Appendix E Watershed Characteristics

E1 Sub Watershed Summary
E2 Sub Watershed Tc Details
E3 Sub Watershed Land Use & Curve Numbers

Wilson Downing Tributary
Sub Watershed Summary

Sub-Area Identifier	Drainage Area (ac)	Drainage Area (sq miles)	Time of Concentration (min)	Time of Concentration (hr)	Lag Time (hr)	Lag Time (min)	Curve Number
Sub1	29.44	0.046	20.22	0.337	0.202	12.1	82
Sub2	39.1	0.061	23.16	0.386	0.232	13.9	81
Sub3	8.6	0.013	17.88	0.298	0.178	10.7	75
Sub4	17	0.027	27.18	0.453	0.272	16.3	79
Sub5	56.3	0.088	27.78	0.463	0.278	16.7	83
Sub6	43.6	0.068	28.26	0.471	0.283	17.0	79
Sub7	66.8	0.104	28.32	0.472	0.355	21.3	77
Sub8	69.8	0.109	24.66	0.411	0.370	22.2	75
Sub9A	30.9	0.048	29.82	0.497	0.298	17.9	66
Sub9B	14.9	0.023	29.94	0.499	0.300	18.0	82
Sub10	48.8	0.076	37.02	0.617	0.370	22.2	78
Sub11	37.4	0.058	23.04	0.384	0.230	13.8	75
Sub12	55.7	0.087	33.3	0.555	0.333	20.0	80
Sub13A	11.4	0.018	23.1	0.385	0.232	13.9	75
Sub13B	14.2	0.022	22.8	0.38	0.228	13.7	83
Sub14A	44.8	0.070	32.82	0.547	0.493	29.6	86
Sub14B	77.8	0.122	34.44	0.574	0.515	30.9	88
Sub15	63.2	0.099	30.84	0.514	0.463	27.8	75
Sub16	33.8	0.053	29.7	0.495	0.372	22.3	85
Sub17	53.8	0.084	31.68	0.528	0.475	28.5	92

Wilson Downing
Fayette County, Kentucky
Sub-Watershed Time of Concentration Details (Win TR-55)

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)	Travel Time (min)	Lag (Min)
Sub 1									
SHEET	100	0.05	0.41				0.257	15.42	
SHALLOW	288	0.05	0.025				0.018	1.08	
CHANNEL	1140	0.05	0.012	7.07	9.42	22.619	0.014	0.84	
CHANNEL	760	0.0075	0.045	36	19	4.398	0.048	2.88	
					Time of Concentration		0.337	20.22	12.132
							========		
Sub2									
SHEET	100	0.03	0.41				0.315	18.9	
SHALLOW	400	0.05	0.05				0.031	1.86	
CHANNEL	1200	0.05	0.012	7.07	9.42	22.222	0.015	0.9	
CHANNEL	400	0.0075	0.045	36	19	4.444	0.025	1.50	
					Time of Concentration		0.386	23.16	13.896
							========		
Sub3									
SHEET	100	0.056	0.41				0.246	14.76	
SHALLOW	830	0.05	0.025				0.051	3.06	
CHANNEL	60	0.05	0.012	7.07	9.42	16.667	0.001	0.06	
					Time of Concentration		0.298	17.88	10.728
							========		
Sub4									
SHEET	100	0.02	0.41				0.371	22.26	
SHALLOW	644	0.04	0.05				0.055	3.3	
CHANNEL	275	0.06	0.012	3.14	6.28	19.097	0.004	0.24	
CHANNEL	360	0.0075	0.045	36	19	4.348	0.023	1.38	
					Time of Concentration		0.453	27.18	16.308
							========		
Sub5									
SHEET	100	0.02	0.41				0.371	22.26	
SHALLOW	344	0.05	0.05				0.026	1.56	
CHANNEL	510	0.025	0.012	3.14	6.28	12.879	0.011	0.66	
CHANNEL	1650	0.025	0.045	65	32	8.333	0.055	3.3	
					Time of Concentration		0.463	27.78	16.668
							========		

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)	Travel Time (min)	Lag (Min)
Sub6									
SHEET	100	0.02	0.41				0.371	22.26	
SHALLOW	636	0.05	0.05				0.049	2.94	
CHANNEL	1580	0.03	0.012	7.07	9.42	17.556	0.025	1.5	
CHANNEL	410	0.0075	0.045	36	19	4.38	0.026	1.56	
					Time of Concentration		0.471	28.26	16.956
							========		
Sub7									
SHEET	100	0.02	0.41				0.371	22.26	
SHALLOW	448	0.05	0.05				0.034	2.04	
CHANNEL	2500	0.02	0.012	7.07	9.42	14.468	0.048	2.88	
CHANNEL	300	0.0075	0.045	36	19	4.386	0.019	1.14	
					Time of Concentration		0.472	28.32	21.3
							========		
Sub8									
SHEET	100	0.03	0.41				0.315	18.9	
SHALLOW	425	0.04	0.05				0.037	2.22	
CHANNEL	1660	0.03	0.012	7.07	9.42	17.735	0.026	1.56	
CHANNEL	526	0.0075	0.045	36	19	4.428	0.033	1.98	
					Time of Concentration		0.411	24.66	22.2
							========		
Sub9A									
SHEET	100	0.02		0.41			0.371	22.26	
SHALLOW	1300	0.035		0.05			0.12	7.2	
CHANNEL	100	0.03		0.045	9	12	0.006	0.36	
					Time of Concentration		0.497	29.82	17.892
							========		
Sub9B									
SHEET	100	0.02	0.41				0.371	22.26	
SHALLOW	1012	0.035	0.05				0.093	5.58	
CHANNEL	600	0.03	0.045	9	12	4.762	0.035	2.1	
					Time of Concentration		0.499	29.94	17.964
							========		

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)	Travel Time (min)	Lag (Min)
---	---	---	---	---	---	---	---		
Sub10									
SHEET	100	0.04	0.41				0.281	16.86	
SHALLOW	1010	0.0035	0.025				0.233	13.98	
CHANNEL	954	0.03	0.012	7.07	9.42	17.667	0.015	0.9	
CHANNEL	1384	0.0075	0.045	36	19	4.369	0.088	5.28	
					Time of Concentration		0.617	37.02	22.212
							========		
Sub11									
SHEET	100	0.04	0.41				0.281	16.86	
SHALLOW	263	0.03	0.05				0.026	1.56	
CHANNEL	1660	0.04	0.012	7.07	9.42	20.96	0.022	1.32	
CHANNEL	870	0.0075	0.045	36	19	4.394	0.055	3.3	
					Time of Concentration		0.384	23.04	13.824
							========		
Sub12									
SHEET	100	0.01	0.41				0.489	29.34	
SHALLOW	350	0.05	0.05				0.027	1.62	
CHANNEL	2470	0.03	0.012	7.07	9.42	17.593	0.039	2.34	
					Time of Concentration		0.555	33.3	19.98
							========		
Sub13A									
SHEET	100	0.04	0.41				0.281	16.86	
SHALLOW	586	0.05	0.05				0.045	2.7	
CHANNEL	648	0.01	0.045	7	8	3.051	0.059	3.54	
					Time of Concentration		0.385	23.1	13.86
							========		
Sub13B									
SHEET	100	0.04	0.41				0.281	16.86	
SHALLOW	550	0.055	0.05				0.04	2.4	
CHANNEL	648	0.01	0.045	7	8	3.051	0.059	3.54	
					Time of Concentration		0.38	22.8	13.68
							========		

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)	Travel Time (min)	Lag (Min)
---	---	---	---	---	---	---	---		
Sub14A									
SHEET	100	0.02	0.41				0.371	22.26	
SHALLOW	585	0.005	0.05				0.142	8.52	
CHANNEL	1780	0.02	0.012	7.07	9.42	14.542	0.034	2.04	
					Time of Concentration		0.547	32.82	29.6
							========		
Sub14B									
SHEET	100	0.01	0.41				0.489	29.34	
SHALLOW	330	0.025	0.05				0.036	2.16	
CHANNEL	2560	0.02	0.012	7.07	9.42	14.512	0.049	2.94	
					Time of Concentration		0.574	34.44	30.9
							========		
Sub15									
SHEET	100	0.02	0.41				0.371	22.26	
SHALLOW	1020	0.035	0.05				0.094	5.64	
CHANNEL	1850	0.02	0.012	7.07	9.42	14.683	0.035	2.1	
CHANNEL	250	0.01	0.045	36	19	4.96	0.014	0.84	
					Time of Concentration		0.514	30.84	27.8
							========		
Sub16									
SHEET	100	0.02	0.41				0.371	22.26	
CHANNEL	1843	0.03	0.045	9	12	4.74	0.108	6.48	
CHANNEL	300	0.01	0.045	36	19	5.208	0.016	0.96	
					Time of Concentration		0.495	29.7	22.3
							========		
Sub17									
SHEET	100	0.01	0.41				0.489	29.34	
CHANNEL	2300	0.025	0.012	7.07	9.42	16.382	0.039	2.34	
					Time of Concentration		0.528	31.68	28.5
							========		

Land Use & Curve Number Calculated in Win TR-55

Sub 1	Residential districts (1/4 acre)	C	19.84	83
	Residential districts (1/2 acre)	C	9.6	80
	Total Area / Weighted Curve Number		29.44	82
			=====	==
Sub2	Residential districts (1/4 acre)	C	26	83
	Residential districts (2 acre)	C	13.1	77
	Total Area / Weighted Curve Number		39.1	81
			====	==
Sub3	Open space; grass cover 50% to 75% (fair)	A	4	49
	Paved parking lots, roofs, driveways	A	4.6	98
	Total Area / Weighted Curve Number		8.6	75
			===	==
Sub4	Open space; grass cover > 75% (good)	C	7	74
	Residential districts (1/4 acre)	C	10	83
	Total Area / Weighted Curve Number		17	79
			==	==
Sub5	Residential districts (1/4 acre)	C	56.3	83
	Total Area / Weighted Curve Number		56.3	83
			====	==

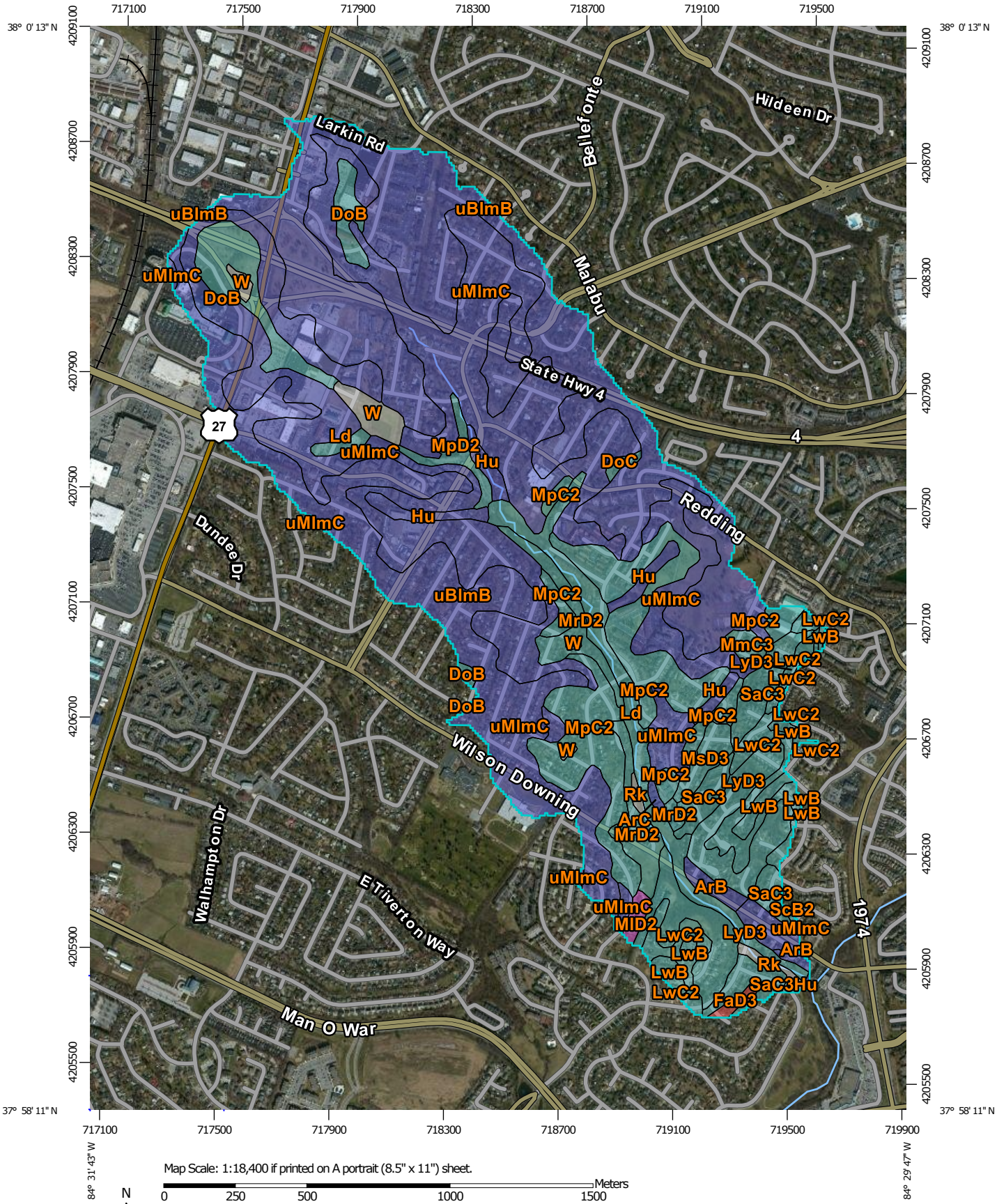
```
Sub6      Residential districts (1/4 acre)              B          23.6
75
          Residential districts (1/4 acre)              C            20
83

          Total Area / Weighted Curve Number                       43.6
79
                                                                   ====
==


Sub7      Open space; grass cover > 75%       (good)    B           8.5
61
          Residential districts (1/4 acre)              B            29
75
          Residential districts (1/4 acre)              C          29.3
83

          Total Area / Weighted Curve Number                       66.8
77
                                                                   ====
==


Sub8      Residential districts (1/4 acre)              B          69.8
75

          Total Area / Weighted Curve Number                       69.8
75
                                                                   ====
==


Sub9A     Open space; grass cover > 75%       (good)    B          20.9
61
          Residential districts (1/4 acre)              B            10
75

          Total Area / Weighted Curve Number                       30.9
66
                                                                   ====
==
```

```
Sub9B     Open space; grass cover > 75%       (good)    B           3.9
61
          Commercial & business                         B             6
92
          Residential districts (1/8 acre)              B             5
85

          Total Area / Weighted Curve Number                       14.9
82
                                                                   ====
==

Sub10     Open space; grass cover > 75%       (good)    B             6
61
          Paved parking lots, roofs, driveways          B             3
98
          Residential districts (1/8 acre)              B          14.8
85
          Residential districts (1/4 acre)              B            25
75

          Total Area / Weighted Curve Number                       48.8
78
                                                                   ====
==

Sub11     Residential districts (1/4 acre)              B          37.4
75

          Total Area / Weighted Curve Number                       37.4
75
                                                                   ====
==


Sub12     Commercial & business                         B          17.4
92
          Residential districts (1/4 acre)              B          38.3
75

          Total Area / Weighted Curve Number                       55.7
80
                                                                   ====
==


Sub13A    Residential districts (1/4 acre)              B          11.4
75

          Total Area / Weighted Curve Number                       11.4
75
                                                                   ====
==
```

```
Sub13B    Commercial & business                          B             7
92
          Residential districts (1/4 acre)               B           7.2
75

          Total Area / Weighted Curve Number                        14.2
83
                                                                    ====
==


Sub14     Open space; grass cover > 75%       (good)     B          11.4
61
          Commercial & business                          B           110
92

          Total Area / Weighted Curve Number                       121.4
89
                                                                   =====
==


Sub15     Residential districts (1/4 acre)               B          63.2
75

          Total Area / Weighted Curve Number                        63.2
75
                                                                    ====
==


Sub16     Open space; grass cover > 75%       (good)     B             5
61
          Paved; curbs and storm sewers                  B             8
98
          Residential districts (1/8 acre)               B          20.8
85

          Total Area / Weighted Curve Number                        33.8
85
                                                                    ====
==


Sub17     Commercial & business                          B          53.8
92

          Total Area / Weighted Curve Number                        53.8
92
                                                                    ====
==
```

Appendix F Hydrologic Soil Group Report

Hydrologic Soil Group—Fayette County Area, Part of Fayette County, Kentucky
(GlobalWatershedKY)



Map Scale: 1:18,400 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Fayette County Area, Part of Fayette County, Kentucky
Survey Area Data: Version 10, Dec 16, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 17, 2010—Feb 20, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Fayette County Area, Part of Fayette County, Kentucky (KY643)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
ArB	Armour silt loam, 2 to 6 percent slopes (elk)	B	4.3	0.5%
ArC	Armour silt loam, 6 to 12 percent slopes (elk)	B	1.1	0.1%
DoB	Donerail silt loam, 2 to 6 percent slopes	C	24.7	3.0%
DoC	Donerail silt loam, 6 to 12 percent slopes	C	1.4	0.2%
FaD3	Fairmount very rocky silty clay loam, 6 to 30 percent slopes, severely eroded (fairmount-Rock outcrop complex)	D	1.8	0.2%
Hu	Huntington silt loam	B	13.0	1.6%
Ld	Lindside silt loam	C	30.0	3.7%
LwB	Lowell silt loam, 2 to 6 percent slopes	C	8.0	1.0%
LwC2	Lowell silt loam, 6 to 12 percent slopes, eroded	C	21.6	2.6%
LyD3	Lowell silty clay loam, 12 to 20 percent slopes, severely eroded	C	37.9	4.6%
MlD2	Maury silt loam, 12 to 20 percent slopes, eroded	A	2.3	0.3%
MmC3	Maury silty clay loam, 6 to 12 percent slopes, severely eroded (loradale)	C	2.9	0.4%
MpC2	McAfee silty clay loam, 6 to 12 percent slopes, eroded	C	72.3	8.8%
MpD2	McAfee silty clay loam, 12 to 20 percent slopes, eroded	C	5.9	0.7%
MrD2	McAfee very rocky silty clay loam, 6 to 20 percent slopes, eroded (mcafee-Rock outcrop complex)	C	20.6	2.5%

Hydrologic Soil Group— Summary by Map Unit — Fayette County Area, Part of Fayette County, Kentucky (KY643)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
MsD3	McAfee very rocky silty clay, 12 to 20 percent slopes, severely eroded (mcafee-rock outcrop complex)	C	6.2	0.8%
Rk	Rock land (rock outcrop-fairmount complex, 20 to 50 percent slopes)		2.9	0.4%
SaC3	Salvisa silty clay, 6 to 12 percent slopes, severely eroded	C	25.4	3.1%
ScB2	Salvisa silty clay loam, 2 to 6 percent slopes, eroded	C	0.2	0.0%
ScC2	Salvisa silty clay loam, 6 to 12 percent slopes, eroded	C	1.2	0.2%
uBlmB	Bluegrass-Maury silt loams, 2 to 6 percent slopes	B	290.3	35.5%
uMlmC	Maury-Bluegrass silt loams, 6 to 12 percent slopes	B	235.2	28.8%
W	Water		8.2	1.0%
Totals for Area of Interest			**817.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

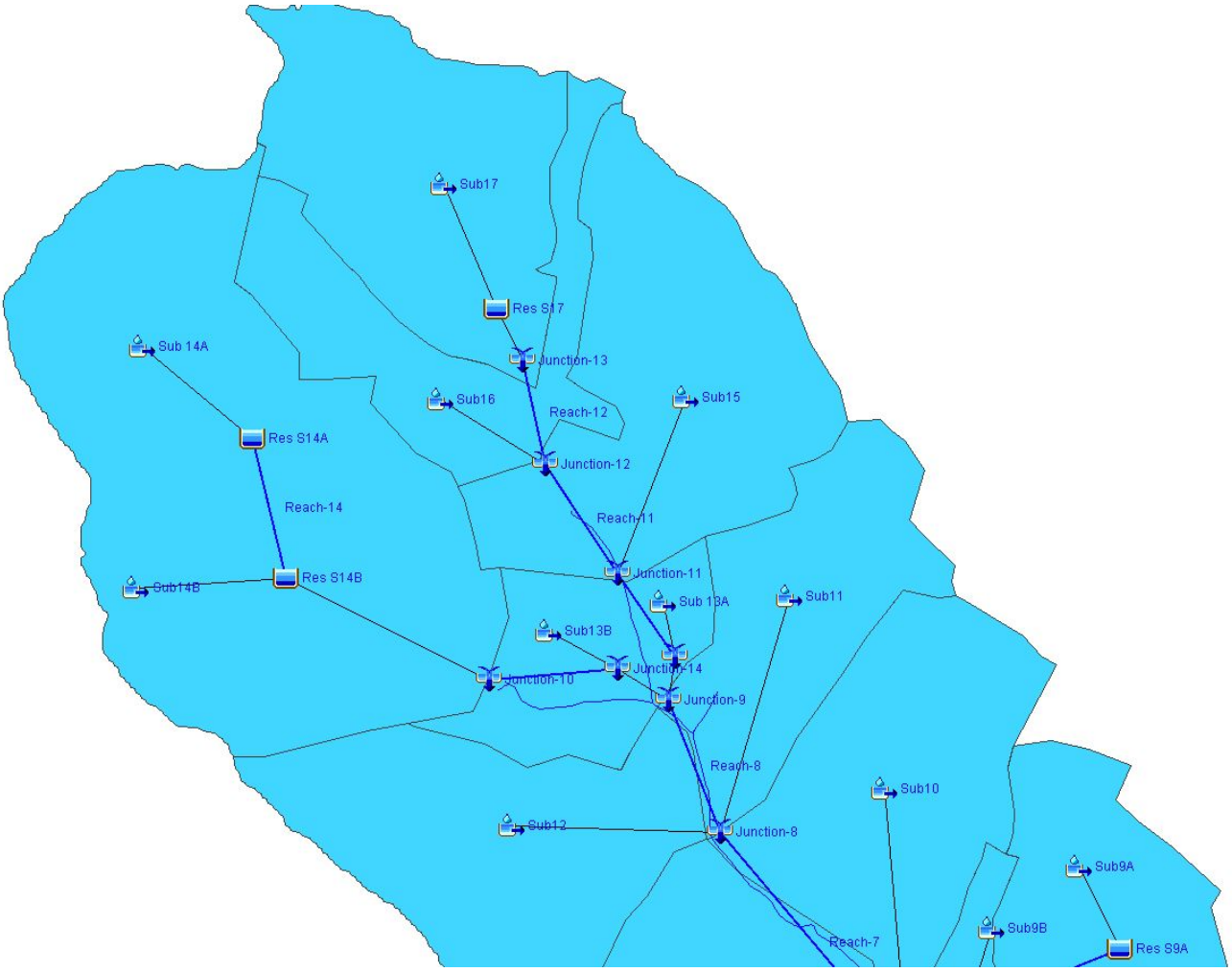
Tie-break Rule: Higher

Appendix G HEC HMS Reports

G1 Watershed Schematic
G2 500 Yr Global Summary
G3 100 Yr Global Summary
G4 50 Yr Global Summary
G5 25 Yr Global Summary
G6 10 Yr Global Summary
G7 Aug 31 Global Summary

Sub17
Res S17
Junction-13
Sub 14A
Sub15
Res S14A
Junction-12
Reach-14
Reach-11
Res S14B
Sub11
Junction-9
Reach-8
Sub10
Junction-8
Sub9A
Res S9A
Res S9B
Sub8
Junction-7
Reach-6
Junction-6
Sub7
Reach-5
Sub6
Junction-5
Sub 5
Reach-4
Junction-4
Sub 2
Junction-3
Junction-2
Sub 3
Reach-1
Junction-1

Junction-8
Sub9A
Sub9B
Res S9A
Reach-7
Reach-13
Res S9B
Sub8
Junction-7
Reach-6
Sub7
Junction-6
Reach-5
Sub6
Junction-5
Sub 5
Reach-4
Junction-4
Reach-3
Sub 2
Sub 4
Junction-3
Reach-2
Res S3
Junction-2
Sub 3
Reach-1
Sub 1
Junction-1


Sub17
Res S17
Junction-13
Sub 14A
Sub16
Reach-12
Sub15
Res S14A
Junction-12
Reach-14
Reach-11
Junction-11
Sub14B
Res S14B
Sub 13A
Sub11
Sub13B
Junction-14
Junction-10
Junction-9
Reach-8
Sub10
Sub12
Junction-8
Sub9A
Sub9B
Reach-7
Res S9A

Project: Wilson Downing Simulation Run: SCS 500 Type II

Start of Run: 01Jan2000, 00:00 Basin Model: Wilson Downing
End of Run: 02Jan2000, 00:30 Meteorologic Model: SCS 500 TY II
Compute Time: 29Aug2014, 11:33:24 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Sub17	0.083	262.6	01Jan2000, 12:20	7.73
Res S17	0.083	76.6	01Jan2000, 13:02	7.70
Junction-13	0.083	76.6	01Jan2000, 13:02	7.70
Reach-12	0.083	76.6	01Jan2000, 13:04	7.69
Sub16	0.052	178.8	01Jan2000, 12:14	6.89
Junction-12	0.135	230.9	01Jan2000, 12:16	7.38
Reach-11	0.135	230.9	01Jan2000, 12:17	7.38
Sub15	0.099	247.9	01Jan2000, 12:20	5.67
Junction-11	0.234	477.2	01Jan2000, 12:19	6.65
Reach-10	0.234	476.9	01Jan2000, 12:20	6.65
Sub 13A	0.018	69.1	01Jan2000, 12:07	5.69
Junction-15	0.252	514.3	01Jan2000, 12:18	6.58
Sub14B	0.120	322.4	01Jan2000, 12:23	6.64
Sub 14A	0.070	202.2	01Jan2000, 12:21	7.00
Res S14A	0.070	190.0	01Jan2000, 12:28	7.00
Reach-14	0.070	189.9	01Jan2000, 12:29	6.99
Res S14B	0.190	82.6	01Jan2000, 13:36	6.52
Junction-10	0.190	82.6	01Jan2000, 13:36	6.52
Reach-9	0.190	82.6	01Jan2000, 13:36	6.52
Sub13B	0.022	97.5	01Jan2000, 12:06	6.66
Junction-14	0.212	146.5	01Jan2000, 12:07	6.53
Junction-9	0.464	633.9	01Jan2000, 12:16	6.56
Reach-8	0.464	633.4	01Jan2000, 12:17	6.55
Sub12	0.087	296.8	01Jan2000, 12:12	6.29
Sub11	0.056	215.9	01Jan2000, 12:07	5.69
Junction-8	0.607	1084.6	01Jan2000, 12:12	6.43

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Reach-7	0.607	1083.9	01Jan2000, 12:15	6.42
Sub9A	0.048	129.3	01Jan2000, 12:11	4.59
Res S9A	0.048	49.8	01Jan2000, 12:33	4.59
Reach-13	0.048	49.8	01Jan2000, 12:35	4.59
Sub9B	0.023	86.4	01Jan2000, 12:10	6.53
Res S9B	0.071	122.9	01Jan2000, 12:16	5.21
Sub10	0.076	234.4	01Jan2000, 12:14	6.04
Junction-7	0.754	1440.6	01Jan2000, 12:15	6.27
Reach-6	0.754	1439.4	01Jan2000, 12:16	6.26
Sub8	0.109	317.1	01Jan2000, 12:14	5.68
Junction-6	0.863	1755.7	01Jan2000, 12:15	6.19
Reach-5	0.863	1754.6	01Jan2000, 12:16	6.18
Sub7	0.104	323.1	01Jan2000, 12:13	5.92
Sub6	0.068	251.4	01Jan2000, 12:09	6.17
Junction-5	1.035	2291.9	01Jan2000, 12:15	6.16
Reach-4	1.035	2287.9	01Jan2000, 12:17	6.15
Sub 5	0.088	350.4	01Jan2000, 12:09	6.65
Junction-4	1.123	2581.3	01Jan2000, 12:15	6.19
Reach-3	1.123	2580.1	01Jan2000, 12:16	6.18
Sub 3	0.013	56.7	01Jan2000, 12:04	5.69
Res S3	0.013	19.5	01Jan2000, 12:19	5.69
Sub 4	0.027	102.3	01Jan2000, 12:09	6.17
Junction-3	1.163	2683.0	01Jan2000, 12:16	6.18
Reach-2	1.163	2681.6	01Jan2000, 12:17	6.17
Sub 2	0.061	260.2	01Jan2000, 12:06	6.41
Junction-2	1.224	2853.6	01Jan2000, 12:16	6.18
Reach-1	1.224	2851.0	01Jan2000, 12:16	6.18
Sub 1	0.046	213.6	01Jan2000, 12:05	6.54
Junction-1	1.270	2963.8	01Jan2000, 12:16	6.19

Project: Wilson Downing Simulation Run: LFUCG 100 Year

Start of Run: 01Jan2000, 00:00 Basin Model: Wilson Downing
End of Run: 02Jan2000, 00:30 Meteorologic Model: LFUCG 100
Compute Time: 10Jul2014, 12:12:42 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Sub17	0.083	184.7	01Jan2000, 12:16	5.81
Res S17	0.083	66.9	01Jan2000, 12:56	5.79
Junction-13	0.083	66.9	01Jan2000, 12:56	5.79
Reach-12	0.083	66.9	01Jan2000, 12:58	5.78
Sub16	0.052	116.6	01Jan2000, 12:11	5.03
Junction-12	0.135	163.3	01Jan2000, 12:14	5.49
Reach-11	0.135	163.3	01Jan2000, 12:16	5.48
Sub15	0.099	156.9	01Jan2000, 12:17	3.94
Junction-11	0.234	319.7	01Jan2000, 12:16	4.83
Reach-10	0.234	319.7	01Jan2000, 12:18	4.82
Sub 13A	0.018	38.4	01Jan2000, 12:05	3.95
Junction-15	0.252	344.6	01Jan2000, 12:16	4.76
Sub14B	0.120	218.1	01Jan2000, 12:20	4.80
Sub 14A	0.070	138.6	01Jan2000, 12:18	5.13
Res S14A	0.070	137.4	01Jan2000, 12:20	5.13
Reach-14	0.070	137.4	01Jan2000, 12:22	5.12
Res S14B	0.190	75.4	01Jan2000, 13:25	4.71
Junction-10	0.190	75.4	01Jan2000, 13:25	4.71
Reach-9	0.190	75.4	01Jan2000, 13:26	4.71
Sub13B	0.022	56.4	01Jan2000, 12:05	4.81
Junction-14	0.212	101.5	01Jan2000, 12:08	4.72
Junction-9	0.464	438.8	01Jan2000, 12:15	4.74
Reach-8	0.464	438.5	01Jan2000, 12:16	4.73
Sub12	0.087	184.1	01Jan2000, 12:10	4.48
Sub11	0.056	119.7	01Jan2000, 12:05	3.95
Junction-8	0.607	712.5	01Jan2000, 12:11	4.63

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Reach-7	0.607	711.8	01Jan2000, 12:14	4.61
Sub9A	0.048	71.0	01Jan2000, 12:09	3.02
Res S9A	0.048	41.5	01Jan2000, 12:26	3.02
Reach-13	0.048	41.5	01Jan2000, 12:27	3.02
Sub9B	0.023	53.0	01Jan2000, 12:08	4.70
Res S9B	0.071	87.6	01Jan2000, 12:14	3.56
Sub10	0.076	146.4	01Jan2000, 12:12	4.26
Junction-7	0.754	944.3	01Jan2000, 12:14	4.48
Reach-6	0.754	943.7	01Jan2000, 12:14	4.47
Sub8	0.109	194.1	01Jan2000, 12:12	3.94
Junction-6	0.863	1136.4	01Jan2000, 12:14	4.41
Reach-5	0.863	1135.6	01Jan2000, 12:15	4.40
Sub7	0.104	199.1	01Jan2000, 12:11	4.15
Sub6	0.068	149.8	01Jan2000, 12:07	4.37
Junction-5	1.035	1461.7	01Jan2000, 12:14	4.38
Reach-4	1.035	1461.2	01Jan2000, 12:15	4.37
Sub 5	0.088	212.8	01Jan2000, 12:07	4.81
Junction-4	1.123	1641.8	01Jan2000, 12:14	4.40
Reach-3	1.123	1640.6	01Jan2000, 12:15	4.40
Sub 3	0.013	29.6	01Jan2000, 12:03	3.95
Res S3	0.013	16.1	01Jan2000, 12:15	3.95
Sub 4	0.027	60.4	01Jan2000, 12:07	4.37
Junction-3	1.163	1708.2	01Jan2000, 12:14	4.40
Reach-2	1.163	1706.5	01Jan2000, 12:15	4.39
Sub 2	0.061	149.7	01Jan2000, 12:05	4.59
Junction-2	1.224	1813.7	01Jan2000, 12:14	4.40
Reach-1	1.224	1813.4	01Jan2000, 12:15	4.40
Sub 1	0.046	119.1	01Jan2000, 12:04	4.70
Junction-1	1.270	1885.8	01Jan2000, 12:14	4.41

Project: Wilson Downing Simulation Run: SCS 50 Type II

Start of Run: 01Jan2000, 00:00 Basin Model: Wilson Downing
End of Run: 02Jan2000, 00:30 Meteorologic Model: SCS 50 TY II
Compute Time: 29Aug2014, 10:56:37 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Sub17	0.083	173.7	01Jan2000, 12:20	5.01
Res S17	0.083	63.1	01Jan2000, 12:55	4.98
Junction-13	0.083	63.1	01Jan2000, 12:55	4.98
Reach-12	0.083	63.1	01Jan2000, 12:57	4.98
Sub16	0.052	112.1	01Jan2000, 12:14	4.25
Junction-12	0.135	152.7	01Jan2000, 12:17	4.70
Reach-11	0.135	152.6	01Jan2000, 12:19	4.69
Sub15	0.099	140.8	01Jan2000, 12:20	3.23
Junction-11	0.234	293.2	01Jan2000, 12:20	4.07
Reach-10	0.234	293.1	01Jan2000, 12:21	4.07
Sub 13A	0.018	39.6	01Jan2000, 12:07	3.24
Junction-15	0.252	312.9	01Jan2000, 12:20	4.01
Sub14B	0.120	198.3	01Jan2000, 12:23	4.03
Sub 14A	0.070	127.7	01Jan2000, 12:21	4.35
Res S14A	0.070	126.8	01Jan2000, 12:24	4.35
Reach-14	0.070	126.8	01Jan2000, 12:25	4.34
Res S14B	0.190	71.0	01Jan2000, 13:22	3.95
Junction-10	0.190	71.0	01Jan2000, 13:22	3.95
Reach-9	0.190	71.0	01Jan2000, 13:22	3.95
Sub13B	0.022	60.3	01Jan2000, 12:06	4.04
Junction-14	0.212	96.3	01Jan2000, 12:08	3.96
Junction-9	0.464	395.0	01Jan2000, 12:18	3.98
Reach-8	0.464	394.9	01Jan2000, 12:20	3.98
Sub12	0.087	178.0	01Jan2000, 12:12	3.73
Sub11	0.056	123.7	01Jan2000, 12:07	3.24
Junction-8	0.607	650.4	01Jan2000, 12:13	3.88

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Reach-7	0.607	649.7	01Jan2000, 12:16	3.86
Sub9A	0.048	65.9	01Jan2000, 12:11	2.40
Res S9A	0.048	38.9	01Jan2000, 12:26	2.40
Reach-13	0.048	38.9	01Jan2000, 12:27	2.40
Sub9B	0.023	52.8	01Jan2000, 12:10	3.94
Res S9B	0.071	83.2	01Jan2000, 12:17	2.89
Sub10	0.076	137.7	01Jan2000, 12:15	3.53
Junction-7	0.754	869.9	01Jan2000, 12:16	3.74
Reach-6	0.754	869.3	01Jan2000, 12:17	3.74
Sub8	0.109	180.6	01Jan2000, 12:15	3.23
Junction-6	0.863	1047.8	01Jan2000, 12:16	3.67
Reach-5	0.863	1047.5	01Jan2000, 12:18	3.67
Sub7	0.104	188.1	01Jan2000, 12:14	3.43
Sub6	0.068	149.6	01Jan2000, 12:10	3.63
Junction-5	1.035	1355.6	01Jan2000, 12:16	3.64
Reach-4	1.035	1354.2	01Jan2000, 12:18	3.64
Sub 5	0.088	216.5	01Jan2000, 12:09	4.04
Junction-4	1.123	1524.7	01Jan2000, 12:17	3.67
Reach-3	1.123	1524.2	01Jan2000, 12:17	3.67
Sub 3	0.013	32.6	01Jan2000, 12:04	3.24
Res S3	0.013	15.4	01Jan2000, 12:15	3.24
Sub 4	0.027	60.9	01Jan2000, 12:09	3.63
Junction-3	1.163	1587.4	01Jan2000, 12:17	3.66
Reach-2	1.163	1586.5	01Jan2000, 12:18	3.66
Sub 2	0.061	158.3	01Jan2000, 12:07	3.84
Junction-2	1.224	1681.0	01Jan2000, 12:17	3.66
Reach-1	1.224	1679.8	01Jan2000, 12:18	3.66
Sub 1	0.046	131.3	01Jan2000, 12:05	3.94
Junction-1	1.270	1739.5	01Jan2000, 12:18	3.67

Project: Wilson Downing Simulation Run: LFUCG 25 Year

Start of Run: 01Jan2000, 00:00 Basin Model: Wilson Downing
End of Run: 02Jan2000, 00:30 Meteorologic Model: LFUCG 25
Compute Time: 18Jul2014, 16:05:28 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Sub17	0.083	137.1	01Jan2000, 12:47	4.26
Res S17	0.083	57.1	01Jan2000, 13:22	4.24
Junction-13	0.083	57.1	01Jan2000, 13:22	4.24
Reach-12	0.083	57.1	01Jan2000, 13:24	4.23
Sub16	0.052	82.9	01Jan2000, 12:42	3.54
Junction-12	0.135	121.3	01Jan2000, 12:45	3.96
Reach-11	0.135	121.3	01Jan2000, 12:47	3.96
Sub15	0.099	102.8	01Jan2000, 12:48	2.59
Junction-11	0.234	224.1	01Jan2000, 12:48	3.38
Reach-10	0.234	224.0	01Jan2000, 12:49	3.38
Sub 13A	0.018	25.5	01Jan2000, 12:36	2.60
Junction-15	0.252	239.4	01Jan2000, 12:47	3.32
Sub14B	0.120	152.4	01Jan2000, 12:50	3.33
Sub 14A	0.070	99.0	01Jan2000, 12:48	3.63
Res S14A	0.070	98.5	01Jan2000, 12:50	3.63
Reach-14	0.070	98.4	01Jan2000, 12:52	3.62
Res S14B	0.190	65.6	01Jan2000, 13:48	3.25
Junction-10	0.190	65.6	01Jan2000, 13:48	3.25
Reach-9	0.190	65.6	01Jan2000, 13:48	3.25
Sub13B	0.022	39.8	01Jan2000, 12:35	3.35
Junction-14	0.212	75.7	01Jan2000, 12:39	3.26
Junction-9	0.464	311.1	01Jan2000, 12:46	3.29
Reach-8	0.464	311.0	01Jan2000, 12:48	3.29
Sub12	0.087	126.3	01Jan2000, 12:40	3.06
Sub11	0.056	79.4	01Jan2000, 12:36	2.60
Junction-8	0.607	491.6	01Jan2000, 12:42	3.19

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Reach-7	0.607	491.1	01Jan2000, 12:45	3.18
Sub9A	0.048	42.7	01Jan2000, 12:40	1.86
Res S9A	0.048	32.7	01Jan2000, 12:50	1.85
Reach-13	0.048	32.7	01Jan2000, 12:52	1.85
Sub9B	0.023	37.0	01Jan2000, 12:38	3.25
Res S9B	0.071	63.9	01Jan2000, 12:46	2.30
Sub10	0.076	98.7	01Jan2000, 12:42	2.87
Junction-7	0.754	652.1	01Jan2000, 12:45	3.06
Reach-6	0.754	651.9	01Jan2000, 12:46	3.06
Sub8	0.109	127.6	01Jan2000, 12:43	2.60
Junction-6	0.863	777.6	01Jan2000, 12:45	3.00
Reach-5	0.863	777.2	01Jan2000, 12:46	3.00
Sub7	0.104	133.2	01Jan2000, 12:42	2.78
Sub6	0.068	102.2	01Jan2000, 12:38	2.96
Junction-5	1.035	993.2	01Jan2000, 12:45	2.97
Reach-4	1.035	992.7	01Jan2000, 12:47	2.97
Sub 5	0.088	149.6	01Jan2000, 12:37	3.34
Junction-4	1.123	1115.5	01Jan2000, 12:45	3.00
Reach-3	1.123	1114.7	01Jan2000, 12:46	3.00
Sub 3	0.013	19.7	01Jan2000, 12:34	2.60
Res S3	0.013	13.6	01Jan2000, 12:42	2.60
Sub 4	0.027	41.2	01Jan2000, 12:37	2.96
Junction-3	1.163	1161.7	01Jan2000, 12:45	2.99
Reach-2	1.163	1161.0	01Jan2000, 12:47	2.99
Sub 2	0.061	104.0	01Jan2000, 12:35	3.15
Junction-2	1.224	1230.8	01Jan2000, 12:46	2.99
Reach-1	1.224	1230.0	01Jan2000, 12:47	2.99
Sub 1	0.046	83.5	01Jan2000, 12:34	3.25
Junction-1	1.270	1276.8	01Jan2000, 12:46	3.00

Project: Wilson Downing Simulation Run: LFUCG 10 Year

Start of Run: 01Jan2000, 00:00 Basin Model: Wilson Downing
End of Run: 02Jan2000, 00:30 Meteorologic Model: LFUCG 10
Compute Time: 18Jul2014, 16:04:37 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Sub17	0.083	111.8	01Jan2000, 12:17	3.47
Res S17	0.083	50.5	01Jan2000, 12:49	3.45
Junction-13	0.083	50.5	01Jan2000, 12:49	3.45
Reach-12	0.083	50.4	01Jan2000, 12:51	3.44
Sub16	0.052	65.1	01Jan2000, 12:12	2.79
Junction-12	0.135	98.1	01Jan2000, 12:16	3.19
Reach-11	0.135	98.1	01Jan2000, 12:19	3.19
Sub15	0.099	75.3	01Jan2000, 12:18	1.94
Junction-11	0.234	173.4	01Jan2000, 12:18	2.66
Reach-10	0.234	173.3	01Jan2000, 12:20	2.66
Sub 13A	0.018	18.8	01Jan2000, 12:06	1.95
Junction-15	0.252	184.3	01Jan2000, 12:18	2.61
Sub14B	0.120	118.0	01Jan2000, 12:20	2.60
Sub 14A	0.070	78.0	01Jan2000, 12:19	2.88
Res S14A	0.070	77.7	01Jan2000, 12:20	2.87
Reach-14	0.070	77.7	01Jan2000, 12:22	2.87
Res S14B	0.190	58.8	01Jan2000, 13:13	2.53
Junction-10	0.190	58.8	01Jan2000, 13:13	2.53
Reach-9	0.190	58.8	01Jan2000, 13:13	2.53
Sub13B	0.022	31.0	01Jan2000, 12:05	2.61
Junction-14	0.212	62.7	01Jan2000, 13:05	2.54
Junction-9	0.464	242.9	01Jan2000, 12:18	2.57
Reach-8	0.464	242.8	01Jan2000, 12:20	2.57
Sub12	0.087	96.2	01Jan2000, 12:10	2.35
Sub11	0.056	58.8	01Jan2000, 12:06	1.95
Junction-8	0.607	375.2	01Jan2000, 12:13	2.48

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Reach-7	0.607	374.6	01Jan2000, 12:16	2.47
Sub9A	0.048	28.9	01Jan2000, 12:10	1.31
Res S9A	0.048	25.8	01Jan2000, 12:17	1.31
Reach-13	0.048	25.8	01Jan2000, 12:19	1.31
Sub9B	0.023	28.6	01Jan2000, 12:09	2.52
Res S9B	0.071	51.1	01Jan2000, 12:15	1.70
Sub10	0.076	74.1	01Jan2000, 12:13	2.18
Junction-7	0.754	498.0	01Jan2000, 12:15	2.37
Reach-6	0.754	497.7	01Jan2000, 12:16	2.37
Sub8	0.109	93.7	01Jan2000, 12:13	1.95
Junction-6	0.863	589.7	01Jan2000, 12:16	2.31
Reach-5	0.863	589.3	01Jan2000, 12:17	2.31
Sub7	0.104	99.4	01Jan2000, 12:12	2.10
Sub6	0.068	77.6	01Jan2000, 12:08	2.27
Junction-5	1.035	748.8	01Jan2000, 12:15	2.29
Reach-4	1.035	748.5	01Jan2000, 12:17	2.28
Sub 5	0.088	116.3	01Jan2000, 12:07	2.61
Junction-4	1.123	840.2	01Jan2000, 12:16	2.31
Reach-3	1.123	839.9	01Jan2000, 12:17	2.31
Sub 3	0.013	14.7	01Jan2000, 12:04	1.95
Res S3	0.013	11.8	01Jan2000, 12:10	1.95
Sub 4	0.027	31.3	01Jan2000, 12:08	2.27
Junction-3	1.163	875.2	01Jan2000, 12:16	2.30
Reach-2	1.163	874.9	01Jan2000, 12:18	2.30
Sub 2	0.061	80.0	01Jan2000, 12:05	2.44
Junction-2	1.224	925.2	01Jan2000, 12:17	2.30
Reach-1	1.224	924.6	01Jan2000, 12:18	2.30
Sub 1	0.046	64.8	01Jan2000, 12:04	2.52
Junction-1	1.270	957.0	01Jan2000, 12:17	2.31

Project: Wilson Downing Simulation Run: Aug 31, 2013

Start of Run: 31Aug2013, 09:00 Basin Model: Wilson Downing
End of Run: 31Aug2013, 11:35 Meteorologic Model: Aug 31, 2013
Compute Time: 18Jul2014, 16:03:51 Control Specifications: Aug 31, 2013

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Sub17	0.083	102.9	31Aug2013, 10:50	1.48
Res S17	0.083	46.1	31Aug2013, 11:20	0.77
Junction-13	0.083	46.1	31Aug2013, 11:20	0.77
Reach-12	0.083	46.0	31Aug2013, 11:20	0.74
Sub16	0.052	53.0	31Aug2013, 10:50	1.06
Junction-12	0.135	83.1	31Aug2013, 10:55	0.86
Reach-11	0.135	82.9	31Aug2013, 10:55	0.82
Sub15	0.099	50.0	31Aug2013, 10:55	0.54
Junction-11	0.234	133.0	31Aug2013, 10:55	0.70
Reach-10	0.234	131.2	31Aug2013, 10:55	0.68
Sub 13A	0.018	13.7	31Aug2013, 10:45	0.59
Junction-15	0.252	138.8	31Aug2013, 10:55	0.68
Sub14B	0.120	89.8	31Aug2013, 10:55	0.87
Sub 14A	0.070	63.4	31Aug2013, 10:55	1.06
Res S14A	0.070	62.1	31Aug2013, 10:55	1.04
Reach-14	0.070	62.0	31Aug2013, 11:00	1.02
Res S14B	0.190	45.3	31Aug2013, 11:35	0.25
Junction-10	0.190	45.3	31Aug2013, 11:35	0.25
Reach-9	0.190	45.3	31Aug2013, 11:35	0.25
Sub13B	0.022	25.9	31Aug2013, 10:40	0.97
Junction-14	0.212	45.7	31Aug2013, 11:30	0.32
Junction-9	0.464	177.9	31Aug2013, 10:55	0.51
Reach-8	0.464	176.5	31Aug2013, 11:00	0.49
Sub12	0.087	72.4	31Aug2013, 10:45	0.80
Sub11	0.056	42.6	31Aug2013, 10:45	0.59
Junction-8	0.607	266.3	31Aug2013, 10:50	0.55

