6.10	1.20	-	100
	651	GM	6513244	0.194	23.20	0.29	-	100
	651	GYD	651326826	0.006	0.80	0.26	-	100
	651	GxB	651326722	0.137	16.30	0.24	-	100
	651	HAB	651342022	0.210	25.10	0.07	-	100
	651	HLC	651344224	0.158	18.90	0.14	-	100
10b	651	CO	6512448	0.066	7.70	0.29	20.00	100
	651	Cg	6512433	0.000	0.00	0.24	-	100
	651	Ck	6512441	0.129	15.10	0.30	-	100
	651	Cm	6512445	0.259	30.30	0.26	-	100
	651	Dn	6512647	0.059	6.90	1.20	-	100
	651	GM	6513244	0.023	2.60	0.29	-	100
	651	GYD	651326826	0.026	3.10	0.26	-	100
	651	Gh	6513235	0.025	2.90	0.24	-	100
	651	GxB	651326722	0.015	1.80	0.24	-	100
	651	HAB	651342022	0.066	7.70	0.07	-	100
	651	Lb	6514223	0.017	2.00	0.40	-	100
	651	PRB	651505422	0.027	3.10	0.28	-	100
	651	RS	6515456	0.143	16.70	0.40	65.00	100
12a	651	Ch	6512435	0.113	13.60	0.24	-	100
	651	Cm	6512445	0.029	3.40	0.26	-	100
	651	Dn	6512647	0.019	2.30	1.20	-	100
	651	GM	6513244	0.076	9.10	0.29	-	100
	651	HAB	651342022	0.132	15.80	0.07	-	100
	651	HAC	651342024	0.238	28.60	0.05	-	100
	651	HLC	651344224	0.058	6.90	0.14	-	100
	651	LcA	651422520	0.006	0.70	0.25	-	100
	651	Ld	6514227	0.077	9.20	0.25	-	100
	651	PRB	651505422	0.085	10.20	0.28	-	100
12b	651	AbA	651202320	0.005	1.00	0.38	-	100
	651	Cg	6512433	0.035	7.80	0.24	-	100
	651	Ch	6512435	0.174	38.60	0.24	-	100
	651	Cp	6512451	0.006	1.30	0.40	-	100
	651	Es	6512857	0.005	1.10	0.25	-	100
	651	HAB	651342022	0.054	11.90	0.07	-	100
	651	HAC	651342024	0.066	14.60	0.05	-	100
	651	LcA	651422520	0.032	7.10	0.25	-	100
	651	Ld	6514227	0.075	16.60	0.25	-	100
14a	651	Ac	6512025	0.045	12.20	0.39	-	100
	651	Ch	6512435	0.005	1.30	0.24	-	100
	651	Ck	6512441	0.021	5.70	0.30	-	100
	651	Cm	6512445	0.088	24.00	0.26	-	100
	651	Dn	6512647	0.013	3.60	1.20	-	100
	651	GM	6513244	0.052	14.30	0.29	-	100
	651	HAB	651342022	0.059	15.90	0.07	-	100
	651	HAC	651342024	0.085	23.00	0.05	-	100
14b	651	Ac	6512025	0.042	16.10	0.39	-	100
	651	Cg	6512433	0.000	0.00	0.24	-	100
	651	Ch	6512435	0.029	11.00	0.24	-	100
	651	Ck	6512441	0.046	17.90	0.30	-	100
	651	Cm	6512445	0.120	46.20	0.26	-	100
	651	LcA	651422520	0.007	2.80	0.25	-	100
	651	PRB	651505422	0.015	5.90	0.28	-	100
14c	651	Ac	6512025	0.035	3.20	0.39	-	100
	651	Cg	6512433	0.354	32.40	0.24	-	100
	651	Ch	6512435	0.135	12.30	0.24	-	100
	651	Ck	6512441	0.003	0.30	0.30	-	100
	651	Cm	6512445	0.053	4.80	0.26	-	100
	651	Cp	6512451	0.035	3.20	0.40	-	100
	651	Es	6512857	0.025	2.30	0.25	-	100
	651	GYD	651326826	0.054	4.90	0.26	-	100
	651	GgA	651323320	0.045	4.10	0.25	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
14c	651	HAB	651342022	0.054	4.90	0.07	-	100
	651	HLC	651344224	0.019	1.70	0.14	-	100
	651	Lb	6514223	0.019	1.70	0.40	-	100
	651	LcA	651422520	0.062	5.70	0.25	-	100
	651	Ld	6514227	0.169	15.40	0.25	-	100
	651	Pb	6515023	0.034	3.10	0.38	-	100
14d	651	Cg	6512433	0.360	71.20	0.24	-	100
	651	Cp	6512451	0.009	1.70	0.40	-	100
	651	Dn	6512647	0.003	0.60	1.20	-	100
	651	GYD	651326826	0.011	2.20	0.26	-	100
	651	GgA	651323320	0.034	6.60	0.25	-	100
	651	GxA	651326720	0.000	0.10	0.23	-	100
	651	HAB	651342022	0.000	0.00	0.07	-	100
	651	HAC	651342024	0.013	2.50	0.05	-	100
	651	Ld	6514227	0.071	14.10	0.25	-	100
	651	Pb	6515023	0.005	1.00	0.38	-	100
14e	651	Cg	6512433	0.635	57.70	0.24	-	100
	651	Cp	6512451	0.168	15.20	0.40	-	100
	651	GgA	651323320	0.015	1.40	0.25	-	100
	651	GxA	651326720	0.082	7.50	0.23	-	100
	651	HAC	651342024	0.007	0.60	0.05	-	100
	651	HLC	651344224	0.001	0.10	0.14	-	100
	651	Ld	6514227	0.049	4.50	0.25	-	100
	651	Pb	6515023	0.014	1.30	0.38	-	100
	651	RaA	651542120	0.015	1.40	0.39	-	100
	651	Vb	6516223	0.114	10.40	0.39	-	100
15a	651	AL	6512042	0.076	14.80	0.40	-	100
	651	AbA	651202320	0.002	0.50	0.38	-	100
	651	GYD	651326826	0.049	9.50	0.26	-	100
	651	Gh	6513235	0.025	4.90	0.24	-	100
	651	GxA	651326720	0.007	1.40	0.23	-	100
	651	GxB	651326722	0.217	42.10	0.24	-	100
	651	PRB	651505422	0.138	26.80	0.28	-	100
16a	651	AbA	651202320	0.025	11.60	0.38	-	100
	651	GYD	651326826	0.147	67.50	0.26	-	100
	651	GgA	651323320	0.005	2.30	0.25	-	100
	651	Gh	6513235	0.001	0.60	0.24	-	100
	651	Ma	6514421	0.008	3.80	0.40	-	100
	651	PRB	651505422	0.029	13.10	0.28	-	100
	651	Vk	6516241	0.002	1.10	0.26	-	100
20a	651	Ac	6512025	0.102	27.30	0.39	-	100
	651	GYD	651326826	0.124	33.30	0.26	-	100
	651	HAB	651342022	0.008	2.00	0.07	-	100
	651	HLC	651344224	0.006	1.70	0.14	-	100
	651	RS	6515456	0.133	35.70	0.40	65.00	100
20b	651	Ac	6512025	0.126	11.10	0.39	-	100
	651	Cg	6512433	0.050	4.40	0.24	-	100
	651	Ck	6512441	0.096	8.40	0.30	-	100
	651	Cm	6512445	0.018	1.60	0.26	-	100
	651	Cp	6512451	0.002	0.20	0.40	-	100
	651	GYD	651326826	0.491	43.00	0.26	-	100
	651	Gh	6513235	0.128	11.20	0.24	-	100
	651	HAB	651342022	0.100	8.80	0.07	-	100
	651	HAC	651342024	0.005	0.40	0.05	-	100
	651	HLC	651344224	0.075	6.60	0.14	-	100
	651	RaA	651542120	0.038	3.30	0.39	-	100
	651	Vb	6516223	0.013	1.10	0.39	-	100
20c	651	Ac	6512025	0.101	7.10	0.39	-	100
	651	CO	6512448	0.005	0.30	0.29	20.00	100
	651	Cg	6512433	0.122	8.60	0.24	-	100
	651	Ch	6512435	0.018	1.20	0.24	-	100
	651	Ck	6512441	0.127	8.90	0.30	-	100
	651	Dn	6512647	0.000	0.00	1.20	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
20c	651	GWD	651326426	0.017	1.20	0.35	-	100
	651	GYD	651326826	0.006	0.50	0.26	-	100
	651	Gh	6513235	0.099	6.90	0.24	-	100
	651	HAB	651342022	0.018	1.30	0.07	-	100
	651	HAC	651342024	0.297	20.90	0.05	-	100
	651	HLC	651344224	0.246	17.30	0.14	-	100
	651	RS	6515456	0.072	5.00	0.40	65.00	100
	651	RaA	651542120	0.026	1.80	0.39	-	100
	651	Vb	6516223	0.267	18.80	0.39	-	100
20d	651	Cg	6512433	0.007	1.20	0.24	-	100
	651	Ck	6512441	0.075	12.00	0.30	-	100
	651	Et	6512859	0.048	7.70	0.25	-	100
	651	GWD	651326426	0.136	21.90	0.35	-	100
	651	Gh	6513235	0.150	24.00	0.24	-	100
	651	HAB	651342022	0.071	11.30	0.07	-	100
	651	HLC	651344224	0.067	10.80	0.14	-	100
	651	Vb	6516223	0.068	11.00	0.39	-	100
20e	651	Ac	6512025	0.053	3.50	0.39	-	100
	651	CO	6512448	0.033	2.10	0.29	20.00	100
	651	Ck	6512441	0.047	3.10	0.30	-	100
	651	Cm	6512445	0.053	3.40	0.26	-	100
	651	Cp	6512451	0.012	0.80	0.40	-	100
	651	Et	6512859	0.100	6.50	0.25	-	100
	651	GWD	651326426	0.223	14.50	0.35	-	100
	651	Gh	6513235	0.261	17.00	0.24	-	100
	651	HAB	651342022	0.235	15.30	0.07	-	100
	651	HLC	651344224	0.299	19.50	0.14	-	100
	651	Ld	6514227	0.133	8.70	0.25	-	100
	651	PRB	651505422	0.002	0.10	0.28	-	100
	651	RS	6515456	0.018	1.10	0.40	65.00	100
	651	Vb	6516223	0.066	4.30	0.39	-	100
20f	651	AbA	651202320	0.060	4.50	0.38	-	100
	651	Ac	6512025	0.074	5.50	0.39	-	100
	651	AdA	651202720	0.009	0.70	0.40	-	100
	651	Cm	6512445	0.035	2.60	0.26	-	100
	651	Et	6512859	0.026	1.90	0.25	-	100
	651	GWD	651326426	0.174	12.90	0.35	-	100
	651	GgA	651323320	0.064	4.70	0.25	-	100
	651	Gh	6513235	0.180	13.30	0.24	-	100
	651	HAB	651342022	0.100	7.40	0.07	-	100
	651	HLC	651344224	0.051	3.80	0.14	-	100
	651	HrB	651345522	0.028	2.10	0.12	-	100
	651	Lb	6514223	0.015	1.10	0.40	-	100
	651	Ld	6514227	0.106	7.90	0.25	-	100
	651	RhB	651543522	0.342	25.40	0.23	-	100
	651	RpE	651545128	0.083	6.20	0.29	-	100
20g	651	AbA	651202320	0.073	6.20	0.38	-	100
	651	AbB	651202322	0.044	3.70	0.39	-	100
	651	Ac	6512025	0.008	0.70	0.39	-	100
	651	Cg	6512433	0.022	1.90	0.24	-	100
	651	Cm	6512445	0.006	0.50	0.26	-	100
	651	Et	6512859	0.005	0.40	0.25	-	100
	651	Ge	6513229	0.008	0.70	0.26	-	100
	651	GgA	651323320	0.134	11.40	0.25	-	100
	651	Gh	6513235	0.005	0.40	0.24	-	100
	651	HM	6513444	0.015	1.30	0.15	-	100
	651	HrB	651345522	0.139	11.80	0.12	-	100
	651	La	6514221	0.015	1.20	0.26	-	100
	651	Lb	6514223	0.030	2.50	0.40	-	100
	651	Ld	6514227	0.014	1.20	0.25	-	100
	651	Pb	6515023	0.020	1.70	0.38	-	100
	651	RbB	651542322	0.109	9.30	0.25	-	100
	651	RhB	651543522	0.349	29.60	0.23	-	100
	651	RpE	651545128	0.137	11.60	0.29	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
20g	651	Vb	6516223	0.047	3.90	0.39	-	100
20h	651	AbA	651202320	0.005	0.40	0.38	-	100
	651	AbB	651202322	0.004	0.30	0.39	-	100
	651	Cm	6512445	0.111	8.90	0.26	-	100
	651	Et	6512859	0.001	0.10	0.25	-	100
	651	GgA	651323320	0.169	13.50	0.25	-	100
	651	GxB	651326722	0.000	0.00	0.24	-	100
	651	HAB	651342022	0.021	1.70	0.07	-	100
	651	HM	6513444	0.010	0.80	0.15	-	100
	651	La	6514221	0.168	13.40	0.26	-	100
	651	Lb	6514223	0.001	0.10	0.40	-	100
	651	Ld	6514227	0.057	4.50	0.25	-	100
	651	Pb	6515023	0.146	11.70	0.38	-	100
	651	RbB	651542322	0.284	22.70	0.25	-	100
	651	RhB	651543522	0.272	21.80	0.23	-	100
	651	RpE	651545128	0.003	0.20	0.29	-	100
20i	651	AbA	651202320	0.038	13.00	0.38	-	100
	651	GgA	651323320	0.010	3.50	0.25	-	100
	651	GxA	651326720	0.025	8.50	0.23	-	100
	651	GxB	651326722	0.059	20.10	0.24	-	100
	651	HrB	651345522	0.000	0.00	0.12	-	100
	651	La	6514221	0.007	2.30	0.26	-	100
	651	LcA	651422520	0.003	0.90	0.25	-	100
	651	Ld	6514227	0.001	0.40	0.25	-	100
	651	PeB	651502922	0.043	14.70	0.38	-	100
	651	RbB	651542322	0.006	1.90	0.25	-	100
	651	RhB	651543522	0.086	29.50	0.23	-	100
	651	RpE	651545128	0.015	5.00	0.29	-	100
20j	651	AbA	651202320	0.008	3.80	0.38	-	100
	651	GgA	651323320	0.041	20.10	0.25	-	100
	651	LcA	651422520	0.002	1.00	0.25	-	100
	651	PeA	651502920	0.063	30.80	0.37	-	100
	651	RbA	651542320	0.066	32.50	0.26	-	100
	651	RbB	651542322	0.024	11.70	0.25	-	100
20k	651	GgA	651323320	0.027	15.30	0.25	-	100
	651	LcA	651422520	0.004	2.40	0.25	-	100
	651	PeA	651502920	0.025	14.00	0.37	-	100
	651	RbA	651542320	0.120	68.30	0.26	-	100
20l	651	AbA	651202320	0.007	5.60	0.38	-	100
	651	AfA	651203120	0.019	14.60	0.38	-	100
	651	GxA	651326720	0.002	1.20	0.23	-	100
	651	GxB	651326722	0.011	8.60	0.24	-	100
	651	LcA	651422520	0.000	0.30	0.25	-	100
	651	PeA	651502920	0.007	5.30	0.37	-	100
	651	RbA	651542320	0.026	19.90	0.26	-	100
	651	RbB	651542322	0.002	1.90	0.25	-	100
	651	RhB	651543522	0.055	42.60	0.23	-	100
21a	651	AfA	651203120	0.014	1.50	0.38	-	100
	651	GYD	651326826	0.014	1.50	0.26	-	100
	651	GxA	651326720	0.136	15.40	0.23	-	100
	651	GxB	651326722	0.018	2.10	0.24	-	100
	651	HLC	651344224	0.023	2.60	0.14	-	100
	651	HM	6513444	0.019	2.20	0.15	-	100
	651	LcA	651422520	0.250	28.40	0.25	-	100
	651	Pb	6515023	0.002	0.20	0.38	-	100
	651	PeA	651502920	0.120	13.60	0.37	-	100
	651	RbA	651542320	0.261	29.60	0.26	-	100
	651	RbB	651542322	0.024	2.70	0.25	-	100
	651	RhB	651543522	0.002	0.20	0.23	-	100
21b	651	AL	6512042	0.059	10.70	0.40	-	100
	651	GYD	651326826	0.201	36.60	0.26	-	100
	651	HLC	651344224	0.142	26.00	0.14	-	100
	651	LcA	651422520	0.106	19.30	0.25	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
21b	651	PeA	651502920	0.026	4.70	0.37	-	100
	651	RbA	651542320	0.015	2.70	0.26	-	100
21c	651	AL	6512042	0.078	33.10	0.40	-	100
	651	GYD	651326826	0.092	39.20	0.26	-	100
	651	HLC	651344224	0.062	26.60	0.14	-	100
	651	LcA	651422520	0.003	1.20	0.25	-	100
21d	645	20	64520	0.002	0.50	0.19	-	100
	651	AL	6512042	0.015	3.10	0.40	-	100
	651	GYD	651326826	0.067	13.50	0.26	-	100
	651	HLC	651344224	0.410	83.00	0.14	-	100
22a	651	AbA	651202320	0.000	0.00	0.38	-	100
	651	GgA	651323320	0.095	21.00	0.25	-	100
	651	GxA	651326720	0.039	8.60	0.23	-	100
	651	GxB	651326722	0.048	10.70	0.24	-	100
	651	HrB	651345522	0.033	7.30	0.12	-	100
	651	La	6514221	0.008	1.80	0.26	-	100
	651	LcA	651422520	0.023	5.20	0.25	-	100
	651	Pb	6515023	0.006	1.30	0.38	-	100
	651	RbA	651542320	0.010	2.30	0.26	-	100
	651	RbB	651542322	0.048	10.50	0.25	-	100
	651	RhB	651543522	0.119	26.30	0.23	-	100
	651	RpE	651545128	0.023	5.10	0.29	-	100
22b	651	Ae	6512029	0.020	12.10	0.39	-	100
	651	GxB	651326722	0.074	45.30	0.24	-	100
	651	LcA	651422520	0.039	23.70	0.25	-	100
	651	Pb	6515023	0.007	4.10	0.38	-	100
	651	PeA	651502920	0.004	2.40	0.37	-	100
	651	RhB	651543522	0.020	12.40	0.23	-	100
22c	651	GxA	651326720	0.085	38.80	0.23	-	100
	651	GxB	651326722	0.021	9.40	0.24	-	100
	651	LcA	651422520	0.048	21.80	0.25	-	100
	651	PeA	651502920	0.036	16.10	0.37	-	100
	651	RbA	651542320	0.012	5.40	0.26	-	100
	651	RhB	651543522	0.019	8.60	0.23	-	100
22d	651	Ae	6512029	0.032	13.00	0.39	-	100
	651	GxA	651326720	0.051	20.70	0.23	-	100
	651	GxB	651326722	0.029	11.80	0.24	-	100
	651	LcA	651422520	0.021	8.70	0.25	-	100
	651	PeA	651502920	0.031	12.80	0.37	-	100
	651	RbA	651542320	0.054	22.10	0.26	-	100
	651	RhB	651543522	0.027	10.90	0.23	-	100
23a	651	AbA	651202320	0.001	0.30	0.38	-	100
	651	Ac	6512025	0.030	8.60	0.39	-	100
	651	Ao	6512049	0.002	0.50	0.04	-	100
	651	GYD	651326826	0.140	39.50	0.26	-	100
	651	Ge	6513229	0.005	1.40	0.26	-	100
	651	GgA	651323320	0.017	4.70	0.25	-	100
	651	Gh	6513235	0.018	5.10	0.24	-	100
	651	PRB	651505422	0.140	39.50	0.28	-	100
	651	Vk	6516241	0.002	0.50	0.26	-	100
24a	651	GYD	651326826	0.099	24.30	0.26	-	100
	651	GxA	651326720	0.001	0.20	0.23	-	100
	651	GxB	651326722	0.092	22.60	0.24	-	100
	651	HrB	651345522	0.001	0.20	0.12	-	100
	651	LcA	651422520	0.167	40.70	0.25	-	100
	651	PeA	651502920	0.027	6.60	0.37	-	100
	651	RbA	651542320	0.022	5.40	0.26	-	100
24b	651	AL	6512042	0.074	22.20	0.40	-	100
	651	GYD	651326826	0.047	14.00	0.26	-	100
	651	GxA	651326720	0.050	14.90	0.23	-	100
	651	GxB	651326722	0.005	1.40	0.24	-	100
	651	HLC	651344224	0.115	34.30	0.14	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
24b	651	HrB	651345522	0.004	1.30	0.12	-	100
	651	LcA	651422520	0.007	2.00	0.25	-	100
	651	RbA	651542320	0.001	0.40	0.26	-	100
	651	RhB	651543522	0.032	9.60	0.23	-	100
30a	651	AbA	651202320	0.018	50.80	0.38	-	100
	651	Ac	6512025	0.009	24.00	0.39	-	100
	651	GgA	651323320	0.009	24.30	0.25	-	100
	651	PRB	651505422	0.000	0.80	0.28	-	100
30b	651	AbA	651202320	0.074	14.50	0.38	-	100
	651	Ac	6512025	0.006	1.30	0.39	-	100
	651	CO	6512448	0.000	0.00	0.29	20.00	100
	651	Cm	6512445	0.003	0.60	0.26	-	100
	651	GYD	651326826	0.098	19.30	0.26	-	100
	651	GgA	651323320	0.099	19.50	0.25	-	100
	651	Gh	6513235	0.098	19.20	0.24	-	100
	651	Lb	6514223	0.000	0.00	0.40	-	100
	651	PRB	651505422	0.106	20.90	0.28	-	100
	651	RS	6515456	0.024	4.70	0.40	65.00	100
30c	651	AGB	651203222	0.034	14.00	0.40	-	100
	651	Ac	6512025	0.055	22.60	0.39	-	100
	651	GYD	651326826	0.052	21.40	0.26	-	100
	651	GgA	651323320	0.027	11.20	0.25	-	100
	651	Gh	6513235	0.001	0.20	0.24	-	100
	651	HLC	651344224	0.010	4.20	0.14	-	100
	651	PRB	651505422	0.031	12.60	0.28	-	100
	651	RS	6515456	0.033	13.70	0.40	65.00	100
30d	651	AGB	651203222	0.061	9.90	0.40	-	100
	651	Ac	6512025	0.147	23.90	0.39	-	100
	651	GYD	651326826	0.384	62.50	0.26	-	100
	651	Gb	6513223	0.001	0.10	0.04	-	100
	651	HLC	651344224	0.006	1.00	0.14	-	100
	651	PRB	651505422	0.016	2.60	0.28	-	100
30e	651	AGB	651203222	0.034	8.60	0.40	-	100
	651	AM	6512044	0.005	1.30	0.39	-	100
	651	Ac	6512025	0.016	4.00	0.39	-	100
	651	Ck	6512441	0.042	10.50	0.30	-	100
	651	GYD	651326826	0.168	42.00	0.26	-	100
	651	Gb	6513223	0.065	16.30	0.04	-	100
	651	Gh	6513235	0.041	10.20	0.24	-	100
	651	HLC	651344224	0.028	7.00	0.14	-	100
	651	PRB	651505422	0.000	0.10	0.28	-	100
30f	651	AGB	651203222	0.139	7.80	0.40	-	100
	651	Ac	6512025	0.247	14.00	0.39	-	100
	651	Ck	6512441	0.480	27.10	0.30	-	100
	651	Cm	6512445	0.055	3.10	0.26	-	100
	651	GWD	651326426	0.145	8.20	0.35	-	100
	651	GYD	651326826	0.427	24.10	0.26	-	100
	651	Gh	6513235	0.032	1.80	0.24	-	100
	651	HAB	651342022	0.020	1.10	0.07	-	100
	651	HLC	651344224	0.082	4.60	0.14	-	100
	651	PRB	651505422	0.131	7.40	0.28	-	100
	651	Va	6516221	0.000	0.00	0.39	-	100
	651	Vb	6516223	0.013	0.80	0.39	-	100
30g	651	AGB	651203222	0.154	18.20	0.40	-	100
	651	Ac	6512025	0.109	12.90	0.39	-	100
	651	Ck	6512441	0.073	8.60	0.30	-	100
	651	GYD	651326826	0.407	48.20	0.26	-	100
	651	PRB	651505422	0.102	12.10	0.28	-	100
32a	651	Ac	6512025	0.069	23.90	0.39	-	100
	651	GYD	651326826	0.173	59.80	0.26	-	100
	651	GgA	651323320	0.013	4.50	0.25	-	100
	651	PRB	651505422	0.034	11.80	0.28	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
32b	651	Ac	6512025	0.086	18.10	0.39	-	100
	651	GWD	651326426	0.016	3.30	0.35	-	100
	651	GYD	651326826	0.352	73.90	0.26	-	100
	651	HLC	651344224	0.022	4.70	0.14	-	100
33a	651	AbA	651202320	0.000	0.00	0.38	-	100
	651	CA2	65124202	0.024	14.50	0.38	-	100
	651	GgA	651323320	0.005	3.20	0.25	-	100
	651	PRB	651505422	0.074	44.50	0.28	-	100
	651	PT	6515058	0.063	37.80	0.40	-	100
34a	651	AGB	651203222	0.000	0.10	0.40	-	100
	651	Ac	6512025	0.163	36.40	0.39	-	100
	651	Ck	6512441	0.039	8.60	0.30	-	100
	651	Cm	6512445	0.021	4.70	0.26	-	100
	651	GWD	651326426	0.067	15.10	0.35	-	100
	651	GYD	651326826	0.022	4.80	0.26	-	100
	651	HAB	651342022	0.062	13.80	0.07	-	100
	651	HLC	651344224	0.044	9.80	0.14	-	100
	651	Va	6516221	0.030	6.70	0.39	-	100
34b	651	Ac	6512025	0.092	14.50	0.39	-	100
	651	Ck	6512441	0.071	11.20	0.30	-	100
	651	Cm	6512445	0.058	9.20	0.26	-	100
	651	GWD	651326426	0.043	6.90	0.35	-	100
	651	HAB	651342022	0.020	3.20	0.07	-	100
	651	HLC	651344224	0.013	2.00	0.14	-	100
	651	HM	6513444	0.056	8.90	0.15	-	100
	651	Lb	6514223	0.095	15.10	0.40	-	100
	651	RpE	651545128	0.157	24.90	0.29	-	100
	651	Va	6516221	0.026	4.10	0.39	-	100
35a	651	CA2	65124202	0.007	12.40	0.38	-	100
	651	GgA	651323320	0.000	0.70	0.25	-	100
	651	Gh	6513235	0.000	0.20	0.24	-	100
	651	PRB	651505422	0.016	28.40	0.28	-	100
	651	PT	6515058	0.033	58.30	0.40	-	100
36a	651	AGB	651203222	0.054	8.00	0.40	-	100
	651	Ac	6512025	0.043	6.40	0.39	-	100
	651	Ck	6512441	0.147	21.70	0.30	-	100
	651	Cm	6512445	0.000	0.00	0.26	-	100
	651	GYD	651326826	0.289	42.60	0.26	-	100
	651	HLC	651344224	0.103	15.20	0.14	-	100
	651	PRB	651505422	0.041	6.10	0.28	-	100
36b	651	AGB	651203222	0.040	3.80	0.40	-	100
	651	AL	6512042	0.230	21.70	0.40	-	100
	651	AbA	651202320	0.041	3.90	0.38	-	100
	651	Ac	6512025	0.017	1.60	0.39	-	100
	651	GYD	651326826	0.458	43.20	0.26	-	100
	651	HLC	651344224	0.178	16.80	0.14	-	100
	651	PRB	651505422	0.040	3.80	0.28	-	100
	651	Pb	6515023	0.046	4.30	0.38	-	100
	651	PeA	651502920	0.009	0.90	0.37	-	100
36c	645	1	6451	0.004	0.40	0.41	-	100
	645	102	645102	0.099	9.20	0.40	-	100
	645	71	64571	0.006	0.50	0.36	-	100
	651	AL	6512042	0.308	28.40	0.40	-	100
	651	AdA	651202720	0.020	1.90	0.40	-	100
	651	GYD	651326826	0.379	34.90	0.26	-	100
	651	HLC	651344224	0.046	4.30	0.14	-	100
	651	PRB	651505422	0.118	10.80	0.28	-	100
	651	Pb	6515023	0.042	3.90	0.38	-	100
	651	RbB	651542322	0.062	5.70	0.25	-	100
40a	651	AGB	651203222	0.061	22.60	0.40	-	100
	651	Ac	6512025	0.094	35.00	0.39	-	100
	651	Ck	6512441	0.046	17.00	0.30	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
40a	651	GYD	651326826	0.031	11.70	0.26	-	100
	651	HAB	651342022	0.030	11.30	0.07	-	100
	651	HLC	651344224	0.006	2.30	0.14	-	100
40b	651	AGB	651203222	0.058	13.80	0.40	-	100
	651	Ac	6512025	0.034	8.20	0.39	-	100
	651	Ae	6512029	0.073	17.60	0.39	-	100
	651	GYD	651326826	0.089	21.30	0.26	-	100
	651	HM	6513444	0.074	17.70	0.15	-	100
	651	Lb	6514223	0.011	2.70	0.40	-	100
	651	RbB	651542322	0.054	13.00	0.25	-	100
	651	RpE	651545128	0.024	5.60	0.29	-	100
40c	651	Ae	6512029	0.110	21.90	0.39	-	100
	651	GYD	651326826	0.118	23.50	0.26	-	100
	651	GxB	651326722	0.135	27.00	0.24	-	100
	651	Pb	6515023	0.011	2.30	0.38	-	100
	651	RbB	651542322	0.082	16.30	0.25	-	100
	651	RhB	651543522	0.045	9.10	0.23	-	100
40d	645	1	6451	0.004	0.50	0.41	-	100
	645	102	645102	0.052	7.10	0.40	-	100
	645	6	6456	0.041	5.60	0.62	-	100
	645	71	64571	0.066	9.00	0.36	-	100
	651	AGB	651203222	0.006	0.90	0.40	-	100
	651	Ae	6512029	0.177	24.20	0.39	-	100
	651	GYD	651326826	0.166	22.80	0.26	-	100
	651	GxB	651326722	0.061	8.30	0.24	-	100
	651	LcA	651422520	0.024	3.20	0.25	-	100
	651	PRB	651505422	0.112	15.30	0.28	-	100
	651	RaA	651542120	0.004	0.50	0.39	-	100
	651	RhB	651543522	0.019	2.60	0.23	-	100
42a	651	Ae	6512029	0.062	17.30	0.39	-	100
	651	La	6514221	0.080	22.20	0.26	-	100
	651	Ld	6514227	0.000	0.10	0.25	-	100
	651	Pb	6515023	0.033	9.20	0.38	-	100
	651	RbB	651542322	0.089	24.70	0.25	-	100
	651	RhB	651543522	0.095	26.40	0.23	-	100
42b	651	Ae	6512029	0.024	7.60	0.39	-	100
	651	GxB	651326722	0.106	34.40	0.24	-	100
	651	La	6514221	0.021	6.80	0.26	-	100
	651	LcA	651422520	0.032	10.30	0.25	-	100
	651	Pb	6515023	0.010	3.20	0.38	-	100
	651	PeA	651502920	0.021	6.90	0.37	-	100
	651	RbA	651542320	0.022	7.00	0.26	-	100
	651	RhB	651543522	0.074	23.80	0.23	-	100
44a	651	AL	6512042	0.037	4.50	0.40	-	100
	651	GxA	651326720	0.008	0.90	0.23	-	100
	651	GxB	651326722	0.189	22.70	0.24	-	100
	651	HLC	651344224	0.159	19.10	0.14	-	100
	651	LcA	651422520	0.127	15.20	0.25	-	100
	651	Pb	6515023	0.029	3.50	0.38	-	100
	651	PeA	651502920	0.058	6.90	0.37	-	100
	651	RbA	651542320	0.079	9.50	0.26	-	100
	651	RbB	651542322	0.123	14.80	0.25	-	100
	651	RhB	651543522	0.025	2.90	0.23	-	100
44b	645	20	64520	0.009	3.10	0.19	-	100
	645	56	64556	0.000	0.00	0.27	-	100
	645	71	64571	0.026	9.50	0.36	-	100
	651	GYD	651326826	0.038	13.70	0.26	-	100
	651	GxB	651326722	0.022	7.80	0.24	-	100
	651	HLC	651344224	0.119	42.60	0.14	-	100
	651	LcA	651422520	0.058	20.90	0.25	-	100
	651	RbB	651542322	0.007	2.30	0.25	-	100
44c	645	20	64520	0.005	1.50	0.19	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
44c	651	GYD	651326826	0.091	26.90	0.26	-	100
	651	HLC	651344224	0.183	54.00	0.14	-	100
	651	LcA	651422520	0.059	17.60	0.25	-	100
44d	645	117	645117	0.013	1.60	0.23	-	100
	645	20	64520	0.255	31.10	0.19	-	100
	651	GYD	651326826	0.027	3.30	0.26	-	100
	651	HLC	651344224	0.502	61.10	0.14	-	100
	651	LcA	651422520	0.024	2.90	0.25	-	100
44e	645	117	645117	0.016	3.40	0.23	-	100
	645	20	64520	0.416	89.70	0.19	-	100
	651	HLC	651344224	0.032	6.90	0.14	-	100
44f	645	117	645117	0.004	1.30	0.23	-	100
	645	20	64520	0.250	93.60	0.19	-	100
	651	HLC	651344224	0.014	5.00	0.14	-	100
46a	645	102	645102	0.210	26.00	0.40	-	100
	645	117	645117	0.001	0.10	0.23	-	100
	645	6	6456	0.038	4.70	0.62	-	100
	645	71	64571	0.559	69.20	0.36	-	100
46b	645	102	645102	0.023	5.80	0.40	-	100
	645	117	645117	0.287	71.70	0.23	-	100
	645	71	64571	0.090	22.50	0.36	-	100
46c	645	117	645117	0.226	100.00	0.23	-	100
46d	645	117	645117	0.318	73.80	0.23	-	100
	645	69	64569	0.012	2.90	0.63	-	100
	645	71	64571	0.101	23.30	0.36	-	100
46e	645	117	645117	0.182	82.50	0.23	-	100
	645	20	64520	0.039	17.50	0.19	-	100
46f	645	117	645117	0.220	38.20	0.23	-	100
	645	20	64520	0.356	61.80	0.19	-	100
46g	645	100	645100	0.001	0.20	0.40	20.00	100
	645	117	645117	0.371	82.20	0.23	-	100
	645	20	64520	0.079	17.60	0.19	-	100
46h	645	117	645117	0.086	22.40	0.23	-	100
	645	20	64520	0.298	77.60	0.19	-	100
46i	645	117	645117	0.019	6.90	0.23	-	100
	645	123	645123	0.093	34.50	0.37	-	100
	645	20	64520	0.158	58.60	0.19	-	100
46j	645	117	645117	0.142	48.20	0.23	-	100
	645	123	645123	0.050	17.00	0.37	-	100
	645	20	64520	0.102	34.80	0.19	-	100
46k	645	117	645117	0.167	37.70	0.23	-	100
	645	123	645123	0.030	6.70	0.37	-	100
	645	20	64520	0.245	55.60	0.19	-	100
48a	645	102	645102	0.023	8.00	0.40	-	100
	645	56	64556	0.025	8.80	0.27	-	100
	645	71	64571	0.207	73.20	0.36	-	100
	651	GxB	651326722	0.002	0.60	0.24	-	100
	651	LcA	651422520	0.007	2.40	0.25	-	100
	651	PeA	651502920	0.009	3.00	0.37	-	100
	651	RbB	651542322	0.011	4.00	0.25	-	100
48b	645	102	645102	0.048	23.40	0.40	-	100
	645	117	645117	0.002	1.10	0.23	-	100
	645	20	64520	0.019	9.40	0.19	-	100
	645	56	64556	0.023	11.40	0.27	-	100
	645	71	64571	0.104	51.20	0.36	-	100
	651	GxB	651326722	0.007	3.60	0.24	-	100
50a	645	102	645102	0.014	1.50	0.40	-	100
	645	117	645117	0.698	78.40	0.23	-	100
	645	20	64520	0.096	10.80	0.19	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
50a	645	71	64571	0.036	4.00	0.36	-	100
	651	GYD	651326826	0.007	0.80	0.26	-	100
	651	HLC	651344224	0.040	4.50	0.14	-	100
50b	645	117	645117	0.205	100.00	0.23	-	100
50c	645	117	645117	0.546	99.70	0.23	-	100
	645	20	64520	0.001	0.30	0.19	-	100
50d	645	117	645117	0.154	86.20	0.23	-	100
	645	20	64520	0.025	13.80	0.19	-	100
50e	645	117	645117	0.156	91.70	0.23	-	100
	645	20	64520	0.014	8.30	0.19	-	100
50f	645	117	645117	0.201	68.90	0.23	-	100
	645	20	64520	0.091	31.10	0.19	-	100
50g	645	117	645117	0.018	12.50	0.23	-	100
	645	20	64520	0.128	87.50	0.19	-	100
52a	645	100	645100	0.506	87.70	0.40	20.00	100
	645	117	645117	0.060	10.40	0.23	-	100
	645	20	64520	0.011	1.90	0.19	-	100
54a	645	100	645100	0.113	31.40	0.40	20.00	100
	645	117	645117	0.076	21.10	0.23	-	100
	645	20	64520	0.171	47.60	0.19	-	100
54b	645	100	645100	0.050	21.10	0.40	20.00	100
	645	117	645117	0.147	62.50	0.23	-	100
	645	123	645123	0.013	5.50	0.37	-	100
	645	20	64520	0.026	10.90	0.19	-	100
56a	645	117	645117	0.033	11.00	0.23	-	100
	645	20	64520	0.138	46.30	0.19	-	100
	645	69	64569	0.027	9.00	0.63	-	100
	645	71	64571	0.100	33.70	0.36	-	100
60a	651	AGB	651203222	0.039	5.10	0.40	-	100
	651	AL	6512042	0.026	3.40	0.40	-	100
	651	Ac	6512025	0.061	7.90	0.39	-	100
	651	Cm	6512445	0.100	12.90	0.26	-	100
	651	GYD	651326826	0.357	46.30	0.26	-	100
	651	HAB	651342022	0.093	12.10	0.07	-	100
	651	HLC	651344224	0.025	3.20	0.14	-	100
	651	LcA	651422520	0.016	2.10	0.25	-	100
	651	RbA	651542320	0.010	1.30	0.26	-	100
	651	TB	6515822	0.025	3.20	0.40	-	100
	651	Va	6516221	0.020	2.60	0.39	-	100
60b	645	102	645102	0.005	0.50	0.40	-	100
	651	AL	6512042	0.131	11.80	0.40	-	100
	651	GYD	651326826	0.605	54.40	0.26	-	100
	651	Lb	6514223	0.061	5.50	0.40	-	100
	651	PRB	651505422	0.259	23.30	0.28	-	100
	651	RbA	651542320	0.001	0.00	0.26	-	100
	651	TB	6515822	0.051	4.60	0.40	-	100
60c	645	1	6451	0.017	1.60	0.41	-	100
	645	102	645102	0.146	14.00	0.40	-	100
	645	71	64571	0.093	8.90	0.36	-	100
	651	AL	6512042	0.122	11.60	0.40	-	100
	651	GYD	651326826	0.272	26.10	0.26	-	100
	651	PRB	651505422	0.248	23.70	0.28	-	100
	651	TB	6515822	0.052	5.00	0.40	-	100
	651	Tc	6515825	0.095	9.10	0.40	-	100
62a	645	1	6451	0.007	1.20	0.41	-	100
	645	102	645102	0.157	26.80	0.40	-	100
	645	71	64571	0.422	72.00	0.36	-	100
62b	645	102	645102	0.060	24.70	0.40	-	100
	645	71	64571	0.185	75.30	0.36	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
64a	645	102	645102	0.020	5.30	0.40	-	100
	645	71	64571	0.358	94.70	0.36	-	100
64b	645	102	645102	0.084	10.10	0.40	-	100
	645	69	64569	0.184	22.00	0.63	-	100
	645	71	64571	0.568	67.90	0.36	-	100
64c	645	102	645102	0.017	2.70	0.40	-	100
	645	56	64556	0.109	17.10	0.27	-	100
	645	69	64569	0.200	31.50	0.63	-	100
	645	71	64571	0.311	48.70	0.36	-	100
64d	645	69	64569	0.141	98.00	0.63	-	100
	645	71	64571	0.003	2.00	0.36	-	100
70a	651	AbA	651202320	0.013	12.20	0.38	-	100
	651	CA2	65124202	0.018	17.80	0.38	-	100
	651	GgA	651323320	0.022	21.30	0.25	-	100
	651	PRB	651505422	0.037	35.50	0.28	-	100
	651	PT	6515058	0.014	13.20	0.40	-	100
70b	651	AbA	651202320	0.035	10.60	0.38	-	100
	651	CA2	65124202	0.030	9.00	0.38	-	100
	651	CO	6512448	0.036	10.90	0.29	20.00	100
	651	GgA	651323320	0.076	22.90	0.25	-	100
	651	Gh	6513235	0.045	13.70	0.24	-	100
	651	PRB	651505422	0.001	0.40	0.28	-	100
	651	PT	6515058	0.108	32.60	0.40	-	100
70c	651	AGB	651203222	0.018	2.40	0.40	-	100
	651	AbA	651202320	0.139	18.80	0.38	-	100
	651	Ac	6512025	0.000	0.10	0.39	-	100
	651	CA2	65124202	0.028	3.80	0.38	-	100
	651	CO	6512448	0.015	2.00	0.29	20.00	100
	651	GYD	651326826	0.258	34.80	0.26	-	100
	651	GgA	651323320	0.173	23.40	0.25	-	100
	651	Gh	6513235	0.014	1.90	0.24	-	100
	651	HLC	651344224	0.008	1.10	0.14	-	100
	651	PRB	651505422	0.089	11.90	0.28	-	100
70d	651	AGB	651203222	0.001	0.10	0.40	-	100
	651	AM	6512044	0.014	2.80	0.39	-	100
	651	CV	6512462	0.000	0.00	0.39	-	100
	651	GYD	651326826	0.315	64.80	0.26	-	100
	651	GgA	651323320	0.102	20.90	0.25	-	100
	651	LcA	651422520	0.013	2.80	0.25	-	100
	651	PRB	651505422	0.041	8.50	0.28	-	100
70e	651	AM	6512044	0.262	19.10	0.39	-	100
	651	Ac	6512025	0.011	0.80	0.39	-	100
	651	Ch	6512435	0.002	0.10	0.24	-	100
	651	Cm	6512445	0.040	2.90	0.26	-	100
	651	GYD	651326826	0.413	30.10	0.26	-	100
	651	GgA	651323320	0.160	11.60	0.25	-	100
	651	Gh	6513235	0.167	12.20	0.24	-	100
	651	HLC	651344224	0.038	2.80	0.14	-	100
	651	LcA	651422520	0.063	4.60	0.25	-	100
	651	PRB	651505422	0.159	11.60	0.28	-	100
	651	PeA	651502920	0.057	4.10	0.37	-	100
	651	PsB	651505722	0.001	0.10	0.26	-	100
70f	651	Ch	6512435	0.029	7.30	0.24	-	100
	651	GYD	651326826	0.006	1.50	0.26	-	100
	651	Gh	6513235	0.126	32.10	0.24	-	100
	651	GxA	651326720	0.011	2.90	0.23	-	100
	651	GxB	651326722	0.029	7.40	0.24	-	100
	651	HAB	651342022	0.009	2.20	0.07	-	100
	651	HLC	651344224	0.070	17.90	0.14	-	100
	651	Ld	6514227	0.100	25.50	0.25	-	100
	651	RbA	651542320	0.011	2.90	0.26	-	100
	651	Vb	6516223	0.001	0.30	0.39	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
70g	651	AL	6512042	0.007	0.40	0.40	-	100
	651	AbA	651202320	0.085	5.20	0.38	-	100
	651	Ac	6512025	0.333	20.40	0.39	-	100
	651	Cg	6512433	0.015	0.90	0.24	-	100
	651	Ch	6512435	0.042	2.60	0.24	-	100
	651	Cm	6512445	0.074	4.50	0.26	-	100
	651	Cp	6512451	0.016	1.00	0.40	-	100
	651	GWD	651326426	0.021	1.30	0.35	-	100
	651	GYD	651326826	0.349	21.40	0.26	-	100
	651	Gh	6513235	0.030	1.80	0.24	-	100
	651	GxA	651326720	0.022	1.40	0.23	-	100
	651	GxB	651326722	0.013	0.80	0.24	-	100
	651	HAB	651342022	0.057	3.50	0.07	-	100
	651	HAC	651342024	0.007	0.40	0.05	-	100
	651	HLC	651344224	0.006	0.40	0.14	-	100
	651	Lb	6514223	0.031	1.90	0.40	-	100
	651	LcA	651422520	0.029	1.80	0.25	-	100
	651	Ld	6514227	0.026	1.60	0.25	-	100
	651	PRB	651505422	0.175	10.70	0.28	-	100
	651	PT	6515058	0.005	0.30	0.40	-	100
	651	Pb	6515023	0.014	0.90	0.38	-	100
	651	PeA	651502920	0.132	8.10	0.37	-	100
	651	RaA	651542120	0.042	2.50	0.39	-	100
	651	RhB	651543522	0.080	4.90	0.23	-	100
	651	Va	6516221	0.008	0.50	0.39	-	100
	651	Vb	6516223	0.015	0.90	0.39	-	100
70h	651	AbA	651202320	0.045	15.50	0.38	-	100
	651	Ch	6512435	0.023	7.90	0.24	-	100
	651	Cp	6512451	0.007	2.50	0.40	-	100
	651	Gh	6513235	0.019	6.60	0.24	-	100
	651	GxA	651326720	0.015	5.00	0.23	-	100
	651	GxB	651326722	0.070	23.90	0.24	-	100
	651	HAB	651342022	0.015	5.10	0.07	-	100
	651	HAC	651342024	0.015	5.00	0.05	-	100
	651	HLC	651344224	0.009	3.00	0.14	-	100
	651	LcA	651422520	0.010	3.60	0.25	-	100
	651	Ld	6514227	0.018	6.00	0.25	-	100
	651	RbA	651542320	0.011	3.60	0.26	-	100
	651	RhB	651543522	0.028	9.50	0.23	-	100
	651	Vb	6516223	0.009	2.90	0.39	-	100
71a	651	CA2	65124202	0.009	3.50	0.38	-	100
	651	CO	6512448	0.016	6.00	0.29	20.00	100
	651	GgA	651323320	0.005	2.00	0.25	-	100
	651	PRB	651505422	0.024	9.00	0.28	-	100
	651	PT	6515058	0.208	79.60	0.40	-	100
71b	651	CO	6512448	0.018	6.10	0.29	20.00	100
	651	PT	6515058	0.268	92.60	0.40	-	100
	651	RS	6515456	0.004	1.30	0.40	65.00	100
72a	651	CA2	65124202	0.039	8.90	0.38	-	100
	651	CO	6512448	0.030	6.80	0.29	20.00	100
	651	GgA	651323320	0.061	13.70	0.25	-	100
	651	PRB	651505422	0.035	7.90	0.28	-	100
	651	PT	6515058	0.278	62.80	0.40	-	100
72b	651	CA2	65124202	0.033	2.70	0.38	-	100
	651	CO	6512448	0.076	6.40	0.29	20.00	100
	651	CV	6512462	0.136	11.50	0.39	-	100
	651	GM	6513244	0.010	0.80	0.29	-	100
	651	GYD	651326826	0.017	1.40	0.26	-	100
	651	GgA	651323320	0.036	3.00	0.25	-	100
	651	PRB	651505422	0.156	13.20	0.28	-	100
	651	PT	6515058	0.715	60.30	0.40	-	100
	651	RS	6515456	0.008	0.60	0.40	65.00	100
73a	651	CV	6512462	0.187	50.70	0.39	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
73a	651	GYD	651326826	0.057	15.50	0.26	-	100
	651	GgA	651323320	0.010	2.80	0.25	-	100
	651	LcA	651422520	0.003	0.70	0.25	-	100
	651	PRB	651505422	0.112	30.30	0.28	-	100
73b	651	CV	6512462	0.053	8.80	0.39	-	100
	651	LcA	651422520	0.355	58.60	0.25	-	100
	651	PRB	651505422	0.150	24.70	0.28	-	100
	651	PeA	651502920	0.048	7.90	0.37	-	100
	651	PsB	651505722	0.000	0.00	0.26	-	100
74a	651	AM	6512044	0.005	1.50	0.39	-	100
	651	Ac	6512025	0.050	16.10	0.39	-	100
	651	Ch	6512435	0.053	17.10	0.24	-	100
	651	Cm	6512445	0.003	0.80	0.26	-	100
	651	GWD	651326426	0.003	0.90	0.35	-	100
	651	GYD	651326826	0.041	13.40	0.26	-	100
	651	Gh	6513235	0.053	17.10	0.24	-	100
	651	HAB	651342022	0.016	5.20	0.07	-	100
	651	PRB	651505422	0.020	6.50	0.28	-	100
	651	PeA	651502920	0.001	0.20	0.37	-	100
	651	Vb	6516223	0.065	21.10	0.39	-	100
74b	651	Ac	6512025	0.233	34.90	0.39	-	100
	651	GWD	651326426	0.005	0.80	0.35	-	100
	651	GYD	651326826	0.276	41.40	0.26	-	100
	651	PRB	651505422	0.087	13.10	0.28	-	100
	651	RhB	651543522	0.014	2.10	0.23	-	100
	651	Vb	6516223	0.051	7.70	0.39	-	100
75a	651	GYD	651326826	0.041	8.90	0.26	-	100
	651	GgA	651323320	0.010	2.10	0.25	-	100
	651	Gh	6513235	0.100	21.70	0.24	-	100
	651	GxB	651326722	0.000	0.10	0.24	-	100
	651	HLC	651344224	0.028	6.20	0.14	-	100
	651	LcA	651422520	0.011	2.40	0.25	-	100
	651	Ld	6514227	0.011	2.30	0.25	-	100
	651	PRB	651505422	0.140	30.40	0.28	-	100
	651	PeA	651502920	0.003	0.60	0.37	-	100
	651	PsB	651505722	0.023	5.10	0.26	-	100
	651	RbA	651542320	0.093	20.20	0.26	-	100
77a	651	AbA	651202320	0.071	28.80	0.38	-	100
	651	Cp	6512451	0.079	32.40	0.40	-	100
	651	GxA	651326720	0.006	2.40	0.23	-	100
	651	GxB	651326722	0.043	17.60	0.24	-	100
	651	HAB	651342022	0.009	3.60	0.07	-	100
	651	LcA	651422520	0.011	4.40	0.25	-	100
	651	RaA	651542120	0.018	7.20	0.39	-	100
	651	RbA	651542320	0.000	0.00	0.26	-	100
	651	RhB	651543522	0.008	3.10	0.23	-	100
	651	RpE	651545128	0.001	0.20	0.29	-	100
	651	Va	6516221	0.000	0.10	0.39	-	100
77b	651	AbA	651202320	0.031	6.90	0.38	-	100
	651	Ch	6512435	0.175	39.50	0.24	-	100
	651	Cp	6512451	0.021	4.70	0.40	-	100
	651	GxB	651326722	0.034	7.70	0.24	-	100
	651	HAB	651342022	0.004	1.00	0.07	-	100
	651	HAC	651342024	0.008	1.70	0.05	-	100
	651	Ld	6514227	0.014	3.30	0.25	-	100
	651	PT	6515058	0.001	0.10	0.40	-	100
	651	Pb	6515023	0.064	14.50	0.38	-	100
	651	RbA	651542320	0.010	2.10	0.26	-	100
	651	RhB	651543522	0.060	13.50	0.23	-	100
	651	RpE	651545128	0.000	0.00	0.29	-	100
	651	Va	6516221	0.022	5.00	0.39	-	100
78a	651	AbA	651202320	0.013	8.80	0.38	-	100
	651	Ch	6512435	0.011	6.90	0.24	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
78a	651	Gh	6513235	0.048	31.80	0.24	-	100
	651	HAB	651342022	0.024	15.60	0.07	-	100
	651	HAC	651342024	0.005	3.20	0.05	-	100
	651	LcA	651422520	0.000	0.20	0.25	-	100
	651	Ld	6514227	0.012	8.10	0.25	-	100
	651	RhB	651543522	0.038	25.40	0.23	-	100
78b	651	Ch	6512435	0.088	18.30	0.24	-	100
	651	Et	6512859	0.075	15.70	0.25	-	100
	651	Gh	6513235	0.029	6.10	0.24	-	100
	651	GxB	651326722	0.050	10.30	0.24	-	100
	651	HAB	651342022	0.026	5.40	0.07	-	100
	651	HAC	651342024	0.004	0.90	0.05	-	100
	651	Ld	6514227	0.073	15.30	0.25	-	100
	651	PT	6515058	0.010	2.00	0.40	-	100
	651	Pb	6515023	0.092	19.10	0.38	-	100
	651	PeA	651502920	0.005	1.00	0.37	-	100
	651	RhB	651543522	0.028	5.80	0.23	-	100
79a	651	CA2	65124202	0.077	15.00	0.38	-	100
	651	GgA	651323320	0.000	0.10	0.25	-	100
	651	Gh	6513235	0.027	5.30	0.24	-	100
	651	PT	6515058	0.410	79.70	0.40	-	100
79b	651	CO	6512448	0.014	3.80	0.29	20.00	100
	651	PT	6515058	0.348	96.20	0.40	-	100
80a	651	AbA	651202320	0.040	11.70	0.38	-	100
	651	AfB	651203122	0.020	5.90	0.40	-	100
	651	GgA	651323320	0.004	1.10	0.25	-	100
	651	GxB	651326722	0.018	5.30	0.24	-	100
	651	Pb	6515023	0.030	9.00	0.38	-	100
	651	PeA	651502920	0.002	0.40	0.37	-	100
	651	RpE	651545128	0.224	66.50	0.29	-	100
80b	651	AbA	651202320	0.019	6.90	0.38	-	100
	651	GxB	651326722	0.104	37.30	0.24	-	100
	651	Pb	6515023	0.082	29.40	0.38	-	100
	651	PeA	651502920	0.000	0.10	0.37	-	100
	651	RpE	651545128	0.073	26.20	0.29	-	100
81a	651	AbA	651202320	0.016	19.80	0.38	-	100
	651	AfB	651203122	0.028	35.50	0.40	-	100
	651	GxB	651326722	0.003	4.10	0.24	-	100
	651	Ma	6514421	0.002	1.90	0.40	-	100
	651	RpE	651545128	0.030	38.60	0.29	-	100
81b	651	AbA	651202320	0.044	8.60	0.38	-	100
	651	GxB	651326722	0.070	13.70	0.24	-	100
	651	Lb	6514223	0.063	12.30	0.40	-	100
	651	PRB	651505422	0.073	14.20	0.28	-	100
	651	Pb	6515023	0.089	17.40	0.38	-	100
	651	RhB	651543522	0.016	3.10	0.23	-	100
	651	RpE	651545128	0.157	30.70	0.29	-	100
82a	651	AL	6512042	0.025	4.20	0.40	-	100
	651	GxB	651326722	0.007	1.20	0.24	-	100
	651	Lb	6514223	0.028	4.80	0.40	-	100
	651	Ma	6514421	0.063	10.80	0.40	-	100
	651	PRB	651505422	0.108	18.30	0.28	-	100
	651	RpE	651545128	0.357	60.70	0.29	-	100
82b	645	102	645102	0.103	39.00	0.40	-	100
	645	71	64571	0.099	37.50	0.36	-	100
	651	PRB	651505422	0.010	3.70	0.28	-	100
	651	RpE	651545128	0.053	19.90	0.29	-	100
83a	645	102	645102	0.098	40.20	0.40	-	100
	645	2	6452	0.017	6.90	0.41	-	100
	645	4	6454	0.011	4.50	0.58	-	100
	645	71	64571	0.065	26.90	0.36	-	100
	651	AGB	651203222	0.012	5.00	0.40	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
83a	651	AL	6512042	0.020	8.20	0.40	-	100
	651	AM	6512044	0.003	1.00	0.39	-	100
	651	HAB	651342022	0.018	7.20	0.07	-	100
83b	645	1	6451	0.001	0.10	0.41	-	100
	645	102	645102	0.076	17.50	0.40	-	100
	645	71	64571	0.356	82.40	0.36	-	100
83c	645	1	6451	0.033	12.00	0.41	-	100
	645	102	645102	0.046	16.50	0.40	-	100
	645	69	64569	0.049	17.70	0.63	-	100
	645	71	64571	0.149	53.80	0.36	-	100
83d	645	1	6451	0.077	33.40	0.41	-	100
	645	102	645102	0.025	10.70	0.40	-	100
	645	69	64569	0.129	55.90	0.63	-	100
83e	645	1	6451	0.135	16.10	0.41	-	100
	645	123	645123	0.006	0.70	0.37	-	100
	645	69	64569	0.696	83.20	0.63	-	100
83f	645	1	6451	0.001	0.60	0.41	-	100
	645	123	645123	0.010	7.90	0.37	-	100
	645	69	64569	0.121	91.50	0.63	-	100
83g	645	1	6451	0.067	10.90	0.41	-	100
	645	69	64569	0.551	89.00	0.63	-	100
	645	71	64571	0.001	0.10	0.36	-	100
83h	645	1	6451	0.001	0.50	0.41	-	100
	645	20	64520	0.103	35.60	0.19	-	100
	645	69	64569	0.183	63.50	0.63	-	100
	645	71	64571	0.001	0.40	0.36	-	100
83i	645	1	6451	0.044	10.90	0.41	-	100
	645	117	645117	0.013	3.30	0.23	-	100
	645	20	64520	0.022	5.40	0.19	-	100
	645	69	64569	0.325	80.50	0.63	-	100
83j	645	1	6451	0.033	20.30	0.41	-	100
	645	117	645117	0.007	4.40	0.23	-	100
	645	69	64569	0.123	75.30	0.63	-	100
83k	645	100	645100	0.129	41.00	0.40	20.00	100
	645	117	645117	0.000	0.00	0.23	-	100
	645	20	64520	0.041	12.90	0.19	-	100
	645	69	64569	0.046	14.50	0.63	-	100
	645	71	64571	0.099	31.60	0.36	-	100
83l	645	100	645100	0.113	20.40	0.40	20.00	100
	645	117	645117	0.210	37.90	0.23	-	100
	645	20	64520	0.199	35.90	0.19	-	100
	645	69	64569	0.000	0.00	0.63	-	100
	645	71	64571	0.032	5.80	0.36	-	100
84a	645	2	6452	0.011	5.00	0.41	-	100
	645	4	6454	0.000	0.00	0.58	-	100
	645	71	64571	0.092	41.40	0.36	-	100
	651	AGB	651203222	0.000	0.10	0.40	-	100
	651	AL	6512042	0.028	12.50	0.40	-	100
	651	RpE	651545128	0.091	40.90	0.29	-	100
84b	645	102	645102	0.097	27.90	0.40	-	100
	645	71	64571	0.250	72.10	0.36	-	100
85a	645	102	645102	0.068	21.70	0.40	-	100
	645	71	64571	0.246	78.30	0.36	-	100
85b	645	102	645102	0.090	38.00	0.40	-	100
	645	71	64571	0.147	62.00	0.36	-	100
86a	645	1	6451	0.079	16.40	0.41	-	100
	645	102	645102	0.004	0.70	0.40	-	100
	645	69	64569	0.396	82.60	0.63	-	100
	645	71	64571	0.001	0.30	0.36	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
87a	645	102	645102	0.103	37.70	0.40	-	100
	645	69	64569	0.061	22.20	0.63	-	100
	645	71	64571	0.110	40.20	0.36	-	100
87b	645	102	645102	0.007	4.60	0.40	-	100
	645	123	645123	0.006	3.90	0.37	-	100
	645	69	64569	0.147	91.50	0.63	-	100
88a	645	1	6451	0.002	0.70	0.41	-	100
	645	117	645117	0.077	27.80	0.23	-	100
	645	20	64520	0.044	16.10	0.19	-	100
	645	69	64569	0.153	55.40	0.63	-	100
89a	645	1	6451	0.003	1.30	0.41	-	100
	645	69	64569	0.212	98.70	0.63	-	100
89b	645	100	645100	0.021	7.50	0.40	20.00	100
	645	20	64520	0.090	32.00	0.19	-	100
	645	69	64569	0.141	50.00	0.63	-	100
	645	71	64571	0.030	10.50	0.36	-	100
91a	645	1	6451	0.107	24.70	0.41	-	100
	645	125	645125	0.010	2.20	0.43	-	100
	645	20	64520	0.003	0.80	0.19	-	100
	645	71	64571	0.314	72.30	0.36	-	100
91b	645	102	645102	0.237	42.30	0.40	-	100
	645	123	645123	0.059	10.40	0.37	-	100
	645	20	64520	0.119	21.20	0.19	-	100
	645	69	64569	0.087	15.60	0.63	-	100
	645	71	64571	0.059	10.60	0.36	-	100
92a	645	1	6451	0.278	35.40	0.41	-	100
	645	102	645102	0.025	3.20	0.40	-	100
	645	123	645123	0.099	12.60	0.37	-	100
	645	125	645125	0.005	0.60	0.43	-	100
	645	20	64520	0.378	48.20	0.19	-	100
92b	645	1	6451	0.005	0.70	0.41	-	100
	645	102	645102	0.009	1.30	0.40	-	100
	645	11	64511	0.011	1.50	0.94	-	100
	645	123	645123	0.147	21.00	0.37	-	100
	645	2	6452	0.106	15.20	0.41	-	100
	645	20	64520	0.149	21.20	0.19	-	100
	645	56	64556	0.222	31.70	0.27	-	100
	645	71	64571	0.052	7.40	0.36	-	100

APPENDIX D2C

Soils Data –without Dike and with Dike Conditions

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
10a	651	Ch	6512435	0.081	9.70	0.24	-	100
	651	Dn	6512647	0.051	6.10	1.20	-	100
	651	GM	6513244	0.194	23.20	0.29	-	100
	651	GYD	651326826	0.006	0.80	0.26	-	100
	651	GxB	651326722	0.137	16.30	0.24	-	100
	651	HAB	651342022	0.210	25.10	0.07	-	100
	651	HLC	651344224	0.158	18.90	0.14	-	100
10b	651	CO	6512448	0.066	7.70	0.29	20.00	100
	651	Cg	6512433	0.000	0.00	0.24	-	100
	651	Ck	6512441	0.129	15.10	0.30	-	100
	651	Cm	6512445	0.259	30.30	0.26	-	100
	651	Dn	6512647	0.059	6.90	1.20	-	100
	651	GM	6513244	0.023	2.60	0.29	-	100
	651	GYD	651326826	0.026	3.10	0.26	-	100
	651	Gh	6513235	0.025	2.90	0.24	-	100
	651	GxB	651326722	0.015	1.80	0.24	-	100
	651	HAB	651342022	0.066	7.70	0.07	-	100
	651	Lb	6514223	0.017	2.00	0.40	-	100
	651	PRB	651505422	0.027	3.10	0.28	-	100
	651	RS	6515456	0.143	16.70	0.40	65.00	100
12a	651	Ch	6512435	0.113	13.60	0.24	-	100
	651	Cm	6512445	0.029	3.40	0.26	-	100
	651	Dn	6512647	0.019	2.30	1.20	-	100
	651	GM	6513244	0.076	9.10	0.29	-	100
	651	HAB	651342022	0.132	15.80	0.07	-	100
	651	HAC	651342024	0.238	28.60	0.05	-	100
	651	HLC	651344224	0.058	6.90	0.14	-	100
	651	LcA	651422520	0.006	0.70	0.25	-	100
	651	Ld	6514227	0.077	9.20	0.25	-	100
	651	PRB	651505422	0.085	10.20	0.28	-	100
12b	651	AbA	651202320	0.005	1.00	0.38	-	100
	651	Cg	6512433	0.035	7.80	0.24	-	100
	651	Ch	6512435	0.174	38.60	0.24	-	100
	651	Cp	6512451	0.006	1.30	0.40	-	100
	651	Es	6512857	0.005	1.10	0.25	-	100
	651	HAB	651342022	0.054	11.90	0.07	-	100
	651	HAC	651342024	0.066	14.60	0.05	-	100
	651	LcA	651422520	0.032	7.10	0.25	-	100
	651	Ld	6514227	0.075	16.60	0.25	-	100
14a	651	Ac	6512025	0.045	12.20	0.39	-	100
	651	Ch	6512435	0.005	1.30	0.24	-	100
	651	Ck	6512441	0.021	5.70	0.30	-	100
	651	Cm	6512445	0.088	24.00	0.26	-	100
	651	Dn	6512647	0.013	3.60	1.20	-	100
	651	GM	6513244	0.052	14.30	0.29	-	100
	651	HAB	651342022	0.059	15.90	0.07	-	100
	651	HAC	651342024	0.085	23.00	0.05	-	100
14b	651	Ac	6512025	0.042	16.10	0.39	-	100
	651	Cg	6512433	0.000	0.00	0.24	-	100
	651	Ch	6512435	0.029	11.00	0.24	-	100
	651	Ck	6512441	0.046	17.90	0.30	-	100
	651	Cm	6512445	0.120	46.20	0.26	-	100
	651	LcA	651422520	0.007	2.80	0.25	-	100
	651	PRB	651505422	0.015	5.90	0.28	-	100
14c	651	Ac	6512025	0.035	3.20	0.39	-	100
	651	Cg	6512433	0.354	32.40	0.24	-	100
	651	Ch	6512435	0.135	12.30	0.24	-	100
	651	Ck	6512441	0.003	0.30	0.30	-	100
	651	Cm	6512445	0.053	4.80	0.26	-	100
	651	Cp	6512451	0.035	3.20	0.40	-	100
	651	Es	6512857	0.025	2.30	0.25	-	100
	651	GYD	651326826	0.054	4.90	0.26	-	100
	651	GgA	651323320	0.045	4.10	0.25	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
14c	651	HAB	651342022	0.054	4.90	0.07	-	100
	651	HLC	651344224	0.019	1.70	0.14	-	100
	651	Lb	6514223	0.019	1.70	0.40	-	100
	651	LcA	651422520	0.062	5.70	0.25	-	100
	651	Ld	6514227	0.169	15.40	0.25	-	100
	651	Pb	6515023	0.034	3.10	0.38	-	100
14d	651	Cg	6512433	0.360	71.20	0.24	-	100
	651	Cp	6512451	0.009	1.70	0.40	-	100
	651	Dn	6512647	0.003	0.60	1.20	-	100
	651	GYD	651326826	0.011	2.20	0.26	-	100
	651	GgA	651323320	0.034	6.60	0.25	-	100
	651	GxA	651326720	0.000	0.10	0.23	-	100
	651	HAB	651342022	0.000	0.00	0.07	-	100
	651	HAC	651342024	0.013	2.50	0.05	-	100
	651	Ld	6514227	0.071	14.10	0.25	-	100
	651	Pb	6515023	0.005	1.00	0.38	-	100
14e	651	Cg	6512433	0.635	57.70	0.24	-	100
	651	Cp	6512451	0.168	15.20	0.40	-	100
	651	GgA	651323320	0.015	1.40	0.25	-	100
	651	GxA	651326720	0.082	7.50	0.23	-	100
	651	HAC	651342024	0.007	0.60	0.05	-	100
	651	HLC	651344224	0.001	0.10	0.14	-	100
	651	Ld	6514227	0.049	4.50	0.25	-	100
	651	Pb	6515023	0.014	1.30	0.38	-	100
	651	RaA	651542120	0.015	1.40	0.39	-	100
	651	Vb	6516223	0.114	10.40	0.39	-	100
15a	651	AL	6512042	0.076	14.80	0.40	-	100
	651	AbA	651202320	0.002	0.50	0.38	-	100
	651	GYD	651326826	0.049	9.50	0.26	-	100
	651	Gh	6513235	0.025	4.90	0.24	-	100
	651	GxA	651326720	0.007	1.40	0.23	-	100
	651	GxB	651326722	0.217	42.10	0.24	-	100
	651	PRB	651505422	0.138	26.80	0.28	-	100
16a	651	AbA	651202320	0.025	11.60	0.38	-	100
	651	GYD	651326826	0.147	67.50	0.26	-	100
	651	GgA	651323320	0.005	2.30	0.25	-	100
	651	Gh	6513235	0.001	0.60	0.24	-	100
	651	Ma	6514421	0.008	3.80	0.40	-	100
	651	PRB	651505422	0.029	13.10	0.28	-	100
	651	Vk	6516241	0.002	1.10	0.26	-	100
20a	651	Ac	6512025	0.087	36.20	0.39	-	100
	651	GYD	651326826	0.014	5.70	0.26	-	100
	651	HLC	651344224	0.006	2.60	0.14	-	100
	651	RS	6515456	0.133	55.50	0.40	65.00	100
20b	651	Ac	6512025	0.141	11.10	0.39	-	100
	651	Cg	6512433	0.050	3.90	0.24	-	100
	651	Ck	6512441	0.096	7.50	0.30	-	100
	651	Cm	6512445	0.018	1.40	0.26	-	100
	651	Cp	6512451	0.002	0.20	0.40	-	100
	651	GYD	651326826	0.601	47.20	0.26	-	100
	651	Gh	6513235	0.128	10.00	0.24	-	100
	651	HAB	651342022	0.108	8.40	0.07	-	100
	651	HAC	651342024	0.005	0.40	0.05	-	100
	651	HLC	651344224	0.075	5.90	0.14	-	100
	651	RaA	651542120	0.038	3.00	0.39	-	100
	651	Vb	6516223	0.013	1.00	0.39	-	100
20c	651	Ac	6512025	0.101	7.10	0.39	-	100
	651	CO	6512448	0.005	0.30	0.29	20.00	100
	651	Cg	6512433	0.122	8.60	0.24	-	100
	651	Ch	6512435	0.018	1.20	0.24	-	100
	651	Ck	6512441	0.127	8.90	0.30	-	100
	651	Dn	6512647	0.000	0.00	1.20	-	100
	651	GWD	651326426	0.017	1.20	0.35	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
20c	651	GYD	651326826	0.006	0.50	0.26	-	100
	651	Gh	6513235	0.099	6.90	0.24	-	100
	651	HAB	651342022	0.018	1.30	0.07	-	100
	651	HAC	651342024	0.297	20.90	0.05	-	100
	651	HLC	651344224	0.246	17.30	0.14	-	100
	651	RS	6515456	0.072	5.00	0.40	65.00	100
	651	RaA	651542120	0.026	1.80	0.39	-	100
	651	Vb	6516223	0.267	18.80	0.39	-	100
20d	651	Cg	6512433	0.007	1.20	0.24	-	100
	651	Ck	6512441	0.075	12.00	0.30	-	100
	651	Et	6512859	0.048	7.70	0.25	-	100
	651	GWD	651326426	0.136	21.90	0.35	-	100
	651	Gh	6513235	0.150	24.00	0.24	-	100
	651	HAB	651342022	0.071	11.30	0.07	-	100
	651	HLC	651344224	0.067	10.80	0.14	-	100
	651	Vb	6516223	0.068	11.00	0.39	-	100
20e	651	Ac	6512025	0.053	3.50	0.39	-	100
	651	CO	6512448	0.033	2.10	0.29	20.00	100
	651	Ck	6512441	0.047	3.10	0.30	-	100
	651	Cm	6512445	0.053	3.40	0.26	-	100
	651	Cp	6512451	0.012	0.80	0.40	-	100
	651	Et	6512859	0.100	6.50	0.25	-	100
	651	GWD	651326426	0.223	14.50	0.35	-	100
	651	Gh	6513235	0.261	17.00	0.24	-	100
	651	HAB	651342022	0.235	15.30	0.07	-	100
	651	HLC	651344224	0.299	19.50	0.14	-	100
	651	Ld	6514227	0.133	8.70	0.25	-	100
	651	PRB	651505422	0.002	0.10	0.28	-	100
	651	RS	6515456	0.018	1.10	0.40	65.00	100
	651	Vb	6516223	0.066	4.30	0.39	-	100
20f	651	AbA	651202320	0.060	4.50	0.38	-	100
	651	Ac	6512025	0.074	5.50	0.39	-	100
	651	AdA	651202720	0.009	0.70	0.40	-	100
	651	Cm	6512445	0.035	2.60	0.26	-	100
	651	Et	6512859	0.026	1.90	0.25	-	100
	651	GWD	651326426	0.174	12.90	0.35	-	100
	651	GgA	651323320	0.064	4.70	0.25	-	100
	651	Gh	6513235	0.180	13.30	0.24	-	100
	651	HAB	651342022	0.100	7.40	0.07	-	100
	651	HLC	651344224	0.051	3.80	0.14	-	100
	651	HrB	651345522	0.028	2.10	0.12	-	100
	651	Lb	6514223	0.015	1.10	0.40	-	100
	651	Ld	6514227	0.106	7.90	0.25	-	100
	651	RhB	651543522	0.342	25.40	0.23	-	100
	651	RpE	651545128	0.083	6.20	0.29	-	100
20g	651	AbA	651202320	0.073	6.20	0.38	-	100
	651	AbB	651202322	0.044	3.70	0.39	-	100
	651	Ac	6512025	0.008	0.70	0.39	-	100
	651	Cg	6512433	0.022	1.90	0.24	-	100
	651	Cm	6512445	0.006	0.50	0.26	-	100
	651	Et	6512859	0.005	0.40	0.25	-	100
	651	Ge	6513229	0.008	0.70	0.26	-	100
	651	GgA	651323320	0.134	11.40	0.25	-	100
	651	Gh	6513235	0.005	0.40	0.24	-	100
	651	HM	6513444	0.015	1.30	0.15	-	100
	651	HrB	651345522	0.139	11.80	0.12	-	100
	651	La	6514221	0.015	1.20	0.26	-	100
	651	Lb	6514223	0.030	2.50	0.40	-	100
	651	Ld	6514227	0.014	1.20	0.25	-	100
	651	Pb	6515023	0.020	1.70	0.38	-	100
	651	RbB	651542322	0.109	9.30	0.25	-	100
	651	RhB	651543522	0.349	29.60	0.23	-	100
	651	RpE	651545128	0.137	11.60	0.29	-	100
	651	Vb	6516223	0.047	3.90	0.39	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
20h	651	AbA	651202320	0.005	0.40	0.38	-	100
	651	AbB	651202322	0.004	0.30	0.39	-	100
	651	Cm	6512445	0.111	8.90	0.26	-	100
	651	Et	6512859	0.001	0.10	0.25	-	100
	651	GgA	651323320	0.169	13.50	0.25	-	100
	651	GxB	651326722	0.000	0.00	0.24	-	100
	651	HAB	651342022	0.021	1.70	0.07	-	100
	651	HM	6513444	0.010	0.80	0.15	-	100
	651	La	6514221	0.168	13.40	0.26	-	100
	651	Lb	6514223	0.001	0.10	0.40	-	100
	651	Ld	6514227	0.057	4.50	0.25	-	100
	651	Pb	6515023	0.146	11.70	0.38	-	100
	651	RbB	651542322	0.284	22.70	0.25	-	100
	651	RhB	651543522	0.272	21.80	0.23	-	100
	651	RpE	651545128	0.003	0.20	0.29	-	100
20i	651	AbA	651202320	0.038	13.00	0.38	-	100
	651	GgA	651323320	0.010	3.50	0.25	-	100
	651	GxA	651326720	0.025	8.50	0.23	-	100
	651	GxB	651326722	0.059	20.10	0.24	-	100
	651	HrB	651345522	0.000	0.00	0.12	-	100
	651	La	6514221	0.007	2.30	0.26	-	100
	651	LcA	651422520	0.003	0.90	0.25	-	100
	651	Ld	6514227	0.001	0.40	0.25	-	100
	651	PeB	651502922	0.043	14.70	0.38	-	100
	651	RbB	651542322	0.006	1.90	0.25	-	100
	651	RhB	651543522	0.086	29.50	0.23	-	100
	651	RpE	651545128	0.015	5.00	0.29	-	100
20j	651	AbA	651202320	0.008	3.80	0.38	-	100
	651	GgA	651323320	0.041	20.10	0.25	-	100
	651	LcA	651422520	0.002	1.00	0.25	-	100
	651	PeA	651502920	0.063	30.80	0.37	-	100
	651	RbA	651542320	0.066	32.50	0.26	-	100
	651	RbB	651542322	0.024	11.70	0.25	-	100
20k	651	GgA	651323320	0.027	15.30	0.25	-	100
	651	LcA	651422520	0.004	2.40	0.25	-	100
	651	PeA	651502920	0.025	14.00	0.37	-	100
	651	RbA	651542320	0.120	68.30	0.26	-	100
20l	651	AbA	651202320	0.007	5.60	0.38	-	100
	651	AfA	651203120	0.019	14.60	0.38	-	100
	651	GxA	651326720	0.002	1.20	0.23	-	100
	651	GxB	651326722	0.011	8.60	0.24	-	100
	651	LcA	651422520	0.000	0.30	0.25	-	100
	651	PeA	651502920	0.007	5.30	0.37	-	100
	651	RbA	651542320	0.026	19.90	0.26	-	100
	651	RbB	651542322	0.002	1.90	0.25	-	100
	651	RhB	651543522	0.055	42.60	0.23	-	100
21a	651	AfA	651203120	0.014	1.50	0.38	-	100
	651	GYD	651326826	0.014	1.50	0.26	-	100
	651	GxA	651326720	0.136	15.40	0.23	-	100
	651	GxB	651326722	0.018	2.10	0.24	-	100
	651	HLC	651344224	0.023	2.60	0.14	-	100
	651	HM	6513444	0.019	2.20	0.15	-	100
	651	LcA	651422520	0.250	28.40	0.25	-	100
	651	Pb	6515023	0.002	0.20	0.38	-	100
	651	PeA	651502920	0.120	13.60	0.37	-	100
	651	RbA	651542320	0.261	29.60	0.26	-	100
	651	RbB	651542322	0.024	2.70	0.25	-	100
	651	RhB	651543522	0.002	0.20	0.23	-	100
21b	651	AL	6512042	0.059	10.70	0.40	-	100
	651	GYD	651326826	0.201	36.60	0.26	-	100
	651	HLC	651344224	0.142	26.00	0.14	-	100
	651	LcA	651422520	0.106	19.30	0.25	-	100
	651	PeA *	651502920	0.026	4.70	0.37	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
21b	651	RbA	651542320	0.015	2.70	0.26	-	100
21c	651	AL	6512042	0.078	33.10	0.40	-	100
	651	GYD	651326826	0.092	39.20	0.26	-	100
	651	HLC	651344224	0.062	26.60	0.14	-	100
	651	LcA	651422520	0.003	1.20	0.25	-	100
21d	645	20	64520	0.002	0.50	0.19	-	100
	651	AL	6512042	0.015	3.10	0.40	-	100
	651	GYD	651326826	0.067	13.50	0.26	-	100
	651	HLC	651344224	0.410	83.00	0.14	-	100
22a	651	AbA	651202320	0.000	0.00	0.38	-	100
	651	GgA	651323320	0.095	21.00	0.25	-	100
	651	GxA	651326720	0.039	8.60	0.23	-	100
	651	GxB	651326722	0.048	10.70	0.24	-	100
	651	HrB	651345522	0.033	7.30	0.12	-	100
	651	La	6514221	0.008	1.80	0.26	-	100
	651	LcA	651422520	0.023	5.20	0.25	-	100
	651	Pb	6515023	0.006	1.30	0.38	-	100
	651	RbA	651542320	0.010	2.30	0.26	-	100
	651	RbB	651542322	0.048	10.50	0.25	-	100
	651	RhB	651543522	0.119	26.30	0.23	-	100
	651	RpE	651545128	0.023	5.10	0.29	-	100
22b	651	Ae	6512029	0.020	12.10	0.39	-	100
	651	GxB	651326722	0.074	45.30	0.24	-	100
	651	LcA	651422520	0.039	23.70	0.25	-	100
	651	Pb	6515023	0.007	4.10	0.38	-	100
	651	PeA	651502920	0.004	2.40	0.37	-	100
	651	RhB	651543522	0.020	12.40	0.23	-	100
22c	651	GxA	651326720	0.085	38.80	0.23	-	100
	651	GxB	651326722	0.021	9.40	0.24	-	100
	651	LcA	651422520	0.048	21.80	0.25	-	100
	651	PeA	651502920	0.036	16.10	0.37	-	100
	651	RbA	651542320	0.012	5.40	0.26	-	100
	651	RhB	651543522	0.019	8.60	0.23	-	100
22d	651	Ae	6512029	0.032	13.00	0.39	-	100
	651	GxA	651326720	0.051	20.70	0.23	-	100
	651	GxB	651326722	0.029	11.80	0.24	-	100
	651	LcA	651422520	0.021	8.70	0.25	-	100
	651	PeA	651502920	0.031	12.80	0.37	-	100
	651	RbA	651542320	0.054	22.10	0.26	-	100
	651	RhB	651543522	0.027	10.90	0.23	-	100
23a	651	AbA	651202320	0.001	0.30	0.38	-	100
	651	Ac	6512025	0.030	8.60	0.39	-	100
	651	Ao	6512049	0.002	0.50	0.04	-	100
	651	GYD	651326826	0.140	39.50	0.26	-	100
	651	Ge	6513229	0.005	1.40	0.26	-	100
	651	GgA	651323320	0.017	4.70	0.25	-	100
	651	Gh	6513235	0.018	5.10	0.24	-	100
	651	PRB	651505422	0.140	39.50	0.28	-	100
	651	Vk	6516241	0.002	0.50	0.26	-	100
24a	651	GYD	651326826	0.099	24.30	0.26	-	100
	651	GxA	651326720	0.001	0.20	0.23	-	100
	651	GxB	651326722	0.092	22.60	0.24	-	100
	651	HrB	651345522	0.001	0.20	0.12	-	100
	651	LcA	651422520	0.167	40.70	0.25	-	100
	651	PeA	651502920	0.027	6.60	0.37	-	100
	651	RbA	651542320	0.022	5.40	0.26	-	100
24b	651	AL	6512042	0.074	22.20	0.40	-	100
	651	GYD	651326826	0.047	14.00	0.26	-	100
	651	GxA	651326720	0.050	14.90	0.23	-	100
	651	GxB	651326722	0.005	1.40	0.24	-	100
	651	HLC	651344224	0.115	34.30	0.14	-	100
	651	HrB	651345522	0.004	1.30	0.12	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
24b	651	LcA	651422520	0.007	2.00	0.25	-	100
	651	RbA	651542320	0.001	0.40	0.26	-	100
	651	RhB	651543522	0.032	9.60	0.23	-	100
30a	651	AbA	651202320	0.018	50.80	0.38	-	100
	651	Ac	6512025	0.009	24.00	0.39	-	100
	651	GgA	651323320	0.009	24.30	0.25	-	100
	651	PRB	651505422	0.000	0.80	0.28	-	100
30b	651	AbA	651202320	0.074	14.50	0.38	-	100
	651	Ac	6512025	0.006	1.30	0.39	-	100
	651	CO	6512448	0.000	0.00	0.29	20.00	100
	651	Cm	6512445	0.003	0.60	0.26	-	100
	651	GYD	651326826	0.098	19.30	0.26	-	100
	651	GgA	651323320	0.099	19.50	0.25	-	100
	651	Gh	6513235	0.098	19.20	0.24	-	100
	651	Lb	6514223	0.000	0.00	0.40	-	100
	651	PRB	651505422	0.106	20.90	0.28	-	100
	651	RS	6515456	0.024	4.70	0.40	65.00	100
30c	651	AGB	651203222	0.034	14.00	0.40	-	100
	651	Ac	6512025	0.055	22.60	0.39	-	100
	651	GYD	651326826	0.052	21.40	0.26	-	100
	651	GgA	651323320	0.027	11.20	0.25	-	100
	651	Gh	6513235	0.001	0.20	0.24	-	100
	651	HLC	651344224	0.010	4.20	0.14	-	100
	651	PRB	651505422	0.031	12.60	0.28	-	100
	651	RS	6515456	0.033	13.70	0.40	65.00	100
30d	651	AGB	651203222	0.061	9.90	0.40	-	100
	651	Ac	6512025	0.147	23.90	0.39	-	100
	651	GYD	651326826	0.384	62.50	0.26	-	100
	651	Gb	6513223	0.001	0.10	0.04	-	100
	651	HLC	651344224	0.006	1.00	0.14	-	100
	651	PRB	651505422	0.016	2.60	0.28	-	100
30e	651	AGB	651203222	0.034	8.60	0.40	-	100
	651	AM	6512044	0.005	1.30	0.39	-	100
	651	Ac	6512025	0.016	4.00	0.39	-	100
	651	Ck	6512441	0.042	10.50	0.30	-	100
	651	GYD	651326826	0.168	42.00	0.26	-	100
	651	Gb	6513223	0.065	16.30	0.04	-	100
	651	Gh	6513235	0.041	10.20	0.24	-	100
	651	HLC	651344224	0.028	7.00	0.14	-	100
	651	PRB	651505422	0.000	0.10	0.28	-	100
30f	651	AGB	651203222	0.139	7.80	0.40	-	100
	651	Ac	6512025	0.247	14.00	0.39	-	100
	651	Ck	6512441	0.480	27.10	0.30	-	100
	651	Cm	6512445	0.055	3.10	0.26	-	100
	651	GWD	651326426	0.145	8.20	0.35	-	100
	651	GYD	651326826	0.427	24.10	0.26	-	100
	651	Gh	6513235	0.032	1.80	0.24	-	100
	651	HAB	651342022	0.020	1.10	0.07	-	100
	651	HLC	651344224	0.082	4.60	0.14	-	100
	651	PRB	651505422	0.131	7.40	0.28	-	100
	651	Va	6516221	0.000	0.00	0.39	-	100
	651	Vb	6516223	0.013	0.80	0.39	-	100
30g	651	AGB	651203222	0.154	18.20	0.40	-	100
	651	Ac	6512025	0.109	12.90	0.39	-	100
	651	Ck	6512441	0.073	8.60	0.30	-	100
	651	GYD	651326826	0.407	48.20	0.26	-	100
	651	PRB	651505422	0.102	12.10	0.28	-	100
32a	651	Ac	6512025	0.069	23.90	0.39	-	100
	651	GYD	651326826	0.173	59.80	0.26	-	100
	651	GgA	651323320	0.013	4.50	0.25	-	100
	651	PRB	651505422	0.034	11.80	0.28	-	100
32b	651	Ac	6512025	0.086	18.10	0.39	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
32b	651	GWD	651326426	0.016	3.30	0.35	-	100
	651	GYD	651326826	0.352	73.90	0.26	-	100
	651	HLC	651344224	0.022	4.70	0.14	-	100
33a	651	AbA	651202320	0.000	0.00	0.38	-	100
	651	CA2	65124202	0.024	14.50	0.38	-	100
	651	GgA	651323320	0.005	3.20	0.25	-	100
	651	PRB	651505422	0.074	44.50	0.28	-	100
	651	PT	6515058	0.063	37.80	0.40	-	100
34a	651	AGB	651203222	0.000	0.10	0.40	-	100
	651	Ac	6512025	0.163	36.40	0.39	-	100
	651	Ck	6512441	0.039	8.60	0.30	-	100
	651	Cm	6512445	0.021	4.70	0.26	-	100
	651	GWD	651326426	0.067	15.10	0.35	-	100
	651	GYD	651326826	0.022	4.80	0.26	-	100
	651	HAB	651342022	0.062	13.80	0.07	-	100
	651	HLC	651344224	0.044	9.80	0.14	-	100
	651	Va	6516221	0.030	6.70	0.39	-	100
34b	651	Ac	6512025	0.092	14.50	0.39	-	100
	651	Ck	6512441	0.071	11.20	0.30	-	100
	651	Cm	6512445	0.058	9.20	0.26	-	100
	651	GWD	651326426	0.043	6.90	0.35	-	100
	651	HAB	651342022	0.020	3.20	0.07	-	100
	651	HLC	651344224	0.013	2.00	0.14	-	100
	651	HM	6513444	0.056	8.90	0.15	-	100
	651	Lb	6514223	0.095	15.10	0.40	-	100
	651	RpE	651545128	0.157	24.90	0.29	-	100
	651	Va	6516221	0.026	4.10	0.39	-	100
35a	651	CA2	65124202	0.007	12.40	0.38	-	100
	651	GgA	651323320	0.000	0.70	0.25	-	100
	651	Gh	6513235	0.000	0.20	0.24	-	100
	651	PRB	651505422	0.016	28.40	0.28	-	100
	651	PT	6515058	0.033	58.30	0.40	-	100
36a	651	AGB	651203222	0.054	8.00	0.40	-	100
	651	Ac	6512025	0.043	6.40	0.39	-	100
	651	Ck	6512441	0.147	21.70	0.30	-	100
	651	Cm	6512445	0.000	0.00	0.26	-	100
	651	GYD	651326826	0.289	42.60	0.26	-	100
	651	HLC	651344224	0.103	15.20	0.14	-	100
	651	PRB	651505422	0.041	6.10	0.28	-	100
36b	651	AGB	651203222	0.040	3.80	0.40	-	100
	651	AL	6512042	0.230	21.70	0.40	-	100
	651	AbA	651202320	0.041	3.90	0.38	-	100
	651	Ac	6512025	0.017	1.60	0.39	-	100
	651	GYD	651326826	0.458	43.20	0.26	-	100
	651	HLC	651344224	0.178	16.80	0.14	-	100
	651	PRB	651505422	0.040	3.80	0.28	-	100
	651	Pb	6515023	0.046	4.30	0.38	-	100
	651	PeA	651502920	0.009	0.90	0.37	-	100
36c	645	1	6451	0.004	0.40	0.41	-	100
	645	102	645102	0.099	9.20	0.40	-	100
	645	71	64571	0.006	0.50	0.36	-	100
	651	AL	6512042	0.308	28.40	0.40	-	100
	651	AdA	651202720	0.020	1.90	0.40	-	100
	651	GYD	651326826	0.379	34.90	0.26	-	100
	651	HLC	651344224	0.046	4.30	0.14	-	100
	651	PRB	651505422	0.118	10.80	0.28	-	100
	651	Pb	6515023	0.042	3.90	0.38	-	100
	651	RbB	651542322	0.062	5.70	0.25	-	100
40a	651	AGB	651203222	0.061	22.60	0.40	-	100
	651	Ac	6512025	0.094	35.00	0.39	-	100
	651	Ck	6512441	0.046	17.00	0.30	-	100
	651	GYD	651326826	0.031	11.70	0.26	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
40a	651	HAB	651342022	0.030	11.30	0.07	-	100
	651	HLC	651344224	0.006	2.30	0.14	-	100
40b	651	AGB	651203222	0.058	13.80	0.40	-	100
	651	Ac	6512025	0.034	8.20	0.39	-	100
	651	Ae	6512029	0.073	17.60	0.39	-	100
	651	GYD	651326826	0.089	21.30	0.26	-	100
	651	HM	6513444	0.074	17.70	0.15	-	100
	651	Lb	6514223	0.011	2.70	0.40	-	100
	651	RbB	651542322	0.054	13.00	0.25	-	100
	651	RpE	651545128	0.024	5.60	0.29	-	100
40c	651	Ae	6512029	0.110	21.90	0.39	-	100
	651	GYD	651326826	0.118	23.50	0.26	-	100
	651	GxB	651326722	0.135	27.00	0.24	-	100
	651	Pb	6515023	0.011	2.30	0.38	-	100
	651	RbB	651542322	0.082	16.30	0.25	-	100
	651	RhB	651543522	0.045	9.10	0.23	-	100
40d	645	1	6451	0.004	0.50	0.41	-	100
	645	102	645102	0.052	7.10	0.40	-	100
	645	6	6456	0.041	5.60	0.62	-	100
	645	71	64571	0.066	9.00	0.36	-	100
	651	AGB	651203222	0.006	0.90	0.40	-	100
	651	Ae	6512029	0.177	24.20	0.39	-	100
	651	GYD	651326826	0.166	22.80	0.26	-	100
	651	GxB	651326722	0.061	8.30	0.24	-	100
	651	LcA	651422520	0.024	3.20	0.25	-	100
	651	PRB	651505422	0.112	15.30	0.28	-	100
	651	RaA	651542120	0.004	0.50	0.39	-	100
	651	RhB	651543522	0.019	2.60	0.23	-	100
42a	651	Ae	6512029	0.062	17.30	0.39	-	100
	651	La	6514221	0.080	22.20	0.26	-	100
	651	Ld	6514227	0.000	0.10	0.25	-	100
	651	Pb	6515023	0.033	9.20	0.38	-	100
	651	RbB	651542322	0.089	24.70	0.25	-	100
	651	RhB	651543522	0.095	26.40	0.23	-	100
42b	651	Ae	6512029	0.024	7.60	0.39	-	100
	651	GxB	651326722	0.106	34.40	0.24	-	100
	651	La	6514221	0.021	6.80	0.26	-	100
	651	LcA	651422520	0.032	10.30	0.25	-	100
	651	Pb	6515023	0.010	3.20	0.38	-	100
	651	PeA	651502920	0.021	6.90	0.37	-	100
	651	RbA	651542320	0.022	7.00	0.26	-	100
	651	RhB	651543522	0.074	23.80	0.23	-	100
44a	651	AL	6512042	0.037	4.50	0.40	-	100
	651	GxA	651326720	0.008	0.90	0.23	-	100
	651	GxB	651326722	0.189	22.70	0.24	-	100
	651	HLC	651344224	0.159	19.10	0.14	-	100
	651	LcA	651422520	0.127	15.20	0.25	-	100
	651	Pb	6515023	0.029	3.50	0.38	-	100
	651	PeA	651502920	0.058	6.90	0.37	-	100
	651	RbA	651542320	0.079	9.50	0.26	-	100
	651	RbB	651542322	0.123	14.80	0.25	-	100
	651	RhB	651543522	0.025	2.90	0.23	-	100
44b	645	20	64520	0.009	3.10	0.19	-	100
	645	56	64556	0.000	0.00	0.27	-	100
	645	71	64571	0.026	9.50	0.36	-	100
	651	GYD	651326826	0.038	13.70	0.26	-	100
	651	GxB	651326722	0.022	7.80	0.24	-	100
	651	HLC	651344224	0.119	42.60	0.14	-	100
	651	LcA	651422520	0.058	20.90	0.25	-	100
	651	RbB	651542322	0.007	2.30	0.25	-	100
44c	645	20	64520	0.005	1.50	0.19	-	100
	651	GYD	651326826	0.091	26.90	0.26	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
44c	651	HLC	651344224	0.183	54.00	0.14	-	100
	651	LcA	651422520	0.059	17.60	0.25	-	100
44d	645	117	645117	0.013	1.60	0.23	-	100
	645	20	64520	0.255	31.10	0.19	-	100
	651	GYD	651326826	0.027	3.30	0.26	-	100
	651	HLC	651344224	0.502	61.10	0.14	-	100
	651	LcA	651422520	0.024	2.90	0.25	-	100
44e	645	117	645117	0.016	3.40	0.23	-	100
	645	20	64520	0.416	89.70	0.19	-	100
	651	HLC	651344224	0.032	6.90	0.14	-	100
44f	645	117	645117	0.004	1.30	0.23	-	100
	645	20	64520	0.250	93.60	0.19	-	100
	651	HLC	651344224	0.014	5.00	0.14	-	100
46a	645	102	645102	0.210	26.00	0.40	-	100
	645	117	645117	0.001	0.10	0.23	-	100
	645	6	6456	0.038	4.70	0.62	-	100
	645	71	64571	0.559	69.20	0.36	-	100
46b	645	102	645102	0.023	5.80	0.40	-	100
	645	117	645117	0.287	71.70	0.23	-	100
	645	71	64571	0.090	22.50	0.36	-	100
46c	645	117	645117	0.226	100.00	0.23	-	100
46d	645	117	645117	0.318	73.80	0.23	-	100
	645	69	64569	0.012	2.90	0.63	-	100
	645	71	64571	0.101	23.30	0.36	-	100
46e	645	117	645117	0.182	82.50	0.23	-	100
	645	20	64520	0.039	17.50	0.19	-	100
46f	645	117	645117	0.220	38.20	0.23	-	100
	645	20	64520	0.356	61.80	0.19	-	100
46g	645	100	645100	0.001	0.20	0.40	20.00	100
	645	117	645117	0.371	82.20	0.23	-	100
	645	20	64520	0.079	17.60	0.19	-	100
46h	645	117	645117	0.086	22.40	0.23	-	100
	645	20	64520	0.298	77.60	0.19	-	100
46i	645	117	645117	0.019	6.90	0.23	-	100
	645	123	645123	0.093	34.50	0.37	-	100
	645	20	64520	0.158	58.60	0.19	-	100
46j	645	117	645117	0.142	48.20	0.23	-	100
	645	123	645123	0.050	17.00	0.37	-	100
	645	20	64520	0.102	34.80	0.19	-	100
46k	645	117	645117	0.167	37.70	0.23	-	100
	645	123	645123	0.030	6.70	0.37	-	100
	645	20	64520	0.245	55.60	0.19	-	100
48a	645	102	645102	0.023	8.00	0.40	-	100
	645	56	64556	0.025	8.80	0.27	-	100
	645	71	64571	0.207	73.20	0.36	-	100
	651	GxB	651326722	0.002	0.60	0.24	-	100
	651	LcA	651422520	0.007	2.40	0.25	-	100
	651	PeA	651502920	0.009	3.00	0.37	-	100
	651	RbB	651542322	0.011	4.00	0.25	-	100
48b	645	102	645102	0.048	23.40	0.40	-	100
	645	117	645117	0.002	1.10	0.23	-	100
	645	20	64520	0.019	9.40	0.19	-	100
	645	56	64556	0.023	11.40	0.27	-	100
	645	71	64571	0.104	51.20	0.36	-	100
	651	GxB	651326722	0.007	3.60	0.24	-	100
50a	645	102	645102	0.014	1.50	0.40	-	100
	645	117	645117	0.698	78.40	0.23	-	100
	645	20	64520	0.096	10.80	0.19	-	100
	645	71	64571	0.036	4.00	0.36	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
50a	651	GYD	651326826	0.007	0.80	0.26	-	100
	651	HLC	651344224	0.040	4.50	0.14	-	100
50b	645	117	645117	0.205	100.00	0.23	-	100
50c	645	117	645117	0.546	99.70	0.23	-	100
	645	20	64520	0.001	0.30	0.19	-	100
50d	645	117	645117	0.154	86.20	0.23	-	100
	645	20	64520	0.025	13.80	0.19	-	100
50e	645	117	645117	0.156	91.70	0.23	-	100
	645	20	64520	0.014	8.30	0.19	-	100
50f	645	117	645117	0.201	68.90	0.23	-	100
	645	20	64520	0.091	31.10	0.19	-	100
50g	645	117	645117	0.018	12.50	0.23	-	100
	645	20	64520	0.128	87.50	0.19	-	100
52a	645	100	645100	0.506	87.70	0.40	20.00	100
	645	117	645117	0.060	10.40	0.23	-	100
	645	20	64520	0.011	1.90	0.19	-	100
54a	645	100	645100	0.113	31.40	0.40	20.00	100
	645	117	645117	0.076	21.10	0.23	-	100
	645	20	64520	0.171	47.60	0.19	-	100
54b	645	100	645100	0.050	21.10	0.40	20.00	100
	645	117	645117	0.147	62.50	0.23	-	100
	645	123	645123	0.013	5.50	0.37	-	100
	645	20	64520	0.026	10.90	0.19	-	100
56a	645	117	645117	0.033	11.00	0.23	-	100
	645	20	64520	0.138	46.30	0.19	-	100
	645	69	64569	0.027	9.00	0.63	-	100
	645	71	64571	0.100	33.70	0.36	-	100
60a	651	AGB	651203222	0.039	5.10	0.40	-	100
	651	AL	6512042	0.026	3.40	0.40	-	100
	651	Ac	6512025	0.061	7.90	0.39	-	100
	651	Cm	6512445	0.100	12.90	0.26	-	100
	651	GYD	651326826	0.357	46.30	0.26	-	100
	651	HAB	651342022	0.093	12.10	0.07	-	100
	651	HLC	651344224	0.025	3.20	0.14	-	100
	651	LcA	651422520	0.016	2.10	0.25	-	100
	651	RbA	651542320	0.010	1.30	0.26	-	100
	651	TB	6515822	0.025	3.20	0.40	-	100
	651	Va	6516221	0.020	2.60	0.39	-	100
60b	645	102	645102	0.005	0.50	0.40	-	100
	651	AL	6512042	0.131	11.80	0.40	-	100
	651	GYD	651326826	0.605	54.40	0.26	-	100
	651	Lb	6514223	0.061	5.50	0.40	-	100
	651	PRB	651505422	0.259	23.30	0.28	-	100
	651	RbA	651542320	0.001	0.00	0.26	-	100
	651	TB	6515822	0.051	4.60	0.40	-	100
60c	645	1	6451	0.017	1.60	0.41	-	100
	645	102	645102	0.146	14.00	0.40	-	100
	645	71	64571	0.093	8.90	0.36	-	100
	651	AL	6512042	0.122	11.60	0.40	-	100
	651	GYD	651326826	0.272	26.10	0.26	-	100
	651	PRB	651505422	0.248	23.70	0.28	-	100
	651	TB	6515822	0.052	5.00	0.40	-	100
	651	Tc	6515825	0.095	9.10	0.40	-	100
62a	645	1	6451	0.007	1.20	0.41	-	100
	645	102	645102	0.157	26.80	0.40	-	100
	645	71	64571	0.422	72.00	0.36	-	100
62b	645	102	645102	0.060	24.70	0.40	-	100
	645	71	64571	0.185	75.30	0.36	-	100
64a	645	102	645102	0.020	5.30	0.40	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
64a	645	71	64571	0.358	94.70	0.36	-	100
64b	645	102	645102	0.084	10.10	0.40	-	100
	645	69	64569	0.184	22.00	0.63	-	100
	645	71	64571	0.568	67.90	0.36	-	100
64c	645	102	645102	0.017	2.70	0.40	-	100
	645	56	64556	0.109	17.10	0.27	-	100
	645	69	64569	0.200	31.50	0.63	-	100
	645	71	64571	0.311	48.70	0.36	-	100
64d	645	69	64569	0.141	98.00	0.63	-	100
	645	71	64571	0.003	2.00	0.36	-	100
70a	651	AbA	651202320	0.013	12.20	0.38	-	100
	651	CA2	65124202	0.018	17.80	0.38	-	100
	651	GgA	651323320	0.022	21.30	0.25	-	100
	651	PRB	651505422	0.037	35.50	0.28	-	100
	651	PT	6515058	0.014	13.20	0.40	-	100
70b	651	AbA	651202320	0.035	10.60	0.38	-	100
	651	CA2	65124202	0.030	9.00	0.38	-	100
	651	CO	6512448	0.036	10.90	0.29	20.00	100
	651	GgA	651323320	0.076	22.90	0.25	-	100
	651	Gh	6513235	0.045	13.70	0.24	-	100
	651	PRB	651505422	0.001	0.40	0.28	-	100
	651	PT	6515058	0.108	32.60	0.40	-	100
70c	651	AGB	651203222	0.018	2.40	0.40	-	100
	651	AbA	651202320	0.139	18.80	0.38	-	100
	651	Ac	6512025	0.000	0.10	0.39	-	100
	651	CA2	65124202	0.028	3.80	0.38	-	100
	651	CO	6512448	0.015	2.00	0.29	20.00	100
	651	GYD	651326826	0.258	34.80	0.26	-	100
	651	GgA	651323320	0.173	23.40	0.25	-	100
	651	Gh	6513235	0.014	1.90	0.24	-	100
	651	HLC	651344224	0.008	1.10	0.14	-	100
	651	PRB	651505422	0.089	11.90	0.28	-	100
70d	651	AGB	651203222	0.001	0.10	0.40	-	100
	651	AM	6512044	0.014	2.80	0.39	-	100
	651	CV	6512462	0.000	0.00	0.39	-	100
	651	GYD	651326826	0.315	64.80	0.26	-	100
	651	GgA	651323320	0.102	20.90	0.25	-	100
	651	LcA	651422520	0.013	2.80	0.25	-	100
	651	PRB	651505422	0.041	8.50	0.28	-	100
70e	651	AM	6512044	0.262	19.10	0.39	-	100
	651	Ac	6512025	0.011	0.80	0.39	-	100
	651	Ch	6512435	0.002	0.10	0.24	-	100
	651	Cm	6512445	0.040	2.90	0.26	-	100
	651	GYD	651326826	0.413	30.10	0.26	-	100
	651	GgA	651323320	0.160	11.60	0.25	-	100
	651	Gh	6513235	0.167	12.20	0.24	-	100
	651	HLC	651344224	0.038	2.80	0.14	-	100
	651	LcA	651422520	0.063	4.60	0.25	-	100
	651	PRB	651505422	0.159	11.60	0.28	-	100
	651	PeA	651502920	0.057	4.10	0.37	-	100
	651	PsB	651505722	0.001	0.10	0.26	-	100
70f	651	Ch	6512435	0.029	7.30	0.24	-	100
	651	GYD	651326826	0.006	1.50	0.26	-	100
	651	Gh	6513235	0.126	32.10	0.24	-	100
	651	GxA	651326720	0.011	2.90	0.23	-	100
	651	GxB	651326722	0.029	7.40	0.24	-	100
	651	HAB	651342022	0.009	2.20	0.07	-	100
	651	HLC	651344224	0.070	17.90	0.14	-	100
	651	Ld	6514227	0.100	25.50	0.25	-	100
	651	RbA	651542320	0.011	2.90	0.26	-	100
	651	Vb	6516223	0.001	0.30	0.39	-	100
70g	651	AL	6512042	0.007	0.40	0.40	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
70g	651	AbA	651202320	0.085	5.20	0.38	-	100
	651	Ac	6512025	0.333	20.40	0.39	-	100
	651	Cg	6512433	0.015	0.90	0.24	-	100
	651	Ch	6512435	0.042	2.60	0.24	-	100
	651	Cm	6512445	0.074	4.50	0.26	-	100
	651	Cp	6512451	0.016	1.00	0.40	-	100
	651	GWD	651326426	0.021	1.30	0.35	-	100
	651	GYD	651326826	0.349	21.40	0.26	-	100
	651	Gh	6513235	0.030	1.80	0.24	-	100
	651	GxA	651326720	0.022	1.40	0.23	-	100
	651	GxB	651326722	0.013	0.80	0.24	-	100
	651	HAB	651342022	0.057	3.50	0.07	-	100
	651	HAC	651342024	0.007	0.40	0.05	-	100
	651	HLC	651344224	0.006	0.40	0.14	-	100
	651	Lb	6514223	0.031	1.90	0.40	-	100
	651	LcA	651422520	0.029	1.80	0.25	-	100
	651	Ld	6514227	0.026	1.60	0.25	-	100
	651	PRB	651505422	0.175	10.70	0.28	-	100
	651	PT	6515058	0.005	0.30	0.40	-	100
	651	Pb	6515023	0.014	0.90	0.38	-	100
	651	PeA	651502920	0.132	8.10	0.37	-	100
	651	RaA	651542120	0.042	2.50	0.39	-	100
	651	RhB	651543522	0.080	4.90	0.23	-	100
	651	Va	6516221	0.008	0.50	0.39	-	100
	651	Vb	6516223	0.015	0.90	0.39	-	100
70h	651	AbA	651202320	0.045	15.50	0.38	-	100
	651	Ch	6512435	0.023	7.90	0.24	-	100
	651	Cp	6512451	0.007	2.50	0.40	-	100
	651	Gh	6513235	0.019	6.60	0.24	-	100
	651	GxA	651326720	0.015	5.00	0.23	-	100
	651	GxB	651326722	0.070	23.90	0.24	-	100
	651	HAB	651342022	0.015	5.10	0.07	-	100
	651	HAC	651342024	0.015	5.00	0.05	-	100
	651	HLC	651344224	0.009	3.00	0.14	-	100
	651	LcA	651422520	0.010	3.60	0.25	-	100
	651	Ld	6514227	0.018	6.00	0.25	-	100
	651	RbA	651542320	0.011	3.60	0.26	-	100
	651	RhB	651543522	0.028	9.50	0.23	-	100
	651	Vb	6516223	0.009	2.90	0.39	-	100
71a	651	CA2	65124202	0.009	3.50	0.38	-	100
	651	CO	6512448	0.016	6.00	0.29	20.00	100
	651	GgA	651323320	0.005	2.00	0.25	-	100
	651	PRB	651505422	0.024	9.00	0.28	-	100
	651	PT	6515058	0.208	79.60	0.40	-	100
71b	651	CO	6512448	0.018	6.10	0.29	20.00	100
	651	PT	6515058	0.268	92.60	0.40	-	100
	651	RS	6515456	0.004	1.30	0.40	65.00	100
72a	651	CA2	65124202	0.039	8.90	0.38	-	100
	651	CO	6512448	0.030	6.80	0.29	20.00	100
	651	GgA	651323320	0.061	13.70	0.25	-	100
	651	PRB	651505422	0.035	7.90	0.28	-	100
	651	PT	6515058	0.278	62.80	0.40	-	100
72b	651	CA2	65124202	0.033	3.10	0.38	-	100
	651	CO	6512448	0.076	7.30	0.29	20.00	100
	651	CV	6512462	0.009	0.90	0.39	-	100
	651	GM	6513244	0.010	0.90	0.29	-	100
	651	GYD	651326826	0.017	1.60	0.26	-	100
	651	GgA	651323320	0.036	3.40	0.25	-	100
	651	PRB	651505422	0.148	14.10	0.28	-	100
	651	PT	6515058	0.711	67.90	0.40	-	100
	651	RS	6515456	0.008	0.70	0.40	65.00	100
73a	651	CV	6512462	0.314	61.80	0.39	-	100
	651	GYD	651326826	0.057	11.20	0.26	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
73a	651	GgA	651323320	0.010	2.00	0.25	-	100
	651	LcA	651422520	0.003	0.50	0.25	-	100
	651	PRB	651505422	0.120	23.60	0.28	-	100
	651	PT	6515058	0.004	0.90	0.40	-	100
73b	651	CV	6512462	0.053	8.80	0.39	-	100
	651	LcA	651422520	0.355	58.60	0.25	-	100
	651	PRB	651505422	0.150	24.70	0.28	-	100
	651	PeA	651502920	0.048	7.90	0.37	-	100
	651	PsB	651505722	0.000	0.00	0.26	-	100
74a	651	AM	6512044	0.005	1.50	0.39	-	100
	651	Ac	6512025	0.050	16.10	0.39	-	100
	651	Ch	6512435	0.053	17.10	0.24	-	100
	651	Cm	6512445	0.003	0.80	0.26	-	100
	651	GWD	651326426	0.003	0.90	0.35	-	100
	651	GYD	651326826	0.041	13.40	0.26	-	100
	651	Gh	6513235	0.053	17.10	0.24	-	100
	651	HAB	651342022	0.016	5.20	0.07	-	100
	651	PRB	651505422	0.020	6.50	0.28	-	100
	651	PeA	651502920	0.001	0.20	0.37	-	100
	651	Vb	6516223	0.065	21.10	0.39	-	100
74b	651	Ac	6512025	0.233	34.90	0.39	-	100
	651	GWD	651326426	0.005	0.80	0.35	-	100
	651	GYD	651326826	0.276	41.40	0.26	-	100
	651	PRB	651505422	0.087	13.10	0.28	-	100
	651	RhB	651543522	0.014	2.10	0.23	-	100
	651	Vb	6516223	0.051	7.70	0.39	-	100
75a	651	GYD	651326826	0.041	8.90	0.26	-	100
	651	GgA	651323320	0.010	2.10	0.25	-	100
	651	Gh	6513235	0.100	21.70	0.24	-	100
	651	GxB	651326722	0.000	0.10	0.24	-	100
	651	HLC	651344224	0.028	6.20	0.14	-	100
	651	LcA	651422520	0.011	2.40	0.25	-	100
	651	Ld	6514227	0.011	2.30	0.25	-	100
	651	PRB	651505422	0.140	30.40	0.28	-	100
	651	PeA	651502920	0.003	0.60	0.37	-	100
	651	PsB	651505722	0.023	5.10	0.26	-	100
	651	RbA	651542320	0.093	20.20	0.26	-	100
77a	651	AbA	651202320	0.071	28.80	0.38	-	100
	651	Cp	6512451	0.079	32.40	0.40	-	100
	651	GxA	651326720	0.006	2.40	0.23	-	100
	651	GxB	651326722	0.043	17.60	0.24	-	100
	651	HAB	651342022	0.009	3.60	0.07	-	100
	651	LcA	651422520	0.011	4.40	0.25	-	100
	651	RaA	651542120	0.018	7.20	0.39	-	100
	651	RbA	651542320	0.000	0.00	0.26	-	100
	651	RhB	651543522	0.008	3.10	0.23	-	100
	651	RpE	651545128	0.001	0.20	0.29	-	100
	651	Va	6516221	0.000	0.10	0.39	-	100
77b	651	AbA	651202320	0.031	6.90	0.38	-	100
	651	Ch	6512435	0.175	39.50	0.24	-	100
	651	Cp	6512451	0.021	4.70	0.40	-	100
	651	GxB	651326722	0.034	7.70	0.24	-	100
	651	HAB	651342022	0.004	1.00	0.07	-	100
	651	HAC	651342024	0.008	1.70	0.05	-	100
	651	Ld	6514227	0.014	3.30	0.25	-	100
	651	PT	6515058	0.001	0.10	0.40	-	100
	651	Pb	6515023	0.064	14.50	0.38	-	100
	651	RbA	651542320	0.010	2.10	0.26	-	100
	651	RhB	651543522	0.060	13.50	0.23	-	100
	651	RpE	651545128	0.000	0.00	0.29	-	100
	651	Va	6516221	0.022	5.00	0.39	-	100
78a	651	AbA	651202320	0.013	8.80	0.38	-	100
	651	Ch	6512435	0.011	6.90	0.24	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
78a	651	Gh	6513235	0.048	31.80	0.24	-	100
	651	HAB	651342022	0.024	15.60	0.07	-	100
	651	HAC	651342024	0.005	3.20	0.05	-	100
	651	LcA	651422520	0.000	0.20	0.25	-	100
	651	Ld	6514227	0.012	8.10	0.25	-	100
	651	RhB	651543522	0.038	25.40	0.23	-	100
78b	651	Ch	6512435	0.088	18.30	0.24	-	100
	651	Et	6512859	0.075	15.70	0.25	-	100
	651	Gh	6513235	0.029	6.10	0.24	-	100
	651	GxB	651326722	0.050	10.30	0.24	-	100
	651	HAB	651342022	0.026	5.40	0.07	-	100
	651	HAC	651342024	0.004	0.90	0.05	-	100
	651	Ld	6514227	0.073	15.30	0.25	-	100
	651	PT	6515058	0.010	2.00	0.40	-	100
	651	Pb	6515023	0.092	19.10	0.38	-	100
	651	PeA	651502920	0.005	1.00	0.37	-	100
	651	RhB	651543522	0.028	5.80	0.23	-	100
79a	651	CA2	65124202	0.077	15.00	0.38	-	100
	651	GgA	651323320	0.000	0.10	0.25	-	100
	651	Gh	6513235	0.027	5.30	0.24	-	100
	651	PT	6515058	0.410	79.70	0.40	-	100
79b	651	CO	6512448	0.014	3.80	0.29	20.00	100
	651	PT	6515058	0.348	96.20	0.40	-	100
80a	651	AbA	651202320	0.040	11.70	0.38	-	100
	651	AfB	651203122	0.020	5.90	0.40	-	100
	651	GgA	651323320	0.004	1.10	0.25	-	100
	651	GxB	651326722	0.018	5.30	0.24	-	100
	651	Pb	6515023	0.030	9.00	0.38	-	100
	651	PeA	651502920	0.002	0.40	0.37	-	100
	651	RpE	651545128	0.224	66.50	0.29	-	100
80b	651	AbA	651202320	0.019	6.90	0.38	-	100
	651	GxB	651326722	0.104	37.30	0.24	-	100
	651	Pb	6515023	0.082	29.40	0.38	-	100
	651	PeA	651502920	0.000	0.10	0.37	-	100
	651	RpE	651545128	0.073	26.20	0.29	-	100
81a	651	AbA	651202320	0.016	19.80	0.38	-	100
	651	AfB	651203122	0.028	35.50	0.40	-	100
	651	GxB	651326722	0.003	4.10	0.24	-	100
	651	Ma	6514421	0.002	1.90	0.40	-	100
	651	RpE	651545128	0.030	38.60	0.29	-	100
81b	651	AbA	651202320	0.044	8.60	0.38	-	100
	651	GxB	651326722	0.070	13.70	0.24	-	100
	651	Lb	6514223	0.063	12.30	0.40	-	100
	651	PRB	651505422	0.073	14.20	0.28	-	100
	651	Pb	6515023	0.089	17.40	0.38	-	100
	651	RhB	651543522	0.016	3.10	0.23	-	100
	651	RpE	651545128	0.157	30.70	0.29	-	100
82a	651	AL	6512042	0.025	4.20	0.40	-	100
	651	GxB	651326722	0.007	1.20	0.24	-	100
	651	Lb	6514223	0.028	4.80	0.40	-	100
	651	Ma	6514421	0.063	10.80	0.40	-	100
	651	PRB	651505422	0.108	18.30	0.28	-	100
	651	RpE	651545128	0.357	60.70	0.29	-	100
82b	645	102	645102	0.103	39.00	0.40	-	100
	645	71	64571	0.099	37.50	0.36	-	100
	651	PRB	651505422	0.010	3.70	0.28	-	100
	651	RpE	651545128	0.053	19.90	0.29	-	100
83a	645	102	645102	0.098	40.20	0.40	-	100
	645	2	6452	0.017	6.90	0.41	-	100
	645	4	6454	0.011	4.50	0.58	-	100
	645	71	64571	0.065	26.90	0.36	-	100
	651	AGB	651203222	0.012	5.00	0.40	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
83a	651	AL	6512042	0.020	8.20	0.40	-	100
	651	AM	6512044	0.003	1.00	0.39	-	100
	651	HAB	651342022	0.018	7.20	0.07	-	100
83b	645	1	6451	0.001	0.10	0.41	-	100
	645	102	645102	0.076	17.50	0.40	-	100
	645	71	64571	0.356	82.40	0.36	-	100
83c	645	1	6451	0.033	12.00	0.41	-	100
	645	102	645102	0.046	16.50	0.40	-	100
	645	69	64569	0.049	17.70	0.63	-	100
	645	71	64571	0.149	53.80	0.36	-	100
83d	645	1	6451	0.077	33.40	0.41	-	100
	645	102	645102	0.025	10.70	0.40	-	100
	645	69	64569	0.129	55.90	0.63	-	100
83e	645	1	6451	0.135	16.10	0.41	-	100
	645	123	645123	0.006	0.70	0.37	-	100
	645	69	64569	0.696	83.20	0.63	-	100
83f	645	1	6451	0.001	0.60	0.41	-	100
	645	123	645123	0.010	7.90	0.37	-	100
	645	69	64569	0.121	91.50	0.63	-	100
83g	645	1	6451	0.067	10.90	0.41	-	100
	645	69	64569	0.551	89.00	0.63	-	100
	645	71	64571	0.001	0.10	0.36	-	100
83h	645	1	6451	0.001	0.50	0.41	-	100
	645	20	64520	0.103	35.60	0.19	-	100
	645	69	64569	0.183	63.50	0.63	-	100
	645	71	64571	0.001	0.40	0.36	-	100
83i	645	1	6451	0.044	10.90	0.41	-	100
	645	117	645117	0.013	3.30	0.23	-	100
	645	20	64520	0.022	5.40	0.19	-	100
	645	69	64569	0.325	80.50	0.63	-	100
83j	645	1	6451	0.033	20.30	0.41	-	100
	645	117	645117	0.007	4.40	0.23	-	100
	645	69	64569	0.123	75.30	0.63	-	100
83k	645	100	645100	0.129	41.00	0.40	20.00	100
	645	117	645117	0.000	0.00	0.23	-	100
	645	20	64520	0.041	12.90	0.19	-	100
	645	69	64569	0.046	14.50	0.63	-	100
	645	71	64571	0.099	31.60	0.36	-	100
83l	645	100	645100	0.113	20.40	0.40	20.00	100
	645	117	645117	0.210	37.90	0.23	-	100
	645	20	64520	0.199	35.90	0.19	-	100
	645	69	64569	0.000	0.00	0.63	-	100
	645	71	64571	0.032	5.80	0.36	-	100
84a	645	2	6452	0.011	5.00	0.41	-	100
	645	4	6454	0.000	0.00	0.58	-	100
	645	71	64571	0.092	41.40	0.36	-	100
	651	AGB	651203222	0.000	0.10	0.40	-	100
	651	AL	6512042	0.028	12.50	0.40	-	100
	651	RpE	651545128	0.091	40.90	0.29	-	100
84b	645	102	645102	0.097	27.90	0.40	-	100
	645	71	64571	0.250	72.10	0.36	-	100
85a	645	102	645102	0.068	21.70	0.40	-	100
	645	71	64571	0.246	78.30	0.36	-	100
85b	645	102	645102	0.090	38.00	0.40	-	100
	645	71	64571	0.147	62.00	0.36	-	100
86a	645	1	6451	0.079	16.40	0.41	-	100
	645	102	645102	0.004	0.70	0.40	-	100
	645	69	64569	0.396	82.60	0.63	-	100
	645	71	64571	0.001	0.30	0.36	-	100

