

**Meekland Avenue Corridor Improvements Project
Cherryland in Alameda County, California
Federal-Aid Project No. 019 TIP-ALA190019
Existing Bridge No. 33C0206**

Bridge Design Hydraulic Study Report



Prepared for:



Prepared by:



June 2023

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Submitted to:
Alameda County Public Works Agency

This report has been prepared by or under the supervision of the following Registered Engineer. The Registered Civil Engineer attests to the technical information contained herein and has judged the qualifications of any technical specialists providing engineering data upon which recommendations, conclusions, and decisions are based.



Chris Sewell, P.E.
Registered Civil Engineer

6/27/2023

Date



June 2023

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Appendix D	Existing HEC-RAS Results
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Executive Summary

Alameda County Public Works Agency (ACPWA) is proposing to provide a multimodal crossing of San Lorenzo Creek and improve multimodal connectivity along the Meekland Avenue corridor. The Meekland Avenue Corridor Improvements Project (Project) will provide sidewalks and add other complete streets and safety improvements to accommodate students and parents walking to school. The Project also will improve Americans with Disabilities Act (ADA) access by adding ADA-compliant curb ramps and driveway aprons.

The Project will also include replacement of the existing San Lorenzo Creek Bridge (33C0206) with a new bridge that meets current applicable Alameda County, American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA), Federal Statewide Transportation Improvement Program (Project No. 2019 TIP-ALA190019), and California Department of Transportation (Caltrans) design criteria and standards. Funding for the Project will come from Congestion Mitigation and Air Quality Program and Surface Transportation Program federal funds, as well as sales tax and other local funding sources.

The Project, situated in the community of San Lorenzo (Cherryland), in Alameda County, California, proposes multimodal connectivity along the Meekland Avenue corridor between East Lewelling Boulevard and Blossom Way.

The existing three-span bridge is comprised of a main 84-foot (ft)-long span and three steel girders with concrete deck supported on seat bents with pile-columns. End spans are 30-ft-long spans of reinforced concrete T-beams. The existing bridge's low soffit elevation is 49.9 ft.

Alameda County proposes to replace the existing bridge with a new single-span bridge that will accommodate two travel lanes and Class II bike lanes, include raised concrete sidewalks, and add traffic-rated vehicular barriers to meet AASHTO standards. The total proposed bridge design width is 54 ft, 4 inches. The San Lorenzo Creek channel is a rectangular concrete channel approximately 48-ft-wide and 13.5-ft-tall, with an 8-inch-deep fish passage center channel. The proposed bridge soffit elevation will be 54.7 ft (North American Vertical Datum of 1988 [NAVD 88]), which is 4.8 ft higher than the existing soffit elevation at 49.9 ft (NAVD 88). All shown on the *Improvements of Meekland Avenue Phase II General Plans* prepared by Wood Rodgers.

The report presents the design flow characteristics for the existing bridge and proposed replacement bridge. It also provides the hydraulic characteristics and design recommendations for the proposed single-span bridge. No scour analysis or erosion countermeasures are required for this proposed bridge design because the channel is concrete-lined.

Per Alameda County direction, the revised 100-year design flow of 12,500 cubic feet per second (cfs) and standard project flood (SPF) of 10,300 cfs were used for the bridge hydraulic analysis. The 50-year and 5-year design flows were obtained from the U.S. Geological Survey (USGS) regional regression equation.

Results from the hydraulic analysis show a decrease in the water surface elevation (WSE) at the Project bridge in the proposed condition compared to the existing condition. This is because the proposed bridge soffit will be raised higher than the 100-year WSE so that pressure flow and flow obstruction are not introduced. The proposed bridge results in adequate freeboard for all design flows shown in Table ES-1.

Table ES-1. Available Freeboard

Return Frequency (years)	Peak Flow	Existing Bridge (Soffit – 49.9 ft)		Proposed Bridge (Soffit – 54.7 ft)	
		WSE*	Freeboard	WSE*	Freeboard
100	12500	61.0	No Freeboard	53.5	1.2
SPF	10300	51.8	No Freeboard	51.5	3.2
50	6970	47.5	2.4	47.5	7.2
5	3010	42.6	7.3	42.6	12.1

Elev. ft = Elevation in NAVD 88

SPF = Standard Project Flood

cfs = Flow rate in cubic feet per second

* WSE taken at the cross section immediately upstream of Project bridge

Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADA	American Disabilities Act
ACFCD	Alameda County Flood Control & Conservation District
ACPWA	Alameda County Public Works Agency
Caltrans	California Department of Transportation
cfs	cubic feet per second
ESRI	Environmental Systems Research Institute
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIS	Flood Insurance Study
ft	feet/foot
HEC-RAS	Hydrologic Engineering Center's River Analysis System
LRFD	Load and Resistance Factor Design
MHHW	Mean Higher High Water
NAVD 88	North American Vertical Datum of 1988
O&M	Operations and Maintenance
SPF	Standard Project Flood
USACE	United States Army Corps of Engineers
USGS	U.S. Geological Survey
WSE	Water Surface Elevation

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1 GENERAL DESCRIPTION

Alameda County Public Works Agency (ACPWA) is proposing to provide a multimodal crossing of San Lorenzo Creek and improve multimodal connectivity along the Meekland Avenue corridor. The Meekland Avenue Corridor Improvements Project (Project) will provide sidewalks width and other complete streets and safety improvements to accommodate students and parents walking to school. The Project also will improve Americans with Disabilities Act (ADA) access through the addition of ADA-compliant curb ramps and driveway aprons.

The Project proposes to replace the existing San Lorenzo Creek Bridge (33C0206) with a new bridge that meets current applicable Alameda County, American Association of State Highway and Transportation Officials (AASHTO), Federal Highway Administration (FHWA), Federal Statewide Transportation Improvement Program (Project No. 2019 TIP-ALA190019), and California Department of Transportation (Caltrans) design criteria and standards. Funding for the Project will come from Congestion Mitigation and Air Quality Program and Surface Transportation Program federal funds, as well as sales tax and other local funding sources.

The Project, situated in the community of San Lorenzo (Cherryland), in Alameda County, California, proposes multimodal connectivity along the Meekland Avenue corridor between East Lewelling Boulevard and Blossom Way. Figure 1, Figure 2, and Figure 3 provide Project location, vicinity, and aerial maps, respectively.

This report presents hydraulic conditions for the existing bridge and proposed bridge as shown in the *Improvements of Meekland Avenue Phase II General Plans* (Appendix A) produced by Wood Rodgers (2021). Any future changes to those plans may need to be reanalyzed to confirm they meet the design requirements found within the Alameda County Flood Control & Water Conservation District's (ACFCD) *Hydrology and Hydraulics Manual* (HHM) (2018) and the ACPWA's *Engineering Design Guidelines* (EDG) (2018).

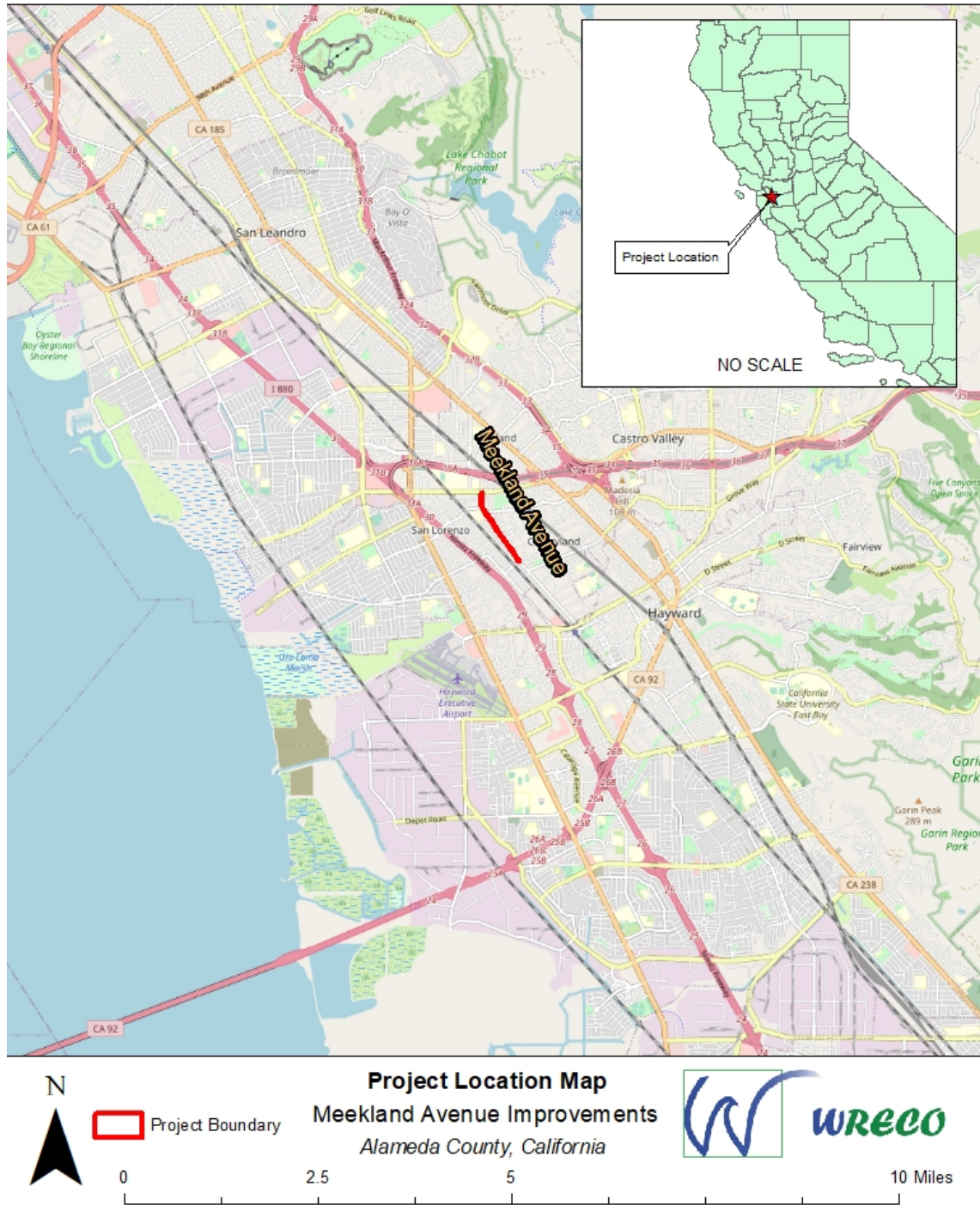


Figure 1. Project Location Map

Source: Environmental Systems Research Institute (ESRI), 2021



Figure 2. Project Vicinity Map

Source: ESRI, 2021

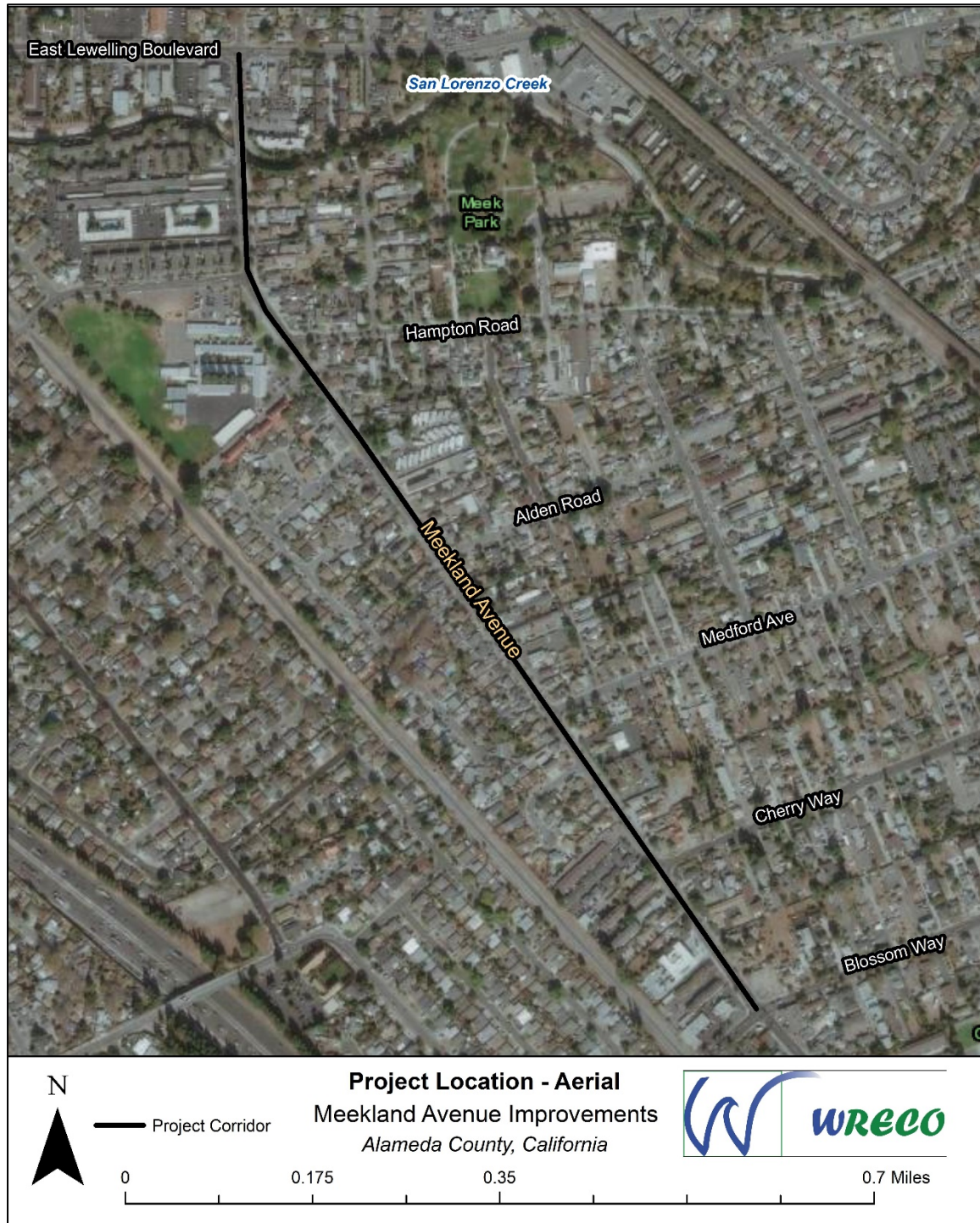


Figure 3. Project Aerial Map
Source: ESRI, 2021

1.1 Project Description

The San Lorenzo Creek Bridge is located on Meekland Avenue, south of the intersection with East Lewelling Boulevard. This segment of Meekland Avenue is an urban minor arterial comprised primarily of two 12-foot (ft)-wide lanes of traffic with bike lanes and sidewalks on each side. The terrain is generally flat, and Meekland Avenue is posted with a 25-mile per hour speed limit.

The Project site includes overhead and underground utilities running parallel to Meekland Avenue. At the bridge crossing, the public right of way is approximately 60-ft-wide. San Lorenzo Creek is a U.S. Army Corps of Engineers (USACE) federal flood control waterway with operation and maintenance (O&M) by the ACFCD.

All four corners of the bridge include adjacent points of access for ACFCD driveways and gates, residential business driveways, and side streets. On the southwest bank, there is a large underground trash capture structure founded on deep foundations. The edge of the existing bridge deck lies within 1 ft of the edge of one retaining wall associated with the trash capture structure.

Existing sidewalks along the corridor will be demolished, reconstructed, and widened by up to 2 ft. Accessibility/ADA-compliant curb ramps and driveway aprons will be installed where appropriate. A full structural section replacement of the roadbed is anticipated – the *Draft Preliminary Foundation Report* (WRECO, 2021) provides further discussion and preliminary pavement sections for the roadway replacement. Any drainage modifications will connect to the existing storm drainage system.

The Project will incorporate low impact development design features such as landscape tree wells and pervious pavement as available space allows.

Meekland Avenue is a generally north-south oriented urban street. The Project location is immediately adjacent to residential neighborhoods and businesses. The bridge serves as a link across San Lorenzo Creek for bicycle and pedestrian traffic, public transit, and access to San Lorenzo High School.

Stream diversion is not anticipated for either demolition of the existing bridge or construction of the new bridge. There are no existing supports within the channel walls, and the replacement bridge will span over the creek to avoid placing supports within the channel.

1.2 Project Need

The Project is needed to improve multimodal connectivity along Meekland Avenue, improve ADA access along the corridor, and update the Meekland Avenue bridge to meet current design standards.

1.3 Project History

In December 2018, plans produced by Cal Engineering & Geology were approved by Alameda County to add a trash capture device to an in-line system that discharges to San Lorenzo Creek at Meekland Avenue. The trash capture device outlet is located about 25 ft downstream of the bridge on the south bank of the creek.

Modification of the bridge sidewalks occurred in 1973-74 and consisted of the removal of the original concrete side parapet structures, construction of chain link fence to replace the original parapet, and addition of roadway guardrails on the sidewalks adjacent to the roadway (Alameda County, 1973). A subsurface full trash capture device concrete structure including aboveground retaining wall outside of the footprint of the existing bridge structure was built west of the southwest corner of the bridge, but did not modify the existing bridge structure (Cal Engineering and Geology, 2018).

1.4 Existing Bridge

The existing three-span bridge is comprised of a main 84-ft-long span of three steel girders with concrete deck supported on seat bents with pile-columns. End spans are 30-ft-long spans of reinforced concrete T-beams. The existing bridge's low soffit elevation is 49.9 ft.

As-built plans used to evaluate the existing bridge geometry include:

- 203-100 (1926) Meekland Avenue Bridge, Western Iron Works
- 24A8Y-60 (1926) Meekland Ave Bridge B-16-5, Alameda County
- U-157-2 (1973) Plans for the Modifications of Meekland Avenue Bridge, ACPWA
- CB-967 (2018) Installation of Full Trash Capture Devices in the Vicinity of Meekland Ave and Loma Verde Drive, Kleinfelder

The existing bridge was built in 1927, before the concrete channel liner was installed. A bridge cross section from Sheet 1 of the original Meekland Avenue bridge plans (Alameda County, 1926) is provided in Figure 4.

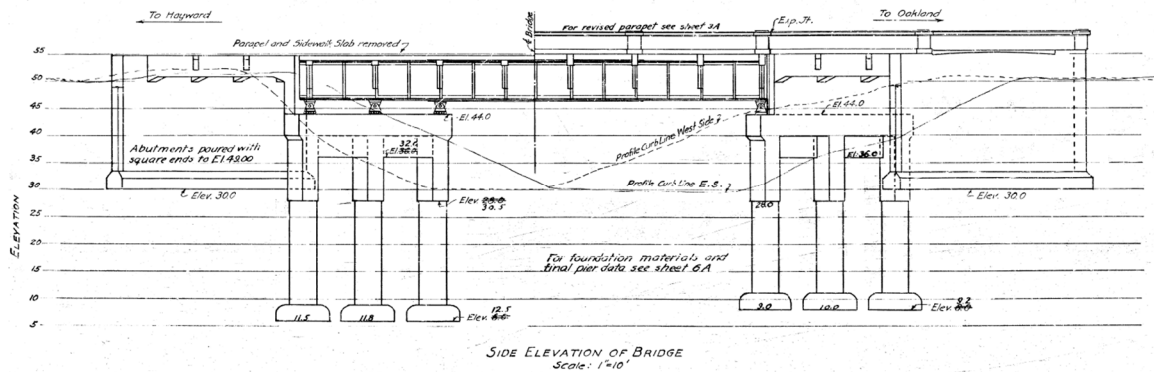


Figure 4. Cross Section of Existing Bridge

Source: Alameda County, 1926

According to the USACE's O&M Manual for the San Lorenzo Creek Channel Improvement, the San Lorenzo Creek in the Project area was built into a rectangular, concrete-lined channel with fish passage in the 1960s (USACE, 1963). This fish passage structure is an 8-inch-deep trapezoidal slot down the middle of the channel. Figure 5 shows cross sections of this inner channel documented in the O&M Manual (Sheets 20 and 21). Figure 6 shows a profile view of the San Lorenzo Creek channel at the Meekland Avenue crossing from Sheet 11 of the same plans.

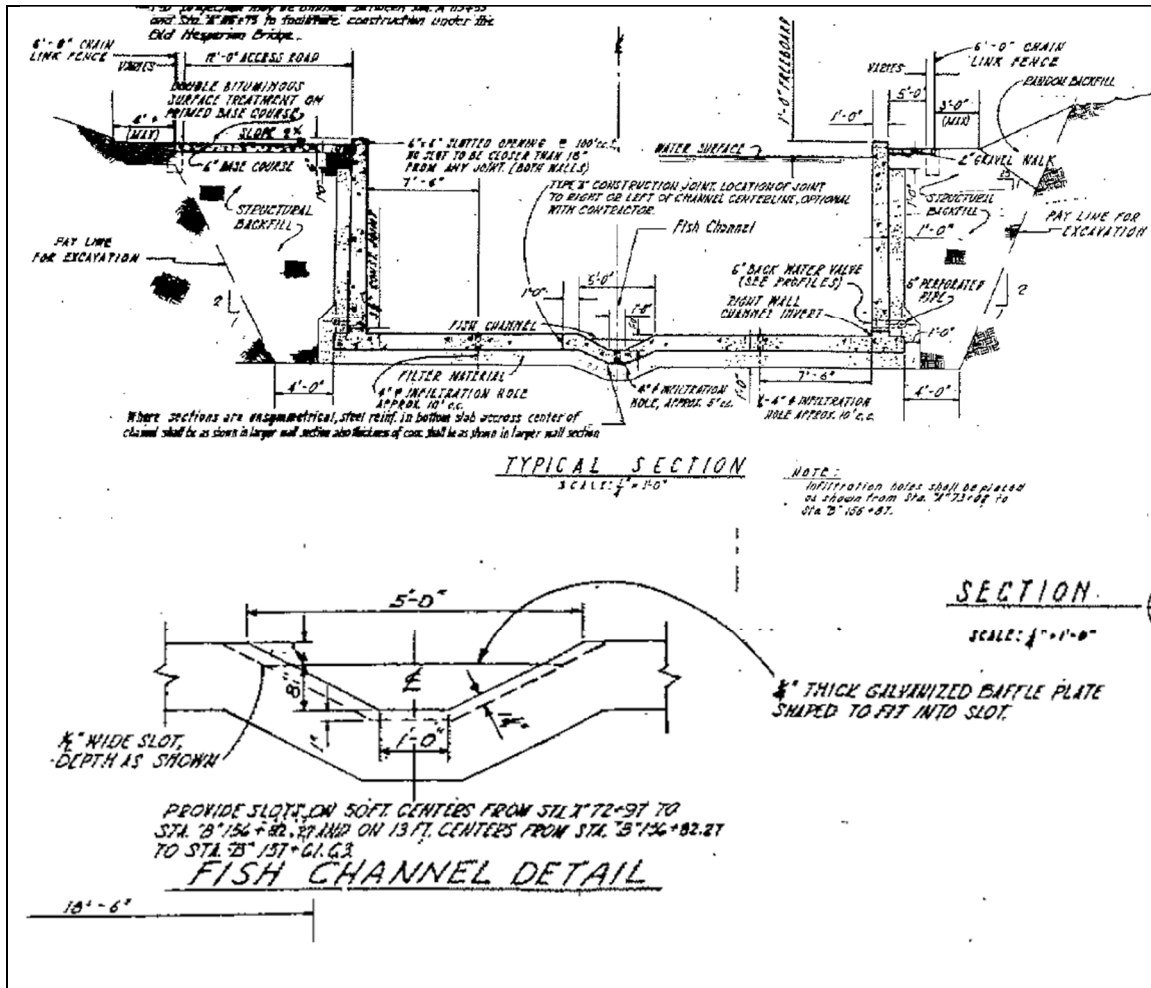


Figure 5. San Lorenzo Creek Cross Section

Source: USACE, 1963

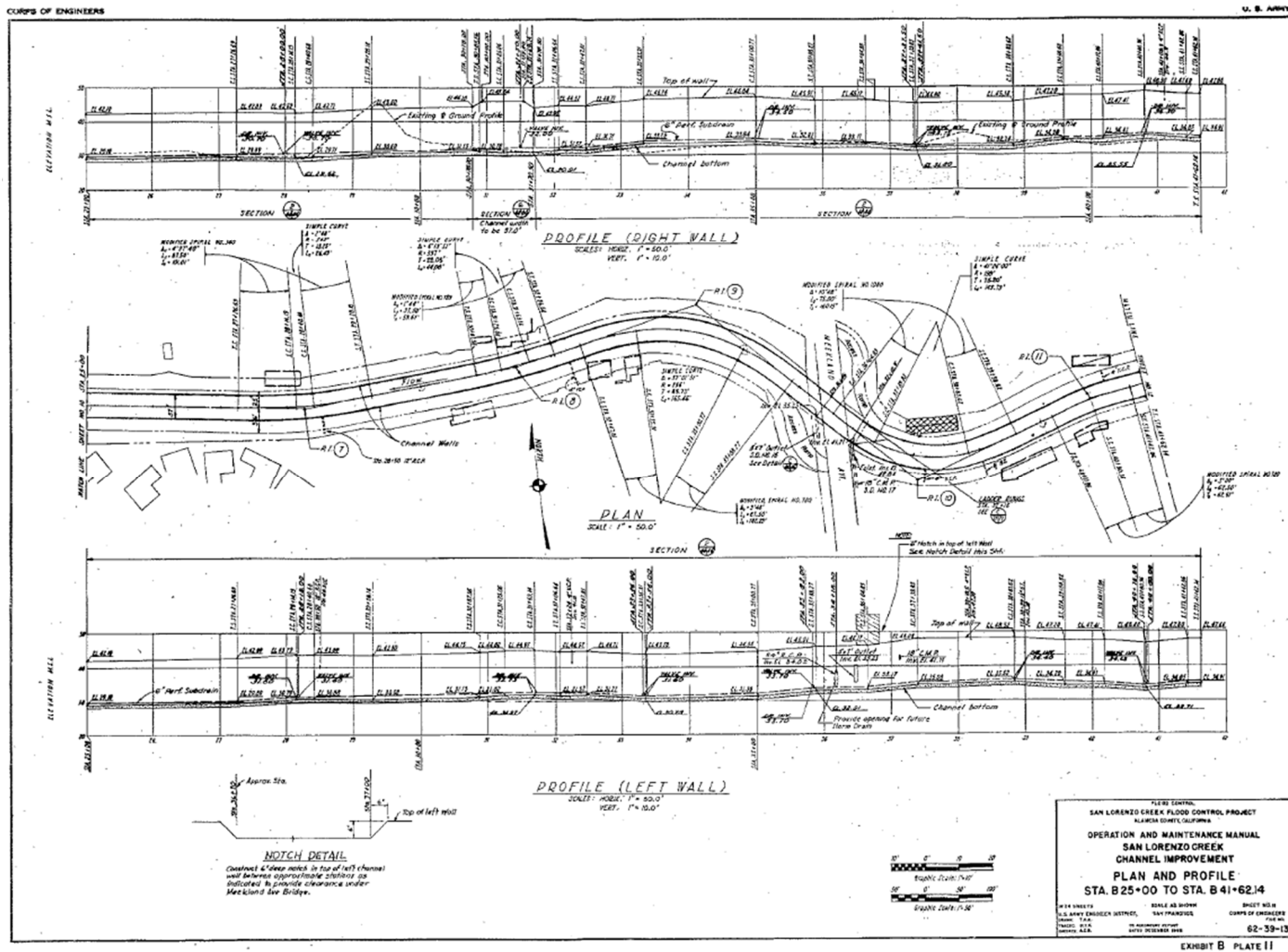


Figure 6. San Lorenzo Creek at Meekland Avenue Profile
Source: USACE, 1963

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1.5 Proposed Bridge

Alameda County proposes to replace the existing bridge with a new single-span bridge that will accommodate two travel lanes, Class II bike lanes, raised concrete sidewalks, and traffic-rated vehicular barriers to meet AASHTO standards. The total proposed bridge design width is 54 ft, 4 inches with a soffit elevation of 54.7 ft.

The replacement bridge will be approximately 125 ft, 10 inches-long with the abutments placed behind the channel and infill walls at the ends of the bridge. The bridge abutments are shown to be supported by deep foundations. Recommendations for suitable foundation types are provided in the *Draft Preliminary Foundation Report* (WRECO, 2021).

The replacement bridge will be designed to avoid affecting the existing storm drain and sewer lines running parallel to the bridge on the east side. The existing trash capture structure on the west side will require modification to accommodate the widened bridge deck.

The analysis presented in this report is for the bridge design shown in *Improvements of Meekland Avenue Phase II General Plans* produced by Wood Rodgers (2021). Any future changes to those plans may need to be reanalyzed to confirm they meet the design requirements found within the HHM (2018) and the EDG (2008).

1.6 Purpose

This Bridge Design Hydraulic Study presents design flow characteristics for the existing bridge and proposed replacement bridge. Calculated scour potential and recommendations on the need for scour countermeasures for the proposed bridge is unnecessary for design because the channel at the Project site is concrete-lined. This report presents the hydraulic characteristics and design recommendations for the proposed single-span bridge.

1.7 Key Tasks

Key tasks performed for this bridge design hydraulic study included: 1) review of available hydrologic data, 2) hydrologic study, and 3) hydraulic analysis to determine design water surface elevations (WSE) and flow velocities for the existing and proposed bridges. Because the existing and proposed channel is concrete-lined, scour analysis to estimate potential scour depths, and scour countermeasure analyses and recommendations will not be required for this Project.

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Meekland Avenue Corridor Improvements Project
Cherryland in Alameda County, California

Existing Bridge No. 33C0206
WRECO P20101

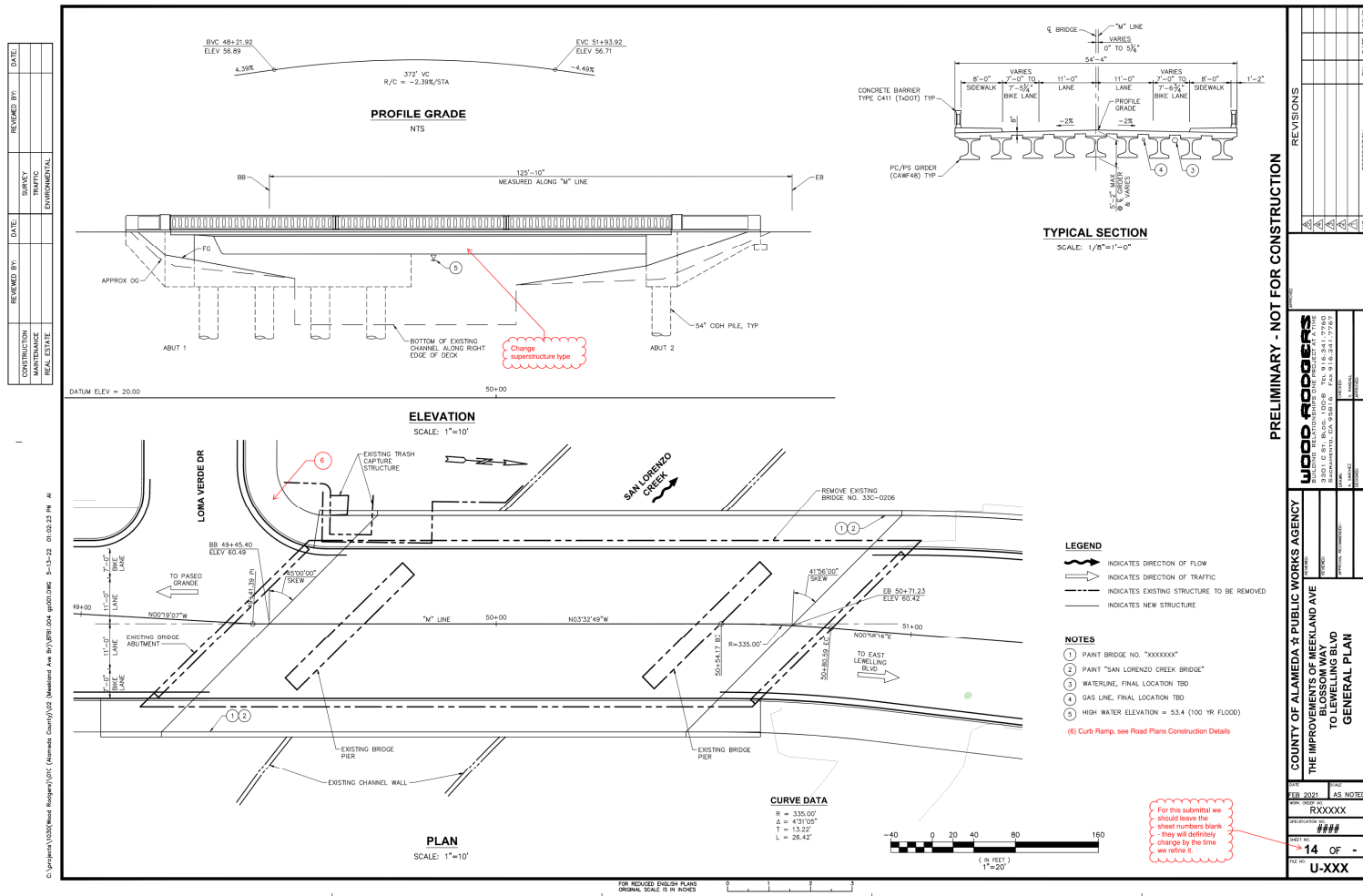


Figure 7. General Plan of the Proposed Bridge
Source: Wood Rodgers, Inc., 2021

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1.8 Design Criteria

The following criteria were used in to design the proposed replacement bridge.

1.8.1 Hydraulic Design Criteria

1.8.1.1 FHWA Standards

Bridges must be designed per the *California Amendments to the American Association of State Highways and Transportation Officials Load and Resistance Factor Design Bridge Design Specifications (2017 Eighth Edition)* (AASHTO LRFD BDS) (Caltrans, 2019). The *California Amendments to the AASHTO LRFD BDS (2017 Eighth Edition)* Section 2.6.3 defers to state requirements for hydraulic studies.

From *Memo to Designers 16-1 Hydraulic Design for Structures over Waterways*, the proposed bridge soffit should provide adequate freeboard to pass anticipated drift for the 50-year design flood, or to pass the 100-year base flood without freeboard, whichever is greater (Caltrans, 2017).

1.8.1.2 Caltrans Standards

From Chapter 820 of the Caltrans' *Highway Design Manual*, hydraulic bridge design is required to pass the 2 percent probability of annual exceedance flow (50-year design discharge) with adequate freeboard to pass anticipated drift and debris (2020). Two (2) feet of freeboard is commonly used in bridge designs. Alternatively, bridges can also be designed to pass the 1 percent probability of annual exceedance flow (100-year design discharge or base flood). No freeboard is added to the base flood.

1.8.1.3 Alameda County Standards

ACFCD develops and maintains flood control systems for the public safety, health, and welfare of Alameda County residents and businesses. Additionally, the Alameda County Clean Water Program enforces pollution control regulations governing Alameda County waterways.

According to the HHM Table 10 (ACFCD, 2018), facilities within the San Lorenzo Creek watershed must be designed to the following three scenarios:

1. The 100-year (1-percent-annual-chance) discharge using mean higher high water (MHHW) as a tailwater surface elevation at the San Francisco Bay, with 1 ft of freeboard.
2. The Standard Project Flood (SPF) discharge using MHHW as a tailwater surface elevation at the San Francisco Bay, with 1 ft of freeboard.
3. The 5-year (20-percent-annual-chance) discharge using the 100-year (1-percent-annual-chance) tide elevation as a tailwater surface elevation at the San Francisco Bay, with 1 ft of freeboard.

1.8.2 Foundation Criteria

Per the *California Amendments to the AASHTO LRFD Bridge Design Specifications* (Caltrans, 2019), foundations should be designed to withstand the conditions of scour. Caltrans' *Memo to Designers 16-1* (2017) provides additional guidance on foundation placement:

The top of a spread footing must be placed at or below the anticipated total scour (Degradation + Contraction + Local) elevation (*LRFD 2.6.4.4.2 and LRFD-BDS-CA Figure C2.6.4.4.2-1*) unless founded on competent, scour-resistant bedrock.

The top of a pile cap footing must be placed at or below the estimated degradation plus contraction scour depth (*LRFD 2.6.4.4.2 and LRFD-BDS-CA Figure C2.6.4.4.2-2*). The bottom of a pile cap footing should be placed at or below the anticipated Total Scour elevation.

1.8.3 Scour Design Criteria

Evaluation of potential scour at the proposed bridge is not needed because the channel is concrete-lined. Consequently, there will be no rock slope protection or erosion countermeasure recommendations.

1.9 Vertical Datum

The Project references the North American Vertical Datum of 1988 (NAVD 88).

2 GEOGRAPHIC SETTING

2.1 Geographic Location

The Project is located east of San Francisco Bay, west of the East Bay hills, and within the unincorporated community of Cherryland. The Project area is relatively flat (less than 2 percent slopes) and extremely urbanized. Meekland Avenue runs parallel to Interstate 880 and State Route 185 (Mission Boulevard) and connects East Lewelling Boulevard in the unincorporated community of Ashland to A Street in Hayward, Alameda County, California. The Meekland Avenue bridge at the San Lorenzo Creek crossing is located approximately 3 miles upstream from the San Lorenzo Creek outfall to San Francisco Bay.

2.2 Watershed Description

According to the California Department of Fish and Wildlife (2020), the Project is within the South Bay Hydrologic Unit in the East Bay Cities Hydrologic Area. The Project is also in the San Lorenzo Creek subbasin (180500040802), in the San Lorenzo Creek – Frontal San Francisco Bay Watershed, within the San Francisco Bay Basin. The San Lorenzo Creek subbasin is 48 square miles in area and drains from the East Bay hills into the San Francisco Bay through San Lorenzo Creek per Alameda County’s Interactive Watershed Map (ACFCD, 2021)

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3 HYDROLOGIC ANALYSIS

The following sub-sections describe the hydrologic data sources that were used to estimate flows for the Project site.

3.1 Hydrologic Design Methods

WRECO evaluated the hydrology at the Project site using the following hydrologic design methods:

1. USGS Regional Regression Equations
2. Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS)
3. USACE's O&M Manual
4. ACFCD channel flow rates

3.1.1 Design Discharge Summary

3.1.1.1 U.S. Geological Survey Regional Regression Equations

Flood-frequency equations were developed by the USGS and based on analysis of gaging station data. California is divided into six regions; the Project site is within the North Coast region (Region 1). These flood-frequency equations are generally used to estimate stream flow for ungaged sites that are not affected by substantial urban development and that are natural (unregulated) streams.

On July 18, 2012, the USGS issued *Methods for Determining Magnitude and Frequency of Floods in California, Based on Data through Water Year 2006* (Gotvald et. al. 2012), which presents the regional flood-frequency equations, and the boundaries of the six unique regions within California. These equations are based on annual peak flow data through water year 2006 for 771 streamflow-gaging stations in California having 10 or more years of data. These equations were used in support of the Project's hydrologic analysis.

The peak discharges at the Project site were calculated using the USGS regional regression equations (Table 1). The detailed USGS StreamStats report is presented in Appendix B (USGS, 2021).

Table 1. Peak Discharges of San Lorenzo Creek at the Project Site Using Regional Regression Equations

Drainage Area (square miles)	Precipitation (inches)	Peak Design Discharge (cfs)		
		100-Year	50-Year	5-Year
46.5	25.9	8,230	6,970	3,010

cfs = cubic feet per second

3.1.1.2 Federal Emergency Management Agency – Flood Insurance Study FIS number 06001CV001B defines the drainage area and 1-percent (100-year) and 0.2-percent (500-year) peak discharges for San Lorenzo Creek just upstream of Washington Boulevard, which is approximately 1.2 miles downstream from the Project location. The FEMA FIS flow rates are summarized in Table 2. The flowrates from the FEMA FIS were not selected for the hydraulic analysis, as Alameda County provided direction to use the revised 100-year and SPF flowrates as described in Section 3.1.1.4.

Table 2. FEMA FIS Flow Values

Return Frequency (years)	Peak Flow (cfs)
100	9,940
500	10,065

3.1.1.3 U.S. Army Corps of Engineers’ Operation and Maintenance Flow
As the San Lorenzo Creek is an engineered channel at the Project location, there is an accompanying O&M manual that documents the history and recommended O&M procedures for the channel, but did not present any design or O&M flow rates (USACE, 1963).

3.1.1.4 ACFCF Channel Flow Rates

The San Lorenzo Creek channel was decertified by the USACE in 1998 after a 20-year storm produced the SPF of 10,300 cfs. ACFCF worked with FEMA to remap the floodplain and determined the revised 100-year peak channel flow rate to be 12,500 cfs which overtops the channel banks and floods portions of the unincorporated communities of Ashland and Cherryland (Table 3). Alameda County has various projects scheduled that will ultimately detain the channel’s maximum flow rate back to the original USACE SPF of 10,300 cfs. These projects are anticipated to start within the next 10 years.

3.1.2 Selected Design Discharges

Per Alameda County direction, the revised 100-year design flow of 12,500 cfs and SPF of 10,300 cfs were used for the bridge hydraulic analysis. The 50-year design flow of 6,970 cfs from the USGS regional regression equation was used for this analysis. The 5-year design flow was selected from the USGS regional regression equation. Table 3 provides a summary of design flows used for the Project.

Table 3. Design Flow Values

Return Frequency (years)	Peak Flow (cfs)
SPF	10,300
100	12,500
50	6,970
5	3,010

4 HYDRAULIC ANALYSIS

The following sections discuss the development of the hydraulic models and summarize the results for the existing and proposed conditions. The water surface profile plots, hydraulic summary tables, and channel cross sections are included in 0 for the existing bridge and Appendix D for the proposed bridge.

4.1 Hydraulic Model Development

4.1.1 Design Tools

The hydraulic analyses were performed for the existing and proposed conditions using the USACE's *Hydrologic Engineering Center's River Analysis System* (HEC-RAS) modeling software, Version 5.0.7 (2017).

4.1.2 Geometry

Geometry conditions were developed for the existing bridge conditions and the proposed bridge design, using as-builts provided by Wood Rodgers, Inc. as well as key bridge parameter information provided in the Project Description and in the 50% Plan Sheet titled *The Improvement of Meekland Avenue, Blossom Way To Lewelling Blvd General Plan* (Appendix A; Wood Rodgers, Inc. 2021). Table 4 provides the bridge geometry between the existing and proposed conditions. The street improvements along Meekland Avenue will match existing grades and are not anticipated to affect the floodplain.

