Technical Data Notebook
Section 5 – Hydraulic Analysis

Upper Rawhide Wash
Floodplain Delineation Study
(FCD 98-12)

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Volume 4 of 4

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Prepared for:
Flood Control District of Maricopa County

Kimley-Horn and Associates, Inc.
March, 2002
KHA Project #091131.02

Kimley-Horn
and Associates, Inc.

Note: All computed WSEL's shown in the HEC-RAS output are based upon NAVD 88 datum. The revised FIRM elevations have been converted to NGVD 29 by FEMA.

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Volume 4 of 4

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5 Hydraulics

5.1 METHOD DESCRIPTION

The U. S. Army Corps of Engineers HEC-RAS, Version 2.2, with SNET 2.2.1, was used to conduct the hydraulic modeling. The version of HEC-RAS used for this study supports one-dimensional, steady flow, water surface profile calculations. This version also supports only fixed channel bed conditions and does not have sediment transport capabilities. This model is based on standard step-backwater using hydraulic cross sections to describe the floodplain.

Rawhide Wash hydraulic analysis starts approximately 1850 feet downstream of Dynamite Boulevard. The stationing for Rawhide Wash starts at river mile 8.000 at the upstream face of the culvert at Dynamite Boulevard. The starting water surface elevation for Rawhide Wash utilized normal depth with slope of S=0.035 ft/ft.

Select Manning's roughness coefficients ("n" values), contraction and expansion coefficients, subdivision for hydraulic sections and associated HEC-RAS methodology are covered later in this section and in Appendix E. Roughness coefficients for the Study ranged from 0.031 to 0.059 in the channel and in the overbanks roughness coefficients ranged from 0.04 to 0.07.

5.2 WORK STUDY MAPS

The work study maps provided as part of this report use a standard border provided by the Flood Control District of Maricopa County. There are nine full size sheets (24 inches by 36 inches) at a scale of 1-inch = 200-feet with a 1 ft. or a 2 ft. contour interval. Structures (culverts and bridges) that cross Rawhide Wash are also indicated on the work study maps. Reaches were subdivided on the basis of channel geometry and vegetation as described in the Field Reconnaissance Report in Appendix E. For clarity reach subdivision was not included in the work study maps.

5.3 PARAMETER ESTIMATION

5.3.1 Roughness Coefficients

Manning's roughness coefficients ("n" values) were derived based on the visual inspection conducted in December 1998 and from the procedure given in the USGS report titled "Estimated Manning's Roughness Coefficients for Stream Channels and Floodplains in

Maricopa County, Arizona" (April, 1991). The "n" value report found in Appendix E contains the location of the cross section, the reach number, and the applicable cross sections to which the derivation of the n-value applies. The report also contains a description of the channel, a table showing the values of "n" for the channel, left and right overbanks for the 100-year flood, and a photograph depicting typical channel forms, banks, vegetation, and bed materials.

For most sites, a photograph was taken of typical bed materials. The photographs of the channels and floodplains were used in comparison with the document illustrations by the USGS and other references.

The description of each reach/cross section includes the location of the channel cross section, the description of the channel, and the evaluation of the estimated "n" value. Changes in channel geometry and type and distribution and density of vegetation are described. The channel cross section and the photographs are used in conjunction with the site description to estimate how "n" was defined.

The Field Reconnaissance Report components of the roughness coefficient for the 100-year flood that were estimates for the channel and the overbanks. The total "n" values are the sum of the base value of "n" for a straight uniform channel (n_b); surface irregularities (n_1); obstruction (n_2); and vegetation (n_3). A blank indicates that a roughness coefficient of zero was used. A meander ratio was applied based on the ratio of the meander length to the straight length of the channel reach. The meander adjustment values apply to flow confined in the channel and not to downvalley flow crossing meanders.

5.3.2 Expansion and Contraction Coefficients

Expansion and contraction coefficients used were 0.3 and 0.1, respectively along the channel. For culverts and bridges expansion and contraction value were increased to 0.5 and 0.3 respectively at the approach, upstream face and the downstream face. These values were obtained from the HEC-RAS manual (Version 2.0) and are generally accepted estimates.

5.4 CROSS SECTION DESCRIPTION

Hydraulic cross sections were located by Kimley-Horn and Associates on aerial Topography provided by the City of Scottsdale through the Flood Control District of Maricopa County. These sections were digitized using AutoCAD version 14 and BOSS-RMS (River Modeling Systems Version 4.0). The cross sections are spaced at 500 feet intervals with additional cross sections added for structures and as required for variations in cross section geometry. The backwater

analysis in this study was done on the basis of a predominant subcritical flow regime.

5.5 MODELING CONSIDERATIONS

5.5.1 Hydraulic Jump and Drop Analysis

This floodplain analysis was conducted according to FEMA criteria for natural channels. A subcritical analysis was performed allowing the HEC-RAS model default to critical in areas that would change to supercritical in a mixed flow analysis. A list of the applicable sections from the floodplain analysis is provided below.

Table 5-1: Cross sections with critical depth defaults

Model	*Cross Section Numbers*
Rawhide Wash	7.653, 7.714, 7.794, 7.845, 7.889, 7.958, 7.983, 8.000, 8.093, 8.185, 8.227, 8.283, 8.365, 8.429, 8.476, 8.76, 8.92, 8.945, 9.085, 9.152, 9.23, 9.418, 9.46, 9.555, 9.65, 9.779, 9.832, 9.981, 10.115, 10.183, 10.295, 10.949, 11.093, 11.24, 11.531, 11.626, 11.804, 11.862, 11.992, 12.213, 12.268, 12.315, 12.422, 12.567 ,12.704, 12.855, 13.138, 13.314, 13.429, 13.524, 13.713, 14.041, 14.266, 14.302, 14.371, 14.441, 14.482, 14.56, 14.715, 14.861, 14.907, 14.979, and 15.054 Pima loop - 0.108, 0.134, 0.164, 0.215, 0.26, and 0.285
Tributary 1	0.095, 0.188, 0.284, 0.422, 0.535, 0.569, 0.609, 0.671, 0.76, 0.854, 0.95, 1.044, and 1.076
Tributary 2	0.256, 0.388, 0.554, 0.972, 1.143, 1.238, and 1.333
Tributary 3	0.284 and 0.437
Tributary 4	0.0947, 0.153, 0.205, 0.284, 0.363, 0.422, 0.529, 0.633, 0.671, 0.861, 0.955, 1.097, 1.145, 1.227, 1.288, 1.357, and 1.408

5.5.2 Bridges and Culverts

Bridges and culverts were integrated into the hydraulic model by utilizing the HEC-RAS routines for these types of structures. HEC-RAS computes energy losses, caused by structures such as culverts, in a series of steps. The first step is to calculate the losses that occur downstream from the structure, where an expansion of flow takes place. The second step is composed of losses that occur as flow runs into, through and out of the culvert. The third and last step in the series is to calculate the losses that occur just upstream of the structure, where the flow is

contracting toward the entrance point of the culvert. This procedure was undertaken for the culvert and each bridge. Physical characteristics and parameters, such as geometry and loss coefficients, were input into the model. Geometry of the structures and loss coefficients were determined from field surveys and construction drawings. Ineffective flow limits (IFL) were also estimated and entered into the model.

Ineffective flow areas occur just upstream and downstream of structures. The method used was to take an assumed ratio (2:1 in the downstream case and 1:1 in the upstream case), distance to cross-section from culvert face over the distance away from the left/right edge of the culvert, and determine the IFL stationing. The upstream IFL elevations were assumed to be slightly lower than the high cord elevation of the upstream side of the roadway. Similarly, the downstream IFL elevations were assumed to be slightly higher than the high cord elevation of the downstream side of the roadway.

Table 5-2: List of Structures

Structure	*Location*
5-barrel 10 ft. x 6 ft. Concrete Reinforced Box Culvert.	Dynamite Road. Between cross sections 7.983 and 8.001
169 ft. 6 span bridge.	Downstream of Pima Road between cross sections 8.913 and 8.921
169 ft. 6 span bridge.	Downstream of Pima Road between cross sections 9.143 and 9.153

5.5.3 Levees and Dikes

There are no dikes or levees along the streams being studied.

5.5.4 Islands and Flow Splits

A split flow exists at Rawhide Wash where it crosses Pima Road. The main channel passes through private property at the southwest corner of Pima Road and Dixileta Drive. A portion of the flow is diverted south on Pima Road and enters the main channel downstream of the private property. The flow split was handled as a "looped network" using HEC-RAS. A junction was set (labeled "Upstream" in HEC-RAS model) in the model upstream of the Bridge #2 between cross sections 9.153 and 9.23 at the Pima Road crossing. A new Reach was created (Pima Road) with cross sections oriented perpendicular to the direction of flow. The Pima Road reach re-enters the main channel flow downstream of the property. . Another junction was added

(labeled "Downstream" in HEC-RAS model) in the model downstream of bridge #2 between cross sections 8.931 and 8.870.

The initial discharge values for Main Wash reach and Pima Road reach were estimated by apportioning the 100-year peak discharge value of 7,150 cfs and running the model. Energy grade lines are then compared at the upstream most cross section (Main Wash # 9.153 and Pima Road loop # 0.285) for each reach. Discharge values were adjusted for each reach until the energy grade lines were within a reasonable tolerance. Rawhide Wash peak discharge value of 7,150 cfs was split with the Main Wash reach discharge value of 4550 cfs and the Pima Road reach discharge value of 2600 cfs.

Isolated islands exist along Rawhide Wash and Tributary No. 1, 2, 3, and 4. These islands were visible in one cross section but disappeared in the next cross section. Since no continuity existed between cross sections, further analysis was not required.

5.5.5 Ineffective Flow Areas

Horizontal ineffective flow areas were entered using the ineffective flow area option in HEC-RAS. This option was used to model the 1:1 contraction and 2:1 expansion of flows near culverts or bridges. Ineffective areas were also added to the floodplain models where cross sections extended into areas outside of the effective flow limits. For these areas a 1:1 contraction and a 4:1 expansion from the effective flow areas to the next up or downstream cross section was modeled.

5.5.6 Supercritical Flow

As discussed in section 5.5.1 the floodplain analysis was performed using a subcritical profile.

5.6 FLOODWAY MODELING

Floodway limits were defined by utilizing encroachment methods 1 and 4 in HEC-RAS. The procedure is based on calculating a natural profile as the first profile of a multiple profile run. Subsequent profiles were initially calculated with the encroachment method 4. This method was used to get a rough estimate of the encroachment stations. A target increase of 1-foot of rise was used to determine the encroachments based on equal conveyance. After a few runs with method 4, the encroachment stations became more defined. At this point method 1 was incorporated to further define the floodway.

5.7 PROBLEMS ENCOUNTERED DURING THE STUDY

5.7.1 Special Problems and Solutions

Several areas exist along the study reach where potential break out of flood flows may exist. These areas were not showing up in the modeled cross sections however these areas may experience shallow flooding during the 100-year storm event. It was determined that in these areas a Zone A would be used to account for this potential flood hazard. These areas are illustrated on the work maps in Appendix E.

5.7.2 Modeling Warning and Error Messages

Error messages and warnings regarding conveyance and energy loss were reviewed at each cross section location. Several cross sections were added at locations where warnings appeared. The placement of these cross sections had little effect on the model results. Error messages regarding the default to critical depth are a function of subcritical analysis as discussed previously.

5.8 CALIBRATION

The culvert located at Dynamite Boulevard was analyzed using Federal Highway Administration Culvert Analysis HY8 Version 6.1 to check for reasonableness of results from the HEC-RAS model. There was no appreciable difference between the two models. The HY8 model is included as part of Appendix E. No other data was available for further calibration of the HEC-RAS models.

5.9 FINAL RESULTS

5.9.1 Hydraulic Analysis Results

The results of the hydraulic modeling are summarized in the following tables.

Table 5-3: 100-Year Floodplain Cross Section Results

Stream	River Sta	Q Total	W.S. Elev	Crit W.S.	Vel Chnl	Top Wdth Act	Hydr Depth	Froude # Chl	Sta W.S. Lft	Sta W.S. Rgt
		(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)
Rawhide Wash	7.653	7319	2200.01	2200.01	9.44	723.65	1.99	0.9	9757.13	10480.78
	7.714	7319	2205.05	2205.05	10.38	677.23	2.16	0.99	9808.21	10485.44
	7.794	7319	2212.2	2212.2	11.39	393.74	2.69	1.07	9816.86	10302.04
	7.845	7319	2217.57	2217.57	12.21	287.05	3.37	0.95	9838.04	10125.09
	7.889	7319	2220.78	2220.78	11.89	233.99	3.64	0.92	9894.01	10316.79
	7.958	7157	2226.48	2226.48	11.64	291.31	3.3	0.91	9738.92	10030.22
	7.983	7157	2229.17	2229.17	11.86	356.65	3.23	0.8	9701.35	10058
	8.001	7157	2232.39	2230.04	7.06	431.42	4.92	0.42	9662.56	10093.98
	8.007	7157	2232.53	2229.83	6.42	429.45	5.1	0.39	9674.53	10103.98
	8.093	7157	2237.6	2237.6	11.82	351.09	3.06	0.82	9680.75	10031.84
	8.185	7157	2243.92	2243.92	11.31	353.73	3.07	0.84	9920.57	10331.42
	8.227	7157	2246.06	2246.06	11.49	385.68	2.72	0.97	9917.77	10303.45
	8.283	7157	2251.41	2251.41	10.07	370.92	2.43	0.91	9733.57	10104.49
	8.365	7153	2256.83	2256.83	10.3	359.31	2.48	0.96	9851.36	10210.66
	8.429	7153	2262.06	2262.06	10.3	464.15	2.46	0.88	9962.42	10426.57
	8.476	7153	2265.9	2265.9	11.34	484.94	2.59	0.87	9910.38	10395.32
	8.57	7153	2272.32	2271.94	9.83	473.78	2.27	1.09	9619.48	10093.26
	8.665	7150	2280.51	2280.09	6.8	675.42	1.8	0.77	9415.39	10090.8
	8.76	7150	2288.4	2288.4	8.74	692.92	1.64	1.05	9468.26	10161.19
	8.825	7150	2294.7	2294.09	7.23	625.07	2.12	0.8	9367.61	10098.57
	8.87	7150	2298.04	2297.84	9.2	656.06	1.97	0.91	9460.53	10116.58
Pima Road Split	0.08	2600	2302.59	2301.79	4.22	317.42	1.96	0.51	9840.03	10157.45
	0.108	2600	2306.07	2306.07	10.36	290.62	1.99	0.97	9730.53	10021.15
	0.134	2600	2308.36	2308.36	7.65	216.96	1.6	0.99	9862.95	10079.91
	0.164	2600	2311.29	2311.29	8.78	232.67	1.75	0.89	9792.12	10082.59

Stream	River Sta	Q Total	W.S. Elev	Crit W.S.	Vel Chnl	Top Wdth Act	Hydr Depth	Froude # Chl	Sta W.S. Lft	Sta W.S. Rgt
		(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)
	0.215	2600	2315.05	2315.05	7.95	419.48	1.44	0.83	9654.64	10074.12
	0.26	2600	2318.94	2318.94	7.37	608.75	1.18	0.79	9439.4	10076.97
	0.285	2600	2321.14	2321.14	7.76	482.55	1.2	0.82	9396.87	10077.22
Rawhide Wash	8.913	4550	2300.4	2297.98	5.27	180.34	4.84	0.4	9885.16	10134.08
(con't)	8.921	4550	2302.4	2298.33	4.06	164	6.84	0.27	9881.27	10259.72
	8.945	4550	2304.86	2304.86	6.86	558.53	1.32	0.8	9648.6	10207.13
	9.013	4550	2310.51	2310.08	4.09	569.87	1.67	0.5	9534.91	10104.78
	9.085	4550	2315.38	2315.38	6.86	457.54	1.45	0.78	9647.39	10104.92
	9.124	4550	2319.47	2319.09	6.14	364.04	2.1	0.64	9818	10182.04
	9.143	4550	2320.47	2318.49	5.53	198.8	4.18	0.44	9935.8	10210.56
	9.153	4550	2321.61	2318.72	4.88	168.8	5.54	0.36	9867.4	10183.93
	9.23	7150	2329.19	2329.19	7.88	869.06	1.52	0.87	9291.84	10160.9
	9.291	7150	2335.42	2335.01	6.75	634	1.9	0.71	9346.62	10254.99
	9.346	7150	2340.69	2340.54	6.6	1069.13	1.39	0.77	9301.45	10370.57
	9.418	7150	2348.01	2348.01	3.9	1034.1	1.87	0.55	9397.36	10600.56
	9.46	7150	2352.01	2352.01	4.63	687.49	1.72	0.76	9874.05	10561.54
	9.555	7150	2362.01	2362.01	1.8	1164.9	2.61	0.27	9913.65	11078.55
	9.65	7150	2370.01	2370.01	5.27	1092.1	1.22	0.93	9703.09	10989.9
	9.722	7150	2378.47	2378.01	4.11	691.97	2.48	0.54	9970.89	10662.86
	9.779	7150	2384.01	2384.01	2.49	663.53	3.18	0.33	9786.47	10524.77
	9.832	7150	2387.75	2387.75	9	382.03	2.3	0.99	9740.97	10123
	9.927	7150	2397.82	2397.09	6.43	437.01	2.73	0.64	9770.51	10207.51
	9.981	7150	2402.88	2402.88	9	421.76	2.17	0.85	9609.7	10031.46
	10.057	7150	2410.51	2410.31	8.08	348.42	2.54	0.89	9693.65	10042.06
	10.115	7150	2416.66	2416.66	9.38	427.31	2.06	0.86	9838.71	10266.02
	10.183	7150	2422.78	2422.78	8.93	395.98	2.16	0.96	9650.12	10046.1

Stream	River Sta	Q Total	W.S. Elev	Crit W.S.	Vel Chnl	Top Wdth Act	Hydr Depth	Froude # Chl	Sta W.S. Lft	Sta W.S. Rgt
		(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)
	10.219	7150	2426.15	2425.68	6.39	476.74	2.35	0.73	9564.13	10040.86
	10.295	7150	2434.34	2434.34	8.48	385.88	2.19	1.01	9958.33	10344.21
	10.369	7150	2442.06	2441.85	6.93	500	2.06	0.85	9709.42	10587.19
	10.464	7150	2450.74	2450.69	8.37	389.84	2.21	0.97	9804.88	10194.72
	10.559	6755	2460.58	2460.54	8.55	353.64	2.26	0.96	9854.29	10272.02
	10.653	6755	2470.22	2470.09	7.59	416.03	2.14	0.91	9726.53	10186.03
	10.748	6755	2478.85	2478.66	8.14	330.21	2.51	0.9	9943.4	10273.61
	10.809	6755	2483.79	2483.79	9.61	248.61	2.83	1.01	9821.91	10070.52
	10.875	6755	2490.07	2489.75	8.65	445.17	2.56	0.82	9696.40	10141.52
	10.949	6600	2498.31	2498.31	10.63	361.28	2.6	0.93	9674.54	10071.45
	11.027	6600	2504.29	2503.85	5.97	518.96	2.13	0.72	9515.6	10034.57
	11.093	6600	2510.39	2510.39	8.64	324.78	2.35	0.99	9730.21	10149.78
	11.155	6600	2515.5	2514.91	7.58	277.22	3.14	0.75	9965.23	10242.45
	11.24	6600	2524.78	2524.78	9.1	414.62	2.08	1.01	9780.67	10195.28
	11.334	6600	2533.42	2533.19	7.72	459.05	2.16	0.82	9643.56	10135.3
	11.41	6600	2540	2539.97	7.81	428.69	1.97	0.98	9813.31	10384.05
	11.46	6600	2545.23	2545.13	8.78	340.1	2.45	0.95	9838.85	10178.95
	11.531	6600	2552.11	2552.11	10.42	448.47	2.35	0.92	9689.13	10137.6
	11.626	6600	2560.02	2560.02	10.26	309.18	2.48	0.97	9900.13	10209.31
	11.72	6445	2568.04	2567.74	8.52	451.48	2.48	0.8	9607.48	10251.48
	11.804	6445	2575.65	2575.65	12.35	226	3.6	0.93	9771.65	10097.04
	11.862	6445	2580.74	2580.74	11.06	187.95	3.39	0.95	9854.31	10042.26
	11.908	6445	2584.08	2582.46	6.44	359.05	4	0.5	9852.43	10211.48
	11.992	5666	2589.65	2589.65	9.59	297.91	2.42	1.06	9649.91	10076.75
	12.067	5666	2596.97	2596.49	6.59	431.66	2.18	0.7	9709.45	10547.11
	12.132	731	2601.58	2600.85	2.53	258.42	1.12	0.42	9968.4	10611.05

Stream	River Sta	Q Total	W.S. Elev	Crit W.S.	Vel Chnl	Top Wdth Act	Hydr Depth	Froude # Chl	Sta W.S. Lft	Sta W.S. Rgt
		(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)
	12.213	731	2608.74	2608.74	6.27	265.36	0.87	0.76	9898.72	10164.08
	12.268	731	2614.42	2614.42	5.37	370.57	0.63	0.67	9722.86	10093.43
	12.315	731	2617.79	2617.79	7.4	114.84	1.2	1.04	9985.84	10199.15
	12.38	731	2623.79	2623.51	6.41	62.73	1.82	0.84	9971.12	10033.85
	12.422	731	2627.35	2627.35	7.84	48.94	1.91	1	9979.7	10028.63
	12.487	731	2632.98	2632.71	4.37	139.54	1.2	0.7	9873.82	10013.36
	12.567	731	2639.61	2639.61	5.55	140.28	0.94	1.01	9991.13	10131.41
	12.609	731	2642.84	2642.5	3.5	196.68	1.06	0.6	9976.05	10172.73
	12.704	731	2650.89	2650.89	5.22	169.07	0.83	1.01	9975.39	10144.46
	12.776	731	2654.86	2654.5	2.33	372.58	0.84	0.45	9987.51	10360.09
	12.855	731	2662.52	2662.52	4.06	353.16	0.51	1	9954.28	10307.44
	12.95	731	2671.9	2671.67	4.57	143.5	1.11	0.76	9970.92	10114.42
	13.027	731	2678.68	2678.63	4.14	265.4	0.66	0.9	9859.21	10124.61
	13.072	731	2682.33	2682.13	3.47	257.17	0.82	0.67	9896.82	10153.99
	13.138	731	2687.97	2687.97	6.15	102.89	1.16	1.01	9973.24	10076.13
	13.233	731	2695.84	2695.52	4.89	105.69	1.41	0.73	9909.67	10015.37
	13.314	731	2703.82	2703.82	6.61	82.69	1.34	1.01	9948.96	10031.65
	13.354	731	2706.99	2706.54	5.29	77.75	1.78	0.7	9935.46	10013.22
	13.429	731	2713.22	2713.22	8.2	55.88	1.74	0.95	9976.87	10032.75
	13.524	731	2722.87	2722.87	7.39	58.51	1.69	1	9963.31	10021.81
	13.619	731	2731.81	2731.61	5.3	105.05	1.31	0.82	9937.75	10042.81
	13.713	731	2741.1	2741.1	5.47	145	0.92	1	9929.31	10074.31
	13.808	731	2751.42	2751.31	5.15	133.14	1.07	0.88	9967.99	10101.13
	13.903	1111	2761.95	2761.79	5.58	150.1	1.33	0.85	9949.72	10444.65
	13.989	1111	2771.16	2770.89	3.82	289.11	1.01	0.67	9862.14	10151.25
	14.041	1111	2776.31	2776.31	5.61	347.49	0.72	0.82	9728.45	10075.95

Stream	River Sta	Q Total	W.S. Elev	Crit W.S.	Vel Chnl	Top Wdth Act	Hydr Depth	Froude # Chl	Sta W.S. Lft	Sta W.S. Rgt
		(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)
	14.1	1111	2781.36	2781.17	4.31	304.93	0.92	0.76	9668.21	10043.9
	14.154	1111	2786.4	2786.27	4.05	325.2	0.84	0.78	9750.46	10075.67
	14.205	1111	2790.76	2790.67	4.01	377.86	0.73	0.83	9788.06	10165.92
	14.266	1111	2798.02	2798.02	3.7	287.56	0.98	0.91	9728.47	10016.03
	14.302	1111	2802.52	2802.52	6.09	303.67	0.88	0.76	9729.59	10033.26
	14.371	1111	2810.01	2810.01	4.75	308.34	1.21	0.62	9984.45	10292.8
	14.441	1111	2818.01	2818.01	5.43	239.45	1.23	0.74	9982.01	10221.46
	14.482	1111	2822.53	2822.53	7.94	72.6	1.93	1.01	9972.74	10045.34
	14.56	1111	2831.7	2831.7	7.85	236.02	1.19	0.84	9808.98	10058.75
	14.655	1111	2839.13	2839.09	5.15	232.28	0.93	0.94	9924.39	10156.67
	14.715	1111	2846.72	2846.72	5.61	202.23	0.98	1	9873.14	10075.37
	14.766	867	2850.94	2850.67	3.07	336.41	0.84	0.59	9927.28	10263.69
	14.861	867	2863.18	2863.18	5.79	169.83	0.95	1	9988.85	10261.04
	14.907	484	2868.29	2868.29	4.98	337.25	0.49	0.63	9959.23	10296.49
	14.979	484	2876.41	2876.41	5.06	288.95	0.61	0.65	9979.05	10405.77
	15.054	484	2885.2	2885.2	4.84	138.49	0.72	1	9962.95	10153.05
	15.148	484	2894.9	2894.75	3.58	189.27	0.72	0.75	9964.59	10221.67
	15.232	484	2903.02	2903.01	4.65	147.22	0.71	0.98	9988.97	10252.76
	15.325	484	2913.75	2913.34	3	173.06	0.93	0.55	9958.52	10162.03
Tributary 1	0.095	648	2573.55	2573.55	5.52	126.32	0.93	1.01	9984.87	10111.19
	0.151	648	2579.02	2578.9	4.52	172.2	0.89	0.82	9912.87	10124.54
	0.188	648	2585.07	2585.07	6.79	66.85	1.43	1	9945.04	10011.89
	0.238	648	2589.96	2589.88	6.05	79.43	1.35	0.92	9915.23	10034.89
	0.284	648	2594.91	2594.91	6.27	89.34	1.18	1	9977.98	10116.65
	0.377	648	2604.5	2604.43	4.14	257.04	0.66	0.87	9987.32	10269.98
	0.422	648	2609.05	2609.05	5.48	128.75	0.92	1.01	9936.98	10099.55

Stream	River Sta	Q Total (cfs)	W.S. Elev (ft)	Crit W.S. (ft)	Vel Chnl (ft/s)	Top Wdth Act (ft)	Hydr Depth (ft)	Froude # Chl	Sta W.S. Lft (ft)	Sta W.S. Rgt (ft)
	0.462	648	2613.01	2612.89	4.41	166.51	0.88	0.83	9885.55	10052.06
	0.535	648	2620.72	2620.72	4.74	197.24	0.69	1	9987.95	10185.19
	0.569	648	2624.58	2624.58	5.87	206.27	0.77	0.84	9973.89	10180.16
	0.609	648	2628.2	2628.2	6.7	84.82	1.16	0.99	9948.53	10033.34
	0.671	648	2634.69	2634.69	4.65	209.13	0.67	1	9967.72	10176.86
	0.76	648	2643.37	2643.37	5.97	98.89	1.1	1	9914.59	10013.48
	0.854	648	2653.3	2653.3	7.96	87.71	1.29	0.83	9977.57	10065.28
	0.95	648	2662.98	2662.98	8.26	61.06	1.5	0.9	9955	10016.06
	1.044	648	2671.54	2671.54	9	48.05	1.83	0.9	9984.59	10032.64
	1.076	648	2674.04	2674.04	6.79	68.53	1.39	1	9956.16	10024.69
Tributary 2	0.256	2481	2606.62	2606.62	10.09	144.24	2.31	0.86	9977.94	10122.18
	0.343	2481	2612.19	2611.74	8.11	153.16	2.71	0.72	9959.84	10112.99
	0.388	2481	2615.07	2615.07	8.52	236.54	1.69	0.92	9932.07	10168.61
	0.477	2481	2620.99	2620.57	4.76	457.1	1.47	0.62	9928.32	10385.42
	0.554	2481	2627.23	2627.23	6.01	369.81	1.12	1	9759.54	10129.35
	0.606	2481	2632.26	2631.89	4.81	507.4	1.07	0.72	9511.9	10019.3
	0.669	2481	2637.58	2637.53	5.98	336.32	1.23	0.95	9819.89	10191.9
	0.763	2481	2646.62	2646.41	4.38	517.37	1.09	0.74	9875.58	10392.96
	0.838	2481	2653.15	2653.04	4.77	535.39	0.97	0.85	9734.34	10380.97
	0.887	2481	2657.21	2656.94	4.19	540.12	1.13	0.68	9757.48	10383
	0.972	2481	2665.6	2665.6	7.01	235.28	1.5	1.01	9976.58	10211.87
	1.049	2481	2672.3	2672.15	5.72	314.51	1.38	0.85	9739.19	10053.71
	1.143	2481	2681.05	2681.05	8.67	156.26	1.95	0.97	9946.92	10103.18
	1.238	2481	2688.48	2688.48	7.74	239.04	1.49	0.93	9886.24	10125.27
	1.333	2481	2695.97	2695.97	5.95	382.68	1.09	1	9952.49	10335.17
	1.417	2481	2702.22	2702.09	5.19	543.85	0.93	0.82	9924.31	10697.09

Stream	River Sta	Q Total	W.S. Elev	Crit W.S.	Vel Chnl	Top Wdth Act	Hydr Depth	Froude # Chl	Sta W.S. Lft	Sta W.S. Rgt
		(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)
Tributary 3	0.284	1633	2631.45	2631.45	8.37	191.73	1.58	0.88	9847.81	10039.54
	0.35	1633	2635.42	2635.06	3.9	347.21	1.21	0.63	9886.23	10233.44
	0.437	1633	2641.2	2641.2	5.93	248.23	1.11	0.99	9936.74	10184.97
	0.495	1633	2647.59	2647.58	6.01	238.38	1.14	0.99	9824.1	10062.48
	0.569	1633	2653.84	2653.61	5.9	169.12	1.64	0.81	9862.53	10031.65
	0.634	1633	2659.09	2659.03	5.27	307.24	1.01	0.92	9757.39	10064.63
	0.679	1633	2663.63	2663.61	6.11	225.52	1.19	0.99	9842.44	10067.96
	0.735	1633	2669.05	2668.92	4.67	348.49	1	0.82	9684.34	10032.83
Tributary 4	0.0947	1875	2616	2616	5.19	379.92	1.1	0.84	9677.59	10057.5
	0.153	1875	2620.57	2620.57	7.63	145.68	1.7	1	9924.4	10070.08
	0.205	1875	2625.58	2625.58	9.73	77.24	2.62	0.98	9961.78	10039.02
	0.284	1875	2632.95	2632.95	7.27	323.15	1.23	0.84	9742.51	10065.66
	0.363	1875	2640.09	2640.09	6.83	409.71	0.94	0.88	9776.98	10186.69
	0.422	1875	2645.46	2645.46	7.63	138.08	1.78	1.01	9870.75	10019.46
	0.472	1875	2649.37	2649.06	4.35	339.44	1.27	0.68	9948.38	10287.82
	0.529	1875	2655.26	2655.26	5.97	286.18	1.1	1	9983.98	10270.16
	0.569	1875	2659.17	2659.08	5.33	318.25	1.1	0.89	9983.16	10301.41
	0.633	1875	2666.22	2666.22	5.34	451.08	0.81	0.98	9857.92	10374.65
	0.671	1875	2670.97	2670.97	5.52	362.96	0.94	1.01	9824.13	10187.09
	0.766	1875	2679.55	2679.39	5.21	294.95	1.22	0.83	9831.92	10126.88
	0.861	1766	2687.83	2687.83	5.72	307.67	1	1.01	9905.86	10213.53
	0.955	1766	2697.85	2697.85	8.87	206.23	1.48	0.88	9865.08	10071.31
	1.031	1766	2703.49	2703.4	5.94	222.18	1.34	0.91	9952.69	10174.87
	1.097	1766	2711.08	2711.08	7.86	381.01	1.21	0.86	9976.48	10357.49
	1.145	1766	2715.01	2715.01	7.59	279.84	1.29	0.88	9909.01	10188.86
	1.227	1766	2721.14	2721.14	7.71	210.92	1.34	0.89	9909.54	10120.46

Stream	River Sta	Q Total	W.S. Elev	Crit W.S.	Vel Chnl	Top Wdth Act	Hydr Depth	Froude # Chl	Sta W.S. Lft	Sta W.S. Rgt
		(cfs)	(ft)	(ft)	(ft/s)	(ft)	(ft)		(ft)	(ft)
	1.288	1766	2726.02	2726.02	8.14	308.87	1.36	0.76	9888.22	10197.09
	1.357	1766	2731.21	2731.21	7.7	334.98	1.22	0.9	9884.61	10219.59
	1.408	1766	2735.47	2735.47	6.56	205.07	1.31	1.01	9873.47	10078.54
	1.459	1766	2739.23	2738.92	3.92	389.54	1.16	0.64	9652.6	10042.14

Table 5-4: Bridge Results

River Sta	W.S. Elev (ft)	E.G. Elev (ft)	Q Total (cfs)	Q Bridge (cfs)	Q Weir (cfs)	Vel Head (ft)	Frctn Loss (ft)	Contraction Coef.	Expansion Coef.
8.913	2300.4	2300.82	4550			0.43	2.06	0.3	0.5
8.920 BR D	2298.96	2300.82	4550	4550	0	1.17			
8.920 BR U	2298.96	2302.65	4550	4550	0	1.45			
8.921	2302.4	2302.66	4550			0.26		0.3	0.5
8.945	2304.86	2305.48	4550			0.62	0.6	0.1	0.3
9.124	2319.47	2320.03	4550			0.56	3.9	0.3	0.5
9.143	2320.47	2320.94	4550			0.47	0.88	0.3	0.5
9.152 BR D	2320.3	2320.94	4550	4550	0	0.97			
9.152 BR U	2320.6	2321.98	4550	4550	0	0.97			
9.153	2321.61	2321.98	4550			0.37		0.3	0.5

Table 5-5: Culvert Results

River Sta	W.S. Elev (ft)	E.G. Elev (ft)	Q Total (cfs)	Culv Q (cfs)	Q Weir (cfs)	Vel Head (ft)	Frctn Loss (ft)	Contraction Coef.	Expansion Coef.
7.958	2226.48	2228.18	7157			1.69	2.47	0.1	0.3
7.983	2229.17	2230.79	7157			1.62	0.79	0.3	0.5
8.000 CULVERT#1			7157	3706.88	3450.12				
8.001	2232.39	2232.87	7157			0.48		0.3	0.5
8.007	2232.53	2232.93	7157			0.41	0.04	0.3	0.5

5.9.2 Verification of Results

A review of the results indicates a reasonable water surface profile for Rawhide Wash and Tributaries 1, 2, 3, and 4 using the estimated "n" values considering what was anticipated based on general field observations. A review of calculated flow velocities in each hydraulic model indicates that they fall in a reasonable range that one would anticipate given the physical characteristics of the study area.

7.1 SUMMARY OF DISCHARGES

Flooding Source and Location	Drainage Area (Square Miles)	Peak Discharge (cfs) 10-Year	50-Year	100-Year	500-Year
Rawhide Wash	0.4	--[1]	--[1]	484	--[1]
South of Tonto National Forrest boundary	0.8	--[1]	--[1]	867	--[1]
South of Tonto National Forrest boundary	1.1	--[1]	--[1]	1,111	--[1]
At diversion	1.4	--[1]	--[1]	731	--[1]
Upstream of Confluence with Tributary 2, 3, and 4	5.3	--[1]	--[1]	5,666	--[1]
Downstream of Confluence with Tributary 2, 3, and 4	6.1	--[1]	--[1]	6,445	--[1]
Confluence with Tributary 1	6.4	--[1]	--[1]	6,600	--[1]
96th Street alignment	6.8	--[1]	--[1]	6,755	--[1]
Downstream of Loan Mountain Alignment	8.6	--[1]	--[1]	7,150	--[1]
Downstream of Via Dona Road	8.8	--[1]	--[1]	7,153	--[1]
At Dynamite Boulevard	8.9	--[1]	--[1]	7,157	--[1]
Downstream of Dynamite Boulevard	9.3	--[1]	--[1]	7,319	--[1]
Tributary 1	0.6	--[1]	--[1]	648	--[1]
Tributary 2	1.3	--[1]	--[1]	2,481	--[1]
Tributary 3	1.1	--[1]	--[1]	1,633	--[1]
Tributary 4	1.3	--[1]	--[1]	1,766	--[1]
	1.5	--[1]	--[1]	1,875	--[1]

[1]Data not computed

7.2 FLOODWAY DATA TABLES

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	[1]DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Rawhide Wash								
A	7.714	339	1048	6.98	N/A	2205.1	2205.9	0.8
B	7.845	108	590	12.41	N/A	2217.6	2218.3	0.7
C	7.889	101	553	13.24	N/A	2220.8	2221.0	0.2
D	8.007	250	1728	4.14	N/A	2232.5	2233.1	0.6
E	8.227	186	758	9.44	N/A	2246.1	2246.5	0.4
F	8.365	165	665	10.75	N/A	2256.8	2257.3	0.5
G	8.665	518	1168	6.12	N/A	2280.5	2280.6	0.1
H	8.870	320	973	7.35	N/A	2298.0	2298.8	0.8
I	9.013	274	769	5.91	N/A	2310.5	2311.4	0.9
J	9.143	159	902	5.05	N/A	2320.5	2321.2	0.7
K	9.230	222	713	10.02	N/A	2329.2	2329.9	0.7
L	9.460	687	1219	5.87	N/A	2352.0	2352.1	0.1
M	9.722	578	1346	5.31	N/A	2378.5	2378.7	0.2
N	9.832	382	920	7.77	N/A	2387.8	2387.9	0.1
O	9.927	335	1039	6.88	N/A	2397.8	2397.8	0.0
P	10.057	348	884	8.09	N/A	2410.5	2410.5	0.0
Q	10.219	477	1119	6.39	N/A	2426.2	2426.2	0.0
R	10.295	386	845	8.47	N/A	2434.3	2434.4	0.1
S	10.369	500	1035	6.91	N/A	2442.1	2442.1	0.0
T	10.464	390	861	8.30	N/A	2450.7	2450.7	0.0
U	10.809	249	703	9.61	N/A	2483.8	2483.8	0.0
V	10.949	298	862	7.65	N/A	2498.3	2498.4	0.1
W	11.027	519	1139	5.79	N/A	2504.3	2504.4	0.1
X	11.155	277	872	7.57	N/A	2515.5	2515.5	0.0
Y	11.334	282	840	7.86	N/A	2533.4	2533.7	0.3
Z	11.410	337	774	8.53	N/A	2540.0	2540.3	0.3
AA	11.531	264	835	7.91	N/A	2552.1	2552.5	0.4
AB	11.804	123	613	10.51	N/A	2575.7	2576.2	0.5
AC	11.908	220	1039	6.20	N/A	2584.1	2584.2	0.1

[1]Miles - Upstream face of culvert at Dynamite Boulevard set at River Mile 8.000

TABLE		
	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	MARICOPA COUNTY, AZ AND INCORPORATED AREAS	RAWHIDE WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	[1]DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Rawhide Wash (Cont'd)								
AC	11.908	220	1039	6.20	N/A	2584.1	2584.2	0.1
AE	12.132	258	309	2.37	N/A	2601.6	2601.7	0.1
AF	12.213	191	198	3.69	N/A	2608.7	2608.8	0.1
AG	12.315	43	90	8.10	N/A	2617.8	2618.4	0.6
AH	12.380	63	120	6.11	N/A	2623.8	2623.9	0.1
AI	12.487	140	167	4.37	N/A	2633.0	2633.0	0.0
AJ	12.776	373	314	2.33	N/A	2654.9	2654.9	0.0
AK	12.950	143	160	4.58	N/A	2671.9	2671.9	0.0
AL	13.072	257	211	3.46	N/A	2682.3	2682.3	0.0
AM	13.138	103	119	6.16	N/A	2688.0	2688.0	0.0
AN	13.524	59	99	7.39	N/A	2722.9	2722.9	0.0
AO	13.808	133	142	5.15	N/A	2751.4	2751.4	0.0
AP	13.903	150	199	5.58	N/A	2762.0	2762.0	0.0
AQ	14.041	348	251	4.43	N/A	2776.3	2776.3	0.0
AR	14.205	378	276	4.02	N/A	2790.8	2790.8	0.0
AS	14.371	166	184	6.04	N/A	2810.0	2810.3	0.3
AT	14.482	73	140	7.94	N/A	2822.5	2822.5	0.0
AU	14.655	232	248	4.48	N/A	2839.1	2839.3	0.2
AV	14.766	336	282	3.07	N/A	2850.9	2850.9	0.0
AW	15.054	138	100	4.85	N/A	2885.2	2885.2	0.0
AX	15.325	173	161	3.00	N/A	2913.8	2913.8	0.0

[1]Miles - Upstream face of culvert at Dynamite Boulevard set at River Mile 8.000

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	[1]DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 1								
A	0.095	126	117	5.52	N/A	2573.6	2573.6	0.0
B	0.151	145	139	4.67	N/A	2579.0	2579.1	0.1
C	0.188	67	95	6.79	N/A	2585.1	2585.1	0.0
D	0.238	79	107	6.05	N/A	2590.0	2590.0	0.0
E	0.284	83	103	6.31	N/A	2594.9	2594.9	0.0
F	0.377	206	153	4.24	N/A	2604.5	2604.5	0.0
G	0.422	129	118	5.48	N/A	2609.1	2609.1	0.0
H	0.462	167	147	4.41	N/A	2613.0	2613.0	0.0
I	0.535	197	137	4.74	N/A	2620.7	2620.7	0.0
J	0.569	206	164	3.95	N/A	2624.6	2624.6	0.0
K	0.609	85	98	6.60	N/A	2628.2	2628.2	0.0
L	0.671	209	139	4.65	N/A	2634.7	2634.7	0.0
M	0.760	99	109	5.97	N/A	2643.4	2643.4	0.0
N	0.854	88	113	5.71	N/A	2653.3	2653.3	0.0
O	0.950	61	91	7.09	N/A	2663.0	2663.0	0.0
P	1.044	48	88	7.37	N/A	2671.5	2671.5	0.0
Q	1.076	69	96	6.78	N/A	2674.0	2674.1	0.1

[1]Miles Above Confluence with Rawhide Wash

TABLE	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	MARICOPA COUNTY, AZ AND INCORPORATED AREAS	TRIBUTARY 1 TO RAWHIDE WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	[1]DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 2								
A	0.256	144	333	7.45	N/A	2606.6	2606.6	0.0
B	0.343	130	380	6.53	N/A	2612.2	2612.2	0.0
C	0.388	160	360	6.89	N/A	2615.1	2615.2	0.1
D	0.477	406	639	3.88	N/A	2621.0	2621.0	0.0
E	0.554	370	413	6.01	N/A	2627.2	2627.2	0.0
F	0.606	367	511	4.85	N/A	2632.3	2632.3	0.0
G	0.669	337	417	5.94	N/A	2637.6	2637.6	0.0
H	0.763	517	564	4.40	N/A	2646.6	2646.6	0.0
I	0.838	536	523	4.75	N/A	2653.2	2653.2	0.0
J	0.887	540	610	4.07	N/A	2657.2	2657.2	0.0
K	0.972	235	354	7.01	N/A	2665.6	2665.6	0.0
L	1.049	315	435	5.71	N/A	2672.3	2672.3	0.0
M	1.143	156	305	8.15	N/A	2681.1	2681.1	0.0
N	1.238	239	355	6.99	N/A	2688.5	2688.5	0.0
O	1.333	383	417	5.95	N/A	2696.0	2696.0	0.0
P	1.417	497	498	4.98	N/A	2702.2	2702.2	0.0

[1]Miles Above Confluence with Rawhide Wash

TABLE	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	MARICOPA COUNTY, AZ AND INCORPORATED AREAS	TRIBUTARY 2 TO RAWHIDE WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	[1]DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 3								
A	0.284	192	304	5.38	N/A	2631.5	2631.5	0.0
B	0.350	347	418	3.90	N/A	2635.4	2635.4	0.0
C	0.437	248	275	5.93	N/A	2641.2	2641.2	0.0
D	0.495	238	272	6.01	N/A	2647.6	2647.6	0.0
E	0.569	169	277	5.89	N/A	2653.8	2653.8	0.0
F	0.634	307	312	5.24	N/A	2659.1	2659.1	0.0
G	0.679	225	268	6.09	N/A	2663.6	2663.6	0.0
H	0.735	348	348	4.69	N/A	2669.1	2669.1	0.0

[1]Miles Above Confluence with Tributary 2

TABLE		
	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	MARICOPA COUNTY, AZ AND INCORPORATED AREAS	TRIBUTARY 3 TO RAWHIDE WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	[1]DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Tributary 4								
A	0.095	260	313	5.99	N/A	2616.0	2616.0	0.0
B	0.153	146	268	7.0	N/A	2620.6	2620.7	0.1
C	0.205	77	205	9.16	N/A	2625.6	2625.6	0.0
D	0.284	212	324	5.78	N/A	2633.0	2633.1	0.1
E	0.363	196	276	6.80	N/A	2640.1	2640.4	0.3
F	0.422	138	247	7.58	N/A	2645.5	2645.5	0.0
G	0.472	339	430	4.36	N/A	2649.4	2649.4	0.0
H	0.529	286	314	5.97	N/A	2655.3	2655.3	0.0
I	0.569	318	352	5.33	N/A	2659.2	2659.2	0.0
J	0.633	451	363	5.16	N/A	2666.2	2666.2	0.0
K	0.671	363	340	5.52	N/A	2671.0	2671.0	0.0
L	0.766	295	360	5.21	N/A	2679.6	2679.6	0.0
M	0.861	308	309	5.72	N/A	2687.8	2687.8	0.0
N	0.955	130	270	6.54	N/A	2697.9	2697.9	0.0
O	1.031	222	300	5.89	N/A	2703.5	2703.5	0.0
P	1.097	200	344	5.13	N/A	2711.1	2711.4	0.3
Q	1.145	280	361	4.89	N/A	2715.0	2715.0	0.0
R	1.227	211	282	6.27	N/A	2721.1	2721.1	0.0
S	1.288	309	443	3.99	N/A	2726.0	2726.1	0.1
T	1.357	335	408	4.33	N/A	2731.2	2731.2	0.0
U	1.408	205	269	6.56	N/A	2735.5	2735.5	0.0
V	1.459	390	451	3.92	N/A	2739.2	2739.2	0.0

[1]Miles Above Confluence with Tributary 2

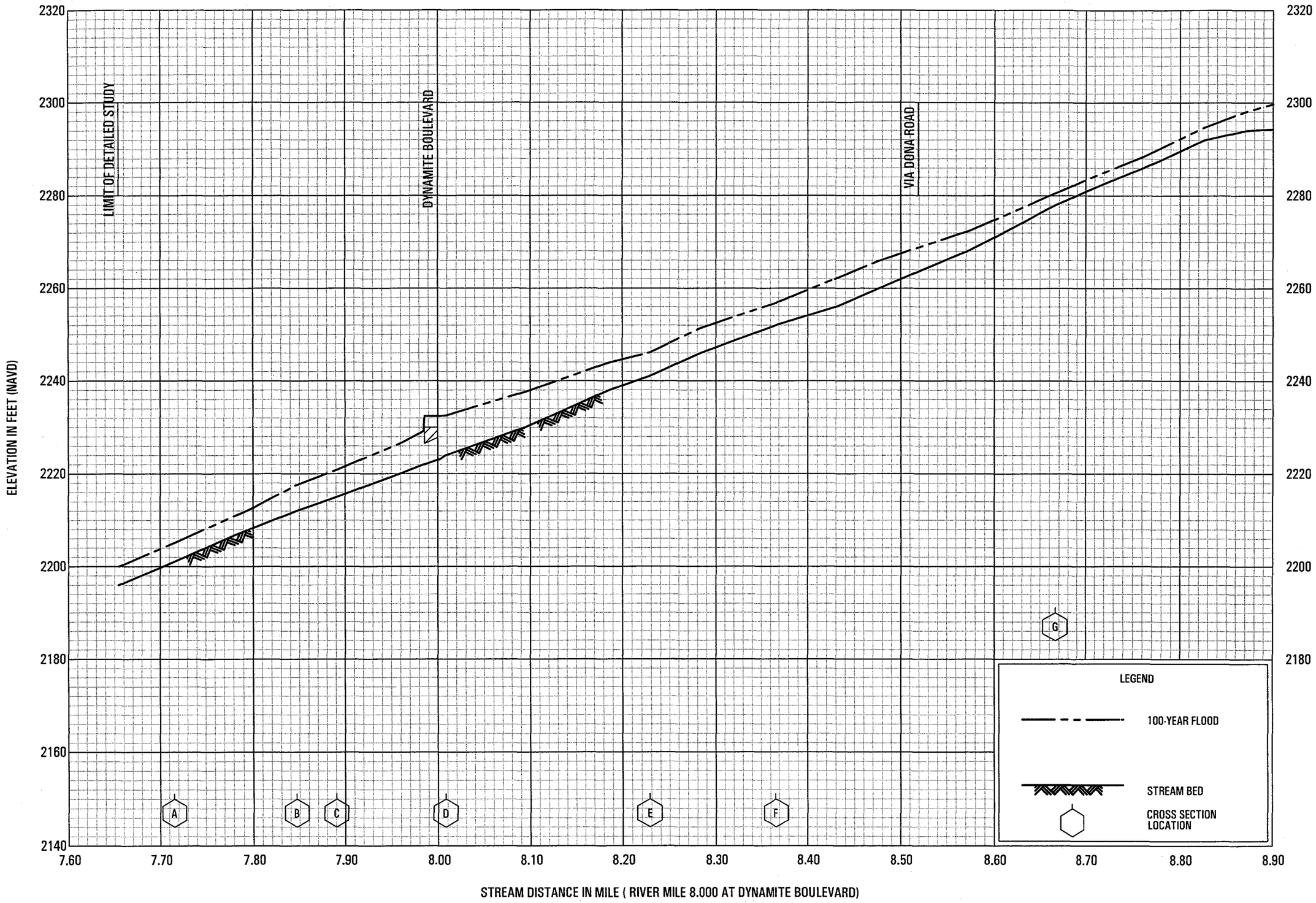
TABLE	FEDERAL EMERGENCY MANAGEMENT AGENCY	FLOODWAY DATA
	MARICOPA COUNTY, AZ AND INCORPORATED AREAS	TRIBUTARY 4 TO RAWHIDE WASH

7.3 ANNOTATED FLOOD INSURANCE RATE MAPS

Not part of this submittal.

7.4 FLOOD PROFILES

Existing Conditions Floodplain Delineation



FLOOD PROFILES

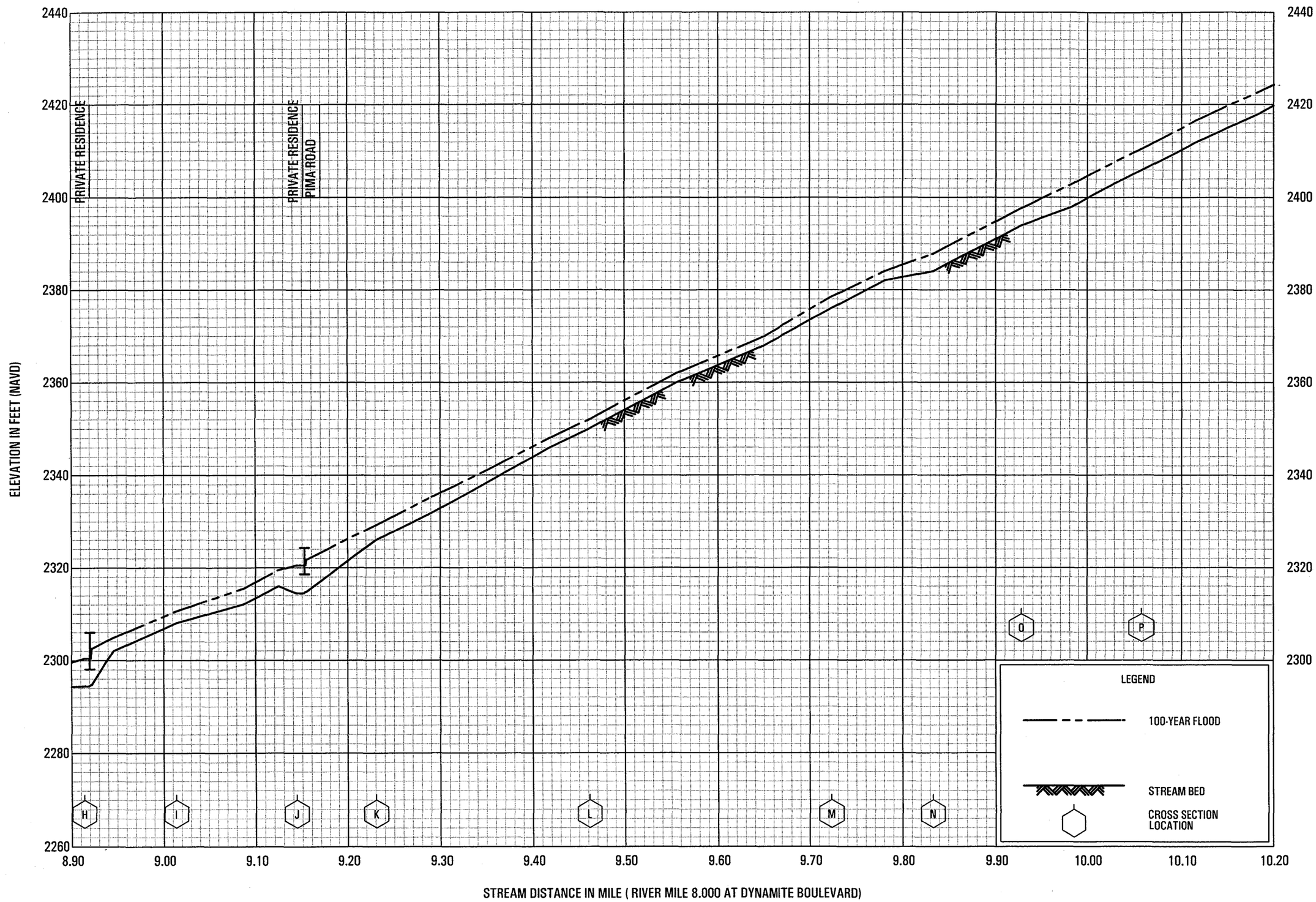
RAWHIDE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

01P



FLOOD PROFILES

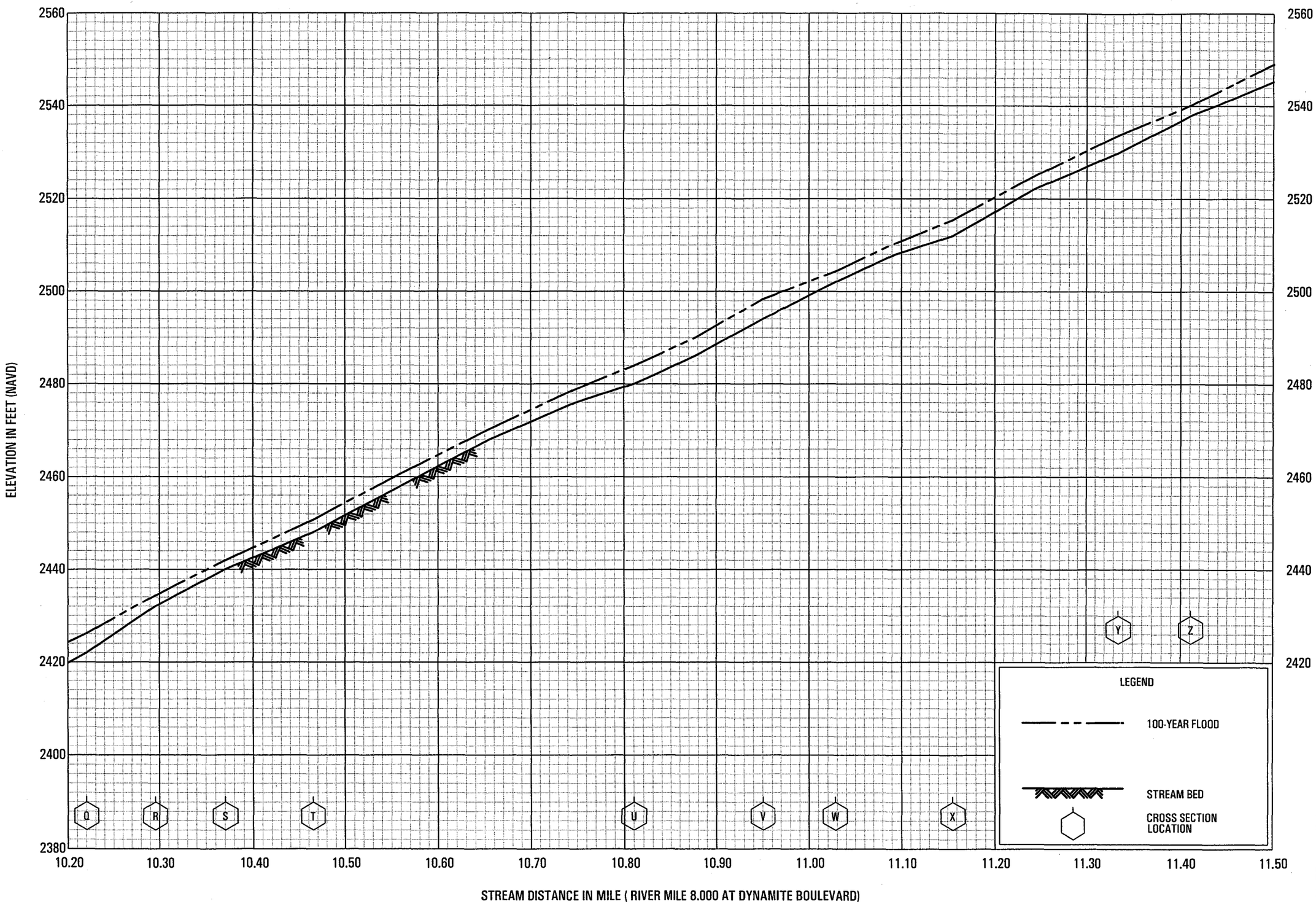
RAWHIDE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

02P



FLOOD PROFILES

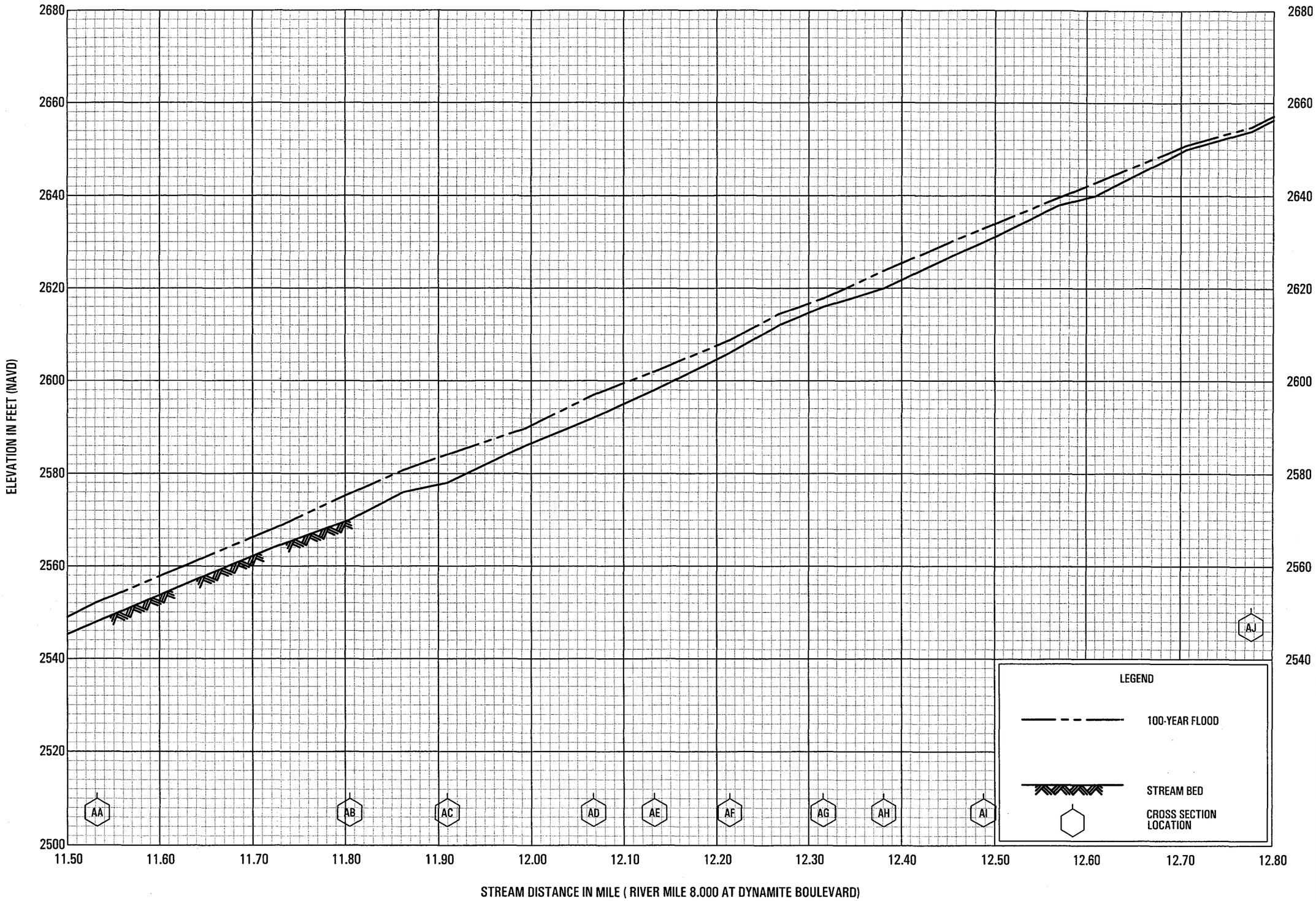
RAWHIDE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

03P



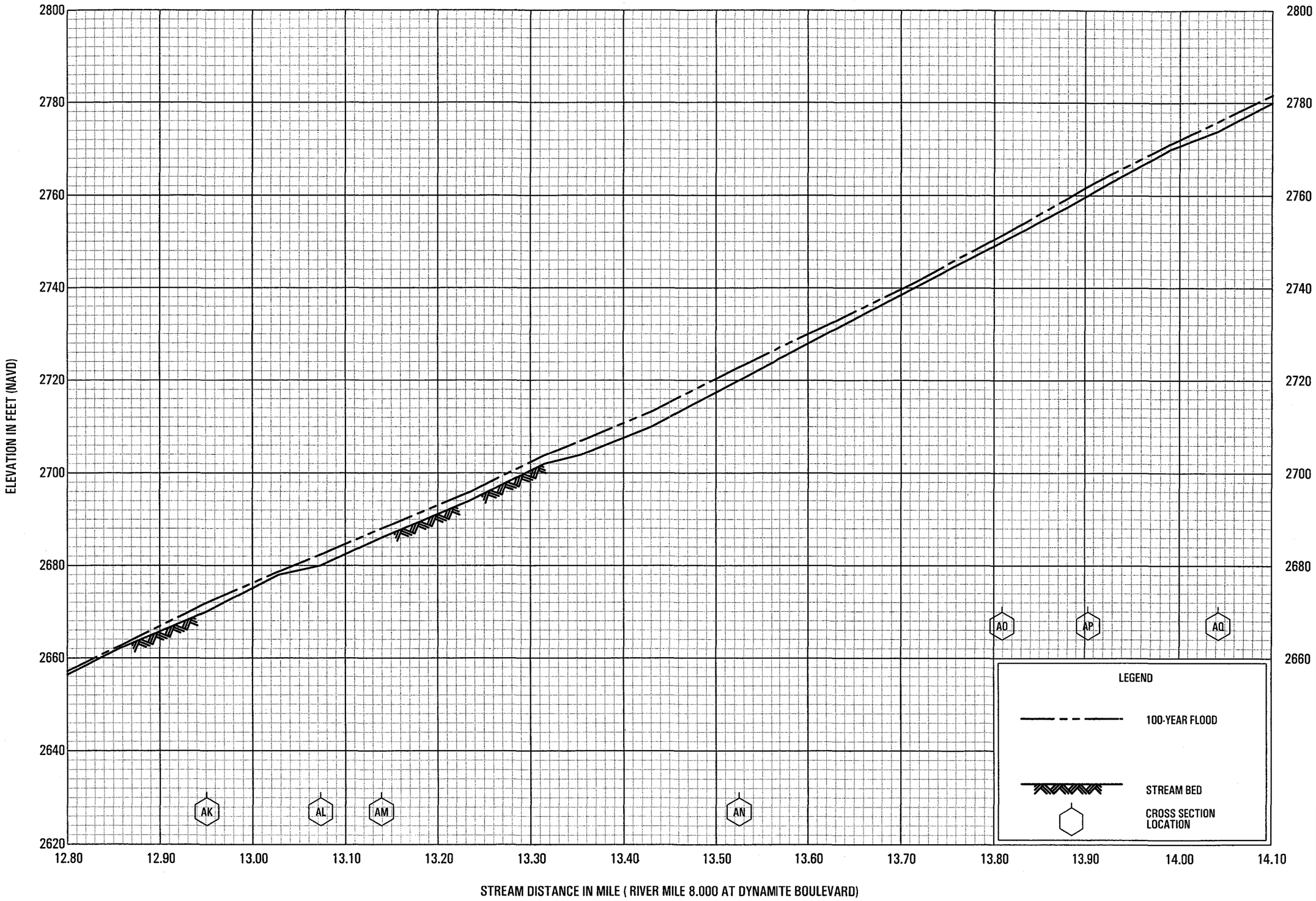
FLOOD PROFILES

RAWHIDE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS



FLOOD PROFILES

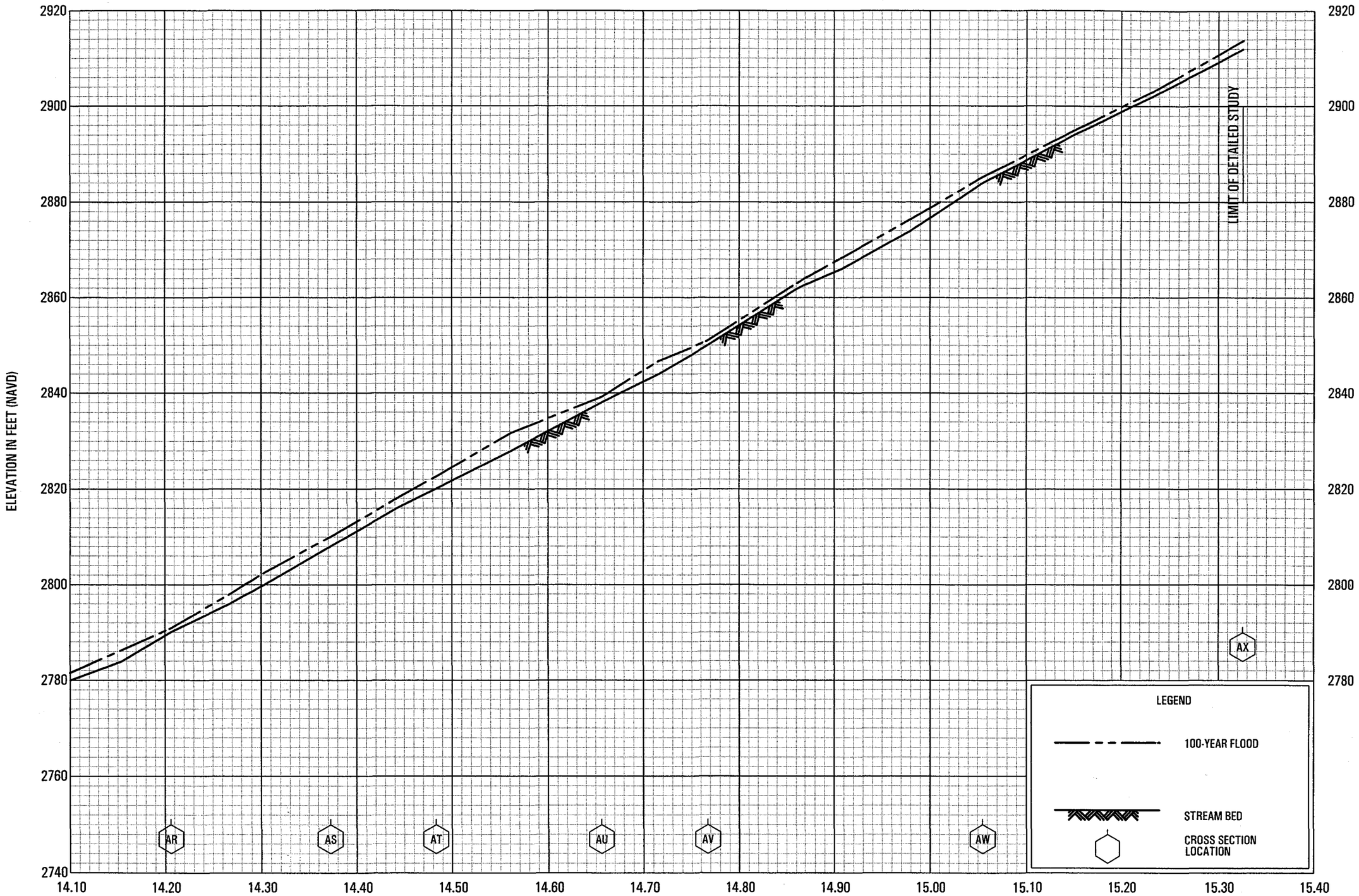
RAWHIDE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

05P



FLOOD PROFILES

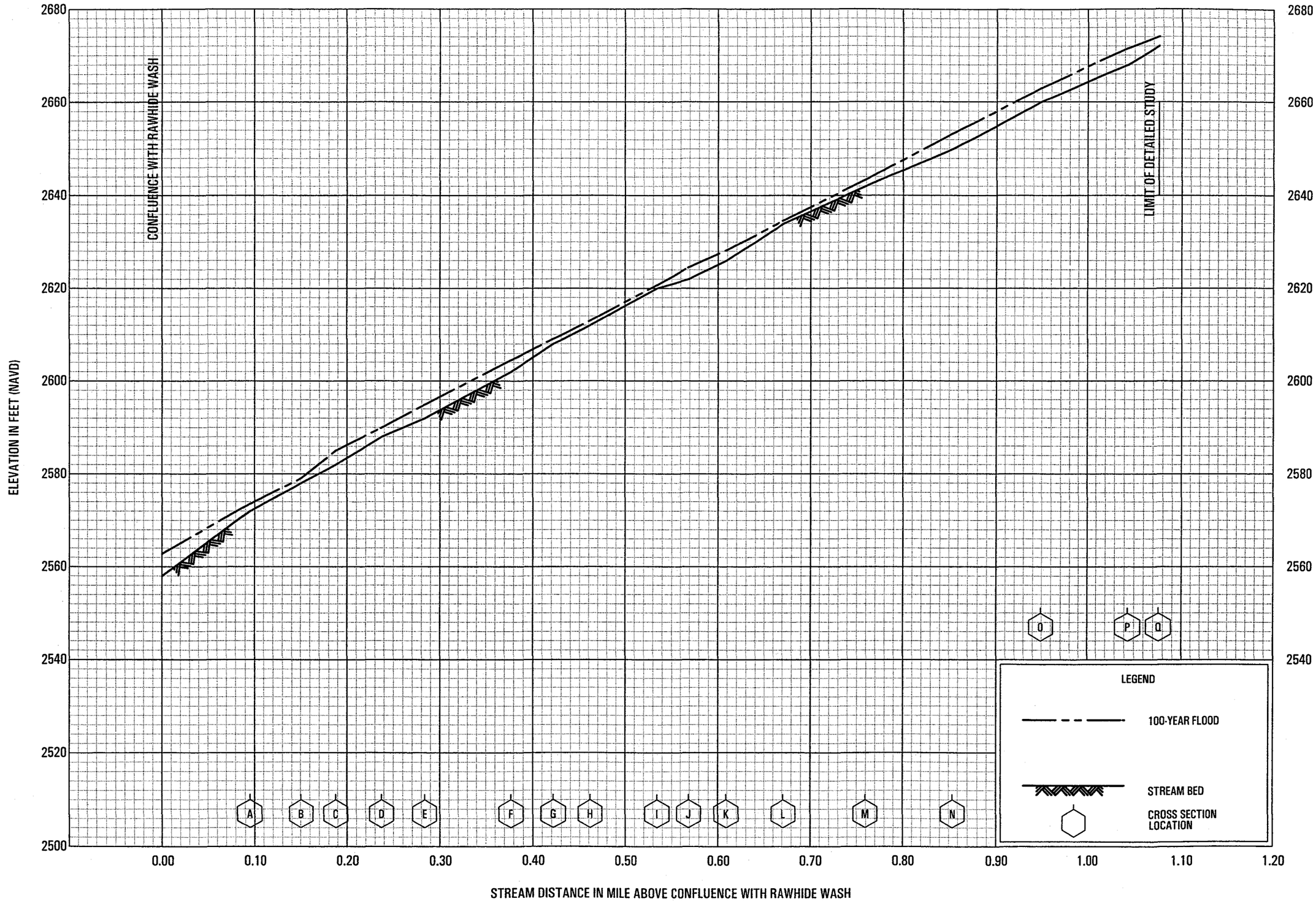
RAWHIDE WASH

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

06P



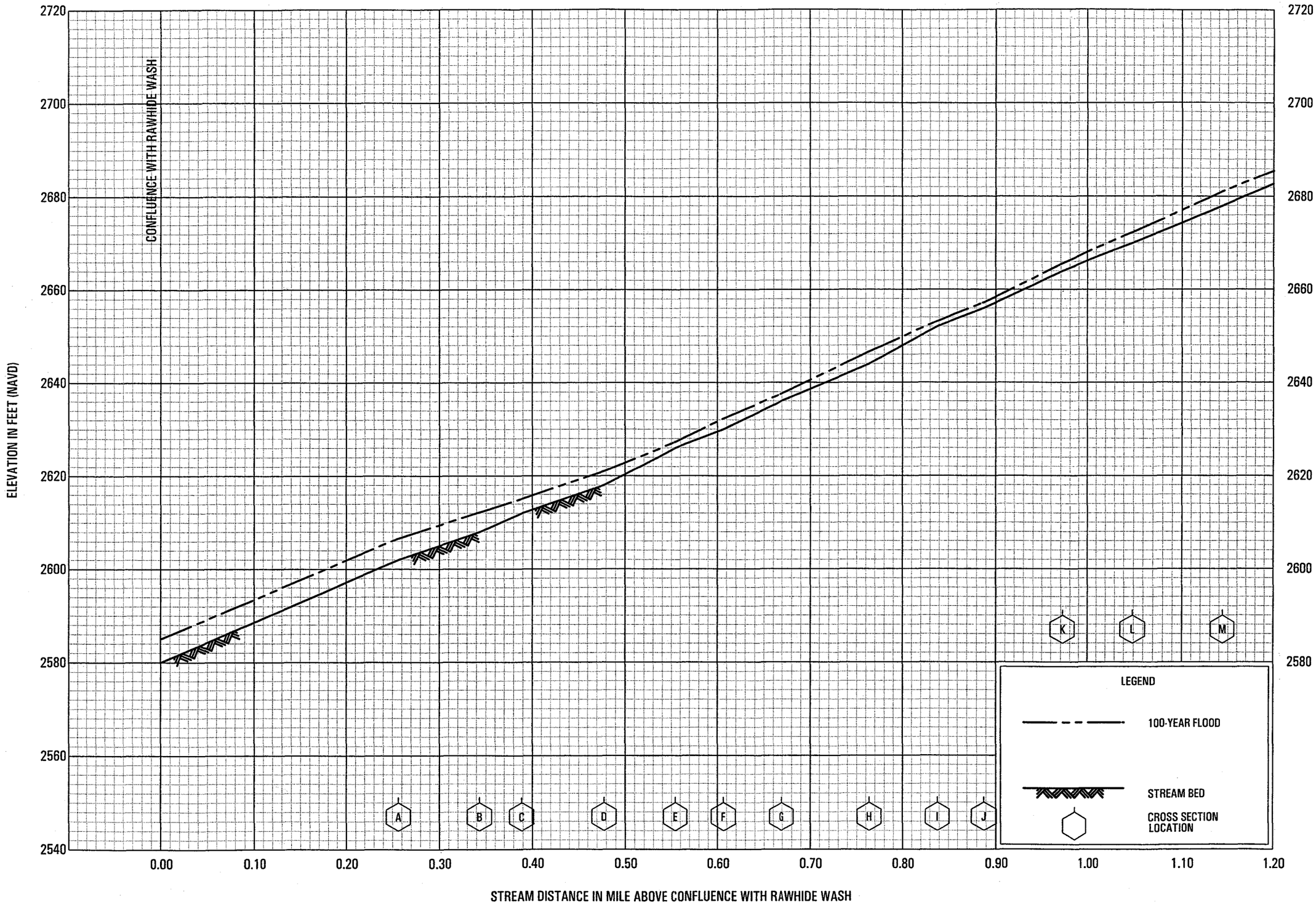
FLOOD PROFILES

TRIBUTARY 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS



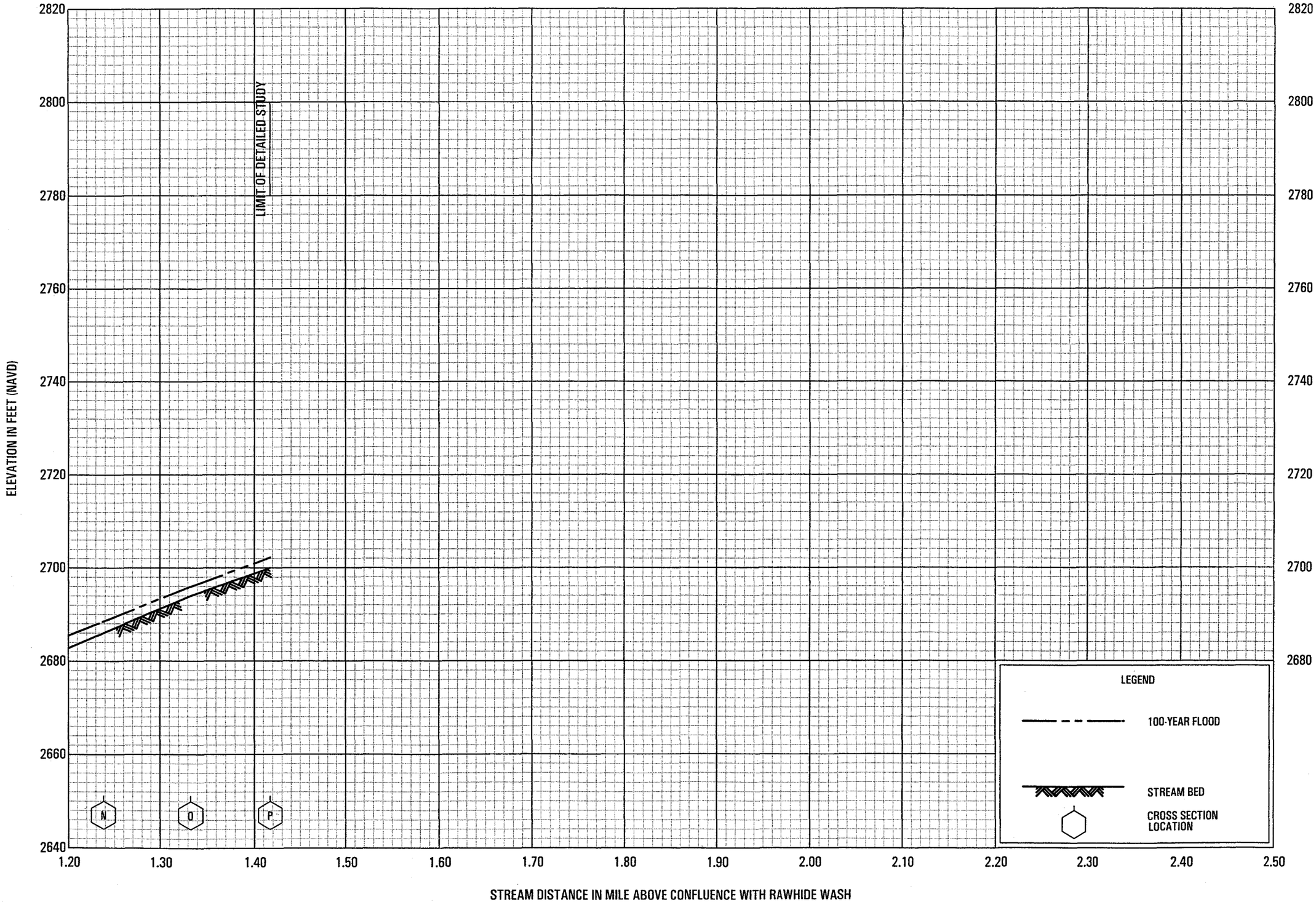
FLOOD PROFILES

TRIBUTARY 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS



FLOOD PROFILES

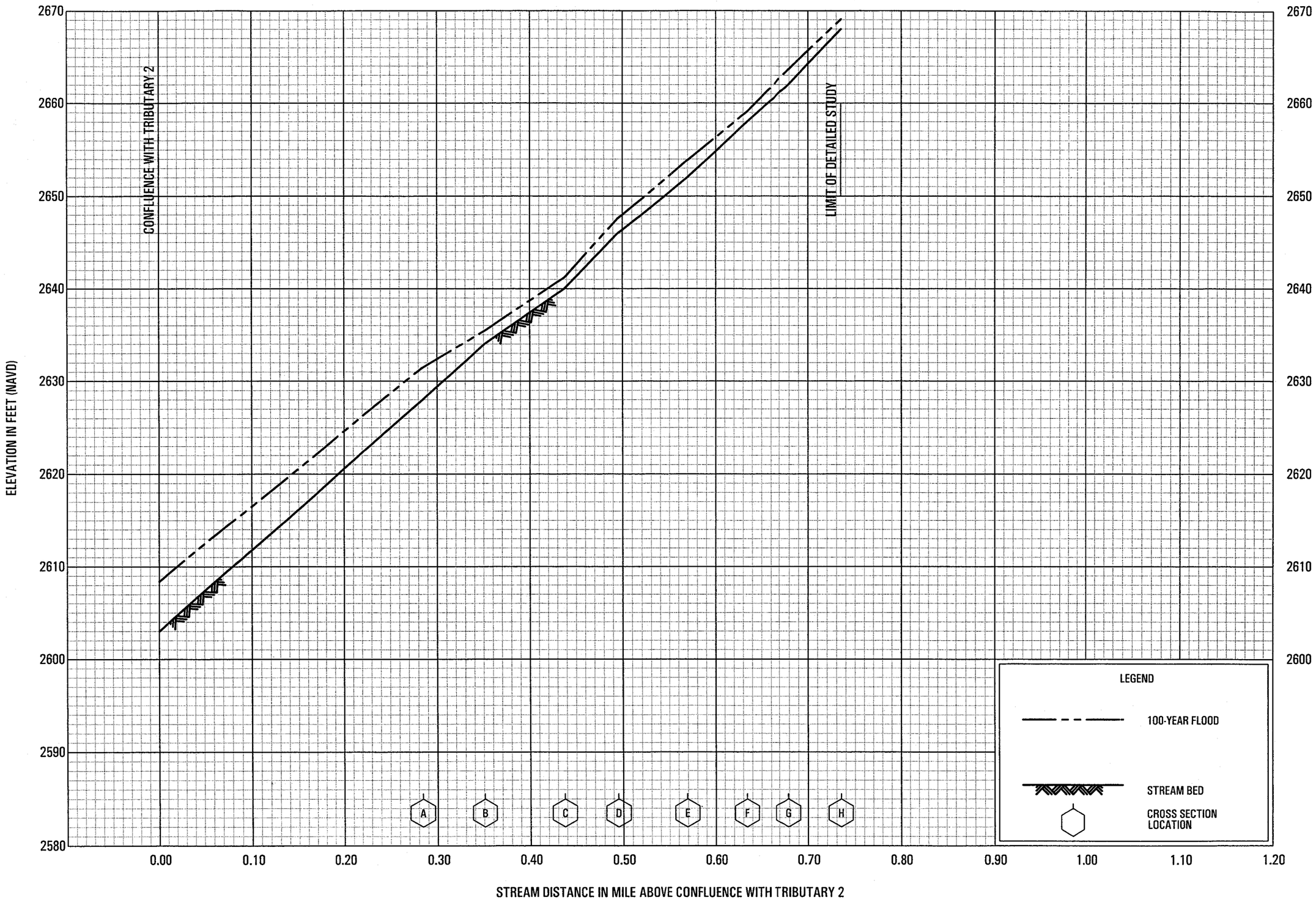
TRIBUTARY 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

02P



FLOOD PROFILES

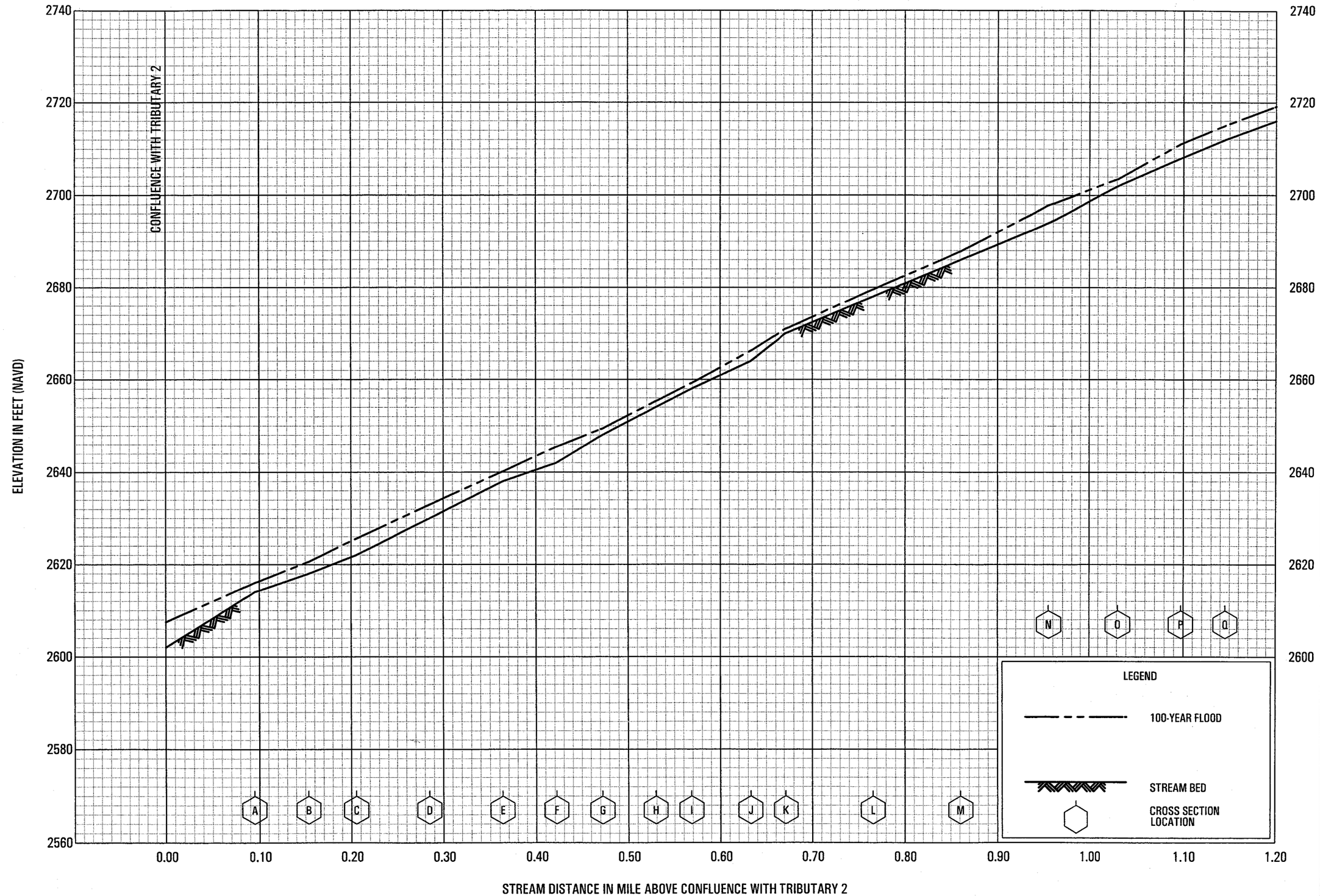
TRIBUTARY 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

01P



FLOOD PROFILES

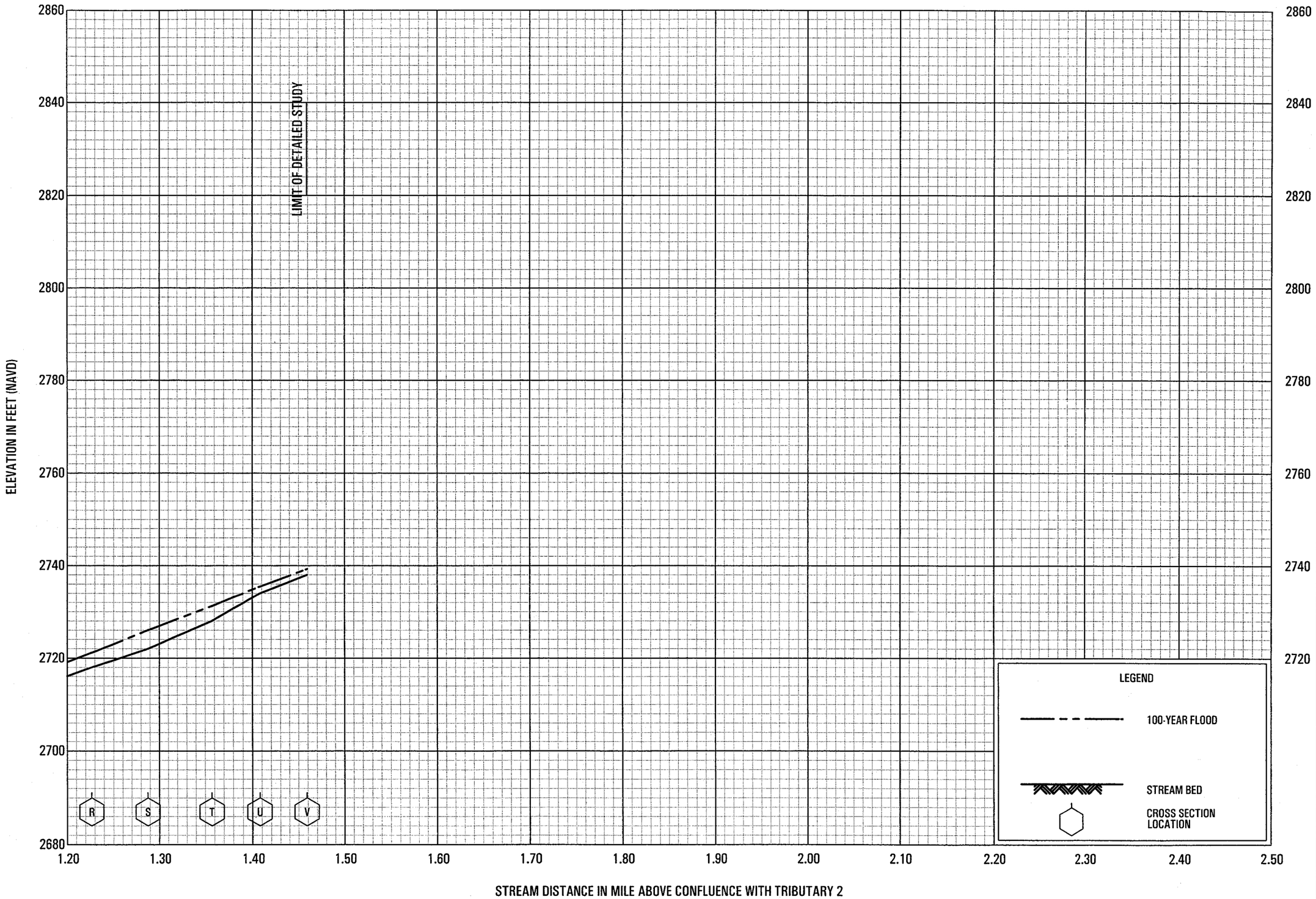
TRIBUTARY 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

01P



FLOOD PROFILES

TRIBUTARY 4

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

02P

APPENDIX E Hydraulic Analysis Supporting Documentation

E.1 ROUGHNESS COEFFICIENT ESTIMATION

Field Reconnaissance Report

E.2 CROSS SECTION PLOTS

Existing Conditions Cross Section Plots

E.3 EXPANSION AND CONTRACTION COEFFICIENTS

*See section 5.3.2.

E.4 ANALYSIS OF STRUCTURES

HY8 analysis for culvert at Dynamite Boulevard

E.5 HYDRAULIC CALCULATIONS

Existing Conditions Floodplain/Floodway Model

E.6 HEC-RAS MODELS ON DISK

E.1 ROUGHNESS COEFFICIENT ESTIMATION

Field Reconnaissance Report

Technical Data Notebook

Final Field Reconnaissance Report

Upper Rawhide Wash

Floodplain Delineation Study

FCD 98-12

Prepared For:

Flood Control District of Maricopa County
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KHA 091131.02
June, 1999

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3 References

1. United States Geological Survey, Water Resources Division, "Estimated Manning's Roughness Coefficients for Stream Channels and Floodplains in Maricopa County, Arizona," (April, 1991). Prepare for Flood Control District of Maricopa County.

2. Chow, V.T., "Open Channel Hydraulics." McGraw-Hill, 1959.

3. Flood Control District of Maricopa County, "Drainage Design Manual Volume II – Hydraulics," January, 1996.

4. B.N. Aldridge and J.M. Garret, "Roughness Coefficients for Stream Channels in Arizona," United States Department of the Interior Geological Survey, February, 1973.

APPENDIX A

Reach Limits and

Photograph Location Maps

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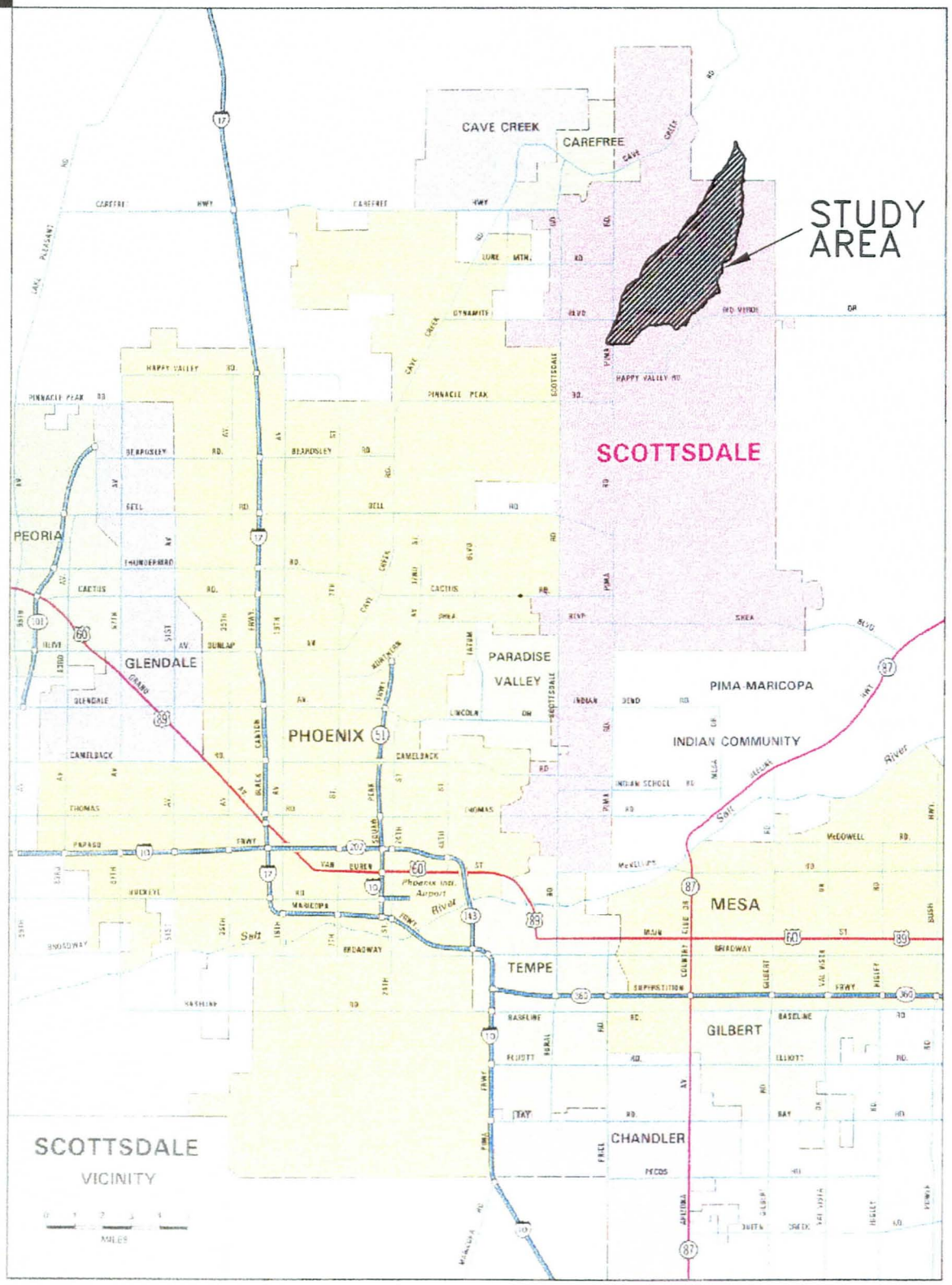

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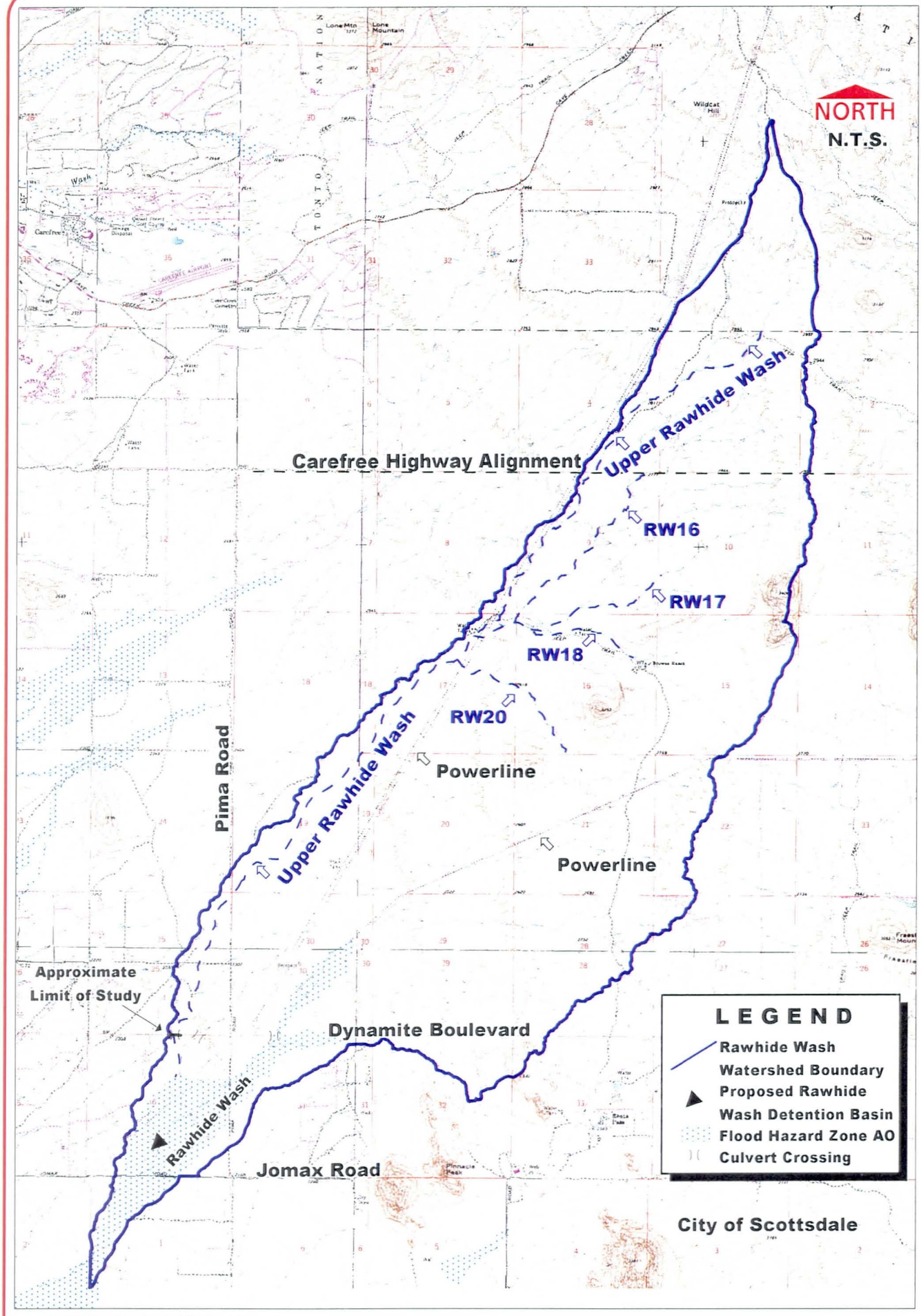
FIGURE 1 VICINITY MAP



Kimley-Horn and Associates, Inc.

FIGURE 2 LOCATION MAP

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2 Derivation of Manning's Roughness Coefficients 5
3 References 24

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Figure 1: Vicinity Map 2
Figure 2: Location Map 3

APPENDIX A Reach Limits and Photograph Location Map

1 Introduction

Kimley-Horn and Associates, Inc. (KHA) and the Flood Control District (FCD) of Maricopa County conducted a reconnaissance field trip of Upper Rawhide Wash from 2000 feet south of Dynamite Boulevard to the Carefree Highway alignment. The field trip was conducted on December 1st, 2nd, 8th, and 9th, 1998. The FCD attended the field trip on December 1st, only. The purpose of the field trip was to review the existing field conditions of the wash in order to assist in the evaluation of Manning's roughness coefficients. KHA photo-documented the main channel of the wash, overbank areas, and culvert crossings of Upper Rawhide Wash and the four tributaries. The field trip on December 1st began at the proposed location of the Rawhide Wash Detention Basin and ended approximately at the confluence of Upper Rawhide Wash with Tributary No. 1 (RW20). The field trip on December 2nd covered the entire Tributary No. 1 from the confluence of Upper Rawhide Wash with Tributary No. 1 to approximately 1.2 miles upstream. The field trip on December 8th covered the entire Tributary No. 2 (RW18) and No. 3 (RW17) from the confluence of Upper Rawhide Wash with Tributary No. 2 for a total reconnaissance of approximately 2.4 linear miles. The field trip on December 9th covered the entire Tributary No. 4 (RW16) from the confluence of Tributary 4 with Tributary No. for a total reconnaissance of approximately 1.1 linear miles.

The Upper Rawhide Wash watershed is approximately 13.6 square miles in area. The watershed is predominately undeveloped with the exception of Troon Village located along Dynamite Boulevard, east of Pima Road. The watershed is typical native Sonoran desert with ephemeral sandy washes. Washes within the study area generally flow to the southwest and are ephemeral in nature, flowing only in response to rainfall events. Vegetation found along the washes and watercourses consists of palo verde, mesquite, and ironwood. In the overbank areas and hillslopes are cacti of various sorts (saguaros, prickly pear, barrel cactus), ocotillo, bursage, creosote, yucca, agave, and various grasses and shrubs.

The project consists of approximately twelve (12) river miles of the Upper Rawhide Wash and four (4) of its major tributaries. The study area is located as follows: (see Figures 1 and 2: Vicinity Map and Location Map, respectively).

Rawhide Wash (main stem): Starting at the current FIS limit of detailed study for Wash 4D (Rawhide Wash approximately 1,800 feet south of Dynamite Boulevard) and extending upstream approximately 6.9 miles to the Tonto National Forest Boundary/City of Scottsdale corporate boundary from Township 5 North, Range 4 East to Township 6 North, Range 5 East.

Tributary RW20: Starting at its confluence with Rawhide Wash and extending upstream approximately 1.1 miles to the south section line of Section 16 (Lone Mountain Road alignment), Township 5 North, Range 5 East.

Tributary RW18: Starting at its confluence with Rawhide Wash and extending upstream approximately 1.3 miles to a confluence located approximately 1,100 feet west of the east section line of Section 16 (112th Street alignment), Township 5 North, Range 5 East.

Tributary RW17: Starting at its confluence with Tributary RW18 and extending upstream approximately 1.1 miles to the east section line of Section 9 (112th Street alignment), Township 5 North, Range 5 East.

Tributary RW16: Starting at its confluence with Tributary RW18 and extending upstream approximately 1.6 miles to the north section line of Section 9 (Carefree Highway alignment), Township 5 North, Range 5 East.

Upper Rawhide Wash and the four tributaries were subdivided for the purposes of this study into reaches of similar Manning's roughness coefficients. Locations of the reaches and reach limits are provided in Appendix A.

The following section of this report derives the Manning's roughness coefficients for Upper Rawhide Wash and the four tributaries. The method is based on the USGS report titled "Estimated Manning's Roughness Coefficients for Stream Channels and Floodplains in Maricopa County, Arizona" (April, 1991).

2 Derivation of Manning's Roughness Coefficients

Manning's roughness coefficients ("n" values) were derived based on the visual inspection conducted in December 1998 and from the procedure given in the USGS document described above. The following sets of site information consist of the location of the cross section, the reach number, the applicable cross sections to which the derivation applies, a description of the channel, a table showing the values of "n" for the channel, left and right overbanks for the 100-year flood, and a photograph depicting typical channel forms, banks, vegetation, and bed materials. Photographs of the study area were taken in early December 1998. The frame of the square grid show in several photographs is 1.5-feet outside dimension on a side with an internal square of 1-foot on a side and a grid spacing on 1-inch.

For most sites, a photograph was taken of typical bed materials. The photographs of the channels and floodplains were used in comparison in the document illustrations by the USGS and other references.

The description of each reach/cross section includes the location of the channel cross section, the description of the channel, and the evaluation of the estimated "n" value. Changes in channel geometry and type and distribution and density of vegetation are described. The channel cross section and the photographs are used in conjunction with the site description to assess how "n" was defined.

The table shows the components of the roughness coefficient for the 100-year flood that were estimates for the channel and the overbanks. The total "n" values are the sum of the base value of "n" for a straight uniform channel (n_b); surface irregularities (n_1); obstruction (n_2); and vegetation (n_3). A blank indicates that a roughness coefficient of zero was used. A meander ratio was applied based on the ratio of the meander length to the straight length of the channel reach. The meander adjustment values apply to flow confined in the channel and not to downvalley flow crossing meanders.

Location of Cross Section: Mainstem Uppper Rawhide 1200 ft downstream of Dynamite Blvd
Reach Number: Rawhide Wash Reach 1
Applicable Cross Sections: 7.606 to 8.092
Description of Channel: Alluvial coarse sandy bed broad, flat, clear, relatively straight considering width of channel trapezoidal in shape, banks lined with medium dense stands of shrubs/trees.

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.07	nb	0.028	nb	0.07
n1		n1	0.001	n1	
n2		n2	0.002	n2	
n3		n3		n3	
n	0.07	n	0.031	n	0.07
		Meander	1		
lobn	0.07	chn	0.031	robn	0.07

Photo No. 1/7 Mainstem Rawhide looking north. Approximately 1200 ft downstream from Dynamite Blvd.

Location of Cross Section: Mainstream Upper Rawhide 1050 ft upstream of Dynamite Blvd
Reach Number: Rawhide Wash Reach 2
Applicable Cross Sections: 8.186 to 8.47
Description of Channel: alluvial coarse sandy bed channel, broad, flat, some medium brush in channel, slight meander, trapezoidal in shape, banks lined with medium sized trees/shrubs

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.07	nb	0.028	nb	0.07
n1		n1	0.002	n1	
n2		n2	0.001	n2	
n3		n3	0.002	n3	
n	0.07	n	0.033	n	0.07
		Meander	1.15		
lobn	0.07	chn	0.038	robn	0.07

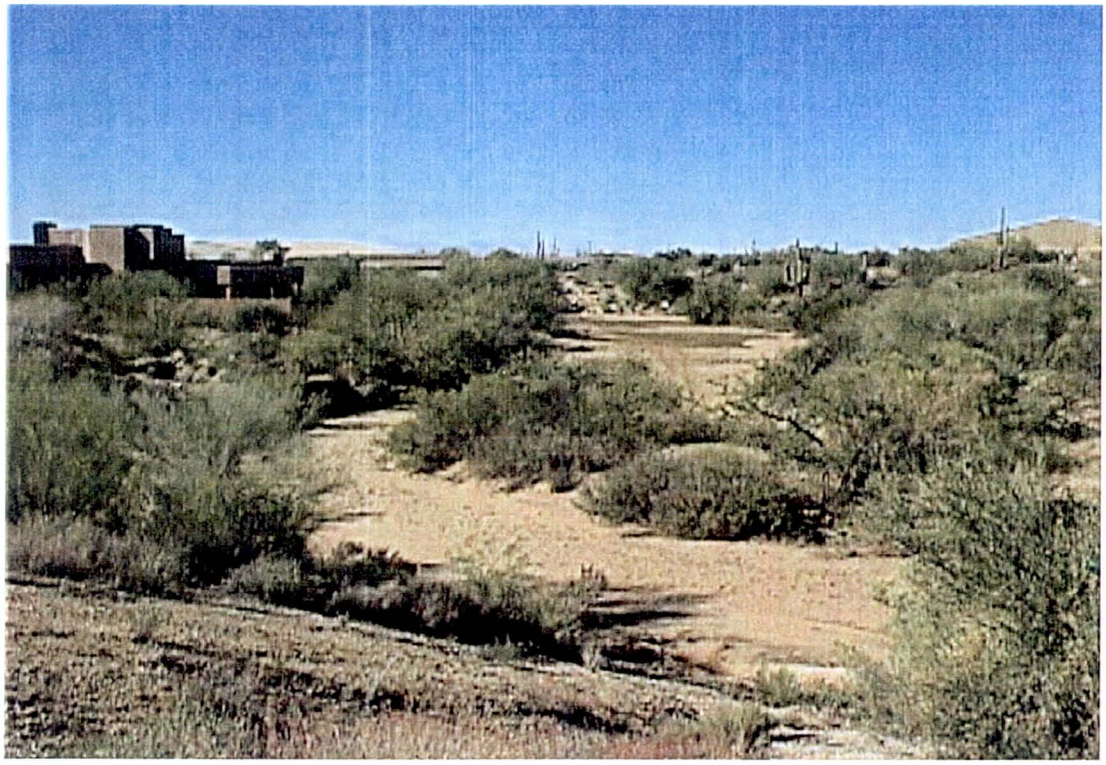


Photo 1/11. Mainstem Rawhide looking west. Approximately 2000 ft upstream of Dynamite.

Location of Cross Section: Mainstream Upper Rawhide 2600 ft upstream of Dynamite Blvd
Reach Number: Rawhide Wash Reach 3
Applicable Cross Sections: 8.565 to 8.851
Description of Channel: Alluvial coarse sandy bed channel, relatively broad, flat, fairly straight, flat trapezoidal in shape. Tree/shrubs lined banks

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.06	nb	0.028		0.06
n1		n1	0.001	n1	
n2		n2	0.005	n2	
n3		n3	0.01	n3	
n	0.06	n	0.044	n	0.06
		Meander	1		
lobn	0.06	chn	0.044	robn	0.06

Photo 1/20. Mainstem Rawhide. Looking north. Approximately 450 ft south of Via Donna.

Location of Cross Section: Mainstream Upper Rawhide S/W corner of Pima and Dixileta
Reach Number: Rawhide Wash Reach 4
Applicable Cross Sections: 8.893 to 9.13
Description of Channel: 40 acre parcel with 8-foot perimeter wall. Multiple barrel culverts u/s and d/s crossings of wash. Alluvial sandy bed channel. Graded. Vegetation cleared. Hay bales stacked within channel

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.04	nb	0.028	nb	0.04
n1		n1	0.001	n1	
n2		n2	0.03	n2	
n3		n3		n3	
n	0.04	n	0.059	n	0.04
		Meander	1		
lobn	0.04	chn	0.059	robn	0.04

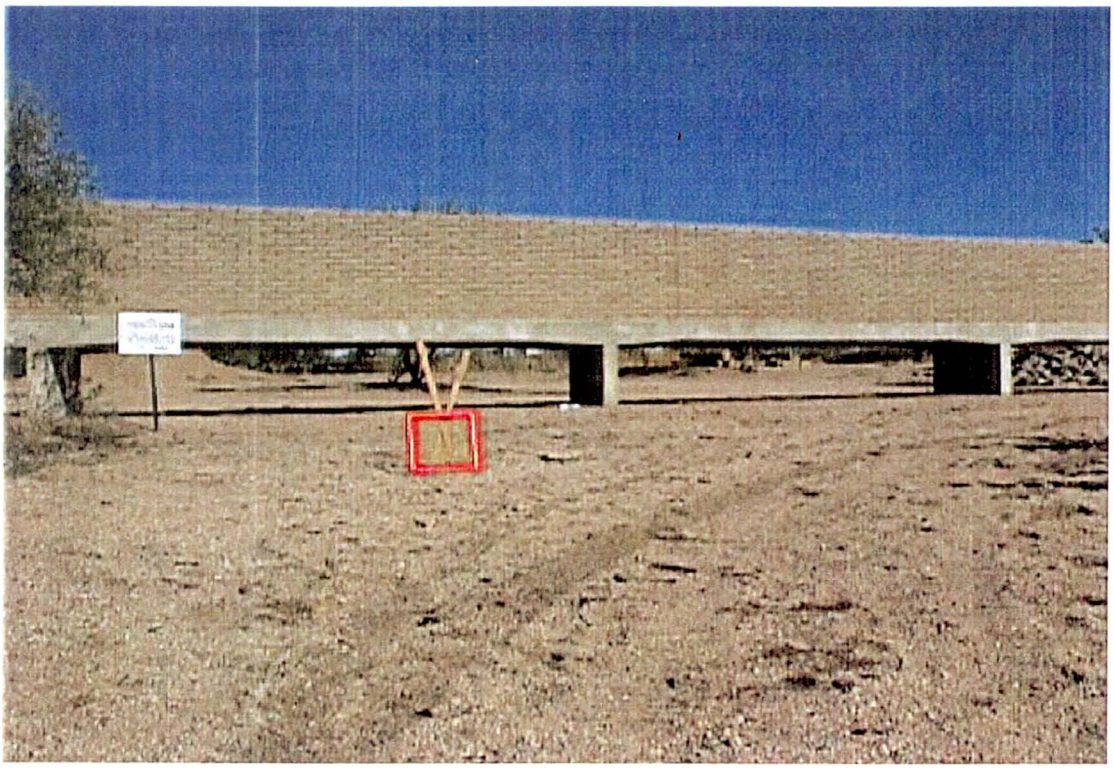


Photo 2/6. Mainstem Rawhide looking north at downstream culvert crossing at Constatine property.

Location of Cross Section:
Mainstem Upper Rawhide 2600 ft Upstream of Pima Rd crossing
Reach Number:
Reach 5. Mainstem Upper Rawhide upstream of Pima Road
Applicable Cross Sections:
9.157 to 9.892
Description of Channel:
Alluvial sandy bed channel, medium degree of braiding, vegetation low to medium sized shrubs, medium density, flat, broad, tree-lined banks

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.07	nb	0.028	nb	0.07
n1		n1	0.002	n1	
n2		n2	0.015	n2	
n3		n3	0.01	n3	
n	0.07	n	0.055	n	0.07
		Meander	1		
lobn	0.07	chn	0.055	robn	0.07

Photo 2/20. Mainstem Rawhide looking north. Approximately 2400 ft north of Pima Road crossing.

Location of Cross Section:
Mainstream Upper Rawhide 6700 ft u/s from Pima Road crossing
Reach Number:
Rawhide Wash Reach-6 Straight, broad, sandy bottom
Applicable Cross Sections:
9.987 to 11.881
Description of Channel:
Alluvial sandy bottom channel, broad, flat, tree-lined banks, in-channel vegetation medium shrubs light density. Local regions of braiding, trapezoidal in shape

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.07	nb	0.028	nb	0.07
n1		n1	0.001	n1	
n2		n2	0.005	n2	
n3		n3	0.01	n3	
n	0.07	n	0.044	n	0.07
		Meander	1		
lobn	0.07	chn	0.044	robn	0.07

Photo 3/1. Mainstem Rawhide looking southwest approximately 1400 ft downstream of Lone Mountain Road.

Location of Cross Section: Mainstream Upper Rawhide 750 ft U/S confluence with Trib #2
Reach Number: Rawhide Wash Reach-7 Confluence area of Rawhide w/Tributaries
Applicable Cross Sections: 11.976 to 12.07
Description of Channel: Alluvial sandy bottom channel. Shrubs with trees, grasses, medium density, braided

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.07	nb	0.03	nb	0.07
n1		n1	0.005	n1	
n2		n2	0.005	n2	
n3		n3	0.01	n3	
n	0.07	n	0.05	n	0.07
		Meander	1		
lobn	0.07	chn	0.05	robn	0.07

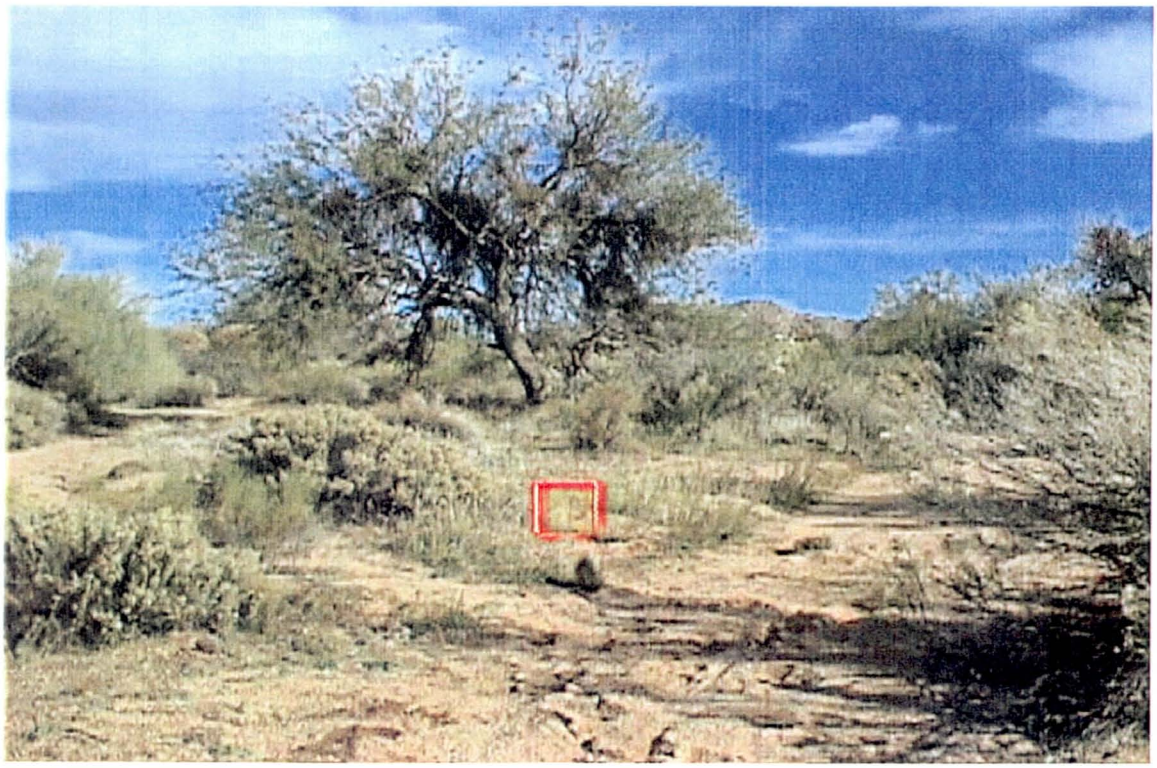


Photo 5/15. Mainstem Rawhide at confluence area with Tributary 2 approximately 450 ft south of Dove Valley Road alignment.

Location of Cross Section: Mainstem Upper Rawhide 2100 ft u/s confluence with Trib #2
Reach Number: Rawhide Wash Reach-8 Mainstem Upper Rawhide
Applicable Cross Sections: 12.09 to 13.775
Description of Channel: Sandy bottom channel with outcrops of rock, fairly confined, shrub lined banks, trapezoidal in shape, some meander

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.03	nb	0.065
n1		n1	0.001	n1	
n2		n2	0.004	n2	
n3		n3	0.005	n3	
n	0.065	n	0.04	n	0.065
		Meander	1		
lobn	0.065	chn	0.04	robn	0.065

Photo 5/12. Mainstem Rawhide Wash looking south approximately 400 ft upstream of confluence.

Location of Cross Section: Mainstem Upper Rawhide 2100 ft u/s Carefree Highway alignment
Reach Number: Rawhide Wash Reach-9
Applicable Cross Sections: 13.869 to 14.059
Description of Channel: Location of split flow out of watershed, braided sandy bottom channel with medium density brush, tall trees

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.03	nb	0.065
n1		n1	0.005	n1	
n2		n2	0.005	n2	
n3		n3	0.01	n3	
n	0.065	n	0.05	n	0.065
		Meander	1		
lobn	0.065	chn	0.05	robn	0.065

Photo 6/10. Mainstem Rawhide Wash looking northeast approximately 1400 ft upstream of Carefree Highway alignment.

Location of Cross Section: Mainstem Upper Rawhide 4450 ft u/s Carefree Highway alignment
Reach Number: Rawhide Wash Reach-10
Applicable Cross Sections: 14.154 to 15.29
Description of Channel: Sandy bottom channel, fairly confined trapezoidal, some brush in channel, clear to light density, tree/shrub lined banks and overbanks

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.03	nb	0.065
n1		n1	0.001	n1	
n2		n2	0.004	n2	
n3		n3	0.005	n3	
n	0.065	n	0.04	n	0.065
		Meander	1		
lobn	0.065	chn	0.04	robn	0.065

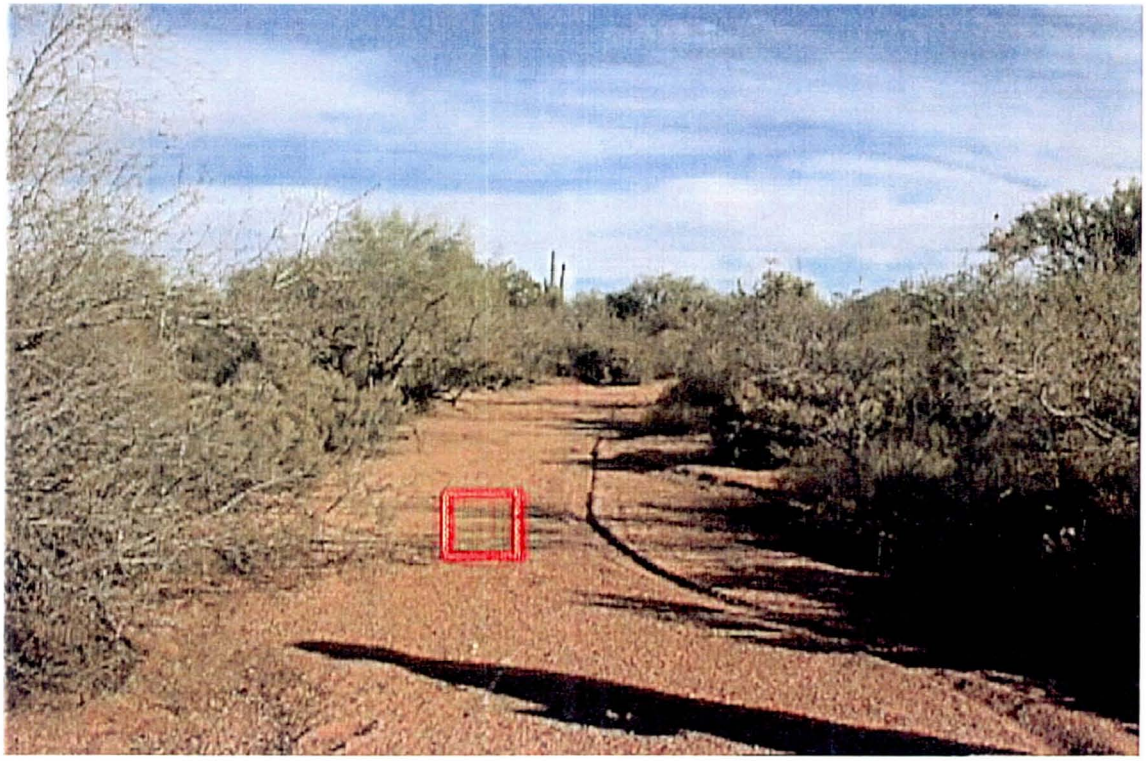


Photo 5/19. Mainstem Rawhide Washl looking northeast approximately 1600 ft downstream of forest boundary.

Location of Cross Section: Tributary #1 1350 ft u/s confluence with Rawhide
Reach Number: Tributary 1 Reach 1. (T1-1)
Applicable Cross Sections: 0.095 to 0.429
Description of Channel: Sandy bed channel, braided, medium dense shrub and trees, meandering

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.028	nb	0.065
n1		n1	0.002	n1	
n2		n2	0.003	n2	
n3		n3	0.005	n3	
n	0.065	n	0.038	n	0.065
		Meander	1		
lobn	0.065	chn	0.038	robn	0.065

Photo 3/19. Tributary 1 (RW 20) looking west approximately 1300 upstream of Rawhide Wash.

Location of Cross Section: Tributary #1 3450 ft u/s from confluence with Rawhide
Reach Number: Tributary 1 Reach 2 (T1-2)
Applicable Cross Sections: 0.473 to 1.136
Description of Channel: Sandy bed channel, trapezoidal, fairly confined, defined banks gradual meanders

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.06	nb	0.028	nb	0.06
n1		n1	0.001	n1	
n2		n2	0.002	n2	
n3		n3	0.002	n3	
n	0.06	n	0.033	n	0.06
		Meander	1		
lobn	0.06	chn	0.033	robn	0.06

Photo 4/2. Tributary 1Reach 2 (RW20) looking upstream toward end of delineation.

Location of Cross Section: Tributary #2 1500 ft u/s from confluence with Tributary #4
Reach Number: Tributary 2 Reach 1 (T2-1)
Applicable Cross Sections: 0.334 to 0.947
Description of Channel: Sandy braided channel, medium to high density of thick brush/ shrubs

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.03	nb	0.065
n1		n1	0.005	n1	
n2		n2	0.002	n2	
n3		n3	0.006	n3	
n	0.065	n	0.043	n	0.065
		Meander	1		
lobn	0.065	chn	0.043	robn	0.065

Photo 4/12. Tributary 2 Reach 1 (RW18) looking east approximately 2800 ft east of Rawhide Wash confluence.

Location of Cross Section: Tributary #2 4750 ft u/s with confluence of Tributary #4
Reach Number: Tributary 2 Reach 2 (T2-2)
Applicable Cross Sections: 1.044 to 1.423
Description of Channel: Sandy bed channel, straight, confined channel, tree-lined banks, overbanks heavy vegetation

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.07	nb	0.03	nb	0.07
n1		n1	0.001	n1	
n2		n2	0.002	n2	
n3		n3	0.002	n3	
n	0.07	n	0.035	n	0.07
		Meander	1		
lobn	0.07	chn	0.035	robn	0.07

Photo 4/15. Tributary 2 Reach 2 looking west from upstream end of delineation.

Location of Cross Section: Tributary #3 1700 ft u/s confluence of Tributary #2
Reach Number: Tributary 3 Reach 1 (T3-1)
Applicable Cross Sections: New to 0.758
Description of Channel: Sandy bottom, slight meander, some braiding, in-channel vegetation medium brush, tree/brush-lined banks

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.03	nb	0.065
n1		n1	0.002	n1	
n2		n2	0.002	n2	
n3		n3	0.005	n3	
n	0.065	n	0.039	n	0.065
		Meander	1		
lobn	0.065	chn	0.039	robn	0.065

Photo 4/20. Looking northeast up Tributary 3 Reach 1 approximately 2100 ft from confluence with Tributary 2.

Location of Cross Section: Tributary #3 4200 ft u/s of confluence with Tributary #2
Reach Number: Tributary 3 Reach 2 (T3-2)
Applicable Cross Sections: .852 to 1.136
Description of Channel: Sandy braided channel, flat, wide, medium to heavy brush, tree-lined banks

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.03	nb	0.065
n1		n1	0.002	n1	
n2		n2	0.005	n2	
n3		n3	0.01	n3	
n	0.065	n	0.047	n	0.065
		Meander	1		
lobn	0.065	chn	0.047	robn	0.065

Photo 5/5. Tributary 3 Reach 2 looking downstream from upstream end of delineation.

Location of Cross Section: Tributary #4 400 ft u/s confluence with Tributary #2
Reach Number: Tributary 4 Reach 1 (T4-1)
Applicable Cross Sections: 0.0947 to 0.663
Description of Channel: Sandy alluvial bed channel, straight, fairly clear, tree/shrub-lined banks

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.03	nb	0.065
n1		n1	0.001	n1	
n2		n2	0.005	n2	
n3		n3	0.002	n3	
n	0.065	n	0.038	n	0.065
		Meander	1		
lobn	0.065	chn	0.038	robn	0.065

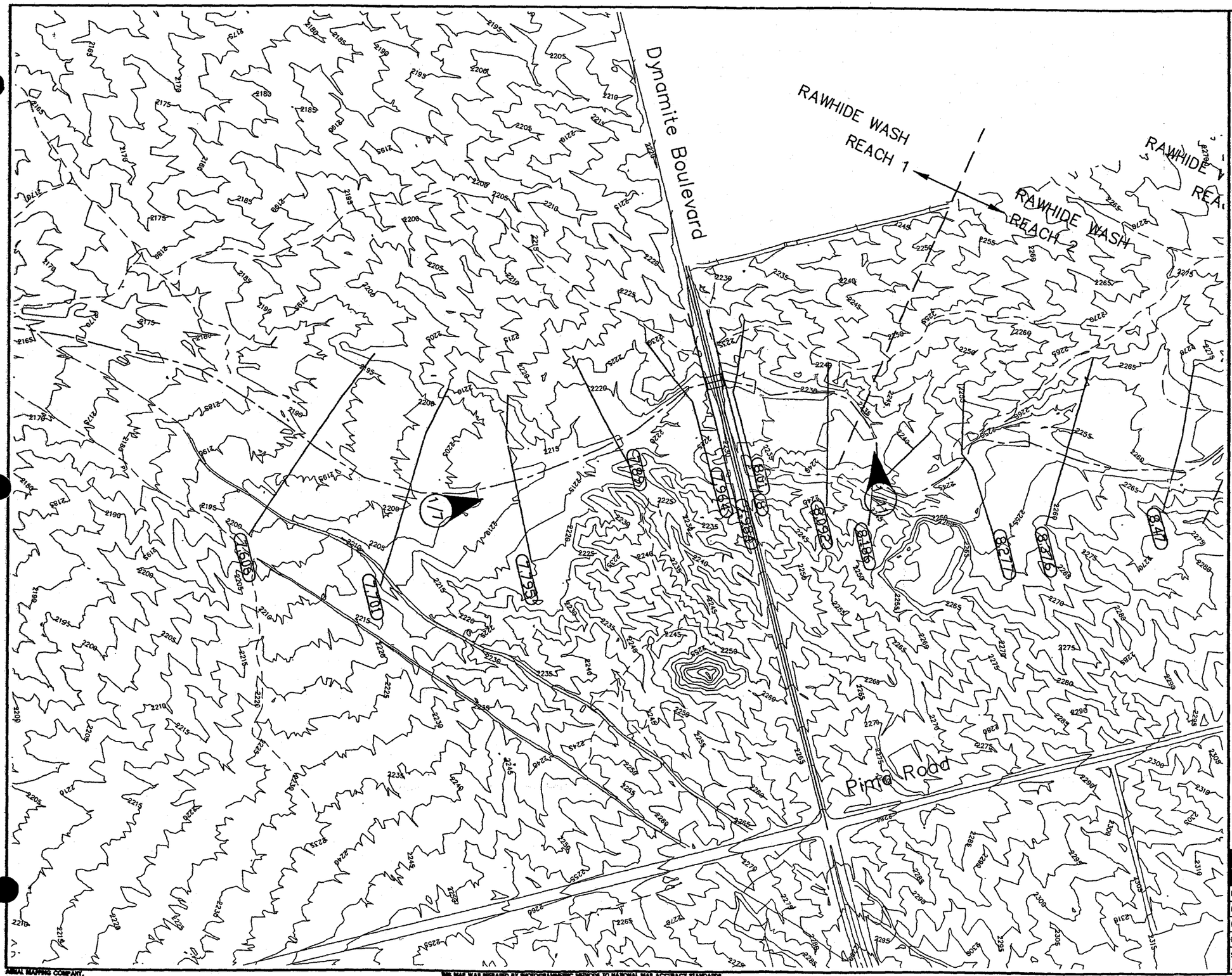
Photo 6/12. Tributary 4 Reach 1 looking upstream approximately 400 ft from confluence with Tributary 1.

Location of Cross Section: Tributary # 4 4800 ft u/s confluence with Tributary # 2
Reach Number: Tributary 4 Reach 2 (T4-2)
Applicable Cross Sections: 0.758 to 1.61
Description of Channel: Sandy bed channel, fairly confined, some meander, medium density shrub and trees along banks and within channel

Manning's Roughness Coefficient Calculation for the 100-year event:

Left Overbank		Channel		Right Overbank	
nb	0.065	nb	0.03	nb	0.065
n1		n1	0.003	n1	
n2		n2	0.003	n2	
n3		n3	0.002	n3	
n	0.065	n	0.038	n	0.065
		Meander	1		
lobn	0.065	chn	0.038	robn	0.065

Photo 6/18. Tributary 4 Reach 2 looking northeast approximately 500 ft upstream from Westland Drive Road alignment.



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	(A) FP-100 Yr WSE / FW-Floodway WSE (A)
ELEVATION REFERENCE MARK	BM43 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION (CODE #/PHOTO #)	#/#

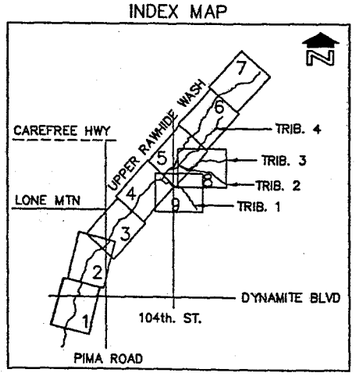
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 19##

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

NOTES

INDEX MAP



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SCALE: 1" = 200'

CONTOUR INTERVAL = 2' FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
PLANS	SH	FEB 99
PLANS CHK.	RAE	FEB 99

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

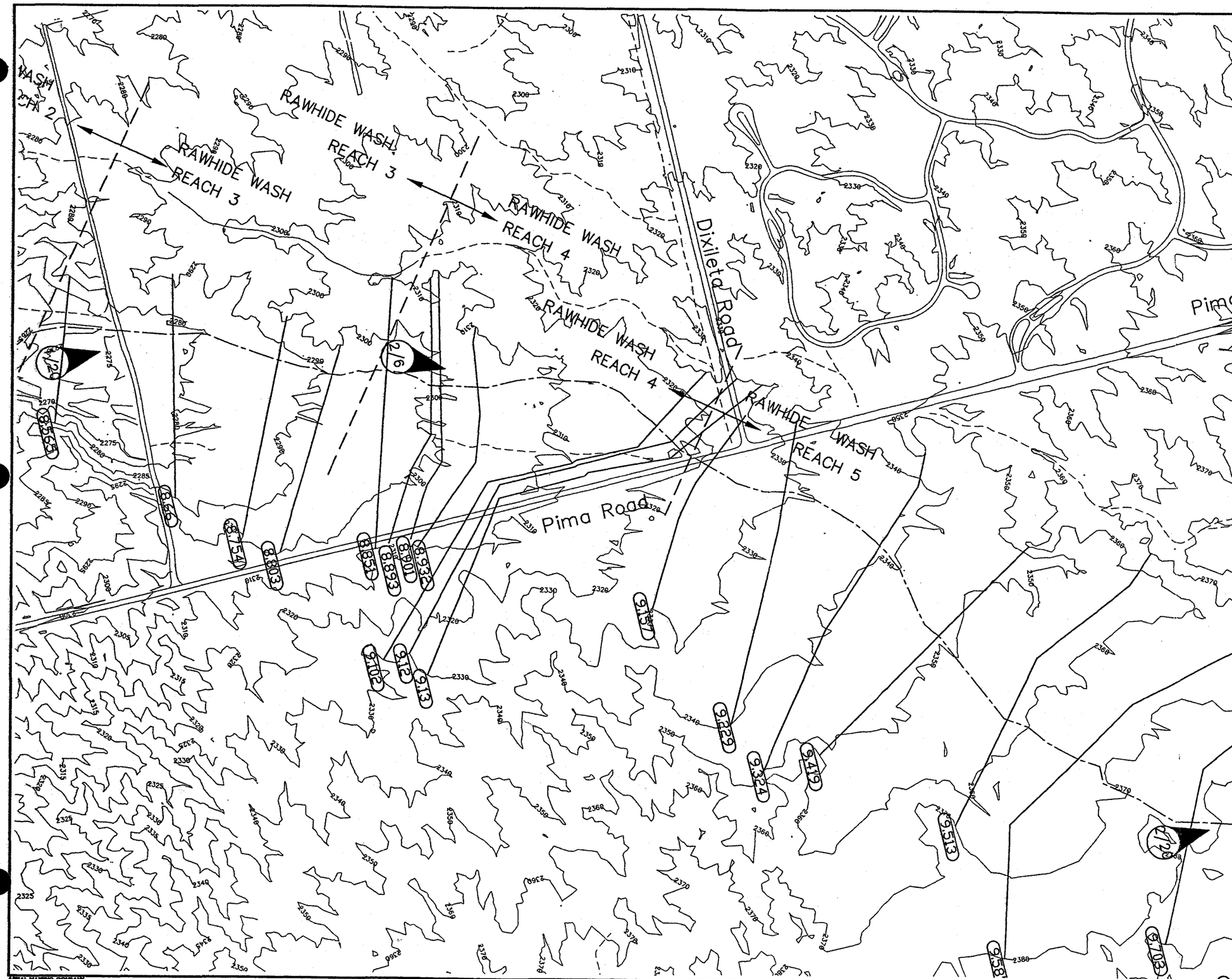
CHIEF ENGINEER AND GENERAL MANAGER

SUBMITTED BY: DRAFT DATE:

SHEET 1 OF 9

AERIAL MAPPING COMPANY, SURVEYING COMPANY AND FLIGHT DATES GO HERE

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS
1" = 200' HORIZONTAL SCALE AND 1' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY
DATA REVIEWED BY: DATE OF FLIGHT



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	A — FP-100 Yr WSE / FW-Floodway WSE — A
ELEVATION REFERENCE MARK	BRMS X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION (DNK #/PHOTO #)	#/#

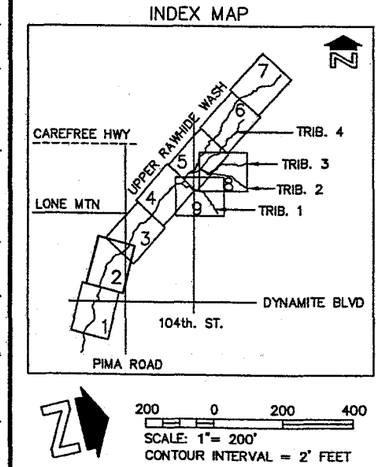
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 19##

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

NOTES

INDEX MAP



Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
PLANS	SH	FEB 99
PLANS CHK.	RAE	FEB 99

SUBMITTED BY: DRAFT DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

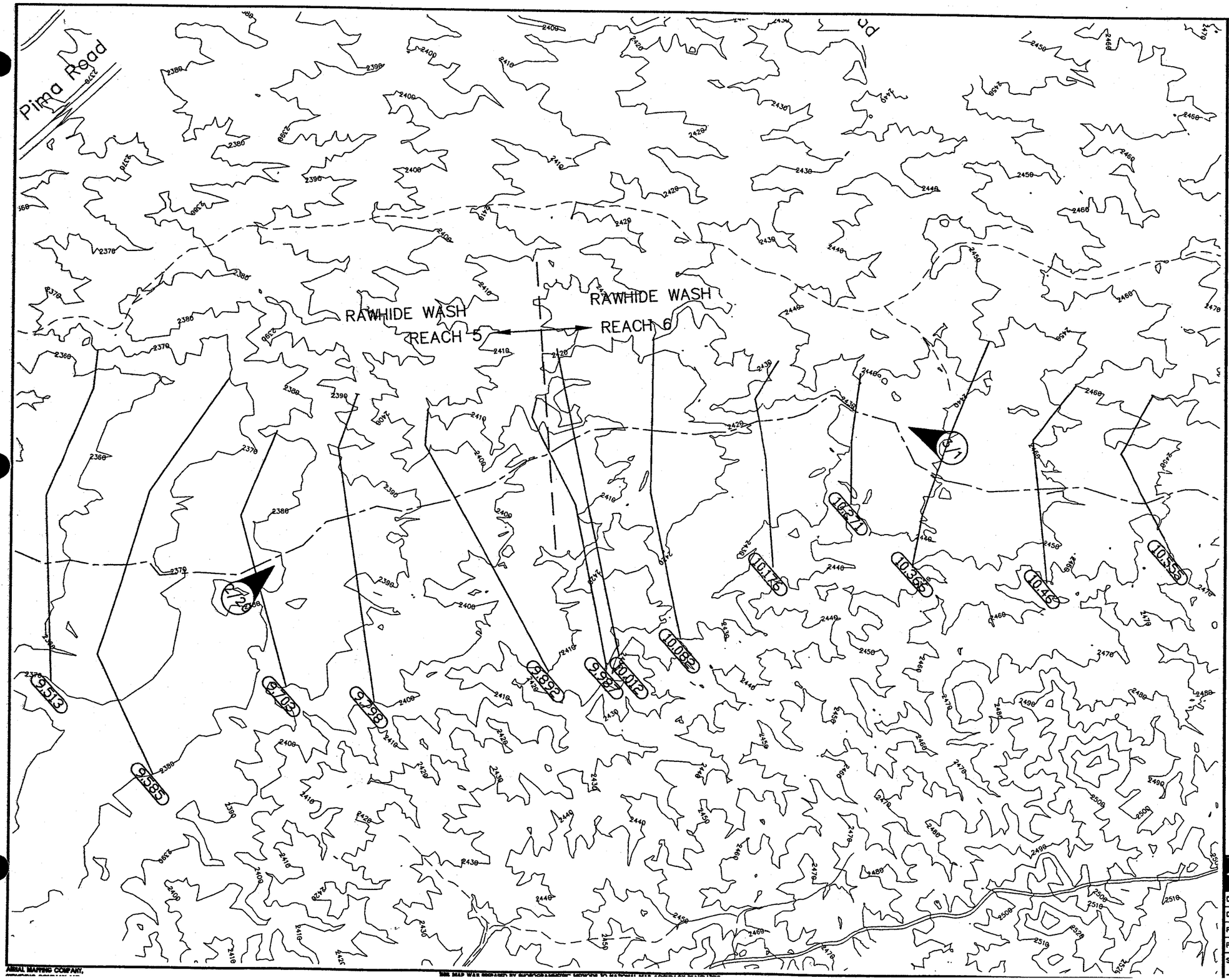
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 2 OF 9

AERIAL MAPPING COMPANY, SURVEYING COMPANY AND

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	A — FP-100 Yr WSE / FW-Floodway WSE — A
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION (DIMK #/PHOTO #)	8/8

ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 19##

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

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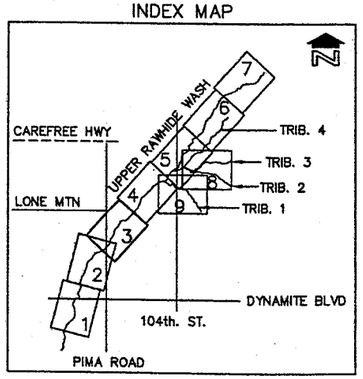
INDEX MAP



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SCALE: 1"= 200'

CONTOUR INTERVAL = 2' FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
PLANS	SH	FEB 99
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SUBMITTED BY: DRAFT DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

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CHIEF ENGINEER AND GENERAL MANAGER

SHEET 3 OF 9

AERIAL MAPPING COMPANY,

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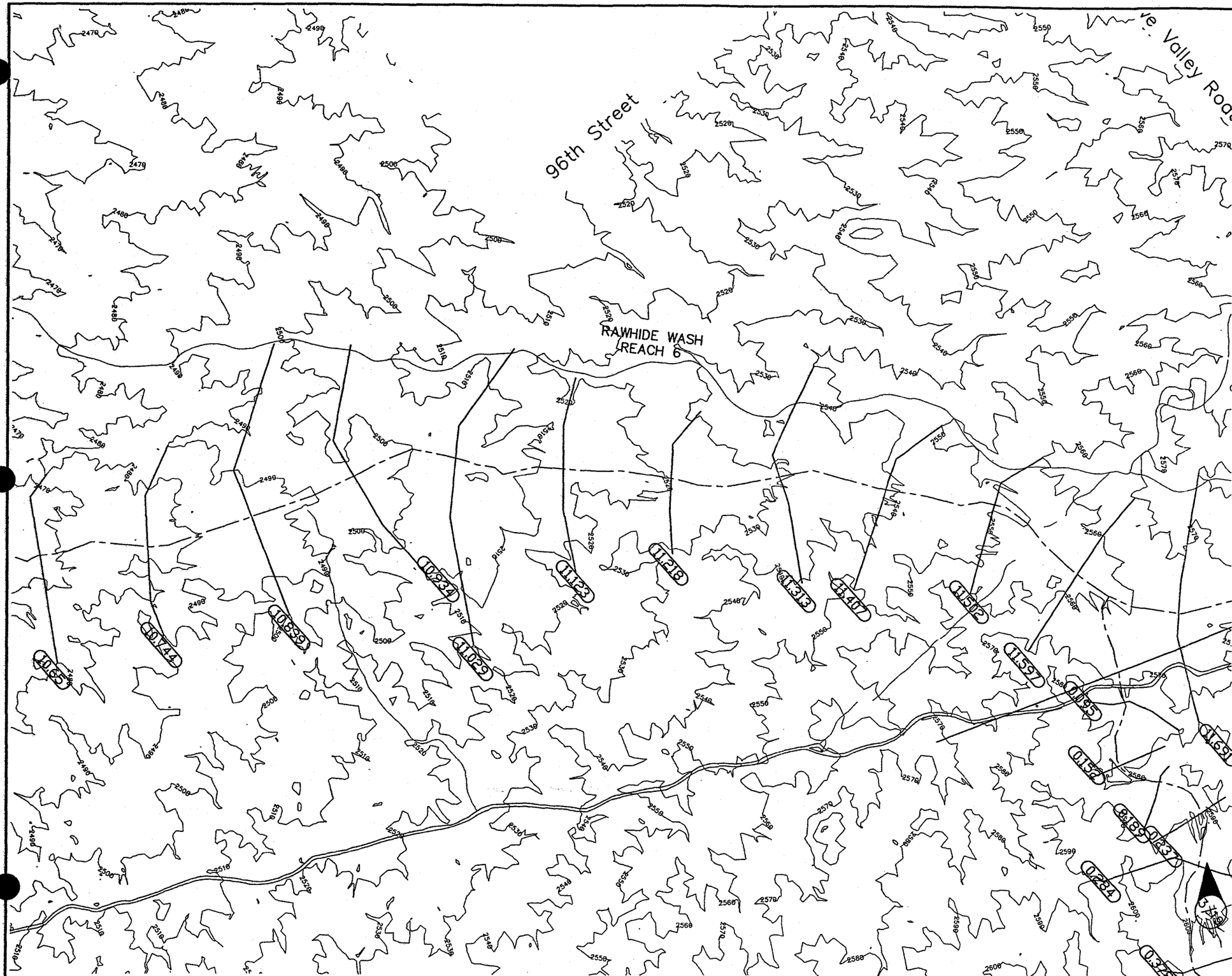

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	A — FP-100 Yr WSE / FW-Floodway WSE — A
ELEVATION REFERENCE MARK	ERMS X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION IDMK #/PHOTO #	#/#

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NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 19##

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

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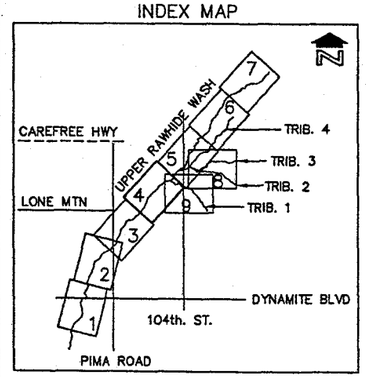

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SCALE: 1"= 200'

CONTOUR INTERVAL = 2' FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
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SHEET 4 OF 9

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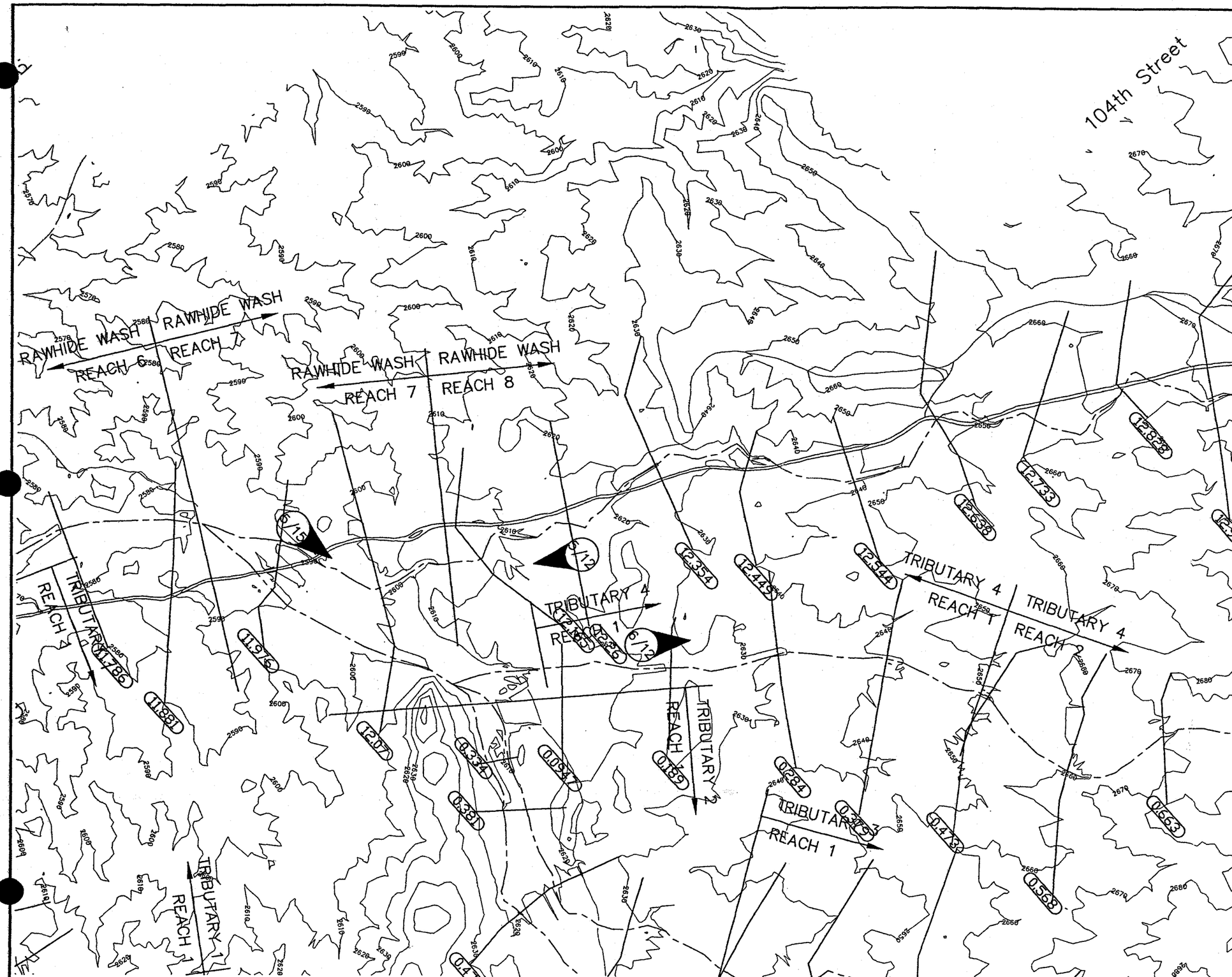


FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	A — FP-100 Yr WSE / FW-Floodway WSE — A
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2530
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION (DISK #/PHOTO #)	#/#

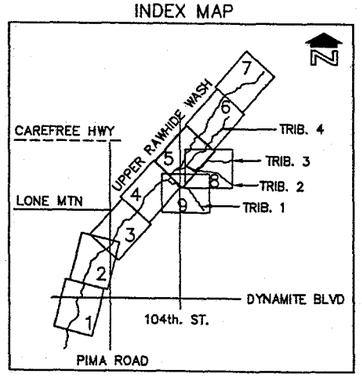
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

NOTES

INDEX MAP



N

200 0 200 400

SCALE: 1" = 200'

CONTOUR INTERVAL = 2' FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
PLANS	SH	FEB 99
PLANS CHK.	RAE	FEB 99

SUBMITTED BY: DRAFT DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

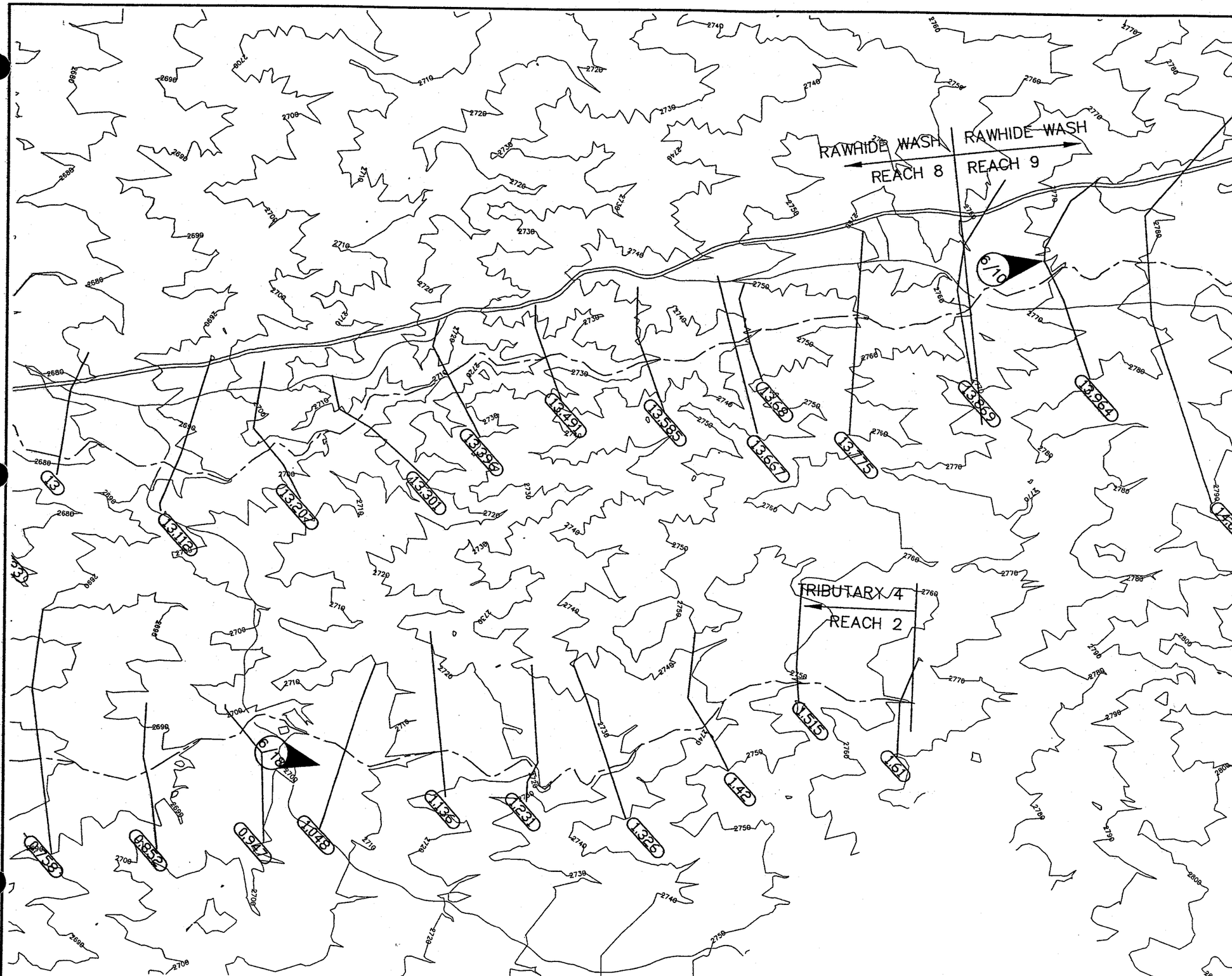
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 5 OF 9

AERIAL MAPPING COMPANY, SURVEYING COMPANY AND FLIGHT DATES (D/D) 10/96

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS 1" = 200' HORIZONTAL SCALE AND 1' CONTOUR INTERVALS AND BASED ON GROUND CONTROL SURVEY



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	A — FP-100 Yr WSE / FW-Floodway WSE — A
ELEVATION REFERENCE MARK	ERMS X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION (DISK #/PHOTO #)	#/#

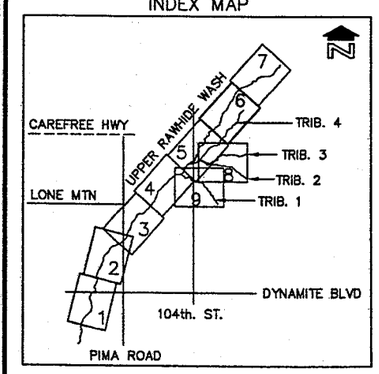
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 19##

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

NOTES

INDEX MAP



N

200 0 200 400

SCALE: 1" = 200'

CONTOUR INTERVAL = 2' FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
PLANS	SH	FEB 99
PLANS CHK.	RAE	FEB 99

SUBMITTED BY: DRAFT DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

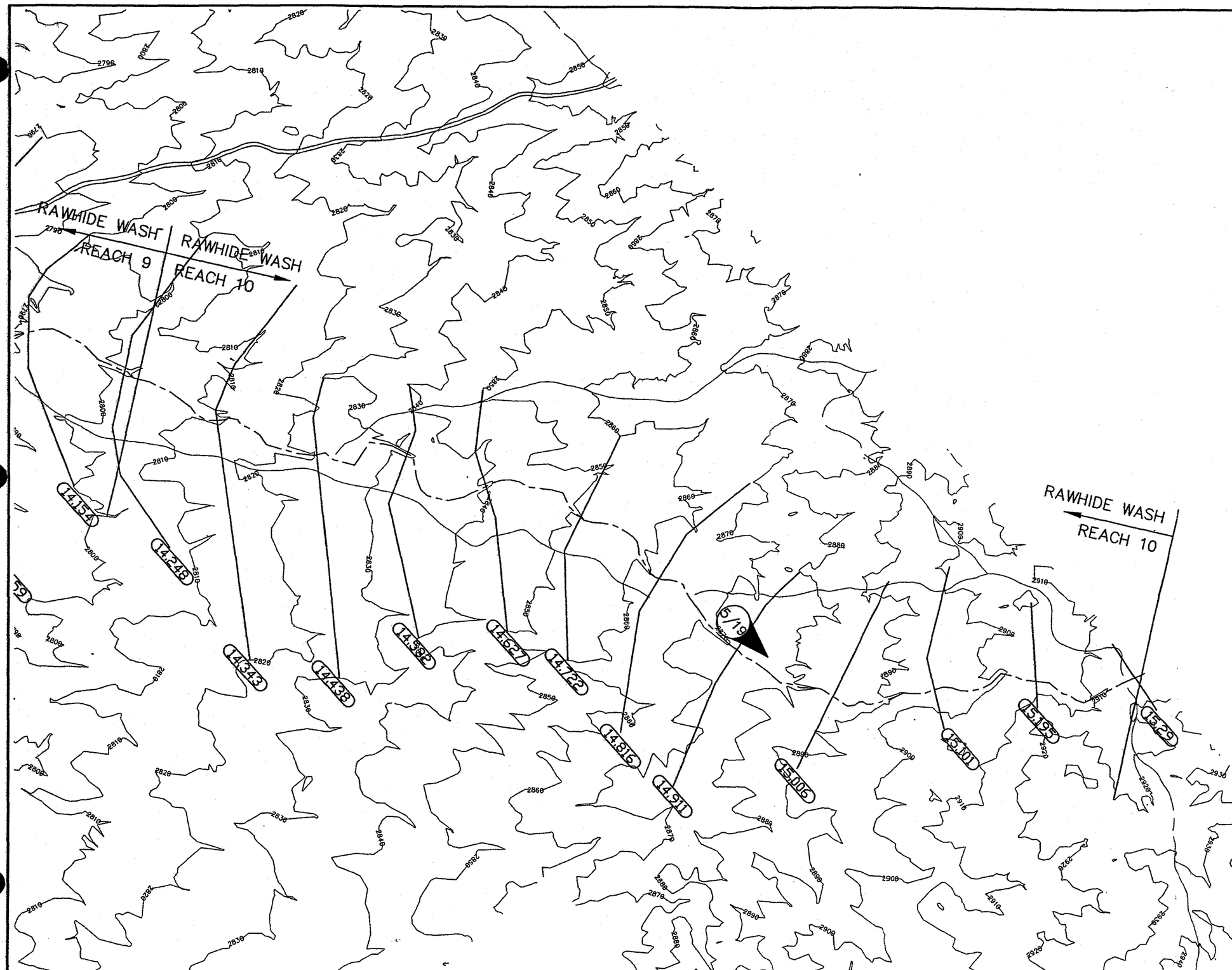
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 6 OF 9

AERIAL MAPPING COMPANY, SURVEYING COMPANY AND

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	A — FP-100 Yr WSE / FW-Floodway WSE — A
ELEVATION REFERENCE MARK	ERMS X
BASE FLOOD ELEVATIONS	2350
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION (DIRK #/PHOTO #)	#/#

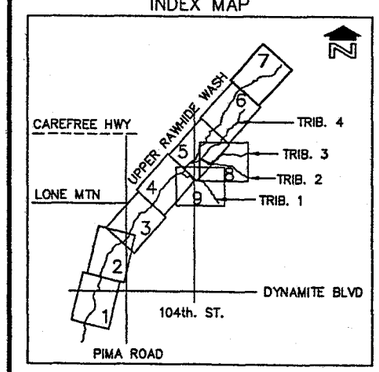
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1988

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

NOTES

INDEX MAP



N

200 0 200 400

SCALE: 1" = 200'

CONTOUR INTERVAL = 2' FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
PLANS	SH	FEB 99
PLANS CHK.	RAE	FEB 99
SUBMITTED BY: DRAFT	DATE:	

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

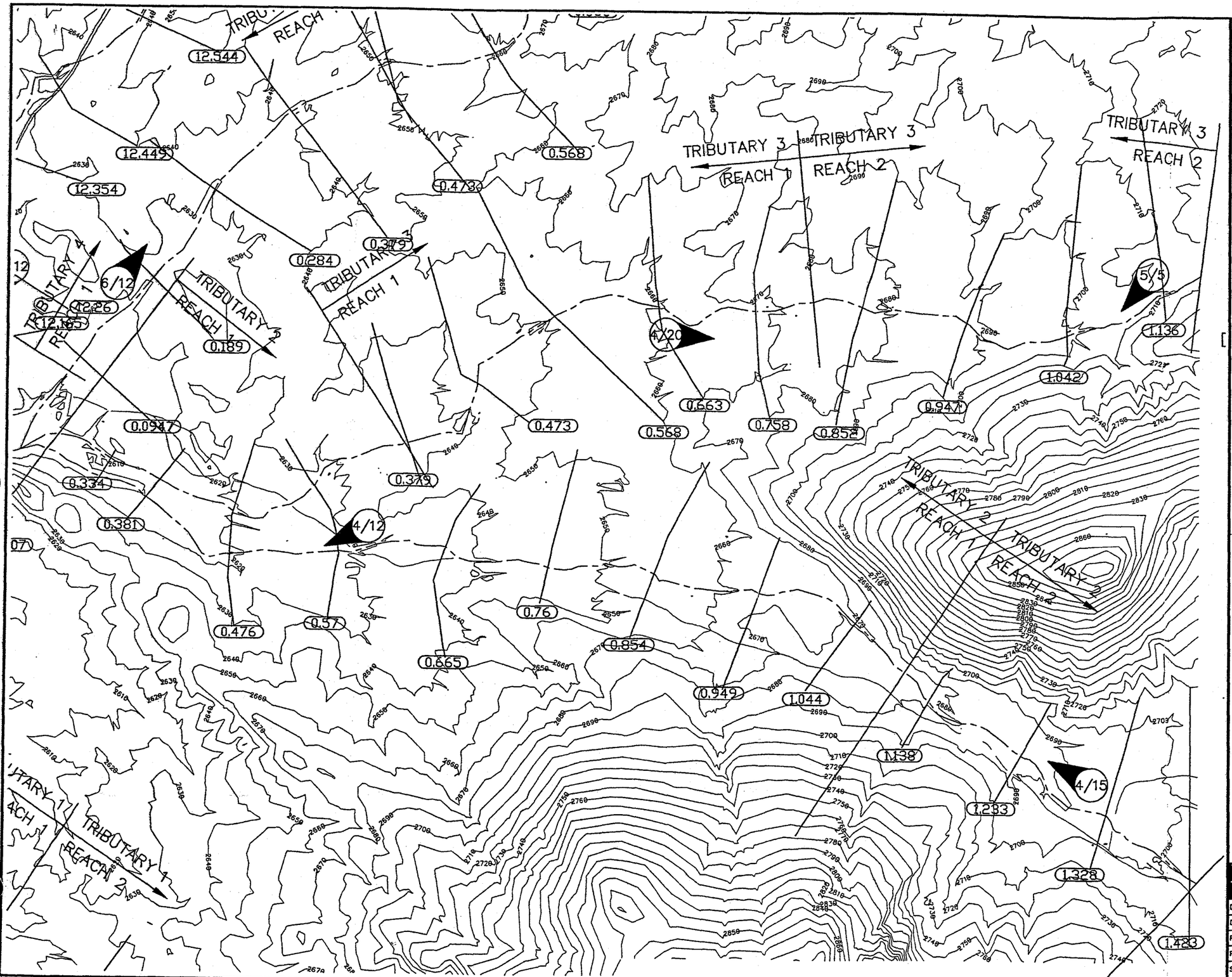
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 7 OF 9

AERIAL MAPPING COMPANY, SURVEYING COMPANY AND

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS TO 200' HORIZONTAL SCALE AND 1' CONTOUR INTERVAL AND BASED ON GROUND CONTROL SURVEY



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	A — FP-100 Yr WSE / FW-Floodway WSE — A
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION (DIRK #/PHOTO #)	#/#

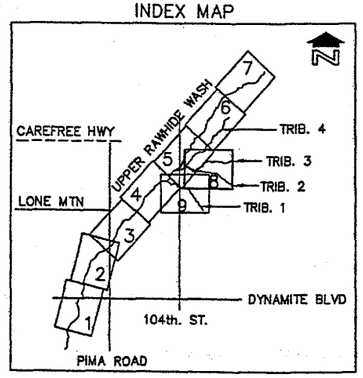
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 19##

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

NOTES

INDEX MAP



N

200 0 200 400

SCALE: 1" = 200'

CONTOUR INTERVAL = 2' FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
PLANS	SH	FEB 99
PLANS CHK.	RAE	FEB 99

SUBMITTED BY: DRAFT DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

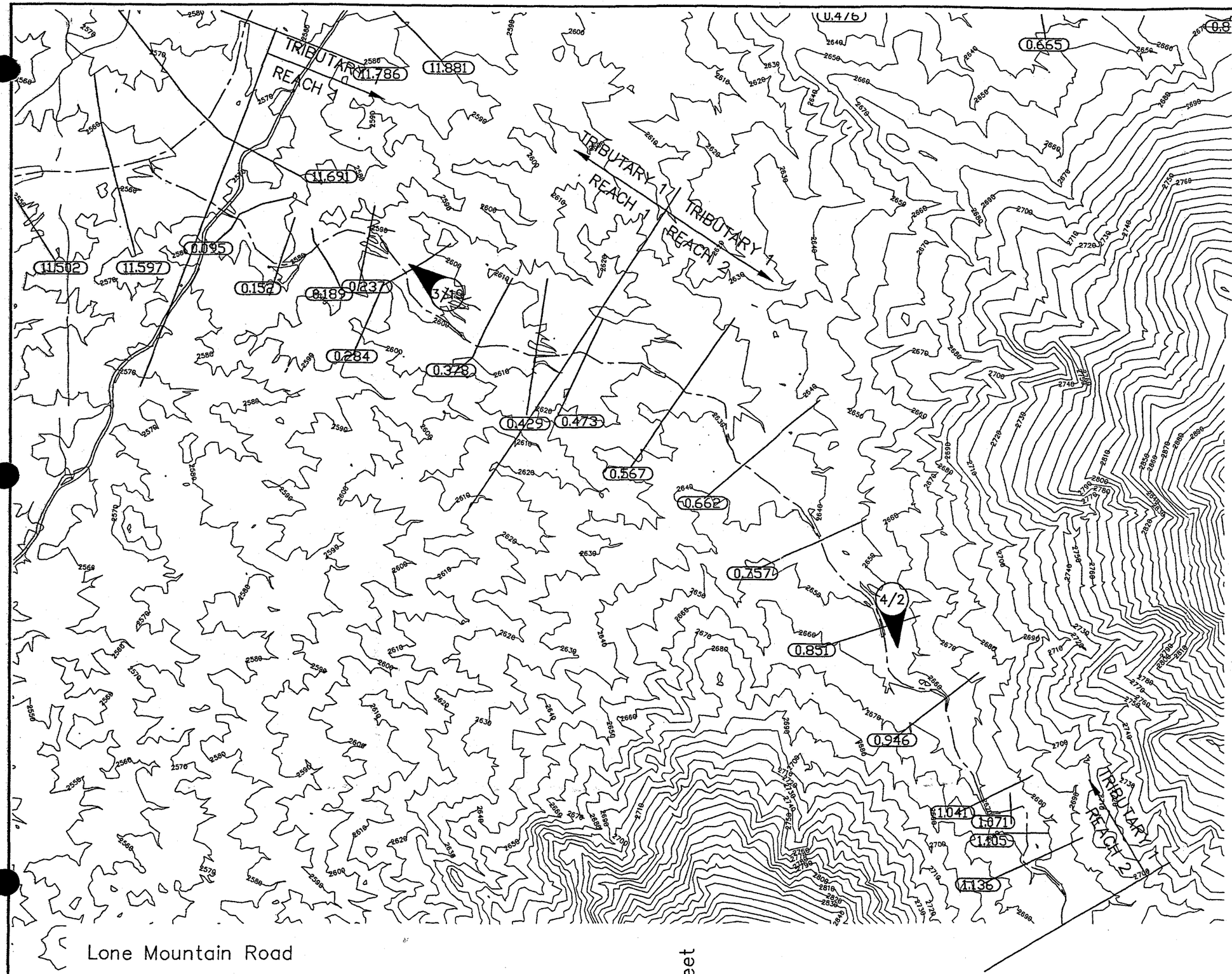
APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 8 OF 9

AERIAL MAPPING COMPANY, SURVEYING COMPANY AND

THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.0 — M 9.0
CROSS SECTION	A — FP-100 Yr WSE / FW-Floodway WSE — A
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary
PHOTO LOCATION AND DIRECTION (DISK #/PHOTO #)	#/#

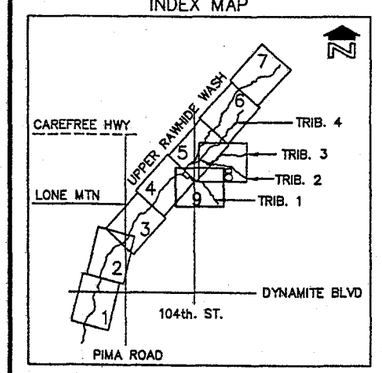
ELEVATION REFERENCE MARKS

NOTE: ALL ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 19##

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION

NOTES

INDEX MAP



N

200 0 200 400

SCALE: 1" = 200'

CONTOUR INTERVAL = 2' FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	FEB 99
DESIGN CHK.	RAE	FEB 99
PLANS	SH	FEB 99
PLANS CHK.	RAE	FEB 99

SUBMITTED BY: DRAFT DATE:

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE:

APPROVED BY: DATE:

CHIEF ENGINEER AND GENERAL MANAGER

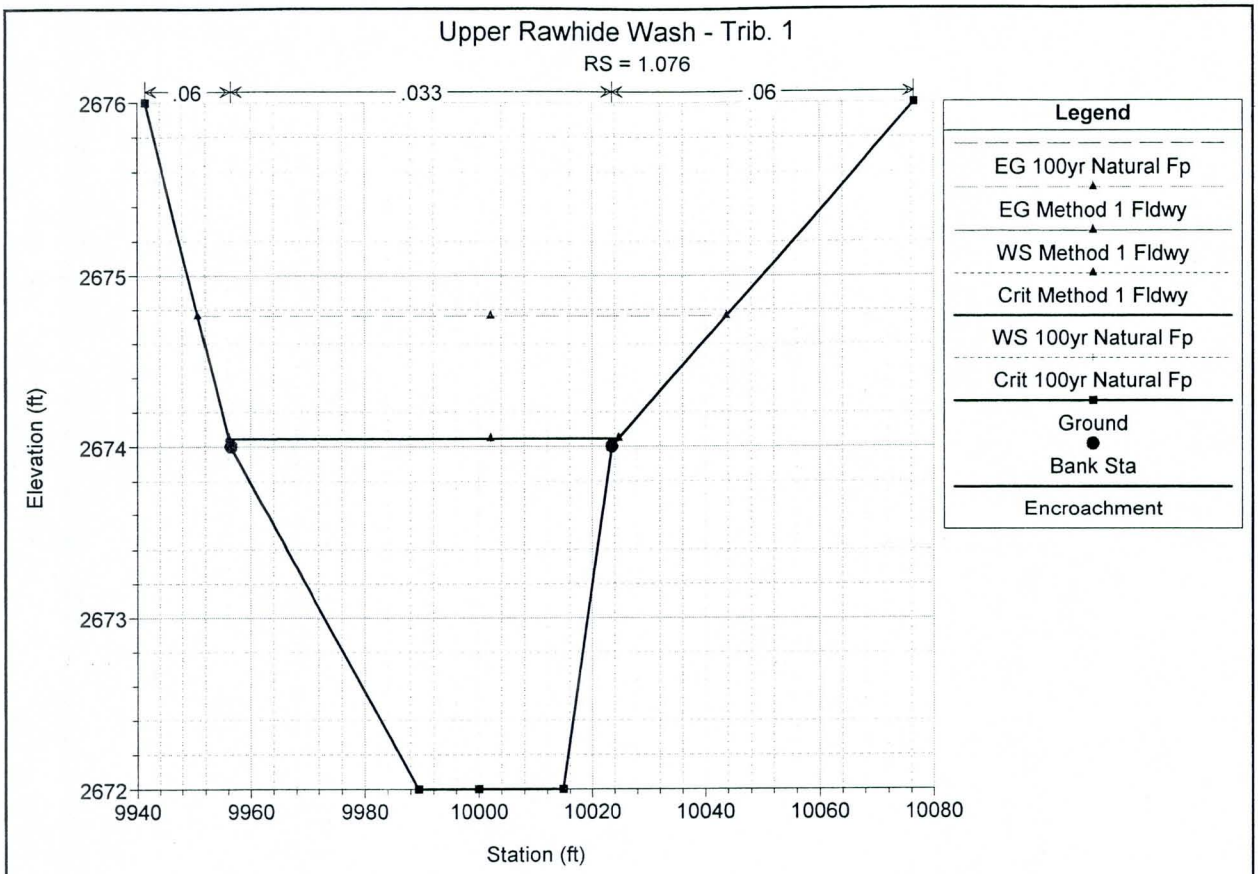
SHEET 9 OF 9

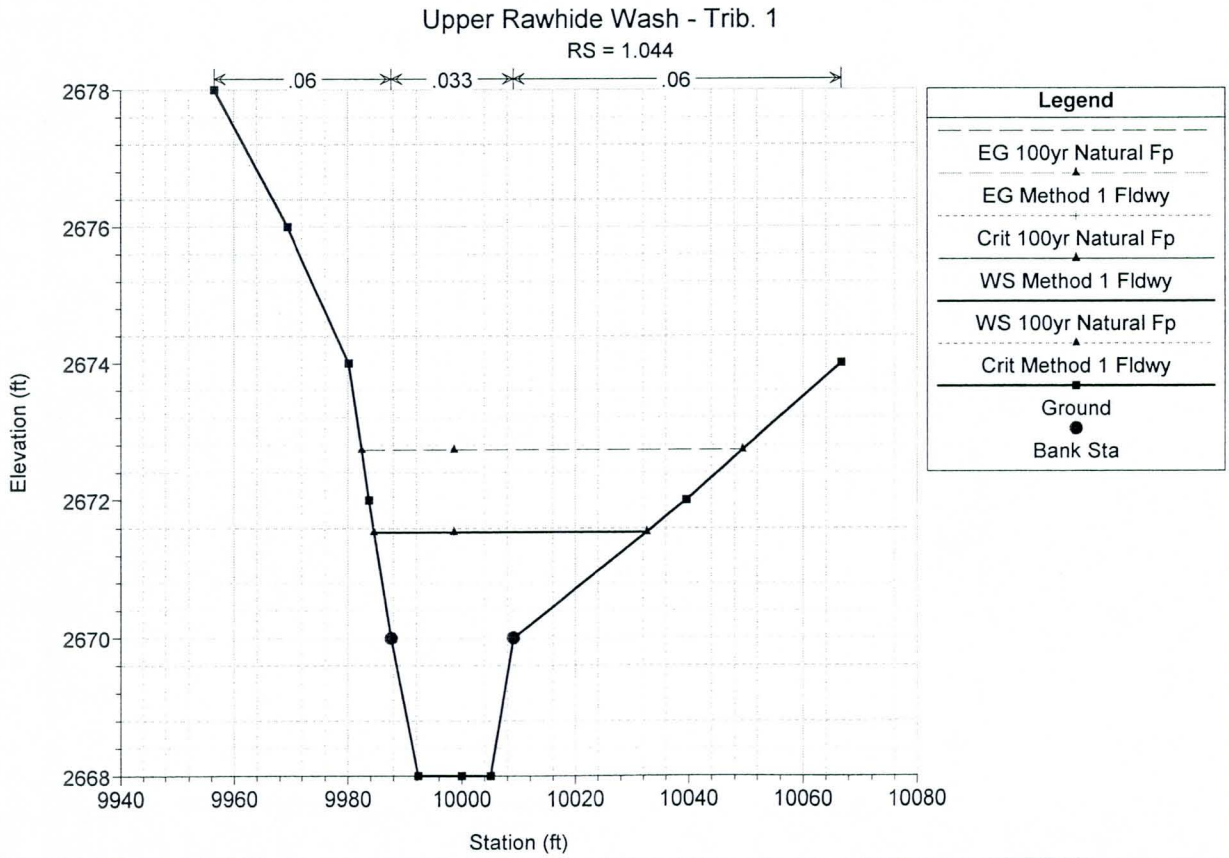
AERIAL MAPPING COMPANY, SURVEYING COMPANY AND

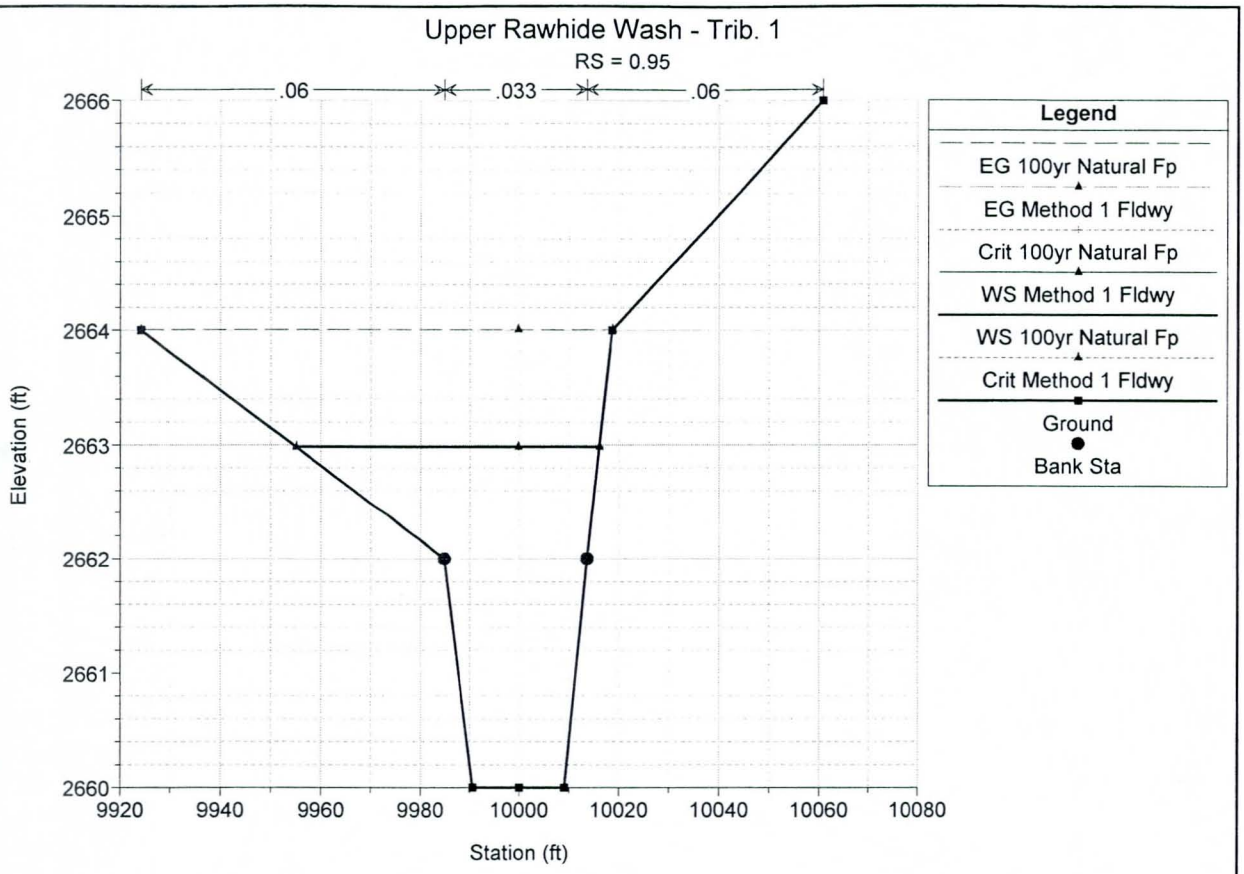
THIS MAP WAS PREPARED BY PHOTOGRAMMETRIC METHODS TO NATIONAL MAP ACCURACY STANDARDS

