APPENDIX E

Hydrologic and Hydraulic Analysis Report

Scriber Creek Flood Reduction Study: 196th to 188th, Phase 2; Hydrologic and Hydraulic Analysis Report

Prepared for:
City of Lynnwood, Washington
Herrera Environmental Consultants

September 2016

Louis Berger

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Scriber Creek Flood Reduction Study: 196th to 188th, Phase 2; Hydrologic and Hydraulic Analysis Report

City of Lynnwood

Table of Contents

List of Tables

List of Figures

List of Appendices

Section 1
Background

Repeated and significant flooding has occurred in the past 20 years along the Scriber Creek corridor between SR-99 and 196th Street SW (Project Corridor) in the City of Lynnwood (City). This flooding has frequently impacted private residences, businesses, streets and other public infrastructure. The City of Lynnwood's 2009 Surface Water Management Comprehensive Plan identified several creek culvert replacements as a partial solution to reducing flooding within the Project Corridor. However, without additional flood storage, the conveyance improvements associated with culvert replacements potentially risk increasing peak flows downstream of the Project Corridor.

The primary goal of the Scriber Creek Flood Reduction Study (Study) is to reduce flood hazards within the Project Corridor without worsening flooding conditions downstream of Scriber Lake. In order to accomplish this goal, the Study includes 1) conducting a more focused analysis of flooding and potential flood improvements within the Project Corridor, 2) working with the community to both inform them about flooding issues and to solicit input regarding potential improvements within the Project Corridor, and 3) developing a practical plan for flood reduction project implementation. This study was used to develop a stream corridor management plan that includes a clear list of projects and associated costs, a proposed project implementation schedule, and which provides a guidance document that supports the City moving directly towards implementation of the projects that can solve flooding problems in the Project Corridor.

To assist in preparation of the flood management plan for this corridor, the City retained a consultant team led by Herrera Environmental Consultants (Herrera). Louis Berger is part of the Herrera team and is leading the hydrologic and hydraulic analyses in support of the plan. This memorandum documents the hydrologic and hydraulic analyses and the resulting assessment of current conditions for the study area. The stream corridor study area is presented on Figure 1.

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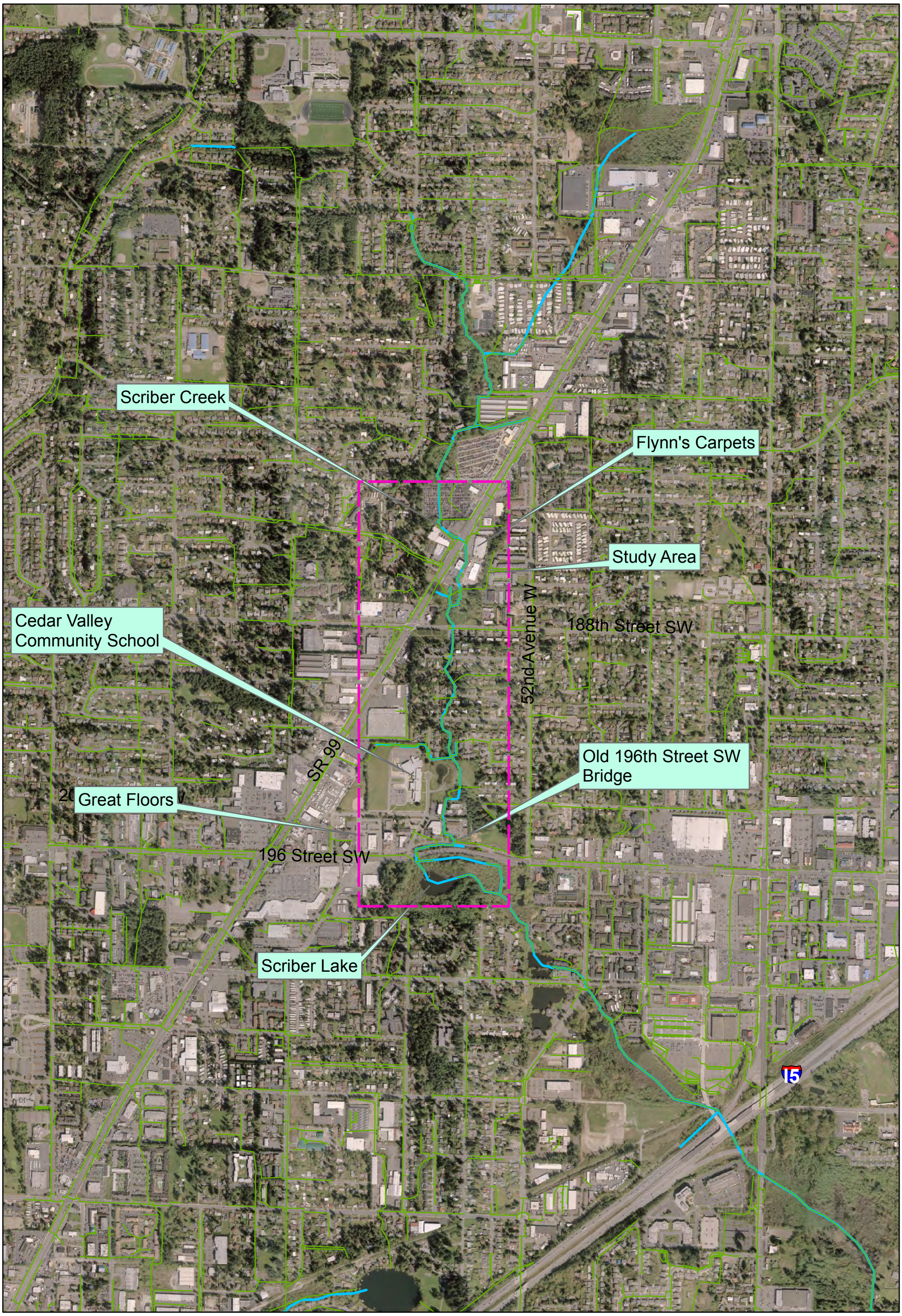

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Storm Pipes

Scriber Creek

Figure 1
Scriber Creek Flood Reduction Study
196th To 188th Phase 2
Study Area

Section 2
Data Gathering and Review

2.1 Survey and Base Mapping

To assist in the update of the hydrologic and hydraulic analysis, Herrera retained AHBL to provide survey of selected areas to provide new and/or updated geometry (e.g., stream cross sections, and culvert and bridge dimensions) and base map information to supplement areas that had previously been surveyed as a part of the 2009 Surface Water Management Comprehensive Plan. The new survey information, combined with prior information, was used in the hydrologic/hydraulic modeling updates. This effort also included surveying approximate high water elevations identified from photographs taken during extreme storm events, where such information was available. The photographs are provided in Appendix A. The associated surveyed high water elevations are discussed in Section 5.2 - Hydraulics. The vertical datum used for this project is NAVD 88.

2.2 Hydrologic and Hydraulic Model Platforms

The hydrologic analysis for Scriber Creek was performed using the Hydrological Simulation Program-FORTRAN (HSPF) model developed by the US Environmental Protection Agency (US EPA, 1989). HSPF is a continuous simulation model that uses historical rainfall records to simulate a long time series of streamflow. Continuous simulation is particularly important in western Washington, where flooding is often caused by a series of storms that occur back-to-back rather than by a single large event. Continuous simulation also allows for statistical and/or data analysis to provide helpful environmental information when considering alternative improvements such as changes in extent and duration of wetland inundation or assessing or designing fish passage improvements using flow durations for seasons of interest.

The hydraulic analysis was performed using HEC-RAS, a one-dimensional step backwater computer model developed by the US Army Corps of Engineers (US COE, 2010). HEC-RAS simulates stream water surface elevations for various flow rates taking into account losses from channel friction and stream culvert crossings.

2.3 History of Prior Hydrologic and Hydraulic Models

The first hydrologic and hydraulic models of Scriber Creek were developed in 1989 when R.W. Beck prepared the Scriber Creek Watershed Management Plan (R.W. Beck, 1989). The study was primarily focused on evaluating creek flooding and developing flood reduction strategies. As part of the plan, the first HSPF model of the Scriber Creek basin tributary to Swamp Creek was developed. The basin was subdivided into several subbasins to simulate flows along the creek system from approximately 172nd Street SW to the confluence with Swamp Creek. Hydraulic models, including HEC-2 (a precursor to HEC-RAS) and HY8 were used to model the stream and culverts, respectively. At the time, HEC-2's culvert analysis capabilities were crude and so HY8 was used to analyze the culvert hydraulics. In addition, the hydraulic models were used to develop function tables (FTABLEs), an input requirement for the HSPF model. FTABLEs define a relationship between reach depth, surface area, volume and flow rate for each stream reach.

Subsequently, the hydrologic and hydraulic models were updated periodically as part of later watershed or basin plans. A summary of these model updates are provided in Table 1.

Table 1:
Model History

1989	R.W. Beck	Hydrology: HSPF Hydraulics: HEC-2[1] and HY8	Scriber Creek Watershed Management Plan
1990	NHC	Hydrology: HSPF Hydraulics: HEC-2[1] and HY8	Scriber Creek Floodplain Mapping Study
1994	KCM	Hydrology: HSPF Hydraulics: HEC-2[1] and HY8	Swamp Creek Watershed Plan
2002	R.W. Beck	Hydrology: HSPF	Snohomish County Swamp Creek Drainage Needs Report
2007	NHC	Hydrology: HSPF	HSPF model user control input file
2009	Herrera	Hydrology: HSPF Hydraulics: HEC-RAS	Scriber Creek Flood Study 188th Street SW to 44th Avenue W
2012	SAIC	Hydrology: HSPF Hydraulics: HEC-RAS	Scriber Creek Flood Study at 50th Avenue W and 200th Street SW

[1]HEC-2 is a prior version of HEC-RAS

During these model updates, some of the model changes included:

- Extending the precipitation record in HSPF to the current extents of data available
- Refining subbasin boundaries when new or updated information was available.
- Updating land use characterization of subbasins. HPSF uses land use characterization (including parameters for runoff characteristics from impervious areas and pervious areas of different soil and vegetative cover) to simulate the amount of rainfall that becomes runoff.
- Updating model calibration with new streamflow records.

The original HSPF model developed for the 1989 *Scriber Creek Watershed Management Plan* and was calibrated based on historical flows at the mouth of the creek for the period November 1984 through September 1986.

In 1990, NHC prepared a floodplain mapping study (NHC, 1990) of the creek from about 2,400 feet downstream of 44th Avenue W to upstream of old 196th Street SW bridge. Although there have been subsequent updates to the modeling of this reach of creek, the regulated FEMA floodplain has not been updated.

The model was subsequently recalibrated for the 1994 *Swamp Creek Watershed Management Plan* (KCM, 1994). Calibration of the Swamp Creek Watershed Management Plan was based on streamflow records at a USGS gage (Scriber Creek at Cypress) for the water years 1985 and 1986. In addition to recalibrating the model, the plan significantly updated the basin boundaries. In 1998, RW. Beck prepared the *City of Lynnwood Comprehensive Flood and Drainage Management Plan* (R.W. Beck, 1998), which included some selective model modifications to assess proposed improvements along the creek. One of the improvements was the North Scriber Creek Wetland Detention Facility Project. This project included adding a controlled outlet to a large wetland located north of 172nd Street SW and west of SR-99. This project was constructed in 2000 and helped to reduce downstream flows through the study corridor, but not enough to eliminate flooding.

In 2002, the models were further updated as part of the *Drainage Needs Reports* for Snohomish County (Snohomish County, 2002). This project refined basin boundaries and update the land use characterization for the HSPF model.

In 2007, NHC updated the HSPF model further refining basin boundaries and land use characterization using 2005 aerial photographs. In addition, the hydrologic parameters for pervious and impervious land covers were updated based on calibration to the Scriber Creek stream flow records at Oak Way.

The *Scriber Creek Flood Study 188th Street SW to 44th Avenue W* (Herrera, 2009) is the most comprehensive study in the project area to date. The study extended precipitation and evaporation time series used for the HSPF model to include the December 3, 2007 rain event. The HEC-RAS model was updated using surveyed cross sections, extended with LiDAR where necessary, from about 2,000 feet downstream of 44th Avenue W to about 400 feet upstream of 188th Street SW.

The models were updated again for the *Scriber Creek Flood Study at 50th Avenue W and 200th Street SW* (SAIC, 2012), referred to herein as the 2012 Scriber Creek Study. A key update to the Scriber Creek HSPF model was to extend the precipitation record (which also includes evapotranspiration data) through 2010, which was the extents of the precipitation record at the time. Table 2 provides the source of this data used in the 2012 Scriber Creek Study. The 2012 Scriber Creek Study hydraulic model primarily focused on the creek flooding from 200th Street SW to Scriber Lake. In this reach, several apartments and businesses are subject to recurrent flooding. The 2012 Scriber Creek Study updates to the hydraulic model primarily focused on this reach.

Table 2:
Precipitation and Evapotranspiration Input to the Scriber Creek HSPF Model

Station	Time Period
NOAA Everett Gauge	October 1, 1948, to October 1987
Snohomish County Alderwood Water District Office Rain Gauge at 15204 35th Avenue W., Lynnwood, WA	October 1987 to December 2012

Section 3
Hydrologic and Hydraulic Model Updates for Current Study

3.1 Hydrology

Hydrologic analyses were conducted to determine the creek flows for select storm events as well as peak flows for the ½ the 2-year, 2-year, 10-year, 25-year and 100-year return period storm events and to provide flow input into the hydraulic models. Peak flow estimates and simulated water surface elevations for the November 2012 and the December 2007 storm events were used to validate the hydrologic and hydraulic analyses. This is discussed further under the Hydraulics Section. The return-period storm events were used to assess the level of flood protection along the study corridor as well as channel flow velocities.

In order to conduct the hydrologic analyses and provide flows at specific points of interest in the study corridor, the HSPF model for the 2012 Scriber Creek Flood Study was updated. The City was particularly interested in determining flow inputs at the following locations:

- Scriber Creek inflow to the wetland upstream of 188th Street SW
- Scriber Creek crossing of 188th Street SW
- Scriber Creek near Cedar Valley Community School
- Scriber Creek crossing of 196th Street SW
- Scriber Lake Outlet

In order to provide flows at a particular location, a model subbasin must be delineated at the location. The prior 2012 Scriber Creek Study model delineated a subbasin at three of the locations, but it did not delineate a subbasin for the creek near the Cedar Valley Community School or at the inflow to the wetland upstream of 188th Street SW. In order to provide flow information at these locations, the prior model Subbasin 630 was subdivided into subbasins 629 and 630, and Subbasin 632 was subdivided into subbasins 631 and 632. The updated subbasin delineations are presented in Figure 2. Relevant land use and soil type information was assigned to the divided subbasins in order to characterize their hydrologic response.

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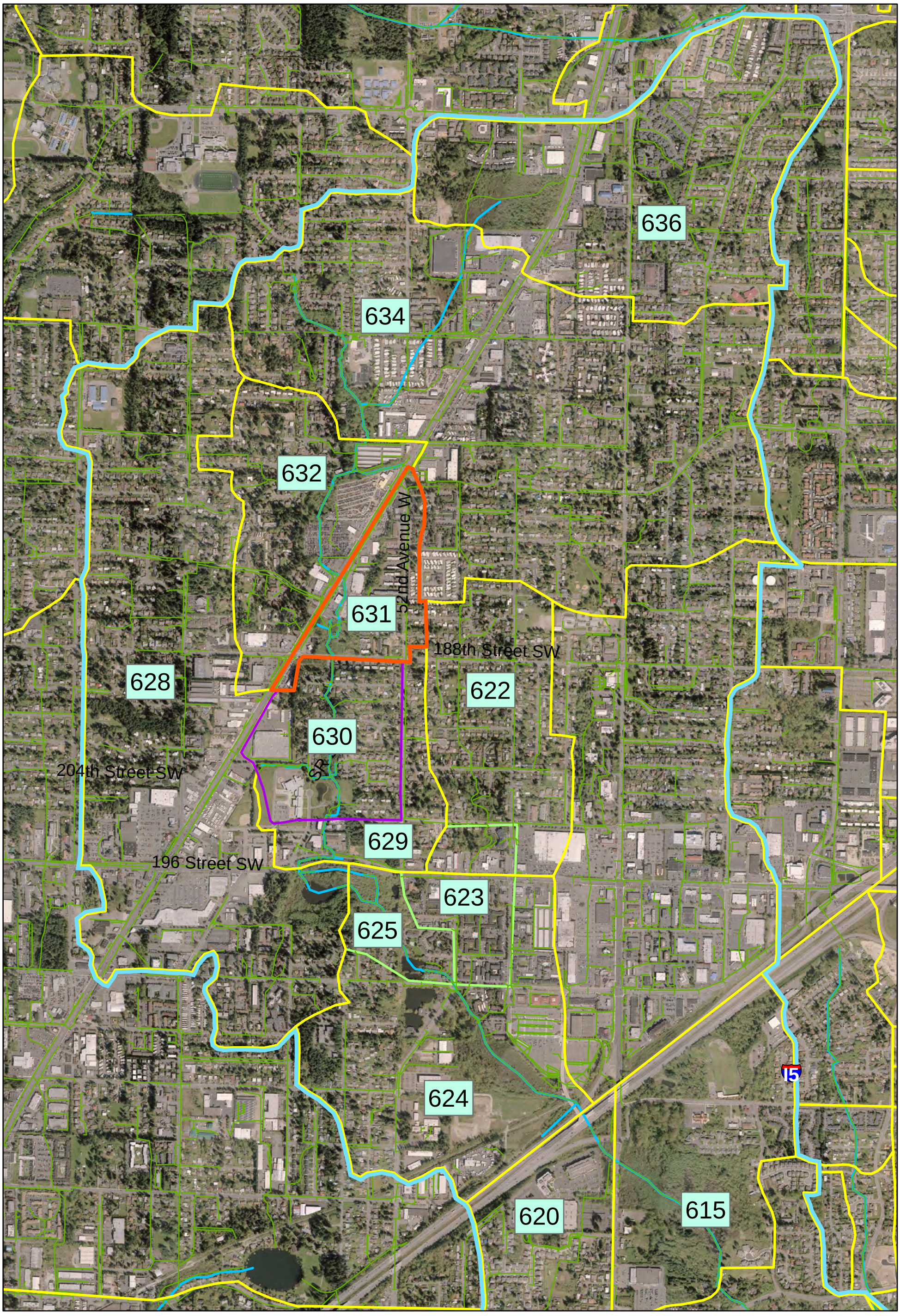

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- Scriber_Basin
- Scriber_Subbasin
- Storm Pipes
- Scriber Creek

Figure 2
Scriber Creek Flood Reduction Study
196th To 188th Phase 2
Study Area HSPF Model Basins

The HSPF model was also updated by extending the precipitation record through 2012 using additional precipitation that was obtained from Snohomish County Alderwood Water District Office Rain Gauge at 15204 35th Avenue W., Lynnwood, WA. In addition, the HSPF model was updated with FTABLEs developed based on the updated hydraulic model. The hydraulic model is described below.

Land use data was not updated for this modeling analysis. As noted above, the last land use update for the model was in 2007, which was based on a 2005 aerial photograph. No further updates were made because the basin is largely developed and because, development projects occurring after 2005 would have provided on-site detention to mitigate for increase in runoff from the development.

Once these modifications were made to the HSPF model, the model was run to extract the peak flows from the selected November 2012 and the December 2007 storm events. Table 3 shows the peak simulated flows at key locations within the corridor for these events. The peak flows from these events were input into the hydraulic model for validation. Once the hydraulic model was satisfactorily validated, the HSPF model was used to run a long-term flow simulation spanning the years 1948 through 2012. The validation of the hydraulic model is discussed in the Hydraulics section.

A Log-Pearson Type III flow frequency analysis was conducted on the HSPF-simulated annual peak flows following the protocol in the United States Geologic Survey (USGS) bulletin 17B ("Guidelines for Determining Flood Flow Frequency", 1982) to estimate peak flows with a recurrence interval of 2, 10, 25 and 100-years. Table 4 includes the return-period flows at key locations.

Table 3:
HSPF Results Peak Flow for Selected Events

Subbasin/Reach	Location	Dec 2007 Peak Flow (cfs)	Nov 2012 Peak Flow (cfs)
632	188th Street SW	134.0	125.0
630	Downstream side of Cedar Hills Community School	132.4	126.5
629	196th Street SW	133.8	131.0
628	SR 99 Subbasin	87.1	79.5
628+629	Scriber Lake Inflow	206.9	206.2
799[1]	Scriber Lake Outlet	181.0	169.4
625	200th Street SW	177.5	134.2
624	I-5	188.9	145.2

[1]Scriber Lake is defined by Reach 799 in HSPF. There is no separate subbasin for Scriber Lake.

Table 4:
HSPF Results Peak Flow for Return Period Storms Under Existing Conditions

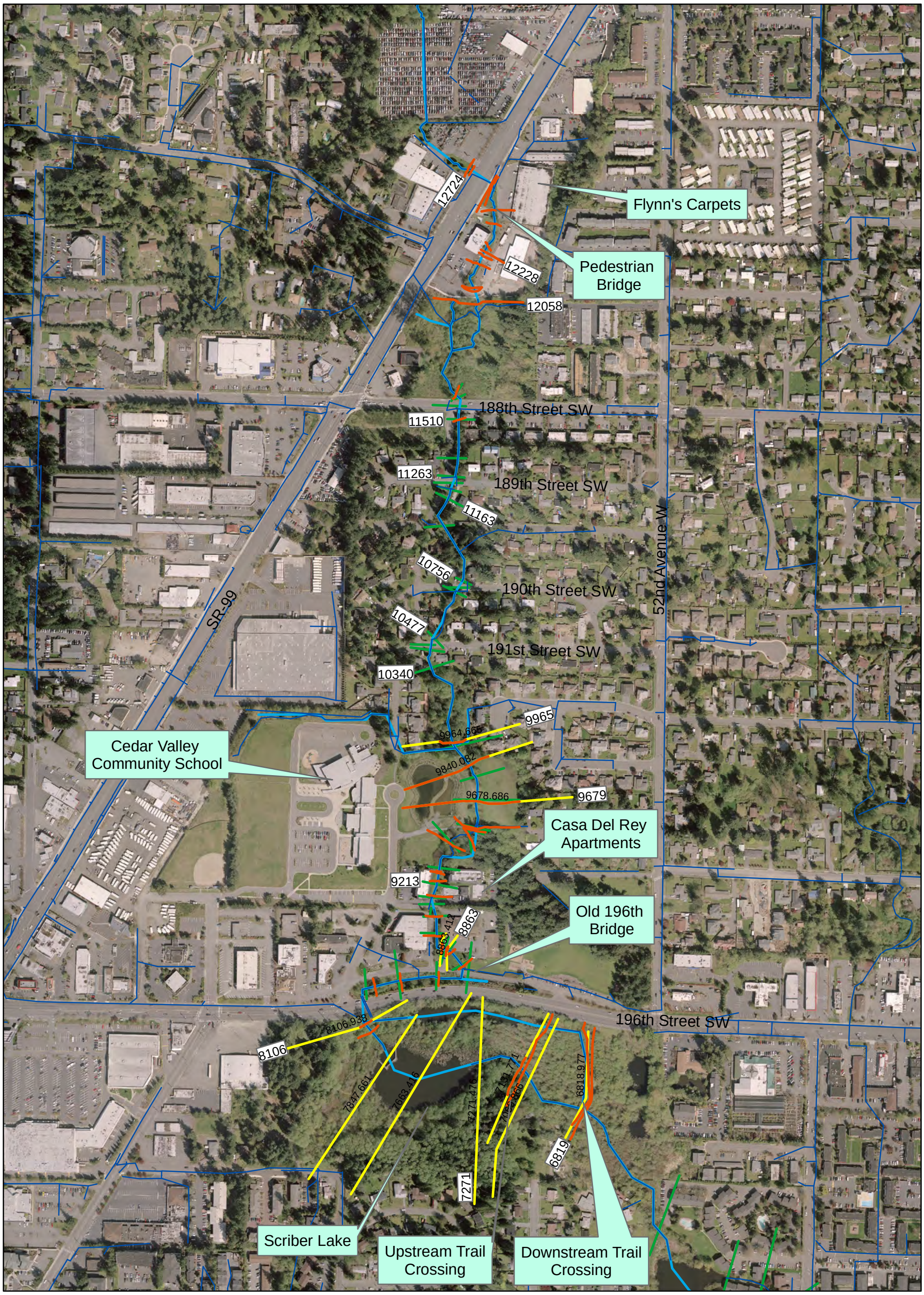
Subbasin/ Reach	Location	1/2 2-Year Peak Flow (cfs)	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	25-Year Peak Flow (cfs)	100-year Peak Flow (cfs)
631	188th Street SW	26.01	52.01	83.07	101.05	131.00
630	Downstream side of Cedar Hills Community School	26.68	53.35	82.75	98.68	123.93
629	196th Street SW	27.90	55.80	85.41	100.81	124.50
628	SR 99 Subbasin	19.97	39.94	69.33	86.1	113.59
628+629	Scriber Lake Inflow	47.87	95.74	154.74	186.91	238.09
799[1]	Scriber Lake Outlet	38.38	76.75	116.09	135.33	163.58
625	200th Street SW	32.68	65.36	101.99	119.71	145.43
624	I-5	35.60	71.19	114.10	136.13	169.52

[1]Scriber Lake is defined by Reach 799 in HSPF. There is no separate subbasin for Scriber Lake.

3.2 Hydraulics

The survey information gathered for this project was used to update the model prepared for the 2009 Scriber Creek study (Herrera 2009), which focused on the portion of the corridor between 188th Street SW to 44th Avenue W. The 2012 Scriber Creek Study updated the hydraulic model downstream of Scriber Lake but did not update the HEC-RAS model through the study corridor. The model updates for the current analysis included the following:

- Adding new surveyed cross sections at the park trails downstream of Scriber Lake within Scriber Lake Park. In addition, new cross sections were added through the lake using GIS Lidar elevations (Puget Sound Lidar Consortium, 2005). The cross sections are shown on Figure 3.
- Adding the existing diversion structure that is immediately downstream of the 196th Street SW culvert crossing. This diversion structure was previously not in the HEC-RAS model. The structure was installed originally to divert lower flows to a northerly cell of Scriber Lake, but the low flow path has been filled in and no longer functions. However, the structure creates headloss at the entrance to Scriber Lake so it was important to include as part of this flood study in order to provide accurate water surface profiles.



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- Storm Pipes
- Scriber Creek
- Surveyed Cross Sections 2015
- XS_Surveyed_Herrera Study
- GIS Cross Sections and Section Extensions

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Figure 3
Scriber Creek Flood Reduction Study
196th to 188th Phase 2
HEC-RAS Cross SectionLocations

- Adjusting the channel cross sections between 196th Street SW and the culvert at Casa Del Rey based on the new survey of the creek thalweg. Survey of the thalweg was done in part to assess whether the channel was aggrading (i.e., filling in by sediment deposition). Comparing the prior survey with the current survey indicates that the channel reach in this section has filled in by approximately 0.3 feet to 1.7 feet. The biggest change was immediately upstream of the Old 196th Street Bridge. Note that a sediment management assessment that will consider strategies to reduce future sediment accumulation is being performed as separate task within the corridor planning study.
- Extending the HEC-RAS model north to represent the creek system from 188th Street SW to the upstream side of the SR 99 crossing. The 2009 HEC-RAS model ended at 188th Street SW.
- Extending some channel cross sections where the prior channel cross sections did not extend the full width of the creek floodplain. This was done using GIS Lidar information and was needed to better represent the full width of the floodplain in the model.

Once the HEC-RAS model was revised with survey and GIS data, the peak flows from the December 2007 and November 2012 storm events shown in Table 3 were used to validate the analysis. The water surface profiles for these events are shown in Figures 4 and 5. The resulting water surface elevations were compared to approximate highwater elevations during those storms and are tabulated in Table 5. AHBL surveyed December 2007 highwater elevations near the Old 196th Street Bridge and at the Casa Del Rey culverts. Note, that although these highwater elevations were surveyed, they should still be viewed as approximate. One reason is because the photographs were not necessarily taken to coincide with the timing of actual highest creek elevations. There is also some potential for error when attempting to determine the exact spot to the survey based on a location shown in a photograph reference. For instance, the survey of the highwater elevation of the December 2007 event crossing the road at the Casa Del Rey apartments (Photo 1 in Appendix A) is higher than the surveyed highwater elevation at the Roz Smith apartment patio (Photo 3 in Appendix A), which is actually upstream from the road and therefore should be higher.

In addition to the surveyed highwater elevations, highwater levels were estimated at 190th Street SW for the December 2007 storm event and at the bridge near Flynn's Carpets for the November 2012 event. The highwater elevation near 190th Street SW was estimated based on surface elevation provided in the GIS and photographs taken during the events. The highwater elevation for the bridge near Flynn's Carpets was estimated based on comparing the photograph of flooding with the survey of the bridge by AHBL. See Photos 4 and 5 in Appendix A, respectively.

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Table 5:
Water Surface Elevation Results for Selected Events

Location	Description	Crossing Top Elevation	HEC-RAS December 2007 Water Surface Elevation	HEC-RAS November 2012 Water Surface Elevation	Overtopping/Flooding?		December 2007 Surveyed High Water Elevation	November 2012 Estimated Water Surface Elevation[3]
					December 2007	November 2012		
Scriber Lake	Downstream Trail Crossing	337.51	339.69	339.28	Yes	Yes		
Scriber Lake	Upstream Trail Crossing	338.27	339.73	339.35	Yes	Yes		
196th Street SW	Twin 42"x68" CMP Pipe Arches	345.77	342.48	342.32	No	No		
Old 196th Street	Bridge	340	342.70	342.56	Yes	Yes	Between 342.51 and 343.05[1]	
Driveway Culvert Near Great Floors	60" Dia CMP	342.91	343.45	343.34	Yes	Yes		
Casa Del Ray	Twin 42" Dia CMP[3]	346.12	346.70	346.71	Yes	Yes	346.86	
Roz Smith	Corner of Patio[4]	n/a	346.71	346.71	Yes	Yes	346.73	
191st St SW	48" Dia CMP	357.24	357.57	357.55	Yes	Yes		
190th St SW	6' Wx 4' H Box Culvert	357.1	357.73	357.72	Yes	Yes		357.6[2]
189th St SW	42" Dia Concrete Culvert	360.73	361.15	361.14	Yes	Yes		
188th St SW	3' Dia Concrete Culvert	363.14	363.72	363.68	Yes	Yes		
Driveway 1 Near Flynn's Carpet	Twin 4' Dia CMPs	368.24	366.15	366.00	No	No		
Driveway 2 Near Flynn's Carpet	Twin 4' Dia CMPs	368.29	367.68	367.52	No	No		
Bridge at Flynn's Carpet	Pedestrian Bridge	367.59	368.64	368.51	Yes	Yes	368.63[5]	
SR-99	8.5' Wx 4' H Box Culvert	370.62	369.41	369.23	No	No		

[1] Between the curb and first railing on the bridge. See Photo 2 in Appendix A.

[2] Highwater elevation estimated using GIS and photographs. See Photo 4 in Appendix A.

[3] Culverts include a greater than 90-degree bend between the inlet and outlet. See Photo 1 in Appendix A.

[4] See photo 3 in Appendix A

[5] See photo 5 in Appendix A

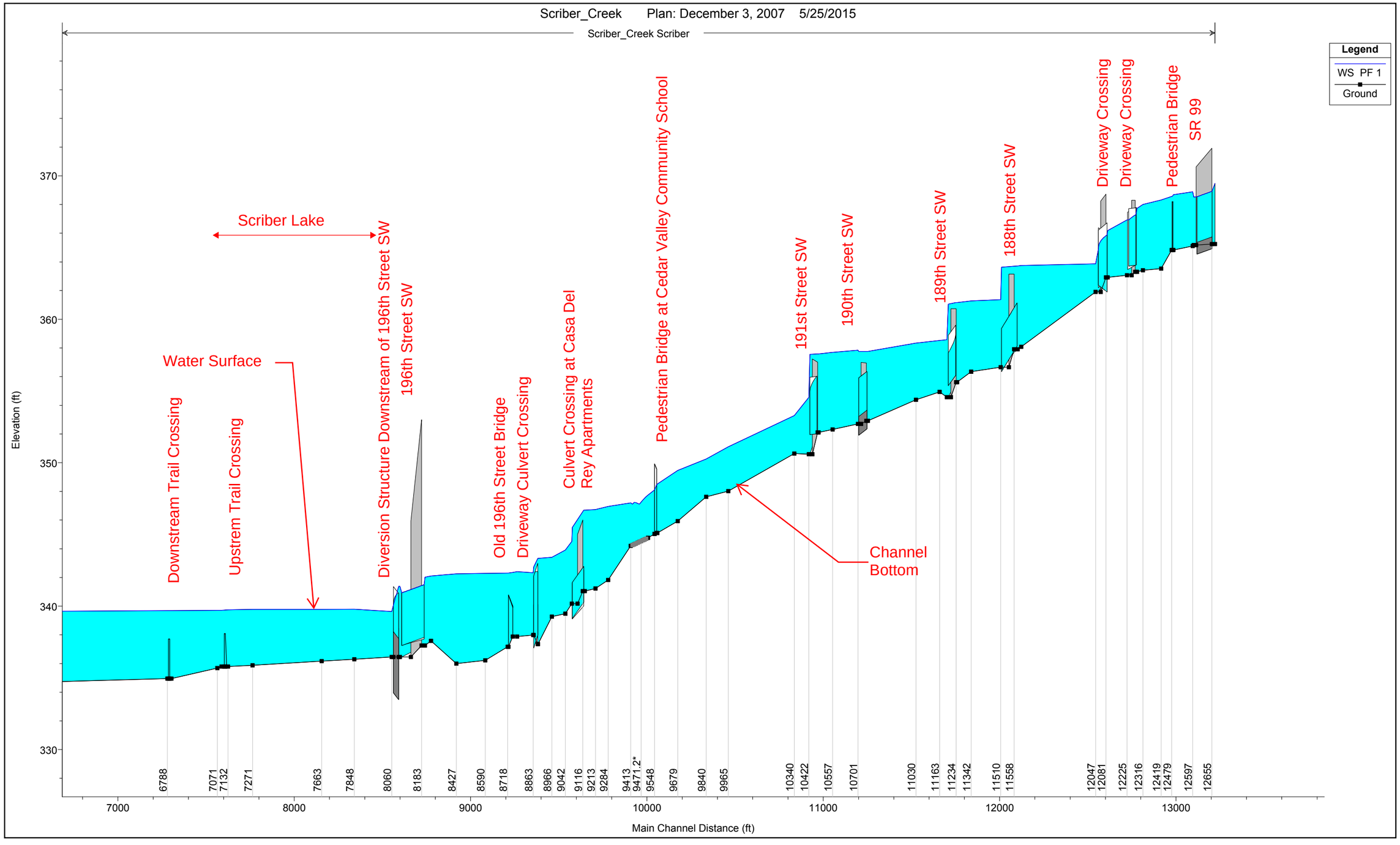

Figure 4
Scriber Creek Flood Reduction Study
188th to 196th Phase 2
December 2007 Water Surface Profile

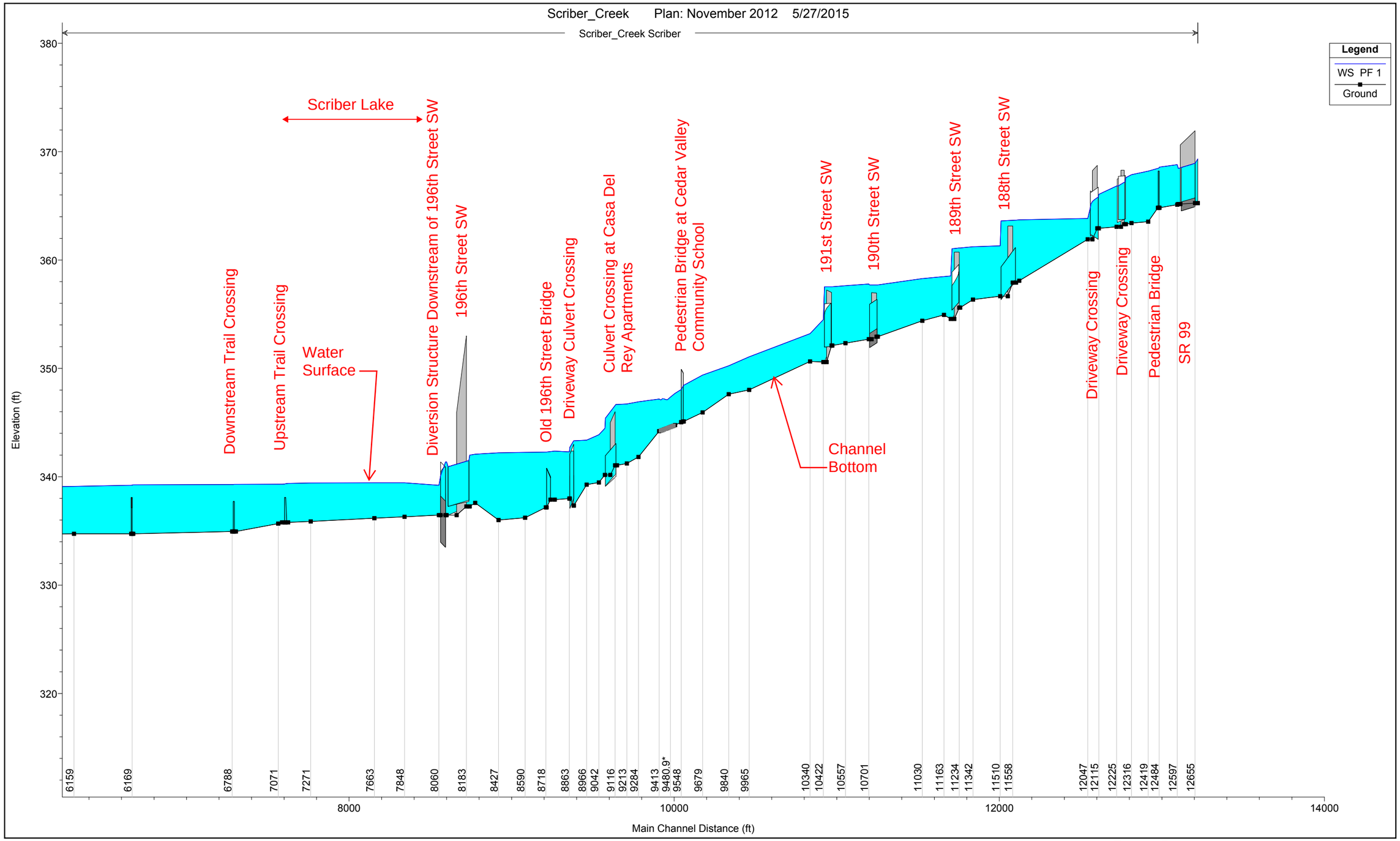

Figure 5
Scriber Creek Flood Reduction Study
188th to 196th Phase 2
November 2012 Water Surface Profile

Initially, the simulated water levels at Casa Del Rey and the Old 196th Street Bridge appeared to be too low when compared to the observed highwater elevations. At Casa Del Rey, the culverts at the apartments make a sharper than 90-degree bend which can cause considerable head loss. In addition, a sharp bend can increase the likelihood that debris could become trapped inside the culverts. HEC-RAS cannot directly account for the headlosses that would result in a pipe bend, but the diameter of the culverts can be reduced to simulate additional headloss. The diameter of the culverts were reduced from 3.5-foot-diameter to 2.6-foot-diameter in order to simulate the December 2007 water surface elevation. This is about equivalent to adding a headloss coefficient of 1.48. This additional headloss would be removed when considering potential options such as culvert replacement because it would be assumed that the alignment for the culvert crossing would be corrected (i.e., a straight alignment from the culvert inlet to the outlet).

To increase the water level at the Old 196th Street bridge, the channel roughness between the 196th Street SW crossing and the bridge was increased from 0.045 to 0.05 to better represent the vegetation present in this portion of the creek. In addition, the headlosses at the entrance to the 196th Street SW culvert were increased to represent the 90-degree bend the flow makes before entering the culverts. These minor adjustments were sufficient to increase the water level at the Old 196th Street bridge such that it overtopped the curb at the elevation surveyed at the location seen in the photograph for the December 2007 event. (See Photo 2 in Appendix A).

After these adjustments were made to the model, the simulated and observed surface water elevations corresponded well such that it is believed that the model is a good representation of the existing creek system.

3.3 Existing Conditions Model Results

Using the validated hydraulic model, ½ 2-year, 2-year, 10-year, 25-year and 100-year water surface profiles were simulated using the return-period peak flows developed using a statistical analysis of HSPF flows. The water surface profiles are presented in Figure 6. The water surface elevation results are tabulated in Table 6. From the profile and Table 6, it can be seen that the Old 196th Street bridge has a less than 10-year level of protection. Flood flows at this location will tend to overtop the west bank of the channel upstream of the bridge first and flow over Old 196th Street at a low spot to the west of the bridge near Great Floors. As flows continue to increase, as occurred in the December 2007 storm event, flows will eventually cross over the bridge more directly. See Photo 2 in Appendix A.

The crossing at the driveway near Great Floors has less than 100-year level of protection and Casa Del Rey has less than 10-year level of protection. The backwater from the

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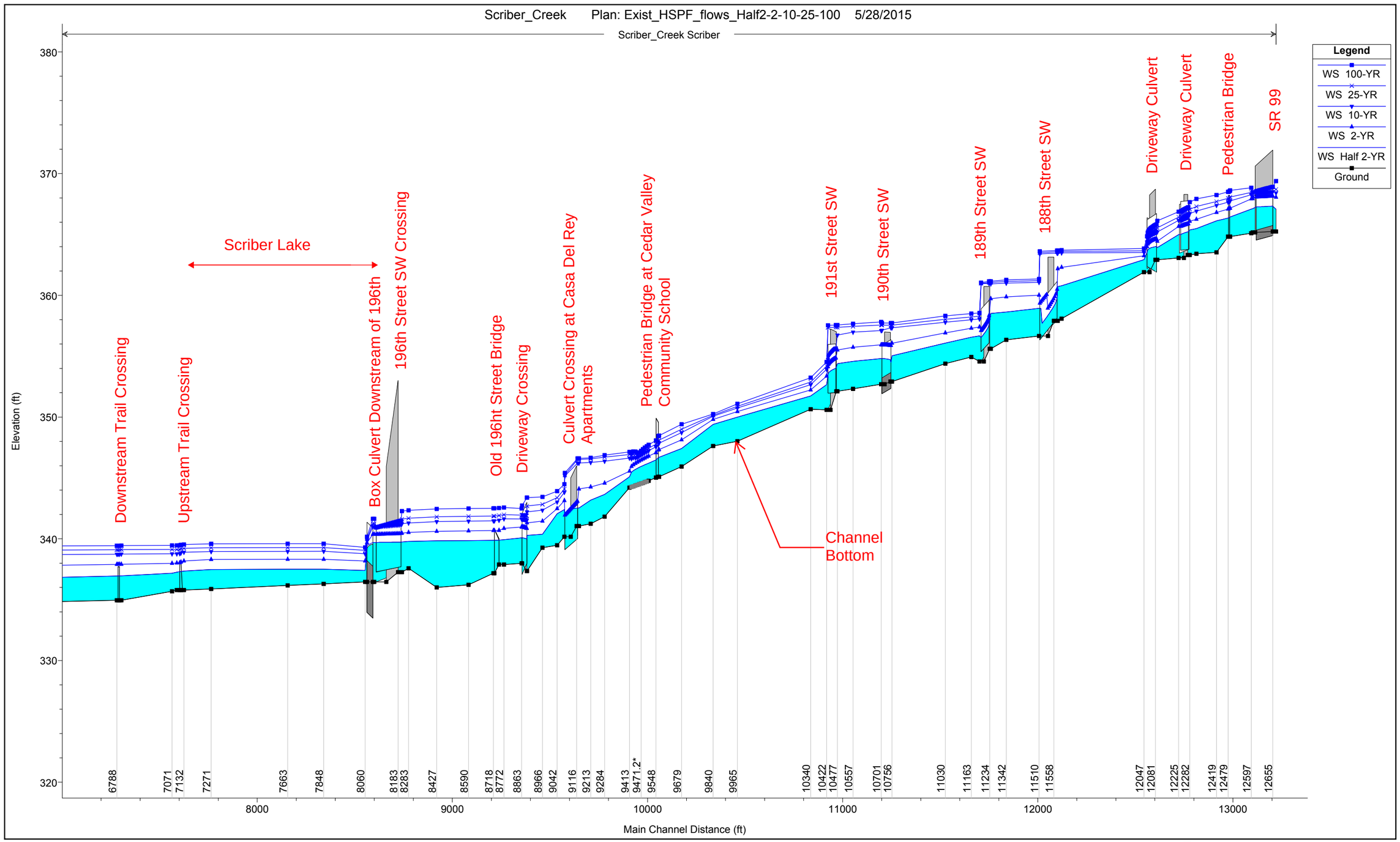

Figure 6
Scriber Creek Flood Reduction Study 188th to 196th Phase 2
Return Period Flow Profiles
Existing Conditions

Table 6:
Existing Conditions Water Surface Elevations for Return Period Flows

Location	Description	Crossing Top Elevation (feet)	1/2-Year Water Surface Elevation (feet)	2-Year Water Surface Elevation (feet)	10-Year Water Surface Elevation (feet)	25-Year Water Surface Elevation (feet)	100-Year Water Surface Elevation (feet)	Overtopping Return Period
Scriber Lake	Downstream Trail Crossing	337.51	336.96	337.91	338.75	339.11	339.44	<2-Year
Scriber Lake	Upstream Trail Crossing	338.27	337.35	338.17	338.90	339.21	339.53	10-Year
196th Street SW	Twin 42"x68" CMP Pipearches	345.77	339.76	340.51	341.34	341.80	342.54	>100-Year
Old 196th Street	Bridge	341.00	339.90	340.81	341.67	342.07	342.76	10-Year
Driveway Culvert Near Great Floors[2]	60" Dia CMP	342.91	340.20	341.25	342.22	342.75	343.47	100-Year
Casa Del Ray	Twin 42" Dia CMP	346.12	342.40	345.34	346.44	346.52	346.67	10-Year
191st St SW	48" Dia CMP	357.24	354.39	355.51	356.74	357.37	357.57	25-Year
190th St SW	6' Wx 4' H Box Culvert	357.10	355.04	356.07	357.33	357.55	357.73	10-year[1]
189th St SW	42" Dia Concrete Culvert	360.73	358.51	359.72	360.94	361.06	361.15	10-year[1]
188th St SW	3' Dia Concrete Culvert	363.14	360.67	362.07	363.46	363.60	363.73	10-Year[2]
Driveway 1 Near Flynn's Carpet	Twin 4' Dia CMPs	368.24	363.90	364.35	365.20	365.61	366.31	>100-Year
Driveway 2 Near Flynn's Carpet	Twin 4' Dia CMPs	368.29	365.34	366.04	366.71	367.12	367.87	>100-Year
Bridge at Flynn's Carpet	Pedestrian Bridge	367.59	366.40	367.12	367.76	368.14	368.80	10-Year[3]
SR-99	8.5' Wx 4' H Box Culvert	370.62	367.02	368.01	368.41	368.77	369.62	>100-Year

[1] Overtopped 55th Avenue W to the west of the creek upstream of crossing.

[2] Significant overbank flooding east of creek upstream of crossing.

[3] Significant overbank flooding to the west of creek upstream of bridge.

Casa Del Rey crossing would cause floodwaters to reach the Roz Smith patio in the 100-year event. However, the unusual configuration of the existing culverts at Casa Del Rey allows debris to easily partially or fully block the culverts, which would reduce the level of protection at this location further.

With the exception of 191st Street SW, which has a less than 25-year level of service, the crossings at 190th, 189th and 188th streets all have level of protection of less than 10-year. In addition, the hydraulic analysis indicates significant overbank flooding between 191st Street SW and 188th Street SW. The overbank flooding in this area includes:

- Both the east and west banks of the channel between 191st and 190th Street SW for the 25-year storm event.
- Upstream of 190th Street SW, the west bank is overtopped for the 10-year storm event for the first 100 or so feet and then the water surface profile transitions to overtopping the east bank for the 2-year event until it reaches 189th Street SW. Where 55th Avenue W parallels the creek north of 189th Place SW and downstream of 189th Street SW, the hydraulic analysis shows flows overtopping it for the 100-year event.
- Between 189th Street SW and 188th Street SW, the hydraulic model shows the west bank, including 55th Avenue W overtopped for the 10-year event.

At Flynn's Carpet upstream of 188th Street SW and near SR 99, the creek overtops its banks in the 10-year event causing flooding of adjacent areas. Contours indicate the out of bank flood flows would flow south on the east side of SR 99 and flood the parking lot to the south of Flynn's Carpet.

Figure 7 presents a summary of those culverts that overtop as well as where more significant overbank flooding occurs. For the overbank flooding, this figure is only intended to show those banks that overtop, rather than detailed inundation mapping. Detailed inundation mapping would require additional field survey.

Table 7 presents a summary of average stream flow velocities at various locations for the various return period flows. This information is helpful for the sediment management assessment, which was done as separate task as a part of the corridor planning study. The sediment management assessment considered strategies to reduce future channel erosion and sediment accumulation. Note that in some cases the velocities do not increase as stream flows increase. This is because in some locations as flows increase, flow over tops the banks. When stream overbank flows occurs, the cross sectional area that the flow occupies increases significantly reducing velocities. Note also that these are cross-sectionally averaged velocities. Velocities near the perimeter of the channel tend to be slower, local velocities within the channel may be higher.

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Legend

N

- Roadway/ Driveway Culvert
- Stream Bank Overtopping[1]
- Roadway/ Driveway Culverts That Overtop
- Scriber Creek

0 200 400 800 Feet

Notes

1 Figure indicates where overbank flooding occurs. It does not show detailed inundation mapping

Figure 7
Scriber Creek Flood Reduction Study
196th To 188th Phase 2
Existing Conditions Stream Bank Overtopping Areas

Table 7:

Existing Conditions Velocities for Return Period Storms

Subbasin/Reach	From	To	Sta	Scenario	1/2 2-Year Velocity (ft/s)	2-Year Velocity (ft/s)	10-Year Velocity (ft/s)	25-Year Velocity (ft/s)	100-year Velocity (ft/s)
632	SR 99	Bridge at Flynn's Carpets	12489	Existing	2.70	3.22	3.43	3.22	2.7
631	Bridge at Flynn's Carpets	Driveway 2 near Flynn's Carpets	12316	Existing	3.30	3.50	3.62	3.61	3.44
630	Driveway 2 near Flynn's Carpets	Driveway 1 near Flynn's Carpets	12225	Existing	2.03	2.88	3.73	4.11	4.57
629	Driveway 1 near Flynn's Carpets	188th Street SW	11626	Existing	1.73	1.49	0.73	0.83	0.96
628	188th Street SW	189th Street SW	11342	Existing	1.34	1.20	1.14	1.27	1.47
628+629	189th Street SW	190th Street SW	11163	Existing	2.12	2.55	2.82	3.07	3.51
799[1]	190th Street SW	191st Street SW	10557	Existing	1.77	2.03	2.04	2.08	2.4
625	191st Street SW	Cedar Valley	10340	Existing	3.26	3.59	4.06	4.33	4.69
		Community School	9965						
			9840						
			9679						
624	Cedar Valley	Casa Del Rey	9510	Existing	3.35	3.37	2.75	3.07	3.5
	Community School		9413						
			9284						
			9213						
620	Casa Del Rey	Driveway Culvert Near	9042	Existing	4.31	5.14	5.81	5.73	5.38
		Great Floors	8966						
615	Driveway Culvert Near Great Floors	Old 196th Street	8863	Existing	1.97	2.66	3.2	3.41	1.44
615	Old 196th Street	196th Street SW	8590	Existing	0.85	1.18	1.32	1.34	1.33
			8427						
			8283						
615	Scriber Lake	Scriber Lake	7271	Existing	0.72	0.59	0.42	0.39	0.36
615	Upstream Trail Crossing	Downstream Trail Crossing	7071	Existing	2.02	1.23	0.76	0.65	0.62

Section 4
Identification and Selection of Flood Reduction Scenarios

Based on the results of the existing conditions assessment, flood reduction scenarios were developed to reduce the potential for flooding in the corridor. For the purpose of this study, a flood reduction scenario includes a combination of stream conveyance improvements, storage improvements, and/or sediment management to work together along the study corridor to reduce flooding while attempting to limit increases in peak flows downstream. Limiting increases in downstream flows is important because increasing flows would exacerbate known flooding problems in the vicinity of SW 200th Street, located downstream of the study area. Implementing conveyance improvements alone to solve flooding problems can increase downstream flows by eliminating flood storage. Flood storage attenuates peak flows. As a result, each of the flood reduction scenarios includes adding flood storage to the creek system to offset the loss of flood storage resulting from the conveyance improvements.

Following review of the existing conditions modeling results, the consulting team met with the City staff and identified three flooding reduction scenarios to be modeled using the hydrologic and hydraulic models previously developed and validated. These were referred to as Modeling Scenarios 1, 2, and 3. Two variations of Modeling Scenario 2 were subsequently added to the analysis and were referred to as Modeling Scenario 2A and 2B. Modeling scenarios encompassing multiple projects were developed for the entire stream study reach - rather than simply modeling individual project locations. This is because individual projects are affected by both downstream and upstream conditions. That is, the size and effectiveness of individual projects depend on what other improvements are made in the corridor so it is important to simulate them as they would work together. The flood reduction modeling scenarios were also developed in a way to integrate prior recommendations from the Scriber Creek Advisory Committee. The five modeling scenarios are summarized in Table 8. Table 8 also provides some explanation regarding the particular alternative scenario elements. The project elements contained in each modeling scenario are also shown in Figures 8, 9 and 10 for Modeling Scenarios 1, 2 (and 2A and 2B) and 3, respectively.

The following paragraphs provide additional details about the flood reduction scenarios. In general, whenever culvert replacements are proposed, they need to be sized to provide fish passage in accordance with the Washington State Department of Fish and Wildlife (WDFW) requirements. This sizing often requires the culvert to be larger than what would otherwise be required to pass peak stream flows. Culvert replacements must also be countersunk below the existing stream grade such that the bottoms of the new culverts can be partially filled with natural stream gravels.

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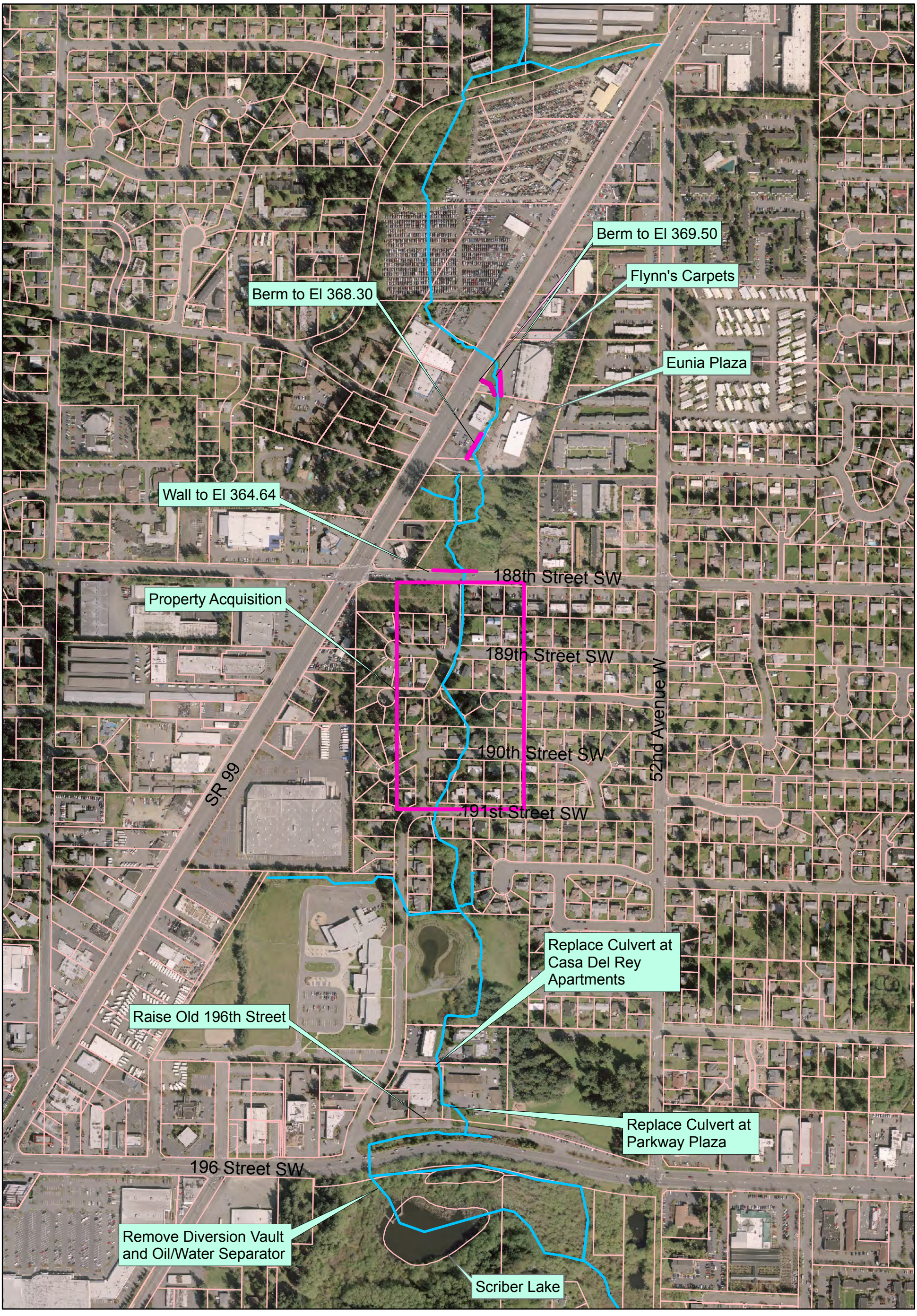
Table 8
Modeling Scenario Alternative Summary

Corridor Location	Modeling Scenario Element Descriptions	Scenario 1	Scenario 2	Scenario 2A	Scenario 2B	Scenario 3	Description/Comments
Scriber Lake - Storage Improvements							
	Increase storage in Scriber Lake by raising a trail (use walls to minimize wetland impacts from fill)		X			X	Raise trail just downstream of lake outlet to back up water level in lake and provide more storage. Trail would be raised by approximately 1 to 2.4 ft. Existing wood bridge would also need to be raised. This provides approximately 3 ac-ft of added flood storage for the 100-year event to prevent the flow around the trail, a low height berm would as be needed to connect the trail to the uplands.
	Increase storage in Scriber Lake by excavation (limited upland areas, possibly integrate with parks amenity)					X	Excavate portion of area along western lake edge to create more flood storage (approximately between elevations 338 and 340). This in combination with raising the trail provides about 6 ac-ft of added flood storage for the 100-year event.
196th St. vicinity - Conveyance improvements							
	Remove Diversion Structure downstream of 196th and incorporate necessary fish passage improvements to 196th St Culverts (i.e. fish passage weir or boulder riffle)	X	X	X	X	X	Removing downstream helps to lower upstream water levels. This would result in the need for a weir downstream of culvert to maintain fish passage, but the removal of the structure and addition of the wier would still result in lower upstream water levels.
	Remove Oil Water Separator downstream of 196th and replace with other treatment type	X	X	X	X	X	Does not affect hydraulic modeling. This project could be combined with removal of the diversion structure as one project element.
	Replace 196th St Culverts in existing location					X	Replace existing twin 5.9' wide x 3.7' tall arch CMP culverts with 12.5' wide x 6.5' tall precast concrete box culvert paritally burried.
	Raise Old 196th Street west of the bridge and associated driveways	X	X	X	X	X	Includes raising road and private access driveways to above 100-year water levels. The roads would be raised to El 342 which is a rise of up to 2' in some areas. This would require a trail transition from the road to the old bridge.
Parkview Plaza/Great Floors/Casa del Rey - conveyance improvements							
	Replace Driveway and culvert to Parkview Plaza (Lighthouse Diving Center) and build up bank on west side of culvert	X	X	X	X		Replace existing 60" dia CMP culvert with 12.5' wide x 5.5' tall precast concrete box culvert paritally burried. This is not needed if the culverts under 196th are replaced.
	Replace culvert at Casa Del Rey	X	X	X	X	X	Replace existing twin 42" dia CMP culverts (angle) with 12.5' wide x 5.5' tall precast concrete box culvert paritally burried and improved alignment.
	Great Floors - possible elimination of detention system	X	X	X	X	X	This improvement was not included in the modeling of the creek. It may be necessary to re-establish on-site treatment control for private property that is lost due to improvements. This would be established during final design of the proposed improvements. It is noted that the site discharge may need to be equipped with backflow prevention device.
	Great Floors - possible retrofit to storm system to incorporate treatment	X	X	X	X	X	Same as above.
School District Property - storage improvements							
	Maximize off-channel Storage on School District property		X		X	X	This improvement includes creating wetland flood storage in an open grassy space area within the school district property. Approximately 0.9 ac-ft of flood storage could be obtained at the 100-year event.
Residential area between 191st and 188th St. - conveyance and flood reduction improvements							
	Acquire flooded properties between 188th St and 191st[4]	X					Objective would be acquire frequently flooding properties. In this way downstream flow increases could be avoided. In addition, some of these properties could possibly be used for storage, recreational trail, project mitigation, and/or adding habitat features. Note culverts at 191st, 190th, 189th, and 188th would not be replaced and would continue to have lower level of flood protection. For modeling of modeling, no new floodplain storage as added at this time.
	Replace 191st St culvert		X	X	X	X	Replace existing 42-ft long 48-inch diameter culvert with new fish passable 8 ft wide by 5.5 ft high culvert counter sunk to provide natural bottom.
	Replace 190th St culvert		X	X	X	X	Replace existing 46-ft long 6 ft wide by 4 ft high box culvert with new fish passable 12 ft wide by 5.5 ft high culvert counter sunk to provide natural bottom.
	Replace 189th St culvert		X	X	X	X	Replace existing 42-ft long 42-inch diameter culvert with new fish passable 10 ft wide by 5.5 ft high culvert counter sunk to provide natural bottom.
188th St and City Parcel to the North - conveyance and storage improvements							
	Build Short wall (about 1.5 ft) on 188th Street to add storage	X		X			This improvement would include a short approximately 1.5 ft high wall along the north side of 188th St SW in the vicinity of the Scriber Creek culvert crossing to further back up stream flow and create more flood storage. It would be equipped with a short section of overflow weir to concentrate overflows when they do occur. This would add about 2.9 ac-ft of flood storage in the 100-year event.
	Build Short wall (about 1.5 ft) on 188th Street and excavate upland areas to add storage		X	X		X	This improvement would include a short wall as above plus excavate out portions of the City-owned property to provide added flood storage. The lowered portions of the site would create new wetland and also provide flood storage. This would add about 3.7 ac-feet of flood storage in the 100-year event. The site would be designed to maintain existing wetlands and large evergreens to extent practical.
Flynn's/Eunia Plaza - conveyance and flood mitigation							
	Berm open channel between driveway culverts near Flynn's Carpets	X	X	X	X	X	Low berms would be installed along top of creek bank to protect low areas of adjacent properties. This may require backflow prevention and a pipe extension (potentially to Scriber Creek at north end of City Park Property north of 188th St) to collect runoff from low parking areas.
	Berm open channel between driveway culverts near Eunia Plaza	X	X	X	X		Same as above.
	Replace driveway culverts near Eunia Plaza					X	Replace existing twin 49-ft long 48-inch diameter culverts with new fish passable 10 ft wide by 5.5 ft high precast box culvert and replace the existing twin 49-ft long 48-inch diameter culverts 10 ft wide by 4 ft high precast box culvert. Both proposed box culverts would be counter sunk to provide natural bottom.
Corridor-wide							
	Implement a continuous sedment management/maintenance program	X	X	X	X	X	No model adjustements were made to reflect an ongoing program of sediment management



N

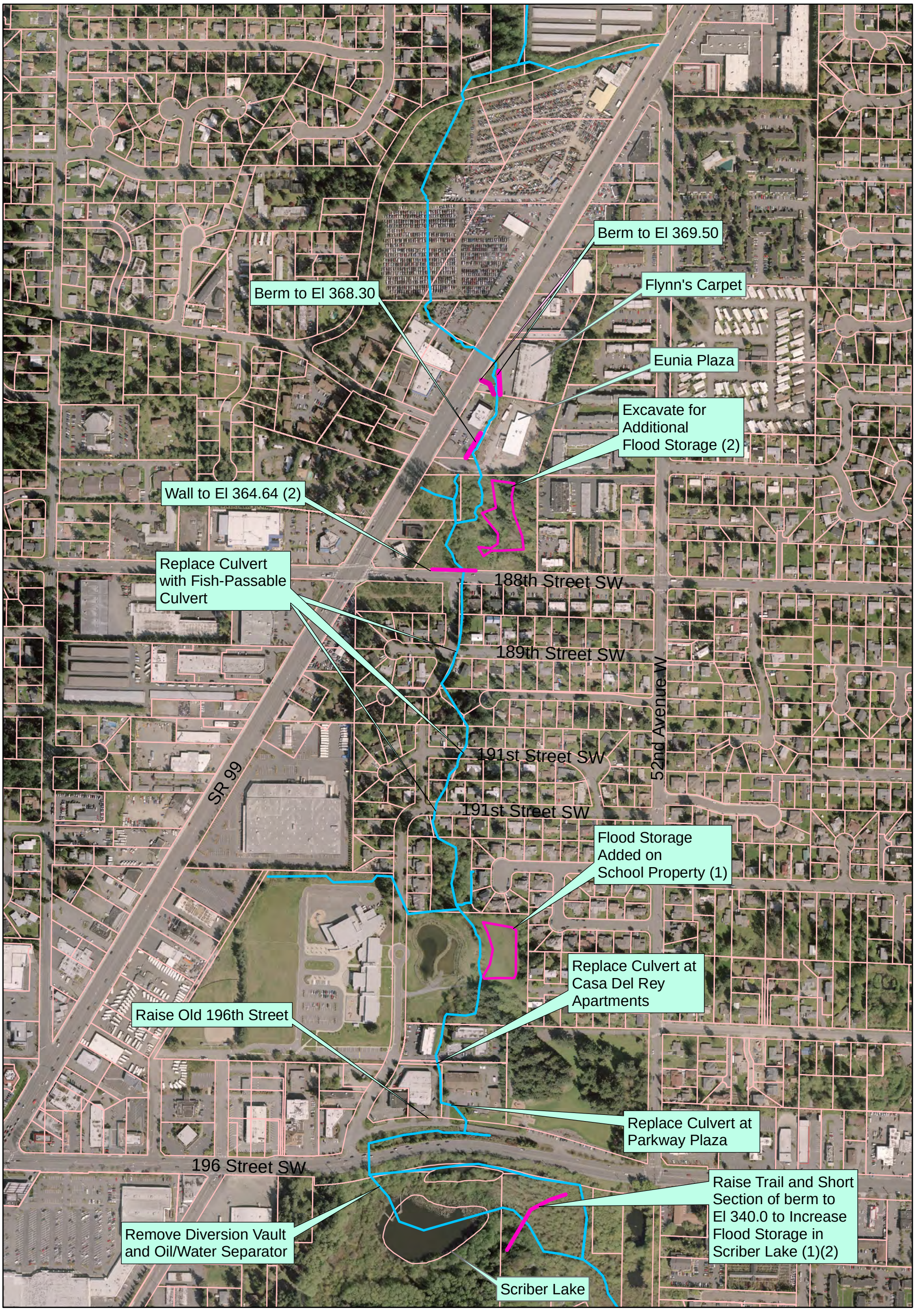
0 200 400 800 Feet

Legend

Scriber Creek

Parcels

Figure 8
Scriber Creek Flood Reduction Study
196th To 188th Phase 2
Modeling Scenario 1



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0 200 400 800 Feet

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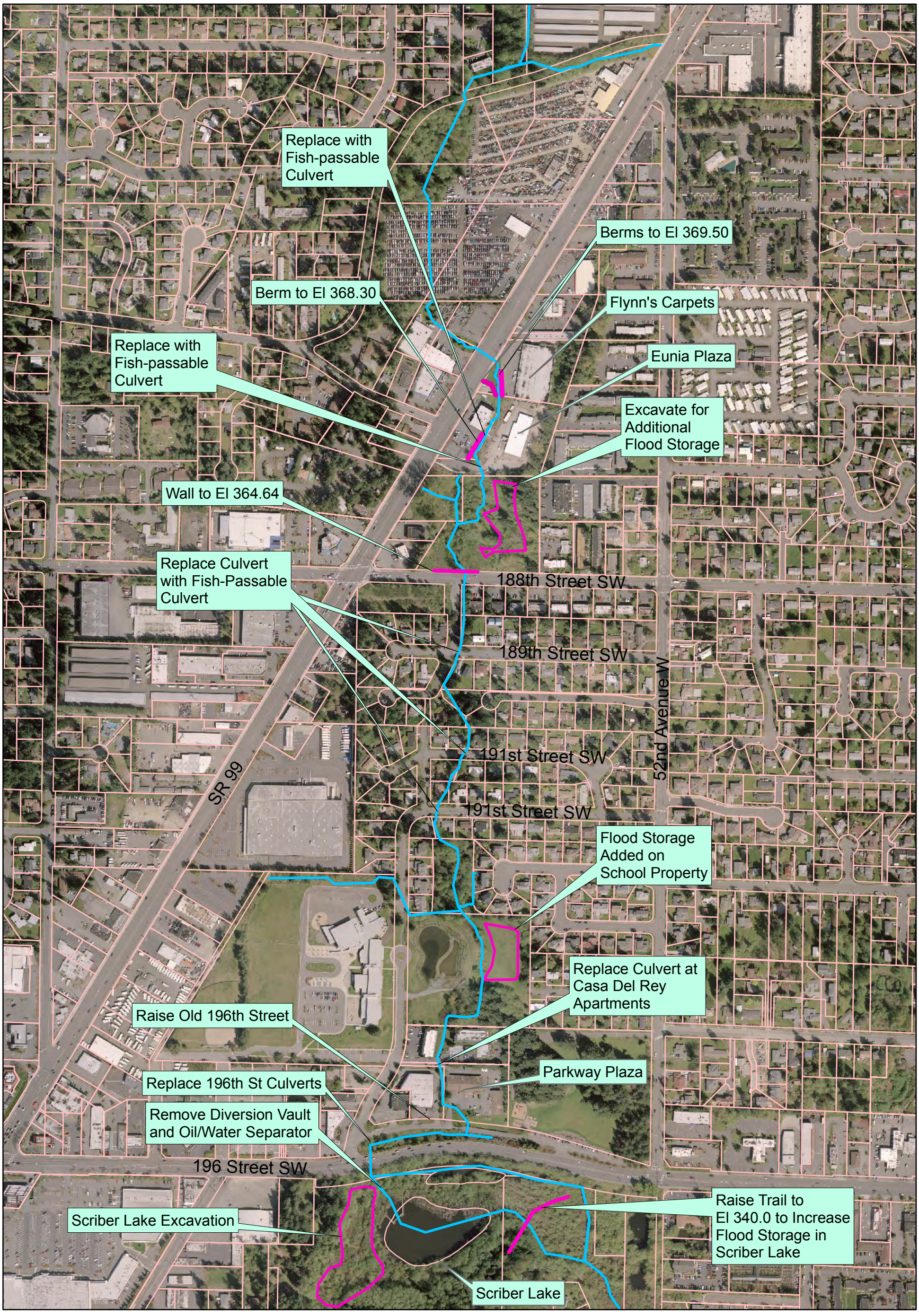
Scriber Creek

Parcels

Notes:

1) Not included on Model Scenario 2A.
2) Not included in Model Scenario 2B.

Figure 9
Scriber Creek Flood Reduction Study
196th To 188th Phase 2
Modeling Scenario 2



N

0 200 400 800 Feet

Legend

Scriber Creek

Parcels

Figure 10
Scriber Creek Flood Reduction Study
196th To 188th Phase 2
Modeling Scenario 3

4.1 Modeling Scenario 1

Flood reduction modeling scenario 1 reflects a combination of conveyance improvements, property acquisitions for frequently flooded properties, and adding a modest amount of flood storage to reduce flood hazards while attempting to limit any increases in downstream flows. The following paragraphs provide additional details about modeling scenario 1 project elements, beginning from downstream to upstream.

196th Street SW Vicinity Improvements – The existing diversion vault located immediately downstream of the 196th Street SW culvert crossing is not working properly and also backs up flow into and upstream of the culvert under 196th Street SW. In addition, we understand the connected oil/water separator does not function well and, unless it is frequently maintained, has the potential to release accumulated oils during significant precipitation. This project element would include removal of both structures. In addition, it would include replacement of the existing oil/water separator with a new type of stormwater treatment device (which does not affect the water surface profiles and is to be defined later in the study). Removal of the diversion structure has the potential to reduce water levels in the culvert, which can create a fish passage barrier during low flows. As a result, the diversion structure should be replaced in combination with adding a low fish weir that backs water up into the culvert at low flows, but does not create added headloss during high flows.

Raise Old 196th Street and Culvert Replacement at Driveway to Parkview Plaza – Even with the removal of the diversion structure downstream of 196th Street SW, Scriber Creek will continue to flood the Old 196th Street because of high water levels and because the driveway culvert to Parkview Plaza is undersized. If the driveway culvert is not replaced with a larger culvert, it would back up Scriber Creek such that it would overtop its banks. The combination of high water surface profiles in the creek and overbank flooding from the Parkview Plaza culvert results in overtopping of Old 196th Street. This project element would both raise the low portions of Old 196th Street in this vicinity (by about 1 ft) and replace the Parkview Plaza culvert with a 12.5 ft wide x 5.5 ft high fish passable box culvert. Note that the culvert is countersunk by 30 percent to provide a natural gravel stream bottom for fish passage. This work could affect the water quality/detention system serving the adjacent Great Floors facility. For example, it may require a backflow prevention device where it discharges to the creek. It is proposed that an analysis of the impacts to the Great Floors facility as well as upstream or downstream impacts be addressed later in the design phase once detailed topographic survey of the area is complete. However, in general, the proposed culvert replacement is expected to lower the tailwater elevation affecting the Great Floors facility.

Casa Del Rey Apartments Culvert Replacement – The current Scriber Creek crossing at the Casa Del Rey Apartments consists of twin 42-inch-diameter CMPs. However, both the inlet and outlet of the culverts are askew from the north-south alignment of the creek, and about half way across the street, they take a sharp approximate 90-degree bend. The result is that there is significant headloss through this crossing and a high risk for material clogging the culverts. A 12.5 ft wide x 5.5 ft high fish passible box culvert is proposed at this location to reduce flooding and provide capacity for the 100-year event. The box culvert would be countersunk by 30 percent to provide a natural stream bottom through the culvert for fish passage.

Property Acquisition in Vicinity of 191st Street SW to 188th Street SW – The objective of this element is to acquire those properties that are already subject to frequent flooding and then continue to use this area for flood storage. This area could also be used for other corridor-wide improvements such as trails, riparian/stream habitat enhancement, or environmental mitigation that may be require for other project elements within the corridor. In addition, the City may want to consider purchasing additional properties in order to obtain a contiguous strip of land for a trail. The specific parcels that would be acquired have not been selected, but in general, it could be those that are already known to flood and which were shown to flood in the modeling, particularly for those where structures are flooded, as well as those parcels where the property owners are willing sellers. An advantage of selecting properties known to flood this is that this would preserve the stream flood storage in this area and avoid the potential for increasing downstream peak flows. The potential benefits of property acquisition could include the ability to:

- add more flood storage through excavation;
- improve creek riparian buffer and habitat, which could be used as mitigation for other impacts created by improvements elsewhere in the creek corridor; and
- provide public property for a trail system (a goal of the City is to extend the existing Scriber Creek trail system north and property acquisition would provide a potential route)

These properties are generally flooded at the 10-year to 25-year flood event. The selection of properties is preliminary. Survey including survey of the finished floors would be required to confirm if additional properties and residential structures are affected by flooding.

It is noted that that to preserve the flood storage in the frequently flooded areas, the existing culvert crossings would not be replaced. Thus, they would continue to be overtopped during the 10 to 25-year event. In addition, 55th Avenue W along the creek in this area would also be subjected to flooding unless additional flood storage is provided on the acquired properties. At this time no new flood storage was added to the model in this reach, but this could be included in the final alternative if desired.

188th Street SW Culvert Crossing and Upstream City-Owned Creek Reach – The stream reach just upstream of 188th Street SW is through a City-owned 4.05 acre parcel. Most of the site is upland area. A smaller portion of the site is a wetland adjacent to Scriber Creek. Currently the culvert crossing is a restriction and backs up flow into the wetland area north of 188th Street SW until the roadway is overtopped. The existing road is overtopped for the 10-year event. The objective of this element is to add creek flood storage north of the road by constructing a short wall on the north side of the street a few feet behind the back of sidewalk. By constructing a wall up to about 1.5 feet high on the north side of 188th Street SW, about 2.9 acre-ft of flood storage is added for about the 100-year event. The wall would have to weave around existing improvements in the area (such as a fire hydrant), but it is a relatively low cost way to add flood storage. Making the wall higher results in backing up the creek to an elevation that risks exacerbating flooding of upstream properties.

The wall would not create enough storage to eliminate roadway overtopping, which would still occur at the 25-year event. But it would reduce downstream creek peak flows. The wall could be configured to have a weir overflow at a desired location in order to locate the primary overflow location.

Berming at Eunia Plaza and Flynn's Carpets

This modeling scenario also includes berming the west side of the channel between the two culverts at Eunia Plaza. Refer to Figure 8. The crest of the berm would need to be at about El 368.30, which would not provide any freeboard for the 100-year flow. Making the berm any higher would make it higher than the drive over the culvert. In addition, berms would be added on either side of the creek near Flynn's Carpets as shown on Figure 8. The berms near Flynn's Carpet would be set to about elevation 369.50 in order to provide 0.5' of freeboard for the 100-year event through this area.

4.2 Modeling Scenario 2

Flood reduction Modeling Scenario 2 reflects a combination of conveyance improvements and adding flood storage to reduce flood hazards while attempting to limit any increases in downstream flows. The main differences between Scenario 2 and Scenario 1 is that it does not include any property acquisitions. Instead, it includes culvert replacements between 191 Street SW and 189th Street SW. In addition, it adds more flood storage along the creek corridor in three locations along the corridor. The following paragraphs provide additional details about Modeling Scenario 2 project elements, beginning from downstream to upstream.

Scriber Lake Improvements – Scriber Lake is located within a City-owned 22-acre open space / park area. The lake and associated streams, wetlands, forest, and trail system offers a valuable setting for fish, wildlife, and opportunities for park visitors. The lake has a long history that is well documented in a 2005 Scriber Lake Park Master Plan document. Part of this history is that the original lake was substantially reduced in size as a result of the construction of 196th Street SW. During construction, the new road sank which displaced deep peat layers and forced a massive peninsula of peat, with trees still rooted, to move sideways, thus creating the peat-laden "North Lagoon" along the south side of 196th Street. It was estimated that Scriber Lake's size was reduced by an estimated 50 percent due to the roadway expansion. The margins of the lake are vegetated with marsh, bog and scrub-shrub wetland species. The trail system includes a portion that extends out over the lake. Other portions are floating trails on the underlying peat. The 2005 master plan reports that the floating boardwalk is nearing the end of its useful life. In addition, the hydraulic modeling shows that portions of the trail are inundated during the 2-year event.

Under modeling Scenario 2, raising a portion of the existing recreational trails is proposed just downstream of the lake outlet. The location of the trail modifications is shown on Figure 11. Raising the trail would not only improve the deteriorated condition, but would also help back up creek flows upstream of the trail creating more flood storage in Scriber Lake. It would also keep the trail above water at the low frequency flood events. The proposed minimum trail elevation through this area is elevation 340.0, which requires the trail to be raised between 1 and 2.4 feet. This would also require that the existing footbridge over the creek be raised to match the new elevation of the trail. Because the trail does not fully cross the entire low area downstream of the lake, an additional small berm, 1 to 2 feet in height would also be needed to connect to the raised trail to upland portions of the site. Portions of this berm would likely fall within wetland areas. Based on the hydraulic analysis results, this would increase flood storage by about 3 acre-ft in the 100-year event.

196TH STREET SW

TRAIL

MODELING SCENARIO 2 & 3:
RAISE TRAIL IN THIS AREA 1–2.5'
TO ELEV. 340. RAISE EXISTING
FOOT BRIDGE TO MATCH TRAIL

SCRIBER
LAKE

MODELING SCENARIO 2 & 3:
EXTEND SHORT 1–2' BERM TO
CONNECT TRAIL TO EXISTING
HIGHER GROUND, ELEV. 340.

MODELING SCENARIO 3 ONLY:
EXCAVATE 1–3' IN THIS
APPROXIMATE AREA AND REPLANT

N

1"=100'

100 50 0 100 200

Scale Feet

Figure 11
Increasing Storage At Scriber Lake

Scriber Creek Phase II
Herrera

Louis Berger

196th Street SW Vicinity Improvements – The improvements at this location would be the same as Scenario 1.

Raise Old 196th Street and Culvert Replacement at Driveway to Parkview Plaza – The improvements at this location would be the same as Scenario 1.

Casa Del Rey Apartments Culvert Replacement – The improvements at this location are the same as in Scenario 1.

School District Property Storage Improvements – Scriber Creek passes through the eastern portion of an Edmonds School District No. 15 property, which is currently an open grassy area. The proposed improvements under Scenario 2 would include creating an off channel flood storage/wetland area connected to the creek. The City would acquire the portion of property to be used. The off channel storage area would be excavated and planted with wetland type planting with habitat features. A preliminary concept is presented in Figure 12 (note this figure is very schematic to show extent of storage and will be updated in future submittal to illustrate additional features). The design attempts to maximize flood storage within the available space. The off channel storage would be slightly sloped to the creek so as to prevent fish stranding. Based on the hydraulic analysis, approximately 0.9 acre-ft of storage could be provided at about the 100-year event. The steep gradient through this portion of the creek (and shallow depth) makes it is difficult to back up flow into the storage area to a depth that would provide more significant storage volumes. Some alternative concepts could be considered including roughening the channel or providing a natural channel constriction (e.g. pinching the channel with rootwads) to increase depth and storage in the excavated area, but any concept would need to provide fish passage and be acceptable to WDFW.

Culvert Replacements from 191st Street SW to 188th Street SW – The objective of this element is to replace these culverts and lower the Scriber Creek water levels to reduce overbank flooding and roadway flooding. This would eliminate the need for property acquisition as described under Scenario 1. Each of these culverts would be replaced with fish passable culverts. The dimensions of the culvert replacements were developed based upon WDFW fish passage criteria and checking to see that they would have sufficient capacity.

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Figure 12.
Maximize Off-Channel Storage on Edmonds School District Property.

Legend

- Proposed project area
- Scriber Creek
- Proposed high flow side channel alignment
- Wetland hunmocks for edge habitat (typ.)
- LWD
- Riparian vegetation (typ.)
- Parcel
- Proposed project grading
- 1-ft contour

N

0 25 50 100 ft

HERRERA

NAD 1983 HARN
Washington State Plane North FIPS 4601 Feet
ESRI, Aerial (2011)

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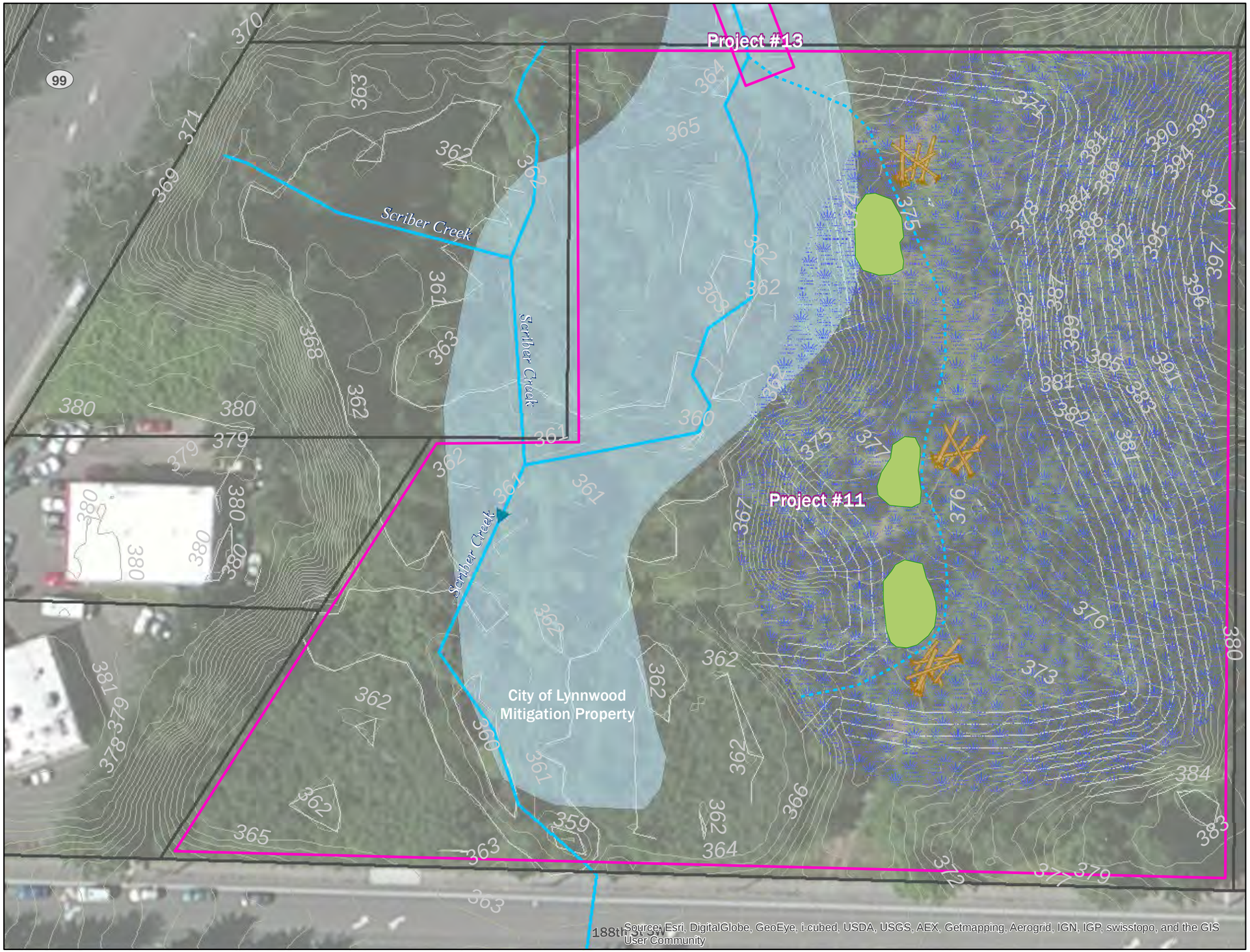

Figure 13.
Maximixe off-channel storage on the City of Lynnwood's Property north of 188th Street.

Legend

- Proposed project area
- Scriber Creek
- Proposed high flow side channel alignment
- Wetland hunmocks for edge habitat (typ.)
- LWD
- Riparian vegetation (typ.)
- Parcel
- Proposed project grading
- 1-ft contour

N

0 25 50 100 ft

HERRERA

NAD 1983 HARN
Washington State Plane North FIPS 4601 Feet
ESRI, Aerial (2011)

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188th Street SW Culvert Crossing and Upstream City-Owned Creek Reach – Under Scenario 2, a wall would be added to the north side of 188th Street SW similar to Scenario 1. In addition, the City-owned parcel would be modified to provide a much larger wetland and increased flood storage than currently exists. An off-channel storage and wetland area would be excavated and planted with wetland type planning with habitat features. A preliminary concept is presented in Figure 13 (note this figure is very schematic to show extent of storage and will be updated in future submittal to illustrate additional features). The design attempts to maximize flood storage within the available space, while maintaining portions of the existing wetlands and areas of concentrated evergreen trees. This could be accomplish be excavating out select portions of the site to elevations just above the low water levels. The off channel storage would be slightly sloped to the creek so as to prevent fish stranding. Even with the added storage, the road would overtop for the 25-year event. However, the combination of adding the wall and the excavation described above would add about 3.7 acre-feet of storage under the 100-year event and help to reduce downstream peak flows.

Bank Improvements at Flynn's Carpets and Eunia Plaza – These improvements would be the same for this scenario as under Scenario 1.

Modeling Scenario 2A. Modeling Scenario 2A was added to the analysis following review of the initial modeling results of Modeling Scenario 2. This adjustment to Scenario 2 sought to determine whether the flood reduction goals of the project could be sufficiently met without the additional flood storage on the School District property and without the additional storage within the Scriber Lake Park area (See Figure 9).

Modeling Scenario 2B. Modeling Scenario 2B was added to the analysis following review of the initial modeling results of Modeling Scenario 2. This adjustment to Scenario 2 sought to determine whether the flood reduction goals of the project could be sufficiently met without the additional storage within the Scriber Lake Park area and without the flood storage improvements at 188th Street SW (both raising the wall and the added storage created by excavation were eliminated)(see Figure 9). Under Modeling Scenario 2B, the additional flood storage on the School District property is included.

4.3 Modeling Scenario 3

Flood reduction Modeling Scenario 3 reflects a combination of conveyance improvements and adding stream storage to reduce flood hazards while attempting to limit any increases in downstream flows. The main differences between Scenario 3 and Scenario 2 is that Scenario 3 adds more flood storage in Scriber Lake by excavation of some upland areas, it replaces the culvert crossing of 196th Street SW, and modifies the approach to flood hazard reduction in the most northerly stream reach in the vicinity of Flynn's Carpets and Eunia Plaza. The following paragraphs provide additional details

about Modeling Scenario 3 project elements, beginning from downstream to upstream.

Scriber Lake Improvements – Under Scenario 3, the improvements at Scriber Lake would include the trail and berm modifications described under Scenario 2 plus adding more flood storage by excavating select areas around the west perimeter of the lake. The potential locations for such excavation is shown on Figure 11. This area was selected because it is relatively low lying but generally above the 2-year water level. Ideally, it is desirable to add flood storage in the elevation range between 338 and 340 because this is the range of elevations between the 2-year and 100-year event. The elevation of this area generally is in that range. The upland area between the main lake and the north lagoon is too low and it is unlikely that excavating this area would not result in much added flood storage during these events. As noted previously, the perimeter of the lake is largely vegetated with marsh, bog and scrub-shrub wetland species. There would be substantial permitting needed to gain approval for excavation in this area (permitting requirements for the scenarios will be described in a separate work product). But there may be a case to present excavation of the area and re-establishing it as a new amenity that increases public access to the lake. The excavation combined with raising the trail adds approximately 6 acre-ft of flood storage for the 100-year event.

196th Street SW Vicinity Improvements – Under Scenario 3, the removal of the diversion structure and replacement of the oil/water separator would be the same as Scenario 1. In addition, the existing 196th Street SW culvert would be replaced with a larger fish-passable culvert to further lower upstream water levels. Some thought was originally given to relocating the crossing to the east near the old 196th Street Bridge where it existed prior to the construction of the new 196th Street SW. However, research on the construction of the roadway embankment by the team geotechnical engineer revealed that the embankment overlays peat and was constructed of logs and non-natural debris (e.g., old concrete) which would make boring through the embankment difficult. As a result, it was decided that it would be much more practical and cost effective to replace the culvert in its current location.

Raise Old 196th Street and Culvert Replacement at Driveway to Parkview Plaza – The improvements at this location would be the same as Scenario 1, except the culvert replacement at Parkview Plaza are no longer required.

Casa Del Rey Apartments Culvert Replacement – The improvements at this location are the same as in Scenario 1.

School District Property Storage Improvements – The improvements at this location would be the same as Scenario 2.

Culvert Replacements from 191st Street SW to 188th Street SW – The improvements at this location would be the same as Scenario 2.

188th Street SW Culvert Crossing and Upstream City-Owned Creek Reach – The improvements at this location would be the same as Scenario 2.

Bank Improvements at Flynn's Carpets and Eunia Plaza – The improvements near Eunia Plaza and Flynn's Carpets would be the same as in Scenario 1 with the exception that the berms could be reduced in height. In addition, the improvements would include replacing the two culverts at Eunia Plaza with fish-passable box culverts. The proposed culverts would provide not only provide fish passage, but the capacity to convey the 100-year peak storm event.

4.4 Scenario Analysis Results

Table 9 presents the resulting peak flows at various locations along the project corridor for the modeling scenarios. The water surface elevation results for existing conditions and each of the modeling scenarios is tabulated in Table 10. Stream channel velocities for both current conditions and modeling scenarios are presented in Table 11. Figures 14 through 18 show the water surface profiles for Modeling Scenarios 1, 2, 2A, 2B, and 3. Figure 19 present the level of protection at the major culvert crossing locations for the modeling scenarios. As seen from the tables and profiles, all of the modeling scenarios except Modeling Scenario 2B achieve the flood control objective of this study while not increasing downstream peak flows.

For Scenario 1, flow still overtops the Old 196th Street bridge for the 25-year event, however, by removing the diversion structure downstream of 196th Street SW and raising Old 196th Street, the roadway is above the 100-year water surface elevation. In addition, replacing the culvert at Parkway Plaza keeps flow within the channel for the 100-year event. Replacing the culvert at Casa Del Rey also provides capacity for the 100-year event at this crossing. Roadways continue to overtop at 191st, 190th, and 189th Streets SW for Scenario 1, however that was expected for this scenario. Under this scenario, frequently flooded properties in this area would be acquired and the roadways would be allowed to overtop in high flows. Adding storage at 188th Street SW by adding a wall provides sufficient storage to offset any increases in downstream flows from the conveyance improvements. In fact under this scenario, flows decrease from existing conditions all along the corridor down to the outlet from Scriber Lake. In addition, the wall at 188th Street decreases the predicted likelihood of 188th Street SW being overtopped from about 10 percent annually to 4 percent annually. The berms within Eunia Plaza and near Flynn's Carpet generally keep the 100-year flow off the parking lots and within the creek channel.

For Modeling Scenario 2, as with Scenario 1, flow overtops the Old 196th Street bridge for the 25-year event, but the roadway is protected for the 100-year event, and the culvert replacements at Parkway Plaza and Casa Del Rey provide a 100-year level of protection at these crossings. However, under this scenario, the proposed improvements also provide 100-year level of protection at 191st, 190th and 189th streets SW. Similar to Scenario 1, 188th Street SW still overtops in the 25-year event. Also similar to Scenario 1, the berms within Eunia Plaza and near Flynn's Carpet generally keep the 100-year flow off the parking lots and within the creek channel. For this scenario, the added flood storage at the Scriber Lake resulting from raising the trail and the additional flood storage at the school property and 188th Street SW adequately attenuate any increases in peak flows resulting from the conveyance improvements such that peak flows generally decrease from existing conditions throughout the corridor. In fact, reviewing the results of the peak flows along the corridor calls into question the need for added flood storage at all of these locations. From the results in Table 9, the inflows to Scriber Lake (Subbasin 628+629) are less under Scenario 2 than existing conditions, indicating the raising the trail at Scriber Lake to provide addition flood storage may not be required. In addition, the significant decrease in flow at 188th Street SW (Subbasin 631) from existing conditions (131.0 cfs) to Scenario 2 (106.5 cfs) calls into question the need for the added flood storage at the school. Because there is such a marked decrease in flow at 188th Street, it was thought that may be enough to offset any increases in peak flows resulting from the scenario. In part due to the review of these results, Modeling Scenarios 2A and 2B were added to the analysis.

Under Modeling Scenario 2A, the results are very similar to Modeling Scenario 2 and it was confirmed that main objectives of not increasing downstream peak flows without raising the trail in Scriber Lake Park and without the added storage at the school district property.

Modeling Scenario 2B results indicate that for flows greater in magnitude than the 2-year event, some increases in peak flows would occur downstream of Scriber Lake. Therefore this scenario did not meet the primary objective of not increasing downstream peak flows. The added storage at the school district property alone was not adequate to mitigate for the loss of storage from the upstream culvert replacements (without the added storage at 188th Street SW). Within the corridor, Scenario 2B generally meets the goal of reducing flooding, with the exception of Old 196th Street, which would experience flood overtopping during the 100-year event near the driveway access to the Great Floors business.

Modeling Scenario 3 updates Scenario 2 by making additional conveyance improvements at 196th Street SW and at Eunia Plaza to further reduce water surface elevations and then adding more flood storage in Scriber Lake by excavation. Similar to the results for Scenario 2, flow overtops the Old 196th Street bridge for the 25-year event, but the roadway is protected for the 100-year event, and the culvert replacement at Casa Del Rey provides a 100-year level of projection. However, due to the improved crossing at 196th Street SW, water surface elevations are sufficiently lowered such that the culvert at Parkway Plaza does not need to be replaced to provide a 100-year level of protection. Similar to Scenario 2, this scenario provides 100-year level of protection at 191st, 190th and 189th streets SW while 188th Street SW is predicted to overtop in the 25-year event. Improving the culverts at Eunia Plaza reduces the water levels through this area providing more freeboard at the crossings, but berms would still be needed to keep flow off the parking lot areas. As with the other scenarios, the added flood storage provided by this scenario is sufficient to offset any increases in peak flow resulting from the conveyance improvements such that flows generally decrease when compared to existing conditions throughout the corridor. Because Scenario 1 and 2 achieve the goals of this project without the additional project elements proposed by this scenario, it appears that the added improvements in this scenario are not necessary.

A separate analysis was done using the HSPF hydrologic model to assess changes in the durations of inundation within those wetlands/ponds considered in the alternative scenarios. This information is helpful to for future designers by allowing understanding of inundation durations for plant selection to ensure successful survival. Table 12 provides this information for Scriber Lake, the alternative pond at Cedar Valley Community School, and the alternative pond at the 188th Street SW wetland modeling scenarios where planting of these areas will be required (scenarios 2 and 3).

For the two potential projects that affect existing wetlands (Scriber Lake and the 188th Street SW pond), the Washington State Department of Ecology provides guidance on allowed impacts to wetlands resulting from proposed projects that may alter their hydrology. Ecology guidance states that the daily volumes post project should not be 20 percent lower or higher and pre-project daily volumes. In addition, the total volume of water into a wetland on a monthly basis should not be more than 15 percent higher or lower than the pre-project volumes. The HSPF hydrologic model data was used to assess this criteria and it was determined that for both storage areas the change in daily volumes was much lower than the 20 percent criteria (Table 13).

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Table 9

Summary of Peak Flows and Return Periods for Modeling Scenarios

Subbasin/ Reach	Location		1/2 2-Year Peak Flow (cfs)	2-Year Peak Flow (cfs)	10-Year Peak Flow (cfs)	25-Year Peak Flow (cfs)	100-year Peak Flow (cfs)
632	SR 99	Existing	26.58	53.16	90.13	111.63	147.45
		Model Scenario 1	26.58	53.16	90.13	111.63	147.45
		Model Scenario 2	26.58	53.16	90.13	111.63	147.45
		Model Scenario 2A	26.58	53.16	90.13	111.63	147.45
		Model Scenario 2B	26.58	53.16	90.13	111.63	147.45
		Model Scenario 3	26.58	53.16	90.13	111.63	147.45
631	188th Street SW	Existing	26.01	52.01	83.07	101.05	131
		Model Scenario 1	25.06	50.12	73.61	86.34	106.54
		Model Scenario 2	25.68	51.35	75.42	87.4	105.23
		Model Scenario 2A	25.68	51.35	75.4	87.37	105.19
		Model Scenario 2B	26.18	52.36	83.62	101.52	131.09
		Model Scenario 3	25.68	51.35	75.45	87.45	105.34
630	Downstream side of Cedar Hills Community School	Existing	26.68	53.35	82.75	98.68	123.93
		Model Scenario 1	26.17	52.33	75.59	87.11	104.23
		Model Scenario 2	26.45	52.89	78.43	90.88	109.11
		Model Scenario 2A	26.91	53.81	79.05	91.28	109.14
		Model Scenario 2B	26.89	53.78	85.21	102.33	129.54
		Model Scenario 3	26.43	52.85	78.43	90.91	109.21
629	196th Street SW	Existing	27.90	55.80	85.41	100.81	124.5
		Model Scenario 1	27.63	55.26	80.05	92.25	110.29
		Model Scenario 2	27.85	55.69	82.82	96.06	115.47
		Model Scenario 2A	28.35	56.70	83.75	96.87	116.06
		Model Scenario 2B	28.28	56.55	89.02	106.42	133.76
		Model Scenario 3	27.86	55.72	82.91	96.21	115.76
628	SR 99 Basin	Existing	19.97	39.94	69.33	86.1	113.59
		Model Scenario 1	19.97	39.94	69.33	86.1	113.59
		Model Scenario 2	19.97	39.94	69.33	86.1	113.59
		Model Scenario 2A	19.97	39.94	69.33	86.1	113.59
		Model Scenario 2B	19.97	39.94	69.33	86.1	113.59
		Model Scenario 3	19.97	39.94	69.33	86.1	113.59
628+629	Scriber Lake Inflow	Existing	47.87	95.74	154.74	186.91	238.09
		Model Scenario 1	47.60	95.20	149.38	178.35	223.88
		Model Scenario 2	47.82	95.63	152.15	182.16	229.06
		Model Scenario 2A	48.32	96.64	153.08	182.97	229.65
		Model Scenario 2B	48.25	96.49	158.35	192.52	247.35
		Model Scenario 3	47.83	95.66	152.24	182.31	229.35
799[1]	Scriber Lake Outlet	Existing	38.38	76.75	116.09	135.33	163.58
		Model Scenario 1	38.42	76.84	113.64	131.14	156.34
		Model Scenario 2	37.96	75.91	112.92	130.59	156.09
		Model Scenario 2A	38.70	77.40	115.91	134.38	161.11
		Model Scenario 2B	38.58	77.15	117.88	138.02	167.82
		Model Scenario 3	36.62	73.24	109.82	127.71	153.97
625	200th Street SW	Existing	32.68	65.36	101.99	119.71	145.43
		Model Scenario 1	32.73	65.46	100.84	117.53	141.33
		Model Scenario 2	32.55	65.10	100.82	117.91	142.54
		Model Scenario 2A	32.76	65.52	101.86	119.3	144.45
		Model Scenario 2B	32.68	65.36	102.43	120.53	146.98

		Model Scenario 3	31.93	63.85	99.24	116.51	141.75
624	I-5	Existing	35.60	71.19	114.1	136.13	169.52
		Model Scenario 1	35.65	71.29	113.49	134.87	166.96
		Model Scenario 2	35.53	71.05	113.29	134.8	167.23
		Model Scenario 2A	35.67	71.33	114.15	136.02	169.07
		Model Scenario 2B	35.61	71.22	114.4	136.65	170.48
		Model Scenario 3	35.11	70.21	111.89	133.28	165.72
620	SW 212th Street	Existing	40.53	81.05	133.19	161.95	208.03
		Model Scenario 1	40.61	81.21	132.92	161.25	206.37
		Model Scenario 2	40.47	80.93	132.47	160.77	205.93
		Model Scenario 2A	40.62	81.24	133.36	162.02	207.81
		Model Scenario 2B	40.55	81.10	133.5	162.49	209.03
		Model Scenario 3	40.03	80.05	130.98	159.12	204.23
615	44th Avenue W	Existing	39.00	77.99	133.29	165.4	218.81
		Model Scenario 1	39.05	78.10	132.88	164.43	216.58
		Model Scenario 2	38.98	77.95	132.6	164.11	216.26
		Model Scenario 2A	39.06	78.12	133.34	165.28	218.29
		Model Scenario 2B	39.01	78.02	133.54	165.86	219.74
		Model Scenario 3	38.72	77.44	131.48	162.69	214.42

[1]Scriber Lake is defined by Reach 799 in HSPF. There is no separate subbasin for Scriber Lake.

Table 10

Water Surface Elevations for Return Period Flows for Modeling Scenarios

Location	Description	Conveyance Condition	Crossing Top Elevation (feet)	1/2-Year Water Surface Elevation (feet)	2-Year Water Surface Elevation (feet)	10-Year Water Surface Elevation (feet)	25-Year Water Surface Elevation (feet)	100-Year Water Surface Elevation (feet)	Overtopping Return Period
Scriber Lake	Downstream Trail Crossing	Existing	337.93	336.96	337.91	338.75	339.11	339.44	2-year
		Modeling Scenario 1	337.93	336.96	337.91	338.72	339.07	339.39	10-year
		Modeling Scenario 2	337.93	336.95	337.9	338.72	339.08	339.4	10-year
		Modeling Scenario 2A	337.93	336.96	337.91	338.74	339.1	339.43	10-year
		Modeling Scenario 2B	337.93	336.96	337.91	338.76	339.12	339.45	10-year
		Modeling Scenario 3	337.93	336.94	337.87	338.69	339.05	339.4	10-year
Scriber Lake	Upstream Trail Crossing	Existing	338.27	337.35	338.17	338.9	339.21	339.53	10-year
		Modeling Scenario 1	340	337.32	338.11	338.82	339.14	339.44	>100-year
		Modeling Scenario 2	340	337.31	338.1	338.94	339.34	339.75	>100-year
		Modeling Scenario 2A	338.27	337.32	338.12	338.84	339.16	339.48	10-year
		Modeling Scenario 2B	338.27	337.32	338.11	338.85	339.18	339.51	10-year
		Modeling Scenario 3	340	337.3	338.07	338.89	339.3	339.74	>100-year
196th Street SW	Twin 42"x68" CMP Pipearches	Existing	345.77	339.76	340.51	341.34	341.8	342.54	>100-year
	Twin 42"x68" CMP Pipearches	Modeling Scenario 1	345.77	338.92	339.52	340.03	340.31	340.7	>100-year
	Twin 42"x68" CMP Pipearches	Modeling Scenario 2	345.77	338.93	339.52	340.09	340.41	340.87	>100-year
	Twin 42"x68" CMP Pipearches	Modeling Scenario 2A	345.77	338.94	339.54	340.09	340.39	340.79	>100-year
	Twin 42"x68" CMP Pipearches	Modeling Scenario 2B	345.77	338.94	339.54	340.18	340.53	341.06	>100-year
	12.5' x 6.5' Box Culvert	Modeling Scenario 3	345.77	338.76	339.28	339.76	340.04	340.41	>100-year
Old 196th Street	Bridge	Existing	341	339.9	340.81	341.67	342.07	342.76	10-year
		Modeling Scenario 1	342[4]	339.42	340.17	340.82	341.2	341.72	25-year[5]
		Modeling Scenario 2	342[4]	339.42	340.18	340.9	341.32	341.88	25-year[5]
		Modeling Scenario 2A	342[4]	339.44	340.2	340.92	341.32	341.85	25-year[5]
		Modeling Scenario 2B	342[4]	339.43	340.2	341.08	341.56	342.05	10-year[6]
		Modeling Scenario 3	3424	339.39	340.09	340.75	341.15	341.67	25-year[5]
Driveway Culvert Near Great Floors	60" Dia CMP	Existing	342.91	340.2	341.25	342.22	342.75	343.47	100-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 1	342.91	339.74	340.46	341.06	341.33	341.79	>100-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 2	342.91	339.75	340.47	341.15	341.44	341.96	>100-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 2A	342.91	339.76	340.49	341.15	341.46	341.97	>100-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 2B	342.91	339.76	340.49	341.22	341.63	342.16	>100-year
	60" Dia CMP	Modeling Scenario 3	342.91	340.21	341.2	342	342.36	342.8	>100-year
Casa Del Ray	Twin 42" Dia CMP	Existing	346.12	342.4	345.34	346.44	346.52	346.67	10-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 1	346.12	342.03	342.66	343.29	343.61	344.04	>100-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 2	346.12	342.04	342.69	343.36	343.71	344.09	>100-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 2A	346.12	342.04	342.69	343.39	343.73	344.09	>100-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 2B	346.12	342.04	342.7	343.53	343.94	344.35	>100-year
	12.5' x 5.5' Box Culvert	Modeling Scenario 3	346.12	342.02	342.57	343.42	343.79	344.09	>100-year
191st St SW	48" Dia CMP	Existing	357.38	354.39	355.51	356.74	357.37	357.57	25-year
	48" Dia CMP	Modeling Scenario 1	357.38	354.33	355.43	356.29	356.72	357.34	>100-year
	8'x5.5' Box Culvert	Modeling Scenario 2	357.38	353.11	353.6	354.04	354.37	354.73	>100-year
	8'x5.5' Box Culvert	Modeling Scenario 2A	357.38	353.11	353.61	354.06	354.38	354.73	>100-year
	8'x5.5' Box Culvert	Modeling Scenario 2B	357.38	353.11	353.61	354.24	354.6	355.06	>100-year
	8'x5.5' Box Culvert	Modeling Scenario 3	357.38	353.1	353.6	354.04	354.38	354.73	>100-year
190th St SW	6' Wx 4' H Box Culvert	Existing	357.1	355.04	356.07	357.33	357.55	357.73	10-year[1]
	6' Wx 4' H Box Culvert	Modeling Scenario 1	357.1	355.08	356.11	357.17	357.39	357.56	10-year[1]
	12'Wx 5.5'H Box Culvert	Modeling Scenario 2	357.1	354.46	355.19	355.73	355.98	356.41	>100-year
	12'Wx 5.5'H Box Culvert	Modeling Scenario 2A	357.1	354.47	355.21	355.74	355.99	356.41	>100-year
	12'Wx 5.5'H Box Culvert	Modeling Scenario 2B	357.1	354.47	355.21	355.86	356.24	356.82	>100-year
	12'Wx 5.5'H Box Culvert	Modeling Scenario 3	357.1	354.46	355.19	355.73	355.98	356.41	>100-year
189th St SW	42" Dia Concrete Culvert	Existing	360.73	358.51	359.72	360.94	361.06	361.15	10-year[1]
	42" Dia Concrete Culvert	Modeling Scenario 1	360.73	358.52	359.72	360.74	361.01	361.06	10-year[1]
	10' Wx 5.5 Box Culvert	Modeling Scenario 2	360.73	356.72	357.2	357.65	357.87	358.07	>100-year
	10' Wx 5.5 Box Culvert	Modeling Scenario 2A	360.73	356.73	357.21	357.66	357.87	358.07	>100-year
	10' Wx 5.5 Box Culvert	Modeling Scenario 2B	360.73	356.73	357.21	357.79	357.99	358.28	>100-year
	10' Wx 5.5 Box Culvert	Modeling Scenario 3	360.73	356.73	357.2	357.65	357.87	358.06	>100-year

Table 10 (Cont'd)
Water Surface Elevations for Return Period Flows for Modeling Scenarios

Location	Description	Conveyance Condition	Crossing Top Elevation (feet)	1/2-Year Water Surface Elevation (feet)	2-Year Water Surface Elevation (feet)	10-Year Water Surface Elevation (feet)	25-Year Water Surface Elevation (feet)	100-Year Water Surface Elevation (feet)	Overtopping Return Period
188th St SW	3' Dia Concrete Culvert	Existing	363.14	360.67	362.07	363.46	363.6	363.73	10-Year[2]
	3' Dia Concrete Culvert	Modeling Scenario 1	364.64	360.41	361.8	364.3	364.77	364.85	25-year
	3' Dia Concrete Culvert	Modeling Scenario 2	364.64	360.44	361.87	363.43	364.68	364.8	25-year
	3' Dia Concrete Culvert	Modeling Scenario 2A	364.64	360.44	361.87	363.44	364.66	364.8	25-year
	3' Dia Concrete Culvert	Modeling Scenario 2B	363.14	360.47	361.93	363.38	363.52	363.67	10-Year[2]
	3' Dia Concrete Culvert	Modeling Scenario 3	364.64	360.44	361.87	363.44	364.68	364.8	25-year
Driveway 1 Near Flynn's Carpet	Twin 4' Dia CMPs	Existing	368.24	363.9	364.35	365.2	365.61	366.31	>100-year
	Twin 4' Dia CMPs	Modeling Scenario 1	368.24	364.45	364.8	365.38	365.78	366.51	>100-year
	Twin 4' Dia CMPs	Modeling Scenario 2	368.24	364.45	364.81	365.38	365.78	366.51	>100-year
	Twin 4' Dia CMPs	Modeling Scenario 2A	368.24	364.45	364.81	365.38	365.78	366.51	>100-year
	Twin 4' Dia CMPs	Modeling Scenario 2B	368.24	364.46	364.82	365.4	365.79	366.51	>100-year
	10'Wx 5.5'H Box Culvert	Modeling Scenario 3	368.24	364.34	364.37	364.81	365.01	365.34	>100-year
Driveway 2 Near Flynn's Carpet	Twin 4' Dia CMPs	Existing	368.29	365.34	366.04	366.71	367.12	367.87	>100-year
	Twin 4' Dia CMPs	Modeling Scenario 1	368.29	365.37	366.07	366.86	367.29	368.1	>100-year
	Twin 4' Dia CMPs	Modeling Scenario 2	368.29	365.38	366.07	366.86	367.29	368.1	>100-year
	Twin 4' Dia CMPs	Modeling Scenario 2A	368.29	365.35	366.07	366.86	367.29	368.1	>100-year
	Twin 4' Dia CMPs	Modeling Scenario 2B	368.29	365.38	366.07	366.86	367.29	368.1	>100-year
	10'Wx 4'H Box Culvert	Modeling Scenario 3	368.29	365	365376	366.73	366.8	367.52	>100-year
Bridge at Flynn's Carpet	Pedestrian Bridge	Existing	367.59	366.4	367.12	367.76	368.14	368.8	10-year[3]
	Pedestrian Bridge	Modeling Scenario 1	367.59	366.45	367.18	367.89	368.3	368.97	10-year
	Pedestrian Bridge	Modeling Scenario 2	367.59	366.45	367.18	367.89	368.3	368.97	10-year
	Pedestrian Bridge	Modeling Scenario 2A	367.59	366.41	367.18	367.89	368.3	368.97	10-year
	Pedestrian Bridge	Modeling Scenario 2B	367.59	366.45	367.18	367.89	368.3	368.97	10-year
	Pedestrian Bridge	Modeling Scenario 3	367.59	366.45	367.18	367.85	368.22	368.78	10-year
SR-99	8.5' Wx 4' H Box Culvert	Existing	370.62	367.02	368.01	368.41	368.77	369.62	>100-year
	8.5' Wx 4' H Box Culvert	Modeling Scenario 1	370.62	367.09	368.08	368.52	368.96	369.86	>100-year
	8.5' Wx 4' H Box Culvert	Modeling Scenario 2	370.62	367.09	368.08	368.52	368.96	369.86	>100-year
	8.5' Wx 4' H Box Culvert	Modeling Scenario 2A	370.62	367.04	368.08	368.52	368.96	369.86	>100-year
	8.5' Wx 4' H Box Culvert	Modeling Scenario 2B	370.62	367.09	368.08	368.52	368.96	369.86	>100-year
	8.5' Wx 4' H Box Culvert	Modeling Scenario 3	370.62	367.09	368.08	368.51	368.94	369.8	>100-year

[1]Overtopped 55th Avenue W to the west of the creek upstream of crossing.