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
Reach-7	0.607	264.9	31Aug2013, 10:55	0.51
Sub9A	0.048	16.6	31Aug2013, 10:50	0.28
Res S9A	0.048	15.7	31Aug2013, 10:50	0.28
Reach-13	0.048	15.6	31Aug2013, 10:55	0.27
Sub9B	0.023	22.8	31Aug2013, 10:45	0.91
Res S9B	0.071	35.0	31Aug2013, 10:50	0.47
Sub10	0.076	53.8	31Aug2013, 10:50	0.69
Junction-7	0.754	349.8	31Aug2013, 10:55	0.52
Reach-6	0.754	348.5	31Aug2013, 10:55	0.51
Sub8	0.109	64.5	31Aug2013, 10:50	0.57
Junction-6	0.863	409.2	31Aug2013, 10:55	0.52
Reach-5	0.863	406.0	31Aug2013, 10:55	0.50
Sub7	0.104	71.1	31Aug2013, 10:50	0.65
Sub6	0.068	59.5	31Aug2013, 10:45	0.76
Junction-5	1.035	514.2	31Aug2013, 10:55	0.54
Reach-4	1.035	510.2	31Aug2013, 10:55	0.51
Sub 5	0.088	95.1	31Aug2013, 10:45	0.97
Junction-4	1.123	576.3	31Aug2013, 10:55	0.55
Reach-3	1.123	573.4	31Aug2013, 10:55	0.54
Sub 3	0.013	11.6	31Aug2013, 10:40	0.59
Res S3	0.013	8.9	31Aug2013, 10:45	0.58
Sub 4	0.027	24.1	31Aug2013, 10:45	0.76
Junction-3	1.163	597.2	31Aug2013, 10:55	0.55
Reach-2	1.163	589.2	31Aug2013, 10:55	0.53
Sub 2	0.061	64.4	31Aug2013, 10:40	0.86
Junction-2	1.224	623.3	31Aug2013, 10:55	0.55
Reach-1	1.224	615.0	31Aug2013, 10:55	0.54
Sub 1	0.046	55.2	31Aug2013, 10:40	0.92
Junction-1	1.270	636.7	31Aug2013, 10:55	0.55

Appendix H USGS Regional Calculations

H1 Streamflow Statistics Report

H2 NSS Report

USGS Kentucky StreamStats

Streamstats Ungaged Site Report

Date: Thu Feb 27 2014 12:41:19 Mountain Standard Time
Site Location: Kentucky
NAD27 Latitude: 37.9737 (37 58 25)
NAD27 Longitude: -84.5007 (-84 30 03)
NAD83 Latitude: 37.9738 (37 58 26)
NAD83 Longitude: -84.5007 (-84 30 02)
Drainage Area: 1.28 mi2

Warning from delineation: Delineated basin may contain karst

Peak Flows Region Grid Basin Characteristics			
100% Lower East Region 3 (1.28 mi2)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	1.28	0.59	722

Peak Flows Region Grid Streamflow Statistics					
Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2	225	23	5.9		
PK5	423	22	9.8		
PK10	591	20	15		
PK25	842	19	25		
PK50	1050	19	32		
PK100	1290	19	39		
PK200	1540	19	45		
PK500	1910	21	48		

National Streamflow Statistics Program
Version 5
Based on Techniques and Methods Book 4-A6
Equations from database C:\Data\Drainage\NFF Database\NSS_v6_2013-08-28.mdb
Updated by tkoenig 8/28/2013 at 04:10:29 PM Add 2 new params for AR 2008-5065

Site: unnamed, Kentucky
User:
Date: Tuesday, September 02, 2014 04:00 PM

Equations for Kentucky developed using English units

Rural Estimate: West Hickman
   Basin Drainage Area: 1.28 square miles
   1 Region
   Region: Lower_East_Region_3
      Drainage_Area = 1.28 square miles

Results for: West Hickman

Equations used:
PK2 = 187* (DRNAREA)^(0.748)
PK5 = 355* (DRNAREA)^(0.712)
PK10 = 498* (DRNAREA)^(0.692)
PK25 = 714* (DRNAREA)^(0.67)
PK50 = 897* (DRNAREA)^(0.656)
PK100 = 1100* (DRNAREA)^(0.643)
PK200 = 1320* (DRNAREA)^(0.632)
PK500 = 1640* (DRNAREA)^(0.62)

Statistic	Value, cfs	Standard Error, %	Equivalent Years
PK2	225	23	5.9
PK5	423	22	9.8
PK10	591	20	15
PK25	842	19	25
PK50	1050	19	32
PK100	1290	19	39
PK200	1540	19	45
PK500	1910	21	48

Urban Estimate: West Hickman Urban
   Basin Drainage Area: 1.28 square miles
   1 Region
   Region: National Urban
      Drainage_Area = 1.28 square miles
      Channel_Slope = 20 feet per mi
      2_hour_2_year_Rainfall_Intensity = 1.65 inches
      Basin_Storage = 0 percent
      Basin_Development_Factor = 10 dimensionless
      Impervious_Surfaces = 40 percent
      Rural Scenario = West Hickman

Results for: West Hickman Urban

Equations used:
PK2 = 2.35 * (Rural_Dis)^0.47 * (Rural_DA)^0.41 * (CSL10_85)^0.17 * (I2H2Y+3)^2.04 * (STORAGE+8)^(-0.65) * (-1*(BDF-13))^(-0.32) * (IMPERV)^0.15
PK5 = 2.7 * (Rural_Dis)^0.54 * (Rural_DA)^0.35 * (CSL10_85)^0.16 * (I2H2Y+3)^1.86 *

(STORAGE+8)^(-0.59) * (-1*(BDF-13))^(-0.31) * (IMPERV)^0.11
PK10 = 2.99 * (Rural_Dis)^0.58 * (Rural_DA)^0.32 * (CSL10_85)^0.15 * (I2H2Y+3)^1.75 * (STORAGE+8)^(-0.57) * (-1*(BDF-13))^(-0.3) * (IMPERV)^0.09
PK25 = 2.78 * (Rural_Dis)^0.6 * (Rural_DA)^0.31 * (CSL10_85)^0.15 * (I2H2Y+3)^1.76 * (STORAGE+8)^(-0.55) * (-1*(BDF-13))^(-0.29) * (IMPERV)^0.07
PK50 = 2.67 * (Rural_Dis)^0.62 * (Rural_DA)^0.29 * (CSL10_85)^0.15 * (I2H2Y+3)^1.74 * (STORAGE+8)^(-0.53) * (-1*(BDF-13))^(-0.28) * (IMPERV)^0.06
PK100 = 2.5 * (Rural_Dis)^0.63 * (Rural_DA)^0.29 * (CSL10_85)^0.15 * (I2H2Y+3)^1.76 * (STORAGE+8)^(-0.52) * (-1*(BDF-13))^(-0.28) * (IMPERV)^0.06
PK500 = 2.27 * (Rural_Dis)^0.63 * (Rural_DA)^0.29 * (CSL10_85)^0.16 * (I2H2Y+3)^1.86 * (STORAGE+8)^(-0.54) * (-1*(BDF-13))^(-0.27) * (IMPERV)^0.05

Statistic	Value, cfs	Standard Error, %
PK2	402	38
PK5	680	37
PK10	927	38
PK25	1200	40
PK50	1490	42
PK100	1780	44
PK500	2330	49

Rural Estimate: Lansdowne
   Basin Drainage Area: 0.46 square miles
   1 Region
   Region: Lower_East_Region_3
      Drainage_Area = 0.46 square miles (below min value 0.59)

Results for: Lansdowne

Equations used:
PK2 = 187* (DRNAREA)^(0.748)
PK5 = 355* (DRNAREA)^(0.712)
PK10 = 498* (DRNAREA)^(0.692)
PK25 = 714* (DRNAREA)^(0.67)
PK50 = 897* (DRNAREA)^(0.656)
PK100 = 1100* (DRNAREA)^(0.643)
PK200 = 1320* (DRNAREA)^(0.632)
PK500 = 1640* (DRNAREA)^(0.62)

Statistic	Value, cfs
PK2	105
PK5	204
PK10	291
PK25	424
PK50	539
PK100	668
PK200	808
PK500	1010

Urban Estimate: Lansdwone Urban
   Basin Drainage Area: 0.46 square miles
   1 Region
   Region: National Urban
      Drainage_Area = 0.46 square miles
      Channel_Slope = 20 feet per mi
      2_hour_2_year_Rainfall_Intensity = 1.65 inches
      Basin_Storage = 0 percent

Basin_Development_Factor = 10 dimensionless
Impervious_Surfaces = 40 percent
Rural Scenario = Lansdowne

Results for: Lansdwone Urban

Equations used:
PK2 = 2.35 * (Rural_Dis)^0.47 * (Rural_DA)^0.41 * (CSL10_85)^0.17 * (I2H2Y+3)^2.04 * (STORAGE+8)^(-0.65) * (-1*(BDF-13))^(-0.32) * (IMPERV)^0.15
PK5 = 2.7 * (Rural_Dis)^0.54 * (Rural_DA)^0.35 * (CSL10_85)^0.16 * (I2H2Y+3)^1.86 * (STORAGE+8)^(-0.59) * (-1*(BDF-13))^(-0.31) * (IMPERV)^0.11
PK10 = 2.99 * (Rural_Dis)^0.58 * (Rural_DA)^0.32 * (CSL10_85)^0.15 * (I2H2Y+3)^1.75 * (STORAGE+8)^(-0.57) * (-1*(BDF-13))^(-0.3) * (IMPERV)^0.09
PK25 = 2.78 * (Rural_Dis)^0.6 * (Rural_DA)^0.31 * (CSL10_85)^0.15 * (I2H2Y+3)^1.76 * (STORAGE+8)^(-0.55) * (-1*(BDF-13))^(-0.29) * (IMPERV)^0.07
PK50 = 2.67 * (Rural_Dis)^0.62 * (Rural_DA)^0.29 * (CSL10_85)^0.15 * (I2H2Y+3)^1.74 * (STORAGE+8)^(-0.53) * (-1*(BDF-13))^(-0.28) * (IMPERV)^0.06
PK100 = 2.5 * (Rural_Dis)^0.63 * (Rural_DA)^0.29 * (CSL10_85)^0.15 * (I2H2Y+3)^1.76 * (STORAGE+8)^(-0.52) * (-1*(BDF-13))^(-0.28) * (IMPERV)^0.06
PK500 = 2.27 * (Rural_Dis)^0.63 * (Rural_DA)^0.29 * (CSL10_85)^0.16 * (I2H2Y+3)^1.86 * (STORAGE+8)^(-0.54) * (-1*(BDF-13))^(-0.27) * (IMPERV)^0.05

Statistic	Value, cfs	Standard Error, %
PK2	184	38
PK5	321	37
PK10	443	38
PK25	580	40
PK50	729	42
PK100	876	44
PK500	1160	49

Rural Estimate: Flintridge
Basin Drainage Area: 0.24 square miles
1 Region
Region: Lower_East_Region_3
Drainage_Area = 0.24 square miles (below min value 0.59)

Results for: Flintridge

Equations used:
PK2 = 187* (DRNAREA)^(0.748)
PK5 = 355* (DRNAREA)^(0.712)
PK10 = 498* (DRNAREA)^(0.692)
PK25 = 714* (DRNAREA)^(0.67)
PK50 = 897* (DRNAREA)^(0.656)
PK100 = 1100* (DRNAREA)^(0.643)
PK200 = 1320* (DRNAREA)^(0.632)
PK500 = 1640* (DRNAREA)^(0.62)

Statistic	Value, cfs
PK2	64.3
PK5	129
PK10	185
PK25	274
PK50	352
PK100	439
PK200	536
PK500	677

Urban Estimate: Flintridge
   Basin Drainage Area: 0.24 square miles
   1 Region
   Region: National Urban
      Drainage_Area = 0.24 square miles
      Channel_Slope = 20 feet per mi
      2_hour_2_year_Rainfall_Intensity = 1.65 inches
      Basin_Storage = 0 percent
      Basin_Development_Factor = 10 dimensionless
      Impervious_Surfaces = 40 percent
      Rural Scenario = Flintridge

Results for: Flintridge

Equations used:
PK2 = 2.35 * (Rural_Dis)^0.47 * (Rural_DA)^0.41 * (CSL10_85)^0.17 * (I2H2Y+3)^2.04 * (STORAGE+8)^(-0.65) * (-1*(BDF-13))^(-0.32) * (IMPERV)^0.15
PK5 = 2.7 * (Rural_Dis)^0.54 * (Rural_DA)^0.35 * (CSL10_85)^0.16 * (I2H2Y+3)^1.86 * (STORAGE+8)^(-0.59) * (-1*(BDF-13))^(-0.31) * (IMPERV)^0.11
PK10 = 2.99 * (Rural_Dis)^0.58 * (Rural_DA)^0.32 * (CSL10_85)^0.15 * (I2H2Y+3)^1.75 * (STORAGE+8)^(-0.57) * (-1*(BDF-13))^(-0.3) * (IMPERV)^0.09
PK25 = 2.78 * (Rural_Dis)^0.6 * (Rural_DA)^0.31 * (CSL10_85)^0.15 * (I2H2Y+3)^1.76 * (STORAGE+8)^(-0.55) * (-1*(BDF-13))^(-0.29) * (IMPERV)^0.07
PK50 = 2.67 * (Rural_Dis)^0.62 * (Rural_DA)^0.29 * (CSL10_85)^0.15 * (I2H2Y+3)^1.74 * (STORAGE+8)^(-0.53) * (-1*(BDF-13))^(-0.28) * (IMPERV)^0.06
PK100 = 2.5 * (Rural_Dis)^0.63 * (Rural_DA)^0.29 * (CSL10_85)^0.15 * (I2H2Y+3)^1.76 * (STORAGE+8)^(-0.52) * (-1*(BDF-13))^(-0.28) * (IMPERV)^0.06
PK500 = 2.27 * (Rural_Dis)^0.63 * (Rural_DA)^0.29 * (CSL10_85)^0.16 * (I2H2Y+3)^1.86 * (STORAGE+8)^(-0.54) * (-1*(BDF-13))^(-0.27) * (IMPERV)^0.05

Statistic	Value, cfs	Standard Error, %
PK2	112	38
PK5	199	37
PK10	277	38
PK25	365	40
PK50	463	42
PK100	557	44
PK500	746	49

Appendix I Flow Changes Summary

Appendix I - Discharge Summary

A flow change was specified in the HEC-RAS model just upstream of every structure and at other locations as necessary. The locations of these flow changes are shown below along with the corresponding HEC HMS element that represent the flow at that location.

HEC RAS River Station (Main Reach)	Desription	HEC HMS Feature	500 Yr Q (SCS Ty II)	100 Yr Q (LFUCG)	50 Yr Q (SCS Ty II)	25 Yr Q (LFUCG)	10 Yr Q (SCS)	August 31, 2013	100 Yr Q USGS Regoinal Equations	100 Yr Q FIS Study
10746.03	South of New Circle	Junction-13	77	67	63	57	51	46		
10523.85	Storm Sewer at Argonne	Junction-12	231	163	153	121	98	83		
9657.2	US of Medlock Culvert	Junction-11	477	320	293	224	173	133		
9152.155	US of 60" RCP	Junction-15	514	345	313	239	184	139	557*	626
8992.126	US of Lansdwone Culvert	Junction-9	634	439	395	311	243	178	876*	934
6329.097	Park Basin Watershed	Junction-7	1441	944	870	652	498	350		
5693.757	US of Camelot Culvert	Junction-6	1756	1136	1048	778	590	409		
3438.489	US of Wilson Downing Bridge	Junction-4	2581	1642	1525	1116	840	576		
2065.195	US of Belleau Wood Culvert	Junction-2	2854	1814	1681	1231	925	623		
1269.88	Confluence with West Hickman	Junction-1	2964	1886	1740	1277	957	637	1780	1674

* Drainage area for these points outside of the range recommended for the the USGS Regional Equations

HEC RAS River Station (Flintridge Dr Trib)		HEC HMS Feature						
631.2124	DS of Loch Ness Basin	Junction-10	83	75	71	66	59	45
149.5525	US of 60" RCP	Junction-14	146	102	96	76	63	46

Appendix J HEC RAS Reports

J1 Manning's n Values
J2 Standard Table 1
J3 Profile
J4 Sections

Manning's n Values

River Station	Frctn (n/K)	n #1	n #2	n #3
10746.03	n	0.03	0.045	0.03
10622.44	n	0.03	0.045	0.03
10523.85	n	0.03	0.045	0.03
10473.18	n	0.03	0.045	0.03
10153.12	n	0.03	0.045	0.03
10115.7	n	0.03	0.045	0.03
9876.212	n	0.03	0.045	0.03
9657.2	n	0.03	0.045	0.03
9622	Culvert			
9586.454	n	0.03	0.045	0.03
9348.507	n	0.03	0.045	0.03
9152.155	n	0.03	0.045	0.03
9072	Culvert			
8992.126	n	0.03	0.045	0.03
8910	Culvert			
8829.508	n	0.03	0.045	0.03
8700.561	n	0.03	0.045	0.03
8419.72	n	0.03	0.045	0.03
8158.85	n	0.03	0.045	0.03
7944.632	n	0.03	0.045	0.03
7681.926	n	0.03	0.045	0.03
7524.105	n	0.03	0.045	0.03
7394.005	n	0.03	0.045	0.03
7326.955	n	0.03	0.045	0.03
7111.105	n	0.03	0.045	0.03
6878.198	n	0.03	0.045	0.03
6738.663	n	0.03	0.045	0.03
6329.097	n	0.03	0.045	0.03
6123.259	n	0.06	0.045	0.06
6053.228	n	0.06	0.045	0.06
5756.054	n	0.06	0.045	0.06
5693.757	n	0.06	0.045	0.06
5628	Culvert			
5563.619	n	0.03	0.045	0.03
5305.9	n	0.03	0.045	0.03
5071.544	n	0.03	0.045	0.06
4849.785	n	0.03	0.045	0.06
4778.794	n	0.03	0.045	0.06
4639.102	n	0.03	0.045	0.06
4441.998	n	0.03	0.045	0.06
4303.387	n	0.03	0.045	0.06
3894.903	n	0.03	0.045	0.03
3696.721	n	0.03	0.045	0.03
3438.489	n	0.03	0.045	0.03
3378.43	n	0.03	0.045	0.03

Manning's n Values

River Station	Frctn (n/K)	n #1	n #2	n #3
3356	Bridge			
3334.342	n	0.06	0.045	0.06
3250.755	n	0.06	0.045	0.06
3105.682	n	0.06	0.045	0.06
2889.186	n	0.06	0.045	0.06
2442.163	n	0.06	0.045	0.06
2065.195	n	0.06	0.045	0.06
2004.315	n	0.06	0.045	0.06
1961	Culvert			
1917.11	n	0.03	0.045	0.03
1862.162	n	0.03	0.045	0.03
1676.452	n	0.03	0.045	0.03
1269.88	n	0.03	0.045	0.03
1143.555	n	0.03	0.045	0.03

HEC-RAS Plan: WD LA AC

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Reach	10746.03	500 YR	77.00	984.59	986.56	986.56	987.17	0.033851	6.29	12.29	10.22	0.98
Main Reach	10746.03	100 YR	67.00	984.59	986.42	986.42	987.00	0.036913	6.14	10.92	9.75	1.01
Main Reach	10746.03	50 YR	63.00	984.59	986.37	986.37	986.93	0.037284	6.02	10.47	9.59	1.01
Main Reach	10746.03	25 YR	59.00	984.59	986.32	986.32	986.86	0.037393	5.90	10.00	9.41	1.01
Main Reach	10746.03	10 YR	52.00	984.59	986.22	986.22	986.73	0.038024	5.73	9.07	9.07	1.01
Main Reach	10746.03	Sept 2013	49.00	984.59	986.18	986.18	986.67	0.038389	5.65	8.67	8.91	1.01
Main Reach	10622.44	500 YR	77.00	982.46	986.51		986.53	0.000437	1.35	59.24	26.28	0.14
Main Reach	10622.44	100 YR	67.00	982.46	986.05		986.08	0.000612	1.43	47.97	23.03	0.16
Main Reach	10622.44	50 YR	63.00	982.46	985.98		986.01	0.000601	1.39	46.31	22.68	0.16
Main Reach	10622.44	25 YR	59.00	982.46	985.84		985.87	0.000648	1.39	43.24	22.02	0.16
Main Reach	10622.44	10 YR	52.00	982.46	985.59		985.62	0.000756	1.39	37.85	20.80	0.17
Main Reach	10622.44	Sept 2013	49.00	982.46	985.43		985.46	0.000889	1.43	34.57	20.02	0.18
Main Reach	10523.85	500 YR	231.00	981.05	986.22		986.39	0.002328	3.44	74.45	37.55	0.31
Main Reach	10523.85	100 YR	163.00	981.05	985.83		985.95	0.001832	2.84	61.75	29.70	0.27
Main Reach	10523.85	50 YR	153.00	981.05	985.77		985.88	0.001747	2.74	59.93	29.14	0.26
Main Reach	10523.85	25 YR	137.00	981.05	985.65		985.74	0.001639	2.59	56.42	27.80	0.25
Main Reach	10523.85	10 YR	112.00	981.05	985.41		985.50	0.001482	2.35	50.25	25.22	0.24
Main Reach	10523.85	Sept 2013	97.00	981.05	985.27		985.34	0.001347	2.17	46.70	23.60	0.22
Main Reach	10473.18	500 YR	231.00	980.62	986.01	985.02	986.22	0.005035	3.80	65.22	42.67	0.42
Main Reach	10473.18	100 YR	163.00	980.62	985.63	984.49	985.80	0.004975	3.39	50.42	34.74	0.40
Main Reach	10473.18	50 YR	153.00	980.62	985.57	984.39	985.74	0.004848	3.29	48.55	33.66	0.40
Main Reach	10473.18	25 YR	137.00	980.62	985.45	984.26	985.61	0.004862	3.18	44.69	31.31	0.39
Main Reach	10473.18	10 YR	112.00	980.62	985.23	983.95	985.36	0.005054	2.99	38.12	26.50	0.39
Main Reach	10473.18	Sept 2013	97.00	980.62	985.09	983.68	985.22	0.004977	2.82	34.77	23.61	0.38
Main Reach	10313		Culvert									
Main Reach	10153.12	500 YR	231.00	975.89	980.11	980.08	980.68	0.014235	6.44	41.09	34.88	0.61
Main Reach	10153.12	100 YR	163.00	975.89	979.92		980.30	0.009547	5.17	35.01	28.92	0.50
Main Reach	10153.12	50 YR	153.00	975.89	979.89		980.25	0.008729	4.93	34.28	28.13	0.48
Main Reach	10153.12	25 YR	137.00	975.89	979.84		980.15	0.007540	4.56	32.86	26.50	0.45
Main Reach	10153.12	10 YR	112.00	975.89	979.73		979.97	0.005796	3.95	30.26	23.23	0.39
Main Reach	10153.12	Sept 2013	97.00	975.89	980.13		980.22	0.002435	2.67	41.74	35.46	0.25
Main Reach	10115.70	500 YR	231.00	975.48	979.75	979.75	980.12	0.016303	5.44	48.00	59.36	0.55
Main Reach	10115.70	100 YR	163.00	975.48	979.55	979.55	979.88	0.016096	5.18	37.03	52.03	0.54
Main Reach	10115.70	50 YR	153.00	975.48	979.49	979.49	979.84	0.017572	5.34	34.05	49.86	0.56
Main Reach	10115.70	25 YR	137.00	975.48	979.44	979.44	979.77	0.017463	5.25	31.25	47.73	0.56
Main Reach	10115.70	10 YR	112.00	975.48	979.34	979.34	979.65	0.015862	5.06	26.87	41.39	0.52
Main Reach	10115.70	Sept 2013	97.00	975.48	978.56	978.56	979.86	0.059446	9.13	10.62	4.29	1.02
Main Reach	9876.212	500 YR	231.00	969.31	974.23		974.26	0.000516	1.83	156.15	97.60	0.15
Main Reach	9876.212	100 YR	163.00	969.31	973.49		973.54	0.000857	2.08	95.46	68.90	0.19
Main Reach	9876.212	50 YR	153.00	969.31	973.34		973.40	0.000994	2.18	85.54	64.26	0.21
Main Reach	9876.212	25 YR	137.00	969.31	973.32		973.36	0.000834	1.99	84.02	63.51	0.19
Main Reach	9876.212	10 YR	112.00	969.31	972.86		972.92	0.001379	2.33	58.08	49.20	0.24
Main Reach	9876.212	Sept 2013	97.00	969.31	972.50		972.59	0.002160	2.67	42.44	36.89	0.29
Main Reach	9657.200	500 YR	477.00	965.47	974.06	971.67	974.13	0.000598	2.57	240.70	113.68	0.16
Main Reach	9657.200	100 YR	320.00	965.47	973.32	970.31	973.38	0.000619	2.45	164.64	82.03	0.16
Main Reach	9657.200	50 YR	293.00	965.47	973.18	970.04	973.24	0.000578	2.33	154.24	72.70	0.15
Main Reach	9657.200	25 YR	262.00	965.47	973.19	969.75	973.24	0.000457	2.08	155.03	72.95	0.14
Main Reach	9657.200	10 YR	203.00	965.47	972.73	969.15	972.78	0.000438	1.95	123.94	62.33	0.13
Main Reach	9657.200	Sept 2013	160.00	965.47	971.58	968.66	971.92	0.003164	4.65	34.39	27.23	0.34
Main Reach	9622		Culvert									
Main Reach	9586.454	500 YR	477.00	964.36	970.17	970.17	973.08	0.016494	13.70	34.83	22.43	1.00
Main Reach	9586.454	100 YR	320.00	964.36	968.82	968.82	971.05	0.017995	11.98	26.70	17.55	1.00
Main Reach	9586.454	50 YR	293.00	964.36	968.55	968.55	970.67	0.018614	11.69	25.07	17.38	1.01
Main Reach	9586.454	25 YR	262.00	964.36	968.27	968.27	970.21	0.018682	11.19	23.42	17.26	1.00
Main Reach	9586.454	10 YR	203.00	964.36	967.66	967.66	969.30	0.019816	10.28	19.74	16.98	1.00
Main Reach	9586.454	Sept 2013	160.00	964.36	967.18	967.18	968.58	0.020746	9.48	16.88	16.73	1.00
Main Reach	9348.507	500 YR	477.00	961.85	966.51		966.68	0.001706	3.48	152.25	74.82	0.29
Main Reach	9348.507	100 YR	320.00	961.85	965.88		966.03	0.001922	3.32	107.85	62.12	0.30
Main Reach	9348.507	50 YR	293.00	961.85	965.72		965.86	0.001957	3.25	98.57	54.56	0.31
Main Reach	9348.507	25 YR	262.00	961.85	965.57		965.70	0.001886	3.10	90.82	49.44	0.30
Main Reach	9348.507	10 YR	203.00	961.85	965.23		965.34	0.001924	2.91	74.86	44.32	0.30
Main Reach	9348.507	Sept 2013	160.00	961.85	964.88		964.99	0.002273	2.92	60.11	41.27	0.31
Main Reach	9152.155	500 YR	514.00	959.94	965.82	964.57	966.08	0.005592	4.12	124.88	64.11	0.47
Main Reach	9152.155	100 YR	345.00	959.94	965.21	963.87	965.42	0.005155	3.64	94.88	45.41	0.44

HEC-RAS Plan: WD LA AC (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Reach	9152.155	50 YR	313.00	959.94	965.05	963.71	965.25	0.005207	3.57	87.62	43.22	0.44
Main Reach	9152.155	25 YR	284.00	959.94	964.92	963.71	965.10	0.005111	3.46	82.00	41.65	0.43
Main Reach	9152.155	10 YR	220.00	959.94	964.57	963.12	964.73	0.005227	3.24	68.00	38.69	0.43
Main Reach	9152.155	Sept 2013	170.00	959.94	964.21	962.63	964.36	0.004696	3.07	55.29	30.58	0.40
Main Reach	9072		Culvert									
Main Reach	8992.126	500 YR	514.00	955.79	963.18	959.72	963.28	0.000993	2.65	200.59	101.51	0.22
Main Reach	8992.126	100 YR	345.00	955.79	962.33	958.87	962.40	0.000781	2.20	156.96	39.71	0.19
Main Reach	8992.126	50 YR	313.00	955.79	961.88	958.71	961.96	0.000829	2.23	140.13	36.10	0.20
Main Reach	8992.126	25 YR	284.00	955.79	960.77	958.53	961.10	0.002602	4.66	60.96	30.86	0.38
Main Reach	8992.126	10 YR	220.00	955.79	960.20	958.15	960.46	0.002403	4.11	53.56	29.29	0.36
Main Reach	8992.126	Sept 2013	170.00	955.79	959.49	957.82	959.71	0.002697	3.84	44.33	27.24	0.37
Main Reach	8910		Culvert									
Main Reach	8829.508	500 YR	634.00	955.40	960.23	960.01	961.35	0.018809	8.49	74.69	26.36	0.89
Main Reach	8829.508	100 YR	439.00	955.40	959.51	959.21	960.82	0.016261	9.18	47.84	20.72	0.87
Main Reach	8829.508	50 YR	395.00	955.40	959.38	959.00	960.52	0.014900	8.57	46.10	20.30	0.83
Main Reach	8829.508	25 YR	371.00	955.40	959.31	958.88	960.36	0.014204	8.24	45.04	20.04	0.81
Main Reach	8829.508	10 YR	291.00	955.40	959.01	958.46	959.80	0.012120	7.13	40.83	19.02	0.74
Main Reach	8829.508	Sept 2013	224.00	955.40	958.68	958.04	959.27	0.010700	6.18	36.22	18.09	0.68
Main Reach	8700.561	500 YR	634.00	953.86	958.98	958.48	959.53	0.008090	6.25	109.95	54.65	0.61
Main Reach	8700.561	100 YR	439.00	953.86	958.41	957.90	958.89	0.008787	5.79	81.13	45.09	0.62
Main Reach	8700.561	50 YR	395.00	953.86	958.25	957.73	958.72	0.008910	5.66	74.38	42.53	0.62
Main Reach	8700.561	25 YR	371.00	953.86	958.16	957.63	958.62	0.008990	5.58	70.61	41.04	0.62
Main Reach	8700.561	10 YR	291.00	953.86	957.83	957.27	958.24	0.009207	5.25	57.98	35.41	0.62
Main Reach	8700.561	Sept 2013	224.00	953.86	957.50	956.90	957.87	0.009357	4.87	47.25	30.36	0.61
Main Reach	8419.720	500 YR	634.00	950.88	954.48	954.48	955.91	0.022071	9.65	66.32	23.66	0.98
Main Reach	8419.720	100 YR	439.00	950.88	953.76	953.76	954.96	0.024447	8.77	50.15	21.58	1.00
Main Reach	8419.720	50 YR	395.00	950.88	953.58	953.58	954.71	0.025207	8.53	46.35	21.06	1.00
Main Reach	8419.720	25 YR	371.00	950.88	953.49	953.49	954.58	0.025608	8.38	44.28	20.77	1.01
Main Reach	8419.720	10 YR	291.00	950.88	953.13	953.13	954.09	0.026619	7.83	37.17	19.75	1.01
Main Reach	8419.720	Sept 2013	224.00	950.88	952.80	952.80	953.63	0.027519	7.29	30.74	18.78	1.00
Main Reach	8158.850	500 YR	634.00	946.47	951.25		951.85	0.007710	6.68	109.48	61.40	0.59
Main Reach	8158.850	100 YR	439.00	946.47	950.84		951.27	0.006090	5.53	87.36	47.43	0.51
Main Reach	8158.850	50 YR	395.00	946.47	950.74		951.13	0.005610	5.21	82.80	46.00	0.49
Main Reach	8158.850	25 YR	371.00	946.47	950.66		951.04	0.005474	5.07	79.35	44.88	0.48
Main Reach	8158.850	10 YR	291.00	946.47	950.34		950.65	0.005106	4.61	66.17	30.90	0.46
Main Reach	8158.850	Sept 2013	224.00	946.47	949.95		950.22	0.004832	4.18	55.07	26.97	0.44
Main Reach	7944.632	500 YR	634.00	945.10	949.86	949.73	950.27	0.006593	5.92	142.28	133.20	0.55
Main Reach	7944.632	100 YR	439.00	945.10	949.48	949.28	949.89	0.006782	5.57	98.51	98.23	0.55
Main Reach	7944.632	50 YR	395.00	945.10	949.34	948.74	949.77	0.007243	5.59	85.43	85.04	0.56
Main Reach	7944.632	25 YR	371.00	945.10	949.28	948.60	949.70	0.007164	5.48	80.40	79.13	0.56
Main Reach	7944.632	10 YR	291.00	945.10	949.04		949.41	0.006632	4.99	64.37	54.81	0.53
Main Reach	7944.632	Sept 2013	224.00	945.10	948.75		949.05	0.006162	4.46	52.01	32.66	0.50
Main Reach	7681.926	500 YR	634.00	943.71	947.41	947.37	947.94	0.012523	6.61	113.16	98.38	0.72
Main Reach	7681.926	100 YR	439.00	943.71	947.12	947.09	947.57	0.012022	6.00	86.92	85.95	0.69
Main Reach	7681.926	50 YR	395.00	943.71	947.09	947.01	947.48	0.010603	5.58	84.11	84.51	0.65
Main Reach	7681.926	25 YR	371.00	943.71	947.04	946.97	947.42	0.010606	5.51	80.13	82.43	0.65
Main Reach	7681.926	10 YR	291.00	943.71	946.86	946.78	947.21	0.010824	5.26	65.69	74.39	0.64
Main Reach	7681.926	Sept 2013	224.00	943.71	946.70	946.62	947.01	0.010122	4.82	54.58	67.55	0.61
Main Reach	7524.105	500 YR	634.00	942.90	945.42	945.42	945.83	0.013968	6.00	125.30	142.46	0.74
Main Reach	7524.105	100 YR	439.00	942.90	945.23	945.23	945.56	0.013114	5.49	99.61	135.73	0.71
Main Reach	7524.105	50 YR	395.00	942.90	945.13	945.13	945.49	0.015117	5.71	86.03	126.13	0.76
Main Reach	7524.105	25 YR	371.00	942.90	945.10	945.10	945.45	0.014849	5.60	82.37	121.06	0.75
Main Reach	7524.105	10 YR	291.00	942.90	944.99	944.99	945.30	0.013596	5.18	70.30	108.38	0.71
Main Reach	7524.105	Sept 2013	224.00	942.90	944.77	944.77	945.11	0.014720	4.96	49.01	77.66	0.72
Main Reach	7394.005	500 YR	634.00	939.73	945.37		945.45	0.000735	2.21	275.47	109.24	0.19
Main Reach	7394.005	100 YR	439.00	939.73	944.74		944.81	0.000750	2.01	210.16	98.86	0.18
Main Reach	7394.005	50 YR	395.00	939.73	944.58		944.65	0.000747	1.95	194.92	96.05	0.18
Main Reach	7394.005	25 YR	371.00	939.73	944.43		944.50	0.000817	1.98	180.31	93.35	0.19
Main Reach	7394.005	10 YR	291.00	939.73	943.91		943.98	0.001121	2.08	134.82	79.55	0.21
Main Reach	7394.005	Sept 2013	224.00	939.73	943.46		943.54	0.001531	2.22	102.53	67.09	0.25
Main Reach	7326.955	500 YR	634.00	939.45	944.80		945.29	0.006044	6.23	117.44	59.34	0.51
Main Reach	7326.955	100 YR	439.00	939.45	944.07		944.63	0.008143	6.46	78.36	47.62	0.57
Main Reach	7326.955	50 YR	395.00	939.45	943.93		944.48	0.007963	6.25	72.25	44.80	0.56
Main Reach	7326.955	25 YR	371.00	939.45	943.44	942.85	944.27	0.013560	7.44	53.48	31.68	0.72

HEC-RAS Plan: WD LA AC (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Reach	7326.955	10 YR	291.00	939.45	942.87		943.71	0.016572	7.34	39.72	16.37	0.77
Main Reach	7326.955	Sept 2013	224.00	939.45	942.69		943.25	0.011964	6.05	37.05	13.85	0.65
Main Reach	7111.105	500 YR	634.00	937.47	944.89		944.94	0.000398	2.09	328.76	99.29	0.15
Main Reach	7111.105	100 YR	439.00	937.47	944.22		944.26	0.000356	1.83	265.00	92.21	0.14
Main Reach	7111.105	50 YR	395.00	937.47	944.09		944.13	0.000330	1.74	253.00	90.82	0.13
Main Reach	7111.105	25 YR	371.00	937.47	943.72		943.76	0.000431	1.89	220.19	85.86	0.15
Main Reach	7111.105	10 YR	291.00	937.47	943.07		943.12	0.000565	1.98	167.75	76.67	0.17
Main Reach	7111.105	Sept 2013	224.00	937.47	941.10		941.39	0.006044	4.33	52.14	27.38	0.49
Main Reach	6878.198	500 YR	634.00	936.49	944.88		944.90	0.000087	1.07	611.63	162.19	0.07
Main Reach	6878.198	100 YR	439.00	936.49	944.21		944.22	0.000071	0.91	507.32	150.68	0.06
Main Reach	6878.198	50 YR	395.00	936.49	944.08		944.09	0.000064	0.85	487.80	148.17	0.06
Main Reach	6878.198	25 YR	371.00	936.49	943.71		943.72	0.000078	0.90	433.68	141.19	0.07
Main Reach	6878.198	10 YR	291.00	936.49	943.06		943.07	0.000091	0.90	345.79	129.42	0.07
Main Reach	6878.198	Sept 2013	224.00	936.49	939.71		940.00	0.005911	4.28	52.33	22.08	0.49
Main Reach	6738.663	500 YR	634.00	935.89	944.88		944.89	0.000032	0.67	851.36	179.62	0.04
Main Reach	6738.663	100 YR	439.00	935.89	944.21		944.22	0.000023	0.54	733.82	173.17	0.04
Main Reach	6738.663	50 YR	395.00	935.89	944.08		944.09	0.000021	0.50	711.31	171.91	0.03
Main Reach	6738.663	25 YR	371.00	935.89	943.71		943.71	0.000024	0.52	647.63	168.34	0.04
Main Reach	6738.663	10 YR	291.00	935.89	943.06		943.06	0.000025	0.50	540.20	162.35	0.04
Main Reach	6738.663	Sept 2013	224.00	935.89	938.75		939.04	0.008216	4.47	56.83	61.19	0.55
Main Reach	6329.097	500 YR	1441.00	932.72	944.87		944.88	0.000024	0.77	1880.65	307.25	0.04
Main Reach	6329.097	100 YR	944.00	932.72	944.20		944.21	0.000014	0.58	1679.05	301.14	0.03
Main Reach	6329.097	50 YR	870.00	932.72	944.07		944.08	0.000013	0.55	1639.96	299.68	0.03
Main Reach	6329.097	25 YR	728.00	932.72	943.70		943.71	0.000008	0.43	1530.10	288.35	0.02
Main Reach	6329.097	10 YR	561.00	932.72	943.05		943.06	0.000007	0.37	1357.92	242.43	0.02
Main Reach	6329.097	Sept 2013	407.00	932.72	938.87		938.88	0.000081	0.85	507.17	188.08	0.07
Main Reach	6123.259	500 YR	1441.00	931.07	944.85		944.87	0.000078	1.45	1807.19	315.86	0.07
Main Reach	6123.259	100 YR	944.00	931.07	944.20		944.20	0.000046	1.08	1603.74	304.55	0.06
Main Reach	6123.259	50 YR	870.00	931.07	944.07		944.07	0.000042	1.02	1564.49	302.32	0.05
Main Reach	6123.259	25 YR	728.00	931.07	943.70		943.70	0.000035	0.92	1453.78	295.93	0.05
Main Reach	6123.259	10 YR	561.00	931.07	943.05		943.05	0.000030	0.82	1265.59	284.66	0.04
Main Reach	6123.259	Sept 2013	407.00	931.07	938.81		938.85	0.000313	1.85	321.48	121.17	0.13
Main Reach	6053.228	500 YR	1441.00	930.73	944.84		944.86	0.000077	1.20	1589.91	297.03	0.07
Main Reach	6053.228	100 YR	944.00	930.73	944.19		944.20	0.000045	0.87	1402.98	276.17	0.05
Main Reach	6053.228	50 YR	870.00	930.73	944.06		944.07	0.000041	0.82	1367.68	272.00	0.05
Main Reach	6053.228	25 YR	728.00	930.73	943.69		943.70	0.000035	0.73	1268.52	265.88	0.05
Main Reach	6053.228	10 YR	561.00	930.73	943.05		943.05	0.000030	0.64	1099.18	257.22	0.04
Main Reach	6053.228	Sept 2013	407.00	930.73	938.80		938.82	0.000259	1.31	310.61	76.70	0.11
Main Reach	5756.054	500 YR	1441.00	928.65	944.82		944.84	0.000072	1.60	1869.69	334.03	0.07
Main Reach	5756.054	100 YR	944.00	928.65	944.18		944.19	0.000042	1.19	1658.32	322.83	0.06
Main Reach	5756.054	50 YR	870.00	928.65	944.05		944.06	0.000038	1.13	1617.24	320.61	0.05
Main Reach	5756.054	25 YR	728.00	928.65	943.68		943.69	0.000031	0.99	1504.67	294.36	0.05
Main Reach	5756.054	10 YR	561.00	928.65	943.04		943.04	0.000016	0.68	1355.20	180.25	0.03
Main Reach	5756.054	Sept 2013	407.00	928.65	938.79		938.79	0.000035	0.79	752.20	126.81	0.05
Main Reach	5693.757	500 YR	1756.00	928.72	944.79	935.95	944.83	0.000132	2.14	1624.75	315.86	0.10
Main Reach	5693.757	100 YR	1136.00	928.72	944.16	934.83	944.18	0.000075	1.57	1429.36	305.86	0.07
Main Reach	5693.757	50 YR	1048.00	928.72	944.03	934.66	944.05	0.000068	1.48	1390.95	304.02	0.07
Main Reach	5693.757	25 YR	856.00	928.72	943.67	934.20	943.69	0.000042	1.14	1308.13	213.68	0.05
Main Reach	5693.757	10 YR	652.00	928.72	943.03	933.61	943.04	0.000027	0.88	1186.36	170.70	0.04
Main Reach	5693.757	Sept 2013	466.00	928.72	938.73	932.25	938.78	0.000222	2.06	288.92	117.65	0.12
Main Reach	5628		Culvert									
Main Reach	5563.619	500 YR	1756.00	928.38	935.44	934.23	936.76	0.006594	9.08	190.51	62.48	0.61
Main Reach	5563.619	100 YR	1136.00	928.38	934.36	933.20	935.21	0.005650	7.49	153.66	54.40	0.55
Main Reach	5563.619	50 YR	1048.00	928.38	934.15	933.03	934.95	0.005606	7.28	146.68	52.70	0.55
Main Reach	5563.619	25 YR	856.00	928.38	933.65	932.65	934.33	0.005621	6.84	129.51	48.48	0.54
Main Reach	5563.619	10 YR	652.00	928.38	933.01	932.06	933.60	0.005880	6.39	107.68	43.08	0.54
Main Reach	5563.619	Sept 2013	466.00	928.38	932.25	931.35	932.79	0.006748	6.04	82.03	37.58	0.56
Main Reach	5305.900	500 YR	1756.00	925.97	933.75	932.68	934.76	0.007776	8.32	232.66	93.33	0.63
Main Reach	5305.900	100 YR	1136.00	925.97	932.43		933.34	0.009376	7.70	149.72	42.17	0.66
Main Reach	5305.900	50 YR	1048.00	925.97	932.22		933.09	0.009362	7.50	141.07	39.72	0.66
Main Reach	5305.900	25 YR	856.00	925.97	931.72		932.48	0.009233	6.99	122.75	35.21	0.64
Main Reach	5305.900	10 YR	652.00	925.97	931.10		931.74	0.008903	6.38	102.24	30.96	0.62
Main Reach	5305.900	Sept 2013	466.00	925.97	930.39		930.89	0.007870	5.69	81.84	26.49	0.57
Main Reach	5071.544	500 YR	1756.00	924.71	931.05	930.92	932.54	0.011243	10.39	214.32	79.02	0.79

HEC-RAS Plan: WD LA AC (Continued)