Area ID	Book Number	Map Unit	Soil ID	Area (sq mi)	Area (%)	XKSAT	Rock Percent (%)	Effective Rock (%)
Major Basin ID: 01								
87a	645	102	645102	0.103	37.70	0.40	-	100
	645	69	64569	0.061	22.20	0.63	-	100
	645	71	64571	0.110	40.20	0.36	-	100
87b	645	102	645102	0.007	4.60	0.40	-	100
	645	123	645123	0.006	3.90	0.37	-	100
	645	69	64569	0.147	91.50	0.63	-	100
88a	645	1	6451	0.002	0.70	0.41	-	100
	645	117	645117	0.077	27.80	0.23	-	100
	645	20	64520	0.044	16.10	0.19	-	100
	645	69	64569	0.153	55.40	0.63	-	100
89a	645	1	6451	0.003	1.30	0.41	-	100
	645	69	64569	0.212	98.70	0.63	-	100
89b	645	100	645100	0.021	7.50	0.40	20.00	100
	645	20	64520	0.090	32.00	0.19	-	100
	645	69	64569	0.141	50.00	0.63	-	100
	645	71	64571	0.030	10.50	0.36	-	100
91a	645	1	6451	0.107	24.70	0.41	-	100
	645	125	645125	0.010	2.20	0.43	-	100
	645	20	64520	0.003	0.80	0.19	-	100
	645	71	64571	0.314	72.30	0.36	-	100
91b	645	102	645102	0.237	42.30	0.40	-	100
	645	123	645123	0.059	10.40	0.37	-	100
	645	20	64520	0.119	21.20	0.19	-	100
	645	69	64569	0.087	15.60	0.63	-	100
	645	71	64571	0.059	10.60	0.36	-	100
92a	645	1	6451	0.278	35.40	0.41	-	100
	645	102	645102	0.025	3.20	0.40	-	100
	645	123	645123	0.099	12.60	0.37	-	100
	645	125	645125	0.005	0.60	0.43	-	100
	645	20	64520	0.378	48.20	0.19	-	100
92b	645	1	6451	0.005	0.70	0.41	-	100
	645	102	645102	0.009	1.30	0.40	-	100
	645	11	64511	0.011	1.50	0.94	-	100
	645	123	645123	0.147	21.00	0.37	-	100
	645	2	6452	0.106	15.20	0.41	-	100
	645	20	64520	0.149	21.20	0.19	-	100
	645	56	64556	0.222	31.70	0.27	-	100
	645	71	64571	0.052	7.40	0.36	-	100

APPENDIX D2D

Land Use Data–without Dike and with Dike Conditions

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
10a	740	0.001	0.1	0.00	0	0.0	WET	0.02
	900	0.837	99.9	0.30	0	25.0	NORMAL	0.05
		0.838	**100.0**					
10b	900	0.855	100.0	0.30	0	25.0	NORMAL	0.05
		0.855	**100.0**					
12a	900	0.832	100.0	0.30	0	25.0	NORMAL	0.05
		0.832	**100.0**					
12b	900	0.451	100.0	0.30	0	25.0	NORMAL	0.05
		0.451	**100.0**					
14a	900	0.367	100.0	0.30	0	25.0	NORMAL	0.05
		0.367	**100.0**					
14b	900	0.259	100.0	0.30	0	25.0	NORMAL	0.05
		0.259	**100.0**					
14c	900	1.095	100.0	0.30	0	25.0	NORMAL	0.05
		1.095	**100.0**					
14d	150			0.25	15	30.0	NORMAL	0.04
	520	0.050	9.9	0.30	45	45.0	NORMAL	0.06
	900	0.456	90.1	0.30	0	25.0	NORMAL	0.05
		0.505	**100.0**					
14e	120	0.012	1.1	0.30	5	25.0	NORMAL	0.05
	520	0.013	1.2	0.30	45	45.0	NORMAL	0.06
	900	1.077	97.7	0.30	0	25.0	NORMAL	0.05
		1.101	**100.0**					
15a	120	0.035	6.8	0.30	5	25.0	NORMAL	0.05
	150	0.012	2.3	0.25	15	30.0	NORMAL	0.04
	530	0.004	0.7	0.20	80	45.0	NORMAL	0.04
	740	0.001	0.3	0.00	0	0.0	WET	0.02
	900	0.463	90.0	0.30	0	25.0	NORMAL	0.05
		0.514	**100.1**					
16a	120	0.063	28.9	0.30	5	25.0	NORMAL	0.05
	150	0.022	10.0	0.25	15	30.0	NORMAL	0.04
	530			0.20	80	45.0	NORMAL	0.04
	740	0.001	0.3	0.00	0	0.0	WET	0.02
	900	0.132	60.8	0.30	0	25.0	NORMAL	0.05
		0.218	**100.0**					
20a	120	0.003	0.7	0.30	5	25.0	NORMAL	0.05
	900	0.370	99.3	0.30	0	25.0	NORMAL	0.05
		0.373	**100.0**					
20b	120	0.034	3.0	0.30	5	25.0	NORMAL	0.05
	150	0.050	4.4	0.25	15	30.0	NORMAL	0.04
	520	0.000		0.30	45	45.0	NORMAL	0.06
	560	0.025	2.2	0.20	80	45.0	NORMAL	0.04
	900	0.000		0.30	0	25.0	NORMAL	0.05
	900	1.032	90.3	0.30	0	25.0	NORMAL	0.05
		1.142	**99.9**					
20c	120	0.023	1.6	0.30	5	25.0	NORMAL	0.05
	150	0.031	2.1	0.25	15	30.0	NORMAL	0.04
	900	0.009	0.6	0.30	0	25.0	NORMAL	0.05
	900	1.361	95.7	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		1.422	**100.0**					
20d	120	0.062	9.9	0.30	5	25.0	NORMAL	0.05
	150	0.006	1.0	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.3	0.30	0	25.0	NORMAL	0.05
	900	0.553	88.8	0.30	0	25.0	NORMAL	0.05
		0.623	**100.0**					
20e	120	0.008	0.5	0.30	5	25.0	NORMAL	0.05
	150	0.014	0.9	0.25	15	30.0	NORMAL	0.04
	560	0.041	2.6	0.20	80	45.0	NORMAL	0.04
	900	1.471	95.9	0.30	0	25.0	NORMAL	0.05
		1.534	**99.9**					
20f	120	0.053	3.9	0.30	5	25.0	NORMAL	0.05
	150	0.030	2.3	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.1	0.30	0	25.0	NORMAL	0.05
	900	1.261	93.7	0.30	0	25.0	NORMAL	0.05
		1.346	**100.0**					
20g	120	0.380	32.3	0.30	5	25.0	NORMAL	0.05
	140	0.001	0.1	0.25	5	25.0	NORMAL	0.05
	150	0.078	6.6	0.25	15	30.0	NORMAL	0.04
	900	0.029	2.5	0.30	0	25.0	NORMAL	0.05
	900	0.690	58.6	0.30	0	25.0	NORMAL	0.05
		1.178	**100.1**					
20h	120	0.201	16.1	0.30	5	25.0	NORMAL	0.05
	140	0.001	0.1	0.25	5	25.0	NORMAL	0.05
	150	0.117	9.3	0.25	15	30.0	NORMAL	0.04
	900	0.023	1.8	0.30	0	25.0	NORMAL	0.05
	900	0.909	72.7	0.30	0	25.0	NORMAL	0.05
		1.250	**100.0**					
20i	900	0.291	100.0	0.30	0	25.0	NORMAL	0.05
		0.291	**100.0**					
20j	900	0.203	100.0	0.30	0	25.0	NORMAL	0.05
		0.203	**100.0**					
20k	120	0.002	1.2	0.30	5	25.0	NORMAL	0.05
	150	0.015	8.2	0.25	15	30.0	NORMAL	0.04
	900	0.160	90.5	0.30	0	25.0	NORMAL	0.05
		0.176	**99.9**					
20l	900	0.130	100.0	0.30	0	25.0	NORMAL	0.05
		0.130	**100.0**					
21a	120	0.043	4.9	0.30	5	25.0	NORMAL	0.05
	150	0.038	4.3	0.25	15	30.0	NORMAL	0.04
	900	0.801	90.8	0.30	0	25.0	NORMAL	0.05
		0.882	**100.0**					
21b	120	0.070	12.7	0.30	5	25.0	NORMAL	0.05
	150	0.038	7.0	0.25	15	30.0	NORMAL	0.04
	900	0.440	80.3	0.30	0	25.0	NORMAL	0.05
		0.548	**100.0**					
21c	900	0.234	100.0	0.30	0	25.0	NORMAL	0.05
		0.234	**100.0**					
21d	900	0.494	100.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.494	**100.0**					
22a	120	0.001	0.1	0.30	5	25.0	NORMAL	0.05
	150	0.023	5.2	0.25	15	30.0	NORMAL	0.04
	900	0.059	13.1	0.30	0	25.0	NORMAL	0.05
	900	0.368	81.6	0.30	0	25.0	NORMAL	0.05
		0.451	**100.0**					
22b	900	0.164	100.0	0.30	0	25.0	NORMAL	0.05
		0.164	**100.0**					
22c	900	0.220	100.0	0.30	0	25.0	NORMAL	0.05
		0.220	**100.0**					
22d	120	0.014	5.7	0.30	5	25.0	NORMAL	0.05
	150	0.012	4.8	0.25	15	30.0	NORMAL	0.04
	900	0.218	89.5	0.30	0	25.0	NORMAL	0.05
		0.244	**100.0**					
23a	120	0.140	39.7	0.30	5	25.0	NORMAL	0.05
	140	0.002	0.5	0.25	5	25.0	NORMAL	0.05
	150	0.065	18.4	0.25	15	30.0	NORMAL	0.04
	560	0.000		0.20	80	45.0	NORMAL	0.04
	740	0.002	0.6	0.00	0	0.0	WET	0.02
	750	0.048	13.7	0.50	0	95.0	NORMAL	0.10
	900	0.003	0.8	0.30	0	25.0	NORMAL	0.05
	900	0.093	26.3	0.30	0	25.0	NORMAL	0.05
		0.354	**100.0**					
24a	120	0.093	22.7	0.30	5	25.0	NORMAL	0.05
	150	0.010	2.4	0.25	15	30.0	NORMAL	0.04
	900	0.306	74.9	0.30	0	25.0	NORMAL	0.05
		0.409	**100.0**					
24b	120	0.000	0.1	0.30	5	25.0	NORMAL	0.05
	900	0.335	99.9	0.30	0	25.0	NORMAL	0.05
		0.335	**100.0**					
30a	120	0.011	30.2	0.30	5	25.0	NORMAL	0.05
	220	0.007	20.2	0.20	75	45.0	NORMAL	0.04
	750	0.014	38.0	0.50	0	95.0	NORMAL	0.10
	900	0.004	11.6	0.30	0	25.0	NORMAL	0.05
		0.036	**100.0**					
30b	120	0.115	22.6	0.30	5	25.0	NORMAL	0.05
	150	0.061	11.9	0.25	15	30.0	NORMAL	0.04
	220	0.021	4.1	0.20	75	45.0	NORMAL	0.04
	900	0.312	61.4	0.30	0	25.0	NORMAL	0.05
		0.508	**100.0**					
30c	120	0.014	5.6	0.30	5	25.0	NORMAL	0.05
	900	0.229	94.4	0.30	0	25.0	NORMAL	0.05
		0.243	**100.0**					
30d	150	0.015	2.5	0.25	15	30.0	NORMAL	0.04
	900	0.599	97.5	0.30	0	25.0	NORMAL	0.05
		0.615	**100.0**					
30e	120	0.013	3.1	0.30	5	25.0	NORMAL	0.05
	150	0.026	6.4	0.25	15	30.0	NORMAL	0.04
	900	0.362	90.4	0.30	0	25.0	NORMAL	0.05
		0.400	**99.9**					

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
30f	120	0.028	1.6	0.30	5	25.0	NORMAL	0.05
	150	0.051	2.9	0.25	15	30.0	NORMAL	0.04
	560	0.019	1.1	0.20	80	45.0	NORMAL	0.04
	900	0.027	1.5	0.30	0	25.0	NORMAL	0.05
	900	1.646	92.9	0.30	0	25.0	NORMAL	0.05
		1.772	**100.0**					
30g	120	0.033	3.9	0.30	5	25.0	NORMAL	0.05
	150	0.081	9.6	0.25	15	30.0	NORMAL	0.04
	560	0.025	2.9	0.20	80	45.0	NORMAL	0.04
	900	0.004	0.4	0.30	0	25.0	NORMAL	0.05
	900	0.703	83.2	0.30	0	25.0	NORMAL	0.05
		0.844	**100.0**					
32a	120	0.014	5.0	0.30	5	25.0	NORMAL	0.05
	150	0.007	2.3	0.25	15	30.0	NORMAL	0.04
	220	0.001	0.2	0.20	75	45.0	NORMAL	0.04
	900	0.268	92.6	0.30	0	25.0	NORMAL	0.05
		0.289	**100.1**					
32b	150	0.002	0.5	0.25	15	30.0	NORMAL	0.04
	900	0.473	99.5	0.30	0	25.0	NORMAL	0.05
		0.476	**100.0**					
33a	120	0.000	0.1	0.30	5	25.0	NORMAL	0.05
	740	0.001	0.7	0.00	0	0.0	WET	0.02
	750	0.077	46.1	0.50	0	95.0	NORMAL	0.10
	900	0.089	53.2	0.30	0	25.0	NORMAL	0.05
		0.167	**100.1**					
34a	120	0.033	7.5	0.30	5	25.0	NORMAL	0.05
	150	0.026	5.9	0.25	15	30.0	NORMAL	0.04
	530	0.005	1.0	0.20	80	45.0	NORMAL	0.04
	560	0.016	3.7	0.20	80	45.0	NORMAL	0.04
	900	0.023	5.2	0.30	0	25.0	NORMAL	0.05
	900	0.343	76.7	0.30	0	25.0	NORMAL	0.05
		0.446	**100.0**					
34b	120	0.058	9.1	0.30	5	25.0	NORMAL	0.05
	150	0.040	6.3	0.25	15	30.0	NORMAL	0.04
	530	0.010	1.6	0.20	80	45.0	NORMAL	0.04
	900	0.003	0.5	0.30	0	25.0	NORMAL	0.05
	900	0.521	82.5	0.30	0	25.0	NORMAL	0.05
		0.631	**100.0**					
35a	740	0.002	2.6	0.00	0	0.0	WET	0.02
	750	0.025	43.3	0.50	0	95.0	NORMAL	0.10
	900	0.031	54.1	0.30	0	25.0	NORMAL	0.05
		0.057	**100.0**					
36a	120	0.121	17.9	0.30	5	25.0	NORMAL	0.05
	150	0.086	12.7	0.25	15	30.0	NORMAL	0.04
	900	0.006	0.9	0.30	0	25.0	NORMAL	0.05
	900	0.464	68.5	0.30	0	25.0	NORMAL	0.05
		0.677	**100.0**					
36b	120	0.123	11.6	0.30	5	25.0	NORMAL	0.05
	150	0.084	7.9	0.25	15	30.0	NORMAL	0.04
	900	0.851	80.4	0.30	0	25.0	NORMAL	0.05
		1.059	**99.9**					
36c	120	0.058	5.3	0.30	5	25.0	NORMAL	0.05
	150	0.013	1.2	0.25	15	30.0	NORMAL	0.04

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
36c	220	0.025	2.3	0.20	75	45.0	NORMAL	0.04
	900	0.990	91.2	0.30	0	25.0	NORMAL	0.05
		1.086	**100.0**					
40a	120	0.036	13.6	0.30	5	25.0	NORMAL	0.05
	150	0.021	7.9	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.8	0.30	0	25.0	NORMAL	0.05
	900	0.208	77.8	0.30	0	25.0	NORMAL	0.05
		0.268	**100.1**					
40b	120	0.083	19.9	0.30	5	25.0	NORMAL	0.05
	150	0.063	15.1	0.25	15	30.0	NORMAL	0.04
	560	0.002	0.6	0.20	80	45.0	NORMAL	0.04
	900	0.268	64.4	0.30	0	25.0	NORMAL	0.05
		0.416	**100.0**					
40c	110	0.019	3.9	0.30	5	25.0	NORMAL	0.05
	120	0.044	8.7	0.30	5	25.0	NORMAL	0.05
	150	0.018	3.6	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.3	0.30	0	25.0	NORMAL	0.05
	900	0.418	83.5	0.30	0	25.0	NORMAL	0.05
		0.501	**100.0**					
40d	120	0.006	0.9	0.30	5	25.0	NORMAL	0.05
	150	0.027	3.7	0.25	15	30.0	NORMAL	0.04
	900	0.696	95.5	0.30	0	25.0	NORMAL	0.05
		0.729	**100.1**					
42a	120	0.017	4.7	0.30	5	25.0	NORMAL	0.05
	150	0.055	15.1	0.25	15	30.0	NORMAL	0.04
	560	0.000	0.1	0.20	80	45.0	NORMAL	0.04
	900			0.30	0	25.0	NORMAL	0.05
	900	0.289	80.0	0.30	0	25.0	NORMAL	0.05
		0.361	**99.9**					
42b	120	0.005	1.7	0.30	5	25.0	NORMAL	0.05
	150	0.015	5.0	0.25	15	30.0	NORMAL	0.04
	560	0.001	0.2	0.20	80	45.0	NORMAL	0.04
	900	0.003	1.0	0.30	0	25.0	NORMAL	0.05
	900	0.285	92.2	0.30	0	25.0	NORMAL	0.05
		0.309	**100.1**					
44a	120	0.165	19.8	0.30	5	25.0	NORMAL	0.05
	150	0.100	12.0	0.25	15	30.0	NORMAL	0.04
	900	0.568	68.2	0.30	0	25.0	NORMAL	0.05
		0.833	**100.0**					
44b	120	0.025	8.8	0.30	5	25.0	NORMAL	0.05
	150	0.012	4.4	0.25	15	30.0	NORMAL	0.04
	900	0.242	86.8	0.30	0	25.0	NORMAL	0.05
		0.279	**100.0**					
44c	900	0.338	100.0	0.30	0	25.0	NORMAL	0.05
		0.338	**100.0**					
44d	900	0.821	100.0	0.30	0	25.0	NORMAL	0.05
		0.821	**100.0**					
44e	900	0.463	100.0	0.30	0	25.0	NORMAL	0.05
		0.463	**100.0**					
44f	900	0.267	100.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.267	**100.0**					
46a	120	0.019	2.3	0.30	5	25.0	NORMAL	0.05
	150	0.006	0.7	0.25	15	30.0	NORMAL	0.04
	900	0.783	97.0	0.30	0	25.0	NORMAL	0.05
		0.808	**100.0**					
46b	900	0.401	100.0	0.30	0	25.0	NORMAL	0.05
		0.401	**100.0**					
46c	900	0.226	100.0	0.30	0	25.0	NORMAL	0.05
		0.226	**100.0**					
46d	900	0.431	100.0	0.30	0	25.0	NORMAL	0.05
		0.431	**100.0**					
46e	900	0.220	100.0	0.30	0	25.0	NORMAL	0.05
		0.220	**100.0**					
46f	900	0.576	100.0	0.30	0	25.0	NORMAL	0.05
		0.576	**100.0**					
46g	900	0.451	100.0	0.30	0	25.0	NORMAL	0.05
		0.451	**100.0**					
46h	900	0.384	100.0	0.30	0	25.0	NORMAL	0.05
		0.384	**100.0**					
46i	740	0.012	4.4	0.00	0	0.0	WET	0.02
	900	0.258	95.6	0.30	0	25.0	NORMAL	0.05
		0.270	**100.0**					
46j	740	0.019	6.5	0.00	0	0.0	WET	0.02
	900	0.275	93.5	0.30	0	25.0	NORMAL	0.05
		0.294	**100.0**					
46k	740	0.011	2.4	0.00	0	0.0	WET	0.02
	900	0.431	97.6	0.30	0	25.0	NORMAL	0.05
		0.442	**100.0**					
48a	120	0.058	20.3	0.30	5	25.0	NORMAL	0.05
	150	0.001	0.2	0.25	15	30.0	NORMAL	0.04
	900	0.225	79.5	0.30	0	25.0	NORMAL	0.05
		0.283	**100.0**					
48b	120	0.008	3.7	0.30	5	25.0	NORMAL	0.05
	150	0.004	2.0	0.25	15	30.0	NORMAL	0.04
	900	0.192	94.3	0.30	0	25.0	NORMAL	0.05
		0.204	**100.0**					
50a	900	0.891	100.0	0.30	0	25.0	NORMAL	0.05
		0.891	**100.0**					
50b	900	0.205	100.0	0.30	0	25.0	NORMAL	0.05
		0.205	**100.0**					
50c	900	0.548	100.0	0.30	0	25.0	NORMAL	0.05
		0.548	**100.0**					
50d	900	0.178	100.0	0.30	0	25.0	NORMAL	0.05
		0.178	**100.0**					
50e	900	0.171	100.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.171	**100.0**					
50f	900	0.292	100.0	0.30	0	25.0	NORMAL	0.05
		0.292	**100.0**					
50g	900	0.146	100.0	0.30	0	25.0	NORMAL	0.05
		0.146	**100.0**					
52a	900	0.577	100.0	0.30	0	25.0	NORMAL	0.05
		0.577	**100.0**					
54a	900	0.360	100.0	0.30	0	25.0	NORMAL	0.05
		0.360	**100.0**					
54b	740	0.002	0.6	0.00	0	0.0	WET	0.02
	900	0.234	99.4	0.30	0	25.0	NORMAL	0.05
		0.236	**100.0**					
56a	900	0.298	100.0	0.30	0	25.0	NORMAL	0.05
		0.298	**100.0**					
60a	110	0.054	7.0	0.30	5	25.0	NORMAL	0.05
	120	0.071	9.2	0.30	5	25.0	NORMAL	0.05
	150	0.142	18.4	0.25	15	30.0	NORMAL	0.04
	900	0.003	0.3	0.30	0	25.0	NORMAL	0.05
	900	0.502	65.1	0.30	0	25.0	NORMAL	0.05
		0.771	**100.0**					
60b	110	0.010	0.9	0.30	5	25.0	NORMAL	0.05
	120	0.189	17.0	0.30	5	25.0	NORMAL	0.05
	150	0.201	18.0	0.25	15	30.0	NORMAL	0.04
	560	0.001	0.1	0.20	80	45.0	NORMAL	0.04
	900	0.031	2.8	0.30	0	25.0	NORMAL	0.05
	900	0.679	61.1	0.30	0	25.0	NORMAL	0.05
		1.111	**99.9**					
60c	120	0.004	0.4	0.30	5	25.0	NORMAL	0.05
	150	0.038	3.6	0.25	15	30.0	NORMAL	0.04
	900	0.004	0.4	0.30	0	25.0	NORMAL	0.05
	900	0.998	95.6	0.30	0	25.0	NORMAL	0.05
		1.044	**100.0**					
62a	900	0.586	100.0	0.30	0	25.0	NORMAL	0.05
		0.586	**100.0**					
62b	900	0.245	100.0	0.30	0	25.0	NORMAL	0.05
		0.245	**100.0**					
64a	900	0.377	100.0	0.30	0	25.0	NORMAL	0.05
		0.377	**100.0**					
64b	900	0.836	100.0	0.30	0	25.0	NORMAL	0.05
		0.836	**100.0**					
64c	900	0.637	100.0	0.30	0	25.0	NORMAL	0.05
		0.637	**100.0**					
64d	900	0.144	100.0	0.30	0	25.0	NORMAL	0.05
		0.144	**100.0**					
70a	120	0.013	13.0	0.30	5	25.0	NORMAL	0.05
	220	0.001	0.8	0.20	75	45.0	NORMAL	0.04
	750	0.019	18.1	0.50	0	95.0	NORMAL	0.10

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
70a	900	0.070	68.1	0.30	0	25.0	NORMAL	0.05
		0.103	**100.0**					
70b	120	0.014	4.2	0.30	5	25.0	NORMAL	0.05
	150	0.002	0.5	0.25	15	30.0	NORMAL	0.04
	900	0.317	95.3	0.30	0	25.0	NORMAL	0.05
		0.333	**100.0**					
70c	120	0.040	5.3	0.30	5	25.0	NORMAL	0.05
	150	0.037	5.0	0.25	15	30.0	NORMAL	0.04
	190	0.002	0.2	0.25	55	50.0	NORMAL	0.03
	220	0.000		0.20	75	45.0	NORMAL	0.04
	750	0.028	3.7	0.50	0	95.0	NORMAL	0.10
	900	0.635	85.6	0.30	0	25.0	NORMAL	0.05
		0.742	**99.8**					
70d	150	0.006	1.2	0.25	15	30.0	NORMAL	0.04
	900	0.481	98.8	0.30	0	25.0	NORMAL	0.05
		0.486	**100.0**					
70e	120	0.051	3.7	0.30	5	25.0	NORMAL	0.05
	150	0.004	0.3	0.25	15	30.0	NORMAL	0.04
	560	0.002	0.1	0.20	80	45.0	NORMAL	0.04
	900	1.316	95.9	0.30	0	25.0	NORMAL	0.05
		1.372	**100.0**					
70f	120	0.004	1.0	0.30	5	25.0	NORMAL	0.05
	150	0.017	4.4	0.25	15	30.0	NORMAL	0.04
	900	0.000	0.1	0.30	0	25.0	NORMAL	0.05
	900	0.371	94.5	0.30	0	25.0	NORMAL	0.05
		0.392	**100.0**					
70g	120	0.440	27.0	0.30	5	25.0	NORMAL	0.05
	150	0.210	12.8	0.25	15	30.0	NORMAL	0.04
	560	0.018	1.1	0.20	80	45.0	NORMAL	0.04
	900	0.006	0.3	0.30	0	25.0	NORMAL	0.05
	900	0.959	58.7	0.30	0	25.0	NORMAL	0.05
		1.633	**99.9**					
70h	120	0.046	15.6	0.30	5	25.0	NORMAL	0.05
	150	0.083	28.3	0.25	15	30.0	NORMAL	0.04
	900	0.010	3.4	0.30	0	25.0	NORMAL	0.05
	900	0.154	52.7	0.30	0	25.0	NORMAL	0.05
		0.293	**100.0**					
71a	900	0.262	100.0	0.30	0	25.0	NORMAL	0.05
		0.262	**100.0**					
71b	900	0.290	100.0	0.30	0	25.0	NORMAL	0.05
		0.290	**100.0**					
72a	750	0.025	5.7	0.50	0	95.0	NORMAL	0.10
	900	0.418	94.3	0.30	0	25.0	NORMAL	0.05
		0.443	**100.0**					
72b	900	1.047	100.0	0.30	0	25.0	NORMAL	0.05
		1.047	**100.0**					
73a	120			0.30	5	25.0	NORMAL	0.05
	150	0.004	0.8	0.25	15	30.0	NORMAL	0.04
	750	0.146	28.8	0.50	0	95.0	NORMAL	0.10
	900	0.358	70.4	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.508	**100.0**					
73b	900	0.606	100.0	0.30	0	25.0	NORMAL	0.05
		0.606	**100.0**					
74a	120	0.019	6.3	0.30	5	25.0	NORMAL	0.05
	900	0.289	93.7	0.30	0	25.0	NORMAL	0.05
		0.309	**100.0**					
74b	120	0.038	5.7	0.30	5	25.0	NORMAL	0.05
	150	0.028	4.1	0.25	15	30.0	NORMAL	0.04
	560			0.20	80	45.0	NORMAL	0.04
	900	0.600	90.2	0.30	0	25.0	NORMAL	0.05
		0.666	**100.0**					
75a	120	0.025	5.5	0.30	5	25.0	NORMAL	0.05
	150	0.043	9.3	0.25	15	30.0	NORMAL	0.04
	560	0.001	0.2	0.20	80	45.0	NORMAL	0.04
	900	0.003	0.6	0.30	0	25.0	NORMAL	0.05
	900	0.388	84.4	0.30	0	25.0	NORMAL	0.05
		0.460	**100.0**					
77a	110	0.002	0.9	0.30	5	25.0	NORMAL	0.05
	120	0.001	0.3	0.30	5	25.0	NORMAL	0.05
	150	0.047	19.3	0.25	15	30.0	NORMAL	0.04
	900	0.017	7.1	0.30	0	25.0	NORMAL	0.05
	900	0.177	72.3	0.30	0	25.0	NORMAL	0.05
		0.245	**99.9**					
77b	110			0.30	5	25.0	NORMAL	0.05
	120	0.018	4.0	0.30	5	25.0	NORMAL	0.05
	150	0.021	4.8	0.25	15	30.0	NORMAL	0.04
	900	0.403	91.2	0.30	0	25.0	NORMAL	0.05
		0.442	**100.0**					
78a	110	0.029	19.2	0.30	5	25.0	NORMAL	0.05
	120	0.033	21.6	0.30	5	25.0	NORMAL	0.05
	900	0.007	4.6	0.30	0	25.0	NORMAL	0.05
	900	0.083	54.6	0.30	0	25.0	NORMAL	0.05
		0.151	**100.0**					
78b	120	0.048	10.0	0.30	5	25.0	NORMAL	0.05
	150	0.037	7.7	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.4	0.30	0	25.0	NORMAL	0.05
	900	0.393	82.0	0.30	0	25.0	NORMAL	0.05
		0.479	**100.1**					
79a	120	0.029	5.7	0.30	5	25.0	NORMAL	0.05
	740	0.001	0.2	0.00	0	0.0	WET	0.02
	750	0.012	2.3	0.50	0	95.0	NORMAL	0.10
	900	0.473	91.8	0.30	0	25.0	NORMAL	0.05
		0.515	**100.0**					
79b	900	0.362	100.0	0.30	0	25.0	NORMAL	0.05
		0.362	**100.0**					
80a	120	0.063	18.6	0.30	5	25.0	NORMAL	0.05
	150	0.016	4.9	0.25	15	30.0	NORMAL	0.04
	900	0.258	76.5	0.30	0	25.0	NORMAL	0.05
		0.337	**100.0**					
80b	120	0.075	27.0	0.30	5	25.0	NORMAL	0.05
	900	0.203	73.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.278	**100.0**					
81a	120	0.006	7.3	0.30	5	25.0	NORMAL	0.05
	150	0.039	50.1	0.25	15	30.0	NORMAL	0.04
	900	0.033	42.7	0.30	0	25.0	NORMAL	0.05
		0.078	**100.1**					
81b	220	0.020	4.0	0.20	75	45.0	NORMAL	0.04
	900	0.492	96.0	0.30	0	25.0	NORMAL	0.05
		0.512	**100.0**					
82a	220	0.001	0.1	0.20	75	45.0	NORMAL	0.04
	900	0.587	99.9	0.30	0	25.0	NORMAL	0.05
		0.588	**100.0**					
82b	900	0.265	100.0	0.30	0	25.0	NORMAL	0.05
		0.265	**100.0**					
83a	900	0.243	100.0	0.30	0	25.0	NORMAL	0.05
		0.243	**100.0**					
83b	120	0.002	0.5	0.30	5	25.0	NORMAL	0.05
	900	0.430	99.5	0.30	0	25.0	NORMAL	0.05
		0.432	**100.0**					
83c	900	0.278	100.0	0.30	0	25.0	NORMAL	0.05
		0.278	**100.0**					
83d	900	0.230	100.0	0.30	0	25.0	NORMAL	0.05
		0.230	**100.0**					
83e	900	0.837	100.0	0.30	0	25.0	NORMAL	0.05
		0.837	**100.0**					
83f	900	0.132	100.0	0.30	0	25.0	NORMAL	0.05
		0.132	**100.0**					
83g	900	0.619	100.0	0.30	0	25.0	NORMAL	0.05
		0.619	**100.0**					
83h	900	0.289	100.0	0.30	0	25.0	NORMAL	0.05
		0.289	**100.0**					
83i	900	0.404	100.0	0.30	0	25.0	NORMAL	0.05
		0.404	**100.0**					
83j	900	0.163	100.0	0.30	0	25.0	NORMAL	0.05
		0.163	**100.0**					
83k	900	0.315	100.0	0.30	0	25.0	NORMAL	0.05
		0.315	**100.0**					
83l	900	0.555	100.0	0.30	0	25.0	NORMAL	0.05
		0.555	**100.0**					
84a	900	0.223	100.0	0.30	0	25.0	NORMAL	0.05
		0.223	**100.0**					
84b	900	0.347	100.0	0.30	0	25.0	NORMAL	0.05
		0.347	**100.0**					
85a	900	0.315	100.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.315	**100.0**					
85b	120	0.005	2.2	0.30	5	25.0	NORMAL	0.05
	900	0.231	97.8	0.30	0	25.0	NORMAL	0.05
		0.237	**100.0**					
86a	900	0.479	100.0	0.30	0	25.0	NORMAL	0.05
		0.479	**100.0**					
87a	900	0.273	100.0	0.30	0	25.0	NORMAL	0.05
		0.273	**100.0**					
87b	900	0.161	100.0	0.30	0	25.0	NORMAL	0.05
		0.161	**100.0**					
88a	900	0.276	100.0	0.30	0	25.0	NORMAL	0.05
		0.276	**100.0**					
89a	900	0.215	100.0	0.30	0	25.0	NORMAL	0.05
		0.215	**100.0**					
89b	900	0.283	100.0	0.30	0	25.0	NORMAL	0.05
		0.283	**100.0**					
91a	900	0.434	100.0	0.30	0	25.0	NORMAL	0.05
		0.434	**100.0**					
91b	900	0.561	100.0	0.30	0	25.0	NORMAL	0.05
		0.561	**100.0**					
92a	900	0.785	100.0	0.30	0	25.0	NORMAL	0.05
		0.785	**100.0**					
92b	900	0.700	100.0	0.30	0	25.0	NORMAL	0.05
		0.700	**100.0**					

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
10a	740	0.001	0.1	0.00	0	0.0	WET	0.02
	900	0.837	99.9	0.30	0	25.0	NORMAL	0.05
		0.838	**100.0**					
10b	900	0.855	100.0	0.30	0	25.0	NORMAL	0.05
		0.855	**100.0**					
12a	900	0.832	100.0	0.30	0	25.0	NORMAL	0.05
		0.832	**100.0**					
12b	900	0.451	100.0	0.30	0	25.0	NORMAL	0.05
		0.451	**100.0**					
14a	900	0.367	100.0	0.30	0	25.0	NORMAL	0.05
		0.367	**100.0**					
14b	900	0.259	100.0	0.30	0	25.0	NORMAL	0.05
		0.259	**100.0**					
14c	900	1.095	100.0	0.30	0	25.0	NORMAL	0.05
		1.095	**100.0**					
14d	150			0.25	15	30.0	NORMAL	0.04
	520	0.050	9.9	0.30	45	45.0	NORMAL	0.06
	900	0.456	90.1	0.30	0	25.0	NORMAL	0.05
		0.505	**100.0**					
14e	120	0.012	1.1	0.30	5	25.0	NORMAL	0.05
	520	0.013	1.2	0.30	45	45.0	NORMAL	0.06
	900	1.077	97.7	0.30	0	25.0	NORMAL	0.05
		1.101	**100.0**					
15a	120	0.035	6.8	0.30	5	25.0	NORMAL	0.05
	150	0.012	2.3	0.25	15	30.0	NORMAL	0.04
	530	0.004	0.7	0.20	80	45.0	NORMAL	0.04
	740	0.001	0.3	0.00	0	0.0	WET	0.02
	900	0.463	90.0	0.30	0	25.0	NORMAL	0.05
		0.514	**100.1**					
16a	120	0.063	28.9	0.30	5	25.0	NORMAL	0.05
	150	0.022	10.0	0.25	15	30.0	NORMAL	0.04
	530			0.20	80	45.0	NORMAL	0.04
	740	0.001	0.3	0.00	0	0.0	WET	0.02
	900	0.132	60.8	0.30	0	25.0	NORMAL	0.05
		0.218	**100.0**					
20a	120	0.003	1.1	0.30	5	25.0	NORMAL	0.05
	900	0.237	98.9	0.30	0	25.0	NORMAL	0.05
		0.240	**100.0**					
20b	120	0.034	2.7	0.30	5	25.0	NORMAL	0.05
	150	0.050	3.9	0.25	15	30.0	NORMAL	0.04
	520	0.000		0.30	45	45.0	NORMAL	0.06
	560	0.025	2.0	0.20	80	45.0	NORMAL	0.04
	900	0.000		0.30	0	25.0	NORMAL	0.05
	900	1.165	91.4	0.30	0	25.0	NORMAL	0.05
		1.275	**100.0**					
20c	120	0.023	1.6	0.30	5	25.0	NORMAL	0.05
	150	0.031	2.1	0.25	15	30.0	NORMAL	0.04
	900	0.009	0.6	0.30	0	25.0	NORMAL	0.05
	900	1.361	95.7	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		1.422	**100.0**					
20d	120	0.062	9.9	0.30	5	25.0	NORMAL	0.05
	150	0.006	1.0	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.3	0.30	0	25.0	NORMAL	0.05
	900	0.553	88.8	0.30	0	25.0	NORMAL	0.05
		0.623	**100.0**					
20e	120	0.008	0.5	0.30	5	25.0	NORMAL	0.05
	150	0.014	0.9	0.25	15	30.0	NORMAL	0.04
	560	0.041	2.6	0.20	80	45.0	NORMAL	0.04
	900	1.471	95.9	0.30	0	25.0	NORMAL	0.05
		1.534	**99.9**					
20f	120	0.053	3.9	0.30	5	25.0	NORMAL	0.05
	150	0.030	2.3	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.1	0.30	0	25.0	NORMAL	0.05
	900	1.261	93.7	0.30	0	25.0	NORMAL	0.05
		1.346	**100.0**					
20g	120	0.380	32.3	0.30	5	25.0	NORMAL	0.05
	140	0.001	0.1	0.25	5	25.0	NORMAL	0.05
	150	0.078	6.6	0.25	15	30.0	NORMAL	0.04
	900	0.029	2.5	0.30	0	25.0	NORMAL	0.05
	900	0.690	58.6	0.30	0	25.0	NORMAL	0.05
		1.178	**100.1**					
20h	120	0.201	16.1	0.30	5	25.0	NORMAL	0.05
	140	0.001	0.1	0.25	5	25.0	NORMAL	0.05
	150	0.117	9.3	0.25	15	30.0	NORMAL	0.04
	900	0.023	1.8	0.30	0	25.0	NORMAL	0.05
	900	0.909	72.7	0.30	0	25.0	NORMAL	0.05
		1.250	**100.0**					
20i	900	0.291	100.0	0.30	0	25.0	NORMAL	0.05
		0.291	**100.0**					
20j	900	0.203	100.0	0.30	0	25.0	NORMAL	0.05
		0.203	**100.0**					
20k	120	0.002	1.2	0.30	5	25.0	NORMAL	0.05
	150	0.015	8.2	0.25	15	30.0	NORMAL	0.04
	900	0.160	90.5	0.30	0	25.0	NORMAL	0.05
		0.176	**99.9**					
20l	900	0.130	100.0	0.30	0	25.0	NORMAL	0.05
		0.130	**100.0**					
21a	120	0.043	4.9	0.30	5	25.0	NORMAL	0.05
	150	0.038	4.3	0.25	15	30.0	NORMAL	0.04
	900	0.801	90.8	0.30	0	25.0	NORMAL	0.05
		0.882	**100.0**					
21b	120	0.070	12.7	0.30	5	25.0	NORMAL	0.05
	150	0.038	7.0	0.25	15	30.0	NORMAL	0.04
	900	0.440	80.3	0.30	0	25.0	NORMAL	0.05
		0.548	**100.0**					
21c	900	0.234	100.0	0.30	0	25.0	NORMAL	0.05
		0.234	**100.0**					
21d	900	0.494	100.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.494	**100.0**					
22a	120	0.001	0.1	0.30	5	25.0	NORMAL	0.05
	150	0.023	5.2	0.25	15	30.0	NORMAL	0.04
	900	0.059	13.1	0.30	0	25.0	NORMAL	0.05
	900	0.368	81.6	0.30	0	25.0	NORMAL	0.05
		0.451	**100.0**					
22b	900	0.164	100.0	0.30	0	25.0	NORMAL	0.05
		0.164	**100.0**					
22c	900	0.220	100.0	0.30	0	25.0	NORMAL	0.05
		0.220	**100.0**					
22d	120	0.014	5.7	0.30	5	25.0	NORMAL	0.05
	150	0.012	4.8	0.25	15	30.0	NORMAL	0.04
	900	0.218	89.5	0.30	0	25.0	NORMAL	0.05
		0.244	**100.0**					
23a	120	0.140	39.7	0.30	5	25.0	NORMAL	0.05
	140	0.002	0.5	0.25	5	25.0	NORMAL	0.05
	150	0.065	18.4	0.25	15	30.0	NORMAL	0.04
	560	0.000		0.20	80	45.0	NORMAL	0.04
	740	0.002	0.6	0.00	0	0.0	WET	0.02
	750	0.048	13.7	0.50	0	95.0	NORMAL	0.10
	900	0.003	0.8	0.30	0	25.0	NORMAL	0.05
	900	0.093	26.3	0.30	0	25.0	NORMAL	0.05
		0.354	**100.0**					
24a	120	0.093	22.7	0.30	5	25.0	NORMAL	0.05
	150	0.010	2.4	0.25	15	30.0	NORMAL	0.04
	900	0.306	74.9	0.30	0	25.0	NORMAL	0.05
		0.409	**100.0**					
24b	120	0.000	0.1	0.30	5	25.0	NORMAL	0.05
	900	0.335	99.9	0.30	0	25.0	NORMAL	0.05
		0.335	**100.0**					
30a	120	0.011	30.2	0.30	5	25.0	NORMAL	0.05
	220	0.007	20.2	0.20	75	45.0	NORMAL	0.04
	750	0.014	38.0	0.50	0	95.0	NORMAL	0.10
	900	0.004	11.6	0.30	0	25.0	NORMAL	0.05
		0.036	**100.0**					
30b	120	0.115	22.6	0.30	5	25.0	NORMAL	0.05
	150	0.061	11.9	0.25	15	30.0	NORMAL	0.04
	220	0.021	4.1	0.20	75	45.0	NORMAL	0.04
	900	0.312	61.4	0.30	0	25.0	NORMAL	0.05
		0.508	**100.0**					
30c	120	0.014	5.6	0.30	5	25.0	NORMAL	0.05
	900	0.229	94.4	0.30	0	25.0	NORMAL	0.05
		0.243	**100.0**					
30d	150	0.015	2.5	0.25	15	30.0	NORMAL	0.04
	900	0.599	97.5	0.30	0	25.0	NORMAL	0.05
		0.615	**100.0**					
30e	120	0.013	3.1	0.30	5	25.0	NORMAL	0.05
	150	0.026	6.4	0.25	15	30.0	NORMAL	0.04
	900	0.362	90.4	0.30	0	25.0	NORMAL	0.05
		0.400	**99.9**					

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
30f	120	0.028	1.6	0.30	5	25.0	NORMAL	0.05
	150	0.051	2.9	0.25	15	30.0	NORMAL	0.04
	560	0.019	1.1	0.20	80	45.0	NORMAL	0.04
	900	0.027	1.5	0.30	0	25.0	NORMAL	0.05
	900	1.646	92.9	0.30	0	25.0	NORMAL	0.05
		1.772	**100.0**					
30g	120	0.033	3.9	0.30	5	25.0	NORMAL	0.05
	150	0.081	9.6	0.25	15	30.0	NORMAL	0.04
	560	0.025	2.9	0.20	80	45.0	NORMAL	0.04
	900	0.004	0.4	0.30	0	25.0	NORMAL	0.05
	900	0.703	83.2	0.30	0	25.0	NORMAL	0.05
		0.844	**100.0**					
32a	120	0.014	5.0	0.30	5	25.0	NORMAL	0.05
	150	0.007	2.3	0.25	15	30.0	NORMAL	0.04
	220	0.001	0.2	0.20	75	45.0	NORMAL	0.04
	900	0.268	92.6	0.30	0	25.0	NORMAL	0.05
		0.289	**100.1**					
32b	150	0.002	0.5	0.25	15	30.0	NORMAL	0.04
	900	0.473	99.5	0.30	0	25.0	NORMAL	0.05
		0.476	**100.0**					
33a	120	0.000	0.1	0.30	5	25.0	NORMAL	0.05
	740	0.001	0.7	0.00	0	0.0	WET	0.02
	750	0.077	46.1	0.50	0	95.0	NORMAL	0.10
	900	0.089	53.2	0.30	0	25.0	NORMAL	0.05
		0.167	**100.1**					
34a	120	0.033	7.5	0.30	5	25.0	NORMAL	0.05
	150	0.026	5.9	0.25	15	30.0	NORMAL	0.04
	530	0.005	1.0	0.20	80	45.0	NORMAL	0.04
	560	0.016	3.7	0.20	80	45.0	NORMAL	0.04
	900	0.023	5.2	0.30	0	25.0	NORMAL	0.05
	900	0.343	76.7	0.30	0	25.0	NORMAL	0.05
		0.446	**100.0**					
34b	120	0.058	9.1	0.30	5	25.0	NORMAL	0.05
	150	0.040	6.3	0.25	15	30.0	NORMAL	0.04
	530	0.010	1.6	0.20	80	45.0	NORMAL	0.04
	900	0.003	0.5	0.30	0	25.0	NORMAL	0.05
	900	0.521	82.5	0.30	0	25.0	NORMAL	0.05
		0.631	**100.0**					
35a	740	0.002	2.6	0.00	0	0.0	WET	0.02
	750	0.025	43.3	0.50	0	95.0	NORMAL	0.10
	900	0.031	54.1	0.30	0	25.0	NORMAL	0.05
		0.057	**100.0**					
36a	120	0.121	17.9	0.30	5	25.0	NORMAL	0.05
	150	0.086	12.7	0.25	15	30.0	NORMAL	0.04
	900	0.006	0.9	0.30	0	25.0	NORMAL	0.05
	900	0.464	68.5	0.30	0	25.0	NORMAL	0.05
		0.677	**100.0**					
36b	120	0.123	11.6	0.30	5	25.0	NORMAL	0.05
	150	0.084	7.9	0.25	15	30.0	NORMAL	0.04
	900	0.851	80.4	0.30	0	25.0	NORMAL	0.05
		1.059	**99.9**					
36c	120	0.058	5.3	0.30	5	25.0	NORMAL	0.05
	150	0.013	1.2	0.25	15	30.0	NORMAL	0.04

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
36c	220	0.025	2.3	0.20	75	45.0	NORMAL	0.04
	900	0.990	91.2	0.30	0	25.0	NORMAL	0.05
		1.086	**100.0**					
40a	120	0.036	13.6	0.30	5	25.0	NORMAL	0.05
	150	0.021	7.9	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.8	0.30	0	25.0	NORMAL	0.05
	900	0.208	77.8	0.30	0	25.0	NORMAL	0.05
		0.268	**100.1**					
40b	120	0.083	19.9	0.30	5	25.0	NORMAL	0.05
	150	0.063	15.1	0.25	15	30.0	NORMAL	0.04
	560	0.002	0.6	0.20	80	45.0	NORMAL	0.04
	900	0.268	64.4	0.30	0	25.0	NORMAL	0.05
		0.416	**100.0**					
40c	110	0.019	3.9	0.30	5	25.0	NORMAL	0.05
	120	0.044	8.7	0.30	5	25.0	NORMAL	0.05
	150	0.018	3.6	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.3	0.30	0	25.0	NORMAL	0.05
	900	0.418	83.5	0.30	0	25.0	NORMAL	0.05
		0.501	**100.0**					
40d	120	0.006	0.9	0.30	5	25.0	NORMAL	0.05
	150	0.027	3.7	0.25	15	30.0	NORMAL	0.04
	900	0.696	95.5	0.30	0	25.0	NORMAL	0.05
		0.729	**100.1**					
42a	120	0.017	4.7	0.30	5	25.0	NORMAL	0.05
	150	0.055	15.1	0.25	15	30.0	NORMAL	0.04
	560	0.000	0.1	0.20	80	45.0	NORMAL	0.04
	900			0.30	0	25.0	NORMAL	0.05
	900	0.289	80.0	0.30	0	25.0	NORMAL	0.05
		0.361	**99.9**					
42b	120	0.005	1.7	0.30	5	25.0	NORMAL	0.05
	150	0.015	5.0	0.25	15	30.0	NORMAL	0.04
	560	0.001	0.2	0.20	80	45.0	NORMAL	0.04
	900	0.003	1.0	0.30	0	25.0	NORMAL	0.05
	900	0.285	92.2	0.30	0	25.0	NORMAL	0.05
		0.309	**100.1**					
44a	120	0.165	19.8	0.30	5	25.0	NORMAL	0.05
	150	0.100	12.0	0.25	15	30.0	NORMAL	0.04
	900	0.568	68.2	0.30	0	25.0	NORMAL	0.05
		0.833	**100.0**					
44b	120	0.025	8.8	0.30	5	25.0	NORMAL	0.05
	150	0.012	4.4	0.25	15	30.0	NORMAL	0.04
	900	0.242	86.8	0.30	0	25.0	NORMAL	0.05
		0.279	**100.0**					
44c	900	0.338	100.0	0.30	0	25.0	NORMAL	0.05
		0.338	**100.0**					
44d	900	0.821	100.0	0.30	0	25.0	NORMAL	0.05
		0.821	**100.0**					
44e	900	0.463	100.0	0.30	0	25.0	NORMAL	0.05
		0.463	**100.0**					
44f	900	0.267	100.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.267	**100.0**					
46a	120	0.019	2.3	0.30	5	25.0	NORMAL	0.05
	150	0.006	0.7	0.25	15	30.0	NORMAL	0.04
	900	0.783	97.0	0.30	0	25.0	NORMAL	0.05
		0.808	**100.0**					
46b	900	0.401	100.0	0.30	0	25.0	NORMAL	0.05
		0.401	**100.0**					
46c	900	0.226	100.0	0.30	0	25.0	NORMAL	0.05
		0.226	**100.0**					
46d	900	0.431	100.0	0.30	0	25.0	NORMAL	0.05
		0.431	**100.0**					
46e	900	0.220	100.0	0.30	0	25.0	NORMAL	0.05
		0.220	**100.0**					
46f	900	0.576	100.0	0.30	0	25.0	NORMAL	0.05
		0.576	**100.0**					
46g	900	0.451	100.0	0.30	0	25.0	NORMAL	0.05
		0.451	**100.0**					
46h	900	0.384	100.0	0.30	0	25.0	NORMAL	0.05
		0.384	**100.0**					
46i	740	0.012	4.4	0.00	0	0.0	WET	0.02
	900	0.258	95.6	0.30	0	25.0	NORMAL	0.05
		0.270	**100.0**					
46j	740	0.019	6.5	0.00	0	0.0	WET	0.02
	900	0.275	93.5	0.30	0	25.0	NORMAL	0.05
		0.294	**100.0**					
46k	740	0.011	2.4	0.00	0	0.0	WET	0.02
	900	0.431	97.6	0.30	0	25.0	NORMAL	0.05
		0.442	**100.0**					
48a	120	0.058	20.3	0.30	5	25.0	NORMAL	0.05
	150	0.001	0.2	0.25	15	30.0	NORMAL	0.04
	900	0.225	79.5	0.30	0	25.0	NORMAL	0.05
		0.283	**100.0**					
48b	120	0.008	3.7	0.30	5	25.0	NORMAL	0.05
	150	0.004	2.0	0.25	15	30.0	NORMAL	0.04
	900	0.192	94.3	0.30	0	25.0	NORMAL	0.05
		0.204	**100.0**					
50a	900	0.891	100.0	0.30	0	25.0	NORMAL	0.05
		0.891	**100.0**					
50b	900	0.205	100.0	0.30	0	25.0	NORMAL	0.05
		0.205	**100.0**					
50c	900	0.548	100.0	0.30	0	25.0	NORMAL	0.05
		0.548	**100.0**					
50d	900	0.178	100.0	0.30	0	25.0	NORMAL	0.05
		0.178	**100.0**					
50e	900	0.171	100.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.171	**100.0**					
50f	900	0.292	100.0	0.30	0	25.0	NORMAL	0.05
		0.292	**100.0**					
50g	900	0.146	100.0	0.30	0	25.0	NORMAL	0.05
		0.146	**100.0**					
52a	900	0.577	100.0	0.30	0	25.0	NORMAL	0.05
		0.577	**100.0**					
54a	900	0.360	100.0	0.30	0	25.0	NORMAL	0.05
		0.360	**100.0**					
54b	740	0.002	0.6	0.00	0	0.0	WET	0.02
	900	0.234	99.4	0.30	0	25.0	NORMAL	0.05
		0.236	**100.0**					
56a	900	0.298	100.0	0.30	0	25.0	NORMAL	0.05
		0.298	**100.0**					
60a	110	0.054	7.0	0.30	5	25.0	NORMAL	0.05
	120	0.071	9.2	0.30	5	25.0	NORMAL	0.05
	150	0.142	18.4	0.25	15	30.0	NORMAL	0.04
	900	0.003	0.3	0.30	0	25.0	NORMAL	0.05
	900	0.502	65.1	0.30	0	25.0	NORMAL	0.05
		0.771	**100.0**					
60b	110	0.010	0.9	0.30	5	25.0	NORMAL	0.05
	120	0.189	17.0	0.30	5	25.0	NORMAL	0.05
	150	0.201	18.0	0.25	15	30.0	NORMAL	0.04
	560	0.001	0.1	0.20	80	45.0	NORMAL	0.04
	900	0.031	2.8	0.30	0	25.0	NORMAL	0.05
	900	0.679	61.1	0.30	0	25.0	NORMAL	0.05
		1.111	**99.9**					
60c	120	0.004	0.4	0.30	5	25.0	NORMAL	0.05
	150	0.038	3.6	0.25	15	30.0	NORMAL	0.04
	900	0.004	0.4	0.30	0	25.0	NORMAL	0.05
	900	0.998	95.6	0.30	0	25.0	NORMAL	0.05
		1.044	**100.0**					
62a	900	0.586	100.0	0.30	0	25.0	NORMAL	0.05
		0.586	**100.0**					
62b	900	0.245	100.0	0.30	0	25.0	NORMAL	0.05
		0.245	**100.0**					
64a	900	0.377	100.0	0.30	0	25.0	NORMAL	0.05
		0.377	**100.0**					
64b	900	0.836	100.0	0.30	0	25.0	NORMAL	0.05
		0.836	**100.0**					
64c	900	0.637	100.0	0.30	0	25.0	NORMAL	0.05
		0.637	**100.0**					
64d	900	0.144	100.0	0.30	0	25.0	NORMAL	0.05
		0.144	**100.0**					
70a	120	0.013	13.0	0.30	5	25.0	NORMAL	0.05
	220	0.001	0.8	0.20	75	45.0	NORMAL	0.04
	750	0.019	18.1	0.50	0	95.0	NORMAL	0.10

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
70a	900	0.070	68.1	0.30	0	25.0	NORMAL	0.05
		0.103	**100.0**					
70b	120	0.014	4.2	0.30	5	25.0	NORMAL	0.05
	150	0.002	0.5	0.25	15	30.0	NORMAL	0.04
	900	0.317	95.3	0.30	0	25.0	NORMAL	0.05
		0.333	**100.0**					
70c	120	0.040	5.3	0.30	5	25.0	NORMAL	0.05
	150	0.037	5.0	0.25	15	30.0	NORMAL	0.04
	190	0.002	0.2	0.25	55	50.0	NORMAL	0.03
	220	0.000		0.20	75	45.0	NORMAL	0.04
	750	0.028	3.7	0.50	0	95.0	NORMAL	0.10
	900	0.635	85.6	0.30	0	25.0	NORMAL	0.05
		0.742	**99.8**					
70d	150	0.006	1.2	0.25	15	30.0	NORMAL	0.04
	900	0.481	98.8	0.30	0	25.0	NORMAL	0.05
		0.486	**100.0**					
70e	120	0.051	3.7	0.30	5	25.0	NORMAL	0.05
	150	0.004	0.3	0.25	15	30.0	NORMAL	0.04
	560	0.002	0.1	0.20	80	45.0	NORMAL	0.04
	900	1.316	95.9	0.30	0	25.0	NORMAL	0.05
		1.372	**100.0**					
70f	120	0.004	1.0	0.30	5	25.0	NORMAL	0.05
	150	0.017	4.4	0.25	15	30.0	NORMAL	0.04
	900	0.000	0.1	0.30	0	25.0	NORMAL	0.05
	900	0.371	94.5	0.30	0	25.0	NORMAL	0.05
		0.392	**100.0**					
70g	120	0.440	27.0	0.30	5	25.0	NORMAL	0.05
	150	0.210	12.8	0.25	15	30.0	NORMAL	0.04
	560	0.018	1.1	0.20	80	45.0	NORMAL	0.04
	900	0.006	0.3	0.30	0	25.0	NORMAL	0.05
	900	0.959	58.7	0.30	0	25.0	NORMAL	0.05
		1.633	**99.9**					
70h	120	0.046	15.6	0.30	5	25.0	NORMAL	0.05
	150	0.083	28.3	0.25	15	30.0	NORMAL	0.04
	900	0.010	3.4	0.30	0	25.0	NORMAL	0.05
	900	0.154	52.7	0.30	0	25.0	NORMAL	0.05
		0.293	**100.0**					
71a	900	0.262	100.0	0.30	0	25.0	NORMAL	0.05
		0.262	**100.0**					
71b	900	0.290	100.0	0.30	0	25.0	NORMAL	0.05
		0.290	**100.0**					
72a	750	0.025	5.7	0.50	0	95.0	NORMAL	0.10
	900	0.418	94.3	0.30	0	25.0	NORMAL	0.05
		0.443	**100.0**					
72b	900	1.047	100.0	0.30	0	25.0	NORMAL	0.05
		1.047	**100.0**					
73a	120			0.30	5	25.0	NORMAL	0.05
	150	0.004	0.8	0.25	15	30.0	NORMAL	0.04
	750	0.146	28.8	0.50	0	95.0	NORMAL	0.10
	900	0.358	70.4	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.508	**100.0**					
73b	900	0.606	100.0	0.30	0	25.0	NORMAL	0.05
		0.606	**100.0**					
74a	120	0.019	6.3	0.30	5	25.0	NORMAL	0.05
	900	0.289	93.7	0.30	0	25.0	NORMAL	0.05
		0.309	**100.0**					
74b	120	0.038	5.7	0.30	5	25.0	NORMAL	0.05
	150	0.028	4.1	0.25	15	30.0	NORMAL	0.04
	560			0.20	80	45.0	NORMAL	0.04
	900	0.600	90.2	0.30	0	25.0	NORMAL	0.05
		0.666	**100.0**					
75a	120	0.025	5.5	0.30	5	25.0	NORMAL	0.05
	150	0.043	9.3	0.25	15	30.0	NORMAL	0.04
	560	0.001	0.2	0.20	80	45.0	NORMAL	0.04
	900	0.003	0.6	0.30	0	25.0	NORMAL	0.05
	900	0.388	84.4	0.30	0	25.0	NORMAL	0.05
		0.460	**100.0**					
77a	110	0.002	0.9	0.30	5	25.0	NORMAL	0.05
	120	0.001	0.3	0.30	5	25.0	NORMAL	0.05
	150	0.047	19.3	0.25	15	30.0	NORMAL	0.04
	900	0.017	7.1	0.30	0	25.0	NORMAL	0.05
	900	0.177	72.3	0.30	0	25.0	NORMAL	0.05
		0.245	**99.9**					
77b	110			0.30	5	25.0	NORMAL	0.05
	120	0.018	4.0	0.30	5	25.0	NORMAL	0.05
	150	0.021	4.8	0.25	15	30.0	NORMAL	0.04
	900	0.403	91.2	0.30	0	25.0	NORMAL	0.05
		0.442	**100.0**					
78a	110	0.029	19.2	0.30	5	25.0	NORMAL	0.05
	120	0.033	21.6	0.30	5	25.0	NORMAL	0.05
	900	0.007	4.6	0.30	0	25.0	NORMAL	0.05
	900	0.083	54.6	0.30	0	25.0	NORMAL	0.05
		0.151	**100.0**					
78b	120	0.048	10.0	0.30	5	25.0	NORMAL	0.05
	150	0.037	7.7	0.25	15	30.0	NORMAL	0.04
	900	0.002	0.4	0.30	0	25.0	NORMAL	0.05
	900	0.393	82.0	0.30	0	25.0	NORMAL	0.05
		0.479	**100.1**					
79a	120	0.029	5.7	0.30	5	25.0	NORMAL	0.05
	740	0.001	0.2	0.00	0	0.0	WET	0.02
	750	0.012	2.3	0.50	0	95.0	NORMAL	0.10
	900	0.473	91.8	0.30	0	25.0	NORMAL	0.05
		0.515	**100.0**					
79b	900	0.362	100.0	0.30	0	25.0	NORMAL	0.05
		0.362	**100.0**					
80a	120	0.063	18.6	0.30	5	25.0	NORMAL	0.05
	150	0.016	4.9	0.25	15	30.0	NORMAL	0.04
	900	0.258	76.5	0.30	0	25.0	NORMAL	0.05
		0.337	**100.0**					
80b	120	0.075	27.0	0.30	5	25.0	NORMAL	0.05
	900	0.203	73.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.278	**100.0**					
81a	120	0.006	7.3	0.30	5	25.0	NORMAL	0.05
	150	0.039	50.1	0.25	15	30.0	NORMAL	0.04
	900	0.033	42.7	0.30	0	25.0	NORMAL	0.05
		0.078	**100.1**					
81b	220	0.020	4.0	0.20	75	45.0	NORMAL	0.04
	900	0.492	96.0	0.30	0	25.0	NORMAL	0.05
		0.512	**100.0**					
82a	220	0.001	0.1	0.20	75	45.0	NORMAL	0.04
	900	0.587	99.9	0.30	0	25.0	NORMAL	0.05
		0.588	**100.0**					
82b	900	0.265	100.0	0.30	0	25.0	NORMAL	0.05
		0.265	**100.0**					
83a	900	0.243	100.0	0.30	0	25.0	NORMAL	0.05
		0.243	**100.0**					
83b	120	0.002	0.5	0.30	5	25.0	NORMAL	0.05
	900	0.430	99.5	0.30	0	25.0	NORMAL	0.05
		0.432	**100.0**					
83c	900	0.278	100.0	0.30	0	25.0	NORMAL	0.05
		0.278	**100.0**					
83d	900	0.230	100.0	0.30	0	25.0	NORMAL	0.05
		0.230	**100.0**					
83e	900	0.837	100.0	0.30	0	25.0	NORMAL	0.05
		0.837	**100.0**					
83f	900	0.132	100.0	0.30	0	25.0	NORMAL	0.05
		0.132	**100.0**					
83g	900	0.619	100.0	0.30	0	25.0	NORMAL	0.05
		0.619	**100.0**					
83h	900	0.289	100.0	0.30	0	25.0	NORMAL	0.05
		0.289	**100.0**					
83i	900	0.404	100.0	0.30	0	25.0	NORMAL	0.05
		0.404	**100.0**					
83j	900	0.163	100.0	0.30	0	25.0	NORMAL	0.05
		0.163	**100.0**					
83k	900	0.315	100.0	0.30	0	25.0	NORMAL	0.05
		0.315	**100.0**					
83l	900	0.555	100.0	0.30	0	25.0	NORMAL	0.05
		0.555	**100.0**					
84a	900	0.223	100.0	0.30	0	25.0	NORMAL	0.05
		0.223	**100.0**					
84b	900	0.347	100.0	0.30	0	25.0	NORMAL	0.05
		0.347	**100.0**					
85a	900	0.315	100.0	0.30	0	25.0	NORMAL	0.05

Sub Basin	Land Use Code	Area (sq mi)	Area (%)	Initial Loss (IA)	Percent Impervious (RTIMP)	Vegetable Cover (%)	DTHETA	Kn
Major Basin ID: 01								
		0.315	**100.0**					
85b	120	0.005	2.2	0.30	5	25.0	NORMAL	0.05
	900	0.231	97.8	0.30	0	25.0	NORMAL	0.05
		0.237	**100.0**					
86a	900	0.479	100.0	0.30	0	25.0	NORMAL	0.05
		0.479	**100.0**					
87a	900	0.273	100.0	0.30	0	25.0	NORMAL	0.05
		0.273	**100.0**					
87b	900	0.161	100.0	0.30	0	25.0	NORMAL	0.05
		0.161	**100.0**					
88a	900	0.276	100.0	0.30	0	25.0	NORMAL	0.05
		0.276	**100.0**					
89a	900	0.215	100.0	0.30	0	25.0	NORMAL	0.05
		0.215	**100.0**					
89b	900	0.283	100.0	0.30	0	25.0	NORMAL	0.05
		0.283	**100.0**					
91a	900	0.434	100.0	0.30	0	25.0	NORMAL	0.05
		0.434	**100.0**					
91b	900	0.561	100.0	0.30	0	25.0	NORMAL	0.05
		0.561	**100.0**					
92a	900	0.785	100.0	0.30	0	25.0	NORMAL	0.05
		0.785	**100.0**					
92b	900	0.700	100.0	0.30	0	25.0	NORMAL	0.05
		0.700	**100.0**					

APPENDIX D3

Hydrograph Routing Data – without Dike Conditions

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
NORMAL DEPTH															
Major Basin 01															
R-JACK	0.060	0.050	0.060	6,600.00	0.0067	-	X:	-	63.50	254.00	317.50	362.50	426.00	616.50	680.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R10b	0.065	0.085	0.065	4,228.00	0.0043	-	X:	-	62.50	250.00	312.50	427.50	490.00	677.50	740.00
							Y:	5.00	3.50	2.00	-	-	2.00	3.50	5.00
R12b	0.050	0.040	0.050	6,106.00	0.0059	-	X:	-	115.00	460.00	575.00	601.00	716.00	1,061.00	1,176.00
							Y:	5.00	3.50	2.00	-	-	2.00	3.50	5.00
R14b	0.050	0.040	0.050	6,585.00	0.0055	-	X:	-	67.60	270.40	338.00	378.00	445.60	648.40	716.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R14c	0.050	0.040	0.050	2,902.00	0.0055	-	X:	-	125.00	500.00	625.00	645.00	770.00	1,145.00	1,270.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R14d	0.050	0.040	0.050	3,603.00	0.0056	-	X:	-	103.00	412.00	515.00	690.00	793.00	1,102.00	1,205.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R14e	0.050	0.040	0.050	2,626.00	0.0053	-	X:	-	130.50	522.00	652.50	727.50	858.00	1,249.50	1,380.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R20a	0.060	0.045	0.060	2,904.00	0.0048	-	X:	-	71.50	286.00	357.50	397.50	469.00	683.50	755.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R20b	0.060	0.070	0.060	3,435.00	0.0029	-	X:	-	93.50	374.00	467.50	587.50	681.00	961.50	1,055.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R20c	0.060	0.070	0.060	7,396.00	0.0043	-	X:	-	108.80	435.20	544.00	706.00	814.80	1,141.20	1,250.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R20d	0.050	0.050	0.050	5,373.00	0.0045	-	X:	-	111.50	446.00	557.50	652.50	764.00	1,098.50	1,210.00
							Y:	3.00	2.10	1.20	-	-	1.20	2.10	3.00
R20e	0.050	0.050	0.050	4,439.00	0.0036	-	X:	-	122.30	489.20	611.50	803.50	925.80	1,292.70	1,415.00
							Y:	3.00	2.10	1.20	-	-	1.20	2.10	3.00
R20f	0.050	0.050	0.050	5,953.00	0.0050	-	X:	-	102.00	408.00	510.00	720.00	822.00	1,128.00	1,230.00
							Y:	3.00	2.10	1.20	-	-	1.20	2.10	3.00
R20g	0.050	0.050	0.050	7,229.00	0.0044	-	X:	-	92.50	370.00	462.50	517.50	610.00	887.50	980.00
							Y:	3.00	2.10	1.20	-	-	1.20	2.10	3.00
R20h	0.050	0.050	0.050	5,408.00	0.0052	-	X:	-	87.70	350.80	438.50	561.50	649.20	912.30	1,000.00
							Y:	3.00	2.10	1.20	-	-	1.20	2.10	3.00
R20i	0.050	0.050	0.050	5,350.00	0.0052	-	X:	-	122.00	488.00	610.00	660.00	782.00	1,148.00	1,270.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R20k	0.050	0.050	0.050	4,495.00	0.0062	-	X:	-	38.50	154.00	192.50	212.50	251.00	366.50	405.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R20l	0.050	0.065	0.050	5,532.00	0.0054	-	X:	-	25.00	100.00	125.00	195.00	220.00	295.00	320.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R21a	0.050	0.065	0.050	4,133.00	0.0053	-	X:	-	34.70	138.80	173.50	226.50	261.20	365.30	400.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R21b	0.050	0.065	0.050	6,096.00	0.0053	-	X:	-	81.00	324.00	405.00	459.00	540.00	783.00	864.00
							Y:	7.00	4.90	2.80	-	-	2.80	4.90	7.00
R21c	0.050	0.065	0.050	6,436.00	0.0059	-	X:	-	52.30	209.20	261.50	283.50	335.80	492.70	545.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R21d	0.050	0.065	0.050	5,510.00	0.0058	-	X:	-	29.00	116.00	145.00	230.00	259.00	346.00	375.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R22b	0.055	0.060	0.055	5,706.00	0.0056	-	X:	-	62.50	250.00	312.50	402.50	465.00	652.50	715.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R22d	0.055	0.060	0.055	3,362.00	0.0060	-	X:	-	62.00	248.00	310.00	325.00	387.00	573.00	635.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R24b	0.050	0.050	0.050	6,238.00	0.0058	-	X:	-	45.70	182.80	228.50	246.50	292.20	429.30	475.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R30c	0.075	0.070	0.075	6,381.00	0.0047	-	X:	-	158.50	634.00	792.50	822.50	981.00	1,456.50	1,615.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R30d	0.060	0.045	0.060	3,027.00	0.0053	-	X:	-	105.00	420.00	525.00	555.00	660.00	975.00	1,080.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R30e	0.060	0.045	0.060	4,256.00	0.0047	-	X:	-	138.50	554.00	692.50	762.50	901.00	1,316.50	1,455.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R30f	0.060	0.045	0.060	4,599.00	0.0044	-	X:	-	162.50	650.00	812.50	842.50	1,005.00	1,492.50	1,655.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R30g	0.060	0.045	0.060	6,597.00	0.0049	-	X:	-	170.00	680.00	850.00	880.00	1,050.00	1,560.00	1,730.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R32b	0.050	0.045	0.050	5,658.00	0.0053	-	X:	-	39.00	156.00	195.00	205.00	244.00	361.00	400.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R34b	0.050	0.050	0.050	7,227.00	0.0053	-	X:	-	91.00	364.00	455.00	485.00	576.00	849.00	940.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R36a	0.060	0.045	0.060	6,970.00	0.0046	-	X:	-	54.00	216.00	270.00	310.00	364.00	526.00	580.00
							Y:	5.00	3.50	2.00	-	-	2.00	3.50	5.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R36b	0.050	0.045	0.050	5,446.00	0.0051	-	X:	-	71.00	284.00	355.00	380.00	451.00	664.00	735.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R36c	0.050	0.045	0.050	5,419.00	0.0063	-	X:	-	79.30	317.20	396.50	446.50	525.80	763.70	843.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R40b	0.060	0.045	0.060	4,432.00	0.0050	-	X:	-	112.50	450.00	562.50	632.50	745.00	1,082.50	1,195.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R40c	0.060	0.045	0.060	7,542.00	0.0048	-	X:	-	181.00	724.00	905.00	960.00	1,141.00	1,684.00	1,865.00
							Y:	7.00	4.90	2.80	-	-	2.80	4.90	7.00
R40d	0.060	0.045	0.060	4,406.00	0.0041	-	X:	-	134.00	536.00	670.00	710.00	844.00	1,246.00	1,380.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R42b	0.055	0.060	0.055	4,141.00	0.0058	-	X:	-	103.50	414.00	517.50	537.50	641.00	951.50	1,055.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R44a	0.055	0.060	0.055	1,962.00	0.0041	-	X:	-	31.00	124.00	155.00	205.00	236.00	329.00	360.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R44a-d	0.060	0.050	0.060	7,483.00	0.0054	-	X:	-	35.00	140.00	175.00	225.00	260.00	365.00	400.00
							Y:	5.00	3.50	2.00	-	-	2.00	3.50	5.00
R44b	0.055	0.060	0.055	8,676.00	0.0052	-	X:	-	61.00	244.00	305.00	350.00	411.00	594.00	655.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R44c	0.055	0.060	0.055	5,610.00	0.0055	-	X:	-	37.00	148.00	185.00	225.00	262.00	373.00	410.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R44d	0.055	0.060	0.055	5,423.00	0.0054	-	X:	-	24.50	98.00	122.50	147.50	172.00	245.50	270.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R44e	0.055	0.060	0.055	9,594.00	0.0067	-	X:	-	51.00	204.00	255.00	275.00	326.00	479.00	530.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R46a	0.060	0.050	0.060	2,368.00	0.0051	-	X:	-	51.50	206.00	257.50	287.50	339.00	493.50	545.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R46b	0.060	0.050	0.060	9,206.00	0.0039	-	X:	-	74.50	298.00	372.50	402.50	477.00	700.50	775.00
							Y:	9.00	6.30	3.60	-	-	3.60	6.30	9.00
R46c	0.060	0.050	0.060	5,471.00	0.0059	-	X:	-	50.00	200.00	250.00	275.00	325.00	475.00	525.00
							Y:	13.00	9.10	5.20	-	-	5.20	9.10	13.00
R46e	0.060	0.050	0.060	7,330.00	0.0055	-	X:	-	62.50	250.00	312.50	337.50	400.00	587.50	650.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R46f	0.060	0.050	0.060	4,690.00	0.0064	-	X:	-	72.00	288.00	360.00	395.00	467.00	683.00	755.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R46h	0.060	0.050	0.060	11,103.00	0.0052	-	X:	-	61.50	246.00	307.50	342.50	404.00	588.50	650.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R46i	0.060	0.050	0.060	6,015.00	0.0060	-	X:	-	26.30	105.20	131.50	153.50	179.80	258.70	285.00
							Y:	12.00	8.40	4.80	-	-	4.80	8.40	12.00
R46kE	0.060	0.050	0.060	6,227.00	0.0090	-	X:	-	33.50	134.00	167.50	182.50	216.00	316.50	350.00
							Y:	12.00	8.40	4.80	-	-	4.80	8.40	12.00
R46kW	0.060	0.050	0.060	5,990.00	0.0090	-	X:	-	12.00	48.00	60.00	80.00	92.00	128.00	140.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R48a	0.055	0.060	0.055	1,972.00	0.0051	-	X:	-	41.50	166.00	207.50	267.50	309.00	433.50	475.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R48b	0.055	0.060	0.055	6,543.00	0.0055	-	X:	-	67.00	268.00	335.00	400.00	467.00	668.00	735.00
							Y:	5.00	3.50	2.00	-	-	2.00	3.50	5.00
R50b	0.060	0.050	0.060	9,252.00	0.0056	-	X:	-	63.00	252.00	315.00	335.00	398.00	587.00	650.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R50d	0.050	0.050	0.050	1,710.00	0.0047	-	X:	-	28.00	112.00	140.00	160.00	188.00	272.00	300.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R50e	0.050	0.050	0.050	4,259.00	0.0075	-	X:	-	55.00	220.00	275.00	305.00	360.00	525.00	580.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R50f	0.050	0.050	0.050	4,264.00	0.0066	-	X:	-	58.00	232.00	290.00	385.00	443.00	617.00	675.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R50g	0.050	0.050	0.050	6,582.00	0.0067	-	X:	-	38.50	154.00	192.50	222.50	261.00	376.50	415.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R54a	0.060	0.050	0.060	1,801.00	0.0067	-	X:	-	27.50	110.00	137.50	162.50	190.00	272.50	300.00
							Y:	5.00	3.50	2.00	-	-	2.00	3.50	5.00
R54b	0.060	0.050	0.060	4,379.00	0.0089	-	X:	-	8.00	32.00	40.00	60.00	68.00	92.00	100.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R60b	0.060	0.050	0.060	6,955.00	0.0046	-	X:	-	137.50	550.00	687.50	747.50	885.00	1,297.50	1,435.00
							Y:	7.00	4.90	2.80	-	-	2.80	4.90	7.00
R60c	0.060	0.050	0.060	5,841.00	0.0051	-	X:	-	69.50	278.00	347.50	397.50	467.00	675.50	745.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R62a	0.060	0.050	0.060	5,737.00	0.0038	-	X:	-	30.50	122.00	152.50	182.50	213.00	304.50	335.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R62b	0.060	0.050	0.060	5,554.00	0.0076	-	X:	-	40.40	161.60	202.00	218.00	258.40	379.60	420.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R64b	0.060	0.050	0.060	5,503.00	0.0051	-	X:	-	21.00	84.00	105.00	125.00	146.00	209.00	230.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R64c	0.060	0.050	0.060	5,389.00	0.0063	-	X:	-	50.00	200.00	250.00	275.00	325.00	475.00	525.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R64d	0.060	0.050	0.060	9,783.00	0.0065	-	X:	-	38.00	152.00	190.00	230.00	268.00	382.00	420.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R70b	0.055	0.055	0.055	2,206.00	0.0027	-	X:	-	55.00	220.00	275.00	315.00	370.00	535.00	590.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R70c	0.055	0.055	0.055	2,956.00	0.0041	-	X:	-	81.50	326.00	407.50	497.50	579.00	823.50	905.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R70d	0.055	0.055	0.055	8,370.00	0.0053	-	X:	-	173.00	692.00	865.00	1,030.00	1,203.00	1,722.00	1,895.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R70e	0.050	0.045	0.050	2,256.00	0.0044	-	X:	-	118.50	474.00	592.50	722.50	841.00	1,196.50	1,315.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R70f	0.060	0.055	0.060	1,071.00	0.0056	-	X:	-	128.00	512.00	640.00	715.00	843.00	1,227.00	1,355.00
							Y:	3.00	2.10	1.20	-	-	1.20	2.10	3.00
R70g	0.060	0.055	0.060	2,950.00	0.0041	-	X:	-	120.00	480.00	600.00	640.00	760.00	1,120.00	1,240.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R71b	0.050	0.075	0.050	4,928.00	0.0162	-	X:	-	39.50	158.00	197.50	217.50	257.00	375.50	415.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R72b	0.050	0.075	0.050	3,300.00	0.0049	-	X:	-	70.00	280.00	350.00	530.00	600.00	810.00	880.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R73a	0.050	0.045	0.050	2,646.00	0.0083	-	X:	-	109.50	438.00	547.50	622.50	732.00	1,060.50	1,170.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R73b	0.045	0.055	0.045	4,440.00	0.0050	-	X:	-	53.00	212.00	265.00	335.00	388.00	547.00	600.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R74a	0.050	0.045	0.050	4,623.00	0.0043	-	X:	-	168.50	674.00	842.50	1,032.50	1,201.00	1,706.50	1,875.00
							Y:	3.00	2.10	1.20	-	-	1.20	2.10	3.00
R74b	0.050	0.045	0.050	3,352.00	0.0054	-	X:	-	147.00	588.00	735.00	805.00	952.00	1,393.00	1,540.00
							Y:	2.00	1.40	0.80	-	-	0.80	1.40	2.00
R77a	0.060	0.055	0.060	3,568.00	0.0056	-	X:	-	133.40	533.60	667.00	733.00	866.40	1,266.60	1,400.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R77b	0.055	0.060	0.055	4,056.00	0.0069	-	X:	-	80.50	322.00	402.50	442.50	523.00	764.50	845.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R78b	0.055	0.060	0.055	3,996.00	0.0065	-	X:	-	85.00	340.00	425.00	455.00	540.00	795.00	880.00
							Y:	4.00	2.80	1.60	-	-	1.60	2.80	4.00
R79b	0.075	0.075	0.075	4,398.00	0.0175	-	X:	-	15.00	60.00	75.00	100.00	115.00	160.00	175.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R80b	0.065	0.050	0.065	4,668.00	0.0069	-	X:	-	27.00	108.00	135.00	165.00	192.00	273.00	300.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R81b	0.065	0.050	0.065	2,533.00	0.0079	-	X:	-	37.00	148.00	185.00	245.00	282.00	393.00	430.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R82b	0.055	0.045	0.055	5,300.00	0.0083	-	X:	-	27.50	110.00	137.50	187.50	215.00	297.50	325.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R82b1	0.055	0.045	0.055	2,500.00	0.0083	-	X:	-	27.50	110.00	137.50	187.50	215.00	297.50	325.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R83b	0.060	0.050	0.060	6,084.00	0.0063	-	X:	-	51.00	204.00	255.00	320.00	371.00	524.00	575.00
							Y:	12.00	8.40	4.80	-	-	4.80	8.40	12.00
R83c	0.060	0.050	0.060	5,898.00	0.0054	-	X:	-	46.00	184.00	230.00	270.00	316.00	454.00	500.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R83d	0.060	0.050	0.060	3,074.00	0.0052	-	X:	-	54.50	218.00	272.50	297.50	352.00	515.50	570.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R83e	0.060	0.050	0.060	4,439.00	0.0059	-	X:	-	47.50	190.00	237.50	262.50	310.00	452.50	500.00
							Y:	7.00	4.90	2.80	-	-	2.80	4.90	7.00
R83g	0.060	0.050	0.060	6,004.00	0.0053	-	X:	-	66.00	264.00	330.00	400.00	466.00	664.00	730.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R83i	0.060	0.050	0.060	4,018.00	0.0045	-	X:	-	64.00	256.00	320.00	360.00	424.00	616.00	680.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R83j	0.060	0.050	0.060	1,430.00	0.0056	-	X:	-	31.00	124.00	155.00	195.00	226.00	319.00	350.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R83k	0.060	0.050	0.060	4,228.00	0.0062	-	X:	-	46.00	184.00	230.00	250.00	296.00	434.00	480.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R84a	0.055	0.045	0.055	3,000.00	0.0083	-	X:	-	27.50	110.00	137.50	187.50	215.00	297.50	325.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R84b	0.055	0.060	0.055	4,440.00	0.0079	-	X:	-	38.50	154.00	192.50	232.50	271.00	386.50	425.00
							Y:	12.00	8.40	4.80	-	-	4.80	8.40	12.00
R85b	0.055	0.060	0.055	4,836.00	0.0083	-	X:	-	56.00	224.00	280.00	345.00	401.00	569.00	625.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00

Route ID	LOB N	Chan N	ROB N	Length (ft)	Slope (ft/ft)	Max Elev (ft)		1.	2.	3.	4.	5.	6.	7.	8.
R87b	0.050	0.060	0.050	6,497.00	0.0077	-	X:	-	45.50	182.00	227.50	257.50	303.00	439.50	485.00
							Y:	6.00	4.20	2.40	-	-	2.40	4.20	6.00
R88a	0.060	0.050	0.060	2,567.00	0.0047	-	X:	-	27.50	110.00	137.50	167.50	195.00	277.50	305.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R89b	0.050	0.060	0.050	3,054.00	0.0075	-	X:	-	33.00	132.00	165.00	190.00	223.00	322.00	355.00
							Y:	8.00	5.60	3.20	-	-	3.20	5.60	8.00
R91b	0.050	0.060	0.050	4,978.00	0.0084	-	X:	-	40.00	160.00	200.00	230.00	270.00	390.00	430.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00
R92b	0.060	0.050	0.060	7,166.00	0.0067	-	X:	-	63.50	254.00	317.50	362.50	426.00	616.50	680.00
							Y:	10.00	7.00	4.00	-	-	4.00	7.00	10.00

APPENDIX D4

RESERVOIR ROUTING DATA

APPENDIX D4

Reservoir Routing Data – with Dike Conditions

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RESERVOIR ROUTING
METHODOLOGY & RESULTS

1.0 Introduction

The Luke Wash Watershed is located in western Maricopa County. Two transportation facilities, Interstate 10 (I-10) and the Union Pacific Railroad (UPRR), traverse the study watershed. These two facilities potentially impact the 100-year peak flows within the project area. The HEC-1 hydrologic models with dike conditions have incorporated the impact of these two facilities using storage routing operations. Three parameters are needed for storage routing operations: elevation (SE), volume (SV), and discharge (SQ). The methods used to estimate these parameters are discussed in the following sections.