[2]Significant overbank flooding east and west of creek upstream of crossing.

[3]Significant overbank flooding to the west of creek upstream of bridge.

[4]Roadway raise to el 342.0 but bridge elevation not adjusted.
[5]Bridge overtops at this return period, but the roadway overtop in a greater than 100-year event.

[6]Bridge overtops at this return period, but the roadway overtop in a 100-year event.

Table 11: Stream Channel Velocities at Selected Locations and Return Period Flows

From	To	Scenario	1/2 2-Year Velocity (ft/s)	2-Year Velocity (ft/s)	10-Year Velocity (ft/s)	25-Year Velocity (ft/s)	100-year Velocity (ft/s)
SR 99	Bridge at Flynn's	Existing	2.70	3.22	3.43	3.22	2.7
	Carpets	Model Scenario 1	2.70	3.22	3.43	3.22	2.7
		Model Scenario 2	2.70	3.22	3.43	3.22	2.7
		Model Scenario 2A	2.67	3.22	3.43	3.22	2.7
		Model Scenario 2B	2.70	3.22	3.43	3.22	2.7
		Model Scenario 3	2.70	3.23	3.54	3.39	3.08
Bridge at Flynn's	Driveway 2 near	Existing	3.30	3.50	3.62	3.61	3.44
Carpets	Flynn's Carpets	Model Scenario 1	3.30	3.50	3.62	3.61	3.44
		Model Scenario 2	3.30	3.50	3.62	3.61	3.44
		Model Scenario 2A	3.28	3.50	3.62	3.61	3.44
		Model Scenario 2B	3.30	3.50	3.62	3.61	3.44
		Model Scenario 3	4.19	4.12	4.27	4.29	4.11
Driveway 2 near	Driveway 1 near	Existing	2.03	2.88	3.73	4.11	4.57
Flynn's Carpets	Flynn's Carpets	Model Scenario 1	2.03	2.88	3.73	4.11	4.57
		Model Scenario 2	2.03	2.88	3.73	4.11	4.57
		Model Scenario 2A	1.98	2.88	3.73	4.11	4.57
		Model Scenario 2B	2.02	2.88	3.73	4.11	4.57
		Model Scenario 3	2.04	2.74	3.57	3.97	4.56
Driveway 1 near	188th Street SW	Existing	1.73	1.49	0.73	0.83	0.96
Flynn's Carpets		Model Scenario 1	1.73	1.52	0.39	0.38	0.44
		Model Scenario 2	1.73	1.50	0.67	0.39	0.44
		Model Scenario 2A	1.73	1.50	0.66	0.39	0.44
		Model Scenario 2B	1.73	1.49	0.79	0.86	0.99
		Model Scenario 3	1.73	1.50	0.66	0.38	0.44
188th Street SW	189th Street SW	Existing	1.34	1.20	1.14	1.27	1.47
		Model Scenario 1	1.35	1.21	1.1	1.16	1.35
		Model Scenario 2	2.46	2.65	2.79	2.87	2.95
		Model Scenario 2A	2.46	2.66	2.79	2.87	2.95
		Model Scenario 2B	2.46	2.66	2.83	2.92	3.01
		Model Scenario 3	2.46	2.65	2.79	2.87	2.95
189th Street SW	190th Street SW	Existing	2.12	2.55	2.82	3.07	3.51
		Model Scenario 1	2.11	2.55	2.75	2.90	3.18
		Model Scenario 2	2.13	2.63	3.06	3.24	3.50
		Model Scenario 2A	2.13	2.65	3.07	3.25	3.50
		Model Scenario 2B	2.13	2.65	3.16	3.40	3.75
		Model Scenario 3	2.13	2.63	3.06	3.24	3.50
190th Street SW	191st Street SW	Existing	1.77	2.03	2.04	2.08	2.4
		Model Scenario 1	1.81	2.07	2.15	2.14	2.2
		Model Scenario 2	2.31	2.99	3.48	3.71	3.94
		Model Scenario 2A	2.32	3.01	3.49	3.71	3.94
		Model Scenario 2B	2.32	3.01	3.62	3.87	4.14
		Model Scenario 3	2.31	2.99	3.48	3.71	3.94
191st Street SW	Cedar Valley	Existing	3.26	3.59	4.06	4.33	4.69
	Community School	Model Scenario 1	3.24	3.58	4.03	4.15	4.43
		Model Scenario 2	3.22	3.74	3.98	4.14	4.24
		Model Scenario 2A	3.24	3.78	3.99	4.14	4.24
		Model Scenario 2B	3.25	3.77	4.05	4.21	4.36
		Model Scenario 3	3.22	3.74	3.98	4.14	4.28
Cedar Valley	Casa Del Rey	Existing	3.35	3.37	2.75	3.07	3.5
Community School		Model Scenario 1	3.30	4.28	4.94	4.72	5.11
		Model Scenario 2	3.30	4.29	4.98	4.89	5.15
		Model Scenario 2A	3.33	4.33	5.00	4.90	5.15
		Model Scenario 2B	3.33	4.33	4.77	5.09	5.31
		Model Scenario 3	3.30	4.29	4.98	4.89	5.15

Table 11: Stream Channel Velocities at Selected Locations and Return Period Flows - Continued

Casa Del Rey	Driveway Culvert Near Great Floors	Existing	4.31	5.14	5.81	5.73	5.38
		Model Scenario 1	4.30	5.59	6.41	6.72	7.08
		Model Scenario 2	4.30	5.61	6.47	6.78	6.89
		Model Scenario 2A	4.33	5.66	6.51	6.81	6.93
		Model Scenario 2B	4.32	5.64	6.68	7.04	7.23
		Model Scenario 3	4.30	5.61	6.55	6.9	7.17
Driveway Culvert Near Great Floors	Old 196th Street	Existing	1.97	2.66	3.2	3.41	1.44
		Model Scenario 1	2.03	2.69	2.96	3.09	3.14
		Model Scenario 2	2.04	2.69	2.98	3.1	3.14
		Model Scenario 2A	2.06	2.71	2.99	3.12	3.18
		Model Scenario 2B	2.05	2.71	3.11	3.18	3.46
		Model Scenario 3	2.06	2.77	3.12	3.28	3.34
Old 196th Street	196th Street SW	Existing	0.85	1.18	1.32	1.34	1.33
		Model Scenario 1	1.22	1.70	1.92	1.97	2.04
		Model Scenario 2	1.22	1.71	1.93	1.97	2.01
		Model Scenario 2A	1.23	1.72	1.95	2.00	2.07
		Model Scenario 2B	1.23	1.72	1.99	2.06	2.16
		Model Scenario 3	1.29	1.82	2.1	2.18	2.27
Scriber Lake	Scriber Lake	Existing	0.72	0.59	0.42	0.39	0.36
		Model Scenario 1	0.67	0.56	0.41	0.38	0.35
		Model Scenario 2	0.72	0.58	0.37	0.32	0.28
		Model Scenario 2A	0.73	0.59	0.42	0.38	0.36
		Model Scenario 2B	0.73	0.59	0.42	0.39	0.36
		Model Scenario 3	0.70	0.58	0.38	0.32	0.28
Upstream Trail Crossing	Downstream Trail Crossing	Existing	2.02	1.23	0.76	0.65	0.62
		Model Scenario 1	2.02	1.23	0.77	0.66	0.62
		Model Scenario 2	2.02	1.23	0.77	0.66	0.63
		Model Scenario 2A	2.02	1.22	0.77	0.65	0.62
		Model Scenario 2B	2.02	1.23	0.76	0.65	0.62
		Model Scenario 3	2.01	1.25	0.79	0.66	0.63

Table 12:
Inundation Duration Summary Table at Selected Locations[1]

		Modeling Scenerio 2					Modeling Scenerio 2A					Modeling Scenerio 2B					Modeling Scenerio 3				
188th Wetland (HPSF Reach 631)		Percent of time Duration is exceeded.					Percent of time Duration is exceeded.					Percent of time Duration is exceeded.					Percent of time Duration is exceeded.				
Depth	**Elevation[2]**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**
0.25	358.16	82%	82%	81%	77%	74%	82%	82%	81%	77%	74%	82%	82%	81%	77%	74%	82%	82%	81%	77%	74%
0.5	358.41	38%	37%	32%	22%	13%	38%	37%	32%	22%	13%	38%	37%	32%	22%	13%	38%	37%	32%	22%	13%
0.75	358.66	24%	22%	16%	8%	2%	24%	22%	16%	8%	2%	24%	22%	16%	8%	2%	24%	22%	16%	8%	2%
1	358.91	13%	11%	6%	2%	0%	13%	11%	6%	2%	0%	13%	11%	6%	2%	0%	13%	11%	6%	2%	0%
1.5	359.41	4%	2%	1%	0%	0%	4%	2%	1%	0%	0%	4%	2%	1%	0%	0%	4%	2%	1%	0%	0%
2	359.91	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%
2.5	360.41	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	360.91	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3.5	361.41	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3.6	361.51	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
School Pond (Cedar Valley) (HSPF Reach 630)																					
		Percent of time Duration is exceeded.					Percent of time Duration is exceeded.					Percent of time Duration is exceeded.					Percent of time Duration is exceeded.				
Depth	**Elevation[2]**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**
0.25	345.35	34%	33%	27%	18%	9%	n/a	n/a	n/a	n/a	n/a	65%	65%	63%	58%	53%	65%	65%	63%	58%	53%
0.5	345.6	15%	13%	7%	2%	0%	n/a	n/a	n/a	n/a	n/a	34%	33%	27%	17%	9%	34%	33%	27%	18%	9%
0.75	345.85	6%	5%	2%	0%	0%	n/a	n/a	n/a	n/a	n/a	13%	10%	5%	1%	0%	13%	10%	5%	1%	0%
1	346.1	3%	2%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	4%	3%	1%	0%	0%	4%	3%	1%	0%	0%
1.5	346.6	0%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	1%	0%	0%	0%	0%	1%	0%	0%	0%	0%
2	347.1	0%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2.5	347.6	0%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	348.1	0%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3.5	348.6	0%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3.6	348.7	0%	0%	0%	0%	0%	n/a	n/a	n/a	n/a	n/a	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Scriber Lake (HSPF Reach 799)																					
		Percent of time Duration is exceeded.					Percent of time Duration is exceeded.					Percent of time Duration is exceeded.					Percent of time Duration is exceeded.				
Depth	**Elevation[2]**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**	**15 Minutes**	**1 Day**	**3 Days**	**1 Week**	**2 Weeks**
0.25	356.04	38%	37%	32%	23%	14%	38%	37%	32%	23%	14%	38%	37%	32%	23%	14%	38%	37%	32%	23%	14%
0.5	356.29	19%	16%	10%	4%	1%	19%	16%	10%	4%	1%	19%	16%	10%	4%	1%	19%	16%	10%	4%	1%
0.75	356.54	6%	4%	2%	0%	0%	6%	4%	2%	0%	0%	6%	4%	2%	0%	0%	6%	4%	2%	0%	0%
1	356.79	2%	1%	0%	0%	0%	2%	1%	0%	0%	0%	2%	1%	0%	0%	0%	2%	1%	0%	0%	0%
1.5	357.29	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2	357.79	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2.5	358.29	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3	358.79	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3.5	359.29	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
3.6	359.39	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

[1] Date expresses percent of time the stream depth is exceeded for that specific period. For example, for Scenario 3, the percent of time that the stream depth exceeds 1 foot and last for greater than 1 day is 11 percent.

[2] Elevation is based upon surveyed elevation at the downstream end of the reach.

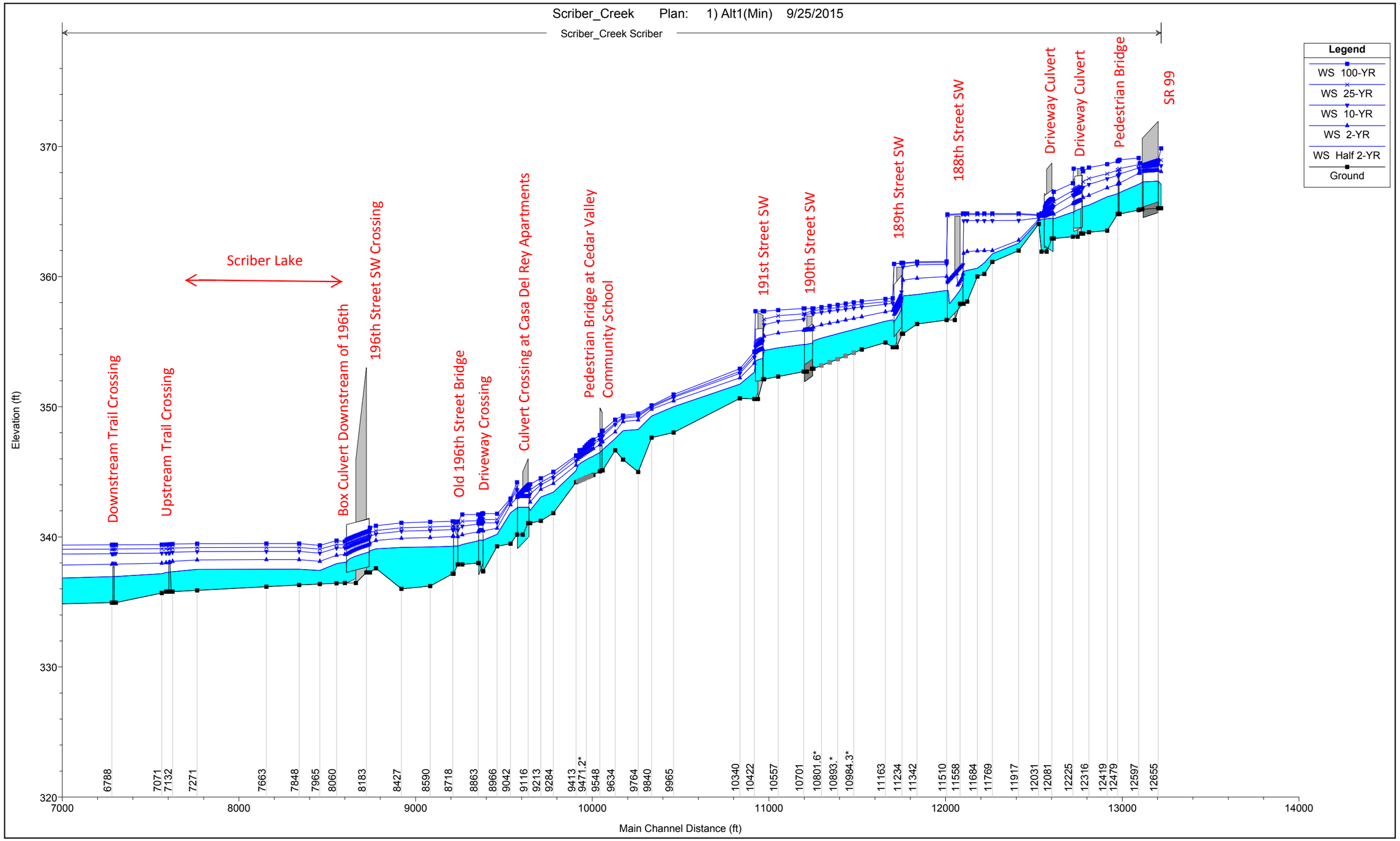


Figure 14
Scriber Creek Flood Reduction Study
188th to 196th Phase 2
Return Period Flow Profiles for Scenario 1

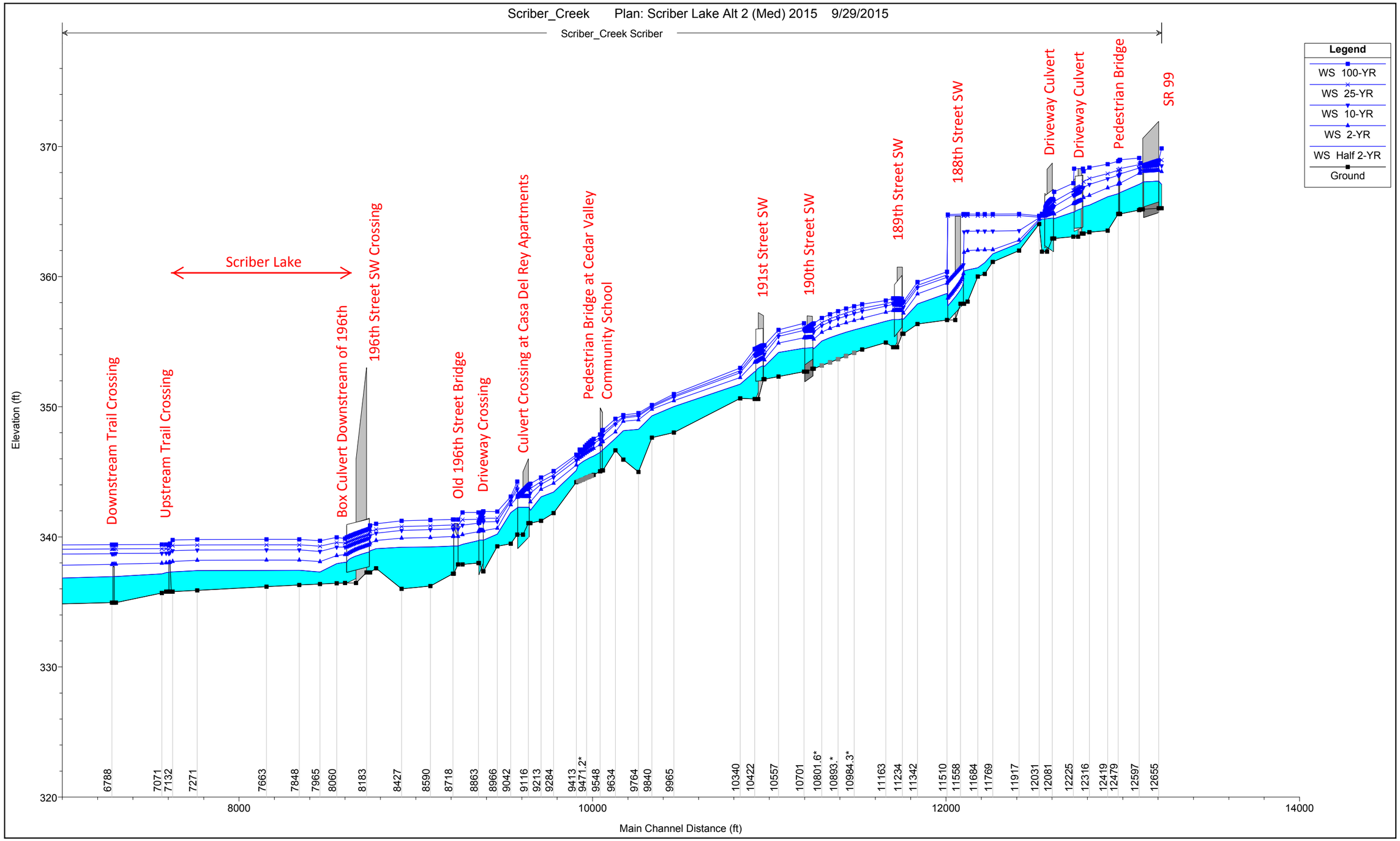


Figure 15
Scriber Creek Flood Reduction Study
188th to 196th Phase 2
Return Period Flow Profiles for Modeling Scenario 2

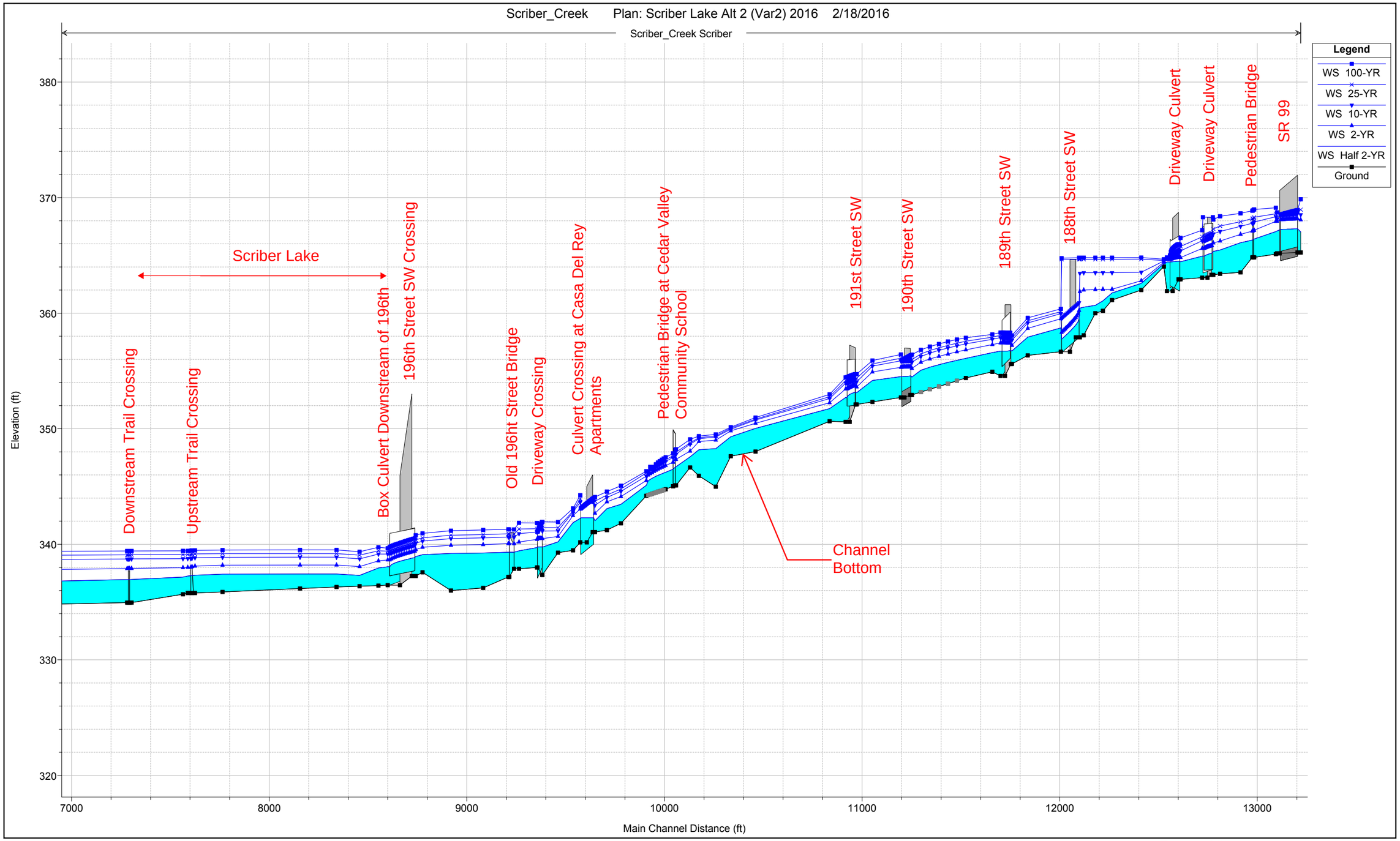


Figure 16
Scriber Creek Flood Reduction Study 188th to 196th Phase 2
Return Period Flow Profiles
Modeling Scenario 2A

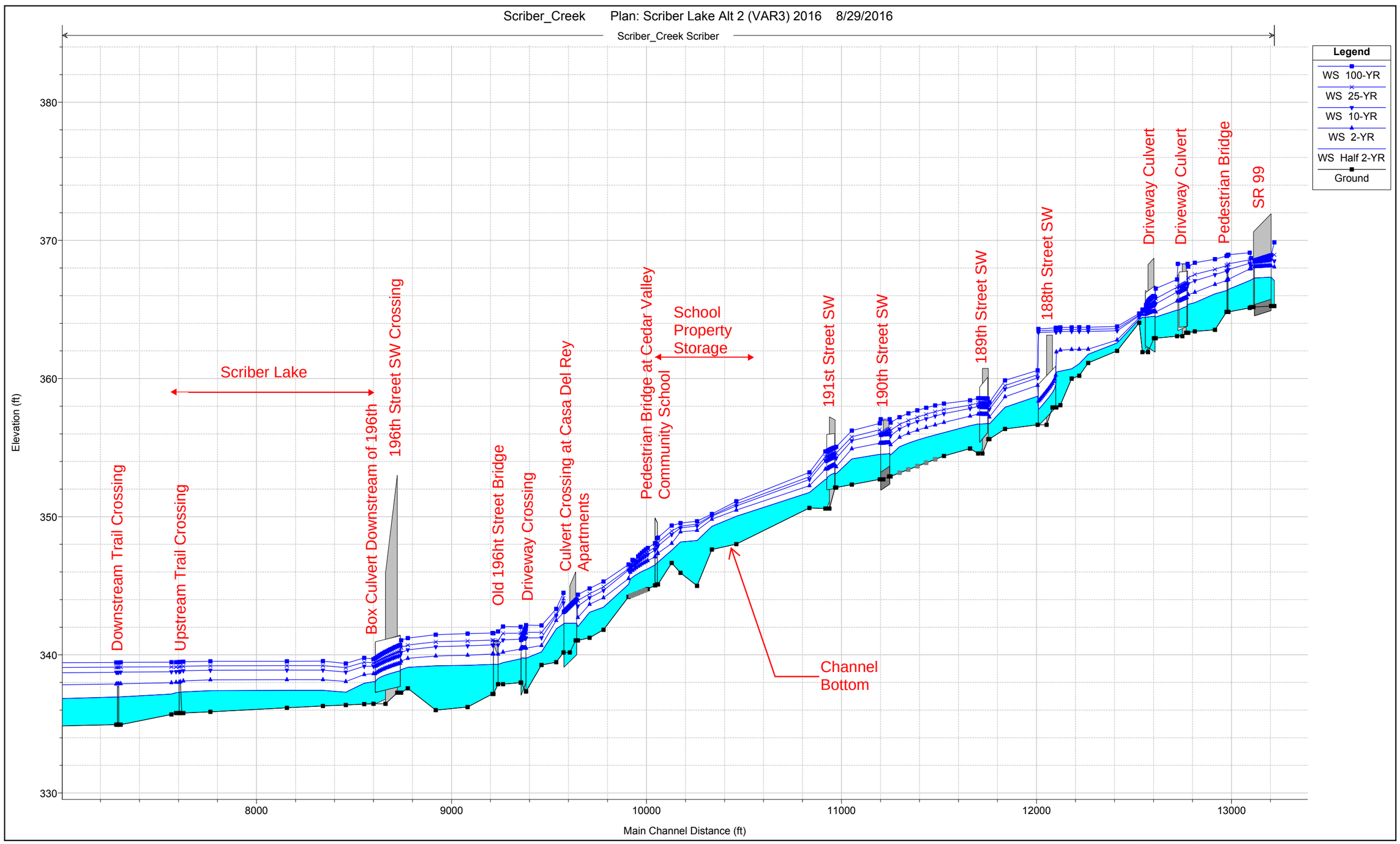
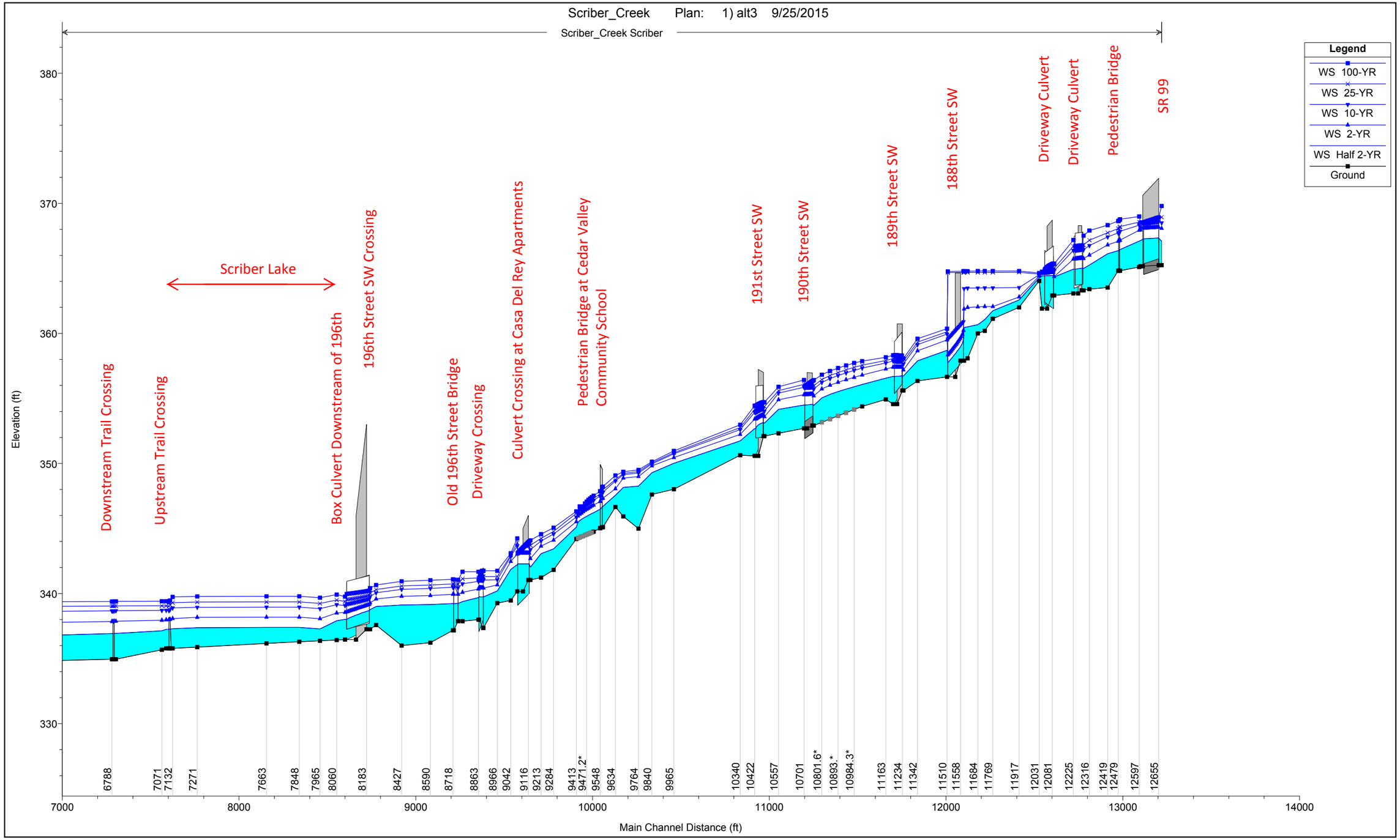


Figure 17
Scriber Creek Flood Reduction Study 188th to 196th Phase 2
Return Period Flow Profiles
Modeling Scenario 2B



1 in Horiz. = 524.8032 ft 1 in Vert. = 7.128511 ft

Figure 18
Scriber Creek Flood Reduction Study
188th to 196th Phase 2
Return Period Flow Profiles for Modeling Scenario 3

Existing: 10-year
Scenario 1: 10-year
Scenario 2: 10-year
Scenario 2A: 10-year
Scenario 2B: 10-year
Scenario 3: 10-year
(Reflects pedestrian bridge flooding, otherwise 100-year contained for Scenario1-3 due to berming)

Existing: >100-year
Scenario 1:>100-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year

Existing: 10-year (assuming opening in berm is at curb elevation)
Scenario 1:>100-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year
(100-year contained for Scenarios 1-3 due bermining)

Existing: 10-year
Scenario 1: 25-year
Scenario 2: 25-year
Scenario 2A: 25-year
Scenario 2B: >10-year
Scenarion 3: 25-year

Existing: >100-year
Scenario 1:>100-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year

188th Street SW

Existing: 10-year
Scenario 1: 10-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year

Existing: 10-year
Scenario 1:10-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year

Existing: 25-year
Scenario 1:>100-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year

191th Street SW

52nd Avenue W

Existing: 10-year
Scenario 1:>100-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year

Old 196th St Roadway
Existing: 10-year
Scenario 1:>100-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year

Existing: 100-year
Scenario 1:>100-year
Scenario 2: >100-year
Scenario 2A: >100-year
Scenario 2B: >100-year
Scenarion 3: >100-year

Old 196th Street Bridge

196th Street SW

N

Legend

- Roadway/ Driveway Culvert[2]
- Stream Bank Overtopping[1]
- Scriber Creek

0 200 400 800 Feet

Notes

[1] Figure indicates where current overbank flooding occurs. It does not show detailed inundation mapping.

[2] Annotations for each culvert indicate the overtopping return period corresponding to each model scenario.

Figure 19
Scriber Creek Flood Reduction Study
196th To 188th Phase 2
Level of Protection at Major Culvert Crossings for Modeling Scenarios

Table 13
Maximum Change in Daily Volume at Wetlands

	188th St SW Wetland	Scriber Lake
Modeling Scenario 1	10.21%	3.58%
Modeling Scenario 2	2.82%	5.85%
Modeling Scenario 2A	2.82%	5.85%
Modeling Scenario 2B	1.48%	8.17%
Modeling Scenario 3	2.87%	5.85%

Because the daily flow post project are also less than 15 percent than the pre-project flow volumes, it can be concluded mathematically, that the monthly post project flow volumes would be less than 15 percent higher or lower than the pre-project flow volumes.

References

Herrera Environmental Consultants, 2009. Appendix F, *Scriber Creek Flood Study 188th Street SW to 44th Avenue W*. Technical Appendix to the *2009 City of Lynnwood Surface Water Management Plan*. Prepared for the City of Lynnwood by Environmental Consultants.

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Appendices

Appendix A
Photos

Photo 1: Casa Del Rey photo used for highwater mark survey

Photo 2: Old 196th Street Bridge. Photo used for highwater survey

Casa del Rey Condominiums- Photo of flooding on Dec. 3, 2007 (taken from patio of #115) Photo 3: Roz Smith

Photo 4: 190th Street. November 2012

Photo 5: Bridge at Flynn's Carpet. December 2007

Appendix B
RAS Table Output

Appendix B.1
HEC-RAS Output – Existing Conditions

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber

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)	
Scriber	12724	Half 2-YR	26.58	365.25	367.09	366.98	367.43	0.027848	4.69	5.67	6.18	0.86
Scriber	12724	2-YR	53.16	365.25	368.08	367.53	368.32	0.008594	4.06	14.56	21.64	0.53
Scriber	12724	10-YR	90.13	365.25	368.52	368.04	368.93	0.011054	5.33	19.20	24.20	0.63
Scriber	12724	25-YR	111.63	365.25	368.96	368.29	369.37	0.008761	5.36	23.87	26.78	0.58
Scriber	12724	100-YR	147.45	365.25	369.86	368.62	370.22	0.005420	5.11	33.27	31.96	0.48
Scriber	12655		Culvert									
Scriber	12604	Half 2-YR	26.58	365.17	367.14	366.78	367.32	0.042895	3.43	7.74	7.93	0.59
Scriber	12604	2-YR	53.16	365.17	367.95	367.27	368.18	0.027263	3.80	14.01	12.26	0.50
Scriber	12604	10-YR	90.13	365.17	368.13	367.78	368.66	0.057032	5.86	15.45	18.82	0.74
Scriber	12604	25-YR	111.63	365.17	368.28	368.03	368.98	0.067275	6.70	16.78	24.71	0.82
Scriber	12604	100-YR	147.45	365.17	368.72	368.42	369.54	0.061670	7.28	20.59	58.10	0.81
Scriber	12597	Half 2-YR	26.58	365.11	367.10	366.44	367.20	0.005629	2.59	10.26	8.49	0.42
Scriber	12597	2-YR	53.16	365.11	367.94	366.94	368.03	0.007046	2.39	22.24	26.29	0.46
Scriber	12597	10-YR	90.13	365.11	368.34	367.65	368.37	0.002044	1.20	75.35	107.98	0.25
Scriber	12597	25-YR	111.63	365.11	368.60	367.90	368.62	0.001143	1.09	106.23	132.47	0.19
Scriber	12597	100-YR	147.45	365.11	369.11	367.99	369.13	0.000464	0.92	174.63	133.31	0.13
Scriber	12489	Half 2-YR	26.58	364.82	366.45	365.80	366.56	0.006093	2.70	9.85	7.36	0.41
Scriber	12489	2-YR	53.16	364.82	367.18	366.28	367.33	0.005652	3.22	19.98	21.38	0.41
Scriber	12489	10-YR	90.13	364.82	367.89	366.91	368.04	0.004227	3.43	42.15	43.87	0.37
Scriber	12489	25-YR	111.63	364.82	368.30	367.23	368.42	0.003088	3.22	62.44	56.61	0.32
Scriber	12489	100-YR	147.45	364.82	368.97	367.58	369.03	0.001676	2.70	110.62	84.51	0.25
Scriber	12484		Bridge									
Scriber	12479	Half 2-YR	26.58	364.82	366.37	365.80	366.50	0.007322	2.87	9.25	7.28	0.45
Scriber	12479	2-YR	53.16	364.82	367.10	366.28	367.27	0.006774	3.42	18.33	20.13	0.44
Scriber	12479	10-YR	90.13	364.82	367.79	366.91	367.97	0.005189	3.69	37.61	40.48	0.41
Scriber	12479	25-YR	111.63	364.82	368.18	367.23	368.32	0.003825	3.49	55.91	52.85	0.36
Scriber	12479	100-YR	147.45	364.82	368.87	367.58	368.96	0.002143	3.00	104.33	94.38	0.28
Scriber	12419	Half 2-YR	26.58	363.53	366.14	364.80	366.21	0.002897	2.14	12.49	8.54	0.27
Scriber	12419	2-YR	53.16	363.53	366.82	365.38	366.95	0.003861	2.98	21.33	16.34	0.32
Scriber	12419	10-YR	90.13	363.53	367.52	366.01	367.69	0.004043	3.57	34.57	21.43	0.34
Scriber	12419	25-YR	111.63	363.53	367.91	366.48	368.09	0.003756	3.70	43.57	24.29	0.34

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	12419	100-YR	147.45	363.53	368.64	366.95	368.79	0.002879	3.65	63.08	29.55	0.30
Scriber	12316	Half 2-YR	26.58	363.41	365.50	365.07	365.67	0.011828	3.30	8.05	7.71	0.57
Scriber	12316	2-YR	53.16	363.41	366.24	365.63	366.42	0.007011	3.50	18.38	16.90	0.48
Scriber	12316	10-YR	90.13	363.41	367.08	366.12	367.26	0.004362	3.62	34.71	22.04	0.40
Scriber	12316	25-YR	111.63	363.41	367.55	366.34	367.71	0.003455	3.61	45.65	24.75	0.37
Scriber	12316	100-YR	147.45	363.41	368.38	366.64	368.53	0.002260	3.44	69.76	32.61	0.31
Scriber	12282	Half 2-YR	26.58	363.31	365.38	364.34	365.45	0.003210	2.16	12.30	7.17	0.29
Scriber	12282	2-YR	53.16	363.31	366.07	364.82	366.21	0.004835	3.05	17.43	7.63	0.36
Scriber	12282	10-YR	90.13	363.31	366.86	365.36	367.09	0.005227	3.83	23.67	8.15	0.39
Scriber	12282	25-YR	111.63	363.31	367.29	365.64	367.56	0.005141	4.15	27.27	8.44	0.39
Scriber	12282	100-YR	147.45	363.31	368.10	366.05	368.40	0.004462	4.44	34.20	13.39	0.38
Scriber	12254		Culvert									
Scriber	12225	Half 2-YR	26.58	363.07	364.95	363.92	365.02	0.002771	2.03	13.12	7.86	0.28
Scriber	12225	2-YR	53.16	363.07	365.61	364.37	365.74	0.003934	2.88	18.80	10.98	0.34
Scriber	12225	10-YR	90.13	363.07	366.27	364.88	366.48	0.004687	3.73	25.04	14.61	0.38
Scriber	12225	25-YR	111.63	363.07	366.61	365.13	366.87	0.004912	4.11	28.41	17.04	0.40
Scriber	12225	100-YR	147.45	363.07	367.18	365.55	367.49	0.004912	4.57	34.03	21.10	0.41
Scriber	12115	Half 2-YR	26.58	362.92	364.46	363.93	364.56	0.006430	2.63	10.11	12.86	0.45
Scriber	12115	2-YR	53.16	362.92	364.82	364.37	365.06	0.009842	3.94	13.50	13.97	0.58
Scriber	12115	10-YR	90.13	362.92	365.40	364.80	365.75	0.009076	4.75	18.99	16.96	0.59
Scriber	12115	25-YR	111.63	362.92	365.79	365.01	366.17	0.007706	4.92	22.68	18.96	0.56
Scriber	12115	100-YR	147.45	362.92	366.51	365.35	366.90	0.005613	5.00	29.47	22.65	0.50
Scriber	12081		Culvert									
Scriber	12047	Half 2-YR	26.58	361.91	364.43	362.95	364.44	0.000368	0.89	30.74	21.99	0.12
Scriber	12047	2-YR	53.16	361.91	364.64	363.25	364.68	0.001012	1.58	34.79	24.63	0.20
Scriber	12047	10-YR	90.13	361.91	364.82	363.57	364.91	0.002192	2.46	38.16	26.84	0.29
Scriber	12047	25-YR	111.63	361.91	364.89	363.74	365.03	0.002982	2.94	39.68	27.83	0.34
Scriber	12047	100-YR	147.45	361.91	364.99	363.97	365.20	0.004509	3.72	41.55	29.06	0.43
Scriber	12031	Half 2-YR	26.01	364.04	364.28	364.28	364.39	0.065018	2.99	11.13	182.43	1.15
Scriber	12031	2-YR	52.01	364.04	364.41	364.41	364.59	0.053212	3.73	18.29	191.75	1.12

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	12031	10-YR	83.07	364.04	364.55	364.55	364.78	0.045540	4.30	26.04	201.15	1.10
Scriber	12031	25-YR	101.05	364.04	364.61	364.61	364.87	0.043862	4.59	29.99	205.72	1.10
Scriber	12031	100-YR	131.00	364.04	364.71	364.71	365.02	0.040990	4.98	36.49	212.92	1.09
Scriber	11917	Half 2-YR	26.01	362.00	362.58		362.59	0.001768	0.92	32.91	215.65	0.22
Scriber	11917	2-YR	52.01	362.00	362.79		362.82	0.002174	1.28	49.97	242.02	0.26
Scriber	11917	10-YR	83.07	362.00	363.54		363.55	0.000476	0.94	125.25	311.86	0.14
Scriber	11917	25-YR	101.05	362.00	363.64		363.66	0.000636	1.14	142.24	319.16	0.16
Scriber	11917	100-YR	131.00	362.00	363.82		363.84	0.000630	1.22	199.24	322.03	0.16
Scriber	11769	Half 2-YR	26.01	361.13	361.75	361.75	361.88	0.036918	3.17	12.29	48.56	0.94
Scriber	11769	2-YR	52.01	361.13	362.10		362.18	0.012124	2.60	36.69	110.97	0.59
Scriber	11769	10-YR	83.07	361.13	363.50		363.50	0.000207	0.75	236.86	176.29	0.09
Scriber	11769	25-YR	101.05	361.13	363.59		363.60	0.000253	0.86	254.18	180.83	0.10
Scriber	11769	100-YR	131.00	361.13	363.76		363.77	0.000310	1.00	285.57	188.79	0.12
Scriber	11723	Half 2-YR	26.01	360.20	361.07		361.11	0.006903	1.62	16.06	35.36	0.42
Scriber	11723	2-YR	52.01	360.20	362.10		362.11	0.000374	0.78	100.31	182.69	0.12
Scriber	11723	10-YR	83.07	360.20	363.50		363.50	0.000042	0.42	372.71	207.57	0.04
Scriber	11723	25-YR	101.05	360.20	363.59		363.59	0.000053	0.48	392.81	209.26	0.05
Scriber	11723	100-YR	131.00	360.20	363.76		363.76	0.000071	0.58	428.45	212.06	0.06
Scriber	11684	Half 2-YR	26.01	360.00	360.69		360.77	0.011204	2.19	11.89	23.92	0.55
Scriber	11684	2-YR	52.01	360.00	362.08		362.09	0.000440	0.78	73.41	196.72	0.13
Scriber	11684	10-YR	83.07	360.00	363.49		363.50	0.000039	0.39	399.29	265.96	0.04
Scriber	11684	25-YR	101.05	360.00	363.59		363.59	0.000049	0.45	425.04	270.39	0.05
Scriber	11684	100-YR	131.00	360.00	363.76		363.76	0.000064	0.53	471.31	278.16	0.06
Scriber	11626	Half 2-YR	26.01	358.08	360.53	359.19	360.58	0.001459	1.73	18.25	19.17	0.22
Scriber	11626	2-YR	52.01	358.08	362.04	359.71	362.06	0.000506	1.49	64.40	81.78	0.14
Scriber	11626	10-YR	83.07	358.08	363.49	360.22	363.49	0.000077	0.73	386.58	266.90	0.06
Scriber	11626	25-YR	101.05	358.08	363.58	360.50	363.59	0.000096	0.83	412.00	268.04	0.07
Scriber	11626	100-YR	131.00	358.08	363.75	360.85	363.76	0.000122	0.96	457.06	270.05	0.07
Scriber	11606	Half 2-YR	26.01	357.91	360.46	359.02	360.54	0.001520	2.29	11.38	8.26	0.26
Scriber	11606	2-YR	52.01	357.91	361.91	359.60	362.04	0.001283	2.87	18.15	16.20	0.26
Scriber	11606	10-YR	83.07	357.91	363.47	360.17	363.49	0.000301	1.29	178.29	234.36	0.10
Scriber	11606	25-YR	101.05	357.91	363.56	360.47	363.58	0.000368	1.44	199.70	235.18	0.12

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	11606	100-YR	131.00	357.91	363.72	360.93	363.75	0.000445	1.62	238.39	236.65	0.13
Scriber	11558		Culvert									
Scriber	11510	Half 2-YR	26.68	356.66	358.96	357.87	359.05	0.003027	2.40	11.11	6.74	0.30
Scriber	11510	2-YR	53.35	356.66	360.05	358.40	360.20	0.002736	3.07	17.36	10.59	0.31
Scriber	11510	10-YR	82.75	356.66	361.09	358.88	361.21	0.002183	2.91	34.21	15.70	0.27
Scriber	11510	25-YR	98.68	356.66	361.21	359.11	361.37	0.002748	3.34	36.14	16.23	0.30
Scriber	11510	100-YR	123.93	356.66	361.35	359.45	361.58	0.003772	4.01	38.49	16.86	0.35
Scriber	11342	Half 2-YR	26.68	356.35	358.66	357.28	358.69	0.001364	1.34	19.85	15.68	0.21
Scriber	11342	2-YR	53.35	356.35	359.92	357.71	359.94	0.000620	1.20	44.29	23.06	0.15
Scriber	11342	10-YR	82.75	356.35	361.03	358.14	361.05	0.000321	1.14	91.41	168.87	0.12
Scriber	11342	25-YR	98.68	356.35	361.14	358.37	361.16	0.000380	1.27	110.77	174.49	0.13
Scriber	11342	100-YR	123.93	356.35	361.27	358.65	361.31	0.000482	1.47	133.41	181.03	0.15
Scriber	11263	Half 2-YR	26.68	355.61	358.54	356.76	358.60	0.000925	1.95	13.67	10.20	0.21
Scriber	11263	2-YR	53.35	355.61	359.76	357.33	359.87	0.001083	2.70	19.76	13.10	0.24
Scriber	11263	10-YR	82.75	355.61	360.97	357.84	361.01	0.000703	1.61	57.84	100.74	0.15
Scriber	11263	25-YR	98.68	355.61	361.07	358.10	361.12	0.000880	1.84	70.26	142.66	0.17
Scriber	11263	100-YR	123.93	355.61	361.17	358.48	361.24	0.001178	2.17	85.97	146.80	0.20
Scriber	11234		Culvert									
Scriber	11205	Half 2-YR	26.68	354.57	356.69	355.70	356.77	0.002155	2.21	12.07	11.99	0.29
Scriber	11205	2-YR	53.35	354.57	357.43	356.16	357.58	0.002716	3.13	17.07	13.04	0.35
Scriber	11205	10-YR	82.75	354.57	358.09	356.58	358.31	0.002997	3.84	21.56	14.87	0.38
Scriber	11205	25-YR	98.68	354.57	358.29	356.79	358.58	0.003442	4.29	22.99	15.61	0.41
Scriber	11205	100-YR	123.93	354.57	358.53	357.10	358.92	0.004352	5.04	24.57	16.42	0.47
Scriber	11163	Half 2-YR	26.68	354.93	356.58		356.65	0.003570	2.12	12.59	10.44	0.34
Scriber	11163	2-YR	53.35	354.93	357.33		357.43	0.003080	2.55	21.26	12.87	0.33
Scriber	11163	10-YR	82.75	354.93	358.02		358.14	0.002678	2.82	30.95	15.26	0.32
Scriber	11163	25-YR	98.68	354.93	358.23		358.38	0.002834	3.07	34.42	17.03	0.34
Scriber	11163	100-YR	123.93	354.93	358.47		358.66	0.003304	3.51	38.68	19.03	0.37
Scriber	11030	Half 2-YR	26.68	354.39	356.11	355.29	356.18	0.003483	2.17	12.32	9.18	0.33
Scriber	11030	2-YR	53.35	354.39	356.96	355.74	357.06	0.002567	2.50	26.99	33.43	0.30

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	11030	10-YR	82.75	354.39	357.83	356.13	357.89	0.001286	2.23	71.93	69.24	0.23
Scriber	11030	25-YR	98.68	354.39	358.06	356.32	358.13	0.001245	2.30	89.07	78.54	0.23
Scriber	11030	100-YR	123.93	354.39	358.29	356.62	358.36	0.001444	2.59	108.61	141.39	0.25
Scriber	10984.3*	Half 2-YR	26.68	354.15	355.95	355.13	356.02	0.003466	2.18	12.26	8.97	0.33
Scriber	10984.3*	2-YR	53.35	354.15	356.84	355.58	356.94	0.002645	2.57	22.62	21.25	0.31
Scriber	10984.3*	10-YR	82.75	354.15	357.75	355.97	357.83	0.001439	2.40	60.44	59.63	0.24
Scriber	10984.3*	25-YR	98.68	354.15	357.99	356.15	358.06	0.001416	2.49	75.14	71.22	0.24
Scriber	10984.3*	100-YR	123.93	354.15	358.19	356.42	358.29	0.001690	2.84	92.30	88.55	0.27
Scriber	10938.6*	Half 2-YR	26.68	353.90	355.79	354.96	355.87	0.003473	2.19	12.19	8.73	0.33
Scriber	10938.6*	2-YR	53.35	353.90	356.72	355.41	356.82	0.002584	2.58	21.79	12.54	0.30
Scriber	10938.6*	10-YR	82.75	353.90	357.67	355.81	357.76	0.001577	2.54	50.84	53.07	0.25
Scriber	10938.6*	25-YR	98.68	353.90	357.89	355.99	357.99	0.001692	2.75	65.53	83.31	0.26
Scriber	10938.6*	100-YR	123.93	353.90	358.09	356.26	358.21	0.001903	3.03	82.72	86.97	0.28
Scriber	10893.*	Half 2-YR	26.68	353.66	355.63	354.80	355.71	0.003513	2.21	12.08	8.46	0.33
Scriber	10893.*	2-YR	53.35	353.66	356.60	355.24	356.70	0.002529	2.58	21.79	12.07	0.30
Scriber	10893.*	10-YR	82.75	353.66	357.59	355.65	357.69	0.001619	2.61	48.48	56.25	0.25
Scriber	10893.*	25-YR	98.68	353.66	357.80	355.83	357.91	0.001754	2.83	63.95	90.80	0.26
Scriber	10893.*	100-YR	123.93	353.66	357.99	356.10	358.12	0.001985	3.11	81.58	93.40	0.28
Scriber	10847.3*	Half 2-YR	26.68	353.41	355.47	354.62	355.54	0.003549	2.22	12.00	8.19	0.32
Scriber	10847.3*	2-YR	53.35	353.41	356.49	355.06	356.59	0.002471	2.57	21.89	11.70	0.29
Scriber	10847.3*	10-YR	82.75	353.41	357.51	355.47	357.61	0.001628	2.64	47.58	62.58	0.25
Scriber	10847.3*	25-YR	98.68	353.41	357.72	355.66	357.83	0.001729	2.83	63.95	89.94	0.26
Scriber	10847.3*	100-YR	123.93	353.41	357.89	355.94	358.03	0.002049	3.17	80.12	101.36	0.28
Scriber	10801.6*	Half 2-YR	26.68	353.17	355.30	354.44	355.38	0.003698	2.26	11.82	7.91	0.33
Scriber	10801.6*	2-YR	53.35	353.17	356.37	354.90	356.48	0.002450	2.57	21.90	11.35	0.29
Scriber	10801.6*	10-YR	82.75	353.17	357.44	355.31	357.54	0.001616	2.64	47.19	64.65	0.25
Scriber	10801.6*	25-YR	98.68	353.17	357.64	355.52	357.75	0.001725	2.83	63.99	92.52	0.26
Scriber	10801.6*	100-YR	123.93	353.17	357.80	355.79	357.93	0.002091	3.20	78.76	98.73	0.28
Scriber	10756	Half 2-YR	26.68	352.92	355.11	354.26	355.22	0.003324	2.63	10.15	7.58	0.36
Scriber	10756	2-YR	53.35	352.92	356.20	354.77	356.36	0.002561	3.21	16.63	10.81	0.34
Scriber	10756	10-YR	82.75	352.92	357.36	355.22	357.47	0.001617	2.64	46.87	65.21	0.24
Scriber	10756	25-YR	98.68	352.92	357.56	355.46	357.67	0.001789	2.88	62.00	85.93	0.26

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	10756	100-YR	123.93	352.92	357.68	355.78	357.83	0.002308	3.34	73.27	96.49	0.29
Scriber	10728		Culvert									
Scriber	10701	Half 2-YR	26.68	352.70	354.84	353.60	354.91	0.001559	2.13	12.53	15.86	0.26
Scriber	10701	2-YR	53.35	352.70	355.97	354.09	356.09	0.001468	2.76	19.34	17.91	0.27
Scriber	10701	10-YR	82.75	352.70	357.10	354.56	357.12	0.000311	1.21	83.48	156.82	0.11
Scriber	10701	25-YR	98.68	352.70	357.55	354.78	357.57	0.000224	1.12	177.11	223.44	0.10
Scriber	10701	100-YR	123.93	352.70	357.76	355.12	357.78	0.000249	1.22	224.20	224.84	0.11
Scriber	10557	Half 2-YR	26.68	352.32	354.60	353.31	354.65	0.001925	1.77	15.04	8.66	0.24
Scriber	10557	2-YR	53.35	352.32	355.77	353.81	355.84	0.001671	2.03	26.33	10.76	0.23
Scriber	10557	10-YR	82.75	352.32	356.97	354.23	357.04	0.001083	2.04	44.71	23.86	0.19
Scriber	10557	25-YR	98.68	352.32	357.43	354.43	357.49	0.000949	2.08	67.03	77.85	0.18
Scriber	10557	100-YR	123.93	352.32	357.61	354.73	357.69	0.001191	2.40	81.69	84.74	0.21
Scriber	10477	Half 2-YR	26.68	352.11	354.41	353.14	354.50	0.001739	2.33	11.43	8.51	0.28
Scriber	10477	2-YR	53.35	352.11	355.54	353.69	355.69	0.001756	3.09	17.28	10.26	0.30
Scriber	10477	10-YR	82.75	352.11	356.73	354.20	356.92	0.001538	3.54	23.39	19.47	0.29
Scriber	10477	25-YR	98.68	352.11	357.36	354.45	357.42	0.000940	2.07	63.14	70.01	0.18
Scriber	10477	100-YR	123.93	352.11	357.51	354.81	357.60	0.001238	2.43	75.07	80.88	0.21
Scriber	10450		Culvert									
Scriber	10422	Half 2-YR	26.68	350.59	352.67	351.71	352.75	0.002461	2.24	11.92	9.83	0.30
Scriber	10422	2-YR	53.35	350.59	353.37	352.18	353.53	0.003146	3.18	16.78	11.00	0.36
Scriber	10422	10-YR	82.75	350.59	353.93	352.60	354.18	0.003826	4.02	20.59	11.92	0.41
Scriber	10422	25-YR	98.68	350.59	354.16	352.80	354.47	0.004206	4.44	22.24	12.32	0.44
Scriber	10422	100-YR	123.93	350.59	354.50	353.11	354.89	0.004765	5.05	24.56	12.88	0.47
Scriber	10340	Half 2-YR	26.68	350.64	351.75	351.75	352.14	0.035664	5.05	5.28	6.60	0.99
Scriber	10340	2-YR	53.35	350.64	352.24	352.24	352.81	0.033628	6.03	8.84	7.89	1.00
Scriber	10340	10-YR	82.75	350.64	352.66	352.66	353.35	0.031686	6.66	12.42	9.01	1.00
Scriber	10340	25-YR	98.68	350.64	352.87	352.87	353.61	0.030724	6.90	14.29	9.55	0.99
Scriber	10340	100-YR	123.93	350.64	353.13	353.13	353.96	0.030470	7.31	16.95	10.25	1.00
Scriber	9965	Half 2-YR	26.68	348.02	350.02		350.04	0.000864	1.20	22.23	15.00	0.17
Scriber	9965	2-YR	53.35	348.02	350.47		350.52	0.001526	1.82	30.25	25.10	0.24

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9965	10-YR	82.75	348.02	350.76		350.84	0.002175	2.40	38.47	30.53	0.29
Scriber	9965	25-YR	98.68	348.02	350.89		351.00	0.002474	2.67	42.61	31.88	0.31
Scriber	9965	100-YR	123.93	348.02	351.08		351.22	0.002889	3.04	48.81	33.79	0.34
Scriber	9840	Half 2-YR	26.68	347.62	349.29	349.29	349.68	0.041559	4.99	5.35	7.10	1.01
Scriber	9840	2-YR	53.35	347.62	349.82	349.82	350.05	0.018090	4.26	21.14	55.62	0.72
Scriber	9840	10-YR	82.75	347.62	350.03	350.03	350.25	0.016399	4.57	34.66	69.46	0.71
Scriber	9840	25-YR	98.68	347.62	350.09	350.09	350.33	0.017459	4.87	39.18	70.42	0.74
Scriber	9840	100-YR	123.93	347.62	350.18	350.18	350.45	0.019519	5.36	45.02	71.41	0.79
Scriber	9764	Half 2-YR	26.68	344.99	348.27	345.91	348.29	0.000498	1.17	23.58	10.03	0.12
Scriber	9764	2-YR	53.35	344.99	349.00	346.42	349.05	0.000882	1.82	32.40	14.05	0.17
Scriber	9764	10-YR	82.75	344.99	349.32	346.87	349.42	0.001544	2.55	37.17	15.81	0.23
Scriber	9764	25-YR	98.68	344.99	349.43	347.08	349.56	0.001980	2.94	38.91	16.40	0.26
Scriber	9764	100-YR	123.93	344.99	349.63	347.38	349.81	0.002597	3.47	42.25	17.48	0.30
Scriber	9679	Half 2-YR	26.68	345.93	348.17	346.84	348.22	0.001557	1.81	16.96	16.60	0.22
Scriber	9679	2-YR	53.35	345.93	348.89	347.34	348.95	0.001631	2.26	42.53	71.26	0.24
Scriber	9679	10-YR	82.75	345.93	349.19	347.81	349.27	0.001900	2.62	64.71	73.45	0.26
Scriber	9679	25-YR	98.68	345.93	349.28	348.10	349.37	0.002214	2.88	71.30	74.14	0.29
Scriber	9679	100-YR	123.93	345.93	349.48	348.48	349.57	0.002284	3.05	86.38	75.73	0.29
Scriber	9634	Half 2-YR	26.68	346.65	347.57	347.57	347.99	0.039302	5.20	5.13	6.17	1.01
Scriber	9634	2-YR	53.35	346.65	348.08	348.08	348.70	0.036856	6.32	8.44	7.29	1.00
Scriber	9634	10-YR	82.75	346.65	348.63		349.04	0.019319	5.58	24.37	47.57	0.76
Scriber	9634	25-YR	98.68	346.65	348.91		349.16	0.011614	4.73	40.27	65.21	0.60
Scriber	9634	100-YR	123.93	346.65	349.28		349.41	0.005902	3.79	66.75	73.88	0.44
Scriber	9563	Half 2-YR	26.68	345.10	346.71	346.01	346.81	0.005770	2.61	10.23	7.27	0.39
Scriber	9563	2-YR	53.35	345.10	347.34	346.48	347.54	0.007261	3.57	14.98	7.63	0.45
Scriber	9563	10-YR	82.75	345.10	347.86	346.89	348.16	0.008114	4.39	18.96	7.92	0.49
Scriber	9563	25-YR	98.68	345.10	348.08	347.09	348.44	0.008621	4.80	20.78	8.05	0.51
Scriber	9563	100-YR	123.93	345.10	348.41	347.39	348.86	0.009292	5.38	23.46	8.23	0.54
Scriber	9555		Bridge									
Scriber	9548	Half 2-YR	26.68	345.03	346.49	346.15	346.67	0.012628	3.36	7.96	7.52	0.57
Scriber	9548	2-YR	53.35	345.03	347.10	346.60	347.38	0.011353	4.28	12.65	8.10	0.58

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9548	10-YR	82.75	345.03	347.56	347.00	347.98	0.011913	5.17	16.54	8.55	0.62
Scriber	9548	25-YR	98.68	345.03	347.75	347.19	348.25	0.012694	5.65	18.19	8.74	0.65
Scriber	9548	100-YR	123.93	345.03	348.02	347.48	348.64	0.013811	6.34	20.59	9.00	0.69
Scriber	9510	Half 2-YR	26.68	344.76	346.22	345.63	346.32	0.005844	2.59	10.29	8.31	0.41
Scriber	9510	2-YR	53.35	344.76	346.81	346.06	347.00	0.007258	3.48	15.35	8.87	0.47
Scriber	9510	10-YR	82.75	344.76	347.26	346.45	347.54	0.008304	4.26	19.69	10.82	0.51
Scriber	9510	25-YR	98.68	344.76	347.43	346.64	347.77	0.009143	4.70	21.60	11.86	0.54
Scriber	9510	100-YR	123.93	344.76	347.67	346.91	348.11	0.010198	5.30	24.70	13.37	0.58
Scriber	9500.3*	Half 2-YR	26.68	344.70	346.16	345.59	346.26	0.006073	2.63	10.14	8.46	0.42
Scriber	9500.3*	2-YR	53.35	344.70	346.73	346.02	346.92	0.007470	3.51	15.20	9.13	0.48
Scriber	9500.3*	10-YR	82.75	344.70	347.18	346.41	347.46	0.008379	4.28	19.61	11.19	0.52
Scriber	9500.3*	25-YR	98.68	344.70	347.33	346.59	347.68	0.009289	4.73	21.45	12.18	0.56
Scriber	9500.3*	100-YR	123.93	344.70	347.57	346.86	348.01	0.010427	5.36	24.45	13.62	0.60
Scriber	9490.6*	Half 2-YR	26.68	344.65	346.09	345.56	346.20	0.006422	2.68	9.96	8.62	0.44
Scriber	9490.6*	2-YR	53.35	344.65	346.65	345.99	346.85	0.007791	3.55	15.02	9.41	0.50
Scriber	9490.6*	10-YR	82.75	344.65	347.09	346.37	347.38	0.008503	4.31	19.54	11.65	0.54
Scriber	9490.6*	25-YR	98.68	344.65	347.24	346.55	347.59	0.009521	4.77	21.31	12.58	0.57
Scriber	9490.6*	100-YR	123.93	344.65	347.45	346.82	347.91	0.010793	5.42	24.19	13.96	0.62
Scriber	9480.9*	Half 2-YR	26.68	344.59	346.02	345.52	346.14	0.006684	2.71	9.86	8.78	0.45
Scriber	9480.9*	2-YR	53.35	344.59	346.57	345.95	346.77	0.008068	3.58	14.91	9.68	0.51
Scriber	9480.9*	10-YR	82.75	344.59	347.01	346.32	347.29	0.008572	4.31	19.57	12.16	0.54
Scriber	9480.9*	25-YR	98.68	344.59	347.14	346.51	347.49	0.009751	4.80	21.24	13.05	0.59
Scriber	9480.9*	100-YR	123.93	344.59	347.34	346.76	347.80	0.011250	5.48	23.95	14.39	0.64
Scriber	9471.2*	Half 2-YR	26.68	344.54	345.95	345.48	346.07	0.007102	2.75	9.70	8.96	0.47
Scriber	9471.2*	2-YR	53.35	344.54	346.49	345.90	346.69	0.008481	3.62	14.74	9.98	0.52
Scriber	9471.2*	10-YR	82.75	344.54	346.92	346.28	347.21	0.008677	4.31	19.63	12.80	0.55
Scriber	9471.2*	25-YR	98.68	344.54	347.04	346.46	347.40	0.010094	4.84	21.15	13.65	0.60
Scriber	9471.2*	100-YR	123.93	344.54	347.20	346.70	347.69	0.012131	5.60	23.61	18.29	0.67
Scriber	9461.5*	Half 2-YR	26.68	344.48	345.88	345.42	346.00	0.007507	2.79	9.57	9.14	0.48
Scriber	9461.5*	2-YR	53.35	344.48	346.40	345.85	346.60	0.008891	3.65	14.60	10.29	0.54
Scriber	9461.5*	10-YR	82.75	344.48	346.84	346.22	347.12	0.008714	4.30	19.80	13.63	0.56
Scriber	9461.5*	25-YR	98.68	344.48	346.93	346.39	347.30	0.010424	4.87	21.14	14.44	0.62

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9461.5*	100-YR	123.93	344.48	347.05	346.64	347.56	0.013407	5.74	23.93	33.63	0.70
Scriber	9451.8*	Half 2-YR	26.68	344.42	345.80	345.37	345.92	0.008063	2.84	9.39	9.31	0.50
Scriber	9451.8*	2-YR	53.35	344.42	346.30	345.80	346.51	0.009493	3.71	14.39	10.57	0.56
Scriber	9451.8*	10-YR	82.75	344.42	346.75	346.16	347.04	0.008720	4.28	21.33	53.83	0.56
Scriber	9451.8*	25-YR	98.68	344.42	346.85	346.32	347.19	0.009907	4.73	26.95	58.61	0.60
Scriber	9451.8*	100-YR	123.93	344.42	347.05	346.58	347.41	0.009875	5.04	39.34	69.62	0.61
Scriber	9442.1*	Half 2-YR	26.68	344.37	345.71	345.32	345.84	0.008717	2.90	9.22	9.48	0.52
Scriber	9442.1*	2-YR	53.35	344.37	346.20	345.74	346.42	0.010191	3.76	14.17	10.85	0.58
Scriber	9442.1*	10-YR	82.75	344.37	346.77	346.10	346.94	0.005642	3.55	38.63	63.03	0.46
Scriber	9442.1*	25-YR	98.68	344.37	346.90	346.27	347.08	0.005765	3.75	47.08	68.26	0.47
Scriber	9442.1*	100-YR	123.93	344.37	347.11	346.74	347.29	0.005507	3.92	62.44	76.30	0.46
Scriber	9432.4*	Half 2-YR	26.68	344.31	345.61	345.25	345.75	0.009661	2.98	8.96	9.60	0.54
Scriber	9432.4*	2-YR	53.35	344.31	346.11	345.67	346.31	0.010161	3.70	17.19	35.43	0.58
Scriber	9432.4*	10-YR	82.75	344.31	346.79	346.16	346.88	0.003405	2.85	52.57	54.84	0.36
Scriber	9432.4*	25-YR	98.68	344.31	346.91	346.38	347.02	0.003572	3.04	59.63	55.04	0.37
Scriber	9432.4*	100-YR	123.93	344.31	347.12	346.52	347.24	0.003605	3.26	71.11	55.35	0.38
Scriber	9422.7*	Half 2-YR	26.68	344.26	345.49	345.18	345.64	0.011343	3.12	8.54	9.65	0.59
Scriber	9422.7*	2-YR	53.35	344.26	345.97	345.59	346.20	0.011985	3.88	15.11	24.92	0.63
Scriber	9422.7*	10-YR	82.75	344.26	346.72	346.08	346.85	0.004059	3.11	39.66	33.80	0.39
Scriber	9422.7*	25-YR	98.68	344.26	346.83	346.22	346.98	0.004625	3.45	43.30	33.95	0.43
Scriber	9422.7*	100-YR	123.93	344.26	347.01	346.41	347.20	0.005173	3.86	49.44	34.20	0.46
Scriber	9413	Half 2-YR	26.68	344.20	345.11	345.11	345.44	0.035637	4.65	5.74	8.51	1.00
Scriber	9413	2-YR	53.35	344.20	345.53	345.53	346.00	0.032493	5.51	9.68	10.24	1.00
Scriber	9413	10-YR	82.75	344.20	346.77	346.13	346.80	0.001479	1.96	95.25	97.68	0.24
Scriber	9413	25-YR	98.68	344.20	346.89	346.21	346.93	0.001545	2.08	107.41	100.89	0.25
Scriber	9413	100-YR	123.93	344.20	347.09	346.32	347.13	0.001594	2.24	128.25	106.64	0.26
Scriber	9284	Half 2-YR	27.90	341.82	343.42	342.77	343.56	0.004772	3.07	10.84	8.59	0.43
Scriber	9284	2-YR	55.80	341.82	345.41	343.30	345.49	0.001061	2.49	32.37	13.15	0.23
Scriber	9284	10-YR	85.41	341.82	346.60	343.76	346.68	0.000726	2.50	77.41	55.76	0.20
Scriber	9284	25-YR	100.81	341.82	346.69	343.97	346.78	0.000911	2.84	82.18	56.51	0.23
Scriber	9284	100-YR	124.50	341.82	346.84	344.27	346.96	0.001153	3.26	91.01	57.88	0.26

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9213	Half 2-YR	27.90	341.23	343.02	342.36	343.17	0.006561	3.09	9.30	7.08	0.47
Scriber	9213	2-YR	55.80	341.23	345.36	342.96	345.42	0.000774	2.01	33.39	11.69	0.19
Scriber	9213	10-YR	85.41	341.23	346.55	343.43	346.63	0.000685	2.29	50.05	25.54	0.19
Scriber	9213	25-YR	100.81	341.23	346.61	343.64	346.72	0.000909	2.66	51.71	28.33	0.22
Scriber	9213	100-YR	124.50	341.23	346.73	343.92	346.87	0.001254	3.18	55.47	38.29	0.25
Scriber	9153	Half 2-YR	27.90	341.05	342.72	342.04	342.82	0.004657	2.59	12.82	13.47	0.38
Scriber	9153	2-YR	55.80	341.05	345.35	342.58	345.38	0.000408	1.53	47.23	15.74	0.13
Scriber	9153	10-YR	85.41	341.05	346.54	342.94	346.58	0.000407	1.82	81.43	82.17	0.14
Scriber	9153	25-YR	100.81	341.05	346.61	343.09	346.66	0.000520	2.07	93.31	88.04	0.16
Scriber	9153	100-YR	124.50	341.05	346.72	343.31	346.79	0.000698	2.44	103.82	90.66	0.18
Scriber	9116		Culvert									
Scriber	9079	Half 2-YR	27.90	340.17	342.22	341.37	342.28	0.002548	1.99	14.04	10.20	0.29
Scriber	9079	2-YR	55.80	340.17	342.97	341.80	343.07	0.002518	2.61	21.35	10.87	0.31
Scriber	9079	10-YR	85.41	340.17	343.70	342.12	343.84	0.002220	2.98	28.63	11.55	0.31
Scriber	9079	25-YR	100.81	340.17	344.00	342.28	344.15	0.002249	3.20	31.50	11.82	0.32
Scriber	9079	100-YR	124.50	340.17	344.30	342.51	344.51	0.002524	3.60	34.54	12.10	0.34
Scriber	9042	Half 2-YR	27.90	339.47	341.86	341.24	342.06	0.011695	3.63	7.69	5.35	0.53
Scriber	9042	2-YR	55.80	339.47	342.08	341.92	342.69	0.029834	6.29	8.92	5.79	0.87
Scriber	9042	10-YR	85.41	339.47	342.48	342.44	343.40	0.033554	7.71	11.41	6.70	0.95
Scriber	9042	25-YR	100.81	339.47	342.85	342.71	343.74	0.026300	7.62	14.60	11.79	0.87
Scriber	9042	100-YR	124.50	339.47	343.50	343.21	344.18	0.015512	6.88	23.99	15.23	0.69
Scriber	8966	Half 2-YR	27.90	339.27	340.20	340.20	340.59	0.037535	4.98	5.60	7.27	1.00
Scriber	8966	2-YR	55.80	339.27	341.30	340.67	341.54	0.007832	3.99	14.81	9.66	0.52
Scriber	8966	10-YR	85.41	339.27	342.26	341.06	342.49	0.004272	3.90	25.18	11.90	0.41
Scriber	8966	25-YR	100.81	339.27	342.77	341.25	342.99	0.003306	3.83	31.51	13.09	0.37
Scriber	8966	100-YR	124.50	339.27	343.42	341.52	343.64	0.002667	3.88	40.57	15.09	0.34
Scriber	8891	Half 2-YR	27.90	337.35	340.23	338.57	340.27	0.000658	1.51	18.42	10.90	0.17
Scriber	8891	2-YR	55.80	337.35	341.28	339.00	341.35	0.000788	2.11	26.45	12.35	0.20
Scriber	8891	10-YR	85.41	337.35	342.23	339.39	342.33	0.000824	2.53	33.69	13.66	0.21
Scriber	8891	25-YR	100.81	337.35	342.73	339.57	342.84	0.000801	2.69	37.54	21.56	0.21
Scriber	8891	100-YR	124.50	337.35	343.44	339.84	343.50	0.000570	1.96	87.75	94.08	0.15

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	8872		Culvert									
Scriber	8863	Half 2-YR	27.90	337.99	340.00	338.88	340.06	0.001539	1.97	14.15	10.02	0.25
Scriber	8863	2-YR	55.80	337.99	340.91	339.32	341.02	0.001655	2.66	20.99	11.34	0.28
Scriber	8863	10-YR	85.41	337.99	341.67	339.71	341.83	0.001730	3.20	26.73	13.28	0.30
Scriber	8863	25-YR	100.81	337.99	342.05	339.89	342.23	0.001723	3.41	29.56	14.23	0.30
Scriber	8863	100-YR	124.50	337.99	342.77	340.16	342.79	0.000381	1.44	171.55	95.34	0.12
Scriber	8772	Half 2-YR	27.90	337.88	339.91	338.78	339.94	0.000921	1.30	22.88	38.27	0.18
Scriber	8772	2-YR	55.80	337.88	340.85	339.16	340.89	0.000691	1.54	39.73	68.32	0.17
Scriber	8772	10-YR	85.41	337.88	341.70	339.44	341.71	0.000210	1.03	156.97	88.90	0.10
Scriber	8772	25-YR	100.81	337.88	342.10	339.56	342.11	0.000169	1.00	192.62	91.95	0.09
Scriber	8772	100-YR	124.50	337.88	342.76	339.76	342.76	0.000103	0.87	318.65	245.99	0.07
Scriber	8745		Bridge									
Scriber	8718	Half 2-YR	27.90	337.17	339.89	338.18	339.89	0.000150	0.64	91.54	74.39	0.07
Scriber	8718	2-YR	55.80	337.17	340.72	338.54	340.72	0.000139	0.75	155.65	79.66	0.07
Scriber	8718	10-YR	85.41	337.17	341.58	338.84	341.59	0.000109	0.78	250.97	107.05	0.07
Scriber	8718	25-YR	100.81	337.17	342.02	338.93	342.02	0.000098	0.79	304.52	148.82	0.07
Scriber	8718	100-YR	124.50	337.17	342.72	339.09	342.73	0.000069	0.73	441.64	240.66	0.06
Scriber	8590	Half 2-YR	27.90	336.22	339.86	337.10	339.87	0.000181	0.80	58.31	60.76	0.08
Scriber	8590	2-YR	55.80	336.22	340.70	337.57	340.70	0.000197	0.97	121.76	82.51	0.08
Scriber	8590	10-YR	85.41	336.22	341.56	337.97	341.57	0.000151	0.97	200.54	95.39	0.08
Scriber	8590	25-YR	100.81	336.22	342.01	338.14	342.01	0.000128	0.94	242.81	96.28	0.07
Scriber	8590	100-YR	124.50	336.22	342.71	338.42	342.72	0.000099	0.90	311.43	97.69	0.06
Scriber	8427	Half 2-YR	27.90	336.00	339.85		339.85	0.000064	0.52	66.97	33.51	0.05
Scriber	8427	2-YR	55.80	336.00	340.67		340.68	0.000113	0.80	97.80	42.53	0.07
Scriber	8427	10-YR	85.41	336.00	341.54		341.55	0.000132	0.98	146.33	95.54	0.08
Scriber	8427	25-YR	100.81	336.00	341.98		341.99	0.000120	0.98	189.73	100.18	0.07
Scriber	8427	100-YR	124.50	336.00	342.69		342.70	0.000096	0.95	263.33	106.33	0.07
Scriber	8283	Half 2-YR	27.90	337.58	339.81		339.83	0.000643	1.24	26.05	15.28	0.15
Scriber	8283	2-YR	55.80	337.58	340.60		340.64	0.000847	1.76	39.19	18.05	0.18
Scriber	8283	10-YR	85.41	337.58	341.45		341.51	0.000790	2.01	56.18	21.86	0.18
Scriber	8283	25-YR	100.81	337.58	341.89		341.95	0.000731	2.09	66.30	23.84	0.18

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	8283	100-YR	124.50	337.58	342.61		342.67	0.000618	2.13	84.52	27.04	0.17
Scriber	8249	Half 2-YR	27.90	337.26	339.77	338.30	339.80	0.000823	1.43	25.23	18.13	0.17
Scriber	8249	2-YR	55.80	337.26	340.55	338.74	340.60	0.001072	1.99	37.08	23.02	0.20
Scriber	8249	10-YR	85.41	337.26	341.40	339.11	341.47	0.001007	2.28	50.04	27.29	0.20
Scriber	8249	25-YR	100.81	337.26	341.85	339.27	341.92	0.000946	2.37	56.79	28.74	0.20
Scriber	8249	100-YR	124.50	337.26	342.56	339.51	342.64	0.000830	2.46	67.69	30.81	0.19
Scriber	8183		Culvert									
Scriber	8107	Half 2-YR	47.87	336.46	339.70	337.41	339.72	0.000267	1.09	48.53	26.44	0.11
Scriber	8107	2-YR	95.74	336.46	340.37	337.85	340.42	0.000526	1.75	61.27	67.28	0.16
Scriber	8107	10-YR	154.74	336.46	340.99	338.28	341.07	0.000800	2.39	72.93	132.77	0.20
Scriber	8107	25-YR	186.91	336.46	341.23	338.48	341.34	0.000963	2.72	77.56	148.19	0.23
Scriber	8107	100-YR	238.09	336.46	341.59	338.79	341.74	0.001199	3.20	84.39	168.17	0.26
Scriber	8085		Culvert									
Scriber	8060	Half 2-YR	38.38	336.43	338.01	337.20	338.10	0.002960	2.43	15.77	23.20	0.34
Scriber	8060	2-YR	76.75	336.43	338.57	337.65	338.63	0.001816	1.90	43.79	47.28	0.26
Scriber	8060	10-YR	116.09	336.43	339.16	338.05	339.21	0.001262	1.95	82.64	78.59	0.23
Scriber	8060	25-YR	135.33	336.43	339.44	338.22	339.49	0.001040	1.92	106.39	89.66	0.21
Scriber	8060	100-YR	163.58	336.43	339.76	338.46	339.81	0.000945	1.98	155.03	189.77	0.21
Scriber	7965	Half 2-YR	38.38	336.37	337.30	337.13	337.50	0.017018	3.60	10.66	13.50	0.71
Scriber	7965	2-YR	76.75	336.37	338.07	337.52	338.27	0.006861	3.60	22.40	52.11	0.51
Scriber	7965	10-YR	116.09	336.37	338.75	337.84	338.96	0.004546	3.73	35.37	115.87	0.44
Scriber	7965	25-YR	135.33	336.37	339.07	337.99	339.28	0.003866	3.75	43.44	136.88	0.41
Scriber	7965	100-YR	163.58	336.37	339.37	338.18	339.60	0.003754	3.98	52.62	248.57	0.42
Scriber	7848	Half 2-YR	38.38	336.30	337.43	336.40	337.43	0.000022	0.16	236.10	224.71	0.03
Scriber	7848	2-YR	76.75	336.30	338.21	336.46	338.21	0.000014	0.19	414.25	234.79	0.02
Scriber	7848	10-YR	116.09	336.30	338.89	336.52	338.89	0.000011	0.21	585.78	289.64	0.02
Scriber	7848	25-YR	135.33	336.30	339.21	336.54	339.21	0.000010	0.21	703.08	395.18	0.02
Scriber	7848	100-YR	163.58	336.30	339.52	336.57	339.52	0.000010	0.23	829.81	410.14	0.02
Scriber	7663	Half 2-YR	38.38	336.17	337.43	336.26	337.43	0.000010	0.12	326.56	278.78	0.02
Scriber	7663	2-YR	76.75	336.17	338.20	336.31	338.20	0.000007	0.14	585.36	399.30	0.02

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	7663	10-YR	116.09	336.17	338.89	336.36	338.89	0.000006	0.16	887.15	457.59	0.02
Scriber	7663	25-YR	135.33	336.17	339.21	336.38	339.21	0.000006	0.16	1054.72	601.68	0.02
Scriber	7663	100-YR	163.58	336.17	339.52	336.41	339.52	0.000005	0.17	1244.50	605.27	0.02
Scriber	7271	Half 2-YR	38.38	335.88	337.41	336.25	337.42	0.000329	0.72	53.14	42.63	0.11
Scriber	7271	2-YR	76.75	335.88	338.19	336.46	338.19	0.000428	0.59	129.56	152.50	0.11
Scriber	7271	10-YR	116.09	335.88	338.88	336.64	338.88	0.000152	0.42	279.98	242.74	0.07
Scriber	7271	25-YR	135.33	335.88	339.20	336.71	339.20	0.000104	0.39	362.04	274.49	0.06
Scriber	7271	100-YR	163.58	335.88	339.51	336.83	339.52	0.000083	0.36	475.34	378.16	0.05
Scriber	7132	Half 2-YR	38.38	335.79	337.32	336.41	337.34	0.001022	1.19	32.36	36.96	0.19
Scriber	7132	2-YR	76.75	335.79	338.11	336.70	338.13	0.000502	1.10	103.48	125.70	0.14
Scriber	7132	10-YR	116.09	335.79	338.84	336.93	338.86	0.000265	1.00	207.35	156.33	0.11
Scriber	7132	25-YR	135.33	335.79	339.17	337.02	339.18	0.000212	0.97	260.47	171.72	0.10
Scriber	7132	100-YR	163.58	335.79	339.49	337.16	339.50	0.000196	1.00	318.80	192.47	0.10
Scriber	7105		Bridge									
Scriber	7095	Half 2-YR	38.38	335.79	337.26	336.41	337.28	0.001176	1.22	31.50	35.02	0.20
Scriber	7095	2-YR	76.75	335.79	338.01	336.71	338.03	0.000640	1.19	90.94	114.00	0.16
Scriber	7095	10-YR	116.09	335.79	338.77	336.92	338.79	0.000299	1.04	196.65	153.76	0.12
Scriber	7095	25-YR	135.33	335.79	339.12	337.02	339.14	0.000227	0.99	252.85	168.23	0.10
Scriber	7095	100-YR	163.58	335.79	339.45	337.15	339.46	0.000206	1.02	312.14	191.80	0.10
Scriber	7071	Half 2-YR	32.68	335.68	337.16	336.51	337.23	0.003785	2.02	16.17	15.87	0.35
Scriber	7071	2-YR	65.36	335.68	337.98	336.91	338.00	0.002120	1.23	53.28	77.33	0.26
Scriber	7071	10-YR	101.99	335.68	338.77	337.47	338.78	0.000666	0.76	133.75	132.27	0.13
Scriber	7071	25-YR	119.71	335.68	339.12	337.57	339.13	0.000442	0.65	183.01	145.86	0.10
Scriber	7071	100-YR	145.43	335.68	339.45	337.69	339.45	0.000364	0.62	232.91	157.53	0.09
Scriber	6811	Half 2-YR	32.68	334.95	336.96	335.82	336.96	0.000420	0.76	43.10	79.83	0.12
Scriber	6811	2-YR	65.36	334.95	337.91	336.06	337.91	0.000130	0.40	180.69	276.64	0.07
Scriber	6811	10-YR	101.99	334.95	338.75	336.28	338.75	0.000038	0.31	433.38	325.49	0.04
Scriber	6811	25-YR	119.71	334.95	339.11	336.36	339.11	0.000027	0.30	553.61	343.77	0.03
Scriber	6811	100-YR	145.43	334.95	339.44	336.49	339.44	0.000024	0.31	670.18	361.24	0.03
Scriber	6799		Bridge									

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	6788	Half 2-YR	32.68	334.95	336.95	335.82	336.96	0.000432	0.76	42.74	79.16	0.12
Scriber	6788	2-YR	65.36	334.95	337.89	336.06	337.89	0.000138	0.41	175.81	275.60	0.07
Scriber	6788	10-YR	101.99	334.95	338.73	336.28	338.73	0.000039	0.32	428.07	324.66	0.04
Scriber	6788	25-YR	119.71	334.95	339.09	336.36	339.10	0.000028	0.30	549.80	343.20	0.04
Scriber	6788	100-YR	145.43	334.95	339.43	336.49	339.43	0.000025	0.31	667.18	360.78	0.03
Scriber	6179	Half 2-YR	32.68	334.74	336.71	335.44	336.73	0.000322	0.97	33.64	22.67	0.14
Scriber	6179	2-YR	65.36	334.74	337.77	335.74	337.79	0.000209	1.08	64.95	38.63	0.12
Scriber	6179	10-YR	101.99	334.74	338.67	335.99	338.69	0.000139	1.09	135.00	124.15	0.11
Scriber	6179	25-YR	119.71	334.74	339.05	336.11	339.06	0.000107	1.03	188.77	163.88	0.09
Scriber	6179	100-YR	145.43	334.74	339.39	336.26	339.40	0.000091	1.00	246.65	189.57	0.09
Scriber	6169		Bridge									
Scriber	6159	Half 2-YR	32.68	334.74	336.57	335.44	336.59	0.000428	1.07	30.54	22.09	0.16
Scriber	6159	2-YR	65.36	334.74	337.53	335.74	337.55	0.000302	1.21	56.43	33.66	0.14
Scriber	6159	10-YR	101.99	334.74	338.42	335.99	338.44	0.000199	1.24	107.41	94.02	0.12
Scriber	6159	25-YR	119.71	334.74	338.87	336.11	338.89	0.000140	1.14	161.89	141.79	0.11
Scriber	6159	100-YR	145.43	334.74	339.27	336.26	339.28	0.000110	1.08	226.08	182.08	0.10
Scriber	5795	Half 2-YR	32.68	334.62	336.33	335.49	336.36	0.000947	1.42	23.07	19.45	0.23
Scriber	5795	2-YR	65.36	334.62	337.38	335.81	337.41	0.000497	1.45	45.14	23.17	0.18
Scriber	5795	10-YR	101.99	334.62	338.31	336.08	338.35	0.000331	1.51	73.15	272.23	0.16
Scriber	5795	25-YR	119.71	334.62	338.79	336.19	338.82	0.000253	1.46	97.90	307.35	0.14
Scriber	5795	100-YR	145.43	334.62	339.19	336.35	339.23	0.000224	1.48	124.21	324.25	0.13
Scriber	5757		Bridge									
Scriber	5719*	Half 2-YR	32.68	334.63	336.24	335.51	336.28	0.001266	1.58	20.74	18.95	0.27
Scriber	5719*	2-YR	65.36	334.63	337.20	335.84	337.24	0.000694	1.62	40.39	22.16	0.21
Scriber	5719*	10-YR	101.99	334.63	337.97	336.11	338.02	0.000554	1.75	58.85	50.33	0.20
Scriber	5719*	25-YR	119.71	334.63	338.39	336.22	338.43	0.000434	1.71	80.89	131.27	0.18
Scriber	5719*	100-YR	145.43	334.63	338.96	336.37	338.99	0.000258	1.49	139.06	220.87	0.14
Scriber	5680		Bridge									
Scriber	5642	Half 2-YR	32.68	334.64	336.12	335.42	336.16	0.001480	1.70	19.27	17.72	0.29
Scriber	5642	2-YR	65.36	334.64	337.04	335.74	337.09	0.000858	1.75	37.29	21.33	0.23

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	5642	10-YR	101.99	334.64	337.68	336.03	337.74	0.000825	1.97	51.67	23.83	0.24
Scriber	5642	25-YR	119.71	334.64	338.02	336.16	338.08	0.000726	2.00	60.08	25.79	0.23
Scriber	5642	100-YR	145.43	334.64	338.55	336.32	338.61	0.000575	1.98	74.72	29.15	0.21
Scriber	5614		Bridge									
Scriber	5600	Half 2-YR	32.68	334.44	335.75	335.36	335.83	0.003875	2.35	13.92	16.28	0.45
Scriber	5600	2-YR	65.36	334.44	336.53	335.69	336.62	0.001972	2.35	27.86	19.34	0.34
Scriber	5600	10-YR	101.99	334.44	337.35	335.97	337.43	0.001210	2.27	45.01	22.55	0.28
Scriber	5600	25-YR	119.71	334.44	337.76	336.10	337.83	0.000966	2.19	54.57	24.18	0.26
Scriber	5600	100-YR	145.43	334.44	338.37	336.28	338.44	0.000671	2.08	70.57	28.04	0.22
Scriber	5508	Half 2-YR	32.68	333.51	335.48	334.44	335.53	0.001360	1.77	18.44	13.74	0.27
Scriber	5508	2-YR	65.36	333.51	336.36	334.87	336.42	0.000961	1.98	36.86	33.22	0.24
Scriber	5508	10-YR	101.99	333.51	337.26	335.29	337.31	0.000482	1.79	73.95	48.59	0.18
Scriber	5508	25-YR	119.71	333.51	337.70	335.47	337.73	0.000360	1.69	93.37	84.22	0.16
Scriber	5508	100-YR	145.43	333.51	338.33	335.69	338.36	0.000249	1.58	123.15	98.76	0.14
Scriber	5407	Half 2-YR	32.68	332.62	335.40	333.61	335.44	0.000610	1.51	21.69	9.97	0.18
Scriber	5407	2-YR	65.36	332.62	336.25	334.14	336.32	0.000963	2.12	30.80	11.69	0.23
Scriber	5407	10-YR	101.99	332.62	337.14	334.61	337.23	0.000973	2.42	43.02	16.97	0.24
Scriber	5407	25-YR	119.71	332.62	337.58	334.82	337.67	0.000850	2.46	51.35	21.14	0.23
Scriber	5407	100-YR	145.43	332.62	338.23	335.07	338.32	0.000673	2.44	67.07	27.33	0.21
Scriber	5387	Half 2-YR	32.68	332.29	335.32	333.30	335.35	0.000502	1.41	23.21	9.86	0.16
Scriber	5387	2-YR	65.36	332.29	336.11	333.84	336.18	0.000895	2.08	31.50	11.30	0.22
Scriber	5387	10-YR	101.99	332.29	336.99	334.32	337.08	0.000973	2.40	42.86	15.71	0.24
Scriber	5387	25-YR	119.71	332.29	337.44	334.52	337.53	0.000861	2.45	50.90	19.83	0.23
Scriber	5387	100-YR	145.43	332.29	338.12	334.79	338.20	0.000678	2.43	66.39	26.24	0.21
Scriber	5328		Culvert									
Scriber	5249	Half 2-YR	35.60	331.20	335.30	332.04	335.31	0.000482	0.79	44.88	12.19	0.07
Scriber	5249	2-YR	71.19	331.20	335.99	332.45	336.02	0.001190	1.33	53.39	12.49	0.11
Scriber	5249	10-YR	114.10	331.20	336.63	332.87	336.68	0.002085	1.86	61.42	12.77	0.15
Scriber	5249	25-YR	136.13	331.20	336.91	333.05	336.98	0.002538	2.09	65.08	12.89	0.16
Scriber	5249	100-YR	169.52	331.20	337.28	333.32	337.37	0.003247	2.43	69.89	13.06	0.18

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	5033	Half 2-YR	35.60	333.60	334.97		335.02	0.009455	1.75	21.09	29.87	0.33
Scriber	5033	2-YR	71.19	333.60	335.34		335.42	0.010890	2.38	33.92	41.33	0.38
Scriber	5033	10-YR	114.10	333.60	335.59		335.72	0.013831	3.04	45.35	49.38	0.44
Scriber	5033	25-YR	136.13	333.60	335.69		335.85	0.015005	3.32	50.85	52.81	0.47
Scriber	5033	100-YR	169.52	333.60	335.95		336.10	0.013022	3.41	65.08	60.81	0.44
Scriber	4986.9*	Half 2-YR	35.60	333.47	334.81		334.82	0.002242	0.80	44.74	60.69	0.16
Scriber	4986.9*	2-YR	71.19	333.47	335.17		335.19	0.002475	1.08	68.16	70.75	0.18
Scriber	4986.9*	10-YR	114.10	333.47	335.36		335.39	0.003759	1.48	81.86	76.68	0.23
Scriber	4986.9*	25-YR	136.13	333.47	335.43		335.47	0.004405	1.66	87.74	79.09	0.25
Scriber	4986.9*	100-YR	169.52	333.47	335.76		335.80	0.003206	1.63	115.70	89.74	0.22
Scriber	4940.8*	Half 2-YR	35.60	333.33	334.76		334.77	0.000751	0.48	74.37	93.89	0.09
Scriber	4940.8*	2-YR	71.19	333.33	335.11		335.12	0.000901	0.67	109.09	103.52	0.11
Scriber	4940.8*	10-YR	114.10	333.33	335.27		335.28	0.001526	0.94	125.15	108.42	0.14
Scriber	4940.8*	25-YR	136.13	333.33	335.32		335.34	0.001876	1.07	131.43	110.30	0.16
Scriber	4940.8*	100-YR	169.52	333.33	335.69		335.71	0.001280	1.04	174.23	122.25	0.14
Scriber	4894.7*	Half 2-YR	35.60	333.20	334.74		334.74	0.000304	0.32	110.51	127.57	0.06
Scriber	4894.7*	2-YR	71.19	333.20	335.09		335.09	0.000403	0.46	156.60	137.34	0.07
Scriber	4894.7*	10-YR	114.10	333.20	335.22		335.23	0.000729	0.67	175.19	141.38	0.10
Scriber	4894.7*	25-YR	136.13	333.20	335.27		335.28	0.000925	0.77	181.86	142.86	0.11
Scriber	4894.7*	100-YR	169.52	333.20	335.66		335.67	0.000626	0.74	239.54	155.67	0.10
Scriber	4848.6*	Half 2-YR	35.60	333.06	334.73		334.73	0.000141	0.23	153.16	161.63	0.04
Scriber	4848.6*	2-YR	71.19	333.06	335.08		335.08	0.000204	0.34	210.72	171.80	0.05
Scriber	4848.6*	10-YR	114.10	333.06	335.20		335.21	0.000386	0.50	232.16	175.31	0.07
Scriber	4848.6*	25-YR	136.13	333.06	335.24		335.25	0.000500	0.58	239.33	176.48	0.08
Scriber	4848.6*	100-YR	169.52	333.06	335.64		335.64	0.000344	0.56	311.75	189.59	0.07
Scriber	4802.5*	Half 2-YR	35.60	332.93	334.73		334.73	0.000072	0.18	202.32	195.72	0.03
Scriber	4802.5*	2-YR	71.19	332.93	335.07		335.07	0.000113	0.27	271.28	206.10	0.04
Scriber	4802.5*	10-YR	114.10	332.93	335.19		335.19	0.000221	0.39	295.74	209.34	0.06
Scriber	4802.5*	25-YR	136.13	332.93	335.23		335.23	0.000289	0.46	303.52	210.36	0.06
Scriber	4802.5*	100-YR	169.52	332.93	335.63		335.63	0.000205	0.45	390.37	223.54	0.06
Scriber	4756.4*	Half 2-YR	35.60	332.80	334.73		334.73	0.000040	0.14	257.79	230.06	0.02
Scriber	4756.4*	2-YR	71.19	332.80	335.07		335.07	0.000067	0.21	338.18	240.36	0.03

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	4756.4*	10-YR	114.10	332.80	335.18		335.18	0.000134	0.32	365.80	243.50	0.04
Scriber	4756.4*	25-YR	136.13	332.80	335.22		335.22	0.000177	0.37	374.31	244.43	0.05
Scriber	4756.4*	100-YR	169.52	332.80	335.62		335.62	0.000130	0.37	475.36	257.24	0.05
Scriber	4710.3*	Half 2-YR	35.60	332.66	334.73		334.73	0.000023	0.11	319.56	264.32	0.02
Scriber	4710.3*	2-YR	71.19	332.66	335.07		335.07	0.000042	0.17	411.41	274.65	0.02
Scriber	4710.3*	10-YR	114.10	332.66	335.18		335.18	0.000085	0.26	442.33	277.93	0.04
Scriber	4710.3*	25-YR	136.13	332.66	335.21		335.21	0.000114	0.31	451.62	278.79	0.04
Scriber	4710.3*	100-YR	169.52	332.66	335.62		335.62	0.000086	0.31	566.83	290.77	0.04
Scriber	4664.2*	Half 2-YR	35.60	332.53	334.72		334.73	0.000014	0.09	387.12	298.56	0.01
Scriber	4664.2*	2-YR	71.19	332.53	335.07		335.07	0.000027	0.15	490.42	308.68	0.02
Scriber	4664.2*	10-YR	114.10	332.53	335.18		335.18	0.000056	0.22	524.66	311.92	0.03
Scriber	4664.2*	25-YR	136.13	332.53	335.21		335.21	0.000076	0.26	534.79	312.85	0.03
Scriber	4664.2*	100-YR	169.52	332.53	335.61		335.62	0.000059	0.26	664.04	323.63	0.03
Scriber	4618.1*	Half 2-YR	35.60	332.39	334.72		334.72	0.000009	0.08	461.18	332.64	0.01
Scriber	4618.1*	2-YR	71.19	332.39	335.06		335.06	0.000018	0.12	575.89	342.58	0.02
Scriber	4618.1*	10-YR	114.10	332.39	335.17		335.17	0.000039	0.19	613.51	345.79	0.02
Scriber	4618.1*	25-YR	136.13	332.39	335.21		335.21	0.000052	0.22	624.49	346.72	0.03
Scriber	4618.1*	100-YR	169.52	332.39	335.61		335.61	0.000042	0.22	767.74	357.05	0.03
Scriber	4572	Half 2-YR	35.60	332.26	334.72	333.04	334.72	0.000006	0.07	541.75	366.83	0.01
Scriber	4572	2-YR	71.19	332.26	335.06	333.12	335.06	0.000013	0.11	667.93	376.60	0.01
Scriber	4572	10-YR	114.10	332.26	335.17	333.19	335.17	0.000027	0.16	708.99	379.73	0.02
Scriber	4572	25-YR	136.13	332.26	335.20	333.22	335.20	0.000037	0.19	720.86	380.63	0.02
Scriber	4572	100-YR	169.52	332.26	335.61	333.26	335.61	0.000030	0.20	878.10	391.00	0.02
Scriber	4568		Culvert									
Scriber	4563	Half 2-YR	35.60	332.26	333.63		333.63	0.000252	0.21	170.10	319.28	0.05
Scriber	4563	2-YR	71.19	332.26	333.90		333.90	0.000265	0.28	256.99	329.14	0.06
Scriber	4563	10-YR	114.10	332.26	334.13		334.13	0.000291	0.34	334.85	337.74	0.06
Scriber	4563	25-YR	136.13	332.26	334.28		334.28	0.000260	0.35	387.20	343.41	0.06
Scriber	4563	100-YR	169.52	332.26	335.60		335.60	0.000030	0.20	927.37	544.51	0.02
Scriber	4279	Half 2-YR	35.60	331.52	333.47		333.47	0.002105	0.48	77.09	243.20	0.14
Scriber	4279	2-YR	71.19	331.52	333.75		333.75	0.001333	0.47	174.71	459.20	0.12

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	4279	10-YR	114.10	331.52	334.00		334.00	0.000762	0.47	313.61	593.33	0.09
Scriber	4279	25-YR	136.13	331.52	334.19		334.19	0.000465	0.42	425.59	620.14	0.08
Scriber	4279	100-YR	169.52	331.52	335.59		335.59	0.000020	0.16	1540.30	852.12	0.02
Scriber	3935	Half 2-YR	35.60	332.00	332.85	332.30	332.85	0.001595	0.59	60.56	116.08	0.13
Scriber	3935	2-YR	71.19	332.00	333.29	332.42	333.30	0.001338	0.65	110.28	250.80	0.13
Scriber	3935	10-YR	114.10	332.00	333.71	332.53	333.72	0.000903	0.68	167.26	355.86	0.11
Scriber	3935	25-YR	136.13	332.00	333.99	332.58	334.00	0.000655	0.66	206.89	403.31	0.10
Scriber	3935	100-YR	169.52	332.00	335.58	332.65	335.58	0.000087	0.39	439.45	501.73	0.04
Scriber	3114	Half 2-YR	35.60	328.66	330.47	329.63	330.52	0.006428	1.79	19.86	16.27	0.29
Scriber	3114	2-YR	71.19	328.66	331.29	330.03	331.36	0.005203	2.07	34.35	18.98	0.27
Scriber	3114	10-YR	114.10	328.66	332.36	330.39	332.43	0.003416	1.97	57.88	25.00	0.23
Scriber	3114	25-YR	136.13	328.66	333.01	330.54	333.06	0.002448	1.81	75.23	28.72	0.20
Scriber	3114	100-YR	169.52	328.66	335.42	330.76	335.44	0.000414	1.11	161.89	43.33	0.09
Scriber	3104		Bridge									
Scriber	3093	Half 2-YR	35.60	328.66	330.27		330.34	0.010779	2.13	16.69	15.62	0.36
Scriber	3093	2-YR	71.19	328.66	331.16		331.23	0.006495	2.24	31.80	18.53	0.30
Scriber	3093	10-YR	114.10	328.66	332.28		332.35	0.003742	2.04	55.89	24.54	0.24
Scriber	3093	25-YR	136.13	328.66	332.96		333.01	0.002588	1.85	73.64	28.40	0.20
Scriber	3093	100-YR	169.52	328.66	335.41		335.43	0.000417	1.11	161.50	43.28	0.09
Scriber	2967	Half 2-YR	35.60	328.08	329.80	328.88	329.82	0.002018	1.03	34.55	413.64	0.16
Scriber	2967	2-YR	71.19	328.08	330.94	329.14	330.96	0.000899	1.07	66.75	466.49	0.12
Scriber	2967	10-YR	114.10	328.08	332.16	329.38	332.18	0.000581	1.13	100.98	508.19	0.11
Scriber	2967	25-YR	136.13	328.08	332.86	329.48	332.88	0.000455	1.13	120.78	518.47	0.10
Scriber	2967	100-YR	169.52	328.08	335.39	329.62	335.40	0.000150	0.88	192.21	554.30	0.06
Scriber	2742		Culvert									
Scriber	2517	Half 2-YR	40.53	325.29	328.77	326.34	328.79	0.000385	1.26	32.22	12.78	0.14
Scriber	2517	2-YR	81.05	325.29	329.39	326.83	329.45	0.000896	1.96	41.28	32.91	0.22
Scriber	2517	10-YR	133.19	325.29	329.95	327.34	330.06	0.001320	2.59	51.47	95.65	0.28
Scriber	2517	25-YR	161.95	325.29	330.22	327.60	330.34	0.001438	2.87	56.41	120.74	0.29
Scriber	2517	100-YR	208.03	325.29	331.09	327.98	331.21	0.001015	2.86	72.79	213.98	0.26

