



May 11, 2017

Mr. Chris Gascon  
City of San Diego  
Transportation and Storm Water Department  
2781 Caminito Chollas MS 44  
San Diego, California 92105

**SUBJECT:** RESPONSE TO 2<sup>ND</sup> PLANCHECK COMMENTS ON THE MASTER MAINTENANCE PROGRAM (MMP) MAP 101 SOUTH CHOLLAS CREEK CHANNEL INDIVIDUAL HYDROLOGIC AND HYDRAULIC ASSESSMENT (IHHA) DATED APRIL 28, 2017  
(RICK ENGINEERING COMPANY JOB NUMBER 17204-L)

Dear Mr. Gascon:

Pursuant to the email dated May 5, 2017 from the City of San Diego, there were two plancheck comments to the Master Maintenance Program (MMP) Map 101 South Chollas Creek Channel Individual Hydrologic and Hydraulic Assessment (IHHA). Below is a list of the plancheck comments from the City of San Diego in italics, followed by Rick Engineering Company's (RICK) response.

- 1. The Hydraulic Workmap in Attachment 3 reflects Reach 1 ending at HEC-RAS Cross Section 417.462 where the IHHA states Reach 1 ends at HEC-RAS Cross Section 292.825. Please revise either the IHHA or Hydraulic Workmap to reflect the same ending HEC-RAS Cross Section*

**Response:** The IHHA for South Chollas Creek Channel Map 101 reflects the correct ending location for Reach 1 (HEC-RAS Cross Section 292.825). The Hydraulic Workmap in Attachment 3 has been revised to reflect the correct ending HEC-RAS Cross Section.

- 2. Pursuant to the 1<sup>st</sup> plancheck dated April 28, 2017, the response to plancheck comment number six does not state the channel lining downstream of HEC-RAS Cross Section 915.6229. Please indicate the channel lining downstream of HEC-RAS Cross Section 915.6229.*

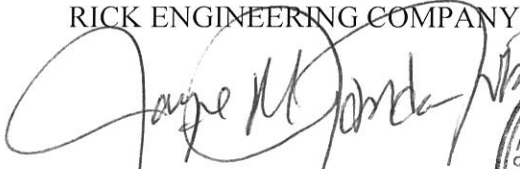
**Response:** Pursuant to the Existing Condition description of South Chollas Creek listed in the IHHA; Reach 2, between HEC-RAS Cross Section 292.825 and 915.6229, is an earthen channel with a retaining wall on the left overbank (when looking downstream). The earthen lined channel has a geometry consisting of a bottom width of 24 feet, right side slope (looking downstream) of 1.5H:1V, a vertical concrete retaining for the left side slope (looking downstream), and a minimum depth of 6 feet.

Mr. Chris Gascon  
May 11, 2017  
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The revised and resigned, final Master Maintenance Program (MMP) Map 101 South Chollas Creek Channel Individual Hydrologic and Hydraulic Assessment (IHHA) and 1<sup>st</sup> plancheck comments dated April 28, 2017 are attached, following this letter. If you have any questions regarding this re-submittal or require any additional information related to this project, please contact Kevin Anub at (619) 688-1485 or kanub@rickengineering.com.

Sincerely,

RICK ENGINEERING COMPANY



Jayne Janda-Timba  
R.C.E. #70649 Exp. 06/17  
Associate Principal

JJT:TJR:rf:k/Files/Text/17204-L.014



Enclosure



April 28, 2017

Mr. Chris Gascon  
City of San Diego  
Transportation and Storm Water Department  
2781 Caminito Chollas MS 44  
San Diego, California 92105

SUBJECT: RESPONSE TO 1<sup>ST</sup> PLANCHECK COMMENTS ON THE DRAFT MASTER MAINTENANCE PROGRAM (MMP) MAP 101 SOUTH CHOLLAS CREEK CHANNEL INDIVIDUAL HYDROLOGIC AND HYDRAULIC ASSESSMENT (IHHA) DATED JANUARY 30, 2017 (RICK ENGINEERING COMPANY JOB NUMBER 17204-L)

Dear Mr. Gascon:

Pursuant to the 1<sup>st</sup> plancheck comments given to Rick Engineering Company on February 17, 2017 regarding the Draft Master Maintenance Program (MMP) Map 101 South Chollas Creek Channel Individual Hydrologic and Hydraulic Assessment (IHHA), the following comments were addressed. Please note these comments were abbreviated in the pdf plancheck and have been reworded. Also, there were other comments listed in the plancheck however they were grammatical in nature and have been addressed in the revised IHHA. Below is a list of the plancheck comments from the City of San Diego in italics, followed by Rick Engineering Company's (RICK) response.

- 1. In order for the operation and maintenance crews to access the upstream end of Reach 2, the crews must drive and clear vegetation through a portion of Reach 3. Please consider this vegetation removal in the recommended maintenance condition and how it impacts flood capacity.*

**Response:** The recommended maintenance condition has been revised to propose vegetation maintenance within a portion of Reach 3 (between HEC-RAS Cross Section 976.670 to 2098.664) to accommodate access for the City of San Diego Operation and Maintenance crew's equipment. The overall capacity for Reach 3 within South Chollas Creek Channel, including the described maintenance above, would remain at a 100-year storm event however, it is important to note that vegetation maintenance (in the selected portions of Reach 3) will increase the channels capacity and decrease water surface elevations.

- 2. Does the recommended maintenance locations contribute to an increase in flow velocities thus increasing erosion downstream in Reach 2 near the single span bridge at Federal Boulevard?*

**Response:** The recommended maintenance condition, partial sediment and vegetation removal in Reach 2 (HEC-RAS Cross Section 926.753 to 976.670) and partial vegetation maintenance in Reach 3 (HEC-RAS Cross Section 976.670 to 2098.664), increases velocities only within the proposed maintenance areas. Partial sediment and vegetation removal

maintenance will result in increased velocities between HEC-RAS Cross Sections 926.753 to 976.670 to a maximum velocity of 5.5 fps. The channel segment between HEC-RAS Cross Sections 926.753 to 976.670 is 2-ton rip-rap lined in the as-built condition. Pursuant to the San Diego County Hydraulics Design Manual dated September 2014, Table 5-3, 2-ton rip-rap has a maximum design velocity of 18 fps. Partial vegetation maintenance will result in increased velocities between HEC-RAS Cross Sections 976.670 to 2098.664 to a maximum velocity of 21.8 fps. The channel segment between HEC-RAS Cross Sections 976.670 to 2098.664 is concrete lined which is not affected by the increase in velocity.

- 3. The Hydraulic Workmap in Attachment 3 reflects Reach 1 ending at HEC-RAS Cross Section 417.462 where the IHHA states Reach 1 ends at HEC-RAS Cross Section 292.825. Please revise either the IHHA or Hydraulic Workmap to reflect the same ending HEC-RAS Cross Section*

**Response:** The IHHA for South Chollas Creek Map 101 reflects the correct ending location for Reach 1 (HEC-RAS Cross Section 292.825). The Hydraulic Workmap in Attachment 3 has been revised to reflect the correct ending HEC-RAS Cross Section.

- 4. 2-Ton grouted rip-rap is listed in the Manning Roughness Coefficient table for Reach 3 but not in the boundary condition for the Reach 3. Should the 2-ton grouted rip-rap be included in Reach 2 or Reach 3? Please update reach boundary condition as required.*

**Response:** The 2-ton grouted riprap is located at the downstream end of Reach 3, and is not located within Reach 2. The Existing Condition IHHA text has been revised to clarify the 2-ton grouted riprap location.

- 5. How much vegetation and sediment needs to be removed in the Recommended Maintenance Condition?*

**Response:** There is approximately 8 to 14 inches of sediment deposition that has occurred between HEC-RAS Cross Sections 926.753 to 976.670. The volume of sediment and vegetation removal should be calculated by the City of San Diego, however the sediment deposition and vegetation, between HEC-RAS Cross Sections 926.753 to 976.670, is proposed to be removed (to the channels as-built flow line and as-built geometry).

- 6. In Table 8, the HEC-RAS Cross Section downstream of the recommended maintenance area has a lower storm event frequency than the recommended maintenance area, why?*

**Response:** The Recommended Maintenance storm event frequency at HEC-RAS Cross Section 926.7529 has been revised to a 25-year storm event. The HEC-RAS Cross Section downstream of the recommended maintenance area (HEC-RAS Cross Section 915.6229) contains the same channel geometry and vegetation density as depicted in the current vegetated condition. HEC-RAS Cross Section 915.6229 increases in capacity from a 10-year storm event to a 25-year storm event; which is equivalent to the storm event frequency for the Recommended Maintenance condition.



Mr. Chris Gascon  
April 28, 2017  
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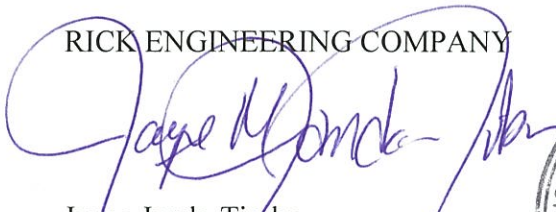
7. *In the Recommended Maintenance Condition, what areas would be impacted during the 50- and 100-year storm events?*

**Response:** The property located south of the South Chollas Creek (5950 Federal Boulevard) could potentially be impacted during storm events larger than the 25-year event. It is important to note the property located at 5950 Federal Boulevard is located within the floodplain as shown on the FEMA FIRM for South Chollas Creek (Map Number 06073C1902G).

The revised, final Master Maintenance Program (MMP) Map 101 South Chollas Creek Channel Individual Hydrologic and Hydraulic Assessment (IHHA) is attached, following this letter. If you have any questions regarding this re-submittal or require any additional information related to this project, please contact Taylor Ryan at (619) 908-3527 or [tryan@rickengineering.com](mailto:tryan@rickengineering.com).

Sincerely,

RICK ENGINEERING COMPANY

  
Jayne Janda-Timba  
R.C.E. #70649 Exp. 06/17  
Associate Principal

JJT:TJR:rf:k/Files/Text/17204-L.009



# INDIVIDUAL HYDROLOGIC & HYDRAULIC ASSESSMENT (IHHA) REPORT

**Site Name/Facility:** South Chollas Creek Channel

**Master Program Map No.:** Map 101

**Date:** January 30, 2017; April 28, 2017,  
Revised May 11, 2017

**Civil Engineer:** Jayne Janda-Timba, R.C.E.,  
Rick Engineering Company  
5620 Friars Road,  
San Diego, California 92110  
(619) 688-1448

**Register Civil Engineer Number  
& Expiration Date:** RCE# 70649  
Exp. 06/2017



**Instructions:** This form must be completed for each target facility following the completion of the Individual Maintenance Plan (IMP) report form and prior to any work being conducted in the facility. Attach additional sheets if needed.

## Executive Summary:

This Individual Hydrologic and Hydraulic Assessment (IHHA) report, and the corresponding analyses, concludes that vegetation and sediment removal from portions of the South Chollas Creek Channel, mapped in the Master Maintenance Program (MMP) Map 101, will affect the capacity as follows:

- Reach 1 (HEC-RAS Cross Sections 28.064 to 292.825) – was not analyzed for maintenance but included for the downstream boundary condition in the hydraulic analysis.
- Reach 2 (HEC-RAS Cross Section 292.825 to 926.753) - maintenance not proposed.
- Reach 2 (HEC-RAS Cross Section 926.753 to 976.670) – sediment and vegetation removal is proposed and will increase the capacity from a 10-year to a 25-year storm event.
- Reach 3 (HEC-RAS Cross Sections 976.670 to 2098.664) – vegetation removal preserves the current 100- year capacity.
- Reach 3 (HEC-RAS Cross Sections 2098.664 to 2306.424) –maintenance not proposed.

The extent of South Chollas Creek MMP Map 101 is from HEC-RAS Cross Section 292.825 to 2306.424 as shown in the Hydraulic Workmap located in Attachment 3. It is important to note, Reach 1 (HEC-RAS Cross Sections 28.064 to 292.825), is not included in the South Chollas MMP Map 101 extents.

South Chollas Creek MMP Map 101 is a concrete, rip-rap and earthen lined, rectangular and trapezoidal channel that has sediment deposition and vegetation establishment through its reach. The South Chollas Creek MMP Map 101 is bound at the downstream end by Federal Boulevard and at the upstream end by a City of Lemon Grove drainage channel (located in the City of Lemon Grove's jurisdiction) and has an approximate length of 1,900 feet. The proposed areas of maintenance include the 2 ton rip-rap lined section of channel, directly downstream of the concrete lined section listed in Reach 3 (approximately 50 feet in length), and a portion of Reach 3, from the access/staging area located at 6184 Federal Boulevard to the upstream limit of Reach 2 (approximately 1,160 feet in length). The overall capacity for the South Chollas Creek MMP Map 101 including the described maintenance conditions above, would be 25-year storm event however, it is important to note that partial sediment and vegetation removal (in selected portions of the channel) will increase the channels capacity and decrease water surface elevation.

## Introduction:

The City of San Diego developed the Master Storm Water System Maintenance Program to optimize its business processes and environmental protection practices related to channel operation and maintenance activities. The MMP is intended to integrate operation and maintenance planning, implementation and assessment activities with its water quality protection programs. This document provides a summary of the IHHA activities conducted

within South Chollas Creek MMP Map 101; southwest of the City of San Diego and the City of Lemon Grove boundary (reference point 32°43'46.18"N; 117°03'51.01"W, Latitude and Longitude) and northeast of Federal Boulevard.

Based on the IHHA assessment, portion of South Chollas Creek MMP Map 101 are subject to sediment deposition and vegetation establishment. The establishment of vegetation in the deposited material contributes to the reduction in velocities, and in turn encourages more sediment to deposit. Maintenance will not resolve all of the flooding issues within South Chollas Creek MMP Map 101, but will significantly assist in reducing the flood event occurrence frequency by increasing the capacity of the channel.

The following sections of this IHHA will describe in detail the analysis and results following channel conditions: current vegetated condition, ultimate vegetated condition, maintained condition-vegetation only, maintained condition – sediment and vegetation, and recommended maintenance condition – partial sediment and vegetation removal.

## EXISTING CONDITIONS

### **Description of creek/channel (limits of reach, surrounding land use and area, creek/channel geometry and vegetative condition):**

South Chollas Creek MMP Map 101 is a drainage channel, located southwest of the City of San Diego and the City of Lemon Grove boundary and south of State Route 94. A City of Lemon Grove flood control channel discharges into the upstream end of South Chollas Creek MMP Map 101, a City of San Diego flood control channel, west of the intersection between Winnett Street and Federal Boulevard. From there the channel flows in a south-westerly direction crossing underneath a single span bridge, 20 feet wide by 11 feet high, at Federal Boulevard. The single span bridge at Federal Boulevard is the downstream limit of the hydraulic analysis. South Chollas Creek Channel continues downstream and confluences with the Encanto Channel which then confluences with the Chollas Creek Channel and ultimately discharge into the San Diego Bay. See Attachment 2 – Vicinity Map for a general project area.

For the purposes of the study, the channel within the area of study has been divided into three reaches: Reach 1, Reach 2, and Reach 3. The three reaches of South Chollas Creek Channel study limits have been identified as:

- Reach 1 - HEC-RAS Cross Sections 28.064 to 292.825 (for hydraulic analysis only)
- Reach 2 - HEC-RAS Cross Sections 292.825 to 976.670
- Reach 3 – HEC-RAS Cross Sections 976.670 to 2306.424

The limits of these Reaches are identified in the hydraulic work maps located in Attachment 3. Unless otherwise stated in the descriptions below, it is the responsibility of the City of San Diego to maintain the channel reaches within their jurisdictional boundaries as identified in the hydraulic work map.

The following text discusses the limits and configuration of each Reach:

#### Reach 1: (HEC-RAS Cross Sections 28.064 to 292.825) Unmapped Area

Reach 1 is bound from the downstream end by an earthen section of South Chollas Creek Channel and extends underneath the single span, 20 feet wide by 11 feet high, bridge at Federal Boulevard. Reach 1 is entirely earthen and trapezoidal through the reach, having a bottom width of approximately 20 feet, a minimum depth of approximately 9 feet, and side slopes of 1.5 feet horizontal to 1 foot vertical (1.5H:1V). Reach 1 is not analyzed for maintenance but has been included for the downstream boundary condition in the hydraulic analysis.

#### Reach 2: (HEC-RAS Cross Sections 292.825 to 976.670) MMP Map 101

The downstream limit of Reach 2 is the upstream limit of Reach 1, the upstream end of the single span, 20 feet wide by 11 feet high bridge at Federal Boulevard. Reach 2 extends approximately 600 feet to the downstream limit of Reach 3, a change in channel materials from 2 ton rip-rap to concrete lined. Pursuant to the Grading Plan, Parcels 1, 2, 3, & 4 For Proposed Parcel Map, T.M 01-275-0 as-built plan sheet 20039-5-D prepared by Charles R. Crull on May 18, 1981, Reach 2 is an earthen channel with a retaining wall on the left overbank (when looking downstream) for approximately 550 feet upstream of the bridge at Federal Boulevard. The channel then transitions to a 2-ton rip-rap lined channel for approximately 50-feet until the downstream limit of

Reach 3 (the change in channel material from rip-rap to concrete). In the 1981 as-built condition, the earthen and rip-rap lined channel have a geometry consisting of a bottom width of 24 feet, right side slope (looking downstream) of 1.5H:1V, a vertical concrete retaining for the left side slope (looking downstream), and a minimum depth of 6 feet (channel limits pursuant to as-built plans). As observed during the site visit performed on November 9, 2016, Reach 2 contains dense vegetation along the channel bottom and side slope throughout the earthen and rip-rap lined section.

**Reach 3: (HEC-RAS Cross Sections 976.670 to 2306.424) MMP Map 101**

The downstream limit of Reach 3 is the upstream limit of Reach 2, the transition in channel materials from rip-rap lined to concrete lined. Reach 3 extends approximately 1,140 feet upstream as a concrete lined trapezoidal channel. Reach 3 then transitions to a rectangular concrete channel for approximately 175 feet upstream before reaching the City of Lemon Grove flood control channel. Pursuant to the Grading Plan Encanto Industrial Park as-built plan sheet 14482-6-D prepared by Lawrence, Fogg, Smith and Associates on February 22, 1971, the concrete line channel has a trapezoidal geometry with a bottom width of 8 feet, a minimum depth of 5-feet 9-inches and side slopes of 1.5H:1V (channel limit pursuant to as-built plans). Pursuant to the Plans for The Improvement in and Adjacent To Encanto Industrial Park as-built plan sheet 14482-4-D prepared by Lawrence, Fogg, Smith and Associates on February 22, 1971, the concrete line channel has a rectangular geometry with a bottom width of 20 feet and a minimum depth of 4 feet (channel limit pursuant to as-built plans). As observed during the site visit performed on November 9, 2016, Reach 3 contains sparse vegetation along the channel bottom with no vegetation along the channel side slopes.

**Hydrologic information (source of hydrologic information, summary of flow rates and return frequencies):**

South Chollas Creek Channel MMP Map 101 is Federal Emergency Management Agency (FEMA) mapped, as seen in the FEMA Firmette and FEMA Flood Insurance Study (FIS) dated April 5, 2016 located in Attachment 6. The hydrologic information used for the South Chollas Creek Channel analysis is based on the FEMA’s 2016 FIS for San Diego County. The FIS provided the 10-, 50-, and 100-year flow rate information for South Chollas Creek. This flow rate information was then plotted on log-probability paper to determine a flow rate distribution. From this flow rate distribution, flow rates were determined and equated to a return frequency storm event. See Attachment 6 for a copy the log-probability paper used to extrapolate the return frequency storm events. Table 1 below shows extrapolated and 2016 San Diego FIS Flow Rates:

**Table 1: Flow Rates**

Storm Event	Q (cfs)	Source
2-Year	167	Extrapolated
5-Year	370	Extrapolated
10-Year	580	2016 San Diego FIS
25-Year	830	Extrapolated
50-Year	1,100	2016 San Diego FIS
100-Year	1,500	2016 San Diego FIS

*Notes:*

- 1) *cfs = cubic feet per second*
- 2) *Noted flowrates were extrapolated from the 2016 FEMA FIS using a log-probability relationship*

**Hydraulic analyses (description of hydraulic models created for project):**

The US Army Corps of Engineers Hydraulic Engineering Center River Analysis System (HEC-RAS) Version 4.1.0 was used to analyze the hydraulic characteristics of South Chollas Creek Channel. HEC-RAS has the ability to perform one-dimensional hydraulic calculations for natural and engineered channels, by utilizing the energy equation and the momentum equation. For the purposes of this project, all HEC-RAS modeling was performed using a mixed flow regime.

Hydraulic modeling was prepared for four channel conditions that consist of the Current Vegetated Condition, Ultimate Vegetated Condition, Maintained Condition – Vegetation Only, and Maintained Condition – Sediment and Vegetation removed. All of the analyses are based on the 2014 Lidar data for the City of San Diego, 2-foot contour topographic information. The topography and the hydraulic modeling performed for South Chollas Creek Channel are all on the North American Vertical Datum of 1988 (NAVD 88).

The downstream limit of South Chollas Creek Channel MMP Map 101 is the upstream end of the single span bridge at Federal Boulevard. In order to determine the downstream boundary conditions at the bridge, the bridge and channel downstream of the bridge were modeled in HEC-RAS to determine the water surface elevations at the bridge. HEC-RAS performs inlet and outlet calculations for the bridge model to determine water surface elevations upstream and downstream of the bridge. The downstream boundary condition for the HEC-RAS model was a normal depth calculation of the channel downstream of the bridge at Federal Boulevard. The additional channel added to the HEC-RAS analysis was named Reach 1 and is only used for hydraulic computations of the downstream boundary condition.

As-builts for the channel were gathered and referenced, when applicable, for the various models created. Table 2 below, lists the as-builts utilized for the South Chollas Creek Channel.

**Table 2**

Plan Number	Reach	Description
20039-01, 03 & 05 -D	Reach 2	Plans for The Improvement of Federal Boulevard Between 60 <sup>th</sup> Street & State Highway 94 (For Proposed T.M. 01-275-0) – City of San Diego, As Built May 18, 1981 by Charles R. Crull
14482-1, 4, 5 & 6 – D	Reach 3	Plans for The Improvements in and Adjacent to Encanto Industrial Park – City of San Diego, As Built February 22, 1971 by Lawrence, Fogg, Smith and Associates

The following provides general descriptions of hydraulic analyses/models that were prepared for this area of study:

**Current Vegetated Condition:**

The hydraulic analysis for the Current Vegetated Condition was created to reflect the current vegetation of the channel and determine the actual channel capacity. A field visit was performed on November 9, 2016 to determine and evaluate the Manning Roughness Coefficients, channel conditions, and channel properties within South Chollas Creek Channel to include in the model for the Current Vegetated Condition.

Based on the site visit, 2014 Lidar topography, and as-built plans, the following factors for each reach were all incorporated into the Current Vegetated Condition model:

Reach 1:

Manning Roughness Coefficient of 0.04 to 0.055 was used in portions within the channel to reflect dense growth of weeds and trees in the channel with branches submerged at flood stage. The area outside of the channel has medium to dense brush and received a coefficient between 0.05 to 0.075. Manning Roughness Coefficients of 0.018 was used within the single span bridge at Federal Boulevard to reflect concrete with no vegetation or sedimentation. The channel bottom under the bridge at Federal Boulevard received a coefficient of 0.02 to reflect standing water under the bridge. Reach 1 is not proposed for maintenance and is included only for the hydraulic analysis of Reach 2 and Reach 3.

Reach 2:

As observed during the site visit performed on November 9, 2016, the upstream end of Reach 2 contains dense invasive vegetation such as arundo and palm trees along with sedimentation in the 2-ton rip-rap section, receiving a Manning Roughness Coefficient ranging from 0.09 to 0.10. The downstream portion of the earthen channel showed signs of erosion however the channel still contained dense vegetation. The erosion sections received coefficient between 0.03 and 0.05 while the dense vegetation sections received a coefficient between 0.05 and 0.07. The area south of the channel (outside of the channel limits) is a paved commercial development

thus receiving a coefficient of 0.018. The area north of the channel (outside of the channel limits) has medium to dense brush and received a coefficient ranging from 0.05 to 0.07.

Reach 3:

Manning Roughness Coefficients of 0.018 was used to reflect the concrete trapezoidal and rectangular channel with no vegetation or sedimentation. At the downstream end of Reach 3, there was approximately 50 feet of grouted 2 ton rip-rap along the right over bank, thus receiving a coefficient of 0.042. The grouted 2-ton rip-rap only exist within Reach 3 of South Chollas Creek. Portions along the bottom of the concrete channel had minor sediment deposition and light vegetation growth thus receiving a coefficient of 0.03. The area south of the channel (outside of the channel limits) is a paved commercial development thus receiving a coefficient of 0.018. The area north of the channel (outside of the channel limits) has medium to dense brush and received a coefficient ranging from 0.05 to 0.07.

See the site photos in Attachment 1 for a visual on the site visit observations and determinations listed above.

**Ultimate Vegetated Condition:**

The Ultimate Vegetated Condition reflects dense vegetation throughout the entire channel reach, which assumes that in absence of maintenance, the vegetation that currently exists in the channel will become denser. This dense vegetation will reduce velocities. The slower velocities will cause sediment to drop out and ultimately cause deposition and vegetation throughout the channel reach, including the fully concrete lined portions. The vegetation will further decrease the capacity of the channel and potentially cause flooding to occur more frequently.

To establish this ultimate vegetated condition in this hydraulic model, for the above-described limits of study, a Manning Roughness Coefficients of 0.15 was used in the channel bottom only for the concrete lined silted channel reach and for the entire earthen channel reach. Please note, the Manning Roughness Coefficients within Reach 1 were not adjusted since Reach 1 is only included for the downstream boundary condition in the hydraulic analysis.

**Maintained Condition-Vegetation Only (No sediment removed):**

This Maintained Condition-Vegetation Only (no sediment removed) assumes vegetation-only maintenance of the channel. This maintained condition models vegetation currently along the length of the channel to be cut down to just above the sediment level.

For the above-described limits of maintenance, to establish the maintained condition-vegetation only in this hydraulic model, the Manning Roughness Coefficient of 0.035 was utilized for the bottom of the channel where vegetation occurred. The portions of the channel that are concrete lined where no vegetation and sediment exist, the Manning Roughness Coefficient of 0.018 was utilized.

Additional Note:

For the Maintained Condition-Vegetation Only (No sediment removed) model prepared, it is important to note that the Manning Roughness Coefficients for the portions of the cross sections outside of the reach limits of the channel were kept the same as the current vegetated condition. Please note, the Manning Roughness Coefficients within Reach 1 were not adjusted since Reach 1 is only included for the downstream boundary condition in the hydraulic analysis.