Table 4. Bridge Geometry Parameters

Parameter	Existing	Proposed
Length (feet)	84.0	125.8
Width (feet)	40.0	54.3
Soffit Elevation (feet NAVD 88)	49.9	54.7

4.1.3 Hydraulic Modeling Directions from County

The following directions were provided by ACFCFCD for this hydraulic analysis:

- Use the revised 100-year (12,500 cfs) and SPF (10,300 cfs) provided by ACFCFCD
- Use Manning's n values of 0.015 and 0.06 for the channel and overbank areas, respectively.
- Use standard step method (energy equation) at the Project bridge for both the high and low flow events.
- Assume design flow events are entirely contained within the channel upstream of the Project bridge: Levees with elevation of 200 ft are placed along the top of channel and edge of access road to contain the design flow.

- Use Alameda County's HEC-RAS 1-D model (County model) from WRECO's *San Lorenzo Creek Dam Breach Technical Report* (2020) to extend the WRECO model downstream to where San Lorenzo Creek outfalls into San Francisco Bay.

The Alameda County model was also used to extend the WRECO model upstream to where the Western Pacific Railroad crosses over San Lorenzo Creek.

WRECO was instructed by Alameda County to use a 100-year design flow of 12,500 cfs to determine the San Lorenzo Creek WSE and available freeboard at the Project bridge. Because Alameda County is planning various upstream improvement projects to detain and lower the flow in the channel to the original SPF of 10,300 cfs, WRECO was requested to analyze the SPF of 10,300 cfs as well. Table 3 summarizes the hydraulic results at the Project bridge.

4.1.4 Steady State Boundary Conditions

To account for tidal influence, tailwater depth was set to a constant depth of 7 ft in the channel, which corresponds to the MHHW tide (ACFCD, 2016). Tailwater conditions for the channel are assumed to be tidally influenced. As per the HHM (2018), the MHHW tide elevation was considered for the 100-year storm event. The 100-year tailwater elevation was set to 10.3 ft for the 5-year storm event. Excerpts from the HHM (2018) showing the MHHW and 100-year tailwater elevations are provided in Appendix E.

4.1.5 Expansion and Contraction Coefficients

Expansion and contraction coefficients were used in the hydraulic model to represent energy losses in the channel. Expansion and contraction coefficients of 0.3 and 0.1, respectively, were used to represent the channel with gradual transitions between cross sections.

4.2 Hydraulic Model Results

The hydraulic results in this report are based on the proposed bridge as shown in the *Improvements of Meekland Avenue Phase II General Plans* produced by Wood Rodgers (2021). Any future changes to those plans may need to be reanalyzed to confirm they meet the design requirements found within the HHM (2018) and the EDG (2018).

4.2.1 Water Surface Elevations

Results from the channel and bridge analysis show a decrease in WSE at the Project bridge in the proposed condition compared to the existing condition. This is because the proposed bridge soffit will be raised higher than the 100-year WSE so that pressure flow and flow obstruction are not introduced. The resulting WSEs for the 100-year, SPF, 50-year, and 5-year flows are summarized in Table 5,

Table 6, Table 7, and Table 8, respectively. The channel profile for the existing and proposed bridge are shown in Figure 8 and Figure 9, respectively. The upstream face of the existing and proposed bridge cross section is shown in Figure 10 and Figure 11, respectively.

Table 5. San Lorenzo Creek 100-Year Water Surface Elevations

River Station	Location Description	Existing WSE (ft)	Proposed WSE (ft)	Change in WSE
15643.38	Approximately 150 ft upstream of the existing bridge	61.0	54.5	-6.5
15599.32	Approximately 100 ft upstream of the existing bridge	61.0	54.5	-6.5
15547	Approximately 50 ft upstream of the existing bridge	61.0	53.5	-7.5
15500 BR U	Upstream face of the existing bridge	56.5	52.4	-4.1
15500 BR D	Downstream face of existing bridge	55.9	52.5	-3.4
15447.55	Approximately 60 ft downstream of existing bridge	52.2	52.2	0.0
15397.2	Approximately 110 ft downstream of existing bridge	52.8	52.8	0.0
15364.13	Approximately 140 ft downstream of existing bridge	52.7	52.7	0.0

Table 6. San Lorenzo Creek SPF Flow Water Surface Elevations

River Station	Location Description	Existing WSE (ft)	Proposed WSE (ft)	Change in WSE
15643.38	Approximately 150 ft upstream of the existing bridge	52.9	52.7	-0.1
15599.32	Approximately 100 ft upstream of the existing bridge	52.9	52.8	-0.1
15547	Approximately 50 ft upstream of the existing bridge	51.8	51.5	-0.4
15500 BR U	Upstream face of the existing bridge	49.9	50.3	0.4
15500 BR D	Downstream face of existing bridge	50.4	51.0	0.6
15447.55	Approximately 60 ft downstream of existing bridge	50.8	50.8	0.0
15397.2	Approximately 110 ft downstream of existing bridge	51.2	51.2	0.0
15364.13	Approximately 140 ft downstream of existing bridge	50.7	50.7	0.0

Table 7. San Lorenzo Creek 50-Year Water Surface Elevations

River Station	Location Description	Existing WSE (ft)	Proposed WSE (ft)	Change in WSE
15643.38	Approximately 150 ft upstream of the existing bridge	48.8	48.8	0.0
15599.32	Approximately 100 ft upstream of the existing bridge	48.8	48.8	0.0
15547	Approximately 50 ft upstream of the existing bridge	47.5	47.5	0.0
15500 BR U	Upstream face of the existing bridge	46.9	46.9	0.0
15500 BR D	Downstream face of existing bridge	48.0	48.0	0.0
15447.55	Approximately 60 ft downstream of existing bridge	47.9	47.9	0.0
15397.2	Approximately 110 ft downstream of existing bridge	48.1	48.1	0.0
15364.13	Approximately 140 ft downstream of existing bridge	47.5	47.5	0.0

Table 8. San Lorenzo Creek 5-Year Water Surface Elevations

River Station	Location Description	Existing WSE (ft)	Proposed WSE (ft)	Change in WSE
15643.38	Approximately 150 ft upstream of the existing bridge	43.2	43.2	0.0
15599.32	Approximately 100 ft upstream of the existing bridge	43.1	43.1	0.0
15547	Approximately 50 ft upstream of the existing bridge	42.6	42.6	0.0
15500 BR U	Upstream face of the existing bridge	42.1	42.1	0.0
15500 BR D	Downstream face of existing bridge	42.1	42.1	0.0
15447.55	Approximately 60 ft downstream of existing bridge	41.9	41.9	0.0
15397.2	Approximately 110 ft downstream of existing bridge	42.1	42.1	0.0
15364.13	Approximately 140 ft downstream of existing bridge	41.1	41.1	0.0

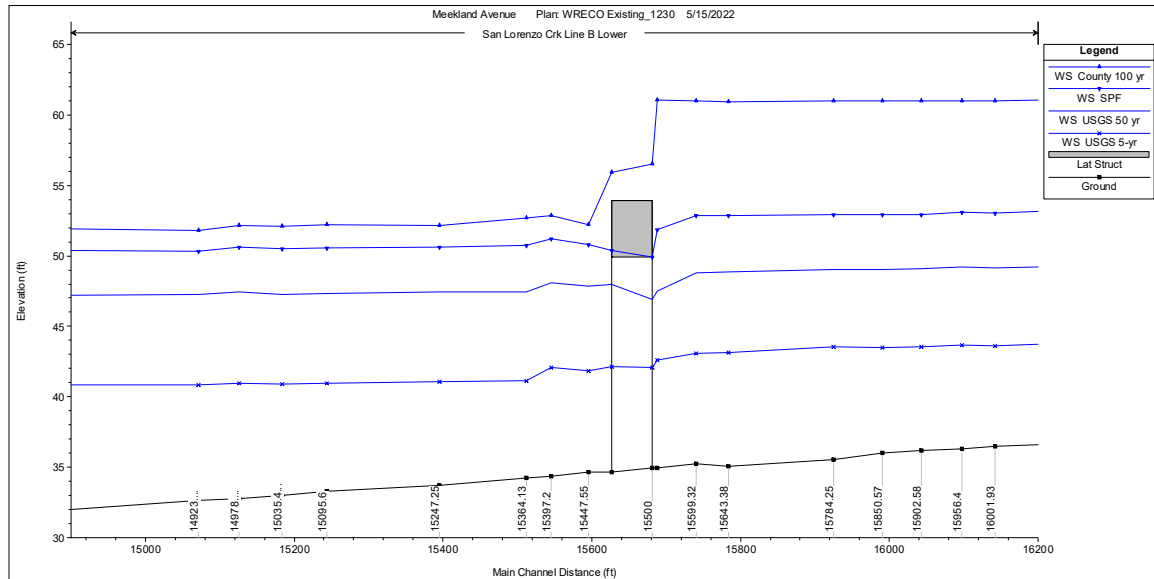


Figure 8. WSE Profile: Existing Conditions

Source: HEC-RAS model results 0

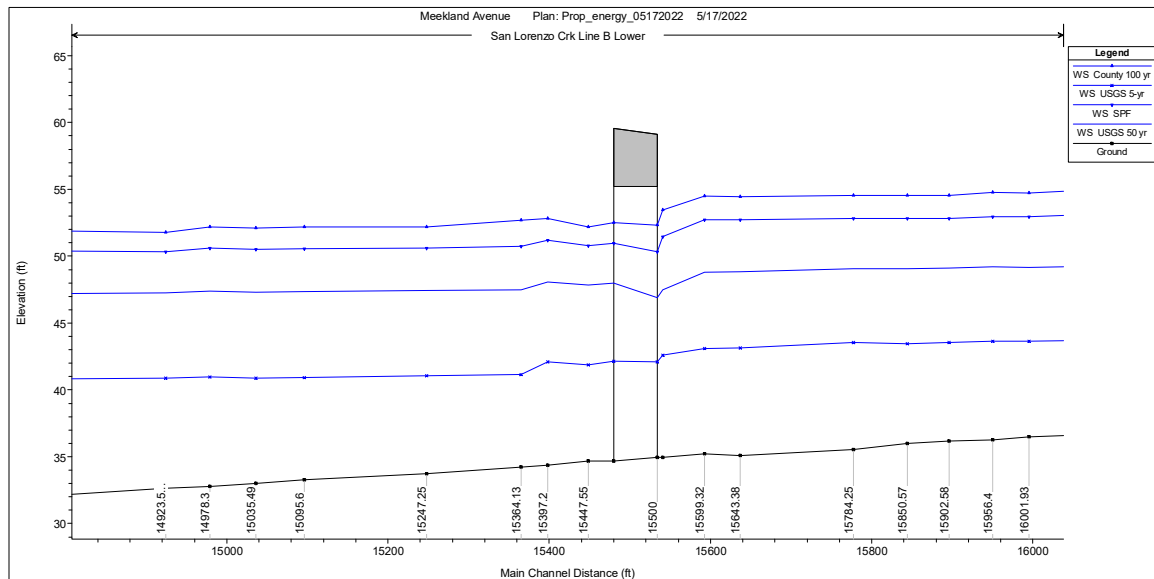


Figure 9. WSE Profile: Proposed Conditions

Source: HEC-RAS model results Appendix D

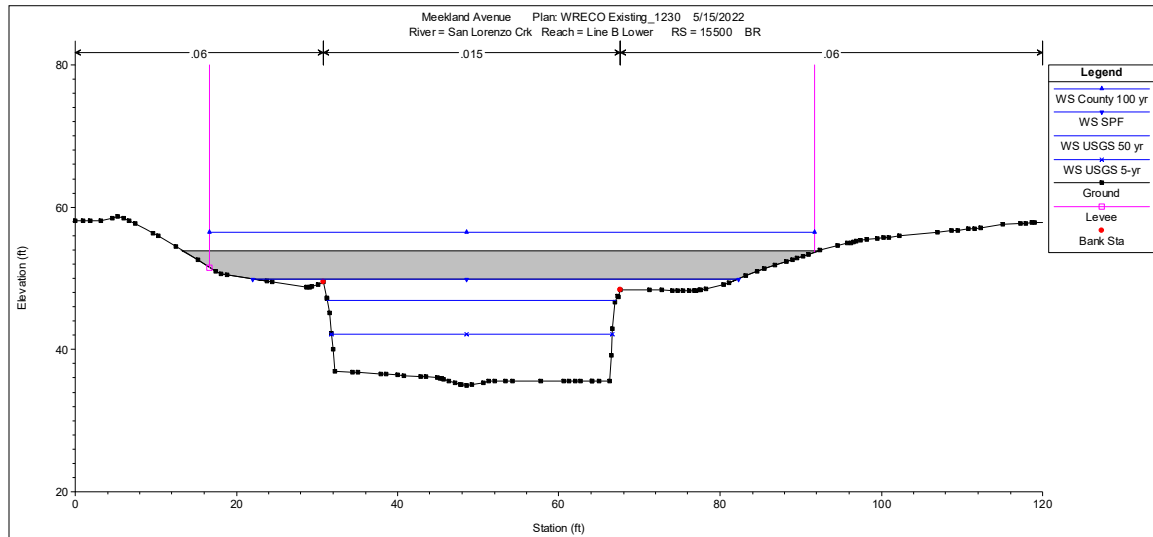


Figure 10. Upstream Face of Existing Bridge, Looking Downstream
 Source: HEC-RAS model results 0

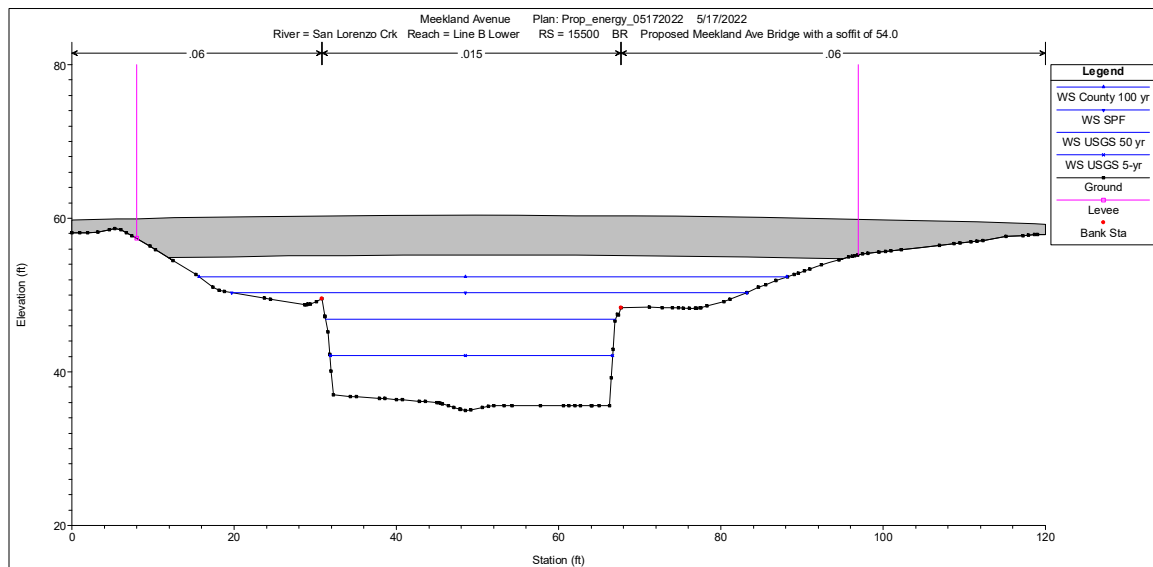


Figure 11. Upstream Face of Proposed Bridge, Looking Downstream
 Source: HEC-RAS model results Appendix D0

4.2.2 Freeboard

The existing Meekland Avenue Bridge soffit elevation is 49.9 feet (NAVD 88). Both the 100-year and SPF design events do not pass freely underneath the existing bridge and there is no freeboard. The Project proposes to raise the bridge soffit to 54.7 ft (NAVD 88), which will allow the 100-year and SPF design events to pass freely underneath the bridge with 3.2 ft and 1.2 ft of freeboard, respectively. The existing and proposed WSE and available freeboard are presented in Table 9.

Table 9. Available Freeboard

Return Frequency (years)	Peak Flow (cfs)	Existing Bridge (Soffit – 49.9 ft)		Proposed Bridge (Soffit – 54 ft)	
		WSE*	Freeboard	WSE*	Freeboard
100	12,500	61.0	No Freeboard	53.5	1.2
SPF	10,300	51.8	No Freeboard	51.5	3.2
50	6,970	47.5	2.4	47.5	7.2
5	3,010	42.6	7.3	42.6	12.1

Elev. ft = Elevation in NAVD 88

cfs = Flow rate in cubic feet per second

*WSE taken at the cross section immediately upstream of Project bridge

The 50-year design event has 7.2 ft of freeboard which meets the recommended design criteria of 2 feet of freeboard. The 5-year design event with 100-year tailwater also meets the Alameda County design criteria of 1 ft of freeboard.

The three existing driveways adjacent to the bridge must remain open and accessible to car traffic. This design constraint prevents the proposed bridge soffit from being raised any higher than elevation 54.7 ft (NAVD 88). The hydrologic summary table is presented in Table 10.

Table 10. Hydrologic Summary Table

Hydrologic Summary for Bridge No. 33C0206			
Drainage Area: 46.5 Miles ²			
Frequency	Design Flood	Base Flood	Flood of Record
	50-year	100-year	N/A
Discharge	6,970 cfs	12,500 cfs	N/A
Water Surface Elevation of Bridge	47.5 ft	53.5 ft	N/A

Note: Floodplain data are based on information available when the plans were prepared and shown to meet federal requirements. The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation.

5 SCOUR ANALYSIS

Scour analysis is not required for this bridge design because the channel is concrete-lined.

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6 SCOUR AND EROSION COUNTERMEASURES

Because no scour is anticipated for a concrete-lined channel, no erosion countermeasures are required for the proposed bridge design.

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7 REFERENCES

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U.S. Geological Survey (USGS). (2021). StreamStats. <<https://streamstats.usgs.gov/ss>>
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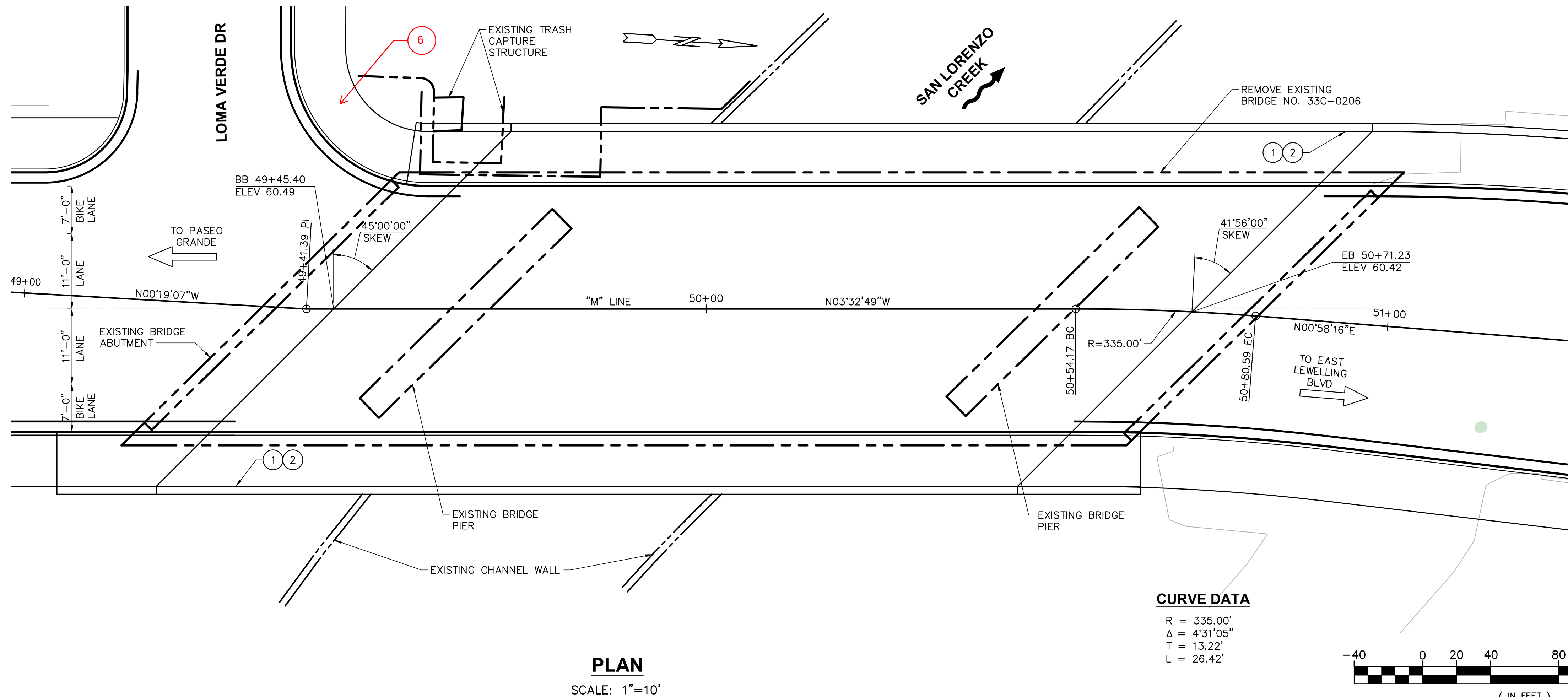
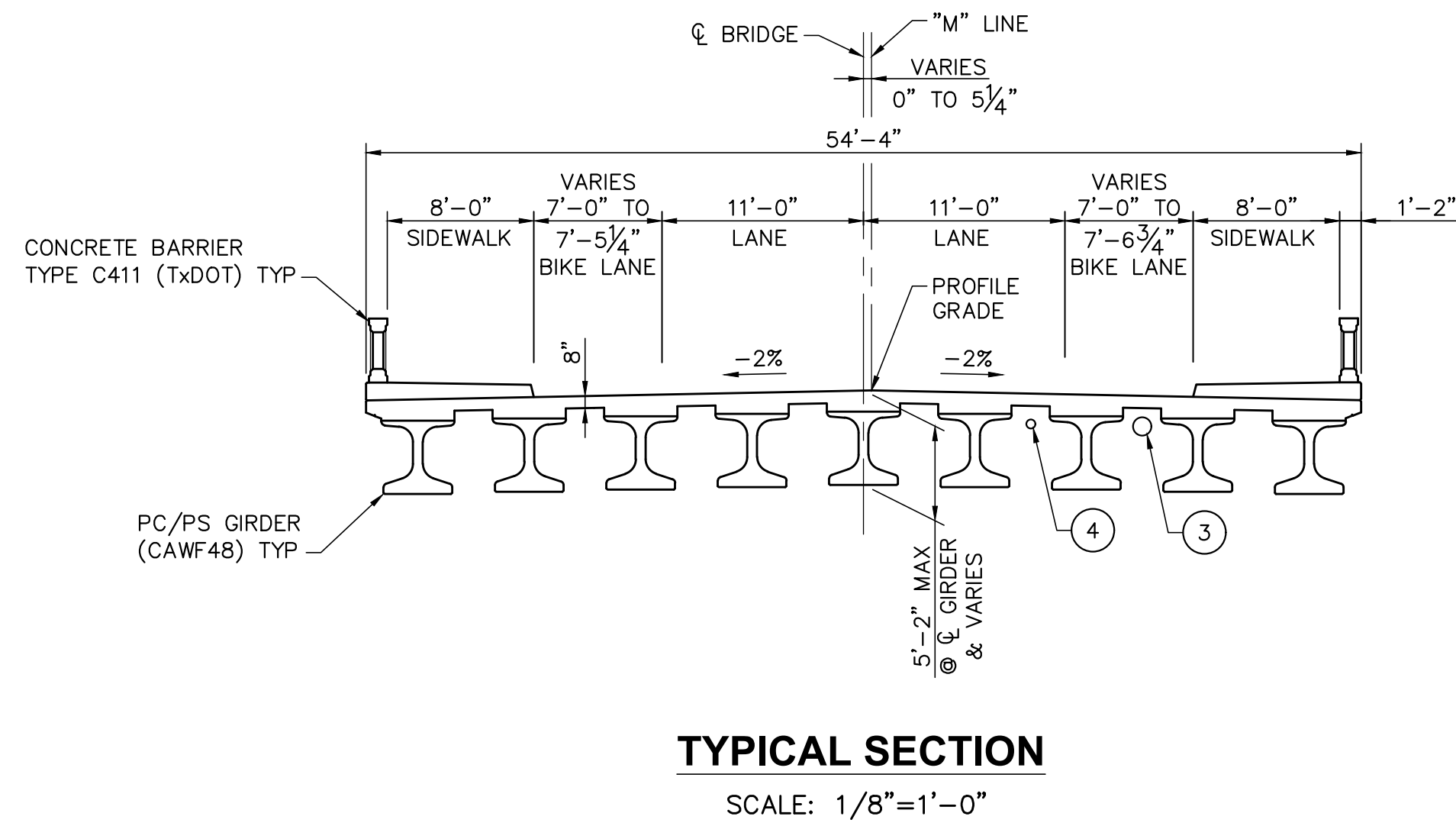
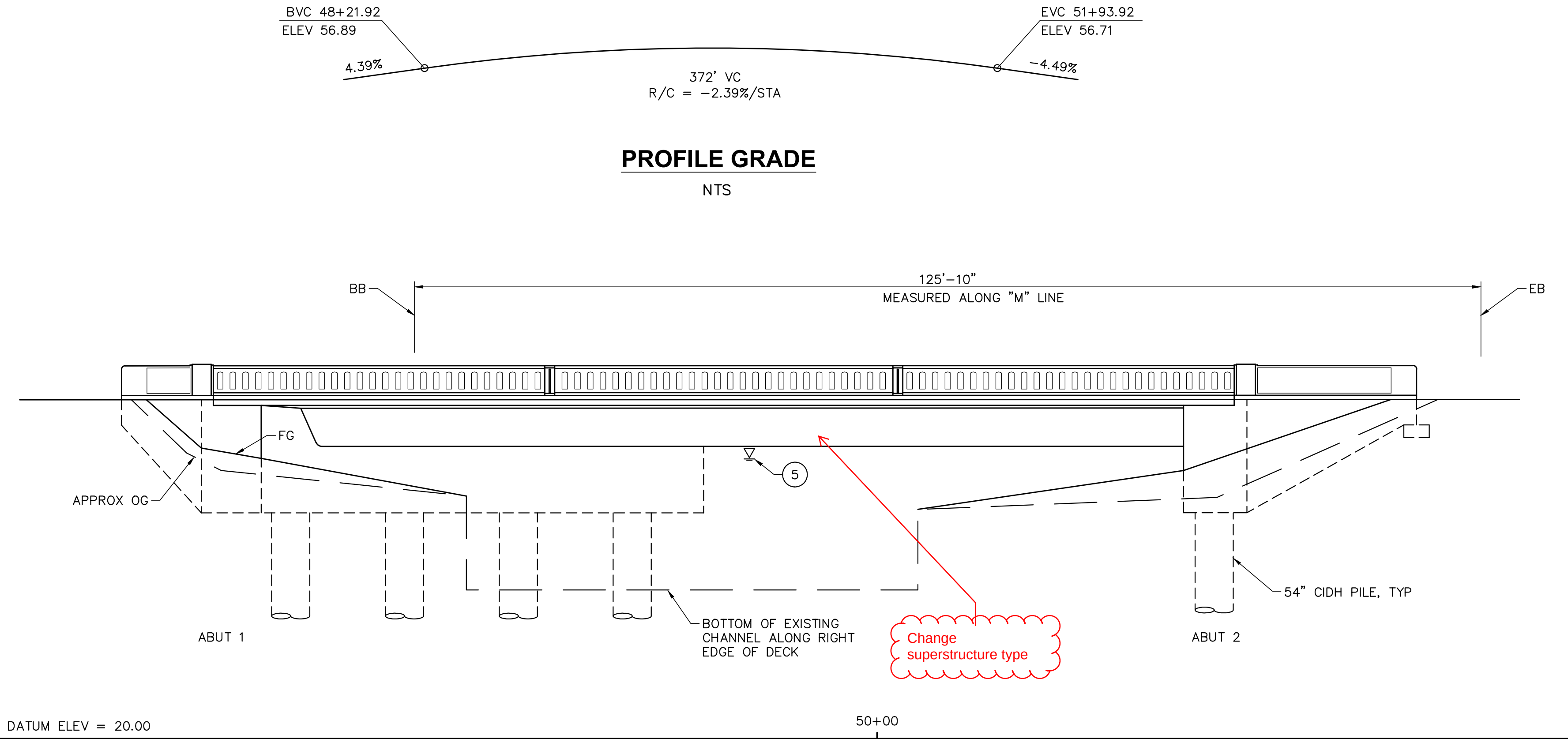
WRECO. (2021). *Draft Preliminary Foundation Report, Meekland Avenue Corridor
Improvements, San Lorenzo Creek Crossing, County of Alameda, California,
Existing Bridge No.33C0206.*

Appendix A **50% Plan Sheet titled *The Improvement of
Meekland Avenue, Blossom Way To Lewelling
Bld General Plan***

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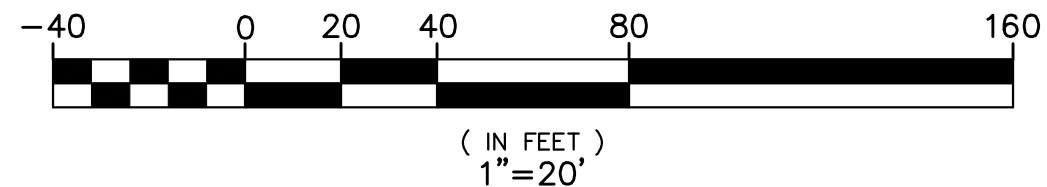
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MAINTENANCE			SURVEY	
REAL ESTATE			TRAFFIC	
			ENVIRONMENTAL	

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CURVE DATA

R = 335.00'
Δ = 4°31'05"
T = 13.22'
L = 26.42'



- LEGEND**
- INDICATES DIRECTION OF FLOW
 - INDICATES DIRECTION OF TRAFFIC
 - INDICATES EXISTING STRUCTURE TO BE REMOVED
 - INDICATES NEW STRUCTURE

- NOTES**
- PAINT BRIDGE NO. "XXXXXXX"
 - PAINT "SAN LORENZO CREEK BRIDGE"
 - WATERLINE, FINAL LOCATION TBD
 - GAS LINE, FINAL LOCATION TBD
 - HIGH WATER ELEVATION = 53.4 (100 YR FLOOD)
- (6) Curb Ramp, see Road Plans Construction Details

For this submittal we should leave the sheet numbers blank - they will definitely change by the time we refine it.

PRELIMINARY - NOT FOR CONSTRUCTION

COUNTY OF ALAMEDA ☆ PUBLIC WORKS AGENCY		THE IMPROVEMENTS OF MEEKLAND AVE BLOSSOM WAY TO LEWELLING BLVD GENERAL PLAN		APPROVED		REVISIONS	
REVIEWED:		REVIEWED:		APPROVAL RECOMMENDED:			
DATE		SCALE		DRAWN:			
FEB 2021		AS NOTED		S. SANCHEZ			
WORK ORDER NO.		RXXXXXX		CHECKED:			
SPECIFICATION NO.		####		S. RANDALL			
SHEET NO.		14 OF -		DESIGNED:			
FILE NO.		U-XXX		E. WESTON			
WOOD RODGERS BUILDING RELATIONSHIPS ONE PROJECT AT A TIME 3301 C ST. BLDG. 100-B TEL 916.341.7760 SACRAMENTO, CA 95816 FAX 916.341.7767				APPROVAL DATE: _____			
				NO.		BY	
				DESCRIPTION		DATE	
				APPR'D			

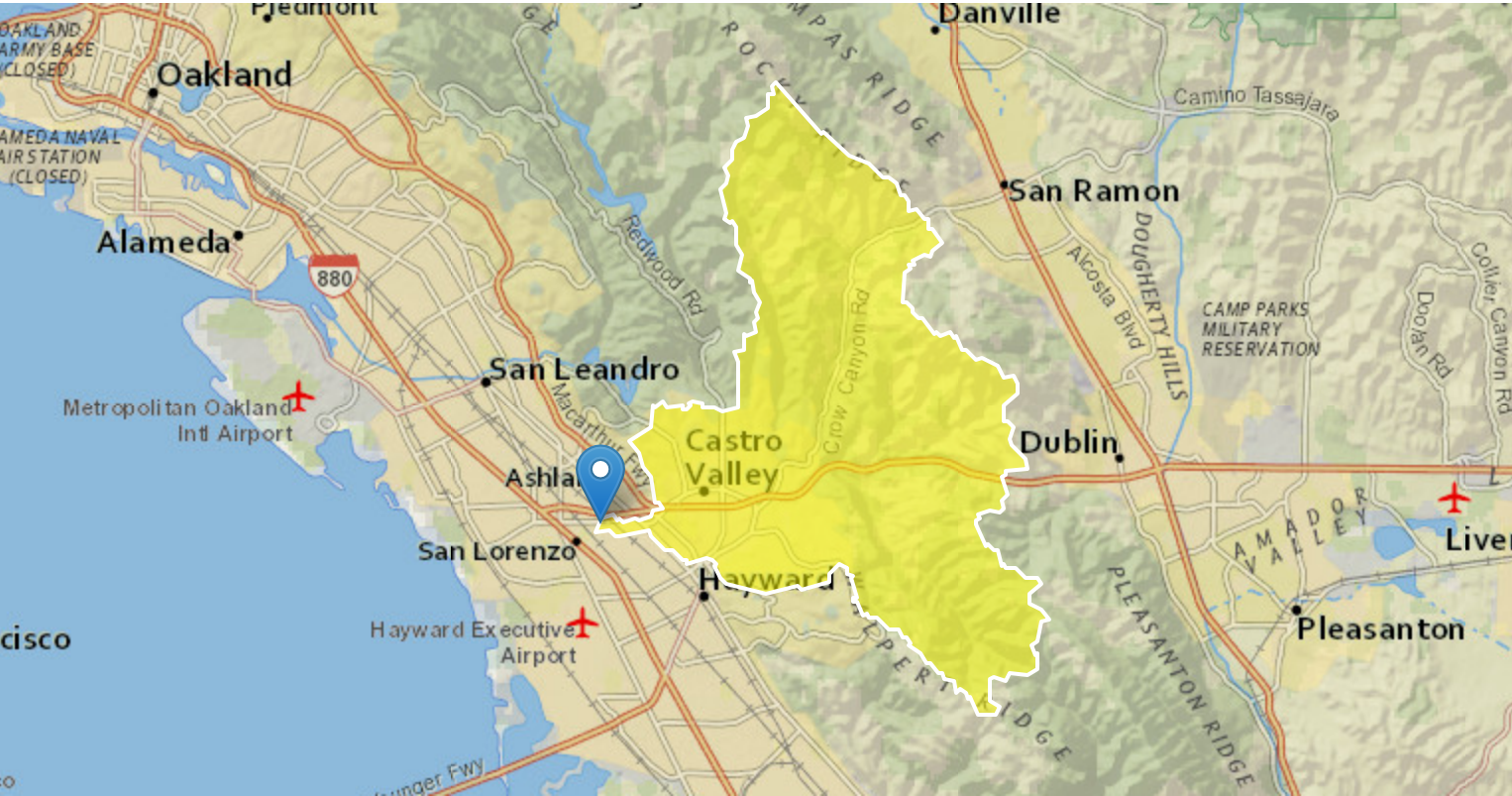
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Appendix B USGS StreamStats Report for San Lorenzo Creek at the Project Site

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San Lorenzo Creek at Meekland Avenue Bridge

Region ID: CA
Workspace ID: CA20210203042654079000
Clicked Point (Latitude, Longitude): 37.68577, -122.11673
Time: 2021-02-02 20:27:13 -0800



Basin Characteristics				
Parameter Code	Parameter Description		Value	Unit
DRNAREA	Area that drains to a point on a stream		46.5	square miles
PRECIP	Mean Annual Precipitation		25.9	inches
BASINPERIM	Perimeter of the drainage basin as defined in SIR 2004-5262		55.2	miles
BSLDEM30M	Mean basin slope computed from 30 m DEM		27.2	percent
EL6000	Percent of area above 6000 ft			percent
ELEV	Mean Basin Elevation		749	feet
ELEVMAX	Maximum basin elevation			feet
FOREST	Percentage of area covered by forest		20	percent

Parameter Code	Parameter Description	Value	Unit
JANMAXTMP	Mean Maximum January Temperature	54.61	degrees F
JANMINTMP	Mean Minimum January Temperature	39.27	degrees F
LAKEAREA	Percentage of Lakes and Ponds		percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24		percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset		percent
LFPLENGTH	Length of longest flow path		miles
MINBELEV	Minimum basin elevation		feet
OUTLETELEV	Elevation of the stream outlet in feet above NAVD88	44	feet
RELIEF	Maximum - minimum elevation		feet
RELRELF	Basin relief divided by basin perimeter		feet per mi

Peak-Flow Statistics Parameters[100 Percent (46.4 square miles) 2012 5113 Region 1 North Coast]					
Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	46.5	square miles	0.04	3200
PRECIP	Mean Annual Precipitation	25.9	inches	20	125
Peak-Flow Statistics Flow Report[100 Percent (46.4 square miles) 2012 5113 Region 1 North Coast]					
PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)					
Statistic	Value	Unit	PII	Plu	SEp
50_percent_AEP_flood	1430	ft^3/s	581	3520	58.6
20_percent_AEP_flood	3010	ft^3/s	1430	6360	47.4
10_percent_AEP_flood	4180	ft^3/s	2050	8510	44.2
4_percent_AEP_flood	5750	ft^3/s	2910	11400	42.7
2_percent_AEP_flood	6970	ft^3/s	3510	13800	42.7
1_percent_AEP_flood	8230	ft^3/s	4050	16700	44.3
0_5_percent_AEP_flood	9440	ft^3/s	4620	19300	44.4
0_2_percent_AEP_flood	11100	ft^3/s	5310	23200	46

Gotvald, A.J., Barth, N.A., Veilleux, A.G., and Parrett, Charles, 2012, Methods for determining magnitude and frequency of floods in California, based on data through water year 2006: U.S. Geological Survey Scientific Investigations Report 2012–5113, 38 p., 1 pl. (<http://pubs.usgs.gov/sir/2012/5113/>)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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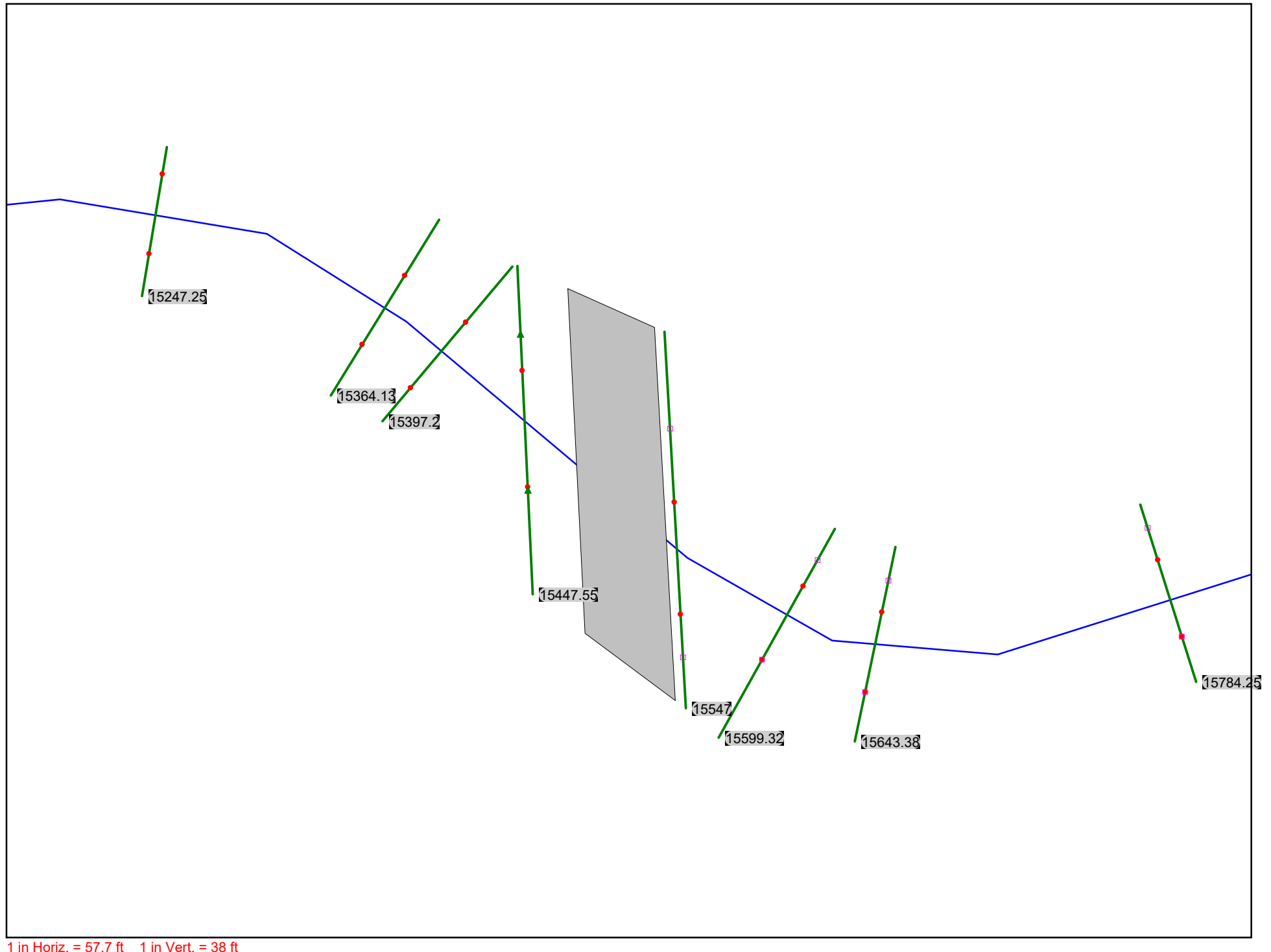
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Appendix C Existing HEC-RAS Results

