



CITY OF BULVERDE MAPPING IMPROVEMENTS LEWIS CREEK WATERSHED DRAINAGE REPORT



MARCH 31, 2015

**CITY OF BULVERDE
30360 COUGAR BEND
BULVERDE, TX 78163**



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PREPARED FOR:
CITY OF BULVERDE



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I. Introduction

In an effort to assist in the development of a Drainage Master Plan for the City of Bulverde, Halff Associates, Inc. (Halff Associates) has developed a detailed hydrologic model for the Lewis Creek watershed, as well as detailed hydraulic models and mapping for portions of Lewis Creek and Tributary 2 to Lewis Creek. The development of these models will aid the city in their immediate need to regulate development. This report details the hydrologic modeling of the Lewis Creek watershed and the development of the hydraulic models. The watershed parameters were set using the City of Bulverde drainage standards for the Snyder Unit Hydrograph method and the SCS Curve Number loss method. In instances where the City of Bulverde methodology was not optimal for the Lewis Creek watershed, such as the Snyder Unit Hydrograph peaking coefficient, methodologies associated with the San Antonio River Basin (SARB) Regional Modeling Standards or other regionally appropriate methods were adopted. All methodologies have been documented in the following sections.

The City of Bulverde is located in Comal County and has a hilly terrain comprised mostly of loamy soils, clay soils, and rock complex (Hydrologic Soils Groups C and D). **Exhibit 1** illustrates the location of the project area and the study streams. The main areas of concern are located along Lewis Creek from its confluence with Dripping Springs Creek to its outfall at Cibolo Creek, in addition to Tributary 2 to Lewis Creek. After the hydrologic and hydraulic results on Lewis Creek have been submitted, Halff Associates will work in conjunction with the City to review the results, assess the current development criteria, and consider the need for additional regulations.

II. Data Collection

A combination of FEMA topographic data with a horizontal accuracy of 0.61 meters and TNRS topographic data with a horizontal accuracy of 0.5 meters, both from 2011, was used to create terrain data for the project area. In addition, a digital elevation model (DEM) with a cell size of 3.28 feet was generated from LiDAR.

In order to develop a HEC-HMS model for the Lewis Creek watershed, Halff Associates used HEC-GeoHMS to develop initial subbasin delineations. City of Bulverde standards recommends matching FEMA DFIRM basin boundaries for Comal County; however, data for the Lewis Creek watershed was not available. Basins were adjusted to coincide with major roads and most are between the sizes of 0.08 and 1.8 square miles. Subbasin delineations can be observed in **Exhibit 2**.

Existing land use was digitized from City of Bulverde Zoning shapefiles and aerial imagery in GIS, and is depicted in **Exhibit 3**. It should be noted that residential areas with an average lot size of over 2 acres were classified in the same category as the surrounding landscape. For many

areas, this was either shrubland or natural/planted herbaceous. For analyzing potential impacts of known future developments, the City of Bulverde provided a shapefile of areas with planned developments that the City expects to be constructed in the next 5-10 years. An analysis was performed to illustrate the effects of these particular developments. The modified landuse has been labeled, *Landuse: 5-10 Year Development Projection*, and is shown in **Exhibit 4**. The 5-10 year projected development shows that the land most likely to be developed is located along Tributary 10 to Lewis Creek, just north of the confluence of Dripping Springs Creek, upstream on Tributary 4 to Lewis Creek, and just north of Tributary 14 to Lewis Creek. Though a future development zoning shapefile was not available, Halff Associates worked with the City of Bulverde to develop a possible maximum build-out scenario of the Lewis Creek watershed. In addition, Halff utilized the information from the City of Bulverde's preliminary Master Transportation Plan to identify possible areas of future development. This plan has been included electronically in **Appendix E.5**, Supporting Documents. It should be noted that the existing and future development landuse for Tributary 2 to Lewis Creek are the same, as no future development is expected in the Tributary 2 to Lewis Creek subbasins. The landuse for future development conditions may be found in **Exhibit 5**.

As mentioned previously in the discussion about existing conditions landuse, residential areas greater than 2 acres were classified in the same category as the surrounding landscape. For the future conditions analysis, these areas were not changed from existing conditions, since they are already developed. Therefore, most of the "Shrubland" and "Natural/Planted Herbaceous" areas classified in **Exhibit 5** are areas of residential development greater than 2 acres. Other changes made for the future conditions landuse analysis included the expansion of commercial areas along the transportation corridors (from the Master Transportation Plan), and the addition of new residential neighborhoods in those areas that are not yet developed. When working with the City of Bulverde to outline a future conditions development option, mostly ¼ acre residential was assumed, which makes the results of the analysis a conservative estimate. However, several areas of ½ acre and 2 acre residential were also added based on known future developments. To further aid loss calculations, a soils shapefile was obtained from the Natural Resources Conservation Service. **Exhibit 6** illustrates the soils represented in the model.

III. Methodology

A. Hydrology

A hydrologic analysis was conducted using HEC-HMS version 3.5 for each of the drainage basins within the Lewis Creek watershed. The model provides simulations of the 2-, 5-, 10-, 25-, 50-, 100-, and 500-year storm frequency events for existing development conditions, and the 25- and 100-year storm frequency events for 5-10 year landuse projection and for the future landuse projection. As mentioned previously, the SCS Curve Number loss method and the Snyder Unit

Hydrograph transform methods were used. The hydrologic parameters calculated for each landuse type are tabulated in **Table 1**.

Snyder Lag Time computations were completed using the equation set forth in the City of Bulverde Drainage Manual. This method utilizes a basin lag coefficient of 0.15 to calculate the basin lag times. The Snyder Unit Hydrograph transform with a peaking coefficient of 0.71 set forth by the City of Bulverde Drainage Manual was initially utilized in the model. However, a modified approach was used to create more reasonable flows in the headwater reaches and, therefore, throughout the watershed. The Snyder Unit Hydrograph Parameter Guidelines technical memorandum in **Appendix E.5** details the approach used. Prepared by PBS&J, the technical memorandum provides equations which were developed for the San Antonio River Basin, and which can be used to derive the Snyder peaking coefficient. The calculations associated with Snyder Lag Time, including initial abstraction and the peaking coefficient, are shown in **Appendices A.1-A.3**. The modified peaking coefficient values ranged from 0.5 to 0.56 and reduced flows in the headwater basins by 17-24%. A verification of the flow results is discussed in **Section IV.A**.

The SCS Curve Number loss method was employed using the process detailed in the NRCS Technical Release 55 (TR-55) Urban Hydrology for Small Watersheds. The design storm duration was set at 24-hour for both the minor and major storm events. A table of curve number values was obtained from the City of Bulverde Drainage Manual, and values not included in the City of Bulverde Drainage Manual (for undeveloped areas) were obtained from the San Antonio River Basin Regional Modeling Standards (see **Appendix E.5**). Since urbanized curve numbers were utilized in this analysis, all impervious values were set to 0%. Otherwise, using impervious percentages greater than zero would be “double counting” and thus improperly skew resultant discharges throughout the watershed.

River reach routing, which accounts for how channel runoff is transformed as it moves downstream, was first approached using the Muskingum method. After initial flows were developed, final routing was developed using the Modified Puls method. HEC-RAS routing models were created for each routing reach and were simulated with eleven different flow profiles. The newly delineated watersheds were modeled in HEC-HMS and routing flow break locations were placed at the nearest HEC-RAS cross section to each basin outlet. The HEC-RAS cross sections corresponding to each HEC-HMS river reach were identified and an average storage-outflow curve was developed for each river reach. The number of subreaches for each routing reach was calculated using the river length, the floodwave velocity, and a two minute time step. The modeled routing reaches can be seen in **Exhibit 2**, and the subreach calculations are included electronically in **Appendix E**.

When the size of a watershed is greater than 10 square miles, areal reduction is usually applied to decrease the simulated amount of rain falling over the watershed. The method of areal reduction applied in this study is utilized by the San Antonio River Authority (SARA), and uses Areal

Reduction Factors (ARFs) to decrease (and more accurately represent) the amount of rainfall for a particular area. For drainage areas greater than 10 square miles, the ARF decreased with increasing area. For each frequency storm event, the ARF was applied to the corresponding non-reduced hyetograph. The ARFs were obtained from a technical memorandum by the San Antonio River Authority dated October 11, 2012. Each reduced hyetograph was obtained from the San Antonio River Authority and modeled in HEC-HMS as its own storm event. The final flows were calculated in a spreadsheet which identified the correct flow for each node based on its basin area. The resultant flows are represented in **Table 2**. Both the HEC-HMS model and the areal reduction spreadsheet may be found in **Appendix E**.

B. *Hydraulics and Mapping*

HEC-RAS version 4.1 was used to develop hydraulic models for the main stem of Lewis Creek and for Tributary 2 to Lewis Creek. Lewis Creek was studied in detail from Cibolo Creek to the confluence with Dripping Springs Creek, and was studied in limited detail upstream of Dripping Springs Creek. The crossing of Lewis Creek and FM 1863 was surveyed, and other crossings along Tributary 2 to Lewis Creek were input into the model using data gathered during a field visit to the site. Available survey and field visit data are available in **Appendix E.7**. Flow break locations for the hydraulic models were placed at a location $\frac{1}{3}$ to $\frac{1}{2}$ of the basin length up from each basin outlet. Flow break locations were also placed before and after a confluence with a tributary.

Tributary 2 to Lewis Creek parallels the main stem of Lewis Creek from the FM 1863 crossing to Honeysuckle Branch. Since overflow between the two streams is likely to occur, this area was modeled as split flow in the Lewis Creek HEC-RAS model, and the HEC-RAS model for Tributary 2 to Lewis Creek begins just upstream of Honeysuckle Branch. The two creeks remain separate at the 2-year storm event, but begin to merge during the 5-year event. Lewis Creek was mapped in detail from Cibolo Creek to Dripping Springs Creek, and Tributary 2 to Lewis Creek was mapped in detail upstream of Honeysuckle Branch using RAS Mapper and the terrain data mentioned previously. Near the confluence of Lewis Creek and Tributary 2 to Lewis Creek, the 100-year water surface elevation on Lewis Creek was used to map the backwater effects of Lewis Creek on Tributary 2 to Lewis Creek. Similarly, near the confluence of Lewis Creek and Cibolo Creek, the water surface elevation on Cibolo Creek was used to map the backwater effects of Cibolo Creek on Lewis Creek. Backwater information for Cibolo Creek was obtained using the FEMA DFIRM cross section shapefile (for the 100-year storm event) and the Cibolo Creek RAS model cross sections (for the 100-year future storm event). The 100-year Cibolo Creek water surface elevation was interpolated between FEMA cross sections, and the 100-year future conditions storm event was interpolated between the RAS model cross sections. The Cibolo Creek model was gathered from the SARA D2MR website, and is included in **Appendix E.3** along with all other HEC-RAS models developed for the Lewis Creek watershed. The modeling and mapping results will be discussed in **Section IV.B**.

IV. Results

A. Hydrology

As stated previously, hydrologic analysis was performed for the 2-, 5-, 10-, 25-, 50-, 100-, and 500-year storm frequency events for existing development conditions, and the 25- and 100-year storm frequency events for the 5-10 year projected landuse and the future development conditions. **Table 2** lists the areally reduced flows for all storm events at each junction in the hydrologic model. In an effort to verify the model output, Halff Associates compared the output flows to those from the Bexar County Flood Insurance Study (FIS) flows in the upper Leon Creek watershed, since it exhibits similar terrain and characteristics as the project area. This comparison, though imperfect, provides some level of model validation since no previous studies were available for comparison in the Lewis Creek watershed. An area-discharge comparison for the 100 year storm event in the Leon Creek and Lewis Creek watersheds is shown in **Figure 1**.

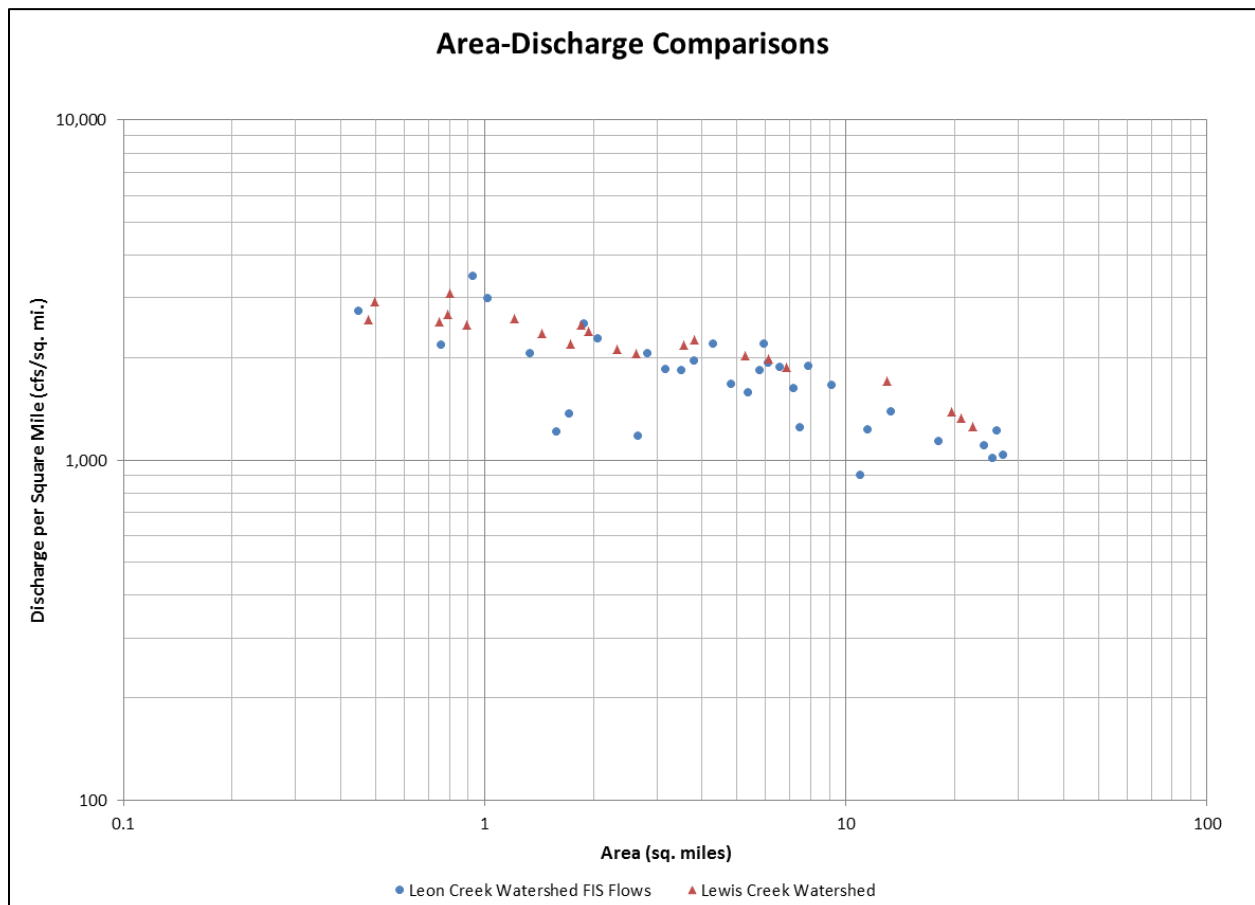


Figure 1. FIS Comparison

B. *Hydraulics and Mapping*

After detailed modeling of Lewis Creek and Tributary 2 to Lewis Creek, tables were created to review the water surface elevations (**Table 4**) and velocities (**Table 5**) at the model cross sections. Floodplain maps were also created for both the 100-year storm event under existing development conditions (**Exhibit 7**), the 100-year storm event for the 5-10 year projected landuse (**Exhibit 8**), and additionally for the 100-year future development conditions storm event (**Exhibit 9**). Furthermore, the parcels and structures affected by the 100-year existing development conditions floodplain were analyzed and are depicted in **Exhibit 10 (Panels 1-2)**. Table 4 tabulates the water surface elevation differences between each type of landuse scenario (existing development conditions, 5-10 year development projection, and ultimate future development) for the 100-year storm event. The table shows that backwater from Cibolo Creek reaches to cross section 2263, which is almost half a mile from the Cibolo Creek confluence. The largest differences in water surface elevation between the three different landuse scenarios analyzed in this project (existing development conditions, 5-10 year development projection, and ultimate future development) are located in the area of backwater influence from Cibolo Creek. If Lewis Creek and Cibolo Creek both experience 100-year floods at the same time, then the water surface elevations at these cross sections in the gray shading should be equal to the Cibolo Creek water surface elevation. However, if the Lewis Creek watershed receives a 100-year storm event, and Cibolo Creek is not at its peak flood discharge, then the elevations at the cross section in the gray shading should be equal to those represented in **Table 4**. The table shows that the projected development in the next 5-10 years is likely to impact the water surface elevations in Lewis Creek by no more than 0.67-ft, and that fully developed conditions in the Lewis Creek watershed increase the 100-year water surface elevation by no more than 1.58-ft.

Using the 100-year floodplain under existing development conditions, the parcels and structures touching the floodplain were analyzed and compared with those touching the FEMA 100-year floodplain. The analysis found that 69 parcels were newly added to the 100-year existing development conditions floodplain, with 28 of these being located on Lewis Creek and 41 of these being located on Tributary 2 to Lewis Creek, which was not previously mapped by FEMA. Furthermore, 25 new structures (mostly residences) were added to the floodplain along Lewis Creek and Tributary 2 to Lewis Creek. Of these 25 structures, 15 are located on Tributary 2 to Lewis Creek. **Exhibit 10 (Panels 1-2)** illustrates these findings. **Appendices B-D** present output from HEC-RAS, and **Appendix E** contains a CD with all models, GIS data, supporting documents, and spreadsheets. Quality Assurance/Quality Control documents are also included in **Appendix E.8**.

V. Next Steps

The project area is located along Lewis Creek from the confluence of Cibolo Creek to the confluence of Dripping Springs Creek, as well as Tributary 2 to Lewis Creek. This is an area of

concern due to the large level of development, its vulnerability to flooding, and the lack of a detailed flood study on Tributary 2 to Lewis Creek. Furthermore, as increased upstream development is expected in the future, the flooding in this area may worsen unless mitigation measures are taken.

Potential flood improvement alternatives should aim to mitigate using ultimate development conditions landuse and thereby protect both existing and future developments. One way to most effectively reduce the floodplain may be to alter the timing of incoming tributaries, as our analysis shows that the Lewis Creek watershed is shaped in such a way that the peak flows from each tributary often arrive at the same time. For instance, the timings of the peak flows for Lewis Creek and Dripping Springs are very similar, as are the timings for Lewis Creek, Tributary 4 to Lewis Creek, and Tributary 10 to Lewis Creek. Furthermore, the peak flows in Lewis Creek and Tributary 14 to Lewis Creek also arrive together. The coincident timings of the multiple tributaries in the Lewis Creek watershed form what is often thought of as a worst case scenario. However, it also brings to light the opportunity to build reservoirs upstream of the area of concern that will delay the timings of one or more tributaries, thereby decreasing the peak flow in the downstream portion of the watershed and likely significantly reducing water surface elevations along the downstream portions of Lewis Creek.

Though not the only alternative, reservoirs are likely one of the more cost effective ways to decrease the flooding downstream. Other possible alternatives may include channel improvements, bypass channels and/or culverts, and other improvements to roadway crossings. In particular, channelization along the main stem of Lewis Creek parallel to Tributary 2 to Lewis Creek may be a viable option. Since Tributary 2 to Lewis Creek is already mostly developed with residential homes, the best improvement alternatives may include the implementation of an underground storm sewer system and the improvement of culvert crossings in the path of the stream. On the downstream end of Tributary 2 to Lewis Creek, many of the homes and properties that are located in the floodplain are impacted from Lewis Creek itself, rather than the tributary. The best way to mitigate flooding in these homes will be to lower flows and water surface elevations on Lewis Creek by utilizing reservoirs and/or channel improvements.

VI. Summary and Conclusions

Halff Associates has presented updated hydrology, hydraulics, and mapping for the Lewis Creek watershed in the City of Bulverde for existing development conditions, a 5-10 year projection of development conditions, and a future (fully developed) projection of development conditions. In particular, a detailed modeling and mapping of the main creek of Lewis Creek in addition to Tributary 2 to Lewis Creek was performed. The results of the analysis illustrate that the downstream portion of the Lewis Creek watershed is prone to flooding during the 100-year storm event, and that the updated mapping adds 69 new parcels and 25 new structures to the 100-year storm floodplain under existing development conditions. Tributary 2 to Lewis Creek in particular

has never been studied in detail and is the primary reason for introducing most of these properties and homes into the floodplain. As discussed previously, the best mitigation alternatives for this stream may include culvert crossing improvements and the implementation of a storm sewer system. However, many of the homes and properties in the 100-year floodplain on the downstream end of Tributary 2 to Lewis Creek are dominated by waters from Lewis Creek, since the two creeks parallel each other. These properties, as well as others on Lewis Creek, may be removed from the floodplain if one or more reservoirs are built upstream of Lewis Creek, or if other mitigation measures are taken to lower floodwaters such as channel improvements and bypass channels/culverts. The next step towards achieving these goals is to perform a preliminary engineering study to analyze several different flood mitigation alternatives which will protect against floodwaters under both existing and ultimate development conditions.

VII. Recommendations

After performing the existing development conditions hydrology, hydraulic, and mapping analyses, Halff Associates is able to provide the following recommendations.

1. It is recommended that the City of Bulverde adopt the hydrologic and hydraulic models developed in this study by ordinance as the best available data. This will provide developers a method by which to analyze the potential impacts of their site and to design in accordance with the City ordinance.
2. Halff Associates recommends that the City of Bulverde adopt a “no-rise” policy which will prohibit developers from increasing discharges or water surface elevations anywhere upstream or downstream of the potential site. Should this regulation prove to be too stringent, Halff Associates recommends that at a minimum, the City of Bulverde establish a “no-rise” policy stating that future development may not cause any negative impacts on Lewis Creek from the confluence with Cibolo Creek to the confluence with Dripping Springs Creek. Since this area is at the most downstream end of the watershed, is more prone to flooding, and is highly developed, it is important that it be protected from negative impacts caused by future development.
3. In order to illustrate that a particular development will not negatively impact discharges or water surface elevations, developers should be provided with the hydrologic and hydraulic models developed in this study. Using these models, developers should:
 - a. Modify the hydrologic parameters, and if necessary, the hydraulic models based on their development
 - b. Model to the confluence of Lewis Creek and Cibolo Creek to prove no impact anywhere along Lewis Creek
 - c. Mitigate appropriately should the models show any negative impacts caused by the design

By following these recommendations, the City of Bulverde will be able to prevent future developments from causing negative impacts on Lewis Creek or its tributaries. Furthermore, should flood mitigation alternatives be developed to remove homes and properties from the 100-year floodplain, these recommendations will ensure that they remain effective after the watershed has been fully developed.

TABLES

Table 1	Basin Parameters
Table 2	Areally Reduced Flows
Table 3	Hydraulic Model Flow Break Locations
Table 4	Water Surface Elevations
Table 5	Velocities

CITY OF BULVERDE MAPPING IMPROVEMENTS

LEWIS CREEK WATERSHED

DRAINAGE REPORT

TABLE 1

BASIN PARAMETERS

Drainage Basin	Area (mi ²)	Longest Flowpath (mi)	Impervious % (All Storms)	Existing CN	5-10 Year Projection Landuse CN	Future CN	Existing T _{lag} (hrs)	5-10 Year Projection Landuse T _{lag} (hrs)	Future T _{lag} (hrs)	Peaking Coefficient (All Storms)
DSC_10	1.741	2.27	0	75	75	81	0.36	0.36	0.36	0.55
DSC_20	1.806	2.03	0	73	73	82	0.31	0.31	0.31	0.54
DSC_30	1.745	2.49	0	74	74	82	0.38	0.38	0.38	0.55
DSC_40	0.818	2.06	0	73	77	78	0.37	0.37	0.37	0.55
LC_10	0.476	1.36	0	73	73	78	0.23	0.23	0.23	0.53
LC_100	0.076	0.66	0	75	75	78	0.11	0.11	0.11	0.5
LC_20	0.816	1.61	0	75	75	85	0.25	0.25	0.25	0.53
LC_30	1.048	2.00	0	76	76	77	0.31	0.31	0.31	0.54
LC_40	0.306	1.40	0	79	79	87	0.28	0.28	0.28	0.54
LC_50	0.276	1.88	0	83	83	86	0.35	0.35	0.35	0.55
LC_60	0.562	1.13	0	75	75	75	0.27	0.27	0.27	0.53
LC_70	0.391	1.51	0	73	82	81	0.31	0.31	0.31	0.54
LC_80	0.597	2.11	0	80	82	82	0.40	0.40	0.40	0.55
LC_90	0.236	1.40	0	73	73	79	0.33	0.33	0.33	0.54
LT1_10	0.755	1.79	0	78	78	78	0.33	0.33	0.33	0.54
LT1_20	0.688	2.00	0	78	78	78	0.33	0.33	0.33	0.54
LT10_10	0.498	1.29	0	76	79	79	0.22	0.22	0.22	0.53
LT10_20	0.295	1.28	0	73	84	84	0.26	0.26	0.26	0.53
LT10_30	0.629	1.92	0	73	83	84	0.35	0.35	0.35	0.55
LT11_10	0.526	1.81	0	77	82	82	0.30	0.30	0.30	0.54
LT12_10	0.995	3.19	0	83	83	83	0.52	0.52	0.52	0.56
LT14_10	0.803	1.80	0	84	84	85	0.31	0.31	0.31	0.54
LT14_20	0.591	1.26	0	84	92	92	0.25	0.25	0.25	0.53
LT14_30	0.636	2.21	0	84	85	89	0.38	0.38	0.38	0.55
LT15_10	0.336	1.31	0	80	85	83	0.25	0.25	0.25	0.53
LT2_10	0.245	0.51	0	79	79	79	0.18	0.18	0.18	0.52
LT2_20	0.343	0.63	0	83	83	83	0.21	0.21	0.21	0.52
LT2_30	0.309	0.63	0	83	83	83	0.20	0.20	0.20	0.52
LT4_10	1.206	1.78	0	74	75	84	0.28	0.28	0.28	0.54
LT4_20	0.651	2.05	0	73	81	86	0.30	0.30	0.30	0.54
LT4_30	0.889	2.85	0	75	80	82	0.48	0.48	0.48	0.56
LT6_10	1.049	1.92	0	77	80	85	0.36	0.36	0.36	0.55

CITY OF BULVERDE MAPPING IMPROVEMENTS
LEWIS CREEK WATERSHED
DRAINAGE REPORT
TABLE 2
AREALLY REDUCED FLOWS

Stream	Hydrologic Element	Drainage Area (sq mi)	2-YR EX	5-YR EX	10-YR EX	25-YR EX	50-YR EX	100-YR EX	500-YR EX	25-YR 5-10 Year Projected Landuse	100-YR 5-10 Year Projected Landuse	25-YR FC	100-YR FC
Dripping Springs	JDSC_10	1.7	1,380	1,870	2,270	3,030	3,740	4,360	6,410	3,030	4,360	3,460	4,800
	JDSC_20	3.55	2,370	3,290	3,980	5,370	6,770	7,920	11,850	5,370	7,920	6,380	8,940
	JDSC_30	5.29	3,100	4,390	5,340	7,360	9,310	10,900	16,330	7,360	10,900	8,800	12,310
	JDSC_40	6.11	3,380	4,810	5,890	8,130	10,280	12,070	18,150	8,200	12,150	9,640	13,590
Lewis Creek	JLC_10	0.48	440	600	740	980	1,230	1,440	2,120	980	1,440	1,110	1,570
	JLC_20	1.29	910	1,250	1,510	2,050	2,600	3,060	4,610	2,050	3,060	2,470	3,460
	JLC_30	2.34	1,390	1,920	2,390	3,430	4,340	5,140	7,770	3,430	5,140	3,920	5,630
	JLC_40	2.65	1,450	2,050	2,530	3,560	4,540	5,410	8,280	3,560	5,410	4,080	5,930
	JLC_50	5.29	3,190	4,400	5,400	7,470	9,360	10,980	16,410	7,650	11,130	8,240	11,730
	JLC_60	6.85	3,690	5,060	6,220	8,620	10,850	12,820	19,260	8,820	12,990	9,430	13,610
	JLC_70	12.98	6,310	8,810	10,640	14,480	18,330	22,010	34,240	15,460	23,070	16,680	24,430
	JLC_80	19.69	7,240	10,720	13,230	18,610	23,210	27,350	43,940	19,670	28,380	21,810	30,800
	JLC_90	20.82	7,240	10,720	13,310	18,420	23,340	27,510	43,480	19,490	28,500	21,720	30,710
	TO_CIBOLO	22.34	7,280	10,850	13,530	18,770	23,680	27,940	44,130	19,840	28,890	22,100	31,070
	JLC30_LT1430	5.01	3,070	4,260	5,190	7,110	8,870	10,370	15,380	7,280	10,520	7,860	11,110
	JLC50_LT1210	6.28	3,650	5,020	6,180	8,550	10,730	12,620	18,900	8,750	12,780	9,350	13,410
	JLC60_LT1030_430	12.59	6,400	8,870	10,670	14,470	18,470	22,090	34,090	15,410	23,090	16,650	24,510
	JLC70_DSC40	19.09	7,420	11,040	13,580	19,590	23,830	28,040	44,490	20,650	29,130	22,900	31,770
Lewis Creek Tributary 1	JLC80_LT210	20.58	7,300	10,830	13,420	18,590	23,510	27,730	44,630	19,670	28,730	21,880	31,050
	JLC90_LT120	22.26	7,290	10,860	13,540	18,780	23,690	27,950	44,180	19,860	28,910	22,110	31,090
Lewis Creek Tributary 1	JLT1_10	0.76	710	930	1,120	1,460	1,780	2,060	2,970	1,460	2,060	1,460	2,060
	JLT1_20	1.44	1,040	1,490	1,810	2,410	2,950	3,420	4,910	2,410	3,420	2,410	3,420
Lewis Creek Tributary 10	JLT10_10	0.50	540	720	870	1,130	1,390	1,620	2,350	1,210	1,700	1,210	1,700
	JLT10_20	0.79	650	890	1,090	1,470	1,840	2,140	3,160	1,680	2,330	1,680	2,330
	JLT10_30	1.95	1,360	1,890	2,320	3,160	3,970	4,630	6,850	3,680	5,130	3,690	5,140
	JLT1020_1110	1.32	1,080	1,480	1,800	2,440	3,040	3,520	5,180	2,760	3,830	2,760	3,830
Lewis Creek Tributary 11	JLT11_10	0.53	500	670	800	1,050	1,290	1,500	2,170	1,170	1,610	1,170	1,610
Lewis Creek Tributary 12	JLT12_10	1.00	860	1,110	1,300	1,660	2,000	2,300	3,270	1,660	2,300	1,660	2,300
Lewis Creek Tributary 14	JLT14_10	0.80	970	1,230	1,450	1,820	2,160	2,480	3,470	1,820	2,480	1,850	2,510
	JLT14_20	1.73	1,300	1,780	2,130	2,840	3,420	3,840	5,470	3,000	3,970	3,000	3,970
	JLT14_30	2.37	1,640	2,220	2,670	3,560	4,360	5,010	7,100	3,750	5,180	3,800	5,230
	JLT1410_1510	1.14	1,360	1,740	2,050	2,580	3,080	3,540	4,980	2,650	3,610	2,660	3,610
Lewis Creek Tributary 15	JLT15_10	0.34	390	510	610	780	940	1,090	1,540	850	1,160	820	1,130
Lewis Creek Tributary 2	JLT2_10	0.25	330	430	510	650	790	920	1,300	650	920	650	920
	JLT2_20	0.59	490	630	750	950	1,170	1,390	2,040	950	1,390	950	1,390
	JLT2_30	0.90	800	1,030	1,220	1,570	1,910	2,240	3,300	1,570	2,240	1,570	2,240
Lewis Creek Tributary 4	JLT4_10	1.21	1,060	1,440	1,750	2,330	2,880	3,370	4,960	2,390	3,430	2,880	3,930
	JLT4_20	1.86	1,420	1,950	2,390	3,210	4,000	4,640	6,890	3,460	4,890	4,040	5,470
	JLT4_30	3.80	2,530	3,520	4,290	5,840	7,320	8,570	12,710	6,360	9,090	7,160	9,880
	JLT420_610	2.91	2,280	3,110	3,790	5,060	6,260	7,260	10,710	5,440	7,640	6,220	8,410
Lewis Creek Tributary 6	JLT6_10	1.05	910	1,210	1,460	1,910	2,340	2,720	3,950	2,040	2,850	2,250	3,050

CITY OF BULVERDE MAPPING IMPROVEMENTS
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TABLE 3
HYDRAULIC MODEL FLOW BREAK LOCATIONS

Stream	Hydrologic Element	River Station	2-YR EX	5-YR EX	10-YR EX	25-YR EX	50-YR EX	100-YR EX	500-YR EX	25-YR 5-10 YR Projection	100-YR 5-10 YR Projection	25-YR FC	100-YR FC
Lewis Creek	JLC_10	40993	440	600	740	980	1,230	1,440	2,120	980	1,440	1,110	1,570
	JLC_20	37559	910	1,250	1,510	2,050	2,600	3,060	4,610	2,050	3,060	2,470	3,460
	JLC_30	31559	1,390	1,920	2,390	3,430	4,340	5,140	7,770	3,430	5,140	3,920	5,630
	JLC_40	27559	1,450	2,050	2,530	3,560	4,540	5,410	8,280	3,560	5,410	4,080	5,930
	JLC30_LT1430	25070	3,070	4,260	5,190	7,110	8,870	10,370	15,380	7,280	10,520	7,860	11,110
	JLC_50	22035	3,190	4,400	5,400	7,470	9,360	10,980	16,410	7,650	11,130	8,240	11,730
	JLC50_LT1210	20008	3,650	5,020	6,180	8,550	10,730	12,620	18,900	8,750	12,780	9,350	13,410
	JLC_60	17562	3,690	5,060	6,220	8,620	10,850	12,820	19,260	8,820	12,990	9,430	13,610
	JLC60_LT1030_430	16070	6,400	8,870	10,670	14,470	18,470	22,090	34,090	15,410	23,090	16,650	24,510
	JLC_70	13558	6,310	8,810	10,640	14,480	18,330	22,010	34,240	15,460	23,070	16,680	24,430
	JLC70_DSC40	11722	7,420	11,040	13,580	19,590	23,830	28,040	44,490	20,650	29,130	22,900	31,770
	JLC_80	7584	7,240	10,720	13,230	18,610	23,210	27,350	43,940	19,670	28,380	21,810	30,800
	JLC80_LT210	6032	7,300	10,830	13,420	18,590	23,510	27,730	44,630	19,670	28,730	21,880	31,050
	JLC_90	2764	7,240	10,720	13,310	18,420	23,340	27,510	43,480	19,490	28,500	21,720	30,710
	JLC90_LT120	1225	7,290	10,860	13,540	18,780	23,690	27,950	44,180	19,860	28,910	22,110	31,090
	TO_CIBOLO	645	7,280	10,850	13,530	18,770	23,680	27,940	44,130	19,840	28,890	22,100	31,070
Lewis Creek Tributary 2	JLT2_10	9686	90	110	130	170	210	240	340	170	240	170	240
	JLT2_10	7506	330	430	510	650	790	920	1,300	650	920	650	920
	JLT2_20	4162	490	630	750	950	1,170	1,390	2,040	950	1,390	950	1,390

CITY OF BULVERDE MAPPING IMPROVEMENTS
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TABLE 4
WATER SURFACE ELEVATIONS

Location	River Station	100-YR Storm (ft) Existing Development	100-YR Storm (ft) 5-10 Year Projection Landuse	100-YR Storm (ft) Future Development	Difference (ft)	Difference (ft)
					5-10 YR Projection and Existing Conditions	Future and Existing Conditions
* All WSE differences represent an increase in elevation from existing conditions.						
	40993	1,239.76	1,239.76	1,239.90	0.00	0.14
	40514	1,233.34	1,233.34	1,233.44	0.00	0.10
	40059	1,227.71	1,227.71	1,227.83	0.00	0.12
	39559	1,221.83	1,221.83	1,221.90	0.00	0.07
	39090	1,217.50	1,217.50	1,217.63	0.00	0.13
	38376	1,210.36	1,210.36	1,210.43	0.00	0.07
	38059	1,207.01	1,207.01	1,207.20	0.00	0.19
	37559	1,201.50	1,201.50	1,201.72	0.00	0.22
	37059	1,195.51	1,195.51	1,195.71	0.00	0.20
	36622	1,191.15	1,191.15	1,191.34	0.00	0.19
	36062	1,185.07	1,185.07	1,185.30	0.00	0.23
	35559	1,179.70	1,179.70	1,179.93	0.00	0.23
	35059	1,175.54	1,175.54	1,175.73	0.00	0.19
	34562	1,170.82	1,170.82	1,171.10	0.00	0.28
	34059	1,166.31	1,166.31	1,166.45	0.00	0.14
	33506	1,160.67	1,160.67	1,160.80	0.00	0.13
	33058	1,155.36	1,155.36	1,155.50	0.00	0.14
	32559	1,150.96	1,150.96	1,151.16	0.00	0.20
	32059	1,147.31	1,147.31	1,147.40	0.00	0.09
	31559	1,142.93	1,142.93	1,143.10	0.00	0.17
	31059	1,137.62	1,137.62	1,137.68	0.00	0.06
	30559	1,132.48	1,132.48	1,132.72	0.00	0.24
	30158	1,130.98	1,130.98	1,131.19	0.00	0.21
	29949	1,127.37	1,127.37	1,127.60	0.00	0.23
	29586	1,124.23	1,124.23	1,124.30	0.00	0.07
	29059	1,118.53	1,118.53	1,118.68	0.00	0.15
	28546	1,114.86	1,114.86	1,115.05	0.00	0.19
	28059	1,111.26	1,111.26	1,111.50	0.00	0.24
	27559	1,107.19	1,107.19	1,107.42	0.00	0.23
	27059	1,103.57	1,103.57	1,103.75	0.00	0.18
	26788	1,101.92	1,101.92	1,102.07	0.00	0.15
	26680	1,101.05	1,101.05	1,101.20	0.00	0.15
	25996	1,095.82	1,095.82	1,096.01	0.00	0.19
Tributary 14 to Lewis Creek	25874	1,095.16	1,095.18	1,095.37	0.02	0.21
	25578	1,094.33	1,094.36	1,094.55	0.03	0.22
	25070	1,092.30	1,092.34	1,092.51	0.04	0.21
	24648	1,089.74	1,089.77	1,089.91	0.03	0.17
	24067	1,085.67	1,085.70	1,085.79	0.03	0.12
	23559	1,082.62	1,082.68	1,082.90	0.06	0.28
	23106	1,079.97	1,080.02	1,080.23	0.05	0.26
	22562	1,076.65	1,076.67	1,076.78	0.02	0.13
	22035	1,073.24	1,073.26	1,073.36	0.02	0.12
	21484	1,070.23	1,070.26	1,070.40	0.03	0.17
	21059	1,068.40	1,068.44	1,068.57	0.04	0.17
	20568	1,066.04	1,066.07	1,066.18	0.03	0.14
Tributary 12 to Lewis Creek	20008	1,063.97	1,063.99	1,064.09	0.02	0.12
	19547	1,061.51	1,061.54	1,061.64	0.03	0.13
	19054	1,059.34	1,059.37	1,059.46	0.03	0.12
	18570	1,056.90	1,056.92	1,057.00	0.02	0.10
	18060	1,055.01	1,055.03	1,055.09	0.02	0.08
Tributary 4 to Lewis Creek	17562	1,052.33	1,052.34	1,052.43	0.01	0.10
Tributary 10 to Lewis Creek	17059	1,050.84	1,050.91	1,051.02	0.07	0.18
	16070	1,047.65	1,047.75	1,047.91	0.10	0.26
	15559	1,045.85	1,045.98	1,046.16	0.13	0.31
	15058	1,044.03	1,044.18	1,044.38	0.15	0.35
	14559	1,042.53	1,042.71	1,042.95	0.18	0.42
	14073	1,041.46	1,041.66	1,041.96	0.20	0.50
	13558	1,039.81	1,039.99	1,040.30	0.18	0.49

CITY OF BULVERDE MAPPING IMPROVEMENTS
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TABLE 4
WATER SURFACE ELEVATIONS

Location	River Station	100-YR Storm (ft) Existing Development	100-YR Storm (ft) 5-10 Year Projection Landuse	100-YR Storm (ft) Future Development	Difference (ft)	Difference (ft)
					5-10 YR Projection and Existing Conditions	Future and Existing Conditions
* All WSE differences represent an increase in elevation from existing conditions.						
Dripping Springs Creek	13055	1,038.10	1,038.34	1,038.73	0.24	0.63
	12559	1,035.56	1,035.79	1,036.22	0.23	0.66
	12040	1,033.85	1,034.08	1,034.65	0.23	0.80
	11722	1,032.60	1,032.82	1,033.35	0.22	0.75
	11346	1,030.94	1,031.14	1,031.62	0.20	0.68
	11059	1,029.76	1,029.95	1,030.42	0.19	0.66
	10785	1,029.05	1,029.24	1,029.72	0.19	0.67
	10429	1,027.47	1,027.68	1,028.15	0.21	0.68
	10228	1,026.57	1,026.78	1,027.28	0.21	0.71
	9974	1,024.91	1,025.10	1,025.55	0.19	0.64
	9772	1,024.26	1,024.44	1,024.87	0.18	0.61
	9570	1,023.45	1,023.61	1,023.98	0.16	0.53
	9388	1,022.82	1,022.97	1,023.34	0.15	0.52
	9081	1,022.00	1,022.16	1,022.53	0.16	0.53
	8783	1,020.94	1,021.09	1,021.47	0.15	0.53
	8559	1,019.97	1,020.13	1,020.51	0.16	0.54
	8335	1,018.97	1,019.14	1,019.54	0.17	0.57
	8082	1,017.90	1,018.07	1,018.47	0.17	0.57
	7857	1,017.12	1,017.28	1,017.66	0.16	0.54
	7584	1,015.49	1,015.65	1,016.03	0.16	0.54
	7315	1,014.15	1,014.32	1,014.71	0.17	0.56
	7059	1,012.77	1,012.93	1,013.32	0.16	0.55
	6889	1,011.97	1,012.13	1,012.49	0.16	0.52
	6573	1,010.81	1,011.02	1,011.40	0.21	0.59
	6315	1,009.95	1,010.18	1,010.59	0.23	0.64
	6032	1,008.82	1,009.11	1,009.54	0.29	0.72
	5767	1008.31	1008.63	1009.07	0.32	0.76
FM 1863	5628	1,008.10	1,008.43	1,008.88	0.33	0.78
	5533	1,005.67	1,005.96	1,006.31	0.29	0.64
	5279	1,004.58	1,004.75	1,005.17	0.17	0.59
Tributary 2 to Lewis Creek	5003	1,003.65	1,003.86	1,004.36	0.21	0.71
	4896	1,003.28	1,003.52	1,004.07	0.24	0.79
	4546	1,002.45	1,002.73	1,003.33	0.28	0.88
	4365	1,002.16	1,002.44	1,003.07	0.28	0.91
	4103	1,001.81	1,002.11	1,002.76	0.30	0.95
	3785	999.72	1,000.00	1,000.55	0.28	0.83
	3588	1,000.07	1,000.36	1,000.97	0.29	0.90
	3236	997.14	997.38	997.90	0.24	0.76
	3000	996.13	996.37	996.86	0.24	0.73
	2764	995.00	995.26	995.79	0.26	0.79
	2500	994.04	994.33	994.90	0.29	0.86
Tributary 1 to Lewis Creek	2263	992.54	992.82	993.36	0.28	0.82
	1999	991.23	991.53	992.08	0.30	0.85
	1765	990.91	991.26	991.88	0.35	0.97
	1508	990.22	990.60	991.23	0.38	1.01
	1225	988.75	989.23	989.93	0.48	1.18
	888	985.60	986.27	987.18	0.67	1.58
	645	983.84	984.35	985.28	0.51	1.44
Cibolo Creek	391	981.30	981.63	982.36	0.33	1.06
	240	977.94	978.23	978.88	0.29	0.94
* The gray shading indicates the limit of backwater influence from Cibolo Creek.						

CITY OF BULVERDE MAPPING IMPROVEMENTS

LEWIS CREEK WATERSHED

DRAINAGE REPORT

TABLE 5

VELOCITIES

Location	River Station	100-YR Storm (ft/s) Existing Development	100-YR Storm (ft/s) 5-10 Year Projection Landuse	100-YR Storm (ft/s) Future Development	Difference (ft/s)	Difference (ft/s)
					5-10 YR Projection and Existing Conditions	Future and Existing Conditions
* Green values represent an increase from existing conditions, and red values indicate a decrease from existing conditions.						
	40993	5.77	5.77	5.90	0	0.13
	40514	8.09	8.09	8.30	0	0.21
	40059	6.10	6.10	6.16	0	0.06
	39559	7.39	7.39	7.63	0	0.24
	39090	4.53	4.53	4.59	0	0.06
	38376	6.82	6.82	7.13	0	0.31
	38059	5.15	5.15	5.13	0	-0.02
	37559	6.69	6.69	7.01	0	0.32
	37059	7.20	7.20	7.41	0	0.21
	36622	6.28	6.28	6.50	0	0.22
	36062	7.53	7.53	7.70	0	0.17
	35559	6.61	6.61	6.87	0	0.26
	35059	6.29	6.29	6.46	0	0.17
	34562	7.83	7.83	8.06	0	0.23
	34059	5.05	5.05	5.31	0	0.26
	33506	7.05	7.05	7.09	0	0.04
	33058	5.47	5.47	5.73	0	0.26
	32559	6.01	6.01	6.09	0	0.08
	32059	4.77	4.77	5.09	0	0.32
	31559	7.22	7.22	7.16	0	-0.06
	31059	5.12	5.12	5.44	0	0.32
	30559	6.37	6.37	6.21	0	-0.16
	30158	5.10	5.10	5.36	0	0.26
	29949	8.59	8.59	8.86	0	0.27
	29586	7.81	7.81	8.25	0	0.44
	29059	8.22	8.22	8.18	0	-0.04
	28546	6.80	6.80	6.92	0	0.12
	28059	8.50	8.50	8.67	0	0.17
	27559	6.45	6.45	6.67	0	0.22
	27059	5.28	5.28	5.52	0	0.24
	26788	5.87	5.87	6.07	0	0.20
	26680	6.88	6.88	7.05	0	0.17
	25996	5.44	5.43	5.57	-0.01	0.13
Tributary 14 to Lewis Creek	25874	4.73	4.71	4.86	-0.02	0.13
	25578	4.34	4.30	4.44	-0.04	0.10
	25070	7.12	7.15	7.29	0.03	0.17
	24648	8.08	8.12	8.28	0.04	0.20
	24067	7.13	7.16	7.31	0.03	0.18
	23559	6.49	6.49	6.43	0	-0.06
	23106	7.96	8.01	8.23	0.05	0.27
	22562	7.32	7.37	7.60	0.05	0.28
	22035	5.73	5.74	5.80	0.01	0.07
	21484	6.12	6.13	6.20	0.01	0.08
	21059	6.93	6.96	7.08	0.03	0.15
	20568	7.43	7.46	7.56	0.03	0.13
Tributary 12 to Lewis Creek	20008	5.86	5.88	5.97	0.02	0.11
	19547	9.62	9.64	9.75	0.02	0.13
	19054	6.98	6.99	7.05	0.01	0.07
	18570	6.46	6.48	6.55	0.02	0.09
	18060	6.25	6.27	6.40	0.02	0.15
Tributary 4 to Lewis Creek	17562	6.63	6.64	6.64	0.01	0.01
Tributary 10 to Lewis Creek	17059	3.02	2.99	3.02	-0.03	0
	16070	8.72	8.73	8.75	0.01	0.03
	15559	7.42	7.46	7.51	0.04	0.09
	15058	6.72	6.75	6.80	0.03	0.08
	14559	5.88	5.90	5.92	0.02	0.04
	14073	5.51	5.52	5.51	0.01	0
	13558	6.58	6.73	6.85	0.15	0.27

CITY OF BULVERDE MAPPING IMPROVEMENTS

LEWIS CREEK WATERSHED

DRAINAGE REPORT

TABLE 5

VELOCITIES

Location	River Station	100-YR Storm (ft/s) Existing Development	100-YR Storm (ft/s) 5-10 Year Projection Landuse	100-YR Storm (ft/s) Future Development	Difference (ft/s)	Difference (ft/s)
					5-10 YR Projection and Existing Conditions	Future and Existing Conditions
* Green values represent an increase from existing conditions, and red values indicate a decrease from existing conditions.						
	13055	6.04	6.00	5.97	-0.04	-0.07
Dripping Springs Creek	12559	8.00	8.16	8.30	0.16	0.30
	12040	6.17	6.29	6.23	0.12	0.06
	11722	6.86	6.98	7.23	0.12	0.37
	11346	7.35	7.48	7.81	0.13	0.46
	11059	7.01	7.13	7.41	0.12	0.40
	10785	5.41	5.48	5.69	0.07	0.28
	10429	7.49	7.56	7.75	0.07	0.26
	10228	7.43	7.50	7.66	0.07	0.23
	9974	9.47	9.61	9.95	0.14	0.48
	9772	7.25	7.38	7.66	0.13	0.41
	9570	7.44	7.60	7.97	0.16	0.53
	9388	7.06	7.19	7.48	0.13	0.42
	9081	5.43	5.50	5.68	0.07	0.25
	8783	5.78	5.85	6.01	0.07	0.23
	8559	6.01	6.07	6.22	0.06	0.21
	8335	5.75	5.81	5.96	0.06	0.21
	8082	5.84	5.92	6.10	0.08	0.26
	7857	5.68	5.78	6.03	0.10	0.35
	7584	7.64	7.71	7.91	0.07	0.27
	7315	6.70	6.78	6.96	0.08	0.26
	7059	7.64	7.75	7.96	0.11	0.32
	6889	7.54	7.65	7.92	0.11	0.38
	6573	6.68	6.64	6.77	-0.04	0.09
	6315	6.52	6.52	6.62	0	0.10
	6032	7.33	7.26	7.36	-0.07	0.03
	5767	5.64	5.61	5.73	-0.03	0.09
FM 1863	5628	5.28	5.21	5.30	-0.07	0.02
	5533	8.67	7.21	7.46	-1.46	-1.21
	5279	7.98	8.01	8.08	0.03	0.10
Tributary 2 to Lewis Creek	5003	6.16	6.13	6.09	-0.03	-0.07
	4896	6.23	6.14	5.99	-0.09	-0.24
	4546	5.53	5.51	5.51	-0.02	-0.02
	4365	5.07	5.09	5.10	0.02	0.03
	4103	4.72	4.76	4.77	0.04	0.05
	3785	11.03	11.14	11.59	0.11	0.56
	3588	5.65	5.71	5.89	0.06	0.24
	3236	12.60	12.79	13.14	0.19	0.54
	3000	10.36	10.50	10.86	0.14	0.50
	2764	9.37	9.48	9.73	0.11	0.36
	2500	8.12	8.18	8.36	0.06	0.24
Tributary 1 to Lewis Creek	2263	9.63	9.74	10.02	0.11	0.39
	1999	9.75	9.82	10.08	0.07	0.33
	1765	7.34	7.33	7.40	-0.01	0.06
	1508	6.72	6.73	6.83	0.01	0.11
	1225	8.06	7.92	7.93	-0.14	-0.13
	888	11.18	10.91	10.86	-0.27	-0.32
	645	11.75	11.74	11.79	-0.01	0.04
	391	13.72	13.89	14.27	0.17	0.55
Cibolo Creek	240	17.12	17.30	17.71	0.18	0.59
* The gray shading indicates the limit of backwater influence from Cibolo Creek.						

EXHIBITS

Exhibit 1	Project Area
Exhibit 2	Routing Reaches
Exhibit 3	Landuse: Existing Development Conditions
Exhibit 4	Landuse: 5-10 Year Development Projection
Exhibit 5	Landuse: Future Development Conditions
Exhibit 6	Soils
Exhibit 7	Floodplain Map: Existing Development Conditions
Exhibit 8	Floodplain Map: 5-10 Year Development Projection
Exhibit 9	Floodplain Map: Future Development Conditions
Exhibit 10	Parcels and Structures (Panels 1 and 2)



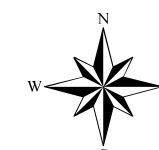
City of Bulverde
Lewis Creek Watershed

Drainage Report

Key to Features

- Study Streams
- Texas Major Rivers
- Major Roads
- Basin Outline
- Reservoirs
- Bulverde City Limits
- Bulverde Extra-Territorial Jurisdiction
- Comal County
- Texas Counties

Exhibit 1:
Project Area

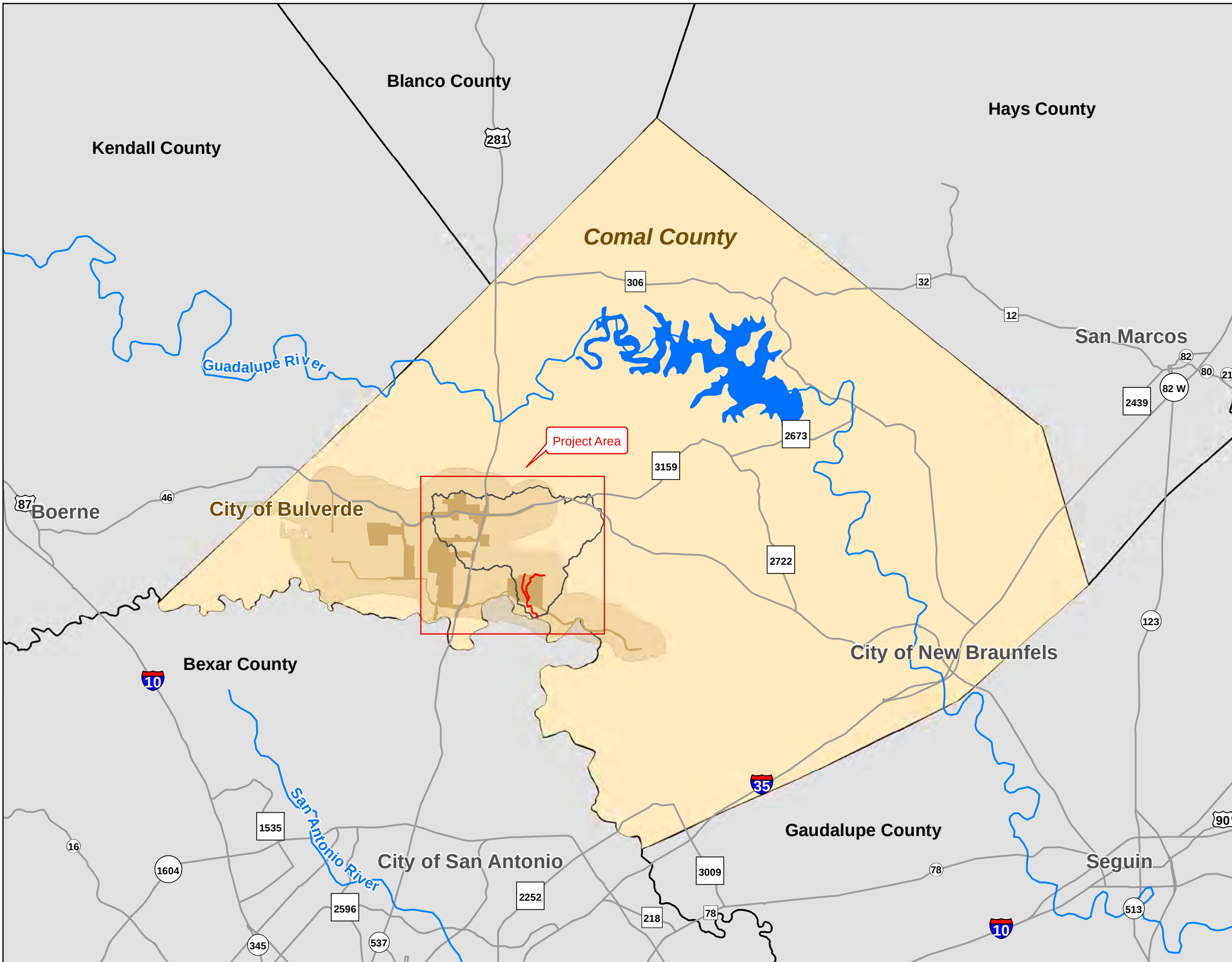


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Feet

1 inch = 20,000 feet



TBPE# F-312





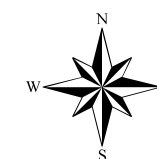
City of Bulverde
Lewis Creek Watershed

Drainage Report

Key to Features

- Routing Reaches
- Streams
- Major Roads
- Subbasins
- Reservoirs
- Bulverde City Limits

Exhibit 2:
Subbasins and
Routing Reaches

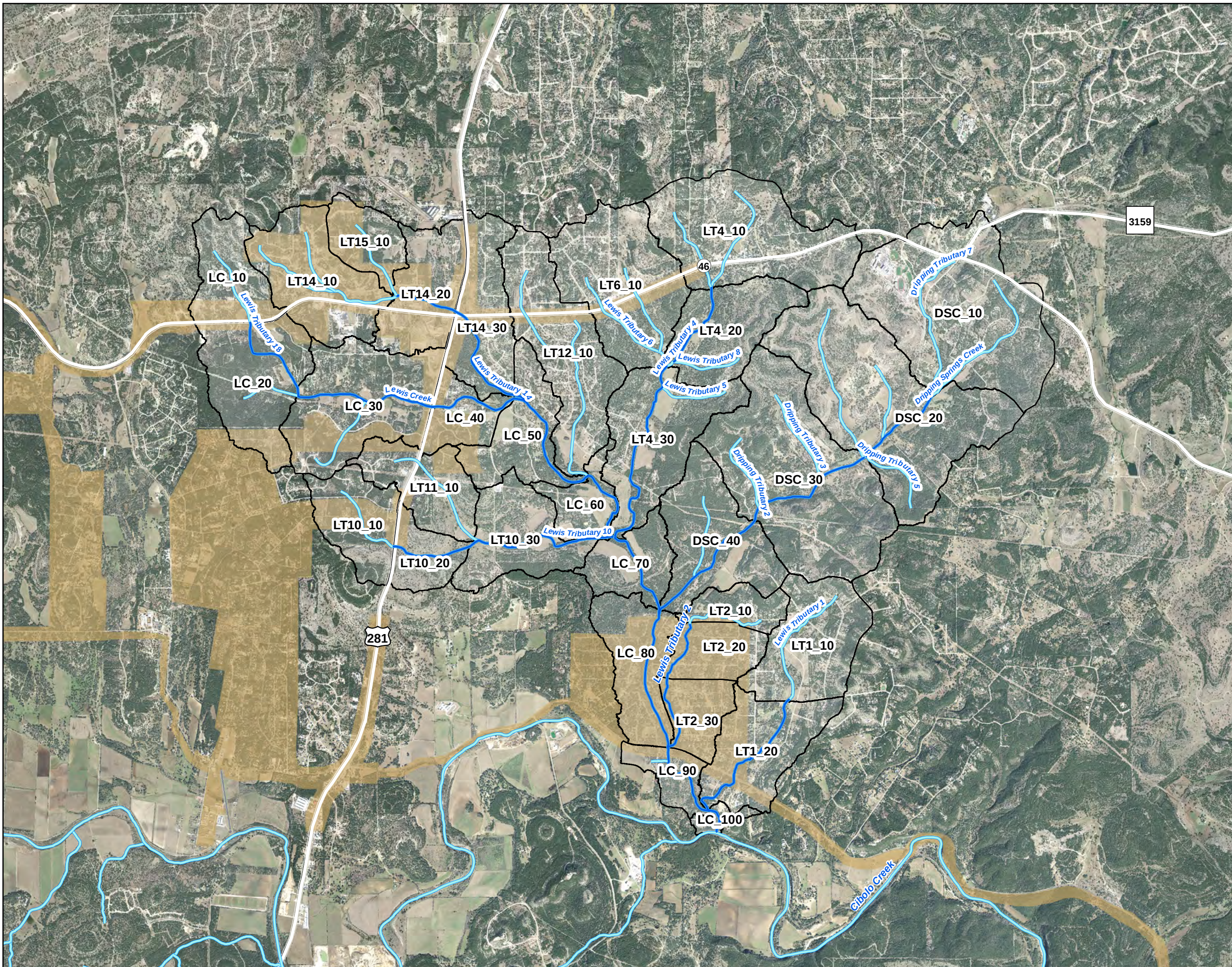


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TBPE# F-312



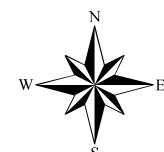


City of Bulverde Mapping Improvements

Drainage Report Key to Features

- Streams
- Major Roads
- Subbasins
- Existing Landuse**
 - 0.5 acre residential
 - 1 acre residential
 - 1/4 acre residential
 - 2 acre residential
 - Civic
 - Commercial/Light Industry
 - Forested
 - Industrial
 - Mixed Forest/Shrub
 - Multi-Family
 - Natural/Planted Herbaceous
 - Open Space, Good Condition
 - Shrubland
 - Transportation
 - Water

Exhibit 3: Landuse - Existing Development Conditions

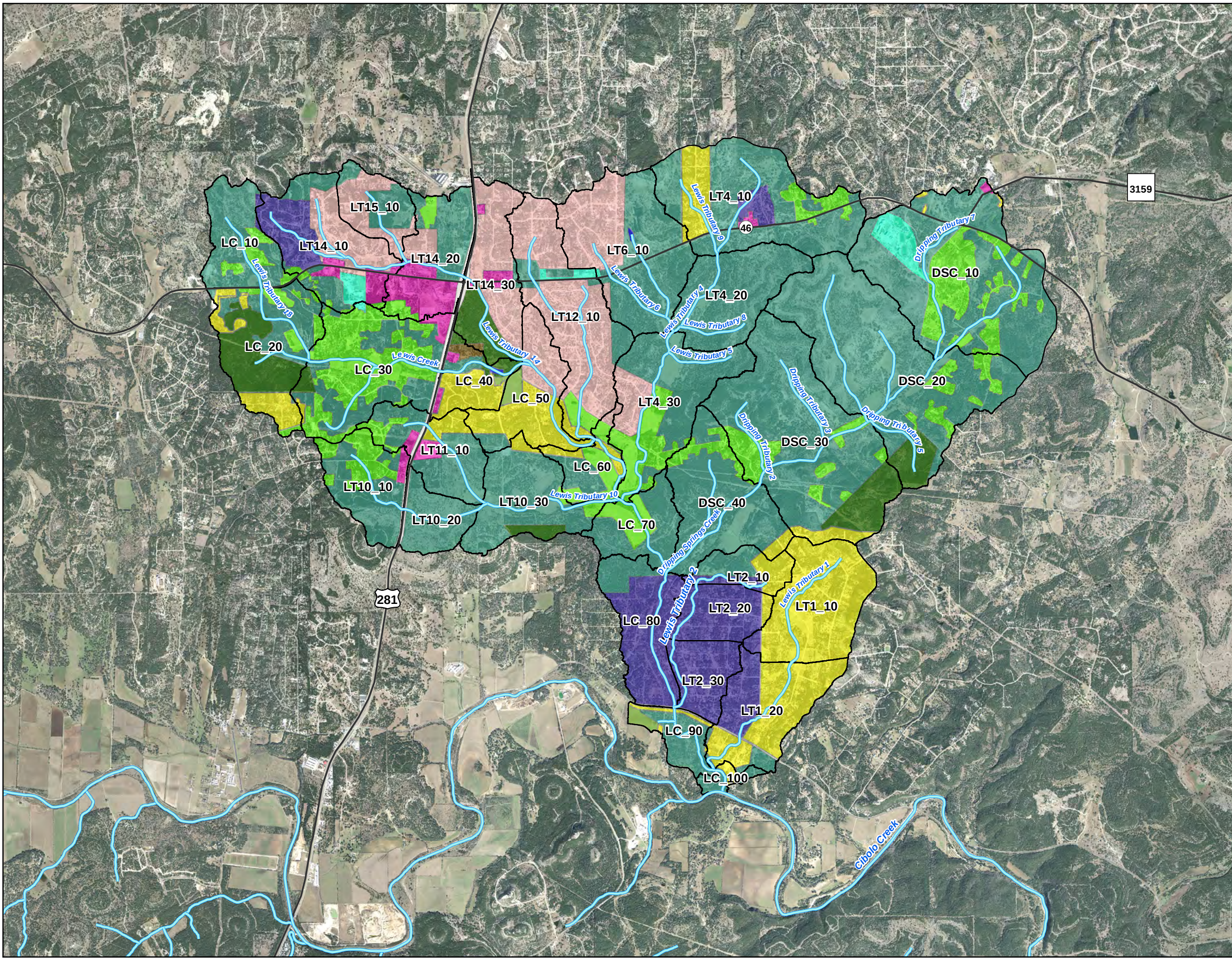


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Feet

1 inch = 4,000 feet



TBPE# F-312





City of Bulverde Mapping Improvements

Drainage Report

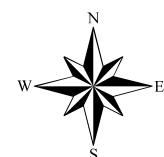
Key to Features

- Streams
- Major Roads
- Known Future Developments
- Subbasins

Landuse: 5-10 Year Projection

- 0.5 acre residential
- 1 acre residential
- 1/4 acre residential
- 2 acre residential
- Civic
- Commercial/Light Industry
- Forested
- Industrial
- Mixed Forest/Shrub
- Multi-Family
- Natural/Planted Herbaceous
- Open Space, Good Condition
- Shrubland
- Transportation
- Water