**Maintained Condition-Sediment and Vegetation removed:**

In addition to the Vegetation-Only Maintenance, a Maintained Condition was also prepared that modeled the removal of sediment and vegetation that has deposited over the years, based on review of as-built information, 2014 Lidar topographic information and field reconnaissance. It was determined that sediment deposition has occurred at the upstream end of Reach 2 within the 2 ton rip-rap section of channel. Also, this maintained condition models the historic as-built channel configuration, with no sediment and no vegetation along the length of the channel.

For the Sediment and Vegetation Removal condition, the channel bottom was adjusted to reflect the historic slope and flow lines of the channel. The earthen channel cross section and slope was based on As-built information for Reach 2. The concrete trapezoidal and rectangular geometry and slope was based on As-built information for Reach 3.

A Manning Roughness Coefficient of 0.03 was used for the bottom and side slopes of the earthen channel in Reach 2 to reflect as-built condition. A Manning Roughness Coefficient of 0.049 was for the bottom and side slopes of the 2-ton rip-rap lined section of channel in Reach 2 to reflect as-built condition. A Manning Roughness Coefficient of 0.018 was used for the bottom and the sides of the concrete channel throughout Reach 3 to reflect as-built condition.

**Additional Note:**

For the model prepared for the Maintained Condition-Sediment and Vegetation removed, it is important to note that the Manning Roughness Coefficients for the portions of the cross sections outside of the limits of the channel were kept the same as the current vegetated condition (please see Current Vegetated Condition for channel limits). Please note, the Manning Roughness Coefficients within Reach 1 were not adjusted since Reach 1 is only included for the downstream boundary condition in the hydraulic analysis.

**Recommended Maintained Condition – Partial Sediment and Vegetation Removal:**

In addition to the sediment and vegetation removal maintenance condition, a Recommended Maintained Condition was prepared to limit velocity increases within the earthen channel section of South Chollas Creek (Reach 2). The Recommended Maintained Condition modeled the removal of sediment and vegetation along the 2 ton rip-rap section of channel (between HEC-RAS Cross Sections 976.669 - 926.753, the upstream end of Reach 2) and vegetation maintenance within Reach 3 between HEC-RAS Cross Sections 976.670 to 2098.664. The 2 ton rip-rap lined sections is directly downstream of the concrete lined section listed in Reach 3, and is approximately 50 feet in length (pursuant to as-built plan 20039-5-D prepared by Charles R. Crull on November 22, 1985). The portion of Reach 3 recommended for maintenance is from the City of San Diego access/staging area located at 6184 Federal Boulevard to the upstream limit of Reach 2 (approximately 1,160 feet in length). The remaining channel segments upstream of HEC-RAS Cross Section 2098.664 and downstream of HEC-RAS Cross Section 926.753 are not proposed to be maintained thus were kept the same as the Current Vegetated Condition. It was determined that sediment deposition has occurred at the upstream end of Reach 2 within the 2 ton rip-rap section of channel. The Recommended Maintained Condition models the historic as-built channel configuration, with no sediment and no vegetation at the upstream end of Reach 2 (between HEC-RAS Cross Sections 976.669 - 926.753) and vegetation trimming up to the sediment layer within a portion of Reach 3 (between HEC-RAS Cross Sections 976.670 to 2098.664).

For the Recommended Maintained Condition - Partial Sediment and Vegetation Removal, the channel bottom between HEC-RAS Cross Sections 976.669 - 926.753 was adjusted to reflect the historic slope and flow lines of the channel.

A Manning Roughness Coefficient of 0.049 was used for the bottom and side slopes of the channel between HEC-RAS Cross Sections 976.669 - 926.753 to reflect the as-built condition (2-ton rip-rap lined). A Manning Roughness Coefficient of 0.018 was used for the bottom and side slopes of the channel between HEC-RAS Cross Sections 976.670 to 2098.664 to reflect the concrete channel with vegetation maintenance. The areas of channel upstream of HEC-RAS Cross Section 2098.664 and downstream of HEC-RAS Cross Section 926.753 are not proposed to be maintained thus utilize a Manning Roughness Coefficient identified in the Current Vegetated Condition.

**Additional Note:**

For the model prepared for the Recommended Maintained Condition - Partial Sediment and Vegetation Removal, it is important to note that the Manning Roughness Coefficients for the portions of the cross sections outside of the limits of the channel were kept the same as the Current Vegetated Condition. Please note, the Manning Roughness Coefficients within Reach 1 were not adjusted since Reach 1 is only included for the downstream boundary condition in the hydraulic analysis.

**MAINTENANCE IMPACTS**

**Hydraulics Results (Describe capacity of channel for each condition):**

Based on the hydrologic and hydraulic assessment for this area of study, maintenance is proposed in portions of South Chollas Creek Channel. Additionally, the maintenance proposed (in the selected portions) in the channel is vegetation and sediment removal from the bottom and side slopes of the channel reach. The results of the hydraulic analyses describe these benefits in more detail. Please see Tables 3 through 8 below for channel capacity, storm event and approximate 6-hour precipitation data. It is important to note the approximate 6-hour precipitation data for each Reach was calculated by linear interpolation between 6-hour precipitation data from the 2003 San Diego County Hydrology Manual and approximate flow rates from the 2016 San Diego FEMA FIS Flow Rates.

**Current Vegetated Condition :**

**Table 3**

<b>Current Vegetated Condition Capacity</b>			
<b>Reach</b>	<b>Approximate Flow Rate (cfs)</b>	<b>Storm Event (years)</b>	<b>Approximate 6-Hour Precipitation (inches)</b>
1	Reach 1 only used for the downstream boundary condition in the hydraulic analysis		
2	800	10-year	1.8 inches
3	1,500	100-year	2.6 inches

The hydraulic model determined that South Chollas Creek Channel, based on the vegetated and sediment condition observed during the site visit, has a 10-year event capacity in Reach 2 and a 100-year event capacity in Reach 3.

Pursuant Table 1-104.10A of the City of San Diego’s Drainage Design Manual, the recommended permissible velocity for Reach 2 of South Chollas Creek, assuming a graded material (loam to gravel), is 6.5 feet per second (fps). The Current Vegetated Condition modeled indicates that velocities in Reach 2, from HEC-RAS Cross-Section 524.6492 to Cross-Section 915.6229 will range from a minimum of 1.7 fps (HEC-RAS Cross-Section 684.4379) to a maximum of 7.4 fps (HEC-RAS Cross-Section 781.5157).

Note: Reach 1 is only used for the downstream boundary condition in the hydraulic analysis therefore the capacity of Reach 1 was not determined.

**Ultimate Vegetated Condition:**

**Table 4**

<b>Ultimate Vegetated Condition Capacity</b>			
<b>Reach</b>	<b>Approximate Flow Rate (cfs)</b>	<b>Storm Event (years)</b>	<b>Approximate 6-Hour Precipitation (inches)</b>
1	Reach 1 only used for the downstream boundary condition in the hydraulic analysis		
2	370	5-year	1.6 inches
3	370	5-year	1.6 inches

The hydraulic model determined that South Chollas Creek Channel (Map 101), based on the ultimate vegetated condition has capacity of a 5-year storm event in Reach 2 and Reach 3.

Note: Reach 1 is only used for the downstream boundary condition in the hydraulic analysis therefore the capacity of Reach 1 was not determined.



**Maintained Condition-Vegetation Only (No sediment removed):**

The hydraulic models determined that vegetation maintenance only would have the following benefits when compared to the current vegetated condition:

**Table 5**

<b>Maintained Condition – Vegetation Only Capacity</b>			
<b>Reach</b>	<b>Approximate Flow Rate (cfs)</b>	<b>Storm Event (years)</b>	<b>Approximate 6-Hour Precipitation (inches)</b>
1	Reach 1 only used for the downstream boundary condition in the hydraulic analysis		
2	830	25-year	2.1 inches
3	1,500	100-year	2.6 inches

In Reach 3, the vegetation only maintenance would have minimal impacts to the current condition scenario, and channel capacity and water surface elevations were found to be generally similar in both conditions modeled.

Overall, vegetation maintenance decreases the frequency of flooding and decreases water surface elevations in the earthen segment of the channel, Reach 2, but does not significantly decrease the water surface elevations or improve the channel capacity in the concrete lined portion of the channel, Reach 3.

Vegetation maintenance only will result in increased velocities in Reach 2 that exceed the recommended permissible velocity for an unlined channel of this type. Per Table 1-104.10A of the City of San Diego’s Drainage Design Manual, the recommended permissible velocity for Reach 2 of South Chollas Creek, assuming a graded material (loam to gravel), is 6.5 fps. The modeled condition indicates that velocities in Reach 2, from HEC-RAS Cross-Section 524.6492 to Cross-Section 915.6229 will range from a minimum of 5.0 fps (HEC-RAS Cross-Section 684.4379) to a maximum of 16.9 fps (HEC-RAS Cross-Section 781.5157). Furthermore, the vegetation only maintenance condition will increase the velocities observed in Reach 2 compared to the current condition model. Vegetation only maintenance is not the preferred maintenance method.

Note: Reach 1 is only used for the downstream boundary condition in the hydraulic analysis therefore the capacity of Reach 1 was not determined.

**Maintained Condition-Sediment and Vegetation removed:**

The hydraulic models determined that sediment and vegetation removal would have the following benefits when compared to the current vegetated condition:

**Table 6**

<b>Maintained Condition – Vegetation Only Capacity</b>			
<b>Reach</b>	<b>Approximate Flow Rate (cfs)</b>	<b>Storm Event (years)</b>	<b>Approximate 6-Hour Precipitation (inches)</b>
1	Reach 1 only used for the downstream boundary condition in the hydraulic analysis		
2	1,100	50-year	2.3 inches
3	1,500	100-year	2.6 inches

The downstream segment of Reach 2, at HEC-RAS Cross Section 417.4621, remained at a 50-year storm event capacity in both the current vegetated state and the maintained condition due to the inlet control of the bridge at Federal Boulevard. In the HEC-RAS hydraulic analysis, a tailwater condition is observed for 150 feet upstream of the existing bridge at Federal Boulevard.

In Reach 3, the combined vegetation and sediment removal maintenance would slightly increase the water surface elevations in the channel reach, but would have minimal impacts to the channel capacity, compared to the current vegetated condition scenario.

Vegetation and sediment removal maintenance will result in increased velocities in Reach 2 that exceed the recommended permissible velocity for an unlined channel of this type. Per Table 1-104.10A of the City of San Diego’s Drainage Design Manual, the recommended permissible velocity for Reach 2 of South Chollas Creek,

assuming a graded material (loam to gravel), is 6 fps. The modeled condition indicates that velocities in Reach 2, from HEC-RAS Cross-Section 417.4621 to Cross-Section 915.6229 will range from a minimum of 4.33 fps (Cross-Section 417.4621) to a maximum of 20.36 fps (Cross-Section 915.6229). Ultimately, the vegetation and sediment maintenance condition will increase the velocities observed in Reach 2 compared to the current condition model. Vegetation and Sediment maintenance is not the preferred maintenance method.

Note: Reach 1 is only used for the downstream boundary condition in the hydraulic analysis therefore the capacity of Reach 1 was not determined.

**Recommended Maintained Condition – Partial Sediment and Vegetation Removal:**

The hydraulic models determined that partial sediment and vegetation removal between HEC-RAS Cross Sections 2098.664 - 926.753 would have the following benefits when compared to the current vegetated condition:

**Table 7**

<b>Maintained Condition – Vegetation Only Capacity</b>			
<b>Reach</b>	<b>Approximate Flow Rate (cfs)</b>	<b>Storm Event (years)</b>	<b>Approximate 6-Hour Precipitation (inches)</b>
1	Reach 1 only used for the downstream boundary condition in the hydraulic analysis		
2	830	25-year	2.1 inches
3	1,500	100-year	2.6 inches

The downstream segment of Reach 2, at HEC-RAS Cross Section 417.4621, remained at a 50-year storm event capacity in both the current vegetated state and the recommended maintained condition due to the inlet control of the bridge at Federal Boulevard. In the HEC-RAS hydraulic analysis, a tailwater condition is observed for 150 feet upstream of the existing bridge at Federal Boulevard.

Partial sediment and vegetation removal maintenance will result in increased velocities between HEC-RAS Cross Sections 976.669 - 926.753 to a maximum velocity of 5.5 fps. The channel segment between HEC-RAS Cross Sections 976.669 - 926.753 is 2-ton rip-rap lined in the as-built condition. Pursuant to the San Diego County Hydraulics Design Manual dated September 2014, Table 5-3, 2-ton rip-rap has a maximum design velocity of 18 fps. It is important to note, the channel segment downstream of the Recommended Maintained Condition (downstream of HEC-RAS Cross Sections 926.753) will not have an increase velocity over the Current Vegetation Condition. Partial sediment and vegetation removal between HEC-RAS Cross Sections 2098.664 - 926.753 increases flood capacity while keeping channel velocities the same as the Current Vegetated Condition

Note: Reach 1 is only used for the hydraulic analysis of Reach 2 and 3 therefore the capacity of Reach 1 was not determined.

Table 8 below compares the hydraulic analysis conducted: Current Vegetated, Ultimate Vegetated, Maintained Condition – Vegetation Only, Maintained Condition – Sediment and Vegetation removed and Recommended Maintained Condition – Partial Sediment and Vegetation Removal.

Table 8 - South Chollas Creek Channel, Map 101 Channel Capacity and 100-year Flow Rate Water Surface Elevation

Reach	River Sta	Current Vegetated Condition Storm Event (year)	Current Vegetated Condition Capacity (cfs)	Current Vegetated Condition 100-year WSEL (feet)	Ultimate Condition Storm Event (year)	Ultimate Condition Capacity (cfs)	Ultimate Condition 100-year WSEL (feet)	Vegetation Maintenance Only Storm Event (year)	Vegetation Maintenance Only Capacity (cfs)	Vegetation Maintenance Only 100-year WSEL (feet)	Sediment and Vegetation Removal Storm Event (year)	Sediment and Vegetation Removal Capacity (cfs)	Sediment and Vegetation Removal 100-year WSEL (feet)	Recommended Maintenance Storm Event (year)	Recommended Maintenance Capacity (cfs)	Recommended Maintenance 100-year WSEL (feet)
Reach 3	2306.424	100	1500	279.09	5	370	280.41	100	1500	278.47	100	1500	278.72	100	1500	279.09
Reach 3	2200	100	1500	275.29	5	370	277.96	100	1500	274.62	100	1500	275.02	100	1500	275.29
Reach 3	2098.664	100	1500	272.83	5	370	276.84	100	1500	272.07	100	1500	271.44	100	1500	272.6
Reach 3	2000	100	1500	271.83	5	370	275.21	100	1500	271	100	1500	271.16	100	1500	271.33
Reach 3	1800	100	1500	268.9	5	370	272.15	100	1500	268.25	100	1500	268.35	100	1500	268.34
Reach 3	1600	100	1500	265.89	5	370	269.02	100	1500	265.29	100	1500	265.4	100	1500	265.32
Reach 3	1400	100	1500	262.89	10	580	265.59	100	1500	262.43	100	1500	262.41	100	1500	262.44
Reach 3	1200	100	1500	259.89	10	580	262.44	100	1500	259.47	100	1500	259.41	100	1500	259.47
Reach 3	1004.18	100	1500	256.66	10	580	258.81	100	1500	256.29	100	1500	256.47	100	1500	256.29
Reach 2	976.6697	100	1500	254.86	5	370	256.47	100	1500	254.57	100	1500	255.98	100	1500	254.58
Reach 2	926.7529	10	580	256.91	5	370	257.91	100	1500	255.65	100	1500	252.68	25	830	256.92
Reach 2	915.6229	10	580	256.28	5	370	257.03	50	1100	255.35	100	1500	252.74	25	830	256.22
Reach 2	781.5157	100	1500	253.58	50	1100	255.5	100	1500	250.57	100	1500	251.95	100	1500	253.58
Reach 2	684.4379	100	1500	251.89	100	1500	253.98	100	1500	250.85	100	1500	250.35	100	1500	251.89
Reach 2	599.9999	100	1500	251.04	100	1500	252.58	100	1500	250.82	100	1500	250.6	100	1500	251.04
Reach 2	524.6492	100	1500	250.88	100	1500	251.06	100	1500	250.84	100	1500	250.61	100	1500	250.88
Reach 2	417.4621	50	1100	251.07	50	1100	251.02	50	1100	251.06	50	1100	251.04	50	1100	251.07
Reach 2	362.8132	Bridge at Federal Boulevard														
Reach 1	292.8245	100	1500	239.24	100	1500	239.24	100	1500	239.24	100	1500	239.24	100	1500	239.24
Reach 1	147.2868	100	1500	239.26	100	1500	239.26	100	1500	239.26	100	1500	239.26	100	1500	239.26
Reach 1	28.06381	100	1500	237.83	100	1500	237.83	100	1500	237.83	100	1500	237.83	100	1500	237.83

Notes:

If the water surface elevation (WSEL), at the specified HEC-RAS Cross Section, is negative "-" then the WSEL of the specified condition is lower than the WSEL of the Current condition.

If the water surface elevation (WSEL), at the specified HEC-RAS Cross Section, is positive "+" then the WSEL of the specified condition is higher than the WSEL of the Current condition.

Legend:

"WSEL" Water Surface Elevation  
 "ft" feet

**Areas within channel that can be avoided (this section can be completed upon completion of Individual Biological Assessment Form):**

The Individual Biological Assessment (IBA) (HELIX 2017) identified the following vegetation communities present within the South Chollas Creek Map #101: Diegan coastal sage scrub on either side of the concrete-lined channel with patches of disturbed wetland dominated by *Arundo*, disturbed southern willow scrub, non-native vegetation composed of Mexican fan palms, southern riparian forest dominated by willows, freshwater marsh dominated by Southwestern spiny rush (*Juncus acutus ssp. leopoldii*), and disturbed land. Southwestern spiny rush is considered moderately threatened in California by the California Native Plant Society (CNPS), however due to its low sensitivity (CNPS list 4.2) and considering its location within the concrete-lined channel, it does not warrant avoidance. The IBA concluded that the small disturbed wetland areas need not be avoided. However, it recommended mature native riparian trees with a diameter at breast height [dbh] greater than 3 inches be retained to the extent feasible. Mature native riparian trees located within the 2 ton riprap lined section of Reach 2 (between HEC-RAS Cross Section 926.753 to 976.670) are infeasible to avoid without reducing hydraulic capacity; thus the proposed maintenance to increase hydraulic capacity is still recommended.

**Would the velocity of storm water during a “bank-full” storm event exceed the velocities identified for unlined channels per Table 1-104.108 of the City’s Design Manual? If so, describe the appropriate form of erosion control (e.g., check dam or comparable mechanism).**

No. Based on the velocities in the current vegetated condition verse the velocities in the Recommended Maintained Condition - partial vegetation and sediment removal, it was determined in the above hydraulic analyses, that downstream check dams are not necessary.

**MITIGATION**

**Conclusion/Recommendations (Describe the limits of recommended maintenance, degree to which native vegetation within the facility can be retained, and capacity of maintained channel):**

The Program Environmental Impact Report (PEIR) for the Master Maintenance Program lists 4 alternatives that would help reduce the need for regular channel maintenance. The alternatives are listed below, followed by a response applicable to the South Chollas Creek Channel. Responses are based solely on the hydrologic and hydraulic analyses completed in this IHHA, additional studies may be necessary to fully assess the feasibility of these alternatives.

**Raising the channel banks and constructing walls or berms along the top of the channels:**

The South Chollas Creek Channel is bound to the South by industrial properties and to the North by State Route 94. Construction of walls or berms along the channel could raise water surface elevations causing additional flooding potential and negative impacts to upstream properties or State Route 94.

**Diverting storm water in pipes around constrained segments:**

The South Chollas Creek Channel is bound to the South by industrial properties and to the North by State Route 94. Due to the inlet control of the bridge at Federal Boulevard a tailwater condition is observed for 150 feet upstream of the existing bridge. Construction of diversion pipes around the existing bridge or upsizing the bridge may be possible to alleviate the back water, but studies would need to be performed to analyze the cost and the feasibility of constructing the diversion pipes. Additionally, the downstream reach, would need to be analyzed for hydraulic capacity and performance.

**Widening the channels to accommodate vegetation:**

The South Chollas Creek Channel is bound to the South by industrial properties and to the North by State Route 94. There is no room to widen the channel without encroaching on adjacent private properties or into Caltrans right of way. Further studies would need to be performed to analyze cost and feasibility of widening South Chollas Creek Channel to increase flood capacity and reduce vegetation grown.

**Reducing off-site runoff generation through use of low impact development measures:**

Low impact development measures are based on the 85<sup>th</sup> percentile flow and would not impact the flood flow rates in the channel.

**Conclusion/Recommendations:**

Several hydraulic models were created to determine the limits of maintenance. It is important to note, pursuant to Plans For The Improvement Of Federal Boulevard Between 60<sup>th</sup> Street & State Highway 94 (For Proposed T.M. 01-275-0) – City of San Diego, As Built Drawing Number 20039-3-D November 22, 1985 by Charles R. Crull, the maximum velocity listed on the as-built plans is 9.3 fps which does not meet current permissible velocity standards for an earthen channel as listed in Table 1-104.10A of the City of San Diego’s Drainage Design Manual. Therefore, the Recommended Maintenance condition was provided to limit erosive velocity in the channel pursuant to the City of San Diego’s Drainage Design Manual, while increasing flood capacity of South Chollas Creek. As such, it was determined South Chollas Creek Channel is proposed for partial vegetation and sediment removal for the following HEC-RAS Cross Sections:

- Reach 1 (HEC-RAS Cross Sections 28.064 to 292.825) – was not analyzed for maintenance but included for the downstream boundary condition in the hydraulic analysis.
- Reach 2 (HEC-RAS Cross Section 292.825 to 926.753) - maintenance not proposed.
- Reach 2 (HEC-RAS Cross Section 926.753 to 976.670) – sediment and vegetation removal is proposed and will increase the capacity from a 10-year to a 25-year storm event.
- Reach 3 (HEC-RAS Cross Sections 976.670 to 2098.664) – vegetation removal preserves the current 100- year capacity.
- Reach 3 (HEC-RAS Cross Sections 2098.664 to 2306.424) –maintenance not proposed.

Please see Attachment 15 for the Recommended Maintenance HEC-RAS analysis.

For sediment and vegetation removal locations as listed above, it is proposed the channel be maintained to its as-built condition. For the portion of maintenance within Reach 2, as-built drawing 20039-5-D prepared by Charles R. Crull on November 22, 1985 was used for the channel cross section, and as-built drawing 20039-3-D prepared by Charles R. Crull on November 22, 1985 was used for the channel profile. The proposed areas of maintenance include the 2 ton rip-rap lined section of channel, directly downstream of the concrete lined section listed in Reach 3 (approximately 50 feet in length), and a portion of Reach 3, from the access/staging area located at 6184 Federal Boulevard to the upstream limit of Reach 2 (approximately 1,160 feet in length). The overall capacity for the South Chollas Creek MMP Map 101 including the described maintenance conditions above, would be 25-year storm event however, it is important to note sediment and vegetation removal (in selected portions of the channel) will increase the channels capacity and decrease water surface elevation, thus decreasing the overall flooding limits.

It is also important to note if South Chollas Creek Channel is to be returned to as-built condition (maintained condition - sediment and vegetation removal) additional studies must be conducted to determine erosion control devices to mitigate erosive velocities in the earthen sections of channel (Reach 2). This report does not recommend complete sediment and vegetation removal from all channel reaches, thus erosion control devices were not designed for the earthen channel sections of South Chollas Creek Channel.

**ADDITIONAL COMMENTS OR RECOMMENDATIONS**

**Additional Comments:**

Pursuant to the field visit conducted on November 9, 2016, scour was observed along the abutments of the single span bridge at Federal Boulevard. The as-built plans for the single span bridge at Federal Boulevard could not be located, thus the abutment foundation depths are unknown. Additional studies may be required to determine if any adverse impacts have been caused due to the scour along the single span bridge at Federal Boulevard.

## **LIST OF ATTACHMENTS:**

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- Attachment 1 - Site Photos
- Attachment 2 – Vicinity Map
- Attachment 3 – Hydraulic Workmap
- Attachment 4 – Photo Location Map
- Attachment 5 – As-Built Plans
- Attachment 6 – FEMA Firmette and FEMA FIS
- Attachment 7 - Hydraulic Profiles for Current Vegetated Condition Model
- Attachment 8 - Hydraulic Profiles for Ultimate Vegetated Condition Model
- Attachment 9 - Hydraulic Profiles for Maintained Condition Model – Vegetation Only (No Sediment Removed)
- Attachment 10 – Hydraulic Profiles for Maintained Condition Model – Sediment and Vegetation Removed
- Attachment 11 - Detailed Hydraulic Results for Current Vegetated Condition Model
- Attachment 12 - Detailed Hydraulic Results for Ultimate Vegetated Condition Model
- Attachment 13 - Detailed Hydraulic Results for Maintained Condition Model – Vegetation Only (No Sediment Removed)
- Attachment 14 - Detailed Hydraulic Results for Maintained Condition Model – Sediment and Vegetation Only
- Attachment 15 – Hydraulic Profiles and Detailed Hydraulic Results for Recommended Maintenance Condition

**Attachment 1 - SITE PHOTOS:**

Date of Site Visit: November 9, 2016. See Hydraulic Workmap in Attachment 4 for picture locations and orientation.

1.



Downstream portion of Reach 1 viewing north-east at the channel and downstream end of the single span bridge at Federal Boulevard.

2.



Upstream portion of Reach 1 viewing north-east underneath the bridge at Federal Boulevard (please note the v-notch weir flow indicator).

3.



Downstream portion of Reach 2 viewing north-east underneath the bridge at Federal Boulevard. Please note the scour along the abutments.

4.



Downstream portion of Reach 2 viewing north-east at the vegetation and ponded water along the channel bottom.



5.



Clogged outfall at the downstream end of Reach 2.

6.



Downstream portion of Reach 2 viewing north-east at the vegetation and arundo in the channel.

7.



Downstream portion of Reach 2 viewing north-east at the channel right bank (viewing downstream) and channel bottom.

8.



Downstream portion of Reach 2 viewing south at the vegetation left bank (viewing downstream).



9.



Reach 2 viewing north-east at the channel left bank, concrete wall (viewing downstream) and channel bottom.

10.



Reach 2 viewing north-east at the vegetation in the channel bottom. Vegetation includes willows, palm trees and arundo.

11.



Reach 2 viewing north-east at the channel left bank, concrete wall (viewing downstream) and channel bottom.

12.