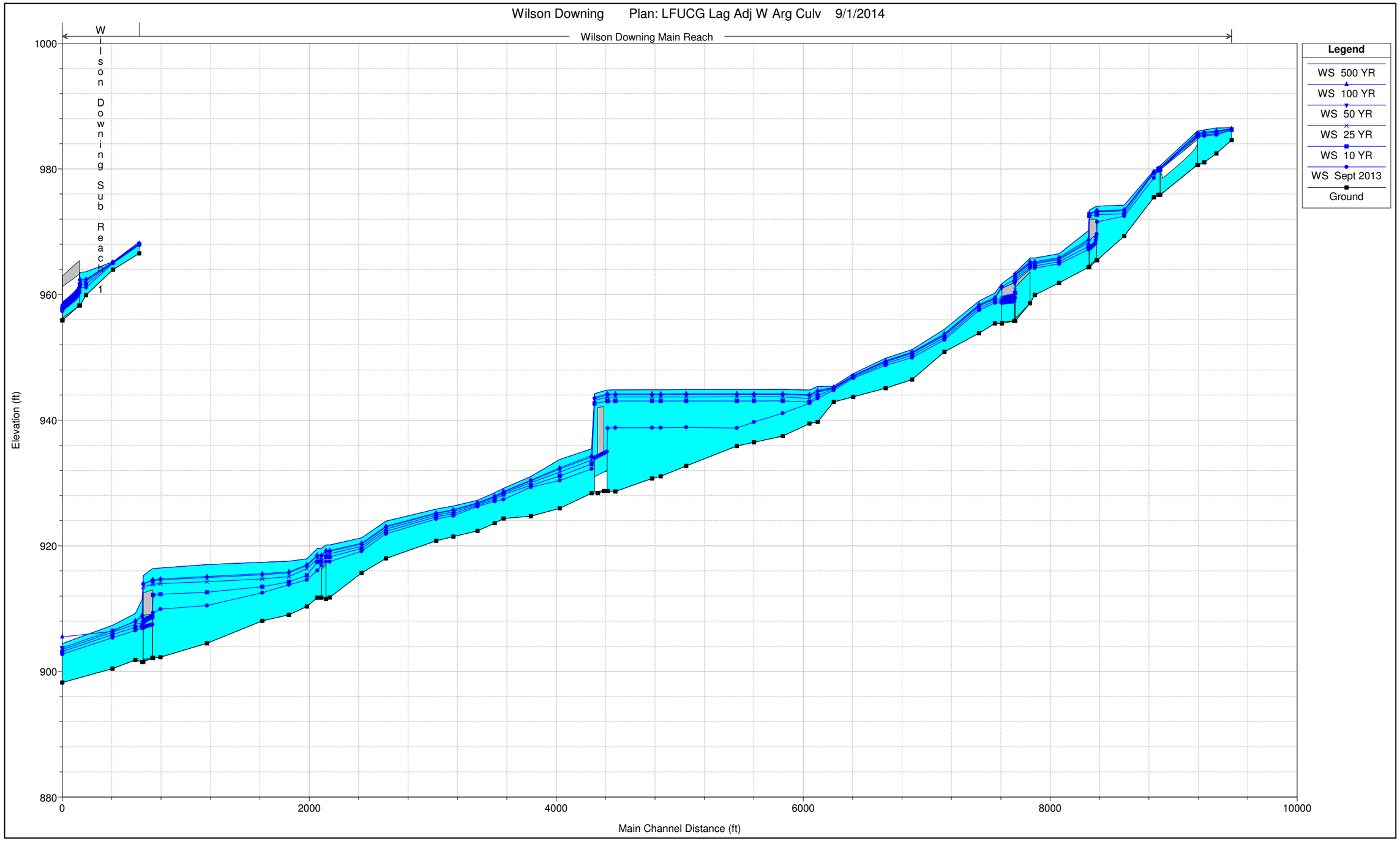
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Reach	5071.544	100 YR	1136.00	924.71	930.45	929.58	931.35	0.007693	7.93	170.93	64.92	0.64
Main Reach	5071.544	50 YR	1048.00	924.71	930.35	929.40	931.17	0.007134	7.53	164.44	62.54	0.62
Main Reach	5071.544	25 YR	856.00	924.71	930.05		930.70	0.006161	6.69	146.68	55.50	0.57
Main Reach	5071.544	10 YR	652.00	924.71	929.65		930.14	0.005133	5.73	126.06	48.64	0.51
Main Reach	5071.544	Sept 2013	466.00	924.71	929.33		929.64	0.003571	4.52	111.40	44.50	0.42
Main Reach	4849.785	500 YR	1756.00	924.35	929.15	929.15	929.83	0.010985	9.01	294.57	191.57	0.74
Main Reach	4849.785	100 YR	1136.00	924.35	928.66	928.66	929.27	0.010584	8.20	205.68	162.48	0.71
Main Reach	4849.785	50 YR	1048.00	924.35	928.56	928.56	929.18	0.010711	8.13	190.85	156.57	0.71
Main Reach	4849.785	25 YR	856.00	924.35	928.38	928.38	928.95	0.010039	7.63	163.60	145.11	0.69
Main Reach	4849.785	10 YR	652.00	924.35	928.16	928.16	928.66	0.008862	6.89	132.29	133.60	0.64
Main Reach	4849.785	Sept 2013	466.00	924.35	927.37	927.37	928.15	0.015318	7.68	74.76	52.16	0.81
Main Reach	4778.794	500 YR	1756.00	923.61	928.45		928.69	0.002498	4.17	494.94	234.11	0.35
Main Reach	4778.794	100 YR	1136.00	923.61	927.91		928.09	0.002506	3.84	370.46	225.48	0.34
Main Reach	4778.794	50 YR	1048.00	923.61	927.83		927.99	0.002469	3.75	350.85	220.22	0.34
Main Reach	4778.794	25 YR	856.00	923.61	927.61		927.76	0.002409	3.57	304.73	207.31	0.33
Main Reach	4778.794	10 YR	652.00	923.61	927.36		927.48	0.002273	3.31	254.62	192.31	0.31
Main Reach	4778.794	Sept 2013	466.00	923.61	927.08		927.18	0.002126	3.02	203.77	175.79	0.30
Main Reach	4639.102	500 YR	1756.00	922.39	927.25	927.23	928.01	0.011672	8.43	259.54	162.07	0.71
Main Reach	4639.102	100 YR	1136.00	922.39	926.85	926.82	927.43	0.011240	7.76	195.75	151.36	0.68
Main Reach	4639.102	50 YR	1048.00	922.39	926.77	926.76	927.34	0.011328	7.69	184.78	149.45	0.69
Main Reach	4639.102	25 YR	856.00	922.39	926.64	926.64	927.13	0.010585	7.26	164.57	145.86	0.66
Main Reach	4639.102	10 YR	652.00	922.39	926.45	926.45	926.88	0.010261	6.91	137.46	140.91	0.64
Main Reach	4639.102	Sept 2013	466.00	922.39	926.27	926.27	926.64	0.008940	6.24	113.17	136.50	0.60
Main Reach	4441.998	500 YR	1756.00	921.46	926.34		926.67	0.004198	5.48	397.84	200.35	0.46
Main Reach	4441.998	100 YR	1136.00	921.46	925.75		926.03	0.004824	5.33	283.03	181.32	0.48
Main Reach	4441.998	50 YR	1048.00	921.46	925.65		925.92	0.004912	5.28	265.09	175.79	0.49
Main Reach	4441.998	25 YR	856.00	921.46	925.41		925.67	0.005172	5.18	224.32	162.53	0.49
Main Reach	4441.998	10 YR	652.00	921.46	925.12		925.36	0.005524	5.04	179.22	146.41	0.50
Main Reach	4441.998	Sept 2013	466.00	921.46	924.78		925.01	0.006279	4.98	133.10	127.62	0.52
Main Reach	4303.387	500 YR	1756.00	920.81	925.85		926.16	0.003239	5.32	405.09	191.64	0.43
Main Reach	4303.387	100 YR	1136.00	920.81	925.24		925.49	0.003154	4.80	296.76	165.25	0.41
Main Reach	4303.387	50 YR	1048.00	920.81	925.14		925.37	0.003135	4.71	280.44	161.08	0.41
Main Reach	4303.387	25 YR	856.00	920.81	924.90		925.11	0.003095	4.49	242.66	150.31	0.40
Main Reach	4303.387	10 YR	652.00	920.81	924.62	923.83	924.79	0.002945	4.16	202.15	137.82	0.39
Main Reach	4303.387	Sept 2013	466.00	920.81	924.29		924.43	0.002781	3.79	159.24	119.73	0.37
Main Reach	3894.903	500 YR	1756.00	918.00	923.94		924.38	0.005540	5.03	330.41	149.19	0.50
Main Reach	3894.903	100 YR	1136.00	918.00	923.11	922.68	923.53	0.007166	5.51	216.97	121.89	0.56
Main Reach	3894.903	50 YR	1048.00	918.00	922.97	922.59	923.40	0.007453	5.60	200.83	117.40	0.57
Main Reach	3894.903	25 YR	856.00	918.00	922.67	922.39	923.10	0.008119	5.66	167.24	108.35	0.59
Main Reach	3894.903	10 YR	652.00	918.00	922.30	922.14	922.73	0.009437	5.76	128.85	97.51	0.63
Main Reach	3894.903	Sept 2013	466.00	918.00	921.90	921.83	922.36	0.010812	5.78	92.58	83.30	0.66
Main Reach	3696.721	500 YR	1756.00	915.68	921.26	921.26	922.70	0.012612	10.21	184.64	63.47	0.82
Main Reach	3696.721	100 YR	1136.00	915.68	920.41	920.41	921.57	0.013349	9.23	133.84	55.91	0.81
Main Reach	3696.721	50 YR	1048.00	915.68	920.27	920.27	921.39	0.013506	9.06	126.03	54.65	0.81
Main Reach	3696.721	25 YR	856.00	915.68	919.93	919.93	920.96	0.014032	8.69	108.00	51.63	0.82
Main Reach	3696.721	10 YR	652.00	915.68	919.56	919.56	920.45	0.013741	7.99	89.79	48.39	0.79
Main Reach	3696.721	Sept 2013	466.00	915.68	919.14	919.14	919.90	0.013951	7.30	69.89	44.59	0.78
Main Reach	3438.489	500 YR	2581.00	911.76	920.15	917.95	920.28	0.000688	3.00	905.98	256.19	0.19
Main Reach	3438.489	100 YR	1642.00	911.76	919.25	917.41	919.35	0.000678	2.74	681.90	246.09	0.19
Main Reach	3438.489	50 YR	1525.00	911.76	919.12	917.33	919.21	0.000683	2.71	648.94	244.62	0.19
Main Reach	3438.489	25 YR	1221.00	911.76	918.73	917.08	918.81	0.000718	2.66	553.47	240.33	0.19
Main Reach	3438.489	10 YR	922.00	911.76	918.25	916.80	918.32	0.000813	2.68	440.42	231.75	0.20
Main Reach	3438.489	Sept 2013	641.00	911.76	917.48	916.35	917.58	0.001248	3.01	279.33	180.27	0.24
Main Reach	3356		Bridge									
Main Reach	3334.342	500 YR	2581.00	911.75	919.59	918.46	919.96	0.004076	6.56	660.43	227.48	0.43
Main Reach	3334.342	100 YR	1642.00	911.75	918.51	917.83	918.89	0.004672	6.30	438.20	184.03	0.45
Main Reach	3334.342	50 YR	1525.00	911.75	918.35	917.74	918.73	0.004813	6.28	408.75	181.91	0.46
Main Reach	3334.342	25 YR	1221.00	911.75	917.89	917.46	918.31	0.005317	6.25	326.93	175.31	0.47
Main Reach	3334.342	10 YR	922.00	911.75	917.40	917.09	917.85	0.005830	6.14	242.21	164.43	0.49
Main Reach	3334.342	Sept 2013	641.00	911.75	916.08	915.33	917.11	0.010585	8.14	78.72	37.11	0.72
Main Reach	3250.755	500 YR	2581.00	910.35	917.91	917.91	919.21	0.011498	10.25	362.56	151.07	0.79
Main Reach	3250.755	100 YR	1642.00	910.35	916.99	916.99	918.12	0.011702	9.08	236.77	122.06	0.77
Main Reach	3250.755	50 YR	1525.00	910.35	916.84	916.84	917.96	0.011888	8.93	218.74	117.39	0.77
Main Reach	3250.755	25 YR	1221.00	910.35	916.36	916.36	917.47	0.013056	8.63	166.44	102.64	0.79
Main Reach	3250.755	10 YR	922.00	910.35	915.28	915.28	916.71	0.022928	9.60	96.02	34.23	1.01

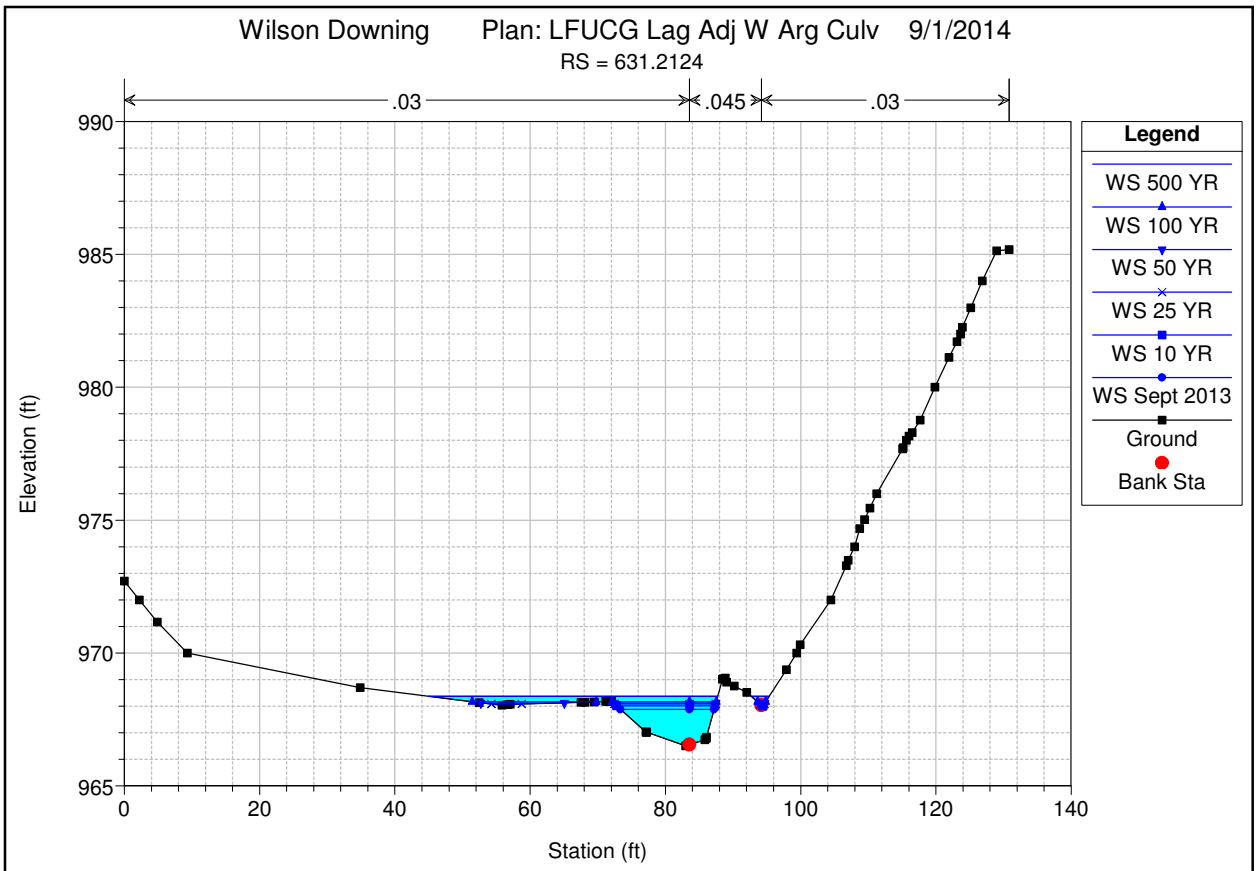
HEC-RAS Plan: WD LA AC (Continued)

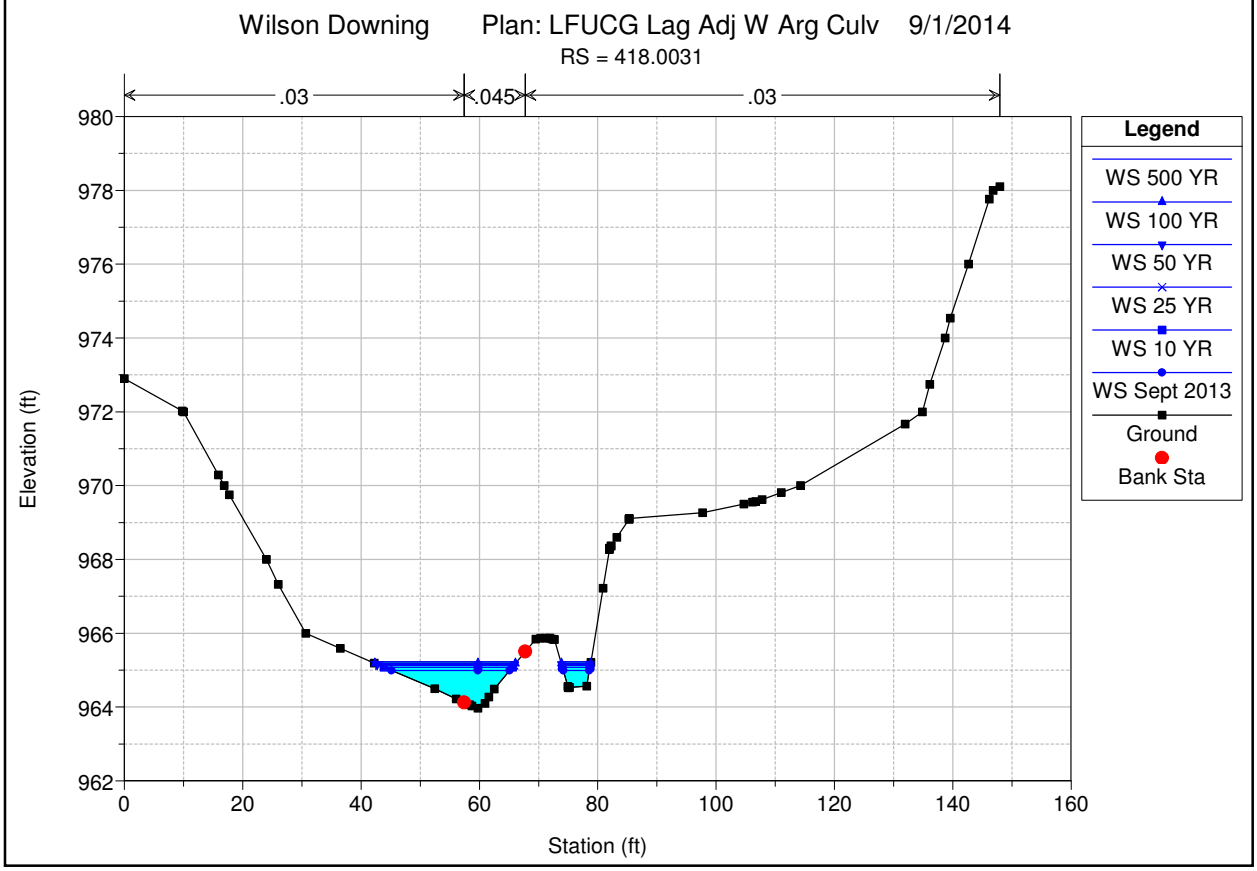
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Main Reach	3250.755	Sept 2013	641.00	910.35	914.57	914.57	915.77	0.023669	8.80	72.86	30.43	1.00
Main Reach	3105.682	500 YR	2581.00	909.01	917.57		917.76	0.001453	4.80	887.77	201.37	0.31
Main Reach	3105.682	100 YR	1642.00	909.01	915.86		916.04	0.001716	4.40	582.07	159.42	0.32
Main Reach	3105.682	50 YR	1525.00	909.01	915.68		915.85	0.001707	4.30	553.51	157.40	0.32
Main Reach	3105.682	25 YR	1221.00	909.01	915.08		915.24	0.001839	4.14	460.82	150.99	0.32
Main Reach	3105.682	10 YR	922.00	909.01	914.26		914.44	0.002445	4.25	340.59	142.24	0.36
Main Reach	3105.682	Sept 2013	641.00	909.01	913.78		913.91	0.002096	3.63	273.39	131.93	0.33
Main Reach	2889.186	500 YR	2581.00	908.05	917.37		917.49	0.000968	3.93	1060.83	210.82	0.24
Main Reach	2889.186	100 YR	1642.00	908.05	915.57		915.70	0.001406	4.00	691.25	199.18	0.28
Main Reach	2889.186	50 YR	1525.00	908.05	915.39		915.51	0.001421	3.95	654.71	197.45	0.28
Main Reach	2889.186	25 YR	1221.00	908.05	914.73		914.86	0.001704	4.00	526.82	191.02	0.30
Main Reach	2889.186	10 YR	922.00	908.05	913.49		913.75	0.004333	5.36	300.05	167.38	0.46
Main Reach	2889.186	Sept 2013	641.00	908.05	912.53	912.45	913.04	0.009553	6.67	154.42	134.33	0.66
Main Reach	2442.163	500 YR	2581.00	904.48	917.01		917.13	0.000649	4.05	1135.01	205.04	0.21
Main Reach	2442.163	100 YR	1642.00	904.48	915.11		915.24	0.000764	3.91	756.78	185.15	0.22
Main Reach	2442.163	50 YR	1525.00	904.48	914.94		915.07	0.000726	3.77	726.13	181.09	0.21
Main Reach	2442.163	25 YR	1221.00	904.48	914.28		914.39	0.000693	3.51	611.32	165.03	0.21
Main Reach	2442.163	10 YR	922.00	904.48	912.62		912.80	0.001216	4.06	369.75	125.92	0.26
Main Reach	2442.163	Sept 2013	641.00	904.48	910.50		910.83	0.002899	5.00	168.89	64.42	0.39
Main Reach	2065.195	500 YR	2854.00	902.28	916.47		916.80	0.001096	5.68	810.80	130.82	0.28
Main Reach	2065.195	100 YR	1813.00	902.28	914.71		914.93	0.000831	4.49	604.64	100.00	0.24
Main Reach	2065.195	50 YR	1681.00	902.28	914.59		914.78	0.000750	4.23	591.93	98.45	0.22
Main Reach	2065.195	25 YR	1349.00	902.28	914.00		914.14	0.000606	3.67	535.92	91.34	0.20
Main Reach	2065.195	10 YR	1017.00	902.28	912.29		912.44	0.000742	3.61	392.28	76.73	0.21
Main Reach	2065.195	Sept 2013	695.00	902.28	909.92		910.10	0.001273	3.83	233.41	58.36	0.27
Main Reach	2004.315	500 YR	2854.00	902.15	916.35	912.01	916.71	0.001309	5.18	757.62	196.44	0.28
Main Reach	2004.315	100 YR	1813.00	902.15	914.56	909.59	914.85	0.001217	4.42	481.27	125.46	0.26
Main Reach	2004.315	50 YR	1681.00	902.15	914.45	909.24	914.71	0.001104	4.17	467.20	122.63	0.25
Main Reach	2004.315	25 YR	1349.00	902.15	913.88	908.30	914.08	0.000929	3.66	402.26	103.49	0.23
Main Reach	2004.315	10 YR	1017.00	902.15	912.18	907.31	912.37	0.001108	3.54	291.46	47.16	0.24
Main Reach	2004.315	Sept 2013	695.00	902.15	909.33	906.23	909.89	0.002617	5.99	116.02	34.26	0.40
Main Reach	1961		Culvert									
Main Reach	1917.110	500 YR	2854.00	901.52	911.49	911.49	916.26	0.014033	17.52	162.92	172.10	1.00
Main Reach	1917.110	100 YR	1813.00	901.52	908.99	908.99	912.51	0.015532	15.06	120.37	48.42	1.00
Main Reach	1917.110	50 YR	1681.00	901.52	908.64	908.64	911.99	0.015775	14.68	114.50	34.86	1.00
Main Reach	1917.110	25 YR	1349.00	901.52	907.72	907.72	910.62	0.016610	13.65	98.79	32.32	1.00
Main Reach	1917.110	10 YR	1017.00	901.52	907.25	906.72	909.20	0.012504	11.20	90.81	31.03	0.85
Main Reach	1917.110	Sept 2013	695.00	901.52	906.90	905.64	907.94	0.007322	8.19	84.85	27.02	0.65
Main Reach	1862.162	500 YR	2854.00	901.82	909.25	909.25	910.48	0.010041	10.52	336.35	138.04	0.74
Main Reach	1862.162	100 YR	1813.00	901.82	908.06	908.00	909.34	0.012168	10.05	204.66	81.88	0.79
Main Reach	1862.162	50 YR	1681.00	901.82	907.92	907.92	909.15	0.011987	9.80	193.85	78.54	0.78
Main Reach	1862.162	25 YR	1349.00	901.82	907.53	907.53	908.64	0.012048	9.29	164.12	71.49	0.77
Main Reach	1862.162	10 YR	1017.00	901.82	907.06	906.99	908.04	0.012074	8.64	132.58	63.13	0.76
Main Reach	1862.162	Sept 2013	695.00	901.82	906.54	906.41	907.32	0.011235	7.60	102.13	53.98	0.72
Main Reach	1676.452	500 YR	2854.00	900.44	907.35	907.06	908.19	0.007127	8.54	402.82	164.22	0.62
Main Reach	1676.452	100 YR	1813.00	900.44	906.38	906.38	907.27	0.009342	8.66	258.18	135.31	0.69
Main Reach	1676.452	50 YR	1681.00	900.44	906.55	906.28	907.18	0.006422	7.34	281.43	140.35	0.58
Main Reach	1676.452	25 YR	1349.00	900.44	906.25	905.94	906.83	0.006178	6.92	240.86	131.43	0.56
Main Reach	1676.452	10 YR	1017.00	900.44	905.87	905.46	906.39	0.005919	6.40	193.86	115.05	0.54
Main Reach	1676.452	Sept 2013	695.00	900.44	905.38	904.63	905.82	0.005434	5.66	143.69	89.28	0.51
Main Reach	1269.880	500 YR	2964.00	898.23	904.45	904.31	905.19	0.007502	8.12	448.37	223.23	0.63
Main Reach	1269.880	100 YR	1886.00	898.23	905.50	903.70	905.62	0.000851	3.09	701.73	258.11	0.22
Main Reach	1269.880	50 YR	1740.00	898.23	903.75	903.61	904.35	0.007508	7.37	301.21	190.46	0.61
Main Reach	1269.880	25 YR	1401.00	898.23	903.48	903.36	904.05	0.007514	7.08	253.45	174.06	0.61
Main Reach	1269.880	10 YR	1054.00	898.23	903.16	903.08	903.68	0.007502	6.71	200.08	149.87	0.60
Main Reach	1269.880	Sept 2013	713.00	898.23	902.74	902.62	903.23	0.007505	6.22	143.02	123.10	0.59
Sub Reach 1	631.2124	500 YR	83.00	966.55	968.37	968.24	968.53	0.009728	3.08	26.41	45.37	0.54
Sub Reach 1	631.2124	100 YR	75.00	966.55	968.16	967.96	968.46	0.009630	3.12	17.87	34.93	0.53
Sub Reach 1	631.2124	50 YR	71.00	966.55	968.12	967.92	968.43	0.009658	3.15	16.59	28.45	0.53
Sub Reach 1	631.2124	25 YR	67.00	966.55	968.08	967.89	968.39	0.009606	3.17	15.57	20.05	0.53
Sub Reach 1	631.2124	10 YR	60.00	966.55	968.01	967.81	968.30	0.009253	3.12	14.45	14.66	0.52
Sub Reach 1	631.2124	Sept 2013	48.00	966.55	967.88	967.67	968.12	0.008786	2.89	12.58	13.85	0.51
Sub Reach 1	418.0031	500 YR	83.00	963.97	965.23	965.23	965.55	0.021554	4.11	18.38	29.77	0.81
Sub Reach 1	418.0031	100 YR	75.00	963.97	965.18	965.18	965.49	0.022022	4.06	16.94	28.65	0.82

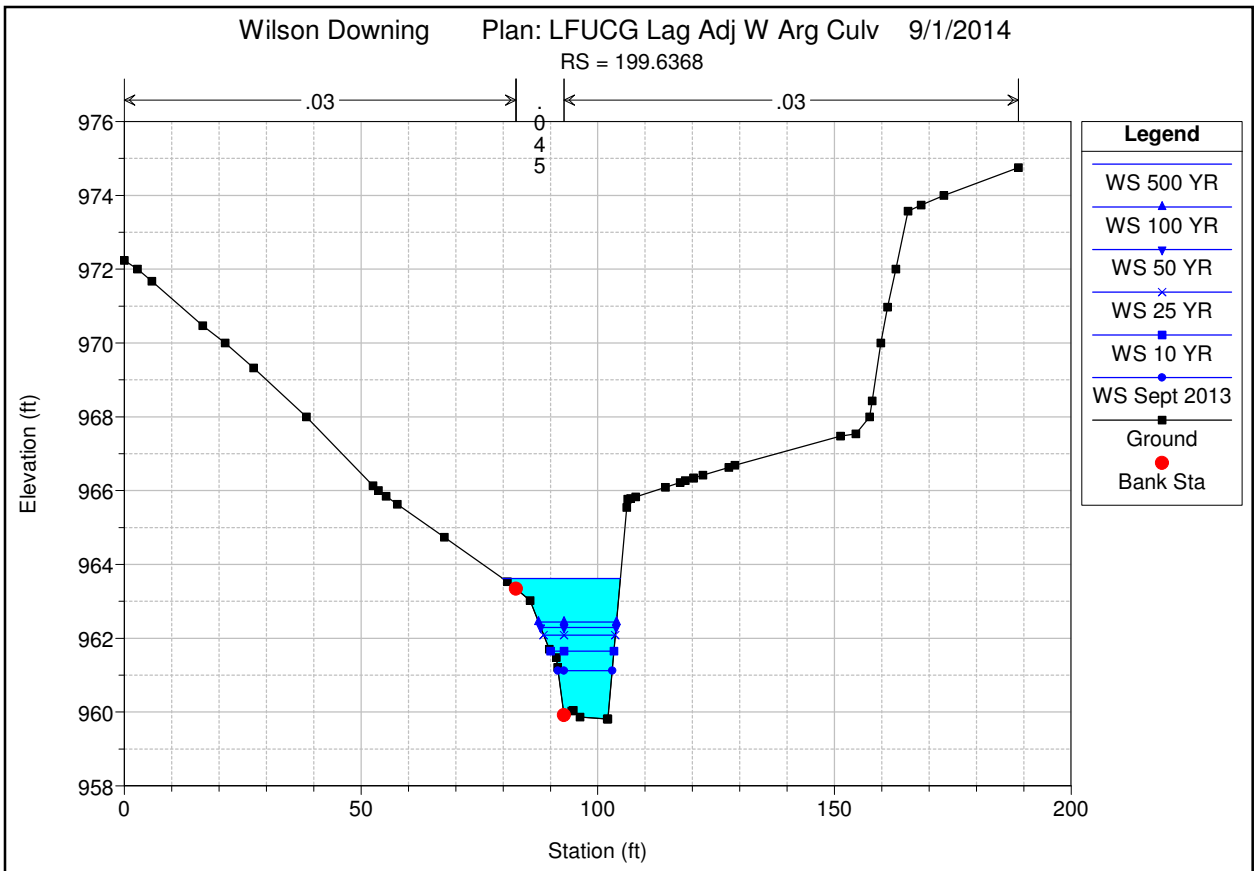
HEC-RAS Plan: WD LA AC (Continued)

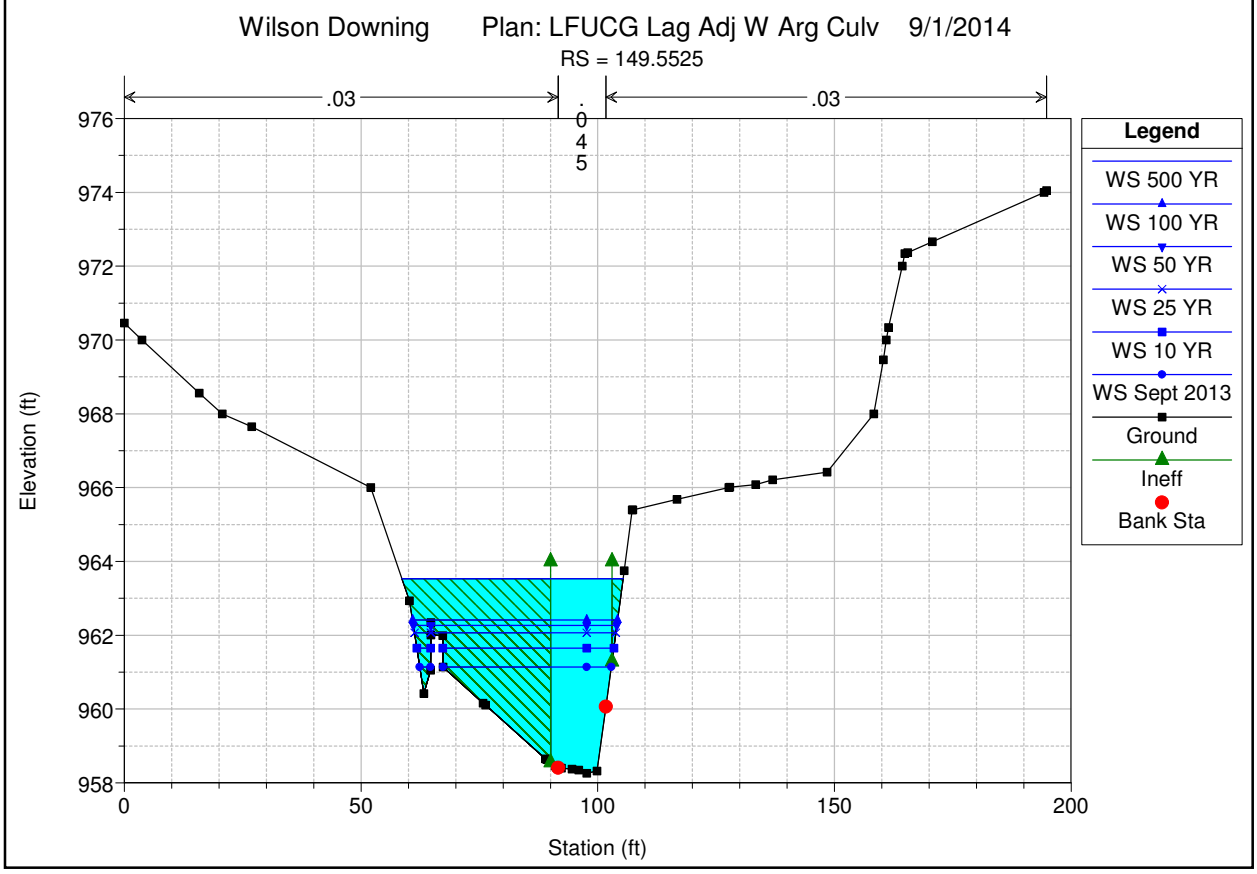
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Sub Reach 1	418.0031	50 YR	71.00	963.97	965.16	965.16	965.46	0.022138	4.02	16.25	28.08	0.82
Sub Reach 1	418.0031	25 YR	67.00	963.97	965.13	965.13	965.42	0.022021	3.97	15.60	27.54	0.81
Sub Reach 1	418.0031	10 YR	60.00	963.97	965.08	965.08	965.36	0.022804	3.93	14.22	26.36	0.82
Sub Reach 1	418.0031	Sept 2013	48.00	963.97	964.99	964.99	965.24	0.023530	3.81	11.95	24.33	0.83
Sub Reach 1	199.6368	500 YR	83.00	959.92	963.62		963.67	0.000338	0.72	54.26	24.86	0.11
Sub Reach 1	199.6368	100 YR	75.00	959.92	962.44		962.55	0.001104	0.95	31.06	16.49	0.17
Sub Reach 1	199.6368	50 YR	71.00	959.92	962.29		962.40	0.001225	0.94	28.64	15.93	0.18
Sub Reach 1	199.6368	25 YR	67.00	959.92	962.09		962.21	0.001490	0.95	25.46	15.16	0.19
Sub Reach 1	199.6368	10 YR	60.00	959.92	961.65		961.82	0.002546	1.02	19.26	13.36	0.23
Sub Reach 1	199.6368	Sept 2013	48.00	959.92	961.12		961.35	0.005348	1.38	12.85	11.44	0.31
Sub Reach 1	149.5525	500 YR	146.00	958.26	963.54	960.25	963.63	0.000553	2.18	62.73	46.75	0.17
Sub Reach 1	149.5525	100 YR	102.00	958.26	962.42	959.84	962.49	0.000644	1.99	48.16	43.32	0.18
Sub Reach 1	149.5525	50 YR	96.00	958.26	962.27	959.79	962.34	0.000651	1.95	46.25	42.98	0.18
Sub Reach 1	149.5525	25 YR	88.00	958.26	962.07	959.70	962.14	0.000661	1.90	43.64	42.50	0.18
Sub Reach 1	149.5525	10 YR	72.00	958.26	961.65	959.54	961.71	0.000681	1.77	38.21	39.02	0.18
Sub Reach 1	149.5525	Sept 2013	54.00	958.26	961.14	959.33	961.19	0.000702	1.60	31.61	37.80	0.17
Sub Reach 1	75		Culvert									
Sub Reach 1	7.2757	500 YR	146.00	955.90	958.34	957.85	958.85	0.010018	5.54	25.83	21.20	0.66
Sub Reach 1	7.2757	100 YR	102.00	955.90	957.93	957.50	958.31	0.010003	4.81	20.85	18.82	0.64
Sub Reach 1	7.2757	50 YR	96.00	955.90	957.87	957.45	958.23	0.010004	4.70	20.11	18.55	0.63
Sub Reach 1	7.2757	25 YR	88.00	955.90	957.78	957.37	958.12	0.010004	4.54	19.09	18.17	0.63
Sub Reach 1	7.2757	10 YR	72.00	955.90	957.60	957.23	957.89	0.010001	4.20	16.93	17.39	0.62
Sub Reach 1	7.2757	Sept 2013	54.00	955.90	957.38	957.05	957.60	0.010007	3.75	14.26	16.41	0.60

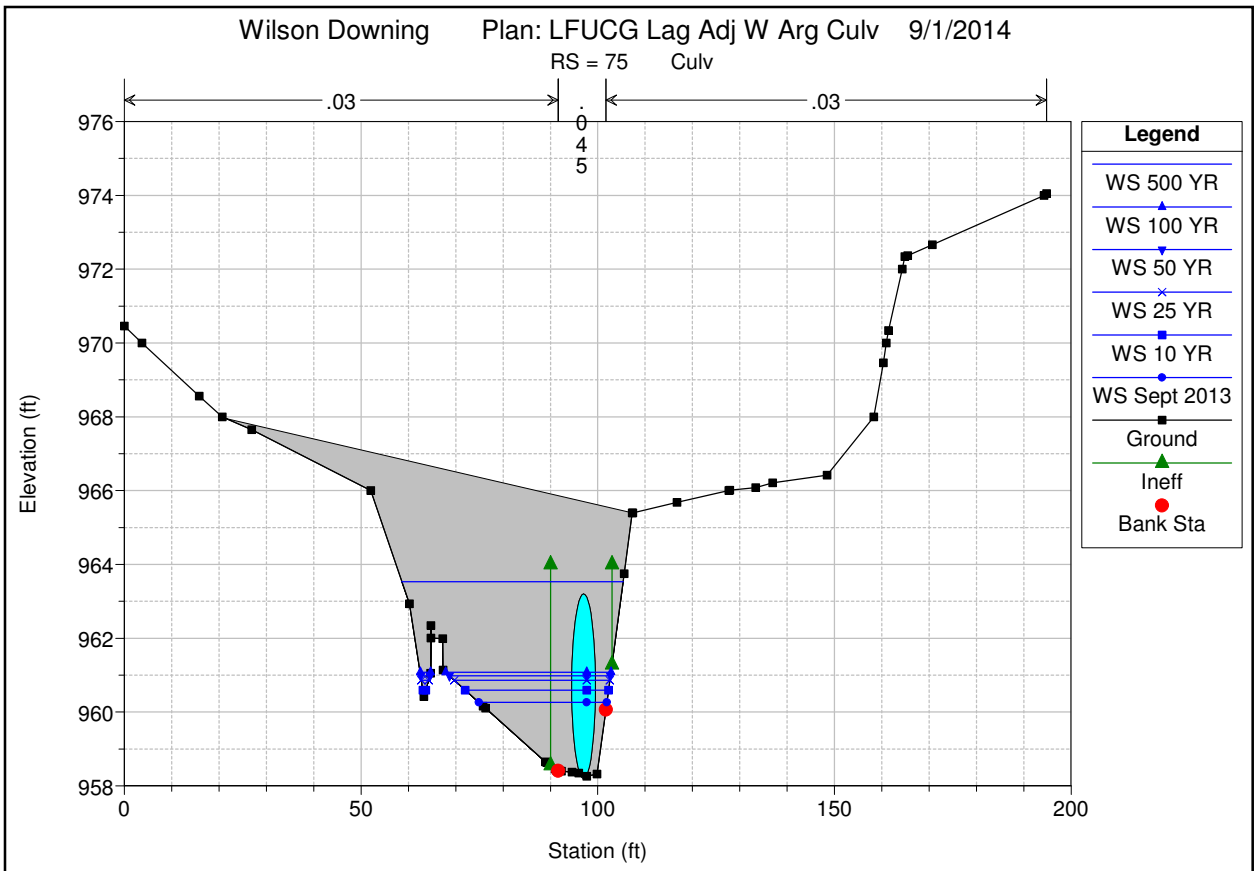

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
Wilson Downing Main Reach
Wilson Downing Sub Reach 1
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Elevation (ft)
1000
980
960
940
920
900
880
0
2000
4000
6000
8000
10000
Main Channel Distance (ft)

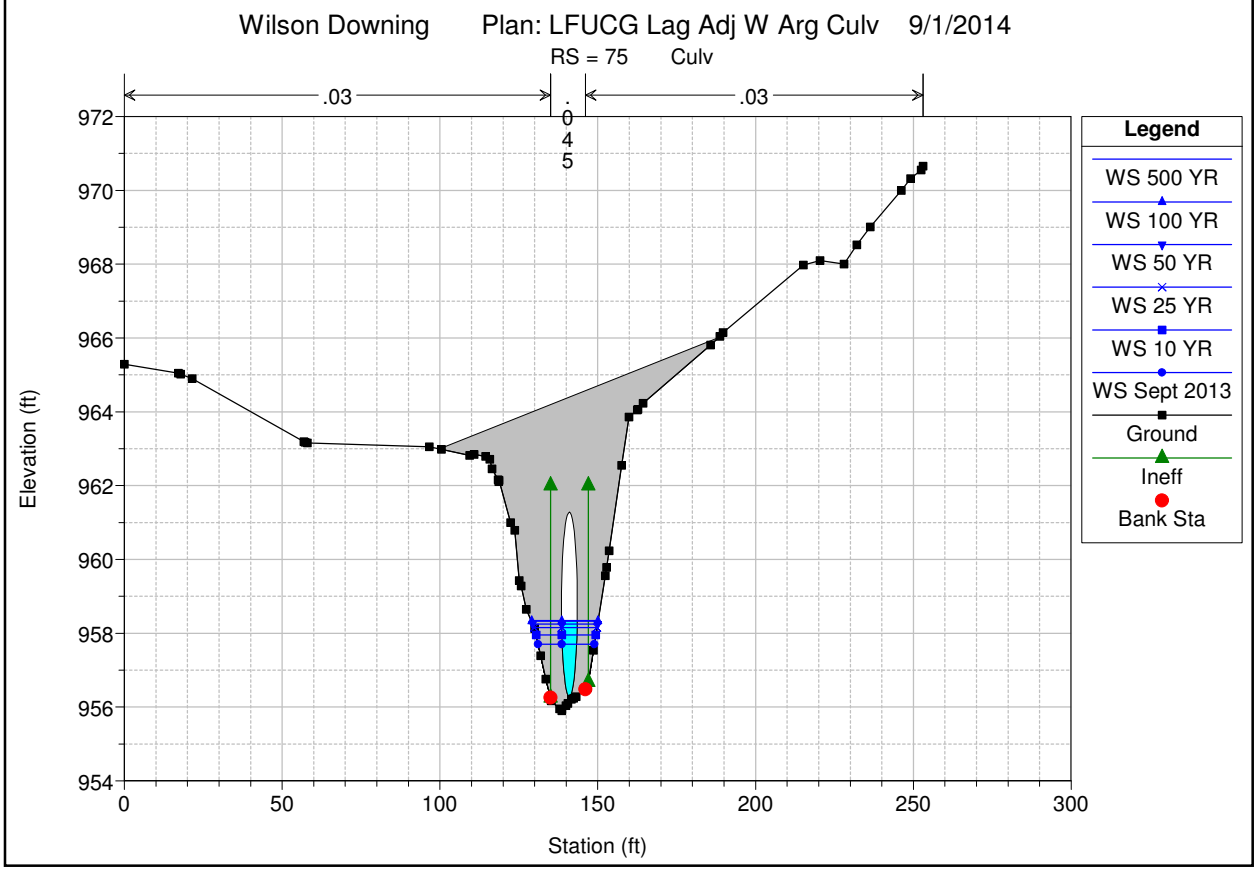

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 631.2124
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

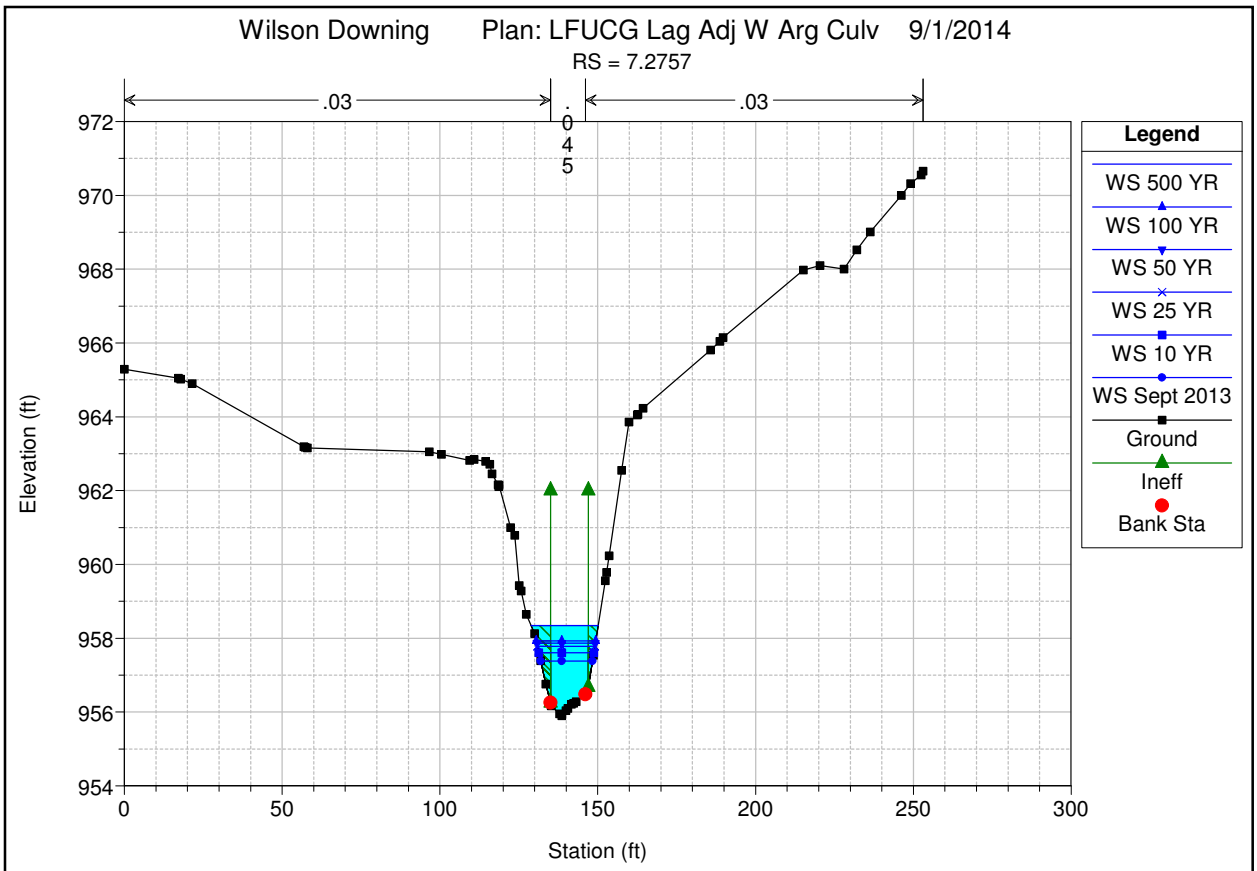

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 418.0031
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

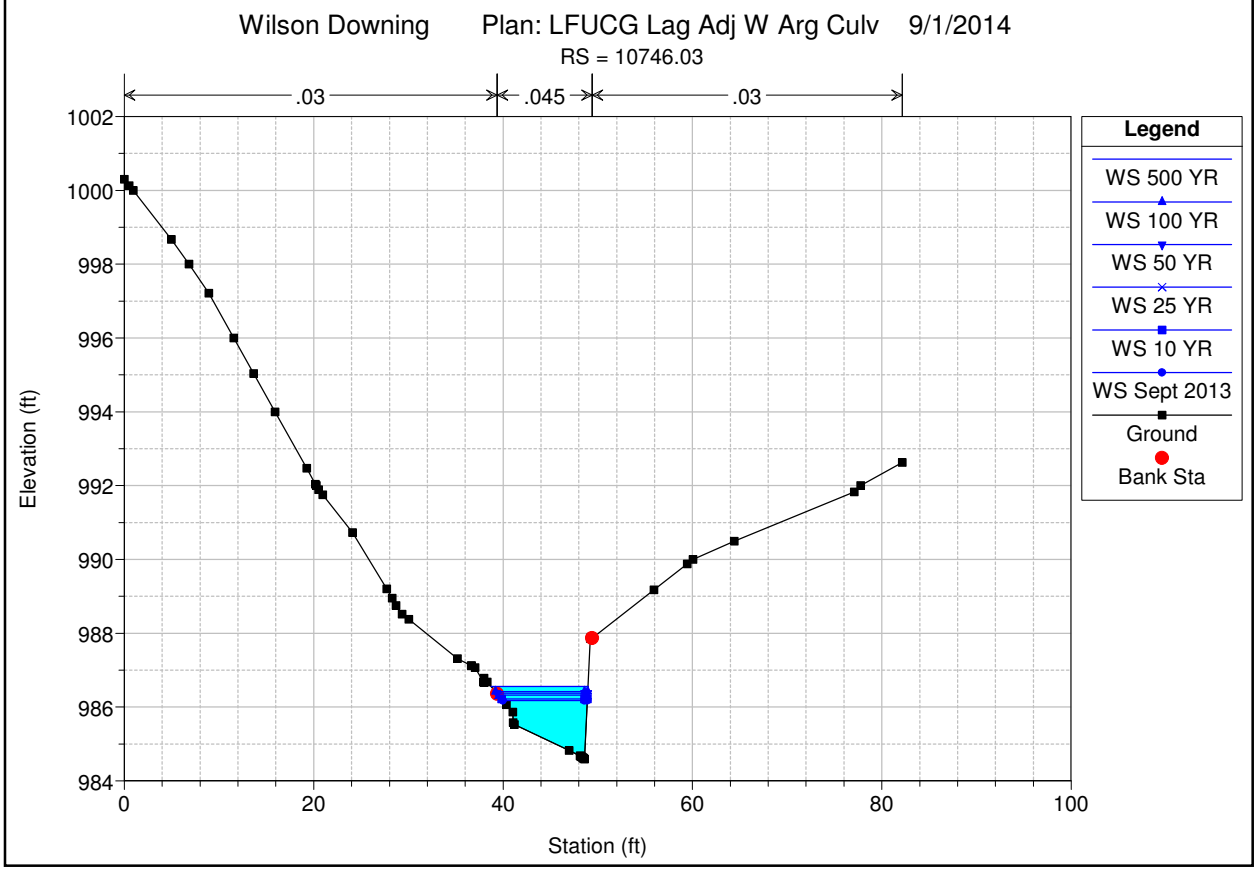

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 199.6368
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