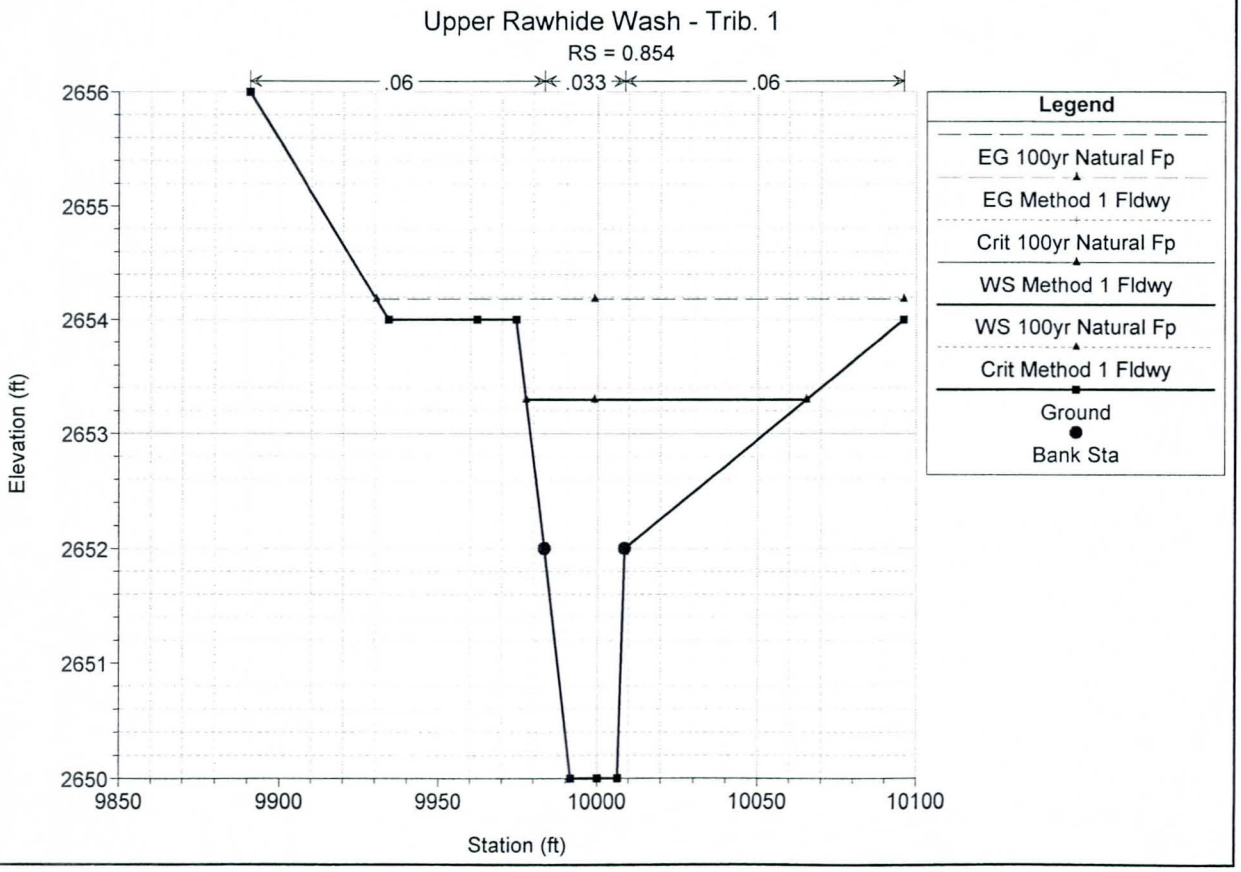
E.2 CROSS SECTION PLOTS

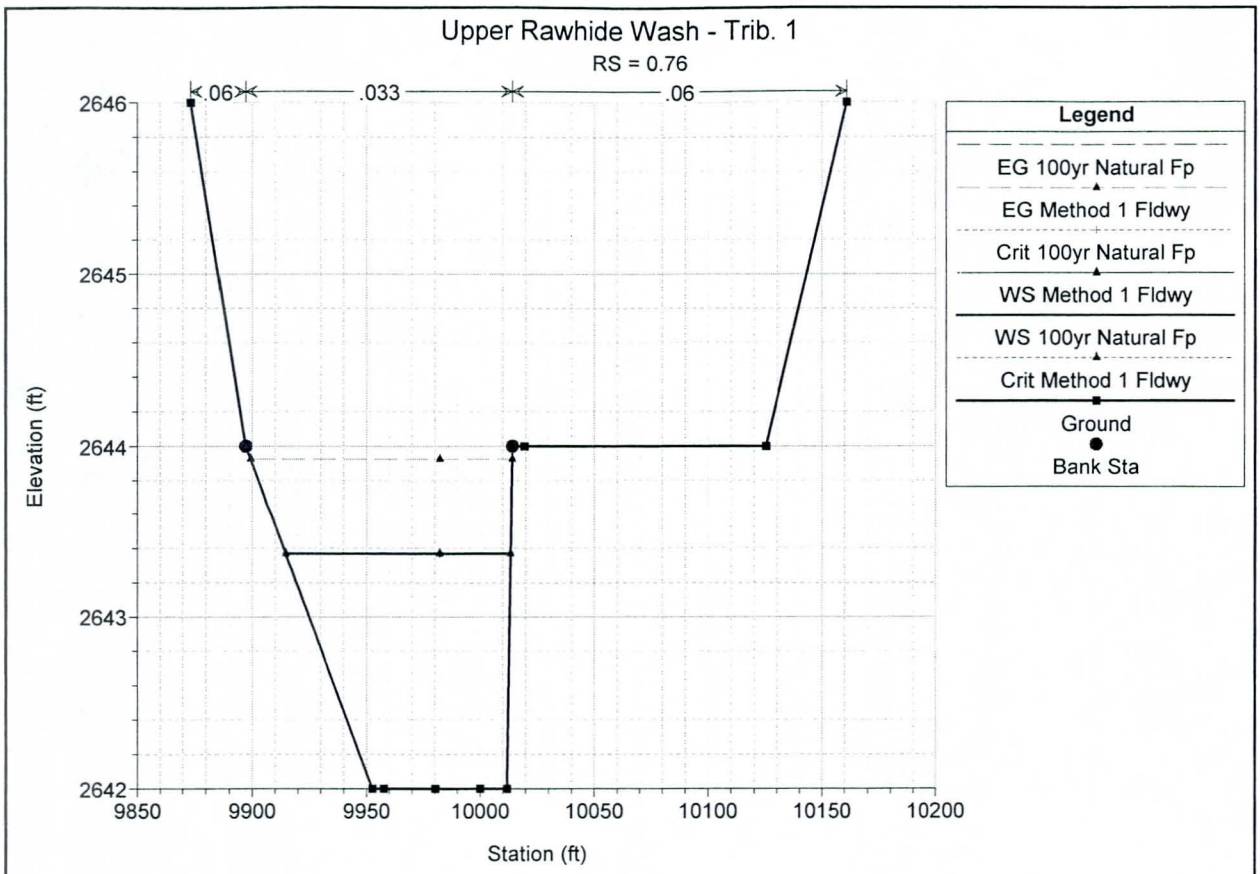
Tributary 1

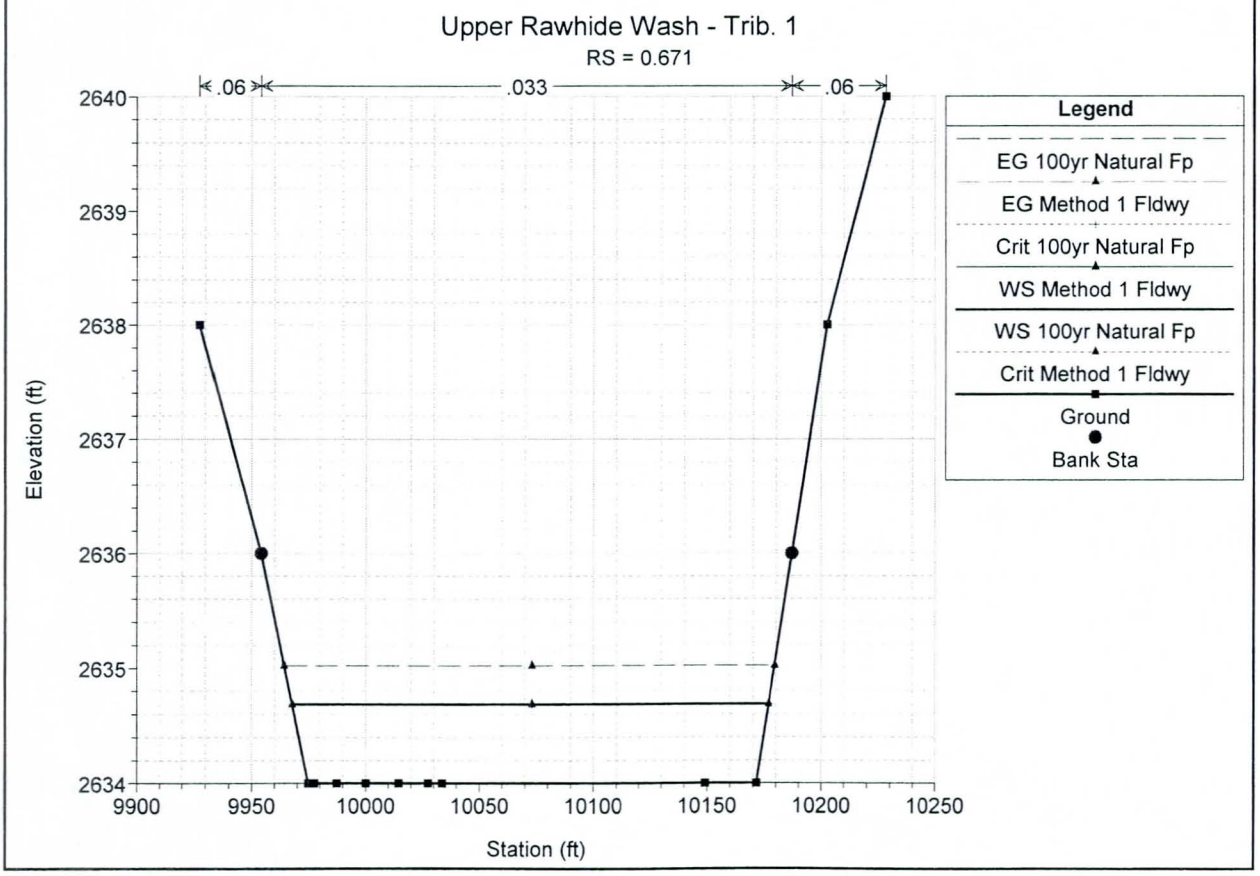

Upper Rawhide Wash - Trib. 1
RS = 1.076
.06
.033
.06
Elevation (ft)
2676
2675
2674
2673
2672
9940
9960
9980
10000
10020
10040
10060
10080
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

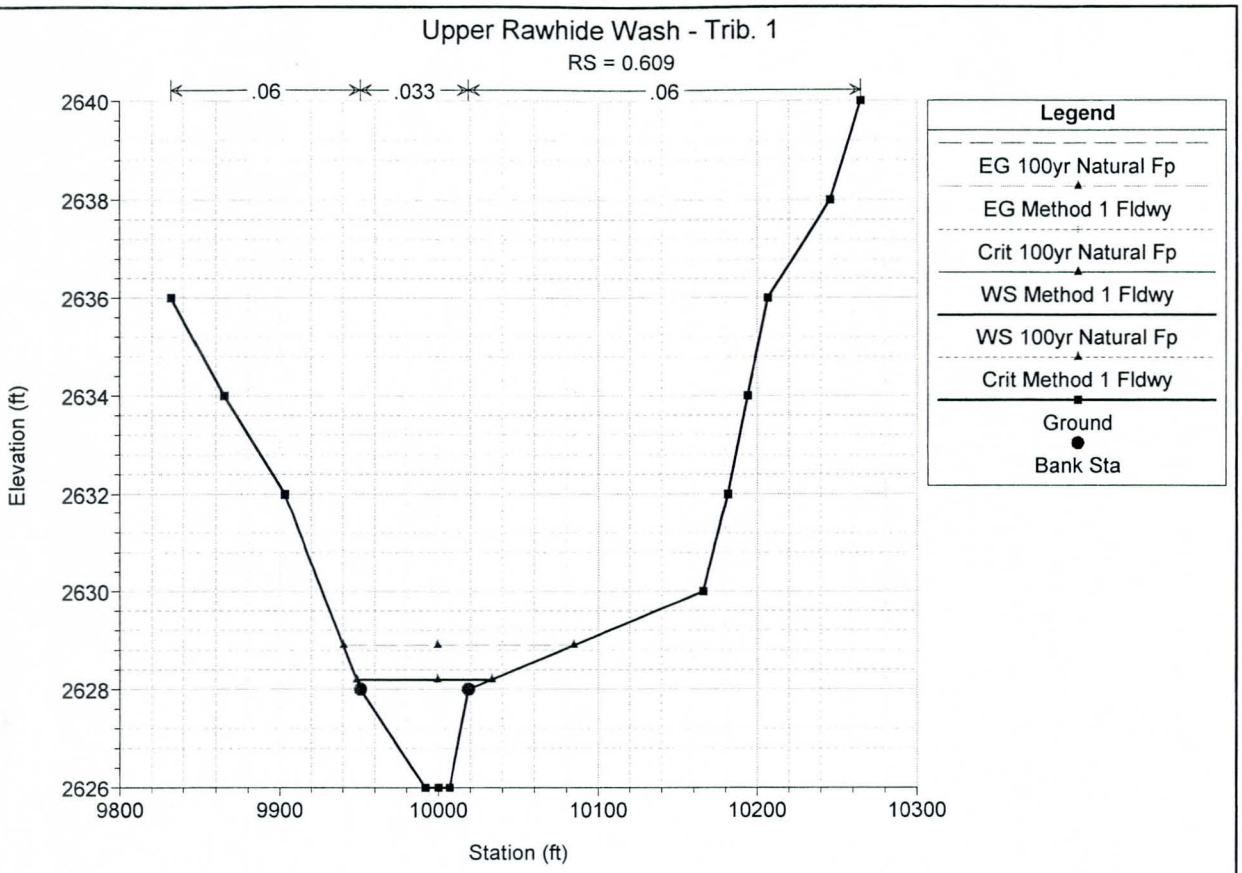

Upper Rawhide Wash - Trib. 1
RS = 1.044
.06
.033
.06
Elevation (ft)
2678
2676
2674
2672
2670
2668
9940
9960
9980
10000
10020
10040
10060
10080
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

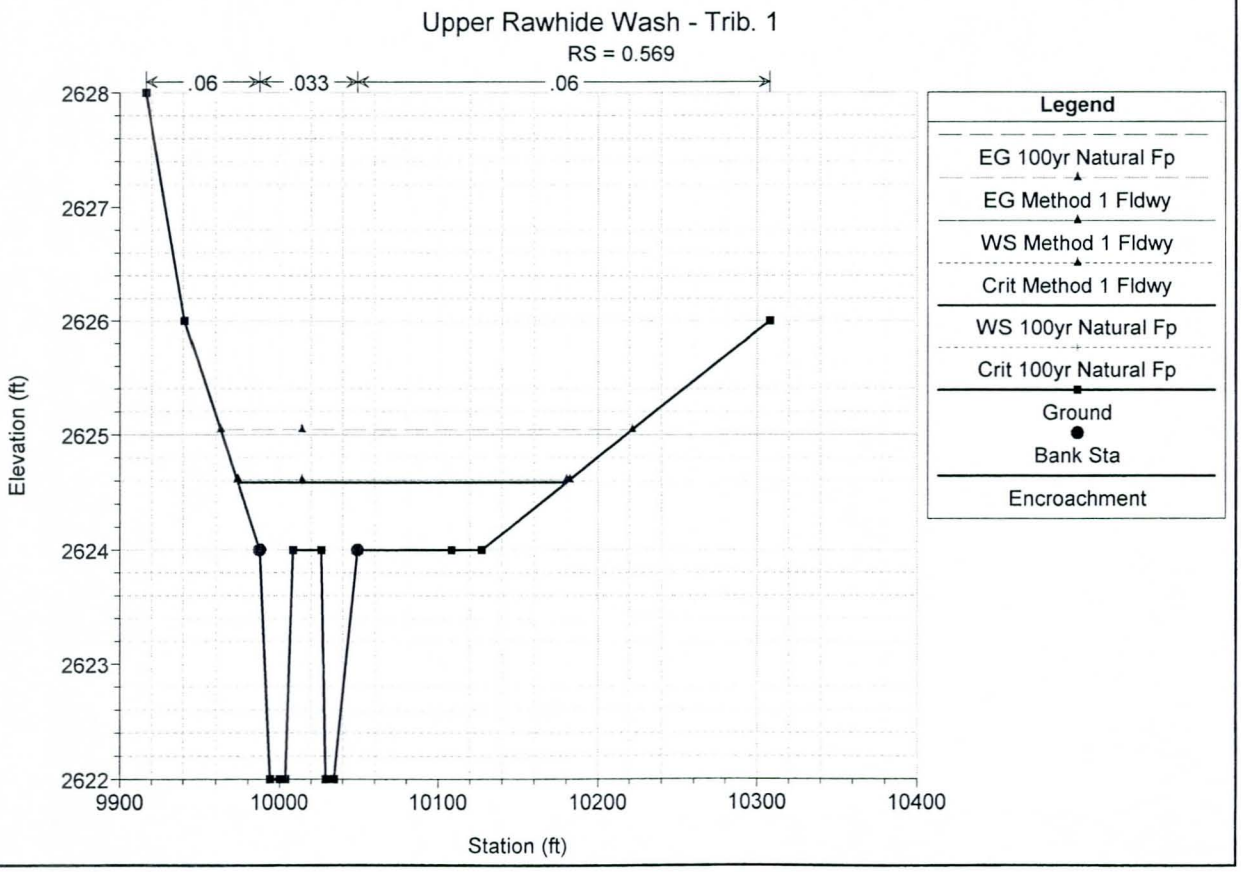

Upper Rawhide Wash - Trib. 1
RS = 0.95
.06
.033
.06
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

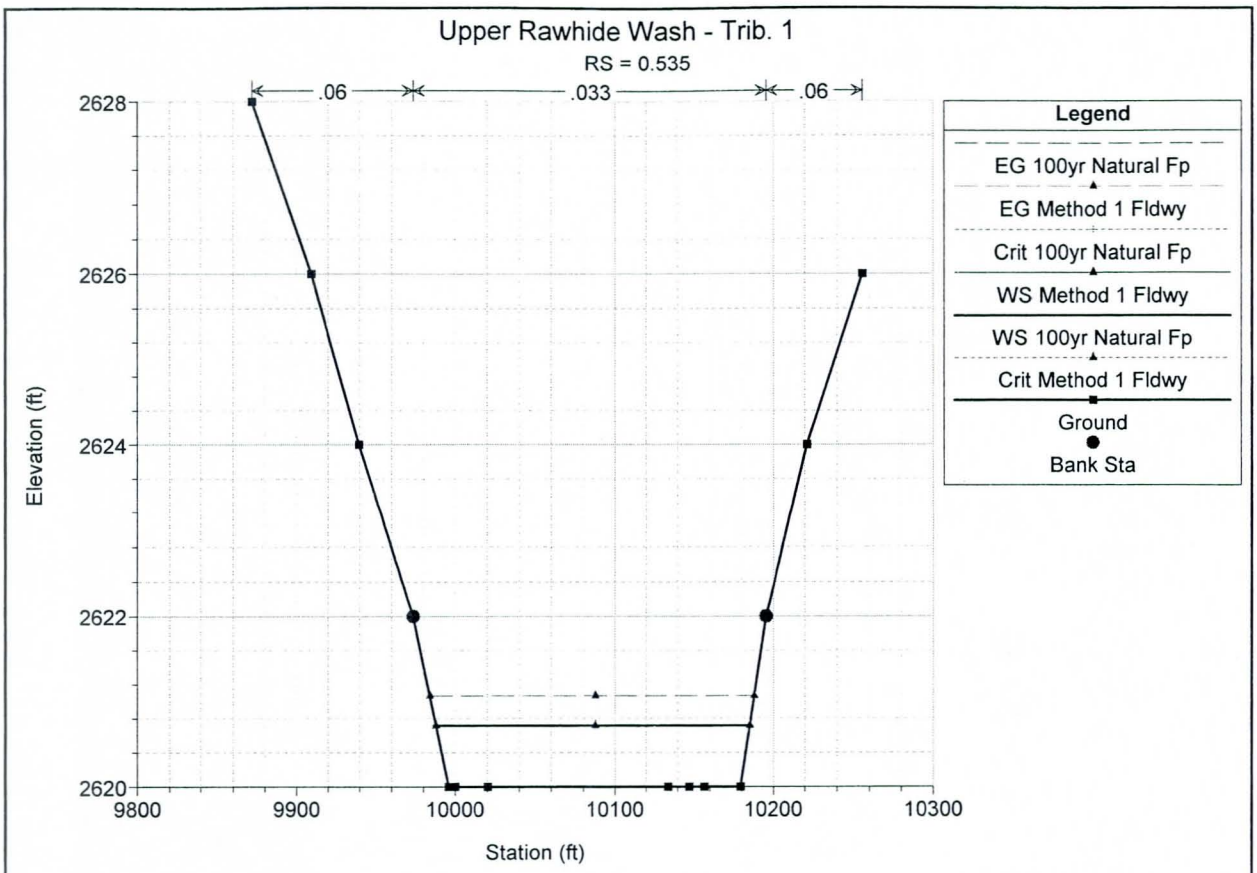

Upper Rawhide Wash - Trib. 1
RS = 0.854
.06
.033
.06
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

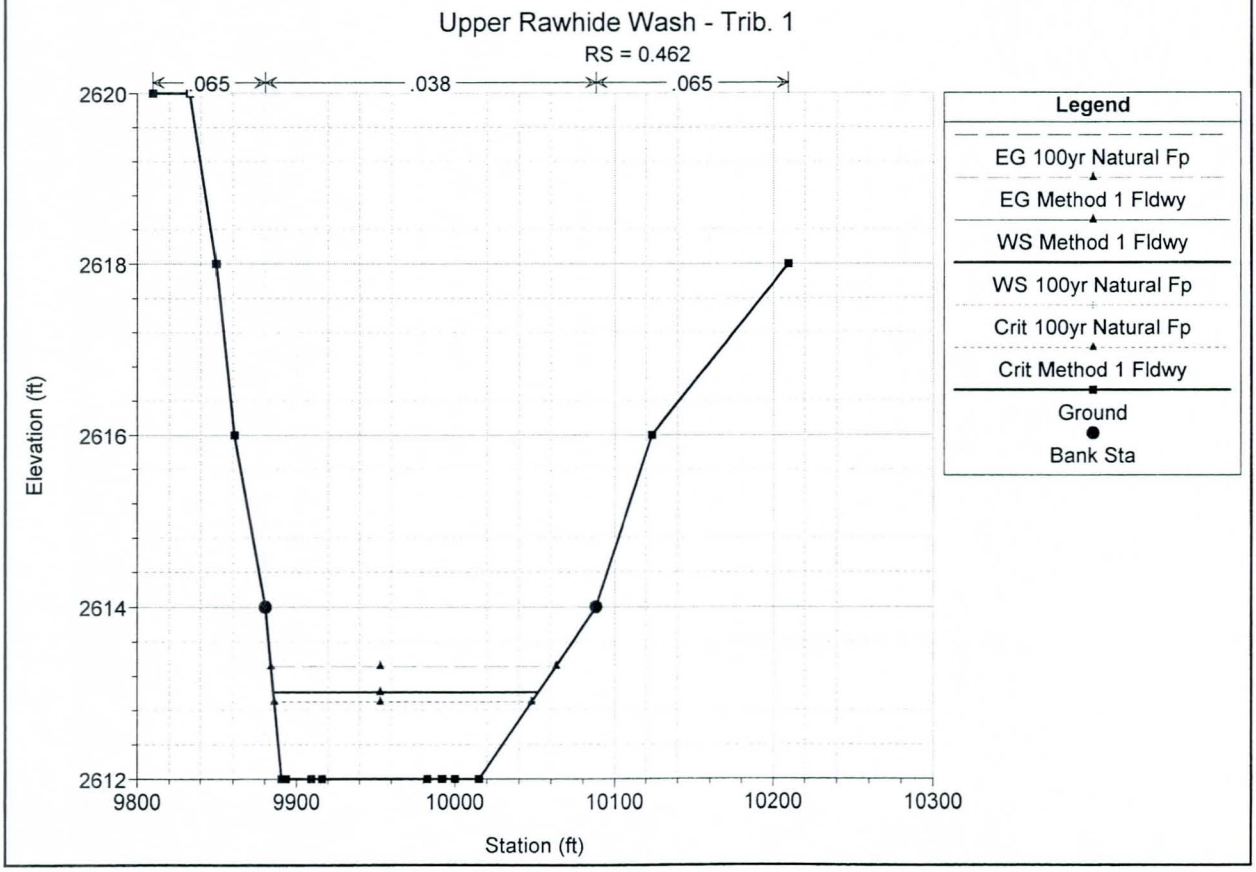

Upper Rawhide Wash - Trib. 1
RS = 0.76
.06
.033
.06
Elevation (ft)
2646
2645
2644
2643
2642
9850
9900
9950
10000
10050
10100
10150
10200
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

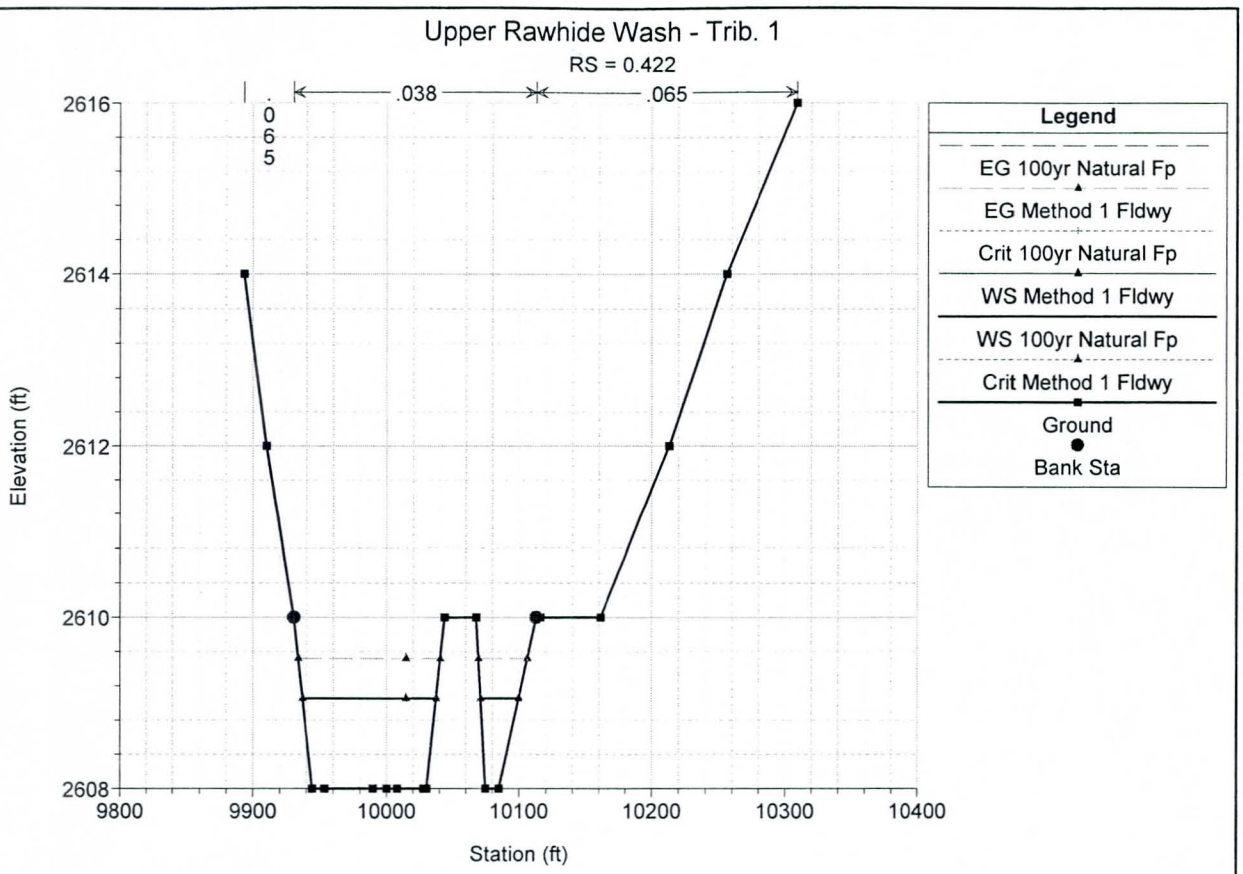

Upper Rawhide Wash - Trib. 1
RS = 0.671
.06
.033
.06
Elevation (ft)
2640
2639
2638
2637
2636
2635
2634
9900
9950
10000
10050
10100
10150
10200
10250
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

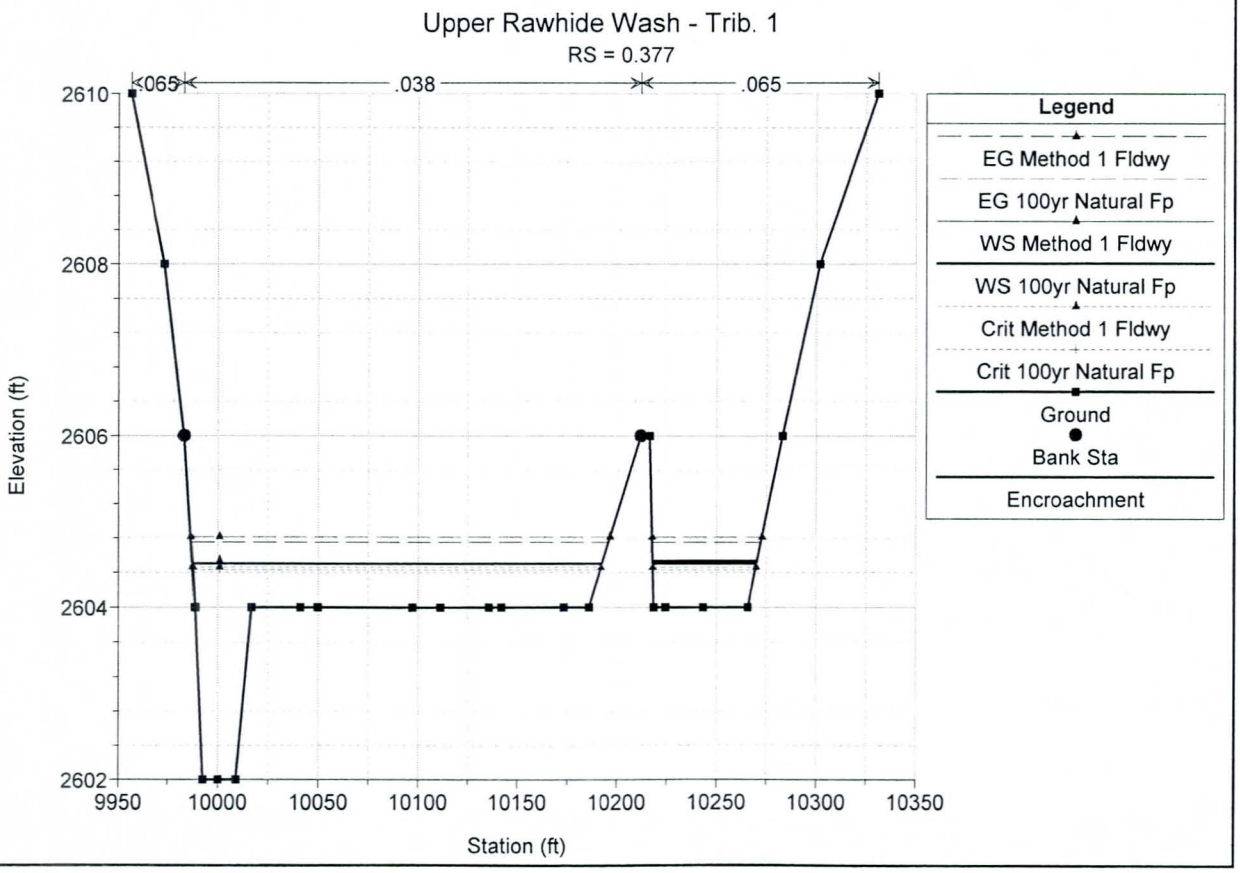

Upper Rawhide Wash - Trib. 1
RS = 0.609
.06
.033
.06
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

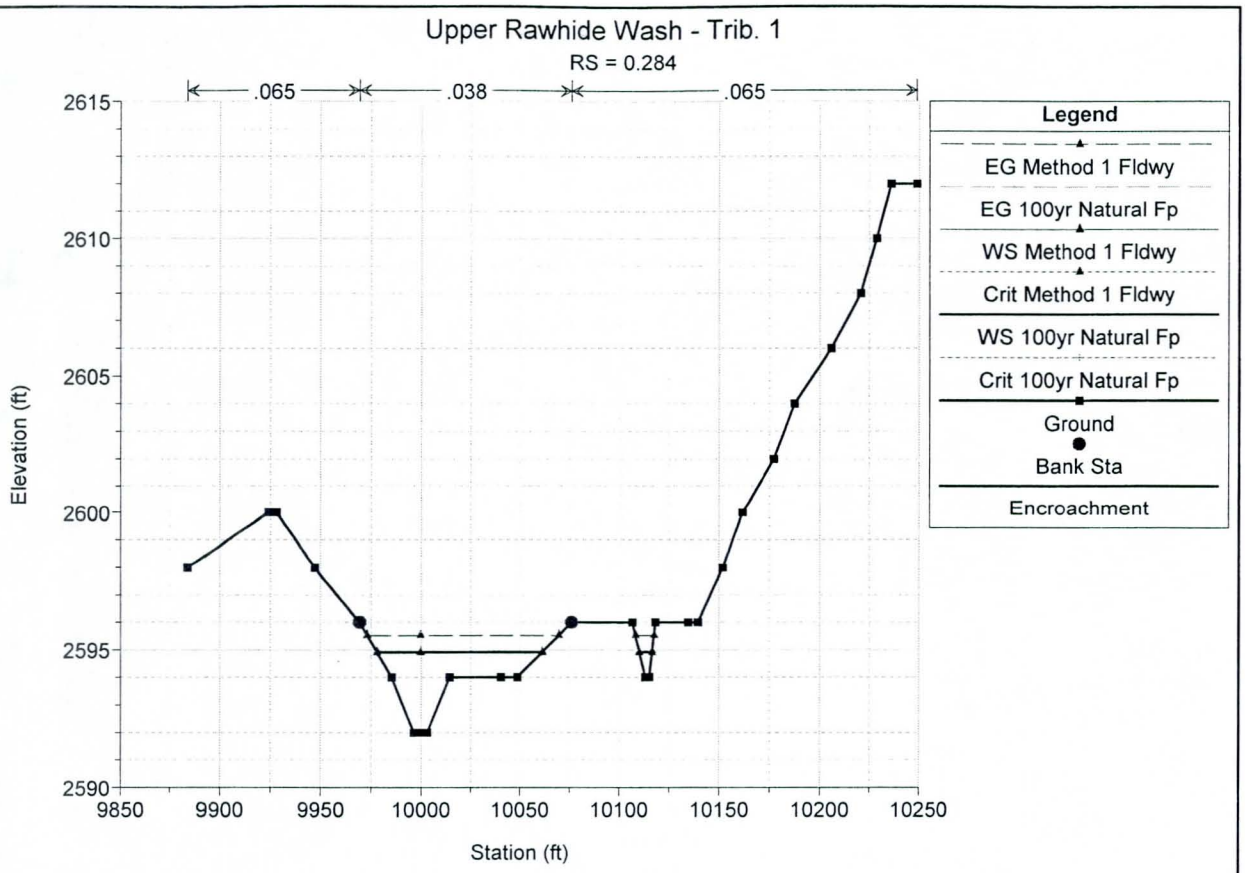

Upper Rawhide Wash - Trib. 1
RS = 0.569
.06
.033
.06
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

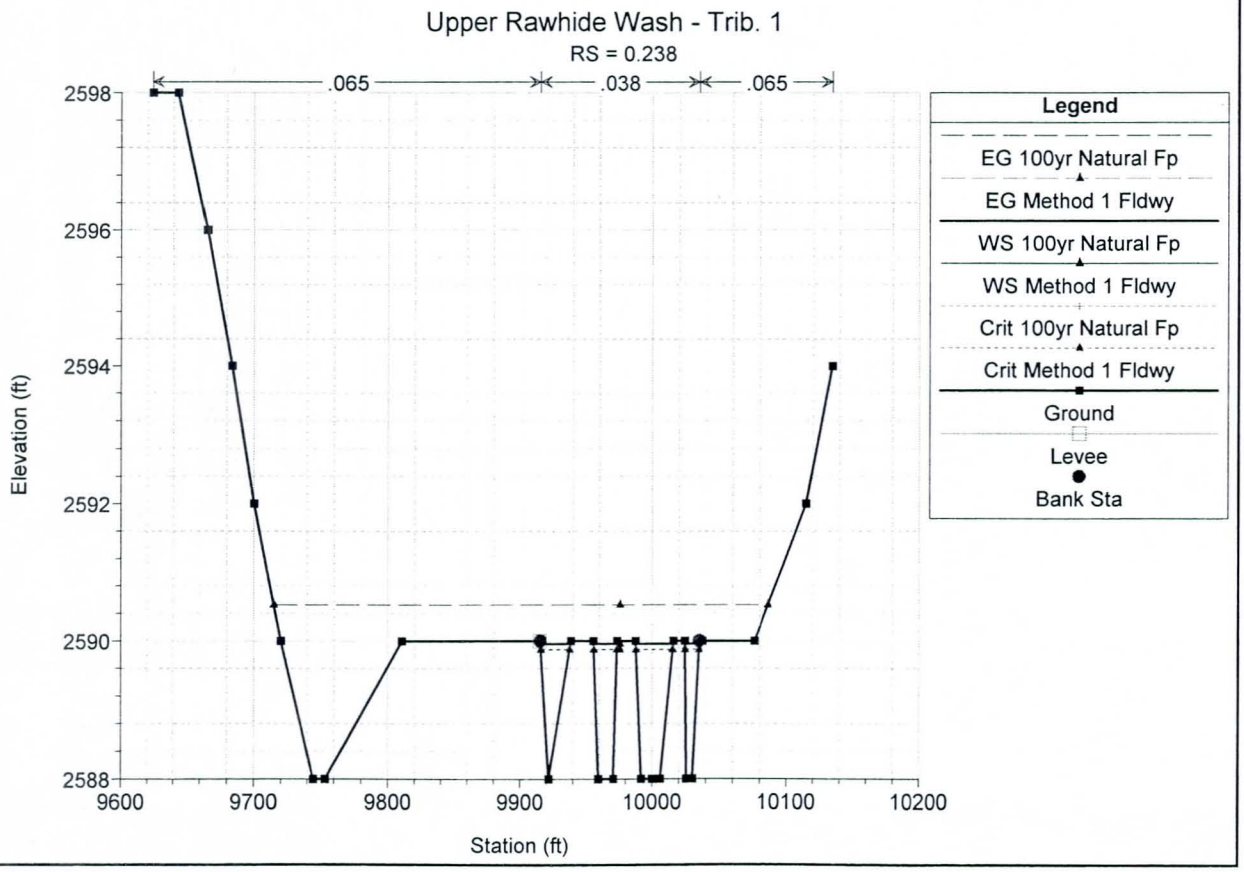

Upper Rawhide Wash - Trib. 1
RS = 0.535
.06
.033
.06
Elevation (ft)
2628
2626
2624
2622
2620
9800
9900
10000
10100
10200
10300
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

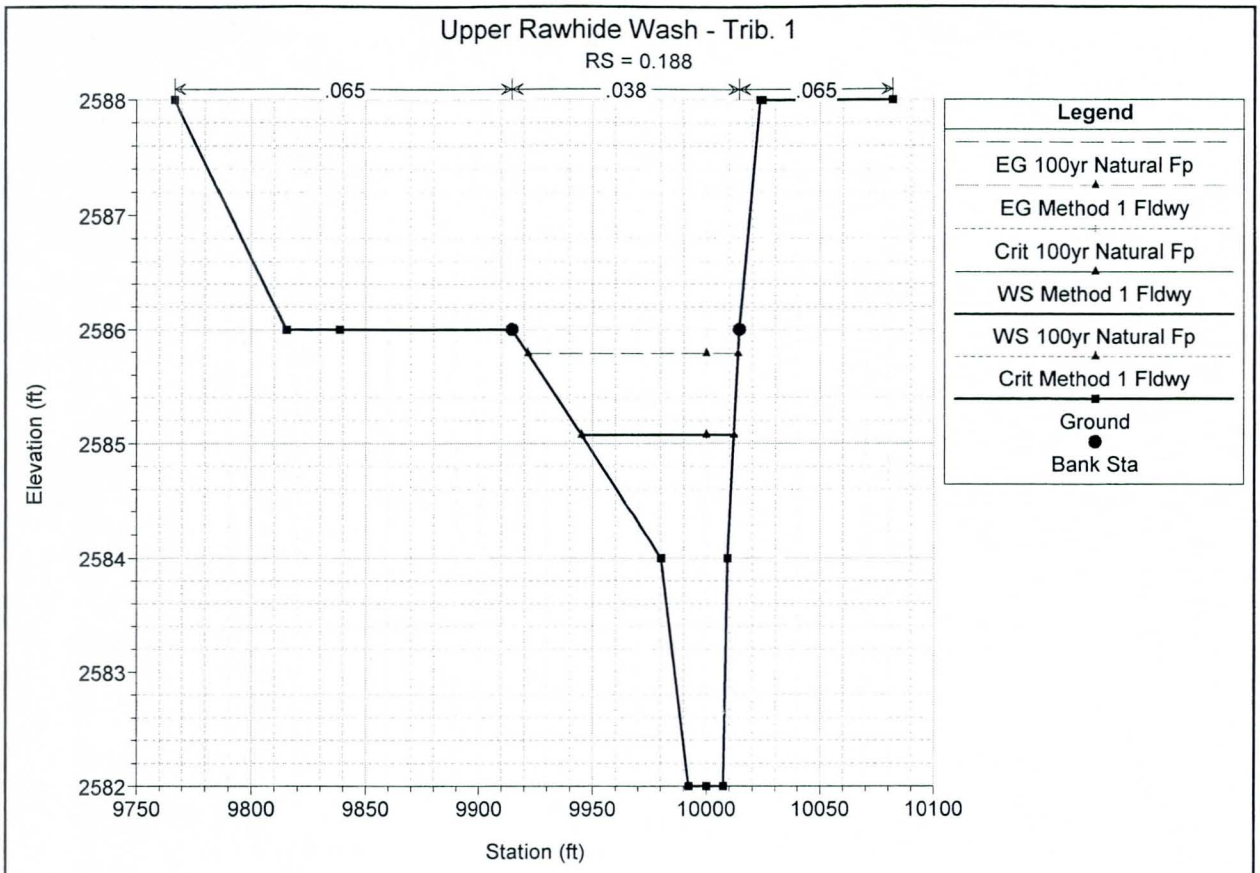

Upper Rawhide Wash - Trib. 1
RS = 0.462
.065
.038
.065
Elevation (ft)
2620
2618
2616
2614
2612
9800
9900
10000
10100
10200
10300
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

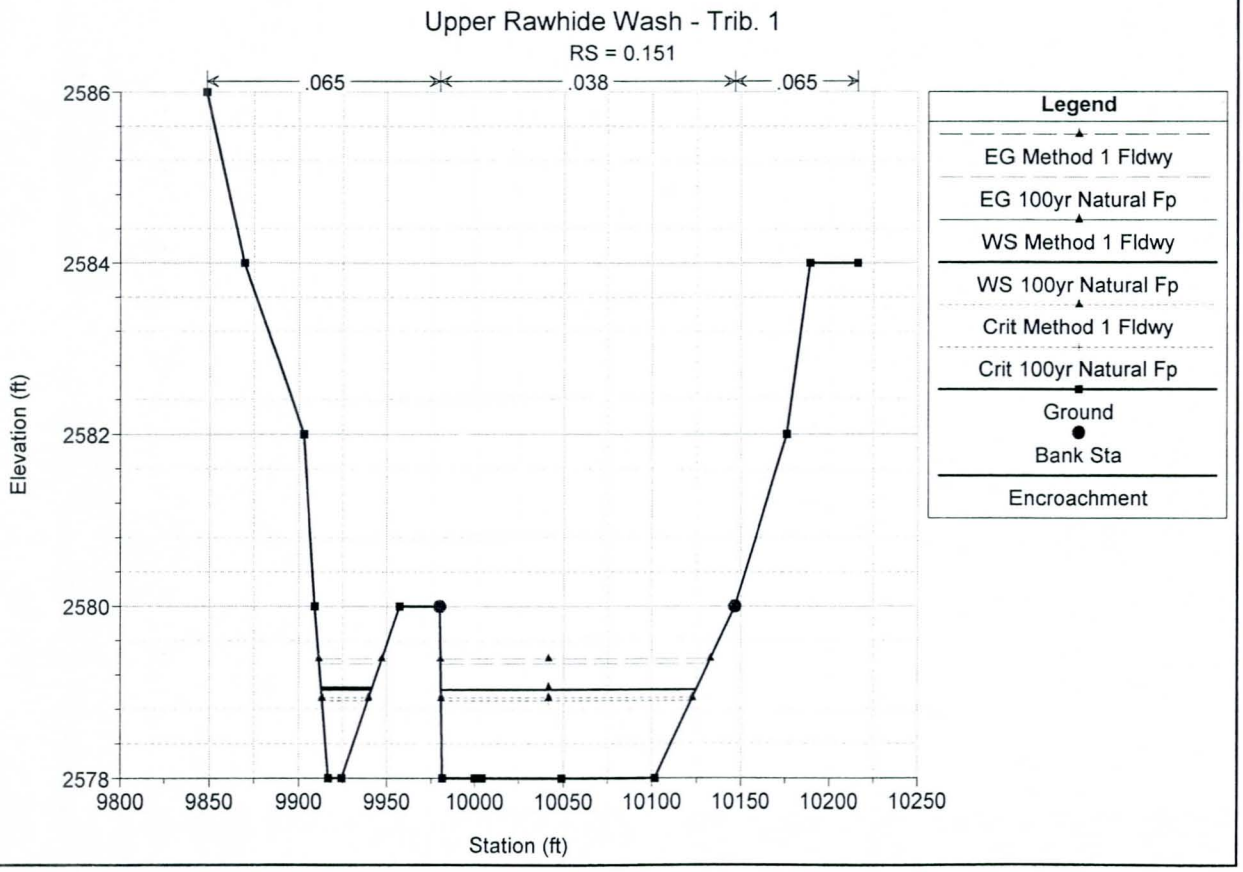

Upper Rawhide Wash - Trib. 1
RS = 0.422
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

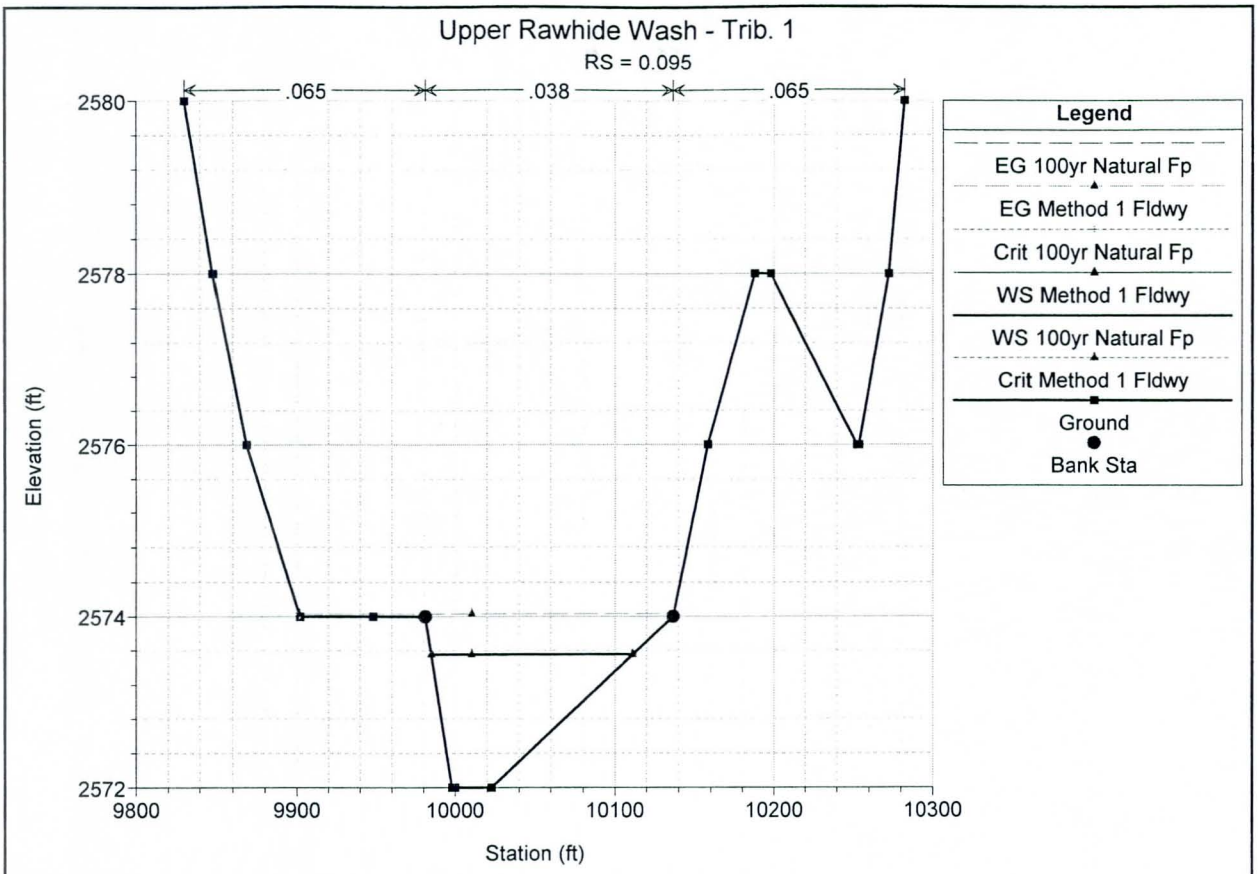

Upper Rawhide Wash - Trib. 1
RS = 0.377
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Trib. 1
RS = 0.284
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Trib. 1
RS = 0.238
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta

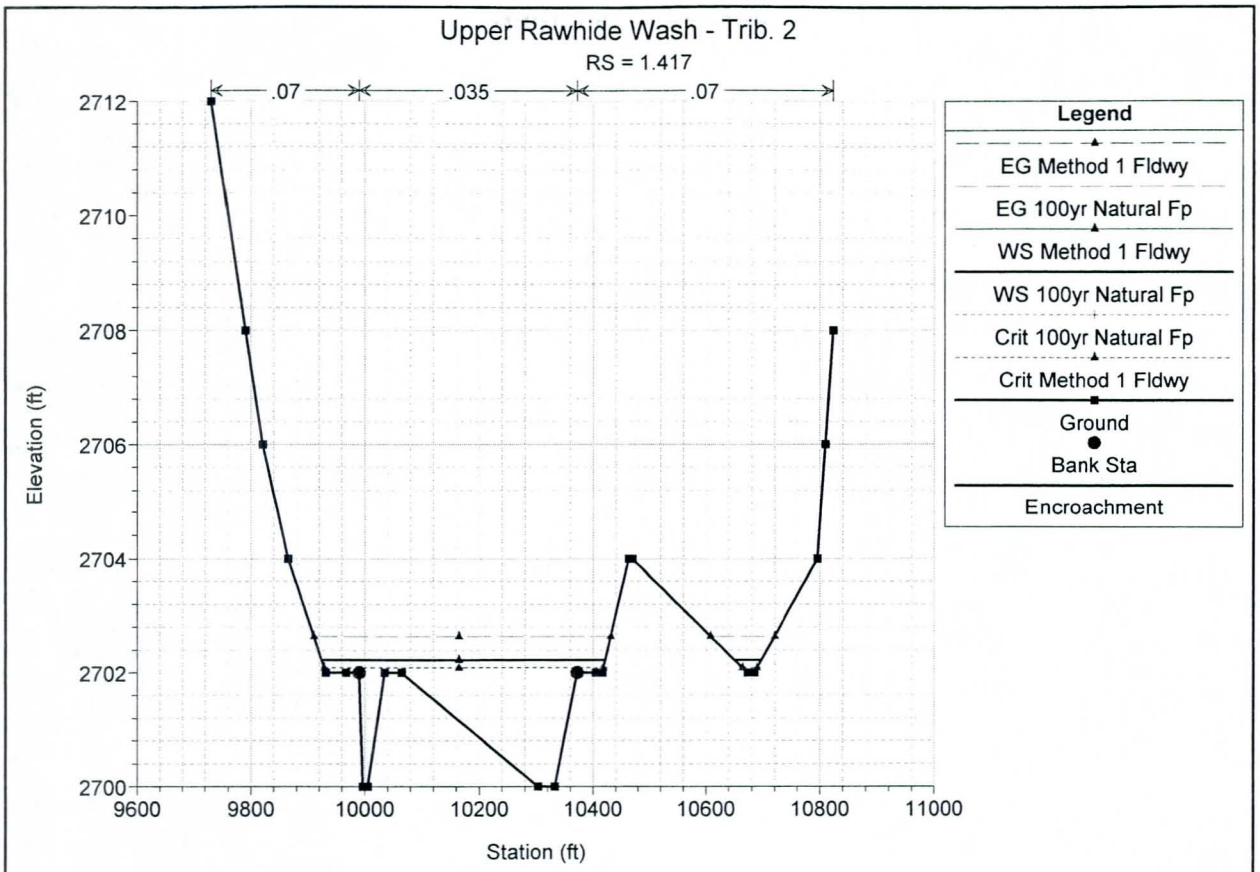

Upper Rawhide Wash - Trib. 1
RS = 0.188
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

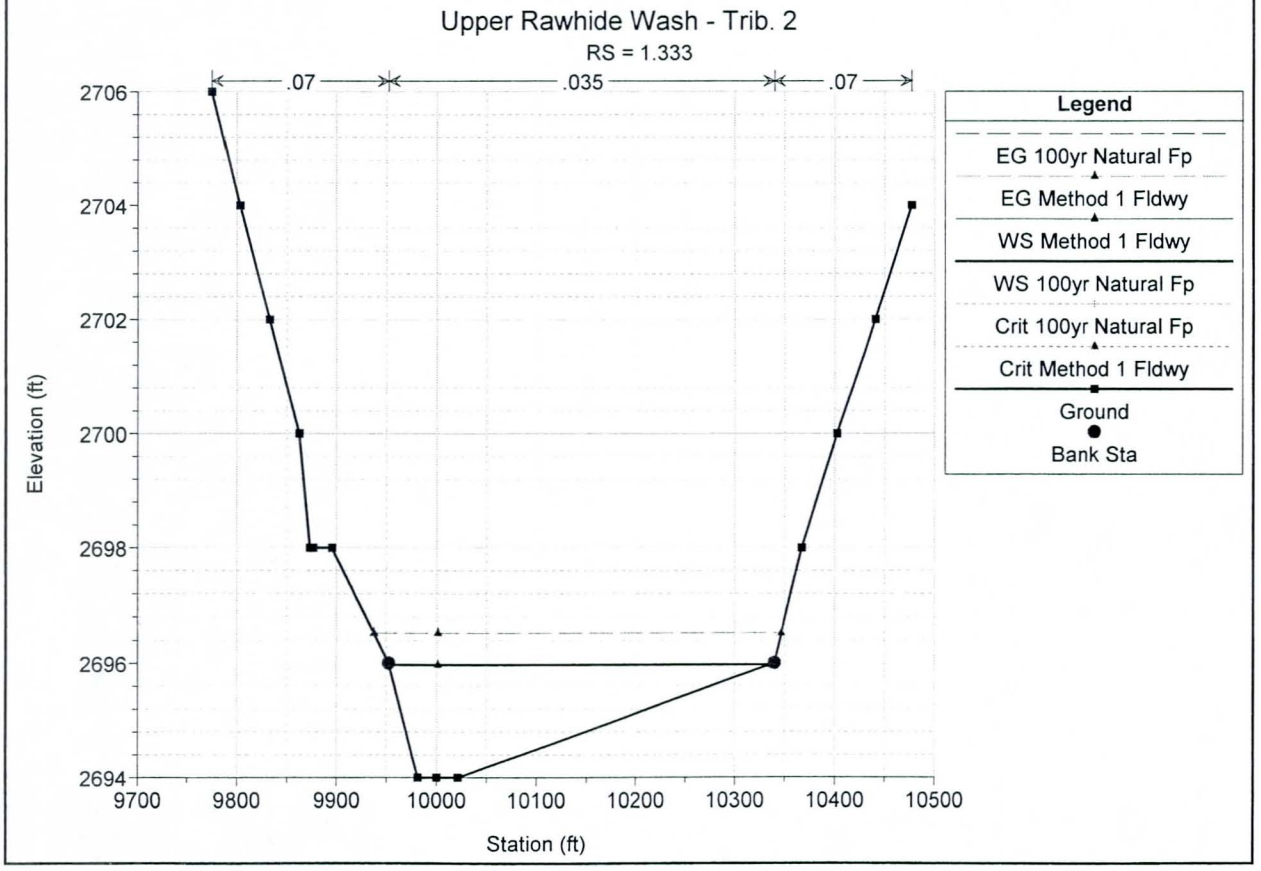

Upper Rawhide Wash - Trib. 1
RS = 0.151
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

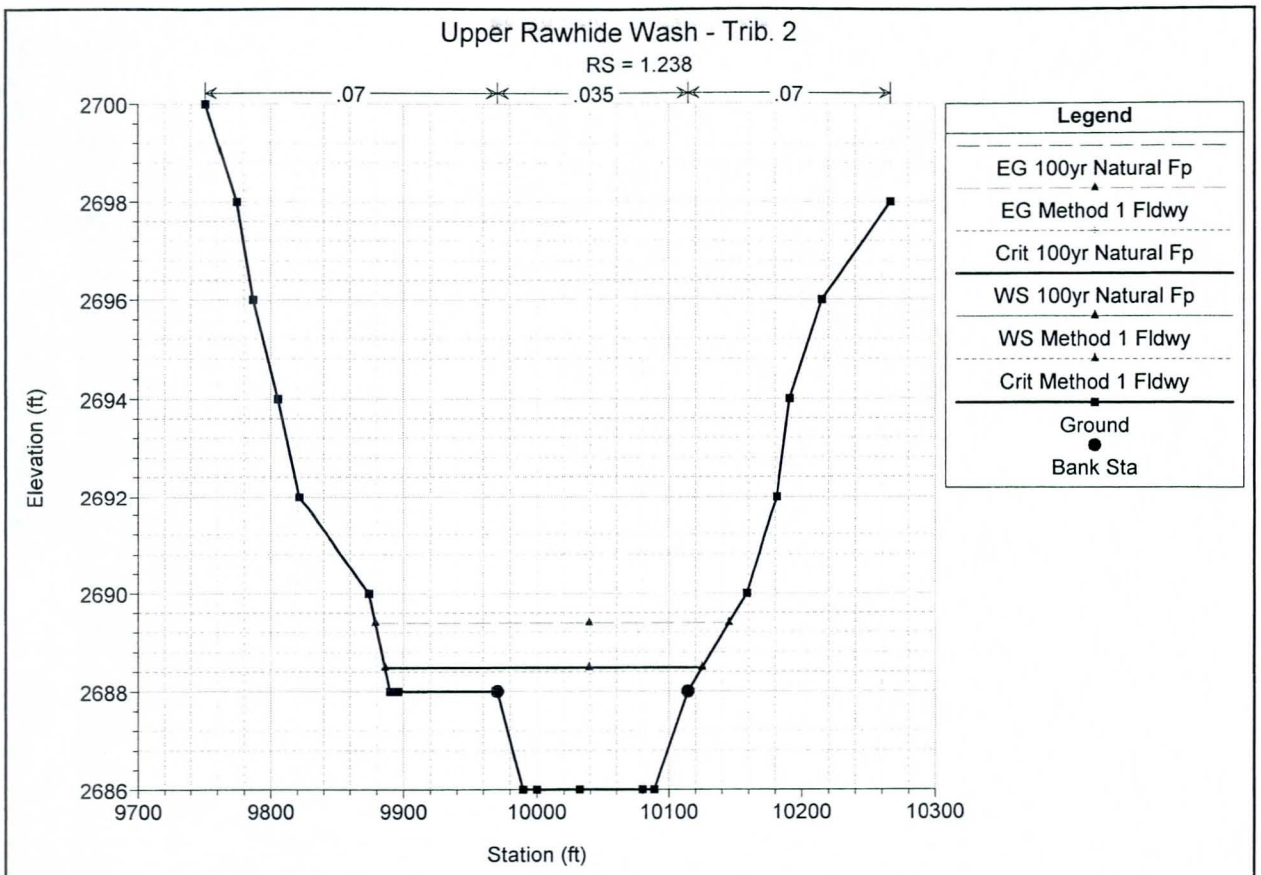

Upper Rawhide Wash - Trib. 1
RS = 0.095
.065
.038
.065
Elevation (ft)
2580
2578
2576
2574
2572
9800
9900
10000
10100
10200
10300
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

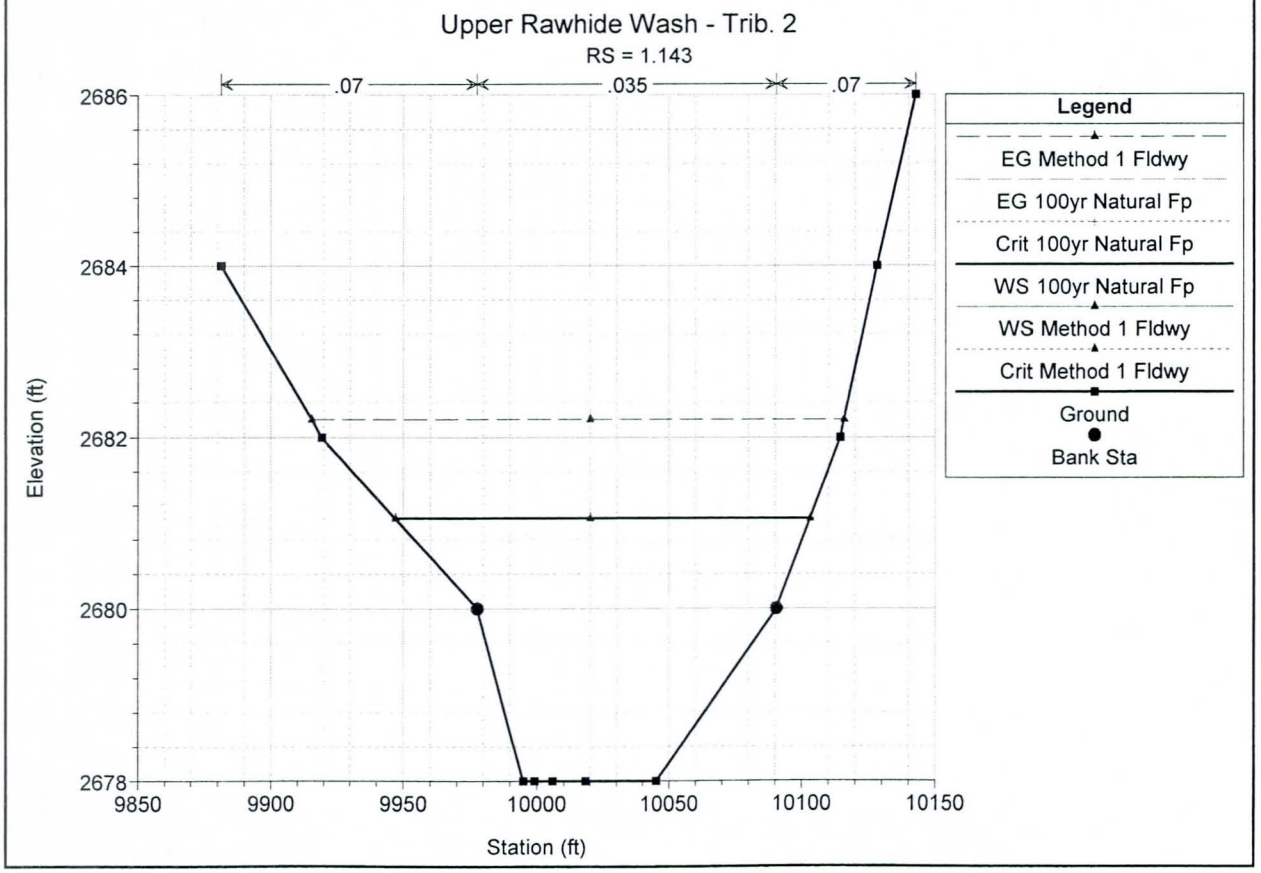
E.2 CROSS SECTION PLOTS

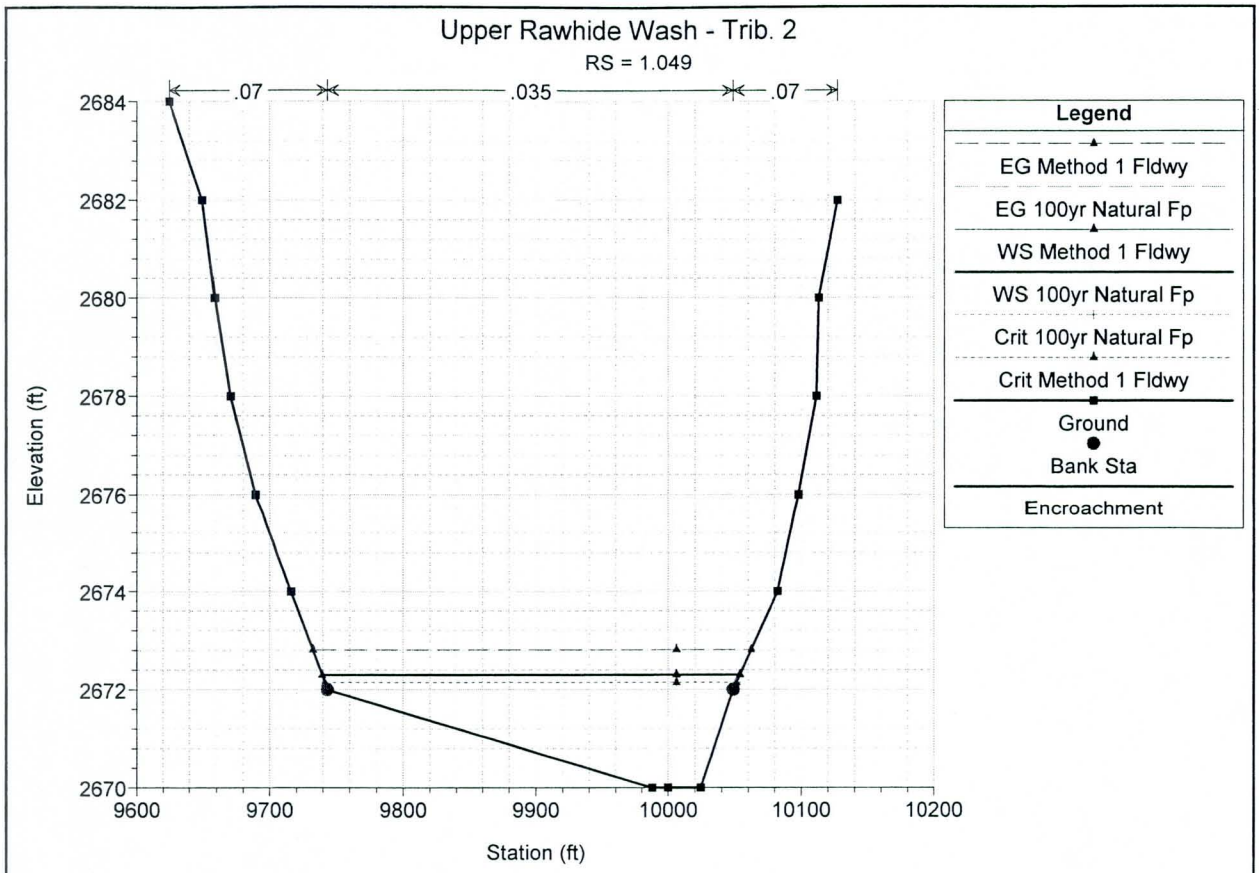
Tributary 2

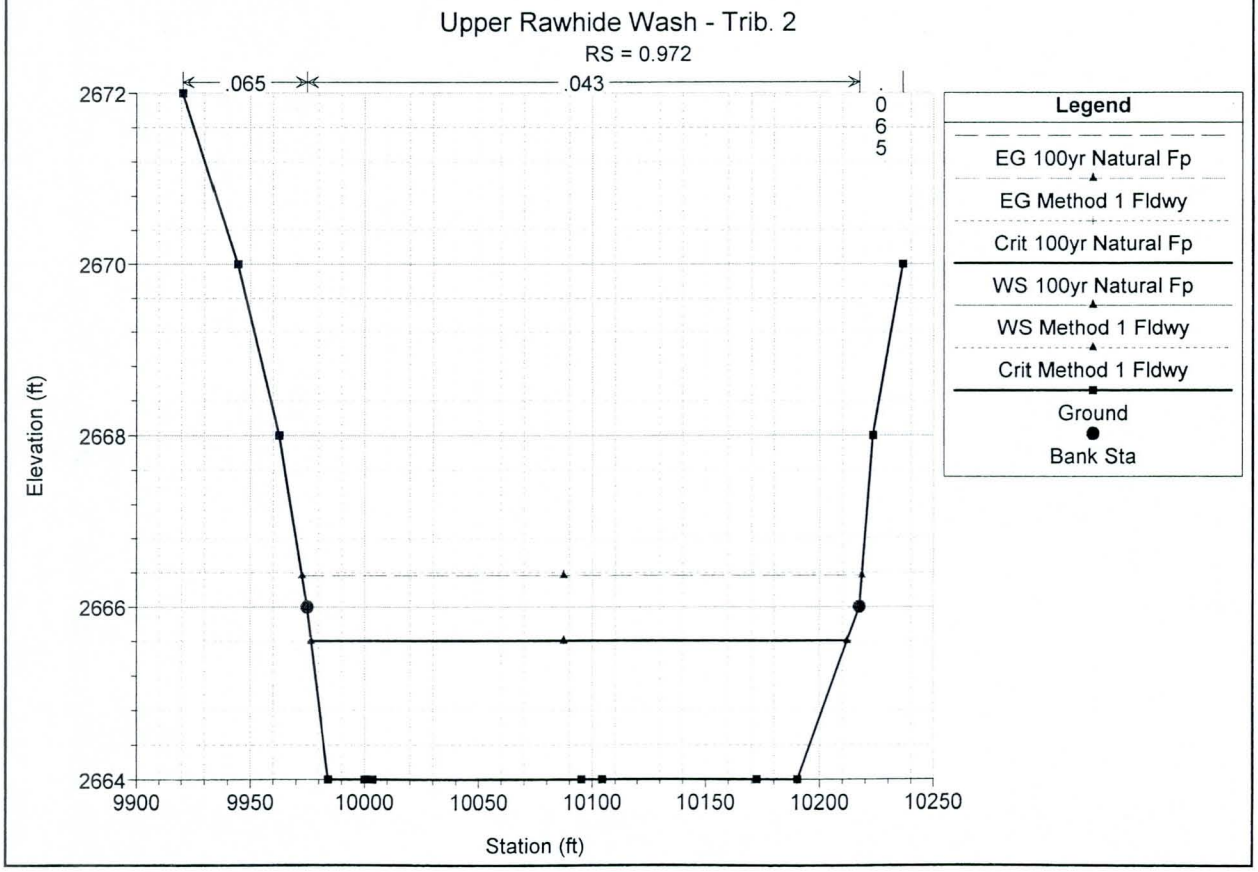

Upper Rawhide Wash - Trib. 2
RS = 1.417
.07
.035
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

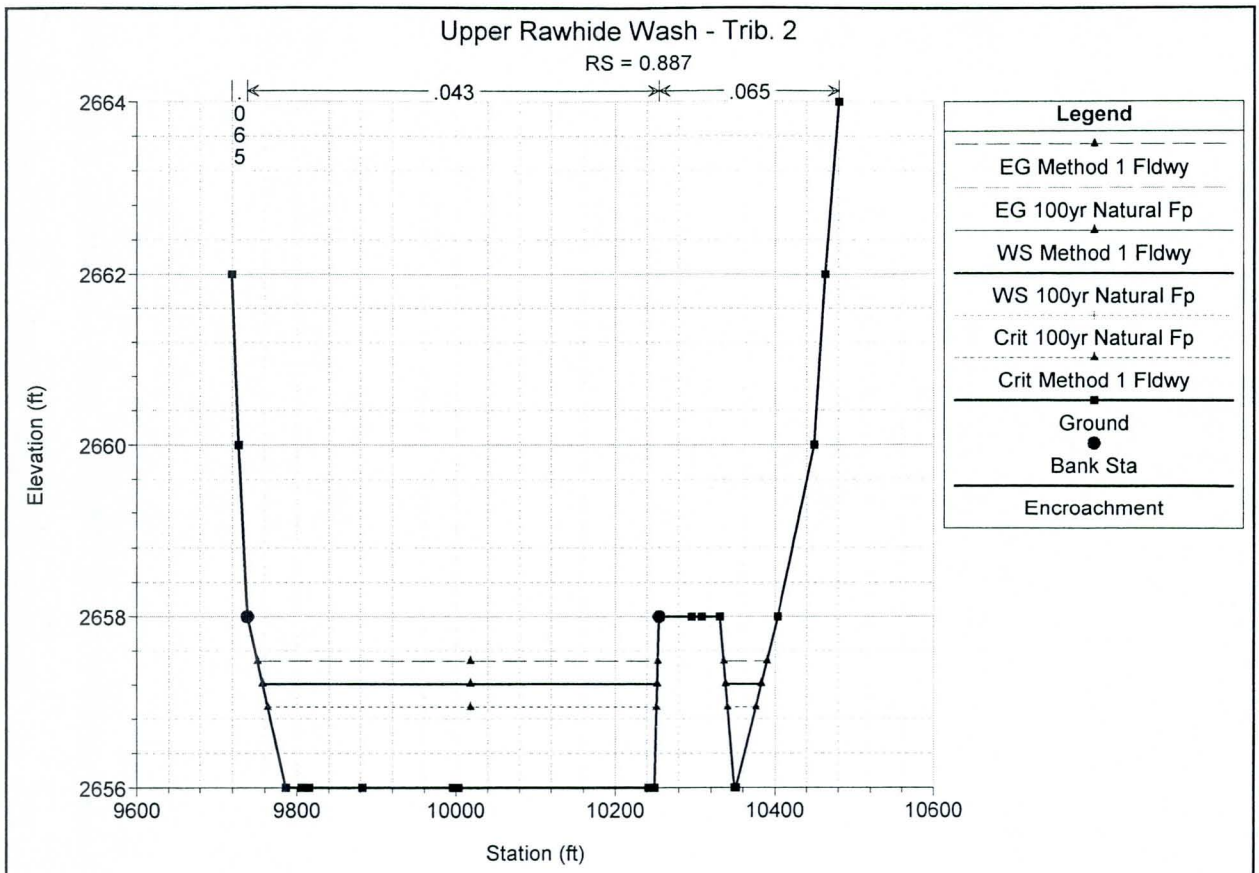

Upper Rawhide Wash - Trib. 2
RS = 1.333
.07
.035
.07
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

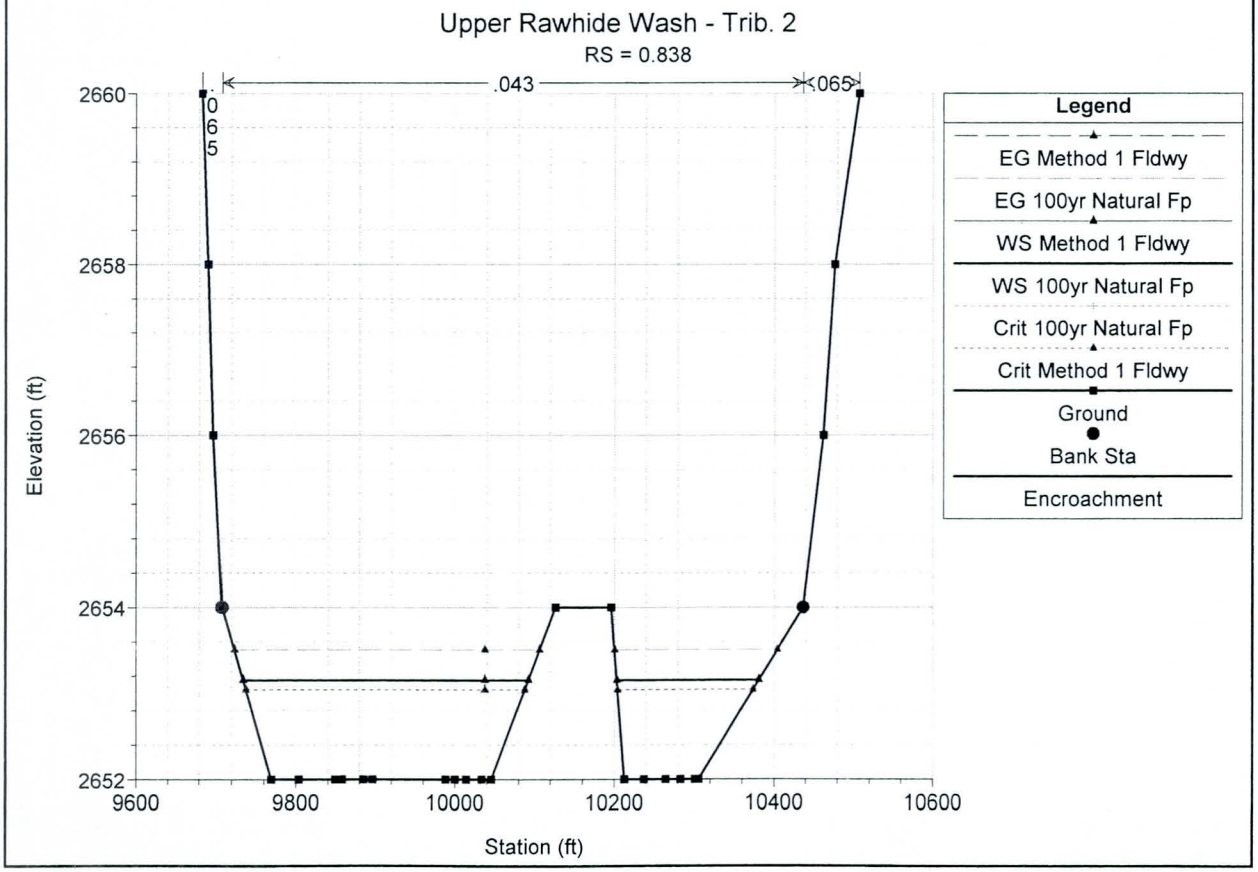

Upper Rawhide Wash - Trib. 2
RS = 1.238
.07
.035
.07
Elevation (ft)
2700
2698
2696
2694
2692
2690
2688
2686
9700
9800
9900
10000
10100
10200
10300
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Bank Sta

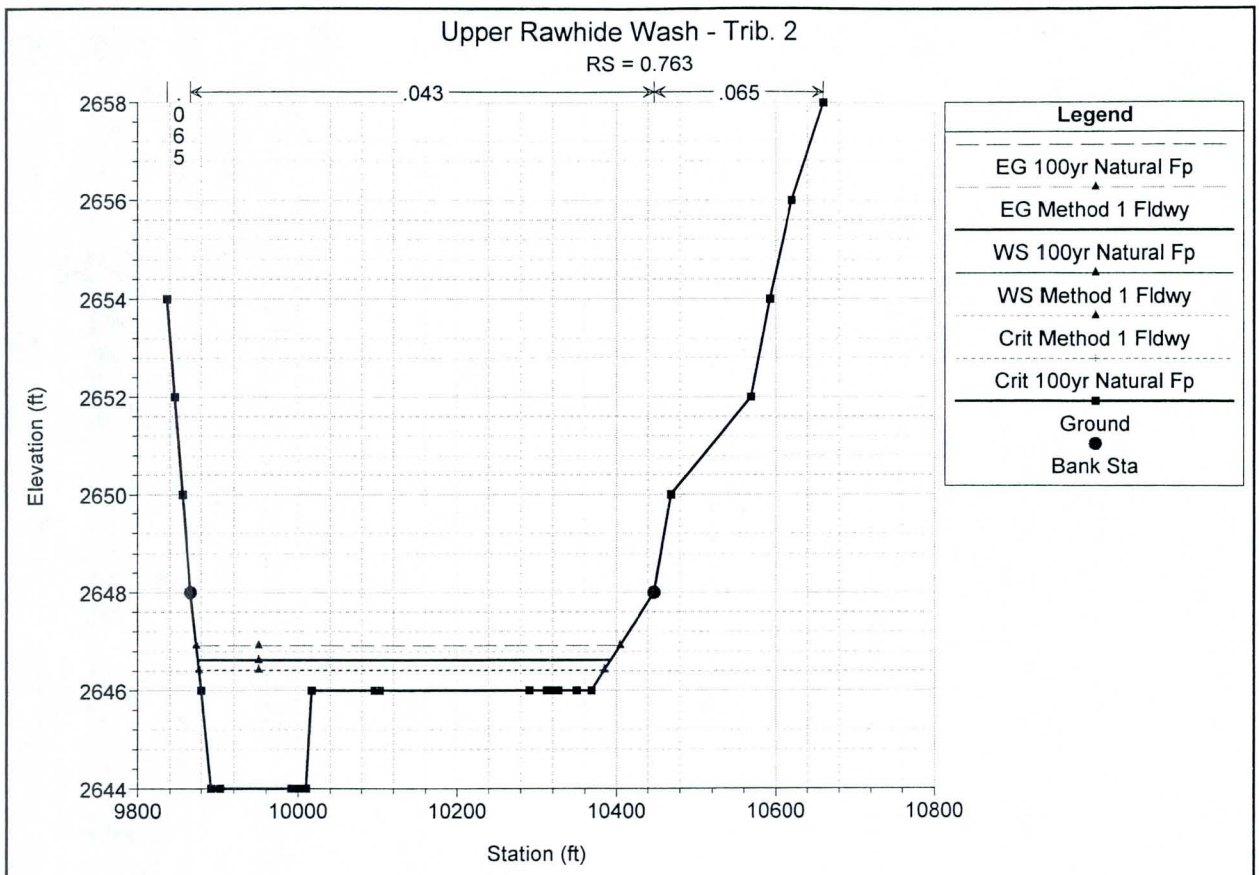

Upper Rawhide Wash - Trib. 2
RS = 1.143
.07
.035
.07
Elevation (ft)
2686
2684
2682
2680
2678
9850
9900
9950
10000
10050
10100
10150
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Bank Sta

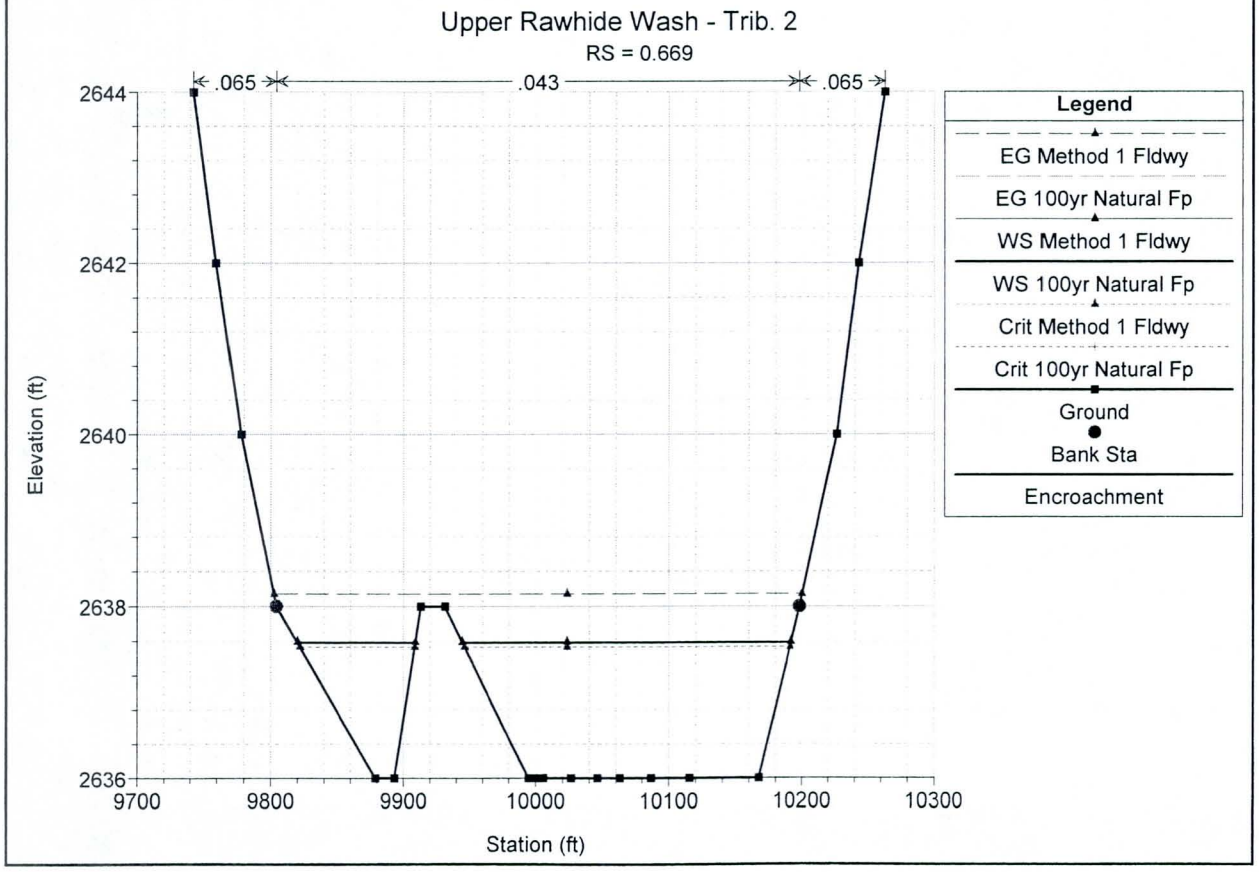

Upper Rawhide Wash - Trib. 2
RS = 1.049
.07
.035
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

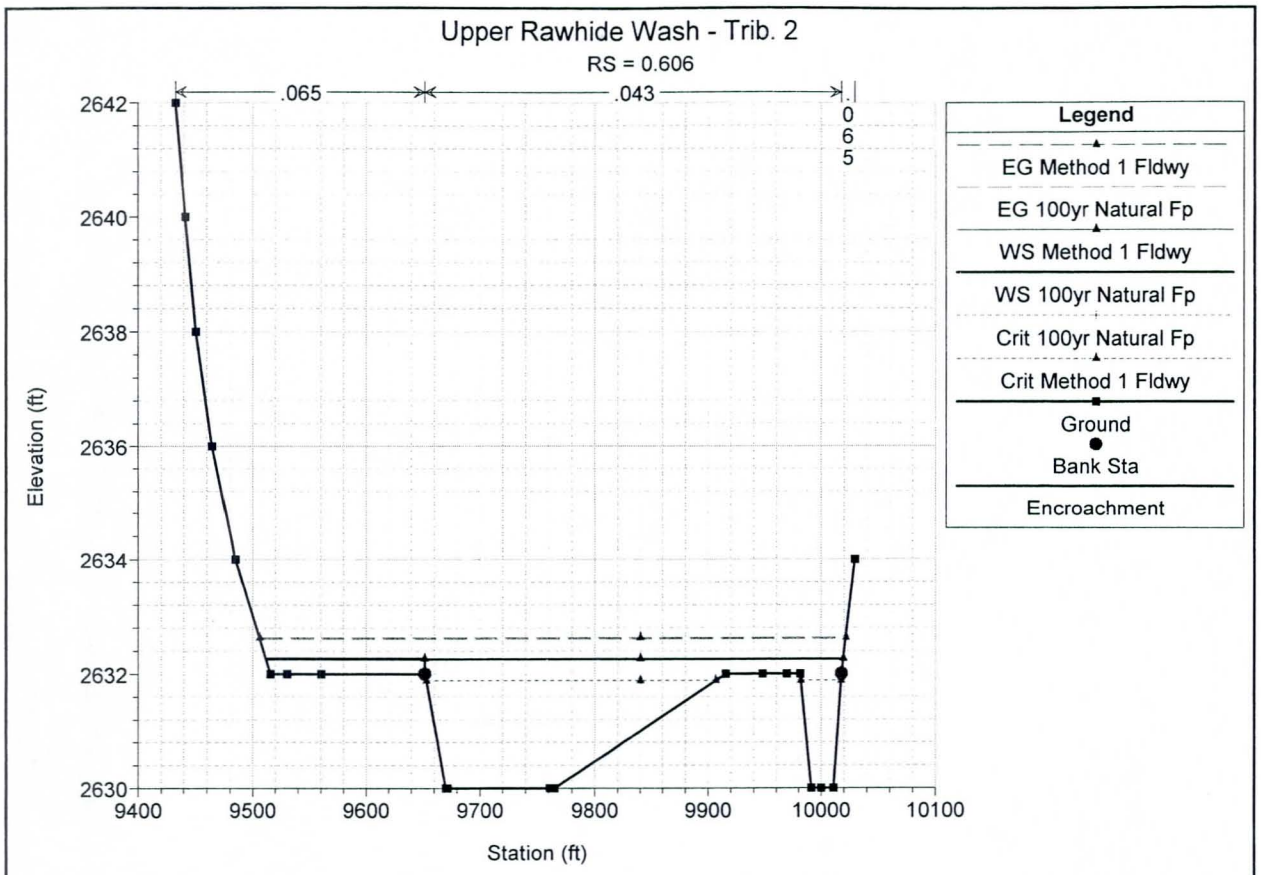

Upper Rawhide Wash - Trib. 2
RS = 0.972
.065
.043
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Bank Sta

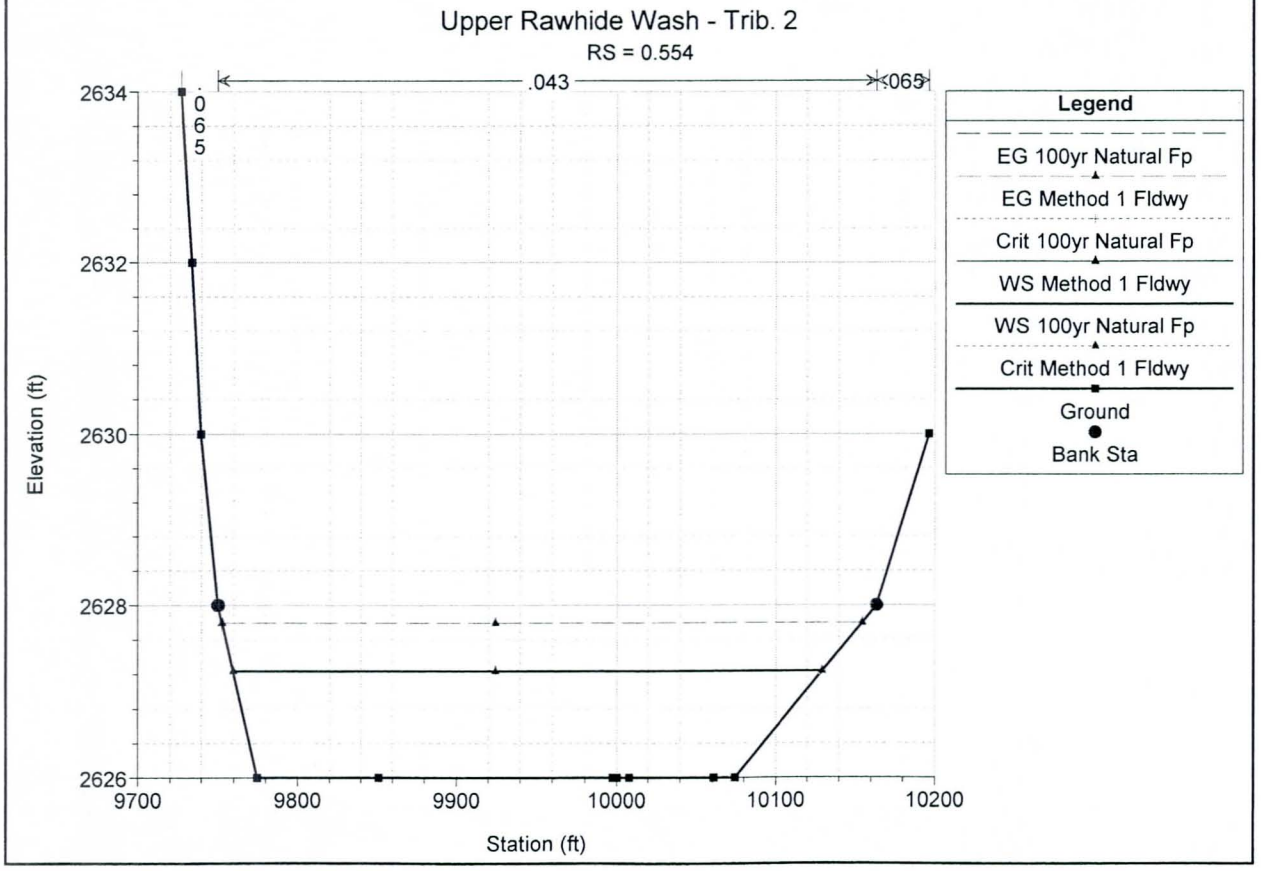

Upper Rawhide Wash - Trib. 2
RS = 0.887
.065
.043
.065
Elevation (ft)
Station (ft)
2664
2662
2660
2658
2656
9600
9800
10000
10200
10400
10600
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

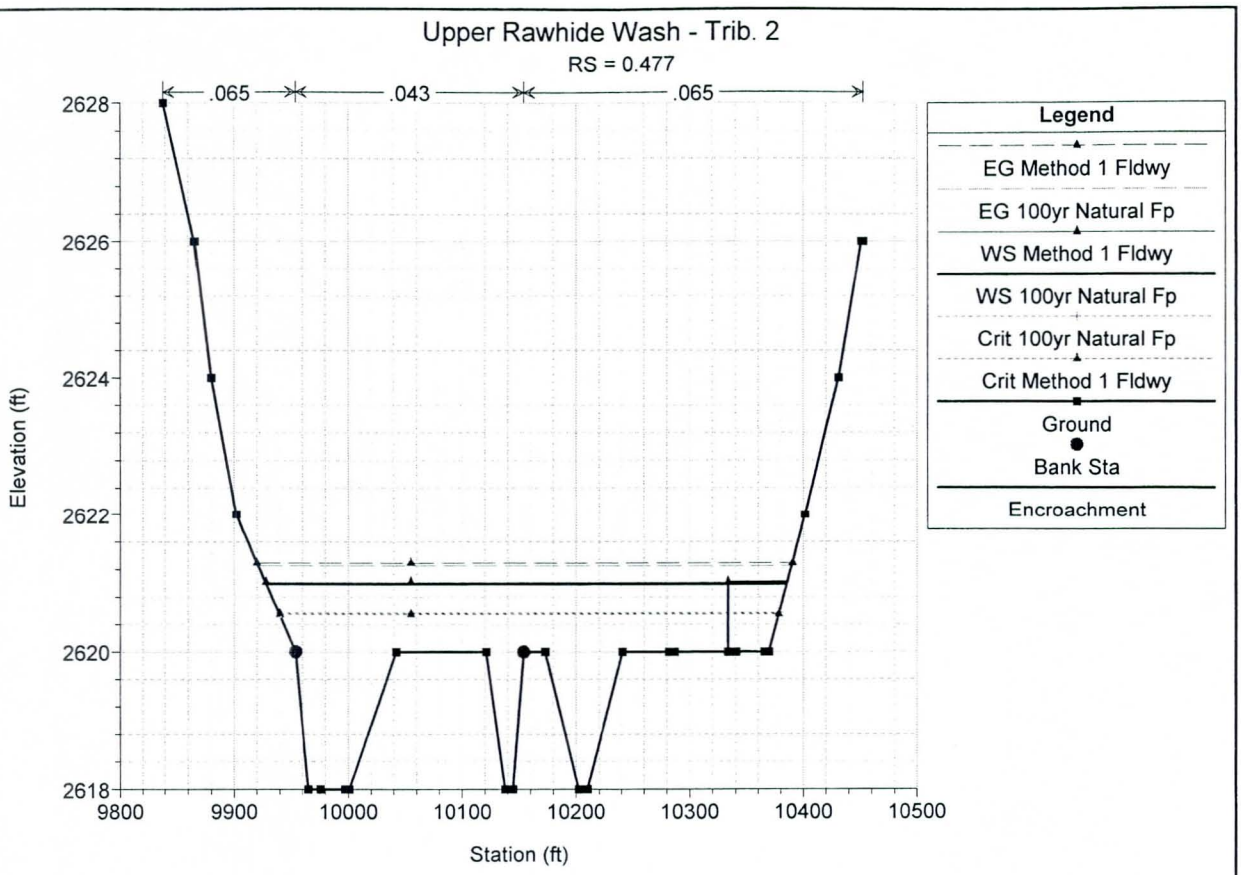

Upper Rawhide Wash - Trib. 2
RS = 0.838
.065
.043
.065
Elevation (ft)
Station (ft)
2660
2658
2656
2654
2652
9600
9800
10000
10200
10400
10600
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

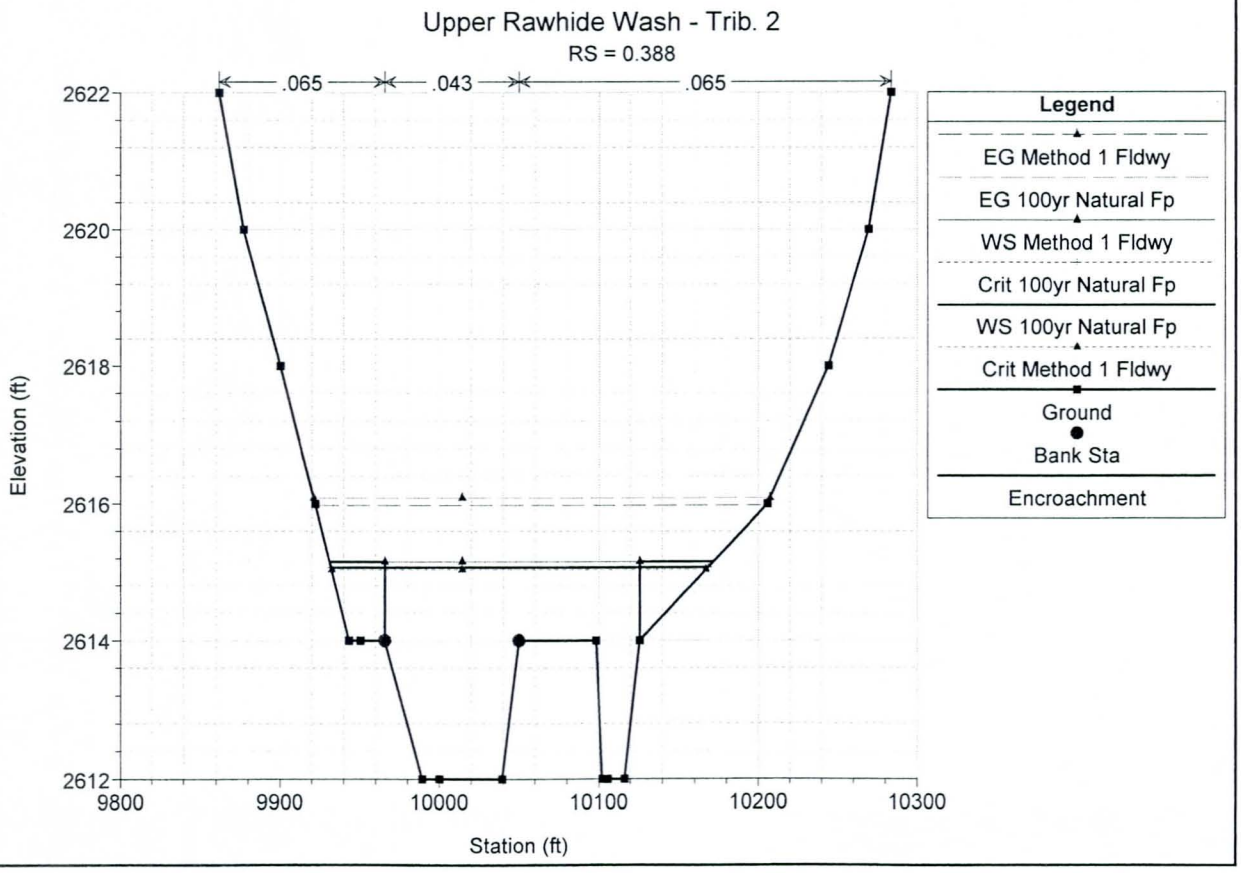

Upper Rawhide Wash - Trib. 2
RS = 0.763
.065
.043
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta

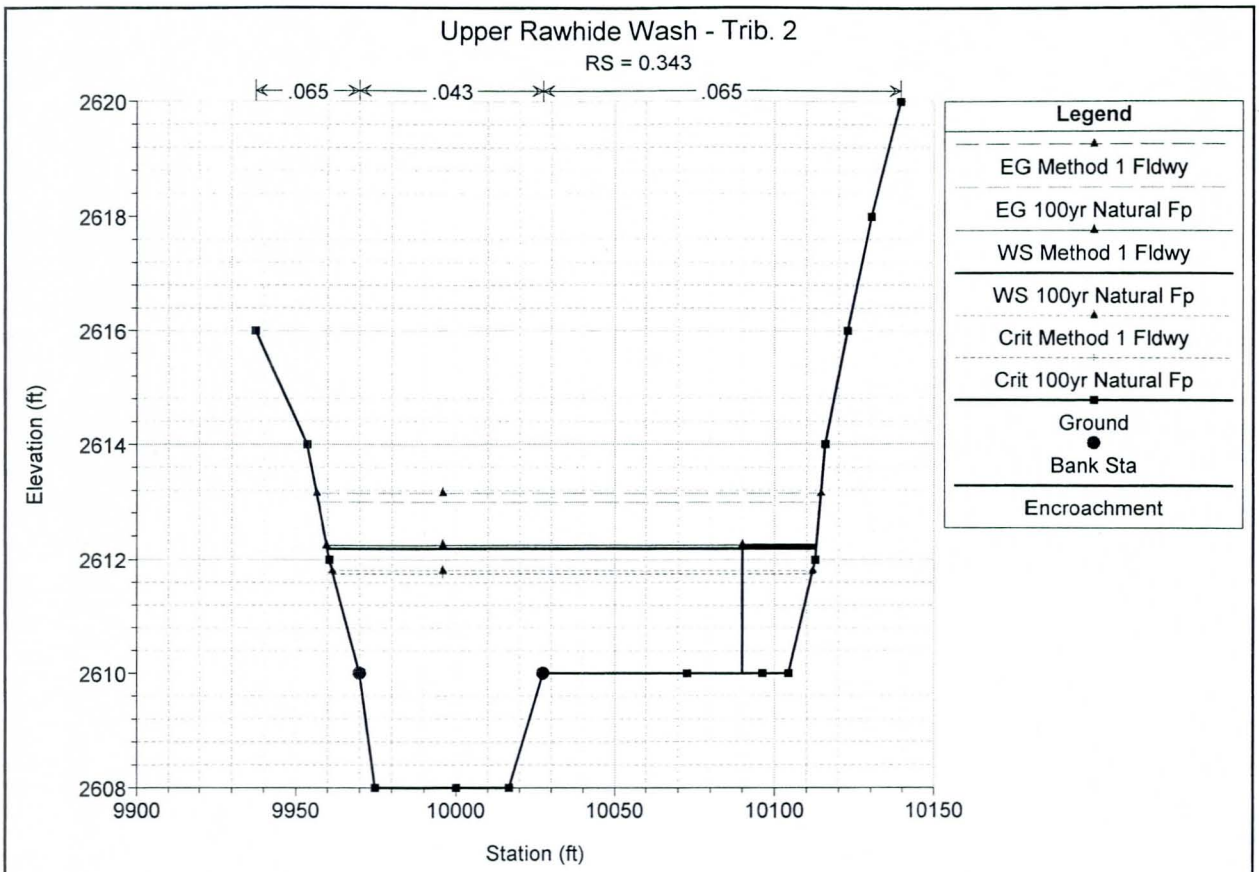

Upper Rawhide Wash - Trib. 2
RS = 0.669
.065
.043
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

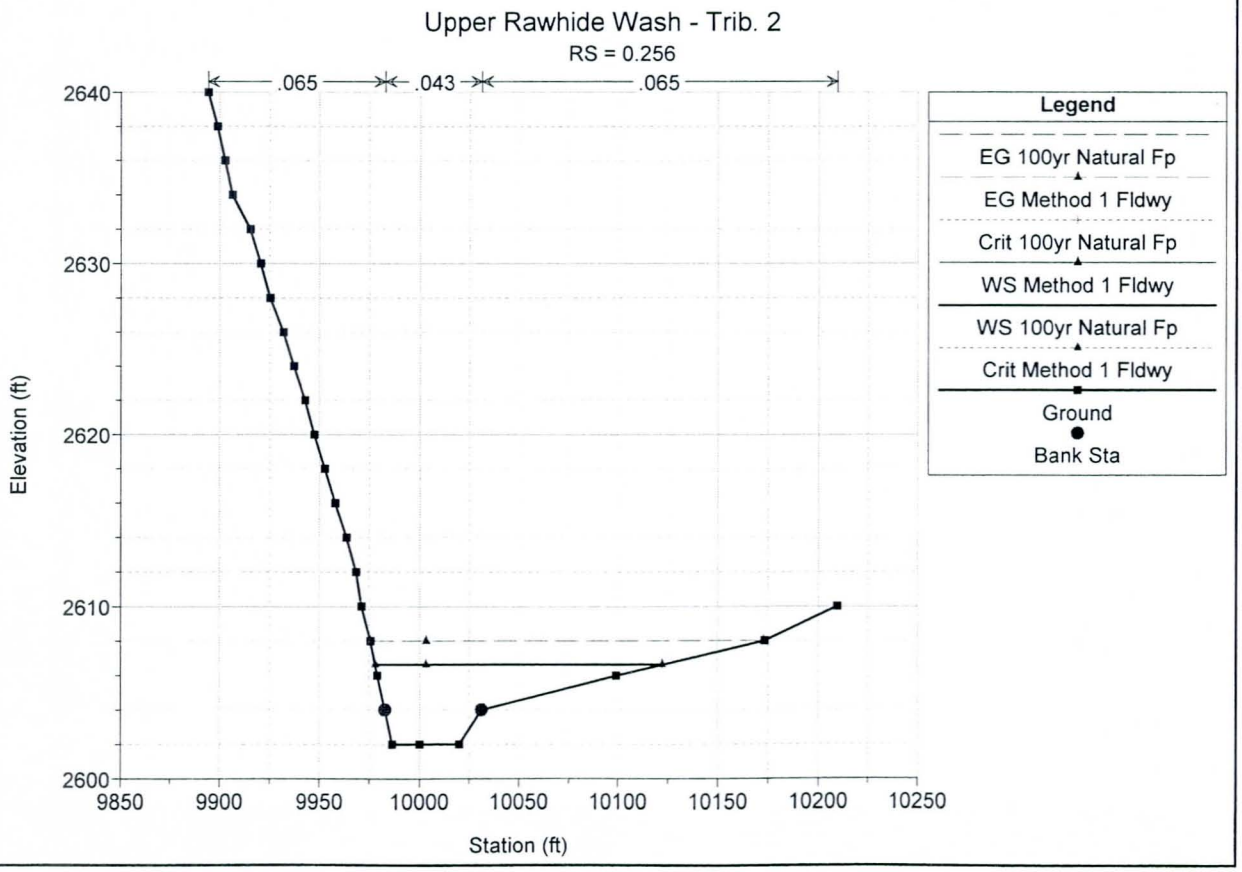

Upper Rawhide Wash - Trib. 2
RS = 0.606
.065
.043
.065
Elevation (ft)
Station (ft)
2642
2640
2638
2636
2634
2632
2630
9400
9500
9600
9700
9800
9900
10000
10100
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Trib. 2
RS = 0.554
.043
.065
.065
Elevation (ft)
Station (ft)
2634
2632
2630
2628
2626
9700
9800
9900
10000
10100
10200
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta


Upper Rawhide Wash - Trib. 2
RS = 0.477
.065
.043
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

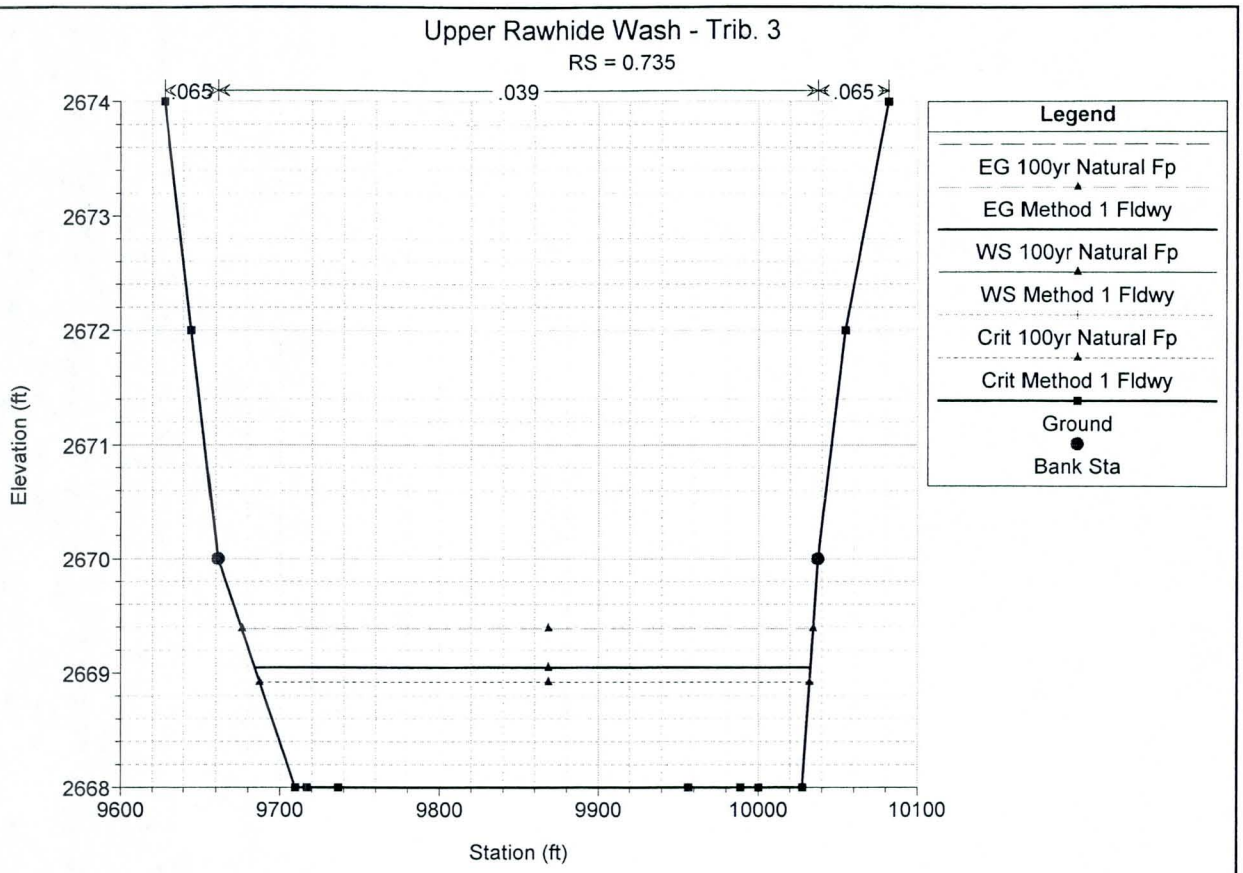

Upper Rawhide Wash - Trib. 2
RS = 0.388
.065
.043
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

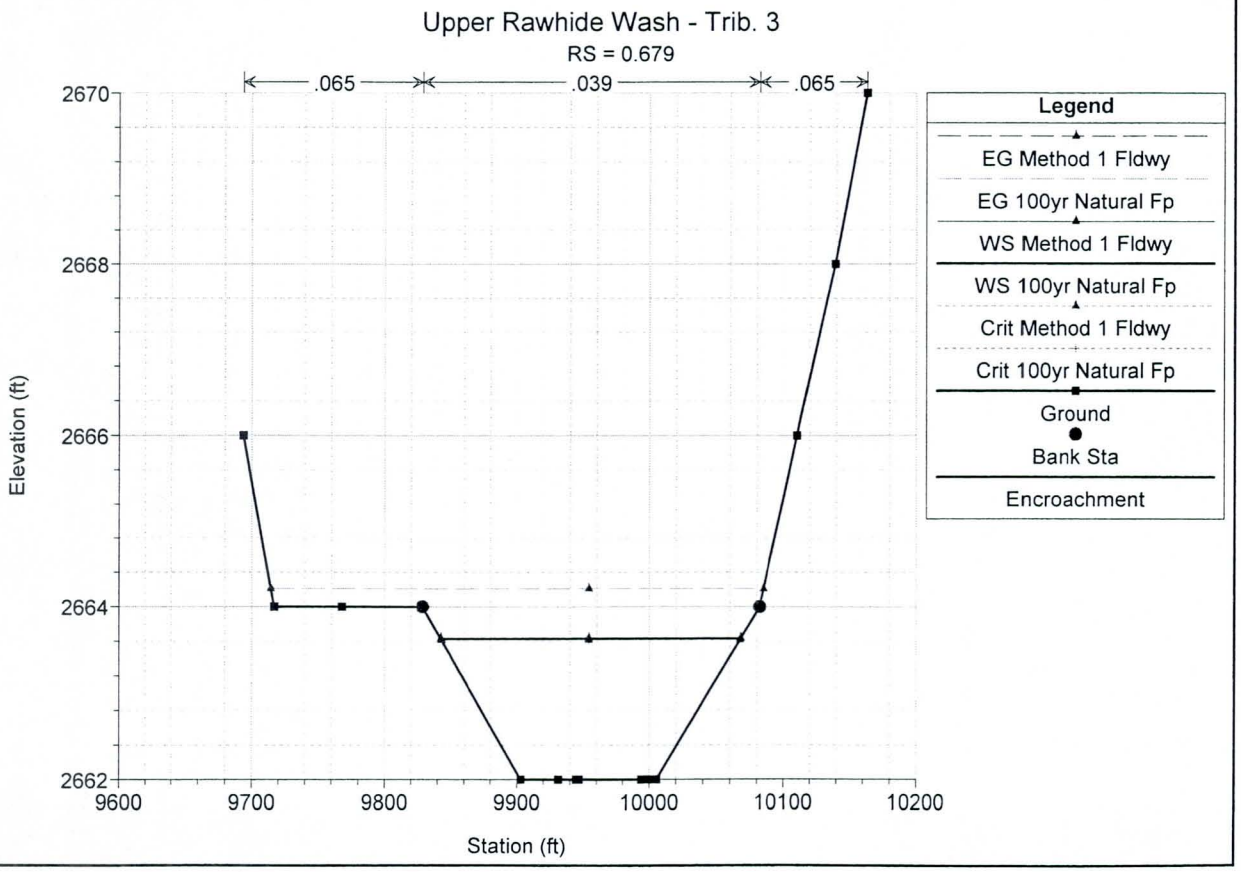

Upper Rawhide Wash - Trib. 2
RS = 0.343
.065
.043
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

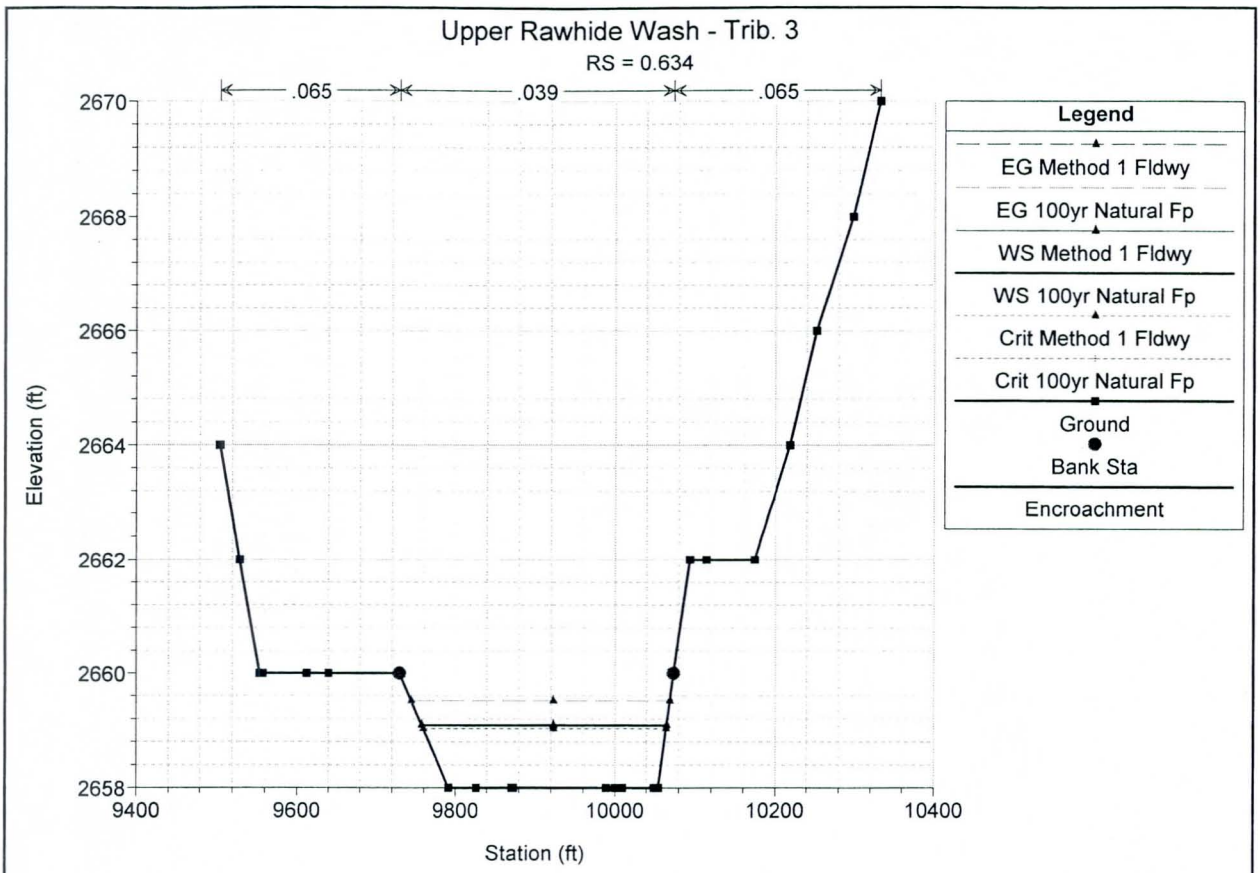

Upper Rawhide Wash - Trib. 2
RS = 0.256
.065
.043
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

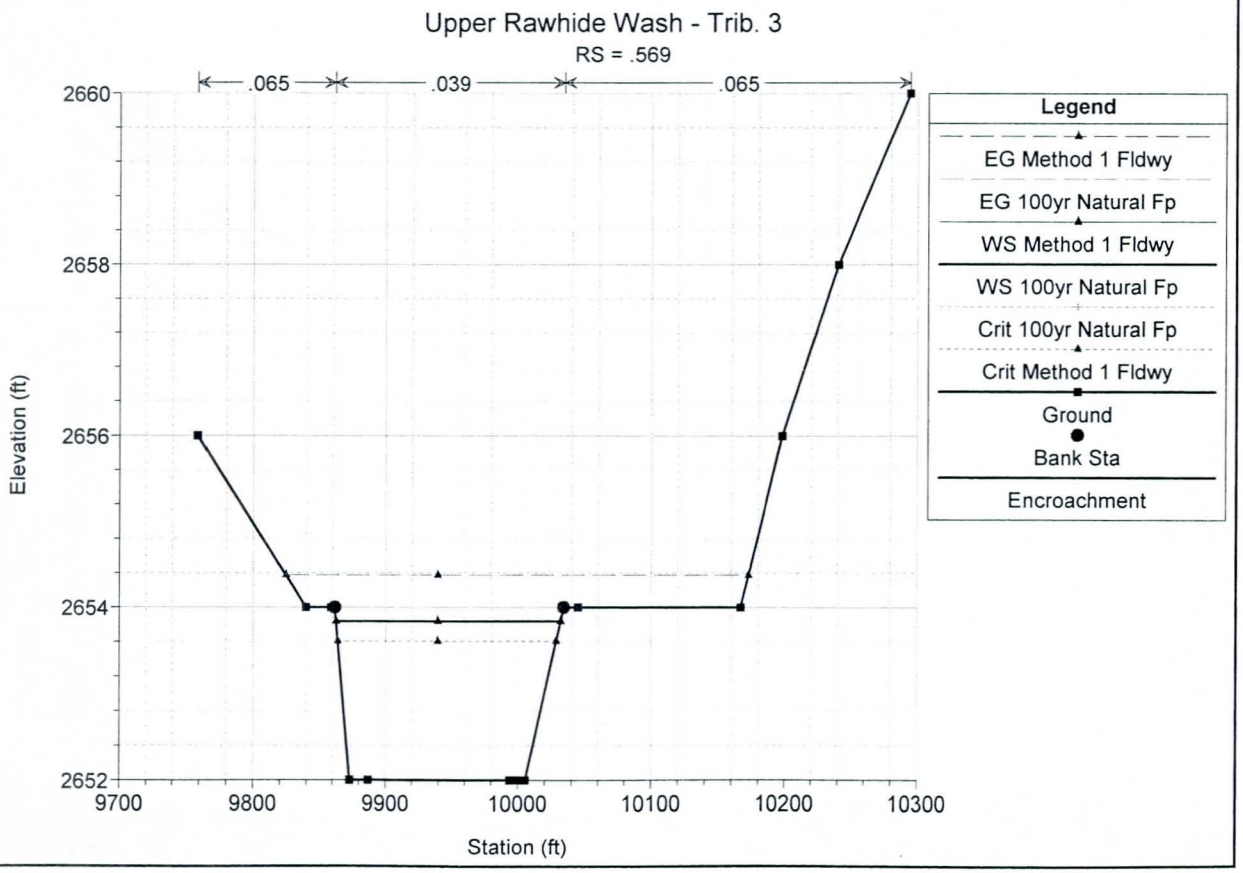
E.2 CROSS SECTION PLOTS

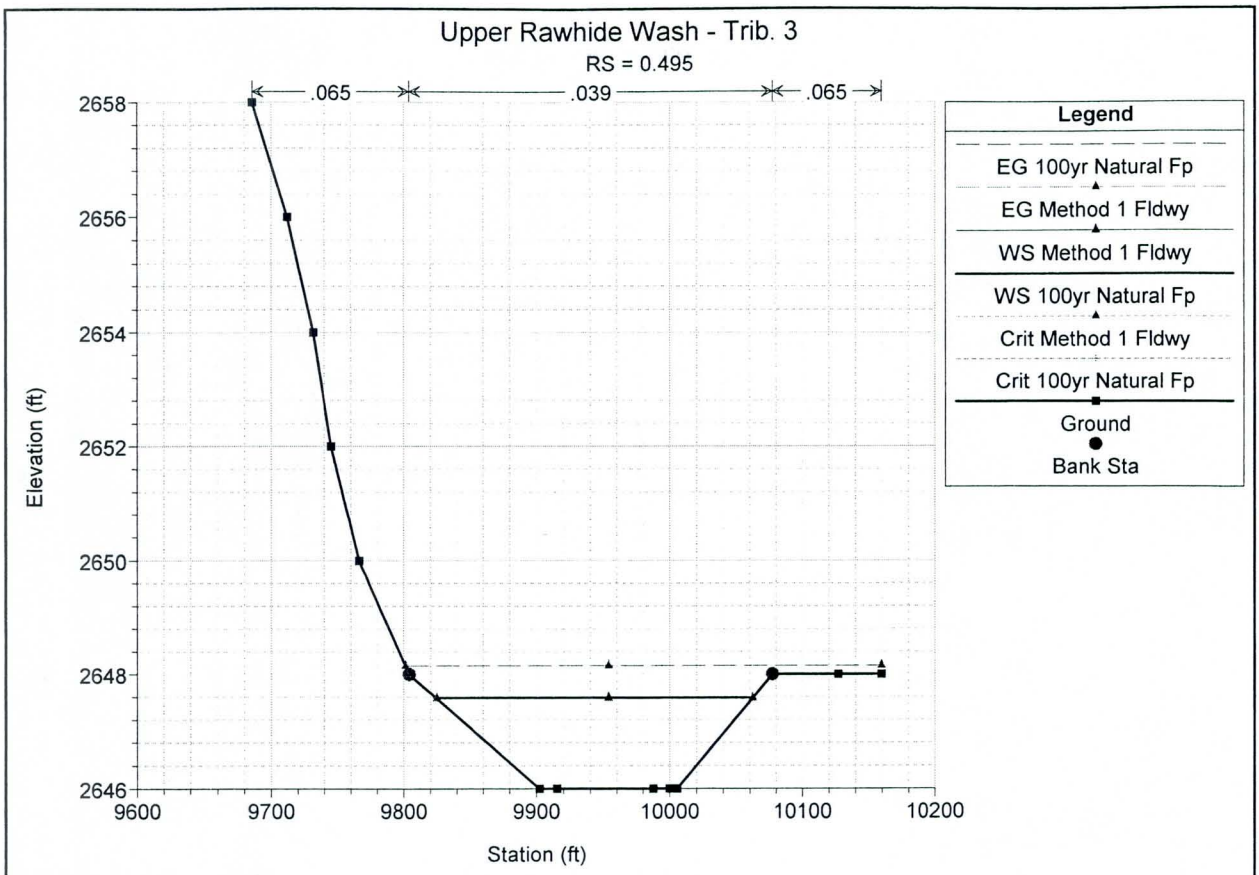
Tributary 3

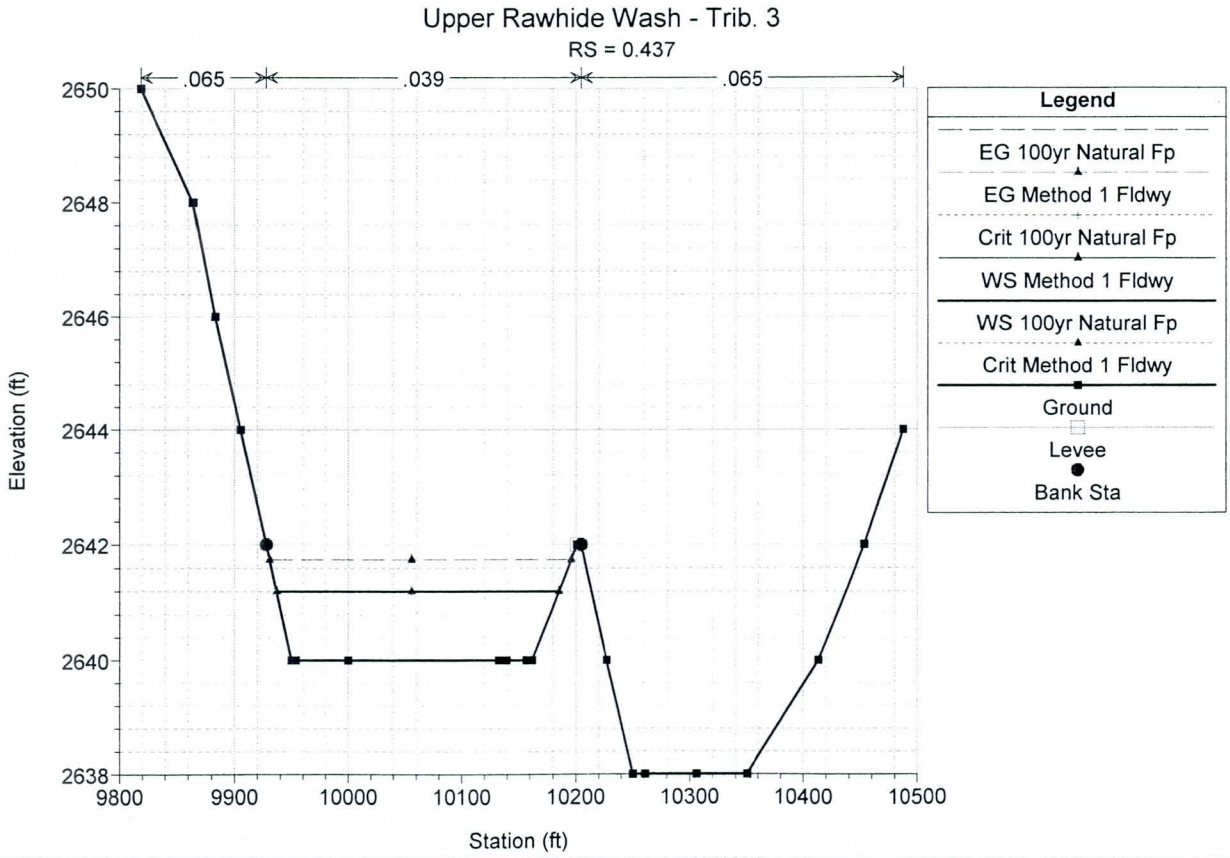

Upper Rawhide Wash - Trib. 3
RS = 0.735
.065
.039
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

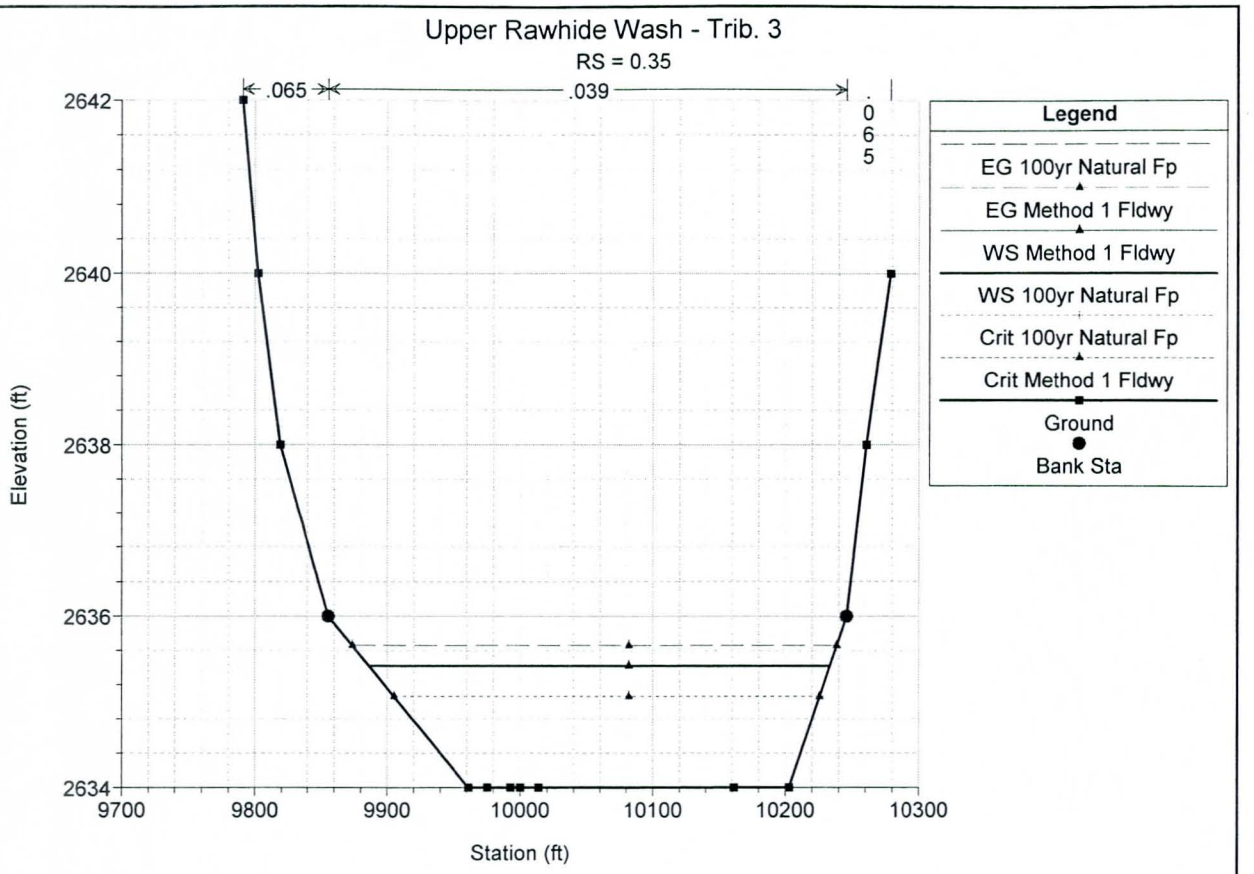

Upper Rawhide Wash - Trib. 3
RS = 0.679
.065
.039
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

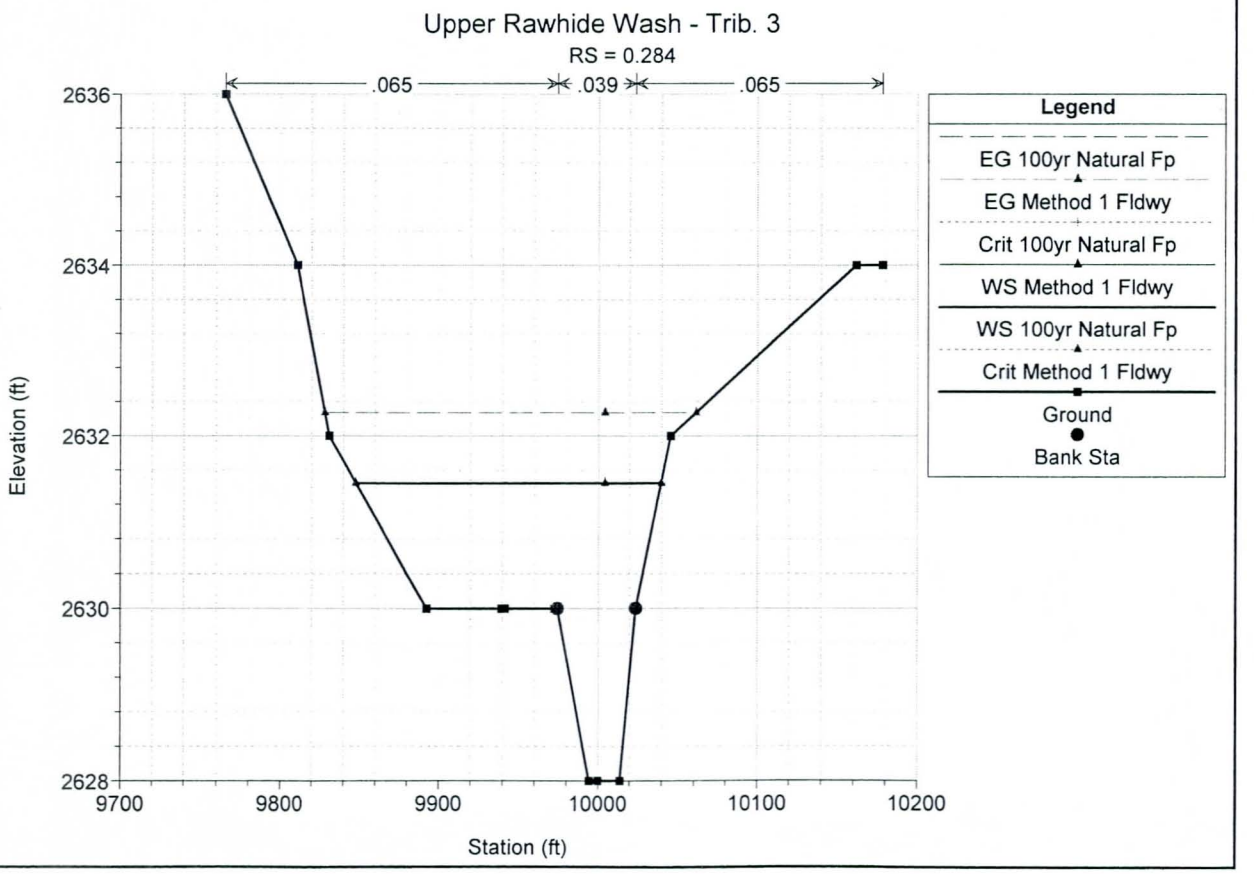

Upper Rawhide Wash - Trib. 3
RS = 0.634
.065
.039
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Trib. 3
RS = .569
.065
.039
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Trib. 3
RS = 0.495
.065
.039
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta

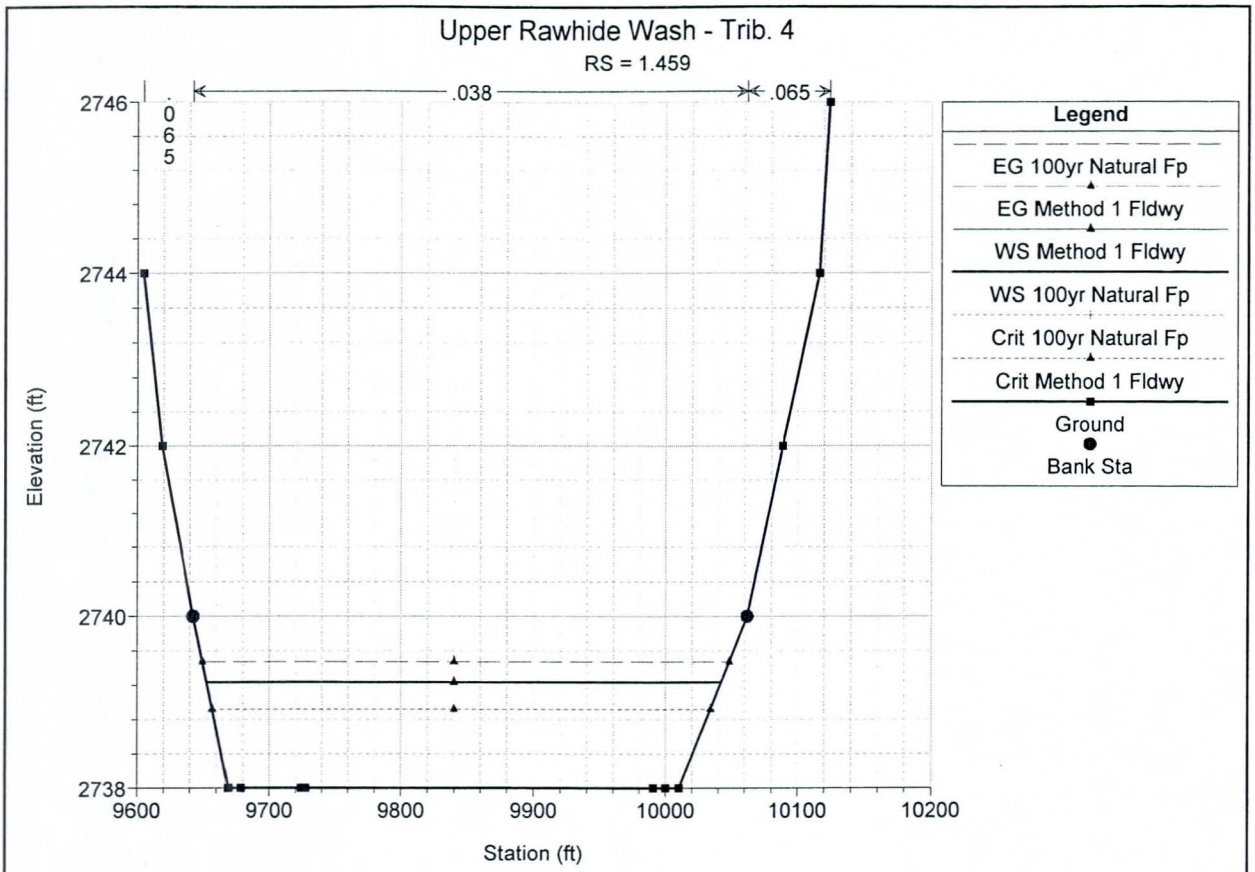

Upper Rawhide Wash - Trib. 3
RS = 0.437
.065
.039
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta

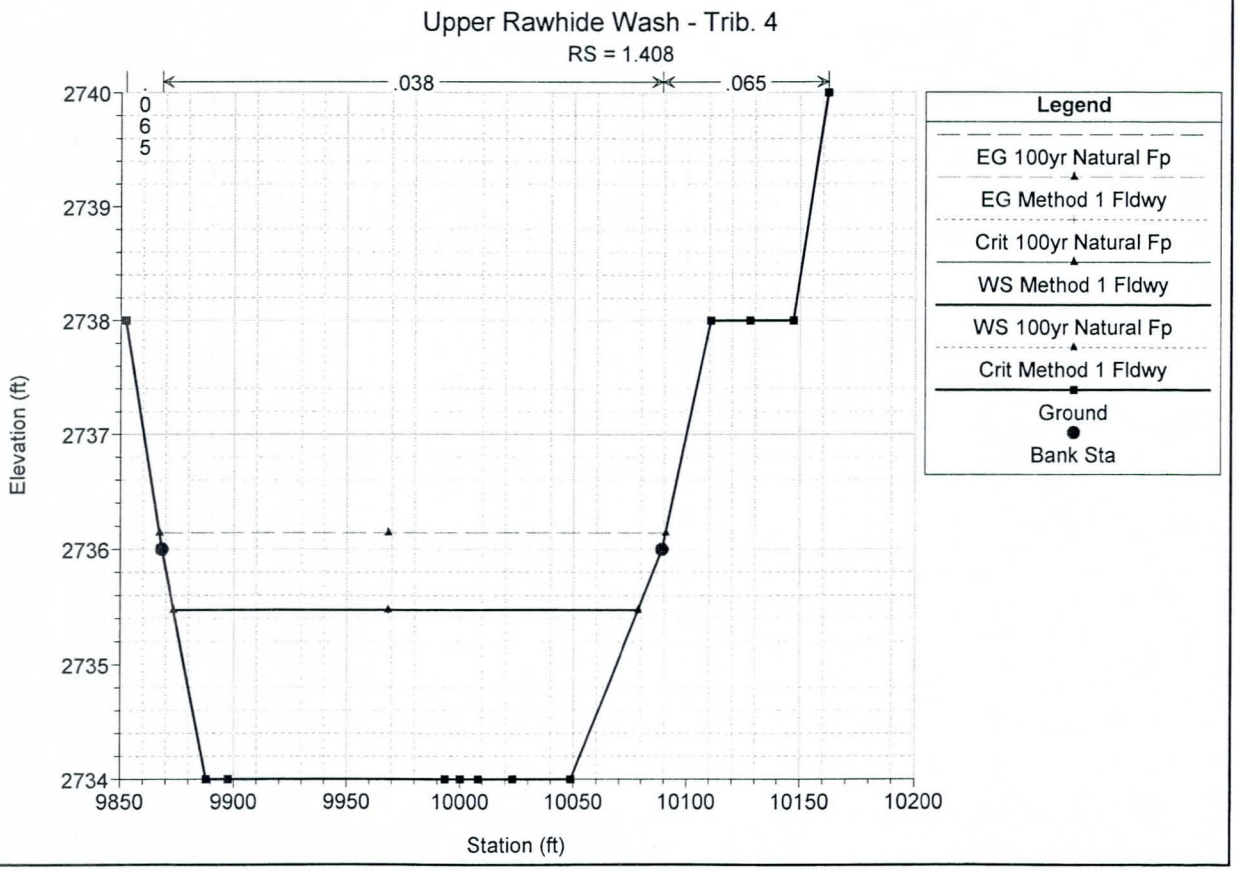

Upper Rawhide Wash - Trib. 3
RS = 0.35
.065
.039
.065
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Elevation (ft)
2642
2640
2638
2636
2634
9700
9800
9900
10000
10100
10200
10300
Station (ft)

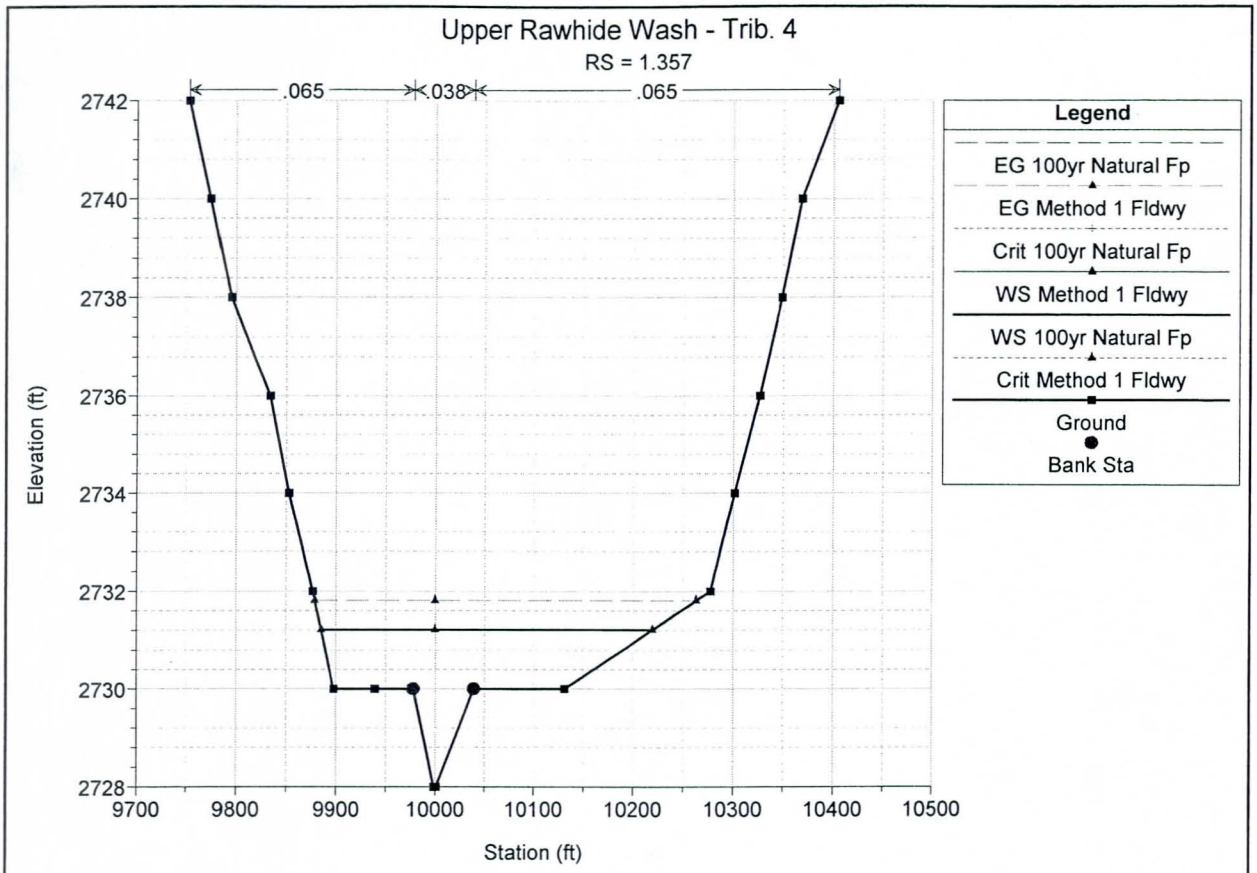

Upper Rawhide Wash - Trib. 3
RS = 0.284
.065
.039
.065
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Elevation (ft)
2636
2634
2632
2630
2628
9700
9800
9900
10000
10100
10200
Station (ft)

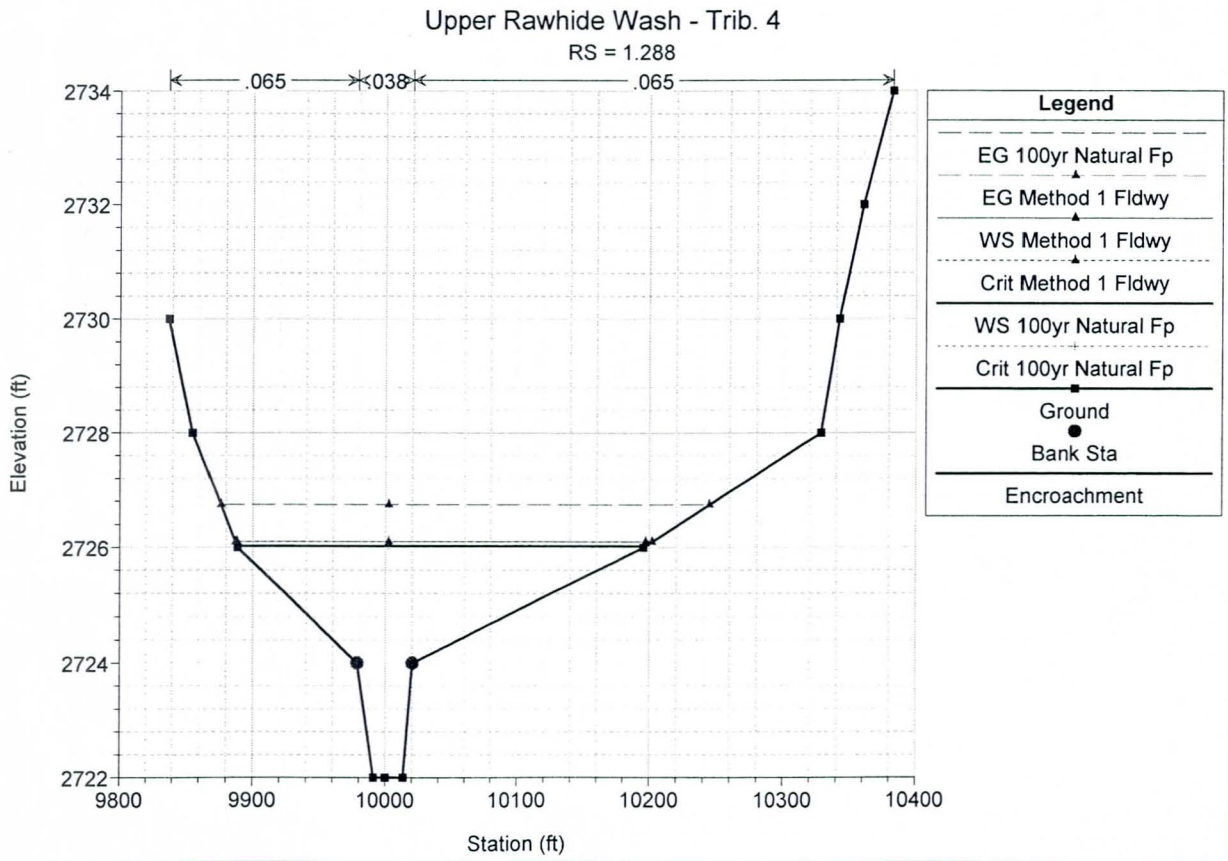
E.2 CROSS SECTION PLOTS

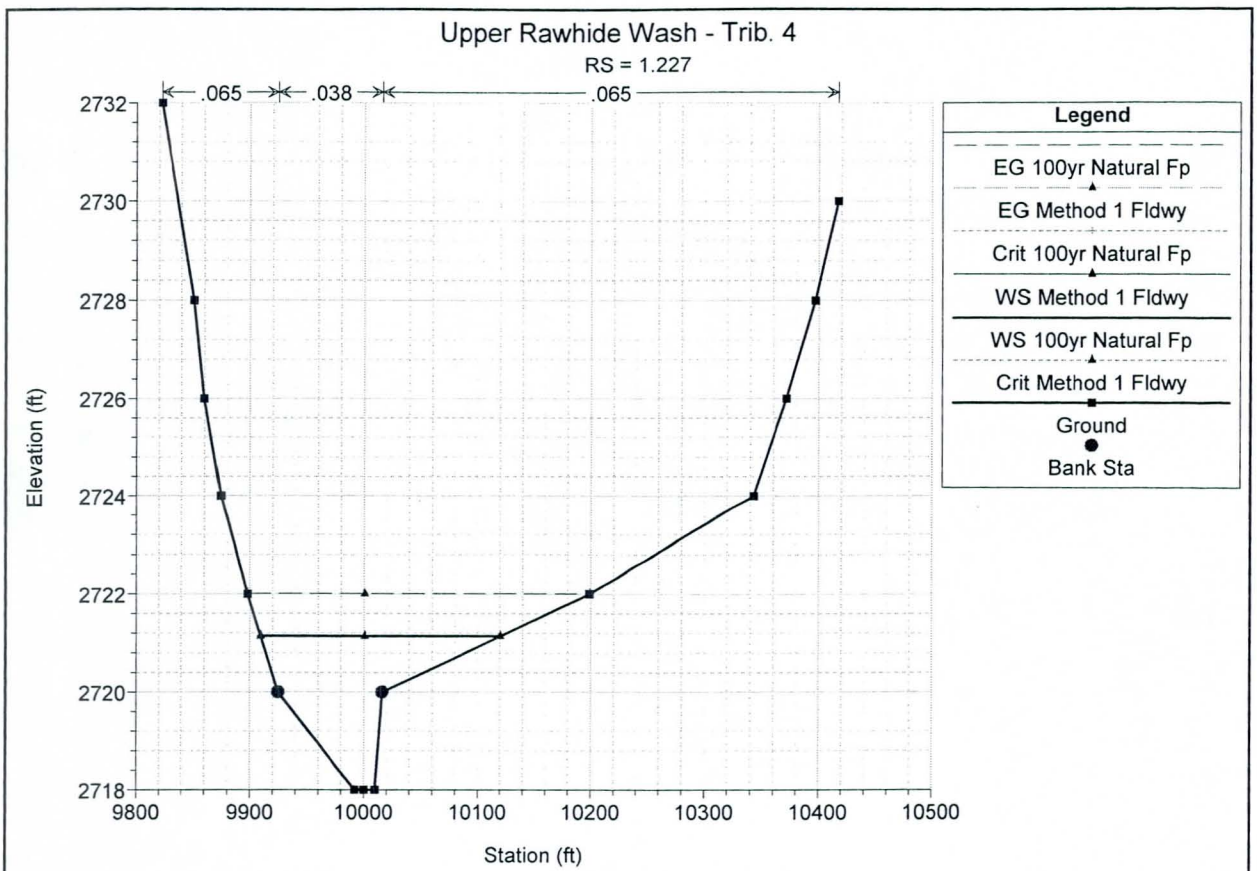
Tributary 4

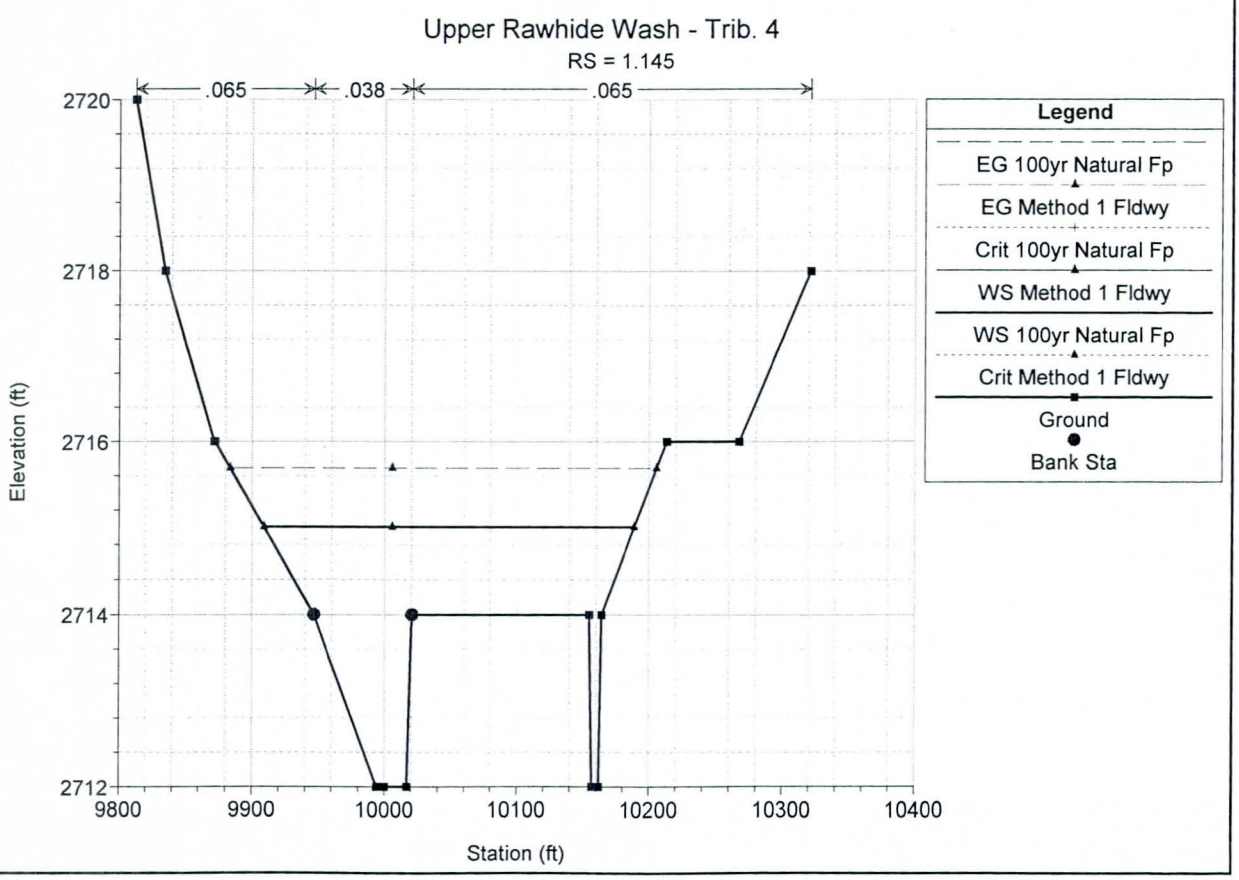

Upper Rawhide Wash - Trib. 4
RS = 1.459
.038
.065
.065
Elevation (ft)
Station (ft)
2746
2744
2742
2740
2738
9600
9700
9800
9900
10000
10100
10200
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

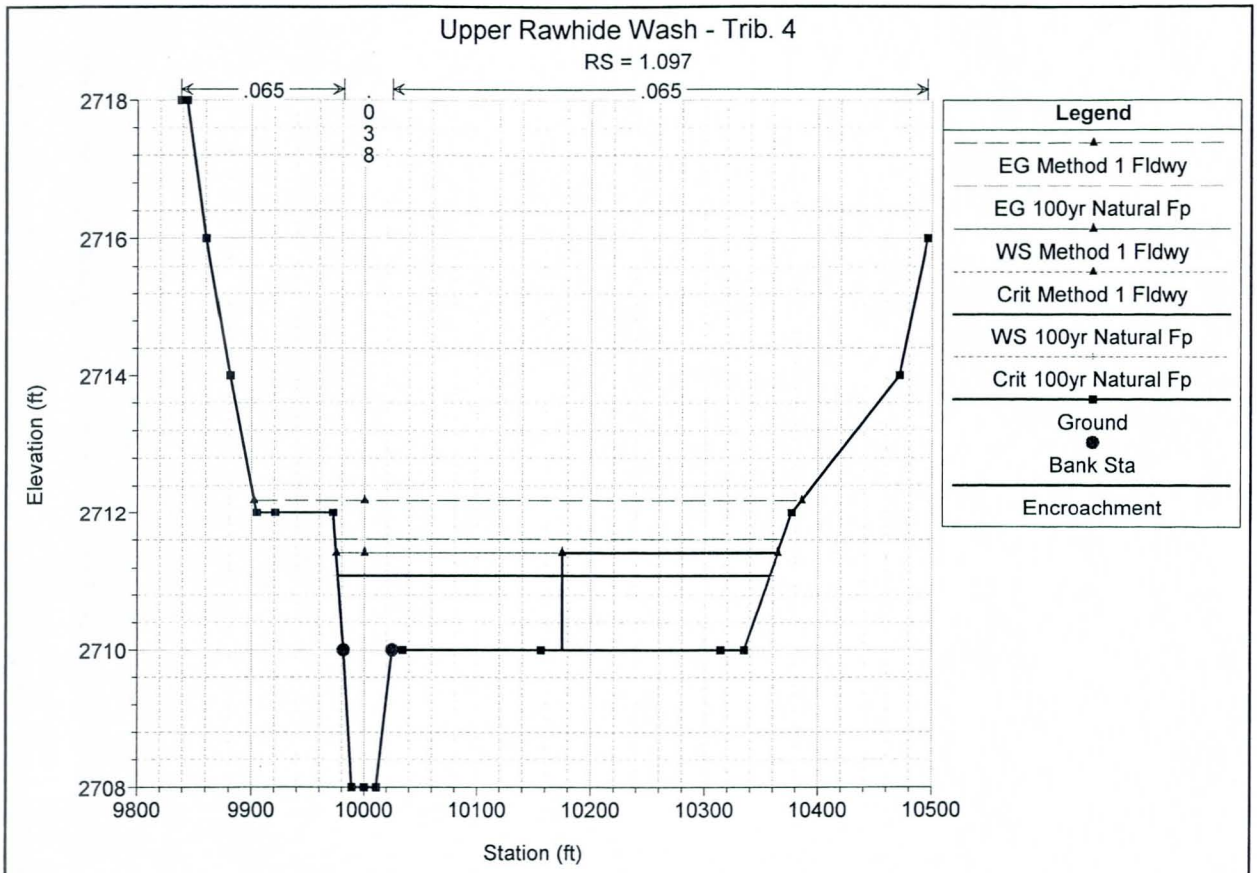

Upper Rawhide Wash - Trib. 4
RS = 1.408
.038
.065
.065
Elevation (ft)
Station (ft)
2740
2739
2738
2737
2736
2735
2734
9850
9900
9950
10000
10050
10100
10150
10200
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

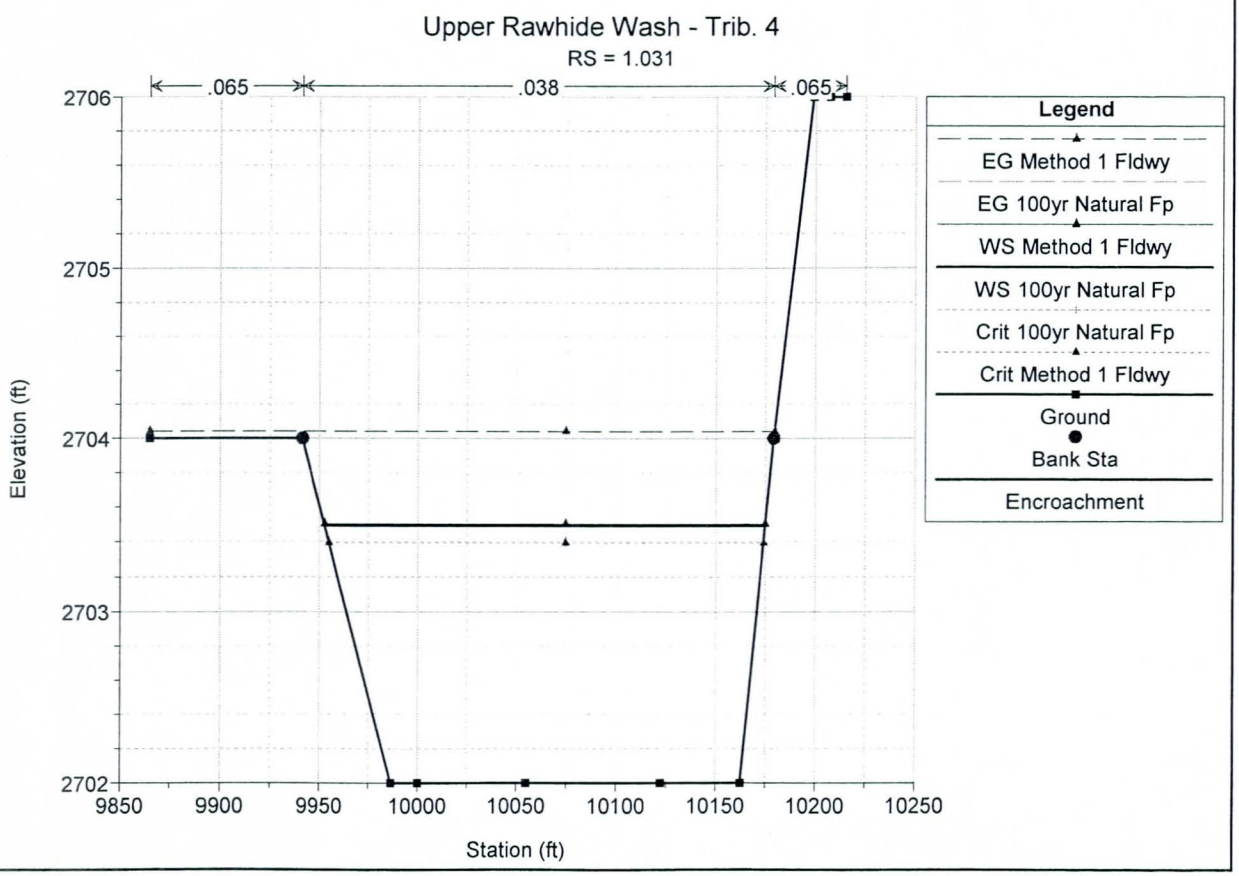

Upper Rawhide Wash - Trib. 4
RS = 1.357
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

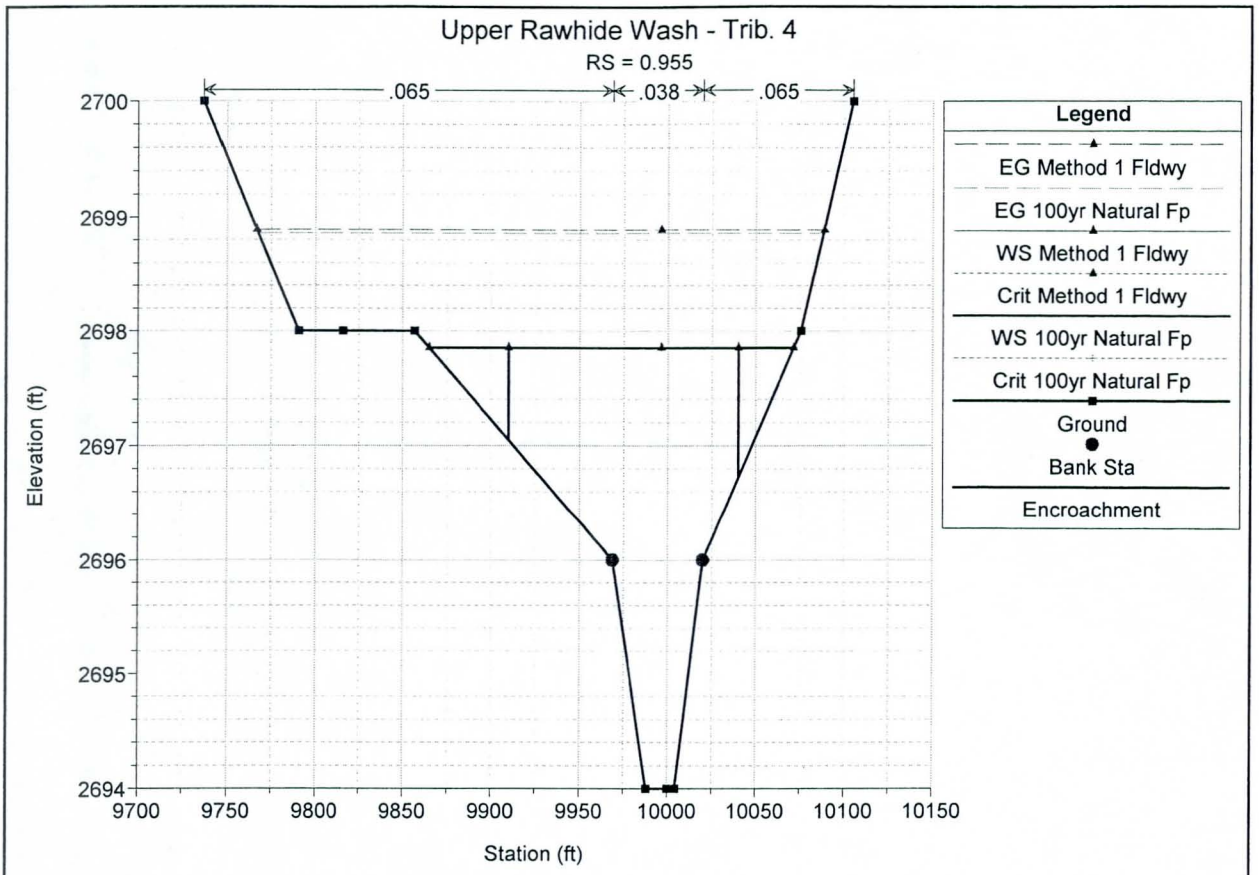

Upper Rawhide Wash - Trib. 4
RS = 1.288
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

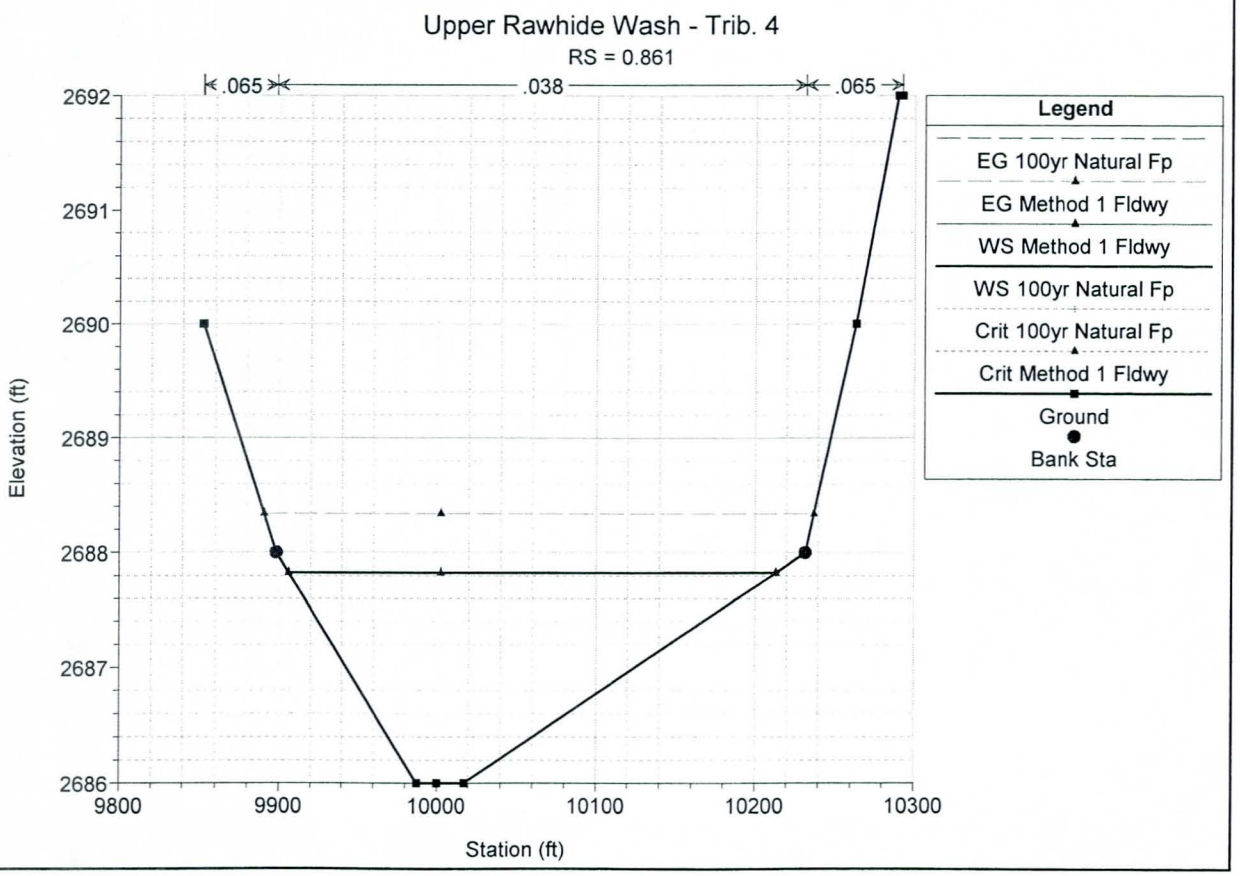

Upper Rawhide Wash - Trib. 4
RS = 1.227
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

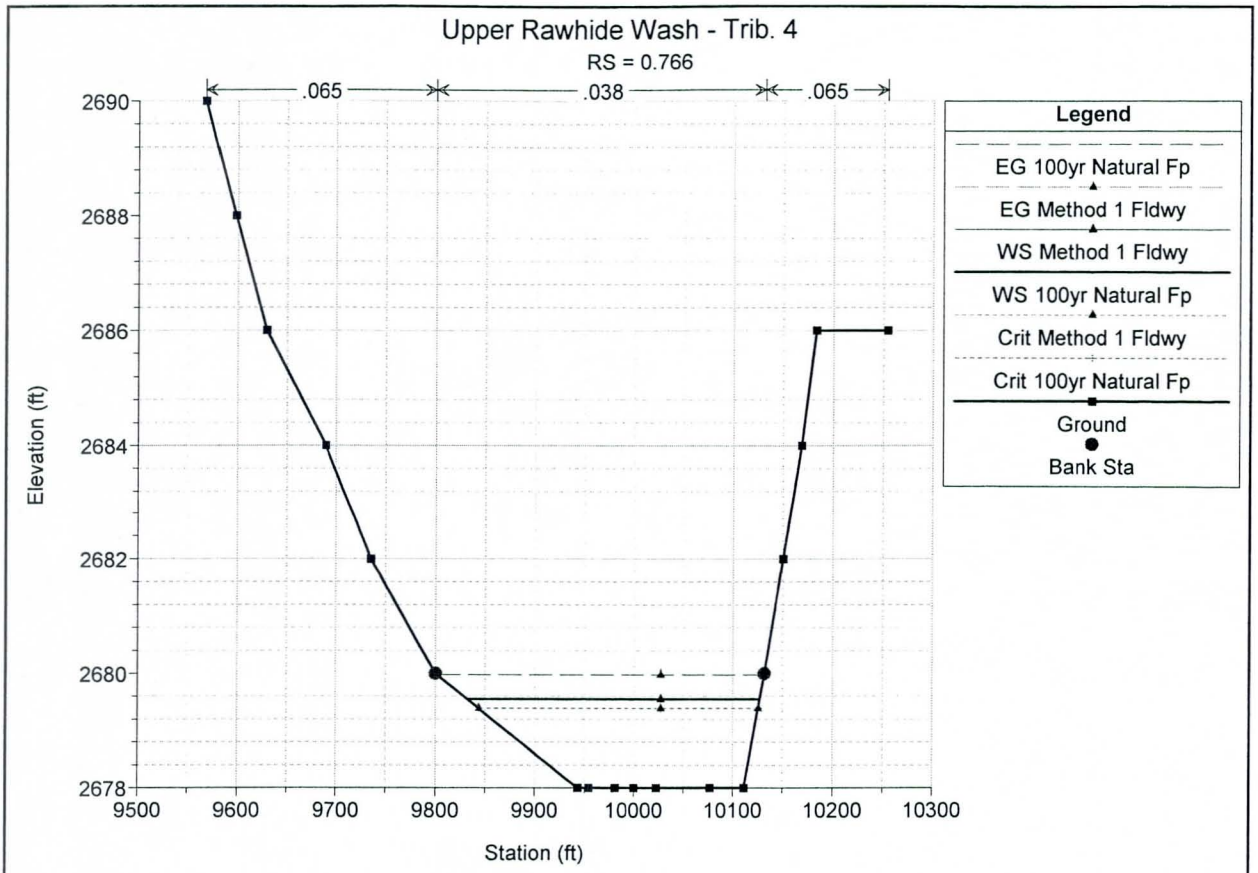

Upper Rawhide Wash - Trib. 4
RS = 1.145
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

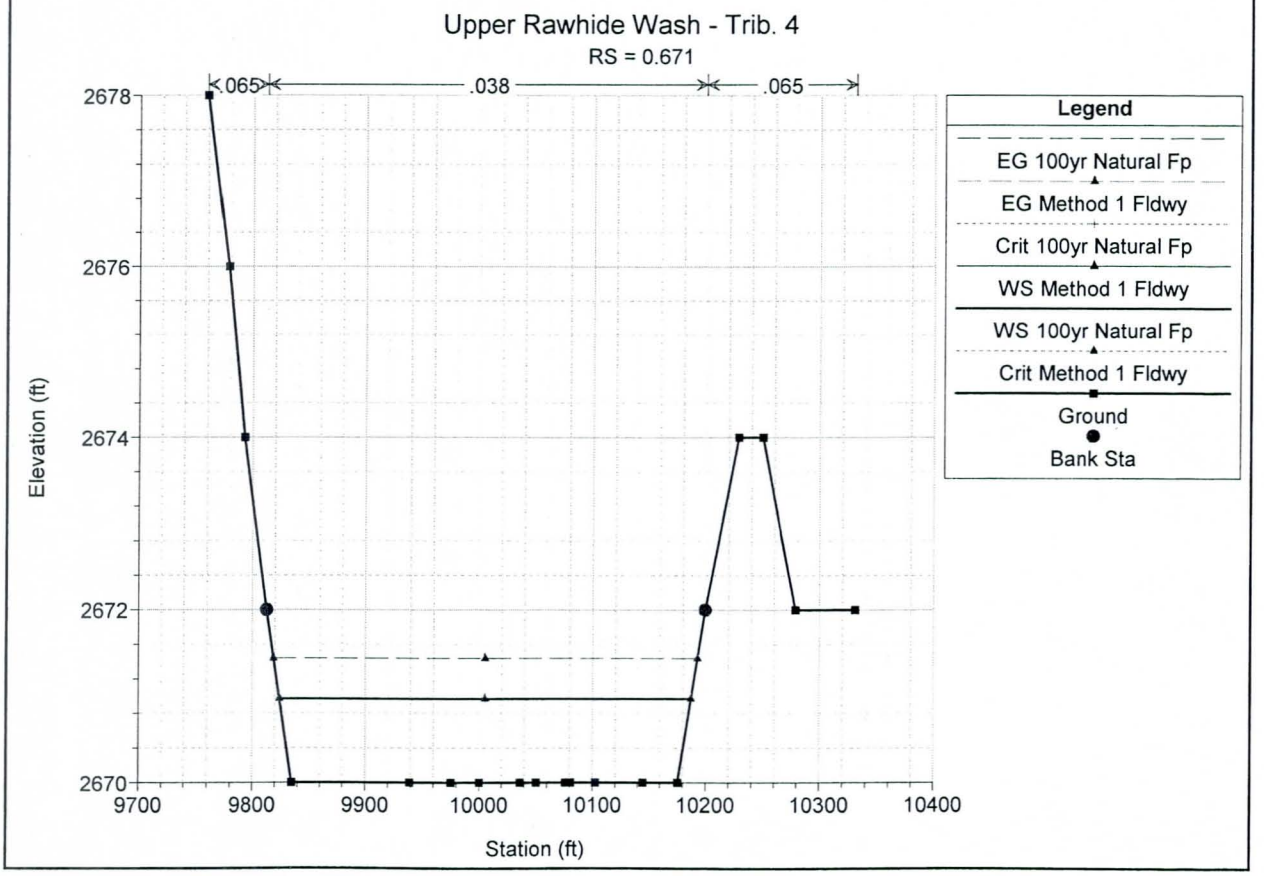

Upper Rawhide Wash - Trib. 4
RS = 1.097
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

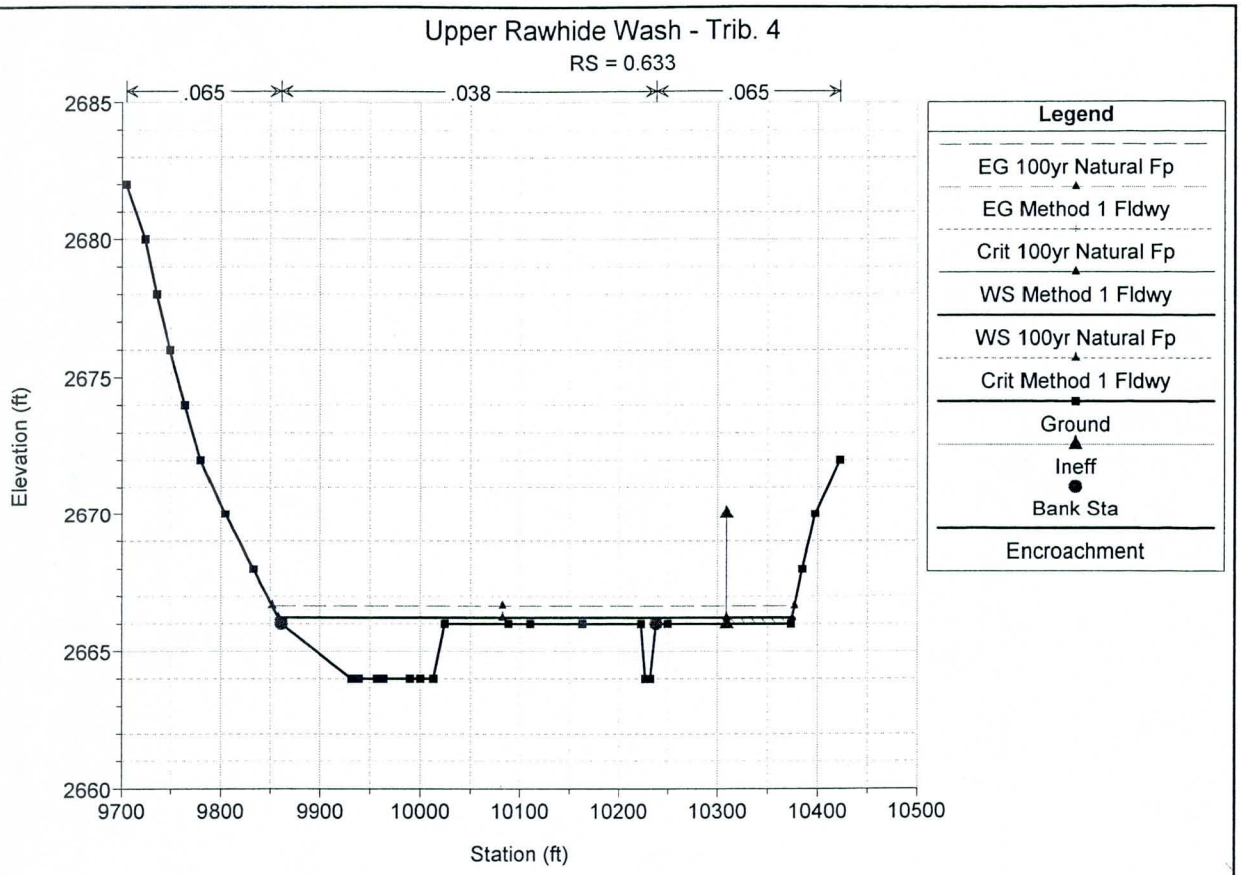

Upper Rawhide Wash - Trib. 4
RS = 1.031
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

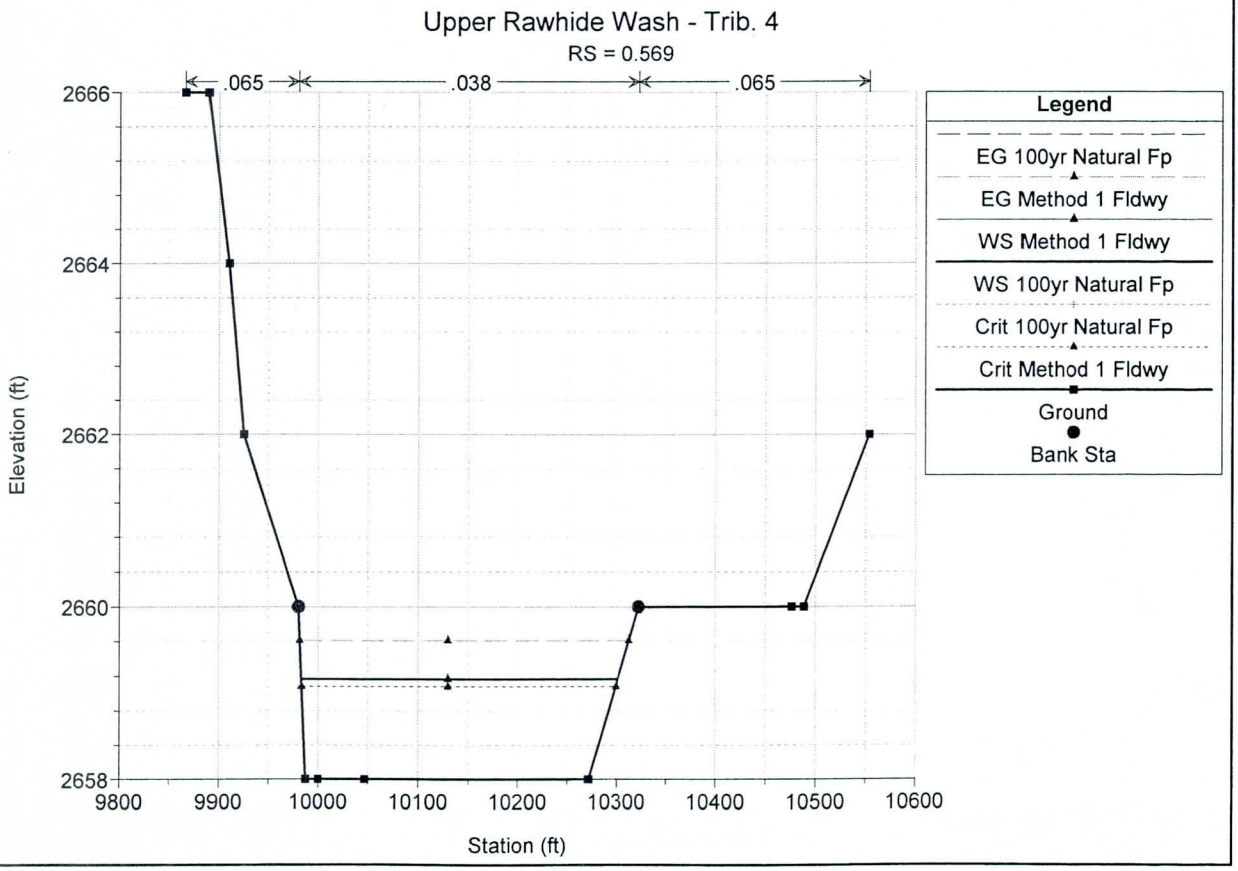

Upper Rawhide Wash - Trib. 4
RS = 0.955
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