Reach 2 viewing north-east at the channel left bank, concrete wall (viewing downstream), arundo and standing water along the channel bottom.



13.



Upstream portion of Reach 2 viewing north-east at the channel left bank (viewing downstream) and vegetation. Note the sediment deposition of approximately 1-foot.

14.



Upstream portion of Reach 2 viewing south-west at the 2-ton rip-rap channel lining and vegetation within the channel (palm trees and arundo)

15.



Downstream portion of Reach 3 viewing north-east at the concrete lined channel. Note the minimal vegetation established within the channel.

16.



Downstream portion of Reach 3 viewing north-east at the concrete lined channel.

17.



Reach 3 viewing north-east at the concrete lined channel.

18.



Upstream portion of Reach 3 viewing north-east at the transition in channel geometry from trapezoidal to rectangular.

19.



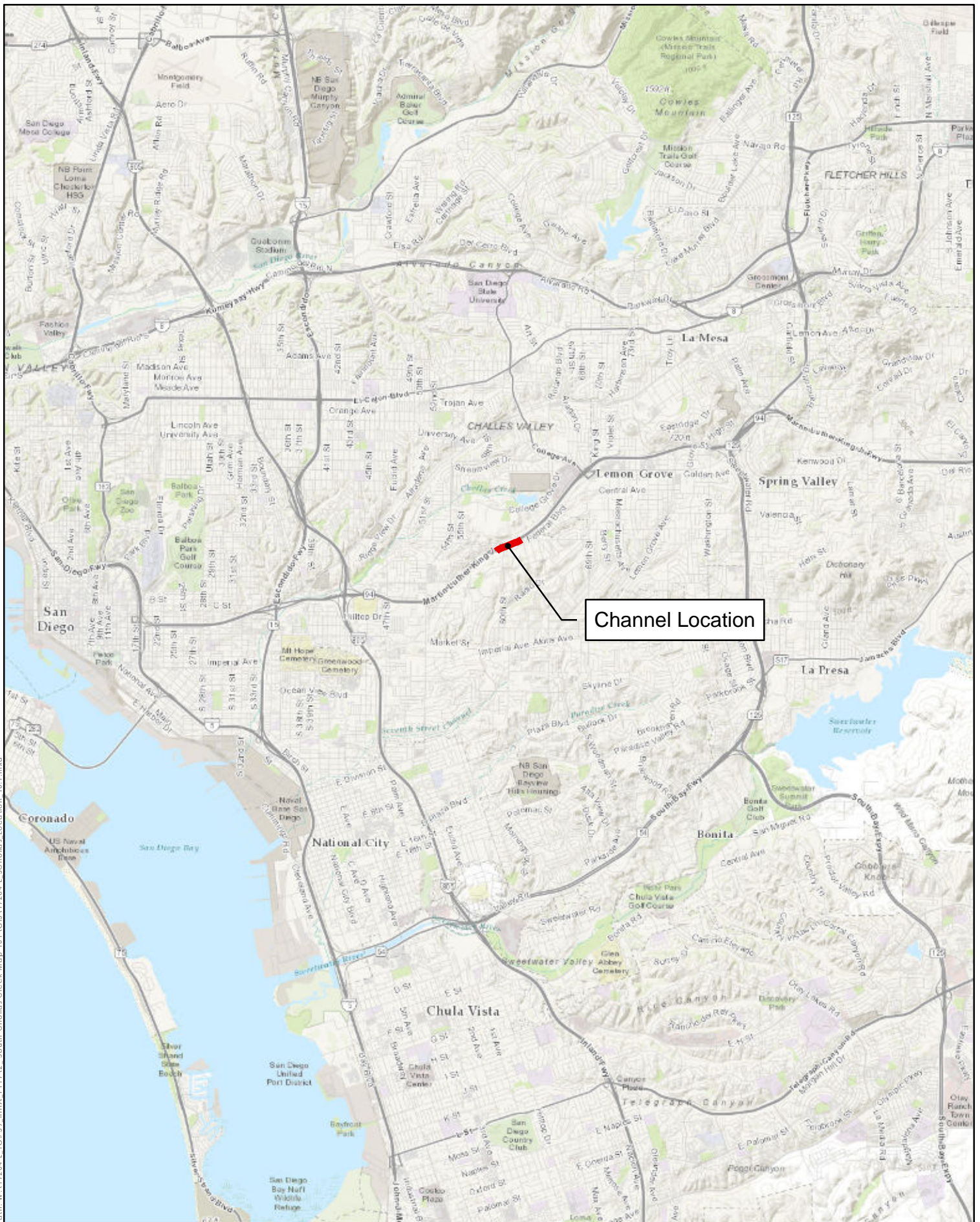
Upstream portion of Reach 3 viewing north-east at the rectangular concrete channel. Not minimal vegetation established in channel.

**Attachment 2 - VICINITY MAP**

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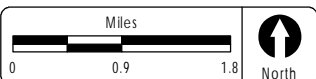


Path: W:\17204-L TO 39 IHHA - FY17\2 - South Chollas Creek Map 101\GIS\17204-L-Schollas Location 10.1.mxd



Channel Location

Date of Exhibit: 12.15.2015  
Source: ESRI World Topographic Baselayer

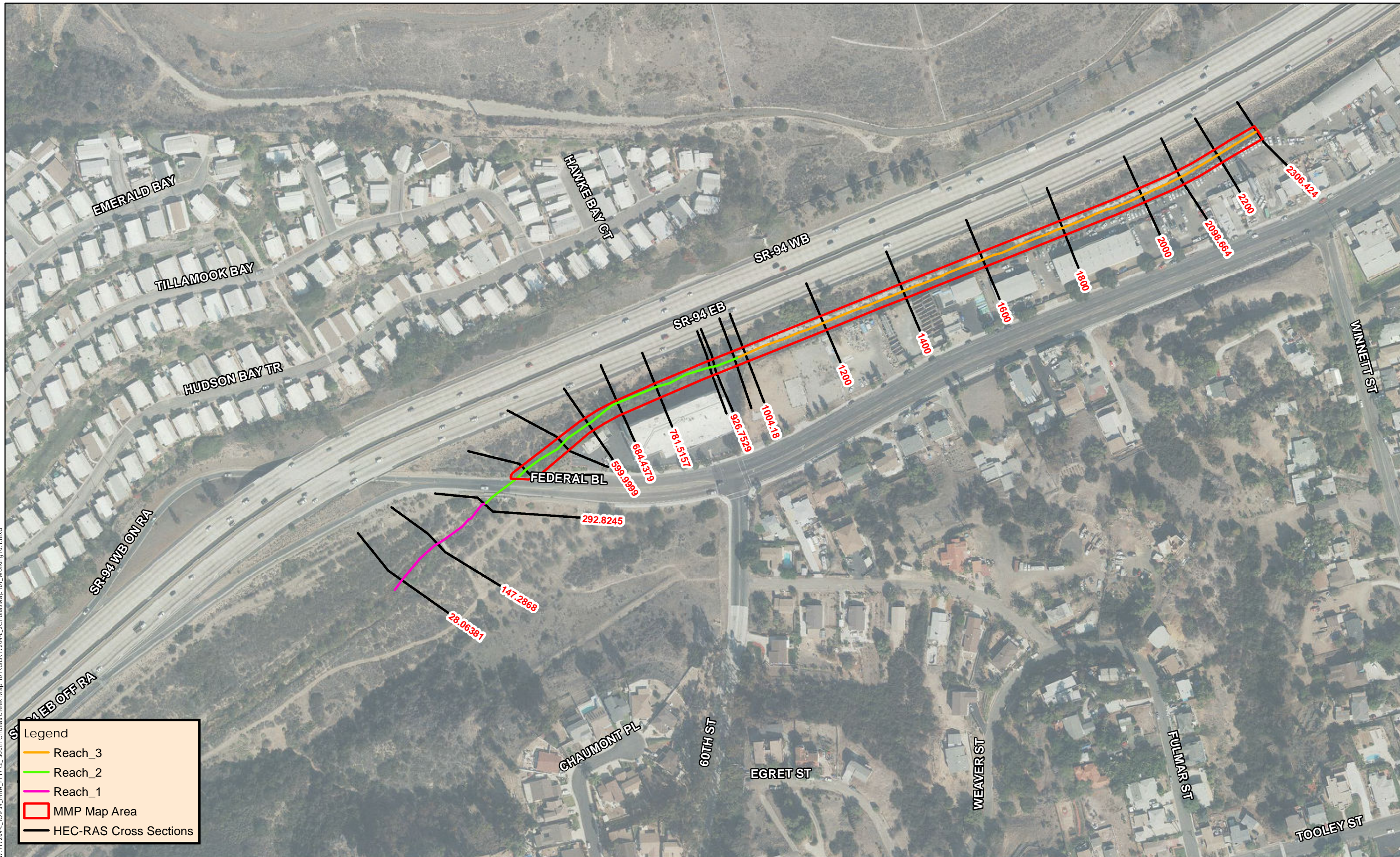


**Attachment 3 - HYDRAULIC WORKMAP**

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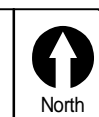
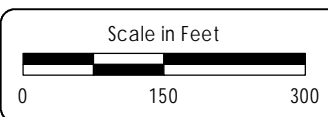


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**Legend**

- Reach\_3
- Reach\_2
- Reach\_1
- MMP Map Area
- HEC-RAS Cross Sections



Date of Exhibit: 3/14/2017  
 DigitalGlobe Aerial Image: 04.2013

South Chollas Creek  
 MMP Map 101 - Hydraulic Workmap



**Attachment 4 - PHOTO LOCATION MAP**

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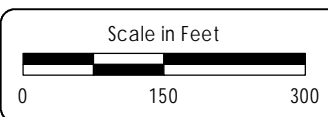


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**Legend**

- Reach\_3
- Reach\_2
- Reach\_1
- MMP Map Area
- HEC-RAS Cross Sections
- ↑ Photo\_Location



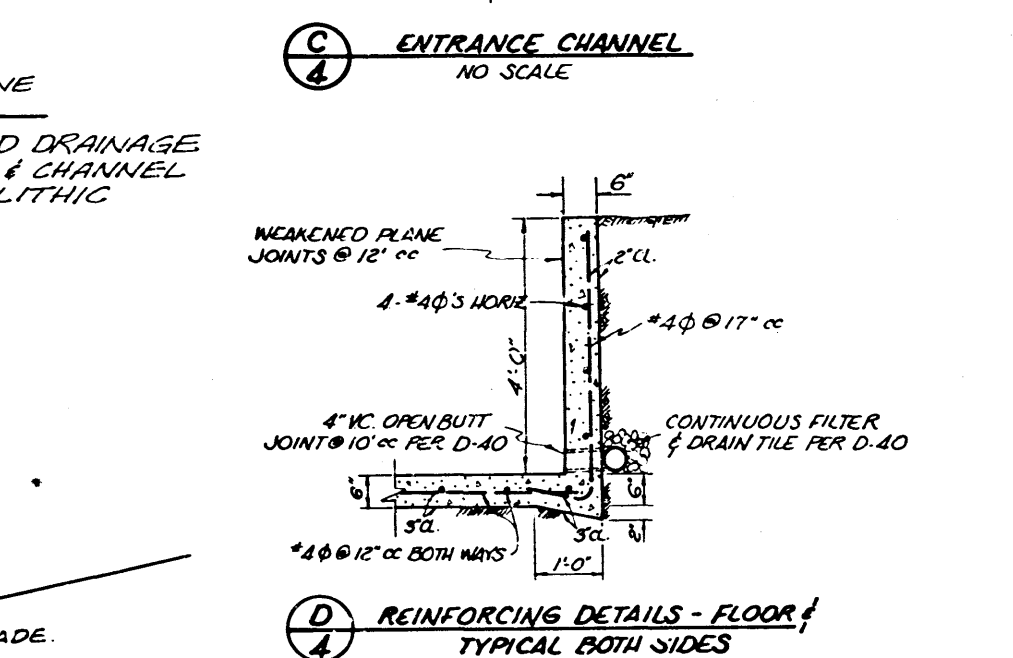
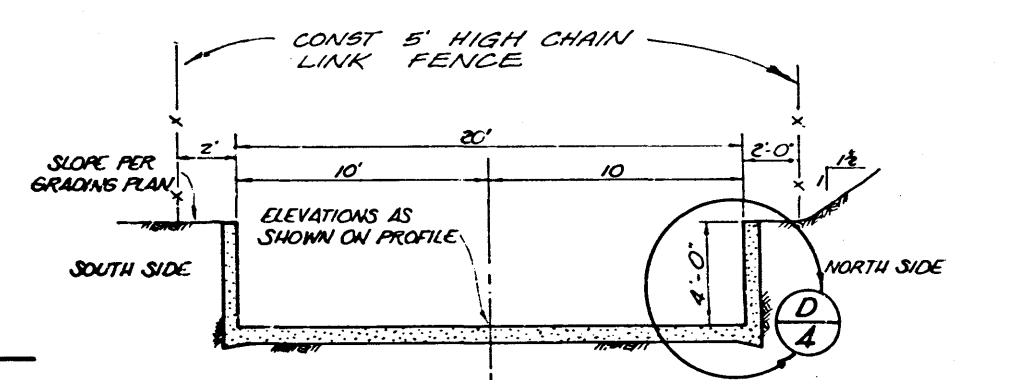
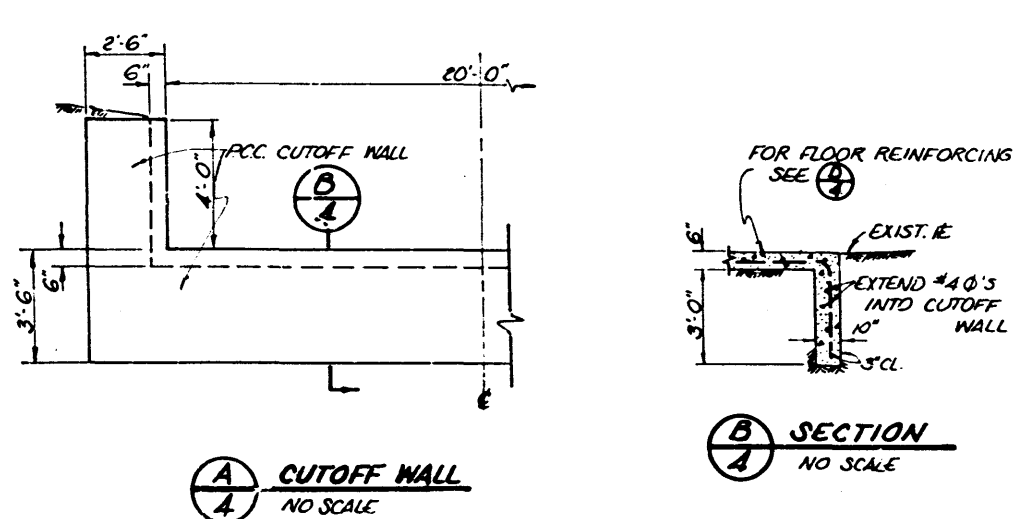
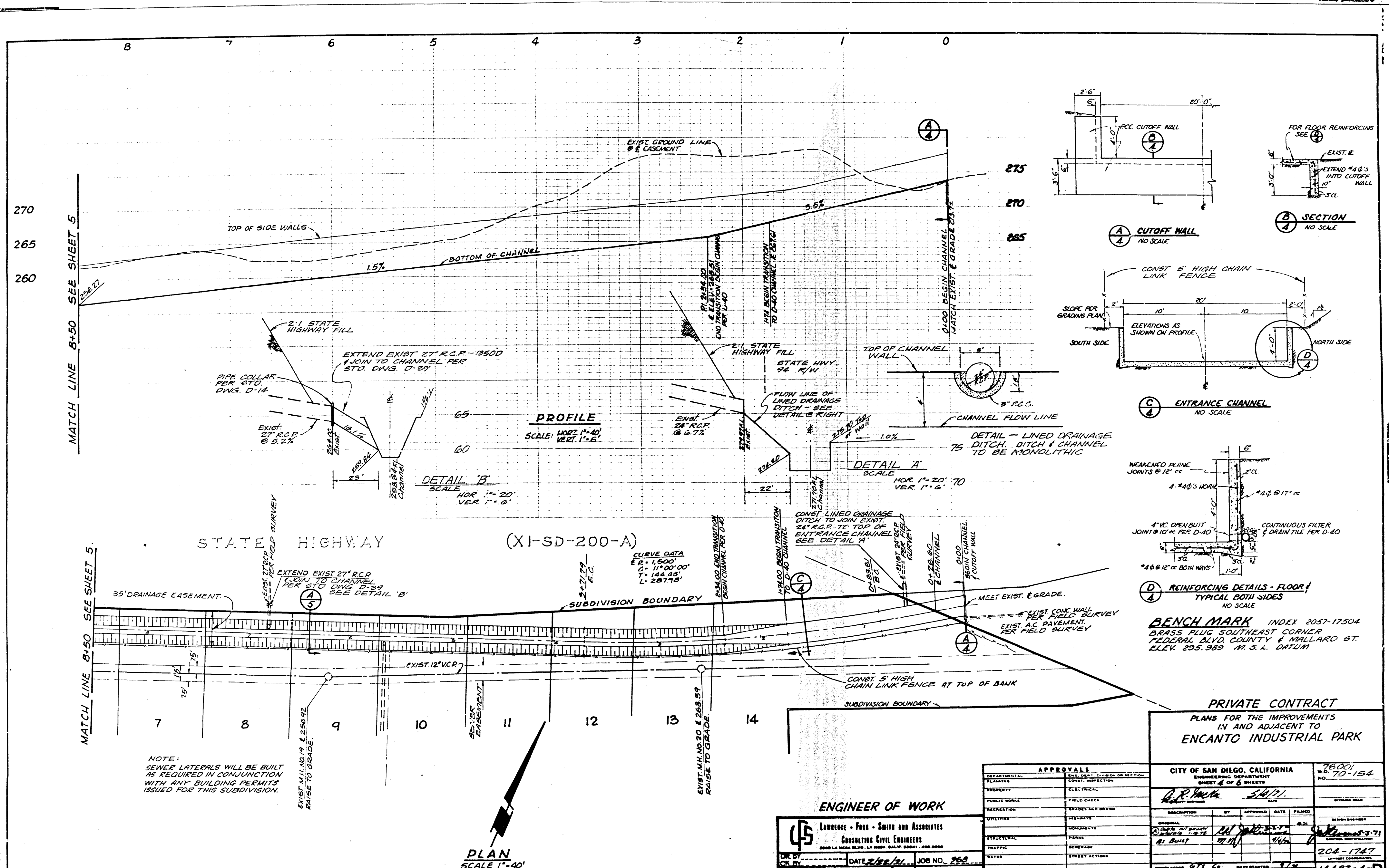
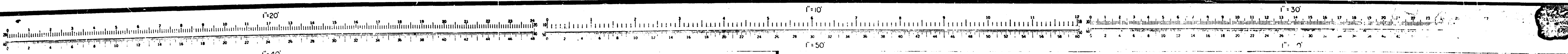
Date of Exhibit: 3/14/2017  
 DigitalGlobe Aerial Image: 04.2013

South Chollas Creek  
 MMP Map 101 - Photo Location Map



**Attachment 5 – AS-BUILT PLANS**

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**BENCH MARK** INDEX 2057-17504  
BRASS PLUG SOUTHEAST CORNER  
FEDERAL BLVD. COUNTY & MALLARD ST.  
ELEV. 295.989 M. S. L. DATUM

NOTE:  
SEWER LATERALS WILL BE BUILT  
AS REQUIRED IN CONJUNCTION  
WITH ANY BUILDING PERMITS  
ISSUED FOR THIS SUBDIVISION.

**PLAN**  
SCALE 1"=40'

**PRIVATE CONTRACT**  
PLANS FOR THE IMPROVEMENTS  
IN AND ADJACENT TO  
ENCANTO INDUSTRIAL PARK

**ENGINEER OF WORK**

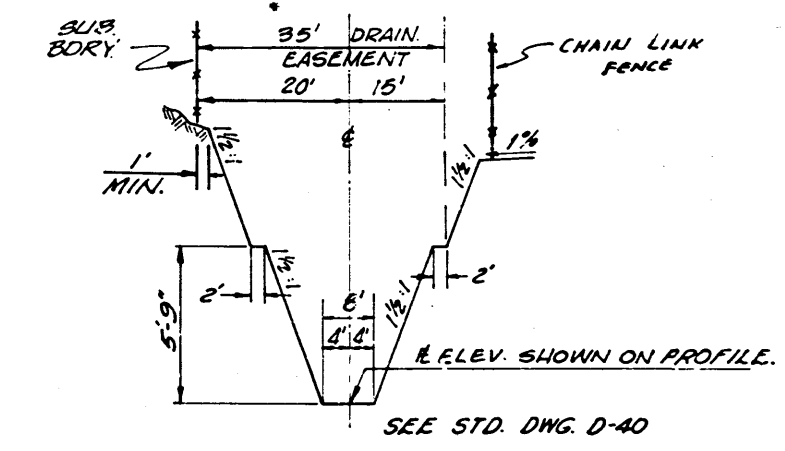
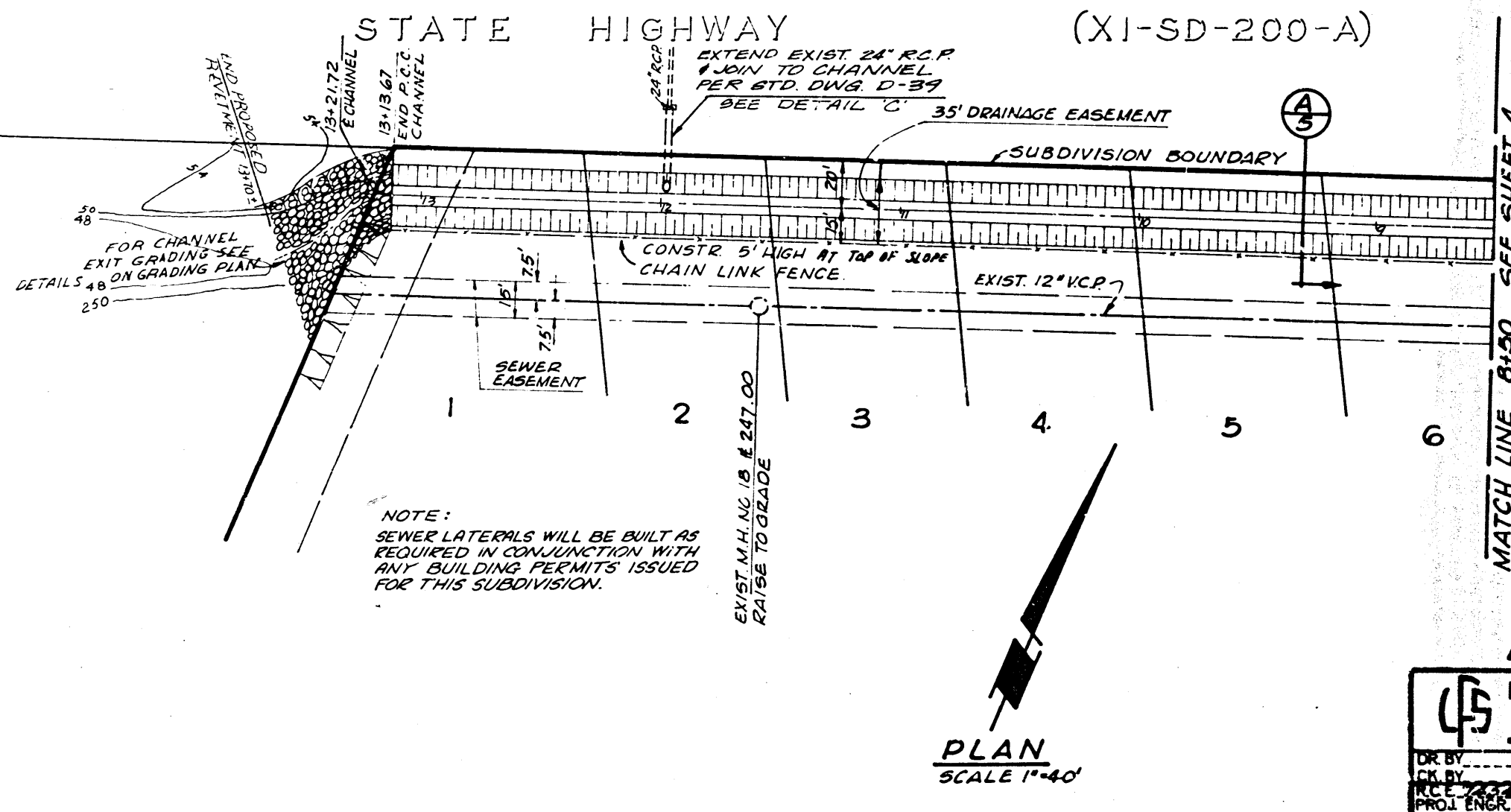
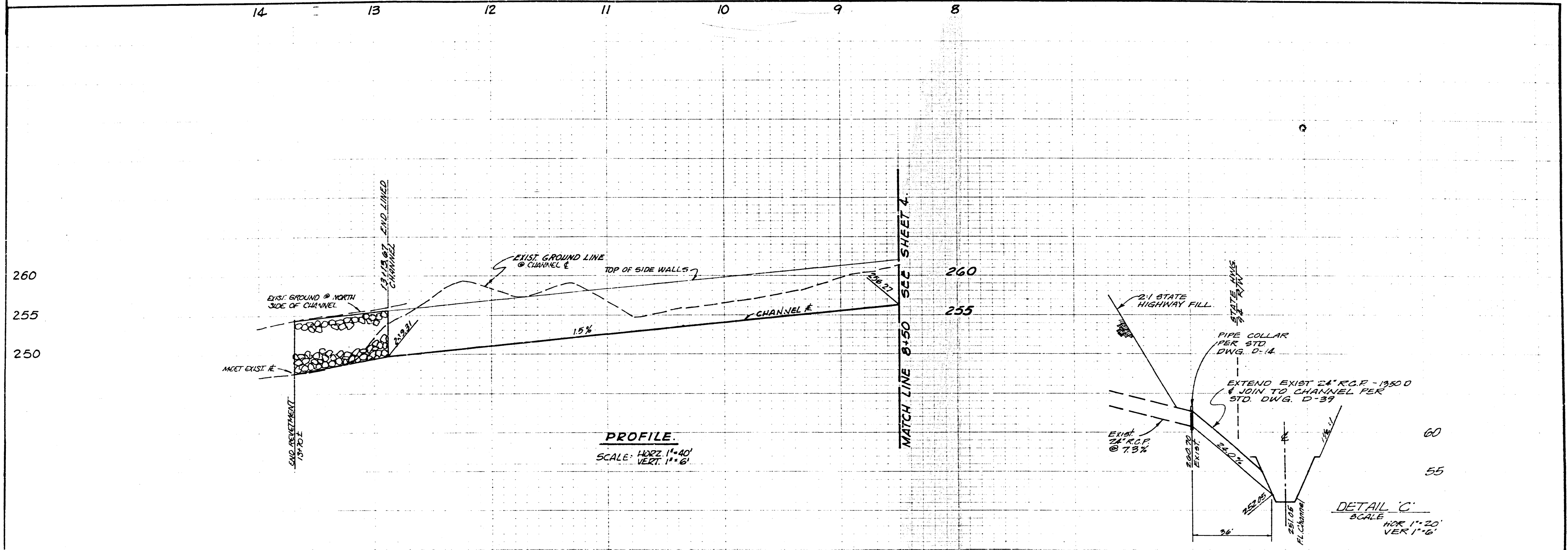
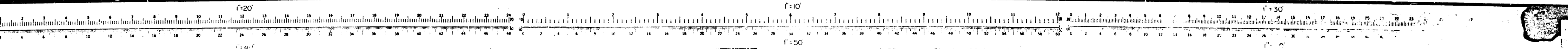
**Lawrence - Ford - Smith and Associates**  
CONSULTING CIVIL ENGINEERS  
2000 LA MEHA BLVD., LA MEHA, CALIF. 92041 - 400-0000