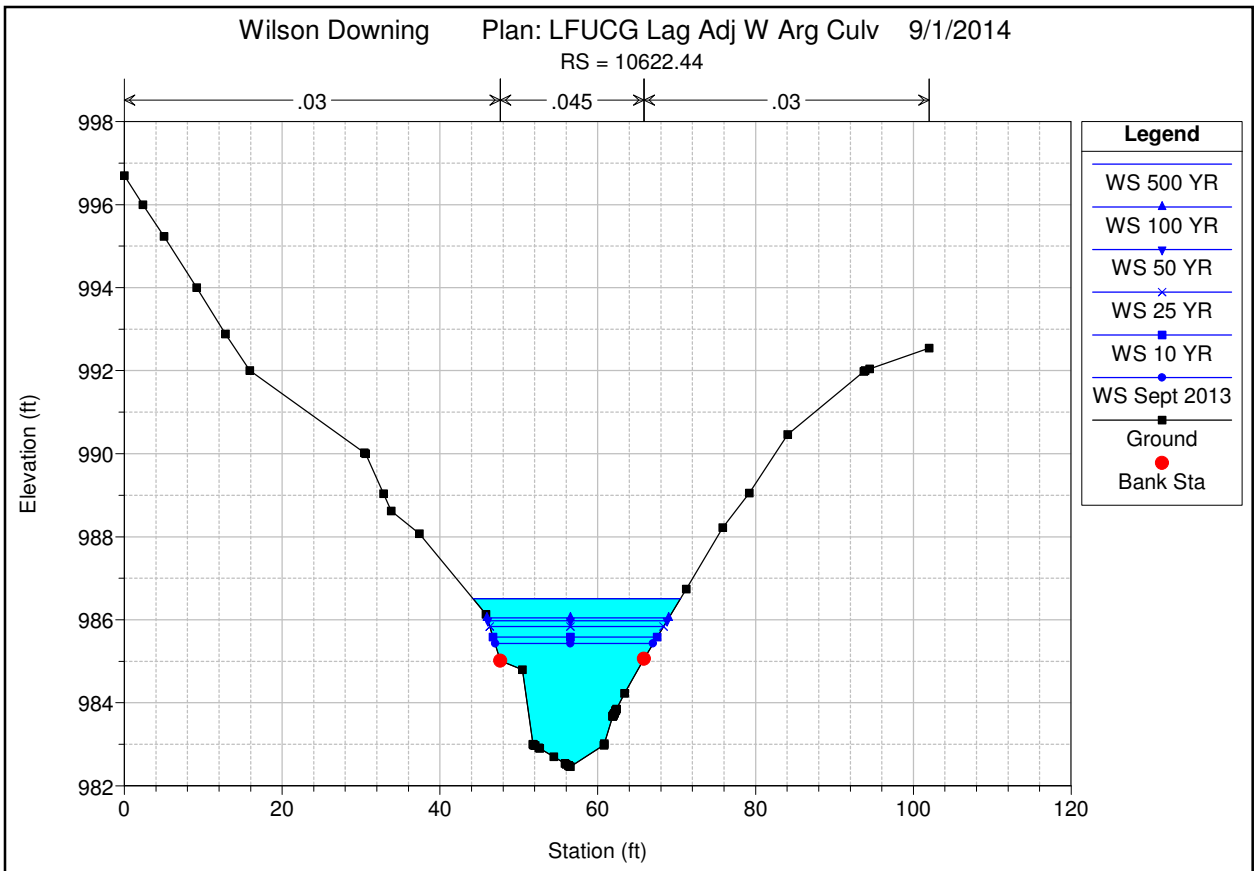

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 149.5525
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

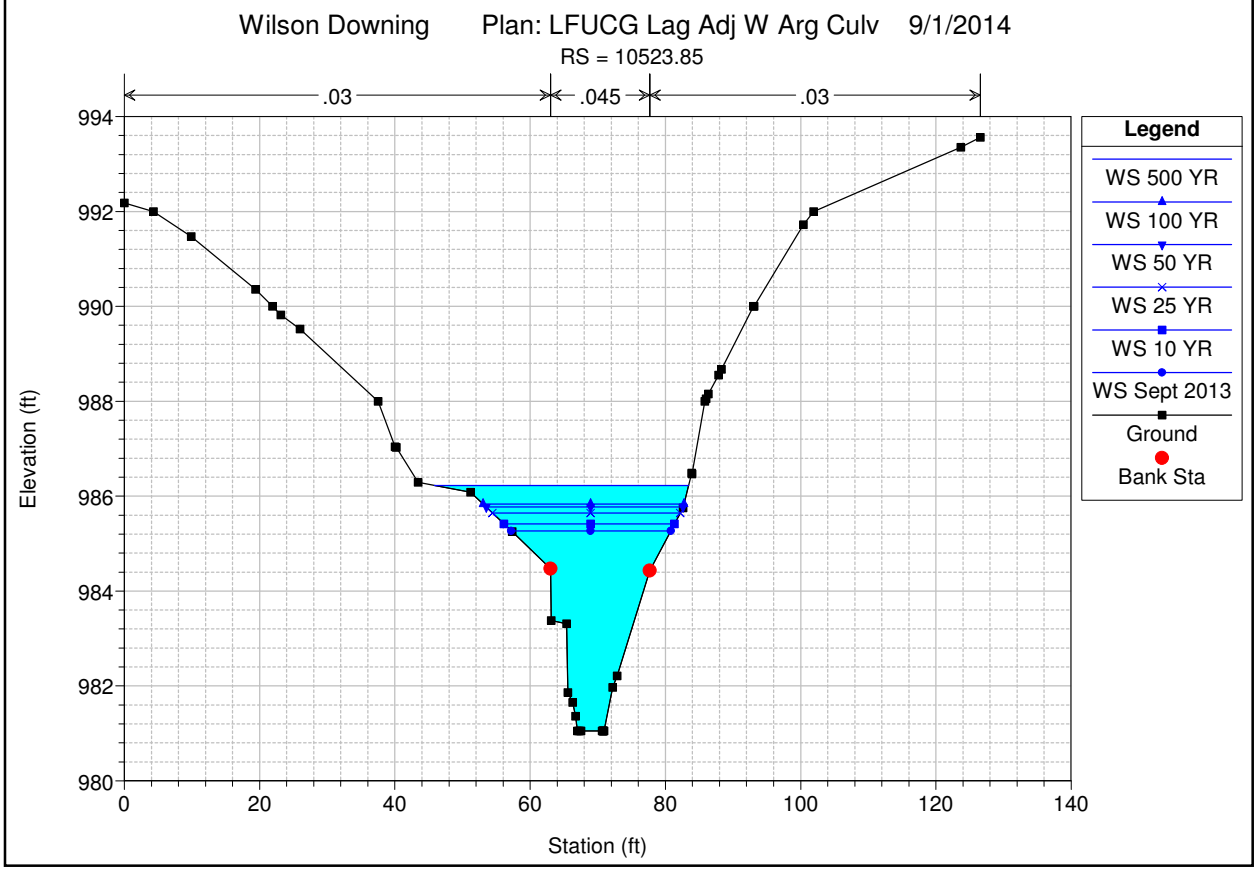

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 75 Culv
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

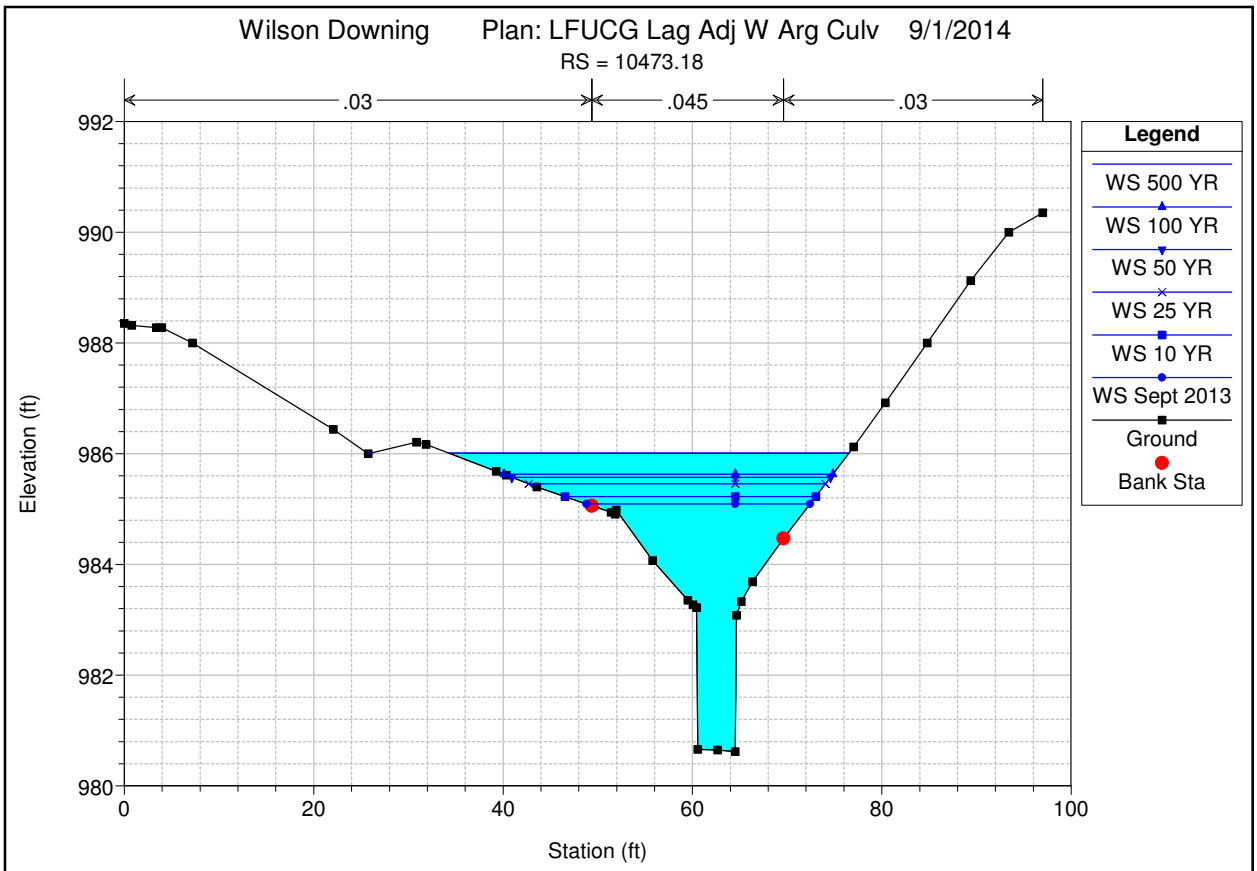

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 75 Culv
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

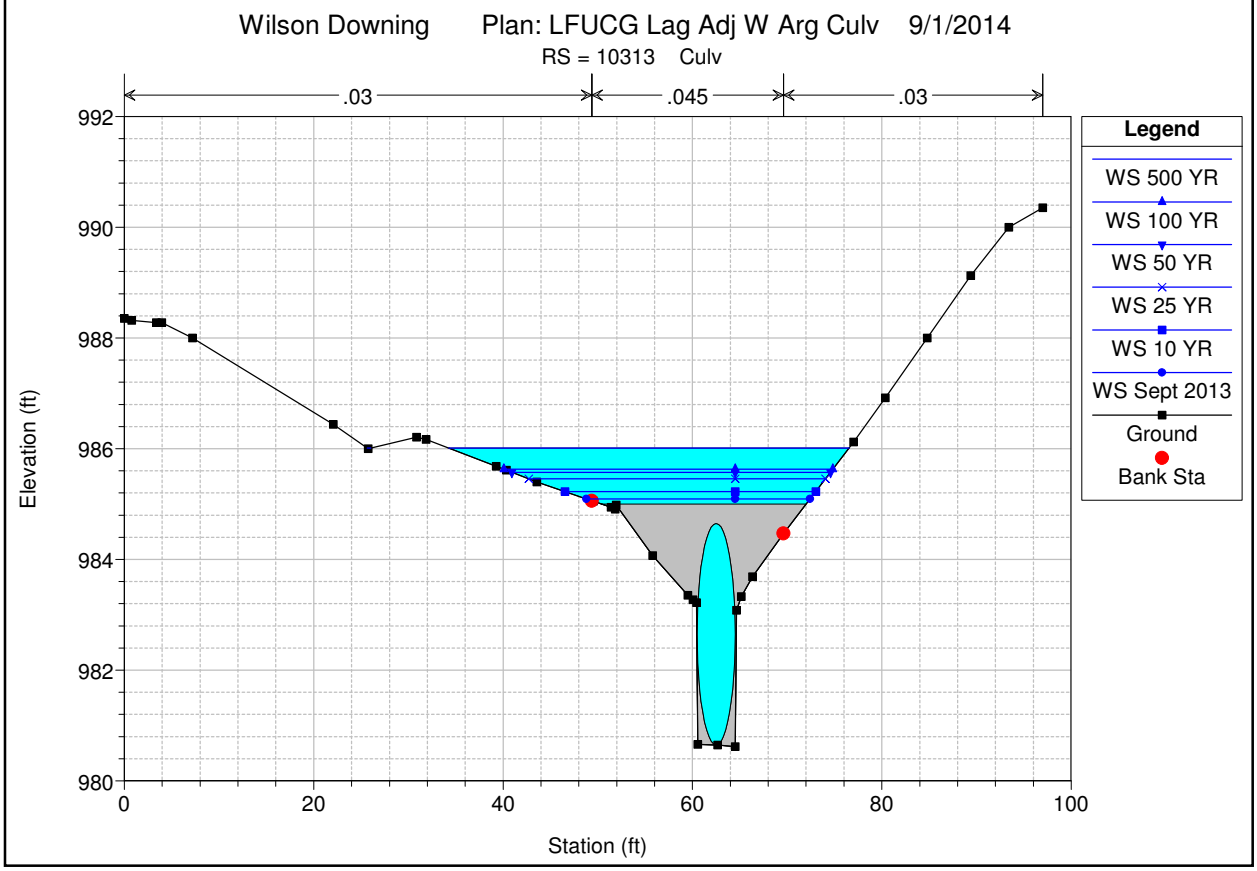

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 7.2757
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

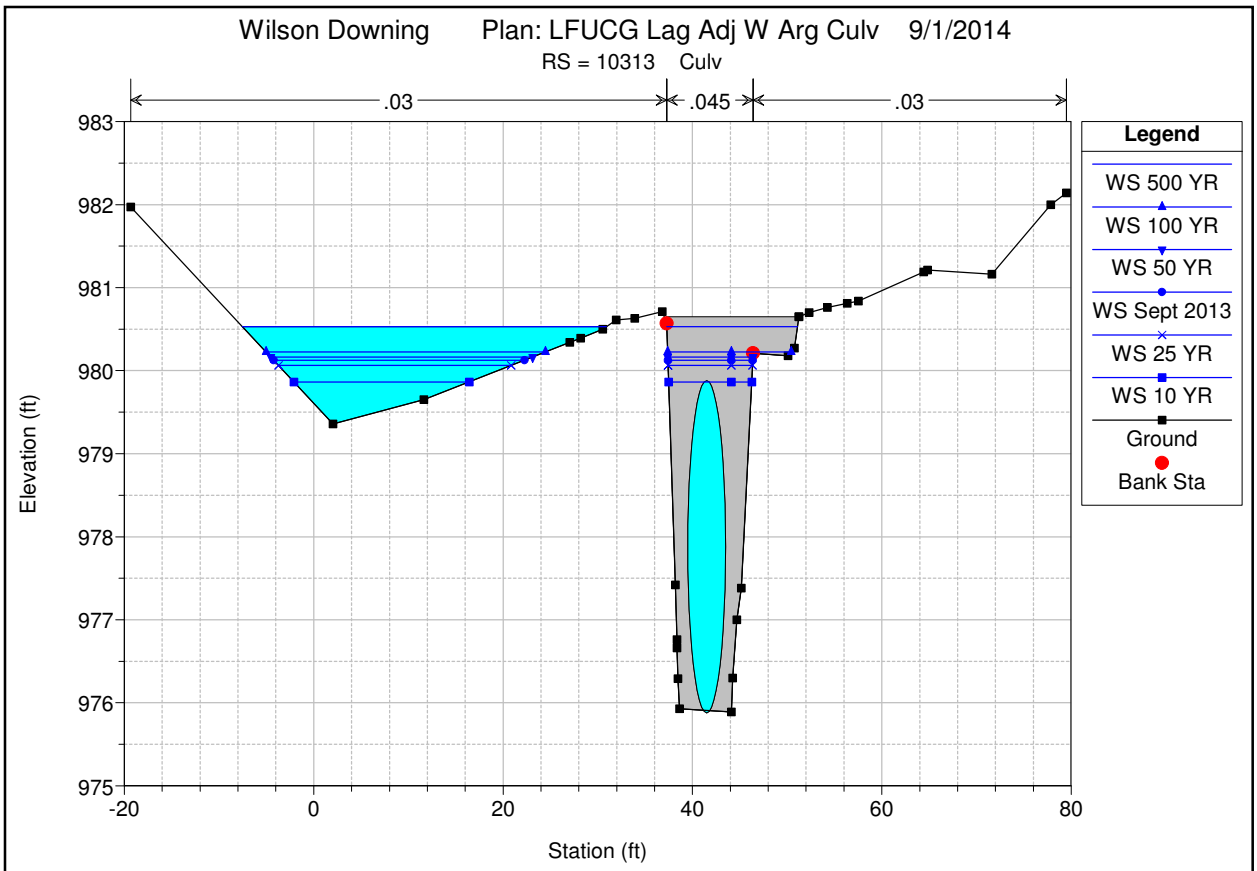

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 10746.03
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

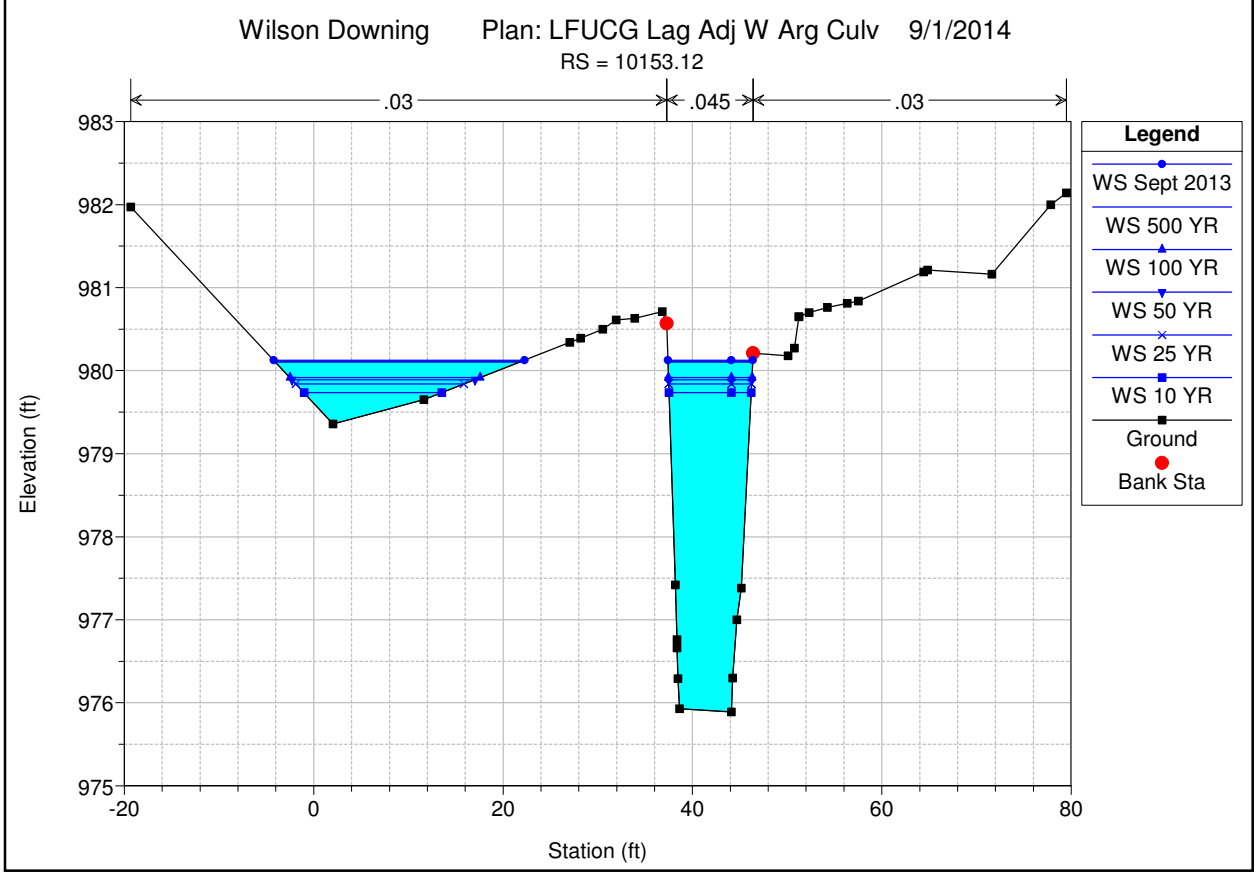

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 10622.44
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

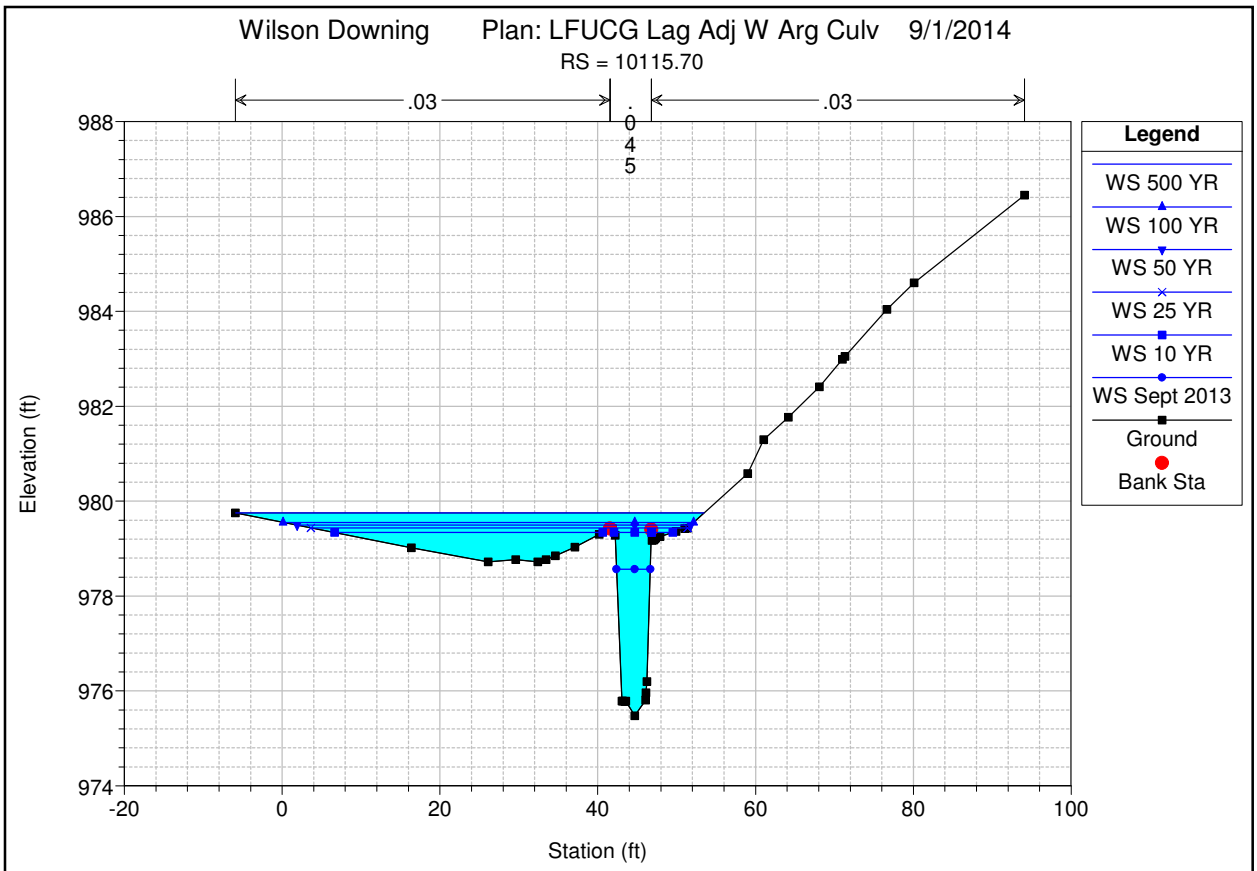

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 10523.85
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

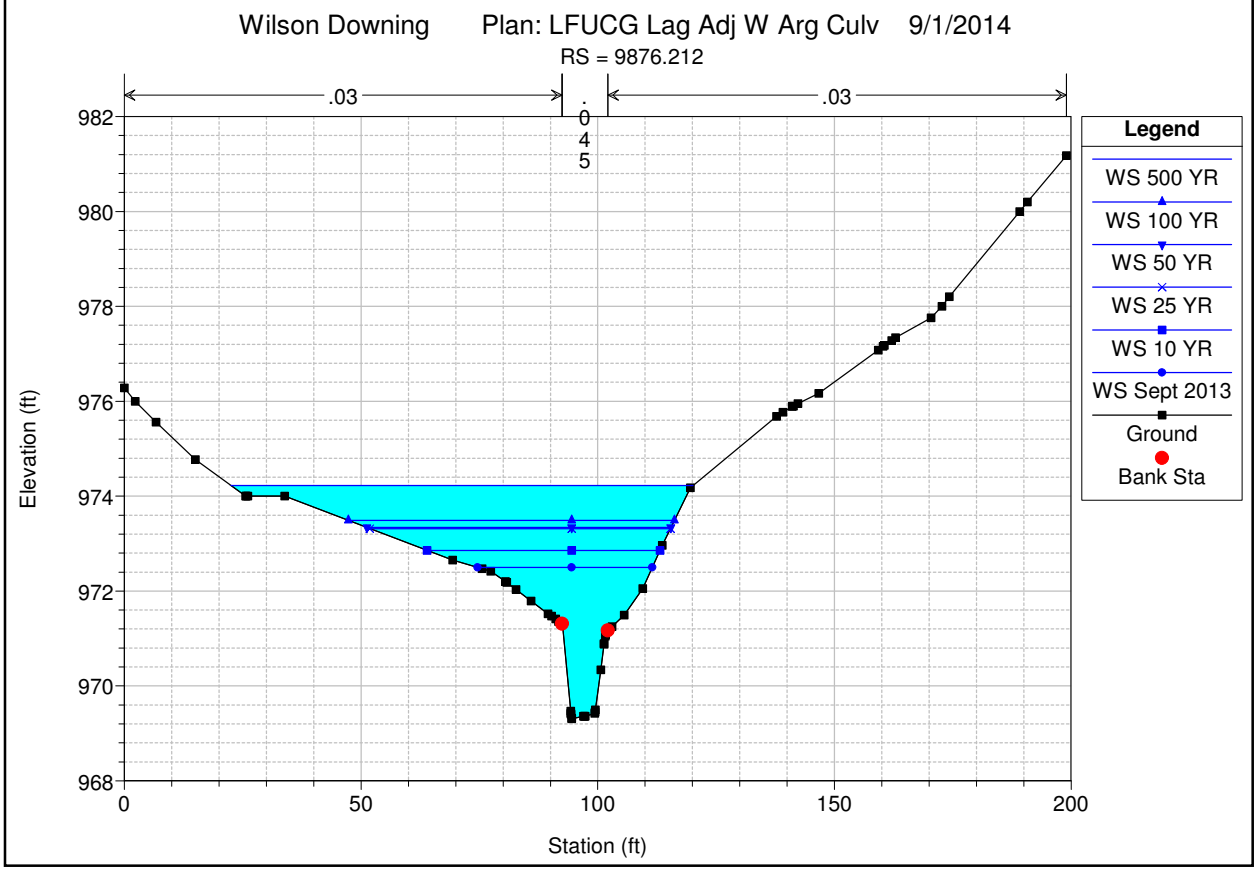

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 10473.18
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

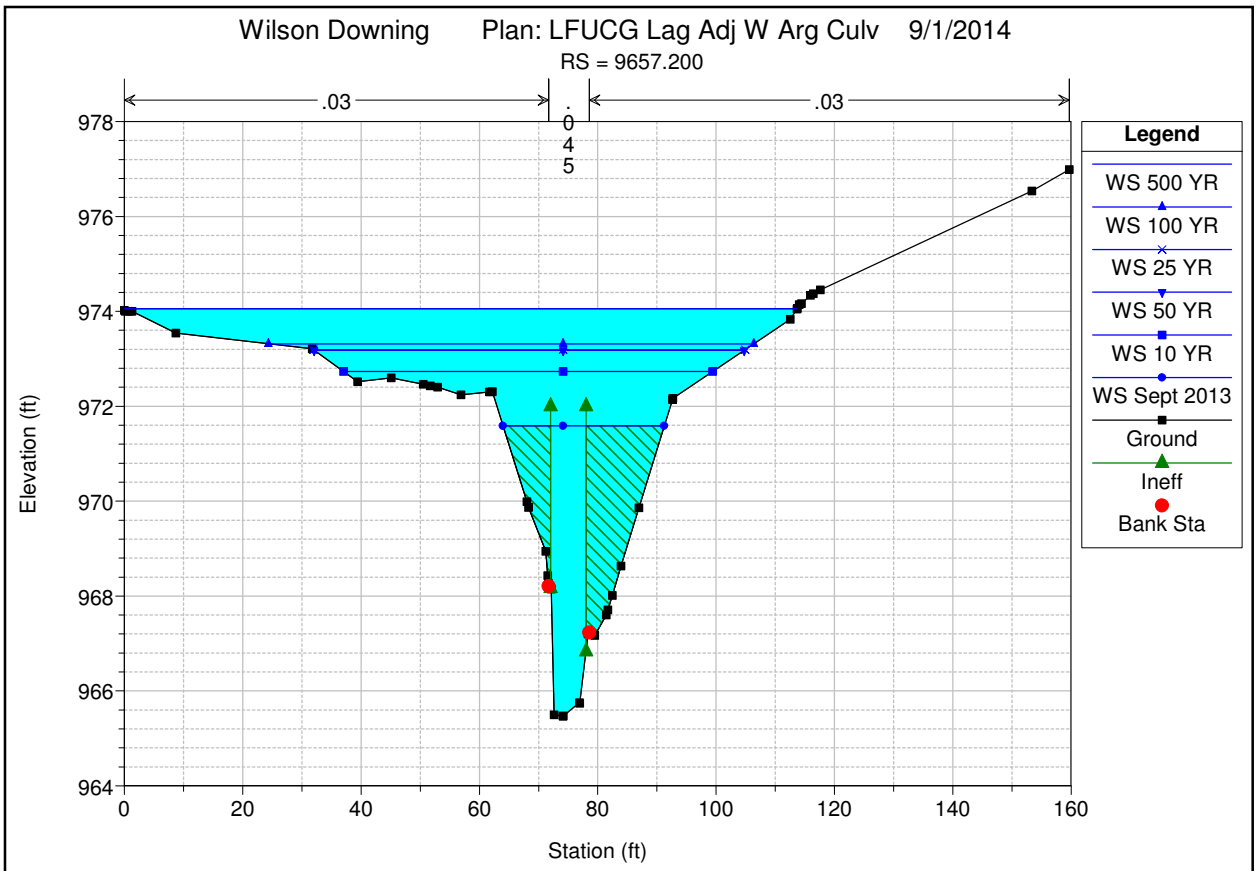

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 10313 Culv
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

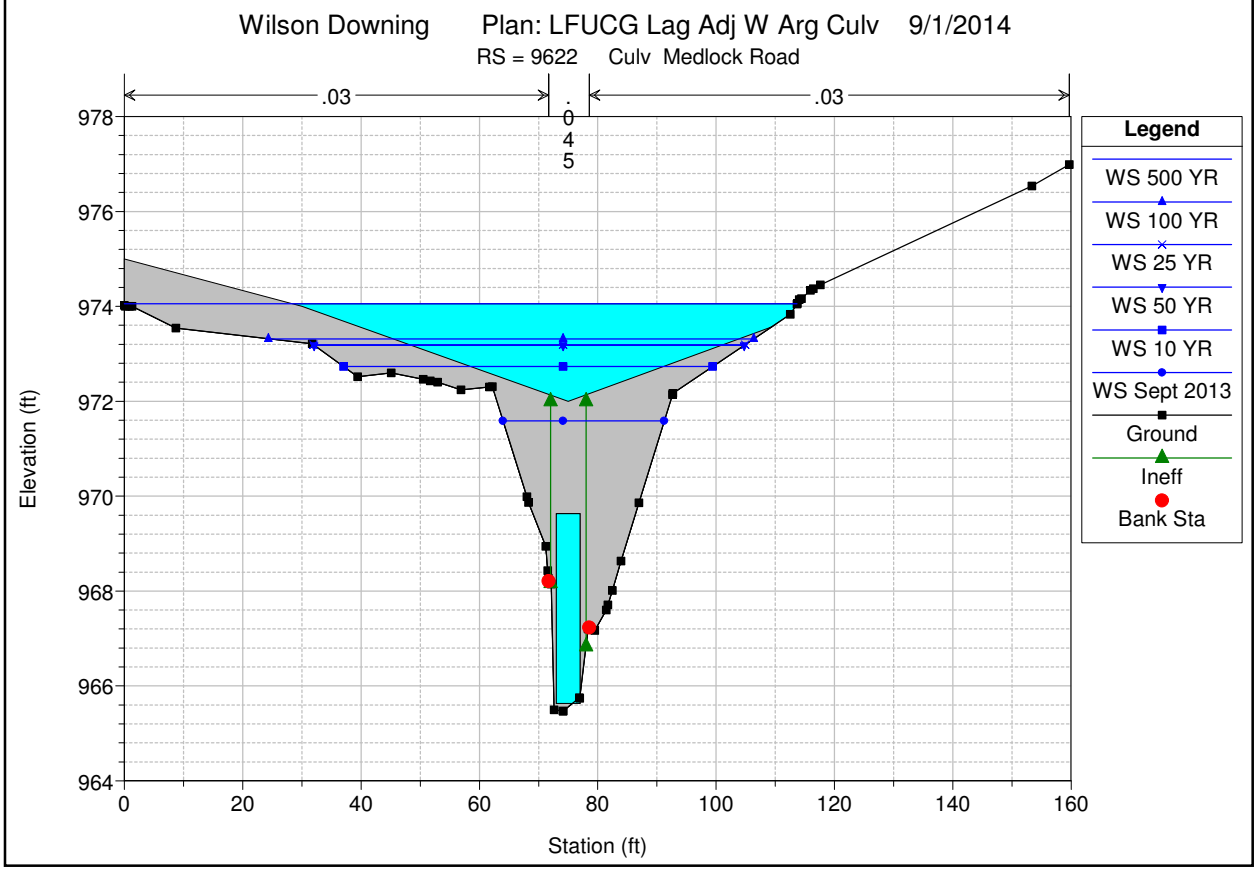

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 10313 Culv
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS Sept 2013
WS 25 YR
WS 10 YR
Ground
Bank Sta

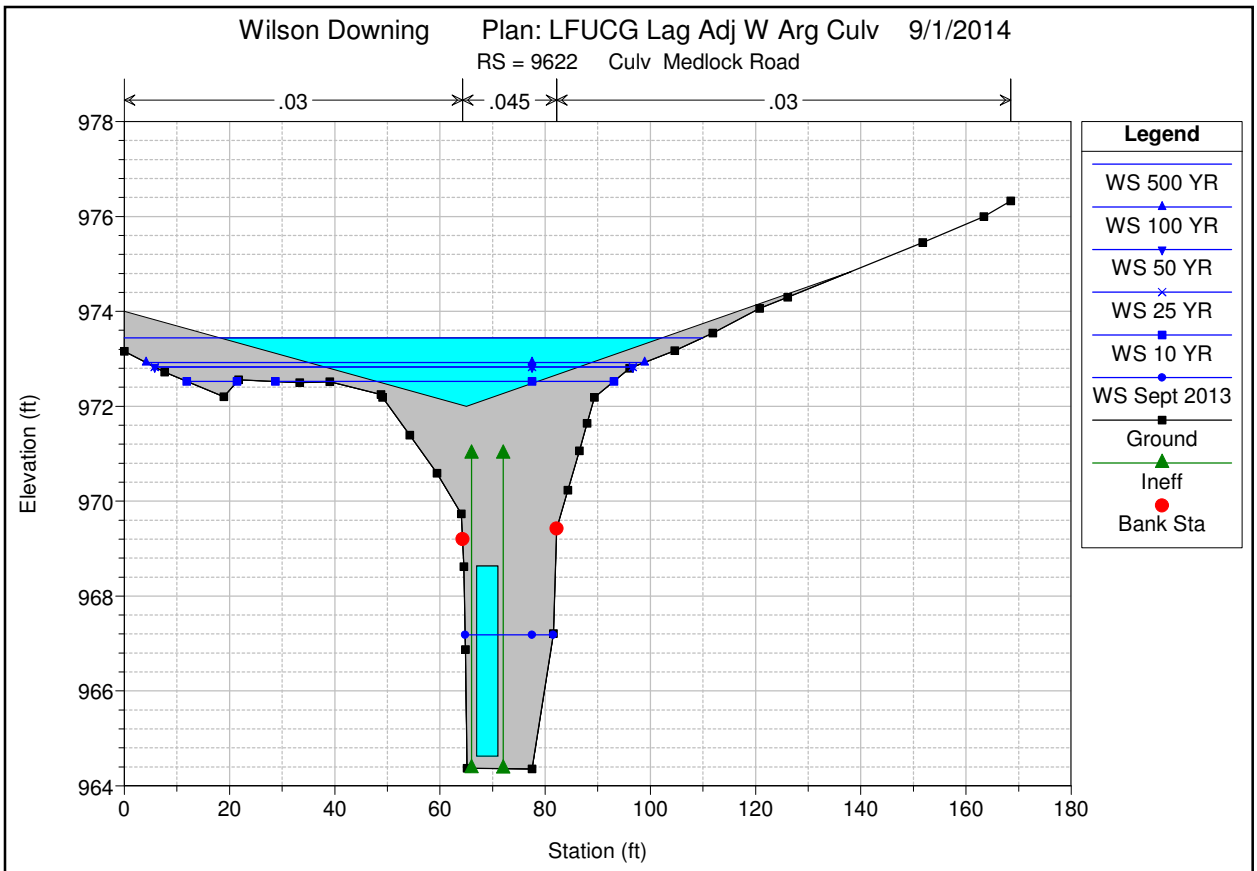

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 10153.12
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS Sept 2013
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
Ground
Bank Sta

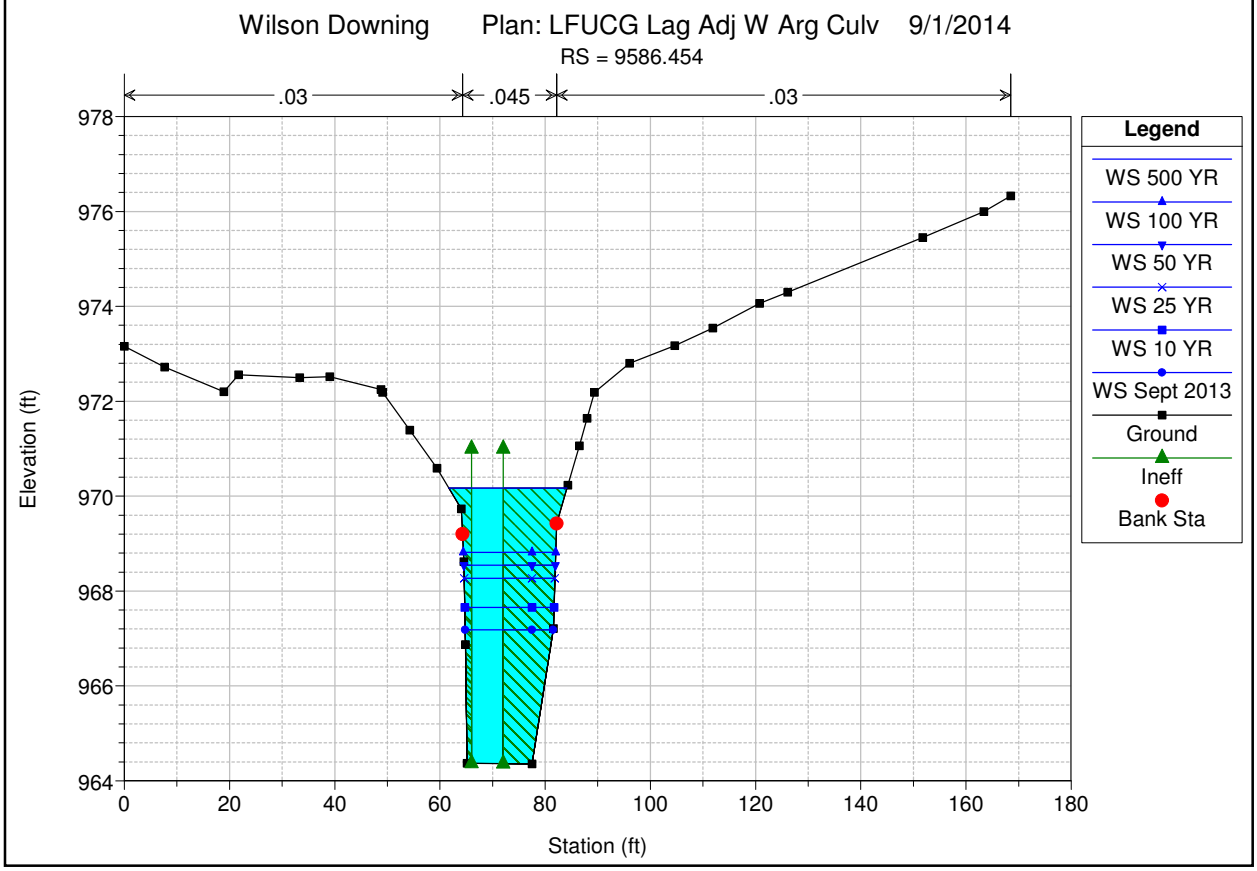

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 10115.70
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

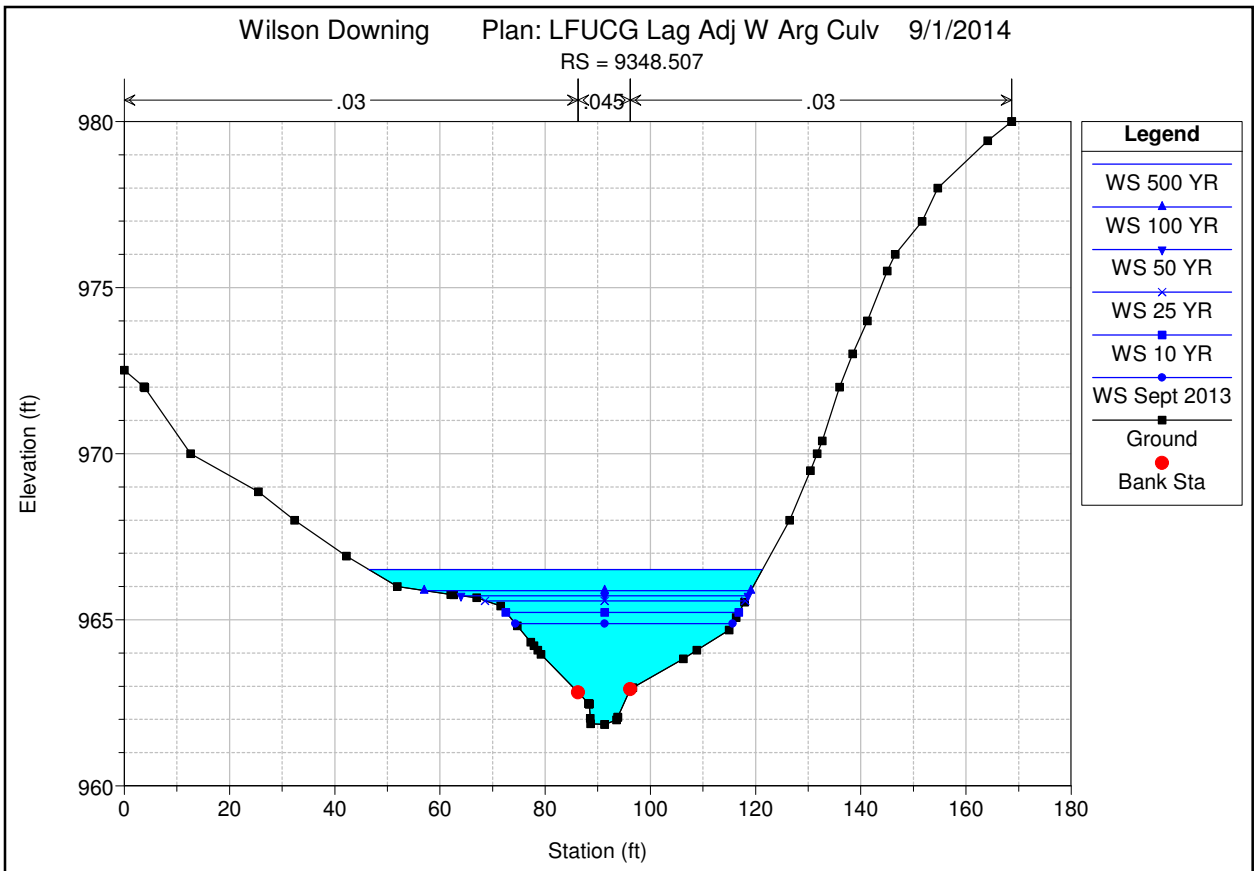

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9876.212
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