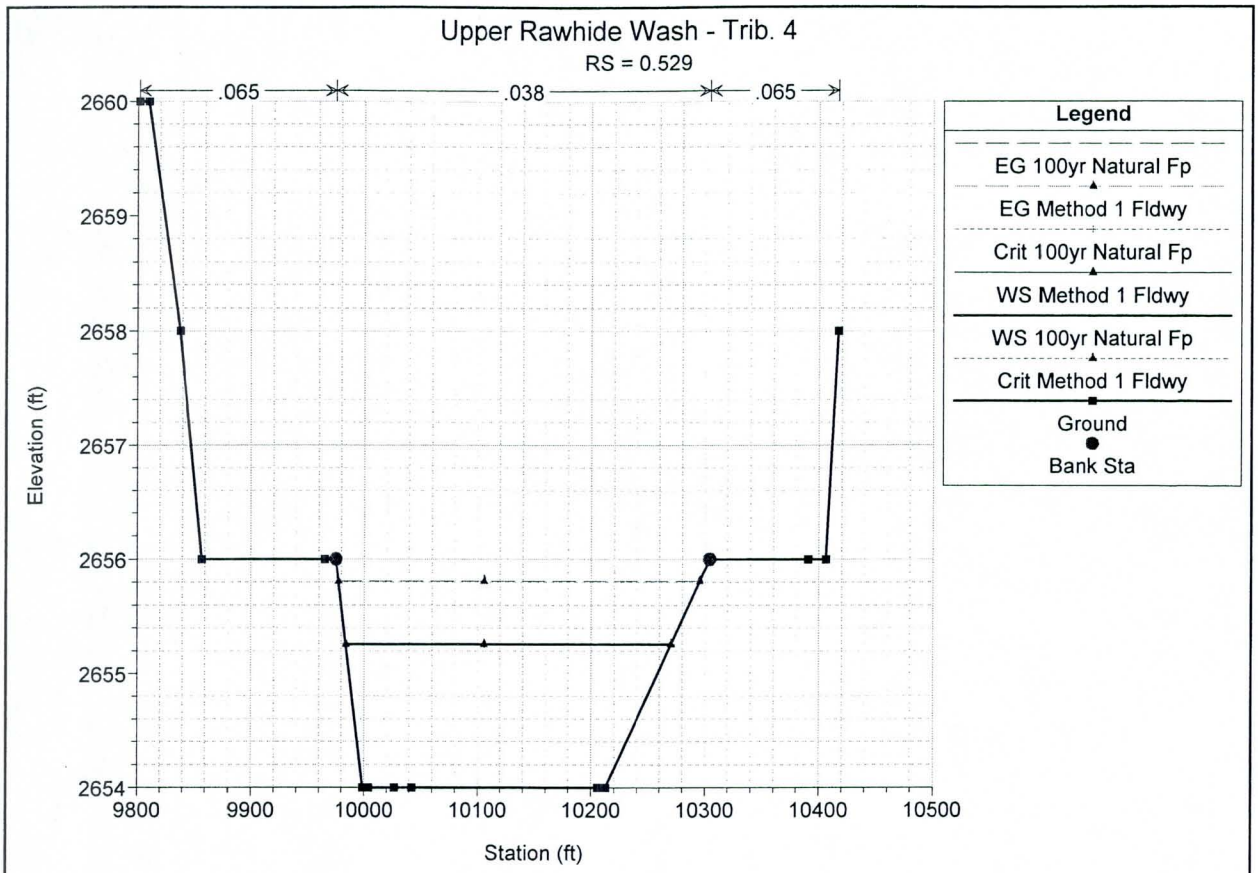

Upper Rawhide Wash - Trib. 4
RS = 0.861
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

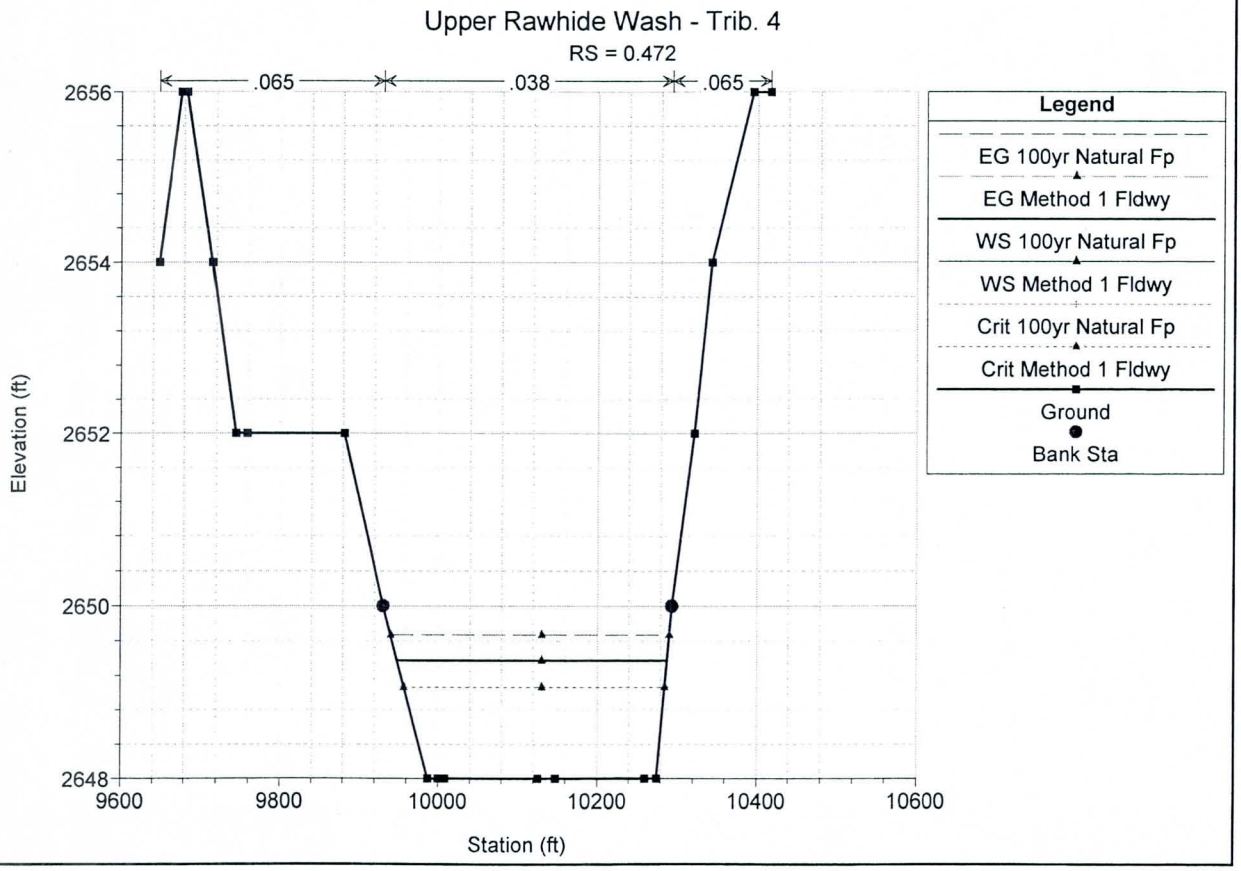

Upper Rawhide Wash - Trib. 4
RS = 0.766
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta

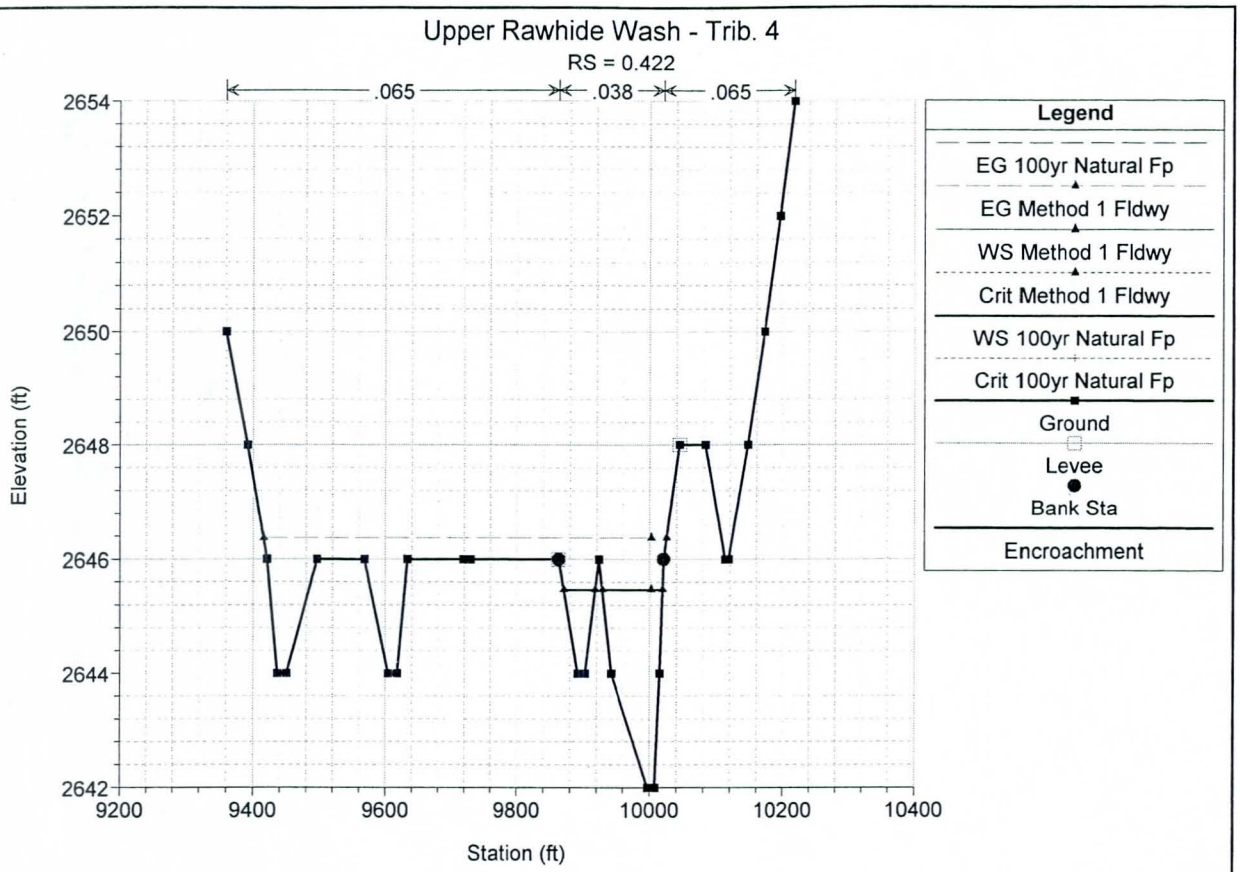

Upper Rawhide Wash - Trib. 4
RS = 0.671
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

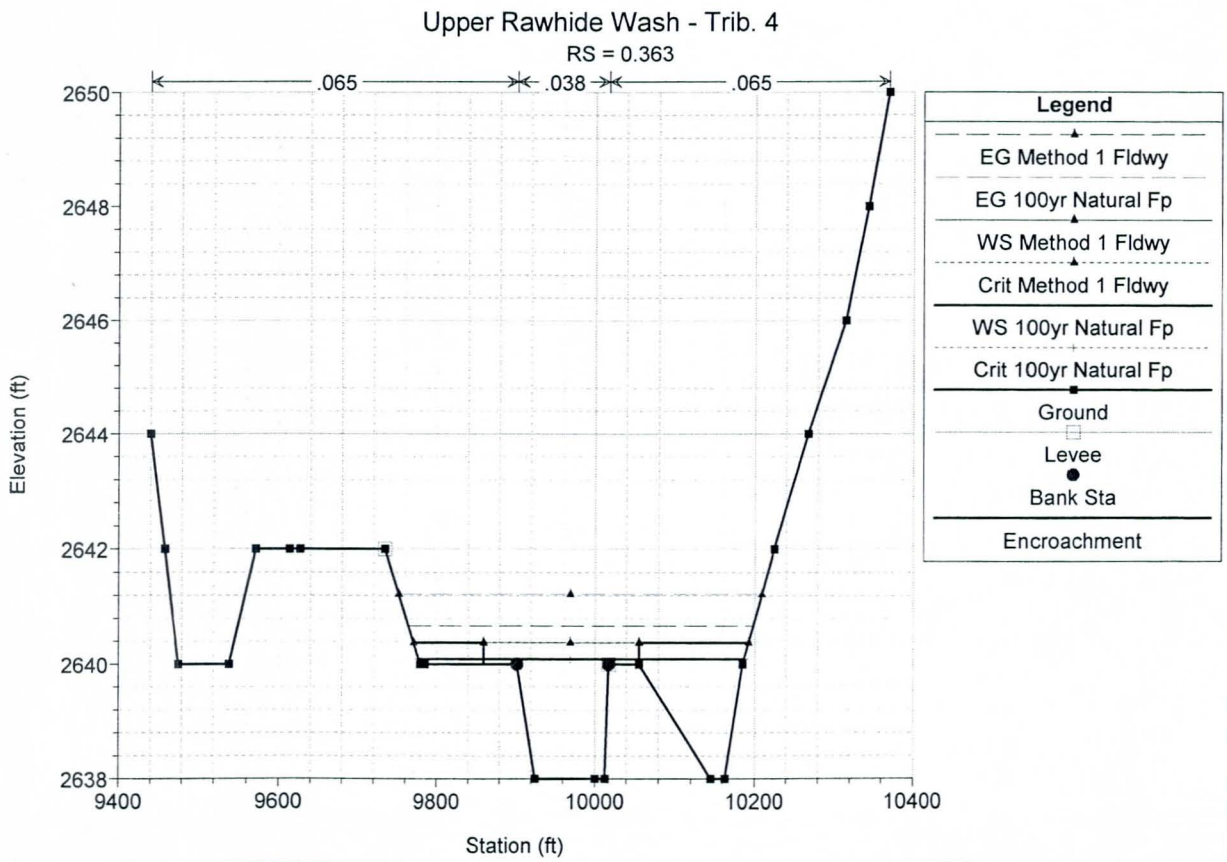

Upper Rawhide Wash - Trib. 4
RS = 0.633
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

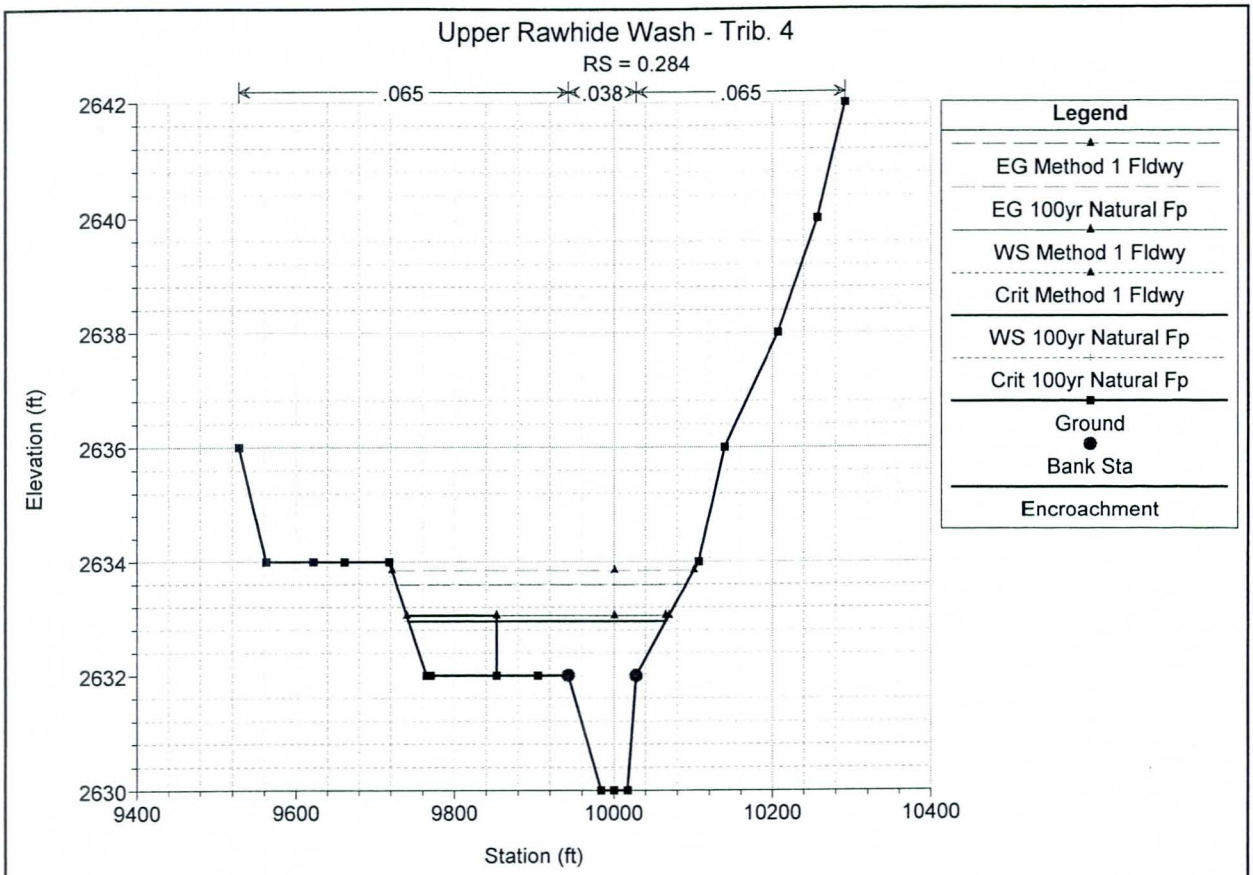

Upper Rawhide Wash - Trib. 4
RS = 0.569
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

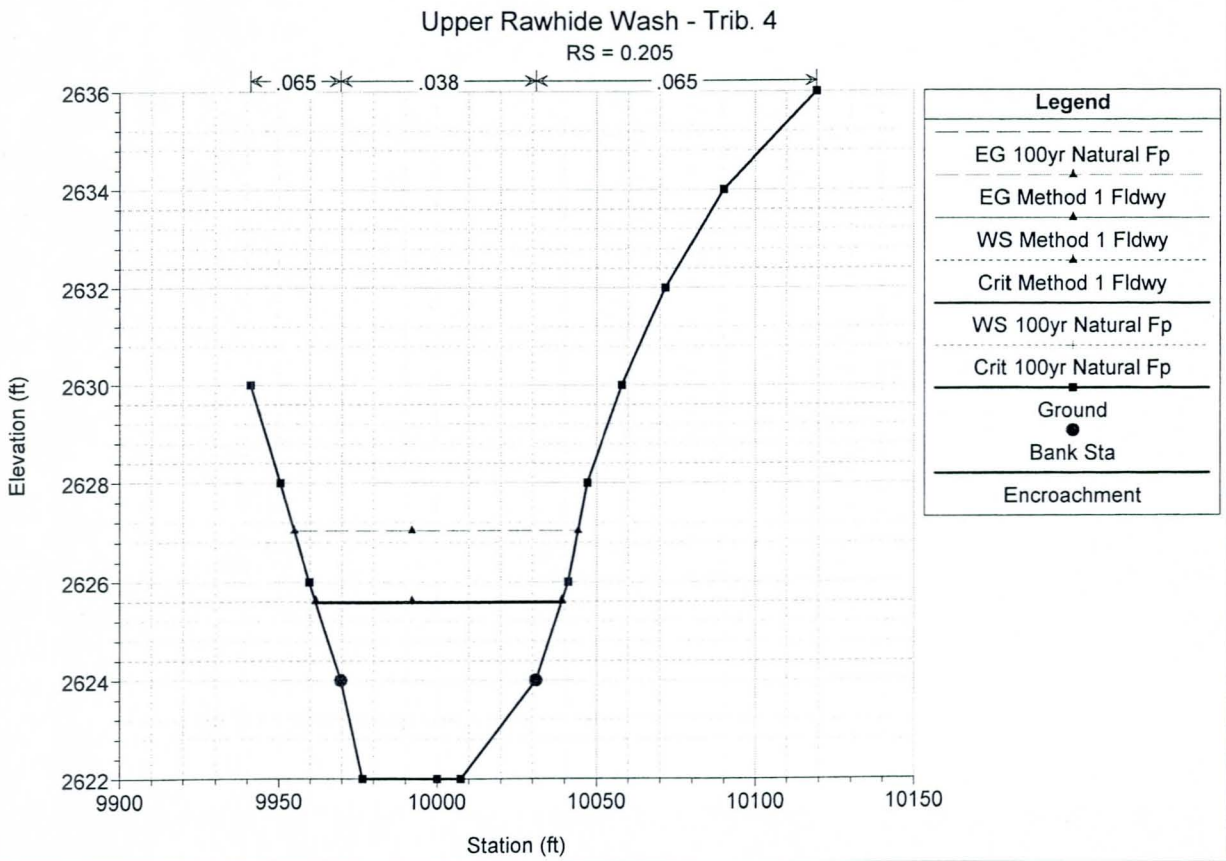

Upper Rawhide Wash - Trib. 4
RS = 0.529
.065
.038
.065
Elevation (ft)
2660
2659
2658
2657
2656
2655
2654
9800
9900
10000
10100
10200
10300
10400
10500
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

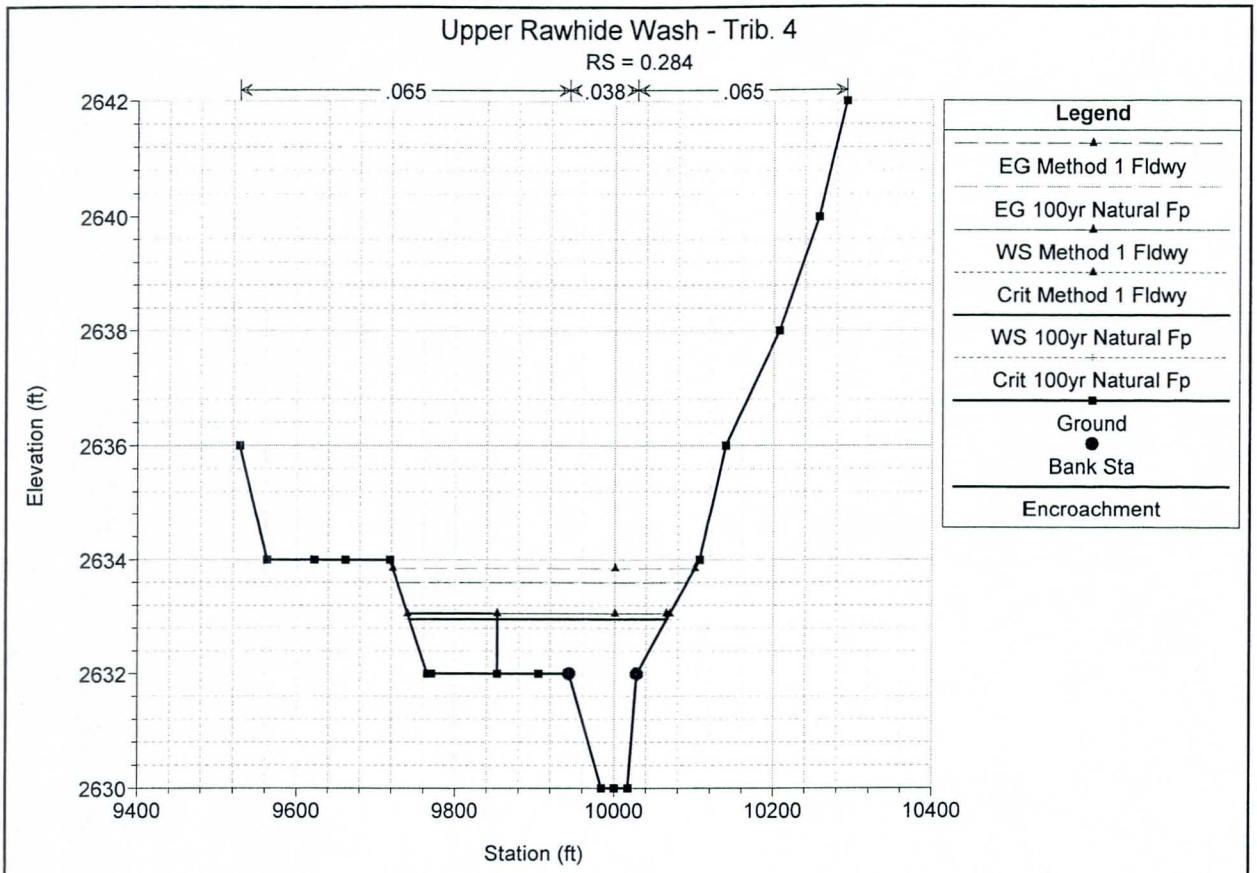

Upper Rawhide Wash - Trib. 4
RS = 0.472
.065
.038
.065
Elevation (ft)
2656
2654
2652
2650
2648
9600
9800
10000
10200
10400
10600
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

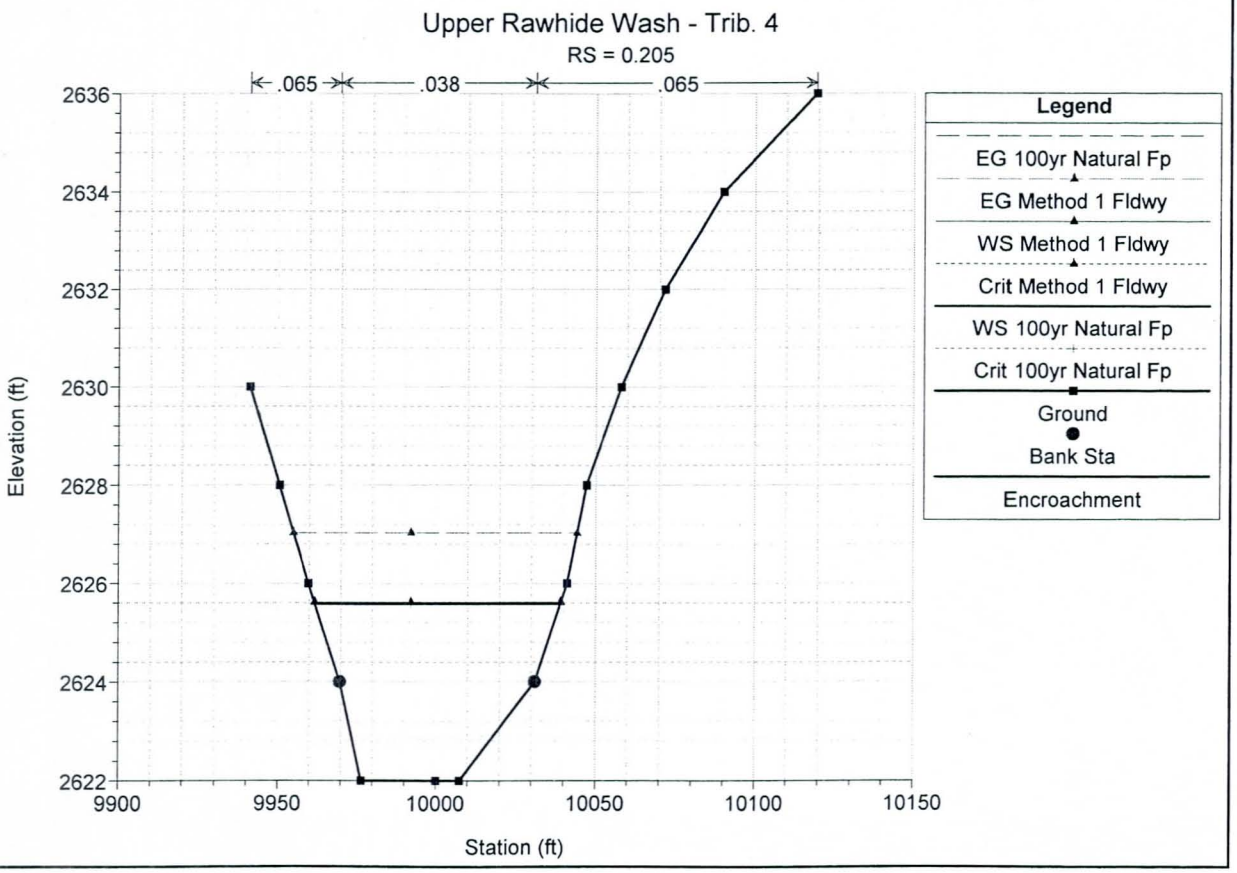

Upper Rawhide Wash - Trib. 4
RS = 0.422
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

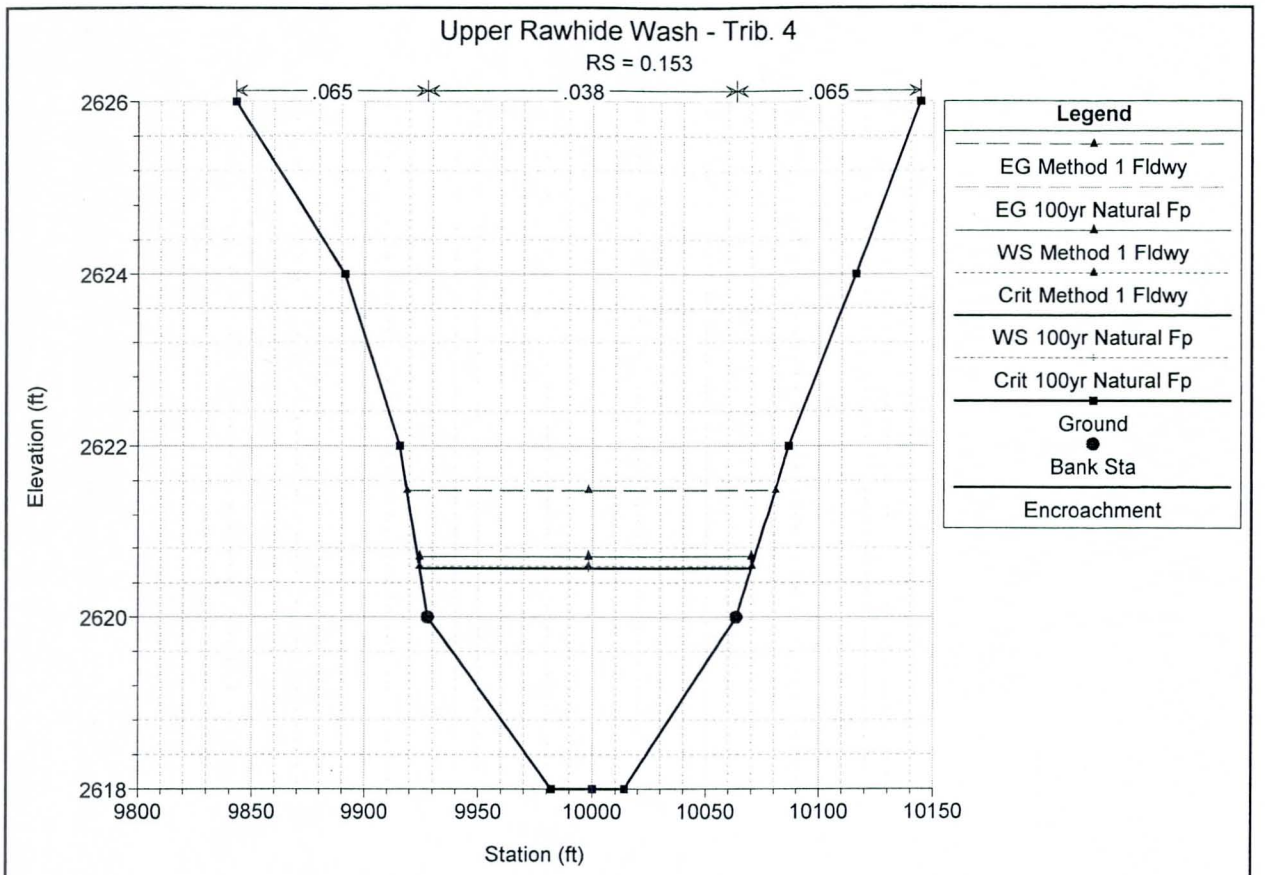

Upper Rawhide Wash - Trib. 4
RS = 0.363
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

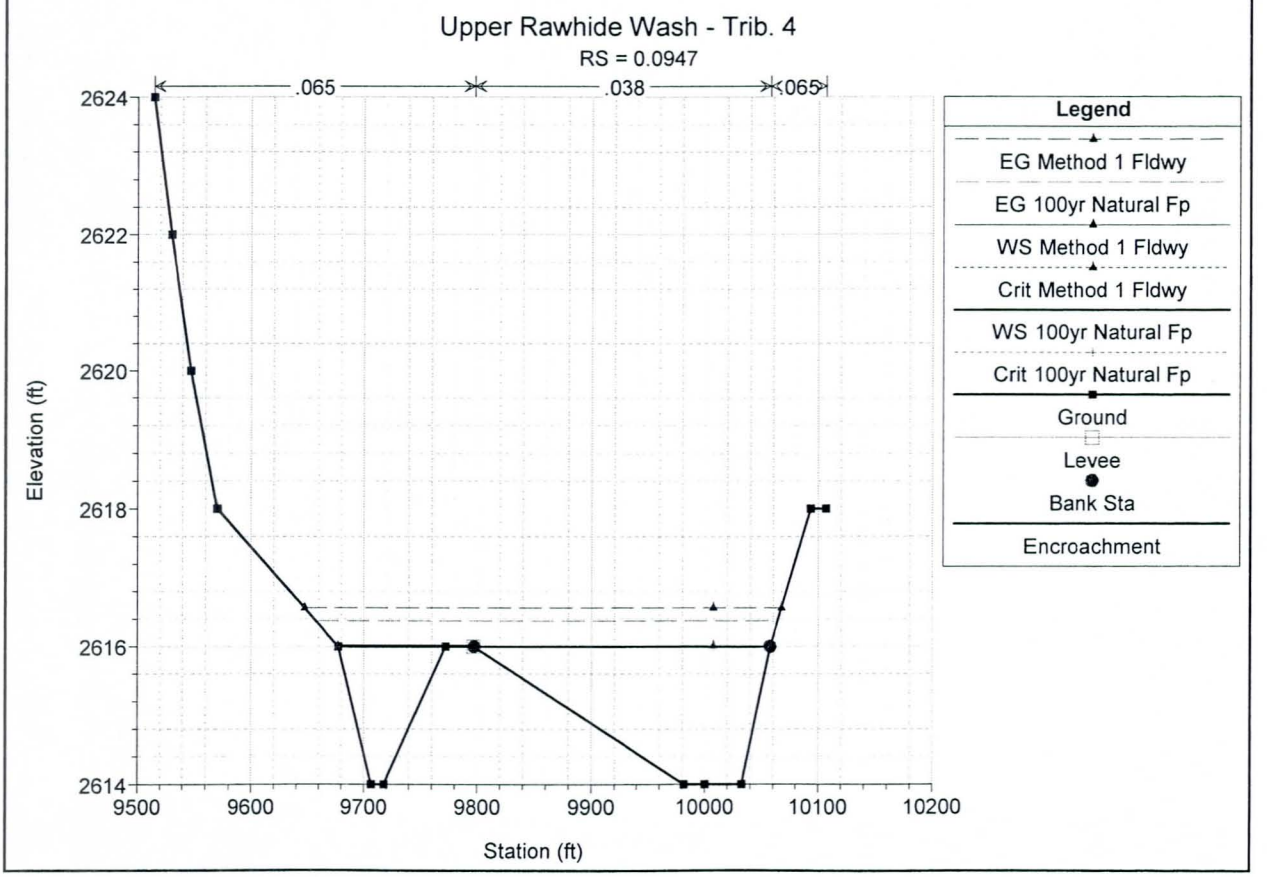

Upper Rawhide Wash - Trib. 4
RS = 0.284
.065
.038
.065
Elevation (ft)
Station (ft)
2642
2640
2638
2636
2634
2632
2630
9400
9600
9800
10000
10200
10400
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Trib. 4
RS = 0.205
.065
.038
.065
Elevation (ft)
Station (ft)
2636
2634
2632
2630
2628
2626
2624
2622
9900
9950
10000
10050
10100
10150
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Trib. 4
RS = 0.284
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

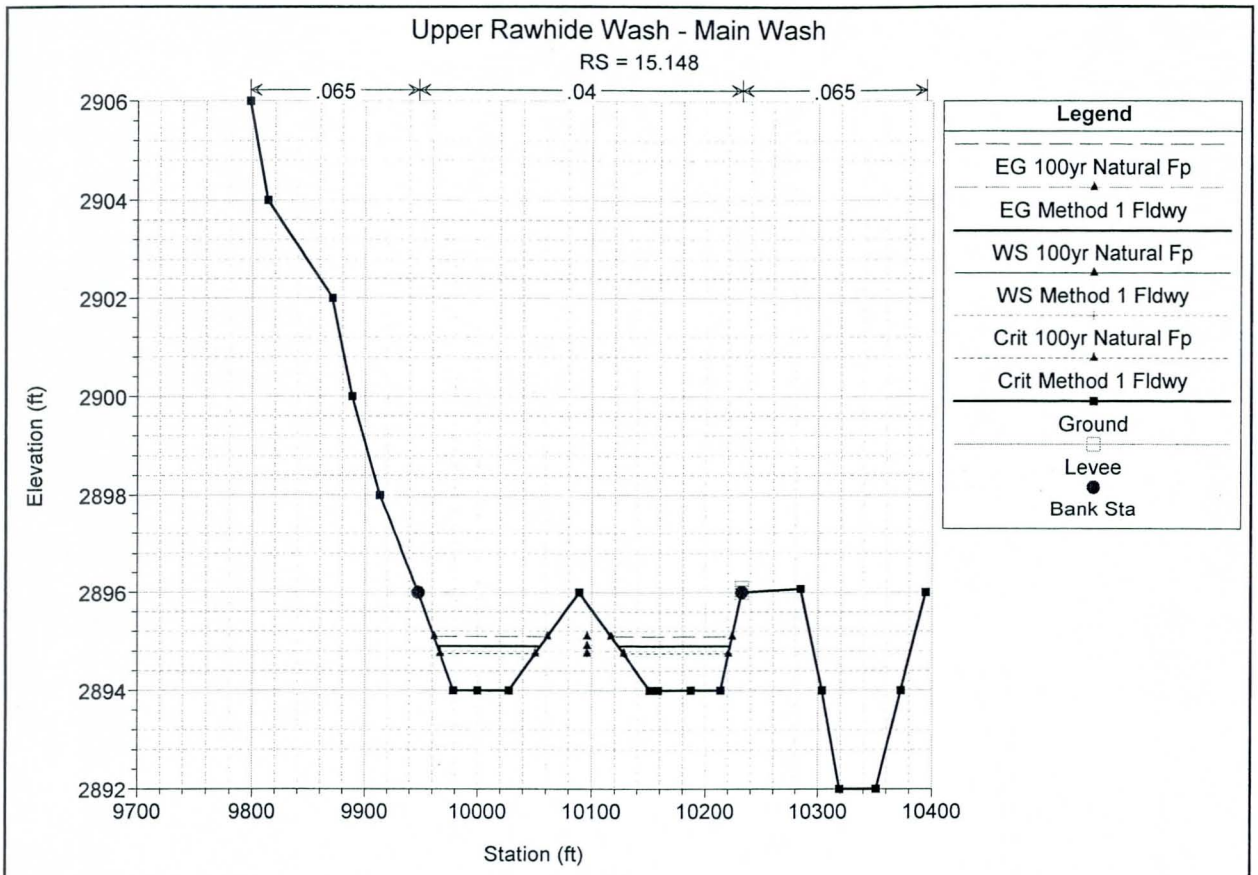

Upper Rawhide Wash - Trib. 4
RS = 0.205
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

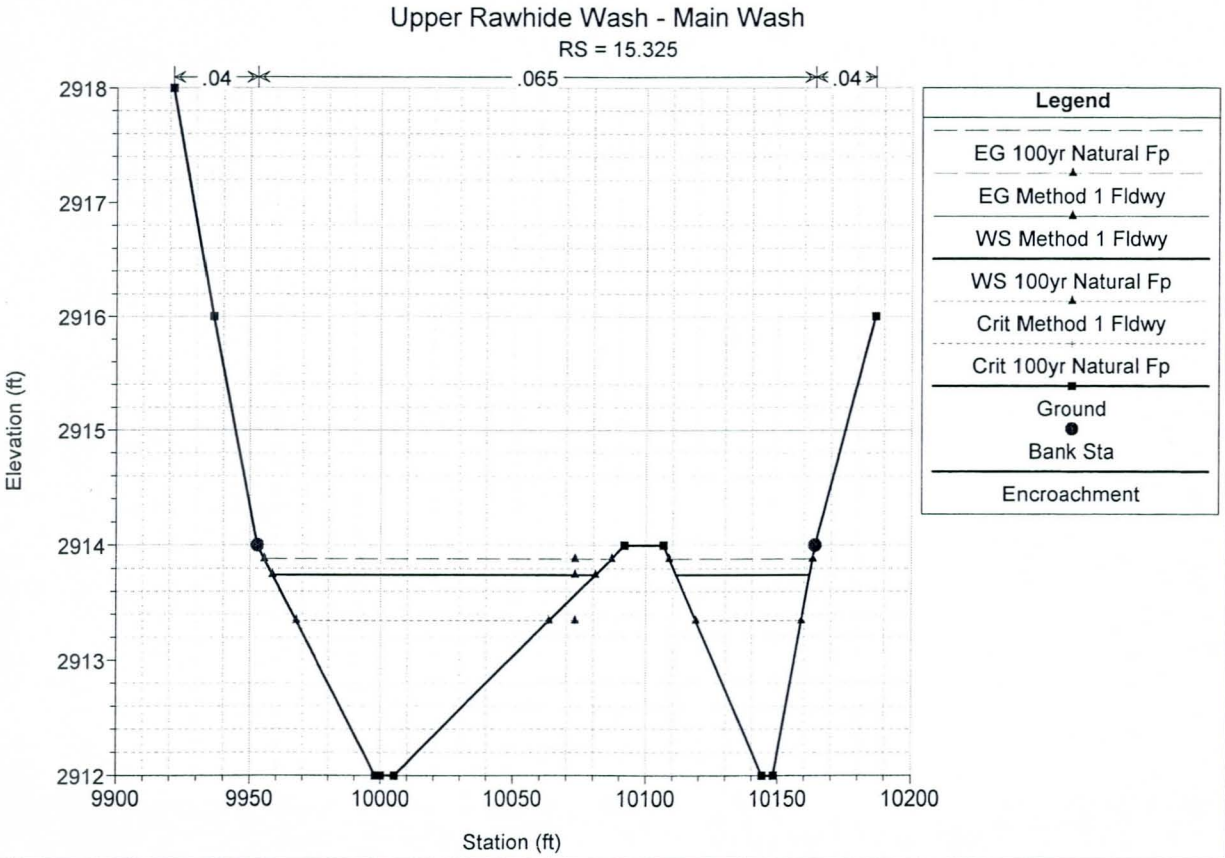

Upper Rawhide Wash - Trib. 4
RS = 0.153
.065
.038
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

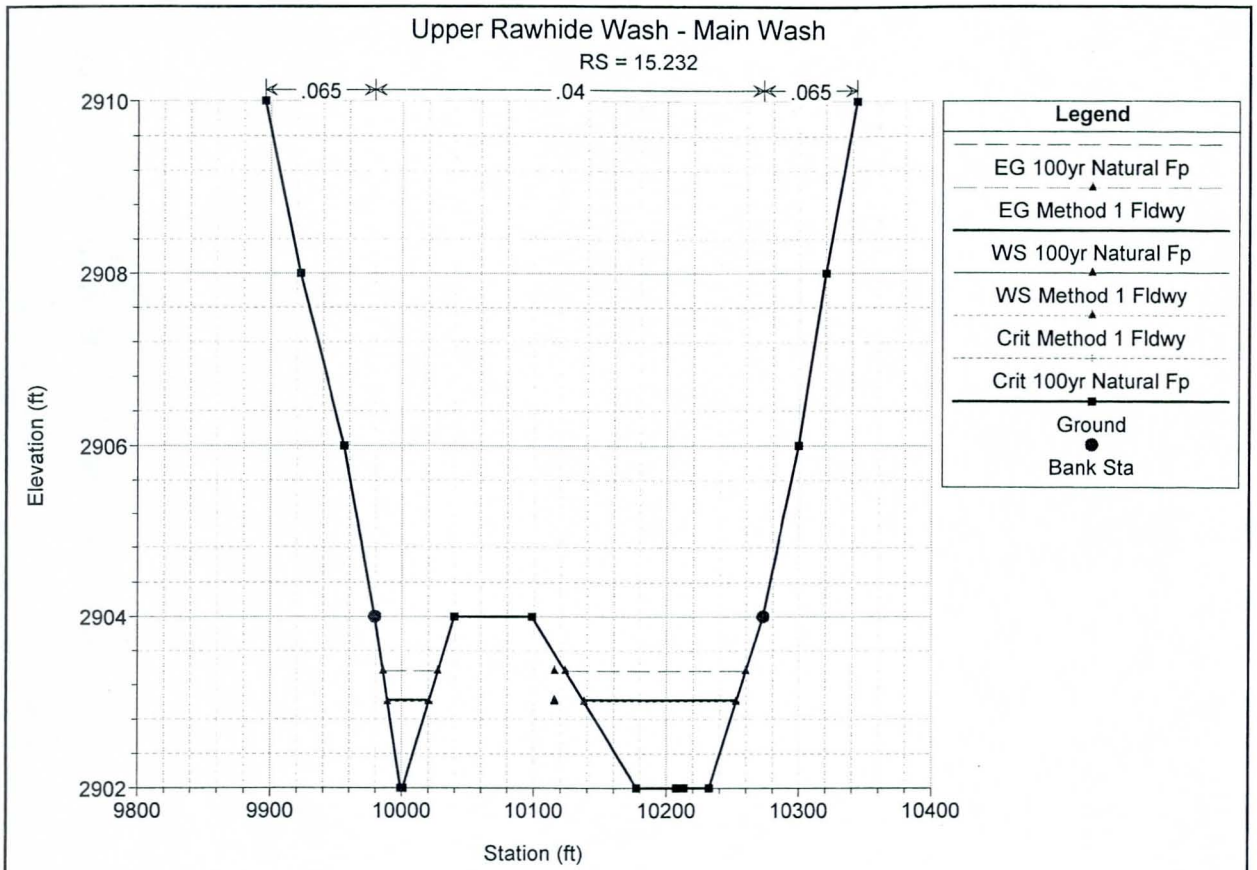

Upper Rawhide Wash - Trib. 4
RS = 0.0947
.065
.038
065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

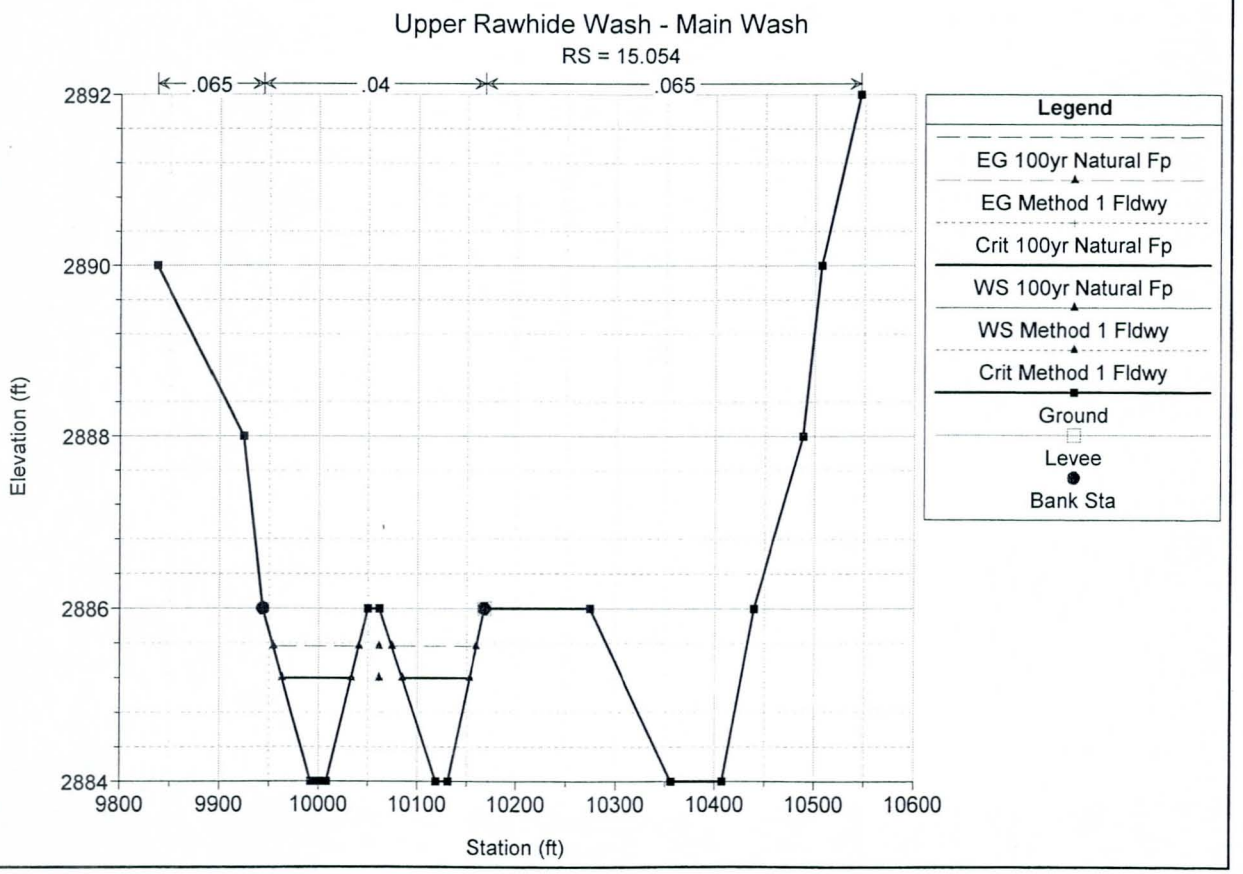
E.2 CROSS SECTION PLOTS

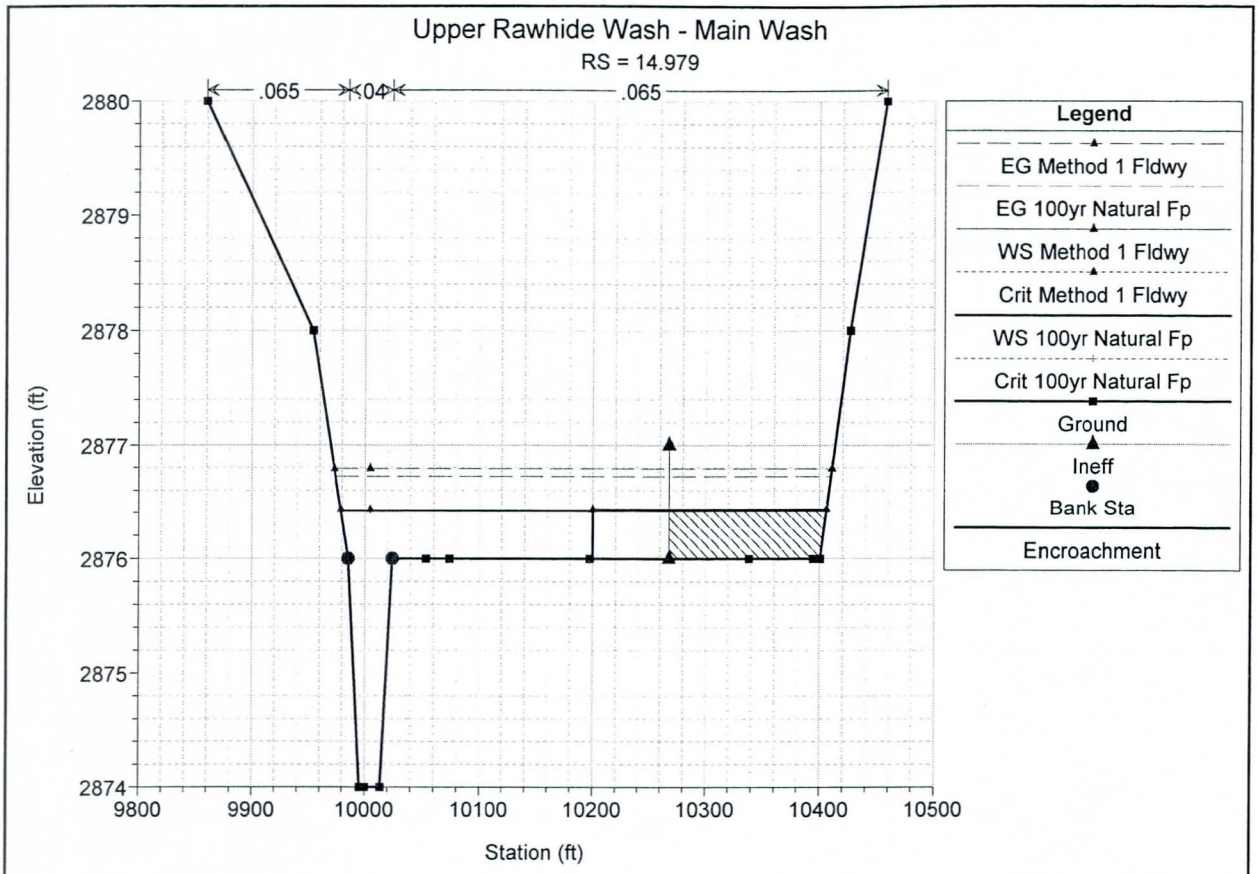
Rawhide Wash

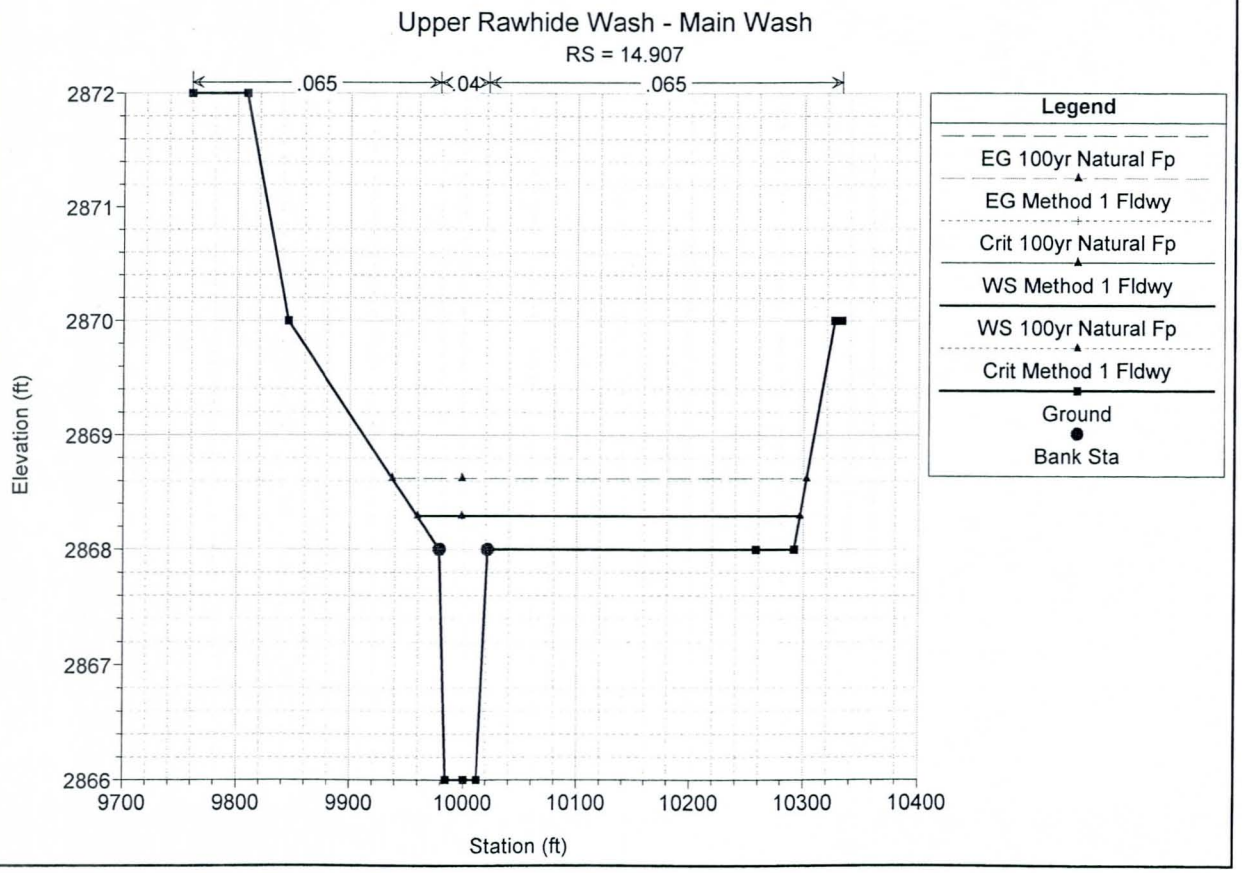

Upper Rawhide Wash - Main Wash
RS = 15.148
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta

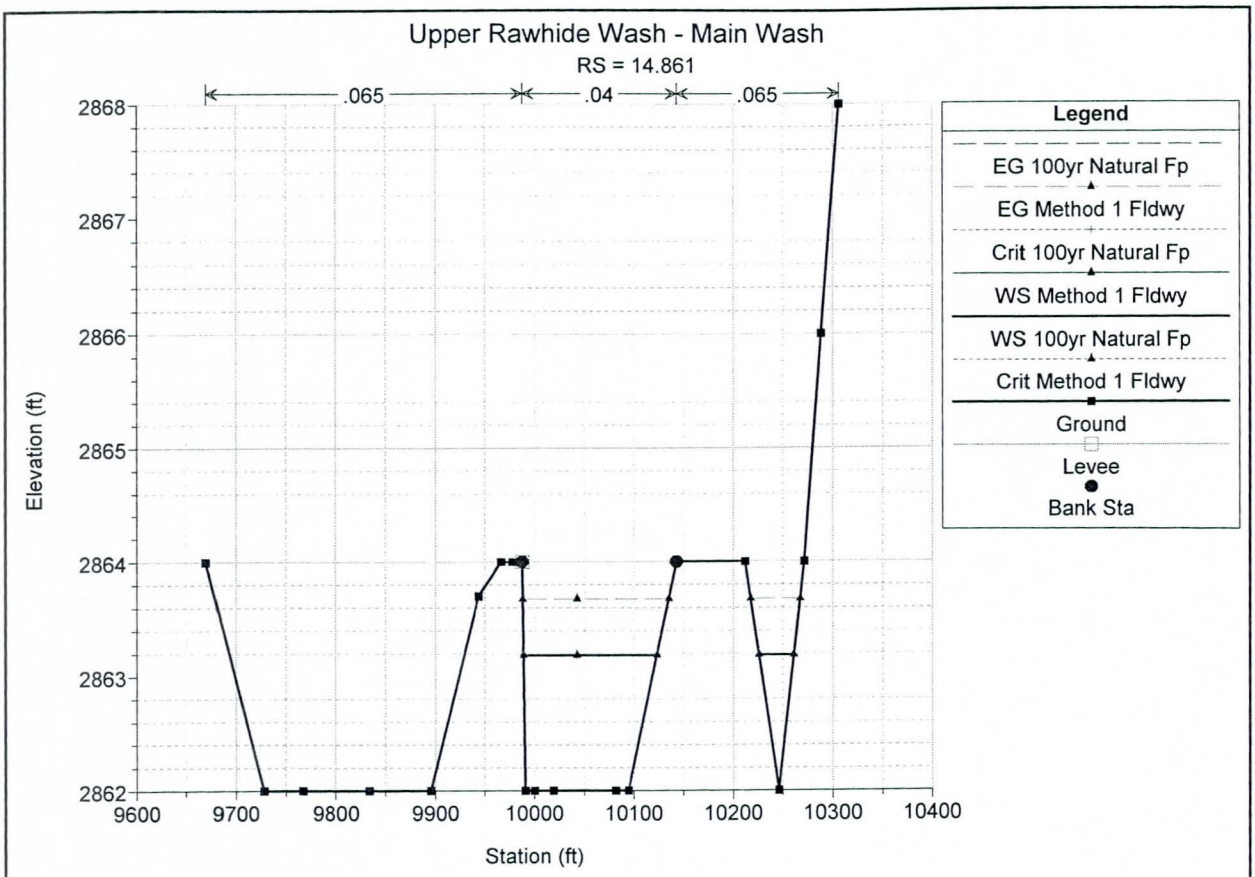

Upper Rawhide Wash - Main Wash
RS = 15.325
.04
.065
.04
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

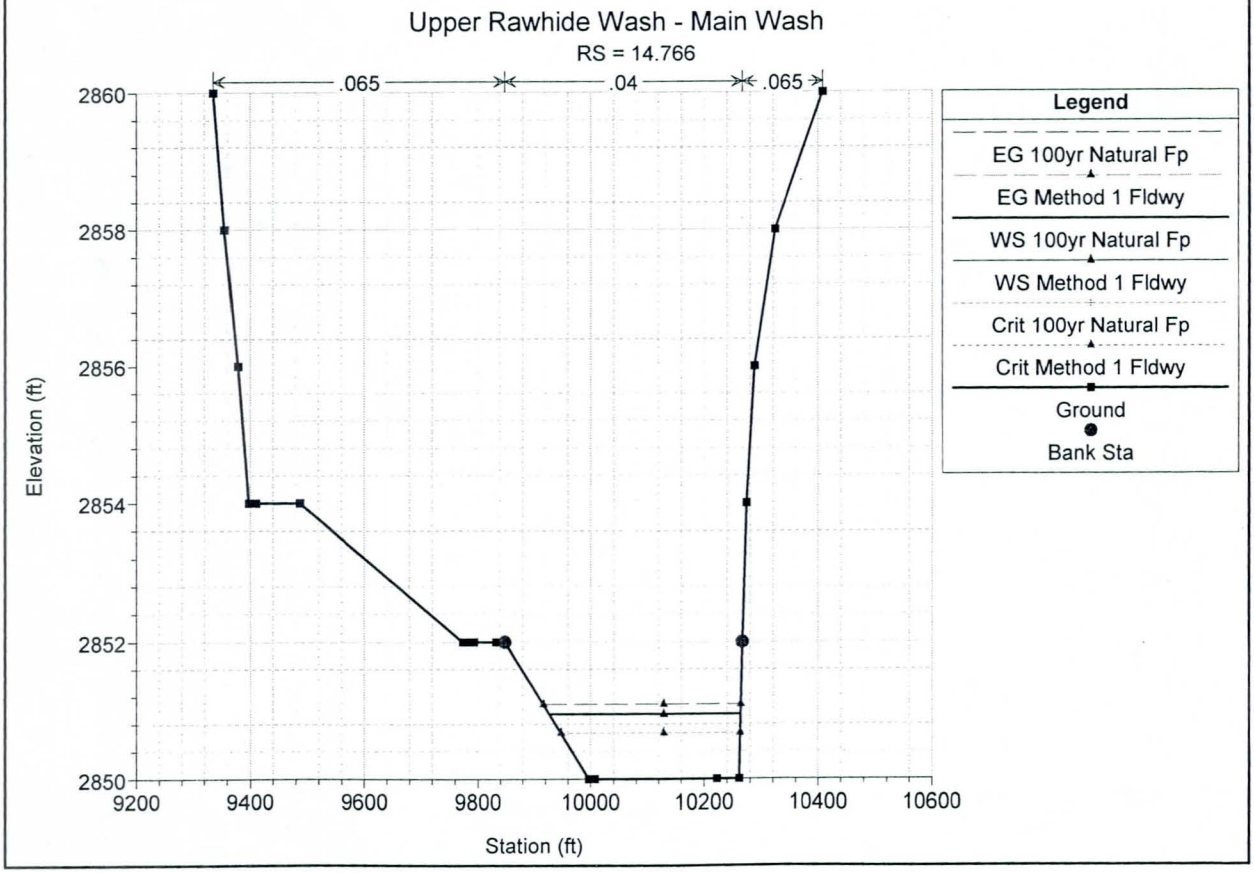

Upper Rawhide Wash - Main Wash
RS = 15.232
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta

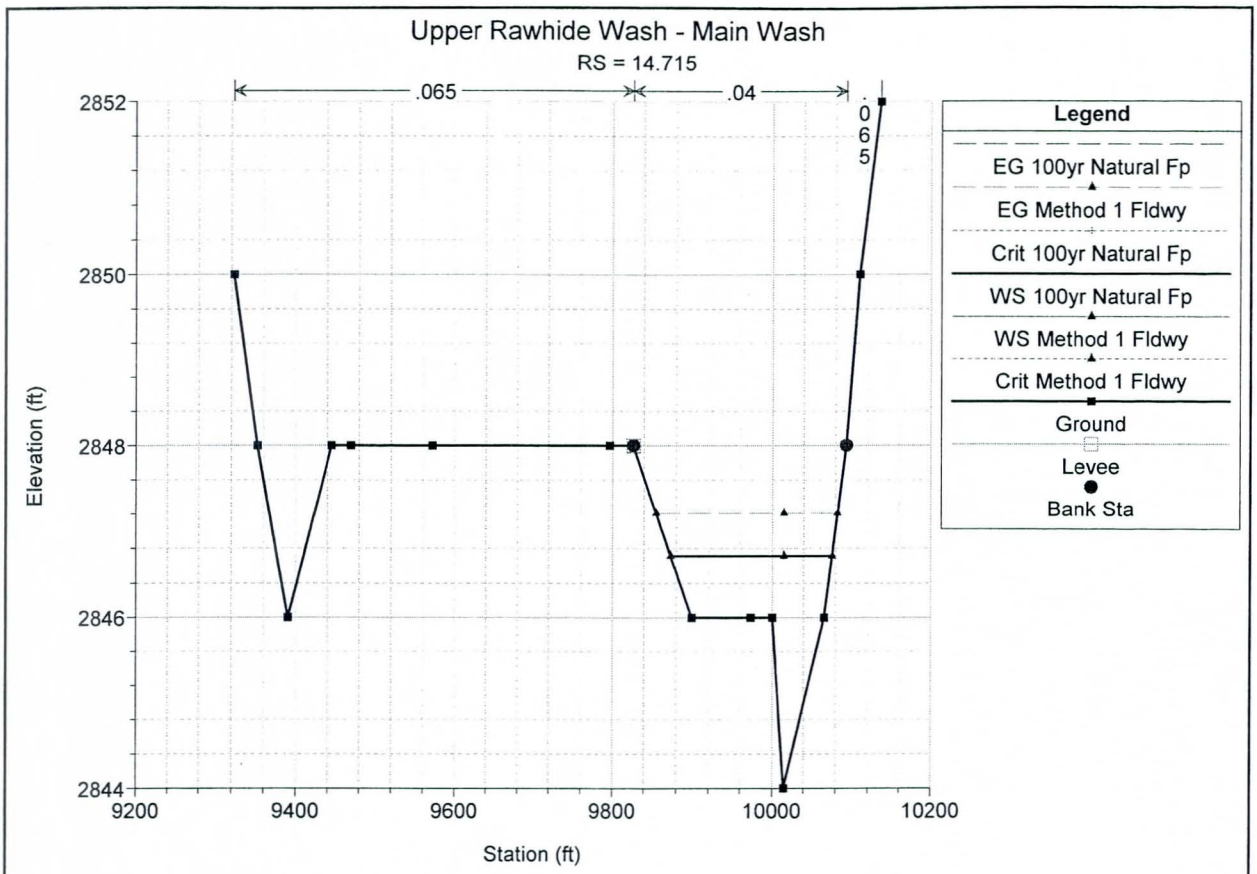

Upper Rawhide Wash - Main Wash
RS = 15.054
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Levee
Bank Sta

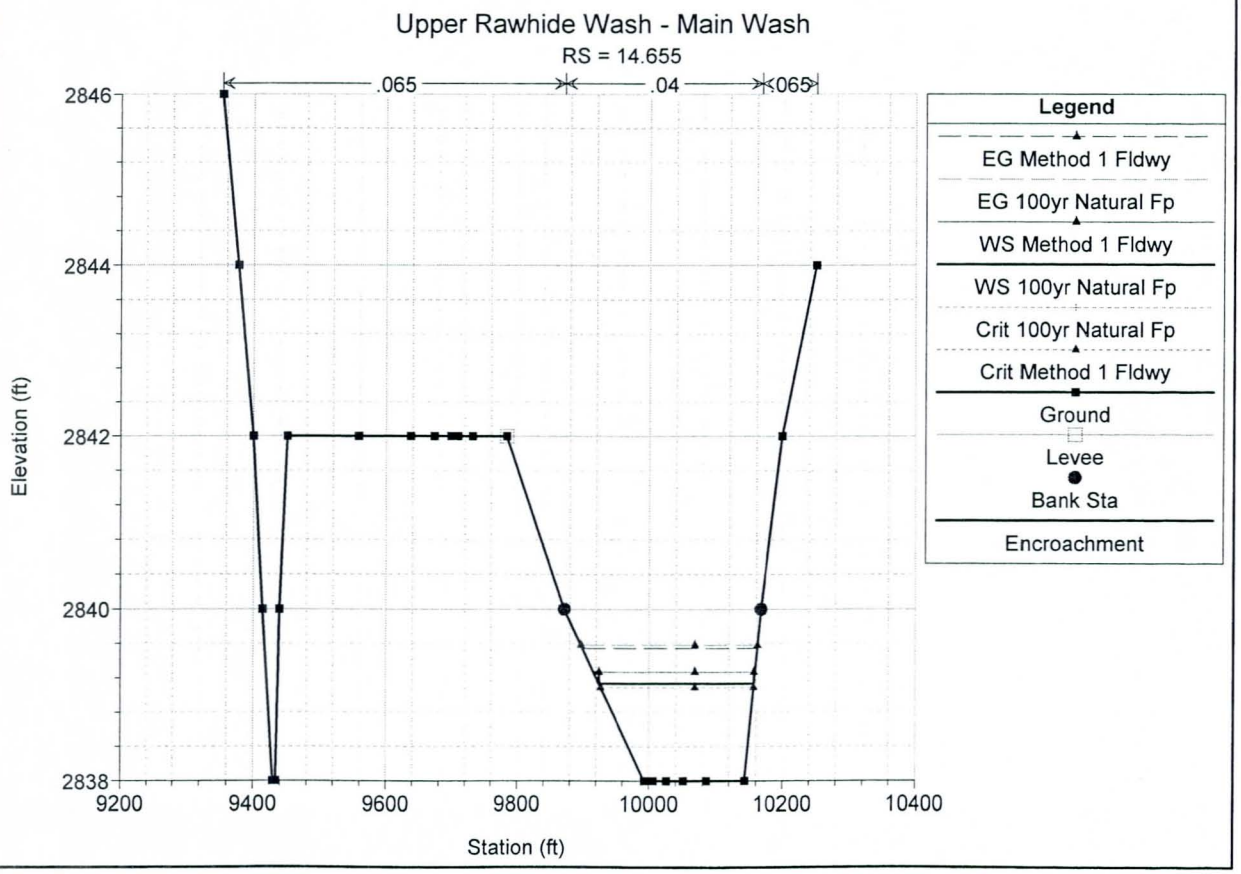

Upper Rawhide Wash - Main Wash
RS = 14.979
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Ineff
Bank Sta
Encroachment

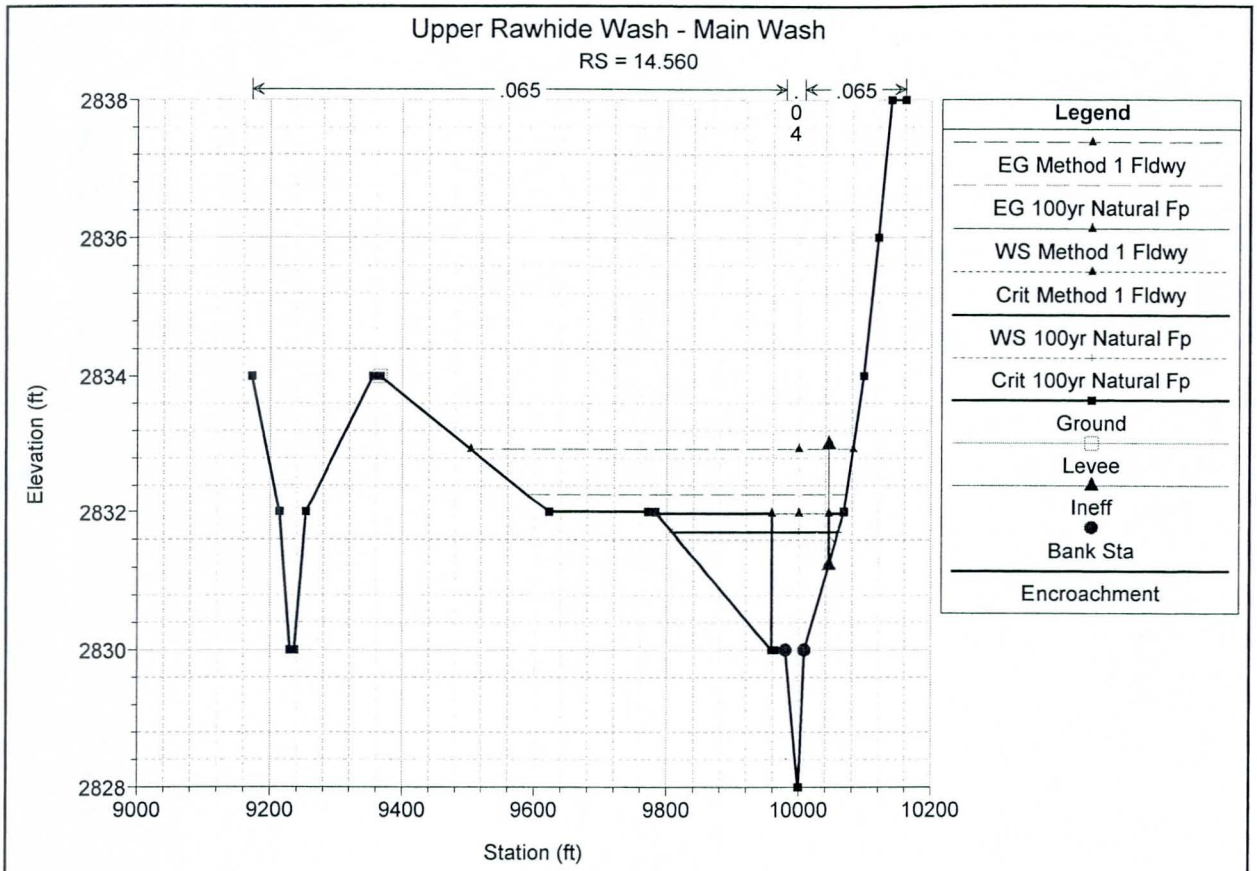

Upper Rawhide Wash - Main Wash
RS = 14.907
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

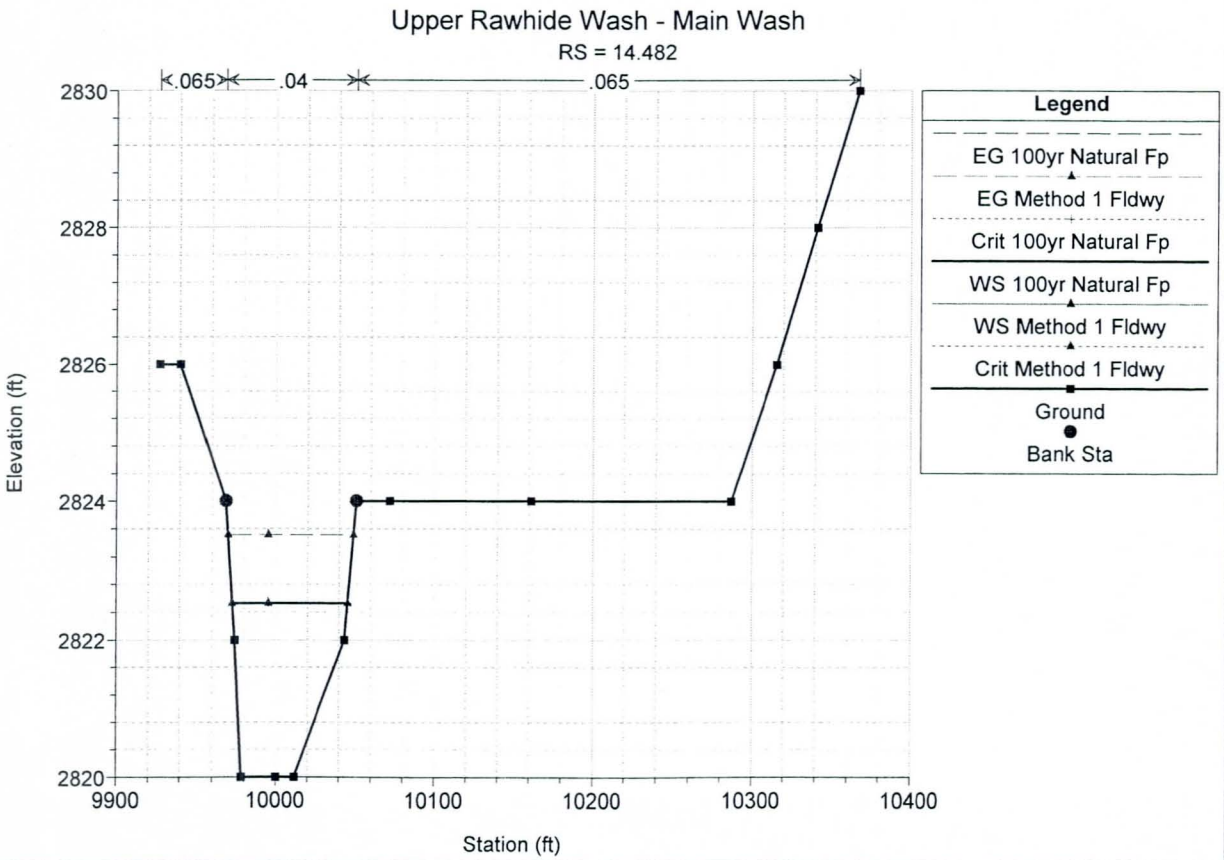

Upper Rawhide Wash - Main Wash
RS = 14.861
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta

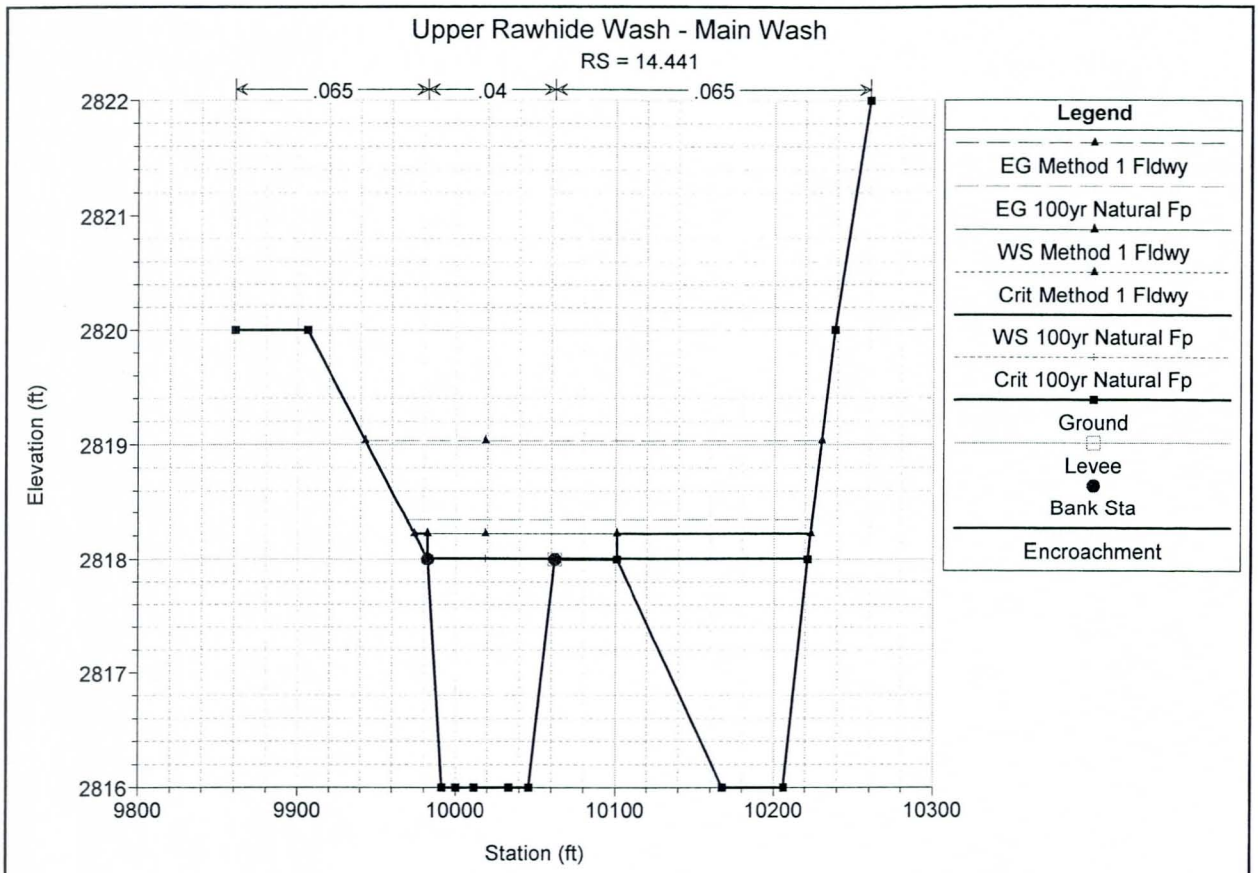

Upper Rawhide Wash - Main Wash
RS = 14.766
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

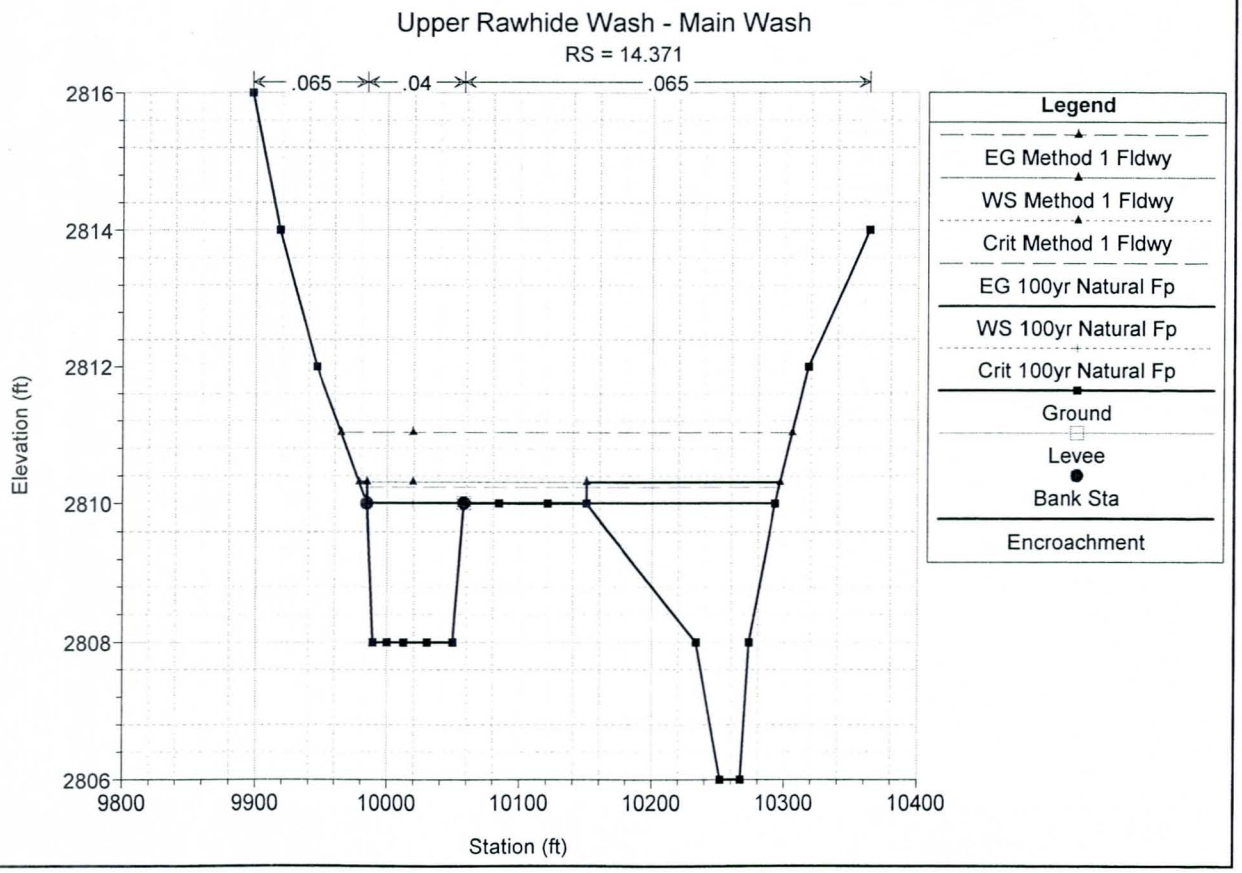

Upper Rawhide Wash - Main Wash
RS = 14.715
.065
.04
.065
Elevation (ft)
Station (ft)
2852
2850
2848
2846
2844
9200
9400
9600
9800
10000
10200
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Levee
Bank Sta

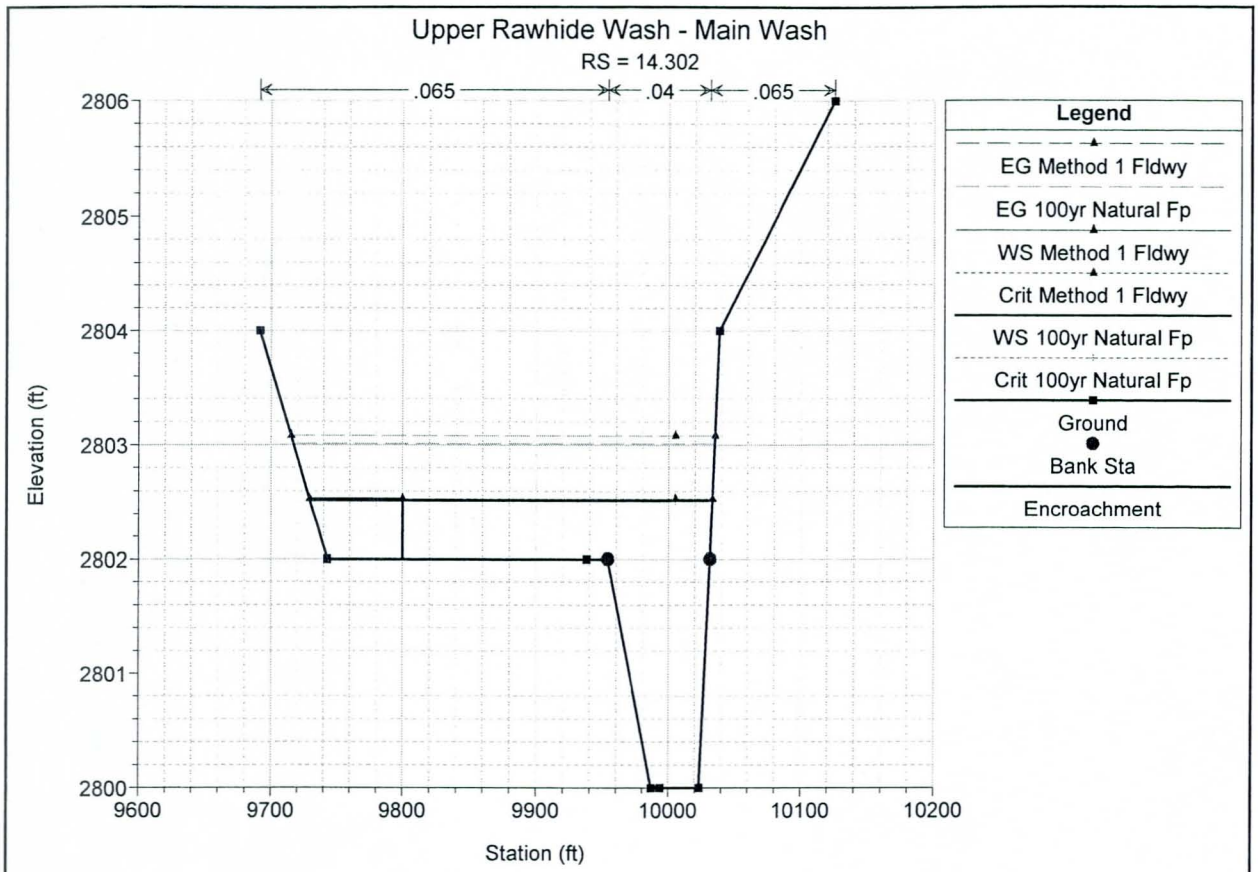

Upper Rawhide Wash - Main Wash
RS = 14.655
.065
.04
.065
Elevation (ft)
Station (ft)
2846
2844
2842
2840
2838
9200
9400
9600
9800
10000
10200
10400
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta
Encroachment

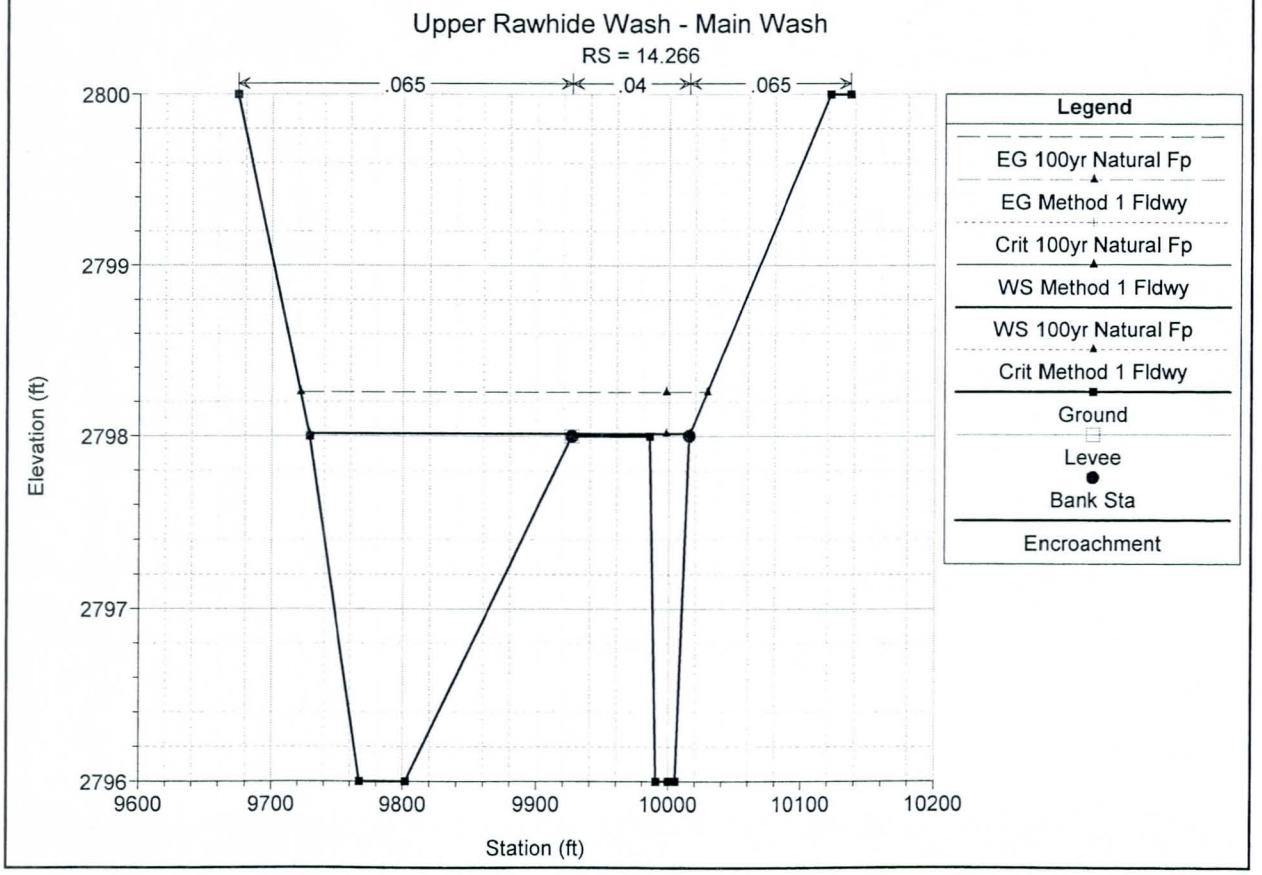

Upper Rawhide Wash - Main Wash
RS = 14.560
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Ineff
Bank Sta
Encroachment

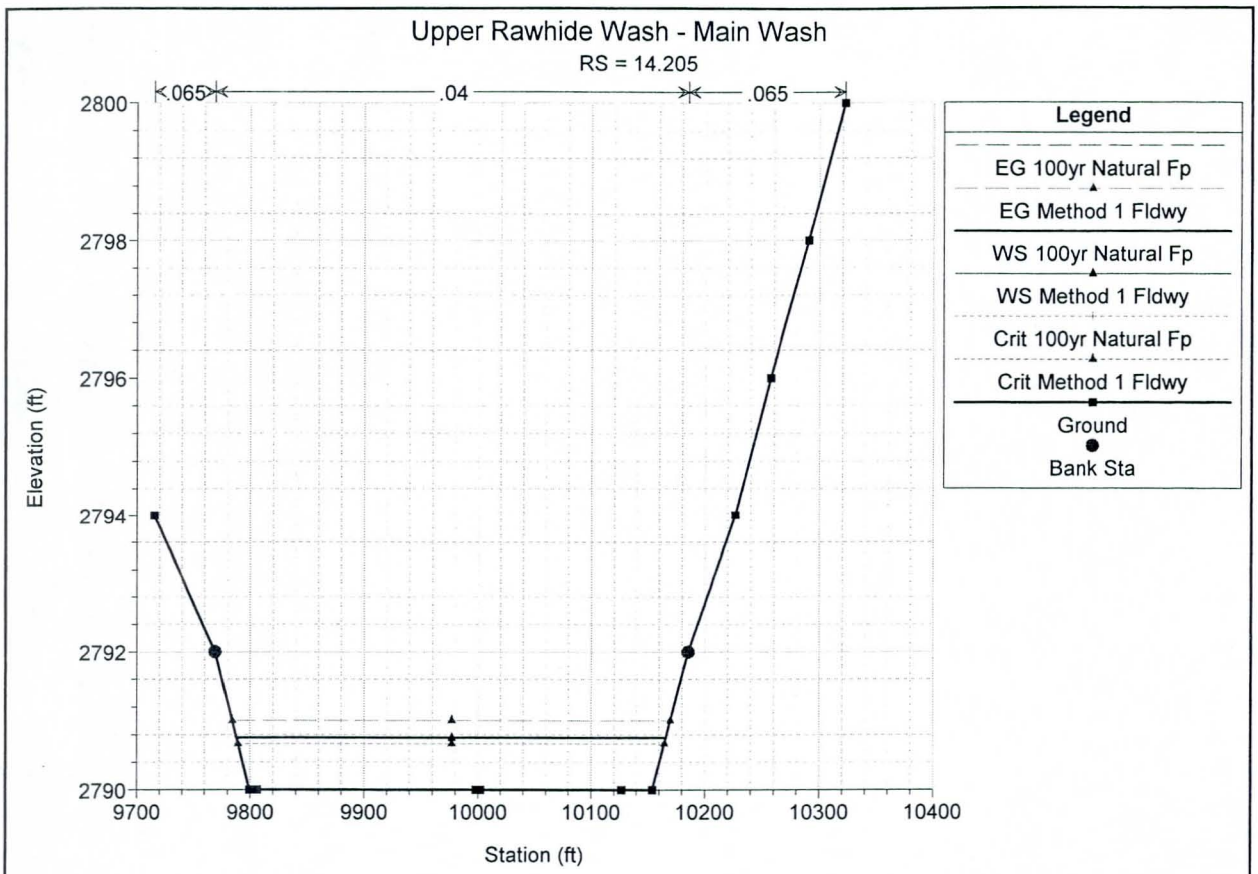

Upper Rawhide Wash - Main Wash
RS = 14.482
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Bank Sta

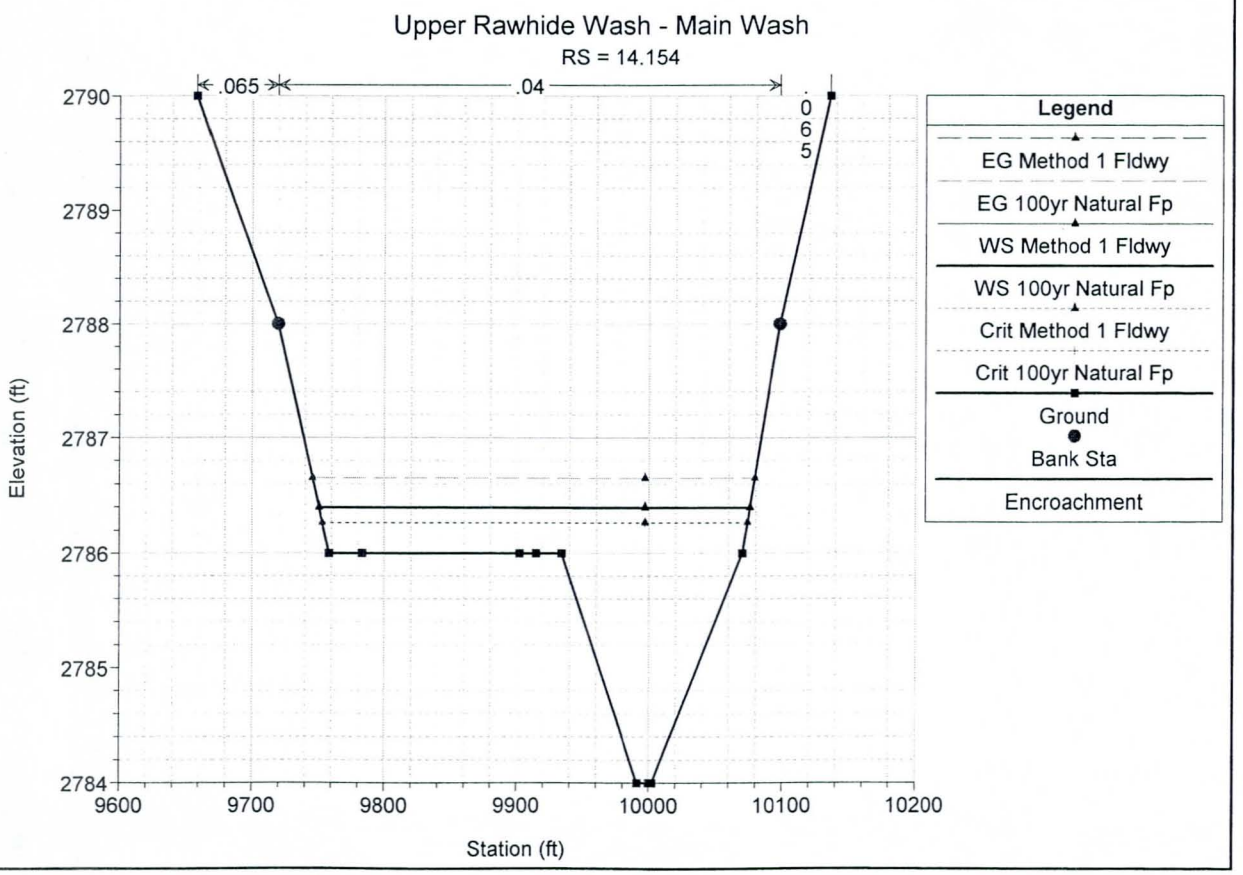

Upper Rawhide Wash - Main Wash
RS = 14.441
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

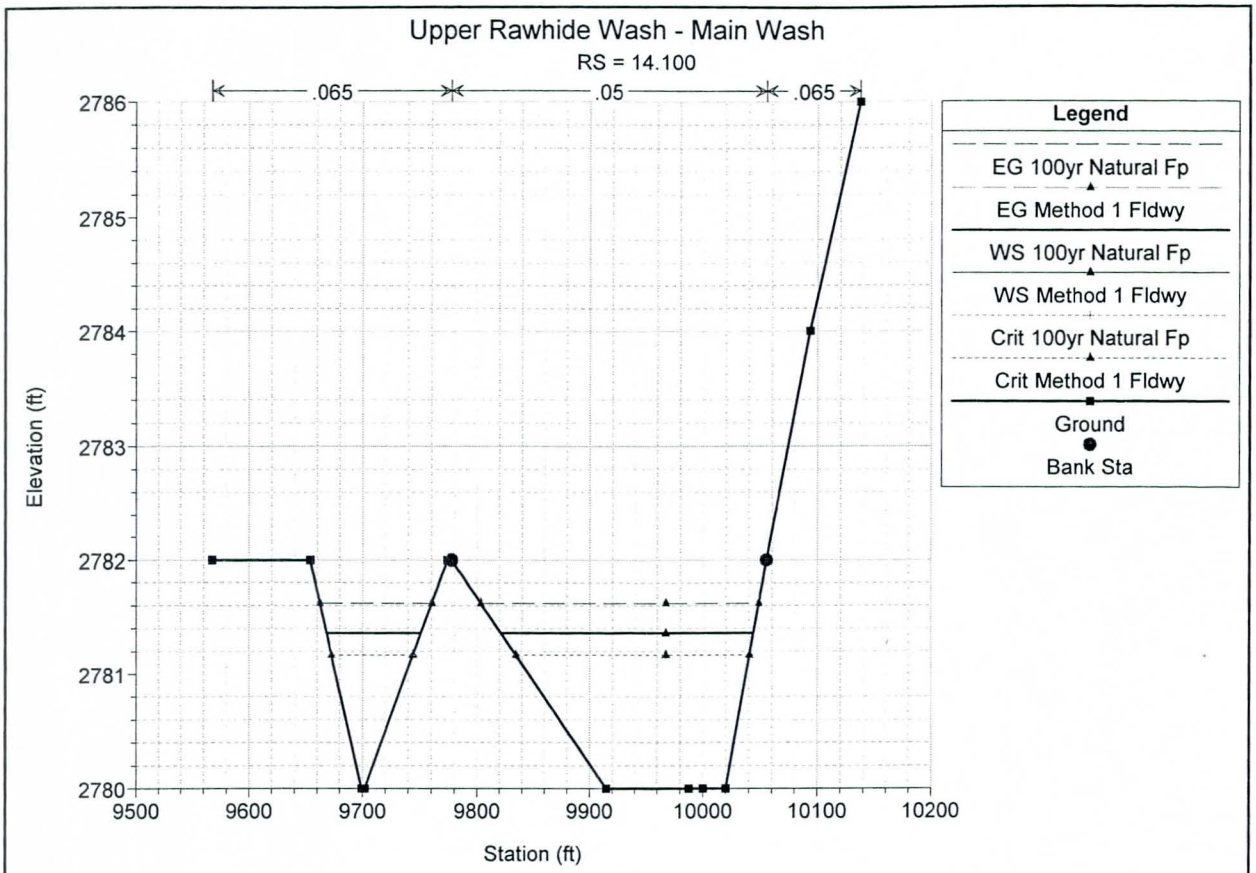

Upper Rawhide Wash - Main Wash
RS = 14.371
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

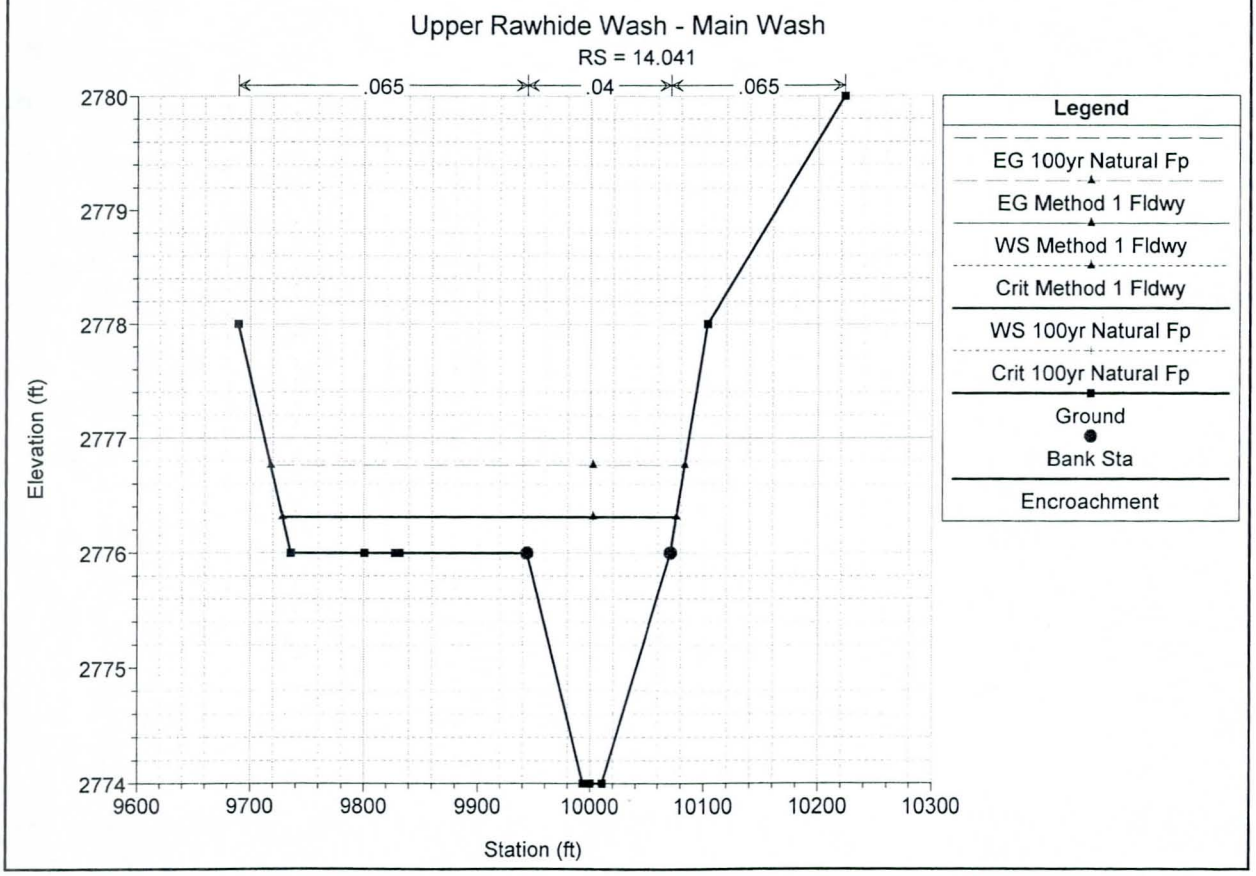

Upper Rawhide Wash - Main Wash
RS = 14.302
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

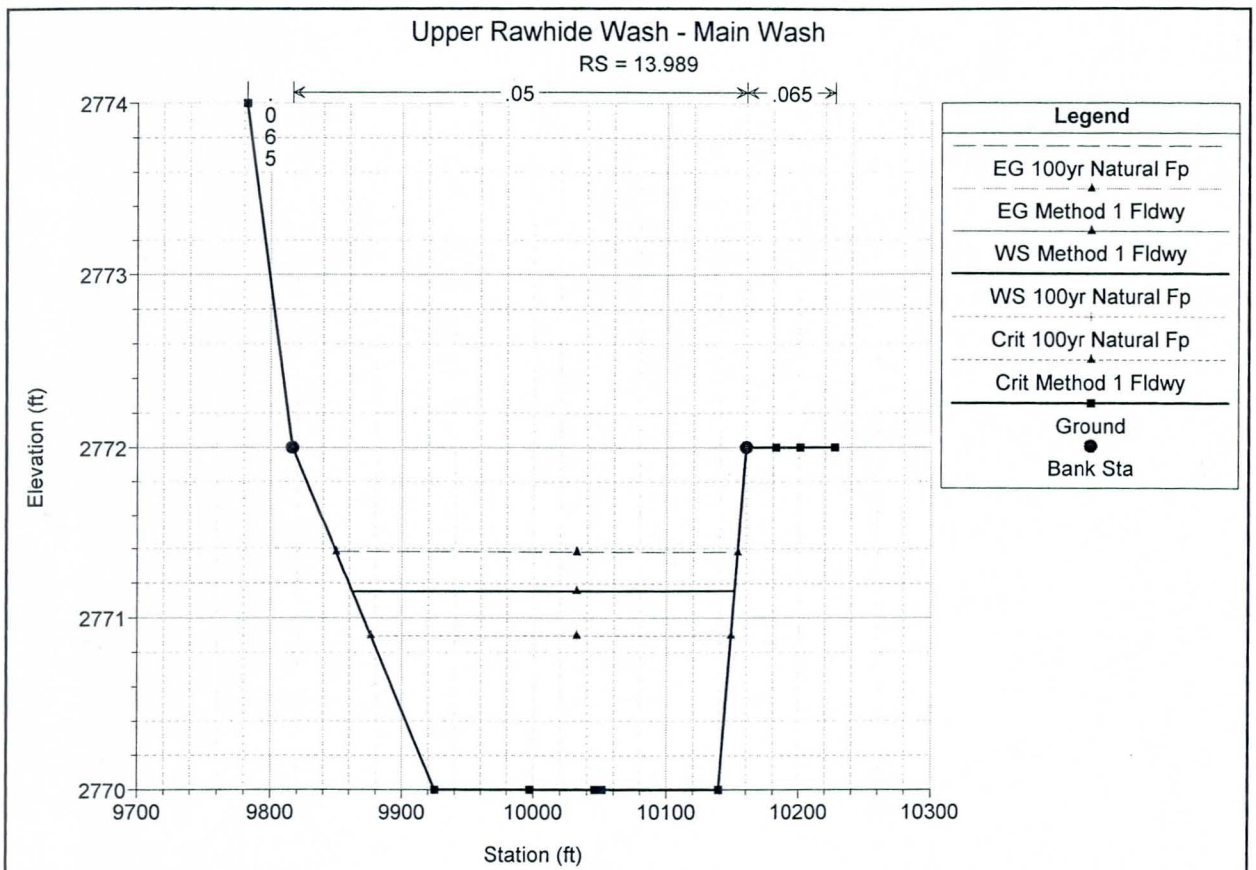

Upper Rawhide Wash - Main Wash
RS = 14.266
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta
Encroachment

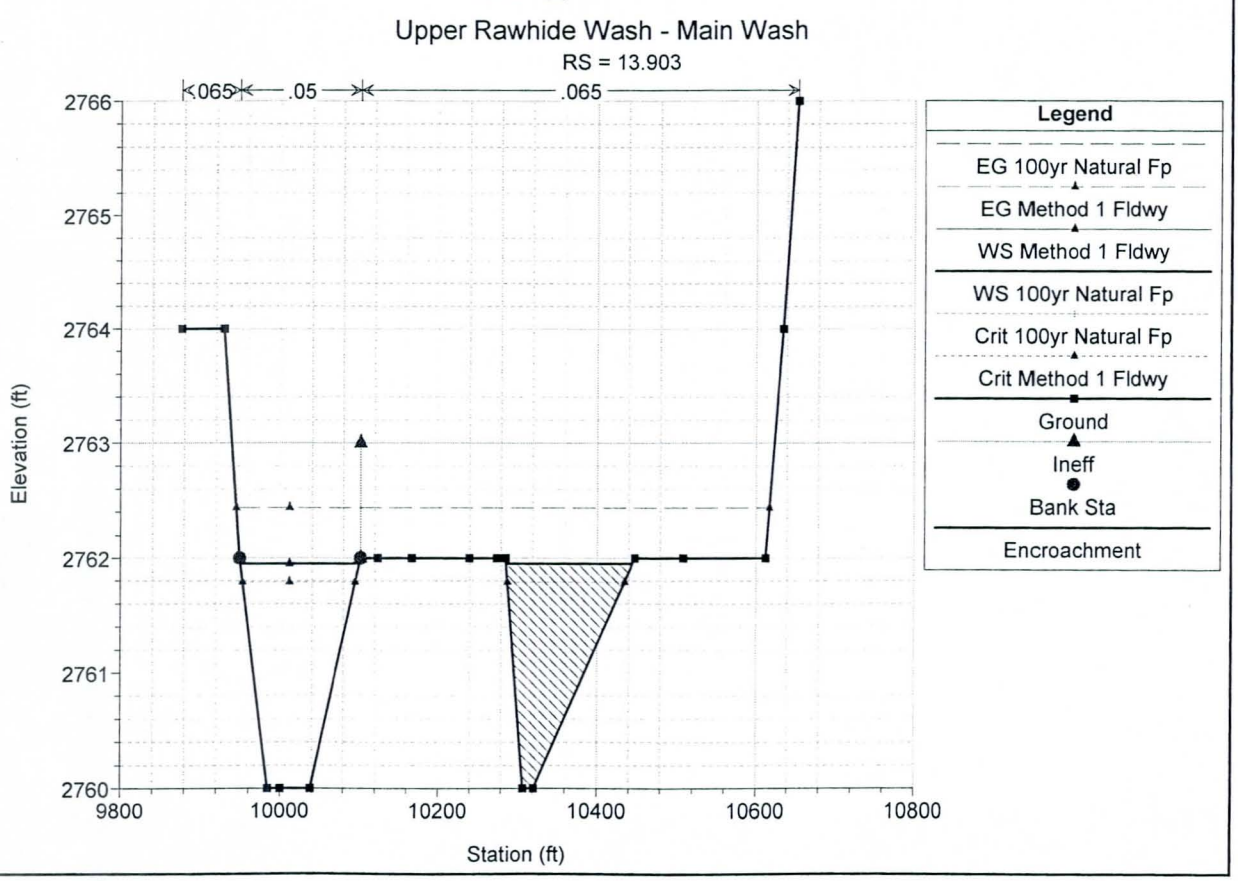

Upper Rawhide Wash - Main Wash
RS = 14.205
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

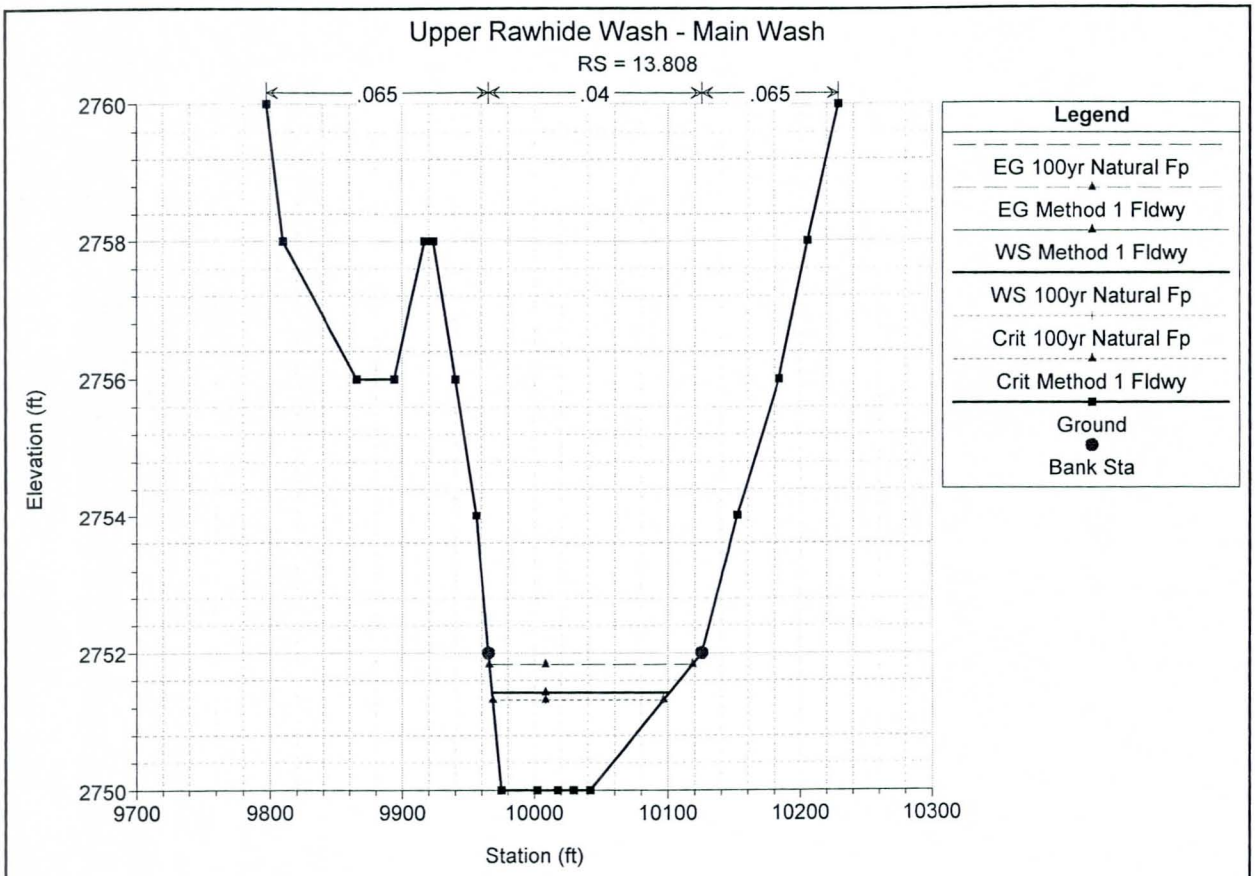

Upper Rawhide Wash - Main Wash
RS = 14.154
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

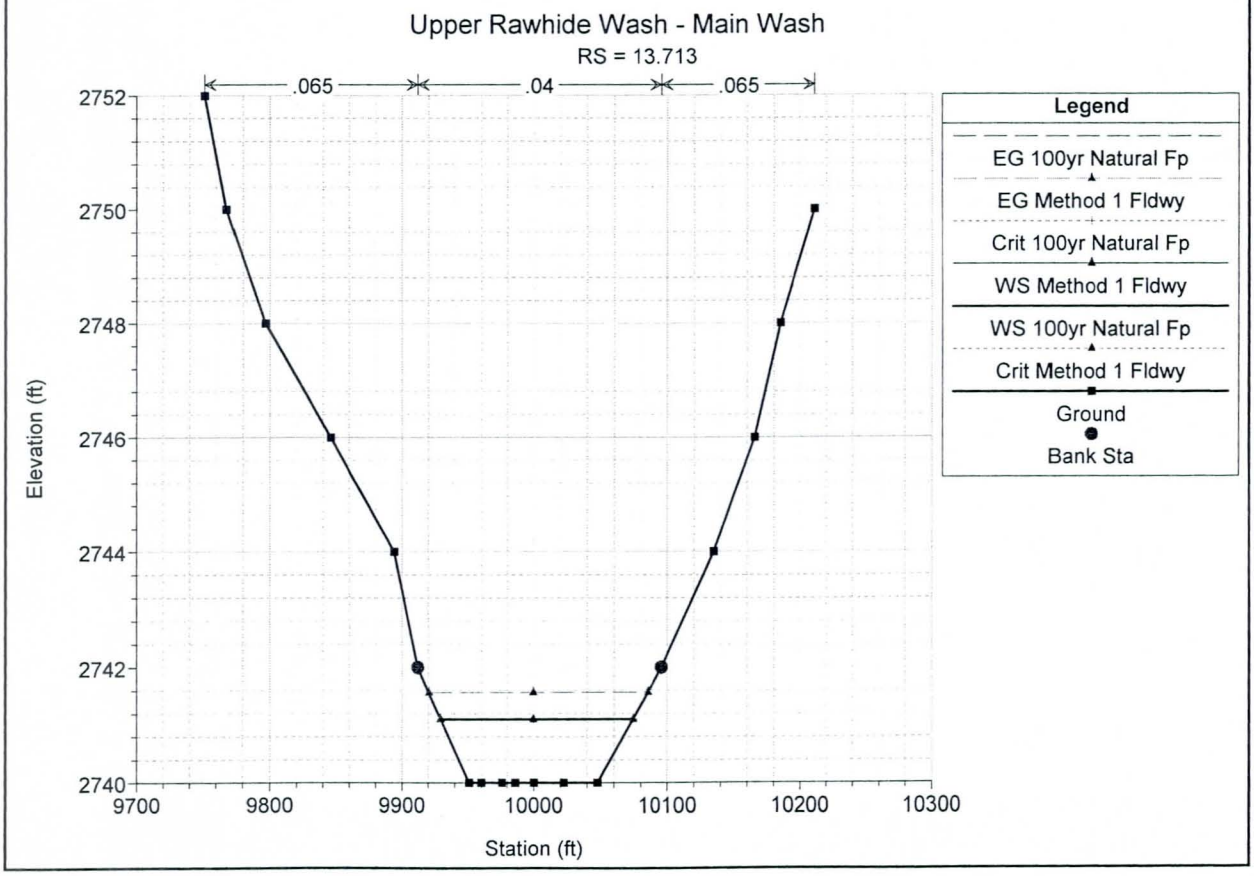

Upper Rawhide Wash - Main Wash
RS = 14.100
.065
.05
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

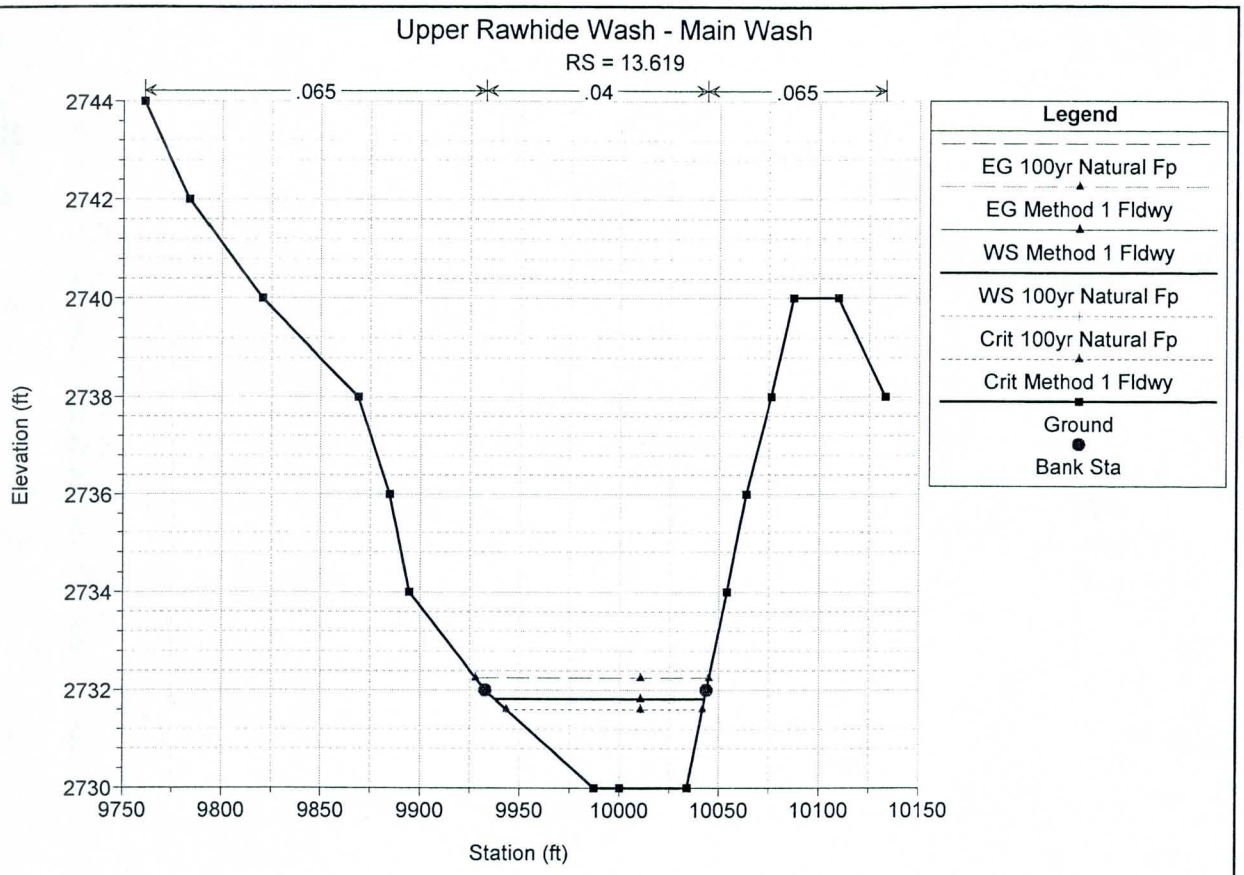

Upper Rawhide Wash - Main Wash
RS = 14.041
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

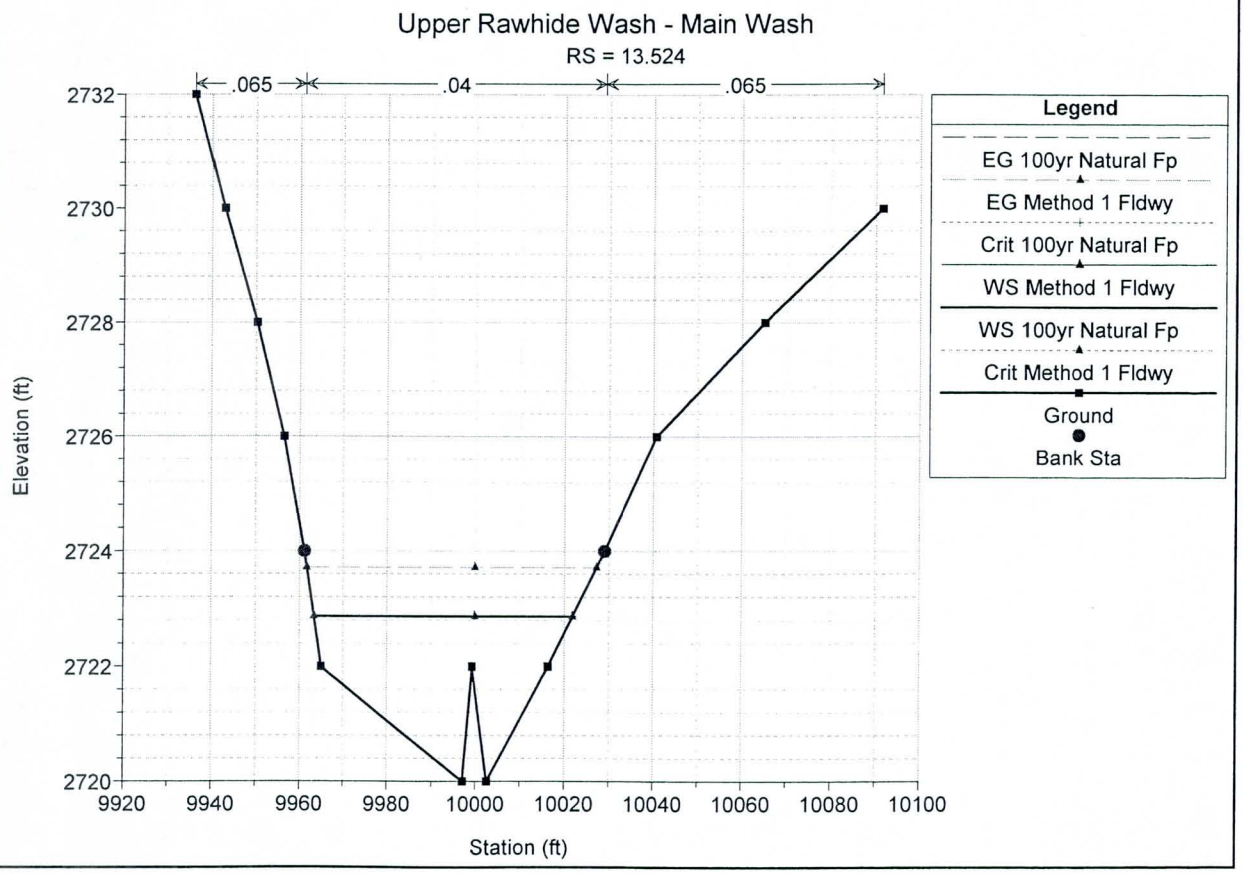

Upper Rawhide Wash - Main Wash
RS = 13.989
.05
.065
.065
Elevation (ft)
Station (ft)
2774
2773
2772
2771
2770
9700
9800
9900
10000
10100
10200
10300
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

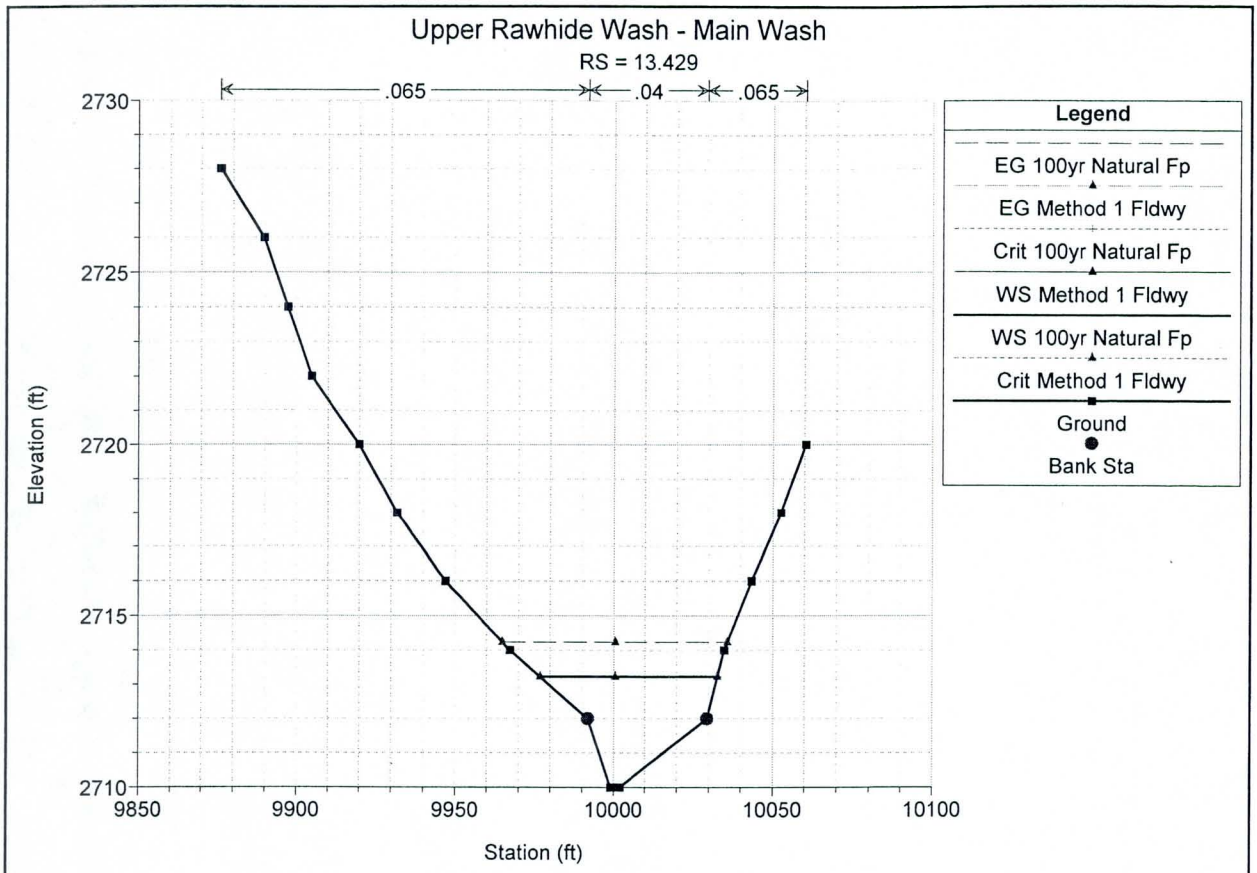

Upper Rawhide Wash - Main Wash
RS = 13.903
.065
.05
.065
Elevation (ft)
Station (ft)
2766
2765
2764
2763
2762
2761
2760
9800
10000
10200
10400
10600
10800
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

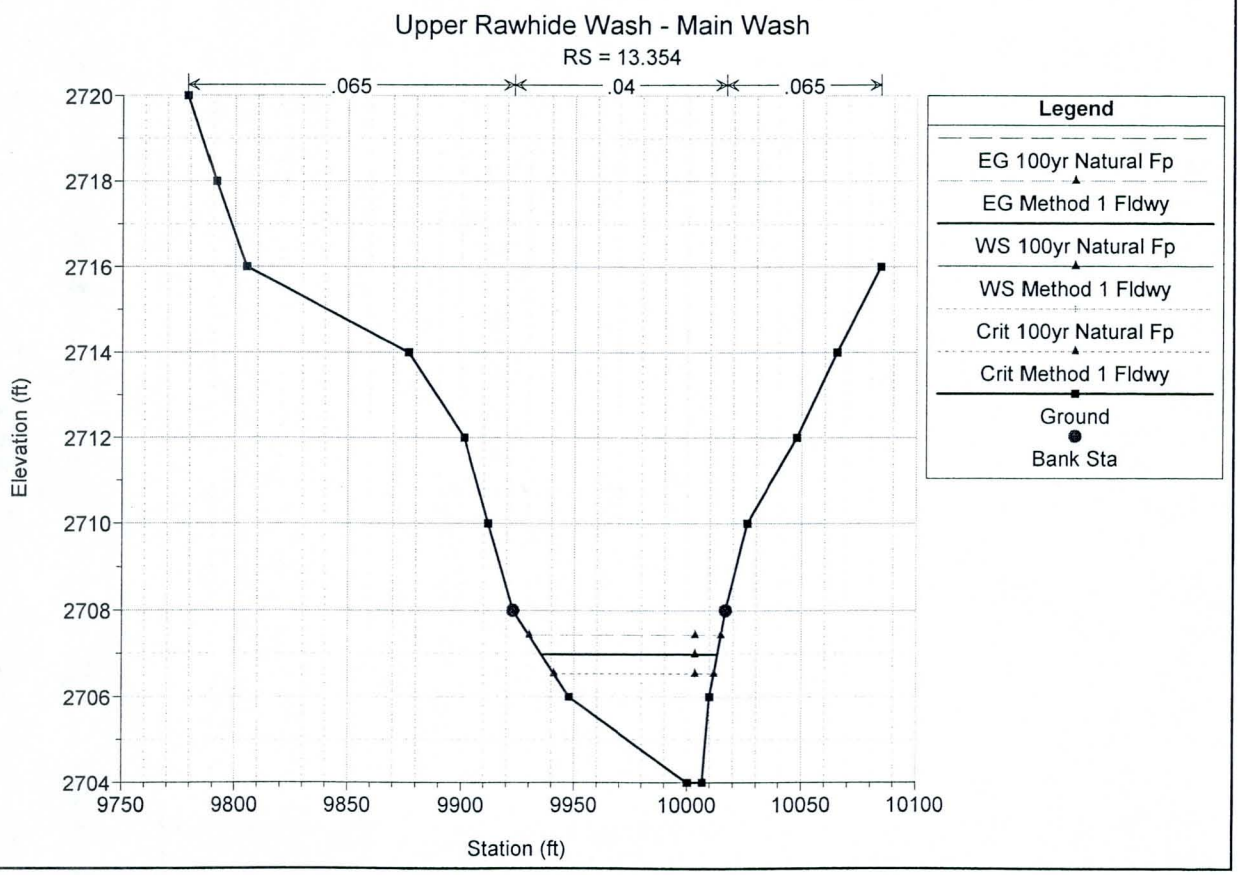

Upper Rawhide Wash - Main Wash
RS = 13.808
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

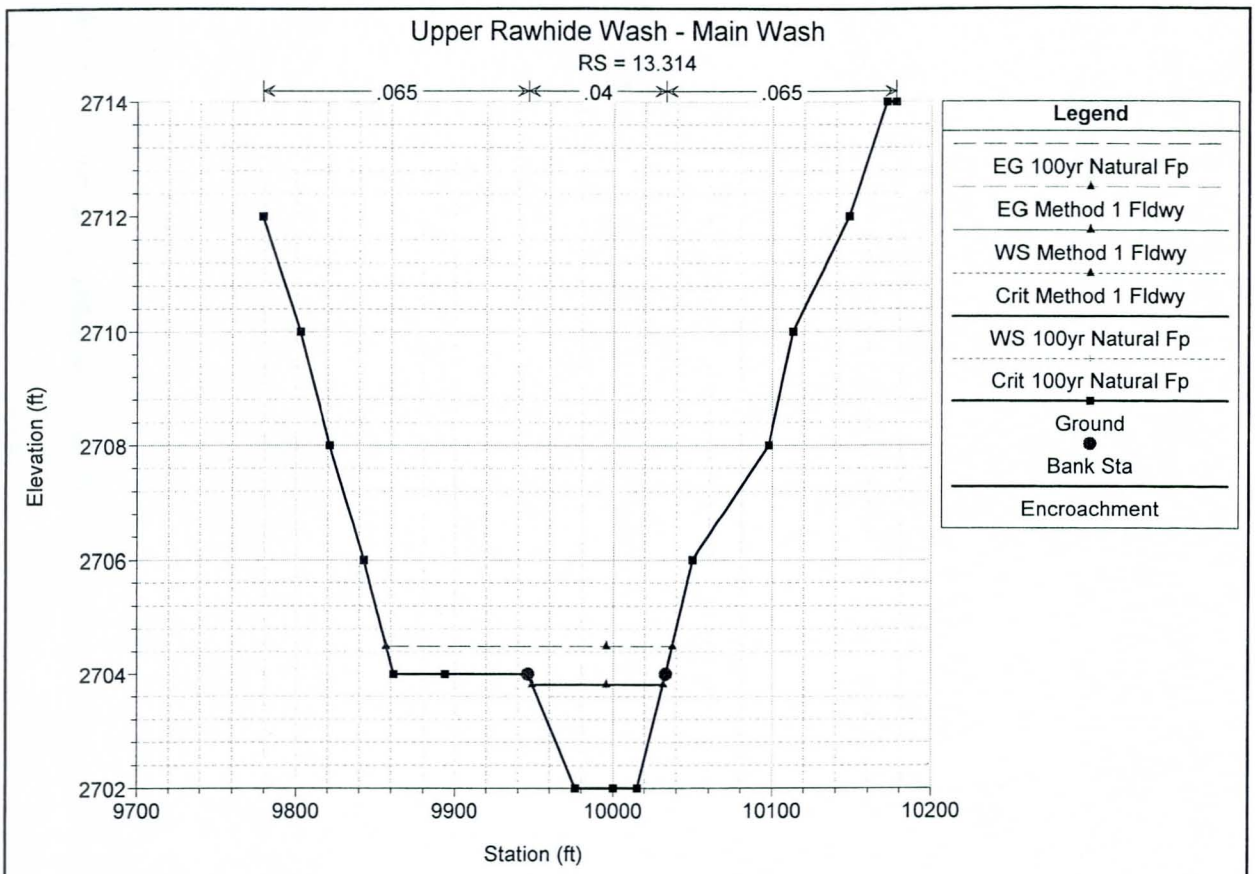

Upper Rawhide Wash - Main Wash
RS = 13.713
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

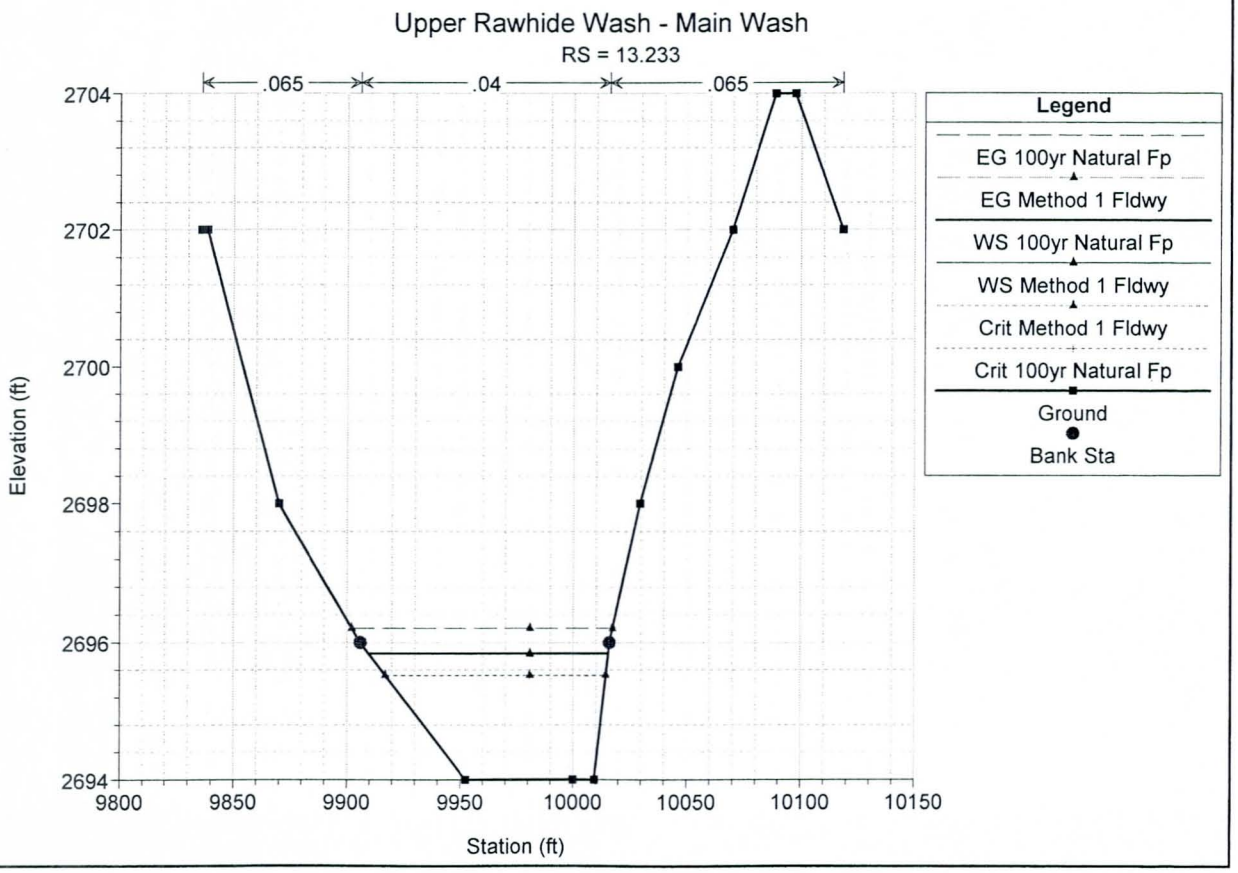

Upper Rawhide Wash - Main Wash
RS = 13.619
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

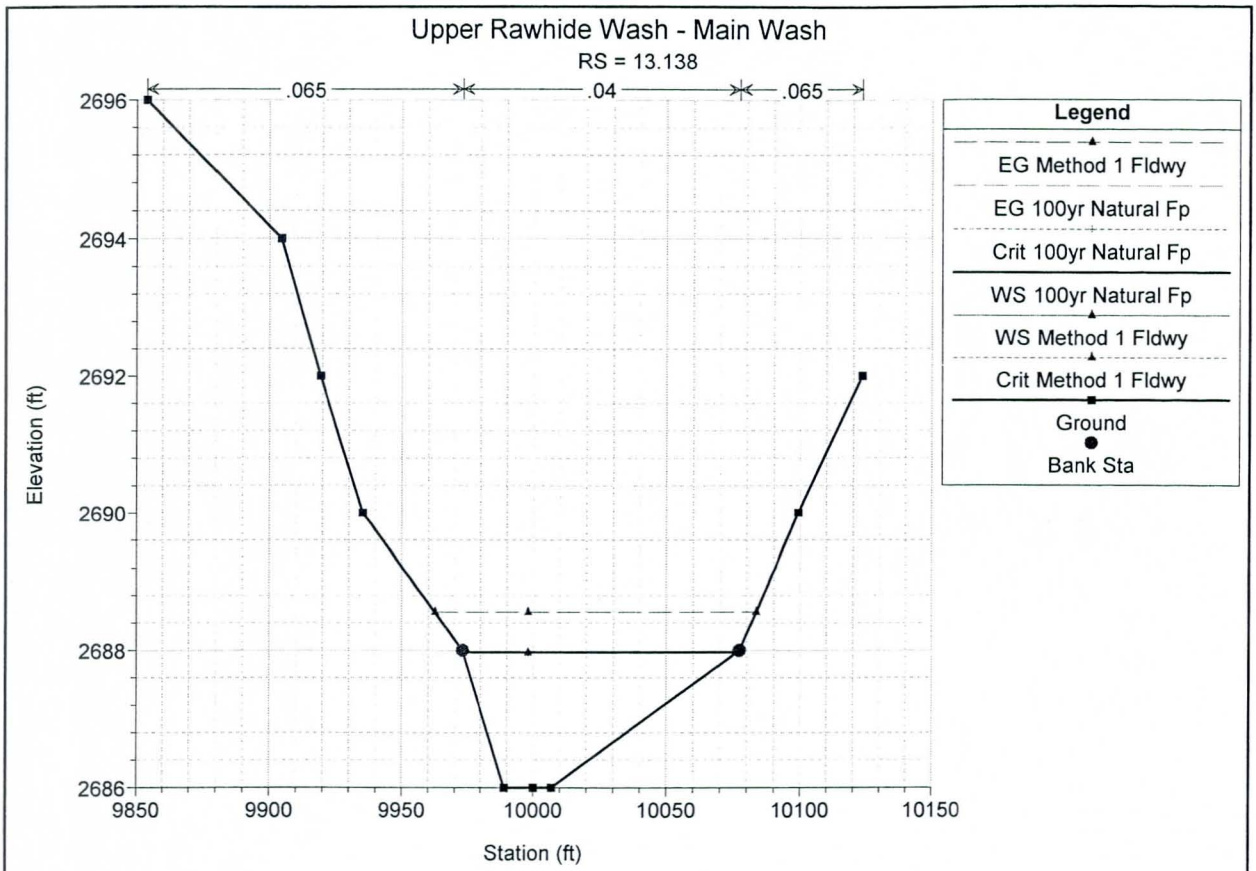

Upper Rawhide Wash - Main Wash
RS = 13.524
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

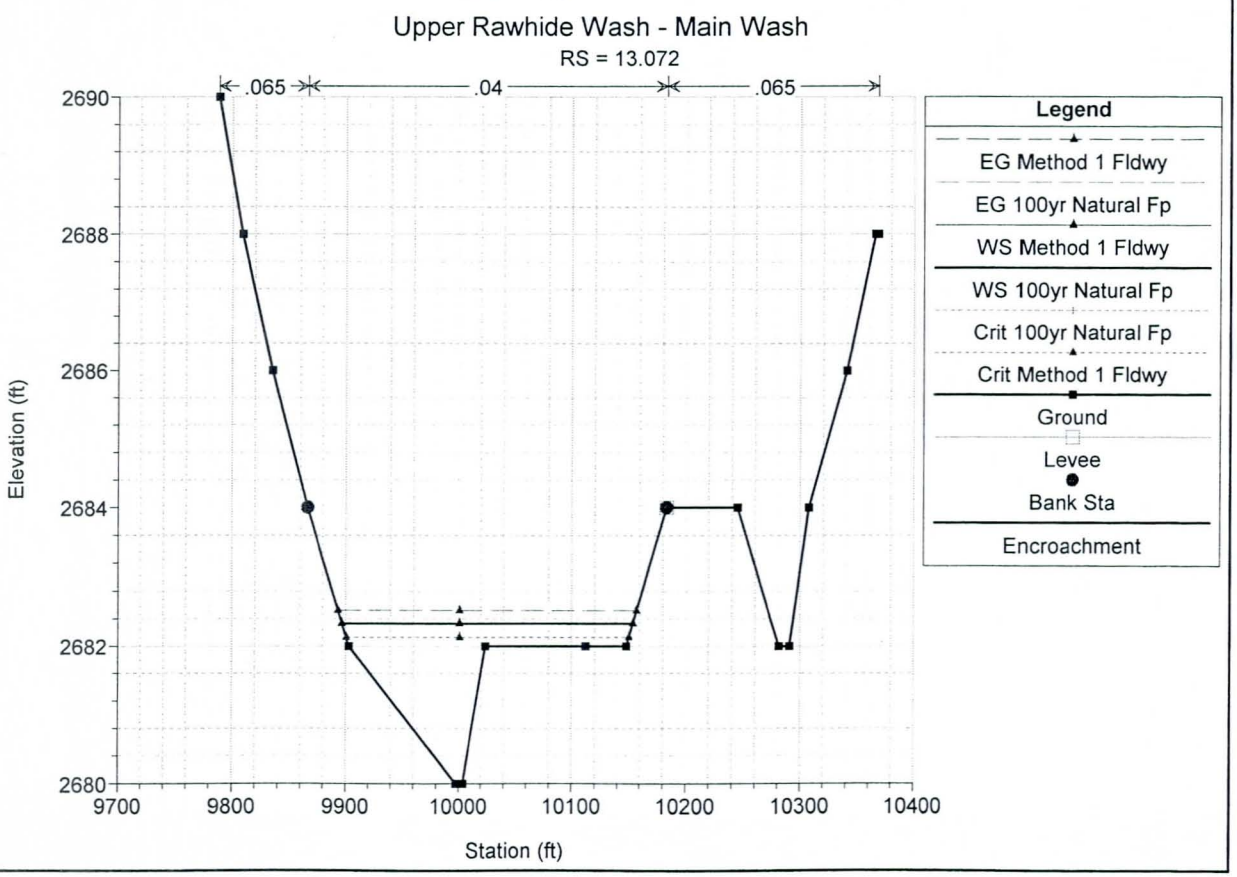

Upper Rawhide Wash - Main Wash
RS = 13.429
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

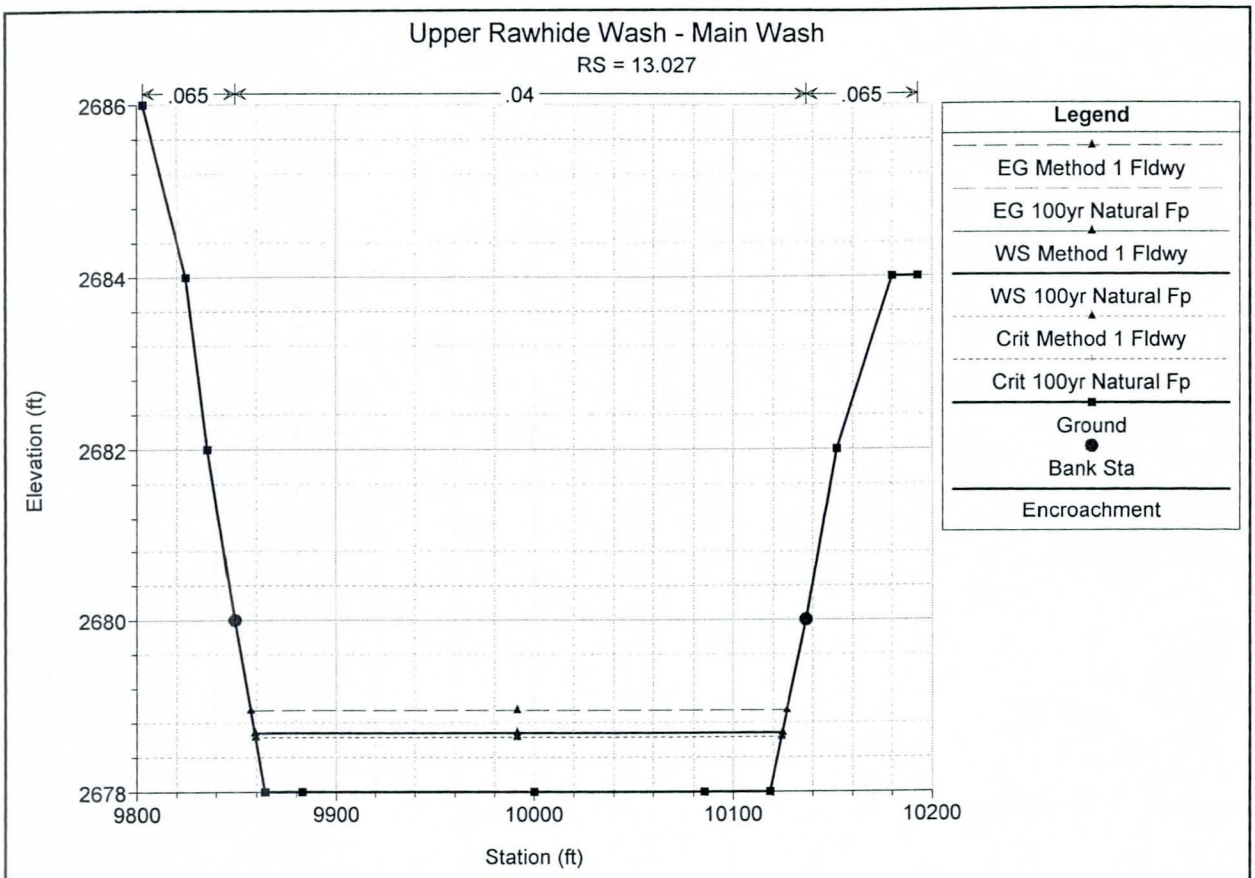

Upper Rawhide Wash - Main Wash
RS = 13.354
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

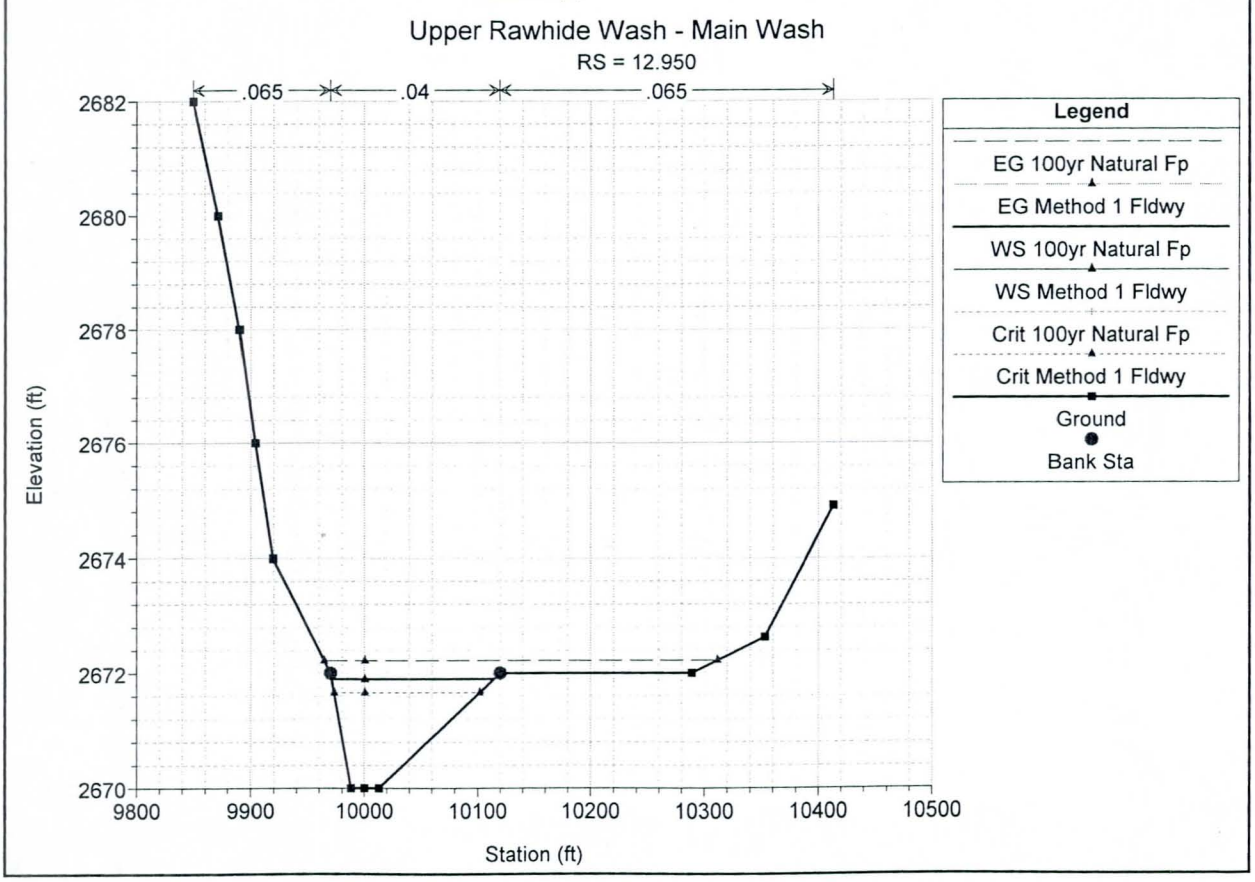

Upper Rawhide Wash - Main Wash
RS = 13.314
.065
.04
.065
Elevation (ft)
2714
2712
2710
2708
2706
2704
2702
9700
9800
9900
10000
10100
10200
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

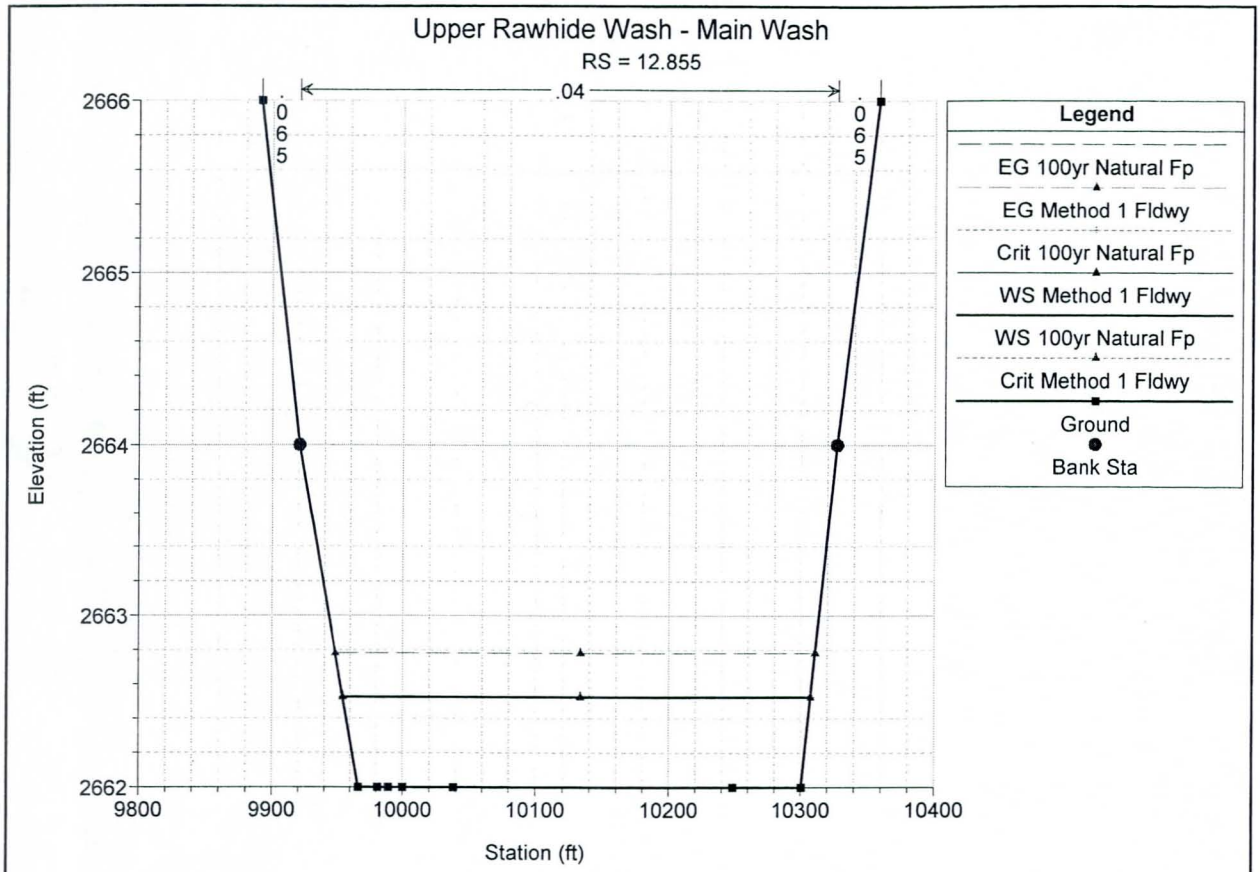

Upper Rawhide Wash - Main Wash
RS = 13.233
.065
.04
.065
Elevation (ft)
2704
2702
2700
2698
2696
2694
9800
9850
9900
9950
10000
10050
10100
10150
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta

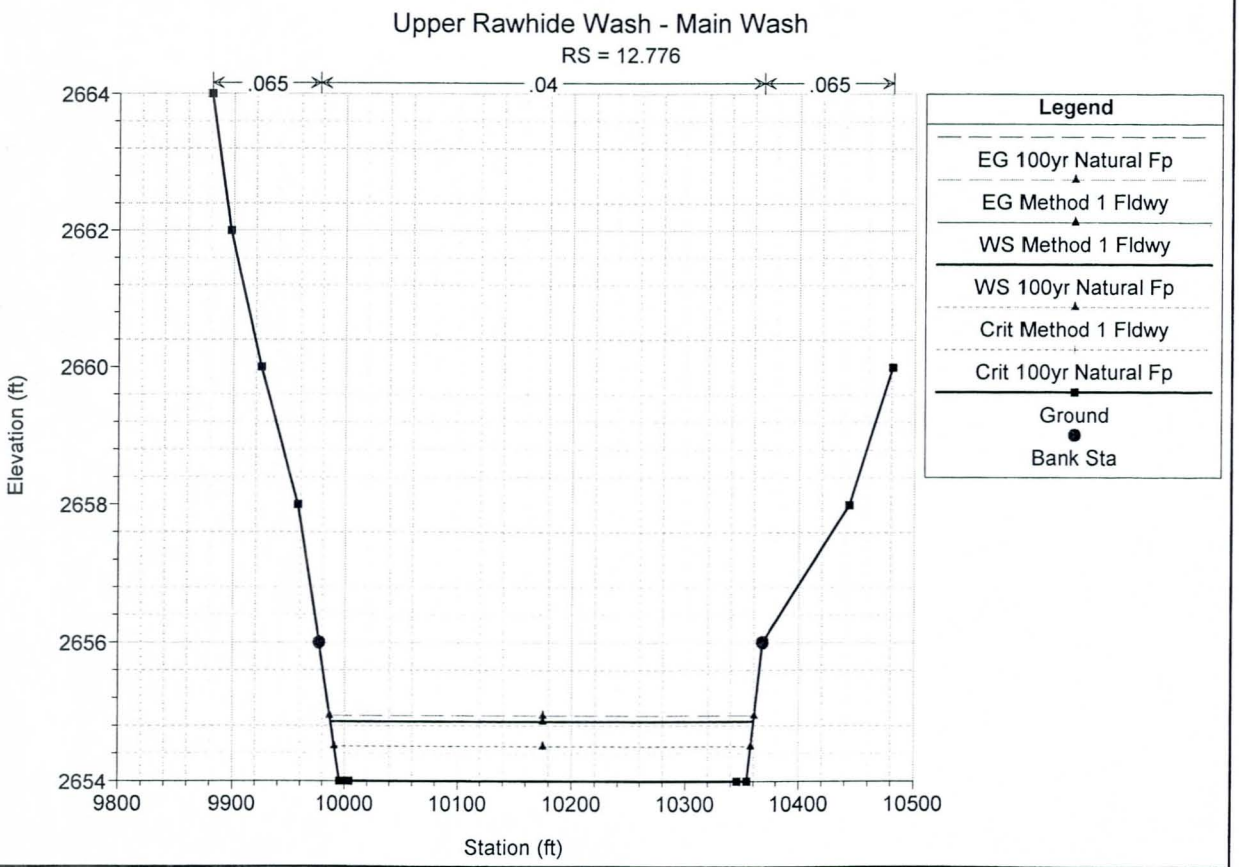

Upper Rawhide Wash - Main Wash
RS = 13.138
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Bank Sta

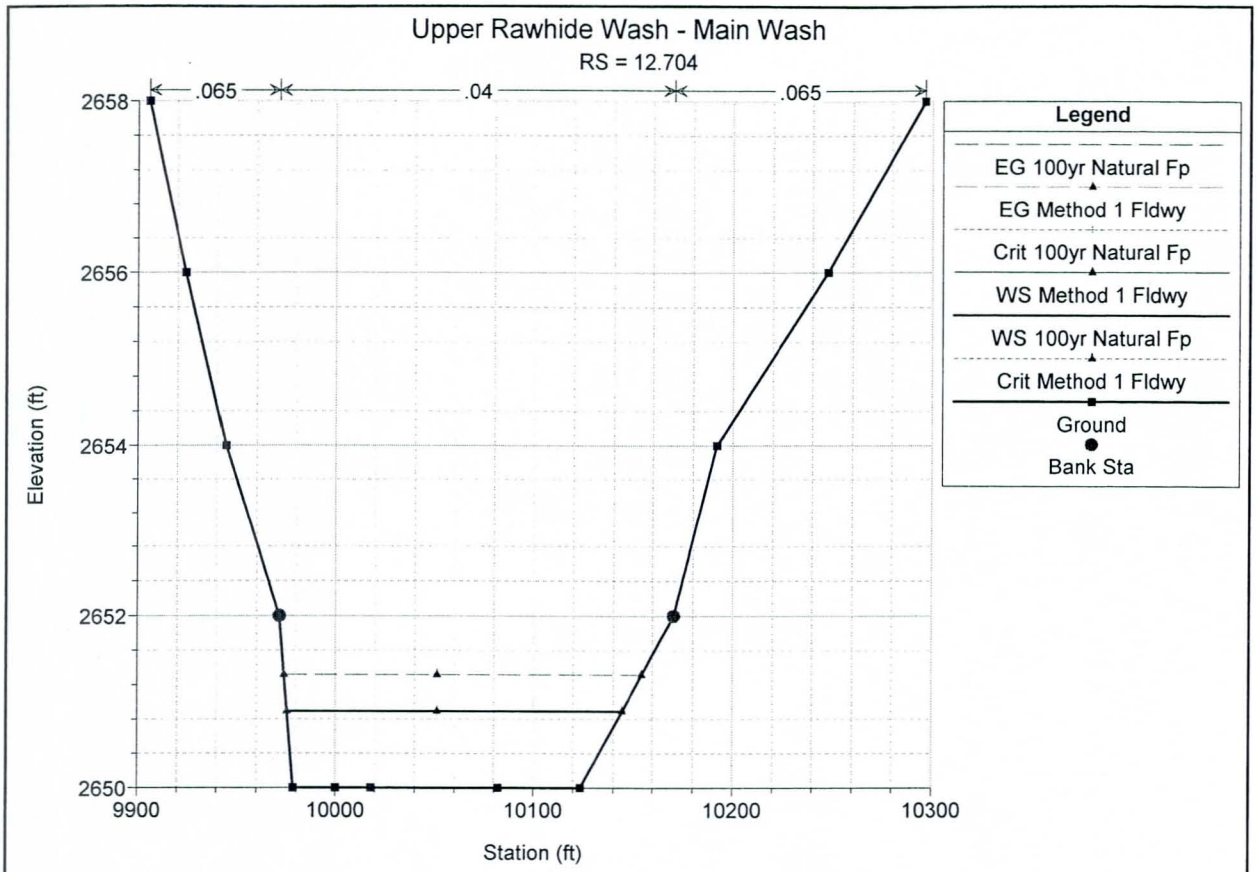

Upper Rawhide Wash - Main Wash
RS = 13.072
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta
Encroachment

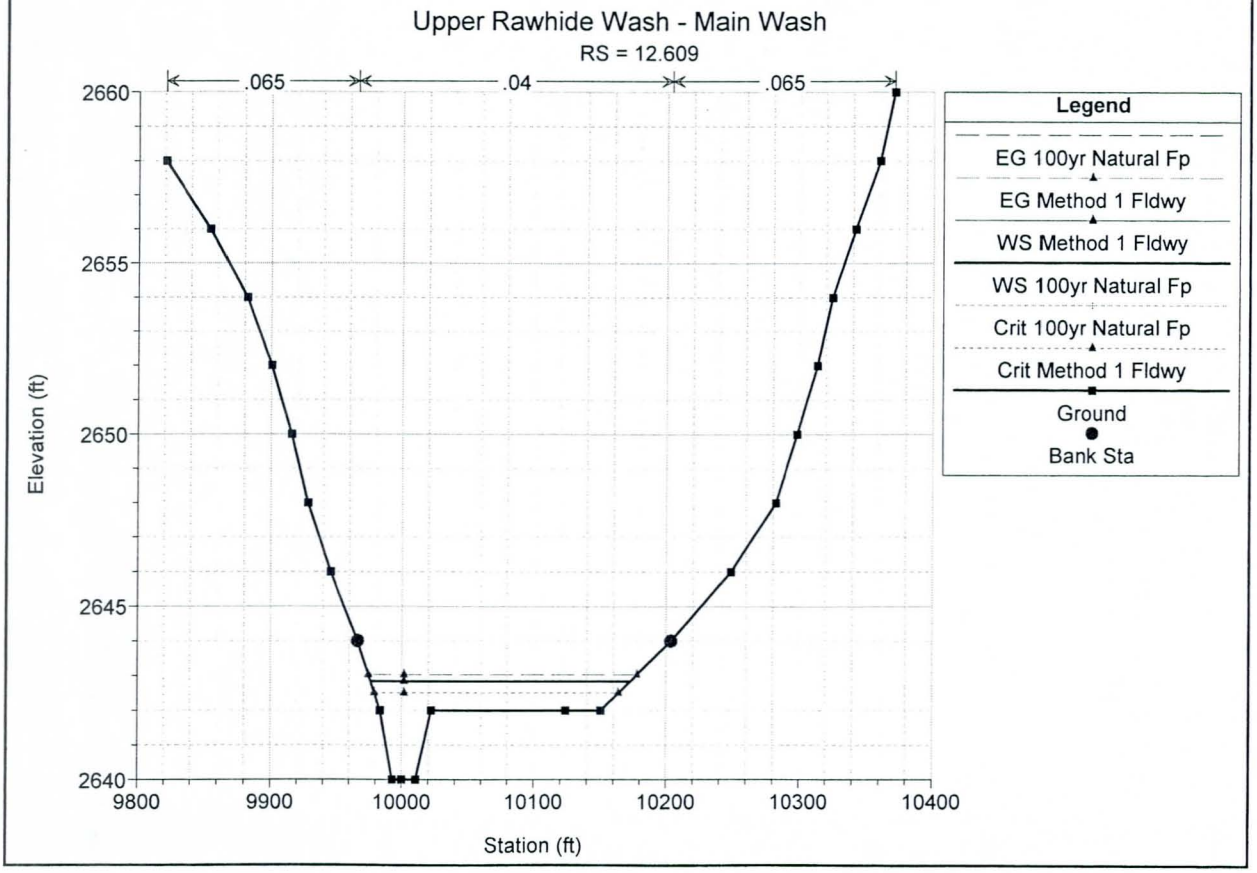

Upper Rawhide Wash - Main Wash
RS = 13.027
.065
.04
.065
Elevation (ft)
2686
2684
2682
2680
2678
9800
9900
10000
10100
10200
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

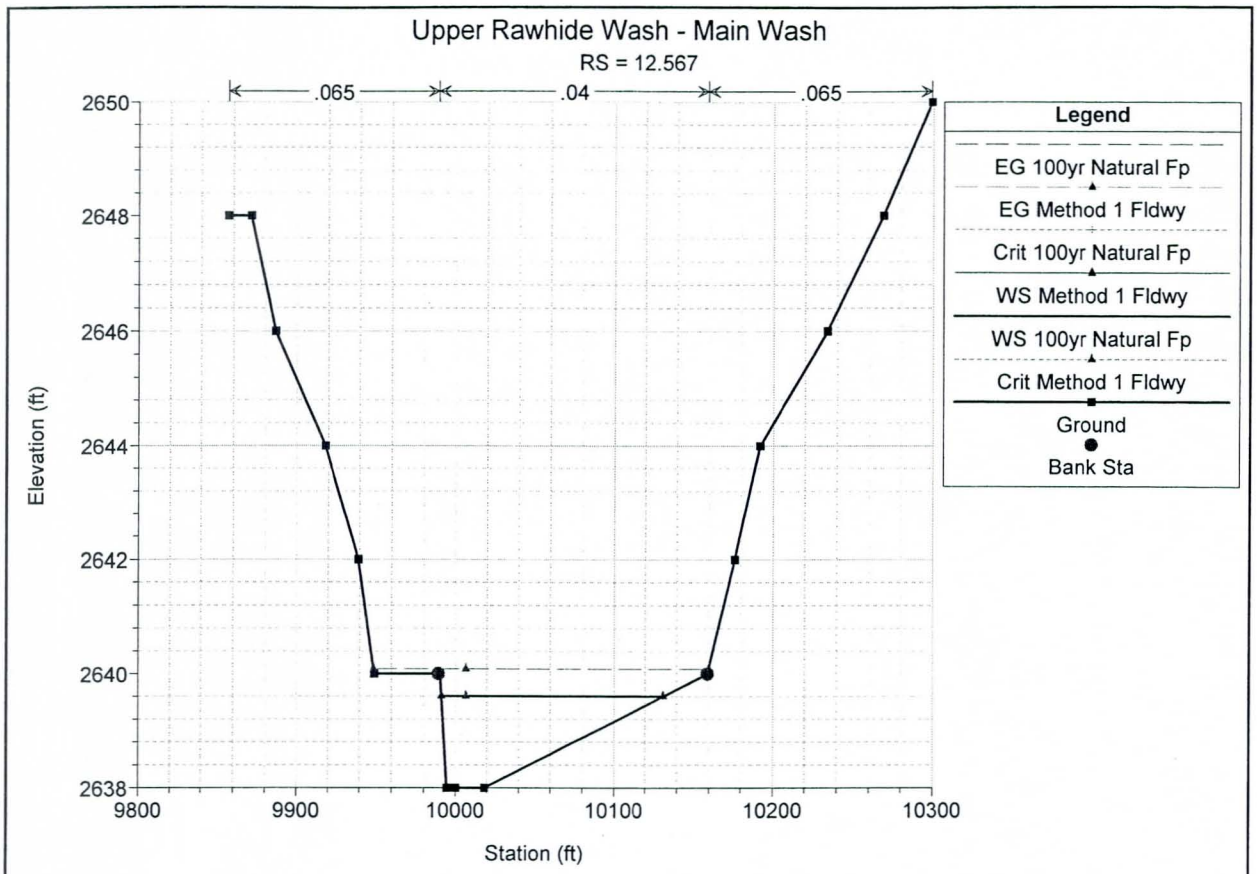

Upper Rawhide Wash - Main Wash
RS = 12.950
.065
.04
.065
Elevation (ft)
2682
2680
2678
2676
2674
2672
2670
9800
9900
10000
10100
10200
10300
10400
10500
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

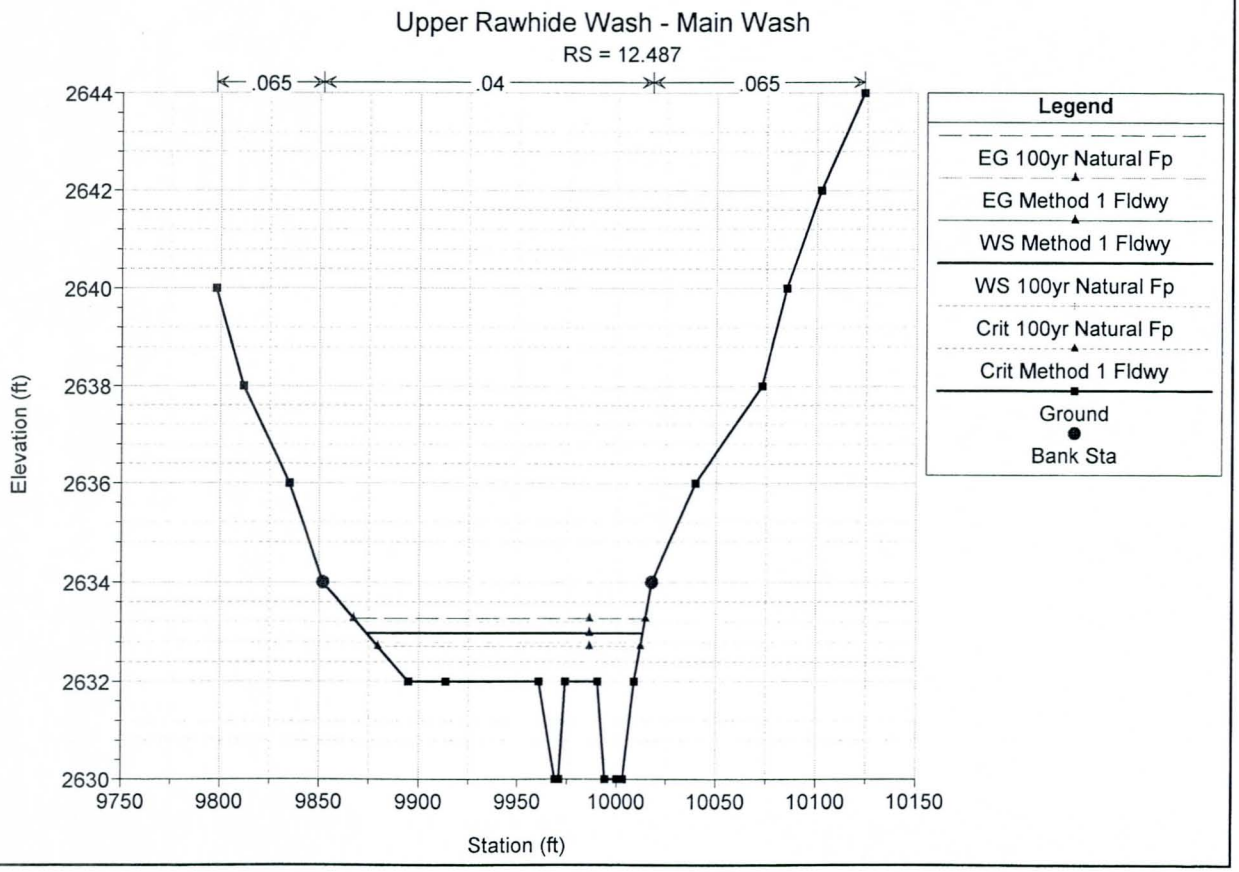

Upper Rawhide Wash - Main Wash
RS = 12.855
.04
.065
.065
Elevation (ft)
Station (ft)
2666
2665
2664
2663
2662
9800
9900
10000
10100
10200
10300
10400
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

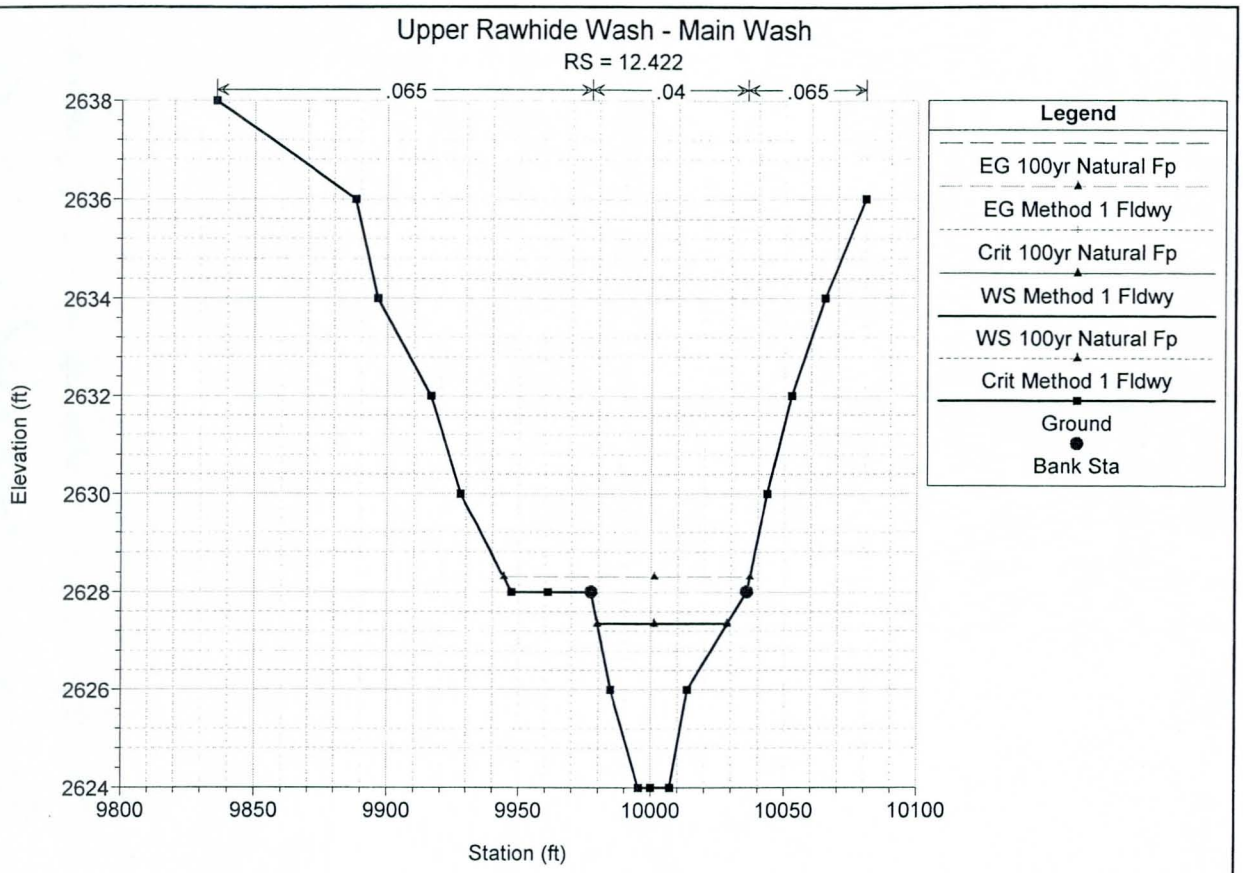

Upper Rawhide Wash - Main Wash
RS = 12.776
.065
.04
.065
Elevation (ft)
Station (ft)
2664
2662
2660
2658
2656
2654
9800
9900
10000
10100
10200
10300
10400
10500
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta

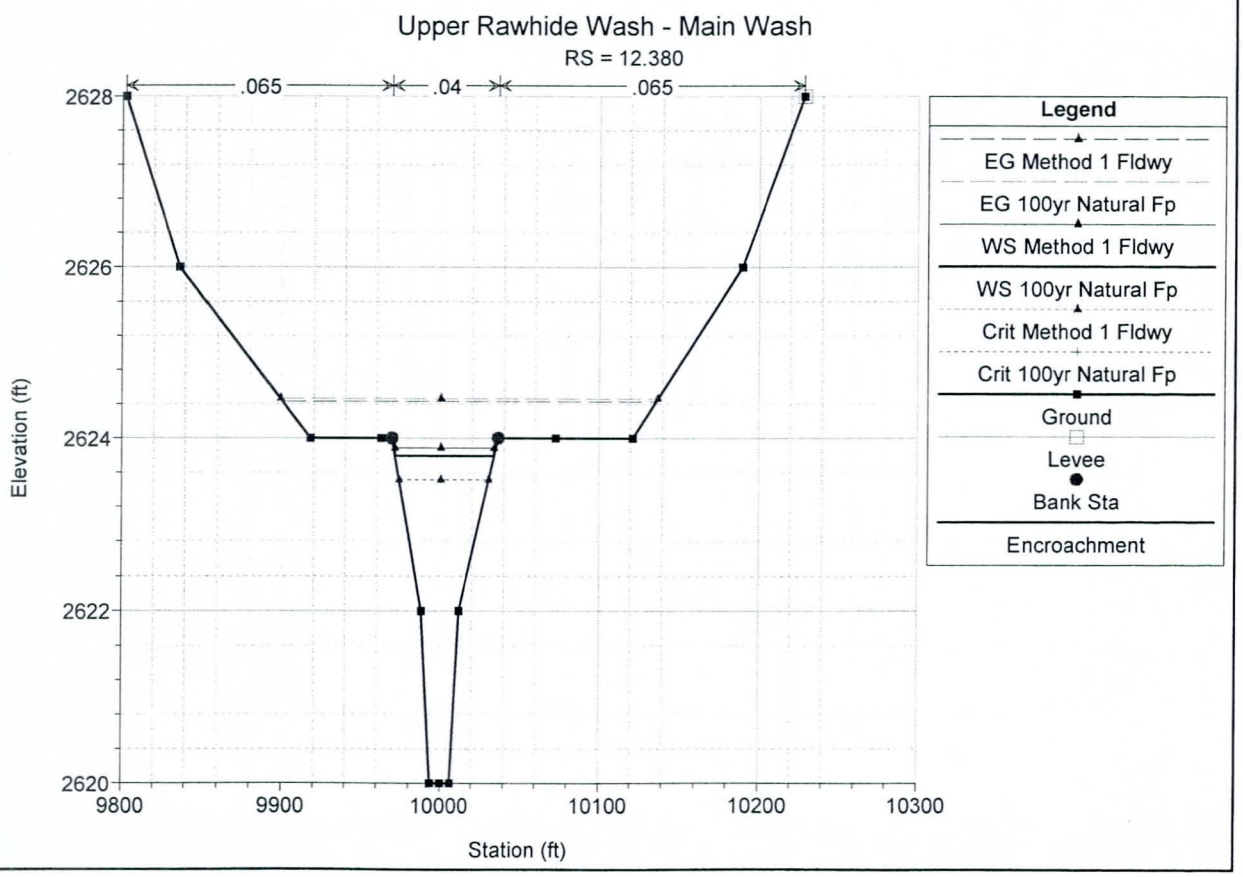

Upper Rawhide Wash - Main Wash
RS = 12.704
.065
.04
.065
Elevation (ft)
2658
2656
2654
2652
2650
9900
10000
10100
10200
10300
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