There are 23 existing cross-drainage structures along I-10 within the study area with a pipe diameter 30-inches and larger. Of these structures, 13 were modeled. The other structures were not modeled because of the following reasons:

a. Some of the structures have small (local) contributing watersheds which have no significant impact on the HEC-1 storage routing operations (such as structures 33, 34 and 40).
b. Some of the structures are within subbasins that have no routing operations. These no routing subbasins are the most upstream subbasin for a particular watershed and encompass the north and south sides of I-10 (such as basins 22c, 42b, and 36c).
c. Some of the structures are within washes that will not be studied hydraulically. There is no need to determine or model the flow at these locations (such as structures 14, 22, 24, 34, 40, 42, 44, 46, and 48).

The UPRR facility includes 6 bridge structures within the study area and 5 were modeled. Bridge 6 was not modeled due to reason 'c' above. The modeled structures are summarized in Table 1 and the plan locations are identified on Exhibit 1 – Crossing Structures Locations for With Dike Conditions.

2.0 Detention Area & Volume Estimation

The detention ponding areas were calculated using AutoCAD and the 2-foot topographic mapping provided by the Flood Control District of Maricopa County (FCDMC) with interpolated 1-foot contours. The ponding areas were measured at 1-foot increments from the structure invert to plus or minus 2 feet above the subbasin boundary elevation. The storage volumes were calculated externally with Excel spreadsheets using the average end area method. See Table 2 for a summary of these calculations.

3.0 Crossing Structure Elevation Discharge Rating Curve Development

The discharge rating curves were determined using "Dodson Hydrocalc Hydraulics," software version 1.2a and "HEC-RAS River Analysis System," version 3.1.3. The structure dimensions used are from the WOOD/PATEL survey report or as-built construction drawings and are included as part of this document.

The discharge rating curves of structures 10, 12, and 50 along I-10 were determined with Dodson Hydrocalc Hydraulics. Several steps were performed:

a. Rating curves for tailwater conditions were determined using Bentley software FlowMaster, service pack 3. A representative cross section downstream of each structure was coded using the project 2-foot topography as provided by the FCDMC. The Manning's "n" values for each cross section were determined by using the aerial photo to find a representative "n" values from the Field Reconnaissance Report. The rating curve as developed by FlowMaster is based on normal

depth versus flow. Please see section Dodson Hydrocalc Hydraulics & FlowMaster Printouts for the tailwater rating curve and cross section geometry.

b. The developed tailwater rating curves were used for the tailwater conditions in Dodson Hydrocalc Hydraulics. The culvert's "n" value and entrance loss coefficient as used in Dodson Hydrocalc Hydraulics were established from the FCDMC "Drainage Design Manual, Hydraulics."

HEC-RAS was used to develop the discharge rating curves for the remaining structures using multiple profiles with different flows. The entrance loss coefficients and Manning's "n" values are based from the FCDMC "Drainage Design Manual, Hydraulics." The invert and geometry of each structure is based from the WOOD/PATEL Survey Report and ADOT as-built construction drawings. The deck elevation and geometry of each structure and the up and downstream cross sections are based on the 2-ft topography as provided by the FCDMC. Table 1 summarizes the HEC-RAS model used in developing the rating curve for each structure.

Sedimentation build-up was assumed to be insignificant in the discharge rating curve development for several reasons: no significant evidence of sediment build-up was observed in the field visits and photos of each structure from the WOOD/PATEL Survey Report; if sedimentation has occurred, the sedimentation build up if significant will be reflected in the generated topography and therefore be modeled; and last, sedimentation build-up is not typically analyzed in Flood Insurance Studies.

The elevation-discharge rating values are summarized in Table 2. The Dodson and HEC-RAS output per structure is included as supporting documentation.

4.0 Composite Elevation Storage Discharge Rating Curves

For multiple structures within one subbasin, a composite rating curve was developed. For structures that are hydraulically connected, the storage rating curve volumes were combined in such a way as to share the same ponding volume when the individual structure's ponding area merged/combined with the other(s).

In cases where structures within the same subbasin are not connected hydraulically, the combined volume was determined differently. The volumes were added together separately per the contour interval. If the ponding depth of one structure reaches heights where flow would split to other subbasins, then the volume at this depth was not counted toward the total volume. These values are also summarized in Table 2. The composite rating curves were then entered into the HEC-1 models as SE, SV, and SQ cards (elevation, volume, and discharge).

5.0 Evaluation of Split Flows from Ponding Areas

Once storage routing rating curves were coded within HEC-1 models, the HEC-1 models were executed to determine if any split flow occurs from the ponding areas based on HEC-1 and HEC-RAS modeling results. Three cases were determined as such: between subbasins 46a and 48a along I-10, between subbasins 64a and 62a along I-10 and between subbasins 30d and 20b along UPRR. In all cases, the floodplain delineations show that the flows were combined upstream of the road or bridge, then routed through the structure(s) using one storage routing routine per case.

TABLE D4.1

Crossing Structures along I-10 and UPRR

TABLE D4.1
Crossing Structures along I-10 and UPRR

Location	Subbasin Name	Storage Basin Name	Crossing Structure		HEC-RAS Model Name
			ID	Type	
I-10	20k	S20k	10	2-42" CMP	N/A
			12	2-36" CMP	
I-10	21a	S21a	14	2-10'x5' CBC	T1SR5WS17.prj
I-10	22d	S22d	18	3-36" CMP	T1N-R6W-S11.prj
			20	42" CMP	
I-10	44a	S44a	26	2-10'x8' CBC	T2NR6WS36.prj
I-10	48a	S46a	28	48"CMP	PhillipsWash.prj
I-10	46a		30	2-10'x3'	
			32	3-10'x5'	
I-10	64a	S64a	36	10'x5' CBC	DickeyWash.prj
I-10	62a		38	72" CMP	
I-10	82b	S82b	50	2-48" CMP	N/A
I-10	83a	S83a	52	4-10'x4'	T2N-R5W-S33E.prj
UPRR	14c	S14c	UPR1	4-14'x5'	T1SR5WS29.prj
UPRR	20b	S20b	UPR2	3-13'x8'	LUKE WASH.prj
UPRR	30d		UPR3	5-14'x3'	
UPRR	32b	S32b	UPR4	5-13.5'x8'	MINOR-TRIB.prj
UPRR	70d	S70d	UPR5	6-14'x15'	EAST_MAIN_TRIB.prj

Note: Crossing structures summarized above are only the structures in the study area that have been modeled with HEC-RAS or Dodson Hydrocalc Hydraulics.

TABLE D4.2

Elevation-Volume-Discharge Rating Curves

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	2-42" CMP
Culvert ID:	10
Subbasin	20k
Storage Bsn	S20k

SE (ft)	SA ft²	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum. (acre-ft)	Q /barrel (cfs)	# barrels	SQ* Total Q (cfs)
1100	3567	0.1	0.0	0.0	0	2	0
1101	22851	0.5	0.3	0.3	5	2	10
1102	72883	1.7	1.1	1.4	16	2	32
1103	156505	3.6	2.6	4.0	31	2	62
1104	263456	6.0	4.8	8.9	45	2	90
1105	383157	8.8	7.4	16.3	59	2	118
1106	504829	11.6	10.2	26.5	68	2	136

** Calculations done in Dodson*

Type:	2-36" CMP
Culvert ID:	12
Subbasin	20k
Storage Bsn	S20k

SE (ft)	SA ft²	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum. (acre-ft)	Q /barrel (cfs)	# barrels	SQ* Total Q (cfs)
1098	85875	2.0	0.0	0.0	0	2	0
1099	184989	4.2	3.1	3.1	5	2	10
1100	276645	6.4	5.3	8.4	17	2	34
1101				8.4			34
1102				8.4			34
1103				8.4			34
1104				8.4			34
1105				8.4			34
1106				8.4			34

Combined Rating Curve		
SE (ft)	SV (acre-ft)	SQ (cfs)
1098	0.0	0
1099	3.1	10
1100	8.4	34
1101	8.7	44
1102	9.8	66
1103	12.4	96
1104	17.3	124
1105	24.7	152
1106	34.9	170

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	2-10x5' CBC
Culvert ID:	14
Subbasin	21a
Storage Bsn	S21a

				SV	
SE	SA	SA	Volume Inc.	Volume Cum.	SQ*
(ft)	ft^2	(acre)	(acre-ft)	(acre-ft)	(cfs)
1093	2251	0.1	0.0	0.0	0.0
1094	7128	0.2	0.1	0.1	144.0
1095	34175	0.8	0.5	0.6	283.0
1096	139972	3.2	2.0	2.6	466.0
1097	278598	6.4	4.8	7.4	621.0
1098	451391	10.4	8.4	15.8	775.0
1099	697889	16.0	13.2	29.0	930.0
1100	975822	22.4	19.2	48.2	1084.0

** Flow determined from HEC-RAS*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	3-36" CMP
Culvert ID:	18
Subbasin	22d
Storage Bsn	S22d

				SV
SE	SA	SA	Volume Inc.	Volume Cum.
(ft)	ft^2	(acre)	(acre-ft)	(acre-ft)
1093	703	0.0	0.0	0.0
1094	3561	0.1	0.05	0.0
1095	28546	0.7	0.4	0.4
1096	87472	2.0	1.3	1.7
1097	198673	4.6	3.3	5.0
1098	314168	7.2	5.9	10.9
1099	441770	10.1	8.7	19.6

Type:	42" CMP
Culvert ID:	20
Subbasin	22d
Storage Bsn	S22d

				SV
SE	SA	SA	Volume Inc.	Volume Cum.
(ft)	ft^2	(acre)	(acre-ft)	(acre-ft)
1093	58	0.0	0.0	0.0
1094	580	0.0	0.0	0.01
1095	5701	0.1	0.1	0.1
1096	31405	0.7	0.4	0.5
1097	198673	4.6	2.6	3.1
1098	314168	7.2	5.9	9.0
1099	441770	10.1	8.7	17.7

Combined Rating Curve		
SE	SV	SQ*
(ft)	(acre-ft)	(cfs)
1093	0.0	0
1094	0.1	47
1095	0.5	90
1096	2.3	127
1097	5.0	158
1098	10.9	189
1099	19.6	221

** Flow determined from HEC-RAS*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	2-10'X8' CBC
Culvert ID:	26
Subbasin	44a
Storage Bsn	S44a

SE	SA	SA	Volume Inc.	SV Volume Cum.	SQ* Total Q
(ft)	ft^2	(acre)	(acre-ft)	(acre-ft)	(cfs)
1086	6837	0.2	0.0	0.0	0
1087	22326	0.5	0.3	0.3	87
1088	95395	2.2	1.4	1.7	217
1089	162391	3.7	3.0	4.6	347
1090	282033	6.5	5.1	9.7	516
1091	341085	7.8	7.2	16.9	720
1092	460461	10.6	9.2	26.1	923
1093	546808	12.6	11.6	37.7	1127
1094	699129	16.0	14.3	52.0	1302

** Flow determined from HEC-RAS*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	48" CMP
Culvert ID:	28
Subbasin	48a
Storage Bsn	S46a

SE (ft)	SA ft²	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum (acre-ft)
1087	5922	0.1	0.0	0.0
1088	22285	0.5	0.3	0.3
1089	65354	1.5	1.0	1.3
1090	124999	2.9	2.2	3.5
1091	785614	18.0	10.5	14.0
1092	1039197	23.9	20.9	34.9
1093	1318629	30.3	27.1	62.0
1094	1735177	39.8	35.1	97.0

Type:	2-10'X3' CBC
Culvert ID:	30
Subbasin	46a
Storage Bsn	S46a

SE (ft)	SA ft²	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum. (acre-ft)
1087	2384	0.1	0	0
1088	10327	0.2	0.1	0.1
1089	51299	1.2	0.7	0.9
1090	133074	3.1	2.1	3.0
1091	785614	18.0	10.5	13.5
1092	1039197	23.9	20.9	34.5
1093	1318629	30.3	27.1	61.5
1094	1735177	39.8	35.1	96.6

Type:	3-10'X5' CBC
Culvert ID:	32
Subbasin	46a
Storage Bsn	S46a

SE (ft)	SA ft²	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum. (acre-ft)
1087	1783	0.0	0	0
1088	12176	0.3	0.2	0.2
1089	33118	0.8	0.5	0.7
1090	112782	2.6	1.7	2.4
1091	785614	18.0	10.3	12.7
1092	1039197	23.9	20.9	33.6
1093	1318629	30.3	27.1	60.7
1094	1735177	39.8	35.1	95.7

Combined Rating Curve		
SE (ft)	SV (acre-ft)	SQ* (cfs)
1087	0.0	0
1088	0.6	258
1089	2.9	586
1090	8.8	990
1091	14.0	1402
1092	34.9	1823
1093	62.0	2061
1094	97.0	2314

** Flow determined from HEC-RAS*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	10'X5' CBC
Culvert ID:	36
Subbasin	64a
Storage Bsn	S64a

SE (ft)	SA ft^2	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum. (acre-ft)
1072	395	0.0	0.0	0.0
1073	708	0.0	0.0	0.0
1074	9198	0.2	0.1	0.1
1075	25249	0.6	0.4	0.5
1076	44175	1.0	0.8	1.3
1077	73991	1.7	1.4	2.7
1078	177120	4.1	2.9	5.6
1079	420365	9.7	6.9	12.4
1080	688159	15.8	12.7	25.1
1081	926507	21.3	18.5	43.7

Type:	72" CMP
Culvert ID:	38
Subbasin	62a
Storage Bsn	S64a

SE (ft)	SA ft^2	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum. (acre-ft)
1072	252	0.0	0.0	0.0
1073	1602	0.0	0.0	0.0
1074	6380	0.1	0.1	0.1
1075	22503	0.5	0.3	0.4
1076	51443	1.2	0.8	1.3
1077	108514	2.5	1.8	3.1
1078	177620	4.1	3.3	6.4
1079	420365	9.7	6.9	13.3
1080	688159	15.8	12.7	26.0
1081	926507	21.3	18.5	44.5

Combined Rating Curve

SE (ft)	SV (acre-ft)	SQ* (cfs)
1072	0.0	0
1073	0.03	66
1074	0.2	171
1075	1.0	312
1076	2.6	454
1077	5.8	595
1078	12.0	698
1079	13.3	792
1080	26.0	887
1081	44.5	982

** Flow determined from HEC-RAS*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	2-48" CMP
Culvert ID:	50
Subbasin	82b
Storage Bsn	S82b

SE	SA	SA	Volume Inc.	SV Volume Cum.	Q /barrel	# barrels	SQ* Total Q
(ft)	ft^2	(acre)	(acre-ft)	(acre-ft)	(cfs)		(cfs)
1070	6470	0.1	0.0	0.0	0	2	0
1071	10682	0.2	0.2	0.2	6	2	12
1072	28646	0.7	0.5	0.6	20	2	40
1073	45769	1.1	0.9	1.5	42	2	84
1074	92793	2.1	1.6	3.1	66	2	132
1075	121962	2.8	2.5	5.6	86	2	172
1076	184808	4.2	3.5	9.1	93	2	186
1077	228456	5.2	4.7	13.8	98	2	196
1078	351650	8.1	6.7	20.5	102	2	204
1079	431068	9.9	9.0	29.5	106	2	212
1080	597473	13.7	11.8	41.3	113	2	226

** Calculations done in Dodson*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	4-10'x4' CBC
Culvert ID:	52
Subbasin	83a
Storage Bsn	S83a

SE (ft)	SA ft^2	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum. (acre-ft)	SQ* (cfs)
1037	330	0.0	0.0	0.0	0
1038	1206	0.03	0.0	0.02	177
1039	4599	0.1	0.1	0.1	473
1040	18840	0.4	0.3	0.4	769
1041	37320	0.9	0.6	1.0	1060
1042	69953	1.6	1.2	2.2	1261
1043	116410	2.7	2.1	4.4	1462
1044	142900	3.3	3.0	7.3	1663
1045	170699	3.9	3.6	10.9	1863
1046	222830	5.1	4.5	15.5	2071

** Flow determined from HEC-RAS*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	4-14x5
Bridge ID:	1
Subbasin	14c
Storage Bsn	S14c

				SV	
SE	SA	SA	Volume Inc.	Volume Cum.	SQ*
(ft)	ft^2	(acre)	(acre-ft)	(acre-ft)	(cfs)
861	31414	0.7	0.0	0.0	0
862	86035	2.0	1.3	1.3	208
863	222806	5.1	3.5	4.9	716
864	501717	11.5	8.3	13.2	1223
865	713099	16.4	13.9	27.2	1731
866	1222338	28.1	22.2	49.4	2595
867	1519747	34.9	31.5	80.8	3168
868	2216266	50.9	42.9	123.7	3447
869	2616257	60.1	55.5	179.2	3727

** Flow determined from HEC-RAS*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	3-13x8
Bridge ID:	2
Subbasin	20b
Storage Bsn	S20b

Type:	5-14x3
Bridge ID:	3
Subbasin	30d
Storage Bsn	S20b

SE (ft)	SA ft^2	SA (acre)	Volume Inc. (acre-ft)	SV Volume Cum. (acre-ft)	SE (ft)	SA ft^2	SA (acre)	Volume Inc (acre-ft)	SV Volume Cum. (acre-ft)
854	22096	0.5	0.0	0.0					
855	47740	1.1	0.8	0.8					
856	166497	3.8	2.5	3.3					
857	310775	7.1	5.5	8.7	857	5468	0.1	0.0	0.0
858	550302	12.6	9.9	18.6	858	16533	0.4	0.3	0.3
859	840430	19.3	16.0	34.6	859	840430	19.3	9.8	10.1
860	1182068	27.1	23.2	57.8	860	1182068	27.1	23.2	33.3
861	1842202	42.3	34.7	92.5	861	1842202	42.3	34.7	68.0
862	2488840	57.1	49.7	142.2	862	2488840	57.1	49.7	117.7

** Flow determined from HEC-RAS*

Combined Rating Curve		
SE (ft)	SV (acre-ft)	SQ* (cfs)
854	0.0	0
855	0.8	100
856	3.3	403
857	8.7	770
858	18.6	1325
859	34.6	2286
860	57.8	3248
861	92.5	4210
862	142.2	5170

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

Type:	5-13.5x8
Bridge ID:	4
Subbasin	32b
Storage Bsn	S32b

				SV	
SE	SA	SA	Volume Inc.	Volume Cum.	SQ*
(ft)	ft^2	(acre)	(acre-ft)	(acre-ft)	(cfs)
860	13406	0.3	0.0	0.0	0
861	71874	1.7	1.0	1.0	258
862	139645	3.2	2.4	3.4	536
863	258850	5.9	4.6	8.0	853
864	398262	9.1	7.5	15.5	1400

** Flow determined from HEC-RAS*

TABLE D4.2
LUKE WASH WATERSHED FDS
Elevation, Volume, Discharge and Rating Curve

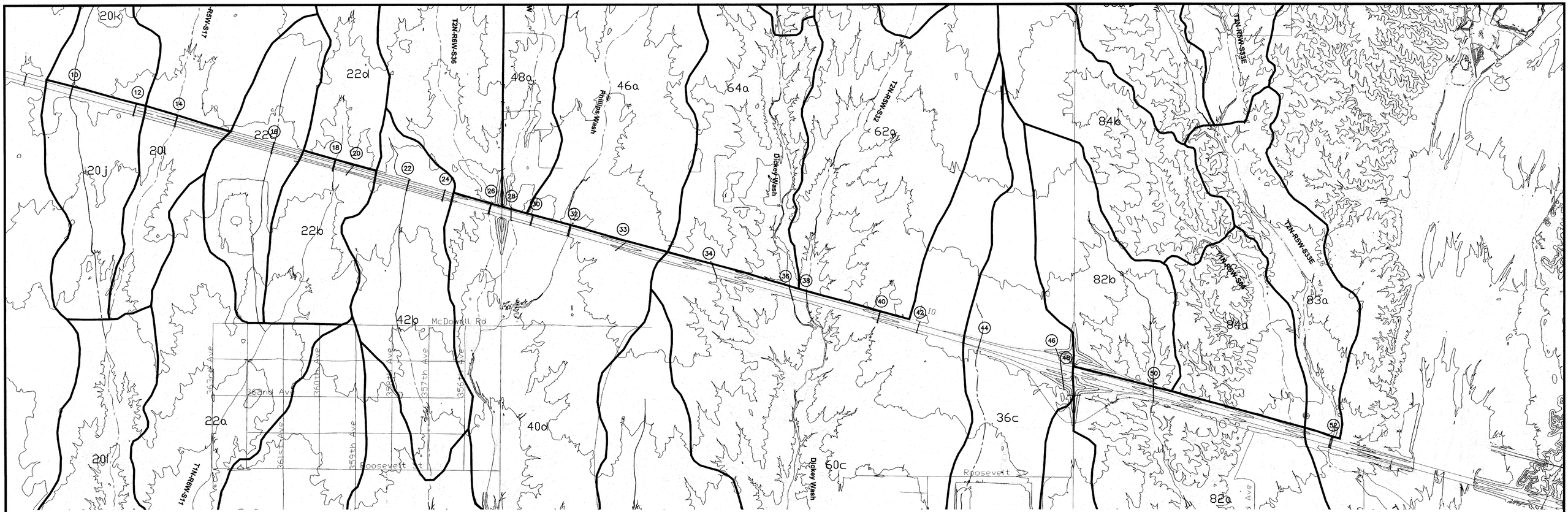
Type:	6-14x15
Bridge ID:	5
Subbasin	70d
Storage Bsn	S70d

				SV	
SE	SA	SA	Volume Inc.	Volume Cum.	SQ*
(ft)	ft^2	(acre)	(acre-ft)	(acre-ft)	(cfs)
854	2858	0.1	0.0	0.0	0
855	5565	0.1	0.1	0.1	130
856	11501	0.3	0.2	0.3	412
857	15251	0.4	0.3	0.6	695
858	19440	0.4	0.4	1.0	978
859	27181	0.6	0.5	1.5	1370
860	38119	0.9	0.7	2.3	1776
861	50769	1.2	1.0	3.3	2185

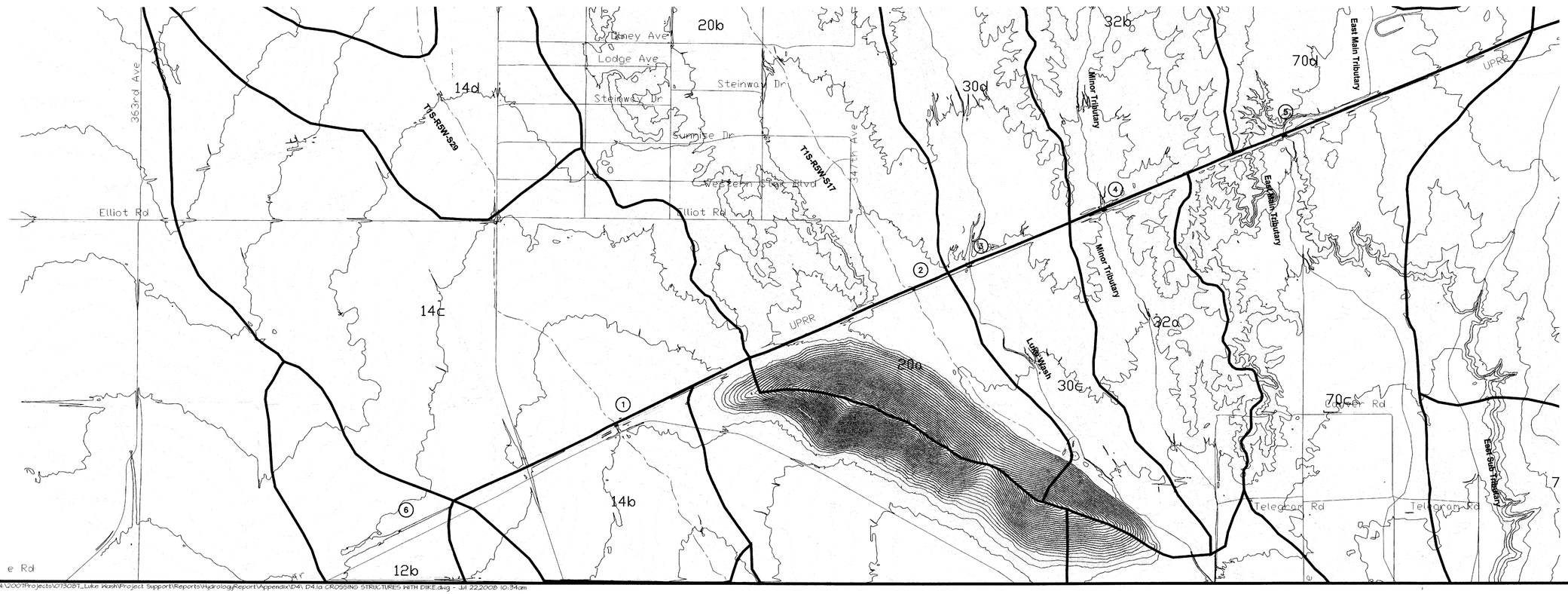
** Flow determined from HEC-RAS*

EXHIBIT D4.1

Detention Locations



I-10 Culverts



UPRR Bridges

800' 0' 800' 1600'
SCALE: 1"= 800' FEET
CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

CROSSING STRUCTURE LOCATIONS
FOR WITH DIKE CONDITIONS

FCD 2007C020
JULY 2008

EXHIBIT
D4.1a

WOOD/PATEL

LAND DEVELOPMENT • WATER RESOURCES
TRANSPORTATION / TRAFFIC
WATER / WASTEWATER • SURVEYING
CONSTRUCTION MANAGEMENT

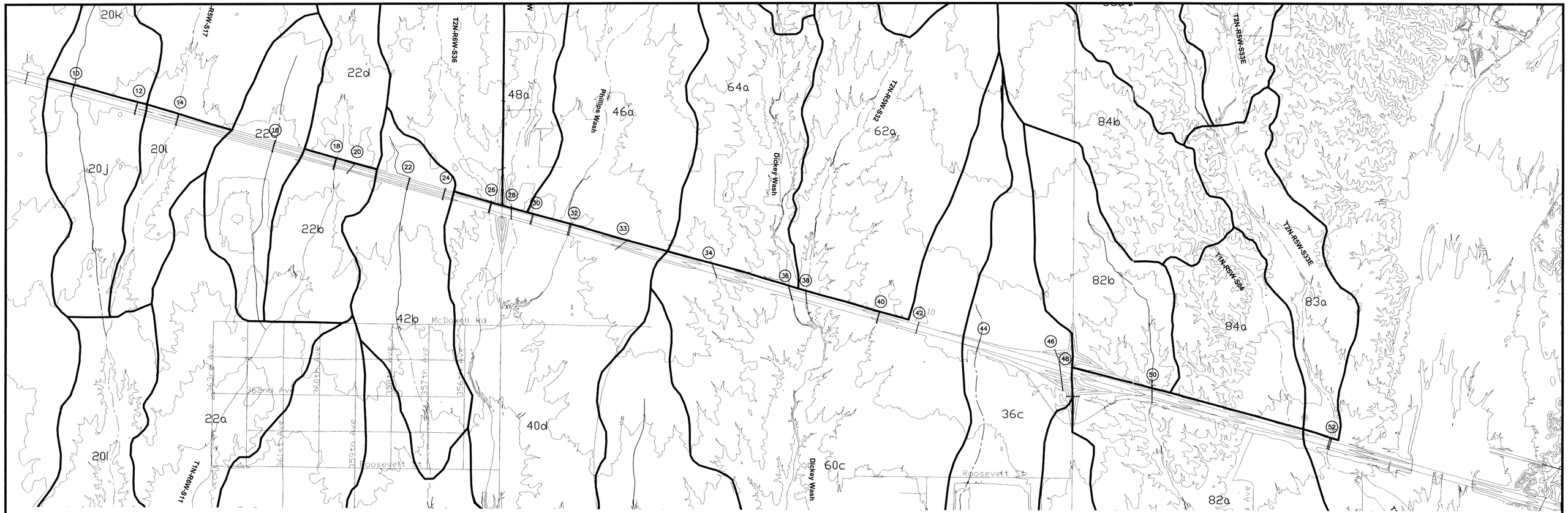
(602) 335-8500

PHOENIX • MESA • TUCSON • COOLIDGE

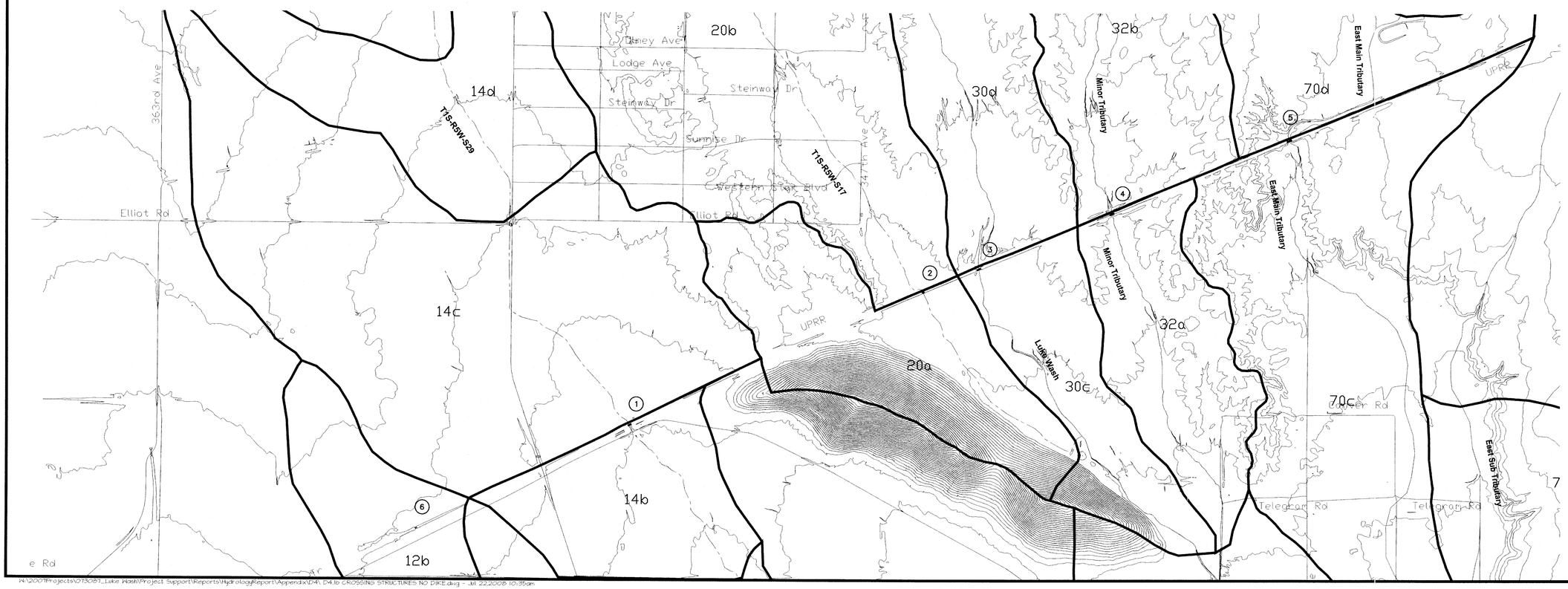
WP# 073087

SHEET 1 OF 1

W:\2007Projects\073087_Luke Wash\Project Support\Reports\Hydrology\Report\Appendix\D4\ D4.1a CROSSING STRUCTURES WITH DIKE.dwg - Jul 22,2008 10:34am



I-10 Culverts



UPRR Bridges

800' 0' 800' 1600'
SCALE: 1"= 800' FEET
CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

CROSSING STRUCTURE LOCATIONS
FOR NO DIKE CONDITIONS

FCD 2007C020
JULY 2008

EXHIBIT
D4.2b

WOOD/PATEL

LAND DEVELOPMENT • WATER RESOURCES
TRANSPORTATION / TRAFFIC
WATER / WASTEWATER • SURVEYING
CONSTRUCTION MANAGEMENT

(602) 335-8500

WP# 073087 SHEET 1 OF 1

N:\2007Projects\073087_Luke Wash\Project Support\Reports\HydrologyReport\Appendix\D4\ D4.1b CROSSING STRUCTURES NO DIKE.dwg - Jul 22,2008 10:35am

EXHIBIT D4.2

Structure Survey Sketches

I-10 and UPRR

ID 10

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

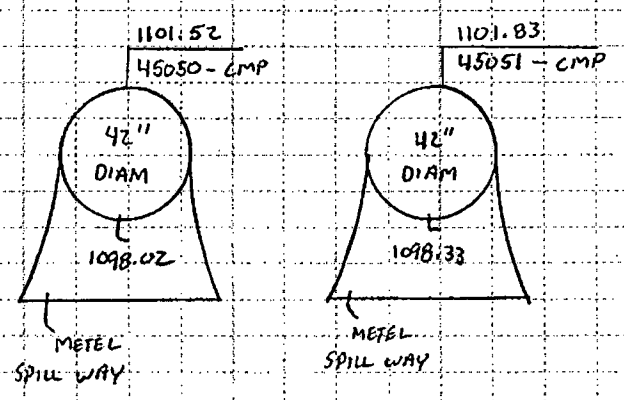
Wood/Patel Project #073087

Type of Structure: CMP 2- 42" Date: 1-29-2008

File Name: LUKE WASH

Description Name: I-10 STA. 5266+50 Party Chief: JEFF LALLIER

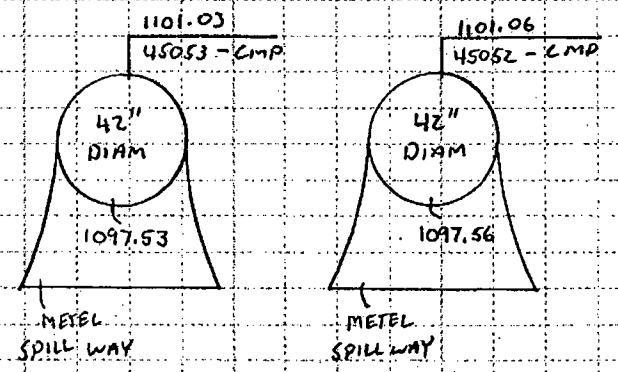
☒ Photo Taken (UPSTREAM) NORTH



SPILL WAYS ARE 6' FROM INVERT TO END OF SPILL WAY

General Condition of Structure GOOD

☒ Photo Taken (DOWNSTREAM) SOUTH



SPILL WAYS ARE 6' FROM INVERT TO END OF SPILL WAY

General Condition of Structure GOOD

E2-1

ID 12

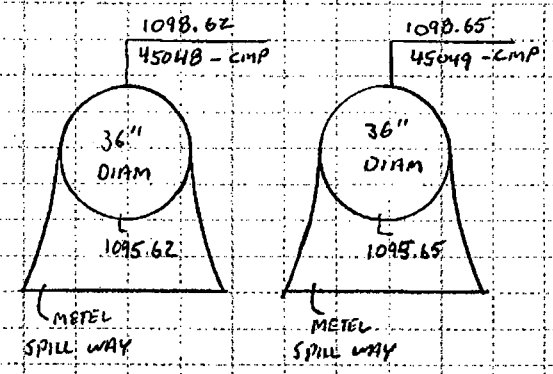
FCDMC Contract 2007C020
Task - Luke Wash Watershed Zone AE Floodplain Delineation Study
Structure Detail Worksheet
Wood/Patel Project #073087

Type of Structure: CMP 2-36" Date: 1-29-2008

File Name: LUKE WASH

Description Name: I-10 STA. 5278+50 Party Chief: JEFF LALLIER

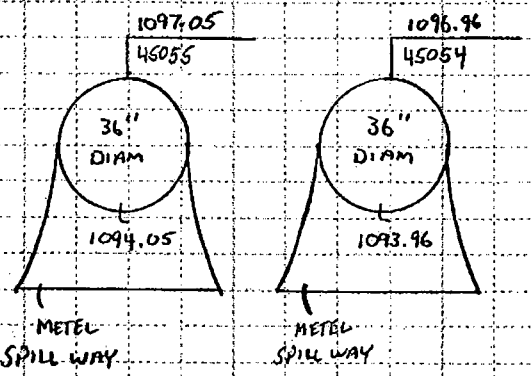
[X] Photo Taken (UPSTREAM) NORTH



SPILL WAYS ARE 5' FROM INVERT TO END OF SPILL WAYS

General Condition of Structure GOOD

[X] Photo Taken (DOWNSTREAM) SOUTH



SPILL WAYS ARE 5' FROM INVERT TO END OF SPILL WAY

General Condition of Structure GOOD

E2-2

ID 14

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

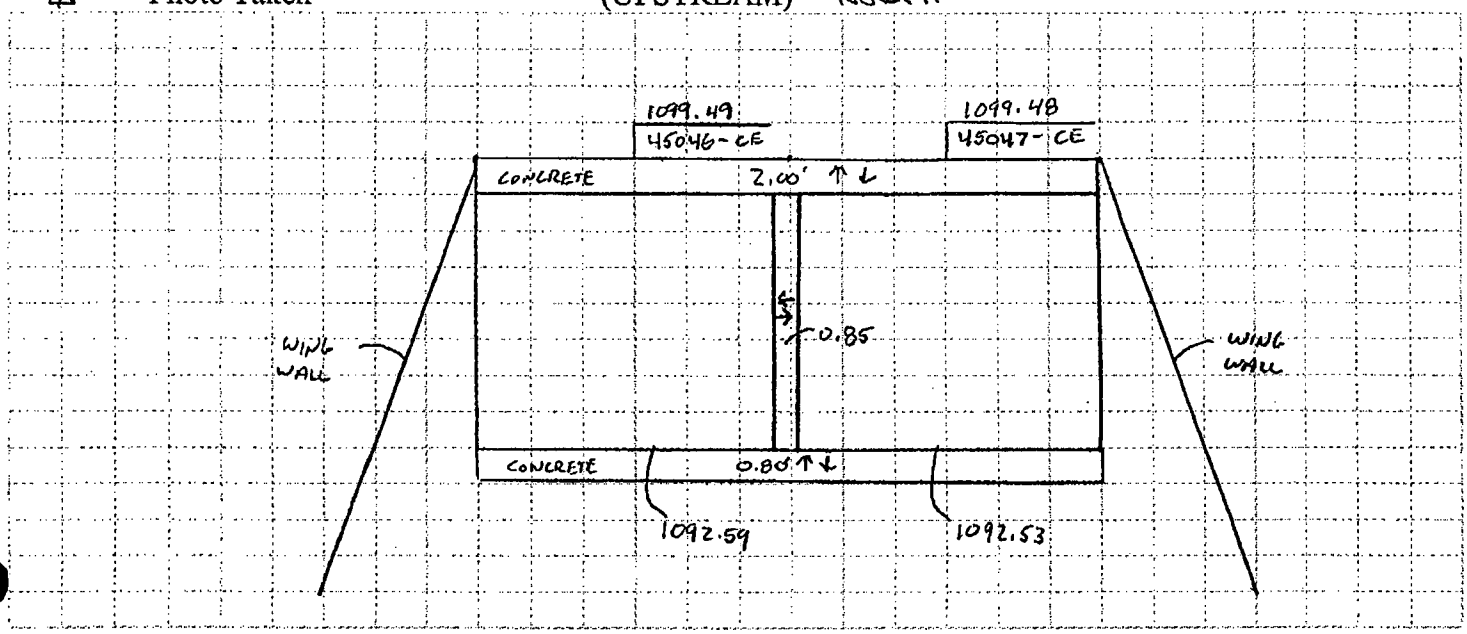
Wood/Patel Project #073087

Type of Structure: BOX CULVERT 2- 10'x5' Date: 1-29-2008

File Name: LUKE WASH 5286+25

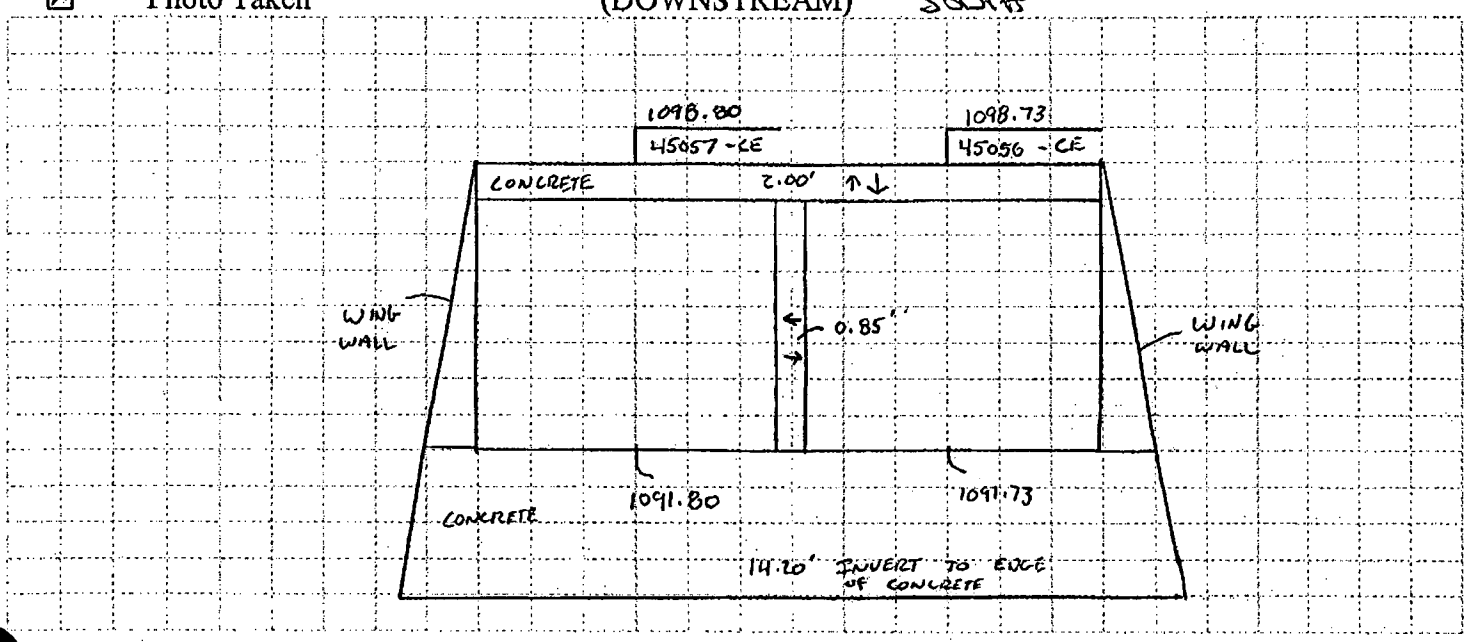
Description Name: I-10 STA. 5286+25 Party Chief: JEFF LALLIER

[X] Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

[X] Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-3

ID 18

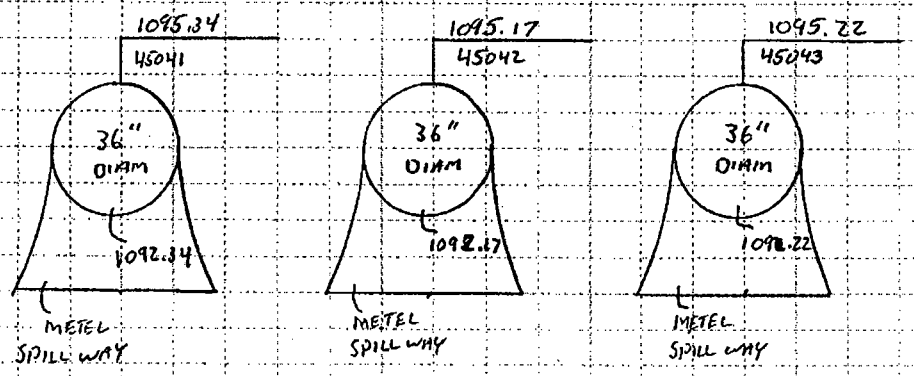
FCDMC Contract 2007C020
Task - Luke Wash Watershed Zone AE Floodplain Delineation Study
Structure Detail Worksheet
Wood/Patel Project #073087

Type of Structure: CMP 3- 36" Date: 1-29-2008

File Name: LUKE WASH

Description Name: I-10 STA. 5316+10 Party Chief: JEFF LALLIER

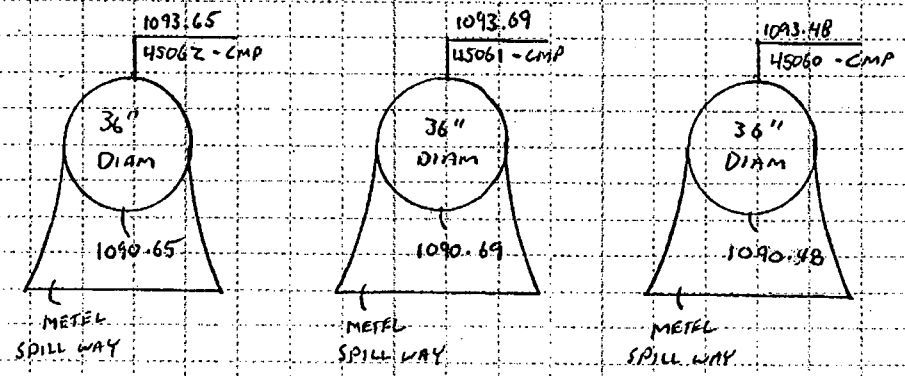
[X] Photo Taken (UPSTREAM) NORTH



ALL SPILL WAYS ARE 5' FROM INVERT TO END SPILL WAY

General Condition of Structure GOOD

[X] Photo Taken (DOWNSTREAM) SOUTH



ALL SPILL WAYS ARE 5' FROM INVERT TO END SPILL WAY

General Condition of Structure GOOD

E2-4

ID 20

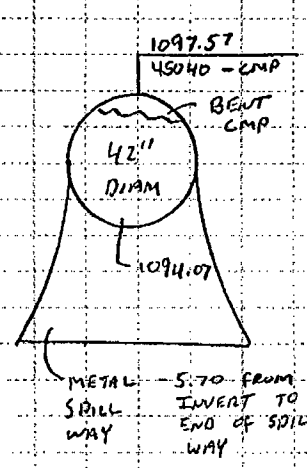
FCDMC Contract 2007C020
Task - Luke Wash Watershed Zone AE Floodplain Delineation Study
Structure Detail Worksheet
Wood/Patel Project #073087

Type of Structure: CMP 42" Date: 1-29-2008

File Name: LUKE WASH

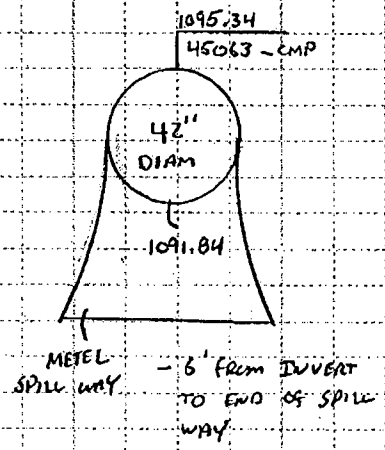
Description Name: I-10 STA. 5319+20 Party Chief: JEFF LALLIER

☒ Photo Taken (UPSTREAM) NORTH



General Condition of Structure TOP OF CMP BENT

☒ Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure E 2.5

ID 26

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

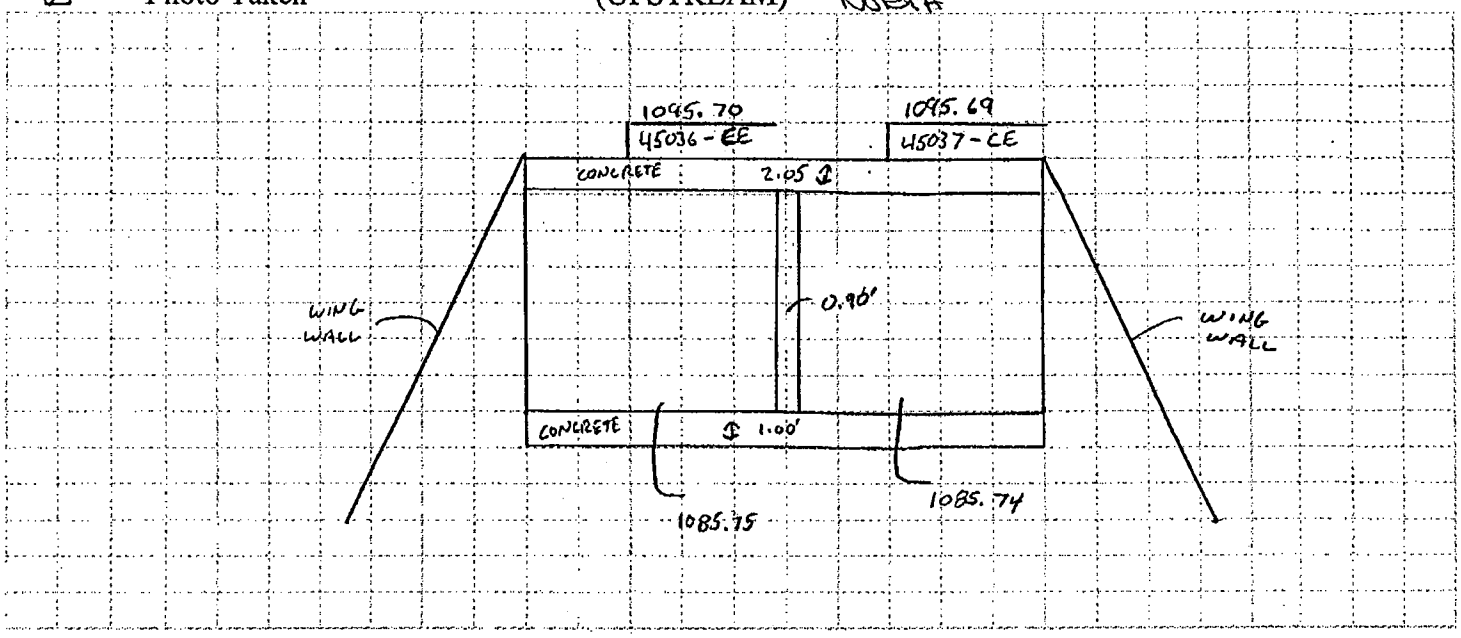
Wood/Patel Project #073087

Type of Structure: BOX CULVERT 2- 10'x8' Date: 1-29-2008

File Name: LUKE WASH 5345-52

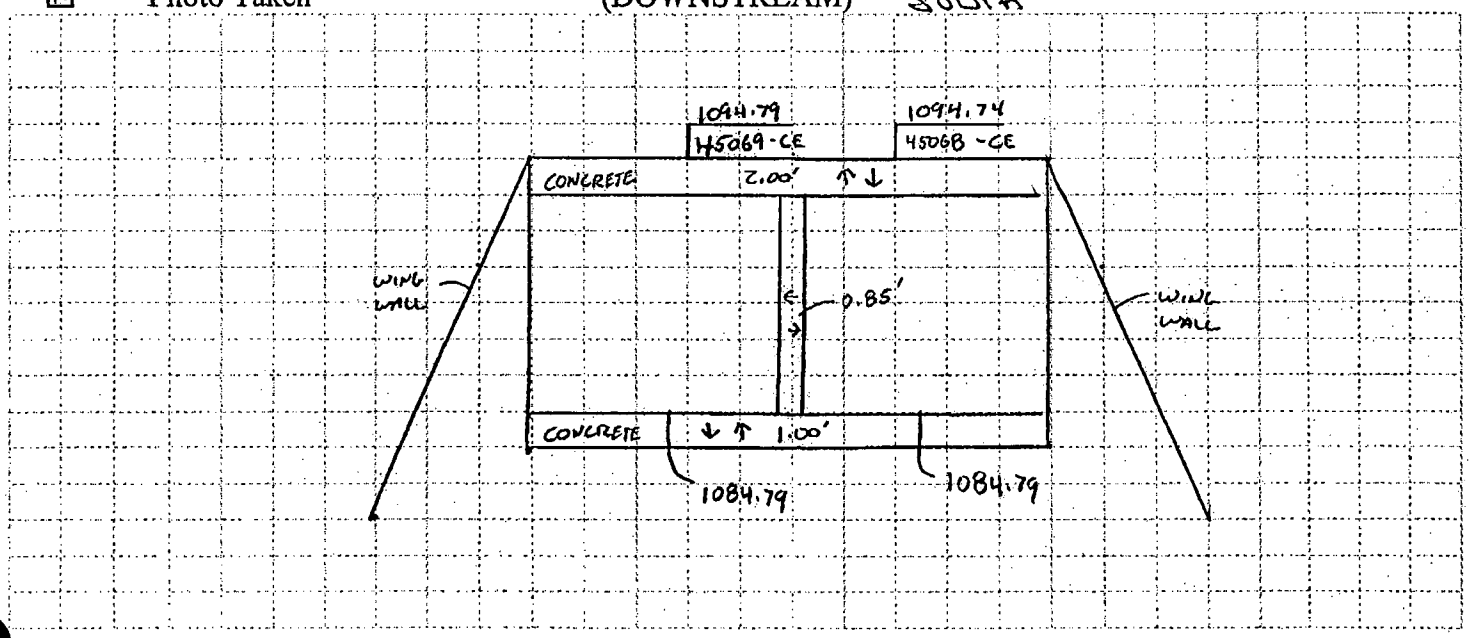
Description Name: I-10 STA. 5345+52 Party Chief: JEFF LALLIER

☒ Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

☒ Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-6

ID 28

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

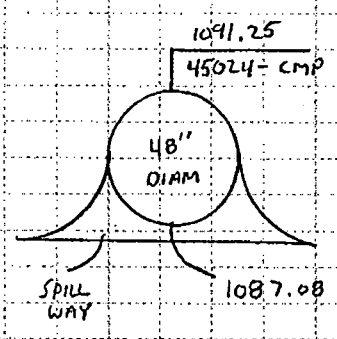
Wood/Patel Project #073087

Type of Structure: 48" CMP Date: 1-22-2008

File Name: LUKE WASH

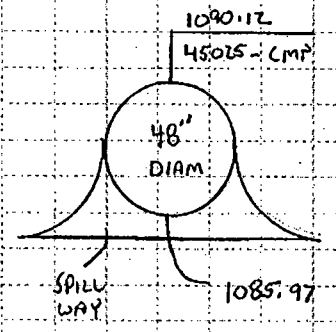
Description Name: I-10 STA. 5349+50 Party Chief: JEFF LALLIER

☒ Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

☒ Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-7

I D 30

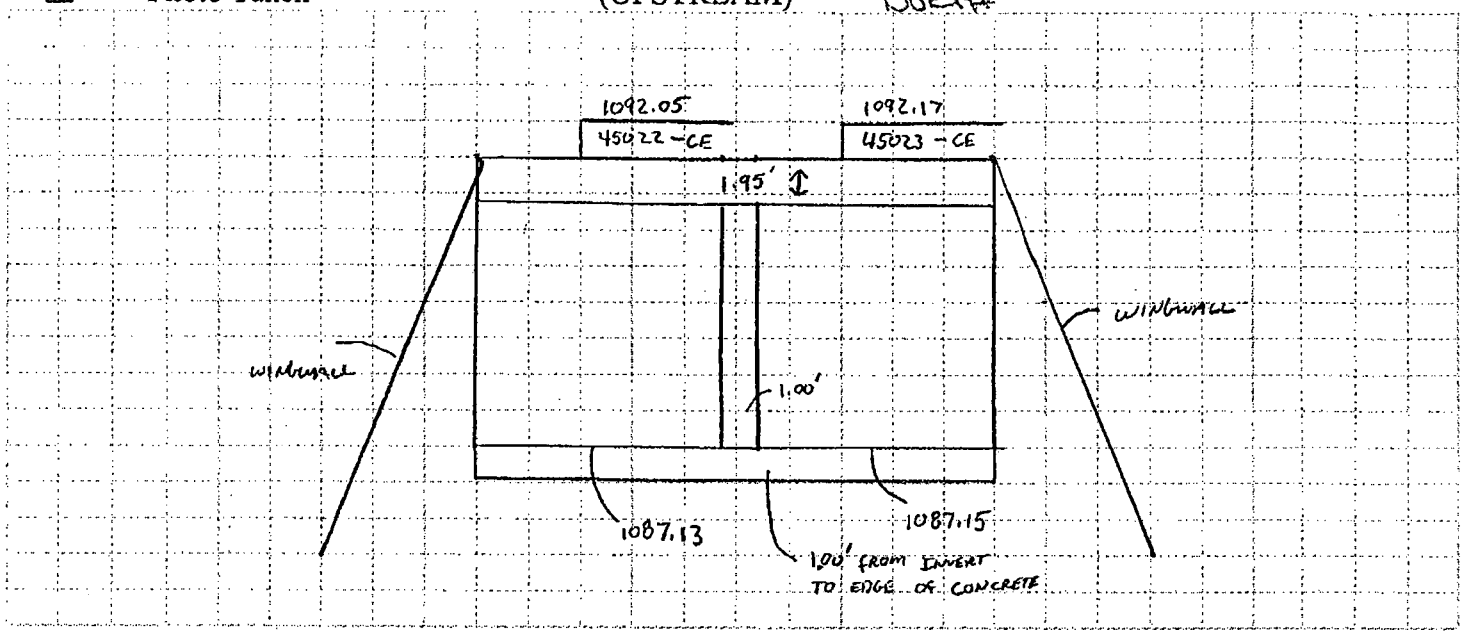
FCDMC Contract 2007C020
Task - Luke Wash Watershed Zone AE Floodplain Delineation Study
Structure Detail Worksheet
Wood/Patel Project #073087

Type of Structure: Box CULVERT 2-10'x3' Date: 1-22-2008

File Name: LUKE WASH

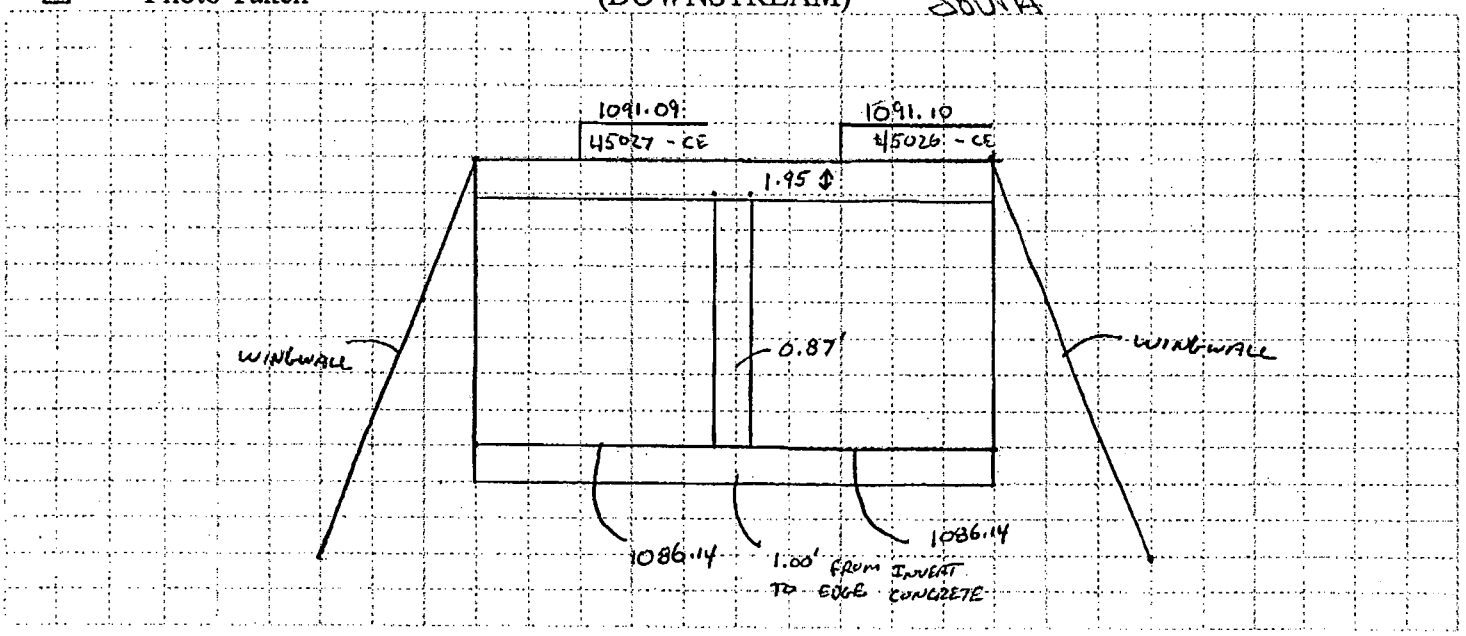
Description Name: I-10 STA. 5353+40 Party Chief: JEFF LALLIER

[X] Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

[X] Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-8

ID 32

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

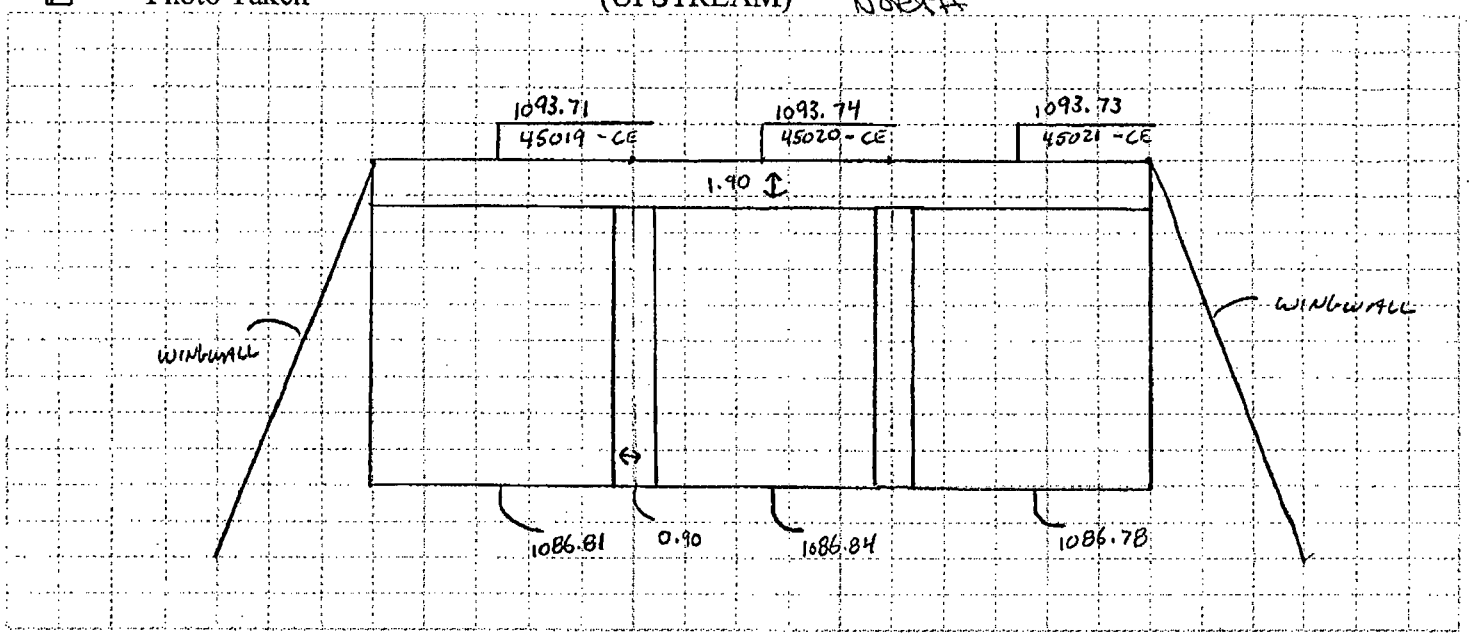
Wood/Patel Project #073087

Type of Structure: BOX CULVERT 3 - 10'x5 Date: 1-22-2008

File Name: LUCIE WASH

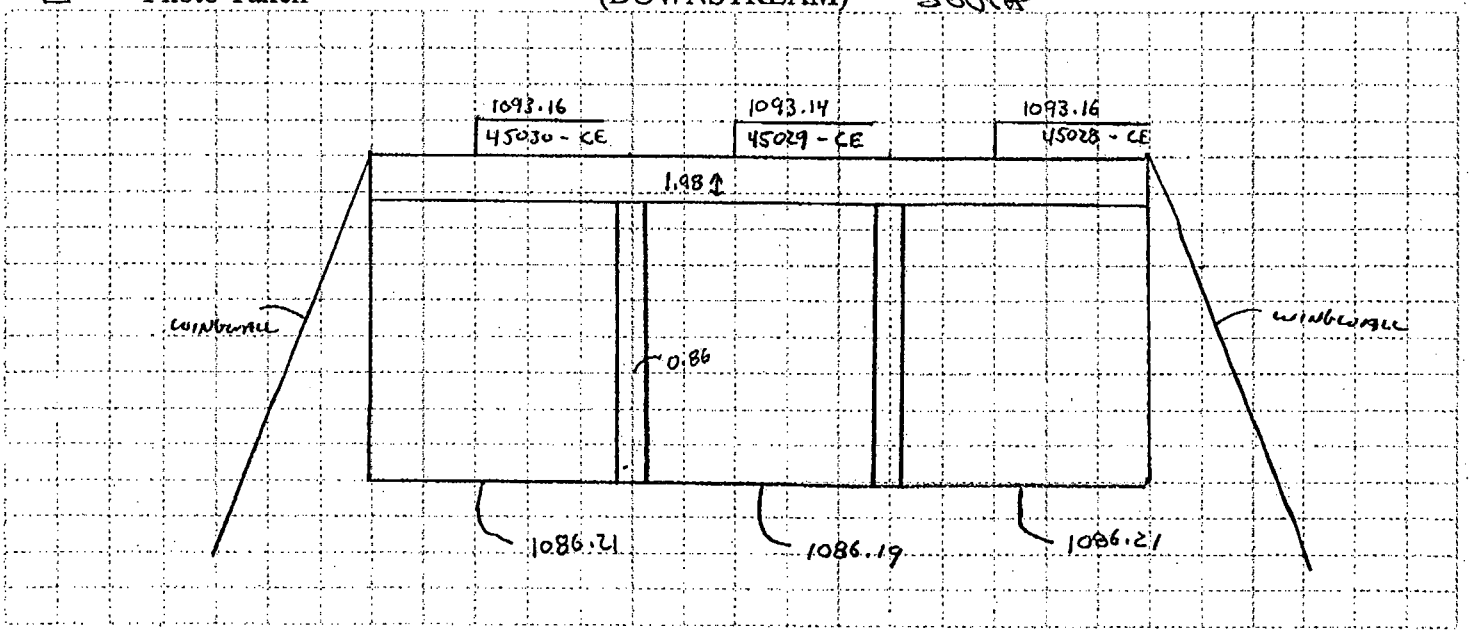
Description Name: I-10 STA. 5360+50 Party Chief: JEFF LALLIER

[X] Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

[X] Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-9

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ID 36

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

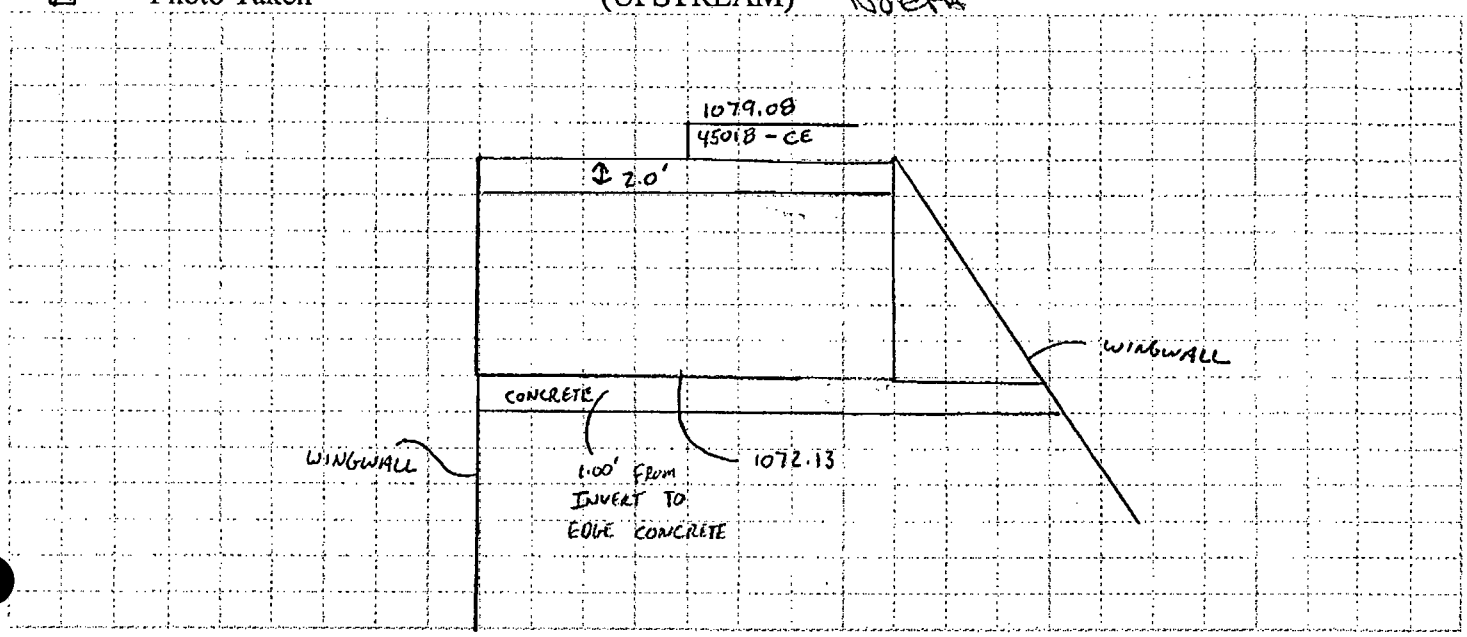
Wood/Patel Project #073087

Type of Structure: BOX CULVERT 10' x 5' Date: 1-22-2008

File Name: LUKE WASH

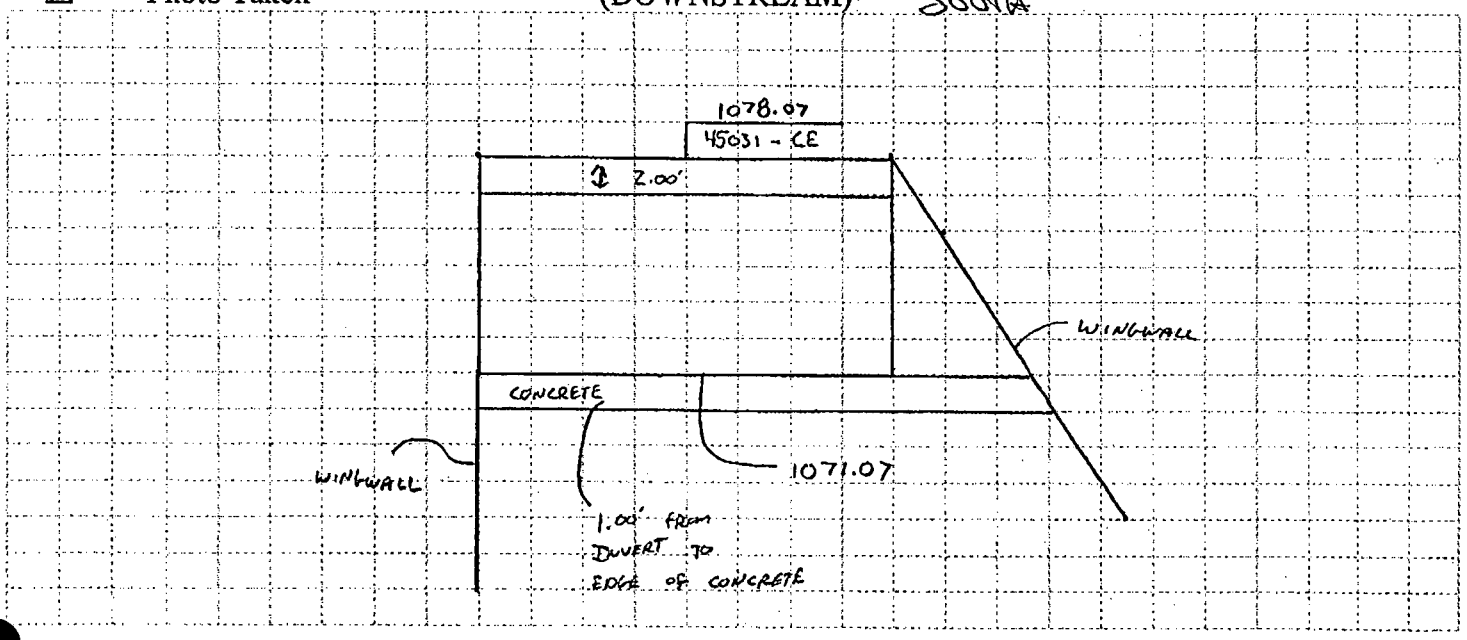
Description Name: I-10 STA. 5402+36 Party Chief: JEFF LALLIER

☒ Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

☒ Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-1

Y:\Survey\FCDMC Form2.doc

ID 38

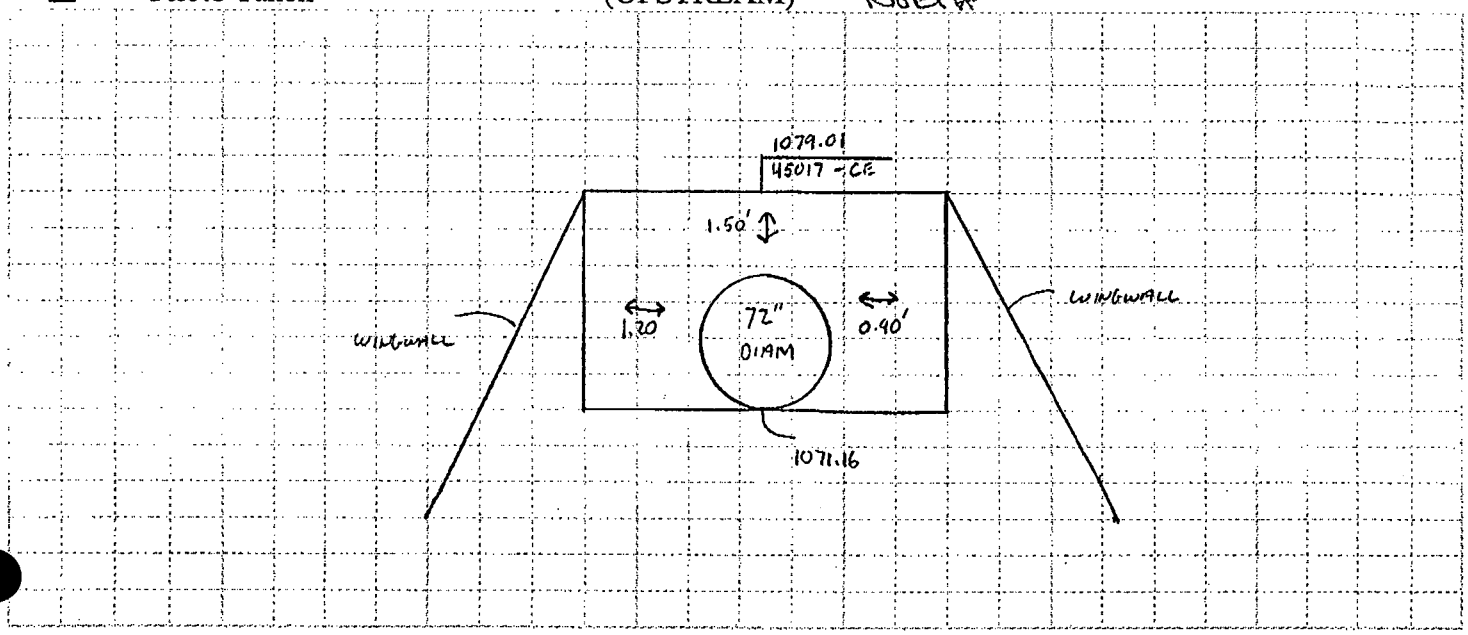
FCDMC Contract 2007C020
Task - Luke Wash Watershed Zone AE Floodplain Delineation Study
Structure Detail Worksheet
Wood/Patel Project #073087

Type of Structure: 72" CMP Date: 1-22-2008

File Name: LUKE WASH

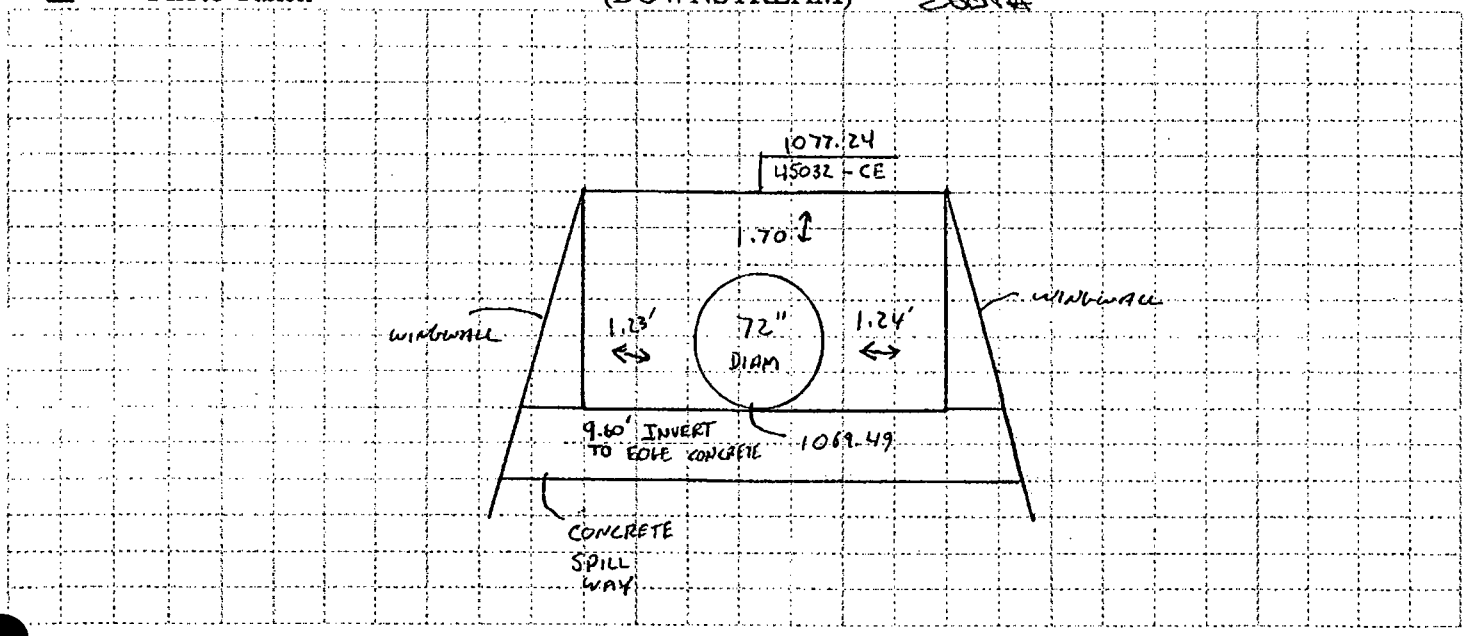
Description Name: I-10 STA. 5405+30 Party Chief: JEFF LALLIER

[X] Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

[X] Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-1

ID 50

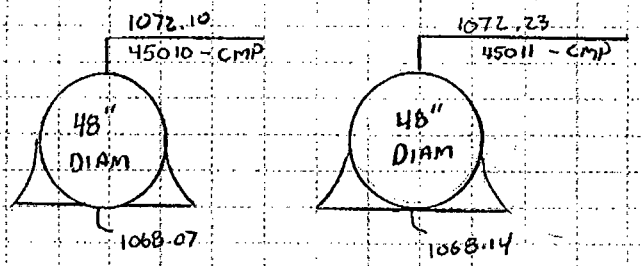
FCDMC Contract 2007C020
Task - Luke Wash Watershed Zone AE Floodplain Delineation Study
Structure Detail Worksheet
Wood/Patel Project #073087

Type of Structure: 48" CMP Date: 1-21-2008

File Name: LUKE WASH

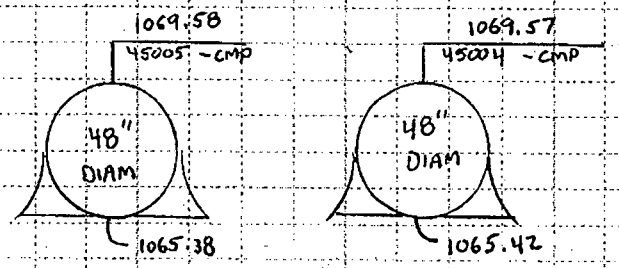
Description Name: I-10 STA. 5470 + 80 Party Chief: JEFF LALLIER

☒ Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

☒ Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-15

Y:\Survey\FCDMC Form2.doc

ID 52

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

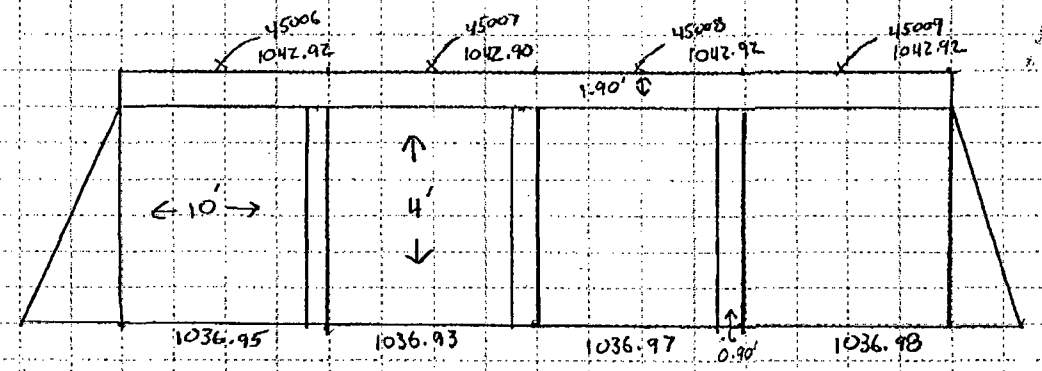
Wood/Patel Project #073087

Type of Structure: BOX CULVERT Date: 1-21-2008

File Name: LUKE WASH

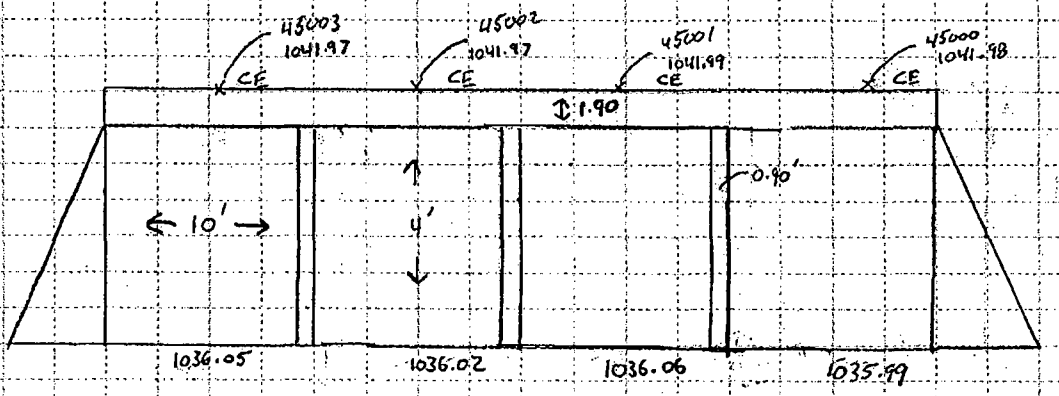
Description Name: T-10 STA. 5504 +40 Party Chief: JEFF LALLIER

☒ Photo Taken (UPSTREAM) NORTH



General Condition of Structure GOOD

☒ Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure GOOD

E2-16

Y:\Survey\FCDMC Form2.doc

UPR 1

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

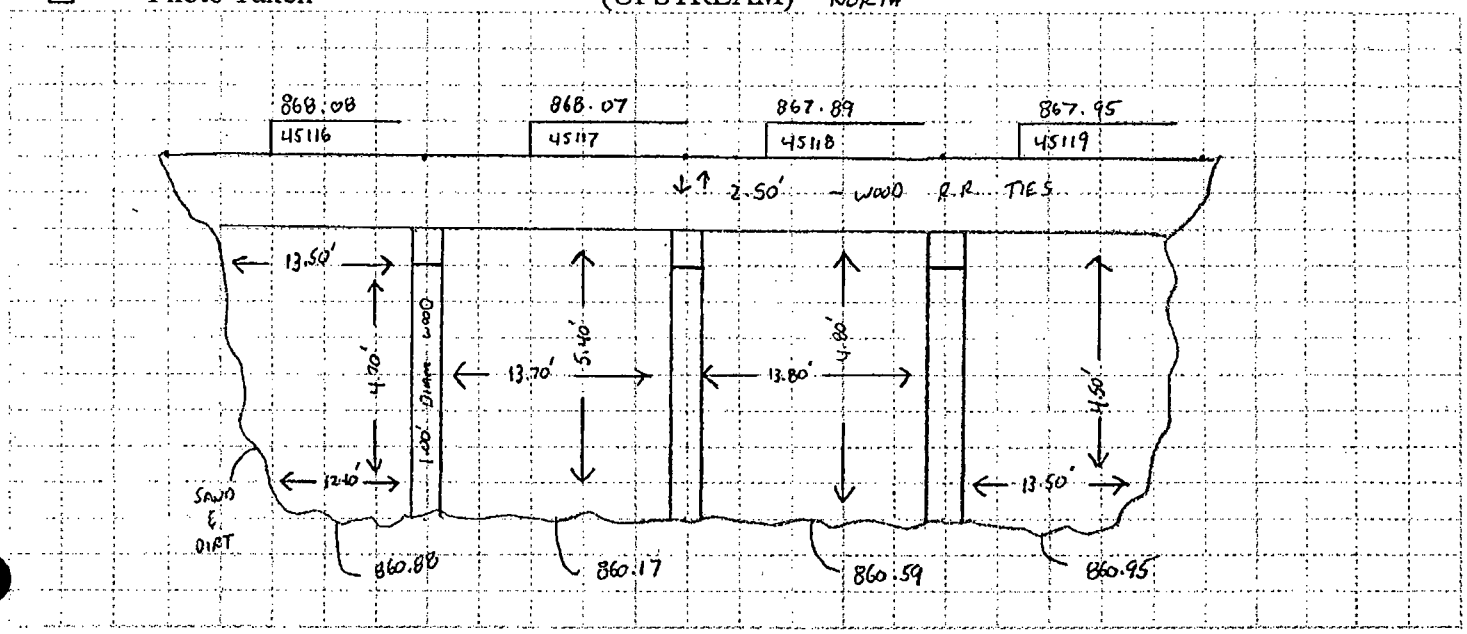
Wood/Patel Project #073087

Type of Structure: WOOD BRIDGE Date: 2-4-2008

File Name: LUKE WASH

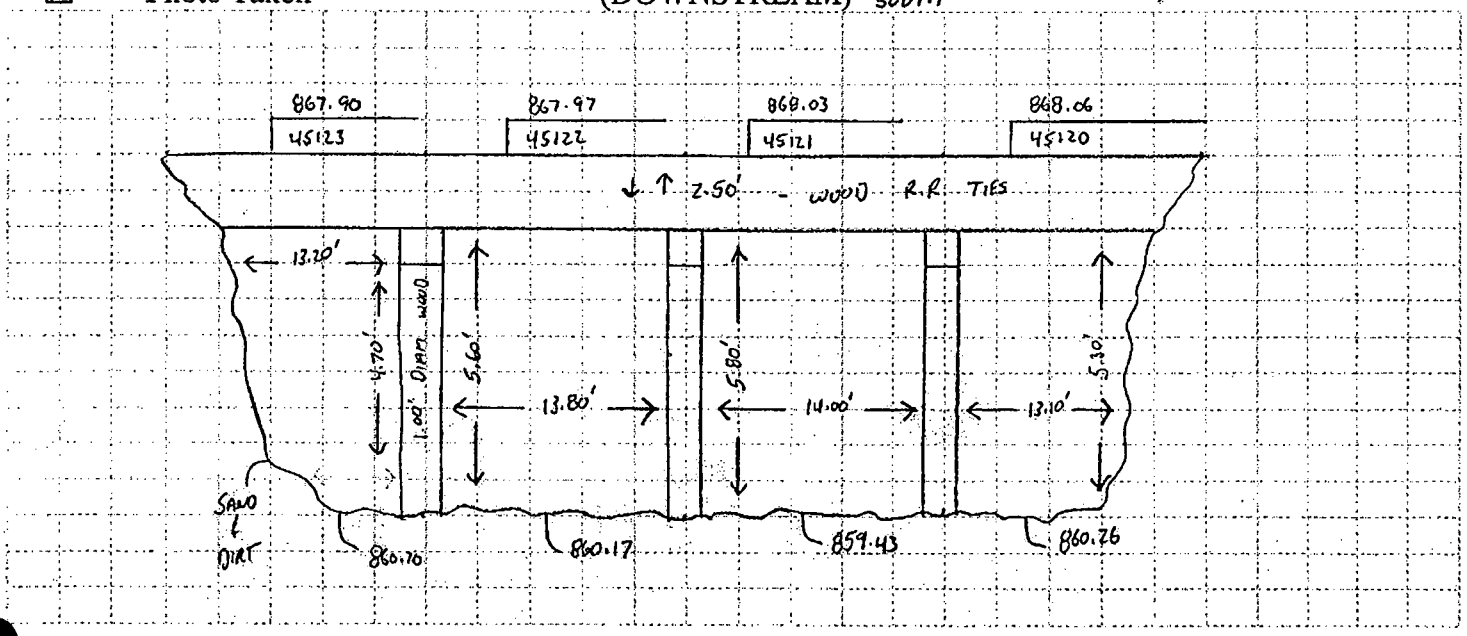
Description Name: UPR BRIDGE # 1 Party Chief: JEFF LALLIER

☒ Photo Taken (UPSTREAM) NORTH



General Condition of Structure OK

☒ Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure OK

E2-17

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UPR 2

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

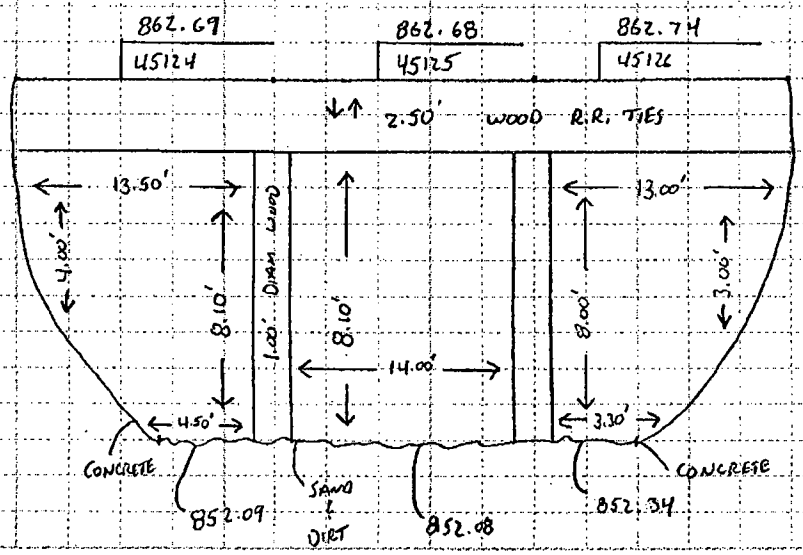
Wood/Patel Project #073087

Type of Structure: WOOD BRIDGE Date: 2-4-2008

File Name: LUKE WASH

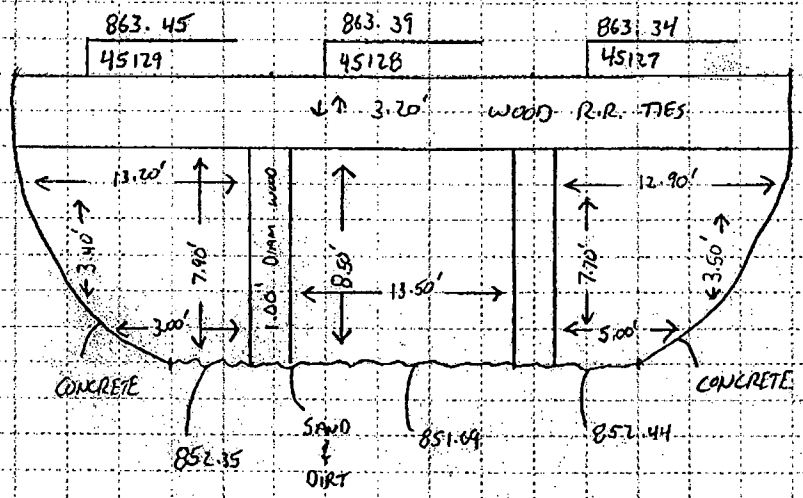
Description Name: UPR BRIDGE # 2 Party Chief: JEFF LALLIER

[X] Photo Taken (UPSTREAM) NORTH



General Condition of Structure OK

[X] Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure OK

E2-18

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UPR 3

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

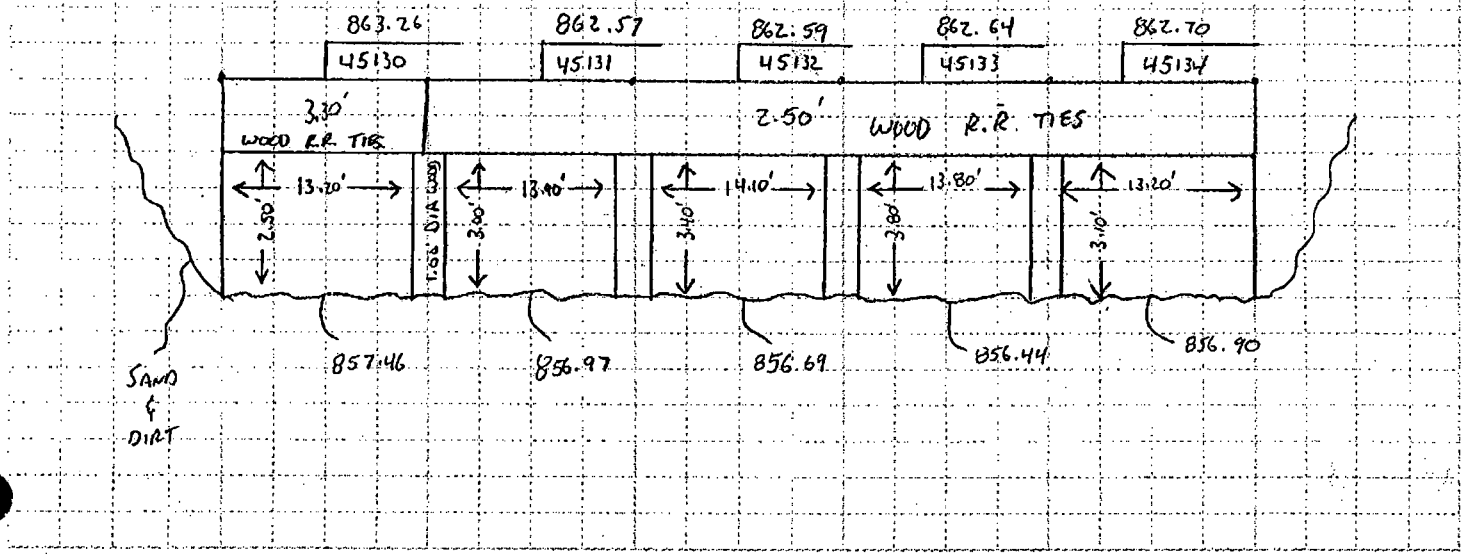
Wood/Patel Project #073087

Type of Structure: WOOD BRIDGE Date: 2-4-2008

File Name: LUKE WASH

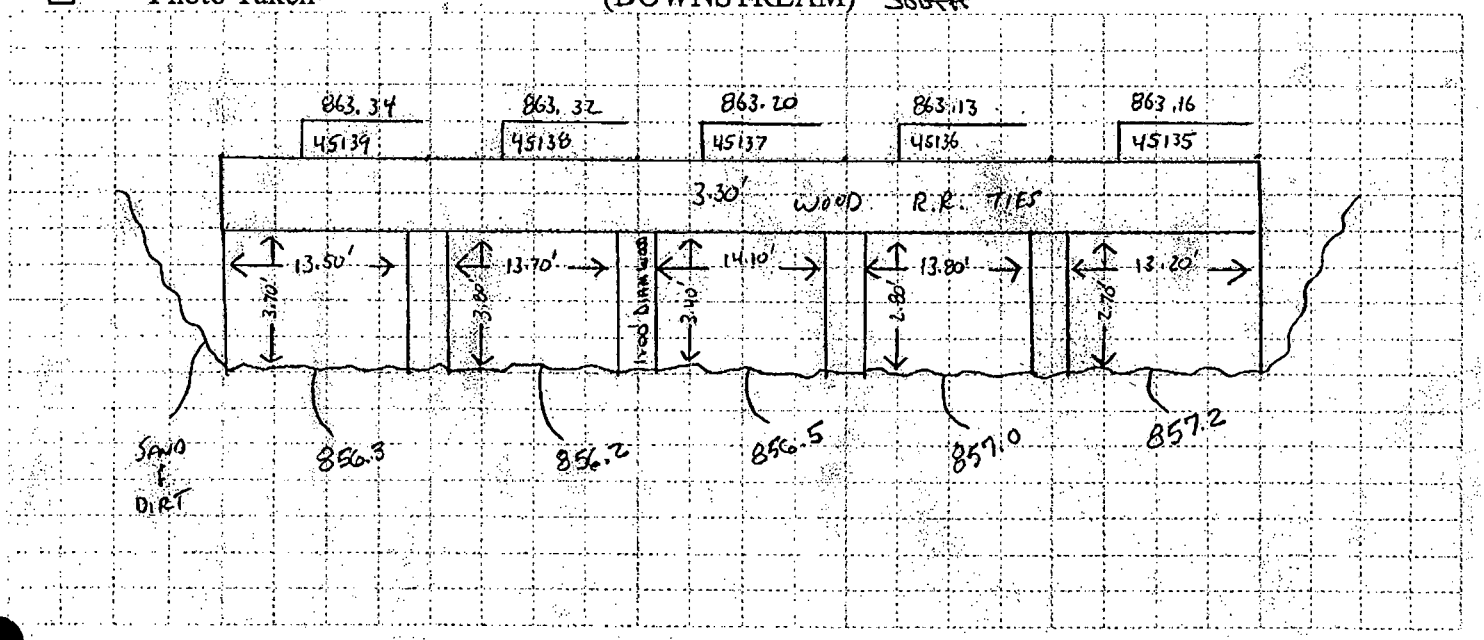
Description Name: UPR # 3 Party Chief: JEFF LALLIER