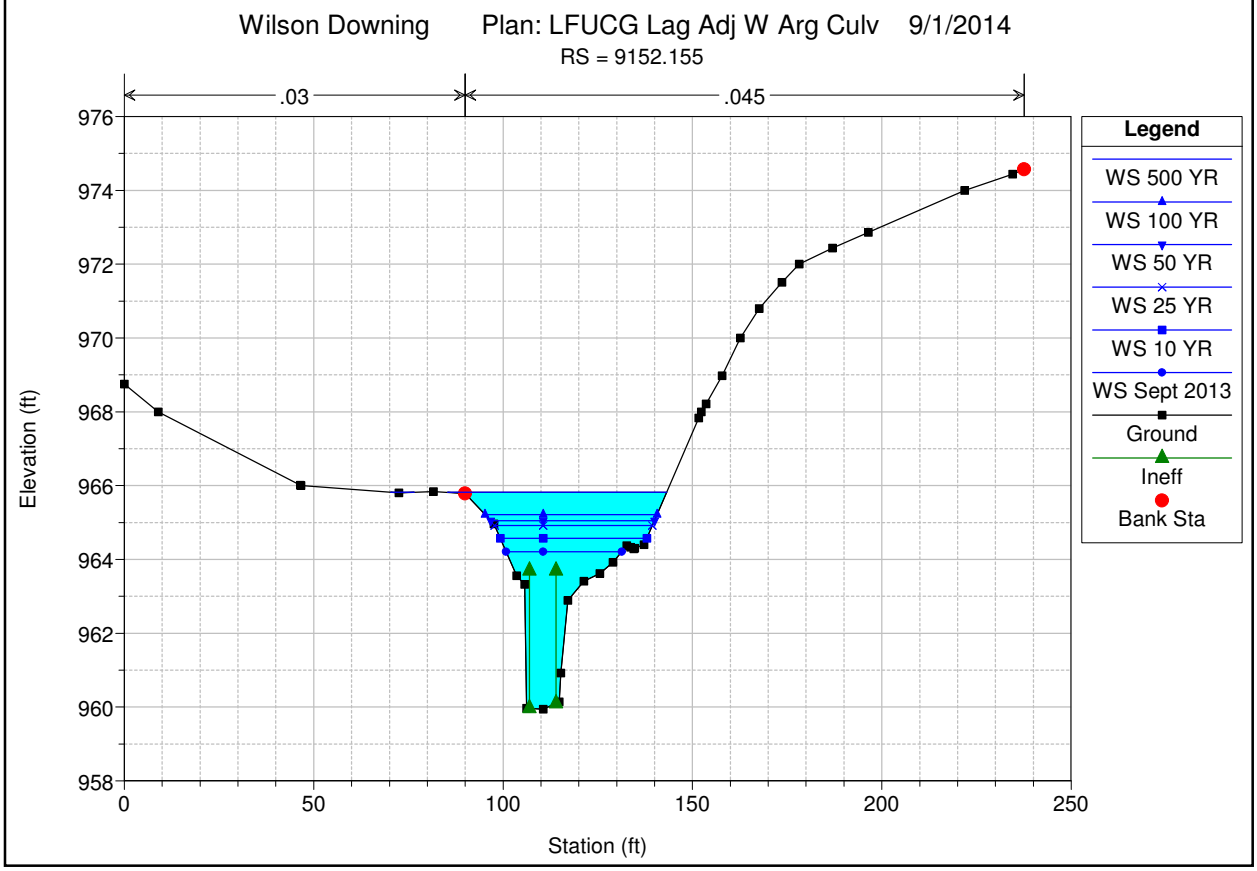

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9657.200
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 25 YR
WS 50 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

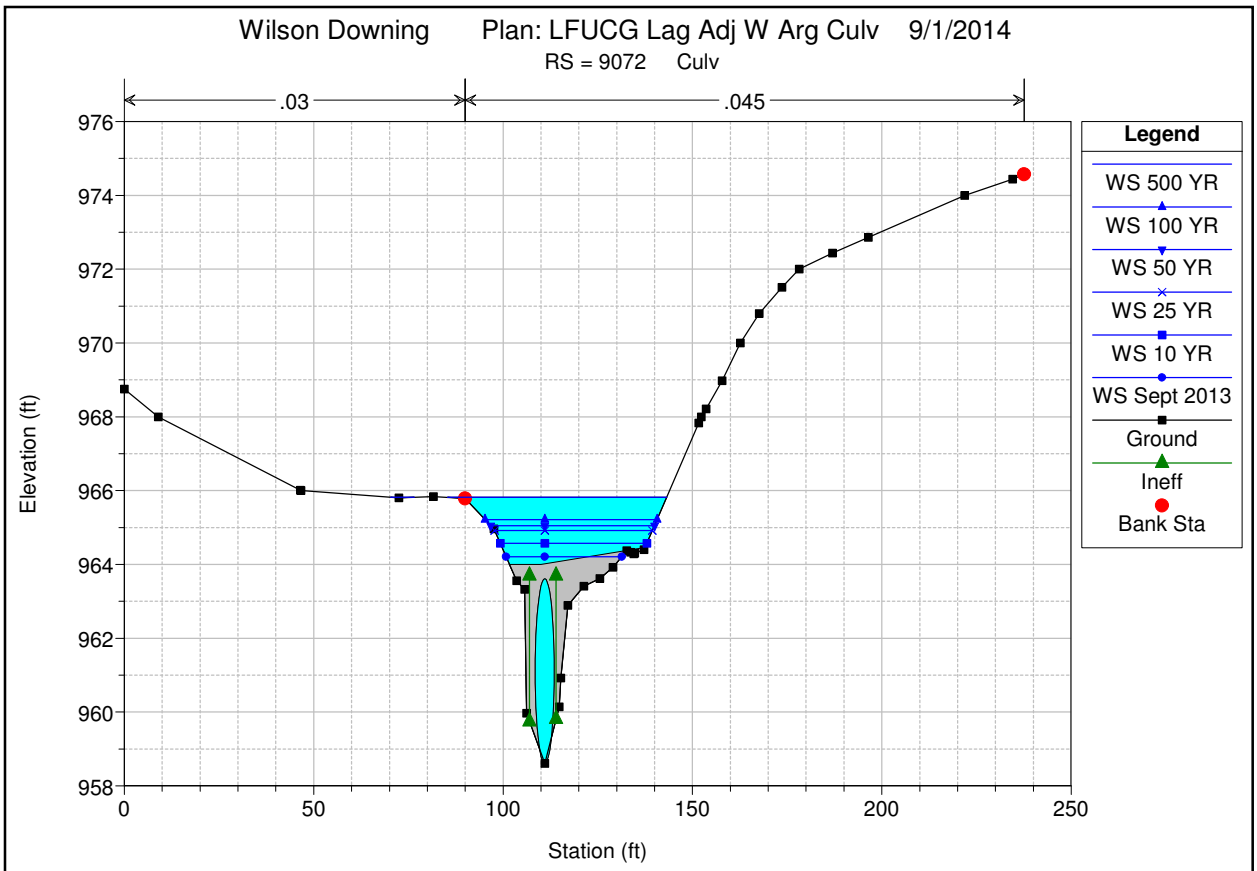

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9622 Culv Medlock Road
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 25 YR
WS 50 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

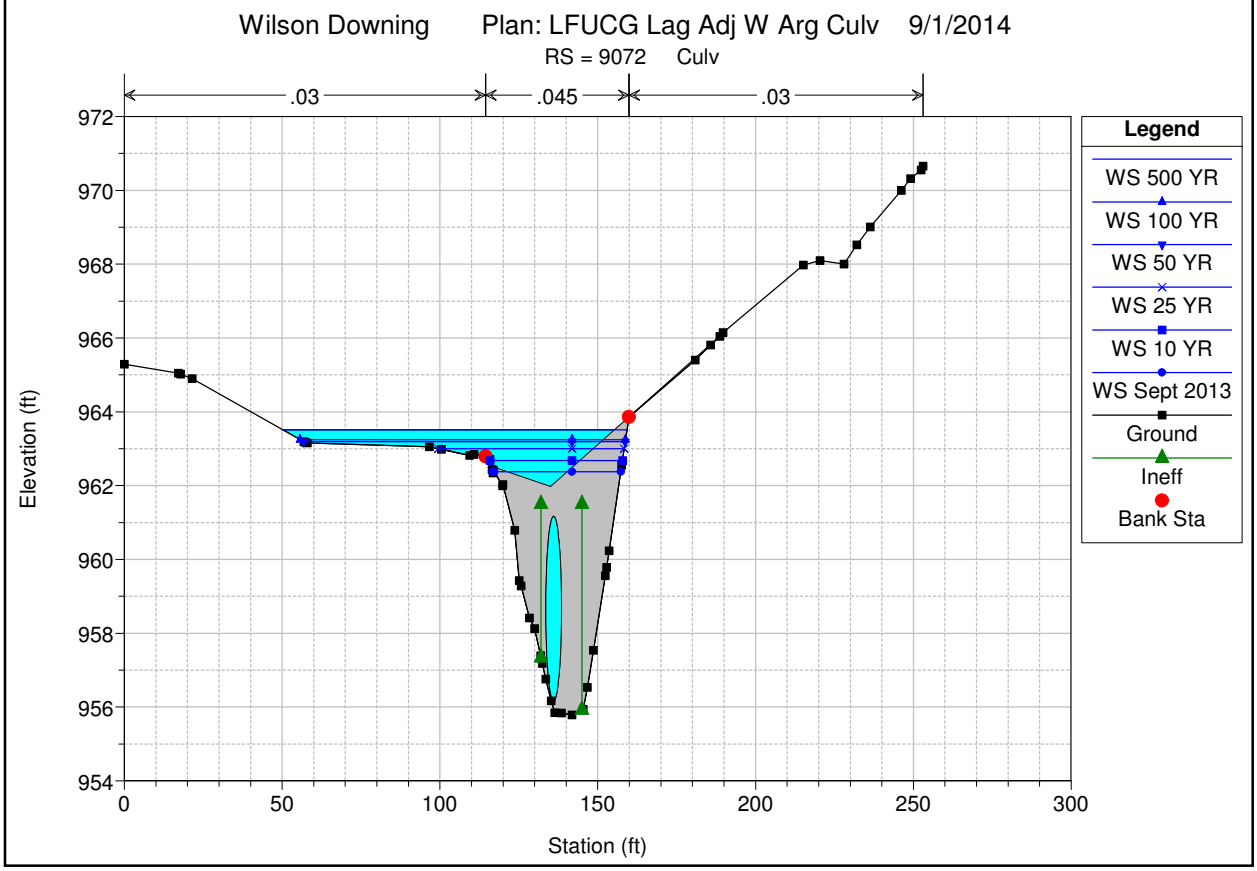

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9622 Culv Medlock Road
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

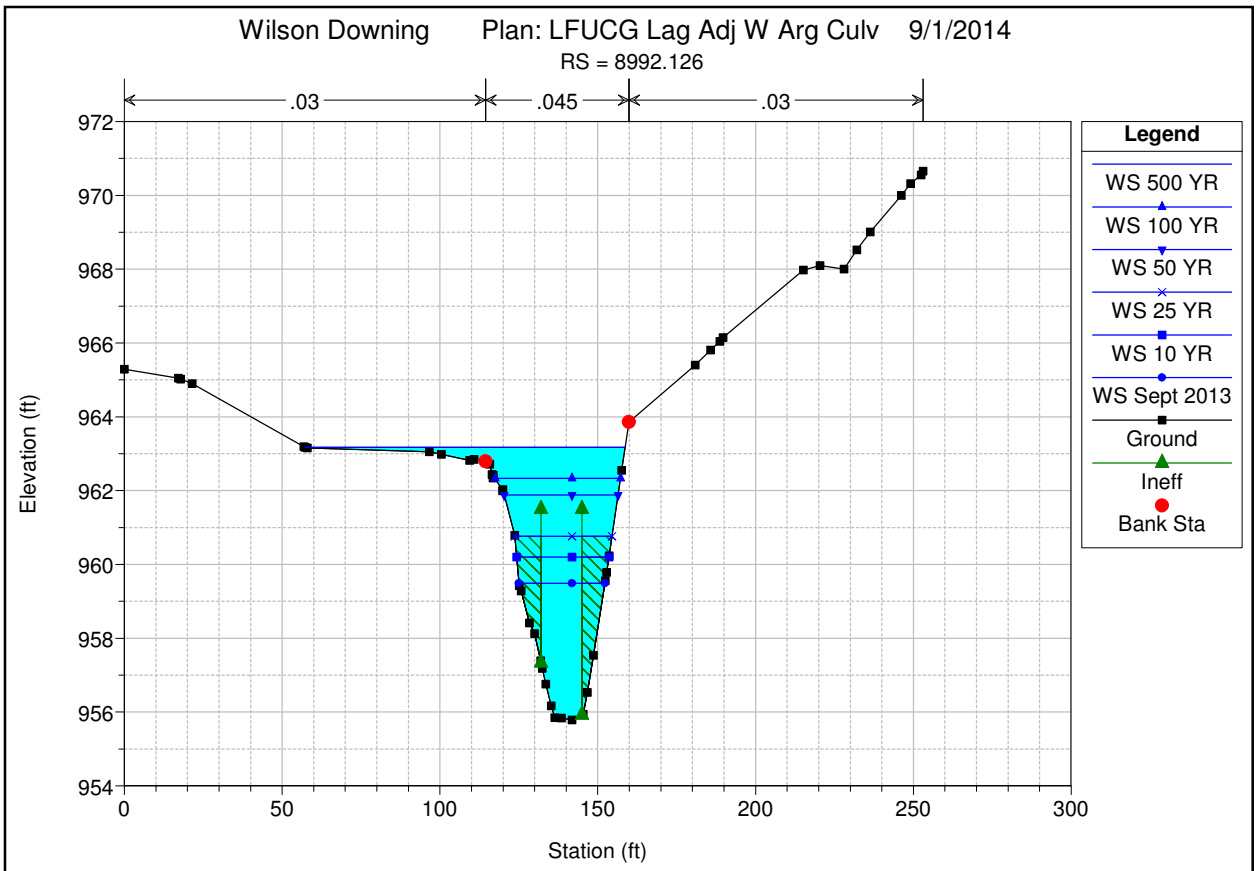

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9586.454
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

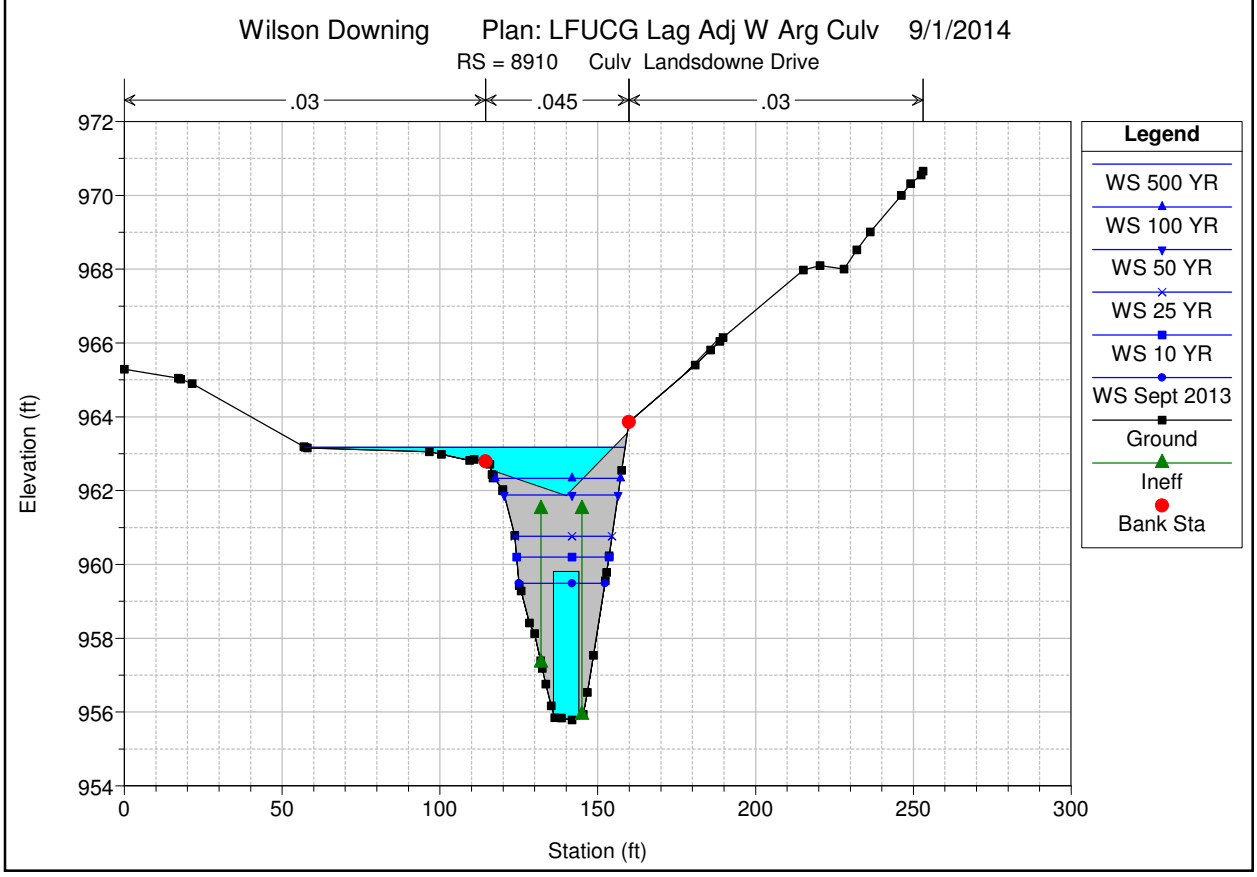

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9348.507
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

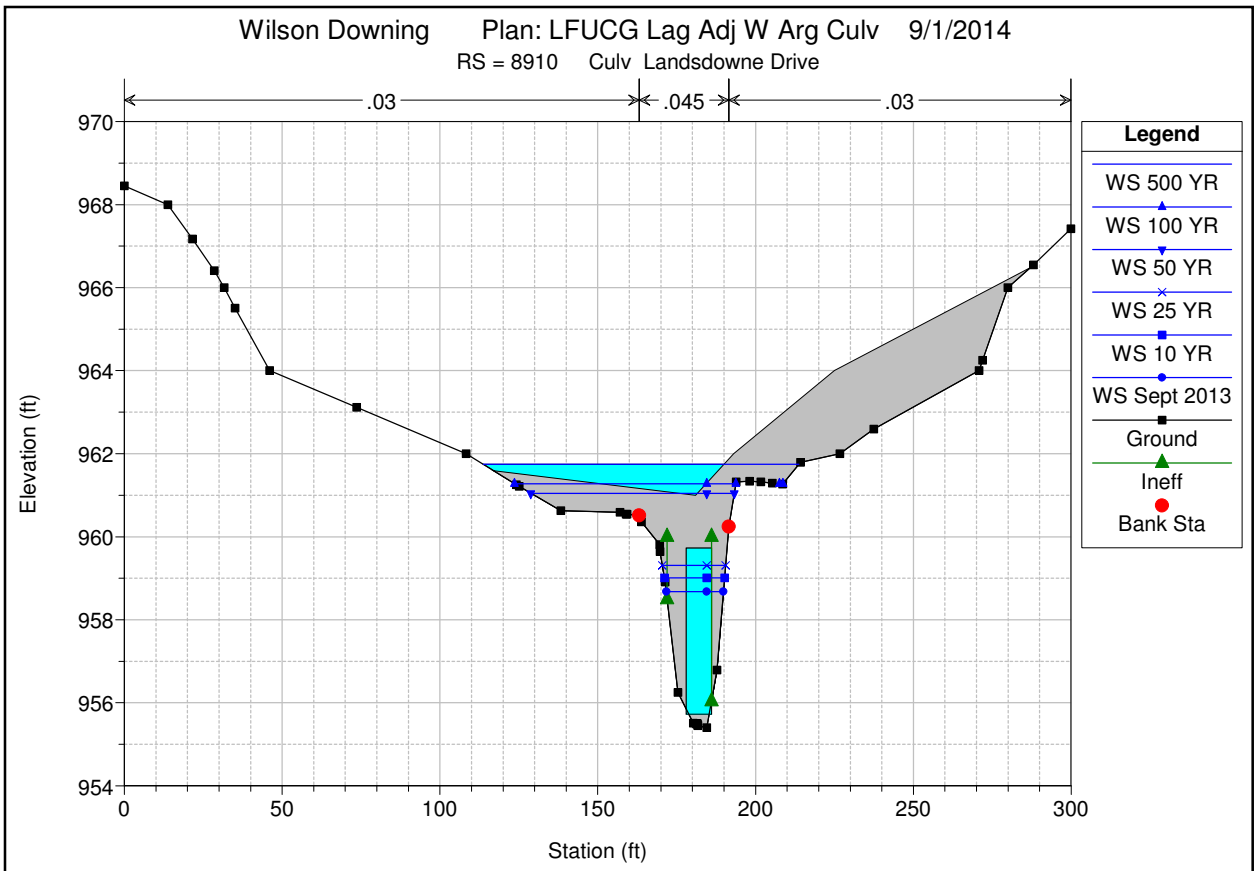

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9152.155
.03
.045
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

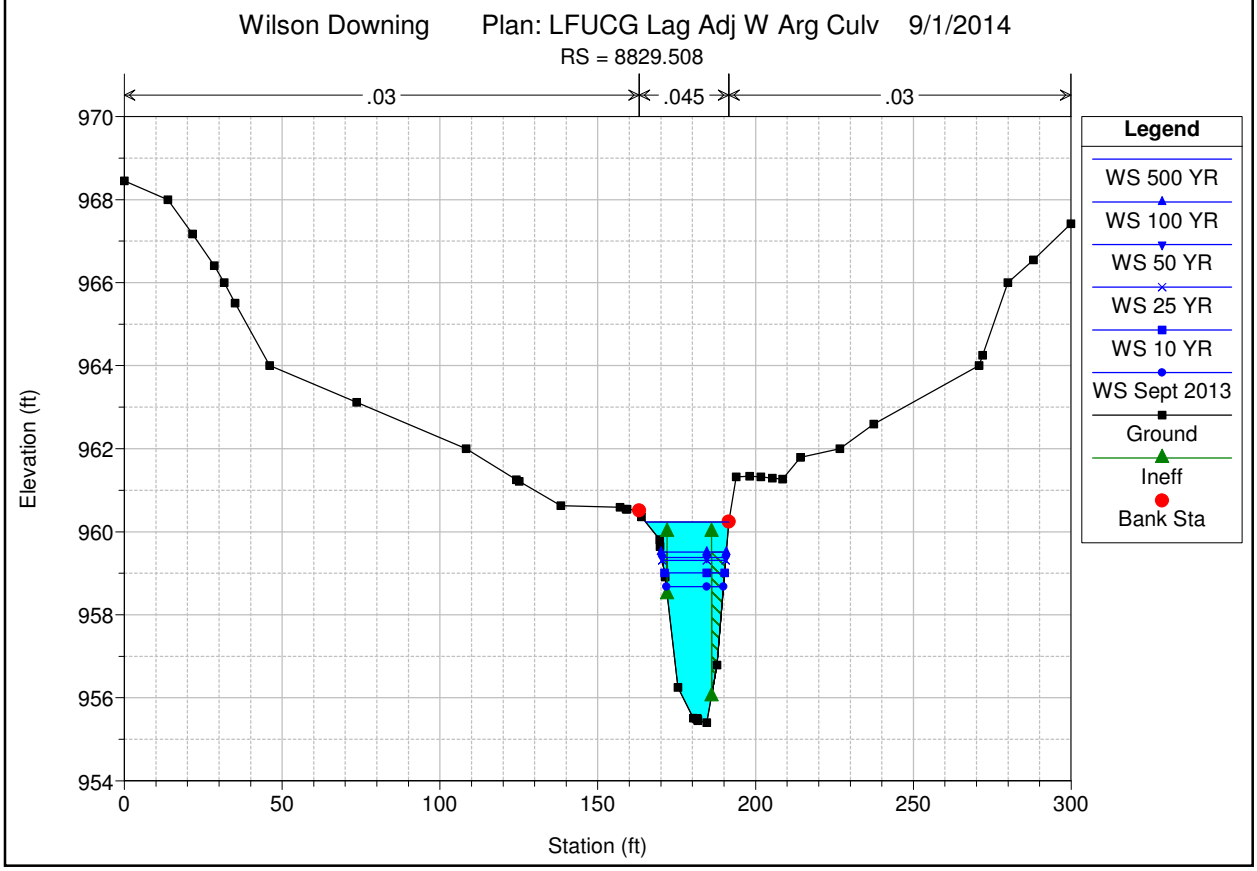

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9072 Culv
.03
.045
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

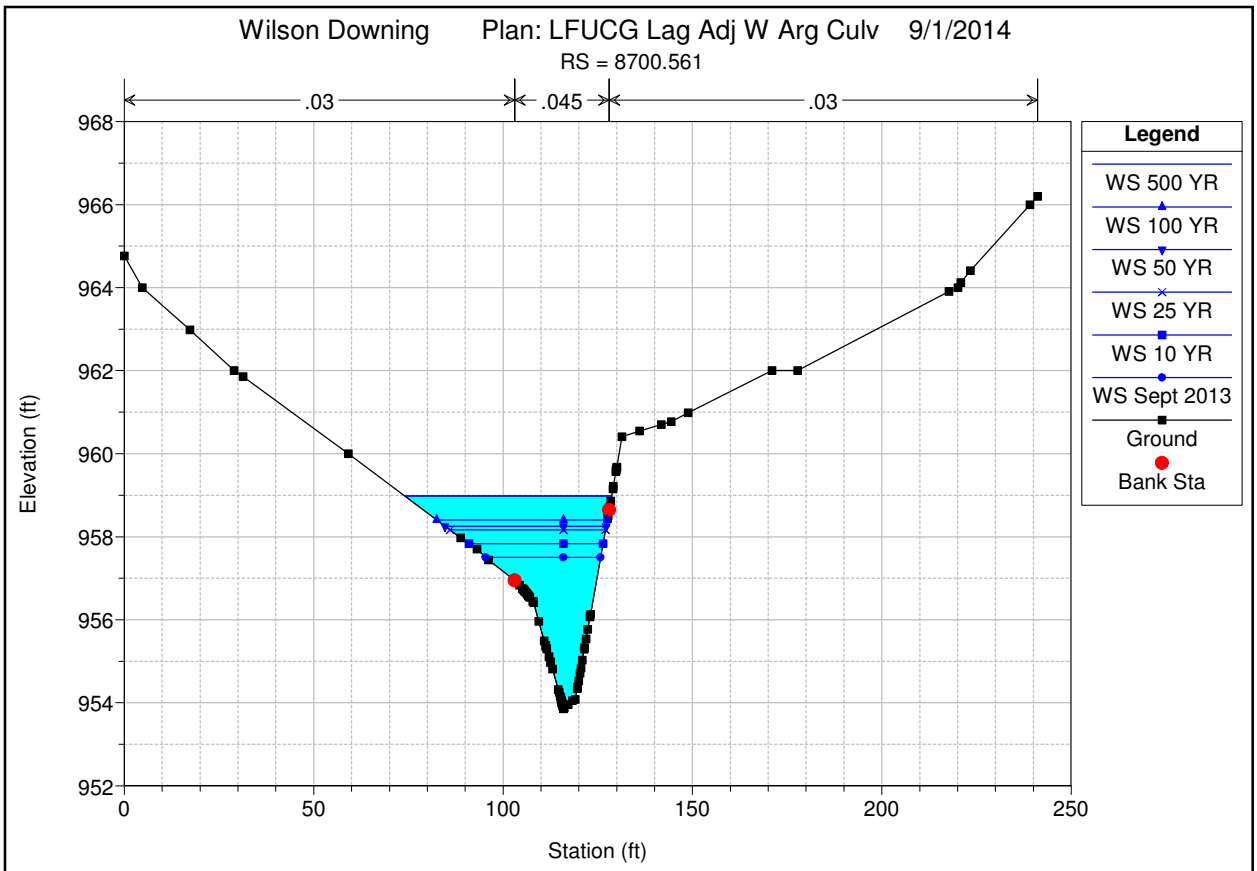

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 9072 Culv
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

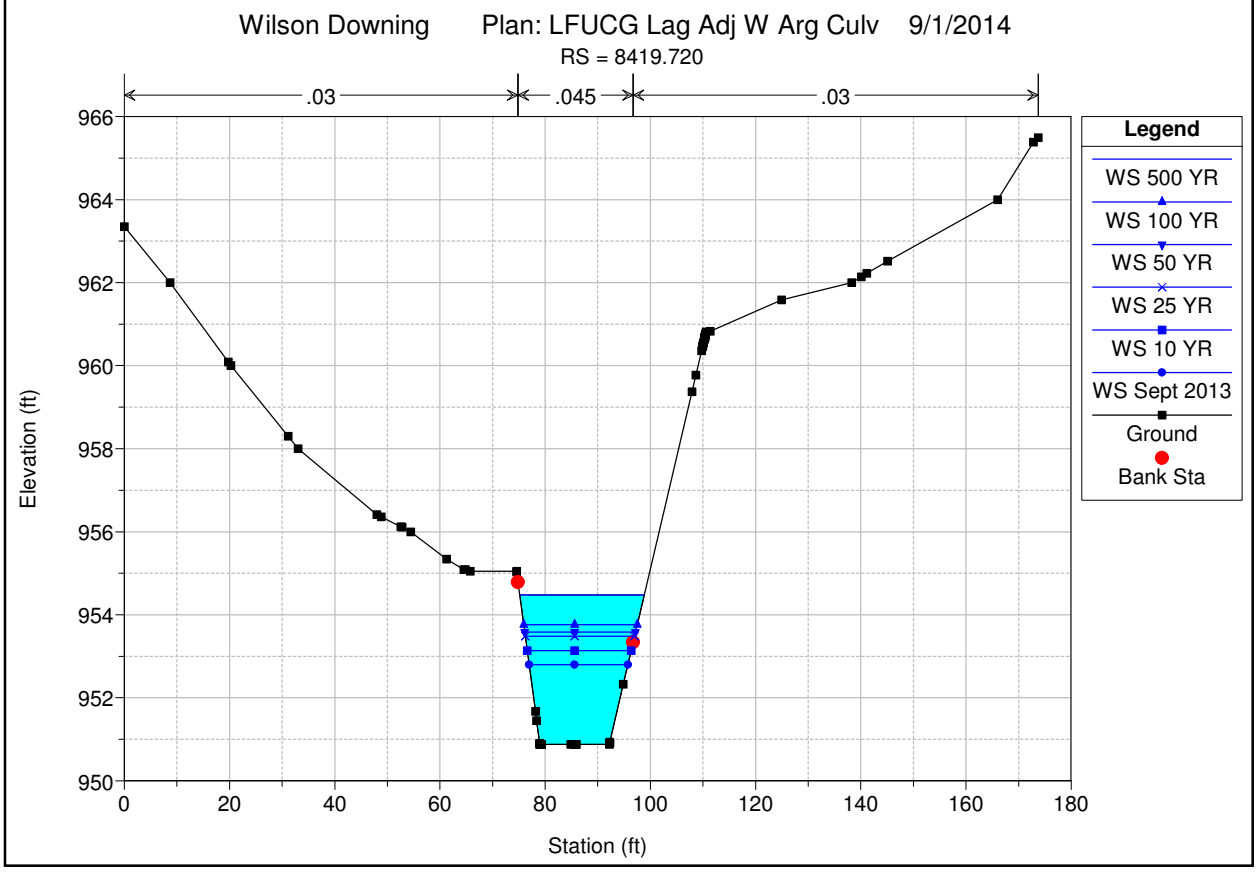

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 8992.126
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

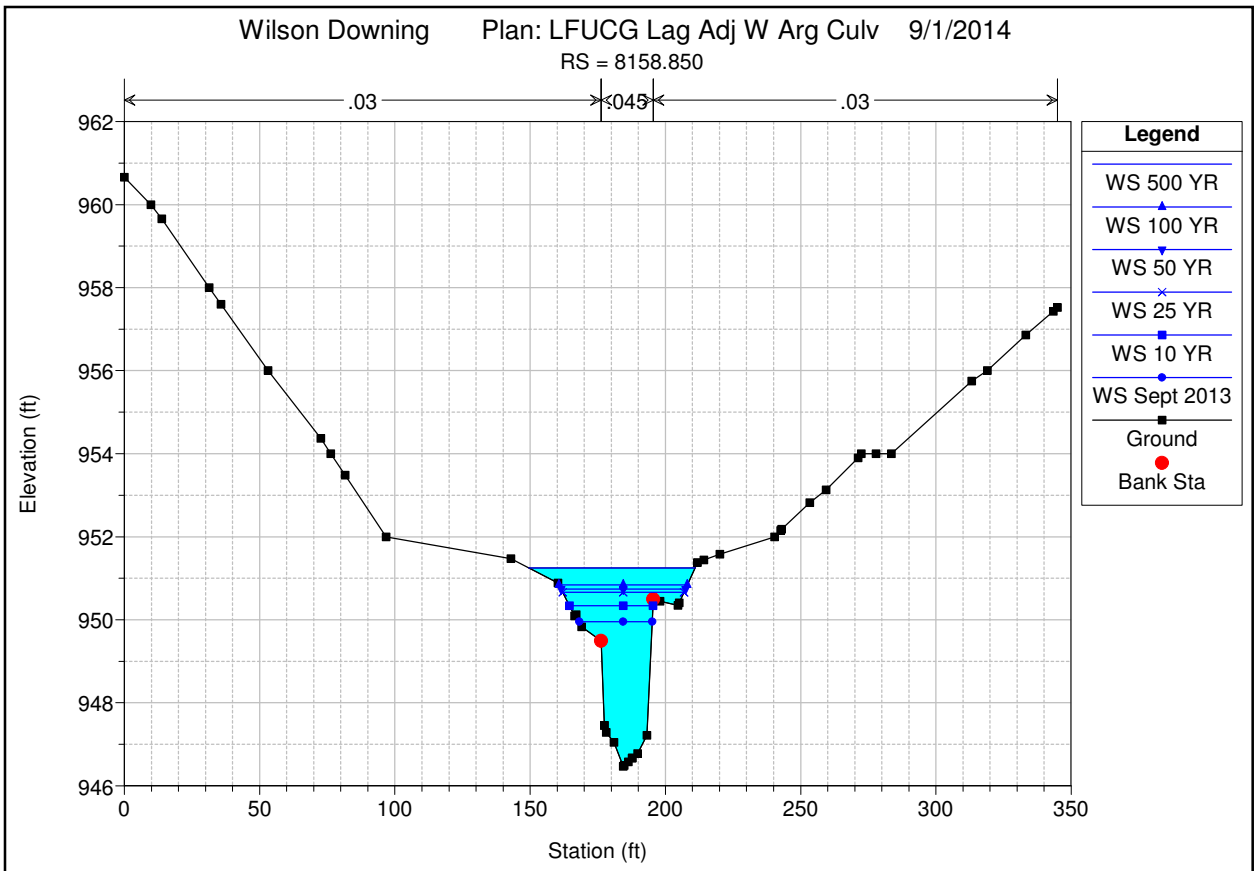

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 8910 Culv Landsdowne Drive
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

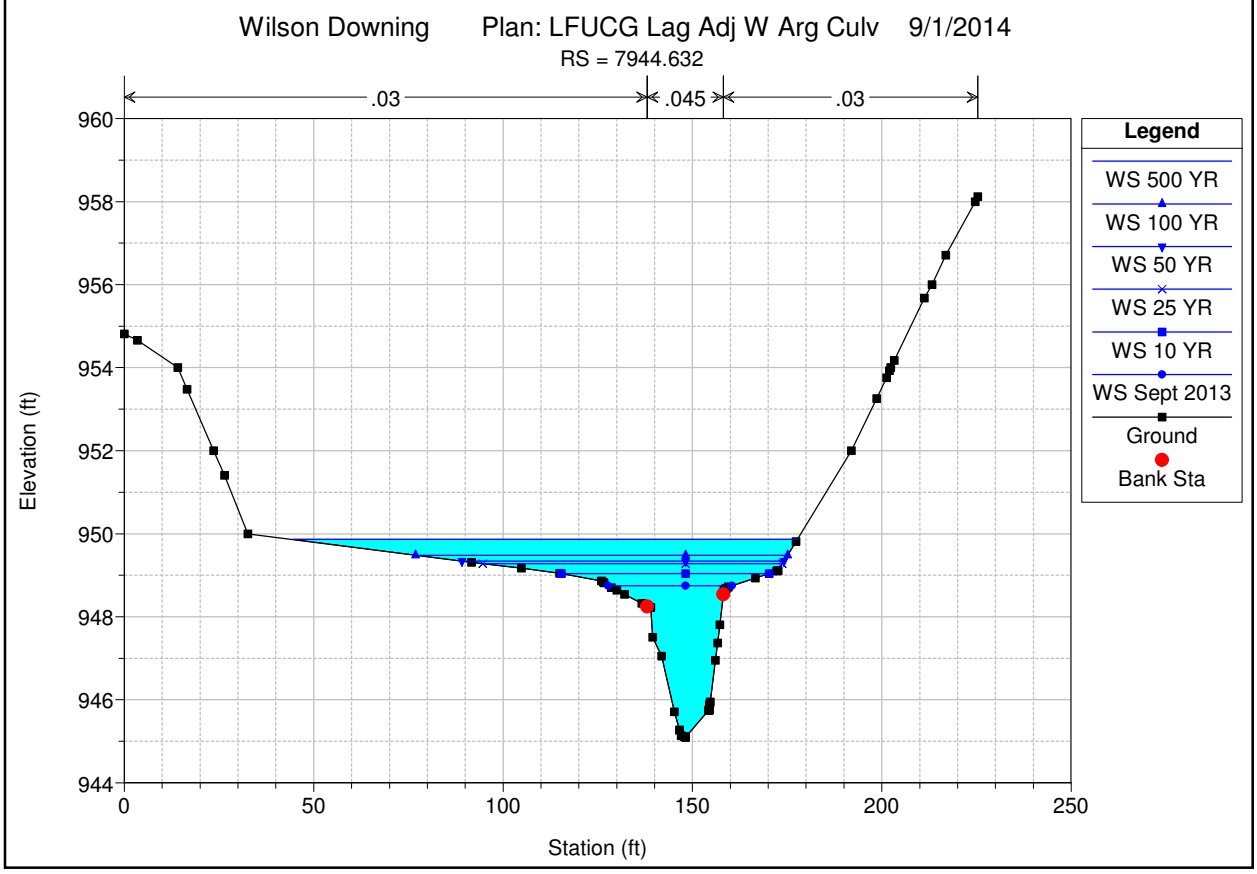

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 8910 Culv Landsdowne Drive
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

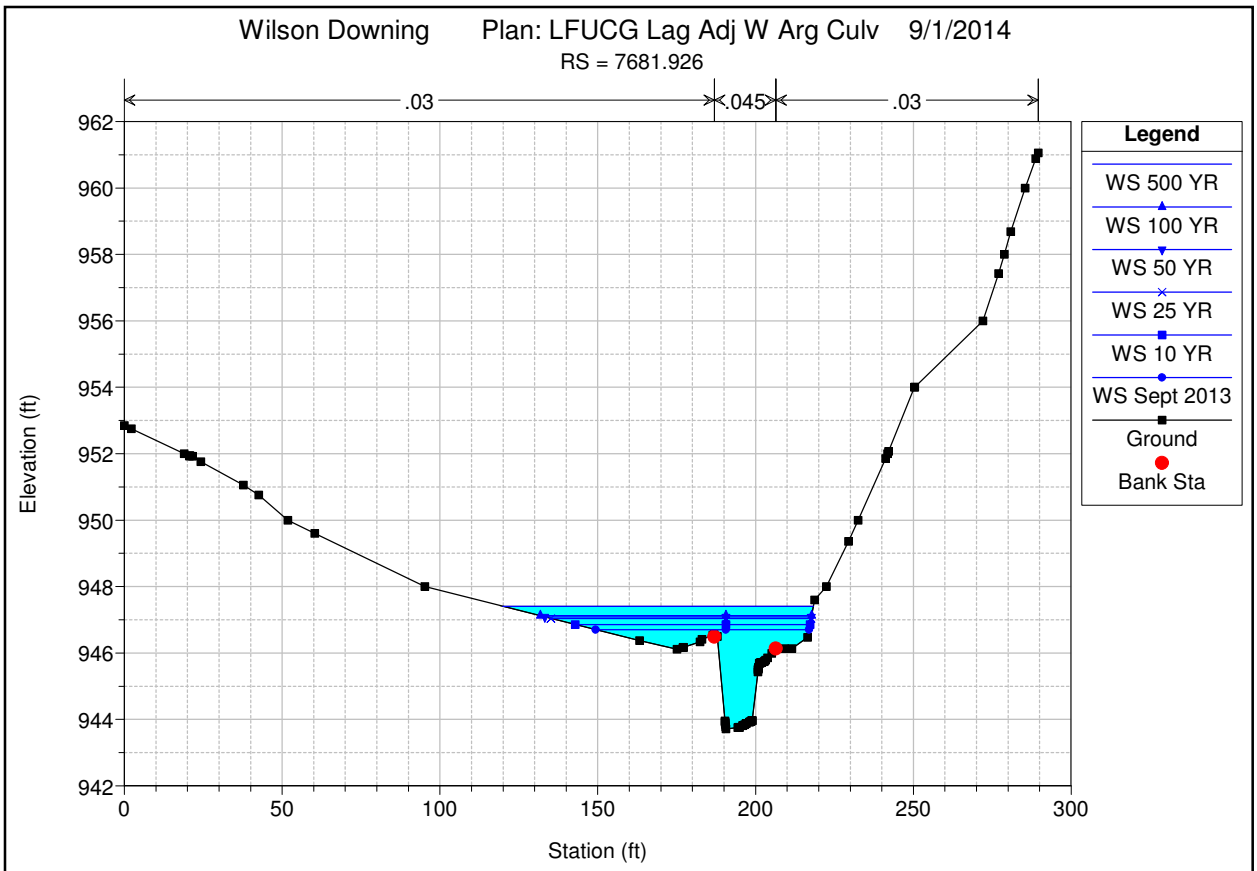

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 8829.508
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

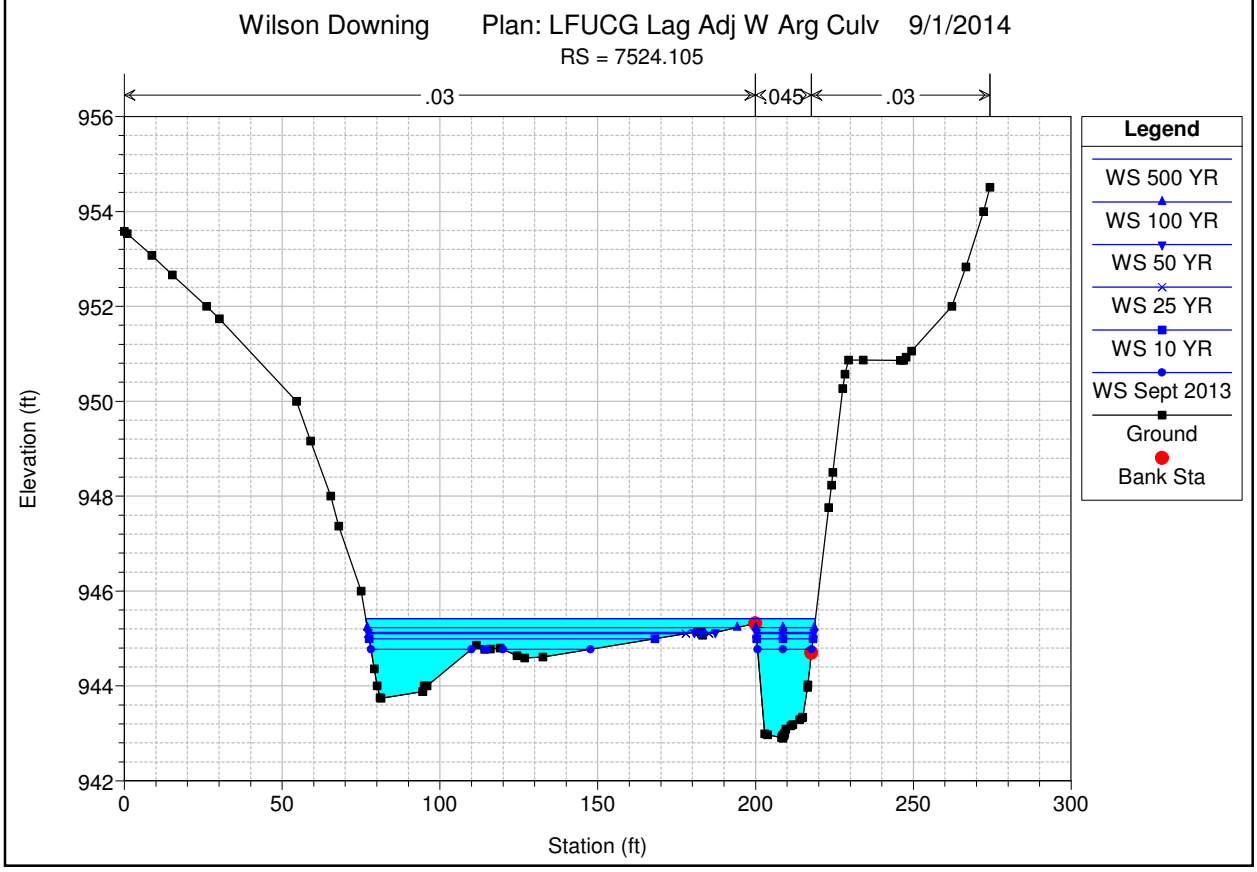

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 8700.561
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

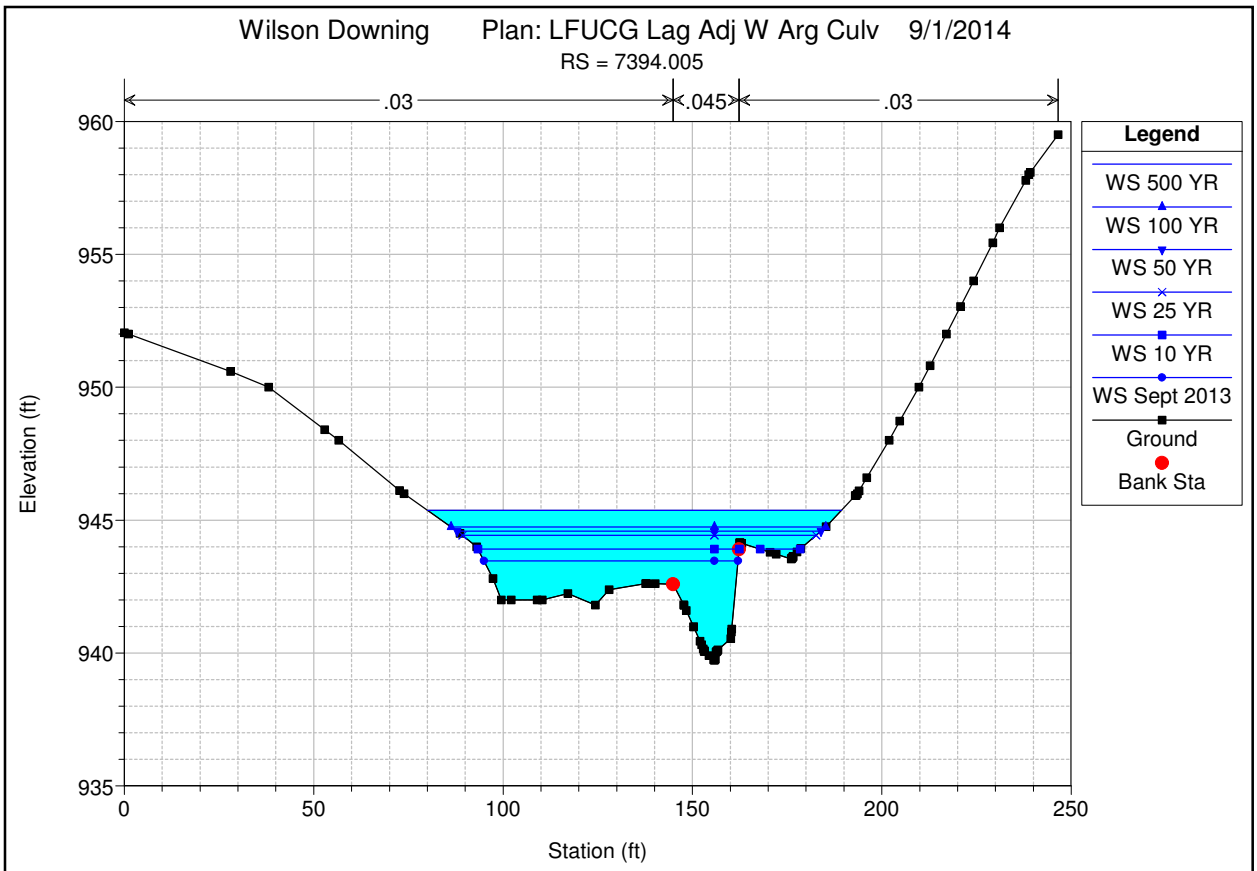

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 8419.720
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