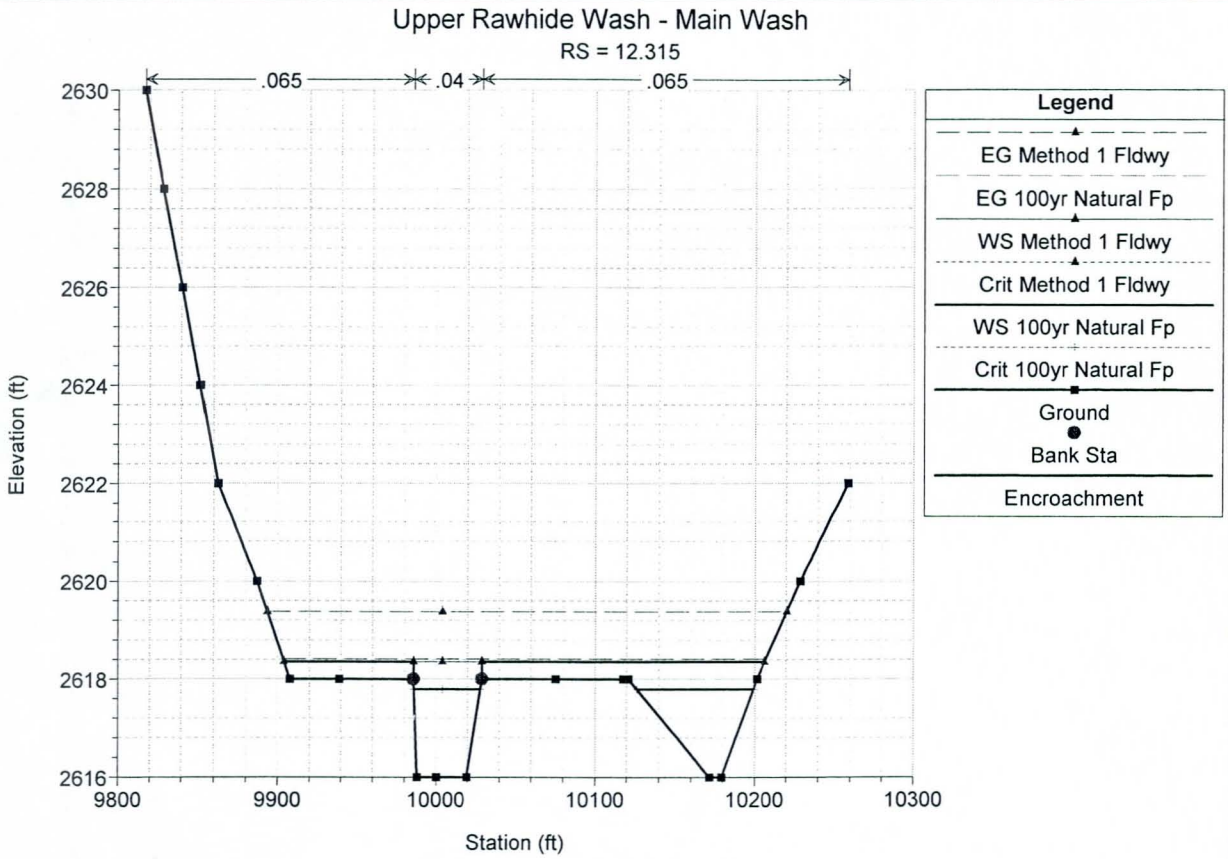

Upper Rawhide Wash - Main Wash
RS = 12.609
.065
.04
.065
Elevation (ft)
2660
2655
2650
2645
2640
9800
9900
10000
10100
10200
10300
10400
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

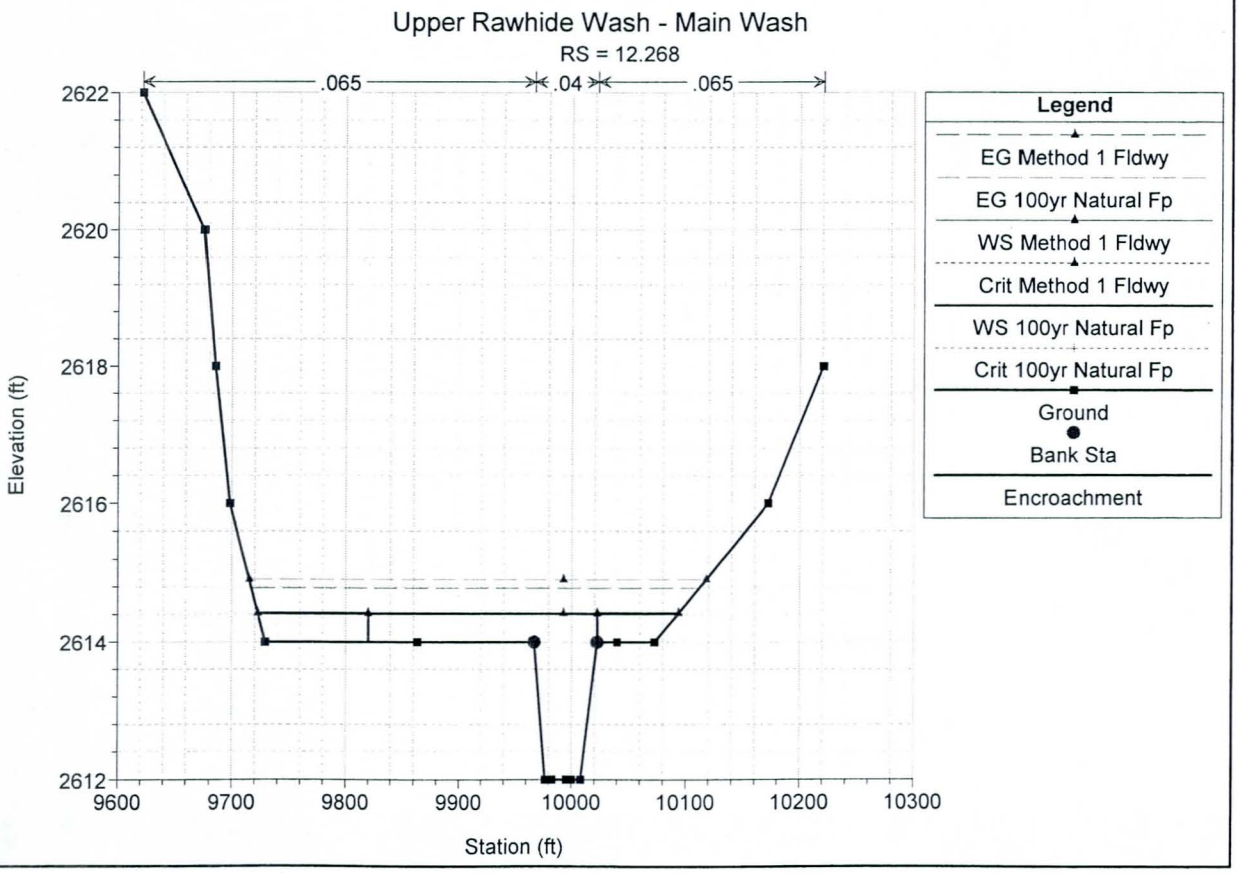

Upper Rawhide Wash - Main Wash
RS = 12.567
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

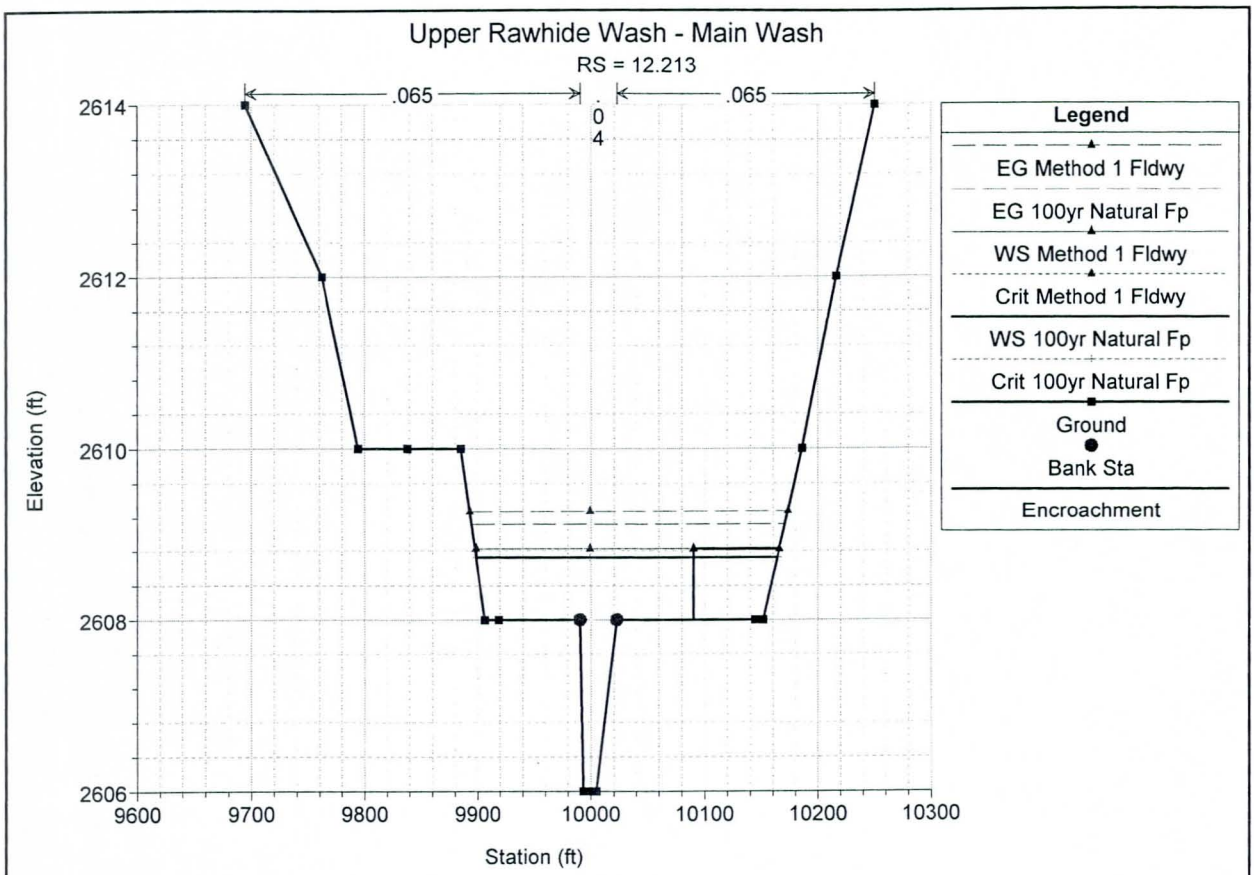

Upper Rawhide Wash - Main Wash
RS = 12.487
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

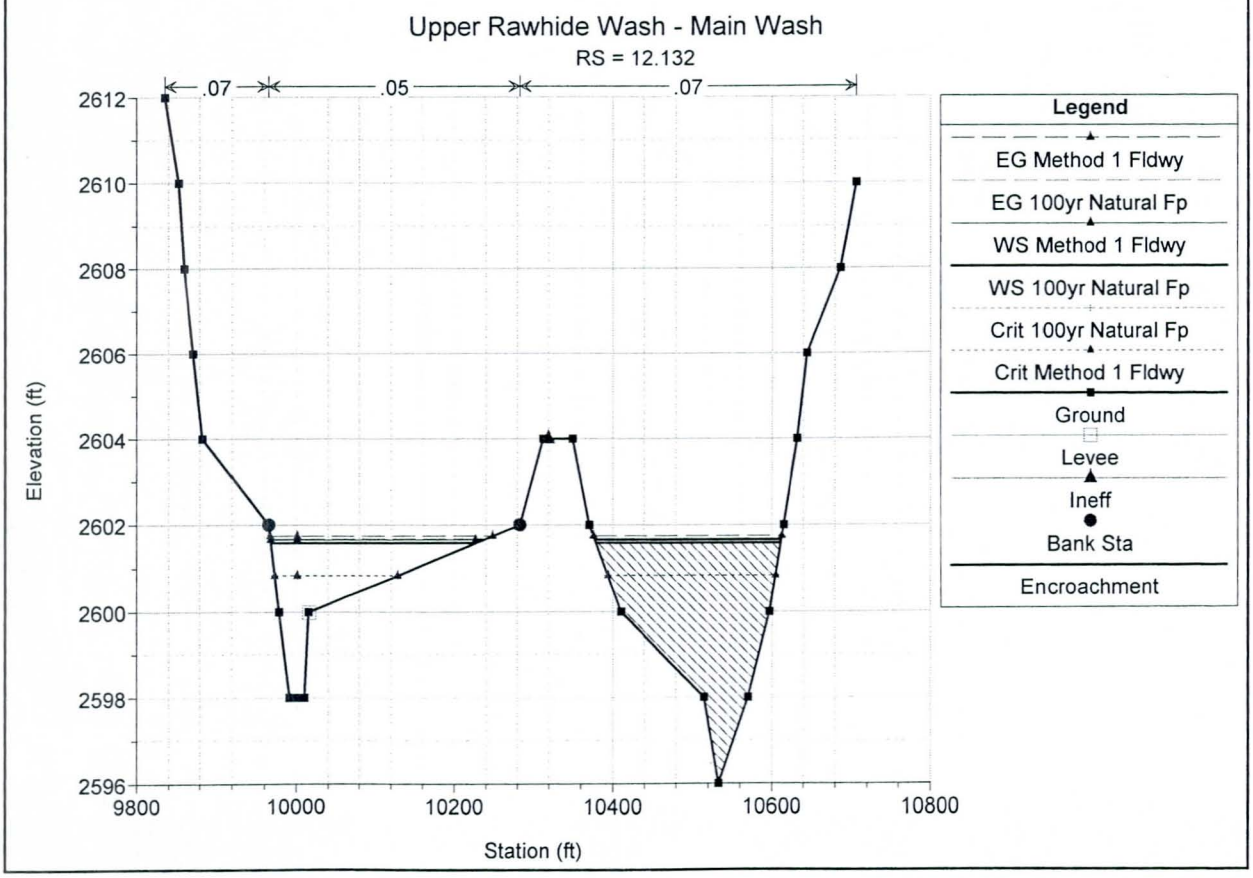

Upper Rawhide Wash - Main Wash
RS = 12.422
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

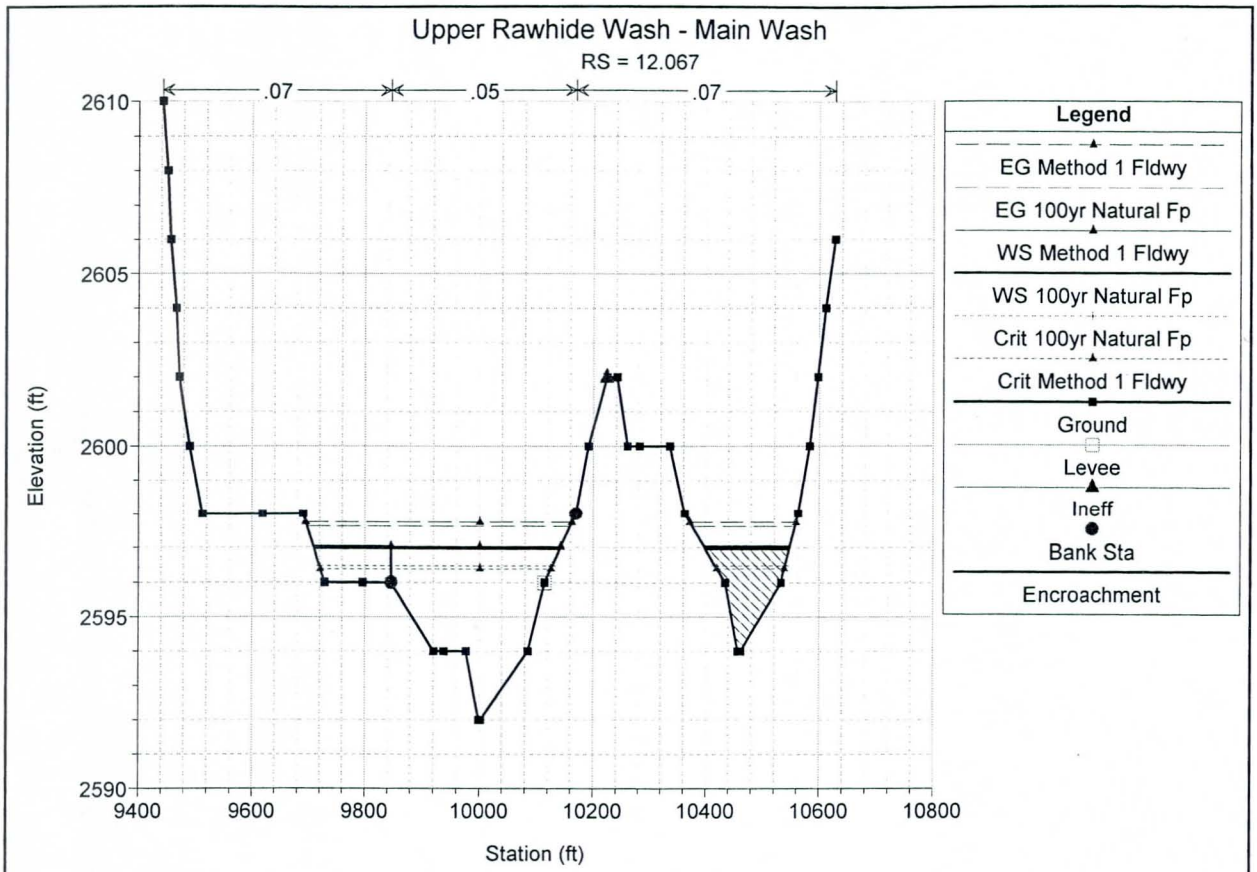

Upper Rawhide Wash - Main Wash
RS = 12.380
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

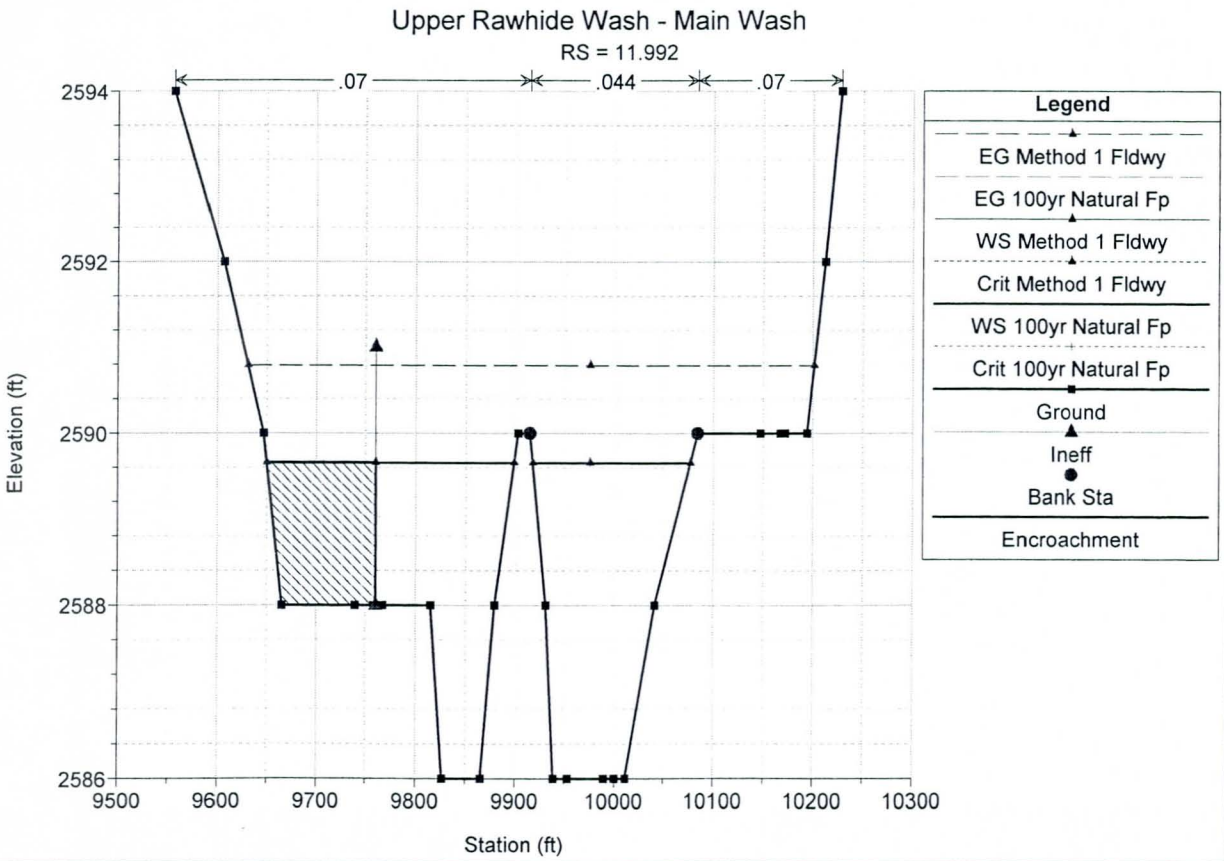

Upper Rawhide Wash - Main Wash
RS = 12.315
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

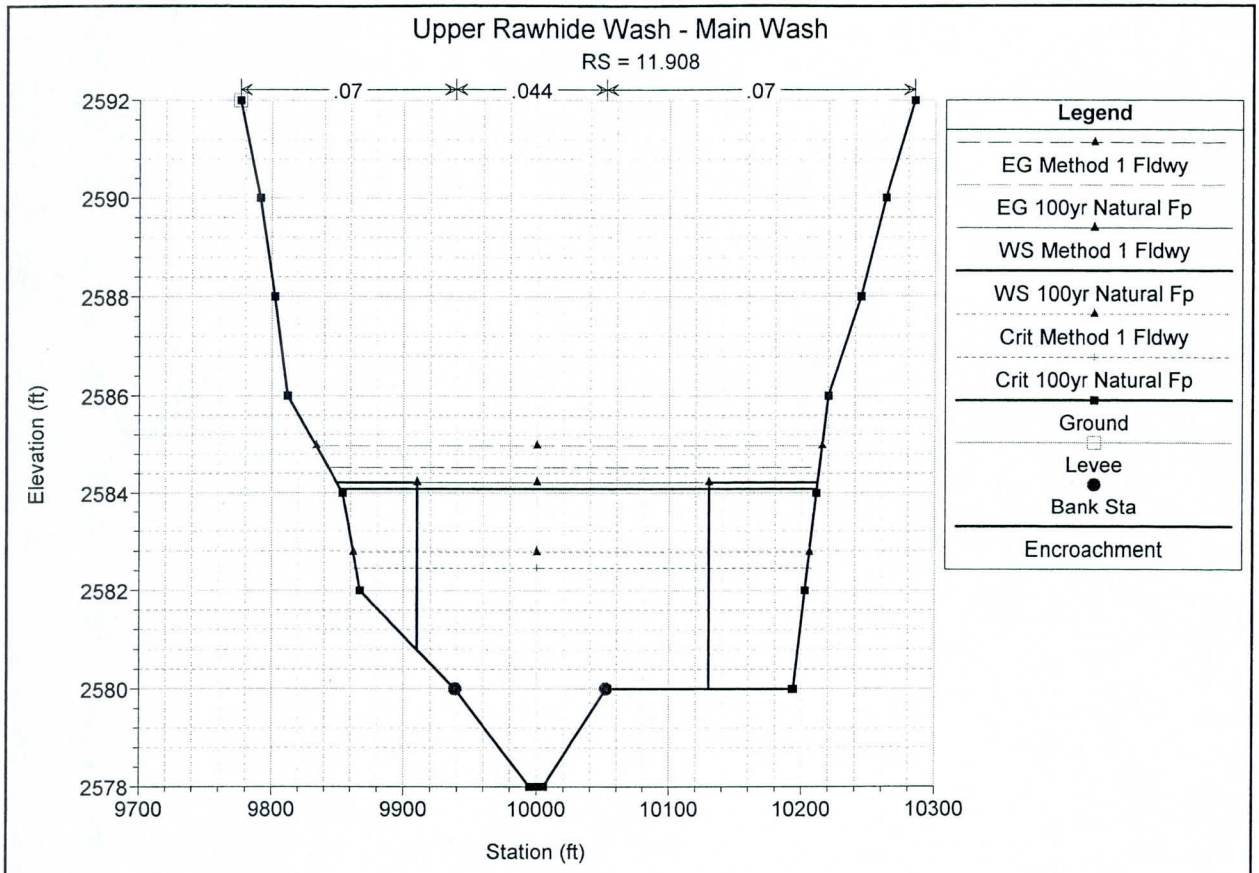

Upper Rawhide Wash - Main Wash
RS = 12.268
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

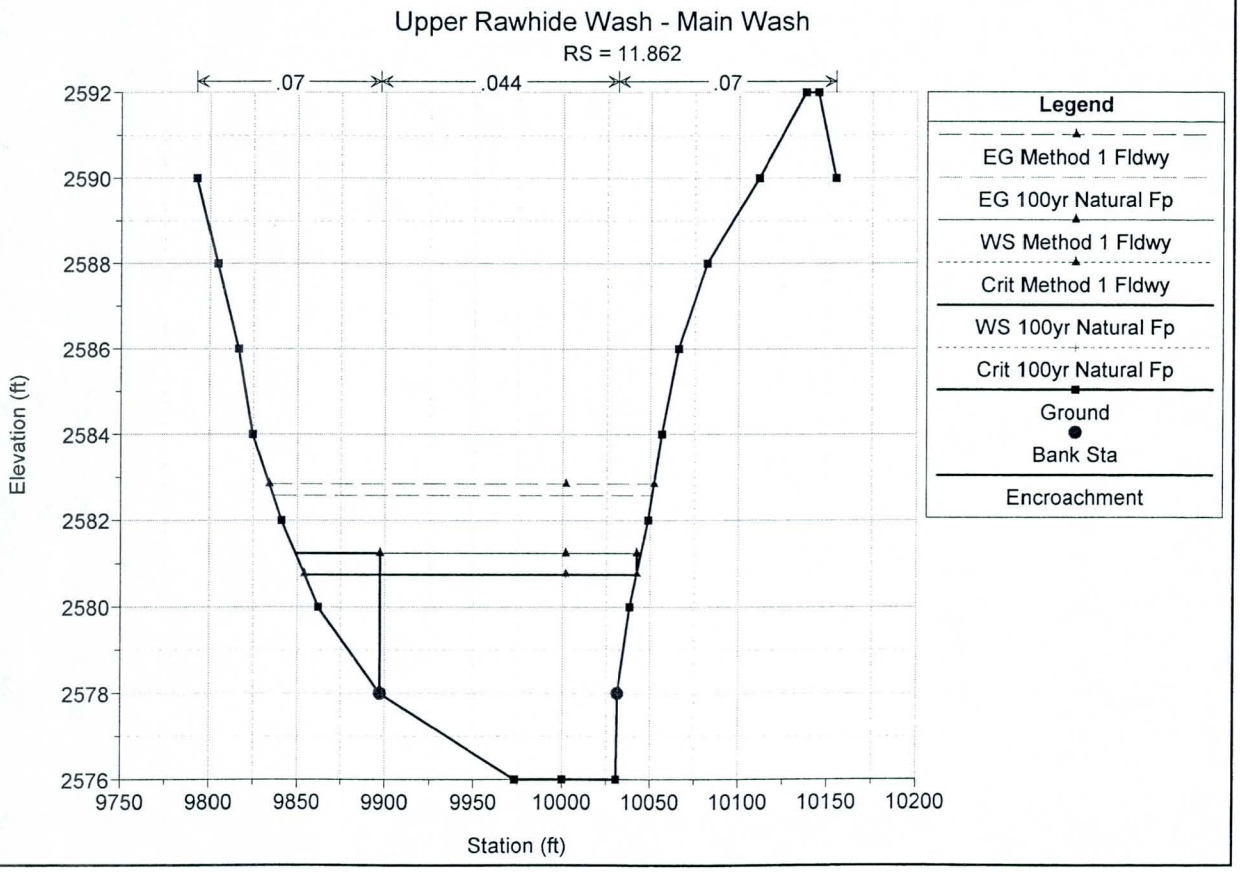

Upper Rawhide Wash - Main Wash
RS = 12.213
.065
.04
.065
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

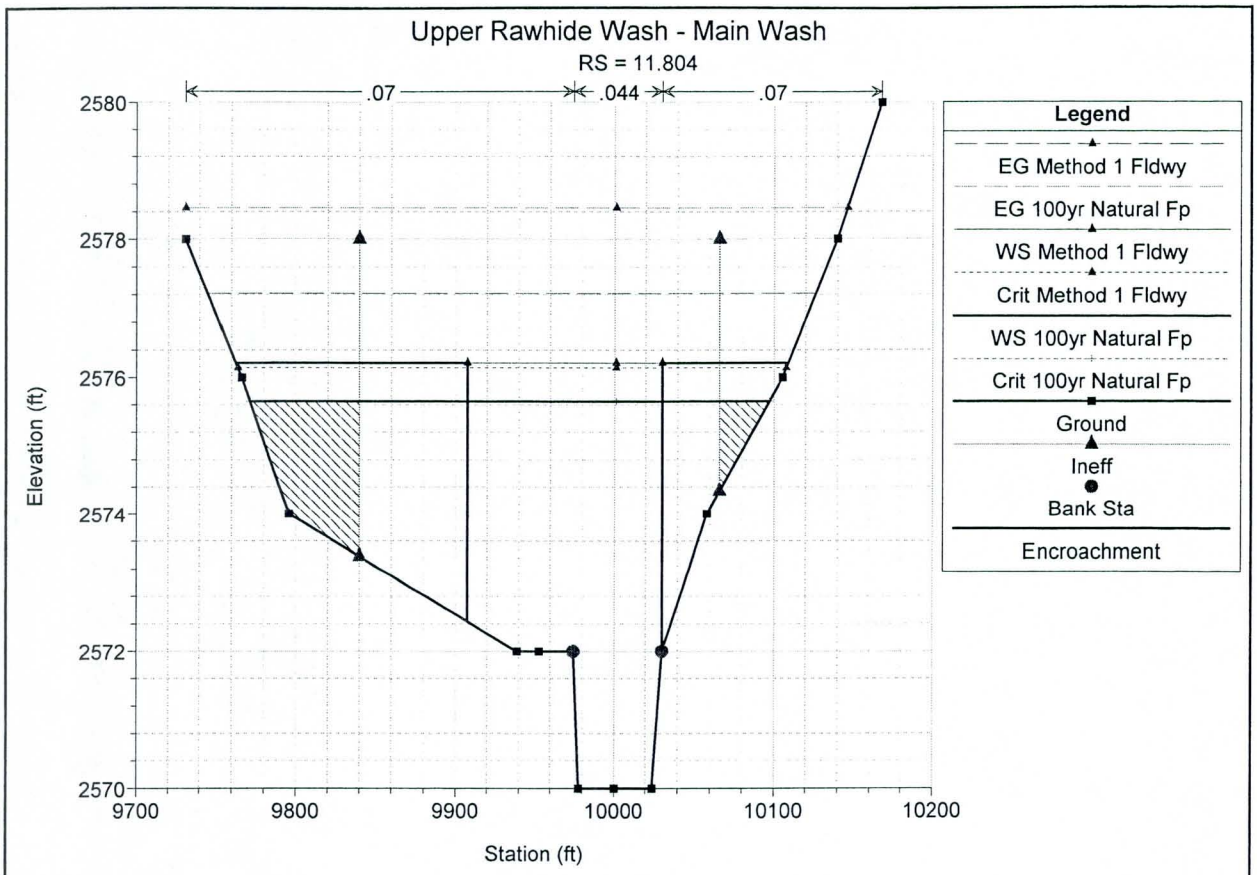

Upper Rawhide Wash - Main Wash
RS = 12.132
.07
.05
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Ineff
Bank Sta
Encroachment

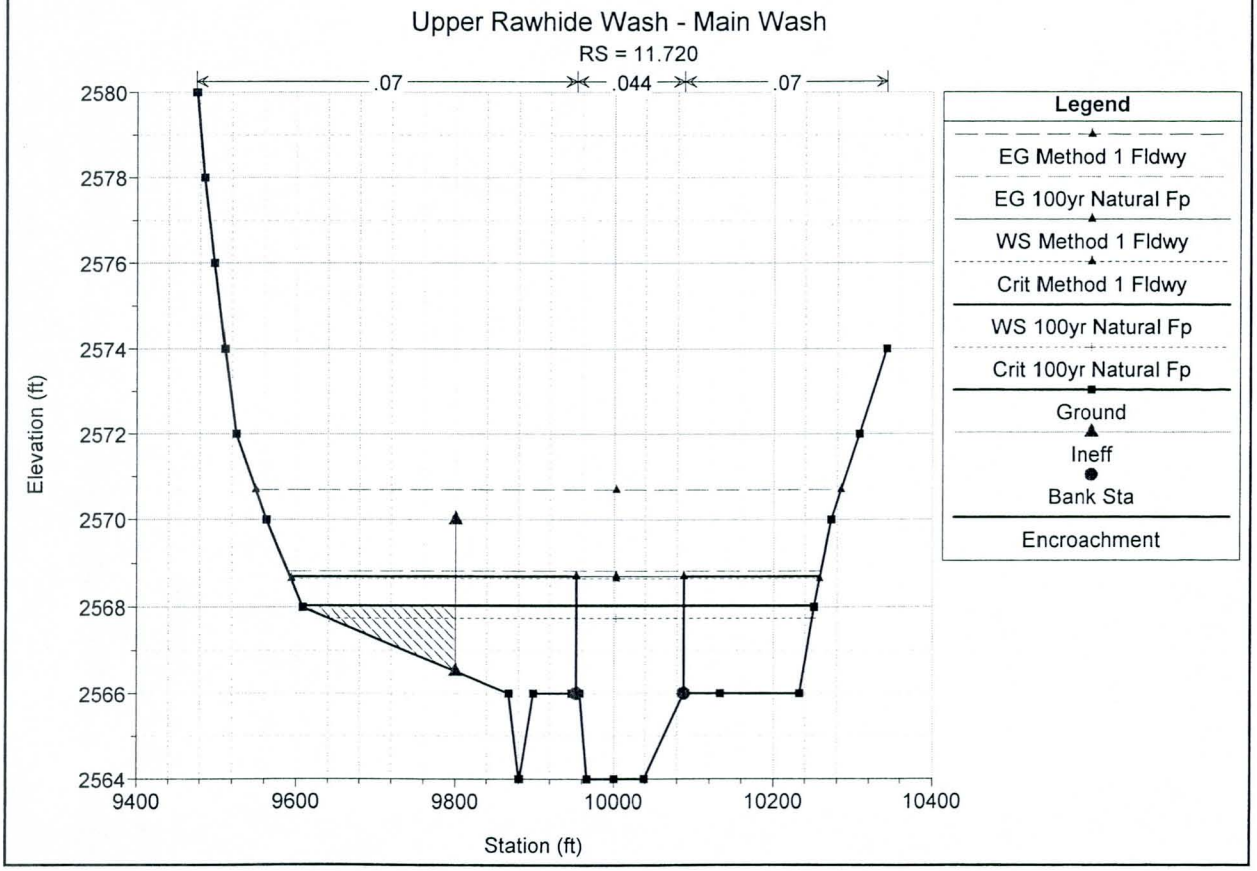

Upper Rawhide Wash - Main Wash
RS = 12.067
.07
.05
.07
Elevation (ft)
Station (ft)
2610
2605
2600
2595
2590
9400
9600
9800
10000
10200
10400
10600
10800
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Ineff
Bank Sta
Encroachment

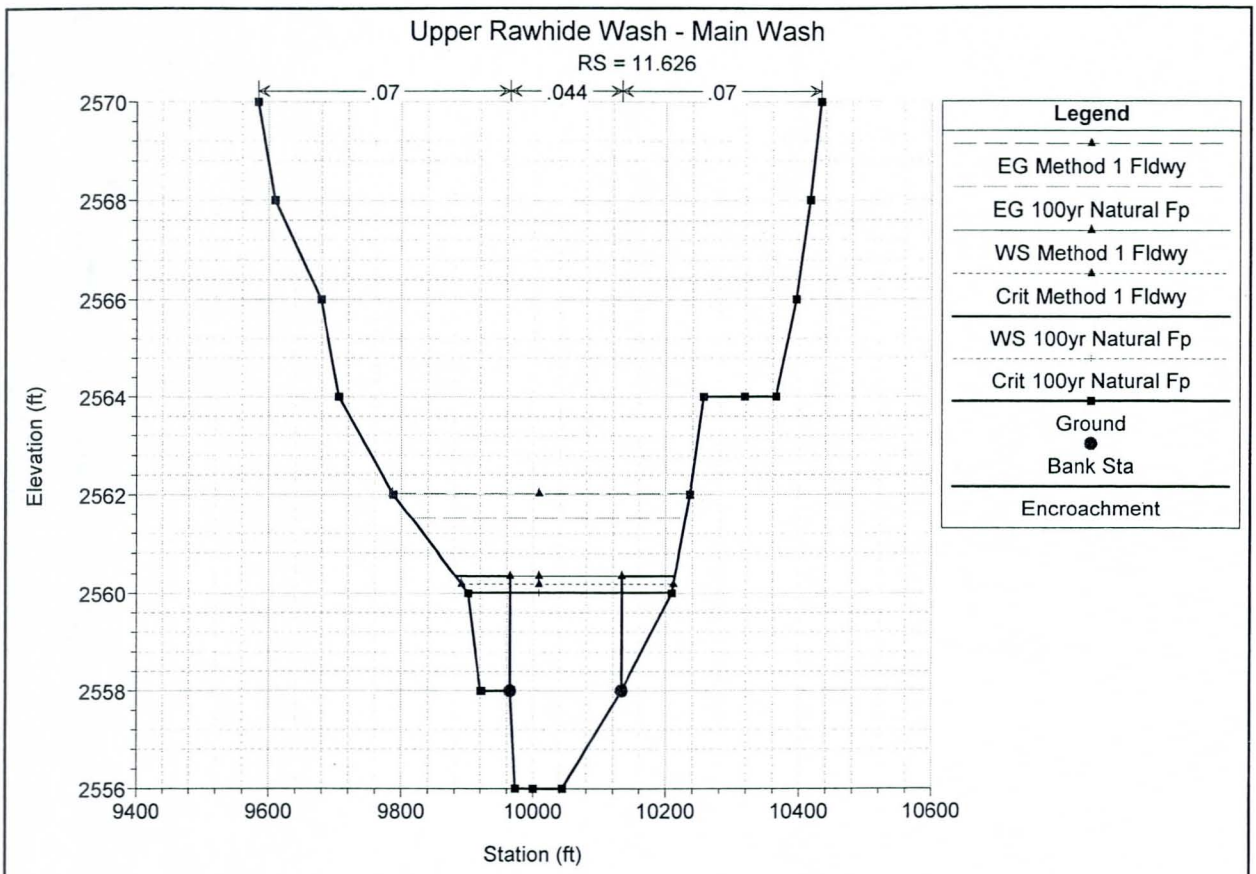

Upper Rawhide Wash - Main Wash
RS = 11.992
.07
.044
.07
Elevation (ft)
Station (ft)
2594
2592
2590
2588
2586
9500
9600
9700
9800
9900
10000
10100
10200
10300
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Ineff
Bank Sta
Encroachment

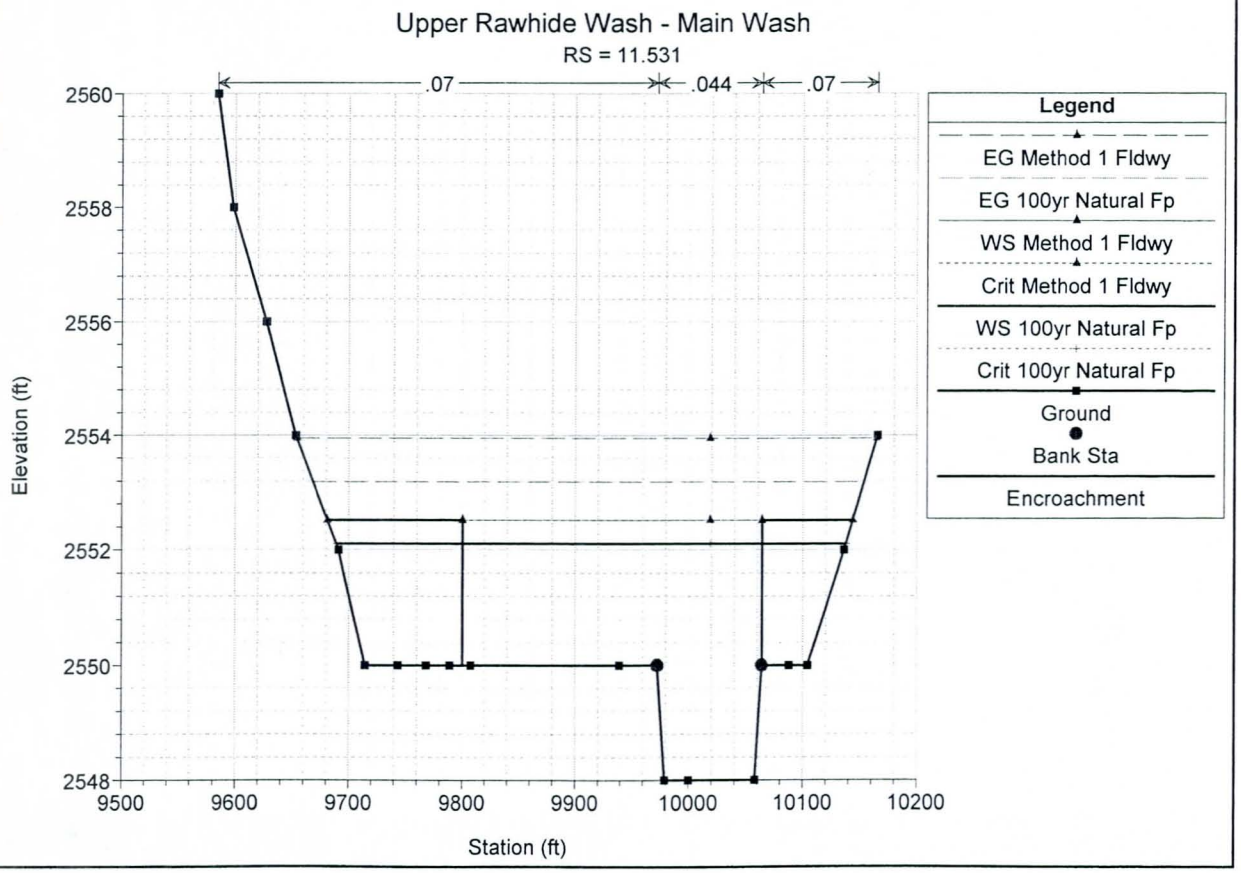

Upper Rawhide Wash - Main Wash
RS = 11.908
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

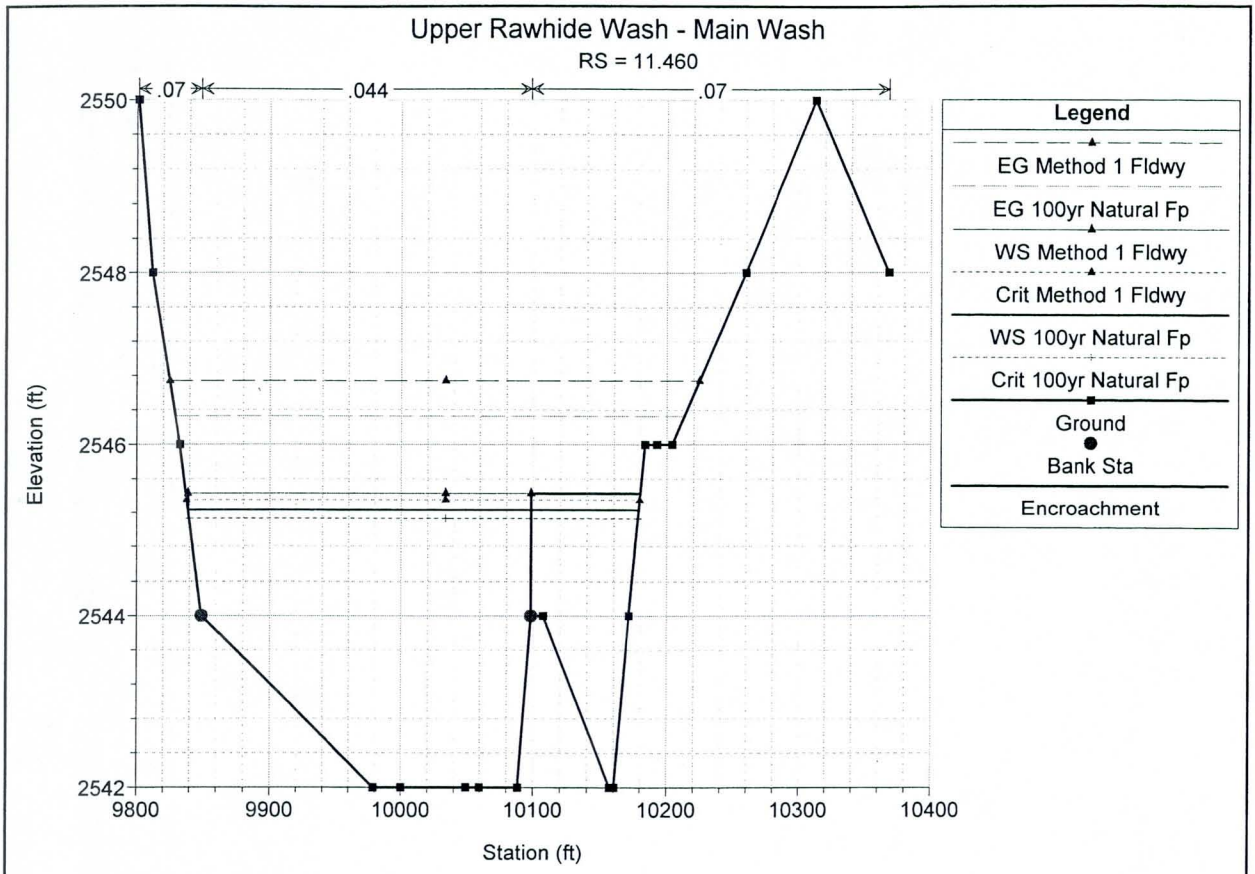

Upper Rawhide Wash - Main Wash
RS = 11.862
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

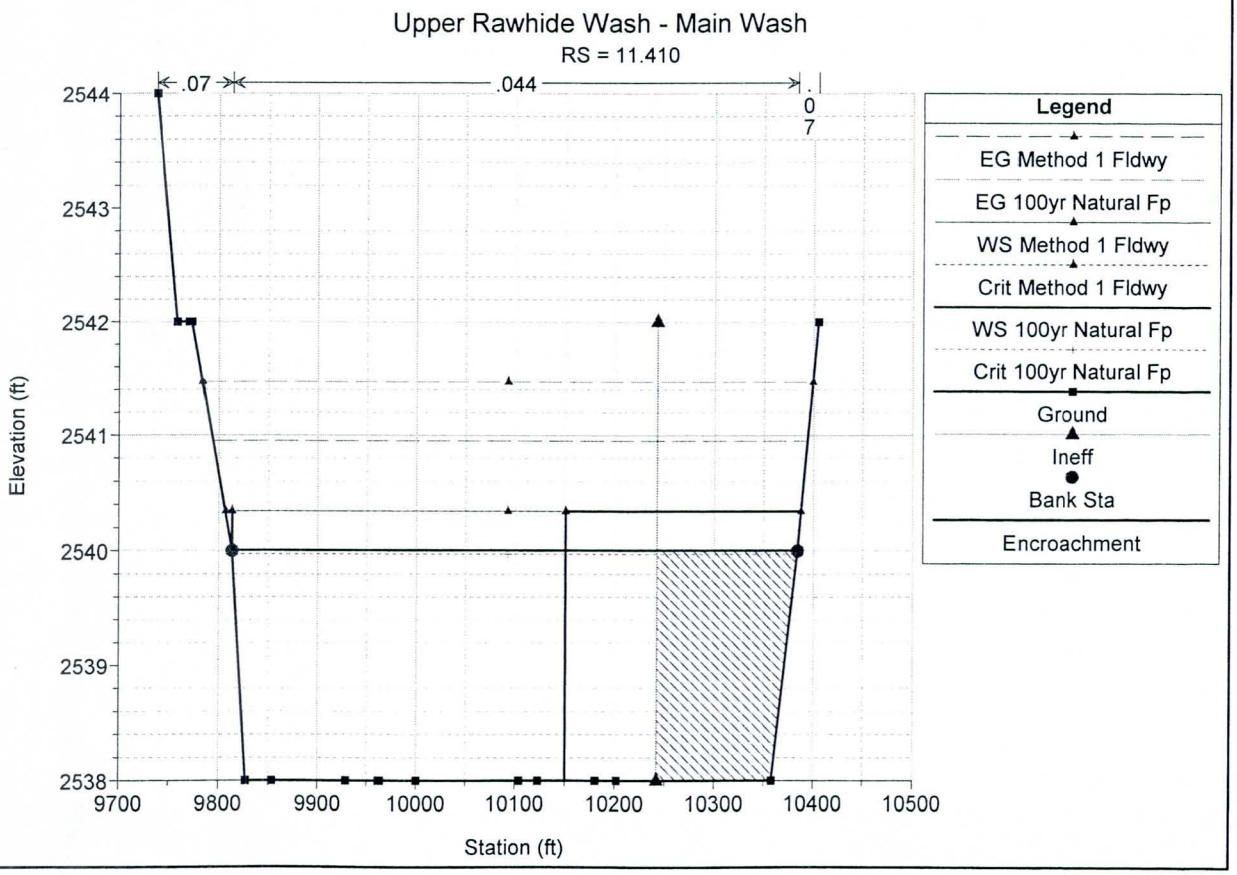

Upper Rawhide Wash - Main Wash
RS = 11.804
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Ineff
Bank Sta
Encroachment

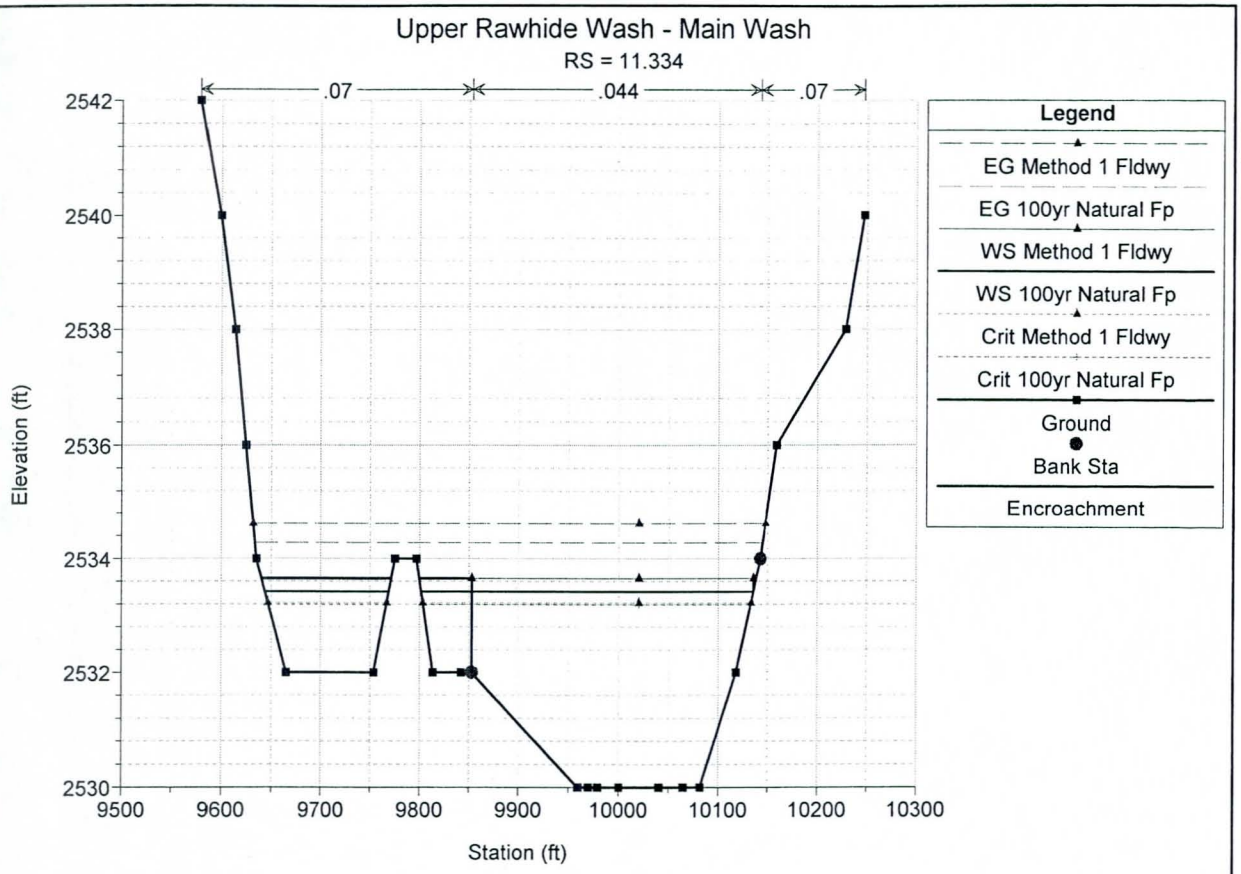

Upper Rawhide Wash - Main Wash
RS = 11.720
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Ineff
Bank Sta
Encroachment

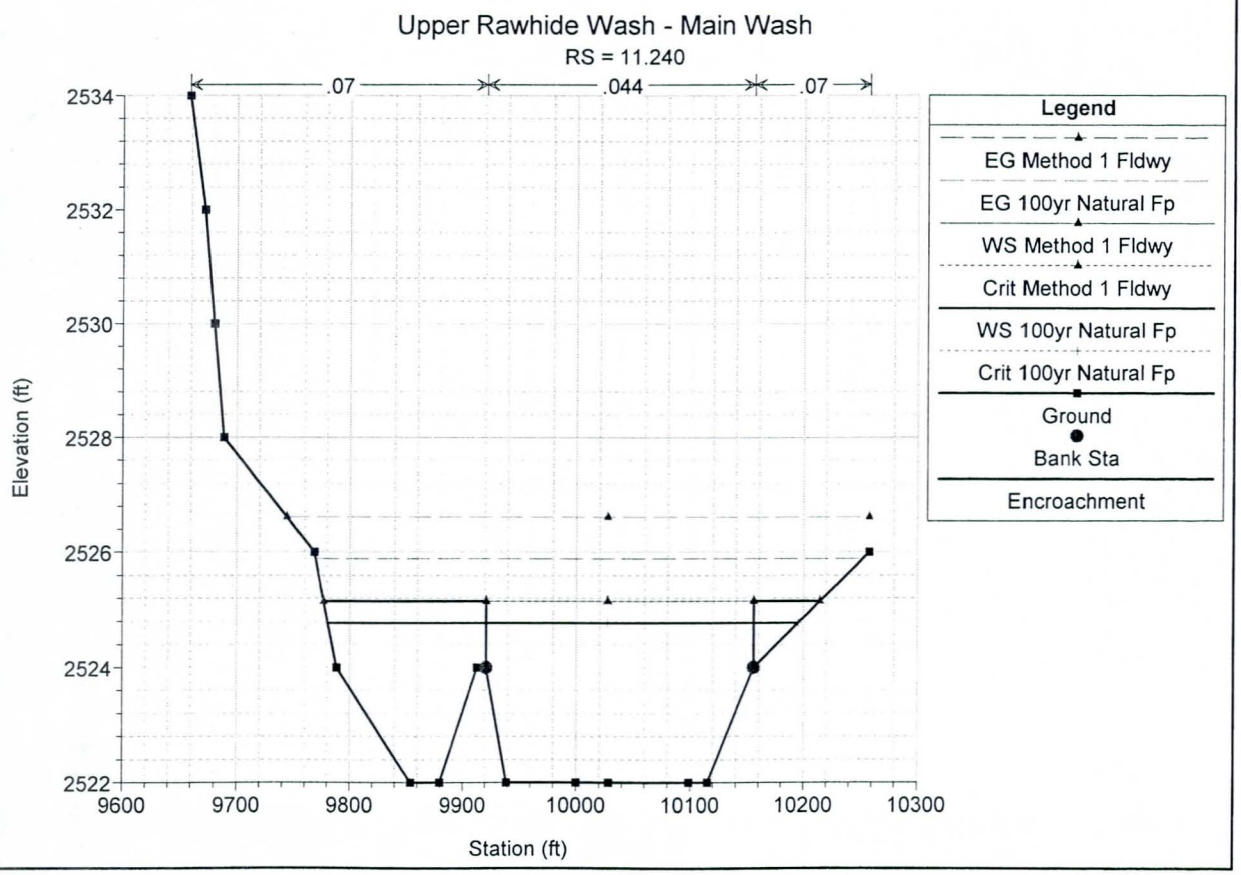

Upper Rawhide Wash - Main Wash
RS = 11.626
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

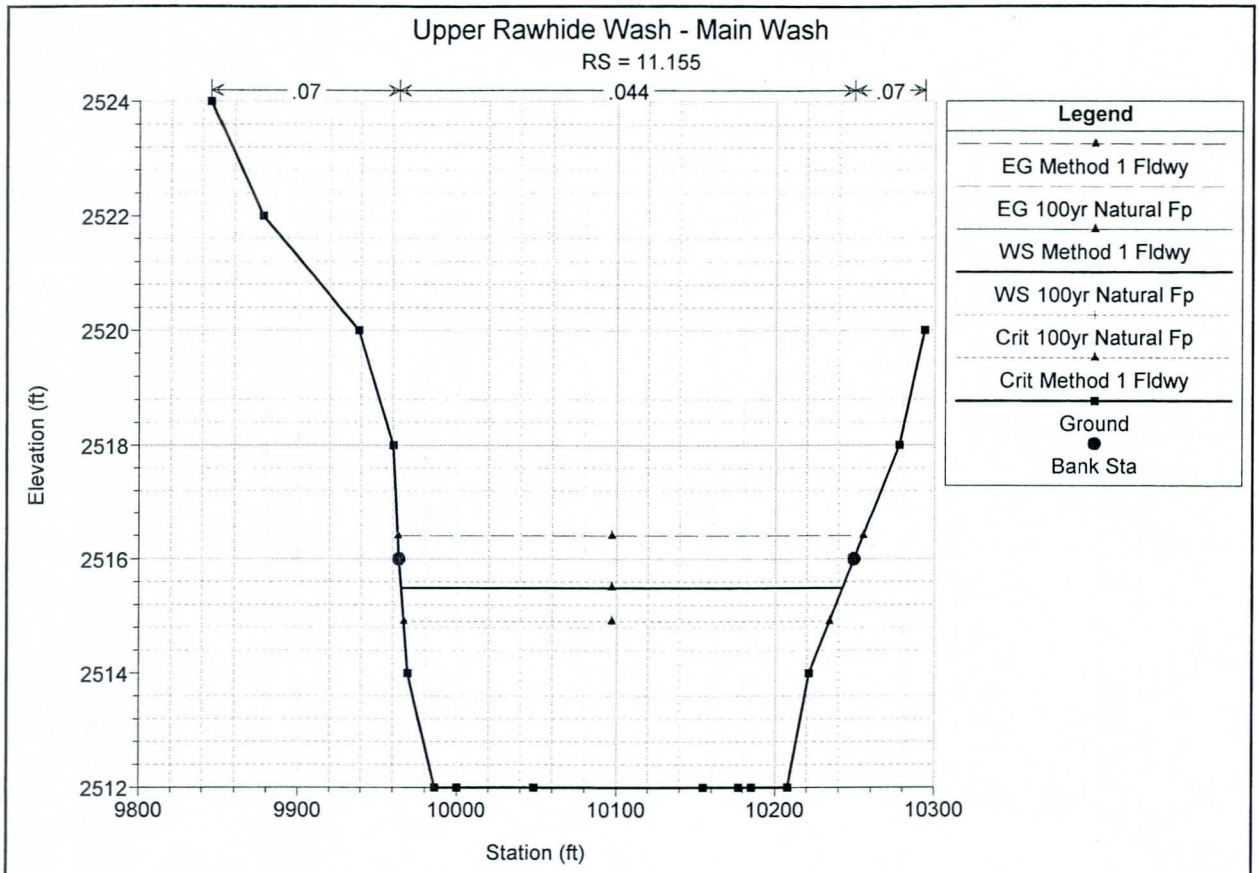

Upper Rawhide Wash - Main Wash
RS = 11.531
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

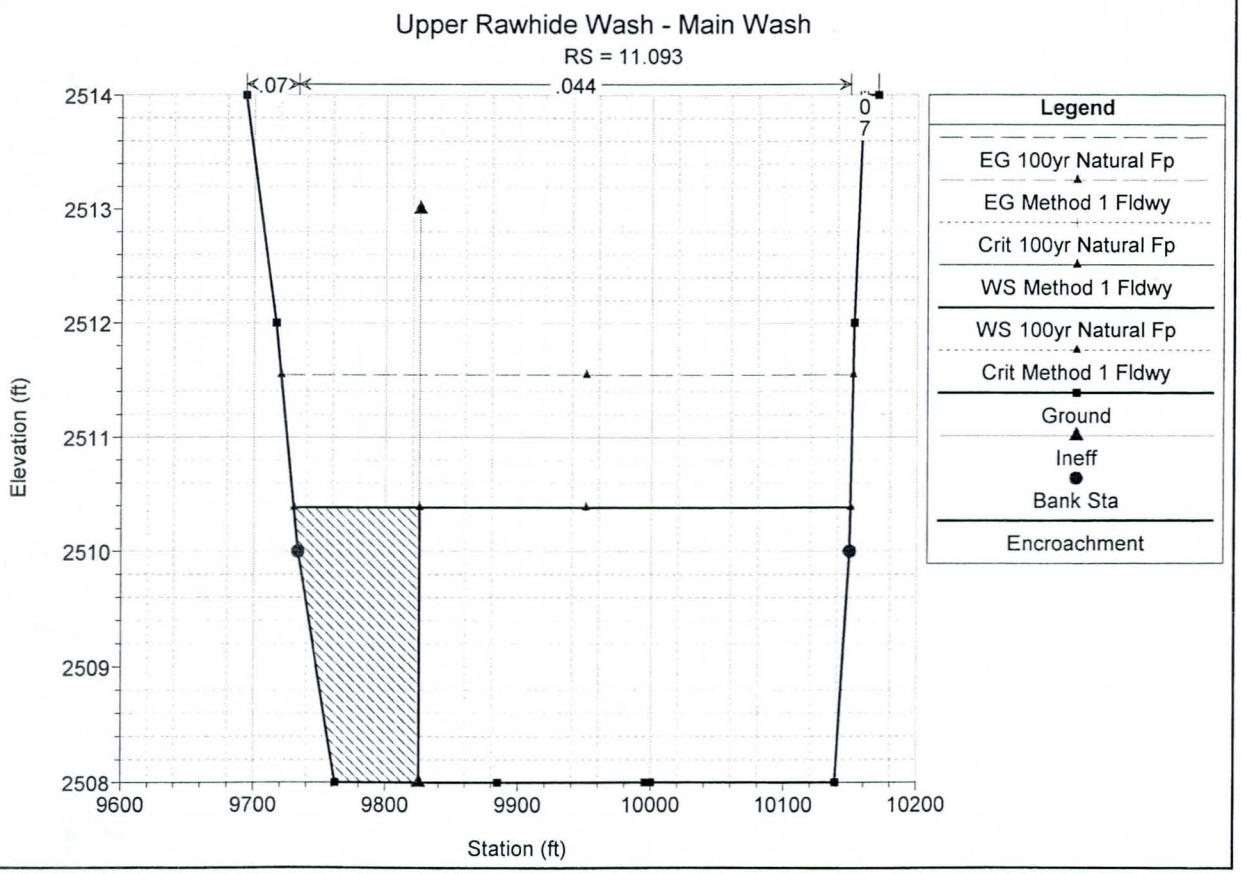

Upper Rawhide Wash - Main Wash
RS = 11.460
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

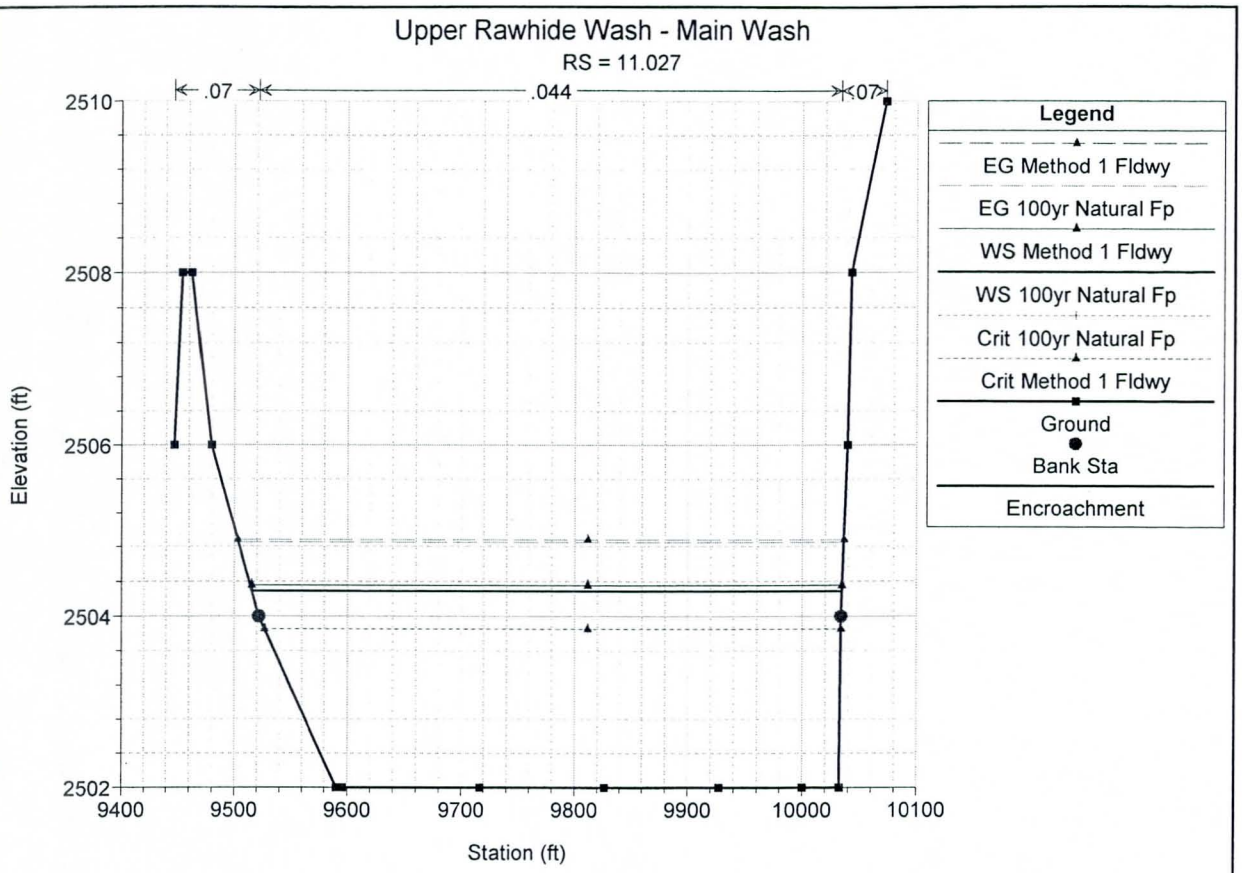

Upper Rawhide Wash - Main Wash
RS = 11.410
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Ineff
Bank Sta
Encroachment

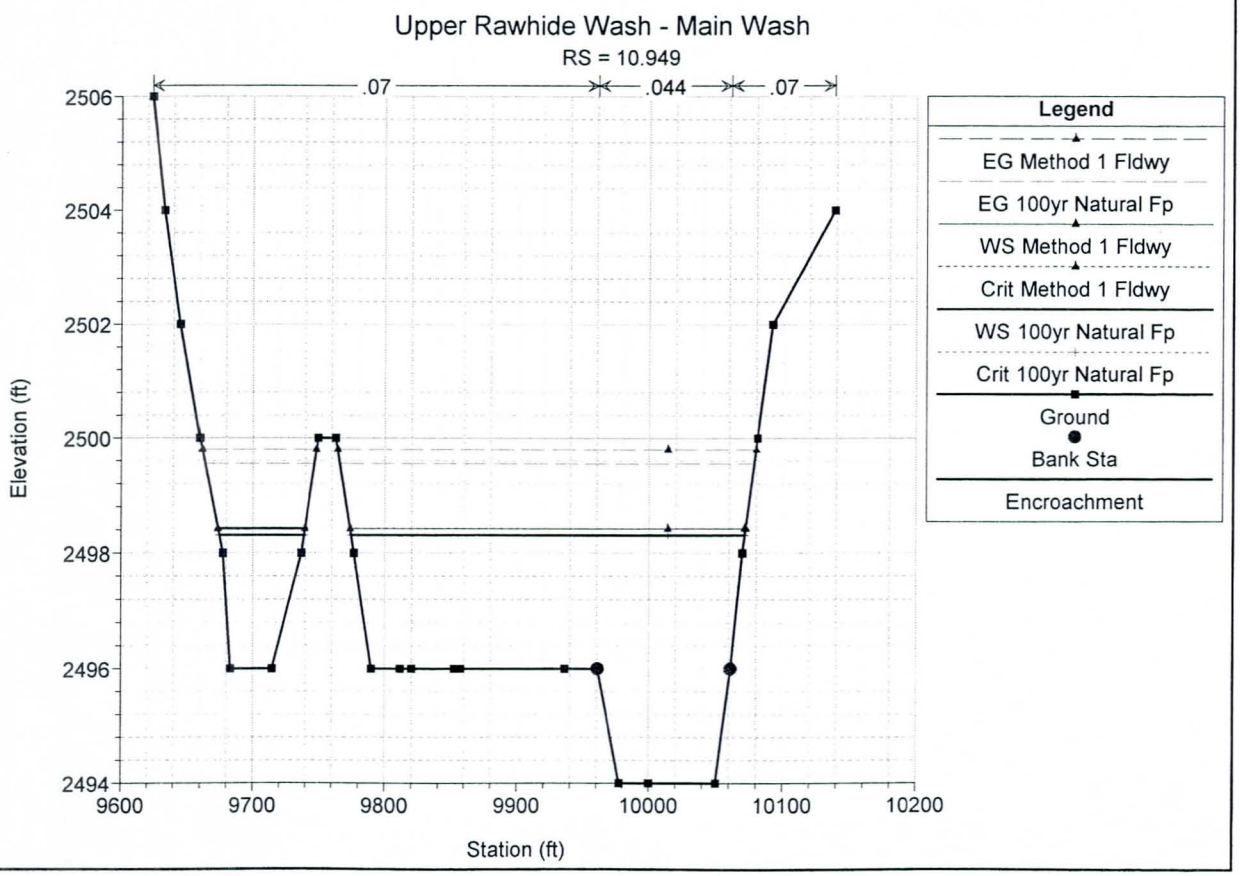

Upper Rawhide Wash - Main Wash
RS = 11.334
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

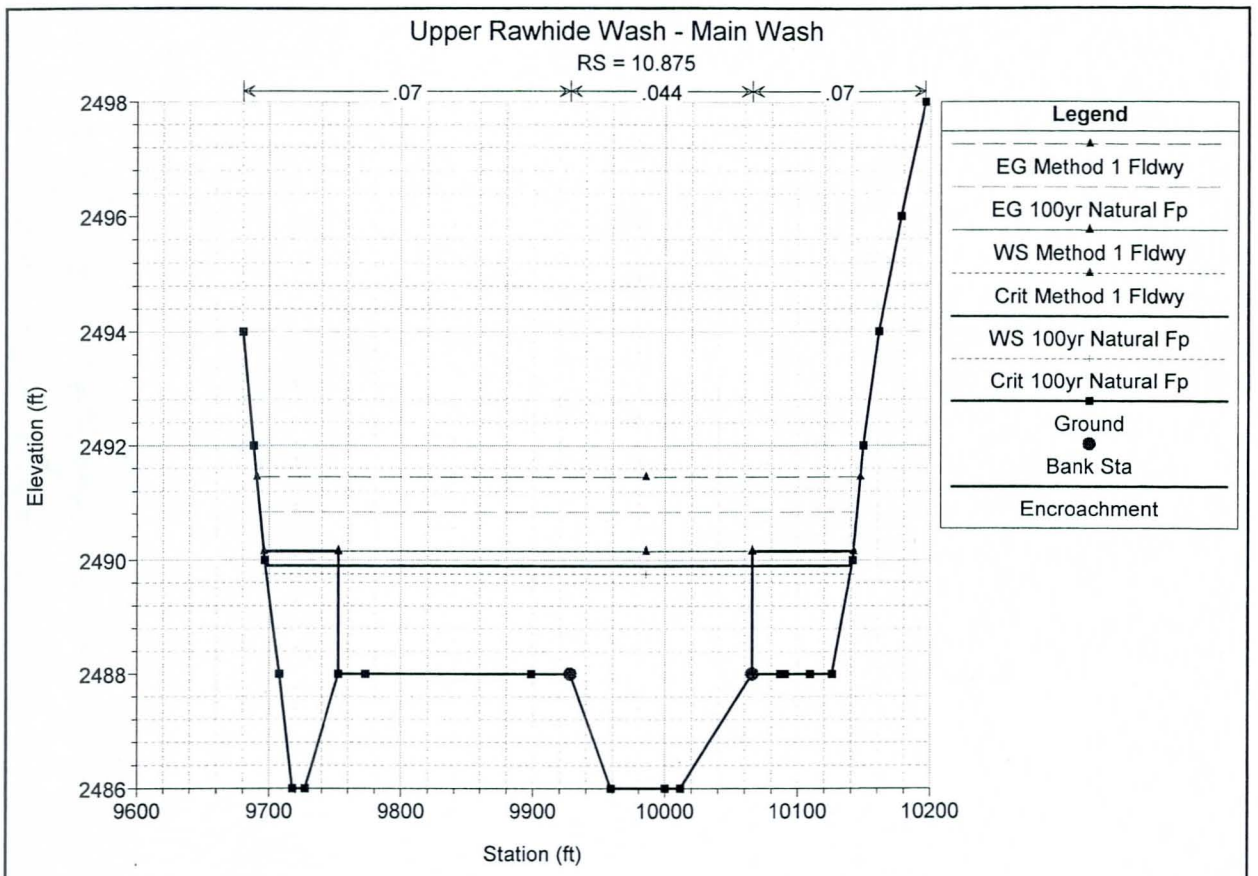

Upper Rawhide Wash - Main Wash
RS = 11.240
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

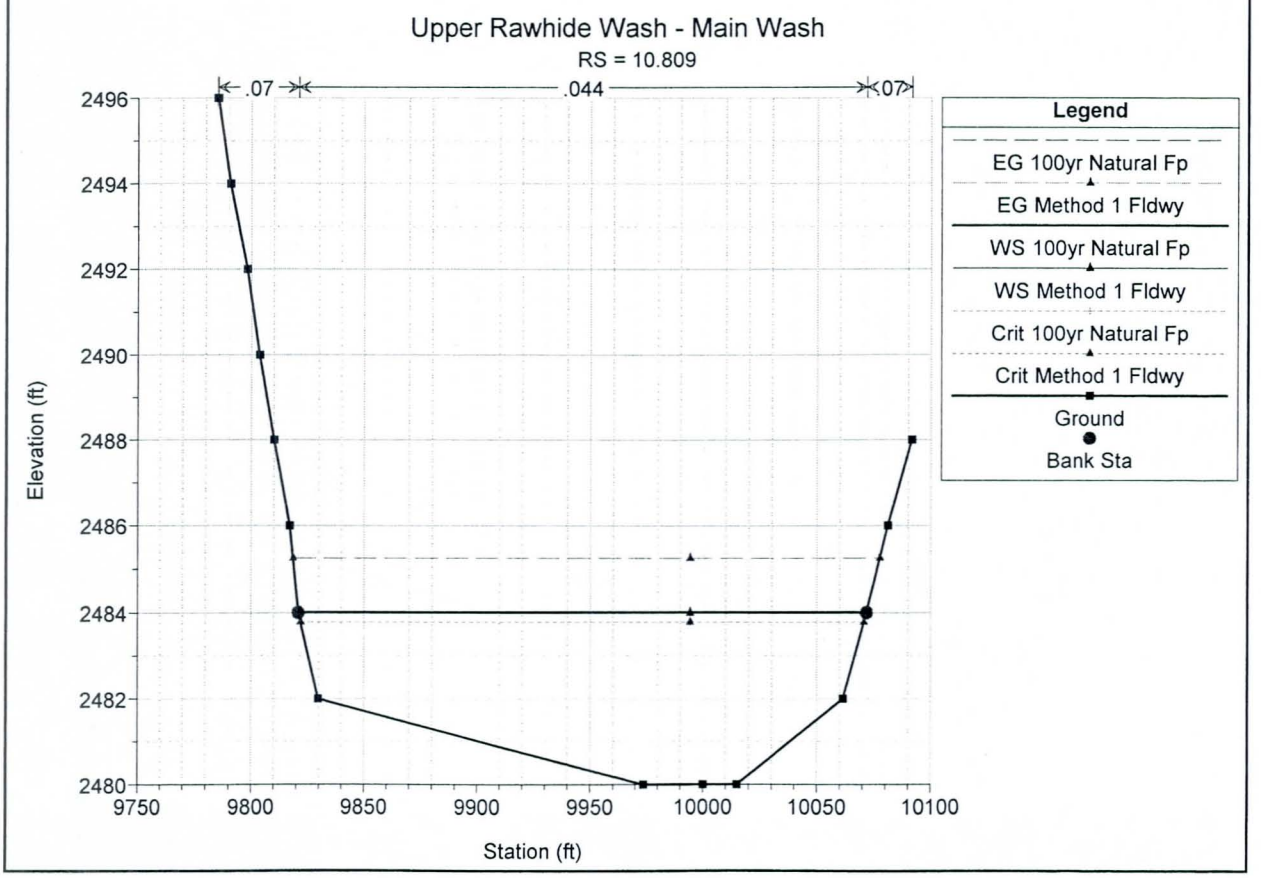

Upper Rawhide Wash - Main Wash
RS = 11.155
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

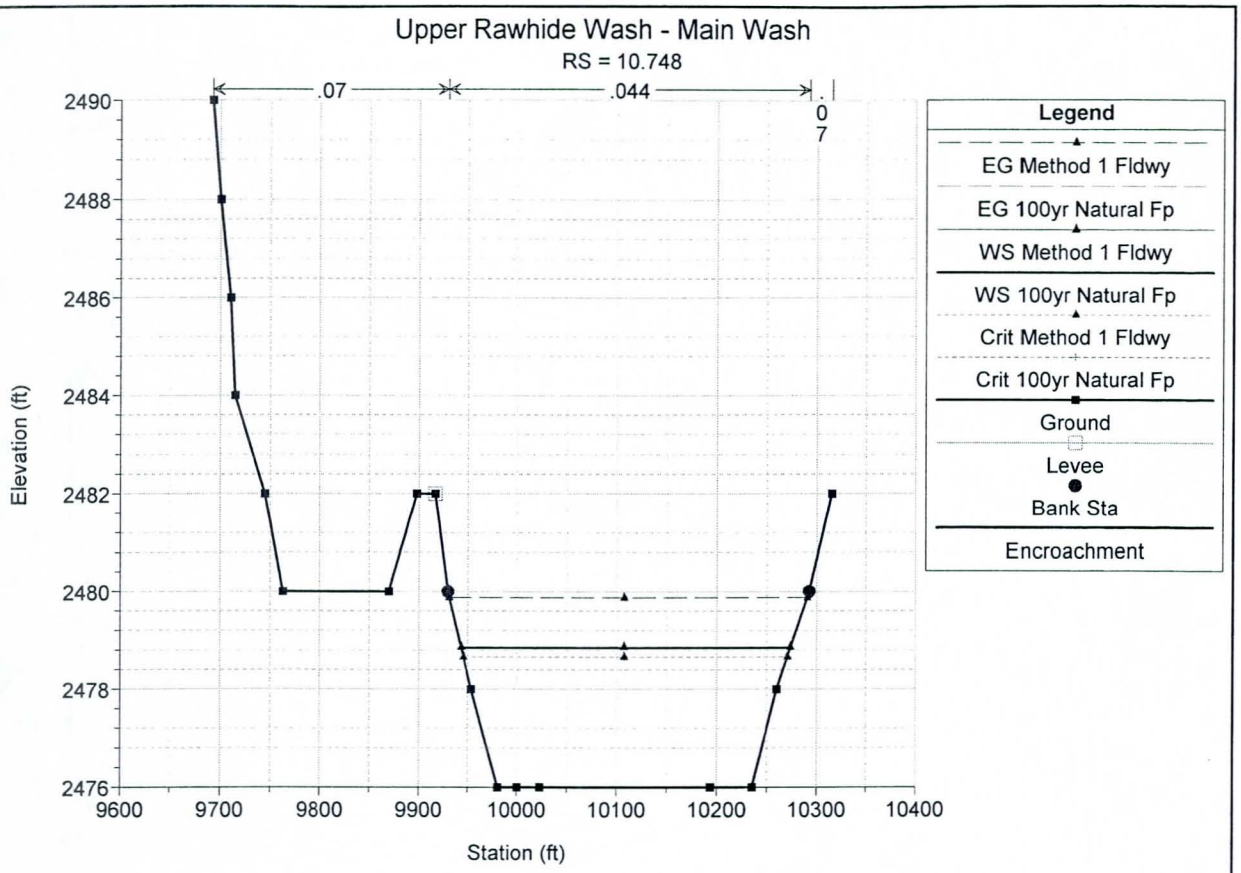

Upper Rawhide Wash - Main Wash
RS = 11.093
.07
.044
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

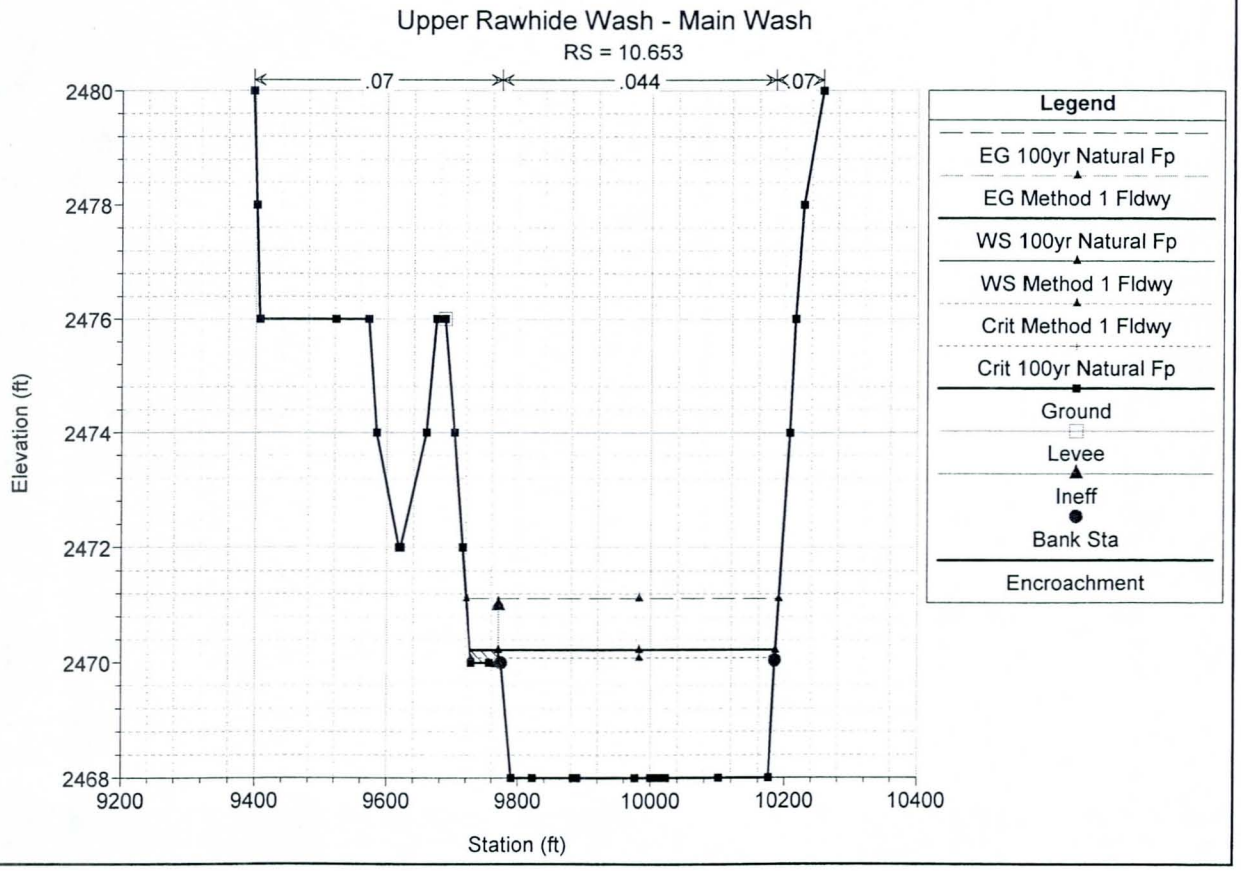

Upper Rawhide Wash - Main Wash
RS = 11.027
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

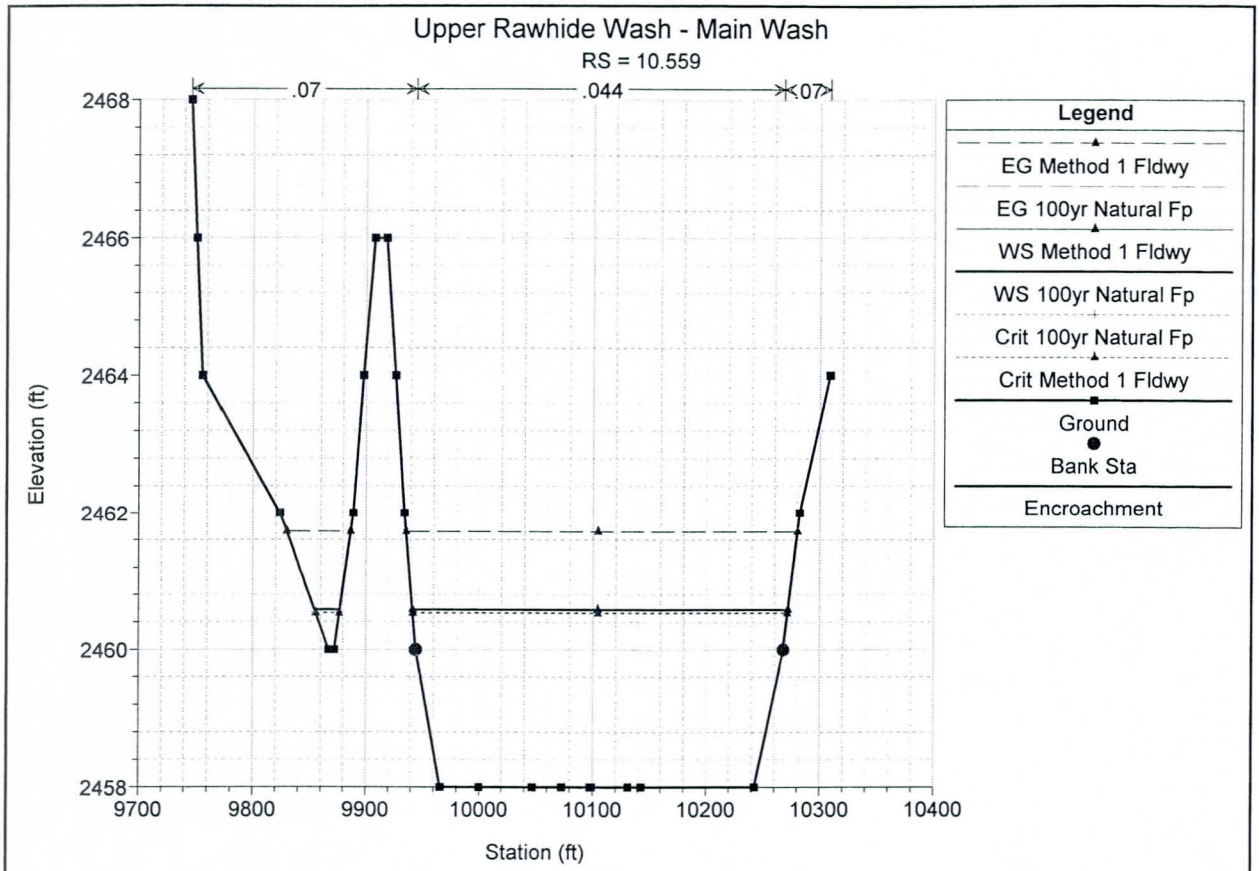

Upper Rawhide Wash - Main Wash
RS = 10.949
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

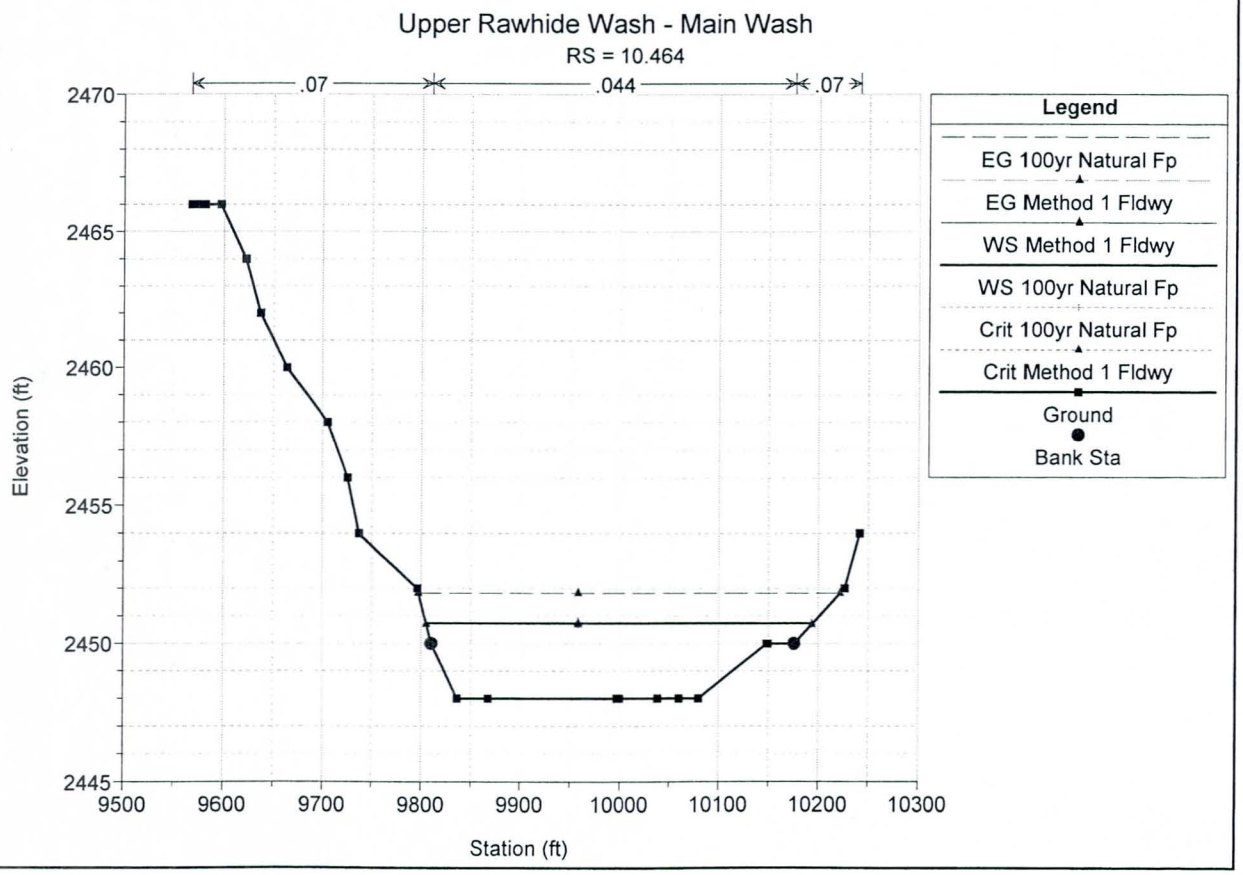

Upper Rawhide Wash - Main Wash
RS = 10.875
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

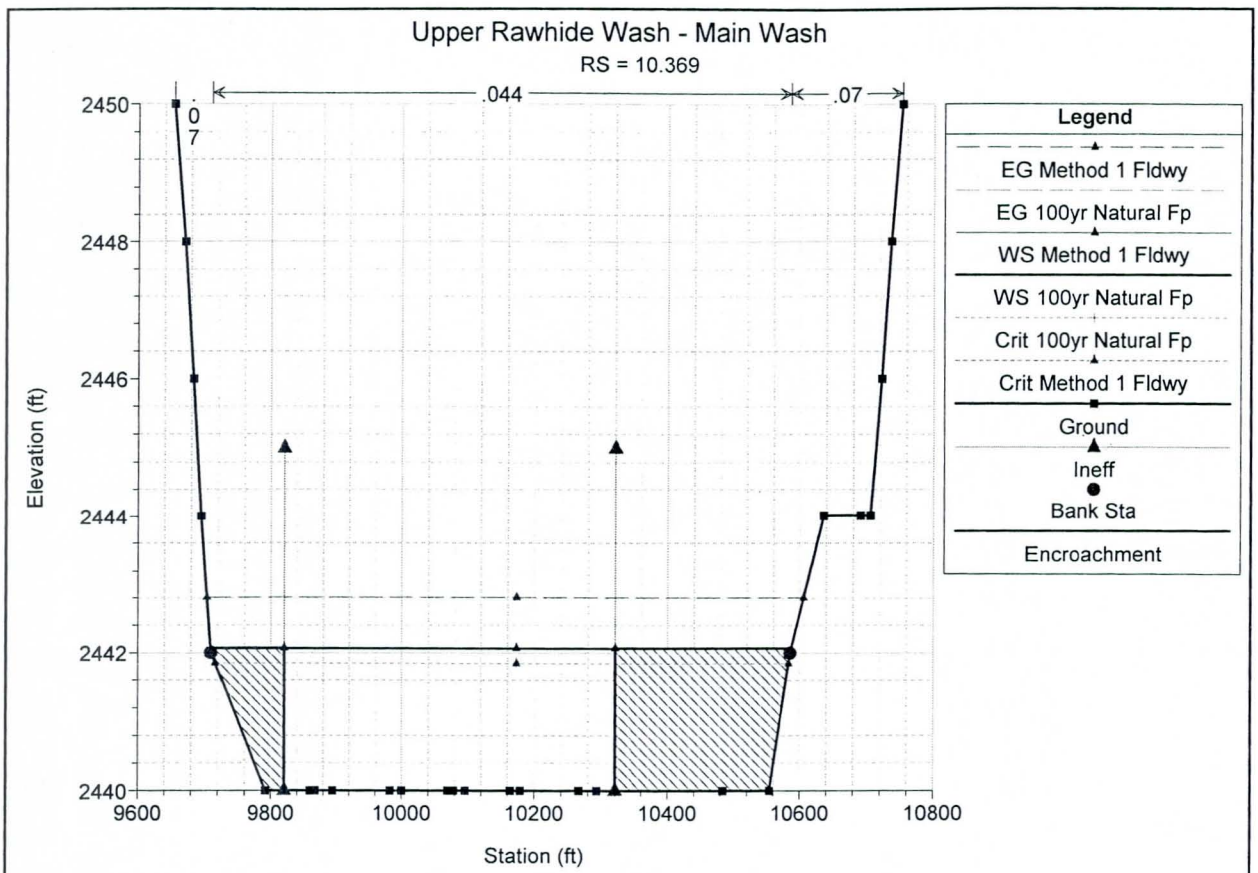

Upper Rawhide Wash - Main Wash
RS = 10.809
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

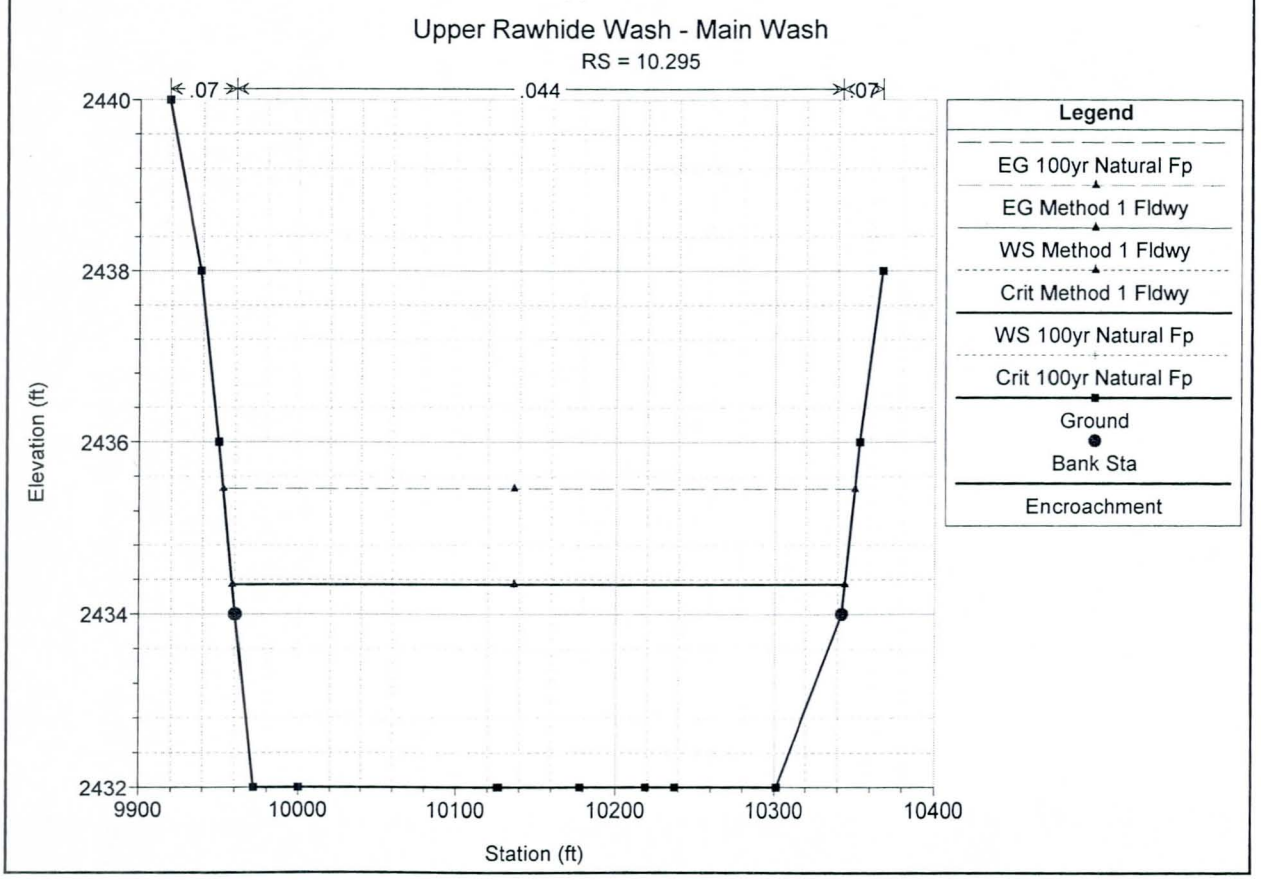

Upper Rawhide Wash - Main Wash
RS = 10.748
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

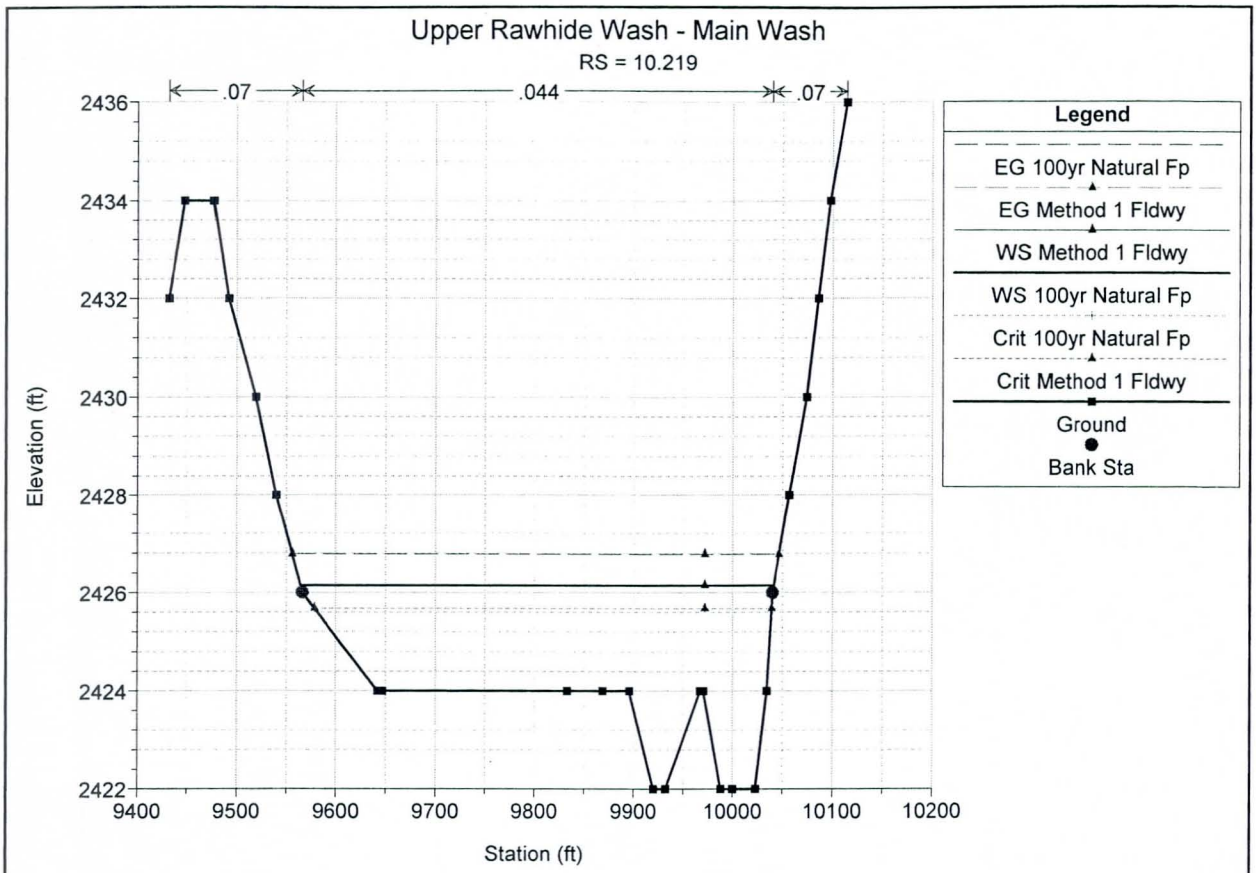

Upper Rawhide Wash - Main Wash
RS = 10.653
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Ineff
Bank Sta
Encroachment

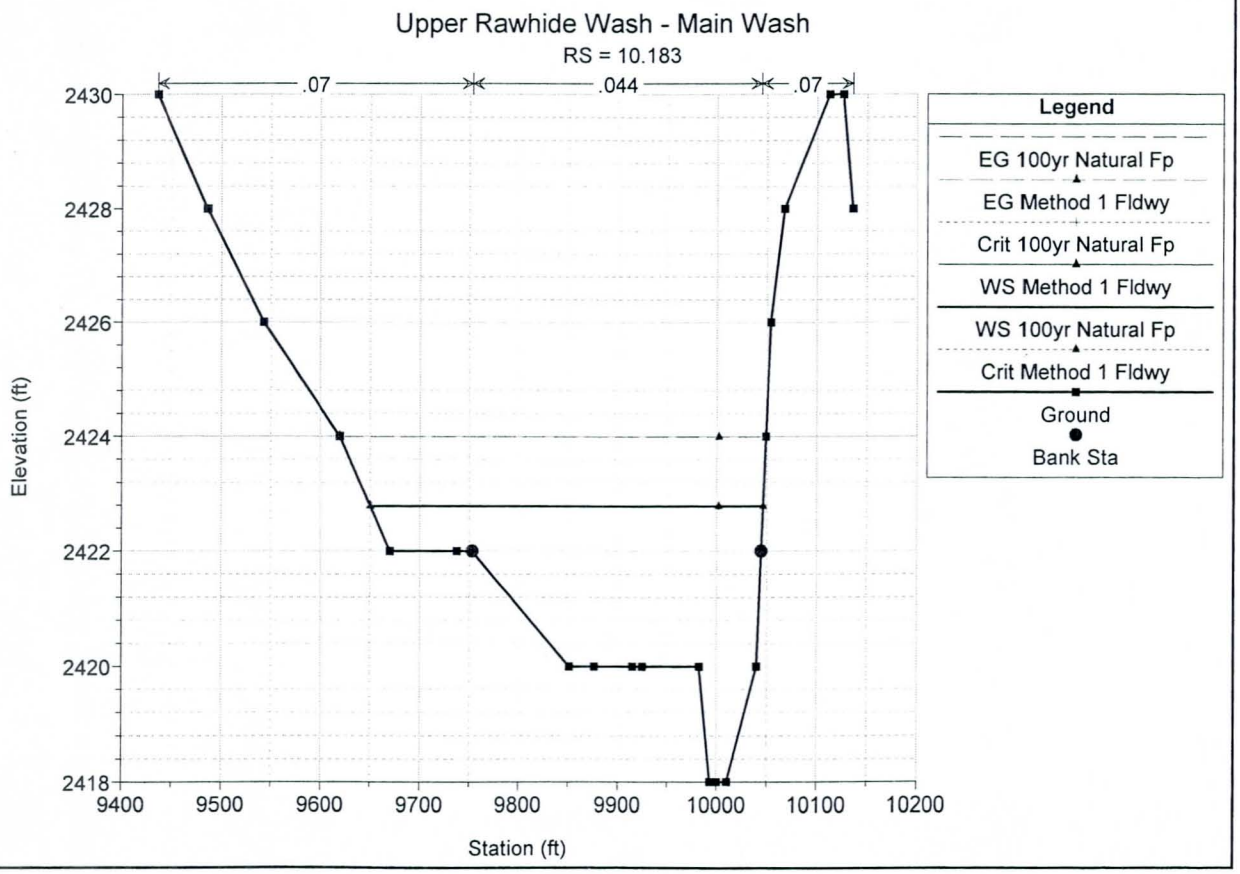

Upper Rawhide Wash - Main Wash
RS = 10.559
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

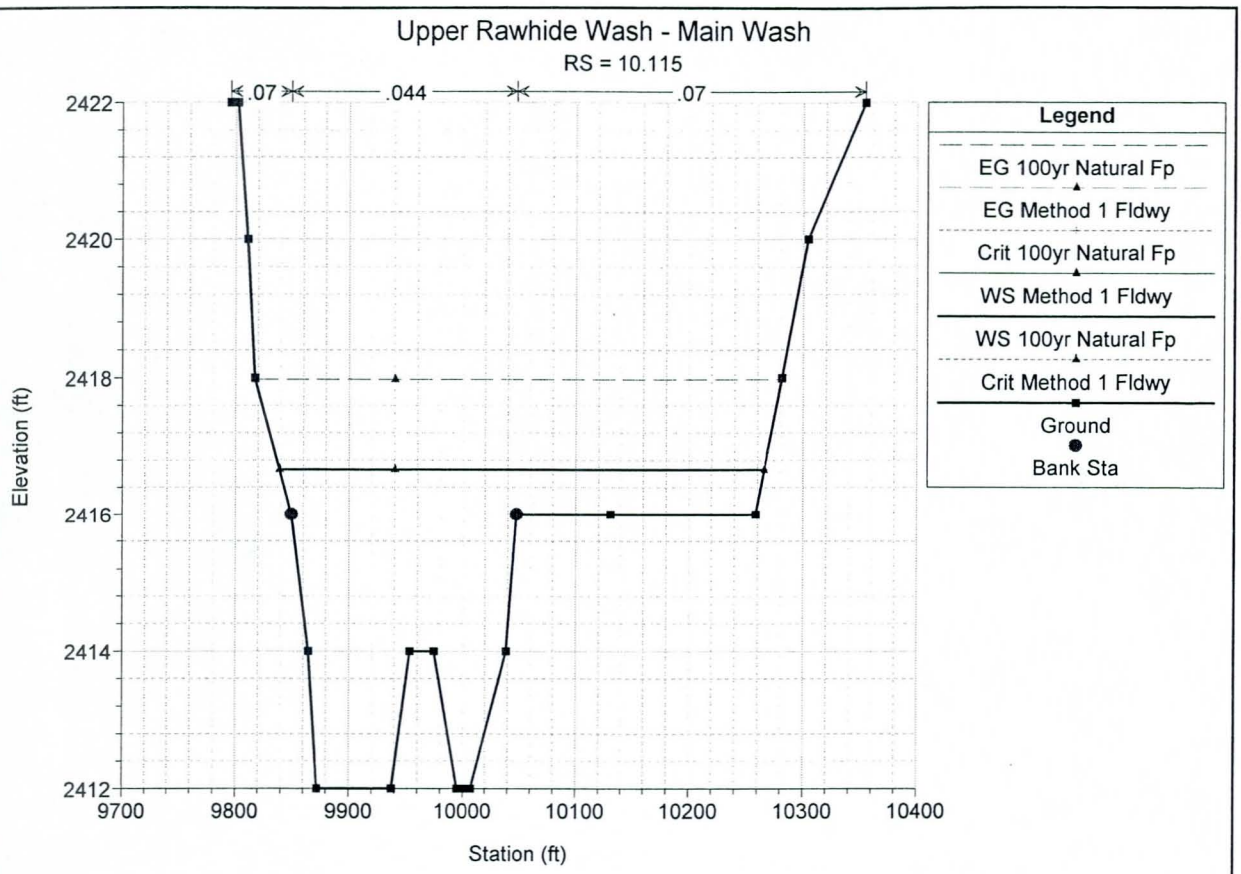

Upper Rawhide Wash - Main Wash
RS = 10.464
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

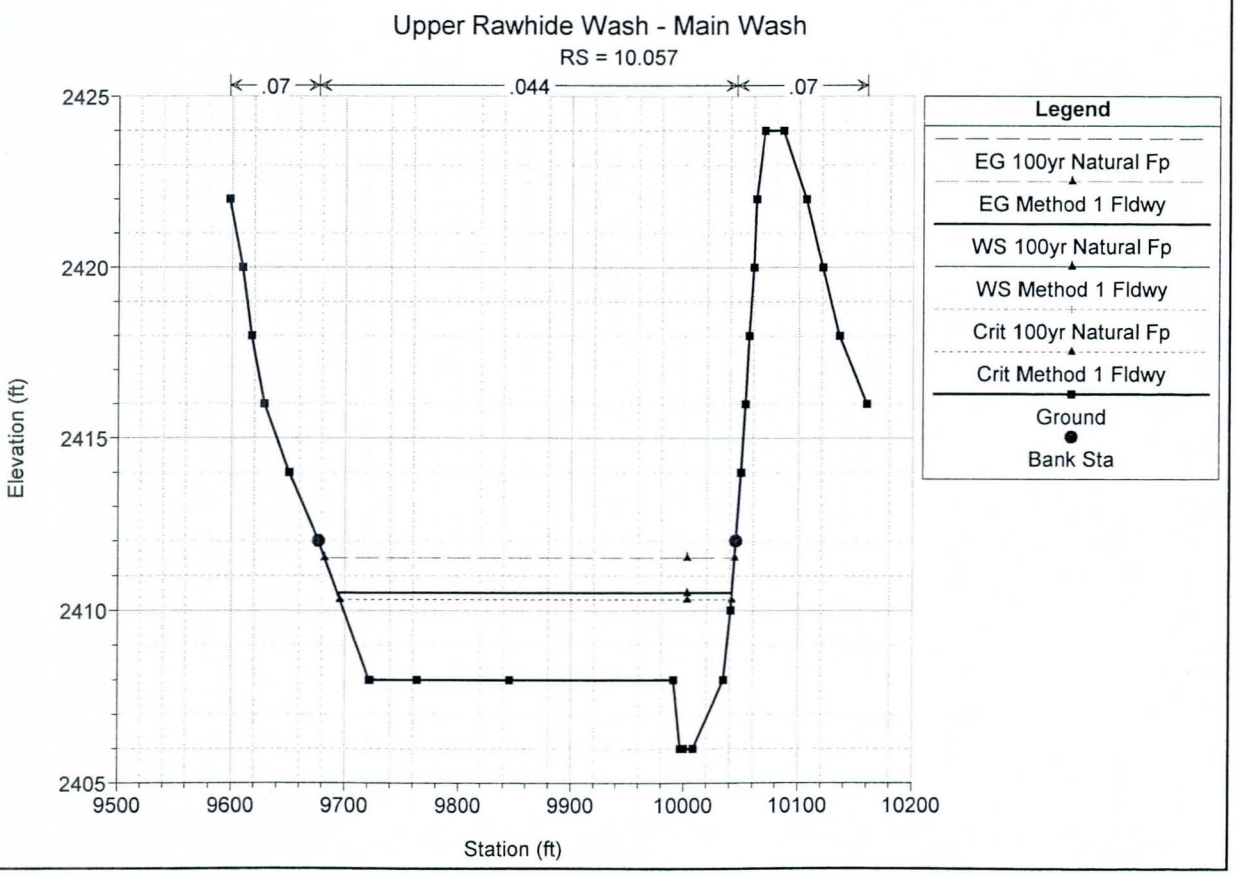

Upper Rawhide Wash - Main Wash
RS = 10.369
.07
.044
.07
Elevation (ft)
Station (ft)
2450
2448
2446
2444
2442
2440
9600
9800
10000
10200
10400
10600
10800
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

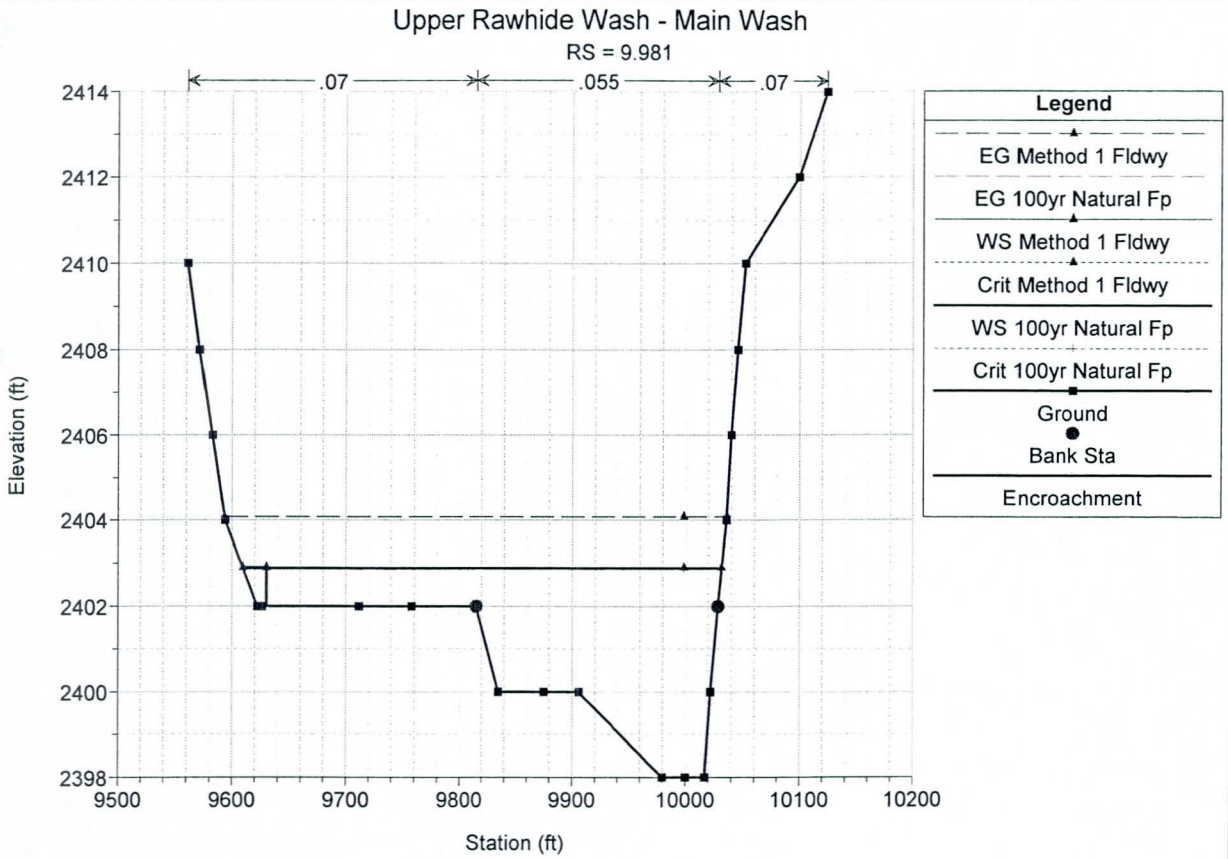

Upper Rawhide Wash - Main Wash
RS = 10.295
.07
.044
.07
Elevation (ft)
Station (ft)
2440
2438
2436
2434
2432
9900
10000
10100
10200
10300
10400
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

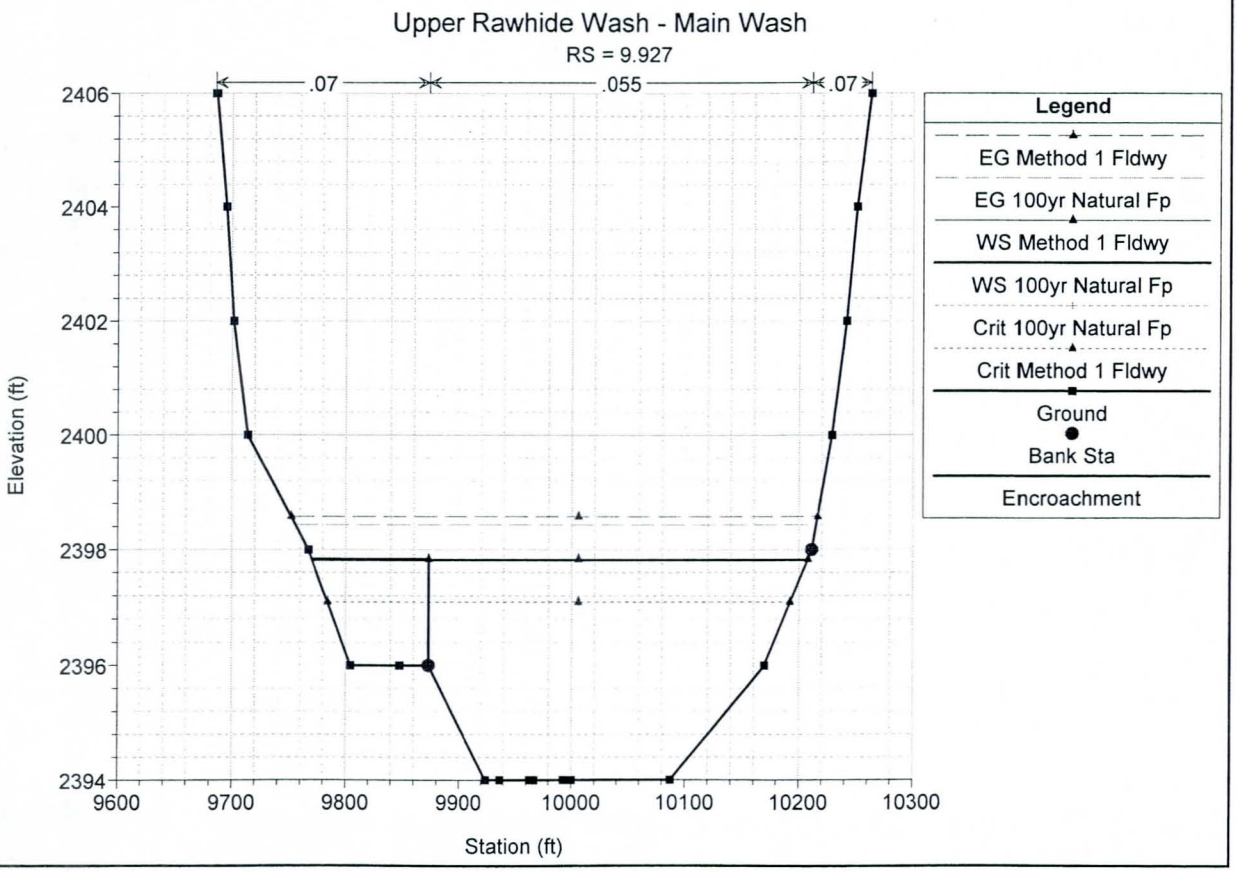

Upper Rawhide Wash - Main Wash
RS = 10.219
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

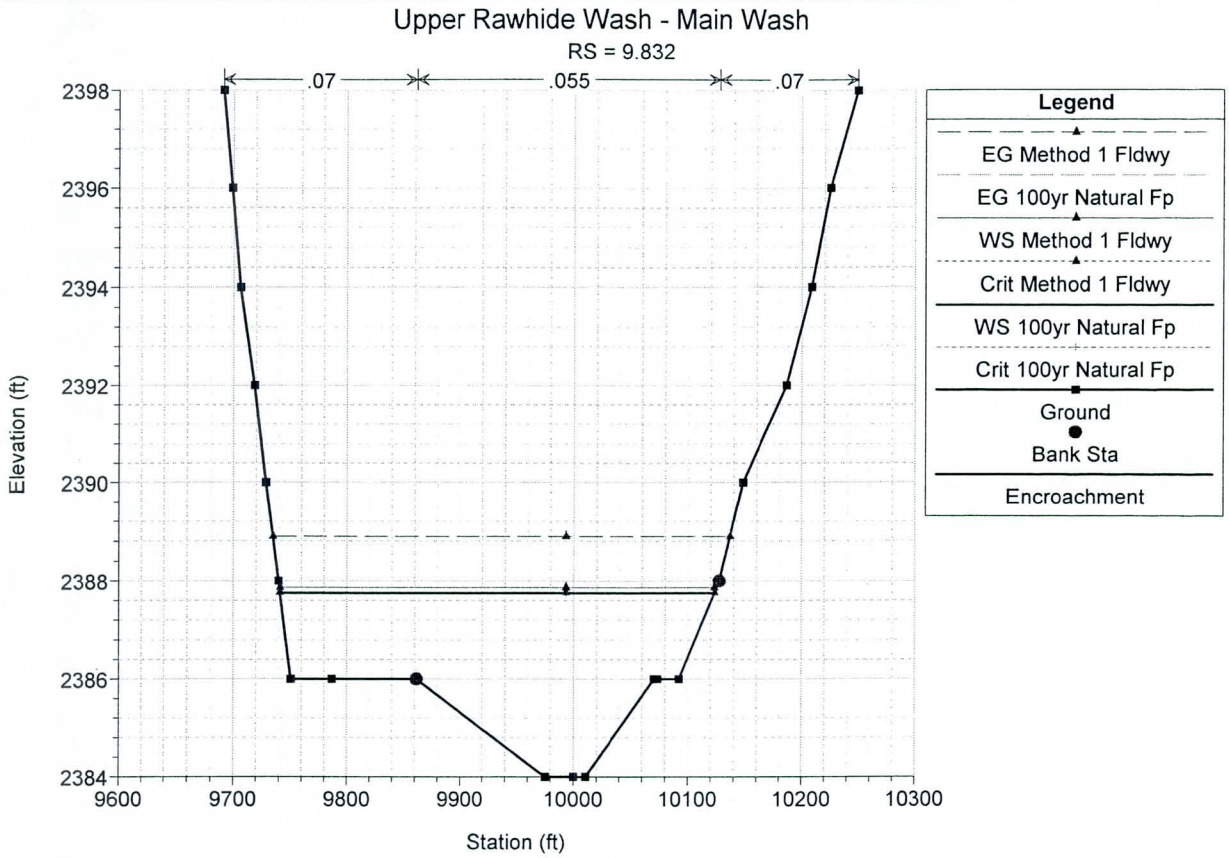

Upper Rawhide Wash - Main Wash
RS = 10.183
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

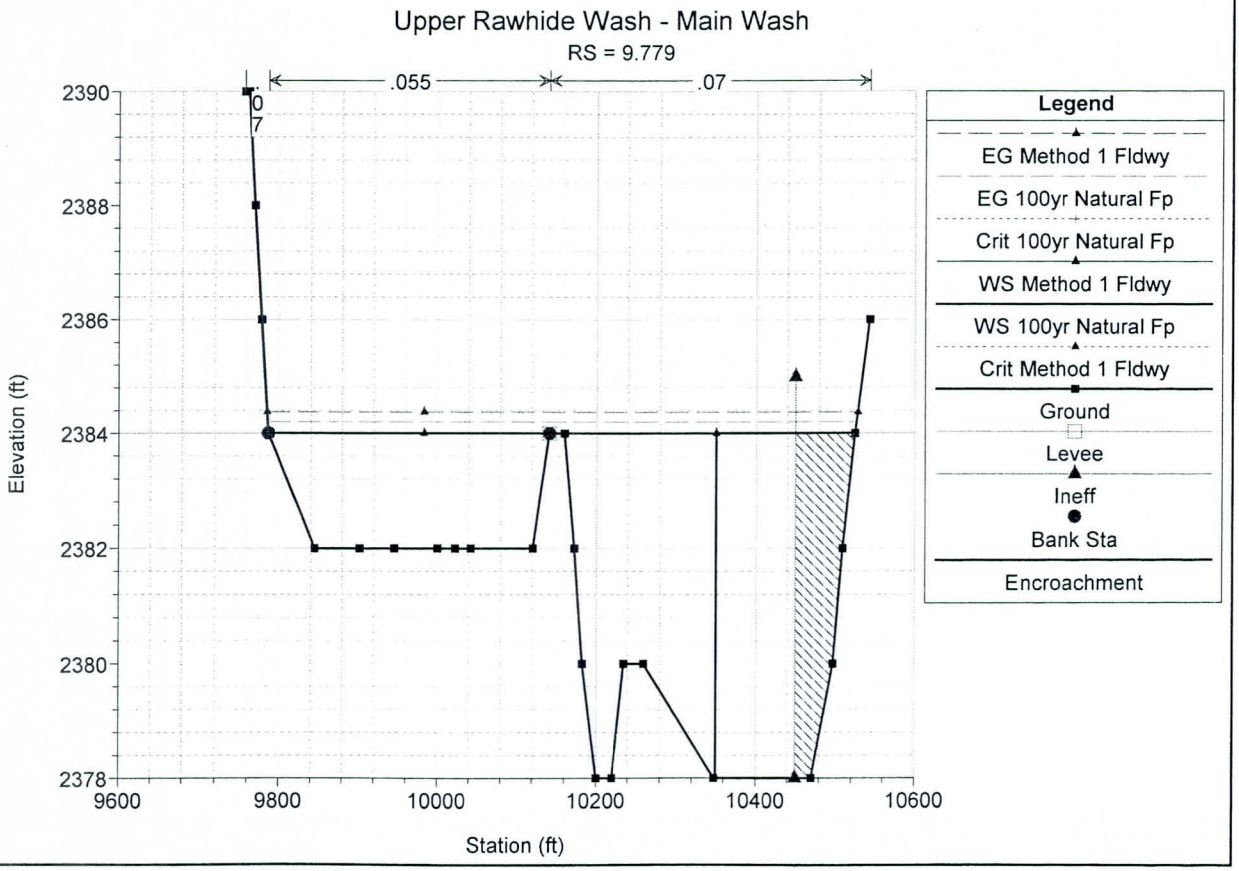

Upper Rawhide Wash - Main Wash
RS = 10.115
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

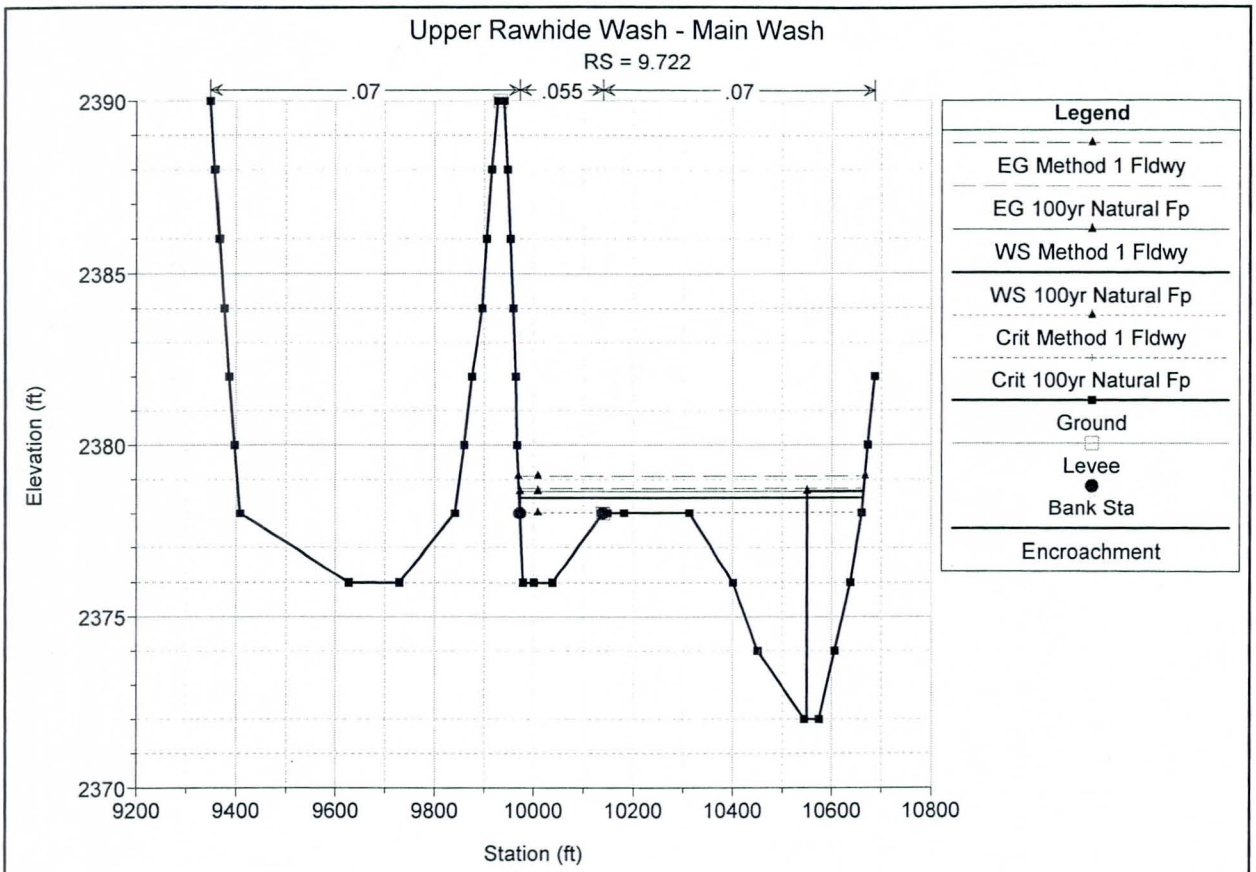

Upper Rawhide Wash - Main Wash
RS = 10.057
.07
.044
.07
Elevation (ft)
Station (ft)
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta

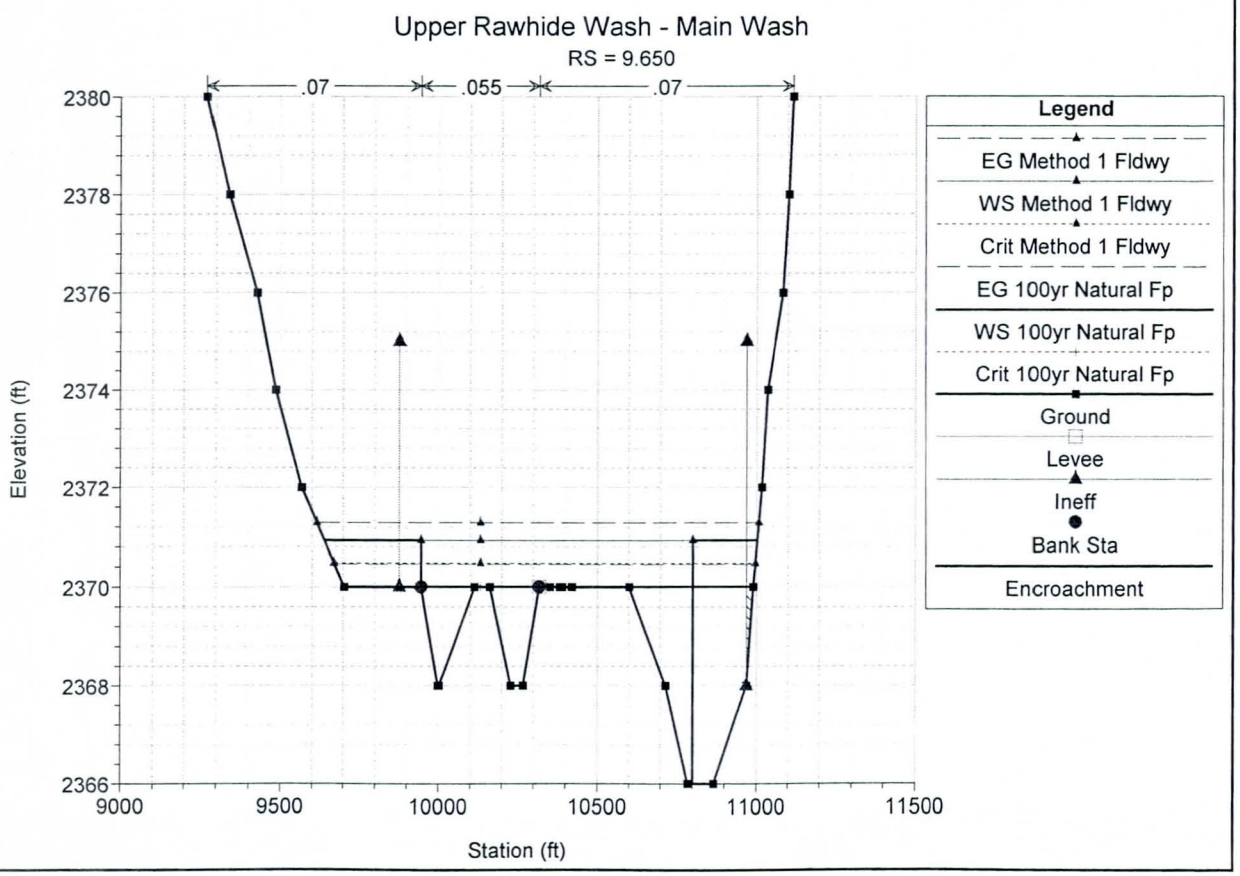

Upper Rawhide Wash - Main Wash
RS = 9.981
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

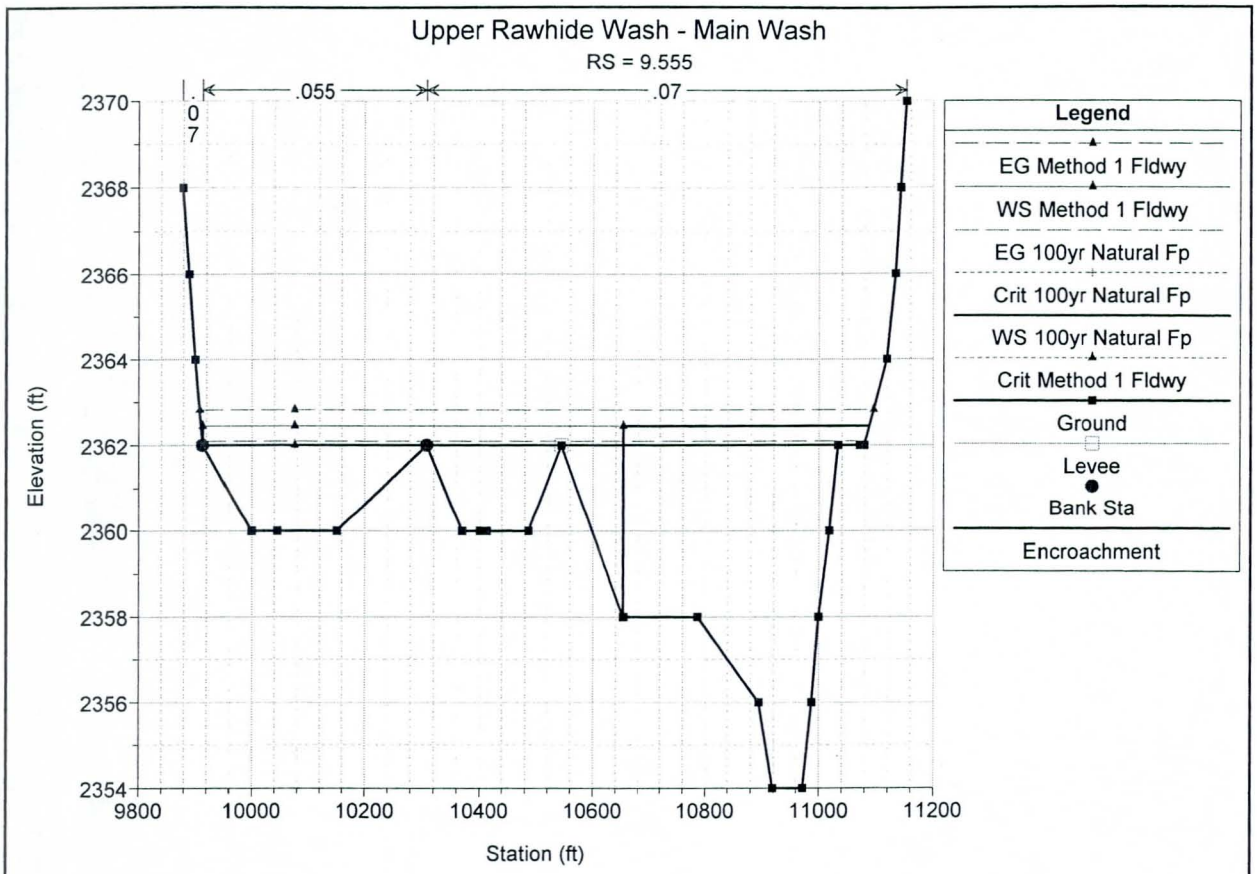

Upper Rawhide Wash - Main Wash
RS = 9.927
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

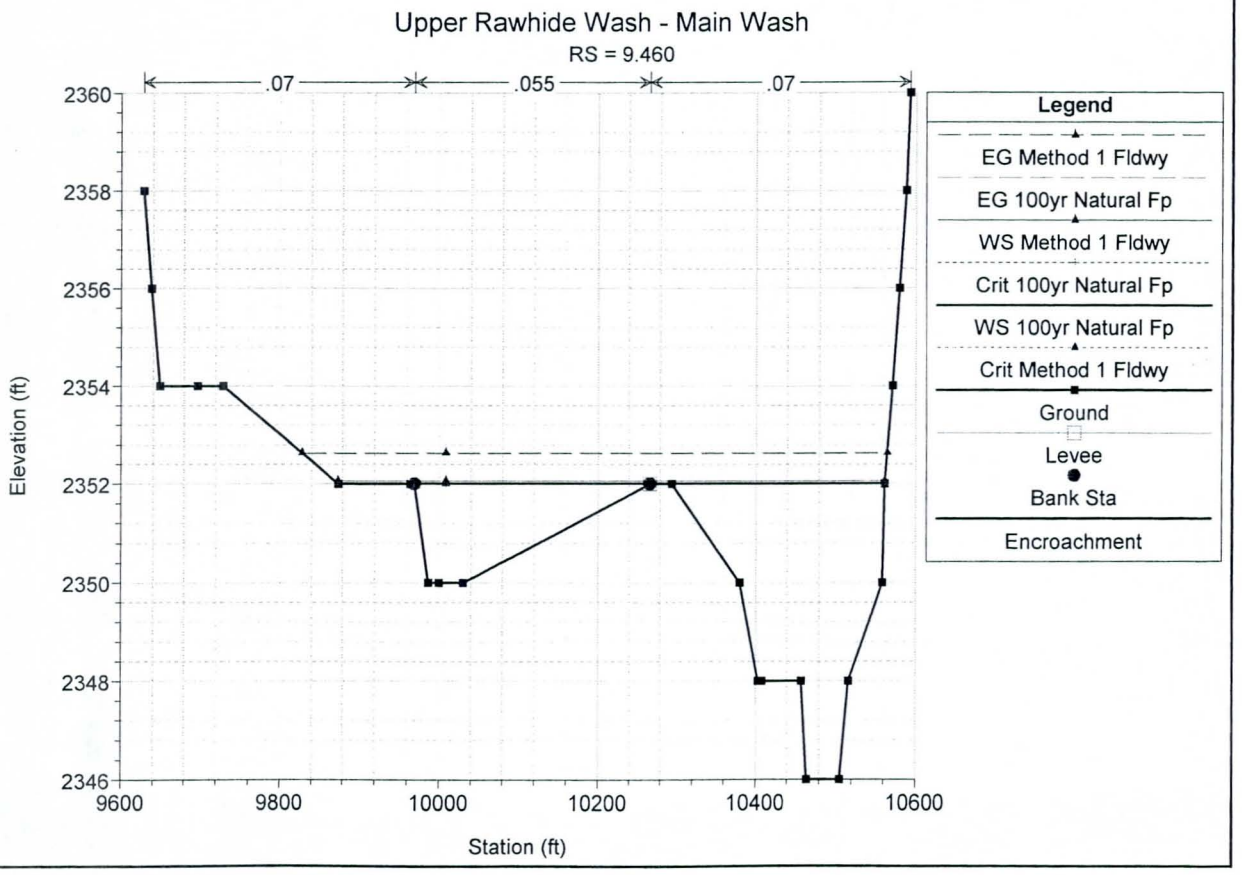

Upper Rawhide Wash - Main Wash
RS = 9.832
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

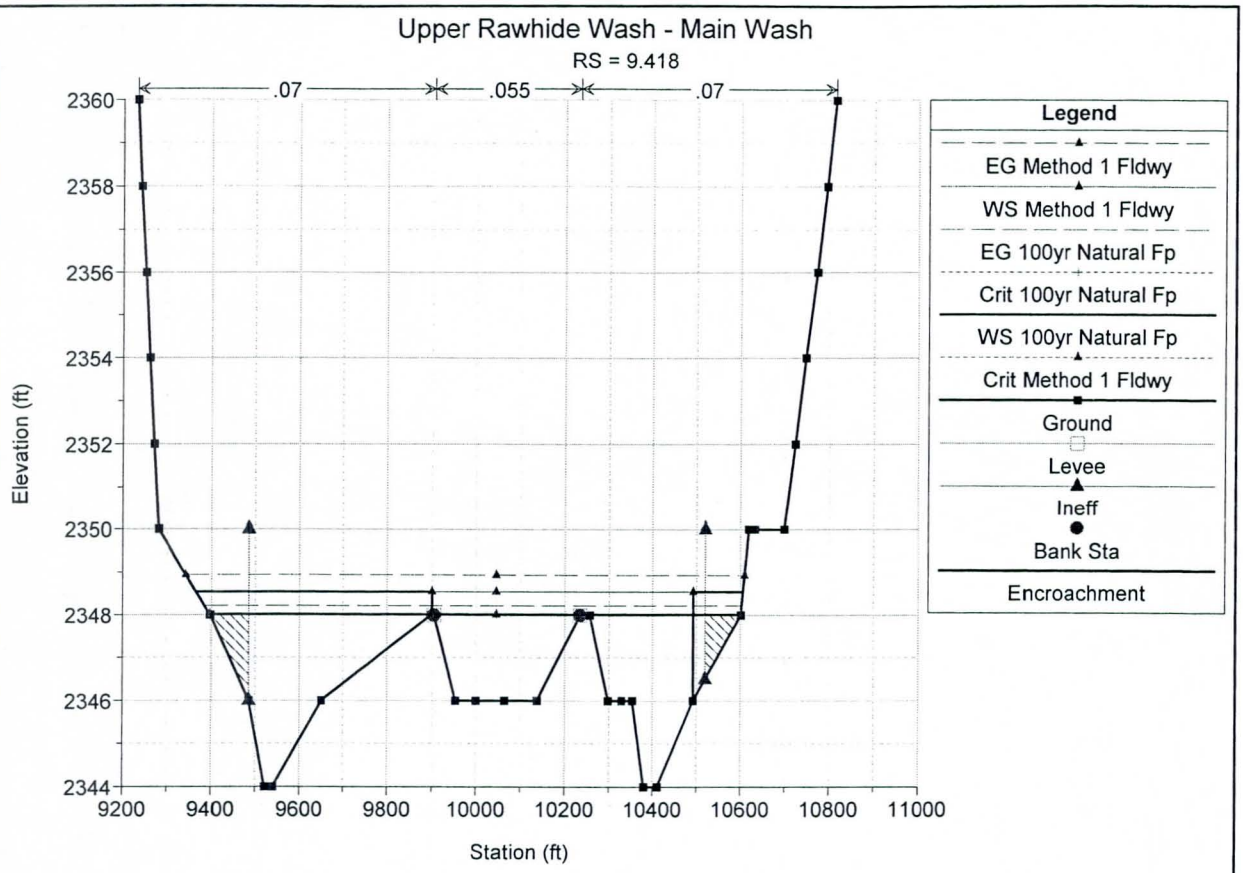

Upper Rawhide Wash - Main Wash
RS = 9.779
.055
.07
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
Crit 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Ineff
Bank Sta
Encroachment

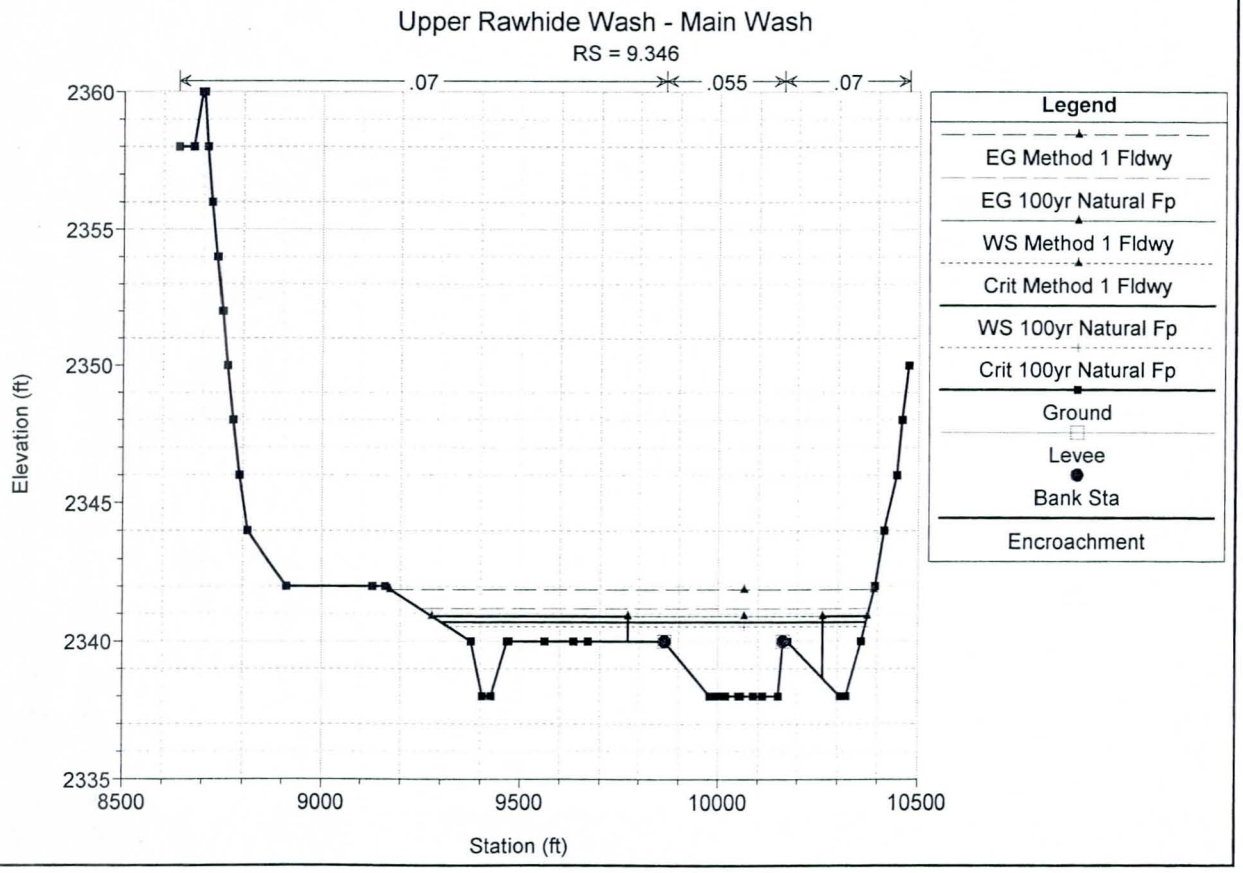

Upper Rawhide Wash - Main Wash
RS = 9.722
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

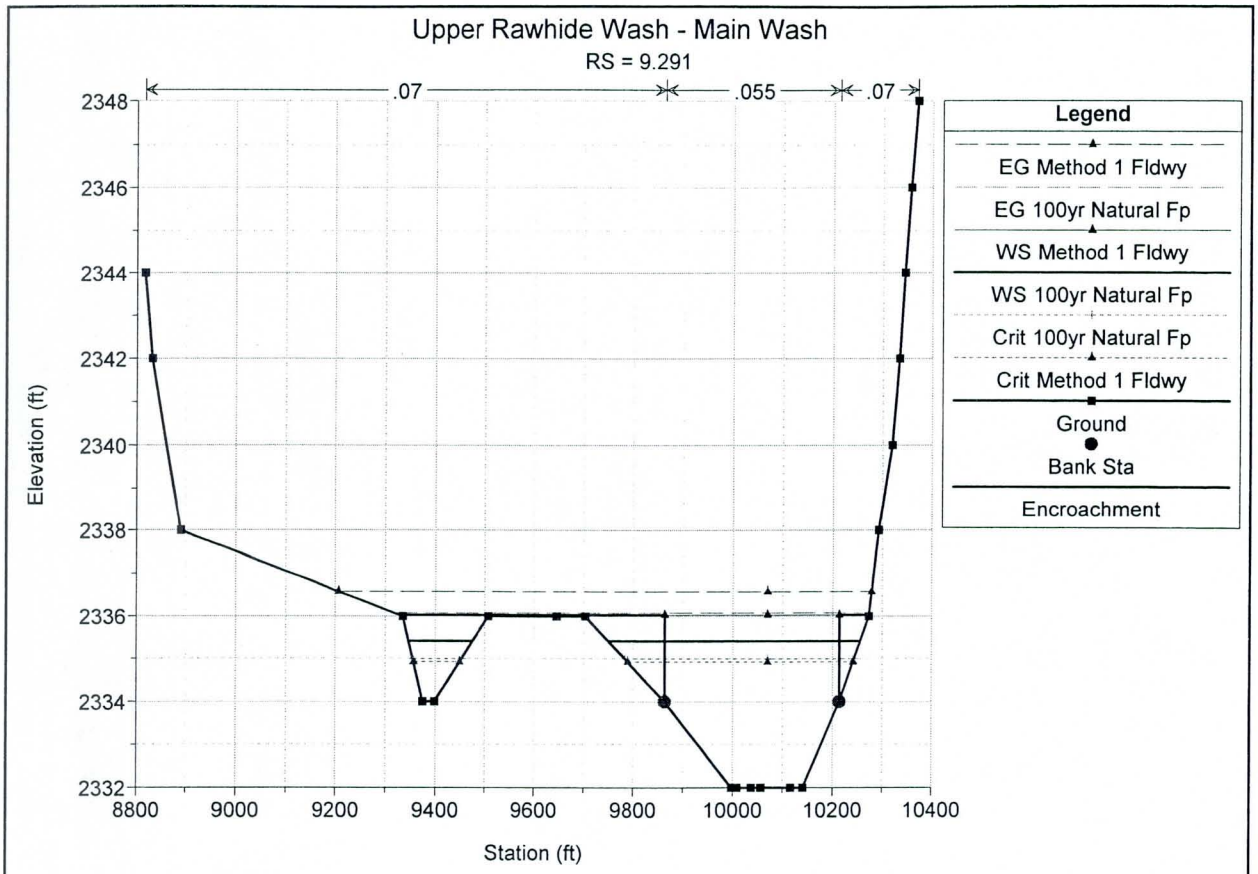

Upper Rawhide Wash - Main Wash
RS = 9.650
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Ineff
Bank Sta
Encroachment

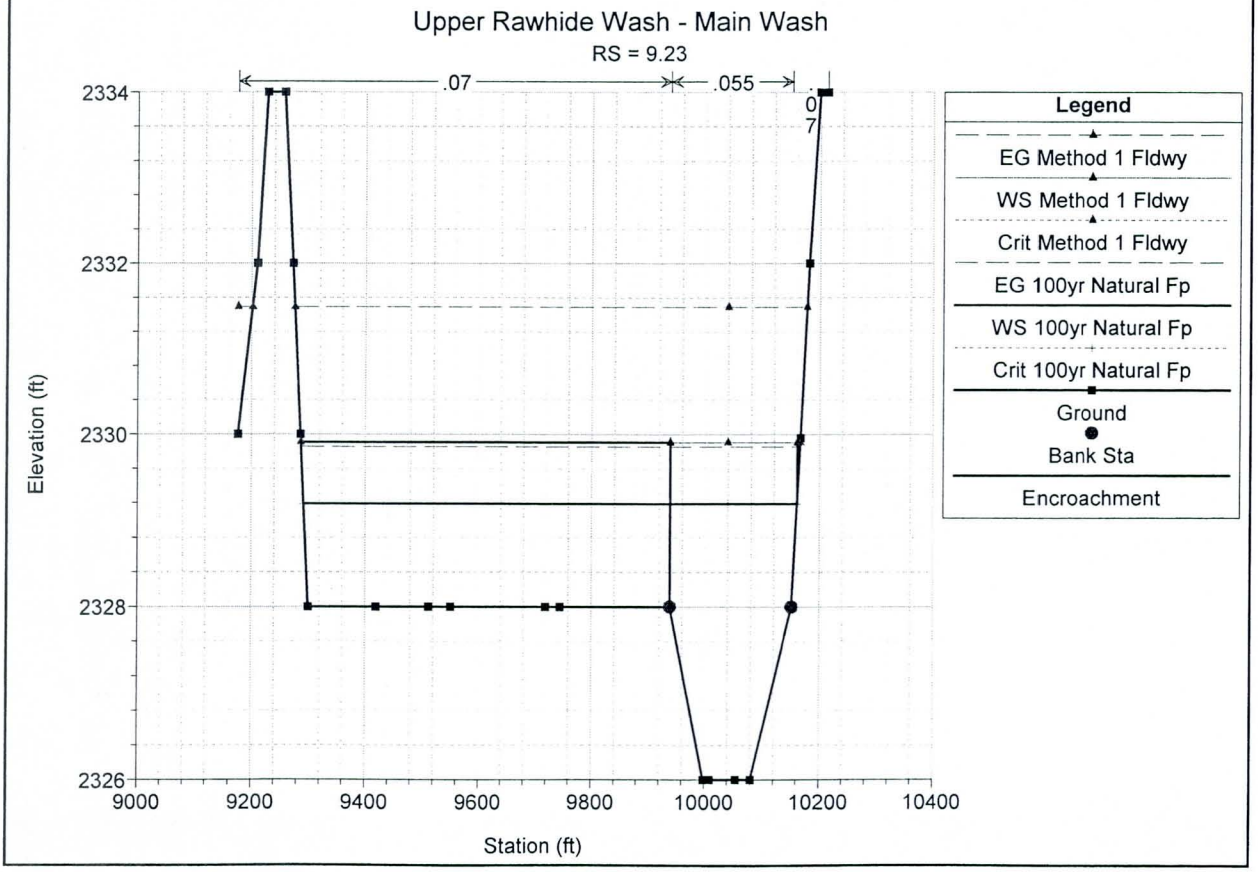

Upper Rawhide Wash - Main Wash
RS = 9.555
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
Crit 100yr Natural Fp
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta
Encroachment

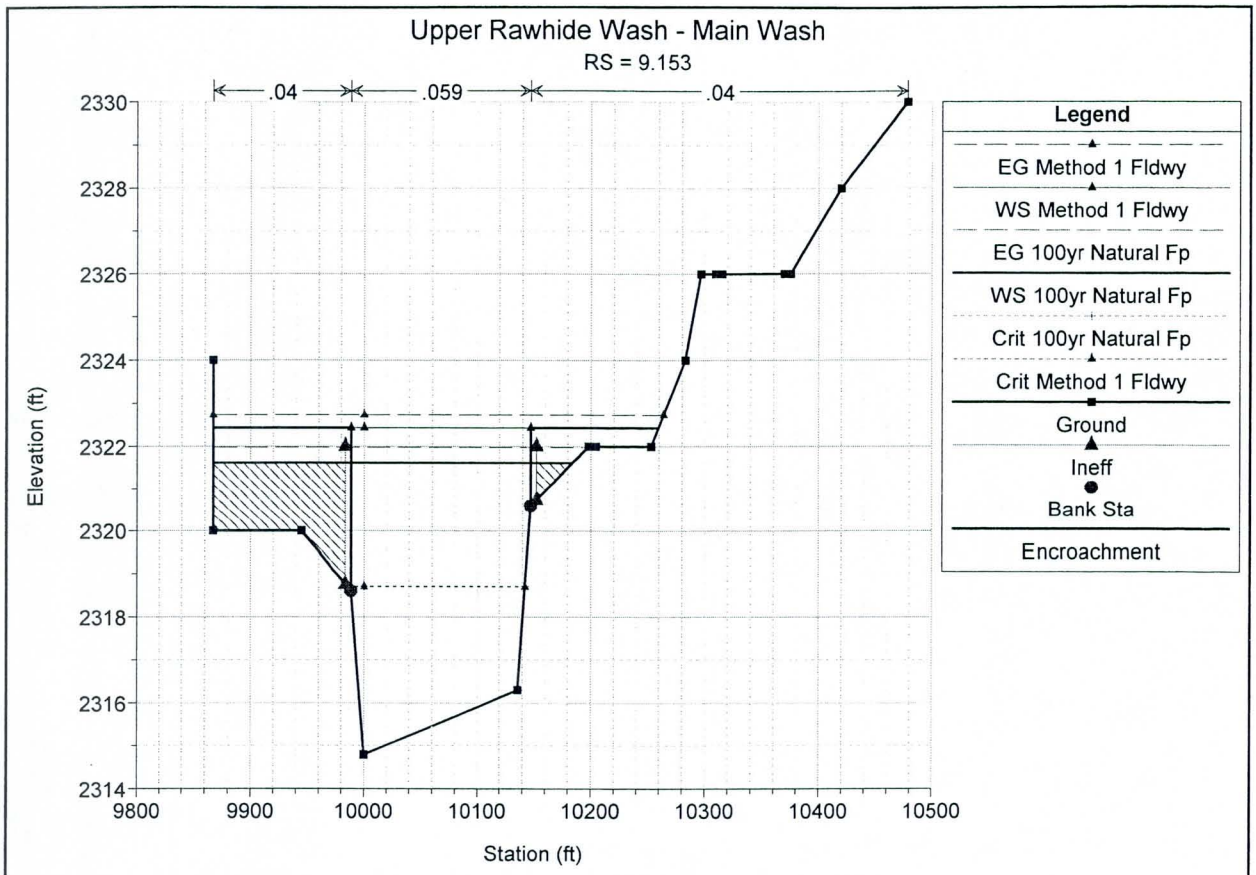

Upper Rawhide Wash - Main Wash
RS = 9.460
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit 100yr Natural Fp
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Bank Sta
Encroachment

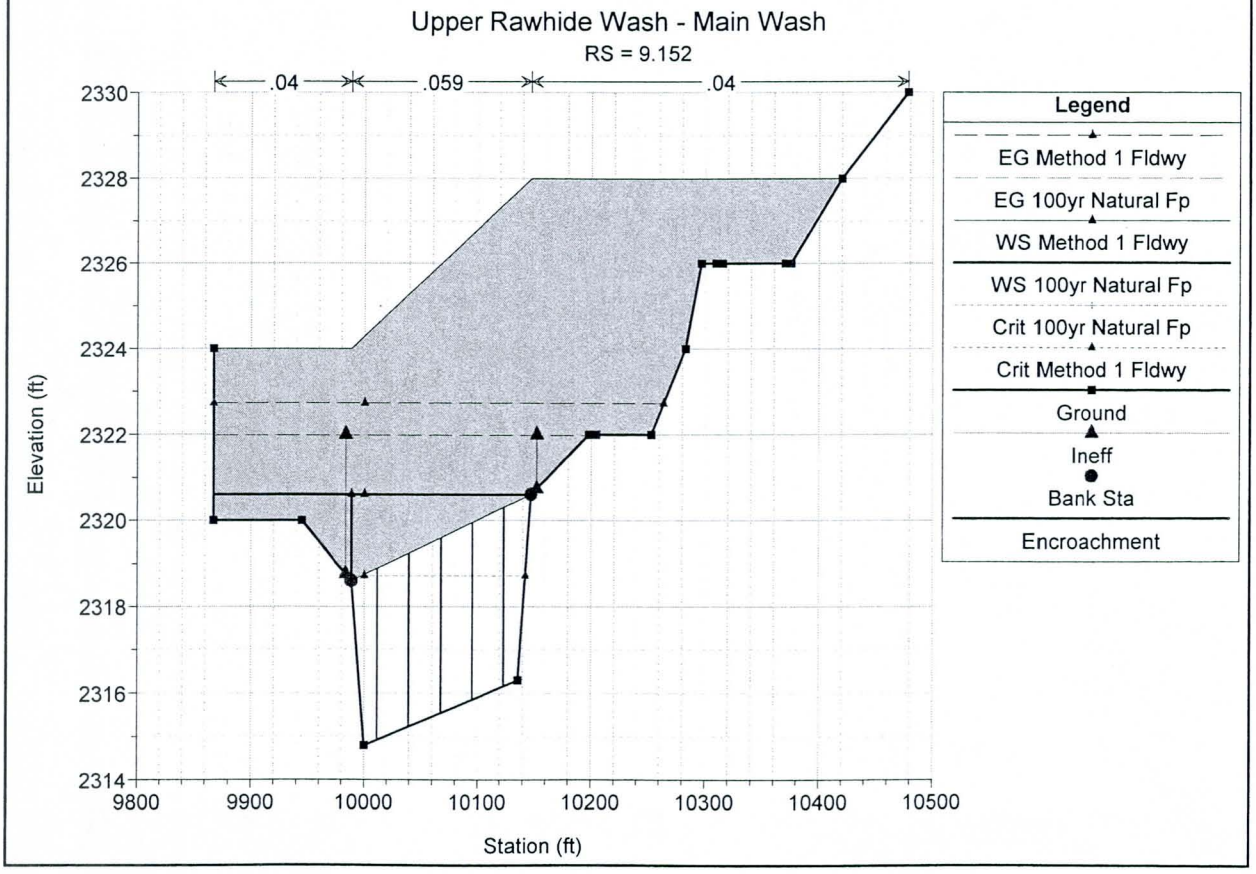

Upper Rawhide Wash - Main Wash
RS = 9.418
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
Crit 100yr Natural Fp
WS 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Ineff
Bank Sta
Encroachment

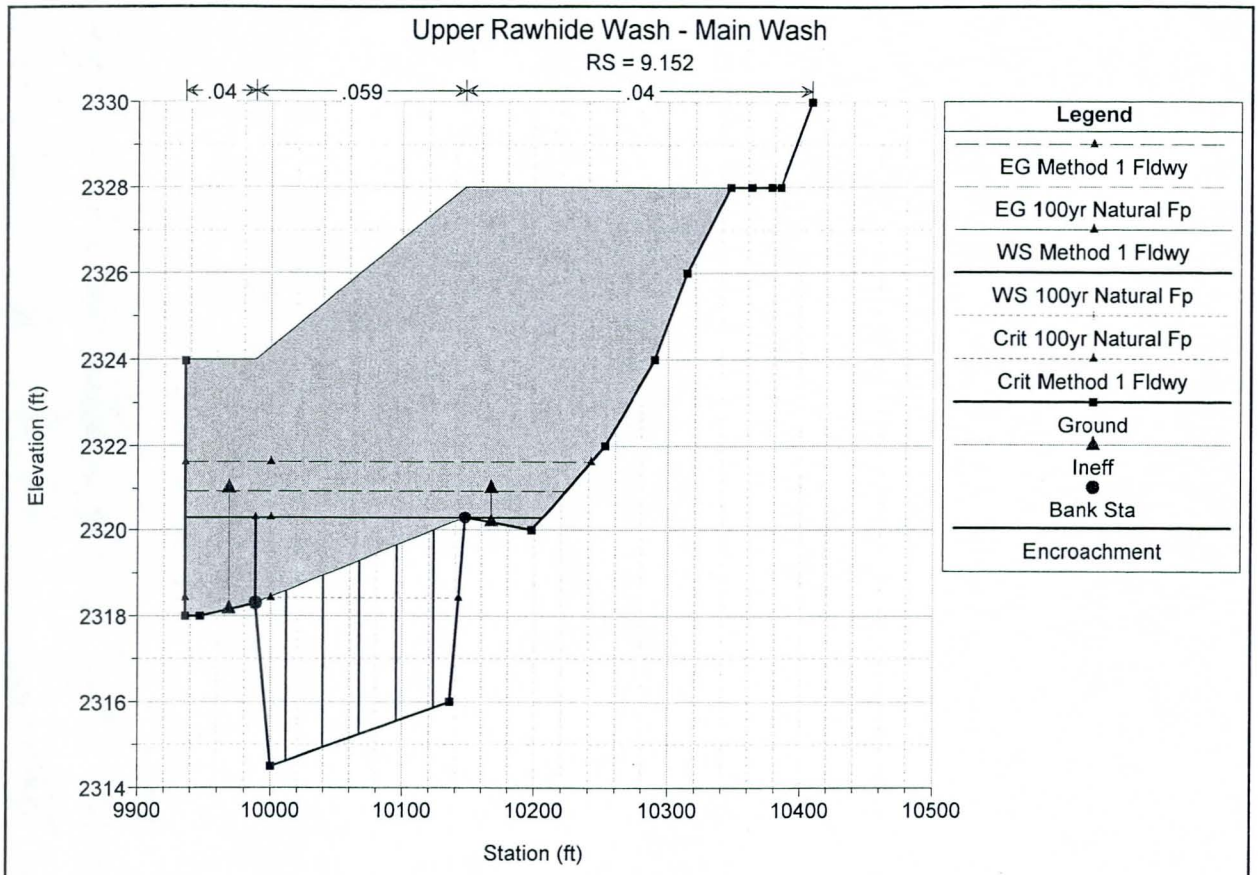

Upper Rawhide Wash - Main Wash
RS = 9.346
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

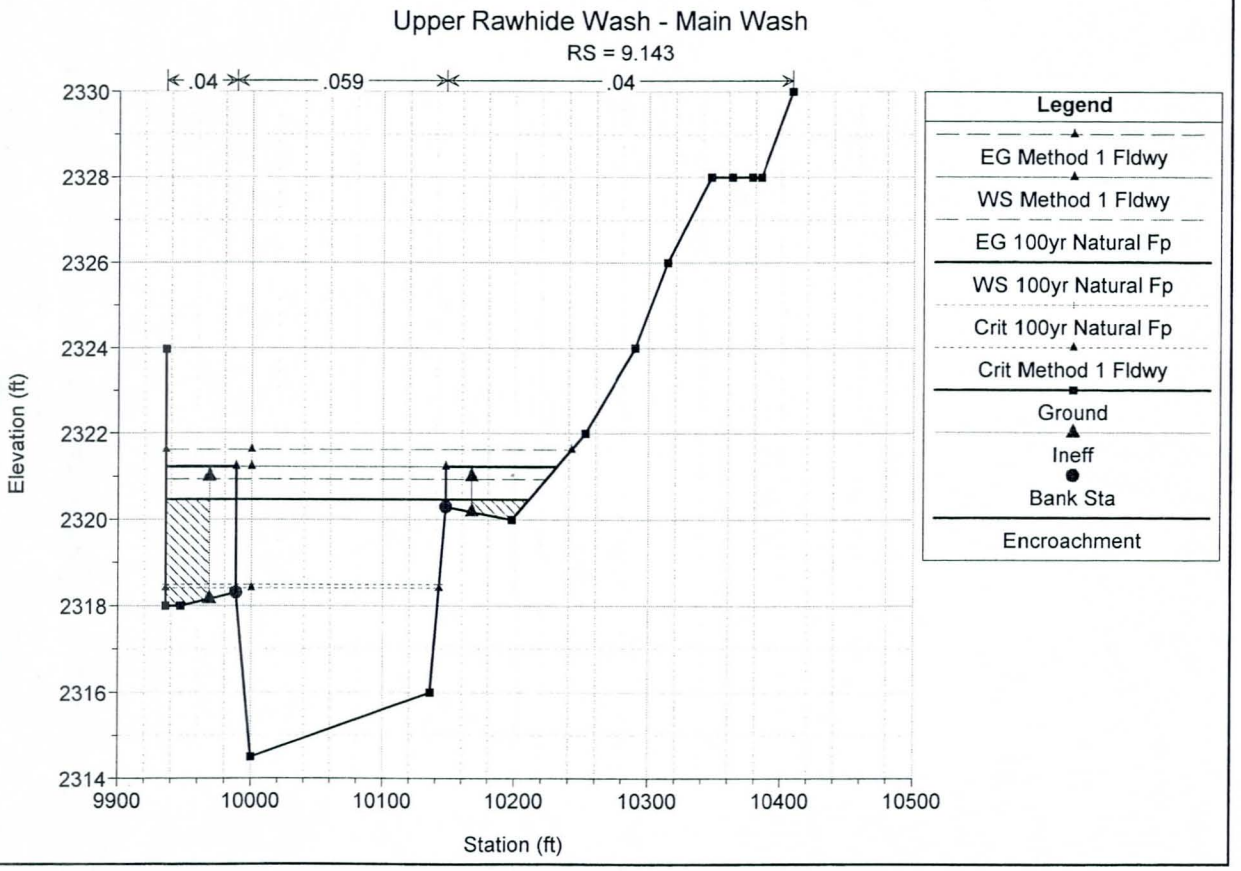

Upper Rawhide Wash - Main Wash
RS = 9.291
.07
.055
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

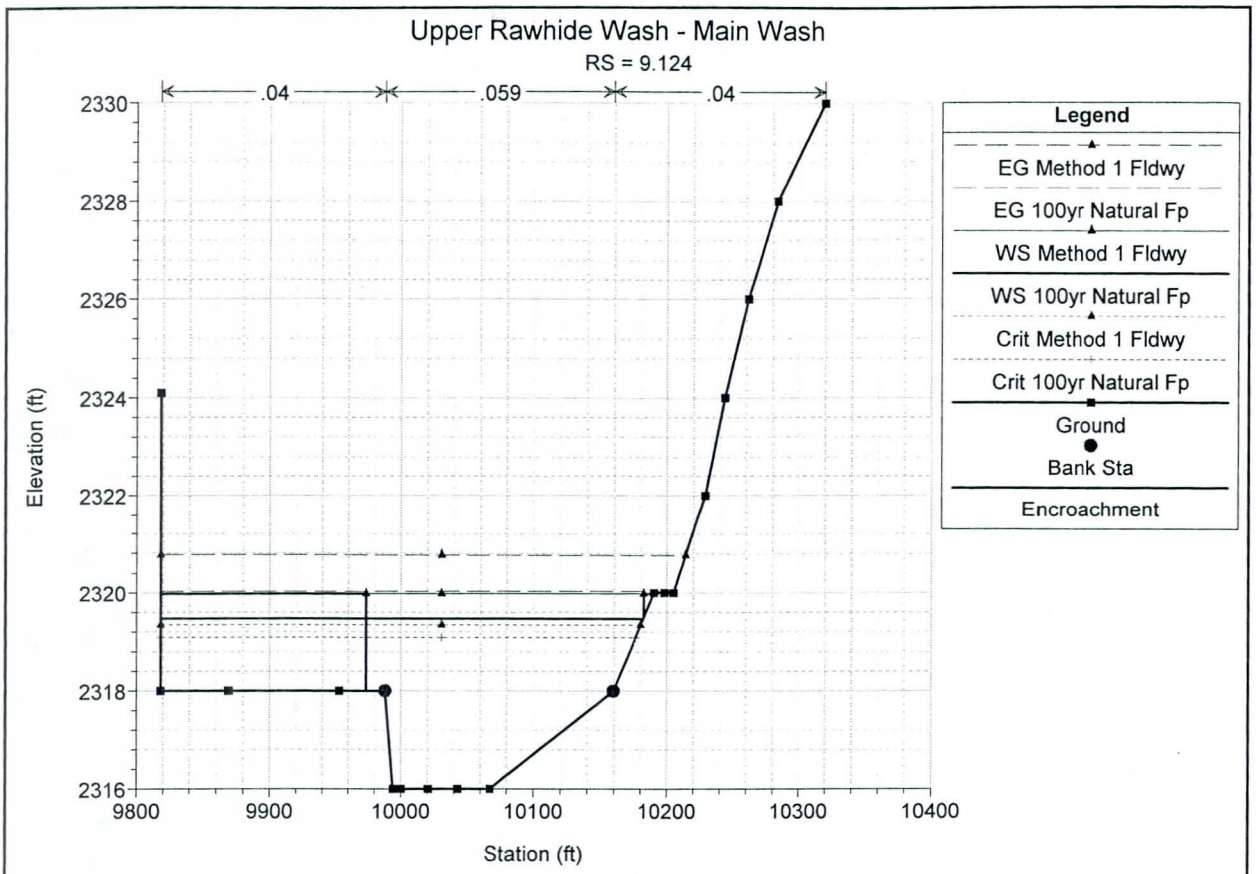

Upper Rawhide Wash - Main Wash
RS = 9.23
.07
.055
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

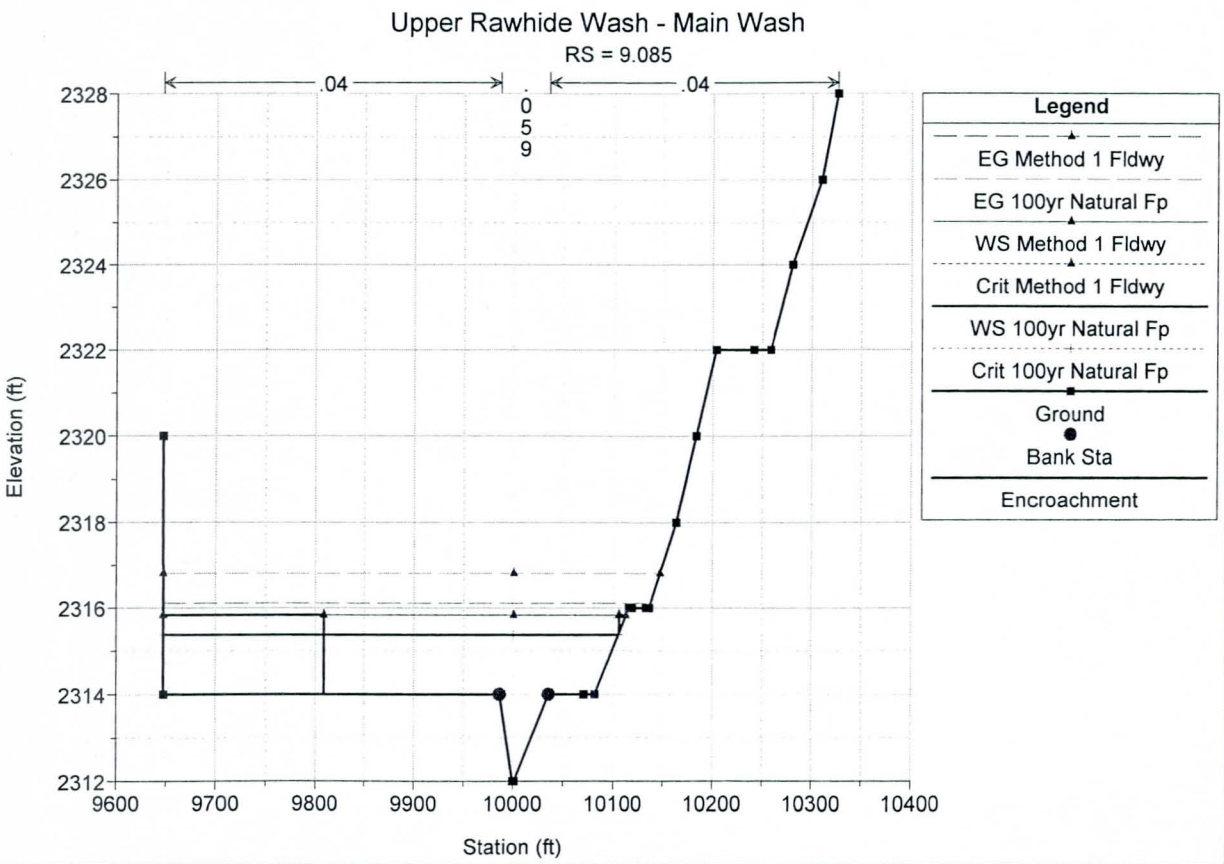

Upper Rawhide Wash - Main Wash
RS = 9.153
.04
.059
.04
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

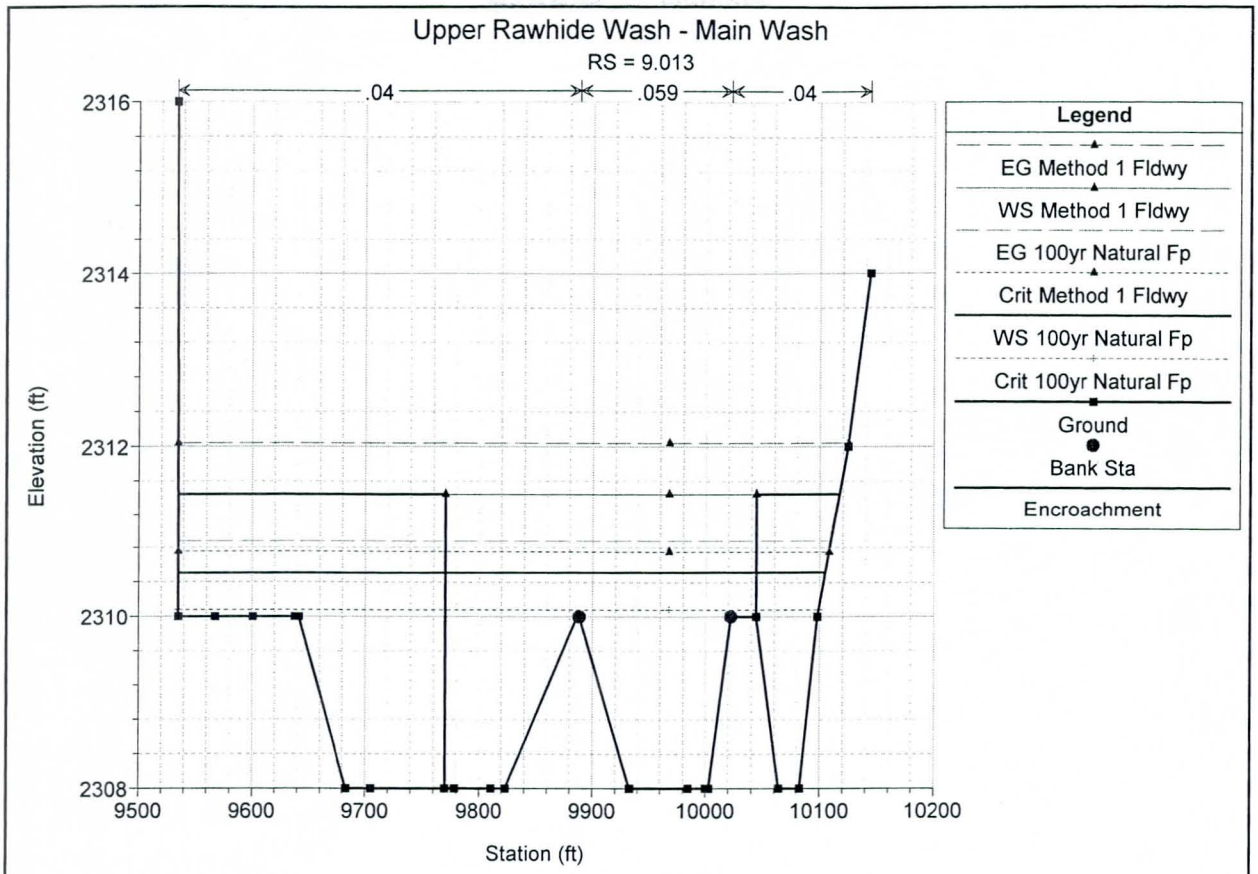

Upper Rawhide Wash - Main Wash
RS = 9.152
.04
.059
.04
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

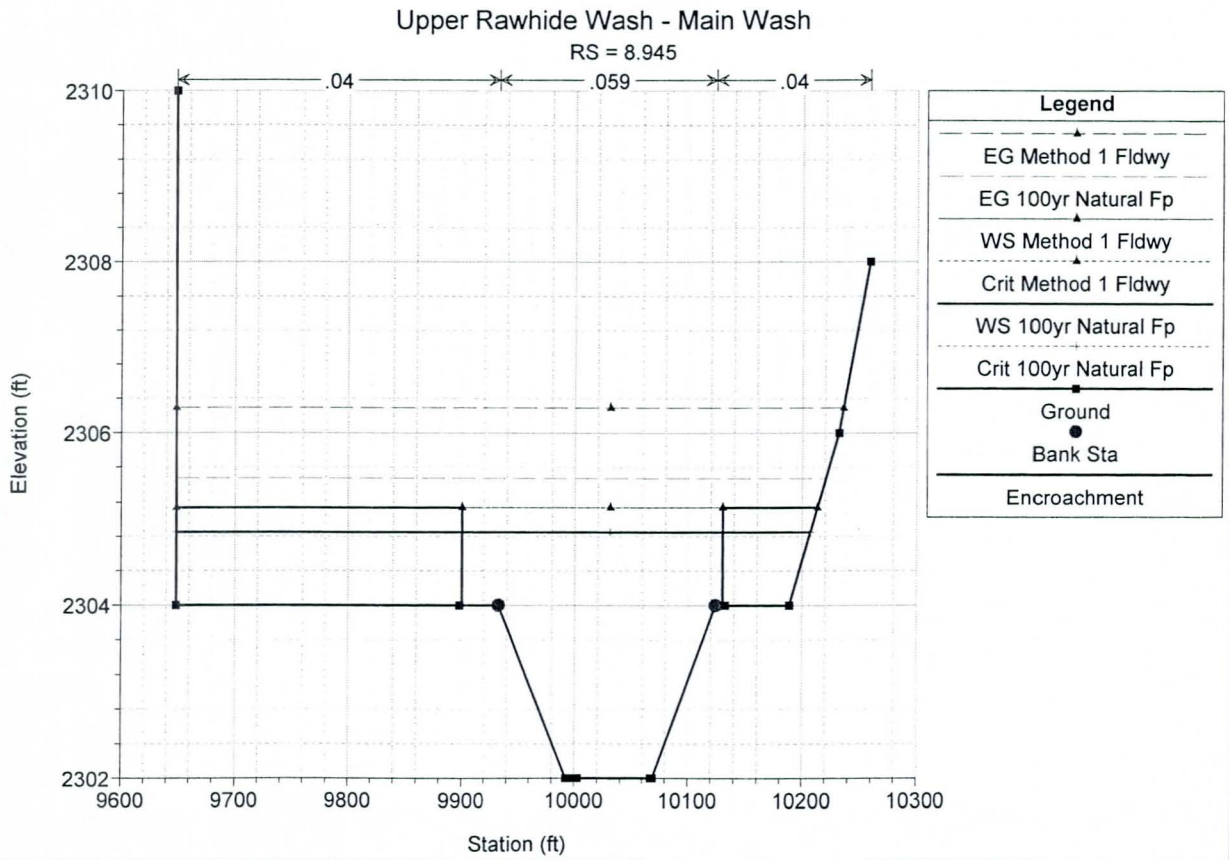

Upper Rawhide Wash - Main Wash
RS = 9.152
.04
.059
.04
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