Exhibit 4: Landuse - 5-10 Year Development Projection

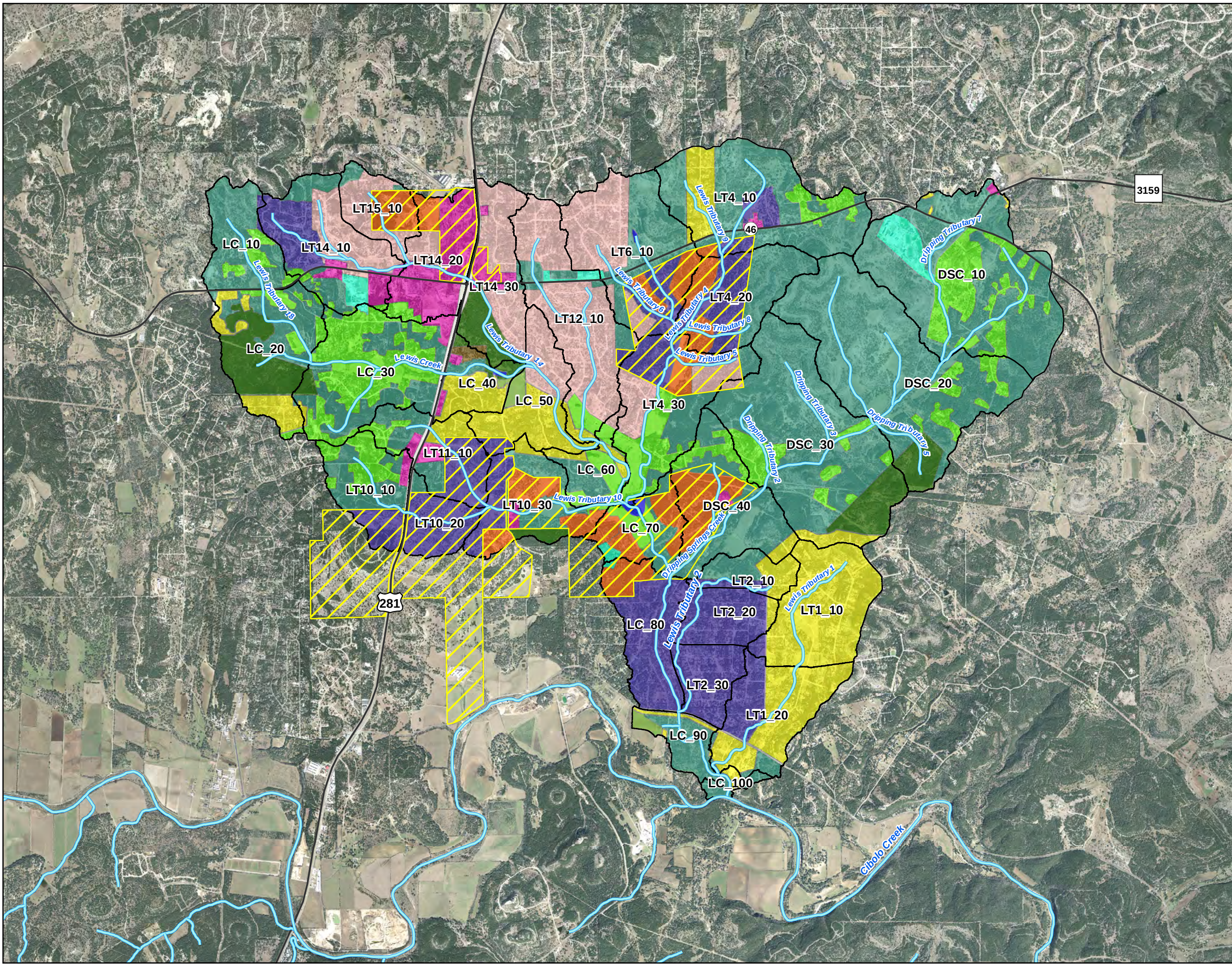


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Feet

1 inch = 4,000 feet



TBPE# F-312





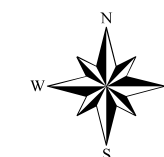
City of Bulverde Mapping Improvements

Drainage Report

Key to Features

- Streams
- Major Roads
- Known Future Developments
- Subbasins
- Landuse: Future Development**
 - 0.5 acre residential
 - 1 acre residential
 - 1/4 acre residential
 - 2 acre residential
 - Civic
 - Commercial/Light Industry
 - Forested
 - Industrial
 - Mixed Forest/Shrub
 - Multi-Family
 - Natural/Planted Herbaceous
 - Open Space, Good Condition
 - Shrubland
 - Transportation
 - Water

Exhibit 5: Landuse - Future Development Conditions

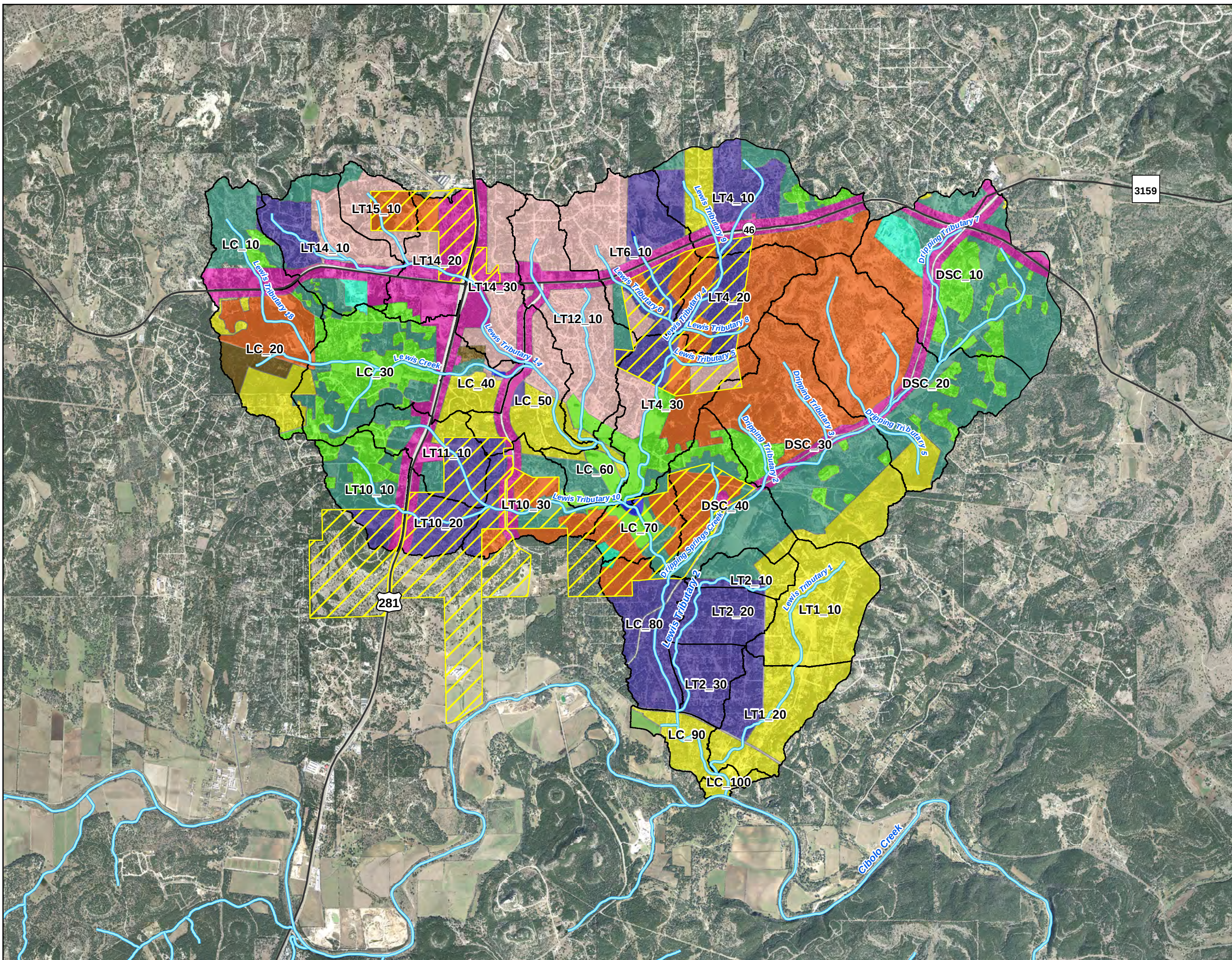


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Feet

1 inch = 4,000 feet



TBPE# F-312





City of Bulverde Mapping Improvements

Drainage Report

Key to Features

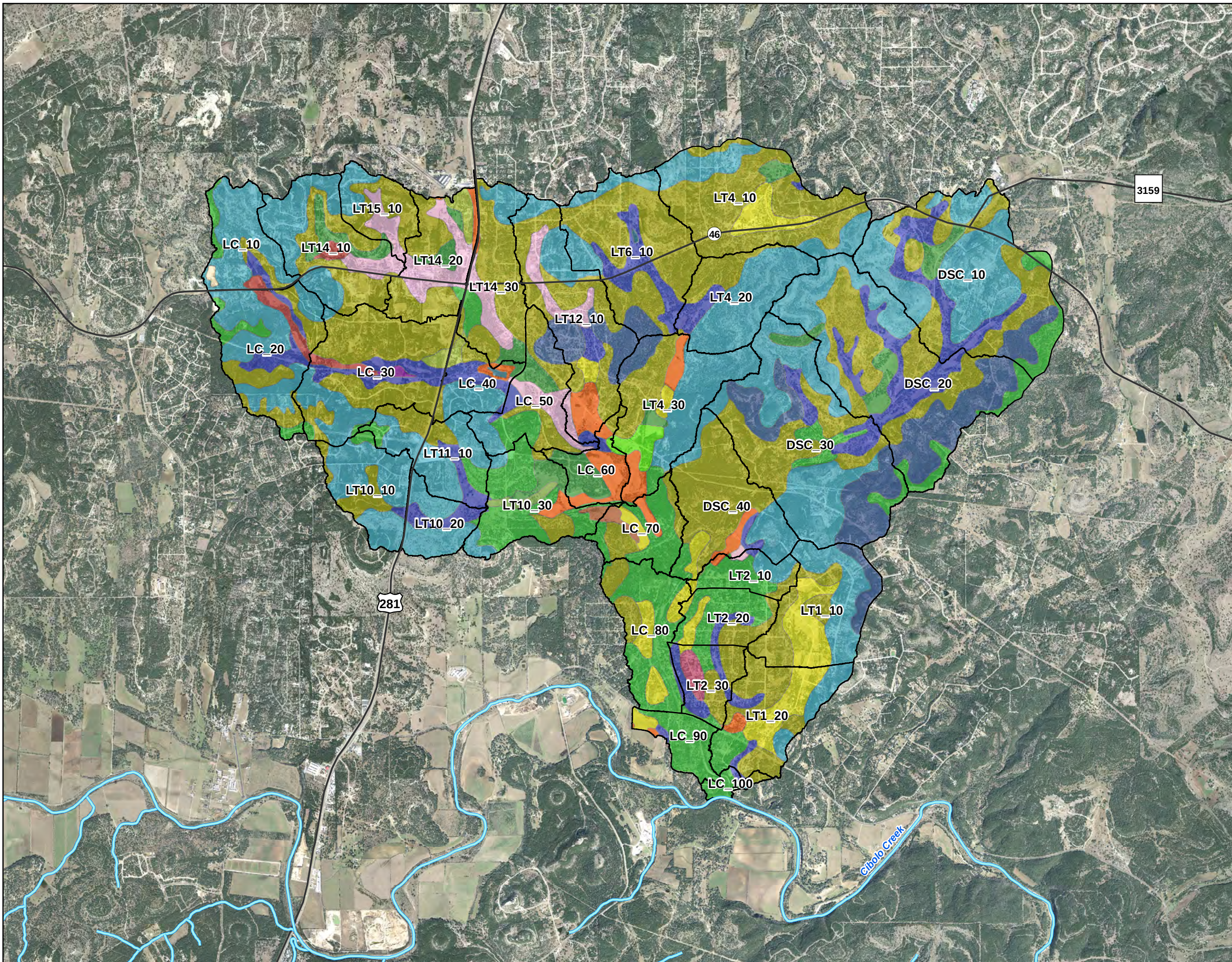
- Streams
 - Major Roads
 - Subbasins
- MUSYM**
- Bolar Clay Loam
 - Loamy Soils, Clay Soils, and Rock Outcrop
 - Loamy Soils and Rock Outcrop
 - Branyon Clay
 - Comfort-Rock Outcrop Complex
 - Denton Silty Clay, 1% to 3% Slopes
 - Denton Silty Clay, 1% to 5% Slopes
 - Doss Silty Clay
 - Eckrant-Rock Outcrop Complex
 - Krum Clay, 0% to 1% Slopes
 - Krum Clay, 1% to 3% Slopes
 - Lewisville Silty Clay, 0% to 1% Slopes
 - Lewisville Silty Clay, 1% to 3% Slopes
 - Pits
 - Purves Clay
 - Real-Comfort-Doss Complex
 - Sunev Clay Loam
 - Water

Exhibit 6: Soils



4,000 2,000 0 4,000
Feet

1 inch = 4,000 feet





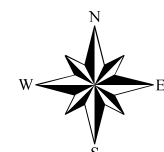
City of Bulverde Mapping Improvements

Drainage Report

Key to Features

-  Streams
-  FEMA Flood Zone A
-  FEMA Flood Zone AE
-  Updated 100-YR Existing Conditions Floodplain

Exhibit 7: Floodplain Map - Existing Development Conditions

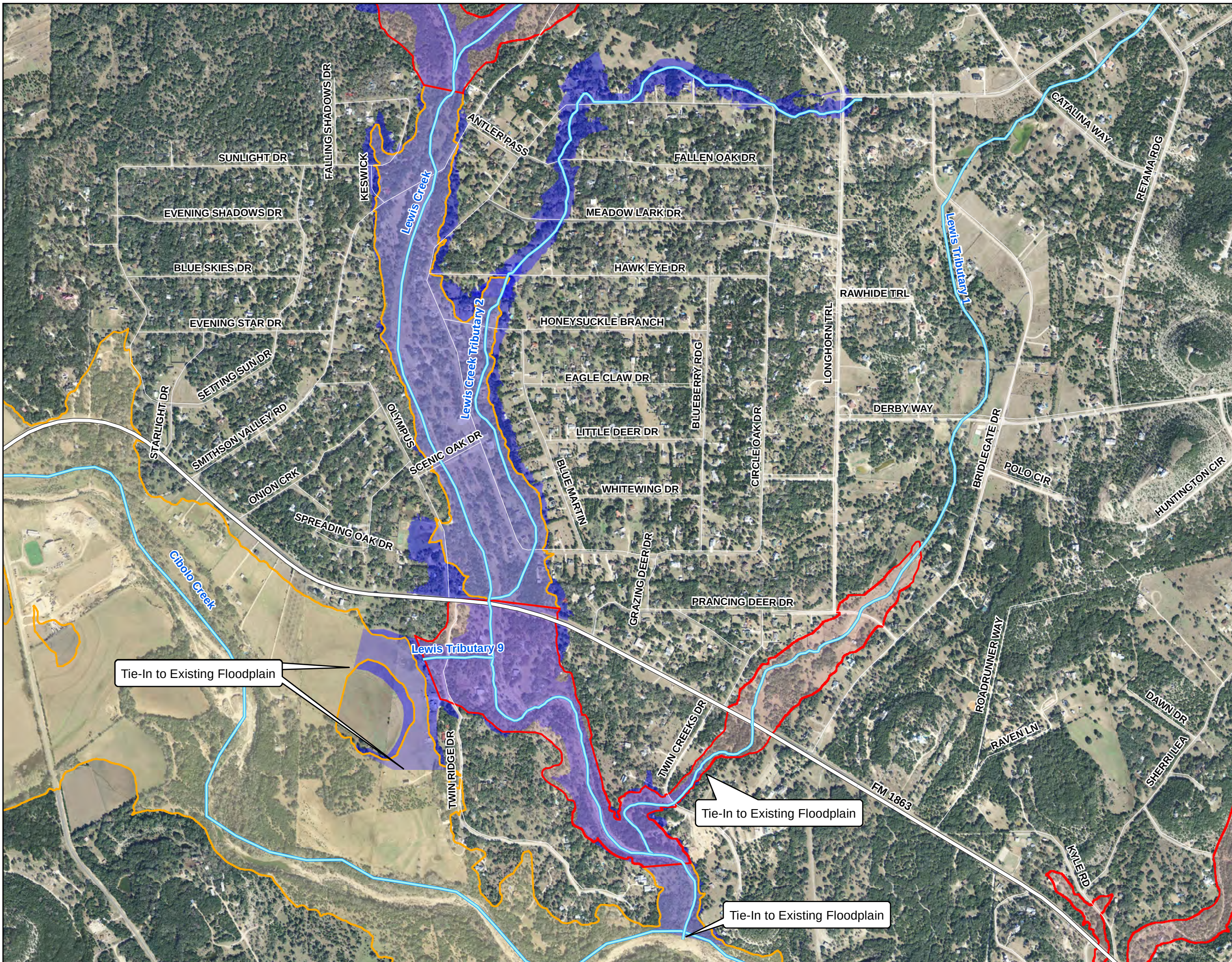


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Feet

1 inch = 1,000 feet



TBPE# F-312





City of Bulverde Mapping Improvements

Drainage Report

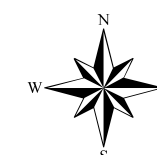
Key to Features

- Streams
- Updated 100-YR Existing Conditions Floodplain
- 100-YR 5-10YR Projection Floodplain

FEMA Flood Zone

- A
- AE

Exhibit 8: Floodplain Map - 5-10 Year Development Projection

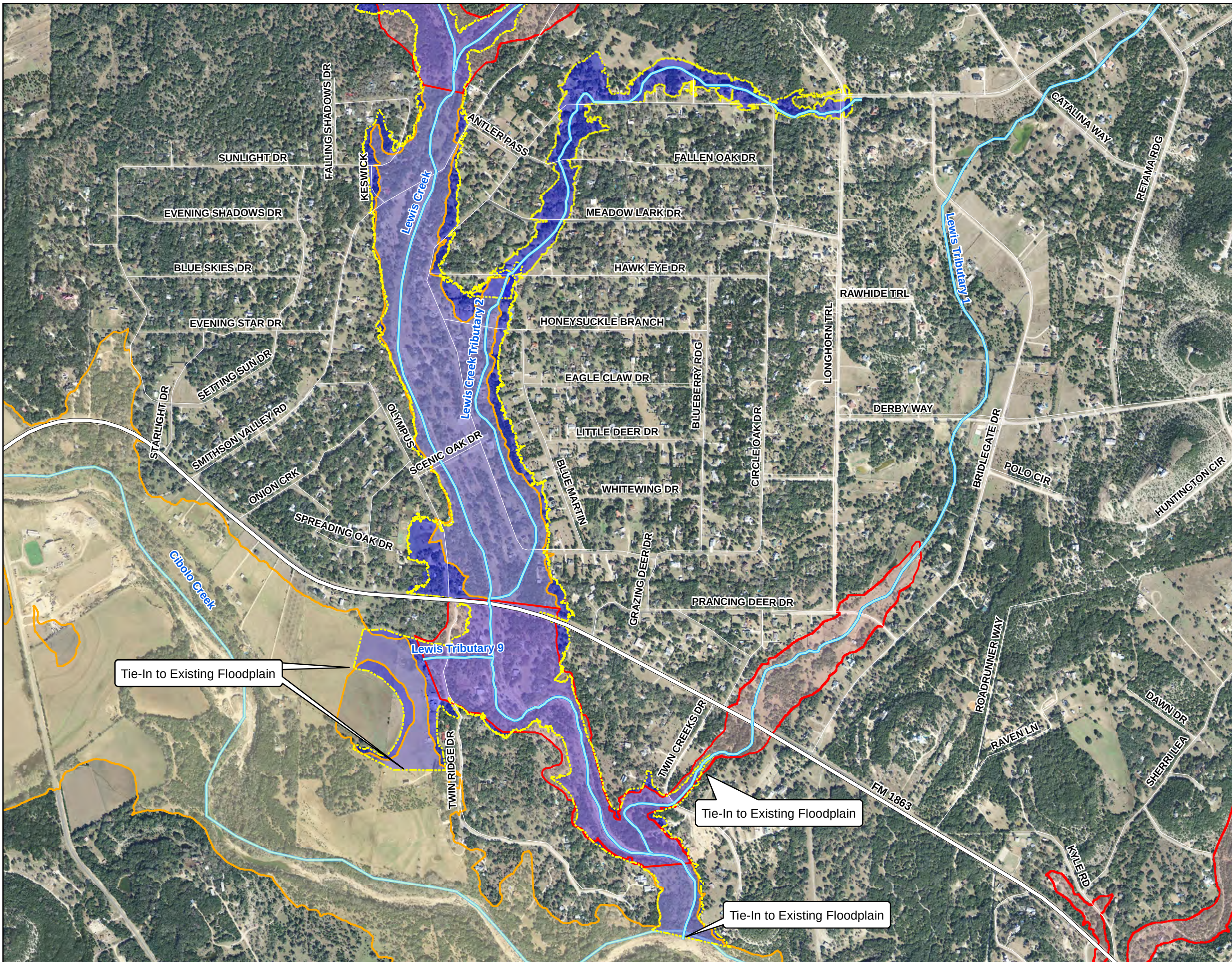


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Feet

1 inch = 1,000 feet



TBPE# F-312





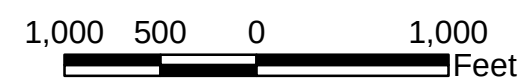
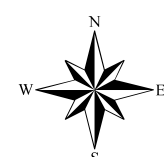
City of Bulverde Mapping Improvements

Drainage Report

Key to Features

- Streams
- Updated 100-YR Existing Conditions Floodplain
- FEMA Flood Zone**
 - A
 - AE
- 100-YR Future Conditions Floodplain

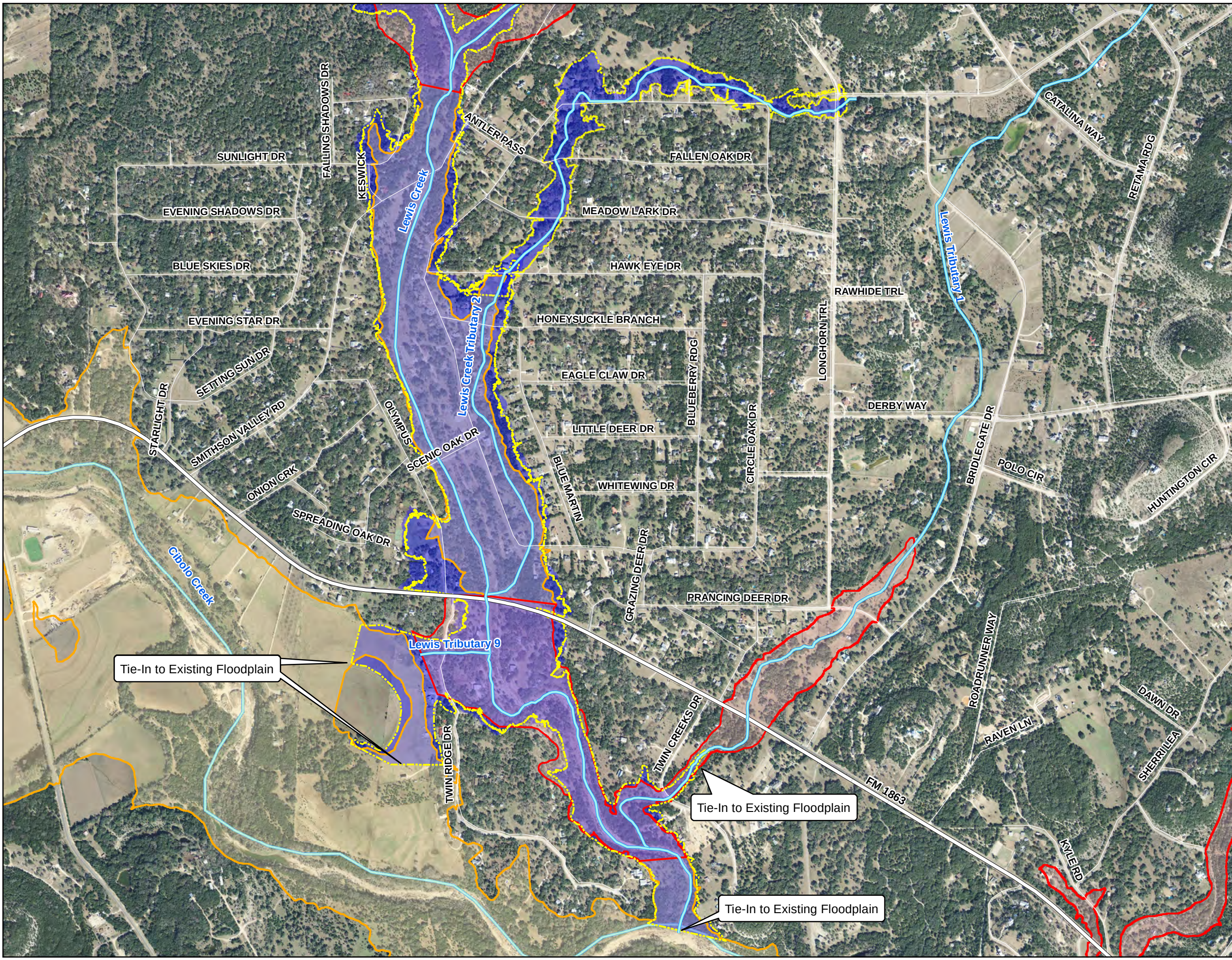
Exhibit 9: Floodplain Map - Future Development Conditions

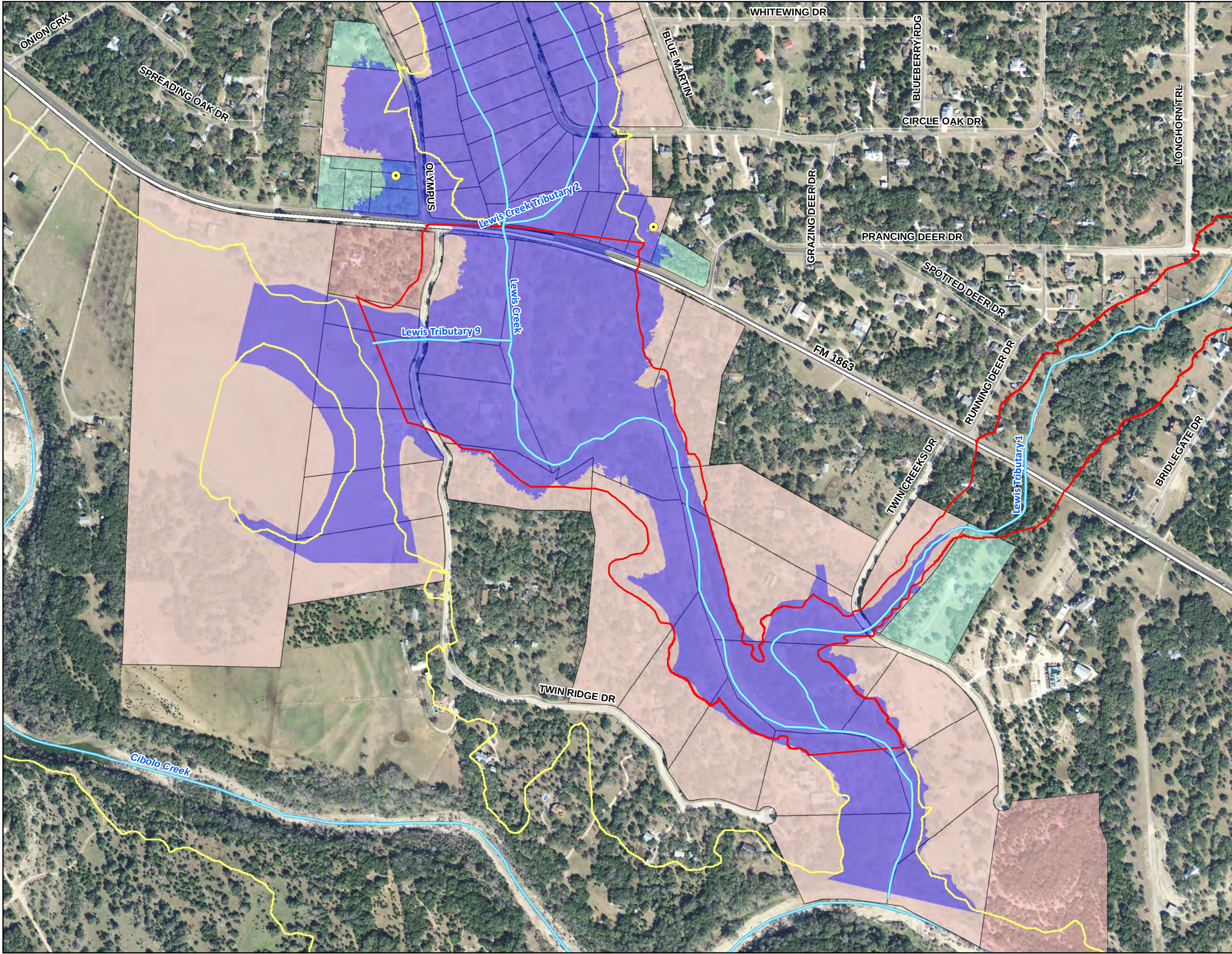


1 inch = 1,000 feet



TBPE# F-312



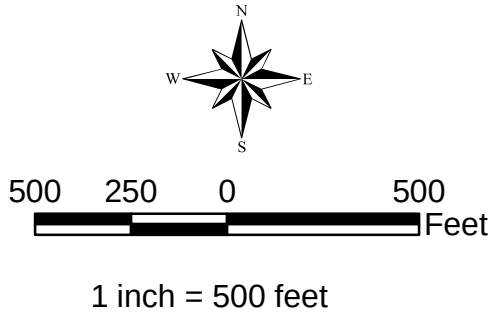


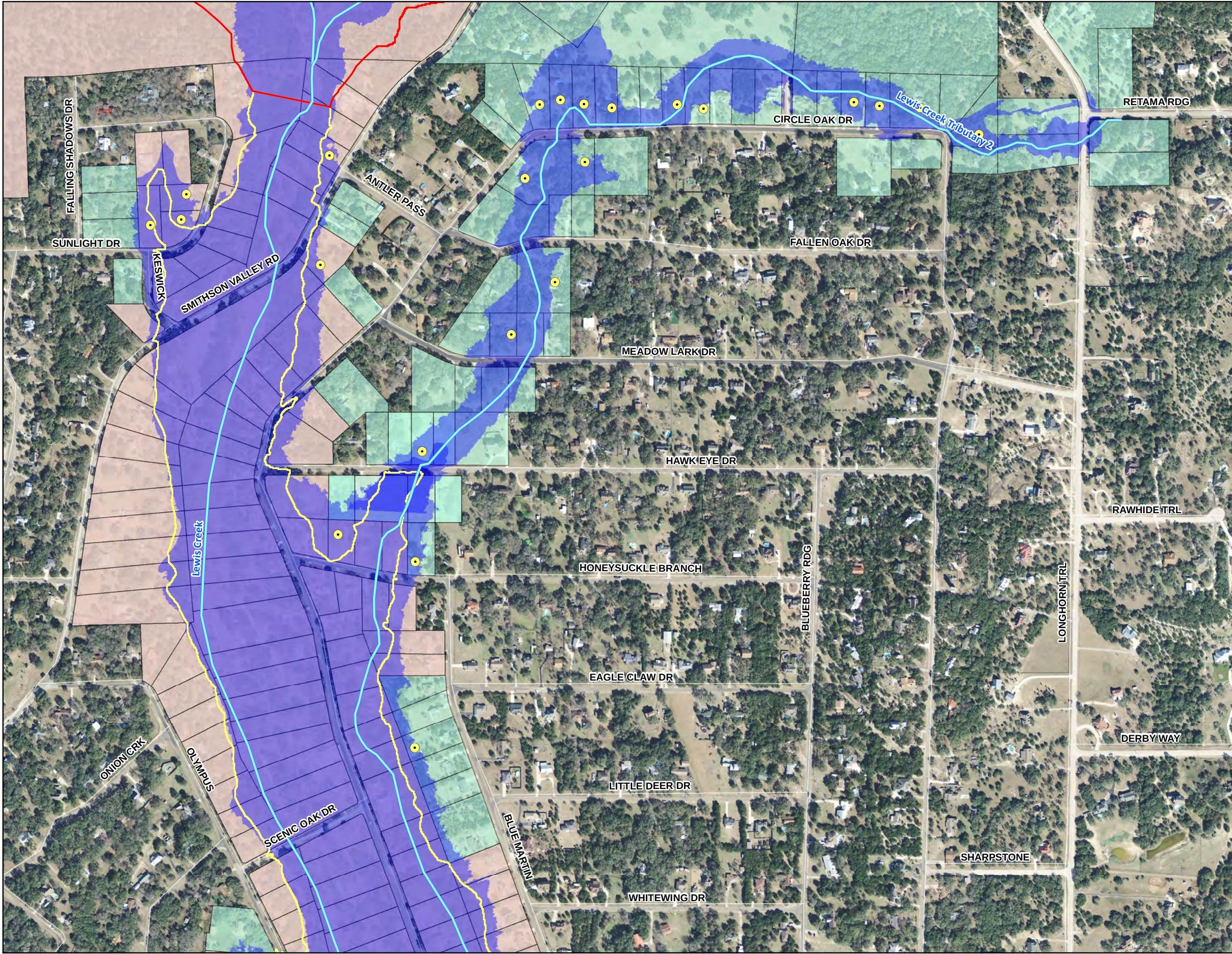
City of Bulverde
Mapping Improvements

Drainage Report

- Key to Features**
- New Structures in 100-YR Floodplain
 - Streams
 - Roads
- FEMA Flood Zone**
- A
 - AE
 - Updated 100-YR Existing Conditions Floodplain
 - Inundated Parcels - Lewis Creek FEMA Floodplain
 - Inundated Parcels - Updated 100-Yr Existing Conditions

Exhibit 10:
Parcels and Structures
PANEL 1



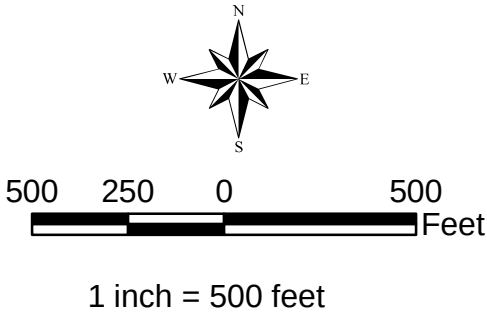


City of Bulverde
Mapping Improvements

Drainage Report

- Key to Features**
- New Structures in 100-YR Floodplain
 - Streams
 - Roads
- FEMA Flood Zone**
- A
 - AE
 - Updated 100-YR Existing Conditions Floodplain
 - Inundated Parcels - Lewis Creek FEMA Floodplain
 - Inundated Parcels - Updated 100-Yr Existing Conditions

Exhibit 10:
Parcels and Structures
PANEL 2



APPENDICES

Appendix A	Hydrologic Parameter Calculations
A.1	Snyder Lag Time Calculations
A.2	Initial Abstraction Calculations
A.3	Peaking Coefficient Calculations
Appendix B	HEC-RAS Output Summary Tables
B.1	Lewis Creek Various Flows
B.2	Lewis Creek Tributary 2 Various Flows
Appendix C	HEC-RAS Cross Sections
C.1	Lewis Creek
C.2	Lewis Creek Tributary 2
Appendix D	HEC-RAS Profiles
D.1	Lewis Creek Existing and 5-10 Year Development Projection
D.2	Lewis Creek Existing and Ultimate Future Development
D.3	Lewis Creek Tributary 2 Profiles (All flows are the same)
Appendix E	Electronic Files
E.1	Bexar County Flood Insurance Study Report
E.2	Hydrologic Model
E.3	Hydraulic Models
E.4	Supporting Excel Spreadsheets
E.5	Supporting Documents
E.6	Supporting GIS Data
E.7	Survey and Field Visit Data
E.8	Quality Assurance/Quality Control (QAQC) Documents

APPENDIX A

Hydrologic Parameter Calculations

- A.1 Snyder Lag Time Calculations
- A.2 Initial Abstraction Calculations
- A.3 Peaking Coefficient Calculations

APPENDIX A.1

Snyder Lag Time Calculation

CITY OF BULVERDE MAPPING IMPROVEMENTS

PRELIMINARY DRAINAGE REPORT

APPENDIX A.1

SNYDER LAG TIME CALCULATIONS

Snyder Lag Time - City of Bulverde Storm Drainage Design Criteria Manual

$$T_{lag} = c_t * \left(\frac{LLca}{\sqrt{S}} \right)^N$$

Basin	C _t	L (miles)	L _{ca} (miles)	S (ft/ft)	N	T _{lag} (hours)	T _c (hours)	T _c (min)	Time Step
DSC_10	0.15	2.27	0.83	0.020	0.34	0.36	0.61	36.3	12
DSC_20	0.15	2.03	0.68	0.026	0.34	0.31	0.52	31.0	10
DSC_30	0.15	2.49	0.91	0.021	0.34	0.38	0.64	38.3	13
DSC_40	0.15	2.06	0.94	0.020	0.34	0.37	0.61	36.5	12
LC_10	0.15	1.36	0.50	0.039	0.34	0.23	0.38	22.9	8
LC_100	0.15	0.66	0.12	0.032	0.34	0.11	0.19	11.3	4
LC_20	0.15	1.61	0.45	0.025	0.34	0.25	0.42	25.2	8
LC_30	0.15	2.00	0.71	0.027	0.34	0.31	0.52	31.3	10
LC_40	0.15	1.40	0.64	0.021	0.34	0.28	0.46	27.8	9
LC_50	0.15	1.88	0.93	0.022	0.34	0.35	0.58	34.8	12
LC_60	0.15	1.13	0.59	0.014	0.34	0.27	0.45	27.1	9
LC_70	0.15	1.51	0.60	0.011	0.34	0.31	0.52	31.2	10
LC_80	0.15	2.11	0.86	0.010	0.34	0.40	0.67	40.4	13
LC_90	0.15	1.40	0.65	0.009	0.34	0.33	0.54	32.7	11
LT1_10	0.15	1.79	0.93	0.028	0.34	0.33	0.55	32.8	11
LT1_20	0.15	2.00	0.93	0.032	0.34	0.33	0.56	33.3	11
LT10_10	0.15	1.29	0.41	0.028	0.34	0.22	0.37	22.2	7
LT10_20	0.15	1.28	0.55	0.018	0.34	0.26	0.44	26.3	9
LT10_30	0.15	1.92	0.96	0.022	0.34	0.35	0.59	35.3	12
LT11_10	0.15	1.81	0.69	0.026	0.34	0.30	0.50	30.2	10
LT12_10	0.15	3.19	1.58	0.017	0.34	0.52	0.87	52.0	17
LT14_10	0.15	1.80	0.87	0.037	0.34	0.31	0.51	30.5	10
LT14_20	0.15	1.26	0.51	0.022	0.34	0.25	0.41	24.7	8
LT14_30	0.15	2.21	1.03	0.021	0.34	0.38	0.64	38.3	13
LT15_10	0.15	1.31	0.62	0.037	0.34	0.25	0.41	24.5	8
LT2_10	0.15	0.51	0.44	0.019	0.34	0.18	0.30	17.7	6
LT2_20	0.15	0.63	0.37	0.007	0.34	0.21	0.35	21.1	7
LT2_30	0.15	0.63	0.31	0.008	0.34	0.20	0.33	19.6	7
LT4_10	0.15	1.78	0.58	0.027	0.34	0.28	0.47	28.1	9
LT4_20	0.15	2.05	0.62	0.028	0.34	0.30	0.50	29.9	10
LT4_30	0.15	2.85	1.34	0.016	0.34	0.48	0.80	47.9	16
LT6_10	0.15	1.92	0.97	0.022	0.34	0.36	0.59	35.6	12

T_{lag} = Snyder Lag Time (hours)

C_t = Basin lag coefficient (0.15)

L = The main stream distance from the outlet to the divide (miles)

L_{ca} = The main stream distance from the outlet to a point opposite the basin centroid (miles)

S = Average watershed slope (ft/ft)

N = Basin exponent coefficient (0.34)

APPENDIX A.2

Initial Abstraction Calculations

CITY OF BULVERDE MAPPING IMPROVEMENTS

PRELIMINARY DRAINAGE REPORT

APPENDIX A.2

INITIAL ABSTRACTION CALCULATIONS

$$I_a = 0.2 S \quad S = \left\{ \begin{array}{ll} \frac{1000 - 10 \text{ CN}}{\text{CN}} & (\text{foot - pound system}) \\ \frac{25400 - 254 \text{ CN}}{\text{CN}} & (\text{SI}) \end{array} \right\}$$

Name	Existing CN	S	I _a	5-10 Year Projected Landuse - CN	5-10 Year Projected Landuse - S	5-10 Year Projected Landuse - I _a	Future Landuse - CN	Future Landuse - S	Future Landuse - I _a
DSC_10	75	3.33	0.67	75	3.33	0.67	81	2.35	0.47
DSC_20	73	3.70	0.74	73	3.70	0.74	82	2.20	0.44
DSC_30	74	3.51	0.70	74	3.51	0.70	82	2.20	0.44
DSC_40	73	3.70	0.74	77	2.99	0.60	78	2.82	0.56
LC_10	73	3.70	0.74	73	3.70	0.74	78	2.82	0.56
LC_100	75	3.33	0.67	75	3.33	0.67	78	2.82	0.56
LC_20	75	3.33	0.67	75	3.33	0.67	85	1.76	0.35
LC_30	76	3.16	0.63	76	3.16	0.63	77	2.99	0.60
LC_40	79	2.66	0.53	79	2.66	0.53	87	1.49	0.30
LC_50	83	2.05	0.41	83	2.05	0.41	86	1.63	0.33
LC_60	75	3.33	0.67	75	3.33	0.67	75	3.33	0.67
LC_70	73	3.70	0.74	82	2.20	0.44	81	2.35	0.47
LC_80	80	2.50	0.50	82	2.20	0.44	82	2.20	0.44
LC_90	73	3.70	0.74	73	3.70	0.74	79	2.66	0.53
LT1_10	78	2.82	0.56	78	2.82	0.56	78	2.82	0.56
LT1_20	78	2.82	0.56	78	2.82	0.56	78	2.82	0.56
LT10_10	76	3.16	0.63	79	2.66	0.53	79	2.66	0.53
LT10_20	73	3.70	0.74	84	1.90	0.38	84	1.90	0.38
LT10_30	73	3.70	0.74	83	2.05	0.41	84	1.90	0.38
LT11_10	77	2.99	0.60	82	2.20	0.44	82	2.20	0.44
LT12_10	83	2.05	0.41	83	2.05	0.41	83	2.05	0.41
LT14_10	84	1.90	0.38	84	1.90	0.38	85	1.76	0.35
LT14_20	84	1.90	0.38	92	0.87	0.17	92	0.87	0.17
LT14_30	84	1.90	0.38	85	1.76	0.35	89	1.24	0.25
LT15_10	80	2.50	0.50	85	1.76	0.35	83	2.05	0.41
LT2_10	79	2.66	0.53	79	2.66	0.53	79	2.66	0.53
LT2_20	83	2.05	0.41	83	2.05	0.41	83	2.05	0.41
LT2_30	83	2.05	0.41	83	2.05	0.41	83	2.05	0.41
LT4_10	74	3.51	0.70	75	3.33	0.67	84	1.90	0.38
LT4_20	73	3.70	0.74	81	2.35	0.47	86	1.63	0.33
LT4_30	75	3.33	0.67	80	2.50	0.50	82	2.20	0.44
LT6_10	77	2.99	0.60	80	2.50	0.50	85	1.76	0.35

I_a = Initial abstraction (in)

S = Potential maximum retention after unoff beings (in)

CN = Curve number

APPENDIX A.3

Peaking Coefficient Calculations

CITY OF BULVERDE MAPPING IMPROVEMENTS

PRELIMINARY DRAINAGE REPORT

APPENDIX A.3

PEAKING COEFFICIENT (C_p) CALCULATIONS

Peaking Coefficient - Snyder Unit Hydrograph

The Snyder peaking coefficient as presented in Equations 4 and 5 is derived from the combination of Equations 2 and 3

$$\text{Eqn. 2: } q_p = 380T_{lag}^{-0.92}$$

$$\text{Eqn. 3: } C_p = \frac{q_p T_{lag}}{640}$$

$$\text{Eqn. 4: } 640C_p = 380T_{lag}^{0.08}$$

$$\text{Eqn. 5: } C_p = 0.594T_{lag}^{0.08}$$

where: q_p is the peak flow rate and C_p is the Snyder peaking coefficient.

Basin	Lag Time (hr)	q _p	C _p
DSC_10	0.36	972.71	0.55
DSC_20	0.31	1116.17	0.54
DSC_30	0.38	925.51	0.55
DSC_40	0.37	948.50	0.55
LC_10	0.23	1468.91	0.53
LC_100	0.11	2895.36	0.50
LC_20	0.25	1360.44	0.53
LC_30	0.31	1116.17	0.54
LC_40	0.28	1225.74	0.54
LC_50	0.35	998.25	0.55
LC_60	0.27	1267.44	0.53
LC_70	0.31	1116.17	0.54
LC_80	0.40	882.85	0.55
LC_90	0.33	1053.78	0.54
LT1_10	0.33	1053.78	0.54
LT1_20	0.33	1053.78	0.54
LT10_10	0.22	1530.22	0.53
LT10_20	0.26	1312.22	0.53
LT10_30	0.35	998.25	0.55
LT11_10	0.30	1150.36	0.54
LT12_10	0.52	693.52	0.56
LT14_10	0.31	1116.17	0.54
LT14_20	0.25	1360.44	0.53
LT14_30	0.38	925.51	0.55
LT15_10	0.25	1360.44	0.53
LT2_10	0.18	1840.49	0.52
LT2_20	0.21	1597.14	0.52
LT2_30	0.20	1670.46	0.52
LT4_10	0.28	1225.74	0.54
LT4_20	0.30	1150.36	0.54
LT4_30	0.48	746.52	0.56
LT6_10	0.36	972.71	0.55

APPENDIX B

HEC-RAS Output Summary Tables

- B.1 Lewis Creek Various Flows
- B.2 Lewis Creek Tributary Various Flows

APPENDIX B.1

Lewis Creek Various Flows - Output Summary Table

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	40993	2-YR EC	440.00	1233.03	1237.68		1237.89	0.005655	3.68	119.57	41.70	0.38
1	40993	5-YR EC	600.00	1233.03	1238.19		1238.47	0.006724	4.23	141.75	45.62	0.42
1	40993	10-YR EC	740.00	1233.03	1238.69		1238.99	0.006697	4.45	170.92	92.46	0.43
1	40993	25-YR EC	980.00	1233.03	1239.11		1239.50	0.007498	5.10	218.64	141.20	0.46
1	40993	50-YR EC	1230.00	1233.03	1239.50		1239.93	0.007646	5.50	288.90	206.01	0.47
1	40993	100-YR EC	1440.00	1233.03	1239.76		1240.21	0.007769	5.77	345.48	231.38	0.48
1	40993	500-YR EC	2120.00	1233.03	1240.40		1240.90	0.008000	6.41	508.99	284.12	0.50
1	40993	25-YR FC	1110.00	1233.03	1239.35		1239.76	0.007417	5.28	259.75	185.16	0.46
1	40993	100-YR FC	1570.00	1233.03	1239.90		1240.36	0.007798	5.90	378.52	235.84	0.49
1	40993	25-YR 5-10 YR	980.00	1233.03	1239.11		1239.50	0.007498	5.10	218.64	141.20	0.46
1	40993	100-YR 5-10 YR	1440.00	1233.03	1239.76		1240.21	0.007769	5.77	345.48	231.38	0.48
1	40514	2-YR EC	440.00	1229.12	1232.14	1232.14	1232.66	0.028606	6.00	87.32	104.17	0.80
1	40514	5-YR EC	600.00	1229.12	1232.49	1232.44	1232.99	0.023298	6.12	127.10	125.82	0.75
1	40514	10-YR EC	740.00	1229.12	1232.61	1232.61	1233.22	0.027514	6.89	141.96	134.45	0.82
1	40514	25-YR EC	980.00	1229.12	1232.94	1232.94	1233.55	0.024380	7.13	191.35	153.78	0.79
1	40514	50-YR EC	1230.00	1229.12	1233.17	1233.17	1233.85	0.025470	7.72	227.31	164.69	0.82
1	40514	100-YR EC	1440.00	1229.12	1233.34	1233.34	1234.07	0.025801	8.09	256.28	170.93	0.83
1	40514	500-YR EC	2120.00	1229.12	1233.87	1233.87	1234.71	0.025495	8.97	354.09	208.00	0.85
1	40514	25-YR FC	1110.00	1229.12	1233.03	1233.03	1233.71	0.026327	7.58	205.36	156.83	0.82
1	40514	100-YR FC	1570.00	1229.12	1233.44	1233.44	1234.20	0.026016	8.30	273.30	174.60	0.84
1	40514	25-YR 5-10 YR	980.00	1229.12	1232.94	1232.94	1233.55	0.024380	7.13	191.35	153.78	0.79
1	40514	100-YR 5-10 YR	1440.00	1229.12	1233.34	1233.34	1234.07	0.025801	8.09	256.28	170.93	0.83
1	40059	2-YR EC	440.00	1221.57	1226.63	1225.56	1226.86	0.006075	4.55	187.61	237.08	0.41
1	40059	5-YR EC	600.00	1221.57	1226.77	1226.34	1227.07	0.008420	5.48	220.56	247.39	0.48
1	40059	10-YR EC	740.00	1221.57	1227.02	1226.84	1227.27	0.007308	5.32	283.87	254.89	0.45
1	40059	25-YR EC	980.00	1221.57	1227.28	1227.02	1227.54	0.007702	5.68	351.85	268.21	0.47
1	40059	50-YR EC	1230.00	1221.57	1227.54	1227.16	1227.79	0.007728	5.90	421.65	281.39	0.48
1	40059	100-YR EC	1440.00	1221.57	1227.71	1227.32	1227.98	0.007880	6.10	472.23	288.61	0.48
1	40059	500-YR EC	2120.00	1221.57	1228.22	1227.67	1228.50	0.008028	6.57	624.26	307.32	0.50
1	40059	25-YR FC	1110.00	1221.57	1227.41	1227.11	1227.66	0.007708	5.79	386.85	270.23	0.47
1	40059	100-YR FC	1570.00	1221.57	1227.83	1227.40	1228.09	0.007782	6.16	504.98	290.79	0.48
1	40059	25-YR 5-10 YR	980.00	1221.57	1227.28	1227.02	1227.54	0.007702	5.68	351.85	268.21	0.47
1	40059	100-YR 5-10 YR	1440.00	1221.57	1227.71	1227.32	1227.98	0.007880	6.10	472.23	288.61	0.48
1	39559	2-YR EC	440.00	1217.39	1220.87	1220.54	1221.49	0.025266	6.33	72.54	142.81	0.77
1	39559	5-YR EC	600.00	1217.39	1221.10	1221.10	1221.47	0.017273	5.61	159.04	174.32	0.65
1	39559	10-YR EC	740.00	1217.39	1221.19	1221.10	1221.67	0.021881	6.48	176.22	188.21	0.74
1	39559	25-YR EC	980.00	1217.39	1221.47	1221.47	1221.94	0.020557	6.75	231.84	211.76	0.73
1	39559	50-YR EC	1230.00	1217.39	1221.66	1221.65	1222.17	0.021101	7.17	276.06	246.93	0.74
1	39559	100-YR EC	1440.00	1217.39	1221.83	1221.80	1222.34	0.020834	7.39	318.79	269.82	0.75
1	39559	500-YR EC	2120.00	1217.39	1222.27	1222.03	1222.83	0.020975	8.12	445.40	295.69	0.77
1	39559	25-YR FC	1110.00	1217.39	1221.57	1221.57	1222.06	0.020862	6.98	254.92	228.66	0.74
1	39559	100-YR FC	1570.00	1217.39	1221.90	1221.87	1222.44	0.021513	7.63	338.73	278.10	0.76
1	39559	25-YR 5-10 YR	980.00	1217.39	1221.47	1221.47	1221.94	0.020557	6.75	231.84	211.76	0.73
1	39559	100-YR 5-10 YR	1440.00	1217.39	1221.83	1221.80	1222.34	0.020834	7.39	318.79	269.82	0.75
1	39090	2-YR EC	440.00	1212.93	1216.33	1215.70	1216.43	0.006224	3.14	209.79	198.87	0.38
1	39090	5-YR EC	600.00	1212.93	1216.60		1216.71	0.006249	3.42	266.06	212.21	0.39
1	39090	10-YR EC	740.00	1212.93	1216.76		1216.89	0.006809	3.72	300.26	218.70	0.42
1	39090	25-YR EC	980.00	1212.93	1217.04		1217.19	0.007160	4.10	363.51	235.40	0.43
1	39090	50-YR EC	1230.00	1212.93	1217.31		1217.47	0.007065	4.33	426.72	241.37	0.44
1	39090	100-YR EC	1440.00	1212.93	1217.50		1217.68	0.007142	4.53	472.48	244.51	0.44
1	39090	500-YR EC	2120.00	1212.93	1218.10		1218.31	0.006934	5.00	625.85	264.86	0.45
1	39090	25-YR FC	1110.00	1212.93	1217.21		1217.36	0.006848	4.17	402.55	239.91	0.43
1	39090	100-YR FC	1570.00	1212.93	1217.63		1217.82	0.006944	4.59	506.16	248.15	0.44
1	39090	25-YR 5-10 YR	980.00	1212.93	1217.04		1217.19	0.007160	4.10	363.51	235.40	0.43
1	39090	100-YR 5-10 YR	1440.00	1212.93	1217.50		1217.68	0.007142	4.53	472.48	244.51	0.44
1	38376	2-YR EC	440.00	1206.13	1209.01	1208.83	1209.40	0.020609	5.23	100.23	109.54	0.69
1	38376	5-YR EC	600.00	1206.13	1209.27	1209.15	1209.72	0.020750	5.76	132.11	124.74	0.71
1	38376	10-YR EC	740.00	1206.13	1209.56	1209.35	1209.98	0.017664	5.78	168.87	141.93	0.66
1	38376	25-YR EC	980.00	1206.13	1209.92	1209.67	1210.37	0.016246	6.11	227.38	172.81	0.65
1	38376	50-YR EC	1230.00	1206.13	1210.17	1209.94	1210.66	0.016757	6.57	270.93	185.31	0.67
1	38376	100-YR EC	1440.00	1206.13	1210.36	1210.14	1210.87	0.016593	6.82	308.20	197.38	0.68
1	38376	500-YR EC	2120.00	1206.13	1210.86	1210.62	1211.48	0.017957	7.82	415.30	234.50	0.72
1	38376	25-YR FC	1110.00	1206.13	1210.01	1209.66	1210.51	0.017672	6.51	243.27	176.55	0.68
1	38376	100-YR FC	1570.00	1206.13	1210.43	1210.24	1210.98	0.017582	7.13	322.34	200.85	0.70
1	38376	25-YR 5-10 YR	980.00	1206.13	1209.92	1209.67	1210.37	0.016246	6.11	227.38	172.81	0.65
1	38376	100-YR 5-10 YR	1440.00	1206.13	1210.36	1210.14	1210.87	0.016593	6.82	308.20	197.38	0.68
1	38059	2-YR EC	440.00	1200.63	1205.12	1203.89	1205.33	0.008553	3.67	119.87	57.92	0.45
1	38059	5-YR EC	600.00	1200.63	1205.67	1204.30	1205.91	0.007614	3.94	152.32	73.96	0.44
1	38059	10-YR EC	740.00	1200.63	1205.96	1204.75	1206.25	0.008224	4.35	170.11	122.98	0.46
1	38059	25-YR EC	980.00	1200.63	1206.34	1205.13	1206.68	0.008526	4.80	237.88	167.26	0.48
1	38059	50-YR EC	1230.00	1200.63	1206.75	1205.48	1207.10	0.007799	4.99	316.20	218.29	0.47
1	38059	100-YR EC	1440.00	1200.63	1207.01	1205.74	1207.36	0.007587	5.15	374.46	235.33	0.47
1	38059	500-YR EC	2120.00	1200.63	1207.75	1206.91	1208.10	0.006638	5.43	564.24	276.00	0.45
1	38059	25-YR FC	1110.00	1200.63	1206.62	1205.29	1206.94	0.007545	4.78	287.92	198.78	0.46
1	38059	100-YR FC	1570.00	1200.63	1207.20	1205.93	1207.54	0.007020	5.13	421.07	245.93	0.45

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	38059	25-YR 5-10 YR	980.00	1200.63	1206.34	1205.13	1206.68	0.008526	4.80	237.88	167.26	0.48
1	38059	100-YR 5-10 YR	1440.00	1200.63	1207.01	1205.74	1207.36	0.007587	5.15	374.46	235.33	0.47
1	37559	2-YR EC	910.00	1196.86	1199.96	1199.41	1200.21	0.011282	4.35	256.37	183.94	0.52
1	37559	5-YR EC	1250.00	1196.86	1200.23	1199.74	1200.56	0.012893	5.05	308.94	195.69	0.57
1	37559	10-YR EC	1510.00	1196.86	1200.49	1199.86	1200.84	0.012558	5.33	360.78	211.62	0.57
1	37559	25-YR EC	2050.00	1196.86	1200.93	1201.33	1201.33	0.012079	5.78	459.08	238.80	0.58
1	37559	50-YR EC	2600.00	1196.86	1201.25	1201.72	1201.72	0.012812	6.35	539.52	264.35	0.60
1	37559	100-YR EC	3060.00	1196.86	1201.50	1202.01	1202.01	0.012928	6.69	607.10	272.39	0.61
1	37559	500-YR EC	4610.00	1196.86	1202.27	1202.91	1202.91	0.013214	7.68	839.10	330.32	0.64
1	37559	25-YR FC	2470.00	1196.86	1201.17	1201.63	1201.63	0.012679	6.23	519.42	258.72	0.60
1	37559	100-YR FC	3460.00	1196.86	1201.72	1202.28	1202.28	0.013091	7.01	669.95	291.15	0.62
1	37559	25-YR 5-10 YR	2050.00	1196.86	1200.93	1201.33	1201.33	0.012079	5.78	459.08	238.80	0.58
1	37559	100-YR 5-10 YR	3060.00	1196.86	1201.50	1202.01	1202.01	0.012928	6.69	607.10	272.39	0.61
1	37059	2-YR EC	910.00	1189.10	1193.94	1193.69	1194.31	0.012451	5.67	255.59	242.44	0.57
1	37059	5-YR EC	1250.00	1189.10	1194.33	1194.10	1194.67	0.010966	5.76	354.93	261.13	0.55
1	37059	10-YR EC	1510.00	1189.10	1194.52	1194.26	1194.88	0.011504	6.12	404.98	268.86	0.56
1	37059	25-YR EC	2050.00	1189.10	1194.86	1194.54	1195.28	0.012376	6.74	502.20	289.38	0.59
1	37059	50-YR EC	2600.00	1189.10	1195.24	1194.83	1195.66	0.011674	6.95	612.43	302.18	0.59
1	37059	100-YR EC	3060.00	1189.10	1195.51	1194.97	1195.94	0.011583	7.20	696.21	317.74	0.59
1	37059	500-YR EC	4610.00	1189.10	1196.25	1195.51	1196.75	0.011613	7.96	944.04	353.64	0.61
1	37059	25-YR FC	2470.00	1189.10	1195.16	1194.78	1195.57	0.011758	6.89	588.36	299.70	0.59
1	37059	100-YR FC	3460.00	1189.10	1195.71	1195.16	1196.17	0.011551	7.41	763.58	327.33	0.59
1	37059	25-YR 5-10 YR	2050.00	1189.10	1194.86	1194.54	1195.28	0.012376	6.74	502.20	289.38	0.59
1	37059	100-YR 5-10 YR	3060.00	1189.10	1195.51	1194.97	1195.94	0.011583	7.20	696.21	317.74	0.59
1	36622	2-YR EC	910.00	1185.57	1189.44	1188.83	1189.71	0.008924	4.55	262.44	189.11	0.49
1	36622	5-YR EC	1250.00	1185.57	1189.76	1189.19	1190.09	0.010032	5.20	328.48	231.52	0.52
1	36622	10-YR EC	1510.00	1185.57	1190.07	1189.45	1190.40	0.009227	5.31	403.74	274.11	0.51
1	36622	25-YR EC	2050.00	1185.57	1190.61	1189.91	1190.94	0.008100	5.50	557.97	389.73	0.49
1	36622	50-YR EC	2600.00	1185.57	1190.92	1190.23	1191.29	0.008675	5.99	690.34	436.88	0.51
1	36622	100-YR EC	3060.00	1185.57	1191.15	1190.44	1191.54	0.008888	6.28	785.70	461.30	0.53
1	36622	500-YR EC	4610.00	1185.57	1191.81	1191.16	1192.26	0.009210	7.02	1073.30	510.41	0.55
1	36622	25-YR FC	2470.00	1185.57	1190.84	1190.16	1191.20	0.008610	5.89	660.52	426.60	0.51
1	36622	100-YR FC	3460.00	1185.57	1191.34	1190.66	1191.74	0.009013	6.50	863.78	475.56	0.53
1	36622	25-YR 5-10 YR	2050.00	1185.57	1190.61	1189.91	1190.94	0.008100	5.50	557.97	389.73	0.49
1	36622	100-YR 5-10 YR	3060.00	1185.57	1191.15	1190.44	1191.54	0.008888	6.28	785.70	461.30	0.53
1	36062	2-YR EC	910.00	1179.80	1183.53	1183.06	1183.93	0.012925	5.30	218.03	193.13	0.58
1	36062	5-YR EC	1250.00	1179.80	1183.99	1183.46	1184.38	0.011257	5.52	326.70	253.97	0.56
1	36062	10-YR EC	1510.00	1179.80	1184.14	1183.77	1184.59	0.012859	6.08	363.78	257.28	0.60
1	36062	25-YR EC	2050.00	1179.80	1184.38	1184.25	1184.98	0.016241	7.18	426.59	265.09	0.68
1	36062	50-YR EC	2600.00	1179.80	1184.78	1184.53	1185.37	0.014703	7.34	534.28	273.47	0.66
1	36062	100-YR EC	3060.00	1179.80	1185.07	1184.73	1185.66	0.014055	7.53	613.17	277.91	0.65
1	36062	500-YR EC	4610.00	1179.80	1185.31	1185.31	1186.55	0.012688	8.10	851.94	290.40	0.64
1	36062	25-YR FC	2470.00	1179.80	1184.70	1184.46	1185.28	0.014868	7.28	511.74	272.18	0.66
1	36062	100-YR FC	3460.00	1179.80	1185.30	1184.90	1185.90	0.013648	7.70	677.56	281.49	0.65
1	36062	25-YR 5-10 YR	2050.00	1179.80	1184.38	1184.25	1184.98	0.016241	7.18	426.59	265.09	0.68
1	36062	100-YR 5-10 YR	3060.00	1179.80	1185.07	1184.73	1185.66	0.014055	7.53	613.17	277.91	0.65
1	35559	2-YR EC	910.00	1172.78	1177.87	1177.47	1178.16	0.010324	5.32	268.78	214.98	0.51
1	35559	5-YR EC	1250.00	1172.78	1178.19	1177.76	1178.55	0.012112	6.12	326.15	236.40	0.56
1	35559	10-YR EC	1510.00	1172.78	1178.45	1177.90	1178.76	0.010524	5.97	423.30	240.21	0.53
1	35559	25-YR EC	2050.00	1172.78	1179.09	1178.32	1179.36	0.008003	5.75	580.99	250.50	0.47
1	35559	50-YR EC	2600.00	1172.78	1179.43	1178.58	1179.75	0.008653	6.27	666.14	254.41	0.50
1	35559	100-YR EC	3060.00	1172.78	1179.70	1178.78	1180.06	0.008932	6.61	736.55	257.85	0.51
1	35559	500-YR EC	4610.00	1172.78	1180.50	1179.35	1180.96	0.009685	7.57	948.29	270.23	0.54
1	35559	25-YR FC	2470.00	1172.78	1179.34	1178.51	1179.65	0.008598	6.18	644.51	253.37	0.49
1	35559	100-YR FC	3460.00	1172.78	1179.93	1178.94	1180.31	0.009118	6.87	795.21	260.83	0.52
1	35559	25-YR 5-10 YR	2050.00	1172.78	1179.09	1178.32	1179.36	0.008003	5.75	580.99	250.50	0.47
1	35559	100-YR 5-10 YR	3060.00	1172.78	1179.70	1178.78	1180.06	0.008932	6.61	736.55	257.85	0.51
1	35059	2-YR EC	910.00	1169.19	1174.21	1173.49	1174.37	0.005930	4.21	349.88	254.91	0.40
1	35059	5-YR EC	1250.00	1169.19	1174.66	1173.77	1174.82	0.005154	4.27	475.23	290.41	0.38
1	35059	10-YR EC	1510.00	1169.19	1174.81	1173.95	1175.00	0.005867	4.67	521.58	308.78	0.41
1	35059	25-YR EC	2050.00	1169.19	1174.92	1174.39	1175.22	0.009175	5.95	557.14	317.65	0.52
1	35059	50-YR EC	2600.00	1169.19	1175.30	1174.65	1175.60	0.008549	6.09	684.16	351.03	0.51
1	35059	100-YR EC	3060.00	1169.19	1175.54	1174.83	1175.86	0.008480	6.29	770.60	362.67	0.51
1	35059	500-YR EC	4610.00	1169.19	1176.22	1175.39	1176.60	0.008511	6.88	1026.03	398.25	0.52
1	35059	25-YR FC	2470.00	1169.19	1175.23	1174.59	1175.53	0.008530	6.02	659.62	347.07	0.51
1	35059	100-YR FC	3460.00	1169.19	1175.73	1174.99	1176.07	0.008507	6.46	839.92	373.42	0.51
1	35059	25-YR 5-10 YR	2050.00	1169.19	1174.92	1174.39	1175.22	0.009175	5.95	557.14	317.65	0.52
1	35059	100-YR 5-10 YR	3060.00	1169.19	1175.54	1174.83	1175.86	0.008480	6.29	770.60	362.67	0.51
1	34562	2-YR EC	910.00	1164.37	1169.26	1169.26	1169.89	0.017724	7.27	193.54	201.76	0.69
1	34562	5-YR EC	1250.00	1164.37	1169.46	1169.46	1170.33	0.023831	8.76	225.38	210.69	0.81
1	34562	10-YR EC	1510.00	1164.37	1169.95	1169.80	1170.64	0.017671	8.21	315.21	265.34	0.71
1	34562	25-YR EC	2050.00	1164.37	1170.35	1170.35	1170.76	0.010845	6.84	497.25	275.59	0.57
1	34562	50-YR EC	2600.00	1164.37	1170.60	1170.36	1171.08	0.012231	7.53	566.02	292.56	0.61
1	34562	100-YR EC	3060.00	1164.37	1170.82	1170.47	1171.35	0.012448	7.83	630.16	316.48	0.62