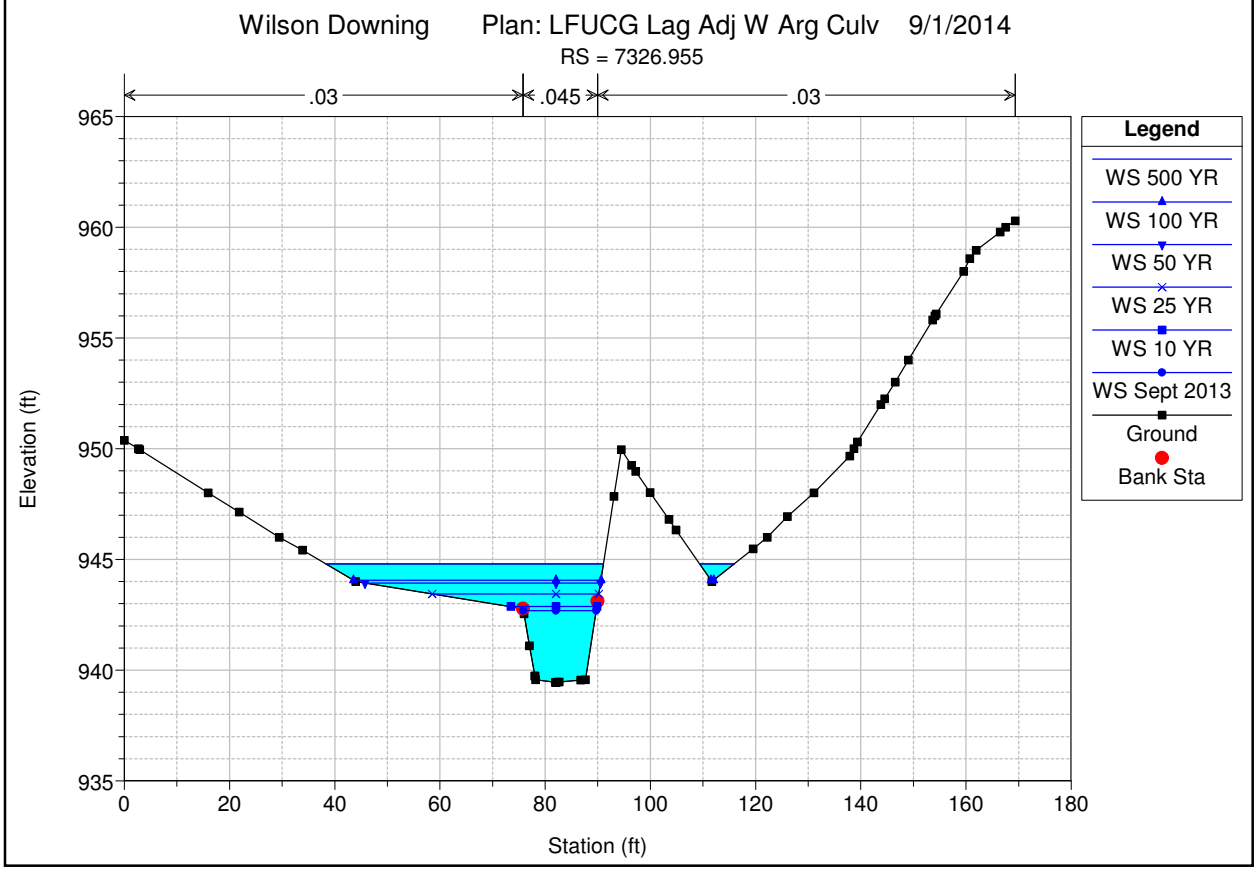

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 8158.850
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

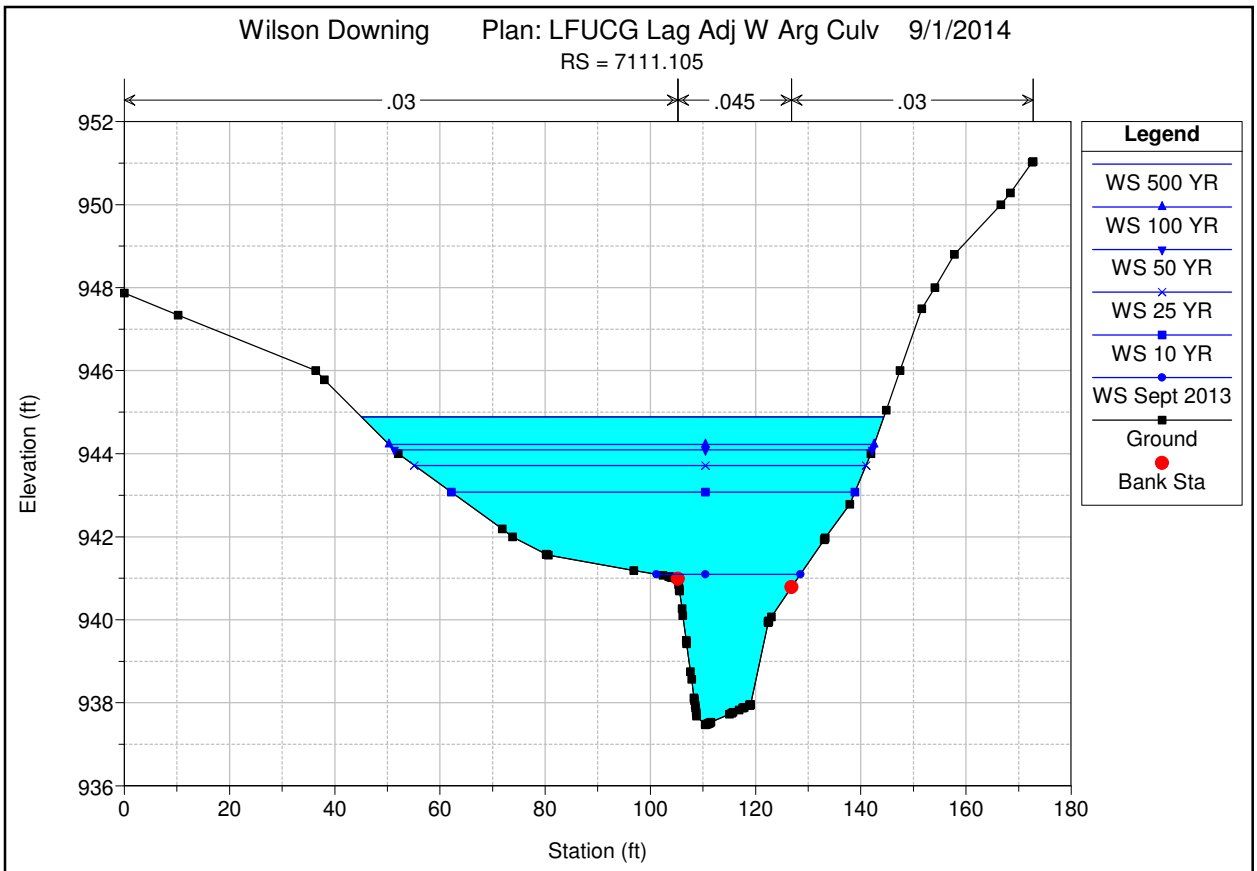

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 7944.632
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

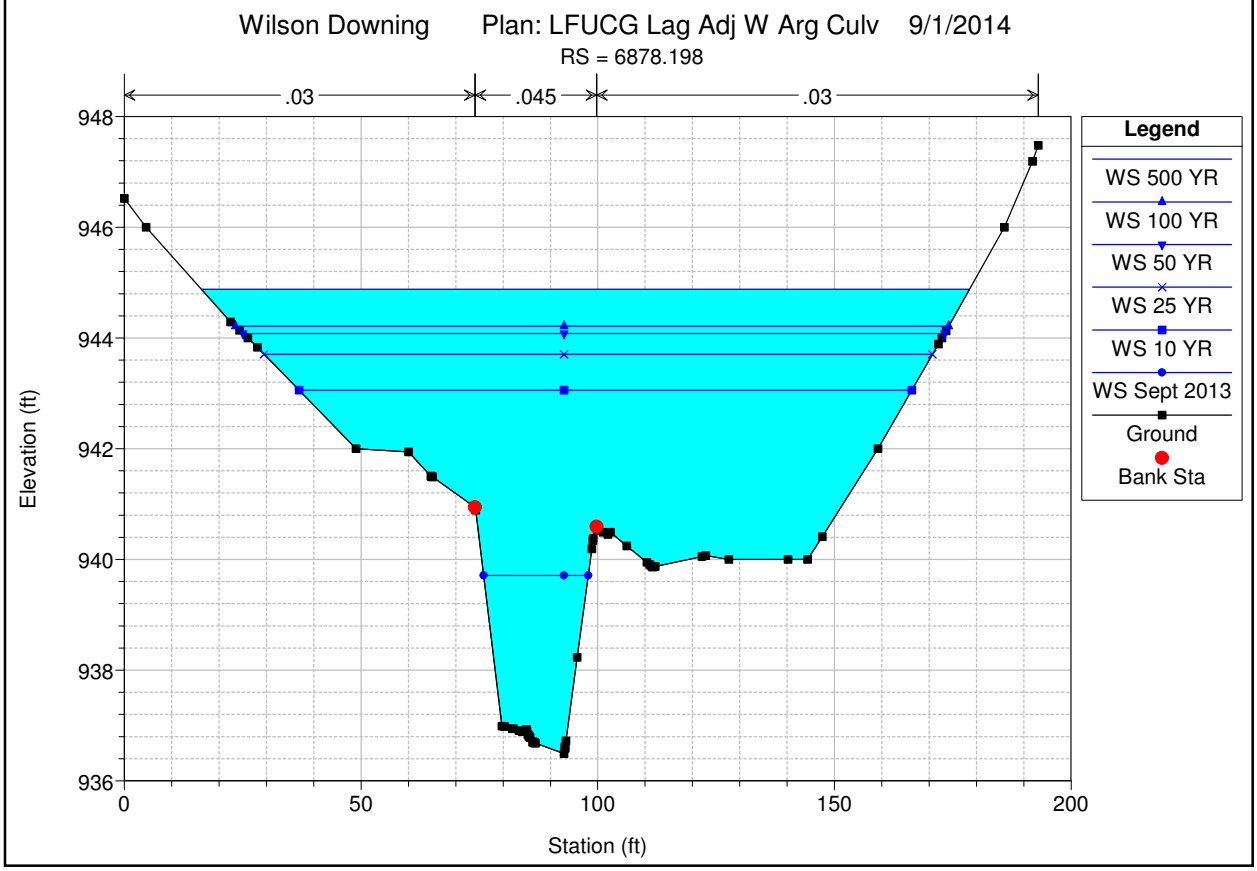

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 7681.926
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

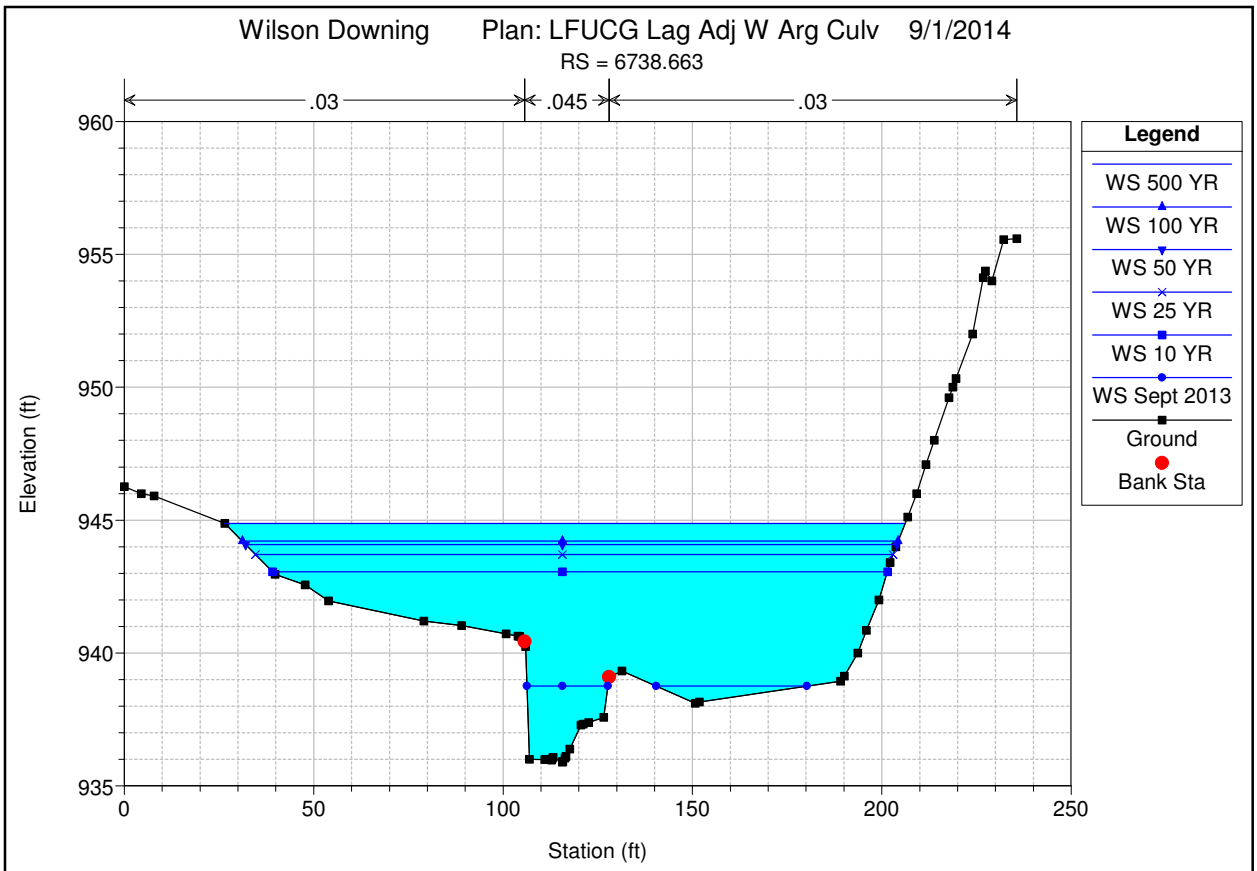

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 7524.105
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

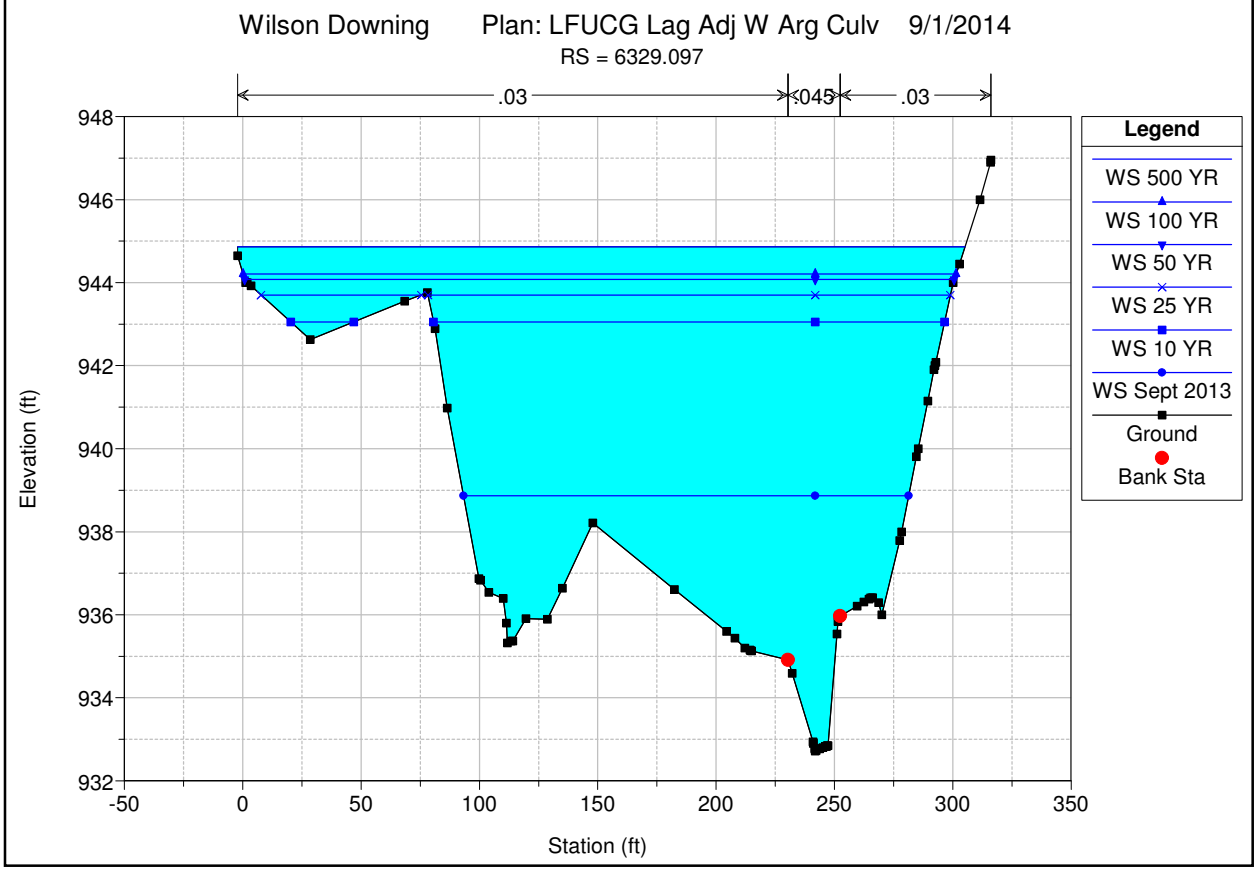

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 7394.005
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

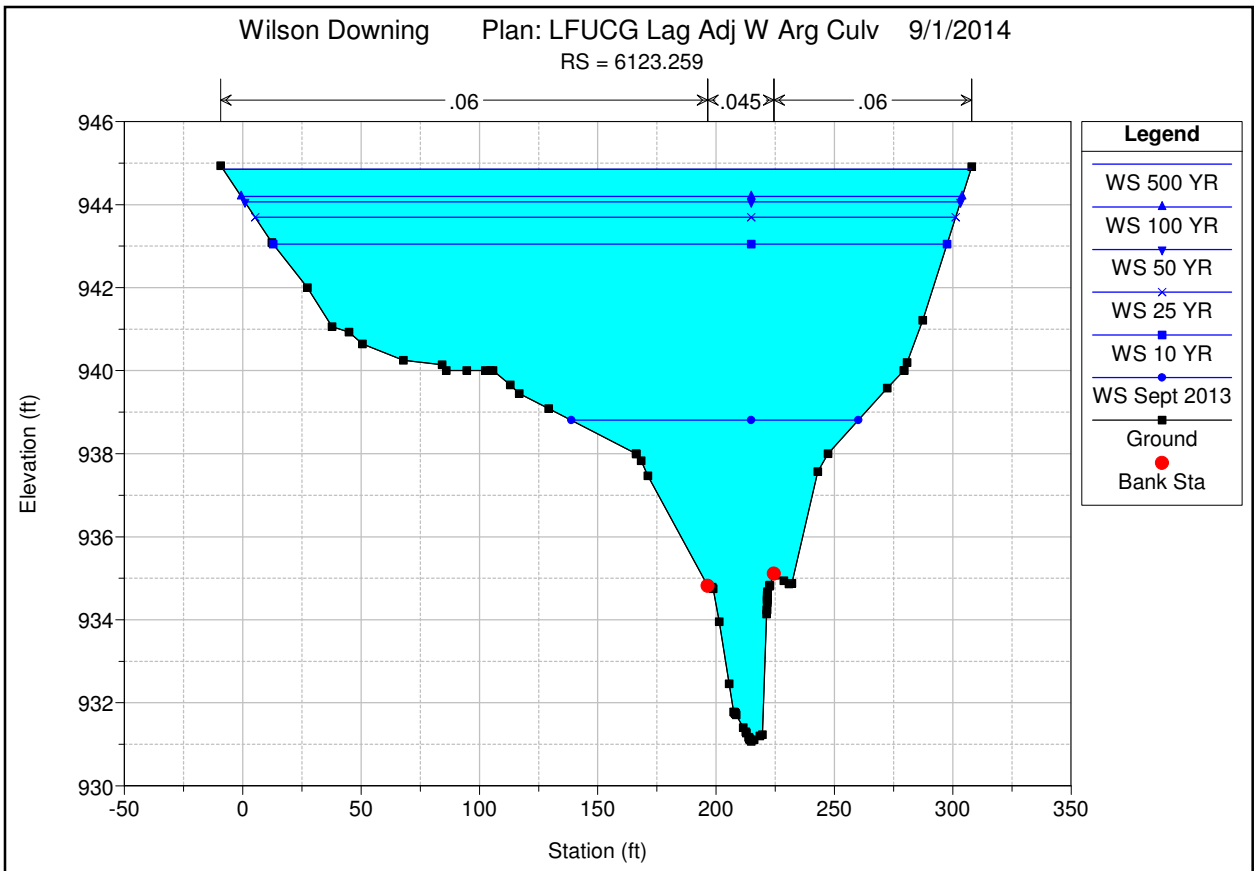

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 7326.955
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

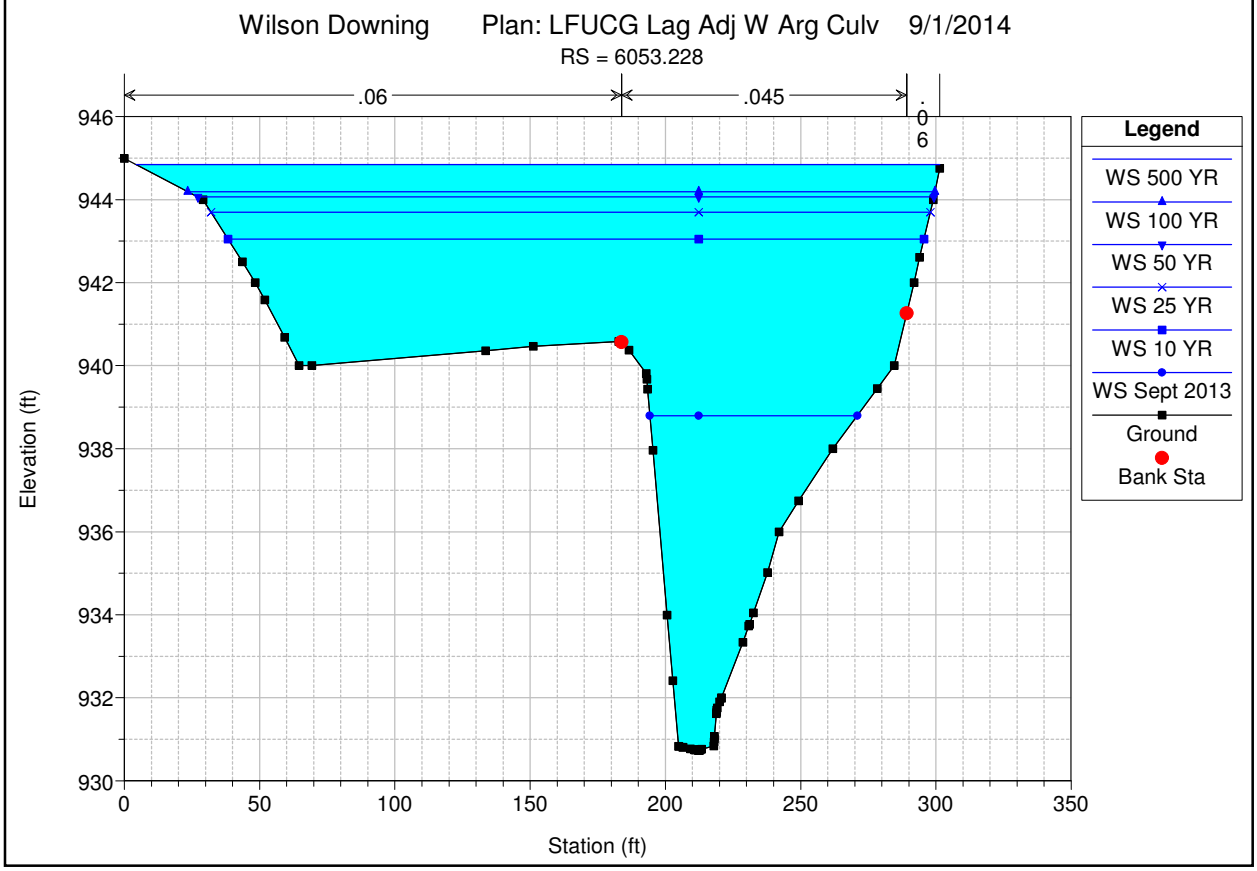

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 7111.105
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

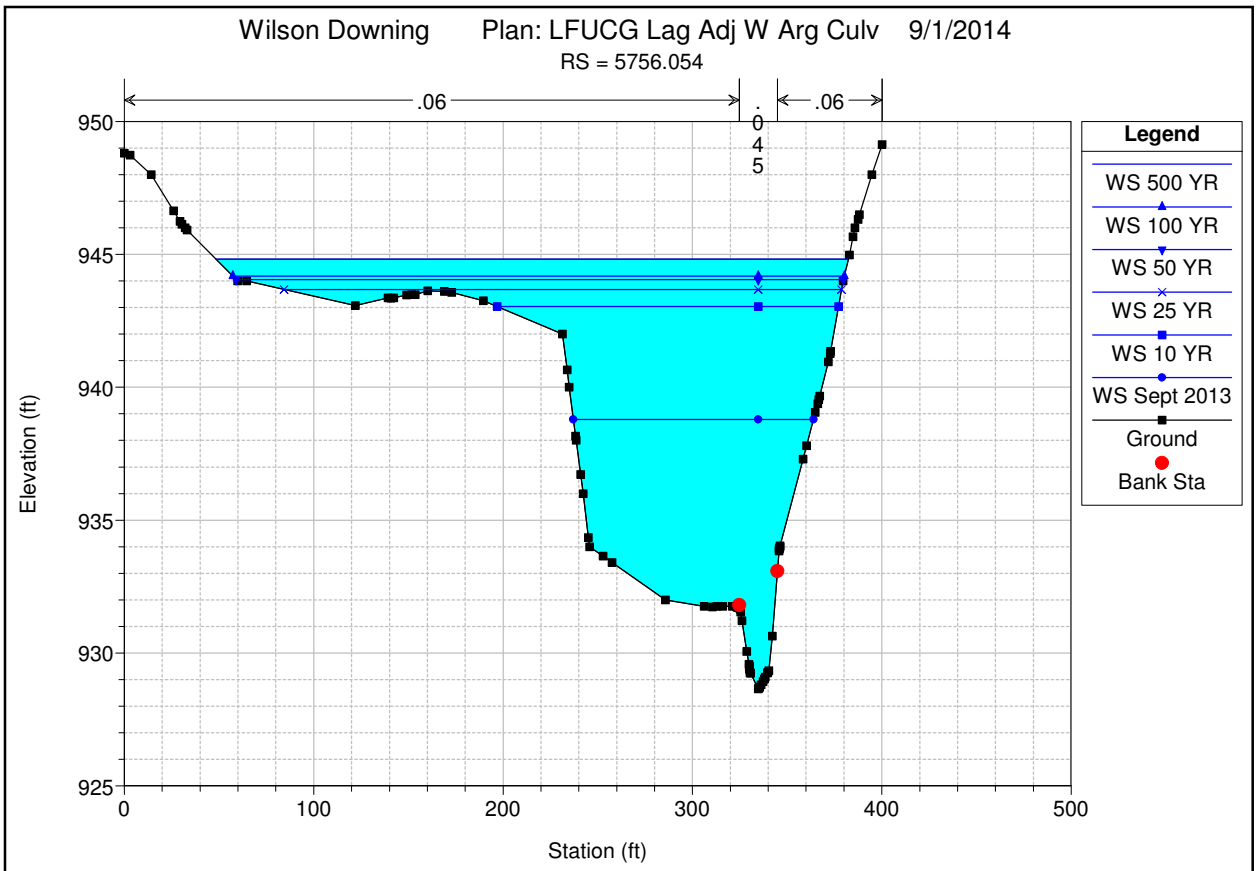

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 6878.198
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

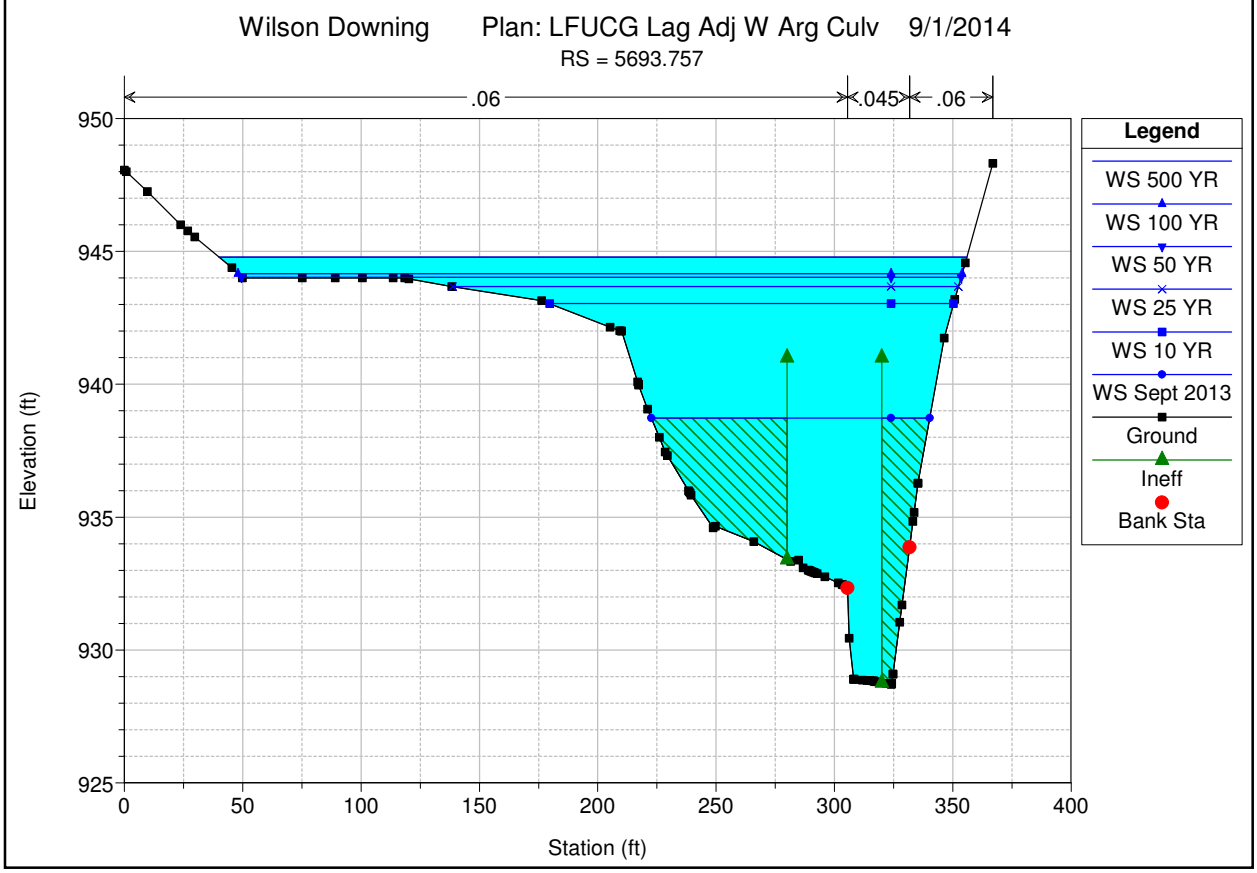

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 6738.663
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

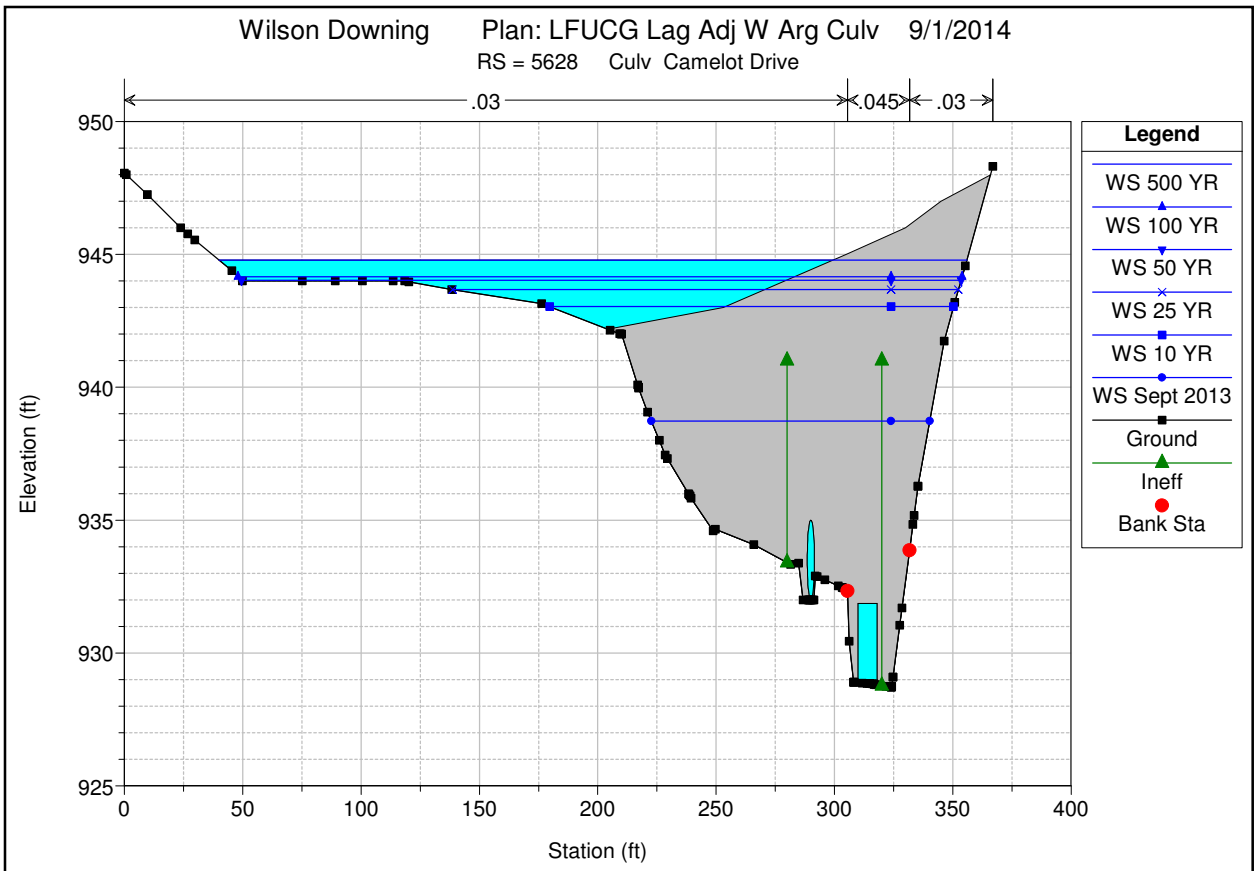

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 6329.097
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

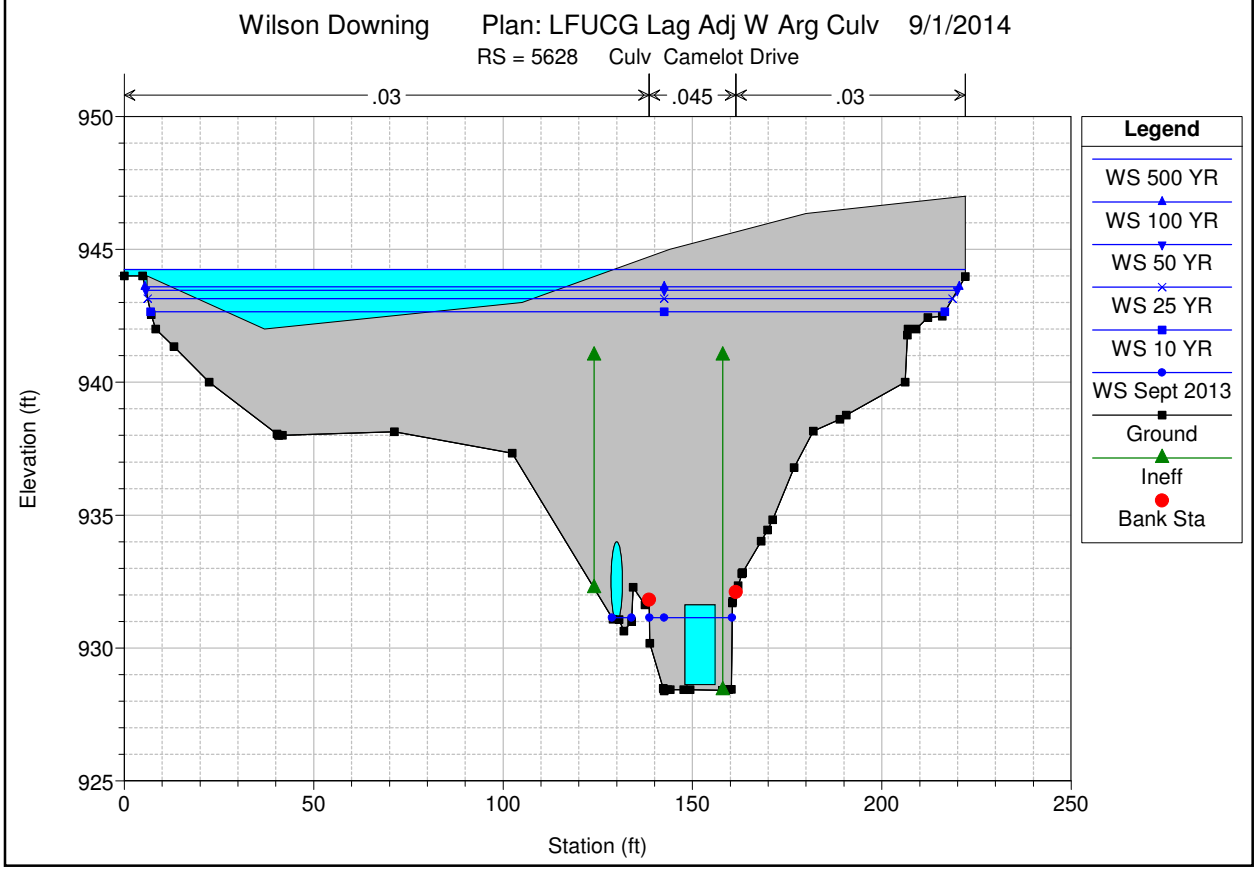

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 6123.259
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

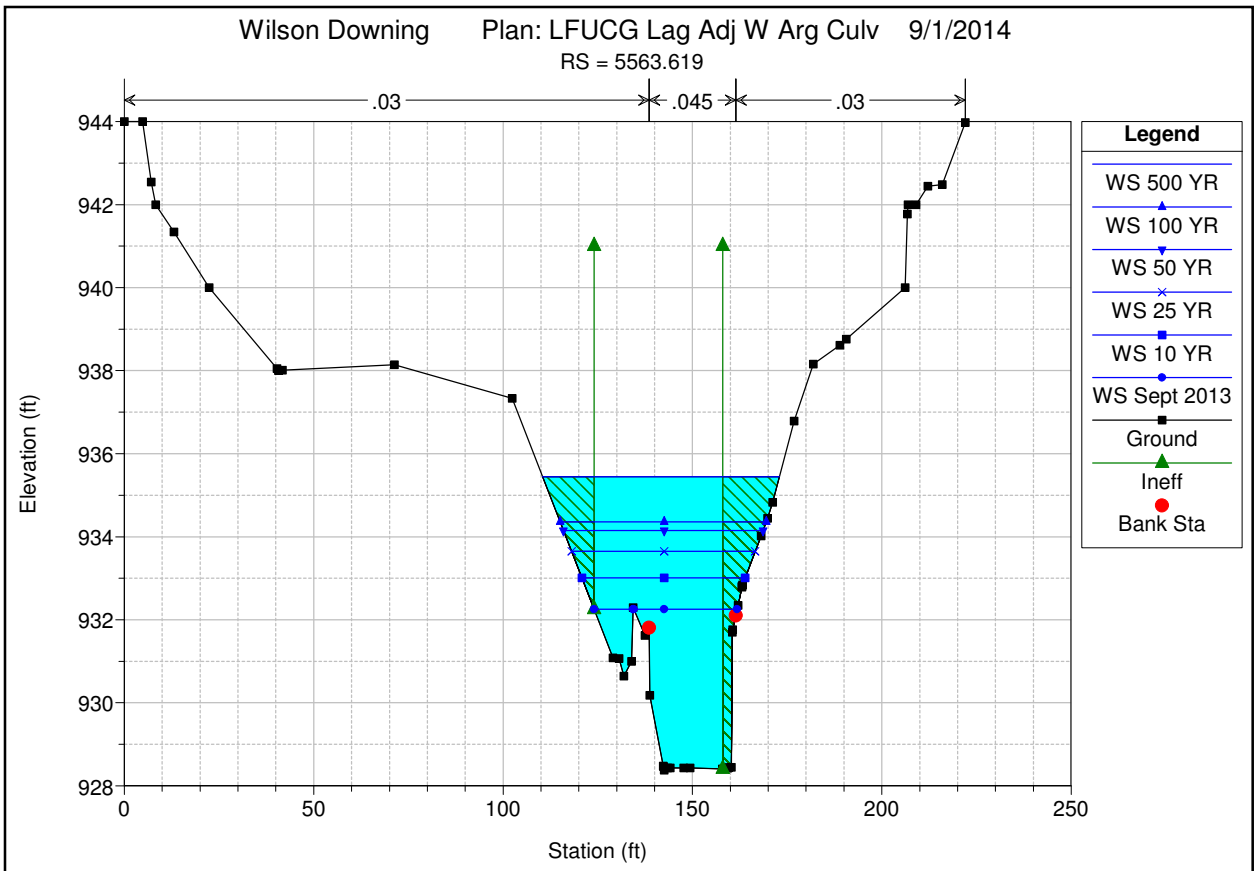

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 6053.228
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

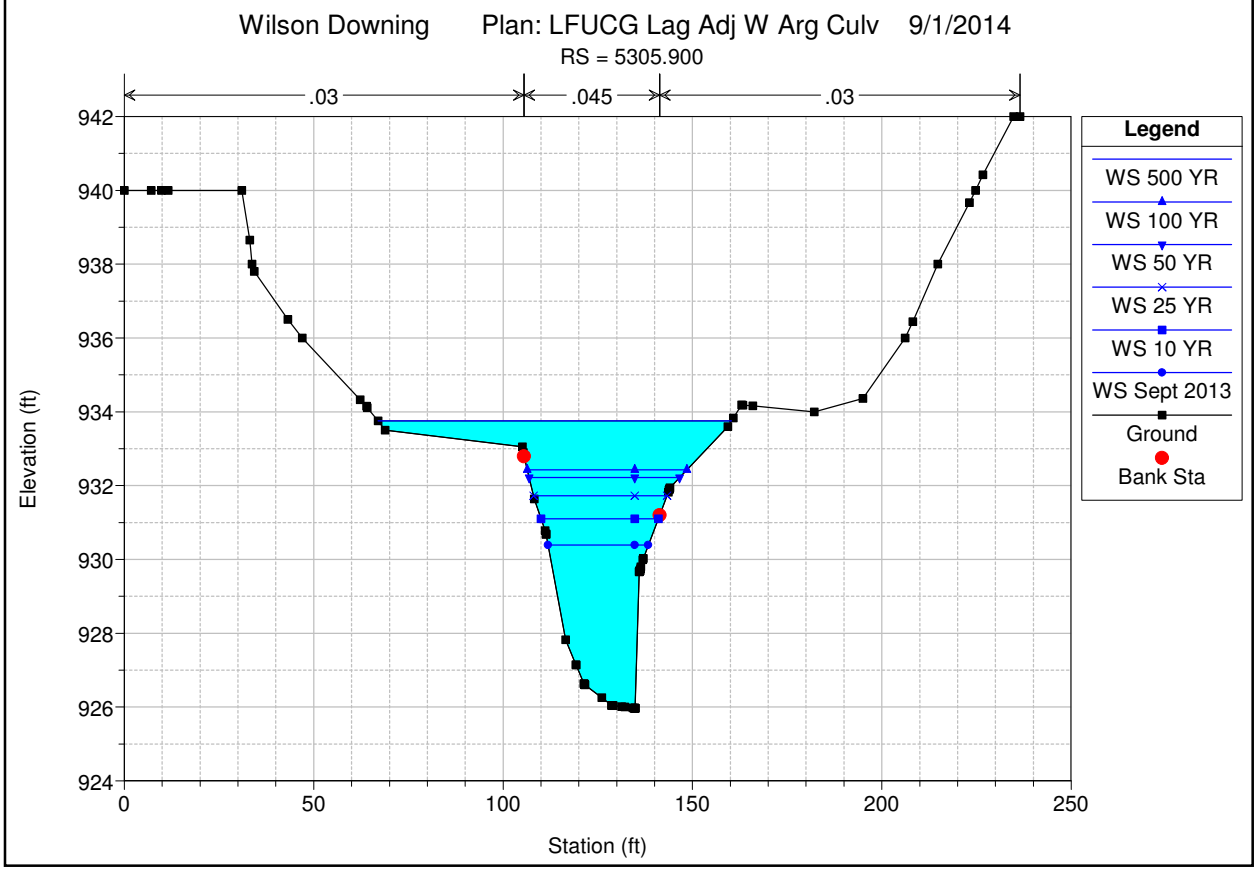

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 5756.054
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