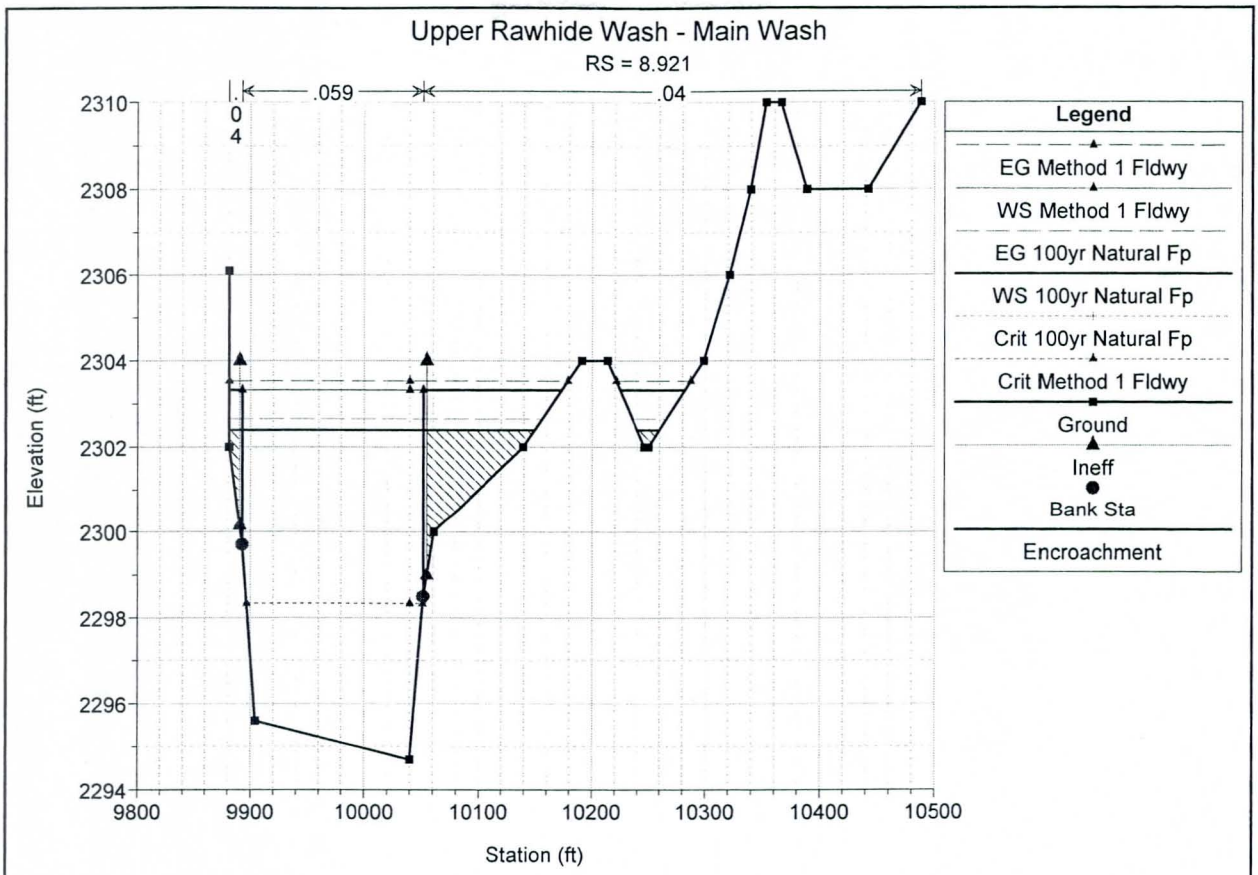

Upper Rawhide Wash - Main Wash
RS = 9.143
.04
.059
.04
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

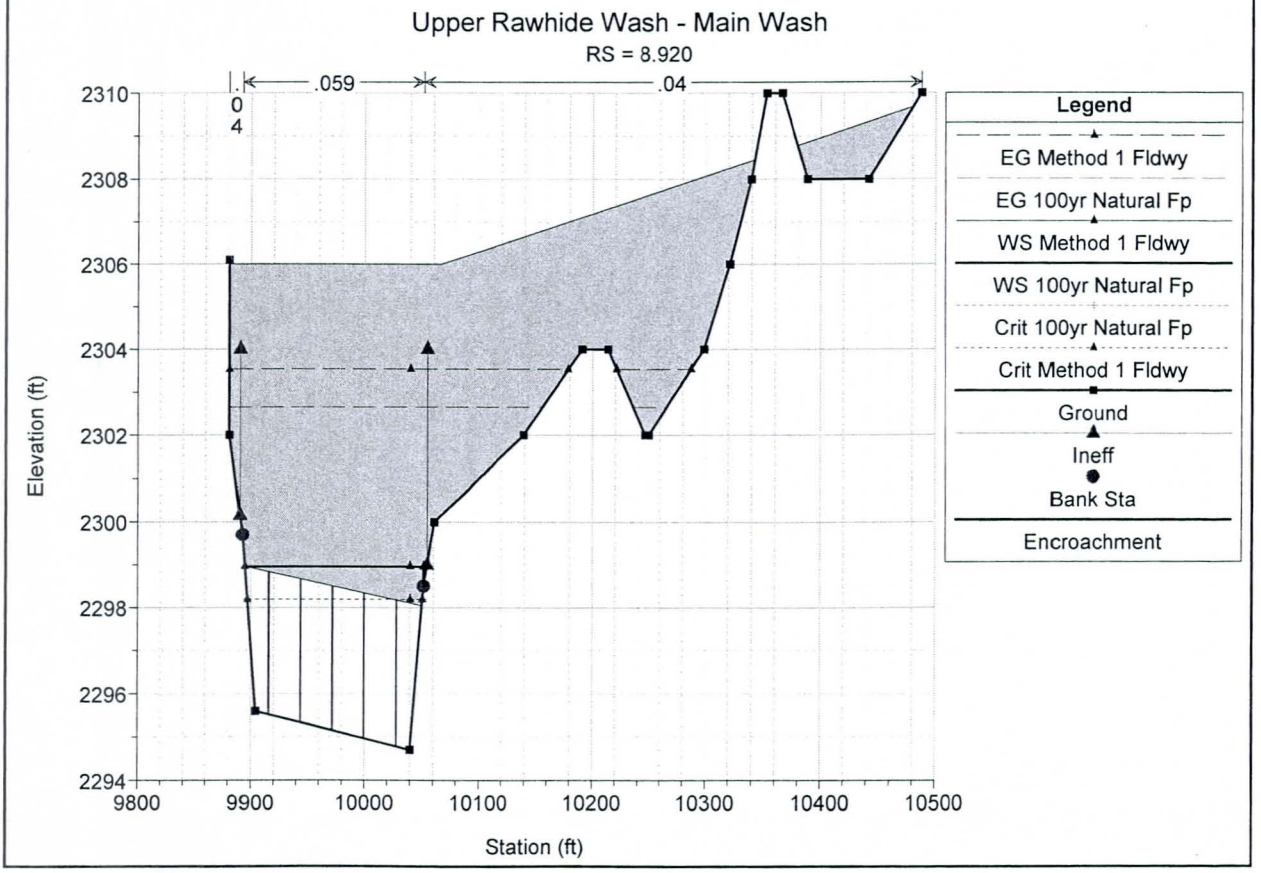

Upper Rawhide Wash - Main Wash
RS = 9.124
.04
.059
.04
Elevation (ft)
2330
2328
2326
2324
2322
2320
2318
2316
9800
9900
10000
10100
10200
10300
10400
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

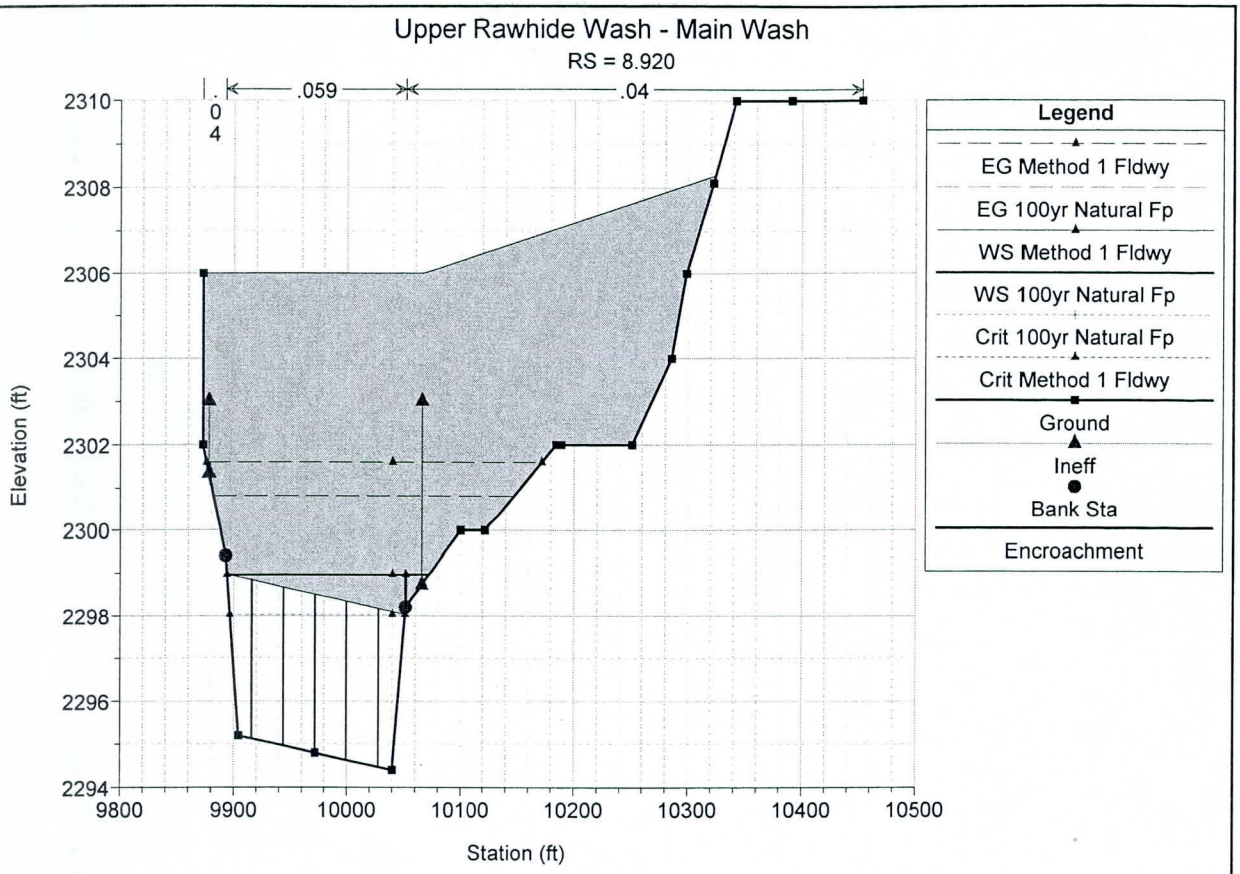

Upper Rawhide Wash - Main Wash
RS = 9.085
.04
.059
.04
Elevation (ft)
2328
2326
2324
2322
2320
2318
2316
2314
2312
9600
9700
9800
9900
10000
10100
10200
10300
10400
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

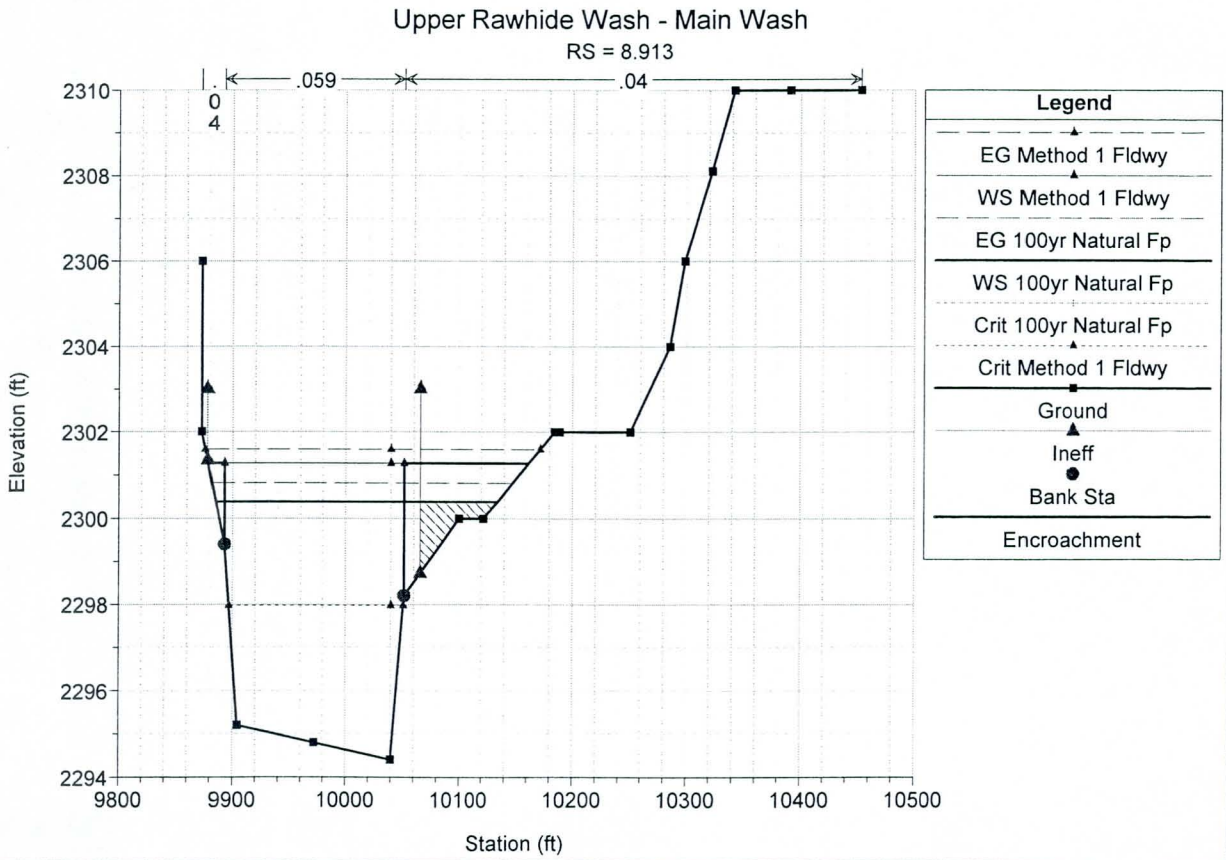

Upper Rawhide Wash - Main Wash
RS = 9.013
.04
.059
.04
Elevation (ft)
2316
2314
2312
2310
2308
9500
9600
9700
9800
9900
10000
10100
10200
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

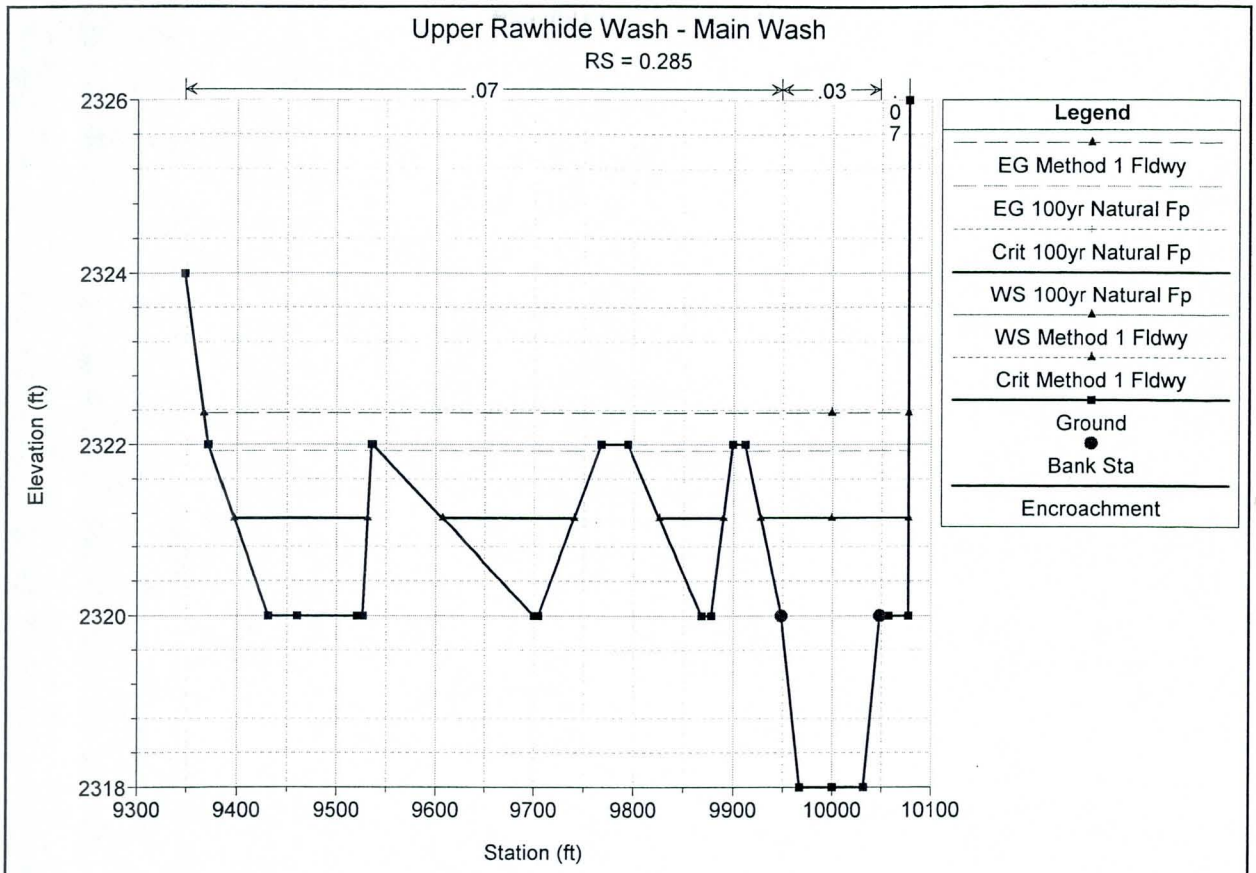

Upper Rawhide Wash - Main Wash
RS = 8.945
.04
.059
.04
Elevation (ft)
2310
2308
2306
2304
2302
9600
9700
9800
9900
10000
10100
10200
10300
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

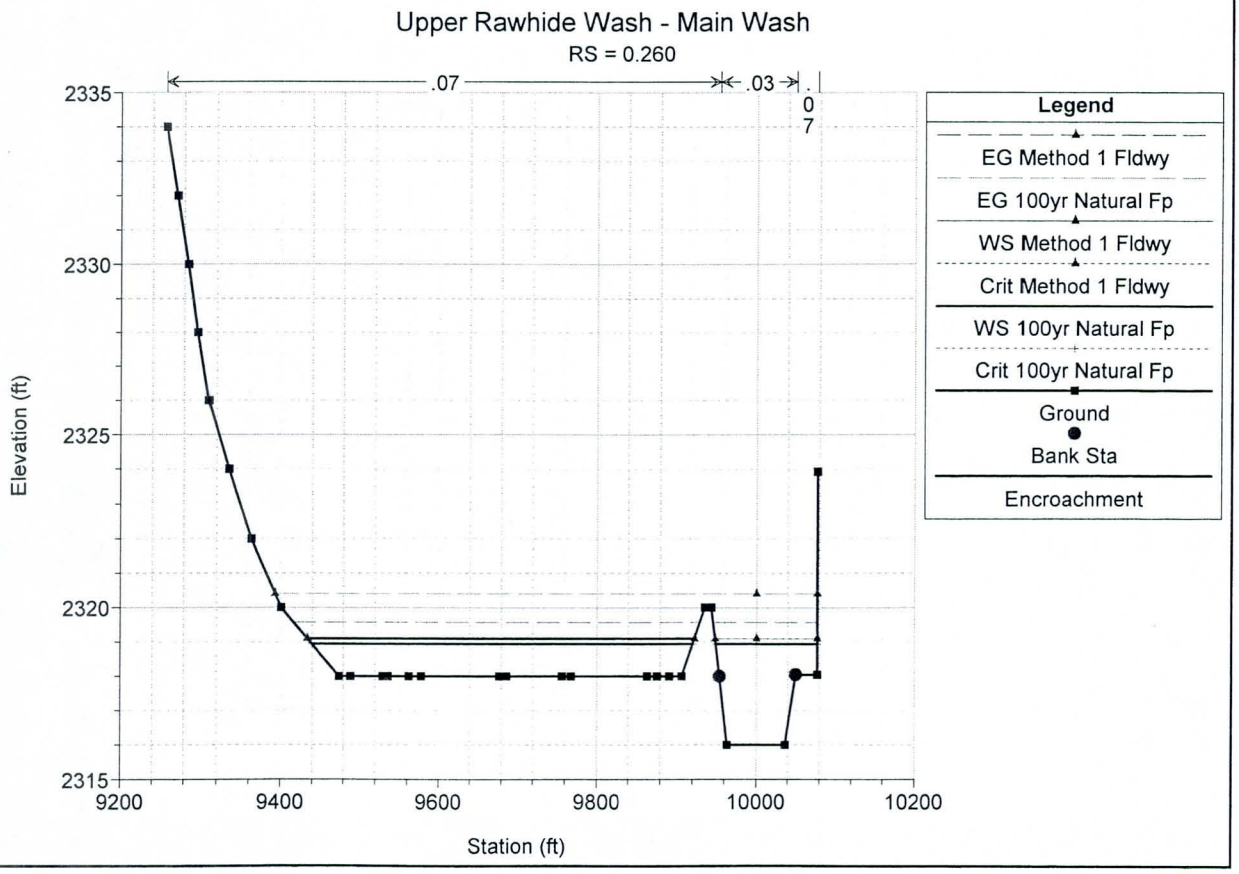

Upper Rawhide Wash - Main Wash
RS = 8.921
.059
.04
0
4
Elevation (ft)
Station (ft)
2310
2308
2306
2304
2302
2300
2298
2296
2294
9800
9900
10000
10100
10200
10300
10400
10500
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

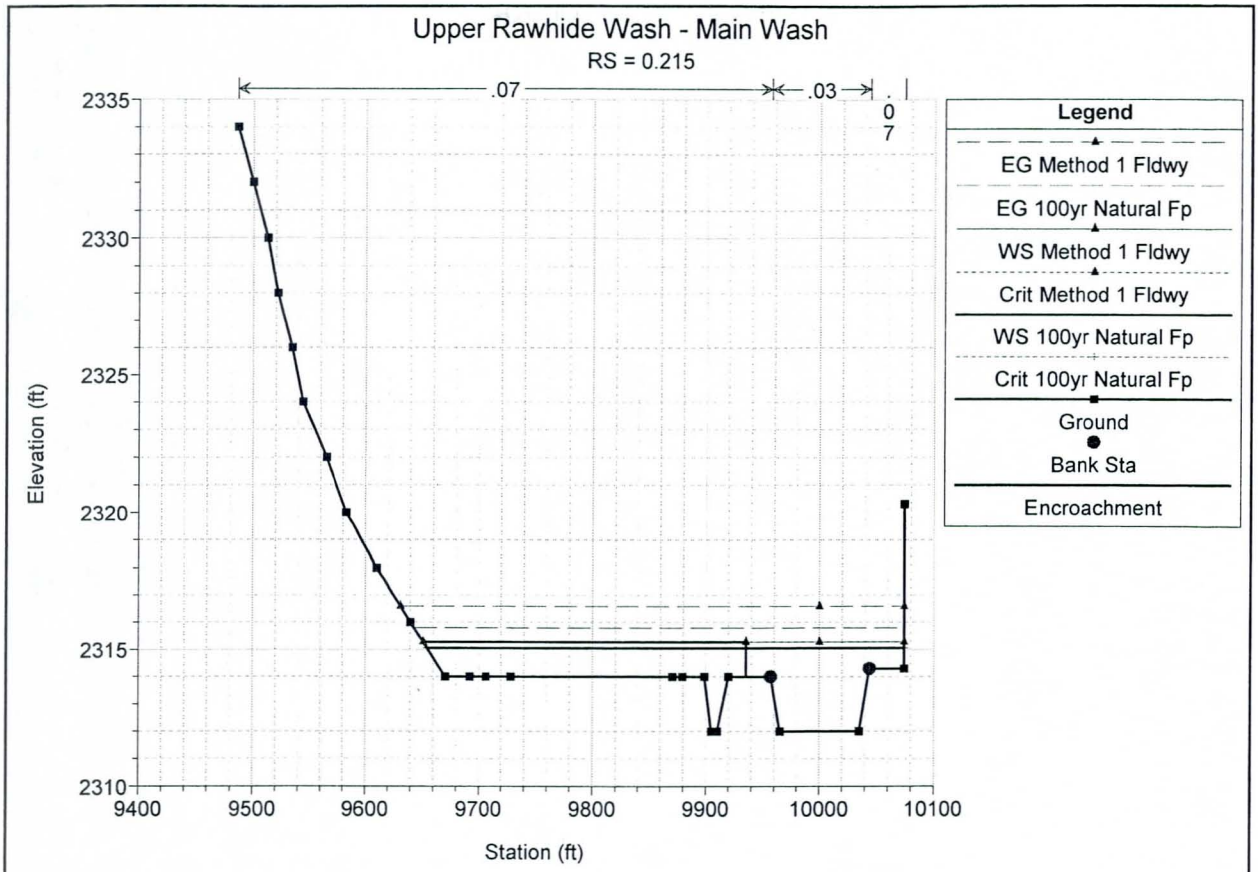

Upper Rawhide Wash - Main Wash
RS = 8.920
.059
.04
0
4
Elevation (ft)
Station (ft)
2310
2308
2306
2304
2302
2300
2298
2296
2294
9800
9900
10000
10100
10200
10300
10400
10500
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

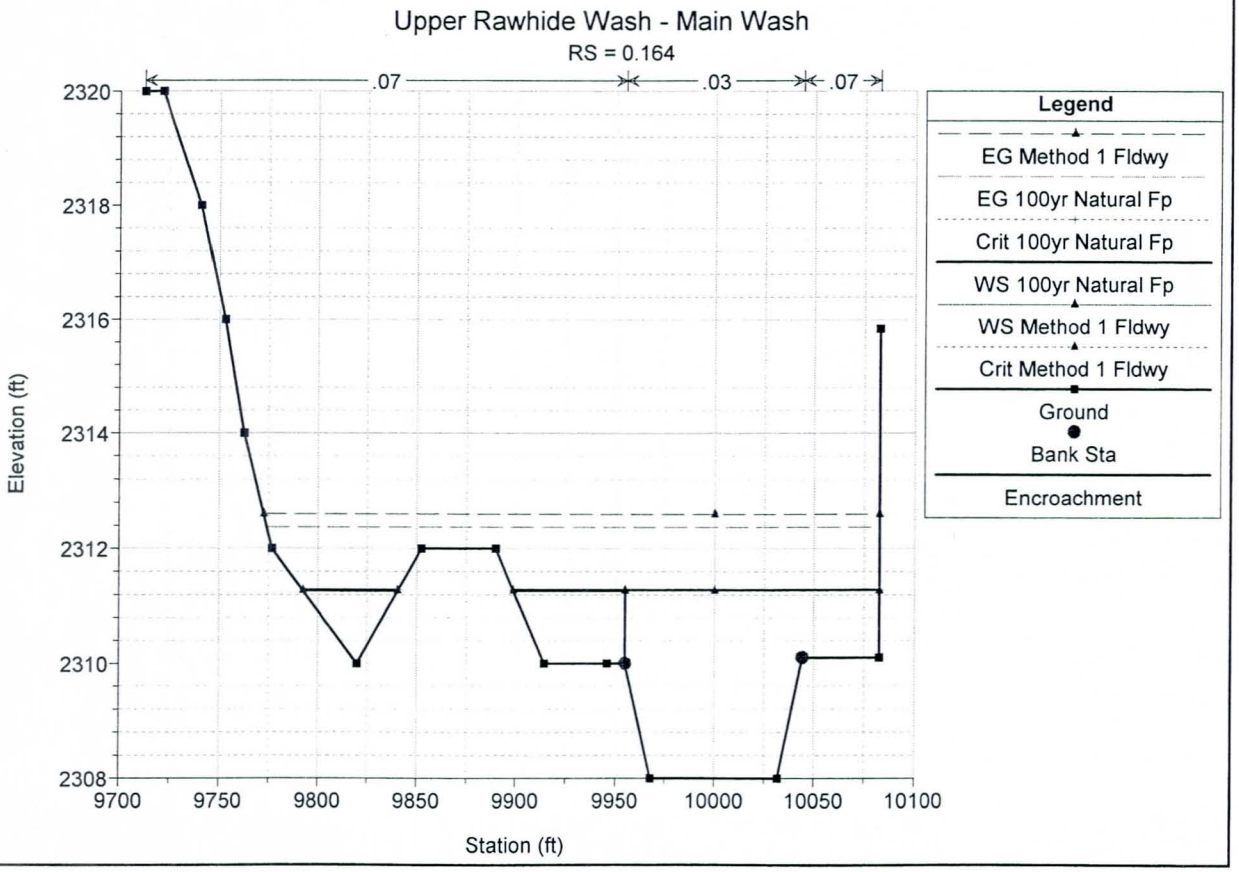

Upper Rawhide Wash - Main Wash
RS = 8.920
.04
.059
.04
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

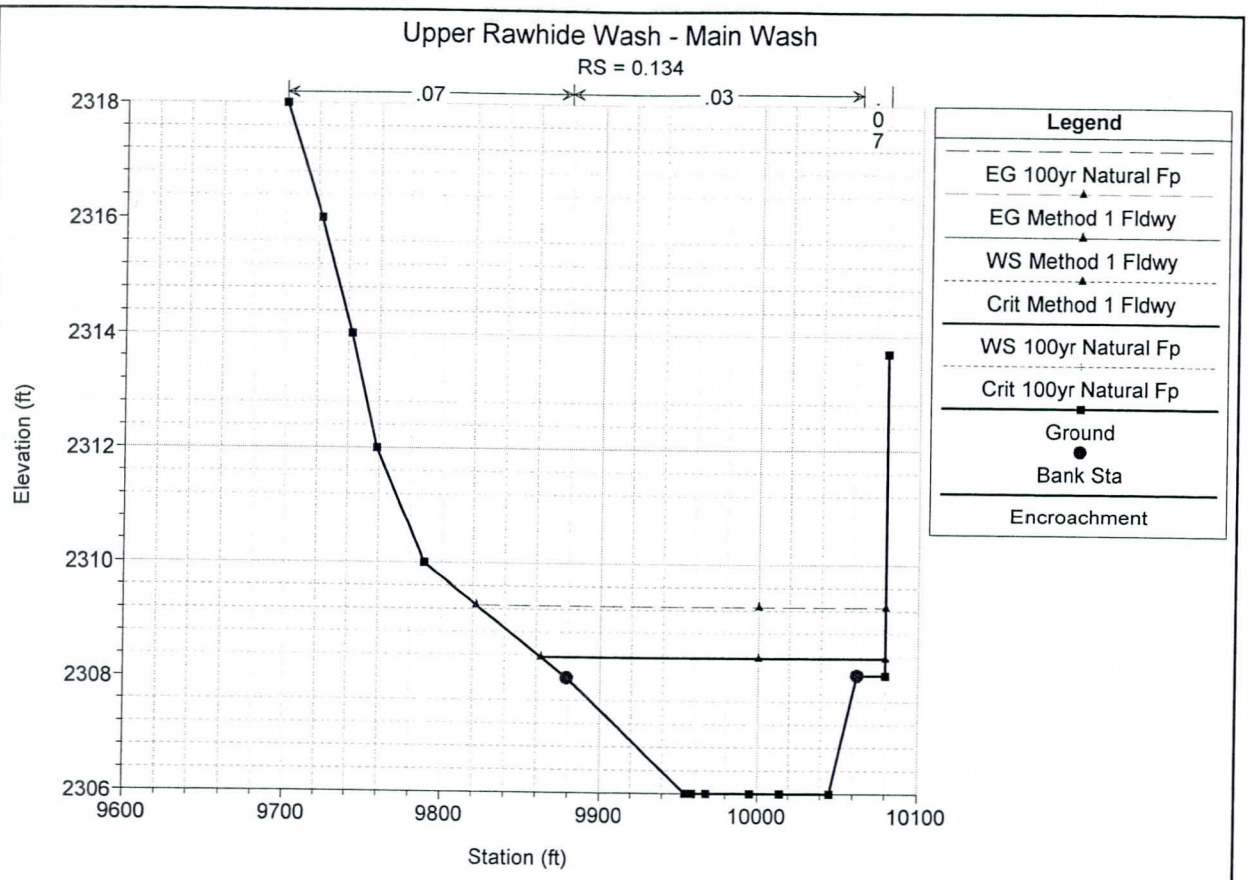

Upper Rawhide Wash - Main Wash
RS = 8.913
.04
.059
.04
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Ineff
Bank Sta
Encroachment

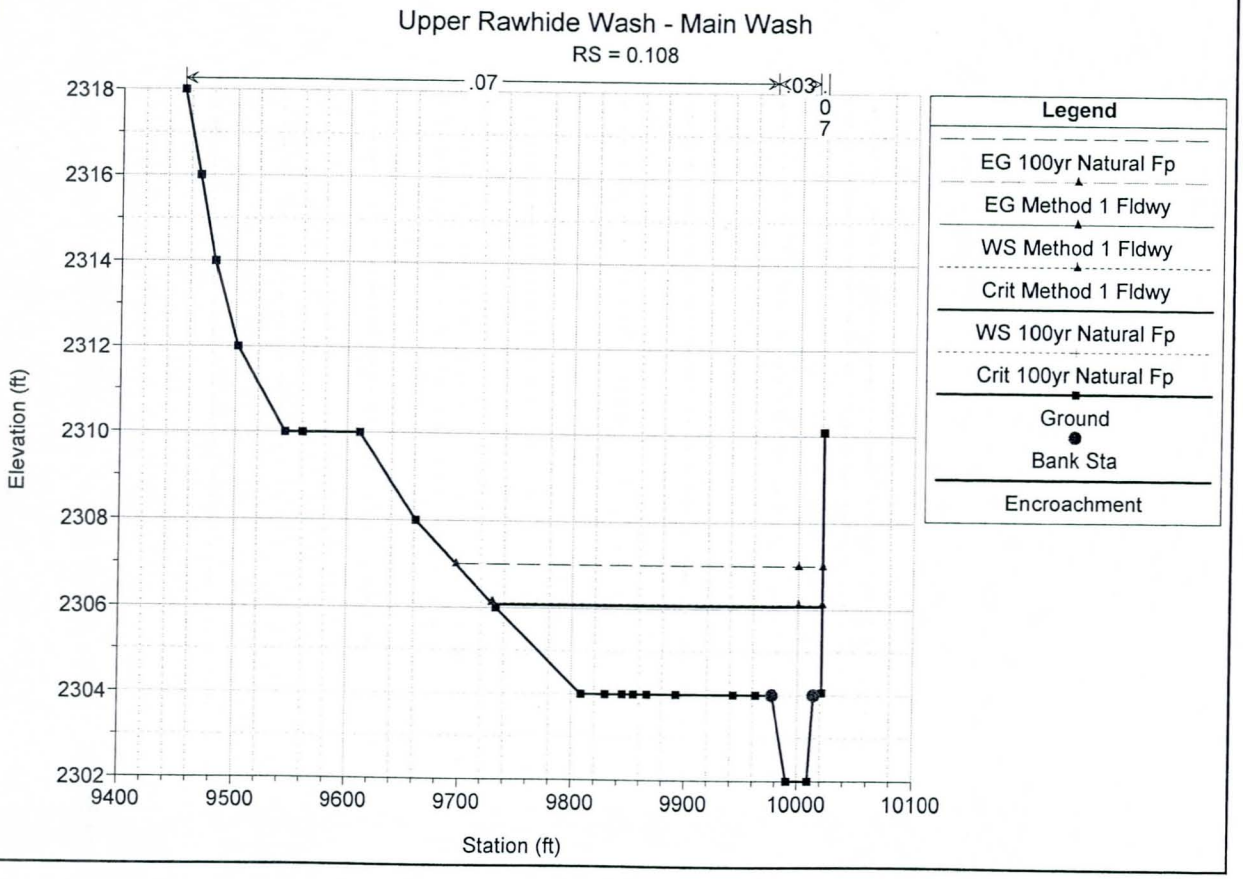

Upper Rawhide Wash - Main Wash
RS = 0.285
.07
.03
.07
Elevation (ft)
Station (ft)
2326
2324
2322
2320
2318
9300
9400
9500
9600
9700
9800
9900
10000
10100
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

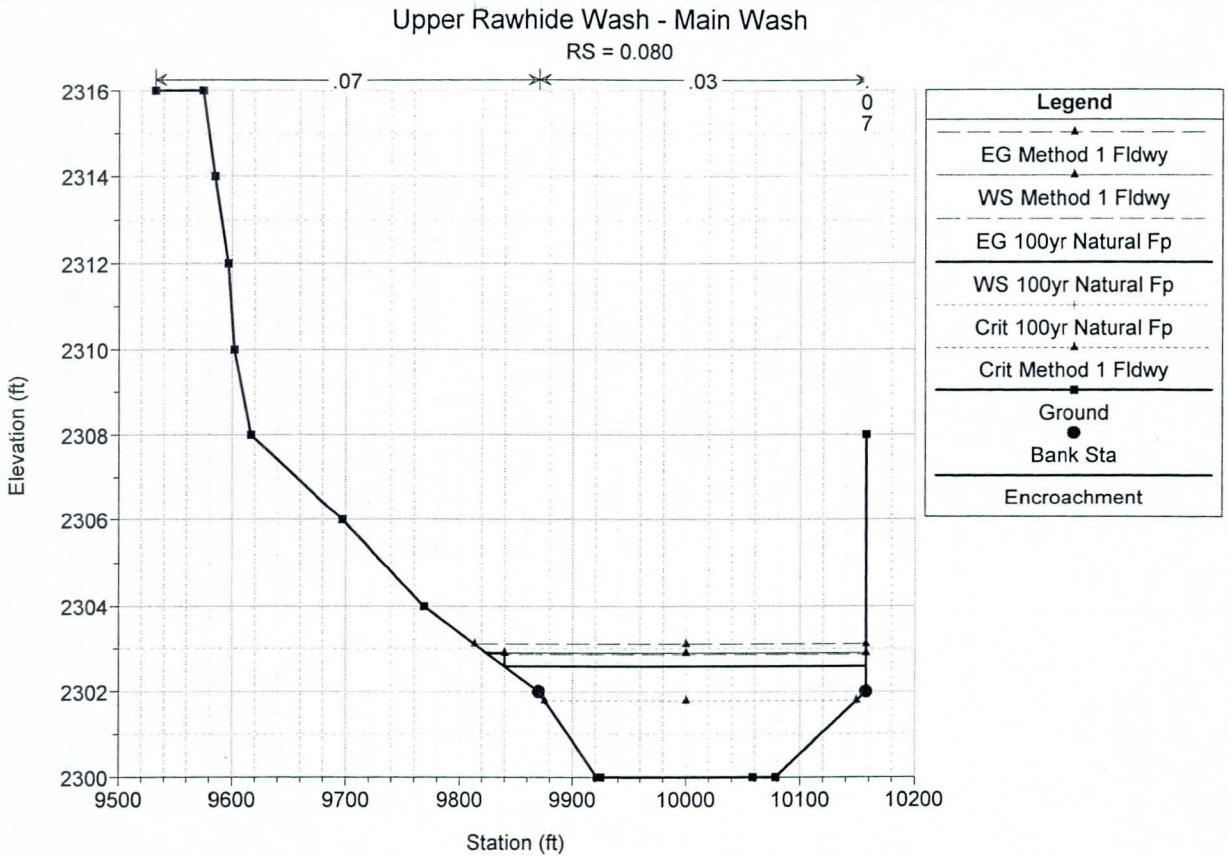

Upper Rawhide Wash - Main Wash
RS = 0.260
.07
.03
.07
Elevation (ft)
Station (ft)
2335
2330
2325
2320
2315
9200
9400
9600
9800
10000
10200
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

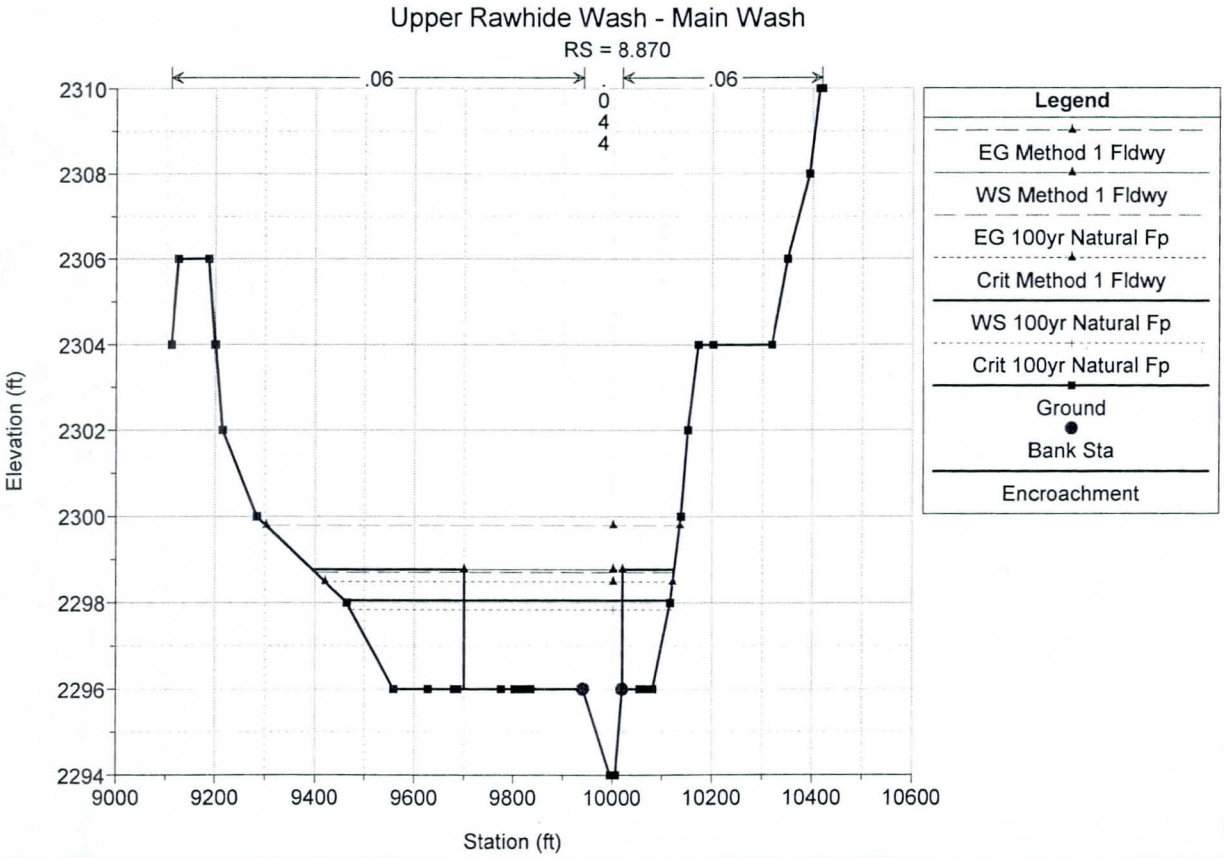

Upper Rawhide Wash - Main Wash
RS = 0.215
.07
.03
.07
Elevation (ft)
Station (ft)
2335
2330
2325
2320
2315
2310
9400
9500
9600
9700
9800
9900
10000
10100
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

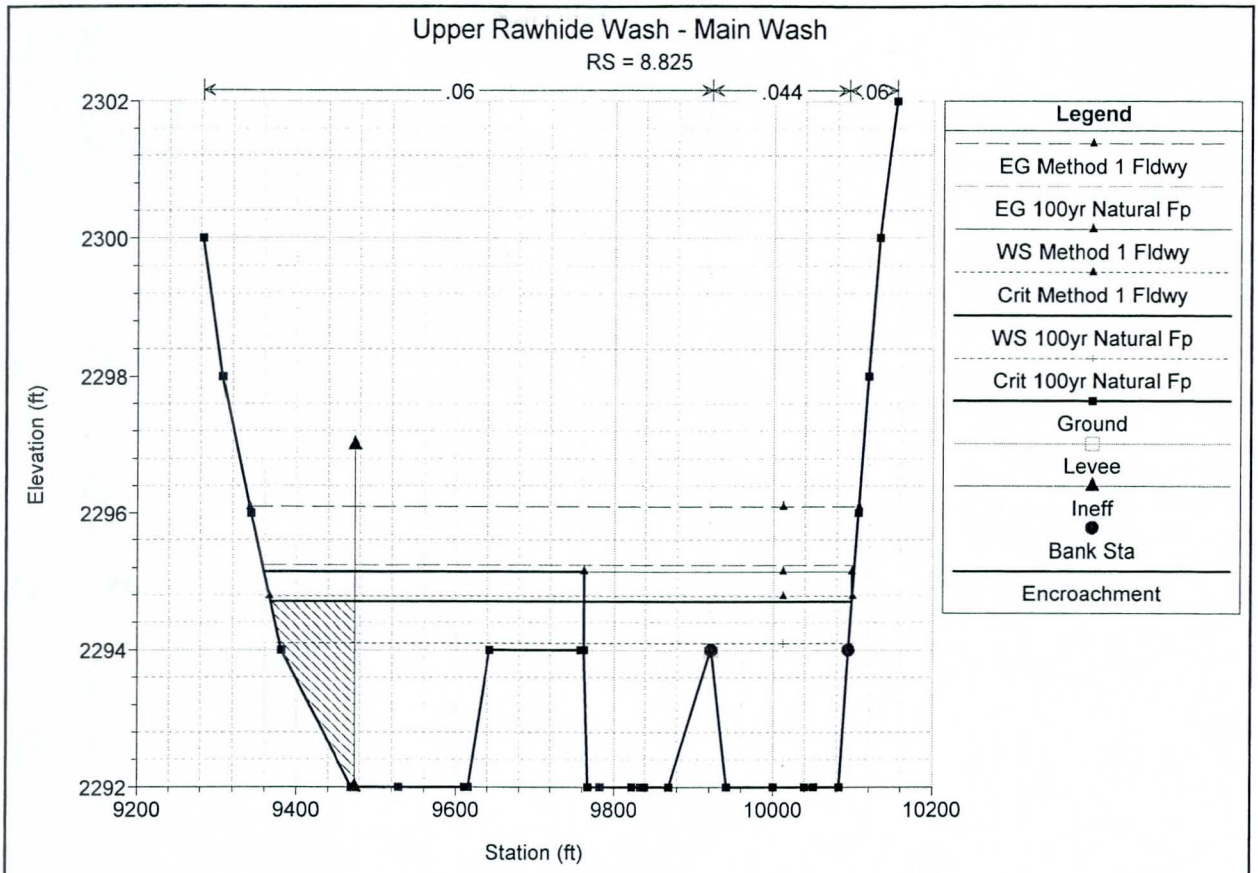

Upper Rawhide Wash - Main Wash
RS = 0.164
.07
.03
.07
Elevation (ft)
Station (ft)
2320
2318
2316
2314
2312
2310
2308
9700
9750
9800
9850
9900
9950
10000
10050
10100
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
Crit 100yr Natural Fp
WS 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

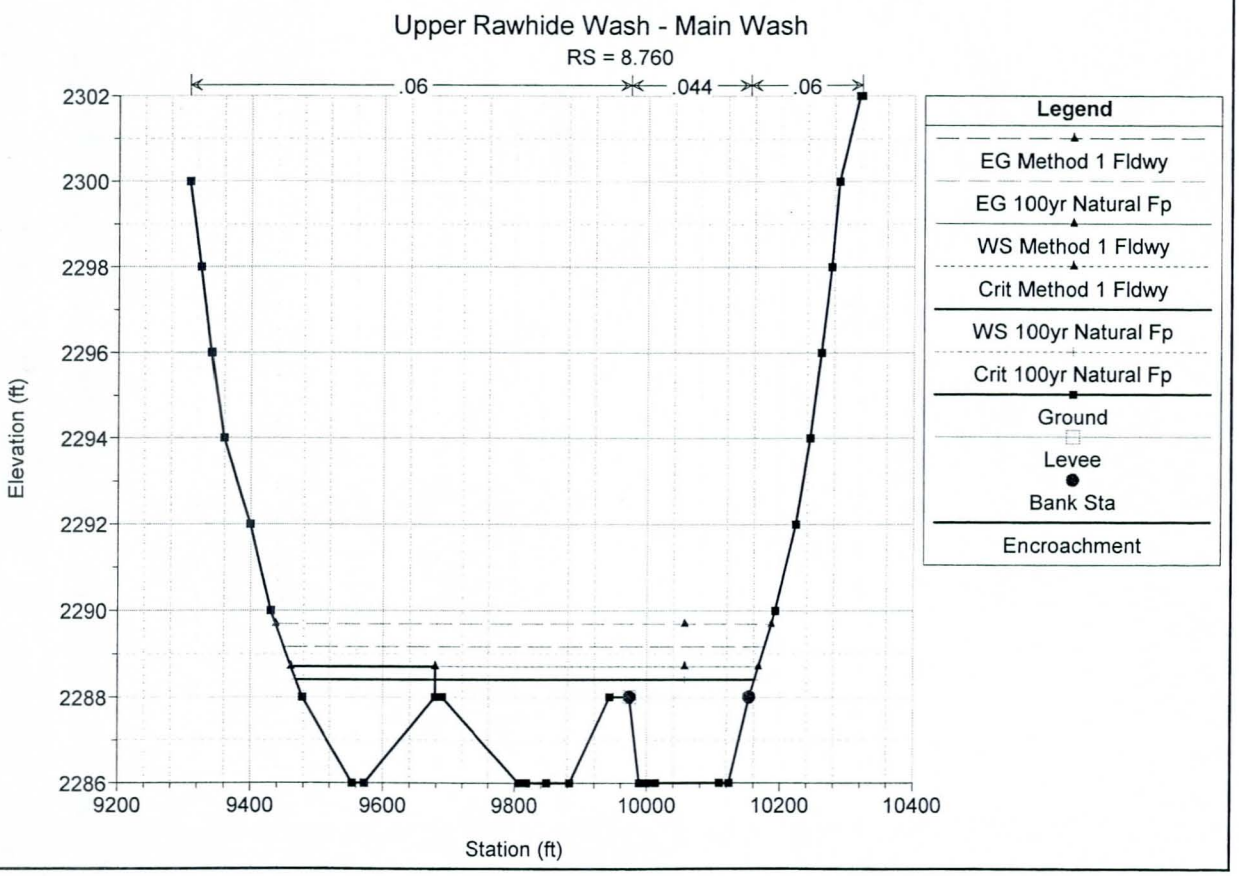

Upper Rawhide Wash - Main Wash
RS = 0.134
.07
.03
.07
Elevation (ft)
Station (ft)
2318
2316
2314
2312
2310
2308
2306
9600
9700
9800
9900
10000
10100
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

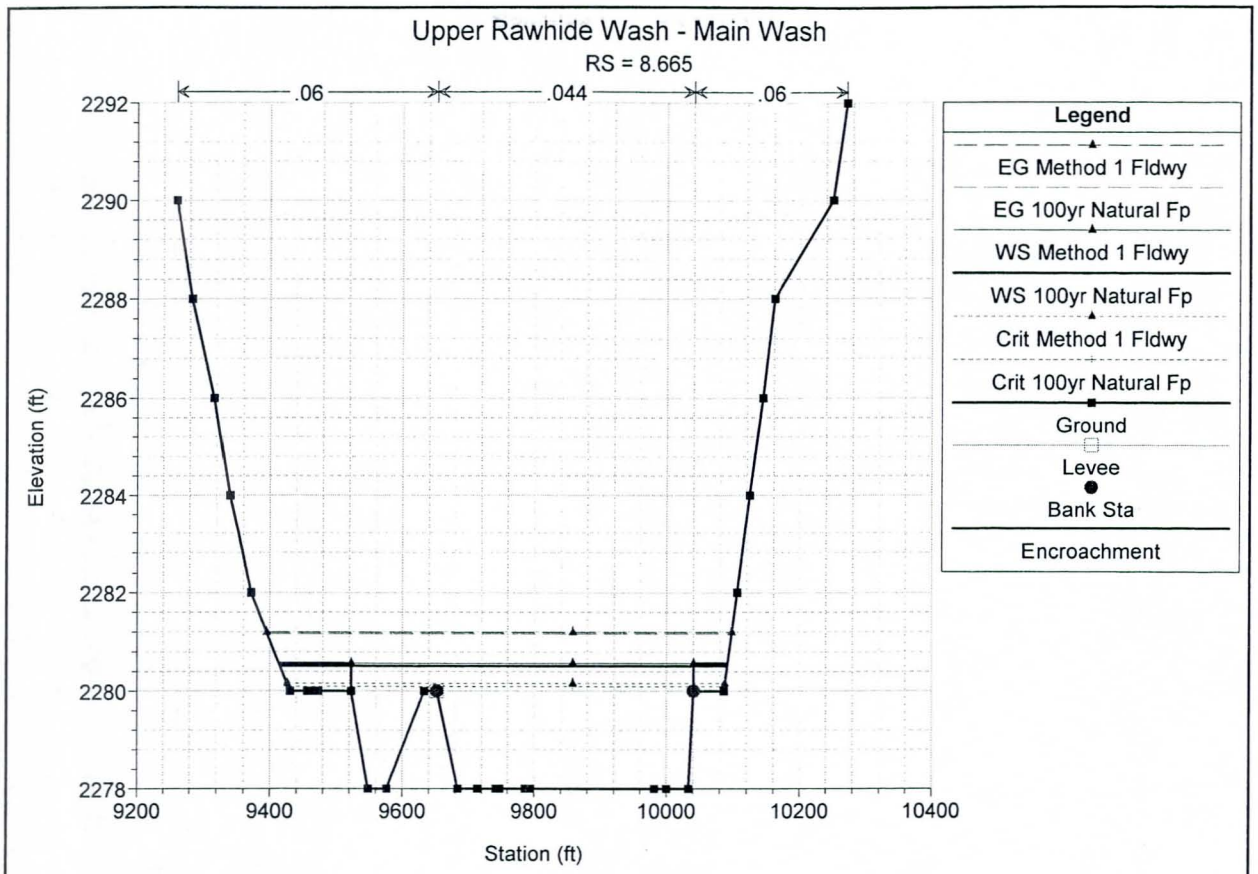

Upper Rawhide Wash - Main Wash
RS = 0.108
.07
.03
.07
Elevation (ft)
Station (ft)
2318
2316
2314
2312
2310
2308
2306
2304
2302
9400
9500
9600
9700
9800
9900
10000
10100
Legend
EG 100yr Natural Fp
EG Method 1 Fldwy
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

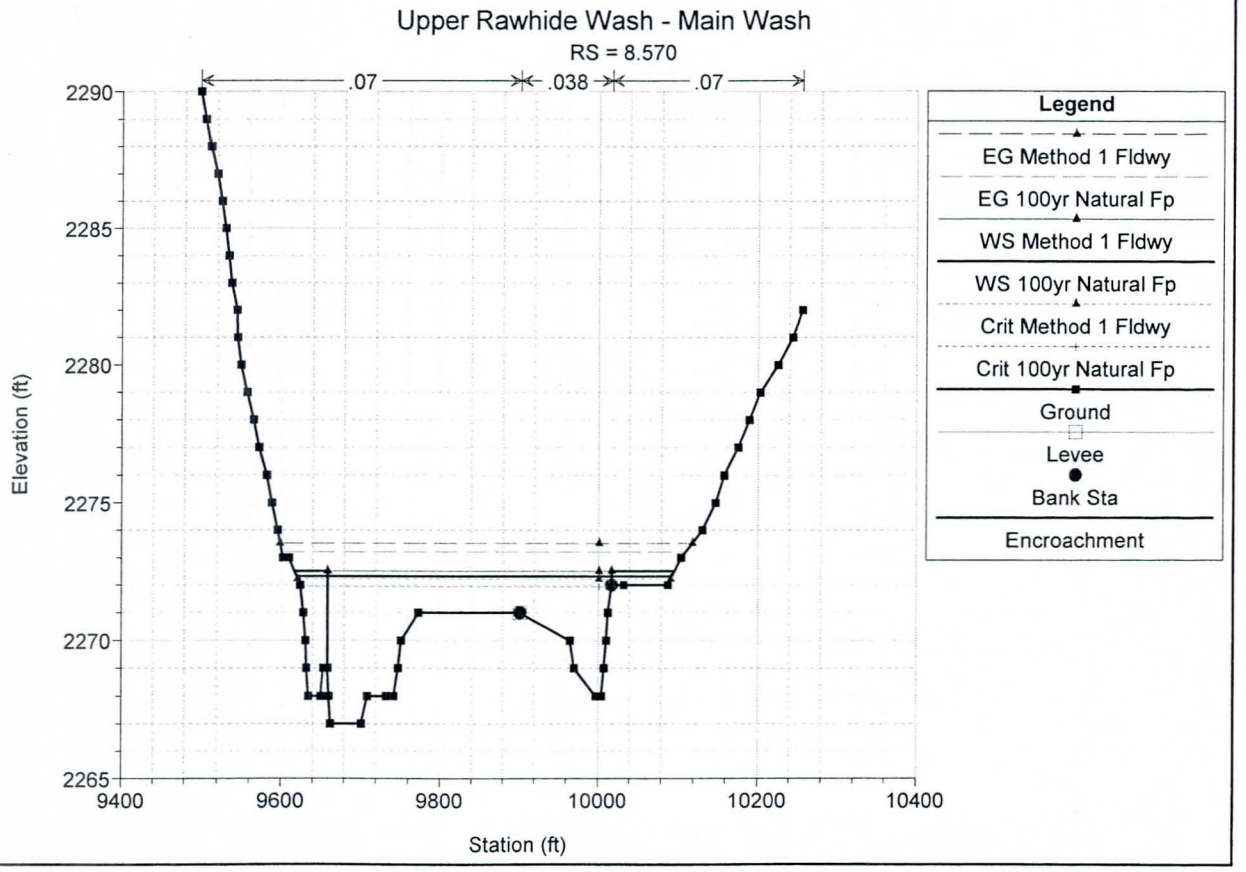

Upper Rawhide Wash - Main Wash
RS = 0.080
.07
.03
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Bank Sta
Encroachment

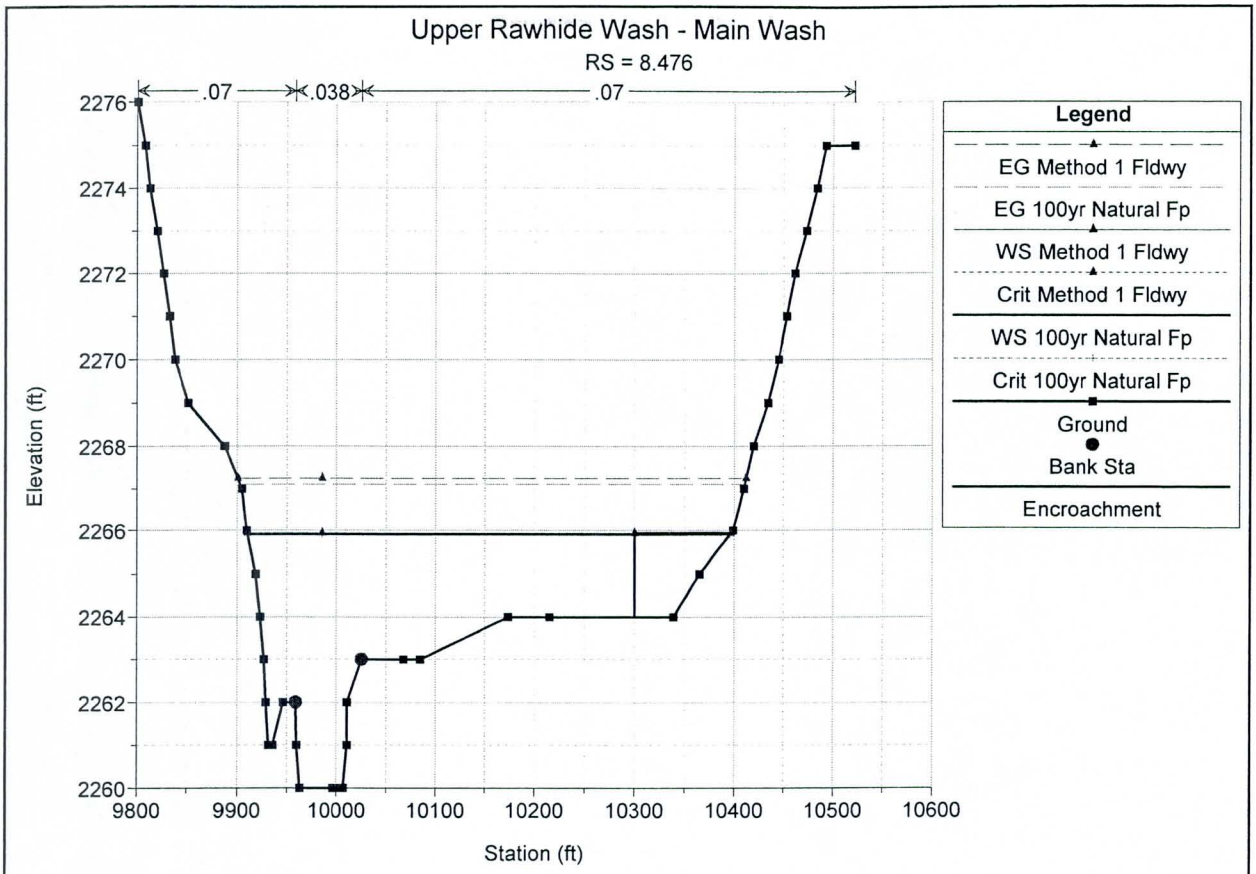

Upper Rawhide Wash - Main Wash
RS = 8.870
.06
.06
.044
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

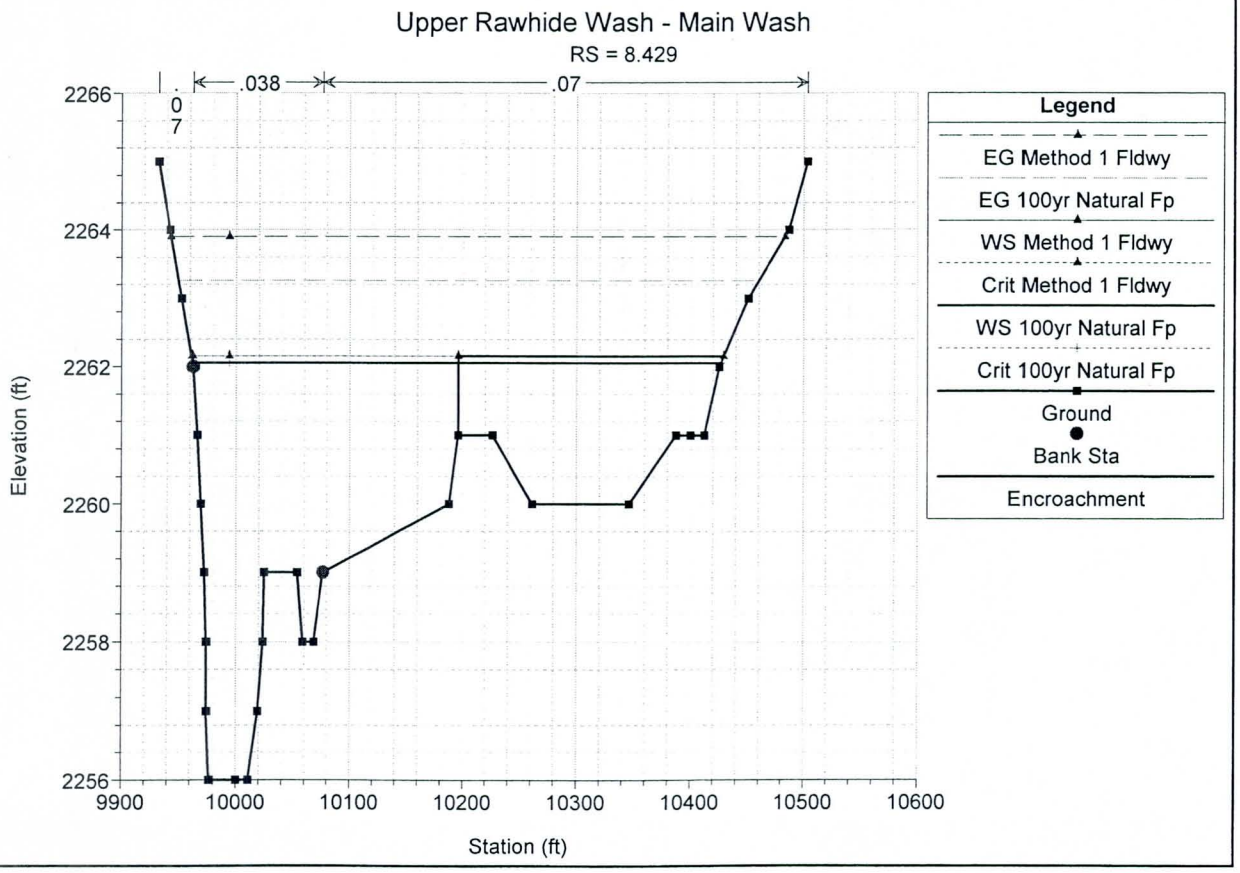

Upper Rawhide Wash - Main Wash
RS = 8.825
.06
.044
.06
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Ineff
Bank Sta
Encroachment

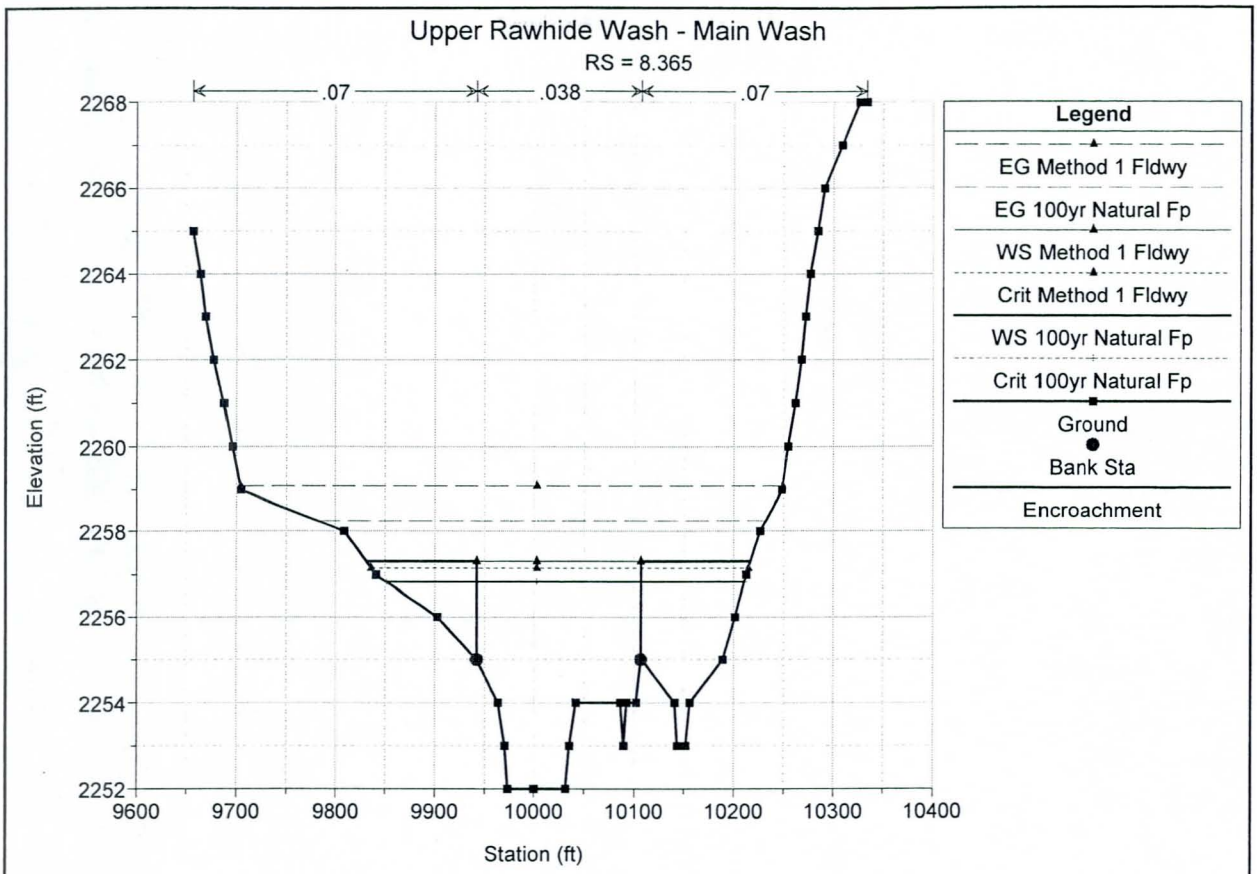

Upper Rawhide Wash - Main Wash
RS = 8.760
.06
.044
.06
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

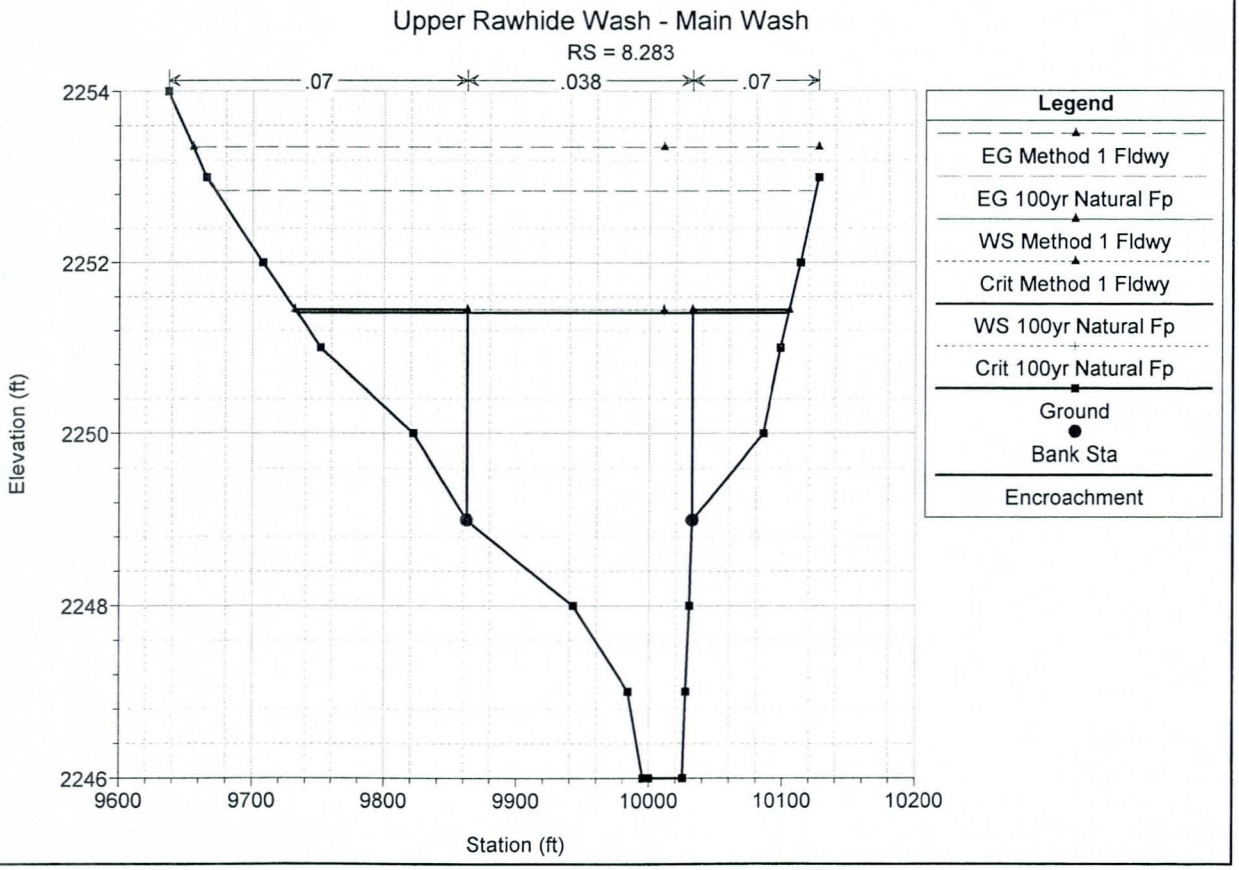

Upper Rawhide Wash - Main Wash
RS = 8.665
.06
.044
.06
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

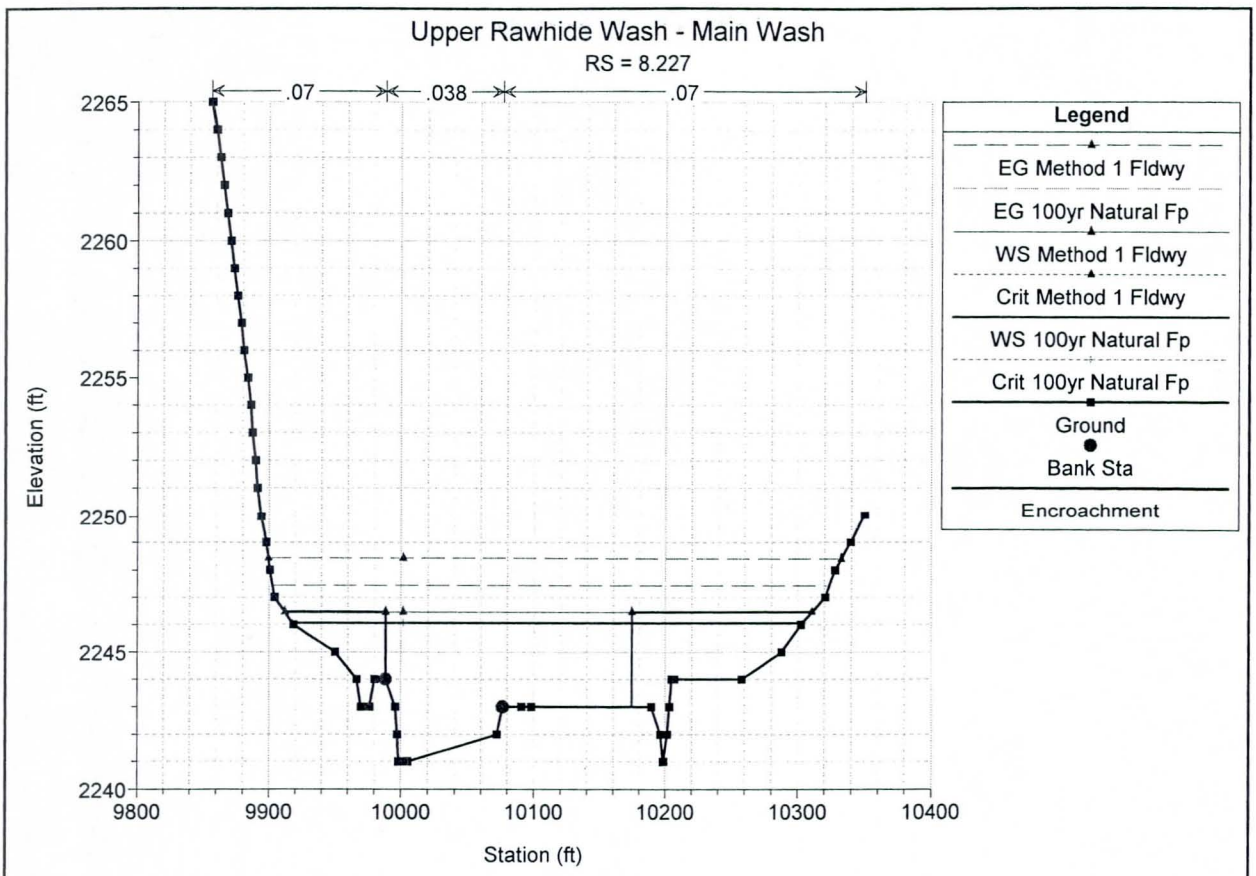

Upper Rawhide Wash - Main Wash
RS = 8.570
.07
.038
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

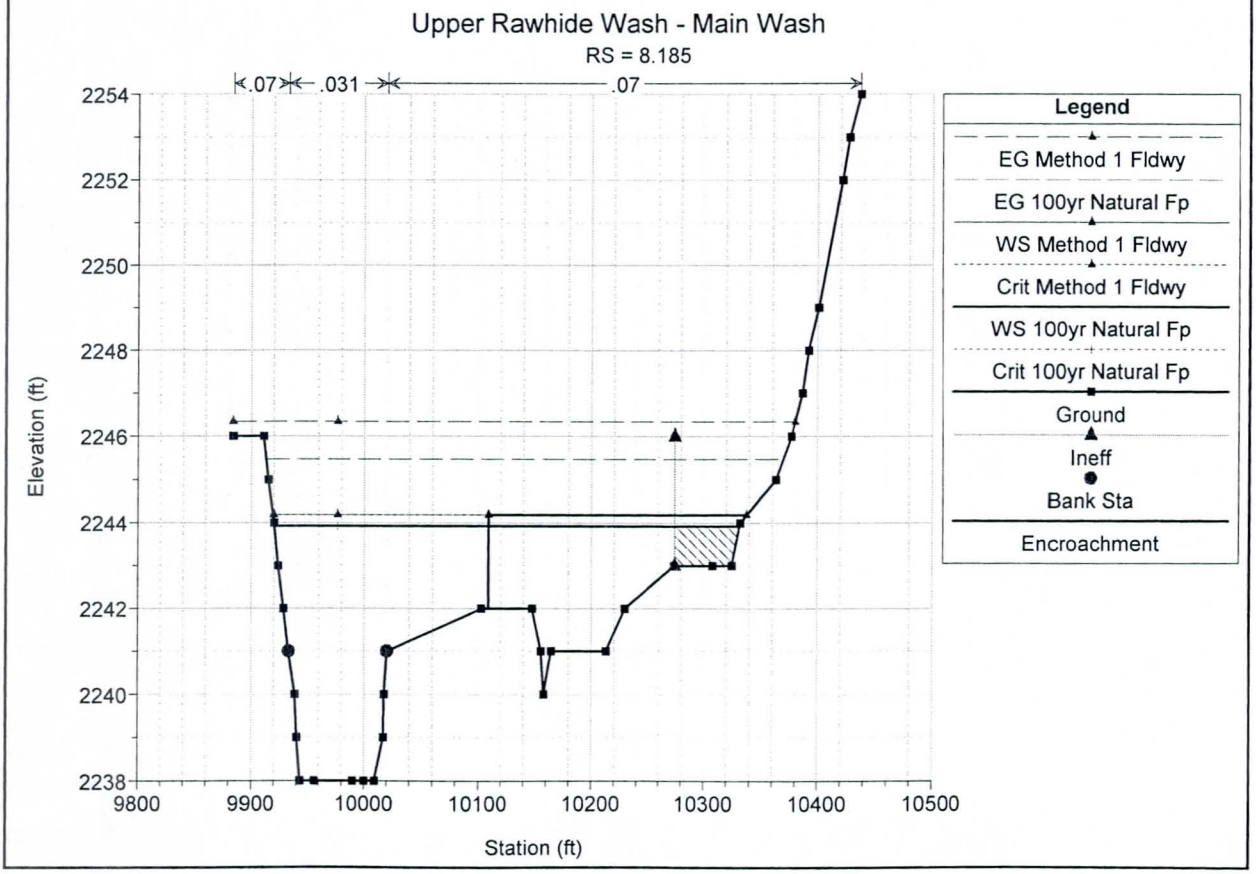

Upper Rawhide Wash - Main Wash
RS = 8.476
.07
.038
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

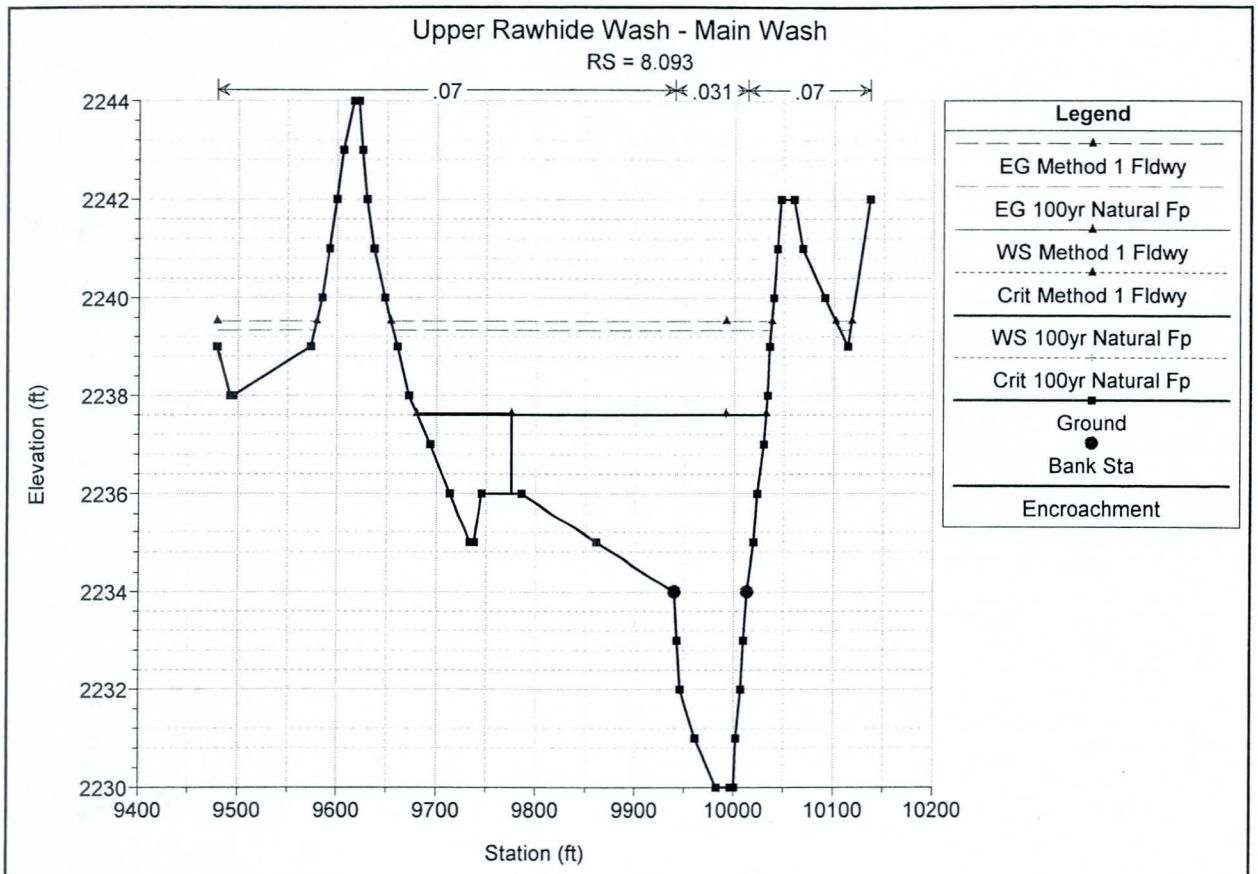

Upper Rawhide Wash - Main Wash
RS = 8.429
.07
.038
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

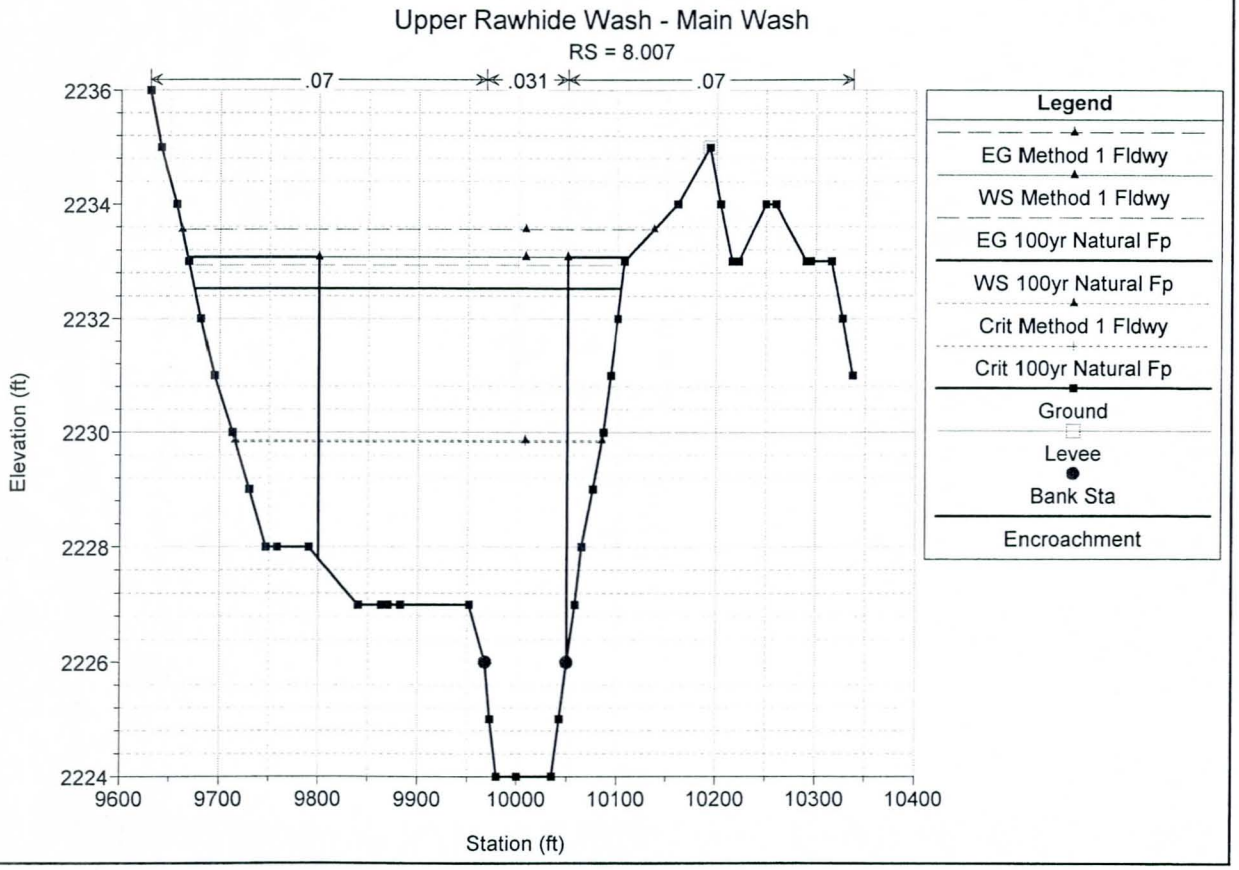

Upper Rawhide Wash - Main Wash
RS = 8.365
.07
.038
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

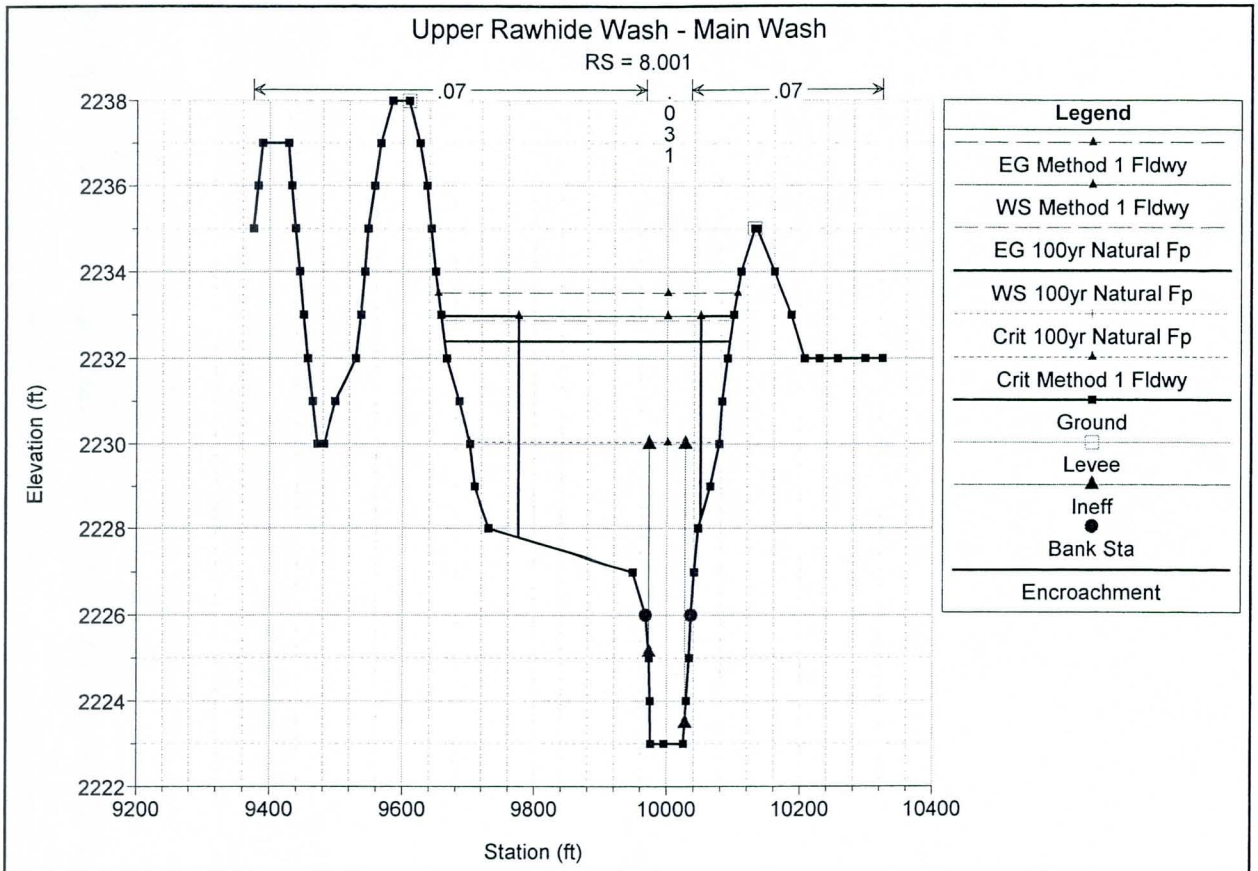

Upper Rawhide Wash - Main Wash
RS = 8.283
.07
.038
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

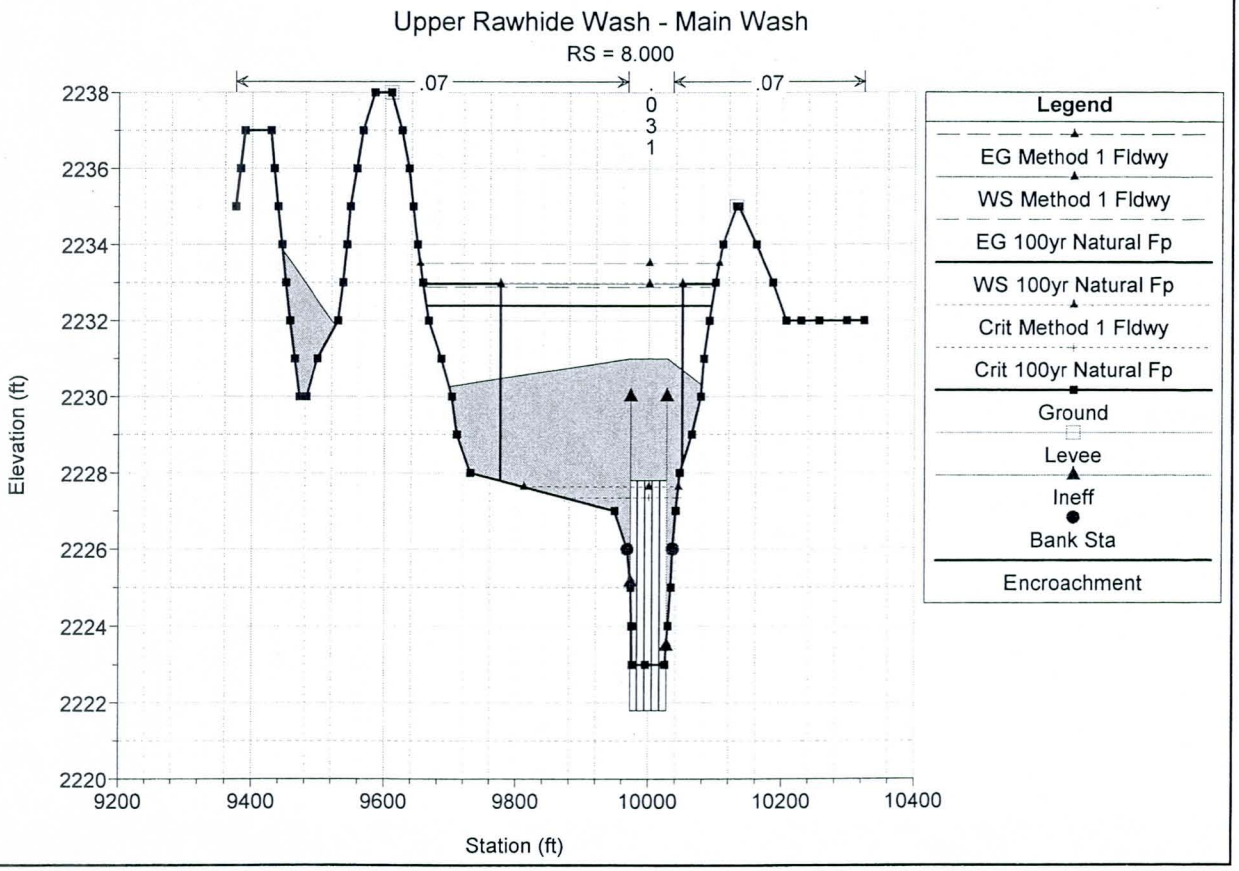

Upper Rawhide Wash - Main Wash
RS = 8.227
.07
.038
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

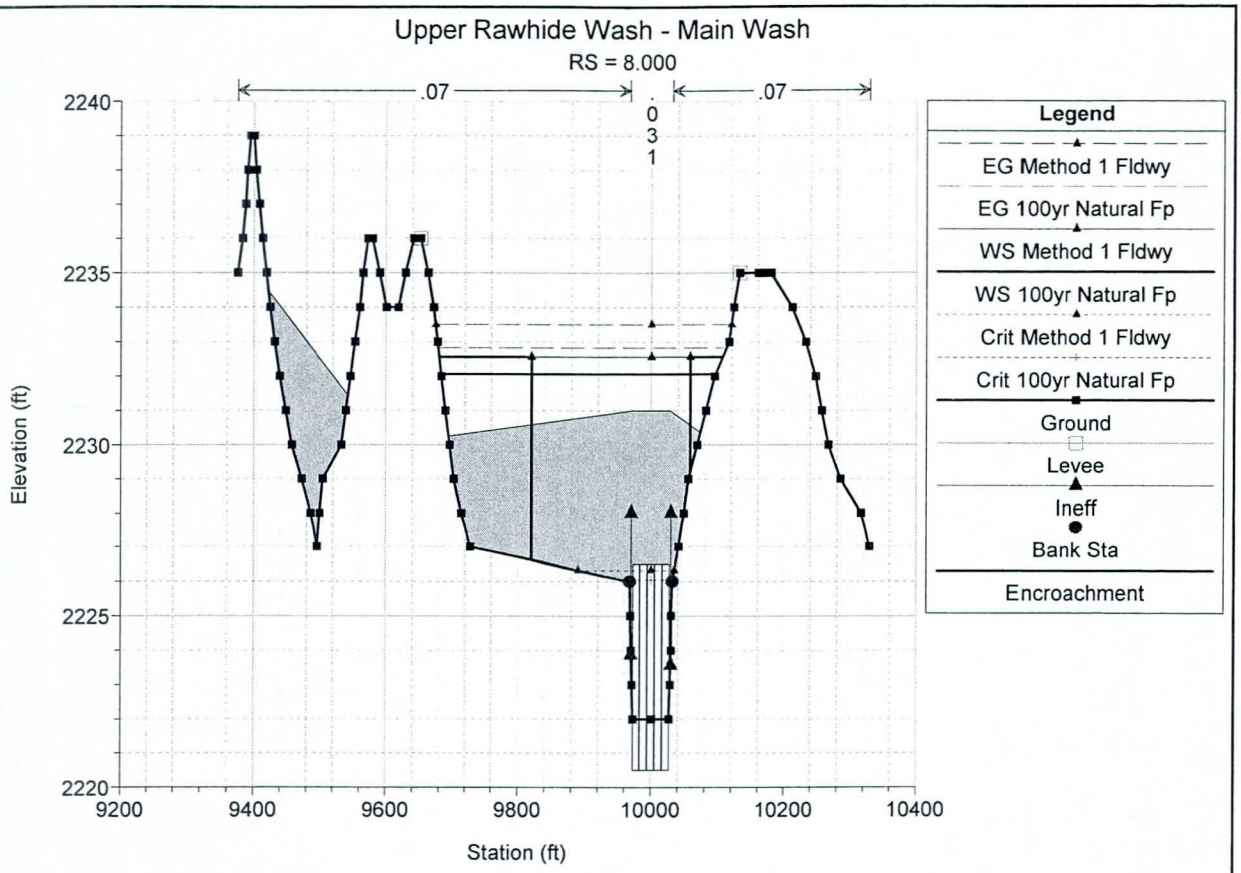

Upper Rawhide Wash - Main Wash
RS = 8.185
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Ineff
Bank Sta
Encroachment

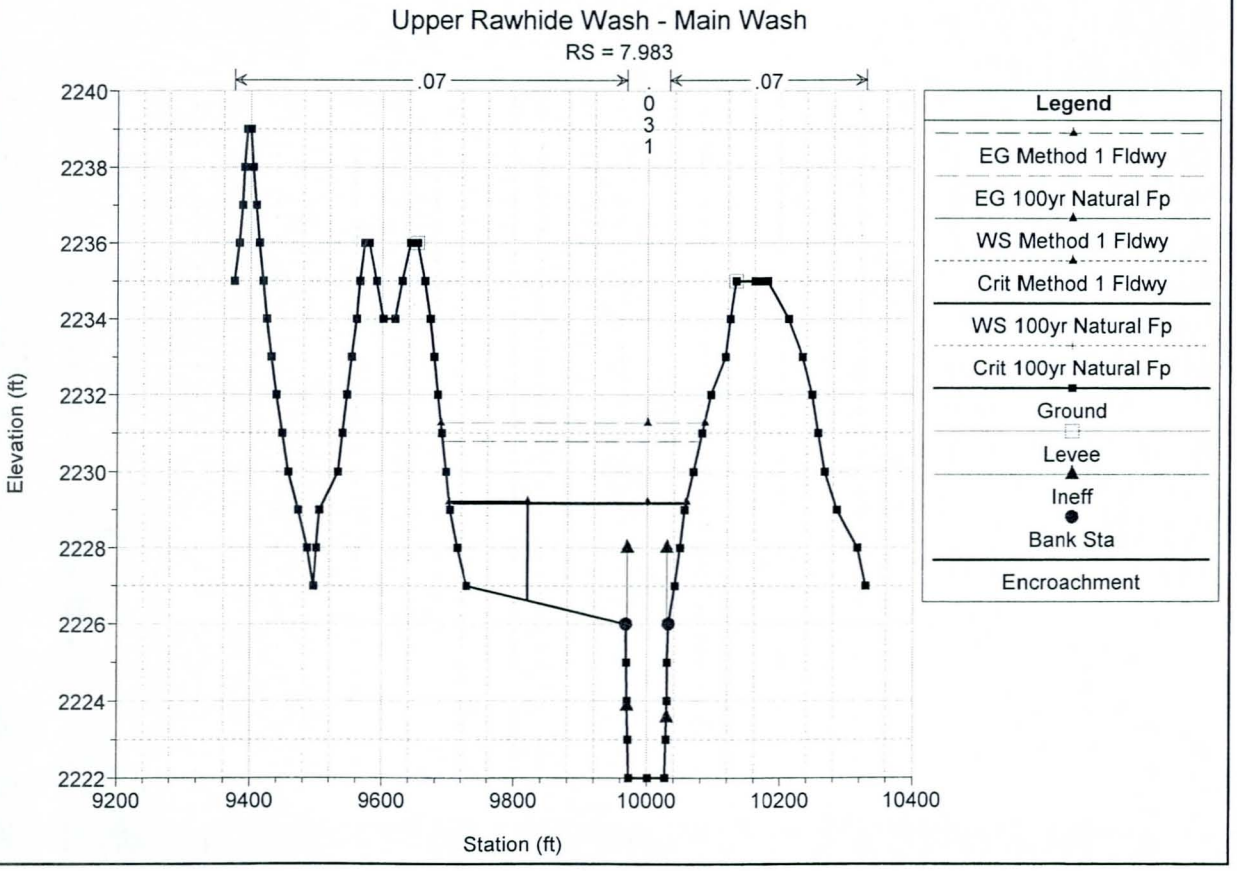

Upper Rawhide Wash - Main Wash
RS = 8.093
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

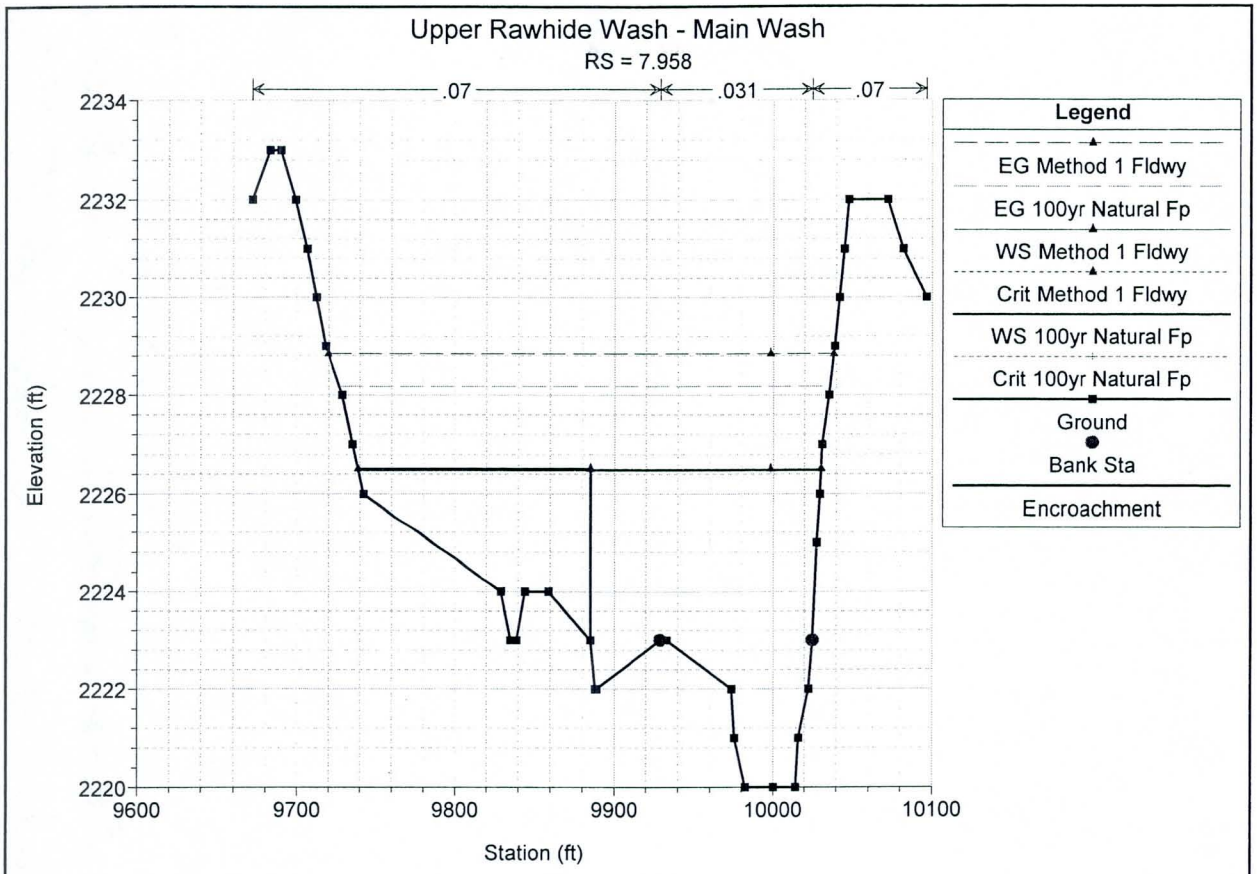

Upper Rawhide Wash - Main Wash
RS = 8.007
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Bank Sta
Encroachment

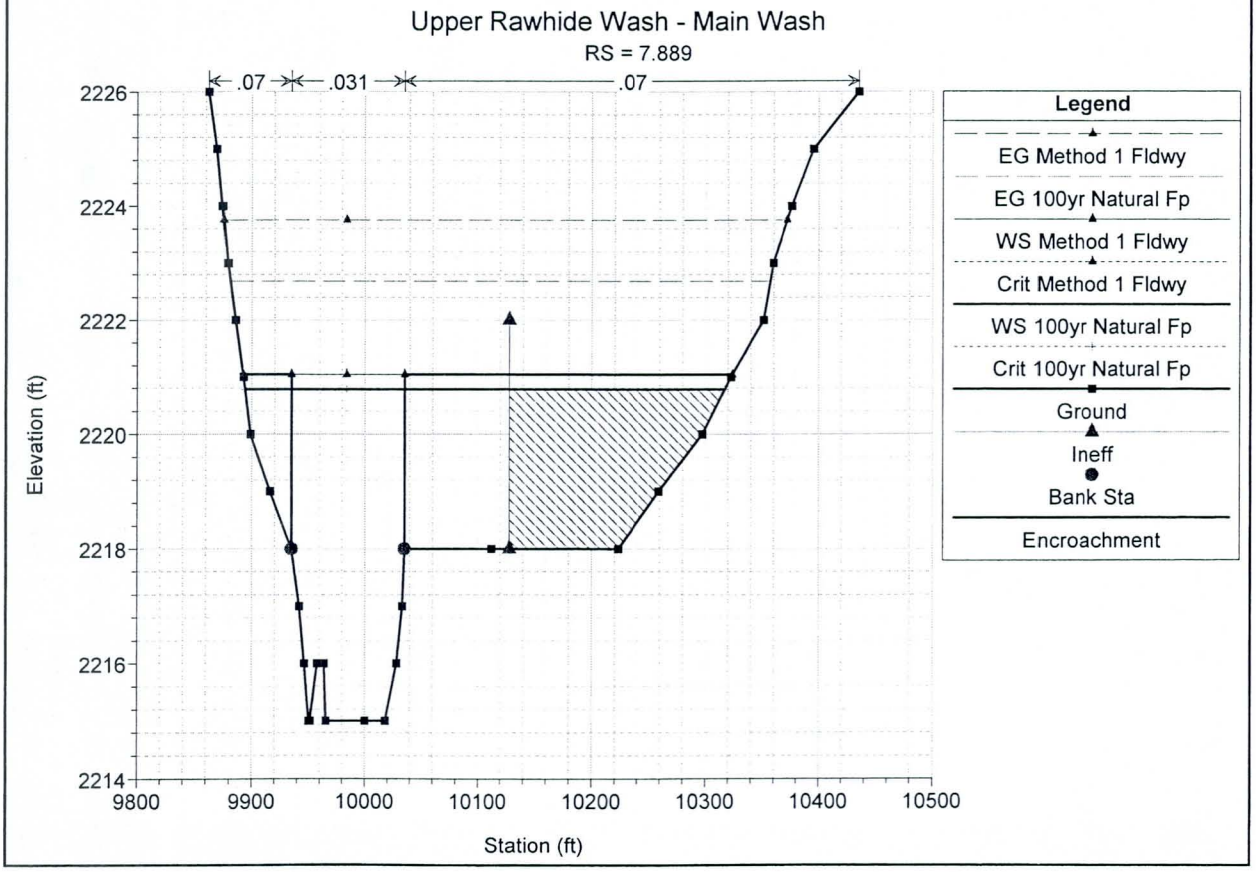

Upper Rawhide Wash - Main Wash
RS = 8.001
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit 100yr Natural Fp
Crit Method 1 Fldwy
Ground
Levee
Ineff
Bank Sta
Encroachment

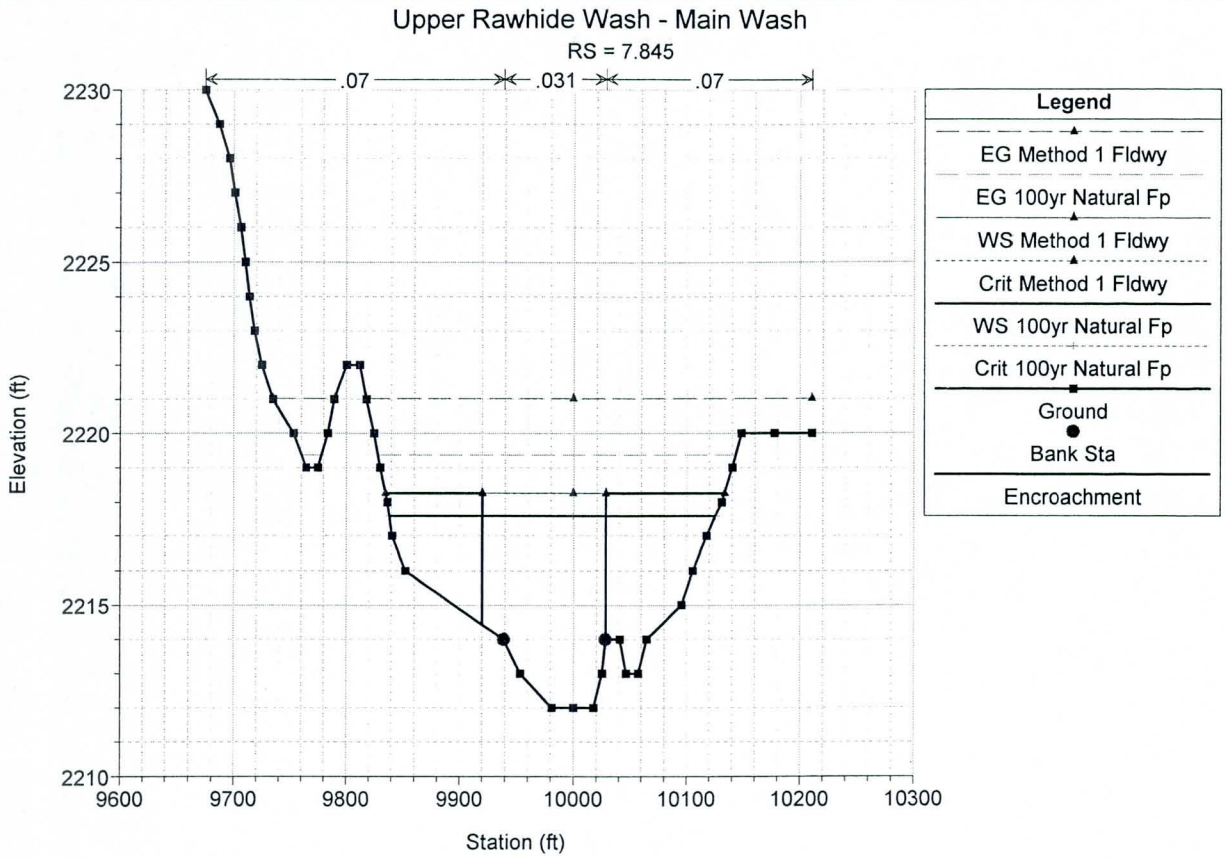

Upper Rawhide Wash - Main Wash
RS = 8.000
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
WS Method 1 Fldwy
EG 100yr Natural Fp
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Ineff
Bank Sta
Encroachment

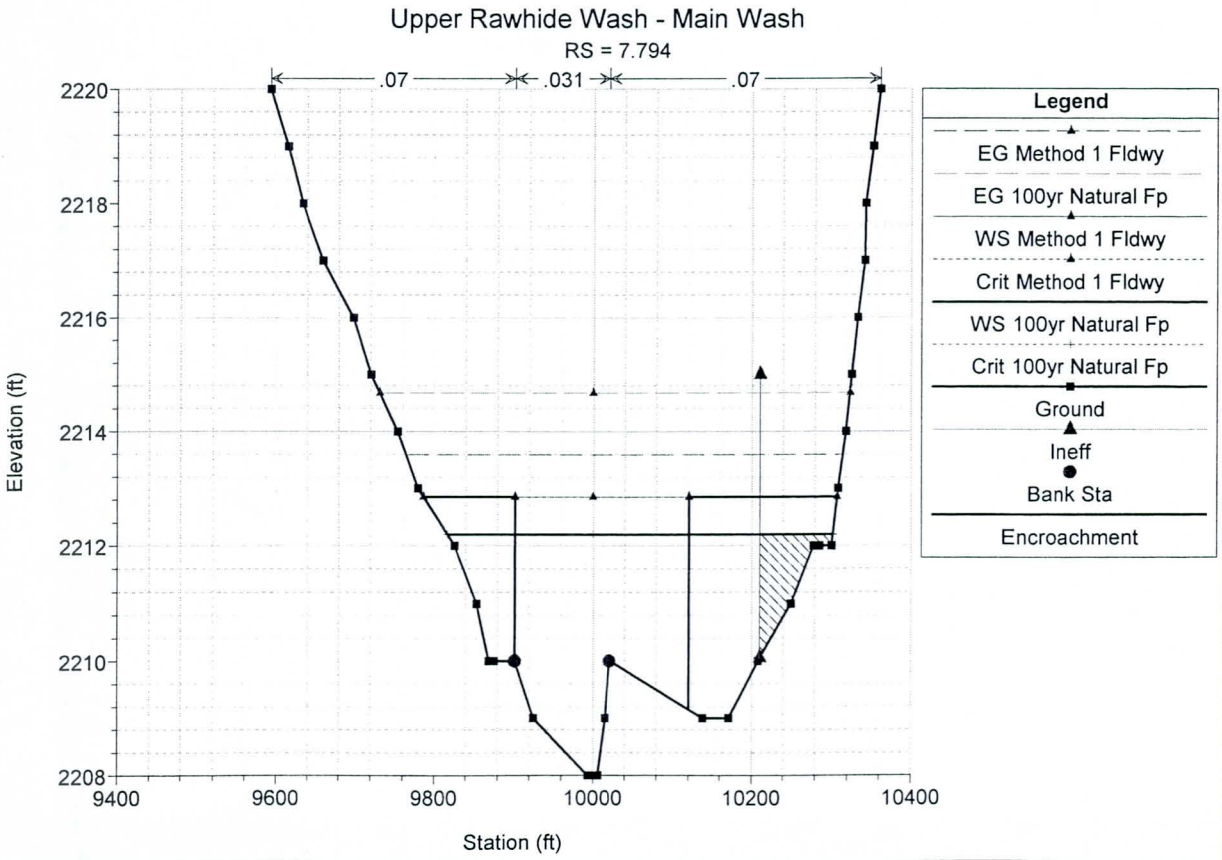

Upper Rawhide Wash - Main Wash
RS = 8.000
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
WS 100yr Natural Fp
Crit Method 1 Fldwy
Crit 100yr Natural Fp
Ground
Levee
Ineff
Bank Sta
Encroachment

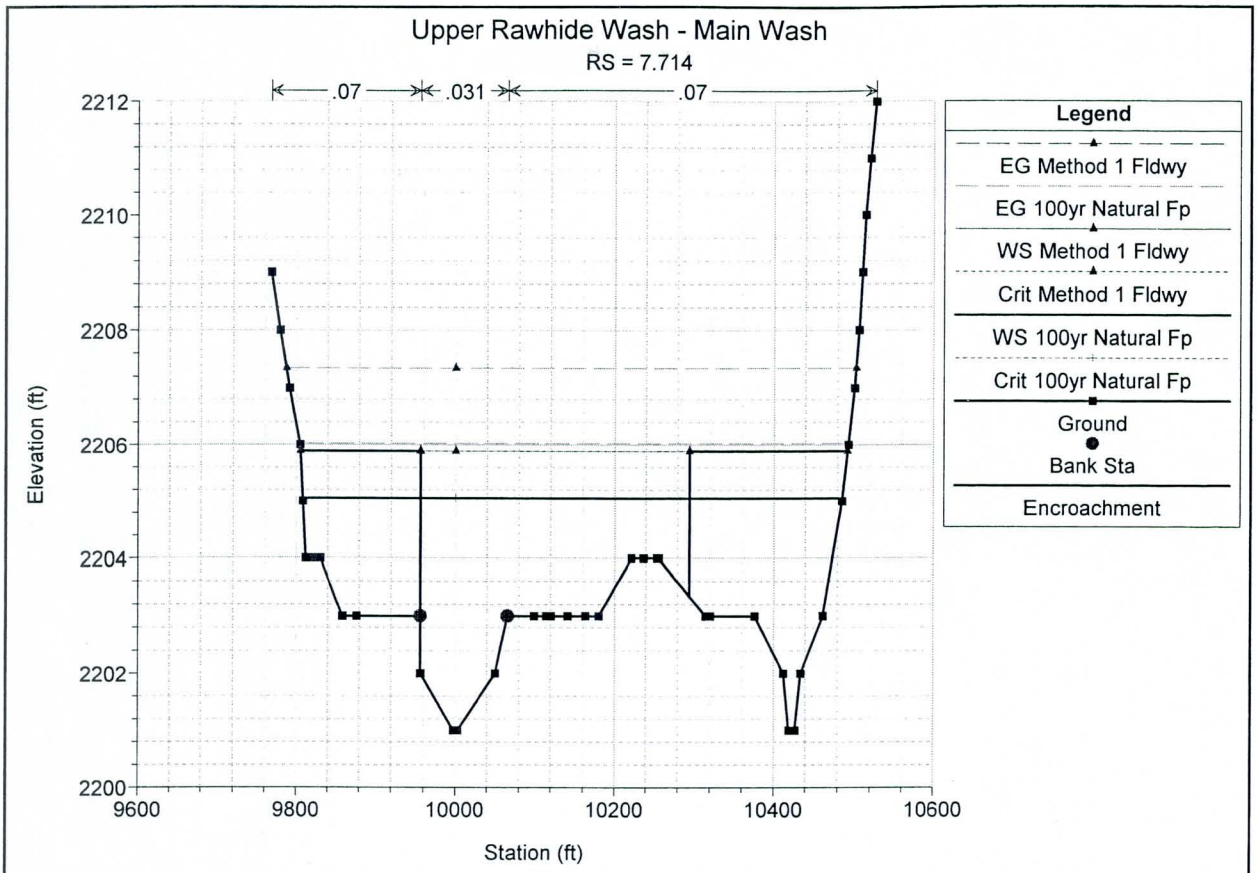

Upper Rawhide Wash - Main Wash
RS = 7.983
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Levee
Ineff
Bank Sta
Encroachment

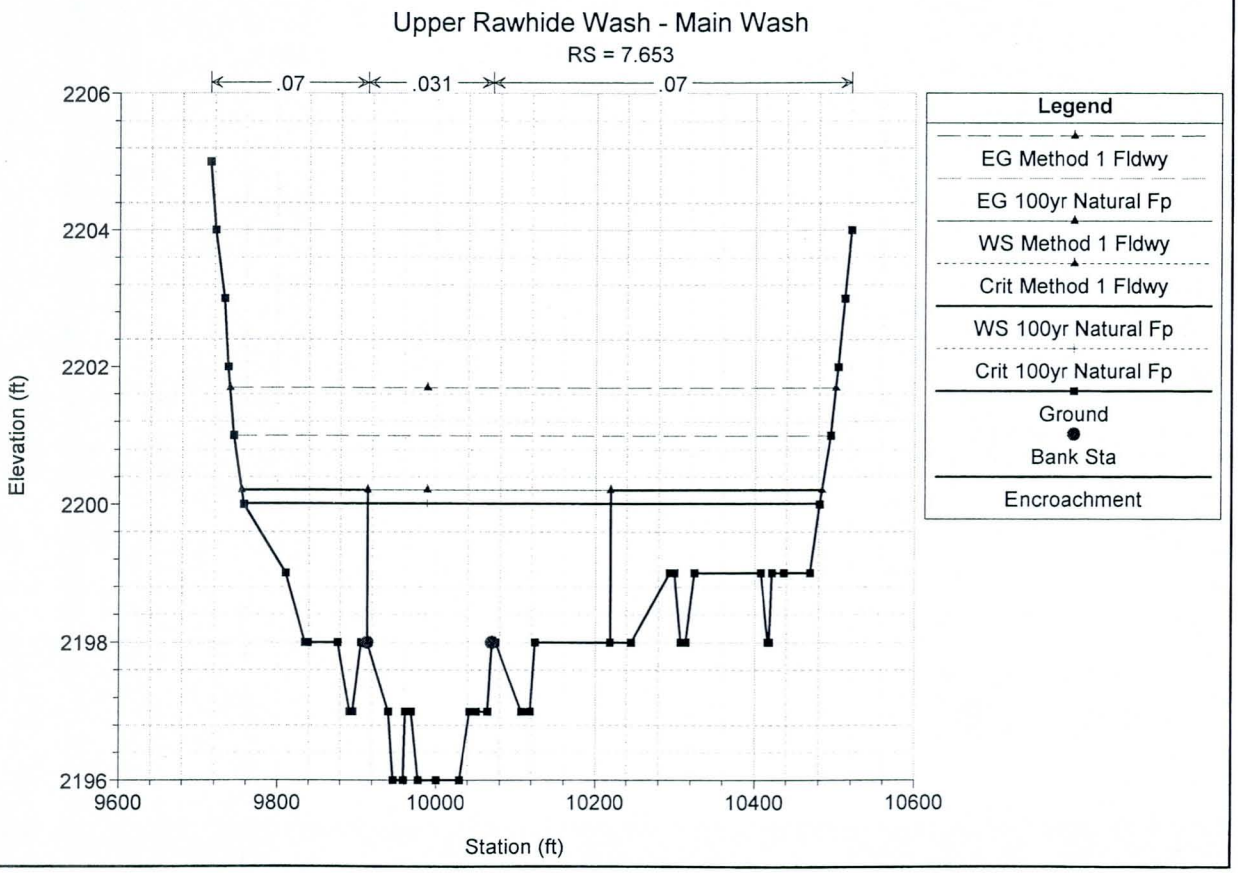

Upper Rawhide Wash - Main Wash
RS = 7.958
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Main Wash
RS = 7.889
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Ineff
Bank Sta
Encroachment


Upper Rawhide Wash - Main Wash
RS = 7.845
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Main Wash
RS = 7.794
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Ineff
Bank Sta
Encroachment


Upper Rawhide Wash - Main Wash
RS = 7.714
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment


Upper Rawhide Wash - Main Wash
RS = 7.653
.07
.031
.07
Elevation (ft)
Station (ft)
Legend
EG Method 1 Fldwy
EG 100yr Natural Fp
WS Method 1 Fldwy
Crit Method 1 Fldwy
WS 100yr Natural Fp
Crit 100yr Natural Fp
Ground
Bank Sta
Encroachment

E.4 ANALYSIS OF STRUCTURES

HY8 Output Files

1

CURRENT DATE: 04-03-2001
CURRENT TIME: 16:49:15

FILE DATE: 04-03-2001
FILE NAME: RAWHIDE

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA: INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	2221.80	2220.50	76.01	5 RCB	10.00	6.00	.013	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: RAWHIDE DATE: 04-03-2001

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
2223.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
2225.08	900.0	900.0	0.0	0.0	0.0	0.0	0.0	0.00	1
2227.06	1800.0	1800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
2228.97	2700.0	2700.0	0.0	0.0	0.0	0.0	0.0	0.00	1
2230.59	3600.0	3345.7	0.0	0.0	0.0	0.0	0.0	244.84	5
2231.07	4500.0	3517.1	0.0	0.0	0.0	0.0	0.0	978.76	3
2231.48	5400.0	3599.9	0.0	0.0	0.0	0.0	0.0	1794.21	3
2231.86	6300.0	3600.0	0.0	0.0	0.0	0.0	0.0	2692.29	3
2232.19	7200.0	3600.0	0.0	0.0	0.0	0.0	0.0	3587.07	4
2232.24	7319.0	3600.0	0.0	0.0	0.0	0.0	0.0	3708.89	3
2232.79	9000.0	3600.0	0.0	0.0	0.0	0.0	0.0	5369.62	4
2230.26	3223.3	3223.3	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: RAWHIDE DATE: 04-03-2001

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
2223.00	0.000	0.00	0.00	0.00
2225.08	0.000	900.00	0.00	0.00
2227.06	0.000	1800.00	0.00	0.00
2228.97	0.000	2700.00	0.00	0.00
2230.59	-0.005	3600.00	9.42	0.26
2231.07	-0.002	4500.00	4.16	0.09
2231.48	-0.002	5400.00	5.86	0.11
2231.86	-0.003	6300.00	7.71	0.12
2232.19	-0.003	7200.00	12.92	0.18
2232.24	-0.003	7319.00	10.11	0.14
2232.79	-0.007	9000.00	30.38	0.34

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 04-03-2001 FILE DATE: 04-03-2001
CURRENT TIME: 16:49:15 FILE NAME: RAWHIDE

PERFORMANCE CURVE FOR CULVERT 1 - 5(10.00 (ft) BY 6.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	2223.00	0.00	1.20	0-NF	0.00	0.00	0.00	2.50	0.00	0.00
900.00	2225.08	3.28	3.28	1-S2n	1.22	2.16	1.41	4.01	12.73	11.15
1800.00	2227.06	5.26	5.26	1-S2n	1.92	3.43	2.40	4.77	14.97	14.26
2700.00	2228.97	7.17	7.17	5-S2n	2.54	4.50	3.27	5.38	16.51	16.41
3345.74	2230.59	8.79	8.79	5-S2n	2.95	5.19	3.85	5.90	17.37	18.07
3517.08	2231.07	9.27	8.39	4-FFt	3.06	5.37	3.06	6.35	22.98	19.44
3599.92	2231.31	9.51	8.94	4-FFt	3.11	5.45	3.11	6.75	23.14	20.81
3600.00	2231.31	9.51	9.26	4-FFt	3.11	5.45	3.11	7.07	23.15	22.03
3600.00	2231.34	9.51	9.54	4-FFt	3.11	5.45	6.00	7.35	12.00	23.09
3600.00	2231.38	9.51	9.58	4-FFt	3.11	5.45	6.00	7.39	12.00	23.20
3600.00	2231.80	9.51	10.00	4-FFt	3.11	5.45	6.00	7.81	12.00	24.72

El. inlet face invert 2221.80 ft El. outlet invert 2220.50 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                     2221.80 ft
      OUTLET STATION                        76.00 ft
      OUTLET ELEVATION                    2220.50 ft
      NUMBER OF BARRELS                        5
      SLOPE (V/H)                              0.0171
      CULVERT LENGTH ALONG SLOPE            76.01 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             6.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.013
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 04-03-2001
CURRENT TIME: 16:49:15

FILE DATE: 04-03-2001
FILE NAME: RAWHIDE

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION
MAIN CHANNEL AND LT & RT OVER BANKS

FILE NAME: RAWHIDE
FILE DATE: 04-03-2001

LEFT CHANNEL BOUNDARY	3
RIGHT CHANNEL BOUNDARY	6
MANNING n LEFT OVER BANK	0.070
MANNING n MAIN CHANNEL	0.031
MANNING n RIGHT OVER BANK	0.070
SLOPE OF CHANNEL	0.0350 ft/ft

CROSS-SECTION COORD. NO.	X (ft)	Y (ft)
1	9648.00	2234.00
2	9730.00	2228.00
3	9968.00	2227.00
4	9976.00	2223.00
5	10025.00	2223.00
6	10040.00	2227.00
7	10110.00	2234.00

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	2223.00	0.000	2.50	0.00	0.00
900.00	2224.51	1.661	4.01	11.15	3.03
1800.00	2225.27	1.763	4.77	14.26	4.38
2700.00	2225.88	1.823	5.38	16.41	5.40
3600.00	2226.40	1.866	5.90	18.07	6.25
4500.00	2226.85	1.899	6.35	19.44	6.97
5400.00	2227.25	1.931	6.75	20.81	7.72
6300.00	2227.57	1.959	7.07	22.03	8.41
7200.00	2227.85	1.982	7.35	23.09	9.02
7319.00	2227.89	1.984	7.39	23.20	9.09
9000.00	2228.31	2.016	7.81	24.72	10.00

Note: Shear stress was calculated using R.

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	76.00 ft
CREST LENGTH	440.00 ft
OVERTOPPING CREST ELEVATION	2230.26 ft

1

CURRENT DATE: 04-03-2001
CURRENT TIME: 16:49:15

FILE DATE: 04-03-2001
FILE NAME: RAWHIDE

FHWA CULVERT ANALYSIS
HY-8, VERSION 6.1

CULV NO.	SITE DATA: INLET ELEV. (ft)	OUTLET ELEV. (ft)	CULVERT LENGTH (ft)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (ft)	RISE (ft)	MANNING n	INLET TYPE
1	2221.80	2220.50	76.01	5 RCB	10.00	6.00	.013	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (cfs) FILE: RAWHIDE DATE: 04-03-2001

ELEV (ft)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
2223.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	1
2225.08	900.0	900.0	0.0	0.0	0.0	0.0	0.0	0.00	1
2227.06	1800.0	1800.0	0.0	0.0	0.0	0.0	0.0	0.00	1
2228.97	2700.0	2700.0	0.0	0.0	0.0	0.0	0.0	0.00	1
2230.59	3600.0	3345.7	0.0	0.0	0.0	0.0	0.0	244.84	5
2231.07	4500.0	3517.1	0.0	0.0	0.0	0.0	0.0	978.76	3
2231.48	5400.0	3599.9	0.0	0.0	0.0	0.0	0.0	1794.21	3
2231.86	6300.0	3600.0	0.0	0.0	0.0	0.0	0.0	2692.29	3
2232.19	7200.0	3600.0	0.0	0.0	0.0	0.0	0.0	3587.07	4
2232.24	7319.0	3600.0	0.0	0.0	0.0	0.0	0.0	3708.89	3
2232.79	9000.0	3600.0	0.0	0.0	0.0	0.0	0.0	5369.62	4
2230.26	3223.3	3223.3	0.0	0.0	0.0	0.0	0.0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: RAWHIDE DATE: 04-03-2001

HEAD ELEV (ft)	HEAD ERROR (ft)	TOTAL FLOW (cfs)	FLOW ERROR (cfs)	% FLOW ERROR
2223.00	0.000	0.00	0.00	0.00
2225.08	0.000	900.00	0.00	0.00
2227.06	0.000	1800.00	0.00	0.00
2228.97	0.000	2700.00	0.00	0.00
2230.59	-0.005	3600.00	9.42	0.26
2231.07	-0.002	4500.00	4.16	0.09
2231.48	-0.002	5400.00	5.86	0.11
2231.86	-0.003	6300.00	7.71	0.12
2232.19	-0.003	7200.00	12.92	0.18
2232.24	-0.003	7319.00	10.11	0.14
2232.79	-0.007	9000.00	30.38	0.34

<1> TOLERANCE (ft) = 0.010 <2> TOLERANCE (%) = 1.000

CURRENT DATE: 04-03-2001 FILE DATE: 04-03-2001
CURRENT TIME: 16:49:15 FILE NAME: RAWHIDE

PERFORMANCE CURVE FOR CULVERT 1 - 5(10.00 (ft) BY 6.00 (ft)) RCB

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRIT. DEPTH (ft)	OUTLET DEPTH (ft)	TW DEPTH (ft)	OUTLET VEL. (fps)	TW VEL. (fps)
0.00	2223.00	0.00	1.20	0-NF	0.00	0.00	0.00	2.50	0.00	0.00
900.00	2225.08	3.28	3.28	1-S2n	1.22	2.16	1.41	4.01	12.73	11.15
1800.00	2227.06	5.26	5.26	1-S2n	1.92	3.43	2.40	4.77	14.97	14.26
2700.00	2228.97	7.17	7.17	5-S2n	2.54	4.50	3.27	5.38	16.51	16.41
3345.74	2230.59	8.79	8.79	5-S2n	2.95	5.19	3.85	5.90	17.37	18.07
3517.08	2231.07	9.27	8.39	4-FFt	3.06	5.37	3.06	6.35	22.98	19.44
3599.92	2231.31	9.51	8.94	4-FFt	3.11	5.45	3.11	6.75	23.14	20.81
3600.00	2231.31	9.51	9.26	4-FFt	3.11	5.45	3.11	7.07	23.15	22.03
3600.00	2231.34	9.51	9.54	4-FFt	3.11	5.45	6.00	7.35	12.00	23.09
3600.00	2231.38	9.51	9.58	4-FFt	3.11	5.45	6.00	7.39	12.00	23.20
3600.00	2231.80	9.51	10.00	4-FFt	3.11	5.45	6.00	7.81	12.00	24.72

El. inlet face invert 2221.80 ft El. outlet invert 2220.50 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

```
***** SITE DATA ***** CULVERT INVERT **************
      INLET STATION                          0.00 ft
      INLET ELEVATION                     2221.80 ft
      OUTLET STATION                        76.00 ft
      OUTLET ELEVATION                    2220.50 ft
      NUMBER OF BARRELS                      5
      SLOPE (V/H)                            0.0171
      CULVERT LENGTH ALONG SLOPE            76.01 ft

***** CULVERT DATA SUMMARY ************************
      BARREL SHAPE          BOX
      BARREL SPAN            10.00 ft
      BARREL RISE             6.00 ft
      BARREL MATERIAL       CONCRETE
      BARREL MANNING'S n    0.013
      INLET TYPE            CONVENTIONAL
      INLET EDGE AND WALL   SQUARE EDGE (30-75 DEG. FLARE)
      INLET DEPRESSION      NONE
```

CURRENT DATE: 04-03-2001 FILE DATE: 04-03-2001
CURRENT TIME: 16:49:15 FILE NAME: RAWHIDE

TAILWATER

***** USER DEFINED CHANNEL CROSS-SECTION FILE NAME: RAWHIDE
MAIN CHANNEL AND LT & RT OVER BANKS FILE DATE: 04-03-2001

LEFT CHANNEL BOUNDARY	3
RIGHT CHANNEL BOUNDARY	6
MANNING n LEFT OVER BANK	0.070
MANNING n MAIN CHANNEL	0.031
MANNING n RIGHT OVER BANK	0.070
SLOPE OF CHANNEL	0.0350 ft/ft

CROSS-SECTION COORD. NO.	X (ft)	Y (ft)
1	9648.00	2234.00
2	9730.00	2228.00
3	9968.00	2227.00
4	9976.00	2223.00
5	10025.00	2223.00
6	10040.00	2227.00
7	10110.00	2234.00

******* UNIFORM FLOW RATING CURVE FOR DOWNSTREAM CHANNEL

FLOW (cfs)	W.S.E. (ft)	FROUDE NUMBER	DEPTH (ft)	VEL. (f/s)	SHEAR (psf)
0.00	2223.00	0.000	2.50	0.00	0.00
900.00	2224.51	1.661	4.01	11.15	3.03
1800.00	2225.27	1.763	4.77	14.26	4.38
2700.00	2225.88	1.823	5.38	16.41	5.40
3600.00	2226.40	1.866	5.90	18.07	6.25
4500.00	2226.85	1.899	6.35	19.44	6.97
5400.00	2227.25	1.931	6.75	20.81	7.72
6300.00	2227.57	1.959	7.07	22.03	8.41
7200.00	2227.85	1.982	7.35	23.09	9.02
7319.00	2227.89	1.984	7.39	23.20	9.09
9000.00	2228.31	2.016	7.81	24.72	10.00

Note: Shear stress was calculated using R.

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH	76.00 ft
CREST LENGTH	440.00 ft
OVERTOPPING CREST ELEVATION	2230.26 ft

E.5 HYDRAULIC CALCULATIONS

Tributary 1

HEC-RAS September 1998 Version 2.2
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Upper Rawhide Wash - Trib. 1
Project File : TRIB1.prj
Run Date and Time: 06/27/2001 7:08:18 AM

Project in English units

Project Description:
Upper Rawhide Wash Floodplain Delineation
FCD 98-12
Tributary 1
(RW20)

Model Created 6/2001

FCD Contact: Richard Harris

Kimley-Horn
and Associates Inc.
7600 N. 15th Street, Suite 250
Phoenix, Arizona
85020

Kimley-Horn Team:

Project Manager - Doug Plasencia
Project
Engineer - Bob Eichinger
Analyst - Jon Ahern
Analyst - Diana
Davisson

HEC-RAS
River Analysis System
Version 2.2, September
1998

Purpose of Study: To delineate the FEMA 100 year
Floodplain/Floodway

Base Mapping: Base Mapping supplied by The City of
Scottsdale through the Flood Control District of Maricopa County

Mapping
Company: Michael Baker Jr.
Date Flown: 11/01/93

PLAN DATA

Plan Title: Floodway Method 1
Plan File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\Disk_2\Trib 1\TRIB1.p02

```
          Geometry Title: Base Conditions Geometry
          Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\Disk_2\Trib 1\TRIB1.G01

          Flow Title    : 100 Year Flood - Floodway
          Flow File     : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\Disk_2\Trib 1\TRIB1.f02

Plan Summary Information:
Number of:  Cross Sections =   17    Mulitple Openings =    0
            Culverts       =    0    Inline Weirs      =    0
            Bridges        =    0

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed at all cross sections
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0

River = Tributary 1      Reach = 1
RS      Profile           Method  Value1  Value2
1.076   Method 1 Fldwy         1 9956.1610024.69
1.044   Method 1 Fldwy         1  9956.6 10066.7
0.95    Method 1 Fldwy         1  9924.2 10060.8
0.854   Method 1 Fldwy         1  9890.8   10096
0.76    Method 1 Fldwy         1  9897.2 10014.2
0.671   Method 1 Fldwy         1  9954.2 10187.1
0.609   Method 1 Fldwy         1  9832.4 10264.9
0.569   Method 1 Fldwy         1 9973.8910180.16
0.535   Method 1 Fldwy         1  9973.6 10195.7
0.462   Method 1 Fldwy         1  9880.4 10088.3
0.422   Method 1 Fldwy         1  9930.4 10112.9
0.377   Method 1 Fldwy         1  9983.2 10212.2
0.284   Method 1 Fldwy         1  9969.3 10075.9
0.238   Method 1 Fldwy         1  9915.1   10035
0.188   Method 1 Fldwy         1  9914.8 10014.3
0.151   Method 1 Fldwy         1  9979.9 10146.5
0.095   Method 1 Fldwy         1  9981.1 10136.6


FLOW DATA

Flow Title: 100 Year Flood - Floodway
Flow File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\Disk_2\Trib 1\TRIB1.f02

Flow Data (cfs)

  River          Reach          RS       100yr Natural Fp  Method 1 Fldwy
  Tributary 1    1              1.076                 648             648


Boundary Conditions

  River          Reach          Profile                        Upstream                Downstream

  Tributary 1    1              100yr Natural Fp                                     Known WS = 2562.8
  Tributary 1    1              Method 1 Fldwy                                       Known WS = 2563.8
```

GEOMETRY DATA

Geometry Title: Base Conditions Geometry
Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\Disk_2\Trib 1\TRIB1.G01

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 1.076

INPUT
Description:
Station Elevation Data num= 7

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9941.4	2676	9956.5	2674	9989.4	2672	10000	2672	10014.8	2672
10023.5	2674	10076.5	2676						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9941.4	.06	9956.5	.033	10023.5	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9956.5	10023.5	201	170	100	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2674.76	Element			
Vel Head (ft)	0.72	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2674.04	Reach Len. (ft)	201.00	170.00	100.00
Crit W.S. (ft)	2674.04	Flow Area (sq ft)	0.01	95.41	0.03
E.G. Slope (ft/ft)	0.014282	Area (sq ft)	0.01	95.41	0.03
Q Total (cfs)	648.00	Flow (cfs)	0.00	647.99	0.01
Top Width (ft)	68.53	Top Width (ft)	0.34	67.00	1.19
Vel Total (ft/s)	6.79	Avg. Vel. (ft/s)	0.23	6.79	0.24
Max Chl Dpth (ft)	2.04	Hydr. Depth (ft)	0.02	1.42	0.02
Conv. Total (cfs)	5422.3	Conv. (cfs)	0.0	5422.2	0.1
Length Wtd. (ft)	168.15	Wetted Per. (ft)	0.34	67.29	1.19
Min Ch El (ft)	2672.00	Shear (lb/sq ft)	0.02	1.26	0.02
Alpha	1.00	Stream Power (lb/ft s)	0.00	8.59	0.00
Frctn Loss (ft)	1.90	Cum Volume (acre-ft)	0.36	12.77	1.05
C & E Loss (ft)	0.05	Cum SA (acres)	0.67	12.17	1.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2674.76	Element			
Vel Head (ft)	0.71	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2674.05	Reach Len. (ft)	201.00	170.00	100.00
Crit W.S. (ft)	2674.05	Flow Area (sq ft)	0.01	95.57	0.03
E.G. Slope (ft/ft)	0.014201	Area (sq ft)	0.01	95.57	0.03
Q Total (cfs)	648.00	Flow (cfs)	0.00	647.99	0.01
Top Width (ft)	68.53	Top Width (ft)	0.34	67.00	1.19
Vel Total (ft/s)	6.78	Avg. Vel. (ft/s)	0.25	6.78	0.25
Max Chl Dpth (ft)	2.05	Hydr. Depth (ft)	0.02	1.43	0.02
Conv. Total (cfs)	5437.8	Conv. (cfs)	0.0	5437.7	0.1
Length Wtd. (ft)	168.15	Wetted Per. (ft)	0.35	67.29	1.19
Min Ch El (ft)	2672.00	Shear (lb/sq ft)	0.02	1.26	0.02
Alpha	1.00	Stream Power (lb/ft s)	0.01	8.54	0.01
Frctn Loss (ft)	1.90	Cum Volume (acre-ft)	0.25	12.87	0.88
C & E Loss (ft)	0.05	Cum SA (acres)	0.50	12.18	1.58

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 1.044

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9956.6	2678	9969.4	2676	9980.2	2674	9983.7	2672	9987.6	2670
9992.3	2668	10000	2668	10005.1	2668	10009.1	2670	10039.6	2672
10066.7	2674								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9956.6	.06	9987.6	.033	10009.1	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.6	10009.1	494	500	498	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2672.73	Element			
Vel Head (ft)	1.18	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2671.54	Reach Len. (ft)	494.00	500.00	498.00
Crit W.S. (ft)	2671.54	Flow Area (sq ft)	2.32	67.49	18.17
E.G. Slope (ft/ft)	0.009173	Area (sq ft)	2.32	67.49	18.17
Q Total (cfs)	648.00	Flow (cfs)	4.29	607.50	36.21
Top Width (ft)	48.05	Top Width (ft)	3.01	21.50	23.54
Vel Total (ft/s)	7.37	Avg. Vel. (ft/s)	1.85	9.00	1.99
Max Chl Dpth (ft)	3.54	Hydr. Depth (ft)	0.77	3.14	0.77
Conv. Total (cfs)	6766.0	Conv. (cfs)	44.8	6343.1	378.1
Length Wtd. (ft)	499.82	Wetted Per. (ft)	3.38	22.38	23.59
Min Ch El (ft)	2668.00	Shear (lb/sq ft)	0.39	1.73	0.44
Alpha	1.40	Stream Power (lb/ft s)	0.73	15.54	0.88
Frctn Loss (ft)	4.70	Cum Volume (acre-ft)	0.35	12.45	1.03
C & E Loss (ft)	0.05	Cum SA (acres)	0.66	12.00	1.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2672.73	Element			
Vel Head (ft)	1.18	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2671.54	Reach Len. (ft)	494.00	500.00	498.00
Crit W.S. (ft)	2671.54	Flow Area (sq ft)	2.32	67.49	18.17
E.G. Slope (ft/ft)	0.009173	Area (sq ft)	2.32	67.49	18.17
Q Total (cfs)	648.00	Flow (cfs)	4.29	607.50	36.21
Top Width (ft)	48.05	Top Width (ft)	3.01	21.50	23.54
Vel Total (ft/s)	7.37	Avg. Vel. (ft/s)	1.85	9.00	1.99
Max Chl Dpth (ft)	3.54	Hydr. Depth (ft)	0.77	3.14	0.77
Conv. Total (cfs)	6766.0	Conv. (cfs)	44.8	6343.1	378.1
Length Wtd. (ft)	499.82	Wetted Per. (ft)	3.38	22.38	23.59
Min Ch El (ft)	2668.00	Shear (lb/sq ft)	0.39	1.73	0.44
Alpha	1.40	Stream Power (lb/ft s)	0.73	15.54	0.88
Frctn Loss (ft)	4.70	Cum Volume (acre-ft)	0.24	12.55	0.85
C & E Loss (ft)	0.05	Cum SA (acres)	0.49	12.01	1.55

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.95

INPUT
Description:
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9924.2	2664	9984.8	2662	9990.6	2660	10000	2660	10009	2660
10013.6	2662	10018.6	2664	10060.8	2666				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9924.2	.06	9984.8	.033	10013.6	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.8	10013.6	494	500	438	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2664.01	Element			
Vel Head (ft)	1.02	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2662.98	Reach Len. (ft)	494.00	500.00	438.00
Crit W.S. (ft)	2662.98	Flow Area (sq ft)	14.66	75.53	1.21
E.G. Slope (ft/ft)	0.009636	Area (sq ft)	14.66	75.53	1.21
Q Total (cfs)	648.00	Flow (cfs)	22.19	624.06	1.74
Top Width (ft)	61.06	Top Width (ft)	29.80	28.80	2.46
Vel Total (ft/s)	7.09	Avg. Vel. (ft/s)	1.51	8.26	1.44
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	0.49	2.62	0.49
Conv. Total (cfs)	6601.4	Conv. (cfs)	226.1	6357.5	17.8
Length Wtd. (ft)	496.87	Wetted Per. (ft)	29.82	29.55	2.65
Min Ch El (ft)	2660.00	Shear (lb/sq ft)	0.30	1.54	0.27
Alpha	1.31	Stream Power (lb/ft s)	0.45	12.70	0.40
Frctn Loss (ft)	4.36	Cum Volume (acre-ft)	0.25	11.63	0.92
C & E Loss (ft)	0.04	Cum SA (acres)	0.47	11.71	1.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2664.01	Element			
Vel Head (ft)	1.02	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2662.98	Reach Len. (ft)	494.00	500.00	438.00
Crit W.S. (ft)	2662.98	Flow Area (sq ft)	14.66	75.53	1.21
E.G. Slope (ft/ft)	0.009636	Area (sq ft)	14.66	75.53	1.21
Q Total (cfs)	648.00	Flow (cfs)	22.19	624.06	1.74
Top Width (ft)	61.06	Top Width (ft)	29.80	28.80	2.46
Vel Total (ft/s)	7.09	Avg. Vel. (ft/s)	1.51	8.26	1.44
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)	0.49	2.62	0.49
Conv. Total (cfs)	6601.4	Conv. (cfs)	226.1	6357.5	17.8
Length Wtd. (ft)	496.87	Wetted Per. (ft)	29.82	29.55	2.65
Min Ch El (ft)	2660.00	Shear (lb/sq ft)	0.30	1.54	0.27
Alpha	1.31	Stream Power (lb/ft s)	0.45	12.70	0.40
Frctn Loss (ft)	4.36	Cum Volume (acre-ft)	0.15	11.73	0.74
C & E Loss (ft)	0.04	Cum SA (acres)	0.30	11.72	1.40

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.854

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9890.8	2656	9934.2	2654	9962.1	2654	9974.4	2654	9983.4	2652
9991.6	2650	10000	2650	10006.5	2650	10008.7	2652	10096	2654

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9890.8	.06	9983.4	.033	10008.7	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.4	10008.7	494	500	482	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2654.18	Element			
Vel Head (ft)	0.89	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2653.30	Reach Len. (ft)	494.00	500.00	482.00
Crit W.S. (ft)	2653.30	Flow Area (sq ft)	3.78	72.99	36.67
E.G. Slope (ft/ft)	0.008016	Area (sq ft)	3.78	72.99	36.67
Q Total (cfs)	648.00	Flow (cfs)	6.18	580.95	60.87
Top Width (ft)	87.71	Top Width (ft)	5.83	25.30	56.58
Vel Total (ft/s)	5.71	Avg. Vel. (ft/s)	1.63	7.96	1.66
Max Chl Dpth (ft)	3.30	Hydr. Depth (ft)	0.65	2.89	0.65
Conv. Total (cfs)	7237.6	Conv. (cfs)	69.0	6488.7	679.9
Length Wtd. (ft)	499.13	Wetted Per. (ft)	5.98	26.31	56.59
Min Ch El (ft)	2650.00	Shear (lb/sq ft)	0.32	1.39	0.32
Alpha	1.75	Stream Power (lb/ft s)	0.52	11.05	0.54
Frctn Loss (ft)	5.44	Cum Volume (acre-ft)	0.15	10.78	0.73
C & E Loss (ft)	0.10	Cum SA (acres)	0.27	11.40	1.50

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2654.18	Element			
Vel Head (ft)	0.89	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2653.30	Reach Len. (ft)	494.00	500.00	482.00
Crit W.S. (ft)	2653.30	Flow Area (sq ft)	3.78	72.99	36.67
E.G. Slope (ft/ft)	0.008016	Area (sq ft)	3.78	72.99	36.67
Q Total (cfs)	648.00	Flow (cfs)	6.18	580.95	60.87
Top Width (ft)	87.71	Top Width (ft)	5.83	25.30	56.58
Vel Total (ft/s)	5.71	Avg. Vel. (ft/s)	1.63	7.96	1.66
Max Chl Dpth (ft)	3.30	Hydr. Depth (ft)	0.65	2.89	0.65
Conv. Total (cfs)	7237.6	Conv. (cfs)	69.0	6488.7	679.9
Length Wtd. (ft)	499.13	Wetted Per. (ft)	5.98	26.31	56.59
Min Ch El (ft)	2650.00	Shear (lb/sq ft)	0.32	1.39	0.32
Alpha	1.75	Stream Power (lb/ft s)	0.52	11.05	0.54
Frctn Loss (ft)	5.44	Cum Volume (acre-ft)	0.04	10.88	0.55
C & E Loss (ft)	0.10	Cum SA (acres)	0.10	11.41	1.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.76

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9873.4	2646	9897.2	2644	9952.5	2642	9957.6	2642	9980.2	2642
10000	2642	10011.9	2642	10014.2	2644	10019.5	2644	10125.2	2644
10161	2646								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9873.4	.06	9897.2	.033	10014.2	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9897.2	10014.2	455	467	519	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2643.92	Element			
Vel Head (ft)	0.55	Wt. n-Val.		0.033	
W.S. Elev (ft)	2643.37	Reach Len. (ft)	455.00	467.00	519.00
Crit W.S. (ft)	2643.37	Flow Area (sq ft)		108.51	
E.G. Slope (ft/ft)	0.015652	Area (sq ft)		108.51	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	98.89	Top Width (ft)		98.89	
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)		5.97	
Max Chl Dpth (ft)	1.37	Hydr. Depth (ft)		1.10	
Conv. Total (cfs)	5179.6	Conv. (cfs)		5179.6	
Length Wtd. (ft)	467.00	Wetted Per. (ft)		99.42	
Min Ch El (ft)	2642.00	Shear (lb/sq ft)		1.07	
Alpha	1.00	Stream Power (lb/ft s)		6.37	
Frctn Loss (ft)	7.89	Cum Volume (acre-ft)	0.13	9.74	0.53
C & E Loss (ft)	0.07	Cum SA (acres)	0.24	10.69	1.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2643.92	Element			
Vel Head (ft)	0.55	Wt. n-Val.		0.033	
W.S. Elev (ft)	2643.37	Reach Len. (ft)	455.00	467.00	519.00
Crit W.S. (ft)	2643.37	Flow Area (sq ft)		108.51	
E.G. Slope (ft/ft)	0.015652	Area (sq ft)		108.51	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	98.89	Top Width (ft)		98.89	
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)		5.97	
Max Chl Dpth (ft)	1.37	Hydr. Depth (ft)		1.10	
Conv. Total (cfs)	5179.6	Conv. (cfs)		5179.6	
Length Wtd. (ft)	467.00	Wetted Per. (ft)		99.42	
Min Ch El (ft)	2642.00	Shear (lb/sq ft)		1.07	
Alpha	1.00	Stream Power (lb/ft s)		6.37	
Frctn Loss (ft)	7.89	Cum Volume (acre-ft)	0.02	9.83	0.35
C & E Loss (ft)	0.07	Cum SA (acres)	0.07	10.70	0.79

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.671

INPUT

Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9927.5	2638	9954.2	2636	9974.8	2634	9977.4	2634	9987.4	2634
10000	2634	10014.5	2634	10027.4	2634	10033.6	2634	10149.1	2634
10171.5	2634	10187.1	2636	10202.5	2638	10228.4	2640		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9927.5	.06	9954.2	.033	10187.1	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9954.2	10187.1	270	329	307	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2635.02	Element			
Vel Head (ft)	0.34	Wt. n-Val.		0.033	
W.S. Elev (ft)	2634.69	Reach Len. (ft)	270.00	329.00	307.00
Crit W.S. (ft)	2634.69	Flow Area (sq ft)		139.41	
E.G. Slope (ft/ft)	0.018310	Area (sq ft)		139.41	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	209.13	Top Width (ft)		209.13	
Vel Total (ft/s)	4.65	Avg. Vel. (ft/s)		4.65	
Max Chl Dpth (ft)	0.69	Hydr. Depth (ft)		0.67	
Conv. Total (cfs)	4788.8	Conv. (cfs)		4788.8	
Length Wtd. (ft)	328.98	Wetted Per. (ft)		209.21	
Min Ch El (ft)	2634.00	Shear (lb/sq ft)		0.76	
Alpha	1.00	Stream Power (lb/ft s)		3.54	
Frctn Loss (ft)	5.23	Cum Volume (acre-ft)	0.13	8.41	0.53
C & E Loss (ft)	0.04	Cum SA (acres)	0.24	9.04	1.19

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2635.02	Element			
Vel Head (ft)	0.34	Wt. n-Val.		0.033	
W.S. Elev (ft)	2634.69	Reach Len. (ft)	270.00	329.00	307.00
Crit W.S. (ft)	2634.69	Flow Area (sq ft)		139.41	
E.G. Slope (ft/ft)	0.018310	Area (sq ft)		139.41	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	209.13	Top Width (ft)		209.13	
Vel Total (ft/s)	4.65	Avg. Vel. (ft/s)		4.65	
Max Chl Dpth (ft)	0.69	Hydr. Depth (ft)		0.67	
Conv. Total (cfs)	4788.8	Conv. (cfs)		4788.8	
Length Wtd. (ft)	328.98	Wetted Per. (ft)		209.21	
Min Ch El (ft)	2634.00	Shear (lb/sq ft)		0.76	
Alpha	1.00	Stream Power (lb/ft s)		3.54	
Frctn Loss (ft)	5.23	Cum Volume (acre-ft)	0.02	8.51	0.35
C & E Loss (ft)	0.04	Cum SA (acres)	0.07	9.05	0.79

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.609

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9832.4	2636	9865.2	2634	9903.2	2632	9950.9	2628	9991.7	2626
10000	2626	10006.9	2626	10018.7	2628	10165.9	2630	10181.6	2632
10194	2634	10206.6	2636	10245.8	2638	10264.9	2640		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9832.4	.06	9950.9	.033	10018.7	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9950.9	10018.7	189	210	244	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2628.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2628.20	Reach Len. (ft)	189.00	210.00	244.00
Crit W.S. (ft)	2628.20	Flow Area (sq ft)	0.24	96.49	1.46
E.G. Slope (ft/ft)	0.013909	Area (sq ft)	0.24	96.49	1.46
Q Total (cfs)	648.00	Flow (cfs)	0.15	646.94	0.91
Top Width (ft)	84.82	Top Width (ft)	2.37	67.80	14.64
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	0.63	6.70	0.63
Max Chl Dpth (ft)	2.20	Hydr. Depth (ft)	0.10	1.42	0.10
Conv. Total (cfs)	5494.4	Conv. (cfs)	1.3	5485.4	7.7
Length Wtd. (ft)	212.34	Wetted Per. (ft)	2.38	68.02	14.65
Min Ch El (ft)	2626.00	Shear (lb/sq ft)	0.09	1.23	0.09
Alpha	1.03	Stream Power (lb/ft s)	0.05	8.26	0.05
Frctn Loss (ft)	2.48	Cum Volume (acre-ft)	0.13	7.52	0.52
C & E Loss (ft)	0.07	Cum SA (acres)	0.23	7.99	1.13

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2628.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.	0.060	0.033	0.060
W.S. Elev (ft)	2628.20	Reach Len. (ft)	189.00	210.00	244.00
Crit W.S. (ft)	2628.20	Flow Area (sq ft)	0.24	96.49	1.46
E.G. Slope (ft/ft)	0.013909	Area (sq ft)	0.24	96.49	1.46
Q Total (cfs)	648.00	Flow (cfs)	0.15	646.94	0.91
Top Width (ft)	84.82	Top Width (ft)	2.37	67.80	14.64
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)	0.63	6.70	0.63
Max Chl Dpth (ft)	2.20	Hydr. Depth (ft)	0.10	1.42	0.10
Conv. Total (cfs)	5494.4	Conv. (cfs)	1.3	5485.4	7.7
Length Wtd. (ft)	212.44	Wetted Per. (ft)	2.38	68.02	14.65
Min Ch El (ft)	2626.00	Shear (lb/sq ft)	0.09	1.23	0.09
Alpha	1.03	Stream Power (lb/ft s)	0.05	8.26	0.05
Frctn Loss (ft)	2.39	Cum Volume (acre-ft)	0.02	7.61	0.35
C & E Loss (ft)	0.08	Cum SA (acres)	0.06	8.00	0.74

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.569

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9916.5	2628	9940.7	2626	9987.6	2624	9994	2622	10000	2622

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 10003.6    2622 10008.4    2624 10026.4    2624 10029.3    2622 10034.4    2622
 10049.1    2624 10108.4    2624 10127.3    2624 10308.1    2626

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9916.5     .06  9987.6    .033 10049.1     .06

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9987.6 10049.1              171     183     219             .1       .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2625.05   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.46   Wt. n-Val.                 0.060      0.033      0.060
  W.S. Elev (ft)            2624.58   Reach Len. (ft)           171.00     183.00     219.00
  Crit W.S. (ft)            2624.58   Flow Area (sq ft)           4.01      94.16      61.18
  E.G. Slope (ft/ft)       0.009939   Area (sq ft)                4.01      94.16      61.18
  Q Total (cfs)              648.00   Flow (cfs)                  4.36     552.75      90.89
  Top Width (ft)             206.27   Top Width (ft)             13.71      61.50     131.06
  Vel Total (ft/s)             4.07   Avg. Vel. (ft/s)            1.09       5.87       1.49
  Max Chl Dpth (ft)            2.58   Hydr. Depth (ft)            0.29       1.53       0.47
  Conv. Total (cfs)          6500.0   Conv. (cfs)                43.7     5544.6      911.7
  Length Wtd. (ft)           185.48   Wetted Per. (ft)           13.72      62.96     131.06
  Min Ch El (ft)            2622.00   Shear (lb/sq ft)            0.18       0.93       0.29
  Alpha                        1.80   Stream Power (lb/ft s)      0.20       5.45       0.43
  Frctn Loss (ft)              2.43   Cum Volume (acre-ft)        0.12       7.06       0.35
  C & E Loss (ft)              0.03   Cum SA (acres)              0.20       7.68       0.73


Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to
         critical depth, the calculated water surface came back below critical depth.  This indicates
         that there is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION OUTPUT    Profile #Method 1 Fldwy

  E.G. Elev (ft)            2625.04   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.44   Wt. n-Val.                 0.060      0.033      0.060
  W.S. Elev (ft)            2624.61   Reach Len. (ft)           171.00     183.00     219.00
  Crit W.S. (ft)            2624.61   Flow Area (sq ft)           4.33      95.60      64.25
  E.G. Slope (ft/ft)       0.009283   Area (sq ft)                4.33      95.60      64.25
  Q Total (cfs)              648.00   Flow (cfs)                  4.78     547.91      95.30
  Top Width (ft)             206.27   Top Width (ft)             13.71      61.50     131.06
  Vel Total (ft/s)             3.95   Avg. Vel. (ft/s)            1.10       5.73       1.48
  Max Chl Dpth (ft)            2.61   Hydr. Depth (ft)            0.32       1.55       0.49
  Conv. Total (cfs)          6725.6   Conv. (cfs)                49.6     5686.8      989.2
  Length Wtd. (ft)           185.60   Wetted Per. (ft)           13.75      62.96     131.09
  Min Ch El (ft)            2622.00   Shear (lb/sq ft)            0.18       0.88       0.28
  Alpha                        1.80   Stream Power (lb/ft s)      0.20       5.04       0.42
  Frctn Loss (ft)              2.34   Cum Volume (acre-ft)        0.01       7.15       0.16
  C & E Loss (ft)              0.03   Cum SA (acres)              0.03       7.69       0.33


Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to
         critical depth, the calculated water surface came back below critical depth.  This indicates
         that there is not a valid subcritical answer.  The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth.  The program will try the
         cross section slice/secant method to find critical depth.