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	34562	500-YR EC	4610.00	1164.37	1171.58	1171.06	1172.13	0.012402	8.60	905.76	387.37	0.63
1	34562	25-YRFC	2470.00	1164.37	1170.53	1170.36	1171.01	0.012242	7.46	545.92	279.93	0.61
1	34562	100-YR FC	3460.00	1164.37	1171.10	1170.61	1171.60	0.012250	8.06	726.03	341.43	0.62
1	34562	25-YR 5-10 YR	2050.00	1164.37	1170.35	1170.35	1170.76	0.010845	6.84	497.25	275.59	0.57
1	34562	100-YR 5-10 YR	3060.00	1164.37	1170.82	1170.47	1171.35	0.012448	7.83	630.16	316.48	0.62
1	34059	2-YR EC	910.00	1160.57	1165.17	1164.32	1165.29	0.005391	3.26	358.91	298.35	0.37
1	34059	5 -YR EC	1250.00	1160.57	1165.58	1164.61	1165.70	0.004567	3.33	495.40	343.73	0.35
1	34059	10-YR EC	1510.00	1160.57	1165.63		1165.79	0.005983	3.86	513.31	344.81	0.40
1	34059	25-YR EC	2050.00	1160.57	1165.82		1166.04	0.007618	4.55	579.29	349.30	0.46
1	34059	50-YR EC	2600.00	1160.57	1166.09		1166.34	0.007778	4.85	674.44	361.93	0.47
1	34059	100-YR EC	3060.00	1160.57	1166.31		1166.58	0.007747	5.05	753.63	373.12	0.47
1	34059	500-YR EC	4610.00	1160.57	1166.84		1167.22	0.008323	5.75	960.61	397.27	0.50
1	34059	25-YRFC	2470.00	1160.57	1166.03		1166.28	0.007728	4.78	653.52	359.86	0.46
1	34059	100-YR FC	3460.00	1160.57	1166.45		1166.75	0.008128	5.31	807.49	383.28	0.49
1	34059	25-YR 5-10 YR	2050.00	1160.57	1165.82		1166.04	0.007618	4.55	579.29	349.30	0.46
1	34059	100-YR 5-10 YR	3060.00	1160.57	1166.31		1166.58	0.007747	5.05	753.63	373.12	0.47
1	33506	2-YR EC	910.00	1156.38	1159.88	1159.38	1160.48	0.019366	6.23	147.77	349.19	0.70
1	33506	5 -YR EC	1250.00	1156.38	1160.18	1159.86	1161.06	0.024587	7.58	169.52	418.61	0.80
1	33506	10-YR EC	1510.00	1156.38	1160.24	1160.24	1160.78	0.018443	6.66	305.54	430.05	0.70
1	33506	25-YR EC	2050.00	1156.38	1160.35	1160.35	1160.78	0.015807	6.32	447.82	460.84	0.65
1	33506	50-YR EC	2600.00	1156.38	1160.54	1160.54	1160.99	0.016256	6.68	538.71	518.67	0.67
1	33506	100-YR EC	3060.00	1156.38	1160.67	1160.67	1161.16	0.017124	7.05	610.21	584.47	0.69
1	33506	500-YR EC	4610.00	1156.38	1161.05	1161.05	1161.59	0.017246	7.62	859.76	703.33	0.71
1	33506	25-YRFC	2470.00	1156.38	1160.50	1160.50	1160.95	0.016187	6.61	518.06	499.10	0.66
1	33506	100-YR FC	3460.00	1156.38	1160.80	1160.80	1161.28	0.016428	7.09	691.04	627.55	0.68
1	33506	25-YR 5-10 YR	2050.00	1156.38	1160.35	1160.35	1160.78	0.015807	6.32	447.82	460.84	0.65
1	33506	100-YR 5-10 YR	3060.00	1156.38	1160.67	1160.67	1161.16	0.017124	7.05	610.21	584.47	0.69
1	33058	2-YR EC	910.00	1151.26	1154.25	1154.10	1154.50	0.009496	4.53	270.29	325.72	0.53
1	33058	5 -YR EC	1250.00	1151.26	1154.53	1154.29	1154.77	0.008662	4.67	372.32	394.15	0.52
1	33058	10-YR EC	1510.00	1151.26	1154.70	1154.47	1154.94	0.008056	4.71	442.36	404.82	0.50
1	33058	25-YR EC	2050.00	1151.26	1155.00		1155.24	0.007389	4.83	565.56	412.50	0.49
1	33058	50-YR EC	2600.00	1151.26	1155.20		1155.49	0.007920	5.22	648.08	415.71	0.51
1	33058	100-YR EC	3060.00	1151.26	1155.36		1155.68	0.008123	5.47	715.37	419.61	0.52
1	33058	500-YR EC	4610.00	1151.26	1155.87		1156.27	0.008566	6.16	942.67	467.74	0.55
1	33058	25-YRFC	2470.00	1151.26	1155.15		1155.43	0.007822	5.14	629.02	415.07	0.51
1	33058	100-YR FC	3460.00	1151.26	1155.50		1155.84	0.008460	5.73	775.12	441.33	0.54
1	33058	25-YR 5-10 YR	2050.00	1151.26	1155.00		1155.24	0.007389	4.83	565.56	412.50	0.49
1	33058	100-YR 5-10 YR	3060.00	1151.26	1155.36		1155.68	0.008123	5.47	715.37	419.61	0.52
1	32559	2-YR EC	910.00	1146.55	1149.76	1149.46	1149.97	0.010210	3.93	252.41	205.52	0.53
1	32559	5 -YR EC	1250.00	1146.55	1150.03	1149.58	1150.29	0.011423	4.57	310.04	236.28	0.57
1	32559	10-YR EC	1510.00	1146.55	1150.16	1149.74	1150.48	0.012594	5.01	343.15	251.48	0.60
1	32559	25-YR EC	2050.00	1146.55	1150.40	1150.09	1150.82	0.014335	5.73	401.37	270.07	0.66
1	32559	50-YR EC	2600.00	1146.55	1150.75	1150.34	1151.19	0.012435	5.85	492.03	310.20	0.63
1	32559	100-YR EC	3060.00	1146.55	1150.96	1150.50	1151.43	0.011869	6.01	574.87	341.38	0.62
1	32559	500-YR EC	4610.00	1146.55	1151.59	1151.10	1152.14	0.010656	6.48	806.94	392.75	0.61
1	32559	25-YRFC	2470.00	1146.55	1150.67	1150.28	1151.11	0.012781	5.82	471.82	301.78	0.63
1	32559	100-YR FC	3460.00	1146.55	1151.16	1150.66	1151.64	0.011179	6.09	642.89	361.05	0.61
1	32559	25-YR 5-10 YR	2050.00	1146.55	1150.40	1150.09	1150.82	0.014335	5.73	401.37	270.07	0.66
1	32559	100-YR 5-10 YR	3060.00	1146.55	1150.96	1150.50	1151.43	0.011869	6.01	574.87	341.38	0.62
1	32059	2-YR EC	910.00	1141.62	1146.14		1146.27	0.006073	3.52	337.39	343.09	0.45
1	32059	5 -YR EC	1250.00	1141.62	1146.43		1146.57	0.005657	3.70	442.26	382.72	0.44
1	32059	10-YR EC	1510.00	1141.62	1146.62		1146.76	0.005272	3.77	514.03	398.51	0.43
1	32059	25-YR EC	2050.00	1141.62	1146.98		1147.14	0.004792	3.95	664.54	432.73	0.42
1	32059	50-YR EC	2600.00	1141.62	1147.15		1147.36	0.005640	4.46	739.94	444.18	0.46
1	32059	100-YR EC	3060.00	1141.62	1147.31		1147.54	0.005997	4.77	811.19	457.79	0.48
1	32059	500-YR EC	4610.00	1141.62	1147.71		1148.06	0.007228	5.69	999.68	478.17	0.54
1	32059	25-YRFC	2470.00	1141.62	1147.11		1147.31	0.005436	4.35	724.55	443.32	0.45
1	32059	100-YR FC	3460.00	1141.62	1147.40		1147.67	0.006563	5.09	852.73	460.73	0.51
1	32059	25-YR 5-10 YR	2050.00	1141.62	1146.98		1147.14	0.004792	3.95	664.54	432.73	0.42
1	32059	100-YR 5-10 YR	3060.00	1141.62	1147.31		1147.54	0.005997	4.77	811.19	457.79	0.48
1	31559	2-YR EC	1390.00	1137.35	1141.16		1141.54	0.016418	5.35	294.50	238.70	0.68
1	31559	5 -YR EC	1920.00	1137.35	1141.47		1141.94	0.017134	6.04	376.29	281.42	0.71
1	31559	10-YR EC	2390.00	1137.35	1141.69	1141.48	1142.23	0.017639	6.50	437.60	301.39	0.73
1	31559	25-YR EC	3430.00	1137.35	1142.10	1141.96	1142.75	0.017658	7.22	575.56	394.15	0.75
1	31559	50-YR EC	4340.00	1137.35	1142.59	1142.34	1143.14	0.013947	7.13	803.34	497.72	0.68
1	31559	100-YR EC	5140.00	1137.35	1142.93		1143.45	0.012622	7.22	976.93	535.74	0.66
1	31559	500-YR EC	7770.00	1137.35	1143.71	1143.11	1144.25	0.009853	7.26	1416.70	589.07	0.60
1	31559	25-YRFC	3920.00	1137.35	1142.40	1142.20	1142.98	0.015542	7.24	711.39	484.11	0.72
1	31559	100-YR FC	5630.00	1137.35	1143.10		1143.61	0.011682	7.16	1068.89	542.84	0.64
1	31559	25-YR 5-10 YR	3430.00	1137.35	1142.10	1141.96	1142.75	0.017658	7.22	575.56	394.15	0.75
1	31559	100-YR 5-10 YR	5140.00	1137.35	1142.93		1143.45	0.012622	7.22	976.93	535.74	0.66
1	31059	2-YR EC	1390.00	1132.19	1136.38		1136.51	0.006491	2.94	478.17	383.65	0.41
1	31059	5 -YR EC	1920.00	1132.19	1136.67		1136.83	0.006417	3.28	604.12	451.33	0.42
1	31059	10-YR EC	2390.00	1132.19	1136.91		1137.09	0.006331	3.52	713.91	502.58	0.43

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	31059	25-YR EC	3430.00	1132.19	1137.34		1137.56	0.006360	4.00	938.05	525.67	0.44
1	31059	50-YR EC	4340.00	1132.19	1137.48		1137.78	0.008033	4.66	1015.16	548.51	0.50
1	31059	100-YR EC	5140.00	1132.19	1137.62		1137.98	0.009059	5.12	1090.36	550.59	0.54
1	31059	500-YR EC	7770.00	1132.19	1137.96		1138.57	0.012624	6.52	1280.43	558.80	0.65
1	31059	25-YRFC	3920.00	1132.19	1137.42		1137.68	0.007224	4.35	981.91	546.73	0.47
1	31059	100-YR FC	5630.00	1132.19	1137.68		1138.09	0.009963	5.44	1121.72	551.95	0.57
1	31059	25-YR 5-10 YR	3430.00	1132.19	1137.34		1137.56	0.006360	4.00	938.05	525.67	0.44
1	31059	100-YR 5-10 YR	5140.00	1132.19	1137.62		1137.98	0.009059	5.12	1090.36	550.59	0.54
1	30559	2-YR EC	1390.00	1125.89	1130.05	1130.05	1130.72	0.026031	4.77	225.02	163.73	0.78
1	30559	5-YR EC	1920.00	1125.89	1130.46	1130.46	1131.15	0.025282	5.36	298.19	202.82	0.80
1	30559	10-YR EC	2390.00	1125.89	1130.74	1130.67	1131.46	0.025009	5.84	357.89	216.81	0.81
1	30559	25-YR EC	3430.00	1125.89	1131.22	1131.22	1132.05	0.023381	6.72	475.76	284.49	0.82
1	30559	50-YR EC	4340.00	1125.89	1131.96		1132.55	0.014315	6.43	713.21	360.21	0.67
1	30559	100-YR EC	5140.00	1125.89	1132.48		1132.99	0.011226	6.37	920.07	429.61	0.61
1	30559	500-YR EC	7770.00	1125.89	1133.65		1134.12	0.006587	5.96	1456.58	485.72	0.49
1	30559	25-YRFC	3920.00	1125.89	1131.65	1131.36	1132.31	0.017680	6.61	606.15	323.20	0.73
1	30559	100-YR FC	5630.00	1125.89	1132.72		1133.21	0.009729	6.21	1024.49	443.90	0.58
1	30559	25-YR 5-10 YR	3430.00	1125.89	1131.22	1131.22	1132.05	0.023381	6.72	475.76	284.49	0.82
1	30559	100-YR 5-10 YR	5140.00	1125.89	1132.48		1132.99	0.011226	6.37	920.07	429.61	0.61
1	30158	2-YR EC	1390.00	1120.42	1126.45	1124.04	1126.71	0.002956	4.09	340.14	114.81	0.33
1	30158	5-YR EC	1920.00	1120.42	1127.58	1124.57	1127.90	0.002740	4.55	422.36	136.50	0.33
1	30158	10-YR EC	2390.00	1120.42	1128.77	1125.01	1129.11	0.002274	4.69	509.36	206.99	0.31
1	30158	25-YR EC	3430.00	1120.42	1130.05	1125.89	1130.28	0.001373	3.96	1088.02	280.33	0.25
1	30158	50-YR EC	4340.00	1120.42	1130.63	1126.58	1130.92	0.001652	4.55	1262.08	334.66	0.27
1	30158	100-YR EC	5140.00	1120.42	1130.98	1127.16	1131.33	0.001973	5.10	1391.34	401.52	0.30
1	30158	500-YR EC	7770.00	1120.42	1131.86	1128.87	1132.41	0.002891	6.58	1781.24	482.41	0.37
1	30158	25-YRFC	3920.00	1120.42	1130.39	1126.26	1130.64	0.001522	4.28	1184.73	299.94	0.26
1	30158	100-YR FC	5630.00	1120.42	1131.19	1127.50	1131.57	0.002109	5.36	1479.01	419.56	0.31
1	30158	25-YR 5-10 YR	3430.00	1120.42	1130.05	1125.89	1130.28	0.001373	3.96	1088.02	280.33	0.25
1	30158	100-YR 5-10 YR	5140.00	1120.42	1130.98	1127.16	1131.33	0.001973	5.10	1391.34	401.52	0.30
1	30047		Culvert									
1	29949	2-YR EC	1390.00	1119.00	1125.64	1123.11	1126.03	0.003728	4.95	279.21	145.68	0.38
1	29949	5-YR EC	1920.00	1119.00	1126.00	1123.84	1126.65	0.005667	6.38	298.69	149.84	0.47
1	29949	10-YR EC	2390.00	1119.00	1126.55	1124.42	1126.92	0.003460	4.97	562.09	165.22	0.37
1	29949	25-YR EC	3430.00	1119.00	1126.77	1125.45	1127.44	0.006194	6.82	599.35	183.89	0.50
1	29949	50-YR EC	4340.00	1119.00	1127.08	1126.23	1127.99	0.007601	7.83	659.28	192.32	0.56
1	29949	100-YR EC	5140.00	1119.00	1127.37	1126.55	1128.48	0.008607	8.59	718.02	226.82	0.60
1	29949	500-YR EC	7770.00	1119.00	1128.32	1128.30	1129.63	0.009778	10.03	1003.77	370.85	0.65
1	29949	25-YRFC	3920.00	1119.00	1126.93	1125.88	1127.73	0.007029	7.40	630.33	188.46	0.53
1	29949	100-YR FC	5630.00	1119.00	1127.60	1126.63	1128.79	0.008742	8.86	773.18	252.10	0.60
1	29949	25-YR 5-10 YR	3430.00	1119.00	1126.77	1125.45	1127.44	0.006194	6.82	599.35	183.89	0.50
1	29949	100-YR 5-10 YR	5140.00	1119.00	1127.37	1126.55	1128.48	0.008607	8.59	718.02	226.82	0.60
1	29586	2-YR EC	1390.00	1117.47	1122.33	1122.33	1123.12	0.024325	8.36	255.42	351.12	0.87
1	29586	5-YR EC	1920.00	1117.47	1122.62	1122.62	1123.16	0.018886	7.85	491.69	409.42	0.78
1	29586	10-YR EC	2390.00	1117.47	1122.82	1122.82	1123.41	0.020279	8.47	571.14	463.93	0.81
1	29586	25-YR EC	3430.00	1117.47	1123.38	1123.19	1123.91	0.016427	8.45	825.72	582.54	0.75
1	29586	50-YR EC	4340.00	1117.47	1123.92	1123.45	1124.32	0.011939	7.84	1216.46	658.99	0.65
1	29586	100-YR EC	5140.00	1117.47	1124.23	1123.67	1124.61	0.010825	7.81	1423.59	665.60	0.63
1	29586	500-YR EC	7770.00	1117.47	1124.96	1124.25	1125.39	0.011147	8.72	1934.65	740.50	0.65
1	29586	25-YRFC	3920.00	1117.47	1123.65	1123.31	1124.09	0.013608	8.04	1044.10	618.78	0.69
1	29586	100-YR FC	5630.00	1117.47	1124.30	1123.87	1124.72	0.011827	8.25	1471.91	667.60	0.66
1	29586	25-YR 5-10 YR	3430.00	1117.47	1123.38	1123.19	1123.91	0.016427	8.45	825.72	582.54	0.75
1	29586	100-YR 5-10 YR	5140.00	1117.47	1124.23	1123.67	1124.61	0.010825	7.81	1423.59	665.60	0.63
1	29059	2-YR EC	1390.00	1111.33	1116.30	1114.57	1116.54	0.004306	3.94	352.79	112.31	0.38
1	29059	5-YR EC	1920.00	1111.33	1116.47	1115.05	1116.89	0.006998	5.17	371.29	125.92	0.49
1	29059	10-YR EC	2390.00	1111.33	1117.04	1115.41	1117.52	0.006714	5.53	432.29	202.06	0.49
1	29059	25-YR EC	3430.00	1111.33	1117.73	1116.15	1118.44	0.008218	6.78	507.98	274.89	0.55
1	29059	50-YR EC	4340.00	1111.33	1118.24	1116.72	1119.17	0.009269	7.72	571.41	368.98	0.60
1	29059	100-YR EC	5140.00	1111.33	1118.53	1117.18	1119.53	0.009795	8.22	758.13	500.53	0.62
1	29059	500-YR EC	7770.00	1111.33	1119.42	1118.53	1120.41	0.009446	8.92	1427.97	618.97	0.62
1	29059	25-YRFC	3920.00	1111.33	1118.03	1116.45	1118.85	0.008693	7.27	543.67	338.99	0.57
1	29059	100-YR FC	5630.00	1111.33	1118.68	1117.43	1119.60	0.009370	8.18	996.32	536.13	0.61
1	29059	25-YR 5-10 YR	3430.00	1111.33	1117.73	1116.15	1118.44	0.008218	6.78	507.98	274.89	0.55
1	29059	100-YR 5-10 YR	5140.00	1111.33	1118.53	1117.18	1119.53	0.009795	8.22	758.13	500.53	0.62
1	28546	2-YR EC	1390.00	1107.79	1112.79	1111.90	1113.32	0.009784	5.96	264.35	343.54	0.57
1	28546	5-YR EC	1920.00	1107.79	1113.25	1112.55	1113.54	0.006052	5.11	661.09	421.37	0.46
1	28546	10-YR EC	2390.00	1107.79	1113.40	1112.93	1113.78	0.007869	5.97	727.00	449.59	0.53
1	28546	25-YR EC	3430.00	1107.79	1114.01	1113.23	1114.39	0.007340	6.34	1008.46	495.20	0.52
1	28546	50-YR EC	4340.00	1107.79	1114.48	1113.73	1114.87	0.007140	6.67	1254.92	538.30	0.52
1	28546	100-YR EC	5140.00	1107.79	1114.86	1113.95	1115.25	0.006736	6.80	1461.80	557.18	0.51
1	28546	500-YR EC	7770.00	1107.79	1115.79	1114.68	1116.22	0.006634	7.49	1998.18	598.13	0.52
1	28546	25-YRFC	3920.00	1107.79	1114.28	1113.62	1114.67	0.007272	6.56	1150.14	528.05	0.52
1	28546	100-YR FC	5630.00	1107.79	1115.05	1114.09	1115.44	0.006655	6.92	1569.79	562.51	0.51
1	28546	25-YR 5-10 YR	3430.00	1107.79	1114.01	1113.23	1114.39	0.007340	6.34	1008.46	495.20	0.52

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	28546	100-YR 5-10 YR	5140.00	1107.79	1114.86	1113.95	1115.25	0.006736	6.80	1461.80	557.18	0.51
1	28059	2-YR EC	1390.00	1102.44	1108.65	1106.89	1109.19	0.007538	5.95	245.08	158.43	0.51
1	28059	5-YR EC	1920.00	1102.44	1109.18	1107.84	1109.74	0.007489	6.42	428.32	257.41	0.52
1	28059	10-YR EC	2390.00	1102.44	1109.60	1108.46	1110.21	0.007694	6.89	547.02	294.67	0.54
1	28059	25-YR EC	3430.00	1102.44	1110.29	1109.79	1110.96	0.007951	7.63	756.96	312.49	0.56
1	28059	50-YR EC	4340.00	1102.44	1110.82	1110.20	1111.53	0.007972	8.10	931.38	349.19	0.57
1	28059	100-YR EC	5140.00	1102.44	1111.26	1110.49	1112.01	0.008032	8.50	1099.63	397.18	0.58
1	28059	500-YR EC	7770.00	1102.44	1112.42	1111.57	1113.18	0.007506	9.13	1609.94	478.94	0.57
1	28059	25-YRFC	3920.00	1102.44	1110.58	1110.03	1111.28	0.007989	7.90	850.84	332.04	0.56
1	28059	100-YR FC	5630.00	1102.44	1111.50	1110.73	1112.25	0.007985	8.67	1196.67	423.85	0.58
1	28059	25-YR 5-10 YR	3430.00	1102.44	1110.29	1109.79	1110.96	0.007951	7.63	756.96	312.49	0.56
1	28059	100-YR 5-10 YR	5140.00	1102.44	1111.26	1110.49	1112.01	0.008032	8.50	1099.63	397.18	0.58
1	27559	2-YR EC	1450.00	1100.46	1104.82		1105.07	0.008659	3.99	363.42	181.13	0.50
1	27559	5-YR EC	2050.00	1100.46	1105.31		1105.63	0.008648	4.52	453.97	187.67	0.51
1	27559	10-YR EC	2530.00	1100.46	1105.67		1106.03	0.008688	4.83	524.04	198.30	0.52
1	27559	25-YR EC	3560.00	1100.46	1106.29		1106.76	0.008559	5.51	657.25	246.85	0.54
1	27559	50-YR EC	4540.00	1100.46	1106.80		1107.36	0.008457	6.02	786.17	257.35	0.55
1	27559	100-YR EC	5410.00	1100.46	1107.19		1107.83	0.008487	6.45	889.34	265.67	0.56
1	27559	500-YR EC	8280.00	1100.46	1108.36		1109.20	0.008300	7.51	1214.37	287.73	0.57
1	27559	25-YRFC	4080.00	1100.46	1106.57		1107.08	0.008501	5.79	727.07	254.10	0.54
1	27559	100-YR FC	5930.00	1100.46	1107.42		1108.09	0.008482	6.67	949.72	271.06	0.56
1	27559	25-YR 5-10 YR	3560.00	1100.46	1106.29		1106.76	0.008559	5.51	657.25	246.85	0.54
1	27559	100-YR 5-10 YR	5410.00	1100.46	1107.19		1107.83	0.008487	6.45	889.34	265.67	0.56
1	27059	2-YR EC	1450.00	1099.44	1101.66		1101.79	0.005044	2.88	504.10	269.30	0.37
1	27059	5-YR EC	2050.00	1099.44	1102.05		1102.23	0.005364	3.36	610.79	273.07	0.39
1	27059	10-YR EC	2530.00	1099.44	1102.32		1102.53	0.005643	3.71	683.93	275.58	0.41
1	27059	25-YR EC	3560.00	1099.44	1102.82		1103.11	0.006129	4.35	822.45	279.42	0.44
1	27059	50-YR EC	4540.00	1099.44	1103.22		1103.59	0.006554	4.89	936.08	282.50	0.46
1	27059	100-YR EC	5410.00	1099.44	1103.57		1104.00	0.006719	5.28	1035.40	284.89	0.48
1	27059	500-YR EC	8280.00	1099.44	1104.42		1105.09	0.007945	6.57	1280.58	290.69	0.54
1	27059	25-YRFC	4080.00	1099.44	1103.04		1103.38	0.006344	4.64	885.16	281.13	0.45
1	27059	100-YR FC	5930.00	1099.44	1103.75		1104.22	0.006918	5.52	1086.17	286.10	0.49
1	27059	25-YR 5-10 YR	3560.00	1099.44	1102.82		1103.11	0.006130	4.35	822.42	279.42	0.44
1	27059	100-YR 5-10 YR	5410.00	1099.44	1103.57		1104.00	0.006719	5.28	1035.40	284.89	0.48
1	26788	2-YR EC	1450.00	1096.40	1100.05		1100.25	0.006600	4.05	543.13	458.05	0.45
1	26788	5-YR EC	2050.00	1096.40	1100.48		1100.70	0.006233	4.38	758.25	520.35	0.45
1	26788	10-YR EC	2530.00	1096.40	1100.75		1100.98	0.006145	4.61	901.62	535.74	0.45
1	26788	25-YR EC	3560.00	1096.40	1101.27		1101.52	0.005912	4.99	1196.87	625.07	0.46
1	26788	50-YR EC	4540.00	1096.40	1101.63		1101.91	0.006144	5.41	1432.23	683.33	0.47
1	26788	100-YR EC	5410.00	1096.40	1101.92		1102.24	0.006611	5.87	1631.85	708.76	0.49
1	26788	500-YR EC	8280.00	1096.40	1102.67		1103.07	0.007084	6.76	2217.94	823.87	0.53
1	26788	25-YRFC	4080.00	1096.40	1101.47		1101.74	0.006061	5.23	1322.74	662.87	0.47
1	26788	100-YR FC	5930.00	1096.40	1102.07		1102.41	0.006751	6.07	1740.44	734.70	0.50
1	26788	25-YR 5-10 YR	3560.00	1096.40	1101.27		1101.52	0.005911	4.99	1196.95	625.10	0.46
1	26788	100-YR 5-10 YR	5410.00	1096.40	1101.92		1102.24	0.006611	5.87	1631.85	708.76	0.49
1	26680	2-YR EC	1450.00	1093.90	1099.04		1099.43	0.008324	5.35	403.97	363.65	0.52
1	26680	5-YR EC	2050.00	1093.90	1099.56		1099.93	0.007841	5.57	633.62	479.98	0.52
1	26680	10-YR EC	2530.00	1093.90	1099.84		1100.22	0.007792	5.84	773.49	521.83	0.52
1	26680	25-YR EC	3560.00	1093.90	1100.39	1099.78	1100.78	0.007616	6.30	1105.85	685.74	0.53
1	26680	50-YR EC	4540.00	1093.90	1100.76	1100.10	1101.15	0.007593	6.63	1373.42	793.55	0.53
1	26680	100-YR EC	5410.00	1093.90	1101.05	1100.47	1101.46	0.007540	6.88	1618.16	857.94	0.54
1	26680	500-YR EC	8280.00	1093.90	1101.76	1101.08	1102.22	0.008208	7.82	2299.97	1088.06	0.57
1	26680	25-YRFC	4080.00	1093.90	1100.61	1099.98	1100.99	0.007403	6.41	1261.40	733.46	0.52
1	26680	100-YR FC	5930.00	1093.90	1101.20	1100.61	1101.61	0.007627	7.05	1746.52	891.79	0.54
1	26680	25-YR 5-10 YR	3560.00	1093.90	1100.39	1099.78	1100.78	0.007631	6.30	1104.85	685.49	0.53
1	26680	100-YR 5-10 YR	5410.00	1093.90	1101.05	1100.47	1101.45	0.007565	6.88	1615.96	857.13	0.54
1	25996	2-YR EC	1450.00	1090.04	1093.41		1093.59	0.008699	3.78	442.66	219.16	0.49
1	25996	5-YR EC	2050.00	1090.04	1093.93		1094.15	0.009179	4.12	564.28	261.02	0.51
1	25996	10-YR EC	2530.00	1090.04	1094.33		1094.56	0.008884	4.19	680.95	316.18	0.51
1	25996	25-YR EC	3560.00	1090.04	1094.97		1095.23	0.008841	4.58	915.81	432.96	0.52
1	25996	50-YR EC	4540.00	1090.04	1095.44		1095.74	0.008534	5.06	1148.02	566.51	0.52
1	25996	100-YR EC	5410.00	1090.04	1095.82		1096.15	0.008362	5.44	1387.96	699.56	0.53
1	25996	500-YR EC	8280.00	1090.04	1096.76		1097.13	0.007207	5.98	2252.76	1060.74	0.51
1	25996	25-YRFC	4080.00	1090.04	1095.22		1095.51	0.008966	4.93	1034.89	501.27	0.53
1	25996	100-YR FC	5930.00	1090.04	1096.01		1096.35	0.008121	5.57	1531.77	802.01	0.53
1	25996	25-YR 5-10 YR	3560.00	1090.04	1094.97		1095.24	0.008806	4.58	917.61	435.98	0.52
1	25996	100-YR 5-10 YR	5410.00	1090.04	1095.82		1096.16	0.008317	5.43	1391.21	701.81	0.53
1	25874	2-YR EC	1450.00	1089.50	1092.37		1092.52	0.009265	3.23	473.18	291.66	0.48
1	25874	5-YR EC	2050.00	1089.50	1093.00		1093.16	0.007225	3.65	671.16	359.41	0.45
1	25874	10-YR EC	2530.00	1089.50	1093.45		1093.62	0.006715	4.03	850.70	410.92	0.45
1	25874	25-YR EC	3560.00	1089.50	1094.24		1094.42	0.004997	4.19	1201.45	477.81	0.41
1	25874	50-YR EC	4540.00	1089.50	1094.76		1094.95	0.004659	4.46	1461.76	556.89	0.40
1	25874	100-YR EC	5410.00	1089.50	1095.16		1095.38	0.004576	4.73	1720.33	751.41	0.41
1	25874	500-YR EC	8280.00	1089.50	1096.23		1096.45	0.003842	5.05	2652.22	917.74	0.39

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	25874	25-YRFC	4080.00	1089.50	1094.51		1094.69	0.004915	4.37	1328.60	491.78	0.41
1	25874	100-YR FC	5930.00	1089.50	1095.37		1095.59	0.004526	4.86	1887.88	857.20	0.41
1	25874	25-YR 5-10 YR	3560.00	1089.50	1094.26		1094.43	0.004922	4.17	1207.52	478.25	0.41
1	25874	100-YR 5-10 YR	5410.00	1089.50	1095.18		1095.38	0.004521	4.71	1729.00	760.50	0.41
1	25578	2-YR EC	1450.00	1086.45	1091.31	1088.86	1091.40	0.001951	2.70	699.54	280.13	0.26
1	25578	5-YR EC	2050.00	1086.45	1092.07	1089.26	1092.17	0.001860	3.01	924.62	310.07	0.26
1	25578	10-YR EC	2530.00	1086.45	1092.51	1089.58	1092.64	0.001966	3.31	1070.58	365.87	0.27
1	25578	25-YR EC	3560.00	1086.45	1093.34	1090.40	1093.50	0.002201	3.91	1505.03	683.06	0.30
1	25578	50-YR EC	4540.00	1086.45	1093.90	1090.82	1094.07	0.002193	4.16	1924.34	808.00	0.30
1	25578	100-YR EC	5410.00	1086.45	1094.33	1091.14	1094.51	0.002172	4.34	2287.94	857.05	0.30
1	25578	500-YR EC	8280.00	1086.45	1095.54	1092.14	1095.72	0.001977	4.64	3342.96	940.67	0.30
1	25578	25-YRFC	4080.00	1086.45	1093.59	1090.66	1093.77	0.002295	4.11	1686.46	745.27	0.30
1	25578	100-YR FC	5930.00	1086.45	1094.55	1091.34	1094.73	0.002175	4.44	2475.90	878.11	0.30
1	25578	25-YR 5-10 YR	3560.00	1086.45	1093.38	1090.40	1093.54	0.002118	3.85	1533.63	688.54	0.29
1	25578	100-YR 5-10 YR	5410.00	1086.45	1094.36	1091.14	1094.54	0.002115	4.30	2314.34	861.45	0.30
1	25070	2-YR EC	3070.00	1083.50	1089.11	1087.60	1089.44	0.005929	5.16	774.95	268.89	0.46
1	25070	5-YR EC	4260.00	1083.50	1089.96	1088.15	1090.34	0.005522	5.67	1106.82	525.52	0.46
1	25070	10-YR EC	5190.00	1083.50	1090.42	1088.50	1090.82	0.005375	5.95	1351.45	545.61	0.46
1	25070	25-YR EC	7110.00	1083.50	1091.20	1089.17	1091.64	0.005365	6.52	1802.86	626.21	0.47
1	25070	50-YR EC	8870.00	1083.50	1091.83	1090.27	1092.29	0.005187	6.85	2218.68	683.78	0.47
1	25070	100-YR EC	10370.00	1083.50	1092.30	1090.51	1092.78	0.005111	7.12	2550.38	720.92	0.47
1	25070	500-YR EC	15380.00	1083.50	1093.63	1091.70	1094.15	0.004920	7.83	3569.57	827.60	0.48
1	25070	25-YRFC	7860.00	1083.50	1091.47	1089.67	1091.92	0.005267	6.66	1979.66	652.14	0.47
1	25070	100-YR FC	11110.00	1083.50	1092.51	1090.79	1093.01	0.005154	7.29	2704.31	763.83	0.48
1	25070	25-YR 5-10 YR	7280.00	1083.50	1091.26	1089.39	1091.71	0.005321	6.54	1846.37	631.29	0.47
1	25070	100-YR 5-10 YR	10520.00	1083.50	1092.34	1090.51	1092.82	0.005106	7.15	2580.61	722.69	0.47
1	24648	2-YR EC	3070.00	1080.83	1086.93		1087.29	0.004448	5.05	767.56	288.94	0.41
1	24648	5-YR EC	4260.00	1080.83	1087.57		1088.06	0.005303	6.00	1016.60	462.11	0.46
1	24648	10-YR EC	5190.00	1080.83	1087.93		1088.48	0.005712	6.51	1191.21	496.89	0.48
1	24648	25-YR EC	7110.00	1080.83	1088.73		1089.33	0.005663	7.07	1614.06	543.60	0.49
1	24648	50-YR EC	8870.00	1080.83	1089.31		1089.97	0.005940	7.66	1943.17	609.88	0.51
1	24648	100-YR EC	10370.00	1080.83	1089.74		1090.45	0.006110	8.08	2219.22	667.17	0.52
1	24648	500-YR EC	15380.00	1080.83	1090.80	1089.75	1091.71	0.007060	9.49	2985.65	797.84	0.57
1	24648	25-YRFC	7860.00	1080.83	1088.99		1089.61	0.005792	7.33	1754.04	569.89	0.50
1	24648	100-YR FC	11110.00	1080.83	1089.91		1090.65	0.006221	8.28	2336.26	679.83	0.53
1	24648	25-YR 5-10 YR	7280.00	1080.83	1088.80		1089.40	0.005706	7.14	1647.53	555.36	0.49
1	24648	100-YR 5-10 YR	10520.00	1080.83	1089.77		1090.49	0.006141	8.12	2241.90	669.51	0.52
1	24067	2-YR EC	3070.00	1079.46	1083.94	1083.08	1084.18	0.006569	4.39	995.65	651.14	0.46
1	24067	5-YR EC	4260.00	1079.46	1084.43	1083.54	1084.70	0.006293	4.78	1336.53	737.96	0.46
1	24067	10-YR EC	5190.00	1079.46	1084.75	1083.74	1085.04	0.006110	5.01	1581.98	772.58	0.46
1	24067	25-YR EC	7110.00	1079.46	1085.04	1084.29	1085.45	0.008142	6.08	1809.69	796.84	0.54
1	24067	50-YR EC	8870.00	1079.46	1085.41	1084.61	1085.88	0.008713	6.68	2110.19	849.64	0.57
1	24067	100-YR EC	10370.00	1079.46	1085.67	1084.86	1086.20	0.009189	7.13	2339.24	874.74	0.59
1	24067	500-YR EC	15380.00	1079.46	1086.55	1085.66	1087.17	0.008979	7.93	3121.02	909.21	0.60
1	24067	25-YRFC	7860.00	1079.46	1085.19	1084.48	1085.63	0.008438	6.35	1929.71	820.76	0.55
1	24067	100-YR FC	11110.00	1079.46	1085.79	1084.98	1086.34	0.009311	7.31	2446.40	877.58	0.59
1	24067	25-YR 5-10 YR	7280.00	1079.46	1085.08	1084.31	1085.49	0.008207	6.14	1837.12	803.80	0.54
1	24067	100-YR 5-10 YR	10520.00	1079.46	1085.70	1084.90	1086.23	0.009182	7.16	2364.24	875.44	0.59
1	23559	2-YR EC	3070.00	1074.91	1079.22	1078.40	1079.81	0.012602	6.16	503.68	262.64	0.64
1	23559	5-YR EC	4260.00	1074.91	1080.01	1078.99	1080.67	0.011290	6.57	683.69	436.64	0.62
1	23559	10-YR EC	5190.00	1074.91	1080.51	1079.41	1081.23	0.010403	6.90	825.82	575.32	0.61
1	23559	25-YR EC	7110.00	1074.91	1081.34	1080.24	1081.89	0.007187	6.51	1576.79	636.03	0.52
1	23559	50-YR EC	8870.00	1074.91	1082.08	1080.90	1082.60	0.006004	6.54	2107.94	826.06	0.49
1	23559	100-YR EC	10370.00	1074.91	1082.62	1081.21	1083.10	0.005226	6.49	2574.32	896.07	0.46
1	23559	500-YR EC	15380.00	1074.91	1084.22	1082.03	1084.64	0.003760	6.43	4122.58	1057.68	0.41
1	23559	25-YRFC	7860.00	1074.91	1081.67	1080.68	1082.20	0.006580	6.51	1791.72	717.24	0.51
1	23559	100-YR FC	11110.00	1074.91	1082.90	1081.27	1083.36	0.004834	6.43	2824.29	912.34	0.45
1	23559	25-YR 5-10 YR	7280.00	1074.91	1081.41	1080.33	1081.95	0.007043	6.51	1622.67	640.12	0.52
1	23559	100-YR 5-10 YR	10520.00	1074.91	1082.68	1081.21	1083.16	0.005146	6.49	2628.49	899.54	0.46
1	23106	2-YR EC	3070.00	1068.11	1076.43	1074.38	1076.76	0.004012	4.77	753.78	238.46	0.39
1	23106	5-YR EC	4260.00	1068.11	1077.23	1075.09	1077.65	0.004269	5.46	955.12	264.40	0.41
1	23106	10-YR EC	5190.00	1068.11	1077.77	1075.54	1078.25	0.004446	5.93	1100.72	280.99	0.43
1	23106	25-YR EC	7110.00	1068.11	1078.69	1076.28	1079.30	0.004811	6.78	1377.93	315.67	0.45
1	23106	50-YR EC	8870.00	1068.11	1079.41	1077.08	1080.13	0.005096	7.46	1618.51	349.89	0.47
1	23106	100-YR EC	10370.00	1068.11	1079.97	1077.57	1080.77	0.005288	7.96	1818.90	381.52	0.49
1	23106	500-YR EC	15380.00	1068.11	1081.55	1078.97	1082.60	0.005778	9.35	2682.45	802.55	0.53
1	23106	25-YRFC	7860.00	1068.11	1079.01	1076.68	1079.67	0.004933	7.08	1481.42	332.50	0.46
1	23106	100-YR FC	11110.00	1068.11	1080.23	1077.81	1081.08	0.005433	8.23	1921.77	411.53	0.50
1	23106	25-YR 5-10 YR	7280.00	1068.11	1078.77	1076.33	1079.38	0.004835	6.85	1401.36	317.70	0.45
1	23106	100-YR 5-10 YR	10520.00	1068.11	1080.02	1077.62	1080.83	0.005317	8.01	1839.90	388.19	0.49
1	22562	2-YR EC	3070.00	1067.88	1074.23		1074.48	0.004305	3.99	774.42	258.77	0.38
1	22562	5-YR EC	4260.00	1067.88	1074.83		1075.17	0.004748	4.68	944.75	314.82	0.41
1	22562	10-YR EC	5190.00	1067.88	1075.22		1075.62	0.005109	5.16	1073.99	359.96	0.43
1	22562	25-YR EC	7110.00	1067.88	1075.88		1076.42	0.005690	5.98	1348.65	429.60	0.47

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	22562	50-YR EC	8870.00	1067.88	1076.33		1077.00	0.006392	6.71	1553.44	467.18	0.50
1	22562	100-YR EC	10370.00	1067.88	1076.65		1077.42	0.007055	7.32	1705.93	500.81	0.53
1	22562	500-YR EC	15380.00	1067.88	1077.47	1076.34	1078.62	0.009142	9.10	2140.02	571.39	0.62
1	22562	25-YRFC	7860.00	1067.88	1076.08		1076.67	0.006004	6.31	1436.76	458.35	0.49
1	22562	100-YR FC	11110.00	1067.88	1076.78		1077.61	0.007383	7.60	1774.62	506.92	0.55
1	22562	25-YR 5-10 YR	7280.00	1067.88	1075.93		1076.48	0.005760	6.06	1369.25	436.26	0.47
1	22562	100-YR 5-10 YR	10520.00	1067.88	1076.67		1077.46	0.007121	7.37	1720.13	502.02	0.54
1	22035	2-YR EC	3190.00	1066.73	1071.33		1071.56	0.007322	3.97	845.87	476.85	0.47
1	22035	5 -YR EC	4400.00	1066.73	1071.78		1072.05	0.007506	4.36	1088.57	613.11	0.48
1	22035	10-YR EC	5400.00	1066.73	1072.06		1072.37	0.007500	4.68	1279.42	722.78	0.49
1	22035	25-YR EC	7470.00	1066.73	1072.55		1072.93	0.007708	5.27	1693.28	987.83	0.51
1	22035	50-YR EC	9360.00	1066.73	1072.93		1073.33	0.007477	5.58	2084.91	1081.22	0.51
1	22035	100-YR EC	10980.00	1066.73	1073.24		1073.65	0.007076	5.73	2427.87	1104.20	0.50
1	22035	500-YR EC	16410.00	1066.73	1074.10		1074.55	0.006309	6.16	3403.39	1174.21	0.49
1	22035	25-YRFC	8240.00	1066.73	1072.71		1073.10	0.007626	5.41	1852.61	1036.06	0.51
1	22035	100-YR FC	11730.00	1066.73	1073.36		1073.78	0.006963	5.80	2567.57	1107.29	0.50
1	22035	25-YR 5-10 YR	7650.00	1066.73	1072.59		1072.97	0.007691	5.30	1729.62	996.94	0.51
1	22035	100-YR 5-10 YR	11130.00	1066.73	1073.26		1073.68	0.007053	5.74	2456.05	1104.83	0.50
1	21484	2-YR EC	3190.00	1061.37	1067.74		1068.02	0.005779	4.73	1034.47	683.38	0.44
1	21484	5 -YR EC	4400.00	1061.37	1068.28		1068.57	0.005523	5.08	1430.29	790.67	0.44
1	21484	10-YR EC	5400.00	1061.37	1068.67		1068.97	0.005322	5.31	1762.82	870.43	0.44
1	21484	25-YR EC	7470.00	1061.37	1069.32		1069.62	0.004929	5.59	2330.98	884.01	0.44
1	21484	50-YR EC	9360.00	1061.37	1069.82		1070.14	0.004768	5.86	2785.27	914.75	0.44
1	21484	100-YR EC	10980.00	1061.37	1070.23		1070.57	0.004740	6.12	3159.66	943.98	0.44
1	21484	500-YR EC	16410.00	1061.37	1071.39		1071.76	0.004397	6.63	4279.16	992.15	0.44
1	21484	25-YRFC	8240.00	1061.37	1069.53		1069.84	0.004864	5.71	2521.50	893.94	0.44
1	21484	100-YR FC	11730.00	1061.37	1070.40		1070.75	0.004684	6.20	3325.54	948.59	0.44
1	21484	25-YR 5-10 YR	7650.00	1061.37	1069.37		1069.67	0.004911	5.62	2375.79	885.44	0.44
1	21484	100-YR 5-10 YR	11130.00	1061.37	1070.26		1070.60	0.004729	6.13	3192.98	944.90	0.44
1	21059	2-YR EC	3190.00	1058.63	1065.69		1065.98	0.004450	5.14	1093.79	562.54	0.41
1	21059	5 -YR EC	4400.00	1058.63	1066.39		1066.68	0.004106	5.40	1525.65	667.37	0.40
1	21059	10-YR EC	5400.00	1058.63	1066.87		1067.16	0.003961	5.60	1865.13	740.45	0.40
1	21059	25-YR EC	7470.00	1058.63	1067.53		1067.86	0.004171	6.16	2365.04	759.71	0.42
1	21059	50-YR EC	9360.00	1058.63	1068.02		1068.38	0.004352	6.59	2739.79	766.09	0.43
1	21059	100-YR EC	10980.00	1058.63	1068.40		1068.78	0.004503	6.93	3030.20	771.92	0.44
1	21059	500-YR EC	16410.00	1058.63	1069.45		1069.93	0.005131	8.07	3858.87	810.99	0.48
1	21059	25-YRFC	8240.00	1058.63	1067.75		1068.08	0.004216	6.32	2529.86	762.52	0.42
1	21059	100-YR FC	11730.00	1058.63	1068.57		1068.96	0.004569	7.08	3157.24	774.54	0.45
1	21059	25-YR 5-10 YR	7650.00	1058.63	1067.59		1067.91	0.004176	6.19	2405.40	760.40	0.42
1	21059	100-YR 5-10 YR	11130.00	1058.63	1068.44		1068.82	0.004505	6.96	3058.48	772.50	0.44
1	20568	2-YR EC	3190.00	1055.56	1063.65	1061.92	1063.96	0.004252	4.89	919.34	427.33	0.40
1	20568	5 -YR EC	4400.00	1055.56	1064.21	1062.49	1064.61	0.004973	5.70	1192.72	588.81	0.44
1	20568	10-YR EC	5400.00	1055.56	1064.58	1062.97	1065.05	0.005489	6.27	1412.12	702.08	0.47
1	20568	25-YR EC	7470.00	1055.56	1065.20	1064.04	1065.70	0.005618	6.81	1906.48	818.44	0.48
1	20568	50-YR EC	9360.00	1055.56	1065.67	1064.87	1066.18	0.005667	7.18	2297.43	840.74	0.49
1	20568	100-YR EC	10980.00	1055.56	1066.04	1065.19	1066.56	0.005664	7.43	2612.21	891.40	0.49
1	20568	500-YR EC	16410.00	1055.56	1067.03	1065.99	1067.60	0.005598	8.07	3527.94	937.12	0.50
1	20568	25-YRFC	8240.00	1055.56	1065.39	1064.31	1065.90	0.005747	7.02	2062.79	831.44	0.49
1	20568	100-YR FC	11730.00	1055.56	1066.18	1065.23	1066.72	0.005709	7.56	2743.60	905.77	0.50
1	20568	25-YR 5-10 YR	7650.00	1055.56	1065.26	1064.23	1065.75	0.005624	6.85	1949.83	825.01	0.48
1	20568	100-YR 5-10 YR	11130.00	1055.56	1066.07	1065.23	1066.60	0.005680	7.46	2641.58	896.78	0.49
1	20008	2-YR EC	3650.00	1052.22	1061.59	1059.39	1061.87	0.003466	4.36	1003.93	646.14	0.36
1	20008	5 -YR EC	5020.00	1052.22	1062.25	1060.01	1062.52	0.003138	4.54	1575.57	844.88	0.35
1	20008	10-YR EC	6180.00	1052.22	1062.66	1060.53	1062.92	0.003045	4.70	1923.65	874.69	0.35
1	20008	25-YR EC	8550.00	1052.22	1063.24	1061.60	1063.53	0.003217	5.16	2447.88	932.04	0.36
1	20008	50-YR EC	10730.00	1052.22	1063.66	1062.47	1063.98	0.003397	5.53	2832.92	957.70	0.38
1	20008	100-YR EC	12620.00	1052.22	1063.97	1062.77	1064.32	0.003584	5.86	3114.51	975.00	0.39
1	20008	500-YR EC	18900.00	1052.22	1064.85	1063.45	1065.29	0.004012	6.71	4032.57	1013.89	0.42
1	20008	25-YRFC	9350.00	1052.22	1063.41	1061.76	1063.71	0.003256	5.28	2604.65	944.79	0.37
1	20008	100-YR FC	13410.00	1052.22	1064.09	1062.87	1064.46	0.003634	5.97	3232.13	983.95	0.39
1	20008	25-YR 5-10 YR	8750.00	1052.22	1063.27	1061.65	1063.57	0.003269	5.22	2475.93	934.06	0.37
1	20008	100-YR 5-10 YR	12780.00	1052.22	1063.99	1062.79	1064.35	0.003601	5.88	3136.57	976.60	0.39
1	19547	2-YR EC	3650.00	1049.76	1059.33	1056.13	1059.99	0.004749	6.53	571.92	343.01	0.44
1	19547	5 -YR EC	5020.00	1049.76	1059.84	1057.36	1060.65	0.005808	7.58	913.44	592.84	0.49
1	19547	10-YR EC	6180.00	1049.76	1060.18	1058.15	1061.06	0.006412	8.21	1145.11	747.36	0.52
1	19547	25-YR EC	8550.00	1049.76	1060.77	1060.77	1061.67	0.006806	8.89	1608.67	819.93	0.55
1	19547	50-YR EC	10730.00	1049.76	1061.19	1061.14	1062.10	0.007045	9.35	1958.63	850.76	0.56
1	19547	100-YR EC	12620.00	1049.76	1061.51	1061.42	1062.41	0.007110	9.62	2231.57	867.56	0.57
1	19547	500-YR EC	18900.00	1049.76	1062.42	1062.11	1063.35	0.007164	10.30	3057.55	933.74	0.58
1	19547	25-YRFC	9350.00	1049.76	1060.93	1060.93	1061.84	0.006977	9.11	1736.45	828.49	0.55
1	19547	100-YR FC	13410.00	1049.76	1061.64	1061.52	1062.55	0.007159	9.75	2343.96	881.58	0.57
1	19547	25-YR 5-10 YR	8750.00	1049.76	1060.85	1060.85	1061.72	0.006591	8.81	1677.06	826.15	0.54
1	19547	100-YR 5-10 YR	12780.00	1049.76	1061.54	1061.43	1062.44	0.007114	9.64	2253.74	870.73	0.57
1	19054	2-YR EC	3650.00	1047.85	1057.36	1055.31	1057.76	0.004078	5.87	1138.43	918.34	0.41

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	19054	5 -YR EC	5020.00	1047.85	1057.81	1057.49	1058.17	0.004032	6.10	1561.42	987.11	0.41
1	19054	10-YR EC	6180.00	1047.85	1058.11	1057.72	1058.46	0.004018	6.27	1866.08	1024.34	0.41
1	19054	25-YR EC	8550.00	1047.85	1058.63	1058.09	1058.98	0.004014	6.56	2412.36	1089.95	0.42
1	19054	50-YR EC	10730.00	1047.85	1059.04	1058.35	1059.40	0.004044	6.81	2868.01	1142.78	0.42
1	19054	100-YR EC	12620.00	1047.85	1059.34	1058.55	1059.72	0.004045	6.98	3218.69	1163.97	0.42
1	19054	500-YR EC	18900.00	1047.85	1060.19	1059.10	1060.63	0.004151	7.54	4235.86	1228.26	0.44
1	19054	25-YRFC	9350.00	1047.85	1058.79	1058.13	1059.13	0.003994	6.63	2581.41	1104.27	0.42
1	19054	100-YR FC	13410.00	1047.85	1059.46	1058.56	1059.84	0.004055	7.05	3354.57	1169.74	0.42
1	19054	25-YR 5-10 YR	8750.00	1047.85	1058.67	1058.13	1059.02	0.004009	6.58	2455.01	1093.28	0.42
1	19054	100-YR 5-10 YR	12780.00	1047.85	1059.37	1058.56	1059.74	0.004046	6.99	3246.98	1165.18	0.42
1	18570	2-YR EC	3650.00	1048.40	1055.43	1054.26	1055.65	0.004063	4.68	1423.50	1184.64	0.39
1	18570	5 -YR EC	5020.00	1048.40	1055.75		1055.97	0.004379	5.08	1800.13	1217.07	0.41
1	18570	10-YR EC	6180.00	1048.40	1055.98		1056.21	0.004491	5.31	2087.25	1230.15	0.42
1	18570	25-YR EC	8550.00	1048.40	1056.37		1056.63	0.004814	5.78	2567.33	1246.50	0.44
1	18570	50-YR EC	10730.00	1048.40	1056.67		1056.96	0.005080	6.15	2947.95	1261.69	0.45
1	18570	100-YR EC	12620.00	1048.40	1056.90		1057.22	0.005318	6.46	3234.23	1266.90	0.47
1	18570	500-YR EC	18900.00	1048.40	1057.61		1058.01	0.005597	7.14	4145.37	1290.25	0.49
1	18570	25-YRFC	9350.00	1048.40	1056.48		1056.75	0.004953	5.94	2708.32	1256.16	0.44
1	18570	100-YR FC	13410.00	1048.40	1057.00		1057.32	0.005361	6.55	3357.29	1269.14	0.47
1	18570	25-YR 5-10 YR	8750.00	1048.40	1056.40		1056.66	0.004841	5.81	2604.80	1249.07	0.44
1	18570	100-YR 5-10 YR	12780.00	1048.40	1056.92		1057.24	0.005334	6.48	3257.90	1267.33	0.47
1	18060	2-YR EC	3650.00	1045.98	1053.21	1052.27	1053.49	0.006687	4.57	956.58	656.09	0.47
1	18060	5 -YR EC	5020.00	1045.98	1053.66	1052.97	1053.96	0.006420	4.92	1282.32	805.80	0.47
1	18060	10-YR EC	6180.00	1045.98	1053.95	1053.26	1054.28	0.006432	5.20	1541.87	926.73	0.47
1	18060	25-YR EC	8550.00	1045.98	1054.42	1053.60	1054.79	0.006510	5.66	2022.44	1114.97	0.49
1	18060	50-YR EC	10730.00	1045.98	1054.74	1054.06	1055.14	0.006721	6.04	2390.10	1184.43	0.50
1	18060	100-YR EC	12620.00	1045.98	1055.01	1054.39	1055.43	0.006666	6.25	2712.62	1221.40	0.50
1	18060	500-YR EC	18900.00	1045.98	1055.53	1055.05	1056.12	0.008218	7.43	3368.77	1297.36	0.57
1	18060	25-YRFC	9350.00	1045.98	1054.56	1053.88	1054.93	0.006488	5.77	2174.55	1139.85	0.49
1	18060	100-YR FC	13410.00	1045.98	1055.09	1054.47	1055.53	0.006856	6.40	2805.75	1228.89	0.51
1	18060	25-YR 5-10 YR	8750.00	1045.98	1054.46	1053.74	1054.83	0.006510	5.69	2062.94	1119.10	0.49
1	18060	100-YR 5-10 YR	12780.00	1045.98	1055.03	1054.32	1055.45	0.006679	6.27	2735.45	1222.65	0.50
1	17562	2-YR EC	3690.00	1044.63	1050.76		1050.94	0.004709	4.20	1120.14	737.77	0.40
1	17562	5 -YR EC	5060.00	1044.63	1051.07		1051.31	0.005635	4.87	1367.14	814.97	0.44
1	17562	10-YR EC	6220.00	1044.63	1051.30		1051.57	0.006139	5.28	1561.52	943.42	0.47
1	17562	25-YR EC	8620.00	1044.63	1051.70		1052.03	0.006763	5.91	1998.98	1202.23	0.50
1	17562	50-YR EC	10850.00	1044.63	1052.02		1052.39	0.006868	6.25	2414.76	1341.36	0.51
1	17562	100-YR EC	12820.00	1044.63	1052.33		1052.70	0.007115	6.63	2849.75	1499.07	0.52
1	17562	500-YR EC	19260.00	1044.63	1053.12		1053.51	0.005747	6.57	4140.74	1686.02	0.48
1	17562	25-YRFC	9430.00	1044.63	1051.80		1052.15	0.007023	6.11	2125.74	1246.02	0.51
1	17562	100-YR FC	13610.00	1044.63	1052.43		1052.81	0.006949	6.64	3004.71	1549.84	0.52
1	17562	25-YR 5-10 YR	8820.00	1044.63	1051.72		1052.06	0.006835	5.96	2028.26	1209.21	0.50
1	17562	100-YR 5-10 YR	12990.00	1044.63	1052.34		1052.73	0.007113	6.64	2877.42	1502.87	0.52
1	17059	2-YR EC	3690.00	1045.57	1048.58	1048.47	1048.67	0.003979	2.82	1505.39	1096.20	0.34
1	17059	5 -YR EC	5060.00	1045.57	1049.06	1048.48	1049.16	0.003081	2.74	2064.55	1202.66	0.31
1	17059	10-YR EC	6220.00	1045.57	1049.38	1048.48	1049.48	0.002736	2.80	2445.55	1238.15	0.30
1	17059	25-YR EC	8620.00	1045.57	1049.95	1048.48	1050.06	0.002308	2.91	3171.94	1337.89	0.28
1	17059	50-YR EC	10850.00	1045.57	1050.41	1048.71	1050.54	0.002056	2.99	3827.17	1435.25	0.27
1	17059	100-YR EC	12820.00	1045.57	1050.84	1048.84	1050.97	0.001814	3.02	4450.60	1481.75	0.26
1	17059	500-YR EC	19260.00	1045.57	1051.74	1049.36	1051.92	0.001800	3.42	5843.00	1601.06	0.27
1	17059	25-YRFC	9430.00	1045.57	1050.19	1048.54	1050.31	0.002019	2.85	3512.67	1418.60	0.26
1	17059	100-YR FC	13610.00	1045.57	1051.02	1048.95	1051.15	0.001717	3.02	4714.18	1510.27	0.25
1	17059	25-YR 5-10 YR	8820.00	1045.57	1050.01	1048.49	1050.13	0.002220	2.89	3259.37	1366.05	0.27
1	17059	100-YR 5-10 YR	12990.00	1045.57	1050.91	1048.89	1051.04	0.001744	2.99	4547.12	1492.59	0.25
1	16070	2-YR EC	6400.00	1037.68	1043.83		1044.34	0.007351	6.10	1117.96	360.75	0.52
1	16070	5 -YR EC	8870.00	1037.68	1044.63		1045.24	0.007590	6.95	1428.83	425.91	0.54
1	16070	10-YR EC	10670.00	1037.68	1045.16		1045.81	0.007583	7.42	1677.32	515.83	0.55
1	16070	25-YR EC	14470.00	1037.68	1046.39		1046.99	0.006739	7.97	2496.05	828.76	0.54
1	16070	50-YR EC	18470.00	1037.68	1047.14		1047.72	0.006246	8.22	3266.35	1297.19	0.52
1	16070	100-YR EC	22090.00	1037.68	1047.65		1048.24	0.006438	8.72	3952.58	1362.78	0.54
1	16070	500-YR EC	34090.00	1037.68	1048.84		1049.46	0.005325	8.69	5672.09	1514.98	0.50
1	16070	25-YRFC	16650.00	1037.68	1046.86		1047.44	0.006395	8.12	2932.52	1110.54	0.53
1	16070	100-YR FC	24510.00	1037.68	1047.91		1048.50	0.006226	8.75	4301.01	1397.01	0.53
1	16070	25-YR 5-10 YR	15410.00	1037.68	1046.62		1047.19	0.006194	7.81	2688.05	908.78	0.52
1	16070	100-YR 5-10 YR	23090.00	1037.68	1047.75		1048.34	0.006352	8.73	4091.81	1370.16	0.54
1	15559	2-YR EC	6400.00	1034.05	1042.39	1040.94	1042.65	0.002571	4.63	1628.52	495.26	0.33
1	15559	5 -YR EC	8870.00	1034.05	1043.22	1041.16	1043.54	0.002569	5.03	2071.35	555.33	0.33
1	15559	10-YR EC	10670.00	1034.05	1043.73	1041.46	1044.08	0.002658	5.36	2366.66	626.50	0.34
1	15559	25-YR EC	14470.00	1034.05	1044.66	1042.05	1045.08	0.003355	6.50	3081.71	914.89	0.39
1	15559	50-YR EC	18470.00	1034.05	1045.35	1042.75	1045.82	0.003666	7.16	3797.31	1117.95	0.42
1	15559	100-YR EC	22090.00	1034.05	1045.85	1043.28	1046.35	0.003671	7.42	4381.47	1191.69	0.42
1	15559	500-YR EC	34090.00	1034.05	1047.26	1044.44	1047.81	0.003419	7.84	6119.20	1288.14	0.41
1	15559	25-YRFC	16650.00	1034.05	1045.07	1042.44	1045.52	0.003595	6.95	3491.81	1090.31	0.41
1	15559	100-YR FC	24510.00	1034.05	1046.16	1043.69	1046.66	0.003611	7.51	4743.94	1208.40	0.42
1	15559	25-YR 5-10 YR	15410.00	1034.05	1044.86	1042.22	1045.30	0.003543	6.79	3270.49	988.89	0.40

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	15559	100-YR 5-10 YR	23090.00	1034.05	1045.98	1043.39	1046.47	0.003647	7.46	4527.94	1200.63	0.42
1	15058	2-YR EC	6400.00	1029.93	1040.69	1036.89	1041.09	0.003668	5.09	1277.50	453.79	0.36
1	15058	5-YR EC	8870.00	1029.93	1041.54	1037.85	1041.98	0.003760	5.60	1882.68	742.84	0.37
1	15058	10-YR EC	10670.00	1029.93	1042.05	1038.48	1042.50	0.003722	5.83	2306.26	882.80	0.37
1	15058	25-YR EC	14470.00	1029.93	1042.79	1039.89	1043.28	0.003851	6.31	3016.69	1007.20	0.38
1	15058	50-YR EC	18470.00	1029.93	1043.48	1042.02	1043.97	0.003756	6.56	3737.71	1085.23	0.38
1	15058	100-YR EC	22090.00	1029.93	1044.03	1042.56	1044.53	0.003639	6.72	4353.22	1135.36	0.38
1	15058	500-YR EC	34090.00	1029.93	1045.68	1043.63	1046.19	0.003092	6.88	6314.22	1232.73	0.36
1	15058	25-YRFC	16650.00	1029.93	1043.19	1040.57	1043.68	0.003799	6.46	3425.58	1063.80	0.38
1	15058	100-YR FC	24510.00	1029.93	1044.38	1042.84	1044.89	0.003554	6.80	4753.34	1167.47	0.38
1	15058	25-YR 5-10 YR	15410.00	1029.93	1042.98	1040.15	1043.46	0.003815	6.37	3203.58	1047.86	0.38
1	15058	100-YR 5-10 YR	23090.00	1029.93	1044.18	1042.57	1044.68	0.003598	6.75	4517.46	1147.39	0.38
1	14559	2-YR EC	6400.00	1030.54	1038.87	1036.82	1039.17	0.003925	4.40	1456.90	407.65	0.41
1	14559	5-YR EC	8870.00	1030.54	1039.67	1037.46	1040.06	0.003860	4.97	1812.15	653.62	0.42
1	14559	10-YR EC	10670.00	1030.54	1040.13	1037.94	1040.58	0.003981	5.39	2031.83	824.44	0.43
1	14559	25-YR EC	14470.00	1030.54	1041.01	1038.67	1041.47	0.003488	5.64	2996.46	973.04	0.41
1	14559	50-YR EC	18470.00	1030.54	1041.82	1039.31	1042.28	0.003156	5.85	3840.49	1089.70	0.40
1	14559	100-YR EC	22090.00	1030.54	1042.53	1039.90	1042.98	0.002783	5.88	4630.76	1145.99	0.38
1	14559	500-YR EC	34090.00	1030.54	1044.52	1041.63	1044.96	0.002110	6.01	7020.97	1248.69	0.35
1	14559	25-YRFC	16650.00	1030.54	1041.47	1039.03	1041.93	0.003308	5.77	3464.99	1058.91	0.41
1	14559	100-YR FC	24510.00	1030.54	1042.95	1040.23	1043.40	0.002620	5.92	5120.03	1168.48	0.38
1	14559	25-YR 5-10 YR	15410.00	1030.54	1041.22	1038.83	1041.68	0.003418	5.71	3202.34	1031.03	0.41
1	14559	100-YR 5-10 YR	23090.00	1030.54	1042.71	1040.04	1043.15	0.002717	5.90	4833.27	1155.11	0.38
1	14073	2-YR EC	6400.00	1028.14	1036.59		1037.01	0.005005	5.23	1230.37	373.01	0.46
1	14073	5-YR EC	8870.00	1028.14	1037.66		1038.09	0.004222	5.40	1788.85	604.21	0.44
1	14073	10-YR EC	10670.00	1028.14	1038.28		1038.72	0.003688	5.49	2187.72	660.70	0.42
1	14073	25-YR EC	14470.00	1028.14	1039.48		1039.91	0.002935	5.60	3101.76	871.09	0.39
1	14073	50-YR EC	18470.00	1028.14	1040.55		1040.95	0.002374	5.58	4096.83	982.45	0.36
1	14073	100-YR EC	22090.00	1028.14	1041.46		1041.83	0.001994	5.51	5025.57	1058.04	0.33
1	14073	500-YR EC	34090.00	1028.14	1043.71		1044.08	0.001545	5.67	7565.23	1202.96	0.30
1	14073	25-YRFC	16650.00	1028.14	1040.12		1040.52	0.002541	5.55	3679.46	943.08	0.37
1	14073	100-YR FC	24510.00	1028.14	1041.96		1042.33	0.001850	5.51	5561.80	1078.21	0.32
1	14073	25-YR 5-10 YR	15410.00	1028.14	1039.78		1040.19	0.002736	5.57	3362.56	912.03	0.38
1	14073	100-YR 5-10 YR	23090.00	1028.14	1041.66		1042.04	0.001938	5.52	5245.60	1069.31	0.33
1	13558	2-YR EC	6310.00	1022.41	1034.62		1034.87	0.003360	4.00	1576.35	296.85	0.31
1	13558	5-YR EC	8810.00	1022.41	1035.77		1036.09	0.003475	4.57	1939.39	342.83	0.32
1	13558	10-YR EC	10640.00	1022.41	1036.46		1036.84	0.003554	4.96	2187.57	366.38	0.33
1	13558	25-YR EC	14480.00	1022.41	1037.75		1038.23	0.003652	5.62	2698.12	437.60	0.34
1	13558	50-YR EC	18330.00	1022.41	1038.86		1039.43	0.003712	6.16	3261.99	558.83	0.35
1	13558	100-YR EC	22010.00	1022.41	1039.81		1040.44	0.003718	6.58	3856.56	708.70	0.36
1	13558	500-YR EC	34240.00	1022.41	1042.06		1042.85	0.003872	7.65	5695.94	916.49	0.38
1	13558	25-YRFC	16680.00	1022.41	1038.41		1038.95	0.003686	5.94	3024.25	513.42	0.35
1	13558	100-YR FC	24430.00	1022.41	1040.30		1040.98	0.003788	6.85	4227.80	766.46	0.37
1	13558	25-YR 5-10 YR	15460.00	1022.41	1038.05		1038.56	0.003689	5.79	2841.75	495.02	0.35
1	13558	100-YR 5-10 YR	23070.00	1022.41	1039.99		1040.66	0.003801	6.73	3992.00	746.23	0.37
1	13055	2-YR EC	6310.00	1024.37	1032.67		1029.98	0.004424	4.13	1526.44	338.65	0.34
1	13055	5-YR EC	8810.00	1024.37	1033.89		1030.68	0.004036	4.50	1967.71	382.26	0.34
1	13055	10-YR EC	10640.00	1024.37	1034.61		1031.12	0.003876	4.79	2258.06	429.92	0.34
1	13055	25-YR EC	14480.00	1024.37	1035.97		1031.95	0.003593	5.26	2880.84	524.14	0.34
1	13055	50-YR EC	18330.00	1024.37	1037.13		1032.67	0.003452	5.67	3479.19	651.39	0.34
1	13055	100-YR EC	22010.00	1024.37	1038.10		1033.31	0.003399	6.04	4068.09	1044.22	0.34
1	13055	500-YR EC	34240.00	1024.37	1040.70		1035.20	0.002633	6.22	7402.92	1247.00	0.31
1	13055	25-YRFC	16680.00	1024.37	1036.68		1032.37	0.003461	5.48	3237.75	596.76	0.34
1	13055	100-YR FC	24430.00	1024.37	1038.73		1033.70	0.003060	5.97	5073.37	1116.25	0.33
1	13055	25-YR 5-10 YR	15460.00	1024.37	1036.29		1032.14	0.003546	5.37	3036.73	556.09	0.34
1	13055	100-YR 5-10 YR	23070.00	1024.37	1038.34		1033.50	0.003245	6.00	4643.83	1092.40	0.34
1	12559	2-YR EC	6310.00	1016.49	1030.15		1030.54	0.005211	5.01	1258.45	233.74	0.38
1	12559	5-YR EC	8810.00	1016.49	1031.42		1031.91	0.005285	5.61	1582.01	281.42	0.39
1	12559	10-YR EC	10640.00	1016.49	1032.14		1032.70	0.005354	6.07	1790.05	308.00	0.40
1	12559	25-YR EC	14480.00	1016.49	1033.54		1034.24	0.005233	6.77	2241.26	341.79	0.41
1	12559	50-YR EC	18330.00	1016.49	1034.63		1035.47	0.005427	7.48	2649.49	400.52	0.43
1	12559	100-YR EC	22010.00	1016.49	1035.56		1036.50	0.005491	8.00	3034.29	421.08	0.44
1	12559	500-YR EC	34240.00	1016.49	1037.97		1039.27	0.005995	9.61	4648.22	1178.44	0.47
1	12559	25-YRFC	16680.00	1016.49	1034.27		1035.03	0.005166	7.11	2510.60	383.61	0.41
1	12559	100-YR FC	24430.00	1016.49	1036.22		1037.23	0.005437	8.30	3337.47	501.61	0.44
1	12559	25-YR 5-10 YR	15460.00	1016.49	1033.83		1034.57	0.005312	6.98	2344.18	369.59	0.42
1	12559	100-YR 5-10 YR	23070.00	1016.49	1035.79		1036.77	0.005537	8.16	3135.10	444.90	0.44
1	12040	2-YR EC	6310.00	1017.45	1027.85		1024.14	0.004024	4.44	1421.70	297.56	0.36
1	12040	5-YR EC	8810.00	1017.45	1029.32		1025.13	0.003500	4.64	1900.55	348.68	0.34
1	12040	10-YR EC	10640.00	1017.45	1030.15		1025.72	0.003227	4.88	2201.26	378.75	0.34
1	12040	25-YR EC	14480.00	1017.45	1031.85		1027.14	0.002682	5.20	2911.85	480.58	0.32
1	12040	50-YR EC	18330.00	1017.45	1032.91		1028.05	0.002793	5.75	3442.65	654.49	0.33
1	12040	100-YR EC	22010.00	1017.45	1033.85		1028.74	0.002828	6.17	3974.38	849.86	0.34
1	12040	500-YR EC	34240.00	1017.45	1036.85		1030.67	0.002078	6.28	7931.22	1545.19	0.30