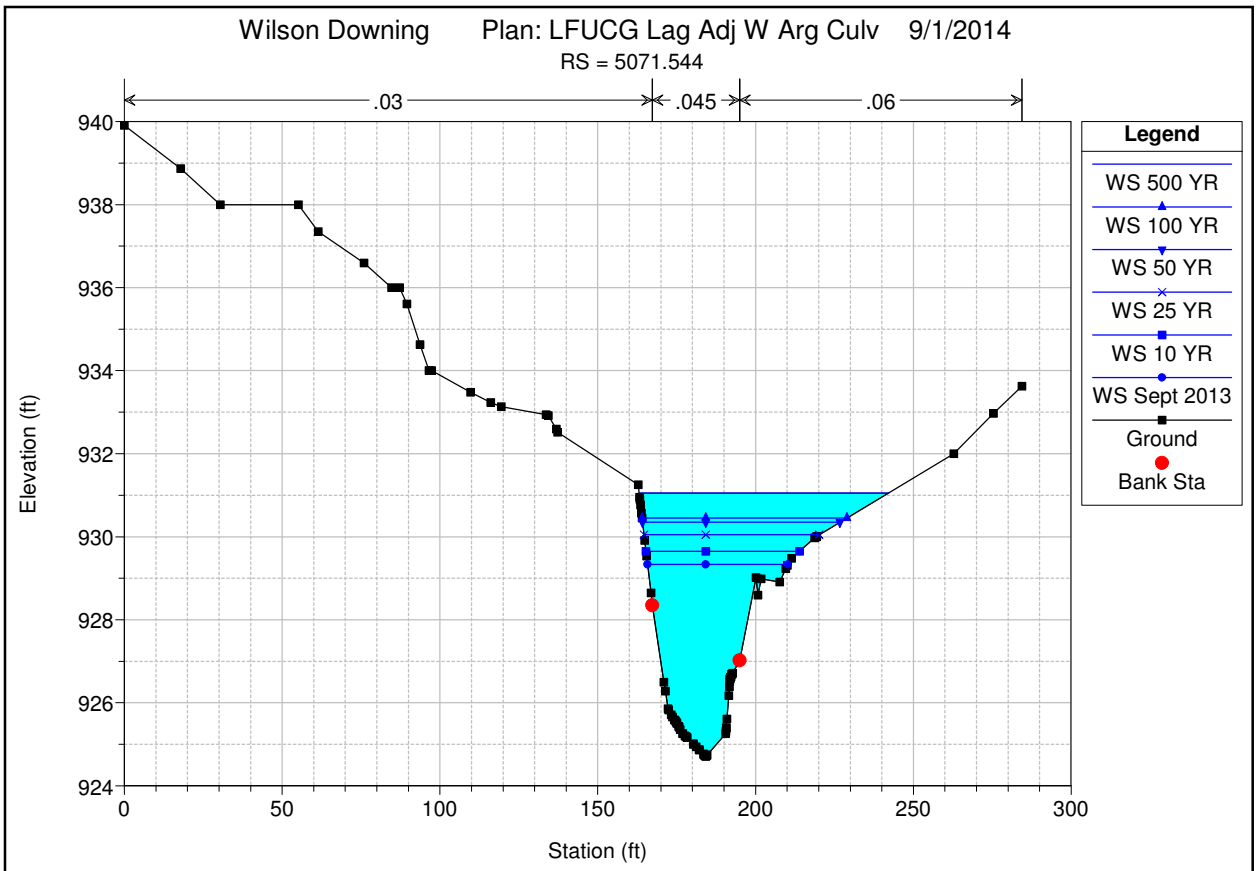

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 5693.757
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

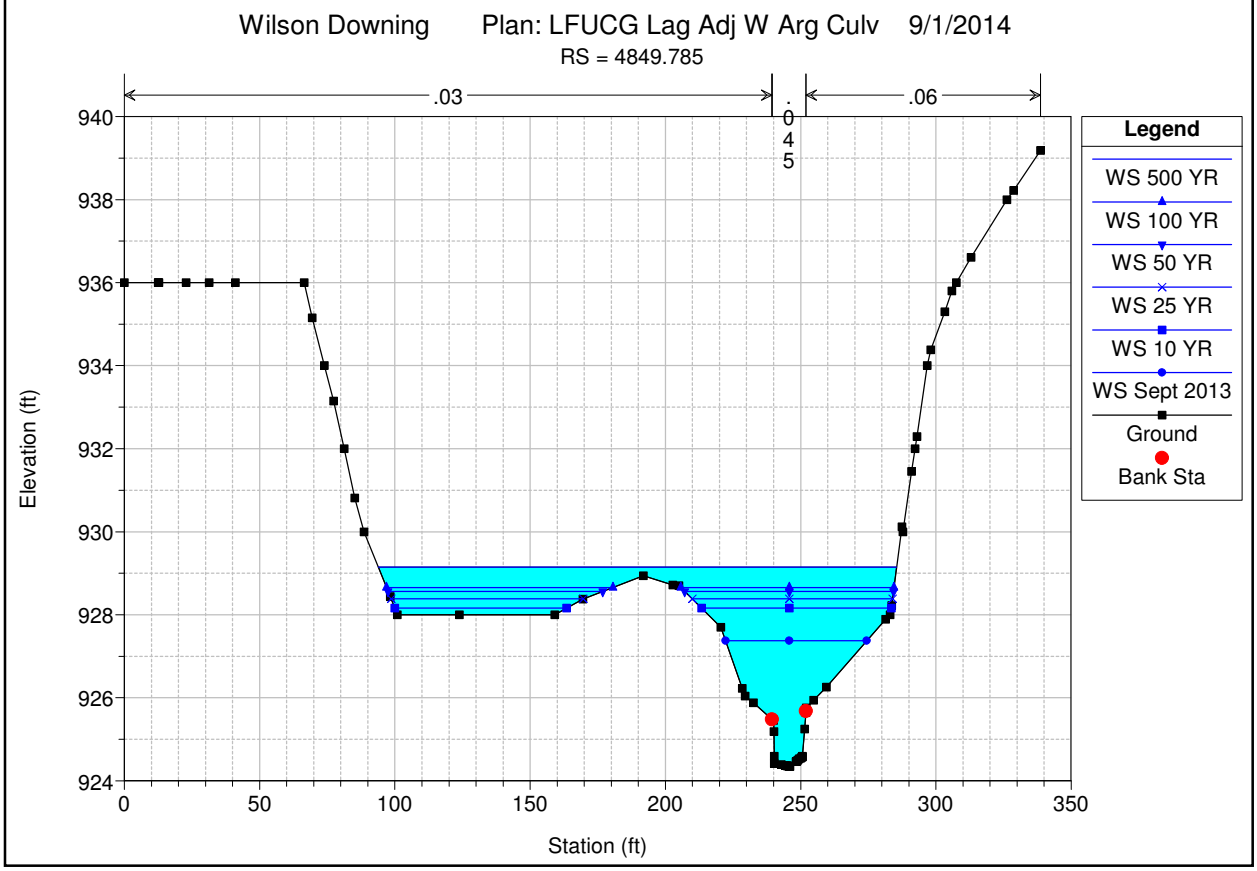

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 5628 Culv Camelot Drive
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

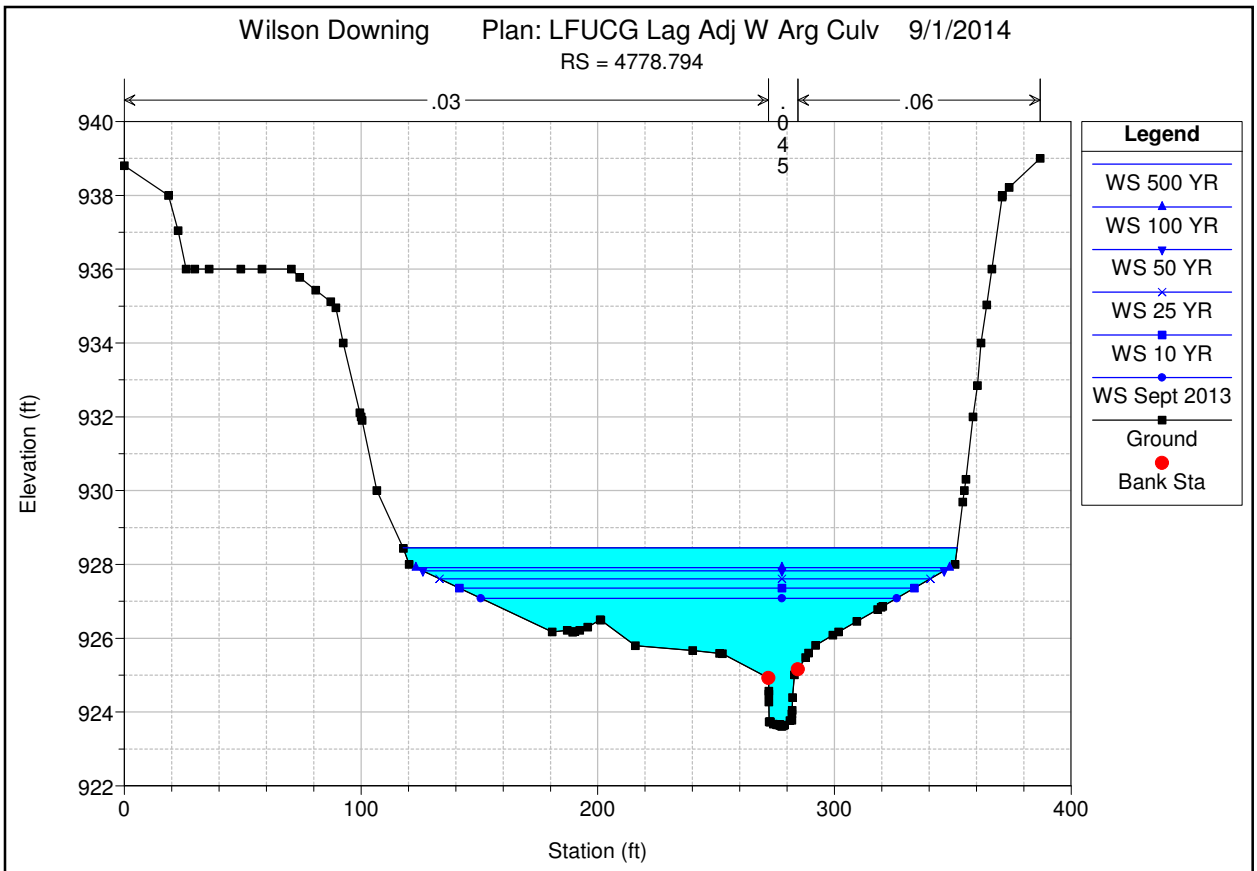

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 5628 Culv Camelot Drive
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

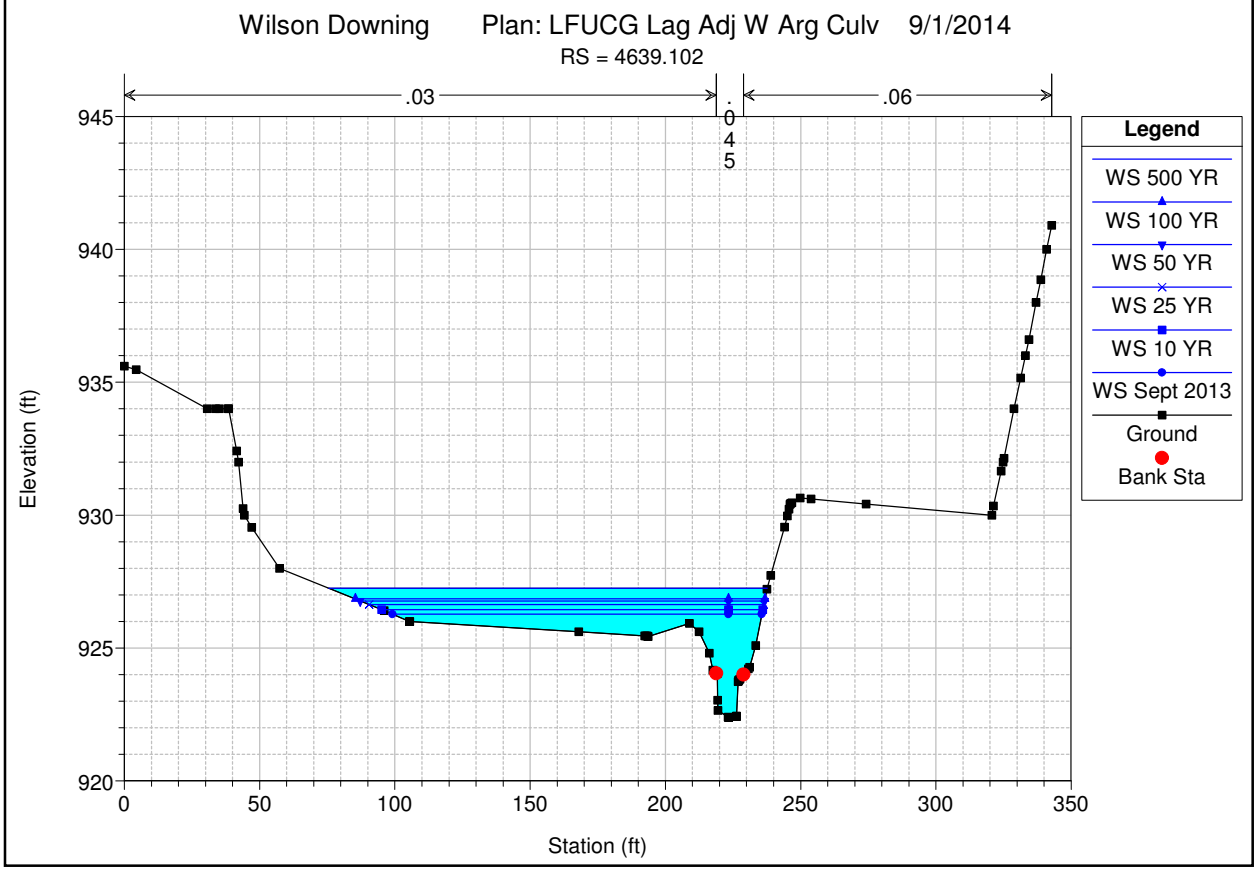

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 5563.619
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

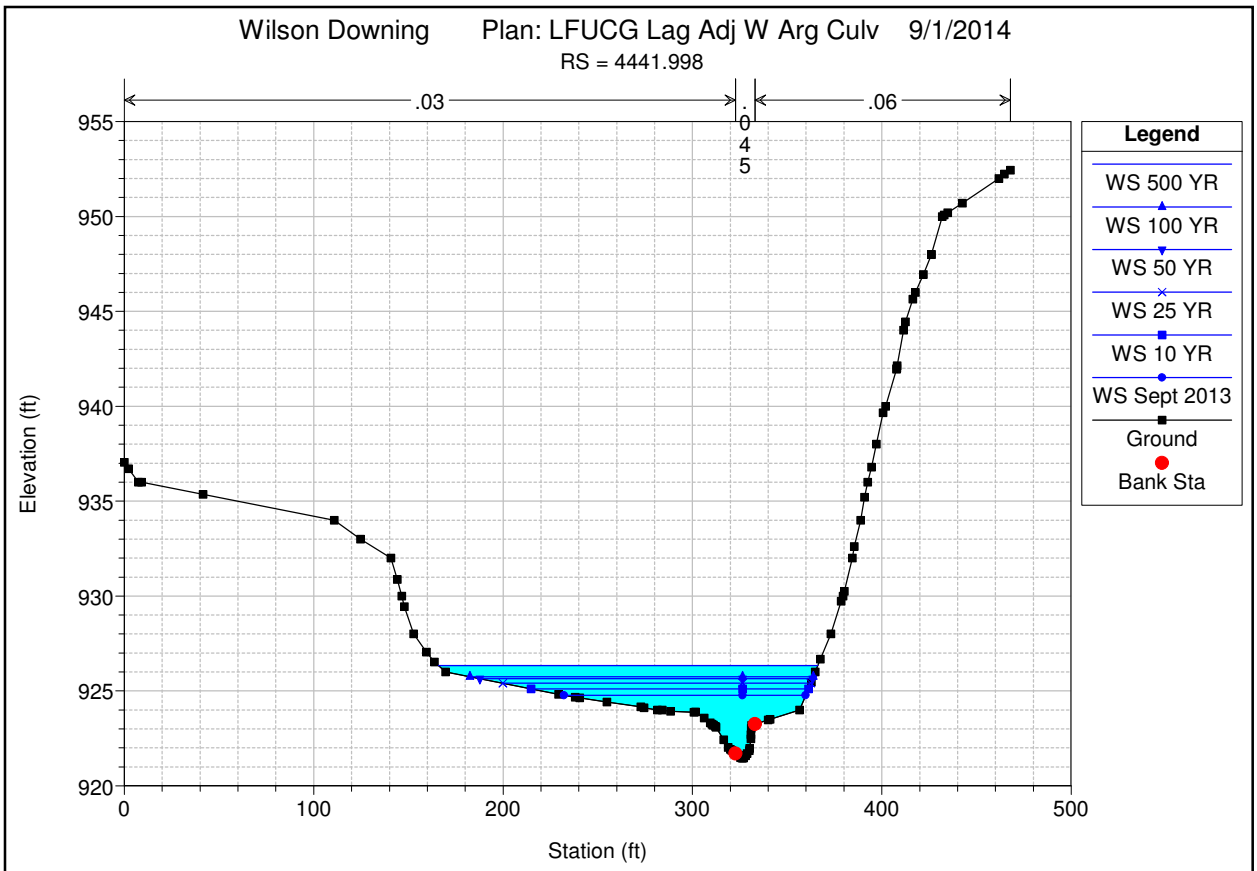

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 5305.900
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

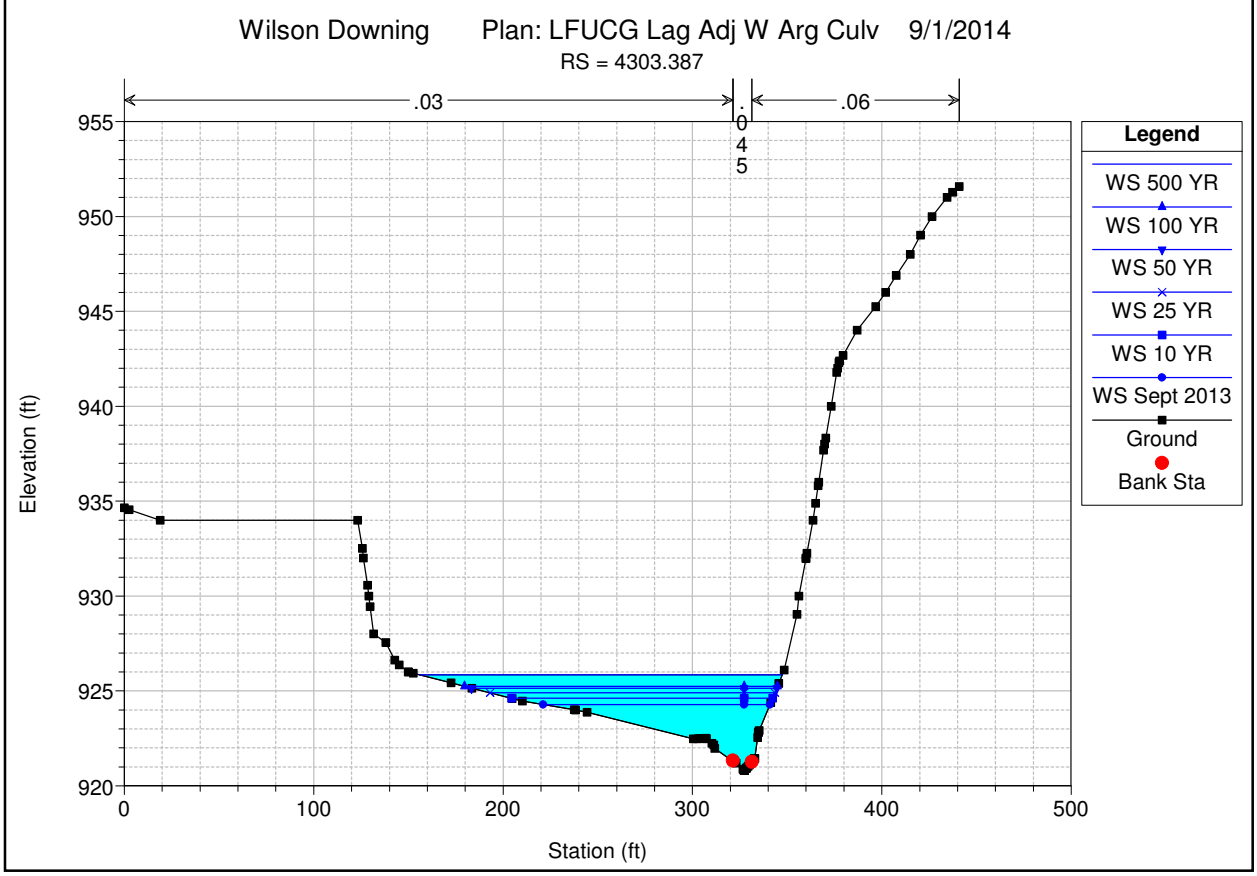

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 5071.544
.03
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

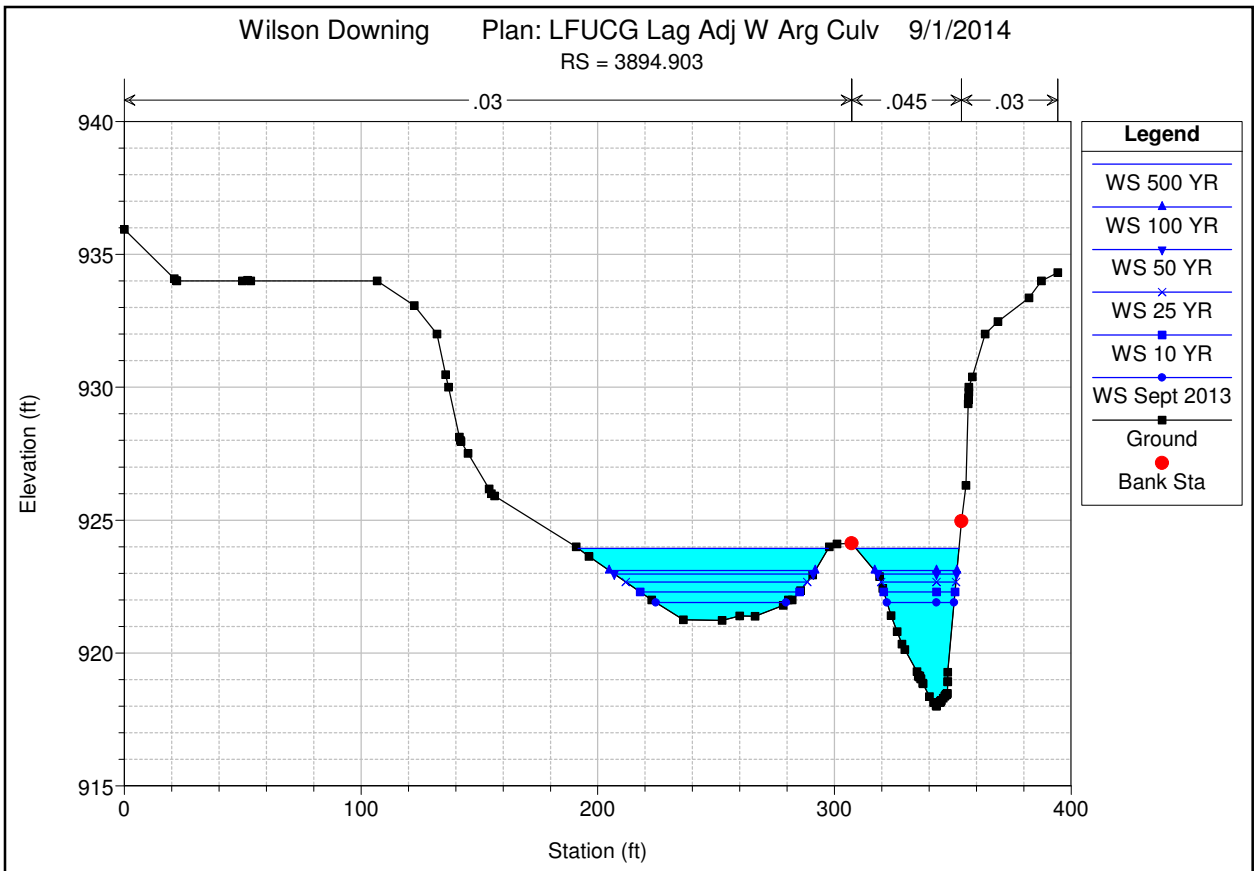

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 4849.785
.03
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

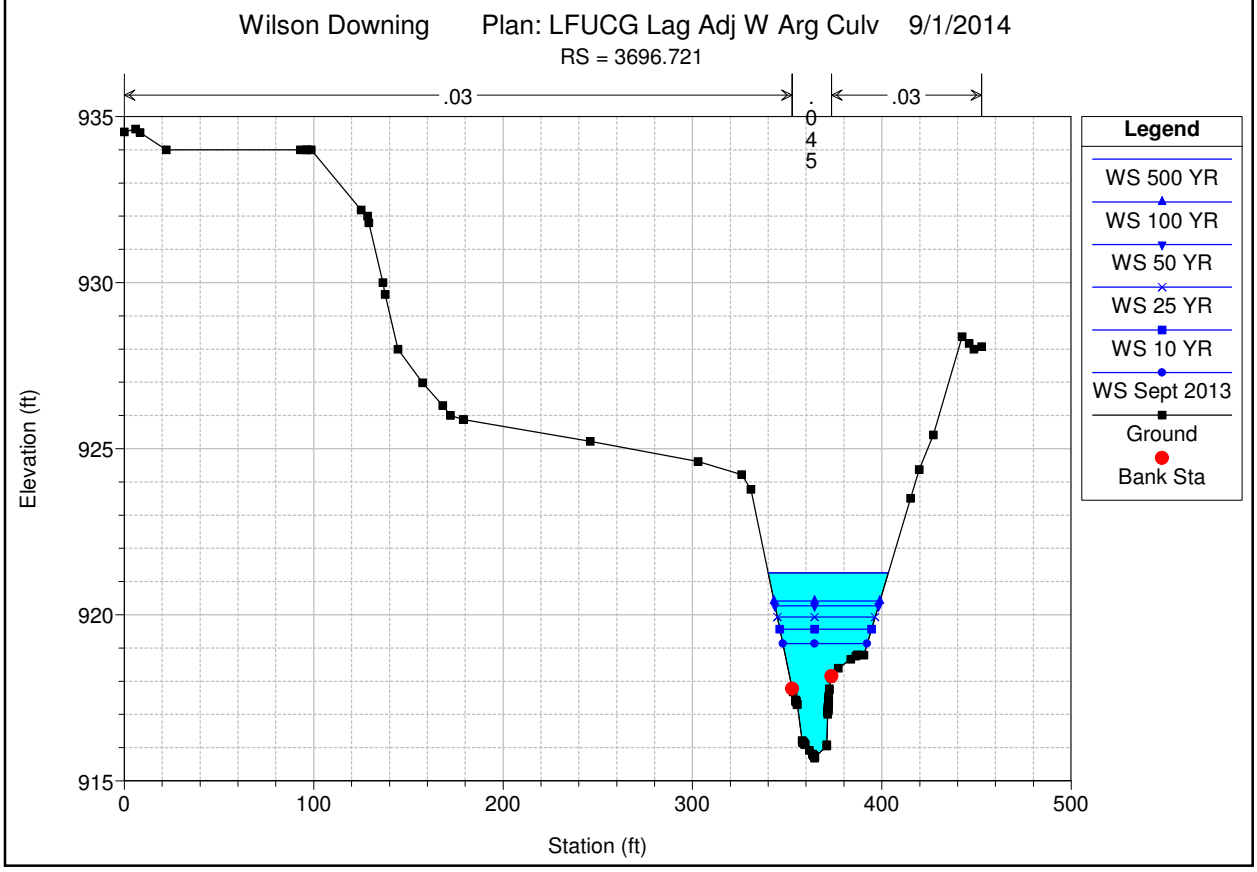

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 4778.794
.03
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

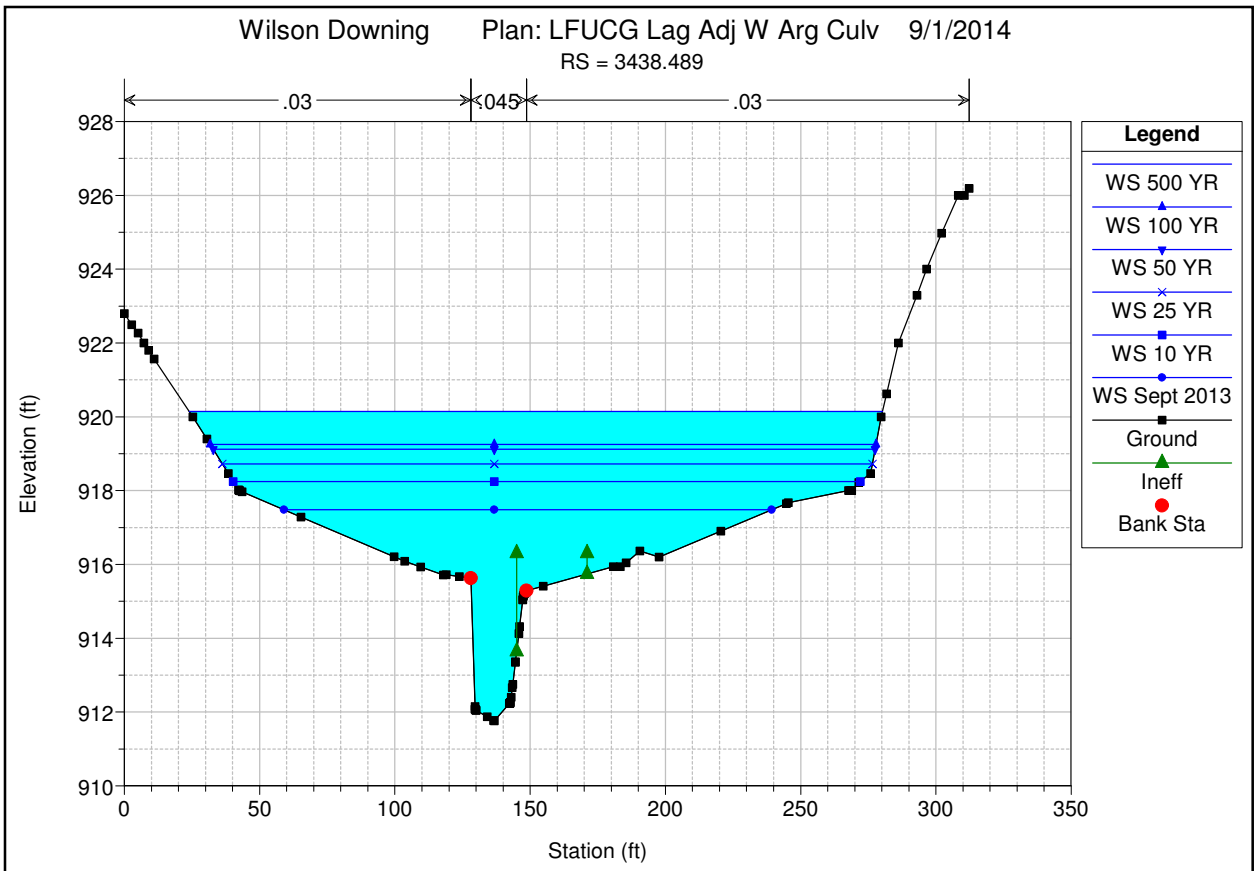

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 4639.102
.03
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

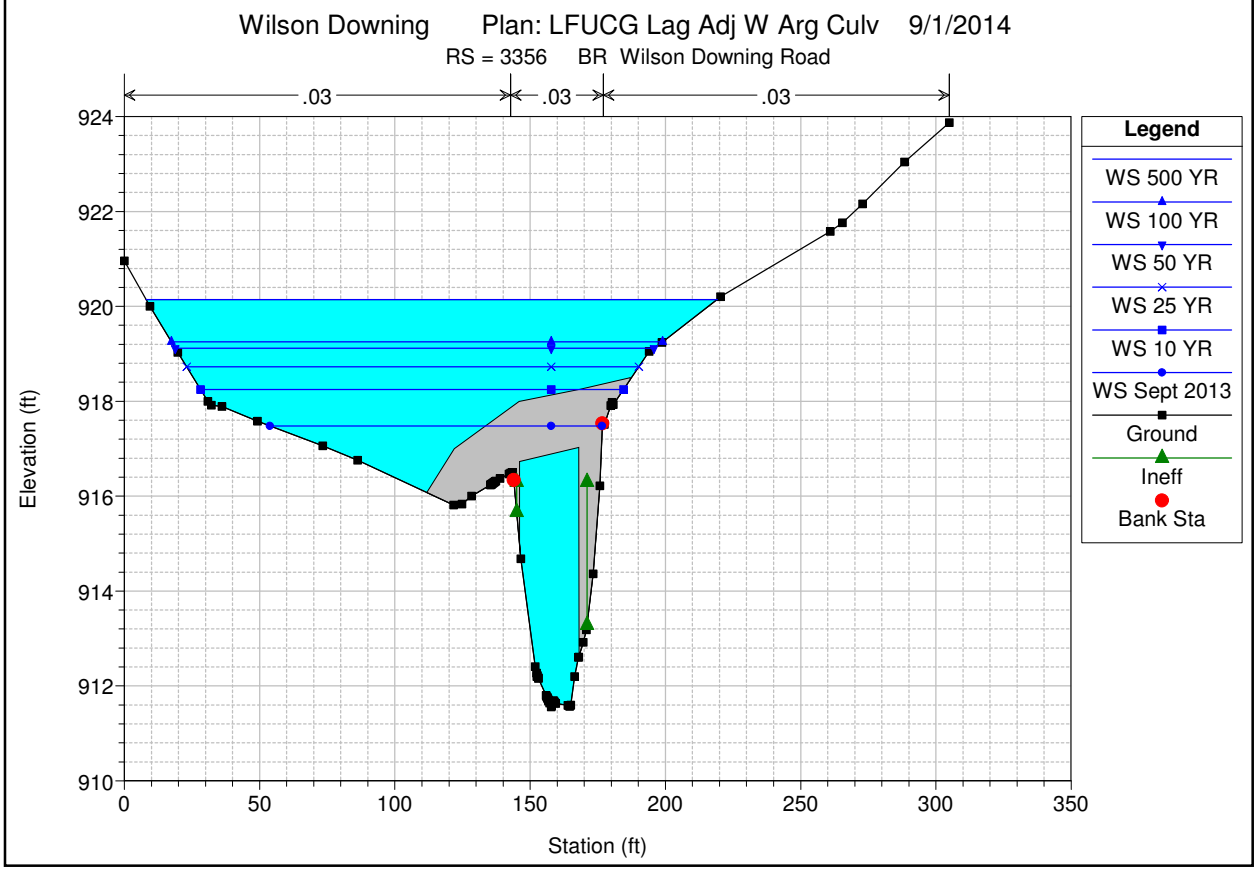

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 4441.998
.03
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

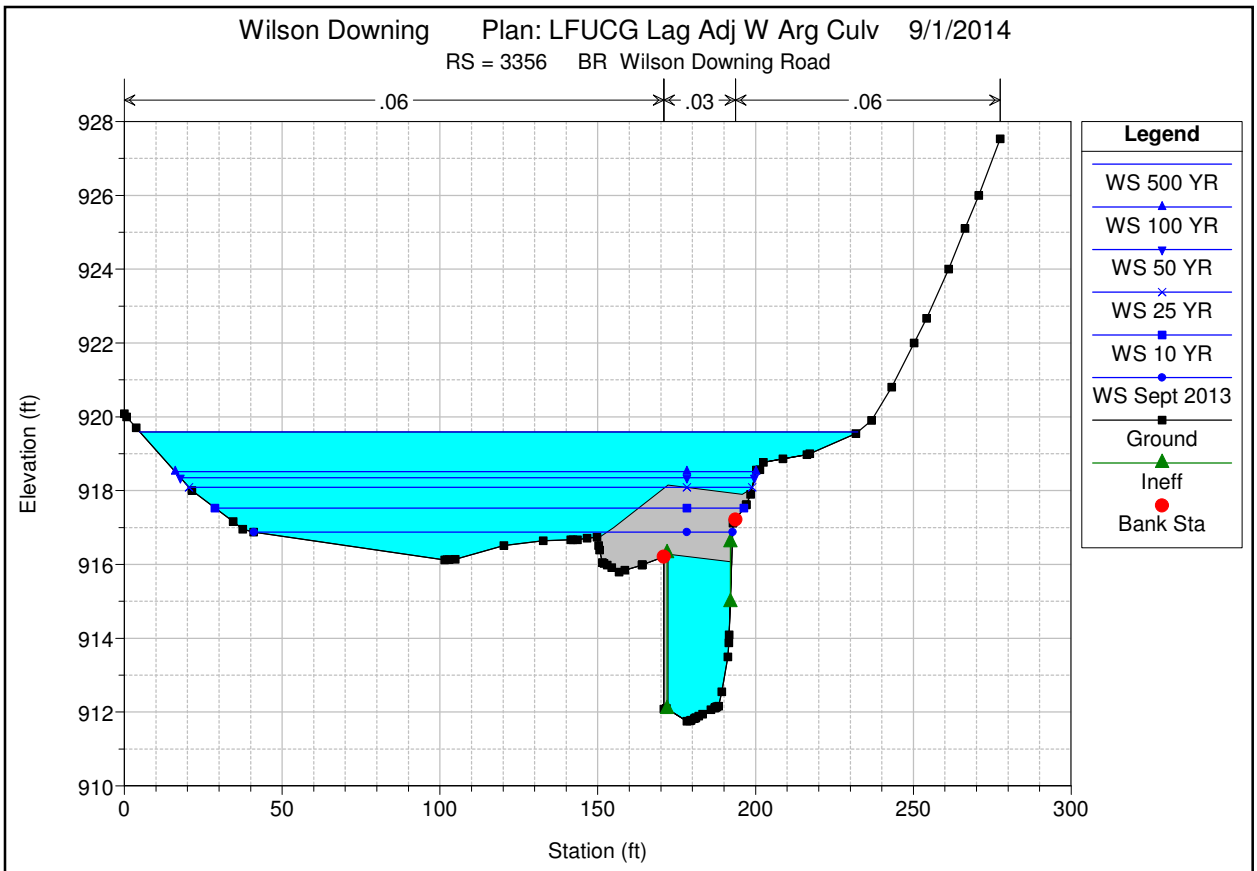

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 4303.387
.03
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

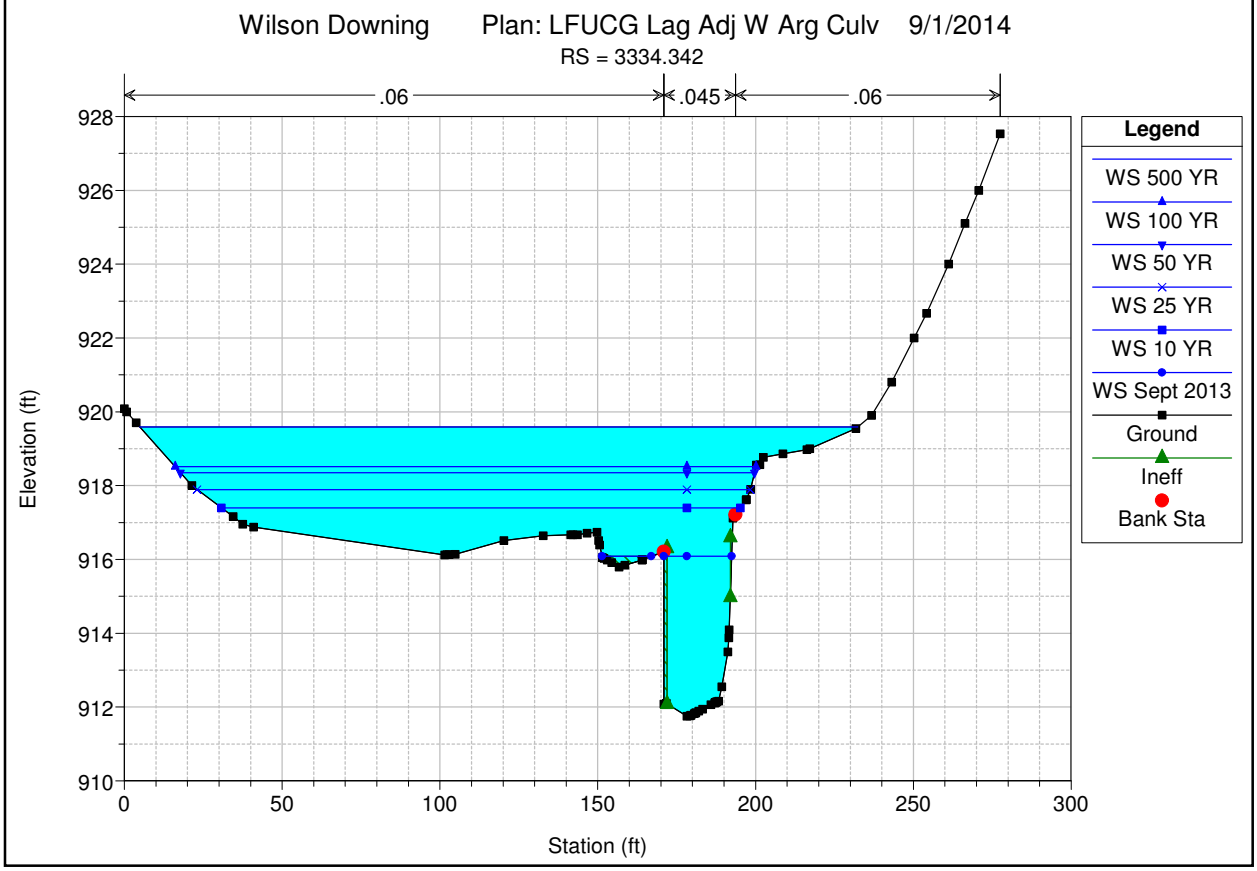

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 3894.903
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

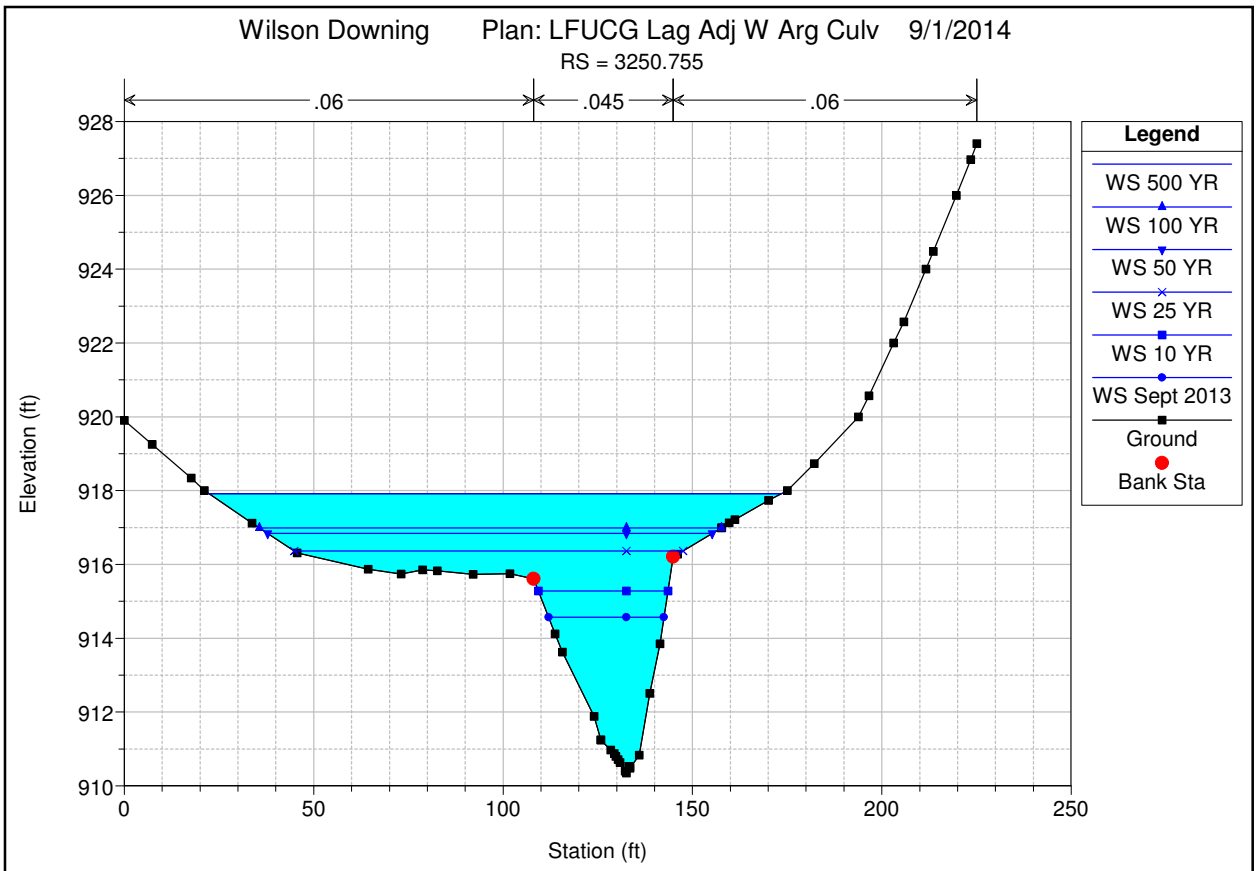

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 3696.721
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

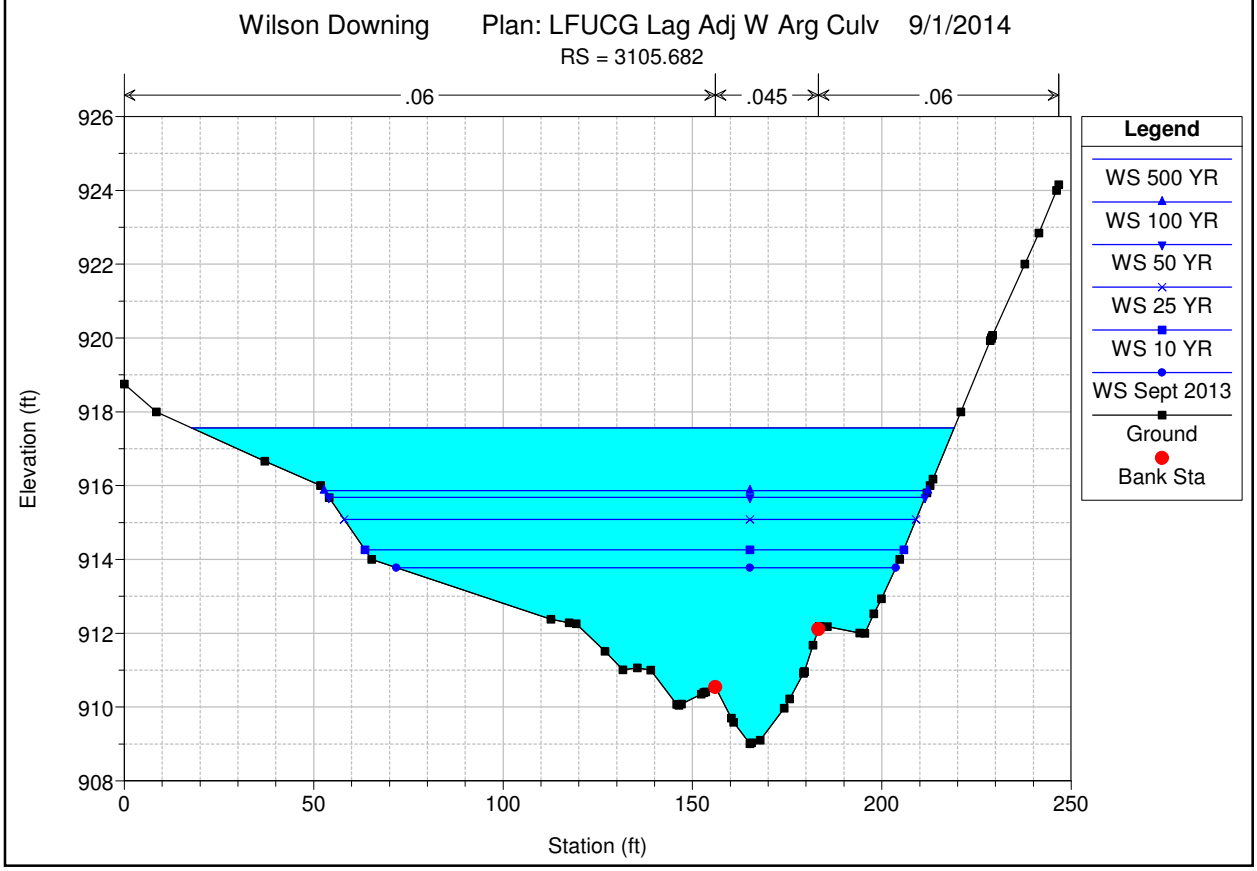

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 3438.489
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