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	2501		Inl Struct									
Scriber	2500	Half 2-YR	40.53	325.21	328.76	326.27	328.78	0.000360	1.23	32.96	12.78	0.13
Scriber	2500	2-YR	81.05	325.21	329.35	326.75	329.41	0.000871	1.95	41.47	30.55	0.22
Scriber	2500	10-YR	133.19	325.21	329.90	327.27	330.00	0.001344	2.60	51.29	88.79	0.28
Scriber	2500	25-YR	161.95	325.21	330.15	327.52	330.28	0.001488	2.89	55.95	116.44	0.30
Scriber	2500	100-YR	208.03	325.21	331.02	327.89	331.15	0.001041	2.87	72.36	210.84	0.26
Scriber	2485		Inl Struct									
Scriber	2477	Half 2-YR	40.53	327.34	328.41	328.41	328.77	0.020255	4.85	8.35	11.26	0.99
Scriber	2477	2-YR	81.05	327.34	328.86	328.86	329.39	0.018649	5.84	13.87	13.16	1.00
Scriber	2477	10-YR	133.19	327.34	329.33	329.33	329.97	0.017501	6.43	20.72	29.21	1.00
Scriber	2477	25-YR	161.95	327.34	329.55	329.55	330.23	0.016885	6.62	24.47	45.23	1.00
Scriber	2477	100-YR	208.03	327.34	330.81	329.82	331.10	0.003134	4.32	48.12	181.95	0.48
Scriber	2452	Half 2-YR	40.53	324.46	327.57	325.52	327.60	0.000522	1.48	27.42	16.87	0.15
Scriber	2452	2-YR	81.05	324.46	328.35	325.99	328.43	0.001129	2.31	35.11	21.31	0.23
Scriber	2452	10-YR	133.19	324.46	329.26	326.52	329.39	0.001626	2.83	47.06	38.92	0.29
Scriber	2452	25-YR	161.95	324.46	329.84	326.77	329.97	0.001492	2.83	57.33	98.00	0.29
Scriber	2452	100-YR	208.03	324.46	330.90	327.15	331.01	0.000915	2.70	77.14	194.62	0.23
Scriber	2396		Culvert									
Scriber	2339	Half 2-YR	40.53	323.90	327.41	325.56	327.48	0.001236	2.08	19.52	19.83	0.24
Scriber	2339	2-YR	81.05	323.90	328.00	326.32	328.16	0.002607	3.26	24.84	23.22	0.36
Scriber	2339	10-YR	133.19	323.90	328.59	327.04	328.88	0.003967	4.32	30.85	26.67	0.45
Scriber	2339	25-YR	161.95	323.90	328.87	327.36	329.23	0.004566	4.78	33.91	28.30	0.48
Scriber	2339	100-YR	208.03	323.90	329.27	327.82	329.72	0.005354	5.41	38.42	133.24	0.53
Scriber	2098	Half 2-YR	40.53	325.55	327.28	326.08	327.30	0.000463	1.19	33.94	20.85	0.16
Scriber	2098	2-YR	81.05	325.55	327.75	326.38	327.80	0.000831	1.84	44.02	21.49	0.23
Scriber	2098	10-YR	133.19	325.55	328.27	326.70	328.36	0.001115	2.40	55.44	22.21	0.27
Scriber	2098	25-YR	161.95	325.55	328.53	326.87	328.64	0.001221	2.64	61.28	28.90	0.28
Scriber	2098	100-YR	208.03	325.55	328.91	327.09	329.05	0.001349	2.98	69.91	75.02	0.30
Scriber	2052		Culvert									

HEC-RAS Plan: ex9_2015 River: Scriber_Creek Reach: Scriber (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)	
Scriber	2006	Half 2-YR	39.00	325.00	327.27	325.50	327.27	0.000113	0.64	60.56	34.93	0.09
Scriber	2006	2-YR	77.99	325.00	327.73	325.77	327.74	0.000226	1.01	77.37	38.25	0.12
Scriber	2006	10-YR	133.29	325.00	328.22	326.09	328.25	0.000356	1.37	97.23	104.44	0.16
Scriber	2006	25-YR	165.40	325.00	328.46	326.24	328.50	0.000418	1.53	107.87	179.68	0.17
Scriber	2006	100-YR	218.81	325.00	328.81	326.48	328.86	0.000506	1.76	124.18	290.24	0.19
Scriber	1408	Half 2-YR	39.00	326.00	327.06	326.71	327.09	0.002269	1.40	27.84	385.62	0.32
Scriber	1408	2-YR	77.99	326.00	327.38	326.91	327.43	0.002066	1.80	43.40	409.56	0.33
Scriber	1408	10-YR	133.29	326.00	327.76	327.10	327.83	0.001899	2.17	61.40	409.57	0.34
Scriber	1408	25-YR	165.40	326.00	327.95	327.20	328.03	0.001837	2.34	70.59	409.57	0.34
Scriber	1408	100-YR	218.81	326.00	328.23	327.35	328.33	0.001789	2.60	84.16	463.98	0.35
Scriber	74	Half 2-YR	39.00	323.00	324.41	323.88	324.45	0.001740	1.51	25.79	32.34	0.30
Scriber	74	2-YR	77.99	323.00	324.86	324.15	324.92	0.001741	1.89	41.30	37.08	0.32
Scriber	74	10-YR	133.29	323.00	325.33	324.42	325.41	0.001741	2.23	59.86	41.95	0.33
Scriber	74	25-YR	165.40	323.00	325.55	324.55	325.64	0.001740	2.38	69.46	43.97	0.33
Scriber	74	100-YR	218.81	323.00	325.88	324.75	325.99	0.001740	2.59	84.36	46.94	0.34

Appendix B.2
HEC-RAS Output – Scenario 1

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber

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)	
Scriber	12724	Half 2-YR	26.58	365.25	367.09	366.98	367.43	0.027848	4.69	5.67	6.18	0.86
Scriber	12724	2-YR	53.16	365.25	368.08	367.53	368.32	0.008594	4.06	14.56	21.64	0.53
Scriber	12724	10-YR	90.13	365.25	368.52	368.04	368.93	0.011054	5.33	19.20	24.20	0.63
Scriber	12724	25-YR	111.63	365.25	368.96	368.29	369.37	0.008762	5.36	23.87	26.77	0.58
Scriber	12724	100-YR	147.45	365.25	369.86	368.62	370.22	0.005420	5.11	33.27	31.96	0.48
Scriber	12655		Culvert									
Scriber	12604	Half 2-YR	26.58	365.17	367.14	366.78	367.32	0.042895	3.43	7.74	7.93	0.59
Scriber	12604	2-YR	53.16	365.17	367.95	367.27	368.18	0.027263	3.80	14.01	12.26	0.50
Scriber	12604	10-YR	90.13	365.17	368.13	367.78	368.66	0.057032	5.86	15.45	18.82	0.74
Scriber	12604	25-YR	111.63	365.17	368.28	368.03	368.98	0.067298	6.70	16.77	24.70	0.82
Scriber	12604	100-YR	147.45	365.17	368.72	368.42	369.54	0.061678	7.28	20.59	58.09	0.81
Scriber	12597	Half 2-YR	26.58	365.11	367.10	366.44	367.20	0.005629	2.59	10.26	8.49	0.42
Scriber	12597	2-YR	53.16	365.11	367.94	366.94	368.03	0.007046	2.39	22.24	26.29	0.46
Scriber	12597	10-YR	90.13	365.11	368.34	367.65	368.37	0.002044	1.20	75.35	107.98	0.25
Scriber	12597	25-YR	111.63	365.11	368.60	367.90	368.62	0.001144	1.09	106.21	132.45	0.19
Scriber	12597	100-YR	147.45	365.11	369.11	367.99	369.13	0.000464	0.92	174.62	133.30	0.13
Scriber	12489	Half 2-YR	26.58	364.82	366.45	365.80	366.56	0.006093	2.70	9.85	7.36	0.41
Scriber	12489	2-YR	53.16	364.82	367.18	366.28	367.33	0.005652	3.22	19.98	21.38	0.41
Scriber	12489	10-YR	90.13	364.82	367.89	366.91	368.04	0.004227	3.43	42.15	43.87	0.37
Scriber	12489	25-YR	111.63	364.82	368.30	367.23	368.41	0.003089	3.22	62.42	56.60	0.32
Scriber	12489	100-YR	147.45	364.82	368.97	367.58	369.03	0.001676	2.70	110.62	84.51	0.25
Scriber	12484		Bridge									
Scriber	12479	Half 2-YR	26.58	364.82	366.37	365.80	366.50	0.007322	2.87	9.25	7.28	0.45
Scriber	12479	2-YR	53.16	364.82	367.10	366.28	367.27	0.006774	3.42	18.33	20.13	0.44
Scriber	12479	10-YR	90.13	364.82	367.79	366.91	367.97	0.005189	3.69	37.61	40.48	0.41
Scriber	12479	25-YR	111.63	364.82	368.18	367.23	368.32	0.003827	3.49	55.89	52.84	0.36
Scriber	12479	100-YR	147.45	364.82	368.87	367.58	368.96	0.002143	3.00	104.32	94.37	0.28
Scriber	12419	Half 2-YR	26.58	363.53	366.14	364.80	366.21	0.002897	2.14	12.49	8.54	0.27
Scriber	12419	2-YR	53.16	363.53	366.82	365.38	366.95	0.003861	2.98	21.33	16.34	0.32
Scriber	12419	10-YR	90.13	363.53	367.52	366.01	367.69	0.004043	3.57	34.57	21.43	0.34
Scriber	12419	25-YR	111.63	363.53	367.91	366.48	368.09	0.003758	3.71	43.56	24.29	0.34

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	12419	100-YR	147.45	363.53	368.64	366.95	368.79	0.002879	3.65	63.07	29.55	0.30
Scriber	12316	Half 2-YR	26.58	363.41	365.50	365.07	365.67	0.011835	3.30	8.04	7.71	0.57
Scriber	12316	2-YR	53.16	363.41	366.24	365.63	366.42	0.007010	3.50	18.38	16.90	0.48
Scriber	12316	10-YR	90.13	363.41	367.08	366.12	367.26	0.004362	3.62	34.71	22.04	0.40
Scriber	12316	25-YR	111.63	363.41	367.54	366.34	367.71	0.003459	3.61	45.63	24.74	0.37
Scriber	12316	100-YR	147.45	363.41	368.38	366.64	368.53	0.002260	3.44	69.75	32.61	0.31
Scriber	12282	Half 2-YR	26.58	363.31	365.37	364.34	365.45	0.003212	2.16	12.29	7.17	0.29
Scriber	12282	2-YR	53.16	363.31	366.07	364.82	366.21	0.004835	3.05	17.43	7.63	0.36
Scriber	12282	10-YR	90.13	363.31	366.86	365.36	367.09	0.005228	3.83	23.67	8.15	0.39
Scriber	12282	25-YR	111.63	363.31	367.29	365.64	367.56	0.005146	4.15	27.27	8.44	0.39
Scriber	12282	100-YR	147.45	363.31	368.10	366.05	368.40	0.004463	4.44	34.20	13.39	0.38
Scriber	12254		Culvert									
Scriber	12225	Half 2-YR	26.58	363.07	364.95	363.92	365.02	0.002779	2.03	13.11	7.86	0.28
Scriber	12225	2-YR	53.16	363.07	365.61	364.37	365.74	0.003933	2.88	18.81	10.98	0.34
Scriber	12225	10-YR	90.13	363.07	366.27	364.88	366.48	0.004692	3.73	25.03	14.61	0.38
Scriber	12225	25-YR	111.63	363.07	366.61	365.13	366.86	0.004923	4.11	28.39	17.03	0.40
Scriber	12225	100-YR	147.45	363.07	367.18	365.55	367.49	0.004914	4.57	34.03	21.10	0.41
Scriber	12115	Half 2-YR	26.58	362.92	364.45	363.93	364.56	0.006619	2.65	10.01	12.84	0.45
Scriber	12115	2-YR	53.16	362.92	364.80	364.37	365.05	0.010133	3.97	13.39	13.91	0.59
Scriber	12115	10-YR	90.13	362.92	365.38	364.80	365.74	0.009378	4.79	18.81	16.86	0.60
Scriber	12115	25-YR	111.63	362.92	365.78	365.01	366.16	0.007829	4.95	22.57	18.90	0.56
Scriber	12115	100-YR	147.45	362.92	366.51	365.35	366.90	0.005619	5.00	29.47	22.65	0.50
Scriber	12081		Culvert									
Scriber	12047	Half 2-YR	26.58	361.91	364.42	362.95	364.43	0.000374	0.89	30.56	21.87	0.12
Scriber	12047	2-YR	53.16	361.91	364.63	363.25	364.66	0.001038	1.60	34.50	24.44	0.20
Scriber	12047	10-YR	90.13	361.91	364.75	363.57	364.85	0.002427	2.54	36.92	26.03	0.31
Scriber	12047	25-YR	111.63	361.91	364.79	363.74	364.93	0.003515	3.09	37.61	26.48	0.37
Scriber	12047	100-YR	147.45	361.91	364.84	363.97	365.09	0.005608	3.97	38.72	27.21	0.47
Scriber	12031	Half 2-YR	25.06	364.04	364.28	364.28	364.38	0.066108	2.95	10.83	182.01	1.15
Scriber	12031	2-YR	50.12	364.04	364.40	364.40	364.58	0.053856	3.69	17.80	191.13	1.13

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	12031	10-YR	73.61	364.04	364.51	364.51	364.72	0.047724	4.15	23.70	198.37	1.11
Scriber	12031	25-YR	86.34	364.04	364.58	364.56	364.80	0.038398	4.14	28.25	203.72	1.02
Scriber	12031	100-YR	106.54	364.04	364.71		364.92	0.027186	4.05	36.46	212.89	0.89
Scriber	11917	Half 2-YR	25.06	362.00	362.56	362.23	362.58	0.001760	0.91	32.12	73.02	0.22
Scriber	11917	2-YR	50.12	362.00	362.80	362.35	362.82	0.001984	1.23	50.29	83.90	0.25
Scriber	11917	10-YR	73.61	362.00	364.31	362.43	364.31	0.000056	0.43	359.57	327.18	0.05
Scriber	11917	25-YR	86.34	362.00	364.71	362.48	364.72	0.000035	0.37	491.64	330.06	0.04
Scriber	11917	100-YR	106.54	362.00	364.83	362.54	364.84	0.000043	0.43	531.45	330.92	0.05
Scriber	11769	Half 2-YR	25.06	361.13	361.74	361.74	361.87	0.036869	3.14	11.93	48.10	0.94
Scriber	11769	2-YR	50.12	361.13	362.00		362.11	0.023017	3.15	25.96	74.31	0.79
Scriber	11769	10-YR	73.61	361.13	364.31		364.31	0.000040	0.41	392.85	201.14	0.04
Scriber	11769	25-YR	86.34	361.13	364.71		364.71	0.000031	0.40	474.38	202.83	0.04
Scriber	11769	100-YR	106.54	361.13	364.83		364.83	0.000040	0.47	498.58	203.33	0.05
Scriber	11723	Half 2-YR	25.06	360.20	361.06		361.10	0.006686	1.58	15.81	35.11	0.42
Scriber	11723	2-YR	50.12	360.20	362.00		362.01	0.000489	0.85	81.77	165.91	0.13
Scriber	11723	10-YR	73.61	360.20	364.31		364.31	0.000011	0.26	546.04	218.26	0.02
Scriber	11723	25-YR	86.34	360.20	364.71		364.71	0.000010	0.26	634.75	221.21	0.02
Scriber	11723	100-YR	106.54	360.20	364.83		364.83	0.000013	0.31	661.13	222.08	0.03
Scriber	11684	Half 2-YR	25.06	360.00	360.65		360.73	0.013772	2.33	10.75	22.97	0.60
Scriber	11684	2-YR	50.12	360.00	361.98		361.99	0.000555	0.83	60.16	54.06	0.14
Scriber	11684	10-YR	73.61	360.00	364.31		364.31	0.000009	0.23	628.54	291.44	0.02
Scriber	11684	25-YR	86.34	360.00	364.71		364.71	0.000008	0.23	746.80	294.26	0.02
Scriber	11684	100-YR	106.54	360.00	364.83		364.83	0.000011	0.27	781.83	295.10	0.02
Scriber	11626	Half 2-YR	25.06	358.08	360.47	359.16	360.52	0.001519	1.73	17.17	18.30	0.22
Scriber	11626	2-YR	50.12	358.08	361.93	359.67	361.95	0.000547	1.52	59.83	47.73	0.15
Scriber	11626	10-YR	73.61	358.08	364.30	360.06	364.31	0.000018	0.39	610.17	289.56	0.03
Scriber	11626	25-YR	86.34	358.08	364.71	360.28	364.71	0.000015	0.38	730.13	304.31	0.03
Scriber	11626	100-YR	106.54	358.08	364.83	360.57	364.83	0.000020	0.44	766.50	308.65	0.03
Scriber	11606	Half 2-YR	25.06	357.91	360.41	358.99	360.49	0.001523	2.25	11.12	8.19	0.26
Scriber	11606	2-YR	50.12	357.91	361.80	359.56	361.93	0.001309	2.84	17.65	15.29	0.26
Scriber	11606	10-YR	73.61	357.91	364.30	360.00	364.30	0.000081	0.99	310.57	256.67	0.07
Scriber	11606	25-YR	86.34	357.91	364.71	360.22	364.71	0.000038	0.54	485.25	266.73	0.04

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	11606	100-YR	106.54	357.91	364.82	360.56	364.83	0.000050	0.62	516.89	268.90	0.04
Scriber	11558		Culvert									
Scriber	11510	Half 2-YR	26.17	356.66	358.93	357.86	359.02	0.003043	2.39	10.97	6.71	0.30
Scriber	11510	2-YR	52.33	356.66	360.01	358.38	360.15	0.002762	3.06	17.11	10.36	0.31
Scriber	11510	10-YR	75.59	356.66	360.94	358.77	361.12	0.002328	3.37	22.46	15.07	0.30
Scriber	11510	25-YR	87.11	356.66	361.10	358.94	361.32	0.002703	3.72	23.39	15.78	0.32
Scriber	11510	100-YR	104.23	356.66	361.16	359.19	361.46	0.003696	4.40	23.71	16.04	0.38
Scriber	11342	Half 2-YR	26.17	356.35	358.63	357.28	358.66	0.001407	1.35	19.35	15.49	0.21
Scriber	11342	2-YR	52.33	356.35	359.87	357.71	359.90	0.000639	1.21	43.16	22.78	0.16
Scriber	11342	10-YR	75.59	356.35	360.91	358.01	360.93	0.000315	1.10	75.91	154.84	0.12
Scriber	11342	25-YR	87.11	356.35	361.08	358.21	361.10	0.000326	1.16	100.92	171.63	0.12
Scriber	11342	100-YR	104.23	356.35	361.14	358.44	361.17	0.000425	1.35	110.59	174.44	0.14
Scriber	11263	Half 2-YR	26.17	355.61	358.52	356.72	358.57	0.000831	1.84	14.25	10.15	0.20
Scriber	11263	2-YR	52.33	355.61	359.72	357.26	359.83	0.000973	2.54	20.59	13.03	0.23
Scriber	11263	10-YR	75.59	355.61	360.74	357.67	360.88	0.000940	2.91	25.94	19.00	0.23
Scriber	11263	25-YR	87.11	355.61	361.02	357.85	361.06	0.000729	1.66	64.04	127.34	0.16
Scriber	11263	100-YR	104.23	355.61	361.06	358.10	361.11	0.000996	1.95	68.73	140.96	0.19
Scriber	11234		Culvert									
Scriber	11205	Half 2-YR	26.17	354.57	356.68	355.70	356.75	0.002144	2.19	11.95	11.96	0.29
Scriber	11205	2-YR	52.33	354.57	357.40	356.14	357.55	0.002717	3.10	16.87	13.00	0.35
Scriber	11205	10-YR	75.59	354.57	357.95	356.49	358.16	0.002900	3.66	20.63	14.39	0.37
Scriber	11205	25-YR	87.11	354.57	358.14	356.64	358.38	0.003145	3.97	21.92	15.05	0.39
Scriber	11205	100-YR	104.23	354.57	358.34	356.86	358.65	0.003665	4.47	23.32	15.77	0.43
Scriber	11163	Half 2-YR	26.17	354.93	356.56		356.63	0.003586	2.11	12.41	10.39	0.34
Scriber	11163	2-YR	52.33	354.93	357.30		357.40	0.003124	2.55	20.86	12.76	0.34
Scriber	11163	10-YR	75.59	354.93	357.88		357.99	0.002701	2.75	28.81	14.77	0.32
Scriber	11163	25-YR	87.11	354.93	358.07		358.20	0.002759	2.90	31.76	15.65	0.33
Scriber	11163	100-YR	104.23	354.93	358.28		358.44	0.002972	3.18	35.23	17.43	0.34
Scriber	11030	Half 2-YR	26.17	354.39	356.09	355.28	356.16	0.003502	2.16	12.13	9.14	0.33
Scriber	11030	2-YR	52.33	354.39	356.92	355.73	357.01	0.002689	2.52	25.53	31.45	0.31

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	11030	10-YR	75.59	354.39	357.66	356.04	357.73	0.001432	2.26	60.86	62.51	0.24
Scriber	11030	25-YR	87.11	354.39	357.88	356.19	357.95	0.001306	2.27	75.57	71.32	0.23
Scriber	11030	100-YR	104.23	354.39	358.11	356.37	358.17	0.001296	2.37	92.47	80.26	0.23
Scriber	10984.3*	Half 2-YR	26.17	354.15	355.93	355.12	356.00	0.003491	2.17	12.07	8.93	0.33
Scriber	10984.3*	2-YR	52.33	354.15	356.79	355.57	356.89	0.002761	2.59	21.62	18.95	0.31
Scriber	10984.3*	10-YR	75.59	354.15	357.58	355.88	357.66	0.001593	2.43	50.43	53.15	0.25
Scriber	10984.3*	25-YR	87.11	354.15	357.80	356.02	357.88	0.001472	2.45	63.44	60.91	0.24
Scriber	10984.3*	100-YR	104.23	354.15	358.03	356.22	358.11	0.001487	2.58	78.02	78.54	0.25
Scriber	10938.6*	Half 2-YR	26.17	353.90	355.77	354.96	355.84	0.003505	2.18	11.99	8.70	0.33
Scriber	10938.6*	2-YR	52.33	353.90	356.66	355.40	356.76	0.002705	2.59	21.11	12.28	0.31
Scriber	10938.6*	10-YR	75.59	353.90	357.49	355.72	357.58	0.001701	2.54	42.30	43.21	0.26
Scriber	10938.6*	25-YR	87.11	353.90	357.71	355.86	357.81	0.001645	2.62	53.35	59.49	0.26
Scriber	10938.6*	100-YR	104.23	353.90	357.92	356.05	358.03	0.001785	2.85	68.32	83.92	0.27
Scriber	10893.*	Half 2-YR	26.17	353.66	355.61	354.78	355.68	0.003555	2.20	11.87	8.43	0.33
Scriber	10893.*	2-YR	52.33	353.66	356.54	355.23	356.64	0.002665	2.60	21.06	11.80	0.30
Scriber	10893.*	10-YR	75.59	353.66	357.41	355.55	357.51	0.001719	2.59	39.50	44.20	0.26
Scriber	10893.*	25-YR	87.11	353.66	357.63	355.69	357.73	0.001717	2.71	50.76	62.25	0.26
Scriber	10893.*	100-YR	104.23	353.66	357.83	355.89	357.95	0.001866	2.93	66.44	91.17	0.27
Scriber	10847.3*	Half 2-YR	26.17	353.41	355.44	354.60	355.52	0.003603	2.22	11.78	8.16	0.33
Scriber	10847.3*	2-YR	52.33	353.41	356.42	355.05	356.52	0.002621	2.60	21.10	11.43	0.30
Scriber	10847.3*	10-YR	75.59	353.41	357.33	355.38	357.43	0.001713	2.61	37.62	45.17	0.25
Scriber	10847.3*	25-YR	87.11	353.41	357.55	355.52	357.65	0.001725	2.73	49.82	67.60	0.26
Scriber	10847.3*	100-YR	104.23	353.41	357.74	355.73	357.86	0.001865	2.95	65.74	90.73	0.27
Scriber	10801.6*	Half 2-YR	26.17	353.17	355.27	354.42	355.35	0.003774	2.26	11.58	7.87	0.33
Scriber	10801.6*	2-YR	52.33	353.17	356.30	354.88	356.40	0.002619	2.61	21.05	11.06	0.29
Scriber	10801.6*	10-YR	75.59	353.17	357.25	355.21	357.35	0.001719	2.63	36.84	46.65	0.25
Scriber	10801.6*	25-YR	87.11	353.17	357.47	355.37	357.58	0.001724	2.74	49.15	69.99	0.25
Scriber	10801.6*	100-YR	104.23	353.17	357.65	355.57	357.78	0.001888	2.97	65.02	92.96	0.27
Scriber	10756	Half 2-YR	26.17	352.92	355.08	354.25	355.18	0.003426	2.63	9.94	7.55	0.36
Scriber	10756	2-YR	52.33	352.92	356.11	354.75	356.27	0.002730	3.24	16.13	10.50	0.35
Scriber	10756	10-YR	75.59	352.92	357.17	355.12	357.27	0.001714	2.62	36.69	38.61	0.25
Scriber	10756	25-YR	87.11	352.92	357.39	355.29	357.50	0.001739	2.75	48.43	68.37	0.25

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	10756	100-YR	104.23	352.92	357.56	355.53	357.69	0.001997	3.04	61.95	85.88	0.27
Scriber	10728		Culvert									
Scriber	10701	Half 2-YR	26.17	352.70	354.78	353.59	354.85	0.001636	2.14	12.21	15.77	0.26
Scriber	10701	2-YR	52.33	352.70	355.88	354.08	356.00	0.001549	2.78	18.81	17.75	0.28
Scriber	10701	10-YR	75.59	352.70	356.72	354.45	356.88	0.001464	3.17	23.86	25.88	0.28
Scriber	10701	25-YR	87.11	352.70	357.14	354.62	357.16	0.000330	1.26	88.96	169.18	0.12
Scriber	10701	100-YR	104.23	352.70	357.56	354.84	357.58	0.000245	1.17	179.49	223.51	0.10
Scriber	10557	Half 2-YR	26.17	352.32	354.53	353.30	354.58	0.002072	1.81	14.44	8.54	0.25
Scriber	10557	2-YR	52.33	352.32	355.67	353.80	355.74	0.001813	2.07	25.23	10.40	0.23
Scriber	10557	10-YR	75.59	352.32	356.56	354.13	356.63	0.001412	2.15	36.38	16.49	0.22
Scriber	10557	25-YR	87.11	352.32	357.00	354.27	357.07	0.001171	2.14	45.27	24.27	0.20
Scriber	10557	100-YR	104.23	352.32	357.43	354.50	357.50	0.001062	2.20	66.79	77.73	0.20
Scriber	10477	Half 2-YR	26.17	352.11	354.33	353.13	354.42	0.001902	2.38	11.00	8.38	0.29
Scriber	10477	2-YR	52.33	352.11	355.43	353.67	355.58	0.001905	3.14	16.66	10.08	0.31
Scriber	10477	10-YR	75.59	352.11	356.29	354.08	356.49	0.001796	3.57	21.15	13.16	0.31
Scriber	10477	25-YR	87.11	352.11	356.72	354.27	356.94	0.001709	3.73	23.37	19.40	0.31
Scriber	10477	100-YR	104.23	352.11	357.34	354.52	357.41	0.001063	2.19	62.23	68.03	0.19
Scriber	10450		Culvert									
Scriber	10422	Half 2-YR	26.17	350.59	352.66	351.70	352.73	0.002436	2.21	11.81	9.80	0.30
Scriber	10422	2-YR	52.33	350.59	353.35	352.16	353.51	0.003125	3.15	16.62	10.96	0.36
Scriber	10422	10-YR	75.59	350.59	353.81	352.50	354.03	0.003663	3.83	19.76	11.72	0.40
Scriber	10422	25-YR	87.11	350.59	354.00	352.65	354.26	0.003921	4.13	21.08	12.04	0.42
Scriber	10422	100-YR	104.23	350.59	354.24	352.87	354.57	0.004322	4.57	22.80	12.45	0.44
Scriber	10340	Half 2-YR	26.17	350.64	351.73	351.73	352.13	0.036300	5.05	5.18	6.55	1.00
Scriber	10340	2-YR	52.33	350.64	352.23	352.23	352.78	0.033569	6.00	8.73	7.85	1.00
Scriber	10340	10-YR	75.59	350.64	352.57	352.57	353.23	0.032311	6.55	11.55	8.75	1.00
Scriber	10340	25-YR	87.11	350.64	352.72	352.72	353.42	0.031653	6.75	12.90	9.15	1.00
Scriber	10340	100-YR	104.23	350.64	352.92	352.92	353.69	0.030805	7.01	14.86	9.70	1.00
Scriber	9965	Half 2-YR	26.17	348.02	350.00		350.03	0.000860	1.19	21.96	14.94	0.17
Scriber	9965	2-YR	52.33	348.02	350.46		350.51	0.001501	1.80	29.96	24.60	0.24

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	9965	10-YR	75.59	348.02	350.71		350.79	0.001967	2.25	37.07	29.91	0.28
Scriber	9965	25-YR	87.11	348.02	350.80		350.89	0.002254	2.47	39.67	30.94	0.30
Scriber	9965	100-YR	104.23	348.02	350.94		351.05	0.002555	2.75	44.13	32.36	0.32
Scriber	9840	Half 2-YR	26.17	347.62	349.29	349.29	349.66	0.040274	4.91	5.33	7.08	1.00
Scriber	9840	2-YR	52.33	347.62	349.81	349.81	350.04	0.018339	4.26	20.54	54.70	0.73
Scriber	9840	10-YR	75.59	347.62	349.96	349.96	350.21	0.018792	4.71	29.89	67.68	0.75
Scriber	9840	25-YR	87.11	347.62	350.05	350.05	350.28	0.016940	4.68	35.72	69.68	0.72
Scriber	9840	100-YR	104.23	347.62	350.11	350.11	350.36	0.018495	5.04	40.03	70.60	0.76
Scriber	9764	Half 2-YR	26.17	344.99	348.25	345.90	348.27	0.000489	1.15	23.40	9.93	0.12
Scriber	9764	2-YR	52.33	344.99	348.98	346.40	349.03	0.000867	1.79	32.11	13.94	0.17
Scriber	9764	10-YR	75.59	344.99	349.24	346.77	349.33	0.001395	2.38	35.90	15.36	0.22
Scriber	9764	25-YR	87.11	344.99	349.35	346.93	349.46	0.001667	2.66	37.59	15.95	0.24
Scriber	9764	100-YR	104.23	344.99	349.48	347.15	349.61	0.002119	3.06	39.63	16.64	0.27
Scriber	9679	Half 2-YR	26.17	345.93	348.16	346.83	348.20	0.001546	1.80	16.69	16.21	0.22
Scriber	9679	2-YR	52.33	345.93	348.86	347.33	348.93	0.001662	2.27	40.84	71.09	0.24
Scriber	9679	10-YR	75.59	345.93	349.11	347.70	349.19	0.001922	2.59	58.60	72.85	0.26
Scriber	9679	25-YR	87.11	345.93	349.21	347.87	349.29	0.002014	2.71	66.15	73.59	0.27
Scriber	9679	100-YR	104.23	345.93	349.33	348.19	349.41	0.002251	2.93	74.46	74.47	0.29
Scriber	9634	Half 2-YR	26.17	346.65	347.56	347.56	347.97	0.039390	5.17	5.06	6.16	1.01
Scriber	9634	2-YR	52.33	346.65	348.06	348.06	348.67	0.036510	6.26	8.35	6.80	1.00
Scriber	9634	10-YR	75.59	346.65	348.63	348.63	348.97	0.016163	5.10	24.33	47.52	0.69
Scriber	9634	25-YR	87.11	346.65	348.71		349.06	0.017065	5.36	28.11	52.14	0.71
Scriber	9634	100-YR	104.23	346.65	349.00		349.21	0.009900	4.50	46.35	70.85	0.56
Scriber	9563	Half 2-YR	26.17	345.10	346.69	346.01	346.79	0.005725	2.59	10.12	7.26	0.39
Scriber	9563	2-YR	52.33	345.10	347.32	346.47	347.52	0.007232	3.53	14.82	7.62	0.44
Scriber	9563	10-YR	75.59	345.10	347.74	346.80	348.01	0.007973	4.22	18.02	7.85	0.48
Scriber	9563	25-YR	87.11	345.10	347.91	346.95	348.23	0.008336	4.52	19.42	7.95	0.50
Scriber	9563	100-YR	104.23	345.10	348.16	347.17	348.53	0.008812	4.94	21.37	8.09	0.52
Scriber	9555		Bridge									
Scriber	9548	Half 2-YR	26.17	345.03	346.48	346.14	346.65	0.012696	3.33	7.85	7.50	0.57
Scriber	9548	2-YR	52.33	345.03	347.08	346.59	347.36	0.011357	4.25	12.50	8.08	0.58

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	9548	10-YR	75.59	345.03	347.45	346.91	347.84	0.011937	4.99	15.58	8.44	0.62
Scriber	9548	25-YR	87.11	345.03	347.60	347.05	348.04	0.012419	5.35	16.88	8.59	0.64
Scriber	9548	100-YR	104.23	345.03	347.81	347.26	348.33	0.013080	5.83	18.68	8.79	0.67
Scriber	9510	Half 2-YR	26.17	344.76	346.20	345.62	346.31	0.005815	2.57	10.17	8.30	0.41
Scriber	9510	2-YR	52.33	344.76	346.79	346.04	346.97	0.007201	3.45	15.19	8.85	0.46
Scriber	9510	10-YR	75.59	344.76	347.14	346.35	347.40	0.008427	4.13	18.42	10.07	0.51
Scriber	9510	25-YR	87.11	344.76	347.28	346.50	347.58	0.008961	4.45	19.88	10.92	0.53
Scriber	9510	100-YR	104.23	344.76	347.47	346.70	347.84	0.009595	4.87	22.10	12.12	0.56
Scriber	9500.3*	Half 2-YR	26.17	344.70	346.14	345.58	346.25	0.006044	2.61	10.03	8.44	0.42
Scriber	9500.3*	2-YR	52.33	344.70	346.71	346.01	346.90	0.007412	3.48	15.04	9.11	0.48
Scriber	9500.3*	10-YR	75.59	344.70	347.05	346.32	347.32	0.008626	4.17	18.25	10.40	0.53
Scriber	9500.3*	25-YR	87.11	344.70	347.18	346.46	347.50	0.009187	4.49	19.68	11.23	0.55
Scriber	9500.3*	100-YR	104.23	344.70	347.37	346.66	347.74	0.009830	4.92	21.88	12.39	0.58
Scriber	9490.6*	Half 2-YR	26.17	344.65	346.08	345.55	346.19	0.006393	2.66	9.85	8.60	0.44
Scriber	9490.6*	2-YR	52.33	344.65	346.64	345.97	346.83	0.007733	3.52	14.86	9.38	0.49
Scriber	9490.6*	10-YR	75.59	344.65	346.96	346.29	347.23	0.008926	4.21	18.06	10.80	0.54
Scriber	9490.6*	25-YR	87.11	344.65	347.08	346.43	347.40	0.009535	4.55	19.46	11.60	0.57
Scriber	9490.6*	100-YR	104.23	344.65	347.26	346.62	347.65	0.010199	4.98	21.64	12.74	0.59
Scriber	9480.9*	Half 2-YR	26.17	344.59	346.01	345.50	346.12	0.006654	2.69	9.74	8.76	0.45
Scriber	9480.9*	2-YR	52.33	344.59	346.56	345.93	346.75	0.008005	3.55	14.75	9.66	0.51
Scriber	9480.9*	10-YR	75.59	344.59	346.86	346.24	347.14	0.009231	4.25	17.91	11.19	0.56
Scriber	9480.9*	25-YR	87.11	344.59	346.98	346.37	347.31	0.009925	4.60	19.27	11.99	0.58
Scriber	9480.9*	100-YR	104.23	344.59	347.15	346.57	347.54	0.010640	5.04	21.41	13.14	0.61
Scriber	9471.2*	Half 2-YR	26.17	344.54	345.94	345.46	346.06	0.007072	2.73	9.58	8.94	0.46
Scriber	9471.2*	2-YR	52.33	344.54	346.47	345.89	346.67	0.008414	3.59	14.58	9.95	0.52
Scriber	9471.2*	10-YR	75.59	344.54	346.76	346.19	347.05	0.009698	4.31	17.71	11.64	0.58
Scriber	9471.2*	25-YR	87.11	344.54	346.87	346.32	347.21	0.010544	4.67	18.99	12.43	0.61
Scriber	9471.2*	100-YR	104.23	344.54	347.03	346.52	347.44	0.011361	5.13	21.08	13.61	0.64
Scriber	9461.5*	Half 2-YR	26.17	344.48	345.87	345.42	345.98	0.007475	2.77	9.46	9.12	0.48
Scriber	9461.5*	2-YR	52.33	344.48	346.38	345.83	346.59	0.008837	3.62	14.44	10.24	0.54
Scriber	9461.5*	10-YR	75.59	344.48	346.66	346.14	346.95	0.010266	4.36	17.50	12.12	0.60
Scriber	9461.5*	25-YR	87.11	344.48	346.75	346.27	347.10	0.011407	4.77	18.63	12.89	0.63

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	9461.5*	100-YR	104.23	344.48	346.89	346.46	347.32	0.012505	5.26	20.56	14.10	0.67
Scriber	9451.8*	Half 2-YR	26.17	344.42	345.78	345.36	345.91	0.008029	2.82	9.28	9.28	0.50
Scriber	9451.8*	2-YR	52.33	344.42	346.29	345.78	346.50	0.009432	3.68	14.24	10.52	0.56
Scriber	9451.8*	10-YR	75.59	344.42	346.54	346.08	346.85	0.011179	4.46	17.15	12.68	0.62
Scriber	9451.8*	25-YR	87.11	344.42	346.61	346.21	346.98	0.012975	4.93	17.99	13.36	0.67
Scriber	9451.8*	100-YR	104.23	344.42	346.69	346.39	347.18	0.015615	5.60	19.19	14.28	0.75
Scriber	9442.1*	Half 2-YR	26.17	344.37	345.70	345.30	345.83	0.008678	2.87	9.11	9.45	0.52
Scriber	9442.1*	2-YR	52.33	344.37	346.18	345.72	346.40	0.010122	3.73	14.02	10.80	0.58
Scriber	9442.1*	10-YR	75.59	344.37	346.43	346.02	346.74	0.011769	4.49	19.05	43.82	0.64
Scriber	9442.1*	25-YR	87.11	344.37	346.46	346.15	346.85	0.014300	5.02	20.74	51.49	0.71
Scriber	9442.1*	100-YR	104.23	344.37	346.62	346.59	347.01	0.013486	5.19	29.53	58.76	0.70
Scriber	9432.4*	Half 2-YR	26.17	344.31	345.60	345.24	345.74	0.009612	2.95	8.86	9.57	0.54
Scriber	9432.4*	2-YR	52.33	344.31	346.09	345.65	346.30	0.010212	3.69	16.64	33.90	0.58
Scriber	9432.4*	10-YR	75.59	344.31	346.43	346.03	346.62	0.007563	3.70	33.13	54.30	0.52
Scriber	9432.4*	25-YR	87.11	344.31	346.48	346.22	346.70	0.008528	4.02	36.09	54.39	0.55
Scriber	9432.4*	100-YR	104.23	344.31	346.66	346.41	346.86	0.007391	4.01	45.85	54.66	0.52
Scriber	9422.7*	Half 2-YR	26.17	344.26	345.48	345.16	345.63	0.011267	3.10	8.45	9.61	0.58
Scriber	9422.7*	2-YR	52.33	344.26	345.96	345.59	346.19	0.011992	3.87	14.74	23.96	0.63
Scriber	9422.7*	10-YR	75.59	344.26	346.30	345.93	346.53	0.009270	4.00	25.63	33.21	0.57
Scriber	9422.7*	25-YR	87.11	344.26	346.20	346.13	346.58	0.016499	5.09	22.17	33.07	0.75
Scriber	9422.7*	100-YR	104.23	344.26	346.27	346.27	346.74	0.019293	5.69	24.54	33.17	0.82
Scriber	9413	Half 2-YR	26.17	344.20	345.10	345.10	345.43	0.036271	4.65	5.63	8.45	1.00
Scriber	9413	2-YR	52.33	344.20	345.51	345.51	345.98	0.032763	5.50	9.52	10.17	1.00
Scriber	9413	10-YR	75.59	344.20	345.84	345.80	346.36	0.028576	5.80	13.03	11.51	0.96
Scriber	9413	25-YR	87.11	344.20	346.16	346.16	346.41	0.012185	4.42	36.87	92.92	0.65
Scriber	9413	100-YR	104.23	344.20	346.26	346.24	346.51	0.011737	4.55	46.42	93.71	0.65
Scriber	9284	Half 2-YR	27.63	341.82	343.43	342.77	343.57	0.004591	3.02	10.92	8.61	0.42
Scriber	9284	2-YR	55.26	341.82	344.11	343.29	344.35	0.005296	4.11	17.24	10.14	0.48
Scriber	9284	10-YR	80.05	341.82	344.53	343.67	344.87	0.006077	4.94	21.69	11.11	0.53
Scriber	9284	25-YR	92.25	341.82	344.71	343.85	345.10	0.006327	5.27	23.83	11.54	0.55
Scriber	9284	100-YR	110.29	341.82	344.99	344.09	345.44	0.006468	5.67	27.15	12.19	0.56

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	9213	Half 2-YR	27.63	341.23	343.06	342.35	343.20	0.005871	2.96	9.62	7.18	0.44
Scriber	9213	2-YR	55.26	341.23	343.65	342.95	343.90	0.007619	4.04	14.54	10.37	0.53
Scriber	9213	10-YR	80.05	341.23	343.99	343.36	344.36	0.008780	4.87	18.14	10.63	0.59
Scriber	9213	25-YR	92.25	341.23	344.18	343.52	344.58	0.008740	5.13	20.13	10.77	0.59
Scriber	9213	100-YR	110.29	341.23	344.50	343.75	344.93	0.008047	5.36	23.57	11.02	0.58
Scriber	9153	Half 2-YR	27.63	341.05	342.03	342.03	342.44	0.037146	5.15	5.37	6.86	1.00
Scriber	9153	2-YR	55.26	341.05	342.66	342.56	343.14	0.022472	5.59	10.68	13.42	0.84
Scriber	9153	10-YR	80.05	341.05	343.29	342.90	343.71	0.012657	5.37	17.32	13.96	0.67
Scriber	9153	25-YR	92.25	341.05	343.61	343.04	344.01	0.009847	5.23	20.92	14.24	0.60
Scriber	9153	100-YR	110.29	341.05	344.04	343.24	344.43	0.007804	5.21	25.70	14.61	0.55
Scriber	9116		Culvert									
Scriber	9079	Half 2-YR	27.63	340.17	342.22	341.36	342.28	0.002624	1.97	14.07	10.19	0.29
Scriber	9079	2-YR	55.26	340.17	343.03	341.79	343.12	0.002339	2.47	22.59	10.93	0.30
Scriber	9079	10-YR	80.05	340.17	343.58	342.07	343.70	0.002287	2.85	28.74	11.44	0.30
Scriber	9079	25-YR	92.25	340.17	343.83	342.20	343.97	0.002268	3.00	31.51	11.66	0.31
Scriber	9079	100-YR	110.29	340.17	344.19	342.38	344.35	0.002191	3.19	35.64	12.00	0.31
Scriber	9042	Half 2-YR	27.63	339.47	341.85	341.23	342.06	0.011601	3.61	7.66	5.34	0.53
Scriber	9042	2-YR	55.26	339.47	342.46	341.92	342.85	0.014450	5.03	11.30	6.66	0.62
Scriber	9042	10-YR	80.05	339.47	342.76	342.35	343.37	0.018891	6.31	13.65	10.22	0.73
Scriber	9042	25-YR	92.25	339.47	342.85	342.55	343.59	0.021841	6.96	14.66	11.89	0.79
Scriber	9042	100-YR	110.29	339.47	342.94	342.93	343.91	0.027572	8.00	15.71	13.40	0.89
Scriber	8966	Half 2-YR	27.63	339.27	340.20	340.20	340.58	0.038020	4.98	5.54	7.26	1.00
Scriber	8966	2-YR	55.26	339.27	340.66	340.66	341.24	0.033200	6.15	9.07	8.16	0.99
Scriber	8966	10-YR	80.05	339.27	341.08	340.99	341.74	0.024725	6.51	12.77	9.16	0.90
Scriber	8966	25-YR	92.25	339.27	341.33	341.16	341.97	0.020188	6.47	15.12	9.74	0.83
Scriber	8966	100-YR	110.29	339.27	341.78	341.37	342.36	0.013744	6.16	19.73	10.78	0.71
Scriber	8891	Half 2-YR	27.63	337.35	339.74	338.53	339.78	0.001516	1.61	17.21	10.22	0.22
Scriber	8891	2-YR	55.26	337.35	340.46	338.95	340.53	0.002115	2.22	24.89	11.21	0.26
Scriber	8891	10-YR	80.05	337.35	341.06	339.26	341.16	0.002179	2.51	31.95	12.05	0.27
Scriber	8891	25-YR	92.25	337.35	341.33	339.39	341.43	0.002119	2.63	35.14	12.41	0.27
Scriber	8891	100-YR	110.29	337.35	341.79	339.58	341.91	0.001844	2.71	41.00	13.06	0.26

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	8872		Culvert									
Scriber	8863	Half 2-YR	27.63	337.99	339.70	338.85	339.76	0.002978	2.03	13.60	9.63	0.30
Scriber	8863	2-YR	55.26	337.99	340.39	339.26	340.50	0.003605	2.69	20.56	10.52	0.34
Scriber	8863	10-YR	80.05	337.99	340.98	339.57	341.12	0.003333	2.96	27.03	11.53	0.33
Scriber	8863	25-YR	92.25	337.99	341.24	339.69	341.39	0.003185	3.09	29.89	12.18	0.33
Scriber	8863	100-YR	110.29	337.99	341.72	339.90	341.87	0.002637	3.14	35.38	13.40	0.31
Scriber	8772	Half 2-YR	27.63	337.88	339.42	338.77	339.47	0.003366	1.92	14.62	15.32	0.33
Scriber	8772	2-YR	55.26	337.88	340.17	339.15	340.24	0.002114	2.17	27.43	52.82	0.29
Scriber	8772	10-YR	80.05	337.88	340.82	339.40	340.90	0.001487	2.24	39.17	67.88	0.25
Scriber	8772	25-YR	92.25	337.88	341.20	339.49	341.22	0.000565	1.52	113.11	85.00	0.16
Scriber	8772	100-YR	110.29	337.88	341.72	339.65	341.74	0.000342	1.32	158.41	89.03	0.13
Scriber	8745		Bridge									
Scriber	8718	Half 2-YR	27.63	337.17	339.29	338.18	339.30	0.000615	1.05	48.51	65.61	0.14
Scriber	8718	2-YR	55.26	337.17	340.03	338.54	340.04	0.000442	1.13	101.97	75.27	0.13
Scriber	8718	10-YR	80.05	337.17	340.56	338.80	340.57	0.000365	1.17	142.94	78.64	0.12
Scriber	8718	25-YR	92.25	337.17	340.82	338.87	340.83	0.000332	1.18	163.36	80.27	0.12
Scriber	8718	100-YR	110.29	337.17	341.20	339.00	341.21	0.000305	1.22	209.76	107.03	0.11
Scriber	8590	Half 2-YR	27.63	336.22	339.22	337.09	339.24	0.000436	1.08	33.73	28.10	0.12
Scriber	8590	2-YR	55.26	336.22	339.94	337.56	339.97	0.000629	1.52	63.40	66.94	0.15
Scriber	8590	10-YR	80.05	336.22	340.49	337.90	340.52	0.000550	1.57	105.03	80.00	0.14
Scriber	8590	25-YR	92.25	336.22	340.75	338.04	340.78	0.000495	1.55	126.69	83.24	0.13
Scriber	8590	100-YR	110.29	336.22	341.14	338.26	341.17	0.000432	1.54	160.59	94.55	0.13
Scriber	8427	Half 2-YR	27.63	336.00	339.19		339.20	0.000134	0.66	47.23	25.97	0.07
Scriber	8427	2-YR	55.26	336.00	339.89		339.91	0.000239	1.02	68.45	33.92	0.09
Scriber	8427	10-YR	80.05	336.00	340.43		340.45	0.000291	1.24	88.01	38.99	0.11
Scriber	8427	25-YR	92.25	336.00	340.69		340.72	0.000303	1.32	98.69	42.99	0.11
Scriber	8427	100-YR	110.29	336.00	341.08		341.11	0.000310	1.41	116.94	51.40	0.11
Scriber	8283	Half 2-YR	27.63	337.58	339.09		339.14	0.002635	1.91	15.82	13.16	0.28
Scriber	8283	2-YR	55.26	337.58	339.72		339.82	0.002925	2.57	24.70	14.98	0.32
Scriber	8283	10-YR	80.05	337.58	340.22		340.34	0.002852	2.94	32.61	16.68	0.33
Scriber	8283	25-YR	92.25	337.58	340.47		340.61	0.002700	3.05	36.98	17.54	0.32

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	8283	100-YR	110.29	337.58	340.85		341.00	0.002451	3.16	43.97	19.20	0.31
Scriber	8249	Half 2-YR	27.63	337.26	338.92	338.30	339.01	0.004811	2.49	12.92	12.85	0.38
Scriber	8249	2-YR	55.26	337.26	339.52	338.73	339.67	0.005120	3.28	21.34	16.52	0.41
Scriber	8249	10-YR	80.05	337.26	340.03	339.06	340.20	0.004484	3.58	29.15	19.75	0.40
Scriber	8249	25-YR	92.25	337.26	340.30	339.19	340.48	0.004056	3.65	33.25	21.44	0.39
Scriber	8249	100-YR	110.29	337.26	340.70	339.37	340.88	0.003508	3.71	39.33	23.91	0.37
Scriber	8183		Culvert									
Scriber	8107	Half 2-YR	47.60	336.46	338.05	337.40	338.15	0.004242	2.51	19.23	15.53	0.39
Scriber	8107	2-YR	95.20	336.46	338.65	337.84	338.83	0.004745	3.42	28.99	17.06	0.44
Scriber	8107	10-YR	149.38	336.46	339.15	338.22	339.42	0.005321	4.22	38.03	20.47	0.48
Scriber	8107	25-YR	178.35	336.46	339.39	338.43	339.70	0.005470	4.56	42.55	23.09	0.49
Scriber	8107	100-YR	223.88	336.46	339.64	338.71	340.05	0.006263	5.19	47.39	25.67	0.54
Scriber	8060	Half 2-YR	38.42	336.43	337.94	337.13	337.98	0.002034	1.55	24.73	22.67	0.26
Scriber	8060	2-YR	76.84	336.43	338.58	337.48	338.64	0.001780	1.89	44.28	47.99	0.26
Scriber	8060	10-YR	113.64	336.43	339.14	337.75	339.19	0.001247	1.93	81.36	78.17	0.23
Scriber	8060	25-YR	131.14	336.43	339.41	337.85	339.46	0.001024	1.89	103.73	87.15	0.21
Scriber	8060	100-YR	156.34	336.43	339.71	338.01	339.76	0.000945	1.96	146.16	185.31	0.21
Scriber	7965	Half 2-YR	38.42	336.37	337.42	337.13	337.57	0.010819	3.14	12.25	14.01	0.58
Scriber	7965	2-YR	76.84	336.37	338.12	337.52	338.31	0.006187	3.49	23.24	55.42	0.48
Scriber	7965	10-YR	113.64	336.37	338.75	337.82	338.95	0.004376	3.65	35.30	115.75	0.43
Scriber	7965	25-YR	131.14	336.37	339.05	337.96	339.25	0.003707	3.66	43.02	135.94	0.40
Scriber	7965	100-YR	156.34	336.37	339.34	338.13	339.56	0.003544	3.85	51.80	245.27	0.40
Scriber	7848	Half 2-YR	38.42	336.30	337.52	336.40	337.52	0.000017	0.15	255.49	225.78	0.02
Scriber	7848	2-YR	76.84	336.30	338.25	336.45	338.25	0.000013	0.18	423.92	235.39	0.02
Scriber	7848	10-YR	113.64	336.30	338.88	336.52	338.88	0.000011	0.20	583.37	288.69	0.02
Scriber	7848	25-YR	131.14	336.30	339.19	336.54	339.19	0.000010	0.21	694.55	394.17	0.02
Scriber	7848	100-YR	156.34	336.30	339.49	336.56	339.49	0.000010	0.22	815.32	409.56	0.02
Scriber	7663	Half 2-YR	38.42	336.17	337.51	336.26	337.51	0.000008	0.11	350.79	281.04	0.02
Scriber	7663	2-YR	76.84	336.17	338.25	336.31	338.25	0.000007	0.14	601.87	401.75	0.02
Scriber	7663	10-YR	113.64	336.17	338.88	336.36	338.88	0.000006	0.15	883.36	457.40	0.02
Scriber	7663	25-YR	131.14	336.17	339.18	336.36	339.19	0.000005	0.16	1041.74	601.44	0.02

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	7663	100-YR	156.34	336.17	339.49	336.40	339.49	0.000005	0.17	1223.15	604.86	0.02
Scriber	7271	Half 2-YR	38.42	335.88	337.50	336.24	337.50	0.001329	0.67	57.63	62.29	0.12
Scriber	7271	2-YR	76.84	335.88	338.23	336.46	338.24	0.001213	0.56	136.24	171.27	0.11
Scriber	7271	10-YR	113.64	335.88	338.87	336.62	338.87	0.000336	0.41	277.85	242.20	0.07
Scriber	7271	25-YR	131.14	335.88	339.18	336.70	339.18	0.000219	0.38	356.01	272.49	0.05
Scriber	7271	100-YR	156.34	335.88	339.48	336.79	339.48	0.000167	0.35	461.86	377.56	0.05
Scriber	7132	Half 2-YR	38.42	335.79	337.32	336.42	337.34	0.001021	1.19	32.40	37.00	0.19
Scriber	7132	2-YR	76.84	335.79	338.11	336.70	338.13	0.000501	1.10	103.73	125.92	0.14
Scriber	7132	10-YR	113.64	335.79	338.82	336.91	338.83	0.000264	0.99	203.83	155.49	0.11
Scriber	7132	25-YR	131.14	335.79	339.14	337.00	339.15	0.000209	0.96	255.09	169.26	0.10
Scriber	7132	100-YR	156.34	335.79	339.44	337.13	339.45	0.000190	0.98	310.52	191.64	0.10
Scriber	7105		Bridge									
Scriber	7095	Half 2-YR	38.42	335.79	337.26	336.42	337.28	0.001175	1.22	31.54	35.07	0.20
Scriber	7095	2-YR	76.84	335.79	338.01	336.71	338.03	0.000639	1.19	91.15	114.34	0.16
Scriber	7095	10-YR	113.64	335.79	338.75	336.91	338.76	0.000299	1.04	193.09	152.90	0.12
Scriber	7095	25-YR	131.14	335.79	339.09	336.99	339.10	0.000224	0.98	247.57	165.77	0.10
Scriber	7095	100-YR	156.34	335.79	339.41	337.12	339.42	0.000200	0.99	303.95	190.38	0.10
Scriber	7071	Half 2-YR	32.73	335.68	337.16	336.51	337.23	0.003784	2.02	16.19	15.87	0.35
Scriber	7071	2-YR	65.46	335.68	337.98	336.91	338.00	0.002114	1.23	53.43	77.63	0.26
Scriber	7071	10-YR	100.84	335.68	338.74	337.47	338.75	0.000687	0.77	130.65	131.22	0.14
Scriber	7071	25-YR	117.53	335.68	339.09	337.56	339.09	0.000453	0.66	178.38	144.72	0.10
Scriber	7071	100-YR	141.33	335.68	339.41	337.67	339.41	0.000369	0.62	226.17	156.01	0.09
Scriber	6811	Half 2-YR	32.73	334.95	336.96	335.81	336.97	0.000420	0.76	43.15	79.89	0.12
Scriber	6811	2-YR	65.46	334.95	337.91	336.06	337.91	0.000129	0.40	181.32	276.77	0.07
Scriber	6811	10-YR	100.84	334.95	338.72	336.27	338.72	0.000039	0.32	425.58	324.27	0.04
Scriber	6811	25-YR	117.53	334.95	339.07	336.36	339.07	0.000028	0.30	542.59	342.13	0.04
Scriber	6811	100-YR	141.33	334.95	339.39	336.46	339.39	0.000024	0.31	654.67	358.89	0.03
Scriber	6799		Bridge									
Scriber	6788	Half 2-YR	32.73	334.95	336.95	335.81	336.96	0.000431	0.76	42.79	79.29	0.12
Scriber	6788	2-YR	65.46	334.95	337.89	336.06	337.89	0.000137	0.40	176.44	275.73	0.07

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	6788	10-YR	100.84	334.95	338.71	336.27	338.71	0.000040	0.32	420.18	323.42	0.04
Scriber	6788	25-YR	117.53	334.95	339.06	336.36	339.06	0.000028	0.30	538.67	341.55	0.04
Scriber	6788	100-YR	141.33	334.95	339.38	336.46	339.39	0.000025	0.31	651.62	358.43	0.03
Scriber	6179	Half 2-YR	32.73	334.74	336.71	335.44	336.73	0.000322	0.97	33.67	22.68	0.14
Scriber	6179	2-YR	65.46	334.74	337.77	335.74	337.79	0.000209	1.08	65.05	38.68	0.12
Scriber	6179	10-YR	100.84	334.74	338.64	335.99	338.66	0.000142	1.09	131.85	122.12	0.11
Scriber	6179	25-YR	117.53	334.74	339.02	336.09	339.03	0.000109	1.03	183.40	159.71	0.09
Scriber	6179	100-YR	141.33	334.74	339.35	336.24	339.36	0.000092	1.00	239.14	187.75	0.09
Scriber	6169		Bridge									
Scriber	6159	Half 2-YR	32.73	334.74	336.57	335.44	336.59	0.000428	1.07	30.57	22.09	0.16
Scriber	6159	2-YR	65.46	334.74	337.53	335.74	337.56	0.000302	1.21	56.51	33.71	0.14
Scriber	6159	10-YR	100.84	334.74	338.39	335.99	338.42	0.000201	1.23	104.92	89.97	0.12
Scriber	6159	25-YR	117.53	334.74	338.84	336.09	338.85	0.000143	1.14	156.58	137.23	0.11
Scriber	6159	100-YR	141.33	334.74	339.22	336.24	339.23	0.000113	1.09	217.79	178.25	0.10
Scriber	5795	Half 2-YR	32.73	334.62	336.33	335.49	336.37	0.000947	1.42	23.10	19.45	0.23
Scriber	5795	2-YR	65.46	334.62	337.38	335.81	337.42	0.000496	1.45	45.19	23.18	0.18
Scriber	5795	10-YR	100.84	334.62	338.29	336.07	338.32	0.000335	1.51	71.98	271.68	0.16
Scriber	5795	25-YR	117.53	334.62	338.75	336.18	338.78	0.000257	1.46	95.36	306.31	0.14
Scriber	5795	100-YR	141.33	334.62	339.15	336.32	339.18	0.000225	1.47	121.05	323.32	0.13
Scriber	5757		Bridge									
Scriber	5719*	Half 2-YR	32.73	334.63	336.24	335.52	336.28	0.001265	1.58	20.76	18.95	0.27
Scriber	5719*	2-YR	65.46	334.63	337.20	335.84	337.24	0.000693	1.62	40.44	22.17	0.21
Scriber	5719*	10-YR	100.84	334.63	337.95	336.10	337.99	0.000557	1.74	58.28	49.49	0.20
Scriber	5719*	25-YR	117.53	334.63	338.34	336.21	338.39	0.000447	1.72	76.97	126.93	0.18
Scriber	5719*	100-YR	141.33	334.63	338.89	336.35	338.92	0.000272	1.51	131.51	207.98	0.15
Scriber	5680		Bridge									
Scriber	5642	Half 2-YR	32.73	334.64	336.12	335.42	336.16	0.001480	1.70	19.29	17.72	0.29
Scriber	5642	2-YR	65.46	334.64	337.04	335.75	337.09	0.000858	1.75	37.32	21.34	0.23
Scriber	5642	10-YR	100.84	334.64	337.66	336.02	337.72	0.000824	1.97	51.27	23.76	0.24
Scriber	5642	25-YR	117.53	334.64	337.98	336.14	338.04	0.000731	1.99	59.22	25.58	0.23

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	5642	100-YR	141.33	334.64	338.48	336.30	338.54	0.000583	1.97	72.84	28.74	0.21
Scriber	5614		Bridge									
Scriber	5600	Half 2-YR	32.73	334.44	335.75	335.36	335.84	0.003873	2.35	13.94	16.28	0.45
Scriber	5600	2-YR	65.46	334.44	336.53	335.69	336.62	0.001969	2.35	27.91	19.35	0.34
Scriber	5600	10-YR	100.84	334.44	337.33	335.97	337.41	0.001215	2.26	44.59	22.48	0.28
Scriber	5600	25-YR	117.53	334.44	337.72	336.08	337.80	0.000977	2.19	53.67	24.01	0.26
Scriber	5600	100-YR	141.33	334.44	338.30	336.24	338.37	0.000685	2.08	68.64	27.61	0.22
Scriber	5508	Half 2-YR	32.73	333.51	335.48	334.44	335.53	0.001362	1.77	18.45	13.75	0.27
Scriber	5508	2-YR	65.46	333.51	336.37	334.86	336.43	0.000959	1.98	36.95	33.30	0.24
Scriber	5508	10-YR	100.84	333.51	337.24	335.28	337.29	0.000486	1.79	73.11	45.93	0.18
Scriber	5508	25-YR	117.53	333.51	337.66	335.44	337.69	0.000365	1.69	91.62	83.43	0.16
Scriber	5508	100-YR	141.33	333.51	338.26	335.65	338.29	0.000254	1.58	119.77	96.99	0.14
Scriber	5407	Half 2-YR	32.73	332.62	335.40	333.62	335.44	0.000612	1.51	21.69	9.97	0.18
Scriber	5407	2-YR	65.46	332.62	336.26	334.15	336.33	0.000964	2.12	30.83	11.70	0.23
Scriber	5407	10-YR	100.84	332.62	337.12	334.60	337.21	0.000969	2.40	42.71	16.82	0.24
Scriber	5407	25-YR	117.53	332.62	337.54	334.78	337.63	0.000851	2.45	50.57	20.79	0.23
Scriber	5407	100-YR	141.33	332.62	338.16	335.04	338.25	0.000678	2.43	65.17	26.66	0.21
Scriber	5387	Half 2-YR	32.73	332.29	335.32	333.30	335.35	0.000503	1.41	23.22	9.86	0.16
Scriber	5387	2-YR	65.46	332.29	336.11	333.84	336.18	0.000896	2.08	31.52	11.31	0.22
Scriber	5387	10-YR	100.84	332.29	336.97	334.31	337.06	0.000966	2.39	42.59	15.57	0.23
Scriber	5387	25-YR	117.53	332.29	337.41	334.50	337.50	0.000860	2.43	50.17	19.47	0.23
Scriber	5387	100-YR	141.33	332.29	338.04	334.75	338.13	0.000682	2.41	64.57	25.57	0.21
Scriber	5328		Culvert									
Scriber	5249	Half 2-YR	35.65	331.20	335.30	332.04	335.31	0.000483	0.79	44.89	12.19	0.07
Scriber	5249	2-YR	71.29	331.20	335.99	332.46	336.02	0.001192	1.33	53.42	12.49	0.11
Scriber	5249	10-YR	113.49	331.20	336.62	332.86	336.67	0.002073	1.85	61.32	12.76	0.15
Scriber	5249	25-YR	134.87	331.20	336.89	333.04	336.96	0.002512	2.08	64.87	12.89	0.16
Scriber	5249	100-YR	166.96	331.20	337.26	333.30	337.35	0.003182	2.40	69.63	13.05	0.18
Scriber	5033	Half 2-YR	35.65	333.60	334.97		335.02	0.009522	1.76	21.06	29.85	0.33
Scriber	5033	2-YR	71.29	333.60	335.34		335.42	0.010843	2.37	34.02	41.41	0.38

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	5033	10-YR	113.49	333.60	335.58		335.72	0.013798	3.03	45.20	49.28	0.44
Scriber	5033	25-YR	134.87	333.60	335.69		335.84	0.014904	3.30	50.59	52.66	0.46
Scriber	5033	100-YR	166.96	333.60	335.88		336.05	0.014543	3.52	61.28	58.79	0.47
Scriber	4986.9*	Half 2-YR	35.65	333.47	334.81		334.82	0.002288	0.81	44.49	60.62	0.16
Scriber	4986.9*	2-YR	71.29	333.47	335.18		335.19	0.002453	1.08	68.43	70.87	0.18
Scriber	4986.9*	10-YR	113.49	333.47	335.36		335.39	0.003741	1.47	81.69	76.61	0.23
Scriber	4986.9*	25-YR	134.87	333.47	335.43		335.47	0.004337	1.65	87.64	79.05	0.25
Scriber	4986.9*	100-YR	166.96	333.47	335.66		335.70	0.003915	1.73	106.25	86.28	0.24
Scriber	4940.8*	Half 2-YR	35.65	333.33	334.76		334.76	0.000770	0.48	73.87	93.77	0.09
Scriber	4940.8*	2-YR	71.29	333.33	335.12		335.13	0.000892	0.66	109.56	103.67	0.11
Scriber	4940.8*	10-YR	113.49	333.33	335.26		335.28	0.001517	0.94	124.95	108.36	0.14
Scriber	4940.8*	25-YR	134.87	333.33	335.32		335.34	0.001838	1.06	131.53	110.33	0.16
Scriber	4940.8*	100-YR	166.96	333.33	335.56		335.58	0.001618	1.11	158.92	118.12	0.15
Scriber	4894.7*	Half 2-YR	35.65	333.20	334.74		334.74	0.000311	0.33	109.77	127.44	0.06
Scriber	4894.7*	2-YR	71.29	333.20	335.10		335.10	0.000398	0.46	157.26	137.48	0.07
Scriber	4894.7*	10-YR	113.49	333.20	335.22		335.23	0.000724	0.66	174.97	141.33	0.10
Scriber	4894.7*	25-YR	134.87	333.20	335.27		335.28	0.000904	0.76	182.16	142.93	0.11
Scriber	4894.7*	100-YR	166.96	333.20	335.52		335.53	0.000799	0.79	218.46	151.10	0.11
Scriber	4848.6*	Half 2-YR	35.65	333.06	334.73		334.73	0.000144	0.23	152.19	161.48	0.04
Scriber	4848.6*	2-YR	71.29	333.06	335.08		335.09	0.000202	0.34	211.57	171.94	0.05
Scriber	4848.6*	10-YR	113.49	333.06	335.20		335.20	0.000384	0.50	231.90	175.27	0.07
Scriber	4848.6*	25-YR	134.87	333.06	335.25		335.25	0.000488	0.57	239.82	176.57	0.08
Scriber	4848.6*	100-YR	166.96	333.06	335.50		335.50	0.000438	0.60	285.03	184.72	0.08
Scriber	4802.5*	Half 2-YR	35.65	332.93	334.72		334.72	0.000073	0.18	201.12	195.53	0.03
Scriber	4802.5*	2-YR	71.29	332.93	335.08		335.08	0.000112	0.26	272.31	206.24	0.04
Scriber	4802.5*	10-YR	113.49	332.93	335.19		335.19	0.000219	0.39	295.44	209.30	0.06
Scriber	4802.5*	25-YR	134.87	332.93	335.23		335.23	0.000282	0.45	304.18	210.45	0.06
Scriber	4802.5*	100-YR	166.96	332.93	335.48		335.49	0.000259	0.48	358.15	218.30	0.06
Scriber	4756.4*	Half 2-YR	35.65	332.80	334.72		334.72	0.000041	0.14	256.38	229.87	0.02
Scriber	4756.4*	2-YR	71.29	332.80	335.07		335.07	0.000066	0.21	339.39	240.50	0.03
Scriber	4756.4*	10-YR	113.49	332.80	335.18		335.18	0.000133	0.31	365.48	243.46	0.04
Scriber	4756.4*	25-YR	134.87	332.80	335.22		335.22	0.000173	0.36	375.13	244.52	0.05

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	4756.4*	100-YR	166.96	332.80	335.47		335.48	0.000162	0.39	437.80	251.67	0.05
Scriber	4710.3*	Half 2-YR	35.65	332.66	334.72		334.72	0.000024	0.11	317.93	264.14	0.02
Scriber	4710.3*	2-YR	71.29	332.66	335.07		335.07	0.000041	0.17	412.80	274.80	0.02
Scriber	4710.3*	10-YR	113.49	332.66	335.18		335.18	0.000085	0.26	441.96	277.89	0.04
Scriber	4710.3*	25-YR	134.87	332.66	335.22		335.22	0.000111	0.30	452.60	278.88	0.04
Scriber	4710.3*	100-YR	166.96	332.66	335.47		335.47	0.000106	0.32	524.00	285.41	0.04
Scriber	4664.2*	Half 2-YR	35.65	332.53	334.72		334.72	0.000015	0.09	385.28	298.38	0.01
Scriber	4664.2*	2-YR	71.29	332.53	335.07		335.07	0.000027	0.15	491.97	308.83	0.02
Scriber	4664.2*	10-YR	113.49	332.53	335.17		335.17	0.000056	0.22	524.26	311.89	0.03
Scriber	4664.2*	25-YR	134.87	332.53	335.21		335.21	0.000074	0.25	535.91	312.95	0.03
Scriber	4664.2*	100-YR	166.96	332.53	335.46		335.47	0.000073	0.28	615.99	319.40	0.03
Scriber	4618.1*	Half 2-YR	35.65	332.39	334.72		334.72	0.000010	0.08	459.12	332.46	0.01
Scriber	4618.1*	2-YR	71.29	332.39	335.07		335.07	0.000018	0.12	577.61	342.73	0.02
Scriber	4618.1*	10-YR	113.49	332.39	335.17		335.17	0.000038	0.19	613.07	345.75	0.02
Scriber	4618.1*	25-YR	134.87	332.39	335.21		335.21	0.000051	0.22	625.77	346.82	0.03
Scriber	4618.1*	100-YR	166.96	332.39	335.46		335.46	0.000051	0.24	714.46	353.36	0.03
Scriber	4572	Half 2-YR	35.65	332.26	334.72	333.04	334.72	0.000006	0.07	539.48	366.65	0.01
Scriber	4572	2-YR	71.29	332.26	335.07	333.12	335.07	0.000013	0.11	669.83	376.75	0.01
Scriber	4572	10-YR	113.49	332.26	335.17	333.19	335.17	0.000027	0.16	708.51	379.69	0.02
Scriber	4572	25-YR	134.87	332.26	335.21	333.21	335.21	0.000036	0.19	722.29	380.73	0.02
Scriber	4572	100-YR	166.96	332.26	335.46	333.26	335.46	0.000037	0.21	819.59	387.42	0.02
Scriber	4568		Culvert									
Scriber	4563	Half 2-YR	35.65	332.26	333.63		333.63	0.000252	0.21	170.24	319.29	0.05
Scriber	4563	2-YR	71.29	332.26	333.90		333.90	0.000265	0.28	257.16	329.16	0.06
Scriber	4563	10-YR	113.49	332.26	334.13		334.13	0.000291	0.34	333.71	337.61	0.06
Scriber	4563	25-YR	134.87	332.26	334.27		334.27	0.000263	0.35	383.49	343.01	0.06
Scriber	4563	100-YR	166.96	332.26	335.45		335.45	0.000036	0.21	848.08	526.19	0.02
Scriber	4279	Half 2-YR	35.65	331.52	333.47		333.47	0.002104	0.48	77.19	243.42	0.14
Scriber	4279	2-YR	71.29	331.52	333.75		333.75	0.001332	0.47	174.95	459.46	0.12
Scriber	4279	10-YR	113.49	331.52	334.00		334.00	0.000769	0.47	311.34	592.41	0.09
Scriber	4279	25-YR	134.87	331.52	334.17		334.17	0.000482	0.42	417.48	618.56	0.08

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	4279	100-YR	166.96	331.52	335.44		335.44	0.000025	0.17	1413.71	851.04	0.02
Scriber	3935	Half 2-YR	35.65	332.00	332.85	332.30	332.85	0.001594	0.59	60.62	116.16	0.13
Scriber	3935	2-YR	71.29	332.00	333.29	332.42	333.30	0.001337	0.65	110.40	251.09	0.13
Scriber	3935	10-YR	113.49	332.00	333.70	332.53	333.71	0.000909	0.68	166.38	354.95	0.11
Scriber	3935	25-YR	134.87	332.00	333.97	332.58	333.98	0.000670	0.66	204.22	401.00	0.10
Scriber	3935	100-YR	166.96	332.00	335.42	332.65	335.43	0.000101	0.40	416.02	486.39	0.04
Scriber	3114	Half 2-YR	35.65	328.66	330.47	329.63	330.52	0.006430	1.79	19.87	16.27	0.29
Scriber	3114	2-YR	71.29	328.66	331.29	330.03	331.36	0.005199	2.07	34.39	18.99	0.27
Scriber	3114	10-YR	113.49	328.66	332.35	330.39	332.41	0.003430	1.97	57.55	24.93	0.23
Scriber	3114	25-YR	134.87	328.66	332.97	330.53	333.02	0.002502	1.82	74.07	28.49	0.20
Scriber	3114	100-YR	166.96	328.66	335.25	330.74	335.27	0.000456	1.14	154.59	42.28	0.09
Scriber	3104		Bridge									
Scriber	3093	Half 2-YR	35.65	328.66	330.27		330.34	0.010777	2.13	16.71	15.62	0.36
Scriber	3093	2-YR	71.29	328.66	331.16		331.24	0.006486	2.24	31.84	18.54	0.30
Scriber	3093	10-YR	113.49	328.66	332.27		332.34	0.003761	2.04	55.56	24.46	0.24
Scriber	3093	25-YR	134.87	328.66	332.91		332.97	0.002651	1.86	72.46	28.16	0.20
Scriber	3093	100-YR	166.96	328.66	335.24		335.26	0.000460	1.14	154.18	42.22	0.09
Scriber	2967	Half 2-YR	35.65	328.08	329.81	328.89	329.82	0.002014	1.03	34.60	413.64	0.16
Scriber	2967	2-YR	71.29	328.08	330.95	329.14	330.96	0.000898	1.07	66.83	466.63	0.12
Scriber	2967	10-YR	113.49	328.08	332.14	329.38	332.16	0.000582	1.13	100.58	507.98	0.11
Scriber	2967	25-YR	134.87	328.08	332.81	329.47	332.83	0.000462	1.13	119.55	517.83	0.10
Scriber	2967	100-YR	166.96	328.08	335.21	329.61	335.23	0.000159	0.89	187.32	553.22	0.06
Scriber	2742		Culvert									
Scriber	2517	Half 2-YR	40.61	325.29	328.77	326.35	328.79	0.000387	1.26	32.21	12.78	0.14
Scriber	2517	2-YR	81.21	325.29	329.39	326.83	329.45	0.000899	1.97	41.28	32.91	0.22
Scriber	2517	10-YR	132.92	325.29	329.96	327.35	330.06	0.001305	2.58	51.59	96.44	0.27
Scriber	2517	25-YR	161.25	325.29	330.21	327.58	330.33	0.001443	2.87	56.21	120.10	0.29
Scriber	2517	100-YR	206.37	325.29	331.04	327.96	331.17	0.001037	2.87	71.96	211.96	0.26
Scriber	2501		Inl Struct									

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	2500	Half 2-YR	40.61	325.21	328.76	326.27	328.78	0.000361	1.23	32.96	12.78	0.14
Scriber	2500	2-YR	81.21	325.21	329.35	326.75	329.41	0.000875	1.96	41.47	30.55	0.22
Scriber	2500	10-YR	132.92	325.21	329.90	327.26	330.01	0.001328	2.59	51.41	89.57	0.28
Scriber	2500	25-YR	161.25	325.21	330.14	327.51	330.27	0.001492	2.89	55.75	115.80	0.30
Scriber	2500	100-YR	206.37	325.21	330.98	327.89	331.10	0.001065	2.88	71.54	206.25	0.26
Scriber	2485		Inl Struct									
Scriber	2477	Half 2-YR	40.61	327.34	328.41	328.41	328.78	0.020369	4.87	8.35	11.26	1.00
Scriber	2477	2-YR	81.21	327.34	328.86	328.86	329.39	0.018723	5.85	13.87	13.16	1.01
Scriber	2477	10-YR	132.92	327.34	329.32	329.32	329.97	0.017777	6.46	20.57	28.63	1.01
Scriber	2477	25-YR	161.25	327.34	329.54	329.54	330.23	0.017079	6.64	24.28	44.21	1.00
Scriber	2477	100-YR	206.37	327.34	330.75	329.81	331.05	0.003335	4.39	47.00	172.93	0.49
Scriber	2452	Half 2-YR	40.61	324.46	327.57	325.52	327.60	0.000523	1.48	27.43	16.87	0.15
Scriber	2452	2-YR	81.21	324.46	328.35	326.00	328.43	0.001132	2.31	35.14	21.33	0.23
Scriber	2452	10-YR	132.92	324.46	329.26	326.51	329.38	0.001626	2.83	46.98	38.56	0.29
Scriber	2452	25-YR	161.25	324.46	329.83	326.77	329.95	0.001503	2.83	57.05	96.12	0.29
Scriber	2452	100-YR	206.37	324.46	330.84	327.14	330.96	0.000942	2.71	76.09	186.28	0.24
Scriber	2396		Culvert									
Scriber	2339	Half 2-YR	40.61	323.90	327.42	325.55	327.48	0.001239	2.08	19.53	19.84	0.24
Scriber	2339	2-YR	81.21	323.90	328.00	326.32	328.17	0.002613	3.27	24.86	23.23	0.36
Scriber	2339	10-YR	132.92	323.90	328.59	327.03	328.88	0.003962	4.31	30.81	26.65	0.45
Scriber	2339	25-YR	161.25	323.90	328.87	327.36	329.22	0.004555	4.77	33.83	28.26	0.48
Scriber	2339	100-YR	206.37	323.90	329.25	327.80	329.70	0.005342	5.40	38.24	132.86	0.53
Scriber	2098	Half 2-YR	40.61	325.55	327.28	326.08	327.30	0.000464	1.20	33.95	20.85	0.17
Scriber	2098	2-YR	81.21	325.55	327.75	326.39	327.81	0.000833	1.84	44.05	21.50	0.23
Scriber	2098	10-YR	132.92	325.55	328.27	326.70	328.36	0.001115	2.40	55.36	22.20	0.27
Scriber	2098	25-YR	161.25	325.55	328.53	326.86	328.64	0.001220	2.64	61.11	28.72	0.28
Scriber	2098	100-YR	206.37	325.55	328.90	327.09	329.03	0.001350	2.97	69.53	74.30	0.30
Scriber	2052		Culvert									
Scriber	2006	Half 2-YR	39.05	325.00	327.27	325.50	327.27	0.000113	0.64	60.58	34.93	0.09
Scriber	2006	2-YR	78.10	325.00	327.73	325.77	327.74	0.000227	1.01	77.41	38.26	0.13

HEC-RAS Plan: Alt1(Min) River: Scriber_Creek Reach: Scriber (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)	
Scriber	2006	10-YR	132.88	325.00	328.22	326.08	328.25	0.000355	1.37	97.09	104.02	0.16
Scriber	2006	25-YR	164.43	325.00	328.46	326.24	328.49	0.000416	1.53	107.56	177.79	0.17
Scriber	2006	100-YR	216.58	325.00	328.80	326.46	328.84	0.000505	1.76	123.41	282.30	0.19
Scriber	1408	Half 2-YR	39.05	326.00	327.06	326.71	327.09	0.002268	1.40	27.87	385.68	0.32
Scriber	1408	2-YR	78.10	326.00	327.38	326.91	327.44	0.002066	1.80	43.44	409.56	0.33
Scriber	1408	10-YR	132.88	326.00	327.76	327.09	327.83	0.001899	2.17	61.28	409.57	0.34
Scriber	1408	25-YR	164.43	326.00	327.94	327.20	328.03	0.001839	2.34	70.32	409.57	0.34
Scriber	1408	100-YR	216.58	326.00	328.22	327.34	328.32	0.001792	2.59	83.61	461.60	0.35
Scriber	74	Half 2-YR	39.05	323.00	324.41	323.88	324.45	0.001740	1.51	25.82	32.35	0.30
Scriber	74	2-YR	78.10	323.00	324.86	324.15	324.92	0.001742	1.89	41.34	37.09	0.32
Scriber	74	10-YR	132.88	323.00	325.33	324.42	325.40	0.001741	2.22	59.74	41.93	0.33
Scriber	74	25-YR	164.43	323.00	325.55	324.55	325.63	0.001740	2.38	69.18	43.92	0.33
Scriber	74	100-YR	216.58	323.00	325.87	324.74	325.97	0.001740	2.59	83.76	46.82	0.34

Appendix B.3
HEC-RAS Output – Scenario 2

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber

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)	
Scriber	12724	Half 2-YR	26.58	365.25	367.09	366.98	367.43	0.027848	4.69	5.67	6.18	0.86
Scriber	12724	2-YR	53.16	365.25	368.08	367.53	368.32	0.008594	4.06	14.56	21.64	0.53
Scriber	12724	10-YR	90.13	365.25	368.52	368.04	368.93	0.011054	5.33	19.20	24.20	0.63
Scriber	12724	25-YR	111.63	365.25	368.96	368.29	369.37	0.008762	5.36	23.87	26.77	0.58
Scriber	12724	100-YR	147.45	365.25	369.86	368.62	370.22	0.005420	5.11	33.27	31.96	0.48
Scriber	12655		Culvert									
Scriber	12604	Half 2-YR	26.58	365.17	367.14	366.78	367.32	0.042895	3.43	7.74	7.93	0.59
Scriber	12604	2-YR	53.16	365.17	367.95	367.27	368.18	0.027263	3.80	14.01	12.26	0.50
Scriber	12604	10-YR	90.13	365.17	368.13	367.78	368.66	0.057032	5.86	15.45	18.82	0.74
Scriber	12604	25-YR	111.63	365.17	368.28	368.03	368.98	0.067308	6.70	16.77	24.70	0.82
Scriber	12604	100-YR	147.45	365.17	368.72	368.42	369.54	0.061678	7.28	20.59	58.09	0.81
Scriber	12597	Half 2-YR	26.58	365.11	367.10	366.44	367.20	0.005629	2.59	10.26	8.49	0.42
Scriber	12597	2-YR	53.16	365.11	367.94	366.94	368.03	0.007046	2.39	22.24	26.29	0.46
Scriber	12597	10-YR	90.13	365.11	368.34	367.65	368.37	0.002044	1.20	75.35	107.98	0.25
Scriber	12597	25-YR	111.63	365.11	368.60	367.90	368.62	0.001144	1.09	106.20	132.45	0.19
Scriber	12597	100-YR	147.45	365.11	369.11	367.99	369.13	0.000464	0.92	174.62	133.30	0.13
Scriber	12489	Half 2-YR	26.58	364.82	366.45	365.80	366.56	0.006093	2.70	9.85	7.36	0.41
Scriber	12489	2-YR	53.16	364.82	367.18	366.28	367.33	0.005652	3.22	19.98	21.38	0.41
Scriber	12489	10-YR	90.13	364.82	367.89	366.91	368.04	0.004227	3.43	42.15	43.87	0.37
Scriber	12489	25-YR	111.63	364.82	368.30	367.23	368.41	0.003090	3.22	62.41	56.60	0.32
Scriber	12489	100-YR	147.45	364.82	368.97	367.58	369.03	0.001676	2.70	110.62	84.51	0.25
Scriber	12484		Bridge									
Scriber	12479	Half 2-YR	26.58	364.82	366.37	365.80	366.50	0.007322	2.87	9.25	7.28	0.45
Scriber	12479	2-YR	53.16	364.82	367.10	366.28	367.27	0.006774	3.42	18.33	20.13	0.44
Scriber	12479	10-YR	90.13	364.82	367.79	366.91	367.97	0.005189	3.69	37.61	40.48	0.41
Scriber	12479	25-YR	111.63	364.82	368.18	367.23	368.32	0.003827	3.49	55.88	52.83	0.36
Scriber	12479	100-YR	147.45	364.82	368.87	367.58	368.96	0.002143	3.00	104.32	94.37	0.28
Scriber	12419	Half 2-YR	26.58	363.53	366.14	364.80	366.21	0.002897	2.14	12.49	8.54	0.27
Scriber	12419	2-YR	53.16	363.53	366.82	365.38	366.95	0.003861	2.98	21.33	16.34	0.32
Scriber	12419	10-YR	90.13	363.53	367.52	366.01	367.69	0.004043	3.57	34.57	21.43	0.34
Scriber	12419	25-YR	111.63	363.53	367.91	366.48	368.09	0.003758	3.71	43.56	24.29	0.34

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	12419	100-YR	147.45	363.53	368.64	366.95	368.79	0.002879	3.65	63.07	29.55	0.30
Scriber	12316	Half 2-YR	26.58	363.41	365.50	365.07	365.67	0.011831	3.30	8.05	7.71	0.57
Scriber	12316	2-YR	53.16	363.41	366.24	365.63	366.42	0.007010	3.50	18.38	16.90	0.48
Scriber	12316	10-YR	90.13	363.41	367.08	366.12	367.26	0.004362	3.62	34.71	22.04	0.40
Scriber	12316	25-YR	111.63	363.41	367.54	366.34	367.71	0.003460	3.61	45.63	24.74	0.37
Scriber	12316	100-YR	147.45	363.41	368.38	366.64	368.53	0.002260	3.44	69.75	32.61	0.31
Scriber	12282	Half 2-YR	26.58	363.31	365.38	364.34	365.45	0.003211	2.16	12.29	7.17	0.29
Scriber	12282	2-YR	53.16	363.31	366.07	364.82	366.21	0.004835	3.05	17.43	7.63	0.36
Scriber	12282	10-YR	90.13	363.31	366.86	365.36	367.09	0.005228	3.83	23.67	8.15	0.39
Scriber	12282	25-YR	111.63	363.31	367.29	365.64	367.56	0.005147	4.15	27.26	8.44	0.39
Scriber	12282	100-YR	147.45	363.31	368.10	366.05	368.40	0.004463	4.44	34.20	13.39	0.38
Scriber	12254		Culvert									
Scriber	12225	Half 2-YR	26.58	363.07	364.95	363.92	365.02	0.002774	2.03	13.12	7.86	0.28
Scriber	12225	2-YR	53.16	363.07	365.61	364.37	365.74	0.003934	2.88	18.80	10.98	0.34
Scriber	12225	10-YR	90.13	363.07	366.27	364.88	366.48	0.004691	3.73	25.03	14.61	0.38
Scriber	12225	25-YR	111.63	363.07	366.61	365.13	366.86	0.004924	4.11	28.39	17.03	0.40
Scriber	12225	100-YR	147.45	363.07	367.18	365.55	367.49	0.004914	4.57	34.03	21.10	0.41
Scriber	12115	Half 2-YR	26.58	362.92	364.45	363.93	364.56	0.006496	2.64	10.07	12.86	0.45
Scriber	12115	2-YR	53.16	362.92	364.81	364.37	365.05	0.009947	3.95	13.46	13.95	0.58
Scriber	12115	10-YR	90.13	362.92	365.38	364.80	365.74	0.009326	4.78	18.84	16.87	0.60
Scriber	12115	25-YR	111.63	362.92	365.78	365.01	366.16	0.007816	4.94	22.58	18.91	0.56
Scriber	12115	100-YR	147.45	362.92	366.51	365.35	366.90	0.005619	5.00	29.47	22.65	0.50
Scriber	12081		Culvert									
Scriber	12047	Half 2-YR	26.58	361.91	364.43	362.95	364.44	0.000370	0.89	30.68	21.94	0.12
Scriber	12047	2-YR	53.16	361.91	364.63	363.25	364.67	0.001022	1.59	34.68	24.57	0.20
Scriber	12047	10-YR	90.13	361.91	364.76	363.57	364.86	0.002379	2.52	37.16	26.18	0.30
Scriber	12047	25-YR	111.63	361.91	364.80	363.74	364.95	0.003424	3.07	37.94	26.70	0.37
Scriber	12047	100-YR	147.45	361.91	364.82	363.97	365.07	0.005811	4.02	38.28	26.92	0.48
Scriber	12031	Half 2-YR	25.68	364.04	364.28	364.28	364.39	0.065314	2.97	11.03	214.40	1.15
Scriber	12031	2-YR	51.35	364.04	364.41	364.41	364.58	0.053472	3.72	18.13	226.86	1.12

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	12031	10-YR	75.42	364.04	364.51	364.51	364.73	0.047326	4.18	24.16	236.79	1.11
Scriber	12031	25-YR	87.40	364.04	364.56	364.56	364.80	0.045742	4.39	26.91	241.14	1.11
Scriber	12031	100-YR	105.23	364.04	364.67	364.63	364.90	0.034350	4.33	33.47	251.16	0.99
Scriber	11917	Half 2-YR	25.68	362.00	362.57		362.58	0.001766	0.92	32.64	225.87	0.22
Scriber	11917	2-YR	51.35	362.00	362.80		362.82	0.002052	1.25	50.56	264.54	0.25
Scriber	11917	10-YR	75.42	362.00	363.53		363.54	0.000400	0.86	124.33	367.98	0.12
Scriber	11917	25-YR	87.40	362.00	364.68		364.68	0.000038	0.39	479.29	414.22	0.04
Scriber	11917	100-YR	105.23	362.00	364.81		364.81	0.000044	0.43	522.20	415.94	0.05
Scriber	11769	Half 2-YR	25.68	361.13	361.75	361.75	361.87	0.036960	3.17	12.16	48.39	0.94
Scriber	11769	2-YR	51.35	361.13	362.06		362.15	0.015492	2.81	32.48	104.19	0.66
Scriber	11769	10-YR	75.42	361.13	363.50		363.50	0.000171	0.68	236.69	274.89	0.09
Scriber	11769	25-YR	87.40	361.13	364.67		364.67	0.000033	0.41	466.71	315.58	0.04
Scriber	11769	100-YR	105.23	361.13	364.80		364.80	0.000041	0.47	492.87	316.96	0.05
Scriber	11723	Half 2-YR	25.68	360.20	361.07		361.11	0.006851	1.61	15.96	35.26	0.42
Scriber	11723	2-YR	51.35	360.20	362.06		362.07	0.000411	0.80	93.78	182.05	0.12
Scriber	11723	10-YR	75.42	360.20	363.49		363.50	0.000034	0.38	372.57	316.49	0.04
Scriber	11723	25-YR	87.40	360.20	364.67		364.67	0.000011	0.27	626.37	336.95	0.02
Scriber	11723	100-YR	105.23	360.20	364.80		364.80	0.000013	0.31	654.89	338.67	0.03
Scriber	11684	Half 2-YR	25.68	360.00	360.68		360.76	0.012015	2.24	11.49	23.60	0.56
Scriber	11684	2-YR	51.35	360.00	362.05		362.06	0.000480	0.80	66.84	154.89	0.13
Scriber	11684	10-YR	75.42	360.00	363.49		363.49	0.000032	0.36	399.18	265.94	0.04
Scriber	11684	25-YR	87.40	360.00	364.67		364.67	0.000009	0.23	735.64	294.00	0.02
Scriber	11684	100-YR	105.23	360.00	364.80		364.80	0.000011	0.27	773.54	294.90	0.02
Scriber	11626	Half 2-YR	25.68	358.08	360.51	359.17	360.56	0.001480	1.73	17.87	18.87	0.22
Scriber	11626	2-YR	51.35	358.08	362.00	359.70	362.02	0.000520	1.50	62.78	49.62	0.14
Scriber	11626	10-YR	75.42	358.08	363.49	360.09	363.49	0.000063	0.67	386.69	266.90	0.05
Scriber	11626	25-YR	87.40	358.08	364.67	360.30	364.67	0.000016	0.39	718.59	302.92	0.03
Scriber	11626	100-YR	105.23	358.08	364.80	360.56	364.80	0.000020	0.44	757.83	307.62	0.03
Scriber	11606	Half 2-YR	25.68	357.91	360.44	359.00	360.52	0.001521	2.27	11.29	8.24	0.26
Scriber	11606	2-YR	51.35	357.91	361.87	359.58	362.00	0.001292	2.86	17.97	15.88	0.26
Scriber	11606	10-YR	75.42	357.91	363.43	360.04	363.48	0.000444	2.10	125.14	234.05	0.16
Scriber	11606	25-YR	87.40	357.91	364.67	360.24	364.67	0.000042	0.56	475.08	266.03	0.04

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	11606	100-YR	105.23	357.91	364.80	360.53	364.80	0.000050	0.62	509.32	268.38	0.04
Scriber	11558		Culvert									
Scriber	11510	Half 2-YR	26.45	356.66	358.71	357.87	358.82	0.004689	2.73	9.70	6.44	0.37
Scriber	11510	2-YR	52.89	356.66	359.49	358.40	359.71	0.005278	3.73	14.18	7.77	0.42
Scriber	11510	10-YR	78.43	356.66	359.95	358.82	360.29	0.006626	4.67	16.78	10.05	0.48
Scriber	11510	25-YR	90.88	356.66	360.13	358.99	360.53	0.007278	5.10	17.82	11.02	0.51
Scriber	11510	100-YR	109.11	356.66	360.37	359.25	360.87	0.008218	5.69	19.18	12.28	0.55
Scriber	11342	Half 2-YR	26.45	356.35	357.90	357.28	357.99	0.005115	2.46	10.76	9.04	0.40
Scriber	11342	2-YR	52.89	356.35	358.67	357.72	358.78	0.005282	2.65	19.96	15.72	0.41
Scriber	11342	10-YR	78.43	356.35	359.14	358.05	359.26	0.004587	2.79	28.10	18.50	0.40
Scriber	11342	25-YR	90.88	356.35	359.33	358.27	359.46	0.004446	2.87	31.69	19.61	0.40
Scriber	11342	100-YR	109.11	356.35	359.59	358.49	359.73	0.004211	2.95	37.01	21.14	0.39
Scriber	11263	Half 2-YR	26.45	355.61	356.72	356.69	357.11	0.034325	5.01	5.28	6.10	0.95
Scriber	11263	2-YR	52.89	355.61	357.20	357.20	357.84	0.037063	6.41	8.25	6.43	1.00
Scriber	11263	10-YR	78.43	355.61	357.66	357.66	358.40	0.036600	6.94	11.30	7.52	1.00
Scriber	11263	25-YR	90.88	355.61	357.87	357.87	358.62	0.035758	6.96	13.06	8.61	1.00
Scriber	11263	100-YR	109.11	355.61	358.07	358.07	358.91	0.035458	7.39	14.77	9.07	1.00
Scriber	11234		Culvert									
Scriber	11205	Half 2-YR	26.45	354.57	356.70	355.68	356.74	0.001529	1.63	16.18	12.00	0.23
Scriber	11205	2-YR	52.89	354.57	357.40	356.05	357.48	0.001805	2.22	23.83	13.01	0.27
Scriber	11205	10-YR	78.43	354.57	357.88	356.35	357.99	0.002051	2.70	29.06	14.15	0.29
Scriber	11205	25-YR	90.88	354.57	358.07	356.48	358.20	0.002179	2.92	31.17	14.82	0.31
Scriber	11205	100-YR	109.11	354.57	358.32	356.65	358.48	0.002366	3.22	33.93	15.71	0.32
Scriber	11163	Half 2-YR	26.45	354.93	356.57		356.64	0.003630	2.13	12.44	10.40	0.34
Scriber	11163	2-YR	52.89	354.93	357.26		357.37	0.003398	2.63	20.40	12.64	0.35
Scriber	11163	10-YR	78.43	354.93	357.73		357.87	0.003579	3.06	26.65	14.25	0.37
Scriber	11163	25-YR	90.88	354.93	357.92		358.08	0.003700	3.24	29.40	14.90	0.38
Scriber	11163	100-YR	109.11	354.93	358.16		358.35	0.003808	3.50	33.24	16.44	0.39
Scriber	11030	Half 2-YR	26.45	354.39	356.07	355.29	356.15	0.003695	2.20	12.00	9.11	0.34
Scriber	11030	2-YR	52.89	354.39	356.80	355.73	356.91	0.003440	2.75	22.11	26.24	0.35

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	11030	10-YR	78.43	354.39	357.34	356.08	357.45	0.002771	2.90	42.53	49.37	0.32
Scriber	11030	25-YR	90.88	354.39	357.56	356.22	357.67	0.002467	2.90	54.83	58.51	0.31
Scriber	11030	100-YR	109.11	354.39	357.87	356.43	357.97	0.002086	2.86	74.81	70.90	0.29
Scriber	10984.3*	Half 2-YR	26.45	354.15	355.90	355.12	355.98	0.003784	2.24	11.82	8.89	0.34
Scriber	10984.3*	2-YR	52.89	354.15	356.63	355.57	356.75	0.003679	2.84	19.19	12.09	0.36
Scriber	10984.3*	10-YR	78.43	354.15	357.16	355.92	357.31	0.003372	3.19	31.93	35.80	0.35
Scriber	10984.3*	25-YR	90.88	354.15	357.40	356.07	357.55	0.003079	3.23	41.53	45.29	0.34
Scriber	10984.3*	100-YR	109.11	354.15	357.73	356.26	357.86	0.002620	3.22	58.77	58.93	0.32
Scriber	10938.6*	Half 2-YR	26.45	353.90	355.72	354.96	355.80	0.003956	2.28	11.58	8.63	0.35
Scriber	10938.6*	2-YR	52.89	353.90	356.45	355.40	356.58	0.003911	2.92	18.59	11.24	0.36
Scriber	10938.6*	10-YR	78.43	353.90	356.97	355.75	357.14	0.003863	3.38	25.63	20.51	0.38
Scriber	10938.6*	25-YR	90.88	353.90	357.20	355.90	357.39	0.003714	3.52	31.70	30.94	0.37
Scriber	10938.6*	100-YR	109.11	353.90	357.54	356.10	357.73	0.003288	3.58	44.62	45.83	0.36
Scriber	10893.*	Half 2-YR	26.45	353.66	355.53	354.79	355.61	0.004272	2.36	11.22	8.33	0.36
Scriber	10893.*	2-YR	52.89	353.66	356.25	355.23	356.39	0.004319	3.02	17.83	10.54	0.38
Scriber	10893.*	10-YR	78.43	353.66	356.77	355.59	356.96	0.004301	3.52	23.89	12.80	0.39
Scriber	10893.*	25-YR	90.88	353.66	356.99	355.74	357.21	0.004276	3.72	27.01	14.68	0.40
Scriber	10893.*	100-YR	109.11	353.66	357.34	355.95	357.56	0.003935	3.86	36.57	40.52	0.39
Scriber	10847.3*	Half 2-YR	26.45	353.41	355.31	354.61	355.41	0.004785	2.46	10.75	8.01	0.37
Scriber	10847.3*	2-YR	52.89	353.41	356.02	355.06	356.18	0.004992	3.17	16.88	9.83	0.40
Scriber	10847.3*	10-YR	78.43	353.41	356.53	355.41	356.74	0.004994	3.70	22.45	11.90	0.41
Scriber	10847.3*	25-YR	90.88	353.41	356.76	355.57	356.99	0.004958	3.91	25.25	13.01	0.42
Scriber	10847.3*	100-YR	109.11	353.41	357.11	355.78	357.36	0.004671	4.11	30.23	15.26	0.41
Scriber	10801.6*	Half 2-YR	26.45	353.17	355.05	354.43	355.16	0.006125	2.68	9.86	7.64	0.42
Scriber	10801.6*	2-YR	52.89	353.17	355.73	354.89	355.92	0.006558	3.46	15.37	8.93	0.44
Scriber	10801.6*	10-YR	78.43	353.17	356.23	355.25	356.48	0.006435	4.02	20.36	10.83	0.46
Scriber	10801.6*	25-YR	90.88	353.17	356.46	355.42	356.74	0.006316	4.23	22.91	11.68	0.46
Scriber	10801.6*	100-YR	109.11	353.17	356.82	355.63	357.12	0.005817	4.42	27.45	14.47	0.45
Scriber	10756	Half 2-YR	26.45	352.92	354.46	354.24	354.70	0.018741	3.92	6.74	6.95	0.70
Scriber	10756	2-YR	52.89	352.92	355.19	354.71	355.49	0.013584	4.37	12.12	7.66	0.61
Scriber	10756	10-YR	78.43	352.92	355.73	355.08	356.09	0.011498	4.80	16.56	9.14	0.58
Scriber	10756	25-YR	90.88	352.92	355.98	355.24	356.36	0.010579	4.96	18.75	10.03	0.57

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	10756	100-YR	109.11	352.92	356.41	355.47	356.79	0.008611	5.00	22.56	11.56	0.53
Scriber	10728		Culvert									
Scriber	10701	Half 2-YR	26.45	352.70	354.50	353.42	354.53	0.001076	1.47	18.02	15.25	0.20
Scriber	10701	2-YR	52.89	352.70	355.30	353.75	355.36	0.001145	1.97	26.82	16.69	0.22
Scriber	10701	10-YR	78.43	352.70	355.87	354.02	355.95	0.001250	2.37	33.08	17.72	0.24
Scriber	10701	25-YR	90.88	352.70	356.09	354.15	356.20	0.001316	2.55	35.59	18.13	0.25
Scriber	10701	100-YR	109.11	352.70	356.42	354.31	356.54	0.001377	2.79	39.17	21.18	0.26
Scriber	10557	Half 2-YR	26.45	352.32	354.17	353.31	354.25	0.004029	2.31	11.45	7.95	0.34
Scriber	10557	2-YR	52.89	352.32	354.90	353.79	355.04	0.004845	2.99	17.69	9.14	0.38
Scriber	10557	10-YR	78.43	352.32	355.41	354.17	355.59	0.005514	3.48	22.55	9.97	0.41
Scriber	10557	25-YR	90.88	352.32	355.60	354.33	355.81	0.005918	3.71	24.50	10.28	0.42
Scriber	10557	100-YR	109.11	352.32	355.90	354.57	356.14	0.006051	3.94	27.71	11.33	0.43
Scriber	10477	Half 2-YR	26.45	352.11	353.11	353.11	353.51	0.033019	5.08	5.20	6.50	0.99
Scriber	10477	2-YR	52.89	352.11	353.60	353.60	354.20	0.030277	6.23	8.49	7.25	1.00
Scriber	10477	10-YR	78.43	352.11	354.04	353.96	354.74	0.023741	6.70	11.71	7.94	0.93
Scriber	10477	25-YR	90.88	352.11	354.37	354.13	355.02	0.017037	6.43	14.13	8.45	0.81
Scriber	10477	100-YR	109.11	352.11	354.73	354.34	355.39	0.014078	6.53	16.70	9.00	0.76
Scriber	10450		Culvert									
Scriber	10422	Half 2-YR	26.45	350.59	352.69	351.71	352.77	0.002580	2.17	12.22	9.86	0.30
Scriber	10422	2-YR	52.89	350.59	353.42	352.18	353.56	0.003417	2.99	17.66	11.08	0.35
Scriber	10422	10-YR	78.43	350.59	353.94	352.54	354.15	0.004085	3.61	21.74	11.95	0.38
Scriber	10422	25-YR	90.88	350.59	354.16	352.70	354.40	0.004384	3.87	23.48	12.31	0.40
Scriber	10422	100-YR	109.11	350.59	354.44	352.94	354.72	0.004842	4.24	25.75	12.78	0.42
Scriber	10340	Half 2-YR	26.45	350.64	351.74	351.74	352.14	0.036301	5.07	5.22	6.57	1.00
Scriber	10340	2-YR	52.89	350.64	352.24	352.24	352.80	0.033016	5.98	8.85	7.89	1.00
Scriber	10340	10-YR	78.43	350.64	352.61	352.61	353.28	0.031988	6.59	11.91	8.86	1.00
Scriber	10340	25-YR	90.88	350.64	352.76	352.76	353.48	0.031535	6.82	13.33	9.27	1.00
Scriber	10340	100-YR	109.11	350.64	352.98	352.98	353.76	0.030672	7.09	15.40	9.85	1.00
Scriber	9965	Half 2-YR	26.45	348.02	350.01		350.04	0.000864	1.20	22.09	14.97	0.17
Scriber	9965	2-YR	52.89	348.02	350.46		350.51	0.001518	1.81	30.09	24.83	0.24

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9965	10-YR	78.43	348.02	350.74		350.82	0.002010	2.30	37.97	30.31	0.28
Scriber	9965	25-YR	90.88	348.02	350.83		350.93	0.002320	2.54	40.70	31.27	0.30
Scriber	9965	100-YR	109.11	348.02	350.97		351.09	0.002657	2.83	45.19	32.69	0.33
Scriber	9840	Half 2-YR	26.45	347.62	349.30	349.30	349.67	0.040089	4.91	5.39	7.16	1.00
Scriber	9840	2-YR	52.89	347.62	349.82	349.82	350.04	0.017929	4.23	21.04	55.47	0.72
Scriber	9840	10-YR	78.43	347.62	349.97	349.97	350.23	0.019429	4.82	30.51	68.56	0.77
Scriber	9840	25-YR	90.88	347.62	350.06	350.06	350.29	0.017409	4.77	36.61	69.87	0.73
Scriber	9840	100-YR	109.11	347.62	350.13	350.13	350.38	0.018125	5.06	41.90	70.98	0.76
Scriber	9764	Half 2-YR	26.45	344.99	348.26	345.91	348.28	0.000494	1.16	23.49	57.73	0.12
Scriber	9764	2-YR	52.89	344.99	349.00	346.41	349.04	0.000875	1.81	32.27	132.80	0.17
Scriber	9764	10-YR	78.43	344.99	349.27	346.80	349.36	0.001464	2.45	36.29	135.49	0.22
Scriber	9764	25-YR	90.88	344.99	349.37	346.98	349.49	0.001773	2.75	37.98	136.55	0.24
Scriber	9764	100-YR	109.11	344.99	349.51	347.21	349.66	0.002248	3.17	40.21	137.89	0.28
Scriber	9679	Half 2-YR	26.45	345.93	348.16	346.84	348.21	0.001556	1.81	16.81	126.14	0.22
Scriber	9679	2-YR	52.89	345.93	348.88	347.34	348.94	0.001644	2.27	41.79	185.18	0.24
Scriber	9679	10-YR	78.43	345.93	349.13	347.74	349.21	0.001961	2.63	60.29	188.54	0.27
Scriber	9679	25-YR	90.88	345.93	349.23	347.93	349.31	0.002101	2.78	67.55	189.84	0.28
Scriber	9679	100-YR	109.11	345.93	349.36	348.27	349.45	0.002301	2.99	76.88	191.58	0.29
Scriber	9634	Half 2-YR	26.45	346.65	347.57	347.57	347.98	0.038364	5.15	5.14	79.44	0.99
Scriber	9634	2-YR	52.89	346.65	348.07	348.07	348.69	0.036903	6.31	8.38	134.39	1.00
Scriber	9634	10-YR	78.43	346.65	348.66	348.66	348.99	0.015692	5.07	25.99	180.48	0.68
Scriber	9634	25-YR	90.88	346.65	348.77	348.76	349.09	0.015274	5.16	31.63	187.56	0.68
Scriber	9634	100-YR	109.11	346.65	349.08	348.88	349.26	0.008507	4.27	51.63	204.80	0.52
Scriber	9563	Half 2-YR	26.45	345.10	346.70	346.01	346.80	0.005750	2.60	10.18	7.26	0.39
Scriber	9563	2-YR	52.89	345.10	347.33	346.47	347.53	0.007248	3.55	14.90	7.62	0.45
Scriber	9563	10-YR	78.43	345.10	347.78	346.84	348.07	0.008064	4.29	18.38	7.88	0.49
Scriber	9563	25-YR	90.88	345.10	347.97	347.00	348.30	0.008447	4.62	19.86	7.98	0.50
Scriber	9563	100-YR	109.11	345.10	348.22	347.22	348.62	0.008938	5.05	21.90	8.12	0.53
Scriber	9555		Bridge									
Scriber	9548	Half 2-YR	26.45	345.03	346.49	346.14	346.66	0.012658	3.35	7.91	7.51	0.57
Scriber	9548	2-YR	52.89	345.03	347.09	346.59	347.37	0.011354	4.27	12.58	8.09	0.58

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9548	10-YR	78.43	345.03	347.49	346.94	347.89	0.012052	5.08	15.91	8.48	0.62
Scriber	9548	25-YR	90.88	345.03	347.65	347.10	348.11	0.012568	5.46	17.29	8.63	0.64
Scriber	9548	100-YR	109.11	345.03	347.87	347.32	348.41	0.013269	5.96	19.16	8.84	0.67
Scriber	9510	Half 2-YR	26.45	344.76	346.21	345.62	346.32	0.005832	2.58	10.23	8.31	0.41
Scriber	9510	2-YR	52.89	344.76	346.80	346.05	346.99	0.007232	3.46	15.28	8.86	0.46
Scriber	9510	10-YR	78.43	344.76	347.17	346.39	347.45	0.008550	4.20	18.79	10.29	0.52
Scriber	9510	25-YR	90.88	344.76	347.32	346.54	347.64	0.009112	4.54	20.36	11.19	0.54
Scriber	9510	100-YR	109.11	344.76	347.52	346.75	347.91	0.009764	4.98	22.74	12.43	0.57
Scriber	9500.3*	Half 2-YR	26.45	344.70	346.15	345.59	346.26	0.006061	2.62	10.09	8.45	0.42
Scriber	9500.3*	2-YR	52.89	344.70	346.72	346.02	346.91	0.007443	3.50	15.13	9.12	0.48
Scriber	9500.3*	10-YR	78.43	344.70	347.08	346.35	347.36	0.008751	4.25	18.62	10.62	0.53
Scriber	9500.3*	25-YR	90.88	344.70	347.22	346.50	347.55	0.009341	4.59	20.16	11.49	0.55
Scriber	9500.3*	100-YR	109.11	344.70	347.42	346.71	347.81	0.010001	5.03	22.51	12.70	0.58
Scriber	9490.6*	Half 2-YR	26.45	344.65	346.09	345.55	346.20	0.006410	2.67	9.91	8.61	0.44
Scriber	9490.6*	2-YR	52.89	344.65	346.65	345.99	346.84	0.007764	3.54	14.95	9.40	0.49
Scriber	9490.6*	10-YR	78.43	344.65	346.99	346.31	347.28	0.009057	4.30	18.42	11.02	0.55
Scriber	9490.6*	25-YR	90.88	344.65	347.12	346.47	347.46	0.009696	4.65	19.93	11.86	0.57
Scriber	9490.6*	100-YR	109.11	344.65	347.31	346.67	347.71	0.010376	5.10	22.25	13.05	0.60
Scriber	9480.9*	Half 2-YR	26.45	344.59	346.02	345.51	346.13	0.006672	2.70	9.80	8.77	0.45
Scriber	9480.9*	2-YR	52.89	344.59	346.56	345.93	346.76	0.008038	3.57	14.83	9.67	0.51
Scriber	9480.9*	10-YR	78.43	344.59	346.90	346.27	347.19	0.009373	4.33	18.27	11.41	0.56
Scriber	9480.9*	25-YR	90.88	344.59	347.02	346.42	347.36	0.010101	4.70	19.74	12.25	0.59
Scriber	9480.9*	100-YR	109.11	344.59	347.20	346.61	347.61	0.010832	5.16	22.02	13.45	0.62
Scriber	9471.2*	Half 2-YR	26.45	344.54	345.95	345.47	346.06	0.007091	2.74	9.64	8.95	0.47
Scriber	9471.2*	2-YR	52.89	344.54	346.48	345.89	346.68	0.008449	3.60	14.67	9.96	0.52
Scriber	9471.2*	10-YR	78.43	344.54	346.79	346.22	347.09	0.009859	4.39	18.06	11.86	0.58
Scriber	9471.2*	25-YR	90.88	344.54	346.91	346.36	347.26	0.010749	4.78	19.44	12.69	0.61
Scriber	9471.2*	100-YR	109.11	344.54	347.07	346.56	347.50	0.011583	5.25	21.66	13.92	0.65
Scriber	9461.5*	Half 2-YR	26.45	344.48	345.87	345.42	345.99	0.007497	2.78	9.52	9.13	0.48
Scriber	9461.5*	2-YR	52.89	344.48	346.39	345.84	346.60	0.008864	3.64	14.53	10.27	0.54
Scriber	9461.5*	10-YR	78.43	344.48	346.69	346.17	346.99	0.010463	4.45	17.83	12.35	0.60
Scriber	9461.5*	25-YR	90.88	344.48	346.78	346.31	347.15	0.011680	4.88	19.04	13.16	0.64