[X] Photo Taken (UPSTREAM) NORTH



General Condition of Structure OK

[X] Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure ok

E2-19

UPR 4

FCDMC Contract 2007C020

Task - Luke Wash Watershed Zone AE Floodplain Delineation Study

Structure Detail Worksheet

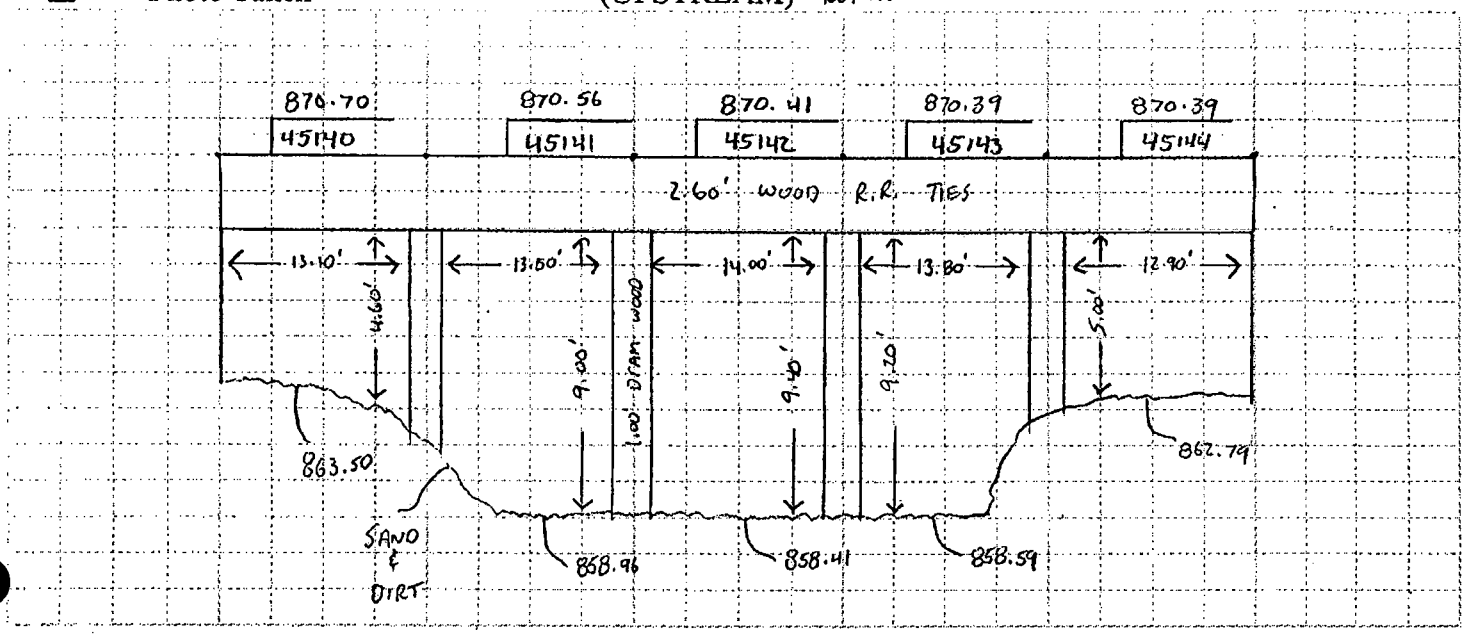
Wood/Patel Project #073087

Type of Structure: WOOD BRIDGE Date: 2-4-2008

File Name: LUKE WASH

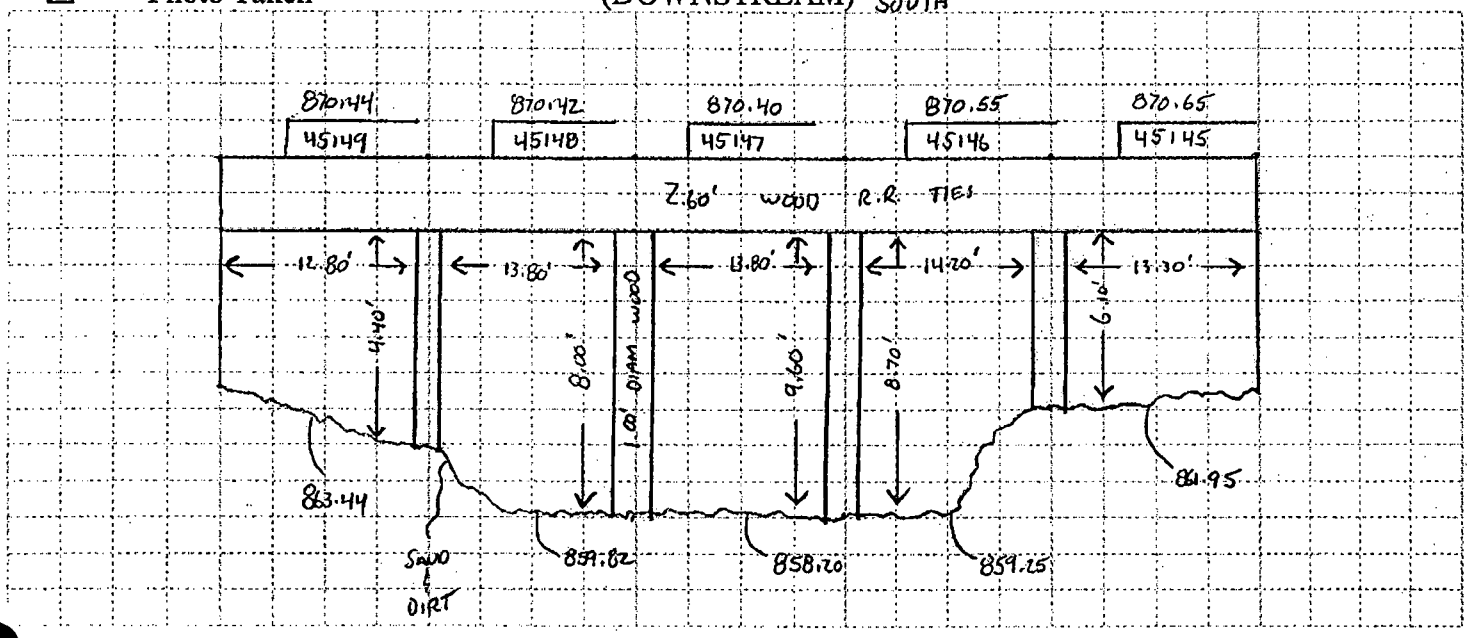
Description Name: UPR # 4 Party Chief: JEFF LALLIER

[X] Photo Taken (UPSTREAM) NORTH



General Condition of Structure OK

[X] Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure OK

E2-20

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UPR 5

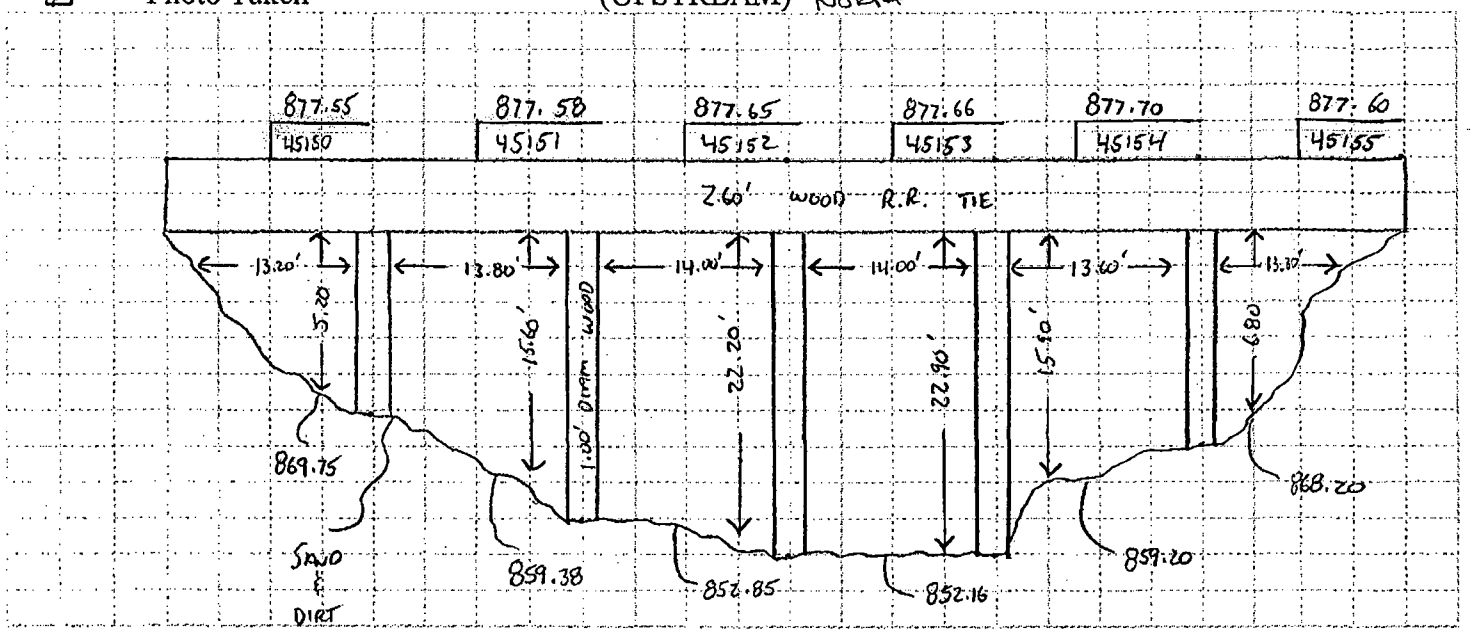
FCDMC Contract 2007C020
Task - Luke Wash Watershed Zone AE Floodplain Delineation Study
Structure Detail Worksheet
Wood/Patel Project #073087

Type of Structure: WOOD BRIDGE Date: 2-4-2008

File Name: LUKE WASH

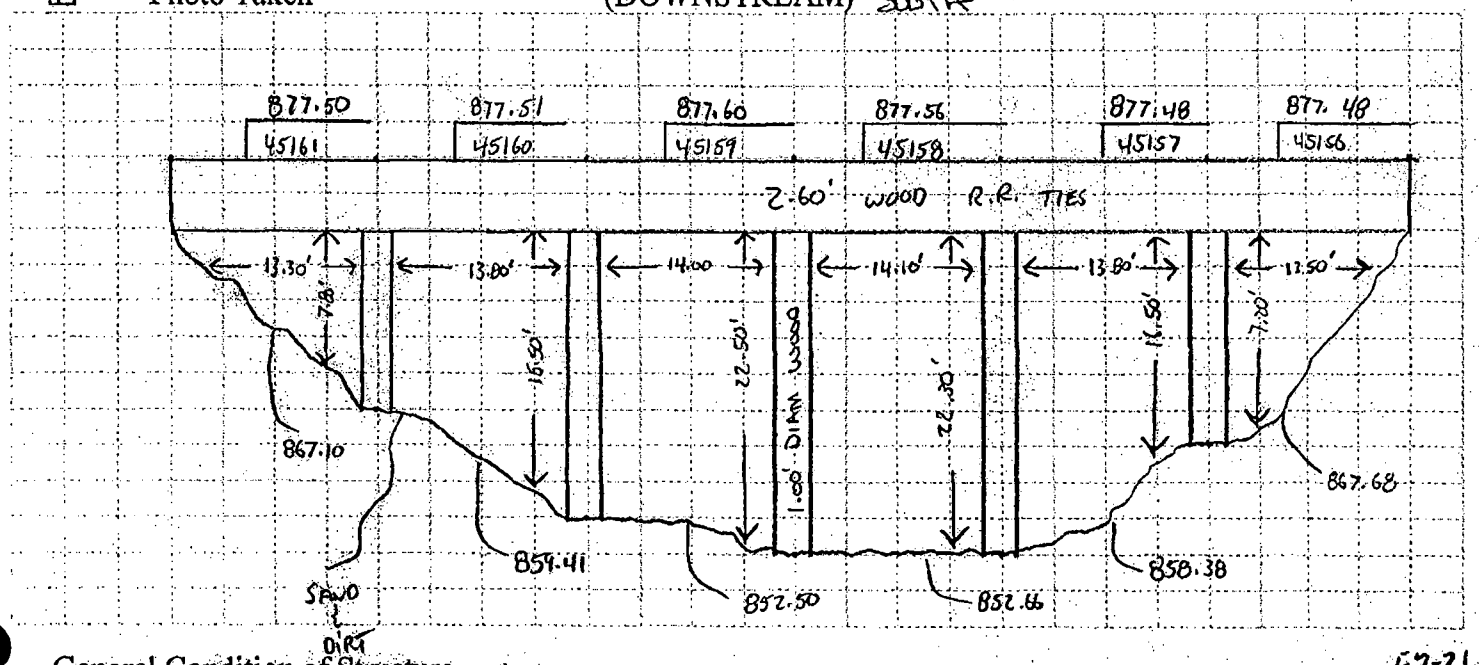
Description Name: UPR BRIDGE # 5 Party Chief: JEFF LALLIER

[X] Photo Taken (UPSTREAM) NORTH



General Condition of Structure OK

[X] Photo Taken (DOWNSTREAM) SOUTH



General Condition of Structure OK

E2-21

APPENDIX D4.1

Dodson Hydrocalc Hydraulics & Flowmaster Printouts

Culvert 10

PIPE CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE

July 10, 2008

PROGRAM INPUT DATA

DESCRIPTION	VALUE
Culvert Diameter (ft)	3.5
FHWA Chart Number	2
FHWA Scale Number (Type of Culvert Entrance)	2
Manning's Roughness Coefficient (n-value)	0.024
Entrance Loss Coefficient of Culvert Opening	0.5
Culvert Length (ft)	213.0
Invert Elevation at Downstream end of Culvert (ft)	1,097.55
Invert Elevation at Upstream end of Culvert (ft)	1,098.18
Culvert Slope (ft/ft)	0.003
Starting Flow Rate (cfs)	5.0
Incremental Flow Rate (cfs)	10.0
Ending Flow Rate (cfs)	105.0
Starting Tailwater Depth (ft)	1.0
Incremental Tailwater Depth (ft)	0.2
Ending Tailwater Depth (ft)	3.0

COMPUTATION RESULTS

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
5.0	1.0	0.93	1.09	0.97	0.67	1.0	2.2
15.0	1.2	1.67	1.95	1.76	1.18	1.2	5.14
25.0	1.4	2.25	2.62	2.46	1.54	1.54	6.14
35.0	1.6	2.75	3.24	3.5	1.83	1.83	6.86
45.0	1.8	3.22	3.96	3.5	2.09	2.09	7.5
55.0	2.0	3.68	4.61	3.5	2.32	2.32	8.12
65.0	2.2	4.36	5.71	3.5	2.53	2.53	8.74
75.0	2.4	5.45	6.96	3.5	2.71	2.71	9.38
85.0	2.6	6.25	8.37	3.5	2.87	2.87	10.06
95.0	2.8	7.15	9.88	3.5	3.01	3.01	10.79
105.0	3.0	8.15	11.55	3.5	3.12	3.12	11.59

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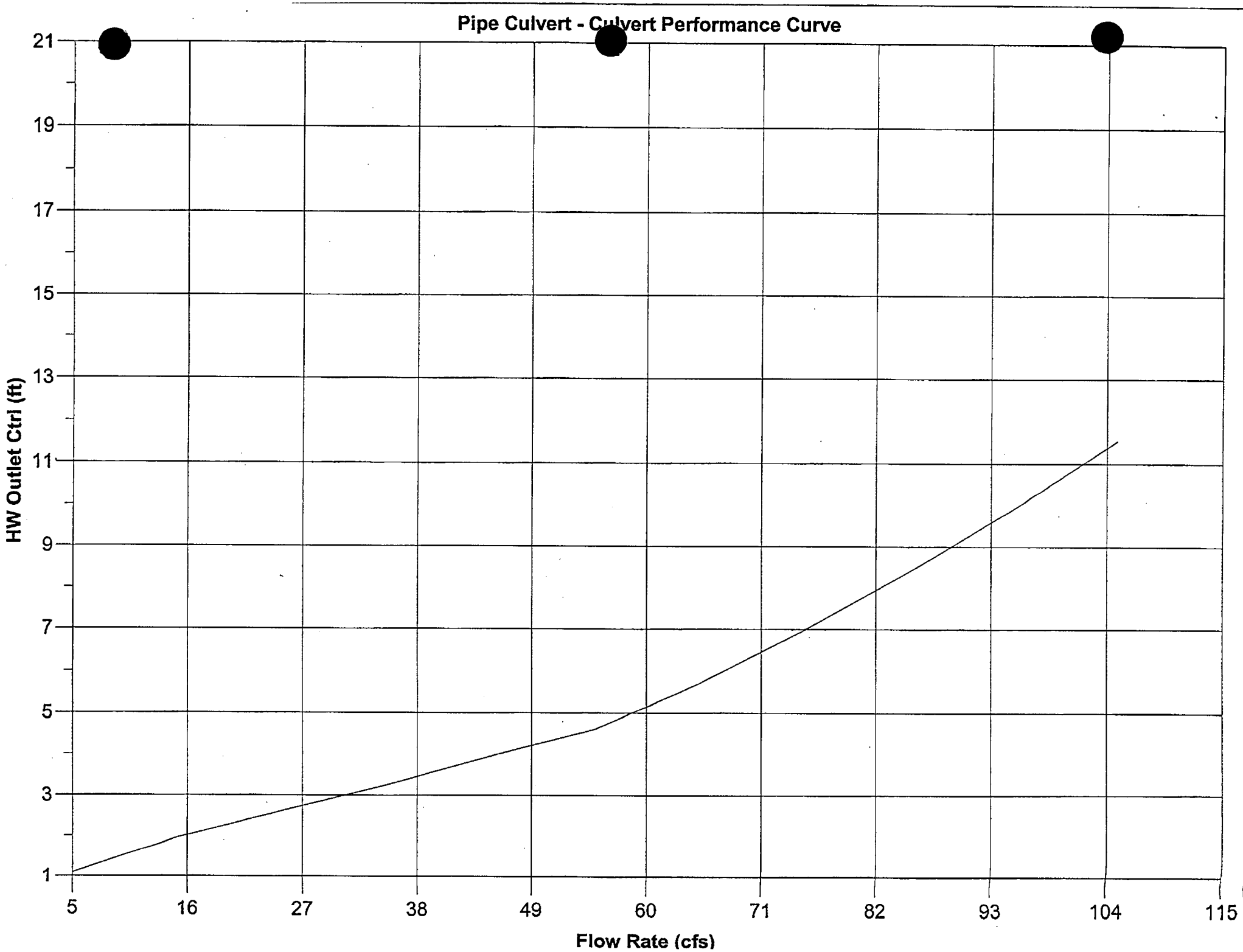

Pipe Culvert - Culvert Performance Curve
HW Outlet Ctrl (ft)
21
19
17
15
13
11
9
7
5
3
1
5
16
27
38
49
60
71
82
93
104
115
Flow Rate (cfs)

Worksheet for TailwaterSection_Culvert 10

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	70.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+32	3.00
1+00	2.00
1+64	1.00
1+95	0.50
2+26	0.00
2+31	0.00
2+80	0.50
3+28	1.00
4+16	2.00
4+70	3.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+32, 3.00)	(1+95, 0.50)	0.050
(1+95, 0.50)	(2+80, 0.50)	0.065
(2+80, 0.50)	(4+70, 3.00)	0.500

Results

Normal Depth	1.63	ft
Elevation Range	0.00 to 3.00 ft	
Flow Area	217.87	ft²
Wetted Perimeter	259.57	ft
Top Width	259.54	ft
Normal Depth	1.63	ft

Worksheet for TailwaterSection_Culvert 10

Results

Critical Depth	0.51	ft
Critical Slope	2.28565	ft/ft
Velocity	0.32	ft/s
Velocity Head	0.00	ft
Specific Energy	1.63	ft
Froude Number	0.06	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.63	ft
Critical Depth	0.51	ft
Channel Slope	0.00600	ft/ft
Critical Slope	2.28565	ft/ft

Cross Section for TailwaterSection_Culvert 10

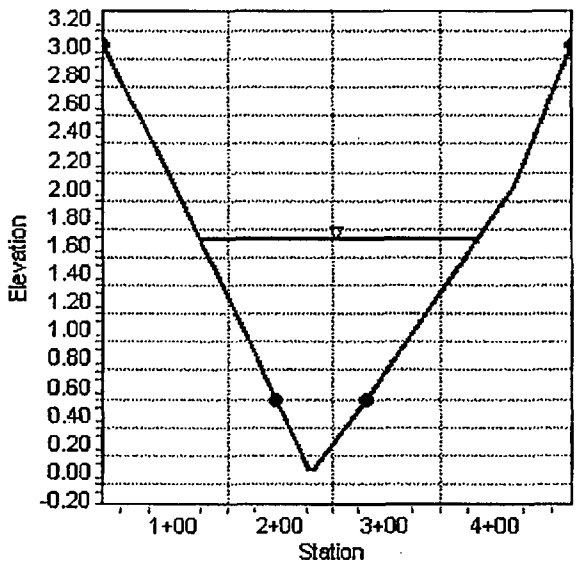
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

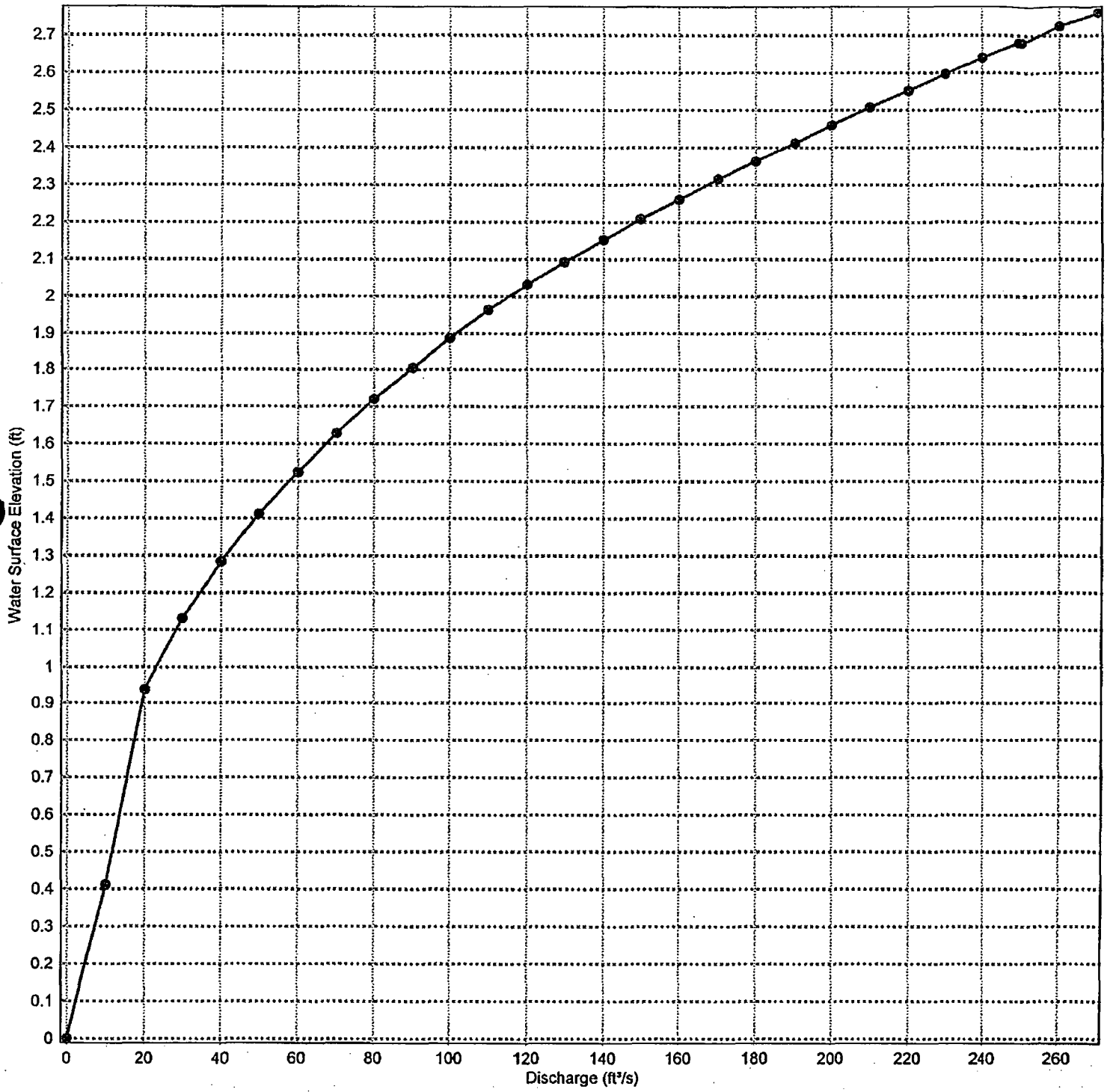
Input Data

Channel Slope	0.00600	ft/ft
Normal Depth	1.63	ft
Discharge	70.00	ft^3/s

Cross Section Image



Worksheet: TailwaterSection_Culvert 10
Water Surface Elevation (ft) vs Discharge (ft³/s)



Culvert 12

PIPE CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE

July 10, 2008

PROGRAM INPUT DATA

DESCRIPTION	VALUE
Culvert Diameter (ft)	3.0
FHWA Chart Number	2
FHWA Scale Number (Type of Culvert Entrance)	2
Manning's Roughness Coefficient (n-value)	0.024
Entrance Loss Coefficient of Culvert Opening	0.5
Culvert Length (ft)	235.0
Invert Elevation at Downstream end of Culvert (ft)	1,093.76
Invert Elevation at Upstream end of Culvert (ft)	1,095.64
Culvert Slope (ft/ft)	0.008
Starting Flow Rate (cfs)	5.0
Incremental Flow Rate (cfs)	5.0
Ending Flow Rate (cfs)	45.0
Starting Tailwater Depth (ft)	0.4
Incremental Tailwater Depth (ft)	0.1
Ending Tailwater Depth (ft)	1.2

COMPUTATION RESULTS

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
5.0	0.4	0.98	1.05	0.8	0.7	0.7	3.99
10.0	0.5	1.43	1.52	1.15	1.0	1.0	4.85
15.0	0.6	1.8	1.91	1.44	1.24	1.24	5.47
20.0	0.7	2.13	2.25	1.71	1.44	1.44	5.99
25.0	0.8	2.44	2.58	1.98	1.61	1.61	6.45
30.0	0.9	2.74	2.91	2.29	1.77	1.77	6.89
35.0	1.0	3.03	3.3	3.0	1.92	1.92	7.31
40.0	1.1	3.31	3.6	3.0	2.06	2.06	7.73
45.0	1.2	3.89	4.58	3.0	2.19	2.19	8.16

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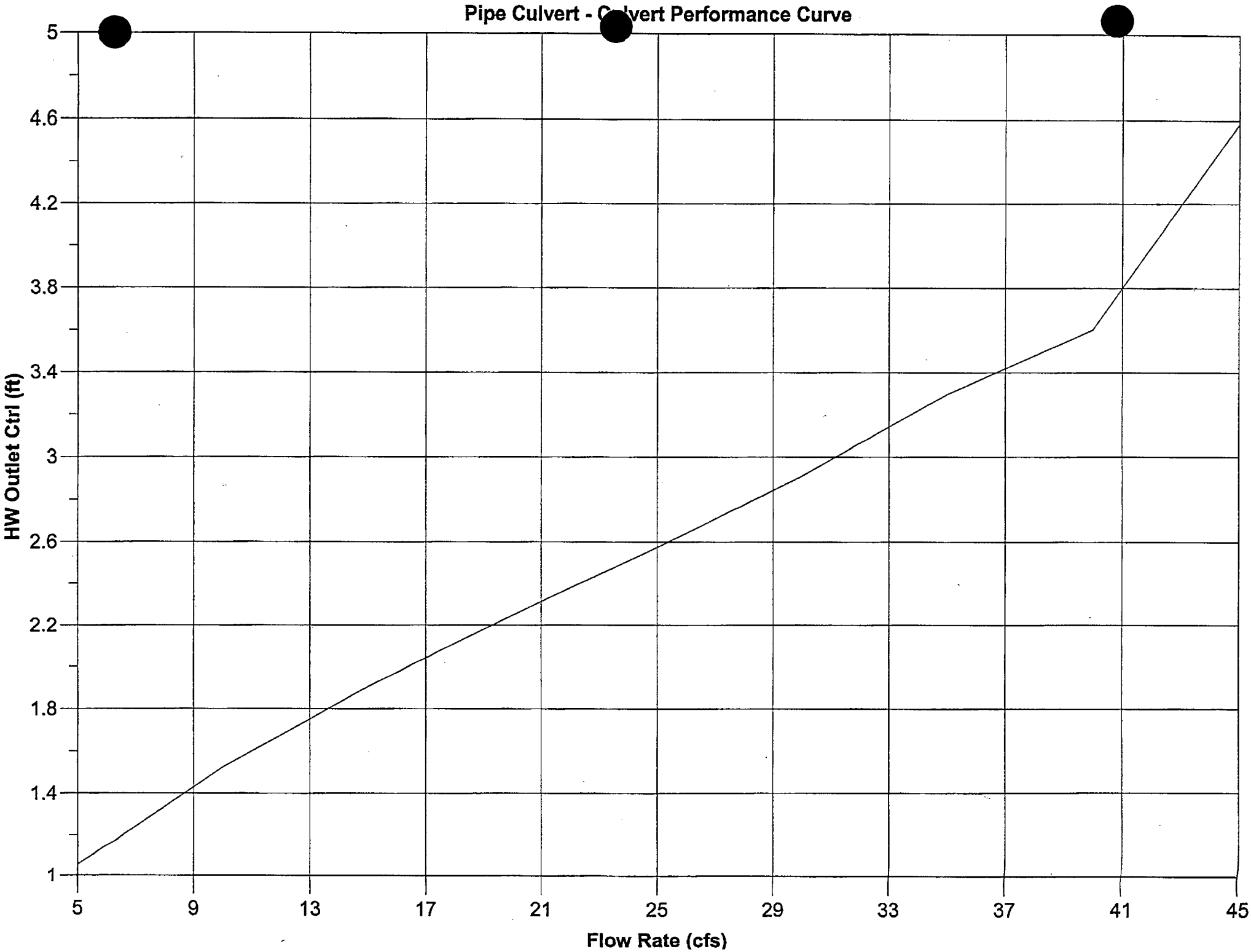

Pipe Culvert - Culvert Performance Curve
HW Outlet Ctrl (ft)
5
4.6
4.2
3.8
3.4
3
2.6
2.2
1.8
1.4
1
5
9
13
17
21
25
29
33
37
41
45
Flow Rate (cfs)

Worksheet for TailwaterSection_Culvert 12

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	36.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
1+00	2.00
1+71	1.00
2+08	0.50
2+45	0.00
2+55	0.00
2+81	0.50
3+07	1.00
3+58	2.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(1+00, 2.00)	(2+08, 0.50)	0.050
(2+08, 0.50)	(2+81, 0.50)	0.065
(2+81, 0.50)	(3+58, 2.00)	0.050

Results

Normal Depth	0.71	ft
Elevation Range	0.00 to 2.00 ft	
Flow Area	39.20	ft^2
Wetted Perimeter	99.91	ft
Top Width	99.89	ft
Normal Depth	0.71	ft
Critical Depth	0.39	ft
Critical Slope	0.08988	ft/ft

Worksheet for TailwaterSection_Culvert 12

Results

Velocity		0.92	ft/s
Velocity Head		0.01	ft
Specific Energy		0.73	ft
Froude Number		0.26	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.71	ft
Critical Depth	0.39	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.08988	ft/ft

Cross Section for TailwaterSection_Culvert 12

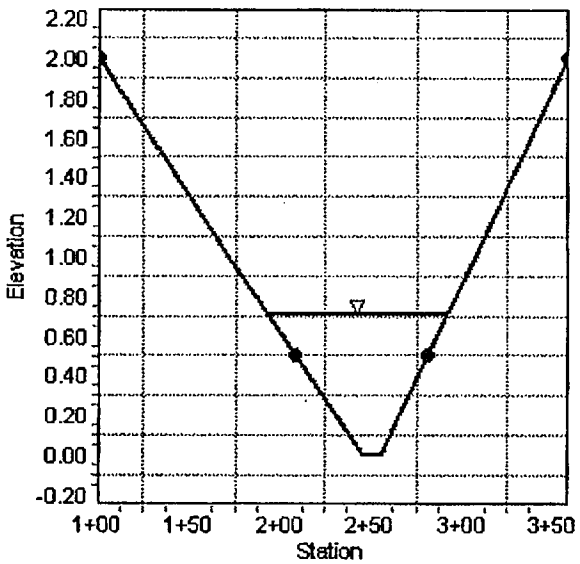
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

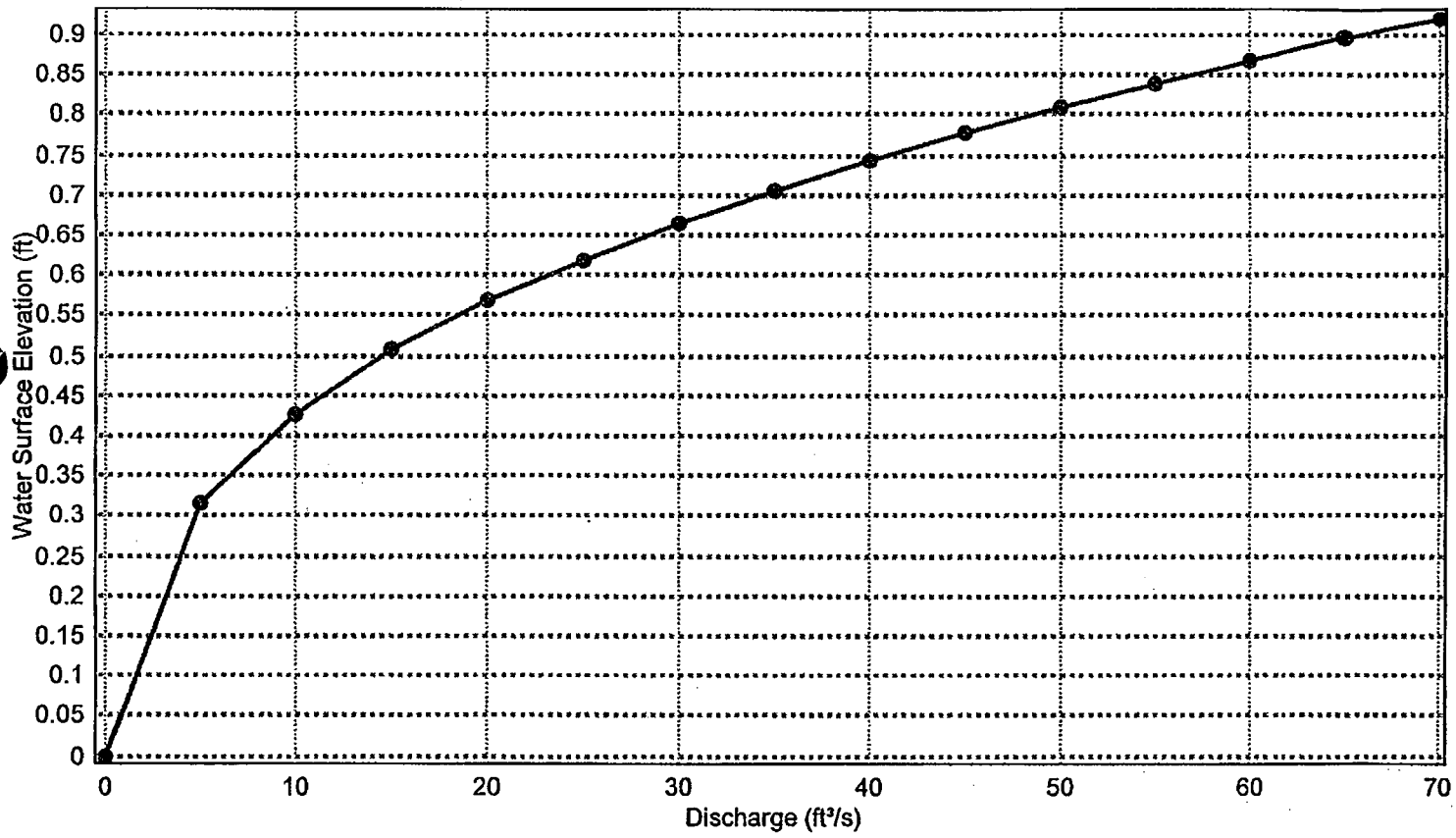
Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.71	ft
Discharge	36.00	ft^3/s

Cross Section Image



Worksheet: TailwaterSection_Culvert 12
Water Surface Elevation (ft) vs Discharge (ft³/s)



Culvert 50

PIPE CULVERT ANALYSIS
COMPUTATION OF CULVERT PERFORMANCE CURVE

July 10, 2008

PROGRAM INPUT DATA

DESCRIPTION	VALUE
Culvert Diameter (ft)	4.0
FHWA Chart Number	2
FHWA Scale Number (Type of Culvert Entrance)	2
Manning's Roughness Coefficient (n-value)	0.024
Entrance Loss Coefficient of Culvert Opening	0.5
Culvert Length (ft)	311.0
Invert Elevation at Downstream end of Culvert (ft)	1,065.4
Invert Elevation at Upstream end of Culvert (ft)	1,068.11
Culvert Slope (ft/ft)	0.0087
Starting Flow Rate (cfs)	5.0
Incremental Flow Rate (cfs)	10.0
Ending Flow Rate (cfs)	125.0
Starting Tailwater Depth (ft)	2.1
Incremental Tailwater Depth (ft)	0.2
Ending Tailwater Depth (ft)	4.5

COMPUTATION RESULTS

Flow Rate (cfs)	Tailwater Depth (ft)	Headwater (ft) Inlet Control	Headwater (ft) Outlet Control	Normal Depth (ft)	Critical Depth (ft)	Depth at Outlet (ft)	Outlet Velocity (fps)
5.0	2.1	0.9	0.97	0.71	0.65	2.1	0.75
15.0	2.3	1.61	1.72	1.23	1.13	2.3	2.01
25.0	2.5	2.13	2.26	1.62	1.48	2.5	3.03
35.0	2.7	2.59	2.72	1.96	1.76	2.7	3.88
45.0	2.9	3.0	3.14	2.28	2.01	2.9	4.61
55.0	3.1	3.4	3.54	2.6	2.23	3.1	5.26
65.0	3.3	3.78	3.95	2.95	2.43	3.3	5.86
75.0	3.5	4.15	4.43	3.41	2.62	3.5	6.43
85.0	3.7	4.52	4.92	4.0	2.79	3.7	7.0
95.0	3.9	5.48	6.26	4.0	2.95	3.9	7.61
105.0	4.1	6.26	8.68	4.0	3.1	4.0	8.36
115.0	4.3	6.9	10.34	4.0	3.24	4.0	9.15
125.0	4.5	7.61	12.12	4.0	3.36	4.0	9.95

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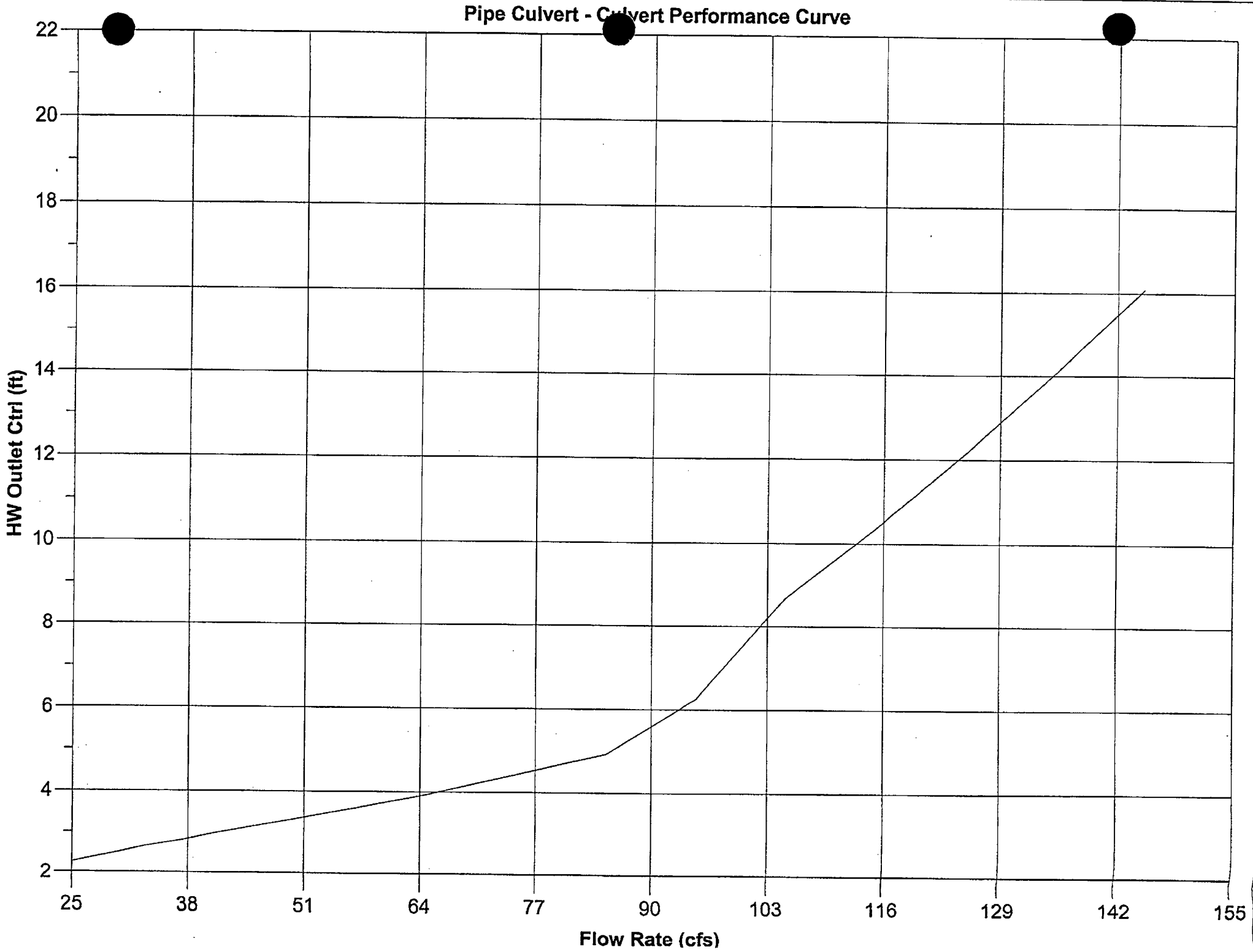

Pipe Culvert - Culvert Performance Curve
HW Outlet Ctrl (ft)
22
20
18
16
14
12
10
8
6
4
2
25
38
51
64
77
90
103
116
129
142
155
Flow Rate (cfs)

Worksheet for TailwaterSection_Culvert 50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	190.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+97	5.00
1+00	4.00
1+05	1.00
1+06	0.00
1+08	0.00
1+10	1.00
1+13	2.00
1+72	4.00
1+84	5.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+97, 5.00)	(1+05, 1.00)	0.055
(1+05, 1.00)	(1+10, 1.00)	0.045
(1+10, 1.00)	(1+84, 5.00)	0.055

Results

Normal Depth	3.91	ft
Elevation Range	0.00 to 5.00 ft	
Flow Area	86.14	ft²
Wetted Perimeter	70.84	ft
Top Width	69.19	ft
Normal Depth	3.91	ft
Critical Depth	2.99	ft

Worksheet for TailwaterSection_Culvert 50

Results

Critical Slope	0.04682	ft/ft
Velocity	2.21	ft/s
Velocity Head	0.08	ft
Specific Energy	3.99	ft
Froude Number	0.35	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.91	ft
Critical Depth	2.99	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.04682	ft/ft

Cross Section for TailwaterSection_Culvert 50

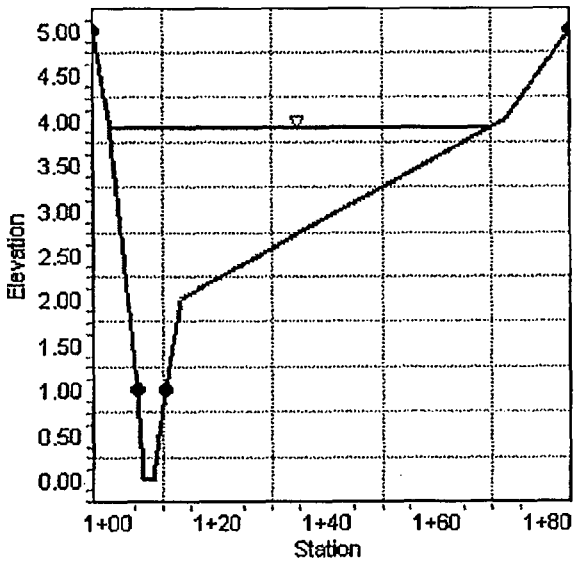
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

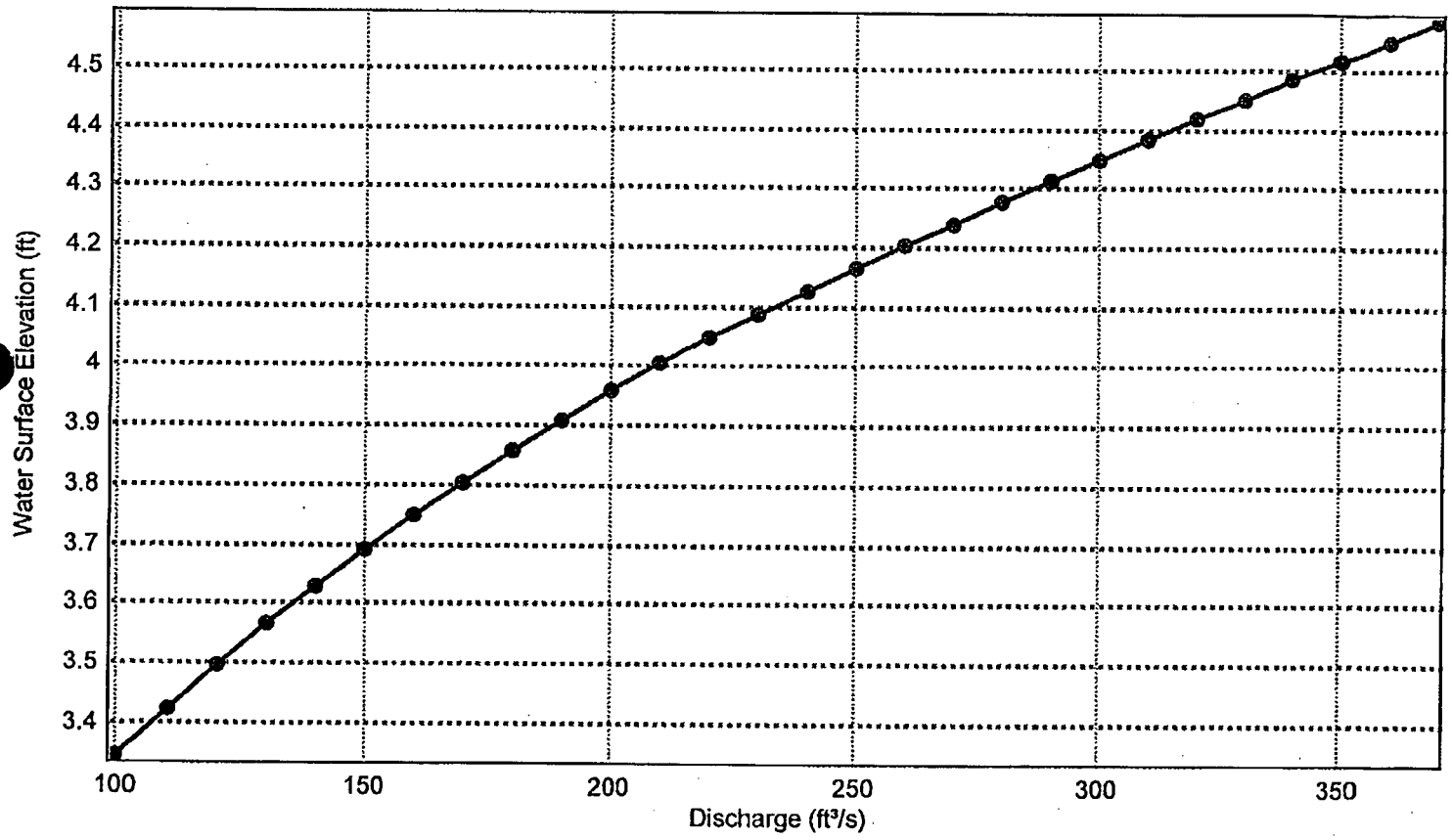
Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	3.91	ft
Discharge	190.00	ft^3/s

Cross Section Image



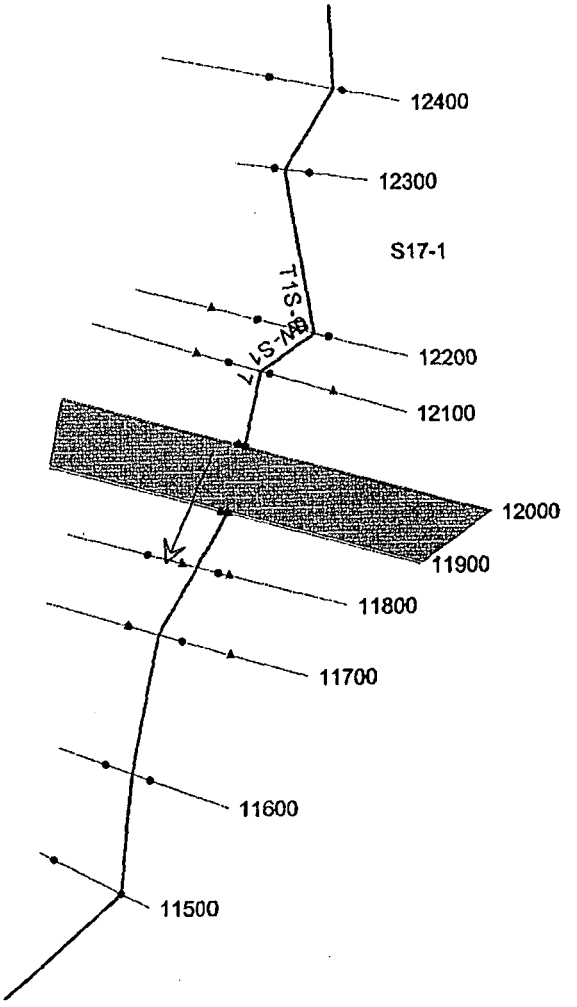
Worksheet: TailwaterSection_Culvert 50
Water Surface Elevation (ft) vs Discharge (ft³/s)



APPENDIX D4.2

HEC-RAS Printouts

HEC-RAS Model for Structure (14)



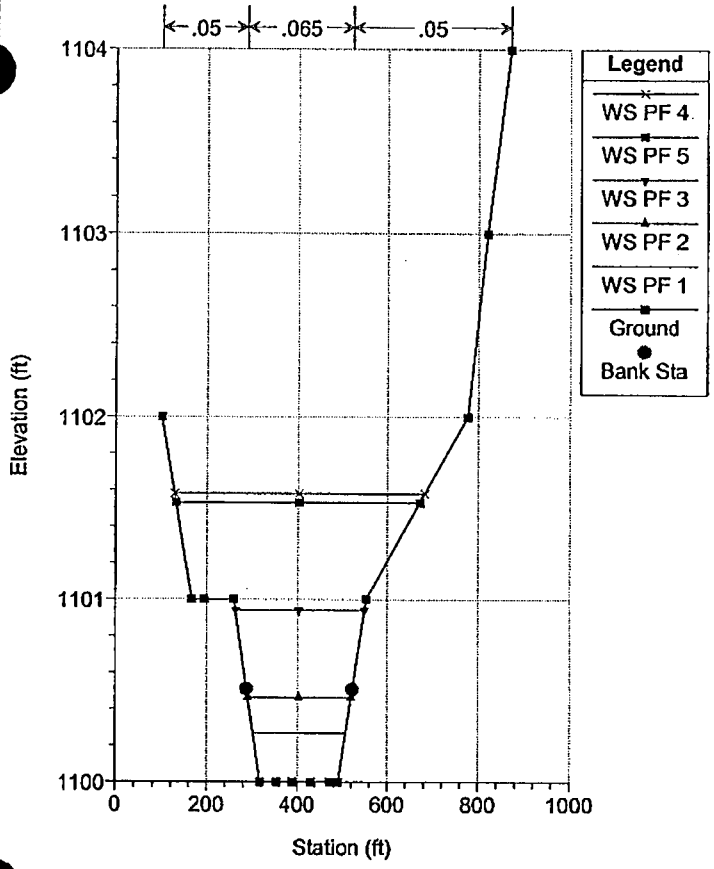
HEC-RAS Plan: FDS River: T1S-R5W-S17 Reach: S17-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
S17-1	12400	PF 1	50.00	1100.00	1100.27	1100.14	1100.28	0.011812	0.98	51.01	205.82	0.35
S17-1	12400	PF 2	100.00	1100.00	1100.46	1100.22	1100.48	0.007332	1.07	93.11	229.07	0.30
S17-1	12400	PF 3	300.00	1100.00	1100.94	1100.43	1100.97	0.004654	1.42	216.01	286.31	0.27
S17-1	12400	PF 4	700.00	1100.00	1101.58		1101.61	0.002705	1.57	505.88	554.11	0.22
S17-1	12400	PF 5	1000.00	1100.00	1101.53		1101.61	0.006385	2.36	479.37	540.05	0.34
S17-1	12300	PF 1	50.00	1098.00	1098.71	1098.33	1098.72	0.003061	0.82	62.75	147.60	0.20
S17-1	12300	PF 2	100.00	1098.00	1098.89		1098.91	0.004165	1.17	91.43	177.13	0.25
S17-1	12300	PF 3	300.00	1098.00	1099.24		1099.30	0.007363	2.03	163.23	232.93	0.35
S17-1	12300	PF 4	700.00	1098.00	1099.20	1099.20	1099.55	0.046980	5.00	154.23	226.81	0.87
S17-1	12300	PF 5	1000.00	1098.00	1100.46		1100.52	0.002489	1.97	550.40	357.73	0.23
S17-1	12200	PF 1	50.00	1096.00	1096.28	1096.13	1096.29	0.008589	0.86	58.19	225.25	0.30
S17-1	12200	PF 2	100.00	1096.00	1096.47	1096.20	1096.49	0.005569	0.96	104.31	247.59	0.26
S17-1	12200	PF 3	300.00	1096.00	1097.01	1096.40	1097.04	0.002975	1.21	254.77	309.20	0.22
S17-1	12200	PF 4	700.00	1096.00	1098.34	1096.69	1098.35	0.000627	0.99	782.24	664.87	0.12
S17-1	12200	PF 5	1000.00	1096.00	1100.42	1096.86	1100.42	0.000053	0.45	2503.78	899.70	0.04
S17-1	12100	PF 1	50.00	1094.50	1095.41	1094.91	1095.43	0.003364	0.93	53.92	92.17	0.21
S17-1	12100	PF 2	100.00	1094.50	1095.77	1095.09	1095.79	0.003210	1.09	91.37	117.60	0.22
S17-1	12100	PF 3	300.00	1094.50	1096.63	1095.53	1096.66	0.001727	1.26	266.43	367.19	0.18
S17-1	12100	PF 4	700.00	1094.50	1098.28	1096.10	1098.29	0.000261	0.80	953.11	789.80	0.08
S17-1	12100	PF 5	1000.00	1094.50	1100.41	1096.39	1100.41	0.000023	0.34	3266.63	990.03	0.03
S17-1	12000	PF 1	50.00	1092.56	1093.27	1093.12	1093.45	0.033498	3.34	14.97	22.01	0.70
S17-1	12000	PF 2	100.00	1092.56	1093.73	1093.45	1093.99	0.025968	4.08	24.50	22.65	0.67
S17-1	12000	PF 3	300.00	1092.56	1095.10	1094.40	1095.59	0.017510	5.63	53.30	24.73	0.62
S17-1	12000	PF 4	700.00	1092.56	1097.20	1095.81	1098.00	0.012787	7.19	97.38	32.95	0.59
S17-1	12000	PF 5	1000.00	1092.56	1099.61	1096.68	1100.32	0.006451	6.75	148.10	1147.16	0.45
S17-1	11950		Culvert									
S17-1	11900	PF 1	50.00	1091.76	1092.73		1092.82	0.012774	2.46	20.36	21.70	0.44
S17-1	11900	PF 2	100.00	1091.76	1093.14		1093.33	0.015882	3.44	29.05	22.06	0.52
S17-1	11900	PF 3	300.00	1091.76	1093.94	1093.60	1094.61	0.031268	6.55	45.83	22.96	0.78
S17-1	11900	PF 4	700.00	1091.76	1095.00	1095.00	1096.64	0.045472	10.28	68.10	24.97	1.01
S17-1	11900	PF 5	1000.00	1091.76	1095.88	1095.88	1097.95	0.041945	11.57	86.42	27.37	1.01
S17-1	11800	PF 1	50.00	1091.00	1091.67	1091.25	1091.68	0.003131	0.87	57.40	177.85	0.20
S17-1	11800	PF 2	100.00	1091.00	1091.95	1091.39	1091.97	0.003561	1.14	88.02	224.91	0.23
S17-1	11800	PF 3	300.00	1091.00	1092.57	1091.76	1092.63	0.004217	1.83	166.92	287.99	0.28
S17-1	11800	PF 4	700.00	1091.00	1093.31	1092.25	1093.41	0.004884	2.62	276.35	389.21	0.32
S17-1	11800	PF 5	1000.00	1091.00	1093.68	1092.54	1093.82	0.005487	3.09	332.88	460.07	0.35
S17-1	11700	PF 1	50.00	1090.00	1090.85	1090.43	1090.85	0.003337	0.75	66.26	153.40	0.20
S17-1	11700	PF 2	100.00	1090.00	1091.09	1090.58	1091.10	0.003275	0.93	108.03	190.16	0.21
S17-1	11700	PF 3	300.00	1090.00	1091.62	1090.92	1091.65	0.003391	1.44	211.03	246.80	0.24
S17-1	11700	PF 4	700.00	1090.00	1092.24	1091.27	1092.30	0.003843	2.05	371.98	623.70	0.27
S17-1	11700	PF 5	1000.00	1090.00	1092.52	1091.49	1092.59	0.004103	2.34	467.78	652.68	0.29
S17-1	11600	PF 1	50.00	1088.00	1088.79		1088.80	0.006250	1.00	49.89	120.82	0.27
S17-1	11600	PF 2	100.00	1088.00	1089.02		1089.04	0.006511	1.22	81.93	156.45	0.29
S17-1	11600	PF 3	300.00	1088.00	1089.46		1089.51	0.006784	1.86	174.22	261.58	0.33
S17-1	11600	PF 4	700.00	1088.00	1089.96		1090.04	0.006501	2.39	334.81	380.65	0.35
S17-1	11600	PF 5	1000.00	1088.00	1090.23		1090.31	0.006109	2.59	441.04	414.81	0.35
S17-1	11500	PF 1	50.00	1086.30	1086.79	1086.51	1086.80	0.004608	0.76	66.12	194.36	0.23
S17-1	11500	PF 2	100.00	1086.30	1086.99	1086.62	1087.00	0.004603	0.91	109.52	242.45	0.24
S17-1	11500	PF 3	300.00	1086.30	1087.40	1086.88	1087.43	0.004604	1.40	216.39	271.18	0.27
S17-1	11500	PF 4	700.00	1086.30	1087.94	1087.17	1088.00	0.004604	1.94	371.45	305.68	0.29
S17-1	11500	PF 5	1000.00	1086.30	1088.25	1087.35	1088.32	0.004603	2.21	468.15	324.63	0.30

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

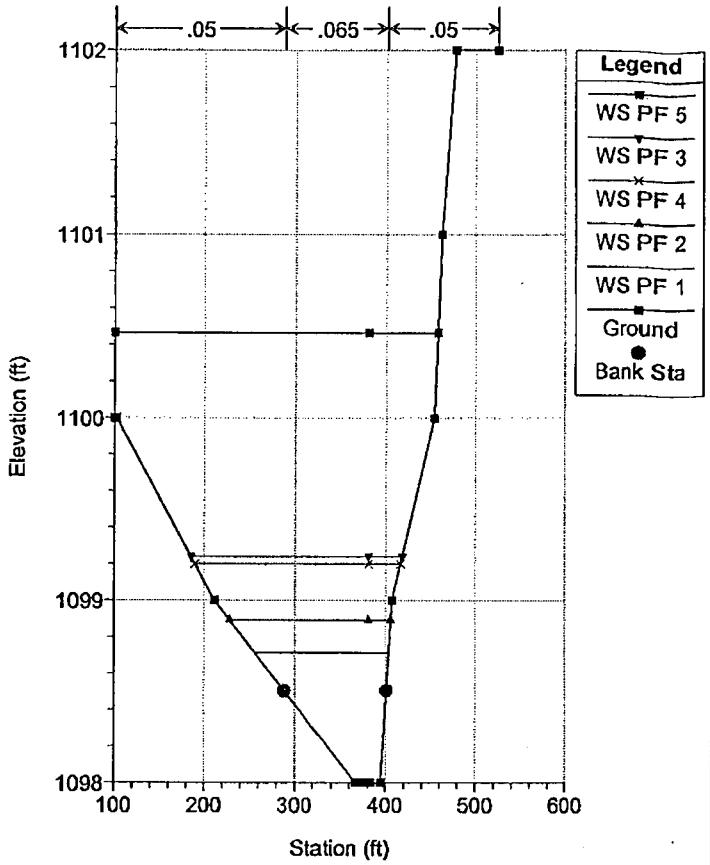
River = T1S-R5W-S17 Reach = S17-1 RS = 12400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

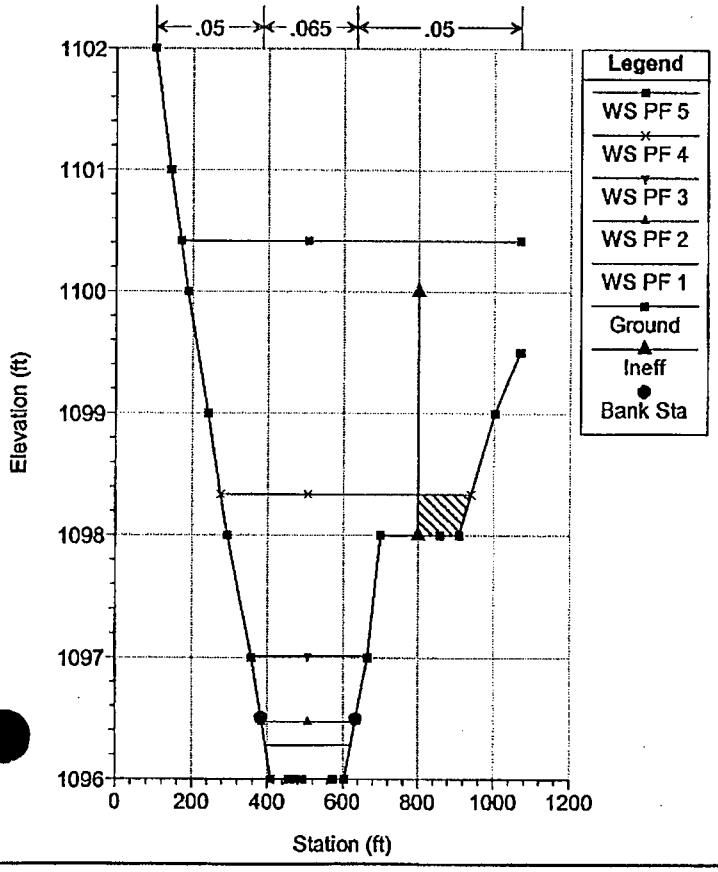
River = T1S-R5W-S17 Reach = S17-1 RS = 12300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

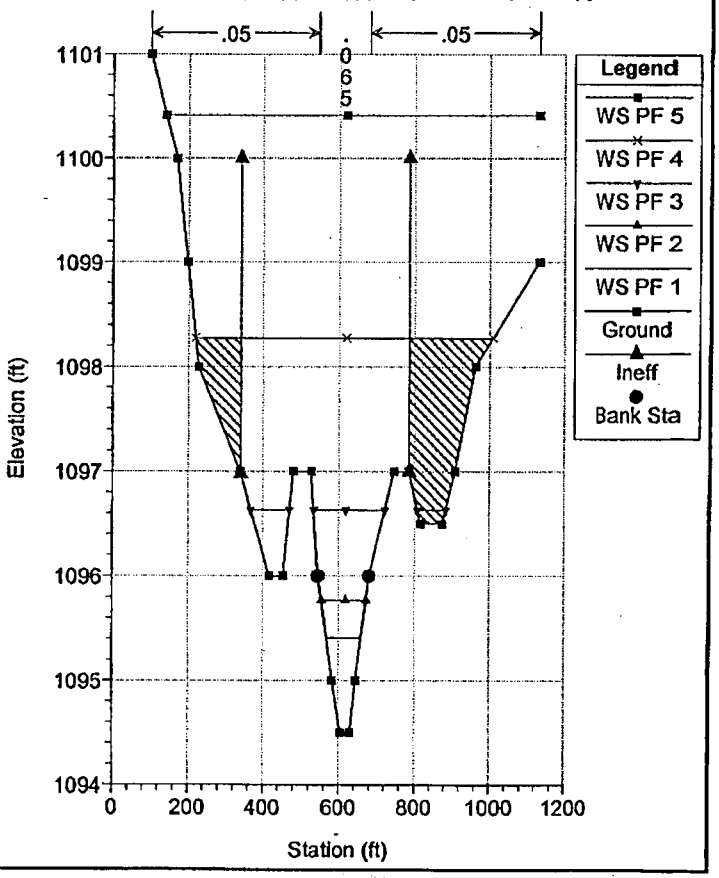
River = T1S-R5W-S17 Reach = S17-1 RS = 12200



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

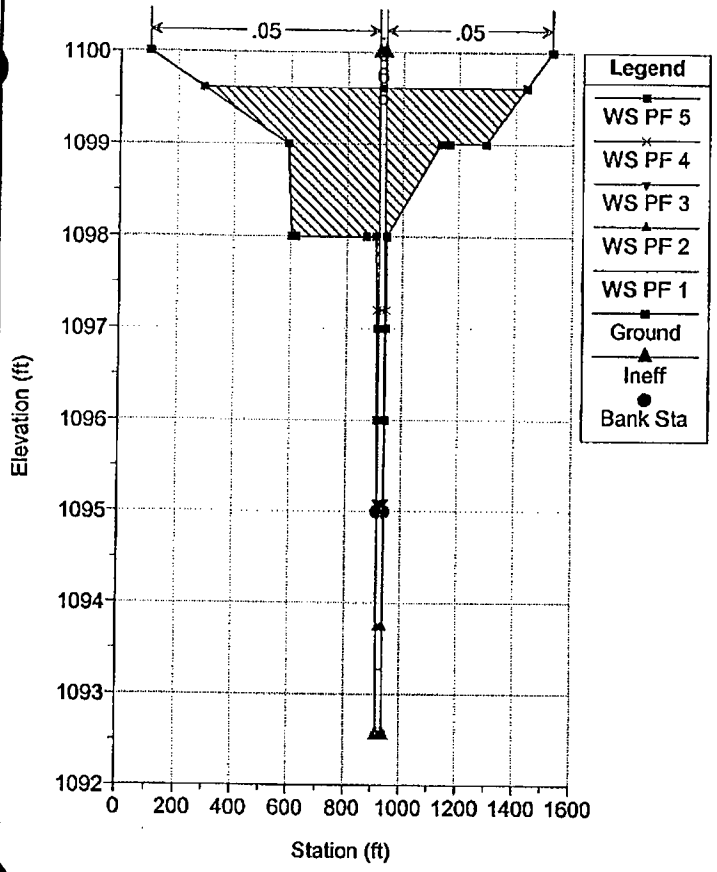
River = T1S-R5W-S17 Reach = S17-1 RS = 12100



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

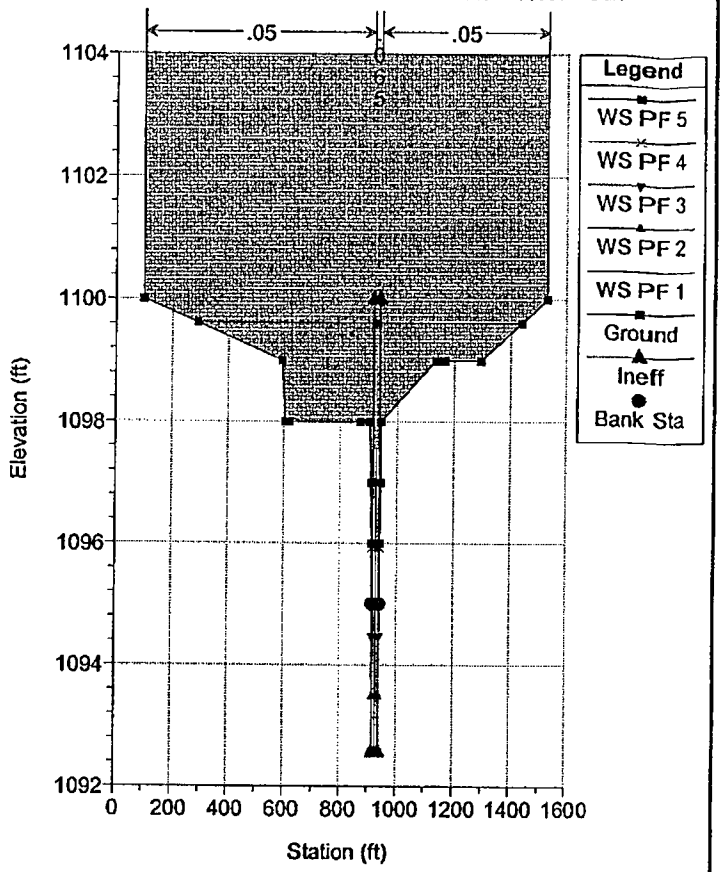
River = T1S-R5W-S17 Reach = S17-1 RS = 12000



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

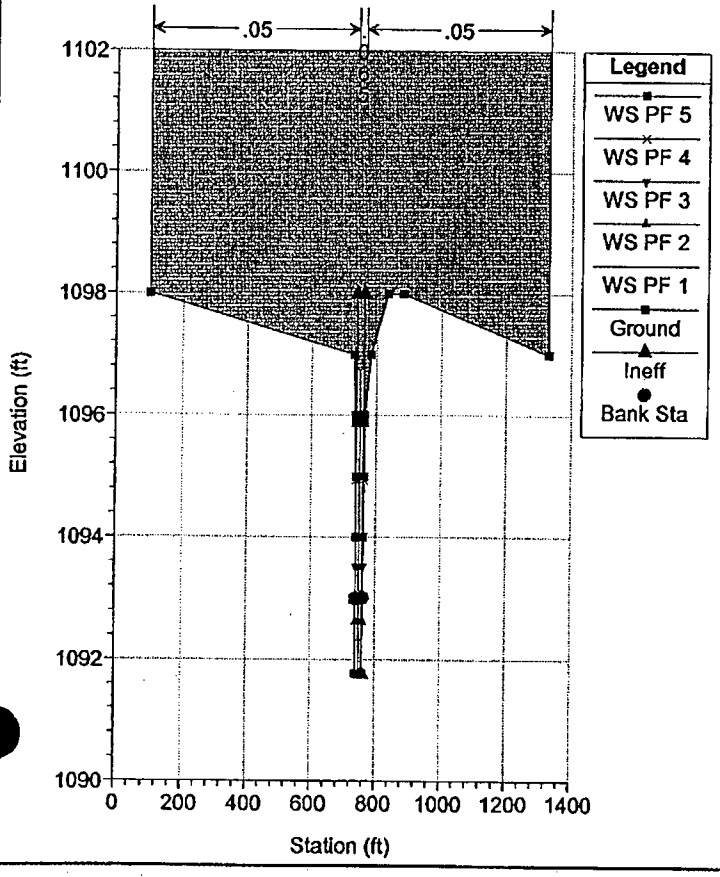
River = T1S-R5W-S17 Reach = S17-1 RS = 11950 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

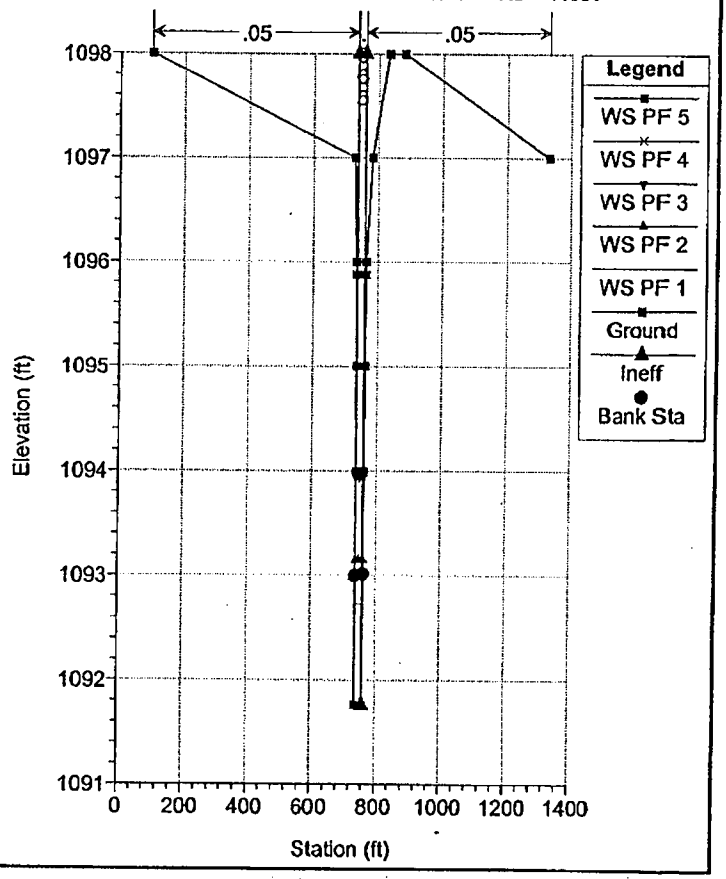
River = T1S-R5W-S17 Reach = S17-1 RS = 11950 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

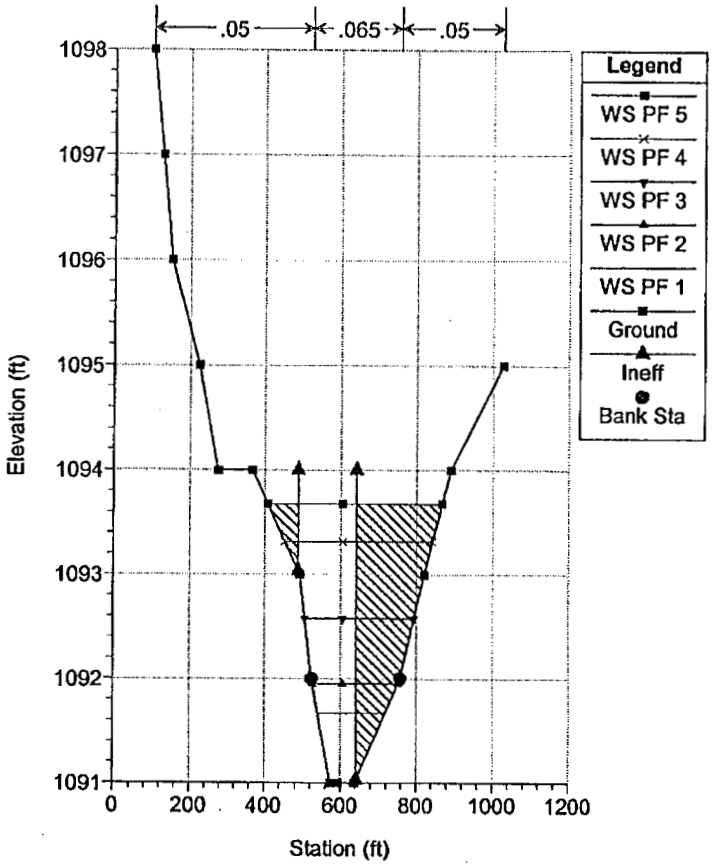
River = T1S-R5W-S17 Reach = S17-1 RS = 11900



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

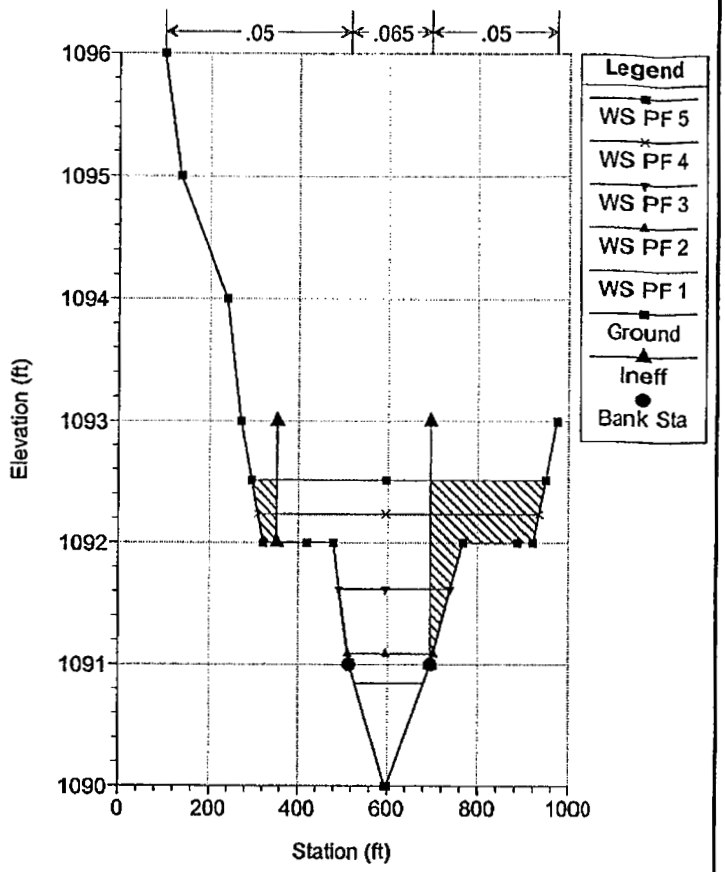
River = T1S-R5W-S17 Reach = S17-1 RS = 11800



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

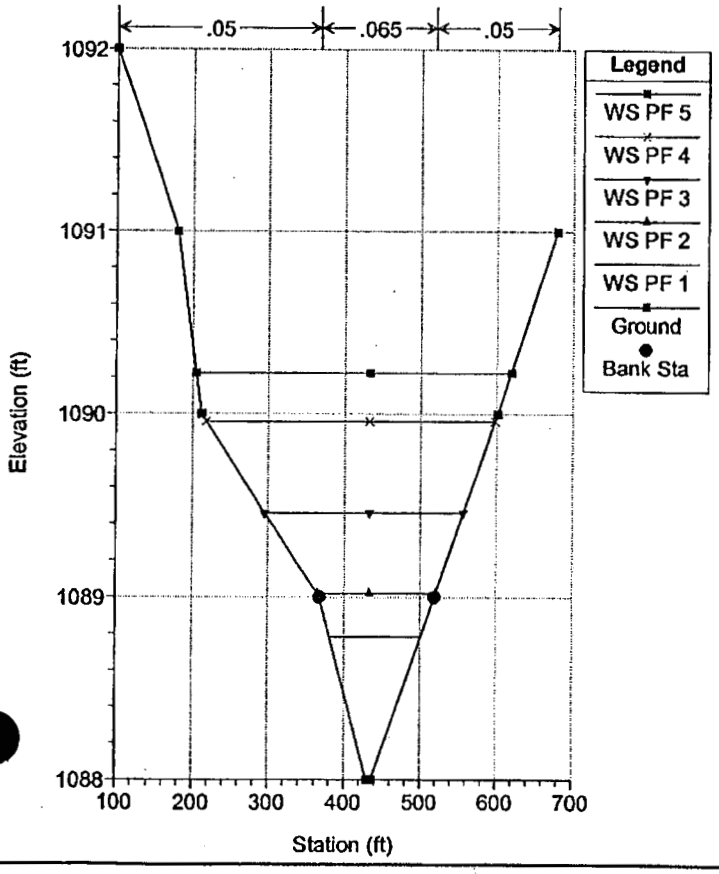
River = T1S-R5W-S17 Reach = S17-1 RS = 11700



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

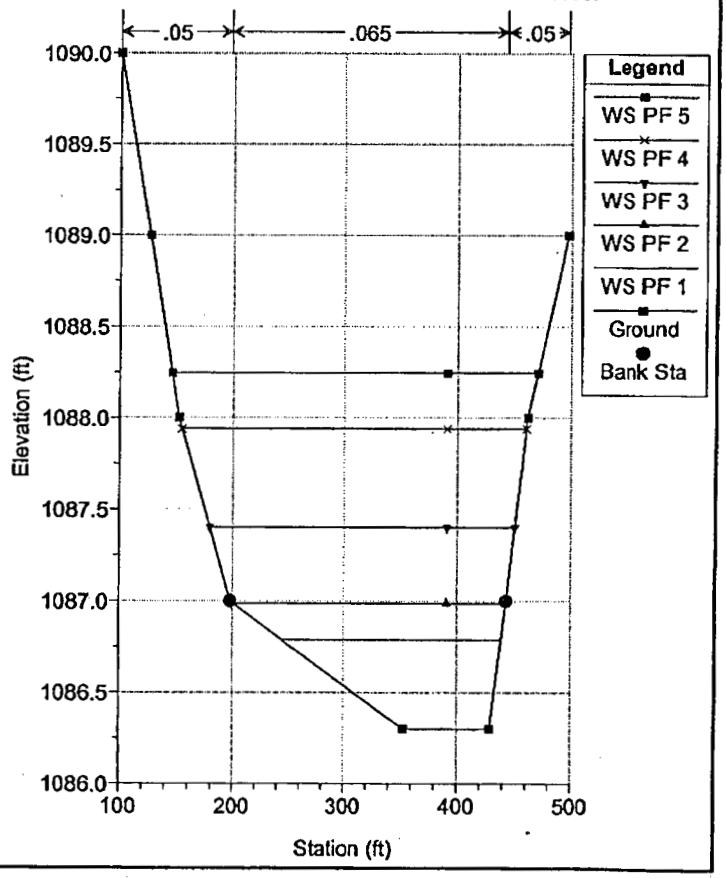
River = T1S-R5W-S17 Reach = S17-1 RS = 11600



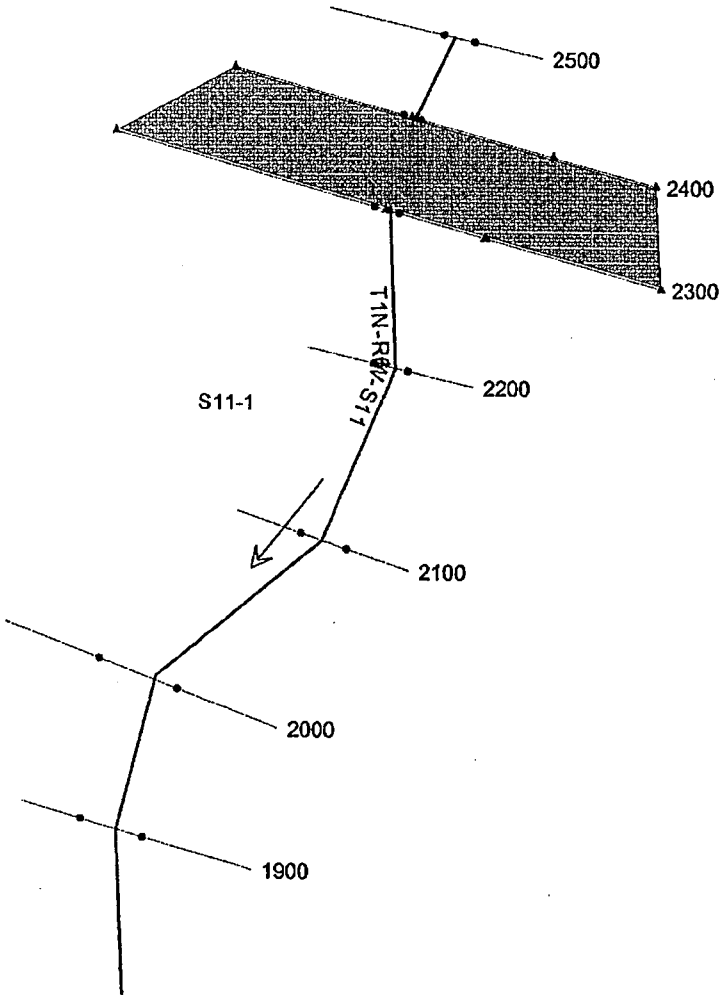
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = T1S-R5W-S17 Reach = S17-1 RS = 11500



for Structures (18) & (20)



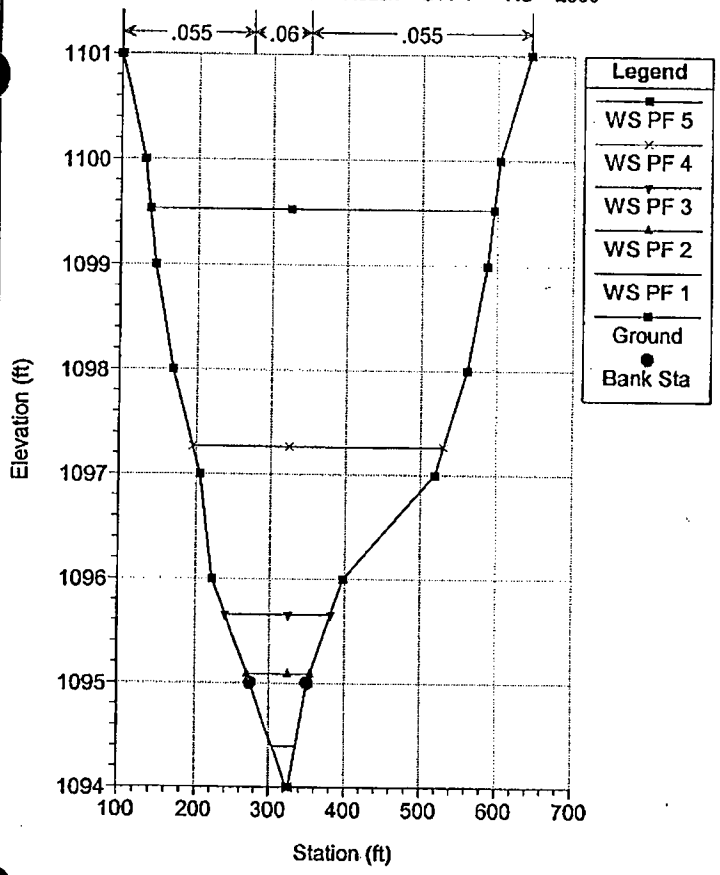
HEC-RAS Plan: FDS River: T1N-R6W-S11 Reach: S11-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
S11-1	2500	PF 1	10.00	1094.00	1094.39	1094.31	1094.43	0.029852	1.51	6.61	31.42	0.58
S11-1	2500	PF 2	50.00	1094.00	1095.09		1095.11	0.003726	1.08	48.62	85.34	0.24
S11-1	2500	PF 3	100.00	1094.00	1095.70		1095.71	0.001162	0.96	116.78	145.22	0.15
S11-1	2500	PF 4	175.00	1094.00	1097.70		1097.70	0.000043	0.35	647.60	369.26	0.03
S11-1	2500	PF 5	250.00	1094.00	1100.05		1100.05	0.000006	0.19	1664.16	477.17	0.01
S11-1	2400	PF 1	10.00	1092.24	1093.08	1092.54	1093.10	0.002432	1.09	9.21	19.42	0.21
S11-1	2400	PF 2	50.00	1092.24	1094.18	1093.10	1094.27	0.003653	2.33	21.78	36.76	0.29
S11-1	2400	PF 3	100.00	1092.24	1095.17	1093.60	1095.30	0.003287	2.91	36.07	143.42	0.30
S11-1	2400	PF 4	175.00	1092.24	1097.57	1094.32	1097.66	0.001139	2.55	70.81	664.61	0.19
S11-1	2400	PF 5	250.00	1092.24	1099.95	1094.82	1100.04	0.000624	2.41	105.41	1079.92	0.15
S11-1	2350		Culvert									
S11-1	2300	PF 1	10.00	1090.61	1091.37	1090.90	1091.39	0.003355	1.20	8.37	23.48	0.24
S11-1	2300	PF 2	50.00	1090.61	1092.29		1092.39	0.005469	2.59	20.30	47.87	0.35
S11-1	2300	PF 3	100.00	1090.61	1092.89		1093.08	0.006999	3.59	29.31	67.39	0.42
S11-1	2300	PF 4	175.00	1090.61	1093.45		1093.79	0.009619	4.86	37.60	372.28	0.51
S11-1	2300	PF 5	250.00	1090.61	1093.81	1093.03	1094.35	0.012546	6.03	43.13	442.79	0.59
S11-1	2200	PF 1	10.00	1089.00	1089.28	1089.14	1089.29	0.009569	0.92	10.87	46.43	0.34
S11-1	2200	PF 2	50.00	1089.00	1089.70		1089.73	0.008362	1.43	34.92	69.41	0.36
S11-1	2200	PF 3	100.00	1089.00	1089.99		1090.04	0.008219	1.73	57.91	85.81	0.37
S11-1	2200	PF 4	175.00	1089.00	1090.20	1089.78	1090.26	0.007899	2.02	103.01	228.56	0.38
S11-1	2200	PF 5	250.00	1089.00	1090.35		1090.41	0.007526	2.19	138.20	238.63	0.38
S11-1	2100	PF 1	10.00	1086.00	1086.38	1086.20	1086.39	0.004255	0.55	18.24	92.21	0.22
S11-1	2100	PF 2	50.00	1086.00	1086.66		1086.67	0.005115	0.98	52.69	156.67	0.27
S11-1	2100	PF 3	100.00	1086.00	1086.84		1086.86	0.005517	1.29	84.07	197.89	0.30
S11-1	2100	PF 4	175.00	1086.00	1087.02		1087.05	0.005861	1.60	124.10	238.93	0.32
S11-1	2100	PF 5	250.00	1086.00	1087.15		1087.20	0.006202	1.82	157.15	258.78	0.34
S11-1	2000	PF 1	10.00	1083.50	1083.60	1083.54	1083.60	0.007815	0.47	21.93	239.71	0.26
S11-1	2000	PF 2	50.00	1083.50	1083.76	1083.61	1083.77	0.006792	0.82	64.26	295.39	0.29
S11-1	2000	PF 3	100.00	1083.50	1083.88	1083.69	1083.90	0.006406	1.04	103.89	339.34	0.30
S11-1	2000	PF 4	175.00	1083.50	1084.03	1083.76	1084.05	0.006069	1.26	157.93	444.43	0.31
S11-1	2000	PF 5	250.00	1083.50	1084.13	1083.83	1084.16	0.005757	1.38	205.29	462.99	0.31
S11-1	1900	PF 1	10.00	1081.00	1081.25	1081.10	1081.26	0.005103	0.56	17.86	100.30	0.23
S11-1	1900	PF 2	50.00	1081.00	1081.54	1081.28	1081.55	0.005100	0.89	56.60	168.32	0.26
S11-1	1900	PF 3	100.00	1081.00	1081.72	1081.40	1081.74	0.005109	1.16	89.68	209.61	0.28
S11-1	1900	PF 4	175.00	1081.00	1081.91	1081.52	1081.94	0.005107	1.42	133.47	254.16	0.30
S11-1	1900	PF 5	250.00	1081.00	1082.06	1081.62	1082.09	0.005102	1.61	181.93	422.39	0.30

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

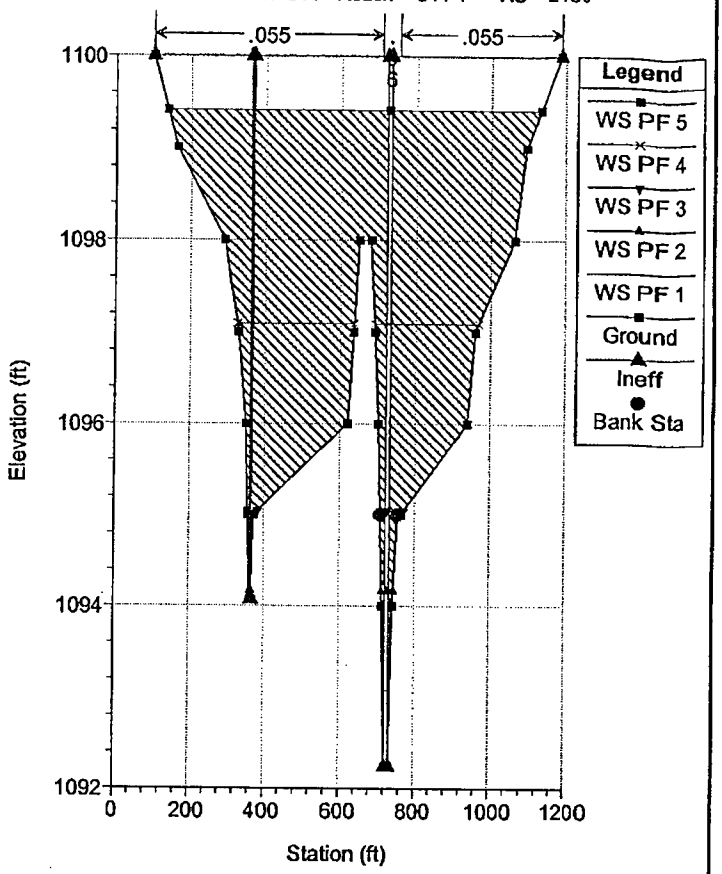
River = T1N-R6W-S11 Reach = S11-1 RS = 2500



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

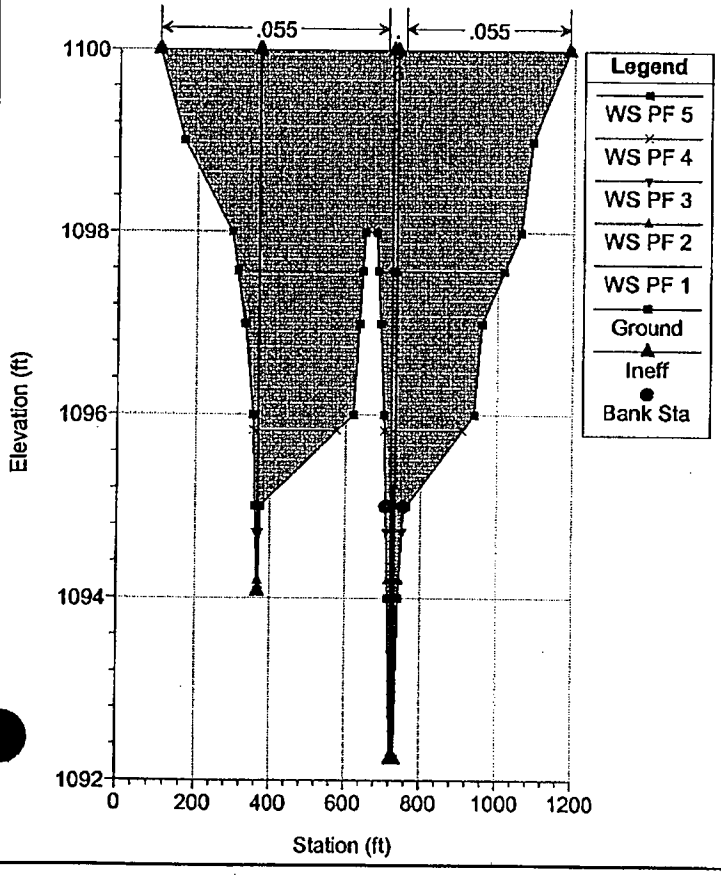
River = T1N-R6W-S11 Reach = S11-1 RS = 2400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

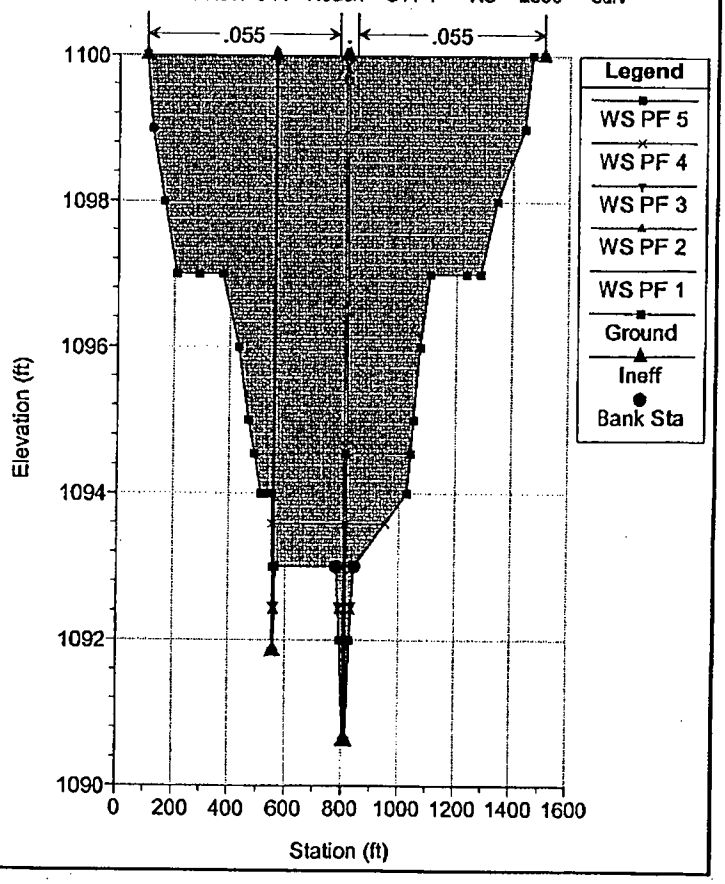
River = T1N-R6W-S11 Reach = S11-1 RS = 2350 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

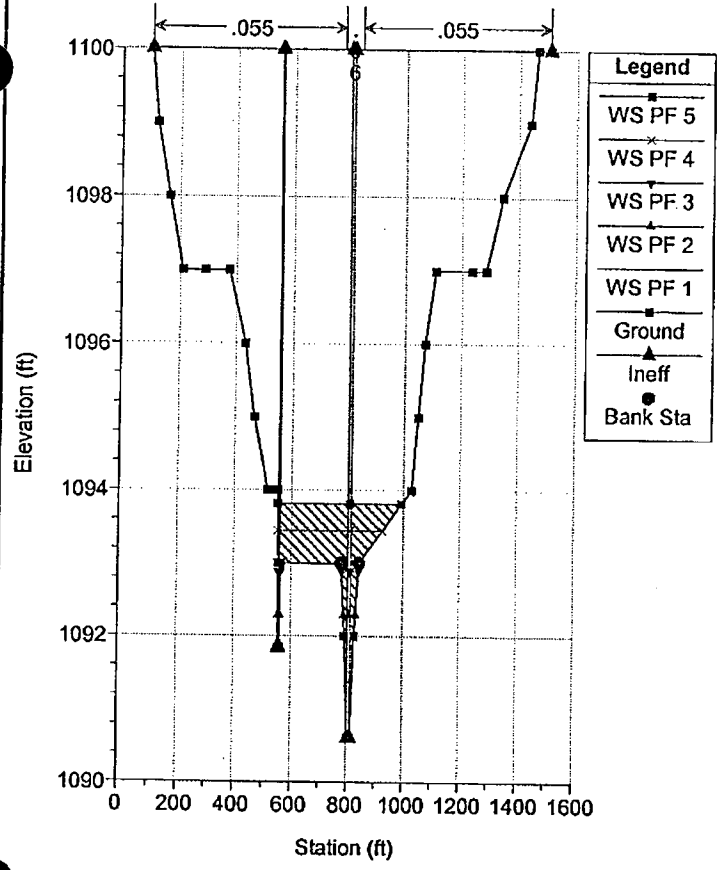
River = T1N-R6W-S11 Reach = S11-1 RS = 2350 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

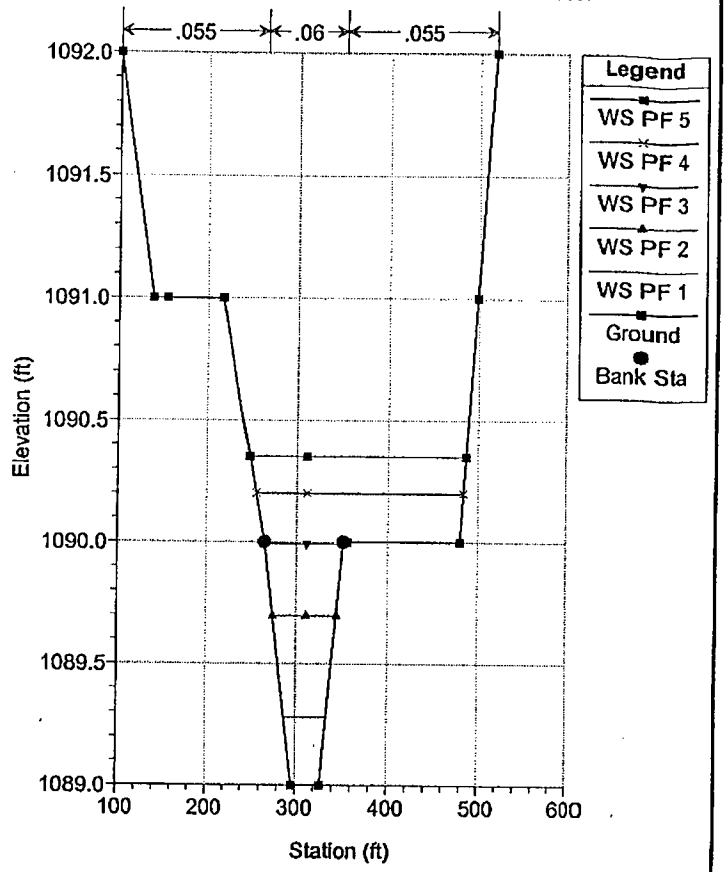
River = T1N-R6W-S11 Reach = S11-1 RS = 2300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

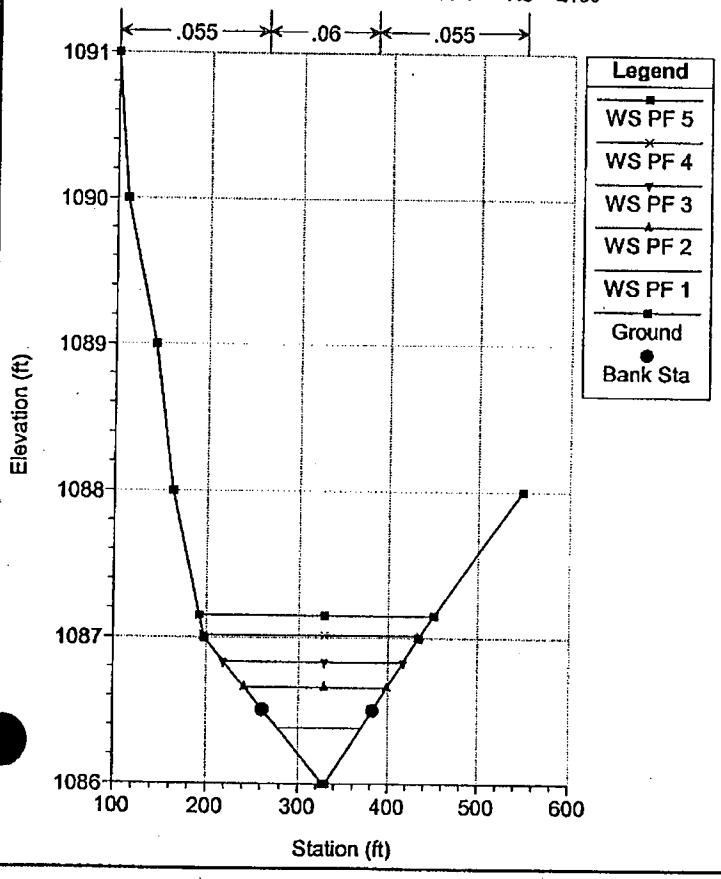
River = T1N-R6W-S11 Reach = S11-1 RS = 2200



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

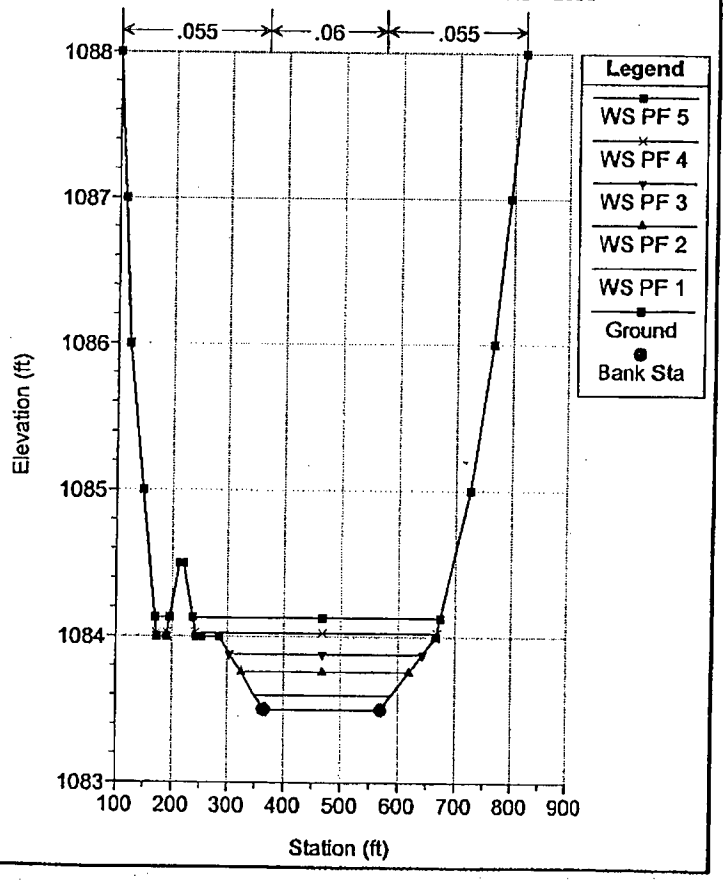
River = T1N-R6W-S11 Reach = S11-1 RS = 2100