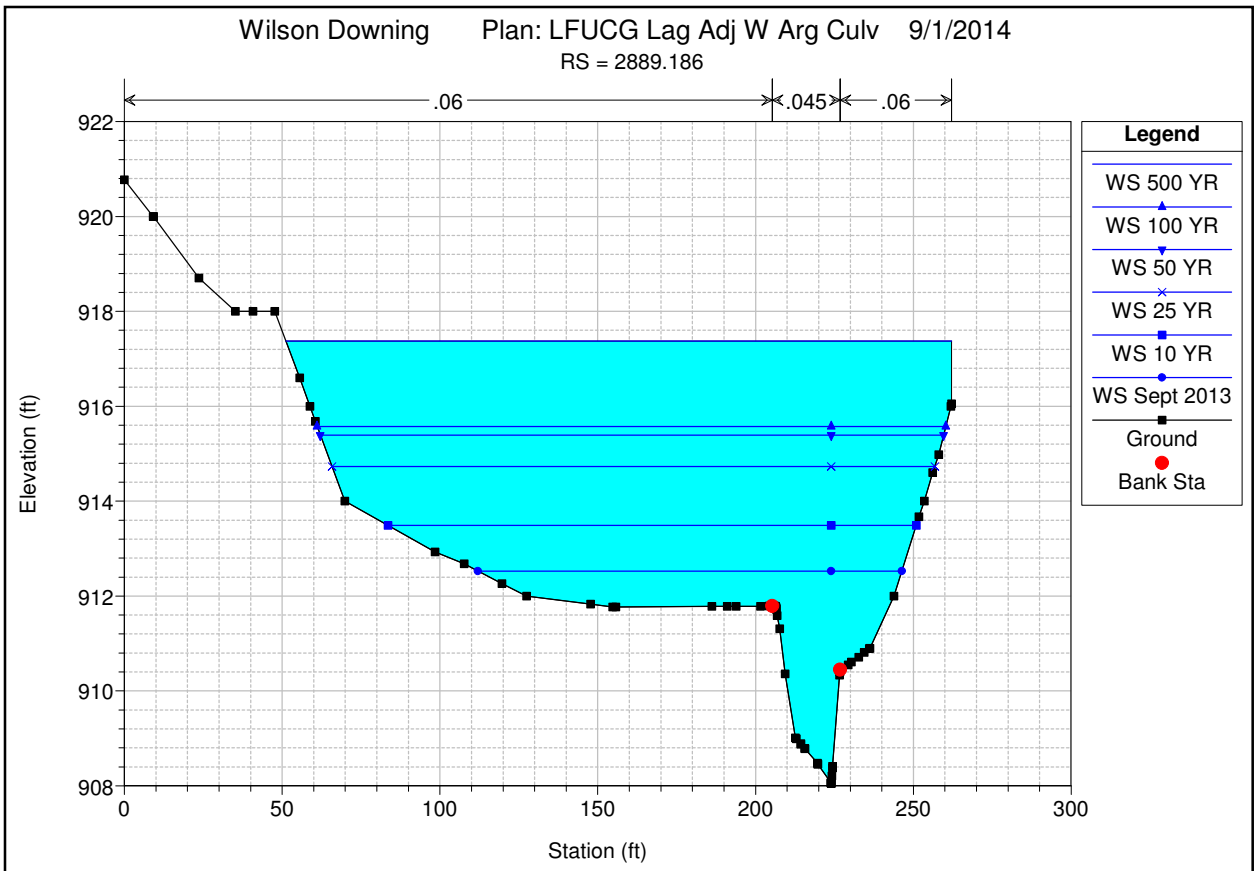

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 3356 BR Wilson Downing Road
.03
.03
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

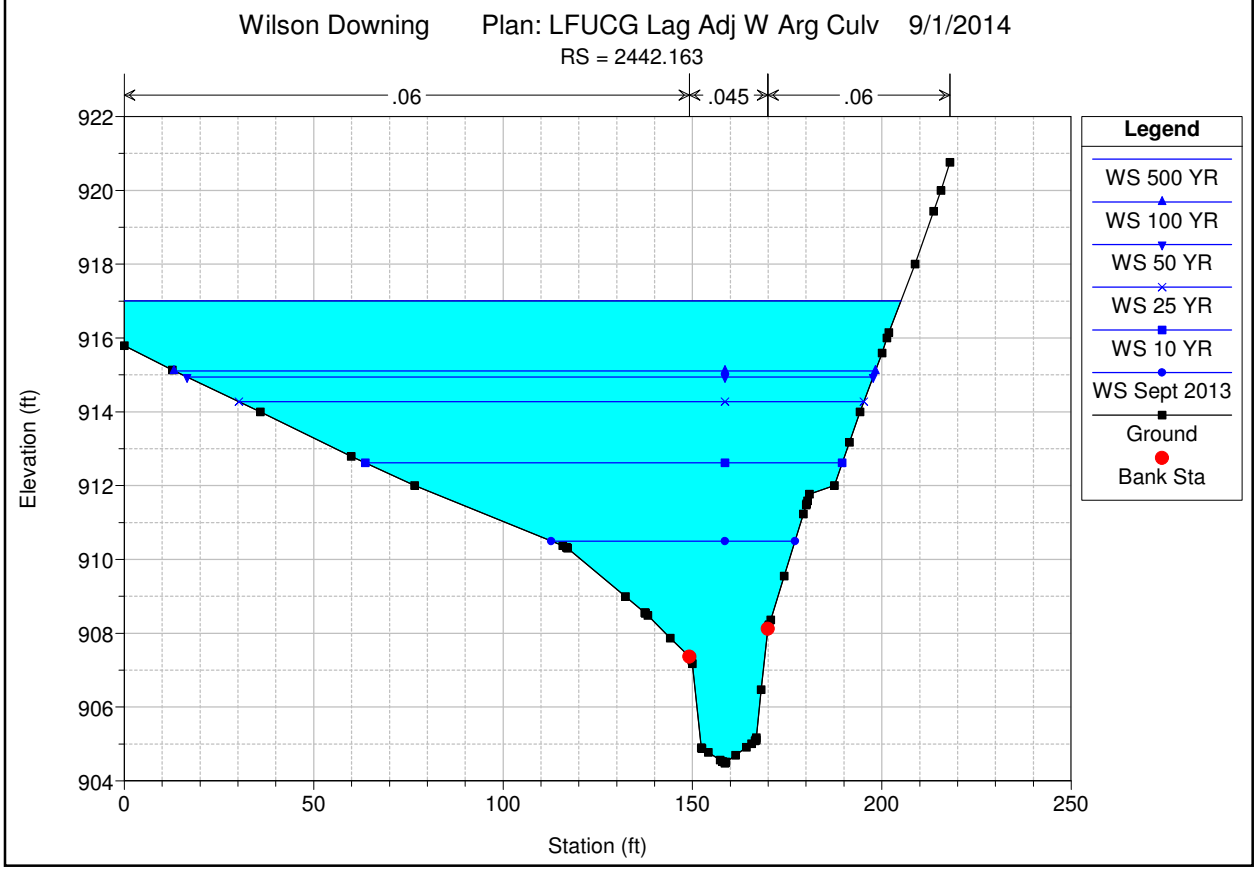

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 3356 BR Wilson Downing Road
.06
.03
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

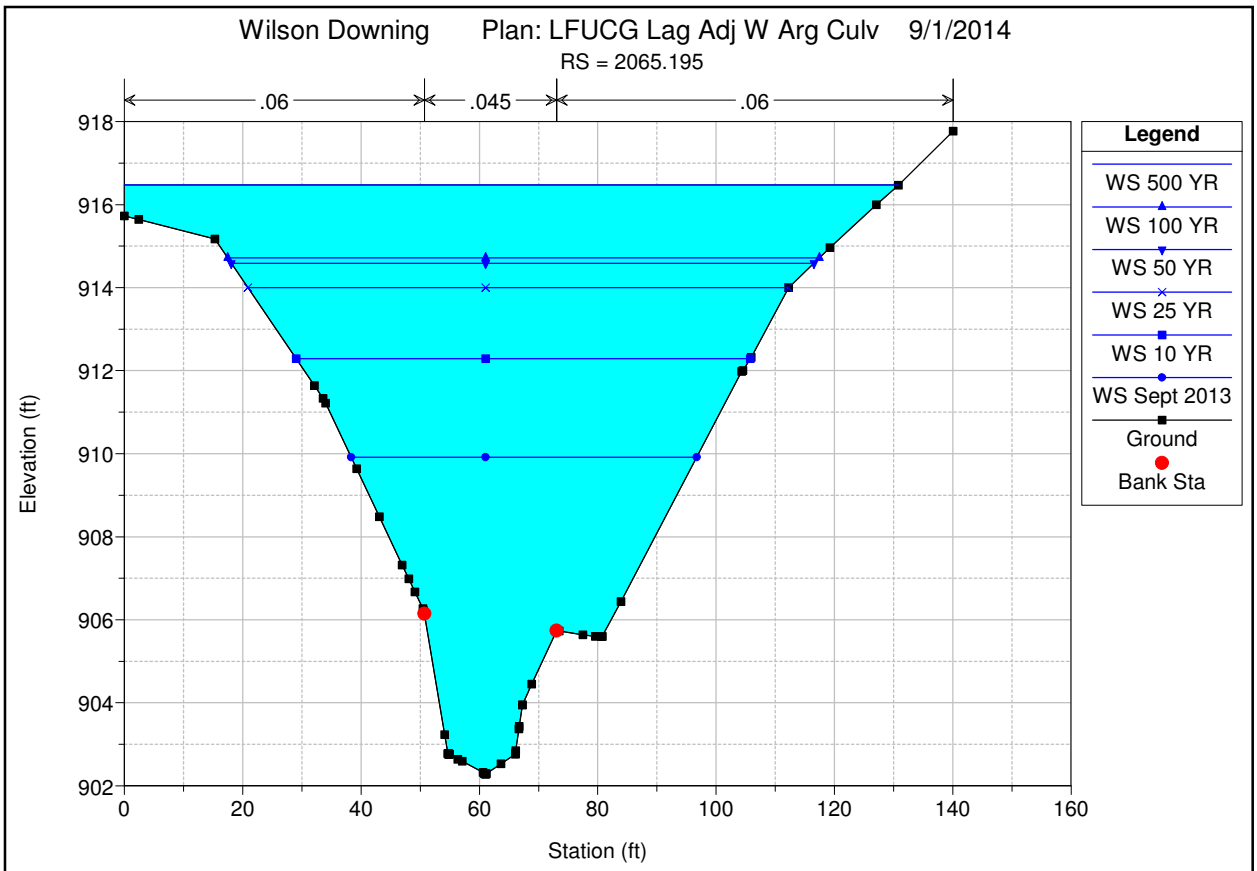

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 3334.342
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

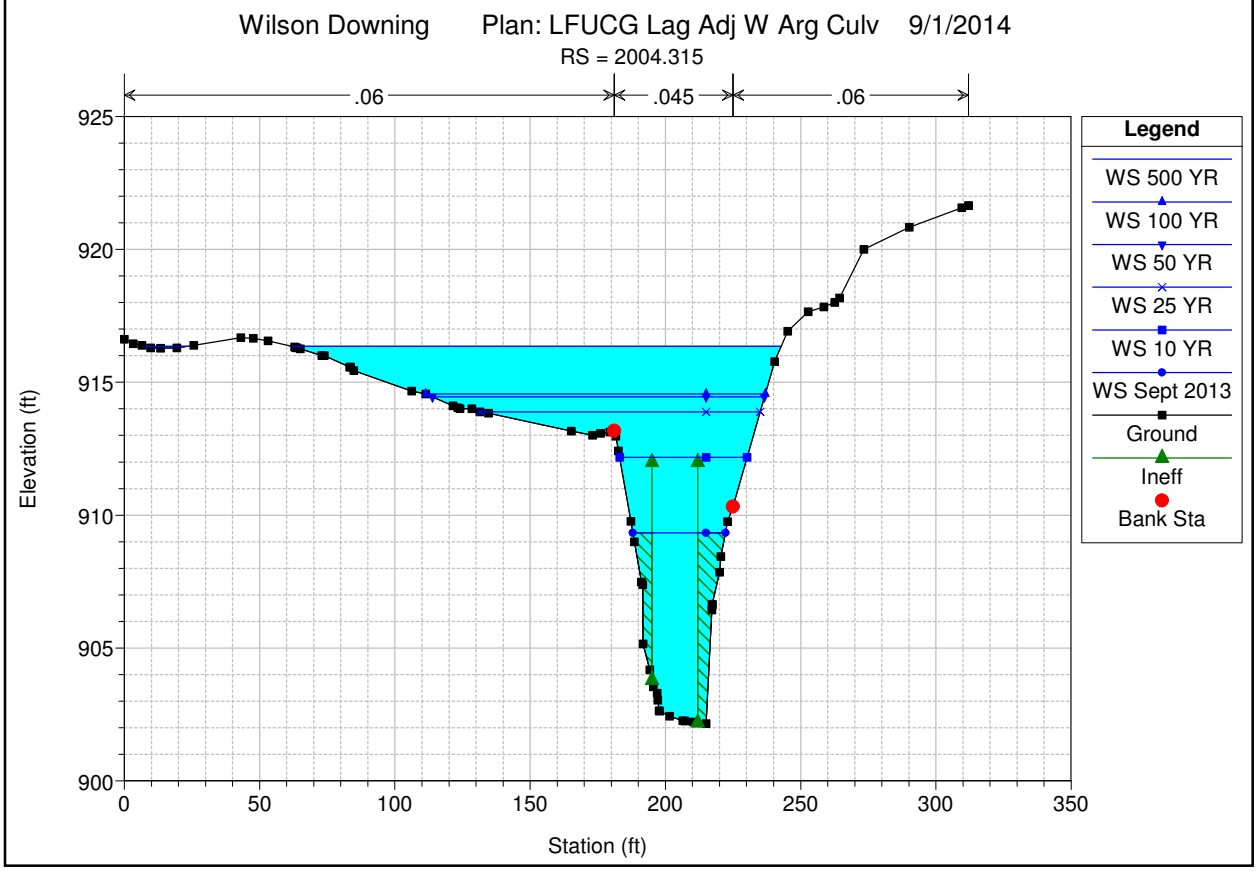

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 3250.755
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

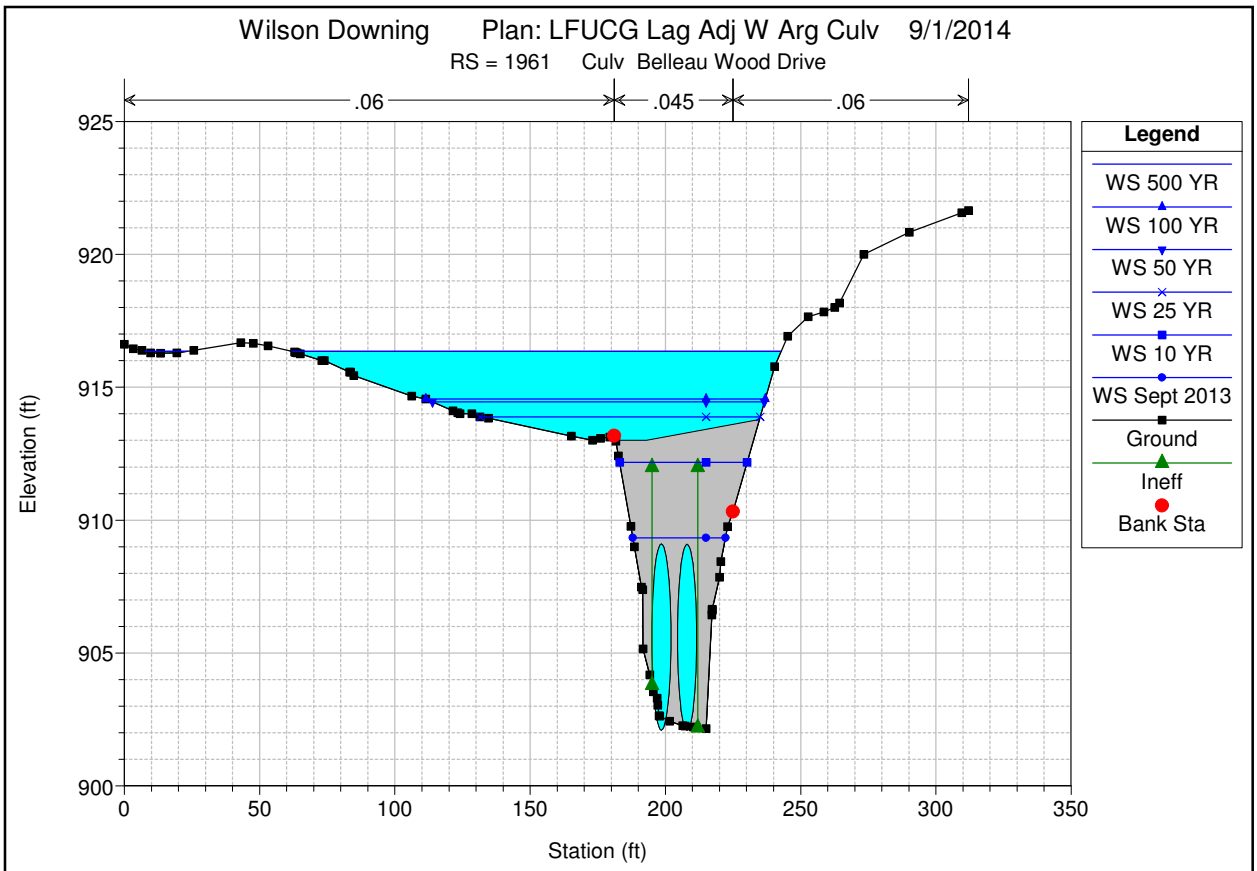

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 3105.682
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

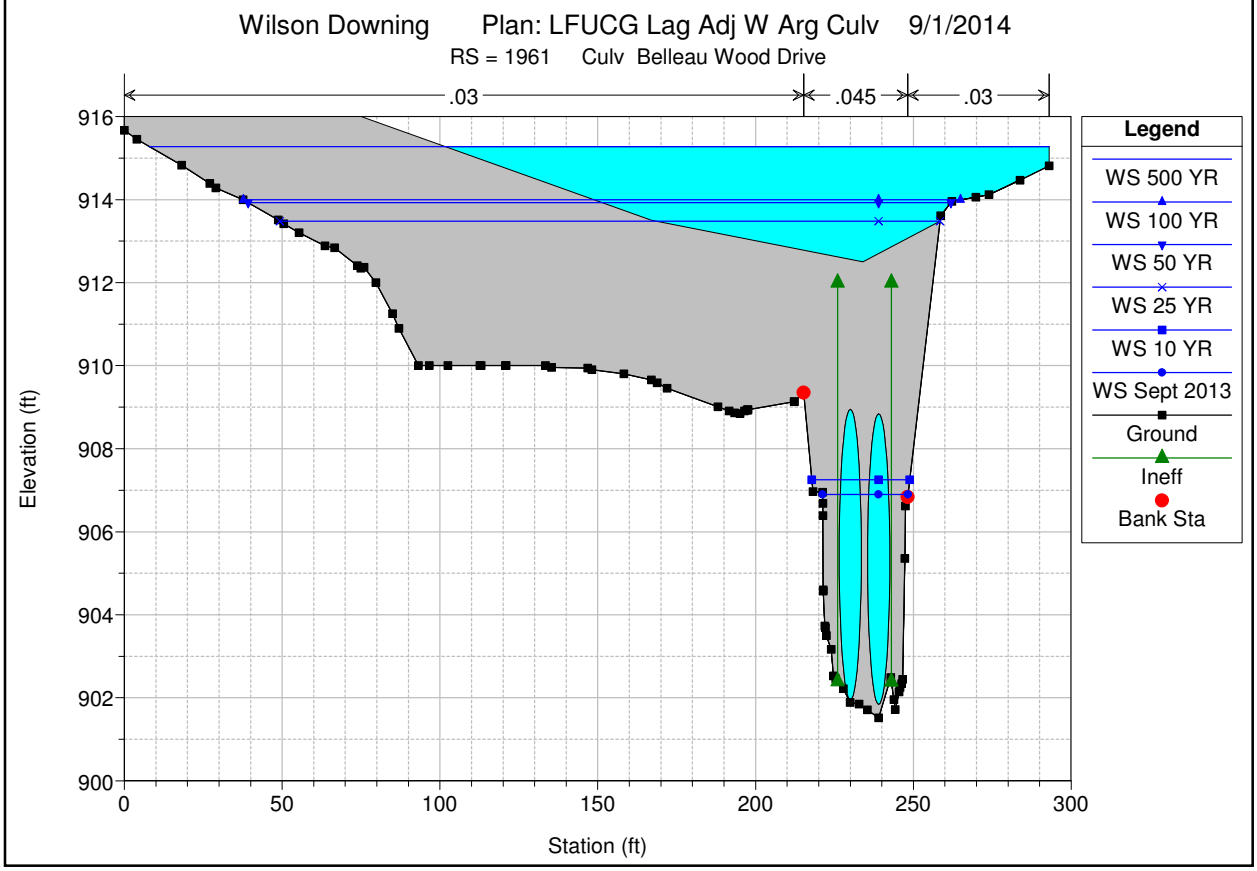

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 2889.186
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

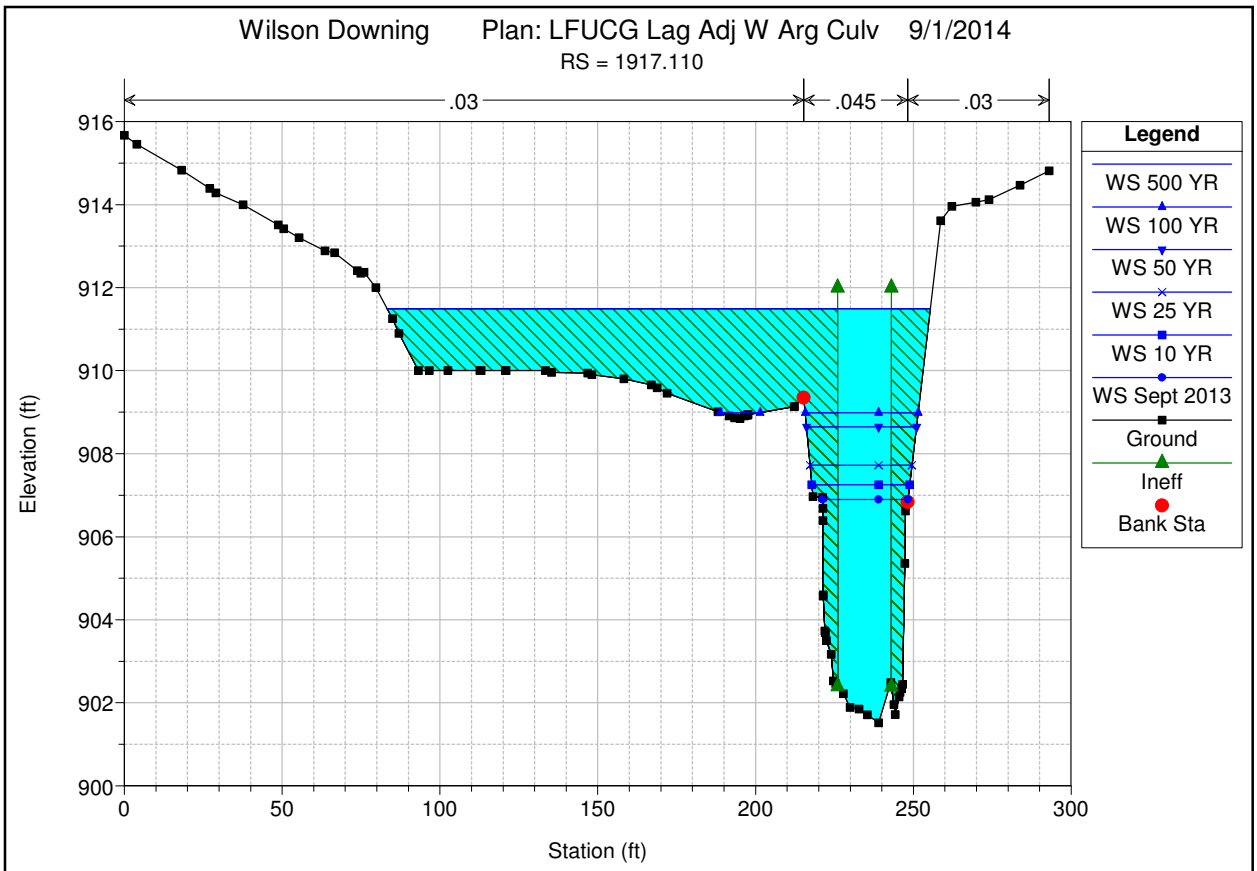

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 2442.163
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

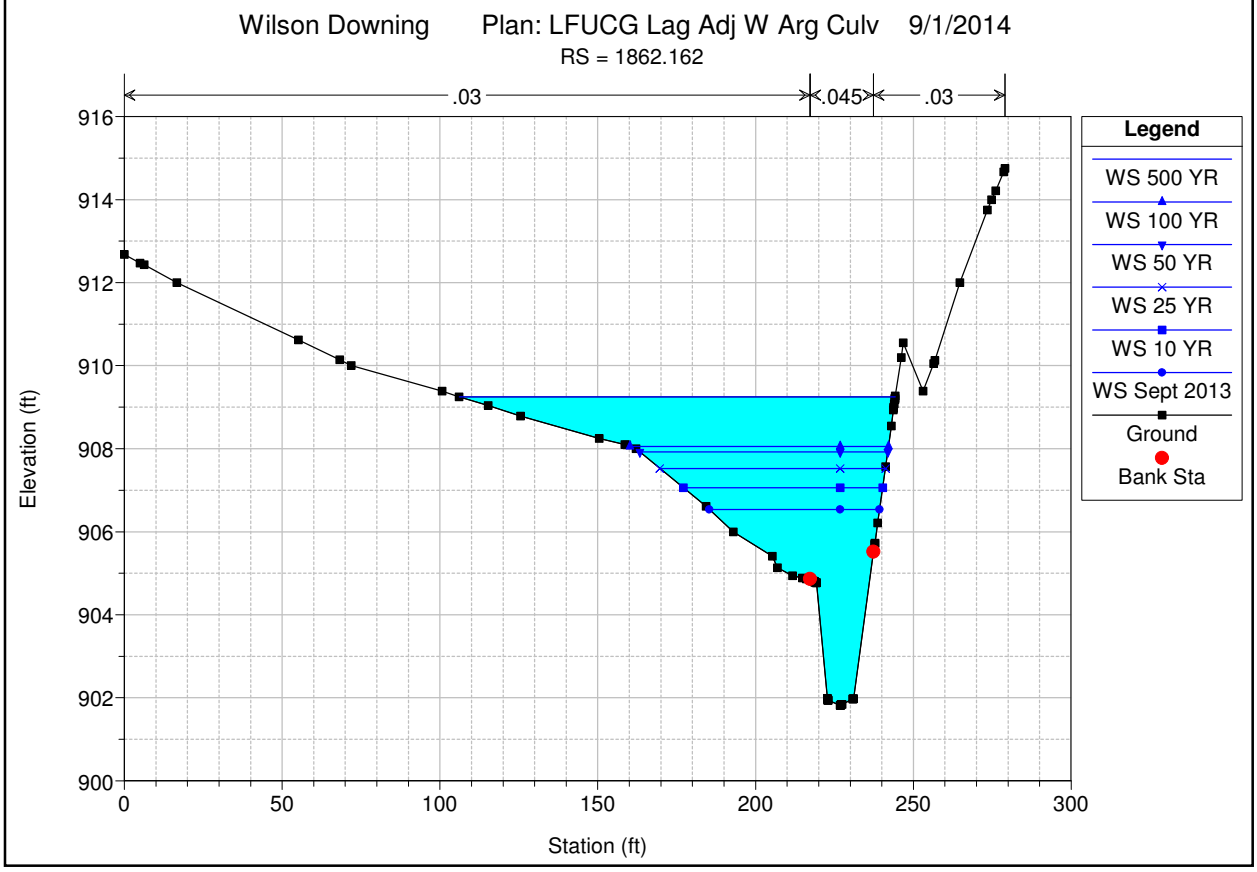

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 2065.195
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

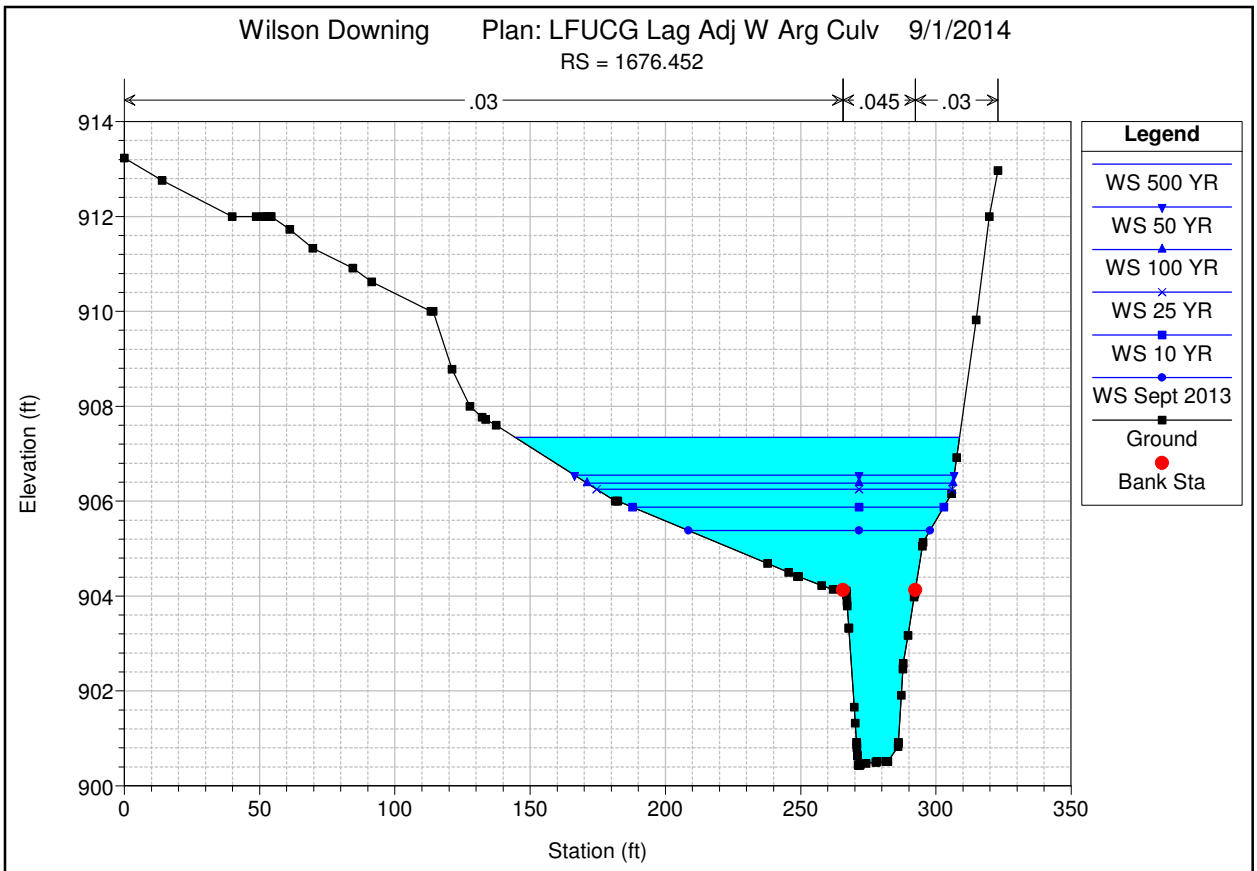

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 2004.315
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

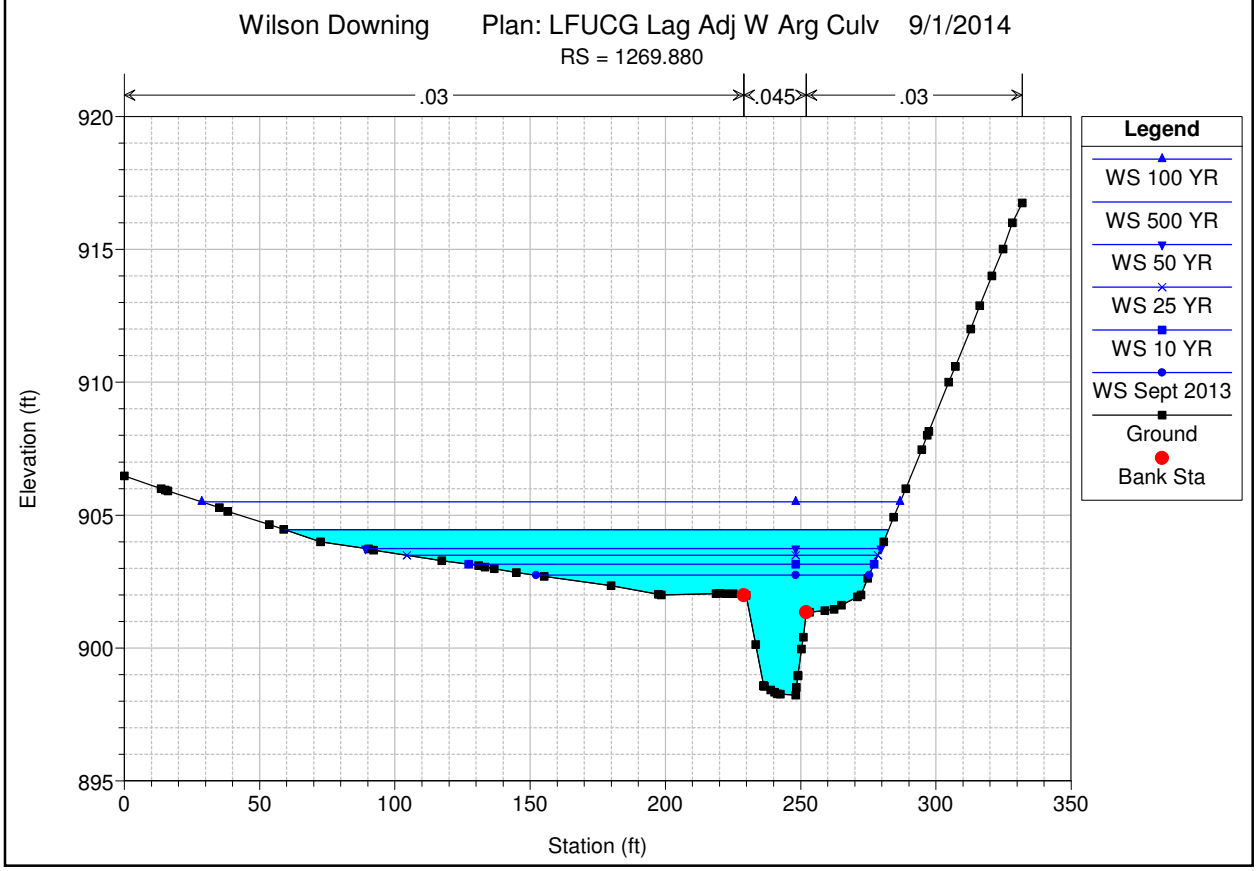

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 1961 Culv Belleau Wood Drive
.06
.045
.06
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta


Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 1961 Culv Belleau Wood Drive
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta

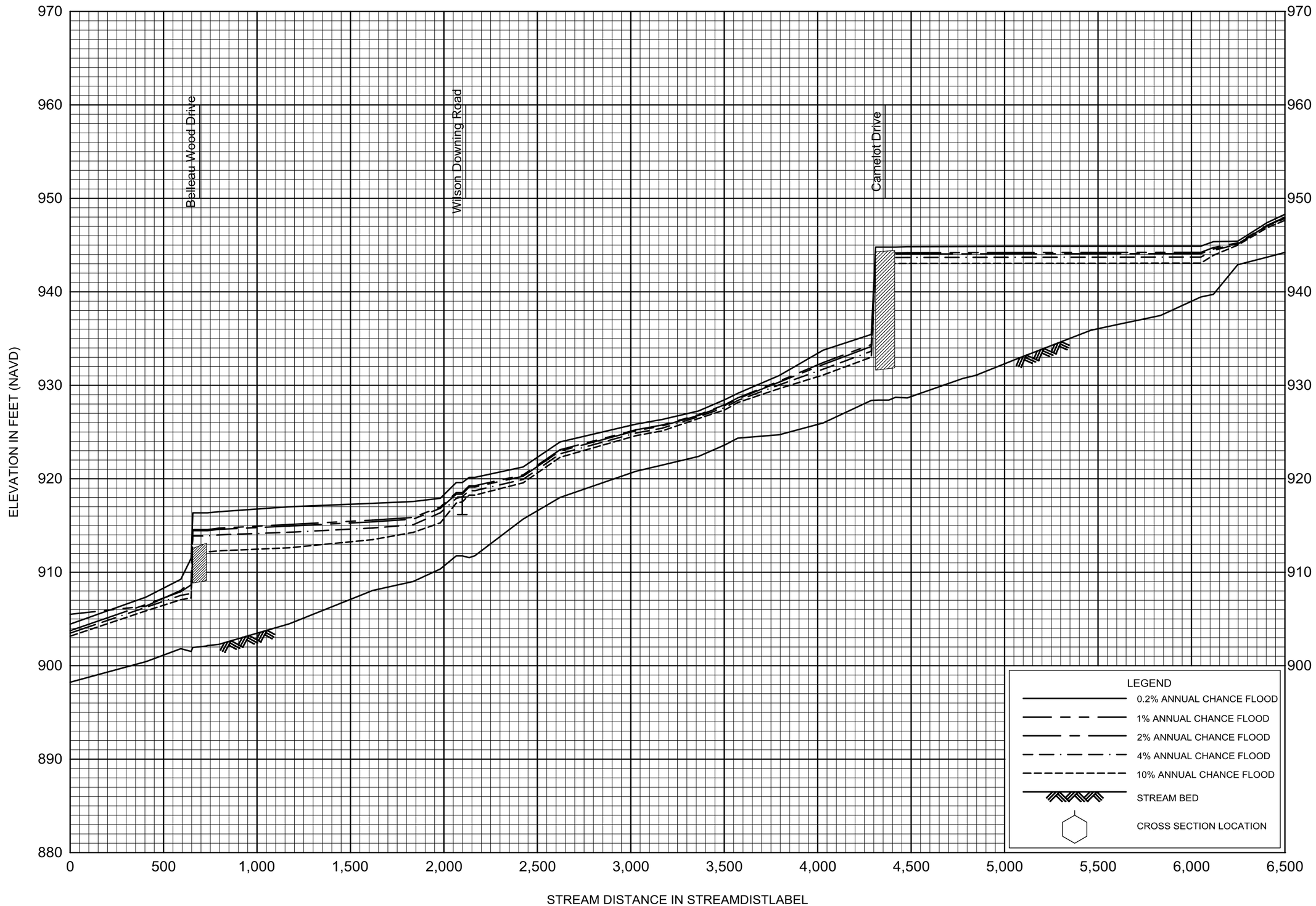

Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 1917.110
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Ineff
Bank Sta


Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 1862.162
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 100 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta


Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 1676.452
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 500 YR
WS 50 YR
WS 100 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta


Wilson Downing Plan: LFUCG Lag Adj W Arg Culv 9/1/2014
RS = 1269.880
.03
.045
.03
Elevation (ft)
Station (ft)
Legend
WS 100 YR
WS 500 YR
WS 50 YR
WS 25 YR
WS 10 YR
WS Sept 2013
Ground
Bank Sta

Appendix K RASPLOT Profiles



FLOOD PROFILES

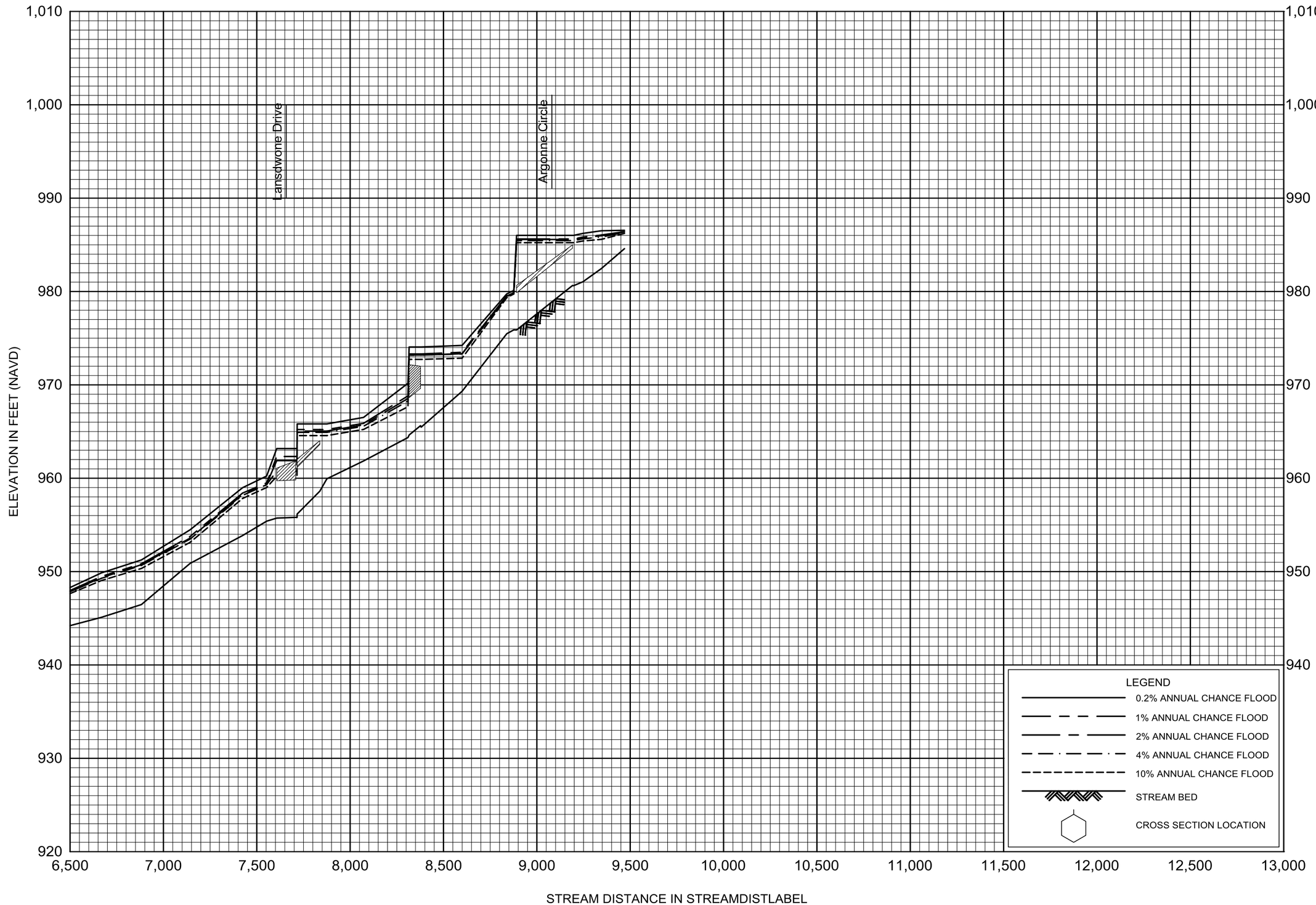
WILSON DOWNING TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

FAYETTE COUNTY, KY

COMMUNITYNAME

01P



FLOOD PROFILES

WILSON DOWNING TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

FAYETTE COUNTY, KY

COMMUNITYNAME

02P

Appendix K Check RAS Report

cHECk-RAS Report

HEC-RAS Project:	*wilsondowning.prj*
Plan File:	*wilsondowning.p02*
Geometry File:	*wilsondowning.g05*
Flow File:	*wilsondowning.f03*
Report Date:	*7/22/2014*

Message ID	Message	Cross sections affected	Comments
CV CF 01	This is ($strucname$). Culvert Chart # is $chart$ and Scale # is $scale$. Culvert entrance shape is $shape$. Culvert entrance loss coefficient is $inputentlosscoef$. It should be equal to $entlosscoef$. Please refer to Table 6-3 and Table 6-4 on Page 6-26 of HEC-RAS Hydraulic Reference Manual	8910	Entrance loss is negligabel because the 60" RCP directs water into the barrell
MP SW 01DD	The name of the stream is ($streamname$). The flow regime is subcritical or mixed flow. The downstream starting water-surface elevation, SWSEL, is computed from different methods.		
MS IF 01S2L	This is Section 2 of Multiple Structures. Left Ineffective Flow Station was not considered at Section 2. The Multiple Block Ineffective Flow option should be used. The left ineffective flow elevation should be higher than the highest discharge that has low flow or pressure flow or less than the WSEL of the lowest discharge that has weir flow. The placement of the ineffective flow stations is explained on page 5-10 of the Applications Guide (HEC, 2010).	5628(Culvert)	The ineffective flow areas were placed as described. Multiple blocks were put in the model, CheckRAS adised to remove them.
MS IF 01S2R	This is Section 2 of Multiple Structures. Right Ineffective Flow Station was not considered at Section 2. Multiple Block Ineffective Flow option should be used. The right ineffective flow elevation should be higher than the highest discharge that has low flow or pressure flow or less than the WSEL of the lowest discharge that has weir flow. The placement of the ineffective flow stations is explained on page 5-10 the Applications Guide (HEC, 2010).	5628(Culvert)	The ineffective flow areas were placed as described. Multiple blocks were put in the model, CheckRAS adised to remove them.
MS IF 01S3L	This is Section 3 of Multiple Structures. Left Ineffective Flow Station was not considered at Section 3. Multiple Block Ineffective Flow option should be used. The left ineffective flow elevation should be equal to $LMnTpRdU$. The placement of the ineffective flow stations is explained on page 5-10 of the Applications Guide (HEC, 2010).	5628(Culvert)	The ineffective flow areas were placed as described. Multiple blocks were put in the model, CheckRAS adised to remove them.

MS IF 01S3R	This is Section 3 of Multiple Structures. Right Ineffective Flow Station was not considered at Section 3. Multiple Block Ineffective Flow option should be used. The right ineffective flow elevation should be equal to $RMnTpRdU$. The placement of the ineffective flow stations is explained on page 5-10 of the Applications Guide (HEC, 2010).	5628(Culvert)	The ineffective flow areas were placed as described. Multiple blocks were put in the model, CheckRAS adised to remove them.
NT RC 05	The left overbank n-value of $nlob$ and the right overbank n-value of $nrob$ are less than or equal to the channel n-value of nch. Follow the procedure in (FHWA, 1984) to compute the n-value for the natural floodplain and the channel. Or follow the procedure in (USGS, 1977) to compute the n-value for urban development. Please submit supporting information on the evaluation of n-values.	1676.452; 1862.162; 1917.11; 3356(Bridge-UP); 3438.489; 3696.721; 3894.903; 5305.9; 5563.619; 5628(Culvert-UP); 6329.097; 6738.663; 6878.198; 7111.105; 7326.955; 7394.005; 7524.105; 7681.926; 7944.632; 8158.85; 8419.72; 8700.561; 8829.508; 8910(Culvert-UP); 8992.126; 9072(Culvert-UP); 9152.155; 9348.507; 9586.454; 9622(Culvert-UP); 9657.2; 9876.212; 10115.7; 10153.12; 10313(Culvert-UP); 10473.18; 10523.85; 10622.44; 10746.03; 7.2757; 75(Culvert-UP); 149.5525; 199.6368; 418.0031; 631.2124; 1269.88	In these areas the channel is rougher than the floodplain
ST DT 02C	This is ($strucname$). The culvert downstream distance, $distdn$ is equal to Length_Chnl at Section 3 minus (DistanceUp + CulvertLength). The culvert downstream distance of $distdn$ is less than the height of the culvert opening of $height$. This indicates that Section 2 may not be placed at the foot of the road embankment or wing walls and may not represent the natural valley cross section. Section 2 should be relocated or provide a statement that it represents the natural valley cross section. The HEC-RAS geometry file may need to be recreated using a GIS program. Lengths at Sections 3 & 2 should be adjusted.	9072(Culvert-DN); 75(Culvert-DN)	This represents the valley section