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	12040	25-YRFC	16680.00	1017.45	1032.69	1027.66	1033.13	0.002523	5.38	3327.13	614.73	0.32
1	12040	100-YR FC	24430.00	1017.45	1034.65	1029.17	1035.22	0.002610	6.23	4483.17	1039.84	0.33
1	12040	25-YR 5-10 YR	15460.00	1017.45	1032.13	1027.39	1032.56	0.002721	5.35	3039.57	522.32	0.32
1	12040	100-YR 5-10 YR	23070.00	1017.45	1034.08	1028.88	1034.66	0.002849	6.29	4117.05	881.90	0.34
1	11722	2-YR EC	7420.00	1018.11	1026.65	1023.51	1026.91	0.003736	4.12	1802.84	355.53	0.32
1	11722	5-YR EC	11040.00	1018.11	1028.19	1024.40	1028.52	0.003612	4.66	2369.06	377.91	0.33
1	11722	10-YR EC	13580.00	1018.11	1029.02	1024.97	1029.42	0.003661	5.05	2688.82	388.52	0.34
1	11722	25-YR EC	19590.00	1018.11	1030.70	1026.09	1031.23	0.003722	5.88	3358.30	412.41	0.35
1	11722	50-YR EC	23830.00	1018.11	1031.71	1026.79	1032.34	0.003806	6.39	3795.61	469.06	0.36
1	11722	100-YR EC	28040.00	1018.11	1032.60	1027.43	1033.33	0.003899	6.86	4232.63	727.43	0.37
1	11722	500-YR EC	44490.00	1018.11	1035.47	1029.52	1036.40	0.003868	8.02	7326.46	1269.07	0.39
1	11722	25-YRFC	22900.00	1018.11	1031.49	1026.64	1032.10	0.003788	6.29	3698.09	448.60	0.36
1	11722	100-YR FC	31770.00	1018.11	1033.35	1027.93	1034.16	0.003946	7.23	4623.94	937.62	0.38
1	11722	25-YR 5-10 YR	20650.00	1018.11	1030.96	1026.27	1031.52	0.003741	6.01	3467.53	417.21	0.35
1	11722	100-YR 5-10 YR	29130.00	1018.11	1032.82	1027.58	1033.57	0.003921	6.98	4344.34	764.31	0.37
1	11346	2-YR EC	7420.00	1014.35	1025.39	1021.47	1025.64	0.003039	4.04	1836.40	316.29	0.30
1	11346	5-YR EC	11040.00	1014.35	1026.83	1022.43	1027.18	0.003501	4.78	2309.85	343.98	0.33
1	11346	10-YR EC	13580.00	1014.35	1027.59	1023.02	1028.02	0.003725	5.27	2582.32	371.37	0.34
1	11346	25-YR EC	19590.00	1014.35	1029.16	1024.42	1029.76	0.004054	6.25	3251.06	474.96	0.37
1	11346	50-YR EC	23830.00	1014.35	1030.10	1025.19	1030.82	0.004234	6.83	3715.49	529.03	0.38
1	11346	100-YR EC	28040.00	1014.35	1030.94	1025.89	1031.76	0.004410	7.35	4145.04	624.54	0.39
1	11346	500-YR EC	44490.00	1014.35	1033.46	1028.25	1034.70	0.005183	9.17	5860.10	1443.46	0.44
1	11346	25-YRFC	22900.00	1014.35	1029.90	1025.04	1030.60	0.004197	6.71	3614.71	512.50	0.38
1	11346	100-YR FC	31770.00	1014.35	1031.62	1026.52	1032.55	0.004578	7.81	4553.20	804.44	0.41
1	11346	25-YR 5-10 YR	20650.00	1014.35	1029.40	1024.64	1030.04	0.004102	6.40	3369.27	485.14	0.37
1	11346	100-YR 5-10 YR	29130.00	1014.35	1031.14	1026.06	1031.99	0.004452	7.48	4257.38	672.96	0.40
1	11059	2-YR EC	7420.00	1012.48	1024.56	1020.84	1024.79	0.002884	3.79	1955.86	357.68	0.29
1	11059	5-YR EC	11040.00	1012.48	1025.89	1021.78	1026.21	0.003242	4.51	2448.85	391.42	0.31
1	11059	10-YR EC	13580.00	1012.48	1026.59	1022.41	1026.98	0.003481	5.01	2737.56	494.70	0.33
1	11059	25-YR EC	19590.00	1012.48	1028.07	1023.56	1028.62	0.003827	5.95	3440.58	663.81	0.36
1	11059	50-YR EC	23830.00	1012.48	1028.97	1024.25	1029.62	0.004010	6.50	3933.61	783.78	0.37
1	11059	100-YR EC	28040.00	1012.48	1029.76	1024.88	1030.50	0.004195	7.01	4388.06	863.59	0.38
1	11059	500-YR EC	44490.00	1012.48	1032.45	1027.06	1033.30	0.003919	7.90	8115.41	1393.85	0.39
1	11059	25-YRFC	22900.00	1012.48	1028.78	1024.09	1029.41	0.003980	6.39	3824.19	770.55	0.37
1	11059	100-YR FC	31770.00	1012.48	1030.42	1025.44	1031.25	0.004324	7.41	4791.23	1084.56	0.39
1	11059	25-YR 5-10 YR	20650.00	1012.48	1028.31	1023.72	1028.88	0.003881	6.09	3563.62	703.11	0.36
1	11059	100-YR 5-10 YR	29130.00	1012.48	1029.95	1025.06	1030.72	0.004240	7.13	4502.86	900.86	0.39
1	10785	2-YR EC	7420.00	1016.68	1023.71	1020.68	1023.91	0.003479	3.58	2075.07	560.53	0.30
1	10785	5-YR EC	11040.00	1016.68	1025.06	1021.44	1025.30	0.003186	3.95	2972.44	674.52	0.30
1	10785	10-YR EC	13580.00	1016.68	1025.76	1021.94	1026.04	0.003133	4.25	3457.51	711.45	0.30
1	10785	25-YR EC	19590.00	1016.68	1027.30	1023.03	1027.64	0.002949	4.79	4661.55	835.40	0.31
1	10785	50-YR EC	23830.00	1016.68	1028.23	1023.63	1028.61	0.002884	5.12	5470.10	903.37	0.31
1	10785	100-YR EC	28040.00	1016.68	1029.05	1024.15	1029.47	0.002849	5.41	6220.30	953.52	0.31
1	10785	500-YR EC	44490.00	1016.68	1031.76	1025.93	1032.31	0.002779	6.33	9253.90	1209.62	0.32
1	10785	25-YRFC	22900.00	1016.68	1028.03	1023.50	1028.40	0.002896	5.05	5290.00	887.27	0.31
1	10785	100-YR FC	31770.00	1016.68	1029.72	1024.59	1030.18	0.002872	5.69	6901.06	1067.42	0.32
1	10785	25-YR 5-10 YR	20650.00	1016.68	1027.54	1023.18	1027.89	0.002926	4.87	4865.57	846.65	0.31
1	10785	100-YR 5-10 YR	29130.00	1016.68	1029.24	1024.29	1029.68	0.002845	5.48	6414.81	996.24	0.31
1	10429	2-YR EC	7420.00	1013.37	1022.03		1022.39	0.005263	4.92	1742.19	507.46	0.38
1	10429	5-YR EC	11040.00	1013.37	1023.57		1023.97	0.004374	5.34	2588.37	593.46	0.36
1	10429	10-YR EC	13580.00	1013.37	1024.18		1024.67	0.004775	5.91	2971.29	657.95	0.39
1	10429	25-YR EC	19590.00	1013.37	1025.70		1026.31	0.004781	6.72	4064.59	801.72	0.40
1	10429	50-YR EC	23830.00	1013.37	1026.63		1027.30	0.004759	7.17	4853.88	897.80	0.41
1	10429	100-YR EC	28040.00	1013.37	1027.47		1028.18	0.004648	7.49	5635.46	965.83	0.41
1	10429	500-YR EC	44490.00	1013.37	1030.17		1031.04	0.004605	8.67	8669.00	1298.57	0.42
1	10429	25-YRFC	22900.00	1013.37	1026.44		1027.09	0.004741	7.06	4681.97	871.06	0.40
1	10429	100-YR FC	31770.00	1013.37	1028.15		1028.89	0.004581	7.75	6311.30	1016.38	0.41
1	10429	25-YR 5-10 YR	20650.00	1013.37	1025.94		1026.56	0.004807	6.86	4255.90	827.43	0.40
1	10429	100-YR 5-10 YR	29130.00	1013.37	1027.68		1028.39	0.004618	7.56	5836.63	979.35	0.41
1	10228	2-YR EC	7420.00	1007.85	1020.72	1017.98	1021.23	0.006219	5.71	1299.17	426.41	0.45
1	10228	5-YR EC	11040.00	1007.85	1022.24	1019.23	1022.87	0.006814	6.36	1737.74	558.15	0.48
1	10228	10-YR EC	13580.00	1007.85	1023.10	1019.92	1023.65	0.005331	6.20	2728.22	632.79	0.43
1	10228	25-YR EC	19590.00	1007.85	1024.74	1021.48	1025.36	0.004681	6.76	3899.11	778.83	0.42
1	10228	50-YR EC	23830.00	1007.85	1025.70	1022.48	1026.38	0.004486	7.14	4706.94	884.36	0.42
1	10228	100-YR EC	28040.00	1007.85	1026.57	1023.05	1027.29	0.004295	7.43	5522.79	974.15	0.42
1	10228	500-YR EC	44490.00	1007.85	1029.28	1024.96	1030.17	0.004147	8.58	8467.71	1286.37	0.43
1	10228	25-YRFC	22900.00	1007.85	1025.49	1022.47	1026.16	0.004557	7.08	4520.99	865.77	0.42
1	10228	100-YR FC	31770.00	1007.85	1027.28	1023.54	1028.02	0.004171	7.66	6226.77	1015.46	0.42
1	10228	25-YR 5-10 YR	20650.00	1007.85	1024.98	1021.81	1025.62	0.004622	6.85	4094.71	806.89	0.42
1	10228	100-YR 5-10 YR	29130.00	1007.85	1026.78	1023.19	1027.51	0.004265	7.50	5728.14	988.68	0.42
1	9974	2-YR EC	7420.00	1005.28	1019.53	1014.99	1019.98	0.003858	5.47	1566.94	411.96	0.37
1	9974	5-YR EC	11040.00	1005.28	1020.93	1016.66	1021.52	0.004157	6.43	2187.26	487.30	0.40
1	9974	10-YR EC	13580.00	1005.28	1021.73	1017.67	1022.42	0.004345	6.99	2598.79	535.69	0.41
1	9974	25-YR EC	19590.00	1005.28	1023.24	1020.01	1024.13	0.004812	8.16	3507.25	669.76	0.44

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	9974	50-YR EC	23830.00	1005.28	1024.12	1020.90	1025.13	0.005104	8.86	4117.59	747.21	0.46
1	9974	100-YR EC	28040.00	1005.28	1024.91	1021.73	1026.03	0.005328	9.47	4748.13	835.02	0.48
1	9974	500-YR EC	44490.00	1005.28	1027.42	1024.15	1028.87	0.005858	11.25	7136.85	1080.19	0.52
1	9974	25-YRFC	22900.00	1005.28	1023.93	1020.69	1024.91	0.005019	8.69	3983.92	717.65	0.46
1	9974	100-YR FC	31770.00	1005.28	1025.55	1022.26	1026.76	0.005501	9.95	5306.43	900.18	0.49
1	9974	25-YR 5-10 YR	20650.00	1005.28	1023.46	1020.21	1024.38	0.004886	8.34	3658.73	676.61	0.45
1	9974	100-YR 5-10 YR	29130.00	1005.28	1025.10	1021.83	1026.25	0.005380	9.61	4908.62	856.25	0.48
1	9772	2-YR EC	7420.00	1003.77	1019.05	1012.75	1019.29	0.002604	3.90	1901.48	346.42	0.29
1	9772	5 -YR EC	11040.00	1003.77	1020.44	1014.61	1020.77	0.002720	4.62	2420.07	396.32	0.31
1	9772	10-YR EC	13580.00	1003.77	1021.23	1015.52	1021.63	0.002854	5.09	2739.40	419.56	0.32
1	9772	25-YR EC	19590.00	1003.77	1022.67	1017.87	1023.24	0.003265	6.11	3507.75	621.06	0.36
1	9772	50-YR EC	23830.00	1003.77	1023.50	1018.81	1024.18	0.003515	6.72	4065.33	694.94	0.38
1	9772	100-YR EC	28040.00	1003.77	1024.26	1019.46	1025.04	0.003717	7.25	4615.92	772.58	0.39
1	9772	500-YR EC	44490.00	1003.77	1026.63	1021.65	1027.77	0.004344	8.96	6623.16	992.21	0.44
1	9772	25-YRFC	22900.00	1003.77	1023.32	1018.64	1023.98	0.003471	6.59	3943.06	682.69	0.37
1	9772	100-YR FC	31770.00	1003.77	1024.87	1020.00	1025.74	0.003849	7.66	5108.66	809.47	0.40
1	9772	25-YR 5-10 YR	20650.00	1003.77	1022.88	1018.20	1023.48	0.003342	6.27	3642.60	662.81	0.36
1	9772	100-YR 5-10 YR	29130.00	1003.77	1024.44	1019.61	1025.25	0.003760	7.38	4758.99	791.07	0.39
1	9570	2-YR EC	7420.00	1004.83	1018.63	1013.40	1018.83	0.001892	3.65	2035.21	322.99	0.26
1	9570	5 -YR EC	11040.00	1004.83	1019.96	1014.57	1020.27	0.002268	4.45	2499.98	370.84	0.29
1	9570	10-YR EC	13580.00	1004.83	1020.70	1015.28	1021.08	0.002487	4.97	2791.86	431.82	0.31
1	9570	25-YR EC	19590.00	1004.83	1022.03	1016.85	1022.60	0.003065	6.10	3496.70	609.45	0.35
1	9570	50-YR EC	23830.00	1004.83	1022.78	1017.67	1023.48	0.003446	6.80	3971.74	662.49	0.37
1	9570	100-YR EC	28040.00	1004.83	1023.45	1018.42	1024.28	0.003794	7.44	4439.33	759.15	0.40
1	9570	500-YR EC	44490.00	1004.83	1025.63	1020.87	1026.86	0.004641	9.29	6873.73	1709.19	0.45
1	9570	25-YRFC	22900.00	1004.83	1022.62	1017.50	1023.29	0.003373	6.66	3866.13	653.97	0.37
1	9570	100-YR FC	31770.00	1004.83	1023.98	1019.10	1024.93	0.004076	7.97	4884.20	895.08	0.42
1	9570	25-YR 5-10 YR	20650.00	1004.83	1022.22	1017.07	1022.82	0.003175	6.29	3611.29	618.44	0.36
1	9570	100-YR 5-10 YR	29130.00	1004.83	1023.61	1018.69	1024.47	0.003876	7.60	4563.34	795.59	0.40
1	9388	2-YR EC	7420.00	1005.79	1018.29	1013.30	1018.49	0.001875	3.55	2087.50	344.22	0.25
1	9388	5 -YR EC	11040.00	1005.79	1019.55	1014.60	1019.84	0.002343	4.35	2564.96	429.76	0.29
1	9388	10-YR EC	13580.00	1005.79	1020.25	1015.35	1020.61	0.002637	4.84	2922.84	593.91	0.31
1	9388	25-YR EC	19590.00	1005.79	1021.49	1016.68	1022.01	0.003219	5.87	3754.04	754.02	0.35
1	9388	50-YR EC	23830.00	1005.79	1022.18	1017.43	1022.82	0.003583	6.52	4317.96	862.22	0.38
1	9388	100-YR EC	28040.00	1005.79	1022.82	1018.13	1023.55	0.003851	7.06	4897.02	930.02	0.40
1	9388	500-YR EC	44490.00	1005.79	1024.90	1020.79	1025.97	0.004567	8.74	7592.06	1640.79	0.44
1	9388	25-YRFC	22900.00	1005.79	1022.03	1017.27	1022.64	0.003524	6.39	4189.02	839.57	0.37
1	9388	100-YR FC	31770.00	1005.79	1023.34	1018.68	1024.15	0.004030	7.48	5389.07	953.12	0.41
1	9388	25-YR 5-10 YR	20650.00	1005.79	1021.65	1016.87	1022.21	0.003347	6.06	3882.74	791.89	0.36
1	9388	100-YR 5-10 YR	29130.00	1005.79	1022.97	1018.29	1023.73	0.003908	7.19	5041.56	933.94	0.40
1	9081	2-YR EC	7420.00	1009.40	1017.68	1014.07	1017.84	0.002312	3.17	2344.83	510.10	0.25
1	9081	5 -YR EC	11040.00	1009.40	1018.84	1014.83	1019.06	0.002654	3.76	3003.83	770.89	0.28
1	9081	10-YR EC	13580.00	1009.40	1019.49	1015.29	1019.75	0.002777	4.13	3402.79	1100.85	0.29
1	9081	25-YR EC	19590.00	1009.40	1020.69	1016.26	1021.02	0.002903	4.74	5209.08	1352.69	0.30
1	9081	50-YR EC	23830.00	1009.40	1021.36	1016.93	1021.73	0.003037	5.13	6122.77	1387.76	0.31
1	9081	100-YR EC	28040.00	1009.40	1022.00	1017.52	1022.41	0.003081	5.43	7015.38	1406.96	0.32
1	9081	500-YR EC	44490.00	1009.40	1024.14	1019.37	1024.66	0.003163	6.36	10148.53	1507.23	0.34
1	9081	25-YRFC	22900.00	1009.40	1021.21	1016.80	1021.57	0.003020	5.05	5913.81	1377.69	0.31
1	9081	100-YR FC	31770.00	1009.40	1022.53	1018.07	1022.96	0.003120	5.68	7765.37	1442.61	0.33
1	9081	25-YR 5-10 YR	20650.00	1009.40	1020.84	1016.44	1021.18	0.002979	4.86	5409.99	1355.37	0.31
1	9081	100-YR 5-10 YR	29130.00	1009.40	1022.16	1017.66	1022.57	0.003089	5.50	7237.19	1413.15	0.32
1	8783	2-YR EC	7420.00	1007.88	1016.79	1013.77	1016.98	0.003663	3.50	2120.65	585.74	0.31
1	8783	5 -YR EC	11040.00	1007.88	1017.87	1014.70	1018.12	0.003697	4.09	2746.15	772.44	0.32
1	8783	10-YR EC	13580.00	1007.88	1018.48	1015.24	1018.79	0.003792	4.47	3144.08	949.93	0.33
1	8783	25-YR EC	19590.00	1007.88	1019.67	1016.19	1020.05	0.003788	5.07	4772.47	1297.16	0.34
1	8783	50-YR EC	23830.00	1007.88	1020.30	1016.74	1020.73	0.003948	5.49	5590.63	1318.45	0.35
1	8783	100-YR EC	28040.00	1007.88	1020.94	1017.22	1021.40	0.003925	5.78	6442.66	1347.89	0.36
1	8783	500-YR EC	44490.00	1007.88	1023.11	1018.92	1023.68	0.003777	6.64	9538.67	1483.60	0.36
1	8783	25-YRFC	22900.00	1007.88	1020.14	1016.63	1020.57	0.003956	5.42	5390.53	1311.88	0.35
1	8783	100-YR FC	31770.00	1007.88	1021.47	1017.65	1021.96	0.003907	6.01	7169.72	1392.02	0.36
1	8783	25-YR 5-10 YR	20650.00	1007.88	1019.78	1016.33	1020.18	0.003953	5.24	4913.43	1299.31	0.35
1	8783	100-YR 5-10 YR	29130.00	1007.88	1021.09	1017.37	1021.57	0.003924	5.85	6655.75	1364.85	0.36
1	8559	2-YR EC	7420.00	1007.40	1015.83	1012.71	1016.05	0.004723	3.76	1975.99	547.72	0.34
1	8559	5 -YR EC	11040.00	1007.40	1016.94	1013.63	1017.22	0.004403	4.28	2618.50	776.22	0.35
1	8559	10-YR EC	13580.00	1007.40	1017.53	1014.22	1017.87	0.004483	4.66	2996.28	950.08	0.36
1	8559	25-YR EC	19590.00	1007.40	1018.60	1015.38	1019.08	0.004994	5.56	3705.97	1176.46	0.39
1	8559	50-YR EC	23830.00	1007.40	1019.31	1016.10	1019.78	0.004616	5.72	5179.99	1209.08	0.38
1	8559	100-YR EC	28040.00	1007.40	1019.97	1016.58	1020.47	0.004523	6.01	5983.44	1244.11	0.38
1	8559	500-YR EC	44490.00	1007.40	1022.19	1018.20	1022.81	0.004221	6.86	8870.23	1374.45	0.38
1	8559	25-YRFC	22900.00	1007.40	1019.15	1016.00	1019.62	0.004661	5.67	4986.85	1203.69	0.38
1	8559	100-YR FC	31770.00	1007.40	1020.51	1016.98	1021.05	0.004443	6.22	6664.90	1262.73	0.38
1	8559	25-YR 5-10 YR	20650.00	1007.40	1018.78	1015.65	1019.22	0.004689	5.48	4545.15	1191.74	0.38
1	8559	100-YR 5-10 YR	29130.00	1007.40	1020.13	1016.69	1020.64	0.004499	6.07	6184.35	1247.74	0.38
1	8335	2-YR EC	7420.00	1004.96	1014.57	1011.94	1014.84	0.006126	4.13	1796.27	547.57	0.39

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	8335	5 -YR EC	11040.00	1004.96	1015.75	1012.82	1016.06	0.006066	4.50	2456.05	800.87	0.39
1	8335	10-YR EC	13580.00	1004.96	1016.38	1013.39	1016.73	0.005677	4.78	2841.77	1002.88	0.39
1	8335	25-YR EC	19590.00	1004.96	1017.51	1014.65	1017.92	0.005138	5.26	4321.14	1064.14	0.39
1	8335	50-YR EC	23830.00	1004.96	1018.28	1015.25	1018.72	0.004780	5.51	5143.48	1078.32	0.38
1	8335	100-YR EC	28040.00	1004.96	1018.97	1015.75	1019.44	0.004538	5.75	5905.10	1109.55	0.38
1	8335	500-YR EC	44490.00	1004.96	1021.27	1017.40	1021.86	0.004112	6.57	8616.73	1247.03	0.37
1	8335	25-YRFC	22900.00	1004.96	1018.10	1015.09	1018.53	0.004900	5.48	4949.04	1075.82	0.38
1	8335	100-YR FC	31770.00	1004.96	1019.54	1016.12	1020.04	0.004425	5.96	6537.91	1146.38	0.38
1	8335	25-YR 5-10 YR	20650.00	1004.96	1017.71	1014.79	1018.12	0.005043	5.33	4530.32	1068.40	0.38
1	8335	100-YR 5-10 YR	29130.00	1004.96	1019.14	1015.86	1019.62	0.004494	5.81	6092.73	1114.03	0.38
1	8082	2-YR EC	7420.00	1003.92	1013.33	1010.73	1013.55	0.004256	3.74	1982.30	560.95	0.33
1	8082	5 -YR EC	11040.00	1003.92	1014.53	1011.49	1014.81	0.004060	4.25	2612.27	827.07	0.33
1	8082	10-YR EC	13580.00	1003.92	1015.19	1011.96	1015.52	0.004040	4.60	2993.29	864.67	0.34
1	8082	25-YR EC	19590.00	1003.92	1016.39	1012.97	1016.78	0.003951	5.17	4447.50	955.11	0.35
1	8082	50-YR EC	23830.00	1003.92	1017.18	1013.49	1017.62	0.003912	5.53	5232.06	999.38	0.35
1	8082	100-YR EC	28040.00	1003.92	1017.90	1014.02	1018.38	0.003871	5.84	5961.06	1043.74	0.36
1	8082	500-YR EC	44490.00	1003.92	1020.22	1015.82	1020.85	0.003836	6.84	8517.83	1174.45	0.37
1	8082	25-YRFC	22900.00	1003.92	1016.97	1013.38	1017.41	0.004013	5.50	5023.48	995.08	0.36
1	8082	100-YR FC	31770.00	1003.92	1018.47	1014.42	1018.99	0.003863	6.10	6564.79	1067.73	0.36
1	8082	25-YR 5-10 YR	20650.00	1003.92	1016.59	1013.07	1016.99	0.003930	5.26	4648.24	979.35	0.35
1	8082	100-YR 5-10 YR	29130.00	1003.92	1018.07	1014.14	1018.56	0.003869	5.92	6139.96	1050.45	0.36
1	7857	2-YR EC	7420.00	1003.27	1012.46	1009.93	1012.66	0.003624	3.57	2077.38	564.19	0.31
1	7857	5 -YR EC	11040.00	1003.27	1013.71	1010.63	1013.97	0.003421	4.07	2737.42	789.53	0.31
1	7857	10-YR EC	13580.00	1003.27	1014.43	1011.03	1014.71	0.003196	4.28	3582.08	901.61	0.31
1	7857	25-YR EC	19590.00	1003.27	1015.59	1011.88	1015.95	0.003467	5.01	4641.02	930.88	0.33
1	7857	50-YR EC	23830.00	1003.27	1016.40	1012.42	1016.81	0.003443	5.36	5407.00	961.03	0.33
1	7857	100-YR EC	28040.00	1003.27	1017.12	1012.93	1017.57	0.003448	5.68	6108.90	1004.66	0.34
1	7857	500-YR EC	44490.00	1003.27	1019.42	1014.83	1020.04	0.003603	6.78	8721.25	1205.11	0.36
1	7857	25-YRFC	22900.00	1003.27	1016.16	1012.31	1016.57	0.003560	5.34	5180.49	954.77	0.34
1	7857	100-YR FC	31770.00	1003.27	1017.66	1013.34	1018.17	0.003584	6.03	6683.87	1092.77	0.35
1	7857	25-YR 5-10 YR	20650.00	1003.27	1015.80	1012.02	1016.18	0.003456	5.10	4838.85	935.97	0.33
1	7857	100-YR 5-10 YR	29130.00	1003.27	1017.28	1013.03	1017.75	0.003491	5.78	6274.71	1035.02	0.34
1	7584	2-YR EC	7240.00	1000.41	1010.51	1008.64	1011.05	0.010873	5.88	1231.22	362.94	0.52
1	7584	5 -YR EC	10720.00	1000.41	1011.87	1009.69	1012.48	0.009608	6.27	1750.15	605.79	0.51
1	7584	10-YR EC	13230.00	1000.41	1012.68	1010.37	1013.34	0.008421	6.53	2159.36	782.40	0.49
1	7584	25-YR EC	18610.00	1000.41	1014.00	1011.54	1014.64	0.006763	6.75	3617.02	913.66	0.45
1	7584	50-YR EC	23210.00	1000.41	1014.77	1012.31	1015.49	0.006808	7.27	4346.53	1007.28	0.46
1	7584	100-YR EC	27350.00	1000.41	1015.49	1013.00	1016.26	0.006664	7.64	5100.92	1081.54	0.47
1	7584	500-YR EC	43940.00	1000.41	1017.85	1014.88	1018.75	0.006110	8.63	7959.76	1325.58	0.47
1	7584	25-YRFC	21810.00	1000.41	1014.53	1012.11	1015.23	0.006869	7.15	4106.10	951.44	0.46
1	7584	100-YR FC	30800.00	1000.41	1016.03	1013.52	1016.84	0.006566	7.91	5702.41	1150.39	0.47
1	7584	25-YR 5-10 YR	19670.00	1000.41	1014.23	1011.74	1014.88	0.006599	6.82	3830.04	925.01	0.45
1	7584	100-YR 5-10 YR	28380.00	1000.41	1015.65	1013.13	1016.44	0.006619	7.71	5279.90	1094.71	0.47
1	7315	2-YR EC	7240.00	1002.03	1008.74	1006.17	1009.09	0.004945	4.76	1519.59	361.63	0.39
1	7315	5 -YR EC	10720.00	1002.03	1010.21	1007.09	1010.63	0.004859	5.23	2050.72	480.69	0.40
1	7315	10-YR EC	13230.00	1002.03	1011.11	1007.70	1011.57	0.004943	5.47	2420.12	559.78	0.41
1	7315	25-YR EC	18610.00	1002.03	1012.55	1008.80	1013.12	0.004718	6.04	3107.16	775.96	0.41
1	7315	50-YR EC	23210.00	1002.03	1013.38	1009.62	1013.99	0.004524	6.40	4303.90	928.22	0.41
1	7315	100-YR EC	27350.00	1002.03	1014.15	1010.31	1014.81	0.004362	6.70	5047.63	985.03	0.41
1	7315	500-YR EC	43940.00	1002.03	1016.55	1012.47	1017.39	0.004253	7.83	7611.75	1188.06	0.42
1	7315	25-YRFC	21810.00	1002.03	1013.15	1009.39	1013.73	0.004477	6.23	4092.79	881.54	0.41
1	7315	100-YR FC	30800.00	1002.03	1014.71	1010.86	1015.41	0.004314	6.96	5613.01	1030.41	0.41
1	7315	25-YR 5-10 YR	19670.00	1002.03	1012.80	1009.00	1013.39	0.004664	6.15	3237.15	808.28	0.41
1	7315	100-YR 5-10 YR	28380.00	1002.03	1014.32	1010.48	1014.99	0.004343	6.78	5217.18	997.07	0.41
1	7059	2-YR EC	7240.00	999.01	1007.46	1004.98	1007.83	0.004850	4.93	1468.46	326.42	0.39
1	7059	5 -YR EC	10720.00	999.01	1008.87	1005.82	1009.36	0.005014	5.62	1907.79	425.33	0.41
1	7059	10-YR EC	13230.00	999.01	1009.67	1006.39	1010.24	0.005401	6.08	2178.66	552.08	0.43
1	7059	25-YR EC	18610.00	999.01	1011.09	1007.51	1011.82	0.005283	6.91	2813.75	759.54	0.44
1	7059	50-YR EC	23210.00	999.01	1012.03	1008.32	1012.77	0.004886	7.18	4058.98	820.20	0.43
1	7059	100-YR EC	27350.00	999.01	1012.77	1009.10	1013.60	0.004952	7.64	4704.96	911.38	0.44
1	7059	500-YR EC	43940.00	999.01	1015.02	1011.55	1016.14	0.005350	9.18	6941.19	1215.13	0.48
1	7059	25-YRFC	21810.00	999.01	1011.84	1008.07	1012.54	0.004711	6.94	3905.91	802.72	0.42
1	7059	100-YR FC	30800.00	999.01	1013.32	1009.70	1014.20	0.004977	7.96	5217.20	972.94	0.45
1	7059	25-YR 5-10 YR	19670.00	999.01	1011.34	1007.70	1012.10	0.005275	7.05	2942.84	771.63	0.44
1	7059	100-YR 5-10 YR	28380.00	999.01	1012.93	1009.27	1013.78	0.004972	7.75	4855.91	920.74	0.44
1	6889	2-YR EC	7240.00	998.02	1006.73	1004.09	1007.07	0.004125	4.67	1551.39	322.98	0.37
1	6889	5 -YR EC	10720.00	998.02	1008.10	1004.90	1008.55	0.004506	5.35	2017.47	458.35	0.39
1	6889	10-YR EC	13230.00	998.02	1008.86	1005.45	1009.39	0.004535	5.83	2324.81	523.49	0.40
1	6889	25-YR EC	18610.00	998.02	1010.30	1006.51	1010.98	0.004548	6.65	2996.59	751.89	0.41
1	6889	50-YR EC	23210.00	998.02	1011.26	1007.41	1011.98	0.004352	7.02	4167.50	855.73	0.41
1	6889	100-YR EC	27350.00	998.02	1011.97	1008.13	1012.78	0.004531	7.54	4811.68	946.61	0.43
1	6889	500-YR EC	43940.00	998.02	1014.08	1010.49	1015.22	0.005264	9.26	7018.12	1265.77	0.48
1	6889	25-YRFC	21810.00	998.02	1010.95	1007.14	1011.73	0.004754	7.16	3328.49	798.36	0.43
1	6889	100-YR FC	30800.00	998.02	1012.49	1008.66	1013.38	0.004666	7.92	5321.45	1005.41	0.44
1	6889	25-YR 5-10 YR	19670.00	998.02	1010.55	1006.71	1011.25	0.004568	6.81	3121.48	765.66	0.42

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	6889	100-YR 5-10 YR	28380.00	998.02	1012.13	1008.29	1012.96	0.004569	7.65	4962.43	960.92	0.43
1	6573	2-YR EC	7240.00	998.14	1005.42	1002.91	1005.73	0.004265	4.44	1630.96	356.10	0.37
1	6573	5-YR EC	10720.00	998.14	1006.73	1003.80	1007.12	0.004385	5.06	2120.65	478.43	0.38
1	6573	10-YR EC	13230.00	998.14	1007.52	1004.28	1007.98	0.004236	5.43	2459.42	608.48	0.38
1	6573	25-YR EC	18610.00	998.14	1009.03	1005.22	1009.60	0.003964	6.07	3235.64	823.60	0.39
1	6573	50-YR EC	23210.00	998.14	1009.93	1005.99	1010.61	0.004182	6.70	3759.61	1097.69	0.40
1	6573	100-YR EC	27350.00	998.14	1010.81	1006.63	1011.44	0.003655	6.68	5468.38	1507.07	0.38
1	6573	500-YR EC	43940.00	998.14	1013.12	1008.82	1013.78	0.003271	7.31	9565.42	1799.17	0.38
1	6573	25-YRFC	21810.00	998.14	1009.62	1005.77	1010.27	0.004212	6.56	3568.16	935.26	0.40
1	6573	100-YR FC	30800.00	998.14	1011.40	1007.09	1012.03	0.003462	6.77	6634.39	1636.89	0.38
1	6573	25-YR 5-10 YR	19670.00	998.14	1009.28	1005.40	1009.87	0.003969	6.20	3374.28	858.51	0.39
1	6573	100-YR 5-10 YR	28380.00	998.14	1011.02	1006.77	1011.63	0.003510	6.64	6009.42	1557.70	0.38
1	6315	2-YR EC	7240.00	997.51	1004.27	1001.94	1004.58	0.004664	4.47	1619.96	391.82	0.38
1	6315	5-YR EC	10720.00	997.51	1005.62	1002.73	1006.01	0.004238	5.03	2131.01	460.97	0.38
1	6315	10-YR EC	13230.00	997.51	1006.46	1003.27	1006.91	0.004075	5.39	2455.45	508.23	0.38
1	6315	25-YR EC	18610.00	997.51	1008.03	1004.20	1008.60	0.003812	6.04	3184.33	809.84	0.38
1	6315	50-YR EC	23210.00	997.51	1008.99	1004.87	1009.59	0.003658	6.39	4504.14	1005.35	0.38
1	6315	100-YR EC	27350.00	997.51	1009.95	1005.47	1010.55	0.003322	6.52	5765.44	1604.27	0.37
1	6315	500-YR EC	43940.00	997.51	1012.38	1007.56	1012.99	0.002902	7.06	10012.37	1834.48	0.36
1	6315	25-YRFC	21810.00	997.51	1008.64	1004.68	1009.23	0.003776	6.32	4169.13	927.28	0.38
1	6315	100-YR FC	30800.00	997.51	1010.59	1005.92	1011.19	0.003152	6.62	6835.13	1709.15	0.36
1	6315	25-YR 5-10 YR	19670.00	997.51	1008.27	1004.35	1008.86	0.003839	6.19	3314.45	864.78	0.38
1	6315	100-YR 5-10 YR	28380.00	997.51	1010.18	1005.60	1010.77	0.003223	6.52	6142.26	1662.39	0.36
1	6032	2-YR EC	7300.00	993.22	1002.70	1000.51	1003.15	0.006311	5.39	1354.38	344.56	0.44
1	6032	5-YR EC	10830.00	993.22	1004.08	1001.50	1004.65	0.006243	6.06	1788.51	411.70	0.46
1	6032	10-YR EC	13420.00	993.22	1004.96	1002.07	1005.61	0.005899	6.45	2085.35	484.23	0.45
1	6032	25-YR EC	18590.00	993.22	1006.69	1003.16	1007.44	0.004975	6.97	2748.16	722.26	0.43
1	6032	50-YR EC	23510.00	993.22	1007.73	1004.05	1008.49	0.004575	7.25	4167.25	836.74	0.42
1	6032	100-YR EC	27730.00	993.22	1008.82	1004.72	1009.56	0.004027	7.33	5163.57	1168.49	0.41
1	6032	500-YR EC	44630.00	993.22	1011.27	1007.19	1012.09	0.003769	8.20	9139.05	1849.23	0.41
1	6032	25-YRFC	21880.00	993.22	1007.37	1003.75	1008.11	0.004663	7.12	3867.79	817.86	0.43
1	6032	100-YR FC	31050.00	993.22	1009.54	1005.21	1010.27	0.003696	7.36	6229.00	1470.46	0.39
1	6032	25-YR 5-10 YR	19670.00	993.22	1006.89	1003.36	1007.68	0.005127	7.19	2830.51	755.63	0.44
1	6032	100-YR 5-10 YR	28730.00	993.22	1009.11	1004.87	1009.83	0.003800	7.26	5608.72	1379.02	0.40
1	5767	2-YR EC	7300.00	991.95	1001.60	999.22	1001.88	0.004283	4.28	1704.73	416.83	0.36
1	5767	5-YR EC	10830.00	991.95	1003.21	1000.07	1003.54	0.003293	4.62	2352.07	449.59	0.33
1	5767	10-YR EC	13420.00	991.95	1004.18	1000.53	1004.56	0.003021	4.90	2765.63	488.12	0.33
1	5767	25-YR EC	18590.00	991.95	1006.11	1001.36	1006.53	0.002502	5.25	3646.36	730.97	0.31
1	5767	50-YR EC	23510.00	991.95	1007.03	1002.08	1007.58	0.002838	5.98	4117.27	891.12	0.34
1	5767	100-YR EC	27730.00	991.95	1008.31	1002.63	1008.78	0.002202	5.64	6230.49	1371.79	0.30
1	5767	500-YR EC	44630.00	991.95	1010.78	1004.70	1011.32	0.002199	6.47	10419.75	1890.27	0.31
1	5767	25-YRFC	21880.00	991.95	1006.69	1001.85	1007.20	0.002783	5.78	3935.41	816.87	0.33
1	5767	100-YR FC	31050.00	991.95	1009.07	1003.08	1009.53	0.002075	5.73	7362.85	1626.21	0.30
1	5767	25-YR 5-10 YR	19670.00	991.95	1006.28	1001.53	1006.74	0.002619	5.45	3732.12	751.15	0.32
1	5767	100-YR 5-10 YR	28730.00	991.95	1008.63	1002.77	1009.08	0.002094	5.61	6679.81	1478.14	0.30
1	5628	2-YR EC	7300.00	991.23	1001.23	997.18	1001.45	0.002176	3.75	1945.21	369.97	0.27
1	5628	5-YR EC	10830.00	991.23	1002.88	998.12	1003.17	0.002108	4.35	2488.09	423.42	0.28
1	5628	10-YR EC	13420.00	991.23	1003.85	998.71	1004.21	0.002157	4.78	2810.35	566.75	0.29
1	5628	25-YR EC	18590.00	991.23	1005.76	999.90	1006.22	0.002108	5.40	3440.65	960.74	0.29
1	5628	50-YR EC	23510.00	991.23	1006.57	1000.74	1007.19	0.002634	6.35	3705.14	1179.91	0.33
1	5628	100-YR EC	27730.00	991.23	1008.10	1001.38	1008.48	0.001654	5.28	7758.10	1790.23	0.27
1	5628	500-YR EC	44630.00	991.23	1010.59	1003.63	1011.00	0.001618	5.92	12739.14	2125.66	0.27
1	5628	25-YRFC	21880.00	991.23	1006.25	1000.48	1006.83	0.002506	6.07	3602.54	1064.03	0.32
1	5628	100-YR FC	31050.00	991.23	1008.88	1001.84	1009.24	0.001532	5.30	9227.45	1965.27	0.26
1	5628	25-YR 5-10 YR	19670.00	991.23	1005.91	1000.14	1006.40	0.002254	5.64	3488.46	985.76	0.31
1	5628	100-YR 5-10 YR	28730.00	991.23	1008.43	1001.52	1008.79	0.001552	5.21	8373.08	1870.41	0.26
1	5576	Bridge										
1	5533	2-YR EC	7300.00	991.34	1000.52	997.01	1000.81	0.002916	4.37	1670.64	281.00	0.32
1	5533	5-YR EC	10830.00	991.34	1002.07	997.94	1002.47	0.003049	5.11	2122.18	458.01	0.33
1	5533	10-YR EC	13420.00	991.34	1002.96	998.57	1003.45	0.003175	5.63	2392.27	724.94	0.35
1	5533	25-YR EC	18590.00	991.34	1004.36	999.64	1005.04	0.003567	6.64	2834.57	815.87	0.38
1	5533	50-YR EC	23510.00	991.34	1005.02	1000.60	1005.96	0.004558	7.84	3041.58	873.38	0.43
1	5533	100-YR EC	27730.00	991.34	1005.67	1001.36	1006.83	0.005134	8.67	3248.72	1014.65	0.46
1	5533	500-YR EC	44630.00	991.34	1008.03	1003.91	1008.84	0.003631	8.31	8165.70	1799.12	0.40
1	5533	25-YRFC	21880.00	991.34	1004.72	1000.29	1005.59	0.004367	7.52	2946.85	836.15	0.42
1	5533	100-YR FC	31050.00	991.34	1006.31	1001.87	1007.03	0.003524	7.46	5670.24	1151.57	0.39
1	5533	25-YR 5-10 YR	19670.00	991.34	1004.34	999.86	1005.10	0.004034	7.04	2825.68	814.31	0.40
1	5533	100-YR 5-10 YR	28730.00	991.34	1005.96	1001.52	1006.64	0.003425	7.21	5279.10	1088.17	0.38
1	5279	2-YR EC	7300.00	990.80	999.40	996.74	999.83	0.005301	5.26	1386.60	275.86	0.41
1	5279	5-YR EC	10830.00	990.80	1000.93	997.80	1001.47	0.005130	5.92	1832.03	408.91	0.42
1	5279	10-YR EC	13420.00	990.80	1001.81	998.46	1002.44	0.005007	6.39	2131.24	555.45	0.43
1	5279	25-YR EC	18590.00	990.80	1003.08	999.60	1003.92	0.005425	7.43	2624.31	842.33	0.46
1	5279	50-YR EC	23510.00	990.80	1003.91	1000.55	1004.72	0.005045	7.64	3937.70	977.24	0.45

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	5279	100-YR EC	27730.00	990.80	1004.58	1001.32	1005.43	0.005013	7.98	4632.74	1099.62	0.45
1	5279	500-YR EC	44630.00	990.80	1007.12	1004.41	1007.90	0.003969	8.28	8023.42	1910.46	0.42
1	5279	25-YRFC	21880.00	990.80	1003.60	1000.26	1004.39	0.005117	7.52	3636.12	933.58	0.45
1	5279	100-YR FC	31050.00	990.80	1005.17	1001.90	1006.01	0.004745	8.08	5306.67	1235.64	0.44
1	5279	25-YR 5-10 YR	19670.00	990.80	1003.25	999.83	1004.00	0.004944	7.19	3326.17	883.24	0.44
1	5279	100-YR 5-10 YR	28730.00	990.80	1004.75	1001.49	1005.60	0.004930	8.01	4824.60	1114.36	0.45
1	5003	2-YR EC	7300.00	988.90	997.86	994.93	998.27	0.005970	5.15	1417.17	332.35	0.43
1	5003	5-YR EC	10830.00	988.90	999.51	996.02	999.95	0.005693	5.35	2025.72	507.96	0.43
1	5003	10-YR EC	13420.00	988.90	1000.55	996.78	1001.00	0.005039	5.39	2493.25	623.04	0.41
1	5003	25-YR EC	18590.00	988.90	1001.93	998.22	1002.47	0.004477	5.91	3206.43	885.42	0.40
1	5003	50-YR EC	23510.00	988.90	1002.93	999.26	1003.44	0.003755	5.94	4737.42	1150.68	0.38
1	5003	100-YR EC	27730.00	988.90	1003.65	999.95	1004.17	0.003591	6.16	5589.66	1243.31	0.37
1	5003	500-YR EC	44630.00	988.90	1006.47	1001.85	1006.95	0.002553	6.29	9984.11	2025.84	0.33
1	5003	25-YRFC	21880.00	988.90	1002.55	998.90	1003.06	0.004032	5.95	4305.59	1100.91	0.39
1	5003	100-YR FC	31050.00	988.90	1004.36	1000.37	1004.85	0.003160	6.09	6498.41	1326.76	0.35
1	5003	25-YR 5-10 YR	19670.00	988.90	1002.02	998.49	1002.61	0.004804	6.18	3256.42	928.39	0.42
1	5003	100-YR 5-10 YR	28730.00	988.90	1003.86	1000.08	1004.38	0.003449	6.13	5854.75	1266.93	0.37
1	4896	2-YR EC	7300.00	988.77	997.12	994.32	997.59	0.006529	5.52	1322.39	308.23	0.45
1	4896	5-YR EC	10830.00	988.77	998.78	995.45	999.30	0.006261	5.82	1859.56	458.40	0.45
1	4896	10-YR EC	13420.00	988.77	999.89	996.19	1000.42	0.005615	5.84	2299.14	589.31	0.43
1	4896	25-YR EC	18590.00	988.77	1001.35	997.70	1001.97	0.004871	6.35	3068.40	930.50	0.42
1	4896	50-YR EC	23510.00	988.77	1002.55	998.70	1003.04	0.003557	6.02	4871.78	1244.47	0.37
1	4896	100-YR EC	27730.00	988.77	1003.28	999.46	1003.80	0.003397	6.23	5946.64	1610.71	0.37
1	4896	500-YR EC	44630.00	988.77	1006.33	1001.95	1006.67	0.001907	5.67	12131.36	2350.64	0.29
1	4896	25-YRFC	21880.00	988.77	1002.12	998.38	1002.64	0.003915	6.09	4382.32	1071.98	0.38
1	4896	100-YR FC	31050.00	988.77	1004.07	999.95	1004.52	0.002814	5.99	7305.57	1825.28	0.34
1	4896	25-YR 5-10 YR	19670.00	988.77	1001.58	997.93	1002.10	0.004211	6.03	3833.04	974.98	0.39
1	4896	100-YR 5-10 YR	28730.00	988.77	1003.52	999.62	1004.01	0.003187	6.14	6343.81	1699.92	0.36
1	4546	2-YR EC	7300.00	986.90	995.18	992.62	995.57	0.005034	5.04	1447.78	323.74	0.40
1	4546	5-YR EC	10830.00	986.90	996.99	993.56	997.44	0.004494	5.37	2018.27	407.78	0.39
1	4546	10-YR EC	13420.00	986.90	998.25	994.17	998.70	0.004262	5.37	2499.72	540.45	0.38
1	4546	25-YR EC	18590.00	986.90	1000.30	995.25	1000.68	0.002652	5.14	4181.13	878.54	0.32
1	4546	50-YR EC	23510.00	986.90	1001.70	996.18	1002.08	0.002222	5.23	5469.82	991.77	0.30
1	4546	100-YR EC	27730.00	986.90	1002.45	997.00	1002.86	0.002251	5.53	6257.61	1363.54	0.30
1	4546	500-YR EC	44630.00	986.90	1005.85	999.68	1006.15	0.001341	5.17	13702.12	2614.89	0.25
1	4546	25-YRFC	21880.00	986.90	1001.20	995.88	1001.58	0.002394	5.23	4990.58	927.54	0.31
1	4546	100-YR FC	31050.00	986.90	1003.33	997.68	1003.73	0.001996	5.51	7404.15	2012.41	0.29
1	4546	25-YR 5-10 YR	19670.00	986.90	1000.57	995.47	1000.96	0.002612	5.21	4416.74	899.65	0.32
1	4546	100-YR 5-10 YR	28730.00	986.90	1002.73	997.23	1003.13	0.002150	5.51	6596.77	1606.91	0.30
1	4365	2-YR EC	7300.00	982.96	994.31	990.80	994.67	0.004831	4.85	1503.74	372.02	0.39
1	4365	5-YR EC	10830.00	982.96	996.28	992.26	996.66	0.003934	4.98	2173.11	466.84	0.36
1	4365	10-YR EC	13420.00	982.96	997.61	993.14	998.00	0.003360	5.00	2686.02	533.13	0.34
1	4365	25-YR EC	18590.00	982.96	999.83	994.28	1000.23	0.002424	5.09	3784.12	804.31	0.30
1	4365	50-YR EC	23510.00	982.96	1001.42	995.20	1001.73	0.001676	4.74	6008.14	959.76	0.26
1	4365	100-YR EC	27730.00	982.96	1002.16	995.91	1002.50	0.001751	5.07	6737.12	1045.22	0.27
1	4365	500-YR EC	44630.00	982.96	1005.53	998.30	1005.90	0.001438	5.49	11265.99	1679.08	0.26
1	4365	25-YRFC	21880.00	982.96	1000.89	994.92	1001.20	0.001776	4.71	5520.28	895.40	0.27
1	4365	100-YR FC	31050.00	982.96	1003.07	996.45	1003.41	0.001594	5.10	7751.83	1175.66	0.26
1	4365	25-YR 5-10 YR	19670.00	982.96	1000.08	994.49	1000.50	0.002453	5.22	3926.73	831.90	0.31
1	4365	100-YR 5-10 YR	28730.00	982.96	1002.44	996.12	1002.79	0.001704	5.09	7043.50	1090.02	0.27
1	4103	2-YR EC	7300.00	981.40	993.18	988.93	993.49	0.004104	4.49	1624.06	393.45	0.36
1	4103	5-YR EC	10830.00	981.40	995.47	990.20	995.77	0.002812	4.40	2461.96	472.81	0.31
1	4103	10-YR EC	13420.00	981.40	996.95	990.99	997.25	0.002291	4.38	3063.47	521.98	0.29
1	4103	25-YR EC	18590.00	981.40	999.36	992.84	999.68	0.001711	4.51	4174.03	659.30	0.26
1	4103	50-YR EC	23510.00	981.40	1001.10	993.78	1001.37	0.001271	4.35	6253.13	877.44	0.23
1	4103	100-YR EC	27730.00	981.40	1001.81	994.41	1002.13	0.001378	4.72	6947.33	1096.45	0.24
1	4103	500-YR EC	44630.00	981.40	1005.28	996.68	1005.60	0.001147	5.11	12166.25	1815.48	0.23
1	4103	25-YRFC	21880.00	981.40	1000.55	993.51	1000.82	0.001339	4.32	5791.54	815.37	0.23
1	4103	100-YR FC	31050.00	981.40	1002.76	994.90	1003.07	0.001272	4.77	8129.87	1354.49	0.23
1	4103	25-YR 5-10 YR	19670.00	981.40	999.73	993.05	999.99	0.001415	4.21	5144.72	730.00	0.24
1	4103	100-YR 5-10 YR	28730.00	981.40	1002.11	994.56	1002.42	0.001356	4.76	7284.63	1220.08	0.24
1	3785	2-YR EC	7300.00	977.71	990.65	987.50	991.77	0.006673	8.47	861.44	109.75	0.53
1	3785	5-YR EC	10830.00	977.71	992.82	989.36	994.29	0.007304	9.72	1114.42	168.60	0.57
1	3785	10-YR EC	13420.00	977.71	994.24	990.53	995.90	0.007470	10.35	1296.20	192.75	0.58
1	3785	25-YR EC	18590.00	977.71	996.39	992.67	998.49	0.007717	11.64	1610.45	290.88	0.61
1	3785	50-YR EC	23510.00	977.71	997.88	994.41	1000.35	0.007853	12.75	2028.22	446.10	0.63
1	3785	100-YR EC	27730.00	977.71	999.72	995.74	1001.31	0.004909	11.03	3461.77	601.00	0.51
1	3785	500-YR EC	44630.00	977.71	1003.81	999.90	1005.00	0.003355	10.74	8125.42	1645.08	0.44
1	3785	25-YRFC	21880.00	977.71	997.40	993.87	999.78	0.007865	12.45	1880.16	415.27	0.62
1	3785	100-YR FC	31050.00	977.71	1000.55	997.73	1002.27	0.005039	11.59	4066.03	803.36	0.52
1	3785	25-YR 5-10 YR	19670.00	977.71	996.72	993.09	998.93	0.007819	11.95	1689.59	374.56	0.62
1	3785	100-YR 5-10 YR	28730.00	977.71	1000.00	996.01	1001.61	0.004884	11.14	3648.85	707.52	0.51
1	3588	2-YR EC	7300.00	977.31	990.63		990.89	0.001825	4.09	1785.60	265.20	0.28
1	3588	5-YR EC	10830.00	977.31	993.07		993.37	0.001548	4.40	2463.22	289.52	0.27

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	3588	10-YR EC	13420.00	977.31	994.60		994.93	0.001544	4.59	2928.88	333.58	0.27
1	3588	25-YR EC	18590.00	977.31	997.09		997.46	0.001295	4.93	3938.25	478.35	0.26
1	3588	50-YR EC	23510.00	977.31	998.81		999.24	0.001257	5.33	4784.08	535.64	0.26
1	3588	100-YR EC	27730.00	977.31	1000.07		1000.55	0.001251	5.65	5507.68	615.58	0.26
1	3588	500-YR EC	44630.00	977.31	1003.90		1004.47	0.001211	6.50	9711.64	1537.45	0.27
1	3588	25-YRFC	21880.00	977.31	998.28		998.69	0.001256	5.19	4515.26	489.32	0.26
1	3588	100-YR FC	31050.00	977.31	1000.97		1001.48	0.001255	5.89	6107.56	752.77	0.26
1	3588	25-YR 5-10 YR	19670.00	977.31	997.49		997.88	0.001280	5.02	4133.31	482.05	0.26
1	3588	100-YR 5-10 YR	28730.00	977.31	1000.36		1000.85	0.001245	5.71	5692.25	642.18	0.26
1	3236	2-YR EC	7300.00	970.75	989.10		989.91	0.004083	7.24	1007.88	107.59	0.42
1	3236	5-YR EC	10830.00	970.75	991.19		992.35	0.005552	8.64	1253.78	130.47	0.49
1	3236	10-YR EC	13420.00	970.75	992.49		993.85	0.006310	9.35	1435.82	150.31	0.53
1	3236	25-YR EC	18590.00	970.75	994.81		996.49	0.005896	10.42	1837.48	226.33	0.53
1	3236	50-YR EC	23510.00	970.75	996.19		998.24	0.006340	11.61	2181.37	270.11	0.56
1	3236	100-YR EC	27730.00	970.75	997.14		999.52	0.006818	12.60	2477.57	358.47	0.58
1	3236	500-YR EC	44630.00	970.75	1000.52	998.55	1003.46	0.007015	14.71	4047.62	610.52	0.61
1	3236	25-YRFC	21880.00	970.75	995.78		997.71	0.006170	11.22	2073.80	254.81	0.55
1	3236	100-YR FC	31050.00	970.75	997.90	993.95	1000.44	0.006928	13.14	2762.55	396.86	0.59
1	3236	25-YR 5-10 YR	19670.00	970.75	995.13		996.90	0.006010	10.71	1912.17	241.44	0.54
1	3236	100-YR 5-10 YR	28730.00	970.75	997.38		999.82	0.006870	12.79	2564.38	368.31	0.59
1	3000	2-YR EC	7300.00	975.44	988.10		988.84	0.004889	6.89	1058.75	147.83	0.45
1	3000	5-YR EC	10830.00	975.44	990.02		990.99	0.005471	7.94	1364.36	167.86	0.49
1	3000	10-YR EC	13420.00	975.44	991.25		992.37	0.005652	8.50	1578.00	179.31	0.51
1	3000	25-YR EC	18590.00	975.44	993.68		994.92	0.006286	8.92	2084.16	244.68	0.53
1	3000	50-YR EC	23510.00	975.44	995.18		996.62	0.005905	9.62	2460.70	258.28	0.53
1	3000	100-YR EC	27730.00	975.44	996.13		997.79	0.006084	10.36	2709.47	266.43	0.55
1	3000	500-YR EC	44630.00	975.44	999.15		1001.70	0.006888	12.93	3727.51	482.86	0.61
1	3000	25-YRFC	21880.00	975.44	994.76		996.11	0.005895	9.34	2352.66	253.96	0.53
1	3000	100-YR FC	31050.00	975.44	996.86		998.69	0.006145	10.86	2907.19	273.57	0.56
1	3000	25-YR 5-10 YR	19670.00	975.44	994.05		995.32	0.006142	9.06	2173.37	248.21	0.53
1	3000	100-YR 5-10 YR	28730.00	975.44	996.37		998.07	0.006081	10.50	2772.85	268.64	0.55
1	2764	2-YR EC	7240.00	975.79	986.88		987.60	0.005630	6.80	1064.17	170.52	0.48
1	2764	5-YR EC	10720.00	975.79	988.75		989.65	0.005728	7.65	1401.44	190.77	0.50
1	2764	10-YR EC	13310.00	975.79	990.00		991.01	0.005626	8.07	1649.64	204.46	0.50
1	2764	25-YR EC	18420.00	975.79	992.34		993.43	0.005976	8.40	2192.94	268.44	0.52
1	2764	50-YR EC	23340.00	975.79	994.04		995.23	0.005251	8.76	2670.32	290.47	0.50
1	2764	100-YR EC	27510.00	975.79	995.00		996.37	0.005290	9.37	2954.51	299.67	0.51
1	2764	500-YR EC	43480.00	975.79	998.28		1000.09	0.005047	10.97	4490.24	718.83	0.52
1	2764	25-YRFC	21720.00	975.79	993.59		994.73	0.005341	8.56	2540.63	285.66	0.50
1	2764	100-YR FC	30710.00	975.79	995.79		997.25	0.005180	9.73	3192.34	309.59	0.51
1	2764	25-YR 5-10 YR	19490.00	975.79	992.75		993.86	0.005866	8.46	2303.82	275.17	0.52
1	2764	100-YR 5-10 YR	28500.00	975.79	995.26		996.65	0.005239	9.48	3031.17	302.00	0.51
1	2500	2-YR EC	7240.00	976.55	985.66		986.21	0.004582	5.95	1217.31	204.65	0.43
1	2500	5-YR EC	10720.00	976.55	987.63		988.30	0.004186	6.55	1636.93	222.36	0.43
1	2500	10-YR EC	13310.00	976.55	988.97		989.70	0.003904	6.85	1943.51	234.15	0.42
1	2500	25-YR EC	18420.00	976.55	991.24		992.07	0.004046	7.31	2518.80	282.60	0.43
1	2500	50-YR EC	23340.00	976.55	993.05		993.95	0.003925	7.60	3072.57	329.27	0.43
1	2500	100-YR EC	27510.00	976.55	994.04		995.07	0.003924	8.12	3423.40	378.25	0.44
1	2500	500-YR EC	43480.00	976.55	997.47		998.82	0.003683	9.47	4977.67	563.12	0.44
1	2500	25-YRFC	21720.00	976.55	992.56		993.42	0.004051	7.46	2911.85	319.04	0.43
1	2500	100-YR FC	30710.00	976.55	994.90		995.98	0.003757	8.36	3763.31	420.01	0.43
1	2500	25-YR 5-10 YR	19490.00	976.55	991.66		992.51	0.004004	7.38	2640.67	289.97	0.43
1	2500	100-YR 5-10 YR	28500.00	976.55	994.33		995.36	0.003853	8.18	3531.86	393.32	0.44
1	2263	2-YR EC	7240.00	975.70	984.50		985.11	0.004598	6.30	1149.24	176.30	0.43
1	2263	5-YR EC	10720.00	975.70	986.48		987.26	0.004461	7.10	1509.58	188.75	0.44
1	2263	10-YR EC	13310.00	975.70	987.83		988.70	0.004363	7.50	1774.06	200.84	0.44
1	2263	25-YR EC	18420.00	975.70	989.96		991.02	0.004637	8.27	2228.29	228.46	0.47
1	2263	50-YR EC	23340.00	975.70	991.71		992.91	0.004607	8.81	2652.84	259.58	0.47
1	2263	100-YR EC	27510.00	975.70	992.54		993.98	0.004984	9.63	2879.18	282.93	0.50
1	2263	500-YR EC	43480.00	975.70	995.48		997.67	0.005694	11.96	3856.67	394.65	0.55
1	2263	25-YRFC	21720.00	975.70	991.22		992.37	0.004659	8.59	2528.68	249.33	0.47
1	2263	100-YR FC	30710.00	975.70	993.36		994.91	0.004930	10.02	3118.43	309.97	0.50
1	2263	25-YR 5-10 YR	19490.00	975.70	990.37		991.46	0.004652	8.39	2323.65	233.65	0.47
1	2263	100-YR 5-10 YR	28500.00	975.70	992.82		994.29	0.004933	9.74	2959.37	288.47	0.50
1	1999	2-YR EC	7240.00	974.08	983.10	980.36	983.78	0.005476	6.65	1088.27	247.07	0.47
1	1999	5-YR EC	10720.00	974.08	985.23	981.62	986.03	0.004832	7.21	1487.34	291.35	0.46
1	1999	10-YR EC	13310.00	974.08	986.68	982.45	987.55	0.004401	7.50	1774.95	312.59	0.45
1	1999	25-YR EC	18420.00	974.08	988.76	984.02	989.83	0.004365	8.30	2218.57	363.75	0.47
1	1999	50-YR EC	23340.00	974.08	990.57	985.23	991.77	0.004051	8.80	2653.96	492.73	0.48
1	1999	100-YR EC	27510.00	974.08	991.23	986.16	992.70	0.004682	9.75	2839.65	560.77	0.52
1	1999	500-YR EC	43480.00	974.08	995.70	989.58	996.40	0.001968	7.61	7433.86	895.14	0.34
1	1999	25-YRFC	21720.00	974.08	990.07	984.84	991.22	0.004048	8.59	2527.39	450.27	0.47
1	1999	100-YR FC	30710.00	974.08	992.08	986.89	993.65	0.004639	10.08	3108.26	624.56	0.51
1	1999	25-YR 5-10 YR	19490.00	974.08	989.19	984.28	990.29	0.004262	8.41	2316.13	380.28	0.47
1	1999	100-YR 5-10 YR	28500.00	974.08	991.53	986.40	993.03	0.004623	9.82	2930.56	579.05	0.51