DATE 2/12/71 JOB NO. 262  
SHT. 4 OF 5 SHT

APPROVALS	
PLANNING	FIELD CHECK
PROPERTY	REVISIONS
PUBLIC WORKS	UTILITIES
RECREATION	STRUCTURAL
TRAFFIC	WATER
	STREET ACTIONS

CITY OF SAN DIEGO, CALIFORNIA		78001 W.G. 70-154 NO. 70-154	
ENGINEERING DEPARTMENT		DIVISION HEAD	
SHEET 4 OF 6 SHEETS		DESIGN ENGINEER	
APPROVED	DATE	APPROVED	DATE
<i>[Signature]</i>	5/11/71	<i>[Signature]</i>	5/11/71
DESCRIPTION	BY	APPROVED	DATE
2057-17504	AS	<i>[Signature]</i>	5/11/71
2057-17504	AS	<i>[Signature]</i>	5/11/71
2057-17504	AS	<i>[Signature]</i>	5/11/71
CONTRACTOR	DATE STARTED	DATE COMPLETED	
AS BUILT	7/72	3/11/72	
			14482-4-D

**AS BUILT**



**(A) DRAINAGE CHANNEL**  
NO SCALE

**BENCH MARK INDEX 2057-17504**  
BRASS PLUG SOUTHEAST CORNER  
FEDERAL BLDG. CO. JNTY & MALLARD ST  
ELEV. 295.989 N.T.S.L. DATUM

**PRIVATE CONTRACT**  
PLANS FOR THE IMPROVEMENTS  
IN AND ADJACENT TO  
ENCANTO INDUSTRIAL PARK

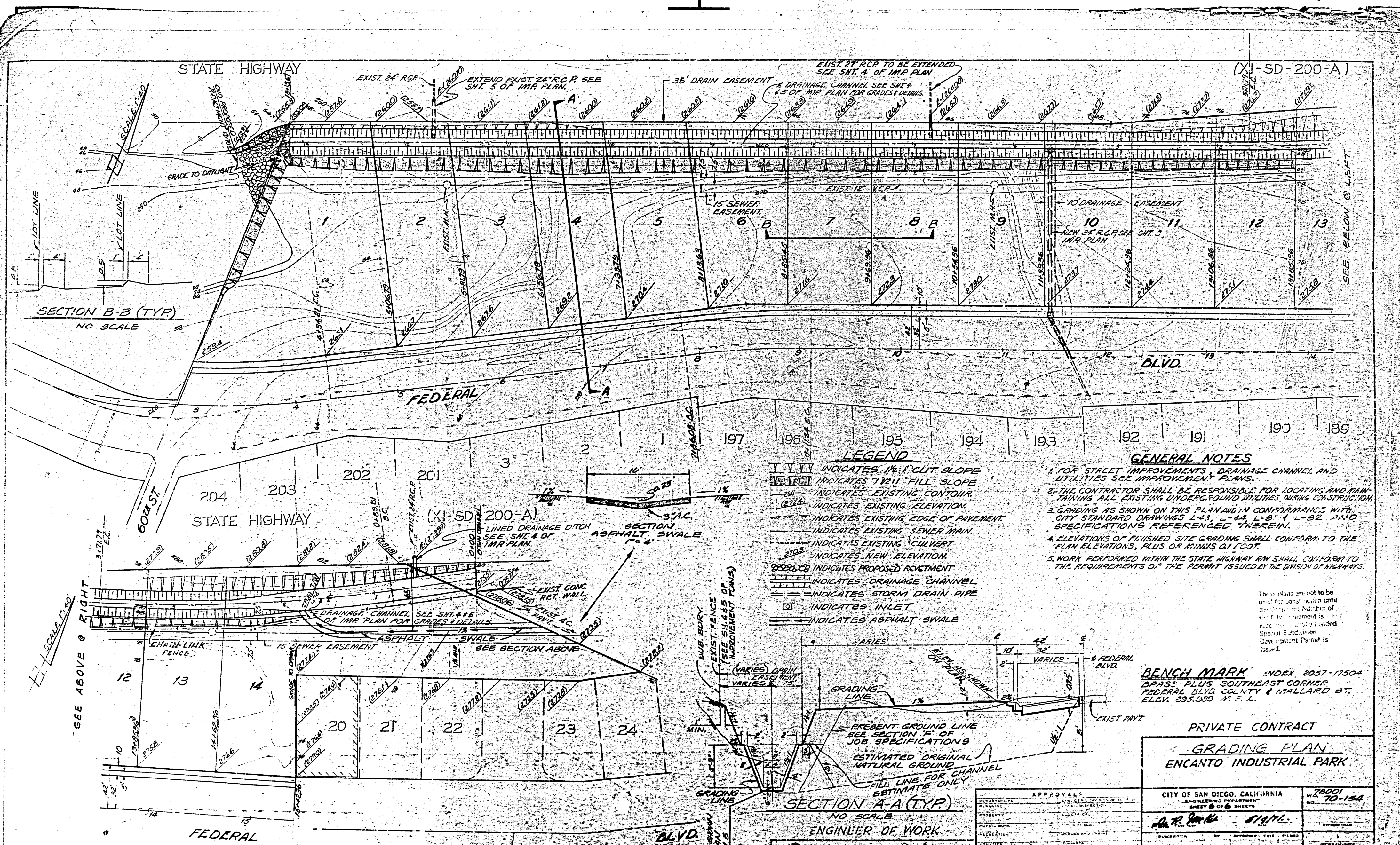
CITY OF SAN DIEGO, CALIFORNIA		78001
ENGINEERING DEPARTMENT		NO. 70-154
SHEET 5 OF 6 SHEETS		
APPROVED: <i>L. R. Fuchs</i>		
DATE: <i>3/11/74</i>		
DESCRIPTION	BY	APPROVED
ORIGINAL		
DATE: <i>1.8.74</i>	<i>W. J. Smith</i>	<i>3-2-74</i>
<i>DI BUNT</i>	<i>7/1/74</i>	<i>1/1/74</i>
CONTRACTOR: <i>G. J. S. Co.</i>		DATE STARTED: <i>2/74</i>
INSPECTOR: <i>W. J. Smith</i>		DATE COMPLETED: <i>2/11/74</i>
		14482-5-D

**ENGINEER OF WORK**  
**Lawrence - Fogg - Smith and Associates**  
CONSULTING CIVIL ENGINEERS  
8880 LA MEZA BLVD., LA MEZA, CALIF. 92041 - 480-9000

DR. BY: \_\_\_\_\_ DATE: *2/11/74* JOB NO. *968*  
CHK. BY: \_\_\_\_\_  
PROJ. ENGR. *Chub. R. Smith* SHT. 5 OF 5 SHT.

**AS BUILT**





SECTION B-B (TYP)  
NO SCALE

SECTION A-A (TYP)  
NO SCALE  
ENGINEER OF WORK

- LEGEND**
- INDICATES 1% CUT SLOPE
  - INDICATES 1% FILL SLOPE
  - INDICATES EXISTING CONTOUR
  - INDICATES EXISTING ELEVATION
  - INDICATES EXISTING EDGE OF PAVEMENT
  - INDICATES EXISTING SEWER MAIN
  - INDICATES EXISTING CULVERT
  - INDICATES NEW ELEVATION
  - INDICATES PROPOSED REVETMENT
  - INDICATES DRAINAGE CHANNEL
  - INDICATES STORM DRAIN PIPE
  - INDICATES INLET
  - INDICATES ASPHALT SWALE

- GENERAL NOTES**
1. FOR STREET IMPROVEMENTS, DRAINAGE CHANNEL AND UTILITIES SEE IMPROVEMENT PLANS.
  2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND MAINTAINING ALL EXISTING UNDERGROUND UTILITIES DURING CONSTRUCTION.
  3. GRADING AS SHOWN ON THIS PLAN AND IN CONFORMANCE WITH CITY STANDARD DRAWINGS L-43, L-44, L-45, L-51 & L-52 AND SPECIFICATIONS REFERENCED THEREIN.
  4. ELEVATIONS OF FINISHED SITE GRADING SHALL CONFORM TO THE PLAN ELEVATIONS, PLUS OR MINUS 0.1 FOOT.
  5. WORK PERFORMED WITHIN THE STATE HIGHWAY R/W SHALL CONFORM TO THE REQUIREMENTS OF THE PERMIT ISSUED BY THE DIVISION OF HIGHWAYS.

These plans are not to be used for other work until the permit number of the project is recorded with a recorded Special Subdivision Development Permit is issued.

**BENCH MARK** INDEX 2057-17504  
BRASS PLUS SOUTHEAST CORNER FEDERAL BLVD COUNTY & MALLARD ST. ELEV. 295.939 17.5 L.

PRIVATE CONTRACT  
**GRADING PLAN**  
ENCANTO INDUSTRIAL PARK

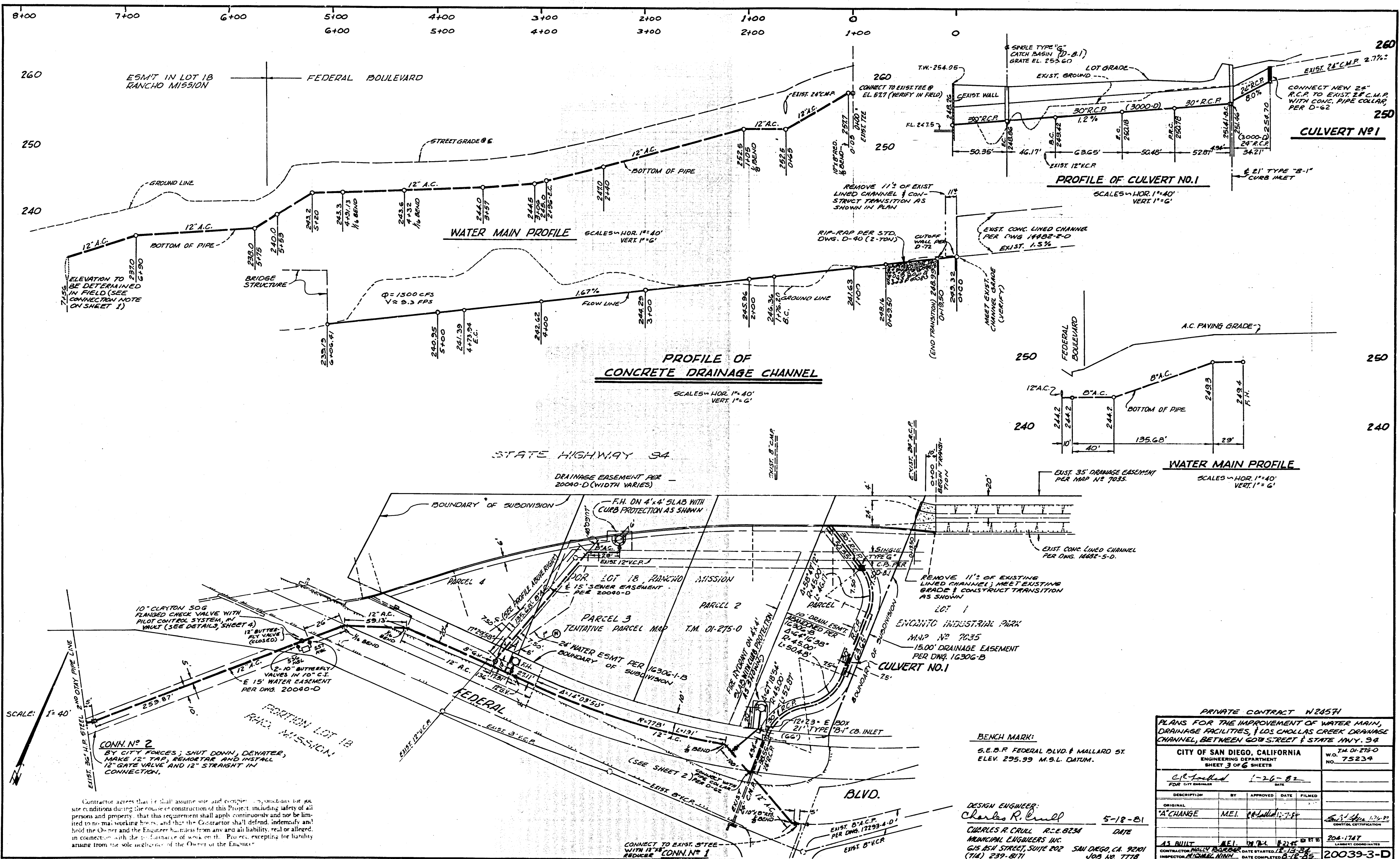
APPROVALS	
PLANNING	DATE
PUBLIC WORK	DATE
UTILITIES	DATE
STREETS	DATE
ENGINEER	DATE
CITY ENGINEER	DATE

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 6 OF 6 SHEETS	NO. 70-154 NO. 204-1747
APPROVED BY: <i>[Signature]</i> 5/17/71	DATE: 5/17/71
APPROVED BY: <i>[Signature]</i> 5/17/71	DATE: 5/17/71
CONTRACTOR: <i>[Signature]</i>	DATE: 5/17/71

LANE & POOL & SMITH AND ASSOCIATES  
CONSULTING CIVIL ENGINEERS  
1510 17th St., San Diego, Calif. 92101  
JOB NO. 968  
SHEET 1 OF 1

**AS BUILT**





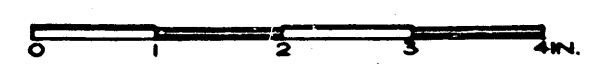
Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this Project, including safety of all persons and property, that this requirement shall apply continuously and not be limited to normal working hours, and that the Contractor shall defend, indemnify and hold the Owner and the Engineer harmless from any and all liability, real or alleged, in connection with the performance of work on this Project, excepting for liability arising from the sole negligence of the Owner or the Engineer.

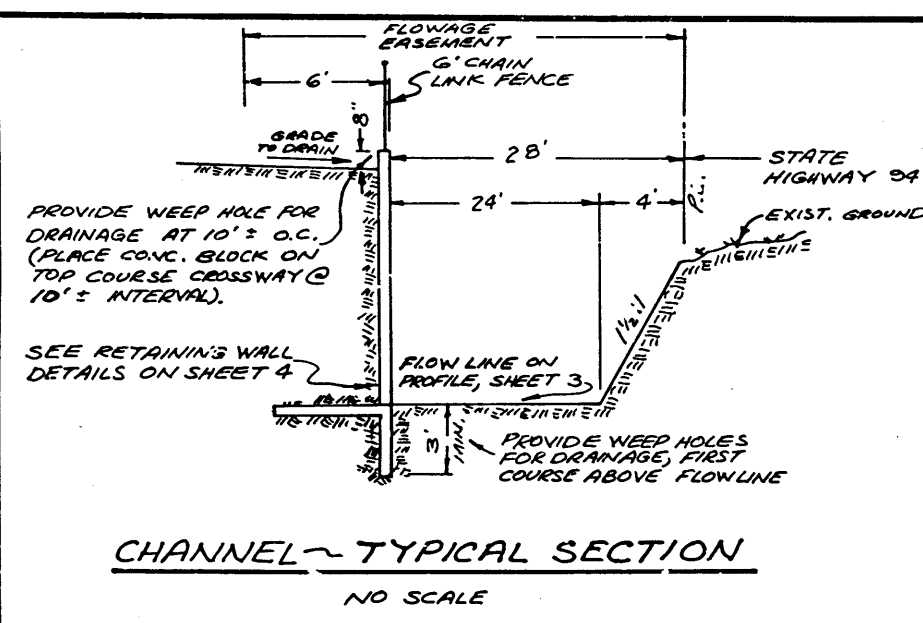
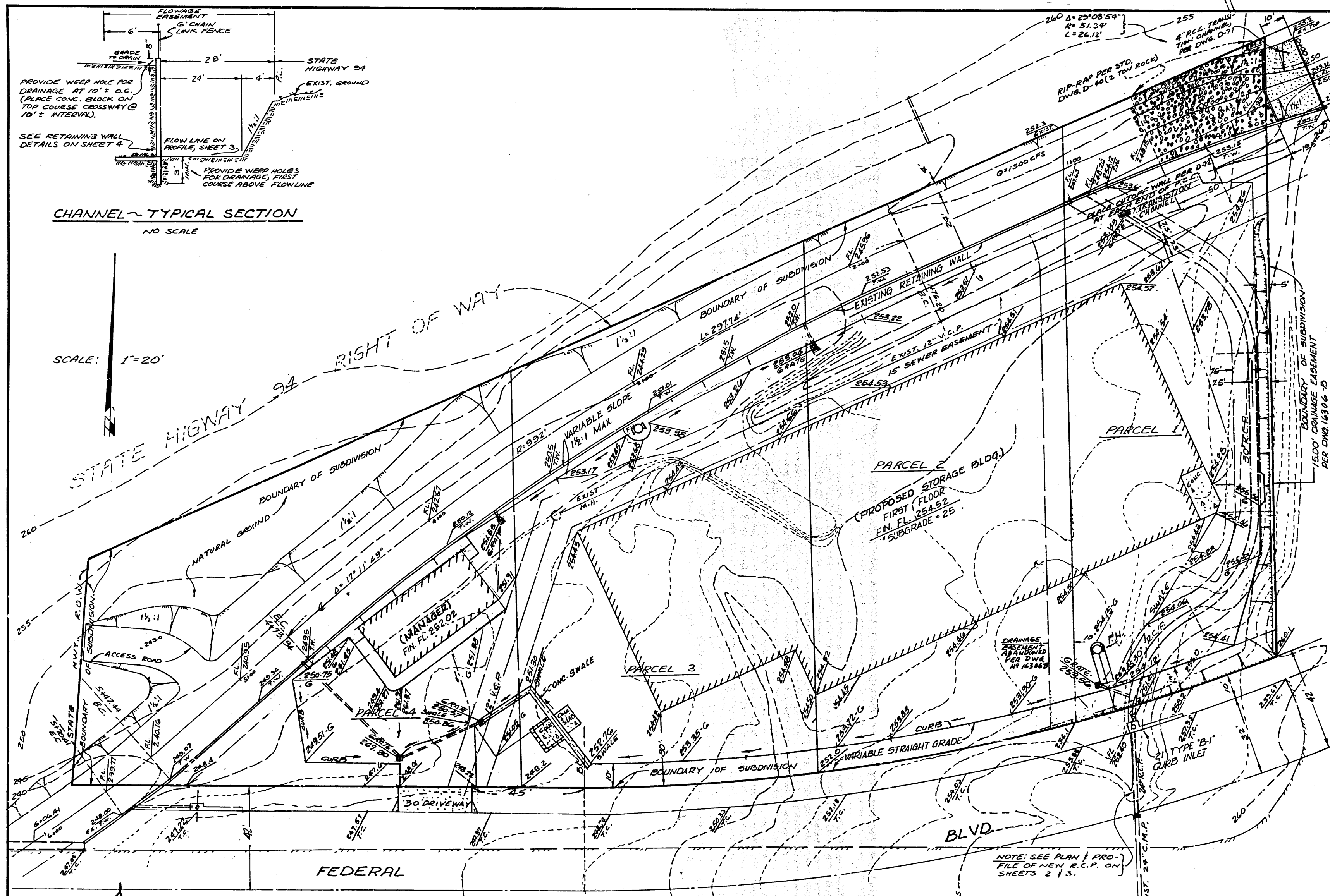
BENCH MARK:  
S.E. COR. FEDERAL BLVD. & MALLARD ST.  
ELEV. 295.99 M.S.L. DATUM.

DESIGN ENGINEER:  
*Charles R. Crull*  
CHARLES R. CRULL R.C.E. 8234  
MUNICIPAL ENGINEERS INC.  
615 ASH STREET, SUITE 202 SAN DIEGO, CA. 92101  
(714) 239-8171

PRIVATE CONTRACT W24574			
PLANS FOR THE IMPROVEMENT OF WATER MAIN, DRAINAGE FACILITIES, & LOS CHOLLAS CREEK DRAINAGE CHANNEL, BETWEEN GOV. STREET & STATE HWY. 94			
CITY OF SAN DIEGO, CALIFORNIA		W.D. T.M. 01-275-0	
ENGINEERING DEPARTMENT		NO. 75234	
SHEET 3 OF 6 SHEETS			
DATE	1-26-82	DATE	
DESCRIPTION	BY	APPROVED	DATE
ORIGINAL			
A CHANGE	MEI	<i>[Signature]</i>	7-84
AS BUILT	MEI	<i>[Signature]</i>	8-14-85
CONTRACTOR	MULLY BROS.	DATE STARTED	12-13-81
INSPECTOR	MICHAEL NICH	DATE COMPLETED	3-12-85
		DATE	5-18-81
		DATE	206-1747
		DATE	20039-3-D

A-MOVE CULV. NO. 1, MOVE F.H.'S, ADD WATER MAIN & F.H.'S CHANGE SHEET NUMBER TOTAL.





SCALE: 1" = 20'

**WORK TO BE DONE**  
THE IMPROVEMENTS COST OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS AND THE SPECIFICATIONS AND STANDARD DRAWINGS OF THE CITY OF SAN DIEGO.

- STANDARD SPECIFICATIONS**
- STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (1979 ED) DOCUMENT NO. 766725, FILED NOVEMBER 9, 1979.
  - STANDARD SPECIAL PROVISIONS, DOCUMENT NO. 767381, FILED NOVEMBER 9, 1979.
  - CITY OF SAN DIEGO STANDARD SPECIAL PROVISIONS, DOCUMENT NO. 767246, FILED SEPTEMBER 20, 1979.

- STANDARD DRAWINGS**
- SAN DIEGO REGIONAL STANDARD DRAWINGS (JULY 1979 ED), DOCUMENT NO. 767429, FILED DECEMBER 3, 1979.
  - CITY OF SAN DIEGO STANDARD DRAWINGS, DOCUMENT NO. 767694, FILED MAY 9, 1980.

- GRADING SPECIFICATIONS**
- GRADING ACCORDING TO THESE PLANS AND IN CONFORMANCE WITH CITY OF SAN DIEGO STANDARD DRAWINGS SOL-101 & SOL-102, CURRENT STD. SPECS. AND DIV. 4, SEC. 62 OF SAN DIEGO MUNICIPAL CODE.
  - ALL FILLS TO BE COMPACTED TO 90% MINIMUM, AND COMPACTION REPORTS SUBMITTED TO RESIDENT ENGINEER PRIOR TO ACCEPTANCE BY THE CITY. (SEE BELOW)
  - PLANT & IRRIGATE ALL CUTS AND FILL SLOPES AS REQUIRED BY DIV. 4, SECT. 62, SAN DIEGO MUNICIPAL CODE, AND ACCORDING TO CITY ENGINEER'S SPECS. FOR LANDSCAPING & IRRIGATION FOR LAND DEVELOPMENT, DOC. #746395, FILED 2/20/74.
  - UPON ISSUANCE OF PERMIT, NO WORK WILL BE PERMITTED DURING WEEKENDS OR HOLIDAYS WITHOUT SPECIAL PERMISSION FROM THE ENGINEERING DEPT.
  - A SEPARATE PLUMBING PERMIT WILL BE REQUIRED FROM THE BUILDING INSPECTION DEPARTMENT FOR THE INSTALLATION OF THE IRRIGATION SYSTEM SHOWN ON THIS DRAWING.

- GRADING SPECIFICATIONS**
- ALL GRADING SHALL BE DONE UNDER THE OBSERVATION OF A QUALIFIED SOILS ENGINEER, AND IN ACCORDANCE WITH THE RECOMMENDATION AND SPECIFICATIONS SET FORTH IN THE SOILS REPORT ENTITLED "SOIL INVESTIGATION - SELECT ELECTRIC BLDG. SITE" PREPARED BY WILLIAM S. KROOSKOS & ASSOC. DATED JAN. 14, 1981.
  - ALL FILL MATERIAL SHALL BE COMPACTED TO AN INDICATED 90% OR BETTER AND REPORTS SUBMITTED TO THE CITY'S RESIDENT ENGINEER PRIOR TO THE ACCEPTANCE OF WORK.
  - AT THE COMPLETION OF THE GRADING OPERATION, AN AS-GRADED SOILS GEOLOGIC REPORT WILL BE PREPARED. THIS REPORT WILL BE SUBMITTED TO THE FIELD INSPECTION SECTION AND ONE COPY TO THE SUBDIVISION SECTION OF THE CITY ENGINEER'S OFFICE WITHIN 15 DAYS OF THE COMPLETION OF GRADING.
  - THESE GRADING PLANS HAVE BEEN REVIEWED BY THE BELOW SIGNED AND FOUND TO BE IN CONFORMANCE WITH THE RECOMMENDATIONS AND SPECIFICATIONS OUTLINED IN THE SOILS-GEOLOGIC REPORT PREPARED FOR THIS DEVELOPMENT.
- WE HAVE REVIEWED THESE GRADING PLANS AND FIND THAT THEY COMPLY WITH THE RECOMMENDATIONS AS SPECIFIED IN THE ABOVE REPORT.

BY: *William S. Krooskos, R.E. 1318* DATE: *September 24, 1981*

- LEGEND:**
- SLOPES: CUT: 1 1/2:1 SLOPES < 10'  
FILL: 1 1/2:1 SLOPES < 10'  
CUT: 2:1 SLOPES > 10'  
FILL: 2:1 SLOPES > 10'
  - FINISH GRADE SHOWN THUS:
  - EXISTING GROUND ELEVATIONS SHOWN BY CONTOURS THUS:
- QUANTITIES: CUT 1250 C.Y.  
FILL 10000 C.Y.  
IMPORT 8750 C.Y.