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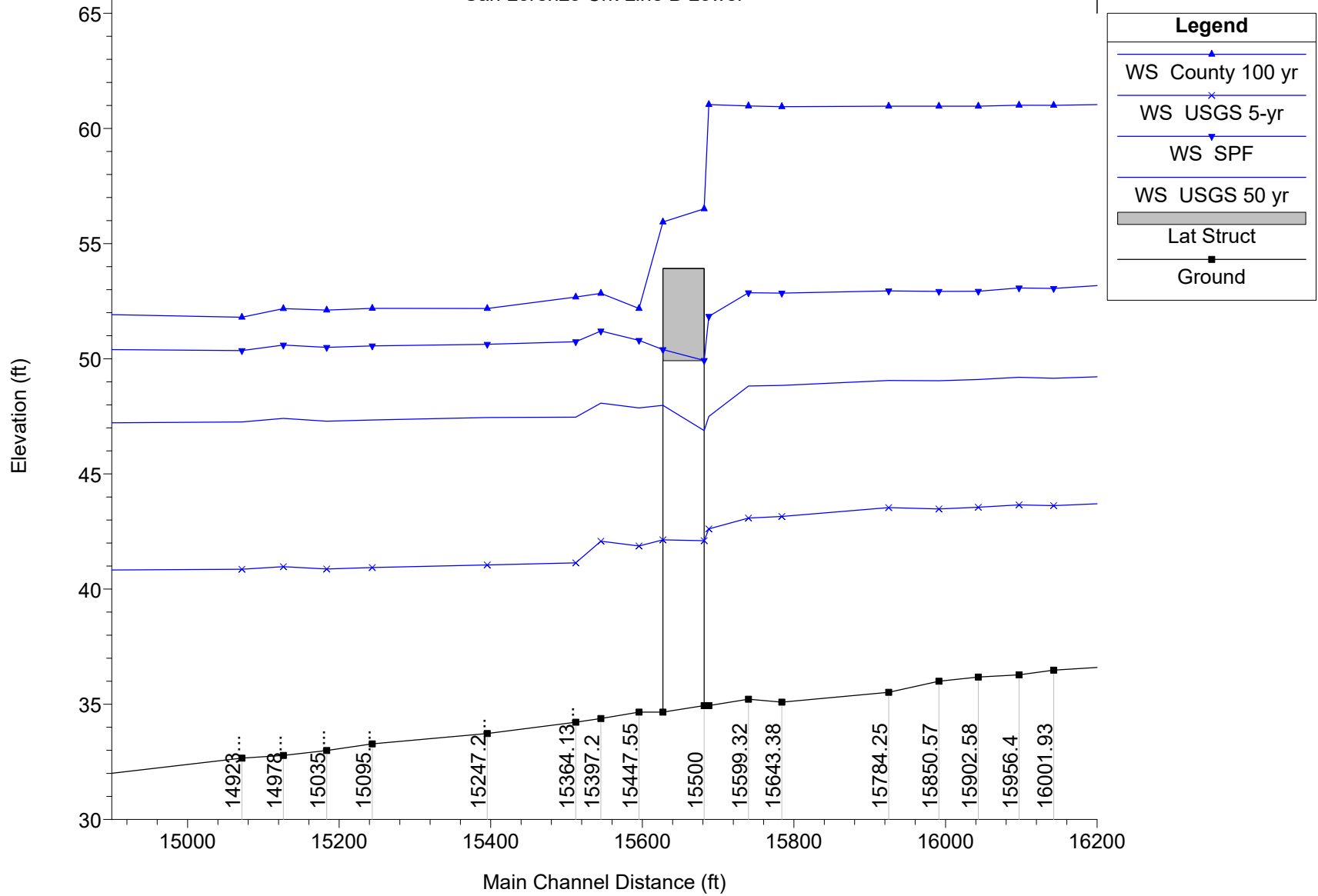
HEC-RAS Results - WRECO Model (Existing)
This appendix only shows partial of the model



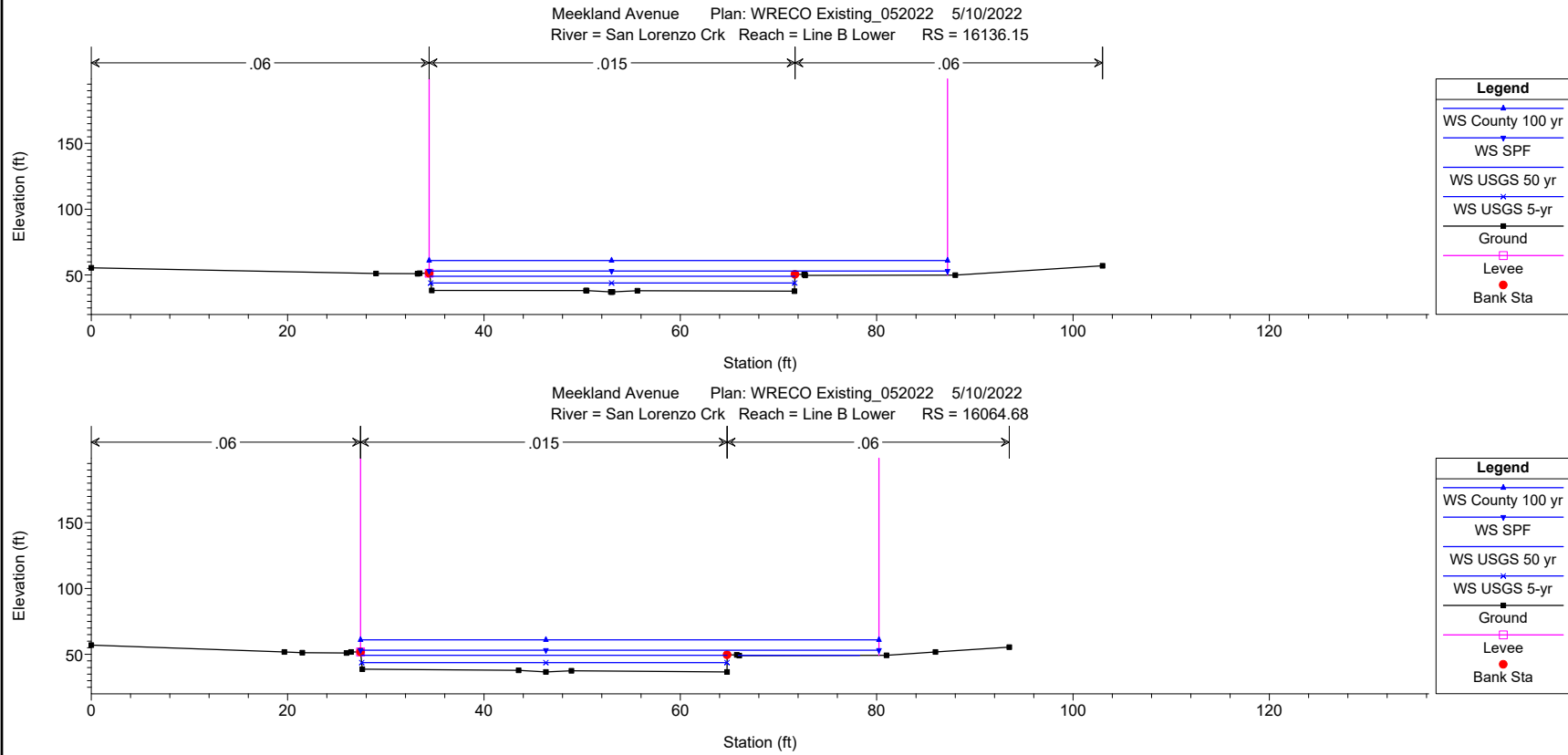
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Meekland Avenue Plan: WRECO Existing_052022 5/10/2022

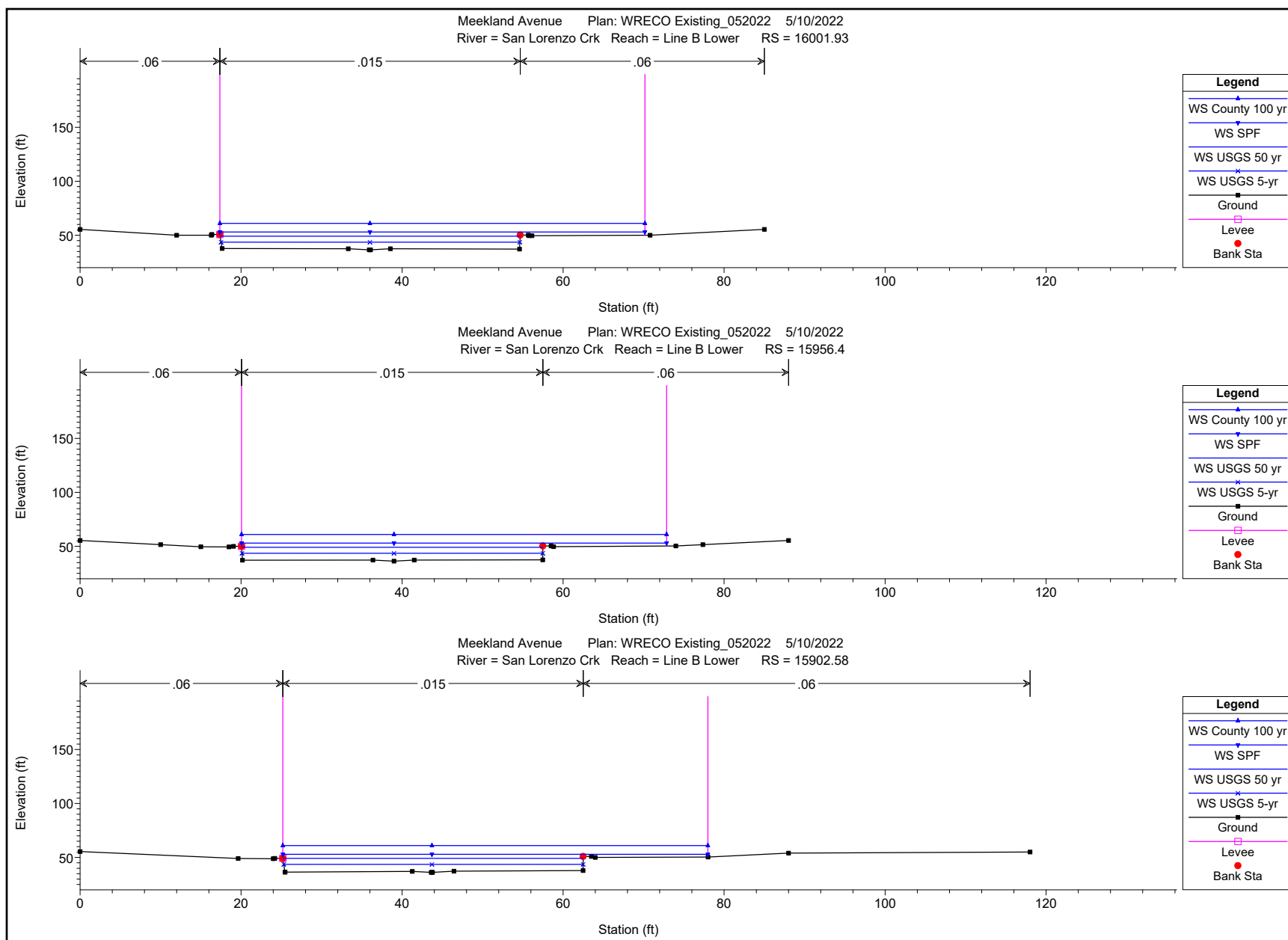
San Lorenzo Crk Line B Lower



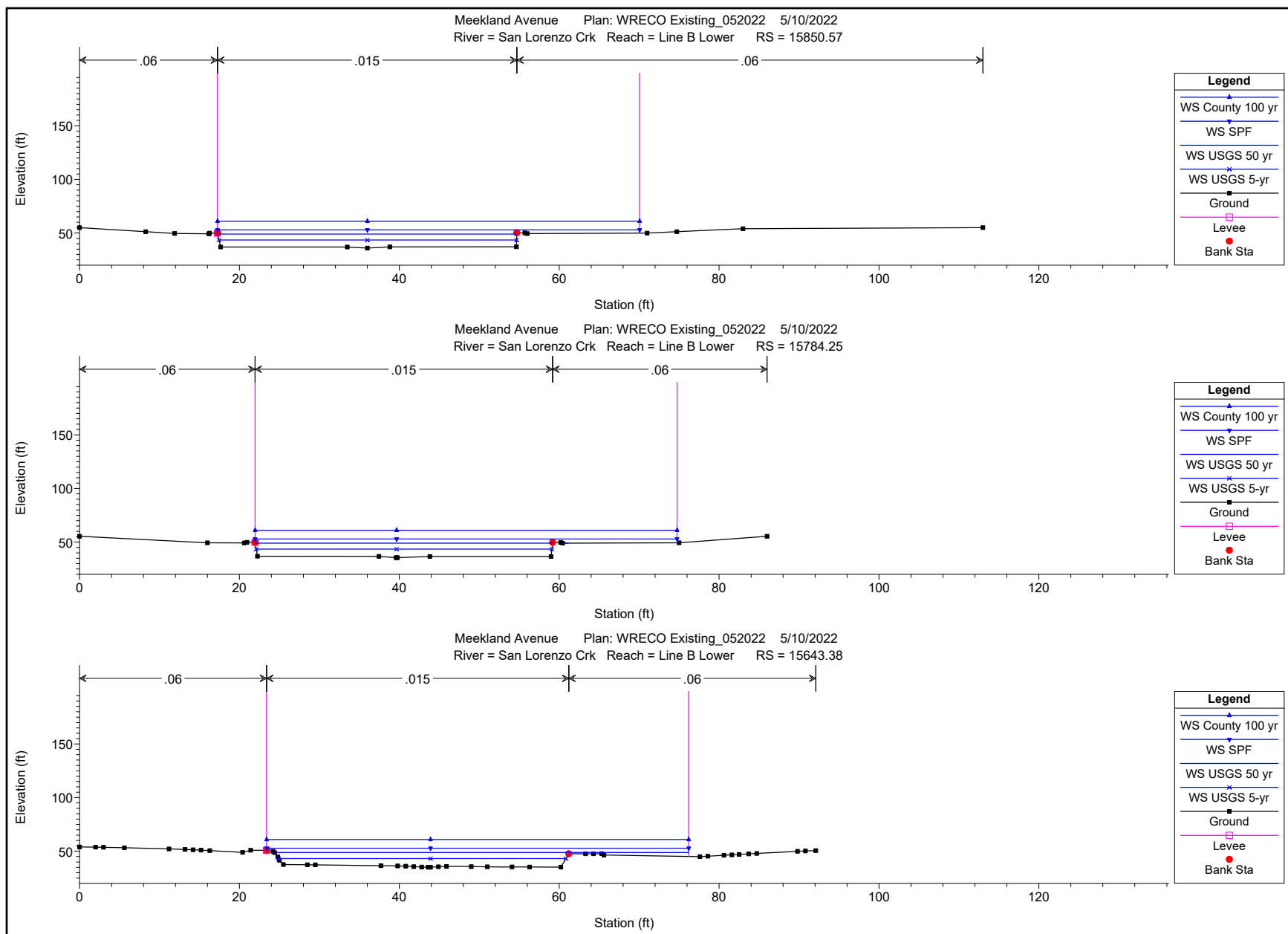
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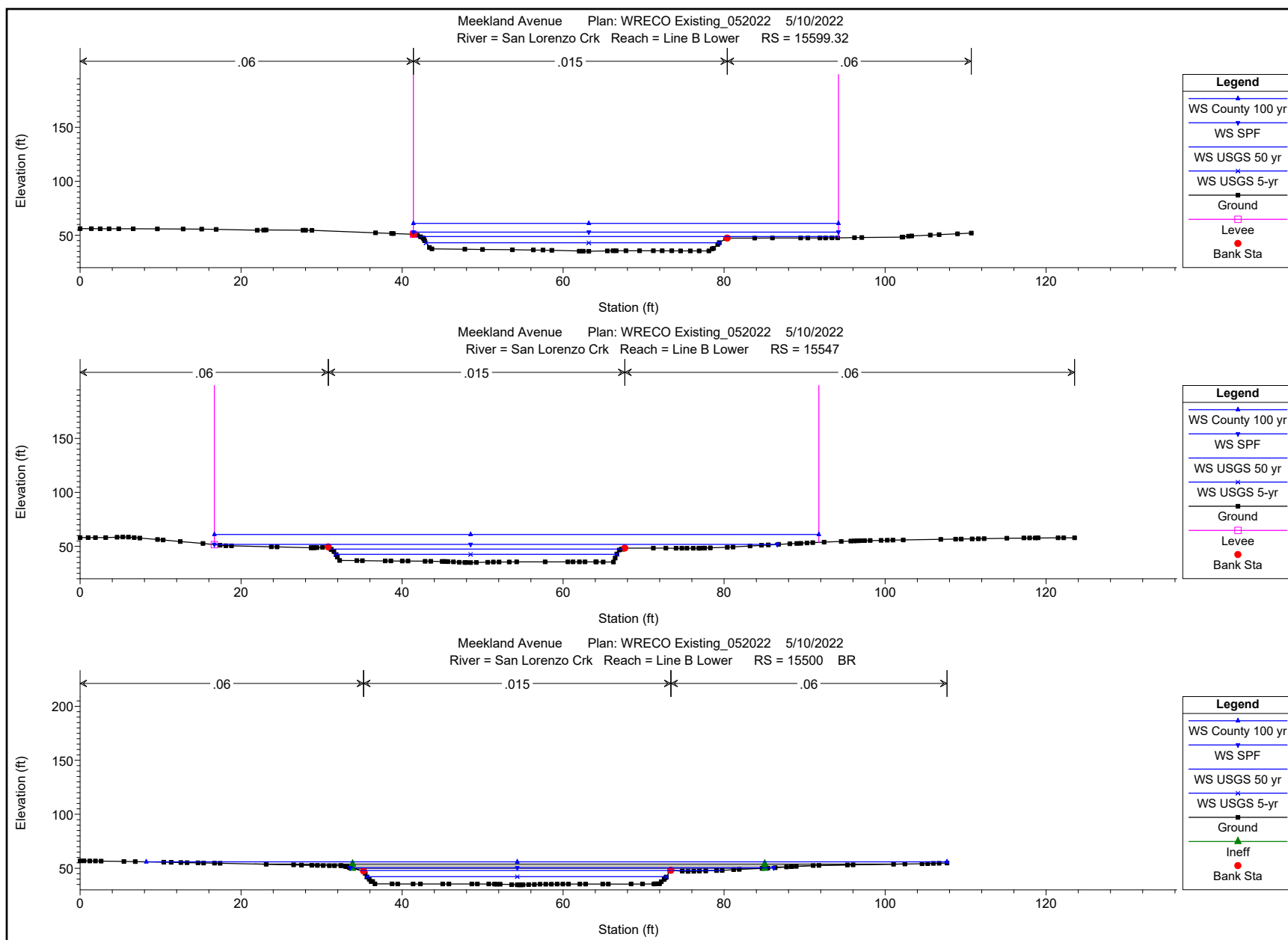
1 in Horiz. = 18 ft 1 in Vert. = 133 ft



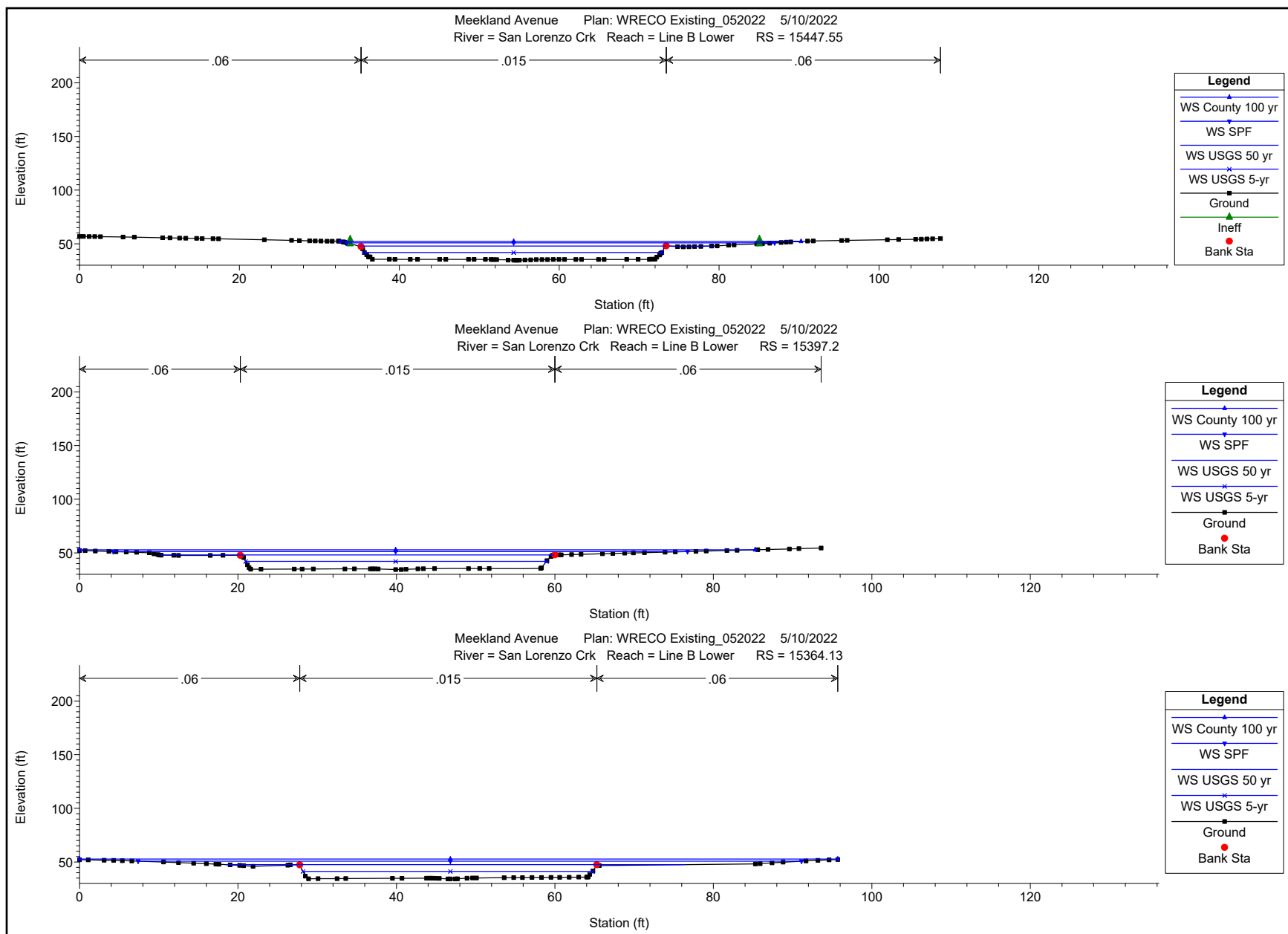
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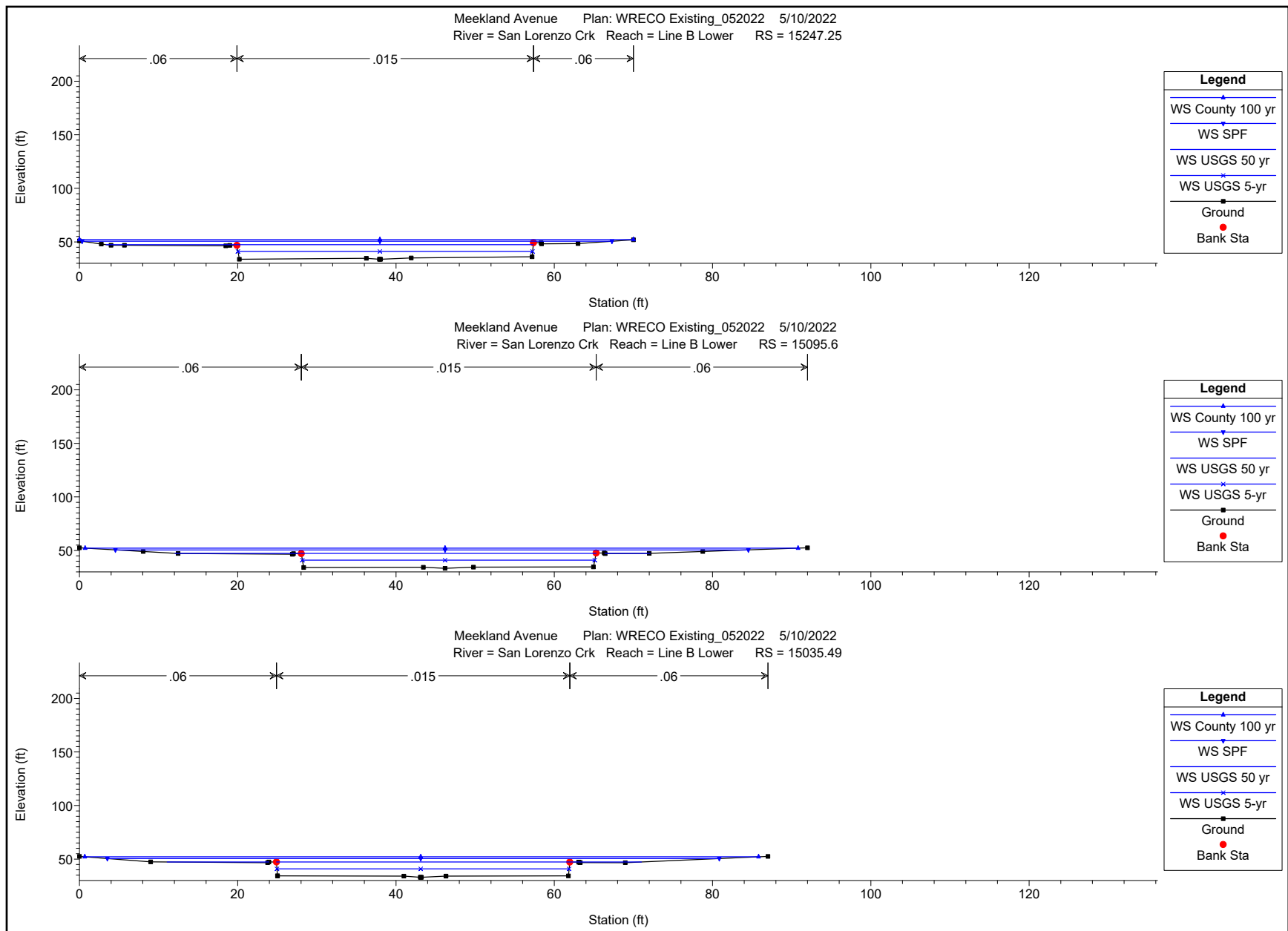
1 in Horiz. = 18 ft 1 in Vert. = 133 ft



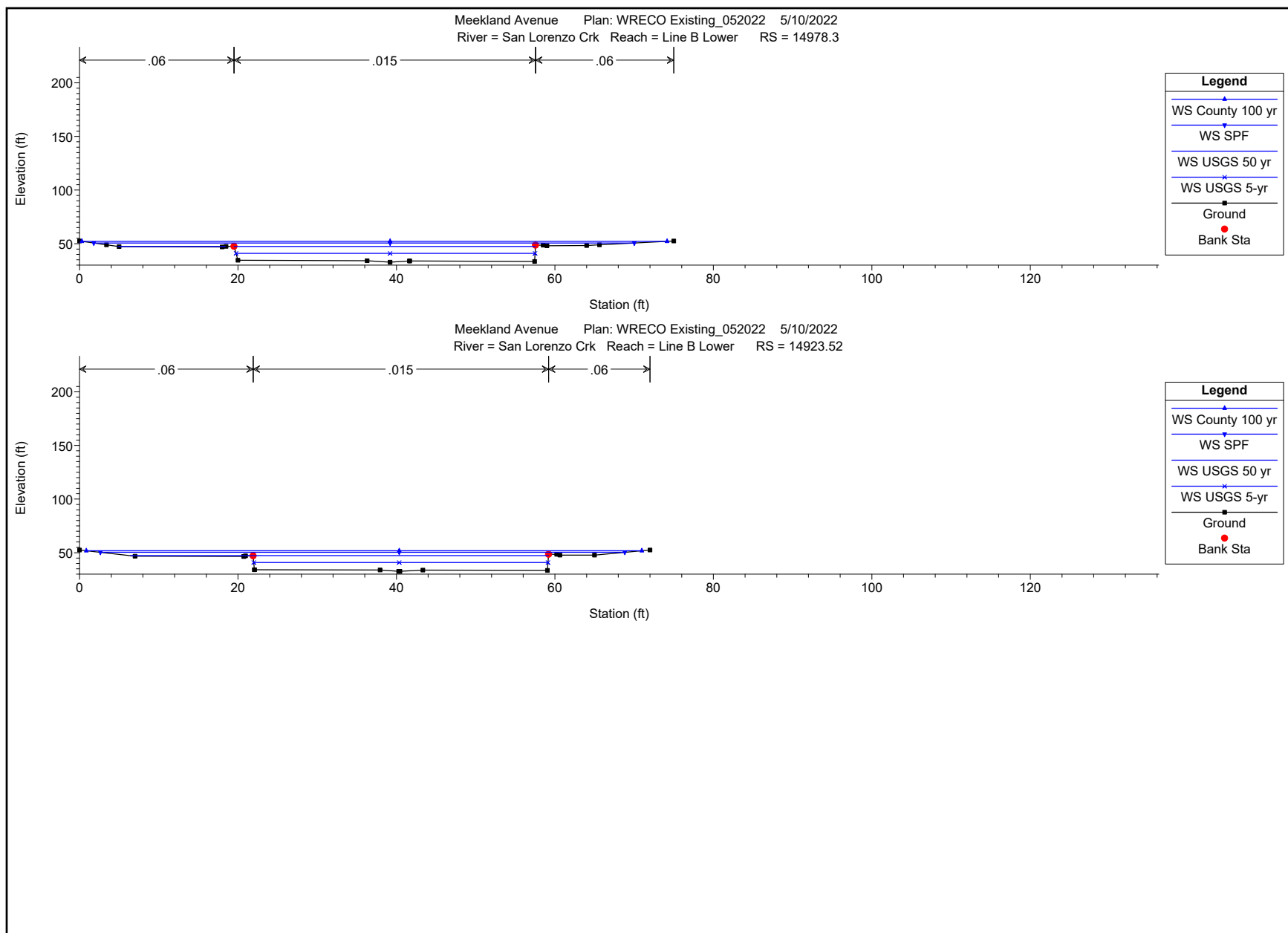
1 in Horiz. = 18 ft 1 in Vert. = 133 ft



1 in Horiz. = 18 ft 1 in Vert. = 133 ft



1 in Horiz. = 18 ft 1 in Vert. = 133 ft



1 in Horiz. = 18 ft 1 in Vert. = 133 ft

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower

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)	
Line B Lower	18262.99	USGS 50 yr	6970.00	45.25	56.68	56.68	61.84	0.002714	18.22	382.54	37.06	1.00
Line B Lower	18262.99	County 100 yr	12500.00	45.25	62.35	61.88	69.05	0.002352	20.86	645.65	52.80	0.92
Line B Lower	18262.99	SPF	10300.00	45.25	59.92	59.92	66.40	0.002675	20.44	517.75	50.89	0.98
Line B Lower	18262.99	USGS 5-yr	3010.00	45.25	52.23	52.23	55.19	0.002630	13.80	218.19	36.89	1.00
Line B Lower	18253.7*	USGS 50 yr	6970.00	45.21	56.64	56.64	61.80	0.002709	18.22	382.53	37.02	1.00
Line B Lower	18253.7*	County 100 yr	12500.00	45.21	62.40	61.81	68.99	0.002139	20.71	656.48	52.80	0.91
Line B Lower	18253.7*	SPF	10300.00	45.21	59.96	59.96	66.34	0.002558	20.29	527.73	52.80	0.97
Line B Lower	18253.7*	USGS 5-yr	3010.00	45.21	52.18	52.18	55.14	0.002628	13.80	218.07	36.83	1.00
Line B Lower	18244.5*	USGS 50 yr	6970.00	45.18	56.59	56.59	61.76	0.002711	18.23	382.25	36.99	1.00
Line B Lower	18244.5*	County 100 yr	12500.00	45.18	62.48	61.75	68.93	0.002079	20.52	668.66	52.80	0.90
Line B Lower	18244.5*	SPF	10300.00	45.18	59.94	59.94	66.28	0.002541	20.25	534.54	52.80	0.97
Line B Lower	18244.5*	USGS 5-yr	3010.00	45.18	52.14	52.14	55.10	0.002625	13.81	218.02	36.76	1.00
Line B Lower	18235.3*	USGS 50 yr	6970.00	45.14	56.58	56.54	61.71	0.002682	18.17	383.62	36.95	0.99
Line B Lower	18235.3*	County 100 yr	12500.00	45.14	62.57	61.70	68.86	0.002139	20.30	681.92	52.80	0.89
Line B Lower	18235.3*	SPF	10300.00	45.14	59.89	59.89	66.20	0.002549	20.22	540.51	52.80	0.97
Line B Lower	18235.3*	USGS 5-yr	3010.00	45.14	52.08	52.08	55.05	0.002632	13.82	217.74	36.69	1.00
Line B Lower	18226.1*	USGS 50 yr	6970.00	44.98	56.60	56.50	61.67	0.002640	18.08	385.61	36.91	0.99
Line B Lower	18226.1*	County 100 yr	12500.00	44.98	62.64	61.63	68.80	0.002073	20.11	694.08	52.80	0.87
Line B Lower	18226.1*	SPF	10300.00	44.98	59.85	59.84	66.13	0.002518	20.17	547.15	52.80	0.96
Line B Lower	18226.1*	USGS 5-yr	3010.00	44.98	52.03	52.03	55.00	0.002627	13.82	217.78	36.62	1.00
Line B Lower	18216.9*	USGS 50 yr	6970.00	44.63	56.63	56.46	61.63	0.002582	17.94	389.61	43.03	0.97
Line B Lower	18216.9*	County 100 yr	12500.00	44.63	62.71	61.55	68.75	0.002008	19.93	706.44	52.80	0.86
Line B Lower	18216.9*	SPF	10300.00	44.63	59.96	59.77	66.05	0.002409	19.91	561.13	52.80	0.94
Line B Lower	18216.9*	USGS 5-yr	3010.00	44.63	51.97	51.97	54.95	0.002632	13.84	217.55	36.54	1.00
Line B Lower	18207.77	USGS 50 yr	6970.00	44.28	56.66	56.45	61.58	0.002525	17.80	396.86	49.61	0.96
Line B Lower	18207.77	County 100 yr	12500.00	44.28	62.77	61.48	68.69	0.001951	19.76	718.15	52.80	0.85
Line B Lower	18207.77	SPF	10300.00	44.28	60.05	59.72	65.98	0.002315	19.67	574.27	52.79	0.93
Line B Lower	18207.77	USGS 5-yr	3010.00	44.28	51.91	51.91	54.90	0.002638	13.85	217.32	36.47	1.00
Line B Lower	18190.7*	USGS 50 yr	6970.00	44.45	56.74	56.30	61.49	0.002399	17.48	403.30	49.45	0.94
Line B Lower	18190.7*	County 100 yr	12500.00	44.45	62.78	61.36	68.64	0.001818	19.63	720.91	52.80	0.84
Line B Lower	18190.7*	SPF	10300.00	44.45	60.09	59.61	65.90	0.002251	19.45	578.69	52.79	0.91
Line B Lower	18190.7*	USGS 5-yr	3010.00	44.45	51.82	51.82	54.79	0.002632	13.83	217.63	36.59	1.00
Line B Lower	18173.7*	USGS 50 yr	6970.00	44.61	56.83	56.17	61.39	0.002270	17.13	410.59	49.35	0.91
Line B Lower	18173.7*	County 100 yr	12500.00	44.61	62.85	61.25	68.57	0.001865	19.40	726.91	52.80	0.83

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	18173.7*	SPF	10300.00	44.61	60.16	59.50	65.81	0.002172	19.19	585.03	52.80	0.90
Line B Lower	18173.7*	USGS 5-yr	3010.00	44.61	51.71	51.71	54.68	0.002631	13.82	217.81	36.73	1.00
Line B Lower	18156.7*	USGS 50 yr	6970.00	44.77	56.90	56.06	61.31	0.002170	16.85	416.37	49.06	0.89
Line B Lower	18156.7*	County 100 yr	12500.00	44.77	62.88	61.17	68.51	0.001828	19.23	730.95	52.80	0.82
Line B Lower	18156.7*	SPF	10300.00	44.77	60.21	59.39	65.74	0.002110	18.97	589.97	52.80	0.88
Line B Lower	18156.7*	USGS 5-yr	3010.00	44.77	51.61	51.61	54.58	0.002632	13.81	217.95	36.86	1.00
Line B Lower	18139.7*	USGS 50 yr	6970.00	44.67	56.96	55.96	61.23	0.002076	16.58	422.07	47.46	0.87
Line B Lower	18139.7*	County 100 yr	12500.00	44.67	62.90	61.06	68.46	0.001685	19.09	734.41	52.80	0.81
Line B Lower	18139.7*	SPF	10300.00	44.67	60.26	59.28	65.67	0.002029	18.75	594.99	52.80	0.87
Line B Lower	18139.7*	USGS 5-yr	3010.00	44.67	51.64	51.52	54.47	0.002472	13.51	222.75	36.99	0.97
Line B Lower	18122.7*	USGS 50 yr	6970.00	44.58	57.02	55.84	61.15	0.001980	16.30	428.71	45.64	0.85
Line B Lower	18122.7*	County 100 yr	12500.00	44.58	62.96	60.96	68.39	0.001748	18.87	740.44	52.80	0.80
Line B Lower	18122.7*	SPF	10300.00	44.58	60.32	59.15	65.59	0.001984	18.51	601.14	52.80	0.85
Line B Lower	18122.7*	USGS 5-yr	3010.00	44.58	51.72	51.41	54.38	0.002252	13.09	229.99	37.14	0.93
Line B Lower	18105.79	USGS 50 yr	6970.00	44.48	57.07	55.73	61.08	0.001902	16.06	434.34	42.59	0.83
Line B Lower	18105.79	County 100 yr	12500.00	44.48	62.99	60.85	68.33	0.001714	18.72	744.54	52.80	0.79
Line B Lower	18105.79	SPF	10300.00	44.48	60.36	59.03	65.53	0.001933	18.31	605.84	52.80	0.84
Line B Lower	18105.79	USGS 5-yr	3010.00	44.48	51.77	51.32	54.30	0.002093	12.76	235.90	37.27	0.89
Line B Lower	18069.1*	USGS 50 yr	6970.00	44.35	56.96	55.65	61.00	0.001919	16.13	432.38	40.64	0.84
Line B Lower	18069.1*	County 100 yr	12500.00	44.35	62.89	60.78	68.26	0.001725	18.77	742.55	52.80	0.79
Line B Lower	18069.1*	SPF	10300.00	44.35	60.23	58.97	65.45	0.001957	18.40	602.39	52.80	0.84
Line B Lower	18069.1*	USGS 5-yr	3010.00	44.35	51.68	51.23	54.21	0.002097	12.78	235.47	37.12	0.89
Line B Lower	18032.5*	USGS 50 yr	6970.00	44.22	56.84	55.58	60.93	0.001949	16.22	429.67	37.44	0.84
Line B Lower	18032.5*	County 100 yr	12500.00	44.22	62.75	60.72	68.20	0.001612	18.88	738.45	52.80	0.80
Line B Lower	18032.5*	SPF	10300.00	44.22	60.10	58.90	65.38	0.001934	18.52	598.02	52.80	0.85
Line B Lower	18032.5*	USGS 5-yr	3010.00	44.22	51.55	51.13	54.13	0.002139	12.88	233.69	36.96	0.90
Line B Lower	17995.9*	USGS 50 yr	6970.00	44.10	56.73	55.49	60.84	0.001964	16.28	428.19	37.11	0.84
Line B Lower	17995.9*	County 100 yr	12500.00	44.10	62.70	60.66	68.13	0.001744	18.86	739.29	52.80	0.79
Line B Lower	17995.9*	SPF	10300.00	44.10	59.98	58.83	65.30	0.002010	18.59	595.42	52.80	0.85
Line B Lower	17995.9*	USGS 5-yr	3010.00	44.10	51.47	51.04	54.04	0.002129	12.88	233.78	36.81	0.90
Line B Lower	17959.3*	USGS 50 yr	6970.00	43.97	56.60	55.42	60.76	0.001994	16.37	425.70	37.01	0.85
Line B Lower	17959.3*	County 100 yr	12500.00	43.97	62.57	60.58	68.06	0.001608	18.97	735.24	52.80	0.80
Line B Lower	17959.3*	SPF	10300.00	43.97	59.82	58.76	65.23	0.001971	18.74	590.02	52.80	0.86
Line B Lower	17959.3*	USGS 5-yr	3010.00	43.97	51.34	50.95	53.96	0.002170	12.97	232.07	36.65	0.91

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	17922.78	USGS 50 yr	6970.00	43.84	56.47	55.34	60.68	0.002019	16.46	423.52	36.92	0.86
Line B Lower	17922.78	County 100 yr	12500.00	43.84	62.51	60.53	67.99	0.001767	18.96	735.72	52.80	0.80
Line B Lower	17922.78	SPF	10300.00	43.84	58.70	58.70	65.05	0.002591	20.27	534.43	52.80	0.97
Line B Lower	17922.78	USGS 5-yr	3010.00	43.84	50.85	50.85	53.84	0.002637	13.85	217.25	36.47	1.00
Line B Lower	17899.7*	USGS 50 yr	6970.00	43.75	56.49	55.23	60.61	0.001961	16.29	427.95	36.93	0.84
Line B Lower	17899.7*	County 100 yr	12500.00	43.75	62.53	60.43	67.93	0.001728	18.82	742.01	52.80	0.79
Line B Lower	17899.7*	SPF	10300.00	43.75	58.59	58.59	64.95	0.002590	20.27	534.10	52.80	0.97
Line B Lower	17899.7*	USGS 5-yr	3010.00	43.75	50.75	50.75	53.73	0.002636	13.85	217.27	36.47	1.00
Line B Lower	17876.7*	USGS 50 yr	6970.00	43.66	56.51	55.12	60.54	0.001902	16.11	432.64	37.68	0.83
Line B Lower	17876.7*	County 100 yr	12500.00	43.66	62.55	60.33	67.86	0.001689	18.67	748.32	52.80	0.78
Line B Lower	17876.7*	SPF	10300.00	43.66	58.51	58.49	64.84	0.002573	20.22	535.22	52.80	0.96
Line B Lower	17876.7*	USGS 5-yr	3010.00	43.66	50.64	50.64	53.62	0.002636	13.85	217.27	36.47	1.00
Line B Lower	17853.8*	USGS 50 yr	6970.00	43.56	56.52	55.01	60.47	0.001844	15.94	438.02	43.52	0.82
Line B Lower	17853.8*	County 100 yr	12500.00	43.56	62.57	60.22	67.80	0.001651	18.53	754.75	52.80	0.77
Line B Lower	17853.8*	SPF	10300.00	43.56	58.56	58.38	64.73	0.002480	19.98	543.22	52.80	0.95
Line B Lower	17853.8*	USGS 5-yr	3010.00	43.56	50.53	50.53	53.51	0.002629	13.84	217.45	36.48	1.00
Line B Lower	17830.8*	USGS 50 yr	6970.00	43.47	56.54	54.91	60.40	0.001791	15.77	443.66	45.24	0.80
Line B Lower	17830.8*	County 100 yr	12500.00	43.47	62.59	60.11	67.74	0.001615	18.39	761.49	52.80	0.76
Line B Lower	17830.8*	SPF	10300.00	43.47	58.61	58.26	64.63	0.002395	19.75	551.42	52.80	0.93
Line B Lower	17830.8*	USGS 5-yr	3010.00	43.47	50.43	50.43	53.40	0.002627	13.84	217.52	36.48	1.00
Line B Lower	17807.82	USGS 50 yr	6970.00	43.38	56.55	54.80	60.34	0.001741	15.61	450.25	51.60	0.79
Line B Lower	17807.82	County 100 yr	12500.00	43.38	62.61	59.99	67.68	0.001579	18.25	769.58	52.80	0.76
Line B Lower	17807.82	SPF	10300.00	43.38	58.65	58.16	64.54	0.002312	19.52	560.91	52.80	0.91
Line B Lower	17807.82	USGS 5-yr	3010.00	43.38	50.31	50.31	53.30	0.002638	13.86	217.23	36.48	1.00
Line B Lower	17786.0*	USGS 50 yr	6970.00	43.31	56.65	54.64	60.24	0.001620	15.21	466.80	52.78	0.77
Line B Lower	17786.0*	County 100 yr	12500.00	43.31	62.73	59.78	67.58	0.001477	17.85	787.77	52.80	0.74
Line B Lower	17786.0*	SPF	10300.00	43.31	58.88	57.97	64.37	0.002093	18.87	584.31	52.80	0.87
Line B Lower	17786.0*	USGS 5-yr	3010.00	43.31	50.37	50.19	53.16	0.002406	13.41	224.51	36.89	0.96
Line B Lower	17764.2*	USGS 50 yr	6970.00	43.24	56.74	54.49	60.16	0.001501	14.83	483.45	52.78	0.74
Line B Lower	17764.2*	County 100 yr	12500.00	43.24	62.84	59.58	67.48	0.001386	17.47	805.46	52.80	0.72
Line B Lower	17764.2*	SPF	10300.00	43.24	59.06	57.79	64.22	0.001914	18.31	605.88	52.80	0.84
Line B Lower	17764.2*	USGS 5-yr	3010.00	43.24	50.46	50.07	53.05	0.002159	12.90	233.29	37.30	0.91
Line B Lower	17742.5*	USGS 50 yr	6970.00	43.16	56.83	54.34	60.07	0.001391	14.45	500.15	52.78	0.72