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	1765	2-YR EC	7240.00	971.97	981.83	979.07	982.53	0.005233	6.71	1078.32	253.03	0.46
1	1765	5-YR EC	10720.00	971.97	984.10	980.31	984.93	0.004623	7.30	1468.94	283.97	0.45
1	1765	10-YR EC	13310.00	971.97	985.64	981.15	986.53	0.004274	7.58	1755.13	305.30	0.44
1	1765	25-YR EC	18420.00	971.97	987.59	982.64	988.72	0.005165	8.53	2159.40	346.06	0.48
1	1765	50-YR EC	23340.00	971.97	989.37	984.00	990.65	0.005719	9.07	2575.74	407.43	0.49
1	1765	100-YR EC	27510.00	971.97	990.91	985.02	991.61	0.003126	7.34	4560.81	533.82	0.37
1	1765	500-YR EC	43480.00	971.97	995.30	988.69	995.95	0.002088	7.38	7607.88	783.93	0.32
1	1765	25-YRFC	21720.00	971.97	988.89	983.56	990.10	0.005636	8.84	2456.02	381.97	0.49
1	1765	100-YR FC	30710.00	971.97	991.88	985.80	992.58	0.002868	7.40	5135.66	685.03	0.36
1	1765	25-YR 5-10 YR	19490.00	971.97	988.02	982.95	989.18	0.005205	8.64	2255.93	355.28	0.48
1	1765	100-YR 5-10 YR	28500.00	971.97	991.26	985.25	991.96	0.002997	7.33	4750.67	550.84	0.37
1	1508	2-YR EC	7240.00	969.85	979.82	976.93	980.87	0.007772	8.20	882.49	174.90	0.52
1	1508	5-YR EC	10720.00	969.85	981.96	978.55	983.34	0.007897	9.43	1136.67	201.24	0.54
1	1508	10-YR EC	13310.00	969.85	983.41	979.65	985.00	0.007921	10.11	1316.49	250.28	0.55
1	1508	25-YR EC	18420.00	969.85	986.97	981.52	987.52	0.003049	6.49	3138.94	371.77	0.35
1	1508	50-YR EC	23340.00	969.85	988.79	983.15	989.38	0.003028	6.60	3884.28	434.08	0.35
1	1508	100-YR EC	27510.00	969.85	990.22	984.55	990.82	0.002679	6.72	4517.43	457.74	0.33
1	1508	500-YR EC	43480.00	969.85	994.74	986.69	995.40	0.002067	7.24	6902.52	607.44	0.31
1	1508	25-YRFC	21720.00	969.85	988.27	982.64	988.84	0.003096	6.47	3659.72	426.53	0.35
1	1508	100-YR FC	30710.00	969.85	991.23	985.72	991.84	0.002492	6.83	5010.18	495.77	0.33
1	1508	25-YR 5-10 YR	19490.00	969.85	987.42	981.90	987.98	0.003062	6.46	3311.25	389.00	0.35
1	1508	100-YR 5-10 YR	28500.00	969.85	990.60	984.91	991.19	0.002578	6.73	4697.90	484.68	0.33
1	1225	2-YR EC	7290.00	966.75	977.22	974.91	978.39	0.009813	8.71	836.68	121.87	0.59
1	1225	5-YR EC	10860.00	966.75	979.50	976.53	980.95	0.009054	9.64	1126.90	132.09	0.58
1	1225	10-YR EC	13540.00	966.75	981.10	977.65	982.67	0.008513	10.08	1343.49	140.20	0.57
1	1225	25-YR EC	18780.00	966.75	984.81	979.54	986.07	0.010313	8.99	2087.98	299.40	0.60
1	1225	50-YR EC	23690.00	966.75	987.00	981.14	988.09	0.007741	8.39	2822.41	359.46	0.53
1	1225	100-YR EC	27950.00	966.75	988.75	984.06	989.76	0.005769	8.06	3470.77	388.84	0.47
1	1225	500-YR EC	44180.00	966.75	993.71	986.91	994.69	0.003232	8.03	5800.08	536.48	0.38
1	1225	25-YRFC	22110.00	966.75	986.34	980.64	987.47	0.008758	8.55	2587.26	352.34	0.56
1	1225	100-YR FC	31090.00	966.75	989.93	984.73	990.91	0.004760	7.93	3959.21	450.45	0.43
1	1225	25-YR 5-10 YR	19860.00	966.75	985.35	979.89	986.55	0.009759	8.81	2253.03	318.83	0.58
1	1225	100-YR 5-10 YR	28910.00	966.75	989.23	984.29	990.20	0.005217	7.92	3657.54	397.11	0.45
1	888	2-YR EC	7290.00	962.44	973.59	971.45	975.08	0.009679	9.77	745.84	102.17	0.64
1	888	5-YR EC	10860.00	962.44	976.22	973.32	977.95	0.008568	10.55	1029.71	113.86	0.62
1	888	10-YR EC	13540.00	962.44	977.92	974.57	979.79	0.008403	10.98	1233.12	126.13	0.62
1	888	25-YR EC	18780.00	962.44	980.88	976.70	982.90	0.008209	11.41	1646.15	156.09	0.62
1	888	50-YR EC	23690.00	962.44	983.41	978.60	985.44	0.007419	11.44	2070.59	181.03	0.60
1	888	100-YR EC	27950.00	962.44	985.60	980.04	987.54	0.006883	11.18	2500.17	214.40	0.58
1	888	500-YR EC	44180.00	962.44	991.43	984.52	993.34	0.004356	11.21	4152.46	355.63	0.49
1	888	25-YRFC	22110.00	962.44	982.63	978.01	984.66	0.007457	11.44	1932.96	169.56	0.60
1	888	100-YR FC	31090.00	962.44	987.18	981.12	989.01	0.006092	10.86	2869.95	258.54	0.55
1	888	25-YR 5-10 YR	19860.00	962.44	981.45	977.16	983.48	0.008092	11.43	1737.47	162.52	0.62
1	888	100-YR 5-10 YR	28910.00	962.44	986.27	980.44	988.12	0.006725	10.91	2649.04	232.02	0.57
1	645	2-YR EC	7280.00	958.31	972.91	966.90	973.63	0.003043	6.79	1072.26	101.54	0.37
1	645	5-YR EC	10850.00	958.31	975.42	968.89	976.45	0.003597	8.13	1335.38	107.93	0.41
1	645	10-YR EC	13530.00	958.31	977.01	970.21	978.26	0.003929	8.96	1509.45	111.63	0.43
1	645	25-YR EC	18770.00	958.31	979.70	972.53	981.35	0.004462	10.32	1818.11	118.30	0.46
1	645	50-YR EC	23680.00	958.31	981.97	974.40	983.93	0.005141	11.25	2104.80	134.20	0.50
1	645	100-YR EC	27940.00	958.31	983.84	975.87	985.99	0.005841	11.75	2376.99	157.53	0.53
1	645	500-YR EC	44130.00	958.31	989.77	981.03	992.16	0.005062	12.47	3679.76	292.51	0.52
1	645	25-YRFC	22100.00	958.31	981.27	973.82	983.14	0.004989	10.98	2012.55	130.12	0.49
1	645	100-YR FC	31070.00	958.31	985.28	976.89	987.44	0.006597	11.79	2634.89	193.62	0.56
1	645	25-YR 5-10 YR	19840.00	958.31	980.20	972.96	981.94	0.004598	10.56	1878.70	120.80	0.47
1	645	100-YR 5-10 YR	28890.00	958.31	984.35	976.19	986.49	0.006451	11.74	2461.24	177.81	0.56
1	391	2-YR EC	7280.00	958.42	971.79		972.70	0.004335	7.67	949.72	99.93	0.44
1	391	5-YR EC	10850.00	958.42	974.03		975.34	0.005119	9.19	1180.93	105.89	0.48
1	391	10-YR EC	13530.00	958.42	975.44		977.04	0.005632	10.15	1332.62	109.68	0.51
1	391	25-YR EC	18770.00	958.42	977.82		979.95	0.006509	11.71	1603.00	117.58	0.56
1	391	50-YR EC	23680.00	958.42	979.77		982.34	0.007190	12.87	1839.29	125.40	0.59
1	391	100-YR EC	27940.00	958.42	981.30		984.23	0.007620	13.72	2036.76	131.40	0.61
1	391	500-YR EC	44130.00	958.42	986.65		990.39	0.008556	15.52	2859.71	186.53	0.66
1	391	25-YRFC	22100.00	958.42	979.17		981.60	0.006984	12.53	1764.35	122.82	0.58
1	391	100-YR FC	31070.00	958.42	982.36		985.52	0.007847	14.27	2177.15	134.95	0.63
1	391	25-YR 5-10 YR	19840.00	958.42	978.27		980.50	0.006668	11.98	1655.57	119.27	0.57
1	391	100-YR 5-10 YR	28890.00	958.42	981.63		984.63	0.007694	13.89	2079.71	132.51	0.62
1	240	2-YR EC	7280.00	959.46	969.55	968.38	971.48	0.015029	11.16	652.09	100.86	0.77
1	240	5-YR EC	10850.00	959.46	971.52	970.24	973.99	0.015022	12.62	859.77	110.13	0.80
1	240	10-YR EC	13530.00	959.46	972.75	971.46	975.60	0.015006	13.55	998.38	114.38	0.81
1	240	25-YR EC	18770.00	959.46	974.86	973.48	978.38	0.015004	15.06	1246.67	121.00	0.83
1	240	50-YR EC	23680.00	959.46	976.58	975.15	980.67	0.015027	16.24	1458.47	125.61	0.84
1	240	100-YR EC	27940.00	959.46	977.94	976.44	982.49	0.015015	17.12	1632.00	128.97	0.85
1	240	500-YR EC	44130.00	959.46	982.49	980.83	988.48	0.015011	19.65	2245.91	142.03	0.87
1	240	25-YRFC	22100.00	959.46	976.05	974.64	979.96	0.015002	15.87	1392.59	124.25	0.84

HEC-RAS Plan: LC_Various Flows River: Lewis Creek Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	240	100-YR FC	31070.00	959.46	978.88	977.38	983.75	0.015008	17.71	1754.43	131.19	0.85
1	240	25-YR 5-10 YR	19840.00	959.46	975.26	973.86	978.90	0.015004	15.32	1294.72	122.19	0.83
1	240	100-YR 5-10 YR	28890.00	959.46	978.23	976.73	982.88	0.015013	17.30	1669.57	129.67	0.85

APPENDIX B.2

Lewis Creek Tributary 2 Various Flows - Output Summary Table

HEC-RAS Plan: Lewis Creek River: Lewis Trib 2 Reach: 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	9710	2-YR EC	90.00	1096.44	1097.04	1097.04	1097.17	0.088617	2.54	31.31	95.41	0.84
1	9710	5-YR EC	110.00	1096.44	1097.07	1097.07	1097.23	0.099861	2.88	34.48	97.78	0.91
1	9710	10-YR EC	130.00	1096.44	1097.10	1097.10	1097.29	0.106687	3.16	37.82	101.45	0.95
1	9710	25-YR EC	170.00	1096.44	1097.18	1097.18	1097.40	0.103854	3.52	46.00	109.55	0.97
1	9710	50-YR EC	210.00	1096.44	1097.25	1097.25	1097.49	0.096612	3.78	54.82	125.29	0.96
1	9710	100-YR EC	240.00	1096.44	1097.32	1097.32	1097.55	0.086831	3.88	62.77	137.34	0.93
1	9710	500-YR EC	340.00	1096.44	1097.47	1097.47	1097.73	0.082692	4.46	85.51	169.91	0.94
1	9710	25-YR FC	170.00	1096.44	1097.18	1097.18	1097.40	0.103854	3.52	46.00	109.55	0.97
1	9710	100-YR FC	240.00	1096.44	1097.32	1097.32	1097.55	0.086831	3.88	62.77	137.34	0.93
1	9710	25-YR 5-10 YR	170.00	1096.44	1097.18	1097.18	1097.40	0.103854	3.52	46.00	109.55	0.97
1	9710	100-YR 5-10 YR	240.00	1096.44	1097.32	1097.32	1097.55	0.086831	3.88	62.77	137.34	0.93
1	9628	2-YR EC	90.00	1093.46	1095.64	1094.38	1095.68	0.002486	1.56	59.38	232.03	0.20
1	9628	5-YR EC	110.00	1093.46	1096.09	1094.47	1096.09	0.000200	0.39	282.65	259.53	0.05
1	9628	10-YR EC	130.00	1093.46	1096.24	1094.55	1096.25	0.000212	0.43	309.27	271.14	0.06
1	9628	25-YR EC	170.00	1093.46	1096.49	1094.71	1096.50	0.000180	0.41	427.55	288.78	0.05
1	9628	50-YR EC	210.00	1093.46	1096.60	1094.87	1096.60	0.000231	0.48	452.80	294.68	0.06
1	9628	100-YR EC	240.00	1093.46	1096.67	1094.97	1096.67	0.000267	0.52	471.48	298.32	0.06
1	9628	500-YR EC	340.00	1093.46	1096.88	1095.28	1096.89	0.000386	0.67	526.26	314.52	0.08
1	9628	25-YR FC	170.00	1093.46	1096.49	1094.71	1096.50	0.000180	0.41	427.55	288.78	0.05
1	9628	100-YR FC	240.00	1093.46	1096.67	1094.97	1096.67	0.000267	0.52	471.48	298.32	0.06
1	9628	25-YR 5-10 YR	170.00	1093.46	1096.49	1094.71	1096.50	0.000180	0.41	427.55	288.78	0.05
1	9628	100-YR 5-10 YR	240.00	1093.46	1096.67	1094.97	1096.67	0.000267	0.52	471.48	298.32	0.06
1	9578		Mult Open									
1	9544	2-YR EC	90.00	1090.81	1092.34	1091.71	1092.44	0.011502	2.54	35.01	104.25	0.39
1	9544	5-YR EC	110.00	1090.81	1092.51	1091.82	1092.63	0.011512	2.76	39.48	134.41	0.40
1	9544	10-YR EC	130.00	1090.81	1092.68	1091.92	1092.81	0.011433	2.95	43.74	149.80	0.40
1	9544	25-YR EC	170.00	1090.81	1092.93	1092.10	1093.11	0.012126	3.34	50.48	194.55	0.43
1	9544	50-YR EC	210.00	1090.81	1093.19	1092.27	1093.40	0.012248	3.66	57.13	221.24	0.44
1	9544	100-YR EC	240.00	1090.81	1093.31	1092.38	1093.56	0.013356	3.96	60.31	229.43	0.46
1	9544	500-YR EC	340.00	1090.81	1093.74	1092.74	1094.09	0.015209	4.74	71.48	282.78	0.51
1	9544	25-YR FC	170.00	1090.81	1092.93	1092.10	1093.11	0.012126	3.34	50.48	194.55	0.43
1	9544	100-YR FC	240.00	1090.81	1093.31	1092.38	1093.56	0.013356	3.96	60.31	229.43	0.46
1	9544	25-YR 5-10 YR	170.00	1090.81	1092.93	1092.10	1093.11	0.012126	3.34	50.48	194.55	0.43
1	9544	100-YR 5-10 YR	240.00	1090.81	1093.31	1092.38	1093.56	0.013356	3.96	60.31	229.43	0.46
1	9260	2-YR EC	90.00	1084.23	1085.06	1085.06	1085.20	0.097514	2.82	30.45	97.20	0.90
1	9260	5-YR EC	110.00	1084.23	1085.11	1085.11	1085.26	0.103675	3.14	35.08	106.60	0.94
1	9260	10-YR EC	130.00	1084.23	1085.14	1085.14	1085.32	0.113127	3.43	38.19	110.55	0.99
1	9260	25-YR EC	170.00	1084.23	1085.22	1085.22	1085.42	0.105354	3.69	47.65	128.19	0.99
1	9260	50-YR EC	210.00	1084.23	1085.27	1085.27	1085.50	0.113200	4.09	54.03	135.29	1.04
1	9260	100-YR EC	240.00	1084.23	1085.34	1085.34	1085.56	0.092928	4.07	64.44	152.58	0.96
1	9260	500-YR EC	340.00	1084.23	1085.49	1085.49	1085.73	0.077753	4.36	91.03	197.08	0.92
1	9260	25-YR FC	170.00	1084.23	1085.22	1085.22	1085.42	0.105354	3.69	47.65	128.19	0.99
1	9260	100-YR FC	240.00	1084.23	1085.34	1085.34	1085.56	0.092928	4.07	64.44	152.58	0.96
1	9260	25-YR 5-10 YR	170.00	1084.23	1085.22	1085.22	1085.42	0.105354	3.69	47.65	128.19	0.99
1	9260	100-YR 5-10 YR	240.00	1084.23	1085.34	1085.34	1085.56	0.092928	4.07	64.44	152.58	0.96
1	9051	2-YR EC	90.00	1074.52	1075.54		1075.58	0.009473	1.10	61.86	113.73	0.29
1	9051	5-YR EC	110.00	1074.52	1075.64		1075.67	0.009634	1.21	73.05	128.51	0.30
1	9051	10-YR EC	130.00	1074.52	1075.71	1075.24	1075.75	0.009816	1.29	83.14	134.87	0.31
1	9051	25-YR EC	170.00	1074.52	1075.85	1075.34	1075.89	0.009997	1.38	103.06	157.10	0.32
1	9051	50-YR EC	210.00	1074.52	1075.97	1075.46	1076.02	0.010127	1.57	124.67	197.70	0.33
1	9051	100-YR EC	240.00	1074.52	1076.04	1075.53	1076.08	0.010615	1.70	137.74	202.46	0.34
1	9051	500-YR EC	340.00	1074.52	1076.19		1076.25	0.012169	2.06	169.57	214.93	0.38
1	9051	25-YR FC	170.00	1074.52	1075.85	1075.34	1075.89	0.009997	1.38	103.06	157.10	0.32
1	9051	100-YR FC	240.00	1074.52	1076.04	1075.53	1076.08	0.010615	1.70	137.74	202.46	0.34
1	9051	25-YR 5-10 YR	170.00	1074.52	1075.85	1075.34	1075.89	0.009997	1.38	103.06	157.10	0.32
1	9051	100-YR 5-10 YR	240.00	1074.52	1076.04	1075.53	1076.08	0.010615	1.70	137.74	202.46	0.34
1	8807	2-YR EC	90.00	1070.23	1071.03	1070.97	1071.16	0.109399	2.82	31.96	95.29	0.75
1	8807	5-YR EC	110.00	1070.23	1071.09	1071.04	1071.23	0.105725	2.95	38.58	116.41	0.75
1	8807	10-YR EC	130.00	1070.23	1071.15	1071.09	1071.29	0.098806	3.05	45.31	131.16	0.74
1	8807	25-YR EC	170.00	1070.23	1071.23	1071.18	1071.39	0.096389	3.31	55.81	134.62	0.75
1	8807	50-YR EC	210.00	1070.23	1071.30	1071.25	1071.47	0.093592	3.51	65.47	137.38	0.75
1	8807	100-YR EC	240.00	1070.23	1071.37	1071.29	1071.54	0.080327	3.48	75.84	141.08	0.71
1	8807	500-YR EC	340.00	1070.23	1071.61	1071.42	1071.77	0.054196	3.44	111.36	161.53	0.61
1	8807	25-YR FC	170.00	1070.23	1071.23	1071.18	1071.39	0.096389	3.31	55.81	134.62	0.75
1	8807	100-YR FC	240.00	1070.23	1071.37	1071.29	1071.54	0.080327	3.48	75.84	141.08	0.71
1	8807	25-YR 5-10 YR	170.00	1070.23	1071.23	1071.18	1071.39	0.096389	3.31	55.81	134.62	0.75
1	8807	100-YR 5-10 YR	240.00	1070.23	1071.37	1071.29	1071.54	0.080327	3.48	75.84	141.08	0.71
1	8404	2-YR EC	90.00	1063.31	1064.33	1063.92	1064.34	0.006527	0.73	128.39	298.84	0.19
1	8404	5-YR EC	110.00	1063.31	1064.39	1063.95	1064.40	0.006603	0.78	146.03	305.10	0.19
1	8404	10-YR EC	130.00	1063.31	1064.44	1063.97	1064.45	0.006722	0.83	161.92	309.92	0.19
1	8404	25-YR EC	170.00	1063.31	1064.54	1064.04	1064.55	0.006770	0.91	192.06	318.10	0.20
1	8404	50-YR EC	210.00	1063.31	1064.62	1064.10	1064.63	0.006840	0.99	218.58	324.76	0.21

HEC-RAS Plan: Lewis Creek River: Lewis Trib 2 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	8404	100-YR EC	240.00	1063.31	1064.66	1064.13	1064.68	0.007185	1.06	233.83	328.84	0.21
1	8404	500-YR EC	340.00	1063.31	1064.79	1064.23	1064.82	0.008378	1.27	277.97	346.13	0.24
1	8404	25-YR FC	170.00	1063.31	1064.54	1064.04	1064.55	0.006770	0.91	192.06	318.10	0.20
1	8404	100-YR FC	240.00	1063.31	1064.66	1064.13	1064.68	0.007185	1.06	233.83	328.84	0.21
1	8404	25-YR 5-10 YR	170.00	1063.31	1064.54	1064.04	1064.55	0.006770	0.91	192.06	318.10	0.20
1	8404	100-YR 5-10 YR	240.00	1063.31	1064.66	1064.13	1064.68	0.007185	1.06	233.83	328.84	0.21
1	8179	2-YR EC	90.00	1059.41	1059.91	1059.91	1060.02	0.224609	2.84	34.03	157.41	0.99
1	8179	5-YR EC	110.00	1059.41	1059.95	1059.95	1060.07	0.215734	2.94	40.37	172.87	0.98
1	8179	10-YR EC	130.00	1059.41	1059.98	1059.98	1060.11	0.199061	3.02	46.51	178.90	0.96
1	8179	25-YR EC	170.00	1059.41	1060.03	1060.03	1060.18	0.193944	3.25	56.22	189.06	0.97
1	8179	50-YR EC	210.00	1059.41	1060.08	1060.08	1060.25	0.189842	3.47	65.19	201.59	0.98
1	8179	100-YR EC	240.00	1059.41	1060.14	1060.11	1060.30	0.151477	3.39	76.57	207.36	0.89
1	8179	500-YR EC	340.00	1059.41	1060.33	1060.21	1060.46	0.081472	3.14	119.29	246.03	0.69
1	8179	25-YR FC	170.00	1059.41	1060.03	1060.03	1060.18	0.193944	3.25	56.22	189.06	0.97
1	8179	100-YR FC	240.00	1059.41	1060.14	1060.11	1060.30	0.151477	3.39	76.57	207.36	0.89
1	8179	25-YR 5-10 YR	170.00	1059.41	1060.03	1060.03	1060.18	0.193944	3.25	56.22	189.06	0.97
1	8179	100-YR 5-10 YR	240.00	1059.41	1060.14	1060.11	1060.30	0.151477	3.39	76.57	207.36	0.89
1	7850	2-YR EC	90.00	1052.20	1054.50		1054.52	0.003834	0.90	100.08	103.29	0.16
1	7850	5-YR EC	110.00	1052.20	1054.70		1054.72	0.003642	0.89	123.63	129.55	0.16
1	7850	10-YR EC	130.00	1052.20	1054.80		1054.82	0.003790	0.95	138.07	165.52	0.16
1	7850	25-YR EC	170.00	1052.20	1054.92		1054.94	0.004553	1.11	160.23	202.22	0.18
1	7850	50-YR EC	210.00	1052.20	1055.03		1055.05	0.005164	1.23	182.69	225.14	0.19
1	7850	100-YR EC	240.00	1052.20	1055.09		1055.12	0.005573	1.32	197.52	239.56	0.20
1	7850	500-YR EC	340.00	1052.20	1055.29		1055.32	0.006433	1.55	247.12	273.53	0.22
1	7850	25-YR FC	170.00	1052.20	1054.92		1054.94	0.004553	1.11	160.23	202.22	0.18
1	7850	100-YR FC	240.00	1052.20	1055.09		1055.12	0.005573	1.32	197.52	239.56	0.20
1	7850	25-YR 5-10 YR	170.00	1052.20	1054.92		1054.94	0.004553	1.11	160.23	202.22	0.18
1	7850	100-YR 5-10 YR	240.00	1052.20	1055.09		1055.12	0.005573	1.32	197.52	239.56	0.20
1	7530	2-YR EC	330.00	1048.39	1050.38		1050.44	0.021809	2.16	168.01	221.87	0.38
1	7530	5-YR EC	430.00	1048.39	1050.59		1050.65	0.021859	2.09	222.72	293.23	0.38
1	7530	10-YR EC	510.00	1048.39	1050.72		1050.78	0.021158	2.04	264.39	332.33	0.37
1	7530	25-YR EC	650.00	1048.39	1050.89		1050.95	0.018986	2.14	323.16	359.04	0.36
1	7530	50-YR EC	790.00	1048.39	1051.04		1051.11	0.017605	2.25	380.80	399.04	0.36
1	7530	100-YR EC	920.00	1048.39	1051.17		1051.24	0.016540	2.33	433.93	423.41	0.35
1	7530	500-YR EC	1300.00	1048.39	1051.50		1051.58	0.014793	2.55	579.55	457.21	0.35
1	7530	25-YR FC	650.00	1048.39	1050.89		1050.95	0.018986	2.14	323.16	359.04	0.36
1	7530	100-YR FC	920.00	1048.39	1051.17		1051.24	0.016540	2.33	433.93	423.41	0.35
1	7530	25-YR 5-10 YR	650.00	1048.39	1050.89		1050.95	0.018986	2.14	323.16	359.04	0.36
1	7530	100-YR 5-10 YR	920.00	1048.39	1051.17		1051.24	0.016540	2.33	433.93	423.41	0.35
1	7390	2-YR EC	330.00	1046.47	1049.24		1049.26	0.004581	1.15	307.06	315.95	0.18
1	7390	5-YR EC	430.00	1046.47	1049.44		1049.46	0.004688	1.25	371.70	351.26	0.19
1	7390	10-YR EC	510.00	1046.47	1049.57		1049.59	0.004782	1.32	418.27	364.28	0.19
1	7390	25-YR EC	650.00	1046.47	1049.76		1049.79	0.004934	1.44	492.42	387.93	0.20
1	7390	50-YR EC	790.00	1046.47	1049.93		1049.96	0.005051	1.56	558.62	414.12	0.20
1	7390	100-YR EC	920.00	1046.47	1050.07		1050.10	0.005193	1.66	617.09	441.65	0.21
1	7390	500-YR EC	1300.00	1046.47	1050.41		1050.46	0.005468	1.90	773.35	467.41	0.22
1	7390	25-YR FC	650.00	1046.47	1049.76		1049.79	0.004934	1.44	492.42	387.93	0.20
1	7390	100-YR FC	920.00	1046.47	1050.07		1050.10	0.005193	1.66	617.09	441.65	0.21
1	7390	25-YR 5-10 YR	650.00	1046.47	1049.76		1049.79	0.004934	1.44	492.42	387.93	0.20
1	7390	100-YR 5-10 YR	920.00	1046.47	1050.07		1050.10	0.005193	1.66	617.09	441.65	0.21
1	7116	2-YR EC	330.00	1044.41	1045.30	1045.30	1045.53	0.187405	3.82	86.31	188.24	1.00
1	7116	5-YR EC	430.00	1044.41	1045.39	1045.39	1045.66	0.188333	4.16	103.44	199.73	1.02
1	7116	10-YR EC	510.00	1044.41	1045.47	1045.47	1045.75	0.177496	4.28	119.14	211.47	1.00
1	7116	25-YR EC	650.00	1044.41	1045.57	1045.57	1045.90	0.164968	4.58	142.23	220.56	0.99
1	7116	50-YR EC	790.00	1044.41	1045.67	1045.67	1046.03	0.154295	4.85	164.17	238.10	0.98
1	7116	100-YR EC	920.00	1044.41	1045.77	1045.77	1046.15	0.138680	4.98	187.67	246.20	0.95
1	7116	500-YR EC	1300.00	1044.41	1046.00	1046.00	1046.44	0.117869	5.40	250.32	293.45	0.91
1	7116	25-YR FC	650.00	1044.41	1045.57	1045.57	1045.90	0.164968	4.58	142.23	220.56	0.99
1	7116	100-YR FC	920.00	1044.41	1045.77	1045.77	1046.15	0.138680	4.98	187.67	246.20	0.95
1	7116	25-YR 5-10 YR	650.00	1044.41	1045.57	1045.57	1045.90	0.164968	4.58	142.23	220.56	0.99
1	7116	100-YR 5-10 YR	920.00	1044.41	1045.77	1045.77	1046.15	0.138680	4.98	187.67	246.20	0.95
1	7029	2-YR EC	330.00	1043.55	1044.68	1044.68	1044.92	0.172384	3.95	83.46	162.59	0.97
1	7029	5-YR EC	430.00	1043.55	1044.77	1044.77	1045.06	0.173146	4.38	98.28	165.01	1.00
1	7029	10-YR EC	510.00	1043.55	1044.84	1044.84	1045.17	0.166795	4.61	110.53	166.61	1.00
1	7029	25-YR EC	650.00	1043.55	1044.96	1044.96	1045.35	0.155631	4.97	130.82	169.68	0.99
1	7029	50-YR EC	790.00	1043.55	1045.06	1045.06	1045.51	0.152004	5.34	148.42	172.46	1.00
1	7029	100-YR EC	920.00	1043.55	1045.17	1045.17	1045.65	0.141587	5.55	166.71	177.12	0.98
1	7029	500-YR EC	1300.00	1043.55	1045.69	1045.49	1045.70	0.000927	0.60	1692.05	1203.08	0.09
1	7029	25-YR FC	650.00	1043.55	1044.96	1044.96	1045.35	0.155631	4.97	130.82	169.68	0.99
1	7029	100-YR FC	920.00	1043.55	1045.17	1045.17	1045.65	0.141587	5.55	166.71	177.12	0.98
1	7029	25-YR 5-10 YR	650.00	1043.55	1044.96	1044.96	1045.35	0.155631	4.97	130.82	169.68	0.99
1	7029	100-YR 5-10 YR	920.00	1043.55	1045.17	1045.17	1045.65	0.141587	5.55	166.71	177.12	0.98

HEC-RAS Plan: Lewis Creek River: Lewis Trib 2 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	6768	2-YR EC	330.00	1042.50	1043.54	1043.54	1043.82	0.173991	4.26	77.45	135.81	0.99
1	6768	5-YR EC	430.00	1042.50	1043.67	1043.67	1043.98	0.165069	4.49	95.75	149.18	0.99
1	6768	10-YR EC	510.00	1042.50	1043.75	1043.75	1044.09	0.162362	4.73	107.84	153.53	0.99
1	6768	25-YR EC	650.00	1042.50	1043.88	1043.88	1044.27	0.157951	5.06	128.77	168.25	1.00
1	6768	50-YR EC	790.00	1042.50	1044.03	1044.00	1044.44	0.130186	5.13	155.74	183.74	0.93
1	6768	100-YR EC	920.00	1042.50	1044.17	1044.10	1044.58	0.110528	5.18	181.49	192.01	0.88
1	6768	500-YR EC	1300.00	1042.50	1044.49	1044.38	1044.94	0.086945	5.47	252.43	236.05	0.82
1	6768	25-YR FC	650.00	1042.50	1043.88	1043.88	1044.27	0.157951	5.06	128.77	168.25	1.00
1	6768	100-YR FC	920.00	1042.50	1044.17	1044.10	1044.58	0.110528	5.18	181.49	192.01	0.88
1	6768	25-YR 5-10 YR	650.00	1042.50	1043.88	1043.88	1044.27	0.157951	5.06	128.77	168.25	1.00
1	6768	100-YR 5-10 YR	920.00	1042.50	1044.17	1044.10	1044.58	0.110528	5.18	181.49	192.01	0.88
1	6615	2-YR EC	330.00	1039.53	1041.67		1041.69	0.003459	0.86	383.78	392.80	0.15
1	6615	5-YR EC	430.00	1039.53	1041.81		1041.82	0.004003	0.98	437.73	409.38	0.17
1	6615	10-YR EC	510.00	1039.53	1041.92		1041.94	0.004180	1.05	484.96	422.97	0.17
1	6615	25-YR EC	650.00	1039.53	1042.07		1042.09	0.004611	1.18	551.23	445.29	0.18
1	6615	50-YR EC	790.00	1039.53	1042.20		1042.23	0.004908	1.30	610.28	459.48	0.19
1	6615	100-YR EC	920.00	1039.53	1042.31		1042.34	0.005149	1.40	662.55	485.77	0.20
1	6615	500-YR EC	1300.00	1039.53	1042.60		1042.64	0.005641	1.65	816.71	601.23	0.22
1	6615	25-YR FC	650.00	1039.53	1042.07		1042.09	0.004611	1.18	551.23	445.29	0.18
1	6615	100-YR FC	920.00	1039.53	1042.31		1042.34	0.005149	1.40	662.55	485.77	0.20
1	6615	25-YR 5-10 YR	650.00	1039.53	1042.07		1042.09	0.004611	1.18	551.23	445.29	0.18
1	6615	100-YR 5-10 YR	920.00	1039.53	1042.31		1042.34	0.005149	1.40	662.55	485.77	0.20
1	6439	2-YR EC	330.00	1038.25	1039.69		1039.86	0.135227	3.27	100.80	217.19	0.85
1	6439	5-YR EC	430.00	1038.25	1039.97		1040.07	0.054229	2.56	168.67	273.03	0.57
1	6439	10-YR EC	510.00	1038.25	1040.08		1040.19	0.046343	2.56	201.31	297.71	0.53
1	6439	25-YR EC	650.00	1038.25	1040.30		1040.39	0.031761	2.46	271.02	343.64	0.46
1	6439	50-YR EC	790.00	1038.25	1040.47		1040.56	0.025912	2.49	332.16	404.88	0.43
1	6439	100-YR EC	920.00	1038.25	1040.60		1040.70	0.022637	2.52	388.15	416.09	0.41
1	6439	500-YR EC	1300.00	1038.25	1040.94		1041.04	0.017688	2.64	538.36	469.45	0.37
1	6439	25-YR FC	650.00	1038.25	1040.30		1040.39	0.031761	2.46	271.02	343.64	0.46
1	6439	100-YR FC	920.00	1038.25	1040.60		1040.70	0.022637	2.52	388.15	416.09	0.41
1	6439	25-YR 5-10 YR	650.00	1038.25	1040.30		1040.39	0.031761	2.46	271.02	343.64	0.46
1	6439	100-YR 5-10 YR	920.00	1038.25	1040.60		1040.70	0.022637	2.52	388.15	416.09	0.41
1	6265	2-YR EC	330.00	1035.54	1038.63	1037.45	1038.65	0.002067	1.11	297.83	270.35	0.19
1	6265	5-YR EC	430.00	1035.54	1038.72	1037.64	1038.75	0.002769	1.34	322.08	275.23	0.22
1	6265	10-YR EC	510.00	1035.54	1038.85	1037.75	1038.88	0.002827	1.42	358.14	282.19	0.22
1	6265	25-YR EC	650.00	1035.54	1038.99	1037.89	1039.03	0.003339	1.63	398.95	294.95	0.25
1	6265	50-YR EC	790.00	1035.54	1039.11	1038.02	1039.16	0.003697	1.82	435.75	303.72	0.26
1	6265	100-YR EC	920.00	1035.54	1039.22	1038.15	1039.28	0.003990	1.97	468.70	320.68	0.28
1	6265	500-YR EC	1300.00	1035.54	1039.48	1038.37	1039.56	0.004782	2.39	556.84	362.86	0.31
1	6265	25-YR FC	650.00	1035.54	1038.99	1037.89	1039.03	0.003339	1.63	398.95	294.95	0.25
1	6265	100-YR FC	920.00	1035.54	1039.22	1038.15	1039.28	0.003990	1.97	468.70	320.68	0.28
1	6265	25-YR 5-10 YR	650.00	1035.54	1038.99	1037.89	1039.03	0.003339	1.63	398.95	294.95	0.25
1	6265	100-YR 5-10 YR	920.00	1035.54	1039.22	1038.15	1039.28	0.003990	1.97	468.70	320.68	0.28
1	6240	Culvert										
1	6218	2-YR EC	330.00	1035.40	1037.79		1037.83	0.005898	1.62	206.32	249.27	0.30
1	6218	5-YR EC	430.00	1035.40	1037.95		1038.00	0.005983	1.76	249.38	271.60	0.31
1	6218	10-YR EC	510.00	1035.40	1038.07		1038.13	0.005993	1.85	283.74	290.80	0.31
1	6218	25-YR EC	650.00	1035.40	1038.25		1038.31	0.006090	1.98	339.76	330.21	0.32
1	6218	50-YR EC	790.00	1035.40	1038.40		1038.47	0.005966	2.12	389.50	347.56	0.33
1	6218	100-YR EC	920.00	1035.40	1038.52		1038.60	0.005944	2.25	431.56	352.72	0.33
1	6218	500-YR EC	1300.00	1035.40	1038.82		1038.92	0.006025	2.57	541.03	372.65	0.34
1	6218	25-YR FC	650.00	1035.40	1038.25		1038.31	0.006090	1.98	339.76	330.21	0.32
1	6218	100-YR FC	920.00	1035.40	1038.52		1038.60	0.005944	2.25	431.56	352.72	0.33
1	6218	25-YR 5-10 YR	650.00	1035.40	1038.25		1038.31	0.006090	1.98	339.76	330.21	0.32
1	6218	100-YR 5-10 YR	920.00	1035.40	1038.52		1038.60	0.005944	2.25	431.56	352.72	0.33
1	6193	2-YR EC	330.00	1035.41	1037.60		1037.64	0.010351	1.62	203.81	239.79	0.31
1	6193	5-YR EC	430.00	1035.41	1037.76		1037.81	0.010348	1.78	243.64	253.38	0.31
1	6193	10-YR EC	510.00	1035.41	1037.88		1037.94	0.010236	1.88	274.76	265.87	0.32
1	6193	25-YR EC	650.00	1035.41	1038.06		1038.12	0.010558	2.05	323.81	305.60	0.33
1	6193	50-YR EC	790.00	1035.41	1038.20		1038.28	0.010697	2.23	370.19	343.15	0.34
1	6193	100-YR EC	920.00	1035.41	1038.32		1038.40	0.010873	2.37	410.49	349.88	0.34
1	6193	500-YR EC	1300.00	1035.41	1038.60		1038.72	0.011521	2.75	514.55	371.53	0.36
1	6193	25-YR FC	650.00	1035.41	1038.06		1038.12	0.010558	2.05	323.81	305.60	0.33
1	6193	100-YR FC	920.00	1035.41	1038.32		1038.40	0.010873	2.37	410.49	349.88	0.34
1	6193	25-YR 5-10 YR	650.00	1035.41	1038.06		1038.12	0.010558	2.05	323.81	305.60	0.33
1	6193	100-YR 5-10 YR	920.00	1035.41	1038.32		1038.40	0.010873	2.37	410.49	349.88	0.34
1	6172	2-YR EC	330.00	1035.23	1037.41		1037.45	0.008302	1.53	216.41	235.17	0.28
1	6172	5-YR EC	430.00	1035.23	1037.57		1037.61	0.008594	1.69	256.75	278.97	0.29
1	6172	10-YR EC	510.00	1035.23	1037.69		1037.74	0.008583	1.80	291.72	302.84	0.29
1	6172	25-YR EC	650.00	1035.23	1037.85		1037.91	0.009219	1.99	343.31	335.19	0.31
1	6172	50-YR EC	790.00	1035.23	1037.99		1038.06	0.009707	2.16	392.02	389.90	0.32

HEC-RAS Plan: Lewis Creek River: Lewis Trib 2 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	6172	100-YR EC	920.00	1035.23	1038.10		1038.18	0.009994	2.31	437.52	437.16	0.33
1	6172	500-YR EC	1300.00	1035.23	1038.38		1038.48	0.010590	2.66	580.79	571.02	0.35
1	6172	25-YR FC	650.00	1035.23	1037.85		1037.91	0.009219	1.99	343.31	335.19	0.31
1	6172	100-YR FC	920.00	1035.23	1038.10		1038.18	0.009994	2.31	437.52	437.16	0.33
1	6172	25-YR 5-10 YR	650.00	1035.23	1037.85		1037.91	0.009219	1.99	343.31	335.19	0.31
1	6172	100-YR 5-10 YR	920.00	1035.23	1038.10		1038.18	0.009994	2.31	437.52	437.16	0.33
1	6095	2-YR EC	330.00	1034.79	1036.52	1035.97	1036.57	0.016132	1.83	206.30	318.10	0.37
1	6095	5-YR EC	430.00	1034.79	1036.65		1036.70	0.016750	1.99	248.78	363.81	0.39
1	6095	10-YR EC	510.00	1034.79	1036.73		1036.79	0.017749	2.13	281.24	397.08	0.40
1	6095	25-YR EC	650.00	1034.79	1036.87		1036.94	0.017650	2.31	336.73	424.33	0.41
1	6095	50-YR EC	790.00	1034.79	1036.98		1037.06	0.017571	2.48	387.27	442.70	0.42
1	6095	100-YR EC	920.00	1034.79	1037.10		1037.19	0.016863	2.60	439.72	464.91	0.41
1	6095	500-YR EC	1300.00	1034.79	1037.40		1037.50	0.015037	2.84	584.87	504.85	0.40
1	6095	25-YR FC	650.00	1034.79	1036.87		1036.94	0.017650	2.31	336.73	424.33	0.41
1	6095	100-YR FC	920.00	1034.79	1037.10		1037.19	0.016863	2.60	439.72	464.91	0.41
1	6095	25-YR 5-10 YR	650.00	1034.79	1036.87		1036.94	0.017650	2.31	336.73	424.33	0.41
1	6095	100-YR 5-10 YR	920.00	1034.79	1037.10		1037.19	0.016863	2.60	439.72	464.91	0.41
1	5952	2-YR EC	330.00	1033.07	1034.81		1034.85	0.009349	1.55	212.57	241.30	0.29
1	5952	5-YR EC	430.00	1033.07	1035.01		1035.05	0.008422	1.64	262.40	253.97	0.28
1	5952	10-YR EC	510.00	1033.07	1035.17		1035.21	0.007544	1.69	302.30	257.89	0.27
1	5952	25-YR EC	650.00	1033.07	1035.40		1035.45	0.006831	1.79	367.49	298.46	0.27
1	5952	50-YR EC	790.00	1033.07	1035.60		1035.66	0.006328	1.88	431.72	328.96	0.26
1	5952	100-YR EC	920.00	1033.07	1035.77		1035.83	0.005992	1.96	488.68	335.22	0.26
1	5952	500-YR EC	1300.00	1033.07	1036.21		1036.28	0.005448	2.17	642.81	372.05	0.26
1	5952	25-YR FC	650.00	1033.07	1035.40		1035.45	0.006831	1.79	367.49	298.46	0.27
1	5952	100-YR FC	920.00	1033.07	1035.77		1035.83	0.005992	1.96	488.68	335.22	0.26
1	5952	25-YR 5-10 YR	650.00	1033.07	1035.40		1035.45	0.006831	1.79	367.49	298.46	0.27
1	5952	100-YR 5-10 YR	920.00	1033.07	1035.77		1035.83	0.005992	1.96	488.68	335.22	0.26
1	5869	2-YR EC	330.00	1031.75	1034.20		1034.23	0.006054	1.50	219.98	189.67	0.25
1	5869	5-YR EC	430.00	1031.75	1034.46		1034.50	0.005342	1.58	271.60	196.63	0.24
1	5869	10-YR EC	510.00	1031.75	1034.67		1034.71	0.004951	1.63	313.31	205.50	0.23
1	5869	25-YR EC	650.00	1031.75	1034.92		1034.97	0.005013	1.78	367.26	226.80	0.24
1	5869	50-YR EC	790.00	1031.75	1035.14		1035.19	0.004977	1.92	417.87	249.28	0.24
1	5869	100-YR EC	920.00	1031.75	1035.31		1035.38	0.004994	2.04	464.30	272.77	0.25
1	5869	500-YR EC	1300.00	1031.75	1035.77		1035.85	0.005032	2.32	607.97	352.18	0.26
1	5869	25-YR FC	650.00	1031.75	1034.92		1034.97	0.005013	1.78	367.26	226.80	0.24
1	5869	100-YR FC	920.00	1031.75	1035.31		1035.38	0.004994	2.04	464.30	272.77	0.25
1	5869	25-YR 5-10 YR	650.00	1031.75	1034.92		1034.97	0.005013	1.78	367.26	226.80	0.24
1	5869	100-YR 5-10 YR	920.00	1031.75	1035.31		1035.38	0.004994	2.04	464.30	272.77	0.25
1	5750	2-YR EC	330.00	1030.72	1033.63		1033.66	0.003867	1.40	236.12	161.72	0.20
1	5750	5-YR EC	430.00	1030.72	1033.90		1033.94	0.004153	1.52	282.47	179.56	0.21
1	5750	10-YR EC	510.00	1030.72	1034.09		1034.13	0.004764	1.60	318.71	208.38	0.23
1	5750	25-YR EC	650.00	1030.72	1034.32		1034.37	0.004967	1.76	369.89	223.03	0.24
1	5750	50-YR EC	790.00	1030.72	1034.55		1034.60	0.004888	1.89	421.23	250.89	0.24
1	5750	100-YR EC	920.00	1030.72	1034.72		1034.78	0.004931	2.01	465.75	257.00	0.24
1	5750	500-YR EC	1300.00	1030.72	1035.15		1035.24	0.005162	2.34	580.26	272.25	0.26
1	5750	25-YR FC	650.00	1030.72	1034.32		1034.37	0.004967	1.76	369.89	223.03	0.24
1	5750	100-YR FC	920.00	1030.72	1034.72		1034.78	0.004931	2.01	465.75	257.00	0.24
1	5750	25-YR 5-10 YR	650.00	1030.72	1034.32		1034.37	0.004967	1.76	369.89	223.03	0.24
1	5750	100-YR 5-10 YR	920.00	1030.72	1034.72		1034.78	0.004931	2.01	465.75	257.00	0.24
1	5546	2-YR EC	330.00	1029.58	1033.38	1031.21	1033.39	0.000631	0.83	397.23	227.72	0.11
1	5546	5-YR EC	430.00	1029.58	1033.59	1031.36	1033.60	0.000845	0.96	447.88	257.41	0.13
1	5546	10-YR EC	510.00	1029.58	1033.72	1031.48	1033.74	0.000981	1.06	483.41	269.88	0.14
1	5546	25-YR EC	650.00	1029.58	1033.91	1031.65	1033.93	0.001151	1.22	534.57	280.33	0.15
1	5546	50-YR EC	790.00	1029.58	1034.12	1031.84	1034.15	0.001210	1.34	596.64	317.21	0.16
1	5546	100-YR EC	920.00	1029.58	1034.27	1032.04	1034.30	0.001301	1.45	646.17	329.39	0.17
1	5546	500-YR EC	1300.00	1029.58	1034.65	1032.35	1034.69	0.001548	1.74	778.46	376.52	0.19
1	5546	25-YR FC	650.00	1029.58	1033.91	1031.65	1033.93	0.001151	1.22	534.57	280.33	0.15
1	5546	100-YR FC	920.00	1029.58	1034.27	1032.04	1034.30	0.001301	1.45	646.17	329.39	0.17
1	5546	25-YR 5-10 YR	650.00	1029.58	1033.91	1031.65	1033.93	0.001151	1.22	534.57	280.33	0.15
1	5546	100-YR 5-10 YR	920.00	1029.58	1034.27	1032.04	1034.30	0.001301	1.45	646.17	329.39	0.17
1	5518	Culvert										
1	5490	2-YR EC	330.00	1028.90	1031.67		1031.74	0.006060	2.15	153.49	115.36	0.33
1	5490	5-YR EC	430.00	1028.90	1031.97		1032.05	0.006350	2.23	192.81	142.10	0.34
1	5490	10-YR EC	510.00	1028.90	1032.18		1032.26	0.005863	2.29	223.12	149.27	0.33
1	5490	25-YR EC	650.00	1028.90	1032.47		1032.56	0.005579	2.43	267.67	164.13	0.33
1	5490	50-YR EC	790.00	1028.90	1032.68		1032.79	0.005513	2.62	304.06	171.39	0.33
1	5490	100-YR EC	920.00	1028.90	1032.87		1032.99	0.005489	2.78	336.80	183.05	0.34
1	5490	500-YR EC	1300.00	1028.90	1033.34		1033.49	0.005501	3.18	429.72	213.65	0.35
1	5490	25-YR FC	650.00	1028.90	1032.47		1032.56	0.005579	2.43	267.67	164.13	0.33
1	5490	100-YR FC	920.00	1028.90	1032.87		1032.99	0.005489	2.78	336.80	183.05	0.34
1	5490	25-YR 5-10 YR	650.00	1028.90	1032.47		1032.56	0.005579	2.43	267.67	164.13	0.33

HEC-RAS Plan: Lewis Creek River: Lewis Trib 2 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	5490	100-YR 5-10 YR	920.00	1028.90	1032.87		1032.99	0.005489	2.78	336.80	183.05	0.34
1	5284	2-YR EC	330.00	1027.80	1030.49		1030.53	0.005525	1.65	199.91	139.39	0.24
1	5284	5-YR EC	430.00	1027.80	1030.80		1030.84	0.005274	1.76	244.78	150.13	0.24
1	5284	10-YR EC	510.00	1027.80	1031.05		1031.10	0.005269	1.79	285.44	170.57	0.24
1	5284	25-YR EC	650.00	1027.80	1031.33		1031.39	0.005657	1.94	334.64	186.09	0.26
1	5284	50-YR EC	790.00	1027.80	1031.52		1031.60	0.005930	2.13	372.18	195.47	0.27
1	5284	100-YR EC	920.00	1027.80	1031.70		1031.78	0.006103	2.28	406.11	204.02	0.27
1	5284	500-YR EC	1300.00	1027.80	1032.11		1032.22	0.006663	2.68	499.17	231.22	0.29
1	5284	25-YR FC	650.00	1027.80	1031.33		1031.39	0.005657	1.94	334.64	186.09	0.26
1	5284	100-YR FC	920.00	1027.80	1031.70		1031.78	0.006103	2.28	406.11	204.02	0.27
1	5284	25-YR 5-10 YR	650.00	1027.80	1031.33		1031.39	0.005657	1.94	334.64	186.09	0.26
1	5284	100-YR 5-10 YR	920.00	1027.80	1031.70		1031.78	0.006103	2.28	406.11	204.02	0.27
1	5038	2-YR EC	330.00	1026.67	1029.30		1029.33	0.004361	1.32	250.31	204.94	0.21
1	5038	5-YR EC	430.00	1026.67	1029.46		1029.50	0.005659	1.50	286.39	234.56	0.24
1	5038	10-YR EC	510.00	1026.67	1029.59		1029.63	0.006840	1.60	318.96	274.04	0.26
1	5038	25-YR EC	650.00	1026.67	1029.77		1029.82	0.007237	1.76	368.71	294.77	0.27
1	5038	50-YR EC	790.00	1026.67	1029.93		1029.98	0.007275	1.91	418.05	326.05	0.28
1	5038	100-YR EC	920.00	1026.67	1030.06		1030.12	0.007394	2.04	460.92	341.82	0.29
1	5038	500-YR EC	1300.00	1026.67	1030.39		1030.47	0.007613	2.35	581.86	390.67	0.30
1	5038	25-YR FC	650.00	1026.67	1029.77		1029.82	0.007237	1.76	368.71	294.77	0.27
1	5038	100-YR FC	920.00	1026.67	1030.06		1030.12	0.007394	2.04	460.92	341.82	0.29
1	5038	25-YR 5-10 YR	650.00	1026.67	1029.77		1029.82	0.007237	1.76	368.71	294.77	0.27
1	5038	100-YR 5-10 YR	920.00	1026.67	1030.06		1030.12	0.007394	2.04	460.92	341.82	0.29
1	4882	2-YR EC	330.00	1024.89	1029.18	1026.66	1029.19	0.000328	0.66	496.49	361.06	0.10
1	4882	5-YR EC	430.00	1024.89	1029.32	1026.84	1029.33	0.000416	0.79	544.74	365.91	0.11
1	4882	10-YR EC	510.00	1024.89	1029.42	1026.98	1029.44	0.000469	0.87	584.22	369.90	0.12
1	4882	25-YR EC	650.00	1024.89	1029.57	1027.19	1029.59	0.000568	1.02	638.59	374.40	0.14
1	4882	50-YR EC	790.00	1024.89	1029.70	1027.37	1029.72	0.000654	1.15	689.49	391.37	0.15
1	4882	100-YR EC	920.00	1024.89	1029.81	1027.53	1029.83	0.000738	1.27	731.74	407.44	0.16
1	4882	500-YR EC	1300.00	1024.89	1030.09	1028.06	1030.13	0.000941	1.56	850.23	441.34	0.18
1	4882	25-YR FC	650.00	1024.89	1029.57	1027.19	1029.59	0.000568	1.02	638.59	374.40	0.14
1	4882	100-YR FC	920.00	1024.89	1029.81	1027.53	1029.83	0.000738	1.27	731.74	407.44	0.16
1	4882	25-YR 5-10 YR	650.00	1024.89	1029.57	1027.19	1029.59	0.000568	1.02	638.59	374.40	0.14
1	4882	100-YR 5-10 YR	920.00	1024.89	1029.81	1027.53	1029.83	0.000738	1.27	731.74	407.44	0.16
1	4838	Culvert										
1	4797	2-YR EC	330.00	1025.35	1027.61		1027.65	0.003746	1.54	214.49	185.77	0.25
1	4797	5-YR EC	430.00	1025.35	1027.80		1027.85	0.004605	1.71	251.26	223.46	0.28
1	4797	10-YR EC	510.00	1025.35	1027.91		1027.96	0.004921	1.86	276.38	248.93	0.29
1	4797	25-YR EC	650.00	1025.35	1028.08		1028.15	0.005236	2.07	323.06	292.63	0.31
1	4797	50-YR EC	790.00	1025.35	1028.22		1028.30	0.005532	2.27	366.60	309.35	0.32
1	4797	100-YR EC	920.00	1025.35	1028.35		1028.44	0.005720	2.43	405.56	325.17	0.33
1	4797	500-YR EC	1300.00	1025.35	1028.68		1028.80	0.005991	2.80	520.72	359.51	0.35
1	4797	25-YR FC	650.00	1025.35	1028.08		1028.15	0.005236	2.07	323.06	292.63	0.31
1	4797	100-YR FC	920.00	1025.35	1028.35		1028.44	0.005720	2.43	405.56	325.17	0.33
1	4797	25-YR 5-10 YR	650.00	1025.35	1028.08		1028.15	0.005236	2.07	323.06	292.63	0.31
1	4797	100-YR 5-10 YR	920.00	1025.35	1028.35		1028.44	0.005720	2.43	405.56	325.17	0.33
1	4539	2-YR EC	330.00	1024.05	1025.29		1025.51	0.028603	3.79	86.99	132.56	0.83
1	4539	5-YR EC	430.00	1024.05	1025.55		1025.74	0.017334	3.50	122.91	145.25	0.67
1	4539	10-YR EC	510.00	1024.05	1025.71		1025.90	0.014244	3.48	146.72	151.10	0.62
1	4539	25-YR EC	650.00	1024.05	1025.96		1026.15	0.012099	3.48	187.45	179.96	0.58
1	4539	50-YR EC	790.00	1024.05	1026.15		1026.35	0.010518	3.60	222.00	188.44	0.56
1	4539	100-YR EC	920.00	1024.05	1026.31		1026.52	0.009522	3.71	253.44	193.91	0.54
1	4539	500-YR EC	1300.00	1024.05	1026.74		1026.99	0.007863	4.02	344.25	230.43	0.52
1	4539	25-YR FC	650.00	1024.05	1025.96		1026.15	0.012099	3.48	187.45	179.96	0.58
1	4539	100-YR FC	920.00	1024.05	1026.31		1026.52	0.009522	3.71	253.44	193.91	0.54
1	4539	25-YR 5-10 YR	650.00	1024.05	1025.96		1026.15	0.012099	3.48	187.45	179.96	0.58
1	4539	100-YR 5-10 YR	920.00	1024.05	1026.31		1026.52	0.009522	3.71	253.44	193.91	0.54
1	4326	2-YR EC	330.00	1020.36	1024.65		1024.68	0.001346	1.38	238.63	165.14	0.20
1	4326	5-YR EC	430.00	1020.36	1024.87		1024.91	0.001554	1.55	276.85	179.32	0.22
1	4326	10-YR EC	510.00	1020.36	1025.03		1025.08	0.001647	1.67	305.63	185.73	0.23
1	4326	25-YR EC	650.00	1020.36	1025.26		1025.31	0.001775	1.86	349.42	202.59	0.24
1	4326	50-YR EC	790.00	1020.36	1025.46		1025.53	0.001843	2.04	394.33	230.74	0.25
1	4326	100-YR EC	920.00	1020.36	1025.65		1025.72	0.001864	2.17	438.49	246.63	0.26
1	4326	500-YR EC	1300.00	1020.36	1026.12		1026.22	0.001907	2.50	570.86	296.38	0.27
1	4326	25-YR FC	650.00	1020.36	1025.26		1025.31	0.001775	1.86	349.42	202.59	0.24
1	4326	100-YR FC	920.00	1020.36	1025.65		1025.72	0.001864	2.17	438.49	246.63	0.26
1	4326	25-YR 5-10 YR	650.00	1020.36	1025.26		1025.31	0.001775	1.86	349.42	202.59	0.24
1	4326	100-YR 5-10 YR	920.00	1020.36	1025.65		1025.72	0.001864	2.17	438.49	246.63	0.26
1	4162	2-YR EC	490.00	1022.56	1023.99		1024.10	0.010283	2.71	180.85	212.03	0.52
1	4162	5-YR EC	630.00	1022.56	1024.17		1024.30	0.009119	2.85	220.68	218.58	0.50
1	4162	10-YR EC	750.00	1022.56	1024.33		1024.46	0.008574	2.93	255.79	232.42	0.49

HEC-RAS Plan: Lewis Creek River: Lewis Trib 2 Reach: 1 (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
1	4162	25-YR EC	950.00	1022.56	1024.53		1024.68	0.008326	3.12	304.47	253.02	0.49
1	4162	50-YR EC	1170.00	1022.56	1024.72		1024.89	0.007780	3.33	354.49	264.75	0.49
1	4162	100-YR EC	1390.00	1022.56	1024.88		1025.08	0.007614	3.54	399.05	282.19	0.49
1	4162	500-YR EC	2040.00	1022.56	1025.30		1025.56	0.007457	4.09	525.76	323.79	0.51
1	4162	25-YR FC	950.00	1022.56	1024.53		1024.68	0.008326	3.12	304.47	253.02	0.49
1	4162	100-YR FC	1390.00	1022.56	1024.88		1025.08	0.007614	3.54	399.05	282.19	0.49
1	4162	25-YR 5-10 YR	950.00	1022.56	1024.53		1024.68	0.008326	3.12	304.47	253.02	0.49
1	4162	100-YR 5-10 YR	1390.00	1022.56	1024.88		1025.08	0.007614	3.54	399.05	282.19	0.49
1	4034	2-YR EC	490.00	1021.03	1023.65	1022.53	1023.67	0.001155	1.21	403.51	305.84	0.19
1	4034	5-YR EC	630.00	1021.03	1023.80	1022.71	1023.83	0.001385	1.40	448.88	313.65	0.21
1	4034	10-YR EC	750.00	1021.03	1023.92	1022.79	1023.96	0.001577	1.54	488.02	328.09	0.22
1	4034	25-YR EC	950.00	1021.03	1024.07	1022.91	1024.12	0.001863	1.76	538.49	333.56	0.24
1	4034	50-YR EC	1170.00	1021.03	1024.26	1023.03	1024.32	0.001966	1.94	605.67	378.98	0.26
1	4034	100-YR EC	1390.00	1021.03	1024.41	1023.13	1024.48	0.002114	2.12	664.25	394.94	0.27
1	4034	500-YR EC	2040.00	1021.03	1024.80	1023.41	1024.90	0.002463	2.58	822.36	428.68	0.30
1	4034	25-YR FC	950.00	1021.03	1024.07	1022.91	1024.12	0.001863	1.76	538.49	333.56	0.24
1	4034	100-YR FC	1390.00	1021.03	1024.41	1023.13	1024.48	0.002114	2.12	664.25	394.94	0.27
1	4034	25-YR 5-10 YR	950.00	1021.03	1024.07	1022.91	1024.12	0.001863	1.76	538.49	333.56	0.24
1	4034	100-YR 5-10 YR	1390.00	1021.03	1024.41	1023.13	1024.48	0.002114	2.12	664.25	394.94	0.27
1	3977	Culvert										
1	3948	2-YR EC	490.00	1020.39	1022.68	1021.99	1022.73	0.003946	1.86	263.13	263.85	0.33
1	3948	5-YR EC	630.00	1020.39	1022.89	1022.12	1022.95	0.003561	1.97	319.93	273.14	0.32
1	3948	10-YR EC	750.00	1020.39	1023.04	1022.22	1023.11	0.003484	2.08	360.49	290.20	0.32
1	3948	25-YR EC	950.00	1020.39	1023.22	1022.36	1023.30	0.003714	2.30	415.75	306.02	0.34
1	3948	50-YR EC	1170.00	1020.39	1023.40	1022.51	1023.50	0.003833	2.52	472.47	342.88	0.35
1	3948	100-YR EC	1390.00	1020.39	1023.56	1022.63	1023.67	0.003922	2.72	528.77	366.31	0.36
1	3948	500-YR EC	2040.00	1020.39	1023.97	1022.93	1024.12	0.004104	3.19	689.96	424.90	0.38
1	3948	25-YR FC	950.00	1020.39	1023.22	1022.36	1023.30	0.003714	2.30	415.75	306.02	0.34
1	3948	100-YR FC	1390.00	1020.39	1023.56	1022.63	1023.67	0.003922	2.72	528.77	366.31	0.36
1	3948	25-YR 5-10 YR	950.00	1020.39	1023.22	1022.36	1023.30	0.003714	2.30	415.75	306.02	0.34
1	3948	100-YR 5-10 YR	1390.00	1020.39	1023.56	1022.63	1023.67	0.003922	2.72	528.77	366.31	0.36
1	3930	2-YR EC	490.00	1020.45	1022.56		1022.63	0.008553	2.11	232.44	233.22	0.37
1	3930	5-YR EC	630.00	1020.45	1022.78		1022.86	0.008092	2.19	287.06	260.11	0.37
1	3930	10-YR EC	750.00	1020.45	1022.93		1023.01	0.008291	2.30	326.63	281.64	0.38
1	3930	25-YR EC	950.00	1020.45	1023.11		1023.21	0.008327	2.52	377.95	297.86	0.39
1	3930	50-YR EC	1170.00	1020.45	1023.28		1023.40	0.008400	2.74	431.85	326.53	0.39
1	3930	100-YR EC	1390.00	1020.45	1023.44		1023.57	0.008462	2.94	483.66	336.98	0.40
1	3930	500-YR EC	2040.00	1020.45	1023.84		1024.02	0.008612	3.43	629.23	387.65	0.42
1	3930	25-YR FC	950.00	1020.45	1023.11		1023.21	0.008327	2.52	377.95	297.86	0.39
1	3930	100-YR FC	1390.00	1020.45	1023.44		1023.57	0.008462	2.94	483.66	336.98	0.40
1	3930	25-YR 5-10 YR	950.00	1020.45	1023.11		1023.21	0.008327	2.52	377.95	297.86	0.39
1	3930	100-YR 5-10 YR	1390.00	1020.45	1023.44		1023.57	0.008462	2.94	483.66	336.98	0.40
1	3723	2-YR EC	490.00	1019.19	1021.10	1020.37	1021.15	0.006005	1.85	264.16	246.23	0.32
1	3723	5-YR EC	630.00	1019.19	1021.36	1020.50	1021.42	0.006009	1.85	341.24	336.40	0.32
1	3723	10-YR EC	750.00	1019.19	1021.49	1020.59	1021.55	0.006011	1.96	386.10	362.75	0.32
1	3723	25-YR EC	950.00	1019.19	1021.67	1020.72	1021.74	0.006012	2.14	454.44	403.16	0.33
1	3723	50-YR EC	1170.00	1019.19	1021.84	1020.87	1021.92	0.006007	2.32	525.11	421.74	0.33
1	3723	100-YR EC	1390.00	1019.19	1022.00	1021.00	1022.09	0.006004	2.48	591.65	429.80	0.34
1	3723	500-YR EC	2040.00	1019.19	1022.40	1021.37	1022.53	0.006008	2.87	769.90	457.10	0.35
1	3723	25-YR FC	950.00	1019.19	1021.67	1020.72	1021.74	0.006012	2.14	454.44	403.16	0.33
1	3723	100-YR FC	1390.00	1019.19	1022.00	1021.00	1022.09	0.006004	2.48	591.65	429.80	0.34
1	3723	25-YR 5-10 YR	950.00	1019.19	1021.67	1020.72	1021.74	0.006012	2.14	454.44	403.16	0.33
1	3723	100-YR 5-10 YR	1390.00	1019.19	1022.00	1021.00	1022.09	0.006004	2.48	591.65	429.80	0.34