CROSS SECTION          RIVER: Tributary 1
REACH: 1                  RS: 0.535

INPUT
Description:
Station Elevation Data    num=      14
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
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9872	2628	9909.3	2626	9939.5	2624	9973.6	2622	9996	2620
10000	2620	10020.4	2620	10134	2620	10147.3	2620	10156.7	2620
10179.3	2620	10195.7	2622	10221.4	2624	10255.7	2626		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9872	.06	9973.6	.033	10195.7	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9973.6	10195.7	369	383	384	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2621.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.		0.033	
W.S. Elev (ft)	2620.72	Reach Len. (ft)	369.00	383.00	384.00
Crit W.S. (ft)	2620.72	Flow Area (sq ft)		136.71	
E.G. Slope (ft/ft)	0.018075	Area (sq ft)		136.71	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	197.24	Top Width (ft)		197.24	
Vel Total (ft/s)	4.74	Avg. Vel. (ft/s)		4.74	
Max Chl Dpth (ft)	0.72	Hydr. Depth (ft)		0.69	
Conv. Total (cfs)	4819.9	Conv. (cfs)		4819.9	
Length Wtd. (ft)	383.00	Wetted Per. (ft)		197.31	
Min Ch El (ft)	2620.00	Shear (lb/sq ft)		0.78	
Alpha	1.00	Stream Power (lb/ft s)		3.71	
Frctn Loss (ft)	6.31	Cum Volume (acre-ft)	0.11	6.58	0.19
C & E Loss (ft)	0.01	Cum SA (acres)	0.17	7.14	0.40

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2621.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.		0.033	
W.S. Elev (ft)	2620.72	Reach Len. (ft)	369.00	383.00	384.00
Crit W.S. (ft)	2620.72	Flow Area (sq ft)		136.71	
E.G. Slope (ft/ft)	0.018075	Area (sq ft)		136.71	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	197.24	Top Width (ft)		197.24	
Vel Total (ft/s)	4.74	Avg. Vel. (ft/s)		4.74	
Max Chl Dpth (ft)	0.72	Hydr. Depth (ft)		0.69	
Conv. Total (cfs)	4819.9	Conv. (cfs)		4819.9	
Length Wtd. (ft)	383.00	Wetted Per. (ft)		197.31	
Min Ch El (ft)	2620.00	Shear (lb/sq ft)		0.78	
Alpha	1.00	Stream Power (lb/ft s)		3.71	
Frctn Loss (ft)	6.31	Cum Volume (acre-ft)		6.66	
C & E Loss (ft)	0.01	Cum SA (acres)		7.15	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.462

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9809.6	2620	9833.1	2620	9849.5	2618	9860.9	2616	9880.4	2614
9890.8	2612	9893.3	2612	9909.1	2612	9916.3	2612	9982.7	2612

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  9991.6    2612    9992    2612   10000    2612 10015.1    2612 10088.3    2614
 10123.8    2616 10209.7    2618

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9809.6    .065  9880.4    .038 10088.3    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9880.4 10088.3              236     210     156             .1       .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2613.31   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.30   Wt. n-Val.                            0.038
  W.S. Elev (ft)            2613.01   Reach Len. (ft)            236.00    210.00     156.00
  Crit W.S. (ft)            2612.89   Flow Area (sq ft)                    146.82
  E.G. Slope (ft/ft)       0.015079   Area (sq ft)                         146.82
  Q Total (cfs)              648.00   Flow (cfs)                           648.00
  Top Width (ft)             166.51   Top Width (ft)                       166.51
  Vel Total (ft/s)             4.41   Avg. Vel. (ft/s)                       4.41
  Max Chl Dpth (ft)            1.01   Hydr. Depth (ft)                       0.88
  Conv. Total (cfs)          5277.1   Conv. (cfs)                         5277.1
  Length Wtd. (ft)           210.00   Wetted Per. (ft)                    166.62
  Min Ch El (ft)            2612.00   Shear (lb/sq ft)                       0.83
  Alpha                        1.00   Stream Power (lb/ft s)                 3.66
  Frctn Loss (ft)              3.77   Cum Volume (acre-ft)         0.11      5.33       0.19
  C & E Loss (ft)              0.02   Cum SA (acres)               0.17      5.54       0.40

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT    Profile #Method 1 Fldwy

  E.G. Elev (ft)            2613.31   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.30   Wt. n-Val.                            0.038
  W.S. Elev (ft)            2613.01   Reach Len. (ft)            236.00    210.00     156.00
  Crit W.S. (ft)            2612.89   Flow Area (sq ft)                    146.82
  E.G. Slope (ft/ft)       0.015079   Area (sq ft)                         146.82
  Q Total (cfs)              648.00   Flow (cfs)                           648.00
  Top Width (ft)             166.51   Top Width (ft)                       166.51
  Vel Total (ft/s)             4.41   Avg. Vel. (ft/s)                       4.41
  Max Chl Dpth (ft)            1.01   Hydr. Depth (ft)                       0.88
  Conv. Total (cfs)          5277.1   Conv. (cfs)                         5277.1
  Length Wtd. (ft)           210.00   Wetted Per. (ft)                    166.62
  Min Ch El (ft)            2612.00   Shear (lb/sq ft)                       0.83
  Alpha                        1.00   Stream Power (lb/ft s)                 3.66
  Frctn Loss (ft)              3.77   Cum Volume (acre-ft)                   5.42
  C & E Loss (ft)              0.02   Cum SA (acres)                         5.55

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Tributary 1
REACH: 1                  RS: 0.422

INPUT
Description:
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9893.5    2614    9910    2612  9930.4    2610  9944.3    2608  9953.5    2608
  9989.6    2608   10000    2608 10007.9    2608 10027.7    2608 10030.1    2608
 10043.5    2610 10067.7    2610 10074.6    2608 10084.7    2608 10112.9    2610
 10115.7    2610 10161.2    2610   10213    2612 10256.2    2614 10309.3    2616

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9893.5    .065  9930.4    .038 10112.9    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9930.4 10112.9              212     237     223             .1       .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp
```

E.G. Elev (ft)	2609.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.		0.038	
W.S. Elev (ft)	2609.05	Reach Len. (ft)	212.00	237.00	223.00
Crit W.S. (ft)	2609.05	Flow Area (sq ft)		118.28	
E.G. Slope (ft/ft)	0.022059	Area (sq ft)		118.28	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	128.75	Top Width (ft)		128.75	
Vel Total (ft/s)	5.48	Avg. Vel. (ft/s)		5.48	
Max Chl Dpth (ft)	1.05	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	4362.9	Conv. (cfs)		4362.9	
Length Wtd. (ft)	236.50	Wetted Per. (ft)		129.09	
Min Ch El (ft)	2608.00	Shear (lb/sq ft)		1.26	
Alpha	1.00	Stream Power (lb/ft s)		6.91	
Frctn Loss (ft)	4.68	Cum Volume (acre-ft)	0.11	4.69	0.19
C & E Loss (ft)	0.06	Cum SA (acres)	0.17	4.83	0.40

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2609.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.		0.038	
W.S. Elev (ft)	2609.05	Reach Len. (ft)	212.00	237.00	223.00
Crit W.S. (ft)	2609.05	Flow Area (sq ft)		118.28	
E.G. Slope (ft/ft)	0.022059	Area (sq ft)		118.28	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	128.75	Top Width (ft)		128.75	
Vel Total (ft/s)	5.48	Avg. Vel. (ft/s)		5.48	
Max Chl Dpth (ft)	1.05	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	4362.9	Conv. (cfs)		4362.9	
Length Wtd. (ft)		Wetted Per. (ft)		129.09	
Min Ch El (ft)	2608.00	Shear (lb/sq ft)		1.26	
Alpha	1.00	Stream Power (lb/ft s)		6.91	
Frctn Loss (ft)		Cum Volume (acre-ft)		4.78	
C & E Loss (ft)		Cum SA (acres)		4.84	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.377

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9956.5	2610	9973.3	2608	9983.2	2606	9988.7	2604	9992.4	2602
10000	2602	10009	2602	10016.8	2604	10041.1	2604	10049.7	2604
10097.1	2604	10111.1	2604	10135.7	2604	10141.9	2604	10173.2	2604
10185.9	2604	10212.2	2606	10216.6	2606	10218.6	2604	10224.4	2604
10243.2	2604	10265.6	2604	10283.1	2606	10301.8	2608	10331	2610

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9956.5	.065	9983.2	.038	10212.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9983.2	10212.2	535	493	365	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2604.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.038	0.065
W.S. Elev (ft)	2604.50	Reach Len. (ft)	535.00	493.00	365.00
Crit W.S. (ft)	2604.43	Flow Area (sq ft)		145.44	24.76
E.G. Slope (ft/ft)	0.017827	Area (sq ft)		145.44	24.76
Q Total (cfs)	648.00	Flow (cfs)		602.00	46.00
Top Width (ft)	257.04	Top Width (ft)		205.16	51.88
Vel Total (ft/s)	3.81	Avg. Vel. (ft/s)		4.14	1.86
Max Chl Dpth (ft)	2.50	Hydr. Depth (ft)		0.71	0.48
Conv. Total (cfs)	4853.3	Conv. (cfs)		4508.7	344.5
Length Wtd. (ft)	487.68	Wetted Per. (ft)		206.03	52.12
Min Ch El (ft)	2602.00	Shear (lb/sq ft)		0.79	0.53
Alpha	1.11	Stream Power (lb/ft s)		3.25	0.98
Frctn Loss (ft)	9.21	Cum Volume (acre-ft)	0.11	3.97	0.13
C & E Loss (ft)	0.03	Cum SA (acres)	0.17	3.92	0.26

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2604.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.038	
W.S. Elev (ft)	2604.54	Reach Len. (ft)	535.00	493.00	365.00
Crit W.S. (ft)	2604.46	Flow Area (sq ft)		152.96	
E.G. Slope (ft/ft)	0.017526	Area (sq ft)		152.96	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	205.74	Top Width (ft)		205.74	
Vel Total (ft/s)	4.24	Avg. Vel. (ft/s)		4.24	
Max Chl Dpth (ft)	2.54	Hydr. Depth (ft)		0.74	
Conv. Total (cfs)	4894.8	Conv. (cfs)		4894.8	
Length Wtd. (ft)	493.00	Wetted Per. (ft)		206.62	
Min Ch El (ft)	2602.00	Shear (lb/sq ft)		0.81	
Alpha	1.00	Stream Power (lb/ft s)		3.43	
Frctn Loss (ft)	9.25	Cum Volume (acre-ft)		4.04	
C & E Loss (ft)	0.03	Cum SA (acres)		3.93	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.284

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9884	2598	9924	2600	9927.9	2600	9947.1	2598	9969.3	2596
9985.2	2594	9996.4	2592	10000	2592	10003	2592	10014.2	2594
10040.3	2594	10048.6	2594	10075.9	2596	10106.8	2596	10113.3	2594
10115.2	2594	10118.4	2596	10134.5	2596	10139.3	2596	10151.7	2598
10161.5	2600	10177.1	2602	10187.4	2604	10205.8	2606	10220.6	2608
10228.6	2610	10235.8	2612	10248.8	2612				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9884	.065	9969.3	.038	10075.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.3	10075.9	184	245	280	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2595.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.60	Wt. n-Val.		0.038	0.065
W.S. Elev (ft)	2594.91	Reach Len. (ft)	184.00	245.00	280.00
Crit W.S. (ft)	2594.91	Flow Area (sq ft)		102.13	3.73
E.G. Slope (ft/ft)	0.019622	Area (sq ft)		102.13	3.73
Q Total (cfs)	648.00	Flow (cfs)		639.92	8.08
Top Width (ft)	89.34	Top Width (ft)		83.03	6.31

Vel Total (ft/s)	6.12	Avg. Vel. (ft/s)		6.27	2.17
Max Chl Dpth (ft)	2.91	Hydr. Depth (ft)		1.23	0.59
Conv. Total (cfs)	4626.0	Conv. (cfs)		4568.3	57.7
Length Wtd. (ft)	245.22	Wetted Per. (ft)		83.47	6.70
Min Ch El (ft)	2592.00	Shear (lb/sq ft)		1.50	0.68
Alpha	1.04	Stream Power (lb/ft s)		9.39	1.48
Frctn Loss (ft)	4.48	Cum Volume (acre-ft)	0.11	2.57	0.01
C & E Loss (ft)	0.01	Cum SA (acres)	0.17	2.29	0.02

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2595.53	Element			
Vel Head (ft)	0.62	Wt. n-Val.		0.038	
W.S. Elev (ft)	2594.92	Reach Len. (ft)	184.00	245.00	280.00
Crit W.S. (ft)	2594.92	Flow Area (sq ft)		102.66	
E.G. Slope (ft/ft)	0.019821	Area (sq ft)		102.66	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	83.16	Top Width (ft)		83.16	
Vel Total (ft/s)	6.31	Avg. Vel. (ft/s)		6.31	
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)		1.23	
Conv. Total (cfs)	4602.7	Conv. (cfs)		4602.7	
Length Wtd. (ft)	245.00	Wetted Per. (ft)		83.61	
Min Ch El (ft)	2592.00	Shear (lb/sq ft)		1.52	
Alpha	1.00	Stream Power (lb/ft s)		9.59	
Frctn Loss (ft)	4.50	Cum Volume (acre-ft)		2.59	
C & E Loss (ft)	0.01	Cum SA (acres)		2.29	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.238

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9624	2598	9643.6	2598	9665.4	2596	9683.9	2594	9700.2	2592
9720	2590	9744.6	2588	9753.5	2588	9810.4	2590	9915.1	2590
9921.5	2588	9938.5	2590	9955.5	2590	9959.4	2588	9970.8	2588
9973.5	2590	9987.5	2590	9991.8	2588	10000	2588	10006.1	2588
10016	2590	10024.4	2590	10025.7	2588	10030	2588	10035	2590
10037.3	2590	10076.1	2590	10114.7	2592	10134.5	2594		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9624	.065	9915.1	.038	10035	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9915.1	10035	188	261	279	.1	.3

Left Levee Station= 9914.5 Elevation= 2590

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2590.53	Element			
Vel Head (ft)	0.57	Wt. n-Val.		0.038	
W.S. Elev (ft)	2589.96	Reach Len. (ft)	188.00	261.00	279.00
Crit W.S. (ft)	2589.88	Flow Area (sq ft)		107.12	

E.G. Slope (ft/ft)	0.017040	Area (sq ft)			107.12
Q Total (cfs)	648.00	Flow (cfs)			648.00
Top Width (ft)	79.43	Top Width (ft)			79.43
Vel Total (ft/s)	6.05	Avg. Vel. (ft/s)			6.05
Max Chl Dpth (ft)	1.96	Hydr. Depth (ft)			1.35
Conv. Total (cfs)	4964.0	Conv. (cfs)			4964.0
Length Wtd. (ft)	261.00	Wetted Per. (ft)			83.04
Min Ch El (ft)	2588.00	Shear (lb/sq ft)			1.37
Alpha	1.00	Stream Power (lb/ft s)			8.30
Frctn Loss (ft)	4.72	Cum Volume (acre-ft)		0.11	1.98
C & E Loss (ft)	0.01	Cum SA (acres)		0.17	1.83

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2590.53	Element			
Vel Head (ft)	0.57	Wt. n-Val.		0.038	
W.S. Elev (ft)	2589.96	Reach Len. (ft)	188.00	261.00	279.00
Crit W.S. (ft)	2589.87	Flow Area (sq ft)		107.04	
E.G. Slope (ft/ft)	0.017074	Area (sq ft)		107.04	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	79.41	Top Width (ft)		79.41	
Vel Total (ft/s)	6.05	Avg. Vel. (ft/s)		6.05	
Max Chl Dpth (ft)	1.96	Hydr. Depth (ft)		1.35	
Conv. Total (cfs)	4959.2	Conv. (cfs)		4959.2	
Length Wtd. (ft)	261.00	Wetted Per. (ft)		83.01	
Min Ch El (ft)	2588.00	Shear (lb/sq ft)		1.37	
Alpha	1.00	Stream Power (lb/ft s)		8.32	
Frctn Loss (ft)	4.72	Cum Volume (acre-ft)		2.00	
C & E Loss (ft)	0.01	Cum SA (acres)		1.83	

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.188

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9766.7	2588	9815.3	2586	9838.7	2586	9914.8	2586	9980.1	2584
9992.3	2582	10000	2582	10007.3	2582	10009.1	2584	10014.3	2586
10023.4	2588	10024.4	2588	10082	2588				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9766.7	.065	9914.8	.038	10014.3	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9914.8	10014.3	227	197	133	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2585.79	Element			
Vel Head (ft)	0.72	Wt. n-Val.		0.038	
W.S. Elev (ft)	2585.07	Reach Len. (ft)	227.00	197.00	133.00
Crit W.S. (ft)	2585.07	Flow Area (sq ft)		95.46	
E.G. Slope (ft/ft)	0.019218	Area (sq ft)		95.46	
Q Total (cfs)	648.00	Flow (cfs)		648.00	

Top Width (ft)	66.85	Top Width (ft)		66.85
Vel Total (ft/s)	6.79	Avg. Vel. (ft/s)		6.79
Max Chl Dpth (ft)	3.07	Hydr. Depth (ft)		1.43
Conv. Total (cfs)	4674.4	Conv. (cfs)		4674.4
Length Wtd. (ft)	197.87	Wetted Per. (ft)		68.12
Min Ch El (ft)	2582.00	Shear (lb/sq ft)		1.68
Alpha	1.00	Stream Power (lb/ft s)		11.41
Frctn Loss (ft)	3.30	Cum Volume (acre-ft)	0.11	1.38
C & E Loss (ft)	0.12	Cum SA (acres)	0.17	1.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2585.79	Element			
Vel Head (ft)	0.72	Wt. n-Val.		0.038	
W.S. Elev (ft)	2585.07	Reach Len. (ft)	227.00	197.00	133.00
Crit W.S. (ft)	2585.07	Flow Area (sq ft)		95.46	
E.G. Slope (ft/ft)	0.019218	Area (sq ft)		95.46	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	66.85	Top Width (ft)		66.85	
Vel Total (ft/s)	6.79	Avg. Vel. (ft/s)		6.79	
Max Chl Dpth (ft)	3.07	Hydr. Depth (ft)		1.43	
Conv. Total (cfs)	4674.4	Conv. (cfs)		4674.4	
Length Wtd. (ft)	197.00	Wetted Per. (ft)		68.12	
Min Ch El (ft)	2582.00	Shear (lb/sq ft)		1.68	
Alpha	1.00	Stream Power (lb/ft s)		11.41	
Frctn Loss (ft)	3.35	Cum Volume (acre-ft)		1.40	
C & E Loss (ft)	0.11	Cum SA (acres)		1.40	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.151

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9848.4	2586	9869.5	2584	9902.8	2582	9909.1	2580	9916.8	2578
9924.4	2578	9957.1	2580	9979.9	2580	9981.3	2578	10000	2578
10004.1	2578	10048.9	2578	10101.6	2578	10146.5	2580	10176	2582
10189.2	2584	10216.3	2584						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9848.4	.065	9979.9	.038	10146.5	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9979.9	10146.5	299	295	163	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2579.32	Element			
Vel Head (ft)	0.30	Wt. n-Val.	0.065	0.038	
W.S. Elev (ft)	2579.02	Reach Len. (ft)	299.00	295.00	163.00
Crit W.S. (ft)	2578.90	Flow Area (sq ft)	18.32	135.03	
E.G. Slope (ft/ft)	0.014620	Area (sq ft)	18.32	135.03	
Q Total (cfs)	648.00	Flow (cfs)	37.79	610.21	
Top Width (ft)	172.20	Top Width (ft)	28.24	143.96	

Vel Total (ft/s)	4.23	Avg. Vel. (ft/s)	2.06	4.52
Max Chl Dpth (ft)	1.02	Hydr. Depth (ft)	0.65	0.94
Conv. Total (cfs)	5359.2	Conv. (cfs)	312.5	5046.6
Length Wtd. (ft)	295.12	Wetted Per. (ft)	28.41	144.51
Min Ch El (ft)	2578.00	Shear (lb/sq ft)	0.59	0.85
Alpha	1.09	Stream Power (lb/ft s)	1.21	3.85
Frctn Loss (ft)	5.28	Cum Volume (acre-ft)	0.06	0.85
C & E Loss (ft)	0.02	Cum SA (acres)	0.10	0.92

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2579.39	Element			
Vel Head (ft)	0.34	Wt. n-Val.		0.038	
W.S. Elev (ft)	2579.05	Reach Len. (ft)	299.00	295.00	163.00
Crit W.S. (ft)	2578.93	Flow Area (sq ft)		138.77	
E.G. Slope (ft/ft)	0.015140	Area (sq ft)		138.77	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	144.56	Top Width (ft)		144.56	
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)		4.67	
Max Chl Dpth (ft)	1.05	Hydr. Depth (ft)		0.96	
Conv. Total (cfs)	5266.4	Conv. (cfs)		5266.4	
Length Wtd. (ft)	295.00	Wetted Per. (ft)		145.13	
Min Ch El (ft)	2578.00	Shear (lb/sq ft)		0.90	
Alpha	1.00	Stream Power (lb/ft s)		4.22	
Frctn Loss (ft)	5.35	Cum Volume (acre-ft)		0.87	
C & E Loss (ft)	0.01	Cum SA (acres)		0.92	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 1
REACH: 1 RS: 0.095

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9830.4	2580	9847.7	2578	9868.7	2576	9901.9	2574	9948.2	2574
9981.1	2574	9998	2572	10000	2572	10022.8	2572	10136.6	2574
10158.3	2576	10187.7	2578	10198	2578	10252.6	2576	10253.9	2576
10272.6	2578	10282.3	2580						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9830.4	.065	9981.1	.038	10136.6	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.1	10136.6	610	500	435	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2574.03	Element			
Vel Head (ft)	0.47	Wt. n-Val.		0.038	
W.S. Elev (ft)	2573.55	Reach Len. (ft)			
Crit W.S. (ft)	2573.55	Flow Area (sq ft)		117.38	
E.G. Slope (ft/ft)	0.022005	Area (sq ft)		117.38	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	126.32	Top Width (ft)		126.32	
Vel Total (ft/s)	5.52	Avg. Vel. (ft/s)		5.52	
Max Chl Dpth (ft)	1.55	Hydr. Depth (ft)		0.93	
Conv. Total (cfs)	4368.3	Conv. (cfs)		4368.3	
Length Wtd. (ft)		Wetted Per. (ft)		126.42	
Min Ch El (ft)	2572.00	Shear (lb/sq ft)		1.28	
Alpha	1.00	Stream Power (lb/ft s)		7.04	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2574.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.47	Wt. n-Val.		0.038	
W.S. Elev (ft)	2573.55	Reach Len. (ft)			
Crit W.S. (ft)	2573.55	Flow Area (sq ft)		117.38	
E.G. Slope (ft/ft)	0.022005	Area (sq ft)		117.38	
Q Total (cfs)	648.00	Flow (cfs)		648.00	
Top Width (ft)	126.32	Top Width (ft)		126.32	
Vel Total (ft/s)	5.52	Avg. Vel. (ft/s)		5.52	
Max Chl Dpth (ft)	1.55	Hydr. Depth (ft)		0.93	
Conv. Total (cfs)	4368.3	Conv. (cfs)		4368.3	
Length Wtd. (ft)		Wetted Per. (ft)		126.42	
Min Ch El (ft)	2572.00	Shear (lb/sq ft)		1.28	
Alpha	1.00	Stream Power (lb/ft s)		7.04	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

E.5 HYDRAULIC CALCULATIONS

Tributary 2

HEC-RAS September 1998 Version 2.2
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Upper Rawhide Wash - Trib. 2
Project File : TRIB2.prj
Run Date and Time: 06/27/2001 7:10:46 AM

Project in English units

Project Description:
Upper Rawhide Wash Floodplain Delineation
FCD 98-12
Tributary 2
(RW17)

Model Created 4/2001

FCD Contact: David Boggs

Kimley-Horn
and Associates Inc.
7600 N. 15th Street, Suite 250
Phoenix, Arizona
85020

Kimley-Horn Team:

Project Manager - Doug Plasencia
Project
Engineer - Bob Eichinger
Analyst - Jon Ahern
Analyst - Diana
Davisson

HEC-RAS
River Analysis System
Version 2.2, September
1998

Purpose of Study: To delineate the FEMA 100 year
Floodplain/Floodway

Base Mapping: Base Mapping supplied by The City of
Scottsdale through the Flood Control District of Maricopa County

Mapping
Company: Michael Baker Jr.
Date Flown: 11/01/93

PLAN DATA

Plan Title: Floodway Method 1
Plan File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 2\TRIB2.p02

```
          Geometry Title: Base Conditions Geometry
          Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 2\TRIB2.G01

          Flow Title    : 100 Year Flood - Floodway
          Flow File     : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 2\TRIB2.f02

Plan Summary Information:
Number of:  Cross Sections =   16    Mulitple Openings =    0
            Culverts       =    0    Inline Weirs      =    0
            Bridges        =    0

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed at all cross sections
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0

River = Tributary 2       Reach = 1
RS      Profile           Method  Value1  Value2
1.417   Method 1 Fldwy         1  9865.5 10462.8
1.333   Method 1 Fldwy         1  9895.6 10366.9
1.238   Method 1 Fldwy         1    9880   10130
1.143   Method 1 Fldwy         1    9940   10110
1.049   Method 1 Fldwy         1 9738.9810053.71
0.972   Method 1 Fldwy         1 9976.5810211.87
0.887   Method 1 Fldwy         1 9757.48   10383
0.838   Method 1 Fldwy         1 9734.3410380.97
0.763   Method 1 Fldwy         1 9875.5810392.96
0.669   Method 1 Fldwy         1 9819.89 10191.9
0.606   Method 1 Fldwy         1  9651.9 10019.3
0.554   Method 1 Fldwy         1  9750.1 10163.6
0.477   Method 1 Fldwy         1 9927.85 10333.4
0.388   Method 1 Fldwy         1  9965.8 10125.8
0.343   Method 1 Fldwy         1    9950   10090
0.256   Method 1 Fldwy         1    9975   10125


FLOW DATA

Flow Title: 100 Year Flood - Floodway
Flow File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 2\TRIB2.f02

Flow Data (cfs)

  River           Reach           RS       100yr Natural Fp  Method 1 Fldwy
  Tributary 2     1               1.417                2481            2481


Boundary Conditions

  River           Reach           Profile                       Upstream                 Downstream

  Tributary 2     1               100yr Natural Fp                                      Known WS = 2585
  Tributary 2     1               Method 1 Fldwy                                        Known WS = 2586


GEOMETRY DATA
```

Geometry Title: Base Conditions Geometry
Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 2\TRIB2.G01

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 1.417

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9730.9	2712	9790.5	2708	9821	2706	9865.5	2704	9931.7	2702
9967.4	2702	9990.6	2702	9996.8	2700	10000	2700	10005.2	2700
10034.3	2702	10064.4	2702	10303.3	2700	10332.3	2700	10371.5	2702
10404.4	2702	10416	2702	10462.8	2704	10470.1	2704	10672.8	2702
10684.7	2702	10795.6	2704	10809.5	2706	10823.1	2708		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9730.9	.07	9990.6	.035	10371.5	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.6	10371.5	382	445	321	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2702.64	Element			
Vel Head (ft)	0.41	Wt. n-Val.	0.070	0.035	0.070
W.S. Elev (ft)	2702.22	Reach Len. (ft)	382.00	445.00	321.00
Crit W.S. (ft)	2702.09	Flow Area (sq ft)	13.98	473.29	17.10
E.G. Slope (ft/ft)	0.011215	Area (sq ft)	13.98	473.29	17.10
Q Total (cfs)	2481.00	Flow (cfs)	11.14	2457.48	12.38
Top Width (ft)	543.85	Top Width (ft)	66.29	380.90	96.66
Vel Total (ft/s)	4.92	Avg. Vel. (ft/s)	0.80	5.19	0.72
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	0.21	1.24	0.18
Conv. Total (cfs)	23427.8	Conv. (cfs)	105.2	23205.7	116.9
Length Wtd. (ft)	444.53	Wetted Per. (ft)	66.30	381.34	96.66
Min Ch El (ft)	2700.00	Shear (lb/sq ft)	0.15	0.87	0.12
Alpha	1.10	Stream Power (lb/ft s)	0.12	4.51	0.09
Frctn Loss (ft)	6.10	Cum Volume (acre-ft)	1.57	55.21	6.58
C & E Loss (ft)	0.01	Cum SA (acres)	3.74	39.91	5.35

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 1.333

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9775.2	2706	9803.1	2704	9832.7	2702	9862.2	2700	9873	2698
9876.2	2698	9895.6	2698	9952.1	2696	9981.3	2694	10000	2694
10021.3	2694	10339.4	2696	10366.9	2698	10402.3	2700	10440.8	2702
10477	2704								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9775.2	.07	9952.1	.035	10339.4	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9952.1	10339.4	538	500	416	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2696.52	Element			
Vel Head (ft)	0.55	Wt. n-Val.		0.035	
W.S. Elev (ft)	2695.97	Reach Len. (ft)	538.00	500.00	416.00
Crit W.S. (ft)	2695.97	Flow Area (sq ft)		417.06	
E.G. Slope (ft/ft)	0.017511	Area (sq ft)		417.06	
Q Total (cfs)	2481.00	Flow (cfs)		2481.00	

Top Width (ft)	382.68	Top Width (ft)		382.68	
Vel Total (ft/s)	5.95	Avg. Vel. (ft/s)		5.95	
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)		1.09	
Conv. Total (cfs)	18748.7	Conv. (cfs)		18748.7	
Length Wtd. (ft)	500.39	Wetted Per. (ft)		382.75	
Min Ch El (ft)	2694.00	Shear (lb/sq ft)		1.19	
Alpha	1.00	Stream Power (lb/ft s)		7.09	
Frctn Loss (ft)	7.09	Cum Volume (acre-ft)	1.51	50.67	6.52
C & E Loss (ft)	0.04	Cum SA (acres)	3.45	36.01	4.99

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 1.238

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9751.1	2700	9774.4	2698	9786.8	2696	9805.4	2694	9821.3	2692
9874.1	2690	9890.1	2688	9896	2688	9970.6	2688	9989.5	2686
10000	2686	10032	2686	10080.1	2686	10089	2686	10114.6	2688
10158.8	2690	10181.4	2692	10191.1	2694	10215.1	2696	10266.5	2698

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9751.1	.07	9970.6	.035	10114.6	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970.6	10114.6	507	500	495	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2689.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.	0.070	0.035	0.070
W.S. Elev (ft)	2688.48	Reach Len. (ft)	507.00	500.00	495.00
Crit W.S. (ft)	2688.48	Flow Area (sq ft)	39.81	313.04	2.58
E.G. Slope (ft/ft)	0.011824	Area (sq ft)	39.81	313.04	2.58
Q Total (cfs)	2481.00	Flow (cfs)	55.68	2423.02	2.30
Top Width (ft)	239.04	Top Width (ft)	84.36	144.00	10.67
Vel Total (ft/s)	6.98	Avg. Vel. (ft/s)	1.40	7.74	0.89
Max Chl Dpth (ft)	2.48	Hydr. Depth (ft)	0.47	2.17	0.24
Conv. Total (cfs)	22816.6	Conv. (cfs)	512.0	22283.4	21.2
Length Wtd. (ft)	500.10	Wetted Per. (ft)	84.39	144.18	10.68
Min Ch El (ft)	2686.00	Shear (lb/sq ft)	0.35	1.60	0.18
Alpha	1.20	Stream Power (lb/ft s)	0.49	12.40	0.16
Frctn Loss (ft)	6.04	Cum Volume (acre-ft)	1.26	46.48	6.51
C & E Loss (ft)	0.02	Cum SA (acres)	2.92	32.99	4.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 1.143

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9881.3	2684	9919.3	2682	9977.6	2680	9994.9	2678	9999.1	2678
10005.9	2678	10018.3	2678	10045.2	2678	10090.6	2680	10114.5	2682
10128.2	2684	10142.6	2686						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9881.3	.07	9977.6	.035	10090.6	.07

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9977.6 10090.6              506     500     482            .1        .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2682.20   Element                  Left OB    Channel   Right OB
  Vel Head (ft)                1.15   Wt. n-Val.                0.070      0.035      0.070
  W.S. Elev (ft)            2681.05   Reach Len. (ft)          506.00     500.00     482.00
  Crit W.S. (ft)            2681.05   Flow Area (sq ft)         16.15     282.23       6.62
  E.G. Slope (ft/ft)       0.012321   Area (sq ft)              16.15     282.23       6.62
  Q Total (cfs)             2481.00   Flow (cfs)                24.79    2446.07      10.14
  Top Width (ft)             156.26   Top Width (ft)            30.68     113.00      12.58
  Vel Total (ft/s)             8.13   Avg. Vel. (ft/s)           1.54       8.67       1.53
  Max Chl Dpth (ft)            3.05   Hydr. Depth (ft)           0.53       2.50       0.53
  Conv. Total (cfs)         22351.1   Conv. (cfs)               223.3    22036.5       91.4
  Length Wtd. (ft)           499.99   Wetted Per. (ft)          30.70     113.16      12.62
  Min Ch El (ft)            2678.00   Shear (lb/sq ft)           0.40       1.92       0.40
  Alpha                        1.12   Stream Power (lb/ft s)     0.62      16.63       0.62
  Frctn Loss (ft)              5.93   Cum Volume (acre-ft)       0.94      43.06       6.45
  C & E Loss (ft)              0.19   Cum SA (acres)             2.26      31.51       4.81


Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to
         critical depth, the calculated water surface came back below critical depth.  This indicates
         that there is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION          RIVER: Tributary 2
REACH: 1                  RS: 1.049

INPUT
Description:
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9624.7    2684  9649.6    2682    9659    2680  9670.6    2678  9689.4    2676
  9715.9    2674  9743.3    2672  9988.1    2670   10000    2670 10024.4    2670
 10048.7    2672 10082.1    2674 10097.8    2676 10111.3    2678 10113.1    2680
 10126.9    2682

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9624.7     .07  9743.3    .035 10048.7     .07

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9743.3 10048.7              369     405     450            .1        .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2672.81   Element                  Left OB    Channel   Right OB
  Vel Head (ft)                0.51   Wt. n-Val.                0.070      0.035      0.070
  W.S. Elev (ft)            2672.30   Reach Len. (ft)          369.00     405.00     450.00
  Crit W.S. (ft)            2672.15   Flow Area (sq ft)          0.62     433.26       0.75
  E.G. Slope (ft/ft)       0.011409   Area (sq ft)               0.62     433.26       0.75
  Q Total (cfs)             2481.00   Flow (cfs)                 0.39    2480.13       0.48
  Top Width (ft)             314.51   Top Width (ft)             4.11     305.40       5.01
  Vel Total (ft/s)             5.71   Avg. Vel. (ft/s)           0.64       5.72       0.64
  Max Chl Dpth (ft)            2.30   Hydr. Depth (ft)           0.15       1.42       0.15
  Conv. Total (cfs)         23227.3   Conv. (cfs)                 3.7    23219.1        4.5
  Length Wtd. (ft)           405.00   Wetted Per. (ft)           4.12     305.49       5.02
  Min Ch El (ft)            2670.00   Shear (lb/sq ft)           0.11       1.01       0.11
  Alpha                        1.01   Stream Power (lb/ft s)     0.07       5.78       0.07
  Frctn Loss (ft)              6.41   Cum Volume (acre-ft)       0.84      38.95       6.41
  C & E Loss (ft)              0.03   Cum SA (acres)             2.05      29.11       4.71


Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less
         than 0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
```

section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.972

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9920.7	2672	9944.5	2670	9962.6	2668	9974.7	2666	9984.2	2664
10000	2664	10003.5	2664	10095.1	2664	10104.3	2664	10172.3	2664
10190.3	2664	10217.2	2666	10223.3	2668	10236.4	2670		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9920.7	.065	9974.7	.043	10217.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.7	10217.2	173	446	179	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2666.37	Element			
Vel Head (ft)	0.76	Wt. n-Val.		0.043	
W.S. Elev (ft)	2665.60	Reach Len. (ft)	173.00	446.00	179.00
Crit W.S. (ft)	2665.60	Flow Area (sq ft)		353.88	
E.G. Slope (ft/ft)	0.023916	Area (sq ft)		353.88	
Q Total (cfs)	2481.00	Flow (cfs)		2481.00	
Top Width (ft)	235.28	Top Width (ft)		235.28	
Vel Total (ft/s)	7.01	Avg. Vel. (ft/s)		7.01	
Max Chl Dpth (ft)	1.60	Hydr. Depth (ft)		1.50	
Conv. Total (cfs)	16043.0	Conv. (cfs)		16043.0	
Length Wtd. (ft)	443.18	Wetted Per. (ft)		235.51	
Min Ch El (ft)	2664.00	Shear (lb/sq ft)		2.24	
Alpha	1.00	Stream Power (lb/ft s)		15.73	
Frctn Loss (ft)	7.27	Cum Volume (acre-ft)	0.84	35.29	6.41
C & E Loss (ft)	0.15	Cum SA (acres)	2.04	26.60	4.69

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.887

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9719.3	2662	9727.5	2660	9738.6	2658	9786.3	2656	9806	2656
9815.2	2656	9882.1	2656	9995.9	2656	10000	2656	10003.1	2656
10242.1	2656	10249.5	2656	10255.1	2658	10296.3	2658	10308.7	2658
10331	2658	10349.4	2656	10351.7	2656	10403.5	2658	10449.5	2660
10463.7	2662	10480.6	2664						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9719.3	.065	9738.6	.043	10255.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9738.6	10255.1	152	262	282	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2657.48	Element			
Vel Head (ft)	0.27	Wt. n-Val.		0.043	0.065
W.S. Elev (ft)	2657.21	Reach Len. (ft)	152.00	262.00	282.00
Crit W.S. (ft)	2656.94	Flow Area (sq ft)		579.24	28.41
E.G. Slope (ft/ft)	0.011959	Area (sq ft)		579.24	28.41

Q Total (cfs)	2481.00	Flow (cfs)		2428.58	52.42
Top Width (ft)	540.12	Top Width (ft)		495.41	44.72
Vel Total (ft/s)	4.08	Avg. Vel. (ft/s)		4.19	1.85
Max Chl Dpth (ft)	1.21	Hydr. Depth (ft)		1.17	0.64
Conv. Total (cfs)	22687.3	Conv. (cfs)		22207.9	479.3
Length Wtd. (ft)	262.21	Wetted Per. (ft)		495.64	44.81
Min Ch El (ft)	2656.00	Shear (lb/sq ft)		0.87	0.47
Alpha	1.04	Stream Power (lb/ft s)		3.66	0.87
Frctn Loss (ft)	3.96	Cum Volume (acre-ft)	0.84	30.52	6.35
C & E Loss (ft)	0.01	Cum SA (acres)	2.04	22.86	4.59

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.838

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9683.9	2660	9691.1	2658	9697.1	2656	9708.4	2654	9769.5	2652
9803.6	2652	9849.6	2652	9858.2	2652	9885.1	2652	9896.4	2652
9988.1	2652	10000	2652	10013.9	2652	10033.6	2652	10045.8	2652
10126.2	2654	10196.3	2654	10212.8	2652	10237.3	2652	10264.9	2652
10283.2	2652	10301.4	2652	10305.7	2652	10436.5	2654	10462.4	2656
10476.8	2658	10507.1	2660						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9683.9	.065	9708.4	.043	10436.5	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9708.4	10436.5	459	393	453	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2653.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.35	Wt. n-Val.		0.043	
W.S. Elev (ft)	2653.15	Reach Len. (ft)	459.00	393.00	453.00
Crit W.S. (ft)	2653.04	Flow Area (sq ft)		520.54	
E.G. Slope (ft/ft)	0.019757	Area (sq ft)		520.54	
Q Total (cfs)	2481.00	Flow (cfs)		2481.00	
Top Width (ft)	535.39	Top Width (ft)		535.39	
Vel Total (ft/s)	4.77	Avg. Vel. (ft/s)		4.77	
Max Chl Dpth (ft)	1.15	Hydr. Depth (ft)		0.97	
Conv. Total (cfs)	17651.1	Conv. (cfs)		17651.1	
Length Wtd. (ft)	393.00	Wetted Per. (ft)		535.50	
Min Ch El (ft)	2652.00	Shear (lb/sq ft)		1.20	
Alpha	1.00	Stream Power (lb/ft s)		5.71	
Frctn Loss (ft)	6.57	Cum Volume (acre-ft)	0.84	27.21	6.26
C & E Loss (ft)	0.02	Cum SA (acres)	2.04	19.76	4.45

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.763

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9836.6	2654	9846.2	2652	9856.4	2650	9866.4	2648	9879.7	2646
9892.4	2644	9903.6	2644	9991.5	2644	10000	2644	10009.6	2644
10016.9	2646	10096.1	2646	10102.1	2646	10291	2646	10312.6	2646
10316.4	2646	10326.8	2646	10350	2646	10368.5	2646	10447.5	2648
10469	2650	10568.7	2652	10593	2654	10620	2656	10660.1	2658

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9836.6	.065	9866.4	.043	10447.5	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9866.4	10447.5	449	500	612	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2646.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.043	
W.S. Elev (ft)	2646.62	Reach Len. (ft)	449.00	500.00	612.00
Crit W.S. (ft)	2646.41	Flow Area (sq ft)		565.88	
E.G. Slope (ft/ft)	0.014302	Area (sq ft)		565.88	
Q Total (cfs)	2481.00	Flow (cfs)		2481.00	
Top Width (ft)	517.37	Top Width (ft)		517.37	
Vel Total (ft/s)	4.38	Avg. Vel. (ft/s)		4.38	
Max Chl Dpth (ft)	2.62	Hydr. Depth (ft)		1.09	
Conv. Total (cfs)	20745.8	Conv. (cfs)		20745.8	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		517.85	
Min Ch El (ft)	2644.00	Shear (lb/sq ft)		0.98	
Alpha	1.00	Stream Power (lb/ft s)		4.28	
Frctn Loss (ft)	8.75	Cum Volume (acre-ft)	0.84	22.31	6.26
C & E Loss (ft)	0.03	Cum SA (acres)	2.04	15.01	4.45

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.669

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9742.4	2644	9759.2	2642	9778	2640	9804.4	2638	9878.7	2636
9893.2	2636	9912.9	2638	9931.3	2638	9994.5	2636	10000	2636
10005.4	2636	10026.3	2636	10046.3	2636	10063	2636	10086.8	2636
10115.6	2636	10167.6	2636	10198.3	2638	10226.6	2640	10243.2	2642
10263.2	2644								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9742.4	.065	9804.4	.043	10198.3	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9804.4	10198.3	528	330	493	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2638.14	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.56	Wt. n-Val.		0.043	
W.S. Elev (ft)	2637.58	Reach Len. (ft)	528.00	330.00	493.00
Crit W.S. (ft)	2637.53	Flow Area (sq ft)		414.69	
E.G. Slope (ft/ft)	0.022687	Area (sq ft)		414.69	
Q Total (cfs)	2481.00	Flow (cfs)		2481.00	
Top Width (ft)	336.32	Top Width (ft)		336.32	
Vel Total (ft/s)	5.98	Avg. Vel. (ft/s)		5.98	
Max Chl Dpth (ft)	1.58	Hydr. Depth (ft)		1.23	
Conv. Total (cfs)	16471.6	Conv. (cfs)		16471.6	
Length Wtd. (ft)	331.47	Wetted Per. (ft)		336.50	
Min Ch El (ft)	2636.00	Shear (lb/sq ft)		1.75	
Alpha	1.00	Stream Power (lb/ft s)		10.44	
Frctn Loss (ft)	5.46	Cum Volume (acre-ft)	0.84	16.68	6.26
C & E Loss (ft)	0.06	Cum SA (acres)	2.04	10.11	4.45

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.606

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9432.6	2642	9441.2	2640	9450.5	2638	9464.5	2636	9484.9	2634
9515.9	2632	9530.3	2632	9560.1	2632	9651.9	2632	9652.3	2632
9670	2630	9671.7	2630	9761	2630	9764.7	2630	9915.3	2632
9947.9	2632	9969.5	2632	9981.4	2632	9991.2	2630	10000	2630
10010.5	2630	10017.8	2632	10029.4	2634				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9432.6	.065	9651.9	.043	10017.8	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9651.9	10017.8	351	275	206	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2632.61	Element			
Vel Head (ft)	0.35	Wt. n-Val.	0.065	0.043	0.065
W.S. Elev (ft)	2632.26	Reach Len. (ft)	351.00	275.00	206.00
Crit W.S. (ft)	2631.89	Flow Area (sq ft)	35.65	507.91	0.19
E.G. Slope (ft/ft)	0.012551	Area (sq ft)	35.65	507.91	0.19
Q Total (cfs)	2481.00	Flow (cfs)	36.67	2444.20	0.13
Top Width (ft)	507.40	Top Width (ft)	140.00	365.90	1.50
Vel Total (ft/s)	4.56	Avg. Vel. (ft/s)	1.03	4.81	0.65
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)	0.25	1.39	0.13
Conv. Total (cfs)	22145.4	Conv. (cfs)	327.3	21816.9	1.1
Length Wtd. (ft)	275.57	Wetted Per. (ft)	140.01	366.50	1.52
Min Ch El (ft)	2630.00	Shear (lb/sq ft)	0.20	1.09	0.10
Alpha	1.10	Stream Power (lb/ft s)	0.21	5.23	0.06
Frctn Loss (ft)	4.80	Cum Volume (acre-ft)	0.62	13.19	6.26
C & E Loss (ft)	0.02	Cum SA (acres)	1.19	7.45	4.44

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.554

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9727.2	2634	9733.9	2632	9739.6	2630	9750.1	2628	9774.7	2626
9851.2	2626	9997.5	2626	10000	2626	10007.9	2626	10060.9	2626
10074.3	2626	10163.6	2628	10196.1	2630				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9727.2	.065	9750.1	.043	10163.6	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9750.1	10163.6	427	405	476	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2627.79	Element			
Vel Head (ft)	0.56	Wt. n-Val.		0.043	
W.S. Elev (ft)	2627.23	Reach Len. (ft)	427.00	405.00	476.00
Crit W.S. (ft)	2627.23	Flow Area (sq ft)		412.66	
E.G. Slope (ft/ft)	0.026159	Area (sq ft)		412.66	
Q Total (cfs)	2481.00	Flow (cfs)		2481.00	
Top Width (ft)	369.81	Top Width (ft)		369.81	
Vel Total (ft/s)	6.01	Avg. Vel. (ft/s)		6.01	
Max Chl Dpth (ft)	1.23	Hydr. Depth (ft)		1.12	
Conv. Total (cfs)	15339.6	Conv. (cfs)		15339.6	
Length Wtd. (ft)	415.75	Wetted Per. (ft)		369.88	
Min Ch El (ft)	2626.00	Shear (lb/sq ft)		1.82	
Alpha	1.00	Stream Power (lb/ft s)		10.95	

Frctn Loss (ft)	5.79	Cum Volume (acre-ft)	0.48	10.28	6.26
C & E Loss (ft)	0.09	Cum SA (acres)	0.62	5.13	4.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.477

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9838.2	2628	9865.4	2626	9880.2	2624	9902.1	2622	9954.1	2620
9965.2	2618	9975.9	2618	9997.4	2618	10000	2618	10000.8	2618
10042.1	2620	10121.3	2620	10137.8	2618	10144.5	2618	10154	2620
10172.8	2620	10202.4	2618	10205.1	2618	10209.9	2618	10240.9	2620
10281.8	2620	10286.8	2620	10333.4	2620	10340.7	2620	10365.6	2620
10369.7	2620	10401.4	2622	10430.8	2624	10451.1	2626	10452.7	2626

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9838.2	.065	9954.1	.043	10154	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9954.1	10154	461	470	385	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2621.26	Element			
Vel Head (ft)	0.27	Wt. n-Val.	0.065	0.043	0.065
W.S. Elev (ft)	2620.99	Reach Len. (ft)	461.00	470.00	385.00
Crit W.S. (ft)	2620.57	Flow Area (sq ft)	12.79	361.24	297.30
E.G. Slope (ft/ft)	0.008636	Area (sq ft)	12.79	361.24	297.30
Q Total (cfs)	2481.00	Flow (cfs)	17.01	1717.93	746.07
Top Width (ft)	457.10	Top Width (ft)	25.78	199.90	231.42
Vel Total (ft/s)	3.70	Avg. Vel. (ft/s)	1.33	4.76	2.51
Max Chl Dpth (ft)	2.99	Hydr. Depth (ft)	0.50	1.81	1.28
Conv. Total (cfs)	26697.1	Conv. (cfs)	183.0	18485.9	8028.1
Length Wtd. (ft)	448.65	Wetted Per. (ft)	25.80	200.46	231.58
Min Ch El (ft)	2618.00	Shear (lb/sq ft)	0.27	0.97	0.69
Alpha	1.29	Stream Power (lb/ft s)	0.36	4.62	1.74
Frctn Loss (ft)	5.23	Cum Volume (acre-ft)	0.42	6.68	4.63
C & E Loss (ft)	0.06	Cum SA (acres)	0.50	2.48	3.17

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.388

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9862	2622	9877.2	2620	9900.2	2618	9922.2	2616	9943.4	2614
9950.5	2614	9965.8	2614	9989.3	2612	10000	2612	10039.4	2612
10049.9	2614	10098.2	2614	10102.1	2612	10105.7	2612	10116.3	2612
10125.8	2614	10205.9	2616	10244.1	2618	10269.5	2620	10283.6	2622

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9862	.065	9965.8	.043	10049.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9965.8	10049.9	215	240	239	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2615.98	Element			
Vel Head (ft)	0.91	Wt. n-Val.	0.065	0.043	0.065
W.S. Elev (ft)	2615.07	Reach Len. (ft)	215.00	240.00	239.00
Crit W.S. (ft)	2615.07	Flow Area (sq ft)	30.00	224.09	145.80
E.G. Slope (ft/ft)	0.016538	Area (sq ft)	30.00	224.09	145.80
Q Total (cfs)	2481.00	Flow (cfs)	81.47	1909.87	489.66
Top Width (ft)	236.54	Top Width (ft)	33.73	84.10	118.71
Vel Total (ft/s)	6.20	Avg. Vel. (ft/s)	2.72	8.52	3.36
Max Chl Dpth (ft)	3.07	Hydr. Depth (ft)	0.89	2.66	1.23
Conv. Total (cfs)	19292.4	Conv. (cfs)	633.5	14851.3	3807.7
Length Wtd. (ft)	239.23	Wetted Per. (ft)	33.78	84.37	119.41
Min Ch El (ft)	2612.00	Shear (lb/sq ft)	0.92	2.74	1.26
Alpha	1.52	Stream Power (lb/ft s)	2.49	23.37	4.23
Frctn Loss (ft)	2.86	Cum Volume (acre-ft)	0.19	3.52	2.67
C & E Loss (ft)	0.03	Cum SA (acres)	0.18	0.95	1.63

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.343

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9937.5	2616	9953.5	2614	9960.5	2612	9970	2610	9974.8	2608
10000	2608	10016.7	2608	10027.4	2610	10072.8	2610	10096.2	2610
10104.3	2610	10112.7	2612	10115.8	2614	10122.7	2616	10130.2	2618
10139.5	2620								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9937.5	.065	9970	.043	10027.4	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970	10027.4	427	459	526	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2612.99	Element			
Vel Head (ft)	0.80	Wt. n-Val.	0.065	0.043	0.065
W.S. Elev (ft)	2612.19	Reach Len. (ft)	427.00	459.00	526.00
Crit W.S. (ft)	2611.74	Flow Area (sq ft)	11.36	224.98	178.39
E.G. Slope (ft/ft)	0.009029	Area (sq ft)	11.36	224.98	178.39
Q Total (cfs)	2481.00	Flow (cfs)	26.19	1824.01	630.81
Top Width (ft)	153.16	Top Width (ft)	10.16	57.40	85.59
Vel Total (ft/s)	5.98	Avg. Vel. (ft/s)	2.30	8.11	3.54
Max Chl Dpth (ft)	4.19	Hydr. Depth (ft)	1.12	3.92	2.08
Conv. Total (cfs)	26110.1	Conv. (cfs)	275.6	19195.8	6638.6
Length Wtd. (ft)	472.01	Wetted Per. (ft)	10.40	57.99	85.88
Min Ch El (ft)	2608.00	Shear (lb/sq ft)	0.62	2.19	1.17
Alpha	1.44	Stream Power (lb/ft s)	1.42	17.73	4.14
Frctn Loss (ft)	4.94	Cum Volume (acre-ft)	0.09	2.29	1.78
C & E Loss (ft)	0.06	Cum SA (acres)	0.07	0.56	1.07

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 2
REACH: 1 RS: 0.256

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9894.1	2640	9898.8	2638	9902.6	2636	9906.4	2634	9915.3	2632
9920.5	2630	9925.1	2628	9931.8	2626	9937.1	2624	9942.8	2622
9947.5	2620	9952.8	2618	9957.9	2616	9963.6	2614	9968.3	2612
9971.1	2610	9975.6	2608	9979	2606	9982.8	2604	9986.5	2602
10000	2602	10020	2602	10031.3	2604	10099.2	2606	10173.2	2608
10209.3	2610								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9894.1	.065	9982.8	.043	10031.3	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.8	10031.3	1510	1353	700	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2607.99	Element			
Vel Head (ft)	1.36	Wt. n-Val.	0.065	0.043	0.065
W.S. Elev (ft)	2606.62	Reach Len. (ft)			
Crit W.S. (ft)	2606.62	Flow Area (sq ft)	6.49	209.12	117.21
E.G. Slope (ft/ft)	0.012371	Area (sq ft)	6.49	209.12	117.21
Q Total (cfs)	2481.00	Flow (cfs)	18.37	2109.61	353.01
Top Width (ft)	144.24	Top Width (ft)	4.86	48.50	90.88
Vel Total (ft/s)	7.45	Avg. Vel. (ft/s)	2.83	10.09	3.01
Max Chl Dpth (ft)	4.62	Hydr. Depth (ft)	1.34	4.31	1.29
Conv. Total (cfs)	22305.9	Conv. (cfs)	165.2	18966.8	3173.8
Length Wtd. (ft)		Wetted Per. (ft)	5.52	49.18	90.92
Min Ch El (ft)	2602.00	Shear (lb/sq ft)	0.91	3.28	1.00
Alpha	1.58	Stream Power (lb/ft s)	2.57	33.13	3.00
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

E.5 HYDRAULIC CALCULATIONS

Tributary 3

HEC-RAS September 1998 Version 2.2
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X    X
X     X  X        X           X   X    X    X   X
XXXXXXX  XXXX     X       XXX XXXX     XXXXXX    XXXX
X     X  X        X           X  X     X    X        X
X     X  X        X    X      X   X    X    X        X
X     X  XXXXXX    XXXX       X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Upper Rawhide Wash - Trib. 3
Project File : TRIB3.prj
Run Date and Time: 06/27/2001 7:12:36 AM

Project in English units

Project Description:
Upper Rawhide Wash Floodplain Delineation
FCD 98-12
Tributary 3
(RW16)

Model Created 6/2001

FCD Contact: Richard Harris

Kimley-Horn
and Associates Inc.
7600 N. 15th Street, Suite 250
Phoenix, Arizona
85020

Kimley-Horn Team:

Project Manager - Doug Plasencia
Project
Engineer - Bob Eichinger
Analyst - Jon Ahern
Analyst - Diana
Davisson

HEC-RAS
River Analysis System
Version 2.2, September
1998

Purpose of Study: To delineate the FEMA 100 year
Floodplain/Floodway

Base Mapping: Base Mapping supplied by The City of
Scottsdale through the Flood Control District of Maricopa County

Mapping
Company: Michael Baker Jr.
Date Flown: 11/01/93

PLAN DATA

Plan Title: Floodway Method 1
Plan File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 3\TRIB3.p02

```
          Geometry Title: Base Conditions Geometry
          Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 3\TRIB3.G01

          Flow Title    : 100 Year Flood - Floodway
          Flow File     : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 3\TRIB3.f02

Plan Summary Information:
Number of:  Cross Sections =    8    Mulitple Openings =    0
            Culverts       =    0    Inline Weirs      =    0
            Bridges        =    0

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed at all cross sections
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0

River = Tributary 3      Reach = 1
RS      Profile           Method  Value1  Value2
0.735   Method 1 Fldwy         1  9661.5 10037.4
0.679   Method 1 Fldwy         1 9842.4910067.91
0.634   Method 1 Fldwy         1 9757.3910064.63
.569    Method 1 Fldwy         1 9862.5310031.65
0.495   Method 1 Fldwy         1    9804 10077.1
0.437   Method 1 Fldwy         1  9927.9 10204.7
0.35    Method 1 Fldwy         1  9855.7 10245.9
0.284   Method 1 Fldwy         1    9831 10045.5


FLOW DATA

Flow Title: 100 Year Flood - Floodway
Flow File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 3\TRIB3.f02

Flow Data (cfs)

  River           Reach           RS       100yr Natural Fp  Method 1 Fldwy
  Tributary 3     1               0.735                1633            1633


Boundary Conditions

  River           Reach           Profile                        Upstream                 Downstream

  Tributary 3     1               100yr Natural Fp                                      Known WS = 2608.4
  Tributary 3     1               Method 1 Fldwy                                        Known WS = 2609.4


GEOMETRY DATA

Geometry Title: Base Conditions Geometry
Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 3\TRIB3.G01

CROSS SECTION          RIVER: Tributary 3
REACH: 1                  RS: 0.735

INPUT
```

Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9628.1	2674	9644.7	2672	9661.5	2670	9709.5	2668	9716.9	2668
9736.4	2668	9956.5	2668	9988.8	2668	10000	2668	10027.8	2668
10037.4	2670	10054.7	2672	10081.8	2674				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9628.1	.065	9661.5	.039	10037.4	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9661.5	10037.4	275	294	206	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2669.39	Element			
Vel Head (ft)	0.34	Wt. n-Val.		0.039	
W.S. Elev (ft)	2669.05	Reach Len. (ft)	275.00	294.00	206.00
Crit W.S. (ft)	2668.92	Flow Area (sq ft)		349.51	
E.G. Slope (ft/ft)	0.014987	Area (sq ft)		349.51	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	348.49	Top Width (ft)		348.49	
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)		4.67	
Max Chl Dpth (ft)	1.05	Hydr. Depth (ft)		1.00	
Conv. Total (cfs)	13339.3	Conv. (cfs)		13339.3	
Length Wtd. (ft)	294.00	Wetted Per. (ft)		348.62	
Min Ch El (ft)	2668.00	Shear (lb/sq ft)		0.94	
Alpha	1.00	Stream Power (lb/ft s)		4.38	
Frctn Loss (ft)	5.16	Cum Volume (acre-ft)	0.45	16.24	0.05
C & E Loss (ft)	0.02	Cum SA (acres)	0.38	13.52	0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2669.39	Element			
Vel Head (ft)	0.34	Wt. n-Val.		0.039	
W.S. Elev (ft)	2669.04	Reach Len. (ft)	275.00	294.00	206.00
Crit W.S. (ft)	2668.92	Flow Area (sq ft)		347.90	
E.G. Slope (ft/ft)	0.015212	Area (sq ft)		347.90	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	348.36	Top Width (ft)		348.36	
Vel Total (ft/s)	4.69	Avg. Vel. (ft/s)		4.69	
Max Chl Dpth (ft)	1.04	Hydr. Depth (ft)		1.00	
Conv. Total (cfs)	13240.0	Conv. (cfs)		13240.0	
Length Wtd. (ft)	294.00	Wetted Per. (ft)		348.49	
Min Ch El (ft)	2668.00	Shear (lb/sq ft)		0.95	
Alpha	1.00	Stream Power (lb/ft s)		4.45	
Frctn Loss (ft)	5.16	Cum Volume (acre-ft)	0.45	16.25	0.05
C & E Loss (ft)	0.02	Cum SA (acres)	0.38	13.52	0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 3
REACH: 1 RS: 0.679

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9693.7	2666	9716.9	2664	9767.7	2664	9828.7	2664	9902.8	2662
9931.3	2662	9944.7	2662	9946.8	2662	9994.2	2662	10000	2662
10005.4	2662	10082.2	2664	10110.2	2666	10139.1	2668	10163.1	2670

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9693.7	.065	9828.7	.039	10082.2	.065

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

```
        9828.7 10082.2              223     238     311             .1       .3

CROSS SECTION OUTPUT     Profile #100yr Natural Fp

  E.G. Elev (ft)            2664.21   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.58   Wt. n-Val.                            0.039
  W.S. Elev (ft)            2663.63   Reach Len. (ft)            223.00     238.00     311.00
  Crit W.S. (ft)            2663.61   Flow Area (sq ft)                     267.28
  E.G. Slope (ft/ft)       0.020508   Area (sq ft)                          267.28
  Q Total (cfs)             1633.00   Flow (cfs)                           1633.00
  Top Width (ft)             225.52   Top Width (ft)                        225.52
  Vel Total (ft/s)             6.11   Avg. Vel. (ft/s)                        6.11
  Max Chl Dpth (ft)            1.63   Hydr. Depth (ft)                        1.19
  Conv. Total (cfs)         11403.2   Conv. (cfs)                          11403.2
  Length Wtd. (ft)           238.00   Wetted Per. (ft)                      225.56
  Min Ch El (ft)            2662.00   Shear (lb/sq ft)                        1.52
  Alpha                        1.00   Stream Power (lb/ft s)                  9.27
  Frctn Loss (ft)              4.64   Cum Volume (acre-ft)         0.45      14.16       0.05
  C & E Loss (ft)              0.04   Cum SA (acres)               0.38      11.59       0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT     Profile #Method 1 Fldwy

  E.G. Elev (ft)            2664.21   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.58   Wt. n-Val.                            0.039
  W.S. Elev (ft)            2663.63   Reach Len. (ft)            223.00     238.00     311.00
  Crit W.S. (ft)            2663.61   Flow Area (sq ft)                     268.05
  E.G. Slope (ft/ft)       0.020301   Area (sq ft)                          268.05
  Q Total (cfs)             1633.00   Flow (cfs)                           1633.00
  Top Width (ft)             225.42   Top Width (ft)                        225.42
  Vel Total (ft/s)             6.09   Avg. Vel. (ft/s)                        6.09
  Max Chl Dpth (ft)            1.63   Hydr. Depth (ft)                        1.19
  Conv. Total (cfs)         11461.1   Conv. (cfs)                          11461.1
  Length Wtd. (ft)           238.00   Wetted Per. (ft)                      225.47
  Min Ch El (ft)            2662.00   Shear (lb/sq ft)                        1.51
  Alpha                        1.00   Stream Power (lb/ft s)                  9.18
  Frctn Loss (ft)              4.65   Cum Volume (acre-ft)         0.45      14.17       0.05
  C & E Loss (ft)              0.05   Cum SA (acres)               0.38      11.59       0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Tributary 3
REACH: 1                  RS: 0.634

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9504.2    2664  9528.8    2662  9553.9    2660  9557.4    2660  9612.1    2660
  9639.9    2660  9729.1    2660  9791.1    2658  9826.2    2658  9870.8    2658
  9873.1    2658    9989    2658   10000    2658 10009.1    2658 10049.2    2658
 10054.2    265810073.38    2660 10093.1    2662 10113.6    2662 10174.1    2662
 10218.5    2664 10251.7    2666 10297.8    2668 10332.3    2670

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9504.2    .065  9729.1    .03910073.38    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9729.110073.38              321     342     437             .1       .3

CROSS SECTION OUTPUT     Profile #100yr Natural Fp

  E.G. Elev (ft)            2659.52   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.43   Wt. n-Val.                            0.039
  W.S. Elev (ft)            2659.09   Reach Len. (ft)            321.00     342.00     437.00
  Crit W.S. (ft)            2659.03   Flow Area (sq ft)                     310.09
  E.G. Slope (ft/ft)       0.018876   Area (sq ft)                          310.09
  Q Total (cfs)             1633.00   Flow (cfs)                           1633.00
```

Top Width (ft)	307.24	Top Width (ft)		307.24	
Vel Total (ft/s)	5.27	Avg. Vel. (ft/s)		5.27	
Max Chl Dpth (ft)	1.09	Hydr. Depth (ft)		1.01	
Conv. Total (cfs)	11885.9	Conv. (cfs)		11885.9	
Length Wtd. (ft)	342.00	Wetted Per. (ft)		307.31	
Min Ch El (ft)	2658.00	Shear (lb/sq ft)		1.19	
Alpha	1.00	Stream Power (lb/ft s)		6.26	
Frctn Loss (ft)	5.12	Cum Volume (acre-ft)	0.45	12.58	0.05
C & E Loss (ft)	0.01	Cum SA (acres)	0.38	10.13	0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2659.52	Element			
Vel Head (ft)	0.43	Wt. n-Val.		0.039	
W.S. Elev (ft)	2659.09	Reach Len. (ft)	321.00	342.00	437.00
Crit W.S. (ft)	2659.03	Flow Area (sq ft)		311.67	
E.G. Slope (ft/ft)	0.018561	Area (sq ft)		311.67	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	307.24	Top Width (ft)		307.24	
Vel Total (ft/s)	5.24	Avg. Vel. (ft/s)		5.24	
Max Chl Dpth (ft)	1.09	Hydr. Depth (ft)		1.01	
Conv. Total (cfs)	11986.4	Conv. (cfs)		11986.4	
Length Wtd. (ft)	342.00	Wetted Per. (ft)		307.32	
Min Ch El (ft)	2658.00	Shear (lb/sq ft)		1.18	
Alpha	1.00	Stream Power (lb/ft s)		6.16	
Frctn Loss (ft)	5.13	Cum Volume (acre-ft)	0.45	12.59	0.05
C & E Loss (ft)	0.01	Cum SA (acres)	0.38	10.13	0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 3
REACH: 1 RS: .569

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9758.6	2656	9839.5	2654	9858.8	2654	9861.6	2654	9872.9	2652
9886.9	2652	9993.5	2652	10000	2652	10005.3	2652	10034	2654
10044.7	2654	10166.7	2654	10198	2656	10240.2	2658	10294.1	2660

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9758.6	.065	9861.6	.039	10034	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9861.6	10034	266	391	290	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2654.38	Element			
Vel Head (ft)	0.54	Wt. n-Val.		0.039	
W.S. Elev (ft)	2653.84	Reach Len. (ft)	266.00	391.00	290.00
Crit W.S. (ft)	2653.61	Flow Area (sq ft)		276.78	
E.G. Slope (ft/ft)	0.012455	Area (sq ft)		276.78	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	169.12	Top Width (ft)		169.12	
Vel Total (ft/s)	5.90	Avg. Vel. (ft/s)		5.90	
Max Chl Dpth (ft)	1.84	Hydr. Depth (ft)		1.64	
Conv. Total (cfs)	14632.6	Conv. (cfs)		14632.6	
Length Wtd. (ft)	391.00	Wetted Per. (ft)		169.34	
Min Ch El (ft)	2652.00	Shear (lb/sq ft)		1.27	
Alpha	1.00	Stream Power (lb/ft s)		7.50	
Frctn Loss (ft)	6.23	Cum Volume (acre-ft)	0.45	10.28	0.05
C & E Loss (ft)	0.00	Cum SA (acres)	0.38	8.26	0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2654.38	Element			
Vel Head (ft)	0.54	Wt. n-Val.		0.039	
W.S. Elev (ft)	2653.84	Reach Len. (ft)	266.00	391.00	290.00
Crit W.S. (ft)	2653.60	Flow Area (sq ft)		277.08	
E.G. Slope (ft/ft)	0.012412	Area (sq ft)		277.08	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	169.12	Top Width (ft)		169.12	
Vel Total (ft/s)	5.89	Avg. Vel. (ft/s)		5.89	
Max Chl Dpth (ft)	1.84	Hydr. Depth (ft)		1.64	
Conv. Total (cfs)	14657.9	Conv. (cfs)		14657.9	
Length Wtd. (ft)	391.00	Wetted Per. (ft)		169.35	
Min Ch El (ft)	2652.00	Shear (lb/sq ft)		1.27	
Alpha	1.00	Stream Power (lb/ft s)		7.47	
Frctn Loss (ft)	6.23	Cum Volume (acre-ft)	0.45	10.28	0.05
C & E Loss (ft)	0.00	Cum SA (acres)	0.38	8.26	0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 3
REACH: 1 RS: 0.495

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9685.7	2658	9712	2656	9731.4	2654	9745	2652	9766.2	2650
9804	2648	9902.2	2646	9915.4	2646	9987.9	2646	10000	2646
10005.7	2646	10077.1	2648	10127.1	2648	10159.5	2648		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9685.7	.065	9804	.039	10077.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9804	10077.1	265	305	278	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2648.15	Element			
Vel Head (ft)	0.56	Wt. n-Val.		0.039	
W.S. Elev (ft)	2647.59	Reach Len. (ft)	265.00	305.00	278.00
Crit W.S. (ft)	2647.58	Flow Area (sq ft)		271.89	
E.G. Slope (ft/ft)	0.020856	Area (sq ft)		271.89	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	238.38	Top Width (ft)		238.38	
Vel Total (ft/s)	6.01	Avg. Vel. (ft/s)		6.01	
Max Chl Dpth (ft)	1.59	Hydr. Depth (ft)		1.14	
Conv. Total (cfs)	11307.5	Conv. (cfs)		11307.5	
Length Wtd. (ft)	305.00	Wetted Per. (ft)		238.42	
Min Ch El (ft)	2646.00	Shear (lb/sq ft)		1.48	
Alpha	1.00	Stream Power (lb/ft s)		8.92	
Frctn Loss (ft)	6.40	Cum Volume (acre-ft)	0.45	7.82	0.05
C & E Loss (ft)	0.00	Cum SA (acres)	0.38	6.43	0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2648.15	Element			
Vel Head (ft)	0.56	Wt. n-Val.		0.039	
W.S. Elev (ft)	2647.59	Reach Len. (ft)	265.00	305.00	278.00
Crit W.S. (ft)	2647.58	Flow Area (sq ft)		271.89	
E.G. Slope (ft/ft)	0.020856	Area (sq ft)		271.89	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	238.38	Top Width (ft)		238.38	
Vel Total (ft/s)	6.01	Avg. Vel. (ft/s)		6.01	

Max Chl Dpth (ft)	1.59	Hydr. Depth (ft)		1.14	
Conv. Total (cfs)	11307.5	Conv. (cfs)		11307.5	
Length Wtd. (ft)	305.00	Wetted Per. (ft)		238.42	
Min Ch El (ft)	2646.00	Shear (lb/sq ft)		1.48	
Alpha	1.00	Stream Power (lb/ft s)		8.92	
Frctn Loss (ft)	6.40	Cum Volume (acre-ft)	0.45	7.82	0.05
C & E Loss (ft)	0.00	Cum SA (acres)	0.38	6.43	0.07

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 3
REACH: 1 RS: 0.437

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9818.9	2650	9864.1	2648	9883.2	2646	9905.3	2644	9927.9	2642
9949.9	2640	9953.3	2640	10000	2640	10132.7	2640	10139.6	2640
10157	2640	10161.7	2640	10200.6	2642	10204.7	2642	10227.1	2640
10250.5	2638	10261.1	2638	10305.7	2638	10350.1	2638	10413.1	2640
10453.4	2642	10487.6	2644						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9818.9	.065	9927.9	.039	10204.7	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9927.9	10204.7	422	458	356	.1	.3

Right Levee Station= 10200.7 Elevation= 2642

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2641.74	Element			
Vel Head (ft)	0.55	Wt. n-Val.		0.039	
W.S. Elev (ft)	2641.20	Reach Len. (ft)	422.00	458.00	356.00
Crit W.S. (ft)	2641.20	Flow Area (sq ft)		275.16	
E.G. Slope (ft/ft)	0.021158	Area (sq ft)		275.16	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	248.23	Top Width (ft)		248.23	
Vel Total (ft/s)	5.93	Avg. Vel. (ft/s)		5.93	
Max Chl Dpth (ft)	3.20	Hydr. Depth (ft)		1.11	
Conv. Total (cfs)	11226.6	Conv. (cfs)		11226.6	
Length Wtd. (ft)	458.00	Wetted Per. (ft)		248.31	
Min Ch El (ft)	2640.00	Shear (lb/sq ft)		1.46	
Alpha	1.00	Stream Power (lb/ft s)		8.69	
Frctn Loss (ft)	5.70	Cum Volume (acre-ft)	0.45	5.90	0.05
C & E Loss (ft)	0.09	Cum SA (acres)	0.38	4.73	0.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2641.74	Element			
Vel Head (ft)	0.55	Wt. n-Val.		0.039	
W.S. Elev (ft)	2641.20	Reach Len. (ft)	422.00	458.00	356.00
Crit W.S. (ft)	2641.20	Flow Area (sq ft)		275.16	
E.G. Slope (ft/ft)	0.021158	Area (sq ft)		275.16	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	248.23	Top Width (ft)		248.23	

Vel Total (ft/s)	5.93	Avg. Vel. (ft/s)		5.93	
Max Chl Dpth (ft)	1.20	Hydr. Depth (ft)		1.11	
Conv. Total (cfs)	11226.6	Conv. (cfs)		11226.6	
Length Wtd. (ft)	458.00	Wetted Per. (ft)		248.31	
Min Ch El (ft)	2640.00	Shear (lb/sq ft)		1.46	
Alpha	1.00	Stream Power (lb/ft s)		8.69	
Frctn Loss (ft)	5.70	Cum Volume (acre-ft)	0.45	5.90	0.05
C & E Loss (ft)	0.09	Cum SA (acres)	0.38	4.73	0.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Tributary 3
REACH: 1 RS: 0.35

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9790.8	2642	9802.4	2640	9818.9	2638	9855.7	2636	9961.1	2634
9975.3	2634	9992.6	2634	10000	2634	10013.5	2634	10161.3	2634
10202.9	2634	10245.9	2636	10260.7	2638	10278.9	2640		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9790.8	.065	9855.7	.039	10245.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9855.7	10245.9	261	351	379	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2635.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.		0.039	
W.S. Elev (ft)	2635.42	Reach Len. (ft)	261.00	351.00	379.00
Crit W.S. (ft)	2635.06	Flow Area (sq ft)		418.39	
E.G. Slope (ft/ft)	0.008185	Area (sq ft)		418.39	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	347.21	Top Width (ft)		347.21	
Vel Total (ft/s)	3.90	Avg. Vel. (ft/s)		3.90	
Max Chl Dpth (ft)	1.42	Hydr. Depth (ft)		1.21	
Conv. Total (cfs)	18049.6	Conv. (cfs)		18049.6	
Length Wtd. (ft)	339.41	Wetted Per. (ft)		347.26	
Min Ch El (ft)	2634.00	Shear (lb/sq ft)		0.62	
Alpha	1.00	Stream Power (lb/ft s)		2.40	
Frctn Loss (ft)	3.32	Cum Volume (acre-ft)	0.45	2.25	0.05
C & E Loss (ft)	0.06	Cum SA (acres)	0.38	1.60	0.07

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2635.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.		0.039	
W.S. Elev (ft)	2635.42	Reach Len. (ft)	261.00	351.00	379.00
Crit W.S. (ft)	2635.06	Flow Area (sq ft)		418.39	
E.G. Slope (ft/ft)	0.008185	Area (sq ft)		418.39	
Q Total (cfs)	1633.00	Flow (cfs)		1633.00	
Top Width (ft)	347.21	Top Width (ft)		347.21	

Vel Total (ft/s)	3.90	Avg. Vel. (ft/s)		3.90	
Max Chl Dpth (ft)	1.42	Hydr. Depth (ft)		1.21	
Conv. Total (cfs)	18049.6	Conv. (cfs)		18049.6	
Length Wtd. (ft)	339.41	Wetted Per. (ft)		347.26	
Min Ch El (ft)	2634.00	Shear (lb/sq ft)		0.62	
Alpha	1.00	Stream Power (lb/ft s)		2.40	
Frctn Loss (ft)	3.32	Cum Volume (acre-ft)	0.45	2.25	0.05
C & E Loss (ft)	0.06	Cum SA (acres)	0.38	1.60	0.07

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 3
REACH: 1 RS: 0.284

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9765.7	2636	9811.1	2634	9831	2632	9892.2	2630	9939.4	2630
9941.5	2630	9972.4	2630	9974.1	2630	9994.5	2628	10000	2628
10013.9	2628	10023.8	2630	10045.5	2632	10161.6	2634	10178.2	2634

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9765.7	.065	9974.1	.039	10023.8	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.1	10023.8	1019	1500	1455	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2632.27	Element			
Vel Head (ft)	0.82	Wt. n-Val.	0.065	0.039	0.065
W.S. Elev (ft)	2631.45	Reach Len. (ft)			
Crit W.S. (ft)	2631.45	Flow Area (sq ft)	151.01	141.20	11.42
E.G. Slope (ft/ft)	0.012097	Area (sq ft)	151.01	141.20	11.42
Q Total (cfs)	1633.00	Flow (cfs)	427.69	1182.21	23.11
Top Width (ft)	191.73	Top Width (ft)	126.29	49.70	15.74
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	2.83	8.37	2.02
Max Chl Dpth (ft)	3.45	Hydr. Depth (ft)	1.20	2.84	0.73
Conv. Total (cfs)	14847.2	Conv. (cfs)	3888.5	10748.6	210.1
Length Wtd. (ft)		Wetted Per. (ft)	126.31	50.00	15.81
Min Ch El (ft)	2628.00	Shear (lb/sq ft)	0.90	2.13	0.55
Alpha	1.83	Stream Power (lb/ft s)	2.56	17.86	1.10
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2632.27	Element			
Vel Head (ft)	0.82	Wt. n-Val.	0.065	0.039	0.065
W.S. Elev (ft)	2631.45	Reach Len. (ft)			
Crit W.S. (ft)	2631.45	Flow Area (sq ft)	151.01	141.20	11.42
E.G. Slope (ft/ft)	0.012097	Area (sq ft)	151.01	141.20	11.42
Q Total (cfs)	1633.00	Flow (cfs)	427.69	1182.21	23.11
Top Width (ft)	191.73	Top Width (ft)	126.29	49.70	15.74
Vel Total (ft/s)	5.38	Avg. Vel. (ft/s)	2.83	8.37	2.02
Max Chl Dpth (ft)	3.45	Hydr. Depth (ft)	1.20	2.84	0.73
Conv. Total (cfs)	14847.2	Conv. (cfs)	3888.5	10748.6	210.1
Length Wtd. (ft)		Wetted Per. (ft)	126.31	50.00	15.81
Min Ch El (ft)	2628.00	Shear (lb/sq ft)	0.90	2.13	0.55
Alpha	1.83	Stream Power (lb/ft s)	2.56	17.86	1.10
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

E.5 HYDRAULIC CALCULATIONS

Tributary 4

HEC-RAS September 1998 Version 2.2
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Upper Rawhide Wash - Trib. 4
Project File : TRIB4.prj
Run Date and Time: 06/27/2001 7:14:44 AM

Project in English units

Project Description:
Upper Rawhide Wash Floodplain Delineation
FCD 98-12
Tributary 4
(RW18)

Model Created 6/2001

FCD Contact: Richard Harris

Kimley-Horn
and Associates Inc.
7600 N. 15th Street, Suite 250
Phoenix, Arizona
85020

Kimley-Horn Team:

Project Manager - Doug Plasencia
Project
Engineer - Bob Eichinger
Analyst - Jon Ahern
Analyst - Diana
Davisson

HEC-RAS
River Analysis System
Version 2.2, September
1998

Purpose of Study: To delineate the FEMA 100 year
Floodplain/Floodway

Base Mapping: Base Mapping supplied by The City of
Scottsdale through the Flood Control District of Maricopa County

Mapping
Company: Michael Baker Jr.
Date Flown: 11/01/93

PLAN DATA

Plan Title: Floodway Method 1
Plan File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 4\TRIB4.p02

```
          Geometry Title: Base Conditions Geometry
          Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 4\TRIB4.G01

          Flow Title    : 100 Year Flood - Floodway
          Flow File     : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 4\TRIB4.f02

Plan Summary Information:
Number of:  Cross Sections =   22    Mulitple Openings =    0
            Culverts       =    0    Inline Weirs      =    0
            Bridges        =    0

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed at all cross sections
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0

River = Tributary 4      Reach = 1
RS      Profile           Method  Value1  Value2
1.459   Method 1 Fldwy         1  9642.3 10061.9
1.408   Method 1 Fldwy         1  9868.3 10089.2
1.357   Method 1 Fldwy         1  9876.2   10277
1.288   Method 1 Fldwy         1 9888.2210197.09
1.227   Method 1 Fldwy         1  9822.4 10417.1
1.145   Method 1 Fldwy         1    9872 10283.2
1.097   Method 1 Fldwy         1  9972.3   10175
1.031   Method 1 Fldwy         1 9952.6910174.87
0.955   Method 1 Fldwy         1    9910   10040
0.861   Method 1 Fldwy         1  9898.3 10231.8
0.766   Method 1 Fldwy         1    9800 10131.4
0.671   Method 1 Fldwy         1  9812.6 10199.4
0.633   Method 1 Fldwy         1    9833   10309
0.569   Method 1 Fldwy         1  9980.2 10322.5
0.529   Method 1 Fldwy         1  9975.1 10304.2
0.472   Method 1 Fldwy         1  9930.9 10293.7
0.422   Method 1 Fldwy         1 9870.7510019.46
0.363   Method 1 Fldwy         1    9860 10055.7
0.284   Method 1 Fldwy         1  9853.210065.66
0.205   Method 1 Fldwy         1 9961.7810039.02
0.153   Method 1 Fldwy         1  9924.410070.08
0.0947  Method 1 Fldwy         1  9797.4 10057.5


FLOW DATA

Flow Title: 100 Year Flood - Floodway
Flow File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 4\TRIB4.f02

Flow Data (cfs)

  River          Reach          RS       100yr Natural Fp  Method 1 Fldwy
  Tributary 4    1              1.459                1766            1766
  Tributary 4    1              0.766                1875            1875


Boundary Conditions

  River          Reach          Profile                        Upstream                 Downstream
```

Tributary 4	1	100yr Natural Fp	Known WS = 2607.5
Tributary 4	1	Method 1 Fldwy	Known WS = 2608.5

GEOMETRY DATA

Geometry Title: Base Conditions Geometry
Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-20-01\Disk_2\Trib 4\TRIB4.G01

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 1.459

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9604.5	2744	9618.9	2742	9642.3	2740	9669.2	2738	9678.5	2738
9724.1	2738	9727.5	2738	9990.8	2738	10000	2738	10010.3	2738
10061.9	2740	10088.8	2742	10116.4	2744	10124.2	2746		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9604.5	.065	9642.3	.038	10061.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9642.3	10061.9	205	270	193	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2739.47	Element			
Vel Head (ft)	0.24	Wt. n-Val.		0.038	
W.S. Elev (ft)	2739.23	Reach Len. (ft)	205.00	270.00	193.00
Crit W.S. (ft)	2738.92	Flow Area (sq ft)		450.85	
E.G. Slope (ft/ft)	0.008259	Area (sq ft)		450.85	
Q Total (cfs)	1766.00	Flow (cfs)		1766.00	
Top Width (ft)	389.54	Top Width (ft)		389.54	
Vel Total (ft/s)	3.92	Avg. Vel. (ft/s)		3.92	
Max Chl Dpth (ft)	1.23	Hydr. Depth (ft)		1.16	
Conv. Total (cfs)	19431.9	Conv. (cfs)		19431.9	
Length Wtd. (ft)	270.00	Wetted Per. (ft)		389.61	
Min Ch El (ft)	2738.00	Shear (lb/sq ft)		0.60	
Alpha	1.00	Stream Power (lb/ft s)		2.34	
Frctn Loss (ft)	3.29	Cum Volume (acre-ft)	4.57	42.39	7.99
C & E Loss (ft)	0.04	Cum SA (acres)	5.95	30.42	9.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2739.47	Element			
Vel Head (ft)	0.24	Wt. n-Val.		0.038	
W.S. Elev (ft)	2739.23	Reach Len. (ft)	205.00	270.00	193.00
Crit W.S. (ft)	2738.92	Flow Area (sq ft)		450.85	
E.G. Slope (ft/ft)	0.008259	Area (sq ft)		450.85	
Q Total (cfs)	1766.00	Flow (cfs)		1766.00	
Top Width (ft)	389.54	Top Width (ft)		389.54	
Vel Total (ft/s)	3.92	Avg. Vel. (ft/s)		3.92	
Max Chl Dpth (ft)	1.23	Hydr. Depth (ft)		1.16	
Conv. Total (cfs)	19431.9	Conv. (cfs)		19431.9	
Length Wtd. (ft)	270.00	Wetted Per. (ft)		389.61	
Min Ch El (ft)	2738.00	Shear (lb/sq ft)		0.60	
Alpha	1.00	Stream Power (lb/ft s)		2.34	
Frctn Loss (ft)	3.29	Cum Volume (acre-ft)	3.31	43.04	5.63
C & E Loss (ft)	0.04	Cum SA (acres)	3.41	30.42	6.00

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 1.408

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9852.2	2738	9868.3	2736	9887.9	2734	9897.5	2734	9993.3	2734
10000	2734	10008.2	2734	10023.2	2734	10048.8	2734	10089.2	2736
10110.5	2738	10127.8	2738	10147	2738	10162	2740		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9852.2	.065	9868.3	.038	10089.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9868.3	10089.2	220	268	275	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2736.14	Element			
Vel Head (ft)	0.67	Wt. n-Val.		0.038	
W.S. Elev (ft)	2735.47	Reach Len. (ft)	220.00	268.00	275.00
Crit W.S. (ft)	2735.47	Flow Area (sq ft)		269.38	
E.G. Slope (ft/ft)	0.019551	Area (sq ft)		269.38	
Q Total (cfs)	1766.00	Flow (cfs)		1766.00	
Top Width (ft)	205.07	Top Width (ft)		205.07	
Vel Total (ft/s)	6.56	Avg. Vel. (ft/s)		6.56	
Max Chl Dpth (ft)	1.47	Hydr. Depth (ft)		1.31	
Conv. Total (cfs)	12630.0	Conv. (cfs)		12630.0	
Length Wtd. (ft)	264.74	Wetted Per. (ft)		205.18	
Min Ch El (ft)	2734.00	Shear (lb/sq ft)		1.60	
Alpha	1.00	Stream Power (lb/ft s)		10.51	
Frctn Loss (ft)	4.21	Cum Volume (acre-ft)	4.57	40.16	7.99
C & E Loss (ft)	0.02	Cum SA (acres)	5.95	28.58	9.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2736.14	Element			
Vel Head (ft)	0.67	Wt. n-Val.		0.038	
W.S. Elev (ft)	2735.47	Reach Len. (ft)	220.00	268.00	275.00
Crit W.S. (ft)	2735.47	Flow Area (sq ft)		269.38	
E.G. Slope (ft/ft)	0.019551	Area (sq ft)		269.38	
Q Total (cfs)	1766.00	Flow (cfs)		1766.00	
Top Width (ft)	205.07	Top Width (ft)		205.07	
Vel Total (ft/s)	6.56	Avg. Vel. (ft/s)		6.56	
Max Chl Dpth (ft)	1.47	Hydr. Depth (ft)		1.31	
Conv. Total (cfs)	12630.0	Conv. (cfs)		12630.0	
Length Wtd. (ft)	264.74	Wetted Per. (ft)		205.18	
Min Ch El (ft)	2734.00	Shear (lb/sq ft)		1.60	
Alpha	1.00	Stream Power (lb/ft s)		10.51	
Frctn Loss (ft)	4.21	Cum Volume (acre-ft)	3.31	40.81	5.63
C & E Loss (ft)	0.02	Cum SA (acres)	3.41	28.58	6.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to

critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 1.357

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9753	2742	9774.3	2740	9795.2	2738	9834	2736	9852.6	2734
9876.2	2732	9897.6	2730	9938.9	2730	9977.9	2730	9998.3	2728
10000	2728	10000.5	2728	10038.8	2730	10130.9	2730	10277	2732
10301.1	2734	10326.2	2736	10348.4	2738	10368.5	2740	10405.2	2742

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9753	.065	9977.9	.038	10038.8	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.9	10038.8	284	367	185	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2731.81	Element			
Vel Head (ft)	0.59	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2731.21	Reach Len. (ft)	284.00	367.00	185.00
Crit W.S. (ft)	2731.21	Flow Area (sq ft)	105.38	137.04	165.66
E.G. Slope (ft/ft)	0.013200	Area (sq ft)	105.38	137.04	165.66
Q Total (cfs)	1766.00	Flow (cfs)	300.07	1055.47	410.46
Top Width (ft)	334.98	Top Width (ft)	93.29	60.90	180.79
Vel Total (ft/s)	4.33	Avg. Vel. (ft/s)	2.85	7.70	2.48
Max Chl Dpth (ft)	3.21	Hydr. Depth (ft)	1.13	2.25	0.92
Conv. Total (cfs)	15371.1	Conv. (cfs)	2611.8	9186.7	3572.6
Length Wtd. (ft)	315.12	Wetted Per. (ft)	93.35	61.05	180.80
Min Ch El (ft)	2728.00	Shear (lb/sq ft)	0.93	1.85	0.76
Alpha	2.04	Stream Power (lb/ft s)	2.65	14.25	1.87
Frctn Loss (ft)	3.21	Cum Volume (acre-ft)	4.30	38.91	7.46
C & E Loss (ft)	0.01	Cum SA (acres)	5.71	27.76	8.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2731.81	Element			
Vel Head (ft)	0.59	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2731.21	Reach Len. (ft)	284.00	367.00	185.00
Crit W.S. (ft)	2731.21	Flow Area (sq ft)	105.38	137.04	165.66
E.G. Slope (ft/ft)	0.013200	Area (sq ft)	105.38	137.04	165.66
Q Total (cfs)	1766.00	Flow (cfs)	300.07	1055.47	410.46
Top Width (ft)	334.98	Top Width (ft)	93.29	60.90	180.79
Vel Total (ft/s)	4.33	Avg. Vel. (ft/s)	2.85	7.70	2.48
Max Chl Dpth (ft)	3.21	Hydr. Depth (ft)	1.13	2.25	0.92
Conv. Total (cfs)	15371.1	Conv. (cfs)	2611.8	9186.7	3572.6
Length Wtd. (ft)	313.73	Wetted Per. (ft)	93.35	61.05	180.80
Min Ch El (ft)	2728.00	Shear (lb/sq ft)	0.93	1.85	0.76
Alpha	2.04	Stream Power (lb/ft s)	2.65	14.25	1.87
Frctn Loss (ft)	2.97	Cum Volume (acre-ft)	3.05	39.56	5.11
C & E Loss (ft)	0.00	Cum SA (acres)	3.17	27.76	5.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates

that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 1.288

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9837.2	2730	9854.9	2728	9888.6	2726	9978.6	2724	9991	2722
10000	2722	10013.3	2722	10020.1	2724	10195.6	2726	10328.4	2728
10342.1	2730	10360.3	2732	10382.6	2734				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9837.2	.065	9978.6	.038	10020.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978.6	10020.1	271	322	177	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2726.74	Element			
Vel Head (ft)	0.72	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2726.02	Reach Len. (ft)	271.00	322.00	177.00
Crit W.S. (ft)	2726.02	Flow Area (sq ft)	92.03	147.73	179.46
E.G. Slope (ft/ft)	0.008084	Area (sq ft)	92.03	147.73	179.46
Q Total (cfs)	1766.00	Flow (cfs)	191.41	1202.31	372.27
Top Width (ft)	308.87	Top Width (ft)	90.38	41.50	176.99
Vel Total (ft/s)	4.21	Avg. Vel. (ft/s)	2.08	8.14	2.07
Max Chl Dpth (ft)	4.02	Hydr. Depth (ft)	1.02	3.56	1.01
Conv. Total (cfs)	19641.1	Conv. (cfs)	2128.9	13371.9	4140.3
Length Wtd. (ft)	299.41	Wetted Per. (ft)	90.40	41.95	177.00
Min Ch El (ft)	2722.00	Shear (lb/sq ft)	0.51	1.78	0.51
Alpha	2.62	Stream Power (lb/ft s)	1.07	14.47	1.06
Frctn Loss (ft)	2.98	Cum Volume (acre-ft)	3.66	37.71	6.73
C & E Loss (ft)	0.01	Cum SA (acres)	5.12	27.33	7.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2726.74	Element			
Vel Head (ft)	0.64	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2726.10	Reach Len. (ft)	271.00	322.00	177.00
Crit W.S. (ft)	2726.10	Flow Area (sq ft)	98.87	150.87	192.85
E.G. Slope (ft/ft)	0.007131	Area (sq ft)	98.87	150.87	192.85
Q Total (cfs)	1766.00	Flow (cfs)	202.47	1169.45	394.08
Top Width (ft)	308.87	Top Width (ft)	90.38	41.50	176.99
Vel Total (ft/s)	3.99	Avg. Vel. (ft/s)	2.05	7.75	2.04
Max Chl Dpth (ft)	4.10	Hydr. Depth (ft)	1.09	3.64	1.09
Conv. Total (cfs)	20913.6	Conv. (cfs)	2397.7	13849.1	4666.8
Length Wtd. (ft)	298.35	Wetted Per. (ft)	90.48	41.95	177.08
Min Ch El (ft)	2722.00	Shear (lb/sq ft)	0.49	1.60	0.48
Alpha	2.59	Stream Power (lb/ft s)	1.00	12.41	0.99
Frctn Loss (ft)	2.77	Cum Volume (acre-ft)	2.38	38.35	4.35
C & E Loss (ft)	0.02	Cum SA (acres)	2.57	27.33	4.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 1.227

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9822.4	2732	9850.9	2728	9859.8	2726	9874.7	2724	9898.1	2722
9924.8	2720	9991.8	2718	10000	2718	10009.6	2718	10016.1	2720
10198.7	2722	10343	2724	10371.7	2726	10397	2728	10417.1	2730

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9822.4	.065	9924.8	.038	10016.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9924.8	10016.1	369	430	414	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2722.01	Element			
Vel Head (ft)	0.86	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2721.14	Reach Len. (ft)	369.00	430.00	414.00
Crit W.S. (ft)	2721.14	Flow Area (sq ft)	8.72	213.46	59.65
E.G. Slope (ft/ft)	0.012581	Area (sq ft)	8.72	213.46	59.65
Q Total (cfs)	1766.00	Flow (cfs)	15.37	1645.30	105.33
Top Width (ft)	210.92	Top Width (ft)	15.26	91.30	104.36
Vel Total (ft/s)	6.27	Avg. Vel. (ft/s)	1.76	7.71	1.77
Max Chl Dpth (ft)	3.14	Hydr. Depth (ft)	0.57	2.34	0.57
Conv. Total (cfs)	15744.5	Conv. (cfs)	137.1	14668.4	939.0
Length Wtd. (ft)	426.75	Wetted Per. (ft)	15.30	91.63	104.37
Min Ch El (ft)	2718.00	Shear (lb/sq ft)	0.45	1.83	0.45
Alpha	1.42	Stream Power (lb/ft s)	0.79	14.10	0.79
Frctn Loss (ft)	5.33	Cum Volume (acre-ft)	3.34	36.37	6.24
C & E Loss (ft)	0.05	Cum SA (acres)	4.79	26.84	7.10

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2722.01	Element			
Vel Head (ft)	0.86	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2721.14	Reach Len. (ft)	369.00	430.00	414.00
Crit W.S. (ft)	2721.14	Flow Area (sq ft)	8.72	213.46	59.65
E.G. Slope (ft/ft)	0.012581	Area (sq ft)	8.72	213.46	59.65
Q Total (cfs)	1766.00	Flow (cfs)	15.37	1645.30	105.33
Top Width (ft)	210.92	Top Width (ft)	15.26	91.30	104.36
Vel Total (ft/s)	6.27	Avg. Vel. (ft/s)	1.76	7.71	1.77
Max Chl Dpth (ft)	3.14	Hydr. Depth (ft)	0.57	2.34	0.57
Conv. Total (cfs)	15744.5	Conv. (cfs)	137.1	14668.4	939.0
Length Wtd. (ft)	426.75	Wetted Per. (ft)	15.30	91.63	104.37
Min Ch El (ft)	2718.00	Shear (lb/sq ft)	0.45	1.83	0.45
Alpha	1.42	Stream Power (lb/ft s)	0.79	14.10	0.79
Frctn Loss (ft)	5.33	Cum Volume (acre-ft)	2.04	37.00	3.84
C & E Loss (ft)	0.05	Cum SA (acres)	2.25	26.84	4.09

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 1.145

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9812.2	2720	9834.4	2718	9872	2716	9946.5	2714	9993.9	2712
10000	2712	10016.8	2712	10020.3	2714	10154.9	2714	10157	2712
10162	2712	10164.1	2714	10213.3	2716	10267.6	2716	10321.3	2718

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9812.2	.065	9946.5	.038	10020.3	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9946.5	10020.3	227	252	226	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2715.69	Element			
Vel Head (ft)	0.68	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2715.01	Reach Len. (ft)	227.00	252.00	226.00
Crit W.S. (ft)	2715.01	Flow Area (sq ft)	18.86	170.97	171.37
E.G. Slope (ft/ft)	0.012409	Area (sq ft)	18.86	170.97	171.37
Q Total (cfs)	1766.00	Flow (cfs)	30.38	1297.18	438.44
Top Width (ft)	279.84	Top Width (ft)	37.49	73.80	168.56
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)	1.61	7.59	2.56
Max Chl Dpth (ft)	3.01	Hydr. Depth (ft)	0.50	2.32	1.02
Conv. Total (cfs)	15853.1	Conv. (cfs)	272.7	11644.6	3935.8
Length Wtd. (ft)	242.06	Wetted Per. (ft)	37.50	74.37	170.18
Min Ch El (ft)	2712.00	Shear (lb/sq ft)	0.39	1.78	0.78
Alpha	1.84	Stream Power (lb/ft s)	0.63	13.51	2.00
Frctn Loss (ft)	2.90	Cum Volume (acre-ft)	3.23	34.48	5.15
C & E Loss (ft)	0.05	Cum SA (acres)	4.56	26.02	5.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2715.69	Element			
Vel Head (ft)	0.68	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2715.01	Reach Len. (ft)	227.00	252.00	226.00
Crit W.S. (ft)	2715.01	Flow Area (sq ft)	18.86	170.97	171.37
E.G. Slope (ft/ft)	0.012409	Area (sq ft)	18.86	170.97	171.37
Q Total (cfs)	1766.00	Flow (cfs)	30.38	1297.18	438.44
Top Width (ft)	279.84	Top Width (ft)	37.49	73.80	168.56
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)	1.61	7.59	2.56
Max Chl Dpth (ft)	3.01	Hydr. Depth (ft)	0.50	2.32	1.02
Conv. Total (cfs)	15853.1	Conv. (cfs)	272.7	11644.6	3935.8
Length Wtd. (ft)	243.61	Wetted Per. (ft)	37.50	74.37	170.18
Min Ch El (ft)	2712.00	Shear (lb/sq ft)	0.39	1.78	0.78
Alpha	1.84	Stream Power (lb/ft s)	0.63	13.51	2.00
Frctn Loss (ft)	2.95	Cum Volume (acre-ft)	1.93	35.10	2.74
C & E Loss (ft)	0.01	Cum SA (acres)	2.02	26.02	2.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 1.097

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9838.4	2718	9843.9	2718	9860.5	2716	9881.1	2714	9904.4	2712
9920.8	2712	9972.3	2712	9981.4	2710	9989.1	2708	10000	2708
10010.8	2708	10024.9	2710	10034	2710	10156.3	2710	10313.9	2710
10334.9	2710	10376.7	2712	10471.5	2714	10496.2	2716		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9838.4	.065	9981.4	.038	10024.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9981.4	10024.9	347	350	401	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2711.61	Element			
Vel Head (ft)	0.53	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2711.08	Reach Len. (ft)	347.00	350.00	401.00
Crit W.S. (ft)	2711.08	Flow Area (sq ft)	2.66	112.23	347.34
E.G. Slope (ft/ft)	0.011571	Area (sq ft)	2.66	112.23	347.34
Q Total (cfs)	1766.00	Flow (cfs)	4.27	882.60	879.13
Top Width (ft)	381.01	Top Width (ft)	4.92	43.50	332.59
Vel Total (ft/s)	3.82	Avg. Vel. (ft/s)	1.61	7.86	2.53
Max Chl Dpth (ft)	3.08	Hydr. Depth (ft)	0.54	2.58	1.04
Conv. Total (cfs)	16417.6	Conv. (cfs)	39.7	8205.0	8172.8
Length Wtd. (ft)	362.69	Wetted Per. (ft)	5.04	43.90	332.62
Min Ch El (ft)	2708.00	Shear (lb/sq ft)	0.38	1.85	0.75
Alpha	2.34	Stream Power (lb/ft s)	0.61	14.52	1.91
Frctn Loss (ft)	4.86	Cum Volume (acre-ft)	3.17	33.66	3.80
C & E Loss (ft)	0.00	Cum SA (acres)	4.45	25.68	4.50

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2712.19	Element			
Vel Head (ft)	0.77	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2711.42	Reach Len. (ft)	347.00	350.00	401.00
Crit W.S. (ft)	2711.42	Flow Area (sq ft)	4.58	126.90	212.91
E.G. Slope (ft/ft)	0.011799	Area (sq ft)	4.58	126.90	212.91
Q Total (cfs)	1766.00	Flow (cfs)	8.90	1093.85	663.25
Top Width (ft)	200.05	Top Width (ft)	6.45	43.50	150.10
Vel Total (ft/s)	5.13	Avg. Vel. (ft/s)	1.94	8.62	3.12
Max Chl Dpth (ft)	3.42	Hydr. Depth (ft)	0.71	2.92	1.42
Conv. Total (cfs)	16258.4	Conv. (cfs)	81.9	10070.3	6106.1
Length Wtd. (ft)	359.57	Wetted Per. (ft)	6.61	43.90	151.52
Min Ch El (ft)	2708.00	Shear (lb/sq ft)	0.51	2.13	1.04
Alpha	1.89	Stream Power (lb/ft s)	0.99	18.35	3.22
Frctn Loss (ft)	4.80	Cum Volume (acre-ft)	1.87	34.24	1.74
C & E Loss (ft)	0.07	Cum SA (acres)	1.91	25.68	1.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 1.031

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9864.7	2704	9941.2	2704	9986.5	2702	10000	2702	10054.7	2702
10122.4	2702	10162.4	2702	10179.1	2704	10199	2706	10207.2	2706
10215.2	2706								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9864.7	.065	9941.2	.038	10179.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9941.2	10179.1	280	400	359	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2704.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.		0.038	
W.S. Elev (ft)	2703.49	Reach Len. (ft)	280.00	400.00	359.00
Crit W.S. (ft)	2703.40	Flow Area (sq ft)		297.15	
E.G. Slope (ft/ft)	0.015688	Area (sq ft)		297.15	
Q Total (cfs)	1766.00	Flow (cfs)		1766.00	
Top Width (ft)	222.18	Top Width (ft)		222.18	
Vel Total (ft/s)	5.94	Avg. Vel. (ft/s)		5.94	
Max Chl Dpth (ft)	1.49	Hydr. Depth (ft)		1.34	
Conv. Total (cfs)	14099.7	Conv. (cfs)		14099.7	
Length Wtd. (ft)	391.28	Wetted Per. (ft)		222.30	
Min Ch El (ft)	2702.00	Shear (lb/sq ft)		1.31	
Alpha	1.00	Stream Power (lb/ft s)		7.78	
Frctn Loss (ft)	5.14	Cum Volume (acre-ft)	3.16	32.01	2.20
C & E Loss (ft)	0.05	Cum SA (acres)	4.43	24.61	2.97

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2704.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.		0.038	
W.S. Elev (ft)	2703.50	Reach Len. (ft)	280.00	400.00	359.00
Crit W.S. (ft)	2703.40	Flow Area (sq ft)		299.65	
E.G. Slope (ft/ft)	0.015258	Area (sq ft)		299.65	
Q Total (cfs)	1766.00	Flow (cfs)		1766.00	
Top Width (ft)	222.18	Top Width (ft)		222.18	
Vel Total (ft/s)	5.89	Avg. Vel. (ft/s)		5.89	
Max Chl Dpth (ft)	1.50	Hydr. Depth (ft)		1.35	
Conv. Total (cfs)	14296.8	Conv. (cfs)		14296.8	
Length Wtd. (ft)	391.25	Wetted Per. (ft)		222.32	
Min Ch El (ft)	2702.00	Shear (lb/sq ft)		1.28	
Alpha	1.00	Stream Power (lb/ft s)		7.57	
Frctn Loss (ft)	5.10	Cum Volume (acre-ft)	1.85	32.53	0.76
C & E Loss (ft)	0.05	Cum SA (acres)	1.88	24.61	1.28

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.955

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9737.2	2700	9790.7	2698	9815.9	2698	9856.6	2698	9968.8	2696
9988.2	2694	10000	2694	10004.4	2694	10020	2696	10075.5	2698
10105.1	2700								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

9737.2 .065 9968.8 .038 10020 .065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9968.8	10020		495	500	512	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2698.86	Element			
Vel Head (ft)	1.01	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2697.85	Reach Len. (ft)	495.00	500.00	512.00
Crit W.S. (ft)	2697.85	Flow Area (sq ft)	95.89	162.06	47.43
E.G. Slope (ft/ft)	0.011144	Area (sq ft)	95.89	162.06	47.43
Q Total (cfs)	1766.00	Flow (cfs)	219.56	1437.87	108.57
Top Width (ft)	206.23	Top Width (ft)	103.72	51.20	51.31
Vel Total (ft/s)	5.78	Avg. Vel. (ft/s)	2.29	8.87	2.29
Max Chl Dpth (ft)	3.85	Hydr. Depth (ft)	0.92	3.17	0.92
Conv. Total (cfs)	16729.2	Conv. (cfs)	2079.9	13620.8	1028.5
Length Wtd. (ft)	500.06	Wetted Per. (ft)	103.74	51.43	51.34
Min Ch El (ft)	2694.00	Shear (lb/sq ft)	0.64	2.19	0.64
Alpha	1.95	Stream Power (lb/ft s)	1.47	19.45	1.47
Frctn Loss (ft)	7.50	Cum Volume (acre-ft)	2.85	29.90	2.01
C & E Loss (ft)	0.15	Cum SA (acres)	4.10	23.36	2.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2698.89	Element			
Vel Head (ft)	1.04	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2697.85	Reach Len. (ft)	495.00	500.00	512.00
Crit W.S. (ft)	2697.85	Flow Area (sq ft)	77.99	162.14	29.80
E.G. Slope (ft/ft)	0.011290	Area (sq ft)	77.99	162.14	29.80
Q Total (cfs)	1766.00	Flow (cfs)	226.59	1448.41	91.00
Top Width (ft)	130.00	Top Width (ft)	58.80	51.20	20.00
Vel Total (ft/s)	6.54	Avg. Vel. (ft/s)	2.91	8.93	3.05
Max Chl Dpth (ft)	3.85	Hydr. Depth (ft)	1.33	3.17	1.49
Conv. Total (cfs)	16620.2	Conv. (cfs)	2132.5	13631.4	856.4
Length Wtd. (ft)	499.99	Wetted Per. (ft)	59.61	51.43	21.14
Min Ch El (ft)	2694.00	Shear (lb/sq ft)	0.92	2.22	0.99
Alpha	1.57	Stream Power (lb/ft s)	2.68	19.85	3.03
Frctn Loss (ft)	7.56	Cum Volume (acre-ft)	1.60	30.41	0.64
C & E Loss (ft)	0.16	Cum SA (acres)	1.69	23.36	1.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.861

INPUT
Description:
Station Elevation Data num= 9

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9852.3	2690	9898.3	2688	9987.2	2686	10000	2686	10017.1	2686
10231.8	2688	10263.2	2690	10289.7	2692	10292.1	2692		

```
Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9852.3    .065  9898.3    .038 10231.8    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9898.3 10231.8              494     500     400             .1       .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2688.34   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.51   Wt. n-Val.                            0.038
  W.S. Elev (ft)            2687.83   Reach Len. (ft)            494.00    500.00     400.00
  Crit W.S. (ft)            2687.83   Flow Area (sq ft)                    308.85
  E.G. Slope (ft/ft)       0.021277   Area (sq ft)                         308.85
  Q Total (cfs)             1766.00   Flow (cfs)                          1766.00
  Top Width (ft)             307.67   Top Width (ft)                       307.67
  Vel Total (ft/s)             5.72   Avg. Vel. (ft/s)                       5.72
  Max Chl Dpth (ft)            1.83   Hydr. Depth (ft)                       1.00
  Conv. Total (cfs)         12106.9   Conv. (cfs)                         12106.9
  Length Wtd. (ft)           500.00   Wetted Per. (ft)                     307.70
  Min Ch El (ft)            2686.00   Shear (lb/sq ft)                       1.33
  Alpha                        1.00   Stream Power (lb/ft s)                 7.62
  Frctn Loss (ft)              8.33   Cum Volume (acre-ft)         2.31      27.20       1.73
  C & E Loss (ft)              0.02   Cum SA (acres)               3.51      21.30       2.46

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT    Profile #Method 1 Fldwy

  E.G. Elev (ft)            2688.34   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.51   Wt. n-Val.                            0.038
  W.S. Elev (ft)            2687.83   Reach Len. (ft)            494.00    500.00     400.00
  Crit W.S. (ft)            2687.83   Flow Area (sq ft)                    308.85
  E.G. Slope (ft/ft)       0.021277   Area (sq ft)                         308.85
  Q Total (cfs)             1766.00   Flow (cfs)                          1766.00
  Top Width (ft)             307.67   Top Width (ft)                       307.67
  Vel Total (ft/s)             5.72   Avg. Vel. (ft/s)                       5.72
  Max Chl Dpth (ft)            1.83   Hydr. Depth (ft)                       1.00
  Conv. Total (cfs)         12106.9   Conv. (cfs)                         12106.9
  Length Wtd. (ft)           500.00   Wetted Per. (ft)                     307.70
  Min Ch El (ft)            2686.00   Shear (lb/sq ft)                       1.33
  Alpha                        1.00   Stream Power (lb/ft s)                 7.62
  Frctn Loss (ft)              8.33   Cum Volume (acre-ft)         1.15      27.70       0.46
  C & E Loss (ft)              0.02   Cum SA (acres)               1.36      21.30       1.08

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Tributary 4
REACH: 1                  RS: 0.766

INPUT
Description:
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9567.7    2690  9598.1    2688  9629.3    2686  9689.4    2684    9735    2682
    9800    2680  9943.3    2678    9954    2678  9980.7    2678   10000    2678
 10022.8    2678 10076.9    2678 10111.1    2678 10131.4    2680 10150.2    2682
 10168.6    2684   10183    2686 10254.5    2686

Manning's n Values          num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9567.7    .065    9800    .038 10131.4    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          9800 10131.4              439     500     510             .1       .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2679.98   Element                   Left OB    Channel   Right OB
```

Vel Head (ft)	0.42	Wt. n-Val.		0.038	
W.S. Elev (ft)	2679.55	Reach Len. (ft)	439.00	500.00	510.00
Crit W.S. (ft)	2679.39	Flow Area (sq ft)		359.66	
E.G. Slope (ft/ft)	0.013649	Area (sq ft)		359.66	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	294.95	Top Width (ft)		294.95	
Vel Total (ft/s)	5.21	Avg. Vel. (ft/s)		5.21	
Max Chl Dpth (ft)	1.55	Hydr. Depth (ft)		1.22	
Conv. Total (cfs)	16049.0	Conv. (cfs)		16049.0	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		295.04	
Min Ch El (ft)	2678.00	Shear (lb/sq ft)		1.04	
Alpha	1.00	Stream Power (lb/ft s)		5.42	
Frctn Loss (ft)	8.53	Cum Volume (acre-ft)	2.31	23.37	1.73
C & E Loss (ft)	0.00	Cum SA (acres)	3.51	17.84	2.46

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2679.98	Element			
Vel Head (ft)	0.42	Wt. n-Val.		0.038	
W.S. Elev (ft)	2679.55	Reach Len. (ft)	439.00	500.00	510.00
Crit W.S. (ft)	2679.39	Flow Area (sq ft)		359.66	
E.G. Slope (ft/ft)	0.013649	Area (sq ft)		359.66	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	294.95	Top Width (ft)		294.95	
Vel Total (ft/s)	5.21	Avg. Vel. (ft/s)		5.21	
Max Chl Dpth (ft)	1.55	Hydr. Depth (ft)		1.22	
Conv. Total (cfs)	16049.0	Conv. (cfs)		16049.0	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		295.04	
Min Ch El (ft)	2678.00	Shear (lb/sq ft)		1.04	
Alpha	1.00	Stream Power (lb/ft s)		5.42	
Frctn Loss (ft)	8.53	Cum Volume (acre-ft)	1.15	23.87	0.46
C & E Loss (ft)	0.00	Cum SA (acres)	1.36	17.84	1.08

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.671

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9759.5	2678	9778.3	2676	9792.8	2674	9812.6	2672	9834.9	2670
9939.1	2670	9975.2	2670	10000	2670	10036	2670	10050.5	2670
10076.4	2670	10080.4	2670	10102.5	2670	10144.9	2670	10175.6	2670
10199.4	2672	10228.2	2674	10249.6	2674	10278.8	2672	10331	2672

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9759.5	.065	9812.6	.038	10199.4	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9812.6	10199.4	253	203	150	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2671.44	Element			
Vel Head (ft)	0.47	Wt. n-Val.		0.038	
W.S. Elev (ft)	2670.97	Reach Len. (ft)	253.00	203.00	150.00
Crit W.S. (ft)	2670.97	Flow Area (sq ft)		339.72	
E.G. Slope (ft/ft)	0.021767	Area (sq ft)		339.72	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	362.96	Top Width (ft)		362.96	
Vel Total (ft/s)	5.52	Avg. Vel. (ft/s)		5.52	
Max Chl Dpth (ft)	0.97	Hydr. Depth (ft)		0.94	
Conv. Total (cfs)	12708.8	Conv. (cfs)		12708.8	
Length Wtd. (ft)	202.74	Wetted Per. (ft)		363.04	
Min Ch El (ft)	2670.00	Shear (lb/sq ft)		1.27	

Alpha	1.00	Stream Power (lb/ft s)		7.02	
Frctn Loss (ft)	4.32	Cum Volume (acre-ft)	2.31	19.35	1.73
C & E Loss (ft)	0.01	Cum SA (acres)	3.51	14.06	2.46

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2671.44	Element			
Vel Head (ft)	0.47	Wt. n-Val.		0.038	
W.S. Elev (ft)	2670.97	Reach Len. (ft)	253.00	203.00	150.00
Crit W.S. (ft)	2670.97	Flow Area (sq ft)		339.72	
E.G. Slope (ft/ft)	0.021767	Area (sq ft)		339.72	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	362.96	Top Width (ft)		362.96	
Vel Total (ft/s)	5.52	Avg. Vel. (ft/s)		5.52	
Max Chl Dpth (ft)	0.97	Hydr. Depth (ft)		0.94	
Conv. Total (cfs)	12708.8	Conv. (cfs)		12708.8	
Length Wtd. (ft)	202.74	Wetted Per. (ft)		363.04	
Min Ch El (ft)	2670.00	Shear (lb/sq ft)		1.27	
Alpha	1.00	Stream Power (lb/ft s)		7.02	
Frctn Loss (ft)	4.32	Cum Volume (acre-ft)	1.15	19.85	0.46
C & E Loss (ft)	0.01	Cum SA (acres)	1.36	14.07	1.08

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.633

INPUT
Description:
Station Elevation Data num= 29

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9704.6	2682	9723.4	2680	9735.2	2678	9748.9	2676	9763.8	2674
9779.6	2672	9804.5	2670	9833	2668	9861	2666	9931.7	2664
9938.6	2664	9957.3	2664	9963.4	2664	9989.7	2664	10000	2664
10012.8	2664	10024.2	2666	10088.2	2666	10110.4	2666	10163	2666
10222.9	2666	10227.4	2664	10232.5	2664	10238.2	2666	10249.7	2666
10373.4	2666	10384.8	2668	10397.6	2670	10422.4	2672		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9704.6	.065	9861	.038	10238.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9861	10238.2	391	339	206	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10309	10422.4	2670

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2666.66	Element			
Vel Head (ft)	0.44	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2666.22	Reach Len. (ft)	391.00	339.00	206.00
Crit W.S. (ft)	2666.22	Flow Area (sq ft)	0.34	347.58	15.56
E.G. Slope (ft/ft)	0.020868	Area (sq ft)	0.34	347.58	29.84
Q Total (cfs)	1875.00	Flow (cfs)	0.26	1856.04	18.71
Top Width (ft)	516.73	Top Width (ft)	3.08	377.20	136.45
Vel Total (ft/s)	5.16	Avg. Vel. (ft/s)	0.76	5.34	1.20

Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	0.11	0.92	0.22
Conv. Total (cfs)	12979.6	Conv. (cfs)	1.8	12848.3	129.5
Length Wtd. (ft)	338.34	Wetted Per. (ft)	3.08	378.17	70.80
Min Ch El (ft)	2664.00	Shear (lb/sq ft)	0.14	1.20	0.29
Alpha	1.06	Stream Power (lb/ft s)	0.11	6.39	0.34
Frctn Loss (ft)	6.22	Cum Volume (acre-ft)	2.31	17.75	1.68
C & E Loss (ft)	0.00	Cum SA (acres)	3.50	12.34	2.22

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2666.66	Element			
Vel Head (ft)	0.44	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2666.22	Reach Len. (ft)	391.00	339.00	206.00
Crit W.S. (ft)	2666.22	Flow Area (sq ft)	0.34	347.58	15.56
E.G. Slope (ft/ft)	0.020869	Area (sq ft)	0.34	347.58	15.56
Q Total (cfs)	1875.00	Flow (cfs)	0.26	1856.08	18.67
Top Width (ft)	451.08	Top Width (ft)	3.08	377.20	70.80
Vel Total (ft/s)	5.16	Avg. Vel. (ft/s)	0.76	5.34	1.20
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	0.11	0.92	0.22
Conv. Total (cfs)	12979.3	Conv. (cfs)	1.8	12848.3	129.2
Length Wtd. (ft)	338.34	Wetted Per. (ft)	3.08	378.17	71.02
Min Ch El (ft)	2664.00	Shear (lb/sq ft)	0.14	1.20	0.29
Alpha	1.06	Stream Power (lb/ft s)	0.11	6.39	0.34
Frctn Loss (ft)	6.22	Cum Volume (acre-ft)	1.15	18.25	0.44
C & E Loss (ft)	0.00	Cum SA (acres)	1.35	12.34	0.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.569

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9866.6	2666	9889.6	2666	9910.3	2664	9925.4	2662	9980.2	2660
9987.3	2658	10000	2658	10046.6	2658	10271	2658	10271.9	2658
10322.5	2660	10476.2	2660	10488.4	2660	10553.7	2662		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9866.6	.065	9980.2	.038	10322.5	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9980.2	10322.5	218	208	183	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2659.61	Element			
Vel Head (ft)	0.44	Wt. n-Val.		0.038	
W.S. Elev (ft)	2659.17	Reach Len. (ft)	218.00	208.00	183.00
Crit W.S. (ft)	2659.08	Flow Area (sq ft)		351.62	
E.G. Slope (ft/ft)	0.016295	Area (sq ft)		351.62	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	318.25	Top Width (ft)		318.25	
Vel Total (ft/s)	5.33	Avg. Vel. (ft/s)		5.33	

Max Chl Dpth (ft)	1.17	Hydr. Depth (ft)		1.10	
Conv. Total (cfs)	14688.5	Conv. (cfs)		14688.5	
Length Wtd. (ft)	208.00	Wetted Per. (ft)		318.44	
Min Ch El (ft)	2658.00	Shear (lb/sq ft)		1.12	
Alpha	1.00	Stream Power (lb/ft s)		5.99	
Frctn Loss (ft)	3.78	Cum Volume (acre-ft)	2.31	15.03	1.61
C & E Loss (ft)	0.01	Cum SA (acres)	3.49	9.63	1.90

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2659.61	Element			
Vel Head (ft)	0.44	Wt. n-Val.		0.038	
W.S. Elev (ft)	2659.17	Reach Len. (ft)	218.00	208.00	183.00
Crit W.S. (ft)	2659.08	Flow Area (sq ft)		351.62	
E.G. Slope (ft/ft)	0.016295	Area (sq ft)		351.62	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	318.25	Top Width (ft)		318.25	
Vel Total (ft/s)	5.33	Avg. Vel. (ft/s)		5.33	
Max Chl Dpth (ft)	1.17	Hydr. Depth (ft)		1.10	
Conv. Total (cfs)	14688.5	Conv. (cfs)		14688.5	
Length Wtd. (ft)	208.00	Wetted Per. (ft)		318.44	
Min Ch El (ft)	2658.00	Shear (lb/sq ft)		1.12	
Alpha	1.00	Stream Power (lb/ft s)		5.99	
Frctn Loss (ft)	3.78	Cum Volume (acre-ft)	1.15	15.53	0.40
C & E Loss (ft)	0.01	Cum SA (acres)	1.34	9.63	0.79

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.529

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9801.7	2660	9809.7	2660	9837.8	2658	9857.4	2656	9964.9	2656
9975.1	2656	9999	2654	10000	2654	10004.1	2654	10026.8	2654
10042.3	2654	10205.9	2654	10212.6	2654	10304.2	2656	10390.7	2656
10406.2	2656	10416.7	2658						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9801.7	.065	9975.1	.038	10304.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9975.1	10304.2	247	300	302	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2655.81	Element			
Vel Head (ft)	0.55	Wt. n-Val.		0.038	
W.S. Elev (ft)	2655.26	Reach Len. (ft)	247.00	300.00	302.00
Crit W.S. (ft)	2655.26	Flow Area (sq ft)		314.07	
E.G. Slope (ft/ft)	0.020597	Area (sq ft)		314.07	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	286.18	Top Width (ft)		286.18	
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)		5.97	
Max Chl Dpth (ft)	1.26	Hydr. Depth (ft)		1.10	
Conv. Total (cfs)	13064.7	Conv. (cfs)		13064.7	
Length Wtd. (ft)	300.00	Wetted Per. (ft)		286.25	
Min Ch El (ft)	2654.00	Shear (lb/sq ft)		1.41	
Alpha	1.00	Stream Power (lb/ft s)		8.42	
Frctn Loss (ft)	3.91	Cum Volume (acre-ft)	2.31	13.44	1.61
C & E Loss (ft)	0.08	Cum SA (acres)	3.49	8.19	1.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2655.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.		0.038	
W.S. Elev (ft)	2655.26	Reach Len. (ft)	247.00	300.00	302.00
Crit W.S. (ft)	2655.26	Flow Area (sq ft)		314.07	
E.G. Slope (ft/ft)	0.020597	Area (sq ft)		314.07	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	286.18	Top Width (ft)		286.18	
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)		5.97	
Max Chl Dpth (ft)	1.26	Hydr. Depth (ft)		1.10	
Conv. Total (cfs)	13064.7	Conv. (cfs)		13064.7	
Length Wtd. (ft)	300.00	Wetted Per. (ft)		286.25	
Min Ch El (ft)	2654.00	Shear (lb/sq ft)		1.41	
Alpha	1.00	Stream Power (lb/ft s)		8.42	
Frctn Loss (ft)	3.94	Cum Volume (acre-ft)	1.15	13.94	0.40
C & E Loss (ft)	0.08	Cum SA (acres)	1.34	8.19	0.79

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.472

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9648.1	2654	9676.3	2656	9682.9	2656	9714.7	2654	9744.4	2652
9758.6	2652	9881.5	2652	9930.9	2650	9986.8	2648	10000	2648
10008.1	2648	10125.8	2648	10148	2648	10259.8	2648	10274.9	2648
10293.7	2650	10321.3	2652	10343.2	2654	10394.5	2656	10416.4	2656

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9648.1	.065	9930.9	.038	10293.7	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9930.9	10293.7	256	266	162	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2649.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.29	Wt. n-Val.		0.038	
W.S. Elev (ft)	2649.37	Reach Len. (ft)	256.00	266.00	162.00
Crit W.S. (ft)	2649.06	Flow Area (sq ft)		431.28	
E.G. Slope (ft/ft)	0.008986	Area (sq ft)		431.28	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	339.44	Top Width (ft)		339.44	
Vel Total (ft/s)	4.35	Avg. Vel. (ft/s)		4.35	
Max Chl Dpth (ft)	1.37	Hydr. Depth (ft)		1.27	
Conv. Total (cfs)	19779.7	Conv. (cfs)		19779.7	
Length Wtd. (ft)	266.00	Wetted Per. (ft)		339.54	
Min Ch El (ft)	2648.00	Shear (lb/sq ft)		0.71	
Alpha	1.00	Stream Power (lb/ft s)		3.10	
Frctn Loss (ft)	3.24	Cum Volume (acre-ft)	2.31	10.87	1.61
C & E Loss (ft)	0.06	Cum SA (acres)	3.49	6.04	1.90

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2649.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.038	
W.S. Elev (ft)	2649.37	Reach Len. (ft)	256.00	266.00	162.00
Crit W.S. (ft)	2649.06	Flow Area (sq ft)		429.79	
E.G. Slope (ft/ft)	0.009084	Area (sq ft)		429.79	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	339.27	Top Width (ft)		339.27	
Vel Total (ft/s)	4.36	Avg. Vel. (ft/s)		4.36	
Max Chl Dpth (ft)	1.37	Hydr. Depth (ft)		1.27	
Conv. Total (cfs)	19672.2	Conv. (cfs)		19672.2	
Length Wtd. (ft)	266.00	Wetted Per. (ft)		339.37	
Min Ch El (ft)	2648.00	Shear (lb/sq ft)		0.72	
Alpha	1.00	Stream Power (lb/ft s)		3.13	
Frctn Loss (ft)	3.24	Cum Volume (acre-ft)	1.15	11.38	0.40
C & E Loss (ft)	0.06	Cum SA (acres)	1.34	6.04	0.79

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.422

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9359.7	2650	9391.6	2648	9421.1	2646	9436.5	2644	9450.1	2644
9496.3	2646	9568.1	2646	9604.4	2644	9617.5	2644	9633.3	2646
9718.3	2646	9729.8	2646	9862.9	2646	9892	2644	9902.8	2644
9923.7	2646	9942.2	2644	9997.4	2642	10000	2642	10008	2642
10015.3	2644	10021	2646	10044.7	2648	10083.1	2648	10112.8	2646
10118.3	2646	10147	2648	10172.5	2650	10196	2652	10218.1	2654

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9359.7	.065	9862.9	.038	10021	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9862.9	10021	274	310	327	.1	.3

Left Levee Station= 9862.4 Elevation= 2646
Right Levee Station= 10044.7 Elevation= 2648

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2646.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.90	Wt. n-Val.		0.038	
W.S. Elev (ft)	2645.46	Reach Len. (ft)	274.00	310.00	327.00
Crit W.S. (ft)	2645.46	Flow Area (sq ft)		245.79	
E.G. Slope (ft/ft)	0.017769	Area (sq ft)		245.79	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	138.08	Top Width (ft)		138.08	
Vel Total (ft/s)	7.63	Avg. Vel. (ft/s)		7.63	
Max Chl Dpth (ft)	3.46	Hydr. Depth (ft)		1.78	
Conv. Total (cfs)	14066.0	Conv. (cfs)		14066.0	
Length Wtd. (ft)	311.83	Wetted Per. (ft)		138.83	
Min Ch El (ft)	2642.00	Shear (lb/sq ft)		1.96	
Alpha	1.00	Stream Power (lb/ft s)		14.98	
Frctn Loss (ft)	4.79	Cum Volume (acre-ft)	2.31	8.81	1.61
C & E Loss (ft)	0.10	Cum SA (acres)	3.49	4.58	1.90

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2646.36	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.		0.038	
W.S. Elev (ft)	2645.47	Reach Len. (ft)	274.00	310.00	327.00
Crit W.S. (ft)	2645.47	Flow Area (sq ft)		247.38	
E.G. Slope (ft/ft)	0.017434	Area (sq ft)		247.38	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	138.31	Top Width (ft)		138.31	
Vel Total (ft/s)	7.58	Avg. Vel. (ft/s)		7.58	
Max Chl Dpth (ft)	3.47	Hydr. Depth (ft)		1.79	
Conv. Total (cfs)	14200.6	Conv. (cfs)		14200.6	
Length Wtd. (ft)	309.88	Wetted Per. (ft)		139.08	
Min Ch El (ft)	2642.00	Shear (lb/sq ft)		1.94	
Alpha	1.00	Stream Power (lb/ft s)		14.67	
Frctn Loss (ft)	4.70	Cum Volume (acre-ft)	1.15	9.31	0.40
C & E Loss (ft)	0.01	Cum SA (acres)	1.34	4.58	0.79

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.363

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9440.2	2644	9458.1	2642	9475.5	2640	9538.5	2640	9571.6	2642
9613.7	2642	9627	2642	9734.5	2642	9779	2640	9785.1	2640
9902.4	2640	9924.9	2638	10000	2638	10012.8	2638	10016.9	2640
10055.7	2640	10144.9	2638	10162.6	2638	10184.9	2640	10224.4	2642
10267	2644	10314.6	2646	10343.5	2648	10369.3	2650		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9440.2	.065	9902.4	.038	10016.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9902.4	10016.9	414	415	411	.1	.3

Left Levee Station= 9734.5 Elevation= 2642
Right Levee Station= 10016.9 Elevation= 2640

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2640.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2640.09	Reach Len. (ft)	414.00	415.00	411.00
Crit W.S. (ft)	2640.09	Flow Area (sq ft)	11.30	212.80	162.24
E.G. Slope (ft/ft)	0.013418	Area (sq ft)	11.30	212.80	162.24
Q Total (cfs)	1875.00	Flow (cfs)	6.01	1452.39	416.59
Top Width (ft)	409.71	Top Width (ft)	125.42	114.50	169.79
Vel Total (ft/s)	4.85	Avg. Vel. (ft/s)	0.53	6.83	2.57
Max Chl Dpth (ft)	2.09	Hydr. Depth (ft)	0.09	1.86	0.96

Conv. Total (cfs)	16186.4	Conv. (cfs)	51.9	12538.1	3596.4
Length Wtd. (ft)	414.42	Wetted Per. (ft)	125.42	115.05	169.91
Min Ch El (ft)	2638.00	Shear (lb/sq ft)	0.08	1.55	0.80
Alpha	1.59	Stream Power (lb/ft s)	0.04	10.58	2.05
Frctn Loss (ft)	5.06	Cum Volume (acre-ft)	2.27	7.17	1.00
C & E Loss (ft)	0.01	Cum SA (acres)	3.09	3.68	1.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2641.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.85	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2640.38	Reach Len. (ft)	414.00	415.00	411.00
Crit W.S. (ft)	2640.38	Flow Area (sq ft)	15.93	245.42	14.58
E.G. Slope (ft/ft)	0.013291	Area (sq ft)	15.93	245.42	14.58
Q Total (cfs)	1875.00	Flow (cfs)	21.73	1833.39	19.88
Top Width (ft)	195.70	Top Width (ft)	42.40	114.50	38.80
Vel Total (ft/s)	6.80	Avg. Vel. (ft/s)	1.36	7.47	1.36
Max Chl Dpth (ft)	2.38	Hydr. Depth (ft)	0.38	2.14	0.38
Conv. Total (cfs)	16263.7	Conv. (cfs)	188.5	15902.7	172.4
Length Wtd. (ft)	414.87	Wetted Per. (ft)	42.78	115.05	39.18
Min Ch El (ft)	2638.00	Shear (lb/sq ft)	0.31	1.77	0.31
Alpha	1.18	Stream Power (lb/ft s)	0.42	13.22	0.42
Frctn Loss (ft)	5.19	Cum Volume (acre-ft)	1.10	7.56	0.34
C & E Loss (ft)	0.02	Cum SA (acres)	1.20	3.68	0.65

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.284

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9528.1	2636	9562.4	2634	9621.8	2634	9661.9	2634	9717.9	2634
9764.8	2632	9769.7	2632	9853.2	2632	9905.2	2632	9943.3	2632
9984.2	2630	10000.1	2630	10017.3	2630	10028.2	2632	10107	2634
10139.4	2636	10207.3	2638	10257	2640	10292.2	2642		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9528.1	.065	9943.3	.038	10028.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9943.3	10028.2	467	420	413	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2633.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.065	0.038	0.065

W.S. Elev (ft)	2632.95	Reach Len. (ft)	467.00	420.00	413.00
Crit W.S. (ft)	2632.95	Flow Area (sq ft)	180.29	198.71	17.80
E.G. Slope (ft/ft)	0.011150	Area (sq ft)	180.29	198.71	17.80
Q Total (cfs)	1875.00	Flow (cfs)	405.04	1443.79	26.17
Top Width (ft)	323.15	Top Width (ft)	200.79	84.90	37.46
Vel Total (ft/s)	4.73	Avg. Vel. (ft/s)	2.25	7.27	1.47
Max Chl Dpth (ft)	2.95	Hydr. Depth (ft)	0.90	2.34	0.48
Conv. Total (cfs)	17756.7	Conv. (cfs)	3835.8	13673.0	247.9
Length Wtd. (ft)	425.18	Wetted Per. (ft)	200.81	85.13	37.47
Min Ch El (ft)	2630.00	Shear (lb/sq ft)	0.62	1.62	0.33
Alpha	1.87	Stream Power (lb/ft s)	1.40	11.81	0.49
Frctn Loss (ft)	5.27	Cum Volume (acre-ft)	1.36	5.21	0.15
C & E Loss (ft)	0.08	Cum SA (acres)	1.54	2.73	0.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2633.85	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.79	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2633.05	Reach Len. (ft)	467.00	420.00	413.00
Crit W.S. (ft)	2633.05	Flow Area (sq ft)	95.00	207.52	21.69
E.G. Slope (ft/ft)	0.011781	Area (sq ft)	95.00	207.52	21.69
Q Total (cfs)	1875.00	Flow (cfs)	242.33	1595.35	37.32
Top Width (ft)	212.46	Top Width (ft)	90.10	84.90	37.46
Vel Total (ft/s)	5.78	Avg. Vel. (ft/s)	2.55	7.69	1.72
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)	1.05	2.44	0.58
Conv. Total (cfs)	17274.5	Conv. (cfs)	2232.6	14698.1	343.8
Length Wtd. (ft)	423.13	Wetted Per. (ft)	91.15	85.13	37.58
Min Ch El (ft)	2630.00	Shear (lb/sq ft)	0.77	1.79	0.42
Alpha	1.53	Stream Power (lb/ft s)	1.96	13.78	0.73
Frctn Loss (ft)	5.31	Cum Volume (acre-ft)	0.57	5.40	0.17
C & E Loss (ft)	0.06	Cum SA (acres)	0.57	2.73	0.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.205

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9941.1	2630	9950.5	2628	9959.7	2626	9969.7	2624	9976.5	2622
10000	2622	10007.5	2622	10031.1	2624	10041.1	2626	10047.1	2628
10058	2630	10071.6	2632	10090	2634	10119.4	2636		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9941.1	.065	9969.7	.038	10031.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.7	10031.1	283	273	271	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2627.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.45	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2625.58	Reach Len. (ft)	283.00	273.00	271.00
Crit W.S. (ft)	2625.58	Flow Area (sq ft)	6.28	189.69	6.28
E.G. Slope (ft/ft)	0.013884	Area (sq ft)	6.28	189.69	6.28
Q Total (cfs)	1875.00	Flow (cfs)	14.29	1846.43	14.29
Top Width (ft)	77.24	Top Width (ft)	7.92	61.40	7.92
Vel Total (ft/s)	9.27	Avg. Vel. (ft/s)	2.28	9.73	2.28
Max Chl Dpth (ft)	3.58	Hydr. Depth (ft)	0.79	3.09	0.79
Conv. Total (cfs)	15912.6	Conv. (cfs)	121.3	15670.1	121.2
Length Wtd. (ft)	273.03	Wetted Per. (ft)	8.08	61.77	8.08
Min Ch El (ft)	2622.00	Shear (lb/sq ft)	0.67	2.66	0.67
Alpha	1.09	Stream Power (lb/ft s)	1.53	25.91	1.53
Frctn Loss (ft)	4.22	Cum Volume (acre-ft)	0.36	3.34	0.03
C & E Loss (ft)	0.16	Cum SA (acres)	0.42	2.02	0.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2627.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.42	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2625.62	Reach Len. (ft)	283.00	273.00	271.00
Crit W.S. (ft)	2625.62	Flow Area (sq ft)	6.52	191.60	6.52
E.G. Slope (ft/ft)	0.013407	Area (sq ft)	6.52	191.60	6.52
Q Total (cfs)	1875.00	Flow (cfs)	14.94	1845.12	14.94
Top Width (ft)	77.24	Top Width (ft)	7.92	61.40	7.92
Vel Total (ft/s)	9.16	Avg. Vel. (ft/s)	2.29	9.63	2.29
Max Chl Dpth (ft)	3.62	Hydr. Depth (ft)	0.82	3.12	0.82
Conv. Total (cfs)	16193.2	Conv. (cfs)	129.0	15935.2	129.0
Length Wtd. (ft)	273.04	Wetted Per. (ft)	8.11	61.77	8.11
Min Ch El (ft)	2622.00	Shear (lb/sq ft)	0.67	2.60	0.67
Alpha	1.09	Stream Power (lb/ft s)	1.54	25.00	1.54
Frctn Loss (ft)	3.68	Cum Volume (acre-ft)	0.03	3.48	0.04
C & E Loss (ft)	0.19	Cum SA (acres)	0.05	2.02	0.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.153

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9843	2626	9891.4	2624	9915.7	2622	9927.9	2620	9982.1	2618
10000	2618	10014	2618	10063.4	2620	10086.7	2622	10116.1	2624
10144.3	2626								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

9843	.065	9927.9	.038	10063.4	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9927.9	10063.4	274	310	326	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2621.48	Element			
Vel Head (ft)	0.90	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2620.57	Reach Len. (ft)	274.00	310.00	326.00
Crit W.S. (ft)	2620.57	Flow Area (sq ft)	1.00	245.14	1.92
E.G. Slope (ft/ft)	0.017299	Area (sq ft)	1.00	245.14	1.92
Q Total (cfs)	1875.00	Flow (cfs)	1.30	1871.20	2.50
Top Width (ft)	145.68	Top Width (ft)	3.50	135.50	6.68
Vel Total (ft/s)	7.56	Avg. Vel. (ft/s)	1.30	7.63	1.30
Max Chl Dpth (ft)	2.57	Hydr. Depth (ft)	0.29	1.81	0.29
Conv. Total (cfs)	14255.9	Conv. (cfs)	9.9	14227.0	19.0
Length Wtd. (ft)	307.48	Wetted Per. (ft)	3.55	135.58	6.71
Min Ch El (ft)	2618.00	Shear (lb/sq ft)	0.31	1.95	0.31
Alpha	1.02	Stream Power (lb/ft s)	0.40	14.91	0.40
Frctn Loss (ft)	4.75	Cum Volume (acre-ft)	0.34	1.98	0.01
C & E Loss (ft)	0.16	Cum SA (acres)	0.39	1.41	0.03

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2621.49	Element			
Vel Head (ft)	0.78	Wt. n-Val.	0.065	0.038	0.065
W.S. Elev (ft)	2620.71	Reach Len. (ft)	274.00	310.00	326.00
Crit W.S. (ft)	2620.60	Flow Area (sq ft)	1.48	263.53	2.82
E.G. Slope (ft/ft)	0.013555	Area (sq ft)	1.48	263.53	2.82
Q Total (cfs)	1875.00	Flow (cfs)	2.14	1868.69	4.17
Top Width (ft)	145.68	Top Width (ft)	3.50	135.50	6.68
Vel Total (ft/s)	7.00	Avg. Vel. (ft/s)	1.45	7.09	1.48
Max Chl Dpth (ft)	2.71	Hydr. Depth (ft)	0.42	1.94	0.42
Conv. Total (cfs)	16104.4	Conv. (cfs)	18.4	16050.2	35.8
Length Wtd. (ft)	310.00	Wetted Per. (ft)	3.68	135.58	6.84
Min Ch El (ft)	2618.00	Shear (lb/sq ft)	0.34	1.64	0.35
Alpha	1.02	Stream Power (lb/ft s)	0.49	11.66	0.52
Frctn Loss (ft)	4.86	Cum Volume (acre-ft)	0.00	2.05	0.01
C & E Loss (ft)	0.07	Cum SA (acres)	0.01	1.41	0.02

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Tributary 4
REACH: 1 RS: 0.0947

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9514.3	2624	9530	2622	9547.1	2620	9570.3	2618	9677.6	2616
9706.5	2614	9717.8	2614	9772.1	2616	9797.4	2616	9981.7	2614
10000	2614	10032.6	2614	10057.5	2616	10093.2	2618	10106.7	2618

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9514.3	.065	9797.4	.038	10057.5	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9797.4	10057.5	556	500	648	.1	.3

Left Levee Station= 9796.8 Elevation= 2616

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2616.37	Element			
Vel Head (ft)	0.37	Wt. n-Val.	0.065	0.038	
W.S. Elev (ft)	2616.00	Reach Len. (ft)			
Crit W.S. (ft)	2616.00	Flow Area (sq ft)	105.83	311.06	
E.G. Slope (ft/ft)	0.013859	Area (sq ft)	105.83	311.06	0.00
Q Total (cfs)	1875.00	Flow (cfs)	262.03	1612.97	
Top Width (ft)	379.92	Top Width (ft)	119.81	260.10	
Vel Total (ft/s)	4.50	Avg. Vel. (ft/s)	2.48	5.19	
Max Chl Dpth (ft)	2.00	Hydr. Depth (ft)	0.88	1.20	
Conv. Total (cfs)	15927.2	Conv. (cfs)	2225.9	13701.3	
Length Wtd. (ft)		Wetted Per. (ft)	119.92	260.19	
Min Ch El (ft)	2614.00	Shear (lb/sq ft)	0.76	1.03	
Alpha	1.19	Stream Power (lb/ft s)	1.89	5.36	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2616.56	Element			
Vel Head (ft)	0.56	Wt. n-Val.		0.038	
W.S. Elev (ft)	2616.01	Reach Len. (ft)			
Crit W.S. (ft)	2616.01	Flow Area (sq ft)		312.97	
E.G. Slope (ft/ft)	0.018351	Area (sq ft)		312.97	
Q Total (cfs)	1875.00	Flow (cfs)		1875.00	
Top Width (ft)	260.10	Top Width (ft)		260.10	
Vel Total (ft/s)	5.99	Avg. Vel. (ft/s)		5.99	
Max Chl Dpth (ft)	2.01	Hydr. Depth (ft)		1.20	
Conv. Total (cfs)	13840.9	Conv. (cfs)		13840.9	
Length Wtd. (ft)		Wetted Per. (ft)		260.21	
Min Ch El (ft)	2614.00	Shear (lb/sq ft)		1.38	
Alpha	1.00	Stream Power (lb/ft s)		8.26	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

E.5 HYDRAULIC CALCULATIONS

Rawhide Wash

HEC-RAS September 1998 Version 2.2
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street, Suite D
Davis, California 95616-4687
(916) 756-1104

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

PROJECT DATA
Project Title: Upper Rawhide Wash - Main Wash
Project File : Main.prj
Run Date and Time: 06/29/2001 7:14:42 AM

Project in English units

Project Description:
Upper Rawhide Wash Floodplain Delineation
FCD 98-12
Rawhide Wash (Main
Wash)

Model Created 6/2001

FCD Contact: Richard Harris

Kimley-Horn
and Associates Inc.
7600 N. 15th Street, Suite 250
Phoenix, Arizona
85020

Kimley-Horn Team:

Project Manager - Doug Plasencia
Project
Engineer - Bob Eichinger
Analyst - Jon Ahern
Analyst - Diana
Davisson

HEC-RAS
River Analysis System
Version 2.2, September
1998

Purpose of Study: To delineate the FEMA 100 year
Floodplain/Floodway

Base Mapping: Base Mapping supplied by The City of
Scottsdale through the Flood Control District of Maricopa County

Mapping
Company: Michael Baker Jr.
Date Flown: 11/01/93

PLAN DATA

Plan Title: Floodway Method 1
Plan File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\DISK_1\Main\Main.p02

```
          Geometry Title: Base Conditions Geometry
          Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\DISK_1\Main\Main.G01

          Flow Title    : 100 Year Flood - Floodway
          Flow File     : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\DISK_1\Main\Main.f02

Plan Summary Information:
Number of:  Cross Sections =  122    Mulitple Openings =    0
            Culverts       =    1    Inline Weirs      =    0
            Bridges        =    2

Computational Information
    Water surface calculation tolerance =  0.01
    Critical depth calculaton tolerance =  0.01
    Maximum number of interations       =  20
    Maximum difference tolerance        =  0.3
    Flow tolerance factor               =  0.001

Computation Options
    Critical depth computed at all cross sections
    Conveyance Calculation Method: At breaks in n values only
    Friction Slope Method:         Average Conveyance
    Computational Flow Regime:     Subcritical Flow

Encroachment Data
   Equal Conveyance = True
   Left Offset      =        0
   Right Offset     =        0

River = Rawhide Wash     Reach = Above Pima Road
RS      Profile           Method  Value1  Value2
15.325  Method 1 Fldwy         1 9958.5210162.06
15.232  Method 1 Fldwy         1 9988.9710252.76
15.148  Method 1 Fldwy         1 9964.5910221.67
15.054  Method 1 Fldwy         1  9943.6 10167.9
14.979  Method 1 Fldwy         1 9979.05   10200
14.907  Method 1 Fldwy         1  9760.2 10332.4
14.861  Method 1 Fldwy         1  9987.5 10305.9
14.766  Method 1 Fldwy         1  9848.7 10266.5
14.715  Method 1 Fldwy         1 9873.1410075.37
14.655  Method 1 Fldwy         1 9924.3910156.67
14.560  Method 1 Fldwy         1    9958   10045
14.482  Method 1 Fldwy         1 9972.7410045.34
14.441  Method 1 Fldwy         1 9982.01 10100.8
14.371  Method 1 Fldwy         1 9984.45   10150
14.302  Method 1 Fldwy         1    980010033.26
14.266  Method 1 Fldwy         1 9728.4710016.03
14.205  Method 1 Fldwy         1  9769.4 10185.2
14.154  Method 1 Fldwy         1 9750.4610075.67
14.100  Method 1 Fldwy         1 9668.21 10043.9
14.041  Method 1 Fldwy         1 9728.4510075.95
13.989  Method 1 Fldwy         1  9782.1 10227.2
13.903  Method 1 Fldwy         1  9948.9 10101.3
13.808  Method 1 Fldwy         1  9965.1 10125.3
13.713  Method 1 Fldwy         1  9911.9 10095.8
13.619  Method 1 Fldwy         1  9760.6 10133.2
13.524  Method 1 Fldwy         1  9961.1   10029
13.429  Method 1 Fldwy         1    9876 10060.4
13.354  Method 1 Fldwy         1  9901.2 10026.1
13.314  Method 1 Fldwy         1 9948.9610031.65
13.233  Method 1 Fldwy         1 9909.6710015.37
13.138  Method 1 Fldwy         1 9973.2410076.13
13.072  Method 1 Fldwy         1 9896.8210153.99
13.027  Method 1 Fldwy         1 9859.2110124.61
12.950  Method 1 Fldwy         1    9970 10119.9
12.855  Method 1 Fldwy         1  9920.7   10327
12.776  Method 1 Fldwy         1  9976.9 10367.9
12.704  Method 1 Fldwy         1  9971.4 10170.4
12.609  Method 1 Fldwy         1  9966.1 10203.8
12.567  Method 1 Fldwy         1  9989.1 10159.1
12.487  Method 1 Fldwy         1  9851.9 10017.9
12.422  Method 1 Fldwy         1  9977.3 10035.8
12.380  Method 1 Fldwy         1 9971.1210033.85
```

12.315	Method 1 Fldwy	1	9985.6	10029
12.268	Method 1 Fldwy	1	9820	10022.3
12.213	Method 1 Fldwy	1	9898.72	10090
12.132	Method 1 Fldwy	1	9968.4	10226.82
12.067	Method 1 Fldwy	1	9846.1	10169.3
11.992	Method 1 Fldwy	1	9760	10084.2
11.908	Method 1 Fldwy	1	9910	10130
11.862	Method 1 Fldwy	1	9897.3	10042.26
11.804	Method 1 Fldwy	1	9907.35	10030.3
11.720	Method 1 Fldwy	1	9952.7	10088.2
11.626	Method 1 Fldwy	1	9964.8	10133.2
11.531	Method 1 Fldwy	1	9800	10064
11.460	Method 1 Fldwy	1	9838.85	10098.3
11.410	Method 1 Fldwy	1	9813.31	10150
11.334	Method 1 Fldwy	1	9853	10135.3
11.240	Method 1 Fldwy	1	9921	10155.7
11.155	Method 1 Fldwy	1	9963.8	10249.5
11.093	Method 1 Fldwy	1	9825	10149.78
11.027	Method 1 Fldwy	1	9515.6	10034.57
10.949	Method 1 Fldwy	1	9760	10071.45
10.875	Method 1 Fldwy	1	9752.7	10065.7
10.809	Method 1 Fldwy	1	9820.98	10071.65
10.748	Method 1 Fldwy	1	9943.4	10273.61
10.653	Method 1 Fldwy	1	9770	10186.03
10.559	Method 1 Fldwy	1	9933	10272.02
10.464	Method 1 Fldwy	1	9796	10241.1
10.369	Method 1 Fldwy	1	9820	10320
10.295	Method 1 Fldwy	1	9958.33	10344.21
10.219	Method 1 Fldwy	1	9431.9	10114.4
10.183	Method 1 Fldwy	1	9436.3	10135.7
10.115	Method 1 Fldwy	1	9795.6	10354.2
10.057	Method 1 Fldwy	1	9677.1	10045.2
9.981	Method 1 Fldwy	1	9630	10031.46
9.927	Method 1 Fldwy	1	9872.9	10211.2
9.832	Method 1 Fldwy	1	9740.97	10123
9.779	Method 1 Fldwy	1	9786.5	10350
9.722	Method 1 Fldwy	1	9972.3	10550
9.650	Method 1 Fldwy	1	9945.1	10800
9.555	Method 1 Fldwy	1	9913.7	10653.3
9.460	Method 1 Fldwy	1	9874.05	10561.54
9.418	Method 1 Fldwy	1	9900	10492.3
9.346	Method 1 Fldwy	1	9770	10262.6
9.291	Method 1 Fldwy	1	9863.5	10212.9
9.23	Method 1 Fldwy	1	9938.6	10160.9

River = Rawhide Wash Reach = Main Wash

RS	Profile	Method	Value1	Value2
9.153	Method 1 Fldwy	1	9988.5	10147.3
9.152	Method 1 Fldwy	1	9988.5	10147.3
9.143	Method 1 Fldwy	1	9988.5	10147.3
9.124	Method 1 Fldwy	1	9973.4	10182.55
9.085	Method 1 Fldwy	1	9808.8	10105.43
9.013	Method 1 Fldwy	1	9770	10044
8.945	Method 1 Fldwy	1	9900	10130
8.921	Method 1 Fldwy	1	9892.7	10051.5
8.920	Method 1 Fldwy	1	9892.7	10051.5
8.913	Method 1 Fldwy	1	9892.7	10051.5

River = Rawhide Wash Reach = Below Pima Road

RS	Profile	Method	Value1	Value2
8.870	Method 1 Fldwy	1	9700	10019.5
8.825	Method 1 Fldwy	1	9762.1	10098.57
8.760	Method 1 Fldwy	1	9678.1	10192.5
8.665	Method 1 Fldwy	1	9522.9	10040.8
8.570	Method 1 Fldwy	1	9659	10016.7
8.476	Method 1 Fldwy	1	9910.38	10300
8.429	Method 1 Fldwy	1	9962.42	10196
8.365	Method 1 Fldwy	1	9942	10107
8.283	Method 1 Fldwy	1	9862.3	10032.1
8.227	Method 1 Fldwy	1	9988.4	10174.31
8.185	Method 1 Fldwy	1	9920	10108.75
8.093	Method 1 Fldwy	1	9775	10031.84
8.007	Method 1 Fldwy	1	9800	10049.6
8.001	Method 1 Fldwy	1	9775	10050

8.000	Method 1 Fldwy	1	9775	10050
7.983	Method 1 Fldwy	1	9820	10058
7.958	Method 1 Fldwy	1	9885.11	10030.22
7.889	Method 1 Fldwy	1	9934.8	10035.3
7.845	Method 1 Fldwy	1	9920.1	10028.1
7.794	Method 1 Fldwy	1	9902	10120.47
7.714	Method 1 Fldwy	1	9956	10294.6
7.653	Method 1 Fldwy	1	9913.6	10218.5

River = Rawhide Wash Reach = Pima Road

RS	Profile	Method	Value1	Value2
0.285	Method 1 Fldwy	1	9927	10077.22
0.260	Method 1 Fldwy	1	9943	10076.97
0.215	Method 1 Fldwy	1	9935	10074.12
0.164	Method 1 Fldwy	1	9954.95	10082.59
0.134	Method 1 Fldwy	1	9862.95	10079.91
0.108	Method 1 Fldwy	1	9730.53	10021.15
0.080	Method 1 Fldwy	1	9840.03	10157.45

FLOW DATA

Flow Title: 100 Year Flood - Floodway
Flow File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\DISK_1\Main\Main.f02

Flow Data (cfs)

River	Reach	RS	100yr Natural Fp	Method 1 Fldwy
Rawhide Wash	Above Pima Road	15.325	484	484
Rawhide Wash	Above Pima Road	14.861	867	867
Rawhide Wash	Above Pima Road	14.715	1111	1111
Rawhide Wash	Above Pima Road	13.808	731	731
Rawhide Wash	Above Pima Road	12.067	5666	5666
Rawhide Wash	Above Pima Road	11.908	6445	6445
Rawhide Wash	Above Pima Road	11.626	6600	6600
Rawhide Wash	Above Pima Road	10.875	6755	6755
Rawhide Wash	Above Pima Road	10.464	7150	7150
Rawhide Wash	Main Wash	9.153	4550	4550
Rawhide Wash	Pima Road	0.285	2600	2600
Rawhide Wash	Below Pima Road	8.870	7150	7150
Rawhide Wash	Below Pima Road	8.570	7153	7153
Rawhide Wash	Below Pima Road	8.283	7157	7157
Rawhide Wash	Below Pima Road	7.889	7319	7319

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Rawhide Wash	Below Pima Road	100yr Natural Fp		Normal S = .035

GEOMETRY DATA

Geometry Title: Base Conditions Geometry
Geometry File : k:\-Civil\09113102\Hydraulics\Submittals\FCD06-27-01\DISK_1\Main\Main.G01

Reach Connection Table

River	Reach	Upstream Boundary	Downstream Boundary
Rawhide Wash	Above Pima Road		Upstream
Rawhide Wash	Main Wash	Upstream	Downstream
Rawhide Wash	Pima Road	Upstream	Downstream
Rawhide Wash	Below Pima Road	Downstream	

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 15.325

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9921.3	2918	9936.3	2916	9952.8	2914	9997.9	2912	10000	2912
10005.1	2912	10091.8	2914	10106.5	2914	10144	2912	10148.5	2912
10164	2914	10186.6	2916						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9921.3	.04	9952.8	.065	10164	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9952.8	10164	508	490	431	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2913.89	Element			
Vel Head (ft)	0.14	Wt. n-Val.		0.065	
W.S. Elev (ft)	2913.75	Reach Len. (ft)	508.00	490.00	431.00
Crit W.S. (ft)	2913.34	Flow Area (sq ft)		161.33	
E.G. Slope (ft/ft)	0.018945	Area (sq ft)		161.33	
Q Total (cfs)	484.00	Flow (cfs)		484.00	
Top Width (ft)	173.06	Top Width (ft)		173.06	
Vel Total (ft/s)	3.00	Avg. Vel. (ft/s)		3.00	
Max Chl Dpth (ft)	1.75	Hydr. Depth (ft)		0.93	
Conv. Total (cfs)	3516.4	Conv. (cfs)		3516.4	
Length Wtd. (ft)	490.00	Wetted Per. (ft)		173.28	
Min Ch El (ft)	2912.00	Shear (lb/sq ft)		1.10	
Alpha	1.00	Stream Power (lb/ft s)		3.30	
Frctn Loss (ft)	10.51	Cum Volume (acre-ft)	69.76	317.43	109.23
C & E Loss (ft)	0.02	Cum SA (acres)	50.84	162.27	54.07

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2913.89	Element			
Vel Head (ft)	0.14	Wt. n-Val.		0.065	
W.S. Elev (ft)	2913.75	Reach Len. (ft)	508.00	490.00	431.00
Crit W.S. (ft)	2913.34	Flow Area (sq ft)		161.33	
E.G. Slope (ft/ft)	0.018945	Area (sq ft)		161.33	
Q Total (cfs)	484.00	Flow (cfs)		484.00	
Top Width (ft)	173.06	Top Width (ft)		173.06	
Vel Total (ft/s)	3.00	Avg. Vel. (ft/s)		3.00	
Max Chl Dpth (ft)	1.75	Hydr. Depth (ft)		0.93	
Conv. Total (cfs)	3516.4	Conv. (cfs)		3516.4	
Length Wtd. (ft)	490.00	Wetted Per. (ft)		173.28	
Min Ch El (ft)	2912.00	Shear (lb/sq ft)		1.10	
Alpha	1.00	Stream Power (lb/ft s)		3.30	
Frctn Loss (ft)	10.50	Cum Volume (acre-ft)	27.20	324.12	53.02
C & E Loss (ft)	0.02	Cum SA (acres)	18.73	155.93	27.55

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 15.232

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9895.95	2910	9922.65	2908	9955.95	2906	9979.25	2904	9999.15	2902
9999.95	2902	10000.85	2902	10039.35	2904	10098.45	2904	10177.55	2902
10207.55	2902	10213.15	2902	10232.05	2902	10272.55	2904	10299.65	2906
10320.15	2908	10343.25	2910						

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
 9895.95    .065 9979.25     .0410272.55    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
       9979.2510272.55              411     440     445            .1       .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2903.36   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.34   Wt. n-Val.                            0.040
  W.S. Elev (ft)            2903.02   Reach Len. (ft)            411.00    440.00     445.00
  Crit W.S. (ft)            2903.01   Flow Area (sq ft)                    104.02
  E.G. Slope (ft/ft)       0.024957   Area (sq ft)                         104.02
  Q Total (cfs)              484.00   Flow (cfs)                           484.00
  Top Width (ft)             147.22   Top Width (ft)                       147.22
  Vel Total (ft/s)             4.65   Avg. Vel. (ft/s)                       4.65
  Max Chl Dpth (ft)            1.02   Hydr. Depth (ft)                       0.71
  Conv. Total (cfs)          3063.7   Conv. (cfs)                          3063.7
  Length Wtd. (ft)           440.00   Wetted Per. (ft)                     147.34
  Min Ch El (ft)            2902.00   Shear (lb/sq ft)                       1.10
  Alpha                        1.00   Stream Power (lb/ft s)                 5.12
  Frctn Loss (ft)              8.22   Cum Volume (acre-ft)        69.76    315.93     109.23
  C & E Loss (ft)              0.04   Cum SA (acres)              50.84    160.46      54.07


Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT    Profile #Method 1 Fldwy

  E.G. Elev (ft)            2903.36   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.34   Wt. n-Val.                            0.040
  W.S. Elev (ft)            2903.02   Reach Len. (ft)            411.00    440.00     445.00
  Crit W.S. (ft)            2903.01   Flow Area (sq ft)                    103.55
  E.G. Slope (ft/ft)       0.025269   Area (sq ft)                         103.55
  Q Total (cfs)              484.00   Flow (cfs)                           484.00
  Top Width (ft)             146.94   Top Width (ft)                       146.94
  Vel Total (ft/s)             4.67   Avg. Vel. (ft/s)                       4.67
  Max Chl Dpth (ft)            1.02   Hydr. Depth (ft)                       0.70
  Conv. Total (cfs)          3044.7   Conv. (cfs)                          3044.7
  Length Wtd. (ft)           440.00   Wetted Per. (ft)                     147.05
  Min Ch El (ft)            2902.00   Shear (lb/sq ft)                       1.11
  Alpha                        1.00   Stream Power (lb/ft s)                 5.19
  Frctn Loss (ft)              8.22   Cum Volume (acre-ft)        27.20    322.63      53.02
  C & E Loss (ft)              0.04   Cum SA (acres)              18.73    154.13      27.55


Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Rawhide Wash
REACH: Above Pima Road    RS: 15.148

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9798    2906  9813.6    2904  9870.8    2902  9888.5    2900  9913.2    2898
  9947.6    2896  9978.5    2894   10000    2894 10027.7    2894 10088.8    2896
   10151    2894 10158.2    2894 10187.1    2894 10213.3    2894 10231.9    2896
 10284.5 2896.07 10303.5    2894 10319.1    2892 10351.1    2892 10372.8    2894
 10394.1    2896 10394.3    2896

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9798    .065  9947.6     .04 10231.9    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9947.6 10231.9              520     500     380            .1       .3
Right Levee     Station= 10232.1      Elevation=  2896.1

CROSS SECTION OUTPUT    Profile #100yr Natural Fp
```

E.G. Elev (ft)	2895.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	
W.S. Elev (ft)	2894.90	Reach Len. (ft)	520.00	500.00	380.00
Crit W.S. (ft)	2894.75	Flow Area (sq ft)		135.37	
E.G. Slope (ft/ft)	0.014494	Area (sq ft)		135.37	
Q Total (cfs)	484.00	Flow (cfs)		484.00	
Top Width (ft)	189.27	Top Width (ft)		189.27	
Vel Total (ft/s)	3.58	Avg. Vel. (ft/s)		3.58	
Max Chl Dpth (ft)	2.90	Hydr. Depth (ft)		0.72	
Conv. Total (cfs)	4020.2	Conv. (cfs)		4020.2	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		189.38	
Min Ch El (ft)	2894.00	Shear (lb/sq ft)		0.65	
Alpha	1.00	Stream Power (lb/ft s)		2.31	
Frctn Loss (ft)	9.52	Cum Volume (acre-ft)	69.76	314.72	109.23
C & E Loss (ft)	0.02	Cum SA (acres)	50.84	158.76	54.07

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2895.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.20	Wt. n-Val.		0.040	
W.S. Elev (ft)	2894.90	Reach Len. (ft)	520.00	500.00	380.00
Crit W.S. (ft)	2894.75	Flow Area (sq ft)		135.23	
E.G. Slope (ft/ft)	0.014537	Area (sq ft)		135.23	
Q Total (cfs)	484.00	Flow (cfs)		484.00	
Top Width (ft)	189.21	Top Width (ft)		189.21	
Vel Total (ft/s)	3.58	Avg. Vel. (ft/s)		3.58	
Max Chl Dpth (ft)	0.90	Hydr. Depth (ft)		0.71	
Conv. Total (cfs)	4014.3	Conv. (cfs)		4014.3	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		189.32	
Min Ch El (ft)	2894.00	Shear (lb/sq ft)		0.65	
Alpha	1.00	Stream Power (lb/ft s)		2.32	
Frctn Loss (ft)	9.52	Cum Volume (acre-ft)	27.20	321.43	53.02
C & E Loss (ft)	0.02	Cum SA (acres)	18.73	152.43	27.55

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 15.054

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9837	2890	9923.9	2888	9943.6	2886	9991.7	2884	10000	2884
10008.2	2884	10050	2886	10061.9	2886	10118.8	2884	10131	2884
10167.9	2886	10273.9	2886	10355.8	2884	10407.3	2884	10439	2886
10488.4	2888	10507	2890	10545.6	2892				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9837	.065	9943.6	.04	10167.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9943.6	10167.9	407	395	380	.1	.3

Right Levee Station= 10167.9 Elevation= 2886

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2885.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.		0.040	
W.S. Elev (ft)	2885.20	Reach Len. (ft)	407.00	395.00	380.00
Crit W.S. (ft)	2885.20	Flow Area (sq ft)		99.92	
E.G. Slope (ft/ft)	0.026300	Area (sq ft)		99.92	
Q Total (cfs)	484.00	Flow (cfs)		484.00	
Top Width (ft)	138.49	Top Width (ft)		138.49	

Vel Total (ft/s)	4.84	Avg. Vel. (ft/s)		4.84	
Max Chl Dpth (ft)	1.20	Hydr. Depth (ft)		0.72	
Conv. Total (cfs)	2984.5	Conv. (cfs)		2984.5	
Length Wtd. (ft)	393.22	Wetted Per. (ft)		138.60	
Min Ch El (ft)	2884.00	Shear (lb/sq ft)		1.18	
Alpha	1.00	Stream Power (lb/ft s)		5.73	
Frctn Loss (ft)	5.26	Cum Volume (acre-ft)	69.76	313.37	109.23
C & E Loss (ft)	0.02	Cum SA (acres)	50.84	156.88	54.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2885.56	Element			
Vel Head (ft)	0.37	Wt. n-Val.		0.040	
W.S. Elev (ft)	2885.19	Reach Len. (ft)	407.00	395.00	380.00
Crit W.S. (ft)	2885.19	Flow Area (sq ft)		99.72	
E.G. Slope (ft/ft)	0.026444	Area (sq ft)		99.72	
Q Total (cfs)	484.00	Flow (cfs)		484.00	
Top Width (ft)	138.35	Top Width (ft)		138.35	
Vel Total (ft/s)	4.85	Avg. Vel. (ft/s)		4.85	
Max Chl Dpth (ft)	1.19	Hydr. Depth (ft)		0.72	
Conv. Total (cfs)	2976.3	Conv. (cfs)		2976.3	
Length Wtd. (ft)	393.60	Wetted Per. (ft)		138.46	
Min Ch El (ft)	2884.00	Shear (lb/sq ft)		1.19	
Alpha	1.00	Stream Power (lb/ft s)		5.77	
Frctn Loss (ft)	5.66	Cum Volume (acre-ft)	27.20	320.08	53.02
C & E Loss (ft)	0.00	Cum SA (acres)	18.73	150.55	27.55

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.979

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9859.9	2880	9954	2878	9985.6	2876	9995.5	2874	10000	2874
10013.6	2874	10024.1	2876	10053.3	2876	10073.6	2876	10197.4	2876
10338.1	2876	10394.4	2876	10400.4	2876	10426.3	2878	10458.1	2880

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9859.9	.065	9985.6	.04	10024.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.6	10024.1	376	379	300	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev

10268 10458.1 2877

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2876.72	Element			
Vel Head (ft)	0.31	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2876.41	Reach Len. (ft)	376.00	379.00	300.00
Crit W.S. (ft)	2876.41	Flow Area (sq ft)	1.36	72.56	101.11
E.G. Slope (ft/ft)	0.008090	Area (sq ft)	1.36	72.56	157.11
Q Total (cfs)	484.00	Flow (cfs)	0.98	367.44	115.58
Top Width (ft)	426.72	Top Width (ft)	6.55	38.50	381.67
Vel Total (ft/s)	2.77	Avg. Vel. (ft/s)	0.72	5.06	1.14
Max Chl Dpth (ft)	2.41	Hydr. Depth (ft)	0.21	1.88	0.41
Conv. Total (cfs)	5381.1	Conv. (cfs)	10.9	4085.2	1285.1
Length Wtd. (ft)	363.95	Wetted Per. (ft)	6.56	38.89	243.90
Min Ch El (ft)	2874.00	Shear (lb/sq ft)	0.10	0.94	0.21
Alpha	2.59	Stream Power (lb/ft s)	0.08	4.77	0.24
Frctn Loss (ft)	2.85	Cum Volume (acre-ft)	69.76	312.59	108.54
C & E Loss (ft)	0.00	Cum SA (acres)	50.81	156.08	52.40

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2876.79	Element			
Vel Head (ft)	0.37	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2876.42	Reach Len. (ft)	376.00	379.00	300.00
Crit W.S. (ft)	2876.42	Flow Area (sq ft)	1.42	72.95	74.72
E.G. Slope (ft/ft)	0.009014	Area (sq ft)	1.42	72.95	74.72
Q Total (cfs)	484.00	Flow (cfs)	1.12	391.38	91.50
Top Width (ft)	220.95	Top Width (ft)	6.55	38.50	175.90
Vel Total (ft/s)	3.25	Avg. Vel. (ft/s)	0.78	5.36	1.22
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)	0.22	1.89	0.42
Conv. Total (cfs)	5097.8	Conv. (cfs)	11.8	4122.3	963.8
Length Wtd. (ft)	365.91	Wetted Per. (ft)	6.57	38.89	176.33
Min Ch El (ft)	2874.00	Shear (lb/sq ft)	0.12	1.06	0.24
Alpha	2.24	Stream Power (lb/ft s)	0.10	5.66	0.29
Frctn Loss (ft)	3.02	Cum Volume (acre-ft)	27.19	319.29	52.70
C & E Loss (ft)	0.01	Cum SA (acres)	18.70	149.75	26.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.907

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9760.2	2872	9808.4	2872	9845.4	2870	9978.6	2868	9984.4	2866
10000	2866	10012	2866	10021.6	2868	10257.9	2868	10291.4	2868
10326.4	2870	10332.4	2870						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9760.2	.065	9978.6	.04	10021.6	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9978.6	10021.6	224	245	196	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2868.62	Element			
Vel Head (ft)	0.33	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2868.29	Reach Len. (ft)	224.00	245.00	196.00
Crit W.S. (ft)	2868.29	Flow Area (sq ft)	2.82	83.10	79.19
E.G. Slope (ft/ft)	0.007585	Area (sq ft)	2.82	83.10	79.19
Q Total (cfs)	484.00	Flow (cfs)	1.55	413.68	68.77
Top Width (ft)	337.25	Top Width (ft)	19.37	43.00	274.89
Vel Total (ft/s)	2.93	Avg. Vel. (ft/s)	0.55	4.98	0.87
Max Chl Dpth (ft)	2.29	Hydr. Depth (ft)	0.15	1.93	0.29
Conv. Total (cfs)	5557.4	Conv. (cfs)	17.8	4750.0	789.6
Length Wtd. (ft)	240.63	Wetted Per. (ft)	19.37	43.54	274.90
Min Ch El (ft)	2866.00	Shear (lb/sq ft)	0.07	0.90	0.14
Alpha	2.48	Stream Power (lb/ft s)	0.04	4.50	0.12
Frctn Loss (ft)	3.44	Cum Volume (acre-ft)	69.74	311.91	107.73
C & E Loss (ft)	0.02	Cum SA (acres)	50.70	155.73	50.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2868.62	Element			
Vel Head (ft)	0.33	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2868.29	Reach Len. (ft)	224.00	245.00	196.00
Crit W.S. (ft)	2868.29	Flow Area (sq ft)	2.82	83.10	79.19
E.G. Slope (ft/ft)	0.007585	Area (sq ft)	2.82	83.10	79.19
Q Total (cfs)	484.00	Flow (cfs)	1.55	413.68	68.77
Top Width (ft)	337.25	Top Width (ft)	19.37	43.00	274.89
Vel Total (ft/s)	2.93	Avg. Vel. (ft/s)	0.55	4.98	0.87
Max Chl Dpth (ft)	2.29	Hydr. Depth (ft)	0.15	1.93	0.29
Conv. Total (cfs)	5557.4	Conv. (cfs)	17.8	4750.0	789.6
Length Wtd. (ft)	240.63	Wetted Per. (ft)	19.37	43.54	274.90
Min Ch El (ft)	2866.00	Shear (lb/sq ft)	0.07	0.90	0.14
Alpha	2.48	Stream Power (lb/ft s)	0.04	4.50	0.12
Frctn Loss (ft)	3.44	Cum Volume (acre-ft)	27.17	318.62	52.17
C & E Loss (ft)	0.02	Cum SA (acres)	18.59	149.40	25.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.861

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9669.7	2864	9728.2	2862	9766.9	2862	9833.9	2862	9895.6	2862
9943.7	2863.7	9966.6	2864	9977.8	2864	9987.5	2864	9990.8	2862
10000	2862	10019.1	2862	10081.7	2862	10094.5	2862	10143.2	2864
10211.7	2864	10246	2862	10271.4	2864	10288.2	2866	10305.9	2868

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9669.7	.065	9987.5	.04	10143.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.5	10143.2	436	500	506	.1	.3

Left Levee Station= 9987.5 Elevation=

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2863.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.		0.040	0.065
W.S. Elev (ft)	2863.18	Reach Len. (ft)	436.00	500.00	506.00
Crit W.S. (ft)	2863.18	Flow Area (sq ft)		141.02	20.93
E.G. Slope (ft/ft)	0.022863	Area (sq ft)		141.02	20.93
Q Total (cfs)	867.00	Flow (cfs)		816.08	50.92
Top Width (ft)	169.83	Top Width (ft)		134.49	35.34
Vel Total (ft/s)	5.35	Avg. Vel. (ft/s)		5.79	2.43
Max Chl Dpth (ft)	1.18	Hydr. Depth (ft)		1.05	0.59
Conv. Total (cfs)	5734.0	Conv. (cfs)		5397.2	336.8
Length Wtd. (ft)	500.18	Wetted Per. (ft)		134.84	35.43
Min Ch El (ft)	2862.00	Shear (lb/sq ft)		1.49	0.84
Alpha	1.11	Stream Power (lb/ft s)		8.64	2.05
Frctn Loss (ft)	6.62	Cum Volume (acre-ft)	69.73	311.28	107.50
C & E Loss (ft)	0.10	Cum SA (acres)	50.65	155.23	49.44

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2863.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.		0.040	0.065
W.S. Elev (ft)	2863.18	Reach Len. (ft)	436.00	500.00	506.00
Crit W.S. (ft)	2863.18	Flow Area (sq ft)		141.02	20.93
E.G. Slope (ft/ft)	0.022863	Area (sq ft)		141.02	20.93
Q Total (cfs)	867.00	Flow (cfs)		816.08	50.92
Top Width (ft)	169.83	Top Width (ft)		134.49	35.34
Vel Total (ft/s)	5.35	Avg. Vel. (ft/s)		5.79	2.43
Max Chl Dpth (ft)	1.18	Hydr. Depth (ft)		1.05	0.59
Conv. Total (cfs)	5734.0	Conv. (cfs)		5397.2	336.8
Length Wtd. (ft)	500.18	Wetted Per. (ft)		134.84	35.43
Min Ch El (ft)	2862.00	Shear (lb/sq ft)		1.49	0.84
Alpha	1.11	Stream Power (lb/ft s)		8.64	2.05
Frctn Loss (ft)	6.63	Cum Volume (acre-ft)	27.16	317.98	51.94
C & E Loss (ft)	0.10	Cum SA (acres)	18.54	148.90	24.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.766

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9336	2860	9355.2	2858	9379	2856	9397.2	2854	9410.1	2854
9487.4	2854	9773.6	2852	9784.2	2852	9793.2	2852	9832.4	2852
9848.7	2852	9997.1	2850	10000	2850	10006.9	2850	10222.1	2850
10261.2	2850	10266.5	2852	10274.1	2854	10288.2	2856	10324.3	2858
10408.6	2860								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9336	.065	9848.7	.04	10266.5	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9848.7	10266.5	237	270	318	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2851.09	Element			
Vel Head (ft)	0.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	2850.94	Reach Len. (ft)	237.00	270.00	318.00
Crit W.S. (ft)	2850.67	Flow Area (sq ft)		282.52	
E.G. Slope (ft/ft)	0.008620	Area (sq ft)		282.52	
Q Total (cfs)	867.00	Flow (cfs)		867.00	
Top Width (ft)	336.41	Top Width (ft)		336.41	
Vel Total (ft/s)	3.07	Avg. Vel. (ft/s)		3.07	
Max Chl Dpth (ft)	0.94	Hydr. Depth (ft)		0.84	
Conv. Total (cfs)	9338.4	Conv. (cfs)		9338.4	
Length Wtd. (ft)	270.00	Wetted Per. (ft)		336.59	
Min Ch El (ft)	2850.00	Shear (lb/sq ft)		0.45	
Alpha	1.00	Stream Power (lb/ft s)		1.39	
Frctn Loss (ft)	3.84	Cum Volume (acre-ft)	69.73	308.85	107.38
C & E Loss (ft)	0.03	Cum SA (acres)	50.65	152.53	49.24

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2851.09	Element			
Vel Head (ft)	0.15	Wt. n-Val.		0.040	
W.S. Elev (ft)	2850.94	Reach Len. (ft)	237.00	270.00	318.00
Crit W.S. (ft)	2850.67	Flow Area (sq ft)		282.35	
E.G. Slope (ft/ft)	0.008635	Area (sq ft)		282.35	
Q Total (cfs)	867.00	Flow (cfs)		867.00	
Top Width (ft)	336.37	Top Width (ft)		336.37	
Vel Total (ft/s)	3.07	Avg. Vel. (ft/s)		3.07	
Max Chl Dpth (ft)	0.94	Hydr. Depth (ft)		0.84	
Conv. Total (cfs)	9330.1	Conv. (cfs)		9330.1	
Length Wtd. (ft)	270.00	Wetted Per. (ft)		336.55	
Min Ch El (ft)	2850.00	Shear (lb/sq ft)		0.45	
Alpha	1.00	Stream Power (lb/ft s)		1.39	
Frctn Loss (ft)	3.84	Cum Volume (acre-ft)	27.16	315.55	51.82
C & E Loss (ft)	0.03	Cum SA (acres)	18.54	146.20	24.33

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.715

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9323.4	2850	9352.5	2848	9390.4	2846	9445.2	2848	9469.2	2848
9571.9	2848	9796.4	2848	9826.4	2848	9899.4	2846	9973.2	2846
10000	2846	10015.1	2844	10065.4	2846	10093.1	2848	10109.6	2850
10136.2	2852								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9323.4	.065	9826.4	.04	10093.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9826.4	10093.1	286	316	373	.1	.3

Left Levee Station= 9826.6 Elevation= 2848

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2847.21	Element			
Vel Head (ft)	0.49	Wt. n-Val.		0.040	
W.S. Elev (ft)	2846.72	Reach Len. (ft)	286.00	316.00	373.00
Crit W.S. (ft)	2846.72	Flow Area (sq ft)		197.87	
E.G. Slope (ft/ft)	0.023552	Area (sq ft)		197.87	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	202.23	Top Width (ft)		202.23	
Vel Total (ft/s)	5.61	Avg. Vel. (ft/s)		5.61	
Max Chl Dpth (ft)	2.72	Hydr. Depth (ft)		0.98	
Conv. Total (cfs)	7239.4	Conv. (cfs)		7239.4	
Length Wtd. (ft)	316.00	Wetted Per. (ft)		202.43	
Min Ch El (ft)	2844.00	Shear (lb/sq ft)		1.44	
Alpha	1.00	Stream Power (lb/ft s)		8.07	
Frctn Loss (ft)	7.05	Cum Volume (acre-ft)	69.73	307.37	107.38
C & E Loss (ft)	0.02	Cum SA (acres)	50.65	150.86	49.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2847.21	Element			
Vel Head (ft)	0.49	Wt. n-Val.		0.040	
W.S. Elev (ft)	2846.72	Reach Len. (ft)	286.00	316.00	373.00
Crit W.S. (ft)	2846.72	Flow Area (sq ft)		197.82	
E.G. Slope (ft/ft)	0.023570	Area (sq ft)		197.82	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	202.21	Top Width (ft)		202.21	
Vel Total (ft/s)	5.62	Avg. Vel. (ft/s)		5.62	
Max Chl Dpth (ft)	2.72	Hydr. Depth (ft)		0.98	
Conv. Total (cfs)	7236.7	Conv. (cfs)		7236.7	
Length Wtd. (ft)	316.00	Wetted Per. (ft)		202.42	
Min Ch El (ft)	2844.00	Shear (lb/sq ft)		1.44	
Alpha	1.00	Stream Power (lb/ft s)		8.08	
Frctn Loss (ft)	5.50	Cum Volume (acre-ft)	27.16	314.07	51.82
C & E Loss (ft)	0.05	Cum SA (acres)	18.54	144.53	24.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.655

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9353.4	2846	9377.1	2844	9399.9	2842	9414.1	2840	9429.5	2838
9433.4	2838	9438.9	2840	9450.6	2842	9557.7	2842	9636.8	2842
9672.5	2842	9697.6	2842	9708.7	2842	9731.2	2842	9783.5	2842
9871.4	2840	9993.2	2838	10000	2838	10006.5	2838	10026	2838
10051	2838	10085.7	2838	10143	2838	10167.2	2840	10198.6	2842

```
 10249.6    2844

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9353.4    .065  9871.4     .04 10167.2    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9871.4 10167.2              339     500     421            .1        .3
Left Levee      Station=  9783.5      Elevation=    2842

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2839.54   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.41   Wt. n-Val.                            0.040
  W.S. Elev (ft)            2839.13   Reach Len. (ft)            339.00    500.00     421.00
  Crit W.S. (ft)            2839.09   Flow Area (sq ft)                    215.85
  E.G. Slope (ft/ft)       0.021176   Area (sq ft)                         215.85
  Q Total (cfs)             1111.00   Flow (cfs)                          1111.00
  Top Width (ft)             232.28   Top Width (ft)                       232.28
  Vel Total (ft/s)             5.15   Avg. Vel. (ft/s)                       5.15
  Max Chl Dpth (ft)            1.13   Hydr. Depth (ft)                       0.93
  Conv. Total (cfs)          7634.6   Conv. (cfs)                          7634.6
  Length Wtd. (ft)           467.47   Wetted Per. (ft)                     232.34
  Min Ch El (ft)            2838.00   Shear (lb/sq ft)                       1.23
  Alpha                        1.00   Stream Power (lb/ft s)                 6.32
  Frctn Loss (ft)              7.26   Cum Volume (acre-ft)        69.73    305.86     107.38
  C & E Loss (ft)              0.02   Cum SA (acres)              50.65    149.28      49.24


Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT    Profile #Method 1 Fldwy

  E.G. Elev (ft)            2839.58   Element                   Left OB    Channel   Right OB
  Vel Head (ft)                0.31   Wt. n-Val.                            0.040
  W.S. Elev (ft)            2839.27   Reach Len. (ft)            339.00    500.00     421.00
  Crit W.S. (ft)            2839.09   Flow Area (sq ft)                    247.90
  E.G. Slope (ft/ft)       0.013371   Area (sq ft)                         247.90
  Q Total (cfs)             1111.00   Flow (cfs)                          1111.00
  Top Width (ft)             232.28   Top Width (ft)                       232.28
  Vel Total (ft/s)             4.48   Avg. Vel. (ft/s)                       4.48
  Max Chl Dpth (ft)            1.27   Hydr. Depth (ft)                       1.07
  Conv. Total (cfs)          9607.9   Conv. (cfs)                          9607.9
  Length Wtd. (ft)           481.61   Wetted Per. (ft)                     232.61
  Min Ch El (ft)            2838.00   Shear (lb/sq ft)                       0.89
  Alpha                        1.00   Stream Power (lb/ft s)                 3.99
  Frctn Loss (ft)              6.59   Cum Volume (acre-ft)        27.16    312.45      51.82
  C & E Loss (ft)              0.06   Cum SA (acres)              18.54    142.95      24.33


Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Rawhide Wash
REACH: Above Pima Road    RS: 14.560

INPUT
Description:
Station Elevation Data    num=      22
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9172.4    2834  9214.1    2832  9229.7    2830    9236    2830  9253.6    2832
  9355.2    2834  9366.3    2834  9622.5    2832  9771.8    2832  9782.8    2832
    9958    2830  9963.4    2830    9980    2830  9999.3    2828   10000    2828
 10000.2    2828 10008.4    2830 10067.6    2832 10097.4    2834 10119.7    2836
 10139.2    2838 10160.5    2838

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9172.4    .065    9980     .04 10008.4    .065

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

```
        9980 10008.4              370     415     357            .1       .3
Ineffective Flow     num=       1
   Sta L   Sta R    Elev
   10045 10160.5    2833
Left Levee      Station=  9366.3      Elevation=    2834
```

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2832.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.57	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2831.70	Reach Len. (ft)	370.00	415.00	357.00
Crit W.S. (ft)	2831.70	Flow Area (sq ft)	164.18	77.61	39.63
E.G. Slope (ft/ft)	0.011868	Area (sq ft)	164.18	77.61	42.83
Q Total (cfs)	1111.00	Flow (cfs)	397.89	609.07	104.04
Top Width (ft)	249.78	Top Width (ft)	171.02	28.40	50.35
Vel Total (ft/s)	3.95	Avg. Vel. (ft/s)	2.42	7.85	2.63
Max Chl Dpth (ft)	3.70	Hydr. Depth (ft)	0.96	2.73	1.08
Conv. Total (cfs)	10198.2	Conv. (cfs)	3652.4	5590.8	955.1
Length Wtd. (ft)	404.23	Wetted Per. (ft)	171.03	28.74	36.62
Min Ch El (ft)	2828.00	Shear (lb/sq ft)	0.71	2.00	0.80
Alpha	2.34	Stream Power (lb/ft s)	1.72	15.70	2.11
Frctn Loss (ft)	6.03	Cum Volume (acre-ft)	69.09	304.18	107.17
C & E Loss (ft)	0.04	Cum SA (acres)	49.98	147.78	48.99

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2832.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2831.97	Reach Len. (ft)	370.00	415.00	357.00
Crit W.S. (ft)	2831.97	Flow Area (sq ft)	43.37	85.28	49.52
E.G. Slope (ft/ft)	0.014031	Area (sq ft)	43.37	85.28	49.52
Q Total (cfs)	1111.00	Flow (cfs)	174.35	774.86	161.80
Top Width (ft)	87.00	Top Width (ft)	22.00	28.40	36.60
Vel Total (ft/s)	6.24	Avg. Vel. (ft/s)	4.02	9.09	3.27
Max Chl Dpth (ft)	3.97	Hydr. Depth (ft)	1.97	3.00	1.35
Conv. Total (cfs)	9379.3	Conv. (cfs)	1471.9	6541.5	1365.9
Length Wtd. (ft)	407.25	Wetted Per. (ft)	23.97	28.74	37.36
Min Ch El (ft)	2828.00	Shear (lb/sq ft)	1.58	2.60	1.16
Alpha	1.59	Stream Power (lb/ft s)	6.37	23.61	3.79
Frctn Loss (ft)	6.66	Cum Volume (acre-ft)	26.99	310.54	51.58
C & E Loss (ft)	0.00	Cum SA (acres)	18.45	141.45	24.15

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

```
CROSS SECTION          RIVER: Rawhide Wash
REACH: Above Pima Road    RS: 14.482

INPUT
Description:
Station Elevation Data     num=      15
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
    9927     2826  9940.1     2826  9968.7     2824  9974.2     2822  9978.5     2820
```

10000	2820	10011.6	2820	10043.4	2822	10050.7	2824	10071.8	2824
10161.2	2824	10286.9	2824	10315.6	2826	10341.2	2828	10367.3	2830

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9927	.065	9968.7	.04	10050.7	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9968.7	10050.7	203	216	210	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2823.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.98	Wt. n-Val.		0.040	
W.S. Elev (ft)	2822.53	Reach Len. (ft)	203.00	216.00	210.00
Crit W.S. (ft)	2822.53	Flow Area (sq ft)		139.93	
E.G. Slope (ft/ft)	0.019278	Area (sq ft)		139.93	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	72.60	Top Width (ft)		72.60	
Vel Total (ft/s)	7.94	Avg. Vel. (ft/s)		7.94	
Max Chl Dpth (ft)	2.53	Hydr. Depth (ft)		1.93	
Conv. Total (cfs)	8001.6	Conv. (cfs)		8001.6	
Length Wtd. (ft)	214.98	Wetted Per. (ft)		73.27	
Min Ch El (ft)	2820.00	Shear (lb/sq ft)		2.30	
Alpha	1.00	Stream Power (lb/ft s)		18.25	
Frctn Loss (ft)	3.02	Cum Volume (acre-ft)	68.40	303.14	107.00
C & E Loss (ft)	0.19	Cum SA (acres)	49.26	147.30	48.79

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2823.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.98	Wt. n-Val.		0.040	
W.S. Elev (ft)	2822.53	Reach Len. (ft)	203.00	216.00	210.00
Crit W.S. (ft)	2822.53	Flow Area (sq ft)		139.84	
E.G. Slope (ft/ft)	0.019316	Area (sq ft)		139.84	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	72.59	Top Width (ft)		72.59	
Vel Total (ft/s)	7.94	Avg. Vel. (ft/s)		7.94	
Max Chl Dpth (ft)	2.53	Hydr. Depth (ft)		1.93	
Conv. Total (cfs)	7993.8	Conv. (cfs)		7993.8	
Length Wtd. (ft)	215.98	Wetted Per. (ft)		73.26	
Min Ch El (ft)	2820.00	Shear (lb/sq ft)		2.30	
Alpha	1.00	Stream Power (lb/ft s)		18.29	
Frctn Loss (ft)	3.84	Cum Volume (acre-ft)	26.81	309.47	51.38
C & E Loss (ft)	0.05	Cum SA (acres)	18.36	140.97	24.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.441

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9860.7	2820	9906.2	2820	9982.3	2818	9991.3	2816	10000	2816

10011.4	2816	10033.4	2816	10045.8	2816	10061.9	2818	10100.8	2818
10167.8	2816	10206.3	2816	10221.4	2818	10238.4	2820	10260.2	2822

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9860.7	.065	9982.3	.04	10061.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9982.3	10061.9	343	368	357	.1	.3

Right Levee Station= 10061.9 Elevation= 2818

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2818.34	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.	0.000	0.040	0.065
W.S. Elev (ft)	2818.01	Reach Len. (ft)	343.00	368.00	357.00
Crit W.S. (ft)	2818.01	Flow Area (sq ft)	0.00	134.70	160.31
E.G. Slope (ft/ft)	0.010663	Area (sq ft)	0.00	134.70	160.31
Q Total (cfs)	1111.00	Flow (cfs)	0.00	731.66	379.34
Top Width (ft)	239.45	Top Width (ft)	0.29	79.60	159.56
Vel Total (ft/s)	3.77	Avg. Vel. (ft/s)	0.06	5.43	2.37
Max Chl Dpth (ft)	2.01	Hydr. Depth (ft)	0.00	1.69	1.00
Conv. Total (cfs)	10759.1	Conv. (cfs)	0.0	7085.6	3673.6
Length Wtd. (ft)	363.76	Wetted Per. (ft)	0.29	79.94	159.73
Min Ch El (ft)	2816.00	Shear (lb/sq ft)		1.12	0.67
Alpha	1.50	Stream Power (lb/ft s)		6.09	1.58
Frctn Loss (ft)	3.20	Cum Volume (acre-ft)	68.40	302.46	106.61
C & E Loss (ft)	0.03	Cum SA (acres)	49.26	146.93	48.40

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2819.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.82	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2818.22	Reach Len. (ft)	343.00	368.00	357.00
Crit W.S. (ft)	2818.22	Flow Area (sq ft)	0.06	151.42	8.46
E.G. Slope (ft/ft)	0.016380	Area (sq ft)	0.06	151.42	8.46
Q Total (cfs)	1111.00	Flow (cfs)	0.05	1102.03	8.92
Top Width (ft)	118.79	Top Width (ft)	0.29	79.60	38.90
Vel Total (ft/s)	6.95	Avg. Vel. (ft/s)	0.73	7.28	1.05
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	0.21	1.90	0.22
Conv. Total (cfs)	8680.6	Conv. (cfs)	0.4	8610.6	69.7
Length Wtd. (ft)	367.79	Wetted Per. (ft)	0.50	79.94	39.12
Min Ch El (ft)	2816.00	Shear (lb/sq ft)	0.13	1.94	0.22
Alpha	1.09	Stream Power (lb/ft s)	0.09	14.10	0.23
Frctn Loss (ft)	5.31	Cum Volume (acre-ft)	26.81	308.74	51.36
C & E Loss (ft)	0.03	Cum SA (acres)	18.36	140.60	23.91

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.371

INPUT
Description:

Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9897.4	2816	9918	2814	9946.1	2812	9984.6	2810	9989.1	2808
10000	2808	10012.4	2808	10030.1	2808	10049.2	2808	10057.4	2810
10084.2	2810	10120.8	2810	10150	2810	10233.2	2808	10251.9	2806
10267	2806	10273.4	2808	10292.7	2810	10317.9	2812	10363.7	2814

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9897.4	.065	9984.6	.04	10057.4	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9984.6	10057.4	354	365	342	.1	.3

Right Levee Station= 10057.4 Elevation= 2810

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2810.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.23	Wt. n-Val.	0.000	0.040	0.065
W.S. Elev (ft)	2810.01	Reach Len. (ft)	354.00	365.00	342.00
Crit W.S. (ft)	2810.01	Flow Area (sq ft)	0.00	133.45	239.98
E.G. Slope (ft/ft)	0.007384	Area (sq ft)	0.00	133.45	239.98
Q Total (cfs)	1111.00	Flow (cfs)	0.00	634.21	476.79
Top Width (ft)	308.34	Top Width (ft)	0.15	72.80	235.40
Vel Total (ft/s)	2.98	Avg. Vel. (ft/s)	0.05	4.75	1.99
Max Chl Dpth (ft)	4.01	Hydr. Depth (ft)	0.00	1.83	1.02
Conv. Total (cfs)	12929.2	Conv. (cfs)	0.0	7380.6	5548.6
Length Wtd. (ft)	359.22	Wetted Per. (ft)	0.15	73.47	235.94
Min Ch El (ft)	2808.00	Shear (lb/sq ft)		0.84	0.47
Alpha	1.65	Stream Power (lb/ft s)		3.98	0.93
Frctn Loss (ft)	3.18	Cum Volume (acre-ft)	68.40	301.33	104.97
C & E Loss (ft)	0.03	Cum SA (acres)	49.26	146.28	46.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2811.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.72	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2810.31	Reach Len. (ft)	354.00	365.00	342.00
Crit W.S. (ft)	2810.31	Flow Area (sq ft)	0.05	155.35	28.55
E.G. Slope (ft/ft)	0.012839	Area (sq ft)	0.05	155.35	28.55
Q Total (cfs)	1111.00	Flow (cfs)	0.03	1077.29	33.68
Top Width (ft)	165.55	Top Width (ft)	0.15	72.80	92.60
Vel Total (ft/s)	6.04	Avg. Vel. (ft/s)	0.56	6.93	1.18
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)	0.30	2.13	0.31
Conv. Total (cfs)	9804.9	Conv. (cfs)	0.2	9507.4	297.3
Length Wtd. (ft)	364.00	Wetted Per. (ft)	0.45	73.47	92.91
Min Ch El (ft)	2808.00	Shear (lb/sq ft)	0.08	1.69	0.25
Alpha	1.28	Stream Power (lb/ft s)	0.05	11.75	0.29
Frctn Loss (ft)	4.41	Cum Volume (acre-ft)	26.81	307.45	51.20
C & E Loss (ft)	0.05	Cum SA (acres)	18.36	139.95	23.37

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash

REACH: Above Pima Road RS: 14.302

INPUT
Description:
Station Elevation Data num= 10

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9691.5	2804	9742.9	2802	9937.8	2802	9953.7	2802	9987	2800
9993.7	2800	10023.5	2800	10031.5	2802	10038.3	2804	10125.4	2806

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9691.5	.065	9953.7	.04	10031.5	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9953.7	10031.5	197	188	179	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2803.01	Element			
Vel Head (ft)	0.49	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2802.52	Reach Len. (ft)	197.00	188.00	179.00
Crit W.S. (ft)	2802.52	Flow Area (sq ft)	112.60	154.59	0.46
E.G. Slope (ft/ft)	0.010815	Area (sq ft)	112.60	154.59	0.46
Q Total (cfs)	1111.00	Flow (cfs)	169.18	941.39	0.43
Top Width (ft)	303.67	Top Width (ft)	224.11	77.80	1.76
Vel Total (ft/s)	4.15	Avg. Vel. (ft/s)	1.50	6.09	0.94
Max Chl Dpth (ft)	2.52	Hydr. Depth (ft)	0.50	1.99	0.26
Conv. Total (cfs)	10683.4	Conv. (cfs)	1626.8	9052.4	4.1
Length Wtd. (ft)	192.50	Wetted Per. (ft)	224.12	78.11	1.84
Min Ch El (ft)	2800.00	Shear (lb/sq ft)	0.34	1.34	0.17
Alpha	1.84	Stream Power (lb/ft s)	0.51	8.14	0.16
Frctn Loss (ft)	3.00	Cum Volume (acre-ft)	67.94	300.12	104.03
C & E Loss (ft)	0.08	Cum SA (acres)	48.34	145.65	45.85

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2803.08	Element			
Vel Head (ft)	0.55	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2802.53	Reach Len. (ft)	197.00	188.00	179.00
Crit W.S. (ft)	2802.53	Flow Area (sq ft)	81.69	155.65	0.48
E.G. Slope (ft/ft)	0.011448	Area (sq ft)	81.69	155.65	0.48
Q Total (cfs)	1111.00	Flow (cfs)	130.81	979.72	0.48
Top Width (ft)	233.26	Top Width (ft)	153.70	77.80	1.76
Vel Total (ft/s)	4.67	Avg. Vel. (ft/s)	1.60	6.29	1.00
Max Chl Dpth (ft)	2.53	Hydr. Depth (ft)	0.53	2.00	0.27
Conv. Total (cfs)	10383.4	Conv. (cfs)	1222.5	9156.5	4.5
Length Wtd. (ft)	192.34	Wetted Per. (ft)	154.23	78.11	1.85
Min Ch El (ft)	2800.00	Shear (lb/sq ft)	0.38	1.42	0.19
Alpha	1.61	Stream Power (lb/ft s)	0.61	8.97	0.18
Frctn Loss (ft)	3.10	Cum Volume (acre-ft)	26.48	306.14	51.09
C & E Loss (ft)	0.09	Cum SA (acres)	17.73	139.32	23.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the

cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.266

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9673.9	2800	9728.9	2798	9767.1	2796	9802.1	2796	9926.2	2798
9985.4	2798	9990.7	2796	10000	2796	10005.3	2796	10015.2	2798
10121.6	2800	10136.6	2800						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9673.9	.065	9926.2	.04	10015.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9926.2	10015.2	293	324	345	.1	.3

Left Levee Station= 9926.2 Elevation= 2798

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2798.26	Element			
Vel Head (ft)	0.24	Wt. n-Val.	0.065	0.040	0.000
W.S. Elev (ft)	2798.02	Reach Len. (ft)	293.00	324.00	345.00
Crit W.S. (ft)	2798.02	Flow Area (sq ft)	235.39	45.79	0.01
E.G. Slope (ft/ft)	0.024278	Area (sq ft)	235.39	45.79	0.01
Q Total (cfs)	1111.00	Flow (cfs)	941.54	169.46	0.00
Top Width (ft)	287.56	Top Width (ft)	197.73	89.00	0.83
Vel Total (ft/s)	3.95	Avg. Vel. (ft/s)	4.00	3.70	0.14
Max Chl Dpth (ft)	2.02	Hydr. Depth (ft)	1.19	0.51	0.01
Conv. Total (cfs)	7130.3	Conv. (cfs)	6042.7	1087.6	0.0
Length Wtd. (ft)	310.86	Wetted Per. (ft)	197.80	89.56	0.83
Min Ch El (ft)	2796.00	Shear (lb/sq ft)	1.80	0.77	
Alpha	1.00	Stream Power (lb/ft s)	7.21	2.87	
Frctn Loss (ft)	6.39	Cum Volume (acre-ft)	67.15	299.69	104.03
C & E Loss (ft)	0.00	Cum SA (acres)	47.39	145.29	45.85

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2798.26	Element			
Vel Head (ft)	0.24	Wt. n-Val.	0.065	0.040	0.000
W.S. Elev (ft)	2798.02	Reach Len. (ft)	293.00	324.00	345.00
Crit W.S. (ft)	2798.02	Flow Area (sq ft)	235.39	45.79	0.01
E.G. Slope (ft/ft)	0.024278	Area (sq ft)	235.39	45.79	0.01
Q Total (cfs)	1111.00	Flow (cfs)	941.54	169.46	0.00
Top Width (ft)	287.56	Top Width (ft)	197.73	89.00	0.83
Vel Total (ft/s)	3.95	Avg. Vel. (ft/s)	4.00	3.70	0.14
Max Chl Dpth (ft)	2.02	Hydr. Depth (ft)	1.19	0.51	0.01
Conv. Total (cfs)	7130.3	Conv. (cfs)	6042.7	1087.6	0.0
Length Wtd. (ft)	310.86	Wetted Per. (ft)	197.80	89.56	0.83
Min Ch El (ft)	2796.00	Shear (lb/sq ft)	1.80	0.77	
Alpha	1.00	Stream Power (lb/ft s)	7.21	2.87	
Frctn Loss (ft)	6.43	Cum Volume (acre-ft)	25.76	305.71	51.09
C & E Loss (ft)	0.00	Cum SA (acres)	16.94	138.96	22.99

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to

critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.205

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9715.2	2794	9769.4	2792	9799.4	2790	9805.9	2790	9998.2	2790
10000	2790	10002.3	2790	10126.5	2790	10154.2	2790	10185.2	2792
10226.3	2794	10257.2	2796	10290.4	2798	10322.3	2800		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9715.2	.065	9769.4	.04	10185.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9769.4	10185.2	180	269	285	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2791.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.040	
W.S. Elev (ft)	2790.76	Reach Len. (ft)	180.00	269.00	285.00
Crit W.S. (ft)	2790.67	Flow Area (sq ft)		276.98	
E.G. Slope (ft/ft)	0.017643	Area (sq ft)		276.98	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	377.86	Top Width (ft)		377.86	
Vel Total (ft/s)	4.01	Avg. Vel. (ft/s)		4.01	
Max Chl Dpth (ft)	0.76	Hydr. Depth (ft)		0.73	
Conv. Total (cfs)	8364.4	Conv. (cfs)		8364.4	
Length Wtd. (ft)	269.00	Wetted Per. (ft)		377.91	
Min Ch El (ft)	2790.00	Shear (lb/sq ft)		0.81	
Alpha	1.00	Stream Power (lb/ft s)		3.24	
Frctn Loss (ft)	4.35	Cum Volume (acre-ft)	66.36	298.49	104.03
C & E Loss (ft)	0.00	Cum SA (acres)	46.73	143.55	45.84

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2791.01	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.25	Wt. n-Val.		0.040	
W.S. Elev (ft)	2790.75	Reach Len. (ft)	180.00	269.00	285.00
Crit W.S. (ft)	2790.67	Flow Area (sq ft)		276.15	
E.G. Slope (ft/ft)	0.017816	Area (sq ft)		276.15	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	377.79	Top Width (ft)		377.79	
Vel Total (ft/s)	4.02	Avg. Vel. (ft/s)		4.02	
Max Chl Dpth (ft)	0.75	Hydr. Depth (ft)		0.73	
Conv. Total (cfs)	8323.6	Conv. (cfs)		8323.6	
Length Wtd. (ft)	269.00	Wetted Per. (ft)		377.84	
Min Ch El (ft)	2790.00	Shear (lb/sq ft)		0.81	
Alpha	1.00	Stream Power (lb/ft s)		3.27	
Frctn Loss (ft)	4.35	Cum Volume (acre-ft)	24.97	304.51	51.09
C & E Loss (ft)	0.00	Cum SA (acres)	16.27	137.23	22.99

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.154

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

9658.6	2790	9719.4	2788	9758.2	2786	9783	2786	9902	2786
9914.6	2786	9933.8	2786	9991.4	2784	10000	2784	10002.5	2784
10070.1	2786	10098	2788	10135.7	2790				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9658.6	.065	9719.4	.04	10098	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9719.4	10098	252	288	284	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2786.65	Element			
Vel Head (ft)	0.25	Wt. n-Val.		0.040	
W.S. Elev (ft)	2786.40	Reach Len. (ft)	252.00	288.00	284.00
Crit W.S. (ft)	2786.27	Flow Area (sq ft)		274.48	
E.G. Slope (ft/ft)	0.014890	Area (sq ft)		274.48	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	325.20	Top Width (ft)		325.20	
Vel Total (ft/s)	4.05	Avg. Vel. (ft/s)		4.05	
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)		0.84	
Conv. Total (cfs)	9104.7	Conv. (cfs)		9104.7	
Length Wtd. (ft)	285.53	Wetted Per. (ft)		325.29	
Min Ch El (ft)	2784.00	Shear (lb/sq ft)		0.78	
Alpha	1.00	Stream Power (lb/ft s)		3.17	
Frctn Loss (ft)	5.03	Cum Volume (acre-ft)	66.36	296.79	104.03
C & E Loss (ft)	0.00	Cum SA (acres)	46.73	141.38	45.84

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2786.65	Element			
Vel Head (ft)	0.25	Wt. n-Val.		0.040	
W.S. Elev (ft)	2786.40	Reach Len. (ft)	252.00	288.00	284.00
Crit W.S. (ft)	2786.27	Flow Area (sq ft)		274.80	
E.G. Slope (ft/ft)	0.014833	Area (sq ft)		274.80	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	325.21	Top Width (ft)		325.21	
Vel Total (ft/s)	4.04	Avg. Vel. (ft/s)		4.04	
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)		0.84	
Conv. Total (cfs)	9122.1	Conv. (cfs)		9122.1	
Length Wtd. (ft)	285.54	Wetted Per. (ft)		325.30	
Min Ch El (ft)	2784.00	Shear (lb/sq ft)		0.78	
Alpha	1.00	Stream Power (lb/ft s)		3.16	
Frctn Loss (ft)	5.03	Cum Volume (acre-ft)	24.97	302.81	51.09
C & E Loss (ft)	0.00	Cum SA (acres)	16.27	135.05	22.99

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.100

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9567.7	2782	9653.6	2782	9699.1	2780	9702.1	2780	9773.7	2782
9777.4	2782	9914.7	2780	9987.5	2780	10000	2780	10020	2780
10055.2	2782	10093.6	2784	10137	2786				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9567.7	.065	9777.4	.05	10055.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9777.4	10055.2	246	289	286	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2781.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.	0.065	0.050	
W.S. Elev (ft)	2781.36	Reach Len. (ft)	246.00	289.00	286.00
Crit W.S. (ft)	2781.17	Flow Area (sq ft)	58.05	222.51	
E.G. Slope (ft/ft)	0.021021	Area (sq ft)	58.05	222.51	
Q Total (cfs)	1111.00	Flow (cfs)	152.16	958.84	
Top Width (ft)	304.93	Top Width (ft)	82.51	222.42	
Vel Total (ft/s)	3.96	Avg. Vel. (ft/s)	2.62	4.31	
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)	0.70	1.00	
Conv. Total (cfs)	7662.8	Conv. (cfs)	1049.5	6613.3	
Length Wtd. (ft)	284.50	Wetted Per. (ft)	82.55	222.47	
Min Ch El (ft)	2780.00	Shear (lb/sq ft)	0.92	1.31	
Alpha	1.08	Stream Power (lb/ft s)	2.42	5.66	
Frctn Loss (ft)	4.84	Cum Volume (acre-ft)	66.19	295.15	104.03
C & E Loss (ft)	0.02	Cum SA (acres)	46.49	139.57	45.84

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2781.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.065	0.050	
W.S. Elev (ft)	2781.35	Reach Len. (ft)	246.00	289.00	286.00
Crit W.S. (ft)	2781.17	Flow Area (sq ft)	57.73	221.64	
E.G. Slope (ft/ft)	0.021265	Area (sq ft)	57.73	221.64	
Q Total (cfs)	1111.00	Flow (cfs)	151.91	959.09	
Top Width (ft)	304.36	Top Width (ft)	82.28	222.08	
Vel Total (ft/s)	3.98	Avg. Vel. (ft/s)	2.63	4.33	
Max Chl Dpth (ft)	1.35	Hydr. Depth (ft)	0.70	1.00	
Conv. Total (cfs)	7618.8	Conv. (cfs)	1041.7	6577.0	
Length Wtd. (ft)	284.48	Wetted Per. (ft)	82.33	222.13	
Min Ch El (ft)	2780.00	Shear (lb/sq ft)	0.93	1.32	
Alpha	1.08	Stream Power (lb/ft s)	2.45	5.73	
Frctn Loss (ft)	4.84	Cum Volume (acre-ft)	24.80	301.17	51.09
C & E Loss (ft)	0.02	Cum SA (acres)	16.03	133.25	22.99