**BENCH MARK:**  
BRASS PLUS ON SOUTHEAST CORNER OF MALLARD ST. & FEDERAL BLVD. ELEV. 295.99 M.S.L.

**OWNER:**  
BOB CHAMBERS  
4586 FEDERAL BLVD.  
SAN DIEGO, CA 92102

\* PM NOW FILED  
PM NO. 12392  
PRIVATE CONTRACT #24571

**GRADING PLAN, PARCELS 1, 2, 3, & 4 FOR PROPOSED PARCEL MAP, T.M. 01-275-0\***

CITY OF SAN DIEGO, CALIFORNIA  
SHEET 5 OF 6 SHEETS

*C.R. Crull* 1-26-81  
FOR CITY ENGINEER

DESCRIPTION	BY	APPROVED	DATE	FILED
ORIGINAL				
CHANGE	M.E.J.		11-7-81	
AS BUILT	M.E.J.		11-22-81	
CONTRACTOR	M.A. BARBER		DATE STARTED 12-15-80	
INSPECTOR	CHARLES KINH		DATE COMPLETED 12-25-80	

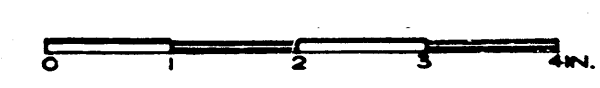
205-1707  
LATEST COORDINATES  
20039-5-D

**NOTE:**  
SEE SHEETS 2 & 6 FOR PAVEMENT TRANSITION DETAILS; SEE SHEET 3 FOR CHANNEL PLAN & PROFILE; SEE SHEET 4 FOR TRANSITION DETAILS. FLOWAGE EASEMENT WIDTH VARIES; SEE EASEMENT DEDICATION INFORMATION ON DRAWING N° 20040-D. SEE DETAIL 7" ON SHEET 2 FOR SPILLWAY INFORMATION.

Contractor agrees that he shall assume sole and complete responsibility for job site conditions, safety and the performance of this Project, including safety of all persons and property, that this requirement shall apply continuously and not be limited to normal working hours, and that the Contractor shall defend, indemnify and hold the Owner and the Engineer harmless from any and all liabilities, real or alleged, in connection with the performance of work on this Project, excepting for liability arising from the negligence of the Owner or the Engineer.

DESIGN ENGINEER *Charles R. Crull*  
CHARLES R. CRULL - MUNICIPAL ENGINEER  
615 ASH STREET, SUITE 202 TELEPHONE: 239-8171  
SAN DIEGO, CA 92101 JOB # 7778 DATE 5-13-81

\* CHANGE GRADING - SHEET NUMBER TOTAL, MOVE CULVERT & ADD DRAIN.



**Attachment 6 – FEMA FIRMETTE AND FEMA FIS**

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# FLOOD INSURANCE STUDY



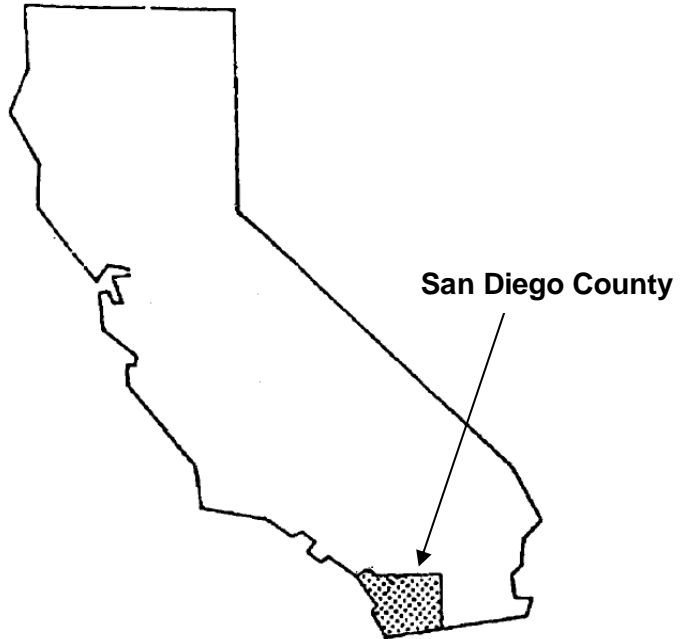
## SAN DIEGO COUNTY, CALIFORNIA AND INCORPORATED AREAS

VOLUME 1 OF 11

### Community Name

### Community Number

SAN DIEGO COUNTY, UNINCORPORATED AREAS	060284
CARLSBAD, CITY OF	060285
CHULA VISTA, CITY OF	065021
CORONADO, CITY OF	060287
DEL MAR, CITY OF	060288
EL CAJON, CITY OF	060289
ENCINITAS, CITY OF	060726
ESCONDIDO, CITY OF	060290
IMPERIAL BEACH, CITY OF	060291
LA MESA, CITY OF	060292
LEMON GROVE, CITY OF	060723
NATIONAL CITY, CITY OF	060293
OCEANSIDE, CITY OF	060294
POWAY, CITY OF	060702
SAN DIEGO, CITY OF	060295
SAN MARCOS, CITY OF	060296
SANTEE, CITY OF	060703
SOLANA BEACH, CITY OF	060725
VISTA, CITY OF	060297



REVISED  
4/5/2016



## Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER  
06073CV001D

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TABLE 13 - FLOODWAY DATA

**TABLE 8: SUMMARY OF PEAK DISCHARGES**

Flooding Source and Location	Drainage Area (sq. miles)	Peak Discharges (cubic feet per second)			
		10% Annual- Chance	2% Annual- Chance	1% Annual- Chance	0.2% Annual- Chance
0.3 Mile Above Mouth	7.1	1,200 <sup>1</sup>	3,400	5,200 <sup>1</sup>	10,400
At Oak Shadows Drive	4.3	700	2,100	3,200	6,500
South Las Chollas Creek					
Above Confluence with Las Chollas Creek	10.9	2,000	3,900	5,300	9,500
Above Confluence with Encanto Branch	3.3	730	1,400	1,900	3,400
At Kelton Road	2.6	580	1,100	1,500	2,700
South Tributary to Santa Maria Creek					
At Mouth	9.3	700	3,400	5,800	15,000
Spring Valley Creek					
Below Confluence with Casa de Oro Creek	7.1	1,300	2,600	3,600	9,300
Steele Canyon Creek					
At Mouth	2.7	--	--	2,980	--
Stevenson Creek					

---

<sup>1</sup>Flow Partially Controlled by Turner Dam  
 -- Data Not Available



**NOTES TO USERS**

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the **Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations** tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations (BFEs)** shown on this map apply only landward of 0' North American Vertical Datum of 1988 (NAVD 88). Users of the FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 11. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov/> or contact the National Geodetic Survey at the following address:

NGS Information Services  
NOAA, NNGS12  
National Geodetic Survey  
SSM-C, #0202  
1215 East-West Highway  
Silver Spring, Maryland 20910-3282  
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at <http://www.ngs.noaa.gov/>.

**Base map** information shown on this FIRM was provided in digital format by the USDA National Agriculture Imagery Program (NAIP). This information was photogrammetrically compiled at a scale of 1:24,000 from aerial photography dated 2009.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

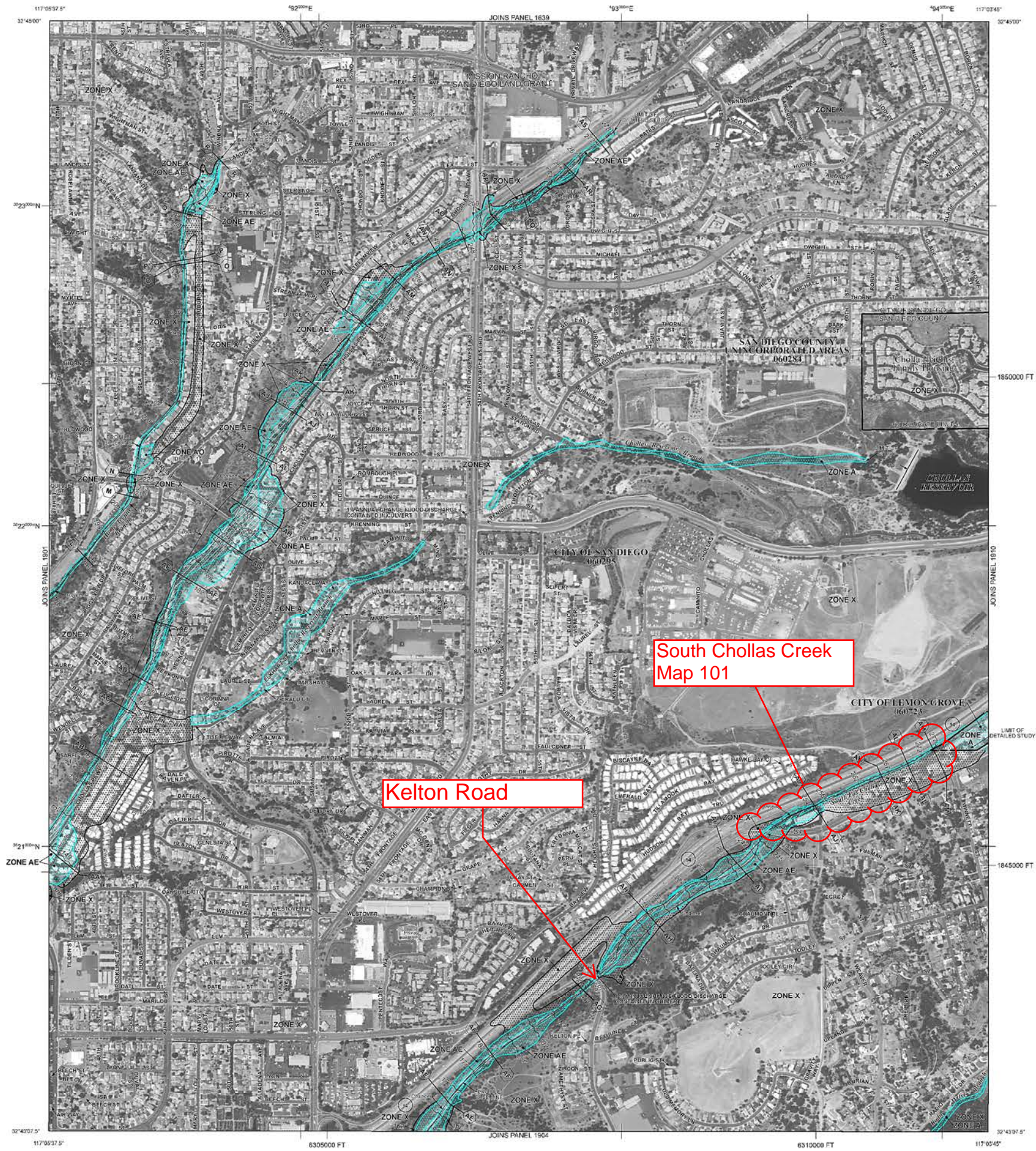
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a listing of Communities with National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-877-FEMA-MAP (1-877-336-2627) for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-6620 and its website at <http://fims.fema.gov/>.

If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/firm/>.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line" in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



**LEGEND**

**SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AD, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

**ZONE A** No Base Flood Elevations determined.

**ZONE AE** Base Flood Elevations determined.

**ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

**ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

**ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently destroyed. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

**ZONE A99** Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

**ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

**ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

**FLOODWAY AREAS IN ZONE AE**

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

**OTHER FLOOD AREAS**

**ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with change areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

**OTHER AREAS**

**ZONE D** Areas determined to be outside the 0.2% annual chance floodplain.

**ZONE I** Areas in which flood hazards are undetermined, but possible.

**COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**

**OTHERWISE PROTECTED AREAS (OPAs)**

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary  
0.2% annual chance floodplain boundary  
Floodway boundary  
Zone D boundary  
CBRS and OPA boundary  
Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities  
Bench mark (see explanation in Notes to Users section of this FIRM panel)  
Base Flood Elevation line and value; elevation in feet\*  
Base Flood Elevation value where uniform within zone; elevation in feet

\* Referenced to the North American Vertical Datum of 1988

⊕ Cross section line  
— Transsect line  
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere  
1000-meter Universal Transverse Mercator grid ticks, zone 11  
500-foot grid values: California State Plane coordinate system, Zone VI (FIPSZONE = 406), Lambert projection  
Bench mark (see explanation in Notes to Users section of this FIRM panel)  
River Mile  
MAP REPOSITORIES  
Refer to Map Repositories list on Map Index

**EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**  
June 19, 1997

**EFFECTIVE DATES OF REVISIONS TO THIS PANEL**  
May 16, 2012 – to update corporate limits, to add roads and road names, to incorporate previously issued Letters of Map Revision, and to update map elevations to North American Vertical Datum of 1988

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

**MAP SCALE 1" = 500'**

0 250 500 750 1000 FEET  
0 5 10 15 20 METERS

**NATIONAL FLOOD INSURANCE PROGRAM**

**PANEL 1902G**

**FIRM**  
**FLOOD INSURANCE RATE MAP**  
**SAN DIEGO COUNTY,**  
**CALIFORNIA**  
**AND INCORPORATED AREAS**

**PANEL 1902 OF 2375**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

**CONTAINS:**

COMMUNITY	NUMBER	PANEL	SUFFIX
LEMON GROVE, CITY OF	060729	1902	G
SAN DIEGO COUNTY	060294	1902	G
SAN DIEGO, CITY OF	060295	1902	G

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

**MAP NUMBER**  
**06073C1902G**

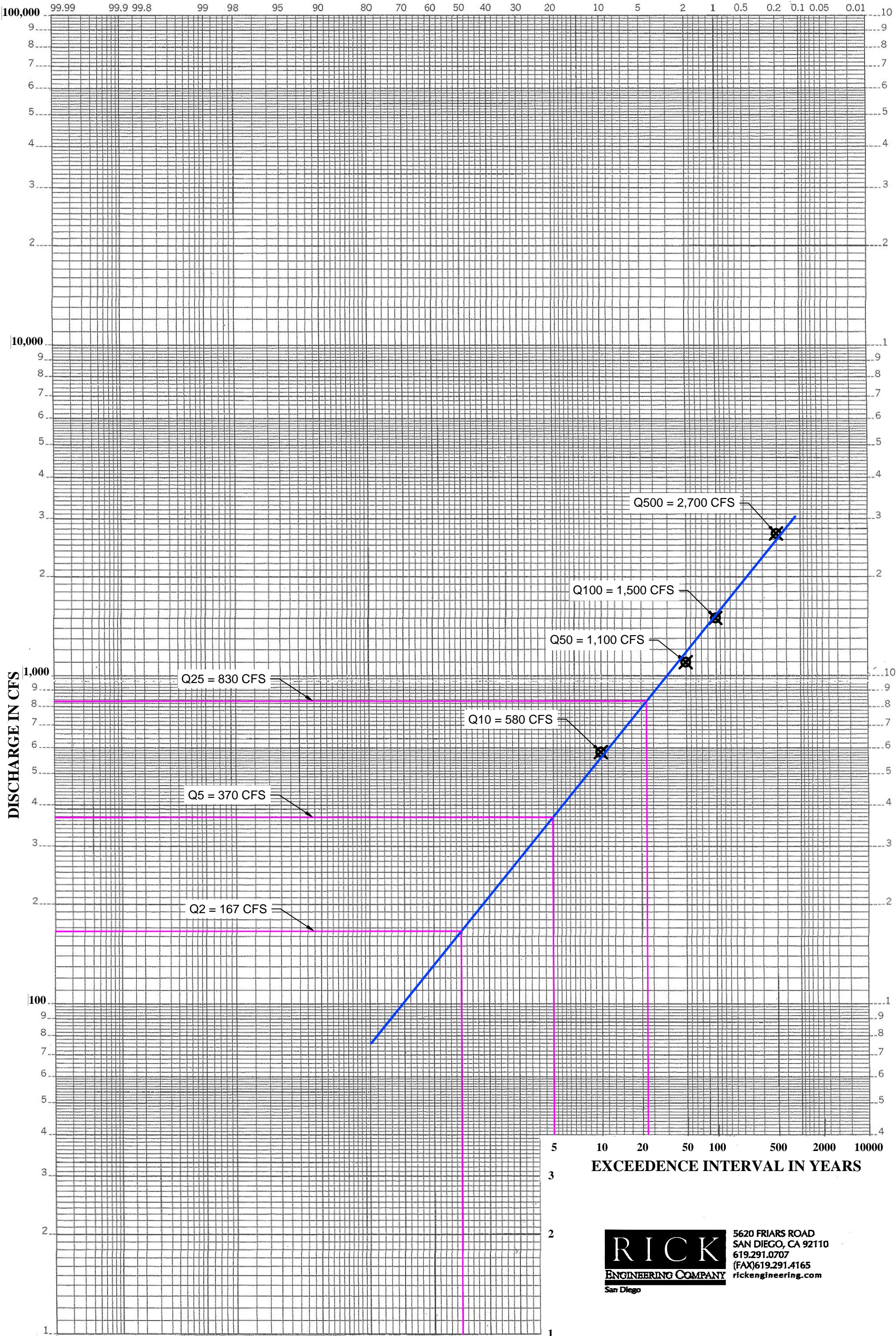
**MAP REVISED**  
**MAY 16, 2012**

**Federal Emergency Management Agency**



### EXCEEDENCE PER HUNDRED YEARS

% CHANCE A STORM EVENT WILL OCCUR  
(IE: THERE IS A 1% CHANCE A 100-YEAR  
STORM WILL OCCUR IN A YEAR)

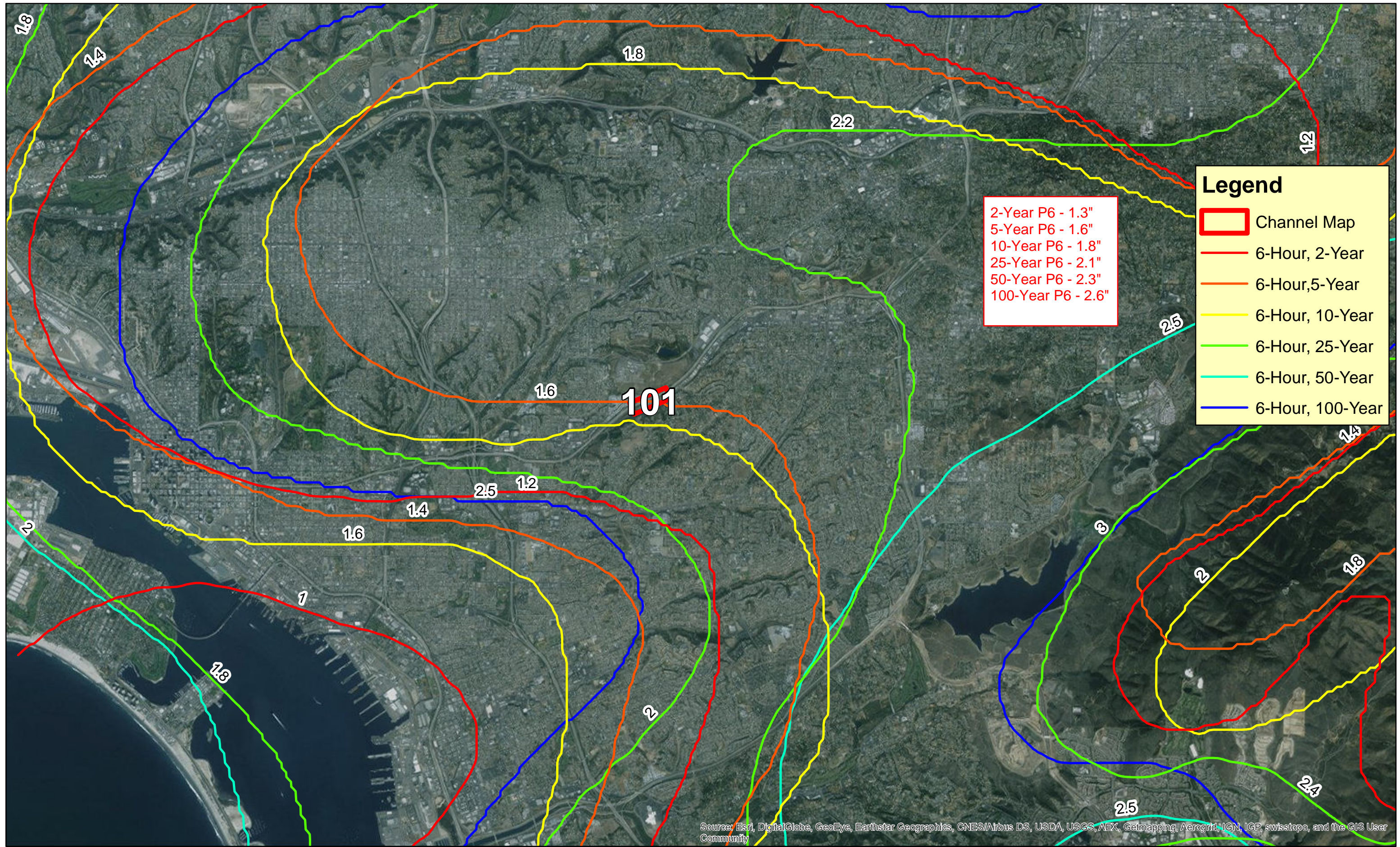


EXCEEDENCE INTERVAL IN YEARS



5620 FRIARS ROAD  
SAN DIEGO, CA 92110  
619.291.0707  
(FAX) 619.291.4165  
rickengineering.com





**101\_South Chollas Creek**





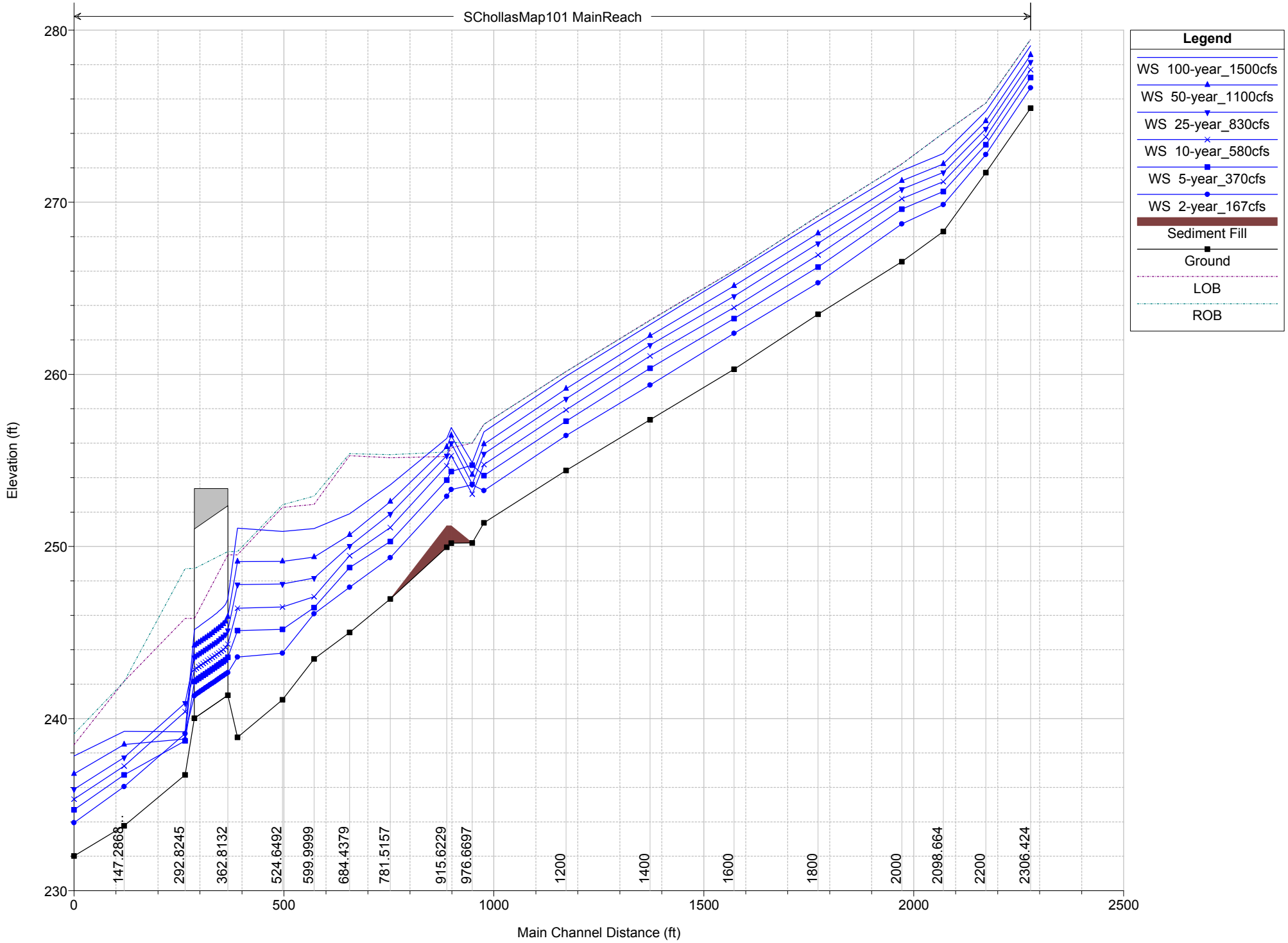
**Attachment 7 - HYDRAULIC PROFILES FOR CURRENT VEGETATED CONDITION  
MODEL**

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SCollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

SCollasMap101 MainReach



**Legend**

- WS 100-year\_1500cfs
- WS 50-year\_1100cfs
- WS 25-year\_830cfs
- WS 10-year\_580cfs
- WS 5-year\_370cfs
- WS 2-year\_167cfs
- Sediment Fill
- Ground
- LOB
- ROB