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	17742.5*	County 100 yr	12500.00	43.16	62.95	59.37	67.40	0.001302	17.10	822.97	52.80	0.70
Line B Lower	17742.5*	SPF	10300.00	43.16	59.23	57.60	64.09	0.001758	17.79	626.53	52.80	0.81
Line B Lower	17742.5*	USGS 5-yr	3010.00	43.16	50.55	49.95	52.95	0.001944	12.43	242.14	37.71	0.86
Line B Lower	17720.7*	USGS 50 yr	6970.00	43.07	56.92	54.19	59.99	0.001291	14.10	516.49	52.77	0.70
Line B Lower	17720.7*	County 100 yr	12500.00	43.07	63.05	59.17	67.31	0.001226	16.76	839.99	52.80	0.68
Line B Lower	17720.7*	SPF	10300.00	43.07	59.37	57.40	63.98	0.001624	17.33	646.04	52.80	0.78
Line B Lower	17720.7*	USGS 5-yr	3010.00	43.07	50.62	49.82	52.86	0.001763	12.01	250.70	38.12	0.83
Line B Lower	17698.98	USGS 50 yr	6970.00	42.80	57.00	54.02	59.92	0.001200	13.75	532.69	52.77	0.67
Line B Lower	17698.98	County 100 yr	12500.00	42.80	63.13	58.96	67.24	0.001156	16.43	856.57	52.80	0.66
Line B Lower	17698.98	SPF	10300.00	42.80	59.51	57.22	63.88	0.001505	16.88	664.96	52.80	0.76
Line B Lower	17698.98	USGS 5-yr	3010.00	42.80	50.69	49.69	52.78	0.001601	11.60	259.45	38.53	0.79
Line B Lower	17678.3*	USGS 50 yr	6970.00	42.70	56.91	54.01	59.89	0.001236	13.90	528.15	52.77	0.68
Line B Lower	17678.3*	County 100 yr	12500.00	42.70	63.00	58.96	67.21	0.001075	16.64	850.01	52.80	0.67
Line B Lower	17678.3*	SPF	10300.00	42.70	59.33	57.22	63.84	0.001522	17.15	655.93	52.80	0.77
Line B Lower	17678.3*	USGS 5-yr	3010.00	42.70	50.59	49.67	52.74	0.001662	11.76	255.96	38.24	0.80
Line B Lower	17657.7*	USGS 50 yr	6970.00	42.59	56.80	54.00	59.85	0.001274	14.05	523.20	52.78	0.69
Line B Lower	17657.7*	County 100 yr	12500.00	42.59	62.92	59.00	67.18	0.001224	16.76	846.06	52.80	0.68
Line B Lower	17657.7*	SPF	10300.00	42.59	59.15	57.24	63.80	0.001644	17.41	647.25	52.80	0.79
Line B Lower	17657.7*	USGS 5-yr	3010.00	42.59	50.48	49.63	52.69	0.001733	11.94	252.17	37.97	0.82
Line B Lower	17637.1*	USGS 50 yr	6970.00	42.49	56.70	54.00	59.82	0.001315	14.21	518.07	52.78	0.70
Line B Lower	17637.1*	County 100 yr	12500.00	42.49	62.75	59.00	67.14	0.001147	17.01	837.59	52.80	0.69
Line B Lower	17637.1*	SPF	10300.00	42.49	58.90	57.25	63.75	0.001700	17.79	634.18	52.80	0.81
Line B Lower	17637.1*	USGS 5-yr	3010.00	42.49	50.37	49.62	52.66	0.001809	12.12	248.33	37.68	0.83
Line B Lower	17616.4*	USGS 50 yr	6970.00	42.38	56.59	53.98	59.79	0.001359	14.38	512.90	52.79	0.71
Line B Lower	17616.4*	County 100 yr	12500.00	42.38	62.66	59.03	67.10	0.001305	17.14	833.20	52.80	0.70
Line B Lower	17616.4*	SPF	10300.00	42.38	58.63	57.27	63.70	0.001865	18.19	620.44	52.80	0.83
Line B Lower	17616.4*	USGS 5-yr	3010.00	42.38	50.26	49.59	52.62	0.001895	12.32	244.29	37.40	0.85
Line B Lower	17595.85	USGS 50 yr	6970.00	42.28	56.48	53.98	59.75	0.001409	14.56	507.20	52.79	0.72
Line B Lower	17595.85	County 100 yr	12500.00	42.28	62.52	59.07	67.07	0.001351	17.34	826.46	52.80	0.70
Line B Lower	17595.85	SPF	10300.00	42.28	58.05	57.28	63.61	0.002133	19.03	590.27	52.80	0.89
Line B Lower	17595.85	USGS 5-yr	3010.00	42.28	49.56	49.56	52.51	0.002643	13.78	218.44	37.11	1.00
Line B Lower	17574.7*	USGS 50 yr	6970.00	42.42	56.50	53.87	59.70	0.001361	14.38	511.70	52.79	0.71
Line B Lower	17574.7*	County 100 yr	12500.00	42.42	62.55	58.95	67.02	0.001318	17.19	830.98	52.80	0.70
Line B Lower	17574.7*	SPF	10300.00	42.42	58.11	57.17	63.53	0.002054	18.78	596.40	52.80	0.87

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	17574.7*	USGS 5-yr	3010.00	42.42	49.45	49.45	52.39	0.002624	13.75	218.84	37.18	1.00
Line B Lower	17553.5*	USGS 50 yr	6970.00	42.53	56.53	53.75	59.65	0.001318	14.22	516.04	52.79	0.70
Line B Lower	17553.5*	County 100 yr	12500.00	42.53	62.55	58.81	66.98	0.001153	17.08	834.24	52.80	0.69
Line B Lower	17553.5*	SPF	10300.00	42.53	58.15	57.04	63.45	0.001932	18.56	601.99	52.80	0.86
Line B Lower	17553.5*	USGS 5-yr	3010.00	42.53	49.33	49.33	52.28	0.002626	13.76	218.74	37.25	1.00
Line B Lower	17532.4*	USGS 50 yr	6970.00	42.42	56.55	53.64	59.60	0.001276	14.05	520.55	52.80	0.68
Line B Lower	17532.4*	County 100 yr	12500.00	42.42	62.60	58.72	66.92	0.001257	16.89	839.99	52.80	0.68
Line B Lower	17532.4*	SPF	10300.00	42.42	58.21	56.92	63.36	0.001916	18.32	608.06	52.80	0.84
Line B Lower	17532.4*	USGS 5-yr	3010.00	42.42	49.23	49.23	52.16	0.002611	13.74	219.10	37.32	1.00
Line B Lower	17511.3*	USGS 50 yr	6970.00	42.30	56.57	53.52	59.55	0.001227	13.88	525.25	52.80	0.67
Line B Lower	17511.3*	County 100 yr	12500.00	42.30	62.60	58.59	66.89	0.001085	16.78	843.82	52.80	0.67
Line B Lower	17511.3*	SPF	10300.00	42.30	58.25	56.80	63.29	0.001776	18.10	613.99	52.80	0.83
Line B Lower	17511.3*	USGS 5-yr	3010.00	42.30	49.11	49.11	52.04	0.002605	13.73	219.22	37.39	1.00
Line B Lower	17490.21	USGS 50 yr	6970.00	42.19	56.59	53.40	59.51	0.001195	13.72	530.08	52.80	0.66
Line B Lower	17490.21	County 100 yr	12500.00	42.19	62.65	58.47	66.83	0.001198	16.59	849.85	52.80	0.66
Line B Lower	17490.21	SPF	10300.00	42.19	58.30	56.67	63.21	0.001788	17.86	620.32	52.80	0.81
Line B Lower	17490.21	USGS 5-yr	3010.00	42.19	49.00	49.00	51.92	0.002596	13.72	219.40	37.46	1.00
Line B Lower	17440.4*	USGS 50 yr	6970.00	42.00	56.60	53.19	59.42	0.001138	13.49	540.31	52.80	0.65
Line B Lower	17440.4*	County 100 yr	12500.00	42.00	62.66	58.28	66.74	0.001161	16.40	859.99	52.80	0.65
Line B Lower	17440.4*	SPF	10300.00	42.00	58.32	56.47	63.08	0.001709	17.59	631.04	52.80	0.79
Line B Lower	17440.4*	USGS 5-yr	3010.00	42.00	48.79	48.79	51.72	0.002603	13.73	219.22	37.46	1.00
Line B Lower	17390.6*	USGS 50 yr	6970.00	41.81	56.61	52.98	59.34	0.001086	13.27	550.45	52.80	0.63
Line B Lower	17390.6*	County 100 yr	12500.00	41.81	62.66	58.08	66.66	0.001125	16.22	870.04	52.80	0.64
Line B Lower	17390.6*	SPF	10300.00	41.81	58.34	56.25	62.95	0.001637	17.32	641.60	52.80	0.78
Line B Lower	17390.6*	USGS 5-yr	3010.00	41.81	48.58	48.58	51.51	0.002601	13.72	219.31	37.47	1.00
Line B Lower	17340.8*	USGS 50 yr	6970.00	41.61	56.62	52.77	59.26	0.001036	13.06	560.56	52.80	0.62
Line B Lower	17340.8*	County 100 yr	12500.00	41.61	62.67	57.87	66.58	0.001091	16.04	880.04	52.80	0.63
Line B Lower	17340.8*	SPF	10300.00	41.61	58.35	56.04	62.83	0.001569	17.07	652.08	52.80	0.76
Line B Lower	17340.8*	USGS 5-yr	3010.00	41.61	48.37	48.37	51.30	0.002596	13.71	219.48	37.46	1.00
Line B Lower	17291.0*	USGS 50 yr	6970.00	41.42	56.63	52.57	59.18	0.000990	12.86	570.39	52.80	0.60
Line B Lower	17291.0*	County 100 yr	12500.00	41.42	62.67	57.67	66.50	0.001059	15.87	889.75	52.80	0.62
Line B Lower	17291.0*	SPF	10300.00	41.42	58.36	55.83	62.72	0.001506	16.83	662.18	52.80	0.74
Line B Lower	17291.0*	USGS 5-yr	3010.00	41.42	48.16	48.16	51.09	0.002598	13.72	219.45	37.46	1.00

HEC-RAS Plan: WRECO Existing 052022 River: San Lorenzo Crk Reach: Line B Lower (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	17241.28	USGS 50 yr	6970.00	41.23	56.63	52.36	59.11	0.000948	12.67	580.06	52.80	0.59
Line B Lower	17241.28	County 100 yr	12500.00	41.23	62.68	57.47	66.42	0.001029	15.71	899.27	52.80	0.61
Line B Lower	17241.28	SPF	10300.00	41.23	58.37	55.61	62.61	0.001449	16.60	672.04	52.80	0.73
Line B Lower	17241.28	USGS 5-yr	3010.00	41.23	47.96	47.96	50.88	0.002603	13.72	219.37	37.47	1.00
Line B Lower	17147.46	USGS 50 yr	6970.00	40.34	56.70	51.81	58.96	0.000846	12.09	599.68	52.80	0.55
Line B Lower	17147.46	County 100 yr	12500.00	40.34	62.75	56.88	66.26	0.000950	15.17	919.32	52.80	0.58
Line B Lower	17147.46	SPF	10300.00	40.34	58.50	54.84	62.37	0.001297	15.86	694.63	52.80	0.68
Line B Lower	17147.46	USGS 5-yr	3010.00	40.34	47.45	47.45	50.35	0.002597	13.67	220.17	37.96	1.00
Line B Lower	17053.17	USGS 50 yr	6970.00	40.40	56.71	51.50	58.85	0.000764	11.77	632.62	52.80	0.53
Line B Lower	17053.17	County 100 yr	12500.00	40.40	62.78	56.54	66.13	0.000877	14.86	952.79	52.80	0.57
Line B Lower	17053.17	SPF	10300.00	40.40	58.53	54.71	62.19	0.001175	15.45	728.71	52.80	0.66
Line B Lower	17053.17	USGS 5-yr	3010.00	40.40	47.13	47.13	50.03	0.002602	13.66	220.41	37.97	1.00
Line B Lower	16900.13	USGS 50 yr	6970.00	39.70	56.75	50.80	58.68	0.000660	11.20	671.37	52.80	0.49
Line B Lower	16900.13	County 100 yr	12500.00	39.70	62.81	55.84	65.93	0.000792	14.34	991.57	52.80	0.54
Line B Lower	16900.13	SPF	10300.00	39.70	58.59	54.02	61.92	0.001027	14.76	768.72	52.80	0.62
Line B Lower	16900.13	USGS 5-yr	3010.00	39.70	46.64	46.43	49.34	0.002348	13.20	228.05	37.98	0.95
Line B Lower	16700	USGS 50 yr	6970.00	38.78	56.79	49.88	58.49	0.000550	10.53	722.21	52.80	0.45
Line B Lower	16700	County 100 yr	12500.00	38.78	62.85	54.91	65.70	0.000696	13.72	1042.49	52.80	0.50
Line B Lower	16700	SPF	10300.00	38.78	58.66	53.09	61.62	0.000871	13.95	820.88	52.80	0.57
Line B Lower	16700	USGS 5-yr	3010.00	38.78	46.82	45.51	48.75	0.001417	11.15	269.95	38.07	0.74
Line B Lower	16680		Bridge									
Line B Lower	16676.42	USGS 50 yr	6970.00	38.77	50.31	50.08	55.23	0.002555	17.79	391.71	37.31	0.97
Line B Lower	16676.42	County 100 yr	12500.00	38.77	61.07	55.26	64.64	0.000971	15.35	925.20	52.80	0.59
Line B Lower	16676.42	SPF	10300.00	38.77	53.56	53.34	59.79	0.002551	20.04	528.73	52.80	0.95
Line B Lower	16676.42	USGS 5-yr	3010.00	38.77	45.67	45.67	48.61	0.002635	13.76	218.83	37.23	1.00
Line B Lower	16554.79	USGS 50 yr	6970.00	38.06	50.42	49.57	54.78	0.002156	16.75	416.14	37.62	0.89
Line B Lower	16554.79	County 100 yr	12500.00	38.06	61.07	54.71	64.48	0.000923	14.97	937.61	52.80	0.57
Line B Lower	16554.79	SPF	10300.00	38.06	53.64	52.61	59.34	0.002290	19.15	545.55	52.80	0.89
Line B Lower	16554.79	USGS 5-yr	3010.00	38.06	45.40	45.19	48.12	0.002355	13.23	227.57	37.56	0.95
Line B Lower	16433.92	USGS 50 yr	6970.00	37.65	50.34	49.14	54.45	0.001978	16.26	428.56	37.52	0.85
Line B Lower	16433.92	County 100 yr	12500.00	37.65	61.05	54.30	64.33	0.000877	14.71	958.20	52.80	0.55
Line B Lower	16433.92	SPF	10300.00	37.65	53.55	52.20	59.00	0.002139	18.73	562.54	52.80	0.86
Line B Lower	16433.92	USGS 5-yr	3010.00	37.65	45.35	44.76	47.76	0.001964	12.47	241.42	37.45	0.87

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	16327.62	USGS 50 yr	6970.00	37.64	49.23	48.96	54.13	0.002522	17.77	392.25	37.04	0.96
Line B Lower	16327.62	County 100 yr	12500.00	37.64	60.99	54.15	64.23	0.000842	14.64	984.16	52.80	0.55
Line B Lower	16327.62	SPF	10300.00	37.64	53.00	52.27	58.74	0.002250	19.26	562.21	52.80	0.90
Line B Lower	16327.62	USGS 5-yr	3010.00	37.64	44.52	44.52	47.48	0.002619	13.79	218.33	36.91	1.00
Line B Lower	16136.15	USGS 50 yr	6970.00	37.12	49.06	48.33	53.55	0.002241	17.00	409.97	37.18	0.90
Line B Lower	16136.15	County 100 yr	12500.00	37.12	60.99	53.49	64.01	0.000765	14.15	1027.69	52.80	0.52
Line B Lower	16136.15	SPF	10300.00	37.12	52.99	51.65	58.16	0.001950	18.34	604.97	52.80	0.84
Line B Lower	16136.15	USGS 5-yr	3010.00	37.12	43.90	43.90	46.85	0.002635	13.77	218.65	37.07	1.00
Line B Lower	16064.68	USGS 50 yr	6970.00	36.61	49.22	47.92	53.27	0.001938	16.14	433.27	49.67	0.84
Line B Lower	16064.68	County 100 yr	12500.00	36.61	61.04	53.04	63.91	0.000710	13.83	1056.82	52.80	0.50
Line B Lower	16064.68	SPF	10300.00	36.61	53.19	51.23	57.90	0.001692	17.53	642.13	52.80	0.78
Line B Lower	16064.68	USGS 5-yr	3010.00	36.61	43.71	43.50	46.45	0.002375	13.28	226.59	37.22	0.95
Line B Lower	16001.93	USGS 50 yr	6970.00	36.48	49.15	47.74	53.13	0.001880	15.99	436.00	37.27	0.82
Line B Lower	16001.93	County 100 yr	12500.00	36.48	61.00	52.92	63.86	0.000710	13.78	1051.72	52.80	0.50
Line B Lower	16001.93	SPF	10300.00	36.48	53.05	51.04	57.79	0.001710	17.54	631.97	52.80	0.78
Line B Lower	16001.93	USGS 5-yr	3010.00	36.48	43.62	43.31	46.28	0.002252	13.07	230.27	37.11	0.93
Line B Lower	15956.4	USGS 50 yr	6970.00	36.28	49.20	47.53	52.99	0.001767	15.62	446.19	37.42	0.80
Line B Lower	15956.4	County 100 yr	12500.00	36.28	61.01	52.69	63.82	0.000694	13.64	1057.10	52.80	0.49
Line B Lower	15956.4	SPF	10300.00	36.28	53.08	50.77	57.67	0.001646	17.27	638.28	52.80	0.77
Line B Lower	15956.4	USGS 5-yr	3010.00	36.28	43.66	43.12	46.12	0.002022	12.59	239.10	37.36	0.88
Line B Lower	15902.58	USGS 50 yr	6970.00	36.18	49.10	47.40	52.89	0.001760	15.62	446.32	37.31	0.80
Line B Lower	15902.58	County 100 yr	12500.00	36.18	60.97	52.60	63.78	0.000701	13.64	1054.79	52.80	0.49
Line B Lower	15902.58	SPF	10300.00	36.18	52.93	50.59	57.58	0.001687	17.36	630.54	52.80	0.77
Line B Lower	15902.58	USGS 5-yr	3010.00	36.18	43.56	42.99	46.00	0.001994	12.55	239.87	37.18	0.87
Line B Lower	15850.57	USGS 50 yr	6970.00	36.00	49.05	47.28	52.78	0.001719	15.50	449.67	37.41	0.79
Line B Lower	15850.57	County 100 yr	12500.00	36.00	60.97	52.45	63.73	0.000674	13.52	1068.04	52.80	0.49
Line B Lower	15850.57	SPF	10300.00	36.00	52.92	50.53	57.46	0.001610	17.17	643.27	52.80	0.76
Line B Lower	15850.57	USGS 5-yr	3010.00	36.00	43.48	42.86	45.89	0.001940	12.45	241.81	37.22	0.86
Line B Lower	15784.25	USGS 50 yr	6970.00	35.52	49.06	46.97	52.62	0.001610	15.15	460.19	37.89	0.76
Line B Lower	15784.25	County 100 yr	12500.00	35.52	60.97	52.17	63.66	0.000654	13.38	1086.05	52.80	0.48
Line B Lower	15784.25	SPF	10300.00	35.52	52.95	50.26	57.30	0.001519	16.84	662.57	52.80	0.74
Line B Lower	15784.25	USGS 5-yr	3010.00	35.52	43.54	42.53	45.70	0.001643	11.78	255.49	36.99	0.79
Line B Lower	15643.38	USGS 50 yr	6970.00	35.09	48.84	46.93	52.40	0.001534	15.19	492.70	51.82	0.76
Line B Lower	15643.38	County 100 yr	12500.00	35.09	60.95	51.94	63.55	0.000592	13.19	1130.57	52.80	0.47

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	15643.38	SPF	10300.00	35.09	52.85	50.15	57.05	0.001383	16.63	703.25	52.80	0.73
Line B Lower	15643.38	USGS 5-yr	3010.00	35.09	43.16	42.26	45.44	0.001704	12.13	248.23	35.94	0.81
Line B Lower	15599.32	USGS 50 yr	6970.00	35.22	48.82	46.74	52.32	0.001451	15.03	481.22	51.95	0.76
Line B Lower	15599.32	County 100 yr	12500.00	35.22	60.98	51.84	63.50	0.000544	12.94	1122.15	52.80	0.47
Line B Lower	15599.32	SPF	10300.00	35.22	52.87	50.05	56.96	0.001279	16.36	694.15	52.80	0.72
Line B Lower	15599.32	USGS 5-yr	3010.00	35.22	43.09	42.21	45.36	0.001663	12.10	248.81	36.42	0.82
Line B Lower	15547	USGS 50 yr	6970.00	34.94	47.49	46.76	52.11	0.002228	17.24	404.36	36.27	0.91
Line B Lower	15547	County 100 yr	12500.00	34.94	61.04	52.34	63.44	0.000455	12.87	1331.88	75.09	0.46
Line B Lower	15547	SPF	10300.00	34.94	51.84	50.32	56.80	0.001668	18.00	645.82	69.91	0.81
Line B Lower	15547	USGS 5-yr	3010.00	34.94	42.62	42.11	45.23	0.002046	12.98	231.83	34.87	0.89
Line B Lower	15500	Bridge										
Line B Lower	15447.55	USGS 50 yr	6970.00	34.66	47.87	45.80	51.38	0.001513	15.04	465.68	44.01	0.76
Line B Lower	15447.55	County 100 yr	12500.00	34.66	52.19	50.91	58.16	0.001737	19.70	679.25	57.64	0.86
Line B Lower	15447.55	SPF	10300.00	34.66	50.80	48.97	55.70	0.001596	17.81	608.17	53.56	0.81
Line B Lower	15447.55	USGS 5-yr	3010.00	34.66	41.87	41.36	44.37	0.001967	12.67	237.60	37.20	0.88
Line B Lower	15397.2	USGS 50 yr	6970.00	34.38	48.08		51.19	0.001303	14.15	496.36	49.84	0.71
Line B Lower	15397.2	County 100 yr	12500.00	34.38	52.84	50.47	57.77	0.001369	17.98	814.66	85.27	0.77
Line B Lower	15397.2	SPF	10300.00	34.38	51.21	48.60	55.42	0.001324	16.54	684.47	72.50	0.74
Line B Lower	15397.2	USGS 5-yr	3010.00	34.38	42.08		44.15	0.001531	11.54	260.81	37.97	0.78
Line B Lower	15364.13	USGS 50 yr	6970.00	34.22	47.46	45.51	51.08	0.001594	15.27	467.58	57.89	0.77
Line B Lower	15364.13	County 100 yr	12500.00	34.22	52.68	50.93	57.71	0.001433	18.38	883.81	95.70	0.78
Line B Lower	15364.13	SPF	10300.00	34.22	50.74	49.08	55.33	0.001503	17.39	707.35	83.72	0.78
Line B Lower	15364.13	USGS 5-yr	3010.00	34.22	41.14	41.00	44.01	0.002417	13.58	221.71	36.54	0.97
Line B Lower	15247.25	USGS 50 yr	6970.00	33.73	47.45		50.84	0.001481	14.77	484.53	53.97	0.73
Line B Lower	15247.25	County 100 yr	12500.00	33.73	52.18	50.41	57.51	0.001616	18.76	785.07	70.00	0.80
Line B Lower	15247.25	SPF	10300.00	33.73	50.63	48.48	55.13	0.001533	17.16	678.04	66.95	0.76
Line B Lower	15247.25	USGS 5-yr	3010.00	33.73	41.05	40.68	43.66	0.002194	12.97	232.08	37.23	0.92
Line B Lower	15095.6	USGS 50 yr	6970.00	33.28	47.34	44.61	50.57	0.001391	14.42	491.08	58.95	0.71
Line B Lower	15095.6	County 100 yr	12500.00	33.28	52.19	50.13	57.17	0.001461	18.21	854.64	90.08	0.76
Line B Lower	15095.6	SPF	10300.00	33.28	50.56	48.06	54.84	0.001407	16.76	715.92	79.98	0.73
Line B Lower	15095.6	USGS 5-yr	3010.00	33.28	40.94		43.27	0.001841	12.26	245.52	36.94	0.84
Line B Lower	15035.49	USGS 50 yr	6970.00	32.99	47.29	44.46	50.47	0.001376	14.32	494.72	58.98	0.70
Line B Lower	15035.49	County 100 yr	12500.00	32.99	52.11	49.97	57.08	0.001459	18.17	849.33	85.14	0.76

HEC-RAS Plan: WRECO Existing 052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	15035.49	SPF	10300.00	32.99	50.50	47.90	54.74	0.001395	16.69	717.86	77.32	0.73
Line B Lower	15035.49	USGS 5-yr	3010.00	32.99	40.87		43.14	0.001768	12.08	249.11	36.91	0.82
Line B Lower	14978.3	USGS 50 yr	6970.00	32.78	47.41		50.31	0.001216	13.67	514.36	51.60	0.66
Line B Lower	14978.3	County 100 yr	12500.00	32.78	52.18	49.39	56.94	0.001395	17.69	821.11	73.85	0.70
Line B Lower	14978.3	SPF	10300.00	32.78	50.60	47.21	54.59	0.001308	16.12	708.89	68.21	0.73
Line B Lower	14978.3	USGS 5-yr	3010.00	32.78	40.97		42.96	0.001479	11.32	265.91	37.74	0.75
Line B Lower	14923.52	USGS 50 yr	6970.00	32.66	47.26		50.24	0.001262	13.87	510.98	52.77	0.67
Line B Lower	14923.52	County 100 yr	12500.00	32.66	51.80	49.40	56.83	0.001510	18.19	798.21	70.11	0.76
Line B Lower	14923.52	SPF	10300.00	32.66	50.36	47.27	54.50	0.001378	16.44	699.71	66.19	0.71
Line B Lower	14923.52	USGS 5-yr	3010.00	32.66	40.86		42.88	0.001495	11.39	264.23	37.14	0.75
Line B Lower	14729.71	USGS 50 yr	6970.00	31.92	47.21		49.94	0.001069	13.27	555.59	64.40	0.62
Line B Lower	14729.71	County 100 yr	12500.00	31.92	51.93	48.83	56.40	0.001235	17.27	904.15	83.64	0.70
Line B Lower	14729.71	SPF	10300.00	31.92	50.40	46.78	54.13	0.001138	15.67	781.25	77.35	0.66
Line B Lower	14729.71	USGS 5-yr	3010.00	31.92	40.83		42.53	0.001154	10.47	287.50	36.84	0.66
Line B Lower	14720		Lat Struct									
Line B Lower	14719		Lat Struct									
Line B Lower	14639.71	USGS 50 yr	6970.00	31.78	43.65	43.65	49.42	0.009237	63.61	400.28	36.77	3.26
Line B Lower	14639.71	County 100 yr	12500.00	31.78	52.12	50.55	56.04	0.004215	61.56	909.18	70.14	2.41
Line B Lower	14639.71	SPF	10300.00	31.78	49.61	49.20	53.88	0.005468	64.22	733.16	70.14	2.68
Line B Lower	14639.71	USGS 5-yr	3010.00	31.78	38.99	38.99	42.16	0.008754	44.41	229.32	36.67	2.92
Line B Lower	14546.84	USGS 50 yr	6970.00	31.29	42.66	42.66	47.86	0.001560	18.29	381.01	37.02	1.01
Line B Lower	14546.84	County 100 yr	12500.00	31.29	53.79		55.24	0.000247	9.75	1385.20	120.00	0.47
Line B Lower	14546.84	SPF	10300.00	31.29	51.48		52.96	0.000324	9.82	1108.23	120.00	0.53
Line B Lower	14546.84	USGS 5-yr	3010.00	31.29	38.24	38.24	41.22	0.001511	13.84	217.42	36.97	1.01
Line B Lower	14313.38	USGS 50 yr	6970.00	30.33	41.87	41.87	47.07	0.001562	18.29	381.02	37.02	1.01
Line B Lower	14313.38	County 100 yr	12500.00	30.33	52.76		55.08	0.000374	12.23	1040.73	73.00	0.56
Line B Lower	14313.38	SPF	10300.00	30.33	50.68		52.81	0.000419	11.72	888.83	73.00	0.58
Line B Lower	14313.38	USGS 5-yr	3010.00	30.33	37.45	37.45	40.43	0.001515	13.85	217.36	36.92	1.01
Line B Lower	14213.31	USGS 50 yr	6970.00	29.83	41.36	41.36	46.56	0.001563	18.29	381.03	37.03	1.01
Line B Lower	14213.31	County 100 yr	12500.00	29.83	53.41		54.77	0.000219	9.37	1386.01	109.00	0.45
Line B Lower	14213.31	SPF	10300.00	29.83	51.22		52.54	0.000268	9.23	1147.27	109.00	0.48
Line B Lower	14213.31	USGS 5-yr	3010.00	29.83	36.94	36.94	39.92	0.001516	13.85	217.39	36.95	1.01

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	14014.75	USGS 50 yr	6970.00	29.35	40.88	40.85	46.04	0.001549	18.24	382.21	37.10	1.00
Line B Lower	14014.75	County 100 yr	12500.00	29.35	53.14		54.70	0.000251	10.09	1337.73	110.52	0.47
Line B Lower	14014.75	SPF	10300.00	29.35	50.95		52.46	0.000300	9.90	1095.55	110.52	0.50
Line B Lower	14014.75	USGS 5-yr	3010.00	29.35	36.43	36.42	39.40	0.001511	13.83	217.63	36.96	1.00
Line B Lower	13981.59	USGS 50 yr	6970.00	29.38	40.84	40.83	45.99	0.001539	18.21	382.85	37.13	1.00
Line B Lower	13981.59	County 100 yr	12500.00	29.38	53.22		54.66	0.000220	9.69	1373.65	110.00	0.45
Line B Lower	13981.59	SPF	10300.00	29.38	51.03		52.41	0.000259	9.45	1133.50	110.00	0.47
Line B Lower	13981.59	USGS 5-yr	3010.00	29.38	36.39	36.39	39.35	0.001497	13.80	218.14	36.98	1.00
Line B Lower	13934.25	USGS 50 yr	6970.00	29.05	41.73	40.18	45.51	0.000999	15.59	447.17	38.89	0.81
Line B Lower	13934.25	County 100 yr	12500.00	29.05	53.11	46.20	54.64	0.000215	9.93	1294.42	88.00	0.44
Line B Lower	13934.25	SPF	10300.00	29.05	51.01	44.58	52.40	0.000236	9.46	1109.92	88.00	0.45
Line B Lower	13934.25	USGS 5-yr	3010.00	29.05	36.66	35.89	38.90	0.001005	11.99	251.00	38.50	0.83
Line B Lower	13880		Bridge									
Line B Lower	13864.2	USGS 50 yr	6970.00	29.05	41.51		45.44	0.001055	15.89	438.70	38.87	0.83
Line B Lower	13864.2	County 100 yr	12500.00	29.05	49.90		52.33	0.000462	12.51	1012.23	88.00	0.62
Line B Lower	13864.2	SPF	10300.00	29.05	48.44		50.56	0.000475	11.68	884.47	85.03	0.62
Line B Lower	13864.2	USGS 5-yr	3010.00	29.05	35.89	35.89	38.76	0.001466	13.59	221.45	38.44	1.00
Line B Lower	13860		Lat Struct									
Line B Lower	13859		Lat Struct									
Line B Lower	13698.1	USGS 50 yr	6970.00	28.46	41.51		45.20	0.000956	15.40	452.62	37.89	0.79
Line B Lower	13698.1	County 100 yr	12500.00	28.46	49.98		52.20	0.000427	11.97	1049.55	84.00	0.59
Line B Lower	13698.1	SPF	10300.00	28.46	48.50		50.43	0.000428	11.15	925.87	84.00	0.58
Line B Lower	13698.1	USGS 5-yr	3010.00	28.46	35.31	35.31	38.25	0.001483	13.74	219.01	37.42	1.00
Line B Lower	13538.18	USGS 50 yr	6970.00	27.90	41.56	39.17	44.93	0.001274	14.74	472.99	59.43	0.92
Line B Lower	13538.18	County 100 yr	12500.00	27.90	50.36		51.95	0.000307	10.12	1235.47	96.48	0.50
Line B Lower	13538.18	SPF	10300.00	27.90	48.82		50.21	0.000309	9.48	1086.68	96.48	0.50
Line B Lower	13538.18	USGS 5-yr	3010.00	27.90	34.94	34.75	37.73	0.001363	13.40	224.61	36.75	0.96
Line B Lower	13470.49	USGS 50 yr	6970.00	27.57	41.74	38.79	44.74	0.000985	13.90	501.59	54.55	0.81
Line B Lower	13470.49	County 100 yr	12500.00	27.57	50.59		51.82	0.000225	8.90	1409.86	115.00	0.44
Line B Lower	13470.49	SPF	10300.00	27.57	49.01		50.11	0.000237	8.41	1227.41	115.00	0.45
Line B Lower	13470.49	USGS 5-yr	3010.00	27.57	35.24		37.48	0.000989	11.99	251.03	37.28	0.81
Line B Lower	13401.74	USGS 50 yr	6970.00	27.32	41.77		44.63	0.001026	13.56	513.93	61.77	0.83

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	13401.74	County 100 yr	12500.00	27.32	50.00		51.75	0.000320	10.63	1178.65	91.00	0.52
Line B Lower	13401.74	SPF	10300.00	27.32	48.53		50.05	0.000317	9.86	1045.53	91.00	0.51
Line B Lower	13401.74	USGS 5-yr	3010.00	27.32	35.21		37.40	0.000956	11.85	253.91	37.19	0.80
Line B Lower	13324.8	USGS 50 yr	6970.00	26.75	42.01		44.43	0.000803	12.49	558.04	63.95	0.75
Line B Lower	13324.8	County 100 yr	12500.00	26.75	49.95		51.73	0.000311	10.70	1168.37	82.00	0.50
Line B Lower	13324.8	SPF	10300.00	26.75	48.53		50.02	0.000290	9.79	1051.93	82.00	0.48
Line B Lower	13324.8	USGS 5-yr	3010.00	26.75	35.40		37.22	0.000730	10.82	278.17	37.46	0.70
Line B Lower	13236.36	USGS 50 yr	6970.00	26.72	41.98		44.35	0.000825	12.34	564.76	68.56	0.76
Line B Lower	13236.36	County 100 yr	12500.00	26.72	50.27		51.55	0.000232	9.07	1379.03	111.00	0.45
Line B Lower	13236.36	SPF	10300.00	26.72	48.76		49.88	0.000238	8.51	1211.02	111.00	0.45
Line B Lower	13236.36	USGS 5-yr	3010.00	26.72	35.41		37.13	0.000666	10.51	286.50	37.21	0.67
Line B Lower	13154.38	USGS 50 yr	6970.00	26.30	40.07	38.12	44.04	0.005902	54.83	472.15	43.25	2.61
Line B Lower	13154.38	County 100 yr	12500.00	26.30	49.85	40.37	51.48	0.001715	42.27	1335.84	104.80	1.54
Line B Lower	13154.38	SPF	10300.00	26.30	48.35	43.81	49.81	0.001711	40.42	1179.27	104.80	1.52
Line B Lower	13154.38	USGS 5-yr	3010.00	26.30	34.92	33.54	36.98	0.005027	37.00	278.54	37.37	2.22
Line B Lower	13104.72	USGS 50 yr	6970.00	26.23	39.32	38.01	43.68	0.006798	56.89	448.91	37.83	2.77
Line B Lower	13104.72	County 100 yr	12500.00	26.23	49.60	40.40	51.37	0.001917	44.46	1289.46	104.80	1.62
Line B Lower	13104.72	SPF	10300.00	26.23	48.10	43.47	49.70	0.001947	42.87	1131.97	104.80	1.62
Line B Lower	13104.72	USGS 5-yr	3010.00	26.23	34.30	33.45	36.67	0.006201	39.33	259.66	37.53	2.44
Line B Lower	13080	Bridge										
Line B Lower	13052.06	USGS 50 yr	6970.00	25.87	37.69	37.69	43.16	0.009646	62.76	397.01	37.49	3.22
Line B Lower	13052.06	County 100 yr	12500.00	25.87	47.43	44.16	50.50	0.003530	56.71	983.92	80.01	2.15
Line B Lower	13052.06	SPF	10300.00	25.87	44.28	42.59	47.89	0.004942	60.37	750.57	67.79	2.48
Line B Lower	13052.06	USGS 5-yr	3010.00	25.87	33.13	33.13	36.21	0.009326	44.56	226.51	37.29	2.92
Line B Lower	13050	Lat Struct										
Line B Lower	13049	Lat Struct										
Line B Lower	12879.9	USGS 50 yr	6970.00	25.36	38.35	36.66	42.09	0.001135	15.53	448.74	44.37	0.86
Line B Lower	12879.9	County 100 yr	12500.00	25.36	47.97		50.08	0.000320	11.80	1173.24	97.00	0.52
Line B Lower	12879.9	SPF	10300.00	25.36	45.05		47.30	0.000440	12.09	895.98	88.87	0.59
Line B Lower	12879.9	USGS 5-yr	3010.00	25.36	32.34	32.34	35.28	0.001499	13.77	218.61	37.53	1.01
Line B Lower	12704.63	USGS 50 yr	6970.00	24.77	38.31		41.85	0.000954	15.10	461.73	39.48	0.78
Line B Lower	12704.63	County 100 yr	12500.00	24.77	48.02		49.99	0.000286	11.34	1186.43	91.00	0.49

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	12704.63	SPF	10300.00	24.77	45.14		47.16	0.000375	11.44	934.72	83.89	0.55
Line B Lower	12704.63	USGS 5-yr	3010.00	24.77	31.73	31.73	34.71	0.001517	13.84	217.54	37.04	1.01
Line B Lower	12638.82	USGS 50 yr	6970.00	24.64	38.30		41.76	0.001018	14.91	467.54	44.25	0.81
Line B Lower	12638.82	County 100 yr	12500.00	24.64	47.88		49.96	0.000297	11.63	1131.67	80.84	0.50
Line B Lower	12638.82	SPF	10300.00	24.64	45.05		47.13	0.000379	11.60	909.52	75.06	0.55
Line B Lower	12638.82	USGS 5-yr	3010.00	24.64	31.53	31.53	34.52	0.001513	13.87	217.04	36.74	1.01
Line B Lower	12491.91	USGS 50 yr	6970.00	24.05	38.79		41.37	0.000762	12.88	541.14	54.48	0.72
Line B Lower	12491.91	County 100 yr	12500.00	24.05	48.03		49.84	0.000245	10.83	1210.00	79.00	0.46
Line B Lower	12491.91	SPF	10300.00	24.05	45.21		46.99	0.000304	10.72	987.17	79.00	0.50
Line B Lower	12491.91	USGS 5-yr	3010.00	24.05	31.02	31.02	33.98	0.001514	13.79	218.22	37.36	1.01
Line B Lower	12329.22	USGS 50 yr	6970.00	23.59	38.72		41.21	0.000789	12.66	550.68	59.20	0.73
Line B Lower	12329.22	County 100 yr	12500.00	23.59	48.15		49.73	0.000216	10.28	1392.81	107.00	0.43
Line B Lower	12329.22	SPF	10300.00	23.59	45.26		46.90	0.000278	10.35	1083.59	107.00	0.48
Line B Lower	12329.22	USGS 5-yr	3010.00	23.59	30.72	30.52	33.51	0.001369	13.38	224.97	36.74	0.95
Line B Lower	12201.64	USGS 50 yr	6970.00	23.04	38.84		41.03	0.000680	11.85	588.23	63.90	0.69
Line B Lower	12201.64	County 100 yr	12500.00	23.04	48.13		49.70	0.000203	10.07	1275.32	76.68	0.42
Line B Lower	12201.64	SPF	10300.00	23.04	45.31		46.83	0.000248	9.90	1058.81	76.68	0.46
Line B Lower	12201.64	USGS 5-yr	3010.00	23.04	31.02		33.17	0.000938	11.77	255.74	37.32	0.79
Line B Lower	12060.73	USGS 50 yr	6970.00	22.56	38.93		40.86	0.000598	11.16	624.81	68.77	0.65
Line B Lower	12060.73	County 100 yr	12500.00	22.56	48.25		49.61	0.000189	9.38	1349.98	79.24	0.40
Line B Lower	12060.73	SPF	10300.00	22.56	45.41		46.74	0.000225	9.24	1125.29	79.24	0.43
Line B Lower	12060.73	USGS 5-yr	3010.00	22.56	31.13		32.96	0.000734	10.85	277.54	37.18	0.70
Line B Lower	11913.96	USGS 50 yr	6970.00	22.00	39.10		40.66	0.000550	10.02	695.69	92.22	0.64
Line B Lower	11913.96	County 100 yr	12500.00	22.00	48.64		49.42	0.000115	7.09	1762.96	113.50	0.32
Line B Lower	11913.96	SPF	10300.00	22.00	45.75		46.55	0.000147	7.17	1435.86	113.50	0.36
Line B Lower	11913.96	USGS 5-yr	3010.00	22.00	31.24		32.78	0.000570	9.94	302.68	37.62	0.62
Line B Lower	11846.92	USGS 50 yr	6970.00	22.00	36.85	33.81	40.38	0.006025	58.25	526.45	57.90	2.67
Line B Lower	11846.92	County 100 yr	12500.00	22.00	48.46	41.54	49.39	0.000830	31.79	1742.75	113.50	1.09
Line B Lower	11846.92	SPF	10300.00	22.00	45.52	40.33	46.51	0.001085	33.59	1408.78	113.50	1.22
Line B Lower	11846.92	USGS 5-yr	3010.00	22.00	30.53	29.24	32.63	0.005169	37.26	276.01	37.56	2.25
Line B Lower	11840		Bridge									
Line B Lower	11813.09	USGS 50 yr	6970.00	21.64	36.68	33.57	40.17	0.005175	54.82	520.69	45.86	2.49
Line B Lower	11813.09	County 100 yr	12500.00	21.64	45.84	40.52	48.30	0.002339	50.61	1117.36	79.00	1.81