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

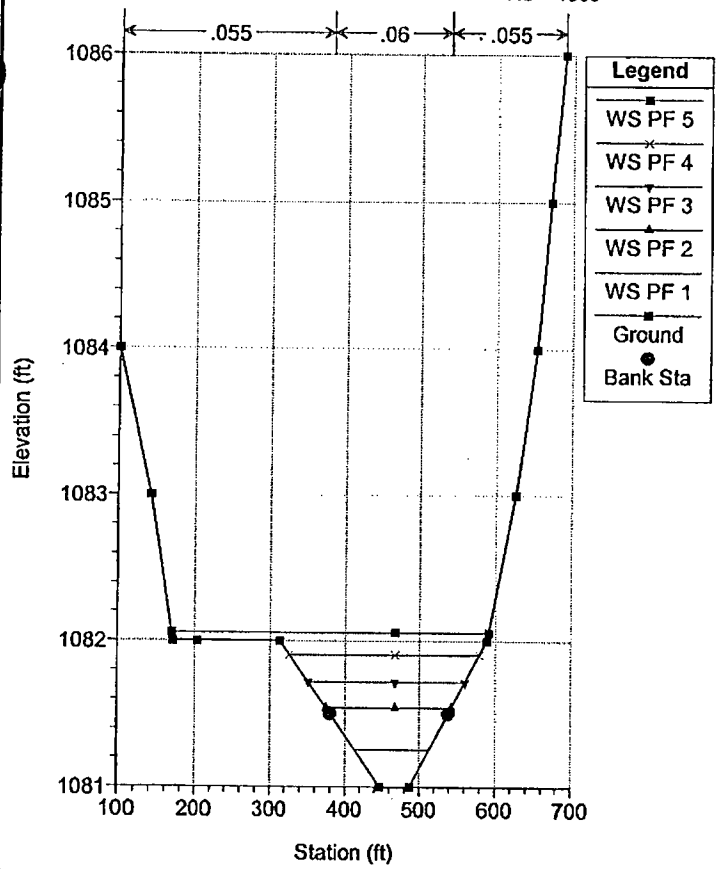
River = T1N-R6W-S11 Reach = S11-1 RS = 2000



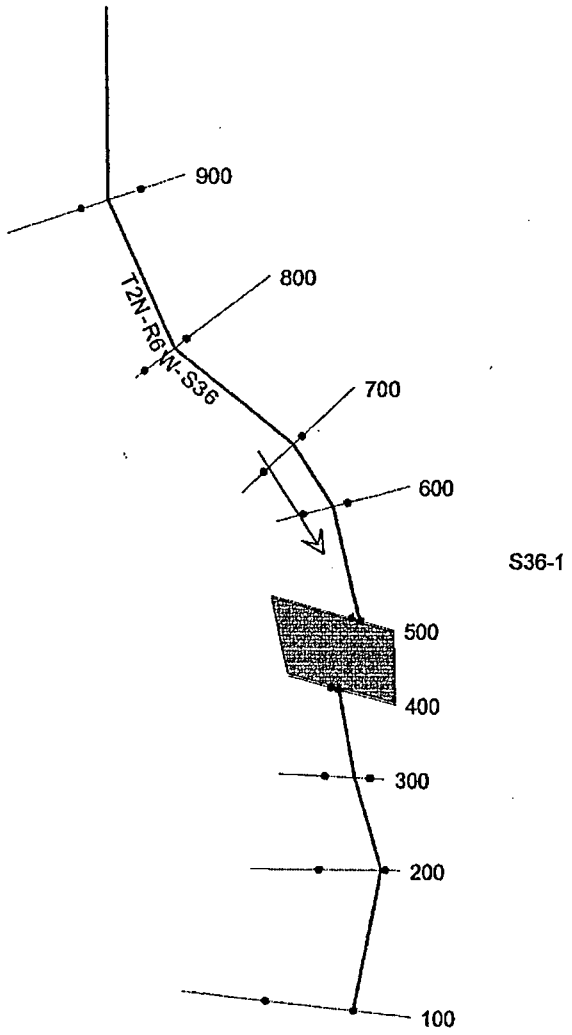
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = T1N-R6W-S11 Reach = S11-1 RS = 1900

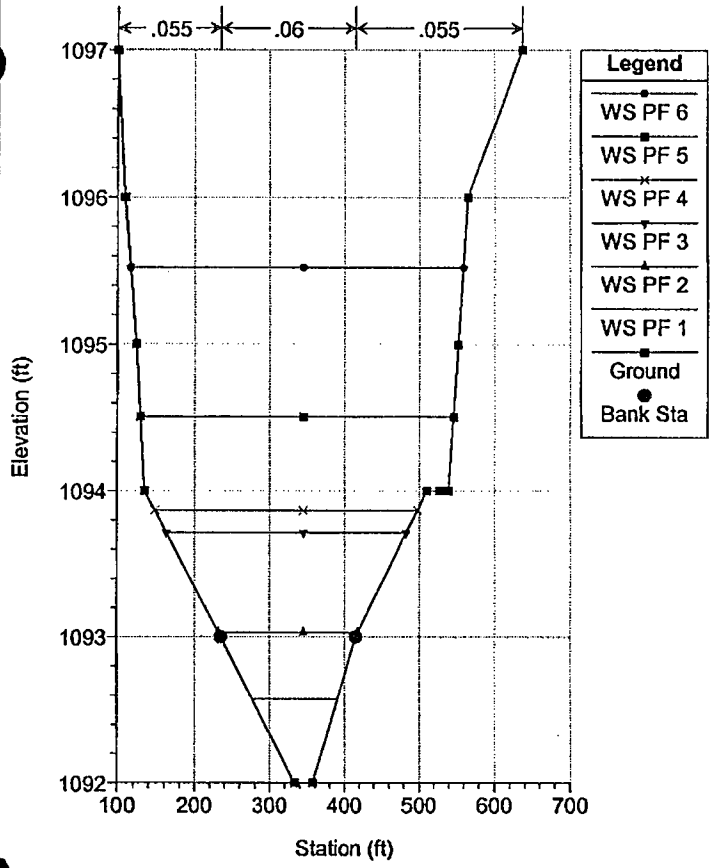


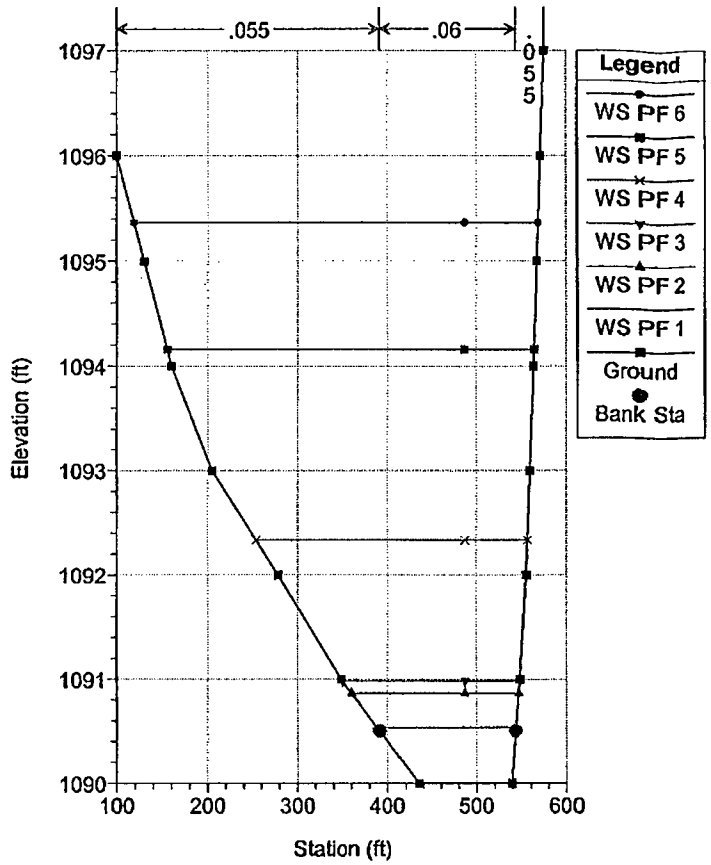
for Structure (26)

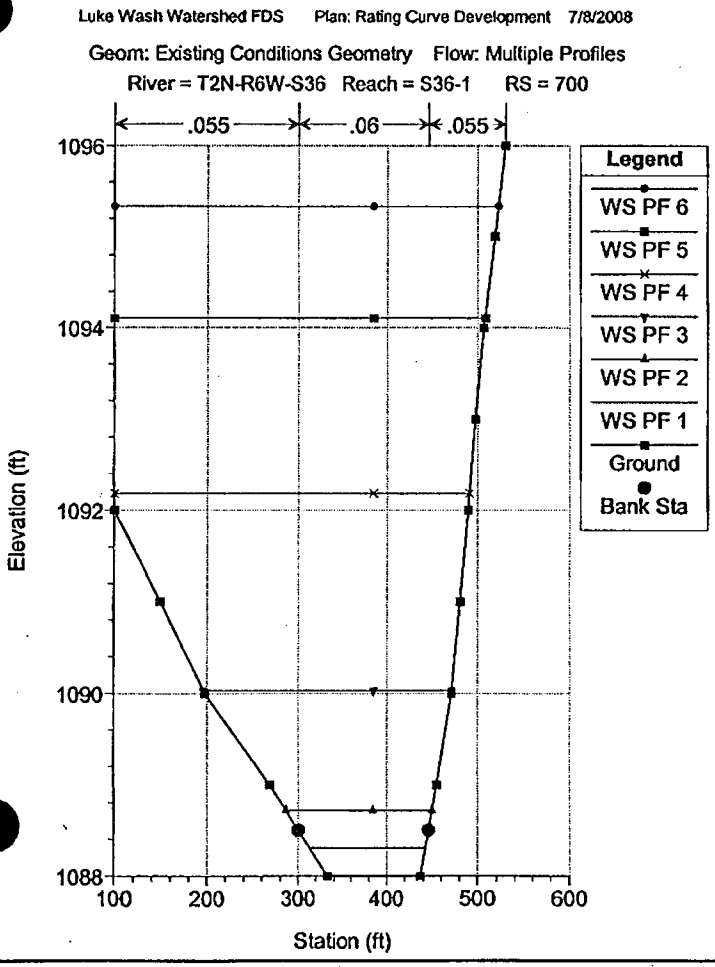


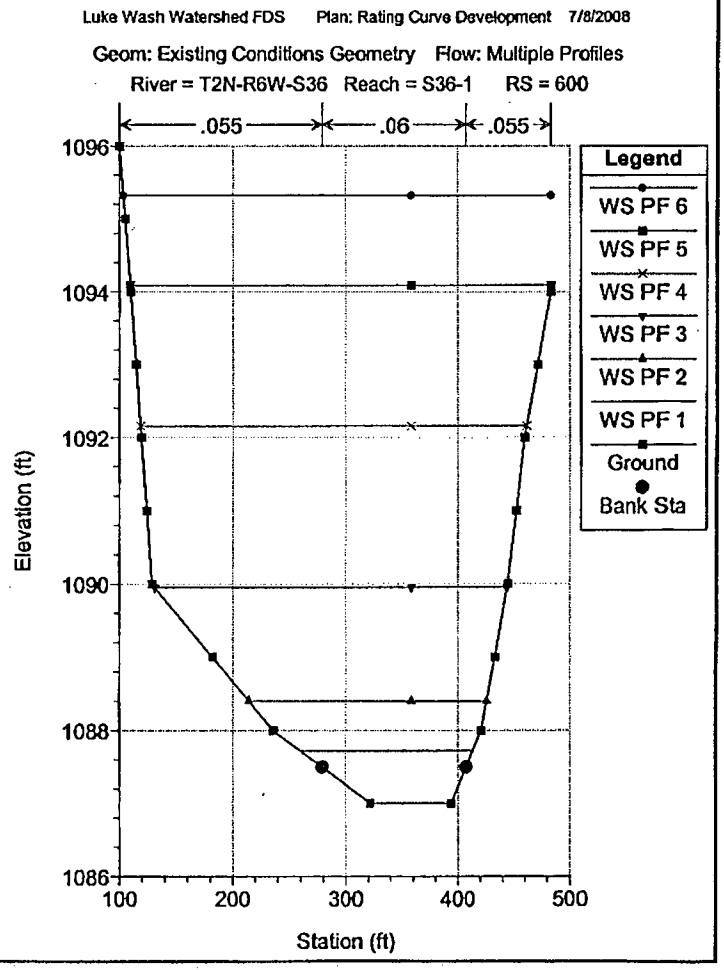
HEC-RAS Plan: FDS River: T2N-R6W-S36 Reach: S36-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
S36-1	900	PF 1	50.00	1092.00	1092.58	1092.35	1092.60	0.010387	1.25	39.94	114.30	0.37
S36-1	900	PF 2	150.00	1092.00	1093.03		1093.06	0.006272	1.39	107.90	186.40	0.32
S36-1	900	PF 3	400.00	1092.00	1093.73	1092.96	1093.76	0.002794	1.55	284.95	322.70	0.24
S36-1	900	PF 4	800.00	1092.00	1093.82		1093.93	0.008579	2.85	314.69	340.28	0.43
S36-1	900	PF 5	1200.00	1092.00	1094.65		1094.71	0.002552	2.13	649.49	421.30	0.25
S36-1	900	PF 6	1500.00	1092.00	1095.75		1095.78	0.000737	1.49	1126.26	449.81	0.14
S36-1	800	PF 1	50.00	1090.00	1090.54		1090.55	0.002339	0.71	70.14	156.03	0.19
S36-1	800	PF 2	150.00	1090.00	1090.86		1090.88	0.003457	1.23	125.11	186.42	0.25
S36-1	800	PF 3	400.00	1090.00	1090.95		1091.08	0.016668	2.92	142.46	195.03	0.55
S36-1	800	PF 4	800.00	1090.00	1092.47		1092.51	0.001493	1.71	529.88	313.33	0.20
S36-1	800	PF 5	1200.00	1090.00	1094.37		1094.39	0.000298	1.13	1237.02	415.69	0.10
S36-1	800	PF 6	1500.00	1090.00	1095.62		1095.63	0.000159	0.98	1782.16	458.05	0.07
S36-1	700	PF 1	50.00	1088.00	1088.31	1088.20	1088.34	0.017436	1.39	35.96	129.71	0.47
S36-1	700	PF 2	150.00	1088.00	1088.72		1088.76	0.007263	1.58	96.27	163.41	0.35
S36-1	700	PF 3	400.00	1088.00	1090.11		1090.13	0.000776	1.11	405.50	280.18	0.14
S36-1	700	PF 4	800.00	1088.00	1092.35		1092.36	0.000146	0.79	1174.86	392.43	0.07
S36-1	700	PF 5	1200.00	1088.00	1094.33		1094.33	0.000065	0.68	1968.52	410.54	0.05
S36-1	700	PF 6	1500.00	1088.00	1095.59		1095.60	0.000049	0.66	2496.24	425.07	0.04
S36-1	600	PF 1	50.00	1087.00	1087.72		1087.73	0.001250	0.63	81.14	153.18	0.14
S36-1	600	PF 2	150.00	1087.00	1088.42		1088.43	0.000672	0.77	212.85	213.06	0.12
S36-1	600	PF 3	400.00	1087.00	1090.04		1090.05	0.000202	0.72	642.82	318.44	0.07
S36-1	600	PF 4	800.00	1087.00	1092.33		1092.33	0.000072	0.63	1398.92	345.84	0.05
S36-1	600	PF 5	1200.00	1087.00	1094.32		1094.32	0.000045	0.62	2118.46	374.67	0.04
S36-1	600	PF 6	1500.00	1087.00	1095.58		1095.59	0.000037	0.63	2596.55	380.93	0.04
S36-1	500	PF 1	50.00	1085.75	1086.65	1086.31	1086.76	0.013371	2.66	18.80	23.25	0.50
S36-1	500	PF 2	150.00	1085.75	1087.63	1086.91	1087.86	0.010065	3.79	39.57	25.74	0.49
S36-1	500	PF 3	400.00	1085.75	1089.37	1087.99	1089.80	0.008094	5.26	76.10	28.27	0.49
S36-1	500	PF 4	800.00	1085.75	1091.50	1089.30	1092.18	0.006939	6.62	120.79	30.22	0.49
S36-1	500	PF 5	1200.00	1085.75	1093.29	1090.40	1094.18	0.006344	7.58	158.26	304.23	0.49
S36-1	500	PF 6	1500.00	1085.75	1095.37	1091.14	1095.53	0.001877	4.09	662.14	356.60	0.26
S36-1	450		Culvert									
S36-1	400	PF 1	50.00	1084.79	1085.78		1085.87	0.009449	2.40	20.86	22.07	0.42
S36-1	400	PF 2	150.00	1084.79	1086.43	1085.95	1086.72	0.016043	4.36	34.41	22.69	0.60
S36-1	400	PF 3	400.00	1084.79	1087.08	1087.02	1088.16	0.037138	8.30	48.18	23.36	0.97
S36-1	400	PF 4	800.00	1084.79	1088.34	1088.34	1090.13	0.034609	10.73	74.59	24.49	1.00
S36-1	400	PF 5	1200.00	1084.79	1089.45	1089.45	1091.79	0.031459	12.26	97.90	25.27	1.00
S36-1	400	PF 6	1500.00	1084.79	1090.18	1090.18	1092.91	0.030230	13.24	113.27	27.61	1.00
S36-1	300	PF 1	50.00	1083.00	1083.63		1083.66	0.007849	1.25	39.86	92.20	0.34
S36-1	300	PF 2	150.00	1083.00	1084.09		1084.13	0.006688	1.64	91.91	132.41	0.34
S36-1	300	PF 3	400.00	1083.00	1084.69		1084.77	0.005930	2.30	183.08	173.25	0.35
S36-1	300	PF 4	800.00	1083.00	1085.31		1085.43	0.005570	2.88	302.98	206.57	0.36
S36-1	300	PF 5	1200.00	1083.00	1085.77		1085.93	0.005489	3.30	402.50	224.30	0.37
S36-1	300	PF 6	1500.00	1083.00	1086.06		1086.24	0.005515	3.56	468.42	234.43	0.38
S36-1	200	PF 1	50.00	1082.00	1082.52		1082.53	0.002419	0.72	69.41	152.64	0.19
S36-1	200	PF 2	150.00	1082.00	1082.92		1082.93	0.002958	1.11	135.49	181.78	0.23
S36-1	200	PF 3	400.00	1082.00	1083.43		1083.48	0.003590	1.71	238.74	219.09	0.27
S36-1	200	PF 4	800.00	1082.00	1083.94		1084.02	0.004245	2.34	359.68	255.86	0.31
S36-1	200	PF 5	1200.00	1082.00	1084.31		1084.43	0.004686	2.79	457.47	269.79	0.34
S36-1	200	PF 6	1500.00	1082.00	1084.54		1084.68	0.004951	3.08	521.38	277.00	0.35
S36-1	100	PF 1	50.00	1081.00	1081.28	1081.12	1081.29	0.003904	0.67	77.51	302.13	0.22
S36-1	100	PF 2	150.00	1081.00	1081.53	1081.22	1081.54	0.003903	1.01	157.17	350.11	0.25
S36-1	100	PF 3	400.00	1081.00	1081.90	1081.41	1081.93	0.003904	1.44	302.01	423.64	0.27
S36-1	100	PF 4	800.00	1081.00	1082.29	1081.64	1082.34	0.003903	1.83	477.01	465.58	0.28
S36-1	100	PF 5	1200.00	1081.00	1082.59	1081.81	1082.65	0.003900	2.11	621.51	489.01	0.29
S36-1	100	PF 6	1500.00	1081.00	1082.79	1081.93	1082.86	0.003902	2.28	719.29	504.25	0.30


Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008
Geom: Existing Conditions Geometry Flow: Multiple Profiles
River = T2N-R6W-S36 Reach = S36-1 RS = 900
.055
.06
.055
Legend
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008
Geom: Existing Conditions Geometry Flow: Multiple Profiles
River = T2N-R6W-S36 Reach = S36-1 RS = 800
.055
.06
.055
Legend
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

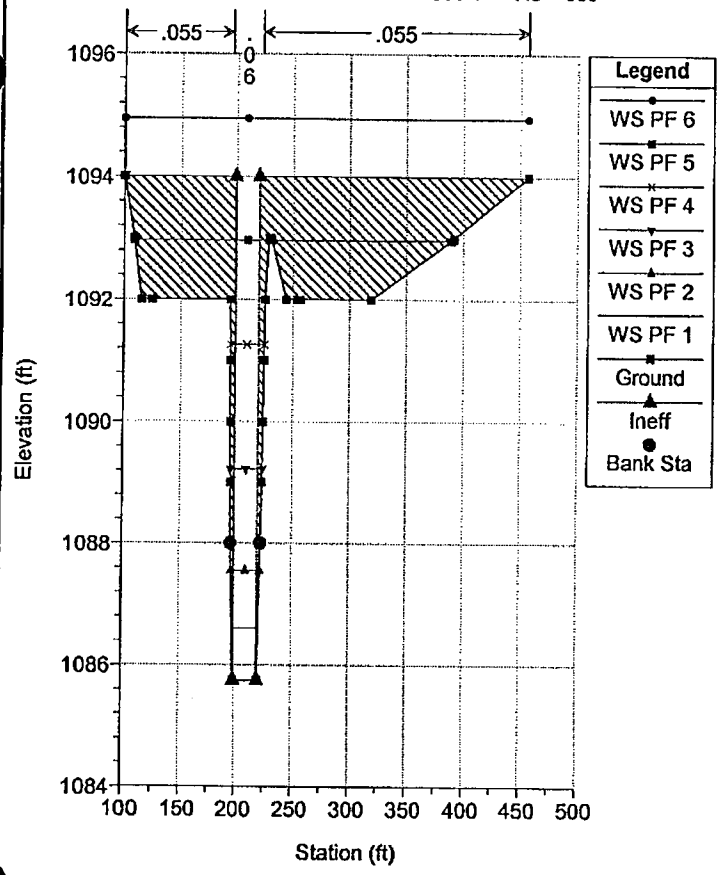

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008
Geom: Existing Conditions Geometry Flow: Multiple Profiles
River = T2N-R6W-S36 Reach = S36-1 RS = 700
.055
.06
.055
Legend
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008
Geom: Existing Conditions Geometry Flow: Multiple Profiles
River = T2N-R6W-S36 Reach = S36-1 RS = 600
.055
.06
.055
Legend
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

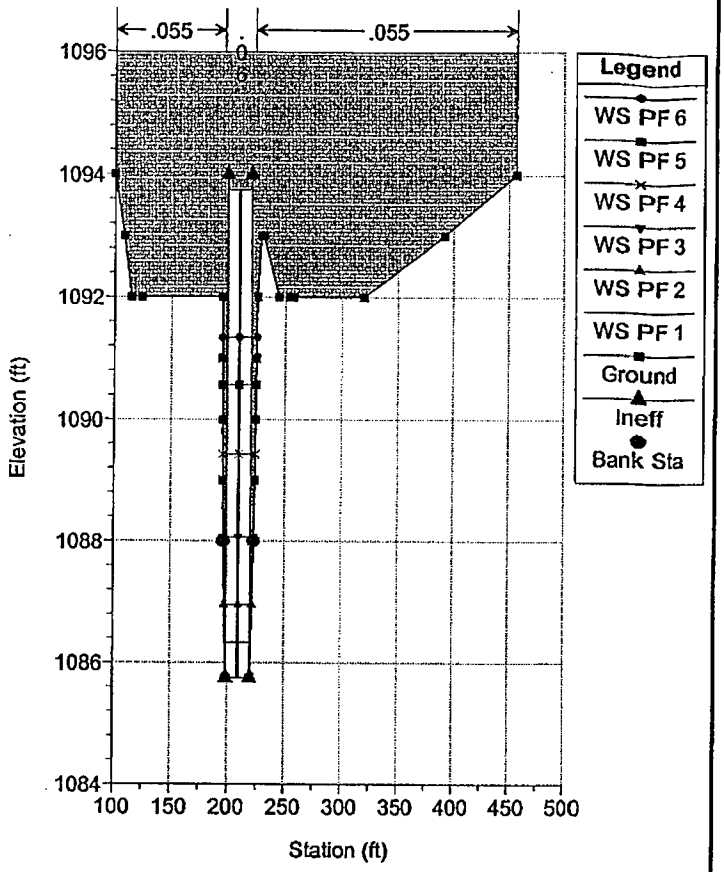
River = T2N-R6W-S36 Reach = S36-1 RS = 500



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

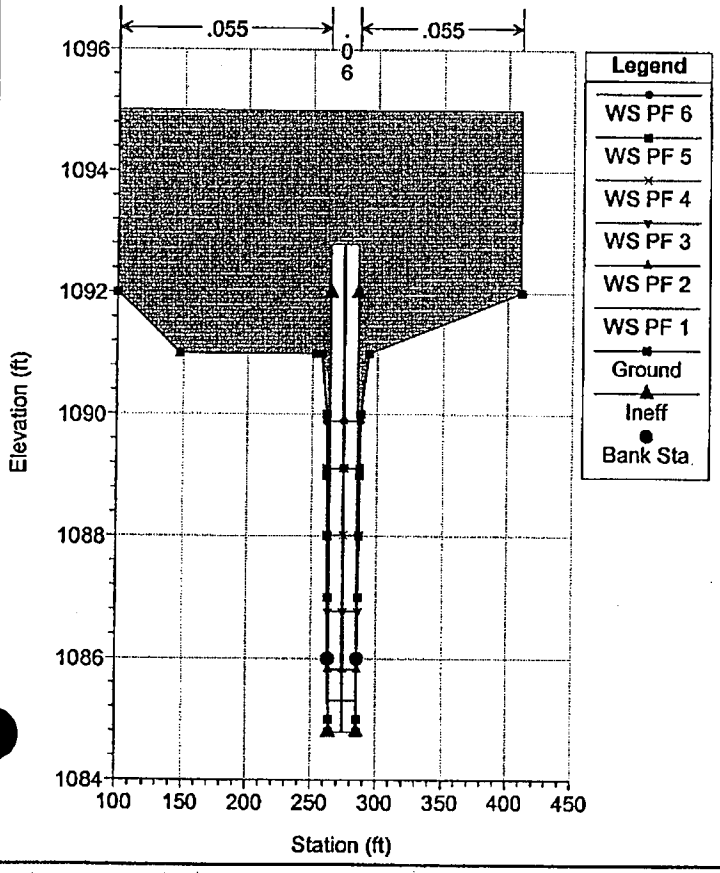
River = T2N-R6W-S36 Reach = S36-1 RS = 450 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

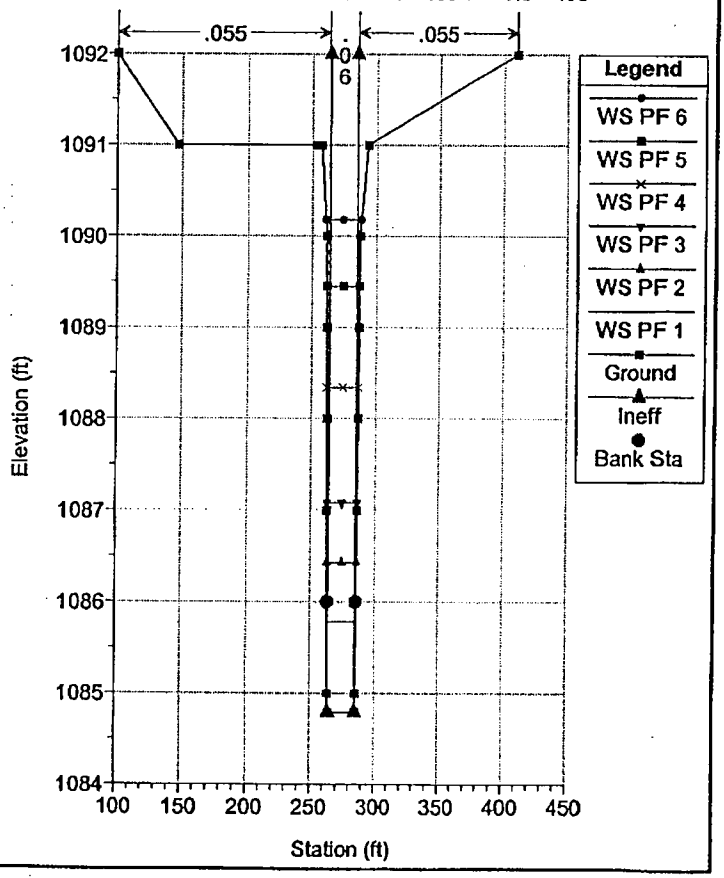
River = T2N-R6W-S36 Reach = S36-1 RS = 450 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

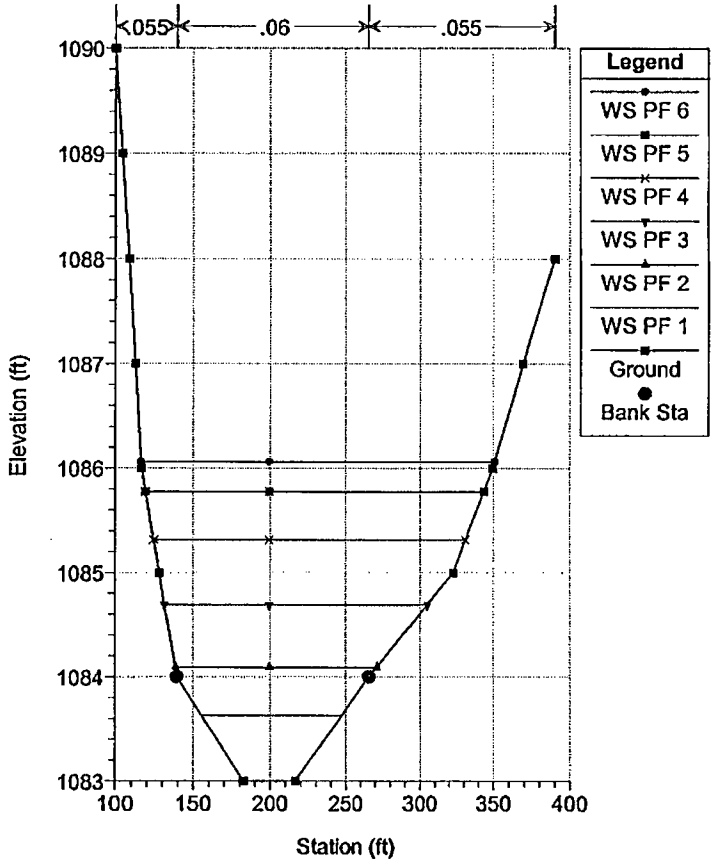
River = T2N-R6W-S36 Reach = S36-1 RS = 400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

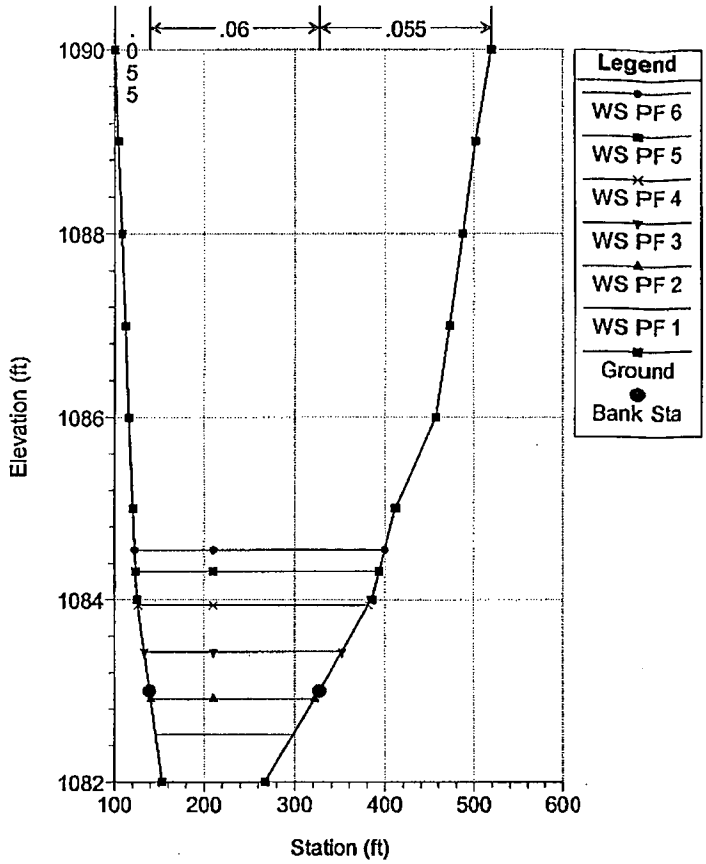
River = T2N-R6W-S36 Reach = S36-1 RS = 300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

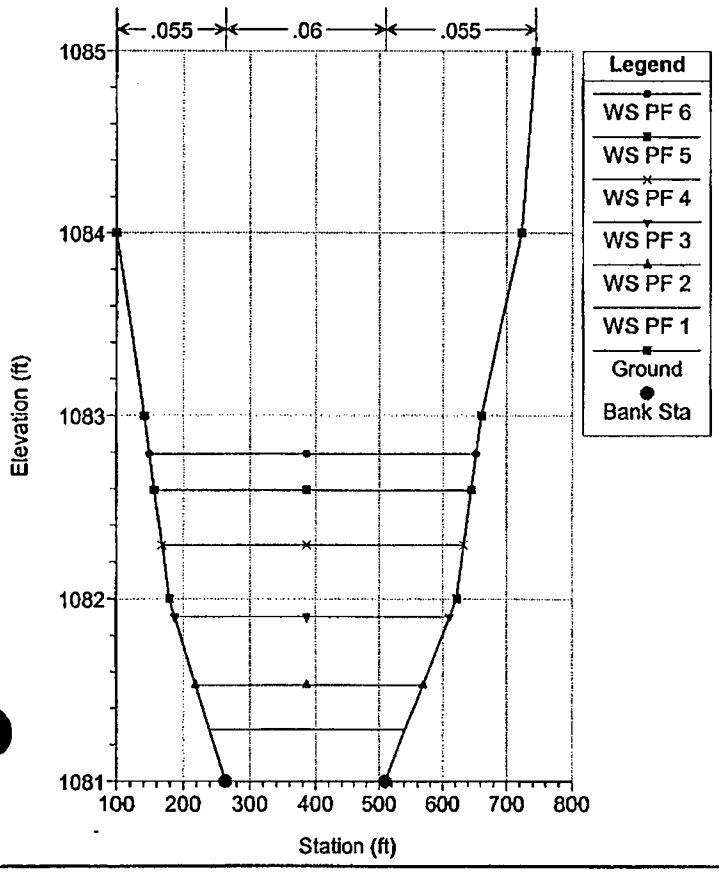
River = T2N-R6W-S36 Reach = S36-1 RS = 200



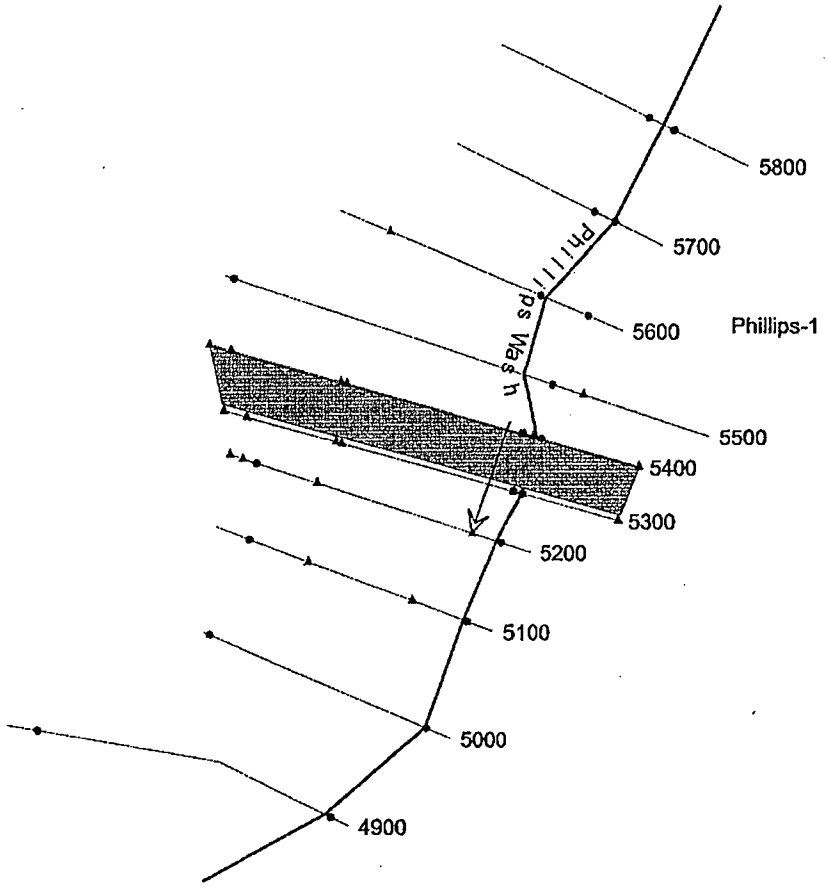
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = T2N-R6W-S36 Reach = S36-1 RS = 100



for Structures (28) (30) & (32)



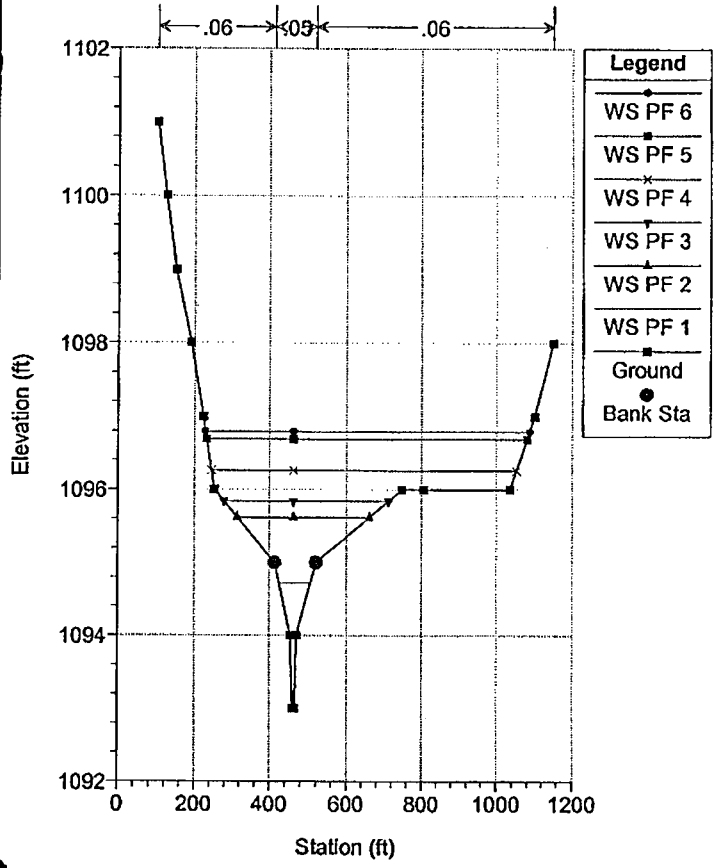
HEC-RAS Plan: FDS River: Phillips Wash Reach: Phillips-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Phillips-1	5800	PF 1	100.00	1093.00	1094.72	1094.41	1094.79	0.011434	2.17	45.99	81.06	0.51
Phillips-1	5800	PF 2	500.00	1093.00	1095.62	1095.25	1095.75	0.007604	3.08	212.80	347.16	0.48
Phillips-1	5800	PF 3	800.00	1093.00	1095.84	1095.59	1096.02	0.009323	3.79	299.91	433.99	0.54
Phillips-1	5800	PF 4	1300.00	1093.00	1096.26	1095.89	1096.41	0.006833	3.81	578.85	807.77	0.48
Phillips-1	5800	PF 5	1800.00	1093.00	1096.69		1096.78	0.003725	3.22	937.20	849.33	0.37
Phillips-1	5800	PF 6	2200.00	1093.00	1096.79		1096.90	0.004350	3.58	1023.85	859.08	0.40
Phillips-1	5700	PF 1	100.00	1090.00	1092.34		1092.38	0.003332	1.68	68.75	132.34	0.30
Phillips-1	5700	PF 2	500.00	1090.00	1093.23	1092.71	1093.29	0.004302	2.41	290.59	346.89	0.36
Phillips-1	5700	PF 3	800.00	1090.00	1093.67	1093.00	1093.73	0.003291	2.53	454.87	410.43	0.33
Phillips-1	5700	PF 4	1300.00	1090.00	1093.99	1093.23	1094.09	0.004173	3.18	597.49	458.51	0.38
Phillips-1	5700	PF 5	1800.00	1090.00	1093.80		1094.06	0.012112	5.09	512.04	430.35	0.64
Phillips-1	5700	PF 6	2200.00	1090.00	1094.29		1094.48	0.007118	4.52	744.57	541.89	0.51
Phillips-1	5600	PF 1	100.00	1089.00	1090.55	1090.27	1090.58	0.007033	1.39	72.35	187.01	0.38
Phillips-1	5600	PF 2	500.00	1089.00	1091.16	1090.79	1091.24	0.006602	2.46	242.32	424.14	0.43
Phillips-1	5600	PF 3	800.00	1089.00	1091.21	1091.02	1091.40	0.013867	3.68	261.82	442.93	0.62
Phillips-1	5600	PF 4	1300.00	1089.00	1091.69	1091.29	1091.85	0.008134	3.60	473.29	614.35	0.51
Phillips-1	5600	PF 5	1800.00	1089.00	1092.78	1091.52	1092.82	0.001313	2.06	1282.00	984.84	0.22
Phillips-1	5600	PF 6	2200.00	1089.00	1094.18	1091.67	1094.19	0.000200	1.07	2894.82	1017.63	0.09
Phillips-1	5500	PF 1	100.00	1088.00	1089.28	1088.71	1089.29	0.002752	0.96	104.63	254.03	0.26
Phillips-1	5500	PF 2	500.00	1088.00	1090.20	1089.37	1090.21	0.001915	0.89	564.48	1260.40	0.22
Phillips-1	5500	PF 3	800.00	1088.00	1090.60	1089.56	1090.61	0.000930	0.79	1009.35	1325.45	0.15
Phillips-1	5500	PF 4	1300.00	1088.00	1091.57	1089.79	1091.58	0.000243	0.61	2159.46	1476.49	0.08
Phillips-1	5500	PF 5	1800.00	1088.00	1092.73	1090.12	1092.73	0.000091	0.49	3728.51	1718.71	0.05
Phillips-1	5500	PF 6	2200.00	1088.00	1094.17	1090.18	1094.17	0.000025	0.34	6882.88	1784.76	0.03
Phillips-1	5400	PF 1	100.00	1086.81	1087.47	1087.44	1087.68	0.031504	3.90	29.67	57.00	0.84
Phillips-1	5400	PF 2	500.00	1086.81	1088.78	1088.33	1089.18	0.014797	5.41	104.15	302.92	0.68
Phillips-1	5400	PF 3	800.00	1086.81	1089.51	1088.83	1090.00	0.012552	6.15	145.61	681.98	0.66
Phillips-1	5400	PF 4	1300.00	1086.81	1090.76	1089.53	1091.35	0.008796	6.64	217.39	1220.69	0.59
Phillips-1	5400	PF 5	1800.00	1086.81	1091.95	1090.15	1092.60	0.006884	7.00	284.77	1504.41	0.54
Phillips-1	5400	PF 6	2200.00	1086.81	1093.53	1090.60	1094.09	0.004134	6.49	375.18	1559.96	0.44
Phillips-1	5350		Culvert									
Phillips-1	5300	PF 1	100.00	1086.20	1086.83	1086.56	1086.92	0.012483	2.43	41.71	63.53	0.54
Phillips-1	5300	PF 2	500.00	1086.20	1087.69	1087.43	1088.16	0.022682	5.84	91.79	66.16	0.84
Phillips-1	5300	PF 3	800.00	1086.20	1087.92	1087.92	1088.84	0.036782	8.20	105.32	66.87	1.10
Phillips-1	5300	PF 4	1300.00	1086.20	1088.63	1088.63	1089.89	0.032334	9.66	146.33	282.23	1.09
Phillips-1	5300	PF 5	1800.00	1086.20	1089.24	1089.24	1090.83	0.030950	10.98	181.73	483.79	1.11
Phillips-1	5300	PF 6	2200.00	1086.20	1089.70	1089.70	1091.50	0.029169	11.71	208.55	566.56	1.10
Phillips-1	5200	PF 1	100.00	1084.00	1085.64		1085.66	0.003965	1.16	86.52	173.12	0.28
Phillips-1	5200	PF 2	500.00	1084.00	1086.48		1086.52	0.003979	1.55	336.43	526.33	0.29
Phillips-1	5200	PF 3	800.00	1084.00	1086.77		1086.82	0.003845	1.79	465.45	603.17	0.30
Phillips-1	5200	PF 4	1300.00	1084.00	1087.14		1087.21	0.003942	2.15	631.00	690.81	0.31
Phillips-1	5200	PF 5	1800.00	1084.00	1087.44		1087.53	0.004034	2.44	772.95	751.97	0.32
Phillips-1	5200	PF 6	2200.00	1084.00	1087.65		1087.76	0.004110	2.64	875.29	794.71	0.33
Phillips-1	5100	PF 1	100.00	1083.00	1084.56	1084.16	1084.57	0.002796	0.97	108.52	223.12	0.23
Phillips-1	5100	PF 2	500.00	1083.00	1085.43	1084.63	1085.46	0.002707	1.29	399.43	487.80	0.24
Phillips-1	5100	PF 3	800.00	1083.00	1085.75		1085.78	0.002750	1.44	572.28	616.64	0.25
Phillips-1	5100	PF 4	1300.00	1083.00	1086.13		1086.17	0.002645	1.66	810.85	845.94	0.25
Phillips-1	5100	PF 5	1800.00	1083.00	1086.39		1086.44	0.002815	1.91	979.53	884.36	0.27
Phillips-1	5100	PF 6	2200.00	1083.00	1086.57		1086.63	0.002925	2.08	1099.65	911.48	0.28
Phillips-1	5000	PF 1	100.00	1081.00	1082.56	1082.28	1082.60	0.008244	1.75	57.22	116.83	0.44
Phillips-1	5000	PF 2	500.00	1081.00	1083.38	1082.90	1083.45	0.009487	2.02	248.37	397.26	0.45
Phillips-1	5000	PF 3	800.00	1081.00	1083.64	1083.21	1083.71	0.009849	2.24	358.91	481.85	0.45
Phillips-1	5000	PF 4	1300.00	1081.00	1084.02	1083.47	1084.10	0.010709	2.29	570.08	780.93	0.47
Phillips-1	5000	PF 5	1800.00	1081.00	1084.20	1083.63	1084.30	0.010489	2.53	715.32	805.64	0.47
Phillips-1	5000	PF 6	2200.00	1081.00	1084.33		1084.44	0.010398	2.70	820.36	823.61	0.47
Phillips-1	4900	PF 1	100.00	1079.00	1079.48	1079.22	1079.50	0.004605	0.87	115.55	320.91	0.25
Phillips-1	4900	PF 2	500.00	1079.00	1080.13	1079.55	1080.15	0.004604	1.18	423.10	752.98	0.28
Phillips-1	4900	PF 3	800.00	1079.00	1080.33	1079.71	1080.36	0.004602	1.39	576.79	807.17	0.29
Phillips-1	4900	PF 4	1300.00	1079.00	1080.59	1079.92	1080.63	0.004601	1.64	797.89	879.28	0.30
Phillips-1	4900	PF 5	1800.00	1079.00	1080.81	1080.12	1080.86	0.004603	1.83	994.75	938.83	0.31
Phillips-1	4900	PF 6	2200.00	1079.00	1080.96	1080.21	1081.02	0.004602	1.95	1141.44	980.86	0.31

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

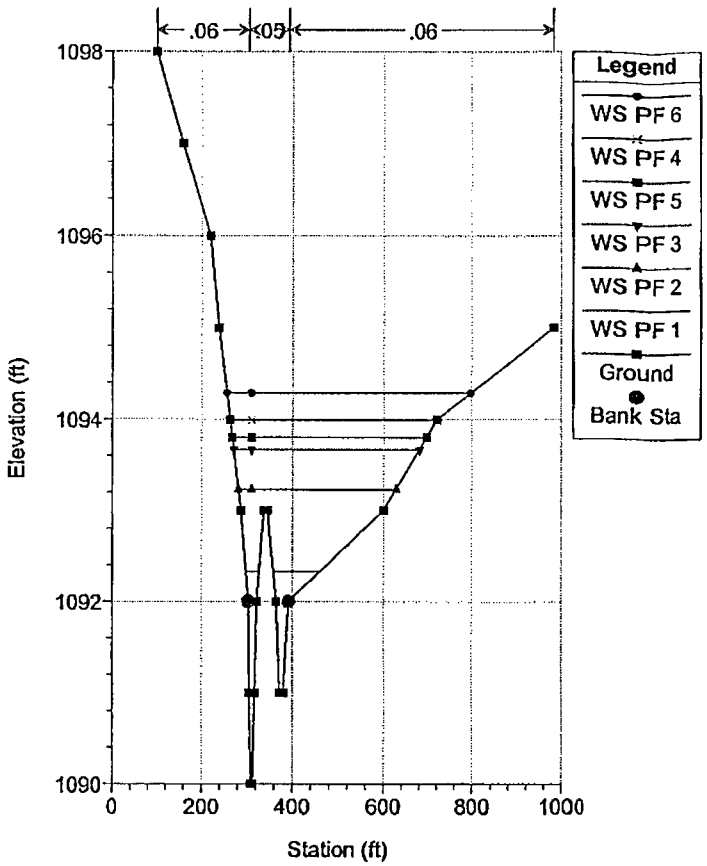
River = Phillips Wash Reach = Phillips-1 RS = 5800



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

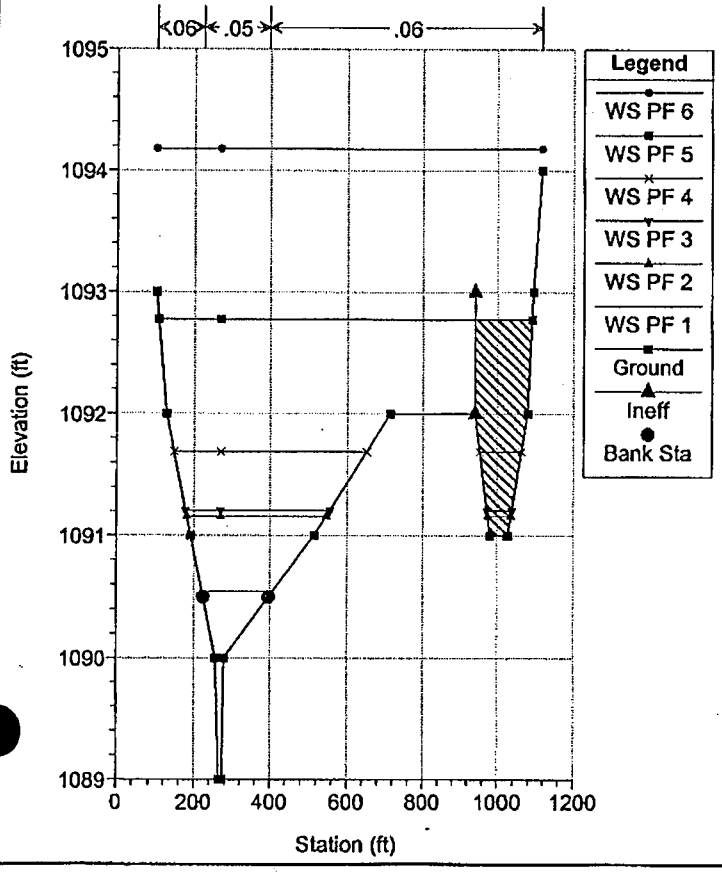
River = Phillips Wash Reach = Phillips-1 RS = 5700



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

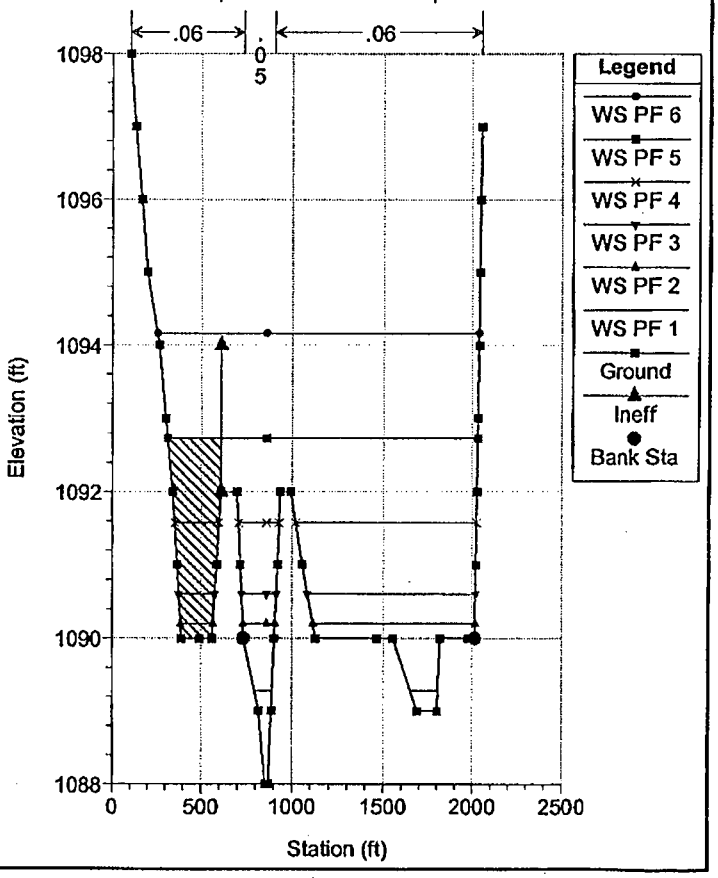
River = Phillips Wash Reach = Phillips-1 RS = 5600



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

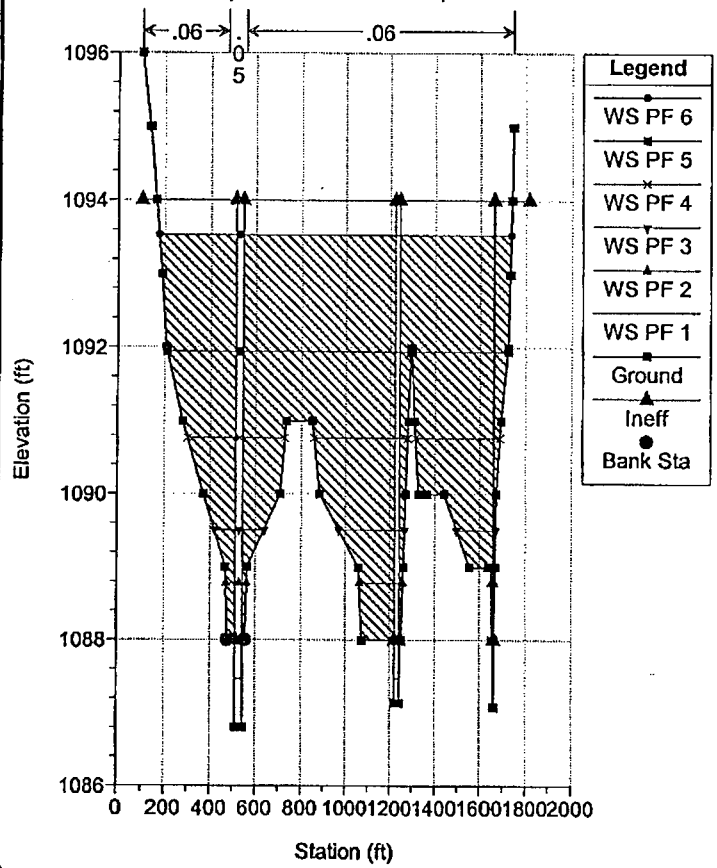
River = Phillips Wash Reach = Phillips-1 RS = 5500



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

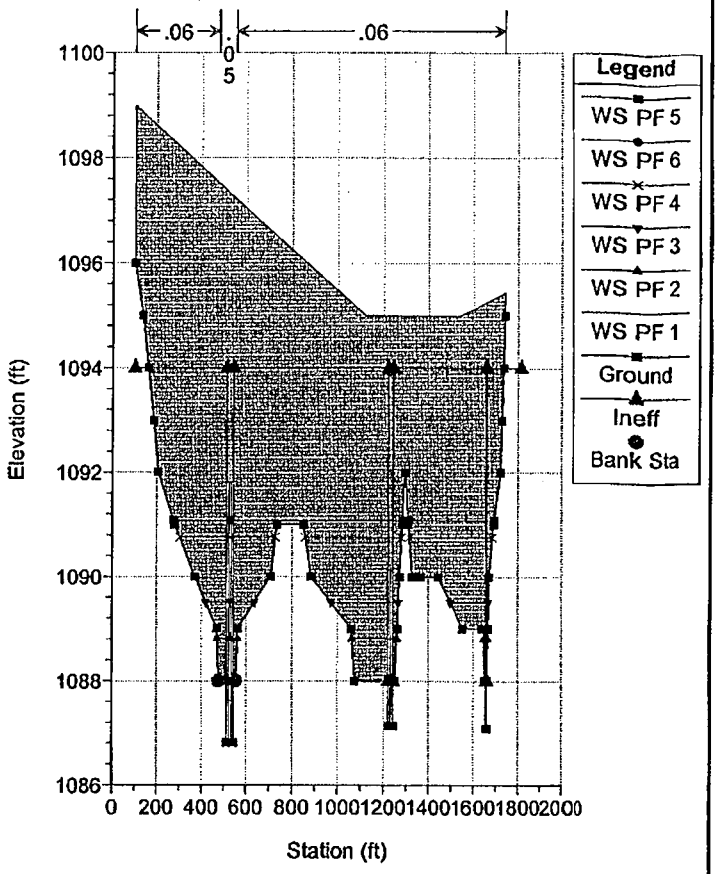
River = Phillips Wash Reach = Phillips-1 RS = 5400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

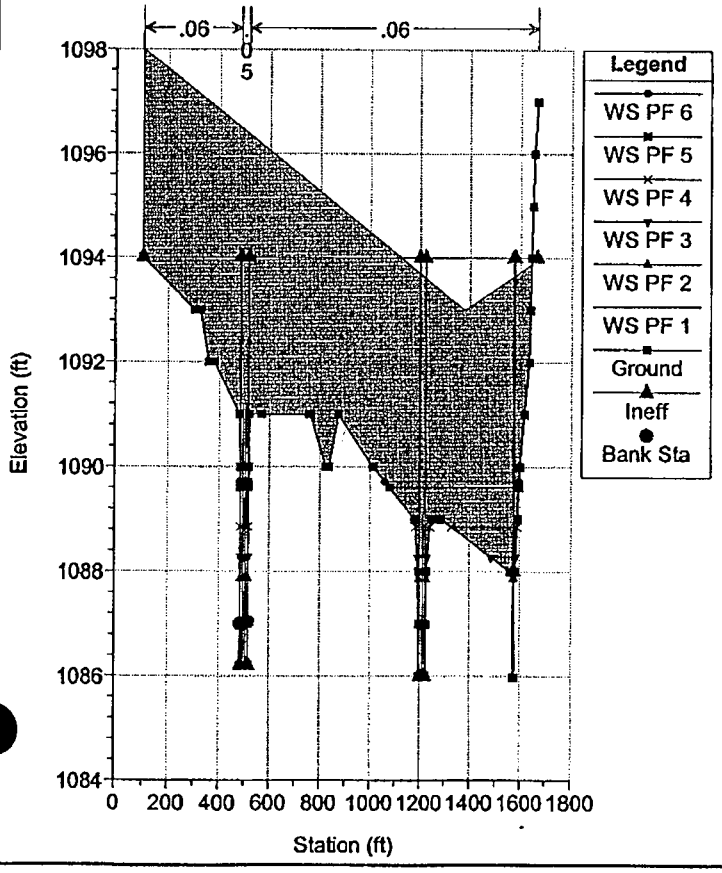
River = Phillips Wash Reach = Phillips-1 RS = 5350 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

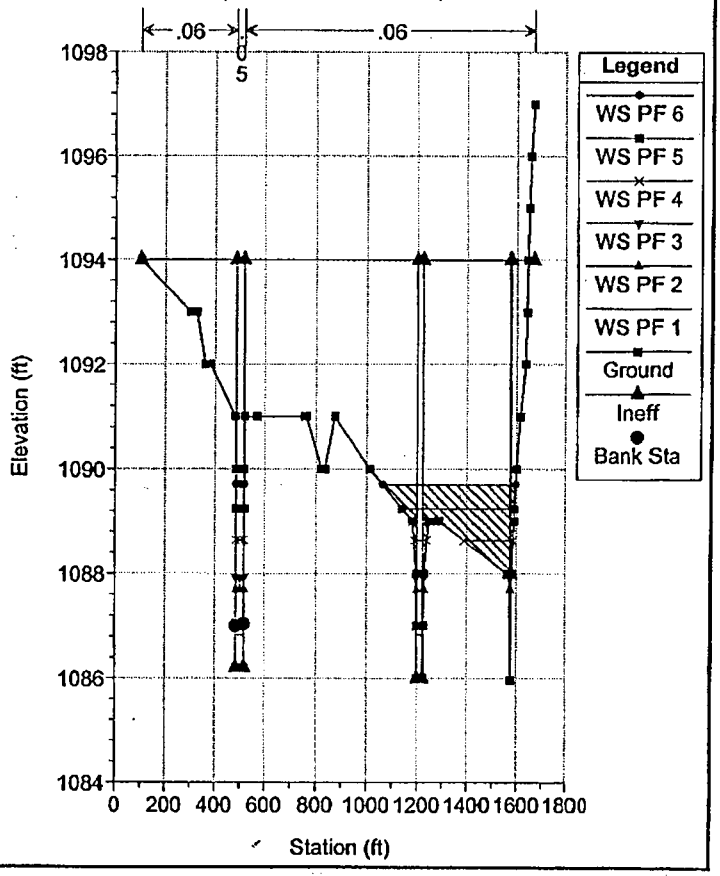
River = Phillips Wash Reach = Phillips-1 RS = 5350 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

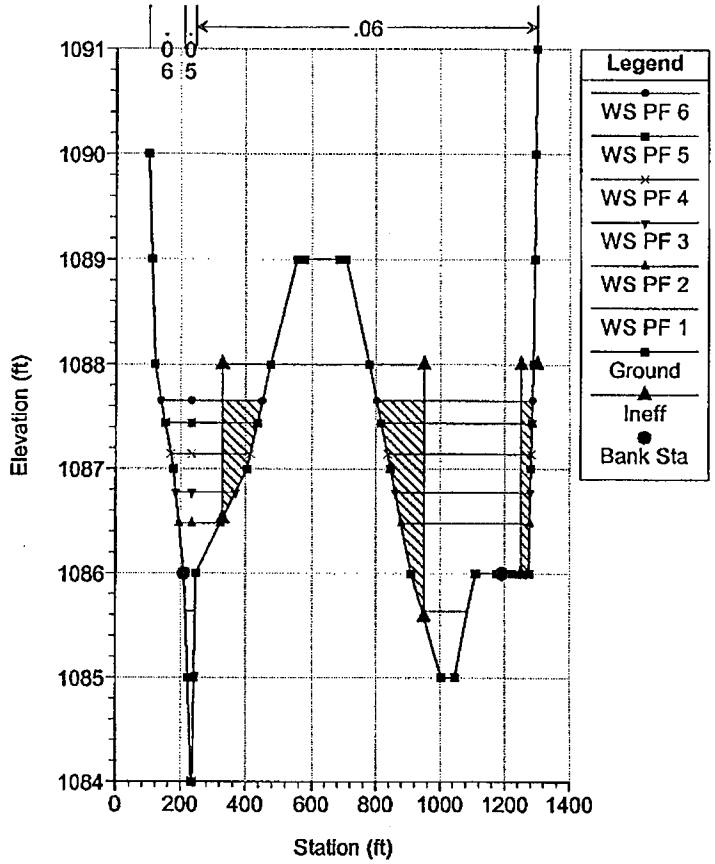
River = Phillips Wash Reach = Phillips-1 RS = 5300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

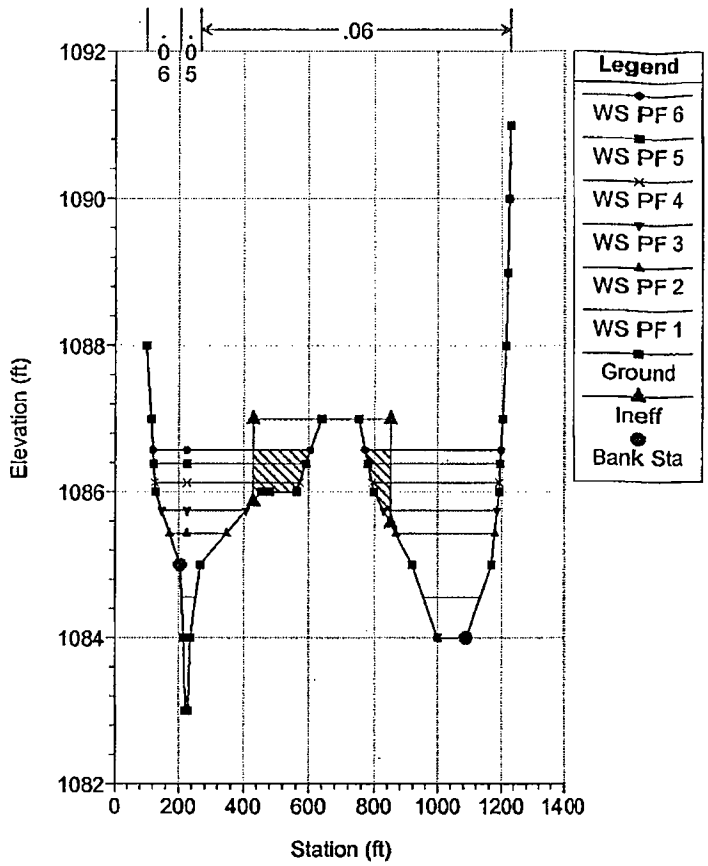
River = Phillips Wash Reach = Phillips-1 RS = 5200



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

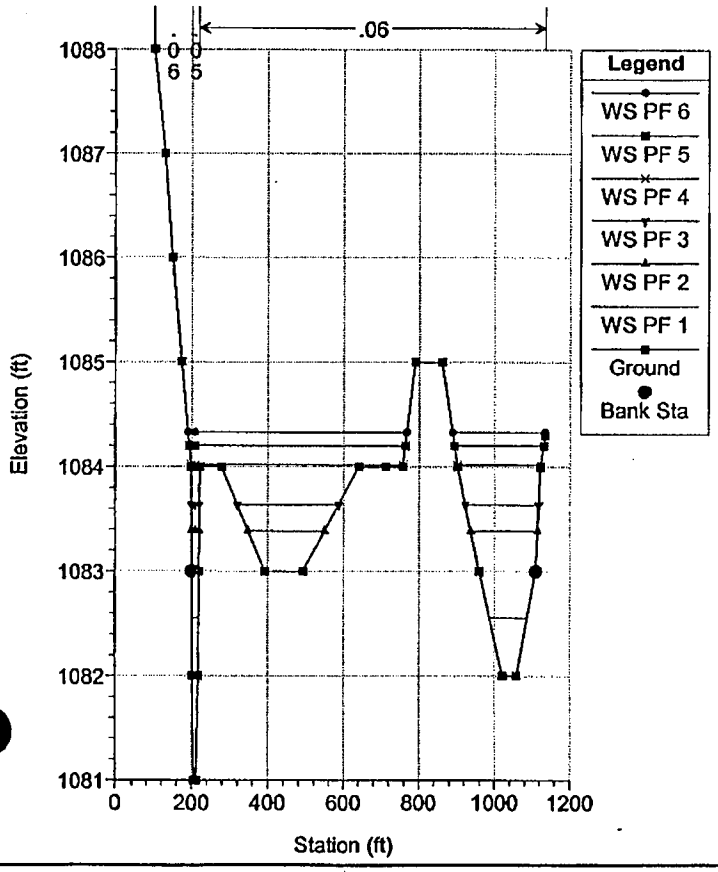
River = Phillips Wash Reach = Phillips-1 RS = 5100



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

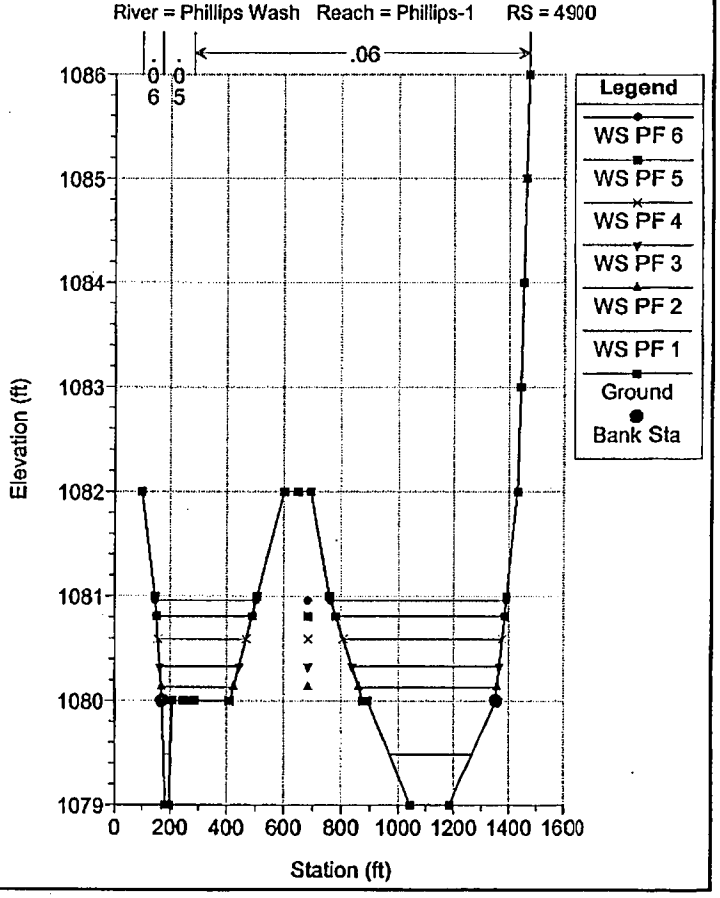
River = Phillips Wash Reach = Phillips-1 RS = 5000



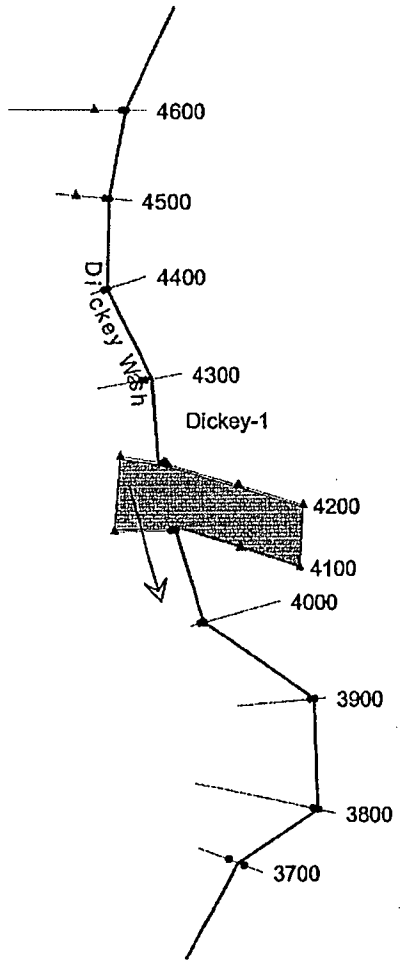
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = Phillips Wash Reach = Phillips-1 RS = 4900



for Structures (36) & (38)



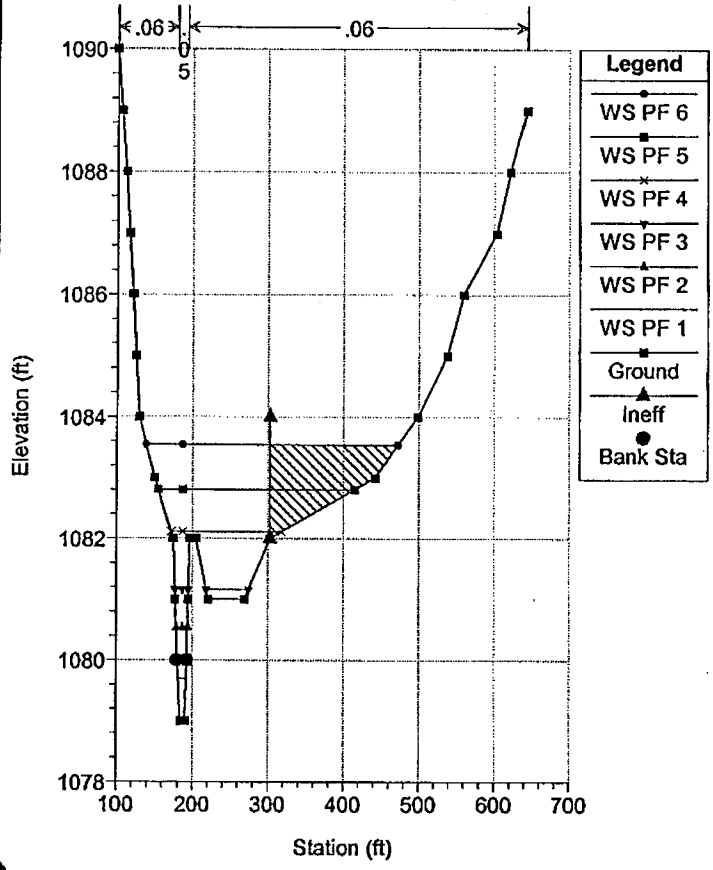
HEC-RAS Plan: FDS River: Dickey Wash **Reach: Dickey-1**

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Dickey-1	4600	PF 1	10.00	1079.00	1079.70	1079.41	1079.75	0.008074	1.74	5.74	10.68	0.42
Dickey-1	4600	PF 2	50.00	1079.00	1080.53	1080.06	1080.68	0.008154	3.08	16.70	15.15	0.48
Dickey-1	4600	PF 3	100.00	1079.00	1081.16	1080.54	1081.36	0.007211	3.79	35.17	74.00	0.49
Dickey-1	4600	PF 4	300.00	1079.00	1082.11	1081.72	1082.27	0.005208	4.23	131.33	146.33	0.44
Dickey-1	4600	PF 5	600.00	1079.00	1082.81	1082.26	1082.97	0.004695	4.65	227.95	259.91	0.44
Dickey-1	4600	PF 6	1000.00	1079.00	1083.54	1082.66	1083.72	0.004092	4.93	342.51	333.99	0.42
Dickey-1	4500	PF 1	10.00	1077.00	1077.87	1077.42	1077.89	0.003308	1.21	8.27	13.70	0.27
Dickey-1	4500	PF 2	50.00	1077.00	1078.87		1078.94	0.002928	2.13	24.38	17.97	0.30
Dickey-1	4500	PF 3	100.00	1077.00	1079.55		1079.66	0.003061	2.77	41.99	31.22	0.33
Dickey-1	4500	PF 4	300.00	1077.00	1080.76		1080.89	0.002793	3.54	153.03	158.51	0.34
Dickey-1	4500	PF 5	600.00	1077.00	1081.55		1081.68	0.002703	4.00	268.05	184.09	0.34
Dickey-1	4500	PF 6	1000.00	1077.00	1082.59		1082.71	0.001938	3.92	432.37	208.48	0.30
Dickey-1	4400	PF 1	10.00	1076.00	1076.65	1076.27	1076.67	0.002777	1.08	9.25	15.88	0.25
Dickey-1	4400	PF 2	50.00	1076.00	1077.37	1076.75	1077.45	0.004768	2.31	21.96	19.76	0.37
Dickey-1	4400	PF 3	100.00	1076.00	1077.91		1078.06	0.005358	3.13	33.52	22.78	0.42
Dickey-1	4400	PF 4	300.00	1076.00	1078.96		1079.24	0.006534	4.72	98.24	106.89	0.50
Dickey-1	4400	PF 5	600.00	1076.00	1079.56		1079.92	0.008226	6.01	169.03	130.73	0.57
Dickey-1	4400	PF 6	1000.00	1076.00	1082.15		1082.21	0.000830	2.79	584.25	181.96	0.20
Dickey-1	4300	PF 1	10.00	1074.00	1074.34	1074.22	1074.38	0.013380	1.62	6.18	19.03	0.50
Dickey-1	4300	PF 2	50.00	1074.00	1075.13	1074.62	1075.20	0.005551	2.20	22.73	23.16	0.39
Dickey-1	4300	PF 3	100.00	1074.00	1075.70		1075.81	0.004894	2.79	36.78	26.22	0.39
Dickey-1	4300	PF 4	300.00	1074.00	1077.12		1077.27	0.003257	3.49	128.10	115.25	0.36
Dickey-1	4300	PF 5	600.00	1074.00	1078.64		1078.72	0.001300	2.90	361.63	199.39	0.24
Dickey-1	4300	PF 6	1000.00	1074.00	1082.07		1082.08	0.000145	1.41	1233.81	311.24	0.09
Dickey-1	4200	PF 1	10.00	1072.00	1072.18	1071.60	1072.21	0.003503	0.55	7.85	24.95	0.23
Dickey-1	4200	PF 2	50.00	1072.00	1072.85	1072.42	1072.97	0.007320	2.28	18.67	32.35	0.44
Dickey-1	4200	PF 3	100.00	1072.00	1073.42	1072.81	1073.62	0.008151	3.38	27.70	37.44	0.50
Dickey-1	4200	PF 4	300.00	1072.00	1075.01	1073.91	1075.50	0.008454	5.69	53.13	50.60	0.58
Dickey-1	4200	PF 5	600.00	1072.00	1076.97	1075.21	1077.75	0.007173	7.33	84.51	129.08	0.58
Dickey-1	4200	PF 6	1000.00	1072.00	1081.20	1076.64	1081.88	0.002786	6.89	152.23	749.96	0.40
Dickey-1	4150		Culvert									
Dickey-1	4100	PF 1	10.00	1071.07	1070.33	1069.93	1070.39	0.008195		5.02	21.65	0.00
Dickey-1	4100	PF 2	50.00	1071.07	1071.51	1070.79	1071.68	0.008217	1.55	16.43	41.34	0.41
Dickey-1	4100	PF 3	100.00	1071.07	1072.21	1071.66	1072.43	0.007499	2.80	27.68	49.97	0.46
Dickey-1	4100	PF 4	300.00	1071.07	1073.17	1072.78	1073.94	0.016570	6.28	43.12	55.31	0.76
Dickey-1	4100	PF 5	600.00	1071.07	1074.03	1074.03	1075.77	0.026785	10.03	56.87	63.38	1.03
Dickey-1	4100	PF 6	1000.00	1071.07	1075.43	1075.43	1077.90	0.024805	12.49	79.21	349.48	1.05
Dickey-1	4000	PF 1	10.00	1069.00	1068.93		1068.95	0.002087		10.35	12.58	0.00
Dickey-1	4000	PF 2	50.00	1069.00	1069.83		1069.86	0.002910	1.23	32.63	29.69	0.26
Dickey-1	4000	PF 3	100.00	1069.00	1070.49		1070.53	0.003292	1.99	63.35	73.57	0.31
Dickey-1	4000	PF 4	300.00	1069.00	1071.50		1071.55	0.002794	2.70	195.26	201.02	0.31
Dickey-1	4000	PF 5	600.00	1069.00	1072.25		1072.30	0.002372	3.00	389.79	306.76	0.30
Dickey-1	4000	PF 6	1000.00	1069.00	1072.72		1072.79	0.002456	3.37	537.40	312.57	0.32
Dickey-1	3900	PF 1	10.00	1066.00	1066.40	1066.25	1066.45	0.012499	1.71	5.86	15.77	0.49
Dickey-1	3900	PF 2	50.00	1066.00	1067.19		1067.28	0.006975	2.51	20.01	20.30	0.43
Dickey-1	3900	PF 3	100.00	1066.00	1067.79		1067.94	0.005815	3.11	33.34	23.74	0.43
Dickey-1	3900	PF 4	300.00	1066.00	1068.56		1068.86	0.008728	4.93	97.43	128.46	0.56
Dickey-1	3900	PF 5	600.00	1066.00	1068.90		1069.44	0.015590	7.19	145.45	156.60	0.76
Dickey-1	3900	PF 6	1000.00	1066.00	1069.40	1069.40	1069.95	0.015010	7.89	234.40	198.39	0.77
Dickey-1	3800	PF 1	10.00	1064.00	1064.61		1064.62	0.001977	0.88	11.36	20.70	0.21
Dickey-1	3800	PF 2	50.00	1064.00	1065.36		1065.41	0.002749	1.76	28.72	25.52	0.28
Dickey-1	3800	PF 3	100.00	1064.00	1065.85		1065.94	0.003471	2.48	41.89	28.53	0.33
Dickey-1	3800	PF 4	300.00	1064.00	1066.49	1065.89	1066.58	0.003409	3.04	203.24	326.40	0.35
Dickey-1	3800	PF 5	600.00	1064.00	1067.03		1067.09	0.002617	3.05	382.21	342.75	0.32
Dickey-1	3800	PF 6	1000.00	1064.00	1067.63		1067.69	0.002030	3.05	592.87	360.61	0.29
Dickey-1	3700	PF 1	10.00	1063.00	1063.37	1063.18	1063.38	0.005009	0.91	10.98	38.52	0.30
Dickey-1	3700	PF 2	50.00	1063.00	1063.84	1063.46	1063.87	0.005004	1.45	34.55	60.45	0.34
Dickey-1	3700	PF 3	100.00	1063.00	1064.15	1063.68	1064.20	0.005002	1.82	55.06	71.32	0.36
Dickey-1	3700	PF 4	300.00	1063.00	1064.88	1064.19	1064.99	0.005001	2.80	113.18	88.68	0.40
Dickey-1	3700	PF 5	600.00	1063.00	1065.60	1064.70	1065.79	0.005009	3.62	183.28	104.92	0.42
Dickey-1	3700	PF 6	1000.00	1063.00	1066.33	1065.23	1066.59	0.005004	4.36	273.96	147.40	0.44

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

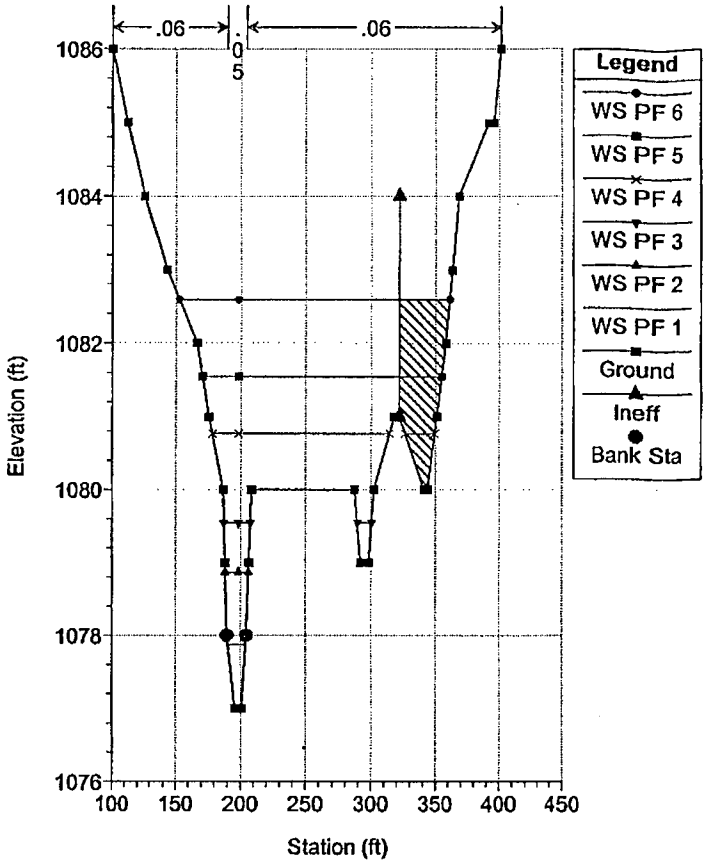
River = Dickey Wash Reach = Dickey-1 RS = 4600



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

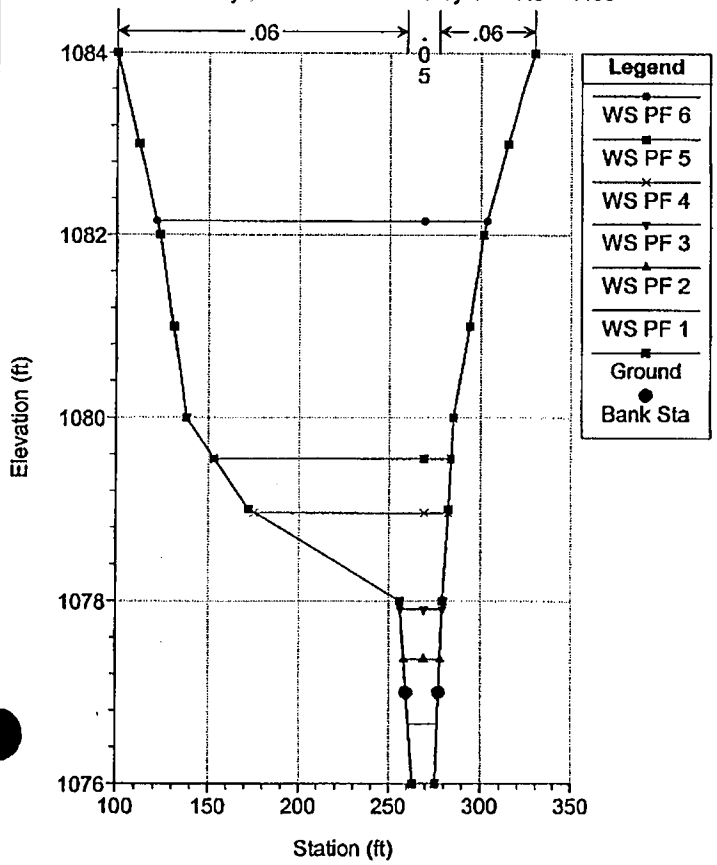
River = Dickey Wash Reach = Dickey-1 RS = 4500



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

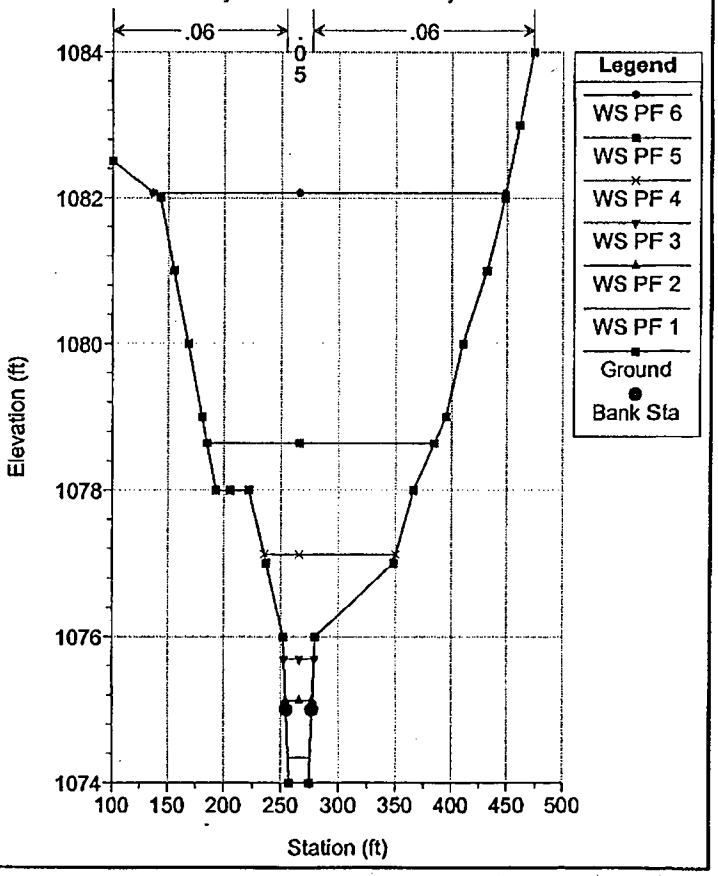
River = Dickey Wash Reach = Dickey-1 RS = 4400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

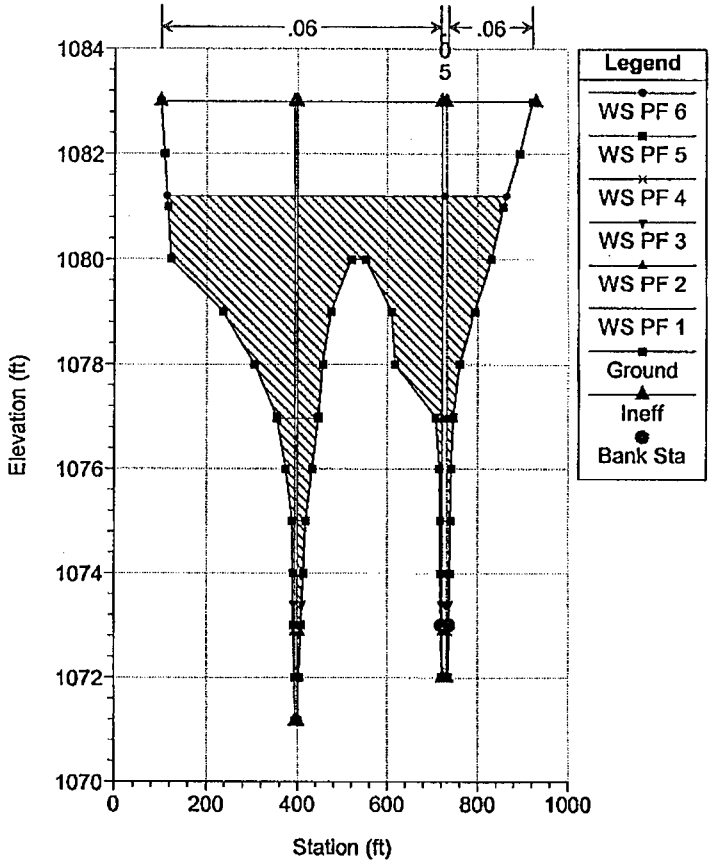
River = Dickey Wash Reach = Dickey-1 RS = 4300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

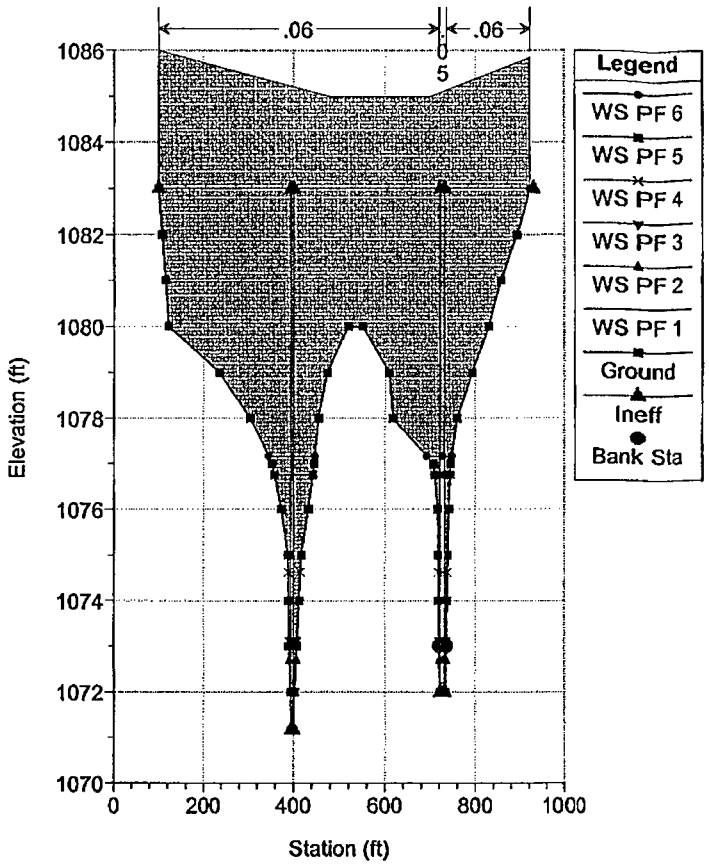
River = Dickey Wash Reach = Dickey-1 RS = 4200



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

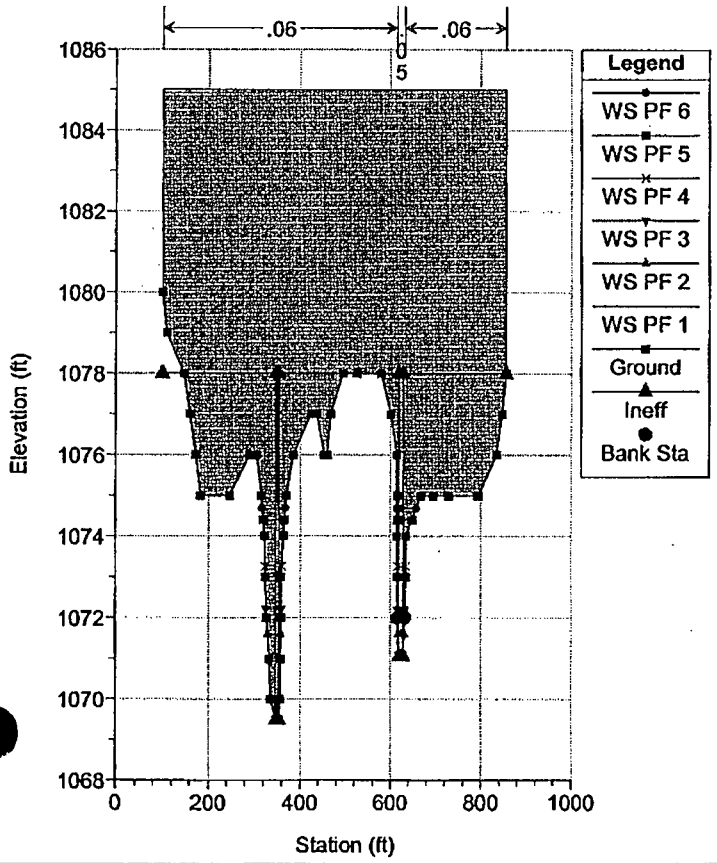
River = Dickey Wash Reach = Dickey-1 RS = 4150 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

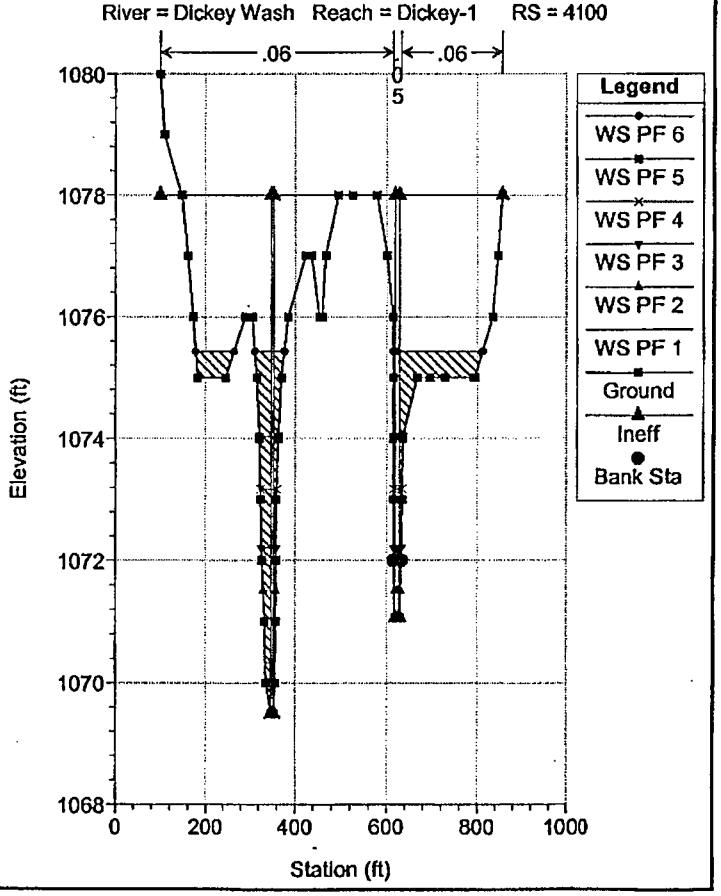
River = Dickey Wash Reach = Dickey-1 RS = 4150 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

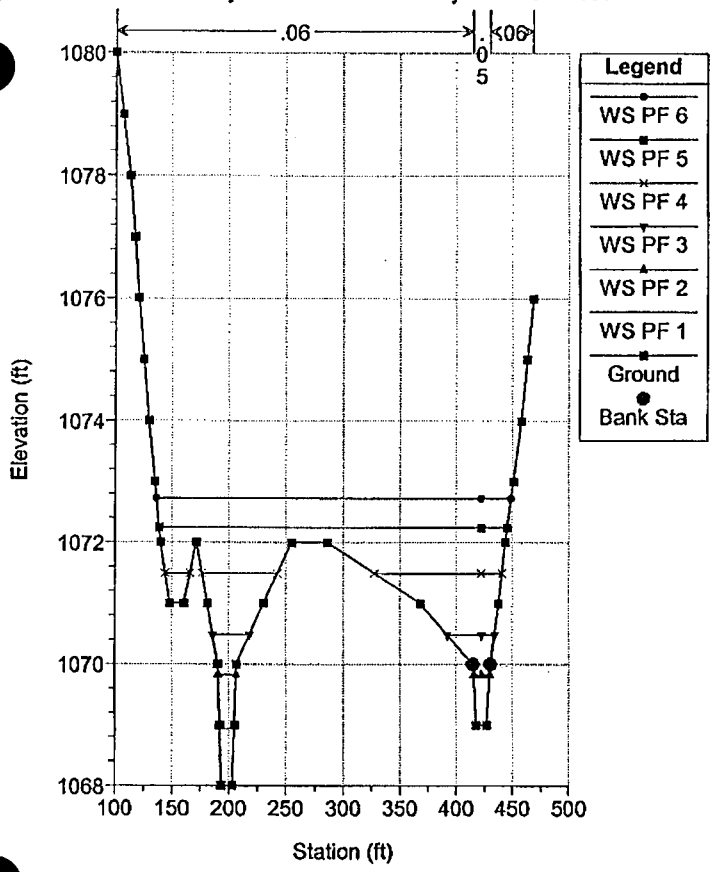
River = Dickey Wash Reach = Dickey-1 RS = 4100



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

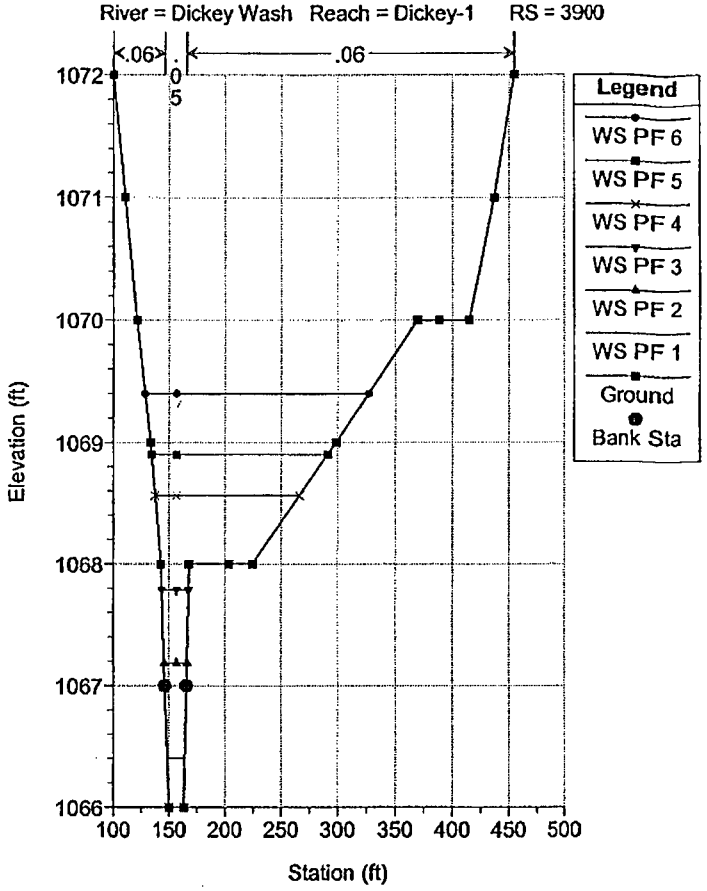
River = Dickey Wash Reach = Dickey-1 RS = 4000