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 14.041

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9689.5	2778	9735.6	2776	9800.7	2776	9827.7	2776	9831.5	2776
9943.8	2776	9993.7	2774	10000	2774	10010.6	2774	10071	2776
10102.9	2778	10222.6	2780						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9689.5	.065	9943.8	.04	10071	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9943.8	10071	283	296	224	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2776.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2776.31	Reach Len. (ft)	283.00	296.00	224.00
Crit W.S. (ft)	2776.31	Flow Area (sq ft)	65.66	183.54	0.77
E.G. Slope (ft/ft)	0.014005	Area (sq ft)	65.66	183.54	0.77
Q Total (cfs)	1111.00	Flow (cfs)	80.47	1029.93	0.60
Top Width (ft)	347.49	Top Width (ft)	215.35	127.20	4.95
Vel Total (ft/s)	4.44	Avg. Vel. (ft/s)	1.23	5.61	0.78
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)	0.30	1.44	0.16

Conv. Total (cfs)	9387.8	Conv. (cfs)	680.0	8702.8	5.1
Length Wtd. (ft)	295.51	Wetted Per. (ft)	215.35	127.27	4.96
Min Ch El (ft)	2774.00	Shear (lb/sq ft)	0.27	1.26	0.14
Alpha	1.48	Stream Power (lb/ft s)	0.33	7.08	0.11
Frctn Loss (ft)	4.46	Cum Volume (acre-ft)	65.84	293.80	104.02
C & E Loss (ft)	0.07	Cum SA (acres)	45.65	138.41	45.83

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2776.76	Element			
Vel Head (ft)	0.45	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2776.31	Reach Len. (ft)	283.00	296.00	224.00
Crit W.S. (ft)	2776.31	Flow Area (sq ft)	66.29	183.91	0.78
E.G. Slope (ft/ft)	0.013885	Area (sq ft)	66.29	183.91	0.78
Q Total (cfs)	1111.00	Flow (cfs)	81.41	1028.97	0.61
Top Width (ft)	347.50	Top Width (ft)	215.35	127.20	4.95
Vel Total (ft/s)	4.43	Avg. Vel. (ft/s)	1.23	5.59	0.79
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)	0.31	1.45	0.16
Conv. Total (cfs)	9428.4	Conv. (cfs)	690.9	8732.2	5.2
Length Wtd. (ft)	295.50	Wetted Per. (ft)	215.36	127.27	4.96
Min Ch El (ft)	2774.00	Shear (lb/sq ft)	0.27	1.25	0.14
Alpha	1.49	Stream Power (lb/ft s)	0.33	7.01	0.11
Frctn Loss (ft)	4.44	Cum Volume (acre-ft)	24.45	299.83	51.09
C & E Loss (ft)	0.07	Cum SA (acres)	15.19	132.09	22.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.989

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9782.1	2774	9816.3	2772	9925	2770	9997.3	2770	10046	2770
10051.2	2770	10139.4	2770	10159.9	2772	10182.2	2772	10201	2772
10227.2	2772								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9782.1	.065	9816.3	.05	10159.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9816.3	10159.9	464	455	367	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2771.38	Element			
Vel Head (ft)	0.23	Wt. n-Val.		0.050	
W.S. Elev (ft)	2771.16	Reach Len. (ft)	464.00	455.00	367.00
Crit W.S. (ft)	2770.89	Flow Area (sq ft)		291.15	
E.G. Slope (ft/ft)	0.016338	Area (sq ft)		291.15	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	289.11	Top Width (ft)		289.11	
Vel Total (ft/s)	3.82	Avg. Vel. (ft/s)		3.82	
Max Chl Dpth (ft)	1.16	Hydr. Depth (ft)		1.01	
Conv. Total (cfs)	8692.0	Conv. (cfs)		8692.0	
Length Wtd. (ft)	455.00	Wetted Per. (ft)		289.18	

Min Ch El (ft)	2770.00	Shear (lb/sq ft)		1.03	
Alpha	1.00	Stream Power (lb/ft s)		3.92	
Frctn Loss (ft)	8.92	Cum Volume (acre-ft)	65.63	292.19	104.02
C & E Loss (ft)	0.03	Cum SA (acres)	44.95	137.00	45.82

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2771.38	Element			
Vel Head (ft)	0.23	Wt. n-Val.		0.050	
W.S. Elev (ft)	2771.16	Reach Len. (ft)	464.00	455.00	367.00
Crit W.S. (ft)	2770.89	Flow Area (sq ft)		291.15	
E.G. Slope (ft/ft)	0.016338	Area (sq ft)		291.15	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	289.11	Top Width (ft)		289.11	
Vel Total (ft/s)	3.82	Avg. Vel. (ft/s)		3.82	
Max Chl Dpth (ft)	1.16	Hydr. Depth (ft)		1.01	
Conv. Total (cfs)	8692.0	Conv. (cfs)		8692.0	
Length Wtd. (ft)	455.00	Wetted Per. (ft)		289.18	
Min Ch El (ft)	2770.00	Shear (lb/sq ft)		1.03	
Alpha	1.00	Stream Power (lb/ft s)		3.92	
Frctn Loss (ft)	8.92	Cum Volume (acre-ft)	24.24	298.21	51.08
C & E Loss (ft)	0.03	Cum SA (acres)	14.49	130.67	22.96

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.903

INPUT
Description: Above Breakout
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9876.4	2764	9928.7	2764	9948.9	2762	9984.1	2760	10000	2760
10038	2760	10101.3	2762	10123.1	2762	10166.4	2762	10239.3	2762
10274.6	2762	10285.5	2762	10308	2760	10321	2760	10447.6	2762
10508.5	2762	10612	2762	10635.2	2764	10653.5	2766		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9876.4	.065	9948.9	.05	10101.3	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9948.9	10101.3	531	500	462	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10101.3	10653.5	2763

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2762.44	Element			
Vel Head (ft)	0.48	Wt. n-Val.		0.050	
W.S. Elev (ft)	2761.95	Reach Len. (ft)	531.00	500.00	462.00
Crit W.S. (ft)	2761.79	Flow Area (sq ft)		199.25	
E.G. Slope (ft/ft)	0.024150	Area (sq ft)		199.25	167.62
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	308.73	Top Width (ft)		150.10	158.62
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)		5.58	
Max Chl Dpth (ft)	1.95	Hydr. Depth (ft)		1.33	
Conv. Total (cfs)	7149.1	Conv. (cfs)		7149.1	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		150.19	
Min Ch El (ft)	2760.00	Shear (lb/sq ft)		2.00	
Alpha	1.00	Stream Power (lb/ft s)		11.15	
Frctn Loss (ft)	10.58	Cum Volume (acre-ft)	65.63	289.62	103.32
C & E Loss (ft)	0.02	Cum SA (acres)	44.95	134.70	45.15

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2762.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.		0.050	
W.S. Elev (ft)	2761.95	Reach Len. (ft)	531.00	500.00	462.00
Crit W.S. (ft)	2761.79	Flow Area (sq ft)		199.25	
E.G. Slope (ft/ft)	0.024150	Area (sq ft)		199.25	
Q Total (cfs)	1111.00	Flow (cfs)		1111.00	
Top Width (ft)	150.10	Top Width (ft)		150.10	
Vel Total (ft/s)	5.58	Avg. Vel. (ft/s)		5.58	
Max Chl Dpth (ft)	1.95	Hydr. Depth (ft)		1.33	
Conv. Total (cfs)	7149.1	Conv. (cfs)		7149.1	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		150.19	
Min Ch El (ft)	2760.00	Shear (lb/sq ft)		2.00	
Alpha	1.00	Stream Power (lb/ft s)		11.15	
Frctn Loss (ft)	10.58	Cum Volume (acre-ft)	24.24	295.65	51.08
C & E Loss (ft)	0.02	Cum SA (acres)	14.49	128.38	22.96

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.808

INPUT
Description: Below Breakout
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9797.3	2760	9809.7	2758	9865.4	2756	9894	2756	9916.7	2758
9923.4	2758	9939.8	2756	9956.1	2754	9965.1	2752	9975.1	2750
10002	2750	10017.6	2750	10029.6	2750	10041.7	2750	10125.3	2752
10152.1	2754	10183.6	2756	10205.6	2758	10228.6	2760		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9797.3	.065	9965.1	.04	10125.3	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9965.1	10125.3	479	500	542	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2751.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.		0.040	
W.S. Elev (ft)	2751.42	Reach Len. (ft)	479.00	500.00	542.00
Crit W.S. (ft)	2751.31	Flow Area (sq ft)		142.01	
E.G. Slope (ft/ft)	0.017649	Area (sq ft)		142.01	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	133.14	Top Width (ft)		133.14	
Vel Total (ft/s)	5.15	Avg. Vel. (ft/s)		5.15	
Max Chl Dpth (ft)	1.42	Hydr. Depth (ft)		1.07	
Conv. Total (cfs)	5502.4	Conv. (cfs)		5502.4	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		133.30	
Min Ch El (ft)	2750.00	Shear (lb/sq ft)		1.17	
Alpha	1.00	Stream Power (lb/ft s)		6.04	
Frctn Loss (ft)	10.26	Cum Volume (acre-ft)	65.63	287.67	102.43
C & E Loss (ft)	0.01	Cum SA (acres)	44.95	133.08	44.31

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2751.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.		0.040	
W.S. Elev (ft)	2751.42	Reach Len. (ft)	479.00	500.00	542.00
Crit W.S. (ft)	2751.31	Flow Area (sq ft)		142.01	
E.G. Slope (ft/ft)	0.017649	Area (sq ft)		142.01	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	133.14	Top Width (ft)		133.14	

Vel Total (ft/s)	5.15	Avg. Vel. (ft/s)		5.15	
Max Chl Dpth (ft)	1.42	Hydr. Depth (ft)		1.07	
Conv. Total (cfs)	5502.4	Conv. (cfs)		5502.4	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		133.30	
Min Ch El (ft)	2750.00	Shear (lb/sq ft)		1.17	
Alpha	1.00	Stream Power (lb/ft s)		6.04	
Frctn Loss (ft)	10.26	Cum Volume (acre-ft)	24.24	293.69	51.08
C & E Loss (ft)	0.01	Cum SA (acres)	14.49	126.75	22.96

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.713

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9751.5	2752	9767.8	2750	9796.9	2748	9845.7	2746	9894	2744
9911.9	2742	9950.8	2740	9960	2740	9975.8	2740	9985.9	2740
10000	2740	10022.5	2740	10047.8	2740	10095.8	2742	10134.8	2744
10165.5	2746	10185	2748	10211.1	2750				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9751.5	.065	9911.9	.04	10095.8	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9911.9	10095.8	468	500	491	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2741.57	Element			
Vel Head (ft)	0.46	Wt. n-Val.		0.040	
W.S. Elev (ft)	2741.10	Reach Len. (ft)	468.00	500.00	491.00
Crit W.S. (ft)	2741.10	Flow Area (sq ft)		133.67	
E.G. Slope (ft/ft)	0.024165	Area (sq ft)		133.67	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	145.00	Top Width (ft)		145.00	
Vel Total (ft/s)	5.47	Avg. Vel. (ft/s)		5.47	
Max Chl Dpth (ft)	1.10	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	4702.5	Conv. (cfs)		4702.5	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		145.05	
Min Ch El (ft)	2740.00	Shear (lb/sq ft)		1.39	
Alpha	1.00	Stream Power (lb/ft s)		7.60	
Frctn Loss (ft)	9.10	Cum Volume (acre-ft)	65.63	286.08	102.43
C & E Loss (ft)	0.01	Cum SA (acres)	44.95	131.48	44.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2741.57	Element			
Vel Head (ft)	0.46	Wt. n-Val.		0.040	
W.S. Elev (ft)	2741.10	Reach Len. (ft)	468.00	500.00	491.00
Crit W.S. (ft)	2741.10	Flow Area (sq ft)		133.67	
E.G. Slope (ft/ft)	0.024165	Area (sq ft)		133.67	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	145.00	Top Width (ft)		145.00	
Vel Total (ft/s)	5.47	Avg. Vel. (ft/s)		5.47	
Max Chl Dpth (ft)	1.10	Hydr. Depth (ft)		0.92	
Conv. Total (cfs)	4702.5	Conv. (cfs)		4702.5	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		145.05	
Min Ch El (ft)	2740.00	Shear (lb/sq ft)		1.39	

Alpha	1.00	Stream Power (lb/ft s)		7.60	
Frctn Loss (ft)	9.10	Cum Volume (acre-ft)	24.24	292.11	51.08
C & E Loss (ft)	0.01	Cum SA (acres)	14.49	125.16	22.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.619

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9760.6	2744	9783.6	2742	9820.4	2740	9868.9	2738	9884.8	2736
9894.5	2734	9932.7	2732	9987.1	2730	10000	2730	10034.1	2730
10043.7	2732	10054	2734	10063.5	2736	10076	2738	10087	2740
10109.4	2740	10133.2	2738						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9760.6	.065	9932.7	.04	10043.7	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9932.7	10043.7	491	500	459	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2732.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.		0.040	
W.S. Elev (ft)	2731.81	Reach Len. (ft)	491.00	500.00	459.00
Crit W.S. (ft)	2731.61	Flow Area (sq ft)		137.93	
E.G. Slope (ft/ft)	0.014197	Area (sq ft)		137.93	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	105.05	Top Width (ft)		105.05	
Vel Total (ft/s)	5.30	Avg. Vel. (ft/s)		5.30	
Max Chl Dpth (ft)	1.81	Hydr. Depth (ft)		1.31	
Conv. Total (cfs)	6135.0	Conv. (cfs)		6135.0	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		105.27	
Min Ch El (ft)	2730.00	Shear (lb/sq ft)		1.16	
Alpha	1.00	Stream Power (lb/ft s)		6.15	
Frctn Loss (ft)	8.50	Cum Volume (acre-ft)	65.63	284.52	102.43
C & E Loss (ft)	0.04	Cum SA (acres)	44.95	130.05	44.31

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2732.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.		0.040	
W.S. Elev (ft)	2731.81	Reach Len. (ft)	491.00	500.00	459.00
Crit W.S. (ft)	2731.61	Flow Area (sq ft)		137.93	
E.G. Slope (ft/ft)	0.014197	Area (sq ft)		137.93	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	105.05	Top Width (ft)		105.05	
Vel Total (ft/s)	5.30	Avg. Vel. (ft/s)		5.30	
Max Chl Dpth (ft)	1.81	Hydr. Depth (ft)		1.31	
Conv. Total (cfs)	6135.0	Conv. (cfs)		6135.0	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		105.27	
Min Ch El (ft)	2730.00	Shear (lb/sq ft)		1.16	
Alpha	1.00	Stream Power (lb/ft s)		6.15	
Frctn Loss (ft)	8.50	Cum Volume (acre-ft)	24.24	290.55	51.08
C & E Loss (ft)	0.04	Cum SA (acres)	14.49	123.72	22.96

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.524

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9936.2	2732	9942.9	2730	9950.3	2728	9956.4	2726	9961.1	2724
9965	2722	9997	2720	9999.2	2722	10002.6	2720	10016.3	2722
10029	2724	10040.7	2726	10065	2728	10091.6	2730		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9936.2	.065	9961.1	.04	10029	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9961.1	10029	501	500	505	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2723.72	Element			
Vel Head (ft)	0.85	Wt. n-Val.		0.040	
W.S. Elev (ft)	2722.87	Reach Len. (ft)	501.00	500.00	505.00
Crit W.S. (ft)	2722.87	Flow Area (sq ft)		98.96	
E.G. Slope (ft/ft)	0.020427	Area (sq ft)		98.96	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	58.51	Top Width (ft)		58.51	
Vel Total (ft/s)	7.39	Avg. Vel. (ft/s)		7.39	
Max Chl Dpth (ft)	2.87	Hydr. Depth (ft)		1.69	
Conv. Total (cfs)	5114.6	Conv. (cfs)		5114.6	
Length Wtd. (ft)	500.03	Wetted Per. (ft)		60.31	
Min Ch El (ft)	2720.00	Shear (lb/sq ft)		2.09	
Alpha	1.00	Stream Power (lb/ft s)		15.46	
Frctn Loss (ft)	9.09	Cum Volume (acre-ft)	65.63	283.16	102.43
C & E Loss (ft)	0.02	Cum SA (acres)	44.95	129.11	44.31

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2723.72	Element			
Vel Head (ft)	0.85	Wt. n-Val.		0.040	
W.S. Elev (ft)	2722.87	Reach Len. (ft)	501.00	500.00	505.00
Crit W.S. (ft)	2722.87	Flow Area (sq ft)		98.96	
E.G. Slope (ft/ft)	0.020427	Area (sq ft)		98.96	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	58.51	Top Width (ft)		58.51	
Vel Total (ft/s)	7.39	Avg. Vel. (ft/s)		7.39	
Max Chl Dpth (ft)	2.87	Hydr. Depth (ft)		1.69	
Conv. Total (cfs)	5114.6	Conv. (cfs)		5114.6	
Length Wtd. (ft)	500.03	Wetted Per. (ft)		60.31	
Min Ch El (ft)	2720.00	Shear (lb/sq ft)		2.09	
Alpha	1.00	Stream Power (lb/ft s)		15.46	
Frctn Loss (ft)	9.09	Cum Volume (acre-ft)	24.24	289.19	51.08
C & E Loss (ft)	0.02	Cum SA (acres)	14.49	122.78	22.96

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.429

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9876	2728	9889.7	2726	9897.3	2724	9904.8	2722	9920	2720
9931.9	2718	9946.9	2716	9967.3	2714	9991.8	2712	9999	2710
10000	2710	10001.9	2710	10029.4	2712	10034.9	2714	10043.4	2716
10052.6	2718	10060.4	2720						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9876	.065	9991.8	.04	10029.4	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9991.8	10029.4	333	399	386	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2714.23	Element			
Vel Head (ft)	1.01	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2713.22	Reach Len. (ft)	333.00	399.00	386.00
Crit W.S. (ft)	2713.22	Flow Area (sq ft)	9.09	86.32	2.04
E.G. Slope (ft/ft)	0.016290	Area (sq ft)	9.09	86.32	2.04
Q Total (cfs)	731.00	Flow (cfs)	19.03	707.87	4.11
Top Width (ft)	55.88	Top Width (ft)	14.93	37.60	3.35
Vel Total (ft/s)	7.50	Avg. Vel. (ft/s)	2.09	8.20	2.01
Max Chl Dpth (ft)	3.22	Hydr. Depth (ft)	0.61	2.30	0.61
Conv. Total (cfs)	5727.4	Conv. (cfs)	149.1	5546.1	32.2
Length Wtd. (ft)	398.10	Wetted Per. (ft)	14.98	37.95	3.57
Min Ch El (ft)	2710.00	Shear (lb/sq ft)	0.62	2.31	0.58
Alpha	1.16	Stream Power (lb/ft s)	1.29	18.97	1.17
Frctn Loss (ft)	4.89	Cum Volume (acre-ft)	65.58	282.10	102.41
C & E Loss (ft)	0.17	Cum SA (acres)	44.86	128.56	44.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2714.23	Element			
Vel Head (ft)	1.01	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2713.22	Reach Len. (ft)	333.00	399.00	386.00
Crit W.S. (ft)	2713.22	Flow Area (sq ft)	9.09	86.32	2.04
E.G. Slope (ft/ft)	0.016290	Area (sq ft)	9.09	86.32	2.04
Q Total (cfs)	731.00	Flow (cfs)	19.03	707.87	4.11
Top Width (ft)	55.88	Top Width (ft)	14.93	37.60	3.35
Vel Total (ft/s)	7.50	Avg. Vel. (ft/s)	2.09	8.20	2.01
Max Chl Dpth (ft)	3.22	Hydr. Depth (ft)	0.61	2.30	0.61
Conv. Total (cfs)	5727.4	Conv. (cfs)	149.1	5546.1	32.2
Length Wtd. (ft)	398.10	Wetted Per. (ft)	14.98	37.95	3.57
Min Ch El (ft)	2710.00	Shear (lb/sq ft)	0.62	2.31	0.58
Alpha	1.16	Stream Power (lb/ft s)	1.29	18.97	1.17
Frctn Loss (ft)	4.89	Cum Volume (acre-ft)	24.18	288.13	51.07
C & E Loss (ft)	0.17	Cum SA (acres)	14.41	122.23	22.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.354

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9778.9	2720	9791.6	2718	9805.1	2716	9876.6	2714	9901.2	2712
9911.8	2710	9923	2708	9947.7	2706	10000	2704	10000.2	2704
10006.7	2704	10009.8	2706	10016.7	2708	10026.1	2710	10047.8	2712
10065.2	2714	10084.2	2716						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9778.9	.065	9923	.04	10016.7	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9923	10016.7	235	210	191	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2707.43	Element			
Vel Head (ft)	0.44	Wt. n-Val.		0.040	
W.S. Elev (ft)	2706.99	Reach Len. (ft)	235.00	210.00	191.00
Crit W.S. (ft)	2706.54	Flow Area (sq ft)		138.08	
E.G. Slope (ft/ft)	0.009576	Area (sq ft)		138.08	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	77.75	Top Width (ft)		77.75	
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)		5.29	
Max Chl Dpth (ft)	2.99	Hydr. Depth (ft)		1.78	
Conv. Total (cfs)	7470.2	Conv. (cfs)		7470.2	
Length Wtd. (ft)	210.00	Wetted Per. (ft)		78.56	
Min Ch El (ft)	2704.00	Shear (lb/sq ft)		1.05	
Alpha	1.00	Stream Power (lb/ft s)		5.56	
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	65.54	281.07	102.41
C & E Loss (ft)	0.02	Cum SA (acres)	44.80	128.03	44.27

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2707.43	Element			
Vel Head (ft)	0.44	Wt. n-Val.		0.040	
W.S. Elev (ft)	2706.99	Reach Len. (ft)	235.00	210.00	191.00
Crit W.S. (ft)	2706.54	Flow Area (sq ft)		138.06	
E.G. Slope (ft/ft)	0.009579	Area (sq ft)		138.06	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	77.75	Top Width (ft)		77.75	
Vel Total (ft/s)	5.29	Avg. Vel. (ft/s)		5.29	
Max Chl Dpth (ft)	2.99	Hydr. Depth (ft)		1.78	
Conv. Total (cfs)	7468.8	Conv. (cfs)		7468.8	
Length Wtd. (ft)	210.00	Wetted Per. (ft)		78.56	
Min Ch El (ft)	2704.00	Shear (lb/sq ft)		1.05	
Alpha	1.00	Stream Power (lb/ft s)		5.56	
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	24.15	287.10	51.06
C & E Loss (ft)	0.02	Cum SA (acres)	14.35	121.70	22.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.314

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9779.3	2712	9802.8	2710	9821.3	2708	9842.7	2706	9861.5	2704
9893.7	2704	9946.2	2704	9976.2	2702	10000	2702	10015.3	2702
10033.3	2704	10049.8	2706	10097.7	2708	10112.9	2710	10148	2712
10171.6	2714	10177.5	2714						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9779.3	.065	9946.2	.04	10033.3	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9946.2	10033.3	377	428	362	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2704.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.68	Wt. n-Val.		0.040	
W.S. Elev (ft)	2703.82	Reach Len. (ft)	377.00	428.00	362.00
Crit W.S. (ft)	2703.82	Flow Area (sq ft)		110.59	
E.G. Slope (ft/ft)	0.021541	Area (sq ft)		110.59	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	82.69	Top Width (ft)		82.69	
Vel Total (ft/s)	6.61	Avg. Vel. (ft/s)		6.61	
Max Chl Dpth (ft)	1.82	Hydr. Depth (ft)		1.34	
Conv. Total (cfs)	4980.7	Conv. (cfs)		4980.7	
Length Wtd. (ft)	428.00	Wetted Per. (ft)		82.85	
Min Ch El (ft)	2702.00	Shear (lb/sq ft)		1.80	
Alpha	1.00	Stream Power (lb/ft s)		11.87	
Frctn Loss (ft)	6.40	Cum Volume (acre-ft)	65.54	280.47	102.41
C & E Loss (ft)	0.09	Cum SA (acres)	44.80	127.64	44.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2704.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.68	Wt. n-Val.		0.040	
W.S. Elev (ft)	2703.82	Reach Len. (ft)	377.00	428.00	362.00
Crit W.S. (ft)	2703.82	Flow Area (sq ft)		110.61	
E.G. Slope (ft/ft)	0.021527	Area (sq ft)		110.61	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	82.69	Top Width (ft)		82.69	
Vel Total (ft/s)	6.61	Avg. Vel. (ft/s)		6.61	
Max Chl Dpth (ft)	1.82	Hydr. Depth (ft)		1.34	
Conv. Total (cfs)	4982.3	Conv. (cfs)		4982.3	
Length Wtd. (ft)	428.00	Wetted Per. (ft)		82.85	
Min Ch El (ft)	2702.00	Shear (lb/sq ft)		1.79	
Alpha	1.00	Stream Power (lb/ft s)		11.86	
Frctn Loss (ft)	6.43	Cum Volume (acre-ft)	24.15	286.50	51.06
C & E Loss (ft)	0.09	Cum SA (acres)	14.35	121.32	22.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.233

INPUT

Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9836	2702	9838.4	2702	9869.8	2698	9905.9	2696	9952.5	2694
10000	2694	10009.3	2694	10015.9	2696	10029.4	2698	10045.8	2700
10069.8	2702	10088.7	2704	10097.4	2704	10118.2	2702		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9836	.065	9905.9	.04	10015.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9905.9	10015.9	657	500	350	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2696.21	Element			
Vel Head (ft)	0.37	Wt. n-Val.		0.040	
W.S. Elev (ft)	2695.84	Reach Len. (ft)	657.00	500.00	350.00
Crit W.S. (ft)	2695.52	Flow Area (sq ft)		149.34	
E.G. Slope (ft/ft)	0.010993	Area (sq ft)		149.34	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	105.69	Top Width (ft)		105.69	
Vel Total (ft/s)	4.89	Avg. Vel. (ft/s)		4.89	
Max Chl Dpth (ft)	1.84	Hydr. Depth (ft)		1.41	
Conv. Total (cfs)	6972.0	Conv. (cfs)		6972.0	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		106.01	
Min Ch El (ft)	2694.00	Shear (lb/sq ft)		0.97	
Alpha	1.00	Stream Power (lb/ft s)		4.73	
Frctn Loss (ft)	7.63	Cum Volume (acre-ft)	65.54	279.20	102.41
C & E Loss (ft)	0.02	Cum SA (acres)	44.80	126.72	44.27

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2696.21	Element			
Vel Head (ft)	0.37	Wt. n-Val.		0.040	
W.S. Elev (ft)	2695.83	Reach Len. (ft)	657.00	500.00	350.00
Crit W.S. (ft)	2695.52	Flow Area (sq ft)		148.88	
E.G. Slope (ft/ft)	0.011091	Area (sq ft)		148.88	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	105.58	Top Width (ft)		105.58	
Vel Total (ft/s)	4.91	Avg. Vel. (ft/s)		4.91	
Max Chl Dpth (ft)	1.83	Hydr. Depth (ft)		1.41	
Conv. Total (cfs)	6941.0	Conv. (cfs)		6941.0	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		105.89	
Min Ch El (ft)	2694.00	Shear (lb/sq ft)		0.97	
Alpha	1.00	Stream Power (lb/ft s)		4.78	
Frctn Loss (ft)	7.63	Cum Volume (acre-ft)	24.15	285.23	51.06
C & E Loss (ft)	0.02	Cum SA (acres)	14.35	120.39	22.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.138

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9853.9	2696	9904.4	2694	9919.2	2692	9935.1	2690	9973	2688
9989	2686	10000	2686	10006.8	2686	10077.2	2688	10099.3	2690
10123.4	2692								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9853.9	.065	9973	.04	10077.2	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9973	10077.2	358	349	415	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2688.56	Element			
Vel Head (ft)	0.59	Wt. n-Val.		0.040	
W.S. Elev (ft)	2687.97	Reach Len. (ft)	358.00	349.00	415.00
Crit W.S. (ft)	2687.97	Flow Area (sq ft)		118.87	
E.G. Slope (ft/ft)	0.022654	Area (sq ft)		118.87	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	102.89	Top Width (ft)		102.89	
Vel Total (ft/s)	6.15	Avg. Vel. (ft/s)		6.15	
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)		1.16	
Conv. Total (cfs)	4856.8	Conv. (cfs)		4856.8	
Length Wtd. (ft)	349.00	Wetted Per. (ft)		103.04	
Min Ch El (ft)	2686.00	Shear (lb/sq ft)		1.63	
Alpha	1.00	Stream Power (lb/ft s)		10.03	
Frctn Loss (ft)	5.43	Cum Volume (acre-ft)	65.54	277.66	102.41
C & E Loss (ft)	0.12	Cum SA (acres)	44.80	125.52	44.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2688.56	Element			
Vel Head (ft)	0.59	Wt. n-Val.		0.040	
W.S. Elev (ft)	2687.97	Reach Len. (ft)	358.00	349.00	415.00
Crit W.S. (ft)	2687.97	Flow Area (sq ft)		118.61	
E.G. Slope (ft/ft)	0.022783	Area (sq ft)		118.61	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	102.79	Top Width (ft)		102.79	
Vel Total (ft/s)	6.16	Avg. Vel. (ft/s)		6.16	
Max Chl Dpth (ft)	1.97	Hydr. Depth (ft)		1.15	
Conv. Total (cfs)	4843.0	Conv. (cfs)		4843.0	
Length Wtd. (ft)	349.00	Wetted Per. (ft)		102.94	
Min Ch El (ft)	2686.00	Shear (lb/sq ft)		1.64	
Alpha	1.00	Stream Power (lb/ft s)		10.10	
Frctn Loss (ft)	5.42	Cum Volume (acre-ft)	24.15	283.69	51.06
C & E Loss (ft)	0.12	Cum SA (acres)	14.35	119.20	22.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 13.072

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9788.2	2690	9808.9	2688	9835.3	2686	9866.3	2684	9902.9	2682
9997.5	2680	10000	2680	10003.7	2680	10024.1	2682	10112.3	2682
10148.2	2682	10183	2684	10244.7	2684	10281.4	2682	10290.6	2682
10307.5	2684	10340.6	2686	10366	2688	10368.6	2688		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
  9788.2    .065  9866.3     .04   10183    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9866.3   10183              206     238     202            .1        .3
Right Levee     Station=   10183      Elevation=    2684

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)           2682.52   Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.19   Wt. n-Val.                          0.040
  W.S. Elev (ft)           2682.33   Reach Len. (ft)           206.00    238.00     202.00
  Crit W.S. (ft)           2682.13   Flow Area (sq ft)                   210.94
  E.G. Slope (ft/ft)      0.011342   Area (sq ft)                        210.94
  Q Total (cfs)             731.00   Flow (cfs)                          731.00
  Top Width (ft)            257.17   Top Width (ft)                      257.17
  Vel Total (ft/s)            3.47   Avg. Vel. (ft/s)                      3.47
  Max Chl Dpth (ft)           2.33   Hydr. Depth (ft)                      0.82
  Conv. Total (cfs)         6863.8   Conv. (cfs)                        6863.8
  Length Wtd. (ft)          238.00   Wetted Per. (ft)                    257.31
  Min Ch El (ft)           2680.00   Shear (lb/sq ft)                      0.58
  Alpha                       1.00   Stream Power (lb/ft s)                2.01
  Frctn Loss (ft)             3.56   Cum Volume (acre-ft)       65.54    276.34     102.41
  C & E Loss (ft)             0.01   Cum SA (acres)             44.80    124.08      44.27

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT    Profile #Method 1 Fldwy

  E.G. Elev (ft)           2682.52   Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.19   Wt. n-Val.                          0.040
  W.S. Elev (ft)           2682.33   Reach Len. (ft)           206.00    238.00     202.00
  Crit W.S. (ft)           2682.13   Flow Area (sq ft)                   211.38
  E.G. Slope (ft/ft)      0.011264   Area (sq ft)                        211.38
  Q Total (cfs)             731.00   Flow (cfs)                          731.00
  Top Width (ft)            257.17   Top Width (ft)                      257.17
  Vel Total (ft/s)            3.46   Avg. Vel. (ft/s)                      3.46
  Max Chl Dpth (ft)           2.33   Hydr. Depth (ft)                      0.82
  Conv. Total (cfs)         6887.6   Conv. (cfs)                        6887.6
  Length Wtd. (ft)          238.00   Wetted Per. (ft)                    257.31
  Min Ch El (ft)           2680.00   Shear (lb/sq ft)                      0.58
  Alpha                       1.00   Stream Power (lb/ft s)                2.00
  Frctn Loss (ft)             3.56   Cum Volume (acre-ft)       24.15    282.37      51.06
  C & E Loss (ft)             0.01   Cum SA (acres)             14.35    117.75      22.93

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION          RIVER: Rawhide Wash
REACH: Above Pima Road    RS: 13.027

INPUT
Description:
Station Elevation Data    num=      13
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9802.9    2686  9824.7    2684  9835.7    2682  9849.3    2680  9864.3    2678
  9882.8    2678   10000    2678 10085.5    2678 10118.5    2678 10136.5    2680
   10152    2682   10180    2684 10192.6    2684

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9802.9    .065  9849.3     .04 10136.5    .065

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9849.3 10136.5              311     407     468            .1        .3

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)           2678.95   Element                  Left OB    Channel   Right OB
  Vel Head (ft)               0.27   Wt. n-Val.                          0.040
  W.S. Elev (ft)           2678.68   Reach Len. (ft)           311.00    407.00     468.00
  Crit W.S. (ft)           2678.63   Flow Area (sq ft)                   176.39
```

E.G. Slope (ft/ft)	0.021466	Area (sq ft)		176.39	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	265.40	Top Width (ft)		265.40	
Vel Total (ft/s)	4.14	Avg. Vel. (ft/s)		4.14	
Max Chl Dpth (ft)	0.68	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	4989.4	Conv. (cfs)		4989.4	
Length Wtd. (ft)	407.00	Wetted Per. (ft)		265.49	
Min Ch El (ft)	2678.00	Shear (lb/sq ft)		0.89	
Alpha	1.00	Stream Power (lb/ft s)		3.69	
Frctn Loss (ft)	6.72	Cum Volume (acre-ft)	65.54	275.28	102.41
C & E Loss (ft)	0.01	Cum SA (acres)	44.80	122.65	44.27

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2678.95	Element			
Vel Head (ft)	0.27	Wt. n-Val.		0.040	
W.S. Elev (ft)	2678.68	Reach Len. (ft)	311.00	407.00	468.00
Crit W.S. (ft)	2678.63	Flow Area (sq ft)		176.52	
E.G. Slope (ft/ft)	0.021413	Area (sq ft)		176.52	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	265.40	Top Width (ft)		265.40	
Vel Total (ft/s)	4.14	Avg. Vel. (ft/s)		4.14	
Max Chl Dpth (ft)	0.68	Hydr. Depth (ft)		0.67	
Conv. Total (cfs)	4995.5	Conv. (cfs)		4995.5	
Length Wtd. (ft)	407.00	Wetted Per. (ft)		265.48	
Min Ch El (ft)	2678.00	Shear (lb/sq ft)		0.89	
Alpha	1.00	Stream Power (lb/ft s)		3.68	
Frctn Loss (ft)	6.72	Cum Volume (acre-ft)	24.15	281.31	51.06
C & E Loss (ft)	0.01	Cum SA (acres)	14.35	116.33	22.93

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.950

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9849.8	2682	9871.7	2680	9890.3	2678	9904	2676	9919.5	2674
9970	2672	9988	2670	10000	2670	10013.1	2670	10119.9	2672
10288.9	2672	10353	2672.63	10413.1	2674.9				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9849.8	.065	9970	.04	10119.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9970	10119.9	436	500	536	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2672.22	Element			
Vel Head (ft)	0.32	Wt. n-Val.		0.040	
W.S. Elev (ft)	2671.90	Reach Len. (ft)	436.00	500.00	536.00
Crit W.S. (ft)	2671.67	Flow Area (sq ft)		159.96	
E.G. Slope (ft/ft)	0.013110	Area (sq ft)		159.96	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	143.50	Top Width (ft)		143.50	
Vel Total (ft/s)	4.57	Avg. Vel. (ft/s)		4.57	
Max Chl Dpth (ft)	1.90	Hydr. Depth (ft)		1.11	
Conv. Total (cfs)	6384.4	Conv. (cfs)		6384.4	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		143.62	
Min Ch El (ft)	2670.00	Shear (lb/sq ft)		0.91	
Alpha	1.00	Stream Power (lb/ft s)		4.17	
Frctn Loss (ft)	9.42	Cum Volume (acre-ft)	65.54	273.71	102.41
C & E Loss (ft)	0.02	Cum SA (acres)	44.80	120.74	44.27

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2672.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.		0.040	
W.S. Elev (ft)	2671.89	Reach Len. (ft)	436.00	500.00	536.00
Crit W.S. (ft)	2671.66	Flow Area (sq ft)		159.50	
E.G. Slope (ft/ft)	0.013210	Area (sq ft)		159.50	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	143.30	Top Width (ft)		143.30	
Vel Total (ft/s)	4.58	Avg. Vel. (ft/s)		4.58	
Max Chl Dpth (ft)	1.89	Hydr. Depth (ft)		1.11	
Conv. Total (cfs)	6360.0	Conv. (cfs)		6360.0	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		143.43	
Min Ch El (ft)	2670.00	Shear (lb/sq ft)		0.92	
Alpha	1.00	Stream Power (lb/ft s)		4.20	
Frctn Loss (ft)	9.42	Cum Volume (acre-ft)	24.15	279.74	51.06
C & E Loss (ft)	0.02	Cum SA (acres)	14.35	114.42	22.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.855

INPUT
Description:
Station Elevation Data num= 11

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9891.5	2666	9920.7	2664	9966.2	2662	9980.8	2662	9989.1	2662
10000	2662	10038.2	2662	10248.6	2662	10300.5	2662	10327	2664
10358.3	2666								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9891.5	.065	9920.7	.04	10327	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9920.7	10327	414	419	361	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2662.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.040	
W.S. Elev (ft)	2662.52	Reach Len. (ft)	414.00	419.00	361.00
Crit W.S. (ft)	2662.52	Flow Area (sq ft)		180.09	
E.G. Slope (ft/ft)	0.029310	Area (sq ft)		180.09	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	353.16	Top Width (ft)		353.16	
Vel Total (ft/s)	4.06	Avg. Vel. (ft/s)		4.06	
Max Chl Dpth (ft)	0.52	Hydr. Depth (ft)		0.51	
Conv. Total (cfs)	4269.8	Conv. (cfs)		4269.8	
Length Wtd. (ft)	419.00	Wetted Per. (ft)		353.19	
Min Ch El (ft)	2662.00	Shear (lb/sq ft)		0.93	
Alpha	1.00	Stream Power (lb/ft s)		3.79	
Frctn Loss (ft)	4.15	Cum Volume (acre-ft)	65.54	271.76	102.41
C & E Loss (ft)	0.05	Cum SA (acres)	44.80	117.89	44.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to

critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2662.78	Element			
Vel Head (ft)	0.26	Wt. n-Val.		0.040	
W.S. Elev (ft)	2662.52	Reach Len. (ft)	414.00	419.00	361.00
Crit W.S. (ft)	2662.52	Flow Area (sq ft)		180.09	
E.G. Slope (ft/ft)	0.029310	Area (sq ft)		180.09	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	353.16	Top Width (ft)		353.16	
Vel Total (ft/s)	4.06	Avg. Vel. (ft/s)		4.06	
Max Chl Dpth (ft)	0.52	Hydr. Depth (ft)		0.51	
Conv. Total (cfs)	4269.8	Conv. (cfs)		4269.8	
Length Wtd. (ft)	419.00	Wetted Per. (ft)		353.19	
Min Ch El (ft)	2662.00	Shear (lb/sq ft)		0.93	
Alpha	1.00	Stream Power (lb/ft s)		3.79	
Frctn Loss (ft)	4.15	Cum Volume (acre-ft)	24.15	277.79	51.06
C & E Loss (ft)	0.05	Cum SA (acres)	14.35	111.57	22.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.776

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9880.6	2664	9897.5	2662	9924.8	2660	9957.4	2658	9976.9	2656
9995.5	2654	10000	2654	10004	2654	10345.5	2654	10354.2	2654
10367.9	2656	10443.4	2658	10481.2	2660				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9880.6	.065	9976.9	.04	10367.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9976.9	10367.9	343	378	329	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2654.94	Element			
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	2654.86	Reach Len. (ft)	343.00	378.00	329.00
Crit W.S. (ft)	2654.50	Flow Area (sq ft)		314.22	
E.G. Slope (ft/ft)	0.004924	Area (sq ft)		314.22	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	372.58	Top Width (ft)		372.58	
Vel Total (ft/s)	2.33	Avg. Vel. (ft/s)		2.33	
Max Chl Dpth (ft)	0.86	Hydr. Depth (ft)		0.84	
Conv. Total (cfs)	10417.5	Conv. (cfs)		10417.5	
Length Wtd. (ft)	378.00	Wetted Per. (ft)		372.69	
Min Ch El (ft)	2654.00	Shear (lb/sq ft)		0.26	
Alpha	1.00	Stream Power (lb/ft s)		0.60	
Frctn Loss (ft)	3.59	Cum Volume (acre-ft)	65.54	269.38	102.41
C & E Loss (ft)	0.03	Cum SA (acres)	44.80	114.40	44.27

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2654.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.040	
W.S. Elev (ft)	2654.86	Reach Len. (ft)	343.00	378.00	329.00
Crit W.S. (ft)	2654.50	Flow Area (sq ft)		314.22	
E.G. Slope (ft/ft)	0.004924	Area (sq ft)		314.22	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	372.58	Top Width (ft)		372.58	
Vel Total (ft/s)	2.33	Avg. Vel. (ft/s)		2.33	
Max Chl Dpth (ft)	0.86	Hydr. Depth (ft)		0.84	
Conv. Total (cfs)	10417.5	Conv. (cfs)		10417.5	
Length Wtd. (ft)	378.00	Wetted Per. (ft)		372.69	
Min Ch El (ft)	2654.00	Shear (lb/sq ft)		0.26	
Alpha	1.00	Stream Power (lb/ft s)		0.60	
Frctn Loss (ft)	3.59	Cum Volume (acre-ft)	24.15	275.41	51.06
C & E Loss (ft)	0.03	Cum SA (acres)	14.35	108.08	22.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.704

INPUT
Description:
Station Elevation Data num= 13

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9905.6	2658	9924.3	2656	9944.5	2654	9971.4	2652	9978.6	2650
10000	2650	10017.9	2650	10082.1	2650	10123.6	2650	10170.4	2652
10191.9	2654	10247.7	2656	10296.2	2658				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9905.6	.065	9971.4	.04	10170.4	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9971.4	10170.4	399	500	433	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2651.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.		0.040	
W.S. Elev (ft)	2650.89	Reach Len. (ft)	399.00	500.00	433.00
Crit W.S. (ft)	2650.89	Flow Area (sq ft)		140.01	
E.G. Slope (ft/ft)	0.025428	Area (sq ft)		140.01	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	169.07	Top Width (ft)		169.07	
Vel Total (ft/s)	5.22	Avg. Vel. (ft/s)		5.22	
Max Chl Dpth (ft)	0.89	Hydr. Depth (ft)		0.83	
Conv. Total (cfs)	4584.2	Conv. (cfs)		4584.2	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		169.21	
Min Ch El (ft)	2650.00	Shear (lb/sq ft)		1.31	
Alpha	1.00	Stream Power (lb/ft s)		6.86	
Frctn Loss (ft)	6.68	Cum Volume (acre-ft)	65.54	267.41	102.41
C & E Loss (ft)	0.07	Cum SA (acres)	44.80	112.05	44.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2651.31	Element	Left OB	Channel	Right OB

Vel Head (ft)	0.42	Wt. n-Val.		0.040	
W.S. Elev (ft)	2650.89	Reach Len. (ft)	399.00	500.00	433.00
Crit W.S. (ft)	2650.89	Flow Area (sq ft)		140.01	
E.G. Slope (ft/ft)	0.025428	Area (sq ft)		140.01	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	169.07	Top Width (ft)		169.07	
Vel Total (ft/s)	5.22	Avg. Vel. (ft/s)		5.22	
Max Chl Dpth (ft)	0.89	Hydr. Depth (ft)		0.83	
Conv. Total (cfs)	4584.2	Conv. (cfs)		4584.2	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		169.21	
Min Ch El (ft)	2650.00	Shear (lb/sq ft)		1.31	
Alpha	1.00	Stream Power (lb/ft s)		6.86	
Frctn Loss (ft)	6.68	Cum Volume (acre-ft)	24.15	273.44	51.06
C & E Loss (ft)	0.07	Cum SA (acres)	14.35	105.73	22.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.609

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9820.8	2658	9854.2	2656	9881.8	2654	9900.4	2652	9915.5	2650
9928.1	2648	9945.6	2646	9966.1	2644	9983.2	2642	9992.7	2640
10000	2640	10010.6	2640	10022	2642	10123.9	2642	10150.4	2642
10203.8	2644	10248.5	2646	10282.3	2648	10298	2650	10313.2	2652
10324.5	2654	10341.6	2656	10359.9	2658	10371.2	2660		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9820.8	.065	9966.1	.04	10203.8	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9966.1	10203.8	220	222	213	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2643.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.040	
W.S. Elev (ft)	2642.84	Reach Len. (ft)	220.00	222.00	213.00
Crit W.S. (ft)	2642.50	Flow Area (sq ft)		208.83	
E.G. Slope (ft/ft)	0.008222	Area (sq ft)		208.83	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	196.68	Top Width (ft)		196.68	
Vel Total (ft/s)	3.50	Avg. Vel. (ft/s)		3.50	
Max Chl Dpth (ft)	2.84	Hydr. Depth (ft)		1.06	
Conv. Total (cfs)	8062.0	Conv. (cfs)		8062.0	
Length Wtd. (ft)	222.00	Wetted Per. (ft)		197.12	
Min Ch El (ft)	2640.00	Shear (lb/sq ft)		0.54	
Alpha	1.00	Stream Power (lb/ft s)		1.90	
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	65.54	265.41	102.41
C & E Loss (ft)	0.03	Cum SA (acres)	44.80	109.95	44.27

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2643.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.040	

W.S. Elev (ft)	2642.84	Reach Len. (ft)	220.00	222.00	213.00
Crit W.S. (ft)	2642.50	Flow Area (sq ft)		208.83	
E.G. Slope (ft/ft)	0.008222	Area (sq ft)		208.83	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	196.68	Top Width (ft)		196.68	
Vel Total (ft/s)	3.50	Avg. Vel. (ft/s)		3.50	
Max Chl Dpth (ft)	2.84	Hydr. Depth (ft)		1.06	
Conv. Total (cfs)	8062.0	Conv. (cfs)		8062.0	
Length Wtd. (ft)	222.00	Wetted Per. (ft)		197.12	
Min Ch El (ft)	2640.00	Shear (lb/sq ft)		0.54	
Alpha	1.00	Stream Power (lb/ft s)		1.90	
Frctn Loss (ft)	2.91	Cum Volume (acre-ft)	24.15	271.44	51.06
C & E Loss (ft)	0.03	Cum SA (acres)	14.35	103.63	22.93

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.567

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9856.9	2648	9871.2	2648	9886.8	2646	9918.2	2644	9939.2	2642
9949.2	2640	9989.1	2640	9990.3	2640	9994.5	2638	10000	2638
10018.3	2638	10159.1	2640	10176.1	2642	10191.9	2644	10233.7	2646
10268.7	2648	10299	2650						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9856.9	.065	9989.1	.04	10159.1	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9989.1	10159.1	437	425	333	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2640.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.		0.040	
W.S. Elev (ft)	2639.61	Reach Len. (ft)	437.00	425.00	333.00
Crit W.S. (ft)	2639.61	Flow Area (sq ft)		131.82	
E.G. Slope (ft/ft)	0.024301	Area (sq ft)		131.82	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	140.28	Top Width (ft)		140.28	
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)		5.55	
Max Chl Dpth (ft)	1.61	Hydr. Depth (ft)		0.94	
Conv. Total (cfs)	4689.3	Conv. (cfs)		4689.3	
Length Wtd. (ft)	425.00	Wetted Per. (ft)		140.66	
Min Ch El (ft)	2638.00	Shear (lb/sq ft)		1.42	
Alpha	1.00	Stream Power (lb/ft s)		7.88	
Frctn Loss (ft)	6.69	Cum Volume (acre-ft)	65.54	264.54	102.41
C & E Loss (ft)	0.05	Cum SA (acres)	44.80	109.09	44.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2640.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.		0.040	
W.S. Elev (ft)	2639.61	Reach Len. (ft)	437.00	425.00	333.00

Crit W.S. (ft)	2639.61	Flow Area (sq ft)		131.82		
E.G. Slope (ft/ft)	0.024301	Area (sq ft)		131.82		
Q Total (cfs)	731.00	Flow (cfs)		731.00		
Top Width (ft)	140.28	Top Width (ft)		140.28		
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)		5.55		
Max Chl Dpth (ft)	1.61	Hydr. Depth (ft)		0.94		
Conv. Total (cfs)	4689.3	Conv. (cfs)		4689.3		
Length Wtd. (ft)	425.00	Wetted Per. (ft)		140.66		
Min Ch El (ft)	2638.00	Shear (lb/sq ft)		1.42		
Alpha	1.00	Stream Power (lb/ft s)		7.88		
Frctn Loss (ft)	6.69	Cum Volume (acre-ft)	24.15	270.57	51.06	
C & E Loss (ft)	0.05	Cum SA (acres)	14.35	102.77	22.93	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.487

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9797.7	2640	9811.6	2638	9834.9	2636	9851.9	2634	9894.9	2632
9913.4	2632	9960.7	2632	9969	2630	9970.9	2630	9974	2632
9990.2	2632	9994.1	2630	10000	2630	10003.2	2630	10009	2632
10017.9	2634	10039.6	2636	10072.8	2638	10085.1	2640	10102.2	2642
10123.7	2644								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9797.7	.065	9851.9	.04	10017.9	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9851.9	10017.9	287	342	347	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2633.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.040	
W.S. Elev (ft)	2632.98	Reach Len. (ft)	287.00	342.00	347.00
Crit W.S. (ft)	2632.71	Flow Area (sq ft)		167.44	
E.G. Slope (ft/ft)	0.011015	Area (sq ft)		167.44	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	139.54	Top Width (ft)		139.54	
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)		4.37	
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)		1.20	
Conv. Total (cfs)	6965.0	Conv. (cfs)		6965.0	
Length Wtd. (ft)	342.00	Wetted Per. (ft)		141.32	
Min Ch El (ft)	2630.00	Shear (lb/sq ft)		0.81	
Alpha	1.00	Stream Power (lb/ft s)		3.56	
Frctn Loss (ft)	4.91	Cum Volume (acre-ft)	65.54	263.08	102.41
C & E Loss (ft)	0.07	Cum SA (acres)	44.80	107.73	44.27

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2633.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.30	Wt. n-Val.		0.040	
W.S. Elev (ft)	2632.98	Reach Len. (ft)	287.00	342.00	347.00

Crit W.S. (ft)	2632.71	Flow Area (sq ft)		167.44	
E.G. Slope (ft/ft)	0.011015	Area (sq ft)		167.44	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	139.54	Top Width (ft)		139.54	
Vel Total (ft/s)	4.37	Avg. Vel. (ft/s)		4.37	
Max Chl Dpth (ft)	2.98	Hydr. Depth (ft)		1.20	
Conv. Total (cfs)	6965.0	Conv. (cfs)		6965.0	
Length Wtd. (ft)	342.00	Wetted Per. (ft)		141.32	
Min Ch El (ft)	2630.00	Shear (lb/sq ft)		0.81	
Alpha	1.00	Stream Power (lb/ft s)		3.56	
Frctn Loss (ft)	4.91	Cum Volume (acre-ft)	24.15	269.11	51.06
C & E Loss (ft)	0.07	Cum SA (acres)	14.35	101.40	22.93

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.422

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9835.6	2638	9887.9	2636	9896.3	2634	9916.3	2632	9927.8	2630
9947.2	2628	9961	2628	9977.3	2628	9984.7	2626	9995.5	2624
10000	2624	10007.1	2624	10013.7	2626	10035.8	2628	10043.5	2630
10052.7	2632	10065.1	2634	10080.4	2636				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9835.6	.065	9977.3	.04	10035.8	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.3	10035.8	195	222	216	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2628.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.95	Wt. n-Val.		0.040	
W.S. Elev (ft)	2627.35	Reach Len. (ft)	195.00	222.00	216.00
Crit W.S. (ft)	2627.35	Flow Area (sq ft)		93.27	
E.G. Slope (ft/ft)	0.019209	Area (sq ft)		93.27	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	48.94	Top Width (ft)		48.94	
Vel Total (ft/s)	7.84	Avg. Vel. (ft/s)		7.84	
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)		1.91	
Conv. Total (cfs)	5274.3	Conv. (cfs)		5274.3	
Length Wtd. (ft)	222.00	Wetted Per. (ft)		49.66	
Min Ch El (ft)	2624.00	Shear (lb/sq ft)		2.25	
Alpha	1.00	Stream Power (lb/ft s)		17.65	
Frctn Loss (ft)	3.57	Cum Volume (acre-ft)	65.54	262.05	102.41
C & E Loss (ft)	0.09	Cum SA (acres)	44.80	106.99	44.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2628.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.95	Wt. n-Val.		0.040	
W.S. Elev (ft)	2627.35	Reach Len. (ft)	195.00	222.00	216.00
Crit W.S. (ft)	2627.35	Flow Area (sq ft)		93.27	
E.G. Slope (ft/ft)	0.019209	Area (sq ft)		93.27	
Q Total (cfs)	731.00	Flow (cfs)		731.00	

Top Width (ft)	48.94	Top Width (ft)		48.94	
Vel Total (ft/s)	7.84	Avg. Vel. (ft/s)		7.84	
Max Chl Dpth (ft)	3.35	Hydr. Depth (ft)		1.91	
Conv. Total (cfs)	5274.3	Conv. (cfs)		5274.3	
Length Wtd. (ft)	222.00	Wetted Per. (ft)		49.66	
Min Ch El (ft)	2624.00	Shear (lb/sq ft)		2.25	
Alpha	1.00	Stream Power (lb/ft s)		17.65	
Frctn Loss (ft)	3.27	Cum Volume (acre-ft)	24.15	268.09	51.06
C & E Loss (ft)	0.11	Cum SA (acres)	14.35	100.66	22.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.380

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9802.2	2628	9836.4	2626	9917.9	2624	9962.6	2624	9969.2	2624
9987.8	2622	9993.6	2620	10000	2620	10006.1	2620	10011.7	2622
10036.4	2624	10072.7	2624	10121.3	2624	10189.7	2626	10228.4	2628

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9802.2	.065	9969.2	.04	10036.4	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.2	10036.4	368	346	365	.1	.3

Right Levee Station= 10228.5 Elevation= 2628

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2624.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.64	Wt. n-Val.		0.040	
W.S. Elev (ft)	2623.79	Reach Len. (ft)	368.00	346.00	365.00
Crit W.S. (ft)	2623.51	Flow Area (sq ft)		114.10	
E.G. Slope (ft/ft)	0.013641	Area (sq ft)		114.10	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	62.73	Top Width (ft)		62.73	
Vel Total (ft/s)	6.41	Avg. Vel. (ft/s)		6.41	
Max Chl Dpth (ft)	3.79	Hydr. Depth (ft)		1.82	
Conv. Total (cfs)	6258.9	Conv. (cfs)		6258.9	
Length Wtd. (ft)	349.17	Wetted Per. (ft)		63.58	
Min Ch El (ft)	2620.00	Shear (lb/sq ft)		1.53	
Alpha	1.00	Stream Power (lb/ft s)		9.79	
Frctn Loss (ft)	6.01	Cum Volume (acre-ft)	65.54	261.53	102.41
C & E Loss (ft)	0.00	Cum SA (acres)	44.80	106.70	44.27

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2624.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.58	Wt. n-Val.		0.040	
W.S. Elev (ft)	2623.88	Reach Len. (ft)	368.00	346.00	365.00
Crit W.S. (ft)	2623.51	Flow Area (sq ft)		119.70	
E.G. Slope (ft/ft)	0.011668	Area (sq ft)		119.70	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	62.73	Top Width (ft)		62.73	
Vel Total (ft/s)	6.11	Avg. Vel. (ft/s)		6.11	
Max Chl Dpth (ft)	3.88	Hydr. Depth (ft)		1.91	
Conv. Total (cfs)	6767.4	Conv. (cfs)		6767.4	
Length Wtd. (ft)	346.00	Wetted Per. (ft)		63.76	
Min Ch El (ft)	2620.00	Shear (lb/sq ft)		1.37	

Alpha	1.00	Stream Power (lb/ft s)		8.35	
Frctn Loss (ft)	5.04	Cum Volume (acre-ft)	24.15	267.55	51.06
C & E Loss (ft)	0.04	Cum SA (acres)	14.35	100.38	22.93

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.315

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9817.2	2630	9828.5	2628	9840.5	2626	9851.6	2624	9862.9	2622
9887.2	2620	9907.7	2618	9938.8	2618	9985.6	2618	9987.9	2616
10000	2616	10019.4	2616	10029	2618	10075.3	2618	10117.7	2618
10121.1	2618	10171.7	2616	10179.3	2616	10201.5	2618	10228.8	2620
10258.7	2622								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9817.2	.065	9985.6	.04	10029	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9985.6	10029	328	248	179	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2618.41	Element			
Vel Head (ft)	0.63	Wt. n-Val.		0.040	0.065
W.S. Elev (ft)	2617.79	Reach Len. (ft)	328.00	248.00	179.00
Crit W.S. (ft)	2617.79	Flow Area (sq ft)		65.85	71.80
E.G. Slope (ft/ft)	0.022474	Area (sq ft)		65.85	71.80
Q Total (cfs)	731.00	Flow (cfs)		487.24	243.76
Top Width (ft)	114.84	Top Width (ft)		42.14	72.70
Vel Total (ft/s)	5.31	Avg. Vel. (ft/s)		7.40	3.40
Max Chl Dpth (ft)	1.79	Hydr. Depth (ft)		1.56	0.99
Conv. Total (cfs)	4876.1	Conv. (cfs)		3250.1	1626.0
Length Wtd. (ft)	241.61	Wetted Per. (ft)		42.99	72.81
Min Ch El (ft)	2616.00	Shear (lb/sq ft)		2.15	1.38
Alpha	1.43	Stream Power (lb/ft s)		15.90	4.70
Frctn Loss (ft)	3.15	Cum Volume (acre-ft)	65.54	260.81	102.11
C & E Loss (ft)	0.08	Cum SA (acres)	44.80	106.28	43.97

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2619.37	Element			
Vel Head (ft)	1.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	2618.35	Reach Len. (ft)	328.00	248.00	179.00
Crit W.S. (ft)	2618.35	Flow Area (sq ft)		90.26	
E.G. Slope (ft/ft)	0.018822	Area (sq ft)		90.26	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	43.40	Top Width (ft)		43.40	
Vel Total (ft/s)	8.10	Avg. Vel. (ft/s)		8.10	
Max Chl Dpth (ft)	2.35	Hydr. Depth (ft)		2.08	
Conv. Total (cfs)	5328.3	Conv. (cfs)		5328.3	
Length Wtd. (ft)	252.40	Wetted Per. (ft)		45.06	
Min Ch El (ft)	2616.00	Shear (lb/sq ft)		2.35	
Alpha	1.00	Stream Power (lb/ft s)		19.06	
Frctn Loss (ft)	3.47	Cum Volume (acre-ft)	24.15	266.71	51.06

C & E Loss (ft)	0.16	Cum SA (acres)	14.35	99.96	22.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.268

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9621.7	2622	9675.7	2620	9685.3	2618	9698.3	2616	9729.3	2614
9863.3	2614	9967	2614	9976.9	2612	9982.7	2612	9995.4	2612
10000	2612	10008	2612	10022.3	2614	10039.7	2614	10072.8	2614
10172.1	2616	10220.6	2618	10220.8	2618				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9621.7	.065	9967	.04	10022.3	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9967	10022.3	344	287	277	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2614.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2614.42	Reach Len. (ft)	344.00	287.00	277.00
Crit W.S. (ft)	2614.42	Flow Area (sq ft)	100.11	109.38	25.27
E.G. Slope (ft/ft)	0.008499	Area (sq ft)	100.11	109.38	25.27
Q Total (cfs)	731.00	Flow (cfs)	116.45	587.84	26.71
Top Width (ft)	370.57	Top Width (ft)	244.14	55.30	71.13
Vel Total (ft/s)	3.11	Avg. Vel. (ft/s)	1.16	5.37	1.06
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)	0.41	1.98	0.36
Conv. Total (cfs)	7929.1	Conv. (cfs)	1263.1	6376.3	289.8
Length Wtd. (ft)	294.84	Wetted Per. (ft)	244.15	55.64	71.14
Min Ch El (ft)	2612.00	Shear (lb/sq ft)	0.22	1.04	0.19
Alpha	2.42	Stream Power (lb/ft s)	0.25	5.61	0.20
Frctn Loss (ft)	2.84	Cum Volume (acre-ft)	65.16	260.31	101.91
C & E Loss (ft)	0.00	Cum SA (acres)	43.88	106.01	43.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2614.91	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.49	Wt. n-Val.	0.065	0.040	
W.S. Elev (ft)	2614.42	Reach Len. (ft)	344.00	287.00	277.00
Crit W.S. (ft)	2614.42	Flow Area (sq ft)	61.51	109.54	
E.G. Slope (ft/ft)	0.010466	Area (sq ft)	61.51	109.54	
Q Total (cfs)	731.00	Flow (cfs)	80.33	650.67	
Top Width (ft)	202.30	Top Width (ft)	147.00	55.30	
Vel Total (ft/s)	4.27	Avg. Vel. (ft/s)	1.31	5.94	
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)	0.42	1.98	
Conv. Total (cfs)	7145.4	Conv. (cfs)	785.2	6360.2	

Length Wtd. (ft)	295.25	Wetted Per. (ft)	147.42	56.06	
Min Ch El (ft)	2612.00	Shear (lb/sq ft)	0.27	1.28	
Alpha	1.73	Stream Power (lb/ft s)	0.36	7.58	
Frctn Loss (ft)	3.23	Cum Volume (acre-ft)	23.92	266.14	51.06
C & E Loss (ft)	0.01	Cum SA (acres)	13.80	99.68	22.93

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.213

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9694.6	2614	9762.3	2612	9794.3	2610	9837.9	2610	9885	2610
9906.7	2608	9919	2608	9990.5	2608	9993.3	2606	10000	2606
10004.7	2606	10022.6	2608	10144.2	2608	10151.4	2608	10185.9	2610
10216.2	2612	10250.4	2614						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9694.6	.065	9990.5	.04	10022.6	.065

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9990.5	10022.6	370	431	410	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2609.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.37	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2608.74	Reach Len. (ft)	370.00	431.00	410.00
Crit W.S. (ft)	2608.74	Flow Area (sq ft)	64.53	67.10	99.34
E.G. Slope (ft/ft)	0.010992	Area (sq ft)	64.53	67.10	99.34
Q Total (cfs)	731.00	Flow (cfs)	122.27	420.65	188.07
Top Width (ft)	265.36	Top Width (ft)	91.78	32.10	141.48
Vel Total (ft/s)	3.16	Avg. Vel. (ft/s)	1.89	6.27	1.89
Max Chl Dpth (ft)	2.74	Hydr. Depth (ft)	0.70	2.09	0.70
Conv. Total (cfs)	6972.5	Conv. (cfs)	1166.3	4012.3	1793.9
Length Wtd. (ft)	423.20	Wetted Per. (ft)	91.81	32.85	141.50
Min Ch El (ft)	2606.00	Shear (lb/sq ft)	0.48	1.40	0.48
Alpha	2.41	Stream Power (lb/ft s)	0.91	8.79	0.91
Frctn Loss (ft)	3.45	Cum Volume (acre-ft)	64.51	259.73	101.51
C & E Loss (ft)	0.08	Cum SA (acres)	42.56	105.72	43.00

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2609.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.	0.065	0.040	0.065
W.S. Elev (ft)	2608.82	Reach Len. (ft)	370.00	431.00	410.00
Crit W.S. (ft)	2608.82	Flow Area (sq ft)	72.71	69.96	55.55
E.G. Slope (ft/ft)	0.011453	Area (sq ft)	72.71	69.96	55.55
Q Total (cfs)	731.00	Flow (cfs)	152.17	460.32	118.51
Top Width (ft)	191.28	Top Width (ft)	91.78	32.10	67.40
Vel Total (ft/s)	3.69	Avg. Vel. (ft/s)	2.09	6.58	2.13
Max Chl Dpth (ft)	2.82	Hydr. Depth (ft)	0.79	2.18	0.82

Conv. Total (cfs)	6830.7	Conv. (cfs)	1421.9	4301.4	1107.4
Length Wtd. (ft)	422.95	Wetted Per. (ft)	91.90	32.85	68.22
Min Ch El (ft)	2606.00	Shear (lb/sq ft)	0.57	1.52	0.58
Alpha	2.13	Stream Power (lb/ft s)	1.18	10.02	1.24
Frctn Loss (ft)	3.08	Cum Volume (acre-ft)	23.39	265.55	50.89
C & E Loss (ft)	0.11	Cum SA (acres)	12.85	99.39	22.71

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.132

INPUT
Description: Above the confluence with Tributary 2, 3, and 4
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9835.6	2612	9852.8	2610	9860.4	2608	9871.5	2606	9883	2604
9965.7	2602	9978.5	2600	9992	2598	10000	2598	10010.4	2598
10015.6	2600	10283.2	2602	10312.7	2604	10349.8	2604	10370.9	2602
10410.7	2600	10514.9	2598	10533.1	2596	10570.4	2598	10597	2600
10614.8	2602	10632	2604	10644.8	2606	10686.8	2608	10706.9	2610

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9835.6	.07	9965.7	.05	10283.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9965.7	10283.2	472	343	209	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10318.9	10706.9	2604

Right Levee Station=10016.54 Elevation= 2599.98

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2601.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.050	
W.S. Elev (ft)	2601.58	Reach Len. (ft)	472.00	343.00	209.00
Crit W.S. (ft)	2600.85	Flow Area (sq ft)		288.76	
E.G. Slope (ft/ft)	0.006279	Area (sq ft)		288.76	627.28
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	490.18	Top Width (ft)		258.42	231.76
Vel Total (ft/s)	2.53	Avg. Vel. (ft/s)		2.53	
Max Chl Dpth (ft)	5.58	Hydr. Depth (ft)		1.12	
Conv. Total (cfs)	9225.0	Conv. (cfs)		9225.0	
Length Wtd. (ft)	348.56	Wetted Per. (ft)		259.07	
Min Ch El (ft)	2598.00	Shear (lb/sq ft)		0.44	
Alpha	1.00	Stream Power (lb/ft s)		1.11	
Frctn Loss (ft)	4.01	Cum Volume (acre-ft)	64.24	257.97	98.09
C & E Loss (ft)	0.05	Cum SA (acres)	42.17	104.28	41.24

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2601.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.050	
W.S. Elev (ft)	2601.66	Reach Len. (ft)	472.00	343.00	209.00
Crit W.S. (ft)	2600.84	Flow Area (sq ft)		308.63	
E.G. Slope (ft/ft)	0.005034	Area (sq ft)		308.63	
Q Total (cfs)	731.00	Flow (cfs)		731.00	
Top Width (ft)	258.42	Top Width (ft)		258.42	
Vel Total (ft/s)	2.37	Avg. Vel. (ft/s)		2.37	
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)		1.19	
Conv. Total (cfs)	10303.4	Conv. (cfs)		10303.4	
Length Wtd. (ft)	343.00	Wetted Per. (ft)		259.22	
Min Ch El (ft)	2598.00	Shear (lb/sq ft)		0.37	
Alpha	1.00	Stream Power (lb/ft s)		0.89	
Frctn Loss (ft)	3.94	Cum Volume (acre-ft)	23.08	263.68	50.63
C & E Loss (ft)	0.06	Cum SA (acres)	12.47	97.95	22.39

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 12.067

INPUT
Description: Below the confluence with Tributary 2, 3, and 4
Station Elevation Data num= 37

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9442.3	2610	9451.1	2608	9456.2	2606	9466.2	2604	9471.9	2602
9490.6	2600	9513.1	2598	9618.5	2598	9689.8	2598	9728	2596
9796.3	2596	9846.1	2596	9920.7	2594	9937.6	2594	9976.9	2594
9999.2	2592	10000	2592	10002.6	2592	10085.3	2594	10114.5	2596
10169.3	2598	10191.6	2600	10224.1	2602	10241.2	2602	10260.1	2600
10281.9	2600	10335.9	2600	10362.1	2598	10434	2596	10456.8	2594
10461.6	2594	10532.4	2596	10562.7	2598	10583.1	2600	10597.4	2602
10611	2604	10627.4	2606						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9442.3	.07	9846.1	.05	10169.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9846.1	10169.3	465	393	357	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10223.6	10627.4	2602

Right Levee Station= 10114.3 Elevation= 2595.99

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2597.62	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.64	Wt. n-Val.	0.070	0.050	
W.S. Elev (ft)	2596.97	Reach Len. (ft)	465.00	393.00	357.00
Crit W.S. (ft)	2596.49	Flow Area (sq ft)	123.71	818.39	
E.G. Slope (ft/ft)	0.012614	Area (sq ft)	123.71	818.39	222.86
Q Total (cfs)	5666.00	Flow (cfs)	275.96	5390.04	
Top Width (ft)	579.69	Top Width (ft)	136.65	295.01	148.03
Vel Total (ft/s)	6.01	Avg. Vel. (ft/s)	2.23	6.59	
Max Chl Dpth (ft)	4.97	Hydr. Depth (ft)	0.91	2.77	
Conv. Total (cfs)	50449.2	Conv. (cfs)	2457.1	47992.1	
Length Wtd. (ft)	406.02	Wetted Per. (ft)	136.67	295.24	
Min Ch El (ft)	2592.00	Shear (lb/sq ft)	0.71	2.18	
Alpha	1.15	Stream Power (lb/ft s)	1.59	14.38	
Frctn Loss (ft)	6.78	Cum Volume (acre-ft)	63.57	253.61	96.05
C & E Loss (ft)	0.05	Cum SA (acres)	41.43	102.10	40.33

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2597.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.71	Wt. n-Val.		0.050	
W.S. Elev (ft)	2597.03	Reach Len. (ft)	465.00	393.00	357.00
Crit W.S. (ft)	2596.41	Flow Area (sq ft)		835.79	
E.G. Slope (ft/ft)	0.013150	Area (sq ft)		835.79	
Q Total (cfs)	5666.00	Flow (cfs)		5666.00	
Top Width (ft)	296.62	Top Width (ft)		296.62	
Vel Total (ft/s)	6.78	Avg. Vel. (ft/s)		6.78	
Max Chl Dpth (ft)	5.03	Hydr. Depth (ft)		2.82	
Conv. Total (cfs)	49410.8	Conv. (cfs)		49410.8	
Length Wtd. (ft)	404.21	Wetted Per. (ft)		297.89	
Min Ch El (ft)	2592.00	Shear (lb/sq ft)		2.30	
Alpha	1.00	Stream Power (lb/ft s)		15.61	
Frctn Loss (ft)	6.91	Cum Volume (acre-ft)	23.08	259.17	50.63
C & E Loss (ft)	0.04	Cum SA (acres)	12.47	95.77	22.39

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.992

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9557	2594	9606.7	2592	9646.7	2590	9665.2	2588	9739.6	2588
9758.1	2588	9767.2	2588	9814.9	2588	9826.6	2586	9865.4	2586
9879.3	2588	9902.4	2590	9914.4	2590	9930.7	2588	9938.8	2586
9952.9	2586	9989.3	2586	10000	2586	10011.2	2586	10041.3	2588
10084.2	2590	10147.2	2590	10167.6	2590	10172.2	2590	10194.4	2590
10212.2	2592	10228.4	2594						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9557	.07	9914.4	.044	10084.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9914.4	10084.2	369	443	493	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
9557	9760	2591

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2590.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.	0.070	0.044	
W.S. Elev (ft)	2589.65	Reach Len. (ft)	369.00	443.00	493.00
Crit W.S. (ft)	2589.65	Flow Area (sq ft)	316.16	406.23	
E.G. Slope (ft/ft)	0.023255	Area (sq ft)	485.48	406.23	
Q Total (cfs)	5666.00	Flow (cfs)	1771.98	3894.02	
Top Width (ft)	408.00	Top Width (ft)	248.48	159.52	
Vel Total (ft/s)	7.84	Avg. Vel. (ft/s)	5.60	9.59	
Max Chl Dpth (ft)	3.65	Hydr. Depth (ft)	2.28	2.55	
Conv. Total (cfs)	37155.1	Conv. (cfs)	11619.9	25535.2	
Length Wtd. (ft)	436.87	Wetted Per. (ft)	138.77	159.97	
Min Ch El (ft)	2586.00	Shear (lb/sq ft)	3.31	3.69	
Alpha	1.19	Stream Power (lb/ft s)	18.54	35.34	
Frctn Loss (ft)	3.35	Cum Volume (acre-ft)	60.32	248.09	95.14
C & E Loss (ft)	0.21	Cum SA (acres)	39.37	100.05	39.72

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2590.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.	0.070	0.044	
W.S. Elev (ft)	2589.66	Reach Len. (ft)	369.00	443.00	493.00
Crit W.S. (ft)	2589.66	Flow Area (sq ft)	317.38	407.64	
E.G. Slope (ft/ft)	0.023136	Area (sq ft)	317.38	407.64	
Q Total (cfs)	5666.00	Flow (cfs)	1763.86	3902.14	
Top Width (ft)	298.28	Top Width (ft)	138.49	159.78	
Vel Total (ft/s)	7.82	Avg. Vel. (ft/s)	5.56	9.57	
Max Chl Dpth (ft)	3.66	Hydr. Depth (ft)	2.29	2.55	
Conv. Total (cfs)	37250.9	Conv. (cfs)	11596.4	25654.5	
Length Wtd. (ft)	435.33	Wetted Per. (ft)	140.54	160.23	
Min Ch El (ft)	2586.00	Shear (lb/sq ft)	3.26	3.67	
Alpha	1.19	Stream Power (lb/ft s)	18.13	35.17	
Frctn Loss (ft)	4.30	Cum Volume (acre-ft)	21.38	253.56	50.63
C & E Loss (ft)	0.11	Cum SA (acres)	11.73	93.71	22.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.908

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9776	2592	9791.4	2590	9802.3	2588	9812.1	2586	9854.2	2584
9867.1	2582	9938.4	2580	9994.9	2578	10000	2578	10005.1	2578
10051.9	2580	10193.3	2580	10194	2580	10202.8	2582	10211.1	2584
10220.1	2586	10244.4	2588	10263.2	2590	10284.7	2592		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9776	.07	9938.4	.044	10051.9	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9938.4	10051.9	203	247	293	.1	.3

Left Levee Station= 9775.95 Elevation= 2592

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2584.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2584.08	Reach Len. (ft)	203.00	247.00	293.00
Crit W.S. (ft)	2582.46	Flow Area (sq ft)	233.97	587.26	616.52
E.G. Slope (ft/ft)	0.004062	Area (sq ft)	233.97	587.26	616.52
Q Total (cfs)	6445.00	Flow (cfs)	616.10	3779.33	2049.57
Top Width (ft)	359.05	Top Width (ft)	85.97	113.50	159.58
Vel Total (ft/s)	4.48	Avg. Vel. (ft/s)	2.63	6.44	3.32
Max Chl Dpth (ft)	6.08	Hydr. Depth (ft)	2.72	5.17	3.86
Conv. Total (cfs)	101127.7	Conv. (cfs)	9667.1	59301.1	32159.5
Length Wtd. (ft)	251.59	Wetted Per. (ft)	86.16	113.58	160.05
Min Ch El (ft)	2578.00	Shear (lb/sq ft)	0.69	1.31	0.98

Alpha	1.42	Stream Power (lb/ft s)	1.81	8.44	3.25
Frctn Loss (ft)	1.82	Cum Volume (acre-ft)	57.27	243.04	91.65
C & E Loss (ft)	0.14	Cum SA (acres)	37.96	98.66	38.82

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2584.97	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.76	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2584.21	Reach Len. (ft)	203.00	247.00	293.00
Crit W.S. (ft)	2582.78	Flow Area (sq ft)	108.33	601.83	329.01
E.G. Slope (ft/ft)	0.005808	Area (sq ft)	108.33	601.83	329.01
Q Total (cfs)	6445.00	Flow (cfs)	396.54	4707.92	1340.54
Top Width (ft)	220.00	Top Width (ft)	28.40	113.50	78.10
Vel Total (ft/s)	6.20	Avg. Vel. (ft/s)	3.66	7.82	4.07
Max Chl Dpth (ft)	6.21	Hydr. Depth (ft)	3.81	5.30	4.21
Conv. Total (cfs)	84567.3	Conv. (cfs)	5203.1	61774.3	17589.8
Length Wtd. (ft)	250.66	Wetted Per. (ft)	31.83	113.58	82.31
Min Ch El (ft)	2578.00	Shear (lb/sq ft)	1.23	1.92	1.45
Alpha	1.27	Stream Power (lb/ft s)	4.52	15.03	5.91
Frctn Loss (ft)	2.04	Cum Volume (acre-ft)	19.58	248.43	48.76
C & E Loss (ft)	0.08	Cum SA (acres)	11.02	92.32	21.95

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.862

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9792.9	2590	9804.6	2588	9816.5	2586	9824.6	2584	9841.1	2582
9862.1	2580	9897.3	2578	9973.3	2576	10000	2576	10030.5	2576
10031.2	2578	10038.4	2580	10048.8	2582	10056.3	2584	10065.7	2586
10081.8	2588	10111.1	2590	10137.5	2592	10144.6	2592	10154.5	2590

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9792.9	.07	9897.3	.044	10031.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9897.3	10031.2	306	305	292	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2582.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.83	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2580.74	Reach Len. (ft)	306.00	305.00	292.00
Crit W.S. (ft)	2580.74	Flow Area (sq ft)	64.20	558.22	13.97
E.G. Slope (ft/ft)	0.016224	Area (sq ft)	64.20	558.22	13.97
Q Total (cfs)	6445.00	Flow (cfs)	226.45	6175.29	43.26
Top Width (ft)	187.95	Top Width (ft)	42.99	133.90	11.06
Vel Total (ft/s)	10.13	Avg. Vel. (ft/s)	3.53	11.06	3.10
Max Chl Dpth (ft)	4.74	Hydr. Depth (ft)	1.49	4.17	1.26
Conv. Total (cfs)	50599.7	Conv. (cfs)	1777.9	48482.2	339.6
Length Wtd. (ft)	304.76	Wetted Per. (ft)	43.08	135.35	11.40
Min Ch El (ft)	2576.00	Shear (lb/sq ft)	1.51	4.18	1.24

Alpha	1.15	Stream Power (lb/ft s)	5.32	46.21	3.84
Frctn Loss (ft)	4.61	Cum Volume (acre-ft)	56.58	239.79	89.53
C & E Loss (ft)	0.08	Cum SA (acres)	37.65	97.96	38.24

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2582.84	Element			
Vel Head (ft)	1.61	Wt. n-Val.		0.044	0.070
W.S. Elev (ft)	2581.24	Reach Len. (ft)	306.00	305.00	292.00
Crit W.S. (ft)	2580.77	Flow Area (sq ft)		624.48	19.44
E.G. Slope (ft/ft)	0.012302	Area (sq ft)		624.48	19.44
Q Total (cfs)	6445.00	Flow (cfs)		6381.48	63.52
Top Width (ft)	144.96	Top Width (ft)		133.90	11.06
Vel Total (ft/s)	10.01	Avg. Vel. (ft/s)		10.22	3.27
Max Chl Dpth (ft)	5.24	Hydr. Depth (ft)		4.66	1.76
Conv. Total (cfs)	58107.9	Conv. (cfs)		57535.2	572.7
Length Wtd. (ft)	305.08	Wetted Per. (ft)		138.58	11.90
Min Ch El (ft)	2576.00	Shear (lb/sq ft)		3.46	1.26
Alpha	1.03	Stream Power (lb/ft s)		35.37	4.10
Frctn Loss (ft)	4.32	Cum Volume (acre-ft)	19.33	244.95	47.59
C & E Loss (ft)	0.06	Cum SA (acres)	10.95	91.62	21.65

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.804

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9731.3	2578	9766.5	2576	9795.7	2574	9938.8	2572	9953	2572
9974.5	2572	9977.9	2570	10000	2570	10024.1	2570	10030.3	2572
10058	2574	10105.4	2576	10139.8	2578	10167.6	2580		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9731.3	.07	9974.5	.044	10030.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9974.5	10030.3	525	440	400	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9731.3	9840	2578	10066	10167.6	2578

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2577.22	Element			
Vel Head (ft)	1.57	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2575.65	Reach Len. (ft)	525.00	440.00	400.00
Crit W.S. (ft)	2575.65	Flow Area (sq ft)	422.37	305.53	85.16
E.G. Slope (ft/ft)	0.014152	Area (sq ft)	528.88	305.53	105.50
Q Total (cfs)	6445.00	Flow (cfs)	2287.14	3774.47	383.40
Top Width (ft)	325.40	Top Width (ft)	202.85	55.80	66.75
Vel Total (ft/s)	7.93	Avg. Vel. (ft/s)	5.42	12.35	4.50
Max Chl Dpth (ft)	5.65	Hydr. Depth (ft)	3.14	5.48	2.39
Conv. Total (cfs)	54176.7	Conv. (cfs)	19225.7	31728.2	3222.8
Length Wtd. (ft)	458.64	Wetted Per. (ft)	134.51	56.66	35.78

Min Ch El (ft)	2570.00	Shear (lb/sq ft)	2.77	4.76	2.10
Alpha	1.61	Stream Power (lb/ft s)	15.02	58.86	9.47
Frctn Loss (ft)	5.93	Cum Volume (acre-ft)	54.49	236.76	89.13
C & E Loss (ft)	0.23	Cum SA (acres)	36.79	97.30	37.98

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2578.46	Element			
Vel Head (ft)	2.24	Wt. n-Val.	0.070	0.044	
W.S. Elev (ft)	2576.22	Reach Len. (ft)	525.00	440.00	400.00
Crit W.S. (ft)	2576.14	Flow Area (sq ft)	276.18	337.24	
E.G. Slope (ft/ft)	0.016504	Area (sq ft)	276.18	337.24	
Q Total (cfs)	6445.00	Flow (cfs)	1864.11	4580.89	
Top Width (ft)	122.95	Top Width (ft)	67.15	55.80	
Vel Total (ft/s)	10.51	Avg. Vel. (ft/s)	6.75	13.58	
Max Chl Dpth (ft)	6.22	Hydr. Depth (ft)	4.11	6.04	
Conv. Total (cfs)	50167.8	Conv. (cfs)	14510.2	35657.5	
Length Wtd. (ft)	452.29	Wetted Per. (ft)	70.93	60.87	
Min Ch El (ft)	2570.00	Shear (lb/sq ft)	4.01	5.71	
Alpha	1.31	Stream Power (lb/ft s)	27.08	77.54	
Frctn Loss (ft)	7.69	Cum Volume (acre-ft)	18.36	241.59	47.53
C & E Loss (ft)	0.07	Cum SA (acres)	10.72	90.95	21.61

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.720

INPUT
Description: Above the confluence with Tributary 1
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9475.2	2580	9476.1	2580	9485.4	2578	9498	2576	9511.1	2574
9525.2	2572	9563	2570	9608.3	2568	9867.5	2566	9880.1	2564
9881.4	2564	9898.7	2566	9947	2566	9952.7	2566	9957.4	2566
9966.6	2564	10000	2564	10038.8	2564	10088.2	2566	10133.3	2566
10233	2566	10251.1	2568	10272.4	2570	10307.5	2572	10342.3	2574

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9475.2	.07	9952.7	.044	10088.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9952.7	10088.2	590	500	421	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
9475.2	9800	2570

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2568.83	Element			
Vel Head (ft)	0.79	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2568.04	Reach Len. (ft)	590.00	500.00	421.00
Crit W.S. (ft)	2567.74	Flow Area (sq ft)	325.84	478.90	313.59

E.G. Slope (ft/ft)	0.011849	Area (sq ft)	474.57	478.90	313.59
Q Total (cfs)	6445.00	Flow (cfs)	1246.43	4079.52	1119.05
Top Width (ft)	644.00	Top Width (ft)	345.22	135.50	163.28
Vel Total (ft/s)	5.76	Avg. Vel. (ft/s)	3.83	8.52	3.57
Max Chl Dpth (ft)	4.04	Hydr. Depth (ft)	2.13	3.53	1.92
Conv. Total (cfs)	59208.8	Conv. (cfs)	11450.7	37477.7	10280.4
Length Wtd. (ft)	503.53	Wetted Per. (ft)	152.98	135.76	163.40
Min Ch El (ft)	2564.00	Shear (lb/sq ft)	1.58	2.61	1.42
Alpha	1.53	Stream Power (lb/ft s)	6.03	22.23	5.07
Frctn Loss (ft)	7.25	Cum Volume (acre-ft)	48.45	232.80	87.20
C & E Loss (ft)	0.07	Cum SA (acres)	33.49	96.33	36.93

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2570.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.99	Wt. n-Val.		0.044	
W.S. Elev (ft)	2568.70	Reach Len. (ft)	590.00	500.00	421.00
Crit W.S. (ft)	2568.64	Flow Area (sq ft)		569.04	
E.G. Slope (ft/ft)	0.017532	Area (sq ft)		569.04	
Q Total (cfs)	6445.00	Flow (cfs)		6445.00	
Top Width (ft)	135.50	Top Width (ft)		135.50	
Vel Total (ft/s)	11.33	Avg. Vel. (ft/s)		11.33	
Max Chl Dpth (ft)	4.70	Hydr. Depth (ft)		4.20	
Conv. Total (cfs)	48675.7	Conv. (cfs)		48675.7	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		141.16	
Min Ch El (ft)	2564.00	Shear (lb/sq ft)		4.41	
Alpha	1.00	Stream Power (lb/ft s)		49.97	
Frctn Loss (ft)	8.57	Cum Volume (acre-ft)	16.69	237.01	47.53
C & E Loss (ft)	0.09	Cum SA (acres)	10.31	89.99	21.61

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.626

INPUT
Description: Below the confluence with Tributary 1
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9584.1	2570	9609.6	2568	9679	2566	9705.8	2564	9787.6	2562
9901	2560	9920	2558	9921.9	2558	9964.8	2558	9973	2556
10000	2556	10044.2	2556	10133.2	2558	10209.1	2560	10236.1	2562
10256.7	2564	10318.2	2564	10365.3	2564	10395.7	2566	10416.9	2568
10433.4	2570								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9584.1	.07	9964.8	.044	10133.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9964.8	10133.2	433	500	528	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2561.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.49	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2560.02	Reach Len. (ft)	433.00	500.00	528.00
Crit W.S. (ft)	2560.02	Flow Area (sq ft)	109.59	578.99	77.07
E.G. Slope (ft/ft)	0.017815	Area (sq ft)	109.59	578.99	77.07
Q Total (cfs)	6600.00	Flow (cfs)	440.84	5939.01	220.14
Top Width (ft)	309.18	Top Width (ft)	64.67	168.40	76.11

Vel Total (ft/s)	8.62	Avg. Vel. (ft/s)	4.02	10.26	2.86
Max Chl Dpth (ft)	4.02	Hydr. Depth (ft)	1.69	3.44	1.01
Conv. Total (cfs)	49447.6	Conv. (cfs)	3302.8	44495.5	1649.3
Length Wtd. (ft)	487.05	Wetted Per. (ft)	64.78	168.66	76.13
Min Ch El (ft)	2556.00	Shear (lb/sq ft)	1.88	3.82	1.13
Alpha	1.29	Stream Power (lb/ft s)	7.57	39.16	3.22
Frctn Loss (ft)	8.03	Cum Volume (acre-ft)	44.49	226.73	85.32
C & E Loss (ft)	0.12	Cum SA (acres)	30.71	94.59	35.77

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2562.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.68	Wt. n-Val.		0.044	
W.S. Elev (ft)	2560.35	Reach Len. (ft)	433.00	500.00	528.00
Crit W.S. (ft)	2560.19	Flow Area (sq ft)		634.86	
E.G. Slope (ft/ft)	0.016788	Area (sq ft)		634.86	
Q Total (cfs)	6600.00	Flow (cfs)		6600.00	
Top Width (ft)	168.40	Top Width (ft)		168.40	
Vel Total (ft/s)	10.40	Avg. Vel. (ft/s)		10.40	
Max Chl Dpth (ft)	4.35	Hydr. Depth (ft)		3.77	
Conv. Total (cfs)	50938.9	Conv. (cfs)		50938.9	
Length Wtd. (ft)	489.15	Wetted Per. (ft)		173.36	
Min Ch El (ft)	2556.00	Shear (lb/sq ft)		3.84	
Alpha	1.00	Stream Power (lb/ft s)		39.90	
Frctn Loss (ft)	8.00	Cum Volume (acre-ft)	16.69	230.10	47.53
C & E Loss (ft)	0.07	Cum SA (acres)	10.31	88.24	21.61

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.531

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9584.5	2560	9598	2558	9627.2	2556	9653.2	2554	9691.2	2552
9714.5	2550	9743.3	2550	9768.2	2550	9788.9	2550	9807.8	2550
9939	2550	9972.7	2550	9979.2	2548	10000	2548	10057.8	2548
10064	2550	10088	2550	10104.2	2550	10136	2552	10165.4	2554

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9584.5	.07	9972.7	.044	10064	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9972.7	10064	503	374	386	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2553.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.08	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2552.11	Reach Len. (ft)	503.00	374.00	386.00
Crit W.S. (ft)	2552.11	Flow Area (sq ft)	570.46	362.44	120.13
E.G. Slope (ft/ft)	0.015289	Area (sq ft)	570.46	362.44	120.13
Q Total (cfs)	6600.00	Flow (cfs)	2385.66	3777.51	436.83
Top Width (ft)	448.47	Top Width (ft)	283.57	91.30	73.60
Vel Total (ft/s)	6.27	Avg. Vel. (ft/s)	4.18	10.42	3.64
Max Chl Dpth (ft)	4.11	Hydr. Depth (ft)	2.01	3.97	1.63
Conv. Total (cfs)	53376.5	Conv. (cfs)	19293.7	30550.1	3532.8
Length Wtd. (ft)	398.51	Wetted Per. (ft)	283.66	91.92	73.67
Min Ch El (ft)	2548.00	Shear (lb/sq ft)	1.92	3.76	1.56

Alpha	1.77	Stream Power (lb/ft s)	8.03	39.23	5.66
Frctn Loss (ft)	6.64	Cum Volume (acre-ft)	41.11	221.33	84.12
C & E Loss (ft)	0.00	Cum SA (acres)	28.98	93.10	34.86

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2553.95	Element			
Vel Head (ft)	1.43	Wt. n-Val.	0.070	0.044	
W.S. Elev (ft)	2552.52	Reach Len. (ft)	503.00	374.00	386.00
Crit W.S. (ft)	2552.52	Flow Area (sq ft)	434.79	399.75	
E.G. Slope (ft/ft)	0.015959	Area (sq ft)	434.79	399.75	
Q Total (cfs)	6600.00	Flow (cfs)	2137.04	4462.96	
Top Width (ft)	264.00	Top Width (ft)	172.70	91.30	
Vel Total (ft/s)	7.91	Avg. Vel. (ft/s)	4.92	11.16	
Max Chl Dpth (ft)	4.52	Hydr. Depth (ft)	2.52	4.38	
Conv. Total (cfs)	52244.0	Conv. (cfs)	16916.3	35327.7	
Length Wtd. (ft)	395.08	Wetted Per. (ft)	175.22	94.43	
Min Ch El (ft)	2548.00	Shear (lb/sq ft)	2.47	4.22	
Alpha	1.47	Stream Power (lb/ft s)	12.15	47.09	
Frctn Loss (ft)	6.75	Cum Volume (acre-ft)	14.53	224.16	47.53
C & E Loss (ft)	0.04	Cum SA (acres)	9.45	86.75	21.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.460

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9801.2	2550	9811.6	2548	9832.6	2546	9848.9	2544	9978.8	2542
10000	2542	10049.1	2542	10059.3	2542	10088.2	2542	10098.3	2544
10107.3	2544	10157.3	2542	10160.4	2542	10171.3	2544	10183.7	2546
10192.6	2546	10203.9	2546	10259.5	2548	10312.7	2550	10368.5	2548

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9801.2	.07	9848.9	.044	10098.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9848.9	10098.3	260	265	337	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2546.33	Element			
Vel Head (ft)	1.10	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2545.23	Reach Len. (ft)	260.00	265.00	337.00
Crit W.S. (ft)	2545.13	Flow Area (sq ft)	6.20	666.35	161.83
E.G. Slope (ft/ft)	0.018254	Area (sq ft)	6.20	666.35	161.83
Q Total (cfs)	6600.00	Flow (cfs)	12.81	5850.72	736.47
Top Width (ft)	340.10	Top Width (ft)	10.05	249.40	80.65
Vel Total (ft/s)	7.91	Avg. Vel. (ft/s)	2.07	8.78	4.55
Max Chl Dpth (ft)	3.23	Hydr. Depth (ft)	0.62	2.67	2.01

Conv. Total (cfs)	48850.6	Conv. (cfs)	94.8	43304.7	5451.1
Length Wtd. (ft)	269.01	Wetted Per. (ft)	10.13	249.61	80.97
Min Ch El (ft)	2542.00	Shear (lb/sq ft)	0.70	3.04	2.28
Alpha	1.13	Stream Power (lb/ft s)	1.44	26.71	10.37
Frctn Loss (ft)	5.33	Cum Volume (acre-ft)	37.78	216.91	82.87
C & E Loss (ft)	0.05	Cum SA (acres)	27.29	91.64	34.18

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2546.74	Element			
Vel Head (ft)	1.31	Wt. n-Val.	0.070	0.044	
W.S. Elev (ft)	2545.43	Reach Len. (ft)	260.00	265.00	337.00
Crit W.S. (ft)	2545.36	Flow Area (sq ft)	8.18	715.67	
E.G. Slope (ft/ft)	0.018336	Area (sq ft)	8.18	715.67	
Q Total (cfs)	6600.00	Flow (cfs)	20.15	6579.85	
Top Width (ft)	259.45	Top Width (ft)	10.05	249.40	
Vel Total (ft/s)	9.12	Avg. Vel. (ft/s)	2.46	9.19	
Max Chl Dpth (ft)	3.43	Hydr. Depth (ft)	0.81	2.87	
Conv. Total (cfs)	48740.7	Conv. (cfs)	148.8	48591.9	
Length Wtd. (ft)	264.99	Wetted Per. (ft)	10.32	251.04	
Min Ch El (ft)	2542.00	Shear (lb/sq ft)	0.91	3.26	
Alpha	1.01	Stream Power (lb/ft s)	2.23	30.00	
Frctn Loss (ft)	5.22	Cum Volume (acre-ft)	11.98	219.37	47.53
C & E Loss (ft)	0.05	Cum SA (acres)	8.40	85.29	21.61

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.410

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9737.6	2544	9758.5	2542	9770.3	2542	9772.9	2542	9813.4	2540
9827.2	2538	9853.5	2538	9928.6	2538	9961.9	2538	9963.2	2538
10000	2538	10103.9	2538	10122.9	2538	10180.1	2538	10201.6	2538
10358	2538	10384	2540	10405	2542				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9737.6	.07	9813.4	.044	10384	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9813.4	10384	256	400	502	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10242	10405	2542

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2540.95	Element			
Vel Head (ft)	0.95	Wt. n-Val.		0.044	
W.S. Elev (ft)	2540.00	Reach Len. (ft)	256.00	400.00	502.00
Crit W.S. (ft)	2539.97	Flow Area (sq ft)		845.28	
E.G. Slope (ft/ft)	0.021624	Area (sq ft)	0.00	1103.91	0.00
Q Total (cfs)	6600.00	Flow (cfs)		6600.00	
Top Width (ft)	570.73	Top Width (ft)	0.09	570.60	0.05
Vel Total (ft/s)	7.81	Avg. Vel. (ft/s)		7.81	
Max Chl Dpth (ft)	2.00	Hydr. Depth (ft)		1.97	
Conv. Total (cfs)	44882.9	Conv. (cfs)		44882.9	
Length Wtd. (ft)	393.31	Wetted Per. (ft)		428.74	
Min Ch El (ft)	2538.00	Shear (lb/sq ft)		2.66	
Alpha	1.00	Stream Power (lb/ft s)		20.78	
Frctn Loss (ft)	6.65	Cum Volume (acre-ft)	37.76	211.53	82.24
C & E Loss (ft)	0.03	Cum SA (acres)	27.26	89.14	33.87

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2541.47	Element			
Vel Head (ft)	1.13	Wt. n-Val.	0.070	0.044	
W.S. Elev (ft)	2540.34	Reach Len. (ft)	256.00	400.00	502.00
Crit W.S. (ft)	2540.34	Flow Area (sq ft)	0.03	774.12	
E.G. Slope (ft/ft)	0.021202	Area (sq ft)	0.03	774.12	
Q Total (cfs)	6600.00	Flow (cfs)	0.02	6599.98	
Top Width (ft)	336.69	Top Width (ft)	0.09	336.60	
Vel Total (ft/s)	8.53	Avg. Vel. (ft/s)	0.53	8.53	
Max Chl Dpth (ft)	2.34	Hydr. Depth (ft)	0.34	2.30	
Conv. Total (cfs)	45326.4	Conv. (cfs)	0.1	45326.3	
Length Wtd. (ft)	400.00	Wetted Per. (ft)	0.43	339.08	
Min Ch El (ft)	2538.00	Shear (lb/sq ft)	0.10	3.02	
Alpha	1.00	Stream Power (lb/ft s)	0.05	25.76	
Frctn Loss (ft)	6.47	Cum Volume (acre-ft)	11.95	214.84	47.53
C & E Loss (ft)	0.05	Cum SA (acres)	8.37	83.51	21.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.334

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9578.9	2542	9599.2	2540	9613.7	2538	9624.2	2536	9634.8	2534
9664.9	2532	9753.8	2532	9775.1	2534	9796.8	2534	9813.3	2532
9842	2532	9853	2532	9959.2	2530	9969.4	2530	9978.7	2530
10000	2530	10040.6	2530	10064.6	2530	10081.5	2530	10118	2532
10142.4	2534	10158.7	2536	10228.5	2538	10247.1	2540		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9578.9	.07	9853	.044	10142.4	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9853	10142.4	497	500	503	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2534.27	Element			
Vel Head (ft)	0.85	Wt. n-Val.	0.070	0.044	
W.S. Elev (ft)	2533.42	Reach Len. (ft)	497.00	500.00	503.00
Crit W.S. (ft)	2533.19	Flow Area (sq ft)	216.52	775.40	
E.G. Slope (ft/ft)	0.013597	Area (sq ft)	216.52	775.40	
Q Total (cfs)	6600.00	Flow (cfs)	613.24	5986.76	
Top Width (ft)	459.05	Top Width (ft)	176.75	282.30	
Vel Total (ft/s)	6.65	Avg. Vel. (ft/s)	2.83	7.72	
Max Chl Dpth (ft)	3.42	Hydr. Depth (ft)	1.23	2.75	
Conv. Total (cfs)	56600.7	Conv. (cfs)	5259.1	51341.6	
Length Wtd. (ft)	499.60	Wetted Per. (ft)	176.95	282.43	
Min Ch El (ft)	2530.00	Shear (lb/sq ft)	1.04	2.33	
Alpha	1.24	Stream Power (lb/ft s)	2.94	17.99	
Frctn Loss (ft)	8.35	Cum Volume (acre-ft)	37.13	202.90	82.24
C & E Loss (ft)	0.03	Cum SA (acres)	26.74	85.23	33.87

Warning: Divided flow computed for this cross-section.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2534.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.		0.044	
W.S. Elev (ft)	2533.65	Reach Len. (ft)	497.00	500.00	503.00
Crit W.S. (ft)	2533.22	Flow Area (sq ft)		840.18	
E.G. Slope (ft/ft)	0.012759	Area (sq ft)		840.18	
Q Total (cfs)	6600.00	Flow (cfs)		6600.00	
Top Width (ft)	282.30	Top Width (ft)		282.30	
Vel Total (ft/s)	7.86	Avg. Vel. (ft/s)		7.86	
Max Chl Dpth (ft)	3.65	Hydr. Depth (ft)		2.98	
Conv. Total (cfs)	58430.2	Conv. (cfs)		58430.2	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		284.31	
Min Ch El (ft)	2530.00	Shear (lb/sq ft)		2.35	
Alpha	1.00	Stream Power (lb/ft s)		18.49	
Frctn Loss (ft)	7.95	Cum Volume (acre-ft)	11.95	207.43	47.53
C & E Loss (ft)	0.05	Cum SA (acres)	8.37	80.67	21.61

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.240

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9659	2534	9671.9	2532	9680.1	2530	9688.4	2528	9768.3	2526
9788.5	2524	9853.9	2522	9879.5	2522	9912.9	2524	9921	2524
9938.9	2522	10000	2522	10028	2522	10098.4	2522	10115	2522
10155.7	2524	10257.8	2526						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9659	.07	9921	.044	10155.7	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9921	10155.7	451	449	478	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2525.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.11	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2524.78	Reach Len. (ft)	451.00	449.00	478.00
Crit W.S. (ft)	2524.78	Flow Area (sq ft)	255.78	592.78	15.35
E.G. Slope (ft/ft)	0.021152	Area (sq ft)	255.78	592.78	15.35
Q Total (cfs)	6600.00	Flow (cfs)	1177.53	5397.28	25.19
Top Width (ft)	414.62	Top Width (ft)	140.33	234.70	39.58
Vel Total (ft/s)	7.64	Avg. Vel. (ft/s)	4.60	9.10	1.64
Max Chl Dpth (ft)	2.78	Hydr. Depth (ft)	1.82	2.53	0.39
Conv. Total (cfs)	45380.1	Conv. (cfs)	8096.4	37110.5	173.2
Length Wtd. (ft)	449.23	Wetted Per. (ft)	140.46	234.86	39.59
Min Ch El (ft)	2522.00	Shear (lb/sq ft)	2.40	3.33	0.51
Alpha	1.23	Stream Power (lb/ft s)	11.07	30.35	0.84
Frctn Loss (ft)	6.67	Cum Volume (acre-ft)	34.43	195.05	82.16
C & E Loss (ft)	0.07	Cum SA (acres)	24.93	82.26	33.64

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2526.61	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.46	Wt. n-Val.		0.044	
W.S. Elev (ft)	2525.15	Reach Len. (ft)	451.00	449.00	478.00
Crit W.S. (ft)	2525.15	Flow Area (sq ft)		679.99	
E.G. Slope (ft/ft)	0.020278	Area (sq ft)		679.99	
Q Total (cfs)	6600.00	Flow (cfs)		6600.00	
Top Width (ft)	234.70	Top Width (ft)		234.70	
Vel Total (ft/s)	9.71	Avg. Vel. (ft/s)		9.71	
Max Chl Dpth (ft)	3.15	Hydr. Depth (ft)		2.90	
Conv. Total (cfs)	46347.9	Conv. (cfs)		46347.9	
Length Wtd. (ft)	449.00	Wetted Per. (ft)		237.15	
Min Ch El (ft)	2522.00	Shear (lb/sq ft)		3.63	
Alpha	1.00	Stream Power (lb/ft s)		35.23	
Frctn Loss (ft)	6.53	Cum Volume (acre-ft)	11.95	198.71	47.53
C & E Loss (ft)	0.17	Cum SA (acres)	8.37	77.70	21.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.155

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9845.1	2524	9877.9	2522	9938.4	2520	9960.2	2518	9963.8	2516
9969.5	2514	9986	2512	10000	2512	10048.5	2512	10154.9	2512
10177.2	2512	10185.2	2512	10208	2512	10221.4	2514	10249.5	2516
10277.8	2518	10293.3	2520						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9845.1	.07	9963.8	.044	10249.5	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9963.8	10249.5	326	325	355	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2516.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.		0.044	
W.S. Elev (ft)	2515.50	Reach Len. (ft)	326.00	325.00	355.00
Crit W.S. (ft)	2514.91	Flow Area (sq ft)		870.29	
E.G. Slope (ft/ft)	0.011001	Area (sq ft)		870.29	
Q Total (cfs)	6600.00	Flow (cfs)		6600.00	
Top Width (ft)	277.22	Top Width (ft)		277.22	
Vel Total (ft/s)	7.58	Avg. Vel. (ft/s)		7.58	
Max Chl Dpth (ft)	3.50	Hydr. Depth (ft)		3.14	
Conv. Total (cfs)	62925.7	Conv. (cfs)		62925.7	
Length Wtd. (ft)	325.00	Wetted Per. (ft)		277.80	
Min Ch El (ft)	2512.00	Shear (lb/sq ft)		2.15	
Alpha	1.00	Stream Power (lb/ft s)		16.32	
Frctn Loss (ft)	4.82	Cum Volume (acre-ft)	33.11	187.51	82.07
C & E Loss (ft)	0.03	Cum SA (acres)	24.20	79.62	33.42

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2516.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.		0.044	
W.S. Elev (ft)	2515.50	Reach Len. (ft)	326.00	325.00	355.00

Crit W.S. (ft)	2514.91	Flow Area (sq ft)		872.05	
E.G. Slope (ft/ft)	0.010933	Area (sq ft)		872.05	
Q Total (cfs)	6600.00	Flow (cfs)		6600.00	
Top Width (ft)	277.33	Top Width (ft)		277.33	
Vel Total (ft/s)	7.57	Avg. Vel. (ft/s)		7.57	
Max Chl Dpth (ft)	3.50	Hydr. Depth (ft)		3.14	
Conv. Total (cfs)	63121.6	Conv. (cfs)		63121.6	
Length Wtd. (ft)	325.00	Wetted Per. (ft)		277.91	
Min Ch El (ft)	2512.00	Shear (lb/sq ft)		2.14	
Alpha	1.00	Stream Power (lb/ft s)		16.21	
Frctn Loss (ft)	4.82	Cum Volume (acre-ft)	11.95	190.71	47.53
C & E Loss (ft)	0.03	Cum SA (acres)	8.37	75.06	21.61

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.093

INPUT
Description:
Station Elevation Data num= 12

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9693.7	2514	9716.5	2512	9733.5	2510	9762	2508	9884.6	2508
9995.9	2508	10000	2508	10138.8	2508	10149.2	2510	10152.2	2512
10159.4	2514	10170.2	2514						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9693.7	.07	9733.5	.044	10149.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9733.5	10149.2	417	349	310	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
9693.7	9825	2513

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2511.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.		0.044	0.070
W.S. Elev (ft)	2510.39	Reach Len. (ft)	417.00	349.00	310.00
Crit W.S. (ft)	2510.39	Flow Area (sq ft)		763.45	0.11
E.G. Slope (ft/ft)	0.020932	Area (sq ft)	0.64	953.36	0.11
Q Total (cfs)	6600.00	Flow (cfs)		6599.90	0.10
Top Width (ft)	419.57	Top Width (ft)	3.29	415.70	0.58
Vel Total (ft/s)	8.64	Avg. Vel. (ft/s)		8.64	0.91
Max Chl Dpth (ft)	2.39	Hydr. Depth (ft)		2.35	0.19
Conv. Total (cfs)	45618.5	Conv. (cfs)		45617.8	0.7
Length Wtd. (ft)	349.00	Wetted Per. (ft)		324.39	0.70
Min Ch El (ft)	2508.00	Shear (lb/sq ft)		3.08	0.21
Alpha	1.00	Stream Power (lb/ft s)		26.59	0.19
Frctn Loss (ft)	5.23	Cum Volume (acre-ft)	33.11	180.70	82.07
C & E Loss (ft)	0.18	Cum SA (acres)	24.19	77.03	33.42

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2511.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.16	Wt. n-Val.		0.044	0.070
W.S. Elev (ft)	2510.39	Reach Len. (ft)	417.00	349.00	310.00

Crit W.S. (ft)	2510.39	Flow Area (sq ft)		763.45	0.11
E.G. Slope (ft/ft)	0.021137	Area (sq ft)		763.45	0.11
Q Total (cfs)	6600.00	Flow (cfs)		6599.90	0.10
Top Width (ft)	324.78	Top Width (ft)		324.20	0.58
Vel Total (ft/s)	8.64	Avg. Vel. (ft/s)		8.64	0.91
Max Chl Dpth (ft)	2.39	Hydr. Depth (ft)		2.35	0.19
Conv. Total (cfs)	45396.1	Conv. (cfs)		45395.4	0.7
Length Wtd. (ft)	349.00	Wetted Per. (ft)		326.78	0.70
Min Ch El (ft)	2508.00	Shear (lb/sq ft)		3.08	0.21
Alpha	1.00	Stream Power (lb/ft s)		26.65	0.19
Frctn Loss (ft)	4.96	Cum Volume (acre-ft)	11.95	184.61	47.53
C & E Loss (ft)	0.19	Cum SA (acres)	8.37	72.82	21.61

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 11.027

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9447.1	2506	9454.3	2508	9462.3	2508	9479.7	2506	9521.8	2504
9590.5	2502	9595.5	2502	9716.6	2502	9826.6	2502	9927.5	2502
10000	2502	10032.3	2502	10033.8	2504	10039	2506	10042.4	2508
10072.7	2510								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9447.1	.07	9521.8	.044	10033.8	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9521.8	10033.8	341	410	435	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2504.85	Element			
Vel Head (ft)	0.55	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2504.29	Reach Len. (ft)	341.00	410.00	435.00
Crit W.S. (ft)	2503.85	Flow Area (sq ft)	0.91	1104.55	0.11
E.G. Slope (ft/ft)	0.011259	Area (sq ft)	0.91	1104.55	0.11
Q Total (cfs)	6600.00	Flow (cfs)	0.57	6599.36	0.07
Top Width (ft)	518.96	Top Width (ft)	6.20	512.00	0.77
Vel Total (ft/s)	5.97	Avg. Vel. (ft/s)	0.63	5.97	0.60
Max Chl Dpth (ft)	2.29	Hydr. Depth (ft)	0.15	2.16	0.15
Conv. Total (cfs)	62201.2	Conv. (cfs)	5.4	62195.2	0.6
Length Wtd. (ft)	398.23	Wetted Per. (ft)	6.21	513.03	0.82
Min Ch El (ft)	2502.00	Shear (lb/sq ft)	0.10	1.51	0.10
Alpha	1.00	Stream Power (lb/ft s)	0.06	9.04	0.06
Frctn Loss (ft)	5.23	Cum Volume (acre-ft)	33.10	172.46	82.07
C & E Loss (ft)	0.07	Cum SA (acres)	24.14	73.32	33.41

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2504.88	Element			
Vel Head (ft)	0.52	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2504.36	Reach Len. (ft)	341.00	410.00	435.00

Crit W.S. (ft)	2503.85	Flow Area (sq ft)	1.31	1137.67	0.16
E.G. Slope (ft/ft)	0.010201	Area (sq ft)	1.31	1137.67	0.16
Q Total (cfs)	6600.00	Flow (cfs)	0.99	6598.89	0.11
Top Width (ft)	518.97	Top Width (ft)	6.20	512.00	0.77
Vel Total (ft/s)	5.79	Avg. Vel. (ft/s)	0.76	5.80	0.69
Max Chl Dpth (ft)	2.36	Hydr. Depth (ft)	0.21	2.22	0.21
Conv. Total (cfs)	65345.8	Conv. (cfs)	9.8	65334.8	1.1
Length Wtd. (ft)	399.51	Wetted Per. (ft)	6.27	513.03	0.89
Min Ch El (ft)	2502.00	Shear (lb/sq ft)	0.13	1.41	0.12
Alpha	1.00	Stream Power (lb/ft s)	0.10	8.19	0.08
Frctn Loss (ft)	5.00	Cum Volume (acre-ft)	11.95	176.99	47.53
C & E Loss (ft)	0.09	Cum SA (acres)	8.34	69.47	21.61

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.949

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9623.7	2506	9633.1	2504	9645.1	2502	9659.9	2500	9677.2	2498
9683	2496	9714.5	2496	9736.8	2498	9749.7	2500	9762.9	2500
9776.5	2498	9789.7	2496	9811.6	2496	9819.8	2496	9852.1	2496
9857.2	2496	9935.9	2496	9960.7	2496	9977.7	2494	10000	2494
10050.2	2494	10061.3	2496	10069.7	2498	10081.1	2500	10092.3	2502
10138.6	2504								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9623.7	.07	9960.7	.044	10061.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9960.7	10061.3	406	390	388	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2499.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.24	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2498.31	Reach Len. (ft)	406.00	390.00	388.00
Crit W.S. (ft)	2498.31	Flow Area (sq ft)	522.21	405.20	11.25
E.G. Slope (ft/ft)	0.015508	Area (sq ft)	522.21	405.20	11.25
Q Total (cfs)	6600.00	Flow (cfs)	2263.26	4305.43	31.31
Top Width (ft)	361.28	Top Width (ft)	250.53	100.60	10.15
Vel Total (ft/s)	7.03	Avg. Vel. (ft/s)	4.33	10.63	2.78
Max Chl Dpth (ft)	4.31	Hydr. Depth (ft)	2.08	4.03	1.11
Conv. Total (cfs)	52998.5	Conv. (cfs)	18174.1	34572.9	251.4
Length Wtd. (ft)	395.19	Wetted Per. (ft)	251.17	100.90	10.41
Min Ch El (ft)	2494.00	Shear (lb/sq ft)	2.01	3.89	1.05
Alpha	1.62	Stream Power (lb/ft s)	8.72	41.31	2.91
Frctn Loss (ft)	5.50	Cum Volume (acre-ft)	31.05	165.35	82.01
C & E Loss (ft)	0.13	Cum SA (acres)	23.14	70.44	33.36

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2499.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.38	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2498.42	Reach Len. (ft)	406.00	390.00	388.00
Crit W.S. (ft)	2498.42	Flow Area (sq ft)	433.29	416.62	12.40

E.G. Slope (ft/ft)	0.015746	Area (sq ft)	433.29	416.62	12.40
Q Total (cfs)	6600.00	Flow (cfs)	2019.15	4544.00	36.85
Top Width (ft)	297.81	Top Width (ft)	187.06	100.60	10.15
Vel Total (ft/s)	7.65	Avg. Vel. (ft/s)	4.66	10.91	2.97
Max Chl Dpth (ft)	4.42	Hydr. Depth (ft)	2.32	4.14	1.22
Conv. Total (cfs)	52597.0	Conv. (cfs)	16091.1	36212.2	293.7
Length Wtd. (ft)	394.57	Wetted Per. (ft)	187.24	100.90	10.53
Min Ch El (ft)	2494.00	Shear (lb/sq ft)	2.27	4.06	1.16
Alpha	1.51	Stream Power (lb/ft s)	10.60	44.27	3.44
Frctn Loss (ft)	6.12	Cum Volume (acre-ft)	10.24	169.68	47.46
C & E Loss (ft)	0.06	Cum SA (acres)	7.58	66.58	21.55

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.875

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9680.2	2494	9688.1	2492	9696.7	2490	9707.7	2488	9717.6	2486
9727.2	2486	9752.7	2488	9773.3	2488	9898.6	2488	9928	2488
9958.9	2486	10000	2486	10011.7	2486	10065.7	2488	10087.1	2488
10090.4	2488	10109.4	2488	10125.7	2488	10141.3	2490	10149.1	2492
10160.9	2494	10177.8	2496	10196.2	2498				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9680.2	.07	9928	.044	10065.7	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9928	10065.7	381	350	354	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2490.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.80	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2490.07	Reach Len. (ft)	381.00	350.00	354.00
Crit W.S. (ft)	2489.75	Flow Area (sq ft)	522.19	475.41	140.83
E.G. Slope (ft/ft)	0.012590	Area (sq ft)	522.19	475.41	140.83
Q Total (cfs)	6755.00	Flow (cfs)	2135.79	4113.17	506.04
Top Width (ft)	445.17	Top Width (ft)	231.60	137.70	75.87
Vel Total (ft/s)	5.93	Avg. Vel. (ft/s)	4.09	8.65	3.59
Max Chl Dpth (ft)	4.07	Hydr. Depth (ft)	2.25	3.45	1.86
Conv. Total (cfs)	60201.7	Conv. (cfs)	19034.5	36657.2	4509.9
Length Wtd. (ft)	355.05	Wetted Per. (ft)	232.06	137.80	76.01
Min Ch El (ft)	2486.00	Shear (lb/sq ft)	1.77	2.71	1.46
Alpha	1.47	Stream Power (lb/ft s)	7.23	23.46	5.23
Frctn Loss (ft)	5.58	Cum Volume (acre-ft)	26.18	161.41	81.34
C & E Loss (ft)	0.06	Cum SA (acres)	20.89	69.37	32.98

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2491.46	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.	0.070	0.044	
W.S. Elev (ft)	2490.28	Reach Len. (ft)	381.00	350.00	354.00
Crit W.S. (ft)	2490.15	Flow Area (sq ft)	399.95	504.66	
E.G. Slope (ft/ft)	0.015285	Area (sq ft)	399.95	504.66	
Q Total (cfs)	6755.00	Flow (cfs)	1803.40	4951.60	
Top Width (ft)	313.00	Top Width (ft)	175.30	137.70	

Vel Total (ft/s)	7.47	Avg. Vel. (ft/s)	4.51	9.81	
Max Chl Dpth (ft)	4.28	Hydr. Depth (ft)	2.28	3.66	
Conv. Total (cfs)	54638.6	Conv. (cfs)	14587.0	40051.6	
Length Wtd. (ft)	354.14	Wetted Per. (ft)	177.58	140.08	
Min Ch El (ft)	2486.00	Shear (lb/sq ft)	2.15	3.44	
Alpha	1.36	Stream Power (lb/ft s)	9.69	33.73	
Frctn Loss (ft)	6.21	Cum Volume (acre-ft)	6.36	165.55	47.41
C & E Loss (ft)	0.03	Cum SA (acres)	5.89	65.52	21.51

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.809

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9785.3	2496	9790.7	2494	9798.2	2492	9803.7	2490	9810.1	2488
9817	2486	9821	2484	9829.6	2482	9973.7	2480	10000	2480
10014.8	2480	10061.3	2482	10071.6	2484	10081.1	2486	10091.5	2488

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9785.3	.07	9821	.044	10071.6	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9821	10071.6	259	232	273	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2485.23	Element			
Vel Head (ft)	1.44	Wt. n-Val.		0.044	
W.S. Elev (ft)	2483.79	Reach Len. (ft)	259.00	232.00	273.00
Crit W.S. (ft)	2483.79	Flow Area (sq ft)		702.57	
E.G. Slope (ft/ft)	0.020335	Area (sq ft)		702.57	
Q Total (cfs)	6755.00	Flow (cfs)		6755.00	
Top Width (ft)	248.61	Top Width (ft)		248.61	
Vel Total (ft/s)	9.61	Avg. Vel. (ft/s)		9.61	
Max Chl Dpth (ft)	3.79	Hydr. Depth (ft)		2.83	
Conv. Total (cfs)	47370.4	Conv. (cfs)		47370.4	
Length Wtd. (ft)	232.00	Wetted Per. (ft)		249.04	
Min Ch El (ft)	2480.00	Shear (lb/sq ft)		3.58	
Alpha	1.00	Stream Power (lb/ft s)		34.43	
Frctn Loss (ft)	4.31	Cum Volume (acre-ft)	23.90	156.68	80.76
C & E Loss (ft)	0.12	Cum SA (acres)	19.88	67.82	32.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2485.23	Element			
Vel Head (ft)	1.44	Wt. n-Val.		0.044	
W.S. Elev (ft)	2483.79	Reach Len. (ft)	259.00	232.00	273.00
Crit W.S. (ft)	2483.79	Flow Area (sq ft)		702.57	
E.G. Slope (ft/ft)	0.020335	Area (sq ft)		702.57	
Q Total (cfs)	6755.00	Flow (cfs)		6755.00	
Top Width (ft)	248.61	Top Width (ft)		248.61	
Vel Total (ft/s)	9.61	Avg. Vel. (ft/s)		9.61	
Max Chl Dpth (ft)	3.79	Hydr. Depth (ft)		2.83	
Conv. Total (cfs)	47370.4	Conv. (cfs)		47370.4	
Length Wtd. (ft)	232.00	Wetted Per. (ft)		249.04	
Min Ch El (ft)	2480.00	Shear (lb/sq ft)		3.58	
Alpha	1.00	Stream Power (lb/ft s)		34.43	
Frctn Loss (ft)	4.27	Cum Volume (acre-ft)	4.61	160.70	47.41

C & E Loss (ft)	0.13	Cum SA (acres)	5.13	63.96	21.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.748

INPUT
Description:
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9692.2	2490	9700.3	2488	9710.1	2486	9714.7	2484	9744.4	2482
9762.7	2480	9869.8	2480	9897.7	2482	9916.3	2482	9929.4	2480
9953.7	2478	9980.6	2476	10000	2476	10023	2476	10193.4	2476
10234.9	2476	10259.7	2478	10292.5	2480	10315.3	2482		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9692.2	.07	9929.4	.044	10292.5	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9929.4	10292.5	483	500	459	.1	.3

Left Levee Station= 9916.3 Elevation= 2482

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2479.88	Element			
Vel Head (ft)	1.03	Wt. n-Val.		0.044	
W.S. Elev (ft)	2478.85	Reach Len. (ft)	483.00	500.00	459.00
Crit W.S. (ft)	2478.66	Flow Area (sq ft)		830.02	
E.G. Slope (ft/ft)	0.017007	Area (sq ft)		830.02	
Q Total (cfs)	6755.00	Flow (cfs)		6755.00	
Top Width (ft)	330.21	Top Width (ft)		330.21	
Vel Total (ft/s)	8.14	Avg. Vel. (ft/s)		8.14	
Max Chl Dpth (ft)	2.85	Hydr. Depth (ft)		2.51	
Conv. Total (cfs)	51797.8	Conv. (cfs)		51797.8	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		330.42	
Min Ch El (ft)	2476.00	Shear (lb/sq ft)		2.67	
Alpha	1.00	Stream Power (lb/ft s)		21.71	
Frctn Loss (ft)	8.71	Cum Volume (acre-ft)	23.90	152.60	80.76
C & E Loss (ft)	0.04	Cum SA (acres)	19.88	66.28	32.67

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2479.88	Element			
Vel Head (ft)	1.02	Wt. n-Val.		0.044	
W.S. Elev (ft)	2478.86	Reach Len. (ft)	483.00	500.00	459.00
Crit W.S. (ft)	2478.66	Flow Area (sq ft)		833.97	
E.G. Slope (ft/ft)	0.016742	Area (sq ft)		833.97	
Q Total (cfs)	6755.00	Flow (cfs)		6755.00	
Top Width (ft)	330.21	Top Width (ft)		330.21	
Vel Total (ft/s)	8.10	Avg. Vel. (ft/s)		8.10	
Max Chl Dpth (ft)	2.86	Hydr. Depth (ft)		2.53	
Conv. Total (cfs)	52206.6	Conv. (cfs)		52206.6	
Length Wtd. (ft)	500.00	Wetted Per. (ft)		330.45	
Min Ch El (ft)	2476.00	Shear (lb/sq ft)		2.64	
Alpha	1.00	Stream Power (lb/ft s)		21.37	
Frctn Loss (ft)	8.72	Cum Volume (acre-ft)	4.61	156.61	47.41
C & E Loss (ft)	0.04	Cum SA (acres)	5.13	62.42	21.51

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.653

INPUT
Description:
Station Elevation Data num= 32

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9396.9	2480	9401.7	2478	9406.9	2476	9521.3	2476	9571.3	2476
9583.9	2474	9618	2472	9620.6	2472	9658.9	2474	9674.1	2476
9687.2	2476	9702	2474	9714.9	2472	9728	2470	9756	2470
9773.7	2470	9789.6	2468	9821.7	2468	9882.9	2468	9888.7	2468
9977.1	2468	10000	2468	10011.5	2468	10015.4	2468	10022.4	2468
10101.5	2468	10176	2468	10185	2470.04	10207.1	2474	10215.6	2476
10227.4	2478	10256.7	2480						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9396.9	.07	9773.7	.044	10185	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9773.7	10185	474	500	535	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
9396.9	9770	2471

Left Levee Station= 9687.2 Elevation= 2476

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2471.12	Element			
Vel Head (ft)	0.89	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2470.22	Reach Len. (ft)	474.00	500.00	535.00
Crit W.S. (ft)	2470.09	Flow Area (sq ft)	0.83	890.00	0.10
E.G. Slope (ft/ft)	0.018063	Area (sq ft)	10.44	890.00	0.10
Q Total (cfs)	6755.00	Flow (cfs)	0.88	6754.07	0.05
Top Width (ft)	459.50	Top Width (ft)	47.17	411.30	1.03
Vel Total (ft/s)	7.58	Avg. Vel. (ft/s)	1.05	7.59	0.58
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	0.22	2.16	0.09
Conv. Total (cfs)	50261.2	Conv. (cfs)	6.5	50254.3	0.4
Length Wtd. (ft)	499.98	Wetted Per. (ft)	3.70	411.65	1.05
Min Ch El (ft)	2468.00	Shear (lb/sq ft)	0.25	2.44	0.10
Alpha	1.00	Stream Power (lb/ft s)	0.27	18.50	0.06
Frctn Loss (ft)	9.38	Cum Volume (acre-ft)	23.84	142.73	80.76
C & E Loss (ft)	0.02	Cum SA (acres)	19.62	62.02	32.66

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2471.12	Element			
Vel Head (ft)	0.90	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2470.22	Reach Len. (ft)	474.00	500.00	535.00
Crit W.S. (ft)	2470.09	Flow Area (sq ft)	0.82	888.40	0.09
E.G. Slope (ft/ft)	0.018172	Area (sq ft)	0.82	888.40	0.09
Q Total (cfs)	6755.00	Flow (cfs)	0.82	6754.13	0.05
Top Width (ft)	416.01	Top Width (ft)	3.70	411.30	1.01
Vel Total (ft/s)	7.60	Avg. Vel. (ft/s)	1.01	7.60	0.57
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)	0.22	2.16	0.09
Conv. Total (cfs)	50109.7	Conv. (cfs)	6.1	50103.2	0.4
Length Wtd. (ft)	500.00	Wetted Per. (ft)	3.92	411.65	1.03
Min Ch El (ft)	2468.00	Shear (lb/sq ft)	0.24	2.45	0.10
Alpha	1.00	Stream Power (lb/ft s)	0.24	18.61	0.06
Frctn Loss (ft)	9.37	Cum Volume (acre-ft)	4.61	146.72	47.41
C & E Loss (ft)	0.02	Cum SA (acres)	5.11	58.17	21.50

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.559

INPUT
Description:
Station Elevation Data num= 25

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9746	2468	9751	2466	9755.9	2464	9823.6	2462	9866.9	2460
9872.5	2460	9888.8	2462	9897.9	2464	9907.6	2466	9918	2466
9926.1	2464	9934.1	2462	9944.3	2460	9965.8	2458	10000	2458
10047.1	2458	10073	2458	10097.7	2458	10098.8	2458	10131	2458
10142.9	2458	10242.5	2458	10267.8	2460	10282.3	2462	10308.8	2464

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9746	.07	9944.3	.044	10267.8	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9944.3	10267.8	536	500	422	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2461.71	Element			
Vel Head (ft)	1.13	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2460.58	Reach Len. (ft)	536.00	500.00	422.00
Crit W.S. (ft)	2460.54	Flow Area (sq ft)	9.18	788.57	1.23
E.G. Slope (ft/ft)	0.019538	Area (sq ft)	9.18	788.57	1.23
Q Total (cfs)	6755.00	Flow (cfs)	13.63	6739.78	1.59
Top Width (ft)	353.64	Top Width (ft)	25.92	323.50	4.22
Vel Total (ft/s)	8.45	Avg. Vel. (ft/s)	1.48	8.55	1.30
Max Chl Dpth (ft)	2.58	Hydr. Depth (ft)	0.35	2.44	0.29
Conv. Total (cfs)	48326.2	Conv. (cfs)	97.5	48217.3	11.4
Length Wtd. (ft)	499.97	Wetted Per. (ft)	26.03	323.67	4.26
Min Ch El (ft)	2458.00	Shear (lb/sq ft)	0.43	2.97	0.35
Alpha	1.02	Stream Power (lb/ft s)	0.64	25.40	0.46
Frctn Loss (ft)	9.87	Cum Volume (acre-ft)	23.74	133.09	80.76
C & E Loss (ft)	0.01	Cum SA (acres)	19.22	57.80	32.63

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2461.72	Element			
Vel Head (ft)	1.14	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2460.58	Reach Len. (ft)	536.00	500.00	422.00
Crit W.S. (ft)	2460.52	Flow Area (sq ft)	0.87	788.80	1.23
E.G. Slope (ft/ft)	0.019591	Area (sq ft)	0.87	788.80	1.23
Q Total (cfs)	6755.00	Flow (cfs)	1.12	6752.28	1.60
Top Width (ft)	330.69	Top Width (ft)	2.97	323.50	4.22
Vel Total (ft/s)	8.54	Avg. Vel. (ft/s)	1.29	8.56	1.30
Max Chl Dpth (ft)	2.58	Hydr. Depth (ft)	0.29	2.44	0.29
Conv. Total (cfs)	48260.9	Conv. (cfs)	8.0	48241.5	11.4
Length Wtd. (ft)	499.94	Wetted Per. (ft)	3.03	323.67	4.26
Min Ch El (ft)	2458.00	Shear (lb/sq ft)	0.35	2.98	0.35
Alpha	1.00	Stream Power (lb/ft s)	0.45	25.52	0.46
Frctn Loss (ft)	9.88	Cum Volume (acre-ft)	4.60	137.10	47.40
C & E Loss (ft)	0.02	Cum SA (acres)	5.07	53.95	21.47

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.464

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9568.1	2466	9572.9	2466	9581.4	2466	9596.8	2466	9621.9	2464
9636.9	2462	9663.4	2460	9705.1	2458	9725.4	2456	9737	2454
9796	2452	9810.1	2450	9836.4	2448	9868.2	2448	9997.2	2448
10000	2448	10038.8	2448	10060.2	2448	10079.6	2448	10148.1	2450
10149.8	2450	10176.1	2450	10226.4	2452	10241.1	2454		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9568.1	.07	9810.1	.044	10176.1	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9810.1	10176.1	572	500	457	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2451.83	Element			
Vel Head (ft)	1.09	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2450.74	Reach Len. (ft)	572.00	500.00	457.00
Crit W.S. (ft)	2450.69	Flow Area (sq ft)	1.93	852.13	6.89
E.G. Slope (ft/ft)	0.019937	Area (sq ft)	1.93	852.13	6.89
Q Total (cfs)	7150.00	Flow (cfs)	2.96	7136.39	10.64
Top Width (ft)	389.84	Top Width (ft)	5.22	366.00	18.62
Vel Total (ft/s)	8.30	Avg. Vel. (ft/s)	1.53	8.37	1.54
Max Chl Dpth (ft)	2.74	Hydr. Depth (ft)	0.37	2.33	0.37
Conv. Total (cfs)	50637.4	Conv. (cfs)	21.0	50541.0	75.4
Length Wtd. (ft)	499.98	Wetted Per. (ft)	5.27	366.11	18.63
Min Ch El (ft)	2448.00	Shear (lb/sq ft)	0.46	2.90	0.46
Alpha	1.02	Stream Power (lb/ft s)	0.70	24.26	0.71
Frctn Loss (ft)	8.92	Cum Volume (acre-ft)	23.67	123.68	80.72
C & E Loss (ft)	0.10	Cum SA (acres)	19.03	53.85	32.52

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2451.83	Element			
Vel Head (ft)	1.09	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2450.74	Reach Len. (ft)	572.00	500.00	457.00
Crit W.S. (ft)	2450.69	Flow Area (sq ft)	1.93	852.30	6.90
E.G. Slope (ft/ft)	0.019923	Area (sq ft)	1.93	852.30	6.90
Q Total (cfs)	7150.00	Flow (cfs)	2.97	7136.38	10.66
Top Width (ft)	389.85	Top Width (ft)	5.22	366.00	18.63
Vel Total (ft/s)	8.30	Avg. Vel. (ft/s)	1.54	8.37	1.54
Max Chl Dpth (ft)	2.74	Hydr. Depth (ft)	0.37	2.33	0.37
Conv. Total (cfs)	50655.2	Conv. (cfs)	21.0	50558.7	75.5
Length Wtd. (ft)	499.98	Wetted Per. (ft)	5.27	366.11	18.64
Min Ch El (ft)	2448.00	Shear (lb/sq ft)	0.46	2.90	0.46
Alpha	1.02	Stream Power (lb/ft s)	0.70	24.25	0.71
Frctn Loss (ft)	8.91	Cum Volume (acre-ft)	4.58	127.68	47.36
C & E Loss (ft)	0.10	Cum SA (acres)	5.02	49.99	21.36

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.369

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9654.5	2450	9670.8	2448	9683.3	2446	9694.8	2444	9709.9	2442
9791.9	2440	9859.6	2440	9866.7	2440	9894.2	2440	9982	2440
10000	2440	10069.3	2440	10077.2	2440	10095.1	2440	10163.7	2440
10178.4	2440	10266.4	2440	10292.6	2440	10483.3	2440	10553.7	2440
10585.6	2442	10635.7	2444	10690.7	2444	10705.8	2444	10722.4	2446
10736.3	2448	10752.7	2450						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9654.5	.07	9709.9	.044	10585.6	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9709.9	10585.6	458	394	491	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev

9654.5 9820 2445 10320 10752.7 2445

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2442.81	Element			
Vel Head (ft)	0.75	Wt. n-Val.		0.044	
W.S. Elev (ft)	2442.06	Reach Len. (ft)	458.00	394.00	491.00
Crit W.S. (ft)	2441.85	Flow Area (sq ft)		1031.74	
E.G. Slope (ft/ft)	0.016030	Area (sq ft)	0.02	1693.09	0.05
Q Total (cfs)	7150.00	Flow (cfs)		7150.00	
Top Width (ft)	877.77	Top Width (ft)	0.48	875.70	1.59
Vel Total (ft/s)	6.93	Avg. Vel. (ft/s)		6.93	
Max Chl Dpth (ft)	2.06	Hydr. Depth (ft)		2.06	
Conv. Total (cfs)	56473.5	Conv. (cfs)		56473.5	
Length Wtd. (ft)	394.00	Wetted Per. (ft)		500.00	
Min Ch El (ft)	2440.00	Shear (lb/sq ft)		2.06	
Alpha	1.00	Stream Power (lb/ft s)		14.31	
Frctn Loss (ft)	7.31	Cum Volume (acre-ft)	23.65	109.07	80.68
C & E Loss (ft)	0.04	Cum SA (acres)	18.99	46.72	32.41

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2442.81	Element			
Vel Head (ft)	0.74	Wt. n-Val.		0.044	
W.S. Elev (ft)	2442.07	Reach Len. (ft)	458.00	394.00	491.00
Crit W.S. (ft)	2441.85	Flow Area (sq ft)		1034.79	
E.G. Slope (ft/ft)	0.016048	Area (sq ft)		1034.79	
Q Total (cfs)	7150.00	Flow (cfs)		7150.00	
Top Width (ft)	500.00	Top Width (ft)		500.00	
Vel Total (ft/s)	6.91	Avg. Vel. (ft/s)		6.91	
Max Chl Dpth (ft)	2.07	Hydr. Depth (ft)		2.07	
Conv. Total (cfs)	56441.2	Conv. (cfs)		56441.2	
Length Wtd. (ft)	394.00	Wetted Per. (ft)		504.14	
Min Ch El (ft)	2440.00	Shear (lb/sq ft)		2.06	
Alpha	1.00	Stream Power (lb/ft s)		14.21	
Frctn Loss (ft)	7.31	Cum Volume (acre-ft)	4.57	116.85	47.32
C & E Loss (ft)	0.04	Cum SA (acres)	4.99	45.02	21.26

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.295

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9918.7	2440	9938.3	2438	9949.8	2436	9960.1	2434	9971.6	2432
10000	2432	10126.1	2432	10127.3	2432	10178.1	2432	10218.7	2432
10237.7	2432	10301.3	2432	10342.3	2434	10353.4	2436	10367.2	2438

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9918.7	.07	9960.1	.044	10342.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9960.1	10342.3	402	500	439	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2435.46	Element			
Vel Head (ft)	1.12	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2434.34	Reach Len. (ft)	402.00	500.00	439.00
Crit W.S. (ft)	2434.34	Flow Area (sq ft)	0.31	843.47	0.33
E.G. Slope (ft/ft)	0.021942	Area (sq ft)	0.31	843.47	0.33
Q Total (cfs)	7150.00	Flow (cfs)	0.29	7149.39	0.32
Top Width (ft)	385.88	Top Width (ft)	1.77	382.20	1.91
Vel Total (ft/s)	8.47	Avg. Vel. (ft/s)	0.96	8.48	0.96

Max Chl Dpth (ft)	2.34	Hydr. Depth (ft)	0.17	2.21	0.17
Conv. Total (cfs)	48268.7	Conv. (cfs)	2.0	48264.6	2.1
Length Wtd. (ft)	500.00	Wetted Per. (ft)	1.81	382.42	1.94
Min Ch El (ft)	2432.00	Shear (lb/sq ft)	0.23	3.02	0.23
Alpha	1.00	Stream Power (lb/ft s)	0.22	25.61	0.22
Frctn Loss (ft)	7.71	Cum Volume (acre-ft)	23.65	97.60	80.68
C & E Loss (ft)	0.14	Cum SA (acres)	18.98	41.03	32.39

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2435.46	Element			
Vel Head (ft)	1.11	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2434.35	Reach Len. (ft)	402.00	500.00	439.00
Crit W.S. (ft)	2434.35	Flow Area (sq ft)	0.31	843.93	0.33
E.G. Slope (ft/ft)	0.021902	Area (sq ft)	0.31	843.93	0.33
Q Total (cfs)	7150.00	Flow (cfs)	0.30	7149.38	0.32
Top Width (ft)	385.88	Top Width (ft)	1.77	382.20	1.91
Vel Total (ft/s)	8.47	Avg. Vel. (ft/s)	0.97	8.47	0.97
Max Chl Dpth (ft)	2.35	Hydr. Depth (ft)	0.17	2.21	0.17
Conv. Total (cfs)	48313.3	Conv. (cfs)	2.0	48309.1	2.2
Length Wtd. (ft)	500.00	Wetted Per. (ft)	1.80	382.42	1.94
Min Ch El (ft)	2432.00	Shear (lb/sq ft)	0.23	3.02	0.23
Alpha	1.00	Stream Power (lb/ft s)	0.22	25.56	0.23
Frctn Loss (ft)	7.70	Cum Volume (acre-ft)	4.57	108.35	47.32
C & E Loss (ft)	0.14	Cum SA (acres)	4.98	41.03	21.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.219

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9431.9	2432	9448	2434	9476.8	2434	9492	2432	9519.1	2430
9539.7	2428	9566.1	2426	9641.9	2424	9646.6	2424	9832.8	2424
9868.5	2424	9895.7	2424	9920.4	2422	9932.6	2422	9967.1	2424
9970.5	2424	9987.9	2422	10000	2422	10022.6	2422	10034.1	2424
10039.6	2426	10056.5	2428	10074	2430	10085.8	2432	10097.6	2434
10114.4	2436								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9431.9	.07	9566.1	.044	10039.6	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9566.1	10039.6	191	190	182	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2426.78	Element			
Vel Head (ft)	0.63	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2426.15	Reach Len. (ft)	191.00	190.00	182.00
Crit W.S. (ft)	2425.68	Flow Area (sq ft)	0.15	1118.34	0.09
E.G. Slope (ft/ft)	0.011420	Area (sq ft)	0.15	1118.34	0.09
Q Total (cfs)	7150.00	Flow (cfs)	0.06	7149.90	0.04
Top Width (ft)	476.74	Top Width (ft)	1.97	473.50	1.26

Vel Total (ft/s)	6.39	Avg. Vel. (ft/s)	0.40	6.39	0.40
Max Chl Dpth (ft)	4.15	Hydr. Depth (ft)	0.07	2.36	0.07
Conv. Total (cfs)	66906.6	Conv. (cfs)	0.6	66905.7	0.4
Length Wtd. (ft)	190.01	Wetted Per. (ft)	1.98	474.30	1.27
Min Ch El (ft)	2422.00	Shear (lb/sq ft)	0.05	1.68	0.05
Alpha	1.00	Stream Power (lb/ft s)	0.02	10.75	0.02
Frctn Loss (ft)	2.73	Cum Volume (acre-ft)	23.65	86.34	80.68
C & E Loss (ft)	0.06	Cum SA (acres)	18.96	36.12	32.38

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2426.78	Element			
Vel Head (ft)	0.63	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2426.15	Reach Len. (ft)	191.00	190.00	182.00
Crit W.S. (ft)	2425.68	Flow Area (sq ft)	0.15	1118.34	0.09
E.G. Slope (ft/ft)	0.011420	Area (sq ft)	0.15	1118.34	0.09
Q Total (cfs)	7150.00	Flow (cfs)	0.06	7149.90	0.04
Top Width (ft)	476.74	Top Width (ft)	1.97	473.50	1.26
Vel Total (ft/s)	6.39	Avg. Vel. (ft/s)	0.40	6.39	0.40
Max Chl Dpth (ft)	4.15	Hydr. Depth (ft)	0.07	2.36	0.07
Conv. Total (cfs)	66906.6	Conv. (cfs)	0.6	66905.7	0.4
Length Wtd. (ft)	190.01	Wetted Per. (ft)	1.98	474.30	1.27
Min Ch El (ft)	2422.00	Shear (lb/sq ft)	0.05	1.68	0.05
Alpha	1.00	Stream Power (lb/ft s)	0.02	10.75	0.02
Frctn Loss (ft)	2.73	Cum Volume (acre-ft)	4.56	97.09	47.32
C & E Loss (ft)	0.06	Cum SA (acres)	4.96	36.12	21.24

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.183

INPUT
Description:
Station Elevation Data num= 24

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9436.3	2430	9486	2428	9542.5	2426	9619.2	2424	9670	2422
9737.3	2422	9753.3	2422	9851.2	2420	9876.2	2420	9915	2420
9925	2420	9982.2	2420	9993.2	2418	10000	2418	10010.3	2418
10039.6	2420	10044.3	2422	10048.9	2424	10053.9	2426	10067.5	2428
10112.2	2430	10126	2430	10126.1	2430	10135.7	2428		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9436.3	.07	9753.3	.044	10044.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9753.3	10044.3	422	357	352	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2423.99	Element			
Vel Head (ft)	1.21	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2422.78	Reach Len. (ft)	422.00	357.00	352.00
Crit W.S. (ft)	2422.78	Flow Area (sq ft)	72.98	781.67	0.70
E.G. Slope (ft/ft)	0.018785	Area (sq ft)	72.98	781.67	0.70
Q Total (cfs)	7150.00	Flow (cfs)	168.54	6980.42	1.03
Top Width (ft)	395.98	Top Width (ft)	103.18	291.00	1.80
Vel Total (ft/s)	8.36	Avg. Vel. (ft/s)	2.31	8.93	1.47
Max Chl Dpth (ft)	4.78	Hydr. Depth (ft)	0.71	2.69	0.39
Conv. Total (cfs)	52167.9	Conv. (cfs)	1229.7	50930.6	7.6
Length Wtd. (ft)	357.69	Wetted Per. (ft)	103.20	291.68	1.96
Min Ch El (ft)	2418.00	Shear (lb/sq ft)	0.83	3.14	0.42
Alpha	1.12	Stream Power (lb/ft s)	1.92	28.07	0.62

Frctn Loss (ft)	5.67	Cum Volume (acre-ft)	23.49	82.19	80.67
C & E Loss (ft)	0.01	Cum SA (acres)	18.73	34.45	32.37

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2423.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.21	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2422.78	Reach Len. (ft)	422.00	357.00	352.00
Crit W.S. (ft)	2422.78	Flow Area (sq ft)	72.98	781.67	0.70
E.G. Slope (ft/ft)	0.018785	Area (sq ft)	72.98	781.67	0.70
Q Total (cfs)	7150.00	Flow (cfs)	168.54	6980.42	1.03
Top Width (ft)	395.98	Top Width (ft)	103.18	291.00	1.80
Vel Total (ft/s)	8.36	Avg. Vel. (ft/s)	2.31	8.93	1.47
Max Chl Dpth (ft)	4.78	Hydr. Depth (ft)	0.71	2.69	0.39
Conv. Total (cfs)	52167.9	Conv. (cfs)	1229.7	50930.6	7.6
Length Wtd. (ft)	357.69	Wetted Per. (ft)	103.20	291.68	1.96
Min Ch El (ft)	2418.00	Shear (lb/sq ft)	0.83	3.14	0.42
Alpha	1.12	Stream Power (lb/ft s)	1.92	28.07	0.62
Frctn Loss (ft)	5.67	Cum Volume (acre-ft)	4.40	92.95	47.32
C & E Loss (ft)	0.01	Cum SA (acres)	4.73	34.45	21.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.115

INPUT
Description:
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9795.6	2422	9802	2422	9810.6	2420	9817.2	2418	9849.3	2416
9864.5	2414	9872.4	2412	9937.5	2412	9953.3	2414	9974.4	2414
9995	2412	10000	2412	10007.5	2412	10038.7	2414	10047.7	2416
10130.4	2416	10258.5	2416	10281.3	2418	10304.3	2420	10354.2	2422

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9795.6	.07	9849.3	.044	10047.7	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9849.3	10047.7	241	307	314	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2417.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.32	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2416.66	Reach Len. (ft)	241.00	307.00	314.00
Crit W.S. (ft)	2416.66	Flow Area (sq ft)	3.49	734.18	141.54
E.G. Slope (ft/ft)	0.013548	Area (sq ft)	3.49	734.18	141.54
Q Total (cfs)	7150.00	Flow (cfs)	4.11	6883.95	261.94
Top Width (ft)	427.31	Top Width (ft)	10.59	198.40	218.32
Vel Total (ft/s)	8.13	Avg. Vel. (ft/s)	1.18	9.38	1.85
Max Chl Dpth (ft)	4.66	Hydr. Depth (ft)	0.33	3.70	0.65
Conv. Total (cfs)	61427.2	Conv. (cfs)	35.3	59141.5	2250.4
Length Wtd. (ft)	307.11	Wetted Per. (ft)	10.61	199.29	218.35
Min Ch El (ft)	2412.00	Shear (lb/sq ft)	0.28	3.12	0.55
Alpha	1.28	Stream Power (lb/ft s)	0.33	29.22	1.01
Frctn Loss (ft)	4.59	Cum Volume (acre-ft)	23.12	75.98	80.10

C & E Loss (ft)	0.09	Cum SA (acres)	18.18	32.45	31.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2417.98	Element			
Vel Head (ft)	1.32	Wt. n-Val.	0.070	0.044	0.070
W.S. Elev (ft)	2416.66	Reach Len. (ft)	241.00	307.00	314.00
Crit W.S. (ft)	2416.66	Flow Area (sq ft)	3.49	734.18	141.54
E.G. Slope (ft/ft)	0.013548	Area (sq ft)	3.49	734.18	141.54
Q Total (cfs)	7150.00	Flow (cfs)	4.11	6883.95	261.94
Top Width (ft)	427.31	Top Width (ft)	10.59	198.40	218.32
Vel Total (ft/s)	8.13	Avg. Vel. (ft/s)	1.18	9.38	1.85
Max Chl Dpth (ft)	4.66	Hydr. Depth (ft)	0.33	3.70	0.65
Conv. Total (cfs)	61427.2	Conv. (cfs)	35.3	59141.5	2250.4
Length Wtd. (ft)	307.11	Wetted Per. (ft)	10.61	199.29	218.35
Min Ch El (ft)	2412.00	Shear (lb/sq ft)	0.28	3.12	0.55
Alpha	1.28	Stream Power (lb/ft s)	0.33	29.22	1.01
Frctn Loss (ft)	4.60	Cum Volume (acre-ft)	4.03	86.74	46.74
C & E Loss (ft)	0.09	Cum SA (acres)	4.18	32.45	20.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 10.057

INPUT
Description:
Station Elevation Data num= 28

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9597.9	2422	9609.4	2420	9617.5	2418	9628.8	2416	9650.7	2414
9677.1	2412	9721.4	2408	9722.4	2408	9763.5	2408	9845.7	2408
9990.8	2408	9997	2406	10000	2406	10008.3	2406	10034.7	2408
10041	2410	10045.2	2412	10049.4	2414	10053.1	2416	10056.1	2418
10060.1	2420	10062.3	2422	10069.7	2424	10085.9	2424	10106	2422
10120.4	2420	10135.4	2418	10159.9	2416				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9597.9	.07	9677.1	.044	10045.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9677.1	10045.2	373	401	392	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2411.52	Element			
Vel Head (ft)	1.01	Wt. n-Val.		0.044	
W.S. Elev (ft)	2410.51	Reach Len. (ft)	373.00	401.00	392.00
Crit W.S. (ft)	2410.31	Flow Area (sq ft)		884.81	
E.G. Slope (ft/ft)	0.016584	Area (sq ft)		884.81	
Q Total (cfs)	7150.00	Flow (cfs)		7150.00	
Top Width (ft)	348.42	Top Width (ft)		348.42	
Vel Total (ft/s)	8.08	Avg. Vel. (ft/s)		8.08	
Max Chl Dpth (ft)	4.51	Hydr. Depth (ft)		2.54	
Conv. Total (cfs)	55521.5	Conv. (cfs)		55521.5	
Length Wtd. (ft)	400.04	Wetted Per. (ft)		349.34	
Min Ch El (ft)	2406.00	Shear (lb/sq ft)		2.62	
Alpha	1.00	Stream Power (lb/ft s)		21.19	

Frctn Loss (ft)	7.44	Cum Volume (acre-ft)	23.11	70.28	79.59
C & E Loss (ft)	0.02	Cum SA (acres)	18.15	30.52	30.70

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2411.52	Element			
Vel Head (ft)	1.02	Wt. n-Val.		0.044	
W.S. Elev (ft)	2410.50	Reach Len. (ft)	373.00	401.00	392.00
Crit W.S. (ft)	2410.31	Flow Area (sq ft)		884.05	
E.G. Slope (ft/ft)	0.016630	Area (sq ft)		884.05	
Q Total (cfs)	7150.00	Flow (cfs)		7150.00	
Top Width (ft)	348.39	Top Width (ft)		348.39	
Vel Total (ft/s)	8.09	Avg. Vel. (ft/s)		8.09	
Max Chl Dpth (ft)	4.50	Hydr. Depth (ft)		2.54	
Conv. Total (cfs)	55444.6	Conv. (cfs)		55444.6	
Length Wtd. (ft)	400.08	Wetted Per. (ft)		349.31	
Min Ch El (ft)	2406.00	Shear (lb/sq ft)		2.63	
Alpha	1.00	Stream Power (lb/ft s)		21.25	
Frctn Loss (ft)	7.43	Cum Volume (acre-ft)	4.02	81.03	46.23
C & E Loss (ft)	0.02	Cum SA (acres)	4.15	30.52	19.55

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.981

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9561.2	2410	9571.3	2408	9582.7	2406	9593.8	2404	9622.2	2402
9626.2	2402	9711.7	2402	9757.6	2402	9815.4	2402	9834.6	2400
9875.1	2400	9905.9	2400	9979.8	2398	10000	2398	10016.9	2398
10021.7	2400	10028.2	2402	10035.6	2404	10039.9	2406	10045.4	2408
10052	2410	10099.1	2412	10123.9	2414				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9561.2	.07	9815.4	.055	10028.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9815.4	10028.2	305	288	282	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2404.06	Element			
Vel Head (ft)	1.18	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2402.88	Reach Len. (ft)	305.00	288.00	282.00
Crit W.S. (ft)	2402.88	Flow Area (sq ft)	175.64	740.20	1.43
E.G. Slope (ft/ft)	0.021152	Area (sq ft)	175.64	740.20	1.43
Q Total (cfs)	7150.00	Flow (cfs)	487.99	6659.51	2.50
Top Width (ft)	421.76	Top Width (ft)	205.71	212.80	3.26
Vel Total (ft/s)	7.79	Avg. Vel. (ft/s)	2.78	9.00	1.75
Max Chl Dpth (ft)	4.88	Hydr. Depth (ft)	0.85	3.48	0.44
Conv. Total (cfs)	49162.1	Conv. (cfs)	3355.3	45789.6	17.2
Length Wtd. (ft)	289.16	Wetted Per. (ft)	205.74	213.63	3.37
Min Ch El (ft)	2398.00	Shear (lb/sq ft)	1.13	4.58	0.56
Alpha	1.25	Stream Power (lb/ft s)	3.13	41.16	0.98
Frctn Loss (ft)	4.64	Cum Volume (acre-ft)	22.36	62.80	79.58
C & E Loss (ft)	0.17	Cum SA (acres)	17.27	27.94	30.68

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2404.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.18	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2402.89	Reach Len. (ft)	305.00	288.00	282.00
Crit W.S. (ft)	2402.89	Flow Area (sq ft)	165.48	742.74	1.47
E.G. Slope (ft/ft)	0.021020	Area (sq ft)	165.48	742.74	1.47
Q Total (cfs)	7150.00	Flow (cfs)	470.63	6676.77	2.60
Top Width (ft)	401.46	Top Width (ft)	185.40	212.80	3.26
Vel Total (ft/s)	7.86	Avg. Vel. (ft/s)	2.84	8.99	1.77
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)	0.89	3.49	0.45
Conv. Total (cfs)	49316.4	Conv. (cfs)	3246.1	46052.3	18.0
Length Wtd. (ft)	288.56	Wetted Per. (ft)	186.29	213.63	3.39
Min Ch El (ft)	2398.00	Shear (lb/sq ft)	1.17	4.56	0.57
Alpha	1.23	Stream Power (lb/ft s)	3.32	41.01	1.01
Frctn Loss (ft)	4.98	Cum Volume (acre-ft)	3.32	73.55	46.23
C & E Loss (ft)	0.13	Cum SA (acres)	3.35	27.94	19.54

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.927

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9685.5	2406	9686.2	2406	9695.1	2404	9701.4	2402	9713.8	2400
9767.2	2398	9804.6	2396	9847.6	2396	9872.9	2396	9924	2394
9936.7	2394	9963.2	2394	9967	2394	9992.8	2394	10000	2394
10087.3	2394	10169.5	2396	10211.2	2398	10228.7	2400	10241.2	2402
10250.6	2404	10263.3	2406						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9685.5	.07	9872.9	.055	10211.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9872.9	10211.2	525	500	433	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2398.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.61	Wt. n-Val.	0.070	0.055	
W.S. Elev (ft)	2397.82	Reach Len. (ft)	525.00	500.00	433.00
Crit W.S. (ft)	2397.09	Flow Area (sq ft)	155.61	1035.33	
E.G. Slope (ft/ft)	0.012581	Area (sq ft)	155.61	1035.33	
Q Total (cfs)	7150.00	Flow (cfs)	489.59	6660.41	
Top Width (ft)	437.01	Top Width (ft)	102.39	334.61	
Vel Total (ft/s)	6.00	Avg. Vel. (ft/s)	3.15	6.43	
Max Chl Dpth (ft)	3.82	Hydr. Depth (ft)	1.52	3.09	
Conv. Total (cfs)	63744.8	Conv. (cfs)	4364.8	59379.9	
Length Wtd. (ft)	502.74	Wetted Per. (ft)	102.44	334.72	
Min Ch El (ft)	2394.00	Shear (lb/sq ft)	1.19	2.43	
Alpha	1.09	Stream Power (lb/ft s)	3.75	15.63	
Frctn Loss (ft)	9.50	Cum Volume (acre-ft)	21.20	56.93	79.58
C & E Loss (ft)	0.05	Cum SA (acres)	16.19	26.13	30.67

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2398.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.		0.055	
W.S. Elev (ft)	2397.83	Reach Len. (ft)	525.00	500.00	433.00
Crit W.S. (ft)	2397.09	Flow Area (sq ft)		1039.25	
E.G. Slope (ft/ft)	0.014436	Area (sq ft)		1039.25	
Q Total (cfs)	7150.00	Flow (cfs)		7150.00	
Top Width (ft)	334.86	Top Width (ft)		334.86	
Vel Total (ft/s)	6.88	Avg. Vel. (ft/s)		6.88	
Max Chl Dpth (ft)	3.83	Hydr. Depth (ft)		3.10	
Conv. Total (cfs)	59509.1	Conv. (cfs)		59509.1	
Length Wtd. (ft)	501.94	Wetted Per. (ft)		336.80	
Min Ch El (ft)	2394.00	Shear (lb/sq ft)		2.78	
Alpha	1.00	Stream Power (lb/ft s)		19.13	
Frctn Loss (ft)	9.65	Cum Volume (acre-ft)	2.74	67.65	46.22
C & E Loss (ft)	0.03	Cum SA (acres)	2.70	26.13	19.53

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.832

INPUT
Description:
Station Elevation Data num= 21

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9691.2	2398	9698.8	2396	9706.1	2394	9718.7	2392	9728.5	2390
9739.6	2388	9750.6	2386	9786.9	2386	9861.6	2386	9975.4	2384
10000	2384	10010.6	2384	10070.5	2386	10073.3	2386	10092	2386
10127.4	2388	10148.1	2390	10186.4	2392	10208.6	2394	10225.3	2396
10249.1	2398								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9691.2	.07	9861.6	.055	10127.4	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9861.6	10127.4	267	278	304	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2388.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.13	Wt. n-Val.	0.070	0.055	
W.S. Elev (ft)	2387.75	Reach Len. (ft)	267.00	278.00	304.00
Crit W.S. (ft)	2387.75	Flow Area (sq ft)	202.82	674.72	
E.G. Slope (ft/ft)	0.031362	Area (sq ft)	202.82	674.72	
Q Total (cfs)	7150.00	Flow (cfs)	1077.11	6072.89	
Top Width (ft)	382.03	Top Width (ft)	120.63	261.40	
Vel Total (ft/s)	8.15	Avg. Vel. (ft/s)	5.31	9.00	
Max Chl Dpth (ft)	3.75	Hydr. Depth (ft)	1.68	2.58	
Conv. Total (cfs)	40374.4	Conv. (cfs)	6082.2	34292.3	
Length Wtd. (ft)	287.31	Wetted Per. (ft)	120.79	261.50	
Min Ch El (ft)	2384.00	Shear (lb/sq ft)	3.29	5.05	
Alpha	1.10	Stream Power (lb/ft s)	17.46	45.47	
Frctn Loss (ft)	2.46	Cum Volume (acre-ft)	19.04	47.11	79.58
C & E Loss (ft)	0.28	Cum SA (acres)	14.85	22.71	30.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2388.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.03	Wt. n-Val.	0.070	0.055	
W.S. Elev (ft)	2387.86	Reach Len. (ft)	267.00	278.00	304.00
Crit W.S. (ft)	2387.77	Flow Area (sq ft)	216.31	703.95	
E.G. Slope (ft/ft)	0.026943	Area (sq ft)	216.31	703.95	
Q Total (cfs)	7150.00	Flow (cfs)	1110.75	6039.25	
Top Width (ft)	382.03	Top Width (ft)	120.63	261.40	
Vel Total (ft/s)	7.77	Avg. Vel. (ft/s)	5.14	8.58	
Max Chl Dpth (ft)	3.86	Hydr. Depth (ft)	1.79	2.69	
Conv. Total (cfs)	43559.9	Conv. (cfs)	6767.0	36792.9	
Length Wtd. (ft)	285.65	Wetted Per. (ft)	120.90	261.61	
Min Ch El (ft)	2384.00	Shear (lb/sq ft)	3.01	4.53	
Alpha	1.10	Stream Power (lb/ft s)	15.45	38.83	
Frctn Loss (ft)	4.32	Cum Volume (acre-ft)	1.43	57.65	46.22
C & E Loss (ft)	0.20	Cum SA (acres)	1.98	22.71	19.53

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.779

INPUT
Description:
Station Elevation Data num= 27

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9757.2	2390	9762.1	2390	9770	2388	9778.2	2386	9786.5	2384
9845.1	2382	9901.9	2382	9945.7	2382	10000	2382	10022.5	2382
10042.3	2382	10120.8	2382	10141	2384	10160.2	2384	10172.3	2382
10182.4	2380	10200.2	2378	10219.8	2378	10234.7	2380	10259.5	2380
10347.9	2378	10470.3	2378	10497.3	2380	10509.3	2382	10524.7	2384
10543	2386	10543.3	2386						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9757.2	.07	9786.5	.055	10141	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9786.5	10141		308	303	283	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10450	10543.3	2385

Right Levee Station= 10141 Elevation= 2384

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2384.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.055	0.070
W.S. Elev (ft)	2384.01	Reach Len. (ft)	308.00	303.00	283.00
Crit W.S. (ft)	2384.01	Flow Area (sq ft)		632.88	1479.64
E.G. Slope (ft/ft)	0.003915	Area (sq ft)	0.00	632.88	1788.40
Q Total (cfs)	7150.00	Flow (cfs)		1574.12	5575.88
Top Width (ft)	738.30	Top Width (ft)	0.03	354.50	383.77
Vel Total (ft/s)	3.38	Avg. Vel. (ft/s)		2.49	3.77
Max Chl Dpth (ft)	6.01	Hydr. Depth (ft)		1.79	4.79
Conv. Total (cfs)	114267.1	Conv. (cfs)		25156.6	89110.4
Length Wtd. (ft)	286.94	Wetted Per. (ft)		354.63	309.63
Min Ch El (ft)	2382.00	Shear (lb/sq ft)		0.44	1.17
Alpha	1.09	Stream Power (lb/ft s)		1.08	4.40
Frctn Loss (ft)	1.73	Cum Volume (acre-ft)	18.42	42.94	73.34

C & E Loss (ft)	0.01	Cum SA (acres)	14.48	20.74	29.33

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2384.38	Element			
Vel Head (ft)	0.37	Wt. n-Val.		0.055	0.070
W.S. Elev (ft)	2384.01	Reach Len. (ft)	308.00	303.00	283.00
Crit W.S. (ft)	2384.01	Flow Area (sq ft)		632.88	878.88
E.G. Slope (ft/ft)	0.009657	Area (sq ft)		632.88	878.88
Q Total (cfs)	7150.00	Flow (cfs)		2472.09	4677.91
Top Width (ft)	563.50	Top Width (ft)		354.50	209.00
Vel Total (ft/s)	4.73	Avg. Vel. (ft/s)		3.91	5.32
Max Chl Dpth (ft)	6.01	Hydr. Depth (ft)		1.79	4.21
Conv. Total (cfs)	72759.1	Conv. (cfs)		25156.3	47602.8
Length Wtd. (ft)	289.16	Wetted Per. (ft)		354.64	215.64
Min Ch El (ft)	2382.00	Shear (lb/sq ft)		1.08	2.46
Alpha	1.06	Stream Power (lb/ft s)		4.20	13.08
Frctn Loss (ft)	3.74	Cum Volume (acre-ft)	0.77	53.38	43.15
C & E Loss (ft)	0.01	Cum SA (acres)	1.61	20.74	18.80

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.722

INPUT
Description:
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9349	2390	9357.4	2388	9367.2	2386	9376	2384	9385.9	2382
9396.3	2380	9407.6	2378	9627.3	2376	9729.2	2376	9840.1	2378
9858.7	2380	9875.2	2382	9896.4	2384	9905	2386	9915.7	2388
9927.8	2390	9939.9	2390	9947.3	2388	9952.7	2386	9958.6	2384
9964	2382	9966.3	2380	9972.3	2378	9978.4	2376	10000	2376
10037.3	2376	10138.7	2378	10147.1	2378	10180.2	2378	10312.4	2378
10400.5	2376	10449.7	2374	10544.7	2372	10574.6	2372	10606.2	2374
10637.7	2376	10659.9	2378	10672.5	2380	10686.6	2382		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9349	.07	9972.3	.055	10138.7	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9972.3	10138.7	643	381	483	.1	.3

Left Levee Station= 9932.1 Elevation= 2390
Right Levee Station= 10138.5 Elevation= 2378

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2378.74	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.27	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2378.47	Reach Len. (ft)	643.00	381.00	483.00
Crit W.S. (ft)	2378.01	Flow Area (sq ft)	0.33	303.42	1410.19
E.G. Slope (ft/ft)	0.010403	Area (sq ft)	0.33	303.42	1410.19
Q Total (cfs)	7150.00	Flow (cfs)	0.26	1246.20	5903.54
Top Width (ft)	691.97	Top Width (ft)	1.41	166.40	524.16
Vel Total (ft/s)	4.17	Avg. Vel. (ft/s)	0.80	4.11	4.19
Max Chl Dpth (ft)	6.47	Hydr. Depth (ft)	0.23	1.82	2.69
Conv. Total (cfs)	70101.0	Conv. (cfs)	2.6	12218.1	57880.3
Length Wtd. (ft)	460.20	Wetted Per. (ft)	1.48	166.75	524.50
Min Ch El (ft)	2376.00	Shear (lb/sq ft)	0.14	1.18	1.75
Alpha	1.00	Stream Power (lb/ft s)	0.12	4.85	7.31
Frctn Loss (ft)	8.27	Cum Volume (acre-ft)	18.42	39.68	62.95
C & E Loss (ft)	0.02	Cum SA (acres)	14.47	18.93	26.38

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2379.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.		0.055	0.070
W.S. Elev (ft)	2378.65	Reach Len. (ft)	643.00	381.00	483.00
Crit W.S. (ft)	2378.02	Flow Area (sq ft)		334.18	1011.61
E.G. Slope (ft/ft)	0.018186	Area (sq ft)		334.18	1011.61
Q Total (cfs)	7150.00	Flow (cfs)		1930.28	5219.72
Top Width (ft)	577.70	Top Width (ft)		166.40	411.30
Vel Total (ft/s)	5.31	Avg. Vel. (ft/s)		5.78	5.16
Max Chl Dpth (ft)	6.65	Hydr. Depth (ft)		2.01	2.46
Conv. Total (cfs)	53019.4	Conv. (cfs)		14313.6	38705.8
Length Wtd. (ft)	441.64	Wetted Per. (ft)		167.40	418.04
Min Ch El (ft)	2376.00	Shear (lb/sq ft)		2.27	2.75
Alpha	1.01	Stream Power (lb/ft s)		13.09	14.18
Frctn Loss (ft)	7.79	Cum Volume (acre-ft)	0.77	50.02	37.01
C & E Loss (ft)	0.02	Cum SA (acres)	1.61	18.93	16.78

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.650

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9270.5	2380	9341.6	2378	9427.9	2376	9486.2	2374	9568.3	2372
9703.6	2370	9942.1	2370	9945.1	2370	9998.7	2368	10000	2368
10001.8	2368	10114.3	2370	10162.8	2370	10228.6	2368	10267.9	2368
10318	2370	10351.4	2370	10383.2	2370	10390.4	2370	10419.8	2370
10600.4	2370	10715.7	2368	10785.6	2366	10866.8	2366	10969.1	2368
10989.8	2370	11016.9	2372	11035.1	2374	11083.6	2376	11102.2	2378
11116.4	2380								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9270.5	.07	9945.1	.055	10318	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9945.1	10318	447	500	483	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9270.5	9877	2375	10969.1	11116.4	2375

Right Levee Station= 10318 Elevation= 2370

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2370.46	Element			
Vel Head (ft)	0.45	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2370.01	Reach Len. (ft)	447.00	500.00	483.00
Crit W.S. (ft)	2370.01	Flow Area (sq ft)	0.52	369.62	961.63
E.G. Slope (ft/ft)	0.038590	Area (sq ft)	1.83	369.62	982.48
Q Total (cfs)	7150.00	Flow (cfs)	0.08	1949.74	5200.18
Top Width (ft)	1286.81	Top Width (ft)	242.01	372.90	671.90
Vel Total (ft/s)	5.37	Avg. Vel. (ft/s)	0.16	5.27	5.41
Max Chl Dpth (ft)	4.01	Hydr. Depth (ft)	0.01	0.99	1.48
Conv. Total (cfs)	36397.2	Conv. (cfs)	0.4	9925.2	26471.6
Length Wtd. (ft)	486.50	Wetted Per. (ft)	68.10	373.03	651.17
Min Ch El (ft)	2368.00	Shear (lb/sq ft)	0.02	2.39	3.56
Alpha	1.00	Stream Power (lb/ft s)	0.00	12.59	19.24
Frctn Loss (ft)	3.44	Cum Volume (acre-ft)	18.40	36.74	49.68
C & E Loss (ft)	0.11	Cum SA (acres)	12.68	16.57	19.75

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2371.29	Element			
Vel Head (ft)	0.36	Wt. n-Val.		0.055	0.070
W.S. Elev (ft)	2370.93	Reach Len. (ft)	447.00	500.00	483.00
Crit W.S. (ft)	2370.48	Flow Area (sq ft)		712.21	829.06
E.G. Slope (ft/ft)	0.017113	Area (sq ft)		712.21	829.06
Q Total (cfs)	7150.00	Flow (cfs)		3867.50	3282.50
Top Width (ft)	854.90	Top Width (ft)		372.90	482.00
Vel Total (ft/s)	4.64	Avg. Vel. (ft/s)		5.43	3.96
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)		1.91	1.72
Conv. Total (cfs)	54656.4	Conv. (cfs)		29564.2	25092.2
Length Wtd. (ft)	492.18	Wetted Per. (ft)		373.95	486.97
Min Ch El (ft)	2368.00	Shear (lb/sq ft)		2.03	1.82
Alpha	1.08	Stream Power (lb/ft s)		11.05	7.20
Frctn Loss (ft)	8.45	Cum Volume (acre-ft)	0.77	45.44	26.81
C & E Loss (ft)	0.00	Cum SA (acres)	1.61	16.57	11.83

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.555

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9878.6	2368	9889.8	2366	9900.6	2364	9913.7	2362	9999	2360
10000	2360	10045.2	2360	10150.1	2360	10151.5	2360	10308.3	2362
10369.2	2360	10400.6	2360	10413.2	2360	10486.3	2360	10544.3	2362

10653.3	2358	10654.2	2358	10786.4	2358	10894.4	2356	10918.4	2354
10971.7	2354	10987.5	2356	10999.3	2358	11018.1	2360	11033.1	2362
11070.5	2362	11078.4	2362	11118.5	2364	11133.8	2366	11142.6	2368
11152.2	2370								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9878.6	.07	9913.7	.055	10308.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9913.7	10308.3	474	500	534	.1	.3

Right Levee Station= 10544.3 Elevation= 2362

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2362.10	Element			
Vel Head (ft)	0.09	Wt. n-Val.		0.055	0.070
W.S. Elev (ft)	2362.01	Reach Len. (ft)	474.00	500.00	534.00
Crit W.S. (ft)	2362.01	Flow Area (sq ft)		550.09	2484.73
E.G. Slope (ft/ft)	0.002863	Area (sq ft)	0.00	550.09	2484.73
Q Total (cfs)	7150.00	Flow (cfs)		992.33	6157.67
Top Width (ft)	1164.90	Top Width (ft)	0.05	394.60	770.25
Vel Total (ft/s)	2.36	Avg. Vel. (ft/s)		1.80	2.48
Max Chl Dpth (ft)	8.01	Hydr. Depth (ft)		1.39	3.23
Conv. Total (cfs)	133619.8	Conv. (cfs)		18544.7	115075.1
Length Wtd. (ft)	527.86	Wetted Per. (ft)		394.64	771.03
Min Ch El (ft)	2360.00	Shear (lb/sq ft)		0.25	0.58
Alpha	1.03	Stream Power (lb/ft s)		0.45	1.43
Frctn Loss (ft)	3.35	Cum Volume (acre-ft)	18.39	31.46	30.46
C & E Loss (ft)	0.05	Cum SA (acres)	11.43	12.17	11.76

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2362.83	Element			
Vel Head (ft)	0.39	Wt. n-Val.		0.055	0.070
W.S. Elev (ft)	2362.45	Reach Len. (ft)	474.00	500.00	534.00
Crit W.S. (ft)	2362.01	Flow Area (sq ft)		723.69	725.49
E.G. Slope (ft/ft)	0.017322	Area (sq ft)		723.69	725.49
Q Total (cfs)	7150.00	Flow (cfs)		3852.31	3297.69
Top Width (ft)	739.60	Top Width (ft)		394.60	345.00
Vel Total (ft/s)	4.93	Avg. Vel. (ft/s)		5.32	4.55
Max Chl Dpth (ft)	4.45	Hydr. Depth (ft)		1.83	2.10
Conv. Total (cfs)	54326.1	Conv. (cfs)		29270.1	25056.0
Length Wtd. (ft)	520.92	Wetted Per. (ft)		395.08	349.59
Min Ch El (ft)	2360.00	Shear (lb/sq ft)		1.98	2.24
Alpha	1.02	Stream Power (lb/ft s)		10.54	10.20
Frctn Loss (ft)	10.18	Cum Volume (acre-ft)	0.77	37.20	18.19
C & E Loss (ft)	0.02	Cum SA (acres)	1.61	12.17	7.25

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.460

INPUT

Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9628	2358	9638.3	2356	9648.9	2354	9696.7	2354	9728.5	2354
9874.6	2352	9964.4	2352	9969.2	2352	9986.7	2350	10000	2350
10029.8	2350	10267	2352	10294.4	2352	10380.2	2350	10402.8	2348
10407.8	2348	10457.5	2348	10464.4	2346	10505.1	2346	10515.9	2348
10558.7	2350	10561.5	2352	10571.2	2354	10579.5	2356	10588.1	2358
10592.7	2360								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9628	.07	9969.2	.055	10267	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9969.2	10267	304	226	210	.1	.3

Right Levee Station= 10267 Elevation= 2352

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2352.61	Element			
Vel Head (ft)	0.61	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2352.01	Reach Len. (ft)	304.00	226.00	210.00
Crit W.S. (ft)	2352.01	Flow Area (sq ft)	0.72	343.15	838.53
E.G. Slope (ft/ft)	0.024329	Area (sq ft)	0.72	343.15	838.53
Q Total (cfs)	7150.00	Flow (cfs)	0.09	1588.93	5560.98
Top Width (ft)	687.49	Top Width (ft)	95.15	297.80	294.54
Vel Total (ft/s)	6.05	Avg. Vel. (ft/s)	0.13	4.63	6.63
Max Chl Dpth (ft)	6.01	Hydr. Depth (ft)	0.01	1.15	2.85
Conv. Total (cfs)	45840.1	Conv. (cfs)	0.6	10186.9	35652.5
Length Wtd. (ft)	231.04	Wetted Per. (ft)	95.15	297.92	295.80
Min Ch El (ft)	2350.00	Shear (lb/sq ft)	0.01	1.75	4.31
Alpha	1.07	Stream Power (lb/ft s)	0.00	8.10	28.55
Frctn Loss (ft)	3.72	Cum Volume (acre-ft)	18.39	26.34	10.09
C & E Loss (ft)	0.12	Cum SA (acres)	10.92	8.19	5.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2352.63	Element			
Vel Head (ft)	0.57	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2352.06	Reach Len. (ft)	304.00	226.00	210.00
Crit W.S. (ft)	2352.01	Flow Area (sq ft)	5.74	358.86	854.06
E.G. Slope (ft/ft)	0.022422	Area (sq ft)	5.74	358.86	854.06
Q Total (cfs)	7150.00	Flow (cfs)	2.80	1643.49	5503.71
Top Width (ft)	687.49	Top Width (ft)	95.15	297.80	294.54
Vel Total (ft/s)	5.87	Avg. Vel. (ft/s)	0.49	4.58	6.44
Max Chl Dpth (ft)	6.06	Hydr. Depth (ft)	0.06	1.21	2.90
Conv. Total (cfs)	47749.9	Conv. (cfs)	18.7	10975.7	36755.4
Length Wtd. (ft)	215.84	Wetted Per. (ft)	95.20	297.92	295.86
Min Ch El (ft)	2350.00	Shear (lb/sq ft)	0.08	1.69	4.04
Alpha	1.07	Stream Power (lb/ft s)	0.04	7.72	26.04
Frctn Loss (ft)	3.65	Cum Volume (acre-ft)	0.74	30.99	8.51
C & E Loss (ft)	0.05	Cum SA (acres)	1.09	8.19	3.33

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash

REACH: Above Pima Road RS: 9.418

INPUT
Description:
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9231.5	2360	9240.6	2358	9251.2	2356	9260.7	2354	9270.6	2352
9281.5	2350	9397.8	2348	9485.3	2346	9521.2	2344	9539.6	2344
9650.6	2346	9897.1	2348	9904.6	2348	9953.1	2346	10000	2346
10064	2346	10138.1	2346	10234.1	2348	10256.5	2348	10297.9	2346
10328.9	2346	10354.3	2346	10380.4	2344	10411.2	2344	10492.3	2346
10600.5	2348	10617.4	2350	10631.4	2350	10698.7	2350	10723.4	2352
10746.2	2354	10771.9	2356	10793.4	2358	10813.5	2360		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9231.5	.07	9904.6	.055	10234.1	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9904.6	10234.1	347	380	364	.1	.3

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9231.5	9485.3	2350	10519.4	10813.5	2350

Left Levee Station= 9904.6 Elevation= 2348
Right Levee Station= 10234.1 Elevation= 2348

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2348.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2348.01	Reach Len. (ft)	347.00	380.00	364.00
Crit W.S. (ft)	2348.01	Flow Area (sq ft)	763.97	516.99	648.57
E.G. Slope (ft/ft)	0.011443	Area (sq ft)	852.14	516.99	709.97
Q Total (cfs)	7150.00	Flow (cfs)	2587.53	2017.20	2545.27
Top Width (ft)	1203.20	Top Width (ft)	507.24	329.50	366.46
Vel Total (ft/s)	3.71	Avg. Vel. (ft/s)	3.39	3.90	3.92
Max Chl Dpth (ft)	4.01	Hydr. Depth (ft)	1.82	1.57	2.27
Conv. Total (cfs)	66840.6	Conv. (cfs)	24189.1	18857.5	23794.0
Length Wtd. (ft)	366.65	Wetted Per. (ft)	419.38	329.56	285.45
Min Ch El (ft)	2346.00	Shear (lb/sq ft)	1.30	1.12	1.62
Alpha	1.01	Stream Power (lb/ft s)	4.41	4.37	6.37
Frctn Loss (ft)	5.45	Cum Volume (acre-ft)	15.41	24.10	6.36
C & E Loss (ft)	0.03	Cum SA (acres)	8.81	6.56	3.64

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2348.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2348.54	Reach Len. (ft)	347.00	380.00	364.00
Crit W.S. (ft)	2348.01	Flow Area (sq ft)	2.49	692.93	738.82
E.G. Slope (ft/ft)	0.013236	Area (sq ft)	2.49	692.93	738.82
Q Total (cfs)	7150.00	Flow (cfs)	3.75	3534.74	3611.51
Top Width (ft)	592.30	Top Width (ft)	4.60	329.50	258.20
Vel Total (ft/s)	4.99	Avg. Vel. (ft/s)	1.51	5.10	4.89
Max Chl Dpth (ft)	4.54	Hydr. Depth (ft)	0.54	2.10	2.86
Conv. Total (cfs)	62149.0	Conv. (cfs)	32.6	30724.5	31391.9
Length Wtd. (ft)	374.53	Wetted Per. (ft)	5.14	329.56	260.89
Min Ch El (ft)	2346.00	Shear (lb/sq ft)	0.40	1.74	2.34
Alpha	1.00	Stream Power (lb/ft s)	0.60	8.86	11.44
Frctn Loss (ft)	6.99	Cum Volume (acre-ft)	0.71	28.26	4.67
C & E Loss (ft)	0.06	Cum SA (acres)	0.74	6.56	1.99

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.346

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8638.3	2358	8676	2358	8697.2	2360	8702	2360	8710	2358
8721.4	2356	8735.1	2354	8748.7	2352	8760.7	2350	8775	2348
8791.2	2346	8812.3	2344	8909.9	2342	9128.6	2342	9160.8	2342
9375.6	2340	9405.2	2338	9427.5	2338	9467.1	2340	9470.7	2340
9561.2	2340	9633.9	2340	9669.9	2340	9864	2340	9978.8	2338
10000	2338	10016.8	2338	10018.6	2338	10050.9	2338	10056.3	2338
10088.1	2338	10111.4	2338	10150.7	2338	10162.6	2340	10174.9	2340
10306.9	2338	10320.7	2338	10358.8	2340	10392.9	2342	10415.6	2344
10446.8	2346	10460.2	2348	10475.7	2350				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
8638.3	.07	9864	.055	10162.6	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9864	10162.6	252	289	349	.1	.3

Left Levee Station= 9864 Elevation= 2340
Right Levee Station= 10162.6 Elevation= 2340

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2341.19	Element			
Vel Head (ft)	0.50	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2340.69	Reach Len. (ft)	252.00	289.00	349.00
Crit W.S. (ft)	2340.54	Flow Area (sq ft)	476.60	676.66	337.23
E.G. Slope (ft/ft)	0.020077	Area (sq ft)	476.60	676.66	337.23
Q Total (cfs)	7150.00	Flow (cfs)	1283.33	4467.13	1399.54
Top Width (ft)	1069.13	Top Width (ft)	562.55	298.60	207.97
Vel Total (ft/s)	4.80	Avg. Vel. (ft/s)	2.69	6.60	4.15
Max Chl Dpth (ft)	2.69	Hydr. Depth (ft)	0.85	2.27	1.62
Conv. Total (cfs)	50461.3	Conv. (cfs)	9057.1	31526.9	9877.3
Length Wtd. (ft)	290.69	Wetted Per. (ft)	562.67	298.78	208.06
Min Ch El (ft)	2338.00	Shear (lb/sq ft)	1.06	2.84	2.03
Alpha	1.39	Stream Power (lb/ft s)	2.86	18.74	8.43
Frctn Loss (ft)	5.08	Cum Volume (acre-ft)	10.12	18.90	1.98
C & E Loss (ft)	0.02	Cum SA (acres)	4.55	3.82	1.24

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2341.88	Element			
Vel Head (ft)	0.97	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2340.91	Reach Len. (ft)	252.00	289.00	349.00
Crit W.S. (ft)	2340.91	Flow Area (sq ft)	85.53	742.20	149.26
E.G. Slope (ft/ft)	0.028237	Area (sq ft)	85.53	742.20	149.26
Q Total (cfs)	7150.00	Flow (cfs)	284.65	6180.21	685.14
Top Width (ft)	492.60	Top Width (ft)	94.00	298.60	100.00
Vel Total (ft/s)	7.32	Avg. Vel. (ft/s)	3.33	8.33	4.59
Max Chl Dpth (ft)	2.91	Hydr. Depth (ft)	0.91	2.49	1.49
Conv. Total (cfs)	42549.8	Conv. (cfs)	1694.0	36778.6	4077.3
Length Wtd. (ft)	291.14	Wetted Per. (ft)	94.91	298.78	102.25

Min Ch El (ft)	2338.00	Shear (lb/sq ft)	1.59	4.38	2.57
Alpha	1.16	Stream Power (lb/ft s)	5.29	36.46	11.81
Frctn Loss (ft)	4.43	Cum Volume (acre-ft)	0.36	22.00	0.96
C & E Loss (ft)	0.13	Cum SA (acres)	0.35	3.82	0.50

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.291

INPUT
Description:
Station Elevation Data num= 25

*Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
8816	2344	8830.8	2342	8889.9	2338	9335.2	2336	9374.4	2334
9397.8	2334	9507.5	2336	9645.7	2336	9703.2	2336	9863.5	2334
9997.2	2332	10000	2332	10007.5	2332	10036.5	2332	10055.9	2332
10116.1	2332	10140.4	2332	10212.9	2334	10272.3	2336	10292.3	2338
10319.3	2340	10333.3	2342	10344.2	2344	10356.1	2346	10369.6	2348

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
8816	.07	9863.5	.055	10212.9	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9863.5	10212.9	323	324	286	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2336.08	Element			
Vel Head (ft)	0.66	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2335.42	Reach Len. (ft)	323.00	324.00	286.00
Crit W.S. (ft)	2335.01	Flow Area (sq ft)	188.42	987.78	29.83
E.G. Slope (ft/ft)	0.015599	Area (sq ft)	188.42	987.78	29.83
Q Total (cfs)	7150.00	Flow (cfs)	423.74	6663.43	62.83
Top Width (ft)	634.00	Top Width (ft)	242.50	349.40	42.09
Vel Total (ft/s)	5.93	Avg. Vel. (ft/s)	2.25	6.75	2.11
Max Chl Dpth (ft)	3.42	Hydr. Depth (ft)	0.78	2.83	0.71
Conv. Total (cfs)	57247.9	Conv. (cfs)	3392.7	53352.1	503.1
Length Wtd. (ft)	323.57	Wetted Per. (ft)	242.56	349.44	42.12
Min Ch El (ft)	2332.00	Shear (lb/sq ft)	0.76	2.75	0.69
Alpha	1.22	Stream Power (lb/ft s)	1.70	18.57	1.45
Frctn Loss (ft)	6.23	Cum Volume (acre-ft)	8.19	13.38	0.51
C & E Loss (ft)	0.00	Cum SA (acres)	2.22	1.68	0.23

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2336.58	Element			
Vel Head (ft)	0.55	Wt. n-Val.		0.055	
W.S. Elev (ft)	2336.03	Reach Len. (ft)	323.00	324.00	286.00
Crit W.S. (ft)	2334.93	Flow Area (sq ft)		1201.13	
E.G. Slope (ft/ft)	0.009504	Area (sq ft)		1201.13	
Q Total (cfs)	7150.00	Flow (cfs)		7150.00	
Top Width (ft)	349.40	Top Width (ft)		349.40	
Vel Total (ft/s)	5.95	Avg. Vel. (ft/s)		5.95	
Max Chl Dpth (ft)	4.03	Hydr. Depth (ft)		3.44	
Conv. Total (cfs)	73342.4	Conv. (cfs)		73342.4	
Length Wtd. (ft)	323.87	Wetted Per. (ft)		353.50	
Min Ch El (ft)	2332.00	Shear (lb/sq ft)		2.02	
Alpha	1.00	Stream Power (lb/ft s)		12.00	

Frctn Loss (ft)	4.99	Cum Volume (acre-ft)	0.11	15.56	0.36
C & E Loss (ft)	0.10	Cum SA (acres)	0.08	1.68	0.10

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Above Pima Road RS: 9.23

INPUT
Description: Approach section for private bridge along eastern property boundary at the southwest corner of Pima Road and Dixileta Road
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9176.5	2330	9210.2	2332	9227.7	2334	9257.4	2334	9272	2332
9286	2330	9300.4	2328	9419.1	2328	9511.3	2328	9550.2	2328
9718.7	2328	9744.7	2328	9938.6	2328	9998.3	2326	10000	2326
10008.9	2326	10054.3	2326	10080	2326	10151.8	2328	10166.8	2329.96
10181.3	2332	10199.2	2334	10213.1	2334				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9176.5	.07	9938.6	.055	10151.8	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9938.6	10151.8	695	402	361	.3	.5

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2329.86	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.	0.070	0.055	0.070
W.S. Elev (ft)	2329.19	Reach Len. (ft)	402.00	402.00	402.00
Crit W.S. (ft)	2329.19	Flow Area (sq ft)	764.04	548.44	5.41
E.G. Slope (ft/ft)	0.024143	Area (sq ft)	764.04	548.44	5.41
Q Total (cfs)	7150.00	Flow (cfs)	2815.94	4321.51	12.55
Top Width (ft)	869.06	Top Width (ft)	646.76	213.20	9.10
Vel Total (ft/s)	5.43	Avg. Vel. (ft/s)	3.69	7.88	2.32
Max Chl Dpth (ft)	3.19	Hydr. Depth (ft)	1.18	2.57	0.59
Conv. Total (cfs)	46016.1	Conv. (cfs)	18122.9	27812.4	80.8
Length Wtd. (ft)	402.00	Wetted Per. (ft)	646.84	213.26	9.18
Min Ch El (ft)	2326.00	Shear (lb/sq ft)	1.78	3.88	0.89
Alpha	1.46	Stream Power (lb/ft s)	6.56	30.54	2.06
Frctn Loss (ft)	3.75	Cum Volume (acre-ft)	6.52	8.67	0.30
C & E Loss (ft)	0.15	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2331.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.58	Wt. n-Val.		0.055	0.070
W.S. Elev (ft)	2329.91	Reach Len. (ft)	402.00	402.00	402.00
Crit W.S. (ft)	2329.91	Flow Area (sq ft)		701.42	11.94
E.G. Slope (ft/ft)	0.029051	Area (sq ft)		701.42	11.94
Q Total (cfs)	7150.00	Flow (cfs)		7101.03	48.97
Top Width (ft)	222.30	Top Width (ft)		213.20	9.10
Vel Total (ft/s)	10.02	Avg. Vel. (ft/s)		10.12	4.10

Max Chl Dpth (ft)	3.91	Hydr. Depth (ft)		3.29	1.31
Conv. Total (cfs)	41949.4	Conv. (cfs)		41662.1	287.3
Length Wtd. (ft)	402.00	Wetted Per. (ft)		215.17	9.90
Min Ch El (ft)	2326.00	Shear (lb/sq ft)		5.91	2.19
Alpha	1.01	Stream Power (lb/ft s)		59.85	8.98
Frctn Loss (ft)	3.16	Cum Volume (acre-ft)	0.07	10.05	0.25
C & E Loss (ft)	0.64	Cum SA (acres)			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: A flow split was encountered. The program first calculated the momentum of both channels below the junction. An energy balance was performed across the junction from the stream with the highest momentum downstream to the section upstream.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Main Wash RS: 9.153

INPUT
Description: Upstream face of private bridge along eastern property boundary at the southwest corner of Pima Road and Dixileta Road
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9867.4	2324	9867.4	2320	9944.8	2320	9988.5	2318.6	10000	2314.8
10135.8	2316.3	10147.3	2320.6	10198	2322	10204	2322	10253	2322
10282.8	2324	10296.5	2326	10309.2	2326	10314.7	2326	10370	2326
10375.1	2326	10419.9	2328	10478.5	2330				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9867.4	.04	9988.5	.059	10147.3	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.5	10147.3	71	57	79	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9867.4	9983.5	2322	10152.3	10478.5	2322

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2321.98	Element			
Vel Head (ft)	0.37	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2321.61	Reach Len. (ft)	5.00	5.00	5.00
Crit W.S. (ft)	2318.72	Flow Area (sq ft)	14.66	915.99	4.71
E.G. Slope (ft/ft)	0.003676	Area (sq ft)	225.75	915.99	18.53
Q Total (cfs)	4550.00	Flow (cfs)	67.59	4472.21	10.20
Top Width (ft)	316.53	Top Width (ft)	121.10	158.80	36.63
Vel Total (ft/s)	4.86	Avg. Vel. (ft/s)	4.61	4.88	2.16
Max Chl Dpth (ft)	6.81	Hydr. Depth (ft)	2.93	5.77	0.94
Conv. Total (cfs)	75049.7	Conv. (cfs)	1114.8	73766.6	168.2
Length Wtd. (ft)	5.00	Wetted Per. (ft)	5.00	160.20	5.00
Min Ch El (ft)	2314.80	Shear (lb/sq ft)	0.67	1.31	0.22
Alpha	1.00	Stream Power (lb/ft s)	3.10	6.41	0.47
Frctn Loss (ft)		Cum Volume (acre-ft)	10.21	13.54	2.74
C & E Loss (ft)		Cum SA (acres)	6.61	3.66	2.15

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2322.73	Element			
Vel Head (ft)	0.29	Wt. n-Val.		0.059	
W.S. Elev (ft)	2322.43	Reach Len. (ft)	5.00	5.00	5.00