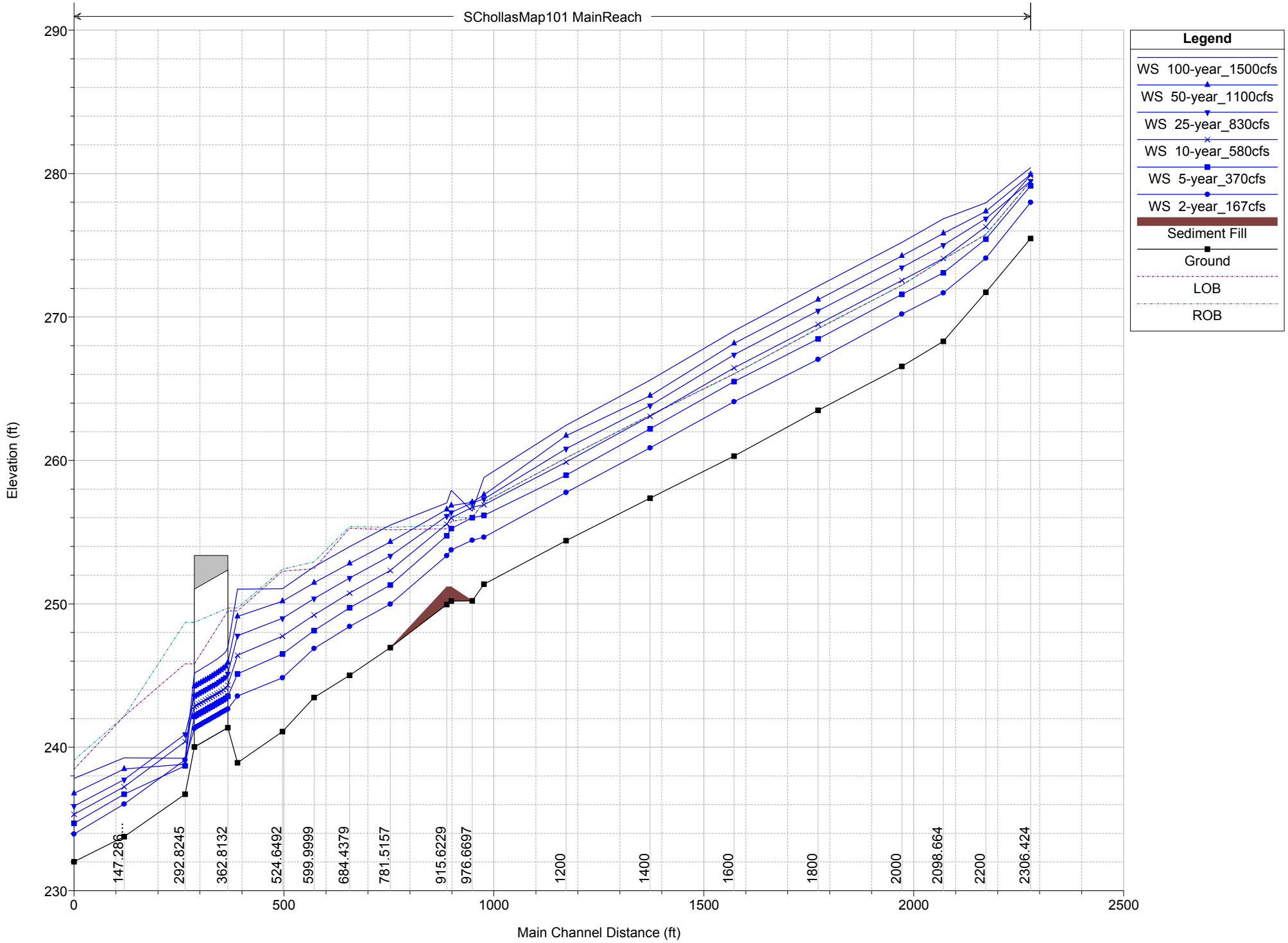
**Attachment 8 - HYDRAULIC PROFILES FOR ULTIMATE VEGETATED CONDITION  
MODEL**

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SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

SChollasMap101 MainReach



Legend	
WS 100-year_1500cfs	▲
WS 50-year_1100cfs	▼
WS 25-year_830cfs	×
WS 10-year_580cfs	■
WS 5-year_370cfs	●
WS 2-year_167cfs	●
Sediment Fill	■
Ground	■
LOB	---
ROB	---

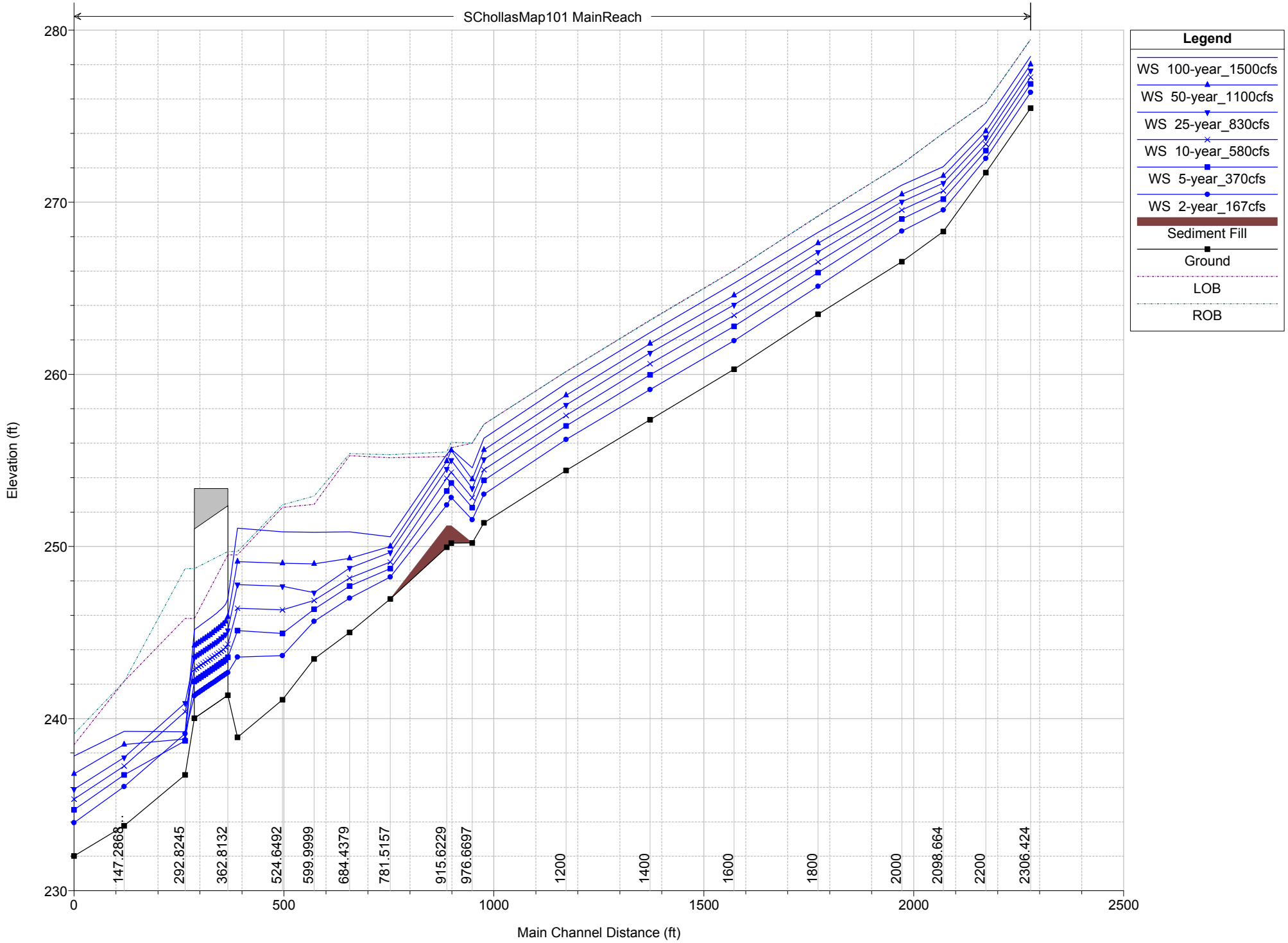
**Attachment 9 - HYDRAULIC PROFILES FOR MAINTAINED CONDITION MODEL –  
VEGETATION ONLY (NO SEDIMENT REMOVED)**

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SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

SChollasMap101 MainReach



Legend	
WS 100-year_1500cfs	▲
WS 50-year_1100cfs	▼
WS 25-year_830cfs	▼
WS 10-year_580cfs	x
WS 5-year_370cfs	■
WS 2-year_167cfs	●
Sediment Fill	■
Ground	■
LOB	- - -
ROB	⋯

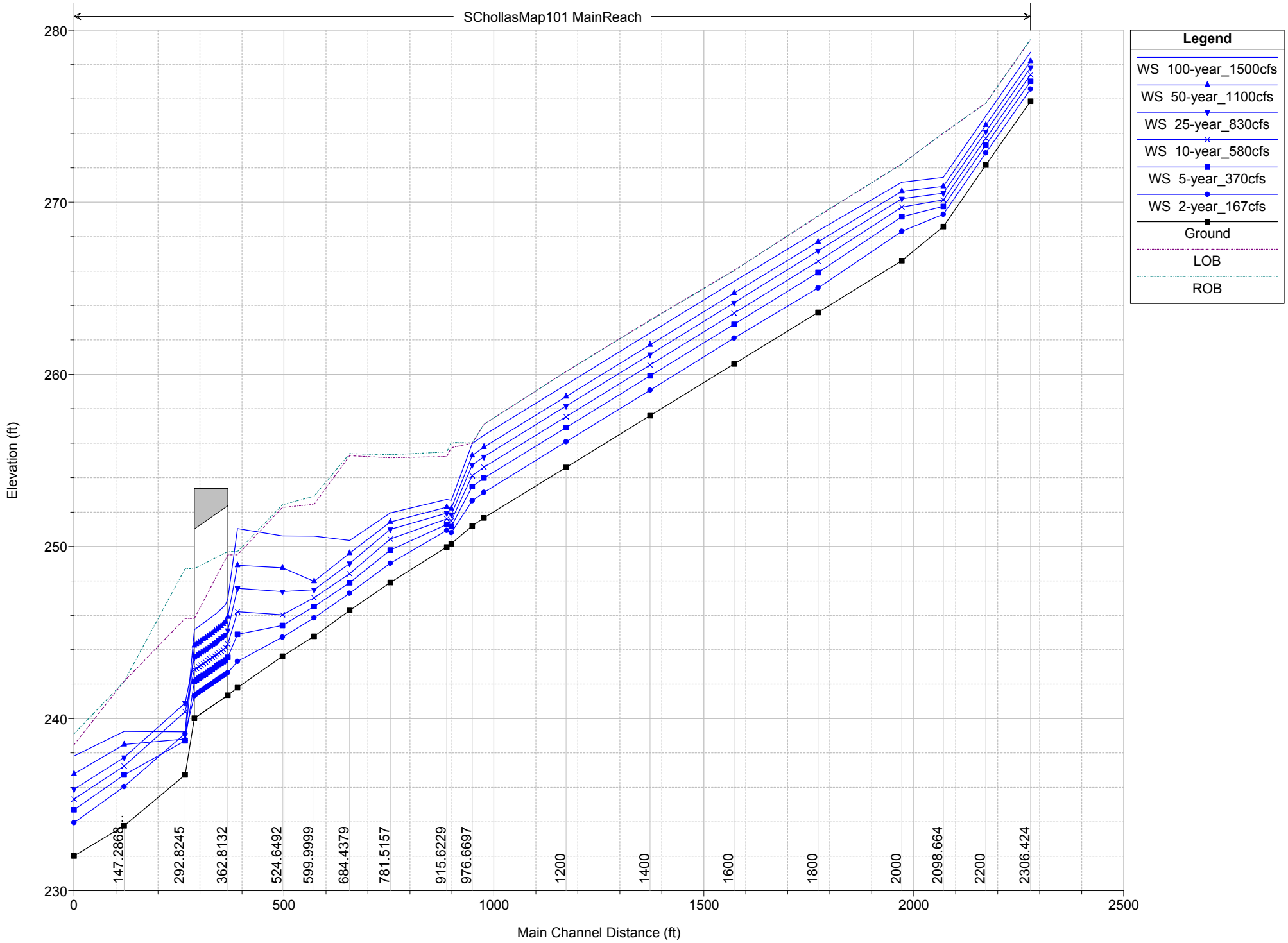
**Attachment 10 - HYDRAULIC PROFILES FOR MAINTAINED CONDITION MODEL –  
SEDIMENT AND VEGETATION REMOVED**

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SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

SChollasMap101 MainReach



Legend	
WS 100-year_1500cfs	▲
WS 50-year_1100cfs	▼
WS 25-year_830cfs	×
WS 10-year_580cfs	■
WS 5-year_370cfs	●
WS 2-year_167cfs	■
Ground	—
LOB	- - -
ROB	- · - · -

**Attachment 11 - DETAILED HYDRAULIC RESULTS FOR CURRENT VEGETATED  
CONDITION MODEL**

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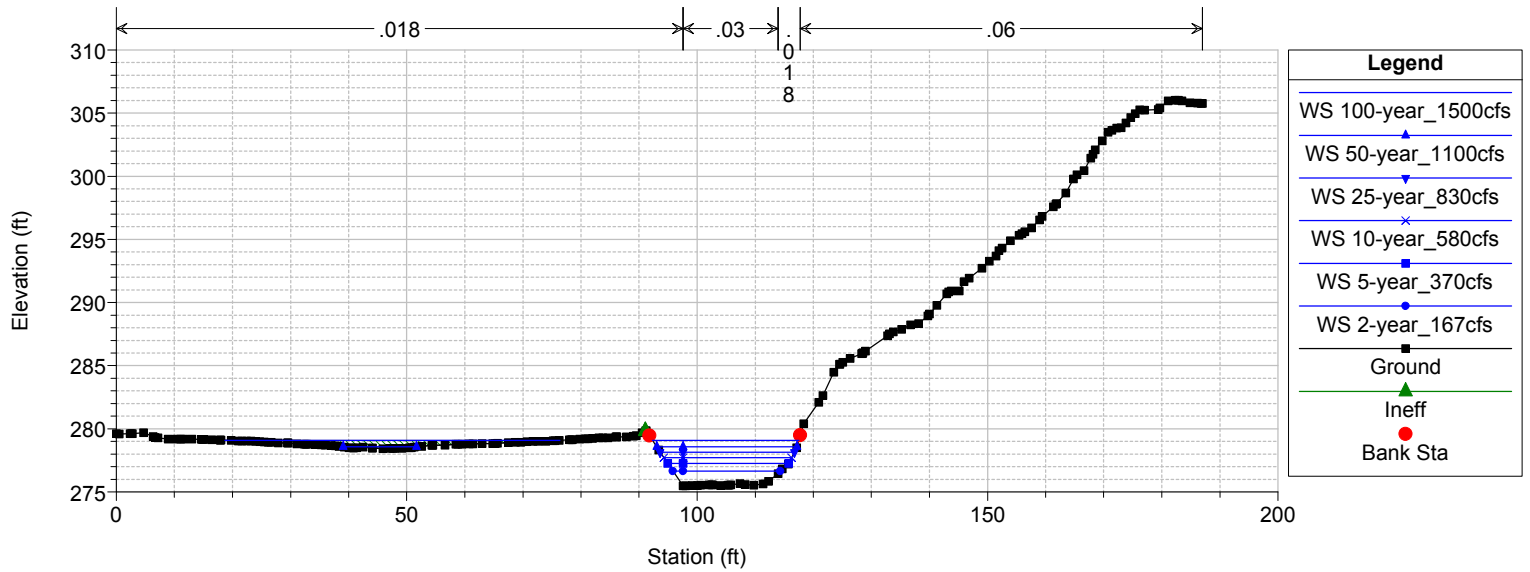
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
MainReach	2306.424	100-year_1500cfs	1500.00	275.47	279.09	280.24	285.78	0.035068	20.75	72.28	82.90	2.16
MainReach	2306.424	50-year_1100cfs	1100.00	275.47	278.56	279.95	283.92	0.035056	18.58	59.21	36.76	2.09
MainReach	2306.424	25-year_830cfs	830.00	275.47	278.15	279.48	282.53	0.035053	16.80	49.41	23.10	2.02
MainReach	2306.424	10-year_580cfs	580.00	275.47	277.70	278.74	281.08	0.035042	14.75	39.32	21.96	1.94
MainReach	2306.424	5-year_370cfs	370.00	275.47	277.25	278.00	279.67	0.035037	12.50	29.60	20.80	1.85
MainReach	2306.424	2-year_167cfs	167.00	275.47	276.65	277.07	278.00	0.035006	9.34	17.88	18.47	1.67
MainReach	2200	100-year_1500cfs	1500.00	271.72	275.29	277.60	282.04	0.035216	20.86	71.92	23.39	2.10
MainReach	2200	50-year_1100cfs	1100.00	271.72	274.71	276.89	280.16	0.035569	18.72	58.75	22.46	2.04
MainReach	2200	25-year_830cfs	830.00	271.72	274.27	275.62	278.74	0.036103	16.97	48.91	21.85	2.00
MainReach	2200	10-year_580cfs	580.00	271.72	273.80	274.84	277.26	0.036560	14.92	38.88	21.20	1.94
MainReach	2200	5-year_370cfs	370.00	271.72	273.34	274.09	275.83	0.037127	12.66	29.23	20.51	1.87
MainReach	2200	2-year_167cfs	167.00	271.72	272.77	273.17	274.14	0.037658	9.38	17.80	19.66	1.74
MainReach	2098.664	100-year_1500cfs	1500.00	268.30	272.83	274.71	278.92	0.024071	19.81	75.73	23.06	1.93
MainReach	2098.664	50-year_1100cfs	1100.00	268.30	272.22	273.77	277.09	0.023461	17.71	62.09	21.57	1.84
MainReach	2098.664	25-year_830cfs	830.00	268.30	271.73	272.99	275.71	0.023042	16.01	51.86	20.40	1.77
MainReach	2098.664	10-year_580cfs	580.00	268.30	271.19	272.16	274.27	0.022711	14.08	41.21	19.11	1.69
MainReach	2098.664	5-year_370cfs	370.00	268.30	270.63	271.30	272.87	0.022585	12.01	30.81	17.62	1.60
MainReach	2098.664	2-year_167cfs	167.00	268.30	269.86	270.23	271.16	0.023272	9.15	18.26	15.19	1.47
MainReach	2000	100-year_1500cfs	1500.00	266.55	271.83	273.29	276.68	0.015348	17.66	84.92	24.78	1.68
MainReach	2000	50-year_1100cfs	1100.00	266.55	271.24	272.37	275.00	0.014074	15.55	70.72	23.08	1.57
MainReach	2000	25-year_830cfs	830.00	266.55	270.76	271.63	273.74	0.013048	13.86	59.89	21.65	1.47
MainReach	2000	10-year_580cfs	580.00	266.55	270.20	270.80	272.44	0.011970	11.99	48.36	19.97	1.36
MainReach	2000	5-year_370cfs	370.00	266.55	269.60	269.94	271.17	0.011002	10.05	36.81	18.18	1.24
MainReach	2000	2-year_167cfs	167.00	266.55	268.74	268.82	269.60	0.009932	7.43	22.48	15.42	1.08
MainReach	1800	100-year_1500cfs	1500.00	263.49	268.90	270.31	273.54	0.015442	17.27	86.85	24.74	1.62
MainReach	1800	50-year_1100cfs	1100.00	263.49	268.19	269.35	272.03	0.015566	15.73	69.92	22.43	1.57
MainReach	1800	25-year_830cfs	830.00	263.49	267.60	268.60	270.85	0.015757	14.46	57.41	20.57	1.53
MainReach	1800	10-year_580cfs	580.00	263.49	266.94	267.74	269.59	0.016610	13.08	44.34	18.69	1.50
MainReach	1800	5-year_370cfs	370.00	263.49	266.24	266.85	268.32	0.018258	11.60	31.91	16.73	1.48
MainReach	1800	2-year_167cfs	167.00	263.49	265.31	265.70	266.68	0.022267	9.40	17.77	13.82	1.46
MainReach	1600	100-year_1500cfs	1500.00	260.30	265.89	267.34	270.61	0.013844	17.43	86.07	23.69	1.61
MainReach	1600	50-year_1100cfs	1100.00	260.30	265.14	266.34	269.07	0.013960	15.92	69.08	21.48	1.56
MainReach	1600	25-year_830cfs	830.00	260.30	264.54	265.56	267.87	0.014109	14.64	56.69	19.83	1.53
MainReach	1600	10-year_580cfs	580.00	260.30	263.89	264.68	266.54	0.014115	13.07	44.38	18.01	1.47
MainReach	1600	5-year_370cfs	370.00	260.30	263.24	263.75	265.15	0.013411	11.10	33.32	16.20	1.36
MainReach	1600	2-year_167cfs	167.00	260.30	262.38	262.56	263.41	0.011790	8.16	20.45	13.64	1.18
MainReach	1400	100-year_1500cfs	1500.00	257.36	262.89	264.31	267.65	0.015824	17.49	85.74	26.22	1.70
MainReach	1400	50-year_1100cfs	1100.00	257.36	262.24	263.45	266.14	0.015422	15.85	69.42	23.47	1.62
MainReach	1400	25-year_830cfs	830.00	257.36	261.71	262.74	264.94	0.014908	14.42	57.58	21.28	1.54
MainReach	1400	10-year_580cfs	580.00	257.36	261.07	261.88	263.66	0.014516	12.90	44.97	18.39	1.45
MainReach	1400	5-year_370cfs	370.00	257.36	260.36	260.91	262.33	0.014813	11.28	32.79	15.90	1.38
MainReach	1400	2-year_167cfs	167.00	257.36	259.38	259.69	260.62	0.016515	8.95	18.65	13.01	1.32
MainReach	1200	100-year_1500cfs	1500.00	254.41	259.89	261.36	264.78	0.012916	17.75	84.52	24.79	1.69
MainReach	1200	50-year_1100cfs	1100.00	254.41	259.17	260.45	263.29	0.012953	16.29	67.54	22.29	1.65
MainReach	1200	25-year_830cfs	830.00	254.41	258.58	259.71	262.11	0.013136	15.07	55.06	20.41	1.62
MainReach	1200	10-year_580cfs	580.00	254.41	257.94	258.83	260.83	0.013471	13.65	42.50	18.42	1.58
MainReach	1200	5-year_370cfs	370.00	254.41	257.28	257.96	259.48	0.013556	11.89	31.12	16.41	1.52
MainReach	1200	2-year_167cfs	167.00	254.41	256.44	256.78	257.71	0.012903	9.04	18.47	13.79	1.38
MainReach	1004.18	100-year_1500cfs	1500.00	251.37	256.66	258.32	261.88	0.016679	18.33	81.84	24.11	1.75
MainReach	1004.18	50-year_1100cfs	1100.00	251.37	255.95	257.31	260.35	0.017226	16.83	65.35	21.99	1.72
MainReach	1004.18	25-year_830cfs	830.00	251.37	255.38	256.56	259.13	0.017605	15.52	53.47	20.28	1.68
MainReach	1004.18	10-year_580cfs	580.00	251.37	254.76	255.71	257.79	0.017890	13.96	41.56	18.18	1.63
MainReach	1004.18	5-year_370cfs	370.00	251.37	254.12	254.82	256.41	0.018233	12.14	30.48	16.12	1.56
MainReach	1004.18	2-year_167cfs	167.00	251.37	253.24	253.64	254.64	0.019352	9.48	17.61	13.27	1.45
MainReach	976.6697	100-year_1500cfs	1500.00	250.21	254.86	256.92	261.04	0.050887	19.94	75.21	23.34	1.96
MainReach	976.6697	50-year_1100cfs	1100.00	250.21	254.16	255.85	259.47	0.053510	18.49	59.49	21.64	1.97
MainReach	976.6697	25-year_830cfs	830.00	250.21	253.62	255.06	258.25	0.055602	17.26	48.10	20.32	1.98
MainReach	976.6697	10-year_580cfs	580.00	250.21	253.04	254.24	256.90	0.056540	15.77	36.78	18.46	1.97
MainReach	976.6697	5-year_370cfs	370.00	250.21	254.72	253.40	255.13	0.003516	5.15	71.91	22.99	0.51
MainReach	976.6697	2-year_167cfs	167.00	250.21	253.58	252.30	253.78	0.002355	3.53	47.31	20.20	0.41
MainReach	926.7529	100-year_1500cfs	1500.00	251.19	256.91	256.20	257.49	0.007194	3.39	303.69	159.38	0.31
MainReach	926.7529	50-year_1100cfs	1100.00	251.19	256.44	256.05	256.88	0.011907	3.99	229.53	157.78	0.39
MainReach	926.7529	25-year_830cfs	830.00	251.19	256.00	254.97	256.41	0.023532	5.12	162.05	138.77	0.54
MainReach	926.7529	10-year_580cfs	580.00	251.19	255.27	254.04	255.74	0.034565	5.51	105.23	43.84	0.63
MainReach	926.7529	5-year_370cfs	370.00	251.19	254.36		254.75	0.026340	5.01	73.84	27.81	0.54
MainReach	926.7529	2-year_167cfs	167.00	251.19	253.31		253.51	0.021804	3.59	46.49	24.59	0.46
MainReach	915.6229	100-year_1500cfs	1500.00	251.19	256.28	256.02	257.29	0.039367	7.40	193.42	91.17	0.70
MainReach	915.6229	50-year_1100cfs	1100.00	251.19	255.77	255.30	256.60	0.047920	7.35	150.75	75.60	0.76
MainReach	915.6229	25-year_830cfs	830.00	251.19	255.27		256.00	0.051124	6.86	121.02	48.74	0.76