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9461.5*	100-YR	109.11	344.48	346.93	346.50	347.38	0.012834	5.39	21.09	14.40	0.68
Scriber	9451.8*	Half 2-YR	26.45	344.42	345.79	345.37	345.92	0.008053	2.83	9.34	9.30	0.50
Scriber	9451.8*	2-YR	52.89	344.42	346.29	345.79	346.51	0.009462	3.69	14.32	10.55	0.56
Scriber	9451.8*	10-YR	78.43	344.42	346.56	346.11	346.89	0.011436	4.55	17.46	12.94	0.63
Scriber	9451.8*	25-YR	90.88	344.42	346.63	346.25	347.03	0.013521	5.08	18.28	13.59	0.69
Scriber	9451.8*	100-YR	109.11	344.42	346.70	346.43	347.23	0.016756	5.82	19.35	14.39	0.77
Scriber	9442.1*	Half 2-YR	26.45	344.37	345.70	345.30	345.83	0.008709	2.89	9.16	9.47	0.52
Scriber	9442.1*	2-YR	52.89	344.37	346.19	345.73	346.41	0.010153	3.75	14.11	10.83	0.58
Scriber	9442.1*	10-YR	78.43	344.37	346.46	346.05	346.77	0.011851	4.56	20.30	49.61	0.64
Scriber	9442.1*	25-YR	90.88	344.37	346.49	346.18	346.89	0.014419	5.11	22.36	57.18	0.71
Scriber	9442.1*	100-YR	109.11	344.37	346.66	346.63	347.05	0.013104	5.20	32.11	59.32	0.69
Scriber	9432.4*	Half 2-YR	26.45	344.31	345.60	345.25	345.74	0.009657	2.97	8.91	9.59	0.54
Scriber	9432.4*	2-YR	52.89	344.31	346.10	345.66	346.31	0.010173	3.69	16.96	34.78	0.58
Scriber	9432.4*	10-YR	78.43	344.31	346.47	346.08	346.65	0.007265	3.69	35.18	54.36	0.51
Scriber	9432.4*	25-YR	90.88	344.31	346.52	346.32	346.73	0.008253	4.02	38.28	54.45	0.55
Scriber	9432.4*	100-YR	109.11	344.31	346.71	346.43	346.90	0.007209	4.03	48.29	54.72	0.52
Scriber	9422.7*	Half 2-YR	26.45	344.26	345.49	345.18	345.64	0.011350	3.12	8.49	9.63	0.58
Scriber	9422.7*	2-YR	52.89	344.26	345.97	345.59	346.20	0.011970	3.87	14.96	24.53	0.63
Scriber	9422.7*	10-YR	78.43	344.26	346.34	345.98	346.57	0.009004	4.01	26.91	33.27	0.57
Scriber	9422.7*	25-YR	90.88	344.26	346.20	346.16	346.61	0.017686	5.28	22.35	33.07	0.78
Scriber	9422.7*	100-YR	109.11	344.26	346.30	346.30	346.78	0.019496	5.79	25.52	33.21	0.83
Scriber	9413	Half 2-YR	26.45	344.20	345.11	345.11	345.44	0.035469	4.63	5.72	8.49	0.99
Scriber	9413	2-YR	52.89	344.20	345.52	345.52	345.99	0.032733	5.51	9.60	10.20	1.00
Scriber	9413	10-YR	78.43	344.20	345.88	345.83	346.40	0.027381	5.78	13.58	11.70	0.94
Scriber	9413	25-YR	90.88	344.20	346.18	346.18	346.44	0.012219	4.47	38.80	93.08	0.65
Scriber	9413	100-YR	109.11	344.20	346.32	346.26	346.54	0.010164	4.35	52.43	94.21	0.61
Scriber	9284	Half 2-YR	27.85	341.82	343.44	342.77	343.57	0.004598	3.03	10.97	8.63	0.42
Scriber	9284	2-YR	55.69	341.82	344.11	343.30	344.36	0.005322	4.13	17.31	10.15	0.48
Scriber	9284	10-YR	82.82	341.82	344.57	343.71	344.92	0.006141	5.02	22.18	11.21	0.54
Scriber	9284	25-YR	96.06	341.82	344.77	343.91	345.18	0.006377	5.36	24.51	11.68	0.55
Scriber	9284	100-YR	115.47	341.82	345.06	344.16	345.53	0.006565	5.80	27.99	12.35	0.57

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9213	Half 2-YR	27.85	341.23	343.07	342.35	343.20	0.005907	2.97	9.66	7.19	0.45
Scriber	9213	2-YR	55.69	341.23	343.65	342.95	343.91	0.007719	4.07	14.55	10.37	0.53
Scriber	9213	10-YR	82.82	341.23	344.03	343.39	344.41	0.008806	4.93	18.57	10.66	0.59
Scriber	9213	25-YR	96.06	341.23	344.25	343.58	344.65	0.008585	5.18	20.86	10.83	0.59
Scriber	9213	100-YR	115.47	341.23	344.56	343.81	345.01	0.008150	5.48	24.25	11.07	0.59
Scriber	9153	Half 2-YR	27.85	341.05	342.04	342.04	342.45	0.036650	5.14	5.42	6.95	0.99
Scriber	9153	2-YR	55.69	341.05	342.69	342.56	343.15	0.021459	5.52	10.94	13.45	0.82
Scriber	9153	10-YR	82.82	341.05	343.36	342.94	343.78	0.011954	5.34	18.11	14.02	0.65
Scriber	9153	25-YR	96.06	341.05	343.71	343.09	344.10	0.009222	5.21	22.02	14.33	0.59
Scriber	9153	100-YR	115.47	341.05	344.09	343.30	344.50	0.008049	5.35	26.25	14.65	0.56
Scriber	9116		Culvert									
Scriber	9079	Half 2-YR	27.85	340.17	342.22	341.37	342.28	0.002631	1.98	14.13	10.20	0.29
Scriber	9079	2-YR	55.69	340.17	343.04	341.79	343.13	0.002335	2.48	22.71	10.94	0.30
Scriber	9079	10-YR	82.82	340.17	343.63	342.10	343.76	0.002291	2.89	29.35	11.48	0.31
Scriber	9079	25-YR	96.06	340.17	343.90	342.25	344.05	0.002255	3.05	32.38	11.73	0.31
Scriber	9079	100-YR	115.47	340.17	344.24	342.43	344.41	0.002280	3.29	36.23	12.04	0.32
Scriber	9042	Half 2-YR	27.85	339.47	341.86	341.24	342.06	0.011746	3.63	7.67	5.34	0.53
Scriber	9042	2-YR	55.69	339.47	342.47	341.92	342.87	0.014472	5.05	11.35	6.68	0.62
Scriber	9042	10-YR	82.82	339.47	342.76	342.40	343.41	0.020329	6.54	13.61	10.16	0.76
Scriber	9042	25-YR	96.06	339.47	342.87	342.62	343.66	0.023245	7.20	14.81	12.12	0.82
Scriber	9042	100-YR	115.47	339.47	343.09	343.09	344.00	0.023920	7.76	17.93	14.30	0.84
Scriber	8966	Half 2-YR	27.85	339.27	340.21	340.21	340.59	0.037123	4.96	5.62	7.27	0.99
Scriber	8966	2-YR	55.69	339.27	340.66	340.66	341.25	0.033228	6.17	9.11	8.17	0.99
Scriber	8966	10-YR	82.82	339.27	341.17	341.02	341.80	0.022318	6.40	13.54	9.35	0.86
Scriber	8966	25-YR	96.06	339.27	341.44	341.20	342.06	0.018132	6.36	16.16	9.98	0.80
Scriber	8966	100-YR	115.47	339.27	341.94	341.42	342.49	0.011923	6.01	21.50	11.16	0.67
Scriber	8891	Half 2-YR	27.85	337.35	339.75	338.54	339.79	0.001524	1.61	17.28	10.23	0.22
Scriber	8891	2-YR	55.69	337.35	340.47	338.95	340.54	0.002121	2.23	25.01	11.22	0.26
Scriber	8891	10-YR	82.82	337.35	341.15	339.28	341.25	0.002092	2.51	33.02	12.17	0.27
Scriber	8891	25-YR	96.06	337.35	341.44	339.43	341.54	0.002030	2.64	36.53	12.57	0.27
Scriber	8891	100-YR	115.47	337.35	341.96	339.63	342.07	0.001723	2.70	43.07	13.29	0.25

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	8872		Culvert									
Scriber	8863	Half 2-YR	27.85	337.99	339.71	338.86	339.77	0.002988	2.04	13.66	9.64	0.30
Scriber	8863	2-YR	55.69	337.99	340.40	339.27	340.51	0.003610	2.69	20.67	10.53	0.34
Scriber	8863	10-YR	82.82	337.99	341.06	339.60	341.20	0.003231	2.98	27.86	11.72	0.33
Scriber	8863	25-YR	96.06	337.99	341.35	339.75	341.50	0.003022	3.10	31.15	12.46	0.33
Scriber	8863	100-YR	115.47	337.99	341.87	339.95	342.02	0.002480	3.14	37.11	13.78	0.30
Scriber	8772	Half 2-YR	27.85	337.88	339.42	338.78	339.48	0.003356	1.92	14.72	15.36	0.33
Scriber	8772	2-YR	55.69	337.88	340.18	339.16	340.25	0.002104	2.17	27.61	53.06	0.29
Scriber	8772	10-YR	82.82	337.88	340.90	339.42	340.98	0.001418	2.24	40.65	69.05	0.25
Scriber	8772	25-YR	96.06	337.88	341.32	339.53	341.34	0.000492	1.46	123.60	85.95	0.15
Scriber	8772	100-YR	115.47	337.88	341.88	339.69	341.89	0.000299	1.28	172.52	90.25	0.12
Scriber	8745		Bridge									
Scriber	8718	Half 2-YR	27.85	337.17	339.30	338.18	339.31	0.000614	1.06	48.97	65.84	0.14
Scriber	8718	2-YR	55.69	337.17	340.04	338.54	340.05	0.000441	1.13	102.63	75.33	0.13
Scriber	8718	10-YR	82.82	337.17	340.62	338.82	340.63	0.000358	1.18	147.50	79.01	0.12
Scriber	8718	25-YR	96.06	337.17	340.91	338.90	340.92	0.000317	1.18	170.91	80.94	0.11
Scriber	8718	100-YR	115.47	337.17	341.34	339.03	341.35	0.000274	1.18	224.89	107.04	0.11
Scriber	8590	Half 2-YR	27.85	336.22	339.23	337.10	339.24	0.000439	1.08	33.91	28.25	0.12
Scriber	8590	2-YR	55.69	336.22	339.95	337.56	339.98	0.000630	1.52	63.98	67.61	0.15
Scriber	8590	10-YR	82.82	336.22	340.55	337.93	340.58	0.000538	1.57	109.83	80.73	0.14
Scriber	8590	25-YR	96.06	336.22	340.85	338.09	340.88	0.000468	1.54	134.86	84.43	0.13
Scriber	8590	100-YR	115.47	336.22	341.29	338.32	341.31	0.000389	1.49	174.54	94.84	0.12
Scriber	8427	Half 2-YR	27.85	336.00	339.20		339.20	0.000135	0.67	47.40	26.05	0.07
Scriber	8427	2-YR	55.69	336.00	339.90		339.92	0.000240	1.03	68.73	34.00	0.10
Scriber	8427	10-YR	82.82	336.00	340.49		340.51	0.000294	1.26	90.33	39.55	0.11
Scriber	8427	25-YR	96.06	336.00	340.79		340.81	0.000302	1.33	102.99	45.11	0.11
Scriber	8427	100-YR	115.47	336.00	341.23		341.25	0.000299	1.41	124.84	54.64	0.11
Scriber	8283	Half 2-YR	27.85	337.58	339.09		339.15	0.002640	1.91	15.89	13.17	0.28
Scriber	8283	2-YR	55.69	337.58	339.73		339.82	0.002935	2.58	24.81	15.01	0.32
Scriber	8283	10-YR	82.82	337.58	340.28		340.40	0.002823	2.97	33.57	16.87	0.32
Scriber	8283	25-YR	96.06	337.58	340.57		340.71	0.002587	3.05	38.74	17.94	0.32

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	8283	100-YR	115.47	337.58	341.01		341.15	0.002261	3.14	47.03	19.90	0.30
Scriber	8249	Half 2-YR	27.85	337.26	338.93	338.30	339.02	0.004822	2.50	12.99	12.88	0.38
Scriber	8249	2-YR	55.69	337.26	339.52	338.74	339.68	0.005140	3.29	21.43	16.56	0.41
Scriber	8249	10-YR	82.82	337.26	340.09	339.09	340.27	0.004392	3.60	30.06	20.12	0.40
Scriber	8249	25-YR	96.06	337.26	340.41	339.23	340.58	0.003808	3.63	34.90	22.12	0.38
Scriber	8249	100-YR	115.47	337.26	340.87	339.43	341.04	0.003169	3.66	41.92	24.84	0.35
Scriber	8183		Culvert									
Scriber	8107	Half 2-YR	47.82	336.46	338.04	337.41	338.14	0.004366	2.54	19.12	15.51	0.39
Scriber	8107	2-YR	95.63	336.46	338.64	337.85	338.82	0.004940	3.47	28.70	16.97	0.44
Scriber	8107	10-YR	152.15	336.46	339.21	338.27	339.48	0.005046	4.18	39.22	21.44	0.47
Scriber	8107	25-YR	182.16	336.46	339.53	338.45	339.83	0.004736	4.40	45.32	24.47	0.46
Scriber	8107	100-YR	229.06	336.46	339.87	338.74	340.23	0.005048	4.90	51.70	28.84	0.49
Scriber	8060	Half 2-YR	37.96	336.43	337.94	337.12	337.97	0.002030	1.55	24.53	22.60	0.26
Scriber	8060	2-YR	75.91	336.43	338.56	337.47	338.62	0.001811	1.89	43.38	45.19	0.26
Scriber	8060	10-YR	112.92	336.43	339.22	337.74	339.26	0.001071	1.83	87.30	80.09	0.21
Scriber	8060	25-YR	130.59	336.43	339.56	337.85	339.61	0.000882	1.82	119.49	178.18	0.20
Scriber	8060	100-YR	156.09	336.43	339.96	338.00	339.99	0.000596	1.65	194.61	204.80	0.17
Scriber	7965	Half 2-YR	37.96	336.37	337.30	337.12	337.50	0.016867	3.58	10.61	13.49	0.71
Scriber	7965	2-YR	75.91	336.37	338.09	337.51	338.28	0.006449	3.52	22.71	53.33	0.49
Scriber	7965	10-YR	112.92	336.37	338.88	337.81	339.06	0.003516	3.41	38.55	123.09	0.39
Scriber	7965	25-YR	130.59	336.37	339.28	337.95	339.44	0.002673	3.29	49.91	153.45	0.35
Scriber	7965	100-YR	156.09	336.37	339.70	338.13	339.85	0.002249	3.32	64.72	288.03	0.33
Scriber	7848	Half 2-YR	37.96	336.30	337.42	336.40	337.43	0.000022	0.16	234.94	224.64	0.03
Scriber	7848	2-YR	75.91	336.30	338.22	336.46	338.22	0.000014	0.19	417.16	234.97	0.02
Scriber	7848	10-YR	112.92	336.30	339.00	336.51	339.00	0.000009	0.19	622.34	376.17	0.02
Scriber	7848	25-YR	130.59	336.30	339.39	336.54	339.39	0.000008	0.19	775.76	404.31	0.02
Scriber	7848	100-YR	156.09	336.30	339.80	336.56	339.80	0.000007	0.20	946.12	413.82	0.02
Scriber	7663	Half 2-YR	37.96	336.17	337.42	336.26	337.42	0.000010	0.12	325.12	278.67	0.02
Scriber	7663	2-YR	75.91	336.17	338.22	336.31	338.22	0.000007	0.14	590.34	400.04	0.02
Scriber	7663	10-YR	112.92	336.17	339.00	336.36	339.00	0.000005	0.14	937.12	460.04	0.02
Scriber	7663	25-YR	130.59	336.17	339.39	336.37	339.39	0.000004	0.14	1164.53	603.76	0.01

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	7663	100-YR	156.09	336.17	339.80	336.40	339.80	0.000004	0.15	1416.14	609.34	0.01
Scriber	7271	Half 2-YR	37.96	335.88	337.40	336.24	337.41	0.000325	0.72	52.94	42.06	0.11
Scriber	7271	2-YR	75.91	335.88	338.20	336.45	338.21	0.000418	0.58	131.59	157.17	0.11
Scriber	7271	10-YR	112.92	335.88	338.99	336.62	338.99	0.000112	0.37	307.27	252.26	0.06
Scriber	7271	25-YR	130.59	335.88	339.38	336.70	339.38	0.000068	0.32	426.07	375.95	0.05
Scriber	7271	100-YR	156.09	335.88	339.80	336.79	339.80	0.000046	0.28	583.91	382.12	0.04
Scriber	7132	Half 2-YR	37.96	335.79	337.31	336.41	337.34	0.001011	1.18	32.25	36.83	0.19
Scriber	7132	2-YR	75.91	335.79	338.10	336.69	338.13	0.000706	1.38	62.15	124.53	0.17
Scriber	7132	10-YR	112.92	335.79	338.94	336.90	338.96	0.000443	1.38	97.45	159.79	0.15
Scriber	7132	25-YR	130.59	335.79	339.34	337.01	339.36	0.000369	1.38	114.40	184.70	0.14
Scriber	7132	100-YR	156.09	335.79	339.75	337.13	339.78	0.000341	1.44	132.10	197.56	0.13
Scriber	7105		Bridge									
Scriber	7095	Half 2-YR	37.96	335.79	337.26	336.41	337.28	0.001161	1.21	31.42	34.93	0.20
Scriber	7095	2-YR	75.91	335.79	338.00	336.70	338.03	0.000812	1.42	58.80	112.44	0.18
Scriber	7095	10-YR	112.92	335.79	338.75	336.90	338.78	0.000547	1.46	88.61	152.69	0.16
Scriber	7095	25-YR	130.59	335.79	339.09	337.00	339.12	0.000472	1.47	102.45	165.67	0.15
Scriber	7095	100-YR	156.09	335.79	339.41	337.12	339.45	0.000470	1.57	115.29	190.62	0.15
Scriber	7071	Half 2-YR	32.55	335.68	337.16	336.51	337.22	0.003785	2.02	16.13	15.85	0.35
Scriber	7071	2-YR	65.10	335.68	337.97	336.91	338.00	0.002134	1.23	52.89	76.57	0.26
Scriber	7071	10-YR	100.82	335.68	338.74	337.47	338.75	0.000688	0.77	130.54	131.18	0.14
Scriber	7071	25-YR	117.91	335.68	339.09	337.56	339.10	0.000451	0.66	179.13	144.91	0.10
Scriber	7071	100-YR	142.54	335.68	339.42	337.68	339.42	0.000368	0.63	228.03	156.43	0.09
Scriber	6811	Half 2-YR	32.55	334.95	336.95	335.82	336.96	0.000421	0.76	42.98	79.66	0.12
Scriber	6811	2-YR	65.10	334.95	337.90	336.06	337.90	0.000131	0.40	179.08	276.29	0.07
Scriber	6811	10-YR	100.82	334.95	338.72	336.27	338.72	0.000039	0.32	425.29	324.22	0.04
Scriber	6811	25-YR	117.91	334.95	339.08	336.36	339.08	0.000028	0.30	544.39	342.40	0.04
Scriber	6811	100-YR	142.54	334.95	339.40	336.47	339.41	0.000024	0.31	658.95	359.54	0.03
Scriber	6799		Bridge									
Scriber	6788	Half 2-YR	32.55	334.95	336.94	335.82	336.95	0.000432	0.76	42.62	78.82	0.12
Scriber	6788	2-YR	65.10	334.95	337.88	336.06	337.89	0.000139	0.41	174.22	275.26	0.07

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	6788	10-YR	100.82	334.95	338.70	336.27	338.71	0.000040	0.32	419.86	323.37	0.04
Scriber	6788	25-YR	117.91	334.95	339.07	336.36	339.07	0.000028	0.30	540.50	341.82	0.04
Scriber	6788	100-YR	142.54	334.95	339.40	336.47	339.40	0.000025	0.31	655.91	359.08	0.03
Scriber	6179	Half 2-YR	32.55	334.74	336.71	335.44	336.72	0.000322	0.97	33.56	22.66	0.14
Scriber	6179	2-YR	65.10	334.74	337.76	335.73	337.78	0.000210	1.08	64.70	38.49	0.12
Scriber	6179	10-YR	100.82	334.74	338.64	335.99	338.66	0.000142	1.09	131.72	122.04	0.11
Scriber	6179	25-YR	117.91	334.74	339.02	336.10	339.03	0.000109	1.03	184.27	160.39	0.09
Scriber	6179	100-YR	142.54	334.74	339.36	336.24	339.37	0.000092	1.00	241.20	188.25	0.09
Scriber	6169		Bridge									
Scriber	6159	Half 2-YR	32.55	334.74	336.57	335.44	336.59	0.000427	1.07	30.47	22.07	0.16
Scriber	6159	2-YR	65.10	334.74	337.53	335.73	337.55	0.000302	1.21	56.23	33.54	0.14
Scriber	6159	10-YR	100.82	334.74	338.39	335.99	338.42	0.000201	1.23	104.81	89.78	0.12
Scriber	6159	25-YR	117.91	334.74	338.84	336.10	338.86	0.000142	1.14	157.43	137.78	0.11
Scriber	6159	100-YR	142.54	334.74	339.23	336.24	339.25	0.000112	1.09	220.04	179.29	0.10
Scriber	5795	Half 2-YR	32.55	334.62	336.33	335.49	336.36	0.000947	1.41	23.01	19.44	0.23
Scriber	5795	2-YR	65.10	334.62	337.37	335.81	337.41	0.000497	1.45	45.00	23.14	0.18
Scriber	5795	10-YR	100.82	334.62	338.29	336.07	338.32	0.000336	1.51	71.92	271.65	0.16
Scriber	5795	25-YR	117.91	334.62	338.76	336.18	338.79	0.000257	1.46	95.77	306.47	0.14
Scriber	5795	100-YR	142.54	334.62	339.16	336.34	339.19	0.000225	1.47	121.90	323.57	0.13
Scriber	5757		Bridge									
Scriber	5719*	Half 2-YR	32.55	334.63	336.24	335.51	336.28	0.001267	1.57	20.68	18.94	0.27
Scriber	5719*	2-YR	65.10	334.63	337.19	335.84	337.23	0.000694	1.62	40.28	22.14	0.21
Scriber	5719*	10-YR	100.82	334.63	337.95	336.10	337.99	0.000558	1.74	58.25	49.44	0.20
Scriber	5719*	25-YR	117.91	334.63	338.35	336.21	338.39	0.000446	1.72	77.47	127.40	0.18
Scriber	5719*	100-YR	142.54	334.63	338.90	336.36	338.93	0.000269	1.50	133.49	212.03	0.14
Scriber	5680		Bridge									
Scriber	5642	Half 2-YR	32.55	334.64	336.11	335.42	336.16	0.001482	1.69	19.21	17.70	0.29
Scriber	5642	2-YR	65.10	334.64	337.03	335.74	337.08	0.000857	1.75	37.20	21.32	0.23
Scriber	5642	10-YR	100.82	334.64	337.66	336.02	337.72	0.000825	1.97	51.24	23.76	0.24
Scriber	5642	25-YR	117.91	334.64	337.99	336.14	338.05	0.000732	1.99	59.31	25.61	0.23

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	5642	100-YR	142.54	334.64	338.50	336.30	338.56	0.000583	1.97	73.32	28.85	0.21
Scriber	5614		Bridge									
Scriber	5600	Half 2-YR	32.55	334.44	335.75	335.36	335.83	0.003893	2.35	13.86	16.26	0.45
Scriber	5600	2-YR	65.10	334.44	336.53	335.68	336.61	0.001972	2.34	27.78	19.33	0.34
Scriber	5600	10-YR	100.82	334.44	337.33	335.96	337.41	0.001218	2.26	44.54	22.47	0.28
Scriber	5600	25-YR	117.91	334.44	337.73	336.09	337.80	0.000979	2.19	53.75	24.02	0.26
Scriber	5600	100-YR	142.54	334.44	338.32	336.25	338.39	0.000684	2.08	69.12	27.71	0.22
Scriber	5508	Half 2-YR	32.55	333.51	335.48	334.44	335.53	0.001359	1.77	18.39	13.72	0.27
Scriber	5508	2-YR	65.10	333.51	336.36	334.86	336.42	0.000961	1.98	36.73	33.09	0.24
Scriber	5508	10-YR	100.82	333.51	337.24	335.29	337.28	0.000487	1.79	73.00	45.59	0.18
Scriber	5508	25-YR	117.91	333.51	337.66	335.45	337.70	0.000365	1.69	91.77	83.50	0.16
Scriber	5508	100-YR	142.54	333.51	338.28	335.66	338.31	0.000253	1.58	120.60	97.43	0.14
Scriber	5407	Half 2-YR	32.55	332.62	335.40	333.62	335.43	0.000608	1.50	21.65	9.96	0.18
Scriber	5407	2-YR	65.10	332.62	336.25	334.15	336.32	0.000959	2.12	30.76	11.68	0.23
Scriber	5407	10-YR	100.82	332.62	337.12	334.59	337.21	0.000971	2.41	42.66	16.79	0.24
Scriber	5407	25-YR	117.91	332.62	337.55	334.79	337.64	0.000854	2.45	50.63	20.81	0.23
Scriber	5407	100-YR	142.54	332.62	338.18	335.04	338.26	0.000679	2.43	65.63	26.82	0.21
Scriber	5387	Half 2-YR	32.55	332.29	335.31	333.29	335.34	0.000500	1.40	23.18	9.86	0.16
Scriber	5387	2-YR	65.10	332.29	336.11	333.84	336.17	0.000890	2.07	31.47	11.30	0.22
Scriber	5387	10-YR	100.82	332.29	336.97	334.30	337.06	0.000969	2.39	42.55	15.55	0.23
Scriber	5387	25-YR	117.91	332.29	337.41	334.50	337.50	0.000864	2.44	50.21	19.49	0.23
Scriber	5387	100-YR	142.54	332.29	338.06	334.76	338.15	0.000683	2.42	65.00	25.73	0.21
Scriber	5328		Culvert									
Scriber	5249	Half 2-YR	35.53	331.20	335.30	332.05	335.31	0.000481	0.79	44.85	12.19	0.07
Scriber	5249	2-YR	71.05	331.20	335.99	332.46	336.02	0.001187	1.33	53.37	12.49	0.11
Scriber	5249	10-YR	113.29	331.20	336.61	332.85	336.67	0.002069	1.85	61.28	12.76	0.15
Scriber	5249	25-YR	134.80	331.20	336.89	333.04	336.96	0.002511	2.08	64.86	12.89	0.16
Scriber	5249	100-YR	167.23	331.20	337.26	333.31	337.35	0.003188	2.40	69.66	13.05	0.18
Scriber	5033	Half 2-YR	35.53	333.60	334.97		335.02	0.009559	1.76	20.98	29.79	0.34
Scriber	5033	2-YR	71.05	333.60	335.34		335.42	0.010798	2.37	33.98	41.38	0.38

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	5033	10-YR	113.29	333.60	335.58		335.71	0.013814	3.03	45.11	49.22	0.44
Scriber	5033	25-YR	134.80	333.60	335.69		335.84	0.014839	3.29	50.66	52.70	0.46
Scriber	5033	100-YR	167.23	333.60	335.89		336.06	0.014413	3.51	61.60	58.96	0.47
Scriber	4986.9*	Half 2-YR	35.53	333.47	334.80		334.81	0.002320	0.81	44.20	60.52	0.16
Scriber	4986.9*	2-YR	71.05	333.47	335.18		335.19	0.002434	1.08	68.46	70.88	0.18
Scriber	4986.9*	10-YR	113.29	333.47	335.35		335.39	0.003755	1.47	81.48	76.52	0.23
Scriber	4986.9*	25-YR	134.80	333.47	335.44		335.48	0.004286	1.64	87.98	79.19	0.24
Scriber	4986.9*	100-YR	167.23	333.47	335.67		335.71	0.003844	1.72	107.09	86.60	0.24
Scriber	4940.8*	Half 2-YR	35.53	333.33	334.75		334.75	0.000782	0.49	73.34	93.64	0.10
Scriber	4940.8*	2-YR	71.05	333.33	335.12		335.13	0.000883	0.66	109.64	103.69	0.11
Scriber	4940.8*	10-YR	113.29	333.33	335.26		335.27	0.001524	0.94	124.61	108.26	0.14
Scriber	4940.8*	25-YR	134.80	333.33	335.33		335.35	0.001809	1.06	132.20	110.53	0.16
Scriber	4940.8*	100-YR	167.23	333.33	335.58		335.59	0.001582	1.10	160.32	118.50	0.15
Scriber	4894.7*	Half 2-YR	35.53	333.20	334.73		334.73	0.000316	0.33	109.02	127.30	0.06
Scriber	4894.7*	2-YR	71.05	333.20	335.10		335.10	0.000395	0.46	157.40	137.51	0.07
Scriber	4894.7*	10-YR	113.29	333.20	335.22		335.23	0.000728	0.66	174.50	141.22	0.10
Scriber	4894.7*	25-YR	134.80	333.20	335.28		335.29	0.000888	0.75	183.15	143.15	0.11
Scriber	4894.7*	100-YR	167.23	333.20	335.53		335.54	0.000780	0.79	220.42	151.53	0.11
Scriber	4848.6*	Half 2-YR	35.53	333.06	334.72		334.72	0.000146	0.24	151.22	161.33	0.04
Scriber	4848.6*	2-YR	71.05	333.06	335.08		335.09	0.000200	0.34	211.77	171.97	0.05
Scriber	4848.6*	10-YR	113.29	333.06	335.20		335.20	0.000385	0.50	231.31	175.18	0.07
Scriber	4848.6*	25-YR	134.80	333.06	335.25		335.26	0.000479	0.57	241.13	176.80	0.08
Scriber	4848.6*	100-YR	167.23	333.06	335.51		335.52	0.000428	0.60	287.52	185.18	0.08
Scriber	4802.5*	Half 2-YR	35.53	332.93	334.72		334.72	0.000074	0.18	199.93	195.36	0.03
Scriber	4802.5*	2-YR	71.05	332.93	335.08		335.08	0.000111	0.26	272.56	206.27	0.04
Scriber	4802.5*	10-YR	113.29	332.93	335.19		335.19	0.000220	0.39	294.72	209.20	0.06
Scriber	4802.5*	25-YR	134.80	332.93	335.24		335.24	0.000277	0.45	305.81	210.66	0.06
Scriber	4802.5*	100-YR	167.23	332.93	335.50		335.50	0.000253	0.47	361.17	218.80	0.06
Scriber	4756.4*	Half 2-YR	35.53	332.80	334.71		334.72	0.000041	0.14	254.97	229.69	0.02
Scriber	4756.4*	2-YR	71.05	332.80	335.08		335.08	0.000066	0.21	339.68	240.54	0.03
Scriber	4756.4*	10-YR	113.29	332.80	335.18		335.18	0.000133	0.31	364.63	243.37	0.04
Scriber	4756.4*	25-YR	134.80	332.80	335.23		335.23	0.000170	0.36	377.06	244.73	0.05

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	4756.4*	100-YR	167.23	332.80	335.49		335.49	0.000159	0.39	441.34	252.10	0.05
Scriber	4710.3*	Half 2-YR	35.53	332.66	334.71		334.71	0.000024	0.11	316.31	263.95	0.02
Scriber	4710.3*	2-YR	71.05	332.66	335.07		335.07	0.000041	0.17	413.14	274.84	0.02
Scriber	4710.3*	10-YR	113.29	332.66	335.17		335.17	0.000085	0.26	441.00	277.80	0.04
Scriber	4710.3*	25-YR	134.80	332.66	335.22		335.22	0.000109	0.30	454.83	279.08	0.04
Scriber	4710.3*	100-YR	167.23	332.66	335.48		335.48	0.000104	0.32	528.05	285.85	0.04
Scriber	4664.2*	Half 2-YR	35.53	332.53	334.71		334.71	0.000015	0.09	383.45	298.19	0.01
Scriber	4664.2*	2-YR	71.05	332.53	335.07		335.07	0.000027	0.15	492.37	308.87	0.02
Scriber	4664.2*	10-YR	113.29	332.53	335.17		335.17	0.000056	0.22	523.18	311.79	0.03
Scriber	4664.2*	25-YR	134.80	332.53	335.22		335.22	0.000073	0.25	538.44	313.18	0.03
Scriber	4664.2*	100-YR	167.23	332.53	335.48		335.48	0.000071	0.27	620.53	319.76	0.03
Scriber	4618.1*	Half 2-YR	35.53	332.39	334.71		334.71	0.000010	0.08	457.07	332.28	0.01
Scriber	4618.1*	2-YR	71.05	332.39	335.07		335.07	0.000018	0.12	578.05	342.77	0.02
Scriber	4618.1*	10-YR	113.29	332.39	335.17		335.17	0.000038	0.19	611.86	345.65	0.02
Scriber	4618.1*	25-YR	134.80	332.39	335.22		335.22	0.000050	0.22	628.58	347.06	0.03
Scriber	4618.1*	100-YR	167.23	332.39	335.48		335.48	0.000050	0.24	719.51	353.72	0.03
Scriber	4572	Half 2-YR	35.53	332.26	334.71	333.04	334.71	0.000006	0.07	537.22	366.47	0.01
Scriber	4572	2-YR	71.05	332.26	335.07	333.12	335.07	0.000013	0.11	670.31	376.78	0.01
Scriber	4572	10-YR	113.29	332.26	335.17	333.19	335.17	0.000027	0.16	707.19	379.59	0.02
Scriber	4572	25-YR	134.80	332.26	335.22	333.21	335.22	0.000035	0.19	725.37	380.97	0.02
Scriber	4572	100-YR	167.23	332.26	335.47	333.26	335.48	0.000036	0.21	825.14	387.76	0.02
Scriber	4568		Culvert									
Scriber	4563	Half 2-YR	35.53	332.26	333.63		333.63	0.000252	0.21	169.90	319.26	0.05
Scriber	4563	2-YR	71.05	332.26	333.89		333.90	0.000265	0.28	256.74	329.11	0.06
Scriber	4563	10-YR	113.29	332.26	334.12		334.13	0.000291	0.34	333.33	337.57	0.06
Scriber	4563	25-YR	134.80	332.26	334.27		334.27	0.000264	0.35	383.23	342.98	0.06
Scriber	4563	100-YR	167.23	332.26	335.45		335.45	0.000036	0.21	850.25	527.33	0.02
Scriber	4279	Half 2-YR	35.53	331.52	333.47		333.47	0.002107	0.48	76.94	242.84	0.14
Scriber	4279	2-YR	71.05	331.52	333.75		333.75	0.001334	0.47	174.39	458.86	0.12
Scriber	4279	10-YR	113.29	331.52	334.00		334.00	0.000771	0.47	310.56	592.09	0.09
Scriber	4279	25-YR	134.80	331.52	334.17		334.17	0.000484	0.42	416.93	618.45	0.08

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	4279	100-YR	167.23	331.52	335.45		335.45	0.000025	0.17	1417.24	851.07	0.02
Scriber	3935	Half 2-YR	35.53	332.00	332.84	332.30	332.85	0.001596	0.59	60.47	115.97	0.13
Scriber	3935	2-YR	71.05	332.00	333.29	332.42	333.30	0.001340	0.65	110.11	250.40	0.13
Scriber	3935	10-YR	113.29	332.00	333.70	332.53	333.71	0.000912	0.68	166.02	354.58	0.11
Scriber	3935	25-YR	134.80	332.00	333.97	332.58	333.98	0.000671	0.66	204.02	400.83	0.10
Scriber	3935	100-YR	167.23	332.00	335.43	332.65	335.43	0.000100	0.40	416.66	486.73	0.04
Scriber	3114	Half 2-YR	35.53	328.66	330.47	329.63	330.52	0.006427	1.79	19.83	16.27	0.29
Scriber	3114	2-YR	71.05	328.66	331.29	330.03	331.35	0.005209	2.07	34.28	18.97	0.27
Scriber	3114	10-YR	113.29	328.66	332.34	330.38	332.40	0.003448	1.98	57.35	24.88	0.23
Scriber	3114	25-YR	134.80	328.66	332.97	330.53	333.02	0.002508	1.82	73.98	28.47	0.20
Scriber	3114	100-YR	167.23	328.66	335.26	330.74	335.28	0.000456	1.14	154.77	42.30	0.09
Scriber	3104		Bridge									
Scriber	3093	Half 2-YR	35.53	328.66	330.27		330.34	0.010781	2.13	16.67	15.61	0.36
Scriber	3093	2-YR	71.05	328.66	331.15		331.23	0.006508	2.24	31.73	18.52	0.30
Scriber	3093	10-YR	113.29	328.66	332.26		332.33	0.003783	2.05	55.35	24.41	0.24
Scriber	3093	25-YR	134.80	328.66	332.91		332.96	0.002657	1.86	72.36	28.14	0.20
Scriber	3093	100-YR	167.23	328.66	335.25		335.27	0.000460	1.14	154.36	42.24	0.09
Scriber	2967	Half 2-YR	35.53	328.08	329.80	328.88	329.82	0.002026	1.03	34.47	413.64	0.16
Scriber	2967	2-YR	71.05	328.08	330.94	329.14	330.96	0.000900	1.07	66.64	466.30	0.12
Scriber	2967	10-YR	113.29	328.08	332.13	329.37	332.15	0.000585	1.13	100.32	507.85	0.11
Scriber	2967	25-YR	134.80	328.08	332.81	329.47	332.83	0.000463	1.13	119.45	517.78	0.10
Scriber	2967	100-YR	167.23	328.08	335.22	329.61	335.23	0.000159	0.89	187.44	553.24	0.06
Scriber	2742		Culvert									
Scriber	2517	Half 2-YR	40.47	325.29	328.76	326.34	328.79	0.000387	1.26	32.12	12.75	0.14
Scriber	2517	2-YR	80.93	325.29	329.39	326.83	329.45	0.000893	1.96	41.28	32.91	0.22
Scriber	2517	10-YR	132.47	325.29	329.94	327.34	330.05	0.001319	2.58	51.32	94.66	0.28
Scriber	2517	25-YR	160.77	325.29	330.20	327.59	330.33	0.001439	2.86	56.16	119.92	0.29
Scriber	2517	100-YR	205.93	325.29	331.03	327.96	331.16	0.001041	2.87	71.79	211.53	0.26
Scriber	2501		Inl Struct									

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	2500	Half 2-YR	40.47	325.21	328.75	326.26	328.78	0.000361	1.23	32.87	12.75	0.14
Scriber	2500	2-YR	80.93	325.21	329.35	326.75	329.41	0.000869	1.95	41.47	30.55	0.22
Scriber	2500	10-YR	132.47	325.21	329.89	327.26	329.99	0.001343	2.59	51.14	87.78	0.28
Scriber	2500	25-YR	160.77	325.21	330.13	327.51	330.26	0.001488	2.89	55.70	115.62	0.30
Scriber	2500	100-YR	205.93	325.21	330.97	327.88	331.10	0.001069	2.89	71.36	204.86	0.26
Scriber	2485		Inl Struct									
Scriber	2477	Half 2-YR	40.47	327.34	328.40	328.40	328.77	0.020807	4.90	8.27	11.23	1.01
Scriber	2477	2-YR	80.93	327.34	328.86	328.86	329.39	0.018594	5.83	13.87	13.16	1.00
Scriber	2477	10-YR	132.47	327.34	329.32	329.32	329.97	0.017597	6.43	20.59	28.73	1.00
Scriber	2477	25-YR	160.77	327.34	329.54	329.54	330.22	0.017072	6.64	24.23	43.93	1.00
Scriber	2477	100-YR	205.93	327.34	330.74	329.80	331.05	0.003362	4.40	46.82	171.53	0.49
Scriber	2452	Half 2-YR	40.47	324.46	327.57	325.52	327.60	0.000521	1.48	27.41	16.86	0.15
Scriber	2452	2-YR	80.93	324.46	328.35	326.00	328.43	0.001127	2.31	35.09	21.30	0.23
Scriber	2452	10-YR	132.47	324.46	329.25	326.51	329.37	0.001623	2.83	46.85	38.06	0.29
Scriber	2452	25-YR	160.77	324.46	329.82	326.76	329.94	0.001509	2.83	56.89	94.97	0.29
Scriber	2452	100-YR	205.93	324.46	330.83	327.13	330.95	0.000945	2.71	75.93	184.96	0.24
Scriber	2396		Culvert									
Scriber	2339	Half 2-YR	40.47	323.90	327.41	325.55	327.48	0.001233	2.07	19.51	19.83	0.24
Scriber	2339	2-YR	80.93	323.90	328.00	326.31	328.16	0.002602	3.26	24.83	23.22	0.36
Scriber	2339	10-YR	132.47	323.90	328.59	327.03	328.87	0.003949	4.30	30.78	26.63	0.45
Scriber	2339	25-YR	160.77	323.90	328.86	327.35	329.21	0.004542	4.76	33.79	28.24	0.48
Scriber	2339	100-YR	205.93	323.90	329.25	327.81	329.70	0.005325	5.39	38.23	132.83	0.53
Scriber	2098	Half 2-YR	40.47	325.55	327.27	326.07	327.30	0.000462	1.19	33.93	20.85	0.16
Scriber	2098	2-YR	80.93	325.55	327.75	326.38	327.80	0.000829	1.84	44.01	21.49	0.23
Scriber	2098	10-YR	132.47	325.55	328.27	326.70	328.36	0.001111	2.40	55.30	22.20	0.27
Scriber	2098	25-YR	160.77	325.55	328.52	326.86	328.63	0.001217	2.63	61.05	28.65	0.28
Scriber	2098	100-YR	205.93	325.55	328.90	327.08	329.03	0.001344	2.96	69.55	74.33	0.30
Scriber	2052		Culvert									
Scriber	2006	Half 2-YR	38.98	325.00	327.27	325.50	327.27	0.000113	0.64	60.55	34.92	0.09
Scriber	2006	2-YR	77.95	325.00	327.73	325.77	327.74	0.000226	1.01	77.35	38.25	0.12

HEC-RAS Plan: alt2 River: Scriber_Creek Reach: Scriber (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)	
Scriber	2006	10-YR	132.60	325.00	328.21	326.09	328.24	0.000354	1.37	96.99	103.73	0.16
Scriber	2006	25-YR	164.11	325.00	328.45	326.24	328.49	0.000416	1.53	107.46	177.17	0.17
Scriber	2006	100-YR	216.26	325.00	328.80	326.46	328.84	0.000502	1.75	123.46	282.90	0.19
Scriber	1408	Half 2-YR	38.98	326.00	327.06	326.71	327.09	0.002270	1.40	27.83	385.59	0.32
Scriber	1408	2-YR	77.95	326.00	327.38	326.91	327.43	0.002067	1.80	43.38	409.56	0.33
Scriber	1408	10-YR	132.60	326.00	327.75	327.10	327.83	0.001900	2.17	61.20	409.57	0.34
Scriber	1408	25-YR	164.11	326.00	327.94	327.20	328.03	0.001840	2.34	70.23	409.57	0.34
Scriber	1408	100-YR	216.26	326.00	328.22	327.34	328.32	0.001787	2.59	83.60	461.58	0.35
Scriber	74	Half 2-YR	38.98	323.00	324.41	323.88	324.45	0.001740	1.51	25.78	32.34	0.30
Scriber	74	2-YR	77.95	323.00	324.86	324.14	324.92	0.001741	1.89	41.28	37.08	0.32
Scriber	74	10-YR	132.60	323.00	325.33	324.41	325.40	0.001741	2.22	59.65	41.91	0.33
Scriber	74	25-YR	164.11	323.00	325.54	324.55	325.63	0.001740	2.38	69.09	43.90	0.33
Scriber	74	100-YR	216.26	323.00	325.87	324.74	325.97	0.001740	2.58	83.67	46.80	0.34

Appendix B.4
HEC-RAS Output – Scenario 2A

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber

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)	
Scriber	12724	Half 2-YR	25.58	365.25	367.04	366.95	367.39	0.029773	4.76	5.37	6.02	0.89
Scriber	12724	2-YR	53.16	365.25	368.08	367.53	368.32	0.008594	4.06	14.56	21.64	0.53
Scriber	12724	10-YR	90.13	365.25	368.52	368.04	368.93	0.011055	5.33	19.20	24.20	0.63
Scriber	12724	25-YR	111.63	365.25	368.96	368.29	369.37	0.008762	5.36	23.87	26.77	0.58
Scriber	12724	100-YR	147.45	365.25	369.86	368.62	370.22	0.005420	5.11	33.27	31.96	0.48
Scriber	12655		Culvert									
Scriber	12604	Half 2-YR	25.58	365.17	367.11	366.76	367.29	0.043926	3.41	7.49	7.80	0.59
Scriber	12604	2-YR	53.16	365.17	367.95	367.27	368.18	0.027262	3.80	14.01	12.27	0.50
Scriber	12604	10-YR	90.13	365.17	368.13	367.78	368.66	0.057038	5.86	15.45	18.82	0.74
Scriber	12604	25-YR	111.63	365.17	368.28	368.03	368.98	0.067308	6.70	16.77	24.70	0.82
Scriber	12604	100-YR	147.45	365.17	368.72	368.42	369.54	0.061683	7.28	20.59	58.08	0.81
Scriber	12597	Half 2-YR	25.58	365.11	367.07	366.41	367.17	0.005645	2.57	9.97	8.39	0.41
Scriber	12597	2-YR	53.16	365.11	367.94	366.93	368.03	0.007046	2.39	22.24	26.29	0.46
Scriber	12597	10-YR	90.13	365.11	368.34	367.65	368.37	0.002044	1.20	75.34	107.98	0.25
Scriber	12597	25-YR	111.63	365.11	368.60	367.90	368.62	0.001144	1.09	106.20	132.45	0.19
Scriber	12597	100-YR	147.45	365.11	369.11	367.99	369.13	0.000464	0.92	174.62	133.30	0.13
Scriber	12489	Half 2-YR	25.58	364.82	366.41	365.79	366.52	0.006117	2.67	9.58	7.33	0.41
Scriber	12489	2-YR	53.16	364.82	367.18	366.27	367.33	0.005652	3.22	19.98	21.38	0.41
Scriber	12489	10-YR	90.13	364.82	367.89	366.91	368.04	0.004227	3.43	42.15	43.87	0.37
Scriber	12489	25-YR	111.63	364.82	368.30	367.23	368.41	0.003090	3.22	62.41	56.60	0.32
Scriber	12489	100-YR	147.45	364.82	368.97	367.58	369.03	0.001676	2.70	110.61	84.51	0.25
Scriber	12484		Bridge									
Scriber	12479	Half 2-YR	25.58	364.82	366.33	365.79	366.46	0.007431	2.85	8.96	7.25	0.45
Scriber	12479	2-YR	53.16	364.82	367.10	366.27	367.27	0.006774	3.42	18.33	20.13	0.44
Scriber	12479	10-YR	90.13	364.82	367.79	366.91	367.97	0.005189	3.69	37.61	40.48	0.41
Scriber	12479	25-YR	111.63	364.82	368.18	367.23	368.32	0.003827	3.49	55.88	52.83	0.36
Scriber	12479	100-YR	147.45	364.82	368.87	367.58	368.96	0.002143	3.00	104.32	94.37	0.28
Scriber	12419	Half 2-YR	25.58	363.53	366.10	364.78	366.17	0.002845	2.10	12.19	7.54	0.27
Scriber	12419	2-YR	53.16	363.53	366.82	365.38	366.95	0.003861	2.98	21.33	16.34	0.32
Scriber	12419	10-YR	90.13	363.53	367.52	366.01	367.69	0.004043	3.57	34.57	21.43	0.34
Scriber	12419	25-YR	111.63	363.53	367.91	366.48	368.09	0.003758	3.71	43.56	24.29	0.34
Scriber	12419	100-YR	147.45	363.53	368.64	366.95	368.79	0.002879	3.65	63.07	29.55	0.30

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	12316	Half 2-YR	25.58	363.41	365.46	365.05	365.63	0.011940	3.28	7.79	7.58	0.57
Scriber	12316	2-YR	53.16	363.41	366.24	365.63	366.42	0.007010	3.50	18.38	16.90	0.48
Scriber	12316	10-YR	90.13	363.41	367.08	366.12	367.26	0.004362	3.62	34.71	22.04	0.40
Scriber	12316	25-YR	111.63	363.41	367.54	366.34	367.71	0.003460	3.61	45.63	24.74	0.37
Scriber	12316	100-YR	147.45	363.41	368.38	366.64	368.53	0.002260	3.44	69.75	32.61	0.31
Scriber	12282	Half 2-YR	25.58	363.31	365.35	364.31	365.41	0.003127	2.12	12.08	7.15	0.29
Scriber	12282	2-YR	53.16	363.31	366.07	364.82	366.21	0.004835	3.05	17.43	7.63	0.36
Scriber	12282	10-YR	90.13	363.31	366.86	365.36	367.09	0.005228	3.83	23.67	8.15	0.39
Scriber	12282	25-YR	111.63	363.31	367.29	365.64	367.56	0.005147	4.15	27.26	8.44	0.39
Scriber	12282	100-YR	147.45	363.31	368.10	366.05	368.40	0.004463	4.44	34.20	13.39	0.38
Scriber	12254		Culvert									
Scriber	12225	Half 2-YR	25.58	363.07	364.93	363.90	364.99	0.002687	1.98	12.91	7.84	0.27
Scriber	12225	2-YR	53.16	363.07	365.61	364.38	365.74	0.003934	2.88	18.80	10.98	0.34
Scriber	12225	10-YR	90.13	363.07	366.27	364.88	366.48	0.004691	3.73	25.03	14.61	0.38
Scriber	12225	25-YR	111.63	363.07	366.61	365.13	366.86	0.004925	4.11	28.38	17.03	0.40
Scriber	12225	100-YR	147.45	363.07	367.18	365.55	367.49	0.004914	4.57	34.03	21.10	0.41
Scriber	12115	Half 2-YR	25.58	362.92	364.45	363.91	364.55	0.006037	2.54	10.06	12.85	0.43
Scriber	12115	2-YR	53.16	362.92	364.81	364.37	365.05	0.009944	3.95	13.46	13.95	0.58
Scriber	12115	10-YR	90.13	362.92	365.38	364.80	365.74	0.009326	4.78	18.84	16.87	0.60
Scriber	12115	25-YR	111.63	362.92	365.78	365.01	366.16	0.007817	4.94	22.58	18.91	0.56
Scriber	12115	100-YR	147.45	362.92	366.51	365.35	366.90	0.005619	5.00	29.47	22.65	0.50
Scriber	12081		Culvert									
Scriber	12047	Half 2-YR	25.58	361.91	364.43	362.93	364.44	0.000342	0.85	30.68	21.95	0.11
Scriber	12047	2-YR	53.16	361.91	364.63	363.25	364.67	0.001022	1.59	34.68	24.57	0.20
Scriber	12047	10-YR	90.13	361.91	364.76	363.57	364.86	0.002380	2.52	37.15	26.18	0.30
Scriber	12047	25-YR	111.63	361.91	364.80	363.73	364.95	0.003425	3.07	37.93	26.69	0.37
Scriber	12047	100-YR	147.45	361.91	364.82	363.97	365.07	0.005822	4.02	38.26	26.90	0.48
Scriber	12031	Half 2-YR	25.68	364.04	364.28	364.28	364.39	0.065314	2.97	11.03	214.40	1.15
Scriber	12031	2-YR	51.35	364.04	364.41	364.41	364.58	0.053487	3.72	18.13	226.85	1.12
Scriber	12031	10-YR	75.40	364.04	364.51	364.51	364.73	0.047203	4.18	24.18	236.82	1.10
Scriber	12031	25-YR	87.37	364.04	364.56	364.56	364.80	0.045740	4.39	26.90	241.13	1.11

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	12031	100-YR	105.19	364.04	364.66	364.62	364.90	0.034934	4.35	33.27	250.86	1.00
Scriber	11917	Half 2-YR	25.68	362.00	362.57		362.58	0.001765	0.92	32.64	225.89	0.22
Scriber	11917	2-YR	51.35	362.00	362.79		362.82	0.002103	1.26	50.11	263.62	0.25
Scriber	11917	10-YR	75.40	362.00	363.54		363.55	0.000392	0.86	125.21	368.96	0.12
Scriber	11917	25-YR	87.37	362.00	364.67		364.67	0.000038	0.39	477.81	414.16	0.04
Scriber	11917	100-YR	105.19	362.00	364.81		364.81	0.000044	0.43	521.68	415.92	0.05
Scriber	11769	Half 2-YR	25.68	361.13	361.75	361.75	361.87	0.036960	3.17	12.16	48.39	0.94
Scriber	11769	2-YR	51.35	361.13	362.08		362.16	0.014339	2.74	33.65	106.25	0.64
Scriber	11769	10-YR	75.40	361.13	363.50		363.51	0.000168	0.68	238.10	276.02	0.08
Scriber	11769	25-YR	87.37	361.13	364.67		364.67	0.000033	0.41	465.79	315.53	0.04
Scriber	11769	100-YR	105.19	361.13	364.80		364.80	0.000041	0.47	492.54	316.94	0.05
Scriber	11723	Half 2-YR	25.68	360.20	361.06		361.11	0.006969	1.62	15.86	35.15	0.42
Scriber	11723	2-YR	51.35	360.20	362.07		362.08	0.000397	0.79	95.63	182.23	0.12
Scriber	11723	10-YR	75.40	360.20	363.50		363.50	0.000034	0.38	374.23	316.68	0.04
Scriber	11723	25-YR	87.37	360.20	364.67		364.67	0.000011	0.27	625.38	336.89	0.02
Scriber	11723	100-YR	105.19	360.20	364.80		364.80	0.000013	0.31	654.54	338.65	0.03
Scriber	11684	Half 2-YR	25.68	360.00	360.70		360.77	0.010395	2.12	12.10	24.10	0.53
Scriber	11684	2-YR	51.35	360.00	362.06		362.07	0.000465	0.79	68.56	167.69	0.13
Scriber	11684	10-YR	75.40	360.00	363.50		363.50	0.000032	0.35	401.31	266.31	0.04
Scriber	11684	25-YR	87.37	360.00	364.67		364.67	0.000009	0.23	734.30	293.97	0.02
Scriber	11684	100-YR	105.19	360.00	364.80		364.80	0.000011	0.27	773.07	294.89	0.02
Scriber	11606	Half 2-YR	25.68	357.91	360.44	359.00	360.52	0.001521	2.27	11.29	8.24	0.26
Scriber	11606	2-YR	51.35	357.91	361.87	359.58	362.00	0.001292	2.86	17.97	15.88	0.26
Scriber	11606	10-YR	75.40	357.91	363.44	360.04	363.49	0.000436	2.09	127.00	234.13	0.16
Scriber	11606	25-YR	87.37	357.91	364.66	360.24	364.67	0.000042	0.56	473.87	265.94	0.04
Scriber	11606	100-YR	105.19	357.91	364.80	360.53	364.80	0.000050	0.62	508.90	268.35	0.04
Scriber	11558		Culvert									
Scriber	11510	Half 2-YR	26.91	356.66	358.72	357.88	358.84	0.004709	2.75	9.78	6.46	0.37
Scriber	11510	2-YR	53.81	356.66	359.51	358.41	359.73	0.005327	3.77	14.29	7.83	0.42
Scriber	11510	10-YR	79.05	356.66	359.96	358.82	360.30	0.006658	4.70	16.83	10.10	0.48
Scriber	11510	25-YR	91.28	356.66	360.14	359.01	360.54	0.007298	5.11	17.85	11.05	0.51
Scriber	11510	100-YR	109.14	356.66	360.37	359.26	360.87	0.008220	5.69	19.18	12.28	0.55

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	11342	Half 2-YR	26.91	356.35	357.92	357.29	358.01	0.005076	2.46	10.92	9.07	0.40
Scriber	11342	2-YR	53.81	356.35	358.68	357.72	358.79	0.005274	2.66	20.23	15.82	0.41
Scriber	11342	10-YR	79.05	356.35	359.15	358.06	359.27	0.004567	2.79	28.30	18.57	0.40
Scriber	11342	25-YR	91.28	356.35	359.34	358.27	359.47	0.004435	2.87	31.82	19.64	0.40
Scriber	11342	100-YR	109.14	356.35	359.59	358.50	359.73	0.004213	2.95	37.01	21.14	0.39
Scriber	11263	Half 2-YR	26.91	355.61	356.73	356.70	357.13	0.035392	5.09	5.29	6.10	0.96
Scriber	11263	2-YR	53.81	355.61	357.21	357.21	357.86	0.037491	6.47	8.31	6.44	1.00
Scriber	11263	10-YR	79.05	355.61	357.66	357.66	358.42	0.036894	6.96	11.36	7.58	1.00
Scriber	11263	25-YR	91.28	355.61	357.87	357.87	358.63	0.035922	6.98	13.08	8.61	1.00
Scriber	11263	100-YR	109.14	355.61	358.07	358.07	358.91	0.035365	7.38	14.78	9.08	1.00
Scriber	11234		Culvert									
Scriber	11205	Half 2-YR	26.91	354.57	356.72	355.69	356.76	0.001534	1.65	16.34	12.02	0.23
Scriber	11205	2-YR	53.81	354.57	357.42	356.07	357.50	0.001813	2.24	24.05	13.04	0.27
Scriber	11205	10-YR	79.05	354.57	357.89	356.35	358.00	0.002057	2.71	29.17	14.18	0.29
Scriber	11205	25-YR	91.28	354.57	358.08	356.48	358.21	0.002183	2.92	31.23	14.84	0.31
Scriber	11205	100-YR	109.14	354.57	358.32	356.66	358.48	0.002366	3.22	33.94	15.71	0.32
Scriber	11163	Half 2-YR	26.91	354.93	356.58		356.65	0.003621	2.13	12.61	10.44	0.34
Scriber	11163	2-YR	53.81	354.93	357.28		357.39	0.003401	2.65	20.65	12.71	0.35
Scriber	11163	10-YR	79.05	354.93	357.74		357.88	0.003585	3.07	26.79	14.29	0.37
Scriber	11163	25-YR	91.28	354.93	357.92		358.08	0.003704	3.25	29.48	14.92	0.38
Scriber	11163	100-YR	109.14	354.93	358.16		358.35	0.003808	3.50	33.25	16.44	0.39
Scriber	11030	Half 2-YR	26.91	354.39	356.09	355.30	356.17	0.003695	2.22	12.14	9.14	0.34
Scriber	11030	2-YR	53.81	354.39	356.82	355.74	356.94	0.003420	2.76	22.68	27.17	0.34
Scriber	11030	10-YR	79.05	354.39	357.35	356.09	357.46	0.002755	2.90	43.11	49.85	0.32
Scriber	11030	25-YR	91.28	354.39	357.57	356.23	357.68	0.002458	2.90	55.24	58.80	0.31
Scriber	11030	100-YR	109.14	354.39	357.87	356.43	357.97	0.002085	2.86	74.85	70.92	0.29
Scriber	10984.3*	Half 2-YR	26.91	354.15	355.92	355.13	355.99	0.003785	2.25	11.96	8.91	0.34
Scriber	10984.3*	2-YR	53.81	354.15	356.65	355.58	356.77	0.003676	2.86	19.45	12.52	0.36
Scriber	10984.3*	10-YR	79.05	354.15	357.17	355.92	357.32	0.003359	3.19	32.36	36.28	0.35
Scriber	10984.3*	25-YR	91.28	354.15	357.40	356.07	357.55	0.003069	3.23	41.87	45.59	0.34
Scriber	10984.3*	100-YR	109.14	354.15	357.73	356.26	357.86	0.002620	3.22	58.79	58.94	0.32

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	10938.6*	Half 2-YR	26.91	353.90	355.74	354.97	355.82	0.003959	2.30	11.72	8.65	0.35
Scriber	10938.6*	2-YR	53.81	353.90	356.47	355.42	356.60	0.003909	2.93	18.82	11.34	0.36
Scriber	10938.6*	10-YR	79.05	353.90	356.98	355.76	357.16	0.003861	3.39	25.87	21.10	0.38
Scriber	10938.6*	25-YR	91.28	353.90	357.21	355.91	357.40	0.003706	3.52	31.93	31.25	0.37
Scriber	10938.6*	100-YR	109.14	353.90	357.54	356.11	357.73	0.003288	3.58	44.65	45.85	0.36
Scriber	10893.*	Half 2-YR	26.91	353.66	355.54	354.79	355.63	0.004279	2.37	11.35	8.35	0.36
Scriber	10893.*	2-YR	53.81	353.66	356.27	355.24	356.41	0.004318	3.04	18.04	10.63	0.38
Scriber	10893.*	10-YR	79.05	353.66	356.78	355.60	356.97	0.004302	3.53	24.03	12.85	0.39
Scriber	10893.*	25-YR	91.28	353.66	357.00	355.74	357.21	0.004273	3.72	27.12	14.80	0.40
Scriber	10893.*	100-YR	109.14	353.66	357.34	355.95	357.56	0.003934	3.86	36.59	40.55	0.39
Scriber	10847.3*	Half 2-YR	26.91	353.41	355.33	354.61	355.42	0.004798	2.48	10.87	8.03	0.37
Scriber	10847.3*	2-YR	53.81	353.41	356.04	355.08	356.20	0.004990	3.20	17.09	9.91	0.40
Scriber	10847.3*	10-YR	79.05	353.41	356.55	355.42	356.76	0.004995	3.71	22.58	11.94	0.41
Scriber	10847.3*	25-YR	91.28	353.41	356.77	355.58	357.00	0.004955	3.92	25.34	13.09	0.42
Scriber	10847.3*	100-YR	109.14	353.41	357.11	355.78	357.36	0.004671	4.11	30.24	15.26	0.41
Scriber	10801.6*	Half 2-YR	26.91	353.17	355.06	354.44	355.18	0.006149	2.70	9.97	7.65	0.42
Scriber	10801.6*	2-YR	53.81	353.17	355.75	354.91	355.94	0.006546	3.48	15.55	9.00	0.45
Scriber	10801.6*	10-YR	79.05	353.17	356.25	355.26	356.50	0.006436	4.03	20.48	10.87	0.46
Scriber	10801.6*	25-YR	91.28	353.17	356.47	355.42	356.74	0.006308	4.23	23.00	11.71	0.46
Scriber	10801.6*	100-YR	109.14	353.17	356.82	355.63	357.12	0.005816	4.42	27.46	14.47	0.45
Scriber	10756	Half 2-YR	26.91	352.92	354.47	354.25	354.71	0.018564	3.93	6.84	6.96	0.70
Scriber	10756	2-YR	53.81	352.92	355.21	354.72	355.51	0.013512	4.38	12.29	7.68	0.61
Scriber	10756	10-YR	79.05	352.92	355.74	355.10	356.10	0.011477	4.81	16.65	9.18	0.58
Scriber	10756	25-YR	91.28	352.92	355.99	355.25	356.37	0.010533	4.96	18.83	10.06	0.57
Scriber	10756	100-YR	109.14	352.92	356.41	355.47	356.79	0.008608	5.00	22.57	11.57	0.53
Scriber	10728		Culvert									
Scriber	10701	Half 2-YR	26.91	352.70	354.51	353.42	354.55	0.001076	1.48	18.21	15.28	0.20
Scriber	10701	2-YR	53.81	352.70	355.32	353.76	355.38	0.001148	1.99	27.07	16.74	0.22
Scriber	10701	10-YR	79.05	352.70	355.88	354.03	355.97	0.001254	2.38	33.21	17.74	0.24
Scriber	10701	25-YR	91.28	352.70	356.10	354.15	356.20	0.001318	2.56	35.67	18.15	0.25
Scriber	10701	100-YR	109.14	352.70	356.42	354.31	356.54	0.001378	2.79	39.18	21.19	0.26
Scriber	10557	Half 2-YR	26.91	352.32	354.18	353.32	354.27	0.004042	2.32	11.58	7.98	0.34

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	10557	2-YR	53.81	352.32	354.92	353.81	355.06	0.004868	3.01	17.89	9.18	0.38
Scriber	10557	10-YR	79.05	352.32	355.41	354.18	355.60	0.005538	3.49	22.65	9.98	0.41
Scriber	10557	25-YR	91.28	352.32	355.61	354.34	355.82	0.005924	3.71	24.57	10.29	0.42
Scriber	10557	100-YR	109.14	352.32	355.90	354.56	356.14	0.006051	3.94	27.72	11.33	0.43
Scriber	10477	Half 2-YR	26.91	352.11	353.11	353.11	353.52	0.033181	5.12	5.25	6.51	1.00
Scriber	10477	2-YR	53.81	352.11	353.61	353.61	354.22	0.030159	6.26	8.60	7.27	1.00
Scriber	10477	10-YR	79.05	352.11	354.06	353.97	354.75	0.023377	6.69	11.82	7.96	0.92
Scriber	10477	25-YR	91.28	352.11	354.38	354.13	355.03	0.016969	6.44	14.18	8.47	0.81
Scriber	10477	100-YR	109.14	352.11	354.73	354.34	355.39	0.014067	6.53	16.70	9.00	0.76
Scriber	10450		Culvert									
Scriber	10422	Half 2-YR	26.91	350.59	352.71	351.72	352.78	0.002595	2.18	12.33	9.89	0.30
Scriber	10422	2-YR	53.81	350.59	353.44	352.19	353.59	0.003432	3.02	17.84	11.12	0.35
Scriber	10422	10-YR	79.05	350.59	353.95	352.56	354.16	0.004108	3.62	21.81	11.97	0.39
Scriber	10422	25-YR	91.28	350.59	354.17	352.71	354.40	0.004397	3.88	23.53	12.32	0.40
Scriber	10422	100-YR	109.14	350.59	354.44	352.94	354.72	0.004841	4.24	25.76	12.78	0.42
Scriber	10340	Half 2-YR	26.91	350.64	351.75	351.75	352.15	0.036317	5.09	5.28	6.59	1.00
Scriber	10340	2-YR	53.81	350.64	352.25	352.25	352.82	0.033401	6.03	8.92	7.92	1.00
Scriber	10340	10-YR	79.05	350.64	352.62	352.62	353.29	0.031718	6.58	12.01	8.89	1.00
Scriber	10340	25-YR	91.28	350.64	352.77	352.77	353.49	0.031454	6.82	13.38	9.29	1.00
Scriber	10340	100-YR	109.14	350.64	352.98	352.98	353.76	0.030705	7.09	15.39	9.85	1.00
Scriber	9965	Half 2-YR	26.91	348.02	350.03		350.05	0.000869	1.21	22.32	15.02	0.17
Scriber	9965	2-YR	53.81	348.02	350.48		350.53	0.001531	1.83	30.44	25.42	0.24
Scriber	9965	10-YR	79.05	348.02	350.75		350.83	0.002016	2.30	38.20	30.41	0.28
Scriber	9965	25-YR	91.28	348.02	350.83		350.93	0.002324	2.54	40.83	31.32	0.30
Scriber	9965	100-YR	109.14	348.02	350.97		351.09	0.002657	2.83	45.20	32.69	0.33
Scriber	9840	Half 2-YR	26.91	347.62	349.31	349.31	349.68	0.040360	4.93	5.46	7.24	1.00
Scriber	9840	2-YR	53.81	347.62	349.82	349.82	350.05	0.018559	4.31	21.04	55.47	0.73
Scriber	9840	10-YR	79.05	347.62	349.97	349.97	350.23	0.019738	4.85	30.51	68.56	0.77
Scriber	9840	25-YR	91.28	347.62	350.06	350.06	350.30	0.017574	4.80	36.60	69.87	0.74
Scriber	9840	100-YR	109.14	347.62	350.13	350.13	350.38	0.018135	5.06	41.90	70.98	0.76
Scriber	9764	Half 2-YR	26.91	344.99	348.28	345.92	348.30	0.000501	1.18	23.66	10.07	0.12
Scriber	9764	2-YR	53.81	344.99	349.02	346.41	349.07	0.000887	1.83	32.55	14.11	0.17

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	9764	10-YR	79.05	344.99	349.27	346.81	349.37	0.001478	2.47	36.40	15.54	0.22
Scriber	9764	25-YR	91.28	344.99	349.38	346.98	349.49	0.001784	2.76	38.02	16.10	0.25
Scriber	9764	100-YR	109.14	344.99	349.51	347.20	349.66	0.002249	3.17	40.21	16.83	0.28
Scriber	9679	Half 2-YR	26.91	345.93	348.18	346.85	348.23	0.001562	1.82	17.08	16.78	0.22
Scriber	9679	2-YR	53.81	345.93	348.90	347.35	348.96	0.001610	2.26	43.42	71.35	0.24
Scriber	9679	10-YR	79.05	345.93	349.14	347.75	349.22	0.001959	2.63	60.81	73.07	0.27
Scriber	9679	25-YR	91.28	345.93	349.23	347.95	349.32	0.002111	2.79	67.68	73.75	0.28
Scriber	9679	100-YR	109.14	345.93	349.36	348.26	349.45	0.002301	2.99	76.90	74.73	0.29
Scriber	9634	Half 2-YR	26.91	346.65	347.57	347.57	347.99	0.039201	5.21	5.16	6.18	1.00
Scriber	9634	2-YR	53.81	346.65	348.07	348.07	348.71	0.038000	6.41	8.40	6.85	1.02
Scriber	9634	10-YR	79.05	346.65	348.66	348.66	349.00	0.016026	5.13	25.90	49.49	0.69
Scriber	9634	25-YR	91.28	346.65	348.78	348.77	349.09	0.015033	5.13	32.10	56.59	0.67
Scriber	9634	100-YR	109.14	346.65	349.08		349.26	0.008500	4.27	51.66	71.65	0.52
Scriber	9563	Half 2-YR	26.91	345.10	346.71	346.02	346.82	0.005790	2.62	10.28	7.27	0.39
Scriber	9563	2-YR	53.81	345.10	347.35	346.48	347.55	0.007273	3.58	15.05	7.63	0.45
Scriber	9563	10-YR	79.05	345.10	347.79	346.84	348.08	0.008083	4.31	18.45	7.88	0.49
Scriber	9563	25-YR	91.28	345.10	347.97	347.01	348.31	0.008458	4.63	19.91	7.98	0.50
Scriber	9563	100-YR	109.14	345.10	348.22	347.23	348.62	0.008939	5.05	21.90	8.12	0.53
Scriber	9555		Bridge									
Scriber	9548	Half 2-YR	26.91	345.03	346.50	346.15	346.68	0.012598	3.36	8.00	7.52	0.57
Scriber	9548	2-YR	53.81	345.03	347.10	346.60	347.39	0.011349	4.30	12.72	8.11	0.58
Scriber	9548	10-YR	79.05	345.03	347.50	346.95	347.90	0.012077	5.10	15.98	8.49	0.62
Scriber	9548	25-YR	91.28	345.03	347.66	347.11	348.12	0.012586	5.47	17.33	8.64	0.65
Scriber	9548	100-YR	109.14	345.03	347.87	347.32	348.41	0.013270	5.96	19.17	8.84	0.67
Scriber	9510	Half 2-YR	26.91	344.76	346.23	345.63	346.33	0.005856	2.60	10.34	8.32	0.41
Scriber	9510	2-YR	53.81	344.76	346.82	346.06	347.01	0.007281	3.49	15.43	8.88	0.47
Scriber	9510	10-YR	79.05	344.76	347.18	346.40	347.46	0.008577	4.22	18.87	10.34	0.52
Scriber	9510	25-YR	91.28	344.76	347.33	346.55	347.65	0.009132	4.55	20.41	11.22	0.54
Scriber	9510	100-YR	109.14	344.76	347.52	346.75	347.91	0.009765	4.98	22.74	12.44	0.57
Scriber	9500.3*	Half 2-YR	26.91	344.70	346.16	345.60	346.27	0.006085	2.64	10.20	8.47	0.42
Scriber	9500.3*	2-YR	53.81	344.70	346.74	346.03	346.93	0.007493	3.52	15.28	9.14	0.48
Scriber	9500.3*	10-YR	79.05	344.70	347.09	346.36	347.37	0.008779	4.26	18.70	10.67	0.53

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	9500.3*	25-YR	91.28	344.70	347.23	346.51	347.56	0.009363	4.60	20.21	11.52	0.56
Scriber	9500.3*	100-YR	109.14	344.70	347.42	346.71	347.81	0.010002	5.03	22.51	12.70	0.58
Scriber	9490.6*	Half 2-YR	26.91	344.65	346.10	345.56	346.21	0.006432	2.69	10.02	8.63	0.44
Scriber	9490.6*	2-YR	53.81	344.65	346.66	346.00	346.86	0.007814	3.56	15.10	9.42	0.50
Scriber	9490.6*	10-YR	79.05	344.65	347.00	346.33	347.29	0.009085	4.31	18.50	11.06	0.55
Scriber	9490.6*	25-YR	91.28	344.65	347.13	346.47	347.46	0.009721	4.66	19.98	11.88	0.57
Scriber	9490.6*	100-YR	109.14	344.65	347.31	346.67	347.71	0.010378	5.10	22.26	13.05	0.60
Scriber	9480.9*	Half 2-YR	26.91	344.59	346.03	345.52	346.15	0.006693	2.72	9.91	8.79	0.45
Scriber	9480.9*	2-YR	53.81	344.59	346.58	345.94	346.78	0.008090	3.59	14.98	9.70	0.51
Scriber	9480.9*	10-YR	79.05	344.59	346.90	346.28	347.20	0.009404	4.35	18.35	11.45	0.56
Scriber	9480.9*	25-YR	91.28	344.59	347.02	346.42	347.37	0.010133	4.71	19.78	12.27	0.59
Scriber	9480.9*	100-YR	109.14	344.59	347.20	346.62	347.61	0.010834	5.16	22.02	13.45	0.62
Scriber	9471.2*	Half 2-YR	26.91	344.54	345.96	345.48	346.08	0.007110	2.76	9.75	8.97	0.47
Scriber	9471.2*	2-YR	53.81	344.54	346.49	345.91	346.70	0.008498	3.63	14.82	10.00	0.53
Scriber	9471.2*	10-YR	79.05	344.54	346.80	346.23	347.10	0.009894	4.41	18.14	11.91	0.58
Scriber	9471.2*	25-YR	91.28	344.54	346.91	346.37	347.26	0.010792	4.79	19.47	12.71	0.62
Scriber	9471.2*	100-YR	109.14	344.54	347.07	346.56	347.50	0.011584	5.25	21.67	13.93	0.65
Scriber	9461.5*	Half 2-YR	26.91	344.48	345.88	345.43	346.01	0.007513	2.80	9.62	9.16	0.48
Scriber	9461.5*	2-YR	53.81	344.48	346.40	345.86	346.61	0.008903	3.67	14.68	10.32	0.54
Scriber	9461.5*	10-YR	79.05	344.48	346.69	346.17	347.00	0.010507	4.47	17.90	12.40	0.60
Scriber	9461.5*	25-YR	91.28	344.48	346.78	346.32	347.15	0.011748	4.90	19.06	13.17	0.64
Scriber	9461.5*	100-YR	109.14	344.48	346.93	346.50	347.38	0.012837	5.39	21.09	14.41	0.68
Scriber	9451.8*	Half 2-YR	26.91	344.42	345.80	345.38	345.93	0.008066	2.85	9.45	9.32	0.50
Scriber	9451.8*	2-YR	53.81	344.42	346.31	345.80	346.52	0.009501	3.72	14.47	10.60	0.56
Scriber	9451.8*	10-YR	79.05	344.42	346.57	346.12	346.89	0.011493	4.57	17.53	12.99	0.63
Scriber	9451.8*	25-YR	91.28	344.42	346.63	346.25	347.03	0.013650	5.10	18.28	13.58	0.69
Scriber	9451.8*	100-YR	109.14	344.42	346.70	346.44	347.23	0.016772	5.82	19.35	14.39	0.77
Scriber	9442.1*	Half 2-YR	26.91	344.37	345.71	345.32	345.85	0.008714	2.90	9.27	9.50	0.52
Scriber	9442.1*	2-YR	53.81	344.37	346.20	345.75	346.43	0.010188	3.77	14.26	10.88	0.58
Scriber	9442.1*	10-YR	79.05	344.37	346.46	346.04	346.78	0.011859	4.57	20.60	50.89	0.64
Scriber	9442.1*	25-YR	91.28	344.37	346.50	346.19	346.89	0.014412	5.11	22.55	57.23	0.71
Scriber	9442.1*	100-YR	109.14	344.37	346.66	346.63	347.05	0.013156	5.21	32.03	59.31	0.69

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	9432.4*	Half 2-YR	26.91	344.31	345.62	345.24	345.75	0.009645	2.98	9.02	9.62	0.54
Scriber	9432.4*	2-YR	53.81	344.31	346.12	345.67	346.32	0.010071	3.70	17.53	36.34	0.58
Scriber	9432.4*	10-YR	79.05	344.31	346.47	346.10	346.66	0.007207	3.69	35.62	54.37	0.51
Scriber	9432.4*	25-YR	91.28	344.31	346.53	346.32	346.74	0.008224	4.02	38.51	54.45	0.55
Scriber	9432.4*	100-YR	109.14	344.31	346.71	346.44	346.90	0.007233	4.03	48.23	54.72	0.52
Scriber	9422.7*	Half 2-YR	26.91	344.26	345.50	345.18	345.65	0.011296	3.13	8.61	9.67	0.58
Scriber	9422.7*	2-YR	53.81	344.26	345.98	345.61	346.21	0.011818	3.88	15.40	25.66	0.62
Scriber	9422.7*	10-YR	79.05	344.26	346.35	345.98	346.58	0.008954	4.01	27.17	33.28	0.57
Scriber	9422.7*	25-YR	91.28	344.26	346.20	346.16	346.62	0.017817	5.30	22.37	33.07	0.78
Scriber	9422.7*	100-YR	109.14	344.26	346.30	346.30	346.78	0.019255	5.77	25.68	33.21	0.83
Scriber	9413	Half 2-YR	26.91	344.20	345.11	345.11	345.45	0.036244	4.69	5.74	8.51	1.00
Scriber	9413	2-YR	53.81	344.20	345.53	345.53	346.01	0.033464	5.58	9.64	10.22	1.01
Scriber	9413	10-YR	79.05	344.20	345.90	345.84	346.41	0.026927	5.76	13.73	11.75	0.94
Scriber	9413	25-YR	91.28	344.20	346.18	346.18	346.44	0.012148	4.47	39.14	93.11	0.65
Scriber	9413	100-YR	109.14	344.20	346.33	346.27	346.54	0.009944	4.31	53.02	94.26	0.60
Scriber	9284	Half 2-YR	28.35	341.82	343.46	342.78	343.59	0.004571	3.05	11.14	8.67	0.42
Scriber	9284	2-YR	56.70	341.82	344.13	343.31	344.38	0.005346	4.17	17.52	10.20	0.49
Scriber	9284	10-YR	83.75	341.82	344.58	343.73	344.94	0.006162	5.04	22.34	11.24	0.54
Scriber	9284	25-YR	96.87	341.82	344.79	343.92	345.19	0.006389	5.38	24.66	11.71	0.55
Scriber	9284	100-YR	116.06	341.82	345.07	344.16	345.54	0.006572	5.81	28.09	12.37	0.57
Scriber	9213	Half 2-YR	28.35	341.23	343.09	342.37	343.22	0.005906	2.99	9.79	7.24	0.45
Scriber	9213	2-YR	56.70	341.23	343.67	342.97	343.93	0.007684	4.09	14.78	10.38	0.53
Scriber	9213	10-YR	83.75	341.23	344.05	343.40	344.42	0.008812	4.96	18.72	10.67	0.59
Scriber	9213	25-YR	96.87	341.23	344.26	343.59	344.67	0.008566	5.20	21.01	10.84	0.59
Scriber	9213	100-YR	116.06	341.23	344.56	343.82	345.02	0.008151	5.49	24.33	11.07	0.59
Scriber	9153	Half 2-YR	28.35	341.05	342.04	342.04	342.46	0.037211	5.19	5.46	7.01	1.00
Scriber	9153	2-YR	56.70	341.05	342.69	342.59	343.17	0.022001	5.60	10.98	13.45	0.83
Scriber	9153	10-YR	83.75	341.05	343.39	342.95	343.80	0.011667	5.32	18.41	14.05	0.65
Scriber	9153	25-YR	96.87	341.05	343.73	343.09	344.12	0.009154	5.21	22.21	14.34	0.59
Scriber	9153	100-YR	116.06	341.05	344.09	343.30	344.51	0.008054	5.36	26.33	14.66	0.56
Scriber	9116		Culvert									
Scriber	9079	Half 2-YR	28.35	340.17	342.24	341.38	342.30	0.002614	1.98	14.32	10.22	0.29

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	9079	2-YR	56.70	340.17	343.06	341.80	343.16	0.002328	2.49	22.99	10.96	0.30
Scriber	9079	10-YR	83.75	340.17	343.65	342.11	343.78	0.002286	2.90	29.57	11.50	0.31
Scriber	9079	25-YR	96.87	340.17	343.92	342.24	344.06	0.002256	3.06	32.55	11.75	0.31
Scriber	9079	100-YR	116.06	340.17	344.25	342.44	344.42	0.002286	3.30	36.32	12.05	0.32
Scriber	9042	Half 2-YR	28.35	339.47	341.87	341.26	342.08	0.011761	3.66	7.76	5.37	0.53
Scriber	9042	2-YR	56.70	339.47	342.49	341.94	342.89	0.014565	5.10	11.47	6.72	0.63
Scriber	9042	10-YR	83.75	339.47	342.78	342.41	343.43	0.020226	6.55	13.80	10.48	0.76
Scriber	9042	25-YR	96.87	339.47	342.88	342.63	343.67	0.023154	7.22	14.98	12.37	0.81
Scriber	9042	100-YR	116.06	339.47	343.10	343.10	344.01	0.023776	7.76	18.08	14.32	0.84
Scriber	8966	Half 2-YR	28.35	339.27	340.21	340.21	340.60	0.037434	5.00	5.67	7.28	1.00
Scriber	8966	2-YR	56.70	339.27	340.68	340.68	341.27	0.033113	6.21	9.23	8.21	0.99
Scriber	8966	10-YR	83.75	339.27	341.17	341.04	341.81	0.022796	6.47	13.55	9.35	0.87
Scriber	8966	25-YR	96.87	339.27	341.44	341.20	342.07	0.018336	6.40	16.19	9.99	0.80
Scriber	8966	100-YR	116.06	339.27	341.92	341.42	342.48	0.012445	6.10	21.24	11.11	0.69
Scriber	8891	Half 2-YR	28.35	337.35	339.76	338.55	339.80	0.001541	1.63	17.42	10.25	0.22
Scriber	8891	2-YR	56.70	337.35	340.49	338.97	340.57	0.002132	2.24	25.28	11.26	0.26
Scriber	8891	10-YR	83.75	337.35	341.15	339.28	341.25	0.002140	2.54	33.02	12.17	0.27
Scriber	8891	25-YR	96.87	337.35	341.44	339.44	341.55	0.002056	2.66	36.57	12.57	0.27
Scriber	8891	100-YR	116.06	337.35	341.94	339.64	342.05	0.001779	2.73	42.78	13.26	0.26
Scriber	8872		Culvert									
Scriber	8863	Half 2-YR	28.35	337.99	339.72	338.86	339.79	0.003009	2.06	13.80	9.65	0.30
Scriber	8863	2-YR	56.70	337.99	340.42	339.28	340.54	0.003617	2.71	20.91	10.56	0.34
Scriber	8863	10-YR	83.75	337.99	341.07	339.62	341.21	0.003237	2.99	28.04	11.76	0.33
Scriber	8863	25-YR	96.87	337.99	341.35	339.75	341.50	0.003066	3.12	31.17	12.46	0.33
Scriber	8863	100-YR	116.06	337.99	341.84	339.96	342.00	0.002564	3.18	36.84	13.72	0.31
Scriber	8772	Half 2-YR	28.35	337.88	339.44	338.79	339.49	0.003333	1.93	14.93	15.45	0.33
Scriber	8772	2-YR	56.70	337.88	340.20	339.16	340.27	0.002074	2.18	28.08	53.65	0.28
Scriber	8772	10-YR	83.75	337.88	340.92	339.42	340.99	0.001418	2.25	40.93	69.27	0.25
Scriber	8772	25-YR	96.87	337.88	341.32	339.54	341.34	0.000498	1.47	123.74	85.96	0.15
Scriber	8772	100-YR	116.06	337.88	341.85	339.69	341.87	0.000312	1.30	170.34	90.06	0.12
Scriber	8745		Bridge									

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	8718	Half 2-YR	28.35	337.17	339.31	338.19	339.32	0.000609	1.06	50.03	66.30	0.14
Scriber	8718	2-YR	56.70	337.17	340.06	338.55	340.07	0.000437	1.14	104.31	75.47	0.13
Scriber	8718	10-YR	83.75	337.17	340.63	338.82	340.64	0.000361	1.18	148.23	79.06	0.12
Scriber	8718	25-YR	96.87	337.17	340.91	338.91	340.92	0.000325	1.19	170.48	80.87	0.11
Scriber	8718	100-YR	116.06	337.17	341.30	339.03	341.31	0.000294	1.22	220.23	107.04	0.11
Scriber	8590	Half 2-YR	28.35	336.22	339.24	337.11	339.26	0.000444	1.10	34.35	28.58	0.12
Scriber	8590	2-YR	56.70	336.22	339.97	337.58	340.00	0.000631	1.53	65.52	69.35	0.15
Scriber	8590	10-YR	83.75	336.22	340.56	337.94	340.58	0.000543	1.58	110.53	80.83	0.14
Scriber	8590	25-YR	96.87	336.22	340.85	338.10	340.87	0.000480	1.55	134.28	84.35	0.13
Scriber	8590	100-YR	116.06	336.22	341.24	338.32	341.27	0.000418	1.54	170.06	94.75	0.13
Scriber	8427	Half 2-YR	28.35	336.00	339.21		339.22	0.000137	0.67	47.79	26.24	0.07
Scriber	8427	2-YR	56.70	336.00	339.92		339.94	0.000243	1.04	69.48	34.21	0.10
Scriber	8427	10-YR	83.75	336.00	340.50		340.52	0.000298	1.27	90.64	39.62	0.11
Scriber	8427	25-YR	96.87	336.00	340.78		340.81	0.000309	1.35	102.61	44.93	0.11
Scriber	8427	100-YR	116.06	336.00	341.18		341.21	0.000315	1.44	122.10	53.55	0.11
Scriber	8283	Half 2-YR	28.35	337.58	339.11		339.16	0.002648	1.93	16.07	13.21	0.28
Scriber	8283	2-YR	56.70	337.58	339.75		339.85	0.002942	2.60	25.11	15.07	0.32
Scriber	8283	10-YR	83.75	337.58	340.28		340.41	0.002872	3.00	33.63	16.88	0.33
Scriber	8283	25-YR	96.87	337.58	340.56		340.70	0.002679	3.10	38.48	17.87	0.32
Scriber	8283	100-YR	116.06	337.58	340.95		341.10	0.002448	3.22	45.77	19.61	0.31
Scriber	8249	Half 2-YR	28.35	337.26	338.94	338.31	339.03	0.004840	2.52	13.15	12.95	0.38
Scriber	8249	2-YR	56.70	337.26	339.54	338.76	339.70	0.005141	3.31	21.72	16.68	0.41
Scriber	8249	10-YR	83.75	337.26	340.09	339.10	340.27	0.004494	3.64	30.05	20.12	0.40
Scriber	8249	25-YR	96.87	337.26	340.39	339.25	340.57	0.003987	3.69	34.56	21.98	0.39
Scriber	8249	100-YR	116.06	337.26	340.79	339.43	340.98	0.003493	3.78	40.74	24.42	0.37
Scriber	8183		Culvert									
Scriber	8107	Half 2-YR	48.32	336.46	338.06	337.40	338.16	0.004306	2.54	19.32	15.54	0.39
Scriber	8107	2-YR	96.64	336.46	338.65	337.85	338.83	0.004950	3.48	28.88	17.03	0.45
Scriber	8107	10-YR	153.08	336.46	339.16	338.27	339.44	0.005514	4.31	38.20	20.62	0.49
Scriber	8107	25-YR	182.97	336.46	339.41	338.45	339.73	0.005611	4.64	42.92	23.27	0.50
Scriber	8107	100-YR	229.65	336.46	339.67	338.74	340.09	0.006388	5.27	47.89	26.01	0.54
Scriber	8060	Half 2-YR	38.70	336.43	337.95	337.13	337.99	0.002035	1.56	24.85	22.71	0.26

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	8060	2-YR	77.40	336.43	338.57	337.48	338.63	0.001846	1.91	43.80	47.31	0.27
Scriber	8060	10-YR	115.91	336.43	339.15	337.75	339.21	0.001271	1.95	82.21	78.45	0.23
Scriber	8060	25-YR	134.38	336.43	339.44	337.87	339.49	0.001037	1.91	105.72	88.60	0.21
Scriber	8060	100-YR	161.11	336.43	339.74	338.03	339.79	0.000944	1.97	152.14	188.35	0.21
Scriber	7965	Half 2-YR	38.70	336.37	337.30	337.13	337.51	0.017124	3.62	10.70	13.52	0.72
Scriber	7965	2-YR	77.40	336.37	338.08	337.53	338.28	0.006924	3.62	22.46	52.34	0.51
Scriber	7965	10-YR	115.91	336.37	338.74	337.84	338.95	0.004590	3.74	35.18	115.53	0.44
Scriber	7965	25-YR	134.38	336.37	339.06	337.98	339.27	0.003835	3.73	43.31	136.60	0.41
Scriber	7965	100-YR	161.11	336.37	339.36	338.17	339.58	0.003677	3.93	52.38	247.66	0.41
Scriber	7848	Half 2-YR	38.70	336.30	337.43	336.41	337.43	0.000022	0.16	237.01	224.76	0.03
Scriber	7848	2-YR	77.40	336.30	338.21	336.46	338.21	0.000014	0.19	415.46	234.87	0.02
Scriber	7848	10-YR	115.91	336.30	338.88	336.52	338.88	0.000011	0.21	583.61	288.79	0.02
Scriber	7848	25-YR	134.38	336.30	339.20	336.54	339.20	0.000010	0.21	700.79	394.91	0.02
Scriber	7848	100-YR	161.11	336.30	339.51	336.57	339.51	0.000010	0.23	825.33	410.01	0.02
Scriber	7663	Half 2-YR	38.70	336.17	337.43	336.26	337.43	0.000010	0.12	327.68	278.86	0.02
Scriber	7663	2-YR	77.40	336.17	338.21	336.31	338.21	0.000008	0.14	587.42	399.60	0.02
Scriber	7663	10-YR	115.91	336.17	338.88	336.36	338.88	0.000006	0.16	883.73	457.42	0.02
Scriber	7663	25-YR	134.38	336.17	339.20	336.38	339.20	0.000005	0.16	1051.25	601.62	0.02
Scriber	7663	100-YR	161.11	336.17	339.51	336.40	339.51	0.000005	0.17	1237.89	605.14	0.02
Scriber	7271	Half 2-YR	38.70	335.88	337.41	336.25	337.42	0.000332	0.73	53.31	43.08	0.12
Scriber	7271	2-YR	77.40	335.88	338.19	336.46	338.20	0.000435	0.59	130.33	154.13	0.11
Scriber	7271	10-YR	115.91	335.88	338.87	336.63	338.88	0.000154	0.42	278.15	242.27	0.07
Scriber	7271	25-YR	134.38	335.88	339.19	336.71	339.20	0.000103	0.38	360.46	273.97	0.06
Scriber	7271	100-YR	161.11	335.88	339.50	336.81	339.50	0.000083	0.36	471.25	377.98	0.05
Scriber	7132	Half 2-YR	38.70	335.79	337.32	336.42	337.34	0.001031	1.20	32.45	37.80	0.19
Scriber	7132	2-YR	77.40	335.79	338.12	336.70	338.13	0.000506	1.11	104.01	126.17	0.14
Scriber	7132	10-YR	115.91	335.79	338.84	336.92	338.85	0.000268	1.00	206.10	156.04	0.11
Scriber	7132	25-YR	134.38	335.79	339.16	337.02	339.17	0.000211	0.97	259.51	171.28	0.10
Scriber	7132	100-YR	161.11	335.79	339.48	337.15	339.49	0.000193	0.99	316.80	192.27	0.10
Scriber	7105		Bridge									
Scriber	7095	Half 2-YR	38.70	335.79	337.26	336.42	337.29	0.001188	1.23	31.57	35.11	0.20
Scriber	7095	2-YR	77.40	335.79	338.01	336.71	338.03	0.000647	1.20	91.24	114.46	0.16

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	7095	10-YR	115.91	335.79	338.77	336.92	338.78	0.000303	1.05	195.24	153.42	0.12
Scriber	7095	25-YR	134.38	335.79	339.12	337.02	339.13	0.000226	0.99	251.94	167.81	0.10
Scriber	7095	100-YR	161.11	335.79	339.44	337.14	339.45	0.000203	1.01	310.22	191.61	0.10
Scriber	7071	Half 2-YR	32.76	335.68	337.17	336.51	337.23	0.003777	2.02	16.22	15.88	0.35
Scriber	7071	2-YR	65.52	335.68	337.98	336.91	338.01	0.002111	1.22	53.51	77.78	0.26
Scriber	7071	10-YR	101.86	335.68	338.76	337.47	338.77	0.000679	0.77	132.52	131.86	0.14
Scriber	7071	25-YR	119.30	335.68	339.11	337.56	339.12	0.000444	0.65	182.21	145.66	0.10
Scriber	7071	100-YR	144.45	335.68	339.44	337.68	339.44	0.000365	0.62	231.33	157.17	0.09
Scriber	6811	Half 2-YR	32.76	334.95	336.96	335.82	336.97	0.000420	0.76	43.18	79.92	0.12
Scriber	6811	2-YR	65.52	334.95	337.91	336.06	337.91	0.000129	0.40	181.66	276.84	0.07
Scriber	6811	10-YR	101.86	334.95	338.74	336.27	338.74	0.000038	0.32	430.24	325.00	0.04
Scriber	6811	25-YR	119.30	334.95	339.10	336.36	339.10	0.000027	0.30	551.73	343.49	0.03
Scriber	6811	100-YR	144.45	334.95	339.43	336.48	339.43	0.000024	0.31	666.54	360.69	0.03
Scriber	6799		Bridge									
Scriber	6788	Half 2-YR	32.76	334.95	336.95	335.82	336.96	0.000431	0.77	42.82	79.36	0.12
Scriber	6788	2-YR	65.52	334.95	337.89	336.06	337.90	0.000137	0.40	176.77	275.81	0.07
Scriber	6788	10-YR	101.86	334.95	338.73	336.27	338.73	0.000039	0.32	427.25	324.53	0.04
Scriber	6788	25-YR	119.30	334.95	339.09	336.36	339.09	0.000028	0.30	547.90	342.92	0.04
Scriber	6788	100-YR	144.45	334.95	339.42	336.48	339.42	0.000025	0.31	663.54	360.23	0.03
Scriber	6179	Half 2-YR	32.76	334.74	336.71	335.44	336.73	0.000322	0.97	33.69	22.68	0.14
Scriber	6179	2-YR	65.52	334.74	337.77	335.73	337.79	0.000209	1.08	65.10	38.79	0.12
Scriber	6179	10-YR	101.86	334.74	338.67	336.00	338.68	0.000139	1.09	134.67	123.94	0.11
Scriber	6179	25-YR	119.30	334.74	339.04	336.11	339.06	0.000108	1.03	187.85	163.17	0.09
Scriber	6179	100-YR	144.45	334.74	339.38	336.26	339.39	0.000091	1.00	244.89	189.15	0.09
Scriber	6169		Bridge									
Scriber	6159	Half 2-YR	32.76	334.74	336.58	335.44	336.59	0.000428	1.07	30.59	22.09	0.16
Scriber	6159	2-YR	65.52	334.74	337.54	335.73	337.56	0.000302	1.21	56.55	33.73	0.14
Scriber	6159	10-YR	101.86	334.74	338.42	336.00	338.44	0.000199	1.24	107.16	93.62	0.12
Scriber	6159	25-YR	119.30	334.74	338.87	336.11	338.88	0.000140	1.14	161.01	141.00	0.11
Scriber	6159	100-YR	144.45	334.74	339.26	336.26	339.27	0.000111	1.08	224.15	181.19	0.10
Scriber	5795	Half 2-YR	32.76	334.62	336.34	335.49	336.37	0.000947	1.42	23.11	19.46	0.23

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	5795	2-YR	65.52	334.62	337.38	335.81	337.42	0.000496	1.45	45.22	23.19	0.18
Scriber	5795	10-YR	101.86	334.62	338.31	336.08	338.35	0.000331	1.51	73.04	272.16	0.16
Scriber	5795	25-YR	119.30	334.62	338.78	336.19	338.81	0.000254	1.46	97.49	307.18	0.14
Scriber	5795	100-YR	144.45	334.62	339.18	336.34	339.21	0.000224	1.48	123.48	324.03	0.13
Scriber	5757		Bridge									
Scriber	5719*	Half 2-YR	32.76	334.63	336.24	335.52	336.28	0.001266	1.58	20.77	18.96	0.27
Scriber	5719*	2-YR	65.52	334.63	337.20	335.84	337.24	0.000694	1.62	40.46	22.17	0.21
Scriber	5719*	10-YR	101.86	334.63	337.97	336.11	338.01	0.000554	1.75	58.80	50.25	0.20
Scriber	5719*	25-YR	119.30	334.63	338.38	336.22	338.42	0.000436	1.71	80.18	130.29	0.18
Scriber	5719*	100-YR	144.45	334.63	338.94	336.36	338.97	0.000261	1.49	137.34	218.42	0.14
Scriber	5680		Bridge									
Scriber	5642	Half 2-YR	32.76	334.64	336.12	335.42	336.16	0.001480	1.70	19.31	17.72	0.29
Scriber	5642	2-YR	65.52	334.64	337.04	335.75	337.09	0.000859	1.75	37.34	21.34	0.23
Scriber	5642	10-YR	101.86	334.64	337.67	336.03	337.73	0.000824	1.97	51.64	23.82	0.24
Scriber	5642	25-YR	119.30	334.64	338.01	336.15	338.07	0.000726	1.99	59.93	25.76	0.23
Scriber	5642	100-YR	144.45	334.64	338.53	336.32	338.59	0.000576	1.97	74.31	29.06	0.21
Scriber	5614		Bridge									
Scriber	5600	Half 2-YR	32.76	334.44	335.75	335.36	335.84	0.003871	2.35	13.95	16.28	0.45
Scriber	5600	2-YR	65.52	334.44	336.53	335.68	336.62	0.001971	2.35	27.91	19.36	0.34
Scriber	5600	10-YR	101.86	334.44	337.35	335.97	337.43	0.001209	2.26	44.98	22.55	0.28
Scriber	5600	25-YR	119.30	334.44	337.75	336.10	337.83	0.000968	2.19	54.42	24.14	0.26
Scriber	5600	100-YR	144.45	334.44	338.36	336.27	338.42	0.000673	2.08	70.15	27.95	0.22
Scriber	5508	Half 2-YR	32.76	333.51	335.48	334.44	335.53	0.001363	1.77	18.46	13.75	0.27
Scriber	5508	2-YR	65.52	333.51	336.37	334.87	336.43	0.000961	1.98	36.95	33.30	0.24
Scriber	5508	10-YR	101.86	333.51	337.26	335.29	337.30	0.000482	1.79	73.89	48.41	0.18
Scriber	5508	25-YR	119.30	333.51	337.69	335.47	337.73	0.000360	1.69	93.08	84.09	0.16
Scriber	5508	100-YR	144.45	333.51	338.32	335.68	338.35	0.000250	1.58	122.42	98.38	0.14
Scriber	5407	Half 2-YR	32.76	332.62	335.40	333.62	335.44	0.000612	1.51	21.70	9.97	0.18
Scriber	5407	2-YR	65.52	332.62	336.26	334.15	336.33	0.000966	2.13	30.82	11.70	0.23
Scriber	5407	10-YR	101.86	332.62	337.14	334.61	337.23	0.000972	2.41	43.00	16.96	0.24
Scriber	5407	25-YR	119.30	332.62	337.57	334.81	337.67	0.000849	2.46	51.22	21.08	0.23

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	5407	100-YR	144.45	332.62	338.21	335.06	338.30	0.000673	2.44	66.66	27.19	0.21
Scriber	5387	Half 2-YR	32.76	332.29	335.32	333.30	335.35	0.000504	1.41	23.22	9.86	0.16
Scriber	5387	2-YR	65.52	332.29	336.11	333.84	336.18	0.000898	2.08	31.52	11.31	0.22
Scriber	5387	10-YR	101.86	332.29	336.99	334.32	337.08	0.000971	2.40	42.85	15.71	0.23
Scriber	5387	25-YR	119.30	332.29	337.44	334.52	337.53	0.000860	2.44	50.78	19.77	0.23
Scriber	5387	100-YR	144.45	332.29	338.10	334.78	338.19	0.000678	2.43	66.00	26.10	0.21
Scriber	5328		Culvert									
Scriber	5249	Half 2-YR	35.67	331.20	335.30	332.04	335.31	0.000483	0.79	44.89	12.19	0.07
Scriber	5249	2-YR	71.33	331.20	335.99	332.46	336.02	0.001194	1.34	53.41	12.49	0.11
Scriber	5249	10-YR	114.15	331.20	336.63	332.87	336.68	0.002087	1.86	61.42	12.77	0.15
Scriber	5249	25-YR	136.02	331.20	336.91	333.05	336.98	0.002537	2.09	65.05	12.89	0.16
Scriber	5249	100-YR	169.07	331.20	337.28	333.32	337.37	0.003235	2.42	69.85	13.05	0.18
Scriber	5033	Half 2-YR	35.67	333.60	334.97		335.02	0.009518	1.76	21.07	29.86	0.33
Scriber	5033	2-YR	71.33	333.60	335.33		335.42	0.011049	2.39	33.78	41.22	0.38
Scriber	5033	10-YR	114.15	333.60	335.60		335.73	0.013405	3.01	45.97	49.78	0.44
Scriber	5033	25-YR	136.02	333.60	335.70		335.85	0.014873	3.30	51.00	52.91	0.46
Scriber	5033	100-YR	169.07	333.60	335.93		336.09	0.013424	3.44	64.09	60.29	0.45
Scriber	4986.9*	Half 2-YR	35.67	333.47	334.81		334.82	0.002285	0.81	44.53	60.63	0.16
Scriber	4986.9*	2-YR	71.33	333.47	335.16		335.18	0.002550	1.09	67.56	70.48	0.18
Scriber	4986.9*	10-YR	114.15	333.47	335.39		335.42	0.003488	1.44	84.10	77.60	0.22
Scriber	4986.9*	25-YR	136.02	333.47	335.44		335.48	0.004299	1.65	88.46	79.38	0.25
Scriber	4986.9*	100-YR	169.07	333.47	335.74		335.78	0.003372	1.66	113.32	88.88	0.22
Scriber	4940.8*	Half 2-YR	35.67	333.33	334.76		334.76	0.000768	0.48	73.93	93.78	0.09
Scriber	4940.8*	2-YR	71.33	333.33	335.10		335.11	0.000933	0.67	108.00	103.18	0.11
Scriber	4940.8*	10-YR	114.15	333.33	335.30		335.32	0.001389	0.91	129.19	109.63	0.14
Scriber	4940.8*	25-YR	136.02	333.33	335.34		335.35	0.001816	1.06	132.83	110.71	0.16
Scriber	4940.8*	100-YR	169.07	333.33	335.66		335.68	0.001356	1.06	170.44	121.24	0.14
Scriber	4894.7*	Half 2-YR	35.67	333.20	334.74		334.74	0.000311	0.33	109.86	127.45	0.06
Scriber	4894.7*	2-YR	71.33	333.20	335.08		335.08	0.000417	0.47	155.04	137.00	0.07
Scriber	4894.7*	10-YR	114.15	333.20	335.27		335.27	0.000660	0.65	181.05	142.68	0.10
Scriber	4894.7*	25-YR	136.02	333.20	335.29		335.29	0.000892	0.76	183.94	143.32	0.11
Scriber	4894.7*	100-YR	169.07	333.20	335.62		335.63	0.000664	0.75	234.36	154.56	0.10

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	4848.6*	Half 2-YR	35.67	333.06	334.73		334.73	0.000144	0.23	152.31	161.50	0.04
Scriber	4848.6*	2-YR	71.33	333.06	335.07		335.07	0.000211	0.35	208.70	171.47	0.05
Scriber	4848.6*	10-YR	114.15	333.06	335.25		335.25	0.000349	0.49	239.80	176.56	0.07
Scriber	4848.6*	25-YR	136.02	333.06	335.26		335.26	0.000482	0.57	242.08	176.96	0.08
Scriber	4848.6*	100-YR	169.07	333.06	335.60		335.61	0.000365	0.57	305.22	188.41	0.07
Scriber	4802.5*	Half 2-YR	35.67	332.93	334.72		334.72	0.000073	0.18	201.27	195.56	0.03
Scriber	4802.5*	2-YR	71.33	332.93	335.06		335.06	0.000117	0.27	268.82	205.76	0.04
Scriber	4802.5*	10-YR	114.15	332.93	335.23		335.24	0.000200	0.38	305.10	210.57	0.05
Scriber	4802.5*	25-YR	136.02	332.93	335.24		335.25	0.000279	0.45	306.92	210.81	0.06
Scriber	4802.5*	100-YR	169.07	332.93	335.59		335.60	0.000217	0.45	382.52	222.27	0.06
Scriber	4756.4*	Half 2-YR	35.67	332.80	334.72		334.72	0.000040	0.14	256.54	229.89	0.02
Scriber	4756.4*	2-YR	71.33	332.80	335.06		335.06	0.000069	0.21	335.28	240.01	0.03
Scriber	4756.4*	10-YR	114.15	332.80	335.23		335.23	0.000122	0.31	376.85	244.71	0.04
Scriber	4756.4*	25-YR	136.02	332.80	335.23		335.24	0.000171	0.36	378.34	244.87	0.05
Scriber	4756.4*	100-YR	169.07	332.80	335.59		335.59	0.000137	0.37	466.21	255.84	0.05
Scriber	4710.3*	Half 2-YR	35.67	332.66	334.72		334.72	0.000024	0.11	318.13	264.16	0.02
Scriber	4710.3*	2-YR	71.33	332.66	335.05		335.05	0.000043	0.18	408.07	274.28	0.02
Scriber	4710.3*	10-YR	114.15	332.66	335.22		335.23	0.000078	0.25	455.04	279.10	0.03
Scriber	4710.3*	25-YR	136.02	332.66	335.23		335.23	0.000110	0.30	456.27	279.22	0.04
Scriber	4710.3*	100-YR	169.07	332.66	335.58		335.58	0.000090	0.31	556.42	289.13	0.04
Scriber	4664.2*	Half 2-YR	35.67	332.53	334.72		334.72	0.000015	0.09	385.51	298.40	0.01
Scriber	4664.2*	2-YR	71.33	332.53	335.05		335.05	0.000028	0.15	486.65	308.32	0.02
Scriber	4664.2*	10-YR	114.15	332.53	335.22		335.22	0.000052	0.21	539.02	313.23	0.03
Scriber	4664.2*	25-YR	136.02	332.53	335.22		335.23	0.000073	0.25	540.04	313.32	0.03
Scriber	4664.2*	100-YR	169.07	332.53	335.58		335.58	0.000062	0.26	652.39	322.50	0.03
Scriber	4618.1*	Half 2-YR	35.67	332.39	334.72		334.72	0.000010	0.08	459.38	332.48	0.01
Scriber	4618.1*	2-YR	71.33	332.39	335.05		335.05	0.000019	0.13	571.70	342.22	0.02
Scriber	4618.1*	10-YR	114.15	332.39	335.22		335.22	0.000036	0.18	629.48	347.13	0.02
Scriber	4618.1*	25-YR	136.02	332.39	335.22		335.22	0.000050	0.22	630.34	347.20	0.03
Scriber	4618.1*	100-YR	169.07	332.39	335.58		335.58	0.000044	0.23	754.85	356.16	0.03
Scriber	4572	Half 2-YR	35.67	332.26	334.72	333.04	334.72	0.000006	0.07	539.76	366.67	0.01
Scriber	4572	2-YR	71.33	332.26	335.05	333.12	335.05	0.000013	0.11	663.31	376.25	0.01