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	11813.09	SPF	10300.00	21.64	44.16	35.66	46.34	0.002280	47.63	985.69	77.16	1.77
Line B Lower	11813.09	USGS 5-yr	3010.00	21.64	30.38	28.93	32.45	0.004871	37.02	280.65	36.92	2.21
Line B Lower	11798.08	USGS 50 yr	6970.00	21.64	36.47	33.57	40.08	0.005406	55.50	511.00	44.92	2.54
Line B Lower	11798.08	County 100 yr	12500.00	21.64	45.78	40.52	48.26	0.002369	50.85	1112.59	79.00	1.83
Line B Lower	11798.08	SPF	10300.00	21.64	44.11	35.66	46.31	0.002309	47.85	981.28	77.03	1.78
Line B Lower	11798.08	USGS 5-yr	3010.00	21.64	30.18	28.93	32.36	0.005268	37.91	273.28	36.91	2.29
Line B Lower	11587.35	USGS 50 yr	6970.00	21.04	37.09		39.42	0.000572	12.25	569.10	46.27	0.62
Line B Lower	11587.35	County 100 yr	12500.00	21.04	46.39		47.82	0.000253	9.60	1302.39	91.00	0.45
Line B Lower	11587.35	SPF	10300.00	21.04	44.64		45.90	0.000256	9.01	1143.14	91.00	0.45
Line B Lower	11587.35	USGS 5-yr	3010.00	21.04	30.38		31.89	0.000551	9.87	304.88	37.06	0.61
Line B Lower	11572.51	USGS 50 yr	6970.00	21.04	34.40	33.14	39.16	0.006893	59.32	444.04	36.72	2.86
Line B Lower	11572.51	County 100 yr	12500.00	21.04	44.10	41.45	47.61	0.003367	59.66	978.53	69.00	2.19
Line B Lower	11572.51	SPF	10300.00	21.04	42.77	37.38	45.73	0.003065	54.71	886.92	69.00	2.07
Line B Lower	11572.51	USGS 5-yr	3010.00	21.04	29.26	28.42	31.78	0.006134	40.45	258.08	36.08	2.49
Line B Lower	11500	Bridge										
Line B Lower	11423.41	USGS 50 yr	6970.00	20.32	33.97		37.40	0.000868	14.86	469.09	37.65	0.74
Line B Lower	11423.41	County 100 yr	12500.00	20.32	40.35	36.94	44.74	0.000741	17.07	856.57	99.87	0.69
Line B Lower	11423.41	SPF	10300.00	20.32	35.67	34.78	41.45	0.001296	19.29	541.52	47.56	0.90
Line B Lower	11423.41	USGS 5-yr	3010.00	20.32	27.27	27.27	30.23	0.001506	13.80	218.15	37.31	1.01
Line B Lower	11408.0*	USGS 50 yr	6970.00	20.24	33.99		37.37	0.000848	14.74	473.00	37.58	0.73
Line B Lower	11408.0*	County 100 yr	12500.00	20.24	40.13	36.78	44.72	0.000775	17.38	812.24	88.38	0.71
Line B Lower	11408.0*	SPF	10300.00	20.24	35.74	34.72	41.39	0.001256	19.09	548.84	46.84	0.89
Line B Lower	11408.0*	USGS 5-yr	3010.00	20.24	27.18	27.18	30.14	0.001506	13.80	218.15	37.29	1.01
Line B Lower	11392.6*	USGS 50 yr	6970.00	20.17	34.01		37.34	0.000833	14.64	476.20	38.41	0.72
Line B Lower	11392.6*	County 100 yr	12500.00	20.17	39.95	36.64	44.70	0.000801	17.60	778.74	76.06	0.72
Line B Lower	11392.6*	SPF	10300.00	20.17	35.78	34.68	41.35	0.001225	18.94	553.76	45.26	0.88
Line B Lower	11392.6*	USGS 5-yr	3010.00	20.17	27.11	27.11	30.07	0.001506	13.80	218.08	37.26	1.01
Line B Lower	11377.32	USGS 50 yr	6970.00	20.09	34.03		37.31	0.000815	14.52	480.69	41.54	0.71
Line B Lower	11377.32	County 100 yr	12500.00	20.09	39.86	36.48	44.68	0.000811	17.71	756.83	64.32	0.72
Line B Lower	11377.32	SPF	10300.00	20.09	35.83	34.58	41.30	0.001196	18.79	557.58	43.54	0.87
Line B Lower	11377.32	USGS 5-yr	3010.00	20.09	27.02	27.02	29.98	0.001509	13.81	217.94	37.24	1.01
Line B Lower	11360.7*	USGS 50 yr	6970.00	20.14	34.04		37.29	0.000803	14.45	483.13	41.64	0.71
Line B Lower	11360.7*	County 100 yr	12500.00	20.14	39.88	36.43	44.65	0.000797	17.62	765.09	69.08	0.72

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	11360.7*	SPF	10300.00	20.14	35.84	34.54	41.26	0.001176	18.69	560.71	43.66	0.86
Line B Lower	11360.7*	USGS 5-yr	3010.00	20.14	27.00	27.00	29.94	0.001490	13.75	218.83	37.28	1.00
Line B Lower	11344.2*	USGS 50 yr	6970.00	20.10	34.05		37.27	0.000794	14.40	485.25	41.74	0.71
Line B Lower	11344.2*	County 100 yr	12500.00	20.10	39.90	36.39	44.63	0.000783	17.53	774.08	74.38	0.71
Line B Lower	11344.2*	SPF	10300.00	20.10	35.85	34.50	41.22	0.001161	18.62	563.14	43.76	0.86
Line B Lower	11344.2*	USGS 5-yr	3010.00	20.10	26.96	26.96	29.90	0.001488	13.75	218.86	37.29	1.00
Line B Lower	11327.6*	USGS 50 yr	6970.00	20.05	34.06		37.24	0.000781	14.32	488.11	41.90	0.70
Line B Lower	11327.6*	County 100 yr	12500.00	20.05	39.94	36.33	44.59	0.000766	17.42	785.70	80.39	0.71
Line B Lower	11327.6*	SPF	10300.00	20.05	35.88	34.45	41.18	0.001137	18.50	567.04	43.89	0.85
Line B Lower	11327.6*	USGS 5-yr	3010.00	20.05	26.91	26.91	29.85	0.001488	13.76	218.83	37.32	1.00
Line B Lower	11311.0*	USGS 50 yr	6970.00	19.99	34.06		37.22	0.000770	14.26	490.49	42.98	0.70
Line B Lower	11311.0*	County 100 yr	12500.00	19.99	39.97	36.31	44.56	0.000751	17.32	798.45	87.15	0.70
Line B Lower	11311.0*	SPF	10300.00	19.99	35.88	34.41	41.15	0.001121	18.42	569.68	44.01	0.85
Line B Lower	11311.0*	USGS 5-yr	3010.00	19.99	26.85	26.85	29.81	0.001502	13.80	218.12	37.33	1.01
Line B Lower	11294.51	USGS 50 yr	6970.00	19.94	34.07		37.20	0.000757	14.18	493.38	43.07	0.69
Line B Lower	11294.51	County 100 yr	12500.00	19.94	40.01	36.27	44.53	0.000733	17.19	814.65	94.74	0.70
Line B Lower	11294.51	SPF	10300.00	19.94	35.91	34.34	41.11	0.001100	18.31	573.46	44.15	0.84
Line B Lower	11294.51	USGS 5-yr	3010.00	19.94	26.81	26.81	29.76	0.001499	13.79	218.25	37.36	1.01
Line B Lower	11139.49	USGS 50 yr	6970.00	19.28	34.27		36.94	0.000803	13.10	531.86	54.06	0.74
Line B Lower	11139.49	County 100 yr	12500.00	19.28	41.87		43.62	0.000341	10.62	1176.74	90.00	0.52
Line B Lower	11139.49	SPF	10300.00	19.28	37.53		40.20	0.000807	13.09	786.75	90.00	0.78
Line B Lower	11139.49	USGS 5-yr	3010.00	19.28	26.25	26.25	29.23	0.001510	13.86	217.21	36.85	1.01
Line B Lower	10976.71	USGS 50 yr	6970.00	18.51	34.55		36.65	0.000671	11.62	600.02	67.93	0.69
Line B Lower	10976.71	County 100 yr	12500.00	18.51	41.70		43.56	0.000332	10.93	1143.81	77.00	0.50
Line B Lower	10976.71	SPF	10300.00	18.51	37.61		40.01	0.000598	12.43	828.76	77.00	0.67
Line B Lower	10976.71	USGS 5-yr	3010.00	18.51	25.63	25.63	28.58	0.001506	13.78	218.49	37.21	1.00
Line B Lower	10897.08	USGS 50 yr	6970.00	18.45	34.63		36.54	0.000620	11.09	628.30	74.81	0.67
Line B Lower	10897.08	County 100 yr	12500.00	18.45	41.91		43.43	0.000265	9.88	1264.63	88.25	0.46
Line B Lower	10897.08	SPF	10300.00	18.45	37.83		39.85	0.000502	11.38	904.75	88.25	0.63
Line B Lower	10897.08	USGS 5-yr	3010.00	18.45	25.43	25.43	28.42	0.001490	13.86	217.15	36.54	1.00
Line B Lower	10813.94	USGS 50 yr	6970.00	18.20	34.77		36.41	0.000525	10.30	676.93	78.81	0.62
Line B Lower	10813.94	County 100 yr	12500.00	18.20	42.09		43.33	0.000217	8.92	1400.70	100.00	0.42
Line B Lower	10813.94	SPF	10300.00	18.20	38.04		39.70	0.000424	10.34	995.98	100.00	0.58
Line B Lower	10813.94	USGS 5-yr	3010.00	18.20	25.05	25.05	28.03	0.001513	13.83	217.65	37.04	1.01

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	10716.96	USGS 50 yr	6970.00	17.88	34.82		36.32	0.000491	9.83	708.70	86.01	0.60
Line B Lower	10716.96	County 100 yr	12500.00	17.88	42.08		43.30	0.000207	8.87	1408.60	96.67	0.41
Line B Lower	10716.96	SPF	10300.00	17.88	38.06		39.64	0.000381	10.10	1020.03	96.67	0.55
Line B Lower	10716.96	USGS 5-yr	3010.00	17.88	24.79	24.79	27.74	0.001491	13.77	218.61	37.00	1.00
Line B Lower	10616.9	USGS 50 yr	6970.00	17.55	34.86		36.24	0.000464	9.42	740.27	93.23	0.59
Line B Lower	10616.9	County 100 yr	12500.00	17.55	42.06		43.28	0.000201	8.85	1411.72	93.23	0.40
Line B Lower	10616.9	SPF	10300.00	17.55	38.06		39.59	0.000351	9.92	1038.82	93.23	0.52
Line B Lower	10616.9	USGS 5-yr	3010.00	17.55	24.47	24.47	27.43	0.001507	13.81	217.98	37.00	1.00
Line B Lower	10523.09	USGS 50 yr	6970.00	17.25	34.88		36.17	0.000409	9.11	765.47	90.00	0.55
Line B Lower	10523.09	County 100 yr	12500.00	17.25	42.04		43.26	0.000200	8.87	1409.56	90.00	0.40
Line B Lower	10523.09	SPF	10300.00	17.25	38.05		39.55	0.000333	9.80	1050.98	90.00	0.51
Line B Lower	10523.09	USGS 5-yr	3010.00	17.25	24.16	24.16	27.14	0.001520	13.84	217.49	37.00	1.01
Line B Lower	10427.95	USGS 50 yr	6970.00	16.67	34.96		36.09	0.000321	8.53	816.98	88.08	0.49
Line B Lower	10427.95	County 100 yr	12500.00	16.67	42.06		43.23	0.000181	8.67	1442.53	88.08	0.38
Line B Lower	10427.95	SPF	10300.00	16.67	38.11		39.48	0.000284	9.41	1094.41	88.08	0.47
Line B Lower	10427.95	USGS 5-yr	3010.00	16.67	23.76	23.76	26.71	0.001509	13.79	218.21	37.40	1.01
Line B Lower	10328.76	USGS 50 yr	6970.00	16.48	35.01		36.02	0.000301	8.06	864.23	98.70	0.48
Line B Lower	10328.76	County 100 yr	12500.00	16.48	42.17		43.16	0.000152	7.96	1570.98	98.70	0.35
Line B Lower	10328.76	SPF	10300.00	16.48	38.22		39.40	0.000248	8.72	1180.64	98.70	0.44
Line B Lower	10328.76	USGS 5-yr	3010.00	16.48	23.50	23.50	26.47	0.001507	13.83	217.71	36.83	1.00
Line B Lower	10281.97	USGS 50 yr	6970.00	16.42	35.04		35.99	0.000284	7.83	889.91	103.15	0.47
Line B Lower	10281.97	County 100 yr	12500.00	16.42	42.21		43.13	0.000139	7.67	1630.14	103.15	0.34
Line B Lower	10281.97	SPF	10300.00	16.42	38.26		39.36	0.000229	8.43	1222.43	103.15	0.43
Line B Lower	10281.97	USGS 5-yr	3010.00	16.42	23.31	23.31	26.29	0.001503	13.86	217.20	36.82	1.01
Line B Lower	10157.15	USGS 50 yr	6970.00	15.95	34.97		35.95	0.000260	7.96	875.64	89.38	0.45
Line B Lower	10157.15	County 100 yr	12500.00	15.95	42.02		43.09	0.000159	8.30	1506.16	89.38	0.36
Line B Lower	10157.15	SPF	10300.00	15.95	38.08		39.32	0.000242	8.92	1154.06	89.38	0.44
Line B Lower	10157.15	USGS 5-yr	3010.00	15.95	22.92	22.92	25.88	0.001491	13.79	218.20	36.80	1.00
Line B Lower	10031.29	USGS 50 yr	6970.00	15.42	35.06		35.87	0.000201	7.21	966.43	96.07	0.40
Line B Lower	10031.29	County 100 yr	12500.00	15.42	42.13		43.02	0.000126	7.60	1645.00	96.07	0.32
Line B Lower	10031.29	SPF	10300.00	15.42	38.21		39.23	0.000189	8.12	1268.35	96.07	0.39
Line B Lower	10031.29	USGS 5-yr	3010.00	15.42	22.40	22.40	25.33	0.001477	13.72	219.32	37.44	1.00
Line B Lower	9921.46	USGS 50 yr	6970.00	15.05	35.05	26.48	35.85	0.000196	7.18	970.55	93.00	0.39

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	9921.46	County 100 yr	12500.00	15.05	42.09	32.64	43.01	0.000130	7.69	1625.46	93.00	0.32
Line B Lower	9921.46	SPF	10300.00	15.05	38.17	31.48	39.21	0.000190	8.17	1261.25	93.00	0.39
Line B Lower	9921.46	USGS 5-yr	3010.00	15.05	22.55	22.05	25.06	0.001171	12.72	236.71	37.03	0.89
Line B Lower	9814.29	USGS 50 yr	6970.00	14.69	35.04	26.08	35.82	0.000184	7.08	985.12	90.00	0.38
Line B Lower	9814.29	County 100 yr	12500.00	14.69	42.06	32.24	42.99	0.000131	7.73	1616.97	90.00	0.32
Line B Lower	9814.29	SPF	10300.00	14.69	38.16	31.06	39.19	0.000186	8.14	1265.34	90.00	0.38
Line B Lower	9814.29	USGS 5-yr	3010.00	14.69	22.71	21.67	24.83	0.000913	11.68	257.62	37.22	0.78
Line B Lower	9745.5	USGS 50 yr	6970.00	14.67	35.07		35.79	0.000163	6.81	1023.45	90.00	0.36
Line B Lower	9745.5	County 100 yr	12500.00	14.67	42.08		42.97	0.000122	7.55	1654.63	90.00	0.31
Line B Lower	9745.5	SPF	10300.00	14.67	38.19		39.16	0.000170	7.90	1303.82	90.00	0.37
Line B Lower	9745.5	USGS 5-yr	3010.00	14.67	22.73		24.73	0.000842	11.36	265.04	37.40	0.75
Line B Lower	9678.7	USGS 50 yr	6970.00	14.57	35.14		35.75	0.000146	6.27	1111.10	107.00	0.34
Line B Lower	9678.7	County 100 yr	12500.00	14.57	42.21		42.91	0.000094	6.69	1867.96	107.00	0.28
Line B Lower	9678.7	SPF	10300.00	14.57	38.31		39.09	0.000139	7.10	1450.17	107.00	0.34
Line B Lower	9678.7	USGS 5-yr	3010.00	14.57	22.62		24.68	0.000876	11.50	261.63	37.31	0.77
Line B Lower	9397.88	USGS 50 yr	6970.00	13.53	35.16		35.69	0.000113	5.85	1192.35	102.00	0.30
Line B Lower	9397.88	County 100 yr	12500.00	13.53	42.21		42.87	0.000086	6.54	1911.45	102.00	0.27
Line B Lower	9397.88	SPF	10300.00	13.53	38.32		39.04	0.000118	6.80	1514.53	102.00	0.31
Line B Lower	9397.88	USGS 5-yr	3010.00	13.53	22.76		24.33	0.000589	10.06	299.10	37.25	0.63
Line B Lower	9304.06	USGS 50 yr	6970.00	13.37	35.15		35.68	0.000107	5.85	1190.74	95.00	0.29
Line B Lower	9304.06	County 100 yr	12500.00	13.37	42.16		42.86	0.000089	6.73	1856.67	95.00	0.27
Line B Lower	9304.06	SPF	10300.00	13.37	38.28		39.02	0.000118	6.92	1488.20	95.00	0.31
Line B Lower	9304.06	USGS 5-yr	3010.00	13.37	22.80		24.24	0.000518	9.63	312.53	37.48	0.59
Line B Lower	9212.4	USGS 50 yr	6970.00	13.14	35.16		35.66	0.000101	5.64	1236.84	101.00	0.28
Line B Lower	9212.4	County 100 yr	12500.00	13.14	42.19		42.83	0.000081	6.42	1946.76	101.00	0.26
Line B Lower	9212.4	SPF	10300.00	13.14	38.31		38.99	0.000109	6.63	1554.66	101.00	0.30
Line B Lower	9212.4	USGS 5-yr	3010.00	13.14	22.80		24.18	0.000485	9.40	320.14	37.25	0.57
Line B Lower	8984.35	USGS 50 yr	6970.00	12.22	35.11		35.63	0.000096	5.78	1206.36	85.00	0.27
Line B Lower	8984.35	County 100 yr	12500.00	12.22	42.05		42.80	0.000094	6.96	1795.91	85.00	0.27
Line B Lower	8984.35	SPF	10300.00	12.22	38.19		38.96	0.000116	7.02	1468.18	85.00	0.30
Line B Lower	8984.35	USGS 5-yr	3010.00	12.22	22.89		24.00	0.000356	8.45	356.02	37.69	0.48
Line B Lower	8905.46	USGS 50 yr	6970.00	11.97	35.22		35.58	0.000066	4.79	1455.10	113.00	0.24
Line B Lower	8905.46	County 100 yr	12500.00	11.97	42.23		42.72	0.000056	5.56	2247.63	113.00	0.22
Line B Lower	8905.46	SPF	10300.00	11.97	38.37		38.87	0.000073	5.69	1810.97	113.00	0.25

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	8905.46	USGS 5-yr	3010.00	11.97	22.89		23.96	0.000335	8.29	363.24	37.74	0.47
Line B Lower	8823.72	USGS 50 yr	6970.00	11.76	32.83	25.57	35.35	0.000215	14.37	969.07	86.88	0.56
Line B Lower	8823.72	County 100 yr	12500.00	11.76	38.66	33.58	42.38	0.000250	18.28	1598.07	112.00	0.63
Line B Lower	8823.72	SPF	10300.00	11.76	32.96	30.97	38.37	0.000459	21.06	980.57	87.59	0.82
Line B Lower	8823.72	USGS 5-yr	3010.00	11.76	19.96	19.92	23.65	0.001123	17.06	266.50	37.53	1.08
Line B Lower	8800	Bridge										
Line B Lower	8726.66	USGS 50 yr	6970.00	11.45	23.21	23.21	28.68	0.009490	62.56	398.87	37.79	3.22
Line B Lower	8726.66	County 100 yr	12500.00	11.45	29.98	29.98	34.58	0.006523	70.26	820.00	82.95	2.88
Line B Lower	8726.66	SPF	10300.00	11.45	28.72	28.72	32.89	0.006499	66.92	718.02	79.01	2.84
Line B Lower	8726.66	USGS 5-yr	3010.00	11.45	18.65	18.65	21.73	0.009197	44.39	227.41	37.45	2.92
Line B Lower	8700	Lat Struct										
Line B Lower	8699	Lat Struct										
Line B Lower	8472.5	USGS 50 yr	6970.00	10.65	22.12	22.12	27.30	0.001547	18.26	381.69	37.22	1.01
Line B Lower	8472.5	County 100 yr	12500.00	10.65	28.51	28.51	33.13	0.001046	17.58	849.66	120.00	0.88
Line B Lower	8472.5	SPF	10300.00	10.65	26.87	26.87	31.37	0.001201	17.14	655.63	98.70	0.92
Line B Lower	8472.5	USGS 5-yr	3010.00	10.65	17.68	17.68	20.67	0.001509	13.85	217.27	36.89	1.01
Line B Lower	8271.07	USGS 50 yr	6970.00	10.08	21.50	21.50	26.69	0.001551	18.28	381.26	37.09	1.01
Line B Lower	8271.07	County 100 yr	12500.00	10.08	27.43	27.43	31.67	0.001313	16.54	767.31	106.80	0.99
Line B Lower	8271.07	SPF	10300.00	10.08	26.44	26.32	30.12	0.001324	15.40	670.46	89.57	0.98
Line B Lower	8271.07	USGS 5-yr	3010.00	10.08	17.06	17.06	20.05	0.001508	13.86	217.19	36.82	1.01
Line B Lower	8151.3	USGS 50 yr	6970.00	9.63	21.14	21.14	26.30	0.001537	18.22	382.56	37.28	1.00
Line B Lower	8151.3	County 100 yr	12500.00	9.63	26.96	26.96	31.27	0.001317	16.66	754.95	94.68	1.00
Line B Lower	8151.3	SPF	10300.00	9.63	26.70	25.87	29.81	0.000988	14.16	730.47	90.21	0.86
Line B Lower	8151.3	USGS 5-yr	3010.00	9.63	16.71	16.71	19.67	0.001493	13.80	218.08	36.94	1.00
Line B Lower	8030.72	USGS 50 yr	6970.00	9.37	20.71	20.71	25.88	0.001540	18.24	382.16	37.19	1.00
Line B Lower	8030.72	County 100 yr	12500.00	9.37	27.25	26.66	30.82	0.001065	15.17	832.77	106.70	0.90
Line B Lower	8030.72	SPF	10300.00	9.37	26.94		29.55	0.000812	12.96	800.32	103.50	0.78
Line B Lower	8030.72	USGS 5-yr	3010.00	9.37	16.27	16.27	19.25	0.001504	13.84	217.44	36.92	1.01
Line B Lower	7805.05	USGS 50 yr	6970.00	8.69	20.03	20.03	25.23	0.001542	18.29	381.12	37.05	1.01
Line B Lower	7805.05	County 100 yr	12500.00	8.69	27.66		30.37	0.000709	13.25	969.31	110.00	0.75
Line B Lower	7805.05	SPF	10300.00	8.69	27.19		29.23	0.000567	11.49	917.56	110.00	0.67
Line B Lower	7805.05	USGS 5-yr	3010.00	8.69	15.75	15.58	18.57	0.001374	13.47	223.41	36.69	0.96

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	7535.08	USGS 50 yr	6970.00	7.87	19.16	19.16	24.36	0.001545	18.30	380.97	37.00	1.01
Line B Lower	7535.08	County 100 yr	12500.00	7.87	28.27		29.90	0.000400	10.24	1220.85	124.00	0.58
Line B Lower	7535.08	SPF	10300.00	7.87	27.61		28.88	0.000339	9.05	1138.40	124.00	0.53
Line B Lower	7535.08	USGS 5-yr	3010.00	7.87	16.05		18.04	0.000816	11.31	266.22	36.77	0.74
Line B Lower	7452.01	USGS 50 yr	6970.00	7.39	18.87	18.86	24.05	0.001547	18.26	381.76	36.91	1.00
Line B Lower	7452.01	County 100 yr	12500.00	7.39	27.98		29.84	0.000448	10.97	1158.67	121.00	0.61
Line B Lower	7452.01	SPF	10300.00	7.39	27.41		28.84	0.000368	9.59	1089.86	121.00	0.55
Line B Lower	7452.01	USGS 5-yr	3010.00	7.39	16.12		17.92	0.000705	10.73	280.43	36.79	0.69
Line B Lower	7375.17	USGS 50 yr	6970.00	7.35	19.02	18.63	23.82	0.001388	17.56	396.92	37.18	0.95
Line B Lower	7375.17	County 100 yr	12500.00	7.35	27.99		29.79	0.000438	10.76	1161.96	115.00	0.60
Line B Lower	7375.17	SPF	10300.00	7.35	27.42	23.77	28.79	0.000358	9.40	1096.24	115.00	0.54
Line B Lower	7375.17	USGS 5-yr	3010.00	7.35	16.16		17.83	0.000637	10.36	290.65	37.02	0.65
Line B Lower	7223.08	USGS 50 yr	6970.00	7.09	18.84	18.37	23.59	0.001365	17.47	398.96	37.14	0.94
Line B Lower	7223.08	County 100 yr	12500.00	7.09	26.03	26.03	29.51	0.001391	14.96	835.36	120.00	1.00
Line B Lower	7223.08	SPF	10300.00	7.09	21.44	21.44	28.15	0.001622	20.79	495.46	37.26	1.01
Line B Lower	7223.08	USGS 5-yr	3010.00	7.09	16.13		17.71	0.000590	10.10	298.12	37.02	0.63
Line B Lower	7057.32	USGS 50 yr	6970.00	6.78	21.50		22.18	0.000932	6.65	1048.59	108.32	0.38
Line B Lower	7057.32	County 100 yr	12500.00	6.78	26.50		27.27	0.001040	7.05	1773.01	180.00	0.40
Line B Lower	7057.32	SPF	10300.00	6.78	25.46		26.11	0.001011	6.50	1585.08	180.00	0.39
Line B Lower	7057.32	USGS 5-yr	3010.00	6.78	16.84		17.24	0.000822	5.04	597.12	85.66	0.34
Line B Lower	6957.26	USGS 50 yr	6970.00	6.64	21.35		22.08	0.001037	6.88	1013.03	107.55	0.40
Line B Lower	6957.26	County 100 yr	12500.00	6.64	26.35		27.16	0.001123	7.22	1731.83	180.00	0.41
Line B Lower	6957.26	SPF	10300.00	6.64	25.31		26.00	0.001100	6.67	1544.71	180.00	0.40
Line B Lower	6957.26	USGS 5-yr	3010.00	6.64	16.71		17.14	0.000965	5.31	566.92	84.75	0.36
Line B Lower	6757.13	USGS 50 yr	6970.00	5.67	21.12		21.87	0.001063	6.92	1006.52	107.83	0.40
Line B Lower	6757.13	County 100 yr	12500.00	5.67	26.12		26.94	0.001134	7.24	1727.12	180.00	0.41
Line B Lower	6757.13	SPF	10300.00	5.67	25.09		25.78	0.001109	6.68	1541.09	180.00	0.40
Line B Lower	6757.13	USGS 5-yr	3010.00	5.67	16.50		16.95	0.000996	5.36	561.41	84.66	0.37
Line B Lower	6557	USGS 50 yr	6970.00	5.91	20.90		21.65	0.001085	6.98	999.13	107.53	0.40
Line B Lower	6557	County 100 yr	12500.00	5.91	25.89		26.71	0.001151	7.27	1719.71	180.00	0.41
Line B Lower	6557	SPF	10300.00	5.91	24.86		25.56	0.001125	6.71	1534.82	180.00	0.41
Line B Lower	6557	USGS 5-yr	3010.00	5.91	16.29		16.74	0.001023	5.41	556.51	84.58	0.37
Line B Lower	6356.88	USGS 50 yr	6970.00	5.70	20.70		21.44	0.001054	6.90	1010.39	108.15	0.40

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	6356.88	County 100 yr	12500.00	5.70	25.65		26.48	0.001152	7.27	1718.61	180.00	0.41
Line B Lower	6356.88	SPF	10300.00	5.70	24.63		25.33	0.001124	6.71	1534.71	180.00	0.41
Line B Lower	6356.88	USGS 5-yr	3010.00	5.70	16.10		16.54	0.000973	5.31	566.58	85.04	0.36
Line B Lower	6156.75	USGS 50 yr	6970.00	5.40	20.12		21.14	0.001676	8.14	856.48	101.20	0.49
Line B Lower	6156.75	County 100 yr	12500.00	5.40	25.01		26.15	0.001951	8.56	1460.59	180.00	0.53
Line B Lower	6156.75	SPF	10300.00	5.40	24.09		25.06	0.001323	7.92	1300.60	134.05	0.45
Line B Lower	6156.75	USGS 5-yr	3010.00	5.40	15.54		16.25	0.001942	6.75	445.63	78.30	0.50
Line B Lower	5756.5	USGS 50 yr	6970.00	5.81	19.77		20.53	0.001093	7.01	994.37	107.10	0.41
Line B Lower	5756.5	County 100 yr	12500.00	5.81	24.59		25.45	0.001242	7.45	1678.04	180.00	0.43
Line B Lower	5756.5	SPF	10300.00	5.81	23.79		24.49	0.001123	6.71	1534.37	180.00	0.41
Line B Lower	5756.5	USGS 5-yr	3010.00	5.81	15.16		15.62	0.001021	5.43	554.72	83.99	0.37
Line B Lower	5356.24	USGS 50 yr	6970.00	5.34	19.32		20.09	0.001104	7.03	990.77	107.03	0.41
Line B Lower	5356.24	County 100 yr	12500.00	5.34	24.06		24.94	0.001295	7.55	1656.64	180.00	0.44
Line B Lower	5356.24	SPF	10300.00	5.34	23.33		24.04	0.001146	6.75	1525.28	180.00	0.41
Line B Lower	5356.24	USGS 5-yr	3010.00	5.34	14.75		15.21	0.001024	5.43	554.41	84.15	0.37
Line B Lower	4955.99	USGS 50 yr	6970.00	5.41	18.84		19.63	0.001153	7.14	975.71	106.29	0.42
Line B Lower	4955.99	County 100 yr	12500.00	5.41	23.49		24.41	0.001377	7.69	1625.71	180.00	0.45
Line B Lower	4955.99	SPF	10300.00	5.41	22.85		23.57	0.001183	6.82	1510.59	180.00	0.41
Line B Lower	4955.99	USGS 5-yr	3010.00	5.41	14.32		14.79	0.001074	5.51	545.84	83.79	0.38
Line B Lower	4555.73	USGS 50 yr	6970.00	4.84	18.38		19.17	0.001161	7.15	975.13	106.76	0.42
Line B Lower	4555.73	County 100 yr	12500.00	4.84	22.89		23.84	0.001451	7.82	1598.69	180.00	0.46
Line B Lower	4555.73	SPF	10300.00	4.84	22.36		23.09	0.001197	6.85	1504.72	180.00	0.42
Line B Lower	4555.73	USGS 5-yr	3010.00	4.84	13.89		14.36	0.001083	5.51	545.96	84.38	0.38
Line B Lower	4155.48	USGS 50 yr	6970.00	4.63	17.86	12.97	18.71	0.001135	9.32	966.07	106.58	0.45
Line B Lower	4155.48	County 100 yr	12500.00	4.63	22.06	16.15	23.25	0.001351	12.22	1544.56	180.00	0.52
Line B Lower	4155.48	SPF	10300.00	4.63	21.77	15.00	22.64	0.001014	10.47	1491.39	180.00	0.45
Line B Lower	4155.48	USGS 5-yr	3010.00	4.63	13.43	9.76	13.93	0.001041	6.80	543.71	84.42	0.40
Line B Lower	3952.75		Bridge									
Line B Lower	3755.23	USGS 50 yr	6970.00	4.28	17.34		18.21	0.001176	9.41	959.78	106.63	0.46
Line B Lower	3755.23	County 100 yr	12500.00	4.28	21.18		22.50	0.001731	13.56	1474.42	180.00	0.58
Line B Lower	3755.23	SPF	10300.00	4.28	19.70		20.87	0.001348	11.26	1224.96	121.73	0.51
Line B Lower	3755.23	USGS 5-yr	3010.00	4.28	12.98		13.48	0.001073	6.86	542.69	84.67	0.41
Line B Lower	3354.97	USGS 50 yr	6970.00	3.90	16.87		17.71	0.001267	7.36	947.63	106.41	0.43

HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (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)	
Line B Lower	3354.97	County 100 yr	12500.00	3.90	20.49		21.70	0.002138	8.81	1418.06	180.00	0.55
Line B Lower	3354.97	SPF	10300.00	3.90	19.14		20.28	0.001589	8.55	1204.36	127.92	0.49
Line B Lower	3354.97	USGS 5-yr	3010.00	3.90	12.54		13.03	0.001160	5.63	534.42	84.42	0.39
Line B Lower	2954.72	USGS 50 yr	6970.00	3.09	16.46		17.19	0.001172	6.86	1015.58	118.87	0.41
Line B Lower	2954.72	County 100 yr	12500.00	3.09	19.88		20.90	0.001633	8.09	1544.74	180.00	0.49
Line B Lower	2954.72	SPF	10300.00	3.09	18.57		19.53	0.001894	7.87	1308.38	180.00	0.51
Line B Lower	2954.72	USGS 5-yr	3010.00	3.09	12.12		12.57	0.001077	5.37	560.20	88.69	0.38
Line B Lower	2854.66	USGS 50 yr	6970.00	2.68	16.42	10.73	17.05	0.000961	6.38	1092.83	123.12	0.38
Line B Lower	2854.66	County 100 yr	12500.00	2.68	19.81	13.94	20.72	0.001354	7.65	1634.13	180.00	0.45
Line B Lower	2854.66	SPF	10300.00	2.68	18.48	12.83	19.33	0.001530	7.38	1394.86	180.00	0.47
Line B Lower	2854.66	USGS 5-yr	3010.00	2.68	12.08	7.63	12.45	0.000854	4.88	616.46	94.90	0.34
Line B Lower	2752.75	Bridge										
Line B Lower	2704.56	USGS 50 yr	6970.00	2.68	14.25		15.32	0.001982	8.30	840.05	109.83	0.53
Line B Lower	2704.56	County 100 yr	12500.00	2.68	17.51		19.11	0.002261	10.16	1230.21	131.01	0.58
Line B Lower	2704.56	SPF	10300.00	2.68	16.68		17.98	0.001937	9.15	1125.10	124.72	0.54
Line B Lower	2704.56	USGS 5-yr	3010.00	2.68	11.89		12.28	0.000919	5.03	598.03	92.91	0.35
Line B Lower	2554.46	USGS 50 yr	6970.00	3.10	14.31		14.93	0.001451	6.33	1100.89	175.30	0.45
Line B Lower	2554.46	County 100 yr	12500.00	3.10	17.84		18.59	0.001455	6.94	1801.68	250.00	0.46
Line B Lower	2554.46	SPF	10300.00	3.10	16.92		17.57	0.001126	6.50	1583.67	200.08	0.41
Line B Lower	2554.46	USGS 5-yr	3010.00	3.10	11.81		12.11	0.000979	4.34	693.46	144.71	0.35
Line B Lower	1753.96	USGS 50 yr	6970.00	2.39	13.29		13.83	0.001249	5.91	1178.57	185.09	0.41
Line B Lower	1753.96	County 100 yr	12500.00	2.39	16.85		17.52	0.001173	6.56	1904.55	243.86	0.41
Line B Lower	1753.96	SPF	10300.00	2.39	16.13		16.68	0.001033	5.95	1732.12	234.23	0.39
Line B Lower	1753.96	USGS 5-yr	3010.00	2.39	11.21		11.42	0.000708	3.71	811.11	167.49	0.30
Line B Lower	1353.7	USGS 50 yr	6970.00	1.73	12.82		13.35	0.001152	5.83	1195.37	180.61	0.40
Line B Lower	1353.7	County 100 yr	12500.00	1.73	16.41		17.03	0.001187	6.32	1977.28	270.00	0.41
Line B Lower	1353.7	SPF	10300.00	1.73	15.73		16.24	0.001111	5.75	1791.98	270.00	0.39
Line B Lower	1353.7	USGS 5-yr	3010.00	1.73	10.98		11.16	0.000548	3.44	874.96	167.23	0.27
Line B Lower	1153.58	USGS 50 yr	6970.00	1.75	12.59		13.12	0.001156	5.81	1198.94	183.24	0.40
Line B Lower	1153.58	County 100 yr	12500.00	1.75	16.18		16.79	0.001170	6.30	1984.40	270.00	0.41
Line B Lower	1153.58	SPF	10300.00	1.75	15.51		16.02	0.001085	5.71	1803.91	270.00	0.39
Line B Lower	1153.58	USGS 5-yr	3010.00	1.75	10.88		11.05	0.000524	3.36	894.58	171.70	0.26
Line B Lower	953.45	USGS 50 yr	6970.00	1.83	12.32		12.88	0.001239	5.97	1167.28	179.58	0.41

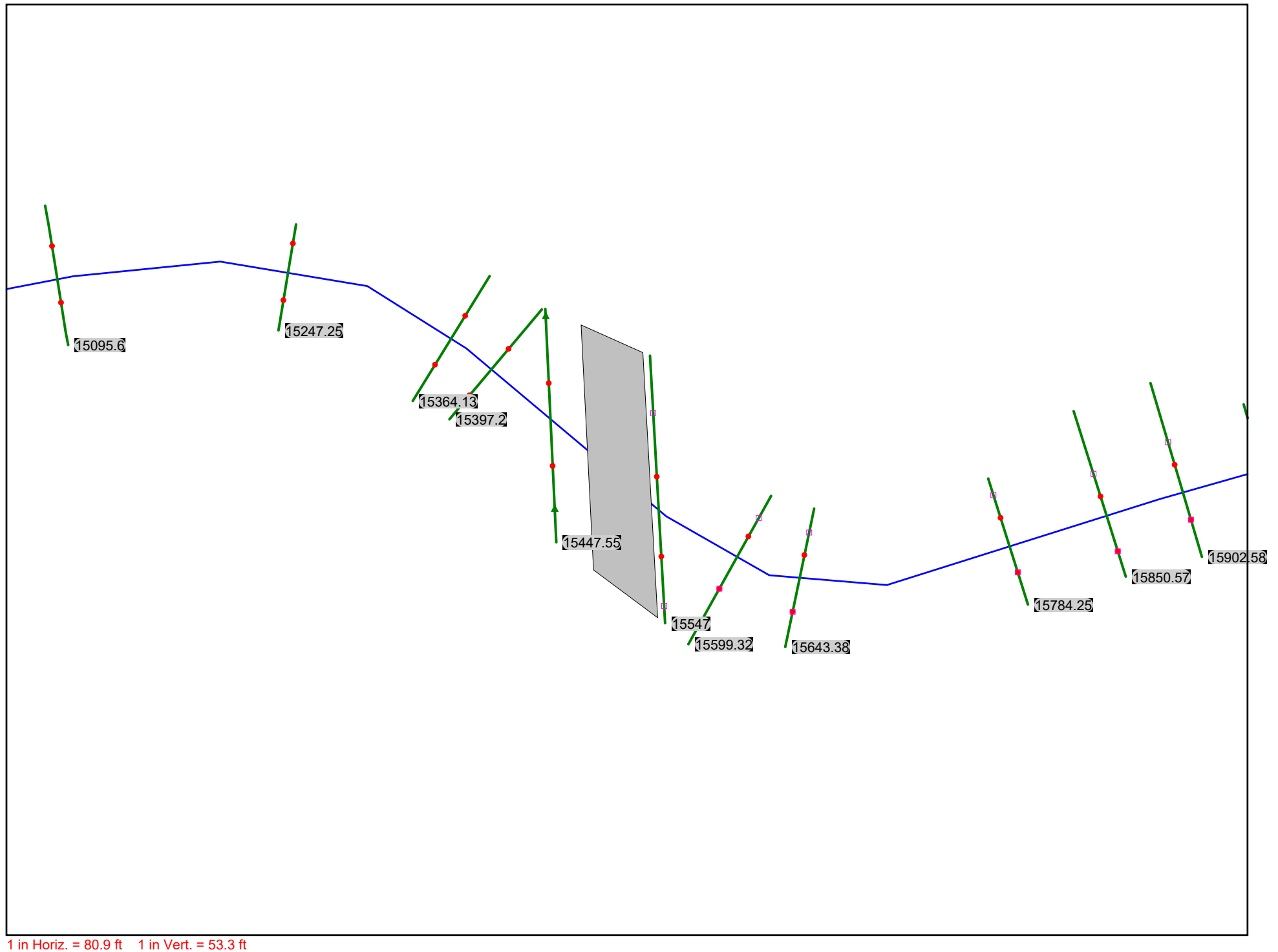
HEC-RAS Plan: WRECO Existing_052022 River: San Lorenzo Crk Reach: Line B Lower (Continued)