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
MainReach	915.6229	10-year_580cfs	580.00	251.19	254.69		255.27	0.050175	6.12	94.85	43.51	0.73
MainReach	915.6229	5-year_370cfs	370.00	251.19	253.86		254.37	0.043540	5.74	64.50	28.34	0.67
MainReach	915.6229	2-year_167cfs	167.00	251.19	252.91		253.19	0.038635	4.19	39.83	25.05	0.59
MainReach	781.5157	100-year_1500cfs	1500.00	246.95	253.58		254.10	0.014807	5.81	258.25	54.32	0.47
MainReach	781.5157	50-year_1100cfs	1100.00	246.95	252.60		253.04	0.016055	5.34	205.94	52.48	0.48
MainReach	781.5157	25-year_830cfs	830.00	246.95	251.89		252.26	0.016726	4.90	169.38	50.84	0.47
MainReach	781.5157	10-year_580cfs	580.00	246.95	251.10		251.41	0.018047	4.45	130.30	48.03	0.48
MainReach	781.5157	5-year_370cfs	370.00	246.95	250.29		250.53	0.019554	3.98	92.98	43.32	0.48
MainReach	781.5157	2-year_167cfs	167.00	246.95	249.35		249.49	0.020253	3.05	54.73	37.70	0.45
MainReach	684.4379	100-year_1500cfs	1500.00	245.01	251.89		252.66	0.014418	7.03	213.49	41.55	0.55
MainReach	684.4379	50-year_1100cfs	1100.00	245.01	250.67		251.37	0.017900	6.72	163.76	39.84	0.58
MainReach	684.4379	25-year_830cfs	830.00	245.01	250.02		250.58	0.017465	6.01	138.21	38.88	0.56
MainReach	684.4379	10-year_580cfs	580.00	245.01	249.47		249.85	0.014284	4.95	117.10	37.41	0.49
MainReach	684.4379	5-year_370cfs	370.00	245.01	248.77		249.02	0.012593	4.04	91.62	35.70	0.44
MainReach	684.4379	2-year_167cfs	167.00	245.01	247.63		247.79	0.015442	3.19	52.31	33.06	0.45
MainReach	599.9999	100-year_1500cfs	1500.00	243.47	251.04		251.70	0.008632	6.53	229.70	40.40	0.48
MainReach	599.9999	50-year_1100cfs	1100.00	243.47	249.38		250.08	0.013299	6.71	163.93	38.71	0.57
MainReach	599.9999	25-year_830cfs	830.00	243.47	248.17		248.94	0.021262	7.03	118.08	37.18	0.70
MainReach	599.9999	10-year_580cfs	580.00	243.47	247.08	246.90	247.93	0.038696	7.41	78.27	35.92	0.88
MainReach	599.9999	5-year_370cfs	370.00	243.47	246.45	246.35	247.13	0.046629	6.61	55.96	35.19	0.92
MainReach	599.9999	2-year_167cfs	167.00	243.47	246.09		246.32	0.019595	3.82	43.74	33.18	0.59
MainReach	524.6492	100-year_1500cfs	1500.00	241.09	250.88		251.33	0.002362	5.43	276.32	43.60	0.38
MainReach	524.6492	50-year_1100cfs	1100.00	241.09	249.13		249.58	0.003070	5.36	205.09	38.30	0.41
MainReach	524.6492	25-year_830cfs	830.00	241.09	247.82		248.25	0.003957	5.28	157.18	35.27	0.44
MainReach	524.6492	10-year_580cfs	580.00	241.09	246.48		246.90	0.005740	5.21	111.41	33.00	0.50
MainReach	524.6492	5-year_370cfs	370.00	241.09	245.18		245.62	0.010317	5.28	70.09	30.81	0.62
MainReach	524.6492	2-year_167cfs	167.00	241.09	243.80	243.80	244.31	0.037086	5.75	29.04	28.47	1.00
MainReach	417.4621	100-year_1500cfs	1500.00	238.91	251.07	244.65	251.15	0.000335	2.27	674.28	243.61	0.14
MainReach	417.4621	50-year_1100cfs	1100.00	238.91	249.12	243.76	249.31	0.001145	3.53	311.58	108.97	0.25
MainReach	417.4621	25-year_830cfs	830.00	238.91	247.78	243.11	247.95	0.001288	3.33	249.00	42.95	0.24
MainReach	417.4621	10-year_580cfs	580.00	238.91	246.41	242.41	246.55	0.001367	2.99	194.01	37.77	0.23
MainReach	417.4621	5-year_370cfs	370.00	238.91	245.11	241.65	245.21	0.001332	2.51	147.26	33.93	0.21
MainReach	417.4621	2-year_167cfs	167.00	238.91	243.57	240.74	243.62	0.000943	1.69	98.57	29.66	0.16
MainReach	362.8132		Culvert									
MainReach	292.8245	100-year_1500cfs	1500.00	236.73	239.24	242.01	257.70	0.918499	34.48	43.50	34.95	5.11
MainReach	292.8245	50-year_1100cfs	1100.00	236.73	238.81	241.21	259.00	1.611516	36.05	30.51	33.82	6.39
MainReach	292.8245	25-year_830cfs	830.00	236.73	240.90	240.65	242.09	0.020846	8.74	94.96	38.81	0.88
MainReach	292.8245	10-year_580cfs	580.00	236.73	240.40		241.23	0.018515	7.31	79.36	37.79	0.80
MainReach	292.8245	5-year_370cfs	370.00	236.73	238.70	239.46	241.59	0.256864	13.65	27.11	32.16	2.51
MainReach	292.8245	2-year_167cfs	167.00	236.73	239.12		239.39	0.015081	4.18	39.98	34.65	0.65
MainReach	147.2868	100-year_1500cfs	1500.00	233.77	239.26	238.72	240.15	0.016269	7.56	198.32	66.39	0.77
MainReach	147.2868	50-year_1100cfs	1100.00	233.77	238.49	238.20	239.34	0.019921	7.40	148.73	62.12	0.84
MainReach	147.2868	25-year_830cfs	830.00	233.77	237.74	237.70	238.70	0.024365	7.88	105.35	53.03	0.99
MainReach	147.2868	10-year_580cfs	580.00	233.77	237.24	237.24	238.06	0.025868	7.27	79.79	50.25	1.02
MainReach	147.2868	5-year_370cfs	370.00	233.77	236.72	236.72	237.42	0.021835	6.68	55.37	39.10	0.99
MainReach	147.2868	2-year_167cfs	167.00	233.77	236.04	236.04	236.51	0.025791	5.50	30.37	33.56	1.02
MainReach	28.06381	100-year_1500cfs	1500.00	232.02	237.83	236.11	238.20	0.014014	4.87	308.14	126.65	0.55
MainReach	28.06381	50-year_1100cfs	1100.00	232.02	236.78	235.54	237.25	0.013998	5.48	200.82	75.08	0.59
MainReach	28.06381	25-year_830cfs	830.00	232.02	235.90	235.11	236.41	0.014002	5.72	145.09	55.22	0.62
MainReach	28.06381	10-year_580cfs	580.00	232.02	235.32	234.61	235.72	0.014001	5.09	113.88	52.57	0.61
MainReach	28.06381	5-year_370cfs	370.00	232.02	234.70	234.13	235.01	0.014027	4.49	82.49	47.79	0.60
MainReach	28.06381	2-year_167cfs	167.00	232.02	233.95	233.56	234.13	0.014010	3.42	48.79	43.15	0.57

SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

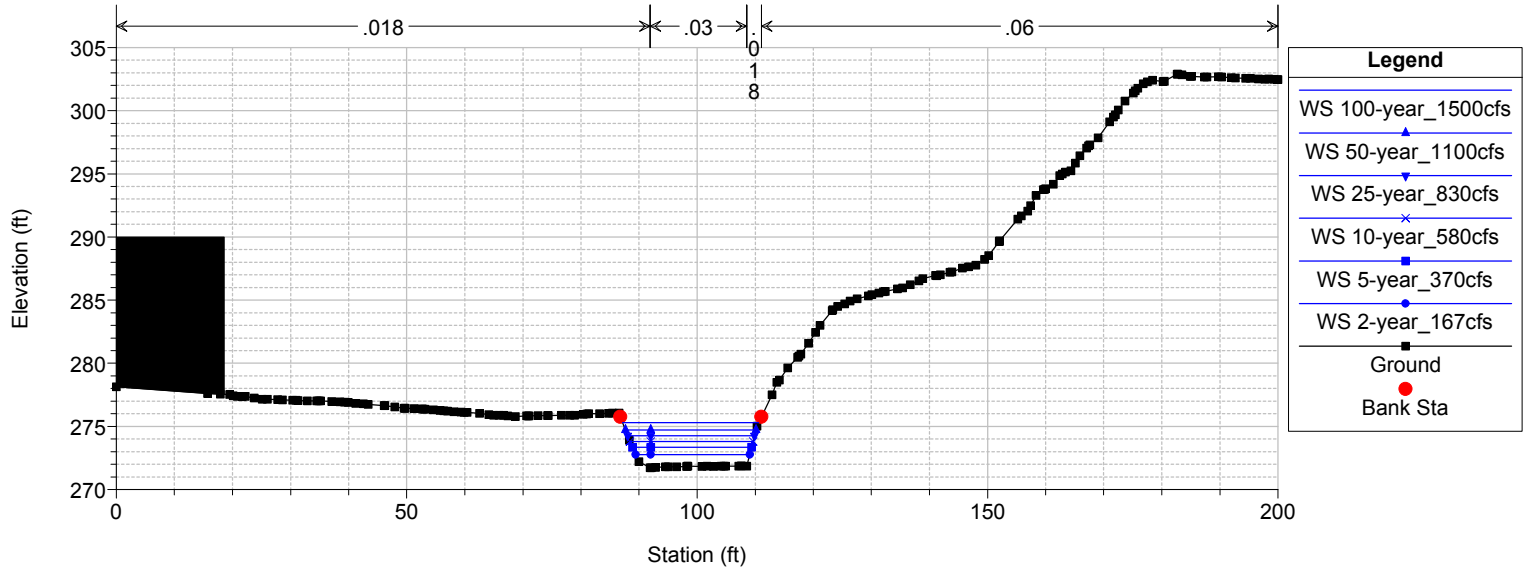
River = SChollasMap101 Reach = MainReach RS = 2306.424 Boundary between Lemon Grove and City. Rectangular channel w/ m



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

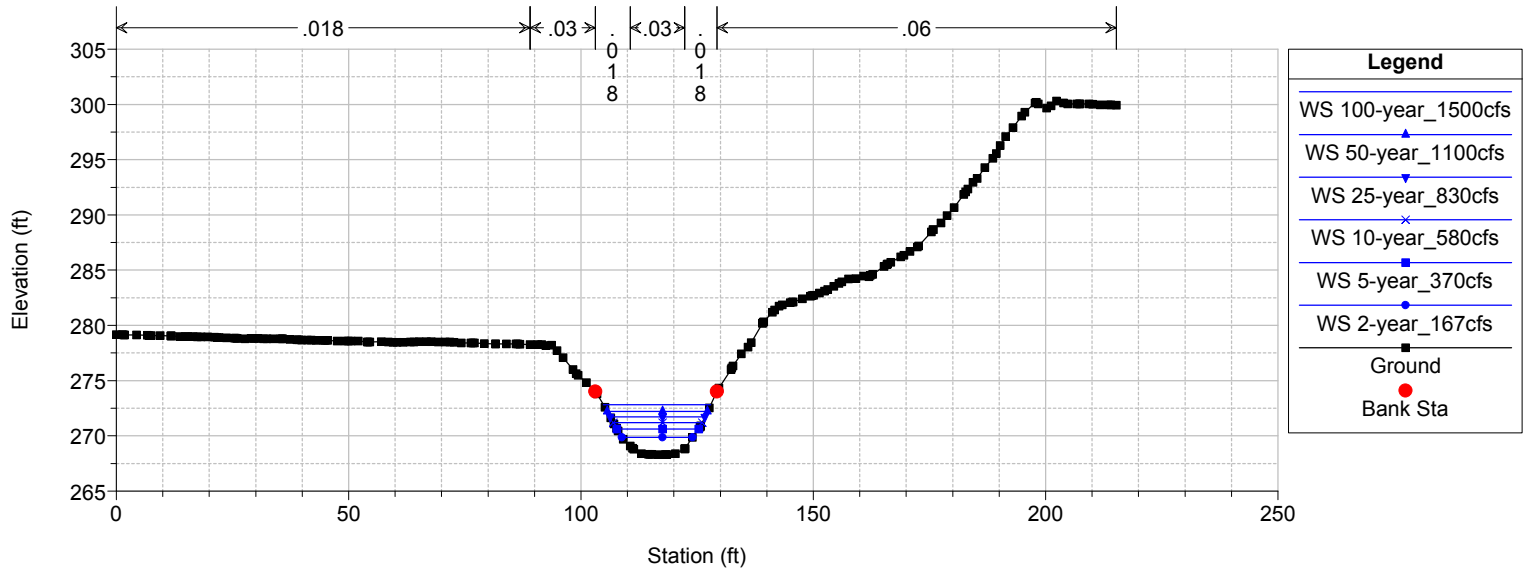
River = SChollasMap101 Reach = MainReach RS = 2200



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

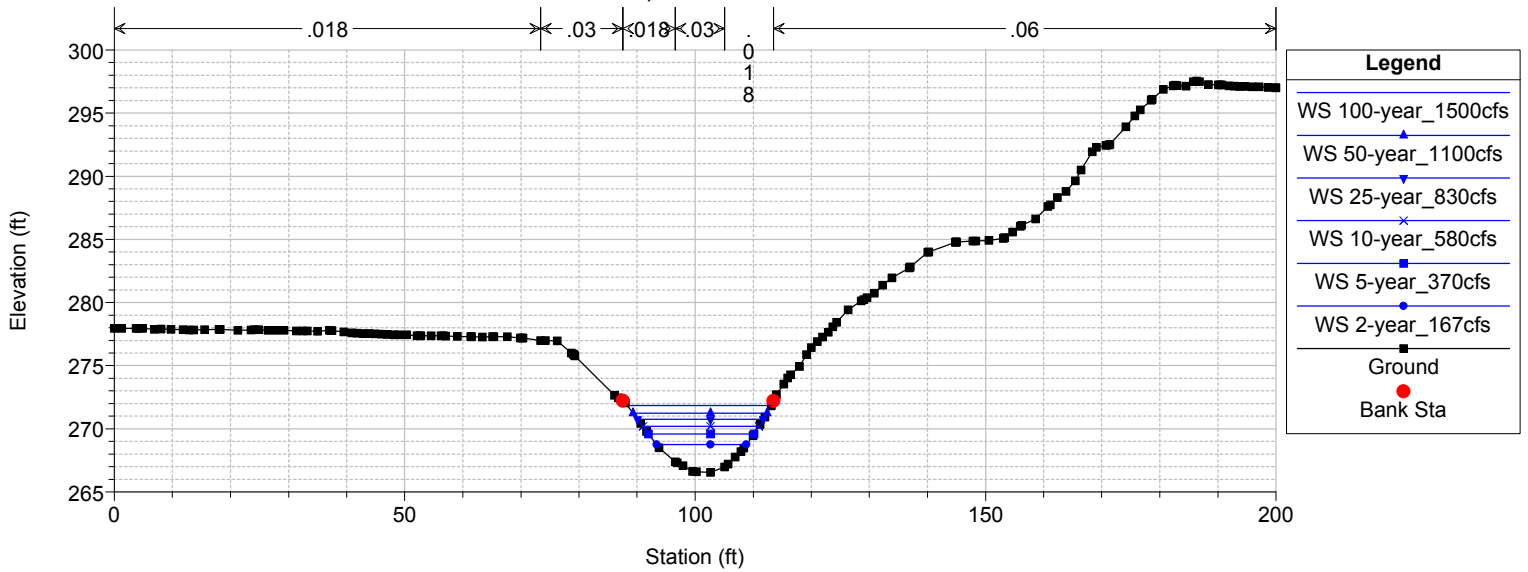
River = SChollasMap101 Reach = MainReach RS = 2098.664 Channel transitions to a trapezoidal concrete channel. Bank sta



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

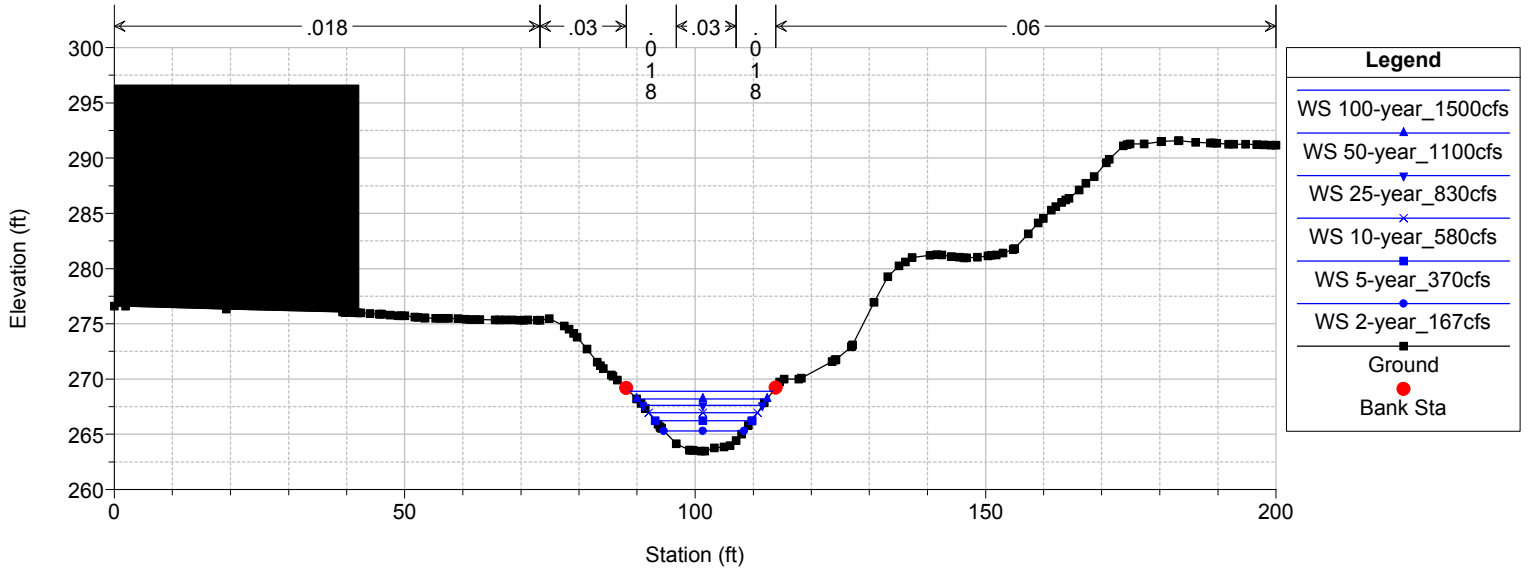
River = SChollasMap101 Reach = MainReach RS = 2000



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

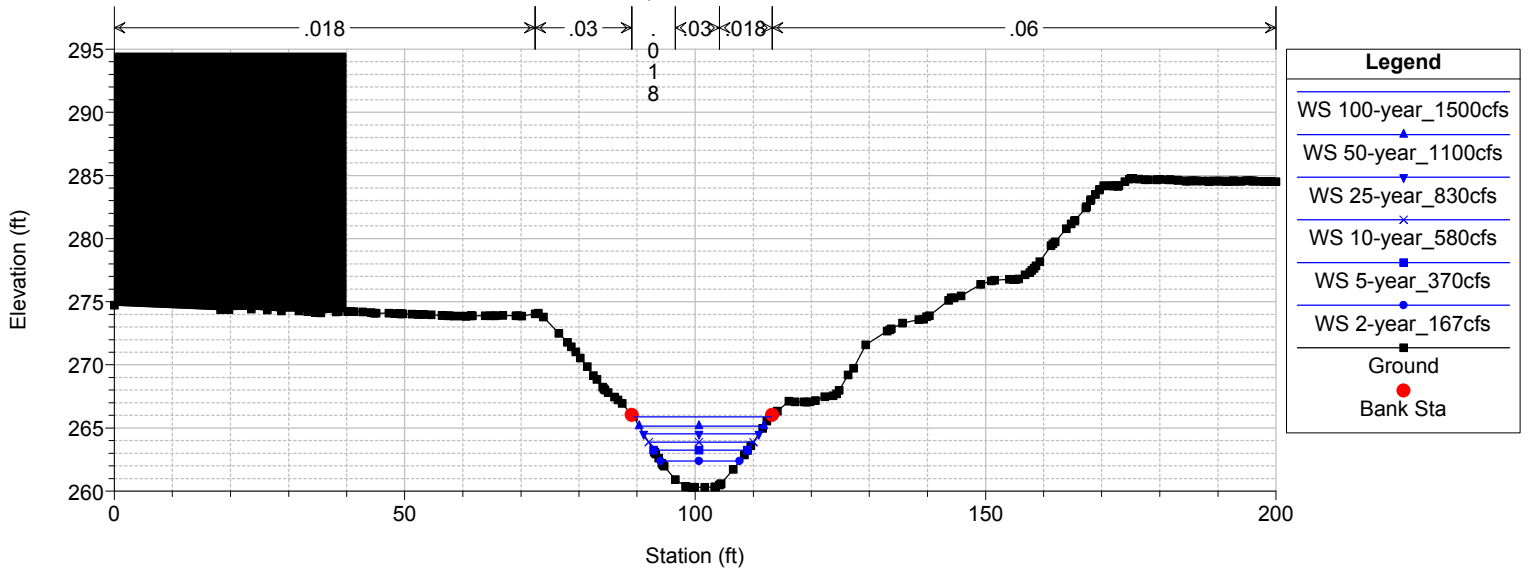
River = SChollasMap101 Reach = MainReach RS = 1800



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

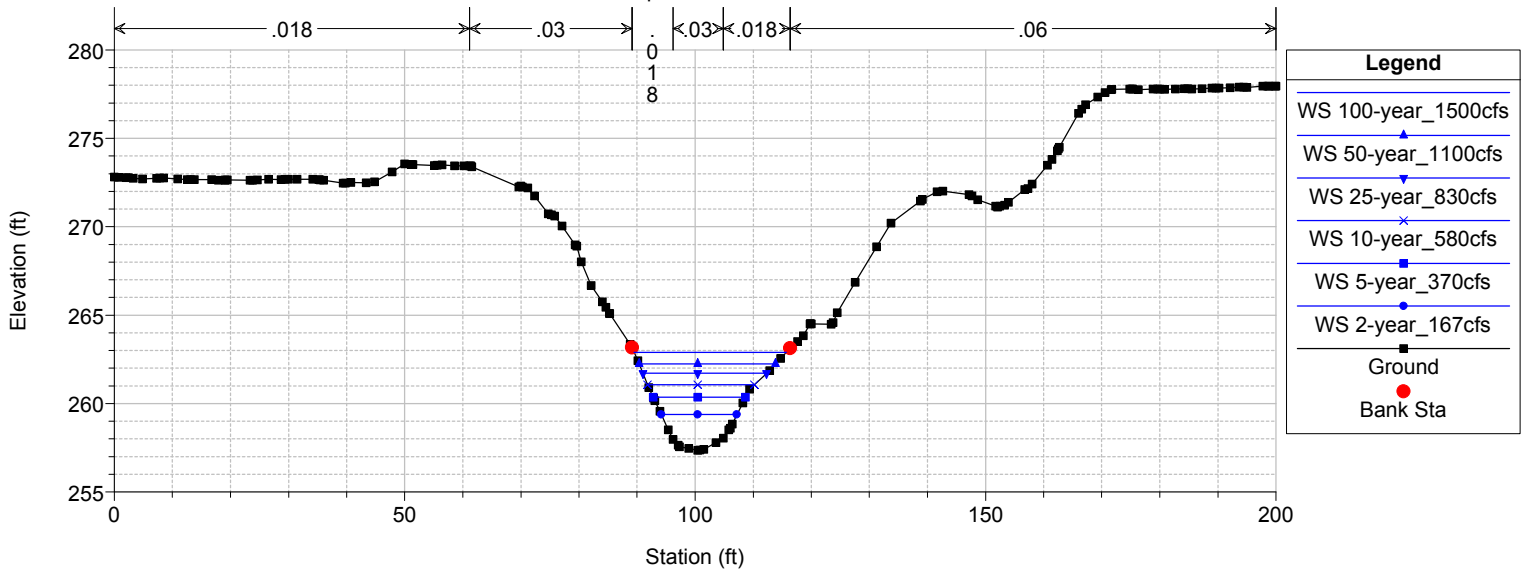
River = SChollasMap101 Reach = MainReach RS = 1600



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

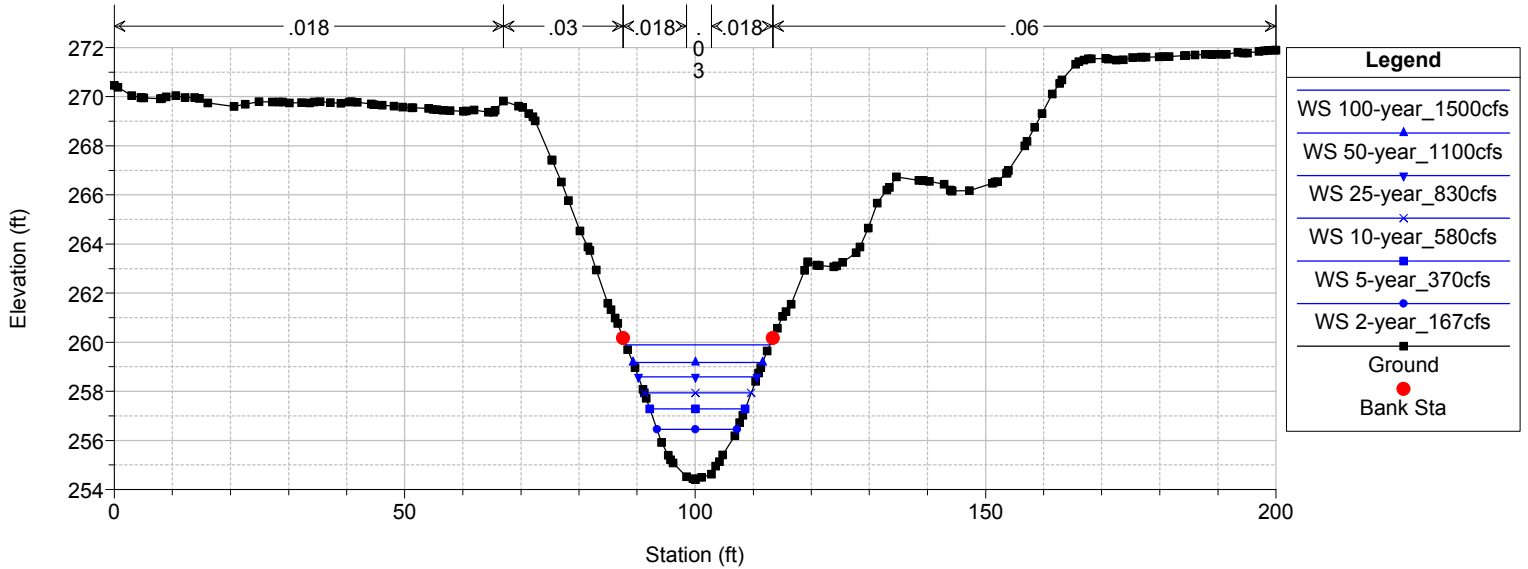
River = SChollasMap101 Reach = MainReach RS = 1400