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	4572	10-YR	114.15	332.26	335.22	333.19	335.22	0.000025	0.16	726.56	381.06	0.02
Scriber	4572	25-YR	136.02	332.26	335.22	333.22	335.22	0.000035	0.19	727.31	381.11	0.02
Scriber	4572	100-YR	169.07	332.26	335.57	333.26	335.58	0.000032	0.20	863.94	390.14	0.02
Scriber	4568		Culvert									
Scriber	4563	Half 2-YR	35.67	332.26	333.63		333.63	0.000252	0.21	170.30	319.30	0.05
Scriber	4563	2-YR	71.33	332.26	333.90		333.90	0.000265	0.28	257.24	329.17	0.06
Scriber	4563	10-YR	114.15	332.26	334.13		334.13	0.000291	0.34	334.95	337.75	0.06
Scriber	4563	25-YR	136.02	332.26	334.28		334.28	0.000260	0.35	386.90	343.38	0.06
Scriber	4563	100-YR	169.07	332.26	335.57		335.57	0.000031	0.20	914.04	543.35	0.02
Scriber	4279	Half 2-YR	35.67	331.52	333.47		333.47	0.002104	0.48	77.23	243.52	0.14
Scriber	4279	2-YR	71.33	331.52	333.75		333.75	0.001332	0.47	175.03	459.55	0.12
Scriber	4279	10-YR	114.15	331.52	334.00		334.00	0.000761	0.47	313.83	593.42	0.09
Scriber	4279	25-YR	136.02	331.52	334.18		334.19	0.000467	0.42	424.92	620.01	0.08
Scriber	4279	100-YR	169.07	331.52	335.57		335.57	0.000020	0.16	1519.21	851.94	0.02
Scriber	3935	Half 2-YR	35.67	332.00	332.85	332.30	332.85	0.001594	0.59	60.65	116.19	0.13
Scriber	3935	2-YR	71.33	332.00	333.29	332.42	333.30	0.001337	0.65	110.46	251.23	0.13
Scriber	3935	10-YR	114.15	332.00	333.71	332.53	333.72	0.000903	0.68	167.35	355.96	0.11
Scriber	3935	25-YR	136.02	332.00	333.99	332.58	334.00	0.000656	0.66	206.68	403.13	0.10
Scriber	3935	100-YR	169.07	332.00	335.55	332.65	335.55	0.000089	0.39	435.50	499.29	0.04
Scriber	3114	Half 2-YR	35.67	328.66	330.47	329.63	330.52	0.006431	1.79	19.88	16.28	0.29
Scriber	3114	2-YR	71.33	328.66	331.29	330.03	331.36	0.005194	2.07	34.41	18.99	0.27
Scriber	3114	10-YR	114.15	328.66	332.37	330.39	332.43	0.003409	1.97	57.94	25.02	0.23
Scriber	3114	25-YR	136.02	328.66	333.01	330.54	333.06	0.002450	1.81	75.15	28.70	0.20
Scriber	3114	100-YR	169.07	328.66	335.40	330.76	335.41	0.000421	1.11	160.67	43.16	0.09
Scriber	3104		Bridge									
Scriber	3093	Half 2-YR	35.67	328.66	330.27		330.34	0.010777	2.13	16.71	15.62	0.36
Scriber	3093	2-YR	71.33	328.66	331.16		331.24	0.006478	2.24	31.87	18.54	0.30
Scriber	3093	10-YR	114.15	328.66	332.29		332.35	0.003735	2.04	55.95	24.56	0.24
Scriber	3093	25-YR	136.02	328.66	332.95		333.01	0.002591	1.85	73.56	28.38	0.20
Scriber	3093	100-YR	169.07	328.66	335.39		335.41	0.000424	1.12	160.29	43.10	0.09
Scriber	2967	Half 2-YR	35.67	328.08	329.81	328.88	329.82	0.002012	1.03	34.62	413.64	0.16

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	2967	2-YR	71.33	328.08	330.95	329.14	330.97	0.000896	1.07	66.88	466.72	0.12
Scriber	2967	10-YR	114.15	328.08	332.16	329.38	332.18	0.000580	1.13	101.05	508.23	0.11
Scriber	2967	25-YR	136.02	328.08	332.85	329.48	332.87	0.000456	1.13	120.70	518.43	0.10
Scriber	2967	100-YR	169.07	328.08	335.36	329.62	335.37	0.000151	0.88	191.41	554.12	0.06
Scriber	2742		Culvert									
Scriber	2517	Half 2-YR	40.62	325.29	328.77	326.35	328.79	0.000387	1.26	32.21	12.78	0.14
Scriber	2517	2-YR	81.24	325.29	329.40	326.83	329.46	0.000895	1.96	41.38	33.28	0.22
Scriber	2517	10-YR	133.36	325.29	329.96	327.35	330.06	0.001315	2.59	51.57	96.33	0.28
Scriber	2517	25-YR	162.02	325.29	330.22	327.60	330.34	0.001438	2.87	56.42	120.79	0.29
Scriber	2517	100-YR	207.81	325.29	331.08	327.96	331.21	0.001018	2.86	72.68	213.72	0.26
Scriber	2501		Inl Struct									
Scriber	2500	Half 2-YR	40.62	325.21	328.76	326.26	328.78	0.000362	1.23	32.96	12.78	0.14
Scriber	2500	2-YR	81.24	325.21	329.36	326.75	329.42	0.000871	1.95	41.58	30.92	0.22
Scriber	2500	10-YR	133.36	325.21	329.90	327.27	330.01	0.001339	2.59	51.39	89.45	0.28
Scriber	2500	25-YR	162.02	325.21	330.15	327.52	330.28	0.001488	2.90	55.96	116.49	0.30
Scriber	2500	100-YR	207.81	325.21	331.01	327.89	331.14	0.001044	2.88	72.26	210.58	0.26
Scriber	2485		Inl Struct									
Scriber	2477	Half 2-YR	40.62	327.34	328.41	328.41	328.78	0.020379	4.87	8.35	11.26	1.00
Scriber	2477	2-YR	81.24	327.34	328.87	328.87	329.39	0.018421	5.82	13.95	13.19	1.00
Scriber	2477	10-YR	133.36	327.34	329.34	329.34	329.97	0.017356	6.41	20.81	29.54	1.00
Scriber	2477	25-YR	162.02	327.34	329.55	329.55	330.23	0.016874	6.62	24.48	45.31	1.00
Scriber	2477	100-YR	207.81	327.34	330.81	329.82	331.10	0.003150	4.33	48.01	181.10	0.48
Scriber	2452	Half 2-YR	40.62	324.46	327.57	325.52	327.60	0.000523	1.48	27.44	16.87	0.15
Scriber	2452	2-YR	81.24	324.46	328.35	326.00	328.43	0.001132	2.31	35.14	21.34	0.23
Scriber	2452	10-YR	133.36	324.46	329.27	326.52	329.39	0.001627	2.83	47.11	39.10	0.29
Scriber	2452	25-YR	162.02	324.46	329.84	326.77	329.97	0.001492	2.83	57.34	98.10	0.29
Scriber	2452	100-YR	207.81	324.46	330.89	327.14	331.01	0.000917	2.70	77.04	193.82	0.23
Scriber	2396		Culvert									
Scriber	2339	Half 2-YR	40.62	323.90	327.42	325.55	327.48	0.001240	2.08	19.53	19.84	0.24
Scriber	2339	2-YR	81.24	323.90	328.00	326.33	328.17	0.002614	3.27	24.86	23.24	0.36

HEC-RAS Plan: Alt2A River: Scriber_Creek Reach: Scriber (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)	
Scriber	2339	10-YR	133.36	323.90	328.59	327.04	328.88	0.003972	4.32	30.86	26.68	0.45
Scriber	2339	25-YR	162.02	323.90	328.87	327.36	329.23	0.004571	4.78	33.91	28.30	0.48
Scriber	2339	100-YR	207.81	323.90	329.26	327.83	329.72	0.005355	5.41	38.39	133.18	0.53
Scriber	2098	Half 2-YR	40.62	325.55	327.28	326.08	327.30	0.000464	1.20	33.95	20.85	0.17
Scriber	2098	2-YR	81.24	325.55	327.75	326.38	327.81	0.000834	1.84	44.05	21.50	0.23
Scriber	2098	10-YR	133.36	325.55	328.27	326.71	328.36	0.001118	2.41	55.45	22.21	0.27
Scriber	2098	25-YR	162.02	325.55	328.53	326.87	328.64	0.001223	2.64	61.26	28.88	0.28
Scriber	2098	100-YR	207.81	325.55	328.91	327.10	329.05	0.001350	2.98	69.84	74.88	0.30
Scriber	2052		Culvert									
Scriber	2006	Half 2-YR	39.06	325.00	327.27	325.50	327.27	0.000113	0.64	60.59	34.93	0.09
Scriber	2006	2-YR	78.12	325.00	327.73	325.78	327.74	0.000227	1.01	77.41	38.26	0.13
Scriber	2006	10-YR	133.34	325.00	328.22	326.09	328.25	0.000356	1.37	97.24	104.49	0.16
Scriber	2006	25-YR	165.28	325.00	328.46	326.24	328.50	0.000418	1.53	107.83	179.44	0.17
Scriber	2006	100-YR	218.29	325.00	328.81	326.47	328.86	0.000505	1.76	124.02	288.68	0.19
Scriber	1408	Half 2-YR	39.06	326.00	327.06	326.71	327.09	0.002269	1.40	27.87	385.68	0.32
Scriber	1408	2-YR	78.12	326.00	327.38	326.91	327.44	0.002067	1.80	43.44	409.56	0.33
Scriber	1408	10-YR	133.34	326.00	327.76	327.10	327.83	0.001899	2.17	61.42	409.57	0.34
Scriber	1408	25-YR	165.28	326.00	327.95	327.20	328.03	0.001837	2.34	70.55	409.57	0.34
Scriber	1408	100-YR	218.29	326.00	328.23	327.35	328.33	0.001790	2.60	84.03	463.42	0.35
Scriber	74	Half 2-YR	39.06	323.00	324.41	323.88	324.45	0.001740	1.51	25.82	32.35	0.30
Scriber	74	2-YR	78.12	323.00	324.86	324.15	324.92	0.001741	1.89	41.34	37.10	0.32
Scriber	74	10-YR	133.34	323.00	325.33	324.42	325.41	0.001741	2.23	59.88	41.96	0.33
Scriber	74	25-YR	165.28	323.00	325.55	324.55	325.64	0.001740	2.38	69.43	43.97	0.33
Scriber	74	100-YR	218.29	323.00	325.88	324.75	325.98	0.001740	2.59	84.22	46.91	0.34

Appendix B.5
HEC-RAS Output – Scenario 2B

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber

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)	
Scriber	12724	Half 2-YR	26.58	365.25	367.09	366.98	367.43	0.027828	4.69	5.67	6.18	0.86
Scriber	12724	2-YR	53.16	365.25	368.08	367.53	368.32	0.008594	4.06	14.56	21.64	0.53
Scriber	12724	10-YR	90.13	365.25	368.52	368.04	368.93	0.011055	5.33	19.20	24.20	0.63
Scriber	12724	25-YR	111.63	365.25	368.96	368.29	369.37	0.008761	5.36	23.87	26.78	0.58
Scriber	12724	100-YR	147.45	365.25	369.86	368.62	370.22	0.005420	5.11	33.27	31.96	0.48
Scriber	12655		Culvert									
Scriber	12604	Half 2-YR	26.58	365.17	367.14	366.78	367.32	0.042888	3.43	7.74	7.93	0.59
Scriber	12604	2-YR	53.16	365.17	367.95	367.27	368.18	0.027262	3.80	14.01	12.27	0.50
Scriber	12604	10-YR	90.13	365.17	368.13	367.78	368.66	0.057038	5.86	15.45	18.82	0.74
Scriber	12604	25-YR	111.63	365.17	368.28	368.03	368.98	0.067275	6.70	16.78	24.71	0.82
Scriber	12604	100-YR	147.45	365.17	368.72	368.42	369.54	0.061673	7.28	20.59	58.10	0.81
Scriber	12597	Half 2-YR	26.58	365.11	367.10	366.44	367.20	0.005629	2.59	10.26	8.49	0.41
Scriber	12597	2-YR	53.16	365.11	367.94	366.93	368.03	0.007046	2.39	22.24	26.29	0.46
Scriber	12597	10-YR	90.13	365.11	368.34	367.65	368.37	0.002044	1.20	75.34	107.98	0.25
Scriber	12597	25-YR	111.63	365.11	368.60	367.90	368.62	0.001143	1.09	106.23	132.47	0.19
Scriber	12597	100-YR	147.45	365.11	369.11	367.99	369.13	0.000464	0.92	174.63	133.31	0.13
Scriber	12489	Half 2-YR	26.58	364.82	366.45	365.80	366.56	0.006073	2.70	9.86	7.36	0.41
Scriber	12489	2-YR	53.16	364.82	367.18	366.27	367.33	0.005652	3.22	19.98	21.38	0.41
Scriber	12489	10-YR	90.13	364.82	367.89	366.91	368.04	0.004227	3.43	42.15	43.87	0.37
Scriber	12489	25-YR	111.63	364.82	368.30	367.23	368.42	0.003087	3.22	62.44	56.61	0.32
Scriber	12489	100-YR	147.45	364.82	368.97	367.58	369.03	0.001676	2.70	110.62	84.51	0.25
Scriber	12484		Bridge									
Scriber	12479	Half 2-YR	26.58	364.82	366.37	365.80	366.50	0.007322	2.87	9.25	7.28	0.45
Scriber	12479	2-YR	53.16	364.82	367.10	366.27	367.27	0.006775	3.42	18.33	20.13	0.44
Scriber	12479	10-YR	90.13	364.82	367.79	366.91	367.97	0.005189	3.69	37.61	40.48	0.41
Scriber	12479	25-YR	111.63	364.82	368.18	367.23	368.32	0.003824	3.49	55.91	52.85	0.36
Scriber	12479	100-YR	147.45	364.82	368.87	367.58	368.96	0.002143	3.00	104.33	94.38	0.28
Scriber	12419	Half 2-YR	26.58	363.53	366.14	364.80	366.21	0.002897	2.14	12.49	8.54	0.27
Scriber	12419	2-YR	53.16	363.53	366.82	365.38	366.95	0.003861	2.98	21.33	16.34	0.32
Scriber	12419	10-YR	90.13	363.53	367.52	366.01	367.69	0.004043	3.57	34.57	21.43	0.34
Scriber	12419	25-YR	111.63	363.53	367.91	366.48	368.09	0.003755	3.70	43.57	24.29	0.34
Scriber	12419	100-YR	147.45	363.53	368.64	366.95	368.79	0.002879	3.65	63.08	29.55	0.30

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	12316	Half 2-YR	26.58	363.41	365.50	365.07	365.67	0.011818	3.30	8.05	7.71	0.57
Scriber	12316	2-YR	53.16	363.41	366.24	365.63	366.42	0.007011	3.50	18.38	16.90	0.48
Scriber	12316	10-YR	90.13	363.41	367.08	366.12	367.26	0.004362	3.62	34.71	22.04	0.40
Scriber	12316	25-YR	111.63	363.41	367.55	366.34	367.71	0.003455	3.61	45.65	24.75	0.37
Scriber	12316	100-YR	147.45	363.41	368.38	366.64	368.53	0.002260	3.44	69.75	32.61	0.31
Scriber	12282	Half 2-YR	26.58	363.31	365.38	364.34	365.45	0.003208	2.16	12.30	7.17	0.29
Scriber	12282	2-YR	53.16	363.31	366.07	364.82	366.21	0.004835	3.05	17.43	7.63	0.36
Scriber	12282	10-YR	90.13	363.31	366.86	365.36	367.09	0.005226	3.83	23.68	8.15	0.39
Scriber	12282	25-YR	111.63	363.31	367.29	365.64	367.56	0.005141	4.15	27.28	8.44	0.39
Scriber	12282	100-YR	147.45	363.31	368.10	366.05	368.40	0.004462	4.44	34.20	13.39	0.38
Scriber	12254		Culvert									
Scriber	12225	Half 2-YR	26.58	363.07	364.96	363.92	365.02	0.002757	2.02	13.14	7.86	0.28
Scriber	12225	2-YR	53.16	363.07	365.61	364.38	365.74	0.003934	2.88	18.80	10.98	0.34
Scriber	12225	10-YR	90.13	363.07	366.27	364.88	366.48	0.004686	3.73	25.04	14.62	0.38
Scriber	12225	25-YR	111.63	363.07	366.61	365.13	366.87	0.004912	4.11	28.41	17.05	0.40
Scriber	12225	100-YR	147.45	363.07	367.18	365.55	367.49	0.004912	4.57	34.03	21.10	0.41
Scriber	12115	Half 2-YR	26.58	362.92	364.46	363.93	364.57	0.006398	2.63	10.12	12.87	0.45
Scriber	12115	2-YR	53.16	362.92	364.82	364.37	365.06	0.009790	3.93	13.53	13.99	0.58
Scriber	12115	10-YR	90.13	362.92	365.40	364.80	365.75	0.009056	4.74	19.01	16.96	0.59
Scriber	12115	25-YR	111.63	362.92	365.79	365.01	366.17	0.007702	4.92	22.68	18.96	0.56
Scriber	12115	100-YR	147.45	362.92	366.51	365.35	366.90	0.005614	5.00	29.47	22.65	0.50
Scriber	12081		Culvert									
Scriber	12047	Half 2-YR	26.58	361.91	364.43	362.95	364.44	0.000366	0.89	30.77	22.01	0.12
Scriber	12047	2-YR	53.16	361.91	364.64	363.25	364.68	0.001008	1.58	34.84	24.67	0.20
Scriber	12047	10-YR	90.13	361.91	364.82	363.57	364.91	0.002179	2.46	38.23	26.89	0.29
Scriber	12047	25-YR	111.63	361.91	364.90	363.73	365.03	0.002970	2.94	39.73	27.87	0.34
Scriber	12047	100-YR	147.45	361.91	364.99	363.97	365.20	0.004505	3.72	41.56	29.07	0.43
Scriber	12031	Half 2-YR	26.18	364.04	364.28	364.28	364.39	0.064869	2.99	11.19	182.50	1.14
Scriber	12031	2-YR	52.36	364.04	364.41	364.41	364.59	0.053098	3.74	18.39	191.87	1.12
Scriber	12031	10-YR	83.62	364.04	364.55	364.55	364.78	0.045436	4.31	26.17	201.30	1.10
Scriber	12031	25-YR	101.52	364.04	364.61	364.61	364.88	0.043677	4.59	30.13	205.87	1.10

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	12031	100-YR	131.09	364.04	364.71	364.71	365.02	0.041013	4.98	36.50	212.93	1.09
Scriber	11917	Half 2-YR	26.18	362.00	362.58		362.59	0.001769	0.92	33.06	215.88	0.22
Scriber	11917	2-YR	52.36	362.00	362.79		362.81	0.002246	1.30	49.63	241.53	0.26
Scriber	11917	10-YR	83.62	362.00	363.46		363.47	0.000582	1.01	116.47	305.62	0.15
Scriber	11917	25-YR	101.52	362.00	363.61		363.62	0.000600	1.09	133.78	317.76	0.15
Scriber	11917	100-YR	131.09	362.00	363.78		363.80	0.000716	1.28	185.20	321.33	0.17
Scriber	11769	Half 2-YR	26.18	361.13	361.75	361.75	361.88	0.036946	3.18	12.36	48.64	0.94
Scriber	11769	2-YR	52.36	361.13	362.12		362.19	0.010560	2.48	39.01	111.95	0.55
Scriber	11769	10-YR	83.62	361.13	363.41		363.42	0.000249	0.80	222.28	172.37	0.10
Scriber	11769	25-YR	101.52	361.13	363.56		363.56	0.000275	0.88	247.36	179.05	0.11
Scriber	11769	100-YR	131.09	361.13	363.71		363.72	0.000340	1.03	276.28	186.47	0.12
Scriber	11723	Half 2-YR	26.18	360.20	361.07		361.11	0.006922	1.62	16.12	35.43	0.42
Scriber	11723	2-YR	52.36	360.20	362.12		362.13	0.000356	0.77	103.79	183.03	0.12
Scriber	11723	10-YR	83.62	360.20	363.41		363.41	0.000048	0.44	355.34	206.07	0.05
Scriber	11723	25-YR	101.52	360.20	363.55		363.56	0.000057	0.50	384.85	208.61	0.05
Scriber	11723	100-YR	131.09	360.20	363.71		363.71	0.000076	0.59	417.92	211.24	0.06
Scriber	11684	Half 2-YR	26.18	360.00	360.70		360.78	0.010818	2.16	12.09	24.09	0.54
Scriber	11684	2-YR	52.36	360.00	362.10		362.11	0.000419	0.77	77.30	197.58	0.12
Scriber	11684	10-YR	83.62	360.00	363.41		363.41	0.000046	0.41	377.04	262.07	0.05
Scriber	11684	25-YR	101.52	360.00	363.55		363.55	0.000053	0.46	414.75	268.62	0.05
Scriber	11684	100-YR	131.09	360.00	363.71		363.71	0.000069	0.55	457.47	275.86	0.06
Scriber	11626	Half 2-YR	26.18	358.08	360.54	359.19	360.59	0.001449	1.73	18.44	19.33	0.22
Scriber	11626	2-YR	52.36	358.08	362.06	359.71	362.08	0.000499	1.49	65.27	99.66	0.14
Scriber	11626	10-YR	83.62	358.08	363.40	360.23	363.41	0.000091	0.79	363.88	265.87	0.06
Scriber	11626	25-YR	101.52	358.08	363.55	360.51	363.55	0.000104	0.86	401.64	267.58	0.07
Scriber	11626	100-YR	131.09	358.08	363.70	360.85	363.71	0.000132	0.99	443.40	269.45	0.08
Scriber	11606	Half 2-YR	26.18	357.91	360.47	359.02	360.55	0.001520	2.29	11.43	8.27	0.26
Scriber	11606	2-YR	52.36	357.91	361.93	359.60	362.06	0.001278	2.87	18.24	16.37	0.26
Scriber	11606	10-YR	83.62	357.91	363.38	360.18	363.40	0.000369	1.41	157.10	233.55	0.12
Scriber	11606	25-YR	101.52	357.91	363.52	360.47	363.54	0.000405	1.51	189.96	234.80	0.12
Scriber	11606	100-YR	131.09	357.91	363.67	360.92	363.70	0.000496	1.70	225.54	236.16	0.14
Scriber	11558		Culvert									

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	11510	Half 2-YR	26.89	356.66	358.72	357.88	358.84	0.004708	2.75	9.78	6.46	0.37
Scriber	11510	2-YR	53.78	356.66	359.51	358.41	359.73	0.005325	3.76	14.29	7.82	0.42
Scriber	11510	10-YR	85.21	356.66	360.05	358.91	360.42	0.006981	4.91	17.36	10.59	0.50
Scriber	11510	25-YR	102.33	356.66	360.28	359.16	360.75	0.007876	5.48	18.69	11.82	0.53
Scriber	11510	100-YR	129.54	356.66	360.60	359.53	361.22	0.009304	6.33	20.48	13.49	0.59
Scriber	11342	Half 2-YR	26.89	356.35	357.92	357.29	358.01	0.005080	2.46	10.91	9.07	0.40
Scriber	11342	2-YR	53.78	356.35	358.68	357.72	358.79	0.005279	2.66	20.21	15.81	0.41
Scriber	11342	10-YR	85.21	356.35	359.25	358.17	359.37	0.004497	2.83	30.09	19.12	0.40
Scriber	11342	25-YR	102.33	356.35	359.50	358.42	359.63	0.004293	2.92	35.04	20.58	0.39
Scriber	11342	100-YR	129.54	356.35	359.86	358.68	360.01	0.003960	3.01	42.99	22.73	0.39
Scriber	11263	Half 2-YR	26.89	355.61	356.73	356.70	357.13	0.035302	5.08	5.29	6.10	0.96
Scriber	11263	2-YR	53.78	355.61	357.21	357.21	357.86	0.037398	6.47	8.32	6.44	1.00
Scriber	11263	10-YR	85.21	355.61	357.79	357.79	358.53	0.036572	6.90	12.36	8.41	1.00
Scriber	11263	25-YR	102.33	355.61	357.99	357.99	358.81	0.035797	7.24	14.13	8.90	1.00
Scriber	11263	100-YR	129.54	355.61	358.28	358.28	359.22	0.034637	7.80	16.61	9.57	1.00
Scriber	11234		Culvert									
Scriber	11205	Half 2-YR	26.89	354.57	356.71	355.69	356.76	0.001534	1.65	16.34	12.02	0.23
Scriber	11205	2-YR	53.78	354.57	357.42	356.07	357.50	0.001813	2.24	24.04	13.04	0.27
Scriber	11205	10-YR	85.21	354.57	357.99	356.42	358.11	0.002121	2.82	30.23	14.52	0.30
Scriber	11205	25-YR	102.33	354.57	358.23	356.59	358.38	0.002294	3.11	32.96	15.39	0.32
Scriber	11205	100-YR	129.54	354.57	358.57	356.85	358.77	0.002567	3.53	36.71	16.59	0.34
Scriber	11163	Half 2-YR	26.89	354.93	356.58		356.65	0.003621	2.13	12.60	10.44	0.34
Scriber	11163	2-YR	53.78	354.93	357.28		357.39	0.003401	2.65	20.64	12.70	0.35
Scriber	11163	10-YR	85.21	354.93	357.83		357.99	0.003645	3.16	28.16	14.61	0.37
Scriber	11163	25-YR	102.33	354.93	358.08		358.25	0.003783	3.40	31.83	15.69	0.38
Scriber	11163	100-YR	129.54	354.93	358.42		358.63	0.003858	3.75	37.67	18.58	0.40
Scriber	11030	Half 2-YR	26.89	354.39	356.09	355.29	356.16	0.003695	2.22	12.14	9.14	0.34
Scriber	11030	2-YR	53.78	354.39	356.82	355.75	356.94	0.003420	2.76	22.66	27.14	0.34
Scriber	11030	10-YR	85.21	354.39	357.46	356.16	357.58	0.002602	2.90	49.06	54.42	0.32
Scriber	11030	25-YR	102.33	354.39	357.76	356.35	357.87	0.002214	2.87	67.22	66.46	0.30
Scriber	11030	100-YR	129.54	354.39	358.19	356.71	358.28	0.001752	2.80	99.33	83.61	0.27

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	10984.3*	Half 2-YR	26.89	354.15	355.92	355.13	355.99	0.003784	2.25	11.96	8.91	0.34
Scriber	10984.3*	2-YR	53.78	354.15	356.65	355.58	356.77	0.003676	2.86	19.44	12.49	0.36
Scriber	10984.3*	10-YR	85.21	354.15	357.29	356.00	357.44	0.003219	3.22	36.92	41.01	0.35
Scriber	10984.3*	25-YR	102.33	354.15	357.61	356.19	357.75	0.002798	3.24	51.91	54.79	0.33
Scriber	10984.3*	100-YR	129.54	354.15	358.06	356.48	358.18	0.002288	3.21	80.47	81.41	0.31
Scriber	10938.6*	Half 2-YR	26.89	353.90	355.74	354.96	355.82	0.003959	2.30	11.71	8.65	0.35
Scriber	10938.6*	2-YR	53.78	353.90	356.47	355.42	356.60	0.003909	2.93	18.82	11.34	0.36
Scriber	10938.6*	10-YR	85.21	353.90	357.10	355.83	357.28	0.003807	3.47	28.63	26.52	0.38
Scriber	10938.6*	25-YR	102.33	353.90	357.42	356.03	357.60	0.003458	3.57	39.31	39.84	0.36
Scriber	10938.6*	100-YR	129.54	353.90	357.88	356.32	358.06	0.002944	3.63	65.06	83.21	0.34
Scriber	10893.*	Half 2-YR	26.89	353.66	355.54	354.79	355.63	0.004278	2.37	11.34	8.35	0.36
Scriber	10893.*	2-YR	53.78	353.66	356.27	355.25	356.41	0.004318	3.04	18.04	10.63	0.38
Scriber	10893.*	10-YR	85.21	353.66	356.89	355.67	357.09	0.004305	3.64	25.52	13.85	0.39
Scriber	10893.*	25-YR	102.33	353.66	357.21	355.87	357.43	0.004128	3.84	31.70	33.42	0.39
Scriber	10893.*	100-YR	129.54	353.66	357.70	356.16	357.91	0.003475	3.90	55.49	73.16	0.37
Scriber	10847.3*	Half 2-YR	26.89	353.41	355.33	354.62	355.42	0.004798	2.47	10.87	8.03	0.37
Scriber	10847.3*	2-YR	53.78	353.41	356.04	355.07	356.20	0.004990	3.20	17.08	9.91	0.40
Scriber	10847.3*	10-YR	85.21	353.41	356.66	355.50	356.88	0.004992	3.82	23.93	12.39	0.42
Scriber	10847.3*	25-YR	102.33	353.41	356.97	355.70	357.22	0.004823	4.06	28.24	14.79	0.42
Scriber	10847.3*	100-YR	129.54	353.41	357.48	356.00	357.74	0.004148	4.19	45.75	59.22	0.40
Scriber	10801.6*	Half 2-YR	26.89	353.17	355.06	354.44	355.18	0.006149	2.70	9.96	7.65	0.42
Scriber	10801.6*	2-YR	53.78	353.17	355.75	354.90	355.94	0.006547	3.48	15.54	9.00	0.45
Scriber	10801.6*	10-YR	85.21	353.17	356.35	355.34	356.62	0.006416	4.14	21.68	11.28	0.46
Scriber	10801.6*	25-YR	102.33	353.17	356.68	355.55	356.97	0.006014	4.36	25.61	12.52	0.46
Scriber	10801.6*	100-YR	129.54	353.17	357.20	355.86	357.52	0.005312	4.58	34.91	41.12	0.44
Scriber	10756	Half 2-YR	26.89	352.92	354.47	354.25	354.71	0.018460	3.92	6.85	6.96	0.70
Scriber	10756	2-YR	53.78	352.92	355.21	354.72	355.51	0.013518	4.38	12.28	7.68	0.61
Scriber	10756	10-YR	85.21	352.92	355.86	355.17	356.23	0.011184	4.91	17.65	9.58	0.58
Scriber	10756	25-YR	102.33	352.92	356.24	355.39	356.63	0.009330	5.00	21.09	10.97	0.55
Scriber	10756	100-YR	129.54	352.92	356.82	355.71	357.22	0.007583	5.15	26.24	15.76	0.51
Scriber	10728		Culvert									
Scriber	10701	Half 2-YR	26.89	352.70	354.52	353.42	354.55	0.001073	1.48	18.22	15.28	0.20

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	10701	2-YR	53.78	352.70	355.32	353.76	355.38	0.001148	1.99	27.06	16.73	0.22
Scriber	10701	10-YR	85.21	352.70	355.99	354.07	356.08	0.001294	2.48	34.41	17.94	0.25
Scriber	10701	25-YR	102.33	352.70	356.30	354.25	356.41	0.001357	2.70	37.86	19.34	0.26
Scriber	10701	100-YR	129.54	352.70	356.76	354.48	356.90	0.001435	3.02	42.89	26.41	0.27
Scriber	10557	Half 2-YR	26.89	352.32	354.18	353.32	354.27	0.004018	2.32	11.59	7.98	0.34
Scriber	10557	2-YR	53.78	352.32	354.92	353.81	355.06	0.004869	3.01	17.88	9.17	0.38
Scriber	10557	10-YR	85.21	352.32	355.50	354.25	355.71	0.005803	3.62	23.53	10.13	0.42
Scriber	10557	25-YR	102.33	352.32	355.79	354.48	356.02	0.006047	3.87	26.49	10.82	0.43
Scriber	10557	100-YR	129.54	352.32	356.22	354.79	356.49	0.005973	4.14	31.65	12.83	0.44
Scriber	10477	Half 2-YR	26.89	352.11	353.11	353.11	353.52	0.034045	5.16	5.21	6.50	1.01
Scriber	10477	2-YR	53.78	352.11	353.61	353.61	354.22	0.030110	6.26	8.60	7.28	1.00
Scriber	10477	10-YR	85.21	352.11	354.24	354.05	354.89	0.018926	6.47	13.17	8.25	0.85
Scriber	10477	25-YR	102.33	352.11	354.60	354.26	355.26	0.014885	6.48	15.80	8.81	0.77
Scriber	10477	100-YR	129.54	352.11	355.06	354.58	355.77	0.012741	6.79	19.07	9.51	0.74
Scriber	10450		Culvert									
Scriber	10422	Half 2-YR	26.89	350.59	352.71	351.72	352.78	0.002595	2.18	12.33	9.89	0.30
Scriber	10422	2-YR	53.78	350.59	353.44	352.19	353.59	0.003432	3.01	17.84	11.11	0.35
Scriber	10422	10-YR	85.21	350.59	354.06	352.63	354.28	0.004257	3.76	22.69	12.15	0.39
Scriber	10422	25-YR	102.33	350.59	354.34	352.85	354.61	0.004665	4.10	24.95	12.62	0.41
Scriber	10422	100-YR	129.54	350.59	354.72	353.17	355.05	0.005366	4.63	28.00	13.24	0.44
Scriber	10340	Half 2-YR	26.89	350.64	351.75	351.75	352.15	0.036263	5.09	5.28	6.59	1.00
Scriber	10340	2-YR	53.78	350.64	352.25	352.25	352.81	0.033354	6.03	8.92	7.92	1.00
Scriber	10340	10-YR	85.21	350.64	352.70	352.70	353.39	0.031352	6.69	12.74	9.11	1.00
Scriber	10340	25-YR	102.33	350.64	352.90	352.90	353.66	0.031169	7.01	14.60	9.63	1.00
Scriber	10340	100-YR	129.54	350.64	353.21	353.18	354.04	0.029395	7.30	17.74	10.46	0.99
Scriber	9965	Half 2-YR	26.89	348.02	350.03		350.05	0.000869	1.21	22.31	15.01	0.17
Scriber	9965	2-YR	53.78	348.02	350.47		350.53	0.001531	1.83	30.43	25.40	0.24
Scriber	9965	10-YR	85.21	348.02	350.78		350.87	0.002218	2.44	39.17	30.77	0.29
Scriber	9965	25-YR	102.33	348.02	350.92		351.03	0.002525	2.72	43.63	32.21	0.32
Scriber	9965	100-YR	129.54	348.02	351.12		351.26	0.002983	3.12	50.07	34.17	0.35
Scriber	9840	Half 2-YR	26.89	347.62	349.31	349.31	349.68	0.040390	4.93	5.45	7.23	1.00
Scriber	9840	2-YR	53.78	347.62	349.82	349.82	350.05	0.018541	4.30	21.04	55.47	0.73

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9840	10-YR	85.21	347.62	350.04	350.04	350.26	0.016805	4.64	35.17	69.57	0.72
Scriber	9840	25-YR	102.33	347.62	350.10	350.10	350.35	0.018240	4.99	39.65	70.52	0.76
Scriber	9840	100-YR	129.54	347.62	350.20	350.20	350.48	0.019720	5.43	46.43	71.60	0.80
Scriber	9764	Half 2-YR	26.89	344.99	348.28	345.92	348.30	0.000501	1.18	23.65	60.19	0.12
Scriber	9764	2-YR	53.78	344.99	349.01	346.43	349.06	0.000887	1.82	32.54	132.98	0.17
Scriber	9764	10-YR	85.21	344.99	349.33	346.90	349.43	0.001626	2.62	37.28	136.11	0.23
Scriber	9764	25-YR	102.33	344.99	349.46	347.13	349.60	0.002072	3.02	39.38	137.40	0.27
Scriber	9764	100-YR	129.54	344.99	349.68	347.44	349.86	0.002715	3.58	43.10	139.54	0.31
Scriber	9679	Half 2-YR	26.89	345.93	348.18	346.84	348.23	0.001561	1.82	17.07	126.60	0.22
Scriber	9679	2-YR	53.78	345.93	348.90	347.35	348.96	0.001614	2.26	43.31	185.46	0.24
Scriber	9679	10-YR	85.21	345.93	349.19	347.83	349.27	0.002020	2.70	64.63	189.31	0.27
Scriber	9679	25-YR	102.33	345.93	349.31	348.16	349.40	0.002241	2.92	73.35	190.93	0.29
Scriber	9679	100-YR	129.54	345.93	349.54	348.52	349.62	0.002238	3.05	90.50	194.08	0.29
Scriber	9634	Half 2-YR	26.89	346.65	347.57	347.57	347.99	0.039232	5.21	5.16	80.01	1.01
Scriber	9634	2-YR	53.78	346.65	348.07	348.07	348.71	0.037555	6.38	8.43	134.82	1.01
Scriber	9634	10-YR	85.21	346.65	348.71	348.71	349.05	0.016132	5.21	28.32	183.51	0.70
Scriber	9634	25-YR	102.33	346.65	348.97		349.20	0.010453	4.57	44.23	201.60	0.57
Scriber	9634	100-YR	129.54	346.65	349.36		349.47	0.005255	3.65	72.35	209.42	0.42
Scriber	9563	Half 2-YR	26.89	345.10	346.71	346.02	346.82	0.005789	2.62	10.27	7.27	0.39
Scriber	9563	2-YR	53.78	345.10	347.35	346.48	347.55	0.007272	3.58	15.04	7.63	0.45
Scriber	9563	10-YR	85.21	345.10	347.89	346.93	348.20	0.008278	4.47	19.19	7.93	0.50
Scriber	9563	25-YR	102.33	345.10	348.13	347.14	348.50	0.008762	4.89	21.16	8.07	0.52
Scriber	9563	100-YR	129.54	345.10	348.48	347.45	348.95	0.009413	5.49	24.03	8.27	0.55
Scriber	9555		Bridge									
Scriber	9548	Half 2-YR	26.89	345.03	346.50	346.15	346.68	0.012602	3.36	8.00	7.52	0.57
Scriber	9548	2-YR	53.78	345.03	347.10	346.60	347.39	0.011350	4.30	12.72	8.11	0.58
Scriber	9548	10-YR	85.21	345.03	347.58	347.03	348.01	0.012339	5.29	16.67	8.57	0.64
Scriber	9548	25-YR	102.33	345.03	347.79	347.24	348.30	0.013007	5.78	18.49	8.77	0.66
Scriber	9548	100-YR	129.54	345.03	348.08	347.55	348.73	0.013995	6.48	21.12	9.05	0.70
Scriber	9510	Half 2-YR	26.89	344.76	346.22	345.63	346.33	0.005856	2.60	10.33	8.32	0.41
Scriber	9510	2-YR	53.78	344.76	346.82	346.06	347.01	0.007280	3.49	15.42	8.88	0.47
Scriber	9510	10-YR	85.21	344.76	347.26	346.48	347.55	0.008877	4.39	19.63	10.79	0.53

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9510	25-YR	102.33	344.76	347.45	346.67	347.81	0.009528	4.82	21.86	11.99	0.56
Scriber	9510	100-YR	129.54	344.76	347.73	346.97	348.18	0.010312	5.41	25.48	13.73	0.59
Scriber	9500.3*	Half 2-YR	26.89	344.70	346.16	345.61	346.27	0.006084	2.64	10.19	8.47	0.42
Scriber	9500.3*	2-YR	53.78	344.70	346.74	346.03	346.93	0.007491	3.52	15.27	9.14	0.48
Scriber	9500.3*	10-YR	85.21	344.70	347.16	346.45	347.47	0.009099	4.44	19.44	11.10	0.54
Scriber	9500.3*	25-YR	102.33	344.70	347.35	346.64	347.72	0.009762	4.87	21.64	12.27	0.57
Scriber	9500.3*	100-YR	129.54	344.70	347.62	346.92	348.08	0.010524	5.46	25.24	13.98	0.61
Scriber	9490.6*	Half 2-YR	26.89	344.65	346.10	345.56	346.21	0.006431	2.69	10.01	8.63	0.44
Scriber	9490.6*	2-YR	53.78	344.65	346.66	345.99	346.86	0.007813	3.56	15.09	9.42	0.50
Scriber	9490.6*	10-YR	85.21	344.65	347.06	346.40	347.38	0.009439	4.50	19.23	11.47	0.56
Scriber	9490.6*	25-YR	102.33	344.65	347.24	346.60	347.62	0.010128	4.93	21.40	12.62	0.59
Scriber	9490.6*	100-YR	129.54	344.65	347.51	346.87	347.98	0.010864	5.52	24.99	14.32	0.62
Scriber	9480.9*	Half 2-YR	26.89	344.59	346.03	345.52	346.14	0.006693	2.72	9.90	8.79	0.45
Scriber	9480.9*	2-YR	53.78	344.59	346.58	345.95	346.78	0.008089	3.59	14.98	9.70	0.51
Scriber	9480.9*	10-YR	85.21	344.59	346.96	346.36	347.28	0.009816	4.54	19.05	11.86	0.58
Scriber	9480.9*	25-YR	102.33	344.59	347.13	346.55	347.52	0.010564	4.99	21.18	13.02	0.61
Scriber	9480.9*	100-YR	129.54	344.59	347.39	346.82	347.87	0.011324	5.59	24.76	15.37	0.64
Scriber	9471.2*	Half 2-YR	26.89	344.54	345.96	345.48	346.08	0.007110	2.76	9.74	8.97	0.47
Scriber	9471.2*	2-YR	53.78	344.54	346.49	345.91	346.70	0.008498	3.63	14.81	10.00	0.53
Scriber	9471.2*	10-YR	85.21	344.54	346.85	346.31	347.18	0.010409	4.61	18.78	12.30	0.60
Scriber	9471.2*	25-YR	102.33	344.54	347.01	346.49	347.41	0.011272	5.08	20.85	13.49	0.63
Scriber	9471.2*	100-YR	129.54	344.54	347.26	346.76	347.76	0.012171	5.70	24.72	22.99	0.67
Scriber	9461.5*	Half 2-YR	26.89	344.48	345.88	345.43	346.00	0.007513	2.80	9.62	9.16	0.48
Scriber	9461.5*	2-YR	53.78	344.48	346.40	345.85	346.61	0.008902	3.67	14.67	10.31	0.54
Scriber	9461.5*	10-YR	85.21	344.48	346.73	346.24	347.08	0.011221	4.70	18.44	12.77	0.63
Scriber	9461.5*	25-YR	102.33	344.48	346.88	346.43	347.30	0.012379	5.20	20.36	13.97	0.67
Scriber	9461.5*	100-YR	129.54	344.48	347.13	346.69	347.63	0.012693	5.73	27.13	46.77	0.69
Scriber	9451.8*	Half 2-YR	26.89	344.42	345.80	345.38	345.93	0.008066	2.85	9.44	9.32	0.50
Scriber	9451.8*	2-YR	53.78	344.42	346.31	345.80	346.52	0.009502	3.72	14.46	10.59	0.56
Scriber	9451.8*	10-YR	85.21	344.42	346.60	346.19	346.96	0.012683	4.85	17.85	13.25	0.67
Scriber	9451.8*	25-YR	102.33	344.42	346.69	346.37	347.16	0.015265	5.52	19.09	14.20	0.74
Scriber	9451.8*	100-YR	129.54	344.42	346.73	346.64	347.45	0.022375	6.80	20.18	47.27	0.90

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9442.1*	Half 2-YR	26.89	344.37	345.71	345.32	345.85	0.008714	2.90	9.27	9.50	0.52
Scriber	9442.1*	2-YR	53.78	344.37	346.20	345.75	346.43	0.010189	3.77	14.25	10.88	0.58
Scriber	9442.1*	10-YR	85.21	344.37	346.45	346.12	346.83	0.014162	4.97	20.06	48.55	0.70
Scriber	9442.1*	25-YR	102.33	344.37	346.60	346.31	346.99	0.013502	5.17	28.72	58.58	0.70
Scriber	9442.1*	100-YR	129.54	344.37	346.83	346.76	347.20	0.011670	5.23	42.84	66.28	0.66
Scriber	9432.4*	Half 2-YR	26.89	344.31	345.62	345.24	345.75	0.009647	2.98	9.01	9.62	0.54
Scriber	9432.4*	2-YR	53.78	344.31	346.11	345.67	346.32	0.010075	3.70	17.51	36.29	0.58
Scriber	9432.4*	10-YR	85.21	344.31	346.46	346.20	346.68	0.008659	4.02	35.01	54.36	0.56
Scriber	9432.4*	25-YR	102.33	344.31	346.65	346.40	346.85	0.007411	4.00	45.04	54.63	0.52
Scriber	9432.4*	100-YR	129.54	344.31	346.88	346.55	347.07	0.006711	4.12	57.57	54.98	0.51
Scriber	9422.7*	Half 2-YR	26.89	344.26	345.50	345.18	345.65	0.011299	3.13	8.60	9.67	0.58
Scriber	9422.7*	2-YR	53.78	344.26	345.98	345.60	346.21	0.011824	3.88	15.39	25.62	0.62
Scriber	9422.7*	10-YR	85.21	344.26	346.20	346.11	346.56	0.015798	4.98	22.17	33.07	0.74
Scriber	9422.7*	25-YR	102.33	344.26	346.25	346.25	346.72	0.019738	5.70	23.83	33.14	0.83
Scriber	9422.7*	100-YR	129.54	344.26	346.43	346.43	346.95	0.019376	6.11	29.96	33.39	0.84
Scriber	9413	Half 2-YR	26.89	344.20	345.11	345.11	345.45	0.036205	4.68	5.74	8.51	1.00
Scriber	9413	2-YR	53.78	344.20	345.53	345.53	346.01	0.033415	5.58	9.64	10.22	1.01
Scriber	9413	10-YR	85.21	344.20	346.14	346.14	346.40	0.012362	4.42	35.51	92.80	0.66
Scriber	9413	25-YR	102.33	344.20	346.23	346.23	346.50	0.012387	4.62	44.18	93.53	0.66
Scriber	9413	100-YR	129.54	344.20	346.54	346.34	346.70	0.006859	3.89	73.47	95.93	0.51
Scriber	9284	Half 2-YR	28.28	341.82	343.45	342.78	343.59	0.004583	3.05	11.11	8.66	0.42
Scriber	9284	2-YR	56.55	341.82	344.13	343.32	344.38	0.005347	4.16	17.48	10.19	0.49
Scriber	9284	10-YR	89.02	341.82	344.66	343.80	345.04	0.006271	5.19	23.26	11.43	0.54
Scriber	9284	25-YR	106.42	341.82	344.93	344.04	345.37	0.006475	5.60	26.40	12.05	0.56
Scriber	9284	100-YR	133.76	341.82	345.31	344.38	345.83	0.006732	6.17	31.12	12.93	0.58
Scriber	9213	Half 2-YR	28.28	341.23	343.09	342.36	343.22	0.005876	2.98	9.79	7.24	0.45
Scriber	9213	2-YR	56.55	341.23	343.67	342.97	343.93	0.007726	4.09	14.72	10.38	0.53
Scriber	9213	10-YR	89.02	341.23	344.13	343.47	344.52	0.008796	5.07	19.58	10.73	0.59
Scriber	9213	25-YR	106.42	341.23	344.42	343.72	344.85	0.008267	5.33	22.76	10.96	0.59
Scriber	9213	100-YR	133.76	341.23	344.81	344.01	345.31	0.008034	5.77	27.06	11.26	0.59
Scriber	9153	Half 2-YR	28.28	341.05	342.04	342.04	342.46	0.037790	5.22	5.42	6.95	1.01
Scriber	9153	2-YR	56.55	341.05	342.70	342.58	343.17	0.021522	5.56	11.05	13.46	0.82
Scriber	9153	10-YR	89.02	341.05	343.53	343.00	343.93	0.010445	5.26	19.99	14.17	0.62

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9153	25-YR	106.42	341.05	343.94	343.20	344.33	0.008298	5.24	24.54	14.52	0.57
Scriber	9153	100-YR	133.76	341.05	344.35	343.48	344.80	0.007863	5.62	29.30	14.88	0.56
Scriber	9116		Culvert									
Scriber	9079	Half 2-YR	28.28	340.17	342.24	341.38	342.30	0.002622	1.98	14.28	10.21	0.29
Scriber	9079	2-YR	56.55	340.17	343.06	341.80	343.15	0.002332	2.49	22.94	10.96	0.30
Scriber	9079	10-YR	89.02	340.17	343.76	342.17	343.90	0.002274	2.96	30.78	11.60	0.31
Scriber	9079	25-YR	106.42	340.17	344.10	342.34	344.26	0.002233	3.16	34.64	11.91	0.31
Scriber	9079	100-YR	133.76	340.17	344.49	342.60	344.69	0.002411	3.55	39.05	12.27	0.33
Scriber	9042	Half 2-YR	28.28	339.47	341.87	341.25	342.08	0.011814	3.66	7.74	5.36	0.53
Scriber	9042	2-YR	56.55	339.47	342.48	341.95	342.89	0.014597	5.09	11.44	6.71	0.63
Scriber	9042	10-YR	89.02	339.47	342.85	342.50	343.54	0.020571	6.74	14.57	11.75	0.77
Scriber	9042	25-YR	106.42	339.47	342.95	342.84	343.84	0.025051	7.66	15.94	13.70	0.85
Scriber	9042	100-YR	133.76	339.47	343.33	343.33	344.27	0.022797	8.02	21.36	14.83	0.83
Scriber	8966	Half 2-YR	28.28	339.27	340.21	340.21	340.60	0.036980	4.98	5.68	7.28	0.99
Scriber	8966	2-YR	56.55	339.27	340.68	340.68	341.27	0.032935	6.19	9.23	8.21	0.99
Scriber	8966	10-YR	89.02	339.27	341.23	341.11	341.91	0.022654	6.61	14.16	9.51	0.88
Scriber	8966	25-YR	106.42	339.27	341.62	341.33	342.25	0.016315	6.41	18.06	10.42	0.77
Scriber	8966	100-YR	133.76	339.27	342.13	341.62	342.75	0.012395	6.43	23.64	11.60	0.69
Scriber	8891	Half 2-YR	28.28	337.35	339.76	338.54	339.80	0.001539	1.63	17.40	10.24	0.22
Scriber	8891	2-YR	56.55	337.35	340.49	338.96	340.57	0.002131	2.24	25.24	11.25	0.26
Scriber	8891	10-YR	89.02	337.35	341.22	339.35	341.33	0.002230	2.63	33.84	12.27	0.28
Scriber	8891	25-YR	106.42	337.35	341.63	339.54	341.75	0.002023	2.75	38.97	12.83	0.27
Scriber	8891	100-YR	133.76	337.35	342.16	339.79	342.29	0.001929	2.96	45.55	13.56	0.27
Scriber	8872		Culvert									
Scriber	8863	Half 2-YR	28.28	337.99	339.72	338.86	339.78	0.003008	2.05	13.77	9.65	0.30
Scriber	8863	2-YR	56.55	337.99	340.42	339.27	340.53	0.003616	2.71	20.88	10.56	0.34
Scriber	8863	10-YR	89.02	337.99	341.13	339.67	341.28	0.003389	3.11	28.70	11.91	0.34
Scriber	8863	25-YR	106.42	337.99	341.57	339.86	341.73	0.002871	3.18	33.71	13.03	0.32
Scriber	8863	100-YR	133.76	337.99	342.03	340.12	342.22	0.002825	3.46	39.05	14.20	0.33
Scriber	8772	Half 2-YR	28.28	337.88	339.43	338.79	339.49	0.003341	1.93	14.89	15.43	0.33
Scriber	8772	2-YR	56.55	337.88	340.20	339.17	340.27	0.002079	2.18	28.01	53.56	0.28

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	8772	10-YR	89.02	337.88	341.08	339.47	341.10	0.000661	1.60	102.89	84.06	0.17
Scriber	8772	25-YR	106.42	337.88	341.56	339.62	341.58	0.000403	1.39	144.68	87.83	0.14
Scriber	8772	100-YR	133.76	337.88	342.05	339.82	342.07	0.000315	1.35	188.72	91.63	0.12
Scriber	8745		Bridge									
Scriber	8718	Half 2-YR	28.28	337.17	339.31	338.19	339.32	0.000611	1.06	49.83	66.22	0.14
Scriber	8718	2-YR	56.55	337.17	340.05	338.54	340.07	0.000438	1.14	104.06	75.45	0.13
Scriber	8718	10-YR	89.02	337.17	340.72	338.85	340.73	0.000354	1.20	155.76	79.66	0.12
Scriber	8718	25-YR	106.42	337.17	341.07	338.97	341.08	0.000344	1.26	195.96	106.66	0.12
Scriber	8718	100-YR	133.76	337.17	341.58	339.13	341.59	0.000267	1.22	250.99	107.05	0.11
Scriber	8590	Half 2-YR	28.28	336.22	339.24	337.10	339.26	0.000444	1.09	34.27	28.52	0.12
Scriber	8590	2-YR	56.55	336.22	339.97	337.59	340.00	0.000631	1.53	65.29	69.08	0.15
Scriber	8590	10-YR	89.02	336.22	340.65	338.01	340.68	0.000532	1.59	118.42	82.02	0.14
Scriber	8590	25-YR	106.42	336.22	341.01	338.21	341.03	0.000463	1.56	148.35	85.86	0.13
Scriber	8590	100-YR	133.76	336.22	341.54	338.53	341.56	0.000383	1.53	197.88	95.34	0.12
Scriber	8427	Half 2-YR	28.28	336.00	339.21		339.22	0.000137	0.67	47.72	26.20	0.07
Scriber	8427	2-YR	56.55	336.00	339.92		339.94	0.000243	1.04	69.36	34.18	0.10
Scriber	8427	10-YR	89.02	336.00	340.59		340.61	0.000309	1.31	94.45	40.78	0.11
Scriber	8427	25-YR	106.42	336.00	340.94		340.97	0.000324	1.41	110.14	48.44	0.12
Scriber	8427	100-YR	133.76	336.00	341.46		341.50	0.000337	1.55	140.25	76.48	0.12
Scriber	8283	Half 2-YR	28.28	337.58	339.10		339.16	0.002653	1.93	16.03	13.20	0.28
Scriber	8283	2-YR	56.55	337.58	339.74		339.84	0.002941	2.60	25.06	15.06	0.32
Scriber	8283	10-YR	89.02	337.58	340.37		340.50	0.002889	3.07	35.11	17.18	0.33
Scriber	8283	25-YR	106.42	337.58	340.71		340.86	0.002705	3.22	41.18	18.53	0.33
Scriber	8283	100-YR	133.76	337.58	341.22		341.38	0.002440	3.39	51.25	20.82	0.32
Scriber	8249	Half 2-YR	28.28	337.26	338.94	338.31	339.03	0.004854	2.52	13.11	12.93	0.38
Scriber	8249	2-YR	56.55	337.26	339.54	338.75	339.69	0.005143	3.31	21.67	16.66	0.41
Scriber	8249	10-YR	89.02	337.26	340.18	339.16	340.36	0.004486	3.72	31.36	20.66	0.40
Scriber	8249	25-YR	106.42	337.26	340.53	339.34	340.72	0.003996	3.82	36.78	22.89	0.39
Scriber	8249	100-YR	133.76	337.26	341.06	339.62	341.26	0.003472	3.97	44.80	25.88	0.37
Scriber	8183		Culvert									
Scriber	8107	Half 2-YR	48.25	336.46	338.06	337.41	338.16	0.004317	2.54	19.29	15.53	0.39

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	8107	2-YR	96.49	336.46	338.64	337.85	338.83	0.004965	3.48	28.82	17.01	0.45
Scriber	8107	10-YR	158.35	336.46	339.17	338.30	339.47	0.005776	4.43	38.48	20.87	0.50
Scriber	8107	25-YR	192.52	336.46	339.42	338.52	339.78	0.006077	4.85	43.24	23.43	0.52
Scriber	8107	100-YR	247.35	336.46	339.69	338.84	340.17	0.007246	5.64	48.25	26.25	0.58
Scriber	8060	Half 2-YR	38.58	336.43	337.95	337.13	337.98	0.002033	1.56	24.80	22.70	0.26
Scriber	8060	2-YR	77.15	336.43	338.57	337.48	338.62	0.001846	1.91	43.64	45.53	0.27
Scriber	8060	10-YR	117.88	336.43	339.17	337.77	339.23	0.001267	1.96	83.79	78.96	0.23
Scriber	8060	25-YR	138.02	336.43	339.46	337.89	339.51	0.001055	1.94	108.05	92.35	0.22
Scriber	8060	100-YR	167.82	336.43	339.78	338.06	339.84	0.000946	1.99	160.12	191.89	0.21
Scriber	7965	Half 2-YR	38.58	336.37	337.30	337.13	337.50	0.017188	3.62	10.66	13.50	0.72
Scriber	7965	2-YR	77.15	336.37	338.07	337.52	338.27	0.006929	3.62	22.40	52.13	0.51
Scriber	7965	10-YR	117.88	336.37	338.76	337.85	338.97	0.004640	3.77	35.52	116.14	0.44
Scriber	7965	25-YR	138.02	336.37	339.07	338.00	339.29	0.003979	3.81	43.65	137.35	0.42
Scriber	7965	100-YR	167.82	336.37	339.38	338.21	339.62	0.003885	4.06	53.05	250.20	0.42
Scriber	7848	Half 2-YR	38.58	336.30	337.43	336.40	337.43	0.000022	0.16	236.42	224.73	0.03
Scriber	7848	2-YR	77.15	336.30	338.21	336.46	338.21	0.000014	0.19	414.63	234.82	0.02
Scriber	7848	10-YR	117.88	336.30	338.90	336.52	338.90	0.000012	0.21	588.70	290.78	0.02
Scriber	7848	25-YR	138.02	336.30	339.22	336.54	339.22	0.000011	0.22	707.87	395.74	0.02
Scriber	7848	100-YR	167.82	336.30	339.54	336.57	339.54	0.000011	0.23	837.71	410.39	0.02
Scriber	7663	Half 2-YR	38.58	336.17	337.43	336.26	337.43	0.000010	0.12	326.95	278.81	0.02
Scriber	7663	2-YR	77.15	336.17	338.21	336.31	338.21	0.000008	0.14	585.99	399.39	0.02
Scriber	7663	10-YR	117.88	336.17	338.90	336.36	338.90	0.000006	0.16	891.76	457.83	0.02
Scriber	7663	25-YR	138.02	336.17	339.22	336.38	339.22	0.000006	0.16	1061.97	601.82	0.02
Scriber	7663	100-YR	167.82	336.17	339.54	336.41	339.54	0.000006	0.17	1256.16	605.48	0.02
Scriber	7271	Half 2-YR	38.58	335.88	337.41	336.25	337.42	0.000332	0.73	53.20	42.78	0.11
Scriber	7271	2-YR	77.15	335.88	338.19	336.46	338.20	0.000433	0.59	129.78	152.96	0.11
Scriber	7271	10-YR	117.88	335.88	338.89	336.64	338.89	0.000153	0.42	282.39	243.30	0.07
Scriber	7271	25-YR	138.02	335.88	339.21	336.72	339.21	0.000105	0.39	365.30	274.92	0.06
Scriber	7271	100-YR	167.82	335.88	339.53	336.84	339.53	0.000085	0.36	482.55	378.49	0.05
Scriber	7132	Half 2-YR	38.58	335.79	337.32	336.42	337.34	0.001032	1.20	32.38	36.98	0.19
Scriber	7132	2-YR	77.15	335.79	338.11	336.70	338.13	0.000507	1.11	103.57	125.78	0.14
Scriber	7132	10-YR	117.88	335.79	338.85	336.93	338.86	0.000269	1.01	208.83	156.69	0.11
Scriber	7132	25-YR	138.02	335.79	339.18	337.04	339.19	0.000217	0.98	262.40	172.59	0.10

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	7132	100-YR	167.82	335.79	339.51	337.18	339.52	0.000201	1.02	322.35	192.82	0.10
Scriber	7105		Bridge									
Scriber	7095	Half 2-YR	38.58	335.79	337.26	336.42	337.28	0.001189	1.23	31.50	35.02	0.20
Scriber	7095	2-YR	77.15	335.79	338.01	336.71	338.03	0.000648	1.20	90.89	113.92	0.16
Scriber	7095	10-YR	117.88	335.79	338.78	336.93	338.80	0.000304	1.05	197.99	154.09	0.12
Scriber	7095	25-YR	138.02	335.79	339.14	337.04	339.15	0.000232	1.01	254.61	169.04	0.11
Scriber	7095	100-YR	167.82	335.79	339.47	337.17	339.48	0.000211	1.03	315.57	192.15	0.10
Scriber	7071	Half 2-YR	32.68	335.68	337.16	336.51	337.23	0.003785	2.02	16.17	15.87	0.35
Scriber	7071	2-YR	65.35	335.68	337.98	336.91	338.00	0.002121	1.23	53.26	77.28	0.26
Scriber	7071	10-YR	102.43	335.68	338.78	337.48	338.78	0.000659	0.76	134.92	132.67	0.13
Scriber	7071	25-YR	120.53	335.68	339.13	337.57	339.14	0.000439	0.65	184.54	146.23	0.10
Scriber	7071	100-YR	146.98	335.68	339.47	337.69	339.47	0.000361	0.62	235.75	158.19	0.09
Scriber	6811	Half 2-YR	32.68	334.95	336.96	335.82	336.96	0.000420	0.76	43.10	79.82	0.12
Scriber	6811	2-YR	65.35	334.95	337.91	336.06	337.91	0.000130	0.40	180.58	276.61	0.07
Scriber	6811	10-YR	102.43	334.95	338.76	336.27	338.76	0.000037	0.31	436.32	325.95	0.04
Scriber	6811	25-YR	120.53	334.95	339.12	336.37	339.12	0.000027	0.30	557.25	344.30	0.03
Scriber	6811	100-YR	146.98	334.95	339.45	336.50	339.46	0.000024	0.31	676.71	362.22	0.03
Scriber	6799		Bridge									
Scriber	6788	Half 2-YR	32.68	334.95	336.95	335.82	336.96	0.000432	0.76	42.74	79.16	0.12
Scriber	6788	2-YR	65.35	334.95	337.89	336.06	337.89	0.000138	0.41	175.70	275.58	0.07
Scriber	6788	10-YR	102.43	334.95	338.74	336.27	338.74	0.000039	0.32	431.05	325.12	0.04
Scriber	6788	25-YR	120.53	334.95	339.10	336.37	339.11	0.000028	0.30	553.47	343.75	0.04
Scriber	6788	100-YR	146.98	334.95	339.45	336.50	339.45	0.000025	0.31	673.75	361.78	0.03
Scriber	6179	Half 2-YR	32.68	334.74	336.71	335.44	336.73	0.000322	0.97	33.64	22.67	0.14
Scriber	6179	2-YR	65.35	334.74	337.77	335.74	337.78	0.000209	1.08	64.93	38.62	0.12
Scriber	6179	10-YR	102.43	334.74	338.68	336.00	338.70	0.000138	1.09	136.20	124.91	0.10
Scriber	6179	25-YR	120.53	334.74	339.06	336.11	339.07	0.000107	1.03	190.55	165.23	0.09
Scriber	6179	100-YR	146.98	334.74	339.41	336.27	339.42	0.000090	1.00	249.82	190.34	0.09
Scriber	6169		Bridge									
Scriber	6159	Half 2-YR	32.68	334.74	336.57	335.44	336.59	0.000428	1.07	30.54	22.09	0.16

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	6159	2-YR	65.35	334.74	337.53	335.74	337.55	0.000302	1.21	56.41	33.65	0.14
Scriber	6159	10-YR	102.43	334.74	338.43	336.00	338.45	0.000198	1.24	108.39	95.58	0.12
Scriber	6159	25-YR	120.53	334.74	338.89	336.11	338.90	0.000139	1.14	163.62	143.31	0.11
Scriber	6159	100-YR	146.98	334.74	339.29	336.27	339.30	0.000109	1.08	229.63	183.71	0.10
Scriber	5795	Half 2-YR	32.68	334.62	336.33	335.49	336.36	0.000947	1.42	23.07	19.45	0.23
Scriber	5795	2-YR	65.35	334.62	337.38	335.81	337.41	0.000497	1.45	45.12	23.16	0.18
Scriber	5795	10-YR	102.43	334.62	338.33	336.08	338.36	0.000329	1.51	73.60	272.50	0.16
Scriber	5795	25-YR	120.53	334.62	338.80	336.19	338.83	0.000253	1.46	98.70	307.74	0.14
Scriber	5795	100-YR	146.98	334.62	339.22	336.36	339.25	0.000223	1.48	125.57	324.65	0.13
Scriber	5757		Bridge									
Scriber	5719*	Half 2-YR	32.68	334.63	336.24	335.51	336.28	0.001266	1.58	20.74	18.95	0.27
Scriber	5719*	2-YR	65.35	334.63	337.20	335.84	337.24	0.000694	1.62	40.38	22.16	0.21
Scriber	5719*	10-YR	102.43	334.63	337.98	336.11	338.03	0.000553	1.75	59.07	50.65	0.20
Scriber	5719*	25-YR	120.53	334.63	338.40	336.23	338.45	0.000429	1.70	82.40	133.36	0.18
Scriber	5719*	100-YR	146.98	334.63	338.98	336.38	339.01	0.000252	1.48	142.14	223.35	0.14
Scriber	5680		Bridge									
Scriber	5642	Half 2-YR	32.68	334.64	336.12	335.42	336.16	0.001480	1.70	19.27	17.72	0.29
Scriber	5642	2-YR	65.35	334.64	337.04	335.74	337.09	0.000859	1.75	37.27	21.33	0.23
Scriber	5642	10-YR	102.43	334.64	337.68	336.04	337.74	0.000825	1.98	51.83	23.85	0.24
Scriber	5642	25-YR	120.53	334.64	338.03	336.16	338.09	0.000724	2.00	60.41	25.87	0.23
Scriber	5642	100-YR	146.98	334.64	338.58	336.33	338.63	0.000552	1.95	83.40	140.63	0.20
Scriber	5614		Bridge									
Scriber	5600	Half 2-YR	32.68	334.44	335.75	335.36	335.83	0.003874	2.35	13.92	16.28	0.45
Scriber	5600	2-YR	65.35	334.44	336.53	335.69	336.62	0.001979	2.35	27.83	19.34	0.35
Scriber	5600	10-YR	102.43	334.44	337.36	335.98	337.44	0.001208	2.27	45.17	22.58	0.28
Scriber	5600	25-YR	120.53	334.44	337.77	336.11	337.85	0.000961	2.20	54.91	24.27	0.26
Scriber	5600	100-YR	146.98	334.44	338.40	336.28	338.47	0.000665	2.08	71.31	28.21	0.22
Scriber	5508	Half 2-YR	32.68	333.51	335.48	334.44	335.53	0.001359	1.77	18.44	13.74	0.27
Scriber	5508	2-YR	65.35	333.51	336.36	334.86	336.42	0.000965	1.98	36.78	33.14	0.24
Scriber	5508	10-YR	102.43	333.51	337.27	335.30	337.31	0.000481	1.79	74.28	49.64	0.18
Scriber	5508	25-YR	120.53	333.51	337.71	335.47	337.75	0.000358	1.69	94.03	84.52	0.16

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	5508	100-YR	146.98	333.51	338.36	335.70	338.39	0.000247	1.58	124.44	99.43	0.14
Scriber	5407	Half 2-YR	32.68	332.62	335.40	333.61	335.44	0.000610	1.51	21.69	9.97	0.18
Scriber	5407	2-YR	65.35	332.62	336.25	334.15	336.32	0.000965	2.12	30.76	11.68	0.23
Scriber	5407	10-YR	102.43	332.62	337.15	334.63	337.24	0.000974	2.42	43.14	17.04	0.24
Scriber	5407	25-YR	120.53	332.62	337.59	334.82	337.69	0.000849	2.47	51.65	21.28	0.23
Scriber	5407	100-YR	146.98	332.62	338.26	335.08	338.34	0.000670	2.45	67.80	27.58	0.21
Scriber	5387	Half 2-YR	32.68	332.29	335.32	333.30	335.35	0.000502	1.41	23.22	9.86	0.16
Scriber	5387	2-YR	65.35	332.29	336.11	333.84	336.17	0.000897	2.08	31.46	11.29	0.22
Scriber	5387	10-YR	102.43	332.29	337.00	334.33	337.09	0.000975	2.41	42.98	15.77	0.24
Scriber	5387	25-YR	120.53	332.29	337.46	334.53	337.55	0.000861	2.45	51.18	19.96	0.23
Scriber	5387	100-YR	146.98	332.29	338.14	334.81	338.23	0.000676	2.44	67.09	26.50	0.21
Scriber	5328		Culvert									
Scriber	5249	Half 2-YR	35.61	331.20	335.30	332.04	335.31	0.000482	0.79	44.89	12.19	0.07
Scriber	5249	2-YR	71.22	331.20	335.99	332.46	336.01	0.001194	1.33	53.36	12.49	0.11
Scriber	5249	10-YR	114.40	331.20	336.63	332.87	336.68	0.002092	1.86	61.47	12.77	0.15
Scriber	5249	25-YR	136.65	331.20	336.92	333.06	336.99	0.002549	2.10	65.16	12.90	0.16
Scriber	5249	100-YR	170.48	331.20	337.29	333.32	337.38	0.003272	2.44	69.99	13.06	0.19
Scriber	5033	Half 2-YR	35.61	333.60	334.97		335.02	0.009453	1.75	21.10	29.88	0.33
Scriber	5033	2-YR	71.22	333.60	335.32		335.41	0.011405	2.41	33.31	40.85	0.39
Scriber	5033	10-YR	114.40	333.60	335.60		335.73	0.013464	3.01	45.97	49.78	0.44
Scriber	5033	25-YR	136.65	333.60	335.70		335.86	0.014936	3.31	51.11	52.97	0.46
Scriber	5033	100-YR	170.48	333.60	335.97		336.12	0.012435	3.36	66.69	61.66	0.44
Scriber	4986.9*	Half 2-YR	35.61	333.47	334.81		334.82	0.002240	0.80	44.76	60.70	0.16
Scriber	4986.9*	2-YR	71.22	333.47	335.14		335.16	0.002717	1.11	66.05	69.79	0.19
Scriber	4986.9*	10-YR	114.40	333.47	335.38		335.42	0.003521	1.45	83.94	77.54	0.22
Scriber	4986.9*	25-YR	136.65	333.47	335.44		335.48	0.004343	1.65	88.43	79.37	0.25
Scriber	4986.9*	100-YR	170.48	333.47	335.80		335.84	0.002984	1.60	119.36	91.04	0.21
Scriber	4940.8*	Half 2-YR	35.61	333.33	334.76		334.77	0.000750	0.48	74.40	93.90	0.09
Scriber	4940.8*	2-YR	71.22	333.33	335.08		335.09	0.001005	0.69	105.32	102.39	0.11
Scriber	4940.8*	10-YR	114.40	333.33	335.30		335.31	0.001405	0.92	128.87	109.54	0.14
Scriber	4940.8*	25-YR	136.65	333.33	335.33		335.35	0.001841	1.07	132.62	110.65	0.16
Scriber	4940.8*	100-YR	170.48	333.33	335.74		335.75	0.001181	1.02	179.93	123.75	0.13

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	4894.7*	Half 2-YR	35.61	333.20	334.74		334.74	0.000303	0.32	110.57	127.58	0.06
Scriber	4894.7*	2-YR	71.22	333.20	335.05		335.05	0.000450	0.48	151.18	136.17	0.08
Scriber	4894.7*	10-YR	114.40	333.20	335.26		335.27	0.000668	0.65	180.55	142.57	0.10
Scriber	4894.7*	25-YR	136.65	333.20	335.28		335.29	0.000906	0.76	183.56	143.24	0.11
Scriber	4894.7*	100-YR	170.48	333.20	335.71		335.71	0.000577	0.72	247.24	157.30	0.09
Scriber	4848.6*	Half 2-YR	35.61	333.06	334.73		334.73	0.000140	0.23	153.23	161.64	0.04
Scriber	4848.6*	2-YR	71.22	333.06	335.04		335.04	0.000227	0.35	203.71	170.64	0.06
Scriber	4848.6*	10-YR	114.40	333.06	335.24		335.25	0.000354	0.49	239.13	176.45	0.07
Scriber	4848.6*	25-YR	136.65	333.06	335.26		335.26	0.000490	0.58	241.54	176.87	0.08
Scriber	4848.6*	100-YR	170.48	333.06	335.69		335.69	0.000318	0.55	321.41	191.32	0.07
Scriber	4802.5*	Half 2-YR	35.61	332.93	334.73		334.73	0.000072	0.18	202.40	195.73	0.03
Scriber	4802.5*	2-YR	71.22	332.93	335.03		335.03	0.000125	0.27	262.71	204.90	0.04
Scriber	4802.5*	10-YR	114.40	332.93	335.23		335.23	0.000203	0.38	304.26	210.46	0.05
Scriber	4802.5*	25-YR	136.65	332.93	335.24		335.24	0.000284	0.45	306.22	210.71	0.06
Scriber	4802.5*	100-YR	170.48	332.93	335.68		335.68	0.000190	0.44	401.95	225.39	0.05
Scriber	4756.4*	Half 2-YR	35.61	332.80	334.73		334.73	0.000040	0.14	257.88	230.07	0.02
Scriber	4756.4*	2-YR	71.22	332.80	335.03		335.03	0.000074	0.22	328.09	239.13	0.03
Scriber	4756.4*	10-YR	114.40	332.80	335.22		335.23	0.000123	0.31	375.87	244.60	0.04
Scriber	4756.4*	25-YR	136.65	332.80	335.23		335.23	0.000174	0.37	377.48	244.78	0.05
Scriber	4756.4*	100-YR	170.48	332.80	335.67		335.68	0.000120	0.36	488.80	259.28	0.04
Scriber	4710.3*	Half 2-YR	35.61	332.66	334.73		334.73	0.000023	0.11	319.68	264.34	0.02
Scriber	4710.3*	2-YR	71.22	332.66	335.02		335.02	0.000046	0.18	399.82	273.36	0.03
Scriber	4710.3*	10-YR	114.40	332.66	335.22		335.22	0.000079	0.26	453.90	279.00	0.03
Scriber	4710.3*	25-YR	136.65	332.66	335.22		335.23	0.000111	0.30	455.26	279.12	0.04
Scriber	4710.3*	100-YR	170.48	332.66	335.67		335.67	0.000080	0.30	582.13	293.18	0.04
Scriber	4664.2*	Half 2-YR	35.61	332.53	334.73		334.73	0.000014	0.09	387.26	298.57	0.01
Scriber	4664.2*	2-YR	71.22	332.53	335.02		335.02	0.000030	0.15	477.34	307.42	0.02
Scriber	4664.2*	10-YR	114.40	332.53	335.22		335.22	0.000053	0.22	537.73	313.11	0.03
Scriber	4664.2*	25-YR	136.65	332.53	335.22		335.22	0.000074	0.26	538.90	313.22	0.03
Scriber	4664.2*	100-YR	170.48	332.53	335.67		335.67	0.000055	0.26	681.11	326.07	0.03
Scriber	4618.1*	Half 2-YR	35.61	332.39	334.72		334.72	0.000009	0.08	461.33	332.65	0.01
Scriber	4618.1*	2-YR	71.22	332.39	335.02		335.02	0.000020	0.13	561.34	341.33	0.02

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	4618.1*	10-YR	114.40	332.39	335.22		335.22	0.000036	0.18	628.04	347.01	0.02
Scriber	4618.1*	25-YR	136.65	332.39	335.22		335.22	0.000051	0.22	629.07	347.10	0.03
Scriber	4618.1*	100-YR	170.48	332.39	335.66		335.67	0.000039	0.22	786.60	358.74	0.03
Scriber	4572	Half 2-YR	35.61	332.26	334.72	333.04	334.72	0.000006	0.07	541.91	366.84	0.01
Scriber	4572	2-YR	71.22	332.26	335.02	333.12	335.02	0.000014	0.11	651.91	375.37	0.01
Scriber	4572	10-YR	114.40	332.26	335.21	333.19	335.21	0.000025	0.16	724.96	380.94	0.02
Scriber	4572	25-YR	136.65	332.26	335.22	333.22	335.22	0.000036	0.19	725.91	381.01	0.02
Scriber	4572	100-YR	170.48	332.26	335.66	333.26	335.66	0.000028	0.19	898.78	392.26	0.02
Scriber	4568		Culvert									
Scriber	4563	Half 2-YR	35.61	332.26	333.63		333.63	0.000252	0.21	170.14	319.28	0.05
Scriber	4563	2-YR	71.22	332.26	333.90		333.90	0.000265	0.28	257.05	329.14	0.06
Scriber	4563	10-YR	114.40	332.26	334.13		334.13	0.000291	0.34	335.42	337.80	0.06
Scriber	4563	25-YR	136.65	332.26	334.29		334.29	0.000259	0.35	388.83	343.58	0.06
Scriber	4563	100-YR	170.48	332.26	335.66		335.66	0.000027	0.19	961.19	547.46	0.02
Scriber	4279	Half 2-YR	35.61	331.52	333.47		333.47	0.002104	0.48	77.12	243.25	0.14
Scriber	4279	2-YR	71.22	331.52	333.75		333.75	0.001332	0.47	174.79	459.29	0.12
Scriber	4279	10-YR	114.40	331.52	334.00		334.01	0.000758	0.47	314.77	593.80	0.09
Scriber	4279	25-YR	136.65	331.52	334.19		334.19	0.000458	0.42	429.15	620.83	0.08
Scriber	4279	100-YR	170.48	331.52	335.65		335.65	0.000018	0.15	1593.57	852.57	0.02
Scriber	3935	Half 2-YR	35.61	332.00	332.85	332.30	332.85	0.001595	0.59	60.57	116.09	0.13
Scriber	3935	2-YR	71.22	332.00	333.29	332.42	333.30	0.001338	0.65	110.33	250.92	0.13
Scriber	3935	10-YR	114.40	332.00	333.71	332.53	333.72	0.000900	0.68	167.73	356.35	0.11
Scriber	3935	25-YR	136.65	332.00	334.00	332.58	334.01	0.000648	0.66	208.07	404.33	0.10
Scriber	3935	100-YR	170.48	332.00	335.64	332.66	335.64	0.000082	0.38	449.51	516.01	0.04
Scriber	3114	Half 2-YR	35.61	328.66	330.47	329.63	330.52	0.006429	1.79	19.86	16.27	0.29
Scriber	3114	2-YR	71.22	328.66	331.29	330.03	331.36	0.005202	2.07	34.36	18.98	0.27
Scriber	3114	10-YR	114.40	328.66	332.37	330.39	332.43	0.003401	1.97	58.09	25.05	0.23
Scriber	3114	25-YR	136.65	328.66	333.03	330.55	333.08	0.002424	1.80	75.73	28.82	0.20
Scriber	3114	100-YR	170.48	328.66	335.49	330.76	335.51	0.000398	1.10	164.96	43.62	0.09
Scriber	3104		Bridge									
Scriber	3093	Half 2-YR	35.61	328.66	330.27		330.34	0.010779	2.13	16.69	15.62	0.36

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	3093	2-YR	71.22	328.66	331.16		331.23	0.006492	2.24	31.81	18.53	0.30
Scriber	3093	10-YR	114.40	328.66	332.29		332.36	0.003724	2.04	56.11	24.59	0.24
Scriber	3093	25-YR	136.65	328.66	332.97		333.03	0.002561	1.84	74.16	28.50	0.20
Scriber	3093	100-YR	170.48	328.66	335.49		335.50	0.000400	1.10	164.59	43.60	0.09
Scriber	2967	Half 2-YR	35.61	328.08	329.80	328.88	329.82	0.002018	1.03	34.56	413.64	0.16
Scriber	2967	2-YR	71.22	328.08	330.94	329.14	330.96	0.000898	1.07	66.78	466.53	0.12
Scriber	2967	10-YR	114.40	328.08	332.17	329.38	332.19	0.000579	1.13	101.24	508.32	0.11
Scriber	2967	25-YR	136.65	328.08	332.88	329.48	332.90	0.000452	1.13	121.31	518.74	0.10
Scriber	2967	100-YR	170.48	328.08	335.46	329.62	335.47	0.000147	0.88	194.24	554.75	0.06
Scriber	2742		Culvert									
Scriber	2517	Half 2-YR	40.55	325.29	328.77	326.35	328.79	0.000387	1.26	32.16	12.76	0.14
Scriber	2517	2-YR	81.10	325.29	329.39	326.83	329.45	0.000897	1.96	41.28	32.91	0.22
Scriber	2517	10-YR	133.50	325.29	329.96	327.35	330.06	0.001317	2.59	51.58	96.40	0.28
Scriber	2517	25-YR	162.49	325.29	330.22	327.60	330.35	0.001439	2.88	56.51	121.08	0.29
Scriber	2517	100-YR	209.03	325.29	331.11	327.98	331.24	0.001005	2.86	73.21	215.03	0.25
Scriber	2501		Inl Struct									
Scriber	2500	Half 2-YR	40.55	325.21	328.76	326.26	328.78	0.000362	1.23	32.91	12.76	0.14
Scriber	2500	2-YR	81.10	325.21	329.35	326.75	329.41	0.000872	1.96	41.47	30.55	0.22
Scriber	2500	10-YR	133.50	325.21	329.90	327.27	330.01	0.001341	2.60	51.41	89.53	0.28
Scriber	2500	25-YR	162.49	325.21	330.15	327.52	330.28	0.001488	2.90	56.05	116.78	0.30
Scriber	2500	100-YR	209.03	325.21	331.04	327.91	331.17	0.001031	2.87	72.79	211.89	0.26
Scriber	2485		Inl Struct									
Scriber	2477	Half 2-YR	40.55	327.34	328.40	328.40	328.77	0.020619	4.88	8.30	11.24	1.00
Scriber	2477	2-YR	81.10	327.34	328.86	328.86	329.39	0.018672	5.85	13.87	13.16	1.00
Scriber	2477	10-YR	133.50	327.34	329.34	329.34	329.98	0.017370	6.41	20.82	29.58	1.00
Scriber	2477	25-YR	162.49	327.34	329.56	329.55	330.24	0.016819	6.61	24.57	45.77	0.99
Scriber	2477	100-YR	209.03	327.34	330.84	329.82	331.12	0.003072	4.31	48.55	185.41	0.47
Scriber	2452	Half 2-YR	40.55	324.46	327.57	325.52	327.60	0.000522	1.48	27.42	16.87	0.15
Scriber	2452	2-YR	81.10	324.46	328.35	326.00	328.43	0.001130	2.31	35.12	21.32	0.23
Scriber	2452	10-YR	133.50	324.46	329.27	326.52	329.39	0.001628	2.83	47.15	39.28	0.29
Scriber	2452	25-YR	162.49	324.46	329.85	326.77	329.98	0.001485	2.82	57.52	99.33	0.28

HEC-RAS Plan: Alt2Var3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	2452	100-YR	209.03	324.46	330.92	327.16	331.03	0.000908	2.70	77.55	197.91	0.23
Scriber	2396		Culvert									
Scriber	2339	Half 2-YR	40.55	323.90	327.42	325.55	327.48	0.001237	2.08	19.52	19.83	0.24
Scriber	2339	2-YR	81.10	323.90	328.00	326.31	328.17	0.002609	3.26	24.84	23.23	0.36
Scriber	2339	10-YR	133.50	323.90	328.59	327.03	328.89	0.003975	4.32	30.88	26.69	0.45
Scriber	2339	25-YR	162.49	323.90	328.88	327.37	329.23	0.004579	4.79	33.96	28.33	0.48
Scriber	2339	100-YR	209.03	323.90	329.27	327.84	329.73	0.005371	5.43	38.50	133.41	0.53
Scriber	2098	Half 2-YR	40.55	325.55	327.28	326.08	327.30	0.000463	1.19	33.94	20.85	0.17
Scriber	2098	2-YR	81.10	325.55	327.75	326.39	327.80	0.000832	1.84	44.03	21.50	0.23
Scriber	2098	10-YR	133.50	325.55	328.28	326.71	328.37	0.001118	2.41	55.49	22.21	0.27
Scriber	2098	25-YR	162.49	325.55	328.54	326.87	328.65	0.001225	2.65	61.36	28.99	0.28
Scriber	2098	100-YR	209.03	325.55	328.92	327.10	329.06	0.001353	2.98	70.06	75.29	0.30
Scriber	2052		Culvert									
Scriber	2006	Half 2-YR	39.01	325.00	327.27	325.50	327.27	0.000113	0.64	60.56	34.93	0.09
Scriber	2006	2-YR	78.02	325.00	327.73	325.78	327.74	0.000226	1.01	77.38	38.26	0.12
Scriber	2006	10-YR	133.54	325.00	328.22	326.09	328.25	0.000356	1.37	97.31	104.69	0.16
Scriber	2006	25-YR	165.86	325.00	328.47	326.24	328.50	0.000419	1.54	108.02	180.56	0.17
Scriber	2006	100-YR	219.74	325.00	328.82	326.48	328.87	0.000507	1.77	124.44	292.99	0.19
Scriber	1408	Half 2-YR	39.01	326.00	327.06	326.71	327.09	0.002269	1.40	27.85	385.63	0.32
Scriber	1408	2-YR	78.02	326.00	327.38	326.91	327.43	0.002066	1.80	43.41	409.56	0.33
Scriber	1408	10-YR	133.54	326.00	327.76	327.10	327.83	0.001898	2.17	61.47	409.57	0.34
Scriber	1408	25-YR	165.86	326.00	327.95	327.20	328.04	0.001837	2.35	70.71	409.57	0.34
Scriber	1408	100-YR	219.74	326.00	328.23	327.35	328.34	0.001788	2.60	84.39	464.97	0.35
Scriber	74	Half 2-YR	39.01	323.00	324.41	323.88	324.45	0.001740	1.51	25.80	32.34	0.30
Scriber	74	2-YR	78.02	323.00	324.86	324.15	324.92	0.001741	1.89	41.31	37.09	0.32
Scriber	74	10-YR	133.54	323.00	325.33	324.42	325.41	0.001741	2.23	59.94	41.97	0.33
Scriber	74	25-YR	165.86	323.00	325.56	324.56	325.64	0.001740	2.38	69.60	44.00	0.33
Scriber	74	100-YR	219.74	323.00	325.89	324.76	325.99	0.001740	2.60	84.61	46.98	0.34

Appendix B.6
HEC-RAS Output – Scenario 3

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber

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)	
Scriber	12724	Half 2-YR	26.58	365.25	367.09	366.98	367.43	0.027858	4.69	5.67	6.18	0.86
Scriber	12724	2-YR	53.16	365.25	368.08	367.53	368.32	0.008596	4.06	14.56	21.64	0.53
Scriber	12724	10-YR	90.13	365.25	368.51	368.04	368.92	0.011213	5.35	19.10	24.15	0.63
Scriber	12724	25-YR	111.63	365.25	368.94	368.29	369.35	0.009042	5.41	23.63	26.64	0.59
Scriber	12724	100-YR	147.45	365.25	369.80	368.62	370.17	0.005759	5.21	32.64	31.61	0.49
Scriber	12655		Culvert									
Scriber	12604	Half 2-YR	26.58	365.17	367.14	366.78	367.32	0.042903	3.43	7.74	7.93	0.59
Scriber	12604	2-YR	53.16	365.17	367.95	367.27	368.18	0.027268	3.80	14.00	12.26	0.50
Scriber	12604	10-YR	90.13	365.17	368.11	367.78	368.65	0.058468	5.90	15.33	18.29	0.75
Scriber	12604	25-YR	111.63	365.17	368.24	368.03	368.97	0.072908	6.87	16.36	22.86	0.85
Scriber	12604	100-YR	147.45	365.17	368.52	368.42	369.49	0.081540	7.93	18.83	37.19	0.91
Scriber	12597	Half 2-YR	26.58	365.11	367.10	366.44	367.20	0.005630	2.59	10.26	8.49	0.42
Scriber	12597	2-YR	53.16	365.11	367.94	366.94	368.03	0.007048	2.39	22.23	26.28	0.46
Scriber	12597	10-YR	90.13	365.11	368.33	367.65	368.35	0.002166	1.22	73.97	106.76	0.25
Scriber	12597	25-YR	111.63	365.11	368.56	367.90	368.58	0.001296	1.13	101.55	129.05	0.20
Scriber	12597	100-YR	147.45	365.11	368.99	367.99	369.00	0.000634	1.01	157.52	133.10	0.15
Scriber	12489	Half 2-YR	26.58	364.82	366.45	365.80	366.56	0.006106	2.70	9.84	7.36	0.41
Scriber	12489	2-YR	53.16	364.82	367.18	366.28	367.33	0.005714	3.23	19.88	21.32	0.41
Scriber	12489	10-YR	90.13	364.82	367.85	366.91	368.01	0.004631	3.54	40.08	42.36	0.39
Scriber	12489	25-YR	111.63	364.82	368.22	367.23	368.35	0.003555	3.39	58.07	54.12	0.35
Scriber	12489	100-YR	147.45	364.82	368.78	367.58	368.87	0.002325	3.08	95.49	78.61	0.29
Scriber	12484		Bridge									
Scriber	12479	Half 2-YR	26.58	364.82	366.37	365.80	366.49	0.007374	2.88	9.22	7.28	0.45
Scriber	12479	2-YR	53.16	364.82	367.09	366.28	367.27	0.006860	3.44	18.20	19.98	0.44
Scriber	12479	10-YR	90.13	364.82	367.73	366.91	367.92	0.005822	3.85	35.25	38.60	0.43
Scriber	12479	25-YR	111.63	364.82	368.07	367.23	368.24	0.004684	3.76	50.25	49.35	0.39
Scriber	12479	100-YR	147.45	364.82	368.64	367.58	368.76	0.003059	3.44	84.86	76.21	0.33
Scriber	12419	Half 2-YR	26.58	363.53	366.13	364.80	366.20	0.002919	2.15	12.44	8.41	0.27
Scriber	12419	2-YR	53.16	363.53	366.81	365.38	366.94	0.003927	3.00	21.15	16.26	0.33
Scriber	12419	10-YR	90.13	363.53	367.43	366.01	367.61	0.004592	3.73	32.57	20.74	0.36
Scriber	12419	25-YR	111.63	363.53	367.75	366.48	367.95	0.004613	3.98	39.65	23.09	0.37

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	12419	100-YR	147.45	363.53	368.33	366.95	368.53	0.004027	4.12	54.31	27.31	0.36
Scriber	12316	Half 2-YR	26.58	363.41	365.26	365.07	365.54	0.022228	4.19	6.35	6.85	0.77
Scriber	12316	2-YR	53.16	363.41	366.02	365.63	366.28	0.011621	4.12	14.89	15.57	0.60
Scriber	12316	10-YR	90.13	363.41	366.76	366.12	367.02	0.007266	4.27	28.08	20.11	0.51
Scriber	12316	25-YR	111.63	363.41	367.17	366.34	367.41	0.005845	4.29	36.71	22.60	0.47
Scriber	12316	100-YR	147.45	363.41	367.91	366.64	368.12	0.003839	4.11	55.21	28.06	0.39
Scriber	12282	Half 2-YR	26.58	363.31	365.00	364.34	365.12	0.006373	2.75	9.68	6.93	0.41
Scriber	12282	2-YR	53.16	363.31	365.76	364.82	365.95	0.007170	3.52	15.12	7.43	0.43
Scriber	12282	10-YR	90.13	363.31	366.44	365.36	366.74	0.008605	4.45	20.28	7.87	0.48
Scriber	12282	25-YR	111.63	363.31	366.80	365.64	367.16	0.008566	4.84	23.19	8.11	0.49
Scriber	12282	100-YR	147.45	363.31	367.52	366.05	367.93	0.007271	5.15	29.18	8.59	0.47
Scriber	12254		Culvert									
Scriber	12225	Half 2-YR	26.58	363.07	364.94	363.92	365.00	0.002845	2.04	13.00	7.85	0.28
Scriber	12225	2-YR	53.16	363.07	365.72	364.37	365.83	0.003340	2.74	19.83	11.65	0.31
Scriber	12225	10-YR	90.13	363.07	366.39	364.88	366.58	0.004076	3.57	26.23	15.48	0.36
Scriber	12225	25-YR	111.63	363.07	366.71	365.13	366.95	0.004396	3.97	29.46	17.80	0.38
Scriber	12225	100-YR	147.45	363.07	367.19	365.55	367.50	0.004858	4.56	34.15	21.19	0.41
Scriber	12115	Half 2-YR	26.58	362.92	364.34	363.93	364.48	0.008814	2.93	9.07	11.02	0.52
Scriber	12115	2-YR	53.16	362.92	364.37	364.37	364.88	0.032901	5.72	9.29	11.59	1.00
Scriber	12115	10-YR	90.13	362.92	364.80	364.80	365.49	0.029847	6.63	13.59	13.90	1.00
Scriber	12115	25-YR	111.63	362.92	365.01	365.01	365.80	0.028567	7.13	15.65	14.96	1.00
Scriber	12115	100-YR	147.45	362.92	365.34	365.34	366.28	0.026361	7.78	18.95	16.65	1.00
Scriber	12081		Culvert									
Scriber	12047	Half 2-YR	26.58	361.91	364.42	363.13	364.45	0.000763	1.40	19.02	21.88	0.18
Scriber	12047	2-YR	53.16	361.91	364.60	363.48	364.70	0.002262	2.55	20.81	24.15	0.31
Scriber	12047	10-YR	90.13	361.91	364.68	363.88	364.95	0.005792	4.18	21.55	25.08	0.50
Scriber	12047	25-YR	111.63	361.91	364.72	364.09	365.12	0.008322	5.08	21.98	25.62	0.60
Scriber	12047	100-YR	147.45	361.91	364.75	364.41	365.43	0.013829	6.61	22.30	26.03	0.78
Scriber	12031	Half 2-YR	25.68	364.04	364.28	364.28	364.39	0.065314	2.97	11.03	214.40	1.15
Scriber	12031	2-YR	51.35	364.04	364.41	364.41	364.58	0.053472	3.72	18.13	226.86	1.12

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	12031	10-YR	75.45	364.04	364.51	364.51	364.73	0.047244	4.18	24.18	236.82	1.11
Scriber	12031	25-YR	87.44	364.04	364.56	364.56	364.80	0.045842	4.39	26.90	241.12	1.11
Scriber	12031	100-YR	105.33	364.04	364.67	364.63	364.90	0.033763	4.31	33.68	251.48	0.98
Scriber	11917	Half 2-YR	25.68	362.00	362.57		362.58	0.001766	0.92	32.64	225.87	0.22
Scriber	11917	2-YR	51.35	362.00	362.80		362.82	0.002052	1.25	50.56	264.54	0.25
Scriber	11917	10-YR	75.45	362.00	363.53		363.54	0.000398	0.86	124.60	368.28	0.12
Scriber	11917	25-YR	87.44	362.00	364.70		364.70	0.000036	0.38	487.26	414.54	0.04
Scriber	11917	100-YR	105.33	362.00	364.81		364.81	0.000044	0.43	522.83	415.97	0.05
Scriber	11769	Half 2-YR	25.68	361.13	361.75	361.75	361.87	0.036960	3.17	12.16	48.39	0.94
Scriber	11769	2-YR	51.35	361.13	362.06		362.15	0.015492	2.81	32.48	104.19	0.66
Scriber	11769	10-YR	75.45	361.13	363.50		363.50	0.000170	0.68	237.11	275.23	0.09
Scriber	11769	25-YR	87.44	361.13	364.70		364.70	0.000032	0.41	471.64	315.84	0.04
Scriber	11769	100-YR	105.33	361.13	364.80		364.80	0.000041	0.47	493.25	316.98	0.05
Scriber	11723	Half 2-YR	25.68	360.20	361.07		361.11	0.006851	1.61	15.96	35.26	0.42
Scriber	11723	2-YR	51.35	360.20	362.06		362.07	0.000411	0.80	93.78	182.05	0.12
Scriber	11723	10-YR	75.45	360.20	363.50		363.50	0.000034	0.38	373.07	316.55	0.04
Scriber	11723	25-YR	87.44	360.20	364.70		364.70	0.000010	0.27	631.75	337.28	0.02
Scriber	11723	100-YR	105.33	360.20	364.80		364.80	0.000013	0.31	655.31	338.69	0.03
Scriber	11684	Half 2-YR	25.68	360.00	360.68		360.76	0.012015	2.24	11.49	23.60	0.56
Scriber	11684	2-YR	51.35	360.00	362.05		362.06	0.000480	0.80	66.84	154.89	0.13
Scriber	11684	10-YR	75.45	360.00	363.50		363.50	0.000032	0.35	399.83	266.05	0.04
Scriber	11684	25-YR	87.44	360.00	364.70		364.70	0.000008	0.23	742.79	294.17	0.02
Scriber	11684	100-YR	105.33	360.00	364.80		364.80	0.000011	0.27	774.10	294.91	0.02
Scriber	11626	Half 2-YR	25.68	358.08	360.51	359.17	360.56	0.001480	1.73	17.87	18.87	0.22
Scriber	11626	2-YR	51.35	358.08	362.00	359.70	362.02	0.000520	1.50	62.78	49.62	0.14
Scriber	11626	10-YR	75.45	358.08	363.49	360.09	363.49	0.000063	0.66	387.33	266.93	0.05
Scriber	11626	25-YR	87.44	358.08	364.69	360.29	364.70	0.000016	0.38	725.98	303.81	0.03
Scriber	11626	100-YR	105.33	358.08	364.80	360.56	364.80	0.000020	0.44	758.41	307.69	0.03
Scriber	11606	Half 2-YR	25.68	357.91	360.44	359.00	360.52	0.001521	2.27	11.29	8.24	0.26
Scriber	11606	2-YR	51.35	357.91	361.87	359.58	362.00	0.001292	2.86	17.97	15.88	0.26
Scriber	11606	10-YR	75.45	357.91	363.44	360.04	363.49	0.000442	2.10	125.72	234.08	0.16
Scriber	11606	25-YR	87.44	357.91	364.69	360.24	364.69	0.000040	0.55	481.58	266.47	0.04

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	11606	100-YR	105.33	357.91	364.80	360.54	364.80	0.000050	0.62	509.83	268.42	0.04
Scriber	11558		Culvert									
Scriber	11510	Half 2-YR	26.45	356.66	358.71	357.87	358.82	0.004689	2.73	9.70	6.44	0.37
Scriber	11510	2-YR	52.89	356.66	359.49	358.40	359.71	0.005278	3.73	14.18	7.77	0.42
Scriber	11510	10-YR	78.43	356.66	359.95	358.82	360.29	0.006626	4.67	16.78	10.05	0.48
Scriber	11510	25-YR	90.88	356.66	360.13	358.99	360.53	0.007278	5.10	17.82	11.02	0.51
Scriber	11510	100-YR	109.15	356.66	360.37	359.25	360.87	0.008220	5.69	19.18	12.28	0.55
Scriber	11342	Half 2-YR	26.45	356.35	357.90	357.28	357.99	0.005115	2.46	10.76	9.04	0.40
Scriber	11342	2-YR	52.89	356.35	358.67	357.72	358.78	0.005282	2.65	19.96	15.72	0.41
Scriber	11342	10-YR	78.43	356.35	359.14	358.05	359.26	0.004587	2.79	28.10	18.50	0.40
Scriber	11342	25-YR	90.88	356.35	359.33	358.27	359.46	0.004446	2.87	31.69	19.61	0.40
Scriber	11342	100-YR	109.15	356.35	359.59	358.50	359.73	0.004208	2.95	37.03	21.14	0.39
Scriber	11263	Half 2-YR	26.45	355.61	356.72	356.69	357.11	0.034325	5.01	5.28	6.10	0.95
Scriber	11263	2-YR	52.89	355.61	357.20	357.20	357.84	0.037063	6.41	8.25	6.43	1.00
Scriber	11263	10-YR	78.43	355.61	357.66	357.66	358.40	0.036600	6.94	11.30	7.52	1.00
Scriber	11263	25-YR	90.88	355.61	357.87	357.87	358.62	0.035758	6.96	13.06	8.61	1.00
Scriber	11263	100-YR	109.15	355.61	358.07	358.07	358.91	0.035534	7.39	14.76	9.07	1.00
Scriber	11234		Culvert									
Scriber	11205	Half 2-YR	26.45	354.57	356.70	355.68	356.74	0.001529	1.63	16.18	12.00	0.23
Scriber	11205	2-YR	52.89	354.57	357.40	356.05	357.48	0.001805	2.22	23.83	13.01	0.27
Scriber	11205	10-YR	78.43	354.57	357.88	356.35	357.99	0.002051	2.70	29.06	14.15	0.29
Scriber	11205	25-YR	90.88	354.57	358.07	356.48	358.20	0.002179	2.92	31.17	14.82	0.31
Scriber	11205	100-YR	109.15	354.57	358.32	356.66	358.48	0.002366	3.22	33.94	15.71	0.32
Scriber	11163	Half 2-YR	26.45	354.93	356.57		356.64	0.003630	2.13	12.44	10.40	0.34
Scriber	11163	2-YR	52.89	354.93	357.26		357.37	0.003398	2.63	20.40	12.64	0.35
Scriber	11163	10-YR	78.43	354.93	357.73		357.87	0.003579	3.06	26.65	14.25	0.37
Scriber	11163	25-YR	90.88	354.93	357.92		358.08	0.003700	3.24	29.40	14.90	0.38
Scriber	11163	100-YR	109.15	354.93	358.17		358.35	0.003808	3.50	33.25	16.44	0.39
Scriber	11030	Half 2-YR	26.45	354.39	356.07	355.29	356.15	0.003695	2.20	12.00	9.11	0.34
Scriber	11030	2-YR	52.89	354.39	356.80	355.73	356.91	0.003440	2.75	22.11	26.24	0.35

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	11030	10-YR	78.43	354.39	357.34	356.08	357.45	0.002771	2.90	42.53	49.37	0.32
Scriber	11030	25-YR	90.88	354.39	357.56	356.22	357.67	0.002467	2.90	54.83	58.51	0.31
Scriber	11030	100-YR	109.15	354.39	357.87	356.43	357.97	0.002085	2.86	74.87	70.92	0.29
Scriber	10984.3*	Half 2-YR	26.45	354.15	355.90	355.12	355.98	0.003784	2.24	11.82	8.89	0.34
Scriber	10984.3*	2-YR	52.89	354.15	356.63	355.57	356.75	0.003679	2.84	19.19	12.09	0.36
Scriber	10984.3*	10-YR	78.43	354.15	357.16	355.92	357.31	0.003372	3.19	31.93	35.80	0.35
Scriber	10984.3*	25-YR	90.88	354.15	357.40	356.07	357.55	0.003079	3.23	41.53	45.29	0.34
Scriber	10984.3*	100-YR	109.15	354.15	357.73	356.26	357.86	0.002619	3.22	58.81	58.95	0.32
Scriber	10938.6*	Half 2-YR	26.45	353.90	355.72	354.96	355.80	0.003956	2.28	11.58	8.63	0.35
Scriber	10938.6*	2-YR	52.89	353.90	356.45	355.40	356.58	0.003911	2.92	18.59	11.24	0.36
Scriber	10938.6*	10-YR	78.43	353.90	356.97	355.75	357.14	0.003863	3.38	25.63	20.51	0.38
Scriber	10938.6*	25-YR	90.88	353.90	357.20	355.90	357.39	0.003714	3.52	31.70	30.94	0.37
Scriber	10938.6*	100-YR	109.15	353.90	357.54	356.11	357.73	0.003287	3.58	44.66	45.87	0.36
Scriber	10893.*	Half 2-YR	26.45	353.66	355.53	354.79	355.61	0.004272	2.36	11.22	8.33	0.36
Scriber	10893.*	2-YR	52.89	353.66	356.25	355.23	356.39	0.004319	3.02	17.83	10.54	0.38
Scriber	10893.*	10-YR	78.43	353.66	356.77	355.59	356.96	0.004301	3.52	23.89	12.80	0.39
Scriber	10893.*	25-YR	90.88	353.66	356.99	355.74	357.21	0.004276	3.72	27.01	14.68	0.40
Scriber	10893.*	100-YR	109.15	353.66	357.34	355.95	357.56	0.003933	3.86	36.61	40.57	0.39
Scriber	10847.3*	Half 2-YR	26.45	353.41	355.31	354.61	355.41	0.004785	2.46	10.75	8.01	0.37
Scriber	10847.3*	2-YR	52.89	353.41	356.02	355.06	356.18	0.004992	3.17	16.88	9.83	0.40
Scriber	10847.3*	10-YR	78.43	353.41	356.53	355.41	356.74	0.004994	3.70	22.45	11.90	0.41
Scriber	10847.3*	25-YR	90.88	353.41	356.76	355.57	356.99	0.004958	3.91	25.25	13.01	0.42
Scriber	10847.3*	100-YR	109.15	353.41	357.11	355.78	357.36	0.004669	4.11	30.24	15.27	0.41
Scriber	10801.6*	Half 2-YR	26.45	353.17	355.05	354.43	355.16	0.006125	2.68	9.86	7.64	0.42
Scriber	10801.6*	2-YR	52.89	353.17	355.73	354.89	355.92	0.006558	3.46	15.37	8.93	0.44
Scriber	10801.6*	10-YR	78.43	353.17	356.23	355.25	356.48	0.006435	4.02	20.36	10.83	0.46
Scriber	10801.6*	25-YR	90.88	353.17	356.46	355.42	356.74	0.006316	4.23	22.91	11.68	0.46
Scriber	10801.6*	100-YR	109.15	353.17	356.82	355.63	357.12	0.005813	4.42	27.47	14.48	0.45
Scriber	10756	Half 2-YR	26.45	352.92	354.46	354.24	354.70	0.018741	3.92	6.74	6.95	0.70
Scriber	10756	2-YR	52.89	352.92	355.19	354.71	355.49	0.013584	4.37	12.12	7.66	0.61
Scriber	10756	10-YR	78.43	352.92	355.73	355.08	356.09	0.011498	4.80	16.56	9.14	0.58
Scriber	10756	25-YR	90.88	352.92	355.98	355.24	356.36	0.010579	4.96	18.75	10.03	0.57

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	10756	100-YR	109.15	352.92	356.41	355.48	356.79	0.008600	5.00	22.57	11.57	0.53
Scriber	10728		Culvert									
Scriber	10701	Half 2-YR	26.45	352.70	354.50	353.42	354.53	0.001076	1.47	18.02	15.25	0.20
Scriber	10701	2-YR	52.89	352.70	355.30	353.75	355.36	0.001145	1.97	26.82	16.69	0.22
Scriber	10701	10-YR	78.43	352.70	355.87	354.02	355.95	0.001250	2.37	33.08	17.72	0.24
Scriber	10701	25-YR	90.88	352.70	356.09	354.15	356.20	0.001316	2.55	35.59	18.13	0.25
Scriber	10701	100-YR	109.15	352.70	356.42	354.31	356.54	0.001377	2.79	39.19	21.20	0.26
Scriber	10557	Half 2-YR	26.45	352.32	354.17	353.31	354.25	0.004029	2.31	11.45	7.95	0.34
Scriber	10557	2-YR	52.89	352.32	354.90	353.79	355.04	0.004845	2.99	17.69	9.14	0.38
Scriber	10557	10-YR	78.43	352.32	355.41	354.17	355.59	0.005514	3.48	22.55	9.97	0.41
Scriber	10557	25-YR	90.88	352.32	355.60	354.33	355.81	0.005918	3.71	24.50	10.28	0.42
Scriber	10557	100-YR	109.15	352.32	355.90	354.57	356.14	0.006046	3.94	27.73	11.34	0.43
Scriber	10477	Half 2-YR	26.45	352.11	353.11	353.11	353.51	0.033019	5.08	5.20	6.50	0.99
Scriber	10477	2-YR	52.89	352.11	353.60	353.60	354.20	0.030277	6.23	8.49	7.25	1.00
Scriber	10477	10-YR	78.43	352.11	354.04	353.96	354.74	0.023741	6.70	11.71	7.94	0.93
Scriber	10477	25-YR	90.88	352.11	354.37	354.13	355.02	0.017037	6.43	14.13	8.45	0.81
Scriber	10477	100-YR	109.15	352.11	354.71	354.35	355.38	0.014455	6.59	16.57	8.97	0.77
Scriber	10450		Culvert									
Scriber	10422	Half 2-YR	26.45	350.59	352.69	351.71	352.77	0.002580	2.17	12.22	9.86	0.30
Scriber	10422	2-YR	52.89	350.59	353.42	352.18	353.56	0.003417	2.99	17.66	11.08	0.35
Scriber	10422	10-YR	78.43	350.59	353.94	352.54	354.15	0.004085	3.61	21.74	11.95	0.38
Scriber	10422	25-YR	90.88	350.59	354.16	352.70	354.40	0.004384	3.87	23.48	12.31	0.40
Scriber	10422	100-YR	109.15	350.59	354.44	352.94	354.72	0.004839	4.24	25.76	12.78	0.42
Scriber	10340	Half 2-YR	26.45	350.64	351.74	351.74	352.14	0.036301	5.07	5.22	6.57	1.00
Scriber	10340	2-YR	52.89	350.64	352.24	352.24	352.80	0.033016	5.98	8.85	7.89	1.00
Scriber	10340	10-YR	78.43	350.64	352.61	352.61	353.28	0.031988	6.59	11.91	8.86	1.00
Scriber	10340	25-YR	90.88	350.64	352.76	352.76	353.48	0.031535	6.82	13.33	9.27	1.00
Scriber	10340	100-YR	109.15	350.64	352.98	352.98	353.76	0.030752	7.09	15.38	9.84	1.00
Scriber	9965	Half 2-YR	26.45	348.02	350.01		350.04	0.000864	1.20	22.09	14.97	0.17
Scriber	9965	2-YR	52.89	348.02	350.46		350.51	0.001518	1.81	30.09	24.83	0.24