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

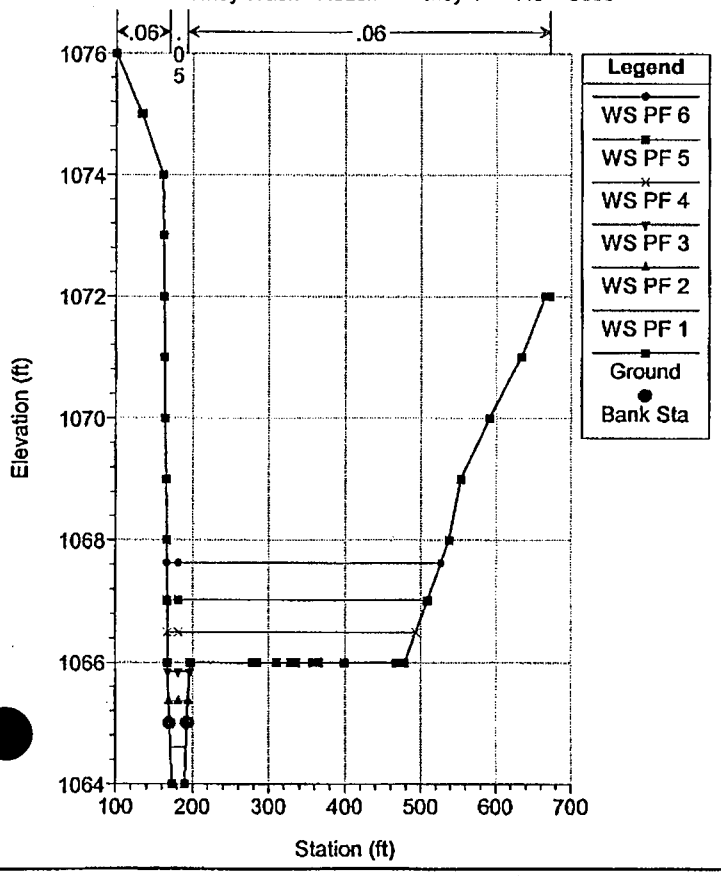
River = Dickey Wash Reach = Dickey-1 RS = 3900



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

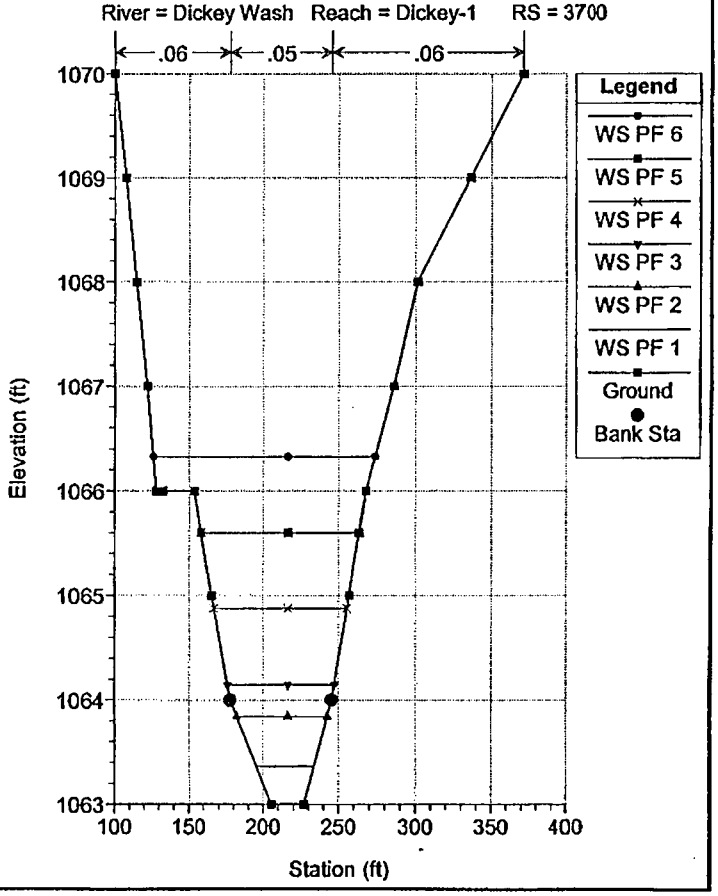
River = Dickey Wash Reach = Dickey-1 RS = 3800



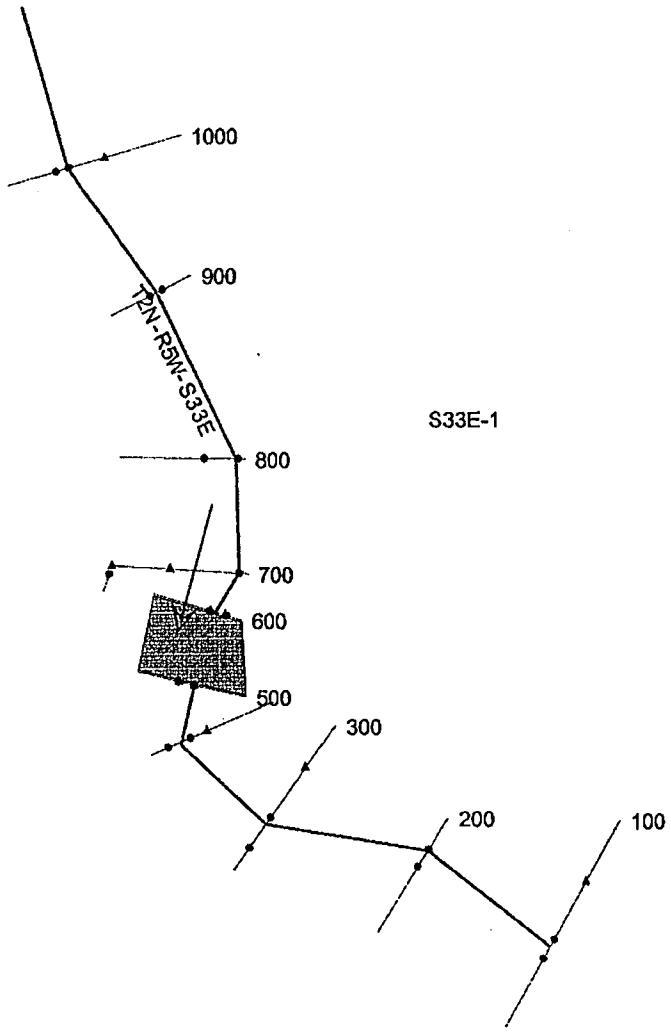
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Flows

River = Dickey Wash Reach = Dickey-1 RS = 3700



for Structure (52)



HEC-RAS Plan: FDS River: T2N-R5W-S33E Reach: S33E-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
S33E-1	1000	PF 1	100.00	1046.00	1047.68	1046.71	1047.73	0.001966	1.78	57.34	40.03	0.25
S33E-1	1000	PF 2	600.00	1046.00	1049.71	1048.22	1049.94	0.003419	4.07	181.16	112.91	0.38
S33E-1	1000	PF 3	1000.00	1046.00	1050.62	1049.13	1050.93	0.003757	4.95	268.74	180.41	0.41
S33E-1	1000	PF 4	1500.00	1046.00	1051.51	1049.91	1051.88	0.003794	5.61	390.13	255.74	0.43
S33E-1	1000	PF 5	1800.00	1046.00	1051.99	1050.26	1052.35	0.003507	5.71	464.59	274.00	0.41
S33E-1	1000	PF 6	2200.00	1046.00	1052.44	1050.77	1052.66	0.002369	4.93	812.54	355.80	0.34
S33E-1	1000	PF 7	3000.00	1046.00	1053.19	1051.72	1053.40	0.002167	5.08	1117.85	445.93	0.34
S33E-1	900	PF 1	100.00	1045.00	1046.11	1045.81	1046.21	0.008639	2.61	43.98	65.68	0.48
S33E-1	900	PF 2	600.00	1045.00	1047.69		1047.95	0.006870	4.54	158.72	79.82	0.51
S33E-1	900	PF 3	1000.00	1045.00	1048.61	1047.45	1048.94	0.006045	5.24	237.26	92.31	0.50
S33E-1	900	PF 4	1500.00	1045.00	1049.29	1048.01	1049.76	0.006861	6.31	303.89	102.73	0.55
S33E-1	900	PF 5	1800.00	1045.00	1049.21	1048.35	1049.92	0.010708	7.77	295.15	101.47	0.68
S33E-1	900	PF 6	2200.00	1045.00	1048.77	1048.77	1050.20	0.024703	10.93	252.20	94.82	1.02
S33E-1	900	PF 7	3000.00	1045.00	1049.52	1049.52	1051.13	0.022312	11.79	327.63	106.06	1.00
S33E-1	800	PF 1	100.00	1042.00	1042.95	1042.56	1043.00	0.006278	1.77	56.59	86.90	0.39
S33E-1	800	PF 2	600.00	1042.00	1043.82		1044.08	0.011803	4.22	156.38	143.48	0.61
S33E-1	800	PF 3	1000.00	1042.00	1044.06	1044.06	1044.58	0.019345	5.98	197.47	224.52	0.80
S33E-1	800	PF 4	1500.00	1042.00	1044.41	1044.41	1045.03	0.019327	6.76	278.31	232.98	0.82
S33E-1	800	PF 5	1800.00	1042.00	1044.98		1045.37	0.009708	5.62	413.73	246.52	0.61
S33E-1	800	PF 6	2200.00	1042.00	1046.72		1046.84	0.001719	3.30	879.01	289.44	0.28
S33E-1	800	PF 7	3000.00	1042.00	1047.84		1047.95	0.001261	3.29	1218.87	317.89	0.25
S33E-1	700	PF 1	100.00	1039.00	1039.76		1039.87	0.020049	2.68	37.32	73.40	0.66
S33E-1	700	PF 2	600.00	1039.00	1040.87		1041.01	0.008677	3.00	201.51	279.92	0.52
S33E-1	700	PF 3	1000.00	1039.00	1041.78		1041.88	0.003389	2.58	392.40	338.49	0.33
S33E-1	700	PF 4	1500.00	1039.00	1043.54		1043.59	0.000885	1.93	795.41	394.86	0.18
S33E-1	700	PF 5	1800.00	1039.00	1044.82		1044.85	0.000520	1.49	1235.43	406.17	0.15
S33E-1	700	PF 6	2200.00	1039.00	1046.66		1046.68	0.000189	1.13	2005.47	426.29	0.09
S33E-1	700	PF 7	3000.00	1039.00	1047.79		1047.81	0.000182	1.25	2489.43	433.27	0.09
S33E-1	600	PF 1	100.00	1036.96	1037.70	1037.51	1037.85	0.017119	3.17	31.59	46.56	0.65
S33E-1	600	PF 2	600.00	1036.96	1039.57	1038.78	1040.01	0.009042	5.35	112.09	51.01	0.58
S33E-1	600	PF 3	1000.00	1036.96	1040.71	1039.52	1041.31	0.007496	6.21	161.11	69.37	0.57
S33E-1	600	PF 4	1500.00	1036.96	1043.23	1040.32	1043.45	0.001684	4.10	542.11	258.10	0.29
S33E-1	600	PF 5	1800.00	1036.96	1044.68	1040.74	1044.78	0.000709	3.06	915.30	258.10	0.19
S33E-1	600	PF 6	2200.00	1036.96	1046.60	1041.29	1046.65	0.000315	2.36	1410.24	258.10	0.13
S33E-1	600	PF 7	3000.00	1036.96	1047.71	1042.28	1047.78	0.000336	2.63	1698.80	258.10	0.14
S33E-1	550		Culvert									
S33E-1	500	PF 1	100.00	1036.03	1037.14	1036.58	1037.21	0.004325	2.10	47.73	44.16	0.35
S33E-1	500	PF 2	600.00	1036.03	1038.56	1037.85	1039.03	0.010063	5.53	108.56	45.32	0.61
S33E-1	500	PF 3	1000.00	1036.03	1039.15	1038.59	1040.01	0.013781	7.45	134.21	45.56	0.74
S33E-1	500	PF 4	1500.00	1036.03	1039.70	1039.39	1041.10	0.018064	9.50	157.83	45.72	0.87
S33E-1	500	PF 5	1800.00	1036.03	1039.96	1039.83	1041.72	0.020650	10.64	169.14	45.80	0.95
S33E-1	500	PF 6	2200.00	1036.03	1041.38	1041.38	1042.20	0.007809	7.87	426.72	297.05	0.60
S33E-1	500	PF 7	3000.00	1036.03	1041.85	1041.85	1042.72	0.008367	8.61	565.78	297.05	0.63
S33E-1	400	PF 1	100.00	1035.30	1036.34	1036.09	1036.38	0.006501	1.87	61.33	159.65	0.40
S33E-1	400	PF 2	600.00	1035.30	1037.37	1036.79	1037.55	0.007661	3.74	181.17	218.26	0.50
S33E-1	400	PF 3	1000.00	1035.30	1037.89		1038.17	0.008208	4.62	243.07	255.52	0.54
S33E-1	400	PF 4	1500.00	1035.30	1038.36		1038.78	0.009430	5.61	298.91	278.37	0.60
S33E-1	400	PF 5	1800.00	1035.30	1038.58		1039.09	0.010265	6.18	325.77	281.00	0.63
S33E-1	400	PF 6	2200.00	1035.30	1038.93		1039.52	0.010379	6.69	367.32	285.05	0.65
S33E-1	400	PF 7	3000.00	1035.30	1039.49	1038.61	1040.34	0.013630	8.52	518.10	292.07	0.77
S33E-1	300	PF 1	100.00	1033.00	1033.77	1033.48	1033.83	0.009369	2.01	49.84	85.52	0.46
S33E-1	300	PF 2	600.00	1033.00	1034.77	1034.35	1034.97	0.009021	3.70	187.59	188.27	0.53
S33E-1	300	PF 3	1000.00	1033.00	1035.19	1034.76	1035.46	0.009561	4.48	282.48	264.87	0.57
S33E-1	300	PF 4	1500.00	1033.00	1035.55	1034.93	1035.88	0.009856	5.11	377.53	279.07	0.60
S33E-1	300	PF 5	1800.00	1033.00	1035.76	1035.39	1036.11	0.009622	5.35	432.39	287.24	0.60
S33E-1	300	PF 6	2200.00	1033.00	1036.08		1036.49	0.009771	5.84	525.11	361.13	0.61
S33E-1	300	PF 7	3000.00	1033.00	1036.49		1036.93	0.009241	6.23	679.48	385.87	0.61
S33E-1	200	PF 1	100.00	1028.00	1028.91		1029.02	0.012831	2.70	37.04	51.44	0.56
S33E-1	200	PF 2	600.00	1028.00	1030.06		1030.38	0.012239	4.93	170.00	214.11	0.64
S33E-1	200	PF 3	1000.00	1028.00	1030.47	1030.31	1030.82	0.011902	5.56	258.83	221.10	0.65
S33E-1	200	PF 4	1500.00	1028.00	1030.88		1031.28	0.011418	6.09	351.87	228.18	0.66
S33E-1	200	PF 5	1800.00	1028.00	1031.08		1031.52	0.011728	6.47	396.52	236.78	0.67
S33E-1	200	PF 6	2200.00	1028.00	1031.31		1031.80	0.012083	6.92	453.76	256.53	0.69
S33E-1	200	PF 7	3000.00	1028.00	1031.71		1032.30	0.012657	7.67	561.74	290.16	0.72
S33E-1	100	PF 1	100.00	1024.00	1024.87	1024.53	1024.94	0.007708	2.11	50.85	75.49	0.44
S33E-1	100	PF 2	600.00	1024.00	1026.14	1025.50	1026.35	0.007710	4.08	200.97	263.68	0.51

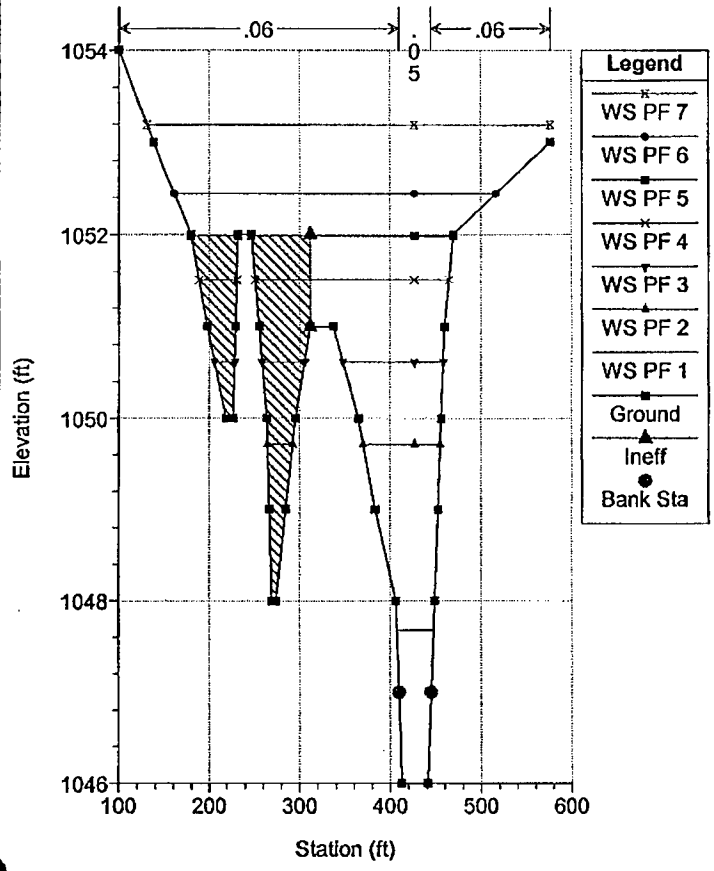
HEC-RAS Plan: FDS River: T2N-R5W-S33E Reach: S33E-1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
S33E-1	100	PF 3	1000.00	1024.00	1026.61	1025.92	1026.86	0.007702	4.70	315.96	346.67	0.53
S33E-1	100	PF 4	1500.00	1024.00	1027.10	1025.93	1027.38	0.007713	5.32	479.68	435.26	0.55
S33E-1	100	PF 5	1800.00	1024.00	1027.27	1026.78	1027.56	0.007702	5.52	555.17	443.22	0.55
S33E-1	100	PF 6	2200.00	1024.00	1027.47	1026.97	1027.78	0.007707	5.76	647.21	452.75	0.56
S33E-1	100	PF 7	3000.00	1024.00	1027.83	1026.96	1028.16	0.007700	6.17	813.71	469.48	0.57

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

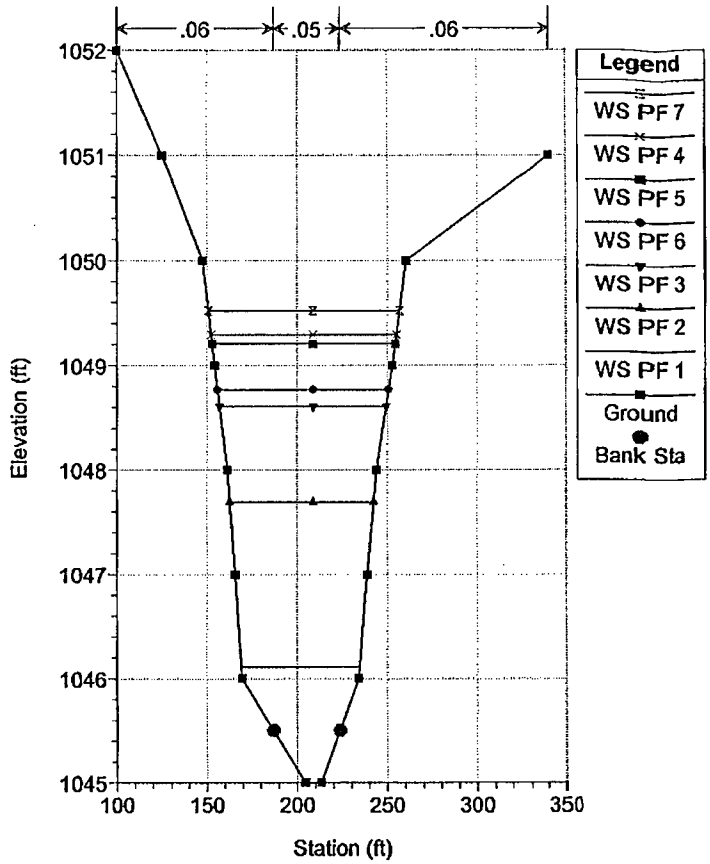
River = T2N-R5W-S33E Reach = S33E-1 RS = 1000



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

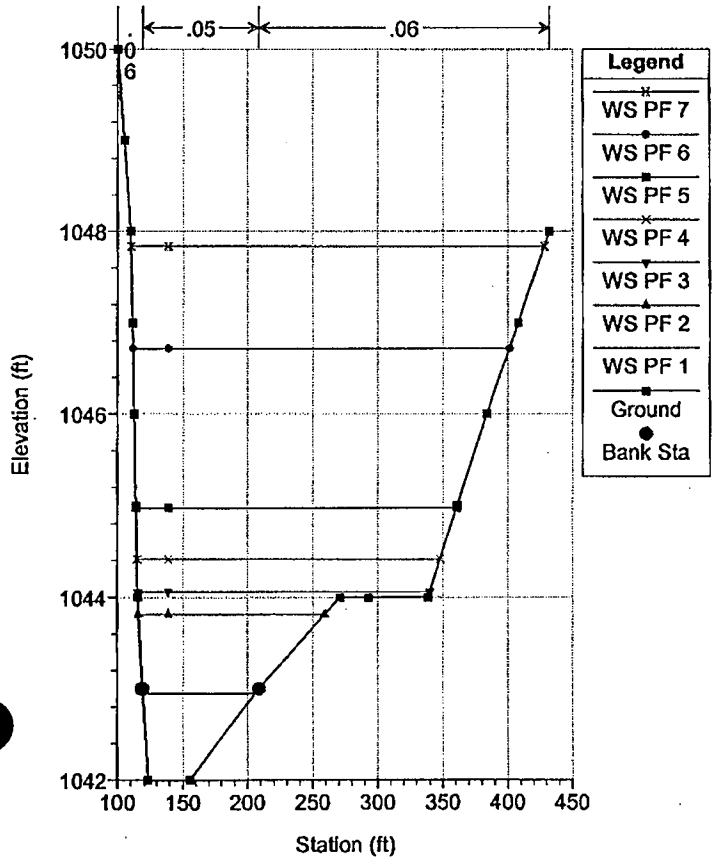
River = T2N-R5W-S33E Reach = S33E-1 RS = 900



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

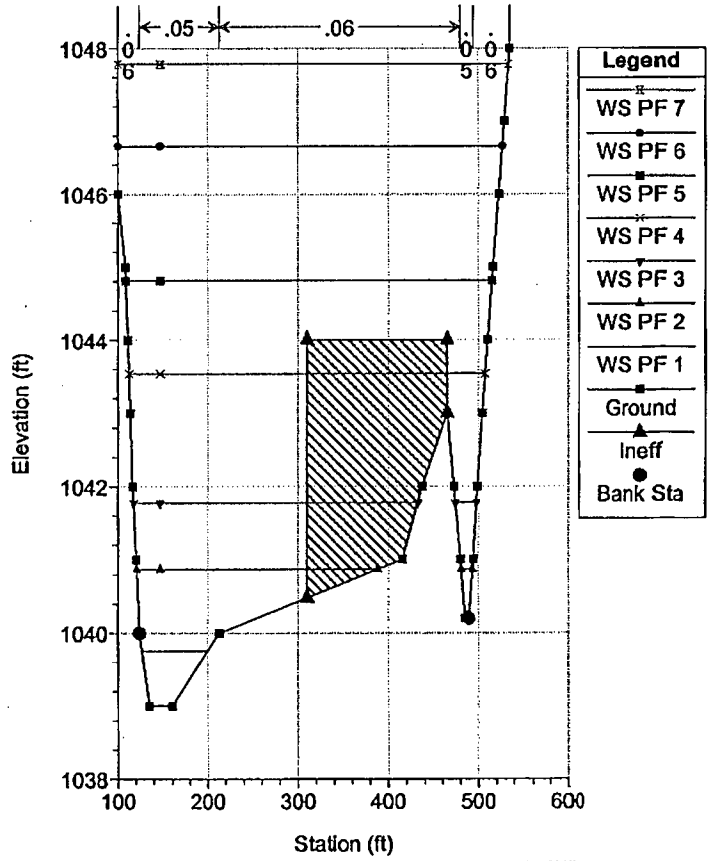
River = T2N-R5W-S33E Reach = S33E-1 RS = 800



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

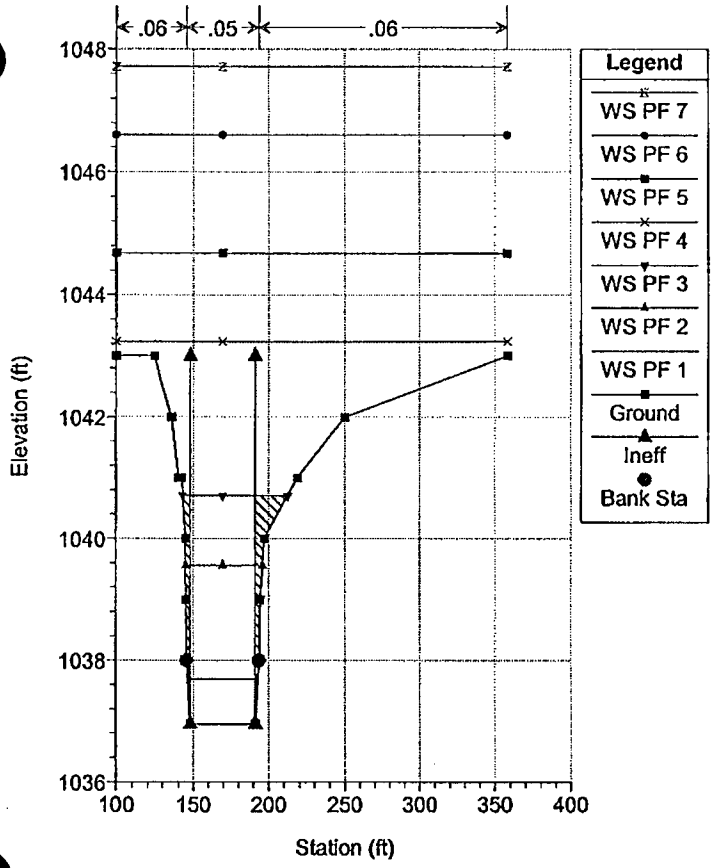
River = T2N-R5W-S33E Reach = S33E-1 RS = 700



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

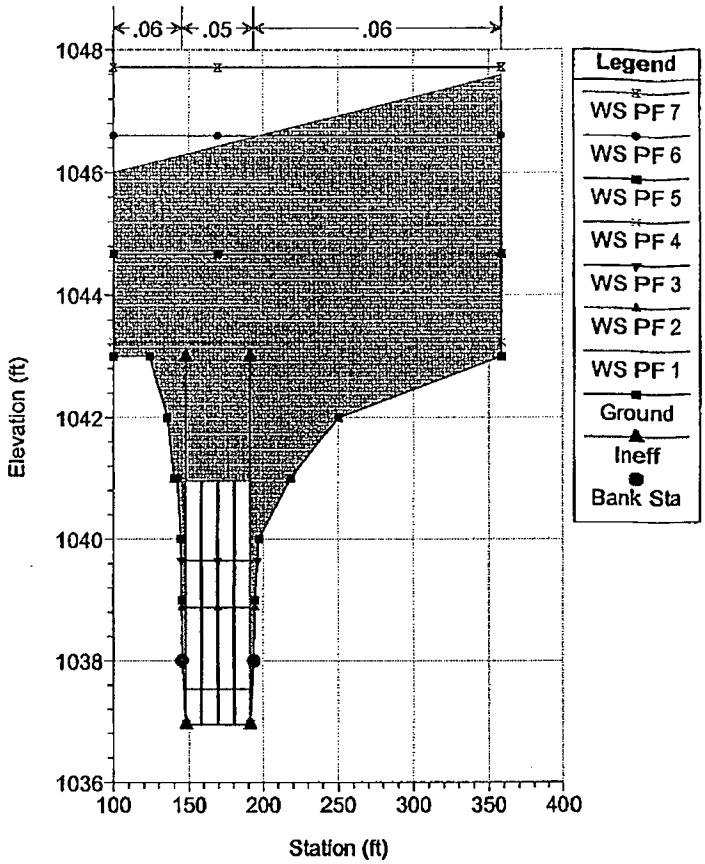
River = T2N-R5W-S33E Reach = S33E-1 RS = 600



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

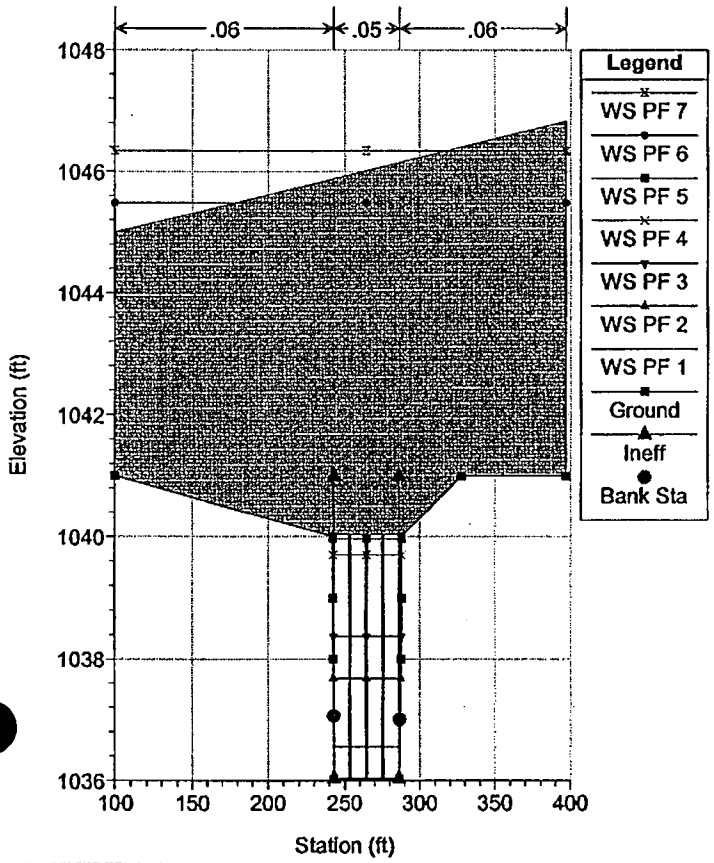
River = T2N-R5W-S33E Reach = S33E-1 RS = 550 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

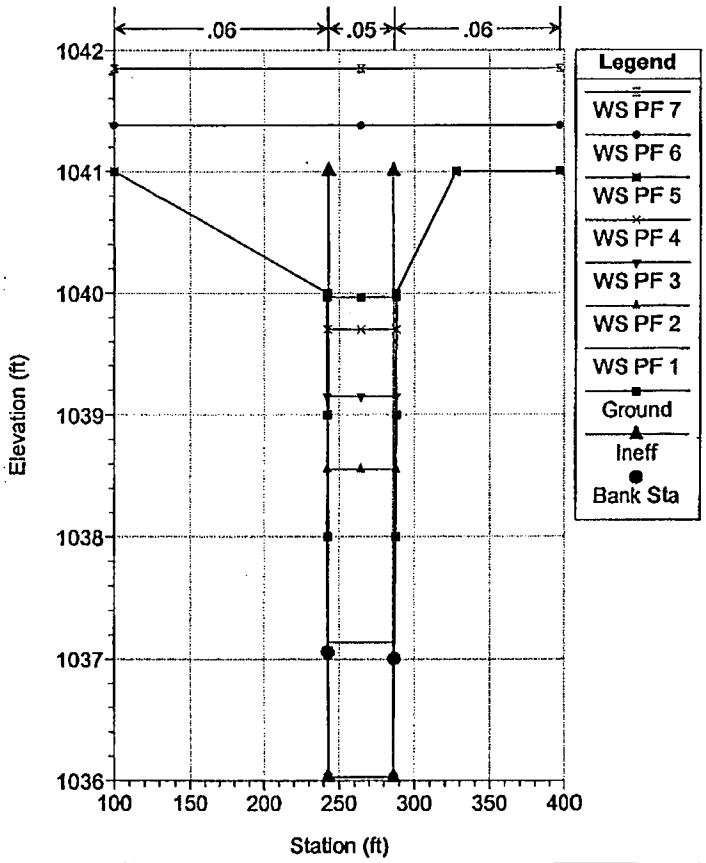
River = T2N-R5W-S33E Reach = S33E-1 RS = 550 Culv



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

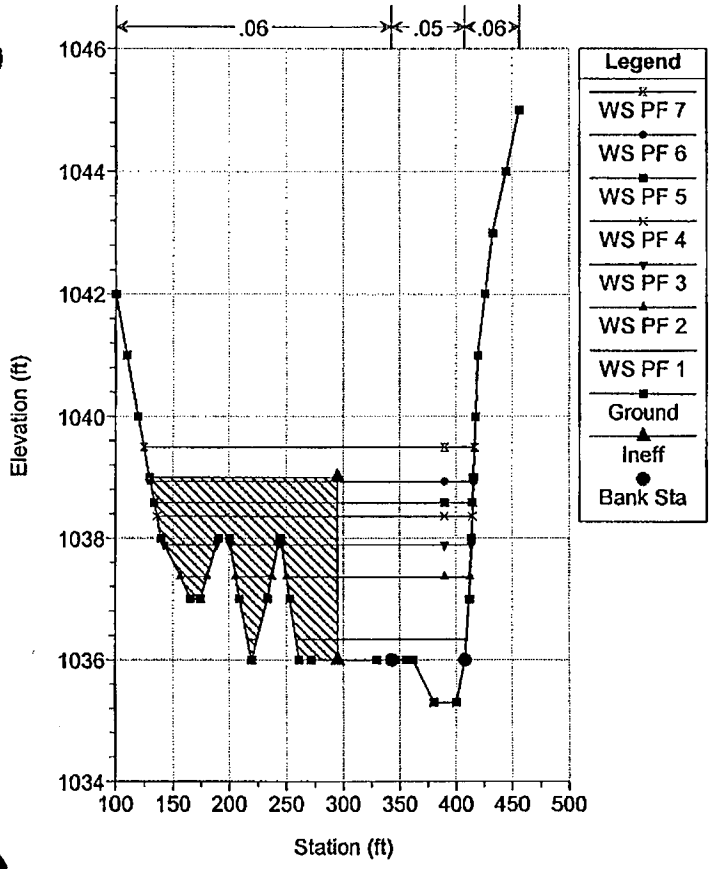
River = T2N-R5W-S33E Reach = S33E-1 RS = 500



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

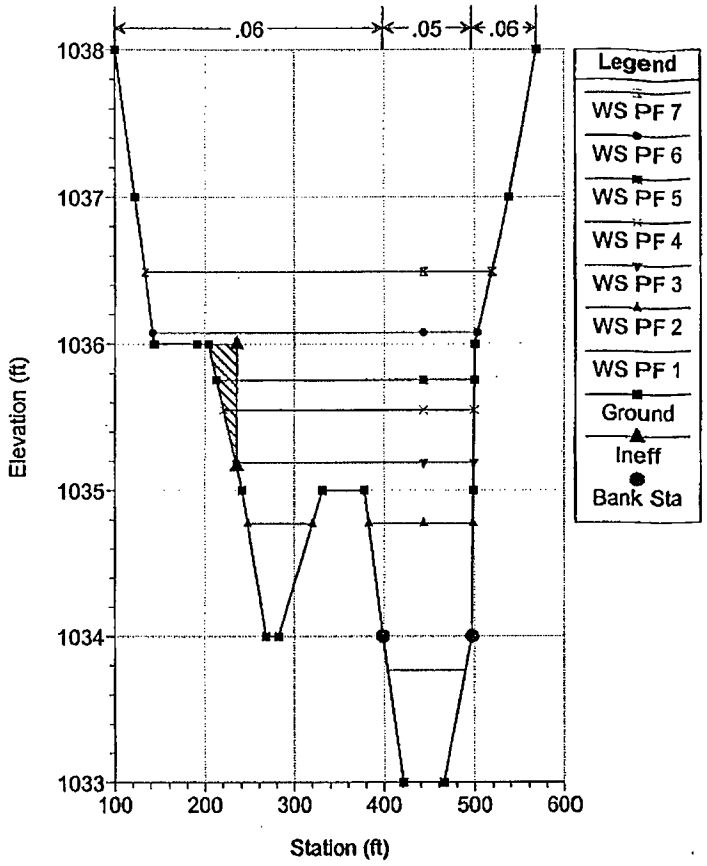
River = T2N-R5W-S33E Reach = S33E-1 RS = 400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

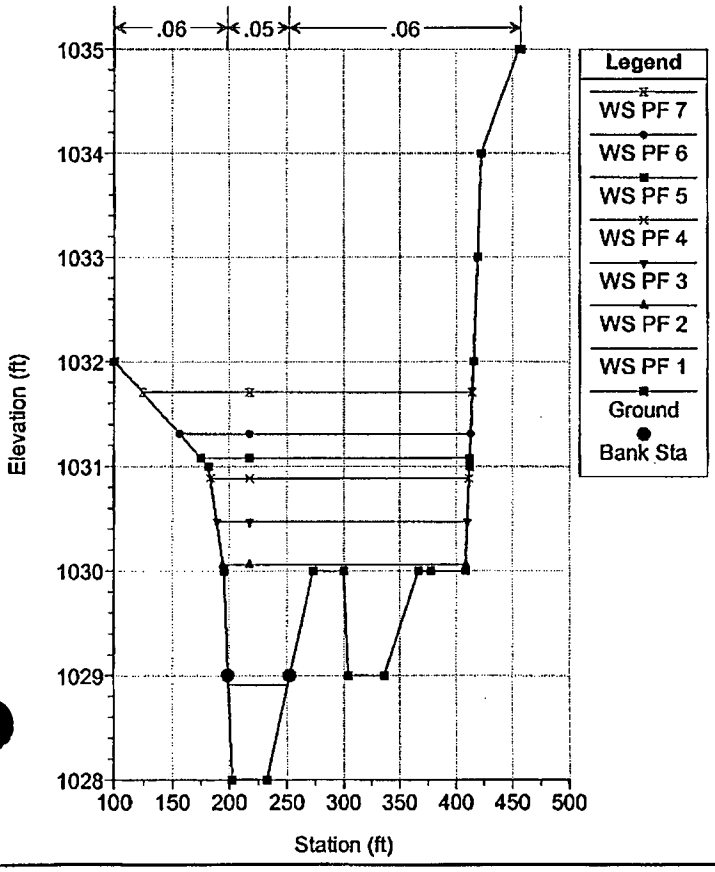
River = T2N-R5W-S33E Reach = S33E-1 RS = 300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

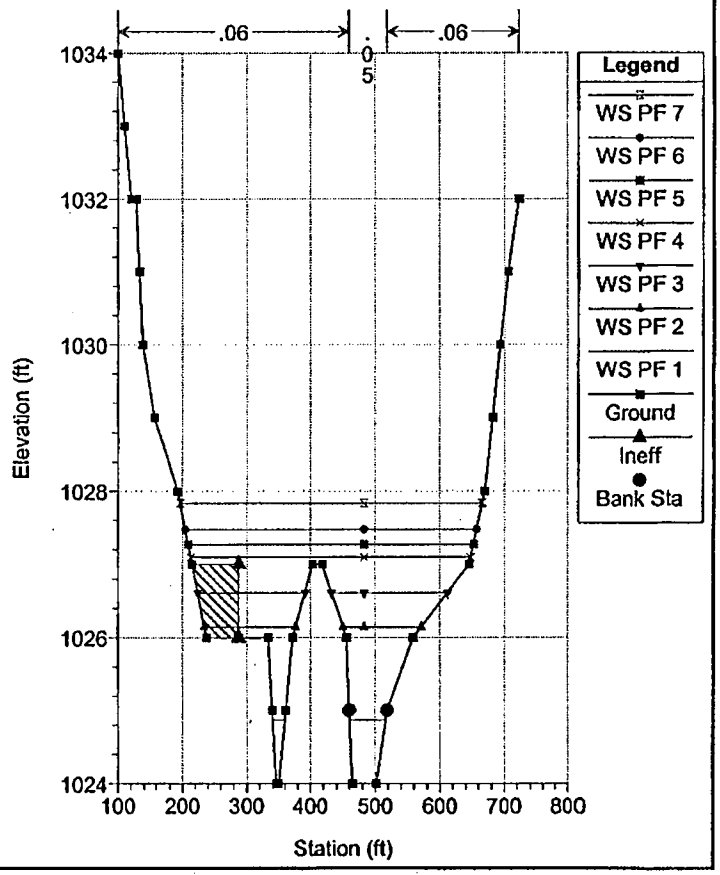
River = T2N-R5W-S33E Reach = S33E-1 RS = 200



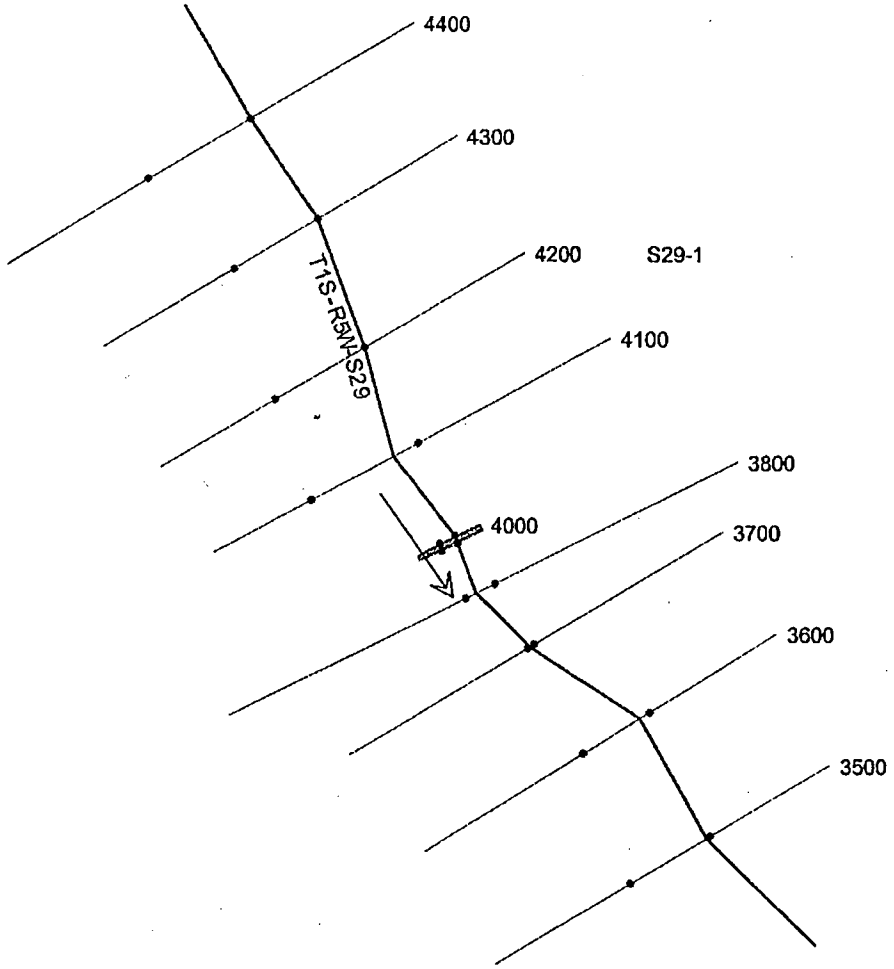
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = T2N-R5W-S33E Reach = S33E-1 RS = 100



for Structure UPR1



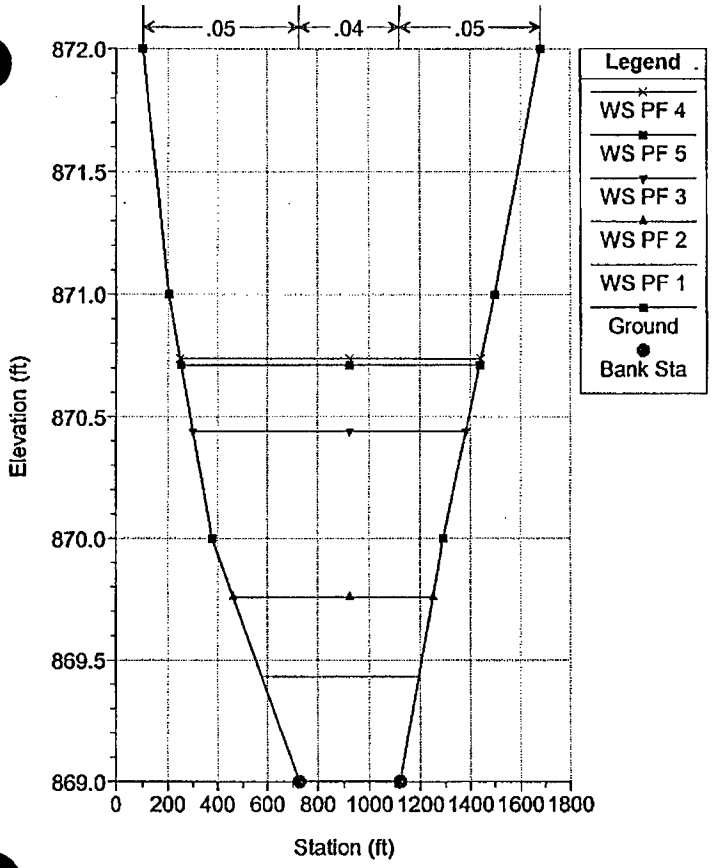
HEC-RAS Plan: FDS River: T1S-R5W-S29 Reach: S29-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
S29-1	4400	PF 1	400.00	869.00	869.43	869.30	869.49	0.009349	2.05	218.89	618.76	0.55
S29-1	4400	PF 2	1000.00	869.00	869.76	869.53	869.85	0.007502	2.67	447.91	787.88	0.54
S29-1	4400	PF 3	2000.00	869.00	870.44		870.51	0.002499	2.37	1093.36	1081.67	0.35
S29-1	4400	PF 4	3000.00	869.00	870.74		870.83	0.002663	2.77	1433.04	1195.47	0.37
S29-1	4400	PF 5	4000.00	869.00	870.71		870.88	0.005027	3.77	1402.09	1185.55	0.51
S29-1	4300	PF 1	400.00	867.00	867.67	867.34	867.69	0.002577	1.44	339.38	694.92	0.31
S29-1	4300	PF 2	1000.00	867.00	868.05		868.10	0.002777	2.02	644.46	894.56	0.35
S29-1	4300	PF 3	2000.00	867.00	867.87	867.87	868.20	0.022730	5.12	496.12	810.84	0.97
S29-1	4300	PF 4	3000.00	867.00	868.10	868.10	868.48	0.020163	5.63	695.20	910.89	0.94
S29-1	4300	PF 5	4000.00	867.00	870.47		870.50	0.000324	1.53	3553.93	1374.48	0.15
S29-1	4200	PF 1	400.00	864.30	864.64	864.64	864.80	0.033737	3.30	127.99	421.17	1.00
S29-1	4200	PF 2	1000.00	864.30	864.91	864.91	865.18	0.026493	4.35	252.24	487.20	0.98
S29-1	4200	PF 3	2000.00	864.30	866.45		866.50	0.001036	1.99	1304.98	933.89	0.24
S29-1	4200	PF 4	3000.00	864.30	867.90		867.92	0.000267	1.42	3020.08	1381.34	0.13
S29-1	4200	PF 5	4000.00	864.30	870.44		870.45	0.000043	0.82	6601.76	1406.75	0.06
S29-1	4100	PF 1	400.00	862.00	863.28		863.30	0.001002	1.10	372.87	477.15	0.20
S29-1	4100	PF 2	1000.00	862.00	864.53		864.54	0.000251	0.98	1268.47	975.92	0.12
S29-1	4100	PF 3	2000.00	862.00	866.42		866.42	0.000066	0.77	3682.58	1501.44	0.07
S29-1	4100	PF 4	3000.00	862.00	867.88		867.89	0.000036	0.70	5877.73	1501.44	0.05
S29-1	4100	PF 5	4000.00	862.00	870.44		870.44	0.000013	0.54	9719.03	1501.44	0.03
S29-1	4000	PF 1	400.00	860.65	862.25	861.81	862.55	0.008159	4.45	89.88	56.55	0.62
S29-1	4000	PF 2	1000.00	860.65	863.78	862.78	864.28	0.005380	5.67	176.88	57.00	0.57
S29-1	4000	PF 3	2000.00	860.65	865.41	864.03	866.27	0.005287	7.44	270.66	58.68	0.60
S29-1	4000	PF 4	3000.00	860.65	866.40	865.08	867.71	0.006334	9.23	330.81	66.39	0.68
S29-1	4000	PF 5	4000.00	860.65	869.98	866.03	870.39	0.001303	5.78	1004.15	234.27	0.33
S29-1	3950		Bridge									
S29-1	3900	PF 1	400.00	860.14	861.64		861.97	0.009496	4.66	85.99	57.85	0.67
S29-1	3900	PF 2	1000.00	860.14	862.24	862.24	863.30	0.018951	8.26	121.32	58.14	1.00
S29-1	3900	PF 3	2000.00	860.14	863.48	863.48	865.16	0.016221	10.40	193.43	58.71	1.00
S29-1	3900	PF 4	3000.00	860.14	864.52	864.52	866.71	0.014752	11.89	254.86	59.76	1.00
S29-1	3900	PF 5	4000.00	860.14	865.41	865.41	868.09	0.014106	13.15	308.67	61.14	1.01
S29-1	3800	PF 1	400.00	858.00	860.36	860.23	860.44	0.006992	2.74	222.35	544.17	0.53
S29-1	3800	PF 2	1000.00	858.00	860.78	860.49	860.87	0.005630	3.23	483.58	705.68	0.51
S29-1	3800	PF 3	2000.00	858.00	861.23		861.35	0.005126	3.78	839.89	871.34	0.51
S29-1	3800	PF 4	3000.00	858.00	861.59		861.72	0.004706	4.11	1172.98	996.02	0.50
S29-1	3800	PF 5	4000.00	858.00	861.84		862.00	0.004862	4.52	1436.61	1084.59	0.52
S29-1	3700	PF 1	400.00	856.00	858.89	858.71	859.01	0.004504	3.85	230.35	433.52	0.49
S29-1	3700	PF 2	1000.00	856.00	859.37	859.12	859.50	0.004933	4.67	482.12	600.29	0.53
S29-1	3700	PF 3	2000.00	856.00	859.86	859.47	860.01	0.005209	5.42	812.06	752.29	0.56
S29-1	3700	PF 4	3000.00	856.00	860.25	859.74	860.41	0.005479	6.04	1184.66	1086.26	0.59
S29-1	3700	PF 5	4000.00	856.00	860.51	859.91	860.68	0.005357	6.28	1476.26	1172.66	0.59
S29-1	3600	PF 1	400.00	855.50	856.51		856.57	0.007153	2.05	226.96	494.93	0.50
S29-1	3600	PF 2	1000.00	855.50	856.88		856.98	0.006938	2.87	422.78	579.38	0.53
S29-1	3600	PF 3	2000.00	855.50	857.31		857.46	0.006750	3.67	695.17	701.61	0.56
S29-1	3600	PF 4	3000.00	855.50	857.63	857.14	857.83	0.006597	4.20	940.83	802.16	0.58
S29-1	3600	PF 5	4000.00	855.50	857.90		858.13	0.006528	4.63	1167.40	884.82	0.59
S29-1	3500	PF 1	400.00	853.50	854.35	854.05	854.38	0.003002	1.59	295.29	590.12	0.34
S29-1	3500	PF 2	1000.00	853.50	854.77	854.32	854.83	0.003000	2.18	565.91	706.90	0.36
S29-1	3500	PF 3	2000.00	853.50	855.24	854.62	855.33	0.003002	2.76	930.59	838.26	0.39
S29-1	3500	PF 4	3000.00	853.50	855.60	854.85	855.71	0.003001	3.17	1250.24	937.93	0.40
S29-1	3500	PF 5	4000.00	853.50	855.90	855.05	856.03	0.003003	3.49	1544.13	1021.02	0.41

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

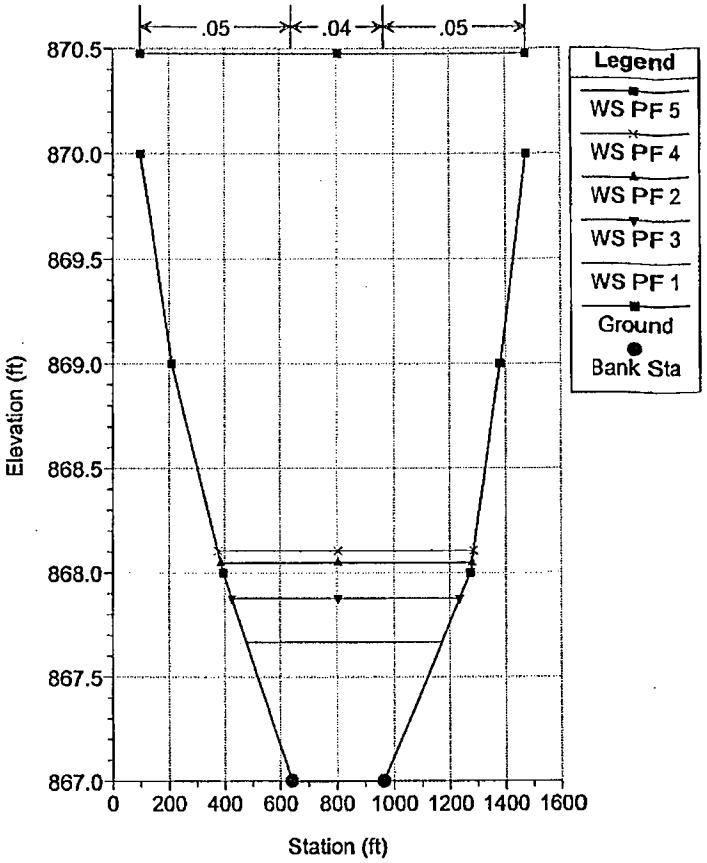
River = T1S-R5W-S29 Reach = S29-1 RS = 4400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

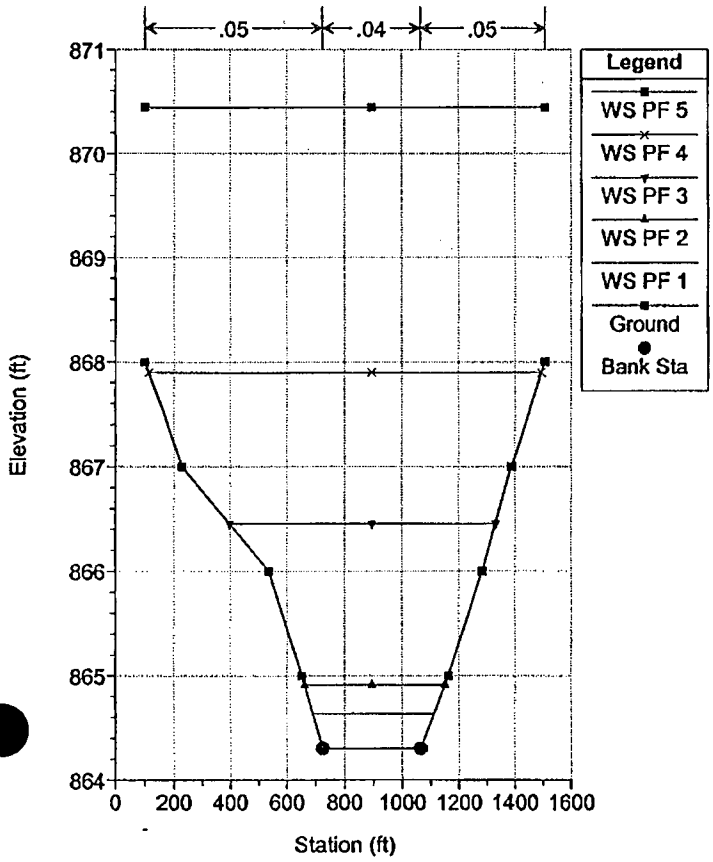
River = T1S-R5W-S29 Reach = S29-1 RS = 4300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

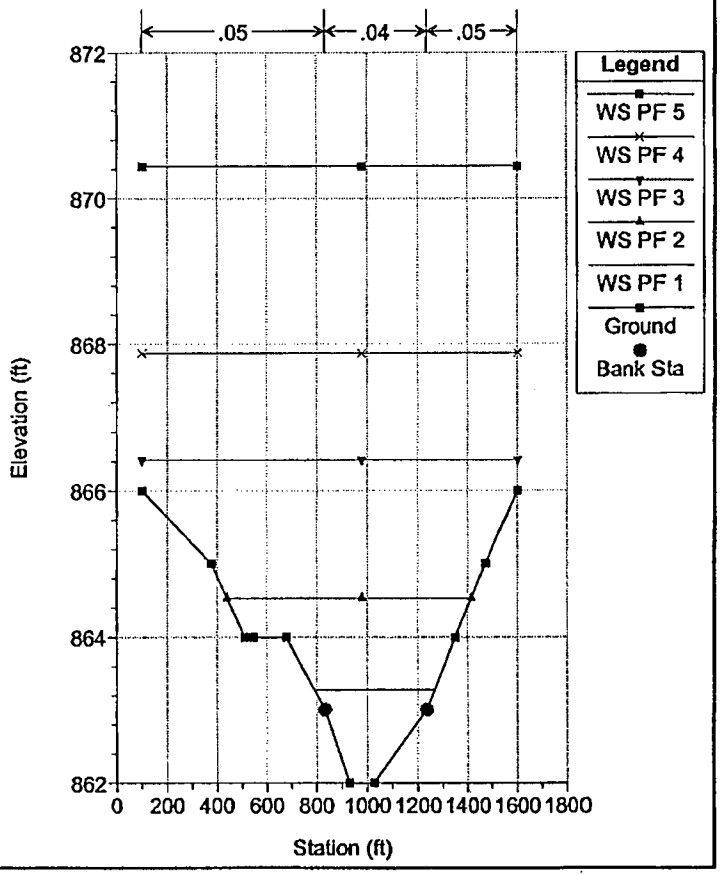
River = T1S-R5W-S29 Reach = S29-1 RS = 4200



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

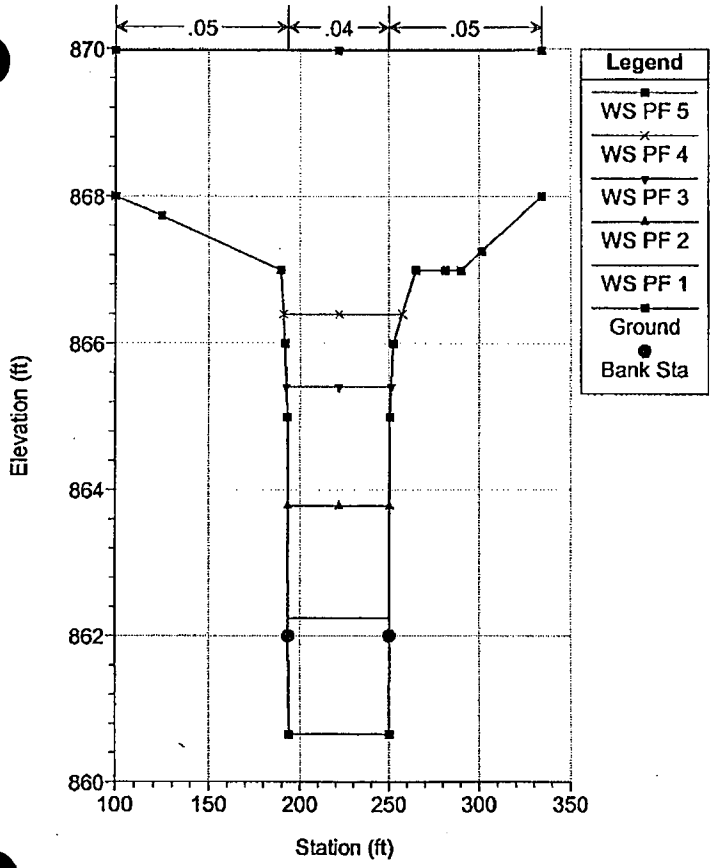
River = T1S-R5W-S29 Reach = S29-1 RS = 4100



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

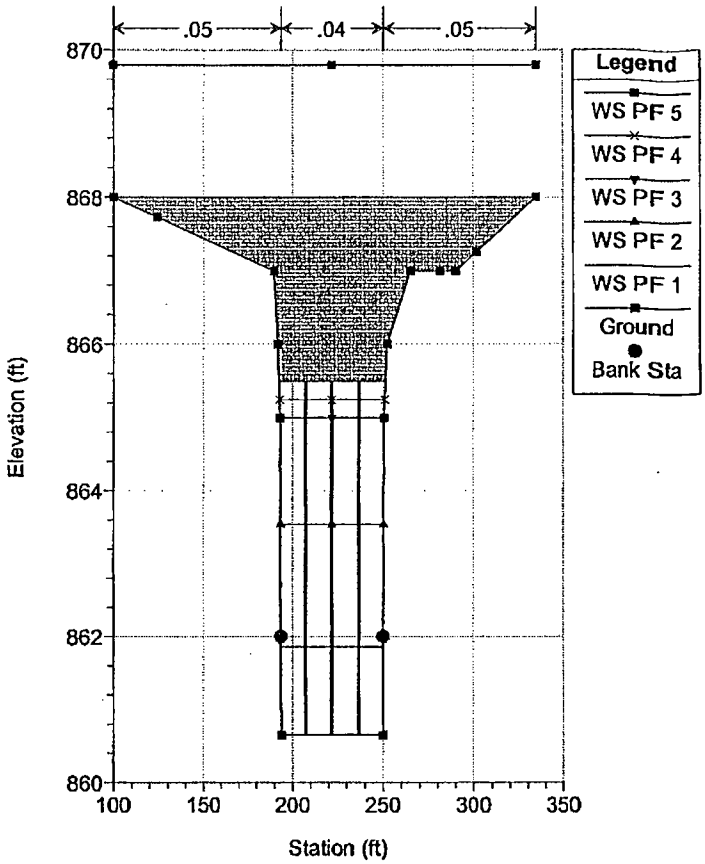
River = T1S-R5W-S29 Reach = S29-1 RS = 4000



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

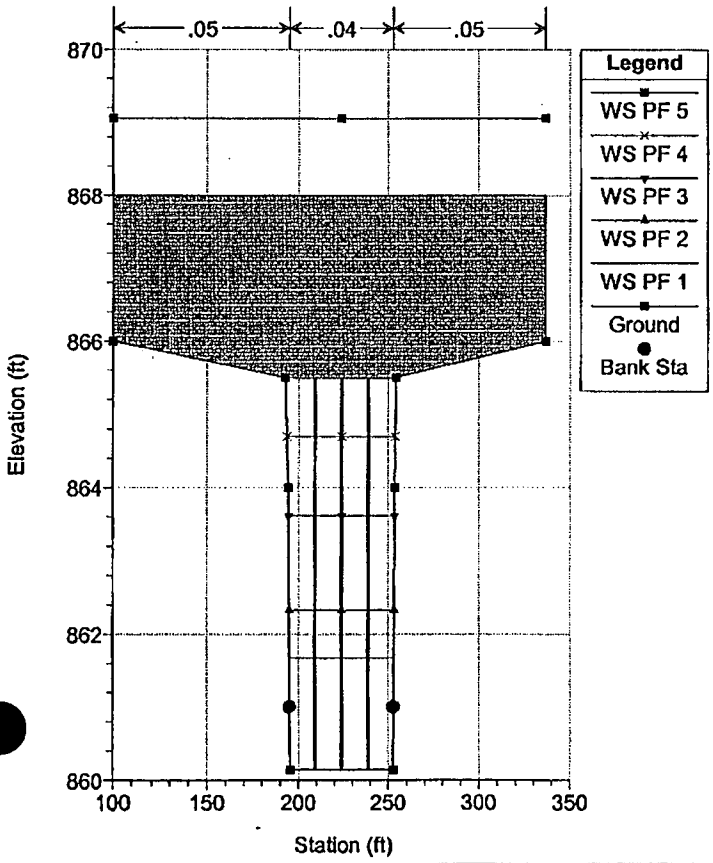
River = T1S-R5W-S29 Reach = S29-1 RS = 3950 BR



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

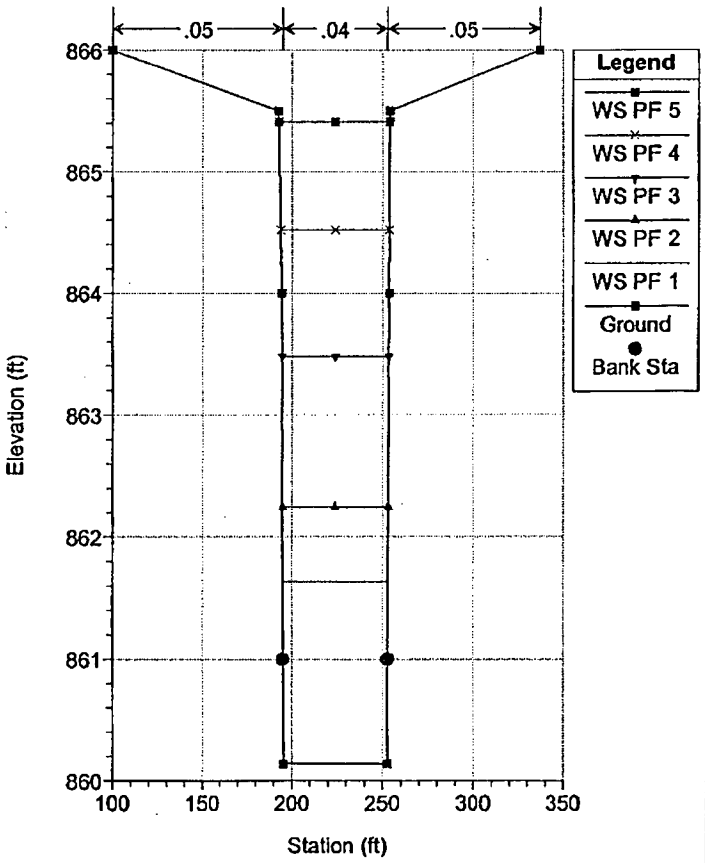
River = T1S-R5W-S29 Reach = S29-1 RS = 3950 BR



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

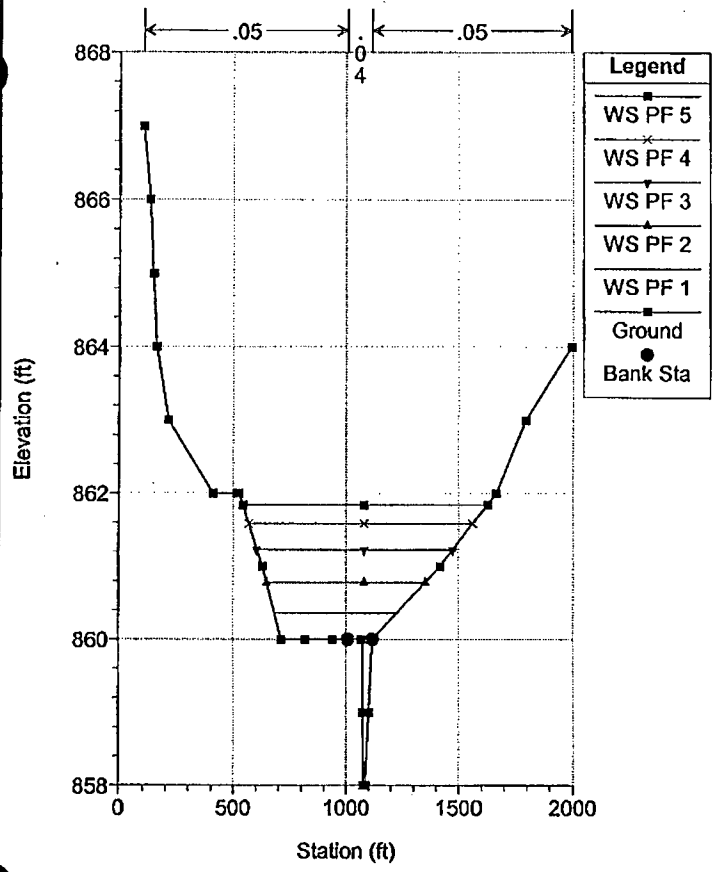
River = T1S-R5W-S29 Reach = S29-1 RS = 3900



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

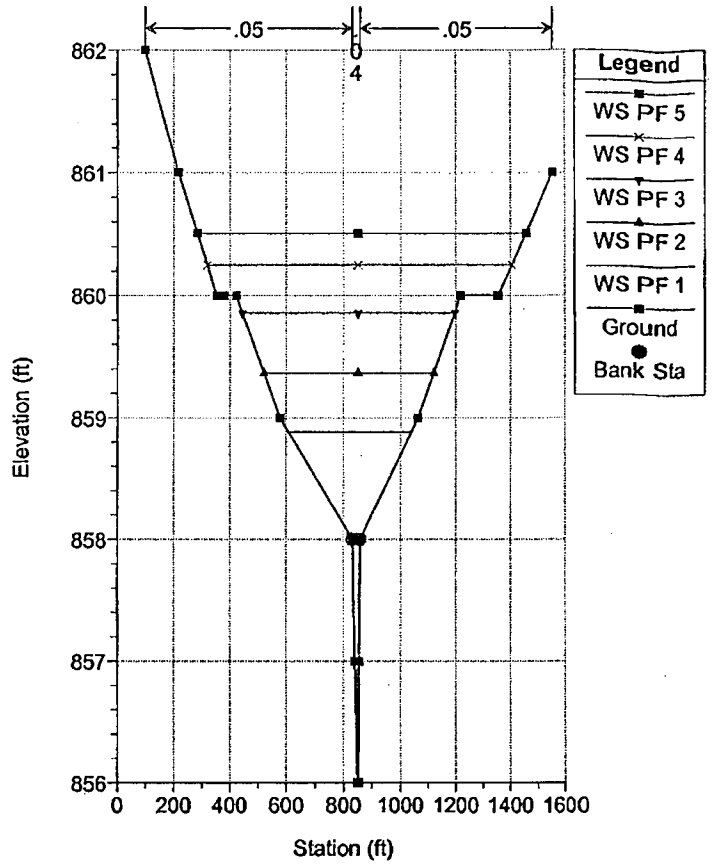
River = T1S-R5W-S29 Reach = S29-1 RS = 3800



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

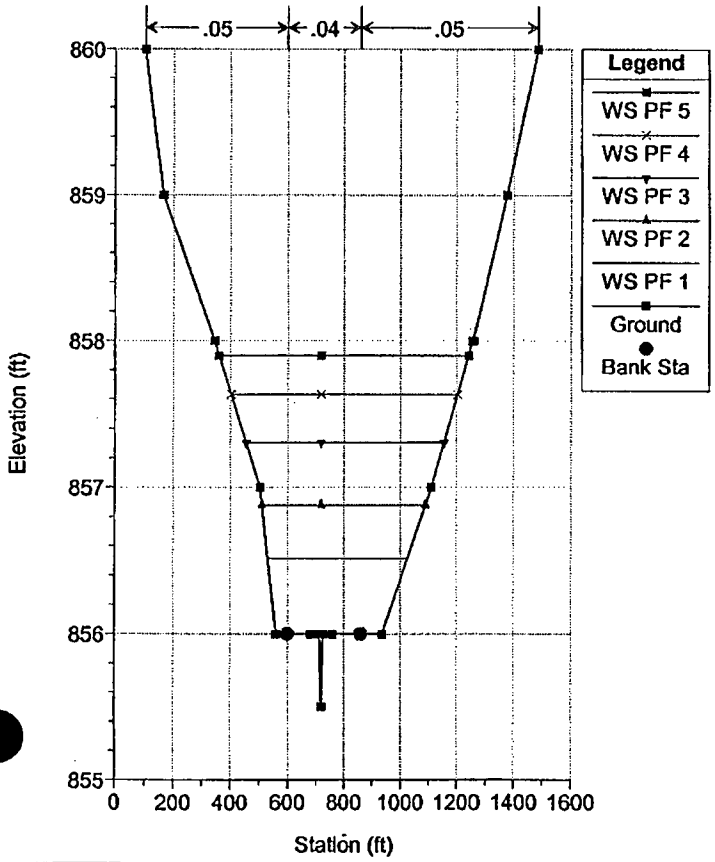
River = T1S-R5W-S29 Reach = S29-1 RS = 3700



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

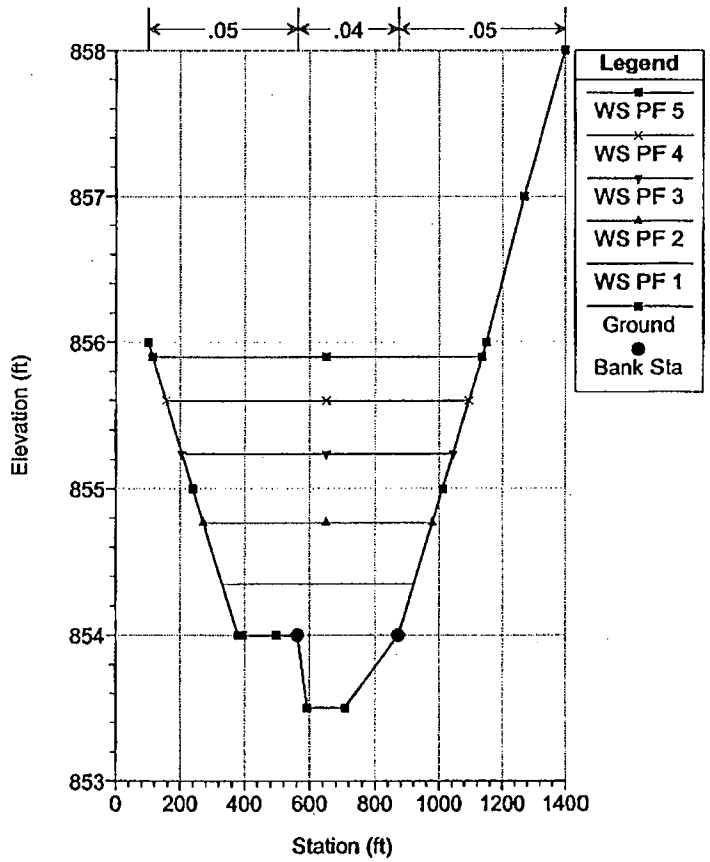
River = T1S-R5W-S29 Reach = S29-1 RS = 3600



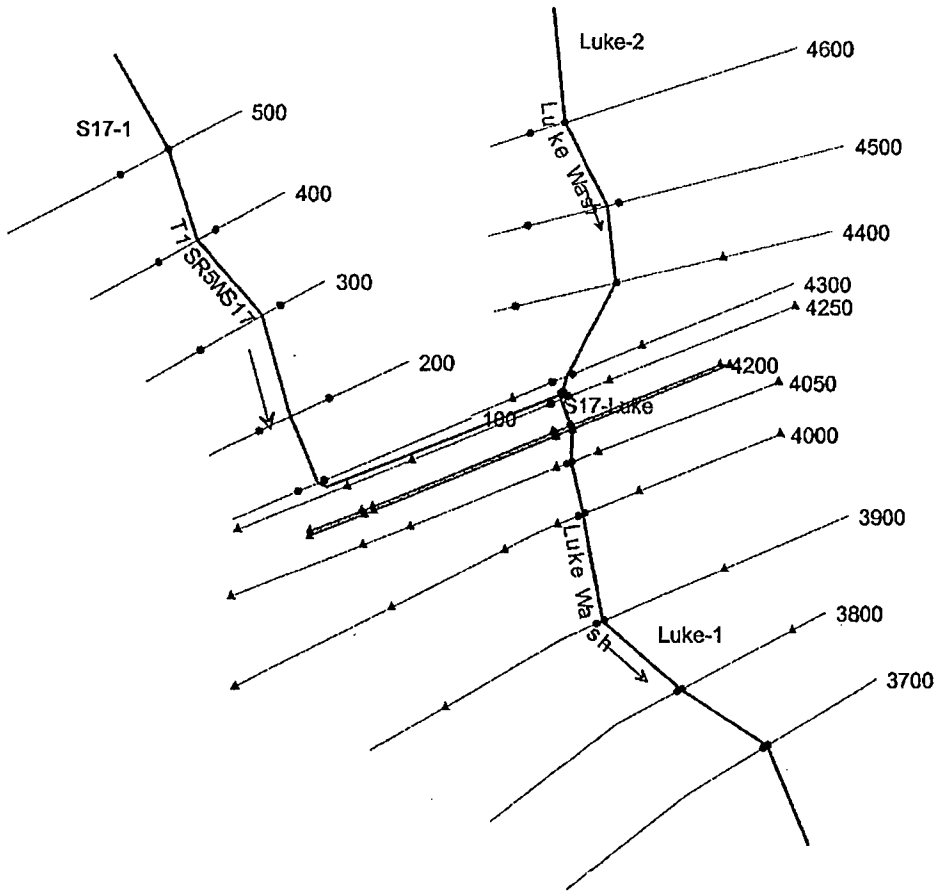
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = T1S-R5W-S29 Reach = S29-1 RS = 3500



for Structure UPR2 & UPR3



HEC-RAS Plan: FDS

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
T1SR5WS17	S17-1	500	PF 1	30.00	861.00	861.33	861.07	861.33	0.001102	0.33	93.86	335.27	0.10
T1SR5WS17	S17-1	500	PF 2	75.00	861.00	861.52	861.14	861.52	0.001261	0.49	164.32	392.62	0.12
T1SR5WS17	S17-1	500	PF 3	150.00	861.00	861.66		861.67	0.002041	0.73	222.99	434.65	0.16
T1SR5WS17	S17-1	500	PF 4	300.00	861.00	861.94		861.95	0.002096	0.93	356.07	517.46	0.17
T1SR5WS17	S17-1	500	PF 5	600.00	861.00	862.37		862.39	0.001790	1.11	591.44	571.55	0.17
T1SR5WS17	S17-1	500	PF 6	900.00	861.00	862.69		862.72	0.001710	1.25	781.81	603.87	0.17
T1SR5WS17	S17-1	500	PF 7	1200.00	861.00	862.87		862.90	0.002038	1.46	891.40	621.71	0.19
T1SR5WS17	S17-1	500	PF 8	1500.00	861.00	863.24		863.27	0.001579	1.45	1130.08	669.03	0.17
T1SR5WS17	S17-1	400	PF 1	30.00	860.00	860.32	860.16	860.33	0.008882	0.70	42.82	206.61	0.27
T1SR5WS17	S17-1	400	PF 2	75.00	860.00	860.53	860.27	860.54	0.006095	0.79	94.98	301.17	0.24
T1SR5WS17	S17-1	400	PF 3	150.00	860.00	860.89		860.90	0.001739	0.69	234.18	467.80	0.15
T1SR5WS17	S17-1	400	PF 4	300.00	860.00	861.20	860.52	861.21	0.001562	0.84	397.10	560.93	0.15
T1SR5WS17	S17-1	400	PF 5	600.00	860.00	861.35		861.38	0.003573	1.39	481.30	592.13	0.23
T1SR5WS17	S17-1	400	PF 6	900.00	860.00	861.36		861.42	0.007720	2.06	488.08	594.57	0.34
T1SR5WS17	S17-1	400	PF 7	1200.00	860.00	862.03		862.06	0.002074	1.45	936.46	733.61	0.19
T1SR5WS17	S17-1	400	PF 8	1500.00	860.00	862.85		862.86	0.000679	1.06	1556.96	794.23	0.11
T1SR5WS17	S17-1	300	PF 1	30.00	858.50	858.90		858.90	0.001756	0.35	84.54	335.51	0.12
T1SR5WS17	S17-1	300	PF 2	75.00	858.50	859.06		859.07	0.002236	0.51	146.07	411.51	0.15
T1SR5WS17	S17-1	300	PF 3	150.00	858.50	858.94	858.82	858.97	0.030697	1.55	96.48	356.99	0.53
T1SR5WS17	S17-1	300	PF 4	300.00	858.50	858.95	858.95	859.09	0.111261	3.00	100.07	363.19	1.01
T1SR5WS17	S17-1	300	PF 5	600.00	858.50	859.70		859.73	0.004230	1.39	457.31	562.40	0.24
T1SR5WS17	S17-1	300	PF 6	900.00	858.50	860.80		860.81	0.000560	0.83	1175.40	710.69	0.10
T1SR5WS17	S17-1	300	PF 7	1200.00	858.50	861.84		861.85	0.000211	0.66	1963.71	806.87	0.07
T1SR5WS17	S17-1	300	PF 8	1500.00	858.50	862.75		862.76	0.000120	0.59	2718.70	845.17	0.05
T1SR5WS17	S17-1	200	PF 1	30.00	856.00	856.28	856.28	856.35	0.134520	2.16	13.89	95.09	1.00
T1SR5WS17	S17-1	200	PF 2	75.00	856.00	856.53		856.57	0.031743	1.58	47.45	175.65	0.54
T1SR5WS17	S17-1	200	PF 3	150.00	856.00	857.20		857.21	0.001456	0.64	238.04	391.36	0.13
T1SR5WS17	S17-1	200	PF 4	300.00	856.00	858.33		858.33	0.000149	0.39	866.34	674.42	0.05
T1SR5WS17	S17-1	200	PF 5	600.00	856.00	859.63		859.63	0.000065	0.37	1832.32	813.23	0.04
T1SR5WS17	S17-1	200	PF 6	900.00	856.00	860.77		860.77	0.000040	0.35	2812.86	897.11	0.03
T1SR5WS17	S17-1	200	PF 7	1200.00	856.00	861.82		861.82	0.000028	0.34	3778.49	931.55	0.03
T1SR5WS17	S17-1	200	PF 8	1500.00	856.00	862.74		862.74	0.000023	0.34	4635.98	936.40	0.02
T1SR5WS17	S17-1	100	PF 1	30.00	854.00	856.18		856.18	0.000009	0.09	422.56	474.98	0.01
T1SR5WS17	S17-1	100	PF 2	75.00	854.00	856.53		856.53	0.000022	0.16	600.10	547.82	0.02
T1SR5WS17	S17-1	100	PF 3	150.00	854.00	857.18		857.18	0.000021	0.19	1001.23	672.79	0.02
T1SR5WS17	S17-1	100	PF 4	300.00	854.00	858.32		858.32	0.000015	0.20	1854.63	824.88	0.02
T1SR5WS17	S17-1	100	PF 5	600.00	854.00	859.62		859.62	0.000014	0.24	3024.30	965.89	0.02
T1SR5WS17	S17-1	100	PF 6	900.00	854.00	860.76		860.76	0.000012	0.25	4175.43	1041.82	0.02
T1SR5WS17	S17-1	100	PF 7	1200.00	854.00	861.81		861.82	0.000010	0.26	5299.90	1090.92	0.02
T1SR5WS17	S17-1	100	PF 8	1500.00	854.00	862.73		862.73	0.000009	0.26	6307.32	1099.56	0.02
Luke Wash	Luke-2	4600	PF 1	70.00	864.00	864.42		864.43	0.002419	0.91	90.65	278.46	0.25
Luke Wash	Luke-2	4600	PF 2	175.00	864.00	864.69		864.71	0.002313	1.24	177.87	358.65	0.26
Luke Wash	Luke-2	4600	PF 3	350.00	864.00	864.95		864.98	0.002687	1.66	281.32	435.00	0.30
Luke Wash	Luke-2	4600	PF 4	700.00	864.00	865.23		865.28	0.003492	2.24	474.31	807.04	0.36
Luke Wash	Luke-2	4600	PF 5	1400.00	864.00	865.55		865.65	0.005258	3.20	765.61	1132.86	0.45
Luke Wash	Luke-2	4600	PF 6	2100.00	864.00	865.74		865.86	0.005956	3.69	991.09	1169.64	0.49
Luke Wash	Luke-2	4600	PF 7	2800.00	864.00	865.87		866.03	0.007094	4.23	1145.76	1194.21	0.54
Luke Wash	Luke-2	4600	PF 8	3500.00	864.00	866.04		866.20	0.006974	4.44	1348.81	1220.56	0.55
Luke Wash	Luke-2	4500	PF 1	70.00	862.00	862.32	862.24	862.37	0.017352	1.80	38.88	145.96	0.61
Luke Wash	Luke-2	4500	PF 2	175.00	862.00	862.50	862.41	862.61	0.020755	2.55	68.51	174.11	0.72
Luke Wash	Luke-2	4500	PF 3	350.00	862.00	862.82	862.62	862.93	0.012977	2.65	131.93	222.70	0.61
Luke Wash	Luke-2	4500	PF 4	700.00	862.00	863.23	863.09	863.29	0.007509	2.16	427.26	1144.54	0.47
Luke Wash	Luke-2	4500	PF 5	1400.00	862.00	863.58		863.64	0.004641	2.28	843.51	1238.66	0.40
Luke Wash	Luke-2	4500	PF 6	2100.00	862.00	863.84		863.91	0.003924	2.43	1181.77	1306.76	0.38
Luke Wash	Luke-2	4500	PF 7	2800.00	862.00	864.12		864.19	0.003063	2.45	1557.18	1355.65	0.35
Luke Wash	Luke-2	4500	PF 8	3500.00	862.00	864.30		864.37	0.003065	2.63	1798.41	1366.55	0.35
Luke Wash	Luke-2	4400	PF 1	70.00	860.00	860.67		860.69	0.002286	1.00	70.17	139.42	0.25
Luke Wash	Luke-2	4400	PF 2	175.00	860.00	861.19		861.20	0.001668	1.12	156.84	207.90	0.23
Luke Wash	Luke-2	4400	PF 3	350.00	860.00	861.65		861.67	0.001672	1.28	272.61	293.35	0.23
Luke Wash	Luke-2	4400	PF 4	700.00	860.00	862.21		862.24	0.001597	1.38	581.28	1266.81	0.24
Luke Wash	Luke-2	4400	PF 5	1400.00	860.00	862.58		862.63	0.001894	1.83	931.35	1321.41	0.27
Luke Wash	Luke-2	4400	PF 6	2100.00	860.00	862.89		862.95	0.001958	2.12	1223.77	1366.14	0.28
Luke Wash	Luke-2	4400	PF 7	2800.00	860.00	862.86		862.96	0.003745	2.90	1193.39	1361.53	0.39
Luke Wash	Luke-2	4400	PF 8	3500.00	860.00	863.14		863.25	0.003155	2.95	1471.71	1398.65	0.37
Luke Wash	Luke-2	4300	PF 1	70.00	858.00	858.61	858.40	858.68	0.009978	2.16	33.96	109.61	0.52
Luke Wash	Luke-2	4300	PF 2	175.00	858.00	858.71	858.71	859.01	0.036390	4.51	40.75	118.76	1.02
Luke Wash	Luke-2	4300	PF 3	350.00	858.00	859.08	859.08	859.50	0.032370	5.40	68.49	150.51	1.02
Luke Wash	Luke-2	4300	PF 4	700.00	858.00	859.61	859.61	860.20	0.029183	6.38	116.48	187.16	1.02
Luke Wash	Luke-2	4300	PF 5	1400.00	858.00	860.47	860.47	860.84	0.012411	5.66	405.49	1254.15	0.72
Luke Wash	Luke-2	4300	PF 6	2100.00	858.00	860.75	860.75	861.15	0.012770	6.28	557.54	1292.30	0.75
Luke Wash	Luke-2	4300	PF 7	2800.00	858.00	861.85		861.91	0.001803	3.10	1879.45	1415.93	0.30
Luke Wash	Luke-2	4300	PF 8	3500.00	858.00	862.74		862.76	0.000598	2.09	3150.94	1445.39	0.18
Luke Wash	Luke-1	4250	PF 1	100.00	857.50	858.08	858.08	858.16	0.090378		38.87	501.38	0.00
Luke Wash	Luke-1	4250	PF 2	250.00	857.50	858.44		858.50	0.017073		130.77	623.61	0.00

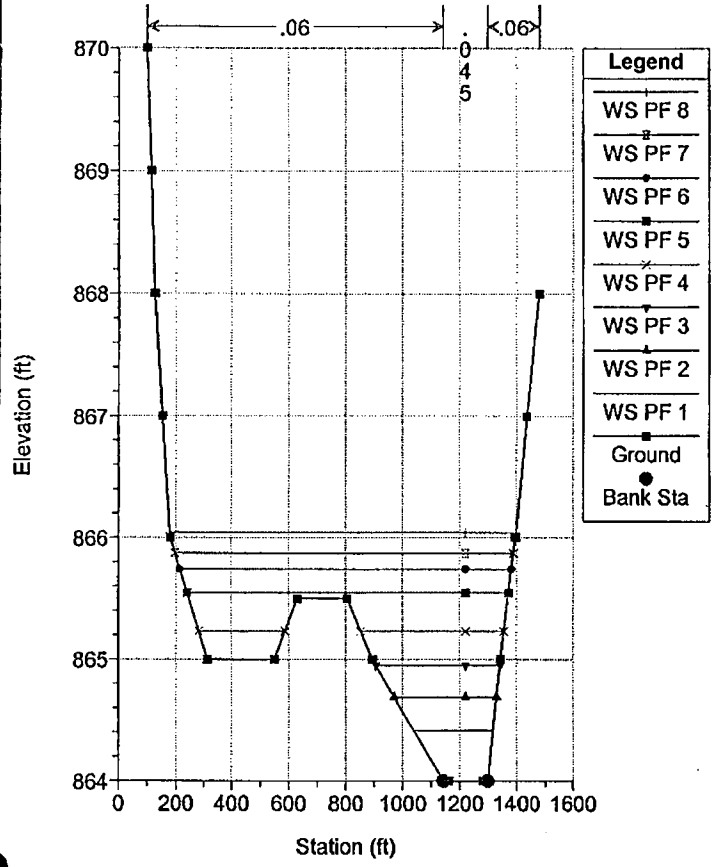
HEC-RAS Plan: FDS (Continued)

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Luke Wash	Luke-1	4250	PF 3	500.00	857.50	857.12		857.16	0.003151		332.26	815.71	0.00
Luke Wash	Luke-1	4250	PF 4	1000.00	857.50	858.27		858.30	0.001168	0.71	698.04	1042.52	0.18
Luke Wash	Luke-1	4250	PF 5	2000.00	857.50	859.56		859.61	0.000902	1.32	1206.40	1650.26	0.19
Luke Wash	Luke-1	4250	PF 6	3000.00	857.50	860.70		860.75	0.000697	1.68	1769.17	2388.19	0.18
Luke Wash	Luke-1	4250	PF 7	4000.00	857.50	861.78		861.80	0.000787	2.24	3850.64	2499.80	0.20
Luke Wash	Luke-1	4250	PF 8	5000.00	857.50	862.71		862.73	0.000285	1.56	6211.43	2542.52	0.13
Luke Wash	Luke-1	4200	PF 1	100.00	856.89	855.08	852.98	855.10	0.000869		80.39	32.26	0.00
Luke Wash	Luke-1	4200	PF 2	250.00	856.89	855.67	853.69	855.76	0.002868		99.82	34.25	0.00
Luke Wash	Luke-1	4200	PF 3	500.00	856.89	856.35	854.50	856.60	0.006043		123.88	36.09	0.00
Luke Wash	Luke-1	4200	PF 4	1000.00	856.89	857.57	855.73	857.96	0.007596	2.19	218.36	110.84	0.47
Luke Wash	Luke-1	4200	PF 5	2000.00	856.89	858.77	857.95	859.30	0.008735	4.60	352.62	113.26	0.59
Luke Wash	Luke-1	4200	PF 6	3000.00	856.89	859.86	858.63	860.48	0.007808	5.92	477.99	114.71	0.61
Luke Wash	Luke-1	4200	PF 7	4000.00	856.89	860.78	859.17	861.51	0.007463	6.92	584.63	119.12	0.62
Luke Wash	Luke-1	4200	PF 8	5000.00	856.89	861.75	859.66	862.55	0.006723	7.62	703.87	127.60	0.61
Luke Wash	Luke-1	4150		Bridge									
Luke Wash	Luke-1	4100	PF 1	100.00	856.64	855.05		855.07	0.000807		81.41	33.31	0.00
Luke Wash	Luke-1	4100	PF 2	250.00	856.64	855.55		855.65	0.002895		98.72	35.50	0.00
Luke Wash	Luke-1	4100	PF 3	500.00	856.64	856.05		856.33	0.007140		116.84	37.53	0.00
Luke Wash	Luke-1	4100	PF 4	1000.00	856.64	856.56	855.69	857.40	0.017984		136.15	38.40	0.00
Luke Wash	Luke-1	4100	PF 5	2000.00	856.64	857.75	857.75	858.79	0.019235	4.80	262.78	112.37	0.80
Luke Wash	Luke-1	4100	PF 6	3000.00	856.64	858.40	858.40	859.74	0.021861	6.96	336.89	113.03	0.92
Luke Wash	Luke-1	4100	PF 7	4000.00	856.64	858.95	858.95	860.57	0.023624	8.65	398.65	113.57	1.00
Luke Wash	Luke-1	4100	PF 8	5000.00	856.64	859.45	859.45	861.35	0.024567	10.06	455.32	113.89	1.06
Luke Wash	Luke-1	4050	PF 1	100.00	856.00	854.93		854.94	0.001644		135.50	494.25	0.00
Luke Wash	Luke-1	4050	PF 2	250.00	856.00	855.33		855.35	0.001991		221.66	614.06	0.00
Luke Wash	Luke-1	4050	PF 3	500.00	856.00	855.76		855.80	0.002512		313.35	721.87	0.00
Luke Wash	Luke-1	4050	PF 4	1000.00	856.00	856.32		856.40	0.003404	0.77	435.73	917.34	0.27
Luke Wash	Luke-1	4050	PF 5	2000.00	856.00	857.03		857.20	0.004851	1.79	600.15	1089.53	0.38
Luke Wash	Luke-1	4050	PF 6	3000.00	856.00	857.56		857.81	0.005875	2.87	739.06	1219.47	0.46
Luke Wash	Luke-1	4050	PF 7	4000.00	856.00	857.97		858.31	0.006781	3.74	858.60	1320.72	0.52
Luke Wash	Luke-1	4050	PF 8	5000.00	856.00	858.36		858.76	0.008069	4.71	1011.81	2431.74	0.58
Luke Wash	Luke-1	4000	PF 1	100.00	855.00	854.44		854.44	0.001448		193.58	688.62	0.00
Luke Wash	Luke-1	4000	PF 2	250.00	855.00	854.67		854.68	0.002143		307.08	748.22	0.00
Luke Wash	Luke-1	4000	PF 3	500.00	855.00	854.93		854.94	0.002705		444.60	815.35	0.00
Luke Wash	Luke-1	4000	PF 4	1000.00	855.00	855.29		855.33	0.003127	0.76	649.61	949.81	0.26
Luke Wash	Luke-1	4000	PF 5	2000.00	855.00	855.97		856.03	0.002660	1.44	1040.65	1174.84	0.29
Luke Wash	Luke-1	4000	PF 6	3000.00	855.00	856.35		856.43	0.003044	1.99	1353.92	2120.17	0.33
Luke Wash	Luke-1	4000	PF 7	4000.00	855.00	856.65		856.75	0.003363	2.44	1610.30	2195.42	0.36
Luke Wash	Luke-1	4000	PF 8	5000.00	855.00	856.91		857.03	0.003596	2.82	1840.23	2261.39	0.38
Luke Wash	Luke-1	3900	PF 1	100.00	853.00	852.18	852.18	852.27	0.094524		42.70	311.69	0.00
Luke Wash	Luke-1	3900	PF 2	250.00	853.00	852.54	852.33	852.59	0.013658		143.20	416.34	0.00
Luke Wash	Luke-1	3900	PF 3	500.00	853.00	852.97		853.02	0.006774		289.71	541.54	0.00
Luke Wash	Luke-1	3900	PF 4	1000.00	853.00	853.61		853.68	0.003969	1.28	564.66	729.48	0.32
Luke Wash	Luke-1	3900	PF 5	2000.00	853.00	854.20		854.27	0.005603	2.36	1035.67	1908.91	0.43
Luke Wash	Luke-1	3900	PF 6	3000.00	853.00	854.49		854.57	0.005288	2.74	1421.26	1931.10	0.44
Luke Wash	Luke-1	3900	PF 7	4000.00	853.00	854.74		854.83	0.004991	3.01	1758.41	1950.50	0.44
Luke Wash	Luke-1	3900	PF 8	5000.00	853.00	854.96		855.06	0.004816	3.25	2056.16	1967.64	0.44
Luke Wash	Luke-1	3800	PF 1	100.00	850.00	850.90		850.90	0.000693	0.72	199.37	309.78	0.15
Luke Wash	Luke-1	3800	PF 2	250.00	850.00	851.28		851.29	0.001012	1.13	330.26	368.40	0.19
Luke Wash	Luke-1	3800	PF 3	500.00	850.00	851.68		851.70	0.001335	1.58	486.72	422.78	0.23
Luke Wash	Luke-1	3800	PF 4	1000.00	850.00	852.26		852.28	0.001924	2.36	1011.46	1503.90	0.29
Luke Wash	Luke-1	3800	PF 5	2000.00	850.00	852.67		852.70	0.001897	2.64	1630.09	1551.51	0.29
Luke Wash	Luke-1	3800	PF 6	3000.00	850.00	853.00		853.03	0.001891	2.86	2116.45	1588.77	0.30
Luke Wash	Luke-1	3800	PF 7	4000.00	850.00	853.27		853.31	0.001908	3.05	2527.83	1612.43	0.30
Luke Wash	Luke-1	3800	PF 8	5000.00	850.00	853.53		853.58	0.001874	3.19	2920.55	1634.88	0.31
Luke Wash	Luke-1	3700	PF 1	100.00	849.00	850.18	850.13	850.22	0.004601	2.12	125.44	639.65	0.39
Luke Wash	Luke-1	3700	PF 2	250.00	849.00	850.37	850.25	850.40	0.004602	2.40	257.47	735.53	0.40
Luke Wash	Luke-1	3700	PF 3	500.00	849.00	850.59	850.35	850.62	0.004609	2.70	424.86	841.52	0.41
Luke Wash	Luke-1	3700	PF 4	1000.00	849.00	850.88	850.51	850.93	0.004602	3.09	697.96	990.39	0.43
Luke Wash	Luke-1	3700	PF 5	2000.00	849.00	851.29	850.75	851.34	0.004604	3.58	1124.41	1111.67	0.44
Luke Wash	Luke-1	3700	PF 6	3000.00	849.00	851.59	850.92	851.67	0.004605	3.93	1478.09	1180.13	0.45
Luke Wash	Luke-1	3700	PF 7	4000.00	849.00	851.86	851.09	851.94	0.004606	4.22	1796.29	1238.49	0.46
Luke Wash	Luke-1	3700	PF 8	5000.00	849.00	852.14	851.21	852.23	0.004606	4.52	2169.15	1401.11	0.47

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

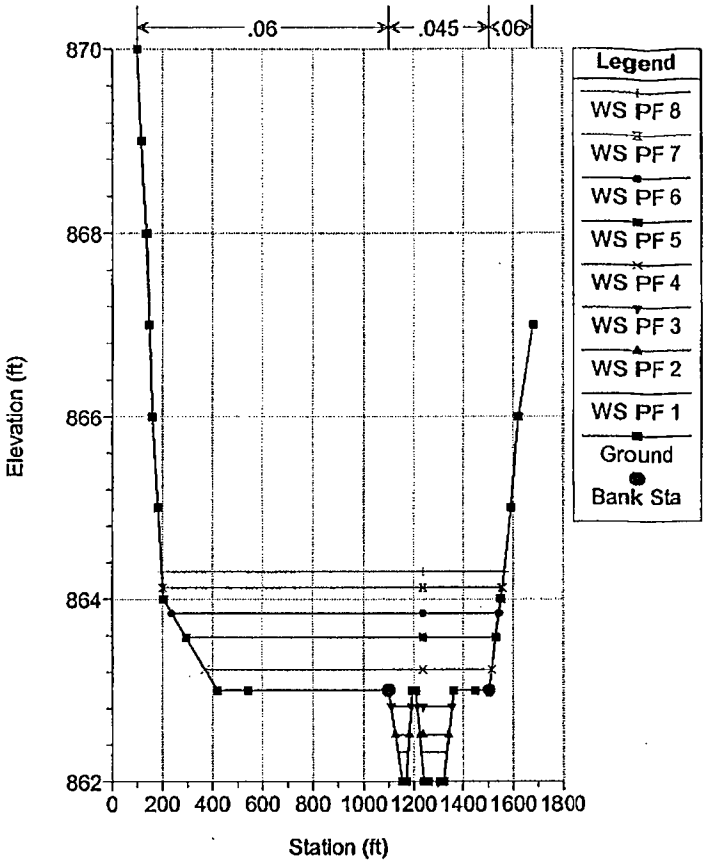
River = Luke Wash Reach = Luke-2 RS = 4600



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

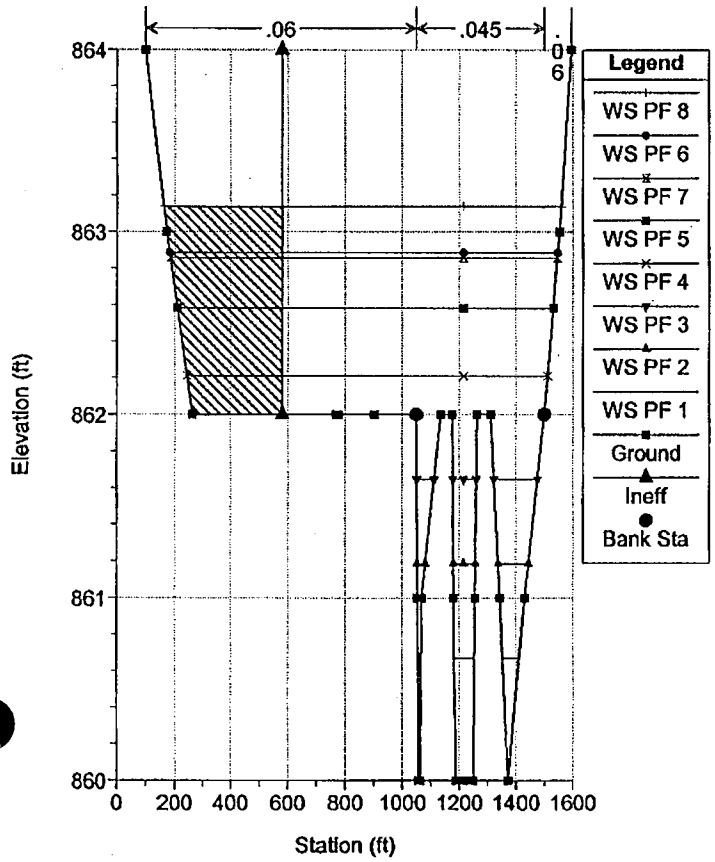
River = Luke Wash Reach = Luke-2 RS = 4500