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)	
Line B Lower	953.45	County 100 yr	12500.00	1.83	15.88		16.54	0.001330	6.54	1910.95	270.00	0.43
Line B Lower	953.45	SPF	10300.00	1.83	15.24		15.78	0.001230	5.92	1738.52	270.00	0.41
Line B Lower	953.45	USGS 5-yr	3010.00	1.83	10.78		10.95	0.000508	3.35	898.23	168.50	0.26
Line B Lower	553.19	USGS 50 yr	6970.00	1.56	11.71		12.33	0.001496	6.29	1107.80	181.26	0.45
Line B Lower	553.19	County 100 yr	12500.00	1.56	15.32		16.00	0.001387	6.61	1891.29	270.00	0.44
Line B Lower	553.19	SPF	10300.00	1.56	14.74		15.29	0.001248	5.94	1735.28	270.00	0.41
Line B Lower	553.19	USGS 5-yr	3010.00	1.56	10.57		10.74	0.000516	3.32	905.82	173.90	0.26
Line B Lower	152.94	USGS 50 yr	6970.00	1.10	10.83	8.75	11.62	0.002012	10.11	993.47	176.84	0.57
Line B Lower	152.94	County 100 yr	12500.00	1.10	14.62	10.66	15.41	0.001487	10.83	1816.31	270.00	0.52
Line B Lower	152.94	SPF	10300.00	1.10	14.15	9.98	14.77	0.001270	9.77	1688.92	270.00	0.48
Line B Lower	152.94	USGS 5-yr	3010.00	1.10	10.37	5.49	10.54	0.000486	4.81	912.89	174.24	0.28
Line B Lower	37.75		Bridge									
Line B Lower	-47.19	USGS 50 yr	6970.00	1.01	9.98		10.99	0.002981	11.66	886.88	181.55	0.69
Line B Lower	-47.19	County 100 yr	12500.00	1.01	12.36		13.75	0.002788	13.19	1336.33	197.15	0.69
Line B Lower	-47.19	SPF	10300.00	1.01	11.69		12.86	0.002570	12.17	1206.79	192.78	0.66
Line B Lower	-47.19	USGS 5-yr	3010.00	1.01	10.26		10.43	0.000469	4.72	937.84	183.39	0.27
Line B Lower	-147.25	USGS 50 yr	6970.00	-0.60	8.30	8.30	10.49	0.005175	12.19	635.21	157.97	0.84
Line B Lower	-147.25	County 100 yr	12500.00	-0.60	10.84	10.84	13.31	0.004167	13.62	1118.67	220.88	0.80
Line B Lower	-147.25	SPF	10300.00	-0.60	9.53	9.53	12.33	0.005513	14.12	840.97	189.59	0.89
Line B Lower	-147.25	USGS 5-yr	3010.00	-0.60	10.20	5.20	10.39	0.000339	3.70	979.91	215.42	0.22

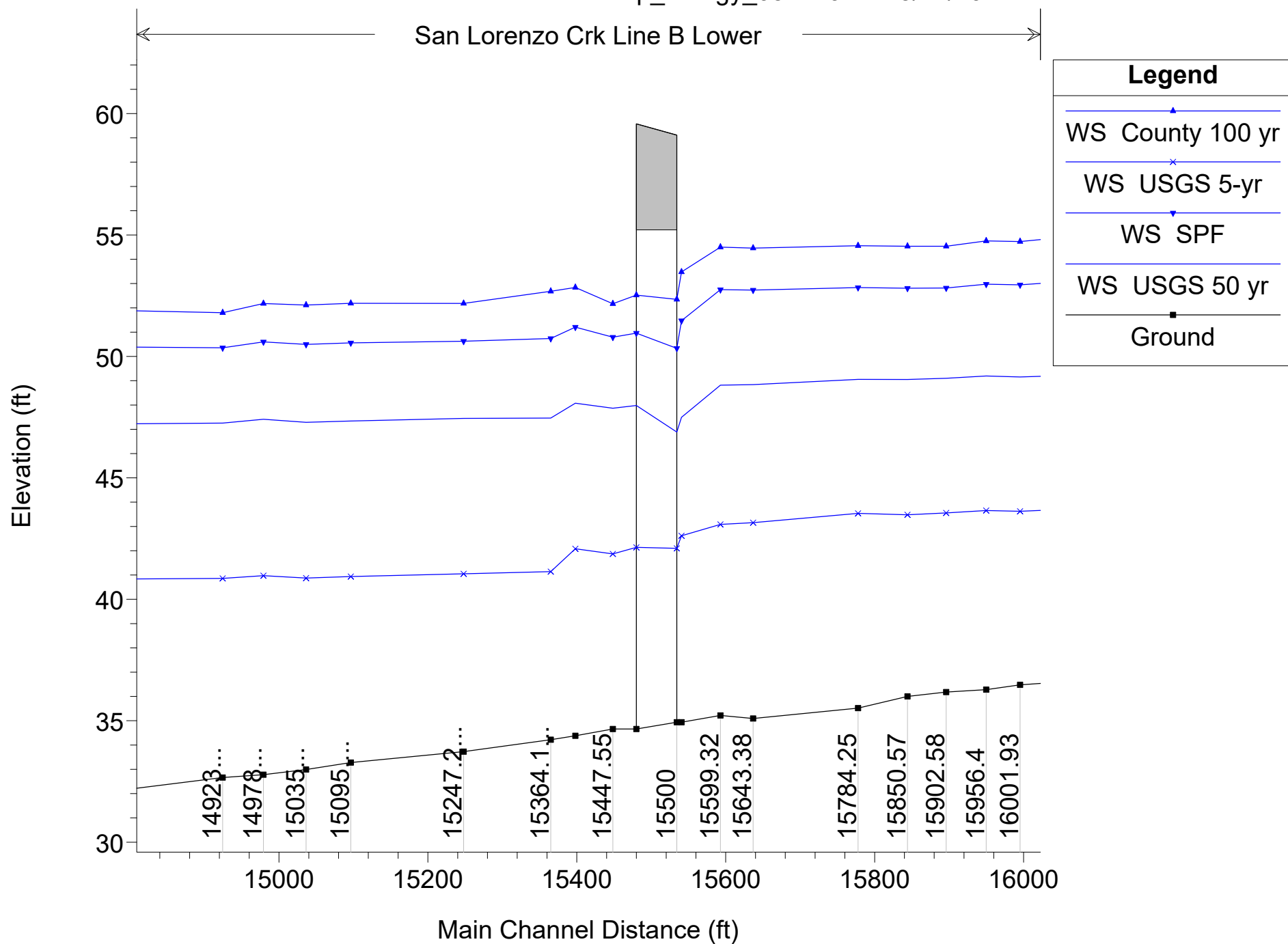
Appendix D Proposed HEC-RAS Results

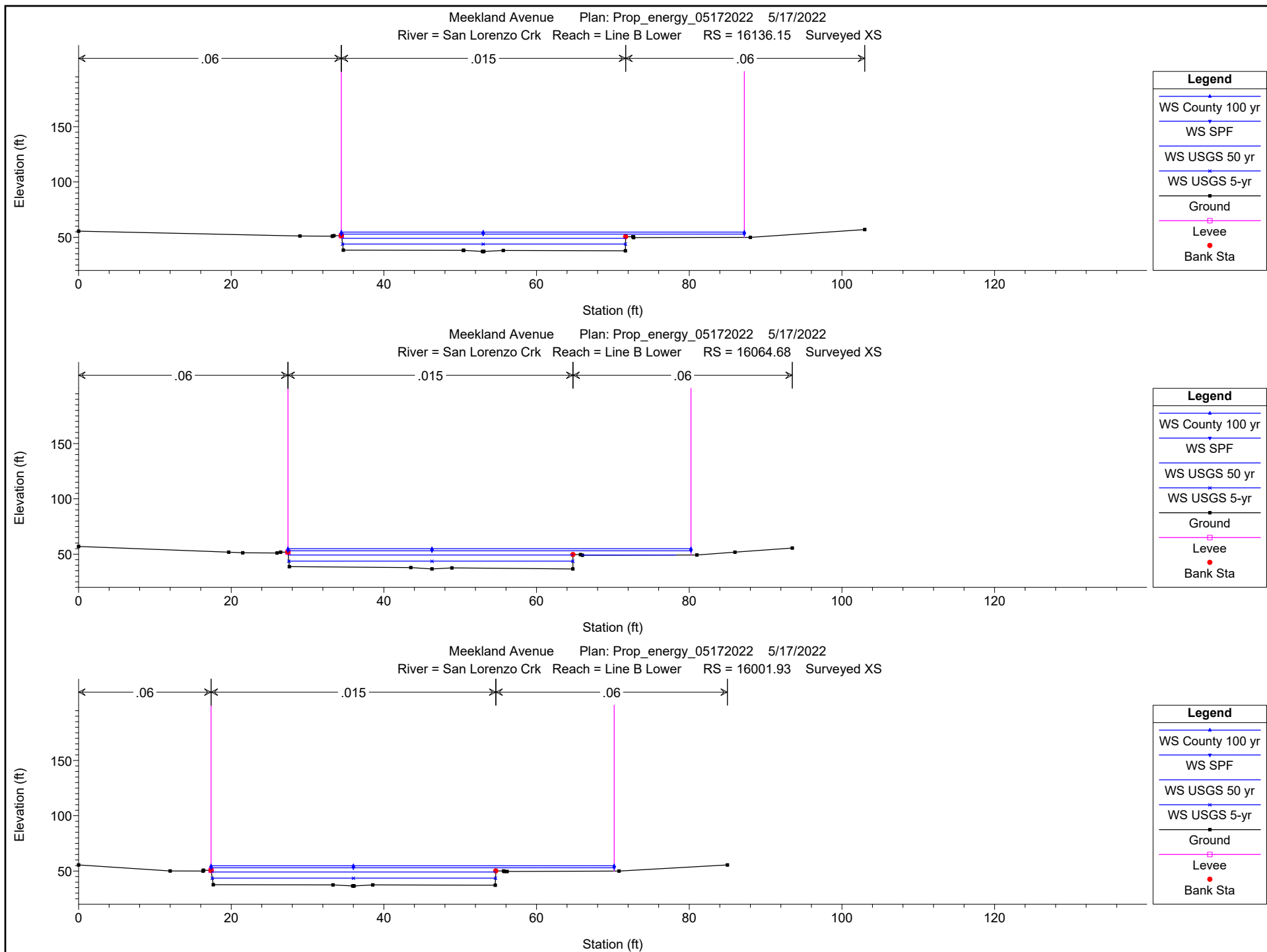
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HEC-RAS Results - WRECO Model (Proposed Condition)
This appendix only shows partial of the model

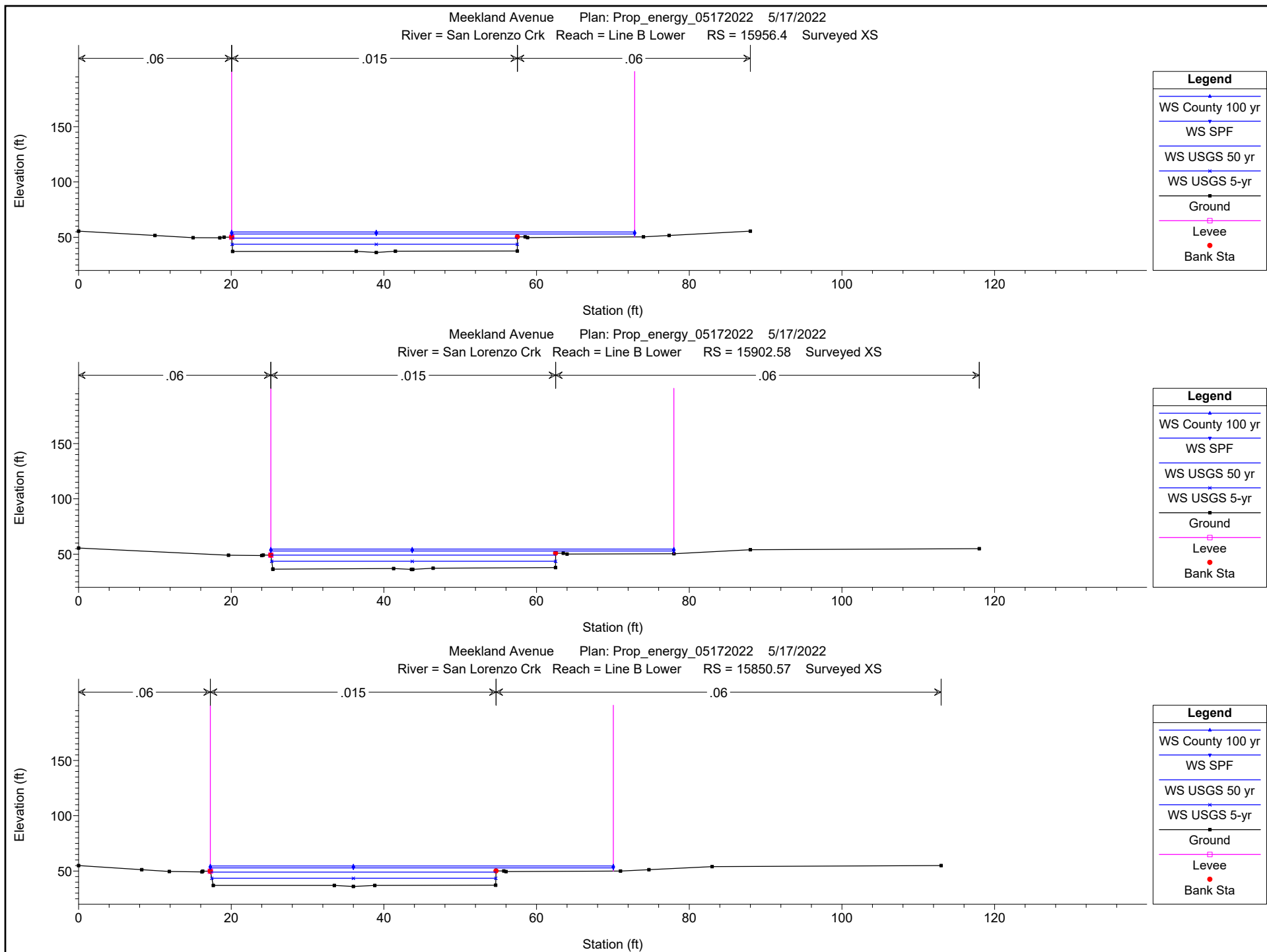


San Lorenzo Crk Line B Lower

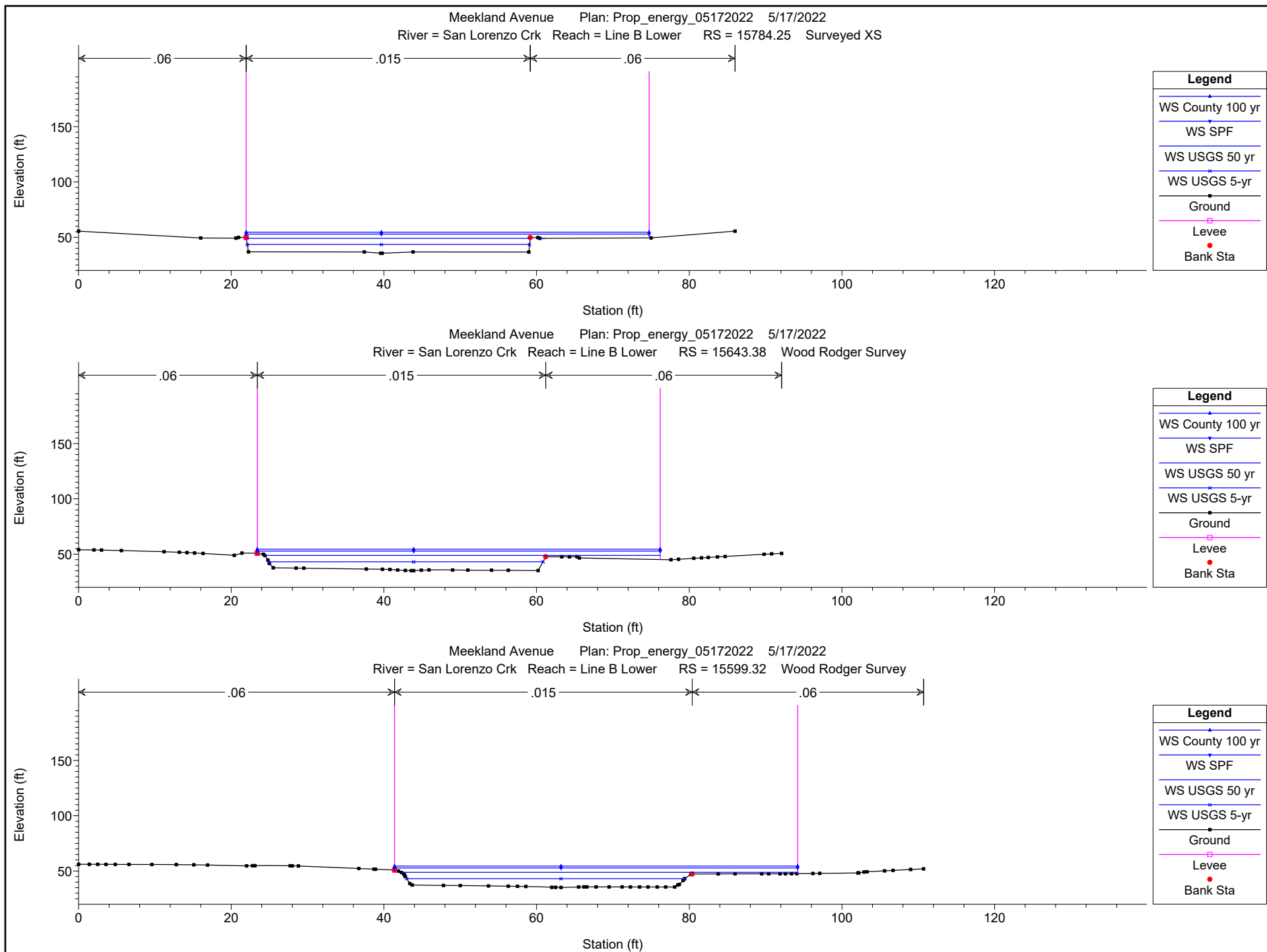




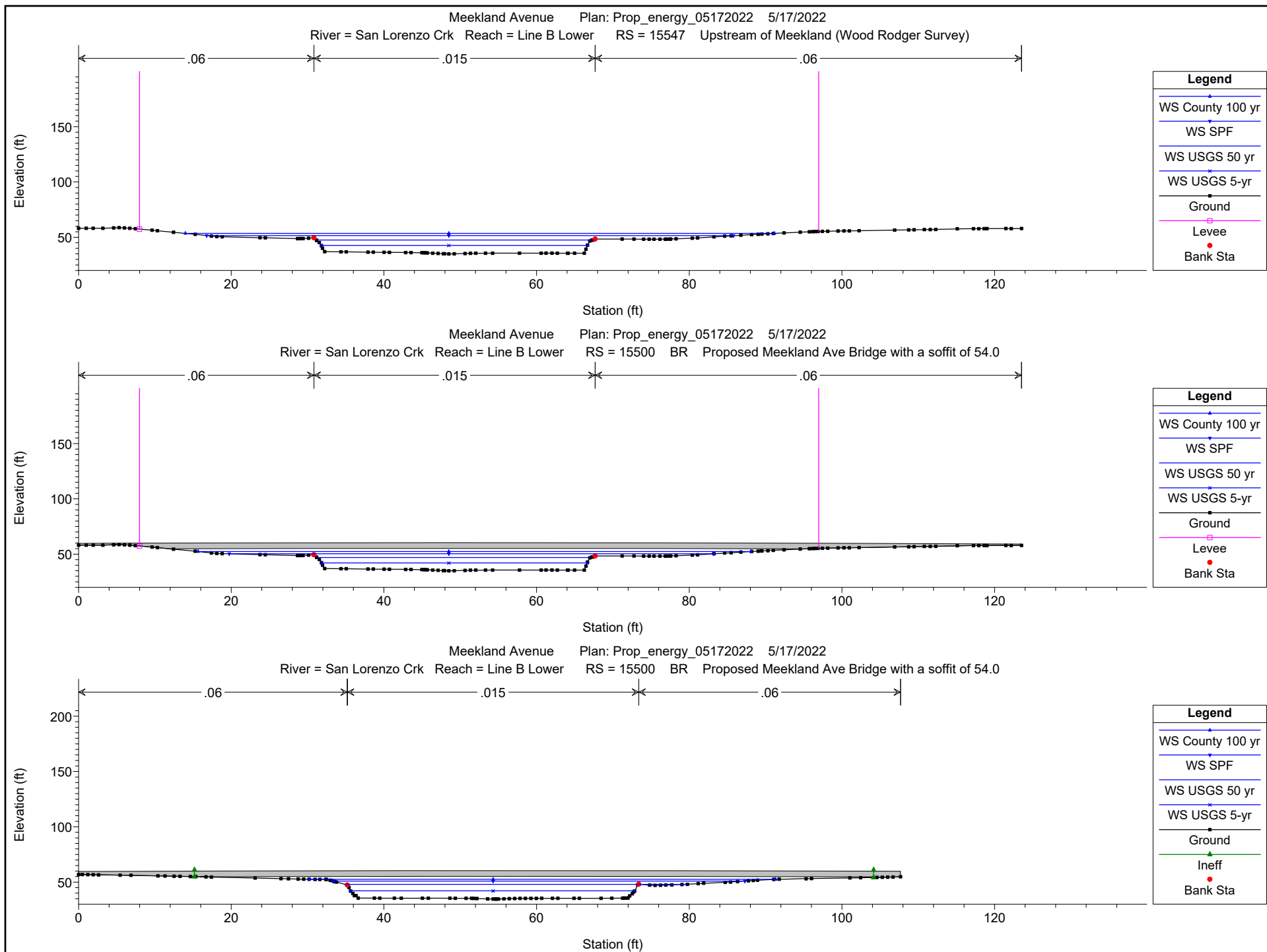
1 in Horiz. = 16.7 ft 1 in Vert. = 114.6 ft



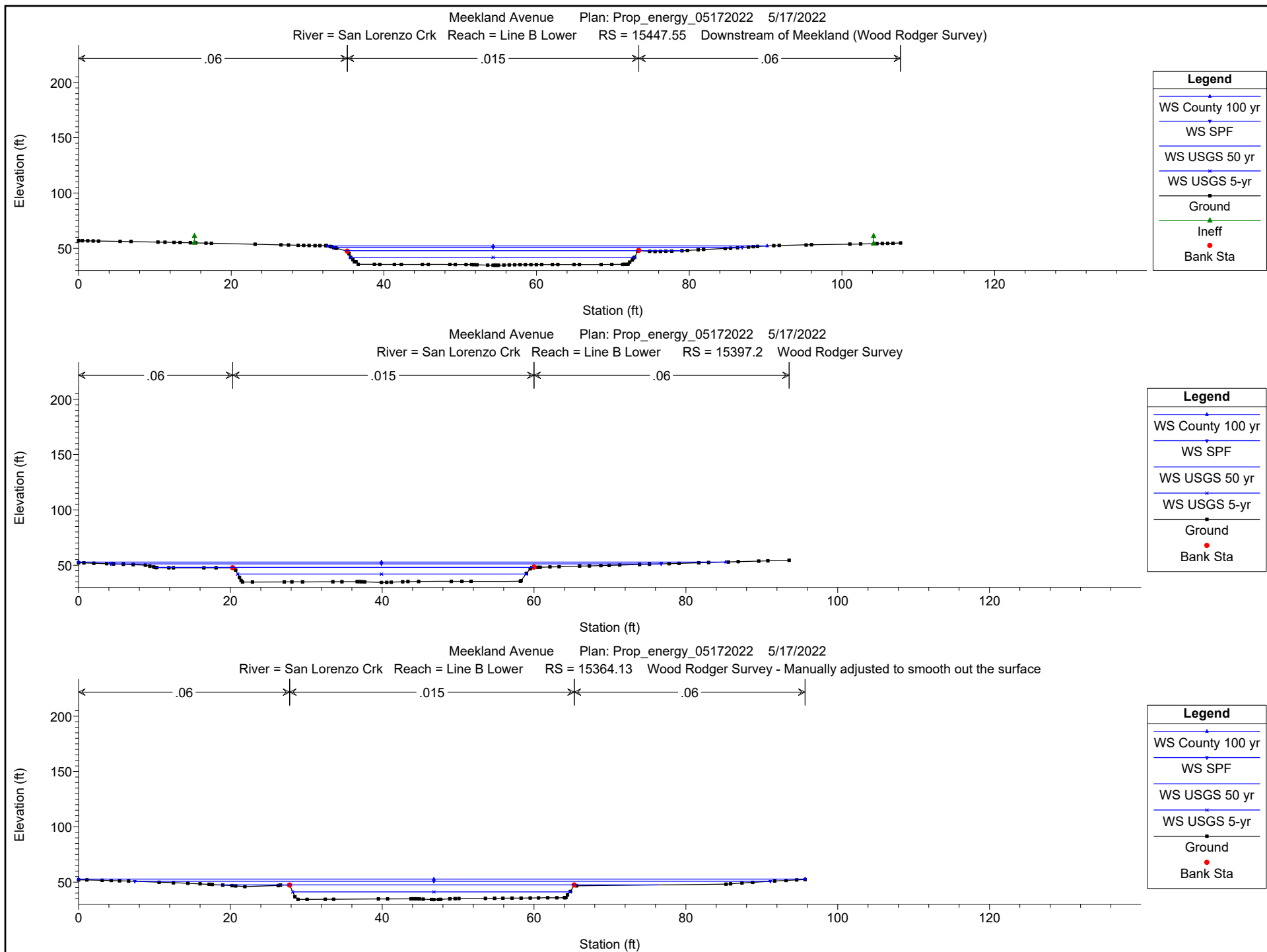
1 in Horiz. = 16.7 ft 1 in Vert. = 114.6 ft



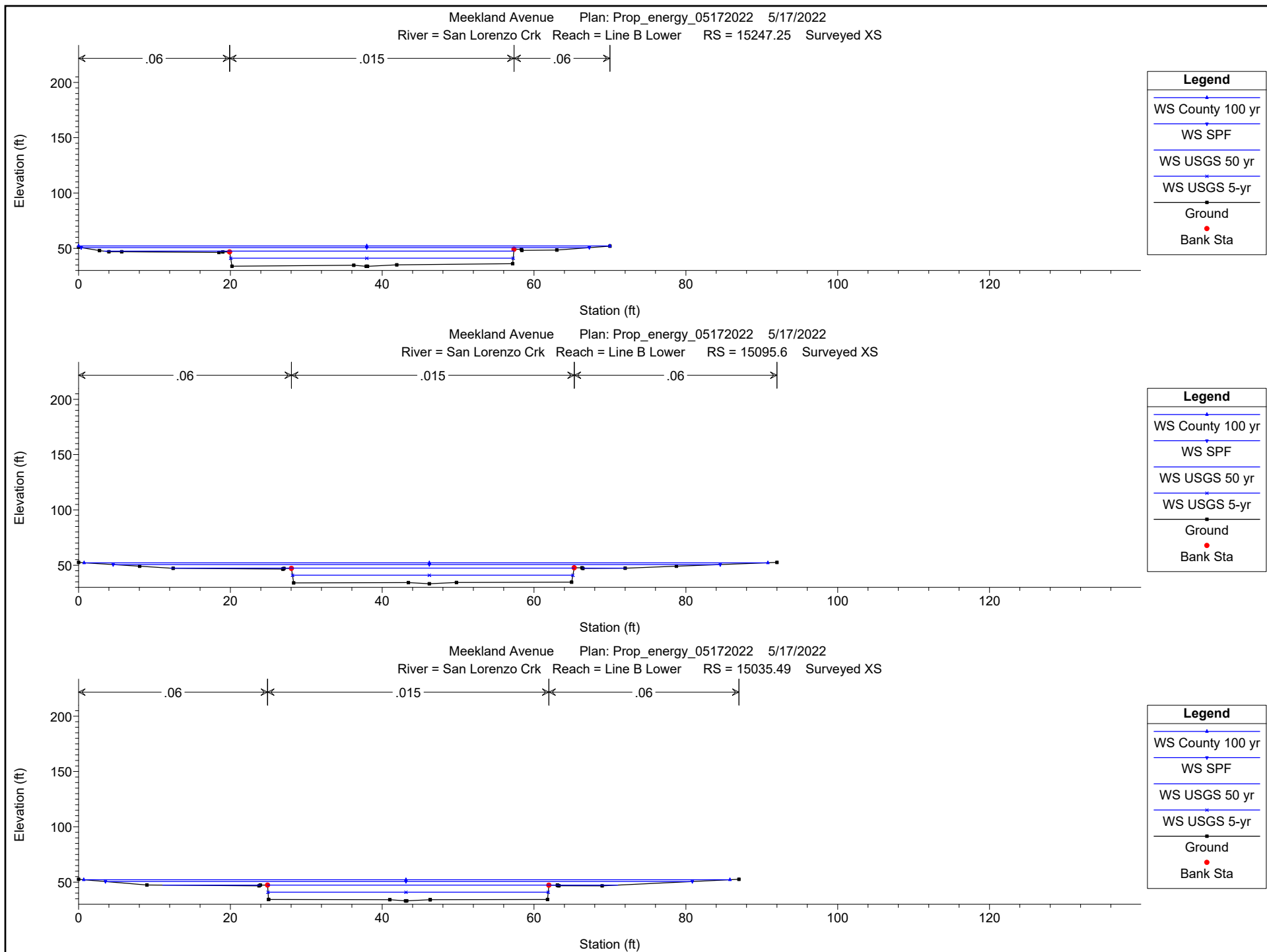
1 in Horiz. = 16.7 ft 1 in Vert. = 114.6 ft

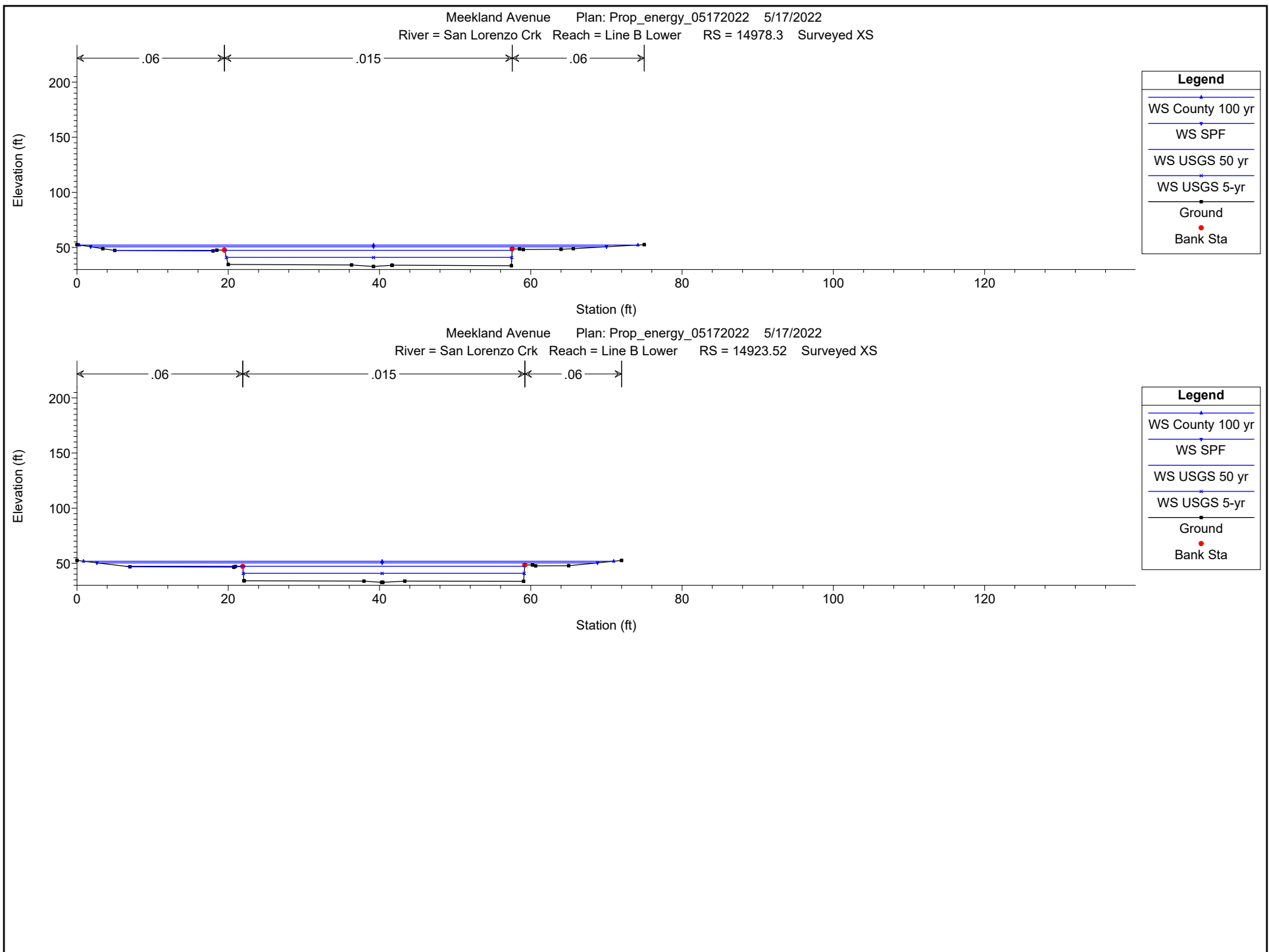


1 in Horiz. = 16.7 ft 1 in Vert. = 114.6 ft



1 in Horiz. = 16.7 ft 1 in Vert. = 114.6 ft





1 in Horiz. = 16.7 ft 1 in Vert. = 114.6 ft

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Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	18262.99	USGS 50 yr	6970.00	45.25	56.68	56.68	61.84	0.002714	18.22	382.54	37.06	1.00
Line B Lower	18262.99	County 100 yr	12500.00	45.25	61.88	61.88	69.03	0.002582	21.53	620.86	52.80	0.96
Line B Lower	18262.99	SPF	10300.00	45.25	59.92	59.92	66.40	0.002675	20.44	517.75	50.89	0.98
Line B Lower	18262.99	USGS 5-yr	3010.00	45.25	52.23	52.23	55.19	0.002630	13.80	218.19	36.89	1.00
Line B Lower	18253.7*	USGS 50 yr	6970.00	45.21	56.64	56.64	61.80	0.002709	18.22	382.53	37.02	1.00
Line B Lower	18253.7*	County 100 yr	12500.00	45.21	61.81	61.81	68.96	0.002435	21.55	625.18	52.80	0.97
Line B Lower	18253.7*	SPF	10300.00	45.21	59.96	59.96	66.34	0.002558	20.29	527.73	52.80	0.97
Line B Lower	18253.7*	USGS 5-yr	3010.00	45.21	52.18	52.18	55.14	0.002628	13.80	218.07	36.83	1.00
Line B Lower	18244.5*	USGS 50 yr	6970.00	45.18	56.59	56.59	61.76	0.002711	18.23	382.25	36.99	1.00
Line B Lower	18244.5*	County 100 yr	12500.00	45.18	61.75	61.75	68.88	0.002433	21.54	630.51	52.80	0.97
Line B Lower	18244.5*	SPF	10300.00	45.18	59.94	59.94	66.28	0.002541	20.25	534.54	52.80	0.97
Line B Lower	18244.5*	USGS 5-yr	3010.00	45.18	52.14	52.14	55.10	0.002625	13.81	218.02	36.76	1.00
Line B Lower	18235.3*	USGS 50 yr	6970.00	45.14	56.58	56.54	61.71	0.002682	18.17	383.62	36.95	0.99
Line B Lower	18235.3*	County 100 yr	12500.00	45.14	61.78	61.70	68.79	0.002494	21.38	640.65	52.80	0.96
Line B Lower	18235.3*	SPF	10300.00	45.14	59.89	59.89	66.20	0.002549	20.22	540.51	52.80	0.97
Line B Lower	18235.3*	USGS 5-yr	3010.00	45.14	52.08	52.08	55.05	0.002632	13.82	217.74	36.69	1.00
Line B Lower	18226.1*	USGS 50 yr	6970.00	44.98	56.60	56.50	61.67	0.002640	18.08	385.61	36.91	0.99
Line B Lower	18226.1*	County 100 yr	12500.00	44.98	61.88	61.63	68.71	0.002400	21.14	654.34	52.80	0.94
Line B Lower	18226.1*	SPF	10300.00	44.98	59.85	59.84	66.13	0.002518	20.17	547.15	52.80	0.96
Line B Lower	18226.1*	USGS 5-yr	3010.00	44.98	52.03	52.03	55.00	0.002627	13.82	217.78	36.62	1.00
Line B Lower	18216.9*	USGS 50 yr	6970.00	44.63	56.63	56.46	61.63	0.002582	17.94	389.61	43.03	0.97
Line B Lower	18216.9*	County 100 yr	12500.00	44.63	61.98	61.55	68.64	0.002308	20.89	668.16	52.80	0.93
Line B Lower	18216.9*	SPF	10300.00	44.63	59.96	59.77	66.05	0.002409	19.91	561.13	52.80	0.94
Line B Lower	18216.9*	USGS 5-yr	3010.00	44.63	51.97	51.97	54.95	0.002632	13.84	217.55	36.54	1.00
Line B Lower	18207.77	USGS 50 yr	6970.00	44.28	56.66	56.45	61.58	0.002525	17.80	396.86	49.61	0.96
Line B Lower	18207.77	County 100 yr	12500.00	44.28	62.07	61.48	68.57	0.002229	20.68	681.19	52.80	0.91
Line B Lower	18207.77	SPF	10300.00	44.28	60.05	59.72	65.98	0.002315	19.67	574.27	52.79	0.93
Line B Lower	18207.77	USGS 5-yr	3010.00	44.28	51.91	51.91	54.90	0.002638	13.85	217.32	36.47	1.00
Line B Lower	18190.7*	USGS 50 yr	6970.00	44.45	56.74	56.30	61.49	0.002399	17.48	403.30	49.45	0.94
Line B Lower	18190.7*	County 100 yr	12500.00	44.45	62.10	61.36	68.50	0.002099	20.51	684.57	52.80	0.90
Line B Lower	18190.7*	SPF	10300.00	44.45	60.09	59.61	65.90	0.002251	19.45	578.69	52.79	0.91
Line B Lower	18190.7*	USGS 5-yr	3010.00	44.45	51.82	51.82	54.79	0.002632	13.83	217.63	36.59	1.00
Line B Lower	18173.7*	USGS 50 yr	6970.00	44.61	56.83	56.17	61.39	0.002270	17.13	410.59	49.35	0.91
Line B Lower	18173.7*	County 100 yr	12500.00	44.61	62.17	61.25	68.42	0.002116	20.25	691.30	52.80	0.88
Line B Lower	18173.7*	SPF	10300.00	44.61	60.16	59.50	65.81	0.002172	19.19	585.03	52.80	0.90
Line B Lower	18173.7*	USGS 5-yr	3010.00	44.61	51.71	51.71	54.68	0.002631	13.82	217.81	36.73	1.00
Line B Lower	18156.7*	USGS 50 yr	6970.00	44.77	56.90	56.06	61.31	0.002170	16.85	416.37	49.06	0.89
Line B Lower	18156.7*	County 100 yr	12500.00	44.77	62.21	61.17	68.35	0.002071	20.07	695.36	52.80	0.87
Line B Lower	18156.7*	SPF	10300.00	44.77	60.21	59.39	65.74	0.002110	18.97	589.97	52.80	0.88
Line B Lower	18156.7*	USGS 5-yr	3010.00	44.77	51.61	51.61	54.58	0.002632	13.81	217.95	36.86	1.00
Line B Lower	18139.7*	USGS 50 yr	6970.00	44.67	56.96	55.96	61.23	0.002076	16.58	422.07	47.46	0.87
Line B Lower	18139.7*	County 100 yr	12500.00	44.67	62.24	61.06	68.28	0.001928	19.89	699.49	52.80	0.86
Line B Lower	18139.7*	SPF	10300.00	44.67	60.26	59.28	65.67	0.002029	18.75	594.99	52.80	0.87
Line B Lower	18139.7*	USGS 5-yr	3010.00	44.67	51.64	51.52	54.47	0.002472	13.51	222.75	36.99	0.97
Line B Lower	18122.7*	USGS 50 yr	6970.00	44.58	57.02	55.84	61.15	0.001980	16.30	428.71	45.64	0.85
Line B Lower	18122.7*	County 100 yr	12500.00	44.58	62.31	60.96	68.21	0.001968	19.65	706.07	52.80	0.85
Line B Lower	18122.7*	SPF	10300.00	44.58	60.32	59.15	65.59	0.001984	18.51	601.14	52.80	0.85
Line B Lower	18122.7*	USGS 5-yr	3010.00	44.58	51.72	51.41	54.38	0.002252	13.09	229.99	37.14	0.93
Line B Lower	18105.79	USGS 50 yr	6970.00	44.48	57.07	55.73	61.08	0.001902	16.06	434.34	42.59	0.83
Line B Lower	18105.79	County 100 yr	12500.00	44.48	62.35	60.85	68.14	0.001925	19.47	710.66	52.80	0.84
Line B Lower	18105.79	SPF	10300.00	44.48	60.36	59.03	65.53	0.001933	18.31	605.84	52.80	0.84
Line B Lower	18105.79	USGS 5-yr	3010.00	44.48	51.77	51.32	54.30	0.002093	12.76	235.90	37.27	0.89
Line B Lower	18069.1*	USGS 50 yr	6970.00	44.35	56.96	55.65	61.00	0.001919	16.13	432.38	40.64	0.84
Line B Lower	18069.1*	County 100 yr	12500.00	44.35	62.22	60.78	68.07	0.001947	19.56	707.17	52.80	0.84
Line B Lower	18069.1*	SPF	10300.00	44.35	60.23	58.97	65.45	0.001957	18.40	602.39	52.80	0.84
Line B Lower	18069.1*	USGS 5-yr	3010.00	44.35	51.68	51.23	54.21	0.002097	12.78	235.47	37.12	0.89
Line B Lower	18032.5*	USGS 50 yr	6970.00	44.22	56.84	55.58	60.93	0.001949	16.22	429.67	37.44	0.84
Line B Lower	18032.5*	County 100 yr	12500.00	44.22	62.03	60.72	67.99	0.001866	19.75	700.05	52.80	0.85
Line B Lower	18032.5*	SPF	10300.00	44.22	60.10	58.90	65.38	0.001934	18.52	598.02	52.80	0.85
Line B Lower	18032.5*	USGS 5-yr	3010.00	44.22	51.55	51.13	54.13	0.002139	12.88	233.69	36.96	0.90
Line B Lower	17995.9*	USGS 50 yr	6970.00	44.10	56.73	55.49	60.84	0.001964	16.28	428.19	37.11	0.84
Line B Lower	17995.9*	County 100 yr	12500.00	44.10	61.92	60.66	67.91	0.002009	19.79	698.20	52.80	0.85
Line B Lower	17995.9*	SPF	10300.00	44.10	59.98	58.83	65.30	0.002010	18.59	595.42	52.80	0.85
Line B Lower	17995.9*	USGS 5-yr	3010.00	44.10	51.47	51.04	54.04	0.002129	12.88	233.78	36.81	0.90