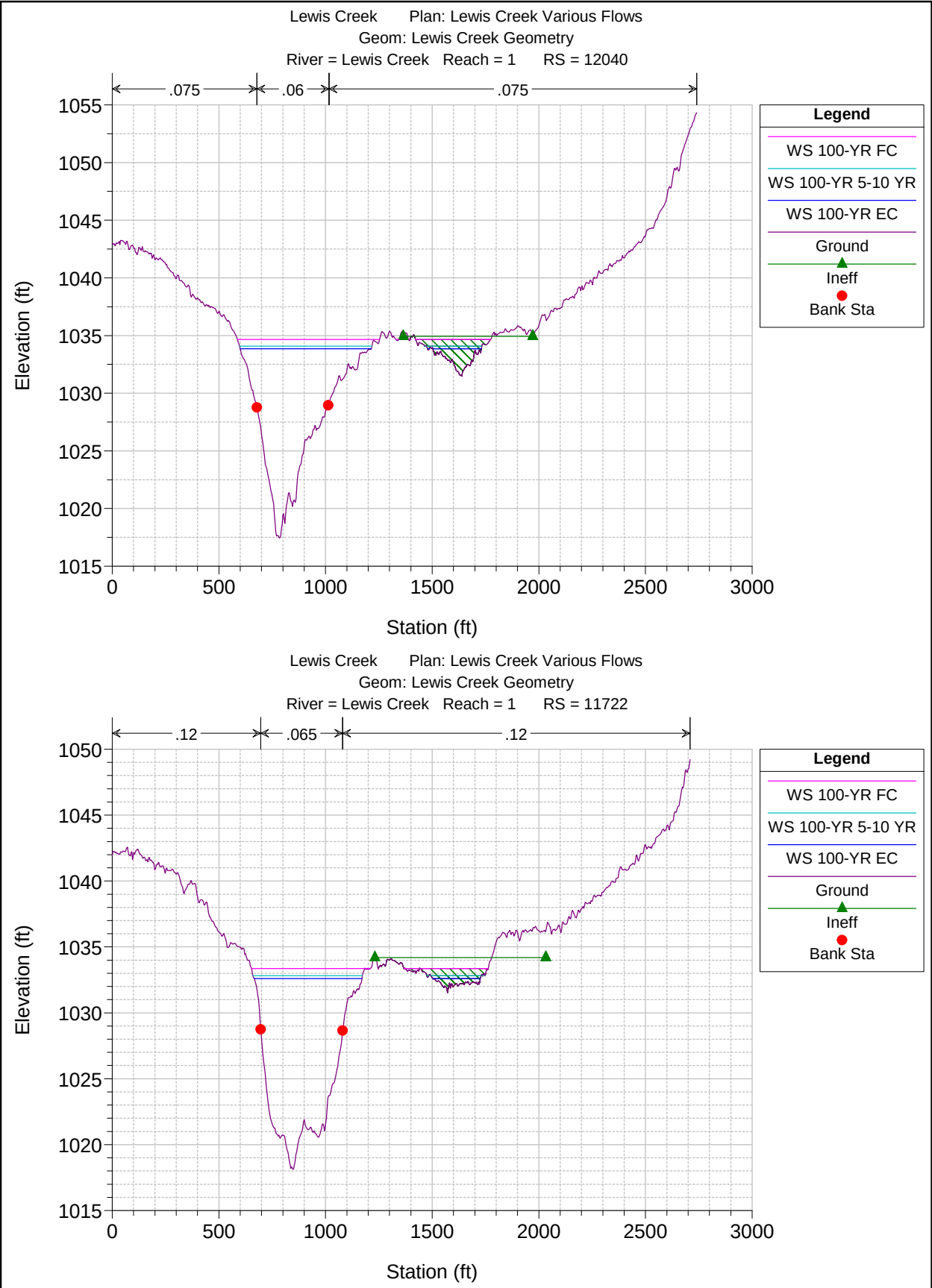
APPENDIX C

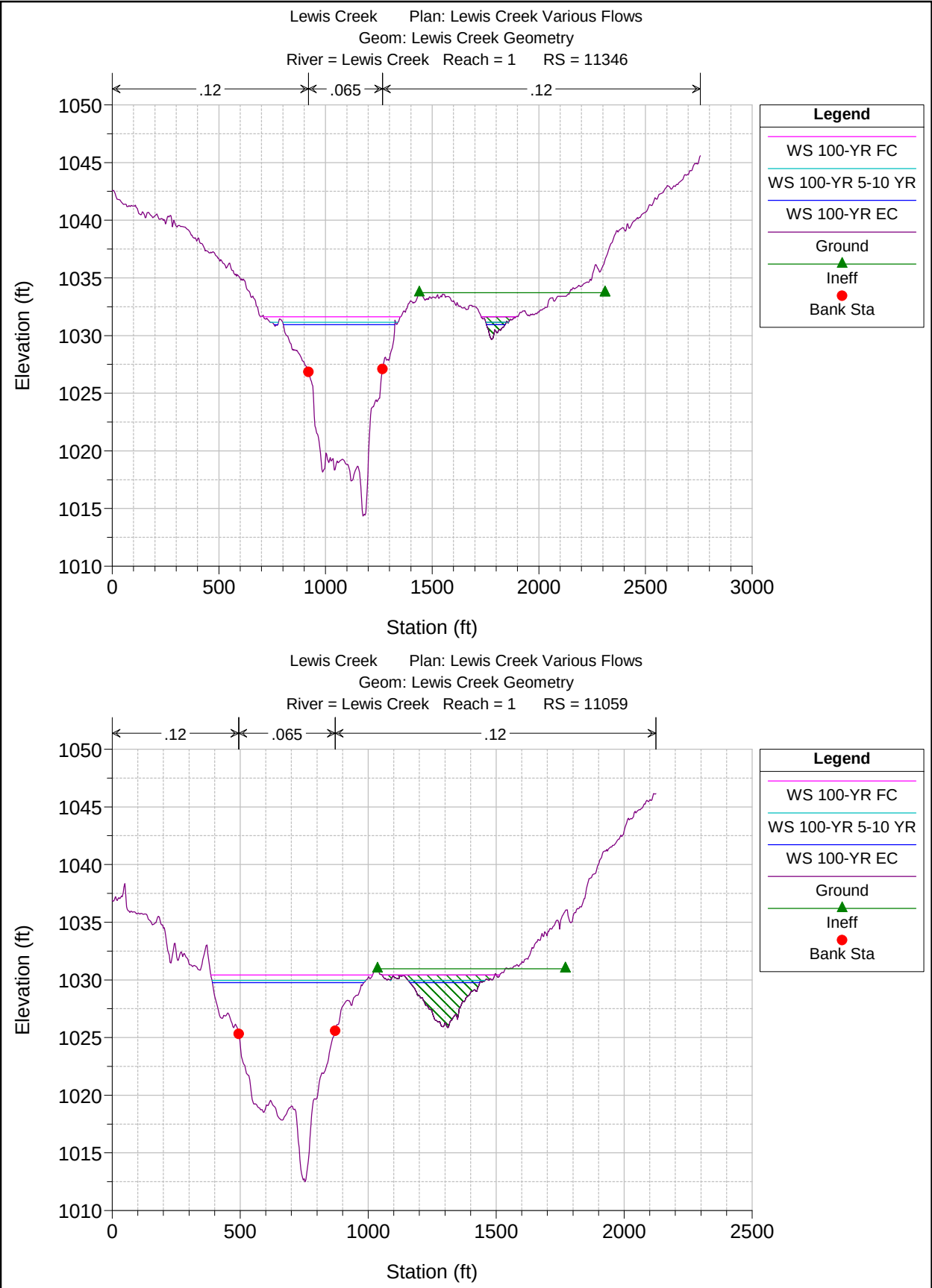
HEC-RAS Cross Sections

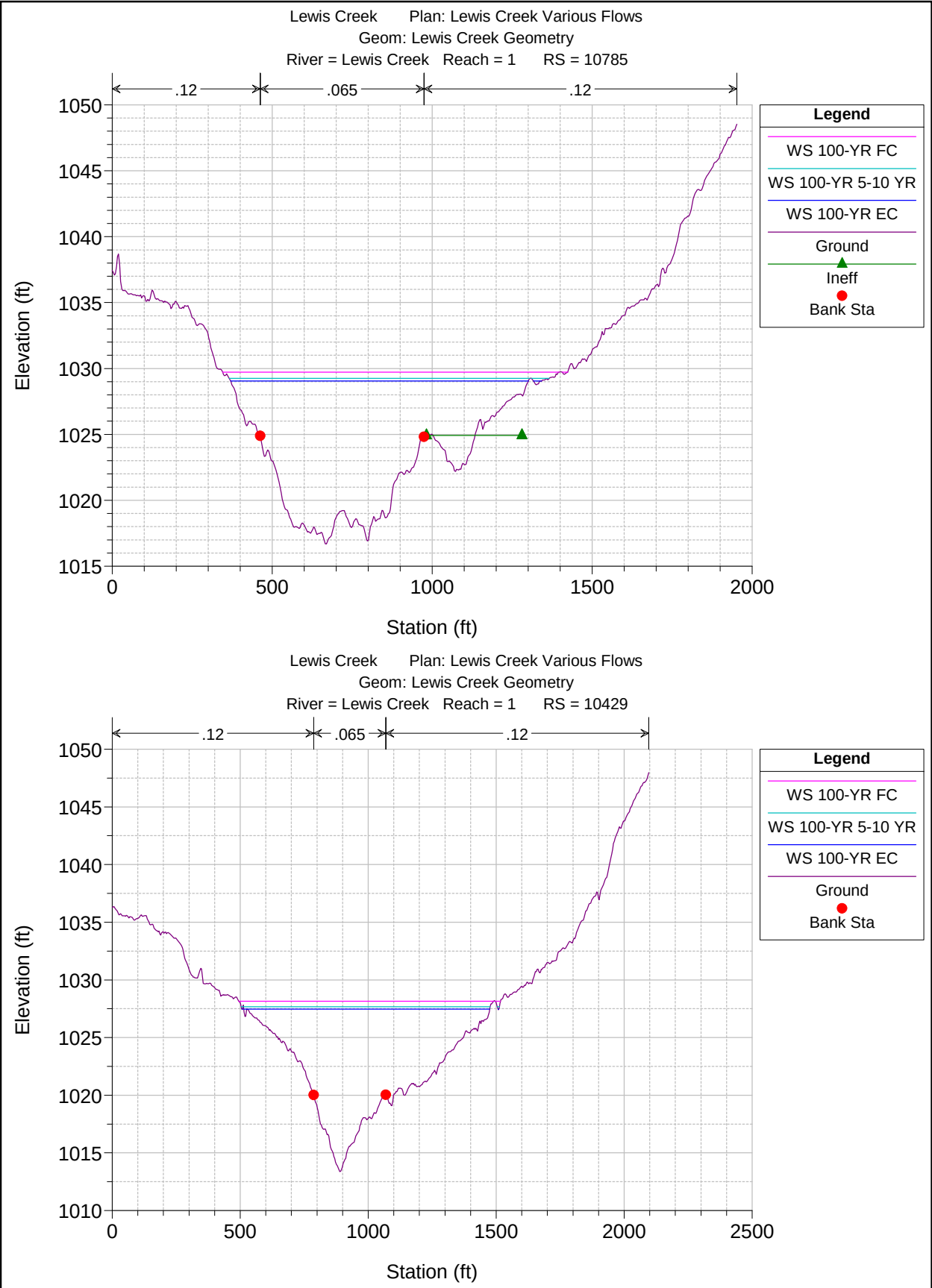
- C.1 Lewis Creek
- C.2 Lewis Creek Tributary 2