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9965	10-YR	78.43	348.02	350.74		350.82	0.002010	2.30	37.97	30.31	0.28
Scriber	9965	25-YR	90.88	348.02	350.83		350.93	0.002320	2.54	40.70	31.27	0.30
Scriber	9965	100-YR	109.15	348.02	350.97		351.09	0.002658	2.83	45.20	32.70	0.33
Scriber	9840	Half 2-YR	26.45	347.62	349.30	349.30	349.67	0.040089	4.91	5.39	7.16	1.00
Scriber	9840	2-YR	52.89	347.62	349.82	349.82	350.04	0.017929	4.23	21.04	55.47	0.72
Scriber	9840	10-YR	78.43	347.62	349.97	349.97	350.23	0.019429	4.82	30.51	68.56	0.77
Scriber	9840	25-YR	90.88	347.62	350.06	350.06	350.29	0.017409	4.77	36.61	69.87	0.73
Scriber	9840	100-YR	109.15	347.62	350.13	350.13	350.38	0.018138	5.06	41.90	70.98	0.76
Scriber	9764	Half 2-YR	26.45	344.99	348.26	345.91	348.28	0.000494	1.16	23.50	57.89	0.12
Scriber	9764	2-YR	52.89	344.99	349.00	346.41	349.05	0.000874	1.80	32.29	132.81	0.17
Scriber	9764	10-YR	78.43	344.99	349.27	346.80	349.36	0.001463	2.45	36.31	135.50	0.22
Scriber	9764	25-YR	90.88	344.99	349.37	346.98	349.49	0.001773	2.75	37.98	136.55	0.24
Scriber	9764	100-YR	109.15	344.99	349.51	347.21	349.66	0.002249	3.17	40.22	137.89	0.28
Scriber	9679	Half 2-YR	26.45	345.93	348.16	346.84	348.21	0.001552	1.80	16.83	126.18	0.22
Scriber	9679	2-YR	52.89	345.93	348.88	347.34	348.94	0.001636	2.26	41.93	185.20	0.24
Scriber	9679	10-YR	78.43	345.93	349.13	347.74	349.21	0.001955	2.62	60.37	188.55	0.27
Scriber	9679	25-YR	90.88	345.93	349.23	347.93	349.31	0.002101	2.78	67.55	189.84	0.28
Scriber	9679	100-YR	109.15	345.93	349.36	348.27	349.45	0.002301	2.99	76.90	191.58	0.29
Scriber	9634	Half 2-YR	26.45	346.65	347.56	347.56	347.98	0.039278	5.19	5.10	78.19	1.01
Scriber	9634	2-YR	52.89	346.65	348.06	348.06	348.69	0.037937	6.37	8.30	134.31	1.01
Scriber	9634	10-YR	78.43	346.65	348.66	348.66	348.99	0.015929	5.11	25.74	180.15	0.69
Scriber	9634	25-YR	90.88	346.65	348.77		349.09	0.015274	5.16	31.63	187.56	0.68
Scriber	9634	100-YR	109.15	346.65	349.08		349.26	0.008497	4.27	51.67	204.81	0.52
Scriber	9563	Half 2-YR	26.45	345.10	346.70	346.01	346.80	0.005750	2.60	10.18	7.26	0.39
Scriber	9563	2-YR	52.89	345.10	347.33	346.47	347.53	0.007248	3.55	14.90	7.62	0.45
Scriber	9563	10-YR	78.43	345.10	347.78	346.84	348.07	0.008064	4.29	18.38	7.88	0.49
Scriber	9563	25-YR	90.88	345.10	347.97	347.00	348.30	0.008447	4.62	19.86	7.98	0.50
Scriber	9563	100-YR	109.15	345.10	348.22	347.23	348.62	0.008940	5.05	21.90	8.12	0.53
Scriber	9555		Bridge									
Scriber	9548	Half 2-YR	26.45	345.03	346.49	346.14	346.66	0.012658	3.35	7.91	7.51	0.57
Scriber	9548	2-YR	52.89	345.03	347.09	346.59	347.37	0.011354	4.27	12.58	8.09	0.58

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9548	10-YR	78.43	345.03	347.49	346.94	347.89	0.012052	5.08	15.91	8.48	0.62
Scriber	9548	25-YR	90.88	345.03	347.65	347.10	348.11	0.012568	5.46	17.29	8.63	0.64
Scriber	9548	100-YR	109.15	345.03	347.87	347.32	348.41	0.013271	5.96	19.17	8.84	0.67
Scriber	9510	Half 2-YR	26.45	344.76	346.21	345.62	346.32	0.005832	2.58	10.23	8.31	0.41
Scriber	9510	2-YR	52.89	344.76	346.80	346.05	346.99	0.007232	3.46	15.28	8.86	0.46
Scriber	9510	10-YR	78.43	344.76	347.17	346.39	347.45	0.008550	4.20	18.79	10.29	0.52
Scriber	9510	25-YR	90.88	344.76	347.32	346.54	347.64	0.009112	4.54	20.36	11.19	0.54
Scriber	9510	100-YR	109.15	344.76	347.52	346.75	347.91	0.009765	4.98	22.74	12.44	0.57
Scriber	9500.3*	Half 2-YR	26.45	344.70	346.15	345.59	346.26	0.006061	2.62	10.09	8.45	0.42
Scriber	9500.3*	2-YR	52.89	344.70	346.72	346.02	346.91	0.007443	3.50	15.13	9.12	0.48
Scriber	9500.3*	10-YR	78.43	344.70	347.08	346.35	347.36	0.008751	4.25	18.62	10.62	0.53
Scriber	9500.3*	25-YR	90.88	344.70	347.22	346.50	347.55	0.009341	4.59	20.16	11.49	0.55
Scriber	9500.3*	100-YR	109.15	344.70	347.42	346.71	347.81	0.010002	5.03	22.51	12.71	0.58
Scriber	9490.6*	Half 2-YR	26.45	344.65	346.09	345.55	346.20	0.006410	2.67	9.91	8.61	0.44
Scriber	9490.6*	2-YR	52.89	344.65	346.65	345.99	346.84	0.007764	3.54	14.95	9.40	0.49
Scriber	9490.6*	10-YR	78.43	344.65	346.99	346.31	347.28	0.009057	4.30	18.42	11.02	0.55
Scriber	9490.6*	25-YR	90.88	344.65	347.12	346.47	347.46	0.009696	4.65	19.93	11.86	0.57
Scriber	9490.6*	100-YR	109.15	344.65	347.31	346.67	347.71	0.010377	5.10	22.26	13.05	0.60
Scriber	9480.9*	Half 2-YR	26.45	344.59	346.02	345.51	346.13	0.006672	2.70	9.80	8.77	0.45
Scriber	9480.9*	2-YR	52.89	344.59	346.56	345.93	346.76	0.008038	3.57	14.83	9.67	0.51
Scriber	9480.9*	10-YR	78.43	344.59	346.90	346.27	347.19	0.009374	4.33	18.27	11.41	0.56
Scriber	9480.9*	25-YR	90.88	344.59	347.02	346.42	347.36	0.010101	4.70	19.74	12.25	0.59
Scriber	9480.9*	100-YR	109.15	344.59	347.20	346.62	347.61	0.010833	5.16	22.03	13.45	0.62
Scriber	9471.2*	Half 2-YR	26.45	344.54	345.95	345.47	346.06	0.007091	2.74	9.64	8.95	0.47
Scriber	9471.2*	2-YR	52.89	344.54	346.48	345.89	346.68	0.008449	3.60	14.67	9.96	0.52
Scriber	9471.2*	10-YR	78.43	344.54	346.79	346.22	347.09	0.009860	4.39	18.06	11.86	0.58
Scriber	9471.2*	25-YR	90.88	344.54	346.91	346.36	347.26	0.010749	4.78	19.44	12.69	0.61
Scriber	9471.2*	100-YR	109.15	344.54	347.07	346.57	347.50	0.011584	5.25	21.67	13.93	0.65
Scriber	9461.5*	Half 2-YR	26.45	344.48	345.87	345.42	345.99	0.007497	2.78	9.52	9.13	0.48
Scriber	9461.5*	2-YR	52.89	344.48	346.39	345.84	346.60	0.008864	3.64	14.53	10.27	0.54
Scriber	9461.5*	10-YR	78.43	344.48	346.69	346.17	346.99	0.010464	4.45	17.83	12.35	0.60
Scriber	9461.5*	25-YR	90.88	344.48	346.78	346.31	347.15	0.011680	4.88	19.04	13.16	0.64

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9461.5*	100-YR	109.15	344.48	346.93	346.50	347.38	0.012835	5.39	21.09	14.41	0.68
Scriber	9451.8*	Half 2-YR	26.45	344.42	345.79	345.37	345.92	0.008053	2.83	9.34	9.30	0.50
Scriber	9451.8*	2-YR	52.89	344.42	346.29	345.79	346.51	0.009462	3.69	14.32	10.55	0.56
Scriber	9451.8*	10-YR	78.43	344.42	346.56	346.11	346.89	0.011438	4.55	17.46	12.93	0.63
Scriber	9451.8*	25-YR	90.88	344.42	346.63	346.25	347.03	0.013521	5.08	18.28	13.59	0.69
Scriber	9451.8*	100-YR	109.15	344.42	346.70	346.44	347.23	0.016765	5.82	19.35	14.39	0.77
Scriber	9442.1*	Half 2-YR	26.45	344.37	345.70	345.30	345.83	0.008709	2.89	9.16	9.47	0.52
Scriber	9442.1*	2-YR	52.89	344.37	346.19	345.73	346.41	0.010153	3.75	14.11	10.83	0.58
Scriber	9442.1*	10-YR	78.43	344.37	346.46	346.05	346.77	0.011854	4.56	20.29	49.58	0.64
Scriber	9442.1*	25-YR	90.88	344.37	346.49	346.18	346.89	0.014419	5.11	22.36	57.18	0.71
Scriber	9442.1*	100-YR	109.15	344.37	346.66	346.63	347.05	0.013095	5.20	32.14	59.33	0.69
Scriber	9432.4*	Half 2-YR	26.45	344.31	345.60	345.25	345.74	0.009657	2.97	8.91	9.59	0.54
Scriber	9432.4*	2-YR	52.89	344.31	346.10	345.66	346.31	0.010173	3.69	16.96	34.78	0.58
Scriber	9432.4*	10-YR	78.43	344.31	346.47	346.08	346.65	0.007268	3.69	35.17	54.36	0.51
Scriber	9432.4*	25-YR	90.88	344.31	346.52	346.32	346.73	0.008253	4.02	38.28	54.45	0.55
Scriber	9432.4*	100-YR	109.15	344.31	346.71	346.44	346.90	0.007205	4.03	48.31	54.73	0.52
Scriber	9422.7*	Half 2-YR	26.45	344.26	345.49	345.18	345.64	0.011350	3.12	8.49	9.63	0.58
Scriber	9422.7*	2-YR	52.89	344.26	345.97	345.59	346.20	0.011970	3.87	14.96	24.53	0.63
Scriber	9422.7*	10-YR	78.43	344.26	346.34	345.98	346.57	0.009008	4.01	26.90	33.27	0.57
Scriber	9422.7*	25-YR	90.88	344.26	346.20	346.16	346.61	0.017683	5.28	22.35	33.07	0.78
Scriber	9422.7*	100-YR	109.15	344.26	346.30	346.30	346.78	0.019526	5.80	25.51	33.21	0.83
Scriber	9413	Half 2-YR	26.45	344.20	345.11	345.11	345.44	0.035469	4.63	5.72	8.49	0.99
Scriber	9413	2-YR	52.89	344.20	345.52	345.52	345.99	0.032733	5.51	9.60	10.20	1.00
Scriber	9413	10-YR	78.43	344.20	345.89	345.83	346.40	0.027298	5.77	13.59	11.70	0.94
Scriber	9413	25-YR	90.88	344.20	346.18	346.18	346.44	0.012219	4.47	38.80	93.08	0.65
Scriber	9413	100-YR	109.15	344.20	346.32	346.26	346.54	0.010062	4.33	52.71	94.23	0.60
Scriber	9284	Half 2-YR	27.88	341.82	343.44	342.77	343.57	0.004597	3.03	10.98	8.63	0.42
Scriber	9284	2-YR	55.76	341.82	344.11	343.29	344.36	0.005327	4.13	17.32	10.15	0.48
Scriber	9284	10-YR	82.94	341.82	344.57	343.72	344.93	0.006144	5.02	22.20	11.21	0.54
Scriber	9284	25-YR	96.23	341.82	344.78	343.90	345.18	0.006385	5.37	24.54	11.69	0.55
Scriber	9284	100-YR	115.75	341.82	345.07	344.16	345.53	0.006569	5.80	28.03	12.36	0.57

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	9213	Half 2-YR	27.88	341.23	343.07	342.35	343.21	0.005904	2.97	9.67	7.20	0.45
Scriber	9213	2-YR	55.76	341.23	343.65	342.95	343.91	0.007735	4.07	14.56	10.37	0.53
Scriber	9213	10-YR	82.94	341.23	344.04	343.39	344.41	0.008803	4.94	18.60	10.66	0.59
Scriber	9213	25-YR	96.23	341.23	344.25	343.58	344.66	0.008616	5.19	20.86	10.83	0.59
Scriber	9213	100-YR	115.75	341.23	344.56	343.82	345.01	0.008154	5.48	24.28	11.07	0.59
Scriber	9153	Half 2-YR	27.88	341.05	342.04	342.04	342.45	0.036729	5.14	5.42	6.95	0.99
Scriber	9153	2-YR	55.76	341.05	342.69	342.57	343.16	0.021296	5.51	10.98	13.45	0.82
Scriber	9153	10-YR	82.94	341.05	343.38	342.93	343.79	0.011534	5.28	18.36	14.04	0.64
Scriber	9153	25-YR	96.23	341.05	343.71	343.09	344.10	0.009333	5.23	21.96	14.32	0.59
Scriber	9153	100-YR	115.75	341.05	344.09	343.30	344.50	0.008059	5.36	26.28	14.65	0.56
Scriber	9116		Culvert									
Scriber	9079	Half 2-YR	27.88	340.17	342.23	341.38	342.29	0.002625	1.98	14.15	10.20	0.29
Scriber	9079	2-YR	55.76	340.17	343.04	341.80	343.13	0.002339	2.48	22.72	10.94	0.30
Scriber	9079	10-YR	82.94	340.17	343.65	342.09	343.77	0.002263	2.88	29.49	11.50	0.30
Scriber	9079	25-YR	96.23	340.17	343.90	342.24	344.04	0.002271	3.06	32.35	11.73	0.31
Scriber	9079	100-YR	115.75	340.17	344.25	342.43	344.41	0.002284	3.29	36.27	12.05	0.32
Scriber	9042	Half 2-YR	27.88	339.47	341.86	341.24	342.06	0.011702	3.63	7.69	5.35	0.53
Scriber	9042	2-YR	55.76	339.47	342.47	341.92	342.87	0.014564	5.06	11.34	6.67	0.63
Scriber	9042	10-YR	82.94	339.47	342.85	342.40	343.45	0.017617	6.25	14.68	11.92	0.71
Scriber	9042	25-YR	96.23	339.47	342.94	342.62	343.68	0.020727	6.95	15.83	13.56	0.77
Scriber	9042	100-YR	115.75	339.47	343.10	343.10	344.00	0.023799	7.75	18.02	14.31	0.84
Scriber	8966	Half 2-YR	27.88	339.27	340.20	340.20	340.59	0.037472	4.97	5.60	7.27	1.00
Scriber	8966	2-YR	55.76	339.27	340.67	340.67	341.25	0.032862	6.15	9.15	8.18	0.99
Scriber	8966	10-YR	82.94	339.27	341.06	341.04	341.78	0.027886	6.85	12.56	9.10	0.96
Scriber	8966	25-YR	96.23	339.27	341.31	341.20	342.03	0.022981	6.84	14.88	9.68	0.89
Scriber	8966	100-YR	115.75	339.27	341.74	341.42	342.40	0.016030	6.58	19.32	10.70	0.77
Scriber	8891	Half 2-YR	27.88	337.35	339.73	338.54	339.78	0.001559	1.63	17.15	10.21	0.22
Scriber	8891	2-YR	55.76	337.35	340.42	338.96	340.50	0.002254	2.28	24.50	11.16	0.27
Scriber	8891	10-YR	82.94	337.35	341.03	339.29	341.14	0.002429	2.63	31.59	12.01	0.28
Scriber	8891	25-YR	96.23	337.35	341.30	339.43	341.42	0.002381	2.77	34.80	12.37	0.29
Scriber	8891	100-YR	115.75	337.35	341.76	339.63	341.89	0.002108	2.87	40.53	13.01	0.28

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	8872		Culvert									
Scriber	8863	Half 2-YR	27.88	337.99	339.69	338.85	339.76	0.003077	2.06	13.54	9.62	0.31
Scriber	8863	2-YR	55.76	337.99	340.35	339.27	340.47	0.003893	2.77	20.14	10.47	0.35
Scriber	8863	10-YR	82.94	337.99	340.95	339.60	341.10	0.003771	3.12	26.60	11.43	0.35
Scriber	8863	25-YR	96.23	337.99	341.20	339.75	341.37	0.003636	3.28	29.46	12.08	0.35
Scriber	8863	100-YR	115.75	337.99	341.68	339.94	341.85	0.003039	3.34	34.89	13.29	0.33
Scriber	8772	Half 2-YR	27.88	337.88	339.39	338.78	339.45	0.003754	1.99	14.17	15.14	0.35
Scriber	8772	2-YR	55.76	337.88	340.09	339.16	340.17	0.002496	2.29	26.10	51.12	0.31
Scriber	8772	10-YR	82.94	337.88	340.75	339.41	340.84	0.001760	2.39	37.96	66.92	0.27
Scriber	8772	25-YR	96.23	337.88	341.15	339.54	341.18	0.000674	1.64	108.86	84.61	0.17
Scriber	8772	100-YR	115.75	337.88	341.67	339.69	341.69	0.000403	1.42	154.37	88.68	0.14
Scriber	8745		Bridge									
Scriber	8718	Half 2-YR	27.88	337.17	339.23	338.18	339.24	0.000735	1.13	44.83	62.78	0.15
Scriber	8718	2-YR	55.76	337.17	339.94	338.54	339.96	0.000532	1.22	95.79	74.75	0.14
Scriber	8718	10-YR	82.94	337.17	340.48	338.82	340.50	0.000442	1.27	136.95	78.16	0.13
Scriber	8718	25-YR	96.23	337.17	340.73	338.90	340.75	0.000407	1.28	156.73	79.74	0.13
Scriber	8718	100-YR	115.75	337.17	341.09	339.03	341.10	0.000394	1.36	198.26	106.70	0.13
Scriber	8590	Half 2-YR	27.88	336.22	339.15	337.10	339.17	0.000492	1.13	31.89	26.65	0.12
Scriber	8590	2-YR	55.76	336.22	339.85	337.57	339.88	0.000715	1.59	55.57	59.27	0.15
Scriber	8590	10-YR	82.94	336.22	340.40	337.94	340.43	0.000682	1.72	97.61	78.86	0.15
Scriber	8590	25-YR	96.23	336.22	340.66	338.08	340.69	0.000620	1.71	118.52	82.03	0.15
Scriber	8590	100-YR	115.75	336.22	341.02	338.32	341.05	0.000539	1.69	149.40	85.93	0.14
Scriber	8427	Half 2-YR	27.88	336.00	339.12		339.13	0.000149	0.69	45.43	25.11	0.07
Scriber	8427	2-YR	55.76	336.00	339.79		339.81	0.000271	1.07	65.05	32.96	0.10
Scriber	8427	10-YR	82.94	336.00	340.32		340.35	0.000345	1.33	83.98	38.00	0.12
Scriber	8427	25-YR	96.23	336.00	340.58		340.61	0.000364	1.42	94.04	40.57	0.12
Scriber	8427	100-YR	115.75	336.00	340.94		340.98	0.000383	1.54	110.15	48.44	0.13
Scriber	8283	Half 2-YR	27.88	337.58	339.00		339.06	0.003343	2.06	14.68	12.91	0.32
Scriber	8283	2-YR	55.76	337.58	339.58		339.70	0.003769	2.79	22.73	14.58	0.36
Scriber	8283	10-YR	82.94	337.58	340.06		340.22	0.003823	3.26	30.06	16.15	0.37
Scriber	8283	25-YR	96.23	337.58	340.31		340.47	0.003657	3.40	34.08	16.97	0.37

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	8283	100-YR	115.75	337.58	340.65		340.84	0.003409	3.57	40.20	18.30	0.36
Scriber	8249	Half 2-YR	27.88	337.26	338.76	338.30	338.89	0.007633	2.89	10.93	11.97	0.46
Scriber	8249	2-YR	55.76	337.26	339.28	338.74	339.49	0.008420	3.85	17.81	15.02	0.52
Scriber	8249	10-YR	82.94	337.26	339.76	339.09	340.01	0.007399	4.26	25.07	18.06	0.51
Scriber	8249	25-YR	96.23	337.26	340.04	339.22	340.28	0.006447	4.30	29.20	19.77	0.48
Scriber	8249	100-YR	115.75	337.26	340.41	339.43	340.66	0.005502	4.36	34.96	22.14	0.45
Scriber	8183		Culvert									
Scriber	8107	Half 2-YR	47.85	336.46	338.02	337.41	338.13	0.004641	2.59	18.76	15.45	0.40
Scriber	8107	2-YR	95.70	336.46	338.56	337.85	338.76	0.005736	3.63	27.33	16.69	0.48
Scriber	8107	10-YR	152.27	336.46	339.07	338.26	339.37	0.006207	4.46	36.52	19.41	0.52
Scriber	8107	25-YR	182.33	336.46	339.39	338.45	339.72	0.005664	4.65	42.68	23.16	0.50
Scriber	8107	100-YR	229.34	336.46	339.76	338.74	340.15	0.005701	5.09	49.70	27.23	0.52
Scriber	8060	Half 2-YR	36.63	336.43	337.91	337.11	337.95	0.002018	1.53	23.96	144.73	0.26
Scriber	8060	2-YR	73.26	336.43	338.51	337.45	338.54	0.001447	1.65	78.57	168.32	0.23
Scriber	8060	10-YR	109.85	336.43	339.15	337.71	339.16	0.000502	1.22	199.25	202.23	0.15
Scriber	8060	25-YR	127.74	336.43	339.50	337.83	339.51	0.000310	1.06	273.90	217.36	0.12
Scriber	8060	100-YR	154.00	336.43	339.92	337.99	339.93	0.000207	0.96	397.77	316.67	0.10
Scriber	7965	Half 2-YR	36.63	336.37	337.28	337.10	337.47	0.016807	3.53	10.37	13.41	0.71
Scriber	7965	2-YR	73.26	336.37	338.06	337.48	338.25	0.006432	3.47	22.18	194.05	0.49
Scriber	7965	10-YR	109.85	336.37	338.84	337.79	339.01	0.003543	3.38	37.51	266.46	0.39
Scriber	7965	25-YR	127.74	336.37	339.25	337.93	339.40	0.002678	3.27	48.84	287.88	0.35
Scriber	7965	100-YR	154.00	336.37	339.68	338.11	339.83	0.002240	3.30	63.98	396.66	0.33
Scriber	7848	Half 2-YR	36.63	336.30	337.40	336.40	337.40	0.000022	0.16	230.29	224.59	0.03
Scriber	7848	2-YR	73.26	336.30	338.18	336.46	338.18	0.000010	0.16	654.92	593.17	0.02
Scriber	7848	10-YR	109.85	336.30	338.96	336.51	338.96	0.000006	0.15	1125.87	710.22	0.02
Scriber	7848	25-YR	127.74	336.30	339.36	336.54	339.36	0.000004	0.14	1408.95	713.35	0.01
Scriber	7848	100-YR	154.00	336.30	339.79	336.57	339.79	0.000004	0.15	1716.68	716.90	0.01
Scriber	7663	Half 2-YR	36.63	336.17	337.40	336.26	337.40	0.000010	0.12	319.22	278.24	0.02
Scriber	7663	2-YR	73.26	336.17	338.18	336.31	338.18	0.000007	0.14	576.96	398.05	0.02
Scriber	7663	10-YR	109.85	336.17	338.96	336.35	338.96	0.000005	0.14	917.89	459.16	0.02
Scriber	7663	25-YR	127.74	336.17	339.35	336.37	339.36	0.000004	0.14	1144.10	603.37	0.01

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	7663	100-YR	154.00	336.17	339.79	336.40	339.79	0.000004	0.15	1404.90	609.00	0.01
Scriber	7271	Half 2-YR	36.63	335.88	337.38	336.23	337.39	0.000318	0.70	52.09	39.64	0.11
Scriber	7271	2-YR	73.26	335.88	338.17	336.44	338.17	0.000398	0.58	126.52	147.60	0.11
Scriber	7271	10-YR	109.85	335.88	338.95	336.61	338.95	0.000116	0.38	296.82	246.60	0.06
Scriber	7271	25-YR	127.74	335.88	339.35	336.68	339.35	0.000069	0.32	413.34	375.37	0.05
Scriber	7271	100-YR	154.00	335.88	339.78	336.78	339.78	0.000047	0.28	576.86	381.93	0.04
Scriber	7132	Half 2-YR	36.63	335.79	337.30	336.40	337.32	0.000991	1.16	31.71	36.22	0.19
Scriber	7132	2-YR	73.26	335.79	338.07	336.68	338.10	0.000694	1.36	60.90	121.28	0.17
Scriber	7132	10-YR	109.85	335.79	338.89	336.90	338.92	0.000443	1.37	95.67	158.22	0.14
Scriber	7132	25-YR	127.74	335.79	339.30	336.99	339.33	0.000366	1.36	112.98	182.09	0.13
Scriber	7132	100-YR	154.00	335.79	339.74	337.11	339.77	0.000338	1.43	131.34	197.21	0.13
Scriber	7105		Bridge									
Scriber	7095	Half 2-YR	36.63	335.79	337.24	336.40	337.26	0.001136	1.19	30.93	34.37	0.20
Scriber	7095	2-YR	73.26	335.79	337.98	336.69	338.01	0.000790	1.39	57.88	108.47	0.18
Scriber	7095	10-YR	109.85	335.79	338.71	336.89	338.74	0.000541	1.44	87.31	151.47	0.16
Scriber	7095	25-YR	127.74	335.79	339.07	336.99	339.10	0.000465	1.45	101.52	164.72	0.15
Scriber	7095	100-YR	154.00	335.79	339.40	337.11	339.44	0.000462	1.56	114.93	189.93	0.15
Scriber	7071	Half 2-YR	31.86	335.68	337.14	336.50	337.21	0.003793	2.01	15.87	15.74	0.35
Scriber	7071	2-YR	63.86	335.68	337.95	336.89	337.97	0.002205	1.25	51.11	72.96	0.26
Scriber	7071	10-YR	99.25	335.68	338.71	337.22	338.72	0.000718	0.79	126.19	129.26	0.14
Scriber	7071	25-YR	116.52	335.68	339.07	337.55	339.08	0.000462	0.66	175.68	144.06	0.11
Scriber	7071	100-YR	141.76	335.68	339.41	337.68	339.41	0.000370	0.63	226.58	156.10	0.09
Scriber	6811	Half 2-YR	31.86	334.95	336.93	335.82	336.94	0.000423	0.75	42.32	77.99	0.12
Scriber	6811	2-YR	63.86	334.95	337.87	336.05	337.88	0.000139	0.40	171.39	273.94	0.07
Scriber	6811	10-YR	99.25	334.95	338.69	336.26	338.69	0.000040	0.32	414.25	322.46	0.04
Scriber	6811	25-YR	116.52	334.95	339.05	336.36	339.06	0.000028	0.30	536.13	341.17	0.04
Scriber	6811	100-YR	141.76	334.95	339.40	336.47	339.40	0.000025	0.31	655.60	359.03	0.03
Scriber	6799		Bridge									
Scriber	6788	Half 2-YR	31.86	334.95	336.92	335.82	336.93	0.000435	0.76	41.96	77.01	0.12
Scriber	6788	2-YR	63.86	334.95	337.86	336.05	337.86	0.000147	0.41	166.61	270.99	0.07

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	6788	10-YR	99.25	334.95	338.67	336.26	338.67	0.000042	0.32	408.67	321.44	0.04
Scriber	6788	25-YR	116.52	334.95	339.04	336.36	339.04	0.000029	0.30	532.12	340.57	0.04
Scriber	6788	100-YR	141.76	334.95	339.39	336.47	339.39	0.000025	0.31	652.55	358.57	0.03
Scriber	6179	Half 2-YR	31.86	334.74	336.69	335.43	336.70	0.000319	0.96	33.16	22.58	0.14
Scriber	6179	2-YR	63.86	334.74	337.73	335.73	337.75	0.000211	1.08	63.51	37.83	0.12
Scriber	6179	10-YR	99.25	334.74	338.61	335.98	338.62	0.000146	1.10	127.32	119.14	0.11
Scriber	6179	25-YR	116.52	334.74	339.00	336.09	339.01	0.000110	1.03	180.27	157.23	0.10
Scriber	6179	100-YR	141.76	334.74	339.35	336.23	339.36	0.000092	1.00	239.57	187.85	0.09
Scriber	6169		Bridge									
Scriber	6159	Half 2-YR	31.86	334.74	336.55	335.43	336.57	0.000425	1.06	30.09	22.00	0.16
Scriber	6159	2-YR	63.86	334.74	337.50	335.73	337.52	0.000305	1.21	55.29	32.93	0.14
Scriber	6159	10-YR	99.25	334.74	338.35	335.98	338.38	0.000204	1.24	101.41	85.09	0.13
Scriber	6159	25-YR	116.52	334.74	338.81	336.09	338.83	0.000146	1.15	153.33	135.34	0.11
Scriber	6159	100-YR	141.76	334.74	339.22	336.23	339.24	0.000113	1.09	218.20	178.45	0.10
Scriber	5795	Half 2-YR	31.86	334.62	336.31	335.47	336.34	0.000946	1.40	22.70	19.39	0.23
Scriber	5795	2-YR	63.86	334.62	337.34	335.80	337.38	0.000501	1.45	44.32	22.99	0.18
Scriber	5795	10-YR	99.25	334.62	338.24	336.06	338.28	0.000343	1.51	70.23	270.90	0.16
Scriber	5795	25-YR	116.52	334.62	338.73	336.16	338.76	0.000261	1.46	93.72	305.63	0.14
Scriber	5795	100-YR	141.76	334.62	339.15	336.32	339.18	0.000226	1.47	121.19	323.37	0.13
Scriber	5757		Bridge									
Scriber	5719*	Half 2-YR	31.86	334.63	336.22	335.51	336.26	0.001271	1.56	20.38	18.90	0.27
Scriber	5719*	2-YR	63.86	334.63	337.17	335.82	337.21	0.000695	1.61	39.74	22.06	0.21
Scriber	5719*	10-YR	99.25	334.63	337.91	336.09	337.96	0.000564	1.74	57.40	48.19	0.20
Scriber	5719*	25-YR	116.52	334.63	338.31	336.20	338.36	0.000458	1.72	74.63	124.69	0.18
Scriber	5719*	100-YR	141.76	334.63	338.89	336.35	338.92	0.000273	1.51	131.65	208.29	0.15
Scriber	5680		Bridge									
Scriber	5642	Half 2-YR	31.86	334.64	336.10	335.41	336.14	0.001488	1.68	18.92	17.64	0.29
Scriber	5642	2-YR	63.86	334.64	337.01	335.72	337.06	0.000853	1.74	36.76	21.23	0.23
Scriber	5642	10-YR	99.25	334.64	337.63	336.01	337.69	0.000828	1.96	50.62	23.65	0.24
Scriber	5642	25-YR	116.52	334.64	337.96	336.14	338.02	0.000740	1.99	58.63	25.44	0.23

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	5642	100-YR	141.76	334.64	338.48	336.29	338.54	0.000587	1.97	72.81	28.74	0.21
Scriber	5614		Bridge									
Scriber	5600	Half 2-YR	31.86	334.44	335.73	335.35	335.81	0.003959	2.34	13.59	16.20	0.45
Scriber	5600	2-YR	63.86	334.44	336.50	335.67	336.59	0.001990	2.34	27.34	19.24	0.35
Scriber	5600	10-YR	99.25	334.44	337.30	335.95	337.38	0.001234	2.26	43.85	22.35	0.28
Scriber	5600	25-YR	116.52	334.44	337.69	336.08	337.77	0.000994	2.20	53.01	23.90	0.26
Scriber	5600	100-YR	141.76	334.44	338.30	336.24	338.37	0.000691	2.08	68.57	27.59	0.22
Scriber	5508	Half 2-YR	31.86	333.51	335.46	334.43	335.51	0.001343	1.75	18.17	13.63	0.27
Scriber	5508	2-YR	63.86	333.51	336.33	334.85	336.39	0.000968	1.97	35.93	32.32	0.24
Scriber	5508	10-YR	99.25	333.51	337.21	335.26	337.25	0.000497	1.79	71.57	43.85	0.19
Scriber	5508	25-YR	116.52	333.51	337.63	335.44	337.66	0.000373	1.70	90.28	82.82	0.16
Scriber	5508	100-YR	141.76	333.51	338.26	335.66	338.29	0.000256	1.58	119.63	96.92	0.14
Scriber	5407	Half 2-YR	31.86	332.62	335.38	333.60	335.42	0.000594	1.48	21.51	9.95	0.18
Scriber	5407	2-YR	63.86	332.62	336.23	334.13	336.30	0.000943	2.09	30.49	11.62	0.23
Scriber	5407	10-YR	99.25	332.62	337.09	334.58	337.18	0.000971	2.39	42.13	16.53	0.24
Scriber	5407	25-YR	116.52	332.62	337.51	334.78	337.60	0.000862	2.45	49.94	20.50	0.23
Scriber	5407	100-YR	141.76	332.62	338.16	335.03	338.24	0.000684	2.44	65.07	26.62	0.21
Scriber	5387	Half 2-YR	31.86	332.29	335.30	333.28	335.33	0.000486	1.38	23.06	9.84	0.16
Scriber	5387	2-YR	63.86	332.29	336.09	333.82	336.15	0.000872	2.04	31.24	11.24	0.22
Scriber	5387	10-YR	99.25	332.29	336.94	334.29	337.02	0.000967	2.38	42.06	15.29	0.23
Scriber	5387	25-YR	116.52	332.29	337.37	334.49	337.46	0.000873	2.43	49.55	19.17	0.23
Scriber	5387	100-YR	141.76	332.29	338.04	334.76	338.13	0.000689	2.42	64.44	25.52	0.21
Scriber	5328		Culvert									
Scriber	5249	Half 2-YR	35.11	331.20	335.29	332.04	335.30	0.000473	0.79	44.71	12.18	0.07
Scriber	5249	2-YR	70.22	331.20	335.97	332.44	336.00	0.001171	1.32	53.19	12.48	0.11
Scriber	5249	10-YR	111.90	331.20	336.60	332.85	336.65	0.002040	1.83	61.04	12.76	0.15
Scriber	5249	25-YR	133.29	331.20	336.87	333.03	336.94	0.002482	2.06	64.60	12.88	0.16
Scriber	5249	100-YR	165.74	331.20	337.25	333.28	337.34	0.003150	2.38	69.50	13.04	0.18
Scriber	5033	Half 2-YR	35.11	333.60	334.96		335.01	0.009636	1.75	20.75	29.63	0.34
Scriber	5033	2-YR	70.22	333.60	335.33		335.41	0.010886	2.36	33.55	41.05	0.38

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	5033	10-YR	111.90	333.60	335.58		335.71	0.013652	3.00	44.86	49.06	0.44
Scriber	5033	25-YR	133.29	333.60	335.69		335.84	0.014422	3.25	50.79	52.78	0.46
Scriber	5033	100-YR	165.74	333.60	335.85		336.03	0.015478	3.58	59.30	57.70	0.48
Scriber	4986.9*	Half 2-YR	35.11	333.47	334.79		334.80	0.002397	0.81	43.42	60.27	0.17
Scriber	4986.9*	2-YR	70.22	333.47	335.16		335.18	0.002480	1.08	67.47	70.44	0.18
Scriber	4986.9*	10-YR	111.90	333.47	335.35		335.39	0.003659	1.45	81.52	76.54	0.22
Scriber	4986.9*	25-YR	133.29	333.47	335.46		335.49	0.003994	1.60	89.51	79.81	0.24
Scriber	4986.9*	100-YR	165.74	333.47	335.59		335.64	0.004510	1.80	100.33	84.05	0.26
Scriber	4940.8*	Half 2-YR	35.11	333.33	334.74		334.74	0.000812	0.49	71.93	93.30	0.10
Scriber	4940.8*	2-YR	70.22	333.33	335.10		335.11	0.000902	0.66	108.07	103.21	0.11
Scriber	4940.8*	10-YR	111.90	333.33	335.26		335.28	0.001474	0.92	124.97	108.37	0.14
Scriber	4940.8*	25-YR	133.29	333.33	335.36		335.37	0.001652	1.02	135.25	111.43	0.15
Scriber	4940.8*	100-YR	165.74	333.33	335.48		335.50	0.001932	1.17	148.74	115.29	0.17
Scriber	4894.7*	Half 2-YR	35.11	333.20	334.71		334.72	0.000328	0.33	107.00	126.93	0.06
Scriber	4894.7*	2-YR	70.22	333.20	335.08		335.08	0.000402	0.46	155.24	137.05	0.07
Scriber	4894.7*	10-YR	111.90	333.20	335.22		335.23	0.000702	0.65	175.18	141.38	0.10
Scriber	4894.7*	25-YR	133.29	333.20	335.31		335.32	0.000804	0.73	187.80	144.19	0.11
Scriber	4894.7*	100-YR	165.74	333.20	335.42		335.43	0.000967	0.84	203.97	147.87	0.12
Scriber	4848.6*	Half 2-YR	35.11	333.06	334.71		334.71	0.000151	0.24	148.59	160.92	0.04
Scriber	4848.6*	2-YR	70.22	333.06	335.07		335.07	0.000204	0.34	209.04	171.52	0.05
Scriber	4848.6*	10-YR	111.90	333.06	335.20		335.21	0.000371	0.49	232.29	175.33	0.07
Scriber	4848.6*	25-YR	133.29	333.06	335.29		335.29	0.000433	0.55	247.34	177.88	0.08
Scriber	4848.6*	100-YR	165.74	333.06	335.39		335.40	0.000532	0.64	266.31	181.23	0.09
Scriber	4802.5*	Half 2-YR	35.11	332.93	334.70		334.70	0.000076	0.18	196.73	194.95	0.03
Scriber	4802.5*	2-YR	70.22	332.93	335.06		335.06	0.000113	0.26	269.26	205.82	0.04
Scriber	4802.5*	10-YR	111.90	332.93	335.19		335.19	0.000212	0.38	295.99	209.37	0.06
Scriber	4802.5*	25-YR	133.29	332.93	335.27		335.28	0.000251	0.43	313.52	211.67	0.06
Scriber	4802.5*	100-YR	165.74	332.93	335.38		335.38	0.000314	0.50	335.36	214.74	0.07
Scriber	4756.4*	Half 2-YR	35.11	332.80	334.70		334.70	0.000042	0.14	251.19	229.19	0.02
Scriber	4756.4*	2-YR	70.22	332.80	335.06		335.06	0.000067	0.21	335.83	240.08	0.03
Scriber	4756.4*	10-YR	111.90	332.80	335.18		335.19	0.000128	0.31	366.18	243.54	0.04
Scriber	4756.4*	25-YR	133.29	332.80	335.27		335.27	0.000154	0.35	386.23	245.74	0.05

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	4756.4*	100-YR	165.74	332.80	335.37		335.37	0.000195	0.41	411.02	248.42	0.05
Scriber	4710.3*	Half 2-YR	35.11	332.66	334.70		334.70	0.000025	0.11	311.96	263.45	0.02
Scriber	4710.3*	2-YR	70.22	332.66	335.06		335.06	0.000041	0.17	408.72	274.35	0.02
Scriber	4710.3*	10-YR	111.90	332.66	335.18		335.18	0.000082	0.26	442.80	277.97	0.03
Scriber	4710.3*	25-YR	133.29	332.66	335.26		335.26	0.000099	0.29	465.43	280.06	0.04
Scriber	4710.3*	100-YR	165.74	332.66	335.36		335.36	0.000127	0.34	493.26	282.61	0.04
Scriber	4664.2*	Half 2-YR	35.11	332.53	334.70		334.70	0.000015	0.09	378.53	297.70	0.01
Scriber	4664.2*	2-YR	70.22	332.53	335.06		335.06	0.000027	0.15	487.40	308.39	0.02
Scriber	4664.2*	10-YR	111.90	332.53	335.18		335.18	0.000054	0.22	525.23	311.98	0.03
Scriber	4664.2*	25-YR	133.29	332.53	335.26		335.26	0.000066	0.25	550.45	314.18	0.03
Scriber	4664.2*	100-YR	165.74	332.53	335.36		335.36	0.000086	0.29	581.33	316.65	0.04
Scriber	4618.1*	Half 2-YR	35.11	332.39	334.70		334.70	0.000010	0.08	451.59	331.80	0.01
Scriber	4618.1*	2-YR	70.22	332.39	335.05		335.05	0.000018	0.12	572.53	342.29	0.02
Scriber	4618.1*	10-YR	111.90	332.39	335.18		335.18	0.000037	0.18	614.16	345.84	0.02
Scriber	4618.1*	25-YR	133.29	332.39	335.26		335.26	0.000046	0.21	641.96	348.15	0.03
Scriber	4618.1*	100-YR	165.74	332.39	335.35		335.35	0.000060	0.25	675.93	350.67	0.03
Scriber	4572	Half 2-YR	35.11	332.26	334.70	333.04	334.70	0.000006	0.07	531.18	366.00	0.01
Scriber	4572	2-YR	70.22	332.26	335.05	333.11	335.05	0.000013	0.11	664.24	376.32	0.01
Scriber	4572	10-YR	111.90	332.26	335.17	333.19	335.17	0.000026	0.16	709.74	379.78	0.02
Scriber	4572	25-YR	133.29	332.26	335.25	333.21	335.25	0.000032	0.18	740.12	382.08	0.02
Scriber	4572	100-YR	165.74	332.26	335.35	333.25	335.35	0.000043	0.22	777.21	384.81	0.03
Scriber	4568		Culvert									
Scriber	4563	Half 2-YR	35.11	332.26	333.62		333.62	0.000251	0.21	168.73	319.12	0.05
Scriber	4563	2-YR	70.22	332.26	333.89		333.89	0.000264	0.28	255.23	328.94	0.06
Scriber	4563	10-YR	111.90	332.26	334.12		334.12	0.000291	0.34	330.75	337.29	0.06
Scriber	4563	25-YR	133.29	332.26	334.26		334.26	0.000267	0.35	378.94	342.52	0.06
Scriber	4563	100-YR	165.74	332.26	335.35		335.35	0.000042	0.22	795.19	497.67	0.03
Scriber	4279	Half 2-YR	35.11	331.52	333.46		333.47	0.002116	0.48	76.07	240.84	0.14
Scriber	4279	2-YR	70.22	331.52	333.75		333.75	0.001345	0.47	172.38	456.68	0.12
Scriber	4279	10-YR	111.90	331.52	333.99		333.99	0.000787	0.47	305.45	590.01	0.09
Scriber	4279	25-YR	133.29	331.52	334.16		334.16	0.000504	0.43	407.54	616.62	0.08

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	4279	100-YR	165.74	331.52	335.34		335.34	0.000030	0.18	1324.51	850.29	0.02
Scriber	3935	Half 2-YR	35.11	332.00	332.84	332.30	332.84	0.001602	0.59	59.91	115.33	0.13
Scriber	3935	2-YR	70.22	332.00	333.28	332.41	333.29	0.001352	0.64	109.02	247.78	0.13
Scriber	3935	10-YR	111.90	332.00	333.69	332.52	333.69	0.000926	0.68	163.94	352.43	0.11
Scriber	3935	25-YR	133.29	332.00	333.95	332.58	333.96	0.000689	0.66	200.89	397.93	0.10
Scriber	3935	100-YR	165.74	332.00	335.32	332.64	335.32	0.000113	0.42	399.73	479.09	0.04
Scriber	3114	Half 2-YR	35.11	328.66	330.46	329.62	330.51	0.006414	1.78	19.69	16.24	0.29
Scriber	3114	2-YR	70.22	328.66	331.27	330.02	331.33	0.005250	2.07	33.91	18.90	0.27
Scriber	3114	10-YR	111.90	328.66	332.31	330.37	332.37	0.003502	1.98	56.48	24.68	0.23
Scriber	3114	25-YR	133.29	328.66	332.92	330.52	332.97	0.002575	1.84	72.61	28.19	0.20
Scriber	3114	100-YR	165.74	328.66	335.13	330.74	335.15	0.000494	1.16	149.36	41.50	0.10
Scriber	3104		Bridge									
Scriber	3093	Half 2-YR	35.11	328.66	330.26		330.33	0.010788	2.12	16.53	15.58	0.36
Scriber	3093	2-YR	70.22	328.66	331.13		331.21	0.006586	2.24	31.34	18.45	0.30
Scriber	3093	10-YR	111.90	328.66	332.23		332.29	0.003850	2.05	54.47	24.20	0.24
Scriber	3093	25-YR	133.29	328.66	332.86		332.91	0.002734	1.88	70.97	27.85	0.21
Scriber	3093	100-YR	165.74	328.66	335.12		335.14	0.000499	1.17	148.92	41.44	0.10
Scriber	2967	Half 2-YR	35.11	328.08	329.79	328.88	329.80	0.002064	1.03	34.04	413.64	0.17
Scriber	2967	2-YR	70.22	328.08	330.92	329.14	330.93	0.000909	1.06	65.98	465.12	0.12
Scriber	2967	10-YR	111.90	328.08	332.09	329.37	332.11	0.000592	1.13	99.24	506.36	0.11
Scriber	2967	25-YR	133.29	328.08	332.76	329.46	332.78	0.000472	1.13	117.98	517.02	0.10
Scriber	2967	100-YR	165.74	328.08	335.09	329.60	335.10	0.000167	0.90	183.73	552.42	0.06
Scriber	2742		Culvert									
Scriber	2517	Half 2-YR	40.03	325.29	328.76	326.34	328.78	0.000380	1.25	32.05	12.72	0.14
Scriber	2517	2-YR	80.06	325.29	329.39	326.82	329.45	0.000879	1.94	41.17	32.51	0.22
Scriber	2517	10-YR	130.99	325.29	329.94	327.33	330.04	0.001305	2.56	51.14	93.47	0.27
Scriber	2517	25-YR	159.13	325.29	330.19	327.57	330.31	0.001433	2.85	55.88	119.01	0.29
Scriber	2517	100-YR	204.25	325.29	330.98	327.94	331.11	0.001077	2.89	70.72	206.56	0.26
Scriber	2501		Inl Struct									

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	2500	Half 2-YR	40.03	325.21	328.75	326.26	328.77	0.000355	1.22	32.80	12.73	0.13
Scriber	2500	2-YR	80.06	325.21	329.35	326.74	329.41	0.000855	1.94	41.36	30.15	0.21
Scriber	2500	10-YR	130.99	325.21	329.88	327.24	329.98	0.001328	2.57	50.96	86.59	0.28
Scriber	2500	25-YR	159.13	325.21	330.12	327.50	330.25	0.001483	2.87	55.42	114.71	0.29
Scriber	2500	100-YR	204.25	325.21	330.91	327.87	331.04	0.001106	2.91	70.29	196.29	0.26
Scriber	2485		Inl Struct									
Scriber	2477	Half 2-YR	40.03	327.34	328.40	328.40	328.77	0.020819	4.88	8.20	11.21	1.00
Scriber	2477	2-YR	80.06	327.34	328.86	328.86	329.38	0.018445	5.80	13.80	13.14	1.00
Scriber	2477	10-YR	130.99	327.34	329.31	329.31	329.95	0.017544	6.41	20.44	28.15	1.00
Scriber	2477	25-YR	159.13	327.34	329.52	329.52	330.21	0.017214	6.64	23.96	42.46	1.00
Scriber	2477	100-YR	204.25	327.34	330.68	329.80	330.99	0.003595	4.47	45.67	161.16	0.51
Scriber	2452	Half 2-YR	40.03	324.46	327.56	325.51	327.59	0.000514	1.46	27.33	16.83	0.15
Scriber	2452	2-YR	80.06	324.46	328.33	325.99	328.41	0.001114	2.29	34.94	21.19	0.23
Scriber	2452	10-YR	130.99	324.46	329.22	326.50	329.35	0.001615	2.82	46.43	36.34	0.29
Scriber	2452	25-YR	159.13	324.46	329.79	326.73	329.91	0.001533	2.83	56.27	90.70	0.29
Scriber	2452	100-YR	204.25	324.46	330.78	327.11	330.89	0.000975	2.73	74.85	176.29	0.24
Scriber	2396		Culvert									
Scriber	2339	Half 2-YR	40.03	323.90	327.41	325.55	327.47	0.001215	2.06	19.46	19.79	0.24
Scriber	2339	2-YR	80.06	323.90	327.99	326.30	328.15	0.002570	3.24	24.74	23.17	0.36
Scriber	2339	10-YR	130.99	323.90	328.57	327.00	328.86	0.003906	4.28	30.64	26.55	0.44
Scriber	2339	25-YR	159.13	323.90	328.85	327.33	329.19	0.004511	4.73	33.62	28.15	0.48
Scriber	2339	100-YR	204.25	323.90	329.24	327.80	329.68	0.005302	5.36	38.08	132.50	0.52
Scriber	2098	Half 2-YR	40.03	325.55	327.27	326.08	327.29	0.000455	1.18	33.85	20.84	0.16
Scriber	2098	2-YR	80.06	325.55	327.75	326.38	327.80	0.000819	1.82	43.89	21.49	0.22
Scriber	2098	10-YR	130.99	325.55	328.26	326.69	328.35	0.001100	2.38	55.09	22.18	0.27
Scriber	2098	25-YR	159.13	325.55	328.51	326.84	328.62	0.001212	2.62	60.72	28.28	0.28
Scriber	2098	100-YR	204.25	325.55	328.88	327.08	329.02	0.001340	2.95	69.25	73.77	0.30
Scriber	2052		Culvert									
Scriber	2006	Half 2-YR	38.72	325.00	327.26	325.50	327.27	0.000112	0.64	60.42	34.90	0.09
Scriber	2006	2-YR	77.44	325.00	327.72	325.77	327.74	0.000225	1.00	77.15	38.21	0.12

HEC-RAS Plan: alt3 River: Scriber_Creek Reach: Scriber (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)	
Scriber	2006	10-YR	131.49	325.00	328.21	326.08	328.23	0.000352	1.36	96.62	102.59	0.16
Scriber	2006	25-YR	162.70	325.00	328.44	326.23	328.48	0.000415	1.52	106.85	173.42	0.17
Scriber	2006	100-YR	214.44	325.00	328.79	326.46	328.83	0.000500	1.74	122.90	278.00	0.19
Scriber	1408	Half 2-YR	38.72	326.00	327.06	326.71	327.09	0.002272	1.40	27.71	385.28	0.32
Scriber	1408	2-YR	77.44	326.00	327.38	326.90	327.43	0.002070	1.79	43.20	409.56	0.33
Scriber	1408	10-YR	131.49	326.00	327.75	327.09	327.82	0.001902	2.16	60.87	409.56	0.34
Scriber	1408	25-YR	162.70	326.00	327.93	327.19	328.01	0.001854	2.33	69.70	409.57	0.34
Scriber	1408	100-YR	214.44	326.00	328.21	327.33	328.31	0.001793	2.58	83.09	459.39	0.35
Scriber	74	Half 2-YR	38.72	323.00	324.41	323.88	324.45	0.001740	1.51	25.67	32.30	0.30
Scriber	74	2-YR	77.44	323.00	324.86	324.14	324.91	0.001741	1.88	41.10	37.03	0.32
Scriber	74	10-YR	131.49	323.00	325.32	324.41	325.39	0.001741	2.22	59.31	41.83	0.33
Scriber	74	25-YR	162.70	323.00	325.54	324.54	325.62	0.001740	2.37	68.68	43.81	0.33
Scriber	74	100-YR	214.44	323.00	325.86	324.74	325.96	0.001740	2.58	83.18	46.71	0.34

APPENDIX F

Geomorphic and Sediment Analysis

HERRERA

TECHNICAL MEMORANDUM

Date: March 10, 2016

To: Robert Victor and Jared Bond, City of Lynnwood

Copy to: Mike Giseburt and Mary Weber, Louis Berger

From: Jeremy Bunn and Christina Avolio, Herrera Environmental Consultants

Subject: Scriber Creek Flood Reduction Study: Geomorphic Assessment

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CONTENTS

APPENDICES

TABLES

FIGURES

2200 Sixth Avenue | Suite 1100 | Seattle, Washington | 98121 | p 206 441 9080 | f 206 441 9108

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Executive Summary

A basic geomorphic assessment was performed for the Scriber Creek Flood Reduction Study (the study), which focuses on the length of Scriber Creek between State Route 99 to the north and Scriber Lake to the south (see Figure 1). The primary goals of the assessment as documented in this memorandum are as follows:

1. To provide sufficient information to inform the comparison of flood reduction alternatives (Herrera 2016) according to sediment removal operations and maintenance (O&M) efforts.
2. To inform the City of Lynnwood (the City) whether sediment removal in and of itself could be beneficial for reducing flooding impacts.

This assessment expands upon brief geomorphic assessment work completed for the Scriber Creek flood study as part of the City's Surface Water Management Comprehensive Plan update in 2008–2009 (Herrera 2009a). The previous geomorphic assessment (Herrera 2009b) included a map of field-noted erosional and depositional areas; in this assessment that map was compared with existing conditions sediment mobility analysis and sediment transport capacity modeling to identify locations of likely sediment deposition. In addition, creek channel survey data collected in 2015 (AHBL 2015) was compared to channel survey data from 2008–2009 (Herrera 2009b) to assess whether the channel bed has aggraded or incised at several locations and the approximate amount of sediment accumulation or loss at those locations.

Herrera conducted a rapid assessment field reconnaissance of the creek channel in the study corridor to determine if sediment sources have changed since similar reconnaissance was performed in 2008, and to characterize the grain size of sediment in the channel bed. The results of hydrologic and hydraulic modeling (Louis Berger 2015) were used to perform spreadsheet calculations of sediment grain size mobility for a range of flows, allowing for estimation of whether changes in flow velocities and depths expected to result from specific flood reduction actions will encourage local-scale or greater sediment movement or deposition. Although sediment transport modeling was not deemed necessary to adequately characterize existing and future sediment transport and deposition patterns, after meeting with City staff in December 2015 Herrera performed a simple sediment transport capacity analysis to estimate sediment supply and further address likely changes in sediment deposition in response to proposed flood reduction actions (consistent with hydraulic results from Scenario 2 modeling, Louis Berger 2015).

In summary, flood reduction and conveyance improvement actions consistent with the Scenario 2 modeling (Louis Berger 2015) are likely to reduce sediment accumulation upstream of replaced culverts and also upstream of 196th Street SW. Sediment accumulation is likely to increase within the flood storage area upstream of 188th Street SW if more storage is created there, and also downstream in Scriber Lake. Based on the results of the hydraulic modeling scenarios and this sediment analysis, we conclude that maintaining flood flow conveyance in the study corridor will require regular sediment management/maintenance in areas of accumulation.

Methods

The methods and standards used to complete the geomorphic assessment are described in the following sections.

Field Reconnaissance

Rapid assessment field reconnaissance of spot locations within the study corridor was conducted over several days including on July 30, October 5, and December 9, 2015. These spot locations are depicted on Figure 1. During these site visits, qualitative assessments of the creek channel, physical habitat, and geomorphic conditions (including sedimentation and erosion observations) were completed, including making observations consistent with the following parameters:

- Reach type – source, transport, or response (Montgomery and Buffington 1997)
- Channel type (adapted from Montgomery and Buffington 1997)
- Bankfull channel width and depth (WDNR 2004)
- Active channel process stage (adapted from Simon 1995, channel evolution model stage)
- Stream complexity (McBride 2001)
- Channel substrate type, and qualitative assessment of gravel cementation and embeddedness (based on Comings et al. 2000)
- Active bank erosion and bank stability (Henshaw and Booth 2000)
- Channel response potential

Multiple photos were taken on each day of reconnaissance to aid in the ensuing geomorphic assessment work.

Sediment Mobility Modeling

This sediment mobility analysis utilized existing and proposed conditions model output from recent hydrologic and hydraulic modeling completed for the study (Louis Berger 2015). References to "proposed conditions" herein represent results that were derived from the Scenario 2 hydraulic model. Scenario 2 model results were relied upon because at the time of this geomorphic assessment, it was deemed as having the greatest likelihood of being carried into further stages of the corridor management plan development (Herrera 2015). Sediment mobility was estimated by plotting modeled depth-velocity coordinates on a modified Hjulstrom-Sundborg diagram (Sundborg 1956). Areas of field-observed erosion and deposition (Figure 1) mapped in 2008–2009 (Herrera 2009b) were compared with existing conditions sediment mobility estimates to corroborate expected existing-conditions sediment deposition locations.

Sediment Supply Estimation

Sediment supply was approximated by estimating the average annual accumulation rate at specific locations along Scriber Creek where differences in channel bed elevations are evident in comparing survey data from 2008 (Herrera 2009b) and 2015 (AHBL 2015). The interpolated volume of sediment accumulation was added to the average sediment transport capacity at that location. Several adjacent cross-sections (XS 8772, XS 8590, XS 8427, XS 8283/8263) near "Old 196th Street SW" are depositional, and accumulated fine sediment (silt, very fine sand, etc.) between the 2008 and 2015 surveys. Since the surveys indicated increased sediment deposition at these locations, we know that sediment supply exceeded sediment transport capacity, or that the reach is transport-limited in those locations. Further, since fine sediment had deposited we can assume that any coarser sediment that made it that far also settled out. Therefore, the following equations were used to calculate the sediment supply rate:

$$\Sigma\ \textit{Deposition (t)} = \Sigma\ [(\textit{Sediment Supply (t)}) - (\textit{Sediment Transport Capacity (t)})], \text{ so}$$

$$\textit{Sediment Supply (t)} = \textit{Deposition (t)} + \textit{Sediment Transport Capacity (t)},$$

where:

Deposition (t)	=	sediment deposition as a function of time
Sediment Supply (t)	=	sediment supply as a function of time
Sediment Transport Capacity (t)	=	sediment transport capacity as a function of time.

We estimated Σ ***Deposition (t)*** by comparing surveyed cross-sections and multiplying the average depth of deposited sediment by the surface area of the depositional reach (between XS 8263 and XS 8772). We then divided by the time between survey dates to get ***Deposition (t)***. ***Sediment Transport Capacity (t)*** at each cross-section was computed using the Ackers-White method (Ackers & White 1973) with parameters obtained from the existing conditions hydraulic model output. Based on the field-observed composition of the sediment at each depositional location and the results of the sediment mobility modeling, we determined that the long-term annual sediment accumulation rate was likely to be best captured by using daily transport capacity rate for fine to medium sand at the 2-year recurrence interval flow.

Results and Discussion

The primary results from the geomorphic assessment are described in the following sections.

Field Reconnaissance

The results of the geomorphic and channel condition survey conducted in 2015 indicate that Scriber Creek within the study corridor appears to be responsive and sensitive to both watershed-wide drivers (e.g., hydrologic change, reduction of bedload sources) as well as local drivers (e.g., bank armoring and culverts with inadequate flow and sediment

conveyance capacity). Note that references to Scriber Creek in this section only refer to Scriber Creek within the study corridor.

Scriber Creek was generally classified as having a "response" reach morphology type, meaning the creek is characterized by lower gradient, transport-limited reaches (plane-bed/pool-riffle/dune-ripple) where morphological adjustments occur in response to changes in flows or sediment supply (Montgomery and Buffington 1997). Scriber Creek was categorized as having both pool-riffle and plane-bed channel types, both being alluvial channel types where the channel characteristics are generally driven by channel processes (rather than colluvial or hill slope processes). These findings suggest that the natural morphology of Scriber Creek is one that is more sensitive than resilient to watershed changes in hydrology and sediment supply. The channel has adjusted, and still is adjusting, in many places to a combination of watershed-driven and localized changes in land use, surface runoff, and access to bedload sediment sources.

Where riffle substrate conditions could be assessed (i.e., in reaches that are not backwatered by undersized culverts downstream), the primary substrate material was consistently either sandy gravel or cobble, both of which would be suitable for fish spawning and rearing habitat. In contrast, sandy substrate and even finer-grained material was common within areas known to experience backwater, including within the channel adjacent to the wetland mitigation area of the City-owned property north of 188th Street SW and also within the channel between Old 196th Street SW and 196th Street SW (SR 524). This observation was consistent with measured riffle embeddedness percentages, which were generally greater than 50 percent within the corridor. Similarly, the channel profiles based on cross-section surveys for the hydraulic modeling study (Louis Berger 2015) indicate consistent trends of sediment deposition upstream of particular undersized culverts or backwatered areas, including upstream of the driveway culvert to Eunia Plaza, upstream of 189th Street SW and 191st Street SW, and within the corridor between the twin 196th Street SW culverts and the Parkview Plaza driveway culvert.

Large woody debris (LWD) was consistently lacking throughout the corridor. Even for sites that had some LWD (e.g., along the creek in the Native Growth Protection Area parcel north of the Edmonds School District property at Cedar Valley Community School), there was neither enough LWD present in the channel nor enough LWD recruitment potential from the adjacent riparian area to qualify the sites as "properly functioning." Therefore, all reaches were classified as "not properly functioning" for LWD. Such lack of LWD not only limits channel resiliency to watershed or localized changes but also reduces the physical stream complexity that is important in creating the physical habitats for a variety of beneficial uses. Consistent with the overarching lack of LWD, most locations rated as either "fair" or "poor/simple" according to the stream complexity metric.

The rapid assessment also found that all riffle locations showed evidence of at least some level of either bank or bed instability. All riffle locations evaluated were classified as either "slightly unstable" or "moderately unstable" for the bank stability metric. Yet most of these reaches with unstable banks are also influenced by local conditions that inhibit channel restabilization (e.g., development that encroaches in the floodplain or confines the channel, or bank armoring that hard-fixes some banks but transmits erosive energy toward the channel bed or toward unprotected banks downstream).

The field reconnaissance observations suggest that the Scriber Creek channel within the project corridor is still adjusting to altered watershed drivers (e.g., altered hydrologic regime) and at most locations does not have the tools (i.e., adequate LWD supply, an intact riparian corridor, or adequate space for lateral adjustment) to restabilize naturally. Where possible, the flood reduction projects implemented as part of the Scriber Creek Corridor Management Plan could incorporate some of these physical habitat improvement elements that also reduce channel aggradation or erosion problems and associated maintenance needs.

Sediment Mobility Modeling

A discussion of the sediment mobility modeling results is presented in the sections below. Figures 2 and 3 graphically illustrate the sediment sizes that are mobile in the study corridor for existing conditions and Scenario 2 proposed conditions, respectively. Detailed plots illustrating the sediment mobility thresholds corresponding to modeled velocities and water depths at specific cross sections for the existing conditions and alternative proposed modeling scenarios are provided in Appendix A.

Existing Conditions

Under existing conditions during the 2-year peak flow (Figure 2) the sediment mobility model indicates that only sediment of a size equal to or smaller than fine sand is continuously mobile from the upstream end of the study reach to the depositional area downstream of the Old 196th Street SW Bridge.

The mobility model indicates that medium to coarse sand drops out between 188th Street SW and 189th Street SW but is mobile again downstream of 189th Street SW. Sediment between very coarse sand and medium gravel is predicted to be mobile at several locations along the study reach, but only for short distances. During typical years, therefore, sediment is likely to accumulate primarily between the Old 196th Street SW Bridge and the culverts under 196th Street SW, with smaller amounts of coarser sand accumulating between 188th Street SW and 189th Street SW and possibly discontinuous gravel movement above 188th Street SW, below 191st Street SW, and between the Parkview Plaza driveway culvert and Old 196th Street SW Bridge, as indicated on Figure 2.

Under existing conditions during the 25-year peak flow the sediment mobility model indicates that no sediment is continuously mobile throughout the study reach (see detailed cross-section results in Appendix A). The model indicates that all sediment fractions drop out in the backwater upstream of 188th Street SW, and downstream of 188th Street SW the sand and smaller fractions of the sediment are mobile down to just above the Old 196th Street SW Bridge, where any sand mobilized past 188th Street SW again drops out. Results for the 10-year recurrence peak flow are similar, which suggests that during years with higher than usual peak flows most sediment will accumulate upstream of 188th Street SW. This result is consistent with the hydraulic modeling results, which found that the culvert under 188th Street SW is only capable of conveying flows less than a 10-year return period flow and creates backwater for less frequent, greater magnitude flow events (Herrera 2009a, Louis Berger 2015).

The existing conditions sediment mobility modeling results are broadly consistent with the locations of 2009 and 2015 field-observed areas of aggradation (Figure 1), especially at the downstream end of the study area, from the Casa Del Rey Condominiums downstream to 196th Street SW. Upstream of 190th Street SW there is less agreement between 2009 field observations and the sediment mobility model results, with aggradation observed between 190th Street SW and 189th Street SW where the mobility model indicates erosion or transport of sand-sized sediments, and no deposition noted between 189th Street SW and 188th Street SW where the mobility model indicates deposition of coarse and medium sand. The 2015 field reconnaissance did note local signs of sediment aggradation upstream of undersized culverts from 191st Street SW to 188th Street SW. However, the streambed elevations used for the 2015 modeling (Louis Berger 2015) to generate the water depth and velocity output for the sediment mobility analysis already reflect the aggradation that may have occurred between 2008 and 2015, and been noted during the 2015 field reconnaissance. This aggradation is evidenced by humps in the streambed elevation profile (see Figure 2), often located upstream of undersized culverts. Thus, the sediment mobility modeling essentially evaluates how much more aggradation or sediment transport could be experienced in the future on top of the channel elevations as surveyed in 2015.

Proposed Conditions

Under Scenario 2 proposed conditions during the 2-year peak flow (Figure 3), the sediment mobility model indicates that sediment of a size equal to or smaller than medium sand is continuously mobile from the upstream end of the study reach to downstream of 196th Street SW. Sediment coarser than medium sand is predicted to drop out in the reach from the backwatered zone upstream of 188th Street SW to 189th Street SW. Downstream of 189th Street SW, the model indicates that the conveyance improvements afforded by the culvert replacements enable coarse sand to remain continuously mobile to downstream of 196th Street SW, while larger sediments are intermittently mobile along the stream length, as under existing conditions. The mobility results indicate that during the 25-year peak flow all sediment fractions lose mobility in the backwater upstream of 188th Street SW, as under existing conditions, but any medium and finer sands mobilized downstream of 188th Street SW are mobile all the way downstream past 196th Street SW. These results suggest that under Scenario 2 during typical years, sediment will not accumulate between the Old 196th Street SW Bridge and the culverts under 196th Street SW, but will instead be passed through to Scriber Lake, and that during years with higher than usual peak flows most sediment will still accumulate upstream of 188th Street SW, but none will accumulate above the Old 196th Street SW Bridge.

Sediment Supply Estimation

Average annual sediment supply to the cross-sections analyzed downstream of the Old 196th Street SW Bridge was estimated to be approximately 148 tonnes (163 tons) per year of fine sand and smaller material. Under existing conditions the sediment mobility model indicates that medium and coarse sand fractions drop out between 188th Street SW and 189th Street SW and that coarser fractions drop out upstream of 188th Street SW, so the material that accumulates below the Old 196th Street SW Bridge likely consists of fine sand

and smaller sediments. Although the Hjulstrom-Sundborg method indicates lack of mobility, in the 2-year peak flow the Ackers-White transport capacity for medium sand between 188th Street SW and 189th Street SW under existing conditions is calculated to be 4.3 tonnes (4.7 tons) per day, so relatively small amounts of material larger than fine sand may be making it downstream to the depositional area near the Old 196th Street SW Bridge.

The sediment mobility model indicates that medium sand and coarser sediments drop out upstream of 189th Street SW, so if sediment accumulation and/or removal records were available it would be possible to estimate sediment supply to that area using the same methodology as used for the area downstream of the Old 196th Street SW Bridge. Since no consistent records are available, however, we were unable to estimate sediment supply to the area upstream of 189th Street SW. 2015 stream reconnaissance observations did note sediment aggradation upstream of 188th Street SW but a fairly stable channel bed between 188th Street SW and 189th Street SW. In any case, sediment mobility and transport capacity modeling indicate that accumulation rates upstream of 189th Street SW should decrease under Scenario 2 proposed conditions, due to increased mobility and transport capacity for medium sand and smaller sediment sizes.

Conclusion and Sediment Maintenance Recommendations

During typical years, under existing conditions, sediment is likely to accumulate primarily between the Old 196th Street SW Bridge and the culverts under 196th Street SW, with smaller amounts of coarser sand accumulating between 188th Street SW and 189th Street SW. During years with higher than usual peak flows most of the sediment will accumulate upstream of 188th Street SW. Flood reduction actions consistent with the Scenario 2 modeling (Louis Berger 2015) are likely to reduce sediment accumulation upstream of replaced culverts and also upstream of 196th Street SW, especially if those actions incorporate physical habitat improvements that also reset a more stable channel cross-section and profile. If the flood storage capacity is increased upstream of 188th Street SW, sediment accumulation is likely to increase in those storage areas. Sediment accumulation is also likely to increase downstream in Scriber Lake as a result of flood reduction actions, because those actions will increase flood flow conveyance, and thus sediment conveyance, within the study corridor.

Based on the results of the hydraulic modeling scenarios and this sediment analysis, to maintain flood conveyance capacity over the long term, regular sediment removal is expected to be necessary in some locations within the corridor regardless of whether flood reduction actions are implemented. Under existing conditions periodic sediment removal is likely to be needed upstream of the 196th Street SW culverts and between 188th Street SW and 189th Street SW. According to our sediment supply estimates and sediment mobility model, up to approximately 100 to 150 tonnes (110 to 165 tons) of sediment per year may need to be removed, on average, with considerable variability between years. It should be noted, however, that City records indicate less frequent sediment removal has been needed in the past; it is possible that our sediment supply estimate is overly conservative, or that once sediment builds up to a certain level its accumulation rate slows considerably. In the latter case regular sediment removal would be needed to maintain full conveyance, while neglecting sediment removal would lead to initial rapid increases in sedimentation and

associated flood hazard that would slowly taper off over time. In any case, implementation of Scenario 2 actions will shift the focus of sediment removal activities to the expanded flood storage area upstream of 188th Street SW, and will likely reduce the average annual volume of sediment removed.

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Legend

- Cross-section
- 2009 aggrading channel
- 2009 eroding channel
- 2015 aggrading channel
- 2015 Field Recon Location
- Scriber Creek

Figure 1.
Study Area Map.

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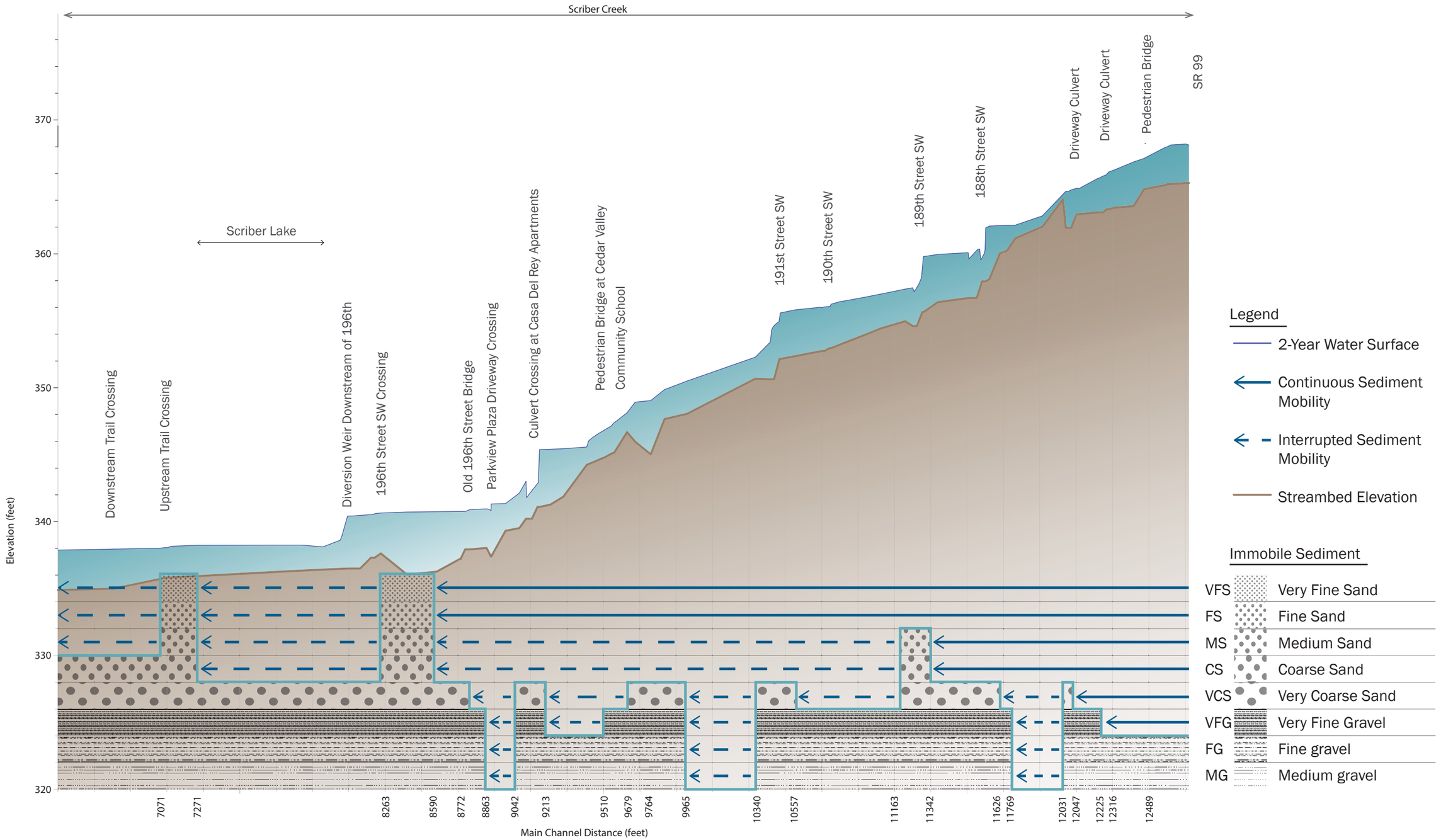

Figure 2. Existing Conditions 2-Year Water Surface and Sediment Mobility Model Profile

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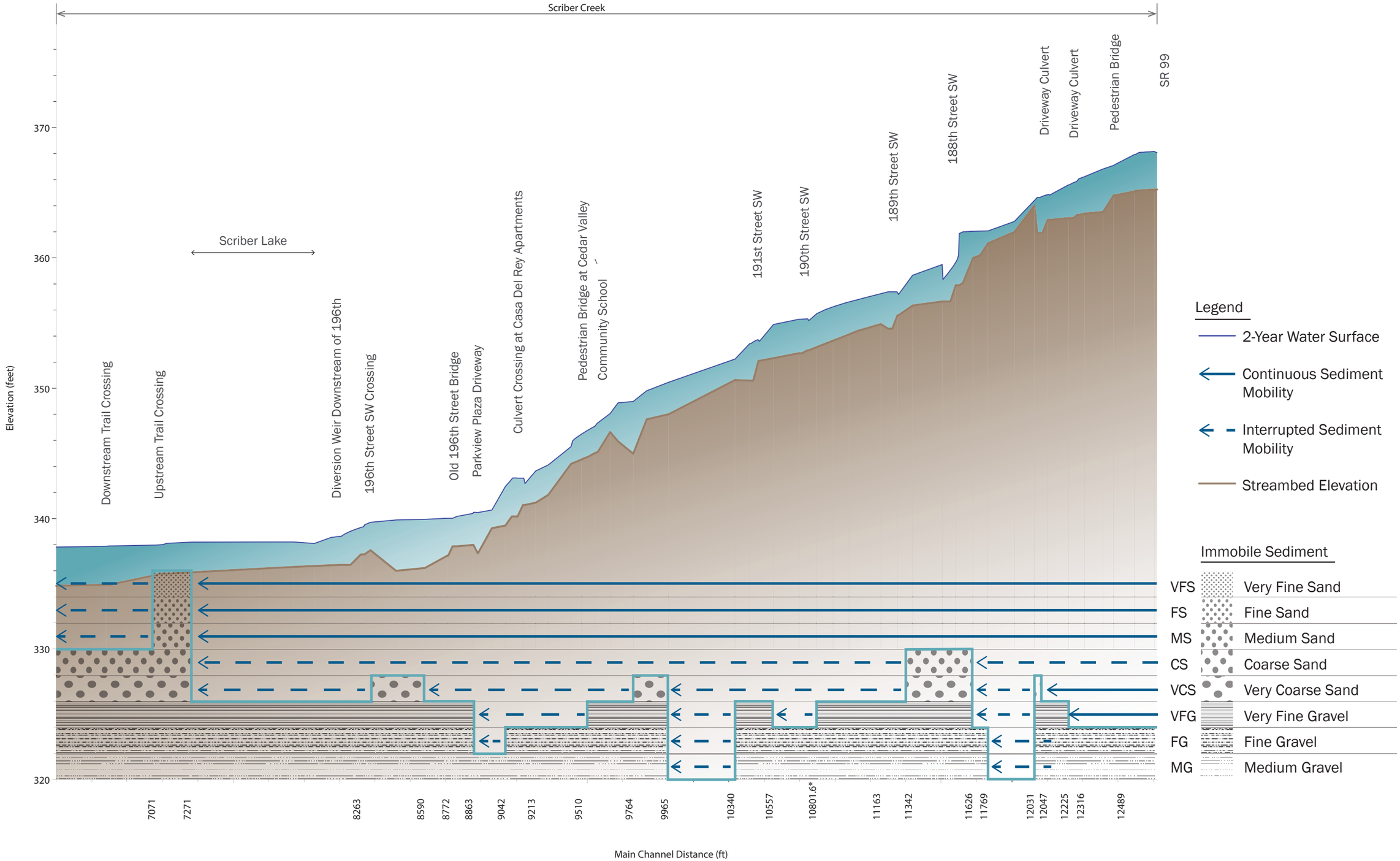

Figure 3. Scenario 2 Proposed Conditions 2-Year Water Surface and Sediment Mobility Model Profile

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APPENDIX A

Cross-Section Sediment Mobility Results

Table A-1. Cross-Section Sediment Mobility Results.

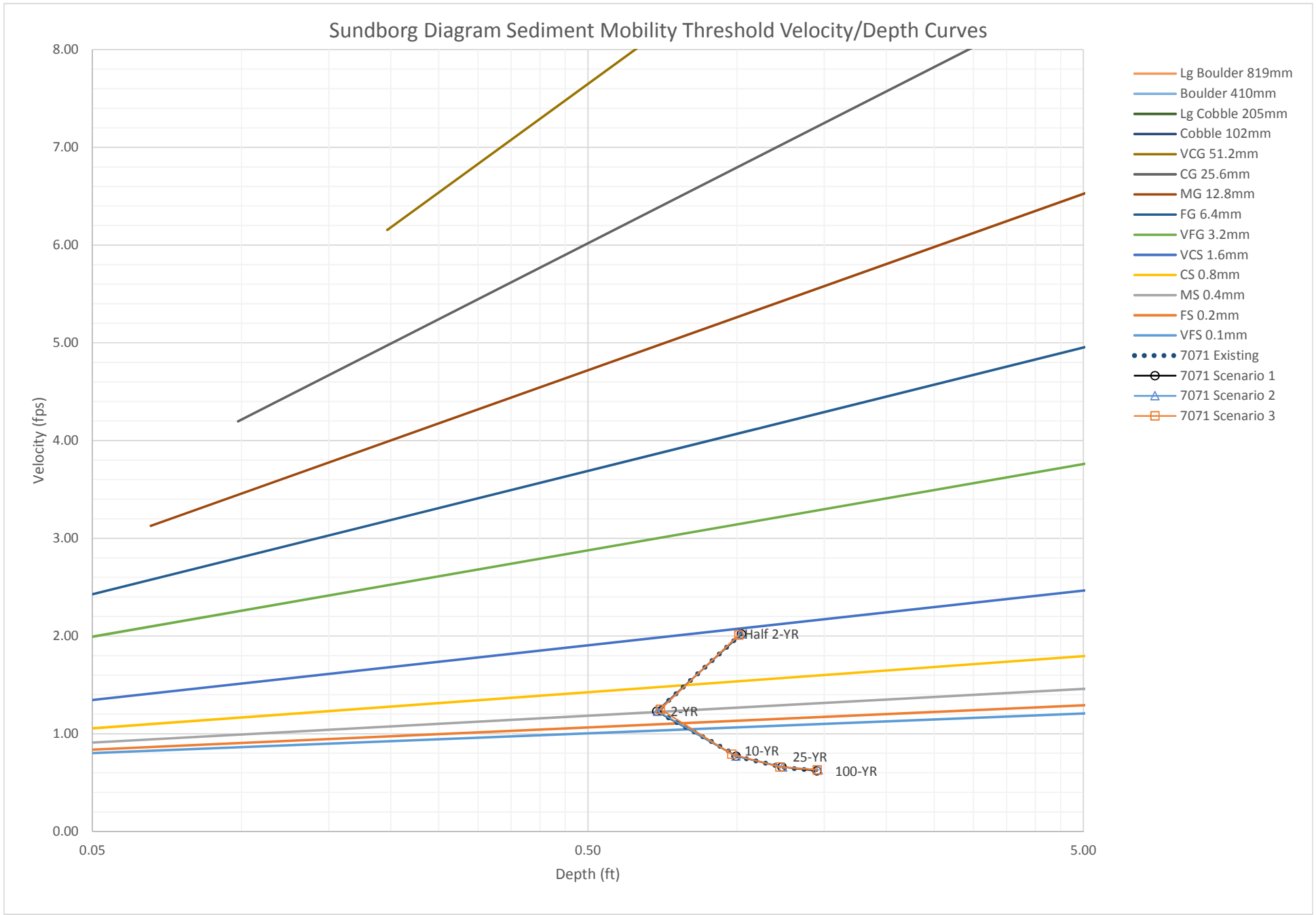
XS	Location	Largest Mobile Sediment (per Scenario)	'09 Note	Surveyed Elevation Change	Comment
12 489	Below 99 at pedestrian bridge	VCS – VFG (E, 1–3)	Depositional		Scenarios 1–3 do not affect sediment mobility.
12 316	Below 99 above driveway culvert	VFG (E, 1–2) VFG – FG (3)	Depositional		Scenario 3 may lead to reduced deposition or increased sediment transport/export to downstream sections.
12 225	Downstream end of upstream driveway culvert	CS – FG (E, 1–3)	Depositional		Hydraulic depth doesn't change with increasing flow, velocity ranges widely.
12 047	Downstream end of downstream driveway culvert	Silt – VFG (E, 1–2) MS – CG (3)			Hydraulic depth doesn't change with increasing flow, velocity ranges widely. Scenario 3 may lead to increased sediment transport/export to downstream sections.
12 031	Below downstream driveway culvert above 188th	FG – CG (E, 2–3) FG – MG (1)			Shallow and relatively fast flow—aggradation unlikely, degradation possible
11 769	Above 188th	VFG – Silt (E, 1–3)			Velocity drops with increasing flow—sediment deposition likely.
11 626	Above 188th culvert	CS – Silt (E, 1–3)			Velocity drops with increasing flow—sediment deposition likely. Scenarios 1–3 do not affect sediment mobility.
11 342	Above 189th culvert	FS – MS (E, 1) VCS (3)			Scenario 3 may lead to reduced deposition or increased sediment transport/export to downstream sections.
11 163	Below 189th culvert	VCS – VFG (E, 2) VCS (1, 3)	Depositional		Scenario 1 or 3 may lead to a slight increase in deposition.
10 801.6	Above 190th culvert	VCS – VFG (E, 1) VCS – FG (2–3)	Depositional		Scenario 2 or 3 may lead to reduced deposition or increased sediment transport/export to downstream sections.
10 557	Above 191st culvert	CS – VCS (E, 1) VCS – VFG (2–3)	Depositional		Scenario 2 or 3 may lead to reduced deposition or increased sediment transport/export to downstream sections.

Table A-1. Cross-Section Sediment Mobility Results.

XS	Location	Largest Mobile Sediment (per Scenario)	'09 Note	Surveyed Elevation Change	Comment
10 340	Below 191st culvert	FG – MG (E, 1–3)	Erosional		Scenarios 1–3 have negligible effect on sediment transport here.
9 965	Halfway from 191st to CVCS pedestrian bridge	FS – VCS (E, 1–3)	Erosional		Scenarios 1–3 have negligible effect on sediment transport here.
9 764	¾ of way from 191st to CVCS pedestrian bridge	VFS – VCS (E, 1) MS – VFG (2–3)	Erosional (?)		Scenario 2 or 3 may lead to reduced deposition or increased sediment transport/export to downstream sections.
9 679	Above CVCS pedestrian bridge	CS – VCS (E, 1) VCS – VFG (2–3)			Scenario 2 or 3 may lead to reduced deposition or increased sediment transport/export to downstream sections.
9 510	Below CVCS pedestrian bridge	VCS – FG (E, 1–3)	Depositional		Scenarios 1–3 have negligible effect on sediment transport here.
9 213	Above Case Del Rey culvert	CS – VCS (E) VCS – FG (1–3)	Depositional		Scenarios 1–3 may lead to reduced deposition or increased sediment transport/export to downstream sections.
9 042	Between Casa Del Rey culvert and driveway crossing above Old 196th bridge	VFG – CG (E, 1–3)			Relatively fast flow—aggradation unlikely, degradation possible. Scenarios 1–3 have negligible effect on sediment transport here.
8 863	Below driveway crossing above Old 196th bridge	VCS – MS (E) VCS (1–3)	Depositional		Scenarios 1–3 may lead to reduced deposition or increased sediment transport/export to downstream sections at higher return-interval flows.
8 772	Above Old 196th bridge	CS – Silt (E) VCS – FS (1–2) VCS – MS (3)	Depositional	+ 1.69 ft	Velocity drops with increasing flow—sediment deposition likely. Scenarios 1–3 may lead to reduced deposition or increased sediment transport/export to downstream sections.

Table A-1. Cross-Section Sediment Mobility Results.