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	17959.3*	USGS 50 yr	6970.00	43.97	56.60	55.42	60.76	0.001994	16.37	425.70	37.01	0.85
Line B Lower	17959.3*	County 100 yr	12500.00	43.97	61.68	60.58	67.83	0.001925	20.05	688.36	52.80	0.87
Line B Lower	17959.3*	SPF	10300.00	43.97	59.82	58.76	65.23	0.001971	18.74	590.02	52.80	0.86
Line B Lower	17959.3*	USGS 5-yr	3010.00	43.97	51.34	50.95	53.96	0.002170	12.97	232.07	36.65	0.91
Line B Lower	17922.78	USGS 50 yr	6970.00	43.84	56.47	55.34	60.68	0.002019	16.46	423.52	36.92	0.86
Line B Lower	17922.78	County 100 yr	12500.00	43.84	60.54	60.53	67.65	0.002566	21.52	631.66	52.80	0.96
Line B Lower	17922.78	SPF	10300.00	43.84	58.70	58.70	65.05	0.002591	20.27	534.43	52.80	0.97
Line B Lower	17922.78	USGS 5-yr	3010.00	43.84	50.85	50.85	53.84	0.002637	13.85	217.25	36.47	1.00
Line B Lower	17899.7*	USGS 50 yr	6970.00	43.75	56.49	55.23	60.61	0.001961	16.29	427.95	36.93	0.84
Line B Lower	17899.7*	County 100 yr	12500.00	43.75	60.57	60.43	67.55	0.002498	21.33	638.29	52.80	0.95
Line B Lower	17899.7*	SPF	10300.00	43.75	58.59	58.59	64.95	0.002590	20.27	534.10	52.80	0.97
Line B Lower	17899.7*	USGS 5-yr	3010.00	43.75	50.75	50.75	53.73	0.002636	13.85	217.27	36.47	1.00
Line B Lower	17876.7*	USGS 50 yr	6970.00	43.66	56.51	55.12	60.54	0.001902	16.11	432.64	37.68	0.83
Line B Lower	17876.7*	County 100 yr	12500.00	43.66	60.61	60.33	67.45	0.002423	21.11	645.96	52.80	0.94
Line B Lower	17876.7*	SPF	10300.00	43.66	58.52	58.49	64.84	0.002572	20.22	535.32	52.80	0.96
Line B Lower	17876.7*	USGS 5-yr	3010.00	43.66	50.64	50.64	53.62	0.002636	13.85	217.27	36.47	1.00
Line B Lower	17853.8*	USGS 50 yr	6970.00	43.56	56.52	55.01	60.47	0.001844	15.94	438.02	43.52	0.82
Line B Lower	17853.8*	County 100 yr	12500.00	43.56	60.65	60.22	67.35	0.002350	20.90	653.66	52.80	0.92
Line B Lower	17853.8*	SPF	10300.00	43.56	58.56	58.38	64.73	0.002479	19.98	543.31	52.80	0.95
Line B Lower	17853.8*	USGS 5-yr	3010.00	43.56	50.53	50.53	53.51	0.002629	13.84	217.45	36.48	1.00
Line B Lower	17830.8*	USGS 50 yr	6970.00	43.47	56.54	54.91	60.40	0.001791	15.77	443.66	45.24	0.80
Line B Lower	17830.8*	County 100 yr	12500.00	43.47	60.69	60.11	67.26	0.002283	20.69	661.58	52.80	0.91
Line B Lower	17830.8*	SPF	10300.00	43.47	58.61	58.26	64.63	0.002394	19.75	551.51	52.80	0.93
Line B Lower	17830.8*	USGS 5-yr	3010.00	43.47	50.43	50.43	53.40	0.002627	13.84	217.52	36.48	1.00
Line B Lower	17807.82	USGS 50 yr	6970.00	43.38	56.55	54.80	60.34	0.001741	15.61	450.25	51.60	0.79
Line B Lower	17807.82	County 100 yr	12500.00	43.38	60.74	59.99	67.16	0.002215	20.49	670.90	52.80	0.90
Line B Lower	17807.82	SPF	10300.00	43.38	58.66	58.16	64.54	0.002312	19.52	561.00	52.80	0.91
Line B Lower	17807.82	USGS 5-yr	3010.00	43.38	50.31	50.31	53.30	0.002638	13.86	217.23	36.48	1.00
Line B Lower	17786.0*	USGS 50 yr	6970.00	43.31	56.65	54.64	60.24	0.001620	15.21	466.80	52.78	0.77
Line B Lower	17786.0*	County 100 yr	12500.00	43.31	60.96	59.78	67.00	0.002023	19.87	694.38	52.80	0.86
Line B Lower	17786.0*	SPF	10300.00	43.31	58.88	57.97	64.37	0.002093	18.87	584.39	52.80	0.87
Line B Lower	17786.0*	USGS 5-yr	3010.00	43.31	50.37	50.19	53.16	0.002406	13.41	224.51	36.89	0.96
Line B Lower	17764.2*	USGS 50 yr	6970.00	43.24	56.74	54.49	60.16	0.001501	14.83	483.45	52.78	0.74
Line B Lower	17764.2*	County 100 yr	12500.00	43.24	61.15	59.58	66.86	0.001864	19.32	716.12	52.80	0.83
Line B Lower	17764.2*	SPF	10300.00	43.24	59.07	57.79	64.22	0.001913	18.31	605.96	52.80	0.84
Line B Lower	17764.2*	USGS 5-yr	3010.00	43.24	50.46	50.07	53.05	0.002159	12.90	233.29	37.30	0.91
Line B Lower	17742.5*	USGS 50 yr	6970.00	43.16	56.83	54.34	60.07	0.001391	14.45	500.15	52.78	0.72
Line B Lower	17742.5*	County 100 yr	12500.00	43.16	61.32	59.37	66.73	0.001724	18.82	736.94	52.80	0.80
Line B Lower	17742.5*	SPF	10300.00	43.16	59.23	57.60	64.10	0.001758	17.79	626.60	52.80	0.81
Line B Lower	17742.5*	USGS 5-yr	3010.00	43.16	50.55	49.95	52.95	0.001944	12.43	242.14	37.71	0.86
Line B Lower	17720.7*	USGS 50 yr	6970.00	43.07	56.92	54.19	59.99	0.001291	14.10	516.49	52.77	0.70
Line B Lower	17720.7*	County 100 yr	12500.00	43.07	61.47	59.17	66.61	0.001603	18.36	756.67	52.80	0.78
Line B Lower	17720.7*	SPF	10300.00	43.07	59.37	57.40	63.98	0.001624	17.32	646.10	52.80	0.78
Line B Lower	17720.7*	USGS 5-yr	3010.00	43.07	50.62	49.82	52.86	0.001763	12.01	250.70	38.12	0.83
Line B Lower	17698.98	USGS 50 yr	6970.00	42.80	57.00	54.02	59.92	0.001200	13.75	532.69	52.77	0.67
Line B Lower	17698.98	County 100 yr	12500.00	42.80	61.60	58.96	66.51	0.001494	17.93	775.62	52.80	0.76
Line B Lower	17698.98	SPF	10300.00	42.80	59.51	57.22	63.88	0.001504	16.88	665.03	52.80	0.76
Line B Lower	17698.98	USGS 5-yr	3010.00	42.80	50.69	49.69	52.78	0.001601	11.60	259.45	38.53	0.79
Line B Lower	17678.3*	USGS 50 yr	6970.00	42.70	56.91	54.01	59.89	0.001236	13.90	528.15	52.77	0.68
Line B Lower	17678.3*	County 100 yr	12500.00	42.70	61.36	58.96	66.46	0.001462	18.27	763.58	52.80	0.77
Line B Lower	17678.3*	SPF	10300.00	42.70	59.33	57.22	63.84	0.001521	17.15	655.99	52.80	0.77
Line B Lower	17678.3*	USGS 5-yr	3010.00	42.70	50.59	49.67	52.74	0.001662	11.76	255.96	38.24	0.80
Line B Lower	17657.7*	USGS 50 yr	6970.00	42.59	56.80	54.00	59.85	0.001274	14.05	523.20	52.78	0.69
Line B Lower	17657.7*	County 100 yr	12500.00	42.59	61.20	59.00	66.42	0.001636	18.50	755.48	52.80	0.78
Line B Lower	17657.7*	SPF	10300.00	42.59	59.15	57.24	63.80	0.001644	17.41	647.32	52.80	0.79
Line B Lower	17657.7*	USGS 5-yr	3010.00	42.59	50.48	49.63	52.69	0.001733	11.94	252.17	37.97	0.82
Line B Lower	17637.1*	USGS 50 yr	6970.00	42.49	56.70	54.00	59.82	0.001315	14.21	518.07	52.78	0.70
Line B Lower	17637.1*	County 100 yr	12500.00	42.49	60.87	59.00	66.35	0.001643	18.98	737.97	52.80	0.81
Line B Lower	17637.1*	SPF	10300.00	42.49	58.90	57.25	63.75	0.001700	17.79	634.27	52.80	0.81
Line B Lower	17637.1*	USGS 5-yr	3010.00	42.49	50.37	49.62	52.66	0.001809	12.12	248.33	37.68	0.83
Line B Lower	17616.4*	USGS 50 yr	6970.00	42.38	56.59	53.98	59.79	0.001359	14.38	512.90	52.79	0.71
Line B Lower	17616.4*	County 100 yr	12500.00	42.38	60.62	59.03	66.31	0.001857	19.33	725.44	52.80	0.83
Line B Lower	17616.4*	SPF	10300.00	42.38	58.63	57.27	63.70	0.001864	18.18	620.54	52.80	0.83

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	17616.4*	USGS 5-yr	3010.00	42.38	50.26	49.59	52.62	0.001895	12.32	244.29	37.40	0.85
Line B Lower	17595.85	USGS 50 yr	6970.00	42.28	56.48	53.98	59.75	0.001409	14.56	507.20	52.79	0.72
Line B Lower	17595.85	County 100 yr	12500.00	42.28	59.07	59.07	66.13	0.002535	21.49	643.88	52.80	0.97
Line B Lower	17595.85	SPF	10300.00	42.28	58.05	57.28	63.61	0.002131	19.03	590.45	52.80	0.89
Line B Lower	17595.85	USGS 5-yr	3010.00	42.28	49.56	49.56	52.51	0.002643	13.78	218.44	37.11	1.00
Line B Lower	17574.7*	USGS 50 yr	6970.00	42.42	56.50	53.87	59.70	0.001361	14.38	511.70	52.79	0.71
Line B Lower	17574.7*	County 100 yr	12500.00	42.42	58.95	58.95	66.01	0.002533	21.47	640.93	52.80	0.97
Line B Lower	17574.7*	SPF	10300.00	42.42	58.11	57.17	63.53	0.002052	18.78	596.57	52.80	0.87
Line B Lower	17574.7*	USGS 5-yr	3010.00	42.42	49.45	49.45	52.39	0.002624	13.75	218.84	37.18	1.00
Line B Lower	17553.5*	USGS 50 yr	6970.00	42.53	56.53	53.75	59.65	0.001318	14.22	516.04	52.79	0.70
Line B Lower	17553.5*	County 100 yr	12500.00	42.53	58.81	58.81	65.90	0.002446	21.50	636.67	52.80	0.97
Line B Lower	17553.5*	SPF	10300.00	42.53	58.16	57.04	63.45	0.001930	18.55	602.15	52.80	0.86
Line B Lower	17553.5*	USGS 5-yr	3010.00	42.53	49.33	49.33	52.28	0.002626	13.76	218.74	37.25	1.00
Line B Lower	17532.4*	USGS 50 yr	6970.00	42.42	56.55	53.64	59.60	0.001276	14.05	520.55	52.80	0.68
Line B Lower	17532.4*	County 100 yr	12500.00	42.42	58.72	58.72	65.77	0.002536	21.44	635.11	52.80	0.97
Line B Lower	17532.4*	SPF	10300.00	42.42	58.21	56.92	63.36	0.001915	18.31	608.23	52.80	0.84
Line B Lower	17532.4*	USGS 5-yr	3010.00	42.42	49.23	49.23	52.16	0.002611	13.74	219.10	37.32	1.00
Line B Lower	17511.3*	USGS 50 yr	6970.00	42.30	56.57	53.52	59.55	0.001227	13.88	525.25	52.80	0.67
Line B Lower	17511.3*	County 100 yr	12500.00	42.30	58.59	58.59	65.66	0.002418	21.44	632.15	52.80	0.97
Line B Lower	17511.3*	SPF	10300.00	42.30	58.25	56.80	63.29	0.001775	18.09	614.16	52.80	0.83
Line B Lower	17511.3*	USGS 5-yr	3010.00	42.30	49.11	49.11	52.04	0.002605	13.73	219.22	37.39	1.00
Line B Lower	17490.21	USGS 50 yr	6970.00	42.19	56.59	53.40	59.51	0.001195	13.72	530.08	52.80	0.66
Line B Lower	17490.21	County 100 yr	12500.00	42.19	58.47	58.47	65.53	0.002541	21.42	629.37	52.80	0.97
Line B Lower	17490.21	SPF	10300.00	42.19	58.31	56.67	63.21	0.001786	17.86	620.48	52.80	0.81
Line B Lower	17490.21	USGS 5-yr	3010.00	42.19	49.00	49.00	51.92	0.002596				

HEC-RAS Plan: Prop_energy_05172022 River: San Lorenzo Crk Reach: Line B Lower (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	16676.42	USGS 50 yr	6970.00	38.77	50.31	50.08	55.23	0.002555	17.79	391.71	37.31	0.97
Line B Lower	16676.42	County 100 yr	12500.00	38.77	55.26	55.26	62.40	0.002606	21.51	618.68	52.80	0.97
Line B Lower	16676.42	SPF	10300.00	38.77	53.52	53.34	59.79	0.002573	20.10	526.70	52.80	0.96
Line B Lower	16676.42	USGS 5-yr	3010.00	38.77	45.67	45.67	48.61	0.002635	13.76	218.83	37.23	1.00
Line B Lower	16554.79	USGS 50 yr	6970.00	38.06	50.42	49.57	54.78	0.002156	16.75	416.14	37.62	0.89
Line B Lower	16554.79	County 100 yr	12500.00	38.06	55.29	54.71	61.95	0.002403	20.75	632.37	52.80	0.92
Line B Lower	16554.79	SPF	10300.00	38.06	53.61	52.61	59.33	0.002309	19.20	543.55	52.80	0.90
Line B Lower	16554.79	USGS 5-yr	3010.00	38.06	45.40	45.19	48.12	0.002355	13.23	227.57	37.56	0.95
Line B Lower	16433.92	USGS 50 yr	6970.00	37.65	50.34	49.14	54.45	0.001978	16.26	428.56	37.52	0.85
Line B Lower	16433.92	County 100 yr	12500.00	37.65	55.20	54.30	61.59	0.002260	20.34	649.53	52.80	0.89
Line B Lower	16433.92	SPF	10300.00	37.65	53.51	52.20	58.99	0.002158	18.79	560.43	52.80	0.87
Line B Lower	16433.92	USGS 5-yr	3010.00	37.65	45.35	44.76	47.76	0.001964	12.47	241.42	37.45	0.87
Line B Lower	16327.62	USGS 50 yr	6970.00	37.64	49.23	48.96	54.13	0.002522	17.77	392.25	37.04	0.96
Line B Lower	16327.62	County 100 yr	12500.00	37.64	54.68	54.15	61.33	0.002340	20.79	651.14	52.80	0.92
Line B Lower	16327.62	SPF	10300.00	37.64	52.89	52.27	58.72	0.002303	19.41	556.58	52.80	0.91
Line B Lower	16327.62	USGS 5-yr	3010.00	37.64	44.52	44.52	47.48	0.002619	13.79	218.33	36.91	1.00
Line B Lower	16136.15	USGS 50 yr	6970.00	37.12	49.06	48.33	53.55	0.002241	17.00	409.97	37.18	0.90
Line B Lower	16136.15	County 100 yr	12500.00	37.12	54.69	53.49	60.72	0.002048	19.85	694.88	52.80	0.86
Line B Lower	16136.15	SPF	10300.00	37.12	52.88	51.65	58.14	0.001995	18.48	599.16	52.80	0.85
Line B Lower	16136.15	USGS 5-yr	3010.00	37.12	43.90	43.90	46.85	0.002635	13.77	218.65	37.07	1.00
Line B Lower	16064.68	USGS 50 yr	6970.00	36.61	49.22	47.92	53.27	0.001938	16.14	433.27	49.67	0.84
Line B Lower	16064.68	County 100 yr	12500.00	36.61	54.91	53.04	60.43	0.001793	19.02	733.35	52.80	0.81
Line B Lower	16064.68	SPF	10300.00	36.61	53.08	51.23	57.86	0.001727	17.65	636.79	52.80	0.79
Line B Lower	16064.68	USGS 5-yr	3010.00	36.61	43.71	43.50	46.45	0.002375	13.28	226.59	37.22	0.95
Line B Lower	16001.93	USGS 50 yr	6970.00	36.48	49.15	47.74	53.13	0.001880	15.99	436.00	37.27	0.82
Line B Lower	16001.93	County 100 yr	12500.00	36.48	54.73	52.92	60.32	0.001830	19.11	720.64	52.80	0.81
Line B Lower	16001.93	SPF	10300.00	36.48	52.95	51.04	57.76	0.001746	17.67	626.52	52.80	0.79
Line B Lower	16001.93	USGS 5-yr	3010.00	36.48	43.62	43.31	46.28	0.002252	13.07	230.27	37.11	0.93
Line B Lower	15956.4	USGS 50 yr	6970.00	36.28	49.20	47.53	52.99	0.001767	15.62	446.19	37.42	0.80
Line B Lower	15956.4	County 100 yr	12500.00	36.28	54.76	52.69	60.19	0.001769	18.83	727.04	52.80	0.79
Line B Lower	15956.4	SPF	10300.00	36.28	52.97	50.77	57.63	0.001680	17.39	632.88	52.80	0.77
Line B Lower	15956.4	USGS 5-yr	3010.00	36.28	43.66	43.12	46.12	0.002022	12.59	239.10	37.36	0.88
Line B Lower	15902.58	USGS 50 yr	6970.00	36.18	49.10	47.40	52.89	0.001760	15.62	446.32	37.31	0.80
Line B Lower	15902.58	County 100 yr	12500.00	36.18	54.54	52.60	60.09	0.001837	19.02	715.31	52.80	0.80
Line B Lower	15902.58	SPF	10300.00	36.18	52.82	50.59	57.54	0.001726	17.49	624.55	52.80	0.78
Line B Lower	15902.58	USGS 5-yr	3010.00	36.18	43.56	42.99	46.00	0.001994	12.55	239.87	37.18	0.87
Line B Lower	15850.57	USGS 50 yr	6970.00	36.00	49.05	47.28	52.78	0.001719	15.50	449.67	37.41	0.79
Line B Lower	15850.57	County 100 yr	12500.00	36.00	54.53	52.45	59.96	0.001755	18.81	728.35	52.80	0.79
Line B Lower	15850.57	SPF	10300.00	36.00	52.81	50.53	57.42	0.001647	17.30	637.23	52.80	0.77
Line B Lower	15850.57	USGS 5-yr	3010.00	36.00	43.48	42.86	45.89	0.001940	12.45	241.81	37.22	0.86
Line B Lower	15784.25	USGS 50 yr	6970.00	35.52	49.06	46.97	52.62	0.001610	15.15	460.19	37.89	0.76
Line B Lower	15784.25	County 100 yr	12500.00	35.52	54.56	52.17	59.78	0.001667	18.49	747.61	52.80	0.77
Line B Lower	15784.25	SPF	10300.00	35.52	52.83	50.26	57.26	0.001552	16.96	656.58	52.80	0.74
Line B Lower	15784.25	USGS 5-yr	3010.00	35.52	43.54	42.53	45.70	0.001643	11.78	255.49	36.99	0.79
Line B Lower	15643.38	USGS 50 yr	6970.00	35.09	48.84	46.93	52.40	0.001534	15.19	492.70	51.82	0.76
Line B Lower	15643.38	County 100 yr	12500.00	35.09	54.46	51.94	59.50	0.001517	18.26	788.22	52.80	0.77
Line B Lower	15643.38	SPF	10300.00	35.09	52.73	50.15	57.00	0.001415	16.76	697.00	52.80	0.74
Line B Lower	15643.38	USGS 5-yr	3010.00	35.09	43.16	42.26	45.44	0.001704	12.13	248.23	35.94	0.81
Line B Lower	15599.32	USGS 50 yr	6970.00	35.22	48.82	46.74	52.32	0.001451	15.03	481.22	51.95	0.76
Line B Lower	15599.32	County 100 yr	12500.00	35.22	54.50	51.84	59.40	0.001395	17.93	780.27	52.80	0.76
Line B Lower	15599.32	SPF	10300.00	35.22	52.75	50.05	56.91	0.001309	16.49	687.86	52.80	0.73
Line B Lower	15599.32	USGS 5-yr	3010.00	35.22	43.09	42.21	45.36	0.001663	12.10	248.81	36.42	0.82
Line B Lower	15547	USGS 50 yr	6970.00	34.94	47.49	46.76	52.11	0.002228	17.24	404.36	36.27	0.91
Line B Lower	15547	County 100 yr	12500.00	34.94	53.48	52.35	59.23	0.001709	19.50	766.76	77.17	0.83
Line B Lower	15547	SPF	10300.00	34.94	51.47	50.32	56.72	0.001818	18.49	620.29	69.01	0.84
Line B Lower	15547	USGS 5-yr	3010.00	34.94	42.62	42.11	45.23	0.002046	12.98	231.83	34.87	0.89
Line B Lower	15500	Bridge										
Line B Lower	15447.55	USGS 50 yr	6970.00	34.66	47.87	45.80	51.38	0.001513	15.04	465.68	44.01	0.76
Line B Lower	15447.55	County 100 yr	12500.00	34.66	52.17	50.89	58.17	0.001744	19.73	685.35	57.58	0.86
Line B Lower	15447.55	SPF	10300.00	34.66	50.79	48.96	55.70	0.001599	17.82	608.95	53.55	0.81
Line B Lower	15447.55	USGS 5-yr	3010.00	34.66	41.87	41.35	44.37	0.001967	12.67	237.60	37.20	0.88
Line B Lower	15397.2	USGS 50 yr	6970.00	34.38	48.08		51.19	0.001303	14.15	496.36	49.84	0.71
Line B Lower	15397.2	County 100 yr	12500.00	34.38	52.84	50.47	57.77	0.001369	17.98	814.66	85.27	0.77

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	15397.2	SPF	10300.00	34.38	51.21	48.60	55.42	0.001324	16.54	684.47	72.50	0.74
Line B Lower	15397.2	USGS 5-yr	3010.00	34.38	42.08		44.15	0.001531	11.54	260.81	37.97	0.78
Line B Lower	15364.13	USGS 50 yr	6970.00	34.22	47.46	45.51	51.08	0.001594	15.27	467.58	57.89	0.77
Line B Lower	15364.13	County 100 yr	12500.00	34.22	52.68	50.93	57.71	0.001433	18.38	883.81	95.70	0.78
Line B Lower	15364.13	SPF	10300.00	34.22	50.74	49.08	55.33	0.001503	17.39	707.35	83.72	0.78
Line B Lower	15364.13	USGS 5-yr	3010.00	34.22	41.14	41.00	44.01	0.002417	13.58	221.71	36.54	0.97
Line B Lower	15247.25	USGS 50 yr	6970.00	33.73	47.45		50.84	0.001481	14.77	484.53	53.97	0.73
Line B Lower	15247.25	County 100 yr	12500.00	33.73	52.18	50.41	57.51	0.001616	18.76	785.07	70.00	0.80
Line B Lower	15247.25	SPF	10300.00	33.73	50.63	48.48	55.13	0.001533	17.16	678.04	66.95	0.76
Line B Lower	15247.25	USGS 5-yr	3010.00	33.73	41.05	40.68	43.66	0.002194	12.97	232.08	37.23	0.92
Line B Lower	15095.6	USGS 50 yr	6970.00	33.28	47.34	44.61	50.57	0.001391	14.42	491.08	58.95	0.71
Line B Lower	15095.6	County 100 yr	12500.00	33.28	52.19	50.13	57.17	0.001461	18.21	854.64	90.08	0.76
Line B Lower	15095.6	SPF	10300.00	33.28	50.56	48.06	54.84	0.001407	16.76	715.92	79.98	0.73
Line B Lower	15095.6	USGS 5-yr	3010.00	33.28	40.94		43.27	0.001841	12.26	245.52	36.94	0.84
Line B Lower	15035.49	USGS 50 yr	6970.00	32.99	47.29	44.46	50.47	0.001376	14.32	494.72	58.98	0.70
Line B Lower	15035.49	County 100 yr	12500.00	32.99	52.11	49.97	57.08	0.001459	18.17	849.33	85.14	0.76
Line B Lower	15035.49	SPF	10300.00	32.99	50.50	47.90	54.74	0.001395	16.69	717.86	77.32	0.73
Line B Lower	15035.49	USGS 5-yr	3010.00	32.99	40.87		43.14	0.001768	12.08	249.11	36.91	0.82
Line B Lower	14978.3	USGS 50 yr	6970.00	32.78	47.41		50.31	0.001216	13.67	514.36	51.60	0.66
Line B Lower	14978.3	County 100 yr	12500.00	32.78	52.18	49.39	56.94	0.001395	17.69	821.11	73.85	0.73
Line B Lower	14978.3	SPF	10300.00	32.78	50.60	47.21	54.59	0.001308	16.12	708.89	68.21	0.70
Line B Lower	14978.3	USGS 5-yr	3010.00	32.78	40.97		42.96	0.001479	11.32	265.91	37.74	0.75
Line B Lower	14923.52	USGS 50 yr	6970.00	32.66	47.26		50.24	0.001262	13.87	510.98	52.77	0.67
Line B Lower	14923.52	County 100 yr	12500.00	32.66	51.80	49.40	56.83	0.001510	18.19	798.21	70.11	0.76
Line B Lower	14923.52	SPF	10300.00	32.66	50.36	47.27	54.50	0.001378	16.44	699.71	66.19	0.71
Line B Lower	14923.52	USGS 5-yr	3010.00	32.66	40.86		42.88	0.001495	11.39	264.23	37.14	0.75

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Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	13864.2	USGS 50 yr	6970.00	29.05	41.51		45.44	0.001055	15.89	438.70	38.87	0.83
Line B Lower	13864.2	County 100 yr	12500.00	29.05	49.90		52.33	0.000462	12.51	1012.23	88.00	0.62
Line B Lower	13864.2	SPF	10300.00	29.05	48.44		50.56	0.000475	11.68	884.47	85.03	0.62
Line B Lower	13864.2	USGS 5-yr	3010.00	29.05	35.89	35.89	38.76	0.001466	13.59	221.45	38.44	1.00
Line B Lower	13860		Lat Struct									
Line B Lower	13859		Lat Struct									
Line B Lower	13698.1	USGS 50 yr	6970.00	28.46	41.51		45.20	0.000956	15.40	452.62	37.89	0.79
Line B Lower	13698.1	County 100 yr	12500.00	28.46	49.98		52.20	0.000427	11.97	1049.55	84.00	0.59
Line B Lower	13698.1	SPF	10300.00	28.46	48.50		50.43	0.000428	11.15	925.87	84.00	0.58
Line B Lower	13698.1	USGS 5-yr	3010.00	28.46	35.31	35.31	38.25	0.001483	13.74	219.01	37.42	1.00
Line B Lower	13538.18	USGS 50 yr	6970.00	27.90	41.56	39.17	44.93	0.001274	14.74	472.99	59.43	0.92
Line B Lower	13538.18	County 100 yr	12500.00	27.90	50.36		51.95	0.000307	10.12	1235.47	96.48	0.50
Line B Lower	13538.18	SPF	10300.00	27.90	48.82		50.21	0.000309	9.48	1086.68	96.48	0.50
Line B Lower	13538.18	USGS 5-yr	3010.00	27.90	34.94	34.75	37.73	0.001363	13.40	224.61	36.75	0.96
Line B Lower	13470.49	USGS 50 yr	6970.00	27.57	41.74	38.79	44.74	0.000985	13.90	501.59	54.55	0.81
Line B Lower	13470.49	County 100 yr	12500.00	27.57	50.59		51.82	0.000225	8.90	1409.86	115.00	0.44
Line B Lower	13470.49	SPF	10300.00	27.57	49.01		50.11	0.000237	8.41	1227.41	115.00	0.45
Line B Lower	13470.49	USGS 5-yr	3010.00	27.57	35.24		37.48	0.000989	11.99	251.03	37.28	0.81
Line B Lower	13401.74	USGS 50 yr	6970.00	27.32	41.77		44.63	0.001026	13.56	513.93	61.77	0.83
Line B Lower	13401.74	County 100 yr	12500.00	27.32	50.00		51.75	0.000320	10.63	1178.65	91.00	0.52
Line B Lower	13401.74	SPF	10300.00	27.32	48.53		50.05	0.000317	9.86	1045.53	91.00	0.51
Line B Lower	13401.74	USGS 5-yr	3010.00	27.32	35.21		37.40	0.000956	11.85	253.91	37.19	0.80
Line B Lower	13324.8	USGS 50 yr	6970.00	26.75	42.01		44.43	0.000803	12.49	558.04	63.95	0.75
Line B Lower	13324.8	County 100 yr	12500.00	26.75	49.95		51.73	0.000311	10.70	1168.37	82.00	0.50
Line B Lower	13324.8	SPF	10300.00	26.75	48.53		50.02	0.000290	9.79	1051.93	82.00	0.48
Line B Lower	13324.8	USGS 5-yr	3010.00	26.75	35.40		37.22	0.000730	10.82	278.17	37.46	0.70
Line B Lower	13236.36	USGS 50 yr	6970.00	26.72	41.98		44.35	0.000825	12.34	564.76	68.56	0.76
Line B Lower	13236.36	County 100 yr	12500.00	26.72	50.27		51.55	0.000232	9.07	1379.03	111.00	0.45
Line B Lower	13236.36	SPF	10300.00	26.72	48.76		49.88	0.000238	8.51	1211.02	111.00	0.45
Line B Lower	13236.36	USGS 5-yr	3010.00	26.72	35.41		37.13	0.000666	10.51	286.50	37.21	0.67
Line B Lower	13154.38	USGS 50 yr	6970.00	26.30	40.07	38.12	44.04	0.005902	54.83	472.15	43.25	2.61
Line B Lower	13154.38	County 100 yr	12500.00	26.30	49.85	40.37	51.48	0.001715	42.27	1335.84	104.80	1.54
Line B Lower	13154.38	SPF	10300.00	26.30	48.35	43.81	49.81	0.001711	40.42	1179.27	104.80	1.52
Line B Lower	13154.38	USGS 5-yr	3010.00	26.30	34.92	33.54	36.98	0.005027	37.00	278.54	37.37	2.22
Line B Lower	13104.72	USGS 50 yr	6970.00	26.23	39.32	38.01	43.68	0.006798	56.89	448.91	37.83	2.77
Line B Lower	13104.72	County 100 yr	12500.00	26.23	49.60	40.40	51.37	0.001917	44.46	1289.46	104.80	1.62
Line B Lower	13104.72	SPF	10300.00	26.23	48.10	43.47	49.70	0.001947	42.87	1131.97	104.80	1.62
Line B Lower	13104.72	USGS 5-yr	3010.00	26.23	34.30	33.45	36.67	0.006201	39.33	259.66	37.53	2.44
Line B Lower	13080		Bridge									
Line B Lower	13052.06	USGS 50 yr	6970.00	25.87	37.69	37.69	43.16	0.009646	62.76	397.01	37.49	3.22
Line B Lower	13052.06	County 100 yr	12500.00	25.87	47.43	44.16	50.50	0.003530	56.71	983.92	80.01	2.15
Line B Lower	13052.06	SPF	10300.00	25.87	44.28	42.59	47.89	0.004942	60.37	750.57	67.79	2.48
Line B Lower	13052.06	USGS 5-yr	3010.00	25.87	33.13	33.13	36.21	0.009326	44.56	226.51	37.29	2.92
Line B Lower	13050		Lat Struct									
Line B Lower	13049		Lat Struct									
Line B Lower	12879.9	USGS 50 yr	6970.00	25.36	38.35	36.66	42.09	0.001135	15.53	448.74	44.37	0.86
Line B Lower	12879.9	County 100 yr	12500.00	25.36	47.97		50.08	0.000320	11.80	1173.24	97.00	0.52
Line B Lower	12879.9	SPF	10300.00	25.36	45.05		47.30	0.000440	12.09	895.98	88.87	0.59
Line B Lower	12879.9	USGS 5-yr	3010.00	25.36	32.34	32.34	35.28	0.001499	13.77	218.61	37.53	1.01
Line B Lower	12704.63	USGS 50 yr	6970.00	24.77	38.31		41.85	0.000954	15.10	461.73	39.48	0.78
Line B Lower	12704.63	County 100 yr	12500.00	24.77	48.02		49.99	0.000286	11.34	1186.43	91.00	0.49
Line B Lower	12704.63	SPF	10300.00	24.77	45.14		47.16	0.000375	11.44	934.72	83.89	0.55
Line B Lower	12704.63	USGS 5-yr	3010.00	24.77	31.73	31.73	34.71	0.001517	13.84	217.54	37.04	1.01
Line B Lower	12638.82	USGS 50 yr	6970.00	24.64	38.30		41.76	0.001018	14.91	467.54	44.25	0.81
Line B Lower	12638.82	County 100 yr	12500.00	24.64	47.88		49.96	0.000297	11.63	1131.67	80.84	0.50
Line B Lower	12638.82	SPF	10300.00	24.64	45.05		47.13	0.000379	11.60	909.52	75.06	0.55
Line B Lower	12638.82	USGS 5-yr	3010.00	24.64	31.53	31.53	34.52	0.001513	13.87	217.04	36.74	1.01
Line B Lower	12491.91	USGS 50 yr	6970.00	24.05	38.79		41.37	0.000762	12.88	541.14	54.48	0.72
Line B Lower	12491.91	County 100 yr	12500.00	24.05	48.03		49.84	0.000245	10.83	1210.00	79.00	0.46
Line B Lower	12491.91	SPF	10300.00	24.05	45.21		46.99	0.000304	10.72	987.17	79.00	0.50
Line B Lower	12491.91	USGS 5-yr	3010.00	24.05	31.02	31.02	33.98	0.001514	13.79	218.22	37.36	1.01

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	12329.22	USGS 50 yr	6970.00	23.59	38.72		41.21	0.000789	12.66	550.68	59.20	0.73
Line B Lower	12329.22	County 100 yr	12500.00	23.59	48.15		49.73	0.000216	10.28	1392.81	107.00	0.43
Line B Lower	12329.22	SPF	10300.00	23.59	45.26		46.90	0.000278	10.35	1083.59	107.00	0.48
Line B Lower	12329.22	USGS 5-yr	3010.00	23.59	30.72	30.52	33.51	0.001369	13.38	224.97	36.74	0.95
Line B Lower	12201.64	USGS 50 yr	6970.00	23.04	38.84		41.03	0.000680	11.85	588.23	63.90	0.69
Line B Lower	12201.64	County 100 yr	12500.00	23.04	48.13		49.70	0.000203	10.07	1275.32	76.68	0.42
Line B Lower	12201.64	SPF	10300.00	23.04	45.31		46.83	0.000248	9.90	1058.81	76.68	0.46
Line B Lower	12201.64	USGS 5-yr	3010.00	23.04	31.02		33.17	0.000938	11.77	255.74	37.32	0.79
Line B Lower	12060.73	USGS 50 yr	6970.00	22.56	38.93		40.86	0.000598	11.16	624.81	68.77	0.65
Line B Lower	12060.73	County 100 yr	12500.00	22.56	48.25		49.61	0.000189	9.38	1349.98	79.24	0.40
Line B Lower	12060.73	SPF	10300.00	22.56	45.41		46.74	0.000225	9.24	1125.29	79.24	0.43
Line B Lower	12060.73	USGS 5-yr	3010.00	22.56	31.13		32.96	0.000734	10.85	277.54	37.18	0.70
Line B Lower	11913.96	USGS 50 yr	6970.00	22.00	39.10		40.66	0.000550	10.02	695.69	92.22	0.64
Line B Lower	11913.96	County 100 yr	12500.00	22.00	48.64		49.42	0.000115	7.09	1762.96	113.50	0.32
Line B Lower	11913.96	SPF	10300.00	22.00	45.75		46.55	0.000147	7.17	1435.86	113.50	0.36
Line B Lower	11913.96	USGS 5-yr	3010.00	22.00	31.24		32.78	0.000570	9.94	302.68	37.62	0.62
Line B Lower	11846.92	USGS 50 yr	6970.00	22.00	36.85	33.81	40.38	0.006025	58.25	526.45	57.90	2.67
Line B Lower	11846.92	County 100 yr	12500.00	22.00	48.46	41.54	49.39	0.000830	31.79	1742.75	113.50	1.09
Line B Lower	11846.92	SPF	10300.00	22.00	45.52	40.33	46.51	0.001085	33.59	1408.78	113.50	1.22
Line B Lower	11846.92	USGS 5-yr	3010.00	22.00	30.53	29.24	32.63	0.005169	37.26	276.01	37.56	2.25
Line B Lower	11840	Bridge										
Line B Lower	11813.09	USGS 50 yr	6970.00	21.64	36.68	33.57	40.17	0.005175	54.82	520.69	45.86	2.49
Line B Lower	11813.09	County 100 yr	12500.00	21.64	45.84	40.52	48.30	0.002339	50.61	1117.36	79.00	1.81
Line B Lower	11813.09	SPF	10300.00	21.64	44.16	35.66	46.34	0.002280	47.63	985.69	77.16	1.77
Line B Lower	11813.09	USGS 5-yr	3010.00	21.64	30.38	28.93	32.45	0.004871	37.02	280.65	36.92	2.21
Line B Lower	11798.08	USGS 50 yr	6970.00	21.64	36.47	33.57	40.08	0.005406	55.50	511.00	44.92	2.54
Line B Lower	11798.08	County 100 yr	12500.00	21.64	45.78	40.52	48.26	0.002369	50.85	1112.59	79.00	1.83
Line B Lower	11798.08	SPF	10300.00	21.64	44.11	35.66	46.31	0.002309	47.85	981.28	77.03	1.78
Line B Lower	11798.08	USGS 5-yr	3010.00	21.64	30.18	28.93	32.36	0.005268	37.91	273.28	36.91	2.29
Line B Lower	11587.35	USGS 50 yr	6970.00	21.04	37.09		39.42	0.000572	12.25	569.10	46.27	0.62
Line B Lower	11587.35	County 100 yr	12500.00	21.04	46.39		47.82	0.000253	9.60	1302.39	91.00	0.45
Line B Lower	11587.35	SPF	10300.00	21.04	44.64		45.90	0.000256	9.01	1143.14	91.00	0.45
Line B Lower	11587.35	USGS 5-yr	3010.00	21.04	30.38		31.89	0.000551	9.87	304.88	37.06	0.61
Line B Lower	11572.51	USGS 50 yr	6970.00	21.04	34.40	33.14	39.16	0.006893	59.32	444.04	36.72	2.86
Line B Lower	11572.51	County 100 yr	12500.00	21.04	44.10	41.45	47.61	0.003367	59.66	978.53	69.00	2.19
Line B Lower	11572.51	SPF	10300.00	21.04	42.77	37.38	45.73	0.003065	54.71	886.92	69.00	2.07
Line B Lower	11572.51	USGS 5-yr	3010.00	21.04	29.26	28.42	31.78	0.006134	40.45	258.08	36.08	2.49
Line B Lower	11500	Bridge										
Line B Lower	11423.41	USGS 50 yr	6970.00	20.32	33.97		37.40	0.000868	14.86	469.09	37.65	0.74
Line B Lower	11423.41	County 100 yr	12500.00	20.32	40.35	36.94	44.74	0.000741	17.07	856.57	99.87	0.69
Line B Lower	11423.41	SPF	10300.00	20.32	35.67	34.78	41.45	0.001296	19.29	541.52	47.56	0.90
Line B Lower	11423.41	USGS 5-yr	3010.00	20.32	27.27	27.27	30.23	0.001506	13.80	218.15	37.31	1.01
Line B Lower	11408.0*	USGS 50 yr	6970.00	20.24	33.99		37.37	0.000848	14.74	473.00	37.58	0.73
Line B Lower	11408.0*	County 100 yr	12500.00	20.24	40.13	36.78	44.72	0.000775	17.38	812.24	88.38	0.71
Line B Lower	11408.0*	SPF	10300.00	20.24	35.74	34.72	41.39	0.001256	19.09	548.84	46.84	0.89
Line B Lower	11408.0*	USGS 5-yr	3010.00	20.24	27.18	27.18	30.14	0.001506	13.80	218.15	37.29	1.01
Line B Lower	11392.6*	USGS 50 yr	6970.00	20.17	34.01		37.34	0.000833	14.64	476.20	38.41	0.72
Line B Lower	11392.6*	County 100 yr	12500.00	20.17	39.95	36.64	44.70	0.000801	17.60	778.74	76.06	0.72
Line B Lower	11392.6*	SPF	10300.00	20.17	35.78	34.68	41.35	0.001225	18.94	553.76	45.26	0.88
Line B Lower	11392.6*	USGS 5-yr	3010.00	20.17	27.11	27.11	30.07	0.001506	13.80	218.08	37.26	1.01
Line B Lower	11377.32	USGS 50 yr	6970.00	20.09	34.03		37.31	0.000815	14.52	480.69	41.54	0.71
Line B Lower	11377.32	County 100 yr	12500.00	20.09	39.86	36.48	44.68	0.000811	17.71	756.83	64.32	0.72
Line B Lower	11377.32	SPF	10300.00	20.09	35.83	34.58	41.30	0.001196	18.79	557.58	43.54	0.87
Line B Lower	11377.32	USGS 5-yr	3010.00	20.09	27.02	27.02	29.98	0.001509	13.81	217.94	37.24	1.01
Line B Lower	11360.7*	USGS 50 yr	6970.00	20.14	34.04		37.29	0.000803	14.45	483.13	41.64	0.71
Line B Lower	11360.7*	County 100 yr	12500.00	20.14	39.88	36.43	44.65	0.000797	17.62	765.09	69.08	0.72
Line B Lower	11360.7*	SPF	10300.00	20.14	35.84	34.54	41.26	0.001176	18.69	560.71	43.66	0.86
Line B Lower	11360.7*	USGS 5-yr	3010.00	20.14	27.00	27.00	29.94	0.001490	13.75	218.83	37.28	1.00
Line B Lower	11344.2*	USGS 50 yr	6970.00	20.10	34.05		37.27	0.000794	14.40	485.25	41.74	0.71
Line B Lower	11344.2*	County 100 yr	12500.00	20.10	39.90	36.39	44.63	0.000783	17.53	774.08	74.38	0.71
Line B Lower	11344.2*	SPF	10300.00	20.10	35.85	34.50	41.22	0.001161	18.62	563.14	43.76	0.86
Line B Lower	11344.2*	USGS 5-yr	3010.00	20.10	26.96	26.96	29.90	0.001488	13.75	218.86	37.29	1.00