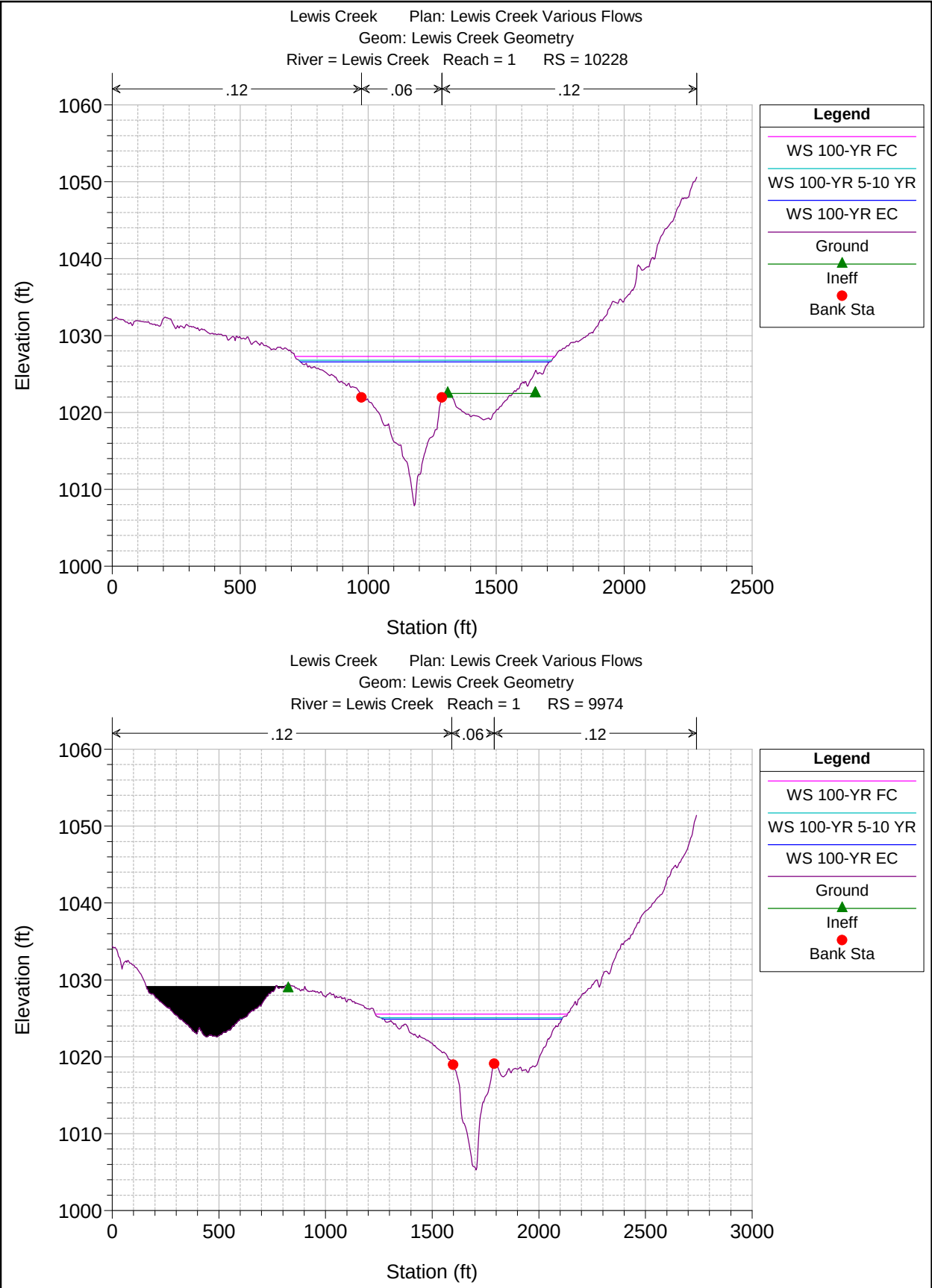
APPENDIX C.1

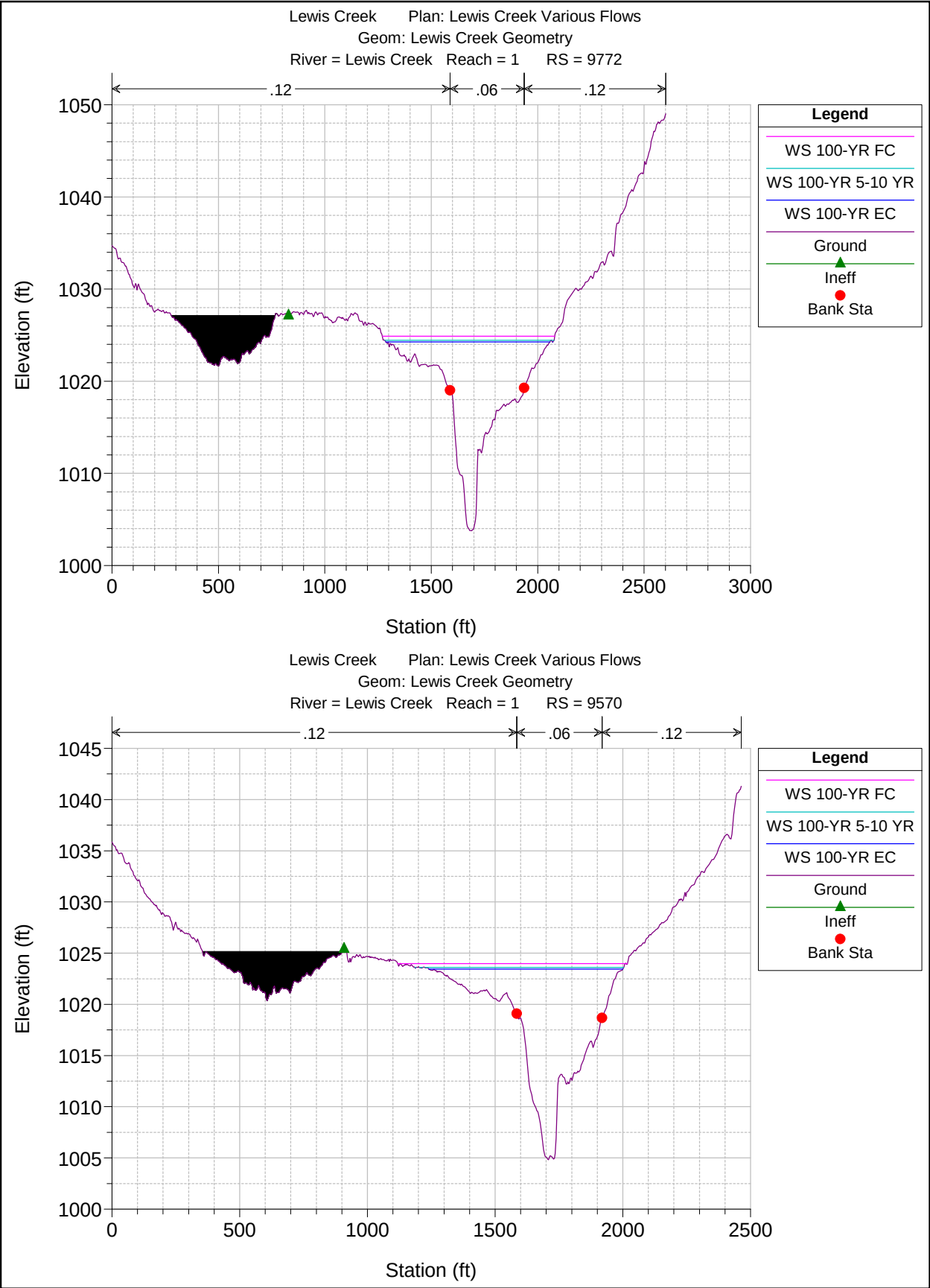
Lewis Creek HEC-RAS Cross Sections

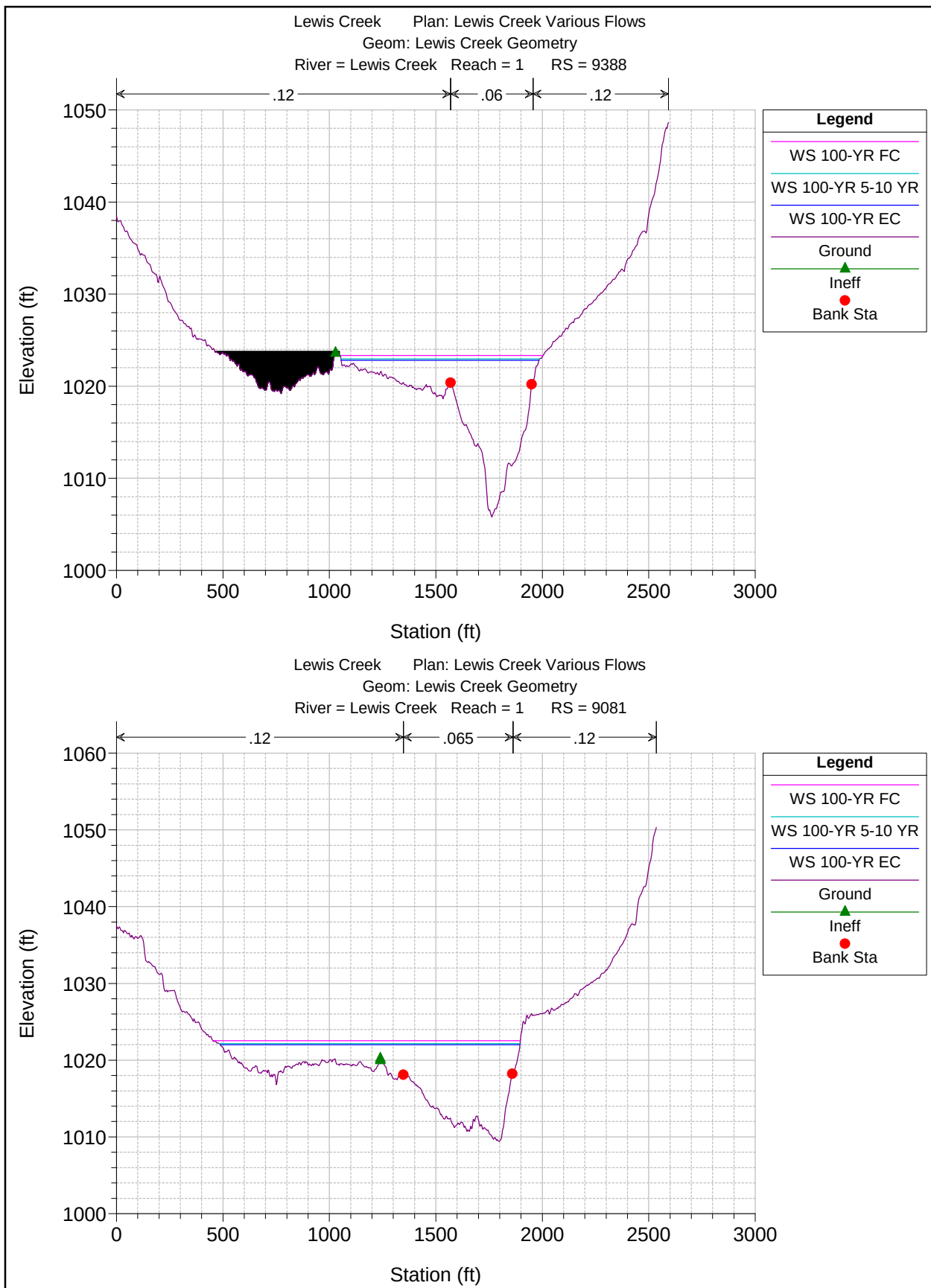


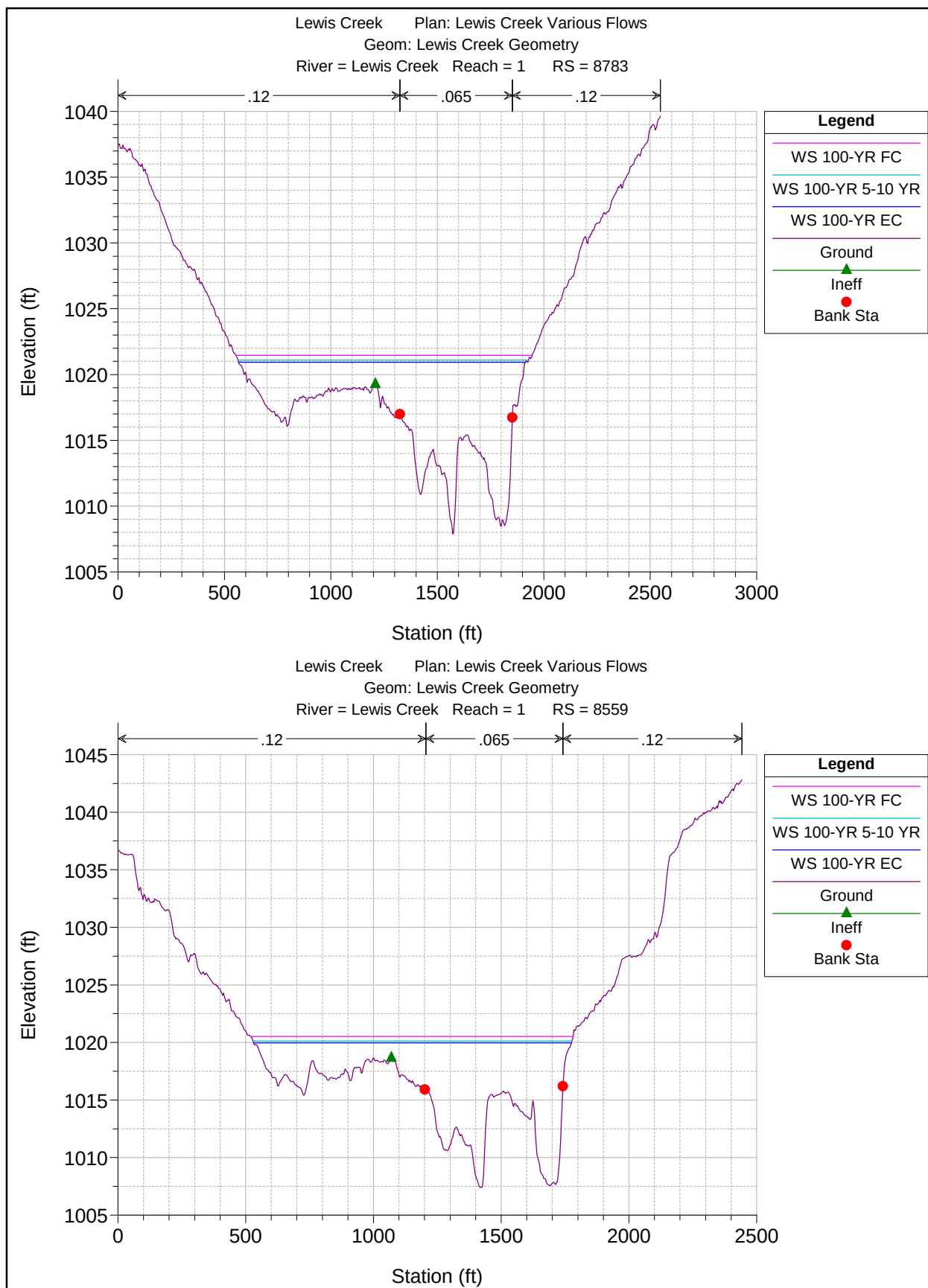


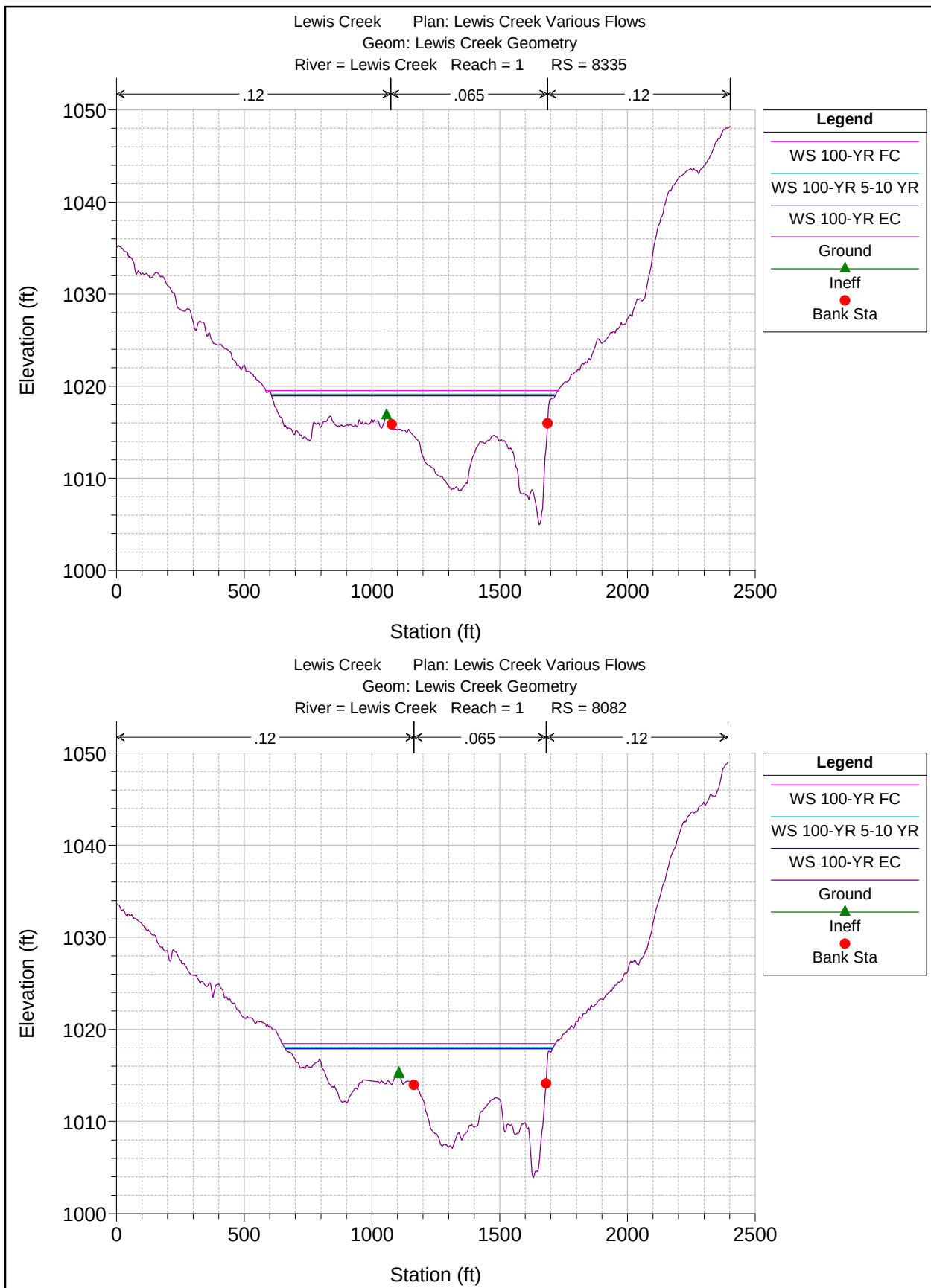


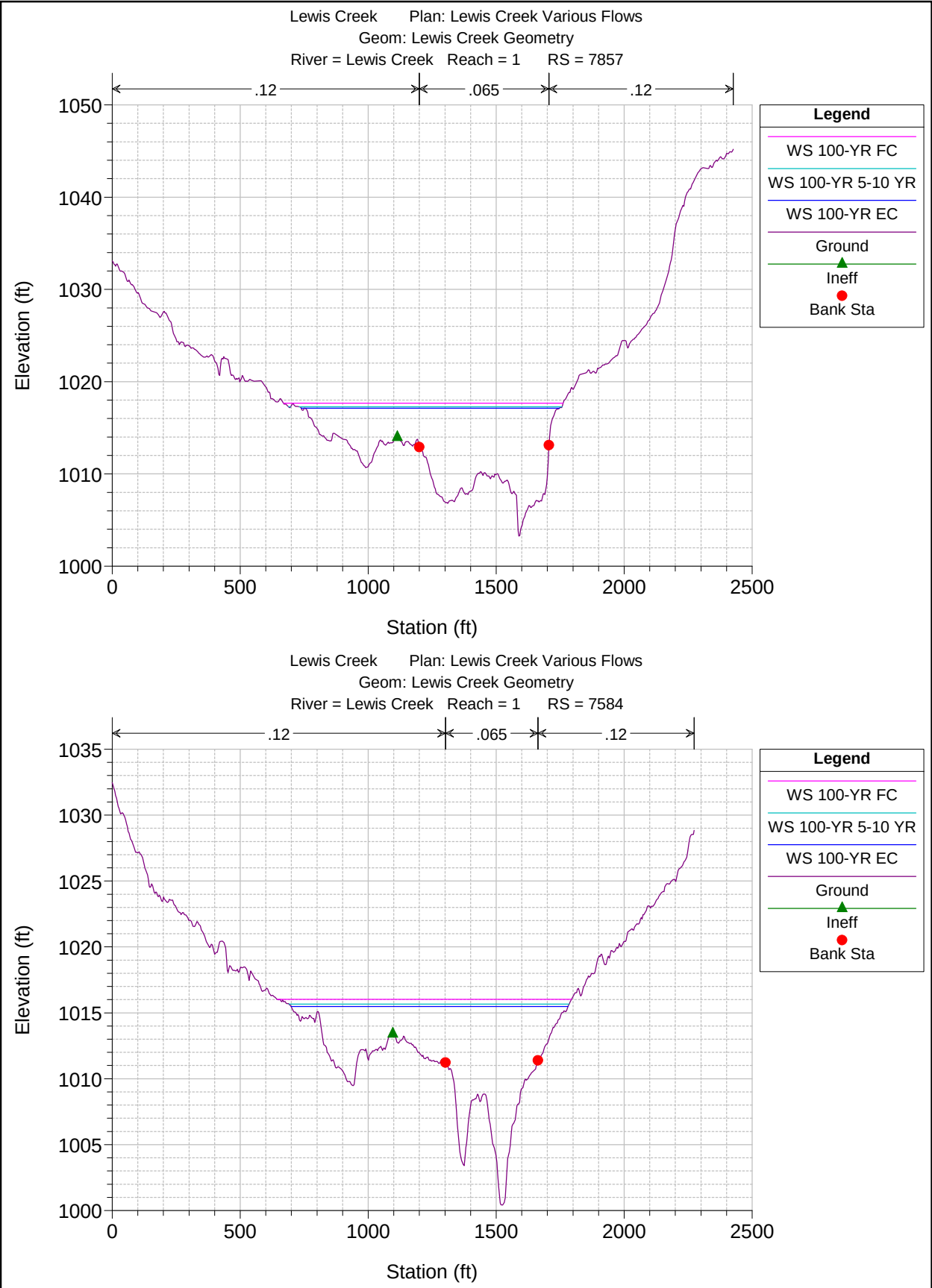


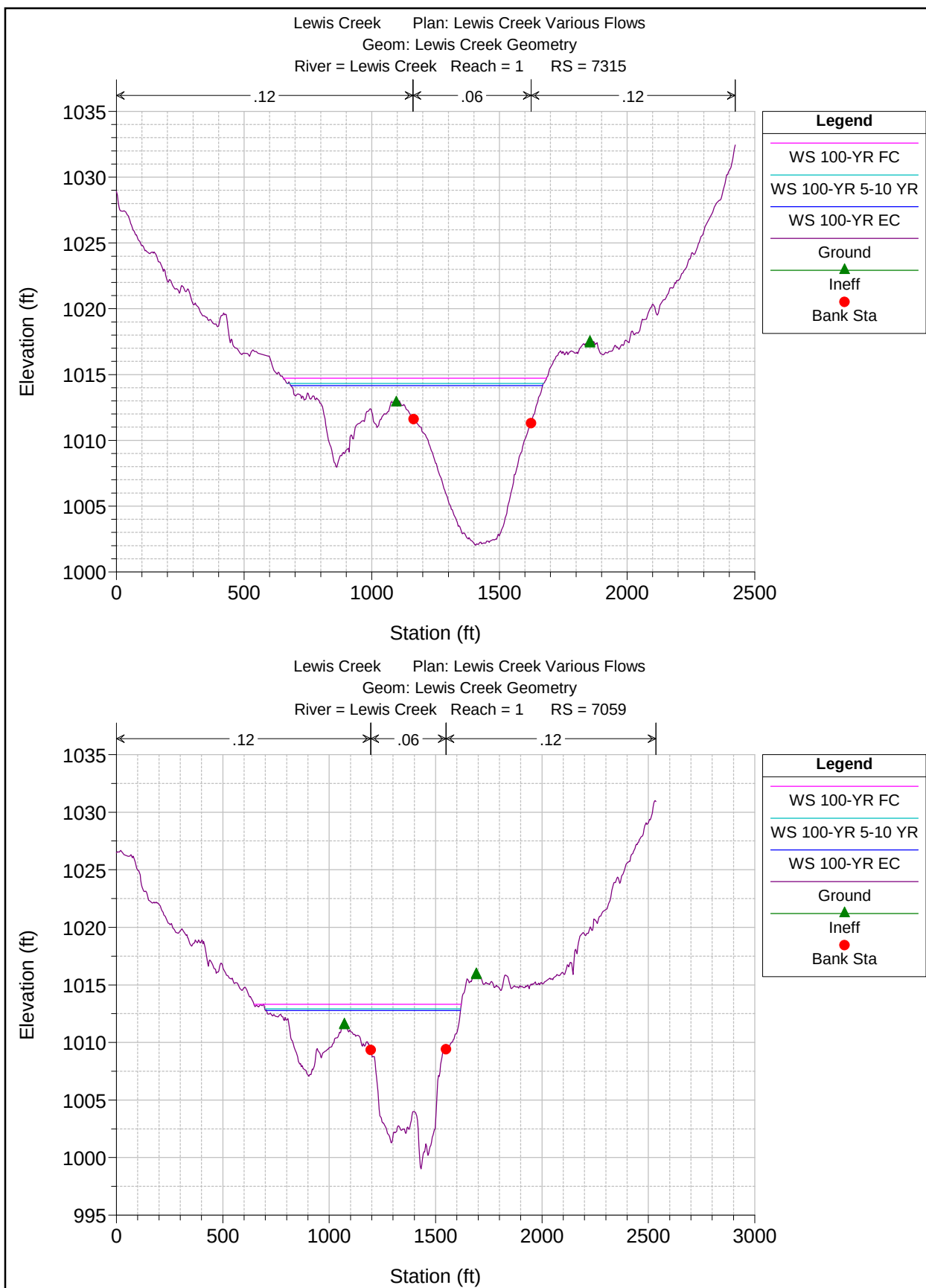


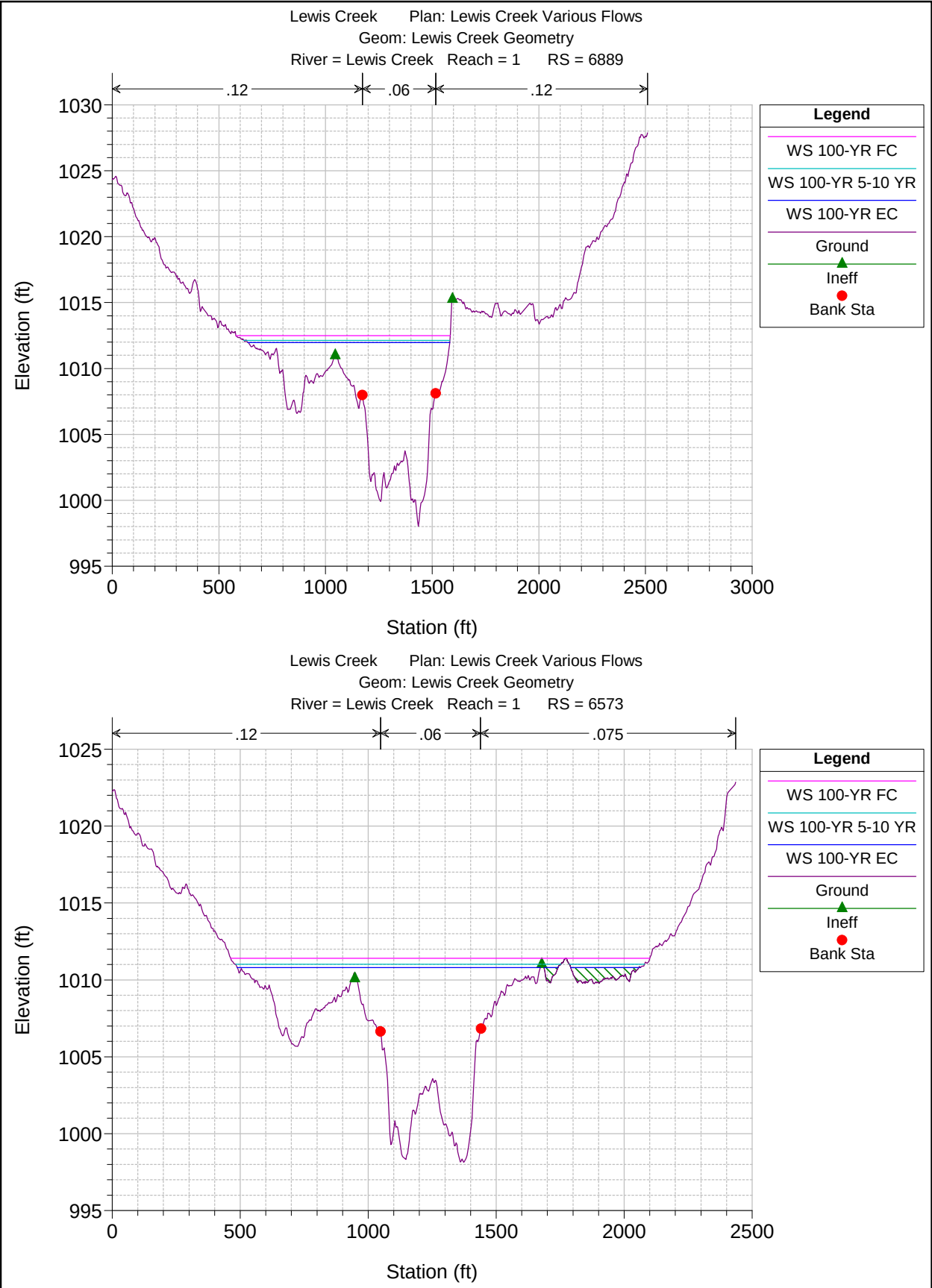


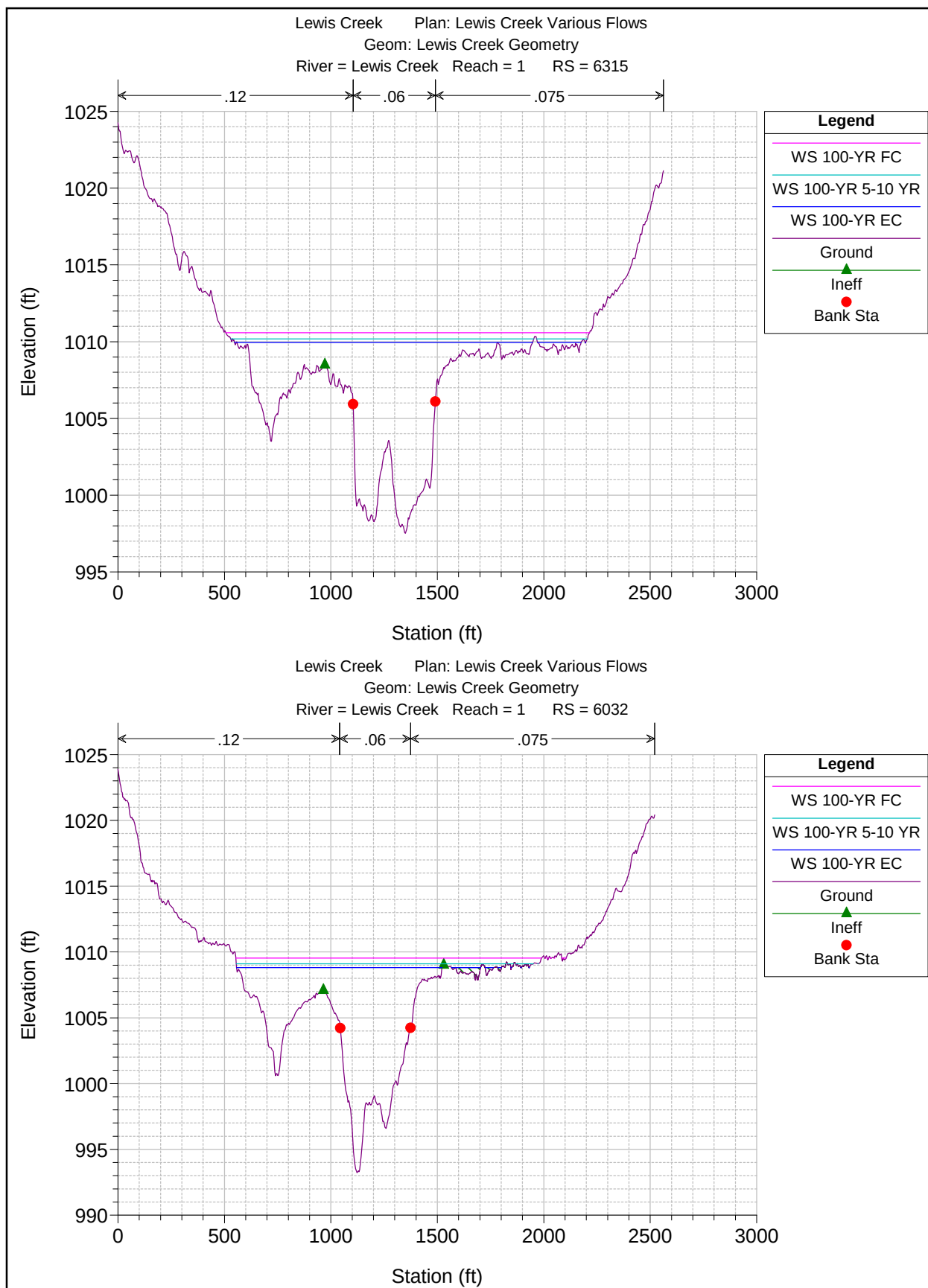


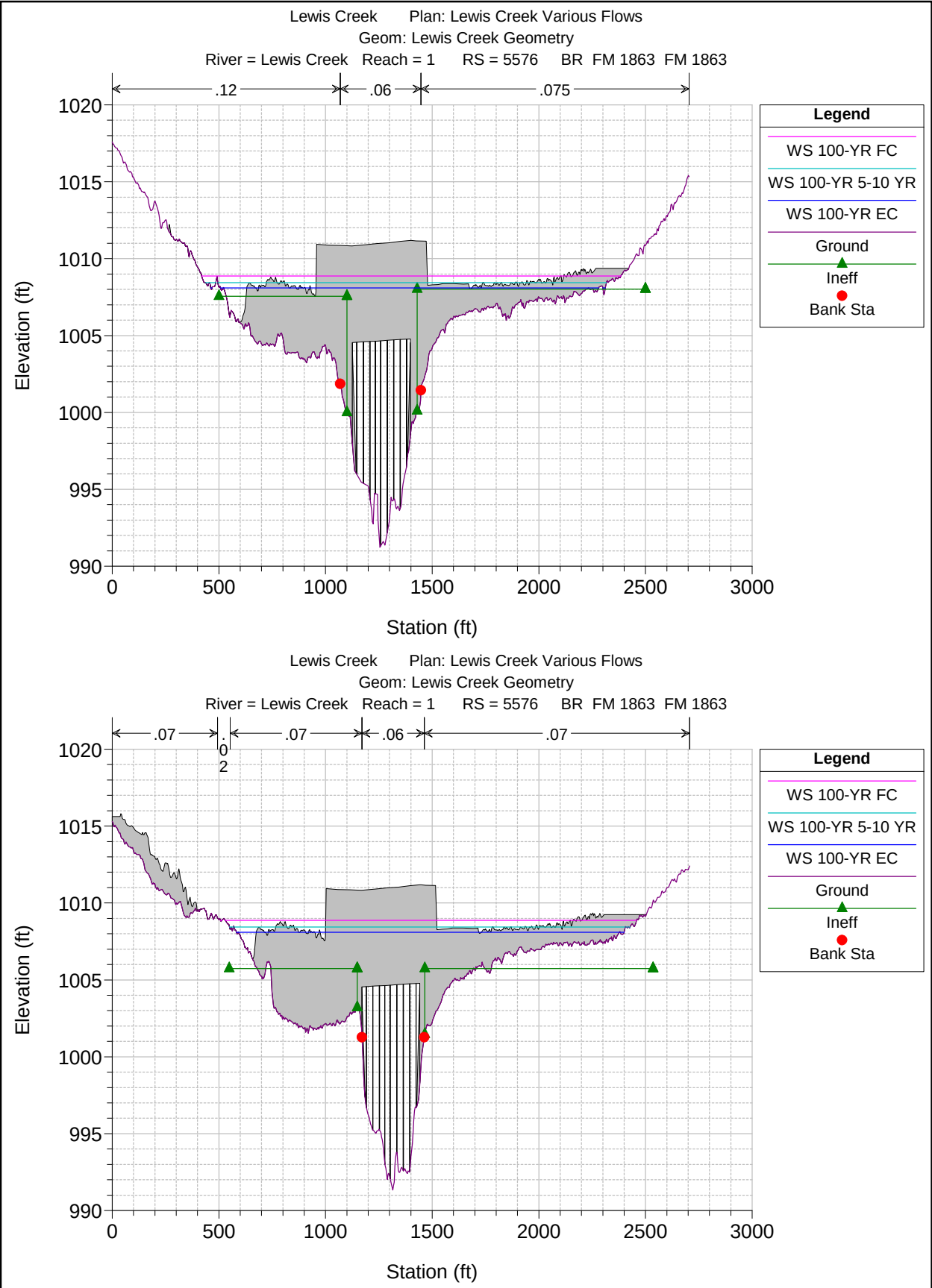


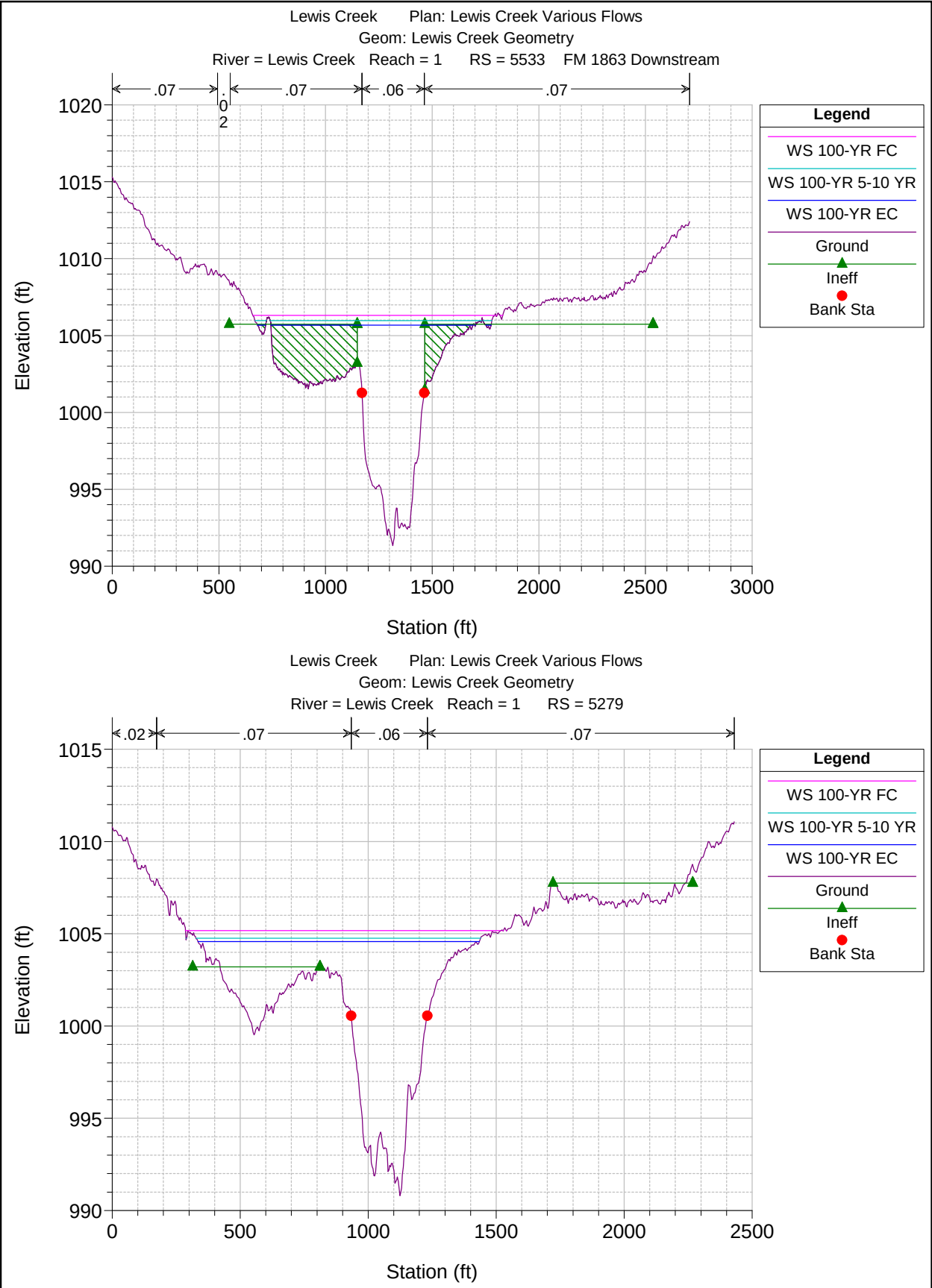


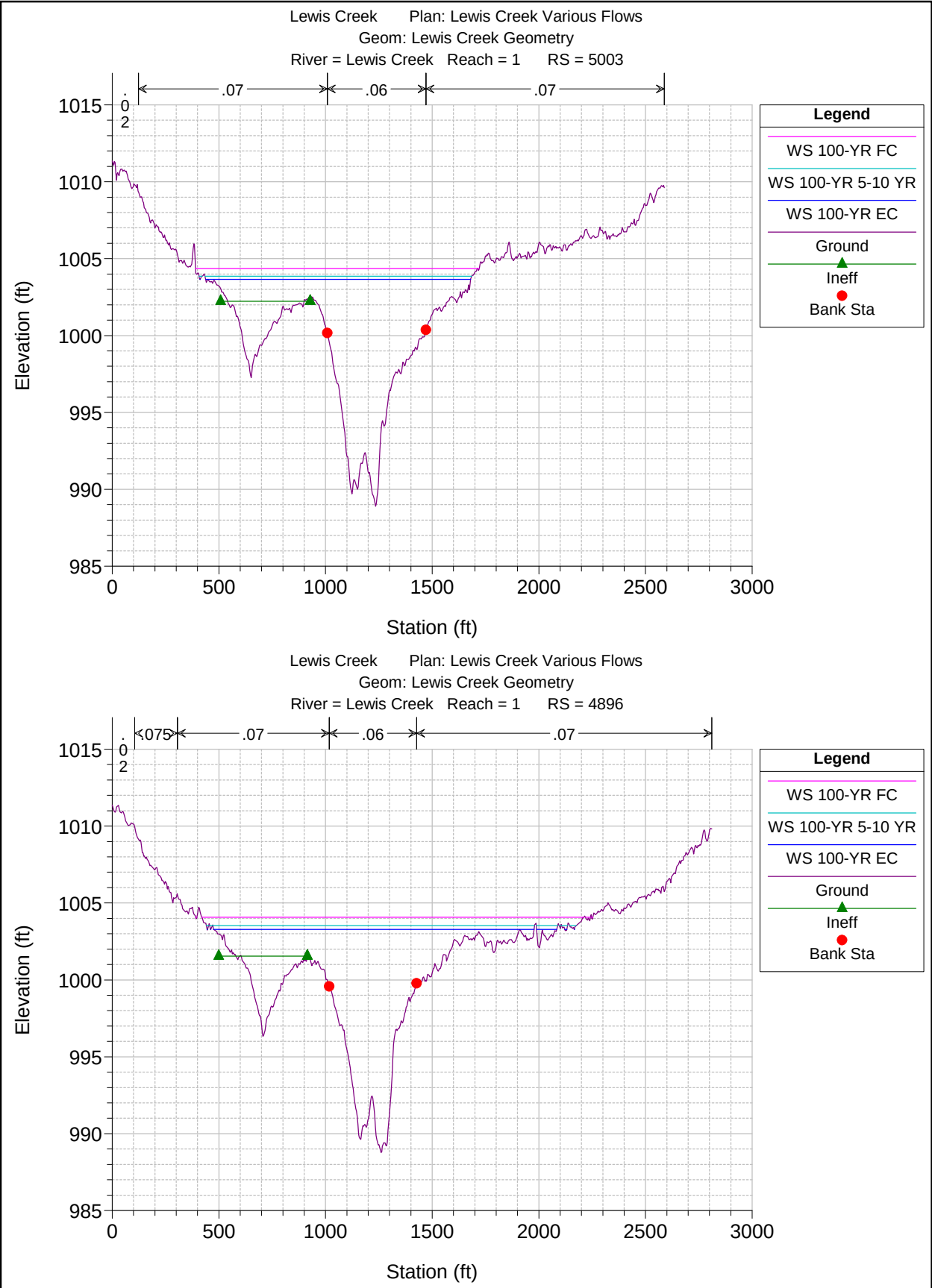


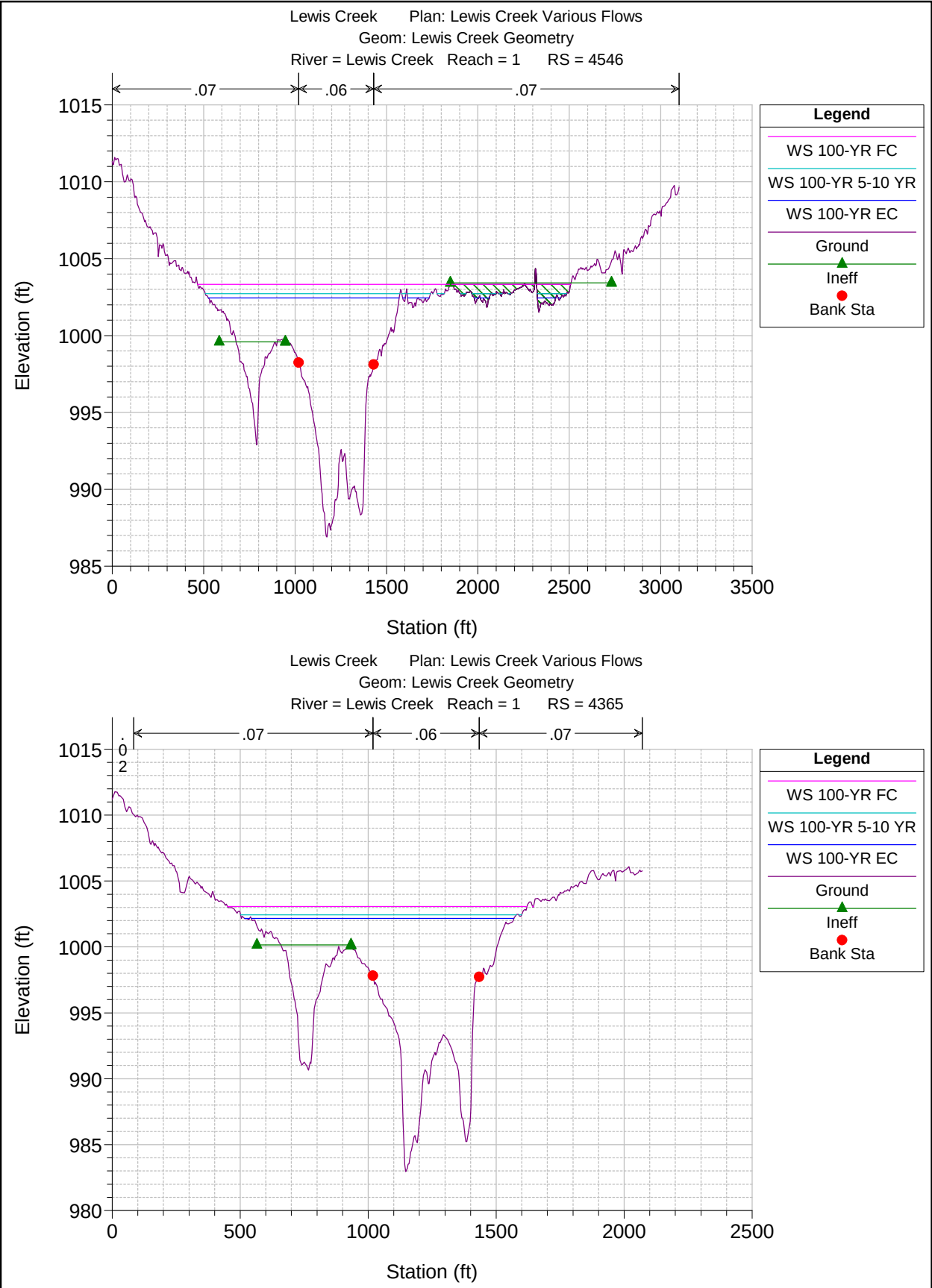


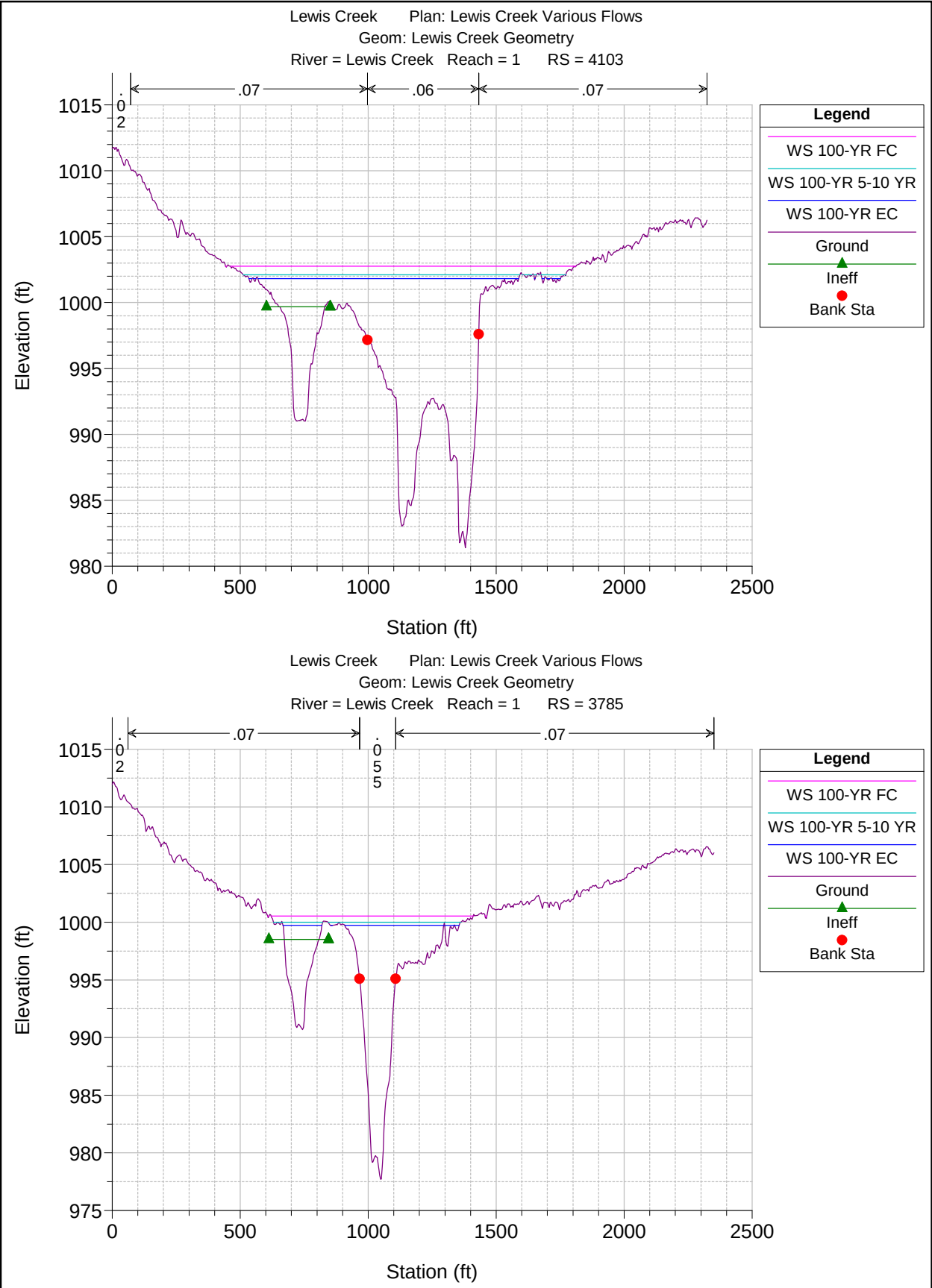


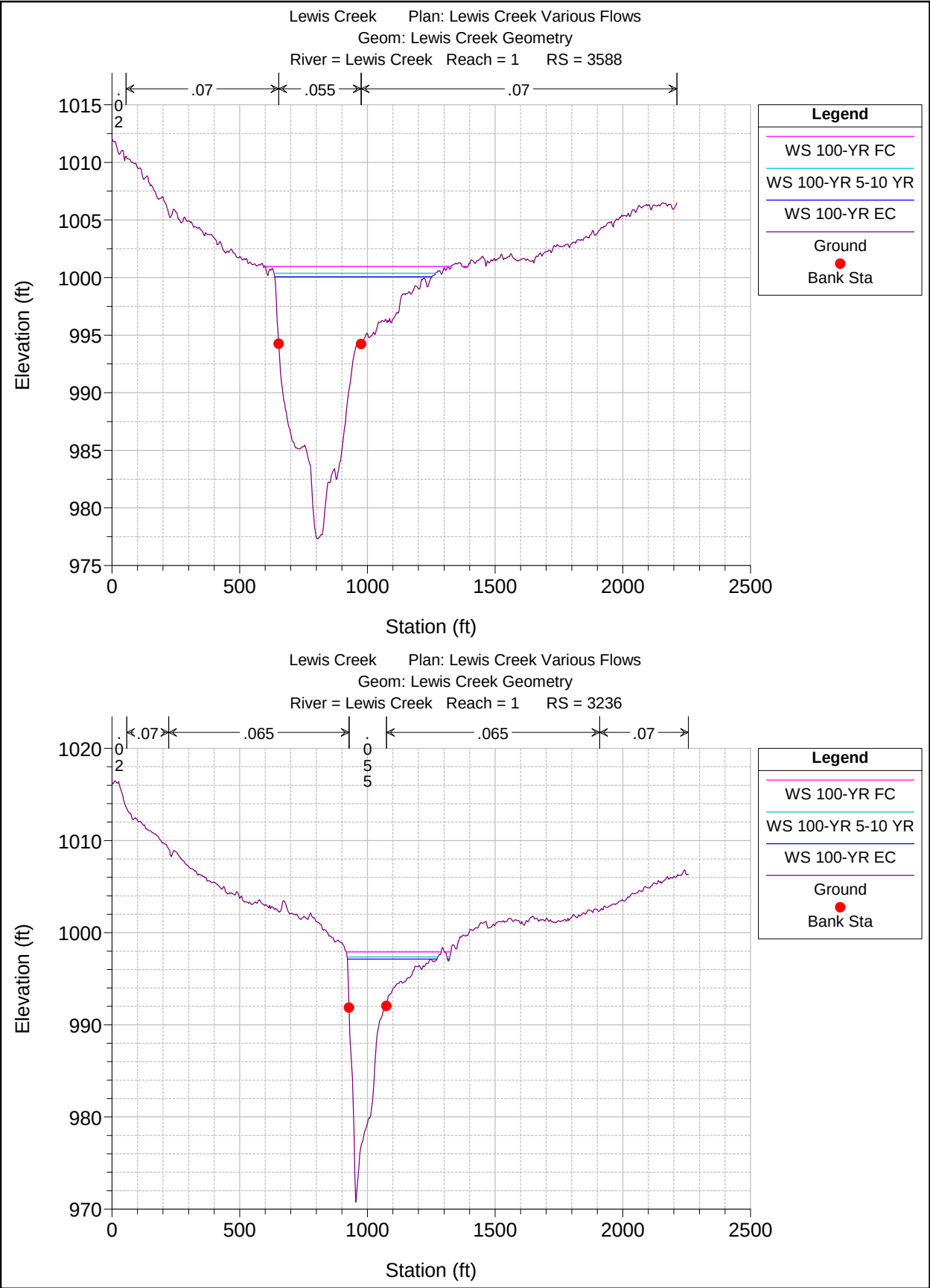


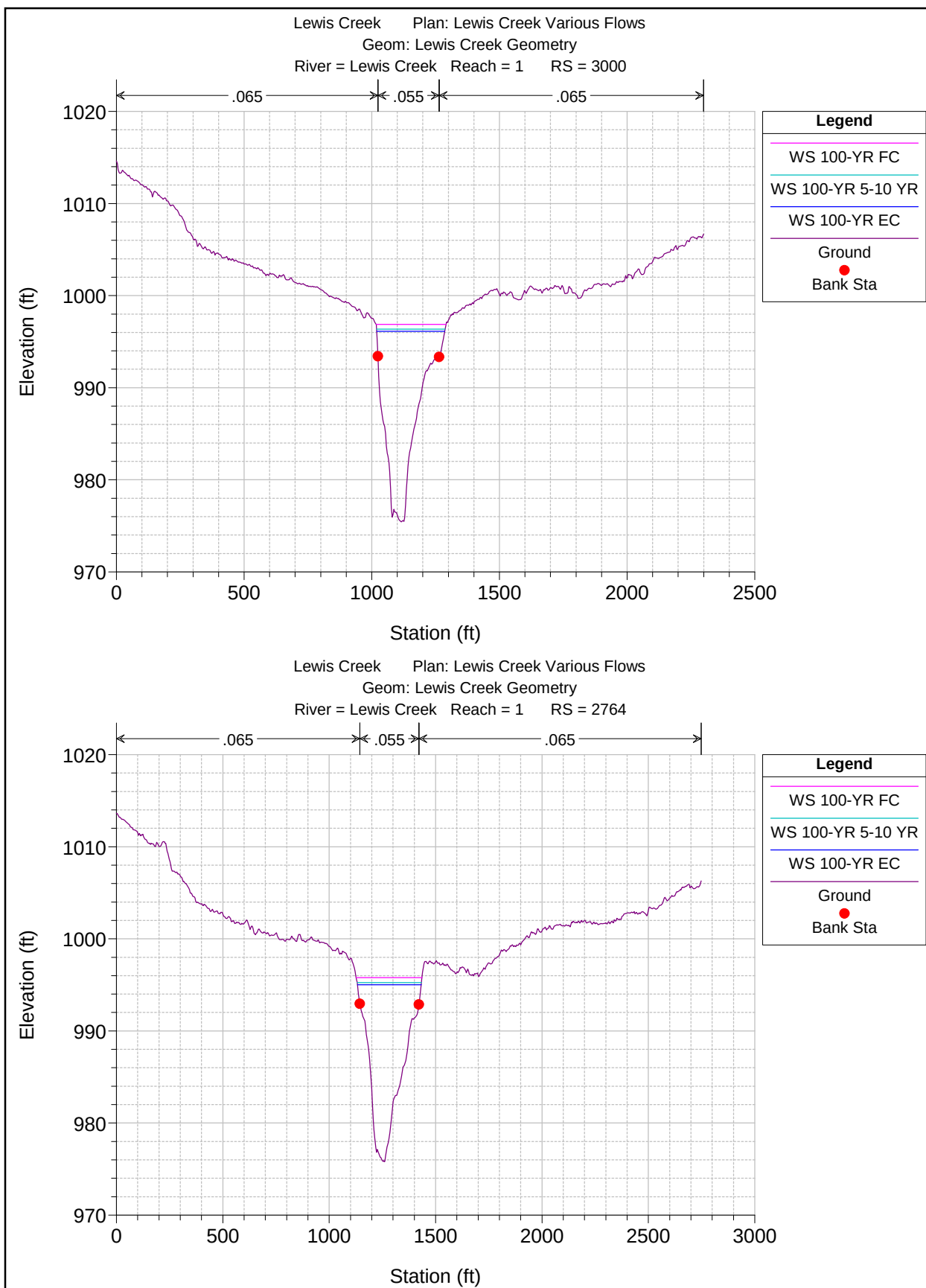


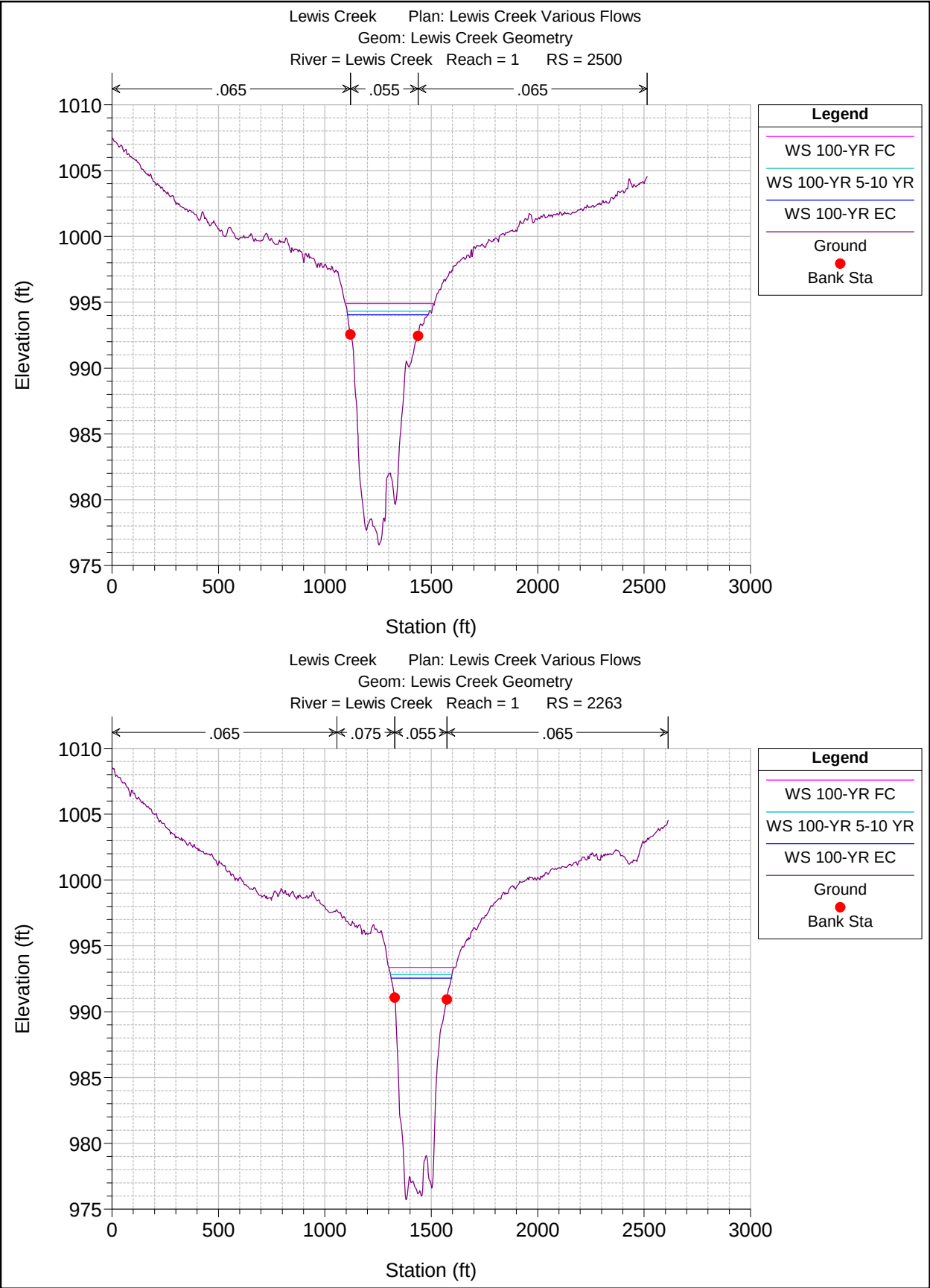


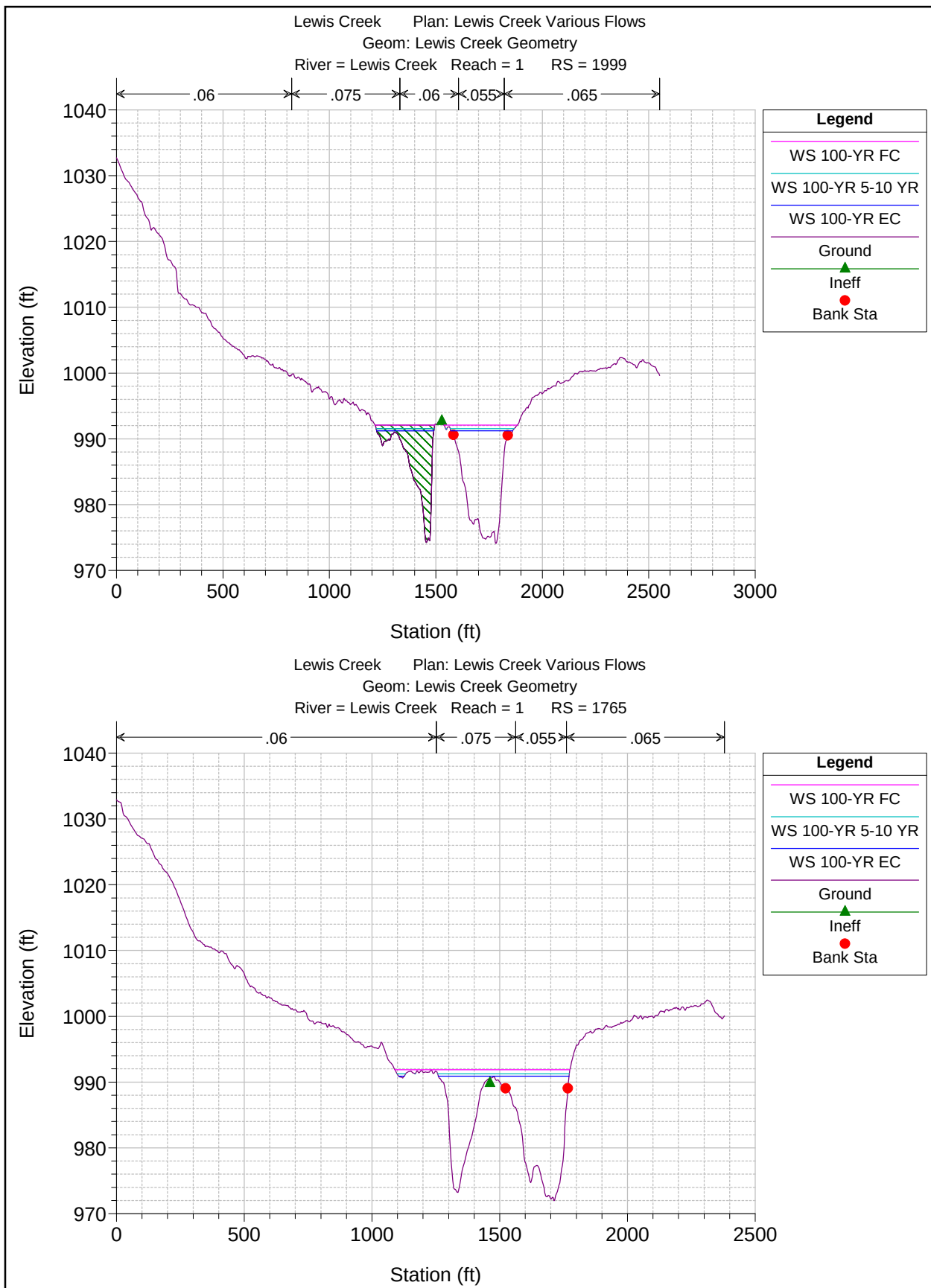


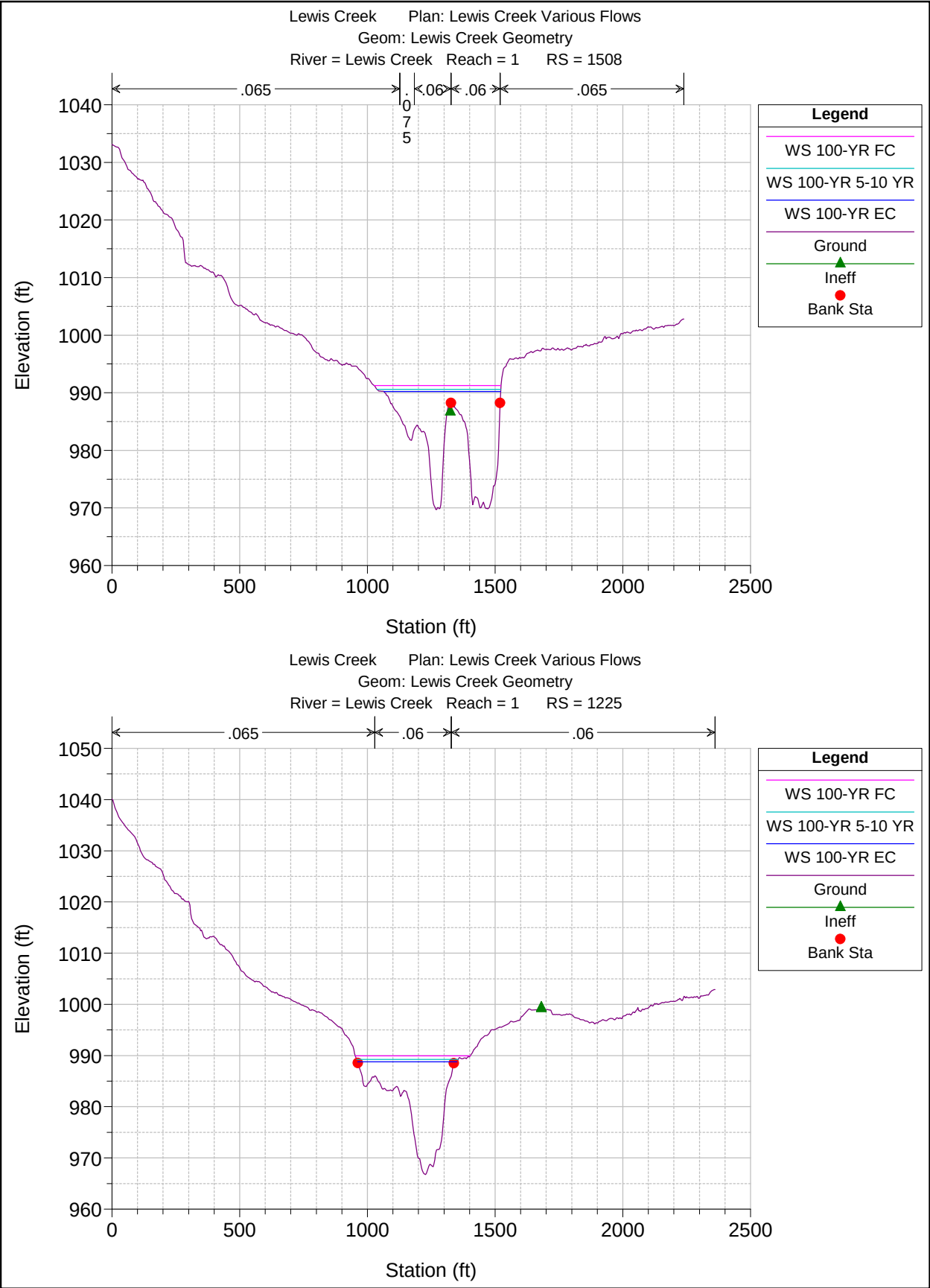


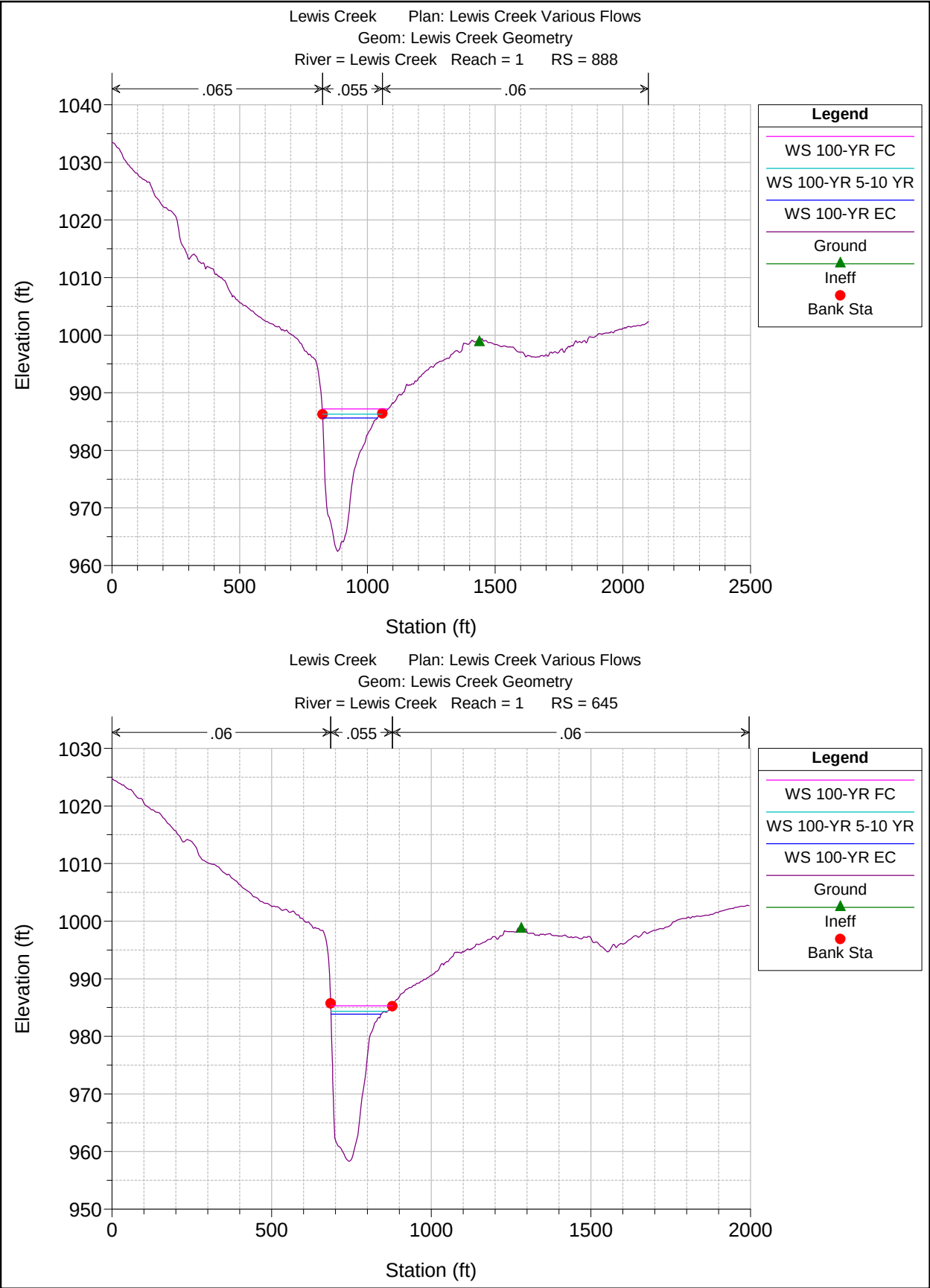


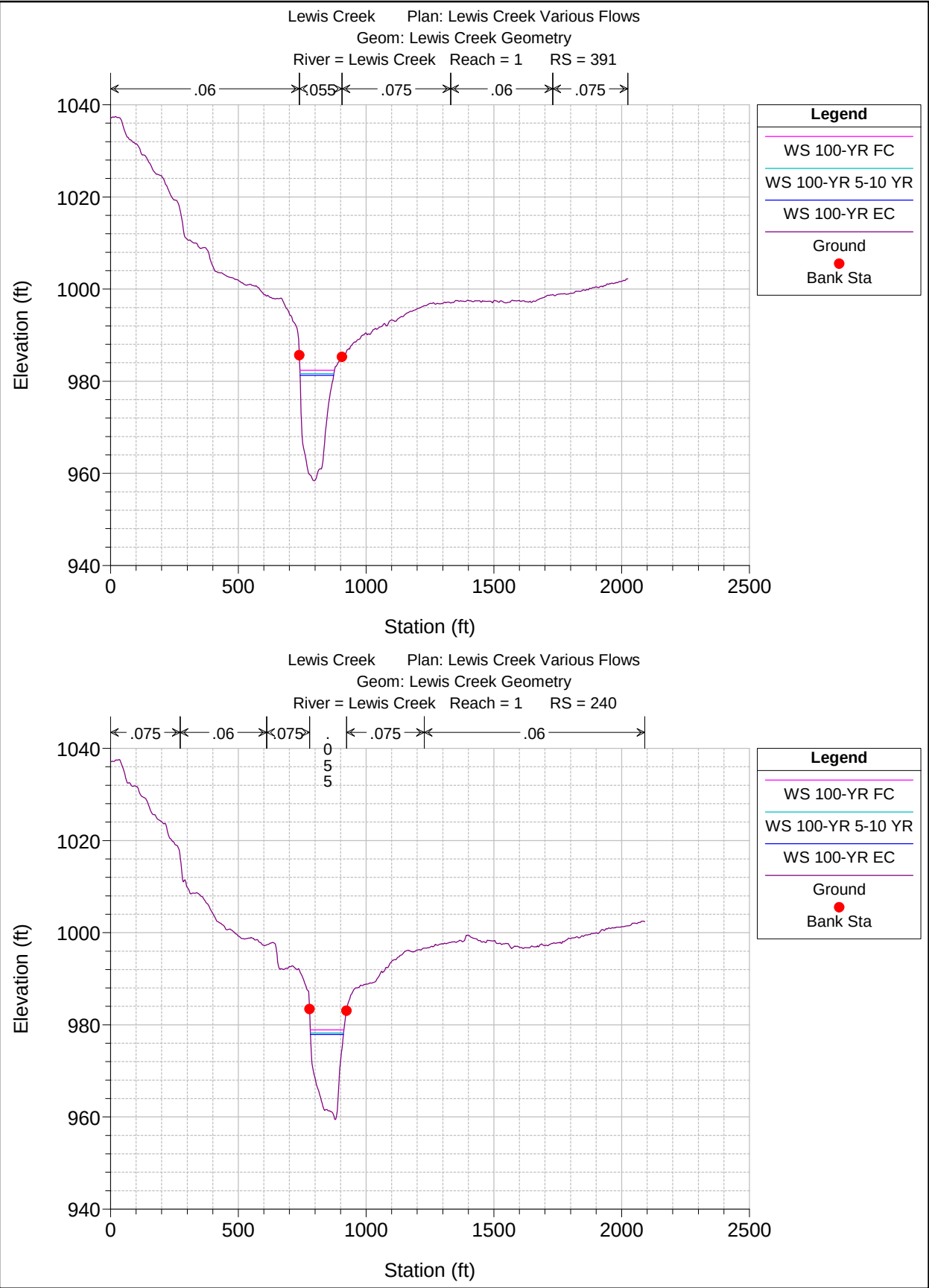






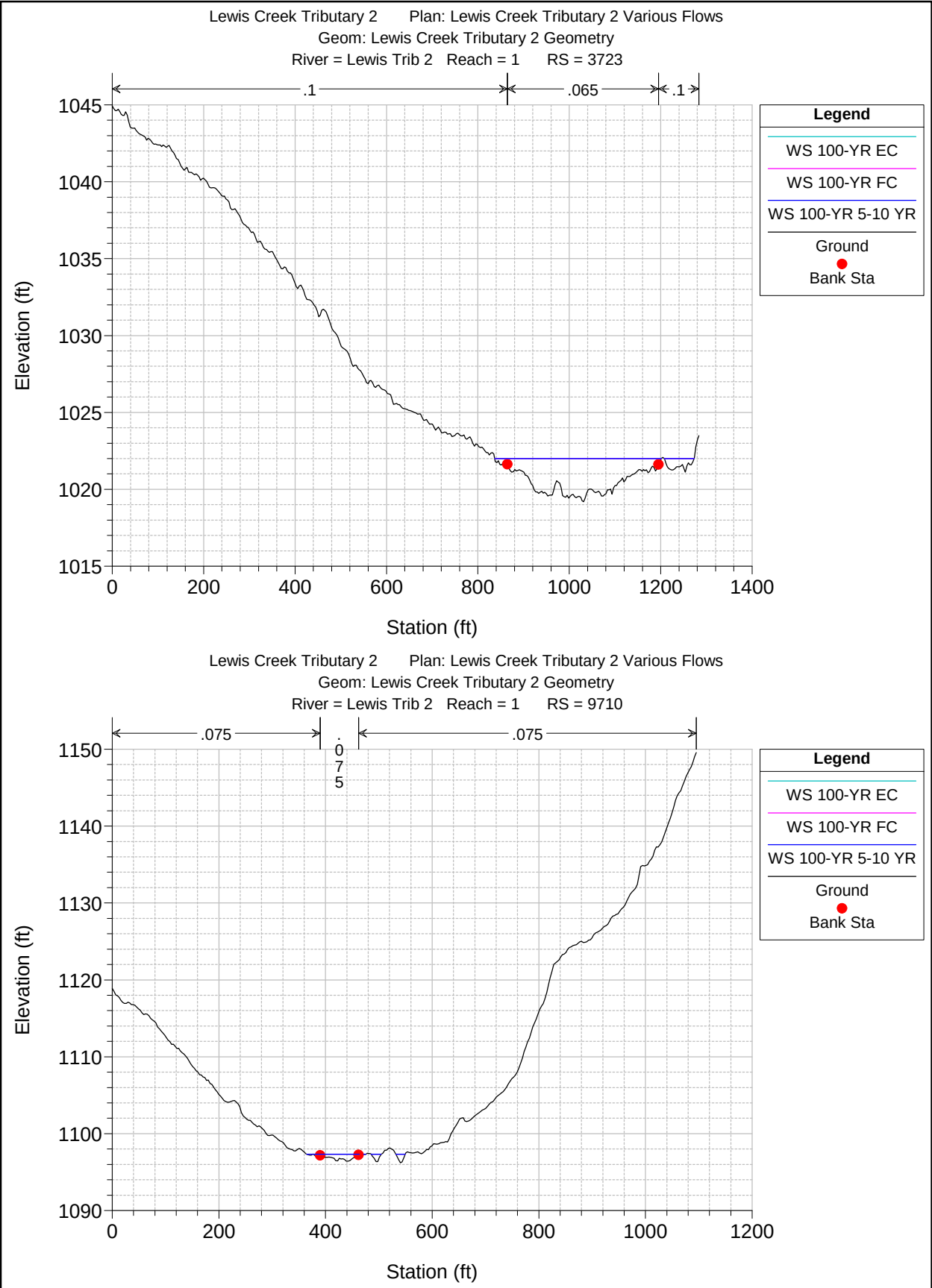


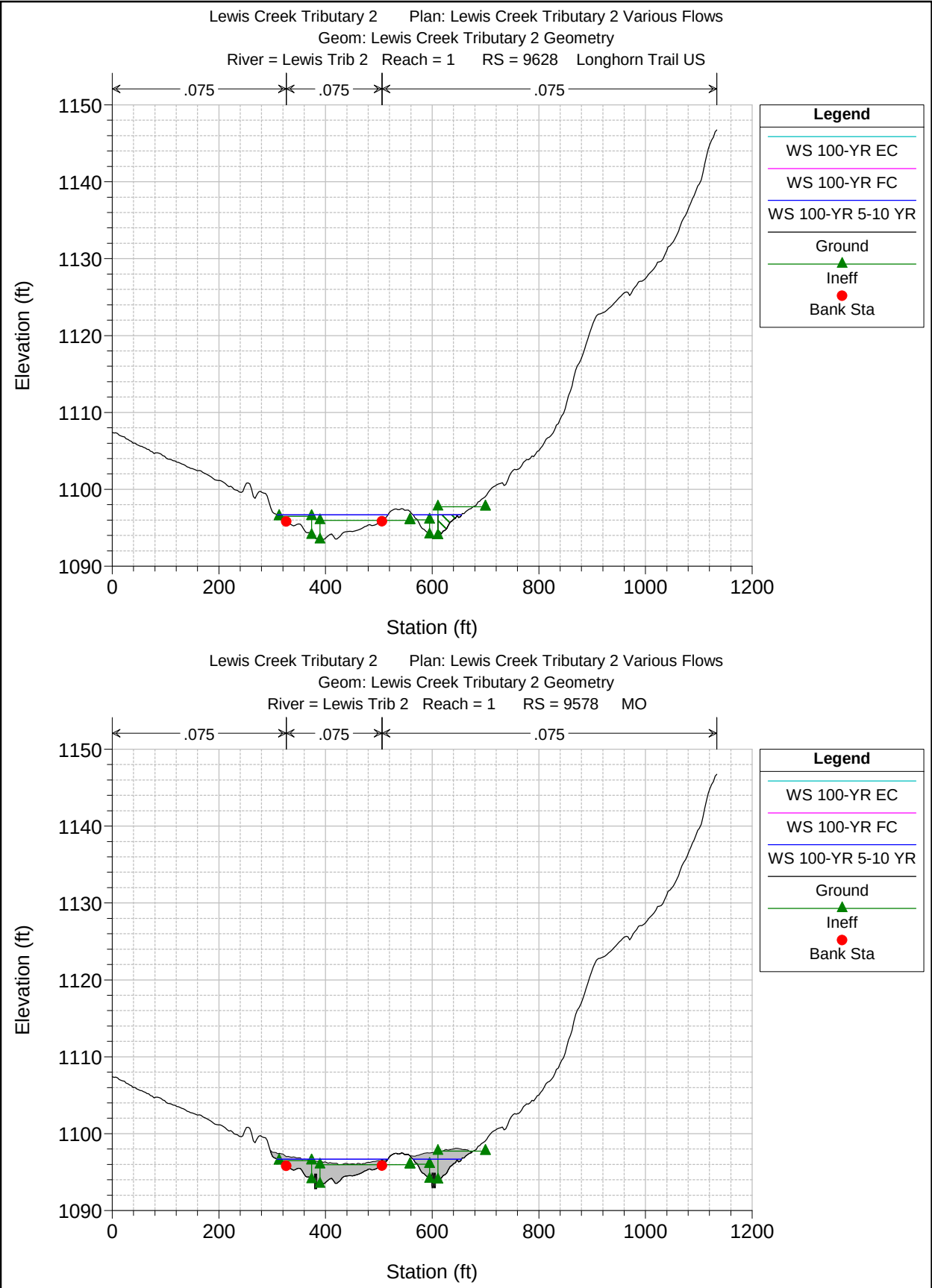


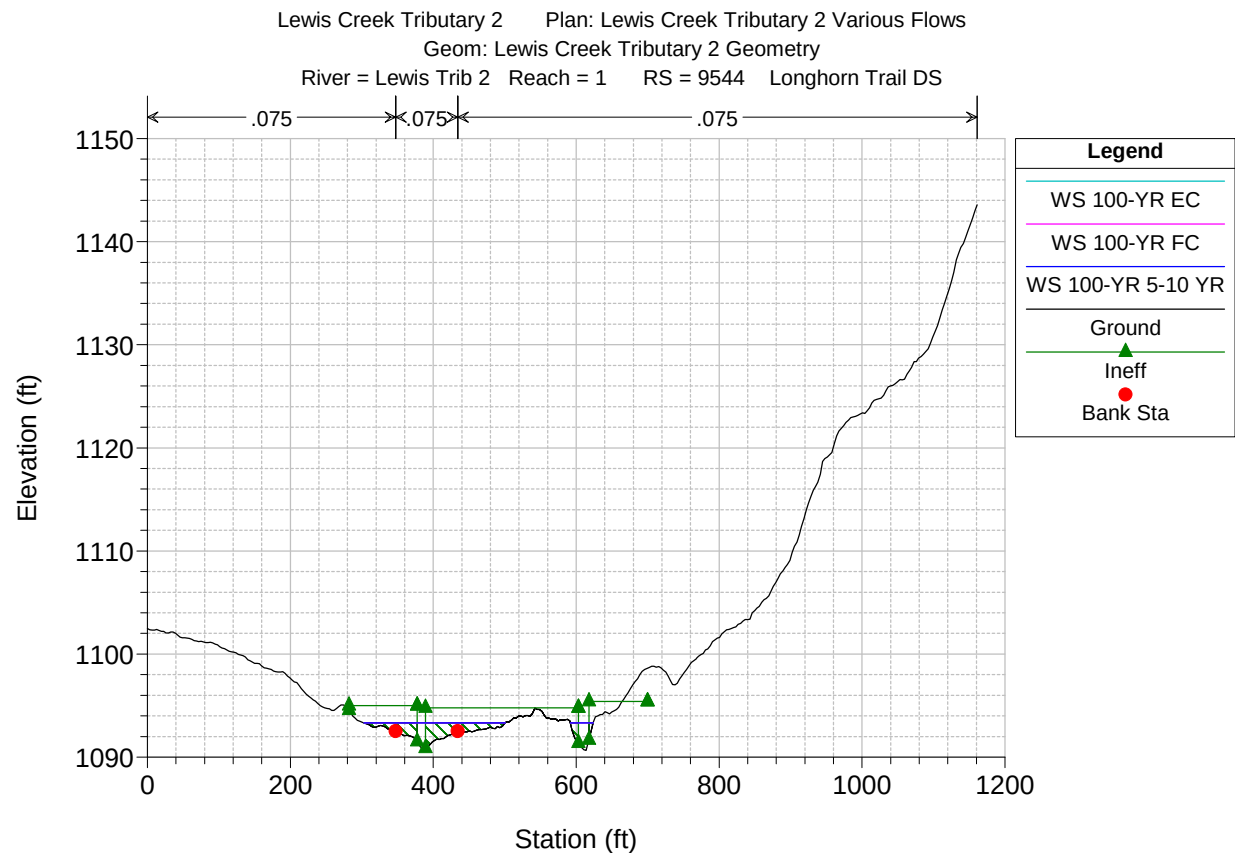
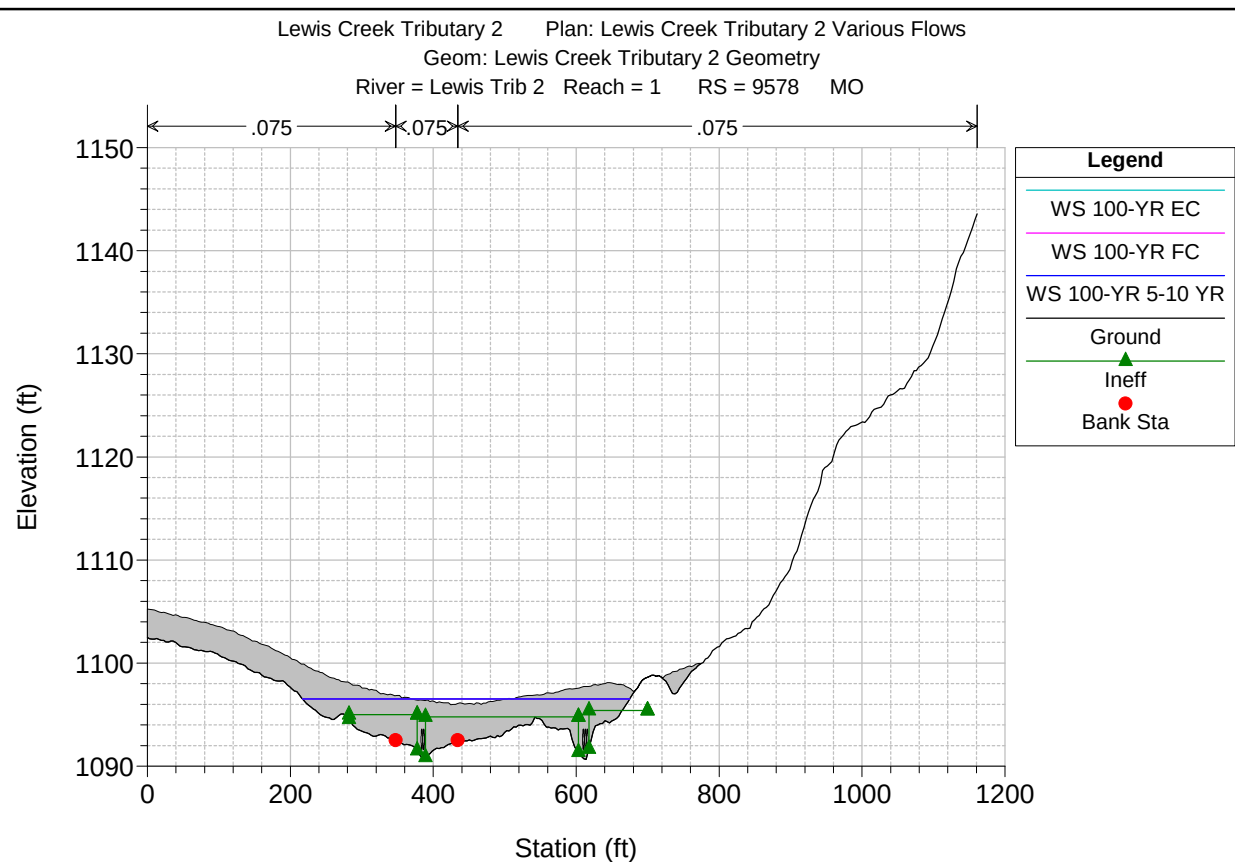


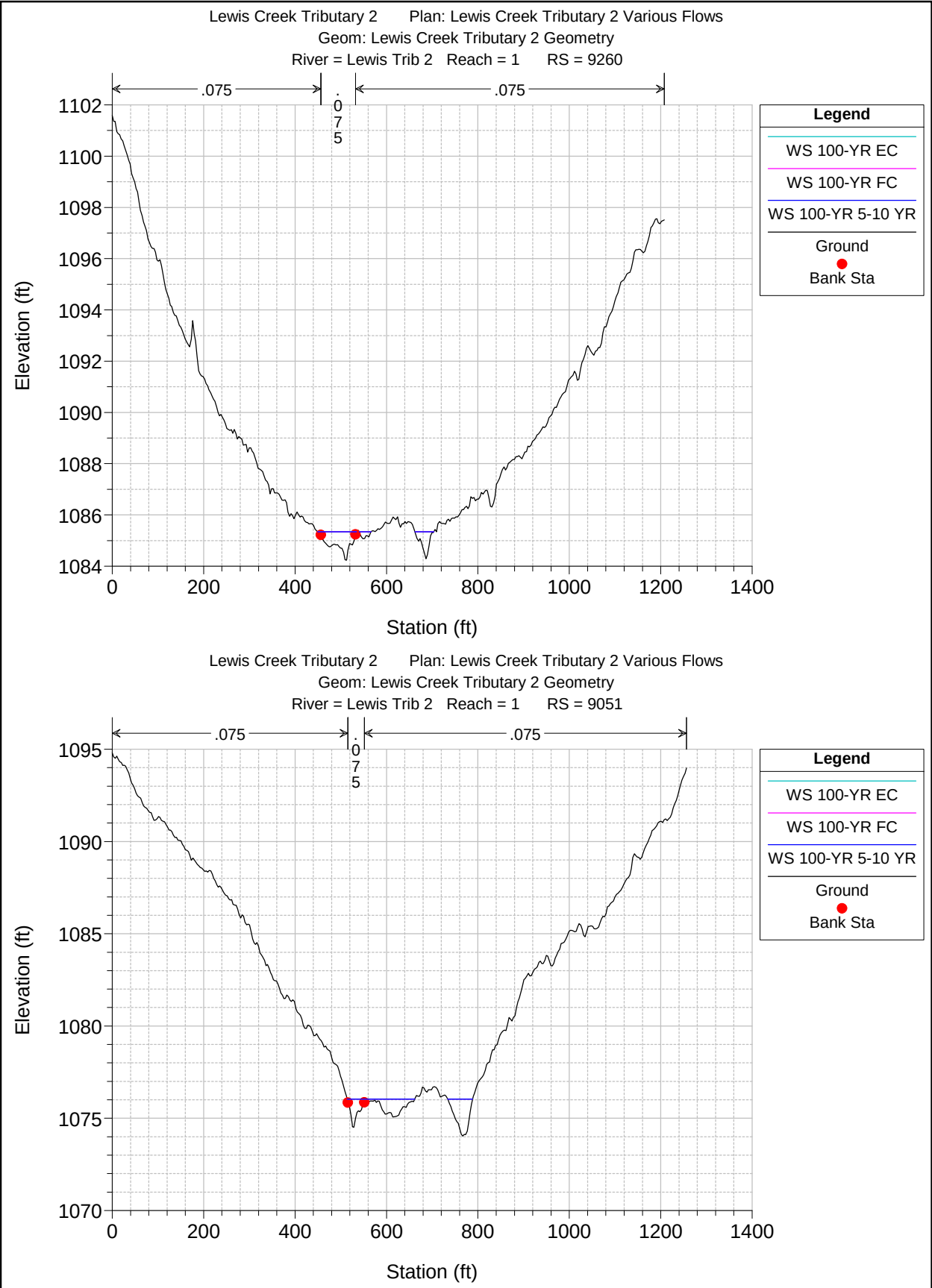
APPENDIX C.2

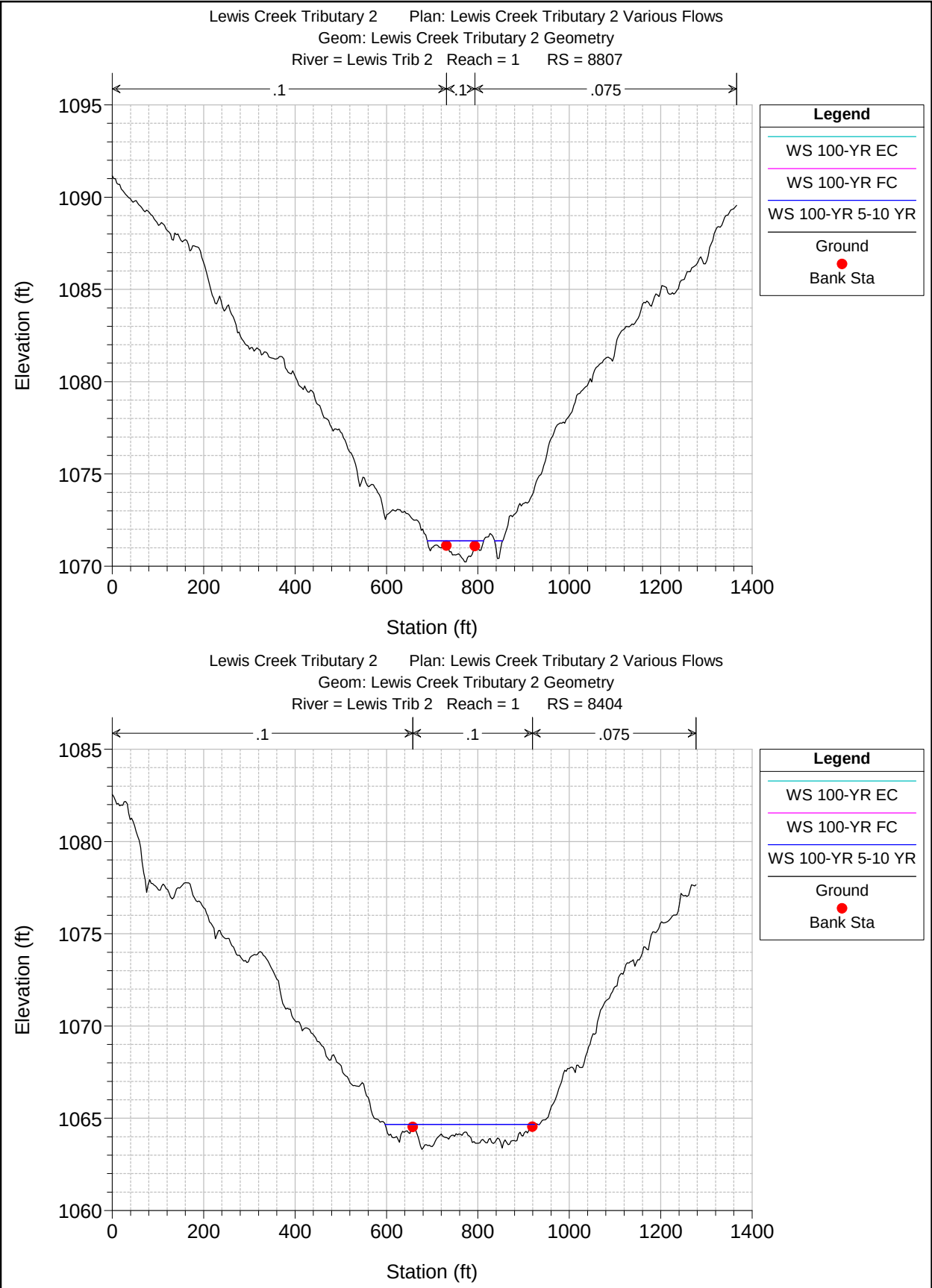
Lewis Creek Tributary 2 HEC-RAS Cross Sections