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

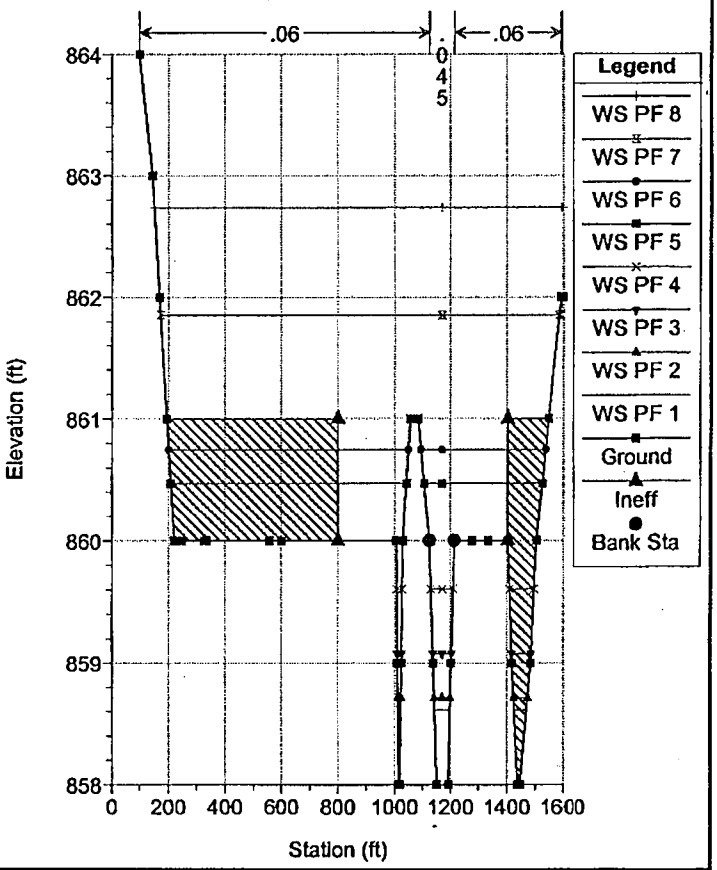
River = Luke Wash Reach = Luke-2 RS = 4400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

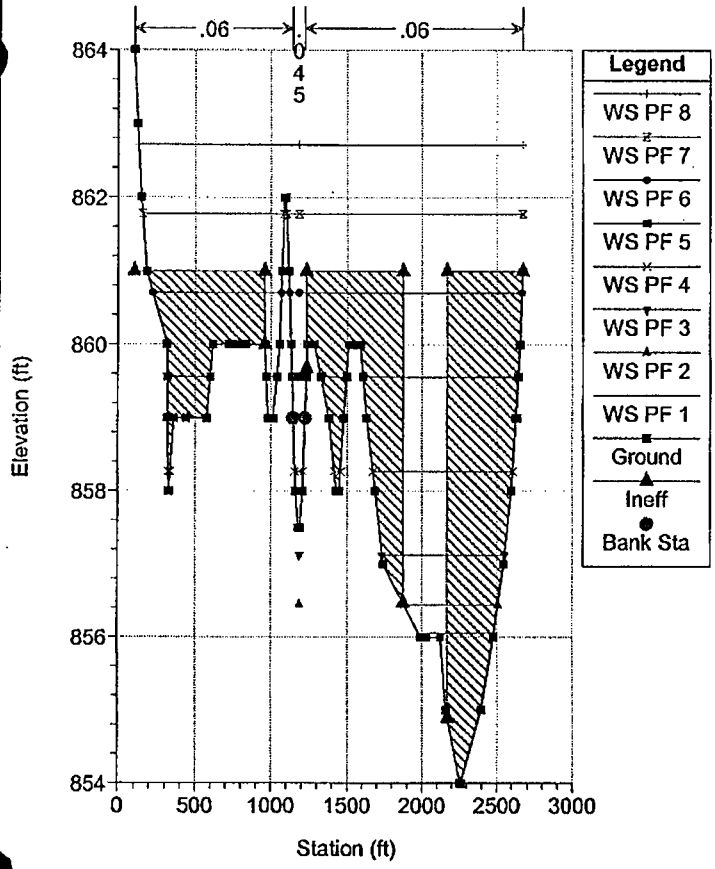
River = Luke Wash Reach = Luke-2 RS = 4300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

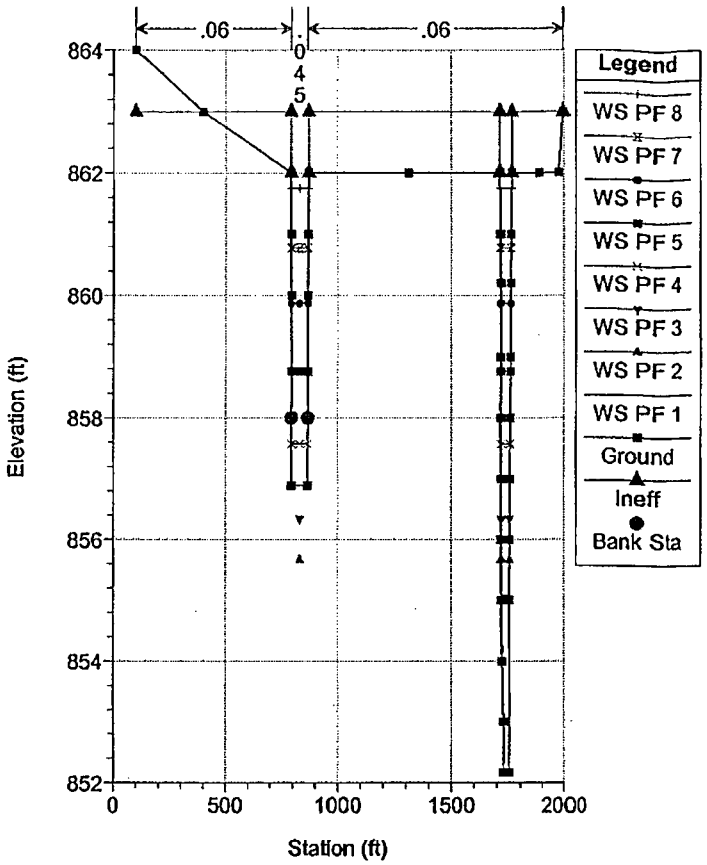
River = Luke Wash Reach = Luke-1 RS = 4250



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

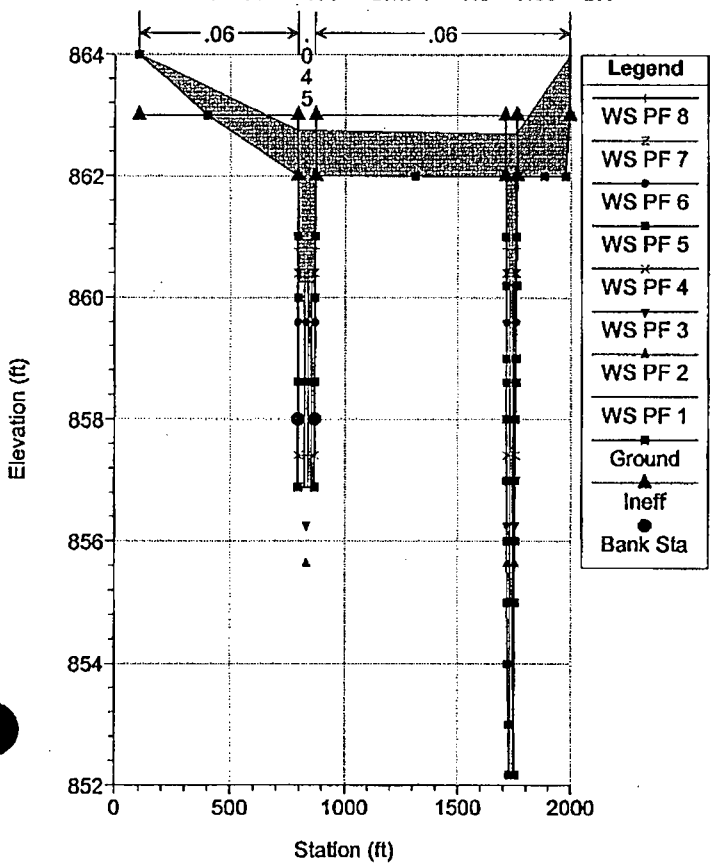
River = Luke Wash Reach = Luke-1 RS = 4200



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

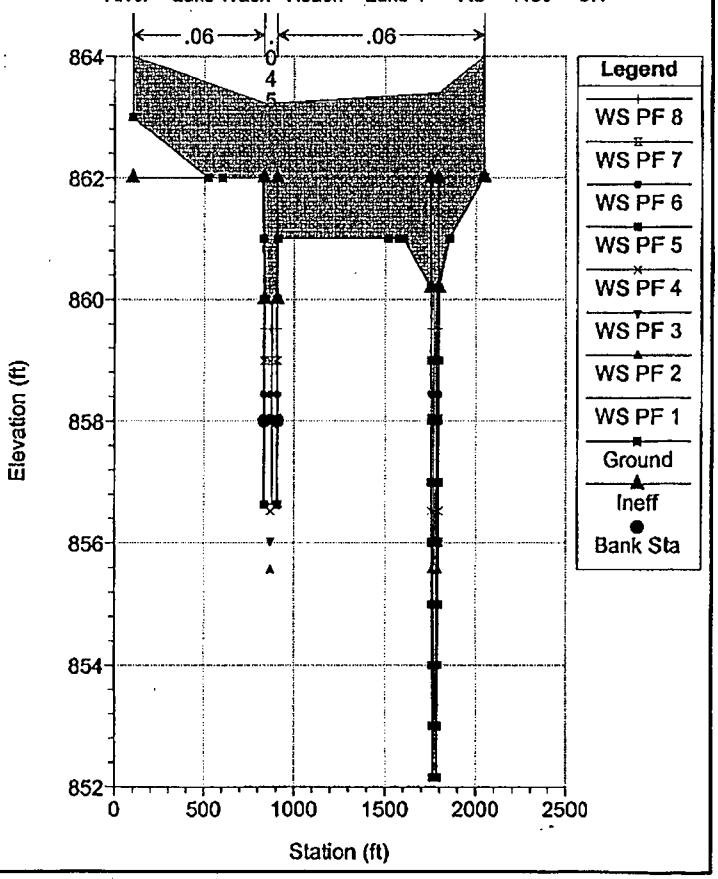
River = Luke Wash Reach = Luke-1 RS = 4150 BR

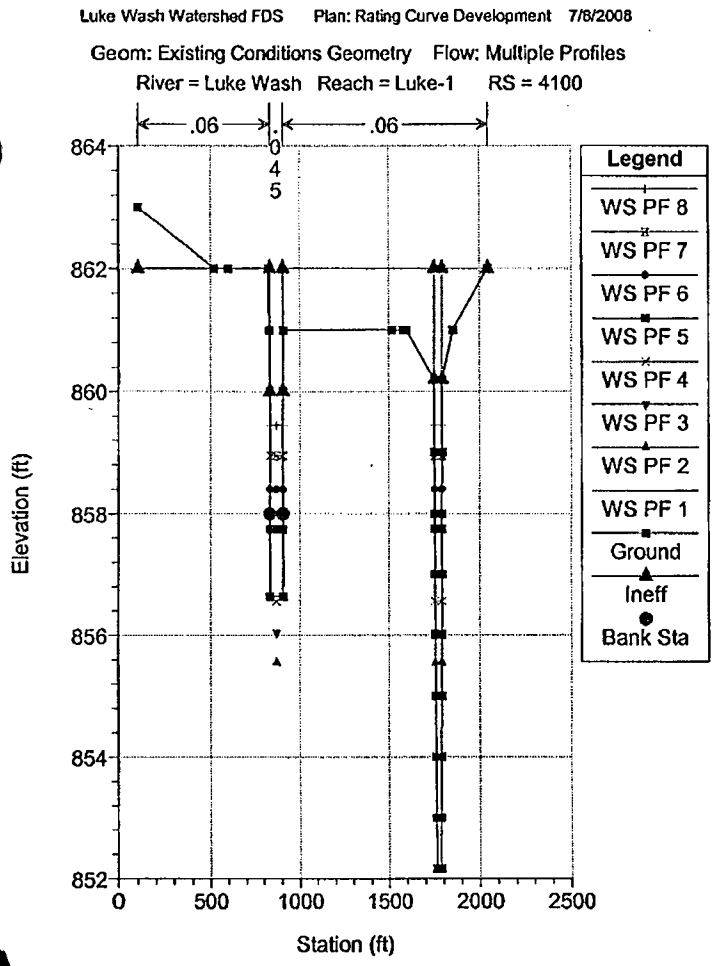


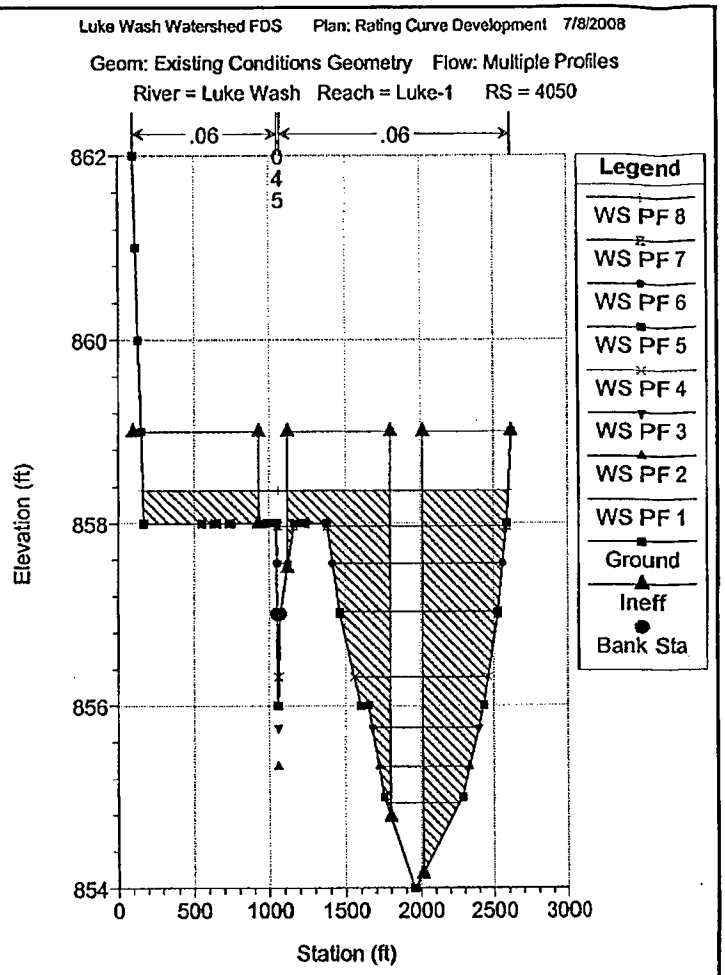
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

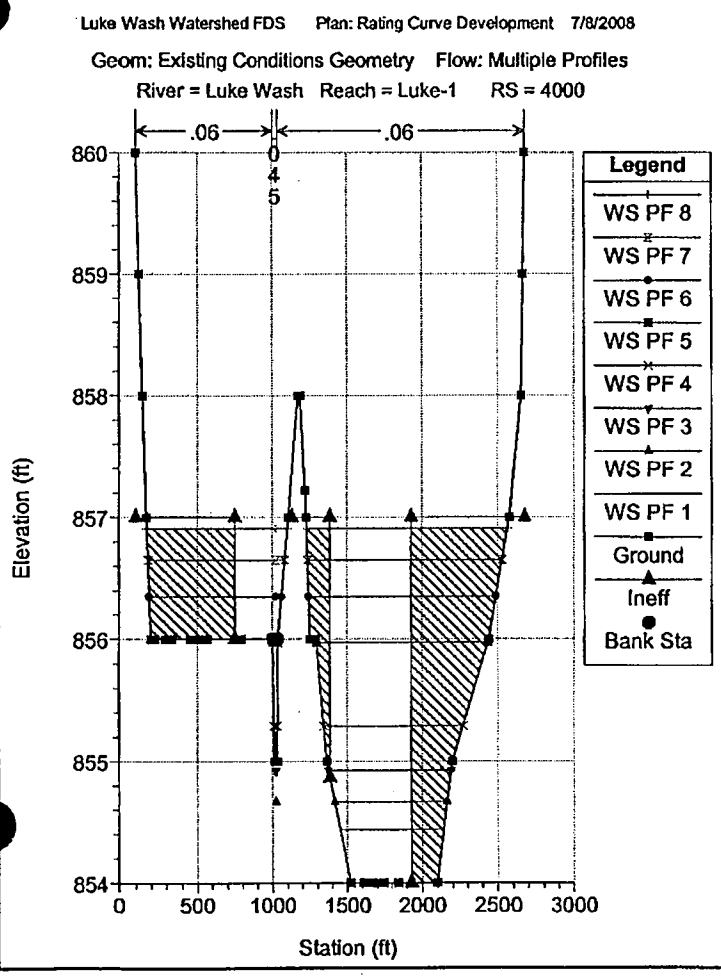
Geom: Existing Conditions Geometry Flow: Multiple Profiles

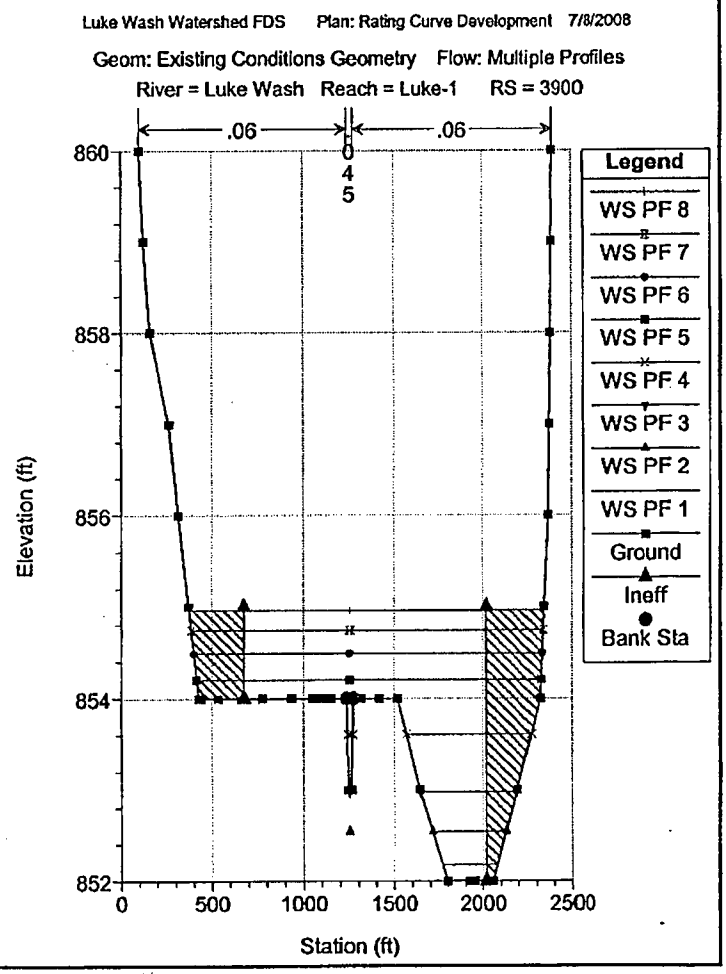
River = Luke Wash Reach = Luke-1 RS = 4150 BR




Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008
Geom: Existing Conditions Geometry Flow: Multiple Profiles
River = Luke Wash Reach = Luke-1 RS = 4100
.06
.045
.06
Legend
WS PF 8
WS PF 7
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008
Geom: Existing Conditions Geometry Flow: Multiple Profiles
River = Luke Wash Reach = Luke-1 RS = 4050
.06
.045
.06
Legend
WS PF 8
WS PF 7
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

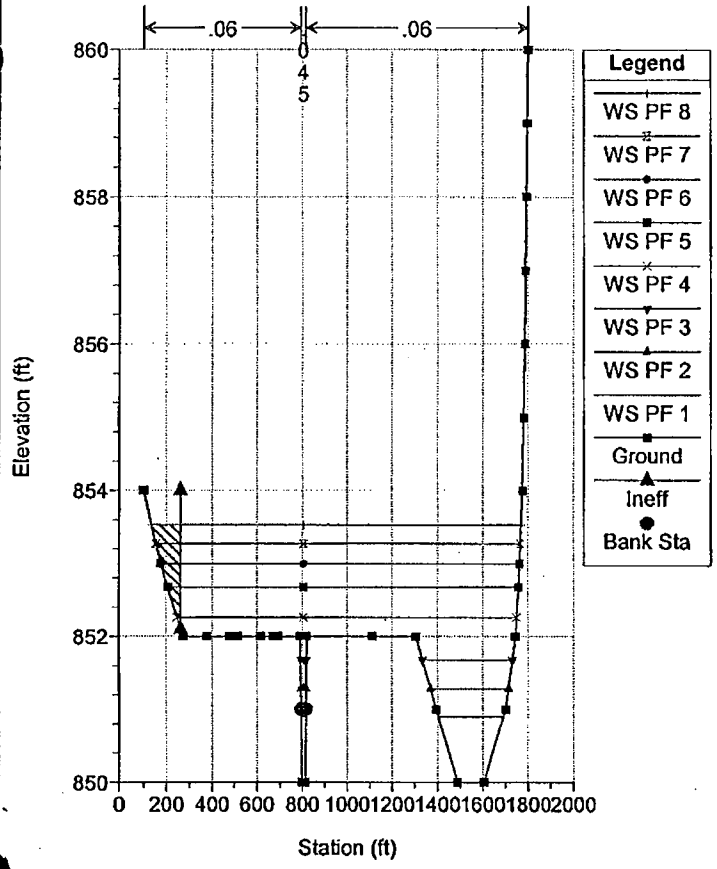

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008
Geom: Existing Conditions Geometry Flow: Multiple Profiles
River = Luke Wash Reach = Luke-1 RS = 4000
.06
.045
.06
Legend
WS PF 8
WS PF 7
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008
Geom: Existing Conditions Geometry Flow: Multiple Profiles
River = Luke Wash Reach = Luke-1 RS = 3900
.06
.045
.06
Legend
WS PF 8
WS PF 7
WS PF 6
WS PF 5
WS PF 4
WS PF 3
WS PF 2
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

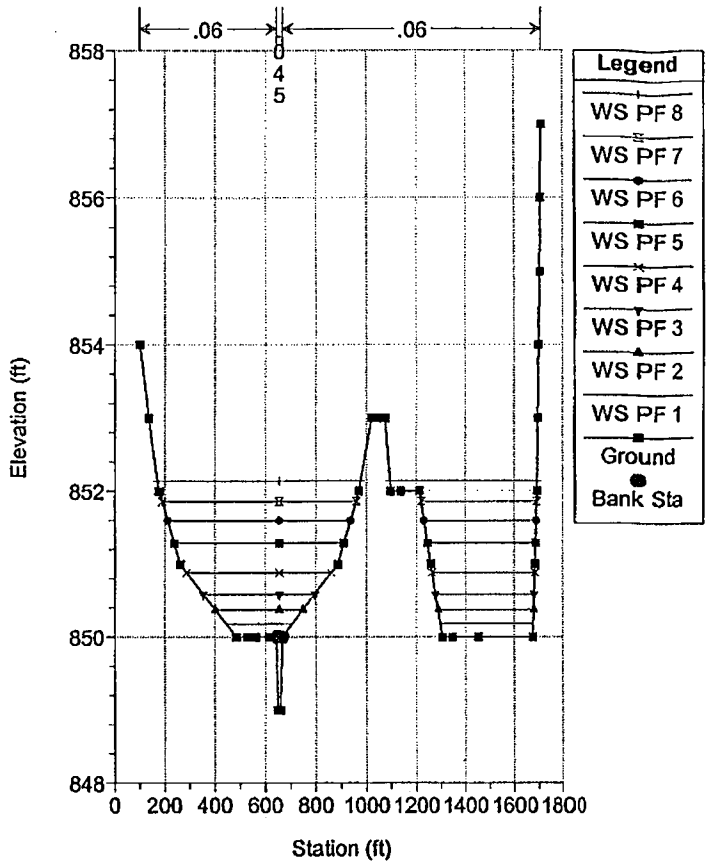
River = Luke Wash Reach = Luke-1 RS = 3800



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

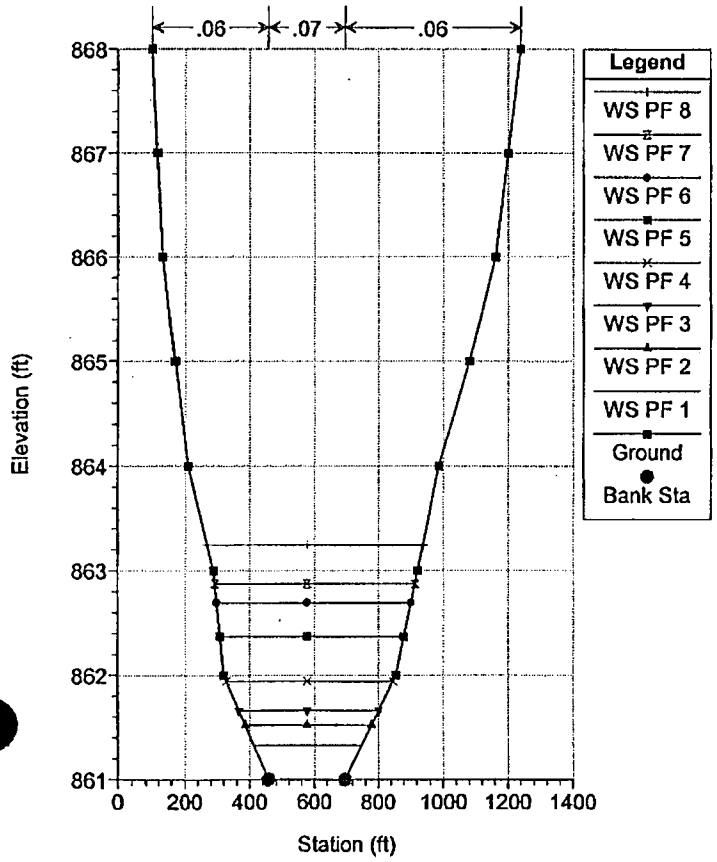
River = Luke Wash Reach = Luke-1 RS = 3700



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

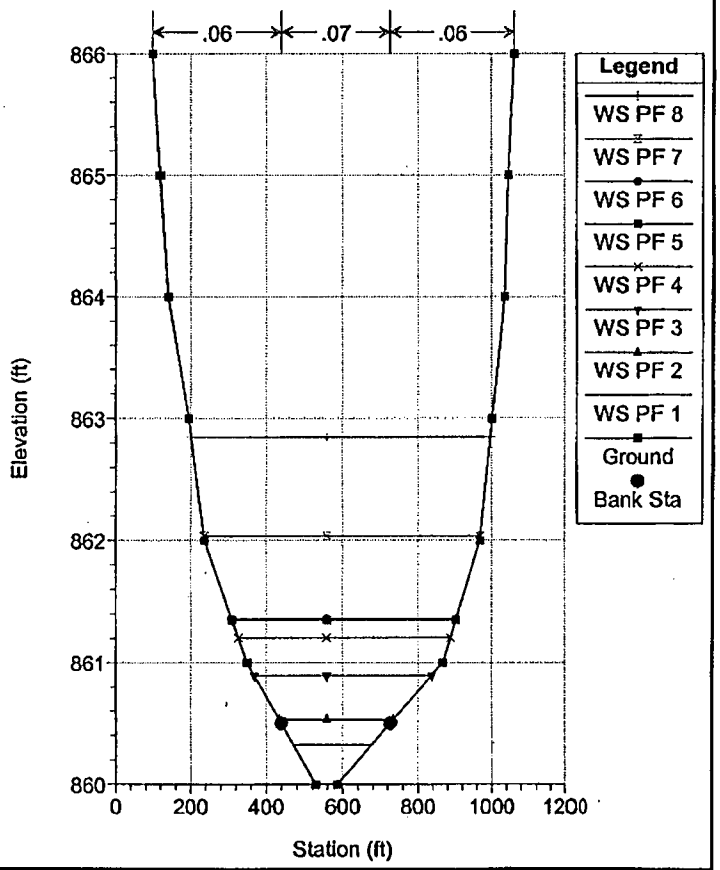
River = T1SR5WS17 Reach = S17-1 RS = 500



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

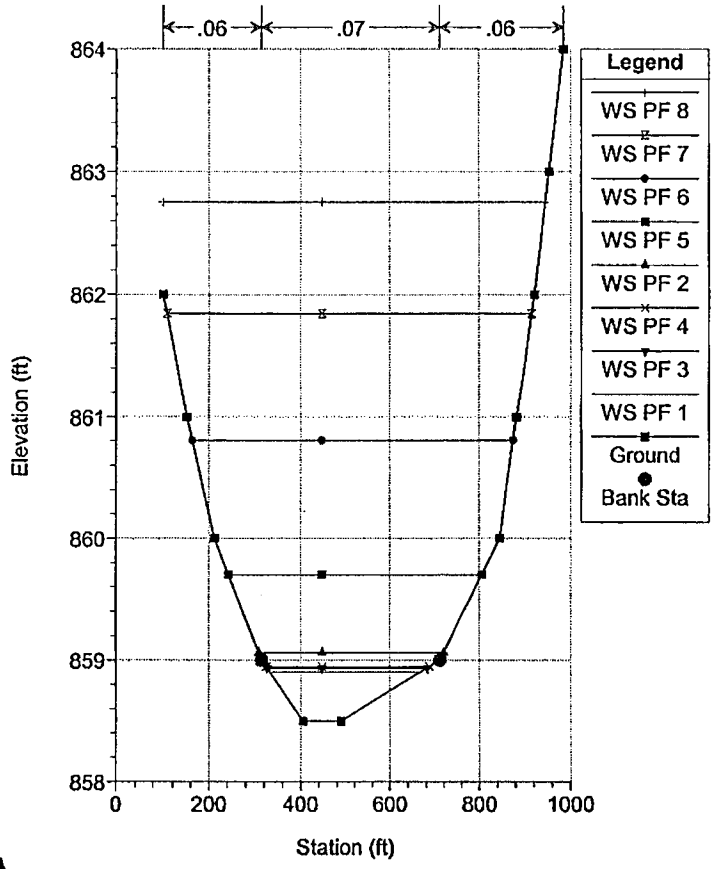
River = T1SR5WS17 Reach = S17-1 RS = 400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

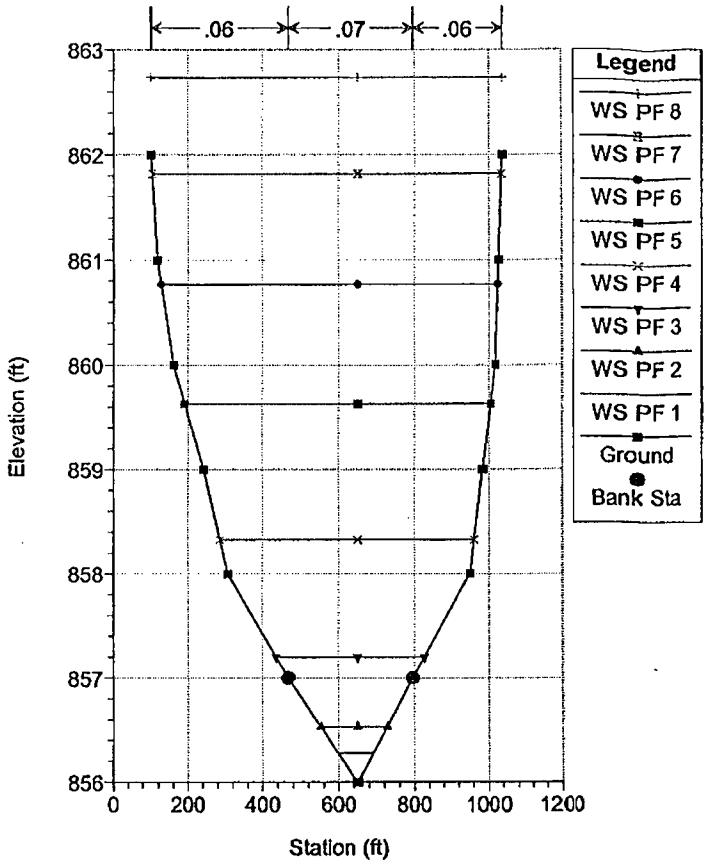
River = T1SR5WS17 Reach = S17-1 RS = 300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

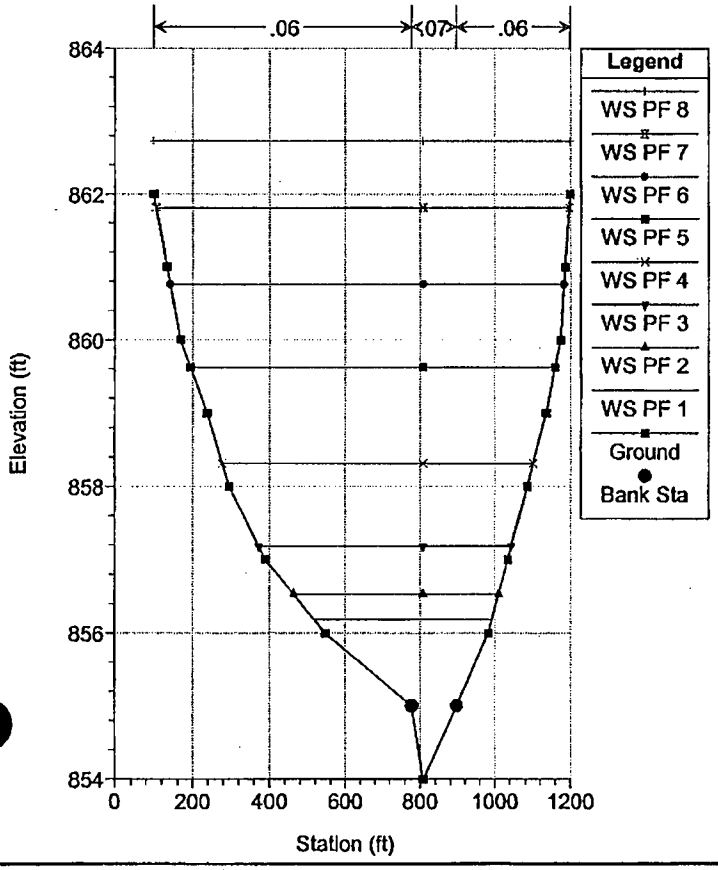
River = T1SR5WS17 Reach = S17-1 RS = 200



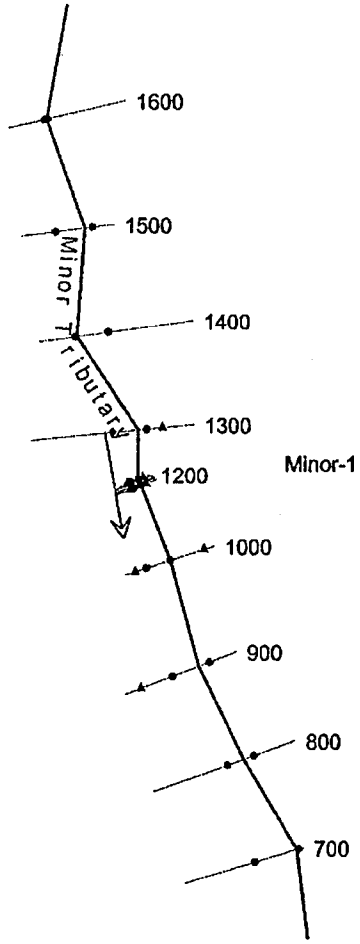
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = T1SR5WS17 Reach = S17-1 RS = 100



for Structure UPR4



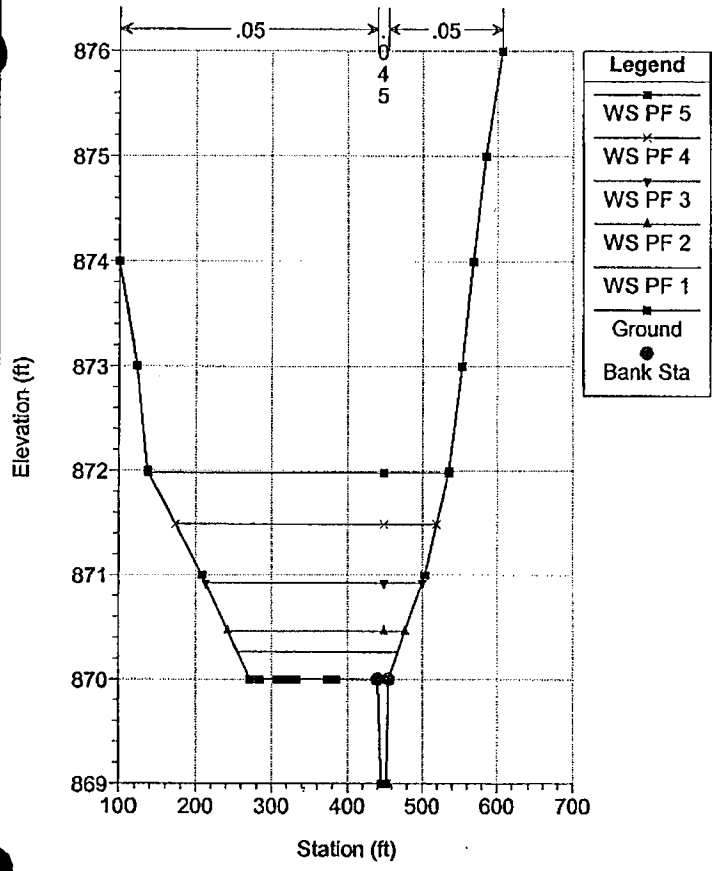
HEC-RAS Plan: FDS River: Minor Tributary Reach: Minor-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Minor-1	1600	PF 1	100.00	869.00	870.26	870.23	870.34	0.009065	3.13	62.98	212.53	0.55
Minor-1	1600	PF 2	300.00	869.00	870.46	870.46	870.65	0.019761	5.20	107.20	234.66	0.83
Minor-1	1600	PF 3	800.00	869.00	870.92	870.80	871.16	0.016748	5.94	227.67	286.39	0.81
Minor-1	1600	PF 4	1200.00	869.00	871.49		871.64	0.007370	4.79	406.15	346.04	0.56
Minor-1	1600	PF 5	1500.00	869.00	871.98	871.17	872.09	0.004068	4.06	589.76	397.77	0.43
Minor-1	1500	PF 1	100.00	866.00	866.70	866.46	866.73	0.005218	1.39	73.92	188.65	0.37
Minor-1	1500	PF 2	300.00	866.00	867.23	866.74	867.27	0.002813	1.72	194.47	264.37	0.31
Minor-1	1500	PF 3	800.00	866.00	867.86	867.16	867.94	0.002961	2.47	389.39	353.10	0.34
Minor-1	1500	PF 4	1200.00	866.00	867.91	867.40	868.08	0.005959	3.56	405.78	359.57	0.49
Minor-1	1500	PF 5	1500.00	866.00	867.67	867.56	868.07	0.017410	5.48	322.21	325.26	0.81
Minor-1	1400	PF 1	100.00	862.00	863.64	863.44	863.68	0.007933	2.23	63.26	151.88	0.48
Minor-1	1400	PF 2	300.00	862.00	863.76	863.76	863.99	0.034254	4.91	84.42	176.18	1.01
Minor-1	1400	PF 3	800.00	862.00	864.17	864.17	864.42	0.039328	3.27	207.46	451.15	0.97
Minor-1	1400	PF 4	1200.00	862.00	864.71		864.82	0.007707	2.67	461.22	496.99	0.50
Minor-1	1400	PF 5	1500.00	862.00	865.27		865.34	0.002660	2.18	756.10	546.22	0.32
Minor-1	1300	PF 1	100.00	860.00	860.92	860.55	860.95	0.004398	1.49	67.23	120.02	0.35
Minor-1	1300	PF 2	300.00	860.00	861.87	860.94	861.89	0.001072	1.35	246.35	241.77	0.20
Minor-1	1300	PF 3	800.00	860.00	863.53	861.47	863.54	0.000297	1.20	843.29	465.33	0.12
Minor-1	1300	PF 4	1200.00	860.00	864.50	861.76	864.51	0.000202	1.19	1297.91	547.57	0.10
Minor-1	1300	PF 5	1500.00	860.00	865.11	861.95	865.12	0.000171	1.20	1602.62	582.15	0.10
Minor-1	1200	PF 1	100.00	858.65	860.36	859.34	860.41	0.001539	1.81	56.17	35.77	0.25
Minor-1	1200	PF 2	300.00	858.65	861.34	860.07	861.51	0.002848	3.35	93.02	39.09	0.36
Minor-1	1200	PF 3	800.00	858.65	862.90	861.33	863.34	0.004057	5.43	157.96	44.35	0.47
Minor-1	1200	PF 4	1200.00	858.65	863.66	862.13	864.32	0.005051	6.77	204.90	75.33	0.54
Minor-1	1200	PF 5	1500.00	858.65	864.18	862.66	864.94	0.005182	7.33	243.72	85.98	0.55
Minor-1	1150		Bridge									
Minor-1	1100	PF 1	100.00	859.10	860.09	859.79	860.24	0.009922	3.13	31.98	34.48	0.57
Minor-1	1100	PF 2	300.00	859.10	860.77	860.50	861.22	0.014484	5.42	56.23	37.53	0.75
Minor-1	1100	PF 3	800.00	859.10	861.74	861.74	862.91	0.020236	8.79	95.06	41.95	0.96
Minor-1	1100	PF 4	1200.00	859.10	862.64	862.64	863.89	0.015150	9.28	144.93	67.42	0.88
Minor-1	1100	PF 5	1500.00	859.10	863.07	863.07	864.49	0.015068	10.00	170.12	73.95	0.89
Minor-1	1000	PF 1	100.00	857.00	857.48	857.28	857.52	0.006227	1.60	70.22	183.06	0.41
Minor-1	1000	PF 2	300.00	857.00	857.86	857.55	857.94	0.006219	2.36	151.04	242.55	0.45
Minor-1	1000	PF 3	800.00	857.00	858.43	857.98	858.55	0.005961	3.23	304.79	319.52	0.48
Minor-1	1000	PF 4	1200.00	857.00	858.75	858.24	858.90	0.005828	3.65	402.23	347.14	0.49
Minor-1	1000	PF 5	1500.00	857.00	858.95	858.38	859.13	0.005729	3.90	465.82	365.00	0.49
Minor-1	900	PF 1	100.00	854.00	854.93	854.60	854.96	0.004540	1.34	74.46	158.75	0.35
Minor-1	900	PF 2	300.00	854.00	855.36	854.94	855.42	0.004434	1.99	157.74	229.20	0.38
Minor-1	900	PF 3	800.00	854.00	855.96	855.39	856.07	0.004487	2.85	323.74	326.71	0.42
Minor-1	900	PF 4	1200.00	854.00	856.27	855.67	856.42	0.004563	3.27	431.90	349.77	0.43
Minor-1	900	PF 5	1500.00	854.00	856.47	855.84	856.63	0.004693	3.56	500.72	360.95	0.45
Minor-1	800	PF 1	100.00	852.00	852.76		852.79	0.005005	1.52	70.72	178.87	0.37
Minor-1	800	PF 2	300.00	852.00	853.15	852.82	853.22	0.005192	2.25	159.45	266.51	0.41
Minor-1	800	PF 3	800.00	852.00	853.69	853.27	853.81	0.005492	3.14	332.44	380.05	0.46
Minor-1	800	PF 4	1200.00	852.00	853.98	853.50	854.13	0.005551	3.57	453.45	442.49	0.48
Minor-1	800	PF 5	1500.00	852.00	854.16	853.65	854.32	0.005506	3.80	534.15	459.31	0.48
Minor-1	700	PF 1	100.00	850.00	850.58	850.33	850.61	0.004504	1.23	81.88	216.92	0.34
Minor-1	700	PF 2	300.00	850.00	850.94	850.59	850.99	0.004501	1.87	176.36	310.92	0.37
Minor-1	700	PF 3	800.00	850.00	851.45	850.98	851.54	0.004509	2.62	358.75	395.47	0.41
Minor-1	700	PF 4	1200.00	850.00	851.75	851.19	851.86	0.004501	3.00	481.43	440.14	0.42
Minor-1	700	PF 5	1500.00	850.00	851.93	851.33	852.07	0.004503	3.24	566.29	468.55	0.43

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

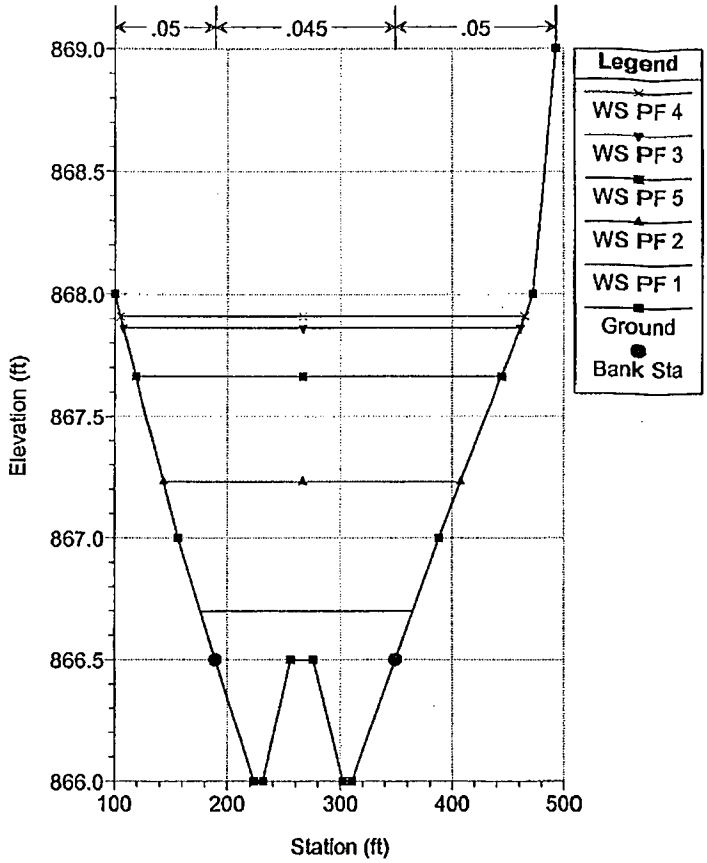
River = Minor Tributary Reach = Minor-1 RS = 1600



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

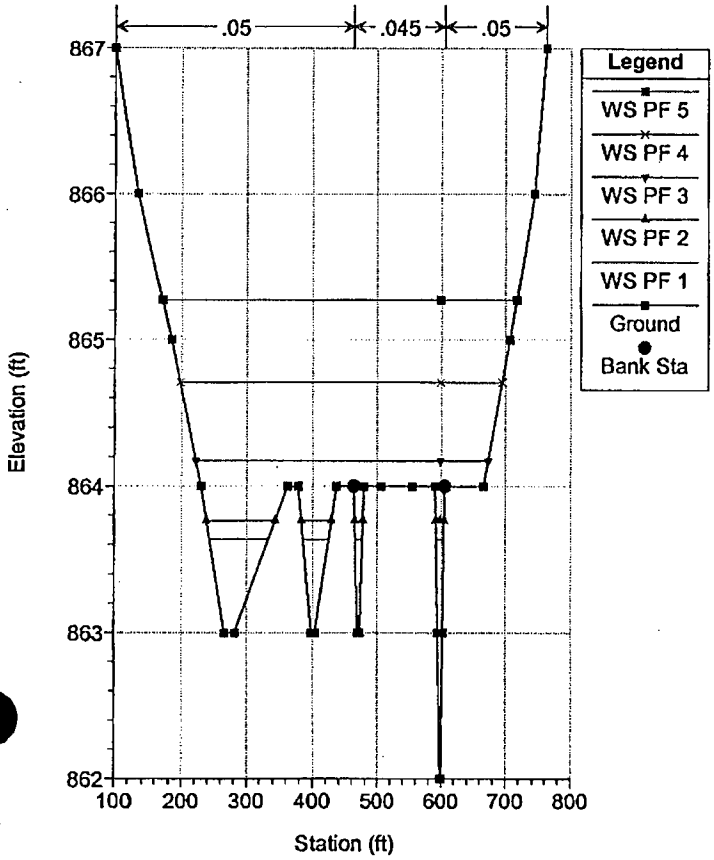
River = Minor Tributary Reach = Minor-1 RS = 1500



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

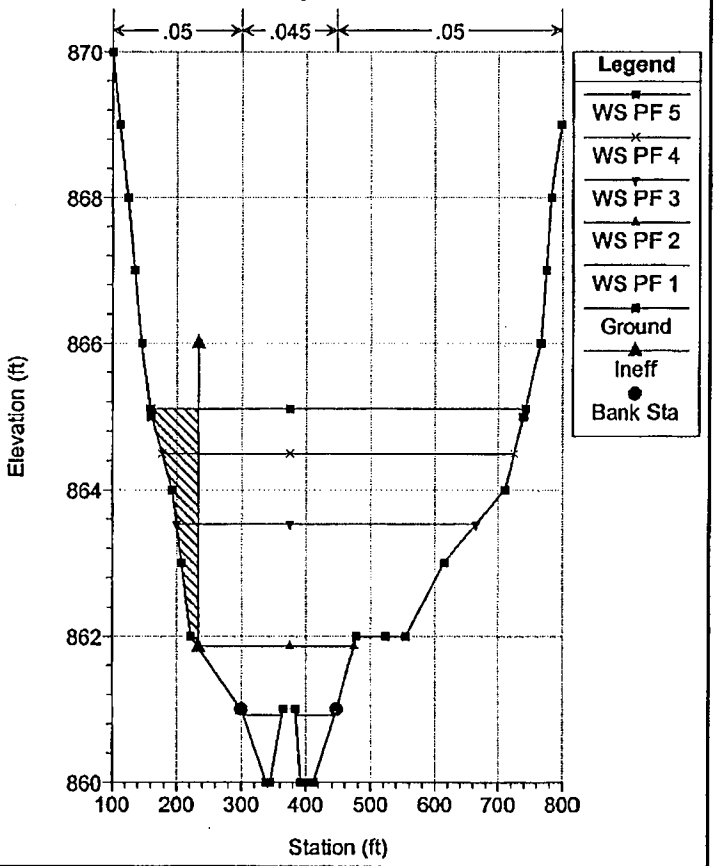
River = Minor Tributary Reach = Minor-1 RS = 1400



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

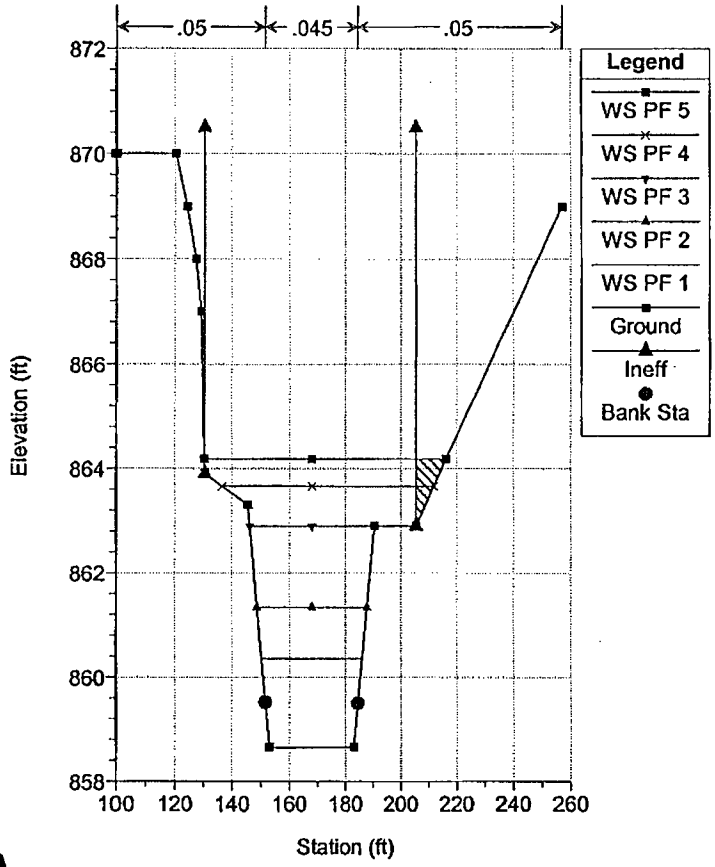
River = Minor Tributary Reach = Minor-1 RS = 1300



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

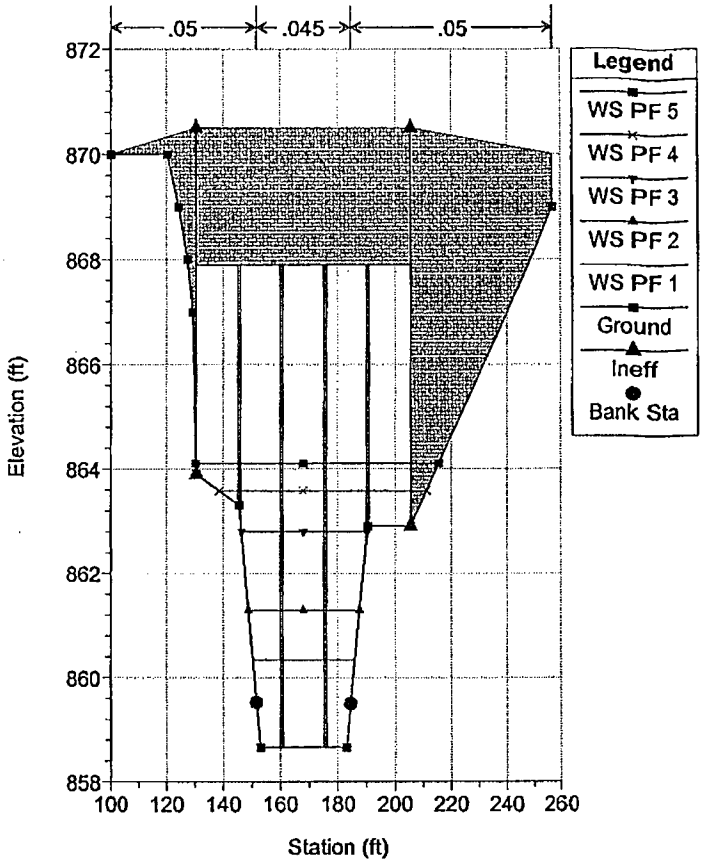
River = Minor Tributary Reach = Minor-1 RS = 1200



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

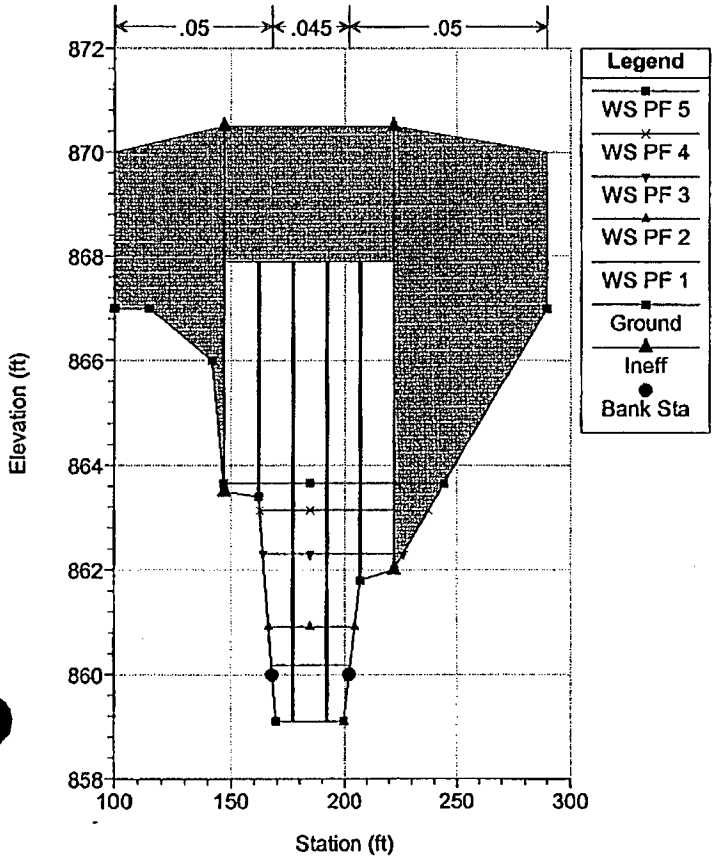
River = Minor Tributary Reach = Minor-1 RS = 1150 BR



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

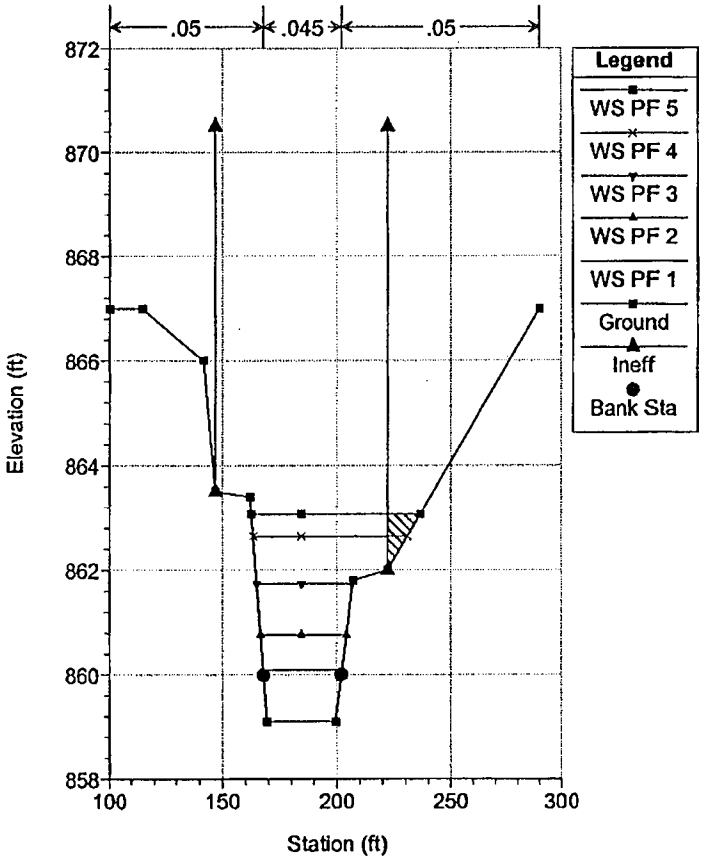
River = Minor Tributary Reach = Minor-1 RS = 1150 BR



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

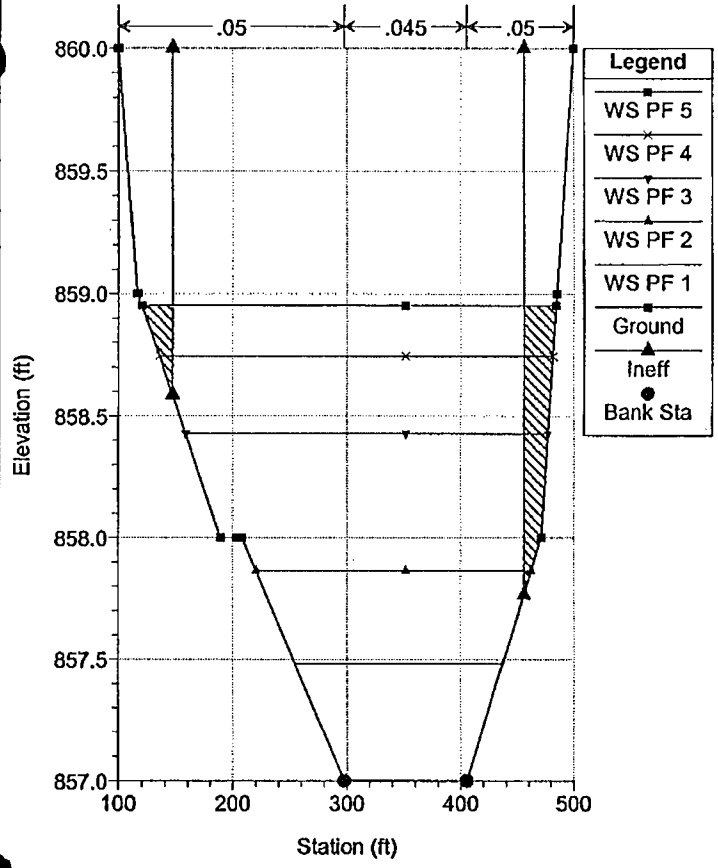
River = Minor Tributary Reach = Minor-1 RS = 1100



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

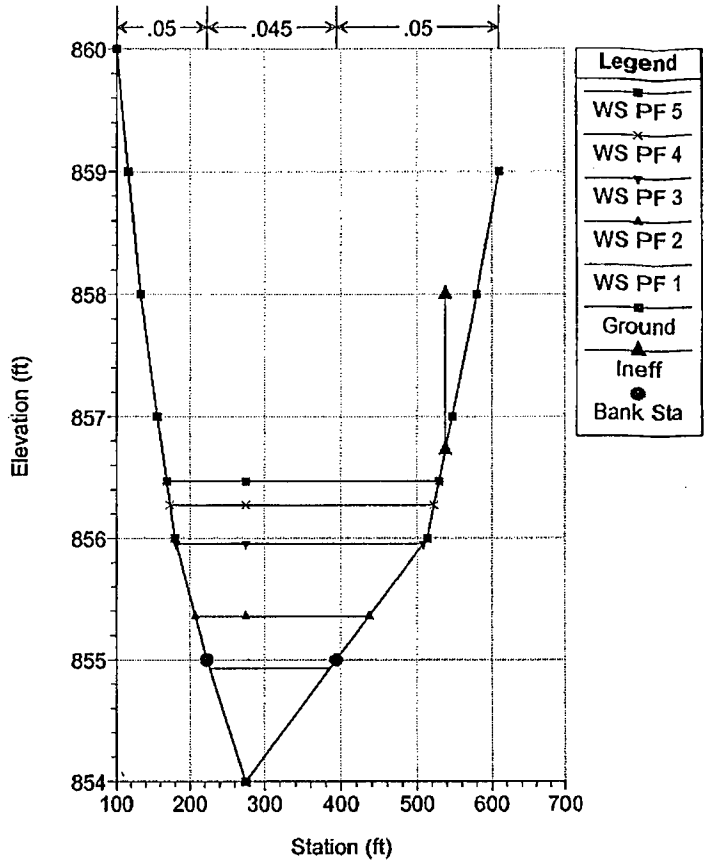
River = Minor Tributary Reach = Minor-1 RS = 1000



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

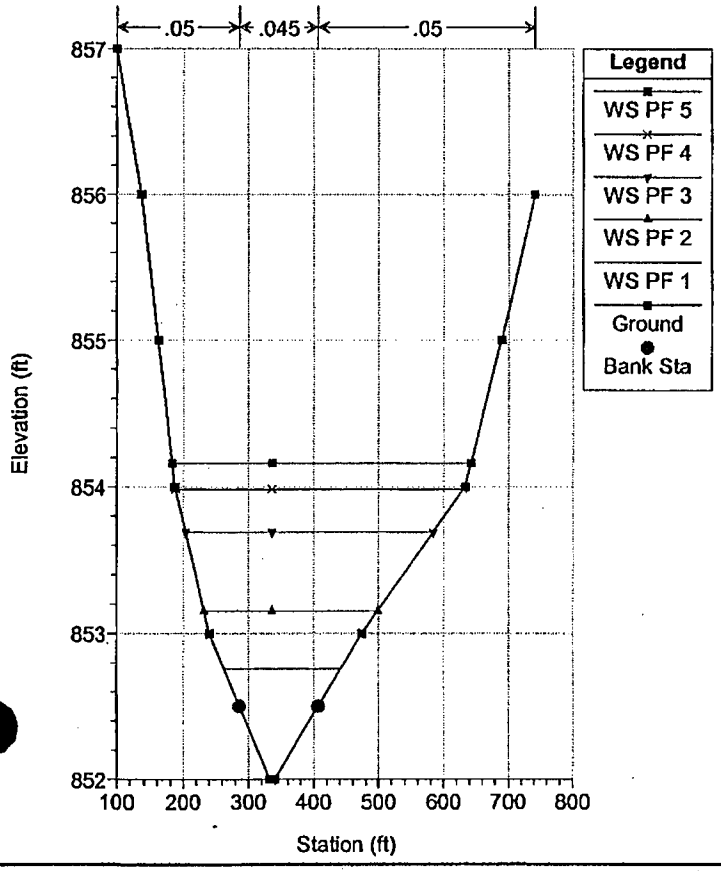
River = Minor Tributary Reach = Minor-1 RS = 900



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

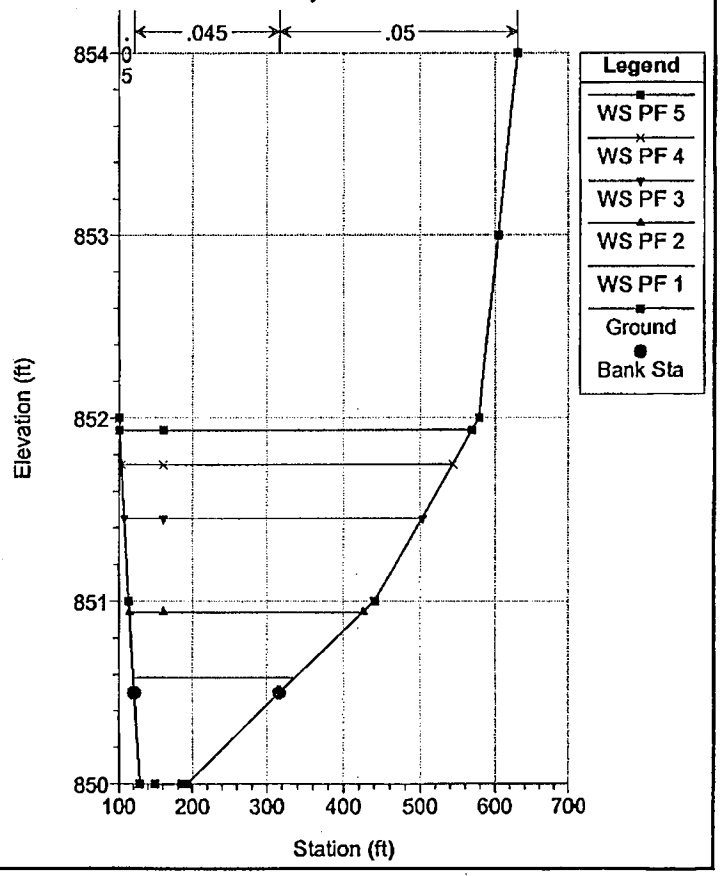
River = Minor Tributary Reach = Minor-1 RS = 800



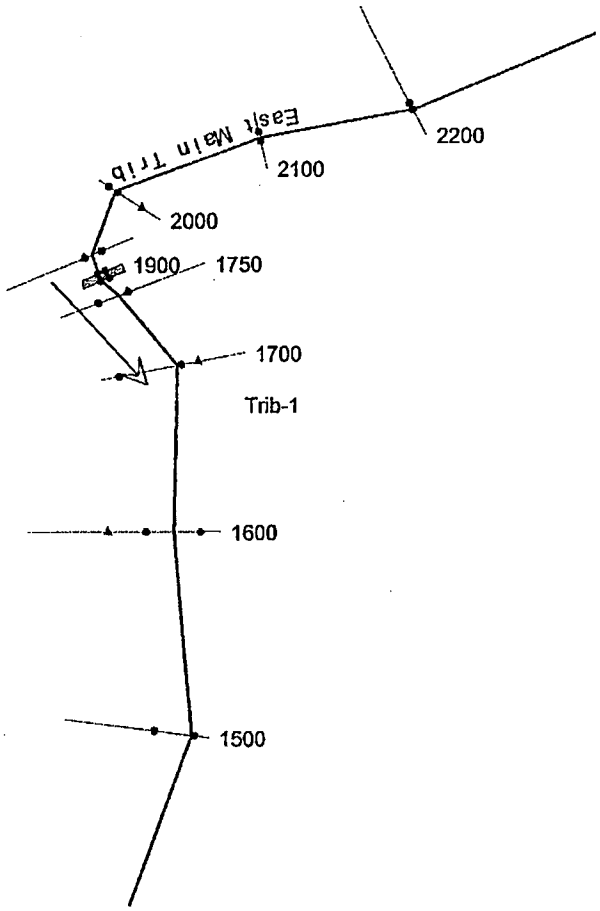
Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = Minor Tributary Reach = Minor-1 RS = 700



for Structure UPR5



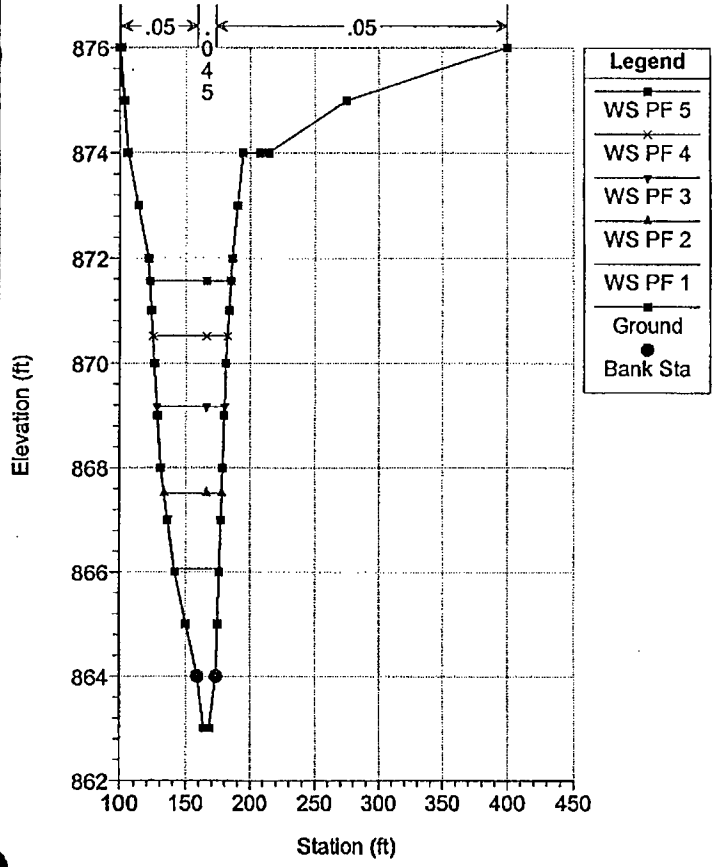
HEC-RAS Plan: FDS River: East Main Trib Reach: Trib-1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Trib-1	2200	PF 1	200.00	863.00	866.06	865.16	866.28	0.004190	4.12	59.82	34.62	0.44
Trib-1	2200	PF 2	500.00	863.00	867.51		867.88	0.004287	5.55	117.59	44.68	0.48
Trib-1	2200	PF 3	1000.00	863.00	869.18		869.66	0.003976	6.68	199.02	52.26	0.49
Trib-1	2200	PF 4	1500.00	863.00	870.51		871.09	0.003693	7.39	272.41	57.70	0.49
Trib-1	2200	PF 5	2000.00	863.00	871.57		872.24	0.003676	8.08	335.81	62.79	0.50
Trib-1	2100	PF 1	200.00	861.00	862.70	862.70	863.41	0.025815	6.81	29.94	22.05	0.99
Trib-1	2100	PF 2	500.00	861.00	863.93	863.91	865.12	0.019936	8.95	59.50	26.06	0.96
Trib-1	2100	PF 3	1000.00	861.00	865.40	865.40	867.13	0.016890	11.00	101.54	31.14	0.95
Trib-1	2100	PF 4	1500.00	861.00	866.57	866.57	868.71	0.015461	12.41	140.92	37.21	0.95
Trib-1	2100	PF 5	2000.00	861.00	867.70	867.70	869.98	0.013199	13.03	187.59	45.14	0.90
Trib-1	2000	PF 1	200.00	854.30	856.83	856.42	857.21	0.010504	4.98	41.79	27.56	0.65
Trib-1	2000	PF 2	500.00	854.30	857.63	857.63	858.63	0.017789	8.27	67.54	38.11	0.90
Trib-1	2000	PF 3	1000.00	854.30	859.00	858.97	860.16	0.013152	9.42	135.64	62.31	0.83
Trib-1	2000	PF 4	1500.00	854.30	860.61	859.88	861.33	0.006017	7.99	260.13	88.06	0.60
Trib-1	2000	PF 5	2000.00	854.30	861.88	860.57	862.46	0.003859	7.33	368.99	96.29	0.49
Trib-1	1950	PF 1	200.00	853.50	855.49	855.12	855.73	0.009988	3.96	51.46	43.21	0.61
Trib-1	1950	PF 2	500.00	853.50	856.99	855.95	857.26	0.004284	4.30	126.09	54.20	0.45
Trib-1	1950	PF 3	1000.00	853.50	858.94	856.91	859.24	0.002517	4.67	241.61	67.48	0.38
Trib-1	1950	PF 4	1500.00	853.50	860.44	857.68	860.79	0.002047	5.06	343.60	162.44	0.36
Trib-1	1950	PF 5	2000.00	853.50	861.69	858.32	862.07	0.001839	5.41	436.85	231.20	0.35
Trib-1	1900	PF 1	200.00	852.16	855.23	854.19	855.47	0.004176	4.11	54.53	25.53	0.44
Trib-1	1900	PF 2	500.00	852.16	856.38	855.47	857.00	0.007057	6.76	86.47	30.15	0.61
Trib-1	1900	PF 3	1000.00	852.16	858.07	856.98	859.01	0.007016	8.59	143.26	36.96	0.64
Trib-1	1900	PF 4	1500.00	852.16	859.40	858.15	860.56	0.006761	9.73	196.06	42.34	0.65
Trib-1	1900	PF 5	2000.00	852.16	860.52	859.08	861.84	0.006477	10.54	245.25	45.29	0.66
Trib-1	1850		Bridge									
Trib-1	1800	PF 1	200.00	852.66	854.94	854.35	855.29	0.008048	4.81	43.77	24.57	0.58
Trib-1	1800	PF 2	500.00	852.66	855.62	855.59	856.77	0.018747	8.83	61.38	27.51	0.93
Trib-1	1800	PF 3	1000.00	852.66	857.05	857.05	858.71	0.016453	10.90	105.05	33.70	0.94
Trib-1	1800	PF 4	1500.00	852.66	858.18	858.18	860.18	0.015031	12.20	145.87	38.60	0.93
Trib-1	1800	PF 5	2000.00	852.66	859.14	859.14	861.40	0.014015	13.16	185.02	42.56	0.92
Trib-1	1750	PF 1	200.00	853.00	854.16	854.16	854.50	0.051603	4.68	42.71	68.18	1.01
Trib-1	1750	PF 2	500.00	853.00	854.73	854.73	855.35	0.040966	6.30	79.58	71.59	1.00
Trib-1	1750	PF 3	1000.00	853.00	855.46	855.46	856.43	0.035049	7.92	127.02	75.96	1.00
Trib-1	1750	PF 4	1500.00	853.00	856.06	856.06	857.33	0.032269	9.08	166.80	158.10	1.00
Trib-1	1750	PF 5	2000.00	853.00	856.62	856.62	858.13	0.029419	9.90	205.13	168.58	0.99
Trib-1	1700	PF 1	200.00	850.00	851.74	850.93	851.76	0.002016	1.32	153.28	140.78	0.22
Trib-1	1700	PF 2	500.00	850.00	852.45	851.37	852.51	0.002402	1.99	257.02	150.10	0.26
Trib-1	1700	PF 3	1000.00	850.00	853.20	851.81	853.32	0.002962	2.78	374.40	162.63	0.30
Trib-1	1700	PF 4	1500.00	850.00	853.76	852.19	853.93	0.003375	3.38	468.26	176.36	0.33
Trib-1	1700	PF 5	2000.00	850.00	854.22	852.51	854.44	0.003674	3.85	547.47	184.87	0.36
Trib-1	1600	PF 1	200.00	849.00	849.86	849.67	850.00	0.021395	2.95	67.79	105.01	0.65
Trib-1	1600	PF 2	500.00	849.00	850.29	850.18	850.51	0.020907	3.95	141.35	213.36	0.69
Trib-1	1600	PF 3	1000.00	849.00	850.74	850.56	851.05	0.018860	4.79	234.73	240.61	0.70
Trib-1	1600	PF 4	1500.00	849.00	851.10	850.85	851.49	0.017804	5.39	310.40	263.10	0.70
Trib-1	1600	PF 5	2000.00	849.00	851.41	851.10	851.88	0.017023	5.86	377.82	284.65	0.70
Trib-1	1500	PF 1	200.00	845.00	846.59	846.21	846.62	0.004001	1.56	148.40	221.30	0.29
Trib-1	1500	PF 2	500.00	845.00	847.10	846.47	847.16	0.004006	2.12	266.68	238.05	0.32
Trib-1	1500	PF 3	1000.00	845.00	847.71	846.79	847.81	0.004006	2.70	417.10	256.43	0.34
Trib-1	1500	PF 4	1500.00	845.00	848.18	847.06	848.31	0.004001	3.11	540.71	266.07	0.35
Trib-1	1500	PF 5	2000.00	845.00	848.58	847.30	848.73	0.004001	3.43	645.57	268.14	0.36

Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

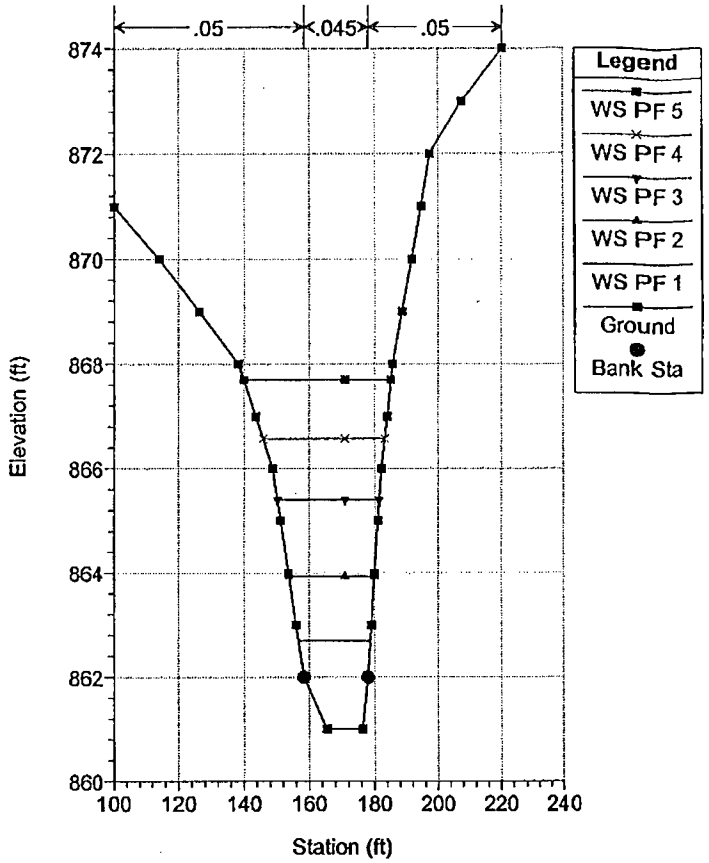
River = East Main Trib Reach = Trib-1 RS = 2200



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

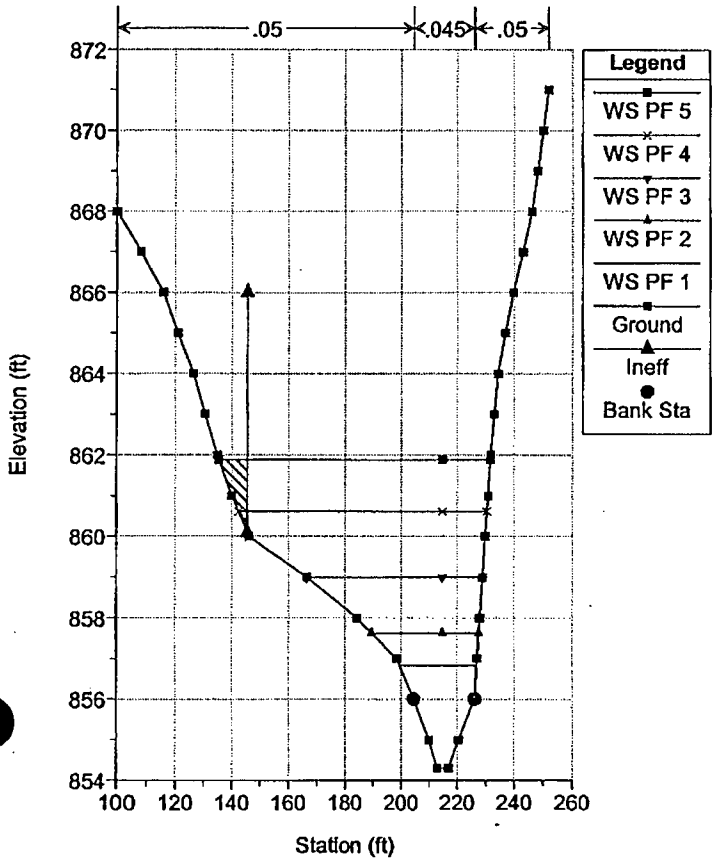
River = East Main Trib Reach = Trib-1 RS = 2100



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

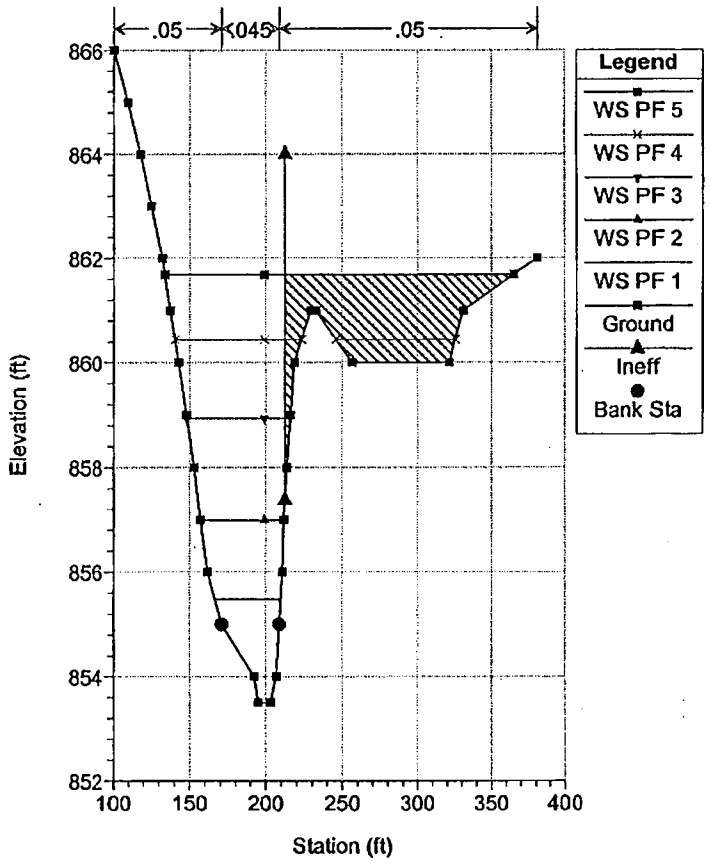
River = East Main Trib Reach = Trib-1 RS = 2000



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

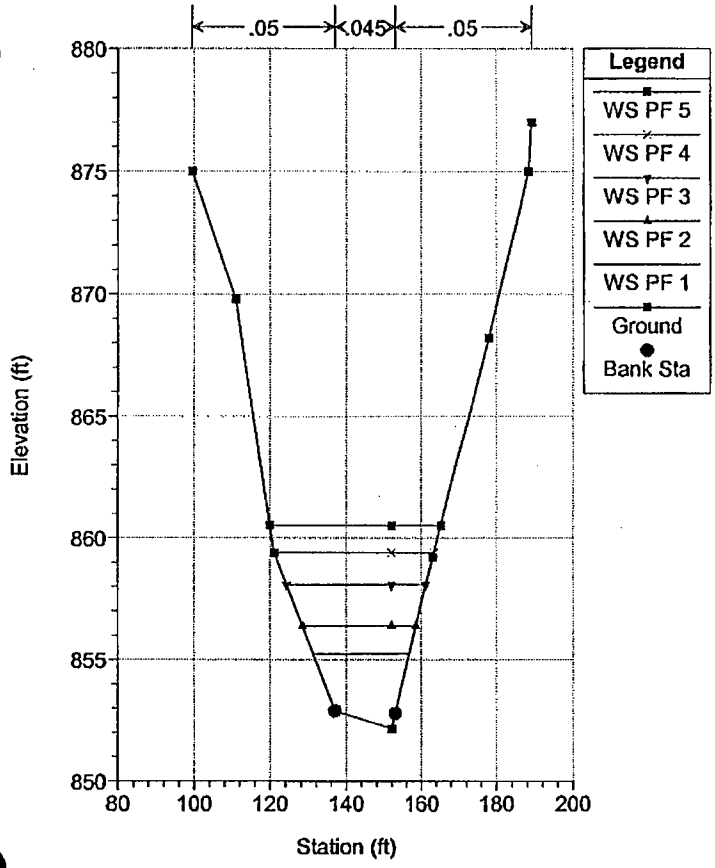
River = East Main Trib Reach = Trib-1 RS = 1950



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

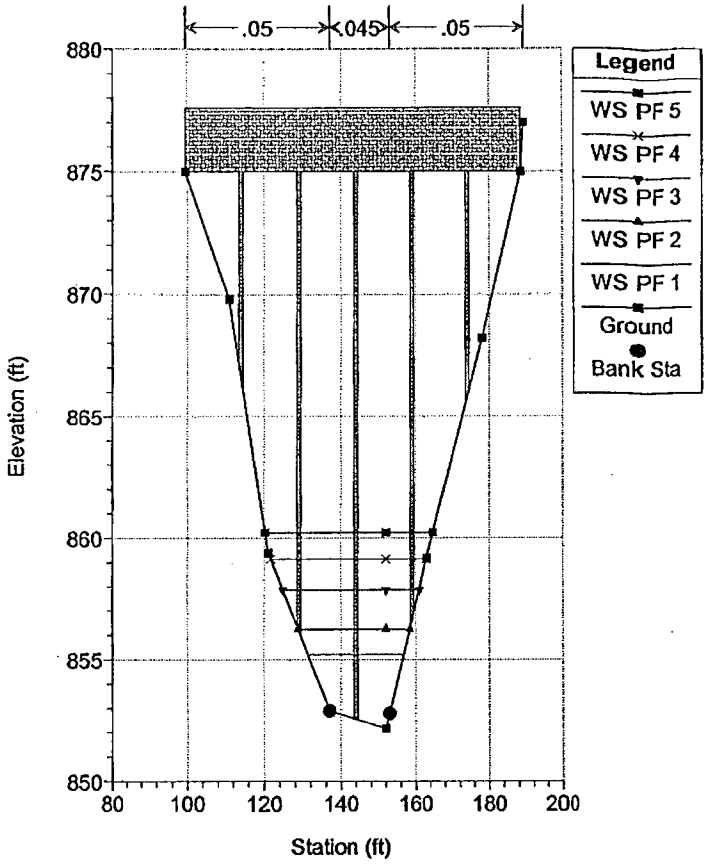
River = East Main Trib Reach = Trib-1 RS = 1900



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

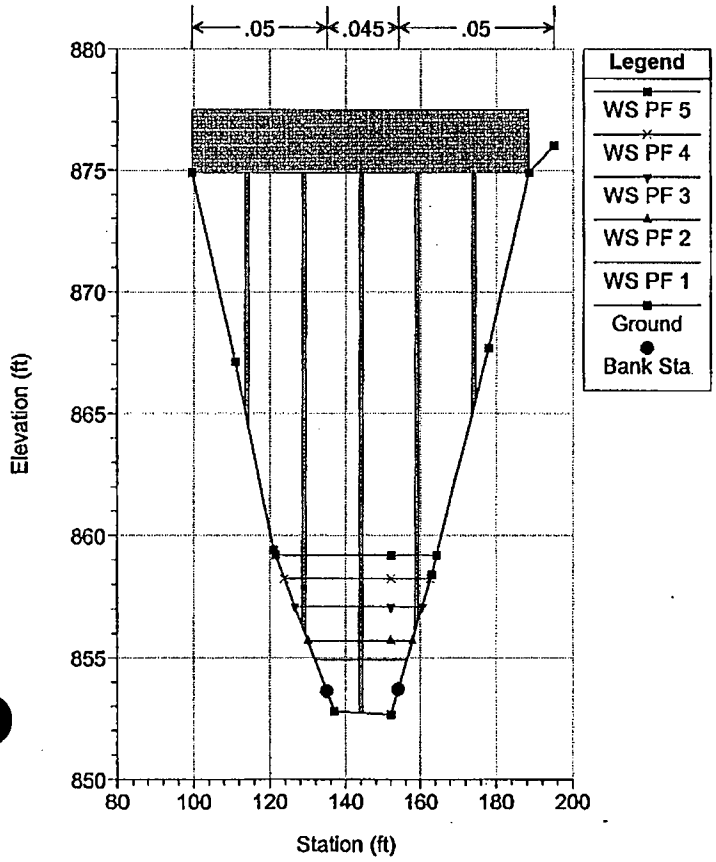
River = East Main Trib Reach = Trib-1 RS = 1850 BR



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

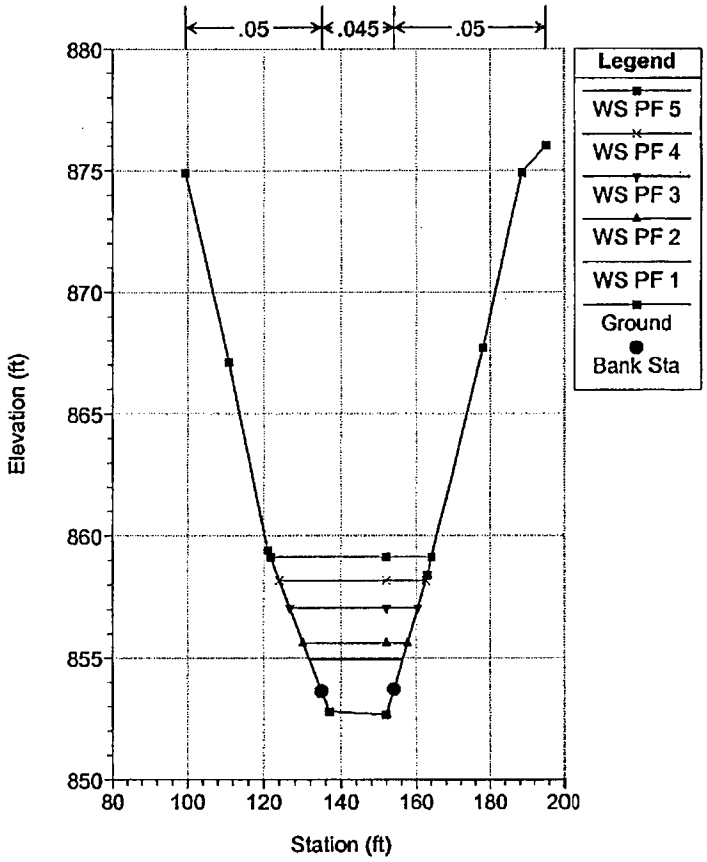
River = East Main Trib Reach = Trib-1 RS = 1850 BR



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

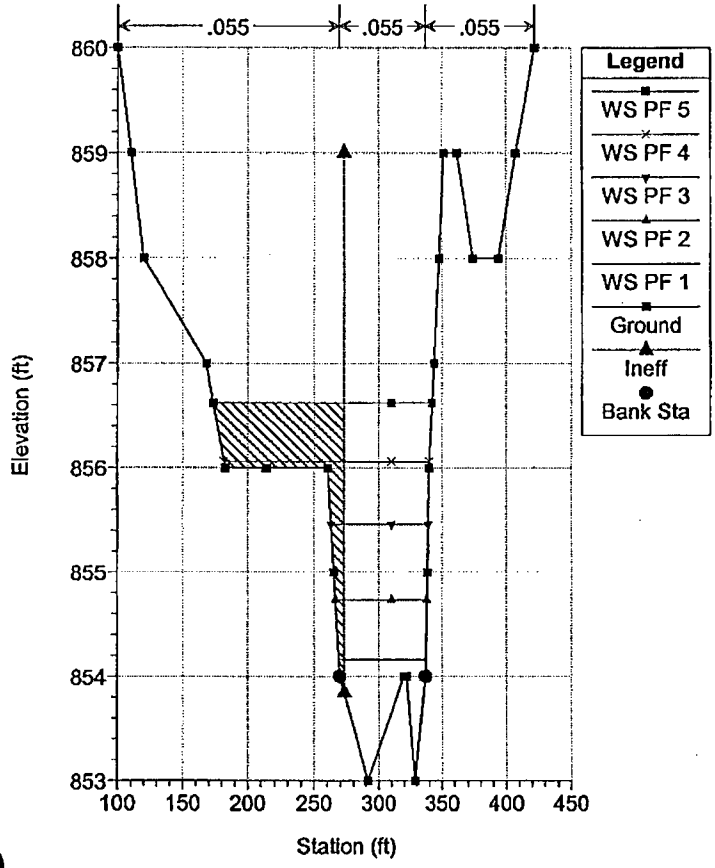
River = East Main Trib Reach = Trib-1 RS = 1800



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

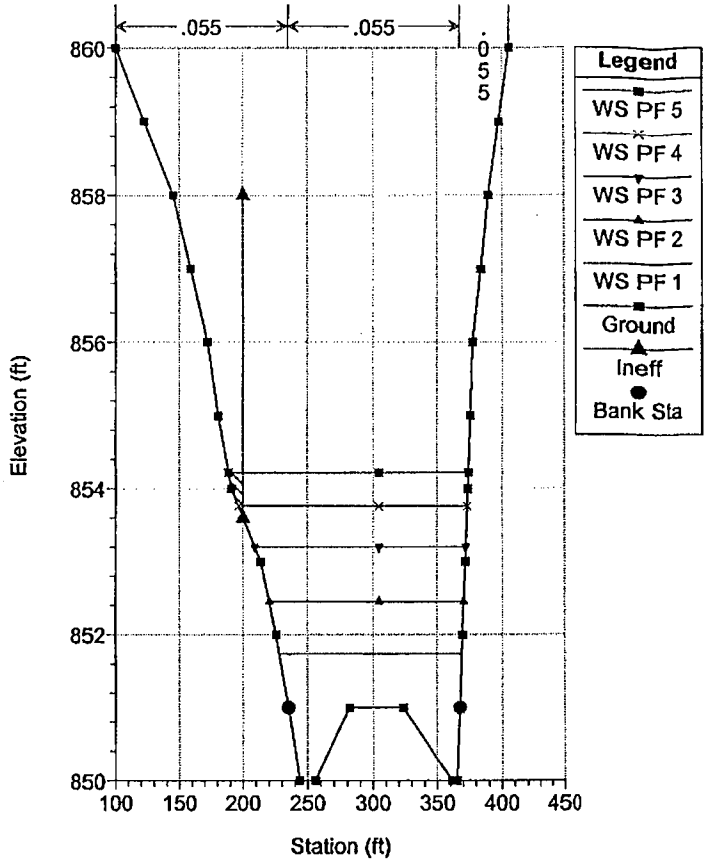
River = East Main Trib Reach = Trib-1 RS = 1750



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

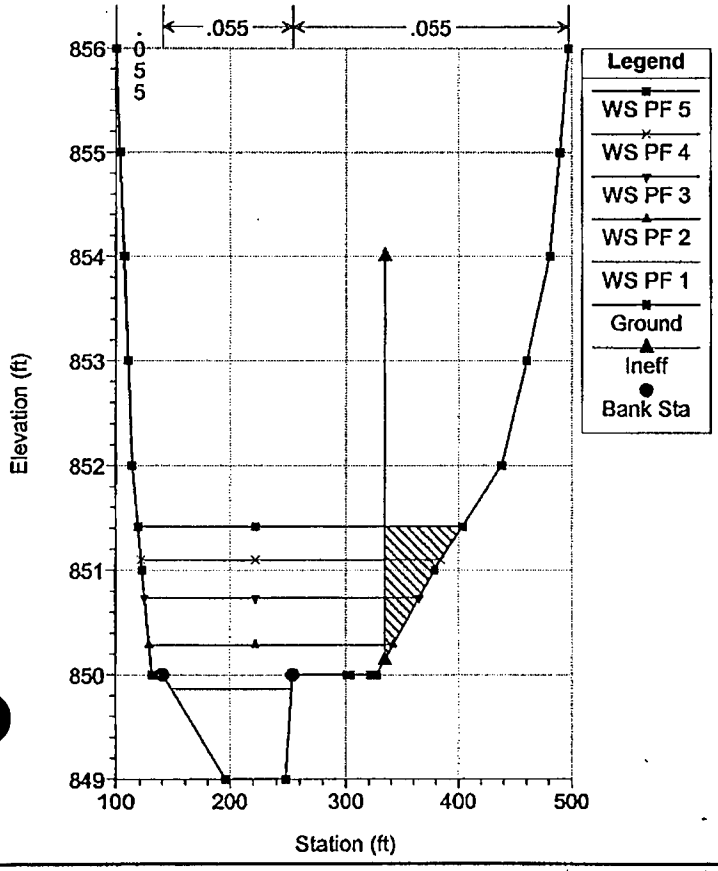
River = East Main Trib Reach = Trib-1 RS = 1700



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

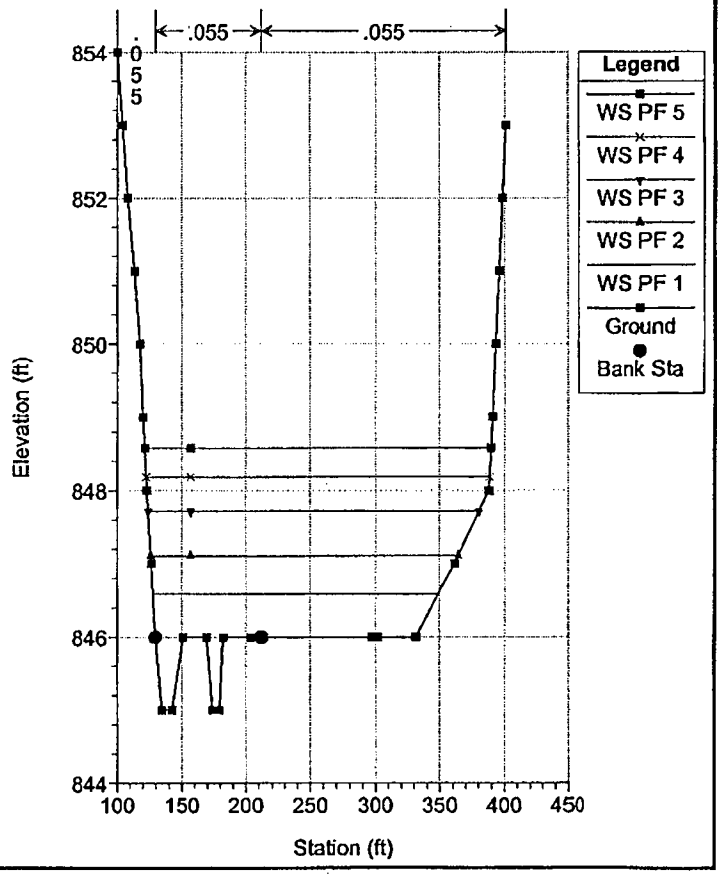
River = East Main Trib Reach = Trib-1 RS = 1600



Luke Wash Watershed FDS Plan: Rating Curve Development 7/8/2008

Geom: Existing Conditions Geometry Flow: Multiple Profiles

River = East Main Trib Reach = Trib-1 RS = 1500



APPENDIX D4.3

Storage Data from DDMSW

Storage ID	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
S14c	Elevation Top of Dam: 869.00		Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
Volume (ac-ft)		1.30	4.90	13.20	27.20	49.40	80.80	123.70	179.20	
Discharge (cfs)		208	716	1,223	1,731	2,595	3,168	3,447	3,727	
Elevation (ft)	861.0	862.0	863.0	864.0	865.0	866.0	867.0	123.7	869.0	-
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
Peak Volume (ac-ft)										
Peak Stage (ft)										
S20b	Elevation Top of Dam: 862.00		Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
Volume (ac-ft)		0.80	3.30	8.70	18.60	34.60	57.80	92.50	142.20	
Discharge (cfs)		100	403	770	1,325	2,286	3,248	4,210	5,170	
Elevation (ft)	854.0	855.0	856.0	857.0	858.0	859.0	860.0	92.5	862.0	-
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
Peak Volume (ac-ft)										
Peak Stage (ft)										
S20k	Elevation Top of Dam: 1,106.00		Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
Volume (ac-ft)		3.10	8.40	8.70	9.80	12.40	17.30	24.70	34.90	
Discharge (cfs)		10	34	44	66	96	124	152	170	
Elevation (ft)	1,098.0	1,099.0	1,100.0	1,101.0	1,102.0	1,103.0	1,104.0	24.7	1,106.0	-
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
Peak Volume (ac-ft)										
Peak Stage (ft)										
S21a	Elevation Top of Dam: 1,100.00		Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
Volume (ac-ft)		0.10	0.60	2.60	7.40	15.80	29.00	48.20		
Discharge (cfs)		144	283	466	621	775	930	1,084		
Elevation (ft)	1,093.0	1,094.0	1,095.0	1,096.0	1,097.0	1,098.0	1,099.0	48.2	-	-
	2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
Peak Volume (ac-ft)										
Peak Stage (ft)										

Storage ID		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
S22d	Elevation Top of Dam: 1,099.00			Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
	Volume (ac-ft)		0.10	0.50	2.30	5.00	10.90	19.60			
	Discharge (cfs)		47	90	127	158	189	221			
	Elevation (ft)	1,093.0	1,094.0	1,095.0	1,096.0	1,097.0	1,098.0	1,099.0	-	-	-
		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
	Peak Volume (ac-ft)										
	Peak Stage (ft)										
S32b	Elevation Top of Dam: 864.00			Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
	Volume (ac-ft)		1.00	3.40	8.00	15.50					
	Discharge (cfs)		258	536	853	1,400					
	Elevation (ft)	860.0	861.0	862.0	863.0	864.0	-	-	-	-	-
		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
	Peak Volume (ac-ft)										
	Peak Stage (ft)										
S44a	Elevation Top of Dam: 1,094.00			Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
	Volume (ac-ft)		0.30	1.70	4.60	9.70	16.90	26.10	37.70	52.00	
	Discharge (cfs)		87	217	347	516	720	923	1,127	1,302	
	Elevation (ft)	1,086.0	1,087.0	1,088.0	1,089.0	1,090.0	1,091.0	1,092.0	37.7	1,094.0	-
		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
	Peak Volume (ac-ft)										
	Peak Stage (ft)										
S46a	Elevation Top of Dam: 1,094.00			Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
	Volume (ac-ft)		0.60	2.90	8.80	14.00	34.90	62.00	97.00		
	Discharge (cfs)		258	586	990	1,402	1,823	2,061	2,314		
	Elevation (ft)	1,087.0	1,088.0	1,089.0	1,090.0	1,091.0	1,092.0	1,093.0	97.0	-	-
		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
	Peak Volume (ac-ft)										
	Peak Stage (ft)										