XS	Location	Largest Mobile Sediment (per Scenario)	'09 Note	Surveyed Elevation Change	Comment
8 590	Between 196th and Old 196th at slope-break	Silt (E) VFS – MS (1–2) VFS – CS (3)	Depositional (?)	+ 0.7 ft + 1.4 ft (XS 8 427)	Scenarios 1–3 may lead to reduced deposition or increased sediment transport/export to downstream sections.
8 263	Above 196th culvert	FS – CS (E) CS – VCS (1–2) CS – VFG (3)	Depositional (?)	+ 0.32 ft (XS 8 283)	Scenarios 1–3 may lead to reduced deposition or increased sediment transport/export to downstream sections.
7 965	Scriber Lake, below 196th culvert	VFG – FG (E, 1–3)	Depositional (?)		Shallow and relatively fast flow—aggradation unlikely, degradation possible. Scenarios 1–3 have negligible effect on sediment transport here.
7 271	Scriber Lake, above upstream trail crossing	Silt (E, 1–3)			Depositional. Scenarios 1–3 have negligible effect on sediment transport here.
7 071	Scriber Lake, below upstream trail crossing	CS – Silt (E, 1–3)			Velocity drops with increasing flow—sediment deposition likely. Scenarios 1–3 do not affect sediment mobility.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Boulder 410mm
Lg Cobble 205mm
Cobble 102mm
VCG 51.2mm
CG 25.6mm
MG 12.8mm
FG 6.4mm
VFG 3.2mm
VCS 1.6mm
CS 0.8mm
MS 0.4mm
FS 0.2mm
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7071 Scenario 1
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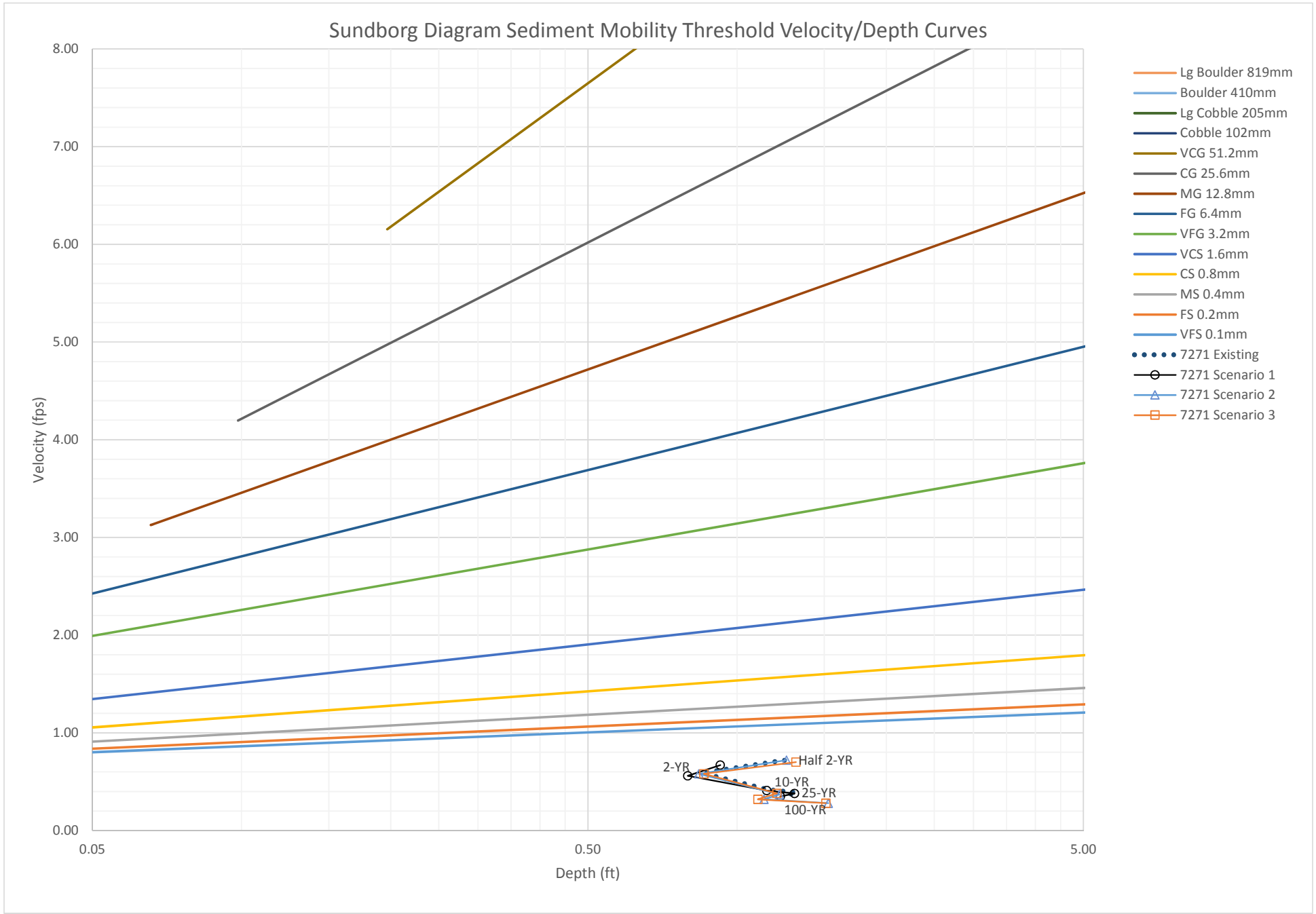
7071 Scenario 3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Cobble 102mm
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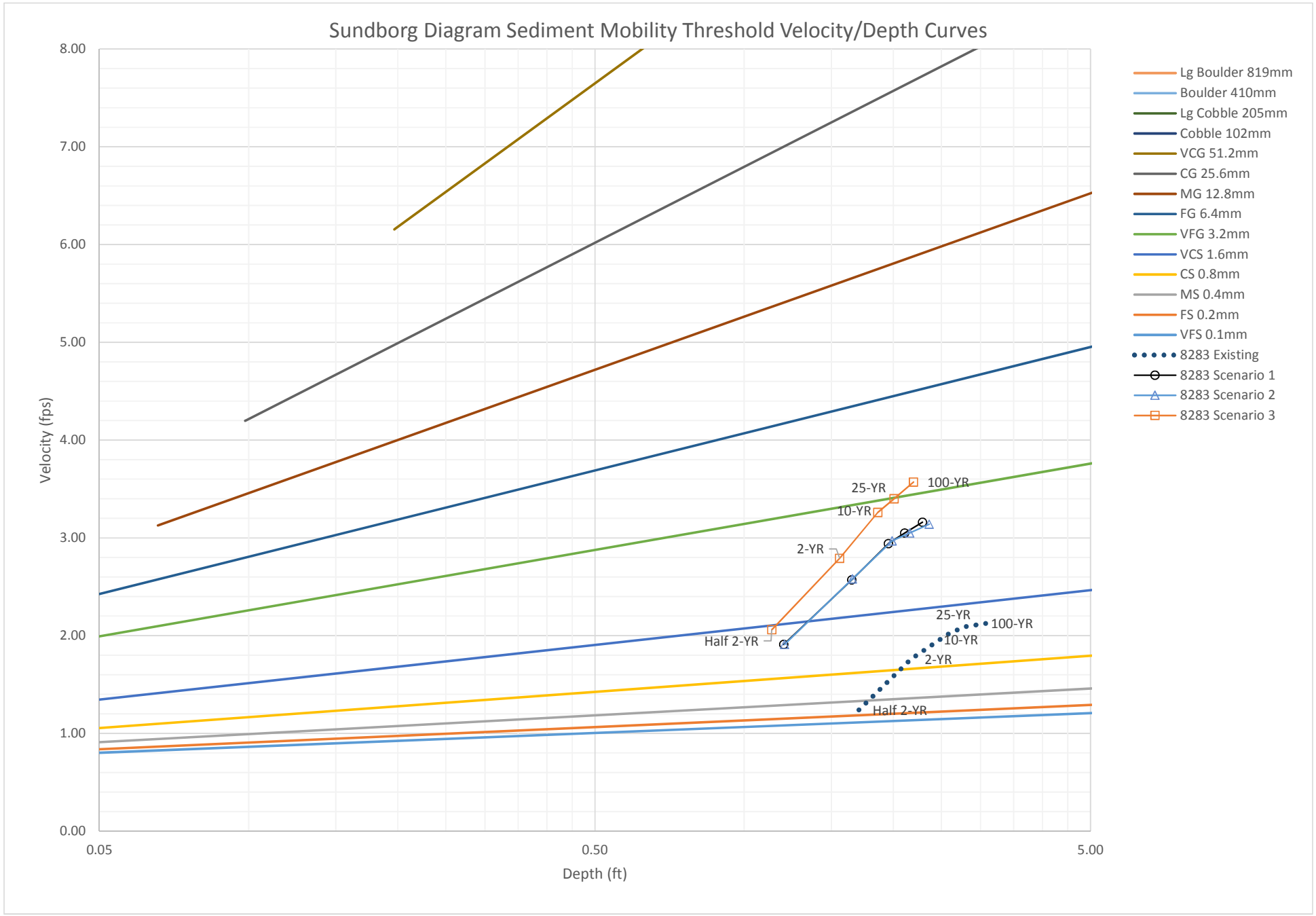
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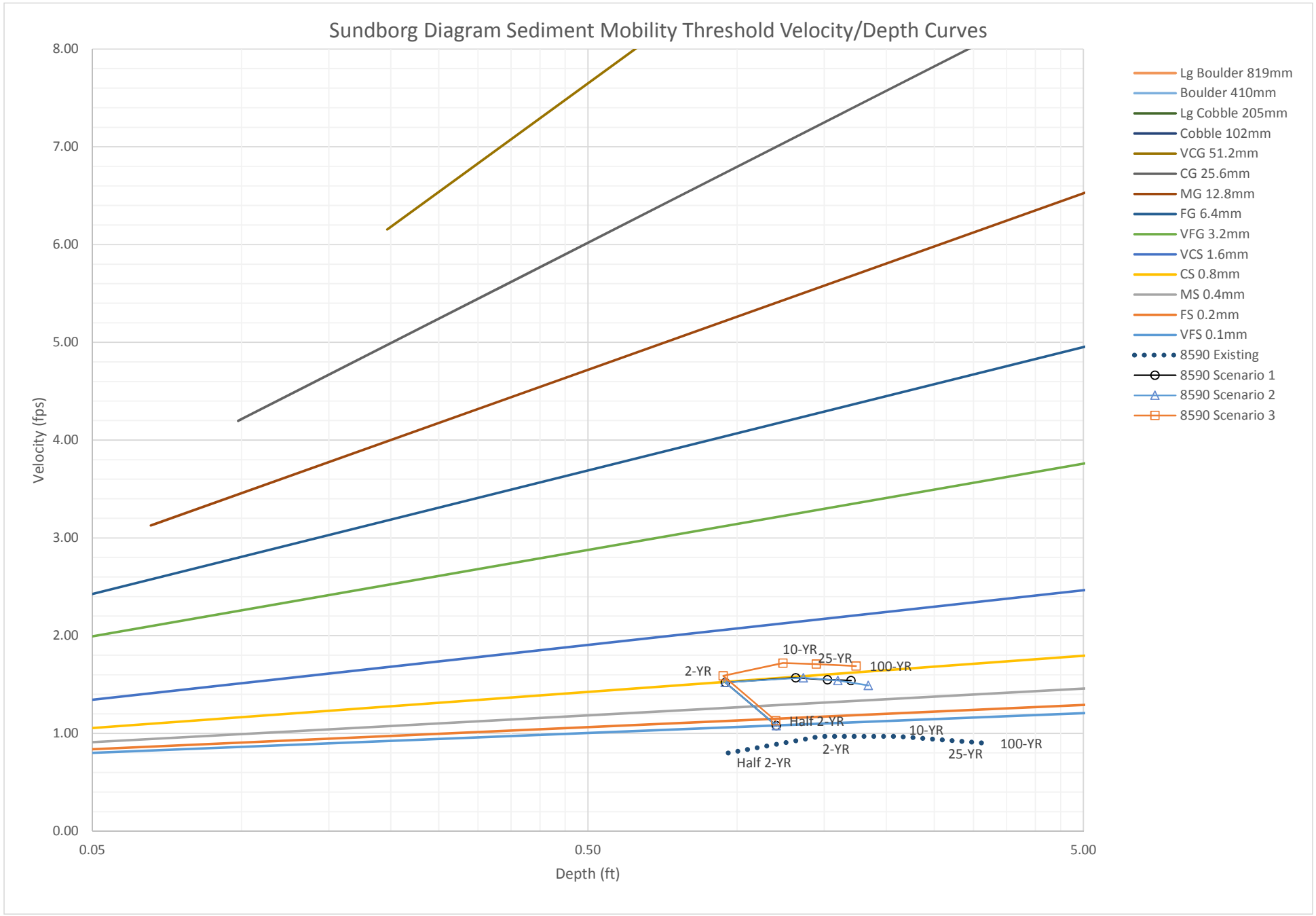
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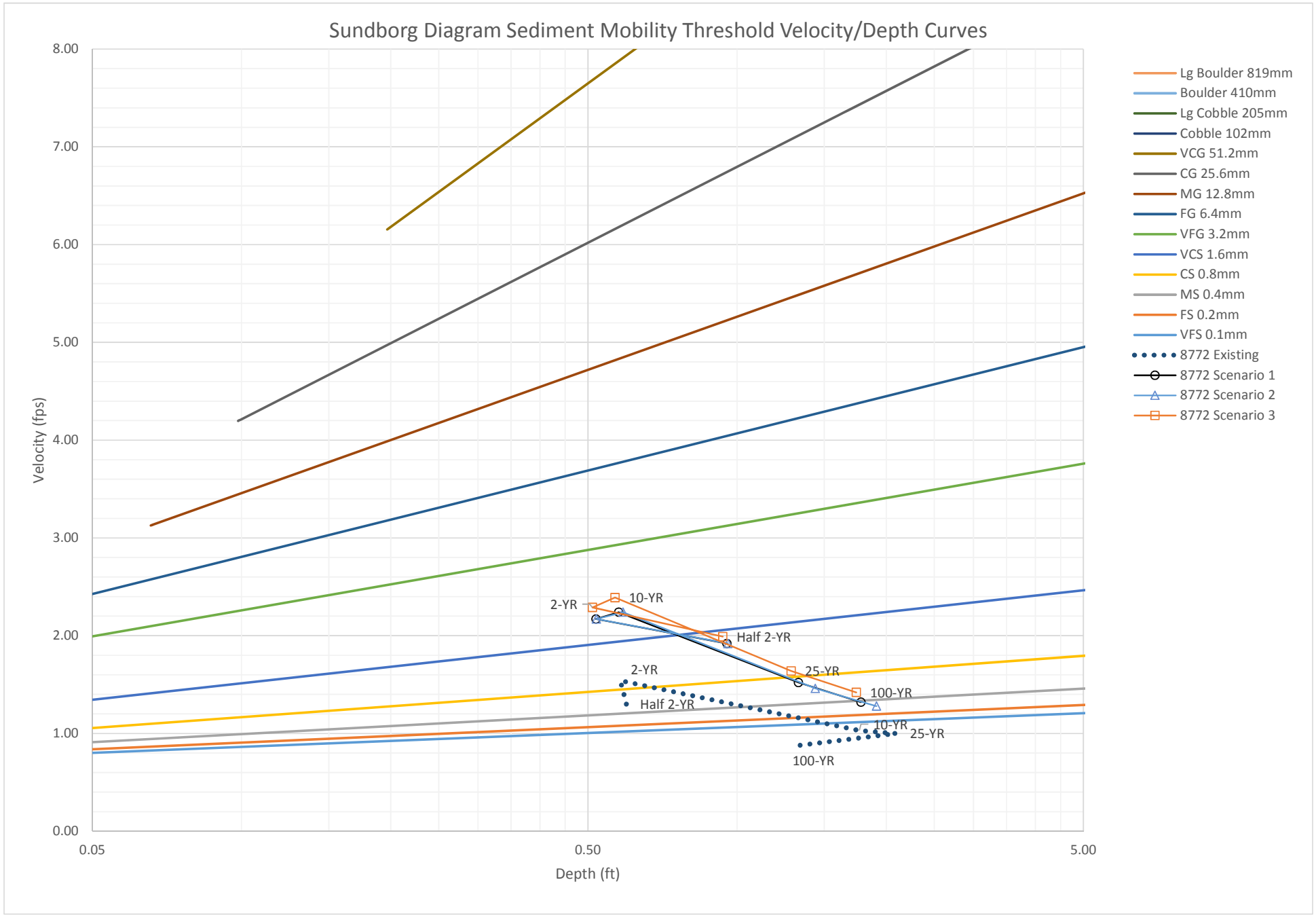
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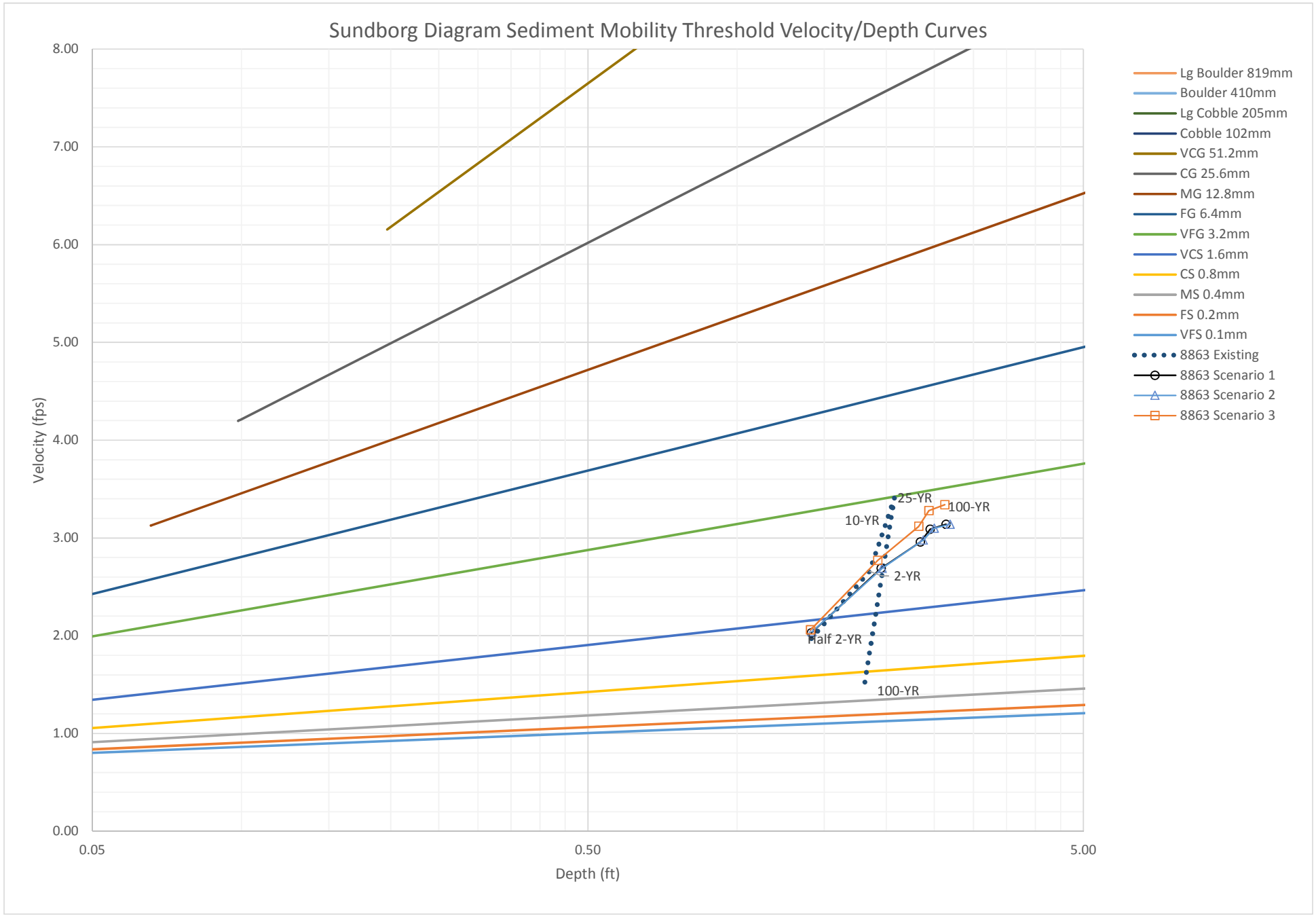
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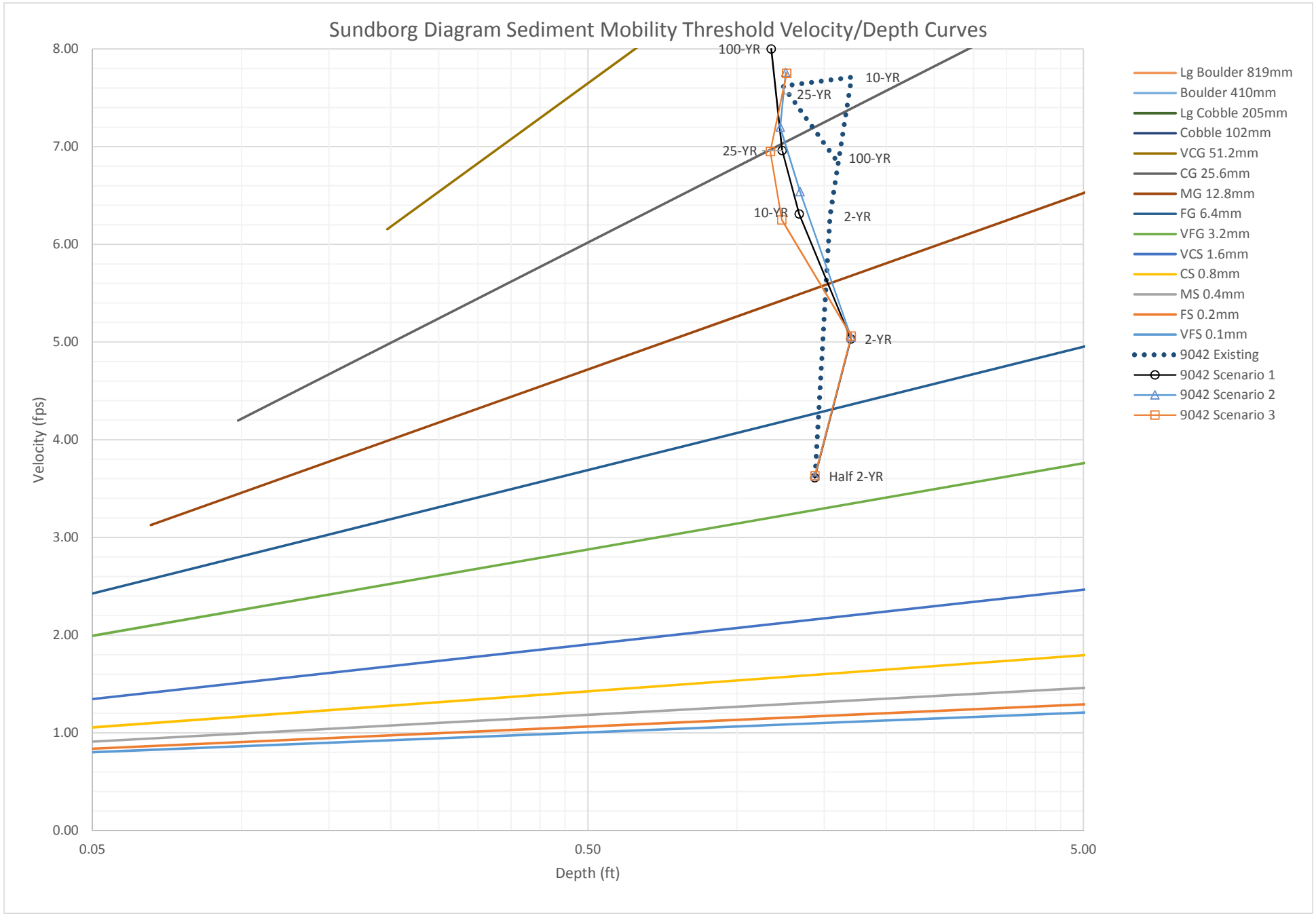
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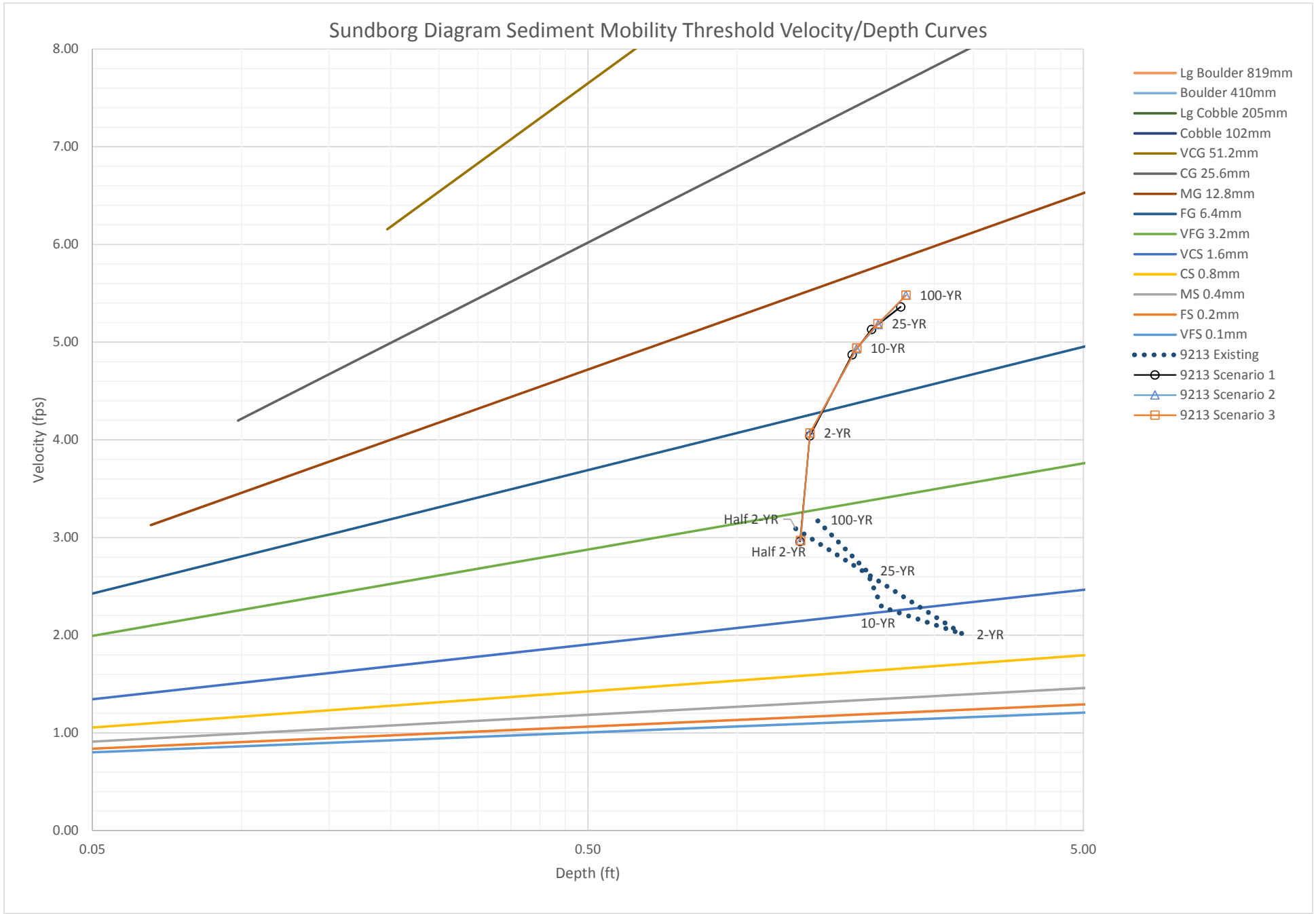
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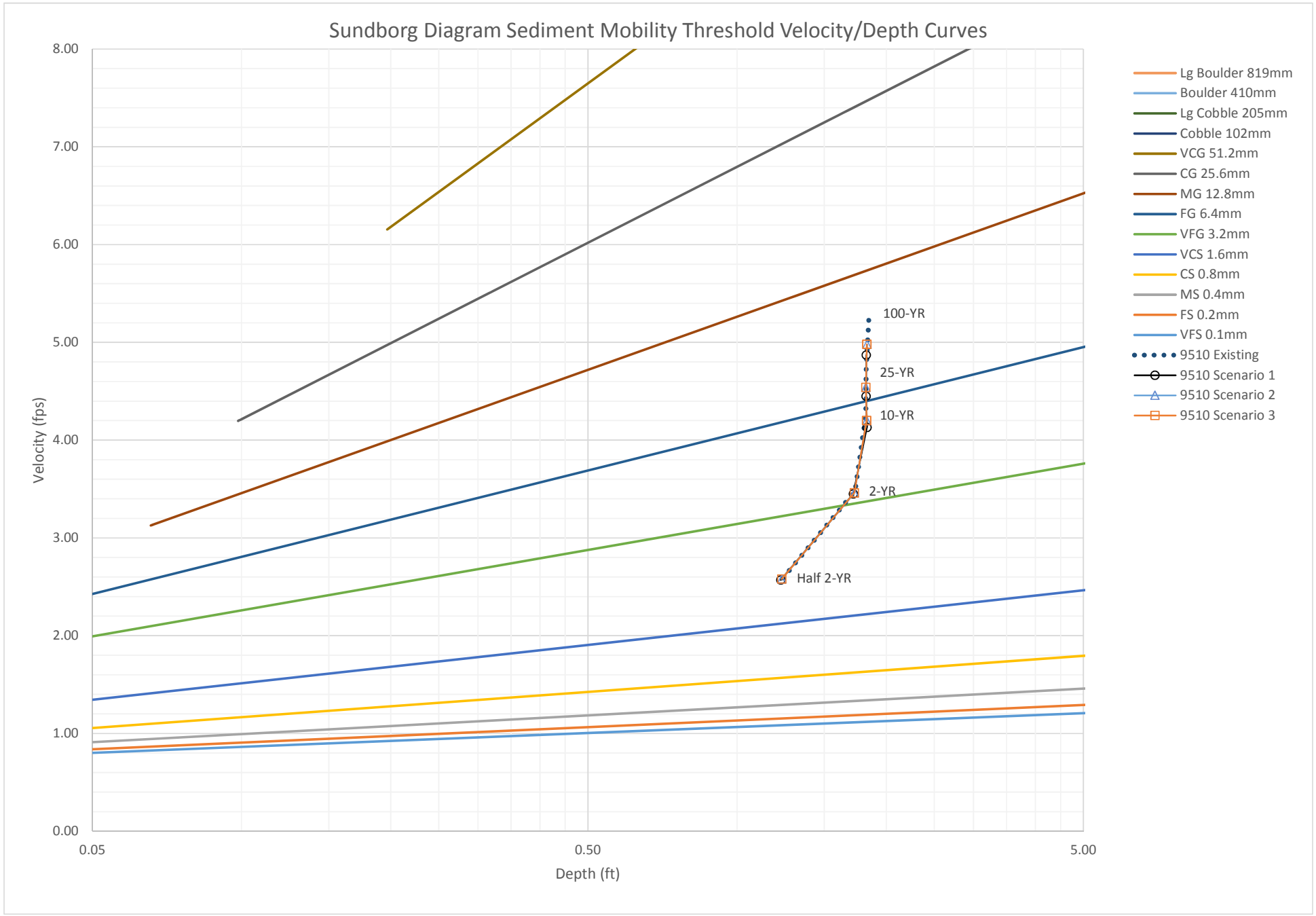
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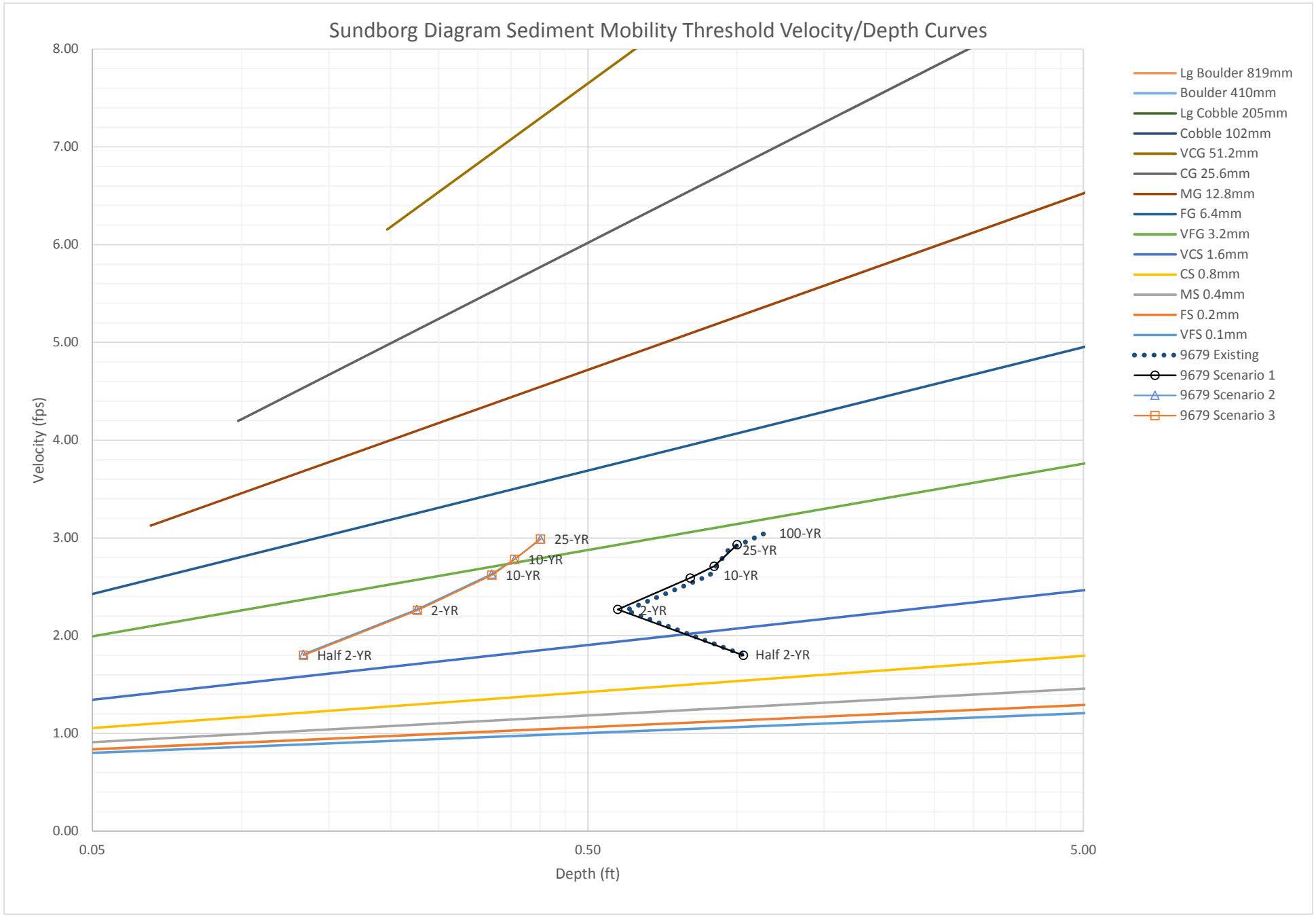
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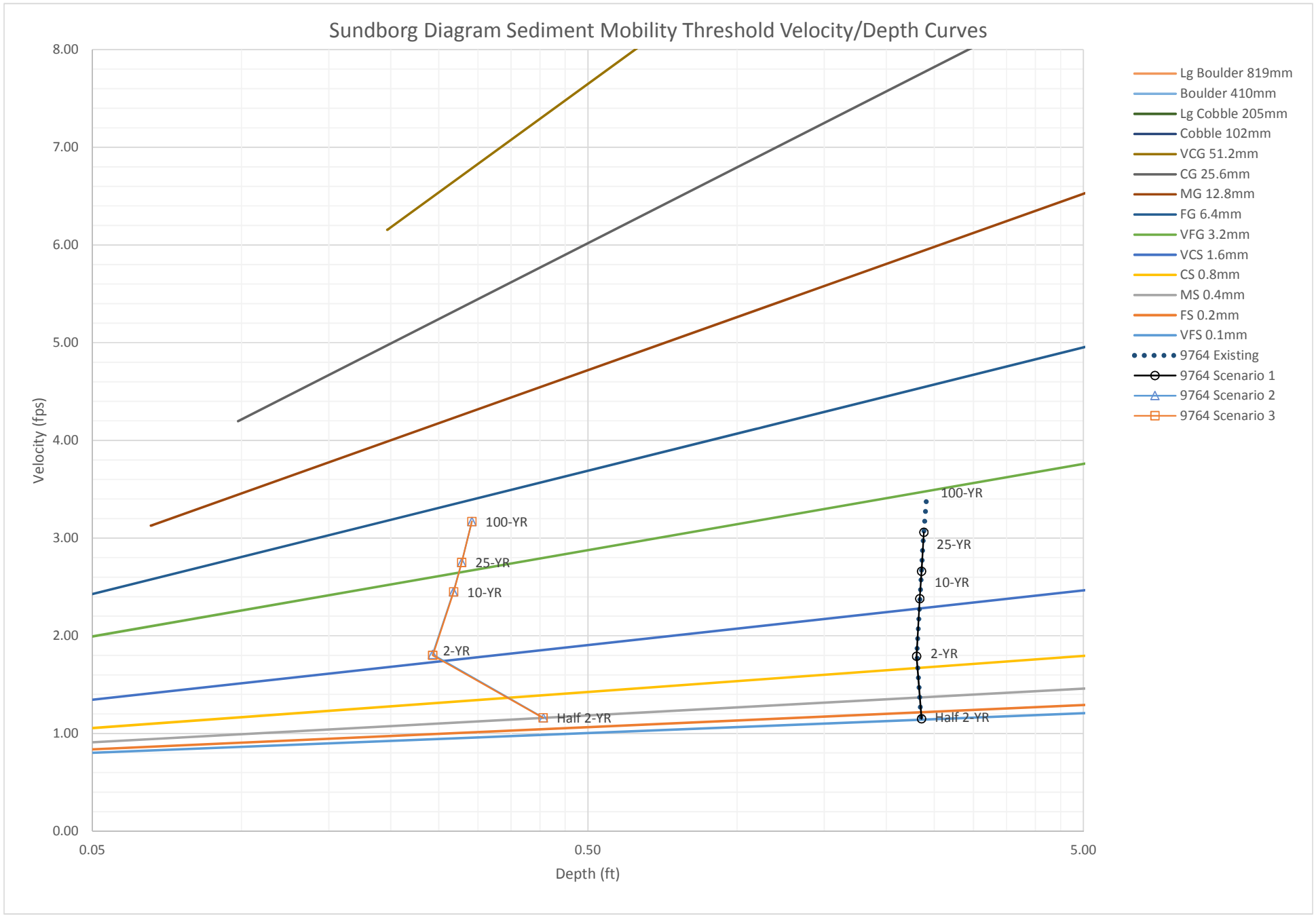
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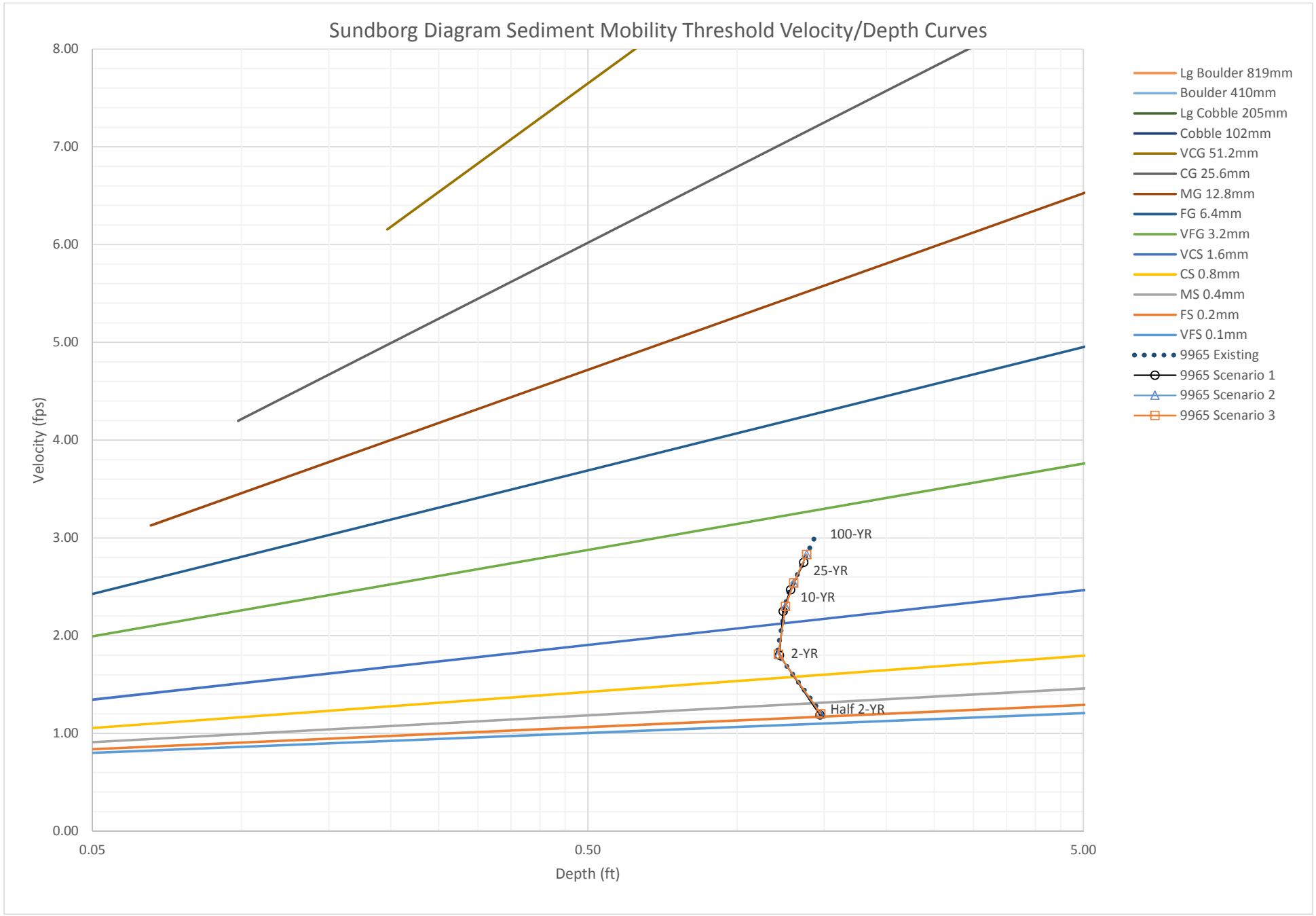
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Lg Boulder 819mm
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Lg Cobble 205mm
Cobble 102mm
VCG 51.2mm
CG 25.6mm
MG 12.8mm
FG 6.4mm
VFG 3.2mm
VCS 1.6mm
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MS 0.4mm
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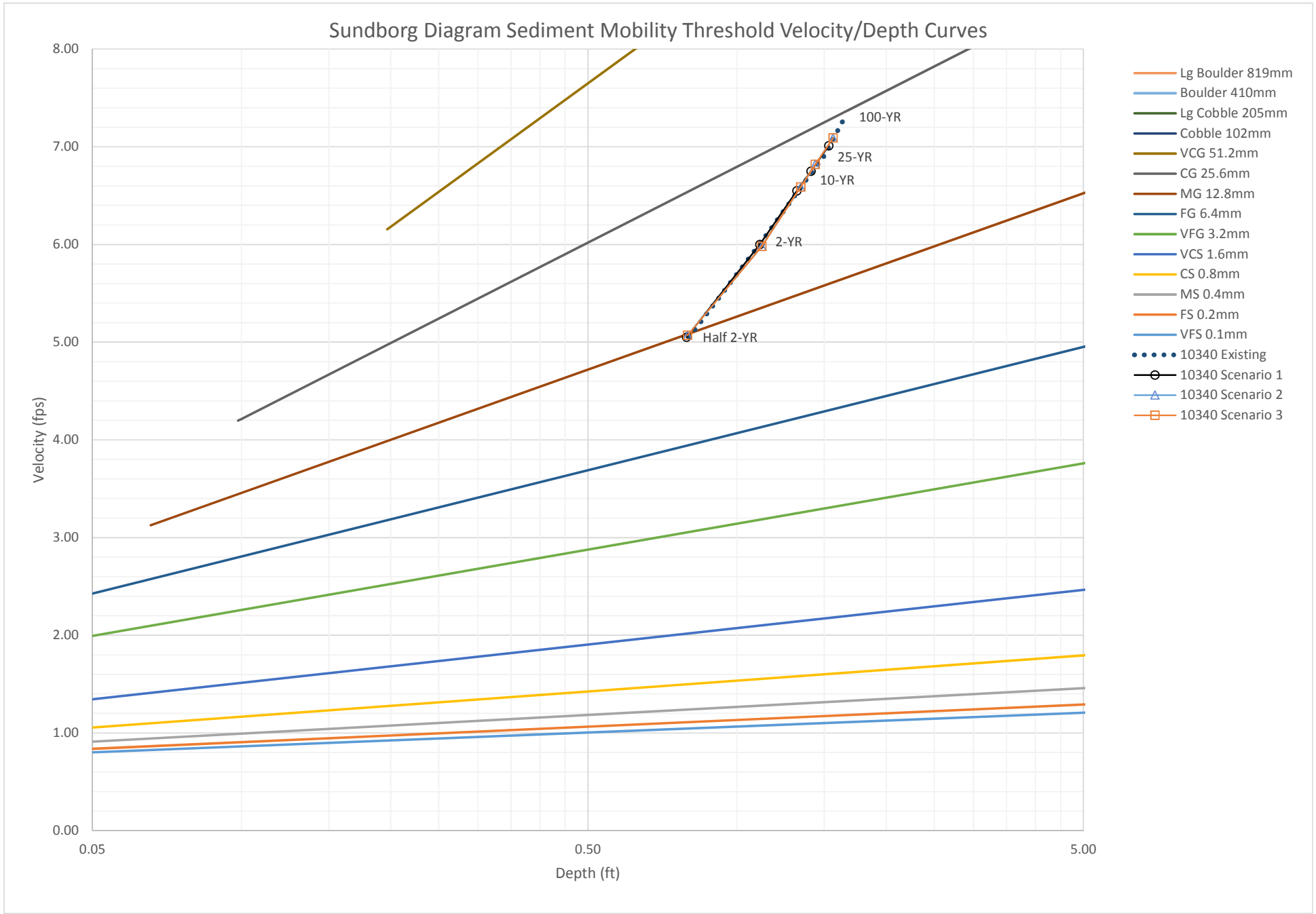
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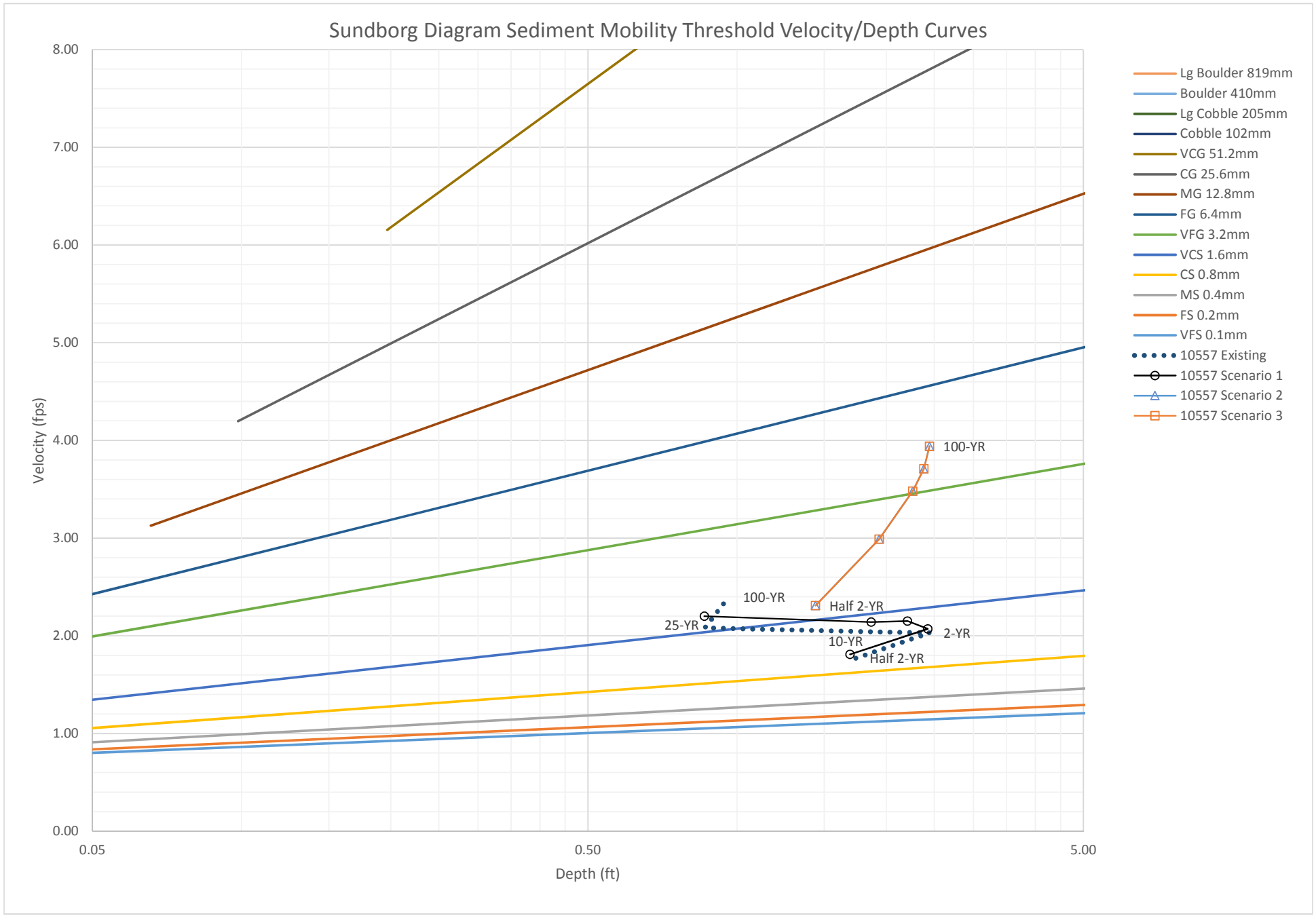
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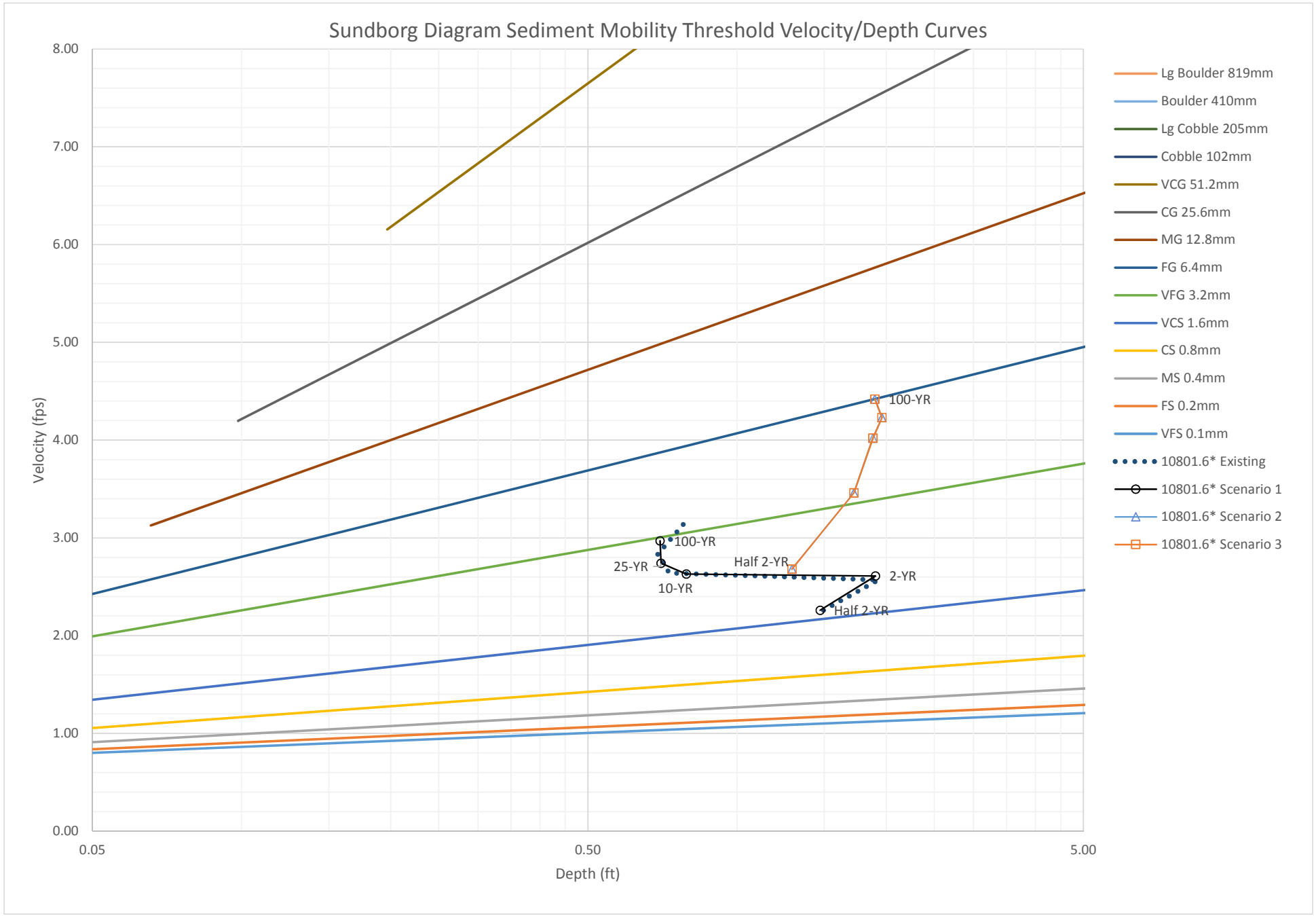
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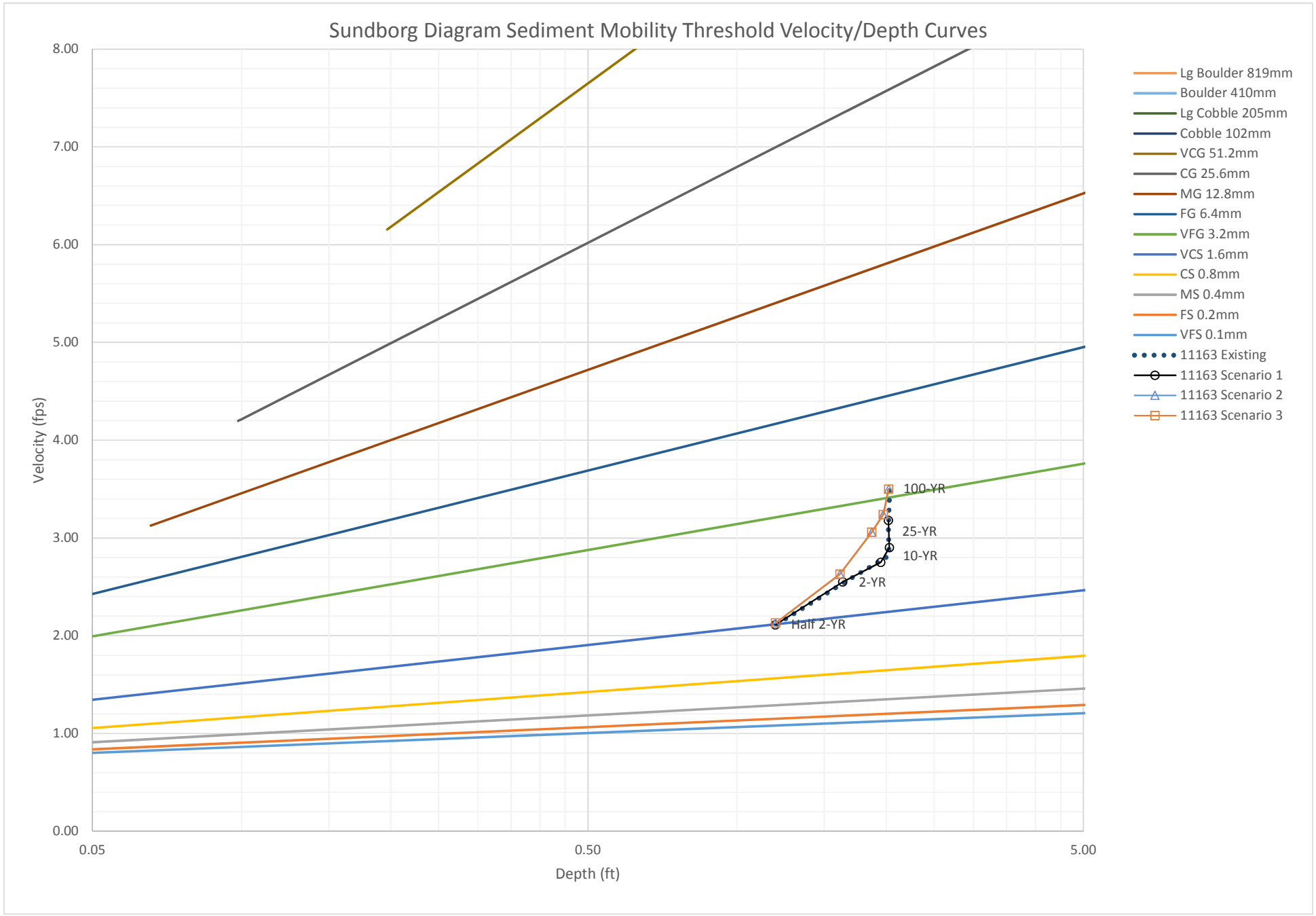
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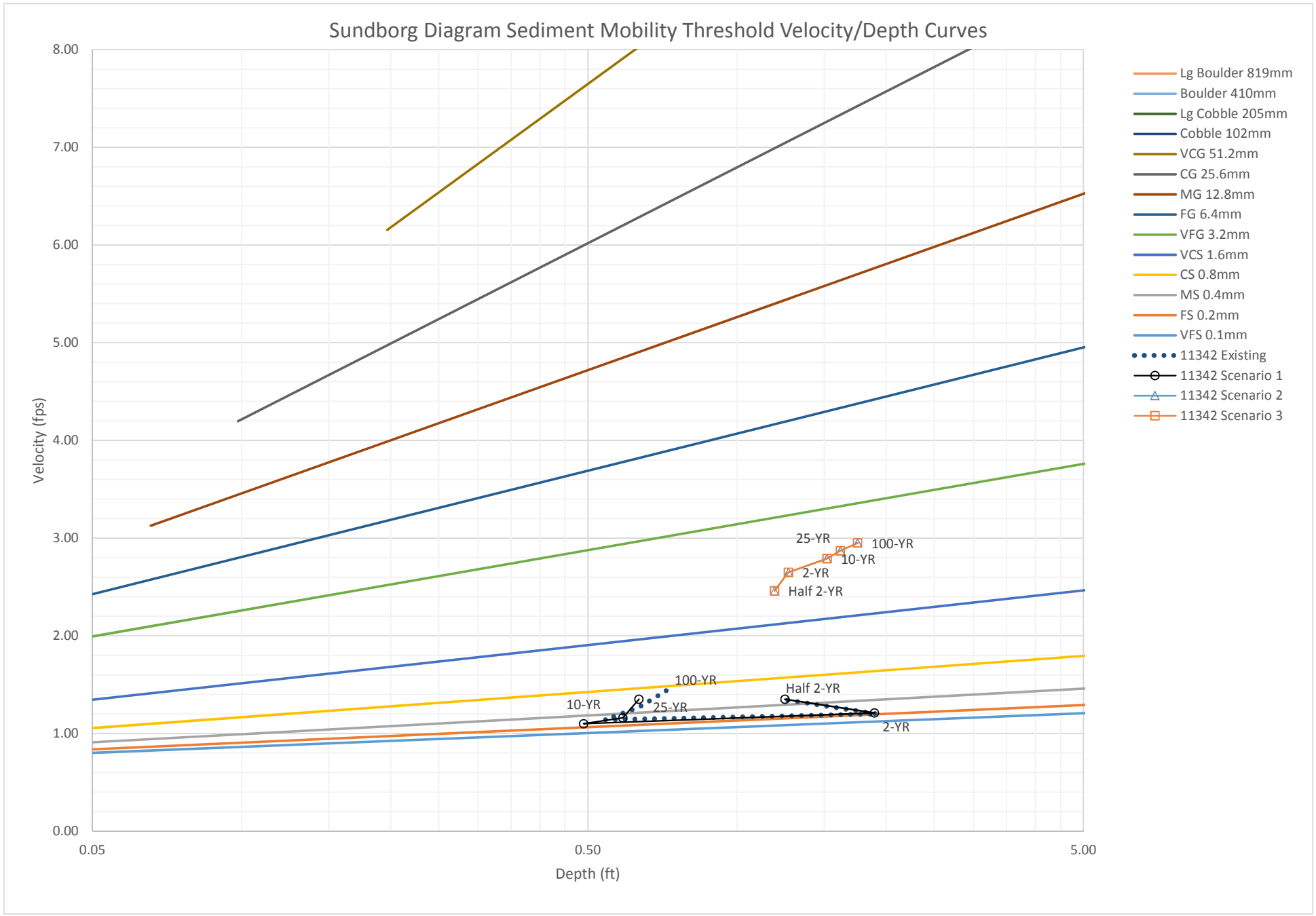
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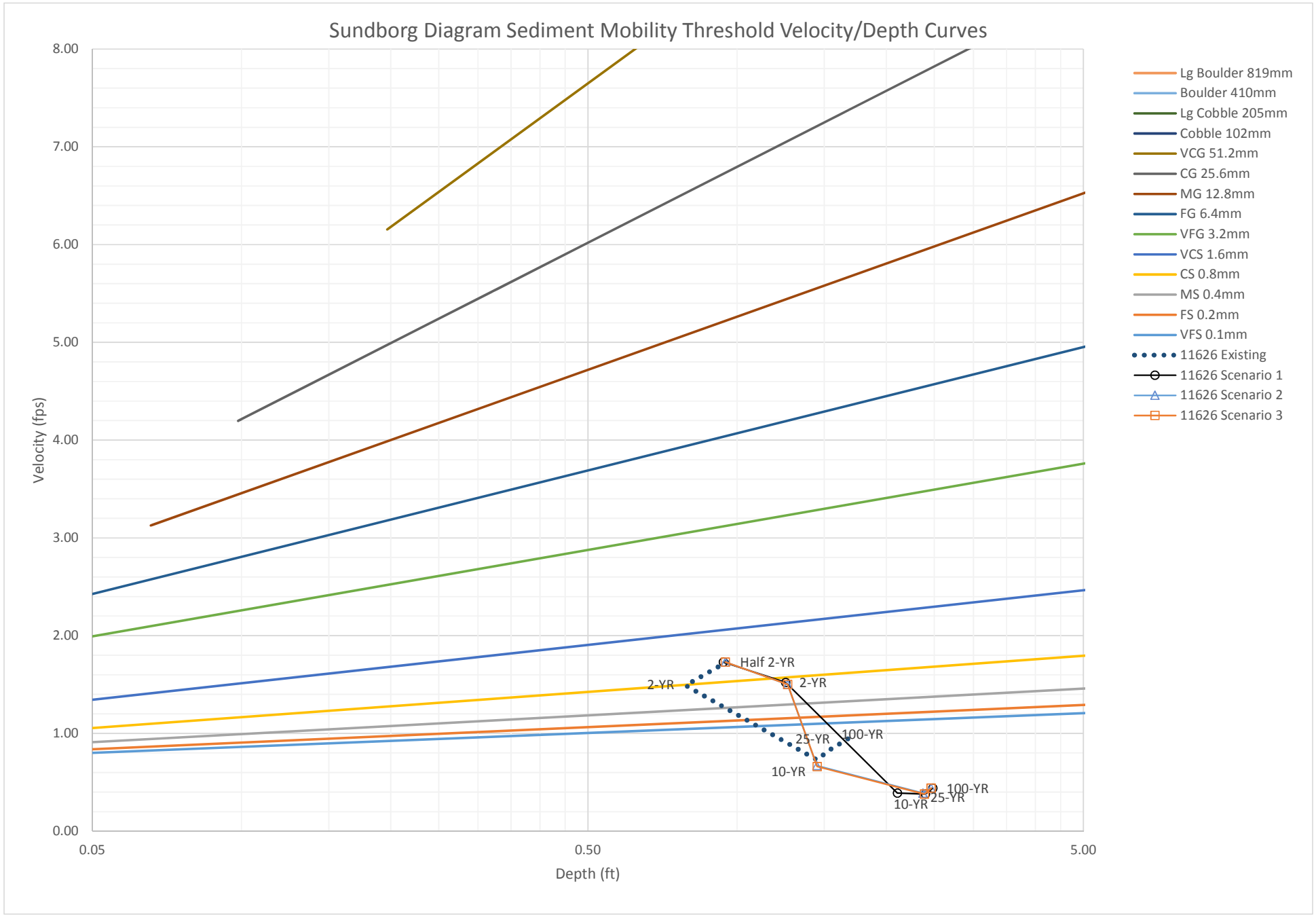
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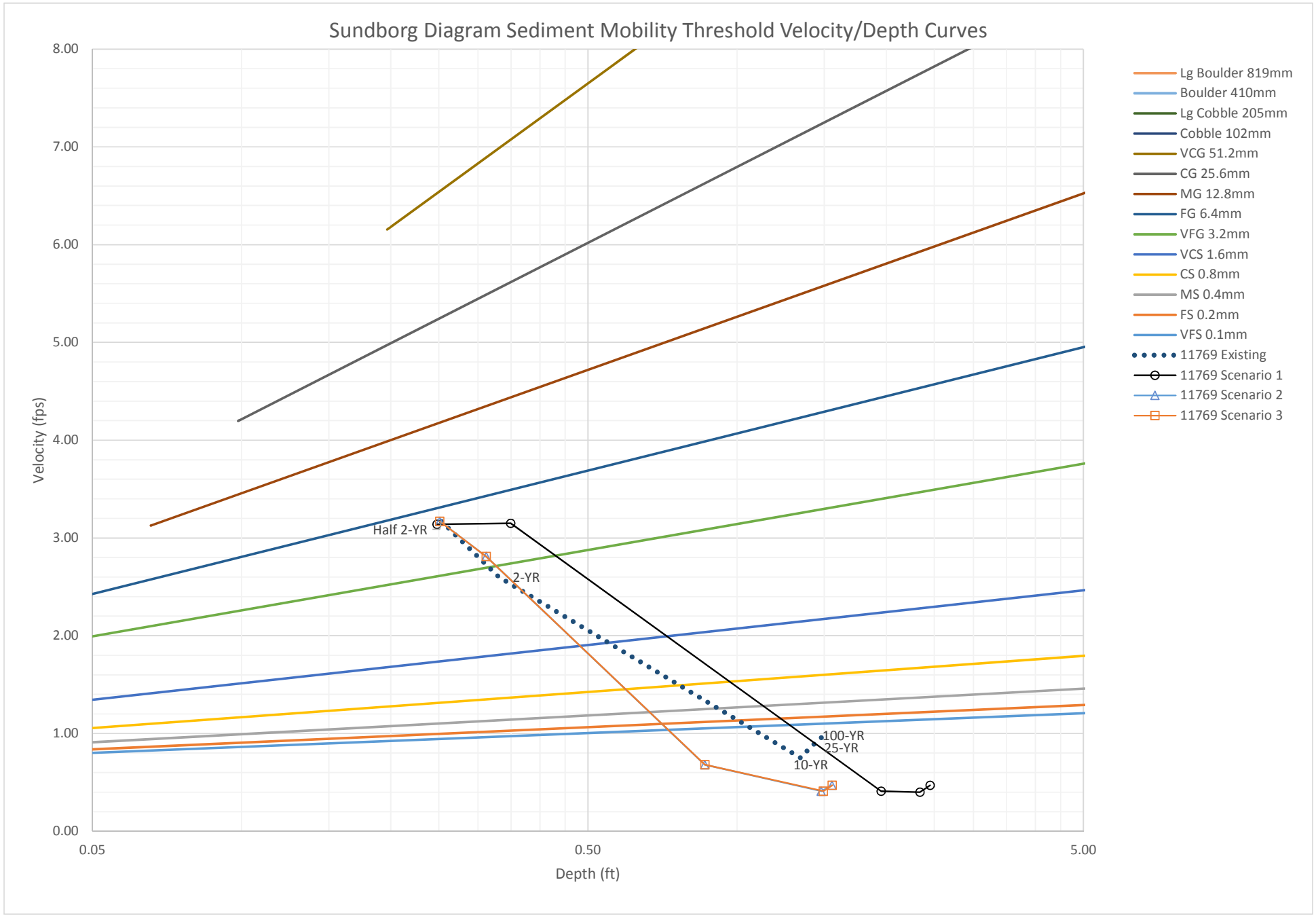
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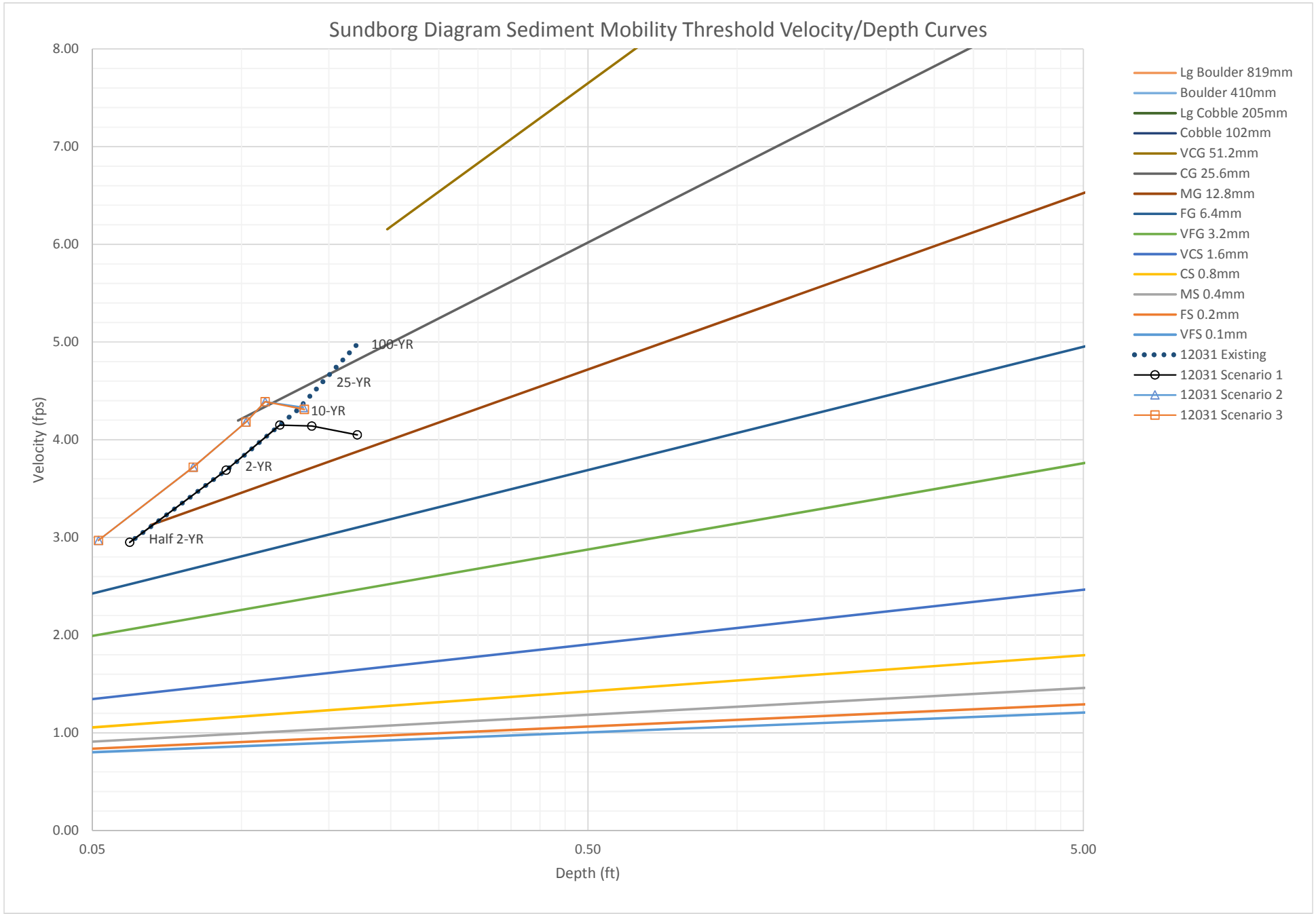
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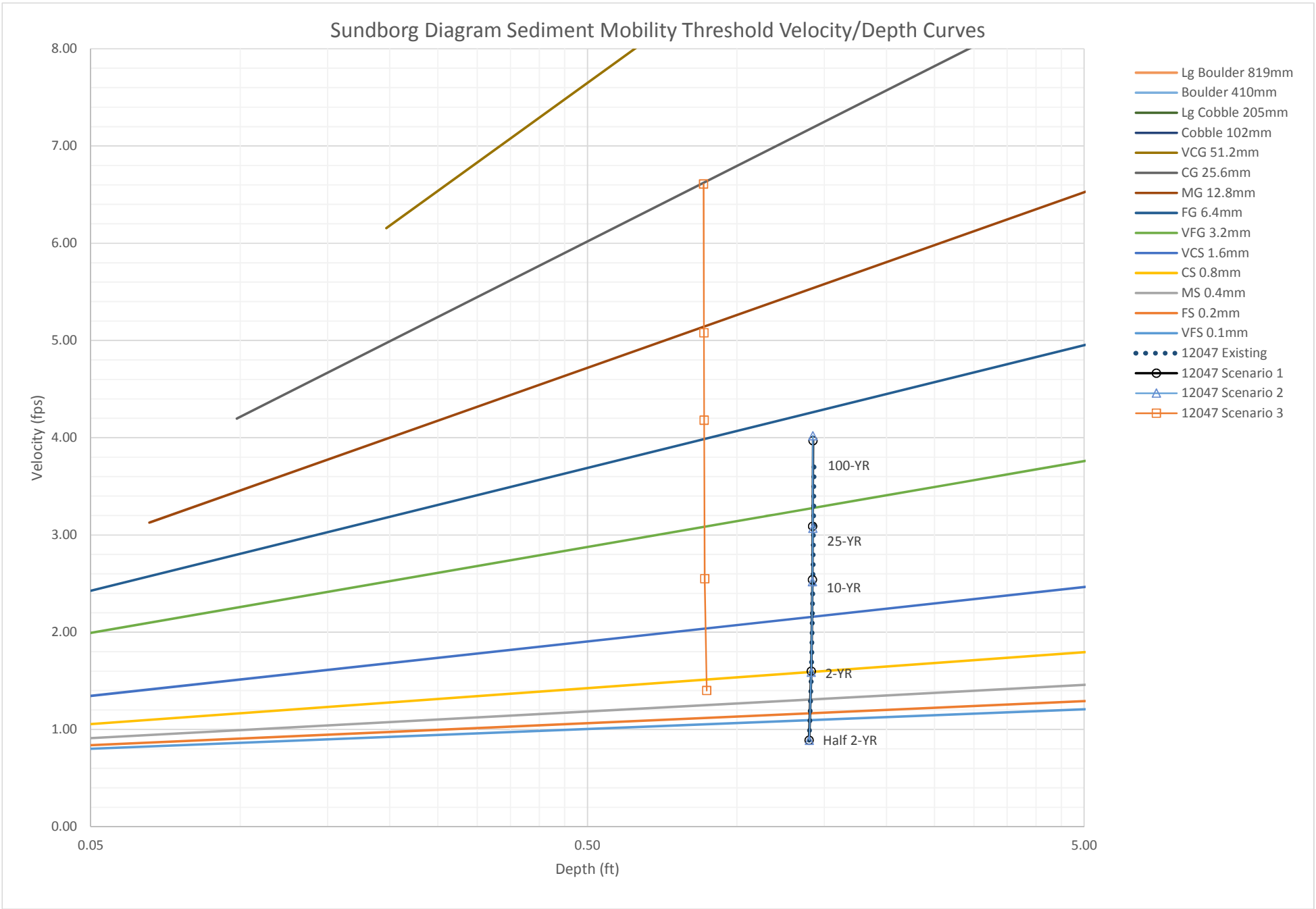
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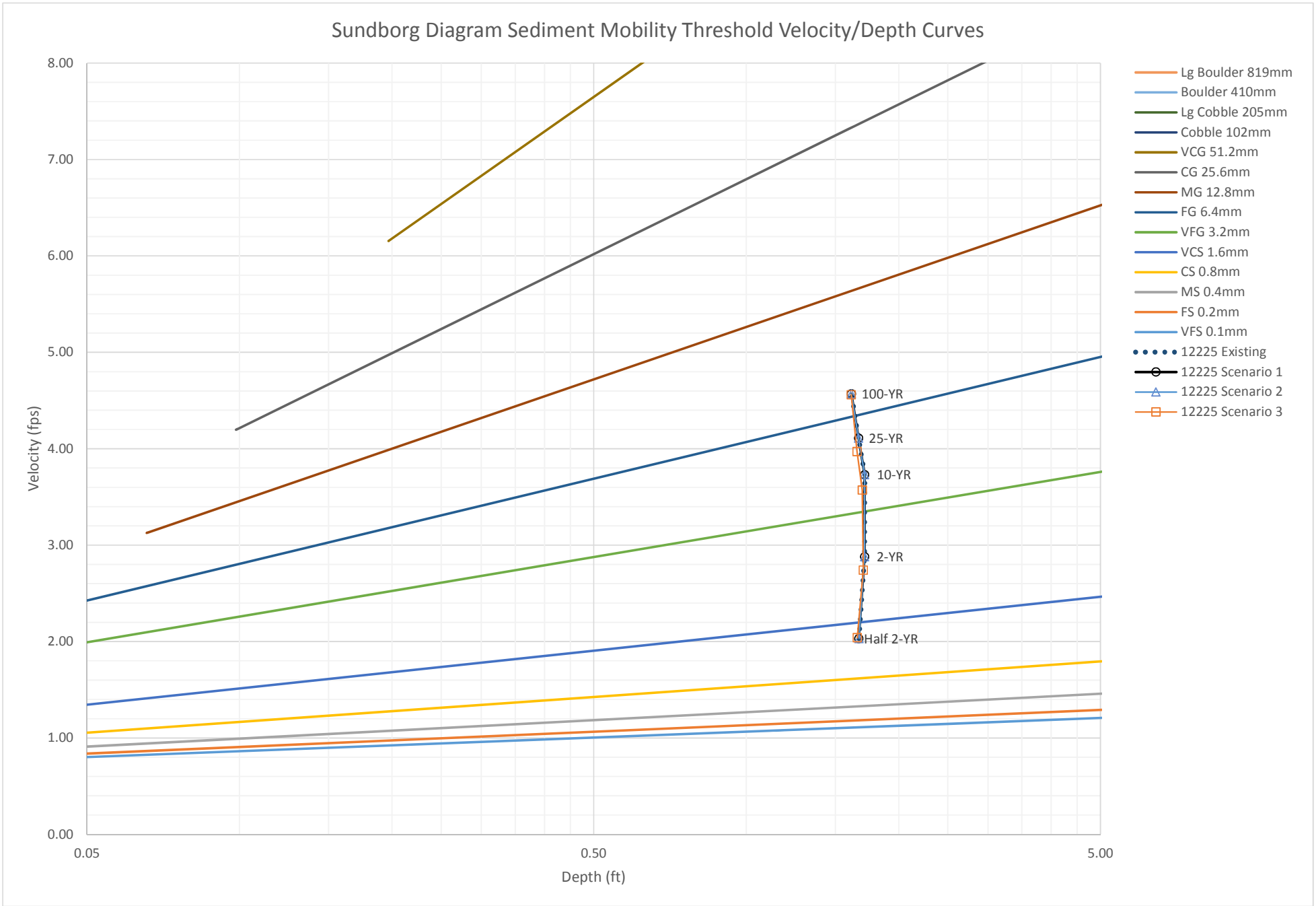
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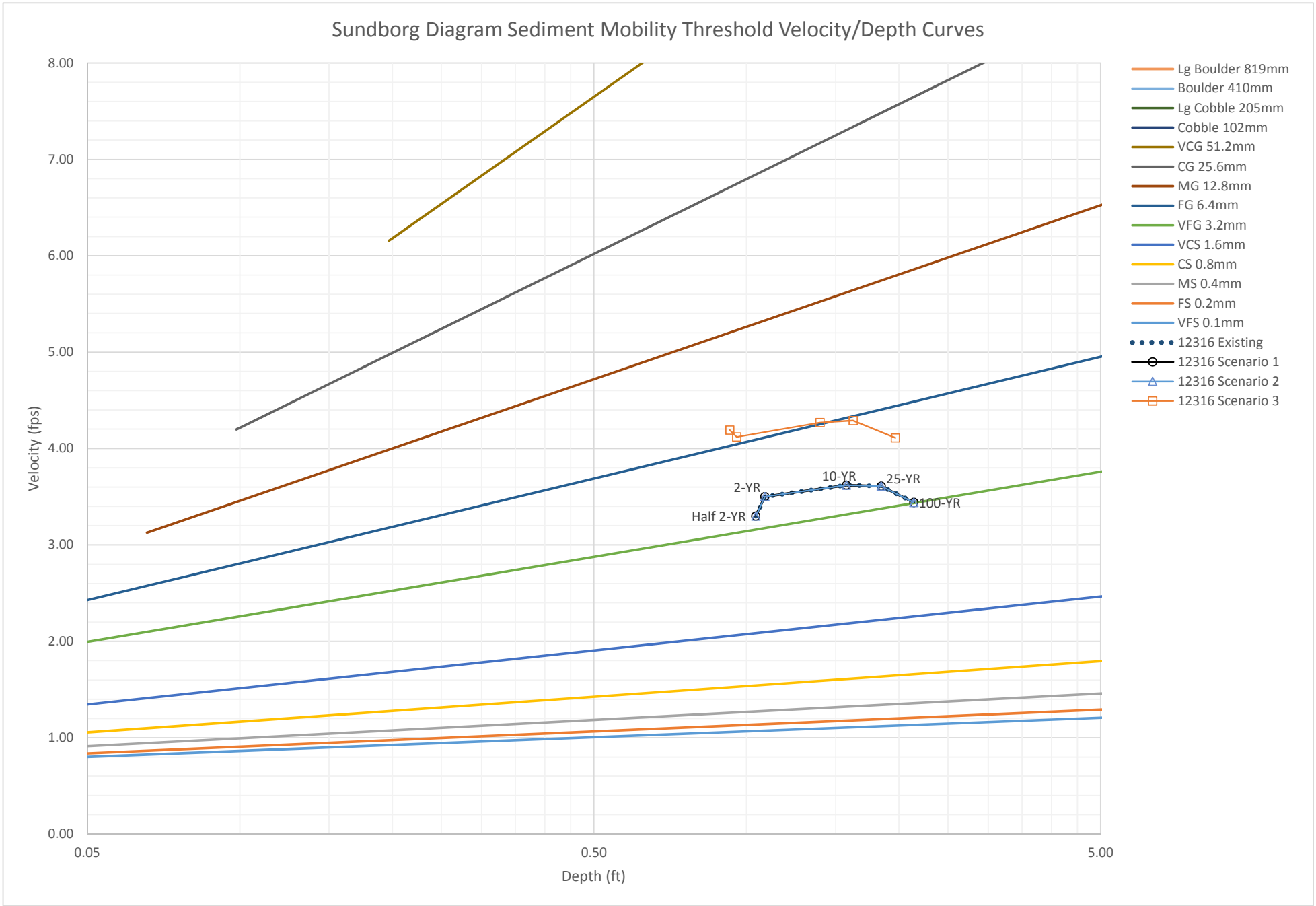
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Lg Boulder 819mm
Boulder 410mm
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MG 12.8mm
FG 6.4mm
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VCS 1.6mm
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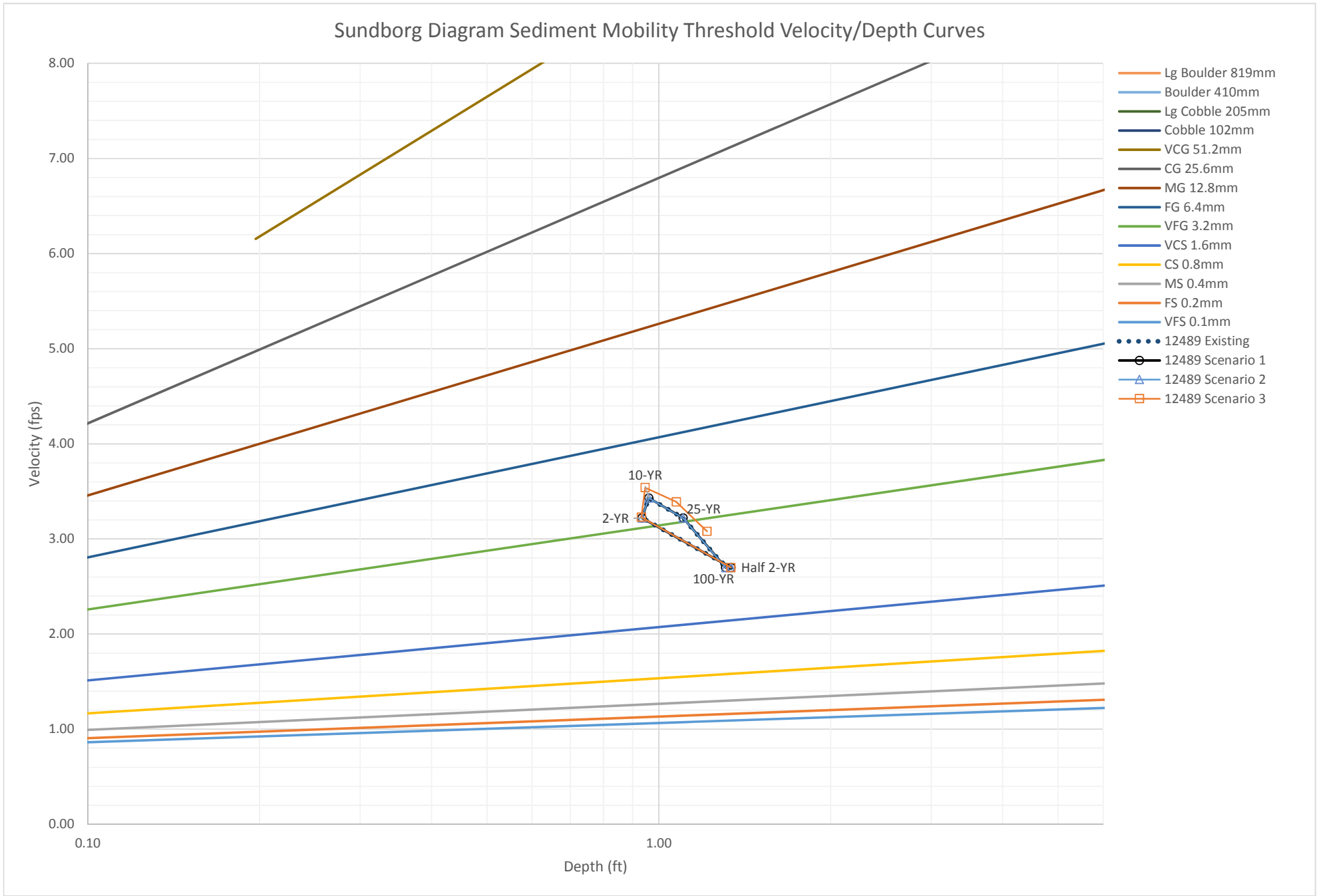
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12489 Existing
12489 Scenario 1
12489 Scenario 2
12489 Scenario 3

APPENDIX G

Flood Reduction Project Summary Sheets

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Scriber Lake Trail and Berm Improvements

Project Number: 1 Estimated Cost: $630,000

PROBLEM DESCRIPTION

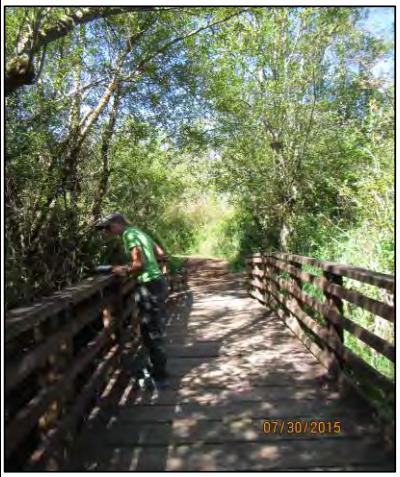
Conveyance improvements from potential culvert replacements throughout the upstream corridor have the potential to increase peak flows downstream as they convey flows more efficiently. The objective of increasing the storage volume in Scriber Lake is to provide additional detention to offset any increases in peak flows preventing negative flooding impacts to downstream reaches.

PROJECT DESCRIPTION

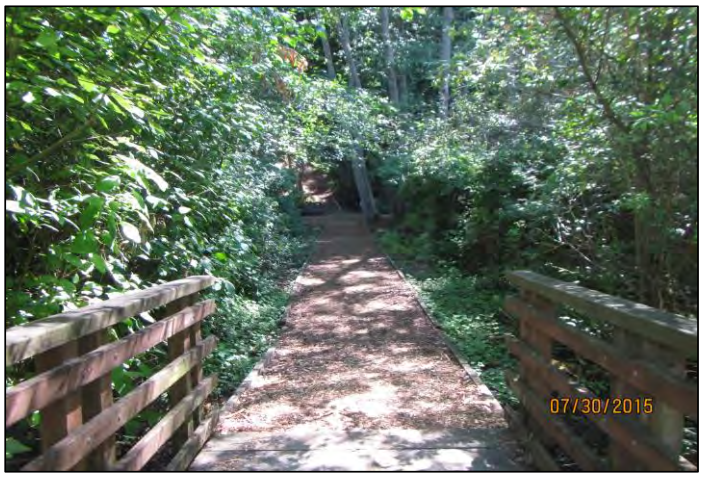
Raise a portion of the existing recreational Scriber Lake Park Trail just downstream of the lake outlet. Raising the trail would not only improve its deteriorated condition and help to elevate the trail above low frequency flood events, but would also help back up creek flows upstream of the trail creating more flood storage in Scriber Lake. The proposed minimum trail elevation through this area is elevation 340 ft (NAVD 88 vertical datum), which requires the trail to be raised between 1 and 2.4 feet. This would also require the existing footbridge over the creek to be raised to match the new elevation of the trail. Because the trail does not fully cross the entire low area downstream of the lake, an additional small berm, 1 to 2 feet in height would also be needed to connect the raised trail to upland portions of the site.

FLOOD BENEFITS OF PROJECT

Raising the trail provides approximately 3 acre-feet of added flood storage in Scriber Lake for the 100-year event, and thus provides additional flood storage that would help to prevent other corridor conveyance improvements from increasing peak flows to downstream reaches.



Existing Trail bridge crossing downstream of Scriber Lake.



Existing trail that would be elevated and improved.

FEASIBILITY CONSIDERATIONS

- Park access and trail detours will be required during construction. Access for machinery is limited.
- Streamflow diversion and/or a flow bypass pipe/pumping may be needed for the new trail bridge over Scriber Creek.
- Some geotechnical exploration needed for design of trail and trail bridge foundation given history of settlement.
- Additional biological and wetland analysis may be needed to quantify and potentially mitigate for critical areas impacts.
- Extensive permitting expected due to affected wetland hydroperiod and wetland fill required for the berm.
- Adding wood rail may be worth consideration where height of raised trail could potentially create a safety hazard.
- Coordination with City of Lynnwood Parks Department would be needed.

PERMITS REQUIRED

- CWA Section 404 (USACE, Individual)
- CWA Section 401 (Ecology, Individual)
- Hydraulic Project Approval (WDFW)
- SEPA MDNS or EA (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood Parks Department
- Washington Wildlife and Recreation Program (WWRP), Washington Recreation and Conservation Office (RCO)
- Land and Water Conservation Fund (LWCF), RCO
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Aquatic Lands Enhancement Account (ALEA) Volunteer Cooperative Grant Program, WDFW

LYNNWOOD WASHINGTON

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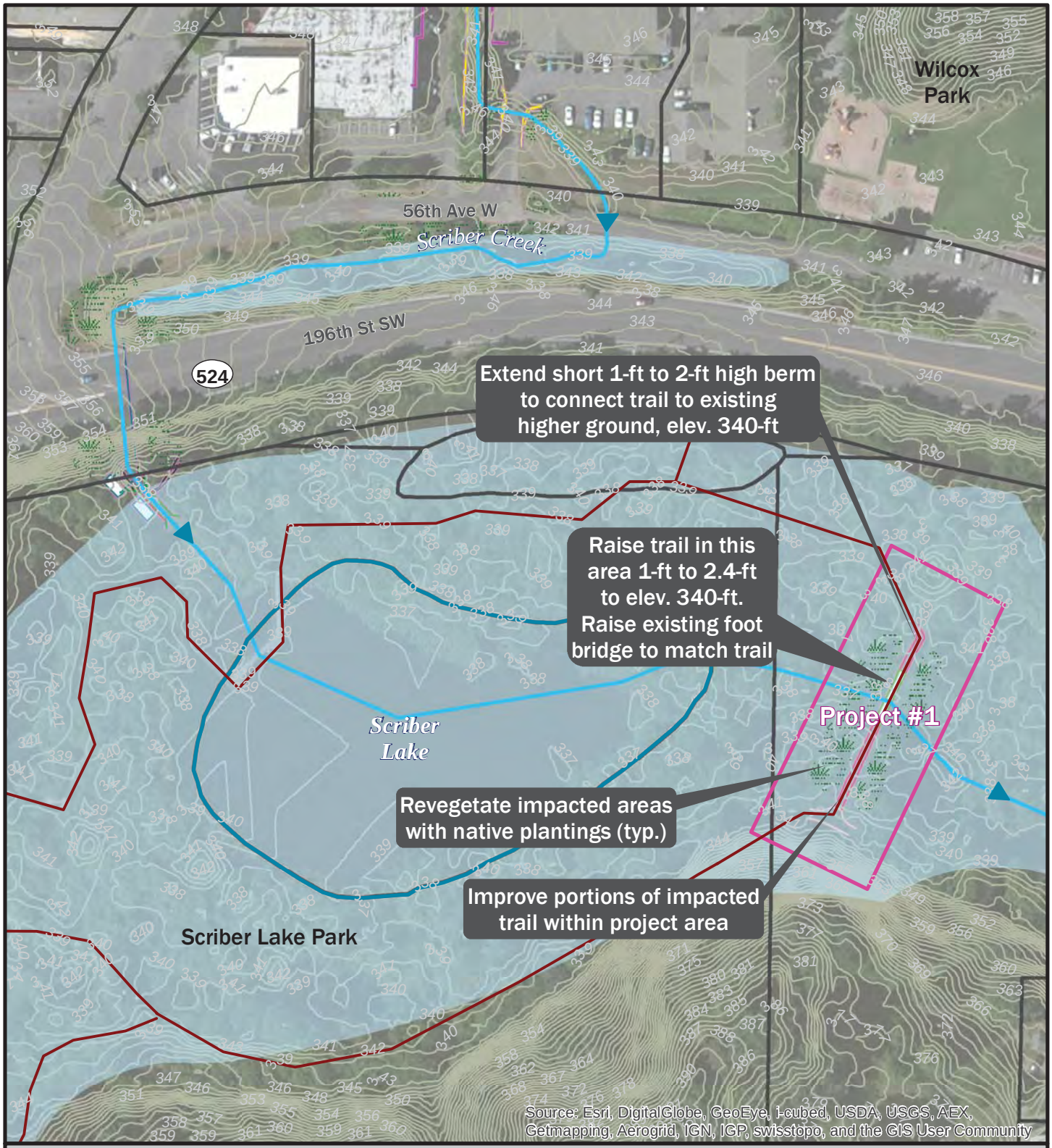

Legend

- Proposed project area
- Scriber Creek
- Scriber Lake Park trail
- Revegetation (typ.)
- Existing 1-ft contour
- Surveyed line
- Snohomish County wetland
- Parcel

Project # 1 - Raised Trail at Scriber Trail.

N

0 62.5 125 250 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #1: Raise Scriber Lake Trail.						
Spec Section	**Bid Item Description**	**Quantity**	**Unit**	**Unit Cost**	**Amount**	**Assumptions/Notes**
1-09.7	MOBILIZATION (10%)	1	LS	$23,000	$23,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$21,000	$21,000	
1-05.4	SURVEYING	1	LS	$10,000	$10,000	
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.1	ACRE	$10,000	$1,000	
2-02.5	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	1	LS	$10,000	$10,000	
2-03.5	GRAVEL BORROW INCL HAUL	100	CY	$30	$3,000	
2-03.5	EMBANKMENT COMPACTION	100	CY	$4	$400	
SPECIAL	LIMESTONE CRUSHED SURFACING	30	TON	$60	$1,800	3" Deep, 1.85 TON/CY. Price From Padden Creek
SPECIAL	TIMBER POSTS FOR TRAIL WALLS	680	LF	$12	$8,160	8' High Spaced At 4 ft for 170' (4x4 Posts)
SPECIAL	TIMBER SIDING FOR RAISING THE TRAIL	1360	LF	$3	$4,080	6"X2" Treated Timber. Avg Ht 4'
SPECIAL	LANDSCAPE RESTORATION	1,700	SF	$10	$17,000	
SPECIAL	WETLAND MITIGATION	5,100	SF	$15	$76,500	1700 SF X 3 Assuming 3:1 Mitigation
SPECIAL	REBUILD TRAIL BRIDGE AT NEW HEIGHT	1	LS	$30,000	$30,000	
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$246,940	
SALES TAX				9.8%	$24,210	
TOTAL CONSTRUCTION COST WITH TAX					**$271,150**	
OTHER APPROXIMATED PROJECT COSTS						
DESIGN				20%	$55,000	
ENVIRONMENTAL PERMITTING					$100,000	Complicated permitting and mitigation: Includes costs of all technical evaluation, preparing supporting documentation including mitigation plan, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$41,000	
SPECIAL TESTING AND INSPECTIONS				5%	$14,000	
SUBTOTAL PROJECT COSTS					$481,150	
PROJECT CONTINGENCY				30%	$145,000	
			TOTAL ESTIMATED PROJECT COST:		**$630,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #1: Raise Scriber Creek Trail.						
PROJECT LIFE CYCLE		30 YEARS				
	Maintenance Activity Type	**Frequency**	**Unit**	**Unit Cost/Time**	**Annual Amount**	**Assumptions/Notes**
	INSPECTION	1	TIMES/YEAR	$315	$315	
	MOWING	0	TIMES/YEAR	$50	$0	Mowing part of typical ROW mowing; no extra O&M
	VACTOR TRUCK REMOVAL	0	TIMES/YEAR	$350	$0	
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$315**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Remove Diversion Structure and Oil/Water Separator Downstream of 196th Street SW

Project Number: 2 Estimated Cost: $320,000

PROBLEM DESCRIPTION

The existing diversion vault located immediately downstream of the 196th Street SW culvert crossing is not working properly and also backs up flow into and upstream of the Scriber Creek culverts. In addition, the connected oil/water separator does not function well and, unless it is frequently maintained, has the potential to release accumulated oils during significant precipitation events.

PROJECT DESCRIPTION

Remove the diversion structure downstream of 196th Street SW that currently backs up water for an ineffective oil/water separator and incorporate necessary fish passage improvements to the existing 196th Street SW culverts, such as a fish passage weir or boulder riffle, to provide minimum water depths for fish passage and channel bed stability downstream of the culverts. Remove the oil/water separator downstream of 196th Street SW and replace it with an alternative stormwater treatment type that meets current stormwater regulations and code requirements.

FLOOD BENEFITS OF PROJECT

Removing the downstream diversion structure helps to lower upstream water levels. Although this would require a new weir or boulder riffle to be installed in Scriber Creek downstream of the existing culverts to maintain a fish passage through the culverts, the removal of the diversion structure still results in significantly lower upstream water levels.

Looking upstream to diversion weir and vault during summer baseflows.


November 23, 2011 flooding at the diversion weir.

FEASIBILITY CONSIDERATIONS

- Park access and trail detours will be required during construction.
- Streamflow diversion and/or a flow bypass pipe/pumping likely needed.
- Instream grade control (per WDFW guidance, either small weir, or boulder riffle) needed to replace existing function of diversion weir to provide adequate water depth for fish passage.
- Coordination with City of Lynnwood Parks Department would be needed.
- Stormwater quality design for replacement treatment facility needed.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Centennial Grant, Washington State Department of Ecology
- Water Quality: Section 319 Grant, Ecology
- Stormwater Financial Assistance, Ecology
- Washington Wildlife and Recreation Program (WWRP), RCO
- Land and Water Conservation Fund (LWCF), RCO
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council
- Aquatic Lands Enhancement Account (ALEA) Volunteer Cooperative Grant Program, WDFW

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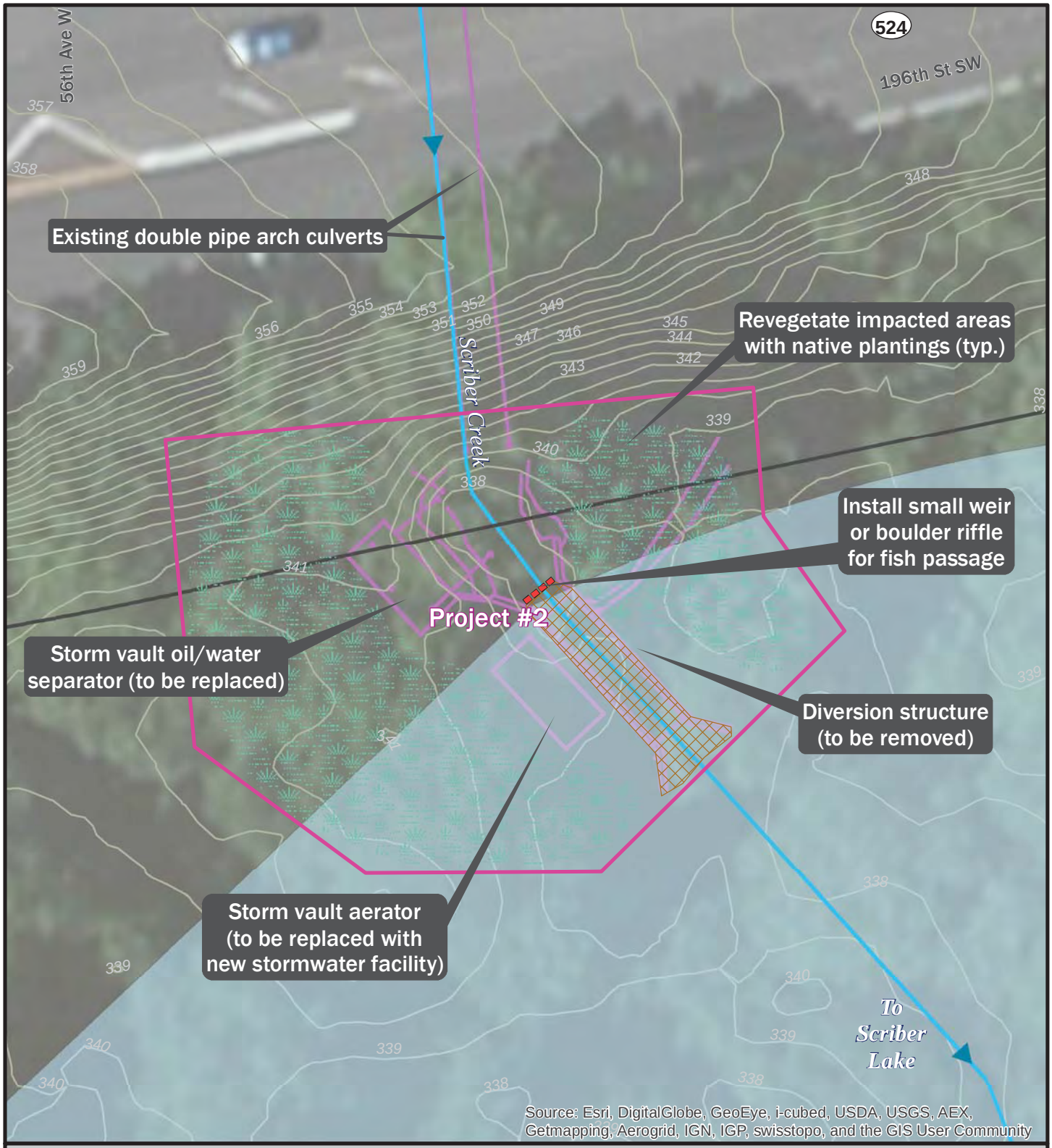

Legend

- Proposed project area
- Parcel
- Scriber Creek
- Revegetation (typ.)
- Boulder riffle
- Proposed weir
- Existing 1-ft contour
- Surveyed line
- Snohomish County wetland

Project #2 - Remove Diversion Structure and Oil/Water Separator Downstream of 196th Street and Incorporate Fish Passage Improvements.

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0 12.5 25 50 Feet

LYNNWOOD WASHINGTON

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #2: Remove Diversion Structure.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$12,000	$12,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$11,000	$11,000	
1-05.4	SURVEYING	1	LS	$20,000	$20,000	
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.15	ACRE	$10,000	$1,500	
2-02.5	REMOVAL OF STRUCTURE AND OBSTRUCTION	1	LS	$5,000	$5,000	Includes removal and disposal
2-09.5	STRUCTURE EXCAVATION CLASS B INCL. HAUL	150	CY	$30	$4,500	assumed dimenisions 20'x40'x5', costs based on Lynnwood 53rd Ave - winning bid
SPECIAL	NEW OIL/WATER SEPARATOR STRUCTURE	1	LS	$25,000	$25,000	To be designed
SPECIAL	CHANNEL GRADE CONTROL FOR FISH PASSAGE	1	LS	$5,000	$5,000	installation of small weir or boulder riffle for fish passage - cost covers either approximately two channel-spanning log structures or one 60ft long 3ft-deep boulder riffle
9-03.11	STREAMBED SEDIMENT	58	TN	$40	$2,320	amend with gravel to restore disturbed streambed
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	100	EA	$10.00	$1,000	4' spacing on center, includes establishment
8-02.3	WET NATIVE SEEDING AND MULCHING	0.15	ACRE	$9,000	$1,350	Lynnwood 53rd Ave - winning bid
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$129,670	
SALES TAX				9.8%	$12,710	
TOTAL CONSTRUCTION COST WITH TAX					**$142,400**	
OTHER APPROXIMATED PROJECT COSTS						
DESIGN				25%	$35,600	
ENVIRONMENTAL PERMITTING				30%	$40,000	Includes costs of all technical evaluation, preparing supporting documentation including mitigation plan, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$22,000	
SPECIAL TESTING AND INSPECTIONS				5%	$8,000	
SUBTOTAL PROJECT COSTS					$248,000	
PROJECT CONTINGENCY				30%	$75,000	
			TOTAL ESTIMATED PROJECT COST:		**$320,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #2: Remove Diversion Structure.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	8	TIMES/YEAR	$315	$2,520	frequency based on O&M table NPDES Phase II (2008)
	MOWING OR VEGETATION MAINTENANCE	2	TIMES/YEAR	$50	$100	Maintain plantings
	CLEAN NEW OIL/WATER SEPARATOR FACILITY	2	TIMES/YEAR	$350	$700	WQ facility - depending on design
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$3,320**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Replace 196th Street SW Culverts in Existing Location

Project Number: 3 Estimated Cost: $990,000

PROBLEM DESCRIPTION

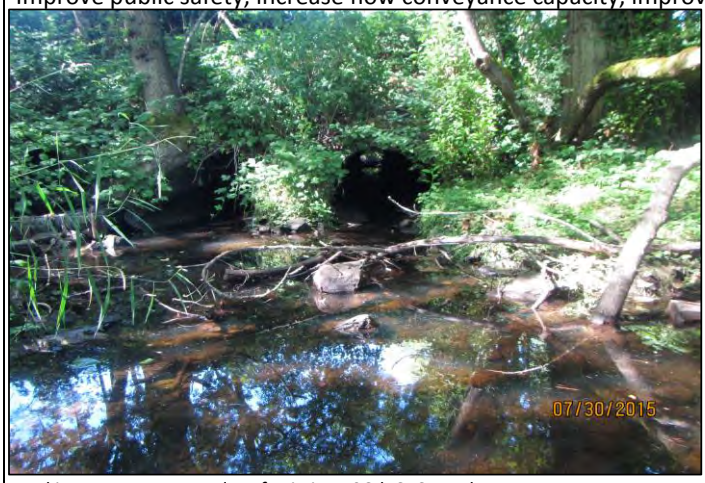
The driveways and parking lots upstream of 196th Street experience flooding during flows more frequent than the 10-year recurrence event, cutting off access to businesses. The 196th Street crossing intersects a natural inflection point in the Scriber Creek stream profile that transitions from steeper slopes upstream of 196th Street to flatter slopes downstream of 196th Street near the approach to Scriber Lake. This profile inflection exacerbates sedimentation and flooding problems in the area and the existing culverts have limited conveyance capacity for both streamflow and suspended sediment.

PROJECT DESCRIPTION

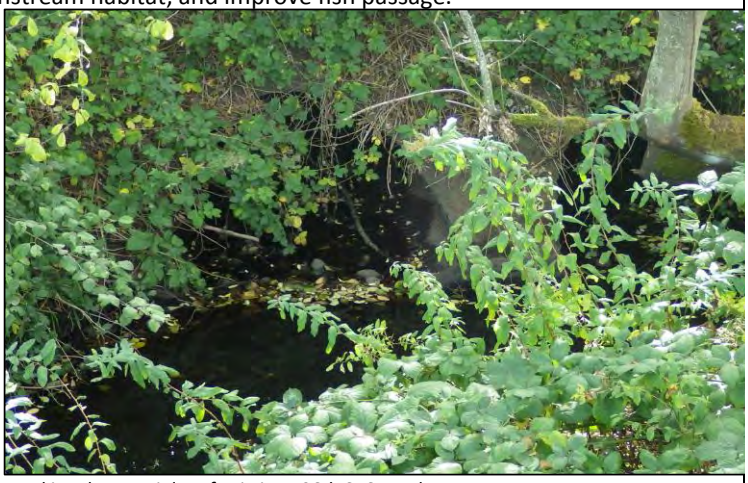
Replace existing twin 5.9-ft wide by 3.7-ft tall arch Corrugated Metal Pipe (CMP) culverts under 196th Street SW with 12.5-ft wide by 6.5-ft tall precast concrete box culverts partially buried per the Washington State Department of Fish and Wildlife (WDFW) guidelines for scour resistance and to provide a natural streambed for physical habitat.

FLOOD BENEFITS OF PROJECT

Replacing the culverts is expected to lower the Scriber Creek water levels to reduce overbank flooding and roadway flooding. This would Improve public safety, increase flow conveyance capacity, improve instream habitat, and improve fish passage.



Looking upstream to outlet of existing 196th St SW culverts.


Looking down to inlet of existing 196th St SW culverts.

FEASIBILITY CONSIDERATIONS

- Within WSDOT ROW: will require significant coordination with WSDOT.
- Cut-and-cover construction.
- Heavy traffic on roadway: temporary traffic control will be required throughout construction.
- Streamflow diversion and/or a flow bypass pipe/pumping likely needed.
- Geotechnical exploration needed for design - assume concrete box structure placed on strip footing.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Washington Wildlife and Recreation Program (WWRP), RCO
- Land and Water Conservation Fund (LWCF), RCO
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council
- Aquatic Lands Enhancement Account (ALEA) Volunteer Cooperative Grant Program, WDFW

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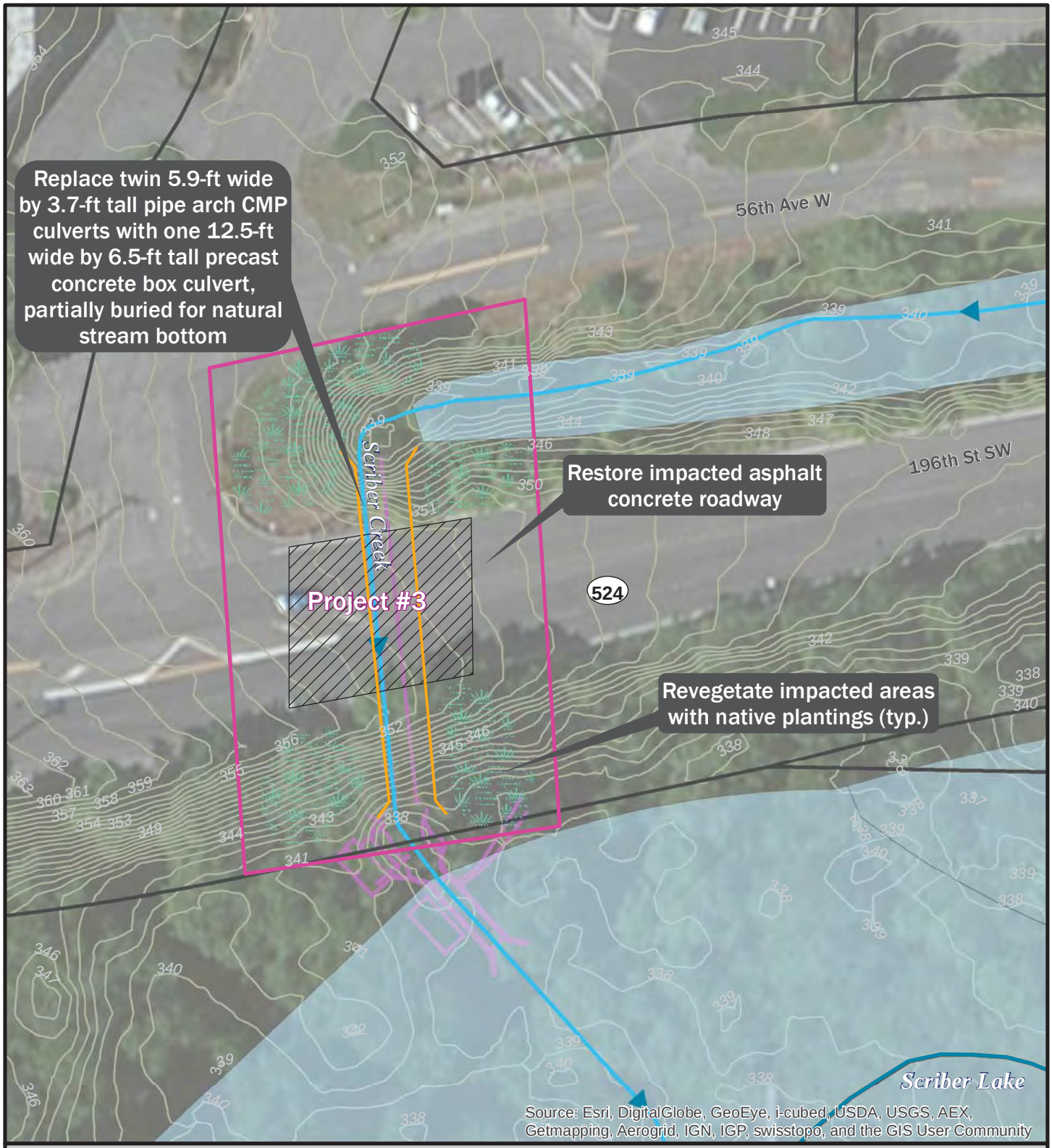

Legend

- Proposed project area
- Parcel
- Scriber Creek
- Revegetation (typ.)
- Proposed culvert
- Proposed asphalt paving
- Existing 1-ft contour
- Surveyed line
- Snohomish County wetland

Project #3 - Replace 196th Street Culverts in Existing Location.

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LYNNWOOD WASHINGTON

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #3: Replace 196th Street SW Culverts.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$35,000	$35,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (20%)	1	LS	$59,000	$59,000	Assumed 20% of const.cost; includes development of Traffic Management Plan, Detour Plan, Traffic Control Plans, variable message signing.
1-05.4	SURVEYING	1	LS	$20,000	$20,000	
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.15	ACRE	$10,000	$1,500	
2-02.5	REMOVE ASPHALT CONC. PAVEMENT	80	SY	$18	$1,440	12' width +3'
2-02.5	REMOVAL OF STRUCTURE AND OBSTRUCTION	1	LS	$20,000	$20,000	Removal and disposal of existing culverts, 42" x 68" twin arches, 90' long
2-03.5	EMBANKMENT COMPACTION	650	CY	$4	$2,600	unit cost from WSDOT bid tabs/UBA
2-09.5	STRUCTURE EXCAVATION CLASS B INCL. HAUL	650	CY	$30	$19,500	unit cost from Lynnwood 53rd Ave - winning bid
2-09.5	SHORING OR EXTRA EXCAVATION CLASS B	2340	SY	$5	$11,700	13' deep, 90' long, unit cost from Lynnwood 53rd Ave - winning bid
SPECIAL	12' W x 6.5' H CONCRETE BOX CULVERT STRUCTURE	1	EA	$108,000	$108,000	90' length; cost from OldCastle incl. delivery
SPECIAL	FOUNDATION PREPARATION	1	LS	$12,000	$12,000	P 187 of the comp plan, price adjusted
SPECIAL	WING WALLS FOR ENTRANCE PROTECTION	1	LS	$18,200	$18,200	cast-in-place concrete; comp plan price adjusted
4-04.5	CRUSHED SURFACING TOP COURSE	36	TN	$35	$1,260	4" thick, unit cost from Lynnwood 53rd Ave - winning bid
5-04.5	HMA CL. 1/2 IN. PG	51	TN	$110	$5,610	6" thick, 2.05TN/CY from WSDOT chapter 620, unit cost from Lynnwood 53rd Ave - winning bid - high number
9-03.11	STREAMBED SEDIMENT	95	TN	$40	$3,800	1' thick, 100' long, 12' width, unit cost from recent projects
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	600	EA	$10.00	$6,000	4' spacing on center, includes establishment
8-11	REMOVING GUARDRAIL	120	LF	$6	$720	unit cost from WSDOT UBA for comparable quantities
9-16	BEAM GAURDRAIL TYPE 31 NON-FLARED	120	LF	$50	$6,000	unit cost from WSDOT UBA for comparable quantities
8-02.3	WET NATIVE SEEDING AND MULCHING	0.15	ACRE	$9,000	$1,350	unit cost from Lynnwood 53rd Ave - winning bid
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$25,000	$25,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000.00	$5,000	
SUBTOTAL CONSTRUCTION COST					$384,680	
SALES TAX				9.8%	$37,700	
TOTAL CONSTRUCTION COST WITH TAX					**$422,400**	
OTHER APPROXIMATED PROJECT COSTS						
SUPPLEMENTAL SITE SURVEY FOR BASEMAPPING				4%	$17,000	
DESIGN				30%	$127,000	
ENVIRONMENTAL PERMITTING				15%	$64,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$64,000	
SPECIAL TESTING AND INSPECTIONS				5%	$22,000	geotechnical investigation and analysis
WSDOT PROJECT REVIEW COORDINATION				10%	$43,000	
SUBTOTAL PROJECT COSTS					$759,400	
PROJECT CONTINGENCY				30%	$228,000	
			TOTAL ESTIMATED PROJECT COST:		**$990,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #3: Replace 196th Street SW Culverts.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	2	TIMES/YEAR	$315	$630	frequency based on O&M table NPDES Phase II (2008)
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	1	TIMES/YEAR	$350	$350	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$1,080**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Raise Old 196th Street SW

Project Number: 4 Estimated Cost: $450,000

PROBLEM DESCRIPTION

The Old 196th Street SW roadway is lower in elevation than high water levels and is expected to flood even if other adjacent conveyance improvements were made. The driveways and parking lots upstream and adjacent to Old 196th Street experience flooding during flows more frequent than the 10-year recurrence event, cutting off access to businesses.

PROJECT DESCRIPTION

Raise the low portions of Old 196th Street roadway about 1 foot to elevation 342 ft (NAVD 88 vertical datum) starting near the west end of the bridge that provides pedestrian access to Wilcox Park. This project would also raise the access driveways for the Great Floors and Parkview Plaza buildings to meet the new elevation of Old 196th Street.

FLOOD BENEFITS OF PROJECT

Raising the roadway would improve access to Parkview Plaza and provide protection from roadway overtopping during the 100-year event, and improved public safety.

December 4, 2007, Flooding of Old 196th looking east

December 4, 2007 Flooding of Old 196th looking west.

FEASIBILITY CONSIDERATIONS

- Coordination with business owners, possibly including time for developing a cost-sharing agreement will be required.
- Need to provide access to businesses during construction.
- Geotechnical analyses needed to assess settling concerns due to additional weight of raised roadway. Overbuilding the road, using lightweight fill, or preloading the roadway may be required.
- Project assumes direct impacts to Scriber Creek buffer but not below the ordinary high water of the creek.
- If raising grade requires grade transitions on private property, temporary construction easements would be required.
- Short retaining wall and guardrail may be required on south side to limit fill within stream buffer.

PERMITS REQUIRED

- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Lynnwood CA Permit with buffer mitigation

POTENTIAL FUNDING SOURCES

- Cost-sharing program with private property owners
- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)

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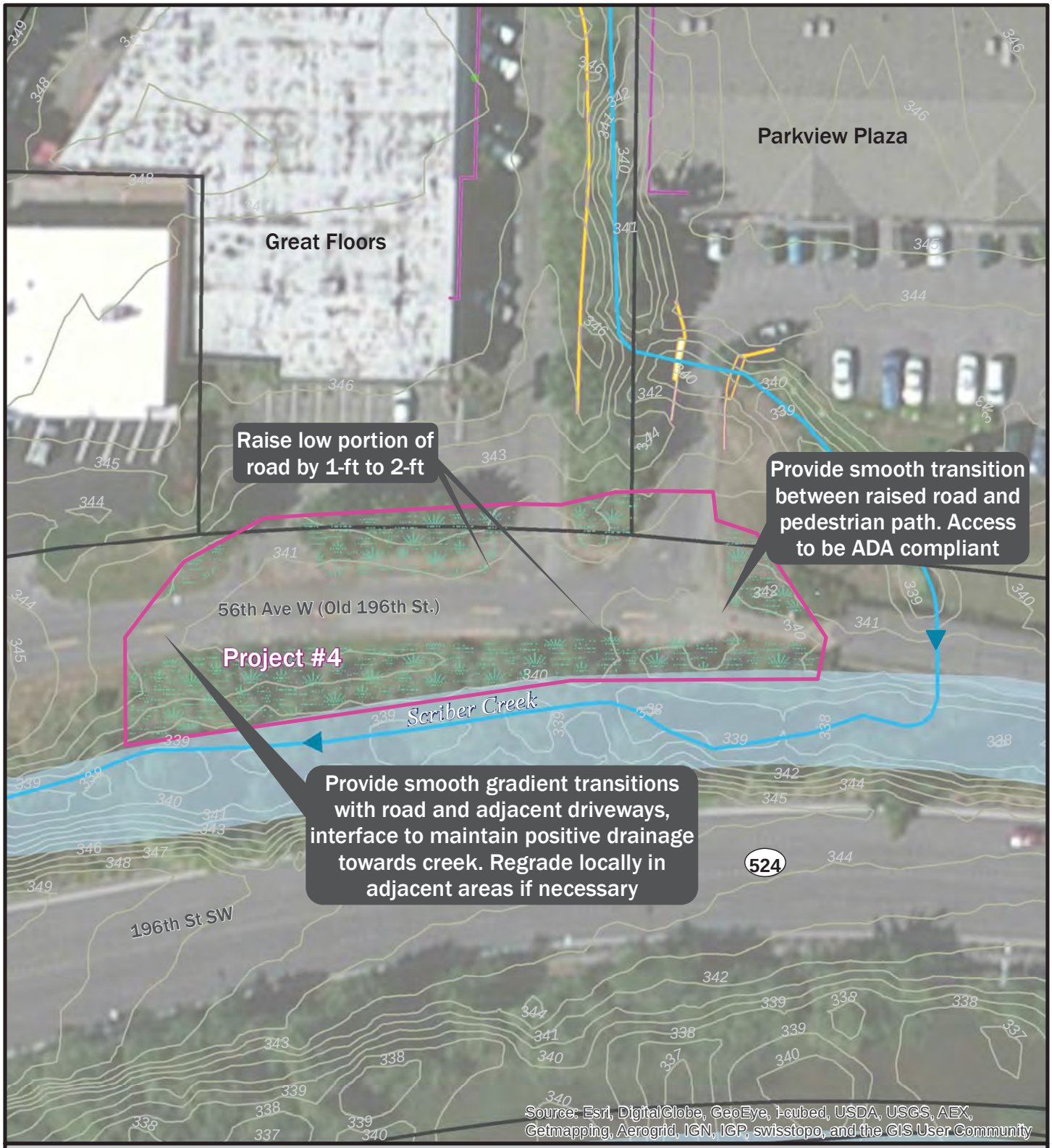

Legend

- Proposed project area
- Scriber Creek
- Revegetation (typ.)
- Existing 1-ft contour
- Surveyed line
- Snohomish County wetland
- Parcel

Project # 4 - Raise Old 196th Street.

N

0 25 50 100 Feet

LYNNWOOD WASHINGTON

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #4: Raise Old 196th Street.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$19,000	$19,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$17,000	$17,000	Assume access to businesses maintained during construction
1-05.4	SURVEYING	1	LS	$10,000	$10,000	
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.1	ACRE	$10,000	$1,000	
2-02.5	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	1	LS	$2,000	$2,000	removal of curb
2-02.5	REMOVAL OF ASPHALT CONC PAVEMENT	1380	SY	$18	$24,840	
2-03.5	GRAVEL BORROW INCL HAUL	600	CY	$30	$18,000	Assumes using gravel borrow to raise lower portions of roadway an average of 1.33ft in places
2-03.5	EMBANKMENT COMPACTION	600	CY	$4	$2,400	
4-04.5	CRUSHED SURFACING TOP COURSE	280	TON	$35	$9,800	Assumes 4IN depth, 1.85 TON/CY compacted dry on roadway
5-04.5	HMA PG 64-22	310	TON	$110	$34,100	Assumes 4IN depth, 2.05 TON/CY installed on roadway
5-04.5	PAVEMENT GEOTEXTILE (PETROMAT)	1380	SY	$3	$4,140	
SPECIAL	WALL-CONCRETE (VARYING HEIGHT)	150	LF	$150	$22,500	(assumed on south side so don't expand into buffer and also require stormwater quality mitigation by new pavement)
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	50	EA	$10.00	$500	native plantings for adjacent riparian areas; 4' spacing on center, includes establishment
8-02.5	SEEDING AND MULCHING	0.1	ACRE	$10,000	$1,000	
8-02.6	LANDSCAPE RESTORATION	1.0	LS	$4,000	$4,000	to restore landscaped areas to pre-construction conditions
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$15,000	$15,000	upland BMPs to prevent erosion and sedimentation
SPECIAL	UTIILITY ADJUSTMENTS	1	LS	$5,000	$5,000	assumes two storm adjustments and two water valve adjustments; raise hydrant
8-11.5	GUARDRAIL	150	LF	$35	$5,250	assumed south side of road for portion of length
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$201,530	
SALES TAX				9.8%	$19,750	
TOTAL CONSTRUCTION COST WITH TAX					**$221,300**	
OTHER APPROXIMATED PROJECT COSTS						
ADMINISTRATIVE COSTS FOR COST-SHARING APPROACH NEGOTIATION				5%	$12,000	
DESIGN				20%	$45,000	
ENVIRONMENTAL PERMITTING				10%	$23,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$34,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				5%	$12,000	
SPECIAL TESTING AND INSPECTIONS				5%	$12,000	
SUBTOTAL PROJECT COSTS					$347,300	
PROJECT CONTINGENCY				30%	$105,000	
			TOTAL ESTIMATED PROJECT COST:		**$450,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #4: Raise Old 196th Street.

PROJECT LIFE CYCLE 10 YEARS shorter project life cycle assuming setting and sedimentation

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	1	TIMES/YEAR	$315	$315	frequency based on O&M table NPDES Phase II (2008)
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	1	TIMES/YEAR	$350	$350	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$765**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Parkview Plaza Culvert Replacement

Project Number: 5 Estimated Cost: $440,000

PROBLEM DESCRIPTION

The Parkview Plaza culvert is undersized. The culvert overtops in the 100-year event and contributes to flooding at Old 196th Street. The backwater created by this undersized culvert encourages Scriber Creek to jump its banks and flood Old 196th Street.

PROJECT DESCRIPTION

Replace driveway and culvert to Parkview Plaza (Lighthouse Diving Center) by replacing the existing 60-inch diameter culvert with a 12.5-ft wide by 5.5-ft high concrete box culvert, and by raising the bank on the west side of the culvert.

FLOOD BENEFITS OF PROJECT

Provides protection to Parkview Plaza access from overtopping for the 100-year event. This also helps reduce the frequency of flooding at Old 196th Street.

December 4, 2007 Flooding downstream of Parkview Plaza

Looking upstream to existing driveway culvert crossing for Parkview Plaza.

FEASIBILITY CONSIDERATIONS

- Project is located on private property; coordination with private business owners, including time for developing a cost-sharing agreement will be required.
- Need to provide access to businesses during construction.
- Streamflow diversion or flow bypass pipe/pumping likely required.
- Additional survey needed to evaluate possible impacts to the private stormwater treatment system serving Great Floors.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- Cost-sharing program with private property owners
- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council

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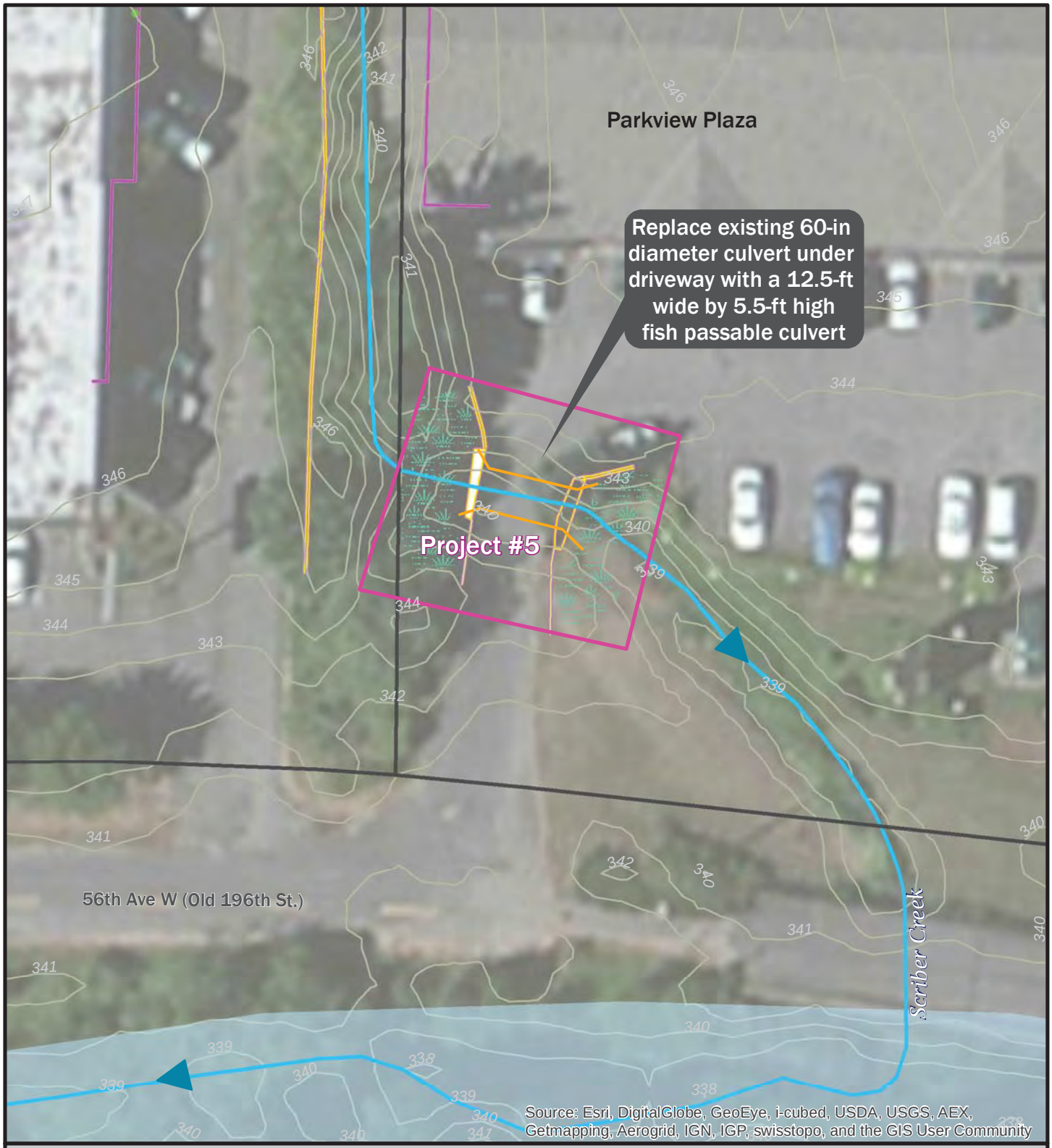

Legend

- Proposed project area
- Scriber Creek
- Revegetation (typ.)
- Proposed culvert
- Existing 1-ft contour
- Surveyed line
- Snohomish County wetland
- Parcel

Project # 5 - Culvert Replacement at Driveway to Parkview Plaza.