```
  Crit W.S. (ft)            2318.71   Flow Area (sq ft)                    1046.14
  E.G. Slope (ft/ft)       0.002559   Area (sq ft)                         1046.14
  Q Total (cfs)             4550.00   Flow (cfs)                           4550.00
  Top Width (ft)             158.80   Top Width (ft)                        158.80
  Vel Total (ft/s)             4.35   Avg. Vel. (ft/s)                        4.35
  Max Chl Dpth (ft)            7.63   Hydr. Depth (ft)                        6.59
  Conv. Total (cfs)         89943.1   Conv. (cfs)                          89943.1
  Length Wtd. (ft)             5.00   Wetted Per. (ft)                      165.86
  Min Ch El (ft)            2314.80   Shear (lb/sq ft)                        1.01
  Alpha                        1.00   Stream Power (lb/ft s)                  4.38
  Frctn Loss (ft)                     Cum Volume (acre-ft)         5.39      16.22       1.29
  C & E Loss (ft)                     Cum SA (acres)               1.97       3.63       0.86


BRIDGE                    RIVER: Rawhide Wash
REACH: Main Wash             RS: 9.152

INPUT
Description:
Distance from Upstream XS =       5
Deck/Roadway Width        =      10
Weir Coefficient          =     2.6
Bridge Deck/Roadway Skew  =
Upstream  Deck/Roadway Coordinates
    num=        4
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  9867.4    2324          9988.5    2324  2318.6 10147.3    2328  2320.6
 10462.4    2328

Upstream Bridge Cross Section Data
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9867.4    2324  9867.4    2320  9944.8    2320  9988.5  2318.6   10000  2314.8
 10135.8  2316.3 10147.3  2320.6   10198    2322   10204    2322   10253    2322
 10282.8    2324 10296.5    2326 10309.2    2326 10314.7    2326   10370    2326
 10375.1    2326 10419.9    2328 10478.5    2330

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9867.4     .04  9988.5    .059 10147.3     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9988.5 10147.3             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
  9867.4  9983.5    2322 10152.3 10478.5    2322

Downstream  Deck/Roadway Coordinates
    num=        4
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  9935.8    2324          9988.5    2324  2318.3 10147.3    2328  2320.3
 10362.4    2328

Downstream Bridge Cross Section Data
Station Elevation Data    num=      16
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
  9935.8 2323.97  9935.8    2318  9947.3    2318  9988.5  2318.3   10000  2314.5
 10135.8    2316 10147.3  2320.310197.75    232010252.45    232210289.75    2324
10313.75    232610346.45    2328 10362.4    232810377.75    232810384.55    2328
10408.25    2330

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
  9935.8     .04  9988.5    .059 10147.3     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9988.5 10147.3             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
  9935.8  9968.5    2321 10167.310408.25    2321

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
```

```
Elevation at which weir flow begins          =
Energy head used in spillway design          =
Spillway height used in design               =
Weir crest shape                             = Broad Crested

Number of Piers =  5

Pier Data
Pier Station     Upstream= 10011.5    Downstream= 10011.5
Upstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6

Pier Data
Pier Station     Upstream= 10039.5    Downstream= 10039.5
Upstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6

Pier Data
Pier Station     Upstream= 10067.5    Downstream= 10067.5
Upstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6

Pier Data
Pier Station     Upstream= 10095.5    Downstream= 10095.5
Upstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6

Pier Data
Pier Station     Upstream= 10123.5    Downstream= 10123.5
Upstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6
Downstream     num=       2
    Width   Elev    Width   Elev
       1    2306       1  2320.6

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION          RIVER: Rawhide Wash
REACH: Main Wash          RS: 9.143
```

INPUT
Description: Downstream face of private bridge along eastern property boundary
at the southwest corner of Pima Road and Dixileta Road
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9935.8	2323.97	9935.8	2318	9947.3	2318	9988.5	2318.3	10000	2314.5
10135.8	2316	10147.3	2320.31	10197.75	2320	10252.45	2322	10289.75	2324
10313.75	2326	10346.45	2328	10362.4	2328	10377.75	2328	10384.55	2328
10408.25	2330								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9935.8	.04	9988.5	.059	10147.3	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.5	10147.3	106	100	136	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9935.8	9968.5	2321	10167.3	10408.25	2321

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2320.94	Element			
Vel Head (ft)	0.47	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2320.47	Reach Len. (ft)	106.00	100.00	136.00
Crit W.S. (ft)	2318.49	Flow Area (sq ft)	44.82	782.08	4.55
E.G. Slope (ft/ft)	0.005828	Area (sq ft)	123.90	782.08	19.05
Q Total (cfs)	4550.00	Flow (cfs)	217.69	4327.50	4.81
Top Width (ft)	274.76	Top Width (ft)	52.70	158.80	63.26
Vel Total (ft/s)	5.47	Avg. Vel. (ft/s)	4.86	5.53	1.06
Max Chl Dpth (ft)	5.97	Hydr. Depth (ft)	2.24	4.92	0.23
Conv. Total (cfs)	59598.6	Conv. (cfs)	2851.4	56684.1	63.1
Length Wtd. (ft)	101.35	Wetted Per. (ft)	20.00	160.20	20.00
Min Ch El (ft)	2314.50	Shear (lb/sq ft)	0.82	1.78	0.08
Alpha	1.01	Stream Power (lb/ft s)	3.96	9.83	0.09
Frctn Loss (ft)	0.88	Cum Volume (acre-ft)	10.14	12.66	2.73
C & E Loss (ft)	0.03	Cum SA (acres)	6.58	3.57	2.12

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2321.62	Element			
Vel Head (ft)	0.40	Wt. n-Val.		0.059	
W.S. Elev (ft)	2321.22	Reach Len. (ft)	106.00	100.00	136.00
Crit W.S. (ft)	2318.41	Flow Area (sq ft)		901.76	
E.G. Slope (ft/ft)	0.004137	Area (sq ft)		901.76	
Q Total (cfs)	4550.00	Flow (cfs)		4550.00	
Top Width (ft)	158.80	Top Width (ft)		158.80	
Vel Total (ft/s)	5.05	Avg. Vel. (ft/s)		5.05	
Max Chl Dpth (ft)	6.72	Hydr. Depth (ft)		5.68	
Conv. Total (cfs)	70739.8	Conv. (cfs)		70739.8	
Length Wtd. (ft)	100.72	Wetted Per. (ft)		164.04	
Min Ch El (ft)	2314.50	Shear (lb/sq ft)		1.42	
Alpha	1.00	Stream Power (lb/ft s)		7.16	
Frctn Loss (ft)	0.73	Cum Volume (acre-ft)	5.39	15.28	1.29
C & E Loss (ft)	0.12	Cum SA (acres)	1.97	3.54	0.86

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Main Wash RS: 9.124

INPUT
Description: Exit section for private bridge along eastern property boundary at
the southwest corner of Pima Road and Dixileta Road
Station Elevation Data num= 19

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9818	2324.1	9818	2318	9869.2	2318	9953.1	2318	9987.8	2318
9993.9	2316	10000	2316	10020.5	2316	10042.6	2316	10067.1	2316

10159.5	2318	10190.1	2320	10198.2	2320	10204.9	2320	10228.8	2322
10243.6	2324	10261.5	2326	10283.9	2328	10319.6	2330		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9818	.04	9987.8	.059	10159.5	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9987.8	10159.5	228	202	227	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2320.03	Element			
Vel Head (ft)	0.56	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2319.47	Reach Len. (ft)	228.00	202.00	227.00
Crit W.S. (ft)	2319.09	Flow Area (sq ft)	250.14	497.84	16.60
E.G. Slope (ft/ft)	0.014394	Area (sq ft)	250.14	497.84	16.60
Q Total (cfs)	4550.00	Flow (cfs)	1435.08	3054.66	60.26
Top Width (ft)	364.04	Top Width (ft)	169.80	171.70	22.54
Vel Total (ft/s)	5.95	Avg. Vel. (ft/s)	5.74	6.14	3.63
Max Chl Dpth (ft)	3.47	Hydr. Depth (ft)	1.47	2.90	0.74
Conv. Total (cfs)	37924.3	Conv. (cfs)	11961.4	25460.6	502.3
Length Wtd. (ft)	216.90	Wetted Per. (ft)	171.27	172.04	22.59
Min Ch El (ft)	2316.00	Shear (lb/sq ft)	1.31	2.60	0.66
Alpha	1.01	Stream Power (lb/ft s)	7.53	15.96	2.40
Frctn Loss (ft)	3.90	Cum Volume (acre-ft)	9.68	11.20	2.67
C & E Loss (ft)	0.02	Cum SA (acres)	6.31	3.19	1.98

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2320.77	Element			
Vel Head (ft)	0.79	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2319.98	Reach Len. (ft)	228.00	202.00	227.00
Crit W.S. (ft)	2319.35	Flow Area (sq ft)	28.53	585.07	28.30
E.G. Slope (ft/ft)	0.015935	Area (sq ft)	28.53	585.07	28.30
Q Total (cfs)	4550.00	Flow (cfs)	193.65	4206.42	149.93
Top Width (ft)	209.15	Top Width (ft)	14.40	171.70	23.05
Vel Total (ft/s)	7.09	Avg. Vel. (ft/s)	6.79	7.19	5.30
Max Chl Dpth (ft)	3.98	Hydr. Depth (ft)	1.98	3.41	1.23
Conv. Total (cfs)	36044.2	Conv. (cfs)	1534.0	33322.4	1187.7
Length Wtd. (ft)	212.87	Wetted Per. (ft)	16.38	172.04	23.57
Min Ch El (ft)	2316.00	Shear (lb/sq ft)	1.73	3.38	1.19
Alpha	1.01	Stream Power (lb/ft s)	11.76	24.32	6.33
Frctn Loss (ft)	3.94	Cum Volume (acre-ft)	5.35	13.58	1.25
C & E Loss (ft)	0.02	Cum SA (acres)	1.95	3.17	0.83

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Main Wash RS: 9.085

INPUT
Description:
Station Elevation Data num= 22

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9647	2320	9647.5	2314	9986.6	2314	9999.5	2312	10000	2312
10001.2	2312	10035.5	2314	10070.6	2314	10081.4	2314	10115.6	2316
10119	2316	10133.2	2316	10136	2316	10136.4	2316	10163.4	2318
10183.3	2320	10203.6	2322	10241.4	2322	10258.8	2322	10281	2324
10310.2	2326	10326	2328						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9647	.04	9986.6	.059	10035.5	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9986.6	10035.5	237	384	443	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2316.11	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.73	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2315.38	Reach Len. (ft)	237.00	384.00	443.00
Crit W.S. (ft)	2315.38	Flow Area (sq ft)	466.59	117.87	79.33
E.G. Slope (ft/ft)	0.023117	Area (sq ft)	466.59	117.87	79.33
Q Total (cfs)	4550.00	Flow (cfs)	3251.37	809.11	489.52
Top Width (ft)	457.54	Top Width (ft)	339.21	48.90	69.42
Vel Total (ft/s)	6.85	Avg. Vel. (ft/s)	6.97	6.86	6.17
Max Chl Dpth (ft)	3.38	Hydr. Depth (ft)	1.38	2.41	1.14
Conv. Total (cfs)	29925.9	Conv. (cfs)	21384.7	5321.6	3219.6
Length Wtd. (ft)	290.97	Wetted Per. (ft)	340.48	49.11	69.46
Min Ch El (ft)	2312.00	Shear (lb/sq ft)	1.98	3.46	1.65
Alpha	1.00	Stream Power (lb/ft s)	13.78	23.78	10.17
Frctn Loss (ft)	4.29	Cum Volume (acre-ft)	7.80	9.77	2.42
C & E Loss (ft)	0.11	Cum SA (acres)	4.98	2.68	1.74

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2316.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2315.83	Reach Len. (ft)	237.00	384.00	443.00
Crit W.S. (ft)	2315.83	Flow Area (sq ft)	325.34	140.08	111.08
E.G. Slope (ft/ft)	0.022044	Area (sq ft)	325.34	140.08	111.08
Q Total (cfs)	4550.00	Flow (cfs)	2666.22	1053.46	830.32
Top Width (ft)	296.63	Top Width (ft)	177.80	48.90	69.93
Vel Total (ft/s)	7.89	Avg. Vel. (ft/s)	8.20	7.52	7.48
Max Chl Dpth (ft)	3.83	Hydr. Depth (ft)	1.83	2.86	1.59
Conv. Total (cfs)	30645.7	Conv. (cfs)	17957.9	7095.4	5592.5
Length Wtd. (ft)	308.09	Wetted Per. (ft)	179.63	49.11	70.40
Min Ch El (ft)	2312.00	Shear (lb/sq ft)	2.49	3.93	2.17
Alpha	1.01	Stream Power (lb/ft s)	20.43	29.52	16.23
Frctn Loss (ft)	4.21	Cum Volume (acre-ft)	4.43	11.90	0.89
C & E Loss (ft)	0.11	Cum SA (acres)	1.45	2.65	0.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Main Wash RS: 9.013

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9534	2316	9535	2310	9567.8	2310	9600.6	2310	9637.7	2310
9641.3	2310	9683.2	2308	9705.1	2308	9769.8	2308	9778.2	2308
9810.7	2308	9823.4	2308	9886.5	2310	9888.3	2310	9932.6	2308
9932.7	2308	9984.4	2308	10000	2308	10002.7	2308	10022	2310
10044	2310	10064.1	2308	10082.5	2308	10098	2310	10124.4	2312
10143.9	2314								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9534	.04	9888.3	.059	10022	.04

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9888.3	10022	343	360	339	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2310.88	Element			
Vel Head (ft)	0.36	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2310.51	Reach Len. (ft)	343.00	360.00	339.00
Crit W.S. (ft)	2310.08	Flow Area (sq ft)	566.90	272.48	113.18
E.G. Slope (ft/ft)	0.010213	Area (sq ft)	566.90	272.48	113.18
Q Total (cfs)	4550.00	Flow (cfs)	2913.67	1113.95	522.38
Top Width (ft)	569.87	Top Width (ft)	353.39	133.70	82.78
Vel Total (ft/s)	4.78	Avg. Vel. (ft/s)	5.14	4.09	4.62
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)	1.60	2.04	1.37
Conv. Total (cfs)	45022.9	Conv. (cfs)	28831.2	11022.7	5169.0
Length Wtd. (ft)	350.24	Wetted Per. (ft)	353.90	133.85	83.03
Min Ch El (ft)	2308.00	Shear (lb/sq ft)	1.02	1.30	0.87
Alpha	1.03	Stream Power (lb/ft s)	5.25	5.31	4.01
Frctn Loss (ft)	5.38	Cum Volume (acre-ft)	4.99	8.05	1.45
C & E Loss (ft)	0.03	Cum SA (acres)	3.09	1.87	0.97

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2312.04	Element			
Vel Head (ft)	0.60	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2311.44	Reach Len. (ft)	343.00	360.00	339.00
Crit W.S. (ft)	2310.76	Flow Area (sq ft)	340.77	396.91	31.78
E.G. Slope (ft/ft)	0.009287	Area (sq ft)	340.77	396.91	31.78
Q Total (cfs)	4550.00	Flow (cfs)	2422.40	1988.28	139.31
Top Width (ft)	274.00	Top Width (ft)	118.30	133.70	22.00
Vel Total (ft/s)	5.91	Avg. Vel. (ft/s)	7.11	5.01	4.38
Max Chl Dpth (ft)	3.44	Hydr. Depth (ft)	2.88	2.97	1.44
Conv. Total (cfs)	47215.5	Conv. (cfs)	25137.3	20632.5	1445.6
Length Wtd. (ft)	354.53	Wetted Per. (ft)	121.78	133.85	23.44
Min Ch El (ft)	2308.00	Shear (lb/sq ft)	1.62	1.72	0.79
Alpha	1.10	Stream Power (lb/ft s)	11.53	8.61	3.45
Frctn Loss (ft)	5.69	Cum Volume (acre-ft)	2.61	9.53	0.16
C & E Loss (ft)	0.06	Cum SA (acres)	0.64	1.85	0.12

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Main Wash RS: 8.945

INPUT
Description: Approach section for private bridge along southern property boundary at the southwest corner of Pima Road and Dixileta Road
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9648.6	2310	9648.6	2304	9897.8	2304	9932.8	2304	9992.6	2302
10000	2302	10002.8	2302	10067.2	2302	10068.9	2302	10123.9	2304
10132.2	2304	10188.7	2304	10231.8	2306	10258.8	2308		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9648.6	.04	9932.8	.059	10123.9	.04

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

9932.8 10123.9 126 124 124 .3 .5

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2305.48	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.62	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2304.86	Reach Len. (ft)	126.00	124.00	124.00
Crit W.S. (ft)	2304.86	Flow Area (sq ft)	243.06	430.84	63.30
E.G. Slope (ft/ft)	0.025083	Area (sq ft)	243.06	430.84	63.30
Q Total (cfs)	4550.00	Flow (cfs)	1285.81	2953.95	310.24
Top Width (ft)	558.53	Top Width (ft)	284.20	191.10	83.23
Vel Total (ft/s)	6.17	Avg. Vel. (ft/s)	5.29	6.86	4.90
Max Chl Dpth (ft)	2.86	Hydr. Depth (ft)	0.86	2.25	0.76
Conv. Total (cfs)	28729.2	Conv. (cfs)	8118.8	18651.5	1958.9
Length Wtd. (ft)	124.29	Wetted Per. (ft)	285.06	191.17	83.25
Min Ch El (ft)	2302.00	Shear (lb/sq ft)	1.34	3.53	1.19
Alpha	1.05	Stream Power (lb/ft s)	7.06	24.20	5.84
Frctn Loss (ft)	0.60	Cum Volume (acre-ft)	1.80	5.14	0.76
C & E Loss (ft)	0.18	Cum SA (acres)	0.58	0.53	0.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2306.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.15	Wt. n-Val.	0.040	0.059	0.040
W.S. Elev (ft)	2305.14	Reach Len. (ft)	126.00	124.00	124.00
Crit W.S. (ft)	2305.14	Flow Area (sq ft)	37.36	485.05	6.95
E.G. Slope (ft/ft)	0.034615	Area (sq ft)	37.36	485.05	6.95
Q Total (cfs)	4550.00	Flow (cfs)	275.24	4228.05	46.72
Top Width (ft)	230.00	Top Width (ft)	32.80	191.10	6.10
Vel Total (ft/s)	8.60	Avg. Vel. (ft/s)	7.37	8.72	6.72
Max Chl Dpth (ft)	3.14	Hydr. Depth (ft)	1.14	2.54	1.14
Conv. Total (cfs)	24455.5	Conv. (cfs)	1479.4	22725.1	251.1
Length Wtd. (ft)	124.06	Wetted Per. (ft)	33.94	191.17	7.24
Min Ch El (ft)	2302.00	Shear (lb/sq ft)	2.38	5.48	2.07
Alpha	1.01	Stream Power (lb/ft s)	17.53	47.79	13.95
Frctn Loss (ft)	0.49	Cum Volume (acre-ft)	1.13	5.89	0.01
C & E Loss (ft)	0.47	Cum SA (acres)	0.05	0.51	0.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Main Wash RS: 8.921

INPUT
Description: Upstream face of private bridge along southern property boundary
at the southwest corner of Pima Road and Dixileta Road
Station Elevation Data num= 20

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9881	2306.1	9881.3	2302	9892.7	2299.7	9904.2	2295.6	10040	2294.7
10051.5	2298.5	10060.7	2300	10139.1	2302	10190.85	2304	10213.55	2304
10246.55	2302	10250.05	2302	10298.65	2304	10321.05	2306	10339.65	2308
10352.85	2310	10366.25	2310	10388.55	2308	10441.85	2308	10487.85	2310

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9881     .04  9892.7    .059 10051.5     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9892.7 10051.5               45      43      52             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    9881  9890.5    2304 10054.510487.85    2304

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2302.66   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.26   Wt. n-Val.                   0.040      0.059      0.040
  W.S. Elev (ft)            2302.40   Reach Len. (ft)               5.00       5.00       5.00
  Crit W.S. (ft)            2298.33   Flow Area (sq ft)             5.45    1105.54      10.96
  E.G. Slope (ft/ft)       0.001979   Area (sq ft)                 17.65    1105.54     145.23
  Q Total (cfs)             4550.00   Flow (cfs)                   16.26    4491.15      42.59
  Top Width (ft)             287.86   Top Width (ft)               11.43     158.80     117.63
  Vel Total (ft/s)             4.06   Avg. Vel. (ft/s)              2.98       4.06       3.89
  Max Chl Dpth (ft)            7.70   Hydr. Depth (ft)              2.48       6.96       3.65
  Conv. Total (cfs)        102279.3   Conv. (cfs)                  365.5   100956.4      957.4
  Length Wtd. (ft)             5.00   Wetted Per. (ft)              2.24     160.12       3.04
  Min Ch El (ft)            2294.70   Shear (lb/sq ft)              0.30       0.85       0.45
  Alpha                        1.00   Stream Power (lb/ft s)        0.90       3.47       1.73
  Frctn Loss (ft)                     Cum Volume (acre-ft)          1.43       2.95       0.46
  C & E Loss (ft)                     Cum SA (acres)                0.16       0.03       0.04


CROSS SECTION OUTPUT    Profile #Method 1 Fldwy

  E.G. Elev (ft)            2303.53   Element                    Left OB    Channel   Right OB
  Vel Head (ft)                0.20   Wt. n-Val.                            0.059
  W.S. Elev (ft)            2303.32   Reach Len. (ft)               5.00       5.00       5.00
  Crit W.S. (ft)            2298.32   Flow Area (sq ft)                     1252.48
  E.G. Slope (ft/ft)       0.001435   Area (sq ft)                          1252.48
  Q Total (cfs)             4550.00   Flow (cfs)                            4550.00
  Top Width (ft)             158.80   Top Width (ft)                         158.80
  Vel Total (ft/s)             3.63   Avg. Vel. (ft/s)                         3.63
  Max Chl Dpth (ft)            8.62   Hydr. Depth (ft)                         7.89
  Conv. Total (cfs)        120108.9   Conv. (cfs)                          120108.9
  Length Wtd. (ft)             5.00   Wetted Per. (ft)                       168.57
  Min Ch El (ft)            2294.70   Shear (lb/sq ft)                         0.67
  Alpha                        1.00   Stream Power (lb/ft s)                   2.42
  Frctn Loss (ft)                     Cum Volume (acre-ft)          1.07       3.41
  C & E Loss (ft)                     Cum SA (acres)                           0.01


BRIDGE                  RIVER: Rawhide Wash
REACH: Main Wash           RS: 8.920

INPUT
Description:
Distance from Upstream XS =       5
Deck/Roadway Width        =      10
Weir Coefficient          =     2.6
Bridge Deck/Roadway Skew  =
Upstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  9676.6    2306          9856.6    2306          9887.6    2306    2299
 10056.6    2306    2298 10066.6    2306         10516.6    2310

Upstream Bridge Cross Section Data
Station Elevation Data    num=      20
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9881  2306.1  9881.3    2302  9892.7  2299.7  9904.2  2295.6   10040  2294.7
 10051.5  2298.5 10060.7    2300 10139.1    230210190.85    230410213.55    2304
10246.55    230210250.05    230210298.65    230410321.05    230610339.65    2308
10352.85    231010366.25    231010388.55    230810441.85    230810487.85    2310

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

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    9881      .04  9892.7     .059 10051.5      .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9892.7 10051.5             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    9881  9890.5    2304 10054.510487.85    2304

Downstream  Deck/Roadway Coordinates
    num=       6
     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
  9676.6    2306          9856.6    2306          9887.6    2306    2299
 10056.6    2306    2298 10066.6    2306         10516.6    2310

Downstream Bridge Cross Section Data
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9873    2306    9873    2302  9892.7  2299.4  9904.2  2295.2  9972.1  2294.8
   10040  2294.4 10051.5  2298.2 10099.7    2300 10121.7    2300 10184.4    2302
 10188.6    2302 10251.1    2302 10285.6    2304 10298.6    230610322.26 2308.11
 10341.7    2310 10390.9    2310   10453    2310

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9873     .04  9892.7    .059 10051.5     .04

Bank Sta: Left   Right    Coeff Contr.   Expan.
        9892.7 10051.5             .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    9873    9878    2303 10065.5   10453    2303

Upstream Embankment side slope              =         horiz. to 1.0 vertical
Downstream Embankment side slope            =         horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Piers =  5

Pier Data
Pier Station     Upstream=  9915.7    Downstream=  9915.7
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299
Downstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299

Pier Data
Pier Station     Upstream=  9943.7    Downstream=  9943.7
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299
Downstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299

Pier Data
Pier Station     Upstream=  9971.7    Downstream=  9971.7
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299
Downstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299

Pier Data
Pier Station     Upstream=  9999.7    Downstream=  9999.7
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299
```

```
Downstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299

Pier Data
Pier Station     Upstream= 10027.7    Downstream= 10027.7
Upstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299
Downstream     num=       2
    Width   Elev    Width   Elev
       1  2294.4       1    2299

Number of Bridge Coefficient Sets =  1

Low Flow Methods and Data
       Energy
Selected Low Flow Methods = Highest Energy Answer

High Flow Method
       Pressure and Weir flow
           Submerged Inlet Cd          =
           Submerged Inlet + Outlet Cd =      .8
           Max Low Cord                =

Additional Bridge Parameters
       Add Friction component to Momentum
       Do not add Weight component to Momentum
       Class B flow critical depth computations use critical depth
           inside the bridge at the upstream end
       Criteria to check for pressure flow = Upstream energy grade line

CROSS SECTION          RIVER: Rawhide Wash
REACH: Main Wash          RS: 8.913

INPUT
Description: Downstream face of private bridge along southern property boundary
             at the southwest corner of Pima Road and Dixileta Road
Station Elevation Data    num=      18
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
    9873    2306    9873    2302  9892.7  2299.4  9904.2  2295.2  9972.1  2294.8
   10040  2294.4 10051.5  2298.2 10099.7    2300 10121.7    2300 10184.4    2302
 10188.6    2302 10251.1    2302 10285.6    2304 10298.6    230610322.26 2308.11
 10341.7    2310 10390.9    2310   10453    2310

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
    9873     .04  9892.7    .059 10051.5     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        9892.7 10051.5              225     225     219              .3       .5
Ineffective Flow     num=       2
   Sta L   Sta R    Elev   Sta L   Sta R    Elev
    9873    9878    2303 10065.5   10453    2303

CROSS SECTION OUTPUT    Profile #100yr Natural Fp

  E.G. Elev (ft)            2300.82   Element                  Left OB    Channel   Right OB
  Vel Head (ft)                0.43   Wt. n-Val.                0.040      0.059      0.040
  W.S. Elev (ft)            2300.40   Reach Len. (ft)          225.00     225.00     225.00
  Crit W.S. (ft)            2297.98   Flow Area (sq ft)          3.75     842.49      27.07
  E.G. Slope (ft/ft)       0.004778   Area (sq ft)               3.75     842.49      73.55
  Q Total (cfs)             4550.00   Flow (cfs)                 6.01    4436.15     107.83
  Top Width (ft)             248.92   Top Width (ft)             7.54     158.80      82.58
  Vel Total (ft/s)             5.21   Avg. Vel. (ft/s)           1.60       5.27       3.98
  Max Chl Dpth (ft)            6.00   Hydr. Depth (ft)           0.50       5.31       1.93
  Conv. Total (cfs)         65825.5   Conv. (cfs)                87.0    64178.4     1560.0
  Length Wtd. (ft)           225.00   Wetted Per. (ft)           7.61     160.16      14.01
  Min Ch El (ft)            2294.40   Shear (lb/sq ft)           0.15       1.57       0.58
  Alpha                        1.01   Stream Power (lb/ft s)     0.24       8.26       2.30
  Frctn Loss (ft)              2.06   Cum Volume (acre-ft)       1.14       2.50       0.40
  C & E Loss (ft)              0.07   Cum SA (acres)
```

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2301.60	Element			
Vel Head (ft)	0.33	Wt. n-Val.		0.059	
W.S. Elev (ft)	2301.27	Reach Len. (ft)	225.00	225.00	225.00
Crit W.S. (ft)	2297.98	Flow Area (sq ft)		980.82	
E.G. Slope (ft/ft)	0.003153	Area (sq ft)		980.82	
Q Total (cfs)	4550.00	Flow (cfs)		4550.00	
Top Width (ft)	158.80	Top Width (ft)		158.80	
Vel Total (ft/s)	4.64	Avg. Vel. (ft/s)		4.64	
Max Chl Dpth (ft)	6.87	Hydr. Depth (ft)		6.18	
Conv. Total (cfs)	81030.3	Conv. (cfs)		81030.3	
Length Wtd. (ft)	225.00	Wetted Per. (ft)		165.09	
Min Ch El (ft)	2294.40	Shear (lb/sq ft)		1.17	
Alpha	1.00	Stream Power (lb/ft s)		5.43	
Frctn Loss (ft)	1.60	Cum Volume (acre-ft)	0.86	2.93	
C & E Loss (ft)	0.21	Cum SA (acres)			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Pima Road RS: 0.285

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9348.3	2324	9371.3	2322	9431	2320	9459.9	2320	9520.7	2320
9520.8	2320	9522.4	2320	9526.3	2320	9535	2322	9536.2	2322
9700.3	2320	9704.4	2320	9767.4	2322	9793.9	2322	9868	2320
9877.7	2320	9898.8	2322	9911.4	2322	9948.2	2320	9966.9	2318
10000	2318	10031.6	2318	10048.1	2320	10057.2	2320	10077.2	2320
10077.3	2326								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9348.3	.07	9948.2	.03	10048.1	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9948.2	10048.1	190	129	131	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2321.93	Element			
Vel Head (ft)	0.78	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2321.14	Reach Len. (ft)	190.00	129.00	131.00
Crit W.S. (ft)	2321.14	Flow Area (sq ft)	264.52	278.84	33.29
E.G. Slope (ft/ft)	0.006258	Area (sq ft)	264.52	278.84	33.29
Q Total (cfs)	2600.00	Flow (cfs)	377.70	2162.67	59.63
Top Width (ft)	482.55	Top Width (ft)	353.53	99.90	29.12
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)	1.43	7.76	1.79
Max Chl Dpth (ft)	3.14	Hydr. Depth (ft)	0.75	2.79	1.14
Conv. Total (cfs)	32865.9	Conv. (cfs)	4774.4	27337.8	753.7
Length Wtd. (ft)	141.16	Wetted Per. (ft)	353.81	100.13	30.22
Min Ch El (ft)	2318.00	Shear (lb/sq ft)	0.29	1.09	0.43
Alpha	2.48	Stream Power (lb/ft s)	0.42	8.44	0.77
Frctn Loss (ft)	0.86	Cum Volume (acre-ft)	10.10	10.52	1.29
C & E Loss (ft)	0.05	Cum SA (acres)	6.48	2.38	0.74

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2322.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.23	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2321.14	Reach Len. (ft)	190.00	129.00	131.00
Crit W.S. (ft)	2321.14	Flow Area (sq ft)	11.88	278.11	33.08
E.G. Slope (ft/ft)	0.008539	Area (sq ft)	11.88	278.11	33.08
Q Total (cfs)	2600.00	Flow (cfs)	15.97	2515.16	68.88
Top Width (ft)	149.92	Top Width (ft)	20.91	99.90	29.12
Vel Total (ft/s)	8.05	Avg. Vel. (ft/s)	1.34	9.04	2.08
Max Chl Dpth (ft)	3.14	Hydr. Depth (ft)	0.57	2.78	1.14
Conv. Total (cfs)	28136.5	Conv. (cfs)	172.8	27218.3	745.4
Length Wtd. (ft)	129.28	Wetted Per. (ft)	20.94	100.13	30.24
Min Ch El (ft)	2318.00	Shear (lb/sq ft)	0.30	1.48	0.58
Alpha	1.22	Stream Power (lb/ft s)	0.41	13.39	1.21
Frctn Loss (ft)	1.12	Cum Volume (acre-ft)	5.12	11.47	0.61
C & E Loss (ft)	0.01	Cum SA (acres)	1.23	2.24	0.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Pima Road RS: 0.260

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9257.35	2334	9271.45	2332	9284.65	2330	9296.35	2328	9309.85	2326
9335.45	2324	9363.55	2322	9400.55	2320	9474.05	2318	9488.75	2318
9529.55	2318	9535.95	2318	9562.15	2318	9577.85	2318	9677.25	2318
9686.65	2318	9756.45	2318	9767.55	2318	9863.65	2318	9876.15	2318
9891.45	2318	9906.65	2318	9935.55	2320	9943.55	2320	9954.05	2318
9963.55	2316	10036.45	2316	10049.91	2318.04	10076.97	2318.04	10076.97	2323.93

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9257.35	.07	9954.05	.03	10049.91	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9954.05	10049.91	180	242	243	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2319.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.63	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2318.94	Reach Len. (ft)	180.00	242.00	243.00
Crit W.S. (ft)	2318.94	Flow Area (sq ft)	432.98	258.88	24.43
E.G. Slope (ft/ft)	0.005917	Area (sq ft)	432.98	258.88	24.43
Q Total (cfs)	2600.00	Flow (cfs)	655.58	1907.97	36.46
Top Width (ft)	608.75	Top Width (ft)	485.83	95.86	27.06
Vel Total (ft/s)	3.63	Avg. Vel. (ft/s)	1.51	7.37	1.49
Max Chl Dpth (ft)	2.94	Hydr. Depth (ft)	0.89	2.70	0.90
Conv. Total (cfs)	33799.5	Conv. (cfs)	8522.4	24803.2	473.9
Length Wtd. (ft)	226.88	Wetted Per. (ft)	485.96	96.22	27.96
Min Ch El (ft)	2316.00	Shear (lb/sq ft)	0.33	0.99	0.32
Alpha	3.07	Stream Power (lb/ft s)	0.50	7.33	0.48
Frctn Loss (ft)	1.40	Cum Volume (acre-ft)	8.58	9.72	1.20
C & E Loss (ft)	0.01	Cum SA (acres)	4.65	2.09	0.66

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: Divided flow computed for this cross-section.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2320.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.31	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2319.10	Reach Len. (ft)	180.00	242.00	243.00
Crit W.S. (ft)	2319.10	Flow Area (sq ft)	3.15	273.50	28.56
E.G. Slope (ft/ft)	0.008722	Area (sq ft)	3.15	273.50	28.56
Q Total (cfs)	2600.00	Flow (cfs)	4.13	2538.66	57.21
Top Width (ft)	128.67	Top Width (ft)	5.75	95.86	27.06
Vel Total (ft/s)	8.52	Avg. Vel. (ft/s)	1.31	9.28	2.00
Max Chl Dpth (ft)	3.10	Hydr. Depth (ft)	0.55	2.85	1.06
Conv. Total (cfs)	27839.5	Conv. (cfs)	44.2	27182.7	612.6
Length Wtd. (ft)	241.25	Wetted Per. (ft)	5.85	96.22	28.11
Min Ch El (ft)	2316.00	Shear (lb/sq ft)	0.29	1.55	0.55
Alpha	1.16	Stream Power (lb/ft s)	0.38	14.37	1.11
Frctn Loss (ft)	2.03	Cum Volume (acre-ft)	5.08	10.65	0.52
C & E Loss (ft)	0.00	Cum SA (acres)	1.17	1.95	0.51

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Pima Road RS: 0.215

INPUT
Description:
Station Elevation Data num= 26

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9486.3	2334	9499.7	2332	9512.6	2330	9521.6	2328	9534.4	2326
9544.1	2324	9565.2	2322	9583	2320	9609.8	2318	9640.1	2316
9670.7	2314	9692	2314	9706.3	2314	9728.3	2314	9870.6	2314
9879.4	2314	9898.4	2314	9904.7	2312	9910	2312	9919.8	2314
9957.1	2314	9965.2	2312	10034.8	2312	10043.68	2314.29	10074.12	2314.29
10074.12	2320.31								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9486.3	.07	9957.1	.03	10043.68	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9957.1	10043.68	191	267	260	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2315.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.75	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2315.05	Reach Len. (ft)	191.00	267.00	260.00
Crit W.S. (ft)	2315.05	Flow Area (sq ft)	335.72	245.76	23.12
E.G. Slope (ft/ft)	0.006465	Area (sq ft)	335.72	245.76	23.12
Q Total (cfs)	2600.00	Flow (cfs)	613.54	1954.15	32.31
Top Width (ft)	419.48	Top Width (ft)	302.46	86.58	30.44
Vel Total (ft/s)	4.30	Avg. Vel. (ft/s)	1.83	7.95	1.40
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)	1.11	2.84	0.76
Conv. Total (cfs)	32336.4	Conv. (cfs)	7630.6	24303.9	401.9
Length Wtd. (ft)	255.49	Wetted Per. (ft)	303.00	87.11	31.20
Min Ch El (ft)	2312.00	Shear (lb/sq ft)	0.45	1.14	0.30
Alpha	2.61	Stream Power (lb/ft s)	0.82	9.05	0.42
Frctn Loss (ft)	1.76	Cum Volume (acre-ft)	7.00	8.32	1.07
C & E Loss (ft)	0.03	Cum SA (acres)	3.03	1.58	0.50

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2316.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.31	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2315.27	Reach Len. (ft)	191.00	267.00	260.00
Crit W.S. (ft)	2315.27	Flow Area (sq ft)	28.11	265.02	29.89
E.G. Slope (ft/ft)	0.008123	Area (sq ft)	28.11	265.02	29.89
Q Total (cfs)	2600.00	Flow (cfs)	60.82	2483.87	55.31
Top Width (ft)	139.12	Top Width (ft)	22.10	86.58	30.44
Vel Total (ft/s)	8.05	Avg. Vel. (ft/s)	2.16	9.37	1.85
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)	1.27	3.06	0.98
Conv. Total (cfs)	28848.5	Conv. (cfs)	674.9	27560.0	613.7
Length Wtd. (ft)	265.91	Wetted Per. (ft)	23.37	87.11	31.42
Min Ch El (ft)	2312.00	Shear (lb/sq ft)	0.61	1.54	0.48
Alpha	1.30	Stream Power (lb/ft s)	1.32	14.46	0.89
Frctn Loss (ft)	2.22	Cum Volume (acre-ft)	5.02	9.16	0.36
C & E Loss (ft)	0.00	Cum SA (acres)	1.11	1.45	0.34

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Pima Road RS: 0.164

INPUT
Description:
Station Elevation Data num= 17

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9712.35	2320	9721.45	2320	9740.75	2318	9752.75	2316	9762.45	2314
9776.65	2312	9819.95	2310	9852.35	2312	9889.75	2312	9914.45	2310
9945.65	2310	9954.95	2310	9968.05	2308	10031.95	2308	10044.2	2310.1
10082.59	2310.1	10082.59	2315.84						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9712.35	.07	9954.95	.03	10044.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9954.95	10044.2	189	158	142	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2312.37	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.09	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2311.29	Reach Len. (ft)	189.00	158.00	142.00
Crit W.S. (ft)	2311.29	Flow Area (sq ft)	93.53	267.26	45.50
E.G. Slope (ft/ft)	0.007315	Area (sq ft)	93.53	267.26	45.50
Q Total (cfs)	2600.00	Flow (cfs)	162.94	2346.39	90.67
Top Width (ft)	232.67	Top Width (ft)	105.03	89.25	38.39
Vel Total (ft/s)	6.40	Avg. Vel. (ft/s)	1.74	8.78	1.99
Max Chl Dpth (ft)	3.29	Hydr. Depth (ft)	0.89	2.99	1.19
Conv. Total (cfs)	30399.1	Conv. (cfs)	1905.1	27433.8	1060.1
Length Wtd. (ft)	158.69	Wetted Per. (ft)	105.15	89.58	39.57
Min Ch El (ft)	2308.00	Shear (lb/sq ft)	0.41	1.36	0.53
Alpha	1.71	Stream Power (lb/ft s)	0.71	11.96	1.05
Frctn Loss (ft)	1.38	Cum Volume (acre-ft)	6.05	6.75	0.87
C & E Loss (ft)	0.05	Cum SA (acres)	2.13	1.04	0.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: Divided flow computed for this cross-section.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2312.60	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.33	Wt. n-Val.		0.030	0.070
W.S. Elev (ft)	2311.27	Reach Len. (ft)	189.00	158.00	142.00
Crit W.S. (ft)	2311.27	Flow Area (sq ft)		266.02	44.97
E.G. Slope (ft/ft)	0.008618	Area (sq ft)		266.02	44.97
Q Total (cfs)	2600.00	Flow (cfs)		2503.48	96.52
Top Width (ft)	127.64	Top Width (ft)		89.25	38.39
Vel Total (ft/s)	8.36	Avg. Vel. (ft/s)		9.41	2.15
Max Chl Dpth (ft)	3.27	Hydr. Depth (ft)		2.98	1.17
Conv. Total (cfs)	28006.8	Conv. (cfs)		26967.1	1039.7
Length Wtd. (ft)	157.70	Wetted Per. (ft)		90.85	39.56
Min Ch El (ft)	2308.00	Shear (lb/sq ft)		1.58	0.61
Alpha	1.22	Stream Power (lb/ft s)		14.83	1.31
Frctn Loss (ft)	1.50	Cum Volume (acre-ft)	4.96	7.53	0.14
C & E Loss (ft)	0.13	Cum SA (acres)	1.06	0.91	0.14

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Pima Road RS: 0.134

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9699.75	2318	9722.65	2316	9742.35	2314	9758.65	2312	9789.15	2310
9878.95	2308	9954.55	2306	9958.75	2306	9967.75	2306	9995.25	2306
10014.35	2306	10045.45	2306	10062.32	2308.06	10079.91	2308.06	10079.91	2313.69

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9699.75	.07	9878.95	.03	10062.32	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9878.95	10062.32	199	139	128	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2309.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2308.36	Reach Len. (ft)	199.00	139.00	128.00
Crit W.S. (ft)	2308.36	Flow Area (sq ft)	2.85	339.13	5.21
E.G. Slope (ft/ft)	0.010510	Area (sq ft)	2.85	339.13	5.21
Q Total (cfs)	2600.00	Flow (cfs)	1.97	2593.05	4.99
Top Width (ft)	216.96	Top Width (ft)	16.00	183.37	17.59
Vel Total (ft/s)	7.49	Avg. Vel. (ft/s)	0.69	7.65	0.96
Max Chl Dpth (ft)	2.36	Hydr. Depth (ft)	0.18	1.85	0.30
Conv. Total (cfs)	25361.7	Conv. (cfs)	19.2	25293.9	48.7
Length Wtd. (ft)	152.74	Wetted Per. (ft)	16.01	183.52	17.89
Min Ch El (ft)	2306.00	Shear (lb/sq ft)	0.12	1.21	0.19
Alpha	1.04	Stream Power (lb/ft s)	0.08	9.27	0.18
Frctn Loss (ft)	1.41	Cum Volume (acre-ft)	5.85	5.65	0.78
C & E Loss (ft)	0.00	Cum SA (acres)	1.87	0.55	0.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2309.26	Element			
Vel Head (ft)	0.90	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2308.36	Reach Len. (ft)	199.00	139.00	128.00
Crit W.S. (ft)	2308.36	Flow Area (sq ft)	2.86	339.26	5.23
E.G. Slope (ft/ft)	0.010496	Area (sq ft)	2.86	339.26	5.23
Q Total (cfs)	2600.00	Flow (cfs)	1.98	2593.02	5.00
Top Width (ft)	216.96	Top Width (ft)	16.00	183.37	17.59
Vel Total (ft/s)	7.49	Avg. Vel. (ft/s)	0.69	7.64	0.96
Max Chl Dpth (ft)	2.36	Hydr. Depth (ft)	0.18	1.85	0.30
Conv. Total (cfs)	25378.7	Conv. (cfs)	19.3	25310.6	48.8
Length Wtd. (ft)	152.89	Wetted Per. (ft)	16.00	183.52	17.89
Min Ch El (ft)	2306.00	Shear (lb/sq ft)	0.12	1.21	0.19
Alpha	1.04	Stream Power (lb/ft s)	0.08	9.26	0.18
Frctn Loss (ft)	1.37	Cum Volume (acre-ft)	4.95	6.43	0.05
C & E Loss (ft)	0.01	Cum SA (acres)	1.03	0.41	0.05

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Pima Road RS: 0.108

INPUT
Description:
Station Elevation Data num= 23

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9454.3	2318	9468.2	2316	9481.9	2314	9502.1	2312	9544.3	2310
9559.8	2310	9611.3	2310	9661.4	2308	9733.1	2306	9808.2	2304
9829.5	2304	9844.5	2304	9854.8	2304	9866.9	2304	9892.3	2304
9943	2304	9962.7	2304	9977.1	2304	9990.7	2302	10009.3	2302
10013.9	2304	10021.15	2304.06	10021.15	2310.09				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9454.3	.07	9977.1	.03	10013.9	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9977.1	10013.9	152	147	139	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2307.00	Element			
Vel Head (ft)	0.93	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2306.07	Reach Len. (ft)	152.00	147.00	139.00
Crit W.S. (ft)	2306.07	Flow Area (sq ft)	430.51	131.64	14.80
E.G. Slope (ft/ft)	0.008163	Area (sq ft)	430.51	131.64	14.80
Q Total (cfs)	2600.00	Flow (cfs)	1197.10	1364.09	38.81
Top Width (ft)	290.62	Top Width (ft)	246.57	36.80	7.25
Vel Total (ft/s)	4.51	Avg. Vel. (ft/s)	2.78	10.36	2.62
Max Chl Dpth (ft)	4.07	Hydr. Depth (ft)	1.75	3.58	2.04
Conv. Total (cfs)	28776.7	Conv. (cfs)	13249.5	15097.7	429.5
Length Wtd. (ft)	148.10	Wetted Per. (ft)	246.60	37.36	9.26
Min Ch El (ft)	2302.00	Shear (lb/sq ft)	0.89	1.80	0.81
Alpha	2.95	Stream Power (lb/ft s)	2.47	18.61	2.14
Frctn Loss (ft)	0.64	Cum Volume (acre-ft)	4.86	4.90	0.75
C & E Loss (ft)	0.20	Cum SA (acres)	1.27	0.20	0.17

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2307.00	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.070	0.030	0.070
W.S. Elev (ft)	2306.11	Reach Len. (ft)	152.00	147.00	139.00
Crit W.S. (ft)	2306.11	Flow Area (sq ft)	440.56	133.14	15.10
E.G. Slope (ft/ft)	0.007718	Area (sq ft)	440.56	133.14	15.10
Q Total (cfs)	2600.00	Flow (cfs)	1209.49	1351.62	38.88
Top Width (ft)	290.62	Top Width (ft)	246.57	36.80	7.25
Vel Total (ft/s)	4.42	Avg. Vel. (ft/s)	2.75	10.15	2.58
Max Chl Dpth (ft)	4.11	Hydr. Depth (ft)	1.79	3.62	2.08
Conv. Total (cfs)	29596.0	Conv. (cfs)	13767.8	15385.6	442.6
Length Wtd. (ft)	148.11	Wetted Per. (ft)	246.64	37.36	9.30
Min Ch El (ft)	2302.00	Shear (lb/sq ft)	0.86	1.72	0.78
Alpha	2.93	Stream Power (lb/ft s)	2.36	17.43	2.01
Frctn Loss (ft)	0.46	Cum Volume (acre-ft)	3.94	5.68	0.02
C & E Loss (ft)	0.20	Cum SA (acres)	0.43	0.06	0.01

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Pima Road RS: 0.080

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9532.45	2316	9574.35	2316	9584.95	2314	9596.55	2312	9601.95	2310
9616.75	2308	9697.15	2306	9768.65	2304	9870.05	2302	9921.45	2300
9924.65	2300	10058.25	2300	10078.55	2300	10157.45	2302	10157.46	2308

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9532.45	.07	9870.05	.03	10157.45	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9870.05	10157.45	626	424	378	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2302.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.	0.070	0.030	
W.S. Elev (ft)	2302.59	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)	2301.79	Flow Area (sq ft)	8.89	614.65	
E.G. Slope (ft/ft)	0.002639	Area (sq ft)	8.89	614.65	0.00
Q Total (cfs)	2600.00	Flow (cfs)	4.30	2595.70	
Top Width (ft)	317.42	Top Width (ft)	30.02	287.40	
Vel Total (ft/s)	4.17	Avg. Vel. (ft/s)	0.48	4.22	
Max Chl Dpth (ft)	2.59	Hydr. Depth (ft)	0.30	2.14	
Conv. Total (cfs)	50612.0	Conv. (cfs)	83.8	50528.2	
Length Wtd. (ft)	500.00	Wetted Per. (ft)	30.02	287.46	
Min Ch El (ft)	2300.00	Shear (lb/sq ft)	0.05	0.35	
Alpha	1.02	Stream Power (lb/ft s)	0.02	1.49	
Frctn Loss (ft)	4.13	Cum Volume (acre-ft)	2.57	4.25	0.47

C & E Loss (ft)	0.04	Cum SA (acres)	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2303.11	Element			
Vel Head (ft)	0.21	Wt. n-Val.	0.070	0.030	
W.S. Elev (ft)	2302.91	Reach Len. (ft)	500.00	500.00	500.00
Crit W.S. (ft)	2301.79	Flow Area (sq ft)	18.32	704.96	
E.G. Slope (ft/ft)	0.001669	Area (sq ft)	18.32	704.96	
Q Total (cfs)	2600.00	Flow (cfs)	11.35	2588.65	
Top Width (ft)	317.42	Top Width (ft)	30.02	287.40	
Vel Total (ft/s)	3.59	Avg. Vel. (ft/s)	0.62	3.67	
Max Chl Dpth (ft)	2.91	Hydr. Depth (ft)	0.61	2.45	
Conv. Total (cfs)	63641.9	Conv. (cfs)	277.8	63364.1	
Length Wtd. (ft)	500.00	Wetted Per. (ft)	30.34	288.37	
Min Ch El (ft)	2300.00	Shear (lb/sq ft)	0.06	0.25	
Alpha	1.04	Stream Power (lb/ft s)	0.04	0.94	
Frctn Loss (ft)	3.25	Cum Volume (acre-ft)	2.01	4.93	
C & E Loss (ft)	0.08	Cum SA (acres)			

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.870

INPUT
Description: Exit section for private bridge along southern property boundary
at the southwest corner of Pima Road and Dixileta Road
Station Elevation Data num= 34

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9111.7	2304	9125.6	2306	9187.1	2306	9199.8	2304	9214	2302
9283.4	2300	9464.6	2298	9558.9	2296	9627.4	2296	9679.4	2296
9687.3	2296	9776	2296	9803.1	2296	9819.5	2296	9835	2296
9940.2	2296	9995.9	2294	10000	2294	10006.1	2294	10019.5	2296
10055.5	2296	10062.8	2296	10072.2	2296	10081.9	2296	10116.1	2298
10137.7	2300	10151.2	2302	10171.6	2304	10201.4	2304	10318.6	2304
10350.1	2306	10393.7	2308	10414.3	2310	10418.9	2310		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9111.7	.06	9940.2	.044	10019.5	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9940.2	10019.5	231	240	240	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2298.70	Element			
Vel Head (ft)	0.65	Wt. n-Val.	0.060	0.044	0.060
W.S. Elev (ft)	2298.04	Reach Len. (ft)	231.00	240.00	240.00
Crit W.S. (ft)	2297.84	Flow Area (sq ft)	878.36	251.66	163.35
E.G. Slope (ft/ft)	0.015956	Area (sq ft)	878.36	251.66	163.35
Q Total (cfs)	7150.00	Flow (cfs)	4112.61	2314.80	722.59
Top Width (ft)	656.06	Top Width (ft)	479.67	79.30	97.08
Vel Total (ft/s)	5.53	Avg. Vel. (ft/s)	4.68	9.20	4.42
Max Chl Dpth (ft)	4.04	Hydr. Depth (ft)	1.83	3.17	1.68
Conv. Total (cfs)	56603.3	Conv. (cfs)	32557.7	18325.2	5720.4
Length Wtd. (ft)	234.89	Wetted Per. (ft)	479.69	79.48	97.15
Min Ch El (ft)	2294.00	Shear (lb/sq ft)	1.82	3.15	1.68
Alpha	1.37	Stream Power (lb/ft s)	8.54	29.01	7.41
Frctn Loss (ft)	3.42	Cum Volume (acre-ft)	55.16	72.90	39.55
C & E Loss (ft)	0.04	Cum SA (acres)	27.06	20.05	20.20

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2299.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.	0.060	0.044	
W.S. Elev (ft)	2298.77	Reach Len. (ft)	231.00	240.00	240.00
Crit W.S. (ft)	2298.48	Flow Area (sq ft)	664.30	308.81	
E.G. Slope (ft/ft)	0.015537	Area (sq ft)	664.30	308.81	
Q Total (cfs)	7150.00	Flow (cfs)	4009.73	3140.27	
Top Width (ft)	319.50	Top Width (ft)	240.20	79.30	
Vel Total (ft/s)	7.35	Avg. Vel. (ft/s)	6.04	10.17	
Max Chl Dpth (ft)	4.77	Hydr. Depth (ft)	2.77	3.89	
Conv. Total (cfs)	57360.9	Conv. (cfs)	32168.1	25192.9	
Length Wtd. (ft)	235.77	Wetted Per. (ft)	242.97	82.25	
Min Ch El (ft)	2294.00	Shear (lb/sq ft)	2.65	3.64	
Alpha	1.22	Stream Power (lb/ft s)	16.01	37.03	
Frctn Loss (ft)	3.67	Cum Volume (acre-ft)	33.87	78.20	17.20
C & E Loss (ft)	0.02	Cum SA (acres)	12.11	20.05	6.80

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.825

INPUT
Description:
Station Elevation Data num= 30

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9282.6	2300	9307.1	2298	9342.8	2296	9381.1	2294	9469.5	2292
9528.3	2292	9610.8	2292	9615.4	2292	9642.4	2294	9642.9	2294
9757.9	2294	9762.1	2294	9767.2	2292	9782.5	2292	9822.2	2292
9833.9	2292	9839	2292	9869.7	2292	9921.2	2294	9922.4	2294
9941.8	2292	10000	2292	10039.8	2292	10051.1	2292	10082.8	2292
10094.2	2294	10106.6	2296	10119.1	2298	10133	2300	10154.4	2302

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9282.6	.06	9922.4	.044	10094.2	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9922.4	10094.2	344	344	264	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
9282.6	9473.5	2297

Left Levee Station= 9922.4 Elevation= 2294

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2295.24	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.060	0.044	0.060
W.S. Elev (ft)	2294.70	Reach Len. (ft)	344.00	344.00	264.00
Crit W.S. (ft)	2294.09	Flow Area (sq ft)	888.69	433.85	1.54
E.G. Slope (ft/ft)	0.013371	Area (sq ft)	1054.95	433.85	1.54
Q Total (cfs)	7150.00	Flow (cfs)	4009.48	3138.34	2.18
Top Width (ft)	730.96	Top Width (ft)	554.79	171.80	4.37
Vel Total (ft/s)	5.40	Avg. Vel. (ft/s)	4.51	7.23	1.42
Max Chl Dpth (ft)	2.70	Hydr. Depth (ft)	1.98	2.53	0.35
Conv. Total (cfs)	61834.5	Conv. (cfs)	34674.7	27140.9	18.8
Length Wtd. (ft)	343.98	Wetted Per. (ft)	449.39	172.08	4.42
Min Ch El (ft)	2292.00	Shear (lb/sq ft)	1.65	2.10	0.29
Alpha	1.18	Stream Power (lb/ft s)	7.45	15.22	0.41
Frctn Loss (ft)	6.05	Cum Volume (acre-ft)	50.03	71.01	39.10
C & E Loss (ft)	0.02	Cum SA (acres)	24.32	19.36	19.92

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2296.09	Element			
Vel Head (ft)	0.95	Wt. n-Val.	0.060	0.044	0.060
W.S. Elev (ft)	2295.15	Reach Len. (ft)	344.00	344.00	264.00
Crit W.S. (ft)	2294.78	Flow Area (sq ft)	445.27	509.64	3.47
E.G. Slope (ft/ft)	0.015618	Area (sq ft)	445.27	509.64	3.47
Q Total (cfs)	7150.00	Flow (cfs)	2705.56	4435.88	8.56
Top Width (ft)	336.47	Top Width (ft)	160.30	171.80	4.37
Vel Total (ft/s)	7.46	Avg. Vel. (ft/s)	6.08	8.70	2.47
Max Chl Dpth (ft)	3.15	Hydr. Depth (ft)	2.78	2.97	0.79
Conv. Total (cfs)	57212.7	Conv. (cfs)	21649.3	35495.0	68.5
Length Wtd. (ft)	343.90	Wetted Per. (ft)	161.86	172.08	4.87
Min Ch El (ft)	2292.00	Shear (lb/sq ft)	2.68	2.89	0.69
Alpha	1.10	Stream Power (lb/ft s)	16.30	25.13	1.71
Frctn Loss (ft)	6.40	Cum Volume (acre-ft)	30.92	75.94	17.19
C & E Loss (ft)	0.00	Cum SA (acres)	11.05	19.36	6.79

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.760

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9308.1	2300	9324.7	2298	9340.7	2296	9359.3	2294	9399.6	2292
9430.4	2290	9477.8	2288	9553.8	2286	9571.9	2286	9678.1	2288
9688.5	2288	9805.9	2286	9818.1	2286	9848.2	2286	9883.2	2286
9942.8	2288	9973.7	2288	9989	2286	10000	2286	10013	2286
10109.2	2286	10123.6	2286	10153.3	2288	10192.5	2290	10223.4	2292
10244.4	2294	10260.8	2296	10275.6	2298	10287.2	2300	10317.8	2302
10320.9	2302								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9308.1	.06	9973.7	.044	10153.3	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9973.7	10153.3	384	500	509	.1	.3

Left Levee Station= 9973.7 Elevation= 2288

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2289.17	Element			
Vel Head (ft)	0.77	Wt. n-Val.	0.060	0.044	0.060
W.S. Elev (ft)	2288.40	Reach Len. (ft)	384.00	500.00	509.00
Crit W.S. (ft)	2288.40	Flow Area (sq ft)	751.44	386.46	1.59
E.G. Slope (ft/ft)	0.024172	Area (sq ft)	751.44	386.46	1.59
Q Total (cfs)	7150.00	Flow (cfs)	3768.40	3379.51	2.10
Top Width (ft)	692.92	Top Width (ft)	505.44	179.60	7.89
Vel Total (ft/s)	6.27	Avg. Vel. (ft/s)	5.01	8.74	1.32
Max Chl Dpth (ft)	2.40	Hydr. Depth (ft)	1.49	2.15	0.20
Conv. Total (cfs)	45988.3	Conv. (cfs)	24238.1	21736.8	13.5
Length Wtd. (ft)		Wetted Per. (ft)	505.54	179.80	7.90
Min Ch El (ft)	2286.00	Shear (lb/sq ft)	2.24	3.24	0.30
Alpha	1.25	Stream Power (lb/ft s)	11.25	28.36	0.40
Frctn Loss (ft)		Cum Volume (acre-ft)	42.90	67.77	39.09
C & E Loss (ft)		Cum SA (acres)	20.13	17.97	19.89

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2289.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.	0.060	0.044	0.060
W.S. Elev (ft)	2288.71	Reach Len. (ft)	384.00	500.00	509.00
Crit W.S. (ft)	2288.71	Flow Area (sq ft)	542.76	442.50	5.00
E.G. Slope (ft/ft)	0.022732	Area (sq ft)	542.76	442.50	5.00
Q Total (cfs)	7150.00	Flow (cfs)	3033.62	4106.99	9.39
Top Width (ft)	489.20	Top Width (ft)	295.60	179.60	14.00
Vel Total (ft/s)	7.22	Avg. Vel. (ft/s)	5.59	9.28	1.88
Max Chl Dpth (ft)	2.71	Hydr. Depth (ft)	1.84	2.46	0.36
Conv. Total (cfs)	47422.9	Conv. (cfs)	20120.7	27239.9	62.3
Length Wtd. (ft)	469.08	Wetted Per. (ft)	296.37	179.80	14.02
Min Ch El (ft)	2286.00	Shear (lb/sq ft)	2.60	3.49	0.51
Alpha	1.20	Stream Power (lb/ft s)	14.53	32.42	0.95
Frctn Loss (ft)	7.45	Cum Volume (acre-ft)	27.02	72.18	17.16
C & E Loss (ft)	0.10	Cum SA (acres)	9.25	17.97	6.73

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.665

INPUT
Description: Upstream of Via Dona Road
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9259.5	2290	9283.4	2288	9316.3	2286	9339.5	2284	9371.3	2282
9430.4	2280	9456.2	2280	9466.5	2280	9472.8	2280	9522.9	2280
9548.2	2278	9576.3	2278	9632.8	2280	9651.7	2280	9683	2278
9713.3	2278	9742.1	2278	9747.7	2278	9786.2	2278	9794	2278
9981.8	2278	10000	2278	10033.3	2278	10040.8	2280	10085.8	2280
10105.5	2282	10124.1	2284	10143	2286	10161.2	2288	10249.9	2290
10270.4	2292								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9259.5	.06	9651.7	.044	10040.8	.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9651.7	10040.8	572	500	489	.1	.3

Left Levee Station= 9651.7 Elevation= 2280

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2281.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.65	Wt. n-Val.	0.060	0.044	0.060
W.S. Elev (ft)	2280.51	Reach Len. (ft)	572.00	500.00	489.00
Crit W.S. (ft)	2280.09	Flow Area (sq ft)	254.25	937.08	24.13
E.G. Slope (ft/ft)	0.012558	Area (sq ft)	254.25	937.08	24.13
Q Total (cfs)	7150.00	Flow (cfs)	740.60	6368.20	41.20
Top Width (ft)	675.42	Top Width (ft)	236.31	389.10	50.00
Vel Total (ft/s)	5.88	Avg. Vel. (ft/s)	2.91	6.80	1.71
Max Chl Dpth (ft)	2.51	Hydr. Depth (ft)	1.08	2.41	0.48
Conv. Total (cfs)	63803.8	Conv. (cfs)	6608.8	56827.3	367.6
Length Wtd. (ft)	525.10	Wetted Per. (ft)	236.44	389.43	50.03
Min Ch El (ft)	2278.00	Shear (lb/sq ft)	0.84	1.89	0.38
Alpha	1.21	Stream Power (lb/ft s)	2.46	12.82	0.65
Frctn Loss (ft)	7.93	Cum Volume (acre-ft)	38.47	60.18	38.94
C & E Loss (ft)	0.02	Cum SA (acres)	16.87	14.71	19.55

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2281.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.64	Wt. n-Val.	0.060	0.044	
W.S. Elev (ft)	2280.56	Reach Len. (ft)	572.00	500.00	489.00
Crit W.S. (ft)	2280.16	Flow Area (sq ft)	210.23	957.60	
E.G. Slope (ft/ft)	0.011718	Area (sq ft)	210.23	957.60	
Q Total (cfs)	7150.00	Flow (cfs)	778.56	6371.44	
Top Width (ft)	517.90	Top Width (ft)	128.80	389.10	
Vel Total (ft/s)	6.12	Avg. Vel. (ft/s)	3.70	6.65	
Max Chl Dpth (ft)	2.56	Hydr. Depth (ft)	1.63	2.46	
Conv. Total (cfs)	66052.2	Conv. (cfs)	7192.4	58859.8	
Length Wtd. (ft)	523.73	Wetted Per. (ft)	129.47	389.99	
Min Ch El (ft)	2278.00	Shear (lb/sq ft)	1.19	1.80	
Alpha	1.09	Stream Power (lb/ft s)	4.40	11.95	
Frctn Loss (ft)	7.63	Cum Volume (acre-ft)	23.70	64.15	17.13
C & E Loss (ft)	0.04	Cum SA (acres)	7.38	14.71	6.65

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.570

INPUT
Description: Downstream of Via Dona Road
Station Elevation Data num= 59

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9499.3	2290	9505.2	2289	9511.5	2288	9519.4	2287	9524.9	2286
9529.8	2285	9533.6	2284	9537.4	2283	9544.2	2282	9544.9	2281
9549.4	2280	9556.9	2279	9565.2	2278	9572.2	2277	9581.7	2276
9588.1	2275	9595.5	2274	9602.2	2273	9609.1	2273	9609.9	2273
9624	2272	9628	2271	9630.8	2270	9632.1	2269	9634.5	2268
9649.9	2268	9653.2	2269	9659	2269	9660.6	2268	9662.5	2267
9701.1	2267	9708.7	2268	9732.6	2268	9742.2	2268	9747.5	2269
9751.4	2270	9773	2271	9901.6	2271	9964.9	2270	9970	2269
9997.4	2268	10000	2268	10004.3	2268	10007.5	2269	10010.1	2270
10012.3	2271	10016.7	2272	10032.3	2272	10088	2272	10104.4	2273
10131.2	2274	10147	2275	10157.9	2276	10175.3	2277	10188.9	2278
10202.3	2279	10225.4	2280	10244	2281	10255.8	2282		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9499.3	.07	9901.6	.038	10016.7	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9901.6	10016.7	445	500	450	.1	.3

Left Levee Station= 9901.6 Elevation= 2271

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2273.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.89	Wt. n-Val.	0.070	0.038	0.070
W.S. Elev (ft)	2272.32	Reach Len. (ft)	445.00	500.00	450.00
Crit W.S. (ft)	2271.94	Flow Area (sq ft)	762.76	291.30	23.70
E.G. Slope (ft/ft)	0.018510	Area (sq ft)	762.76	291.30	23.70
Q Total (cfs)	7153.00	Flow (cfs)	4256.79	2864.89	31.32
Top Width (ft)	473.78	Top Width (ft)	282.12	115.10	76.56
Vel Total (ft/s)	6.64	Avg. Vel. (ft/s)	5.58	9.83	1.32
Max Chl Dpth (ft)	5.32	Hydr. Depth (ft)	2.70	2.53	0.31
Conv. Total (cfs)	52575.4	Conv. (cfs)	31287.9	21057.3	230.2
Length Wtd. (ft)	472.25	Wetted Per. (ft)	283.96	115.89	76.57
Min Ch El (ft)	2268.00	Shear (lb/sq ft)	3.10	2.90	0.36
Alpha	1.30	Stream Power (lb/ft s)	17.32	28.57	0.47
Frctn Loss (ft)	6.07	Cum Volume (acre-ft)	31.79	53.13	38.67
C & E Loss (ft)	0.03	Cum SA (acres)	13.46	11.82	18.84

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2273.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.02	Wt. n-Val.	0.070	0.038	
W.S. Elev (ft)	2272.50	Reach Len. (ft)	445.00	500.00	450.00
Crit W.S. (ft)	2272.22	Flow Area (sq ft)	686.31	312.12	
E.G. Slope (ft/ft)	0.018666	Area (sq ft)	686.31	312.12	
Q Total (cfs)	7153.00	Flow (cfs)	3934.49	3218.51	
Top Width (ft)	357.70	Top Width (ft)	242.60	115.10	
Vel Total (ft/s)	7.16	Avg. Vel. (ft/s)	5.73	10.31	
Max Chl Dpth (ft)	5.50	Hydr. Depth (ft)	2.83	2.71	
Conv. Total (cfs)	52355.3	Conv. (cfs)	28797.9	23557.4	
Length Wtd. (ft)	474.04	Wetted Per. (ft)	246.94	116.39	
Min Ch El (ft)	2268.00	Shear (lb/sq ft)	3.24	3.12	
Alpha	1.28	Stream Power (lb/ft s)	18.57	32.22	
Frctn Loss (ft)	6.25	Cum Volume (acre-ft)	17.82	56.86	17.13
C & E Loss (ft)	0.03	Cum SA (acres)	4.94	11.82	6.65

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.476

INPUT
Description:
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9800.8	2276	9808.1	2275	9813	2274	9820.1	2273	9826.6	2272
9832.7	2271	9838.3	2270	9851.8	2269	9887.8	2268	9904.8	2267
9909.5	2266	9918.5	2265	9923	2264	9926.7	2263	9928.7	2262
9931.4	2261	9935.6	2261	9946.2	2262	9958.6	2262	9959.6	2261
9962.8	2260	9995.9	2260	10000	2260	10006.9	2260	10010.8	2261
10010.8	2262	10025.3	2263	10068	2263	10084.5	2263	10173.4	2264
10214.9	2264	10338.9	2264	10365	2265	10398.6	2266	10409.5	2267
10419.4	2268	10434	2269	10445	2270	10453.1	2271	10461.7	2272
10473.2	2273	10483.6	2274	10492.7	2275	10521.6	2275		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9800.8	.07	9958.6	.038	10025.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9958.6	10025.3	242	245	225	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2267.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.20	Wt. n-Val.	0.070	0.038	0.070
W.S. Elev (ft)	2265.90	Reach Len. (ft)	242.00	245.00	225.00
Crit W.S. (ft)	2265.90	Flow Area (sq ft)	153.20	352.39	750.51
E.G. Slope (ft/ft)	0.009452	Area (sq ft)	153.20	352.39	750.51
Q Total (cfs)	7153.00	Flow (cfs)	676.23	3995.10	2481.67
Top Width (ft)	484.94	Top Width (ft)	48.22	66.70	370.02
Vel Total (ft/s)	5.69	Avg. Vel. (ft/s)	4.41	11.34	3.31
Max Chl Dpth (ft)	5.90	Hydr. Depth (ft)	3.18	5.28	2.03
Conv. Total (cfs)	73573.1	Conv. (cfs)	6955.4	41092.1	25525.5
Length Wtd. (ft)	238.39	Wetted Per. (ft)	48.98	68.43	370.06
Min Ch El (ft)	2260.00	Shear (lb/sq ft)	1.85	3.04	1.20
Alpha	2.39	Stream Power (lb/ft s)	8.15	34.45	3.96
Frctn Loss (ft)	2.35	Cum Volume (acre-ft)	27.11	49.43	34.67
C & E Loss (ft)	0.00	Cum SA (acres)	11.77	10.77	16.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2267.24	Element			
Vel Head (ft)	1.31	Wt. n-Val.	0.070	0.038	0.070
W.S. Elev (ft)	2265.93	Reach Len. (ft)	242.00	245.00	225.00
Crit W.S. (ft)	2265.93	Flow Area (sq ft)	154.66	354.41	634.54
E.G. Slope (ft/ft)	0.009876	Area (sq ft)	154.66	354.41	634.54
Q Total (cfs)	7153.00	Flow (cfs)	701.96	4122.83	2328.21
Top Width (ft)	389.62	Top Width (ft)	48.22	66.70	274.70
Vel Total (ft/s)	6.25	Avg. Vel. (ft/s)	4.54	11.63	3.67
Max Chl Dpth (ft)	5.93	Hydr. Depth (ft)	3.21	5.31	2.31
Conv. Total (cfs)	71975.9	Conv. (cfs)	7063.4	41485.3	23427.2
Length Wtd. (ft)	239.67	Wetted Per. (ft)	49.00	68.43	276.64
Min Ch El (ft)	2260.00	Shear (lb/sq ft)	1.95	3.19	1.41
Alpha	2.16	Stream Power (lb/ft s)	8.83	37.15	5.19
Frctn Loss (ft)	2.67	Cum Volume (acre-ft)	13.52	53.03	13.86
C & E Loss (ft)	0.04	Cum SA (acres)	3.46	10.77	5.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.429

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9932.7	2265	9942.4	2264	9952.9	2263	9963	2262	9966.5	2261
9969.6	2260	9972.7	2259	9974.5	2258	9974.5	2257	9976.9	2256
10000	2256	10010.6	2256	10019.1	2257	10023.7	2258	10024.9	2259
10053.7	2259	10058.5	2258	10068.2	2258	10076.8	2259	10187.7	2260
10196	2261	10226.6	2261	10261.4	2260	10346.3	2260	10387.4	2261
10400	2261	10412.4	2261	10425.1	2262	10450.9	2263	10487.1	2264
10503.2	2265								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9932.7	.07	9963	.038	10076.8	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9963	10076.8	327	337	457	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2263.26	Element			
Vel Head (ft)	1.20	Wt. n-Val.	0.070	0.038	0.070
W.S. Elev (ft)	2262.06	Reach Len. (ft)	327.00	337.00	457.00
Crit W.S. (ft)	2262.06	Flow Area (sq ft)	0.02	486.10	655.24
E.G. Slope (ft/ft)	0.010317	Area (sq ft)	0.02	486.10	655.24
Q Total (cfs)	7153.00	Flow (cfs)	0.00	5006.65	2146.35
Top Width (ft)	464.15	Top Width (ft)	0.58	113.80	349.77
Vel Total (ft/s)	6.27	Avg. Vel. (ft/s)	0.20	10.30	3.28
Max Chl Dpth (ft)	6.06	Hydr. Depth (ft)	0.03	4.27	1.87
Conv. Total (cfs)	70424.0	Conv. (cfs)	0.0	49292.4	21131.6
Length Wtd. (ft)	362.76	Wetted Per. (ft)	0.58	116.40	349.90
Min Ch El (ft)	2256.00	Shear (lb/sq ft)	0.02	2.69	1.21
Alpha	1.97	Stream Power (lb/ft s)	0.00	27.70	3.95
Frctn Loss (ft)	4.16	Cum Volume (acre-ft)	26.69	47.08	31.04
C & E Loss (ft)	0.02	Cum SA (acres)	11.64	10.27	14.67

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2263.90	Element			
Vel Head (ft)	1.75	Wt. n-Val.	0.070	0.038	0.070
W.S. Elev (ft)	2262.16	Reach Len. (ft)	327.00	337.00	457.00
Crit W.S. (ft)	2262.16	Flow Area (sq ft)	0.07	497.46	308.41
E.G. Slope (ft/ft)	0.012696	Area (sq ft)	0.07	497.46	308.41
Q Total (cfs)	7153.00	Flow (cfs)	0.04	5772.12	1380.84
Top Width (ft)	233.58	Top Width (ft)	0.58	113.80	119.20
Vel Total (ft/s)	8.88	Avg. Vel. (ft/s)	0.55	11.60	4.48
Max Chl Dpth (ft)	6.16	Hydr. Depth (ft)	0.13	4.37	2.59
Conv. Total (cfs)	63483.2	Conv. (cfs)	0.4	51227.8	12255.0
Length Wtd. (ft)	348.58	Wetted Per. (ft)	0.68	116.40	120.42
Min Ch El (ft)	2256.00	Shear (lb/sq ft)	0.09	3.39	2.03
Alpha	1.43	Stream Power (lb/ft s)	0.05	39.30	9.09
Frctn Loss (ft)	4.36	Cum Volume (acre-ft)	13.09	50.64	11.42
C & E Loss (ft)	0.00	Cum SA (acres)	3.32	10.27	4.21

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.365

INPUT
Description:
Station Elevation Data num= 44

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9656.9	2265	9663.8	2264	9669.1	2263	9677.1	2262	9687.2	2261
9696.1	2260	9704.8	2259	9808.6	2258	9840.8	2257	9902.4	2256
9942	2255	9964.2	2254	9971	2253	9973.9	2252	9999.7	2252
10000	2252	10031.6	2252	10035.5	2253	10041.8	2254	10086.3	2254
10089.4	2253	10092.4	2254	10102.2	2254	10107	2255	10108.3	2255
10141.2	2254	10143.7	2253	10152.2	2253	10156.3	2254	10189	2255
10201.3	2256	10212.6	2257	10226.1	2258	10248.5	2259	10254.5	2260
10262	2261	10267.9	2262	10272.2	2263	10277.1	2264	10284.5	2265
10291.1	2266	10308.8	2267	10326.4	2268	10333.4	2268		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9656.9	.07	9942	.038	10107	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9942	10107	304	436	428	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2258.26	Element			
Vel Head (ft)	1.43	Wt. n-Val.	0.070	0.038	0.070
W.S. Elev (ft)	2256.83	Reach Len. (ft)	304.00	436.00	428.00
Crit W.S. (ft)	2256.83	Flow Area (sq ft)	73.76	588.42	229.87
E.G. Slope (ft/ft)	0.012828	Area (sq ft)	73.76	588.42	229.87
Q Total (cfs)	7153.00	Flow (cfs)	154.55	6061.21	937.24
Top Width (ft)	359.31	Top Width (ft)	90.64	165.00	103.66
Vel Total (ft/s)	8.02	Avg. Vel. (ft/s)	2.10	10.30	4.08

Max Chl Dpth (ft)	4.83	Hydr. Depth (ft)	0.81	3.57	2.22
Conv. Total (cfs)	63154.7	Conv. (cfs)	1364.5	53515.2	8275.0
Length Wtd. (ft)	430.58	Wetted Per. (ft)	90.66	165.89	104.08
Min Ch El (ft)	2252.00	Shear (lb/sq ft)	0.65	2.84	1.77
Alpha	1.43	Stream Power (lb/ft s)	1.37	29.26	7.21
Frctn Loss (ft)	5.19	Cum Volume (acre-ft)	26.41	42.92	26.40
C & E Loss (ft)	0.00	Cum SA (acres)	11.30	9.19	12.29

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2259.09	Element			
Vel Head (ft)	1.80	Wt. n-Val.		0.038	
W.S. Elev (ft)	2257.29	Reach Len. (ft)	304.00	436.00	428.00
Crit W.S. (ft)	2257.15	Flow Area (sq ft)		665.16	
E.G. Slope (ft/ft)	0.012313	Area (sq ft)		665.16	
Q Total (cfs)	7153.00	Flow (cfs)		7153.00	
Top Width (ft)	165.00	Top Width (ft)		165.00	
Vel Total (ft/s)	10.75	Avg. Vel. (ft/s)		10.75	
Max Chl Dpth (ft)	5.29	Hydr. Depth (ft)		4.03	
Conv. Total (cfs)	64462.9	Conv. (cfs)		64462.9	
Length Wtd. (ft)	436.00	Wetted Per. (ft)		170.48	
Min Ch El (ft)	2252.00	Shear (lb/sq ft)		3.00	
Alpha	1.00	Stream Power (lb/ft s)		32.25	
Frctn Loss (ft)	5.73	Cum Volume (acre-ft)	13.09	46.14	9.80
C & E Loss (ft)	0.01	Cum SA (acres)	3.32	9.19	3.59

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.283

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9636.8	2254	9665.4	2253	9707.6	2252	9751.7	2251	9821.9	2250
9862.3	2249	9942.6	2248	9984.1	2247	9995.8	2246	10000	2246
10025.4	2246	10027.6	2247	10030.2	2248	10032.1	2249	10085.5	2250
10098.4	2251	10113.2	2252	10127.1	2253				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9636.8	.07	9862.3	.038	10032.1	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9862.3	10032.1	303	294	211	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2252.84	Element			
Vel Head (ft)	1.43	Wt. n-Val.	0.070	0.038	0.070
W.S. Elev (ft)	2251.41	Reach Len. (ft)	303.00	294.00	211.00
Crit W.S. (ft)	2251.41	Flow Area (sq ft)	144.90	640.21	115.06
E.G. Slope (ft/ft)	0.011367	Area (sq ft)	144.90	640.21	115.06
Q Total (cfs)	7157.00	Flow (cfs)	354.80	6447.73	354.47
Top Width (ft)	370.92	Top Width (ft)	128.73	169.80	72.39
Vel Total (ft/s)	7.95	Avg. Vel. (ft/s)	2.45	10.07	3.08
Max Chl Dpth (ft)	5.41	Hydr. Depth (ft)	1.13	3.77	1.59
Conv. Total (cfs)	67128.5	Conv. (cfs)	3327.8	60476.0	3324.7

Length Wtd. (ft)	278.13	Wetted Per. (ft)	128.75	170.51	72.45
Min Ch El (ft)	2246.00	Shear (lb/sq ft)	0.80	2.66	1.13
Alpha	1.46	Stream Power (lb/ft s)	1.96	26.83	3.47
Frctn Loss (ft)	3.29	Cum Volume (acre-ft)	25.65	36.77	24.70
C & E Loss (ft)	0.02	Cum SA (acres)	10.53	7.51	11.43

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2253.35	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.90	Wt. n-Val.		0.038	
W.S. Elev (ft)	2251.45	Reach Len. (ft)	303.00	294.00	211.00
Crit W.S. (ft)	2251.45	Flow Area (sq ft)		646.84	
E.G. Slope (ft/ft)	0.014053	Area (sq ft)		646.84	
Q Total (cfs)	7157.00	Flow (cfs)		7157.00	
Top Width (ft)	169.80	Top Width (ft)		169.80	
Vel Total (ft/s)	11.06	Avg. Vel. (ft/s)		11.06	
Max Chl Dpth (ft)	5.45	Hydr. Depth (ft)		3.81	
Conv. Total (cfs)	60372.6	Conv. (cfs)		60372.6	
Length Wtd. (ft)	283.16	Wetted Per. (ft)		175.41	
Min Ch El (ft)	2246.00	Shear (lb/sq ft)		3.24	
Alpha	1.00	Stream Power (lb/ft s)		35.80	
Frctn Loss (ft)	3.91	Cum Volume (acre-ft)	13.09	39.57	9.80
C & E Loss (ft)	0.00	Cum SA (acres)	3.32	7.51	3.59

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.227

INPUT
Description:
Station Elevation Data num= 50

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9856.3	2265	9859.9	2264	9862.7	2263	9865.3	2262	9868	2261
9870.5	2260	9873.1	2259	9875.7	2258	9878.5	2257	9880.5	2256
9883.7	2255	9886	2254	9887.2	2253	9889.7	2252	9891.1	2251
9894	2250	9897.9	2249	9900.7	2248	9904.2	2247	9918.6	2246
9950.3	2245	9966.6	2244	9970	2243	9976.4	2243	9980.1	2244
9988.4	2244	9995.9	2243	9997.2	2242	9998.2	2241	10000	2241
10004.9	2241	10072.2	2242	10076.6	2243	10090.5	2243	10097.9	2243
10189.5	2243	10196.4	2242	10198.5	2241	10198.8	2241	10201.5	2242
10203.3	2243	10204.8	2244	10206.8	2244	10257.8	2244	10287.8	2245
10302.4	2246	10320.5	2247	10327.8	2248	10339.2	2249	10350	2250

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9856.3	.07	9988.4	.038	10076.6	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9988.4	10076.6	236	221	131	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2247.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.37	Wt. n-Val.	0.070	0.038	0.070

W.S. Elev (ft)	2246.06	Reach Len. (ft)	236.00	221.00	131.00
Crit W.S. (ft)	2246.06	Flow Area (sq ft)	97.91	384.65	567.40
E.G. Slope (ft/ft)	0.012288	Area (sq ft)	97.91	384.65	567.40
Q Total (cfs)	7157.00	Flow (cfs)	285.56	4419.20	2452.24
Top Width (ft)	385.68	Top Width (ft)	70.63	88.20	226.85
Vel Total (ft/s)	6.82	Avg. Vel. (ft/s)	2.92	11.49	4.32
Max Chl Dpth (ft)	5.06	Hydr. Depth (ft)	1.39	4.36	2.50
Conv. Total (cfs)	64564.8	Conv. (cfs)	2576.1	39866.5	22122.2
Length Wtd. (ft)	195.74	Wetted Per. (ft)	70.96	89.14	227.94
Min Ch El (ft)	2241.00	Shear (lb/sq ft)	1.06	3.31	1.91
Alpha	1.90	Stream Power (lb/ft s)	3.09	38.03	8.25
Frctn Loss (ft)	1.58	Cum Volume (acre-ft)	24.80	33.31	23.05
C & E Loss (ft)	0.02	Cum SA (acres)	9.84	6.64	10.70

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2248.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.94	Wt. n-Val.		0.038	0.070
W.S. Elev (ft)	2246.46	Reach Len. (ft)	236.00	221.00	131.00
Crit W.S. (ft)	2246.46	Flow Area (sq ft)		420.20	338.17
E.G. Slope (ft/ft)	0.013582	Area (sq ft)		420.20	338.17
Q Total (cfs)	7157.00	Flow (cfs)		5286.77	1870.23
Top Width (ft)	185.91	Top Width (ft)		88.20	97.71
Vel Total (ft/s)	9.44	Avg. Vel. (ft/s)		12.58	5.53
Max Chl Dpth (ft)	5.46	Hydr. Depth (ft)		4.76	3.46
Conv. Total (cfs)	61411.5	Conv. (cfs)		45363.8	16047.8
Length Wtd. (ft)	204.53	Wetted Per. (ft)		91.60	101.17
Min Ch El (ft)	2241.00	Shear (lb/sq ft)		3.89	2.83
Alpha	1.40	Stream Power (lb/ft s)		48.94	15.67
Frctn Loss (ft)	1.87	Cum Volume (acre-ft)	13.09	35.97	8.99
C & E Loss (ft)	0.02	Cum SA (acres)	3.32	6.64	3.35

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.185

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9883.9	2246	9911.1	2246	9915.1	2245	9920.3	2244	9923.8	2243
9928.7	2242	9933.3	2241	9938.8	2240	9940.4	2239	9943.4	2238
9956	2238	9990	2238	10000	2238	10009.4	2238	10017.1	2239
10017.8	2240	10020.2	2241	10102.6	2242	10147.6	2242	10155.6	2241
10158.1	2240	10164.6	2241	10213.1	2241	10229.8	2242	10273.9	2243
10307.8	2243	10324.6	2243	10332	2244	10363.1	2245	10377	2246
10386.7	2247	10392.1	2248	10400.8	2249	10421.2	2252	10427.3	2253
10437	2254								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9883.9	.07	9933.3	.031	10020.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9933.3	10020.2	264	486	502	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10274.3	10437	2246

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2245.47	Element			
Vel Head (ft)	1.55	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2243.92	Reach Len. (ft)	264.00	486.00	502.00
Crit W.S. (ft)	2243.92	Flow Area (sq ft)	19.59	486.04	581.39
E.G. Slope (ft/ft)	0.005721	Area (sq ft)	19.59	486.04	630.89
Q Total (cfs)	7157.00	Flow (cfs)	41.21	5496.58	1619.21
Top Width (ft)	410.85	Top Width (ft)	12.73	86.90	311.22
Vel Total (ft/s)	6.58	Avg. Vel. (ft/s)	2.10	11.31	2.79
Max Chl Dpth (ft)	5.92	Hydr. Depth (ft)	1.54	5.59	2.29
Conv. Total (cfs)	94623.5	Conv. (cfs)	544.9	72670.9	21407.7
Length Wtd. (ft)	465.16	Wetted Per. (ft)	13.06	88.22	254.48
Min Ch El (ft)	2238.00	Shear (lb/sq ft)	0.54	1.97	0.82
Alpha	2.31	Stream Power (lb/ft s)	1.13	22.25	2.27
Frctn Loss (ft)	2.51	Cum Volume (acre-ft)	24.48	31.10	21.25
C & E Loss (ft)	0.02	Cum SA (acres)	9.61	6.20	9.89

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2246.34	Element			
Vel Head (ft)	2.16	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2244.18	Reach Len. (ft)	264.00	486.00	502.00
Crit W.S. (ft)	2244.18	Flow Area (sq ft)	23.02	508.72	234.47
E.G. Slope (ft/ft)	0.006544	Area (sq ft)	23.02	508.72	234.47
Q Total (cfs)	7157.00	Flow (cfs)	55.66	6343.15	758.20
Top Width (ft)	188.75	Top Width (ft)	13.30	86.90	88.55
Vel Total (ft/s)	9.34	Avg. Vel. (ft/s)	2.42	12.47	3.23
Max Chl Dpth (ft)	6.18	Hydr. Depth (ft)	1.73	5.85	2.65
Conv. Total (cfs)	88470.3	Conv. (cfs)	688.0	78410.0	9372.3
Length Wtd. (ft)	467.00	Wetted Per. (ft)	13.78	88.22	90.74
Min Ch El (ft)	2238.00	Shear (lb/sq ft)	0.68	2.36	1.06
Alpha	1.59	Stream Power (lb/ft s)	1.65	29.37	3.41
Frctn Loss (ft)	2.76	Cum Volume (acre-ft)	13.03	33.62	8.12
C & E Loss (ft)	0.08	Cum SA (acres)	3.28	6.20	3.07

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.093

INPUT
Description:
Station Elevation Data num= 47

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9479	2239	9491.7	2238	9494.9	2238	9573.2	2239	9584.8	2240
9592.3	2241	9599.8	2242	9606.3	2243	9616.7	2244	9621.8	2244
9625.5	2243	9630	2242	9637	2241	9647.9	2240	9660.7	2239
9672.3	2238	9693.4	2237	9713.2	2236	9733.5	2235	9737.4	2235
9745.1	2236	9785.8	2236	9860.9	2235	9939.8	2234	9942.7	2233
9946.1	2232	9961.1	2231	9982.5	2230	9996.6	2230	10000.4	2230
10002.1	2231	10007.1	2232	10009.4	2233	10013.1	2234	10019.4	2235
10022.9	2236	10029.5	2237	10033.4	2238	10035.1	2239	10039.4	2240
10042.8	2241	10046.8	2242	10059.8	2242	10068.8	2241	10090.9	2240
10114	2239	10136	2242						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9479	.07	9939.8	.031	10013.1	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9939.8	10013.1	443	455	416	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2239.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.74	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2237.60	Reach Len. (ft)	443.00	455.00	416.00
Crit W.S. (ft)	2237.60	Flow Area (sq ft)	561.84	478.15	34.84
E.G. Slope (ft/ft)	0.005090	Area (sq ft)	561.84	478.15	34.84
Q Total (cfs)	7157.00	Flow (cfs)	1425.12	5653.15	78.73
Top Width (ft)	351.09	Top Width (ft)	259.05	73.30	18.74
Vel Total (ft/s)	6.66	Avg. Vel. (ft/s)	2.54	11.82	2.26
Max Chl Dpth (ft)	7.60	Hydr. Depth (ft)	2.17	6.52	1.86
Conv. Total (cfs)	100317.6	Conv. (cfs)	19975.4	79238.6	1103.6
Length Wtd. (ft)	450.67	Wetted Per. (ft)	259.19	74.38	19.11
Min Ch El (ft)	2230.00	Shear (lb/sq ft)	0.69	2.04	0.58
Alpha	2.52	Stream Power (lb/ft s)	1.75	24.15	1.31
Frctn Loss (ft)	0.92	Cum Volume (acre-ft)	22.72	25.72	17.41
C & E Loss (ft)	0.40	Cum SA (acres)	8.79	5.30	7.99

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2239.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.90	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2237.63	Reach Len. (ft)	443.00	455.00	416.00
Crit W.S. (ft)	2237.63	Flow Area (sq ft)	424.06	480.17	35.35
E.G. Slope (ft/ft)	0.005364	Area (sq ft)	424.06	480.17	35.35
Q Total (cfs)	7157.00	Flow (cfs)	1229.85	5844.39	82.75
Top Width (ft)	256.84	Top Width (ft)	164.80	73.30	18.74
Vel Total (ft/s)	7.62	Avg. Vel. (ft/s)	2.90	12.17	2.34
Max Chl Dpth (ft)	7.63	Hydr. Depth (ft)	2.57	6.55	1.89
Conv. Total (cfs)	97720.0	Conv. (cfs)	16792.1	79798.0	1129.9
Length Wtd. (ft)	451.73	Wetted Per. (ft)	166.44	74.38	19.14
Min Ch El (ft)	2230.00	Shear (lb/sq ft)	0.85	2.16	0.62
Alpha	2.11	Stream Power (lb/ft s)	2.47	26.31	1.45
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)	11.67	28.10	6.57
C & E Loss (ft)	0.43	Cum SA (acres)	2.74	5.30	2.45

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.007

INPUT
Description: Approach section for culvert crossing - Dynamite Roa
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9629.5	2236	9640.6	2235	9656.5	2234	9668.7	2233	9681	2232
9694.3	2231	9712.8	2230	9729.9	2229	9746.8	2228	9757.9	2228
9790	2228	9840.3	2227	9863.8	2227	9870.4	2227	9882.5	2227
9951.8	2227	9967.9	2226	9972.8	2225	9979.5	2224	10000	2224
10035.3	2224	10042.7	2225	10049.6	2226	10057.9	2227	10064.4	2228
10075.7	2229	10085.8	2230	10093.3	2231	10100.4	2232	10107.2	2233
10160.8	2234	10193.2	2235	10203.8	2234	10215.6	2233	10222.1	2233
10249.5	2234	10259.6	2234	10290.1	2233	10294.8	2233	10315.6	2233
10326.8	2232	10337.1	2231						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9629.5	.07	9967.9	.031	10049.6	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9967.9	10049.6	32	37	27	.3	.5

Right Levee Station= 10193.2 Elevation= 2235

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2232.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.41	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2232.53	Reach Len. (ft)	32.00	37.00	27.00
Crit W.S. (ft)	2229.83	Flow Area (sq ft)	1334.22	671.85	182.18
E.G. Slope (ft/ft)	0.001086	Area (sq ft)	1334.22	671.85	182.18
Q Total (cfs)	7157.00	Flow (cfs)	2560.73	4312.35	283.92
Top Width (ft)	429.45	Top Width (ft)	293.38	81.70	54.38
Vel Total (ft/s)	3.27	Avg. Vel. (ft/s)	1.92	6.42	1.56
Max Chl Dpth (ft)	8.53	Hydr. Depth (ft)	4.55	8.22	3.35
Conv. Total (cfs)	217192.8	Conv. (cfs)	77710.3	130866.5	8616.1
Length Wtd. (ft)	34.79	Wetted Per. (ft)	293.56	82.01	54.78
Min Ch El (ft)	2224.00	Shear (lb/sq ft)	0.31	0.56	0.23
Alpha	2.45	Stream Power (lb/ft s)	0.59	3.56	0.35
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	13.08	19.72	16.38
C & E Loss (ft)	0.02	Cum SA (acres)	5.98	4.49	7.64

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2233.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.070	0.031	
W.S. Elev (ft)	2233.07	Reach Len. (ft)	32.00	37.00	27.00
Crit W.S. (ft)	2229.86	Flow Area (sq ft)	1011.56	716.51	
E.G. Slope (ft/ft)	0.001190	Area (sq ft)	1011.56	716.51	
Q Total (cfs)	7157.00	Flow (cfs)	2401.83	4755.17	
Top Width (ft)	249.60	Top Width (ft)	167.90	81.70	
Vel Total (ft/s)	4.14	Avg. Vel. (ft/s)	2.37	6.64	
Max Chl Dpth (ft)	9.07	Hydr. Depth (ft)	6.02	8.77	
Conv. Total (cfs)	207503.1	Conv. (cfs)	69636.2	137866.9	
Length Wtd. (ft)	35.21	Wetted Per. (ft)	173.21	89.09	
Min Ch El (ft)	2224.00	Shear (lb/sq ft)	0.43	0.60	
Alpha	1.82	Stream Power (lb/ft s)	1.03	3.96	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)	4.37	21.85	6.40
C & E Loss (ft)	0.01	Cum SA (acres)	1.05	4.49	2.36

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.001

INPUT
Description: Upstream face of culvert crossing - Dynamite Road
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9376	2235	9382.6	2236	9389.3	2237	9428	2237	9432.9	2236
9438.4	2235	9444.6	2234	9450.7	2233	9456.8	2232	9463.9	2231
9471.2	2230	9481.6	2230	9498.7	2231	9529.5	2232	9537	2233
9543.1	2234	9548	2235	9557.5	2236	9566.4	2237	9584.5	2238
9609.5	2238	9625.4	2237	9636.1	2236	9642.2	2235	9648.8	2234
9657.3	2233	9665.9	2232	9685.3	2231	9701.4	2230	9709.1	2229
9730.5	2228	9948.4	2227	9968.3	2226	9973.8	2225	9974.9	2224
9976.2	2223	9995.6	2223	10024.8	2223	10029.3	2224	10033.3	2225
10035.7	2226	10040.4	2227	10046.6	2228	10064.4	2229	10077.6	2230
10082.2	2231	10090.4	2232	10099.6	2233	10110.6	2234	10130.9	2235
10133.4	2235	10160.4	2234	10186.2	2233	10206.2	2232	10228.5	2232
10256.2	2232	10297.6	2232	10324	2232				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9376	.07	9968.3	.031	10035.7	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9968.3	10035.7	87	86	86	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9376	9973	2230	10027	10324	2230

Left Levee Station= 9609.5 Elevation= 2238
Right Levee Station= 10130.9 Elevation= 2235

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2232.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2232.39	Reach Len. (ft)	87.00	86.00	86.00
Crit W.S. (ft)	2230.04	Flow Area (sq ft)	1336.26	602.51	182.02
E.G. Slope (ft/ft)	0.001197	Area (sq ft)	1336.26	602.51	182.02
Q Total (cfs)	7157.00	Flow (cfs)	2621.92	4250.91	284.16
Top Width (ft)	431.42	Top Width (ft)	305.74	67.40	58.28
Vel Total (ft/s)	3.37	Avg. Vel. (ft/s)	1.96	7.06	1.56
Max Chl Dpth (ft)	9.39	Hydr. Depth (ft)	4.37	8.94	3.12
Conv. Total (cfs)	206887.8	Conv. (cfs)	75792.1	122881.3	8214.3
Length Wtd. (ft)	86.00	Wetted Per. (ft)	305.94	68.65	58.72
Min Ch El (ft)	2223.00	Shear (lb/sq ft)	0.33	0.66	0.23
Alpha	2.73	Stream Power (lb/ft s)	0.64	4.63	0.36
Frctn Loss (ft)		Cum Volume (acre-ft)	12.10	19.18	16.26
C & E Loss (ft)		Cum SA (acres)	5.76	4.43	7.61

Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2233.50	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.53	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2232.97	Reach Len. (ft)	87.00	86.00	86.00
Crit W.S. (ft)	2230.04	Flow Area (sq ft)	1094.94	641.68	80.89
E.G. Slope (ft/ft)	0.001124	Area (sq ft)	1094.94	641.68	80.89
Q Total (cfs)	7157.00	Flow (cfs)	2432.31	4574.90	149.80
Top Width (ft)	275.00	Top Width (ft)	193.30	67.40	14.30
Vel Total (ft/s)	3.94	Avg. Vel. (ft/s)	2.22	7.13	1.85
Max Chl Dpth (ft)	9.97	Hydr. Depth (ft)	5.66	9.52	5.66
Conv. Total (cfs)	213510.0	Conv. (cfs)	72561.4	136479.8	4468.7
Length Wtd. (ft)	86.00	Wetted Per. (ft)	198.50	68.65	19.27

Min Ch El (ft)	2223.00	Shear (lb/sq ft)	0.39	0.66	0.29
Alpha	2.21	Stream Power (lb/ft s)	0.86	4.67	0.55
Frctn Loss (ft)		Cum Volume (acre-ft)	3.60	21.27	6.38
C & E Loss (ft)		Cum SA (acres)	0.92	4.43	2.36

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CULVERT RIVER: Rawhide Wash
REACH: Below Pima Road RS: 8.000

INPUT
Description:
Distance from Upstream XS = 5
Deck/Roadway Width = 76
Weir Coefficient = 2.6
Bridge Deck/Roadway Skew =
Upstream Deck/Roadway Coordinates
num= 5

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9400	2235		9600	2230		9972	2231	
10028	2231		10100	2230				

Upstream Bridge Cross Section Data
Station Elevation Data num= 58

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9376	2235	9382.6	2236	9389.3	2237	9428	2237	9432.9	2236
9438.4	2235	9444.6	2234	9450.7	2233	9456.8	2232	9463.9	2231
9471.2	2230	9481.6	2230	9498.7	2231	9529.5	2232	9537	2233
9543.1	2234	9548	2235	9557.5	2236	9566.4	2237	9584.5	2238
9609.5	2238	9625.4	2237	9636.1	2236	9642.2	2235	9648.8	2234
9657.3	2233	9665.9	2232	9685.3	2231	9701.4	2230	9709.1	2229
9730.5	2228	9948.4	2227	9968.3	2226	9973.8	2225	9974.9	2224
9976.2	2223	9995.6	2223	10024.8	2223	10029.3	2224	10033.3	2225
10035.7	2226	10040.4	2227	10046.6	2228	10064.4	2229	10077.6	2230
10082.2	2231	10090.4	2232	10099.6	2233	10110.6	2234	10130.9	2235
10133.4	2235	10160.4	2234	10186.2	2233	10206.2	2232	10228.5	2232
10256.2	2232	10297.6	2232	10324	2232				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9376	.07	9968.3	.031	10035.7	.07

Bank Sta: Left Right Coeff Contr. Expan.
9968.3 10035.7 .3 .5
Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9376	9973	2230	10027	10324	2230

Left Levee Station= 9609.5 Elevation= 2238
Right Levee Station= 10130.9 Elevation= 2235

Downstream Deck/Roadway Coordinates
num= 5

Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord	Sta	Hi Cord	Lo Cord
9400	2235		9600	2230		9972	2231	
10028	2231		10100	2230				

Downstream Bridge Cross Section Data
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9376	2235	9383	2236	9387.8	2237	9390.9	2238	9394.9	2239
9400.4	2239	9403.8	2238	9408.5	2237	9413.6	2236	9419	2235
9424.5	2234	9431.1	2233	9439	2232	9448.1	2231	9457.1	2230
9472.3	2229	9486	2228	9495.7	2227	9496.1	2227	9500.1	2228
9505	2229	9532.7	2230	9539.5	2231	9546.2	2232	9553.2	2233
9560.5	2234	9565.2	2235	9572.3	2236	9579.8	2236	9590.5	2235
9600.9	2234	9618.7	2234	9629.4	2235	9641.7	2236	9652.3	2236
9663.4	2235	9671.8	2234	9677.6	2233	9683.3	2232	9689.5	2231
9696.2	2230	9702.4	2229	9713.8	2228	9728	2227	9968.3	2226
9969.3	2225	9970.3	2224	9971.9	2223	9973.2	2222	10001.3	2222

10027.3	2222	10028.7	2223	10030.1	2224	10030.2	2225	10032	2226
10040.9	2227	10049	2228	10055.8	2229	10068.8	2230	10081.7	2231
10094.8	2232	10116.2	2233	10123.7	2234	10132.1	2235	10159.9	2235
10171.8	2235	10180.2	2235	10212.1	2234	10233	2233	10247.9	2232
10256.7	2231	10266.9	2230	10285.3	2229	10316.7	2228	10329.4	2227

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9376	.07	9968.3	.031	10032	.07

Bank Sta: Left	Right	Coeff Contr.	Expan.
9968.3	10032	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9376	9970.5	2228	10029.5	10329.4	2228

Left Levee Station= 9652.3 Elevation= 2236
Right Levee Station= 10132.1 Elevation= 2235

Upstream Embankment side slope = horiz. to 1.0 vertical
Downstream Embankment side slope = horiz. to 1.0 vertical
Maximum allowable submergence for weir flow = .95
Elevation at which weir flow begins =
Energy head used in spillway design =
Spillway height used in design =
Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name	Shape	Rise	Span
CULVERT#1	Box	6	10

FHWA Chart # 8 - flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG

Culvert Upstrm Dist	Length	n Value	Entrance Loss Coef	Exit Loss Coef
5	76	.013	.4	1

Number of Barrels = 5
Upstream Elevation = 2221.8
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.
9978	9989	10000	10011	10022

Downstream Elevation = 2220.5
Centerline Stations

Sta.	Sta.	Sta.	Sta.	Sta.
9978	9989	10000	10011	10022

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 7.983

INPUT
Description: Downstream face of culvert crossing - Dynamite
Station Elevation Data num= 75

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9376	2235	9383	2236	9387.8	2237	9390.9	2238	9394.9	2239
9400.4	2239	9403.8	2238	9408.5	2237	9413.6	2236	9419	2235
9424.5	2234	9431.1	2233	9439	2232	9448.1	2231	9457.1	2230
9472.3	2229	9486	2228	9495.7	2227	9496.1	2227	9500.1	2228
9505	2229	9532.7	2230	9539.5	2231	9546.2	2232	9553.2	2233
9560.5	2234	9565.2	2235	9572.3	2236	9579.8	2236	9590.5	2235
9600.9	2234	9618.7	2234	9629.4	2235	9641.7	2236	9652.3	2236
9663.4	2235	9671.8	2234	9677.6	2233	9683.3	2232	9689.5	2231
9696.2	2230	9702.4	2229	9713.8	2228	9728	2227	9968.3	2226
9969.3	2225	9970.3	2224	9971.9	2223	9973.2	2222	10001.3	2222
10027.3	2222	10028.7	2223	10030.1	2224	10030.2	2225	10032	2226
10040.9	2227	10049	2228	10055.8	2229	10068.8	2230	10081.7	2231
10094.8	2232	10116.2	2233	10123.7	2234	10132.1	2235	10159.9	2235
10171.8	2235	10180.2	2235	10212.1	2234	10233	2233	10247.9	2232
10256.7	2231	10266.9	2230	10285.3	2229	10316.7	2228	10329.4	2227

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9376	.07	9968.3	.031	10032	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9968.3	10032	132	136	132	.3	.5

Ineffective Flow num= 2

Sta L	Sta R	Elev	Sta L	Sta R	Elev
9376	9970.5	2228	10029.5	10329.4	2228

Left Levee Station= 9652.3 Elevation= 2236
Right Levee Station= 10132.1 Elevation= 2235

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2230.79	Element			
Vel Head (ft)	1.62	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2229.17	Reach Len. (ft)	132.00	136.00	132.00
Crit W.S. (ft)	2229.17	Flow Area (sq ft)	672.89	438.29	42.02
E.G. Slope (ft/ft)	0.005003	Area (sq ft)	672.89	438.29	42.02
Q Total (cfs)	7157.00	Flow (cfs)	1870.82	5199.73	86.44
Top Width (ft)	356.65	Top Width (ft)	266.95	63.70	26.00
Vel Total (ft/s)	6.21	Avg. Vel. (ft/s)	2.78	11.86	2.06
Max Chl Dpth (ft)	7.17	Hydr. Depth (ft)	2.52	6.88	1.62
Conv. Total (cfs)	101184.6	Conv. (cfs)	26449.4	73513.1	1222.1
Length Wtd. (ft)	135.03	Wetted Per. (ft)	267.04	66.96	26.20
Min Ch El (ft)	2222.00	Shear (lb/sq ft)	0.79	2.04	0.50
Alpha	2.71	Stream Power (lb/ft s)	2.19	24.25	1.03
Frctn Loss (ft)	0.79	Cum Volume (acre-ft)	10.09	18.15	16.04
C & E Loss (ft)	0.02	Cum SA (acres)	5.19	4.30	7.53

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2231.27	Element			
Vel Head (ft)	2.05	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2229.21	Reach Len. (ft)	132.00	136.00	132.00
Crit W.S. (ft)	2229.21	Flow Area (sq ft)	430.56	441.00	43.12
E.G. Slope (ft/ft)	0.005805	Area (sq ft)	430.56	441.00	43.12
Q Total (cfs)	7157.00	Flow (cfs)	1400.94	5658.93	97.13
Top Width (ft)	238.00	Top Width (ft)	148.30	63.70	26.00
Vel Total (ft/s)	7.82	Avg. Vel. (ft/s)	3.25	12.83	2.25
Max Chl Dpth (ft)	7.21	Hydr. Depth (ft)	2.90	6.92	1.66
Conv. Total (cfs)	93932.6	Conv. (cfs)	18386.7	74271.1	1274.8
Length Wtd. (ft)	135.35	Wetted Per. (ft)	150.90	66.96	26.24
Min Ch El (ft)	2222.00	Shear (lb/sq ft)	1.03	2.39	0.60
Alpha	2.16	Stream Power (lb/ft s)	3.36	30.63	1.34
Frctn Loss (ft)	0.94	Cum Volume (acre-ft)	2.08	20.20	6.25
C & E Loss (ft)	0.09	Cum SA (acres)	0.58	4.30	2.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 7.958

INPUT
Description: Exit section for culvert crossing - Dynamite Road
Station Elevation Data num= 39

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9672	2232	9683	2233	9689.9	2233	9699.1	2232	9706.4	2231

9712.3	2230	9718.2	2229	9728.9	2228	9735.3	2227	9742.3	2226
9829.3	2224	9835.3	2223	9838.9	2223	9844.2	2224	9859	2224
9885.1	2223	9888	2222	9888.9	2222	9929	2223	9932.9	2223
9973.7	2222	9975.6	2221	9982.3	2220	10000	2220	10014.3	2220
10016.1	2221	10022.5	2222	10024.9	2223	10027.6	2225	10029.5	2226
10031	2227	10035.4	2228	10038.9	2229	10042	2230	10045.1	2231
10047.8	2232	10072.2	2232	10081.9	2231	10096.4	2230		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9672	.07	9929	.031	10024.9	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9929	10024.9	340	363	352	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2228.18	Element			
Vel Head (ft)	1.69	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2226.48	Reach Len. (ft)	340.00	363.00	352.00
Crit W.S. (ft)	2226.48	Flow Area (sq ft)	466.02	485.34	8.75
E.G. Slope (ft/ft)	0.006870	Area (sq ft)	466.02	485.34	8.75
Q Total (cfs)	7157.00	Flow (cfs)	1488.53	5649.48	18.99
Top Width (ft)	291.31	Top Width (ft)	190.08	95.90	5.32
Vel Total (ft/s)	7.45	Avg. Vel. (ft/s)	3.19	11.64	2.17
Max Chl Dpth (ft)	6.48	Hydr. Depth (ft)	2.45	5.06	1.64
Conv. Total (cfs)	86350.3	Conv. (cfs)	17959.4	68161.8	229.2
Length Wtd. (ft)	359.68	Wetted Per. (ft)	190.51	96.77	6.38
Min Ch El (ft)	2220.00	Shear (lb/sq ft)	1.05	2.15	0.59
Alpha	1.96	Stream Power (lb/ft s)	3.35	25.04	1.28
Frctn Loss (ft)	2.47	Cum Volume (acre-ft)	8.37	16.71	15.97
C & E Loss (ft)	0.02	Cum SA (acres)	4.49	4.05	7.48

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2228.84	Element			
Vel Head (ft)	2.34	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2226.50	Reach Len. (ft)	340.00	363.00	352.00
Crit W.S. (ft)	2226.50	Flow Area (sq ft)	176.09	487.04	8.84
E.G. Slope (ft/ft)	0.008476	Area (sq ft)	176.09	487.04	8.84
Q Total (cfs)	7157.00	Flow (cfs)	823.40	6312.16	21.45
Top Width (ft)	145.12	Top Width (ft)	43.90	95.90	5.32
Vel Total (ft/s)	10.65	Avg. Vel. (ft/s)	4.68	12.96	2.43
Max Chl Dpth (ft)	6.50	Hydr. Depth (ft)	4.01	5.08	1.66
Conv. Total (cfs)	77738.9	Conv. (cfs)	8943.7	68562.3	232.9
Length Wtd. (ft)	361.68	Wetted Per. (ft)	47.58	96.77	6.39
Min Ch El (ft)	2220.00	Shear (lb/sq ft)	1.96	2.66	0.73
Alpha	1.33	Stream Power (lb/ft s)	9.16	34.52	1.78
Frctn Loss (ft)	3.09	Cum Volume (acre-ft)	1.16	18.76	6.17
C & E Loss (ft)	0.04	Cum SA (acres)	0.29	4.05	2.27

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 7.889

INPUT
Description:
Station Elevation Data num= 31

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9862.7	2226	9869.6	2225	9874.4	2224	9879.3	2223	9885.7	2222
9892.6	2221	9899	2220	9916.1	2219	9934.8	2218	9941.8	2217
9946.4	2216	9950.4	2215	9951.6	2215	9957.7	2216	9963.9	2216
9965.6	2215	10000	2215	10018	2215	10028.3	2216	10033.3	2217
10035.3	2218	10112.1	2218	10223.1	2218	10259	2219	10297	2220
10322.4	2221	10351.2	2222	10359.7	2223	10376.2	2224	10395.6	2225
10435.4	2226								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9862.7	.07	9934.8	.031	10035.3	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9934.8	10035.3	248	230	221	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10128	10435.4	2222

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2222.68	Element			
Vel Head (ft)	1.90	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2220.78	Reach Len. (ft)	248.00	230.00	221.00
Crit W.S. (ft)	2220.78	Flow Area (sq ft)	66.44	526.67	257.64
E.G. Slope (ft/ft)	0.006854	Area (sq ft)	66.44	526.67	660.11
Q Total (cfs)	7319.00	Flow (cfs)	161.35	6262.59	895.05
Top Width (ft)	422.78	Top Width (ft)	40.79	100.50	281.50
Vel Total (ft/s)	8.60	Avg. Vel. (ft/s)	2.43	11.89	3.47
Max Chl Dpth (ft)	5.78	Hydr. Depth (ft)	1.63	5.24	2.78
Conv. Total (cfs)	88403.9	Conv. (cfs)	1948.9	75643.9	10811.1
Length Wtd. (ft)	229.96	Wetted Per. (ft)	40.90	101.54	92.70
Min Ch El (ft)	2215.00	Shear (lb/sq ft)	0.70	2.22	1.19
Alpha	1.66	Stream Power (lb/ft s)	1.69	26.39	4.13
Frctn Loss (ft)	1.64	Cum Volume (acre-ft)	6.29	12.49	13.26
C & E Loss (ft)	0.03	Cum SA (acres)	3.59	3.23	6.32

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2223.76	Element			
Vel Head (ft)	2.72	Wt. n-Val.		0.031	
W.S. Elev (ft)	2221.04	Reach Len. (ft)	248.00	230.00	221.00
Crit W.S. (ft)	2221.04	Flow Area (sq ft)		552.92	
E.G. Slope (ft/ft)	0.008602	Area (sq ft)		552.92	
Q Total (cfs)	7319.00	Flow (cfs)		7319.00	
Top Width (ft)	100.50	Top Width (ft)		100.50	
Vel Total (ft/s)	13.24	Avg. Vel. (ft/s)		13.24	
Max Chl Dpth (ft)	6.04	Hydr. Depth (ft)		5.50	
Conv. Total (cfs)	78912.3	Conv. (cfs)		78912.3	
Length Wtd. (ft)	230.41	Wetted Per. (ft)		107.62	
Min Ch El (ft)	2215.00	Shear (lb/sq ft)		2.76	
Alpha	1.00	Stream Power (lb/ft s)		36.52	
Frctn Loss (ft)	1.95	Cum Volume (acre-ft)	0.47	14.42	6.14
C & E Loss (ft)	0.00	Cum SA (acres)	0.12	3.23	2.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 7.845

INPUT
Description:
Station Elevation Data num= 42

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9674.7	2230	9686.9	2229	9696	2228	9700.9	2227	9706.3	2226
9710.1	2225	9713.7	2224	9718.3	2223	9724.8	2222	9734.5	2221
9753	2220	9764.5	2219	9775.2	2219	9783.7	2220	9789.5	2221
9800.4	2222	9811.9	2222	9817.8	2221	9824.4	2220	9829.8	2219
9836.2	2218	9840.5	2217	9852	2216	9939	2214	9953.5	2213
9981.1	2212	10000	2212	10017.7	2212	10024.8	2213	10028.1	2214
10040.8	2214	10046.6	2213	10057.5	2213	10064.9	2214	10095.5	2215
10105.3	2216	10117.3	2217	10130.9	2218	10140.2	2219	10148	2220
10177.4	2220	10210.3	2220						

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9674.7	.07	9939	.031	10028.1	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9939	10028.1	289	270	267	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2219.37	Element			
Vel Head (ft)	1.79	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2217.57	Reach Len. (ft)	289.00	270.00	267.00
Crit W.S. (ft)	2217.57	Flow Area (sq ft)	236.85	452.46	278.40
E.G. Slope (ft/ft)	0.007462	Area (sq ft)	236.85	452.46	278.40
Q Total (cfs)	7319.00	Flow (cfs)	766.11	5523.78	1029.10
Top Width (ft)	287.05	Top Width (ft)	100.96	89.10	96.99
Vel Total (ft/s)	7.56	Avg. Vel. (ft/s)	3.23	12.21	3.70
Max Chl Dpth (ft)	5.57	Hydr. Depth (ft)	2.35	5.08	2.87
Conv. Total (cfs)	84726.3	Conv. (cfs)	8868.7	63944.5	11913.1
Length Wtd. (ft)	270.73	Wetted Per. (ft)	101.09	89.37	97.27
Min Ch El (ft)	2212.00	Shear (lb/sq ft)	1.09	2.36	1.33
Alpha	2.02	Stream Power (lb/ft s)	3.53	28.79	4.93
Frctn Loss (ft)	2.39	Cum Volume (acre-ft)	5.43	9.91	10.88
C & E Loss (ft)	0.12	Cum SA (acres)	3.19	2.73	5.36

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2221.02	Element			
Vel Head (ft)	2.76	Wt. n-Val.	0.070	0.031	
W.S. Elev (ft)	2218.26	Reach Len. (ft)	289.00	270.00	267.00
Crit W.S. (ft)	2218.26	Flow Area (sq ft)	76.37	513.52	
E.G. Slope (ft/ft)	0.008331	Area (sq ft)	76.37	513.52	
Q Total (cfs)	7319.00	Flow (cfs)	331.92	6987.08	
Top Width (ft)	108.00	Top Width (ft)	18.90	89.10	
Vel Total (ft/s)	12.41	Avg. Vel. (ft/s)	4.35	13.61	
Max Chl Dpth (ft)	6.26	Hydr. Depth (ft)	4.04	5.76	
Conv. Total (cfs)	80188.6	Conv. (cfs)	3636.6	76552.0	
Length Wtd. (ft)	270.13	Wetted Per. (ft)	22.73	93.63	

Min Ch El (ft)	2212.00	Shear (lb/sq ft)	1.75	2.85	
Alpha	1.15	Stream Power (lb/ft s)	7.60	38.81	
Frctn Loss (ft)	2.40	Cum Volume (acre-ft)	0.25	11.61	6.14
C & E Loss (ft)	0.28	Cum SA (acres)	0.06	2.73	2.25

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 7.794

INPUT
Description:
Station Elevation Data num= 35

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9592.8	2220	9614.6	2219	9633.8	2218	9659.3	2217	9697.9	2216
9720.2	2215	9753.8	2214	9779.2	2213	9826	2212	9854.1	2211
9869.1	2210	9875.8	2210	9902	2210	9924.9	2209	9993.2	2208
10000	2208	10005.6	2208	10015.1	2209	10020.2	2210	10022.2	2210
10138.3	2209	10171.1	2209	10208.1	2210	10249.6	2211	10278.1	2212
10285	2212	10300.5	2212	10308.4	2213	10318.3	2214	10325.5	2215
10333.1	2216	10341.9	2217	10342.8	2218	10352.3	2219	10361.2	2220

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9592.8	.07	9902	.031	10020.2	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9902	10020.2	488	424	300	.1	.3

Ineffective Flow num= 1

Sta L	Sta R	Elev
10210.6	10361.2	2215

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2213.59	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.39	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2212.20	Reach Len. (ft)	488.00	424.00	300.00
Crit W.S. (ft)	2212.20	Flow Area (sq ft)	118.09	414.99	527.26
E.G. Slope (ft/ft)	0.010600	Area (sq ft)	118.09	414.99	616.54
Q Total (cfs)	7319.00	Flow (cfs)	320.83	4725.95	2272.22
Top Width (ft)	485.18	Top Width (ft)	85.14	118.20	281.84
Vel Total (ft/s)	6.90	Avg. Vel. (ft/s)	2.72	11.39	4.31
Max Chl Dpth (ft)	4.20	Hydr. Depth (ft)	1.39	3.51	2.77
Conv. Total (cfs)	71088.9	Conv. (cfs)	3116.2	45902.7	22069.9
Length Wtd. (ft)	387.52	Wetted Per. (ft)	85.19	118.38	190.42
Min Ch El (ft)	2208.00	Shear (lb/sq ft)	0.92	2.32	1.83
Alpha	1.89	Stream Power (lb/ft s)	2.49	26.42	7.90
Frctn Loss (ft)	3.81	Cum Volume (acre-ft)	4.25	7.22	8.14
C & E Loss (ft)	0.13	Cum SA (acres)	2.57	2.09	4.20

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

E.G. Elev (ft)	2214.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.82	Wt. n-Val.		0.031	0.070
W.S. Elev (ft)	2212.85	Reach Len. (ft)	488.00	424.00	300.00
Crit W.S. (ft)	2212.85	Flow Area (sq ft)		492.29	327.29
E.G. Slope (ft/ft)	0.009527	Area (sq ft)		492.29	327.29
Q Total (cfs)	7319.00	Flow (cfs)		5862.44	1456.57
Top Width (ft)	218.47	Top Width (ft)		118.20	100.27
Vel Total (ft/s)	8.93	Avg. Vel. (ft/s)		11.91	4.45
Max Chl Dpth (ft)	4.85	Hydr. Depth (ft)		4.16	3.26
Conv. Total (cfs)	74985.9	Conv. (cfs)		60062.8	14923.1
Length Wtd. (ft)	394.19	Wetted Per. (ft)		121.23	103.97
Min Ch El (ft)	2208.00	Shear (lb/sq ft)		2.42	1.87
Alpha	1.47	Stream Power (lb/ft s)		28.76	8.33
Frctn Loss (ft)	3.49	Cum Volume (acre-ft)		8.49	5.14
C & E Loss (ft)	0.11	Cum SA (acres)		2.09	1.94

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 7.714

INPUT
Description:
Station Elevation Data num= 43

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9768.2	2209	9779.5	2208	9791.4	2207	9804.8	2206	9808.4	2205
9811.9	2204	9820.6	2204	9830.7	2204	9858.9	2203	9876.7	2203
9956	2203	9956.3	2202	9997.4	2201	10000	2201	10002.5	2201
10050.5	2202	10065.8	2203	10099	2203	10114.1	2203	10120.2	2203
10141	2203	10163.1	2203	10180.2	2203	10221.6	2204	10236.9	2204
10254.1	2204	10256.1	2204	10314.8	2203	10320.5	2203	10376.1	2203
10412.4	2202	10419.3	2201	10427.1	2201	10434.1	2202	10461.7	2203
10485	2205	10493.1	2206	10500.7	2207	10506.6	2208	10510.6	2209
10514.3	2210	10520.4	2211	10527.2	2212				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9768.2	.07	9956	.031	10065.8	.07

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff Contr.	Expan.
9956	10065.8	363	321	187	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

E.G. Elev (ft)	2206.02	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2205.05	Reach Len. (ft)	363.00	321.00	187.00
Crit W.S. (ft)	2205.05	Flow Area (sq ft)	265.05	377.20	821.68
E.G. Slope (ft/ft)	0.009141	Area (sq ft)	265.05	377.20	821.68
Q Total (cfs)	7319.00	Flow (cfs)	793.46	3916.67	2608.88
Top Width (ft)	677.23	Top Width (ft)	147.79	109.80	419.64
Vel Total (ft/s)	5.00	Avg. Vel. (ft/s)	2.99	10.38	3.18
Max Chl Dpth (ft)	4.05	Hydr. Depth (ft)	1.79	3.44	1.96
Conv. Total (cfs)	76551.6	Conv. (cfs)	8299.0	40965.6	27287.0
Length Wtd. (ft)	285.67	Wetted Per. (ft)	147.96	110.60	419.92
Min Ch El (ft)	2201.00	Shear (lb/sq ft)	1.02	1.95	1.12
Alpha	2.49	Stream Power (lb/ft s)	3.06	20.21	3.55
Frctn Loss (ft)	2.37	Cum Volume (acre-ft)	2.10	3.36	3.19
C & E Loss (ft)	0.00	Cum SA (acres)	1.27	0.98	1.78

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2207.35	Element			
Vel Head (ft)	1.46	Wt. n-Val.		0.031	0.070
W.S. Elev (ft)	2205.89	Reach Len. (ft)	363.00	321.00	187.00
Crit W.S. (ft)	2205.89	Flow Area (sq ft)		468.61	579.40
E.G. Slope (ft/ft)	0.008267	Area (sq ft)		468.61	579.40
Q Total (cfs)	7319.00	Flow (cfs)		5256.67	2062.33
Top Width (ft)	338.60	Top Width (ft)		109.80	228.80
Vel Total (ft/s)	6.98	Avg. Vel. (ft/s)		11.22	3.56
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)		4.27	2.53
Conv. Total (cfs)	80494.8	Conv. (cfs)		57813.1	22681.6
Length Wtd. (ft)	290.29	Wetted Per. (ft)		113.49	231.36
Min Ch El (ft)	2201.00	Shear (lb/sq ft)		2.13	1.29
Alpha	1.93	Stream Power (lb/ft s)		23.91	4.60
Frctn Loss (ft)	2.51	Cum Volume (acre-ft)		3.81	2.01
C & E Loss (ft)	0.00	Cum SA (acres)		0.98	0.81

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

CROSS SECTION RIVER: Rawhide Wash
REACH: Below Pima Road RS: 7.653

INPUT
Description:
Station Elevation Data num= 48

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
9714.3	2205	9721	2204	9732.6	2203	9737.4	2202	9744.6	2201
9757.3	2200	9810.5	2199	9834.8	2198	9838.8	2198	9876.4	2198
9891.7	2197	9895.4	2197	9906.1	2198	9913.6	2198	9940.3	2197
9946.3	2196	9959	2196	9961.2	2197	9968.7	2197	9977.2	2196
10000	2196	10029.3	2196	10042.4	2197	10050.7	2197	10064.7	2197
10070.1	2198	10074.5	2198	10107.6	2197	10118.2	2197	10124.3	2198
10218.5	2198	10245.5	2198	10293.6	2199	10299.7	2199	10307.9	2198
10313.9	2198	10324.6	2199	10407.8	2199	10416.7	2198	10418.6	2198
10421.9	2199	10436.6	2199	10469.1	2199	10480.6	2200	10494.4	2201
10503.8	2202	10511.8	2203	10519.8	2204				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
9714.3	.07	9913.6	.031	10070.1	.07

Bank Sta: Left	Right	Coeff Contr.	Expan.
9913.6	10070.1	.1	.3

CROSS SECTION OUTPUT Profile #100yr Natural Fp

			Left OB	Channel	Right OB
E.G. Elev (ft)	2201.00	Element			
Vel Head (ft)	0.98	Wt. n-Val.	0.070	0.031	0.070
W.S. Elev (ft)	2200.01	Reach Len. (ft)			
Crit W.S. (ft)	2200.01	Flow Area (sq ft)	239.41	535.21	663.26
E.G. Slope (ft/ft)	0.007552	Area (sq ft)	239.41	535.21	663.26
Q Total (cfs)	7319.00	Flow (cfs)	586.18	5049.82	1683.01
Top Width (ft)	723.65	Top Width (ft)	156.47	156.50	410.68
Vel Total (ft/s)	5.09	Avg. Vel. (ft/s)	2.45	9.44	2.54
Max Chl Dpth (ft)	4.01	Hydr. Depth (ft)	1.53	3.42	1.62
Conv. Total (cfs)	84218.9	Conv. (cfs)	6745.1	58107.7	19366.2
Length Wtd. (ft)		Wetted Per. (ft)	156.58	157.01	411.14
Min Ch El (ft)	2196.00	Shear (lb/sq ft)	0.72	1.61	0.76

Alpha	2.45	Stream Power (lb/ft s)	1.77	15.16	1.93
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: Slope too steep for slope area to converge during supercritical flow calculations (normal depth is below critical depth). Water surface set to critical depth.

CROSS SECTION OUTPUT Profile #Method 1 Fldwy

			Left OB	Channel	Right OB
E.G. Elev (ft)	2201.70	Element			
Vel Head (ft)	1.48	Wt. n-Val.		0.031	0.070
W.S. Elev (ft)	2200.21	Reach Len. (ft)			
Crit W.S. (ft)	2200.21	Flow Area (sq ft)		566.35	358.49
E.G. Slope (ft/ft)	0.009078	Area (sq ft)		566.35	358.49
Q Total (cfs)	7319.00	Flow (cfs)		6027.05	1291.95
Top Width (ft)	304.90	Top Width (ft)		156.50	148.40
Vel Total (ft/s)	7.91	Avg. Vel. (ft/s)		10.64	3.60
Max Chl Dpth (ft)	4.21	Hydr. Depth (ft)		3.62	2.42
Conv. Total (cfs)	76818.0	Conv. (cfs)		63258.1	13559.9
Length Wtd. (ft)		Wetted Per. (ft)		159.22	150.71
Min Ch El (ft)	2196.00	Shear (lb/sq ft)		2.02	1.35
Alpha	1.53	Stream Power (lb/ft s)		21.45	4.86
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

Warning: The cross section had to be extended vertically during the critical depth calculations.
Warning: Slope too steep for slope area to converge during supercritical flow calculations (normal depth is below critical depth). Water surface set to critical depth.
Warning: The parabolic search method failed to converge on critical depth. The program will try the cross section slice/secant method to find critical depth.

E.6 HEC-RAS MODELS ON DISK

APPENDIX G Exhibit Maps

The following foldout exhibit maps are in this appendix.

Figure G - 11: Floodplain Work Maps (Cover Sheet)

Figure G - 12: Floodplain Work Maps (Sheets 1)

Figure G - 13: Floodplain Work Maps (Sheets 2)

Figure G - 14: Floodplain Work Maps (Sheets 3)

Figure G - 15: Floodplain Work Maps (Sheets 4)

Figure G - 16: Floodplain Work Maps (Sheets 5)

Figure G - 17: Floodplain Work Maps (Sheets 6)

Figure G - 18: Floodplain Work Maps (Sheets 7)

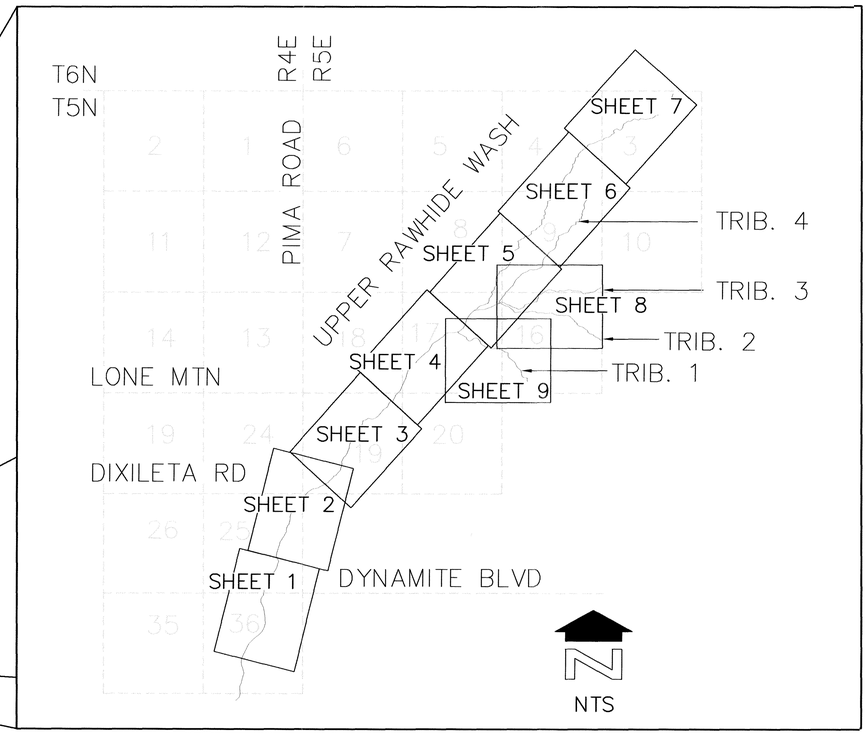
Figure G - 19: Floodplain Work Maps (Sheets 8)

Figure G - 10: Floodplain Work Maps (Sheets 9)

*Hydraulic profiles located in Section 7.4

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
UPPER RAWHIDE WASH FLOODPLAIN
DELINEATION STUDY
FCDMC CONTRACT 98-12

INDEX MAP



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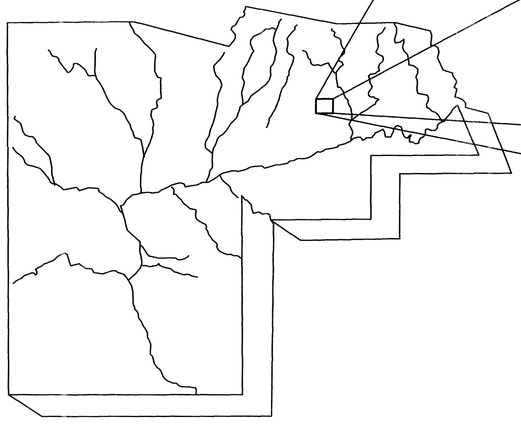
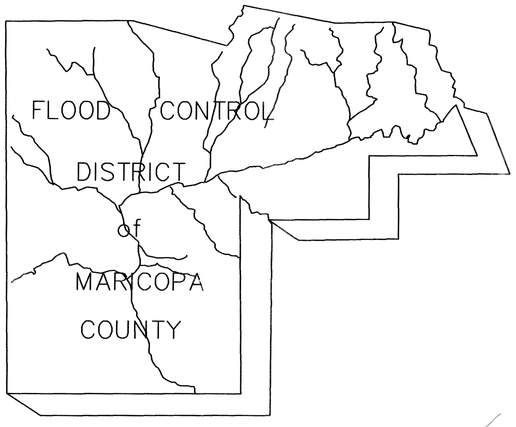




Registered Professional Engineer (Civil)
CERTIFICATE NO. 24426
DOUGLAS J. PLASENCIA
Date Signed 3/11/02
ARIZONA, U.S.A.

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	JTA	3/6/02
PLANS CHK.	RAE	3/6/02

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

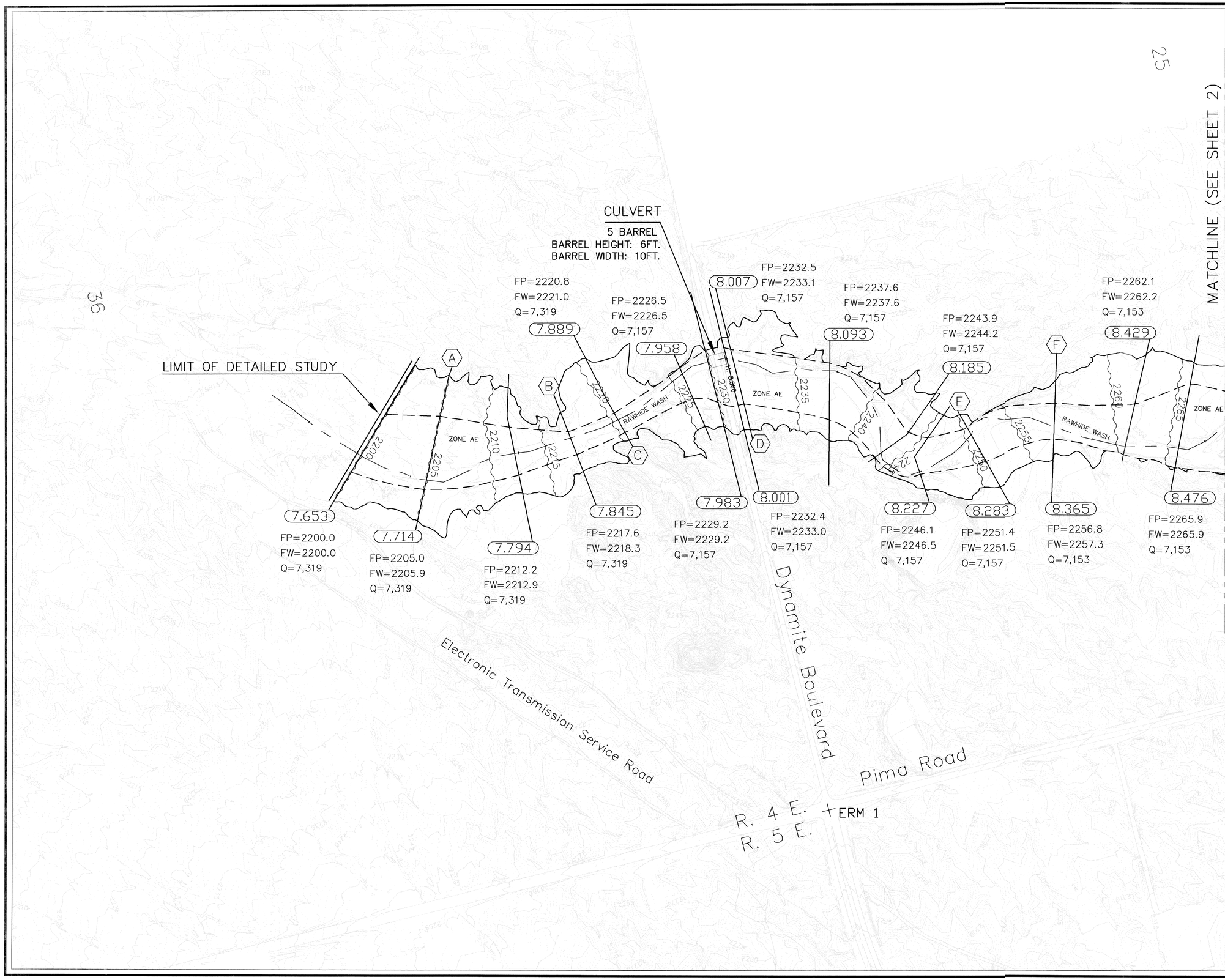
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET CV OF 9



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.000 — M 9.000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

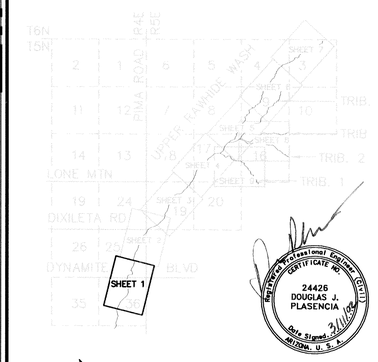
ELEVATION REFERENCE MARKS

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 1	2276.32	City of Scottsdale Brass Cap Flush

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD – 1.77 ft.
4. Topographic Information was provided by City of Scottsdale through the Flood Control District of Maricopa County.

INDEX MAP



Registered Professional Engineer (Civil)
CERTIFICATE NO. 24426
DOUGLAS J. PLASENCIA
Date Signed 3/11/02
ARIZONA, U.S.A.

200 0 200 400
SCALE: 1"= 200'
CONTOUR INTERVAL = 1 FOOT

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

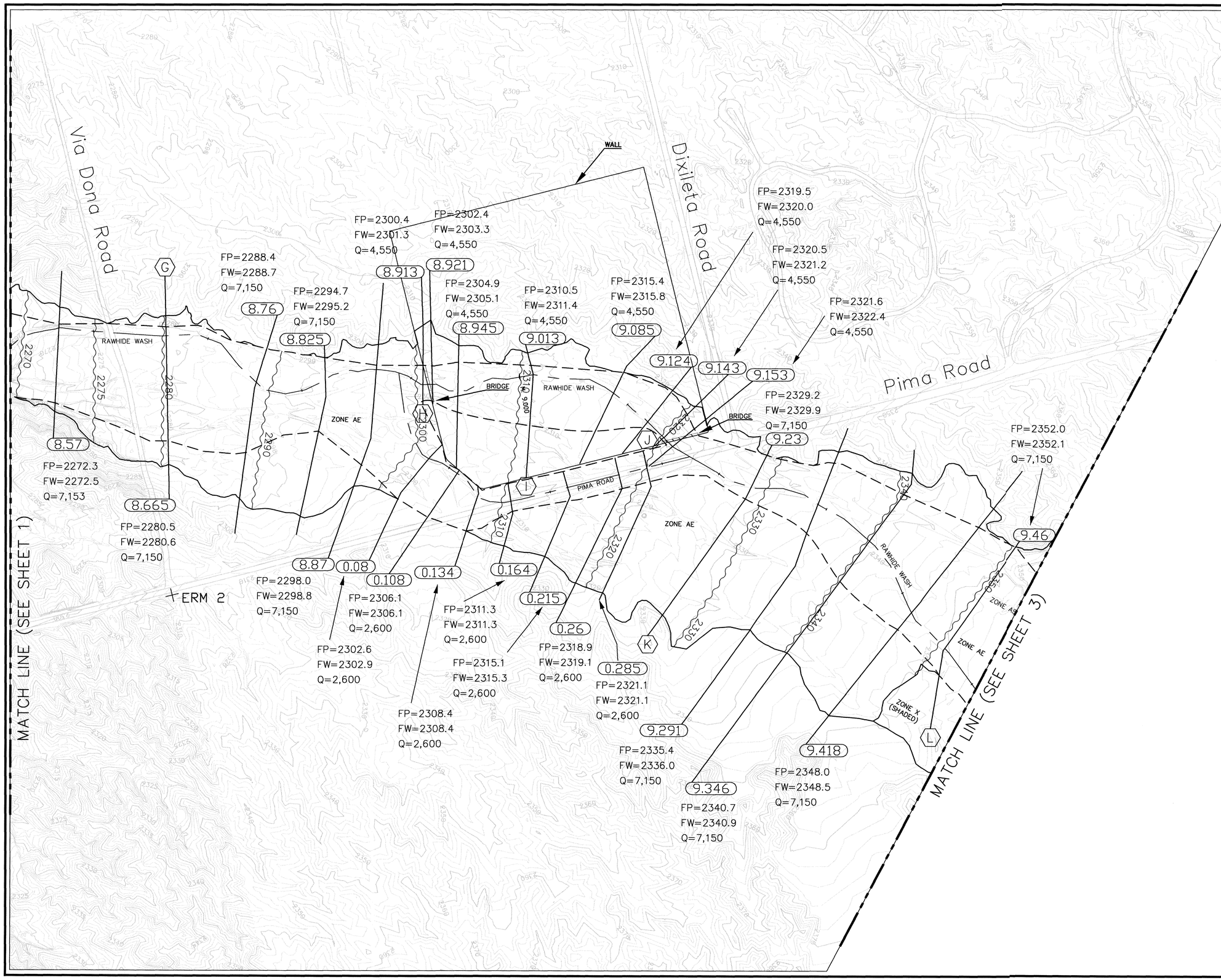
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 1 OF 9



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.000 — M 9.000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

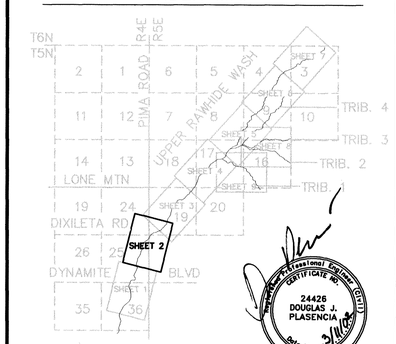
ELEVATION REFERENCE MARKS

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 2	2306.39	3/4 inch Iron Pipe East Side of Pima

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD – 1.77 ft.
4. Topographic Information was provided by City of Scottsdale through the Flood Control District of Maricopa County.

INDEX MAP



Registered Professional Engineer (Civil) CERTIFICATE NO. 24426 DOUGLAS J. PLASENCIA Date Signed 3/6/02 ARIZONA, U.S.A.

200 0 200 400

SCALE: 1"= 200'
CONTOUR INTERVAL(S) = 1 FOOT & 2 FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

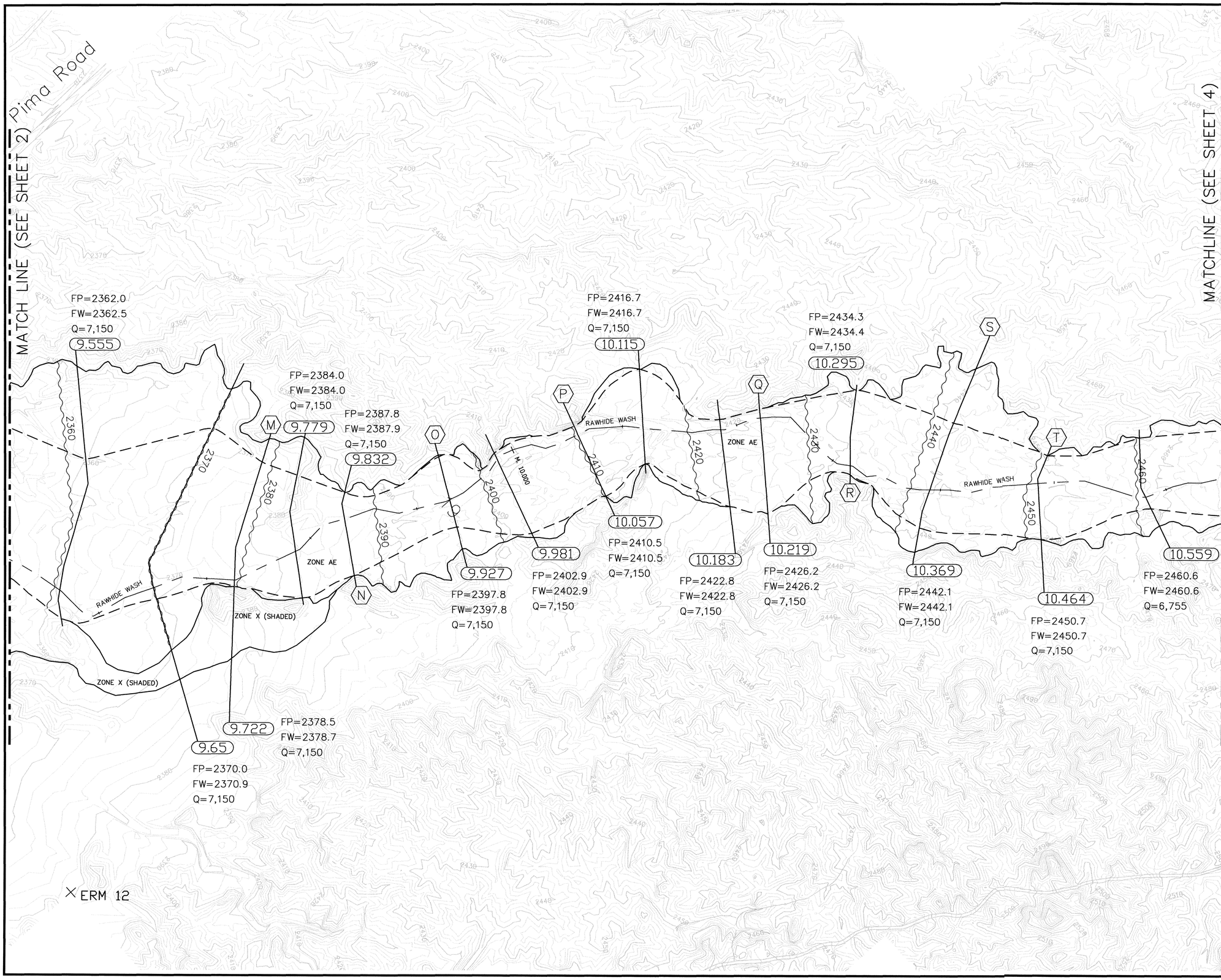
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 2 OF 9



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8,000 — M 9,000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

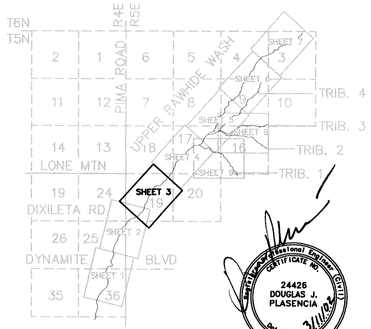
ELEVATION REFERENCE MARKS

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 12	2379.173	Govt Land Office Brass Cap 1919, at End of Fence Line Up 0.9 Feet

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD − 1.77 ft.
4. Topographic Information was provided by City of Scottsdale through the Flood Control District of Maricopa County.

INDEX MAP



Registered Professional Engineer (Civil) CERTIFICATE NO. 24426 DOUGLAS J. PLASENCIA Date Signed 3/11/02 ARIZONA, U.S.A.

200 0 200 400

SCALE: 1"= 200'

CONTOUR INTERVAL = 2 FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

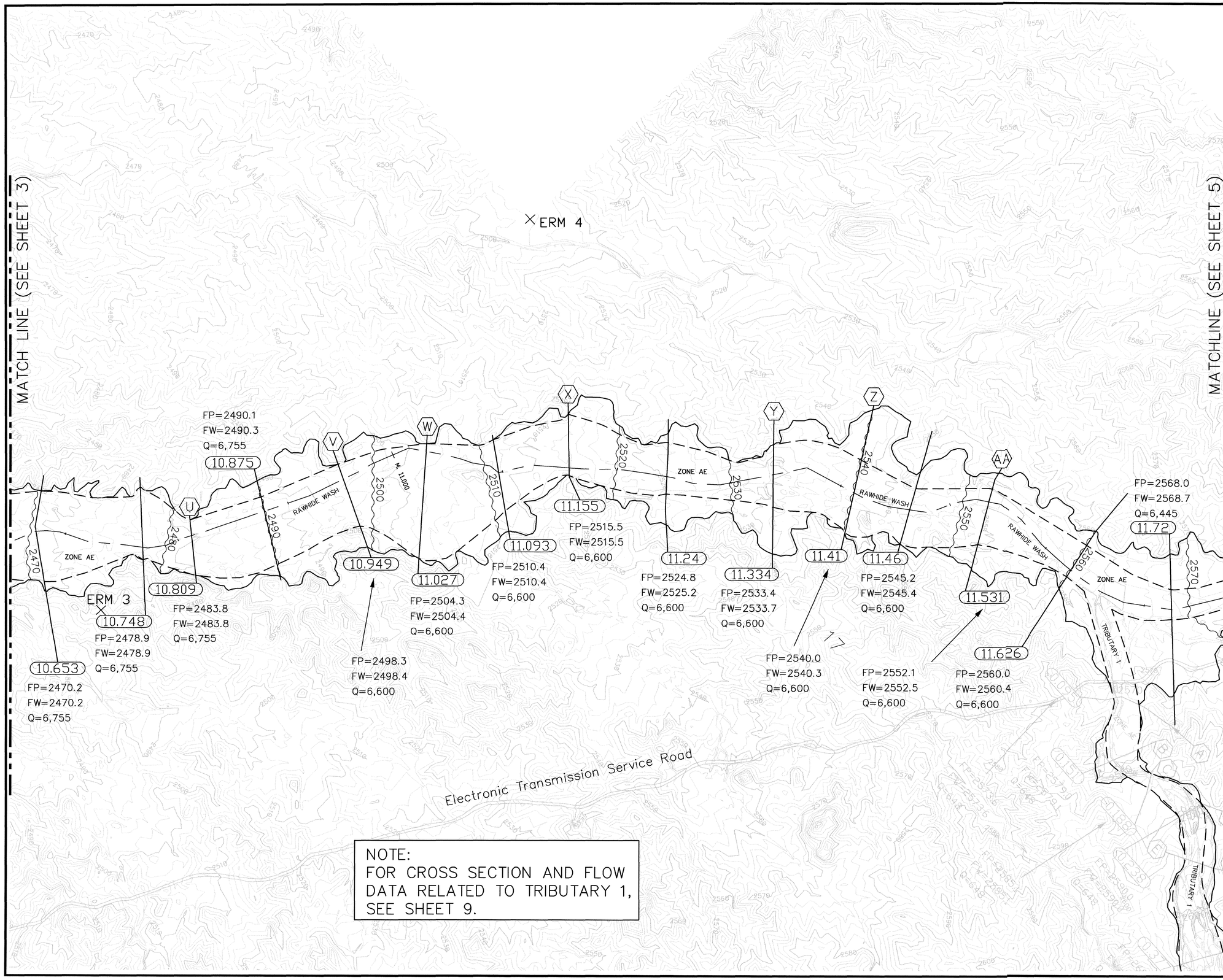
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 3 OF 9



NOTE:
FOR CROSS SECTION AND FLOW DATA RELATED TO TRIBUTARY 1, SEE SHEET 9.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.000 M 9.000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

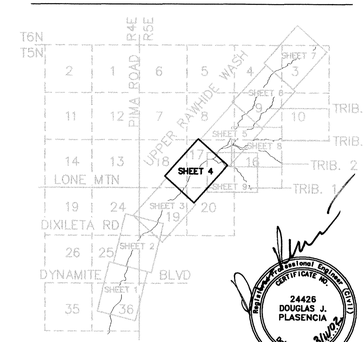
ELEVATION REFERENCE MARKS

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 3	2484.71	Govt Land Office Brass Cap 1919, Up 1.2 Feet
ERM 4	2504.25	Govt Land Office Brass Cap 1919, Up 0.8 Feet

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD – 1.77 ft.
4. Topographic Information was provided by City of Scottsdale through the Flood Control District of Maricopa County.

INDEX MAP



Registered Professional Engineer (Civil) CERTIFICATE NO. 24426 DOUGLAS J. PLASENCIA Date Signed 3/6/02 ARIZONA, U.S.A.

200 0 200 400
SCALE: 1"= 200'
CONTOUR INTERVAL = 2 FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

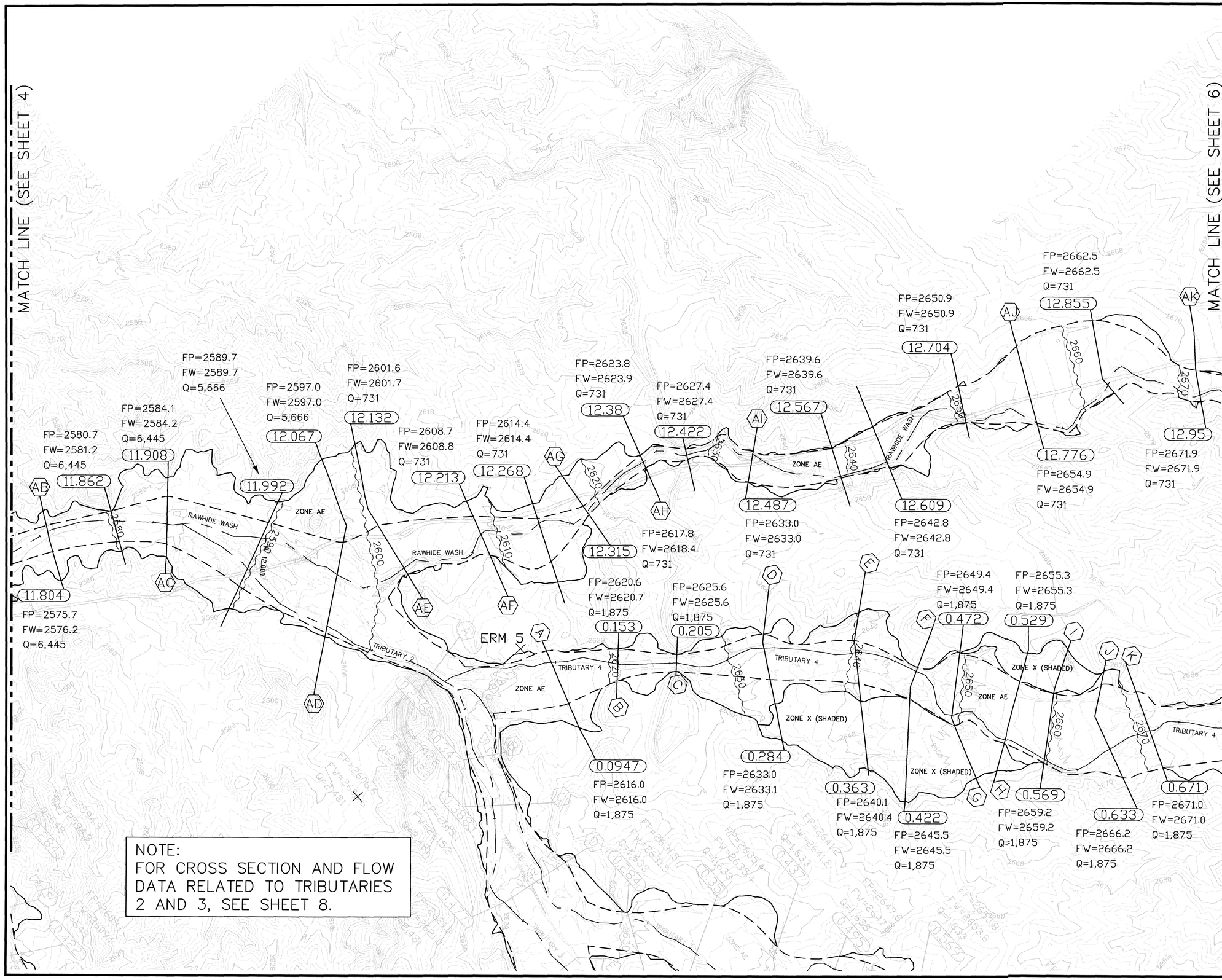
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

SHEET 4 OF 9



NOTE:
FOR CROSS SECTION AND FLOW DATA RELATED TO TRIBUTARIES 2 AND 3, SEE SHEET 8.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.000 — M 9.000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

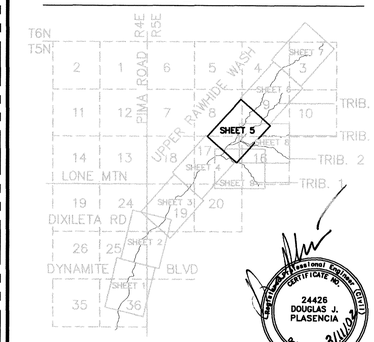
ELEVATION REFERENCE MARKS

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 5	2614.74	Govt Land Office Brass Cap 1919, North of Fence Line Up 1.2 Feet

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD − 1.77 ft.
4. Topographic Information was provided by City of Scottsdale through the Flood Control District of Maricopa County.

INDEX MAP



Registered Professional Engineer (Civil)
CERTIFICATE NO. 24426
DOUGLAS J. PLASENCIA
Date Signed 3/6/02
Arizona, U.S.A.

200 0 200 400
SCALE: 1"= 200'
CONTOUR INTERVAL = 2 FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

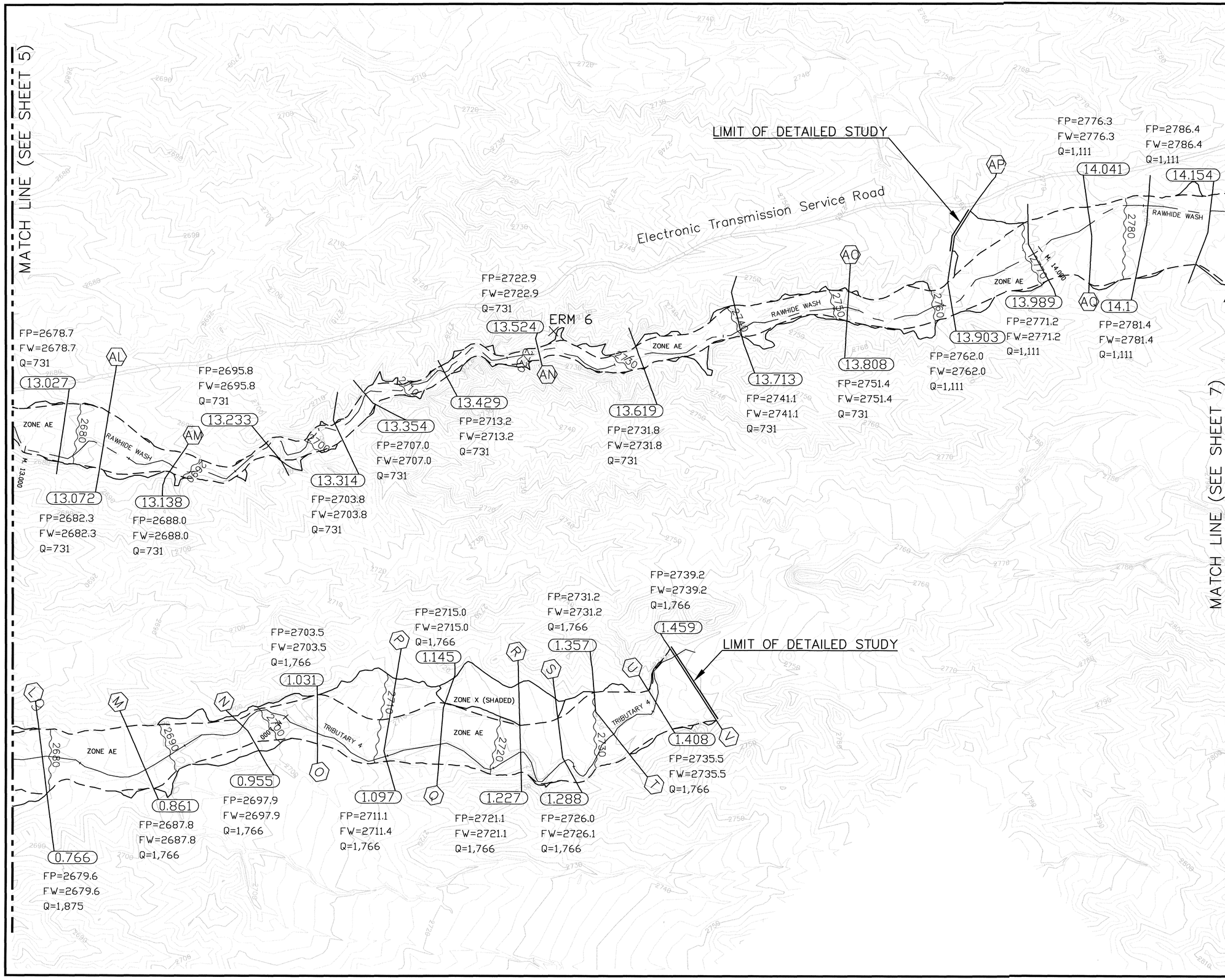
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 5 OF 9



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.000 — M 9.000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

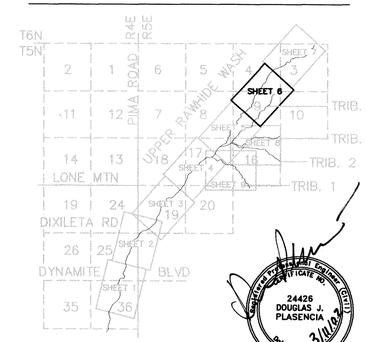
ELEVATION REFERENCE MARKS

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 6	2730.48	Govt Land Office Brass Cap 1919, East of Power Line Rd Up 1.2 Feet

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD – 1.77 ft.
4. Topographic Information was provided by City of Scottsdale through the Flood Control District of Maricopa County.

INDEX MAP



24426 DOUGLAS J. PLASENCIA
Date Signed 3/6/02
ARIZONA, U.S.A.

200 0 200 400
SCALE: 1"= 200'
CONTOUR INTERVAL = 2 FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

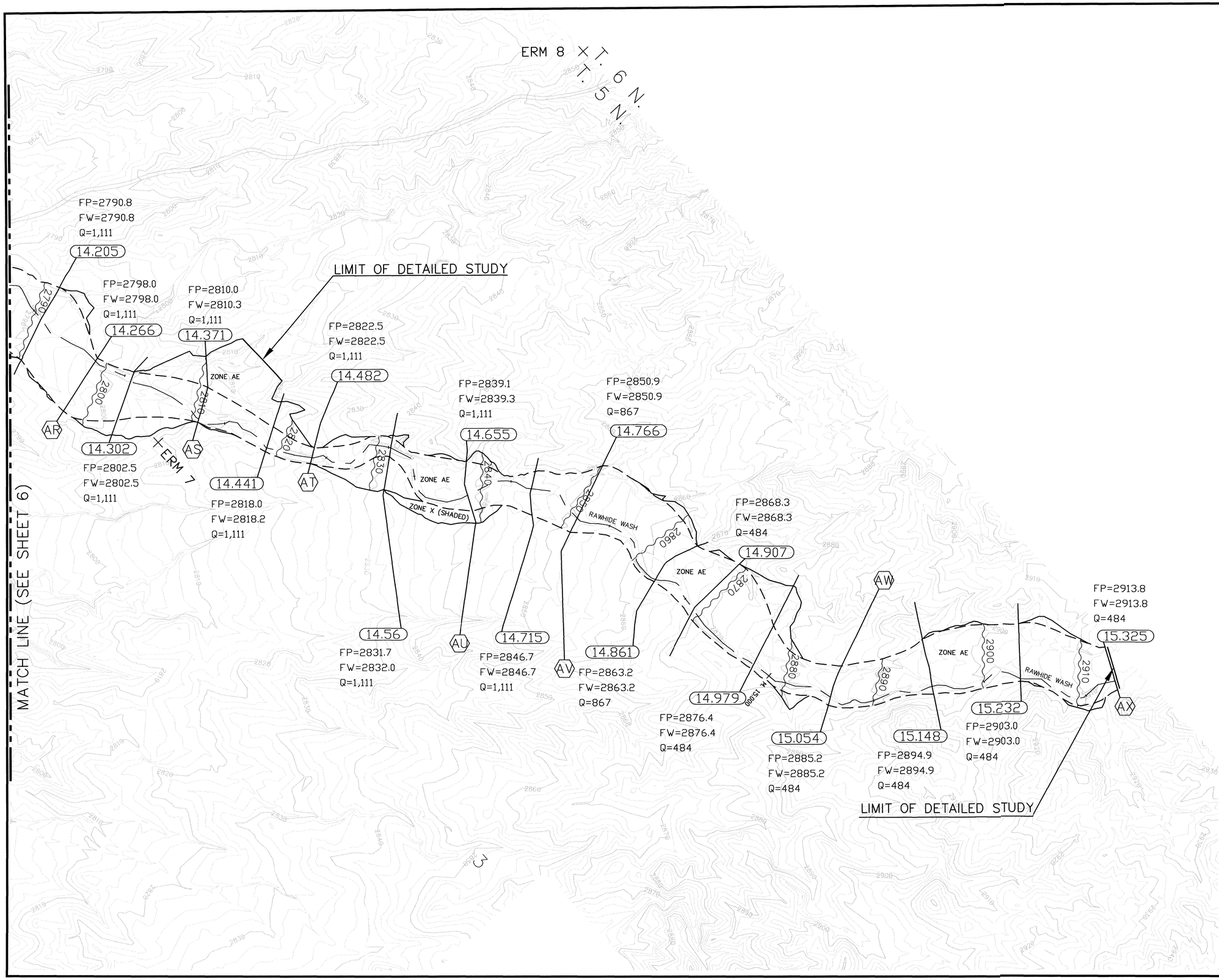
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 6 OF 9



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8,000 — M 9,000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

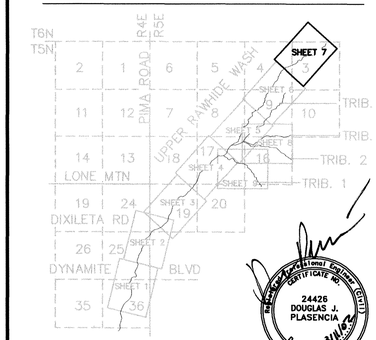
ELEVATION REFERENCE MARKS

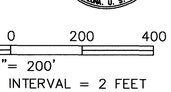
I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 7	2810.81	Govt Land Office Brass Cap 1919, West of Dirt Road Up 1.08 Feet
ERM 8	2849.54	Govt Land Office Brass Cap 1919, Along E-W Fence Line Under Power Line, Up 1.2 Feet

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD – 1.77 ft.
4. Topographic Information was provided by City of Scottsdale through the Flood Control District of Maricopa County.

INDEX MAP





200 0 200 400

SCALE: 1"= 200'

CONTOUR INTERVAL = 2 FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

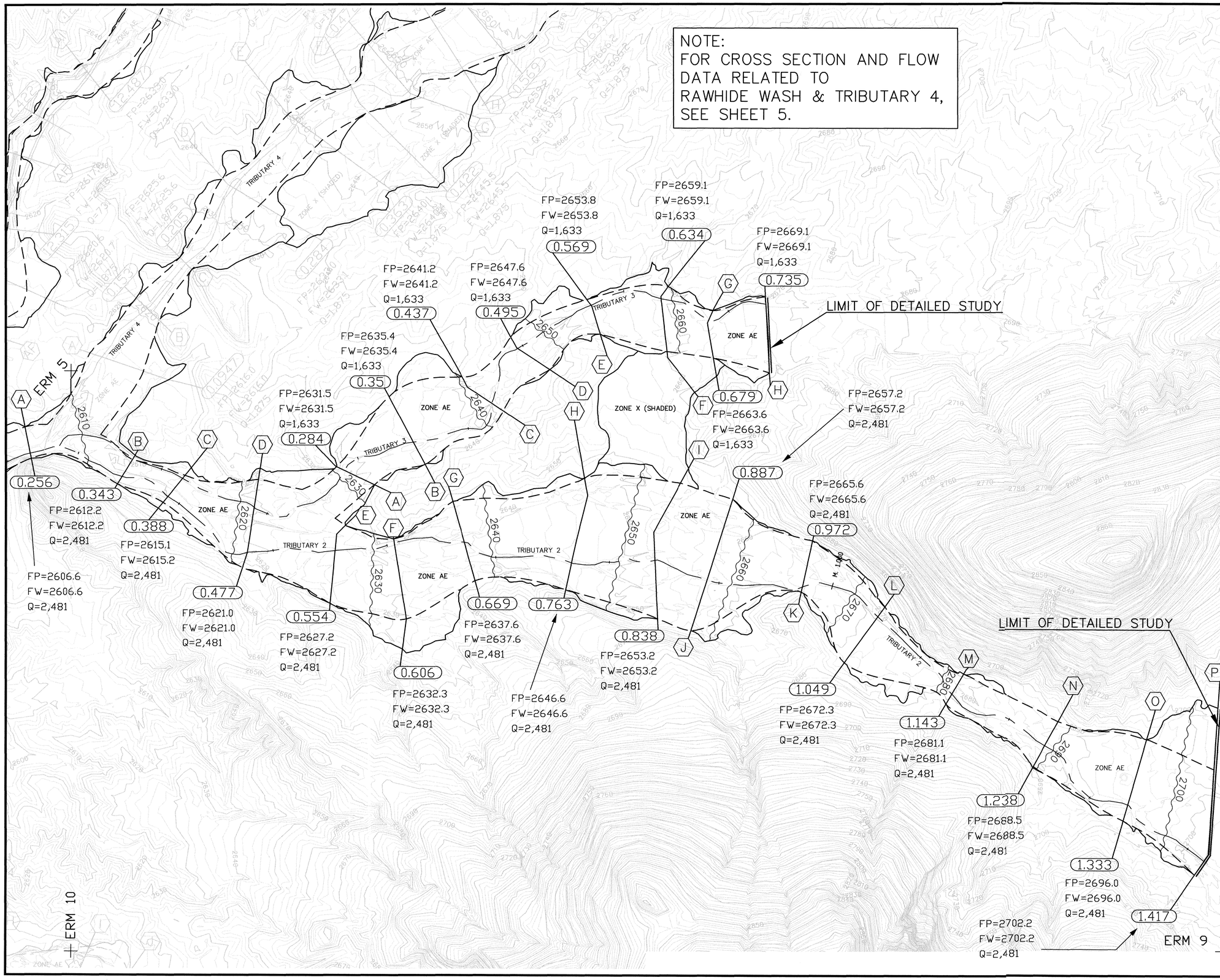
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 7 OF 9



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.000 — M 9.000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

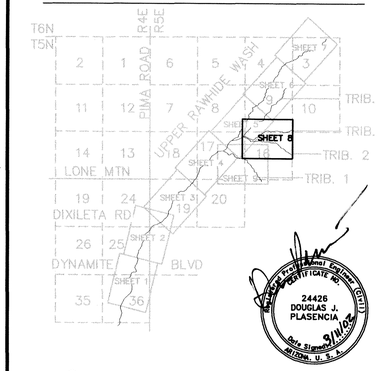
ELEVATION REFERENCE MARKS

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 5	2614.74	Govt Land Office Brass Cap 1919, North of Fence Line Up 1.2 Feet
ERM 9	2715.43	Govt Land Office Brass Cap 1919, Up 1.53 Feet
ERM 10	2619.25	Govt Land Office Brass Cap 1919, Up 0.8 Feet

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD − 1.77 ft.
4. Topographic Information was provided by City of Scottsdale through the Flood Control District of Maricopa County.

INDEX MAP



REGISTERED PROFESSIONAL ENGINEER (CIVIL) CERTIFICATE NO. 24426 DOUGLAS J. PLASENCIA Date Signed 3/6/02 ARIZONA, U.S.A.

200 0 200 400

SCALE: 1"= 200'
CONTOUR INTERVAL = 2 FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

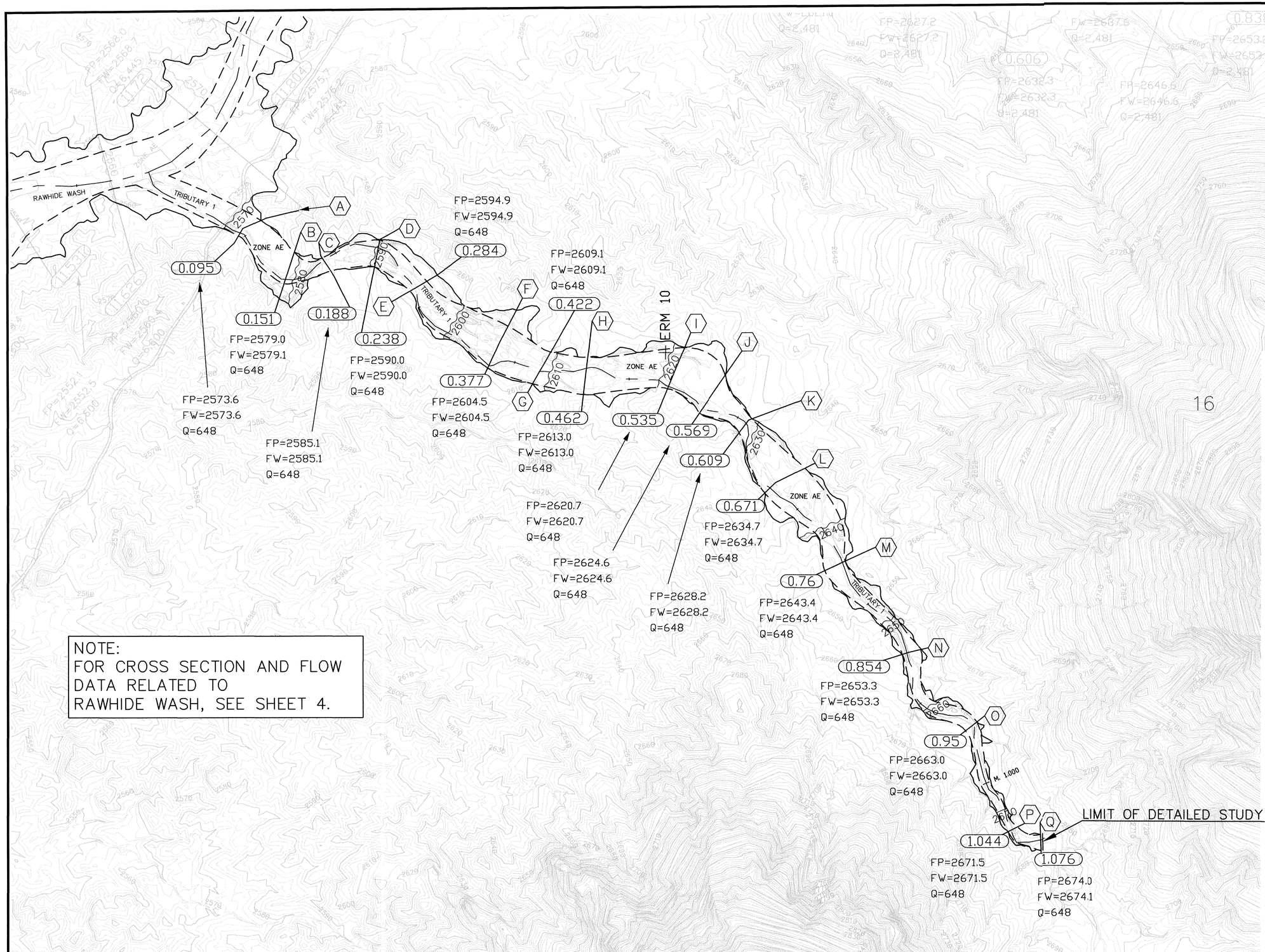
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

SHEET 8 OF 9



NOTE:
FOR CROSS SECTION AND FLOW DATA RELATED TO RAWHIDE WASH, SEE SHEET 4.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOOD DELINEATION STUDY OF UPPER RAWHIDE WASH

F.C.D. CONTRACT NO. 98-12

LEGEND

100-YR FLOODPLAIN BOUNDARY	
FLOODWAY BOUNDARY	
HYDRAULIC BASE LINE WITH RIVER MILE	M 8.000 M 9.000
FEMA CROSS SECTION DESIGNATION	A
CROSS SECTION RIVER MILE DESIGNATION	8.429
100 YR WSE (FT.)	FP
FLOODWAY WSE (FT.)	FW
100 YR PEAK DISCHARGE (CFS)	Q
ELEVATION REFERENCE MARK	ERM3 X
BASE FLOOD ELEVATIONS	2330
ZONE DESIGNATIONS	ZONE AE
CORPORATE LIMITS	Corporate Limits
COUNTY, PARISH, STATE OR INTERNATIONAL BOUNDARY	County Boundary

ELEVATION REFERENCE MARKS

I.D. NUMBER	ELEVATION (FT)	DESCRIPTION/LOCATION
ERM 10	2619.25	Govt Land Office Brass Cap 1919, Up 0.8 Feet

NOTES

1. The Hydraulic Base Line is Cross Section Station 10,000 unless otherwise noted.
2. Horizontal Projection is Arizona Central State Plane, North American Datum of 1983.
3. All Elevations are based on North American Vertical Datum of 1988. Conversion Factor: 1929 NGVD = 1988 NAVD - 1.77 ft.
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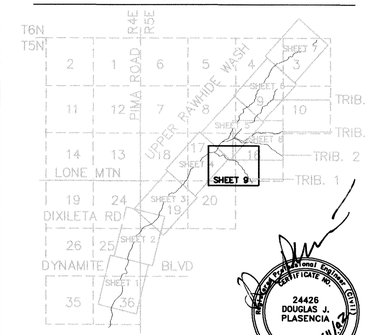
INDEX MAP



200 0 200 400
SCALE: 1"= 200'
CONTOUR INTERVAL = 2 FEET

Kimley-Horn and Associates Inc

	BY	DATE
DESIGN	JTA	3/6/02
DESIGN CHK.	RAE	3/6/02
PLANS	SH	3/6/02
PLANS CHK.	RAE	3/6/02

SUBMITTED BY: KIMLEY-HORN AND ASSOCIATES, INC. DATE: 3/6/02

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 9 OF 9