Storage ID		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
S64a	Elevation Top of Dam: 1,081.00			Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
	Volume (ac-ft)		0.03	0.20	1.00	2.60	5.80	12.00	13.30	26.00	44.50
	Discharge (cfs)		66	171	312	454	595	698	792	887	982
	Elevation (ft)	1,072.0	1,073.0	1,074.0	1,075.0	1,076.0	1,077.0	1,078.0	13.3	1,080.0	1,081.0
		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
	Peak Volume (ac-ft)										
	Peak Stage (ft)										
S70d	Elevation Top of Dam: 861.00			Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
	Volume (ac-ft)		0.10	0.30	0.60	1.00	1.50	2.30	3.30		
	Discharge (cfs)		130	412	695	978	1,370	1,776	2,185		
	Elevation (ft)	854.0	855.0	856.0	857.0	858.0	859.0	860.0	3.3	-	-
		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
	Peak Volume (ac-ft)										
	Peak Stage (ft)										
S82b	Elevation Top of Dam: 1,080.00			Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
	Volume (ac-ft)		0.20	0.60	1.50	3.10	5.60	9.10	13.80	20.50	41.30
	Discharge (cfs)		12	40	84	132	172	186	196	204	226
	Elevation (ft)	1,070.0	1,071.0	1,072.0	1,073.0	1,074.0	1,075.0	1,076.0	13.8	1,078.0	1,080.0
		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
	Peak Volume (ac-ft)										
	Peak Stage (ft)										
S83a	Elevation Top of Dam: 1,046.00			Length of Dam: 100.00		Discharge Coefficient: 3.00			Weir Coefficient:1.50		
	Volume (ac-ft)		0.02	0.10	0.40	1.00	2.20	4.40	7.30	10.90	15.50
	Discharge (cfs)		177	473	769	1,060	1,261	1,462	1,663	1,863	2,071
	Elevation (ft)	1,037.0	1,038.0	1,039.0	1,040.0	1,041.0	1,042.0	1,043.0	7.3	1,045.0	1,046.0
		2 Year	5 Year	10 Year	25 Year	50 Year	100 Year				
	Peak Volume (ac-ft)										
	Peak Stage (ft)										

APPENDIX D5

Flow Splits and Diversions Data

Diversion ID/ DT Card ID	Maximum Volume (ac-ft)	Maximum Diversion (cfs)		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
D46kE			**Inflow (cfs)**		10	50	100	500	1,000				
D46kW			**Diversion (cfs)**		3	15	30	150	300				

APPENDIX D6

Evaluation of S-Graph vs. Clark Unit Hydrograph and Manning's n-Values

Manning's n_Value Sensitivity Analysis

(n values reduced by 0.01)

Wash T1S-R5W-S29 (shallow and wide)

		EC24NODK.Out					EC24NDn1.Out					Diff (%)
			Q100	Tp	Qavg24	A		Q100	Tp	Qavg24	A	
HYDROGRAPH	AT	14e	809	12.5	30	1.1	14e	809	12.5	30	1.1	0
ROUTED TO		R14e	720	12.83	30	1.1	R14e	741	12.75	30	1.1	-2.9
HYDROGRAPH	AT	14d	496	12.42	16	0.5	14d	496	12.42	16	0.5	0.0
2 COMBINED	AT	C14d	908	12.67	45	1.61	C14d	1005	12.58	45	1.61	-10.7
ROUTED TO		R14d	861	13.08	45	1.61	R14d	948	12.92	45	1.61	-10.1
HYDROGRAPH	AT	14c	831	12.5	30	1.1	14c	831	12.5	30	1.1	0.0
2 COMBINED	AT	C14c	1294	12.75	74	2.7	C14c	1519	12.67	74	2.7	-17.4
ROUTED TO		R14c	1229	13	74	2.7	R14c	1461	12.92	74	2.7	-18.9
HYDROGRAPH	AT	14b	308	12.25	7	0.26	14b	308	12.25	7	0.26	0.0
2 COMBINED	AT	C14b	1241	13	80	2.96	C14b	1481	12.92	80	2.96	-19.3
ROUTED TO		R14b	1173	13.58	80	2.96	R14b	1377	13.25	80	2.96	-17.4
HYDROGRAPH	AT	14a	322	12.5	11	0.37	14a	322	12.5	11	0.37	0.0
2 COMBINED	AT	C14a	1195	13.5	91	3.33	C14a	1432	13.25	91	3.33	-19.8
HYDROGRAPH	AT	12b	409	12.5	14	0.45	12b	409	12.5	14	0.45	0.0
ROUTED TO		R12b	315	13	14	0.45	R12b	337	12.92	14	0.45	-7.0
HYDROGRAPH	AT	12a	650	12.58	27	0.83	12a	650	12.58	27	0.83	0.0
2 COMBINED	AT	C12a	763	12.75	40	1.28	C12a	866	12.75	40	1.28	-13.5
2 COMBINED	AT	CC12a	1545	13.25	130	4.61	CC12a	1932	13.08	130	4.61	-25.0
HYDROGRAPH	AT	10b	593	12.58	29	0.86	10b	593	12.58	29	0.86	0.0
2 COMBINED	AT	C10b	1856	12.92	158	5.46	C10b	2303	12.83	158	5.46	-24.1
ROUTED TO		R10b	1783	13.42	158	5.46	R10b	2212	13.33	158	5.46	-24.1
HYDROGRAPH	AT	10a	783	12.42	25	0.84	10a	783	12.42	25	0.84	0.0
2 COMBINED	AT	C10a	1829	13.42	182	6.3	C10a	2273	13.33	182	6.3	-24.3

Manning's n_Value Sensitivity Analysis

(n values reduced by 0.01)

Luke Wash (D/S) (well-defined wash)

		EC24NODK.Out					EC24NDn1.Out					Diff (%)
			Q100	Tp	Qavg24	A		Q100	Tp	Qavg24	A	
COMBINED AT		CC30g	2515	14.5	615	24.96	CC30g	2515	14.5	615	24.96	0
ROUTED TO		R30g	2474	15	615	24.96	R30g	2492	14.92	615	24.96	-0.7
HYDROGRAPH	AT	30f	890	12.83	47	1.77	30f	890	12.83	47	1.77	0.0
2 COMBINED	AT	C30f	2478	15	653	26.74	C30f	2496	14.92	653	26.74	-0.7
ROUTED TO		R30f	2458	15.42	653	26.74	R30f	2486	15.17	653	26.74	-1.1
HYDROGRAPH	AT	30e	417	12.33	12	0.4	30e	417	12.33	12	0.4	0.0
2 COMBINED	AT	C30e	2458	15.42	663	27.14	C30e	2486	15.17	663	27.14	-1.1
ROUTED TO		R30e	2440	15.75	662	27.14	R30e	2473	15.42	662	27.14	-1.4
HYDROGRAPH	AT	30d	418	12.58	16	0.62	30d	418	12.58	16	0.62	0.0
2 COMBINED	AT	C30d	2440	15.75	676	27.75	C30d	2473	15.42	676	27.75	-1.4
ROUTED TO		R30d	2422	16	674	27.75	R30d	2455	15.58	675	27.75	-1.4
2 COMBINED	AT	CC20a	3242	15.92	987	41.4	CC20a	3318	15.58	987	41.4	-2.3
ROUTED TO		R20a	3233	16.08	986	41.4	R20a	3303	15.75	987	41.4	-2.2
HYDROGRAPH	AT	30c	246	12.33	8	0.24	30c	246	12.33	8	0.24	0.0
2 COMBINED	AT	C30c	3233	16.08	992	41.64	C30c	3303	15.75	993	41.64	-2.2
HYDROGRAPH	AT	32b	503	12.33	13	0.48	32b	503	12.33	13	0.48	0.0
ROUTED TO		R32b	363	12.83	13	0.48	R32b	363	12.83	13	0.48	0.0
HYDROGRAPH	AT	32a	278	12.33	8	0.29	32a	278	12.33	8	0.29	0.0
2 COMBINED	AT	C32a	449	12.75	20	0.76	C32a	449	12.75	20	0.76	0.0
2 COMBINED	AT	CC30c	3233	16.08	1009	42.41	CC30c	3303	15.75	1009	42.41	-2.2
ROUTED TO		R30c	3206	16.83	1007	42.41	R30c	3271	16.42	1007	42.41	-2.0
HYDROGRAPH	AT	30b	414	12.5	17	0.51	30b	414	12.5	17	0.51	0.0
2 COMBINED	AT	C30b	3206	16.83	1018	42.91	C30b	3271	16.42	1019	42.91	-2.0
2 COMBINED	AT	CC30b	3925	15.5	1237	53.52	CC30b	4197	15.25	1239	53.52	-6.9
HYDROGRAPH	AT	71b	323	12.25	8	0.29	71b	323	12.25	8	0.29	0.0
ROUTED TO		R71b	213	12.83	8	0.29	R71b	213	12.83	8	0.29	0.0
HYDROGRAPH	AT	71a	277	12.25	7	0.26	71a	277	12.25	7	0.26	0.0
2 COMBINED	AT	C71a	275	12.25	14	0.55	C71a	275	12.25	14	0.55	0.0
2 COMBINED	AT	CC70b	3925	15.5	1248	54.07	CC70b	4197	15.25	1249	54.07	-6.9
ROUTED TO		R70b	3915	15.67	1248	54.07	R70b	4188	15.42	1249	54.07	-7.0
HYDROGRAPH	AT	70A	130	12.25	3	0.1	70A	130	12.25	3	0.1	0.0
2 COMBINED	AT	C70a	3915	15.67	1250	54.17	C70a	4188	15.42	1251	54.17	-7.0
HYDROGRAPH	AT	30a	50	12.17	1	0.04	30a	50	12.17	1	0.04	0.0
2 COMBINED	AT	C30a	3915	15.67	1250	54.21	C30a	4188	15.42	1252	54.21	-7.0

Manning's n_Value Sensitivity Analysis

(n values reduced by 0.005)

Wash T1S-R5W-S29 (shallow and wide)

		EC24NODK.Out					EC24NDn2.Out					Diff (%)
			Q100	Tp	Qavg24	A		Q100	Tp	Qavg24	A	
HYDROGRAPH	AT	14e	809	12.5	30	1.1	14e	809	12.5	30	1.1	0
ROUTED TO		R14e	720	12.83	30	1.1	R14e	716	12.83	30	1.1	0.6
HYDROGRAPH	AT	14d	496	12.42	16	0.5	14d	496	12.42	16	0.5	0.0
2 COMBINED	AT	C14d	908	12.67	45	1.61	C14d	950	12.58	45	1.61	-4.6
ROUTED TO		R14d	861	13.08	45	1.61	R14d	890	13	45	1.61	-3.4
HYDROGRAPH	AT	14c	831	12.5	30	1.1	14c	831	12.5	30	1.1	0.0
2 COMBINED	AT	C14c	1294	12.75	74	2.7	C14c	1399	12.75	74	2.7	-8.1
ROUTED TO		R14c	1229	13	74	2.7	R14c	1335	13	74	2.7	-8.6
HYDROGRAPH	AT	14b	308	12.25	7	0.26	14b	308	12.25	7	0.26	0.0
2 COMBINED	AT	C14b	1241	13	80	2.96	C14b	1353	12.92	80	2.96	-9.0
ROUTED TO		R14b	1173	13.58	80	2.96	R14b	1255	13.42	80	2.96	-7.0
HYDROGRAPH	AT	14a	322	12.5	11	0.37	14a	322	12.5	11	0.37	0.0
2 COMBINED	AT	C14a	1195	13.5	91	3.33	C14a	1289	13.42	91	3.33	-7.9
HYDROGRAPH	AT	12b	409	12.5	14	0.45	12b	409	12.5	14	0.45	0.0
ROUTED TO		R12b	315	13	14	0.45	R12b	320	13	14	0.45	-1.6
HYDROGRAPH	AT	12a	650	12.58	27	0.83	12a	650	12.58	27	0.83	0.0
2 COMBINED	AT	C12a	763	12.75	40	1.28	C12a	814	12.75	40	1.28	-6.7
2 COMBINED	AT	CC12a	1545	13.25	130	4.61	CC12a	1716	13.17	130	4.61	-11.1
HYDROGRAPH	AT	10b	593	12.58	29	0.86	10b	593	12.58	29	0.86	0.0
2 COMBINED	AT	C10b	1856	12.92	158	5.46	C10b	2055	12.83	158	5.46	-10.7
ROUTED TO		R10b	1783	13.42	158	5.46	R10b	1978	13.42	158	5.46	-10.9
HYDROGRAPH	AT	10a	783	12.42	25	0.84	10a	783	12.42	25	0.84	0.0
2 COMBINED	AT	C10a	1829	13.42	182	6.3	C10a	2034	13.33	182	6.3	-11.2

Manning's n_Value Sensitivity Analysis

(n values reduced by 0.005)

Luke Wash (D/S) (well-defined wash)

		EC24NODK.Out					EC24NDn2.Out					Diff (%)
			Q100	Tp	Qavg24	A		Q100	Tp	Qavg24	A	
COMBINED AT		CC30g	2515	14.5	615	24.96	CC30g	2515	14.5	615	24.96	0
ROUTED TO		R30g	2474	15	615	24.96	R30g	2486	14.92	615	24.96	-0.5
HYDROGRAPH	AT	30f	890	12.83	47	1.77	30f	890	12.83	47	1.77	0.0
2 COMBINED	AT	C30f	2478	15	653	26.74	C30f	2490	14.92	653	26.74	-0.5
ROUTED TO		R30f	2458	15.42	653	26.74	R30f	2472	15.25	653	26.74	-0.6
HYDROGRAPH	AT	30e	417	12.33	12	0.4	30e	417	12.33	12	0.4	0.0
2 COMBINED	AT	C30e	2458	15.42	663	27.14	C30e	2472	15.25	663	27.14	-0.6
ROUTED TO		R30e	2440	15.75	662	27.14	R30e	2458	15.58	662	27.14	-0.7
HYDROGRAPH	AT	30d	418	12.58	16	0.62	30d	418	12.58	16	0.62	0.0
2 COMBINED	AT	C30d	2440	15.75	676	27.75	C30d	2458	15.58	676	27.75	-0.7
ROUTED TO		R30d	2422	16	674	27.75	R30d	2439	15.83	675	27.75	-0.7
2 COMBINED	AT	CC20a	3242	15.92	987	41.4	CC20a	3281	15.67	987	41.4	-1.2
ROUTED TO		R20a	3233	16.08	986	41.4	R20a	3270	15.92	987	41.4	-1.1
HYDROGRAPH	AT	30c	246	12.33	8	0.24	30c	246	12.33	8	0.24	0.0
2 COMBINED	AT	C30c	3233	16.08	992	41.64	C30c	3270	15.92	992	41.64	-1.1
HYDROGRAPH	AT	32b	503	12.33	13	0.48	32b	503	12.33	13	0.48	0.0
ROUTED TO		R32b	363	12.83	13	0.48	R32b	363	12.83	13	0.48	0.0
HYDROGRAPH	AT	32a	278	12.33	8	0.29	32a	278	12.33	8	0.29	0.0
2 COMBINED	AT	C32a	449	12.75	20	0.76	C32a	449	12.75	20	0.76	0.0
2 COMBINED	AT	CC30c	3233	16.08	1009	42.41	CC30c	3270	15.92	1009	42.41	-1.1
ROUTED TO		R30c	3206	16.83	1007	42.41	R30c	3239	16.58	1007	42.41	-1.0
HYDROGRAPH	AT	30b	414	12.5	17	0.51	30b	414	12.5	17	0.51	0.0
2 COMBINED	AT	C30b	3206	16.83	1018	42.91	C30b	3239	16.58	1019	42.91	-1.0
2 COMBINED	AT	CC30b	3925	15.5	1237	53.52	CC30b	4071	15.33	1238	53.52	-3.7
HYDROGRAPH	AT	71b	323	12.25	8	0.29	71b	323	12.25	8	0.29	0.0
ROUTED TO		R71b	213	12.83	8	0.29	R71b	213	12.83	8	0.29	0.0
HYDROGRAPH	AT	71a	277	12.25	7	0.26	71a	277	12.25	7	0.26	0.0
2 COMBINED	AT	C71a	275	12.25	14	0.55	C71a	275	12.25	14	0.55	0.0
2 COMBINED	AT	CC70b	3925	15.5	1248	54.07	CC70b	4071	15.33	1249	54.07	-3.7
ROUTED TO		R70b	3915	15.67	1248	54.07	R70b	4060	15.5	1248	54.07	-3.7
HYDROGRAPH	AT	70A	130	12.25	3	0.1	70A	130	12.25	3	0.1	0.0
2 COMBINED	AT	C70a	3915	15.67	1250	54.17	C70a	4060	15.5	1250	54.17	-3.7
HYDROGRAPH	AT	30a	50	12.17	1	0.04	30a	50	12.17	1	0.04	0.0
2 COMBINED	AT	C30a	3915	15.67	1250	54.21	C30a	4060	15.5	1251	54.21	-3.7

Unit Hydrograph Method Comparison

		S-Graph Method						Clark Method				
Operation		Hydrograph Name	Peak Flow	Time to Peak	Mean Flow (24-hour)	Basin Area	Unit Flow (cfs/mile²)	Hydrograph Name	Peak Flow	Basin Area	Unit Flow (cfs/mile²)	Difference (%)
HYDROGRAPH	AT	72B	786	12.5	29	1.19	661	72B	918	1.19	771	-16.8
HYDROGRAPH	AT	76A	733	13	47	1.63	450	76A	846	1.63	519	-15.4
HYDROGRAPH	AT	20E	1210	12.5	47	1.53	791	20E	1359	1.53	888	-12.3
HYDROGRAPH	AT	20F	1027	12.5	38	1.35	761	20F	1079	1.35	799	-5.1
HYDROGRAPH	AT	36B	844	12.5	29	1.06	796	36B	871	1.06	822	-3.2
HYDROGRAPH	AT	14E	809	12.5	30	1.1	735	14E	824	1.1	749	-1.9
HYDROGRAPH	AT	20H	905	12.5	36	1.25	724	20H	918	1.25	734	-1.4
HYDROGRAPH	AT	60A	619	12.5	24	0.77	804	60A	624	0.77	810	-0.8
HYDROGRAPH	AT	70E	1083	12.5	36	1.37	791	70E	1087	1.37	793	-0.4
HYDROGRAPH	AT	20G	936	12.5	35	1.18	793	20G	930	1.18	788	0.6
HYDROGRAPH	AT	60B	713	12.58	32	1.11	642	60B	708	1.11	638	0.7
HYDROGRAPH	AT	52A	527	12.42	21	0.58	909	52A	513	0.58	884	2.7
HYDROGRAPH	AT	79B	438	12.17	10	0.36	1217	79B	425	0.36	1181	3.0
HYDROGRAPH	AT	20C	1073	12.58	46	1.42	756	20C	1031	1.42	726	3.9
HYDROGRAPH	AT	70B	430	12.17	9	0.33	1303	70B	411	0.33	1245	4.4
HYDROGRAPH	AT	90A	561	12.33	17	0.56	1002	90A	533	0.56	952	5.0
HYDROGRAPH	AT	60C	745	12.42	24	0.91	819	60C	696	0.91	765	6.6
HYDROGRAPH	AT	23A	322	12.42	11	0.35	920	23A	300	0.35	857	6.8
HYDROGRAPH	AT	72A	401	12.33	11	0.44	911	72A	373	0.44	848	7.0
HYDROGRAPH	AT	20B	750	12.67	34	1.14	658	20B	695	1.14	610	7.3
HYDROGRAPH	AT	30G	640	12.5	24	0.84	762	30G	590	0.84	702	7.8
HYDROGRAPH	AT	12A	650	12.58	27	0.83	783	12A	586	0.83	706	9.8
HYDROGRAPH	AT	50A	536	12.67	25	0.89	602	50A	483	0.89	543	9.9
HYDROGRAPH	AT	36C	644	12.58	27	0.95	678	36C	578	0.95	608	10.2
HYDROGRAPH	AT	10B	593	12.58	29	0.86	690	10B	531	0.86	617	10.5
HYDROGRAPH	AT	36A	625	12.42	20	0.68	919	36A	558	0.68	821	10.7
HYDROGRAPH	AT	40C	536	12.33	14	0.5	1072	40C	476	0.5	952	11.2
HYDROGRAPH	AT	10A	783	12.42	25	0.84	932	10A	694	0.84	826	11.4
HYDROGRAPH	AT	30F	890	12.83	47	1.77	503	30F	787	1.77	445	11.6
HYDROGRAPH	AT	79A	501	12.33	12	0.51	982	79A	442	0.51	867	11.8
HYDROGRAPH	AT	21A	643	12.5	25	0.88	731	21A	562	0.88	639	12.6
HYDROGRAPH	AT	46A	495	12.58	19	0.81	611	46A	428	0.81	528	13.5
HYDROGRAPH	AT	20D	674	12.33	18	0.62	1087	20D	580	0.62	935	13.9
HYDROGRAPH	AT	30B	414	12.5	17	0.51	812	30B	353	0.51	692	14.7
HYDROGRAPH	AT	14C	831	12.5	30	1.1	755	14C	704	1.1	640	15.3
HYDROGRAPH	AT	83E	625	12.42	18	0.84	744	83E	529	0.84	630	15.4
HYDROGRAPH	AT	40D	468	12.58	19	0.73	641	40D	393	0.73	538	16.0
HYDROGRAPH	AT	92B	584	12.42	18	0.7	834	92B	490	0.7	700	16.1
HYDROGRAPH	AT	64B	533	12.58	21	0.84	635	64B	445	0.84	530	16.5
HYDROGRAPH	AT	71A	277	12.25	7	0.26	1065	71A	231	0.26	888	16.6
HYDROGRAPH	AT	74B	487	12.5	18	0.67	727	74B	406	0.67	606	16.6
HYDROGRAPH	AT	82A	523	12.42	15	0.59	886	82A	435	0.59	737	16.8
HYDROGRAPH	AT	62A	506	12.42	14	0.59	858	62A	419	0.59	710	17.2
HYDROGRAPH	AT	33A	138	12.42	4	0.17	812	33A	114	0.17	671	17.4
HYDROGRAPH	AT	44A	477	12.75	26	0.87	548	44A	391	0.87	449	18.0
HYDROGRAPH	AT	32B	503	12.33	13	0.48	1048	32B	411	0.48	856	18.3
HYDROGRAPH	AT	70C	466	12.67	21	0.74	630	70C	380	0.74	514	18.5
HYDROGRAPH	AT	70D	459	12.42	13	0.49	937	70D	373	0.49	761	18.7
HYDROGRAPH	AT	71B	323	12.25	8	0.29	1114	71B	262	0.29	903	18.9
HYDROGRAPH	AT	92A	526	12.58	21	0.79	666	92A	422	0.79	534	19.8
HYDROGRAPH	AT	24A	379	12.42	12	0.41	924	24A	303	0.41	739	20.1
HYDROGRAPH	AT	91A	419	12.33	11	0.43	974	91A	334	0.43	777	20.3
HYDROGRAPH	AT	15A	531	12.33	14	0.51	1041	15A	421	0.51	825	20.7
HYDROGRAPH	AT	93A	521	12.33	13	0.44	1184	93A	412	0.44	936	20.9
HYDROGRAPH	AT	30E	417	12.33	12	0.4	1043	30E	328	0.4	820	21.3
HYDROGRAPH	AT	83G	431	12.42	13	0.62	695	83G	336	0.62	542	22.0
HYDROGRAPH	AT	64C	436	12.5	16	0.64	681	64C	338	0.64	528	22.5
HYDROGRAPH	AT	21B	377	12.58	16	0.55	685	21B	292	0.55	531	22.5
HYDROGRAPH	AT	14D	496	12.42	16	0.5	992	14D	384	0.5	768	22.6
HYDROGRAPH	AT	83K	333	12.33	10	0.31	1074	83K	255	0.31	823	23.4

HYDROGRAPH	AT	34B	375	12.67	18	0.63	595	34B	286	0.63	454	23.7
HYDROGRAPH	AT	22A	376	12.5	13	0.45	836	22A	286	0.45	636	23.9
HYDROGRAPH	AT	78B	442	12.42	14	0.48	921	78B	335	0.48	698	24.2
HYDROGRAPH	AT	73B	487	12.5	16	0.61	798	73B	369	0.61	605	24.2
HYDROGRAPH	AT	80A	343	12.33	9	0.34	1009	80A	259	0.34	762	24.5
HYDROGRAPH	AT	40B	280	12.58	12	0.42	667	40B	209	0.42	498	25.4
HYDROGRAPH	AT	70G	291	12.42	9	0.29	1003	70G	216	0.29	745	25.8
HYDROGRAPH	AT	30D	418	12.58	16	0.62	674	30D	310	0.62	500	25.8
HYDROGRAPH	AT	30A	50	12.17	1	0.04	1250	30A	37	0.04	925	26.0
HYDROGRAPH	AT	16A	250	12.25	6	0.22	1136	16A	185	0.22	841	26.0
HYDROGRAPH	AT	44D	529	12.75	25	0.82	645	44D	391	0.82	477	26.1
HYDROGRAPH	AT	80B	306	12.33	8	0.28	1093	80B	226	0.28	807	26.1
HYDROGRAPH	AT	54A	358	12.42	12	0.360	994	54A	264	0.36	733	26.3
HYDROGRAPH	AT	12B	409	12.5	14	0.45	909	12B	301	0.45	669	26.4
HYDROGRAPH	AT	70F	347	12.42	12	0.39	890	70F	253	0.39	649	27.1
HYDROGRAPH	AT	46G	427	12.58	17	0.58	736	46G	311	0.58	536	27.2
HYDROGRAPH	AT	21D	383	12.58	16	0.49	782	21D	278	0.49	567	27.4
HYDROGRAPH	AT	89B	309	12.33	8	0.28	1104	89B	224	0.28	800	27.5
HYDROGRAPH	AT	42A	372	12.33	10	0.36	1033	42A	269	0.36	747	27.7
HYDROGRAPH	AT	46H	363	12.42	11	0.38	955	46H	262	0.38	689	27.8
HYDROGRAPH	AT	42B	281	12.33	8	0.28	1004	42B	202	0.28	721	28.1
HYDROGRAPH	AT	75A	344	12.5	13	0.46	748	75A	247	0.46	537	28.2
HYDROGRAPH	AT	83B	333	12.42	11	0.43	774	83B	239	0.43	556	28.2
HYDROGRAPH	AT	70A	130	12.25	3	0.1	1300	70A	93	0.1	930	28.5
HYDROGRAPH	AT	83C	315	12.25	7	0.28	1125	83C	225	0.28	804	28.6
HYDROGRAPH	AT	40A	250	12.42	8	0.27	926	40A	178	0.27	659	28.8
HYDROGRAPH	AT	46I	304	12.33	9	0.29	1048	46I	216	0.29	745	28.9
HYDROGRAPH	AT	77B	405	12.42	12	0.44	920	77B	286	0.44	650	29.4
HYDROGRAPH	AT	84A	278	12.25	6	0.22	1264	84A	196	0.22	891	29.5
HYDROGRAPH	AT	78A	184	12.33	5	0.15	1227	78A	129	0.15	860	29.9
HYDROGRAPH	AT	85A	291	12.33	8	0.31	939	85A	204	0.31	658	29.9
HYDROGRAPH	AT	86A	352	12.42	10	0.48	733	86A	245	0.48	510	30.4
HYDROGRAPH	AT	46J	299	12.33	8	0.27	1107	46J	208	0.27	770	30.4
HYDROGRAPH	AT	20A	361	12.42	16	0.37	976	20A	249	0.37	673	31.0
HYDROGRAPH	AT	91B	318	12.67	14	0.56	568	91B	217	0.56	388	31.8
HYDROGRAPH	AT	14B	308	12.25	7	0.26	1185	14B	210	0.26	808	31.8
HYDROGRAPH	AT	64A	332	12.42	9	0.38	874	64A	225	0.38	592	32.2
HYDROGRAPH	AT	35A	74	12.17	1	0.06	1233	35A	50	0.06	833	32.4
HYDROGRAPH	AT	81A	126	12.17	2	0.08	1575	81A	85	0.08	1063	32.5
HYDROGRAPH	AT	46C	340	12.5	12	0.43	791	46C	229	0.43	533	32.6
HYDROGRAPH	AT	46B	324	12.5	11	0.4	810	46B	218	0.4	545	32.7
HYDROGRAPH	AT	81B	372	12.5	14	0.51	729	81B	249	0.51	488	33.1
HYDROGRAPH	AT	32A	278	12.33	8	0.29	959	32A	186	0.29	641	33.1
HYDROGRAPH	AT	36D	284	12.33	7	0.28	1014	36D	190	0.28	679	33.1
HYDROGRAPH	AT	83I	331	12.42	9	0.4	828	83I	220	0.4	550	33.5
HYDROGRAPH	AT	84B	308	12.33	8	0.35	880	84B	204	0.35	583	33.8
HYDROGRAPH	AT	74A	325	12.33	8	0.31	1048	74A	215	0.31	694	33.8
HYDROGRAPH	AT	46E	253	12.33	6	0.22	1150	46E	167	0.22	759	34.0
HYDROGRAPH	AT	82B	279	12.33	7	0.26	1073	82B	183	0.26	704	34.4
HYDROGRAPH	AT	83F	162	12.17	3	0.13	1246	83F	106	0.13	815	34.6
HYDROGRAPH	AT	56A	284	12.42	8	0.3	947	56A	185	0.3	617	34.9
HYDROGRAPH	AT	44E	340	12.58	14	0.46	739	44E	221	0.46	480	35.0
HYDROGRAPH	AT	48A	221	12.5	7	0.28	789	48A	143	0.28	511	35.3
HYDROGRAPH	AT	20I	283	12.33	8	0.29	976	20I	183	0.29	631	35.3
HYDROGRAPH	AT	77A	246	12.33	7	0.25	984	77A	159	0.25	636	35.4
HYDROGRAPH	AT	14A	322	12.5	11	0.37	870	14A	208	0.37	562	35.4
HYDROGRAPH	AT	44C	309	12.42	10	0.34	909	44C	199	0.34	585	35.6
HYDROGRAPH	AT	22B	219	12.25	5	0.16	1369	22B	141	0.16	881	35.6
HYDROGRAPH	AT	73A	258	12.5	9	0.37	697	73A	166	0.37	449	35.7
HYDROGRAPH	AT	44B	275	12.42	8	0.28	982	44B	176	0.28	629	36.0
HYDROGRAPH	AT	20J	233	12.25	5	0.2	1165	20J	148	0.2	740	36.5
HYDROGRAPH	AT	34A	304	12.58	14	0.45	676	34A	192	0.45	427	36.8
HYDROGRAPH	AT	50F	274	12.42	9	0.29	945	50F	173	0.29	597	36.9
HYDROGRAPH	AT	50C	335	12.67	15	0.55	609	50C	211	0.55	384	37.0
HYDROGRAPH	AT	62B	251	12.33	6	0.25	1004	62B	158	0.25	632	37.1
HYDROGRAPH	AT	50B	224	12.33	6	0.2	1120	50B	141	0.2	705	37.1
HYDROGRAPH	AT	20K	205	12.25	5	0.18	1139	20K	128	0.18	711	37.6
HYDROGRAPH	AT	50E	203	12.25	5	0.17	1194	50E	126	0.17	741	37.9

HYDROGRAPH	AT	85B	261	12.25	6	0.24	1088		85B	161	0.24	671	38.3
HYDROGRAPH	AT	30C	246	12.33	8	0.24	1025		30C	151	0.24	629	38.6
HYDROGRAPH	AT	46F	280	12.67	13	0.45	622		46F	171	0.45	380	38.9
HYDROGRAPH	AT	50D	205	12.33	5	0.18	1139		50D	125	0.18	694	39.0
HYDROGRAPH	AT	22E	159	12.17	3	0.09	1767		22E	96	0.09	1067	39.6
HYDROGRAPH	AT	87A	236	12.42	7	0.27	874		87A	142	0.27	526	39.8
HYDROGRAPH	AT	83D	213	12.33	5	0.23	926		83D	128	0.23	557	39.9
HYDROGRAPH	AT	22C	175	12.25	4	0.13	1346		22C	105	0.13	808	40.0
HYDROGRAPH	AT	44F	235	12.5	8	0.27	870		44F	139	0.27	515	40.9
HYDROGRAPH	AT	89A	205	12.33	5	0.22	932		89A	120	0.22	545	41.5
HYDROGRAPH	AT	83A	210	12.42	6	0.24	875		83A	122	0.24	508	41.9
HYDROGRAPH	AT	46D	194	12.5	6	0.23	843		46D	112	0.23	487	42.3
HYDROGRAPH	AT	83H	227	12.5	7	0.29	783		83H	131	0.29	452	42.3
HYDROGRAPH	AT	88A	244	12.42	7	0.28	871		88A	139	0.28	496	43.0
HYDROGRAPH	AT	22D	232	12.42	7	0.24	967		22D	132	0.24	550	43.1
HYDROGRAPH	AT	54B	272	12.33	7	0.230	1183		54B	154	0.23	670	43.4
HYDROGRAPH	AT	24B	278	12.5	10	0.34	818		24B	157	0.34	462	43.5
HYDROGRAPH	AT	20L	160	12.25	4	0.13	1231		20L	89	0.13	685	44.4
HYDROGRAPH	AT	21C	198	12.42	7	0.23	861		21C	110	0.23	478	44.4
HYDROGRAPH	AT	48B	195	12.33	5	0.2	975		48B	105	0.2	525	46.2
HYDROGRAPH	AT	64D	147	12.25	3	0.14	1050		64D	77	0.14	550	47.6
HYDROGRAPH	AT	50G	175	12.33	4	0.15	1167		50G	89	0.15	593	49.1
HYDROGRAPH	AT	83J	147	12.33	4	0.16	919		83J	74	0.16	463	49.7
HYDROGRAPH	AT	87B	142	12.33	4	0.16	888		87B	70	0.16	438	50.7
						Min =	450	cfs			Min =	380	-17
						Max =	1767	cfs			Max =	1245	51
						Mean =	915	cfs			Mean =	677	25

APPENDIX D7

Hydrologic Computer Model Summary Output

(See CD – Inside Front Cover)

EXHIBITS

Exhibit A1	**Sub-basin Boundary and HEC-1 Schematic Map for without Dike Conditions**
Exhibit A2	**Sub-basin Boundary and HE C-1 Schematic Map for with Dike Conditions**
Exhibit A3	**Soils Map**
Exhibit A4	**Land Use Map**
Exhibit A5	**Drainage Flow Paths and Concentration Points**
Exhibit A6	**Maximum 100-Year Peak Flows**
Exhibit A7	**CD Containing Electronic Files for Hydrologic Study (inside front cover)**

LEGEND

- Hydraulic Base Line
- T2N-R6W-S25 — Wash Name
- Sub-basin Boundary
- 24b — Sub-basin Name
- Section Boundary
- 14 — Section Number
- 36d — Subbasin Hydrograph
- R62b — Surface Routing
- C62a — Flow Combine
- D36dW D36dE — Flow Diversion
- S64a — Storage Routing
- General Flow Direction

SHEET INDEX MAP

1
2
3

1500' 0' 1500' 3000'
SCALE: 1"= 1500' FEET
CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

EXHIBIT A1 SUB-BASIN BOUNDARIES AND HEC-1 SCHEMATIC FOR WITHOUT DIKE CONDITIONS

FCD 2007C020
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LEGEND

	Hydraulic Base Line	36d	Subbasin Hydrograph
T2N-R6W-S25	Wash Name	R62b	Surface Routing
	Sub-basin Boundary	C62a	Flow Combine
24b	Sub-basin Name	D36dW D36dE	Flow Diversion
	Section Boundary	S64a	Storage Routing
14	Section Number		General Flow Direction

SHEET INDEX MAP

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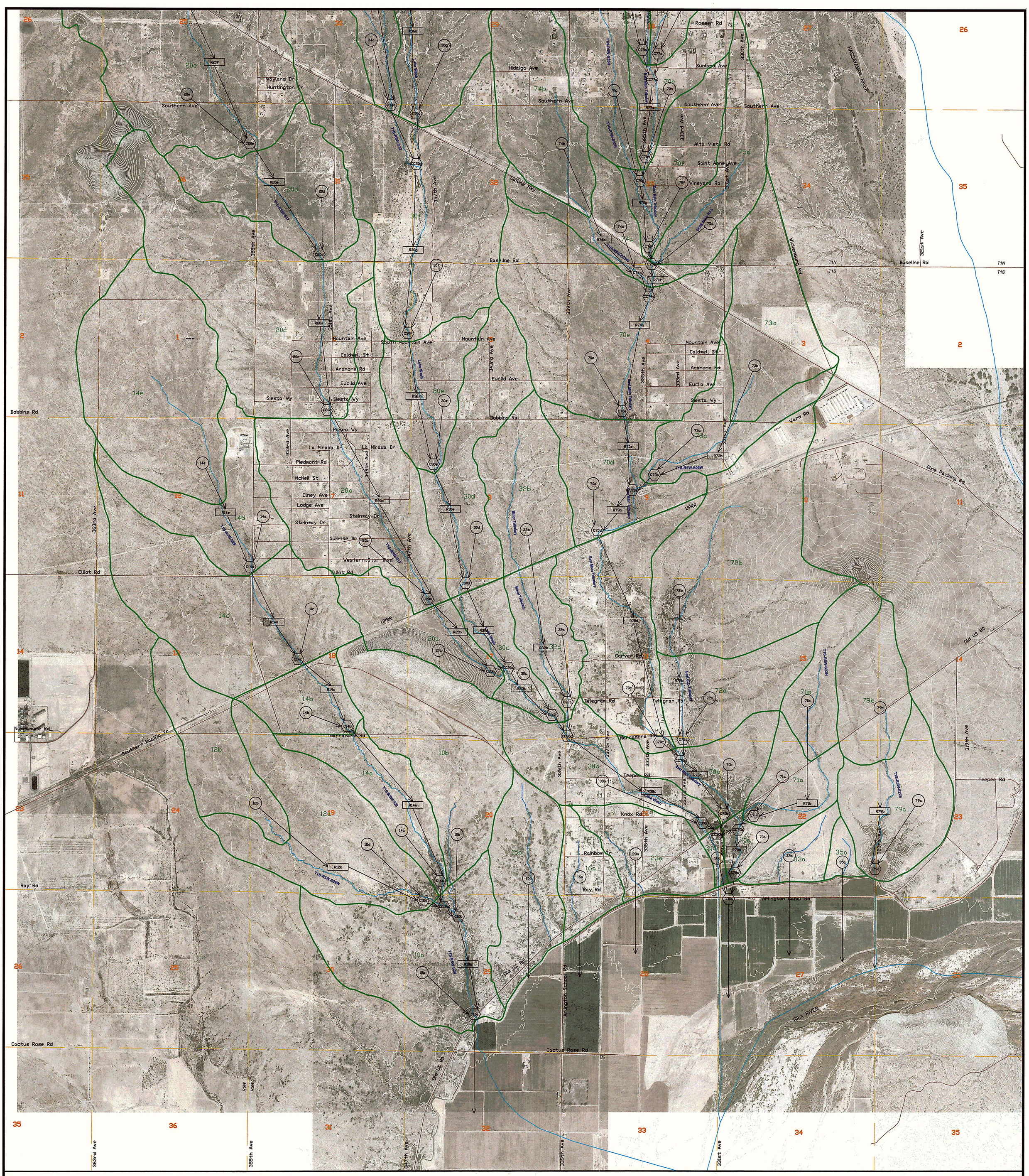

LEGEND

- Hydraulic Base Line
- T2N-R6W-S25 — Wash Name
- Sub-basin Boundary
- 24b — Sub-basin Name
- Section Boundary
- 14 — Section Number
- 36d — Subbasin Hydrograph
- R62b — Surface Routing
- D62a — Flow Combine
- D36dW / D36dE — Flow Diversion
- S64a — Storage Routing
- General Flow Direction

SHEET INDEX MAP

1
2
3

1500' 0' 1500' 3000'
SCALE: 1"= 1500' FEET
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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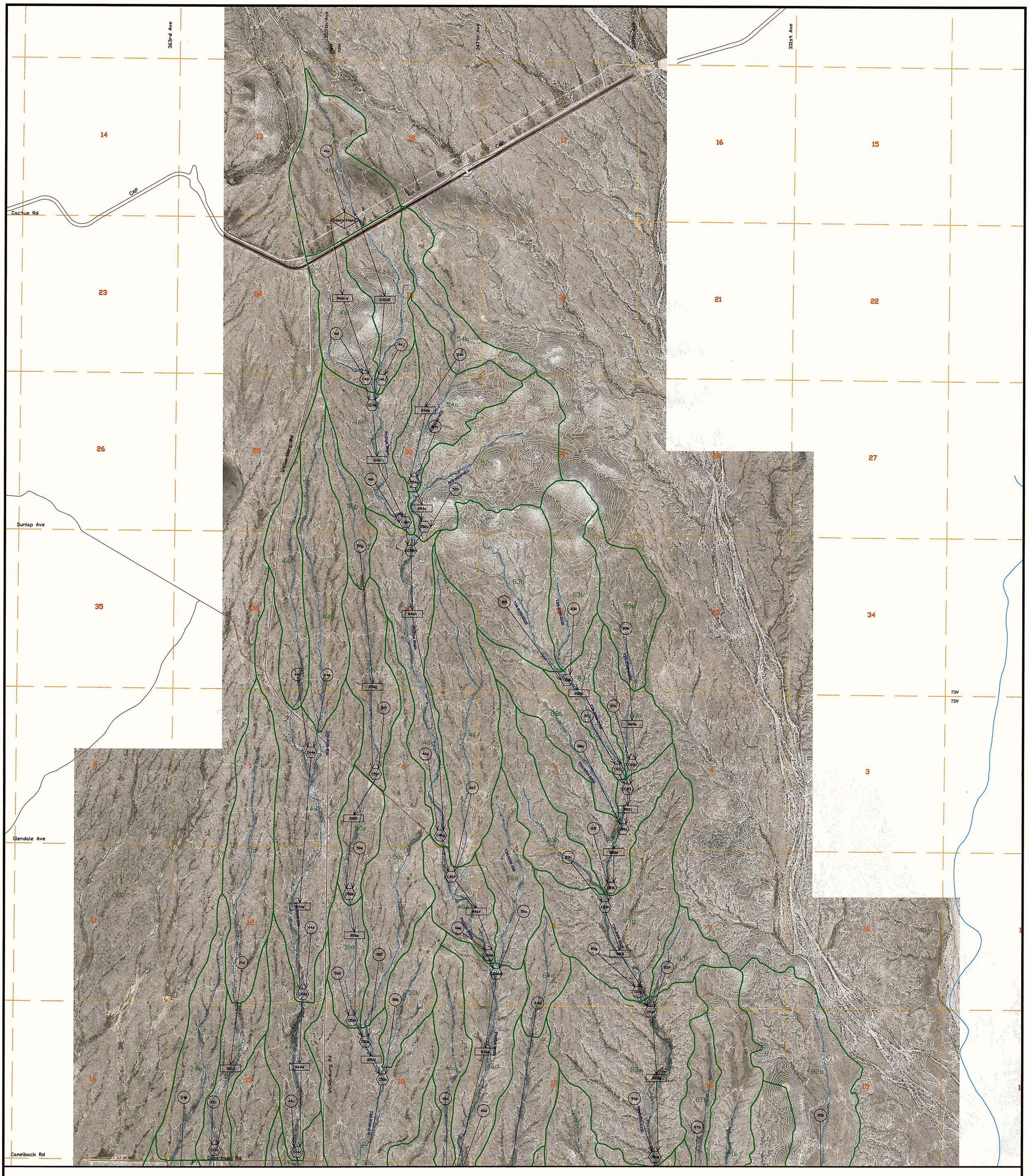

LEGEND

	Hydraulic Base Line	36d	Subbasin Hydrograph
T2N-R6W-S25	Wash Name	R62b	Surface Routing
	Sub-basin Boundary	C62a	Flow Combine
24b	Sub-basin Name	D36dV D36dE	Flow Diversion
	Section Boundary	S64a	Storage Routing
14	Section Number		General Flow Direction

SHEET INDEX MAP

1
2
3

1500' 0' 1500' 3000'
SCALE: 1"= 1500' FEET
CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

EXHIBIT A2 SUB-BASIN BOUNDARIES AND
HEC-1 SCHEMATIC FOR WITH DIKE CONDITIONS

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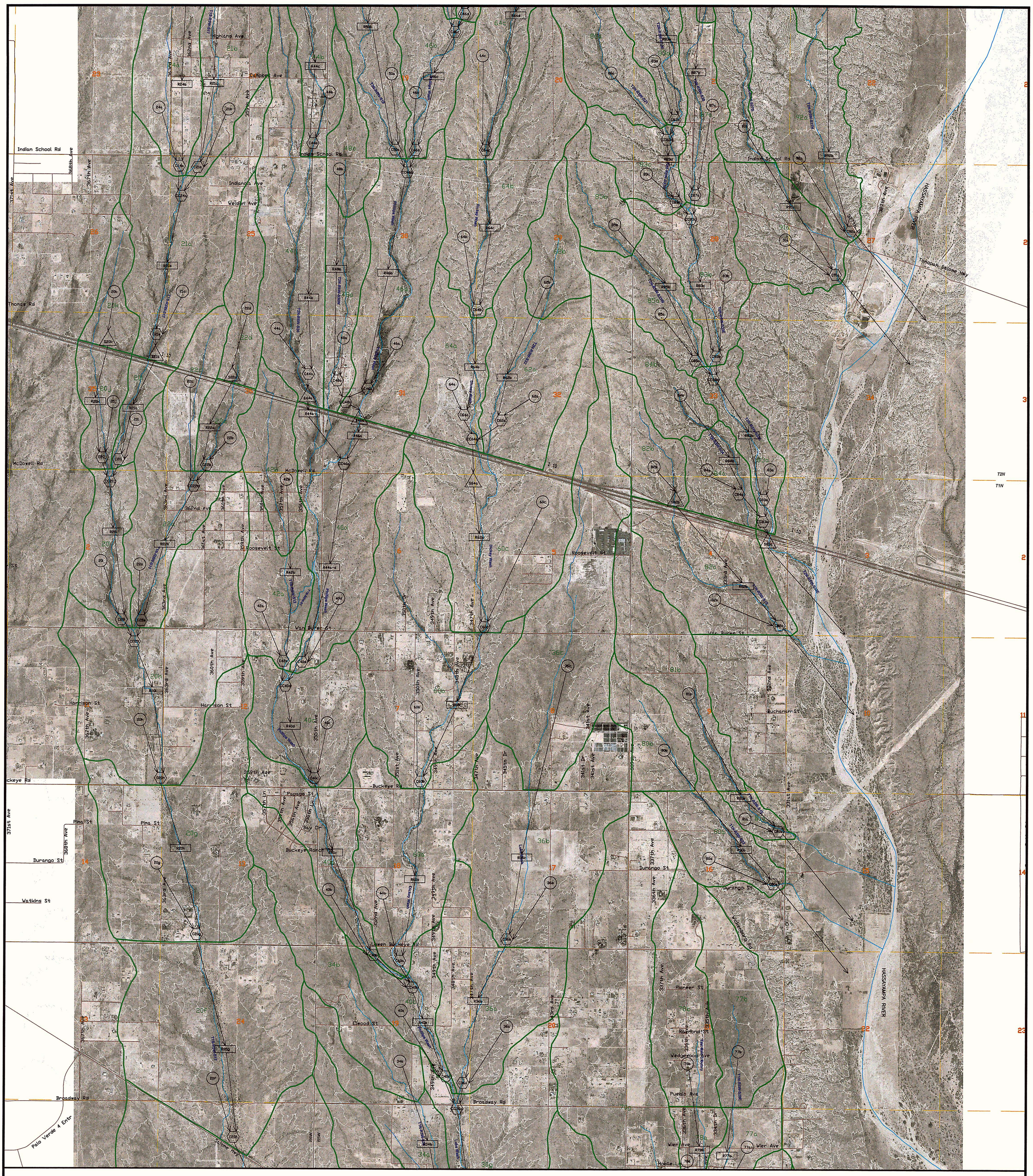

LEGEND

Hydraulic Base Line	36d	Subbasin Hydrograph	
T2N-R6W-S25	Wash Name	R62b	Surface Routing
Sub-basin Boundary	C62b	Flow Combine	
24b	Sub-basin Name	D36dW D36dE	Flow Diversion
Section Boundary	S64a	Storage Routing	
14	Section Number		General Flow Direction

SHEET INDEX MAP

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

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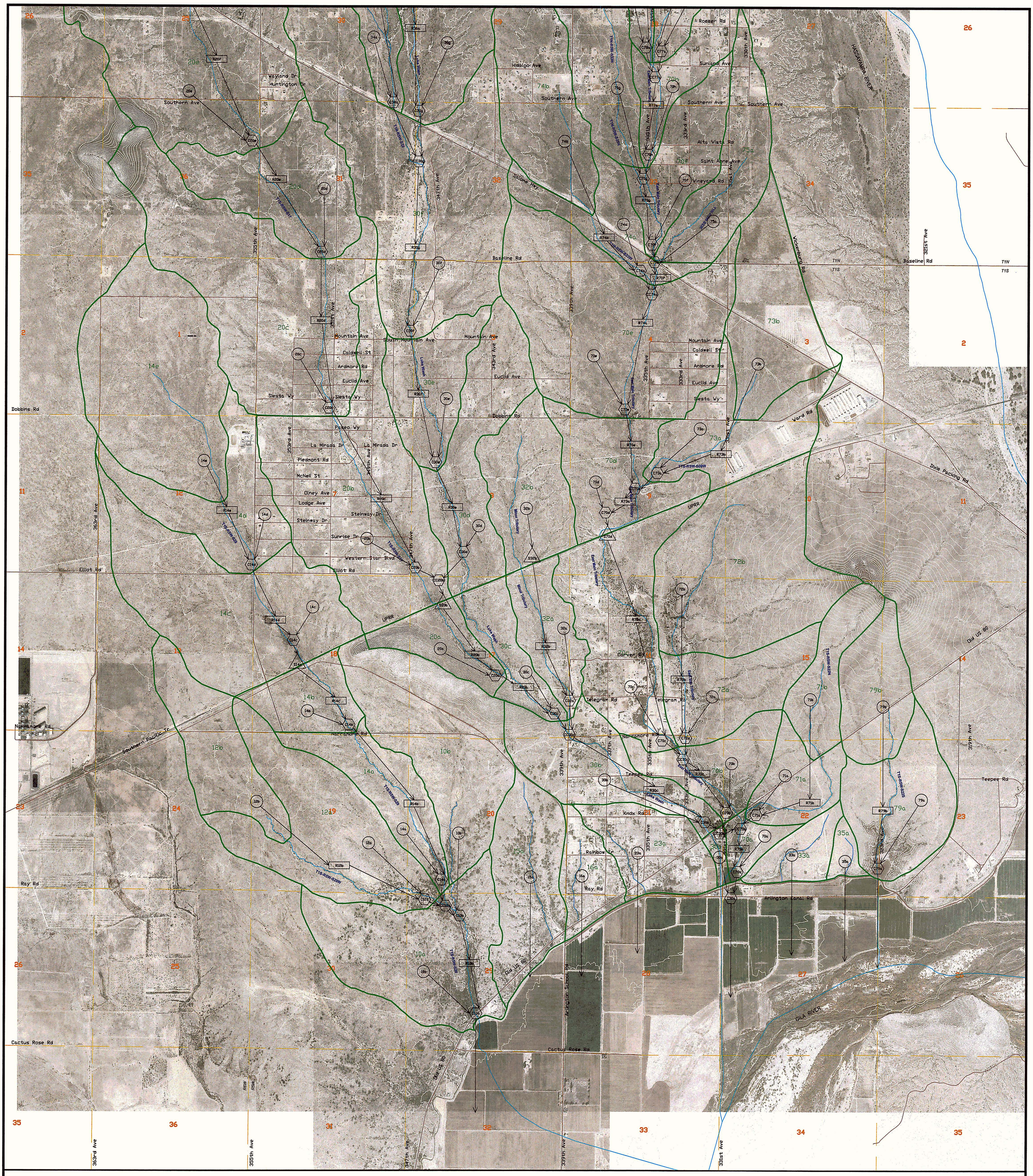

LEGEND

	Hydraulic Base Line	36d	Subbasin Hydrograph
T2N-R6W-S25	Wash Name	R62b	Surface Routing
	Sub-basin Boundary	C62a	Flow Combine
24b	Sub-basin Name	D36dV D36dE	Flow Diversion
	Section Boundary	S64a	Storage Routing
14	Section Number		General Flow Direction

SHEET INDEX MAP

1

2

3

1500' 0' 1500' 3000'

SCALE: 1"= 1500' FEET

CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

EXHIBIT A2 SUB-BASIN BOUNDARIES AND HEC-1 SCHEMATIC FOR WITH DIKE CONDITIONS

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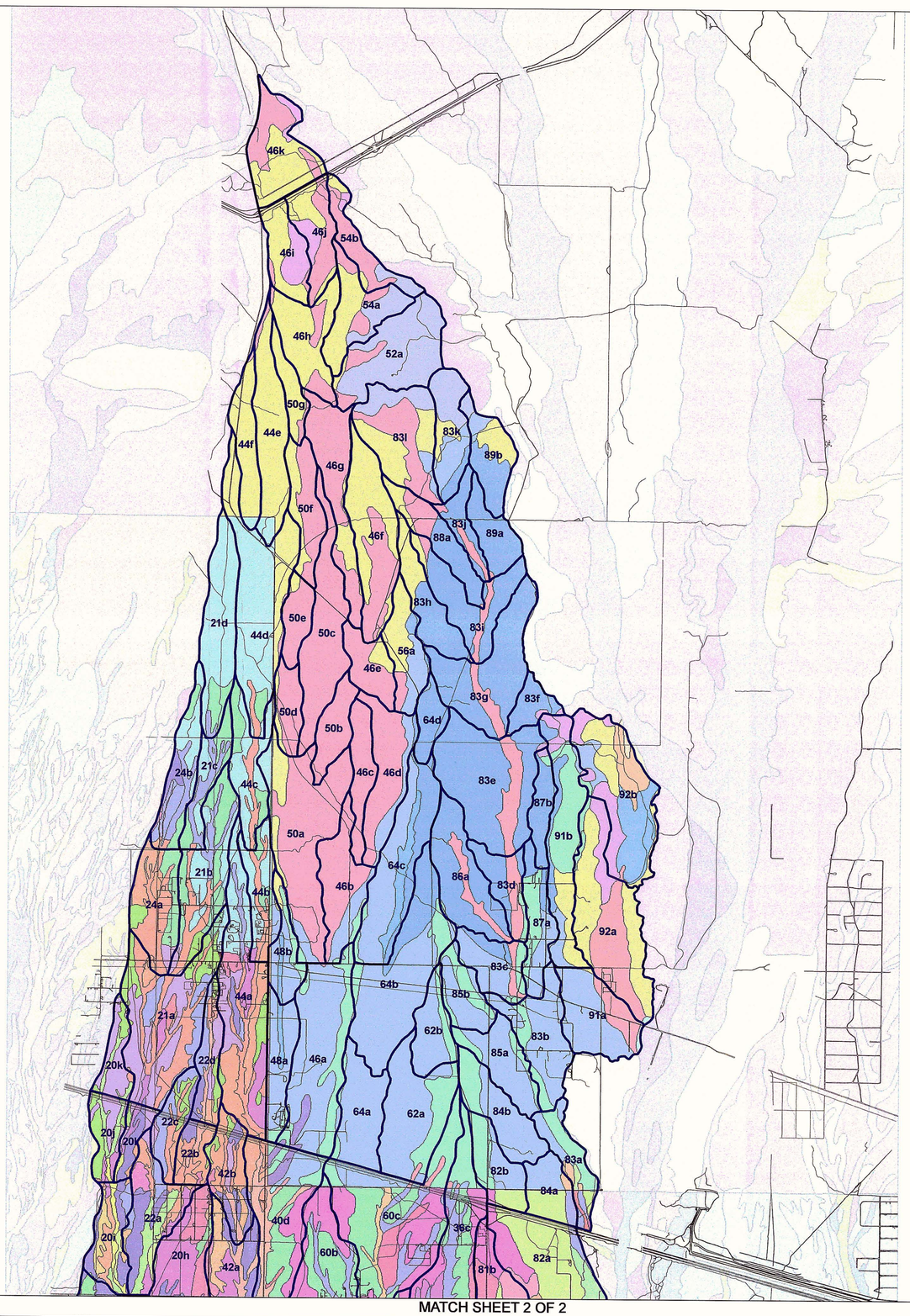

MATCH SHEET 2 OF 2

LUKE WASH WATERSHED FDS

EXHIBIT A3
SUB-BASIN BOUNDARY AND SOIL COVERAGE

FCD 2007C020 JULY 2008

Legend

Soil

- 6451, 574 acres
- 6452, 86 acres
- 6454, 7 acres
- 6456, 50 acres
- 64511, 7 acres
- 64520, 2612 acres
- 64556, 242 acres
- 64569, 2550 acres
- 64571, 3416 acres
- 645100, 597 acres
- 645102, 1245 acres
- 645117, 2978 acres
- 645123, 328 acres
- 645125, 9 acres
- 6512025, 1593 acres
- 6512029, 318 acres
- 6512042, 790 acres
- 6512044, 184 acres
- 6512049, 1 acres
- 6512433, 1026 acres
- 6512435, 624 acres
- 6512441, 923 acres
- 6512445, 719 acres
- 6512448, 197 acres
- 6512451, 227 acres
- 6512462, 241 acres
- 6512647, 93 acres
- 6512857, 19 acres
- 6512859, 163 acres
- 6513223, 42 acres
- 6513229, 9 acres
- 6513235, 1102 acres
- 6513244, 227 acres
- 6513444, 112 acres
- 6514221, 191 acres
- 6514223, 237 acres
- 6514227, 643 acres
- 6514421, 47 acres
- 6515023, 497 acres
- 6515058, 1575 acres
- 6515456, 278 acres
- 6515822, 82 acres
- 6515825, 61 acres
- 6516221, 68 acres
- 6516223, 467 acres
- 6516241, 3 acres
- 6516242, 170 acres
- 651202320, 581 acres
- 651202322, 30 acres
- 651202720, 19 acres
- 651203120, 21 acres
- 651203122, 30 acres
- 651203222, 455 acres
- 651323320, 939 acres
- 651326426, 545 acres
- 651326720, 345 acres
- 651326722, 1080 acres
- 651326826, 5346 acres
- 651342022, 978 acres
- 651342024, 478 acres
- 651344224, 2244 acres
- 651345522, 131 acres
- 651422520, 1038 acres
- 651502920, 435 acres
- 651502922, 27 acres
- 651505422, 2033 acres
- 651505722, 16 acres
- 651542120, 91 acres
- 651542320, 526 acres
- 651542322, 591 acres
- 651543522, 1185 acres
- 651545128, 913 acres

Roads — Railroads — Sub-basin Boundary

Soil Survey as shown by soil prefix:
645xxx - Aguila-Carefree Area, Parts of Maricopa and Pinal Counties, Arizona
651xxx - Maricopa County, AZ, Central Part

N

0 3,000 6,000 9,000 Feet

SCALE: 1" = 3000'

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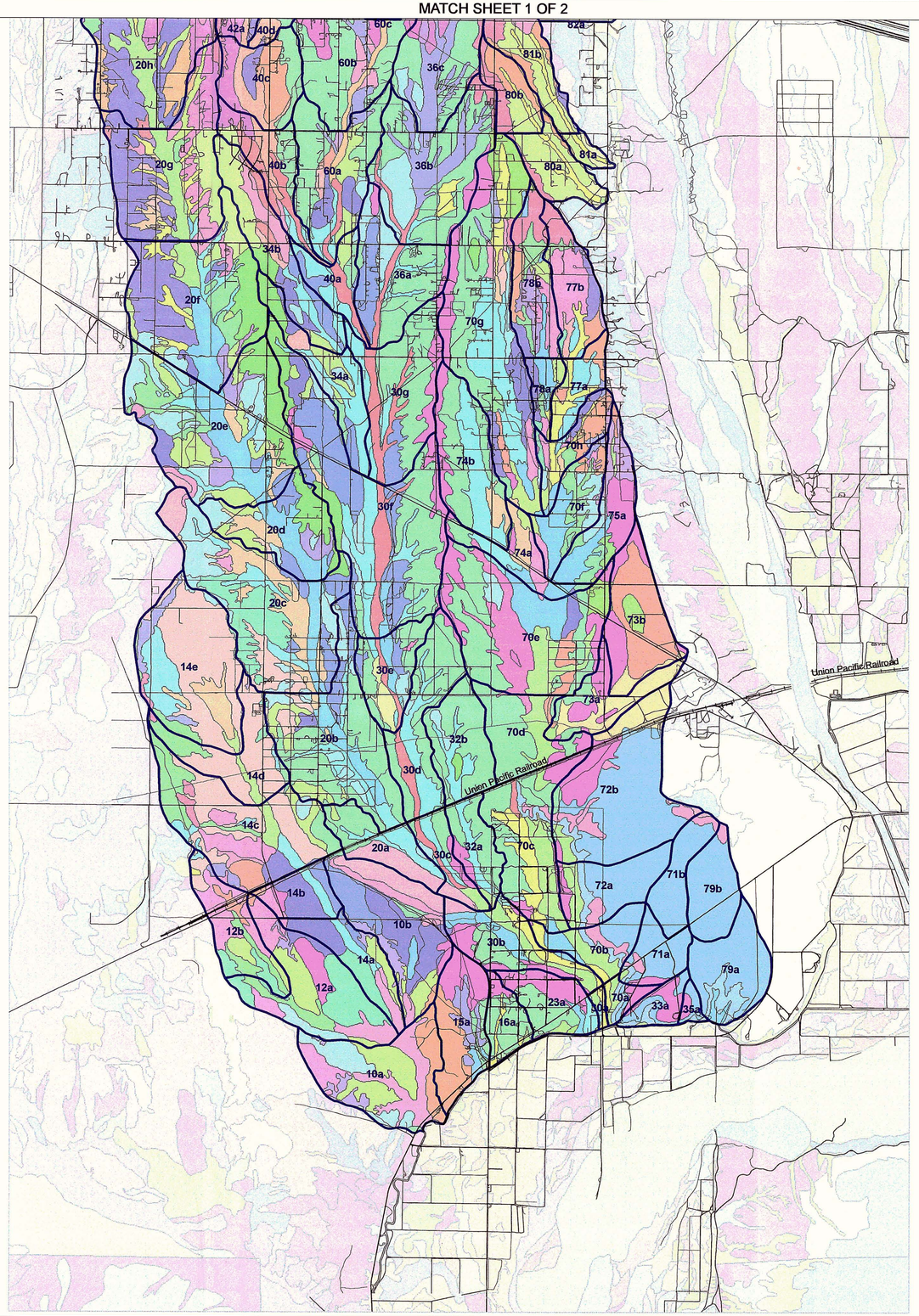

LUKE WASH WATERSHED FDS

EXHIBIT A3

SUB-BASIN BOUNDARY AND SOIL COVERAGE

FCD 2007C020 JULY 2008

Legend

Soil

- 6451, 574 acres
- 6452, 86 acres
- 6454, 7 acres
- 6456, 50 acres
- 64511, 7 acres
- 64520, 2612 acres
- 64556, 242 acres
- 64569, 2550 acres
- 64571, 3416 acres
- 645100, 597 acres
- 645102, 1245 acres
- 645117, 2978 acres
- 645123, 328 acres
- 645125, 9 acres
- 6512025, 1593 acres
- 6512029, 318 acres
- 6512042, 790 acres
- 6512044, 184 acres
- 6512049, 1 acres
- 6512433, 1026 acres
- 6512435, 624 acres
- 6512441, 923 acres
- 6512445, 719 acres
- 6512448, 197 acres
- 6512451, 227 acres
- 6512462, 241 acres
- 6512647, 93 acres
- 6512857, 19 acres
- 6512859, 163 acres
- 6513223, 42 acres
- 6513229, 9 acres
- 6513235, 1102 acres
- 6513244, 227 acres
- 6513444, 112 acres
- 6514221, 191 acres
- 6514223, 237 acres
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- 6515023, 497 acres
- 6515058, 1575 acres
- 6515456, 278 acres
- 6515822, 82 acres
- 6515825, 61 acres
- 6516221, 68 acres
- 6516223, 467 acres
- 6516241, 3 acres
- 6524202, 170 acres
- 651202320, 581 acres
- 651202322, 30 acres
- 651202720, 19 acres
- 651203120, 21 acres
- 651203122, 30 acres
- 651203222, 455 acres
- 651323320, 939 acres
- 651326426, 545 acres
- 651326720, 345 acres
- 651326722, 1080 acres
- 651326826, 5346 acres
- 651342022, 978 acres
- 651342024, 478 acres
- 651344224, 2244 acres
- 651345522, 131 acres
- 651422520, 1038 acres
- 651502920, 435 acres
- 651502922, 27 acres
- 651505422, 2033 acres
- 651505722, 16 acres
- 651542120, 91 acres
- 651542320, 526 acres
- 651542322, 591 acres
- 651543522, 1185 acres
- 651545128, 913 acres

Roads — Railroads — Sub-basin Boundary

Soil Survey as shown by soil prefix:
645xxx - Aguila-Carefree Area, Parts of Maricopa and Pinal Counties, Arizona
651xxx - Maricopa County, AZ, Central Part

N

0 3,000 6,000 9,000 Feet

SCALE: 1" = 3000'

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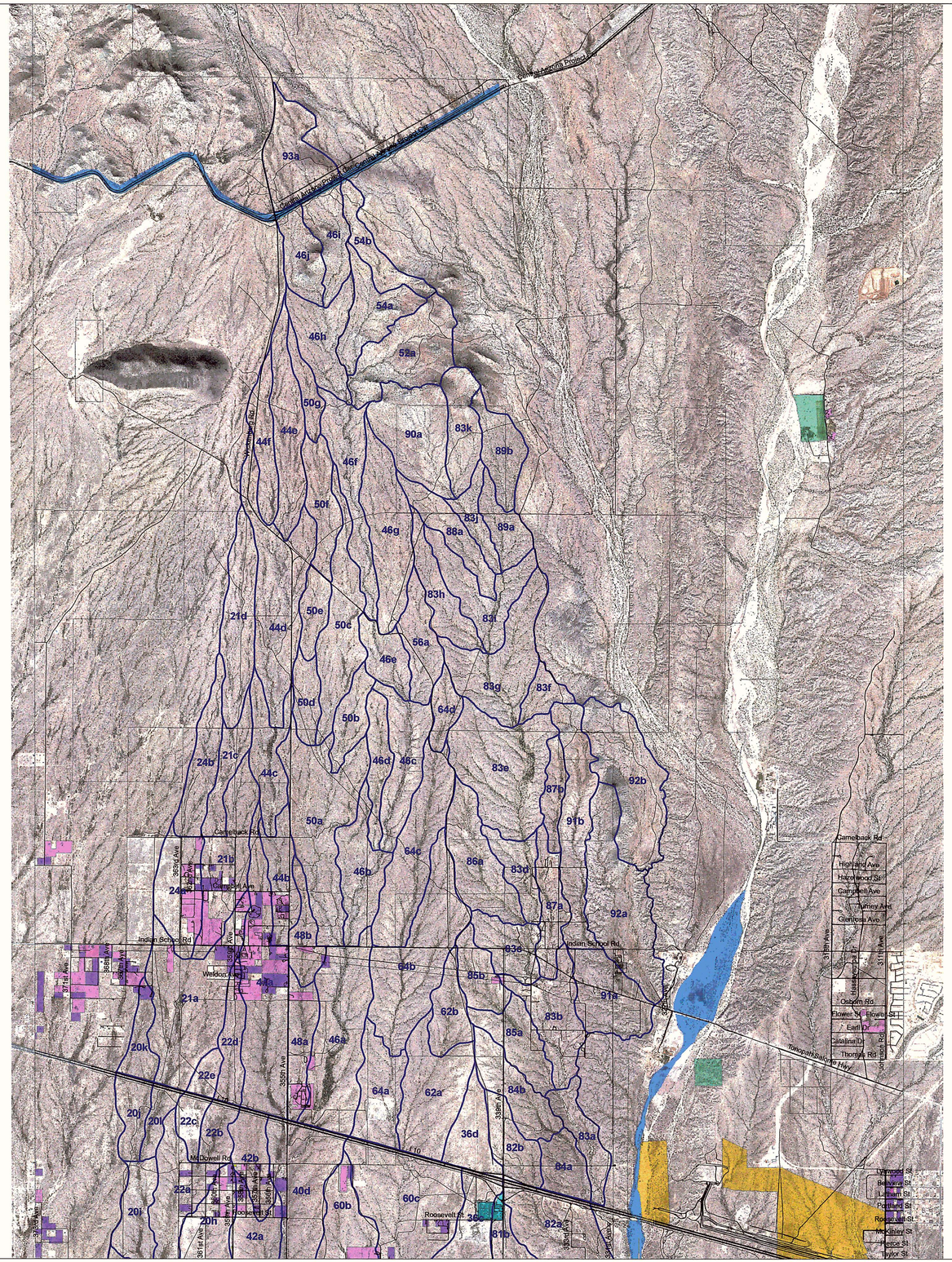

MATCH SHEET 2 OF 2

LUKE WASH WATERSHED FDS

EXHIBIT A4
SUB-BASIN BOUNDARY AND LAND USE

FCD 2007C020 JULY 2008

LEGEND

- Roads
- Railroads
- Sub-basin Boundary

LAND USE

- 110, Rural Residential (<= 1/5 du per acre)
- 120, Estate Residential (1/5 du per acre to 1 du per acre)
- 140, Medium Lot Residential - Single Family (2-4 du per acre)
- 150, Small Lot Residential - Single Family (4-6 du per acre)
- 190, Very High Density Residential - Multi Family (>15 du per ac)
- 220, Neighborhood Commercial (50,000 to 100,000 sq. ft.)
- 520, Educational (Schools and universities)
- 530, Institutional (Includes hospitals and churches)
- 560, Special Events (stadiums, sports complexes and fairgrounds)
- 730, Passive Open Space (Includes mountain preserves and washes)
- 740, Water
- 750, Agriculture
- 900, Vacant (Existing land use database only)

N

0 3,000 6,000 9,000 Feet

SCALE: 1" = 3000'

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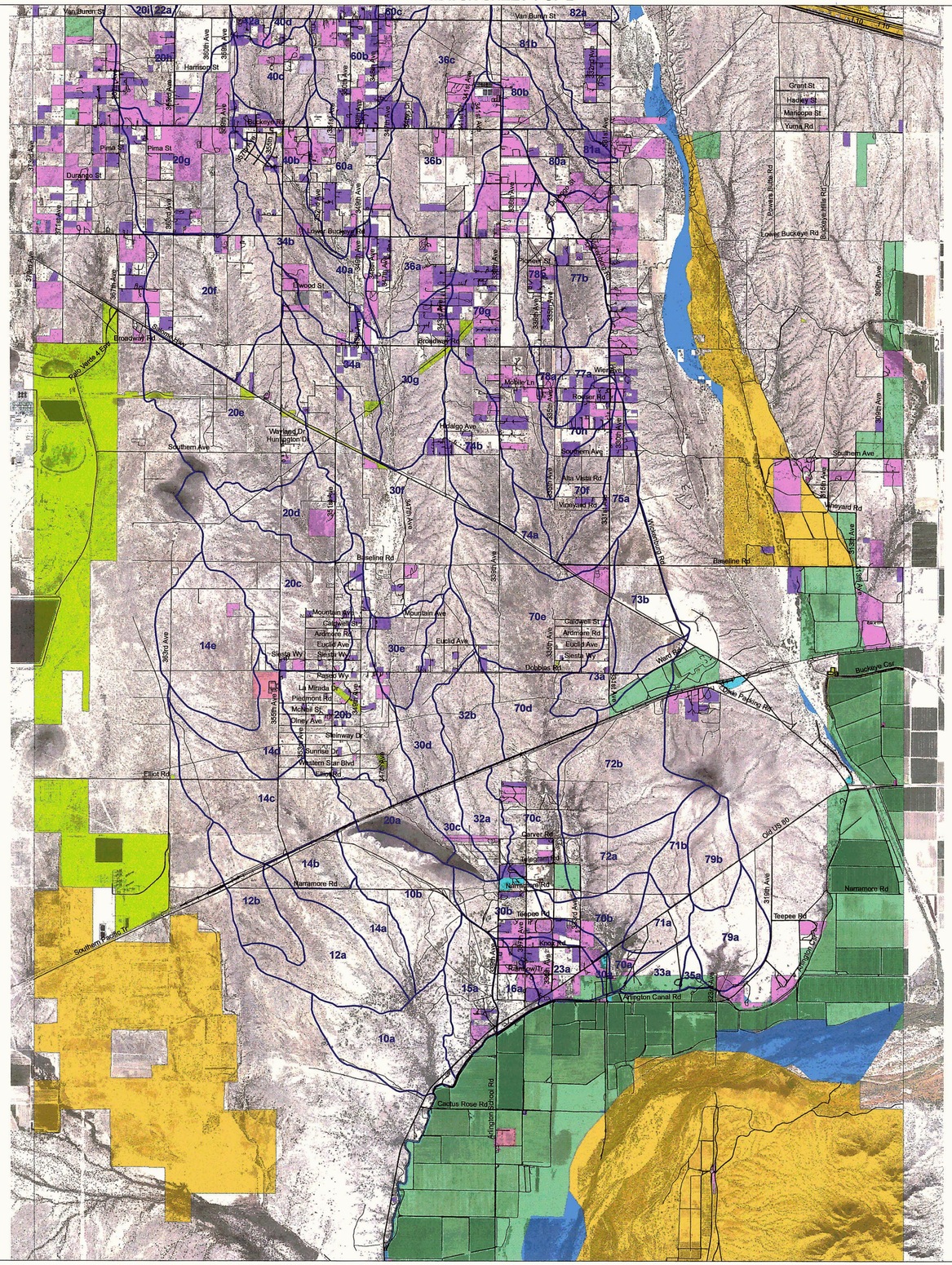
MATCH SHEET 1 OF 2



LUKE WASH WATERSHED FDS

EXHIBIT A4
SUB-BASIN BOUNDARY AND LAND USE

FCD 2007C020 JULY 2008

LEGEND

- Roads
- Railroads
- Sub-basin Boundary

LAND USE

- 110, Rural Residential (<= 1/5 du per acre)
- 120, Estate Residential (1/5 du per acre to 1 du per acre)
- 140, Medium Lot Residential - Single Family (2-4 du per acre)
- 150, Small Lot Residential - Single Family (4-6 du per acre)
- 190, Very High Density Residential - Multi Family (>15 du per ac)
- 220, Neighborhood Commercial (50,000 to 100,000 sq. ft.)
- 520, Educational (Schools and universities)
- 530, Institutional (Includes hospitals and churches)
- 560, Special Events (stadiums, sports complexes and fairgrounds)
- 730, Passive Open Space (Includes mountain preserves and washes)
- 740, Water
- 750, Agriculture
- 900, Vacant (Existing land use database only)

N

0 3,000 6,000 9,000 Feet

SCALE: 1" = 3000'

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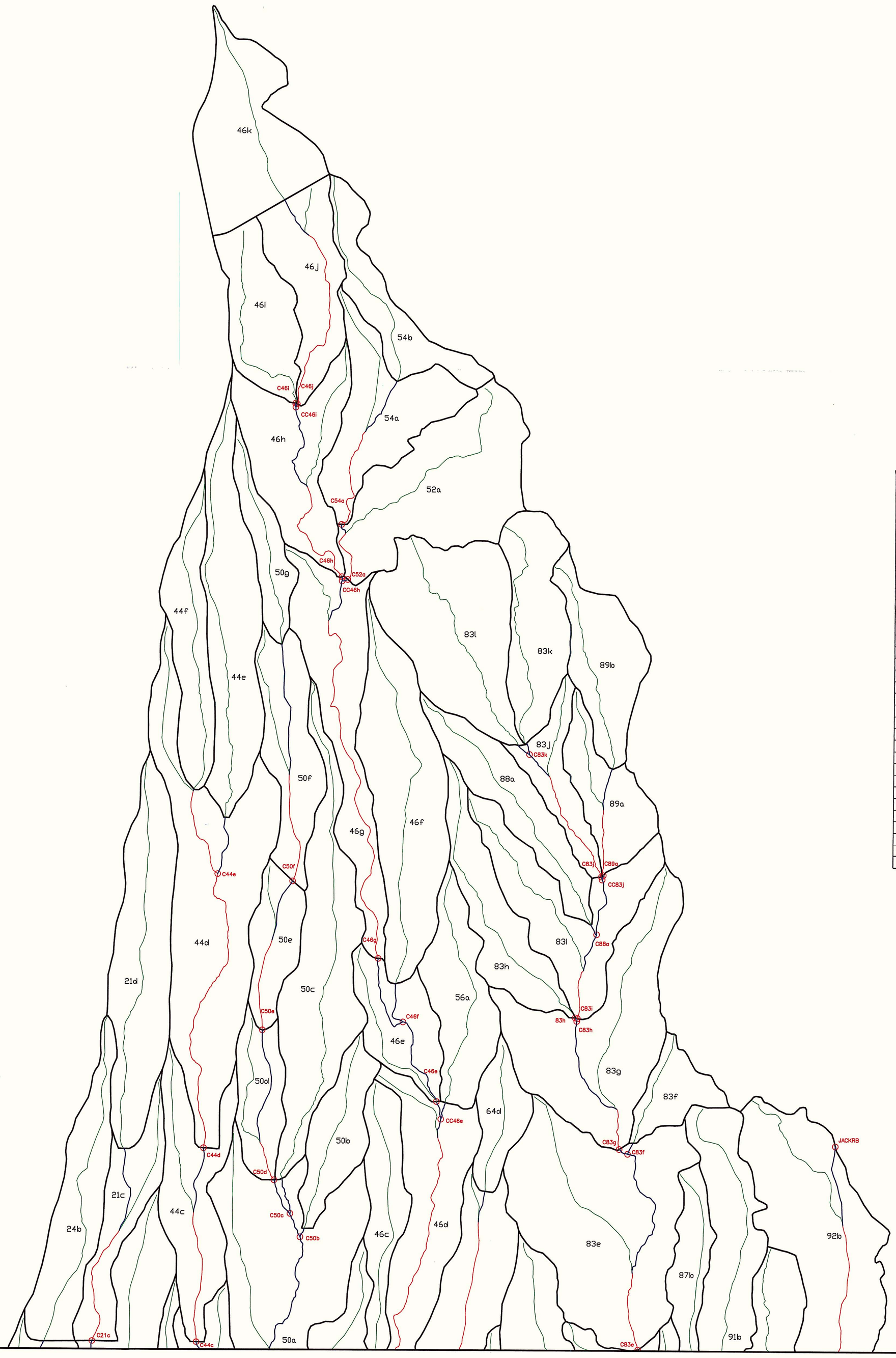

HYDROGRAPH	MAXIMUM FLOW (cfs)	MODEL NAME
C21c	419	EC06NODK
C46j	615	EC06NODK
C46i	432	EC06NODK
CC46i	937	EC06NODK
C46h	1033	EC06DIKE
C54a	718	EC06NODK
C52a	1126	EC06NODK
CC46h	1733	EC24NODK
C46g	1591	EC06DIKE
C46f	1689	EC06DIKE
C46e	1588	EC06DIKE
CC46e	1588	EC06DIKE
C50f	360	EC06NODK
C50e	304	EC06NODK
C50d	277	EC06NODK
C50c	614	EC06NODK
C50b	688	EC06NODK
C44e	683	EC06NODK
C44d	813	EC06DIKE
C44c	758	EC06DIKE
C83k	1031	EC06NODK
C83j	962	EC06NODK
C89a	498	EC06NODK
CC83j	1191	EC06NODK
C88a	1291	EC06NODK
C83i	1320	EC24NODK
83h	299	EC06NODK
C83h	1489	EC24NODK
C83g	1516	EC24NODK
C83f	1519	EC24NODK
C83e	1457	EC24DIKE
JACKRB	2835	EC24NODK

LEGEND

T2N-R5W-S25 Wash Name

Sub-basin Boundary

24b Sub-basin Name

Time of Concentration

Routing Reach

Routing Reach and Time of Concentration

C50f Concentration Point

SHEET INDEX MAP

1

2

3

1500' 0' 1500' 3000'

SCALE: 1"= 1500' FEET

CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

EXHIBIT A5 DRAINAGE FLOW PATHS AND CONCENTRATION POINTS

FCD 2007C020

JULY 2008

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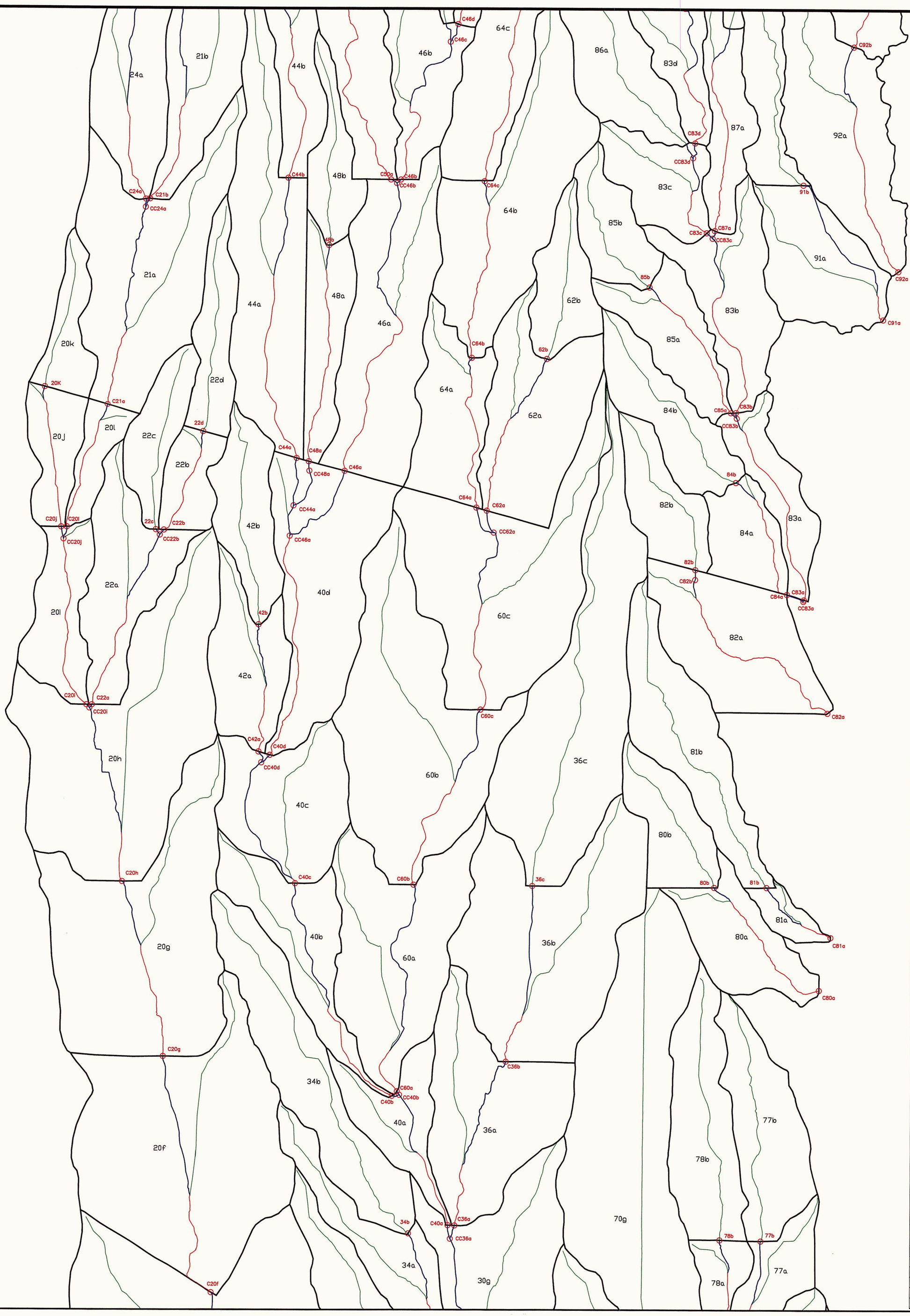

HYDROGRAPH	MAXIMUM FLOW (cfs)	MODEL NAME
C21b	420	EC06NODK
C24a	458	EC06NODK
CC24a	710	EC06NODK
C21a	850	EC06NODK
C20l	798	EC06NODK
20k	269	EC06NODK
C20j	317	EC06NODK
CC20j	829	EC06NODK
C20i	803	EC06NODK
22c	290	EC06NODK
22d	310	EC06NODK
C22b	293	EC06NODK
CC22b	538	EC06NODK
C22a	551	EC06NODK
CC20i	1026	EC24NODK
C20h	1045	EC24NODK
C20g	1139	EC24DIKE
C20f	1107	EC24DIKE
C46d	1424	EC06DIKE
C46c	1421	EC06DIKE
C46b	1361	EC24NODK
C50a	854	EC06DIKE
CC46b	1689	EC24DIKE
C46a	1617	EC24DIKE
48b	253	EC06NODK
C48a	291	EC06NODK
CC48a	1632	EC24DIKE
CC44a	705	EC06NODK
C44b	728	EC06NODK
C44a	684	EC06NODK
CC46a	2173	EC24NODK
C40d	2143	EC24NODK
42b	377	EC06NODK
C42a	459	EC06NODK
CC40d	2143	EC24NODK
C40c	2107	EC24NODK
C40b	2074	EC24NODK
C64c	530	EC06NODK
C64b	853	EC06NODK
C64a	811	EC06NODK
62b	330	EC06NODK
C62a	657	EC06NODK
CC62a	1031	EC06NODK
C60c	1336	EC24NODK
C60b	1571	EC24NODK
C60a	1507	EC24NODK
CC40b	2244	EC24NODK
C40a	2237	EC24NODK
36c	702	EC06NODK
C36b	904	EC06NODK
C36a	1044	EC06NODK
CC36a	2483	EC24NODK
34b	476	EC06NODK
78b	582	EC06NODK
77b	533	EC06NODK
80b	404	EC06NODK
C80a	617	EC06NODK
81b	495	EC06NODK
C81a	465	EC06NODK
82b	368	EC06NODK
C82a	815	EC06NODK
C83d	1371	EC24DIKE
CC83d	1384	EC24DIKE
C83c	1342	EC24DIKE
C87a	311	EC06NODK
CC83c	1387	EC24DIKE
C83b	1335	EC24DIKE
85b	344	EC06NODK
C85a	405	EC06NODK
CC83b	1359	EC24DIKE
C83a	1318	EC24DIKE
84b	411	EC06NODK
C84a	382	EC06NODK
CC83a	1334	EC24DIKE
C82b	584	EC06NODK
91b	409	EC06NODK
C91a	477	EC06NODK
C92b	2778	EC24NODK
C92a	2751	EC24NODK

LEGEND

T2N-R6W-S25 — Wash Name

Sub-basin Boundary

24b — Sub-basin Name

Time of Concentration

Routing Reach

Routing Reach and Time of Concentration

C50f — Concentration Point

SHEET INDEX MAP

1

2

3

1500' 0' 1500' 3000'

SCALE: 1"= 1500' FEET

CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

EXHIBIT A5 DRAINAGE FLOW PATHS AND CONCENTRATION POINTS

FCD 2007C020

JULY 2008

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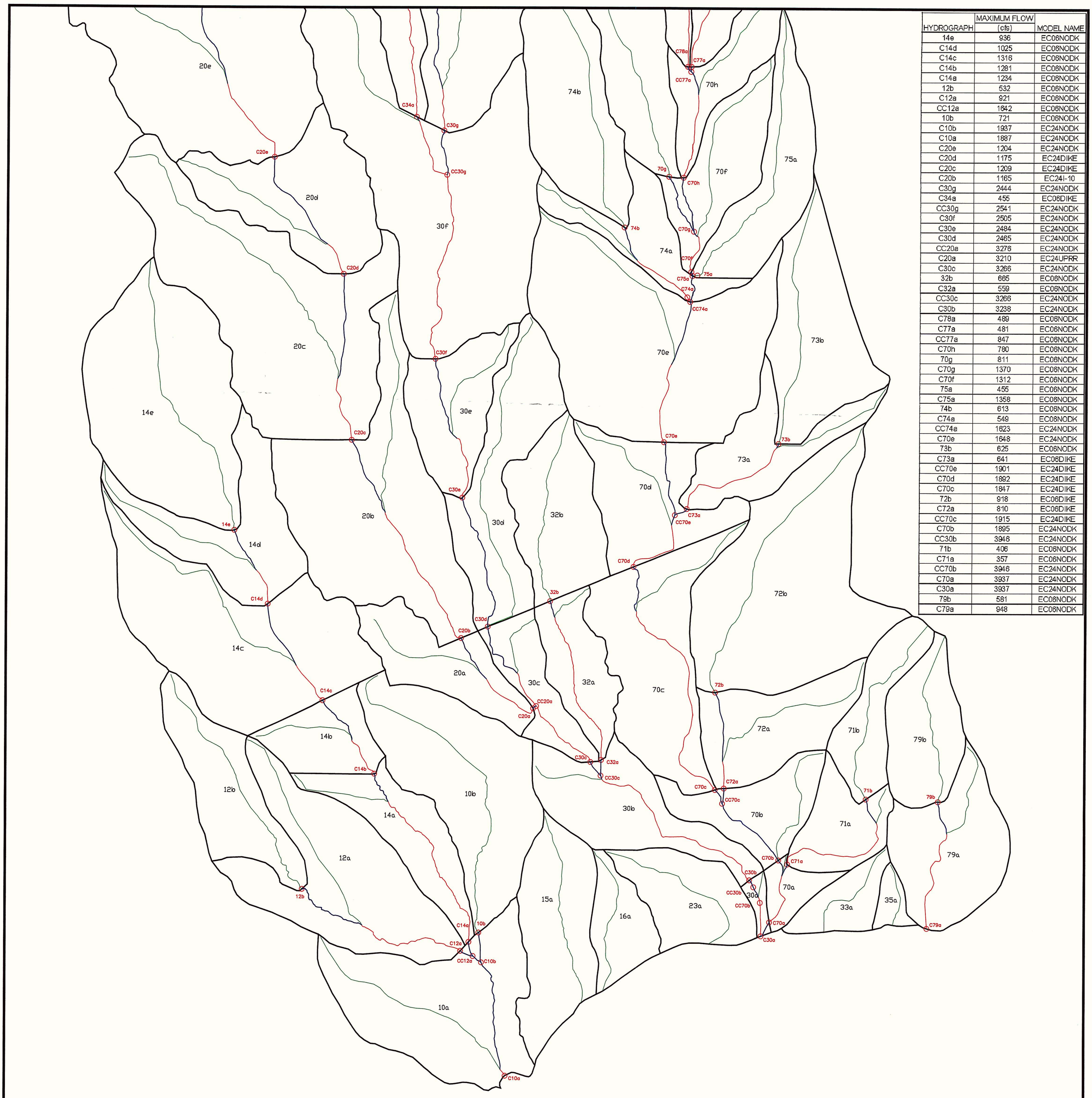

HYDROGRAPH	MAXIMUM FLOW (cfs)	MODEL NAME
14e	936	EC06NODK
C14d	1025	EC06NODK
C14c	1316	EC06NODK
C14b	1281	EC06NODK
C14a	1234	EC06NODK
12b	532	EC06NODK
C12a	921	EC06NODK
CC12a	1642	EC06NODK
10b	721	EC06NODK
C10b	1937	EC24NODK
C10a	1887	EC24NODK
C20e	1204	EC24NODK
C20d	1175	EC24DIKE
C20c	1209	EC24DIKE
C20b	1165	EC24I-10
C30g	2444	EC24NODK
C34a	455	EC06DIKE
CC30g	2541	EC24NODK
C30f	2505	EC24NODK
C30e	2484	EC24NODK
C30d	2465	EC24NODK
CC20a	3276	EC24NODK
C20a	3210	EC24UPRR
C30c	3266	EC24NODK
32b	665	EC06NODK
C32a	559	EC06NODK
CC30c	3266	EC24NODK
C30b	3238	EC24NODK
C78a	489	EC06NODK
C77a	481	EC06NODK
CC77a	847	EC06NODK
C70h	780	EC06NODK
70g	811	EC06NODK
C70g	1370	EC06NODK
C70f	1312	EC06NODK
75a	455	EC06NODK
C75a	1358	EC06NODK
74b	613	EC06NODK
C74a	549	EC06NODK
CC74a	1623	EC24NODK
C70e	1648	EC24NODK
73b	625	EC06NODK
C73a	641	EC06DIKE
CC70e	1901	EC24DIKE
C70d	1892	EC24DIKE
C70c	1847	EC24DIKE
72b	918	EC06DIKE
C72a	810	EC06DIKE
CC70c	1915	EC24DIKE
C70b	1895	EC24NODK
CC30b	3946	EC24NODK
71b	406	EC06NODK
C71a	357	EC06NODK
CC70b	3946	EC24NODK
C70a	3937	EC24NODK
C30a	3937	EC24NODK
79b	581	EC06NODK
C79a	948	EC06NODK

LEGEND

T2N-R6V-S23 — Wash Name

Sub-basin Boundary

24b — Sub-basin Name

Time of Concentration

Routing Reach

Routing Reach and Time of Concentration

C50f — Concentration Point

SHEET INDEX MAP

1

2

3

1500' 0' 1500' 3000'

SCALE: 1"= 1500' FEET

CONTOUR INTERVAL = 2 FEET

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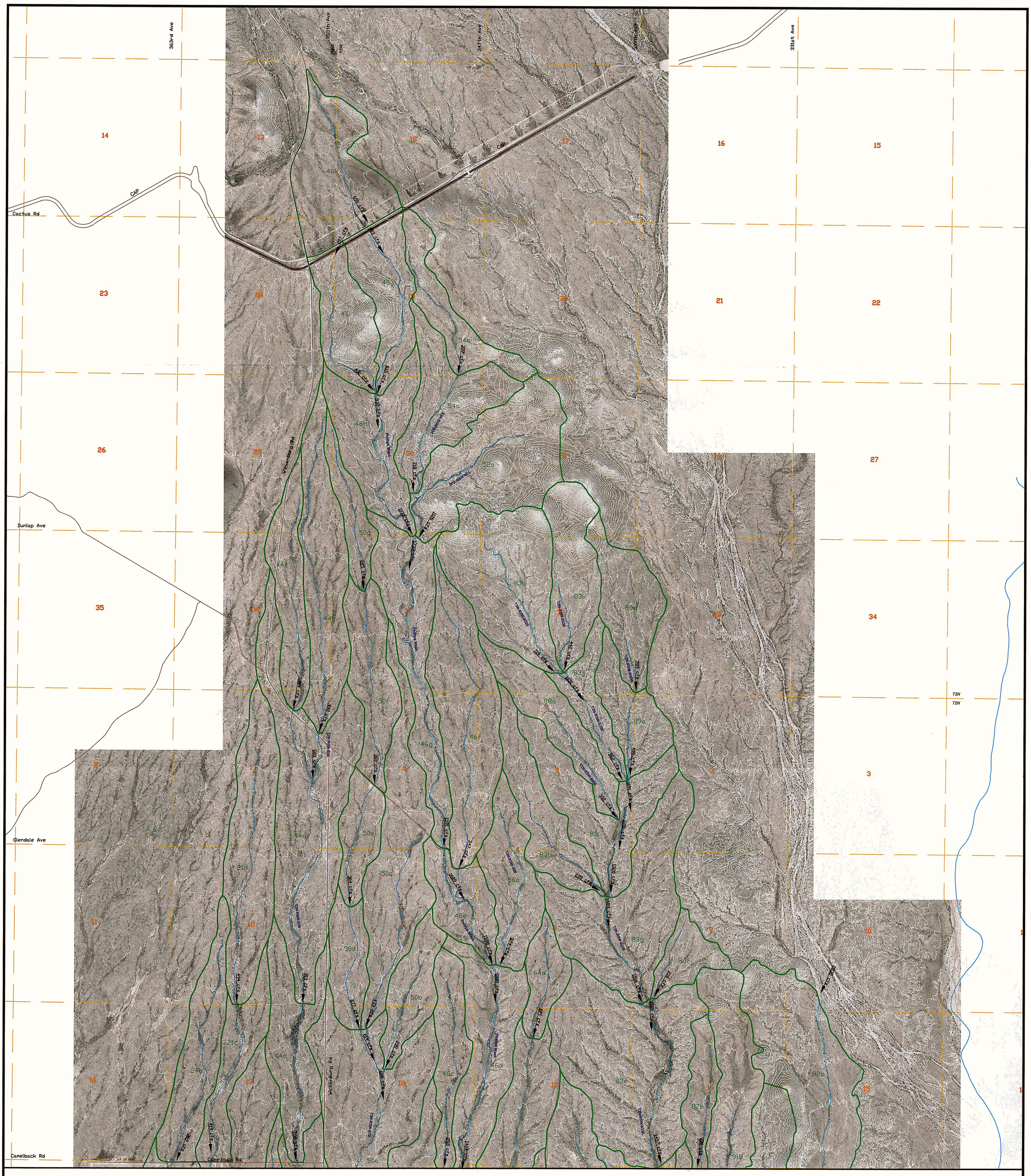

LEGEND

- Hydraulic Base Line
- T2N-R6W-S25 — Wash Name
- Sub-basin Boundary
- 24b — Sub-basin Name
- Section Boundary
- 14 — Section Number
- 1235 cfs — General Flow Direction & Maximum Flow

SHEET INDEX MAP

1
2
3

1500' 0' 1500' 3000'
SCALE: 1"= 1500' FEET
CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

EXHIBIT A6
MAXIMUM FLOW FOR 100-YEAR STORMS
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LEGEND

- Hydraulic Base Line
- T2N-R6W-S25 Wash Name
- Sub-basin Boundary
- 24b Sub-basin Name
- Section Boundary
- 14 Section Number
- 1235 cfs General Flow Direction & Maximum Flow

SHEET INDEX MAP

1
2
3

1500' 0' 1500' 3000'
SCALE: 1"= 1500' FEET
CONTOUR INTERVAL = 2 FEET

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

EXHIBIT A6
MAXIMUM FLOW FOR 100-YEAR STORMS
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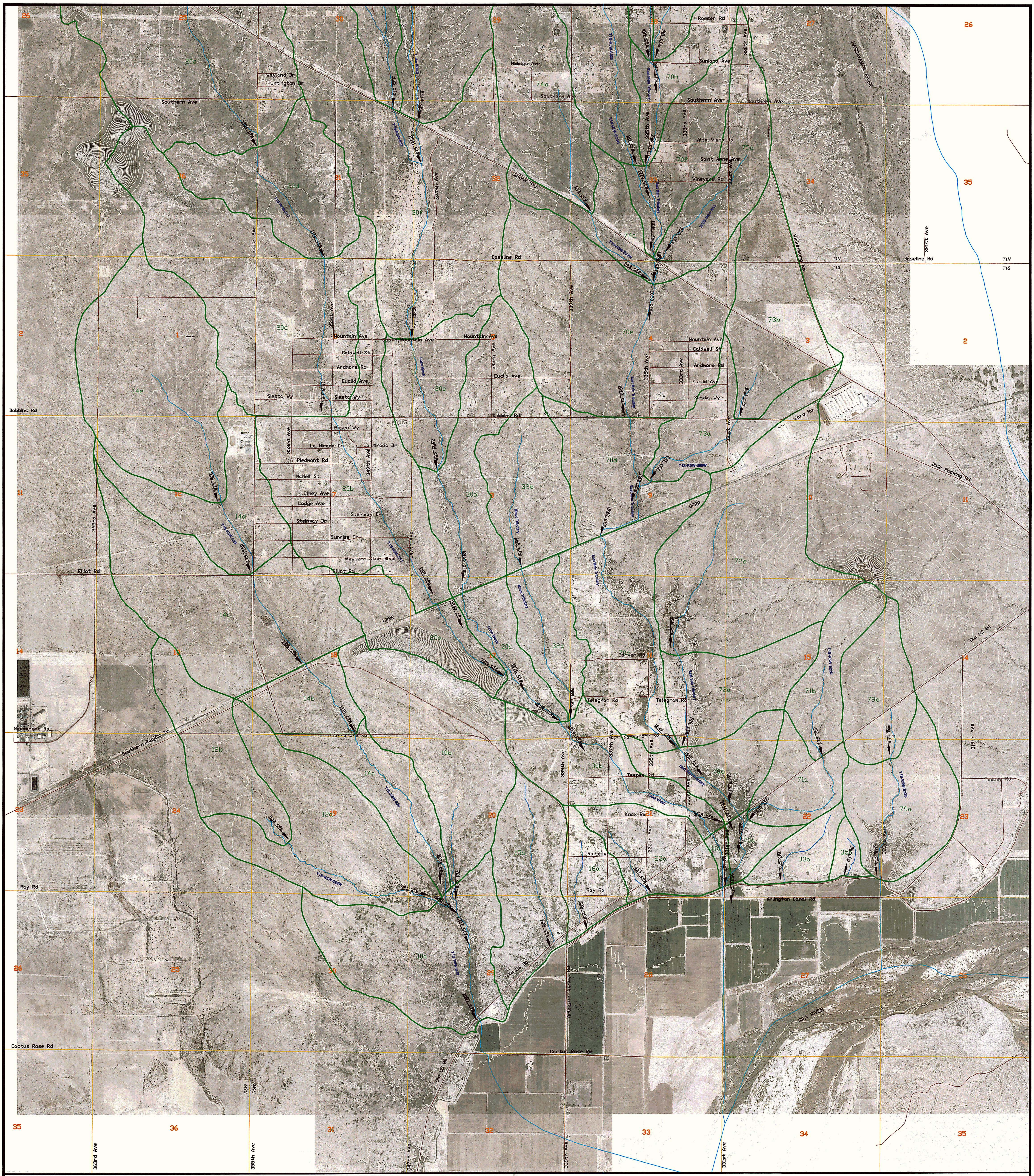

LEGEND

Hydraulic Base Line

T2N-R6W-S25 Wash Name

Sub–basin Boundary

24b Sub–basin Name

Section Boundary

14 Section Number

1235 cfs General Flow Direction & Maximum Flow

SHEET INDEX MAP

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1500' 0' 1500' 3000'

SCALE: 1"= 1500' FEET

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LUKE WASH WATERSHED FDS

EXHIBIT A6

MAXIMUM FLOW FOR 100-YEAR STORMS

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