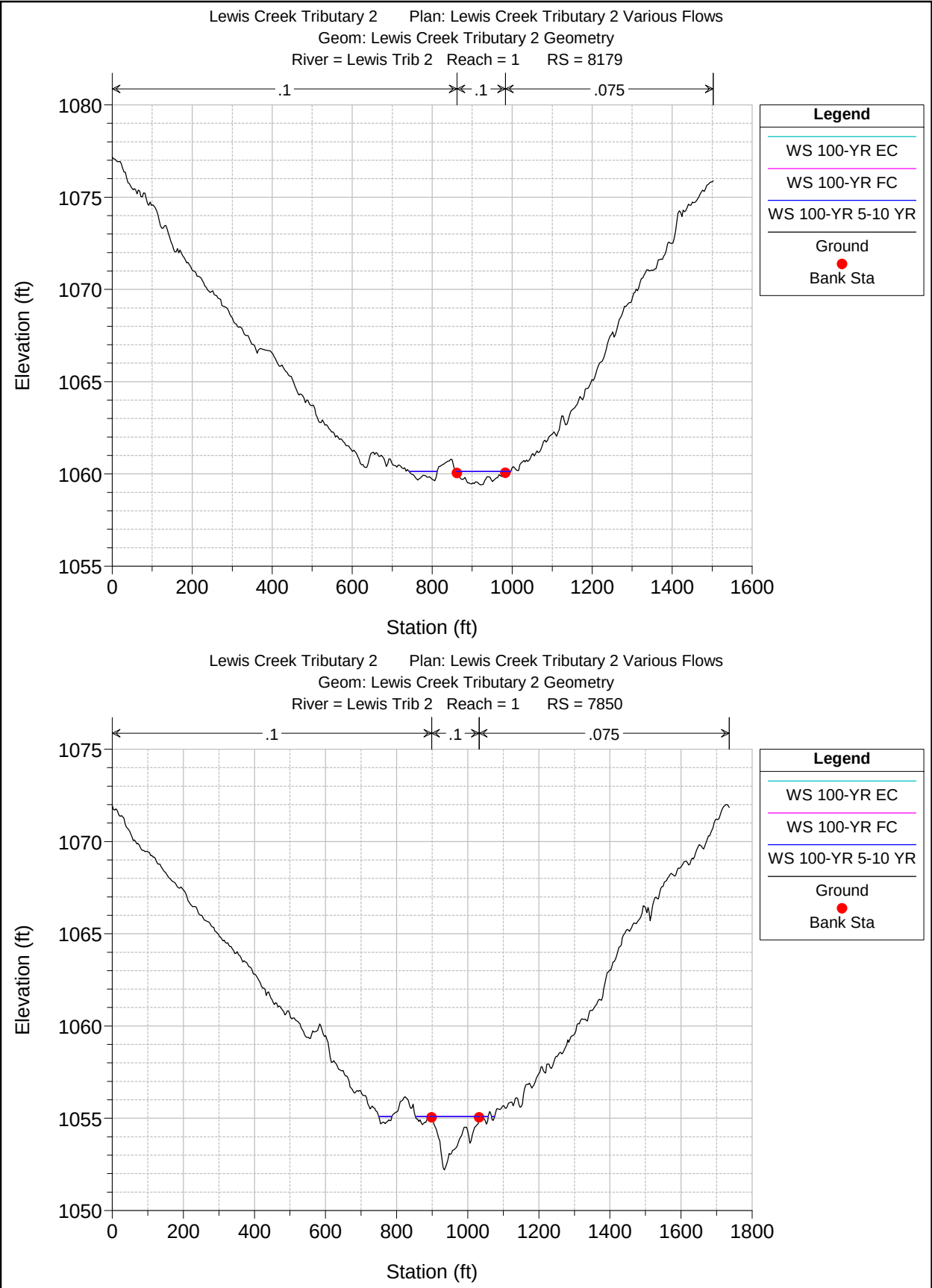


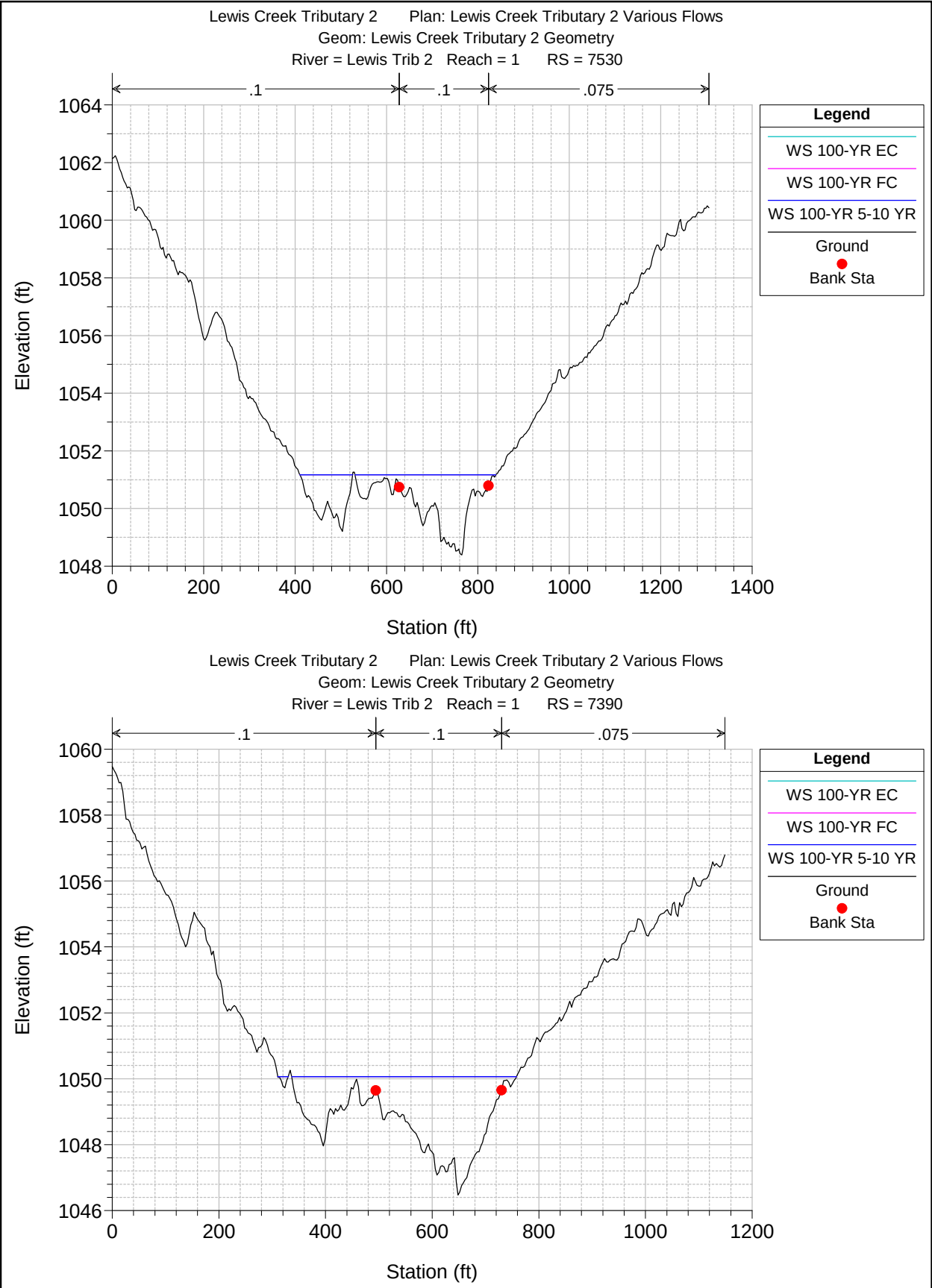


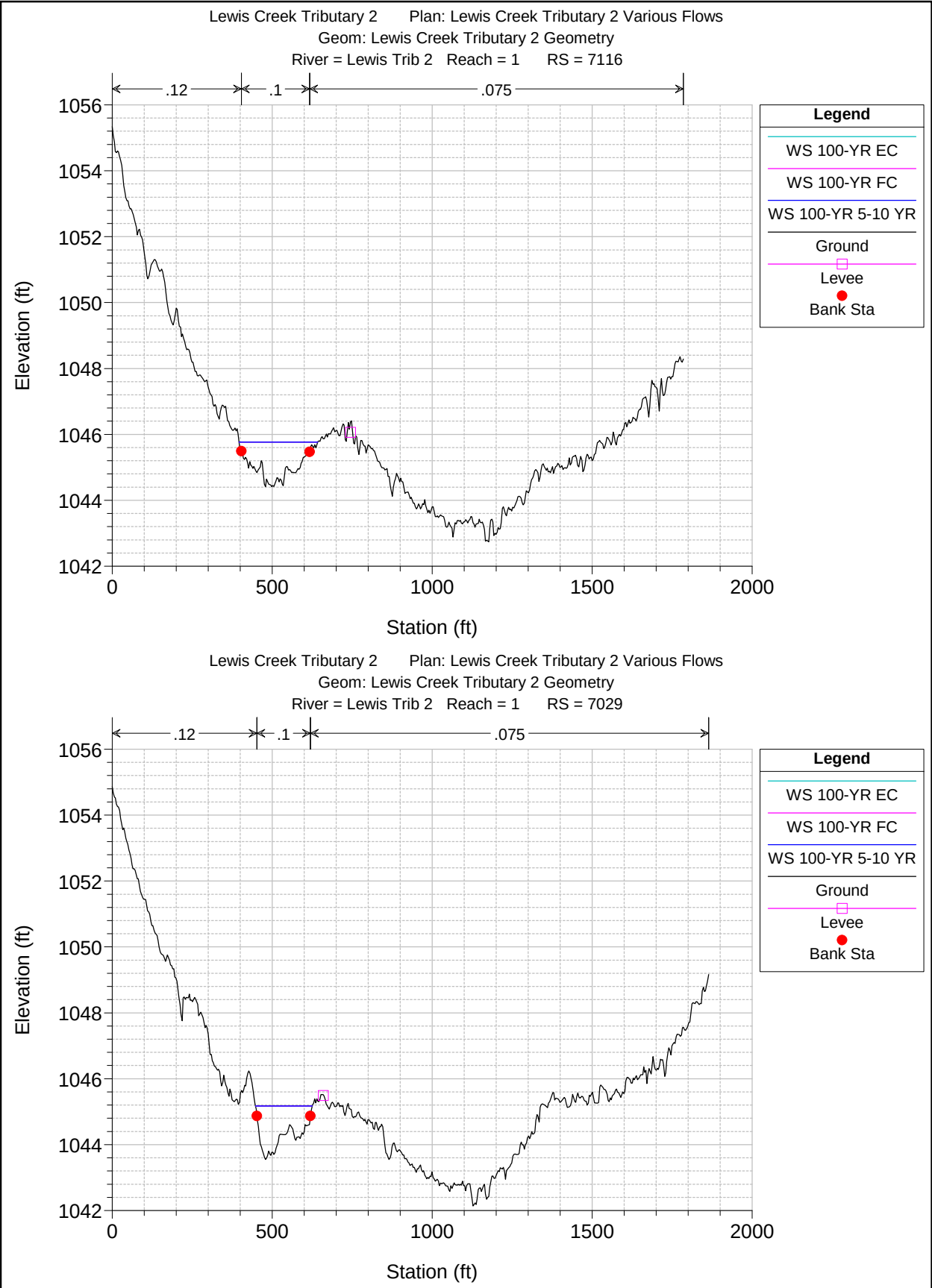


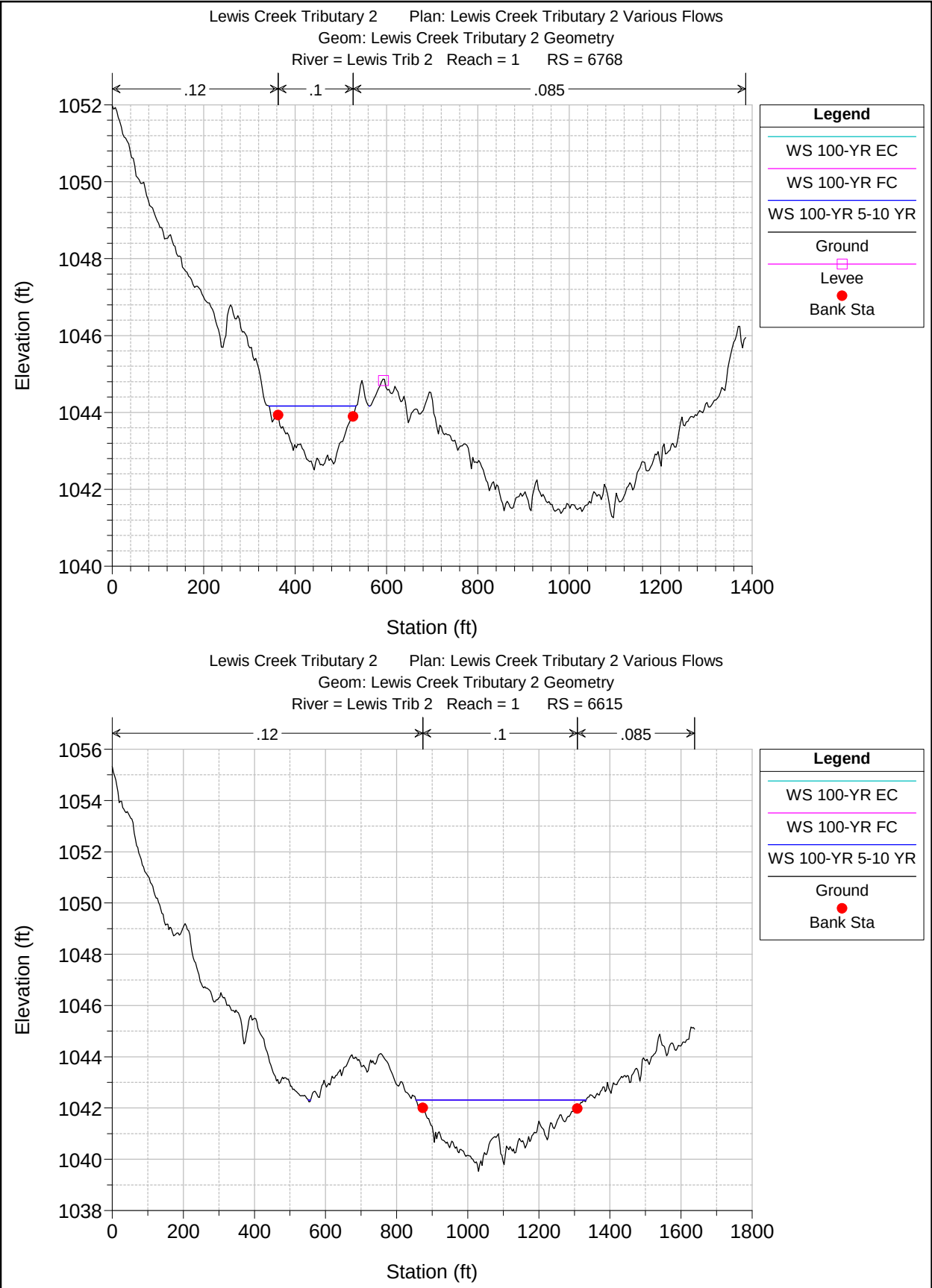


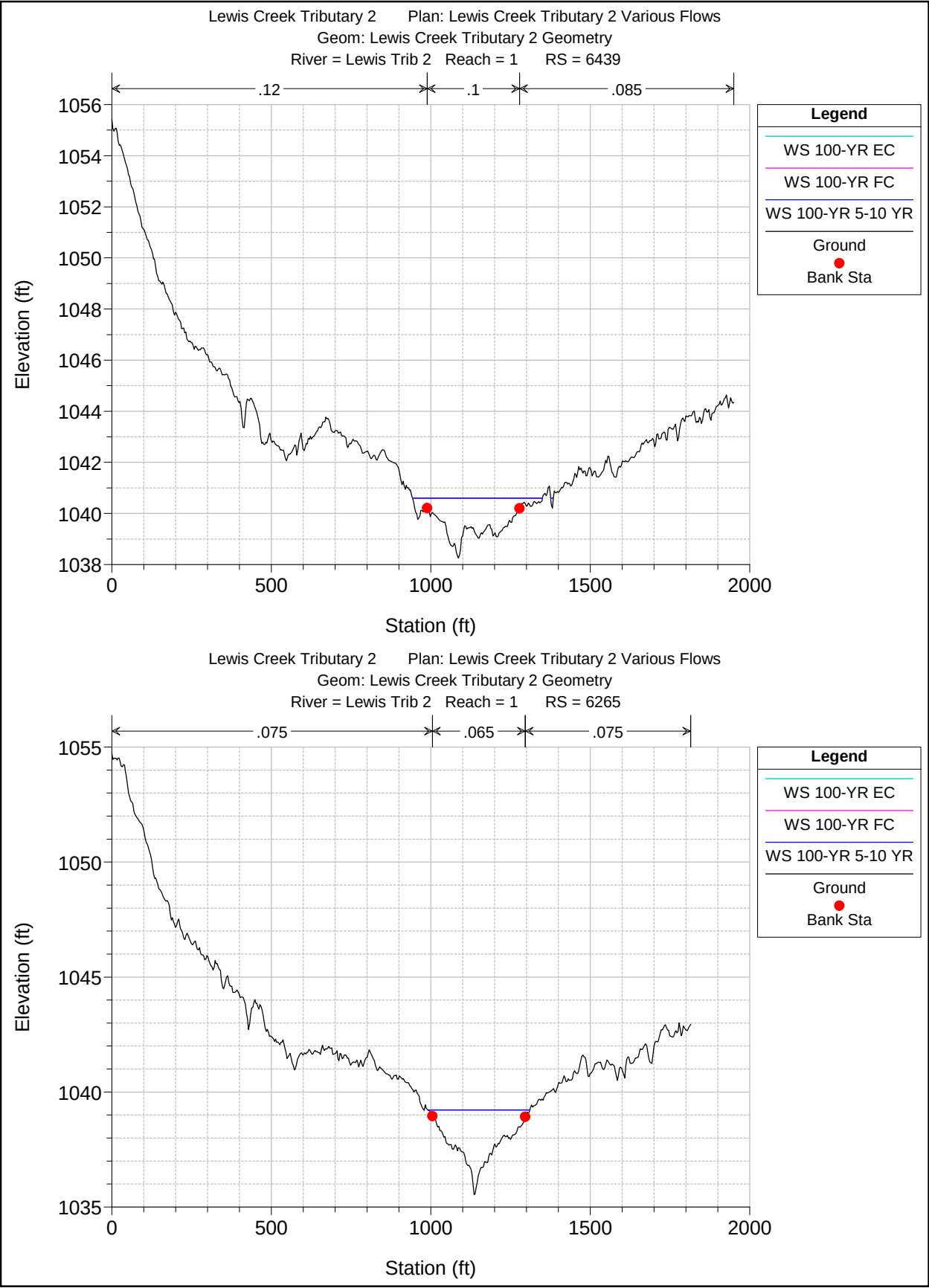


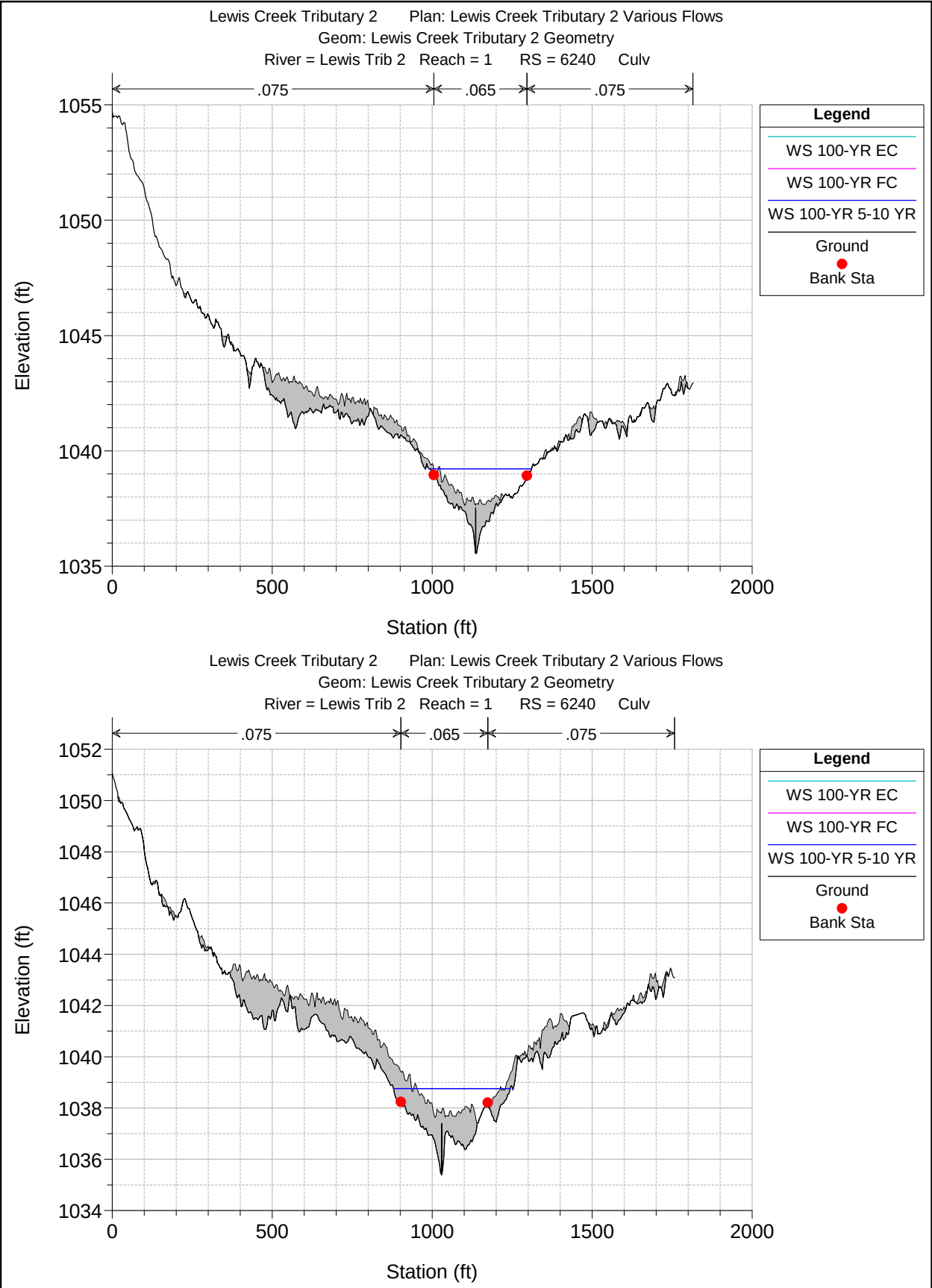


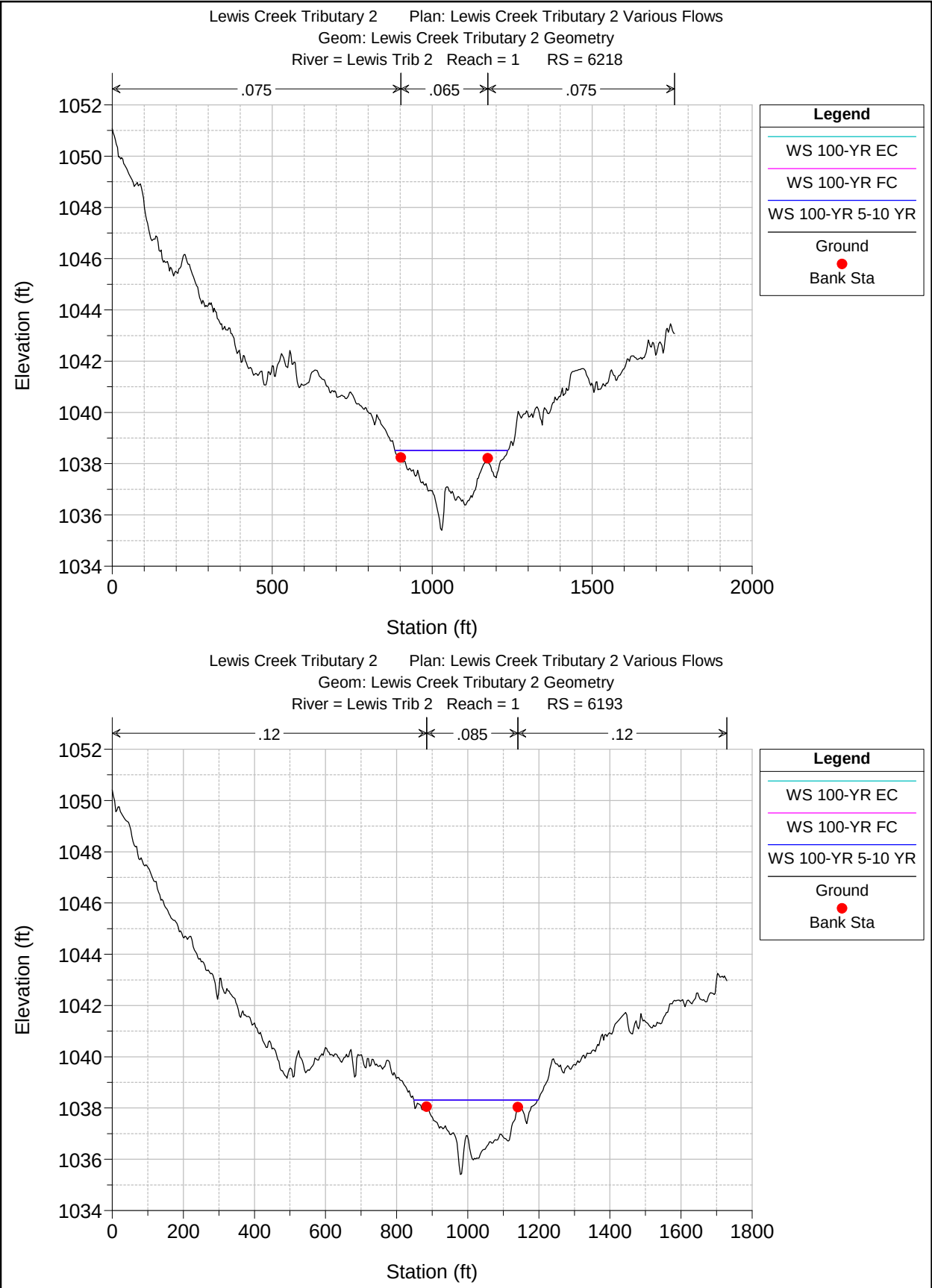


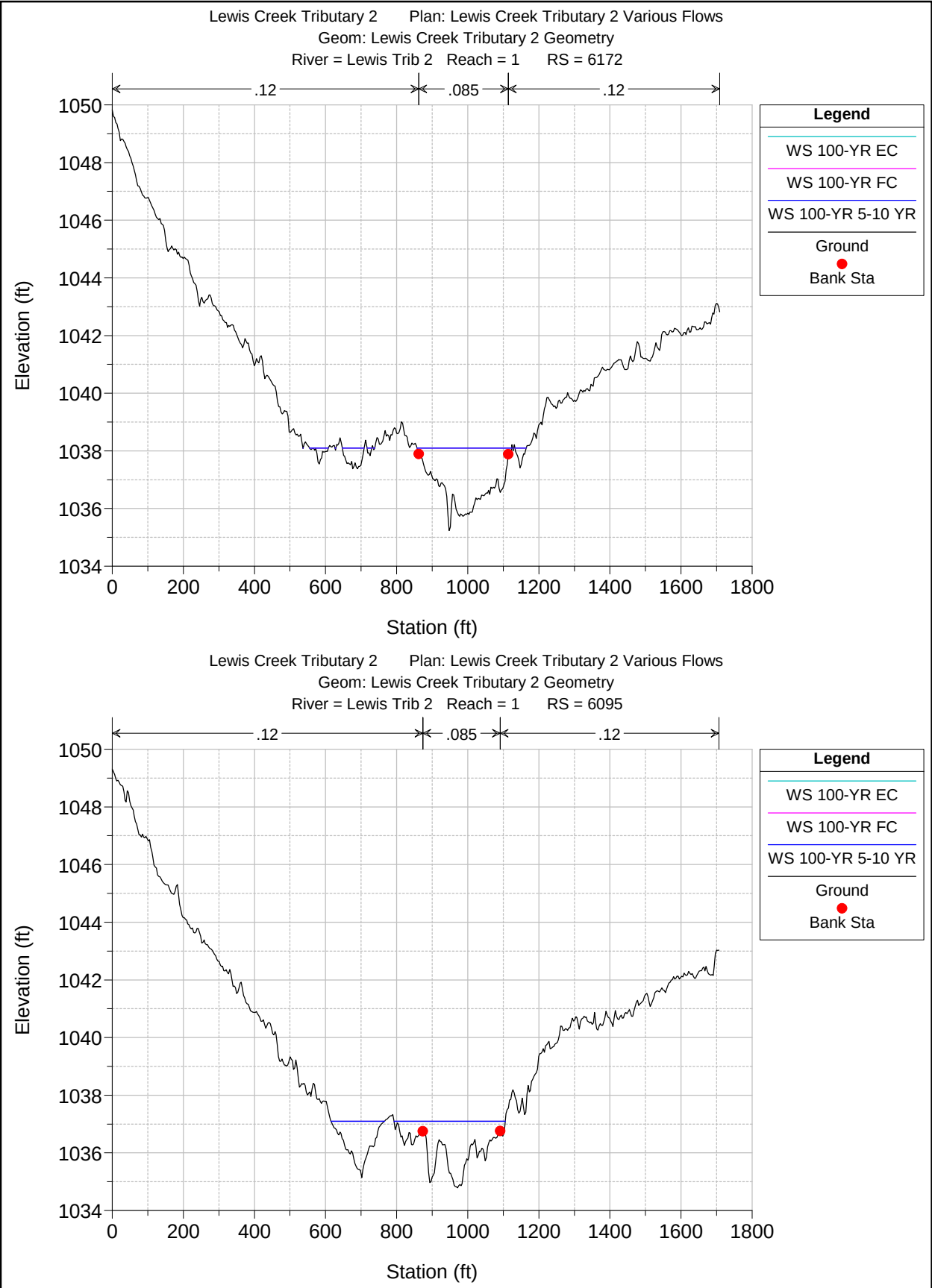


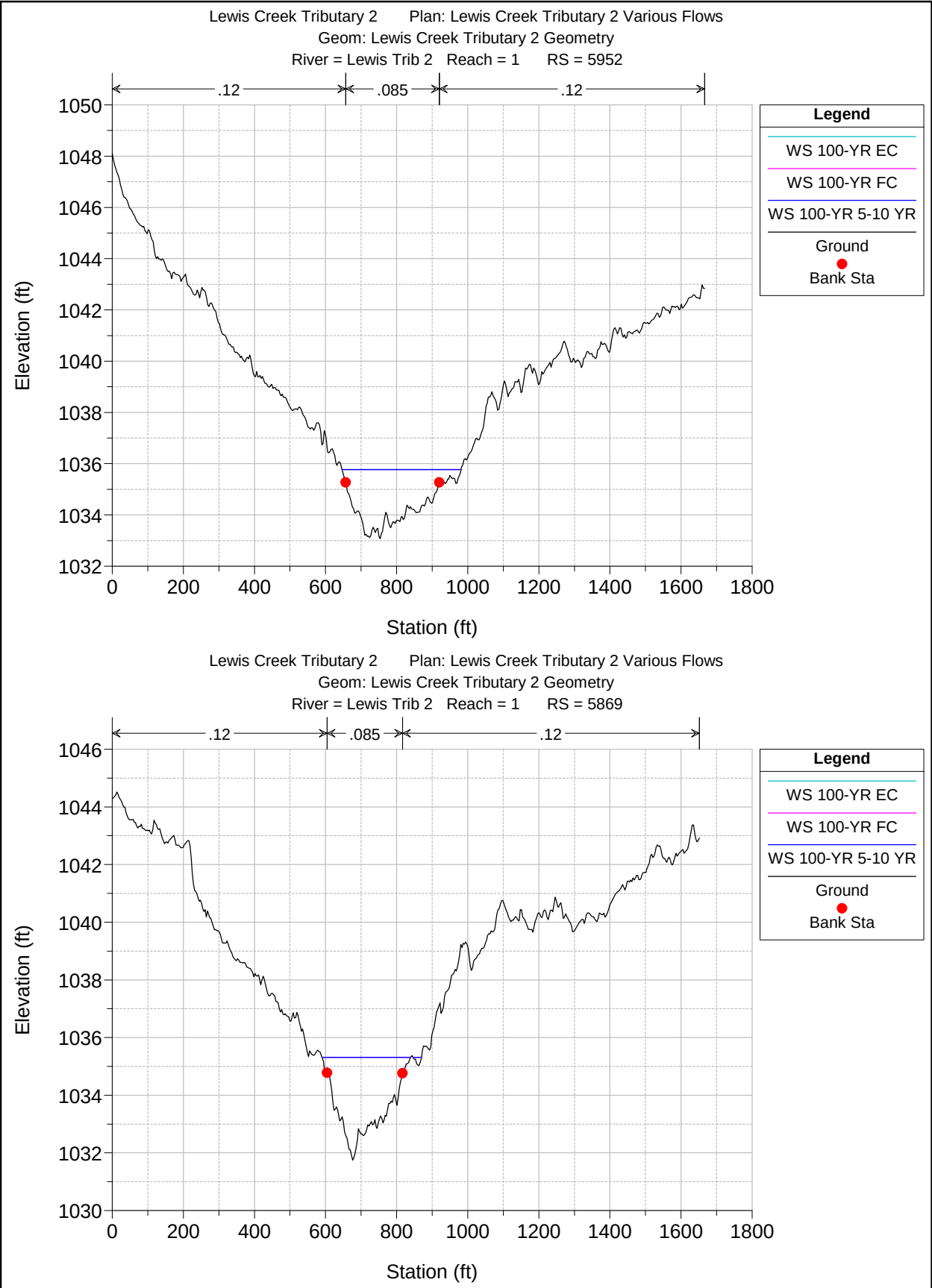


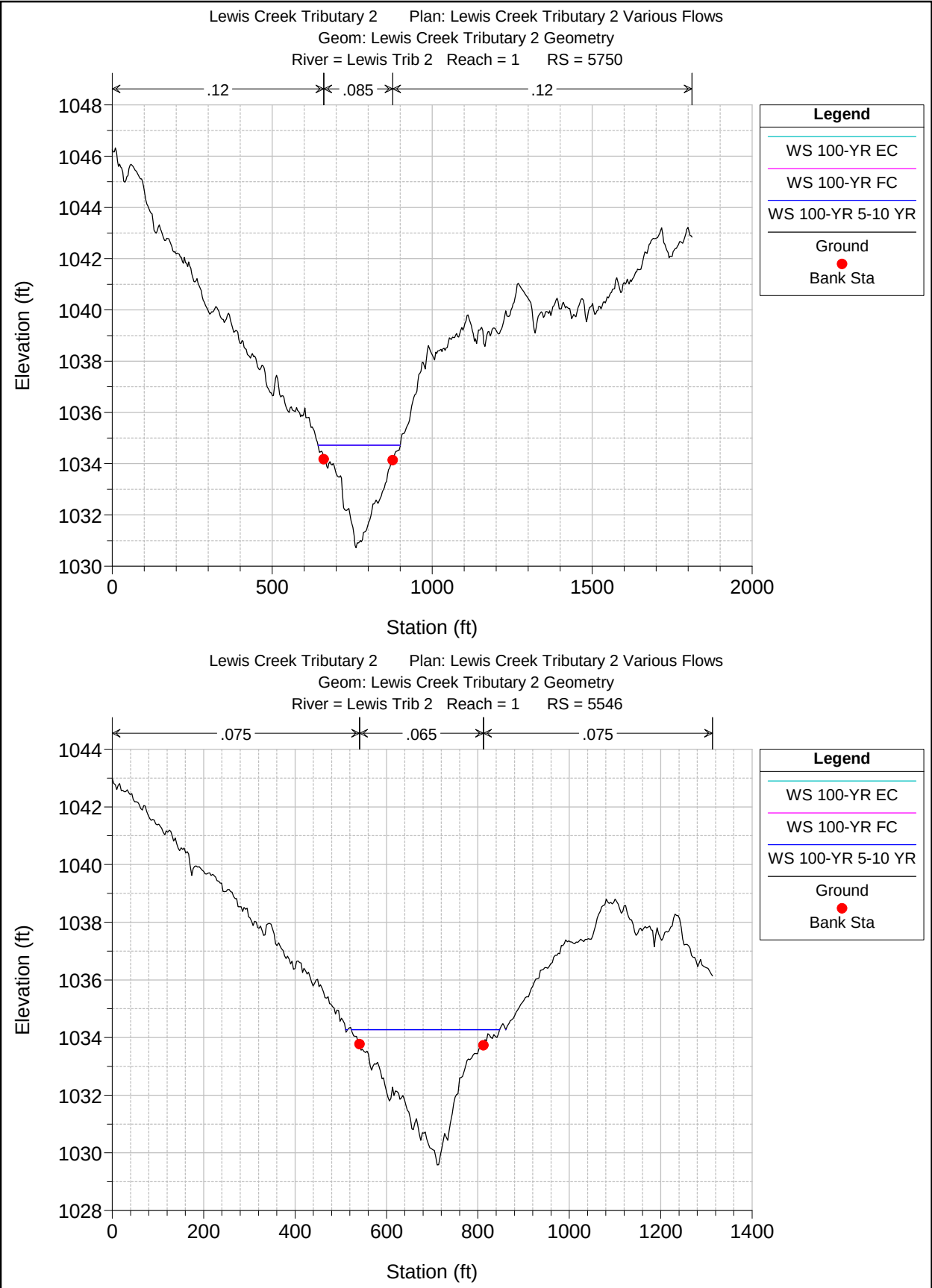


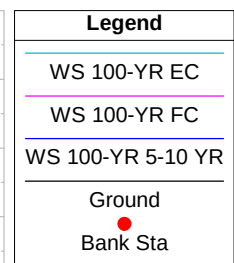
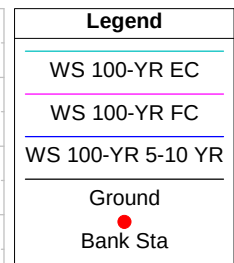
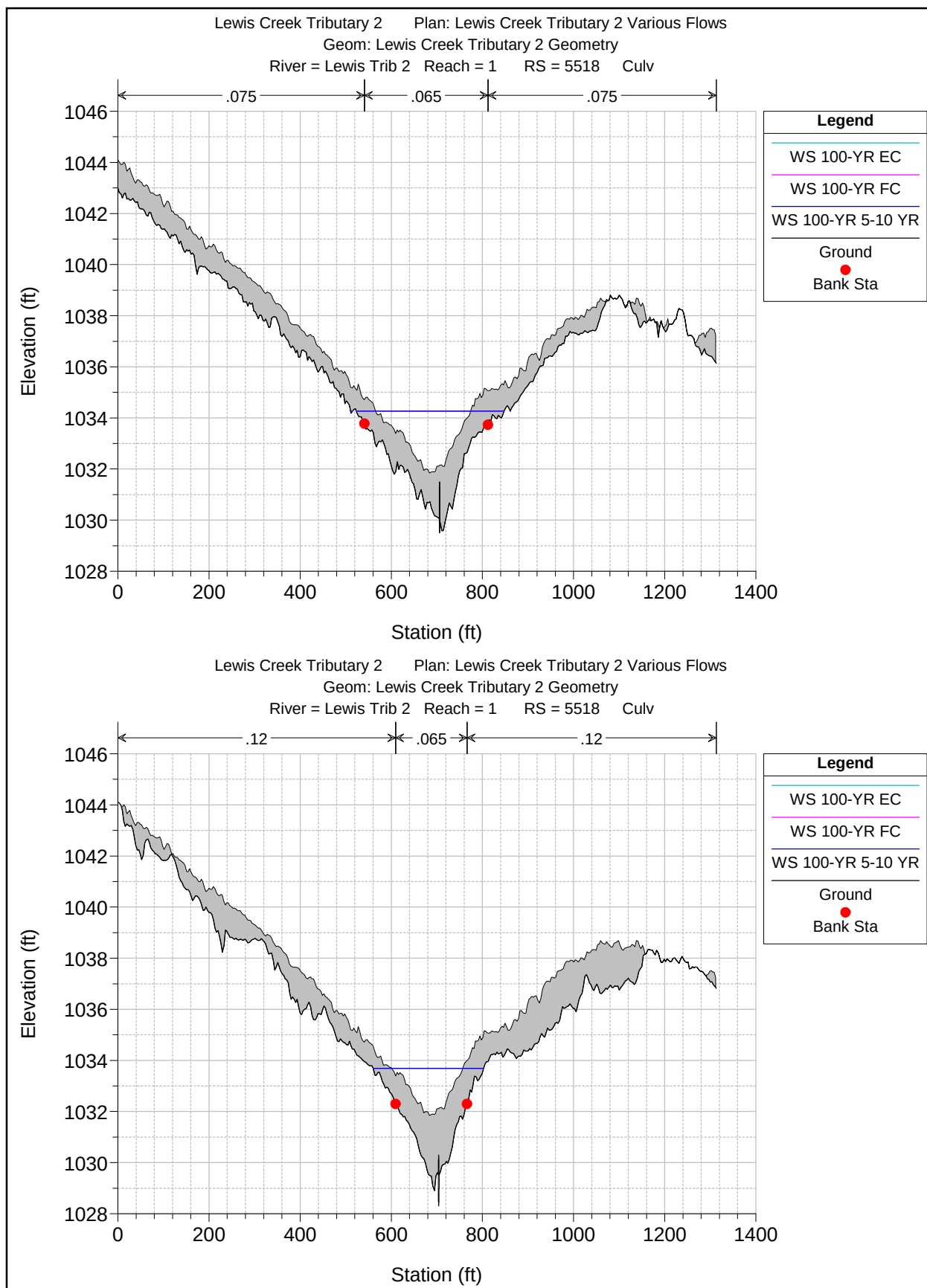


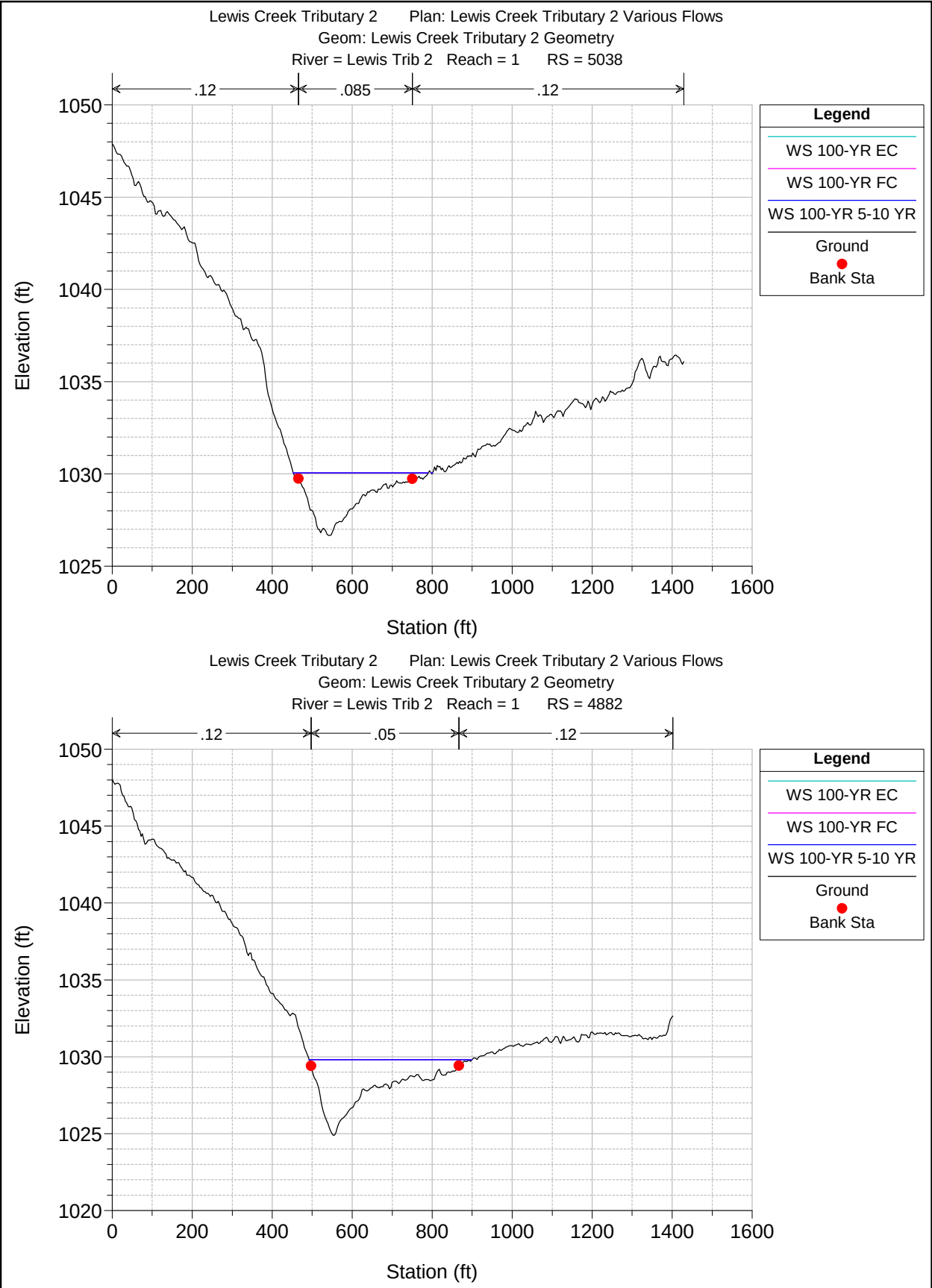


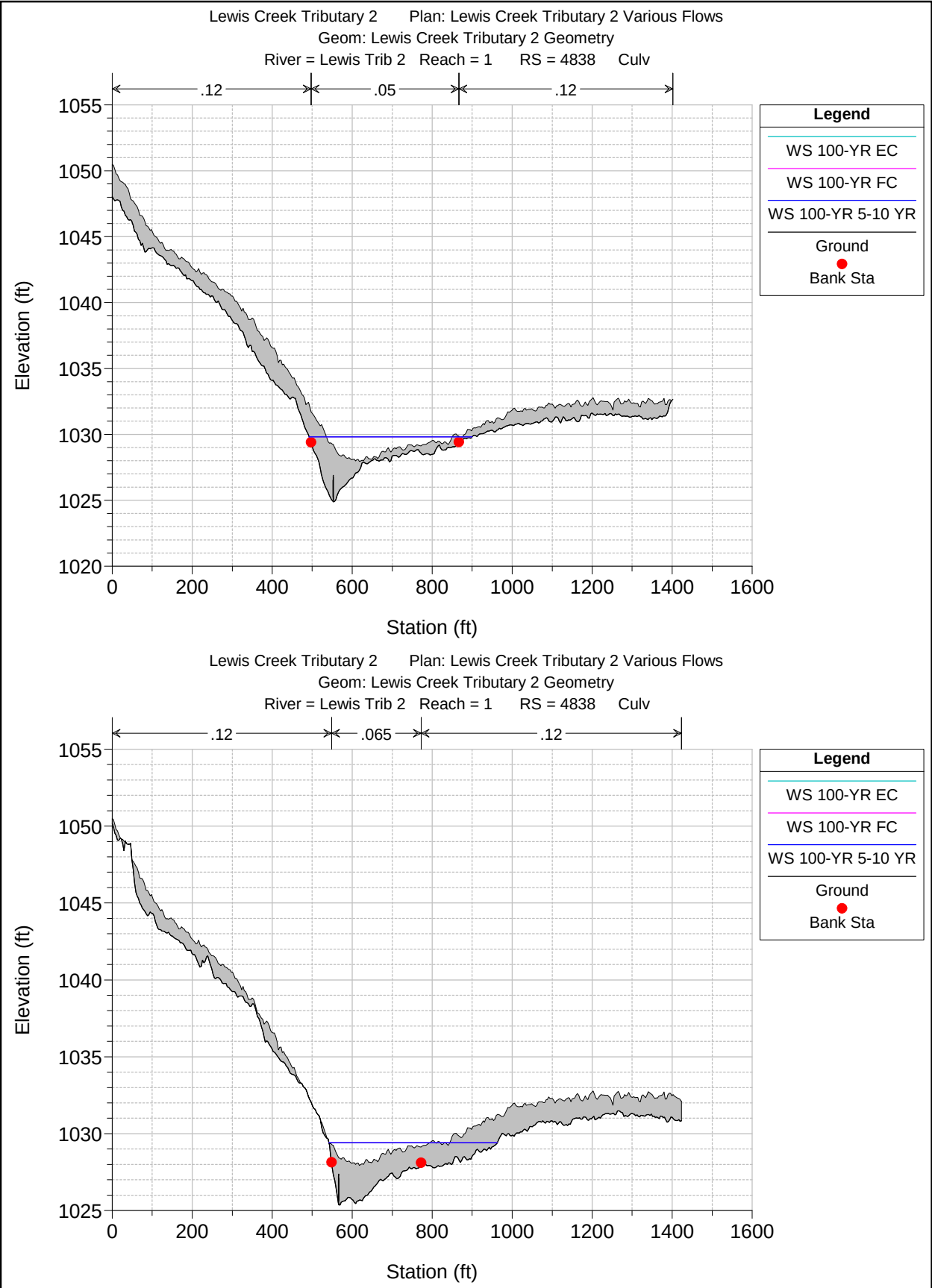


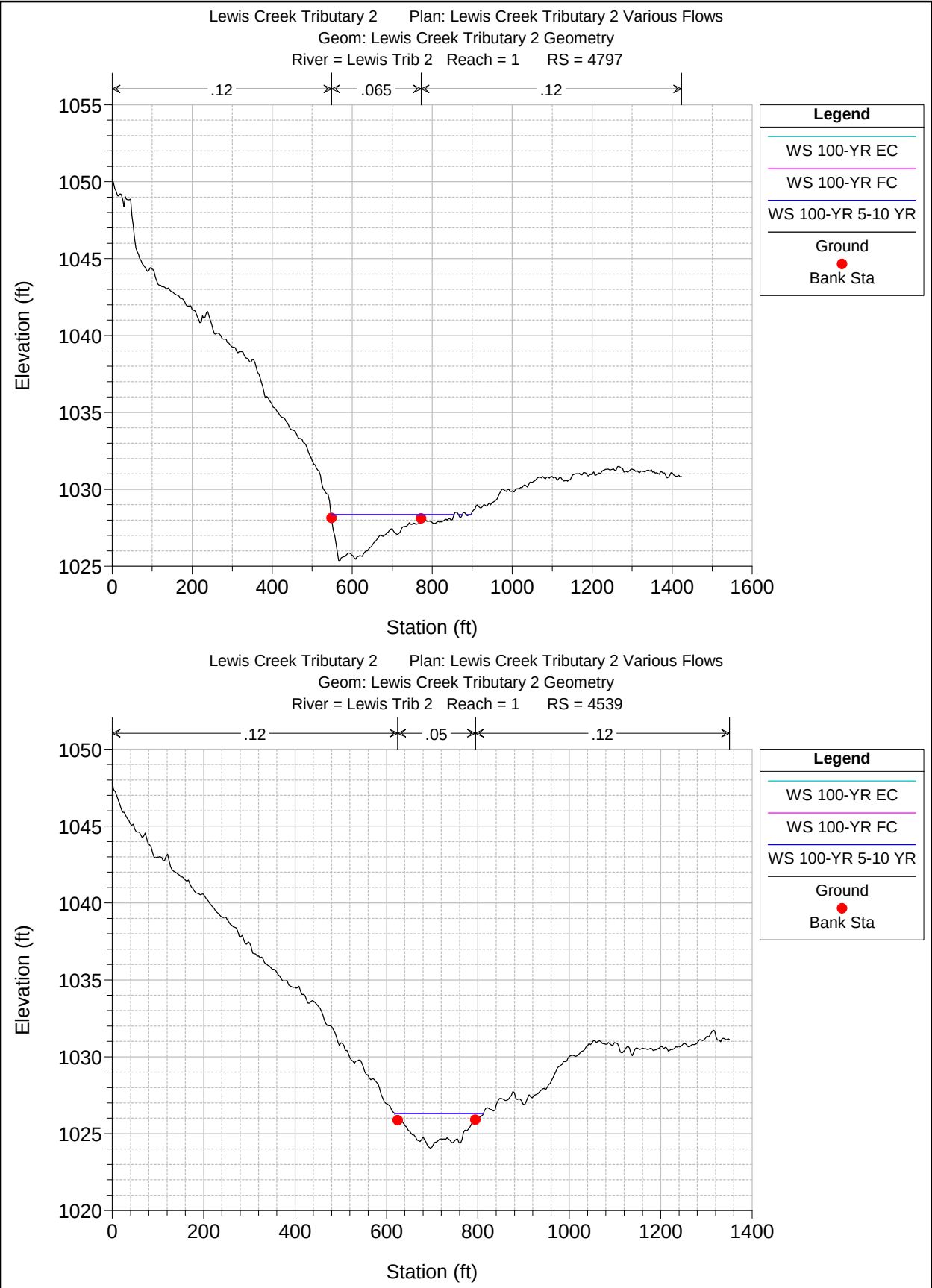


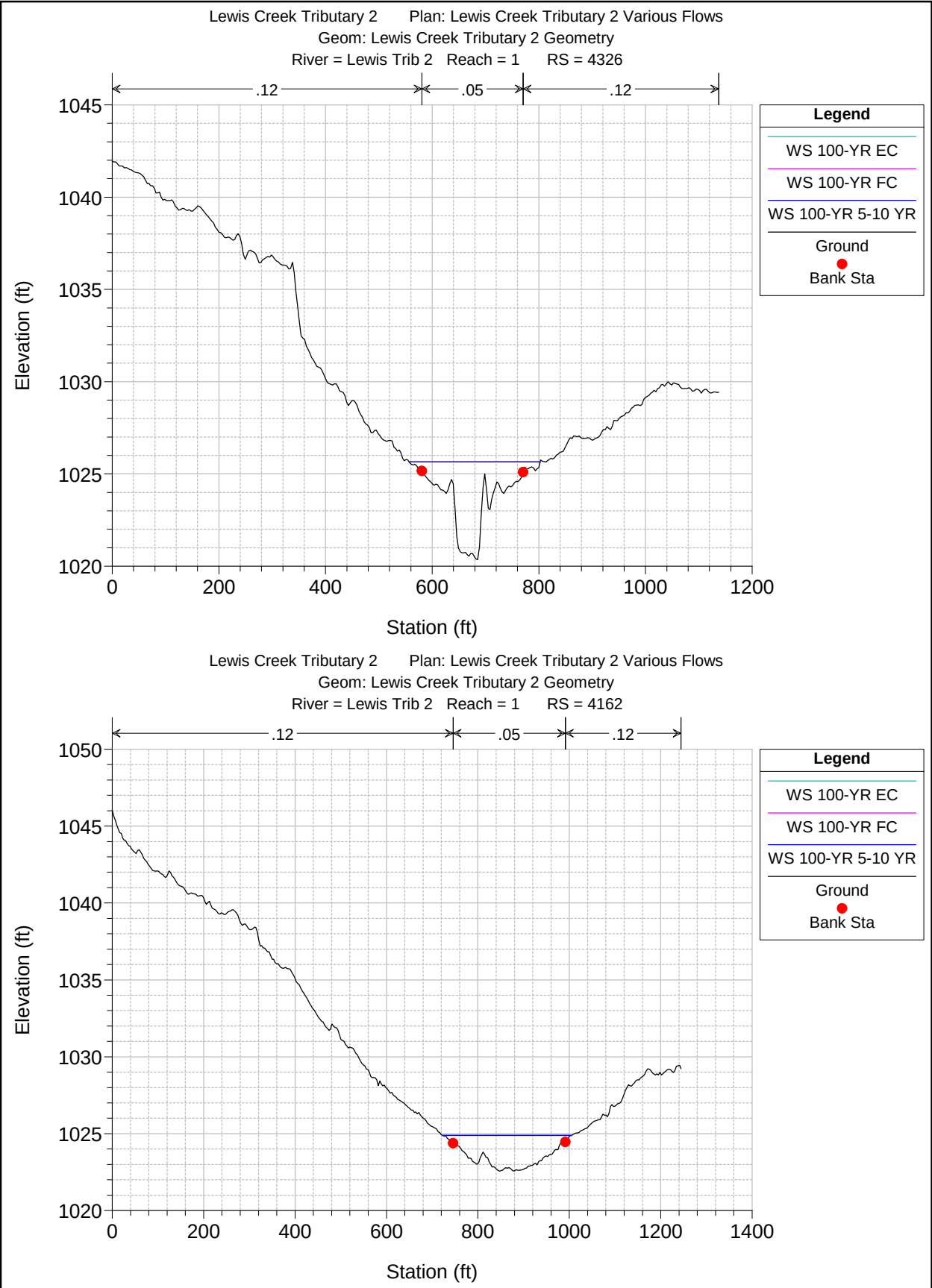


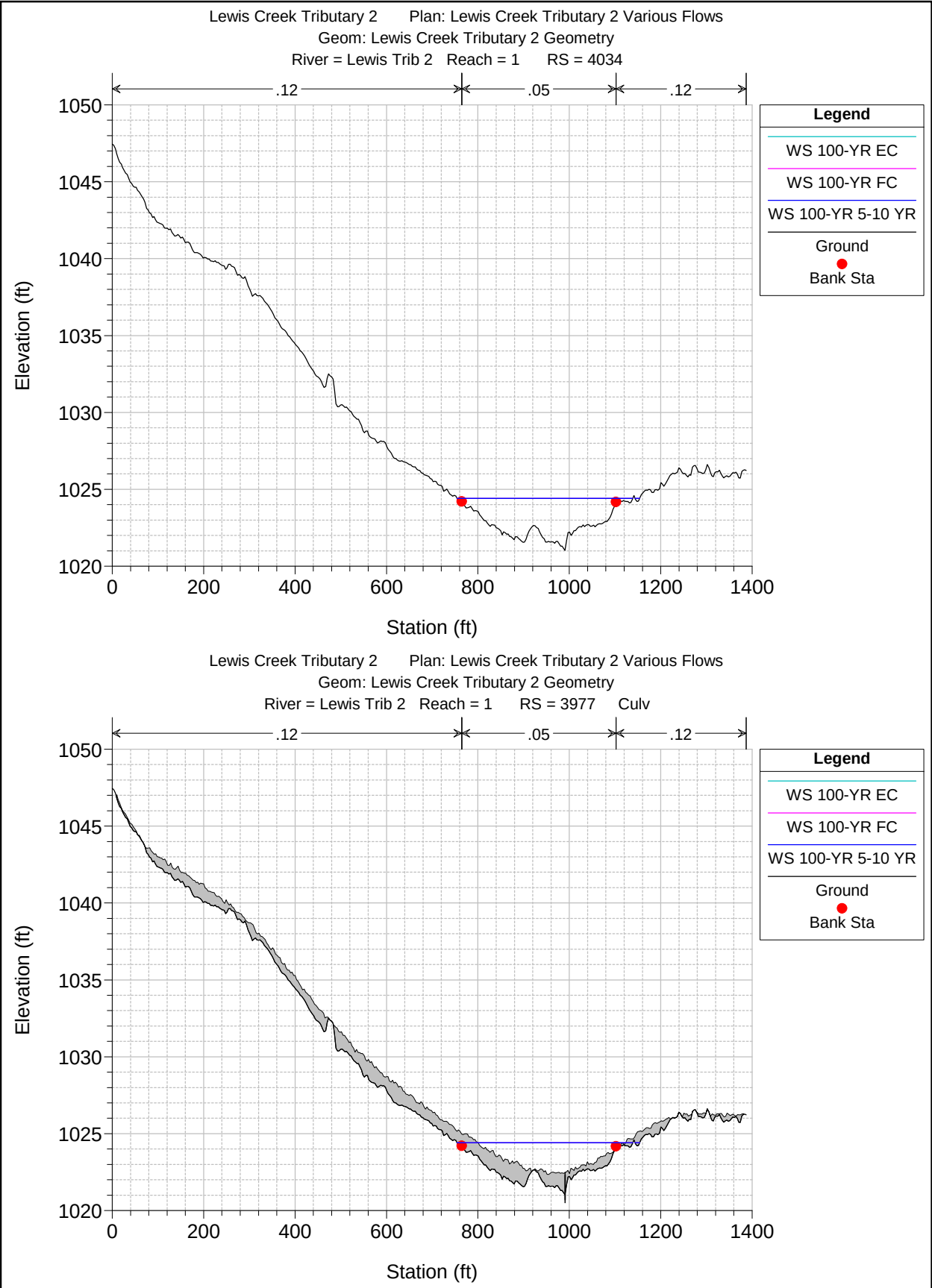


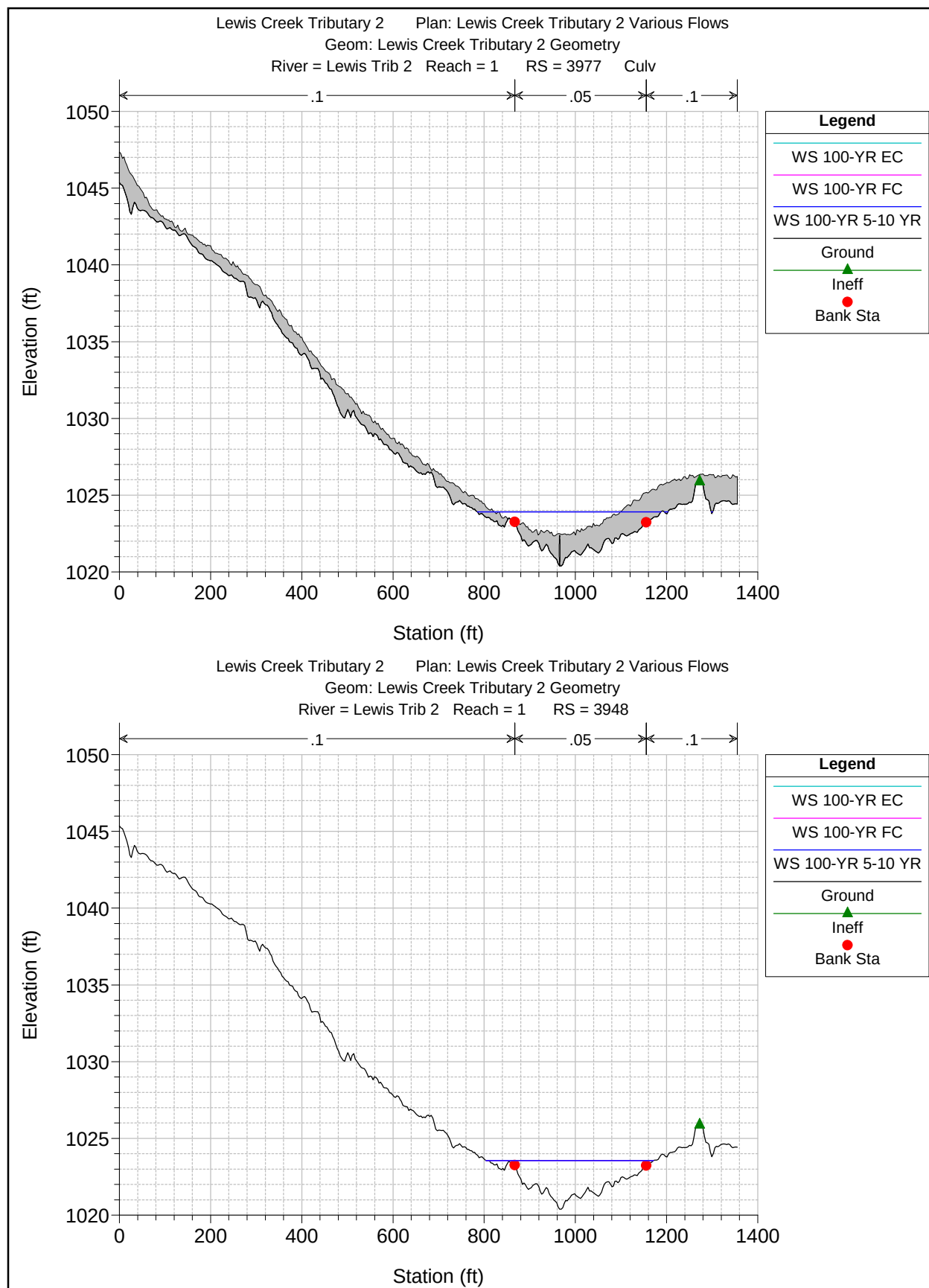


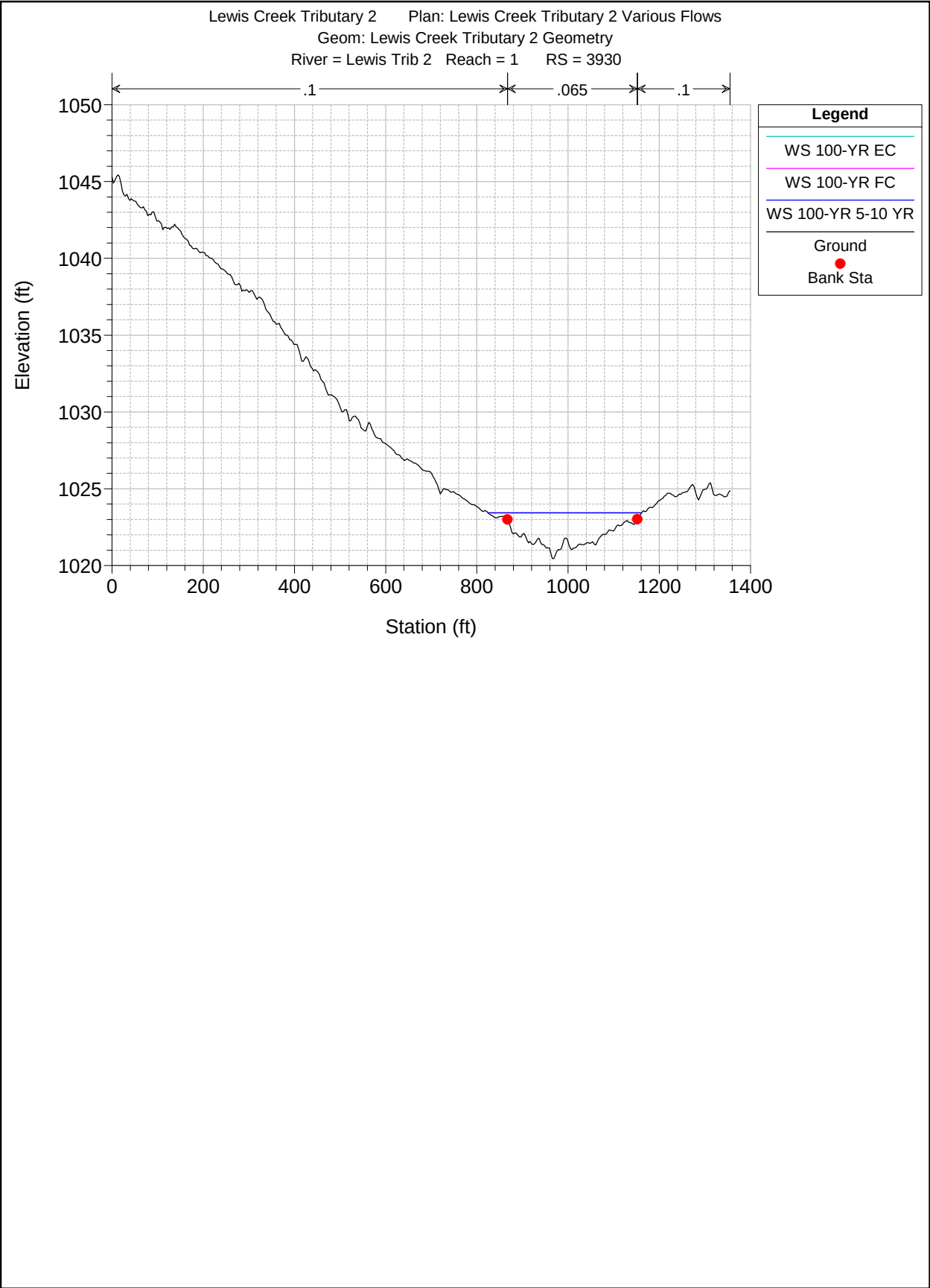












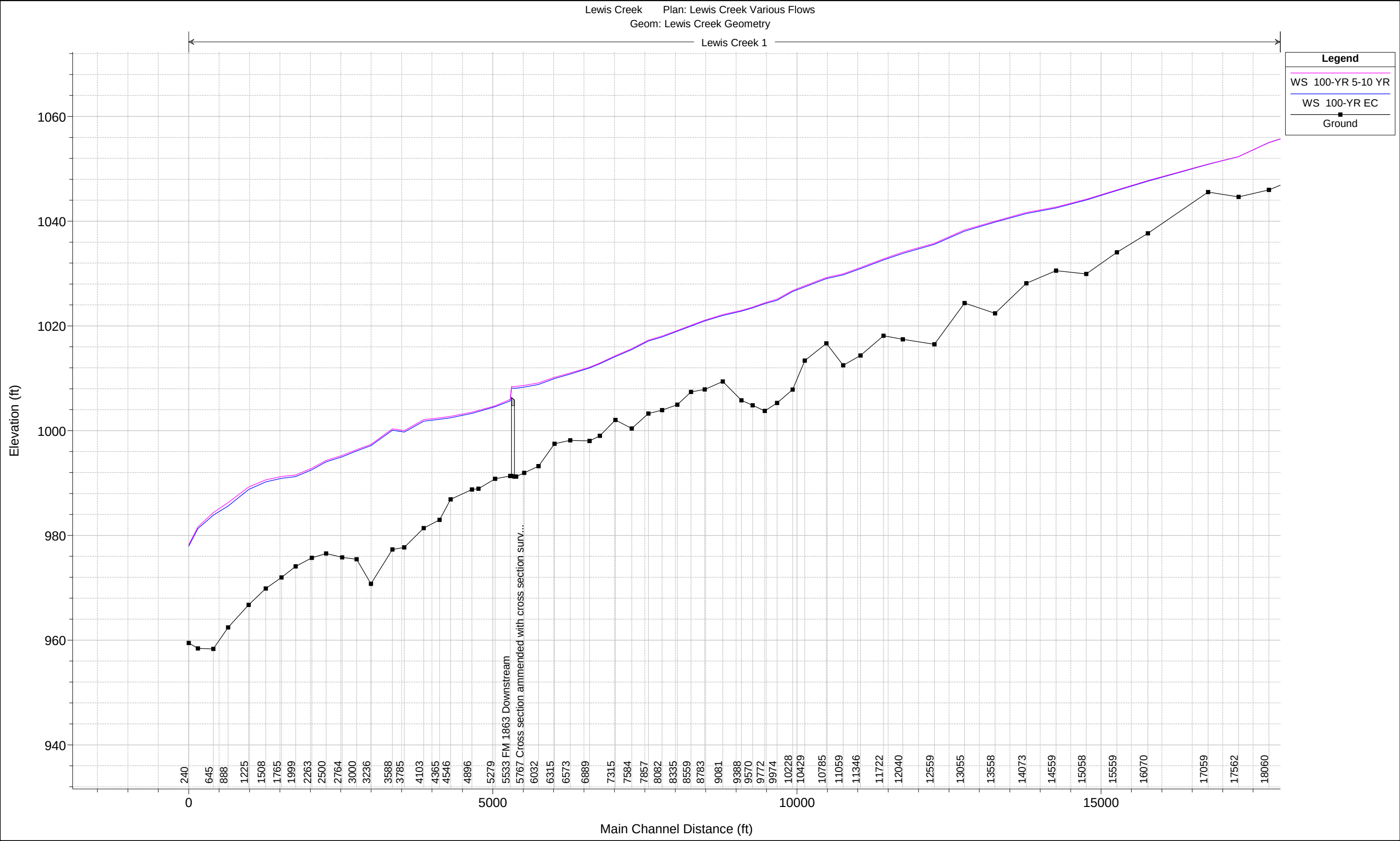
APPENDIX D

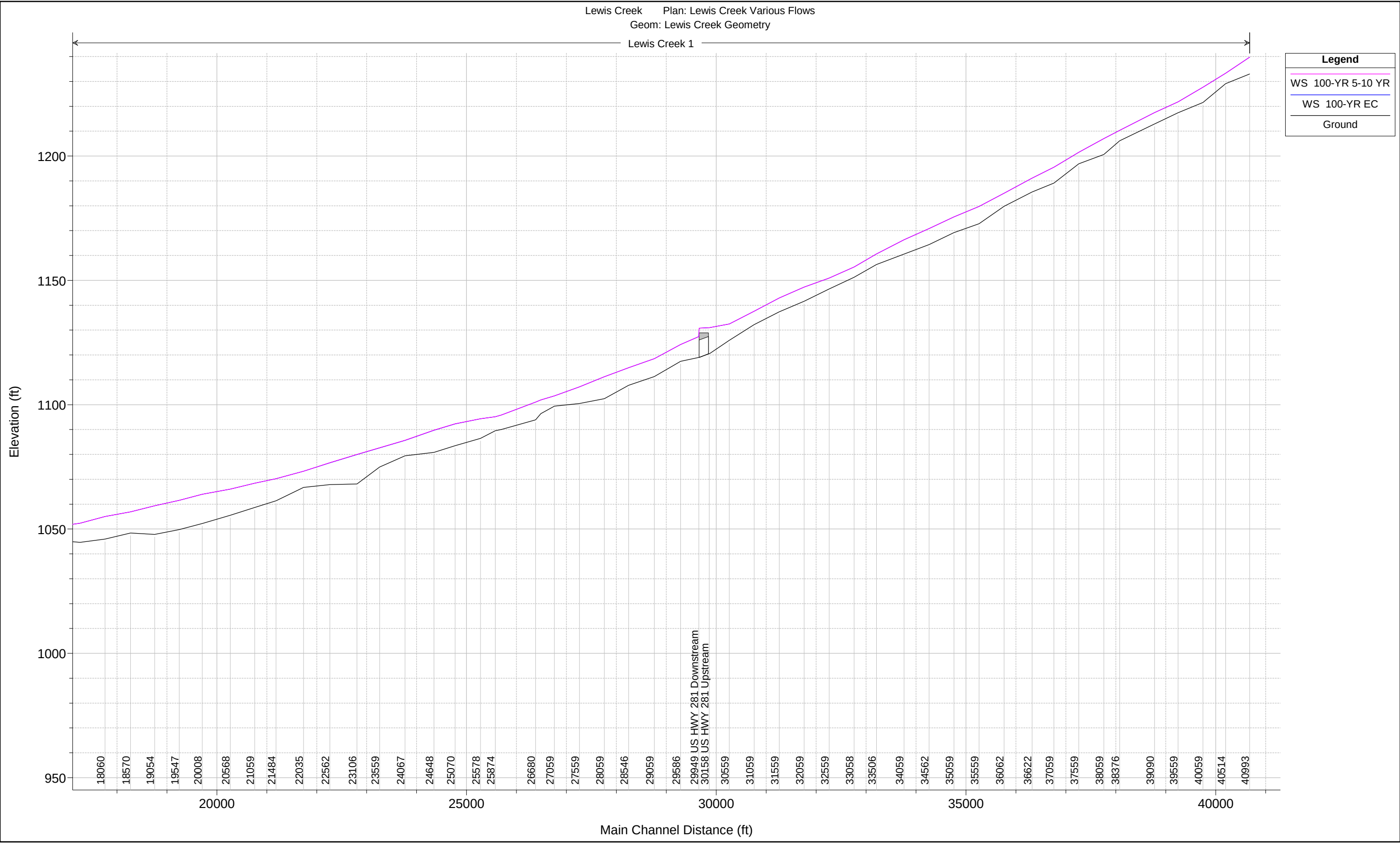
HEC-RAS Profiles

- D.1 Lewis Creek Existing and 5-10 Year Development Projection
- D.2 Lewis Creek Existing and Ultimate Future Development
- D.3 Lewis Creek Tributary 2 Profiles (All flows are the same)

APPENDIX D.1

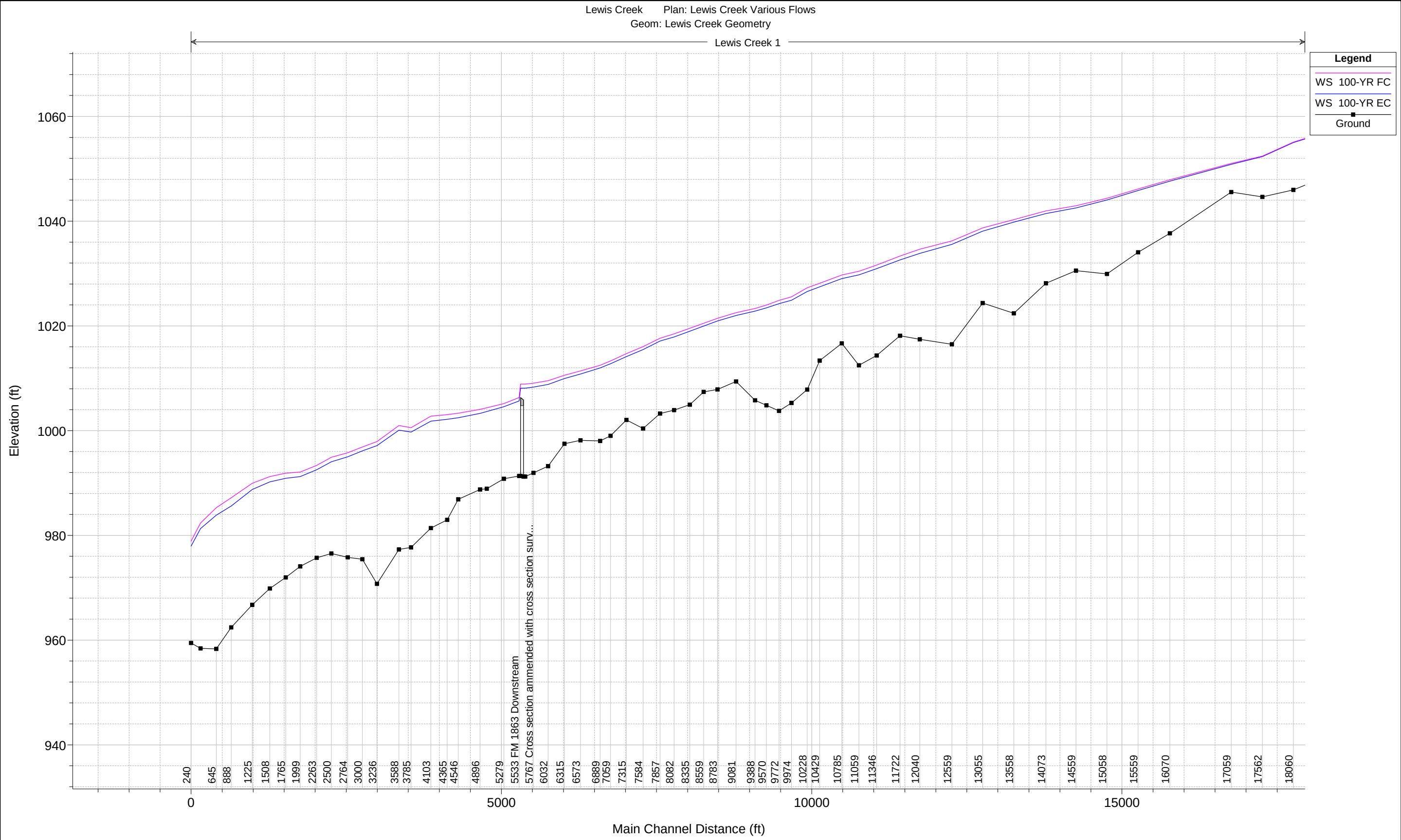
Lewis Creek Existing and 5-10 Year Development Projection Profiles

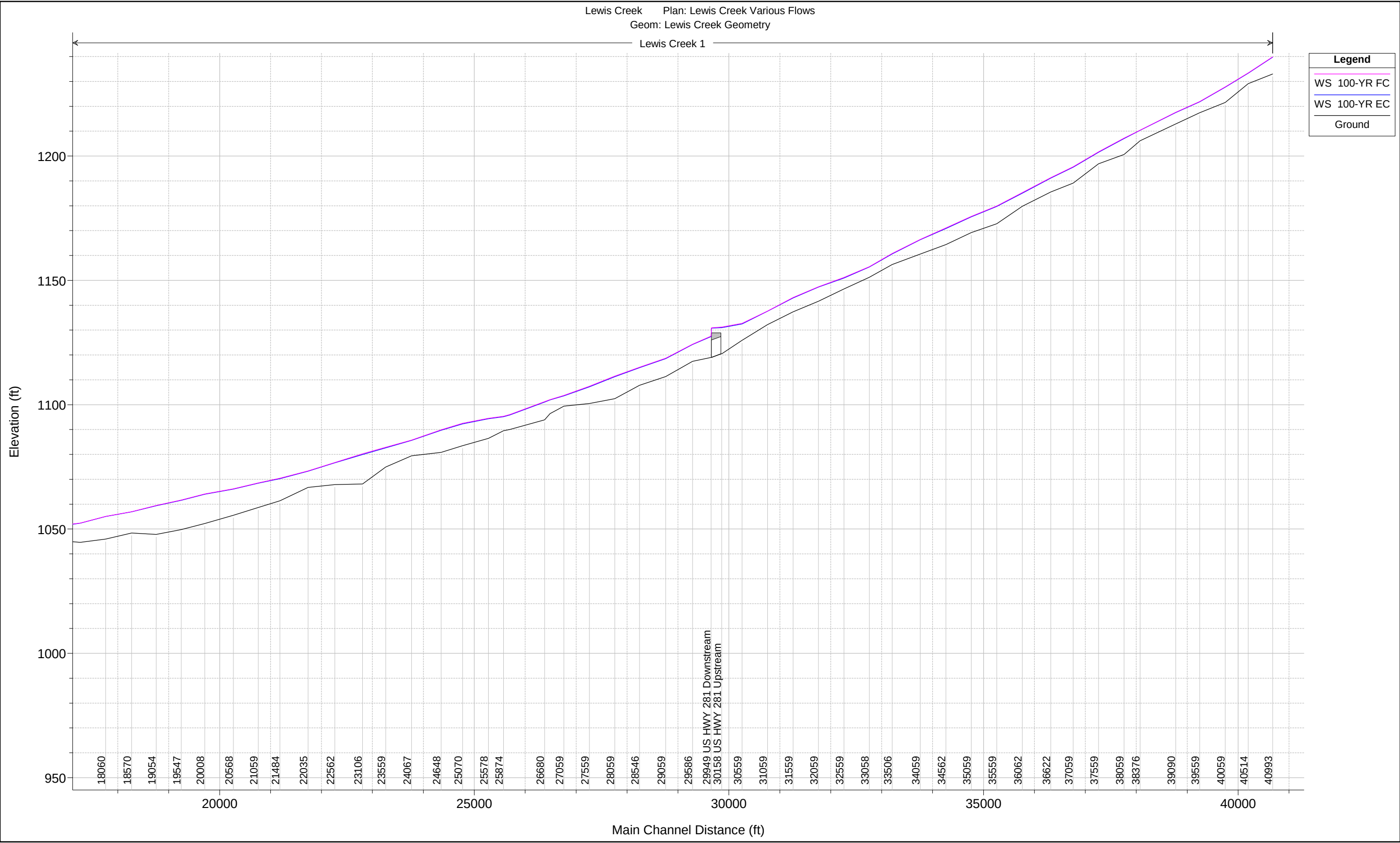




APPENDIX D.2

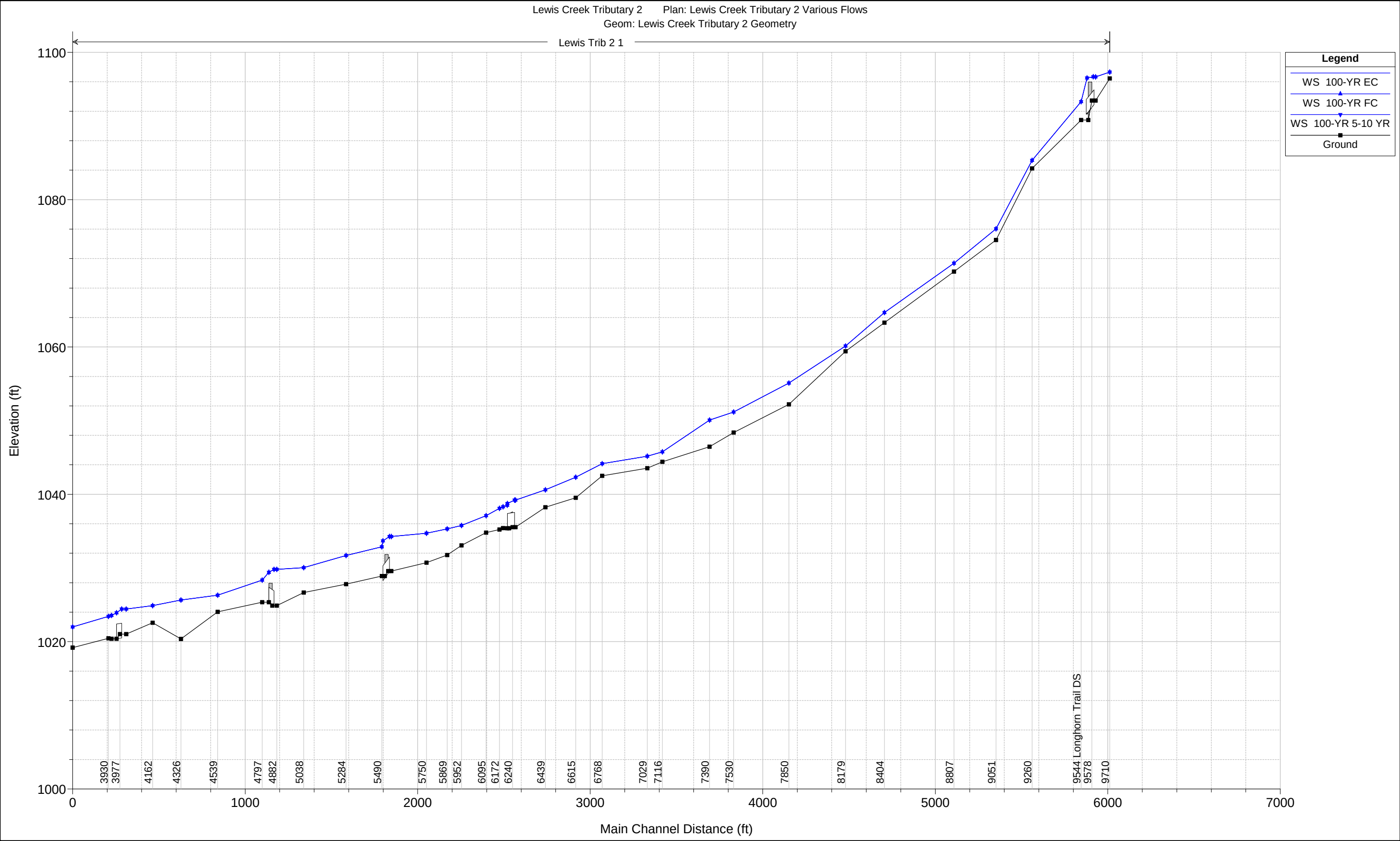
Lewis Creek Existing and Ultimate Future Development Profiles





APPENDIX D.3

Lewis Creek Tributary 2 Profiles (All flows are the same)



APPENDIX E

Electronic Files

E.1	Bexar County Flood Insurance Study Report
E.2	Hydrologic Model
E.3	Hydraulic Models
E.4	Supporting Excel Spreadsheets
E.5	Supporting Documents
E.6	Supporting GIS Data
E.7	Survey and Field Visit Data
E.8	Quality Assurance/Quality Control (QAQC) Documents