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	11327.6*	USGS 50 yr	6970.00	20.05	34.06		37.24	0.000781	14.32	488.11	41.90	0.70
Line B Lower	11327.6*	County 100 yr	12500.00	20.05	39.94	36.33	44.59	0.000766	17.42	785.70	80.39	0.71
Line B Lower	11327.6*	SPF	10300.00	20.05	35.88	34.45	41.18	0.001137	18.50	567.04	43.89	0.85
Line B Lower	11327.6*	USGS 5-yr	3010.00	20.05	26.91	26.91	29.85	0.001488	13.76	218.83	37.32	1.00
Line B Lower	11311.0*	USGS 50 yr	6970.00	19.99	34.06		37.22	0.000770	14.26	490.49	42.98	0.70
Line B Lower	11311.0*	County 100 yr	12500.00	19.99	39.97	36.31	44.56	0.000751	17.32	798.45	87.15	0.70
Line B Lower	11311.0*	SPF	10300.00	19.99	35.88	34.41	41.15	0.001121	18.42	569.68	44.01	0.85
Line B Lower	11311.0*	USGS 5-yr	3010.00	19.99	26.85	26.85	29.81	0.001502	13.80	218.12	37.33	1.01
Line B Lower	11294.51	USGS 50 yr	6970.00	19.94	34.07		37.20	0.000757	14.18	493.38	43.07	0.69
Line B Lower	11294.51	County 100 yr	12500.00	19.94	40.01	36.27	44.53	0.000733	17.19	814.65	94.74	0.70
Line B Lower	11294.51	SPF	10300.00	19.94	35.91	34.34	41.11	0.001100	18.31	573.46	44.15	0.84
Line B Lower	11294.51	USGS 5-yr	3010.00	19.94	26.81	26.81	29.76	0.001499	13.79	218.25	37.36	1.01
Line B Lower	11139.49	USGS 50 yr	6970.00	19.28	34.27		36.94	0.000803	13.10	531.86	54.06	0.74
Line B Lower	11139.49	County 100 yr	12500.00	19.28	41.87		43.62	0.000341	10.62	1176.74	90.00	0.52
Line B Lower	11139.49	SPF	10300.00	19.28	37.53		40.20	0.000807	13.09	786.75	90.00	0.78
Line B Lower	11139.49	USGS 5-yr	3010.00	19.28	26.25	26.25	29.23	0.001510	13.86	217.21	36.85	1.01
Line B Lower	10976.71	USGS 50 yr	6970.00	18.51	34.55		36.65	0.000671	11.62	600.02	67.93	0.69
Line B Lower	10976.71	County 100 yr	12500.00	18.51	41.70		43.56	0.000332	10.93	1143.81	77.00	0.50
Line B Lower	10976.71	SPF	10300.00	18.51	37.61		40.01	0.000598	12.43	828.76	77.00	0.67
Line B Lower	10976.71	USGS 5-yr	3010.00	18.51	25.63	25.63	28.58	0.001506	13.78	218.49	37.21	1.00
Line B Lower	10897.08	USGS 50 yr	6970.00	18.45	34.63		36.54	0.000620	11.09	628.30	74.81	0.67
Line B Lower	10897.08	County 100 yr	12500.00	18.45	41.91		43.43	0.000265	9.88	1264.63	88.25	0.46
Line B Lower	10897.08	SPF	10300.00	18.45	37.83		39.85	0.000502	11.38	904.75	88.25	0.63
Line B Lower	10897.08	USGS 5-yr	3010.00	18.45	25.43	25.43	28.42	0.001490	13.86	217.15	36.54	1.00
Line B Lower	10813.94	USGS 50 yr	6970.00	18.20	34.77		36.41	0.000525	10.30	676.93	78.81	0.62
Line B Lower	10813.94	County 100 yr	12500.00	18.20	42.09		43.33	0.000217	8.92	1400.70	100.00	0.48
Line B Lower	10813.94	SPF	10300.00	18.20	38.04		39.70	0.000424	10.34	995.98	100.00	0.52
Line B Lower	10813.94	USGS 5-yr	3010.00	18.20	25.05	25.05	28.03	0.001513	13.83	217.65	37.04	1.01
Line B Lower	10716.96	USGS 50 yr	6970.00	17.88	34.82		36.32	0.000491	9.83	708.70	86.01	0.60
Line B Lower	10716.96	County 100 yr	12500.00	17.88	42.08		43.30	0.000207	8.87	1408.60	96.67	0.41
Line B Lower	10716.96	SPF	10300.00	17.88	38.06		39.64	0.000381	10.10	1020.03	96.67	0.55
Line B Lower	10716.96	USGS 5-yr	3010.00	17.88	24.79	24.79	27.74	0.001491	13.77	218.61	37.00	1.00
Line B Lower	10616.9	USGS 50 yr	6970.00	17.55	34.86		36.24	0.000464	9.42	740.27	93.23	0.59
Line B Lower	10616.9	County 100 yr	12500.00	17.55	42.06		43.28	0.000201	8.85	1411.72	93.23	0.40
Line B Lower	10616.9	SPF	10300.00	17.55	38.06		39.59	0.000351	9.92	1038.82	93.23	0.52
Line B Lower	10616.9	USGS 5-yr	3010.00	17.55	24.47	24.47	27.43	0.001507	13.81	217.98	37.00	1.00
Line B Lower	10523.09	USGS 50 yr	6970.00	17.25	34.88		36.17	0.000409	9.11	765.47	90.00	0.55
Line B Lower	10523.09	County 100 yr	12500.00	17.25	42.04		43.26	0.000200	8.87	1409.56	90.00	0.40
Line B Lower	10523.09	SPF	10300.00	17.25	38.05		39.55	0.000333	9.80	1050.98	90.00	0.51
Line B Lower	10523.09	USGS 5-yr	3010.00	17.25	24.16	24.16	27.14	0.001520	13.84	217.49	37.00	1.01
Line B Lower	10427.95	USGS 50 yr	6970.00	16.67	34.96		36.09	0.000321	8.53	816.98	88.08	0.49
Line B Lower	10427.95	County 100 yr	12500.00	16.67	42.06		43.23	0.000181	8.67	1442.53	88.08	0.38
Line B Lower	10427.95	SPF	10300.00	16.67	38.11		39.48	0.000284	9.41	1094.41	88.08	0.47
Line B Lower	10427.95	USGS 5-yr	3010.00	16.67	23.76	23.76	26.71	0.001509	13.79	218.21	37.40	1.01
Line B Lower	10328.76	USGS 50 yr	6970.00	16.48	35.01		36.02	0.000301	8.06	864.23	98.70	0.48
Line B Lower	10328.76	County 100 yr	12500.00	16.48	42.17		43.16	0.000152	7.96	1570.98	98.70	0.35
Line B Lower	10328.76	SPF	10300.00	16.48	38.22		39.40	0.000248	8.72	1180.64	98.70	0.44
Line B Lower	10328.76	USGS 5-yr	3010.00	16.48	23.50	23.50	26.47	0.001507	13.83	217.71	36.83	1.00
Line B Lower	10281.97	USGS 50 yr	6970.00	16.42	35.04		35.99	0.000284	7.83	889.91	103.15	0.47
Line B Lower	10281.97	County 100 yr	12500.00	16.42	42.21		43.13	0.000139	7.67	1630.14	103.15	0.34
Line B Lower	10281.97	SPF	10300.00	16.42	38.26		39.36	0.000229	8.43	1222.43	103.15	0.43
Line B Lower	10281.97	USGS 5-yr	3010.00	16.42	23.31	23.31	26.29	0.001503	13.86	217.20	36.82	1.01
Line B Lower	10157.15	USGS 50 yr	6970.00	15.95	34.97		35.95	0.000260	7.96	875.64	89.38	0.45
Line B Lower	10157.15	County 100 yr	12500.00	15.95	42.02		43.09	0.000159	8.30	1506.16	89.38	0.36
Line B Lower	10157.15	SPF	10300.00	15.95	38.08		39.32	0.000242	8.92	1154.06	89.38	0.44
Line B Lower	10157.15	USGS 5-yr	3010.00	15.95	22.92	22.92	25.88	0.001491	13.79	218.20	36.80	1.00
Line B Lower	10031.29	USGS 50 yr	6970.00	15.42	35.06		35.87	0.000201	7.21	966.43	96.07	0.40
Line B Lower	10031.29	County 100 yr	12500.00	15.42	42.13		43.02	0.000126	7.60	1645.00	96.07	0.32
Line B Lower	10031.29	SPF	10300.00	15.42	38.21		39.23	0.000189	8.12	1268.35	96.07	0.39
Line B Lower	10031.29	USGS 5-yr	3010.00	15.42	22.40	22.40	25.33	0.001477	13.72	219.32	37.44	1.00
Line B Lower	9921.46	USGS 50 yr	6970.00	15.05	35.05	26.48	35.85	0.000196	7.18	970.55	93.00	0.39
Line B Lower	9921.46	County 100 yr	12500.00	15.05	42.09	32.64	43.01	0.000130	7.69	1625.46	93.00	0.32
Line B Lower	9921.46	SPF	10300.00	15.05	38.17	31.48	39.21	0.000190	8.17	1261.25	93.00	0.39

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	9921.46	USGS 5-yr	3010.00	15.05	22.55	22.05	25.06	0.001171	12.72	236.71	37.03	0.89
Line B Lower	9814.29	USGS 50 yr	6970.00	14.69	35.04	26.08	35.82	0.000184	7.08	985.12	90.00	0.38
Line B Lower	9814.29	County 100 yr	12500.00	14.69	42.06	32.24	42.99	0.000131	7.73	1616.97	90.00	0.32
Line B Lower	9814.29	SPF	10300.00	14.69	38.16	31.06	39.19	0.000186	8.14	1265.34	90.00	0.38
Line B Lower	9814.29	USGS 5-yr	3010.00	14.69	22.71	21.67	24.83	0.000913	11.68	257.62	37.22	0.78
Line B Lower	9745.5	USGS 50 yr	6970.00	14.67	35.07		35.79	0.000163	6.81	1023.45	90.00	0.36
Line B Lower	9745.5	County 100 yr	12500.00	14.67	42.08		42.97	0.000122	7.55	1654.63	90.00	0.31
Line B Lower	9745.5	SPF	10300.00	14.67	38.19		39.16	0.000170	7.90	1303.82	90.00	0.37
Line B Lower	9745.5	USGS 5-yr	3010.00	14.67	22.73		24.73	0.000842	11.36	265.04	37.40	0.75
Line B Lower	9678.7	USGS 50 yr	6970.00	14.57	35.14		35.75	0.000146	6.27	1111.10	107.00	0.34
Line B Lower	9678.7	County 100 yr	12500.00	14.57	42.21		42.91	0.000094	6.69	1867.96	107.00	0.28
Line B Lower	9678.7	SPF	10300.00	14.57	38.31		39.09	0.000139	7.10	1450.17	107.00	0.34
Line B Lower	9678.7	USGS 5-yr	3010.00	14.57	22.62		24.68	0.000876	11.50	261.63	37.31	0.77
Line B Lower	9397.88	USGS 50 yr	6970.00	13.53	35.16		35.69	0.000113	5.85	1192.35	102.00	0.30
Line B Lower	9397.88	County 100 yr	12500.00	13.53	42.21		42.87	0.000086	6.54	1911.45	102.00	0.27
Line B Lower	9397.88	SPF	10300.00	13.53	38.32		39.04	0.000118	6.80	1514.53	102.00	0.31
Line B Lower	9397.88	USGS 5-yr	3010.00	13.53	22.76		24.33	0.000589	10.06	299.10	37.25	0.63
Line B Lower	9304.06	USGS 50 yr	6970.00	13.37	35.15		35.68	0.000107	5.85	1190.74	95.00	0.29
Line B Lower	9304.06	County 100 yr	12500.00	13.37	42.16		42.86	0.000089	6.73	1856.67	95.00	0.27
Line B Lower	9304.06	SPF	10300.00	13.37	38.28		39.02	0.000118	6.92	1488.20	95.00	0.31
Line B Lower	9304.06	USGS 5-yr	3010.00	13.37	22.80		24.24	0.000518	9.63	312.53	37.48	0.59
Line B Lower	9212.4	USGS 50 yr	6970.00	13.14	35.16		35.66	0.000101	5.64	1236.84	101.00	0.28
Line B Lower	9212.4	County 100 yr	12500.00	13.14	42.19		42.83	0.000081	6.42	1946.76	101.00	0.26
Line B Lower	9212.4	SPF	10300.00	13.14	38.31		38.99	0.000109	6.63	1554.66	101.00	0.30
Line B Lower	9212.4	USGS 5-yr	3010.00	13.14	22.80		24.18	0.000485	9.40	320.14	37.25	0.57
Line B Lower	8984.35	USGS 50 yr	6970.00	12.22	35.11		35.63	0.000096	5.78	1206.36	85.00	0.27
Line B Lower	8984.35	County 100 yr	12500.00	12.22	42.05		42.80	0.000094	6.96	1795.91	85.00	0.27
Line B Lower	8984.35	SPF	10300.00	12.22	38.19		38.96	0.000116	7.02	1468.18	85.00	0.30
Line B Lower	8984.35	USGS 5-yr	3010.00	12.22	22.89		24.00	0.000356	8.45	356.02	37.69	0.48
Line B Lower	8905.46	USGS 50 yr	6970.00	11.97	35.22		35.58	0.000066	4.79	1455.10	113.00	0.24
Line B Lower	8905.46	County 100 yr	12500.00	11.97	42.23		42.72	0.000056	5.56	2247.63	113.00	0.22
Line B Lower	8905.46	SPF	10300.00	11.97	38.37		38.87	0.000073	5.69	1810.97	113.00	0.25
Line B Lower	8905.46	USGS 5-yr	3010.00	11.97	22.89		23.96	0.000335	8.29	363.24	37.74	0.47
Line B Lower	8823.72	USGS 50 yr	6970.00	11.76	32.83	25.57	35.35	0.000215	14.37	969.07	86.88	0.56
Line B Lower	8823.72	County 100 yr	12500.00	11.76	38.66	33.58	42.38	0.000250	18.28	1598.07	112.00	0.63
Line B Lower	8823.72	SPF	10300.00	11.76	32.96	30.97	38.37	0.000459	21.06	980.57	87.59	0.82
Line B Lower	8823.72	USGS 5-yr	3010.00	11.76	19.96	19.92	23.65	0.001123	17.06	266.50	37.53	1.08
Line B Lower	8800	Bridge										
Line B Lower	8726.66	USGS 50 yr	6970.00	11.45	23.21	23.21	28.68	0.009490	62.56	398.87	37.79	3.22
Line B Lower	8726.66	County 100 yr	12500.00	11.45	29.98	29.98	34.58	0.006523	70.26	820.00	82.95	2.88
Line B Lower	8726.66	SPF	10300.00	11.45	28.72	28.72	32.89	0.006499	66.92	718.02	79.01	2.84
Line B Lower	8726.66	USGS 5-yr	3010.00	11.45	18.65	18.65	21.73	0.009197	44.39	227.41	37.45	2.92
Line B Lower	8700	Lat Struct										
Line B Lower	8699	Lat Struct										
Line B Lower	8472.5	USGS 50 yr	6970.00	10.65	22.12	22.12	27.30	0.001547	18.26	381.69	37.22	1.01
Line B Lower	8472.5	County 100 yr	12500.00	10.65	28.51	28.51	33.13	0.001046	17.58	849.66	120.00	0.88
Line B Lower	8472.5	SPF	10300.00	10.65	26.87	26.87	31.37	0.001201	17.14	655.63	98.70	0.92
Line B Lower	8472.5	USGS 5-yr	3010.00	10.65	17.68	17.68	20.67	0.001509	13.85	217.27	36.89	1.01
Line B Lower	8271.07	USGS 50 yr	6970.00	10.08	21.50	21.50	26.69	0.001551	18.28	381.26	37.09	1.01
Line B Lower	8271.07	County 100 yr	12500.00	10.08	27.43	27.43	31.67	0.001313	16.54	767.31	106.80	0.99
Line B Lower	8271.07	SPF	10300.00	10.08	26.44	26.32	30.12	0.001324	15.40	670.46	89.57	0.98
Line B Lower	8271.07	USGS 5-yr	3010.00	10.08	17.06	17.06	20.05	0.001508	13.86	217.19	36.82	1.01
Line B Lower	8151.3	USGS 50 yr	6970.00	9.63	21.14	21.14	26.30	0.001537	18.22	382.56	37.28	1.00
Line B Lower	8151.3	County 100 yr	12500.00	9.63	26.96	26.96	31.27	0.001317	16.66	754.95	94.68	1.00
Line B Lower	8151.3	SPF	10300.00	9.63	26.70	25.87	29.81	0.000988	14.16	730.47	90.21	0.86
Line B Lower	8151.3	USGS 5-yr	3010.00	9.63	16.71	16.71	19.67	0.001493	13.80	218.08	36.94	1.00
Line B Lower	8030.72	USGS 50 yr	6970.00	9.37	20.71	20.71	25.88	0.001540	18.24	382.16	37.19	1.00
Line B Lower	8030.72	County 100 yr	12500.00	9.37	27.25	26.66	30.82	0.001065	15.17	832.77	106.70	0.90
Line B Lower	8030.72	SPF	10300.00	9.37	26.94		29.55	0.000812	12.96	800.32	103.50	0.78
Line B Lower	8030.72	USGS 5-yr	3010.00	9.37	16.27	16.27	19.25	0.001504	13.84	217.44	36.92	1.01
Line B Lower	7805.05	USGS 50 yr	6970.00	8.69	20.03	20.03	25.23	0.001542	18.29	381.12	37.05	1.01

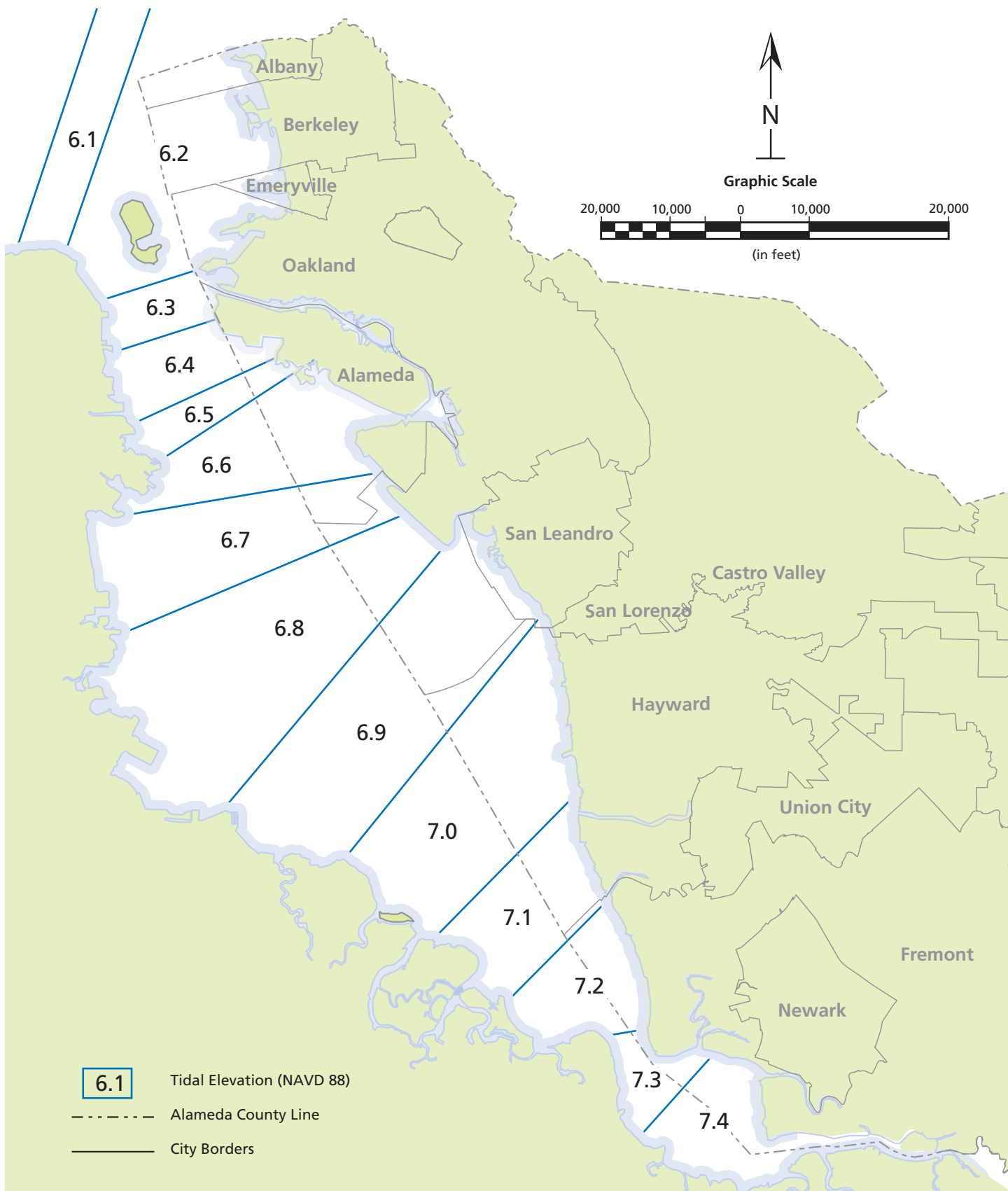
HEC-RAS Plan: Prop_energy_05172022 River: San Lorenzo Crk Reach: Line B Lower (Continued)

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	7805.05	County 100 yr	12500.00	8.69	27.66		30.37	0.000709	13.25	969.31	110.00	0.75
Line B Lower	7805.05	SPF	10300.00	8.69	27.19		29.23	0.000567	11.49	917.56	110.00	0.67
Line B Lower	7805.05	USGS 5-yr	3010.00	8.69	15.76	15.58	18.57	0.001371	13.46	223.61	36.69	0.96
Line B Lower	7535.08	USGS 50 yr	6970.00	7.87	19.16	19.16	24.36	0.001545	18.30	380.97	37.00	1.01
Line B Lower	7535.08	County 100 yr	12500.00	7.87	28.27		29.90	0.000400	10.24	1220.85	124.00	0.58
Line B Lower	7535.08	SPF	10300.00	7.87	27.61		28.88	0.000339	9.05	1138.40	124.00	0.53
Line B Lower	7535.08	USGS 5-yr	3010.00	7.87	16.05		18.04	0.000815	11.30	266.38	36.78	0.74
Line B Lower	7452.01	USGS 50 yr	6970.00	7.39	18.87	18.86	24.05	0.001547	18.26	381.76	36.91	1.00
Line B Lower	7452.01	County 100 yr	12500.00	7.39	27.98		29.84	0.000448	10.97	1158.67	121.00	0.61
Line B Lower	7452.01	SPF	10300.00	7.39	27.41		28.84	0.000368	9.59	1089.86	121.00	0.55
Line B Lower	7452.01	USGS 5-yr	3010.00	7.39	16.13		17.92	0.000704	10.73	280.58	36.79	0.68
Line B Lower	7375.17	USGS 50 yr	6970.00	7.35	19.02	18.63	23.82	0.001388	17.56	396.92	37.18	0.95
Line B Lower	7375.17	County 100 yr	12500.00	7.35	27.99		29.79	0.000438	10.76	1161.96	115.00	0.60
Line B Lower	7375.17	SPF	10300.00	7.35	27.42	23.77	28.79	0.000358	9.40	1096.24	115.00	0.54
Line B Lower	7375.17	USGS 5-yr	3010.00	7.35	16.16		17.83	0.000636	10.35	290.79	37.02	0.65
Line B Lower	7223.08	USGS 50 yr	6970.00	7.09	18.84	18.37	23.59	0.001365	17.47	398.96	37.14	0.94
Line B Lower	7223.08	County 100 yr	12500.00	7.09	26.03	26.03	29.51	0.001391	14.96	835.36	120.00	1.00
Line B Lower	7223.08	SPF	10300.00	7.09	21.44	21.44	28.15	0.001622	20.79	495.46	37.26	1.01
Line B Lower	7223.08	USGS 5-yr	3010.00	7.09	16.13		17.71	0.000589	10.09	298.27	37.02	0.63
Line B Lower	7057.32	USGS 50 yr	6970.00	6.78	21.50		22.18	0.000932	6.65	1048.59	108.32	0.38
Line B Lower	7057.32	County 100 yr	12500.00	6.78	26.50		27.27	0.001040	7.05	1773.01	180.00	0.40
Line B Lower	7057.32	SPF	10300.00	6.78	25.46		26.11	0.001011	6.50	1585.08	180.00	0.39
Line B Lower	7057.32	USGS 5-yr	3010.00	6.78	16.85		17.24	0.000821	5.04	597.41	85.68	0.34
Line B Lower	6957.26	USGS 50 yr	6970.00	6.64	21.35		22.08	0.001037	6.88	1013.03	107.55	0.40
Line B Lower	6957.26	County 100 yr	12500.00	6.64	26.35		27.16	0.001123	7.22	1731.83	180.00	0.41
Line B Lower	6957.26	SPF	10300.00	6.64	25.31		26.00	0.001100	6.67	1544.71	180.00	0.40
Line B Lower	6957.26	USGS 5-yr	3010.00	6.64	16.71		17.15	0.000964	5.31	567.22	84.76	0.36
Line B Lower	6757.13	USGS 50 yr	6970.00	5.67	21.12		21.87	0.001063	6.92	1006.52	107.83	0.40
Line B Lower	6757.13	County 100 yr	12500.00	5.67	26.12		26.94	0.001134	7.24	1727.12	180.00	0.41
Line B Lower	6757.13	SPF	10300.00	5.67	25.09		25.78	0.001109	6.68	1541.09	180.00	0.40
Line B Lower	6757.13	USGS 5-yr	3010.00	5.67	16.50		16.95	0.000994	5.36	561.74	84.68	0.37
Line B Lower	6557	USGS 50 yr	6970.00	5.91	20.90		21.65	0.001085	6.98	999.13	107.53	0.40
Line B Lower	6557	County 100 yr	12500.00	5.91	25.89		26.71	0.001151	7.27	1719.71	180.00	0.41
Line B Lower	6557	SPF	10300.00	5.91	24.86		25.56	0.001125	6.71	1534.82	180.00	0.41
Line B Lower	6557	USGS 5-yr	3010.00	5.91	16.29		16.75	0.001022	5.41	556.88	84.60	0.37
Line B Lower	6356.88	USGS 50 yr	6970.00	5.70	20.70		21.44	0.001054	6.90	1010.39	108.15	0.40
Line B Lower	6356.88	County 100 yr	12500.00	5.70	25.65		26.48	0.001152	7.27	1718.61	180.00	0.41
Line B Lower	6356.88	SPF	10300.00	5.70	24.63		25.33	0.001124	6.71	1534.71	180.00	0.41
Line B Lower	6356.88	USGS 5-yr	3010.00	5.70	16.11		16.54	0.000971	5.31	566.99	85.07	0.36
Line B Lower	6156.75	USGS 50 yr	6970.00	5.40	20.12		21.14	0.001676	8.14	856.48	101.20	0.49
Line B Lower	6156.75	County 100 yr	12500.00	5.40	25.01		26.15	0.001951	8.56	1460.59	180.00	0.53
Line B Lower	6156.75	SPF	10300.00	5.40	24.09		25.06	0.001323	7.92	1300.60	134.05	0.45
Line B Lower	6156.75	USGS 5-yr	3010.00	5.40	15.54		16.25	0.001936	6.75	446.14	78.33	0.50
Line B Lower	5756.5	USGS 50 yr	6970.00	5.81	19.77		20.53	0.001093	7.01	994.37	107.10	0.41
Line B Lower	5756.5	County 100 yr	12500.00	5.81	24.59		25.45	0.001242	7.45	1678.04	180.00	0.43
Line B Lower	5756.5	SPF	10300.00	5.81	23.79		24.49	0.001123	6.71	1534.37	180.00	0.41
Line B Lower	5756.5	USGS 5-yr	3010.00	5.81	15.17		15.63	0.001018	5.42	555.40	84.03	0.37
Line B Lower	5356.24	USGS 50 yr	6970.00	5.34	19.32		20.09	0.001104	7.03	990.77	107.03	0.41
Line B Lower	5356.24	County 100 yr	12500.00	5.34	24.06		24.94	0.001295	7.55	1656.64	180.00	0.44
Line B Lower	5356.24	SPF	10300.00	5.34	23.33		24.04	0.001146	6.75	1525.28	180.00	0.41
Line B Lower	5356.24	USGS 5-yr	3010.00	5.34	14.76		15.22	0.001020	5.42	555.24	84.20	0.37
Line B Lower	4955.99	USGS 50 yr	6970.00	5.41	18.84		19.63	0.001153	7.14	975.71	106.29	0.42
Line B Lower	4955.99	County 100 yr	12500.00	5.41	23.49		24.41	0.001377	7.69	1625.71	180.00	0.45
Line B Lower	4955.99	SPF	10300.00	5.41	22.85		23.57	0.001183	6.82	1510.59	180.00	0.41
Line B Lower	4955.99	USGS 5-yr	3010.00	5.41	14.33		14.80	0.001069	5.50	546.87	83.86	0.38
Line B Lower	4555.73	USGS 50 yr	6970.00	4.84	18.38		19.17	0.001161	7.15	975.13	106.76	0.42
Line B Lower	4555.73	County 100 yr	12500.00	4.84	22.89		23.84	0.001451	7.82	1598.69	180.00	0.46
Line B Lower	4555.73	SPF	10300.00	4.84	22.36		23.09	0.001197	6.85	1504.72	180.00	0.42
Line B Lower	4555.73	USGS 5-yr	3010.00	4.84	13.90		14.37	0.001076	5.50	547.24	84.46	0.38
Line B Lower	4155.48	USGS 50 yr	6970.00	4.63	17.86	12.97	18.71	0.001135	9.32	966.07	106.58	0.45
Line B Lower	4155.48	County 100 yr	12500.00	4.63	22.06	16.15	23.25	0.001351	12.22	1544.56	180.00	0.52
Line B Lower	4155.48	SPF	10300.00	4.63	21.77	15.00	22.64	0.001014	10.47	1491.39	180.00	0.45
Line B Lower	4155.48	USGS 5-yr	3010.00	4.63	13.45	9.76	13.95	0.001032	6.78	545.32	84.51	0.40

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
Line B Lower	3952.75		Bridge									
Line B Lower	3755.23	USGS 50 yr	6970.00	4.28	17.34		18.21	0.001176	9.41	959.78	106.63	0.46
Line B Lower	3755.23	County 100 yr	12500.00	4.28	21.18		22.50	0.001731	13.56	1474.42	180.00	0.58
Line B Lower	3755.23	SPF	10300.00	4.28	19.70		20.87	0.001348	11.26	1224.96	121.73	0.51
Line B Lower	3755.23	USGS 5-yr	3010.00	4.28	13.01		13.50	0.001062	6.83	544.74	84.79	0.41
Line B Lower	3354.97	USGS 50 yr	6970.00	3.90	16.87		17.71	0.001267	7.36	947.63	106.41	0.43
Line B Lower	3354.97	County 100 yr	12500.00	3.90	20.49		21.70	0.002138	8.81	1418.06	180.00	0.55
Line B Lower	3354.97	SPF	10300.00	3.90	19.14		20.28	0.001589	8.55	1204.36	127.92	0.49
Line B Lower	3354.97	USGS 5-yr	3010.00	3.90	12.57		13.06	0.001145	5.61	536.97	84.58	0.39
Line B Lower	2954.72	USGS 50 yr	6970.00	3.09	16.46		17.19	0.001172	6.86	1015.58	118.87	0.41
Line B Lower	2954.72	County 100 yr	12500.00	3.09	19.88		20.90	0.001633	8.09	1544.74	180.00	0.49
Line B Lower	2954.72	SPF	10300.00	3.09	18.57		19.53	0.001894	7.87	1308.38	180.00	0.51
Line B Lower	2954.72	USGS 5-yr	3010.00	3.09	12.16		12.60	0.001061	5.34	563.48	89.00	0.37
Line B Lower	2854.66	USGS 50 yr	6970.00	2.68	16.42	10.73	17.05	0.000961	6.38	1092.83	123.12	0.38
Line B Lower	2854.66	County 100 yr	12500.00	2.68	19.81	13.94	20.72	0.001354	7.65	1634.13	180.00	0.45
Line B Lower	2854.66	SPF	10300.00	2.68	18.48	12.83	19.33	0.001530	7.38	1394.86	180.00	0.47
Line B Lower	2854.66	USGS 5-yr	3010.00	2.68	12.12	7.63	12.49	0.000842	4.85	620.04	95.28	0.34
Line B Lower	2752.75		Bridge									
Line B Lower	2704.56	USGS 50 yr	6970.00	2.68	14.25		15.32	0.001982	8.30	840.05	109.83	0.53
Line B Lower	2704.56	County 100 yr	12500.00	2.68	17.51		19.11	0.002261	10.16	1230.21	131.01	0.58
Line B Lower	2704.56	SPF	10300.00	2.68	16.68		17.98	0.001937	9.15	1125.10	124.72	0.54
Line B Lower	2704.56	USGS 5-yr	3010.00	2.68	11.93		12.31	0.000905	5.00	601.82	93.33	0.35
Line B Lower	2554.46	USGS 50 yr	6970.00	3.10	14.31		14.93	0.001451	6.33	1100.89	175.30	0.45
Line B Lower	2554.46	County 100 yr	12500.00	3.10	17.84		18.59	0.001455	6.94	1801.68	250.00	0.46
Line B Lower	2554.46	SPF	10300.00	3.10	16.92		17.57	0.001126	6.50	1583.67	200.08	0.41
Line B Lower	2554.46	USGS 5-yr	3010.00	3.10	11.86		12.14	0.000977	4.30	699.59	147.82	0.35
Line B Lower	1753.96	USGS 50 yr	6970.00	2.39	13.29		13.83	0.001249	5.91	1178.57	185.09	0.41
Line B Lower	1753.96	County 100 yr	12500.00	2.39	16.85		17.52	0.001173	6.56	1904.55	243.86	0.41
Line B Lower	1753.96	SPF	10300.00	2.39	16.13		16.68	0.001033	5.95	1732.12	234.23	0.39
Line B Lower	1753.96	USGS 5-yr	3010.00	2.39	11.26		11.47	0.000684	3.67	820.21	167.95	0.29
Line B Lower	1353.7	USGS 50 yr	6970.00	1.73	12.82		13.35	0.001152	5.83	1195.37	180.61	0.40
Line B Lower	1353.7	County 100 yr	12500.00	1.73	16.41		17.03	0.001187	6.32	1977.28	270.00	0.41
Line B Lower	1353.7	SPF	10300.00	1.73	15.73		16.24	0.001111	5.75	1791.98	270.00	0.39
Line B Lower	1353.7	USGS 5-yr	3010.00	1.73	11.04		11.22	0.000528	3.40	885.42	167.68	0.26
Line B Lower	1153.58	USGS 50 yr	6970.00	1.75	12.59		13.12	0.001156	5.81	1198.94	183.24	0.40
Line B Lower	1153.58	County 100 yr	12500.00	1.75	16.18		16.79	0.001170	6.30	1984.40	270.00	0.41
Line B Lower	1153.58	SPF	10300.00	1.75	15.51		16.02	0.001085	5.71	1803.91	270.00	0.39
Line B Lower	1153.58	USGS 5-yr	3010.00	1.75	10.94		11.12	0.000504	3.32	906.00	172.15	0.26
Line B Lower	953.45	USGS 50 yr	6970.00	1.83	12.32		12.88	0.001239	5.97	1167.28	179.58	0.41
Line B Lower	953.45	County 100 yr	12500.00	1.83	15.88		16.54	0.001330	6.54	1910.95	270.00	0.43
Line B Lower	953.45	SPF	10300.00	1.83	15.24		15.78	0.001230	5.92	1738.52	270.00	0.41
Line B Lower	953.45	USGS 5-yr	3010.00	1.83	10.85		11.02	0.000488	3.31	910.13	169.01	0.25
Line B Lower	553.19	USGS 50 yr	6970.00	1.56	11.71		12.33	0.001496	6.29	1107.80	181.26	0.45
Line B Lower	553.19	County 100 yr	12500.00	1.56	15.32		16.00	0.001387	6.61	1891.29	270.00	0.44
Line B Lower	553.19	SPF	10300.00	1.56	14.74		15.29	0.001248	5.94	1735.28	270.00	0.41
Line B Lower	553.19	USGS 5-yr	3010.00	1.56	10.65		10.82	0.000492	3.27	919.69	174.35	0.25
Line B Lower	152.94	USGS 50 yr	6970.00	1.10	10.83	8.75	11.62	0.002012	10.11	993.47	176.84	0.57
Line B Lower	152.94	County 100 yr	12500.00	1.10	14.62	10.66	15.41	0.001487	10.83	1816.31	270.00	0.52
Line B Lower	152.94	SPF	10300.00	1.10	14.15	9.98	14.77	0.001270	9.77	1688.92	270.00	0.48
Line B Lower	152.94	USGS 5-yr	3010.00	1.10	10.46	5.49	10.63	0.000461	4.72	928.67	174.75	0.27
Line B Lower	37.75		Bridge									
Line B Lower	-47.19	USGS 50 yr	6970.00	1.01	9.98		10.99	0.002981	11.66	886.88	181.55	0.69
Line B Lower	-47.19	County 100 yr	12500.00	1.01	12.36		13.75	0.002788	13.19	1336.33	197.15	0.69
Line B Lower	-47.19	SPF	10300.00	1.01	11.69		12.86	0.002570	12.17	1206.79	192.78	0.66
Line B Lower	-47.19	USGS 5-yr	3010.00	1.01	10.36		10.52	0.000444	4.62	955.45	184.02	0.27
Line B Lower	-147.25	USGS 50 yr	6970.00	-0.60	8.30	8.30	10.49	0.005175	12.19	635.21	157.97	0.84
Line B Lower	-147.25	County 100 yr	12500.00	-0.60	10.84	10.84	13.31	0.004167	13.62	1118.67	220.88	0.80
Line B Lower	-147.25	SPF	10300.00	-0.60	9.53	9.53	12.33	0.005513	14.12	840.97	189.59	0.89
Line B Lower	-147.25	USGS 5-yr	3010.00	-0.60	10.30	5.20	10.48	0.000321	3.63	1001.48	215.96	0.22

Appendix E MHHW and 100-year Tidal Elevation in the Alameda County Hydrology and Hydraulics Manual

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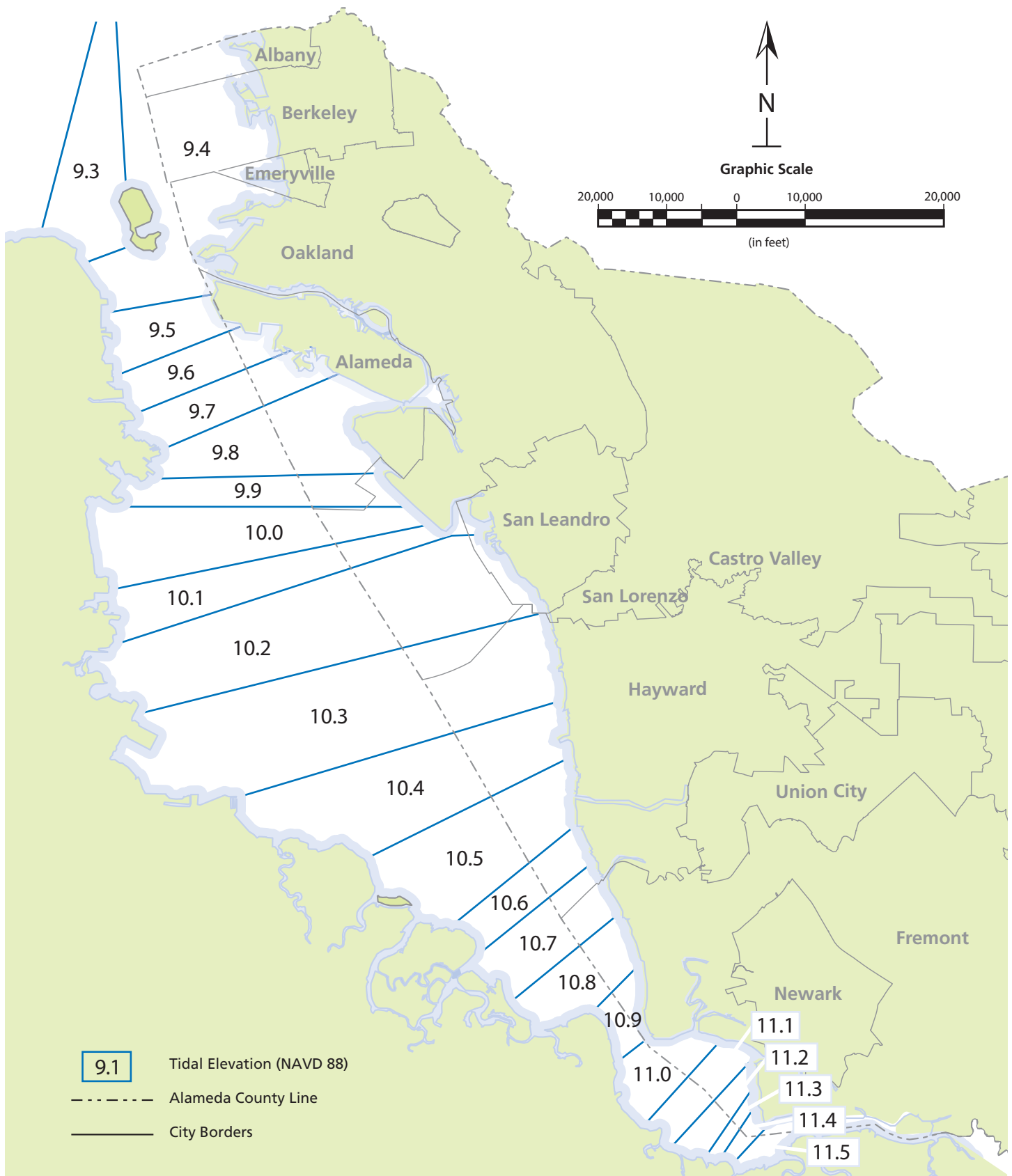
(FEMA 2016)



Alameda County Hydrology & Hydraulics Manual 2016

Tidal Summary Adopted MHW Tidal Elevation

**Attachment
11A**



(FEMA 2016)



Flood Control &
Water Conservation
DISTRICT

Alameda County Hydrology & Hydraulics Manual 2016

Tidal Summary Adopted 100-yr Tidal Elevation

**Attachment
11B**

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