N

0 15 30 60 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #5: Parkview Plaza Culvert Replacement and Berm.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$15,000	$15,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$14,000	$14,000	Assume access to businesses maintained during construction
1-05.4	SURVEYING	1	LS	$8,000	$8,000	Cost includes surveying entire site
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.1	ACRE	$10,000	$1,000	
2-02.5	REMOVAL OF ASPHALT CONC PAVEMENT	50	SY	$18	$900	
2-09.5	STRUCTURE EXCAVATION	270	CY	$30	$8,100	
2-09.5	SHORING	600	SF	$5	$3,000	
SPECIAL	12.5'WX5.5'H CONC BOX CULVERT	1	LS	$50,000	$50,000	24' Long, delivered to Lynnwood+ 50% Labor, 13' W
SPECIAL	WING WALLS FOR ENTRANCE PROTECTION	1	LS	$18,150	$18,150	
4-04.5	CRUSED SURFACING TOP COURSE	40	TON	$35	$1,400	1' below culvert and 4" above culvert
9-03.11	STREAMBED SEDIMENT	40	TON	$40	$1,600	
2-03.5	GRAVEL BORROW INCL HAUL	200	CY	$30	$6,000	
5-04.5	HMA PG 64-22	11	TON	$110	$1,210	
SPECIAL	UTILITY ADJUSTMENTS	1	LS	$2,000	$2,000	
8-02.5	SEEDING AND MULCHING	0.1	ACRE	$10,000	$1,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$10,000	$10,000	
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$162,360	
SALES TAX				9.8%	$15,920	
TOTAL CONSTRUCTION COST WITH TAX					**$178,300**	
OTHER APPROXIMATED PROJECT COSTS						
ADMINISTRATIVE COSTS FOR COST-SHARING APPROACH NEGOTIATION				10%	$18,000	
DESIGN				30%	$54,000	
ENVIRONMENTAL PERMITTING				30%	$54,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$27,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				10%	$18,000	
SPECIAL TESTING AND INSPECTIONS				5%	$9,000	
SUBTOTAL PROJECT COSTS					$340,300	
PROJECT CONTINGENCY				30%	$103,000	
			TOTAL ESTIMATED PROJECT COST:		**$440,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #5: Parkview Plaza Culvert Replacement and Berm.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	2	TIMES/YEAR	$315	$630	frequency based on O&M table NPDES Phase II (2008)
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	1	TIMES/YEAR	$350	$350	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$1,080**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Scriber Creek Culvert Replacement at Casa Del Rey Condominiums Driveway

Project Number: 6 Estimated Cost: $630,000

PROBLEM DESCRIPTION

The current Scriber Creek crossing at the Casa Del Rey Condominiums consists of twin 42-inch diameter pipes that are concrete at the inlet but transition to corrugated metal (CMP) at the outlet. The inlets and outlets of these culverts are askew from the north-south alignment of the creek, and about half way across the street, they take a sharp approximate 90-degree bend. The result is that there is significant head loss through this crossing and a high risk for sedimentation within and upstream of the culverts. Scriber Creek overtops the driveway in a 100-year recurrence interval flood event, endangering motorists and pedestrians and causing flooding damage to adjacent properties and several condominium residences.

PROJECT DESCRIPTION

Replace the existing combination of angled twin 42-inch diameter concrete and CMP culverts with one flow-aligned 12.5-ft wide by 5.5-ft tall precast 3-sided concrete culvert. The replacement culvert will be partially buried per Washington Department of Fish and Wildlife (WDFW) guidelines for scour resistance and to provide a natural streambed for physical habitat.

FLOOD BENEFITS OF PROJECT

The replaced culvert provides a 100-year level of protection from flooding, resulting in improved public safety, increased flow conveyance capacity, improved instream habitat, and improved fish passage.

December 3, 2007 overtopping of existing Casa del Rey Culvert.

Looking downstream to inlet of Casa del Rey Culverts.

FEASIBILITY CONSIDERATIONS

- Coordination with private property owners including time for developing a cost-sharing agreement will be required.
- Need to provide access to residences and/or a temporary traffic detour during construction.
- Cut-and-cover construction.
- Streamflow diversion or flow bypass pipe/pumping likely required.
- Bottomless concrete box structure placed on strip footing.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- Cost-sharing program with private property owners
- Salmon Recovery Funding Board
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council

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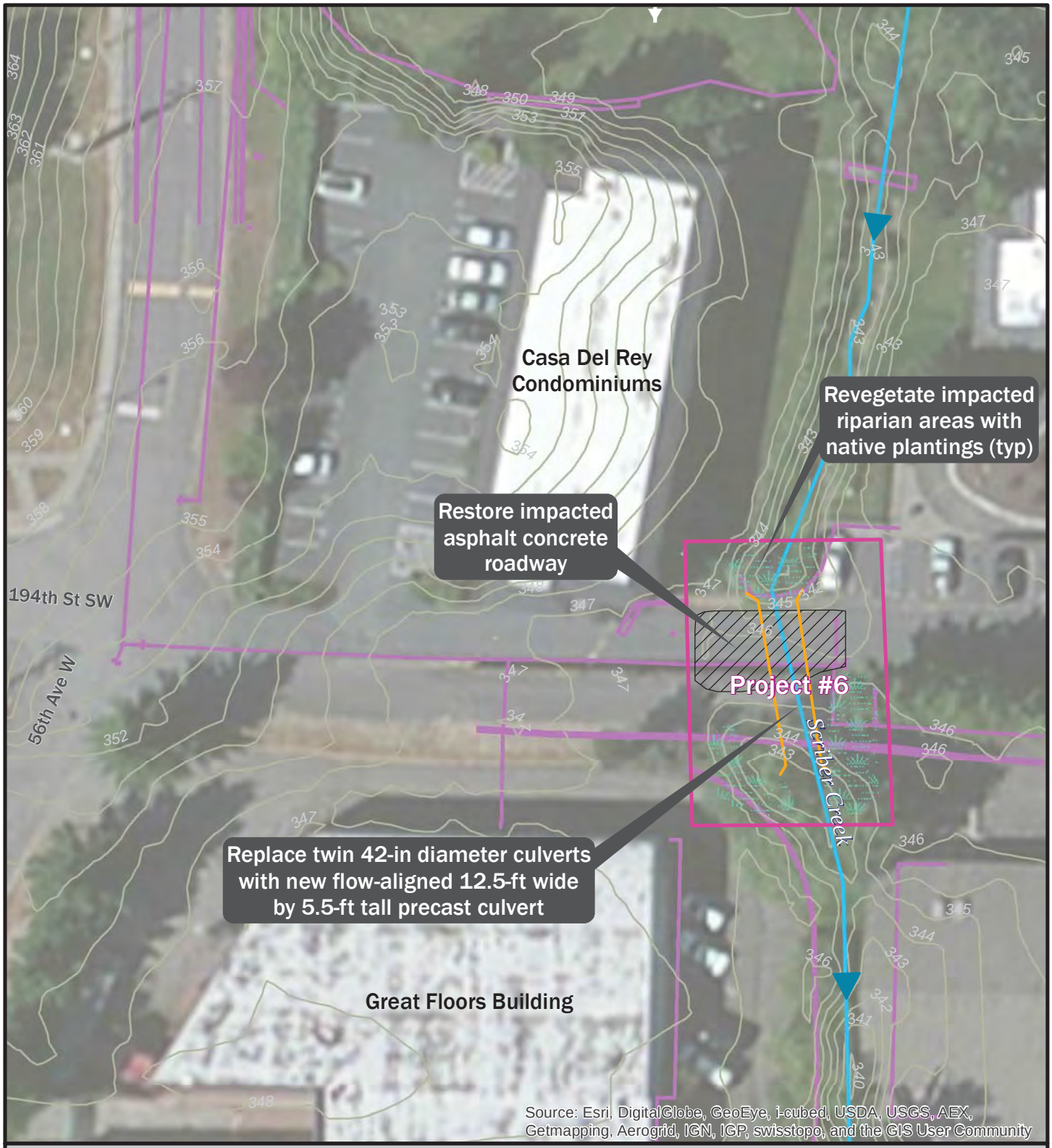

Legend

- Proposed project area
- Scriber Creek
- Revegetation (typ.)
- Proposed culvert
- Proposed asphalt paving
- Existing 1-ft contour
- Surveyed line

Project #6 - Replace Culvert at Casa del Rey.

N

0 20 40 80 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #6: Replace Casa Del Rey Culvert.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$26,000	$26,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (1	1	LS	$23,000	$23,000	Assume access to residences maintained during construction
1-05.4	SURVEYING	1	LS	$20,000	$20,000	
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.05	ACRE	$10,000	$500	
2-02.5	REMOVE ASPHALT CONC. PAVEMENT	80	SY	$18	$1,440	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid - high number
2-02.5	REMOVAL OF STRUCTURE AND OBSTRUCTIO	1	LS	$3,630	$3,630	comp plan, price adjusted
2-03.5	EMBANKMENT COMPACTION	150	CY	$4	$600	comp plan quantity, unit cost from WSDOT bid tabs/UBA
2-09.5	STRUCTURE EXCAVATION CLASS B INCL. HA	220	CY	$30	$6,600	quantity from comp plan, unit cost from Lynnwood 53rd Ave - winning bid
2-09.5	SHORING OR EXTRA EXCAVATION CLASS B	588	SY	$5	$2,940	quantity from comp plan, unit cost from Lynnwood 53rd Ave - winning bid
2-12.5	CONSTRUCTION GEOTEXTILE FOR SOIL STAB	500	SY	$4	$2,000	comp plan quantity, cost WSDOT bid tabs/UBA
SPECIAL	12' W x 5.5' H CONCRETE BOX CULVERT STRU	1	EA	$60,000	$60,000	50' length; cost from OldCastle incl. delivery
SPECIAL	FOUNDATION PREPARATION	1	LS	$12,100	$12,100	comp plan, price adjusted
SPECIAL	WING WALLS FOR ENTRANCE PROTECTION	1	LS	$18,150	$18,150	comp plan, price adjusted
SPECIAL	CULVERT INSTALLATION	1	LS	$36,300	$36,300	comp plan, price adjusted
4-04.5	CRUSHED SURFACING TOP COURSE	20	TN	$35	$700	9 CY from comp plan, unit cost from Lynnwood 53rd Ave - winning bid
5-04.5	HMA CL. 1/2 IN. PG	25	TN	$110	$2,750	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid - high number
9-03.11	STREAMBED SEDIMENT	58	TN	$40	$2,320	27 CY from comp plan, unit cost from Parr and East
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	600	EA	$10.00	$6,000	4' spacing on center, includes establishment
SPECIAL	CHAIN LINK FENCE REMOVAL AND REPLACEI	1	LS	$4,840	$4,840	comp plan, price adjusted
8-02.3	WET NATIVE SEEDING AND MULCHING	0.05	ACRE	$9,000	$450	Lynnwood 53rd Ave - winning bid
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
	BACKFILL FOR STRUCTURAL EARTH WALL IN	150	CY	$50	$7,500	
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$278,820	
SALES TAX				9.8%	$27,330	
TOTAL CONSTRUCTION COST WITH TAX					**$306,100**	
OTHER APPROXIMATED PROJECT COSTS						
ADMINISTRATIVE COSTS FOR COST-SHARING APPROACH NEGOTIATION				5%	$16,000	
DESIGN				20%	$62,000	
ENVIRONMENTAL PERMITTING					$40,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$46,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				5%	$16,000	
SPECIAL TESTING AND INSPECTIONS				5%	$16,000	
SUBTOTAL PROJECT COSTS					$486,100	
PROJECT CONTINGENCY				30%	$146,000	
			TOTAL ESTIMATED PROJECT COST:		**$630,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #6: Replace Casa Del Rey Culvert.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	2	TIMES/YEAR	$315	$630	On private property. O&M not City's responsibility. Cost estimates provided for planning and reference purposes only.
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	0.5	TIMES/YEAR	$350	$175	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$905**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Maximize Off-Channel Storage on Edmonds School District Property

Project Number: 7 Estimated Cost: $3,100,000

PROBLEM DESCRIPTION

Conveyance improvements via culvert replacements throughout the project corridor run the risk of increasing peak flows (as they convey flows more efficiently) downstream. The objective of potentially increasing the storage volume through off-channel floodplain storage at the Edmonds School District Property is to provide additional detention to offset conveyance improvements and prevent an increase in flows to downstream reaches.

PROJECT DESCRIPTION

Maximize off-channel storage on the Edmonds School District Property. This improvement includes creating side-channel flood storage by excavating into an open grassy space along the eastern portion of the School District property. The off-channel floodplain area will be graded to be inundated primarily during peak flood events and to have positive drainage toward the downstream portion of the property to avoid fish stranding. Wetland hummocks and Large Woody Debris (LWD) will be installed for enhanced edge habitat, microtopography, and physical habitat complexity. The entire site will be revegetated with native wetland and riparian vegetation.

FLOOD BENEFITS OF PROJECT

Based on the hydraulic analysis, approximately 0.9 ac-ft of storage could be provided at about the 100-year event, also providing improved instream habitat; greater channel connectivity to floodplain wetland areas; retention of sediments transported from upstream; reduced sediment removal burden in downstream locations.

Looking west across grassy field on Edmonds School District Property.

Looking north across grassy field on Edmonds School District Property.

FEASIBILITY CONSIDERATIONS

- Significant coordination with the Edmonds School District for property subdivision and partial property acquisition.
- Overall elongated project schedule from project planning to implementation expected.
- Coordination with City of Lynnwood Parks Department may be necessary if City decides to bind the land to Wilcox Park.
- Streamflow diversion or flow bypass pipe/pumping likely required.
- Minor bank regrading, and installation of vegetated geogrids or similar bank stabilization measures with reinforced soil and native plantings is likely to be needed, especially along the north or east slopes where seepage could daylight.
- Emphasizing the restoration and habitat enhancement opportunities will support grant applications for the work.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 27 - Restoration)
- CWA Section 401 (Ecology, Certified through NWP 27)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Centennial Grant, Washington State Department of Ecology (Ecology)
- Water Quality: Section 319 Grant, Ecology
- Stormwater Financial Assistance, Ecology
- Washington Wildlife and Recreation Program (WWRP), RCO
- Land and Water Conservation Fund (LWCF), RCO
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council
- Aquatic Lands Enhancement Account (ALEA) Volunteer Cooperative Grant Program, WDFW

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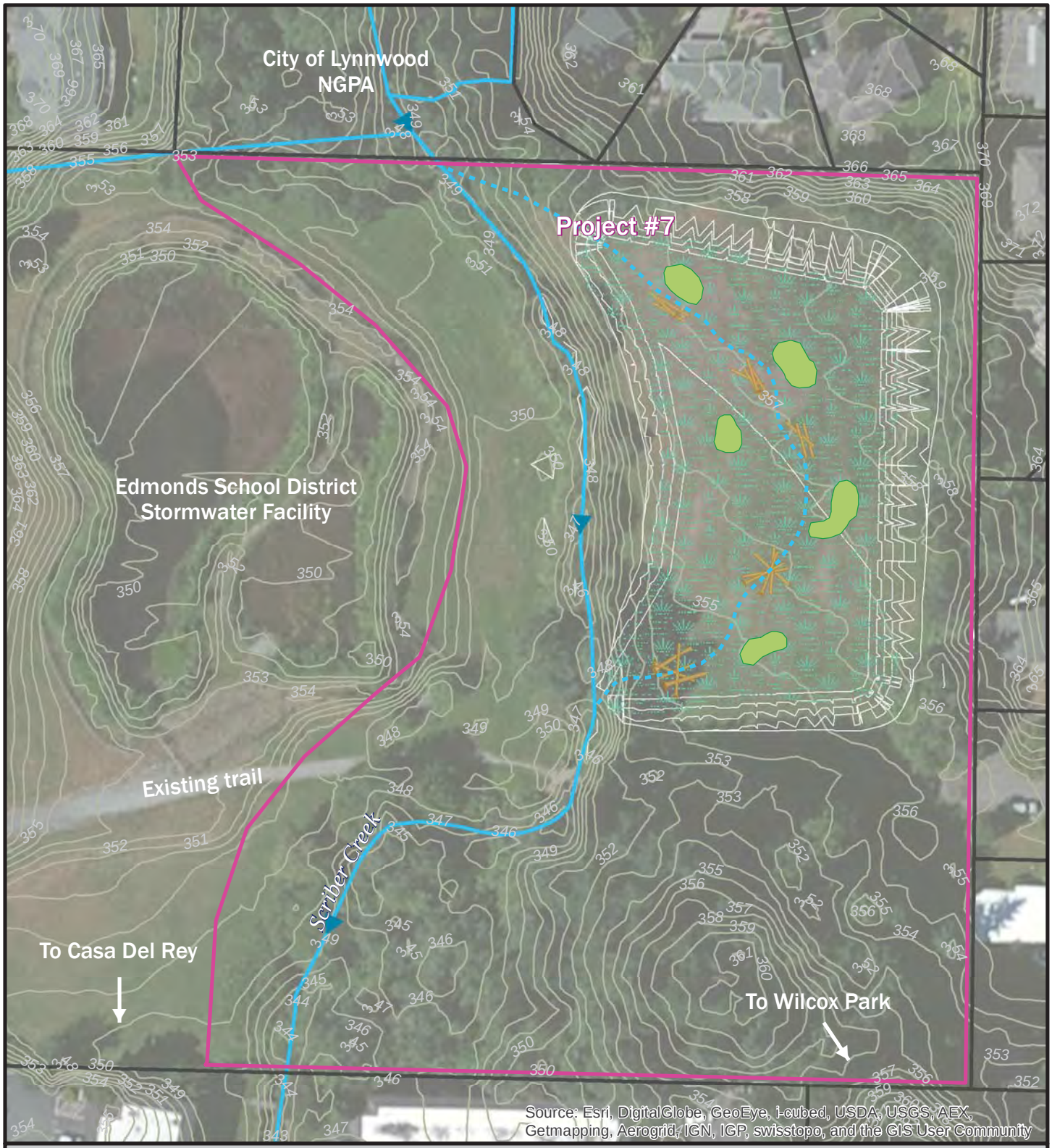

Legend

- Proposed project area (acquired parcel area)
- Scriber Creek
- Proposed high flow side channel alignment
- Revegetation (typ.)
- Wetland hunmocks for edge habitat (typ.)
- LWD
- Proposed project grading
- Existing 1-ft contour
- Parcel

Project #7 - Maximize Off-Channel Storage on Edmonds School District Property.

N

0 37.5 75 150 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #7: Storage Improvements Near School.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$30,000	$30,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$27,000	$27,000	
1-05.4	SURVEYING	1	LS	$20,000	$20,000	Cost includes surveying entire project site and utility locates
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.80	ACRE	$10,000	$8,000	
SPECIAL	BULK EXCAVATION INCL. HAUL	2960	CY	$25	$74,000	200' x 100' x 4', cost from Lynnwood 53rd Ave - winning bid
2.03-5	CHANNEL EXCAVATION INCL. HAUL	150	CY	$50	$7,500	400' long x 5' wide x 2' deep side channel, cost from Lynnwood 204th - winning bid
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	4,000	EA	$10.00	$40,000	approx 4' spacing on center, includes establishment, cost from Lynnwood 53rd Ave - winning bid
8-02.3	WET NATIVE SEEDING AND MULCHING	0.80	ACRE	$9,000	$7,200	200' x300' project area, cost from Lynnwood 204th - winning bid
SPECIAL	LWD GRADE CONTROL AND HABITAT STRUCTURES	5	EA	$6,000	$30,000	Cost based on recent bid tabs for similar stream log structure installations
SPECIAL	NEW PEDESTRIAN BRIDGE ACROSS CREEK	1	LS	$15,000	$15,000	includes new prefabricated pedestrian bridge and cast-in-place footings/foundation
SPECIAL	TRAIL AND SITE IMPROVEMENTS FOR PARKS	1	LS	$15,000	$15,000	Assumes project area will become parks property and require access/trail improvements
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	most excavation outside OHW; short streamflow bypass needed to connect new storage area to creek
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
9-03.11	STREAMBED SEDIMENT	160	TN	$40	$6,400	1' thick in side channel, unit cost from local projects
1-05.18	RECORD DRAWINGS	1	LS	$5,000.00	$5,000	
SUBTOTAL CONSTRUCTION COST					$321,100	
SALES TAX				9.8%	$31,470	
TOTAL CONSTRUCTION COST WITH TAX					**$352,600**	
OTHER APPROXIMATED PROJECT COSTS						
ADMINISTRATIVE COSTS FOR PROPERTY ACQUISITION COORDINATION				5%	$18,000	
AQUIRE PORTION OF EDMONDS SCHOOL DISTRICT PROPERTY					$1,840,000	Snohomish County taxable value, Project acquisition area 3.9 acres of total 6.1 acre parcel
DESIGN				20%	$71,000	
ENVIRONMENTAL PERMITTING					$40,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$53,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				5%	$18,000	
SPECIAL TESTING AND INSPECTIONS				5%	$18,000	
SUBTOTAL PROJECT COSTS					$2,392,600	
PROJECT CONTINGENCY				30%	$718,000	
			TOTAL ESTIMATED PROJECT COST:		**$3,100,000**	Estimate based on 2016 dollars, rounded to nearest $100,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #7: Storage Improvements Near School.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	2	TIMES/YEAR	$315	$630	frequency based on O&M table NPDES Phase II (2008)
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	1	TIMES/YEAR	$350	$350	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$1,080**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Acquire Frequently Flooded Properties Between 188th Street SW and 191st Street SW

Project Number: 8 Estimated Cost: $1,900,000

PROBLEM DESCRIPTION

These properties are generally flooded at the 10-year to 25-year flood event. The objective of this element is to acquire those properties that are already subject to frequent flooding and then allow the City the opportunity to later convert them for additional benefits such as additional flood storage or detention, habitat, or a corridor trail.

PROJECT DESCRIPTION

Acquire frequently flooded properties along Scriber Creek between 188th Street SW and 191st Street SW. No culverts would be replaced under this project. The project assumes that existing structures would be removed. The objective of this improvement would be to reduce flood risk and hazards while also avoiding increases in downstream flows. In addition, some of these properties could possibly be used in the future for improved floodplain reconnection and flood storage, the connection of a recreational trail through the corridor, enhanced wetland and riparian habitat, and possibly for wetland or habitat mitigation for impacts from other projects in the corridor. The estimated project cost provided here does not include some of these potential future improvements.

FLOOD BENEFITS OF PROJECT

Property acquisitions and structure removal reduces flood hazards and risks by removing people and residences away from flooded areas; however, without the culvert replacements, the roadways would still be allowed to overtop in high flows. Yet acquisition preserves some flood attenuation and avoids the potential for increasing downstream peak flows.

November 19, 2012 flooding of residential properties near 189th St SW.

November 19, 2012 flooding of residential properties near 190th St SW.

FEASIBILITY CONSIDERATIONS

- Time required to acquire properties based on acquisition approach adopted by the City.
- Acquisition approach to be consistent with overall City policies and strategies.
- Bank regrading not expected to be necessary; current project assumes no impacts below the ordinary high water (OHW).
- This project provides opportunities for future habitat improvements; however any future work below the OHW would require additional permitting documentation (more than currently assumed for this project).
- Opportunities for future trail corridor through acquired properties.

PERMITS REQUIRED

- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with potential mitigation for impacts during structure demolition and removal (Lynnwood)
- Demoltion Permit (Lynnwood)
- Sewer Capping Permit (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Washington Wildlife and Recreation Program (WWRP), Washington Recreation and Conservation Office (RCO)
- Land and Water Conservation Fund (LWCF), RCO
- Salmon Recovery Funding Board (SRFB) Grant, RCO
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Centennial Grant, Washington State Department of Ecology (Ecology)
- Water Quality: Section 319 Grant, Ecology
- Stormwater Financial Assistance, Ecology
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council
- Aquatic Lands Enhancement Account (ALEA) Volunteer Cooperative Grant Program, WDFW
- Pre-Disaster Mitigation Funding, Federal Emergency Management Agency (FEMA)

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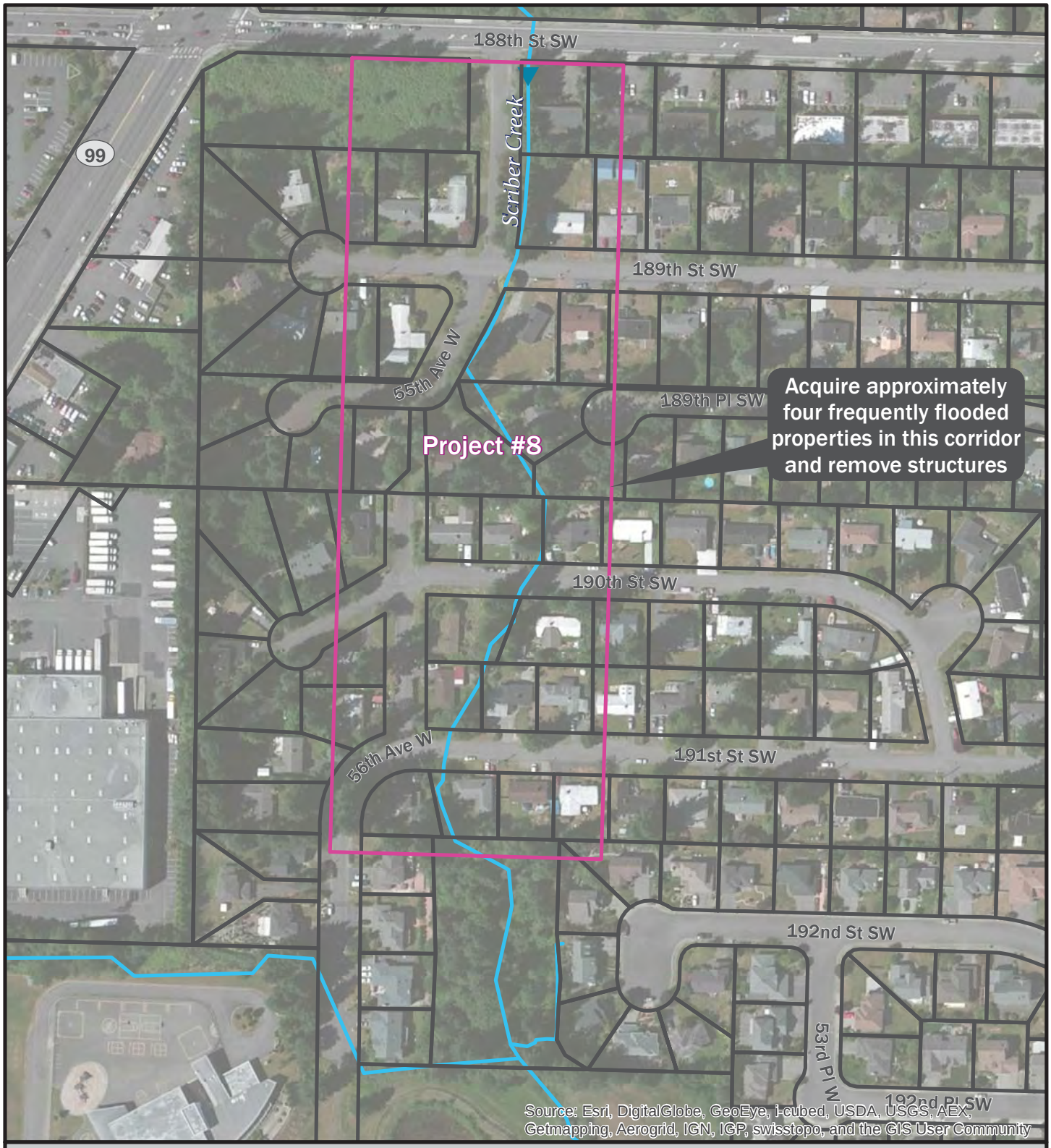

Legend

- Proposed project area
- Scriber Creek
- Parcel

Project #8 - Acquire Frequently Flooded Properties Between 188th Street and 191st Street.

N

0 100 200 400 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #8 Acquire Properties Between 188th and 191st Streets.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$14,000	$14,000	percentage of construction costs only, does not include purchase
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
1-05.4	SURVEYING	1	LS	$20,000	$20,000	Cost includes surveying entire project site and utility locates
2-01.5	CLEARING AND GRUBBING	0.435	ACRE	$10,000	$4,350	removal of invasive plants and non-native vegetation
SPECIAL	PURCHASE 189TH PROPERTY	1	LS	$342,000	$342,000	Snohomish County taxable value $283,200, lot size 10,018 sf
SPECIAL	PURCHASE 190TH PROPERTY	1	LS	$283,000	$283,000	Snohomish County taxable value, lot size 8,712 sf
SPECIAL	PURCHASE 55TH AVE PROPERTY 1	1	LS	$269,000	$269,000	Snohomish County taxable value, lot size 11,325 sf
SPECIAL	PURCHASE 55TH AVE PROPERTY 2	1	LS	$283,000	$283,000	Snohomish County taxable value, lot size 7,840 sf
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	2,700	EA	$10.00	$27,000	4' spacing on center, includes establishment
8-02.3	WET NATIVE SEEDING AND MULCHING	0.87	ACRE	$9,000	$7,830	Lynnwood 53rd Ave - winning bic
SPECIAL	HOUSE DEMOLITION AND REMOVAL	4	EA	$25,000	$100,000	including foundation removal, includes all associated permitting
1-05.18	RECORD DRAWINGS	1	LS	$5,000.00	$5,000	
SUBTOTAL CONSTRUCTION COST					$179,180	Does not include property purchase
SALES TAX				9.8%	$17,560	
TOTAL CONSTRUCTION COST WITH TAX					**$196,740**	Does not include property purchase
OTHER APPROXIMATED PROJECT COSTS						
ADMINISTRATIVE COSTS FOR PROPERTY ACQUISITION COORDINATION				5%	$10,000	
DESIGN		1	LS	$10,000	$10,000	planting design
ENVIRONMENTAL PERMITTING					$15,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$30,000	does not include the property purchase
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				10%	$20,000	includes internal City coordination and planning
SPECIAL TESTING AND INSPECTIONS				5%	$10,000	does not include the property purchase
SUBTOTAL PROJECT COSTS					$1,458,740	includes property acquisition
PROJECT CONTINGENCY				30%	$438,000	
			TOTAL ESTIMATED PROJECT COST:		**$1,900,000**	Estimate based on 2016 dollars, rounded to nearest $100,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #8 Acquire Properties Between 188th and 191st Streets.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	4	TIMES/YEAR	$315	$1,260	assumes once/property (4 properties total)
	MOWING	4	TIMES/YEAR	$50	$200	Maintain plantings once per/property
	VACTOR TRUCK REMOVAL	4	TIMES/YEAR	$350	$1,400	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$2,860**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Replace 191st Street SW Culvert

Project Number: 9a Estimated Cost: $510,000

PROBLEM DESCRIPTION

Scriber Creek overtops 191st Street SW in a 20-year recurrence interval flood event, disrupting traffic, endangering motorists and pedestrians, and causing flooding damage to adjacent properties. This culvert also contributes to flooding of the roadway and single family residences at 190th Street SW.

PROJECT DESCRIPTION

Replace the existing 42-ft long 48-inch diameter culvert with new fish passable 8-ft wide by 5.5-ft high culvert counter sunk per Washington Department of Fish and Wildlife (WDFW) guidelines for scour resistance and to provide a natural streambed for physical habitat.

FLOOD BENEFITS OF PROJECT

Replacing the culvert is expected to lower the Scriber Creek water levels to reduce overbank flooding and roadway flooding. This would Improve public safety, increase flow conveyance capacity, improve instream habitat, and improve fish passage.

Looking upstream to existing channel and culvert inlet at 191st ST SW.

Looking downstream to existing culvert inlet at 191st ST SW.

FEASIBILITY CONSIDERATIONS

- Cut-and-cover construction.
- Temporary traffic detour during installation.
- Streamflow diversion and/or a flow bypass pipe/pumping likely needed.
- Bottomless concrete box structure placed on strip footing.
- Geotechnical exploration needed for design.
- Instream grade controls needed on downstream side to raise water surface profile through culvert.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council

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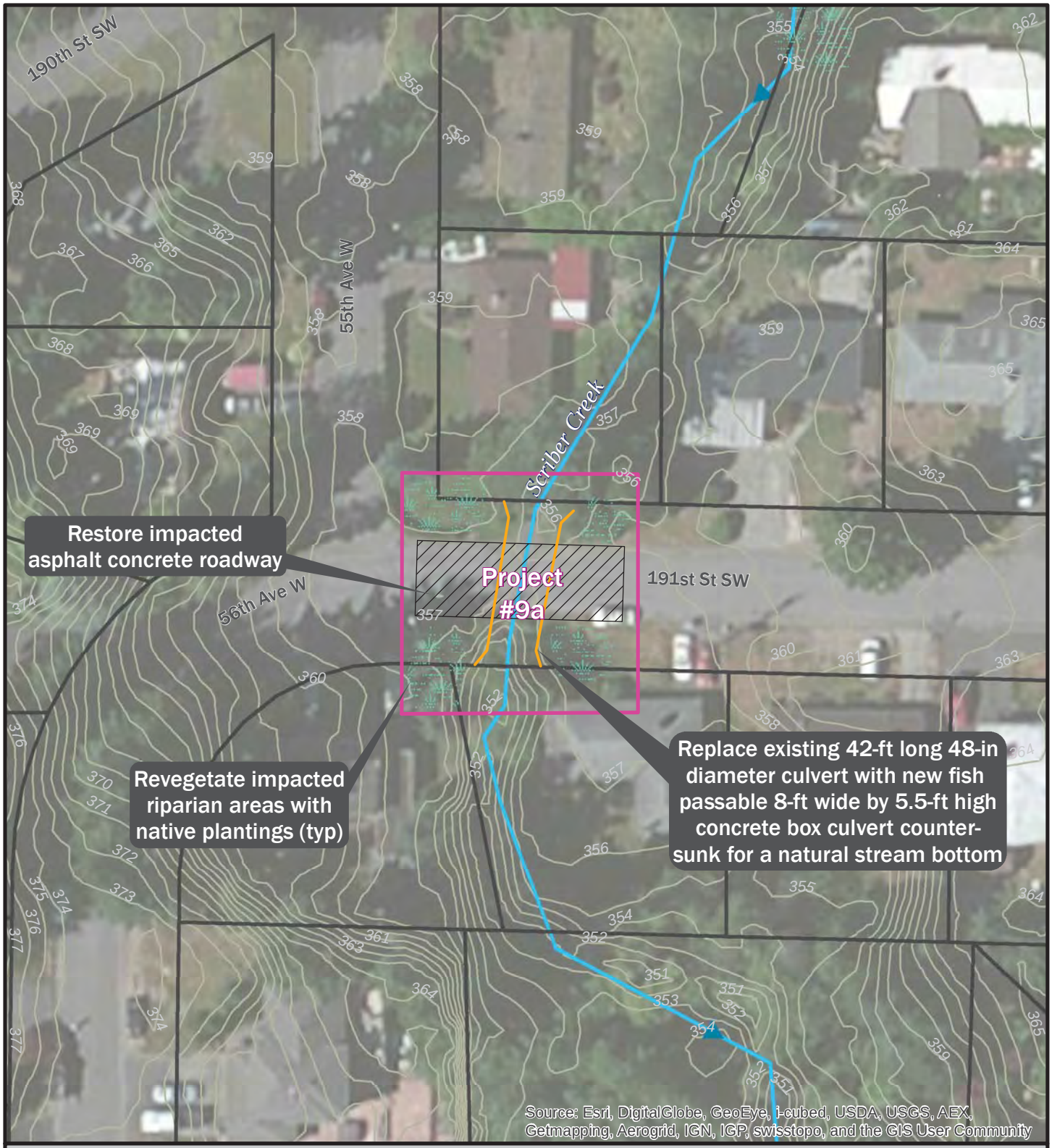

Legend

- Proposed project area
- Scriber Creek
- Revegetation (typ.)
- Proposed culvert
- Proposed asphalt paving
- Existing 1-ft contour
- Parcel

Project #9a - Replace 191st Street SW Culvert.

N

0 25 50 100 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #9a: Replace 191st Street Culvert.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$20,000	$20,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$19,000	$19,000	
1-05.4	SURVEYING	1	LS	$20,000	$20,000	Cost includes surveying entire project site and utility locates
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.05	ACRE	$10,000	$500	
2-02.5	REMOVE ASPHALT CONC. PAVEMENT	60	SY	$18	$1,080	comp plan quanitity, cost from WSDOT bid tabs for smaller project areas
2-02.5	REMOVAL OF STRUCTURE AND OBSTRUCTION	1	LS	$2,420	$2,420	comp plan, price adjusted
2-09.5	STRUCTURE EXCAVATION CLASS B INCL. HAUL	160	CY	$30	$4,800	comp plan quanitity, unit cost from Lynnwood 53rd Ave - winning bid
2-09.5	SHORING OR EXTRA EXCAVATION CLASS B	630	SY	$5	$3,150	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid
SPECIAL	8' W x 5.5' H CONCRETE BOX CULVERT STRUCTURE	1	EA	$29,400	$29,400	42' length; price from OldCastle incl delivery
SPECIAL	FOUNDATION PREPARATION	1	LS	$9,680	$9,680	comp plan, price adjusted
SPECIAL	WING WALLS FOR ENTRANCE PROTECTION	1	LS	$18,150	$18,150	comp plan, price adjusted
SPECIAL	CULVERT INSTALLATION	1	LS	$30,250	$30,250	comp plan, price adjusted
SPECIAL	CHANNEL GRADE CONTROL STRUCTURES	1	LS	$6,050	$6,050	comp plan, price adjusted
4-04.5	CRUSHED SURFACING TOP COURSE	13	TN	$35	$455	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid
5-04.5	HMA CL. 1/2 IN. PG	17	TN	$110	$1,870	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid - high number
9-03.11	STREAMBED SEDIMENT	39	TN	$40	$1,560	comp plan quanitity, unit cost from Parr and East
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	650	EA	$10.00	$6,500	4' spacing on center, includes establishment
SPECIAL	GUARD RAIL REMOVAL AND REPLACEMENT	1	LS	$3,630	$3,630	comp plan, price adjusted
8-02.3	WET NATIVE SEEDING AND MULCHING	0.05	ACRE	$9,000	$450	Lynnwood 53rd Ave - winning bid
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$219,945	
SALES TAX				9.8%	$21,560	
TOTAL CONSTRUCTION COST WITH TAX					**$241,500**	
OTHER APPROXIMATED PROJECT COSTS						
DESIGN				20%	$49,000	
ENVIRONMENTAL PERMITTING					$40,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications; permitting costs could be significantly reduced if bundled with other adjacent culvert projects
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$37,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				5%	$13,000	
SPECIAL TESTING AND INSPECTIONS				5%	$13,000	
SUBTOTAL PROJECT COSTS					$393,500	
PROJECT CONTINGENCY				30%	$119,000	
			TOTAL ESTIMATED PROJECT COST:		**$510,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #9a: Replace 191st Street Culvert.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	2	TIMES/YEAR	$315	$630	frequency based on O&M table NPDES Phase II (2008)
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	0.5	TIMES/YEAR	$350	$175	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$905**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Replace 190th Street SW Culvert

Project Number: 9b Estimated Cost: $660,000

PROBLEM DESCRIPTION

Scriber Creek overtops 190th Street SW in a 10-year recurrence interval flood event, disrupting traffic, endangering motorists and pedestrians, and causing flooding damage to adjacent properties.

PROJECT DESCRIPTION

Replace the existing 46-ft long 6-ft wide by 4-ft high box culvert with new fish passable 12-ft wide by 5.5-ft high culvert counter sunk per Washington Department of Fish and Wildlife (WDFW) guidelines for scour resistance and to provide a natural streambed for physical habitat.

FLOOD BENEFITS OF PROJECT

Replacing the culvert is expected to lower the Scriber Creek water levels to reduce overbank flooding and roadway flooding. This would Improve public safety, increase flow conveyance capacity, improve instream habitat, and improve fish passage.

November 19, 2012 flooding of 190th St SW, looking east.

November 19, 2012 flooding of 190th St SW, looking west.

FEASIBILITY CONSIDERATIONS

- Cut-and-cover construction.
- Temporary traffic detour during installation.
- Streamflow diversion and/or a flow bypass pipe/pumping likely needed.
- Bottomless concrete box structure placed on strip footing.
- Geotechnical exploration needed for design.
- Instream grade controls needed on downstream side to raise water surface profile through culvert.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council

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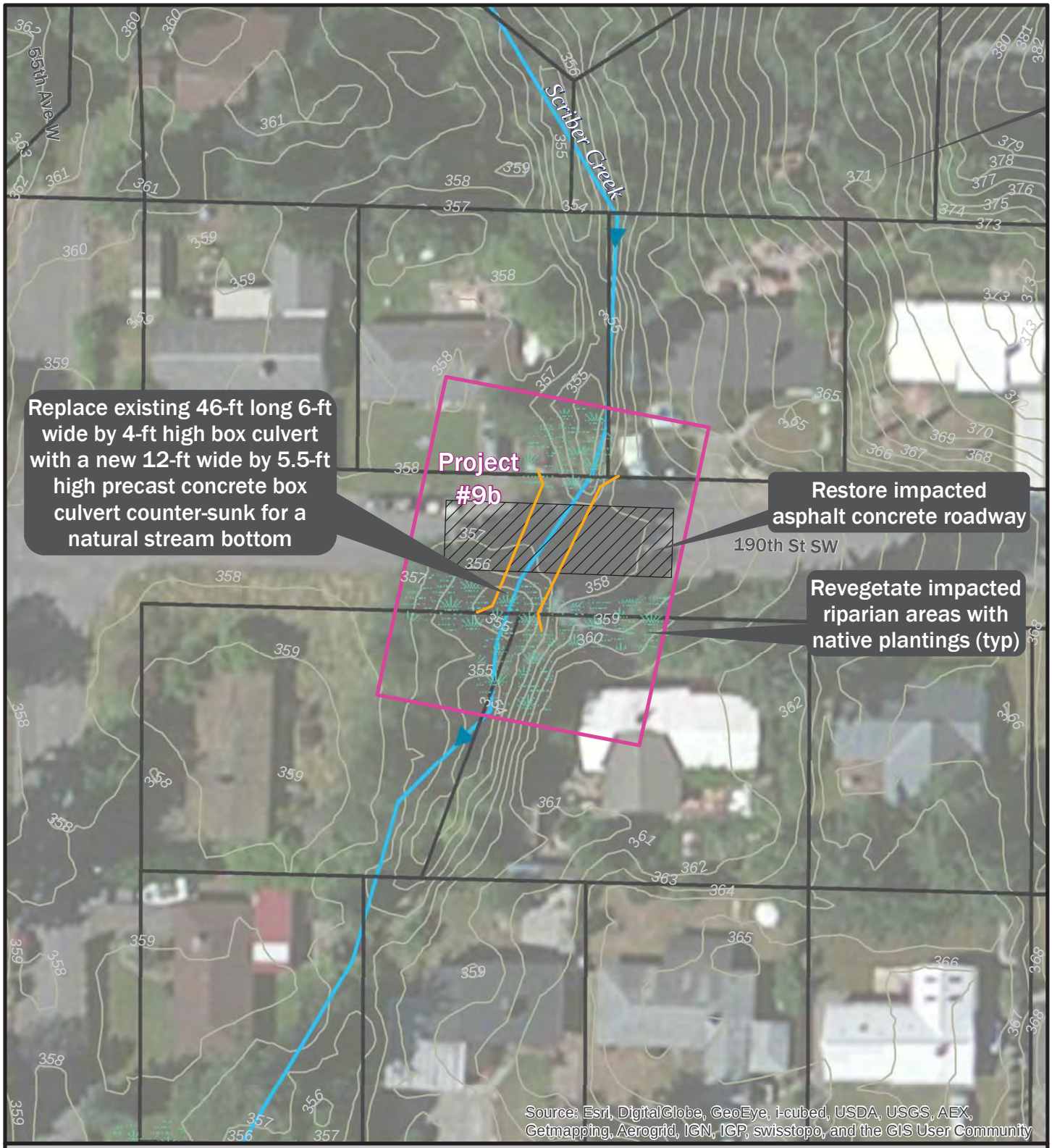

Legend

- Proposed project area
- Scriber Creek
- Revegetation (typ.)
- Proposed culvert
- Proposed asphalt paving
- Existing 1-ft contour
- Parcel

Project #9b - Replace 190th Street SW Culvert.

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LYNNWOOD WASHINGTON

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #9b: Replace 190th Street Culvert.						
Spec Section	**Bid Item Description**	**Quantity**	**Unit**	**Unit Cost**	**Amount**	**Assumptions/Notes**
1-09.7	MOBILIZATION (10%)	1	LS	$27,000	$27,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$25,000	$25,000	
1-05.4	SURVEYING	1	LS	$20,000	$20,000	Cost includes surveying entire project site and utility locates
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.05	ACRE	$10,000	$500	
2-02.5	REMOVE ASPHALT CONC. PAVEMENT	50	SY	$18	$900	12' +3' width x 30' length
2-02.5	REMOVAL OF STRUCTURE AND OBSTRUCTION	1	LS	$8,470	$8,470	comp plan, pride adjusted, assumes culvert will be salvaged
2-09.5	STRUCTURE EXCAVATION CLASS B INCL. HAUL	180	CY	$30	$5,400	unit cost from Lynnwood 53rd Ave - winning bid
2-09.5	SHORING OR EXTRA EXCAVATION CLASS B	644	SY	$5	$3,220	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid
SPECIAL	12' W x 5.5' H CONCRETE BOX CULVERT STRUCTURE	1	EA	$55,200	$55,200	42' length; price from OldCastle incl delivery
SPECIAL	FOUNDATION PREPARATION	1	LS	$12,000	$12,000	based on similar projects in comp plan
SPECIAL	WING WALLS FOR ENTRANCE PROTECTION	1	LS	$18,150	$18,150	comp plan, price adjusted
SPECIAL	CULVERT INSTALLATION	1	LS	$36,300	$36,300	comp plan, price adjusted
SPECIAL	CHANNEL REGRADING AND GRADE CONTROL STRUCTU	1	LS	$24,200	$24,200	comp plan, price adjusted
4-04.5	CRUSHED SURFACING TOP COURSE	13	TN	$35	$455	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid
5-04.5	HMA CL. 1/2 IN. PG	17	TN	$110	$1,870	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid - high number
9-03.11	STREAMBED SEDIMENT	61	TN	$40	$2,440	comp plan quanitity, unit cost from Parr and East
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	650	EA	$10.00	$6,500	4' spacing on center, includes establishment
SPECIAL	GUARD RAIL REMOVAL AND REPLACEMENT	1	LS	$3,630	$3,630	comp plan, price adjusted
8-02.3	WET NATIVE SEEDING AND MULCHING	0.05	ACRE	$9,000	$450	Lynnwood 53rd Ave - winning bid
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$292,685	
SALES TAX				9.8%	$28,690	
TOTAL CONSTRUCTION COST WITH TAX					**$321,400**	
OTHER APPROXIMATED PROJECT COSTS						
DESIGN				20%	$65,000	
ENVIRONMENTAL PERMITTING					$40,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications; permitting costs could be significantly reduced if bundled with other adjacent culvert projects
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$49,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				5%	$17,000	
SPECIAL TESTING AND INSPECTIONS				5%	$17,000	
SUBTOTAL PROJECT COSTS					$509,400	
PROJECT CONTINGENCY				30%	$153,000	
			TOTAL ESTIMATED PROJECT COST:		**$660,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #9b: Replace 190th Street Culvert.						
PROJECT LIFE CYCLE		30 YEARS				
	Maintenance Activity Type	**Frequency**	**Unit**	**Unit Cost/Time**	**Annual Amount**	**Assumptions/Notes**
	INSPECTION	2	TIMES/YEAR	$315	$630	frequency based on O&M table NPDES Phase II (2008)
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	0.5	TIMES/YEAR	$350	$175	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$905**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Replace 189th Street SW Culvert

Project Number: 9c Estimated Cost: $550,000

PROBLEM DESCRIPTION

Scriber Creek overtops 189th Street SW in a 10-year recurrence interval flood event, disrupting traffic, endangering motorists and pedestrians, and causing flooding damage to adjacent properties.

PROJECT DESCRIPTION

Replace the existing 42-ft long 42-inch diameter culvert with new fish passable 10-ft wide by 5.5-ft high culvert counter sunk per Washington Department of Fish and Wildlife (WDFW) guidelines for scour resistance and to provide a natural streambed for physical habitat.

FLOOD BENEFITS OF PROJECT

Replacing the culvert is expected to lower the Scriber Creek water levels to reduce overbank flooding and roadway flooding. This would Improve public safety, increase flow conveyance capacity, improve instream habitat, and improve fish passage.

Looking downstream to inlet of existing 189th St SW culvert.

Looking upstream to outlet of existing 189th St SW culvert.

FEASIBILITY CONSIDERATIONS

- Cut-and-cover construction.
- Temporary traffic detour during installation.
- Streamflow diversion and/or a flow bypass pipe/pumping likely needed.
- Bottomless concrete box structure placed on strip footing.
- Geotechnical exploration needed for design.
- Instream grade controls needed on downstream side to raise water surface profile through culvert.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council

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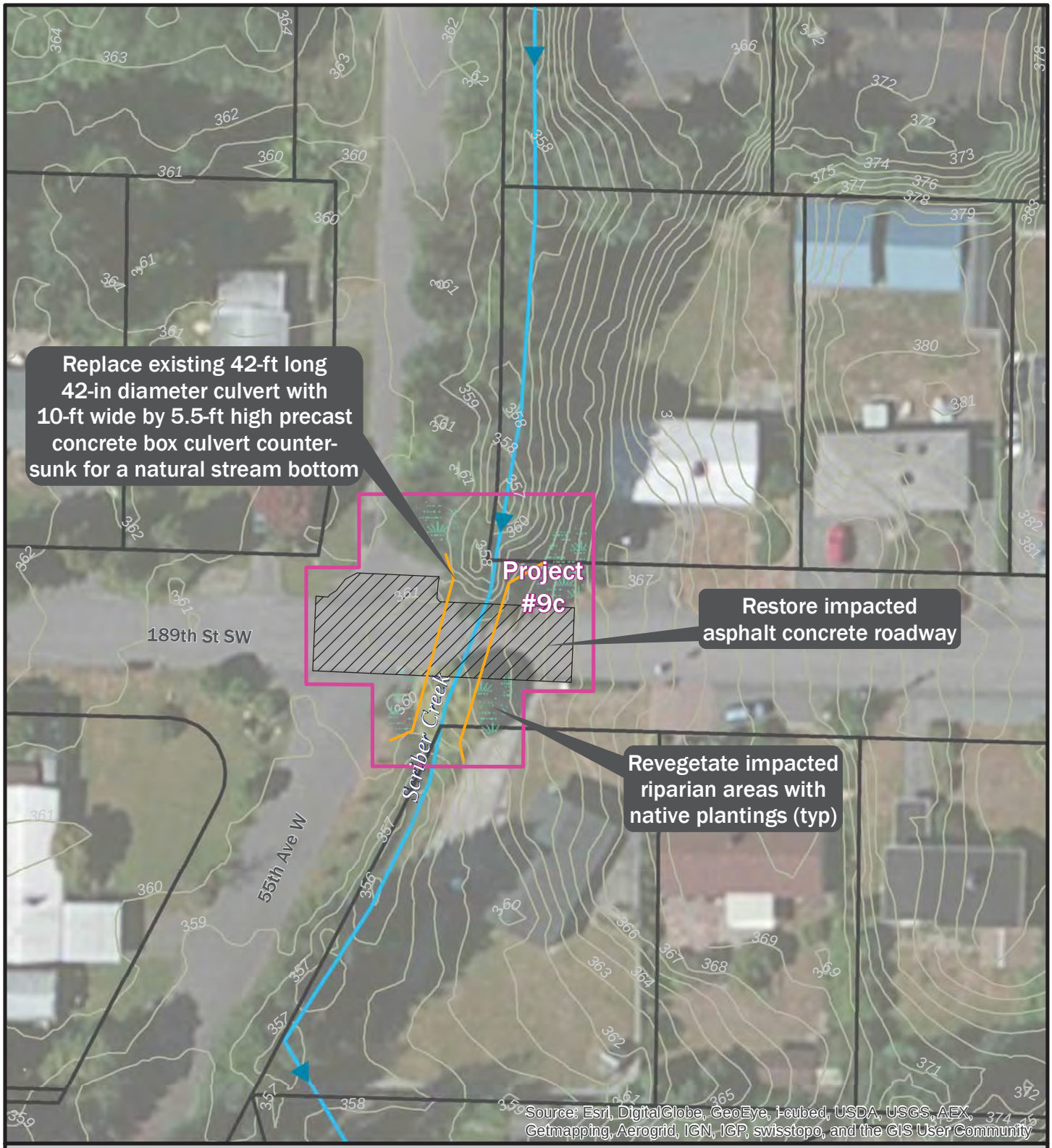

Legend

- Proposed project area
- Scriber Creek
- Revegetation (typ.)
- Proposed culvert
- Proposed asphalt paving
- Existing 1-ft contour
- Parcel

Project #9c - Replace 189th Street SW Culvert.

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LYNNWOOD WASHINGTON

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #9c: Replace 189th Street Culvert.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$22,000	$22,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$20,000	$20,000	
1-05.4	SURVEYING	1	LS	$20,000	$20,000	Cost includes surveying entire project site and utility locates
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.05	ACRE	$10,000	$500	
2-02.5	REMOVE ASPHALT CONC. PAVEMENT	70	SY	$18	$1,260	comp plan quanitity, cost from WSDOT bid tabs for smaller project areas
2-02.5	REMOVAL OF STRUCTURE AND OBSTRUCTION	1	LS	$3,630	$3,630	comp plan, price adjusted
2-09.5	STRUCTURE EXCAVATION CLASS B INCL. HAUL	350	CY	$30	$10,500	comp plan quanitity, unit cost from Lynnwood 53rd Ave - winning bid
2-09.5	SHORING OR EXTRA EXCAVATION CLASS B	924	SY	$5	$4,620	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid
SPECIAL	10' W x 5.5' H CONCRETE BOX CULVERT STRUCTURE	1	EA	$39,900	$39,900	42' length; price from OldCastle incl delivery
SPECIAL	FOUNDATION PREPARATION	1	LS	$12,000	$12,000	estimate based on other culverts
SPECIAL	WING WALLS FOR ENTRANCE PROTECTION	1	LS	$18,150	$18,150	complan, price adjusted
SPECIAL	CULVERT INSTALLATION	1	LS	$24,200	$24,200	comp plan, price adjusted
SPECIAL	CHANNEL GRADE CONTROL STRUCTURES	1	LS	$6,050	$6,050	comp plan, price adjusted
4-04.5	CRUSHED SURFACING TOP COURSE	18	TN	$35	$630	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid
5-04.5	HMA CL. 1/2 IN. PG	22	TN	$110	$2,420	comp plan quantity, unit cost from Lynnwood 53rd Ave - winning bid - high number
9-03.11	STREAMBED SEDIMENT	58	TN	$40	$2,320	comp plan quanitity, unit cost from Parr and East
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	650	EA	$10.00	$6,500	4' spacing on center, includes establishment
SPECIAL	GUARD RAIL REMOVAL AND REPLACEMENT	1	LS	$3,630	$3,630	comp plan, price adjusted
8-02.3	WET NATIVE SEEDING AND MULCHING	0.05	ACRE	$9,000	$450	Lynnwood 53rd Ave - winning bid
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000.00	$5,000	
SUBTOTAL CONSTRUCTION COST					$239,760	
SALES TAX				9.8%	$23,500	
TOTAL CONSTRUCTION COST WITH TAX					**$263,300**	
OTHER APPROXIMATED PROJECT COSTS						
DESIGN				20%	$53,000	
ENVIRONMENTAL PERMITTING					$40,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications; permitting costs could be significantly reduced if bundled with other adjacent culvert projects
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$40,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				5%	$14,000	
SPECIAL TESTING AND INSPECTIONS				5%	$14,000	
SUBTOTAL PROJECT COSTS					$424,300	
PROJECT CONTINGENCY				30%	$128,000	
			TOTAL ESTIMATED PROJECT COST:		**$550,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #9c: Replace 189st Street Culvert.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	2	TIMES/YEAR	$315	$630	frequency based on O&M table NPDES Phase II (2008)
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	0.5	TIMES/YEAR	$350	$175	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$905**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: 188th Street SW Flood Wall

Project Number: 10 Estimated Cost: $380,000

PROBLEM DESCRIPTION

The existing culvert crossing below 188th Street SW is a constriction and backwaters up into the wetland area north of 188th Street SW until the roadway is overtopped. Scriber Creek overtops 188th Street SW in a 10-year recurrence interval flood event, disrupting traffic, endangering motorists and pedestrians, and causing flooding damage to adjacent properties.

PROJECT DESCRIPTION

Construct about 200 linear feet of a short, approximately 1.5-ft high, concrete wall to elevation 364.6 ft +/- (NAVD 88 vertical datum) along the north side of 188th Street SW in the vicinity of the Scriber Creek culvert crossing (at the low point in the road) to reduce the frequency of roadway overtopping and provide additional flood storage upstream. This wall would encourage further backwater and flood storage in the vacant property owned by the City of Lynnwood just north of 188th St SW. The wall would be designed with a short section of overflow weir to concentrate flows that overtop the wall, so that the wall does not fail during overtopping flows. A handrail will be added on top of wall to replace the existing fence and rail that would need to be removed to make room for the new wall.

FLOOD BENEFITS OF PROJECT

Reduces the frequency of roadway overtopping to the 25-year event. Also decreases downstream flow by creating upstream storage. This project improvement would add about 2.9 acre-feet of flood storage in the 100-year event. Additional storage would be provided if Project 11 is implemented.

December 4, 2007 overtopping of 188th Street SW.

Looking north across 188th St SW to location of potential flood wall.

FEASIBILITY CONSIDERATIONS

- Need to align the wall to avoid hydrant and allow for minimum clear distance.
- Need approval from City of Lynnwood transportation department because the wall would be within the clear zone.
- Some traffic control and lane closures are expected during construction so that machinery can access via the sidewalk and westbound lane.
- If existing subsoils are soft and unsuitable for a wall foundation, soil excavation and replacement with structural fill may be necessary.

PERMITS REQUIRED

- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with potential mitigation for impacts to buffers (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)

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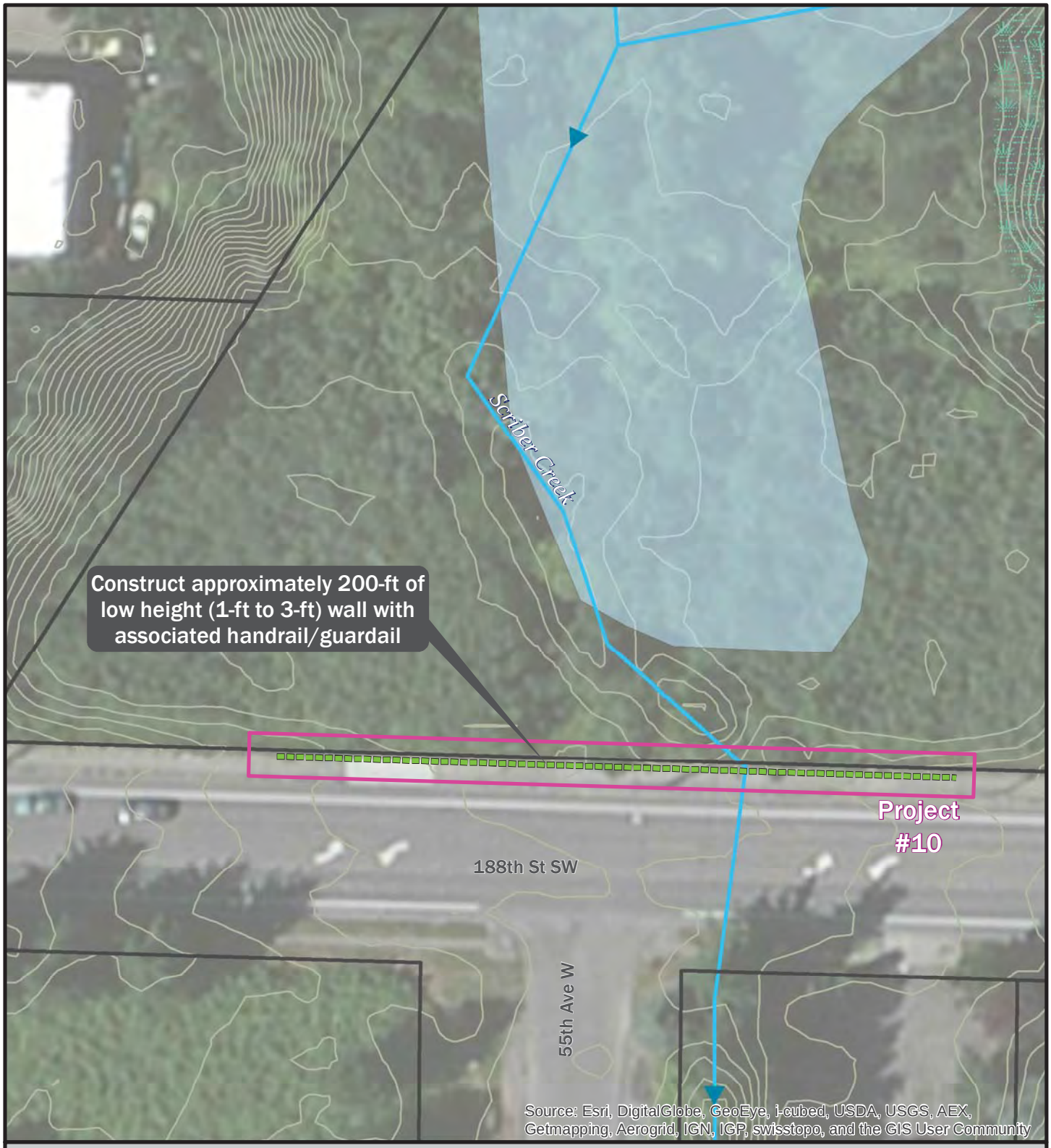

Legend

- Proposed project area
- Proposed flood wall
- Scriber Creek
- Revegetation (typ.)
- Existing 1-ft contour
- Snohomish County wetland
- Parcel

Project #10 - Construction of Flood Wall.

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0 20 40 80 Feet

LYNNWOOD WASHINGTON

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #10: 188th Street SW Flood Wall Project.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$16,000	$16,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$15,000	$15,000	
1-05.4	SURVEYING	1	LS	$15,000	$15,000	Cost includes surveying entire project site and utility locates
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.1	ACRE	$10,000	$1,000	
2-02.5	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	1	LS	$6,000	$6,000	
2-09.5	STRUCTURE EXCAVATION	300	CY	$30	$9,000	excavation required to install approx. 1ft deep wall foundation
SPECIAL	WALL-CONCRETE (VARYING HEIGHT)	200	LF	$200	$40,000	
SPECIAL	HANDRAIL	200	LF	$150	$30,000	Handrail built into top of wall
6-02.5	STEEL PILE	20	EA	$1,500	$30,000	Assume integrated with wall for support
8-14.5	CEMENT CONC SIDEWALK	40.0	SY	$80	$3,200	Only around culvert
8-02.5	SEEDING AND MULCHING	0.1	ACRE	$10,000	$1,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$5,000	$5,000	
1-05.18	RECORD DRAWINGS	1	LS	$1,000	$1,000	
SUBTOTAL CONSTRUCTION COST					$173,200	
SALES TAX				9.8%	$16,980	
TOTAL CONSTRUCTION COST WITH TAX					**$190,200**	
OTHER APPROXIMATED PROJECT COSTS						
DESIGN				20%	$39,000	
ENVIRONMENTAL PERMITTING				10%	$20,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$29,000	
SPECIAL TESTING AND INSPECTIONS				5%	$10,000	includes geotechnical analysis to ensure no settlement of existing culvert below wall
SUBTOTAL PROJECT COSTS					$288,200	
PROJECT CONTINGENCY				30%	$87,000	includes any coordination for access/easements
			TOTAL ESTIMATED PROJECT COST:		**$380,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project 10: 188th Street SW Flood Wall Project.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	1	TIMES/YEAR	$315	$315	Inspect after a severe storm.
	MOWING	1	TIMES/YEAR	$50	$50	Mowing part of typical ROW mowing
	VACTOR TRUCK REMOVAL	0	TIMES/YEAR	$350	$0	
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$365**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Maximize Off-Channel Storage on the Property North of 188th Street SW

Project Number: 11 Estimated Cost: $640,000

PROBLEM DESCRIPTION

The existing culvert crossing below 188th Street SW is a constriction and backwaters up into the wetland area north of 188th Street SW until the roadway is overtopped. Scriber Creek overtops 188th Street SW in a 10-year recurrence interval flood event, disrupting traffic, endangering motorists and pedestrians, and causing flooding damage to adjacent properties.

PROJECT DESCRIPTION

Maximize flood storage and floodplain reconnection within the City-owned vacant property located north of 188th Street SW. This improvement would include excavating portions of the property to create new wetlands and also provide flood storage. The excavation areas would be designed to maintain existing wetlands (potentially as islands or hummocks) as well as large evergreen trees to the extent practical. The off-channel floodplain area will be graded to be inundated primarily during peak flood events and to have positive drainage toward the downstream portion of the property to avoid fish stranding. Wetland hummocks and Large Woody Debris (LWD) will be installed for enhanced edge habitat, microtopography, and physical habitat complexity. The entire site will be revegetated with native wetland and riparian vegetation.

FLOOD BENEFITS OF PROJECT

In combination with Project #10, this project would add about 3.7 acre-feet of flood storage in the 100-year event; improved instream habitat; greater connectivity of channel to floodplain wetland areas, providing flood storage capacity; retention of sediments transported from upstream; reduced sediment removal burden on the City in downstream locations.

Mitigation site north of 188th St SW that excavation would connect to.

Existing upland area in City Parks property that could be excavated.

FEASIBILITY CONSIDERATIONS

- City of Lynnwood Parks Department will need to provide easements and access for the City to perform construction work.
- Streamflow diversion or flow bypass pipe/pumping likely required.
- Minor bank regrading, and installation of vegetated geogrids or similar bank stabilization measures with reinforced soil and native plantings is likely to be needed, especially along the north or east slopes where seepage could daylight.
- Emphasizing the restoration and habitat enhancement opportunities will support grant applications for the work.
- All work within ordinary high water (OHW) must be completed during the "fish window". Due to the proximity of the channel/floodplain to the excavation area, it is likely best to also complete work above OHW during the fish window.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 27 - Restoration)
- CWA Section 401 (Ecology, Certified through NWP 27)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Washington Wildlife and Recreation Program (WWRP), RCO
- Land and Water Conservation Fund (LWCF), RCO
- Centennial Grant, Washington State Department of Ecology (Ecology)
- Water Quality: Section 319 Grant, Ecology
- Stormwater Financial Assistance, Ecology
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)
- Cooperative Watershed Management Grant, WRIA 8 Salmon Recovery Council
- Aquatic Lands Enhancement Account (ALEA) Volunteer Cooperative Grant Program, WDFW

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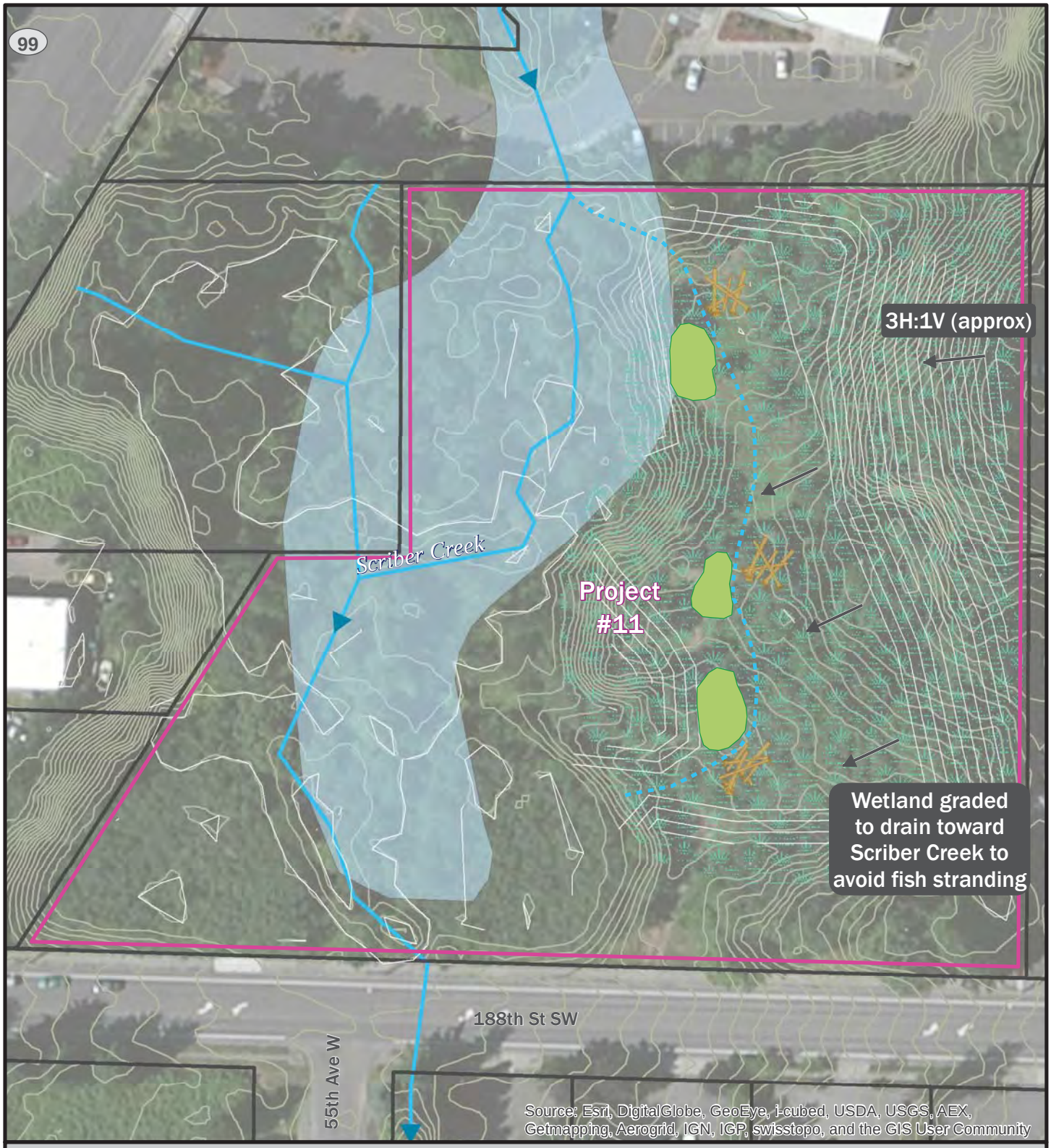

Legend

- Proposed project area
- Scriber Creek
- Proposed high flow side channel alignment
- Revegetation (typ.)
- Wetland hunmocks for edge habitat (typ.)
- LWD
- Proposed project grading
- Existing 1-ft contour
- Snohomish County wetland
- Parcel

Project #11 - Maximixe Off-Channel Storage on the City of Lynnwood's Property North of 188th Street.

N

0 37.5 75 150 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #11: Off-Channel Storage on City's 188th Street Property.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$27,000	$27,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$24,000	$24,000	
1-05.4	SURVEYING	1	LS	$25,000	$25,000	Cost includes surveying entire project site and utility locates
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	1.80	ACRE	$10,000	$18,000	
SPECIAL	BULK EXCAVATION INCL. HAUL	2220	CY	$25	$55,500	approximated quantity consistent with modeled storage needs; unit cost from Lynnwood 53rd Ave - winning bid
2.03-5	CHANNEL EXCAVATION INCL. HAUL	130	CY	$50	$6,500	350' long, 5' wide, 2' deep side channel, unit cost from Lynnwood 204th - winning bid
SPECIAL	LWD GRADE CONTROL AND HABITAT STRUCTURES	5	EA	$6,000	$30,000	Cost based on recent bid tabs for similar stream log structure installations
SPECIAL	NEW PEDESTRIAN BRIDGE ACROSS CREEK	1	LS	$15,000	$15,000	includes new prefabricated pedestrian bridge and cast-in-place footings/foundation
SPECIAL	TRAIL AND SITE IMPROVEMENTS FOR PARKS	1	LS	$15,000	$15,000	Assumes project area will remain parks property and require access/trail improvements
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	1,400	EA	$10.00	$14,000	approximately 8' spacing on center, unit cost from Lynnwood 53rd Ave - winning bid
8-02.3	WET NATIVE SEEDING AND MULCHING	1.80	ACRE	$9,000	$16,200	400' x 200', assume only regraded area is seeded, does not include main channel, unit cost from Lynnwood 204th - winning bid
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	most excavation outside OHW; short streamflow bypass needed to connect new storage area to creek
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
9-03.11	STREAMBED SEDIMENT	140	TN	$40	$5,600	1' thick in side channel, unit cost from Parr and East
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$292,800	
SALES TAX				9.8%	$28,700	
TOTAL CONSTRUCTION COST WITH TAX					**$321,500**	
OTHER APPROXIMATED PROJECT COSTS						
DESIGN				20%	$65,000	
ENVIRONMENTAL PERMITTING					$40,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$49,000	
SPECIAL TESTING AND INSPECTIONS				5%	$17,000	
SUBTOTAL PROJECT COSTS					$492,500	
PROJECT CONTINGENCY				30%	$148,000	includes any coordination for access/easements
			TOTAL ESTIMATED PROJECT COST:		**$640,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #11: Off-Channel Storage on City's 188th Street Property.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	2	TIMES/YEAR	$315	$630	frequency based on O&M table NPDES Phase II (2008)
	MOWING	1	TIMES/YEAR	$50	$50	Maintain plantings
	VACTOR TRUCK REMOVAL	1	TIMES/YEAR	$350	$350	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$1,030**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Install Small Berms Near Eunia Plaza and Flynn's Carpets

Project Number: 12 Estimated Cost: $210,000

PROBLEM DESCRIPTION

Scriber Creek overtops its banks in the 10-year event causing flooding of adjacent business parking lots and access.

PROJECT DESCRIPTION

Berm open channel segments of Scriber Creek between driveway culverts near Flynn's Carpets, the Old Buzz Inn, and Eunia Plaza. The west side of the channel would be bermed between the two culverts at Eunia Plaza, where the crest of the berm would need to be at about Elevation 368.3 ft (NAVD 88 vertical datum) , which would not provide any freeboard for the 100-year flow. Raising the berm further would raise it above the drive over the culvert. In addition, berms would be added on either side of the creek (beyond the top of the creek bank) near Flynn's Carpets and along the west side of creek from the pedestrian bridge at Flynn's to the Old Buzz Inn building, to protect low-lying areas of adjacent properties. Backflow prevention and a pipe extension (potentially to Scriber Creek at north end of City Park Property north of 188th St) to collect runoff from low parking areas would be required.

FLOOD BENEFITS OF PROJECT

Provides protection to Flynn's Carpets and Eunia Plaza from overtopping during the 100-year event. Reduced flooding of businesses and access thereby improves public safety.

March 14, 2011 Flooding near Flynn's Carpets.

Curb within Eunia Plaza parking lot that berm could tie in to.

FEASIBILITY CONSIDERATIONS

- Annual inspection of check valves and berms needed.
- Maintenance of berm and planted vegetation to be required.
- Additional design needs to be performed to evaluate outfalls and berm size and locations prior to budgeting for this project.
- Assumes no work within OHW or wetlands, but stream buffer vegetation enhancement is anticipated.
- If existing subsoils are soft and unsuitable for a berm or wall foundation, soil excavation and replacement with structural fill may be necessary.

PERMITS REQUIRED

- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with potential mitigation for impacts to buffers (Lynnwood)

POTENTIAL FUNDING SOURCES

- Cost-sharing program with private property owners
- City of Lynnwood Surface Water Utility Fund

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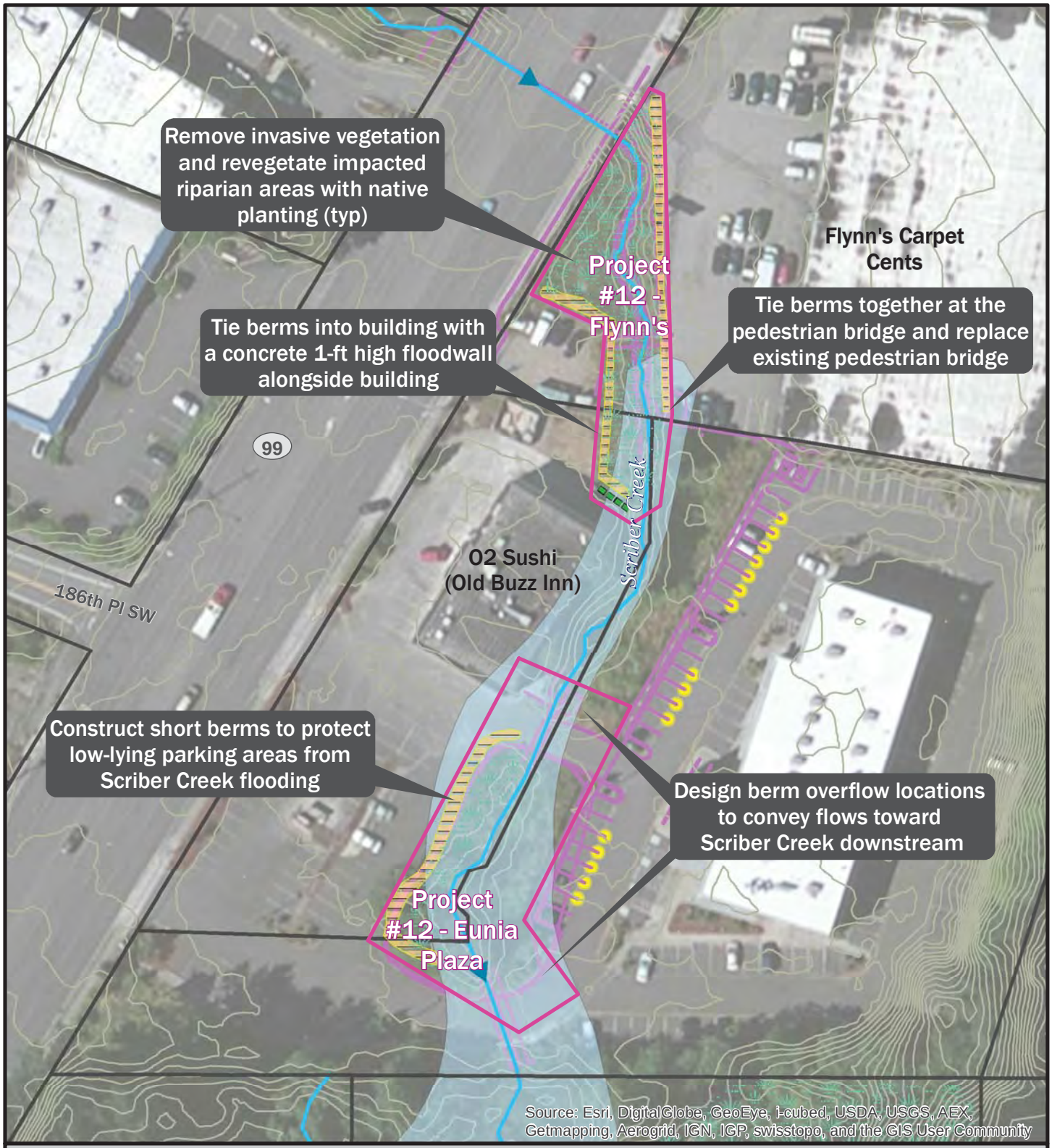

Legend

- Proposed project area
- Scriber Creek
- Revegetation (typ.)
- Proposed berm
- Proposed flood wall
- Existing 1-ft contour
- Surveyed line
- Surveyed point
- Snohomish County wetland
- Parcel

Project #12 - Install Small Berm Near Eunia Plaza and Flynn's Carpet.

N

0 37.5 75 150 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #12: Berm Open Channels between Driveways.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$8,000	$8,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$7,000	$7,000	
1-05.4	SURVEYING	1	LS	$15,000	$15,000	Cost includes surveying entire project site and utility locates
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.20	ACRE	$10,000	$2,000	
2-03.5	EMBANKMENT COMPACTION	191	CY	$4	$764	WSDOT bid tabs/UBA
SPECIAL	LOW PERMEABILITY FILL FOR BERM	411	TN	$30	$12,330	2:1 side slopes, 2' wide crest, eunia plaza: x-sec area 5.5 sf, 100 long , flynn's carpet: x-sec 15 sf, length 200',
SPECIAL	WALL-CONCRETE (VARYING HEIGHT)	20	LF	$200	$4,000	small flood wall to tie berm into back of old Buzz Inn building
SPECIAL	NEW PEDESTRIAN BRIDGE ACROSS CREEK	1	LS	$15,000	$15,000	includes new prefabricated pedestrian bridge and cast-in-place footings/foundation
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	300	EA	$10.00	$3,000	4' spacing on center, includes establishment
8-02.3	WET NATIVE SEEDING AND MULCHING	0.20	ACRE	$9,000	$1,800	Lynnwood 53rd Ave - winning bid
8-02.6	LANDSCAPE RESTORATION	1.0	LS	$4,000	$4,000	to restore landscaped areas to pre-construction conditions
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$5,000	$5,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$83,894	
SALES TAX				9.8%	$8,230	
TOTAL CONSTRUCTION COST WITH TAX					**$92,100**	
OTHER APPROXIMATED PROJECT COSTS						
ADMINISTRATIVE COSTS FOR COST-SHARING APPROACH NEGOTIATION				5%	$5,000	
DESIGN				30%	$28,000	
ENVIRONMENTAL PERMITTING					$15,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$14,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				5%	$5,000	
SPECIAL TESTING AND INSPECTIONS				5%	$5,000	
SUBTOTAL PROJECT COSTS					$159,100	
PROJECT CONTINGENCY				30%	$48,000	
			TOTAL ESTIMATED PROJECT COST:		**$210,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #12: Berm Open Channels between Driveways.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	1	TIMES/YEAR	$315	$315	Inspect after a severe storm.
	MOWING	2	TIMES/YEAR	$50	$100	maintain plantings
	VACTOR TRUCK REMOVAL	0	TIMES/YEAR	$350	$0	
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$415**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Replace Driveway Culverts Near Eunia Plaza

Project Number: 13 Estimated Cost: $820,000

PROBLEM DESCRIPTION

Scriber Creek overtops its banks in the 10-year event causing flooding of adjacent business parking lots and access.

PROJECT DESCRIPTION

Replace existing driveway culverts near Eunia Plaza. The twin 49-ft long 48-inch diameter culverts will be replaced with a new fish passable 10-ft wide by 5.5-ft high precast box culvert and the existing twin 49-ft long 48-inch diameter culverts will be replaced with a 10-ft wide by 4-ft high precast box culvert. Both proposed box culverts would be counter sunk per WDFW guidelines for scour resistance and to provide a natural streambed for physical habitat.

FLOOD BENEFITS OF PROJECT

The proposed culverts would provide not only improved fish passage, but the capacity to convey the 100-year peak storm event, reducing flooding of adjacent properties and businesses thereby improving public safety.

Native Growth Protection Area between existing driveway culverts.

Parking lot near Eunia Plaza overlying one of the existing driveway culverts.

FEASIBILITY CONSIDERATIONS

- Coordination with business owners will be required.
- Need to provide access to businesses during construction.
- Cut-and-cover construction.
- Temporary traffic detour during installation.
- Streamflow diversion and/or a flow bypass pipe/pumping likely needed.
- Bottomless concrete box structure placed on strip footing.
- Geotechnical exploration needed for design.

PERMITS REQUIRED

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- Cost-sharing program with private property owners
- Salmon Recovery Funding Board (SRFB) Grant, Washington State Recreation and Conservation Office (RCO)
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)

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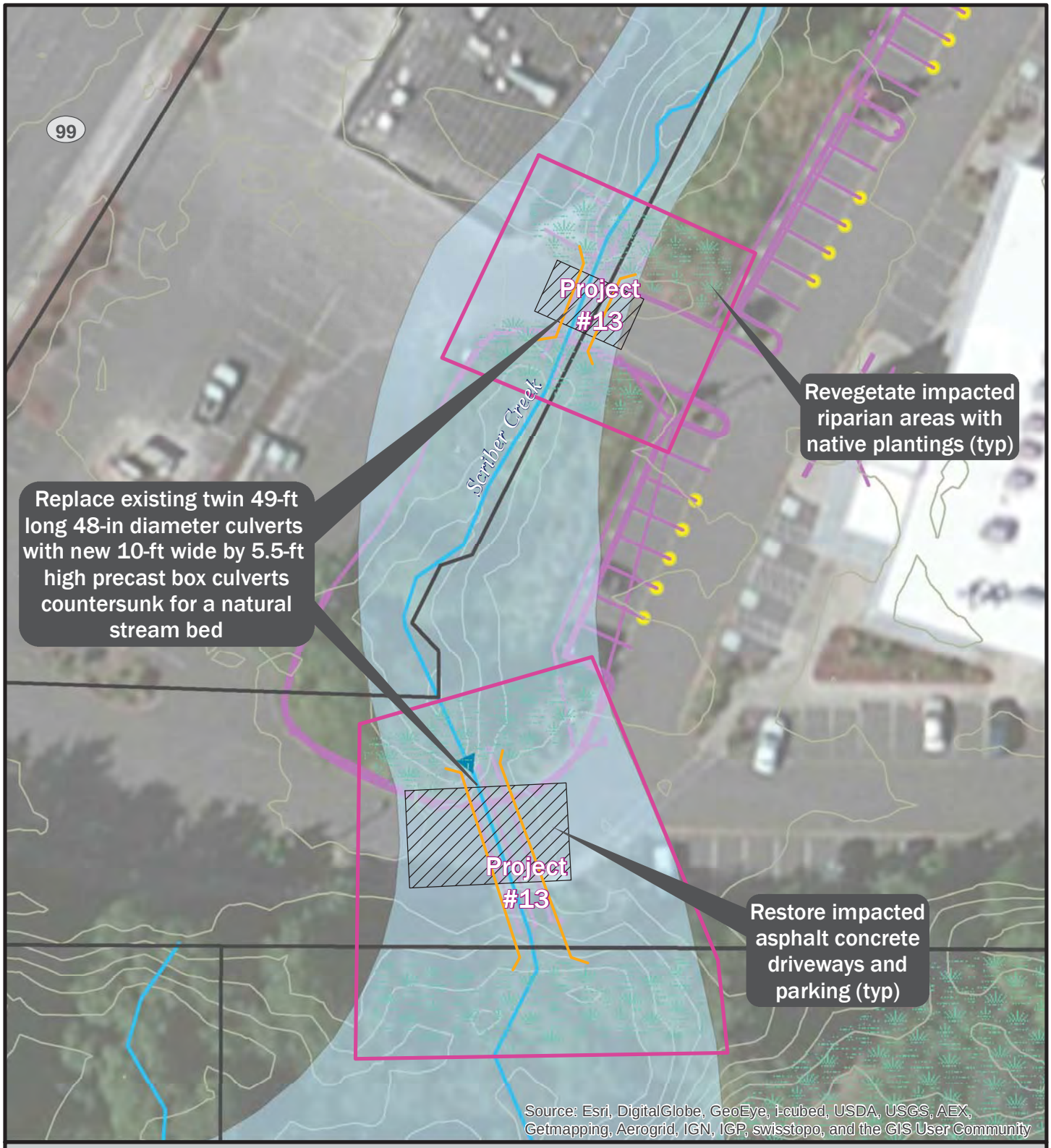

Legend

- Proposed project area
- Scriber Creek
- Revegetation (typ.)
- Proposed culvert
- Proposed asphalt paving
- Existing 1-ft contour
- Surveyed line
- Surveyed point
- Snohomish County wetland
- Parcel

Project #13 - Replace Driveway Culverts Near Eunia Plaza.

N

0 20 40 80 Feet

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Table 1. Planning Level Design, Permitting, and Construction Cost Estimate for Project #13: Replace Eunia Plaza Culverts.

Spec Section	Bid Item Description	Quantity	Unit	Unit Cost	Amount	Assumptions/Notes
1-09.7	MOBILIZATION (10%)	1	LS	$34,000	$34,000	
1-10.5	PROJECT TEMPORARY TRAFFIC CONTROL (10%)	1	LS	$31,000	$31,000	
1-05.4	SURVEYING	1	LS	$15,000	$15,000	Cost includes surveying entire project site and utility locates
1-07.15	SPCC PLAN	1	LS	$1,000	$1,000	
2-01.5	CLEARING AND GRUBBING	0.15	ACRE	$10,000	$1,500	
2-02.5	REMOVE ASPHALT CONC. PAVEMENT	120	SY	$18	$2,160	10'+3' x 40', doubled for two culverts, WSDOT bid tabs for smaller project areas
2-02.5	REMOVAL OF STRUCTURE AND OBSTRUCTION	2	EA	$3,630	$7,260	
2-09.5	STRUCTURE EXCAVATION CLASS B INCL. HAUL	150	CY	$30	$4,500	Lynnwood 53rd Ave - winning bid
2-09.5	SHORING OR EXTRA EXCAVATION CLASS B	1225	SY	$5	$6,125	49' length for both, 7' height and 5.5' height, unit cost from Lynnwood 53rd Ave - winning bid
SPECIAL	10' x 5.5' x 49' CONCRETE BOX CULVERT	1	EA	$46,550	$46,550	49' length, cost from OldCastle incl delivery
SPECIAL	10' x 4' x 49' CONCRETE BOX CULVERT	1	EA	$46,550	$46,550	49' length, cost from OldCastle incl delivery
SPECIAL	FOUNDATION PREPARATION	2	EA	$12,000	$24,000	
SPECIAL	WING WALLS FOR ENTRANCE PROTECTION	2	EA	$18,150	$36,300	based on other projects, double for 2 culverts
SPECIAL	CULVERT INSTALLATION	2	EA	$30,250	$60,500	based on other projects
4-04.5	CRUSHED SURFACING TOP COURSE	40	TN	$35	$1,400	4" thick, Lynnwood 53rd Ave - winning bid
5-04.5	HMA CL. 1/2 IN. PG	33	TN	$110	$3,630	4" thick, 2.05TN/CY per WSDOT design manual, Lynnwood 53rd Ave - winning bid - high number
9-03.11	STREAMBED SEDIMENT	78	TN	$40	$3,120	1' thick, Parr and East
8-02.3	PSIPE - 1 GAL PLANTS - RIPARIAN PLANTINGS	300	EA	$10.00	$3,000	4' spacing on center, includes establishment
SPECIAL	CEMENT CONC. TRAFFIC CURB AND GUTTER	60	LF	$30	$1,800	WSDOT bid tabs/UBA
8-02.3	WET NATIVE SEEDING AND MULCHING	0.15	ACRE	$9,000	$1,350	Lynnwood 53rd Ave - winning bid
SPECIAL	STREAMFLOW DIVERSION / FLOW BYPASS	1	LS	$15,000	$15,000	
8-01.5	EROSION/WATER POLLUTION CONTROL	1	LS	$20,000	$20,000	
1-05.18	RECORD DRAWINGS	1	LS	$5,000	$5,000	
SUBTOTAL CONSTRUCTION COST					$370,745	
SALES TAX				9.8%	$36,340	
TOTAL CONSTRUCTION COST WITH TAX					**$407,100**	
OTHER APPROXIMATED PROJECT COSTS						
ADMINISTRATIVE COSTS FOR COST-SHARING APPROACH NEGOTIATION				5%	$21,000	
DESIGN				20%	$82,000	
ENVIRONMENTAL PERMITTING					$40,000	Includes costs of all technical evaluation, preparing supporting documentation, and submitting the permit applications
CONSTRUCTION MANAGEMENT/CONSTRUCTION ADMINISTRATION				15%	$62,000	
TEMPORARY AND PERMANENT EASEMENT NEGOTIATION				5%	$21,000	
SPECIAL TESTING AND INSPECTIONS				5%	$21,000	
SUBTOTAL PROJECT COSTS					$633,100	
PROJECT CONTINGENCY				30%	$190,000	
			TOTAL ESTIMATED PROJECT COST:		**$820,000**	Estimate based on 2016 dollars, rounded to nearest $10,000; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

Table 2. Planning Level Annual Operations and Maintenance Cost Estimate for Project #13: Replace Eunia Plaza Culverts.

PROJECT LIFE CYCLE 30 YEARS

	Maintenance Activity Type	Frequency	Unit	Unit Cost/Time	Annual Amount	Assumptions/Notes
	INSPECTION	4	TIMES/YEAR	$315	$1,260	frequency based on O&M table NPDES Phase II (2008)
	MOWING	2	TIMES/YEAR	$50	$100	Maintain plantings
	VACTOR TRUCK REMOVAL	1	TIMES/YEAR	$350	$350	Based on historical sediment maintenance data
TOTAL ANNUAL OPERATIONS AND MAINTENANCE COSTS					**$1,710**	Estimate based on 2016 dollars; costs will need to be adjusted for Time Value of Money (TMV) when programming funds.

City of Lynnwood
Scriber Creek Flood Reduction Study
Project Summary Sheet

Project Name: Basin Sediment Management and Maintenance Program

Project Number: 14 Estimated Cost: $300,000

PROBLEM DESCRIPTION

The Scriber Creek basin is heavily developed with a mix of urban land uses that are known to generate peak stormwater runoff that also often alters the geomorphic and sediment regime. Some reaches of Scriber Creek are armored and have little resiliency to laterally adjust or access floodplain storage in response to altered hydrology and geomorphology. Many of these reaches are also degrading, incising or experiencing bank erosion that together with urbanization increases fine sediment loading to downstream reaches.

PROJECT DESCRIPTION

This project would involve a basin wide sediment study that evaluates the primary sediment sources, identifies the primary sediment sinks, and develops a sediment budget that can be used to guide targeted capital projects intended to help manage chronic sediment problems and also steer sediment maintenance where it can be most efficient and reduce impacts to aquatic habitat.

FLOOD BENEFITS OF PROJECT

The implementation of sediment management strategies is expected to reduce the prevalence of sedimentation-prone channel reaches that exacerbate backwater and flooding problems.

Fine sediment deposition north of 196th St SW.

Gravel substrate in Scriber Creek adjacent to Edmonds School Dist. Property.

FEASIBILITY CONSIDERATIONS

- Coordination with private property owners to access the creek corridor will be required.
- Basin planning is encouraged by permit and regulatory agencies and can be cited in grant applications.

PERMITS REQUIRED

To be determined, but could include:

- CWA Section 404 (USACE, NWP 3 - Maintenance)
- CWA Section 401 (Ecology, Certified through NWP 3)
- Hydraulic Project Approval (WDFW)
- SEPA DNS or MDNS (Lynnwood)
- Grading Permit (Lynnwood)
- Critical Areas Permit with mitigation (Lynnwood)

POTENTIAL FUNDING SOURCES

- Cost-sharing program with private property owners
- City of Lynnwood Surface Water Utility Fund
- City of Lynnwood In-Lieu Fee Stormwater Program
- Five Star and Urban Waters Restoration Programs, National Fish and Wildlife Foundation (NFWF)

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APPENDIX H

Potential Permitting Requirements Matrix

Table H-1. Potential Permits and Supporting Documentation for the Scriber Creek Flood Reduction Study Conceptual Projects.

		Nationwide Permit or Individual Permit	Water Quality Certification	Hydraulic Project Approval	SEPA Threshold Determination	Grading Permit	Critical Areas Permit
	Regulation	Clean Water Act Section 404	Clean Water Act Section 401	Washington State Hydraulic Code	SEPA	City of Lynnwood Municipal Code 16.04.030	Critical Areas Ordinance: City of Lynnwood Municipal Code 17.10
	Agency	USACE	Ecology	WDFW	City of Lynnwood, Community Development Department	City of Lynnwood, Public Works Department	City of Lynnwood, Public Works Department
	Jurisdiction	Waters of the US	Federal permits affecting waters of the US, including wetlands	Activities affecting waters of the state	Agency decisions on policies, plans, or regulations; decisions to license, fund, or undertake a proposal; decisions to purchase, sell, or lease resources	Required for cuts greater than 2 feet, cuts that create slopes greater than 1.5H:1V, fill quantities greater than 50 cubic yards, fills on slopes greater than 5H:1V, fills deeper than 1 foot, or fills that will obstruct an existing drainage course	Impacts on critical areas, including wetlands, streams, fish and wildlife priority habitat, geologically hazardous areas, and their buffers
	Supporting Documentation	Critical Areas Study ESA No Effect Letter EZ-1 Form for NHPA compliance SEPA Determination JARPA JARPA design drawings	Critical Areas Study JARPA	Online Application Critical Areas Study SEPA Determination Design drawings Application fee	Land Use Application Environmental Checklist Design drawings Stormwater drainage and grading plans Critical Areas Study Application fee	Public Works Application SEPA Determination Geotechnical report SWPPP, SPCC, and TESC plan Design drawings	Public Works Application Critical Areas Study Geotechnical Report
	Timing	6 to 12 months	6 to 12 months	45 days	60 days	60 days	120 days
Project	**Project Name**	**Permitting Conditions**					
1	Scriber Lake Trail and Berm Improvements	High complexity; low probability of permitting approval; significant alternatives analysis would be required; extended timeframe for permit acquisition; extensive mitigation requirements	Individual permit with alternatives analysis; mitigation for impacts on wetlands	Individual certification process	HPA	MDNS or EA	Grading Permit Additional City permits for the berm may include Tree Removal Permits from Public Works.	Critical Area Permit; mitigation for impacts on wetlands and/or wetland buffer
2	Remove Diversion Structure and Oil/Water Separator downstream of 196th Street SW	Moderate complexity; mitigation requirements from agencies for instream impacts likely	NWP 3	Certified through NWP 3	HPA	DNS or MDNS	Grading Permit	Critical Area Permit; mitigation for impacts on wetlands, streams, and/or buffers
3	Replace 196th Street SW Culverts in Existing Location	High complexity; project lies within WSDOT right-of-way and will require significant WSDOT coordination and right-of-way use permissions for traffic control	NWP 3	Certified through NWP 3	HPA	DNS or MDNS	Grading Permit Additional City permits may include 1) Tree Removal Permit and 2) Right-of-Way Use Permit from Public Works	Critical Area Permit; mitigation for impacts on wetlands, streams, and/or buffers
4	Raise Old 196th Street SW	Low complexity	NWP 3 Potential for work within Scriber Creek and wetlands	Certified through NWP 3 Assumes potential work within Scriber Creek or wetlands	n/a Assumes small retaining wall if necessary to keep work outside the OHWM of Scriber Creek	DNS or MDNS	Grading Permit Additional City permits may include Right-of-Way Use Permit from Public Works	Critical Area Permit; potential mitigation for impact on wetland and/or stream buffer

Table C-1 (continued). Potential Permits and Supporting Documentation for the Scriber Creek Flood Reduction Study Conceptual Projects.

Project	Project Name	Permitting Conditions	Nationwide Permit or Individual Permit	Water Quality Certification	Hydraulic Project Approval	SEPA Threshold Determination	Grading Permit	Critical Areas Permit
5	Parkview Plaza Culvert Replacement	Low complexity	NWP 3	Certified through NWP 3	HPA	DNS or MDNS	Grading Permit Additional City permits may include Right-of-Way Use Permit from Public Works	Critical Area Permit; mitigation for impacts on wetlands, streams, and/or buffers
6	Scriber Creek culvert replacement at Casa Del Rey Condominiums driveway	Low complexity	NWP 3	Certified through NWP 3	HPA	DNS or MDNS	Grading Permit Additional City permits may include Right-of-Way Use Permit from Public Works	Critical Area Permit; mitigation for impacts on wetlands, streams, and/or buffers
7	Maximize off-channel storage on Edmonds School District Property	Moderate complexity; must demonstrate net gain of wetland and stream function	NWP 27	Certified through NWP 27	HPA	DNS or MDNS	Grading Permit	Critical Area Permit; mitigation likely not necessary as project creates wetland and buffer
8	Acquire Frequently Flooded Properties between 188th Street SW and 191 Street SW	Low complexity	n/a Assumes no work within Scriber Creek or wetlands	n/a Assumes no work within Scriber Creek or wetlands	n/a Assumes no work within Scriber Creek or wetlands	DNS or MDNS	Grading Permit Additional City permits for structure demolition are often handled by demolition contractor, but would include: 1) Demolition Permit, 2) Sewer Capping Permit and inspection by Public Works	Critical Area Permit; potential mitigation for impacts on wetland and/or stream buffer during demolition of structures on property
9a	Replace 191st Street SW Culvert	Low complexity	NWP 3	Certified through NWP 3	HPA	DNS or MDNS	Grading Permit Additional City permits may include 1) Tree Removal Permit and 2) Right-of-Way Use Permit from Public Works	Critical Area Permit; mitigation for impacts on wetlands, streams, and/or buffers
9b	Replace 190th Street SW Culvert	Low complexity	NWP 3	Certified through NWP 3	HPA	DNS or MDNS	Grading Permit Additional City permits may include 1) Tree Removal Permit and 2) Right-of-Way Use Permit from Public Works	Critical Area Permit; mitigation for impacts on wetlands, streams, and/or buffers
9c	Replace 189th Street SW Culvert	Low complexity	NWP 3	Certified through NWP 3	HPA	DNS or MDNS	Grading Permit Additional City permits may include 1) Tree Removal Permit and 2) Right-of-Way Use Permit from Public Works	Critical Area Permit; mitigation for impacts on wetlands, streams, and/or buffers

Table C-1 (continued). Potential Permits and Supporting Documentation for the Scriber Creek Flood Reduction Study Conceptual Projects.

Project	Project Name	Permitting Conditions	Nationwide Permit or Individual Permit	Water Quality Certification	Hydraulic Project Approval	SEPA Threshold Determination	Grading Permit	Critical Areas Permit
10	188th Street SW Flood Wall	Moderate complexity	NWP 3 or 13 Assumes potential work within Scriber Creek or wetlands	Certified through NWP Assumes potential work within Scriber Creek or wetlands	n/a Assumes no work within the OHWM of Scriber Creek	DNS or MDNS	Grading Permit Additional City permits may include 1) Tree Removal Permit and 2) Right-of-Way Use Permit from Public Works	Critical Area Permit; potential mitigation for impact on wetland and/or stream buffer
11	Maximize off-channel storage on the property north of 188th Street SW	Moderate complexity; must demonstrate net gain of wetland and stream function	NWP 27	Certified through NWP 27	HPA	DNS or MDNS	Grading Permit Additional City permits may include Tree Removal Permit from Public Works	Critical Area Permit; mitigation likely not necessary as project creates wetland and buffer
12	Install small berms near Eunia Plaza and Flynn's Carpets	Low Complexity	n/a Assumes no work within Scriber Creek or wetlands	n/a Assumes no work within Scriber Creek or wetlands	n/a Assumes no work within the OHWM of Scriber Creek	DNS or MDNS	Grading Permit	Critical Area Permit; potential mitigation for impact on wetland and/or stream buffer
13	Replace Driveway Culverts near Eunia Plaza	Low complexity	NWP 3	Certified through NWP 3	HPA	DNS or MDNS	Grading Permit	Critical Area Permit; mitigation for impacts on wetlands, streams, and/or buffers
14	Basin Sediment Management and Maintenance Program	TBD	TBD	TBD	TBD	TBD	TBD	TBD

City = City of Lynwood, Washington
CWA = Clean Water Act
DNS = Determination of Non-Significance
EA = Environmental Assessment
Ecology = Washington State Department of Ecology
ESA = Endangered Species Act
JARPA = Joint Aquatic Resource Permit Application
HPA = Hydraulic Project Approval
MDNS = Mitigated Determination of Non-Significance
n/a = not applicable
NHPA = National Historic Preservation Act
NWP = Nationwide Permit
NWP 3 = Nationwide Permit #3: Maintenance
NWP 13 = Nationwide Permit #13: Bank Stabilization
NWP 27 = Nationwide Permit #27: Aquatic Habitat Restoration, Establishment, and Enhancement Activities
OHWM = Ordinary High Water Mark
SEPA = State Environmental Policy Act
SPCC = Spill Prevention, Control and Countermeasures Plan
SWPPP = Stormwater Pollution Prevention Plan
TBD = To Be Determined
TESC = Temporary Erosion and Sediment Control
USACE = Seattle District, US Army Corps of Engineers
WDFW = Washington Department of Fish and Wildlife
WSDOT = Washington State Department of Transportation

General Assumptions:

1. All new culverts will meet WDFW's requirements for fish passage.
2. Onsite restoration will occur for all temporary impacts on vegetation.
3. There will be no trees removed that would require a Tree Removal Permit from the City of Lynnwood.

APPENDIX I

Potential Grant Opportunities Matrix

Table I-1. Potential Grant Funding Sources for Scriber Creek Flood Reduction Study Conceptual Projects.

Grant Name	Agency/ Funding Source	Amount	Purpose	Location	Grant Frequency	Closing Date	Link	Scriber Creek Flood Reduction Study Conceptual Projects Potentially Eligible for Funding
Washington Wildlife and Recreation Program (WWRP)	Washington State Recreation and Conservation Office	Local agencies must provide 50% match; $25,000 cap on riparian protection, no cap on other categories $55 million awarded biennially	Funding for a broad range of land protection and outdoor recreation, including park acquisition and development, habitat conservation, farmland preservation, and construction of outdoor recreation facilities. Categories: critical habitat, riparian protection, urban wildlife habitat, other.	Washington State	Even years	Late April/early May, 2018 (2016 closing date was May 1, 2016)[a]	<http://www.rco.wa.gov/grants/wwrp.shtml>	1, 2, 3, 7, 8, 11 • Excludes projects on private properties, businesses, etc. • Must emphasize habitat or open space improvements (trail corridor, etc.) for public benefit/access. • Eligible projects must be cited in a planning document.
Land and Water Conservation Fund (LWCF)	Washington State Recreation and Conservation Office	50% match with 10% of match coming from non-state and non-federal contributions; grant cap at $500,000 $1 million awarded biennially	Land acquisition or projects promoting outdoor recreation resources, including parks, trails, and wildlife; other.	Washington State	Annually	Late April/early May, 2018 (2016 closing date was May 1, 2016)[a]	<http://rco.wa.gov/grants/lwcf.shtml>	1, 2, 3, 7, 8, 11 • Funding cannot support permits or surveys
Centennial Clean Water Fund State Grant Program	Washington State Department of Ecology	25% for non-point source pollution projects; in-kind contributions $250k Grant limits up to $5 million (vary based on project type)	For water quality infrastructure, wetland and stream restoration, and nonpoint source pollution projects to improve and protect water quality.	Washington State	Annually	August through October	<http://www.ecy.wa.gov/programs/wq/funding/fundprgms/Cent/oppCent.html>	2,7,8,11
Water Quality: Section 319 Grants	Washington State Department of Ecology	25% match; $250,000 grant limit with any combination match option, or $500,000 with cash only match option	Nonpoint source pollution control projects and wetland, riparian, and stream restoration projects, similar to the state Centennial program	Washington State	Annually	August through October	<http://www.ecy.wa.gov/programs/wq/funding/FundPrgms/Sec319/oppSec319.html>	2,7,8,11
Stormwater Financial Assistance	Washington State Department of Ecology	$5 million, per community	Projects that address existing pollution problems and provide a high level of water quality benefit.	Washington State	Annually	August through October	<http://www.ecy.wa.gov/programs/wq/funding/FundPrgms/Stormwater/oppSW.html>	2,7,8,11
Five Star & Urban Waters Restoration Programs	National Fish and Wildlife Foundation and others	$2.45 million	Projects focused on improving water quality, watersheds, and the species and habitats they support.	United States	Annually	January or February (2016 closing date was February 3, 2016)[a]	<http://www.nfwf.org/fivestar/Pages/home.aspx>	1, 2, 3, 4, 5, 6, 7, 8, 9a, 9b, 9c, 10, 11, 13, 14 • Projects would compete with projects across country
Salmon Recovery Grants	Washington State Recreation and Conservation Office; Salmon Recovery Funding Board (SRFB)	15% match with no cap* *Design-only projects have no match required, but are limited to $200,000 $18 million awarded annually	To protect and restore salmon habitat. Typical projects include: replacing barriers to fish migration, replanting stream banks, removing dikes and levees, installing LWD, and purchasing pristine habitat. Scriber Creek is a part of the larger Lake Washington/Cedar/Sammamish Watershed (WRIA 8), where salmon recovery efforts are focused on the needs of the Cedar River and Sammamish River Chinook populations, as well as the migratory and rearing corridors required by these populations.	Washington State	Annually	February to November. Application process involves several coordination steps with the Lake Washington/ Cedar/Sammamish Watershed (WRIA 8) Lead Entity first for project sponsorship and development and then for interim application deadlines starting in February and ending in November each year.	<http://www.rco.wa.gov/grants/salmon.shtml>	2, 3, 5, 6, 7, 8, 9a, 9b, 9c, 11* *Only if salmon historically used stream/lake

Table I-1 (continued). Potential Grant Funding Sources for Scriber Creek Flood Reduction Study Conceptual Projects.

Grant Name	Agency/ Funding Source	Amount	Purpose	Location	Grant Frequency	Closing Date	Link	Scriber Creek Flood Reduction Study Conceptual Projects Potentially Eligible for Funding
Aquatic Lands Enhancement Account (ALEA) Volunteer Cooperative Grant Program	WDFW	Varies based on project type $5 million awarded biennially	Restore and/or preserve fish and wildlife habitat. Typical projects include removing bulkheads, restoring estuaries, replacing boardwalks, restoring shoreline habitat, and developing waterfront parks. Would need to demonstrate that Scriber Creek and Scriber Lake are eligible shorelines.	Washington State	Biennially	Late April/early May, 2018 (2016 closing date was May 1, 2016)[a]	<http://www.rco.wa.gov/grants/alea.shtml>	1, 2, 3, 7, 8, 11 • Eligible projects involve restoration and public access to aquatic lands. • Excludes projects on private properties, businesses, etc. • Must emphasize habitat or open space improvements (trail corridor, etc.) for public benefit/access.
Hazard Mitigation Assistance: Pre-Disaster Mitigation (PDM) Grant Program	Federal Emergency Management Agency (FEMA); Washington State Military Department Emergency Management Division	Varies annually $90 million for FY2016	Flood hazard mitigation solutions, including: acquisition/demolition, acquisition, relocation, elevation, dry flood-proofing, mitigation-reconstruction (also known as demolish/rebuild), localized flood risk reduction projects, and hazard mitigation planning. Also eligible as of 2016 are climate resilient mitigation activities that includes green infrastructure actions.	United States, Washington State	Annual	Not Applicable. Application process involves several coordination steps, including pre-application, response, and full application deadlines. See websites for current information.	<www.Grants.gov>; <http://www.fema.gov/hazard-mitigation-assistance>; <http://mil.wa.gov/emergency-management-division/grants/hazard-mitigation-grants>	8, potentially also 1, 2, 3, 4, 5, 6, 7, 9a, 9b, 9c, 10, 11, 13, 14 • City of Lynnwood would apply as a sub-applicant through the Washington State Military Department Emergency Management Division, which will select and prioritize projects across the state for further review at the FEMA regional level.

[a] The 2017 or 2018 grant submittal deadlines are not yet released.

APPENDIX J

Other References

The contents of this appendix are included on a DVD attached to the hard copies of this report.