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

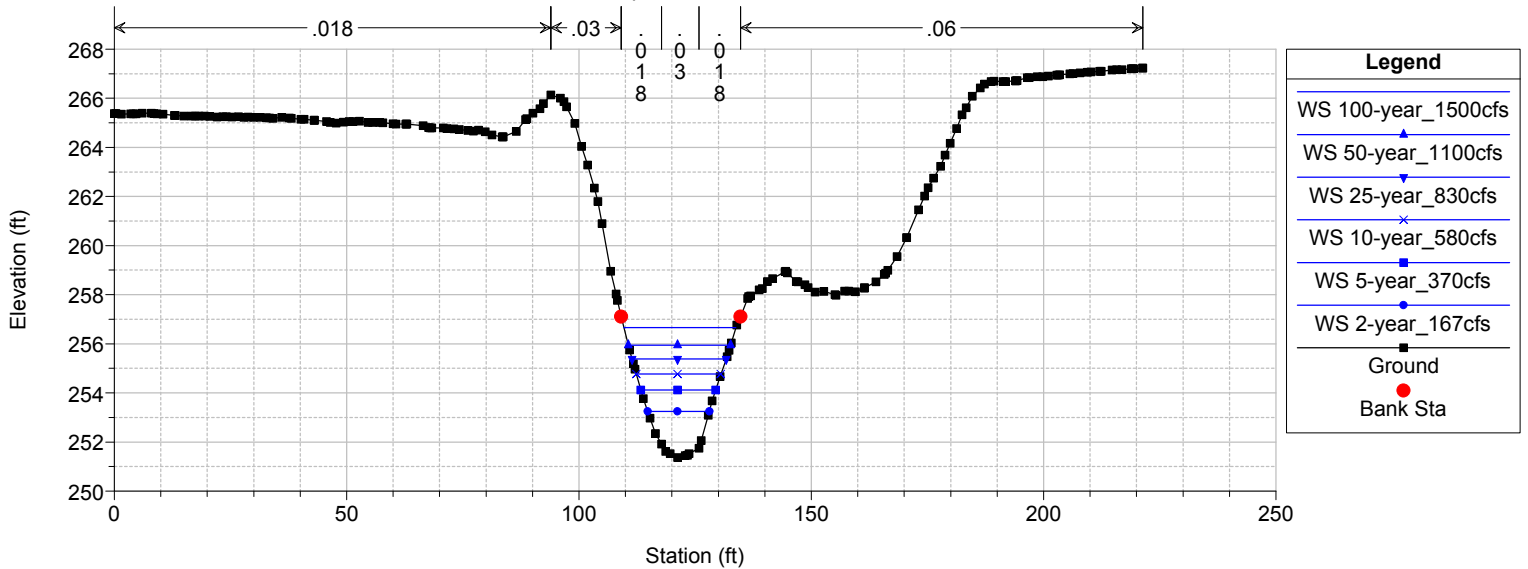
River = SChollasMap101 Reach = MainReach RS = 1200



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

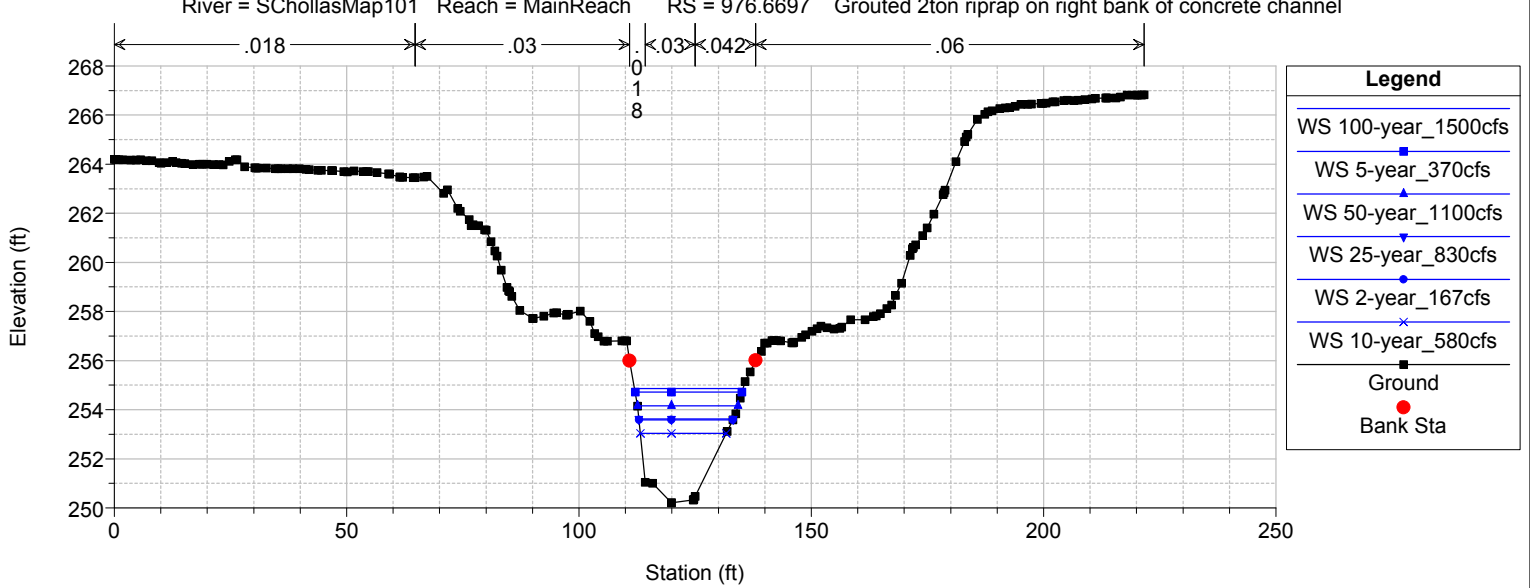
River = SChollasMap101 Reach = MainReach RS = 1004.18



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

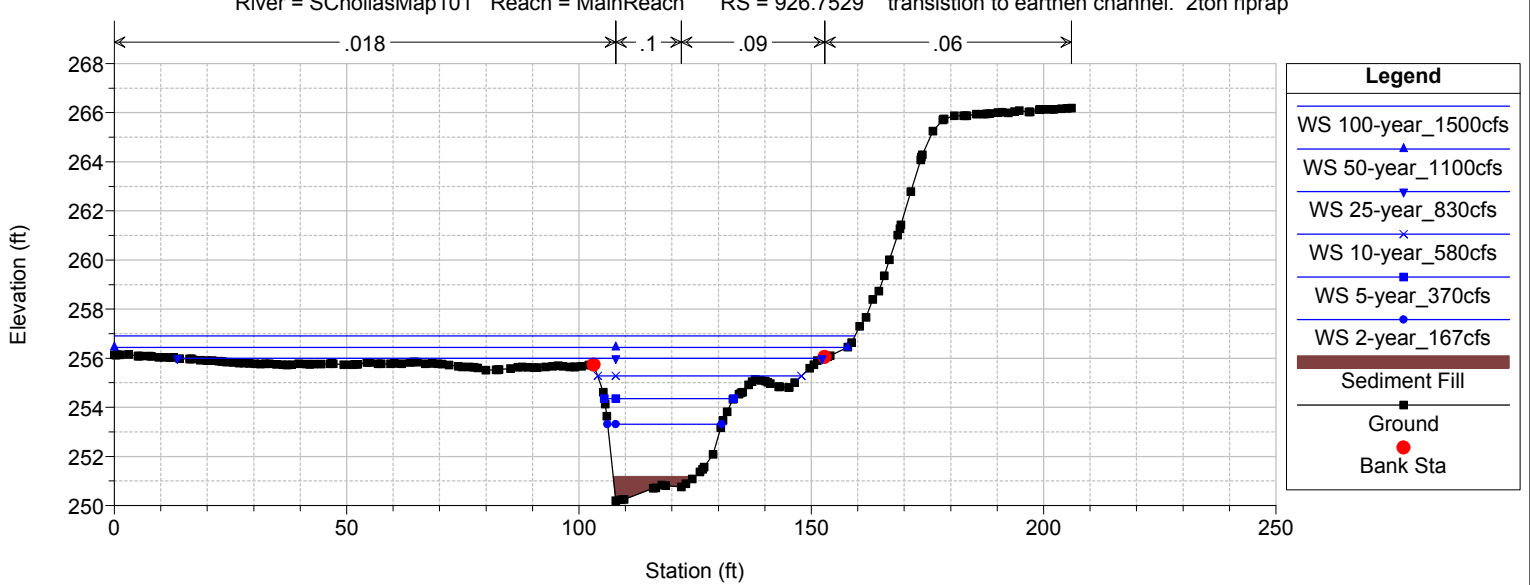
River = SChollasMap101 Reach = MainReach RS = 976.6697 Grouted 2ton riprap on right bank of concrete channel



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

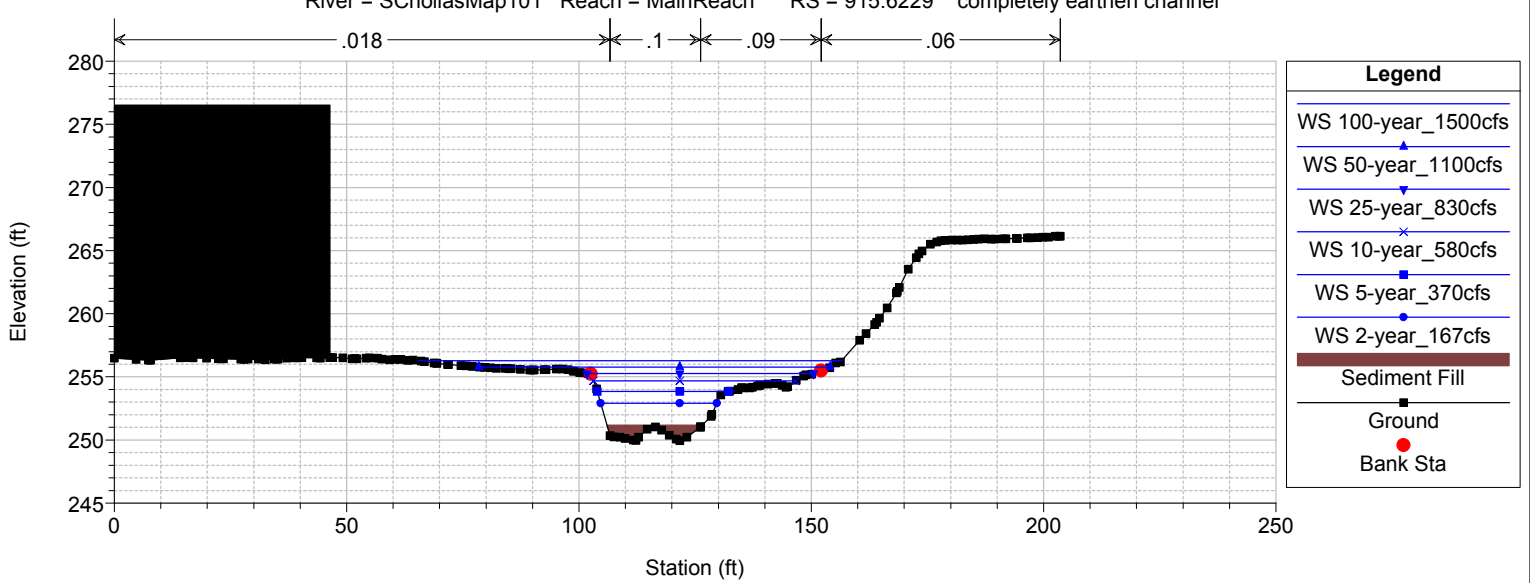
River = SChollasMap101 Reach = MainReach RS = 926.7529 transition to earthen channel. 2ton riprap



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

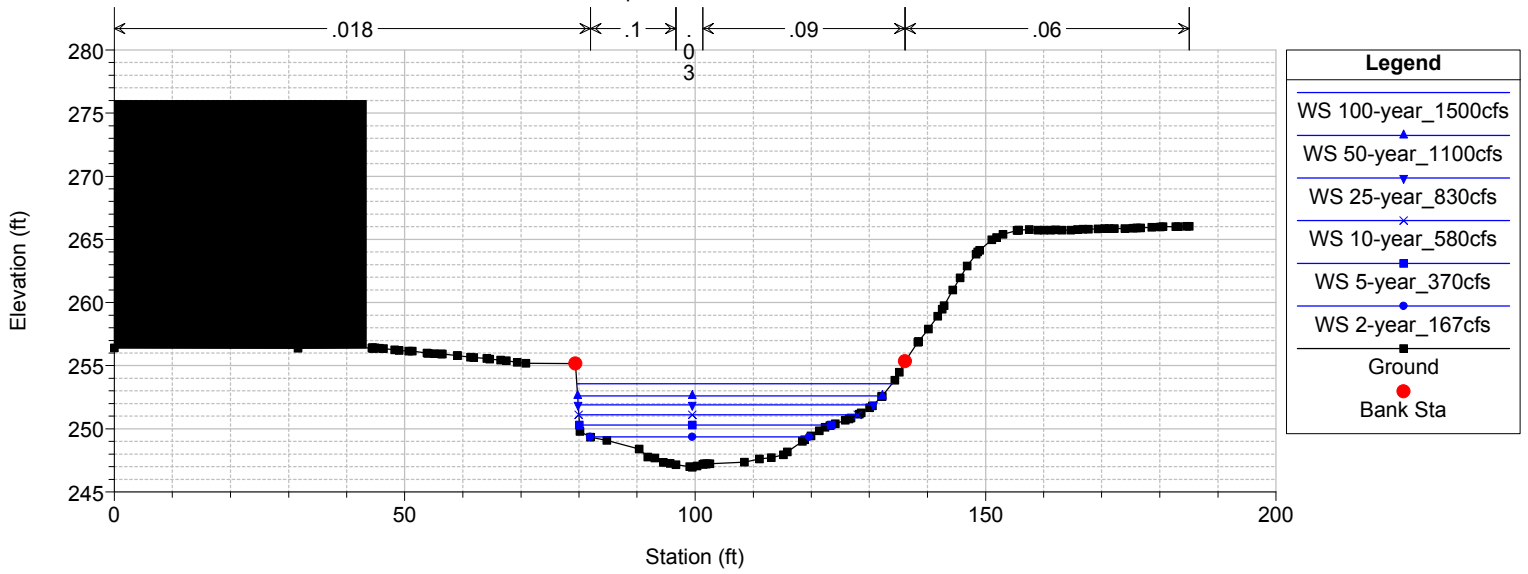
River = SChollasMap101 Reach = MainReach RS = 915.6229 completely earthen channel



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

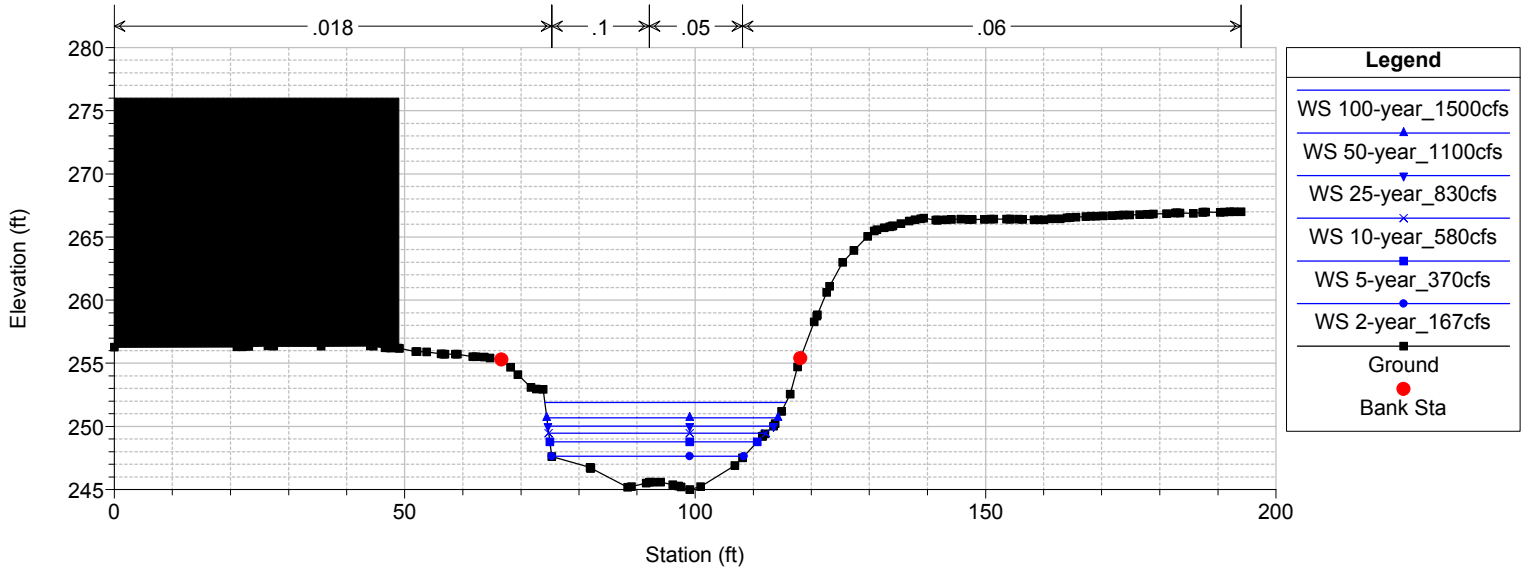
River = SChollasMap101 Reach = MainReach RS = 781.5157



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

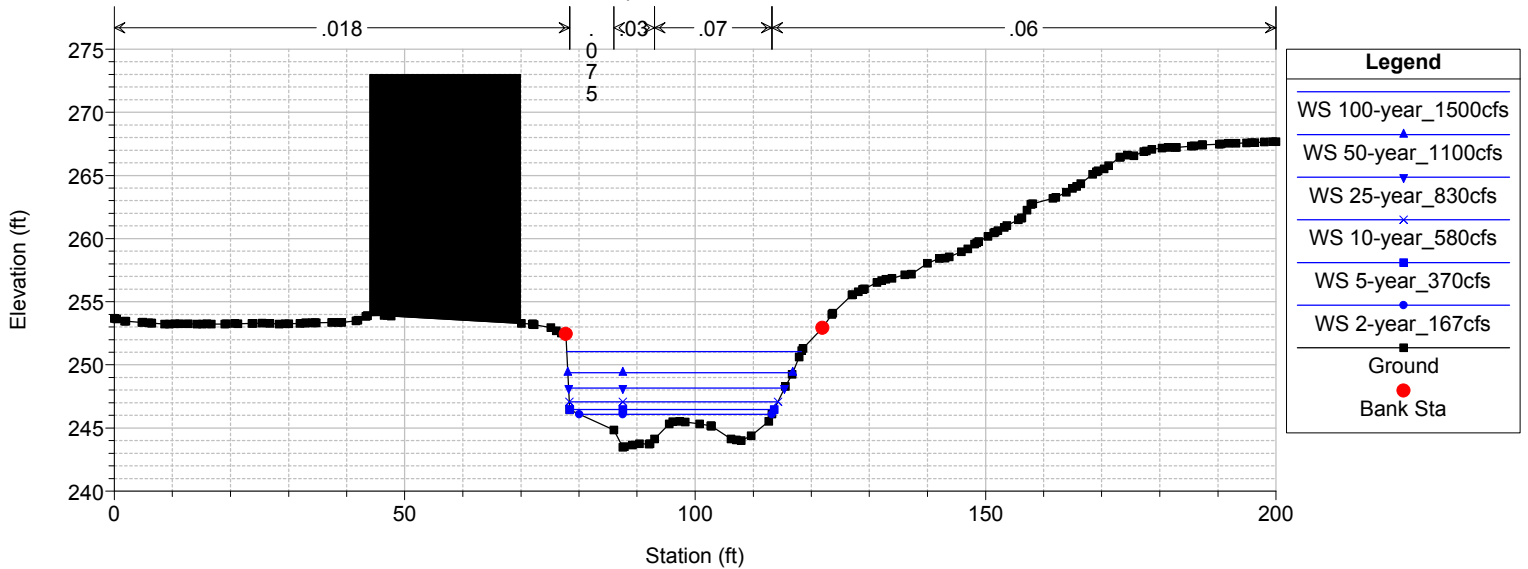
River = SChollasMap101 Reach = MainReach RS = 684.4379



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 599.9999

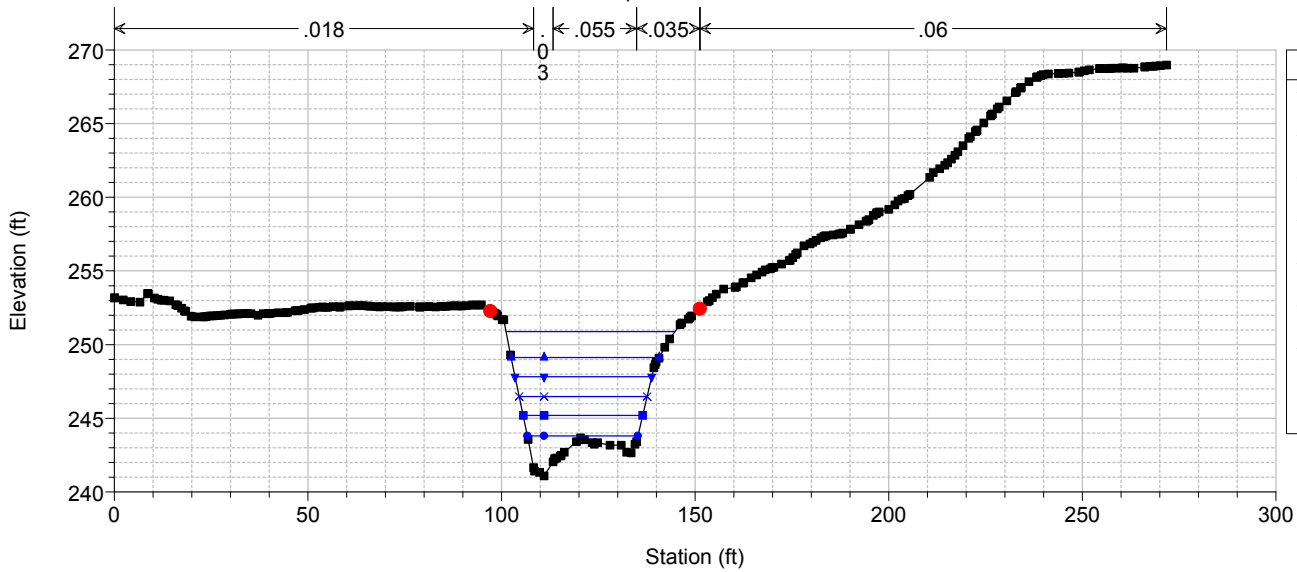




SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

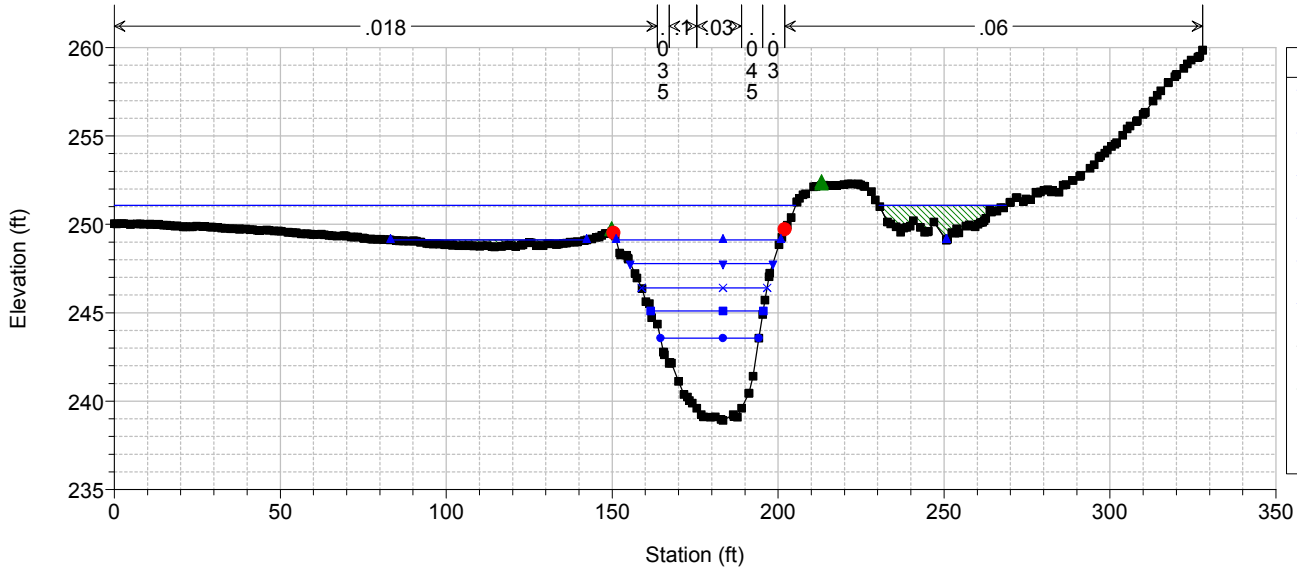
River = SChollasMap101 Reach = MainReach RS = 524.6492



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

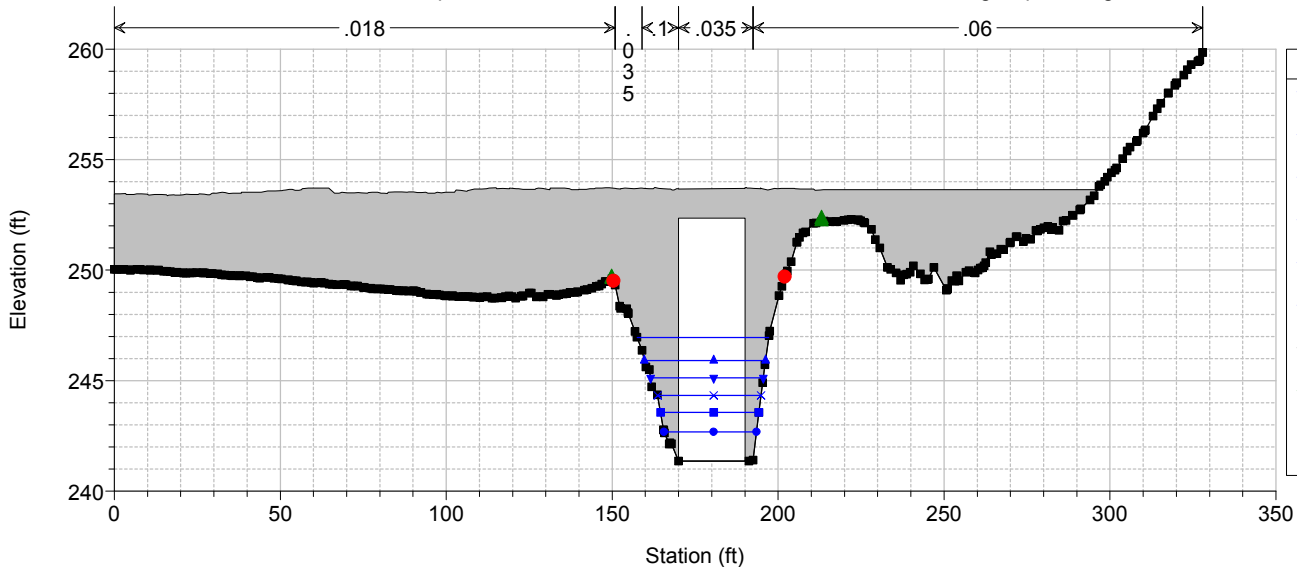
River = SChollasMap101 Reach = MainReach RS = 417.4621 Cross Section upstream of Bridge at Federal Blvd



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd

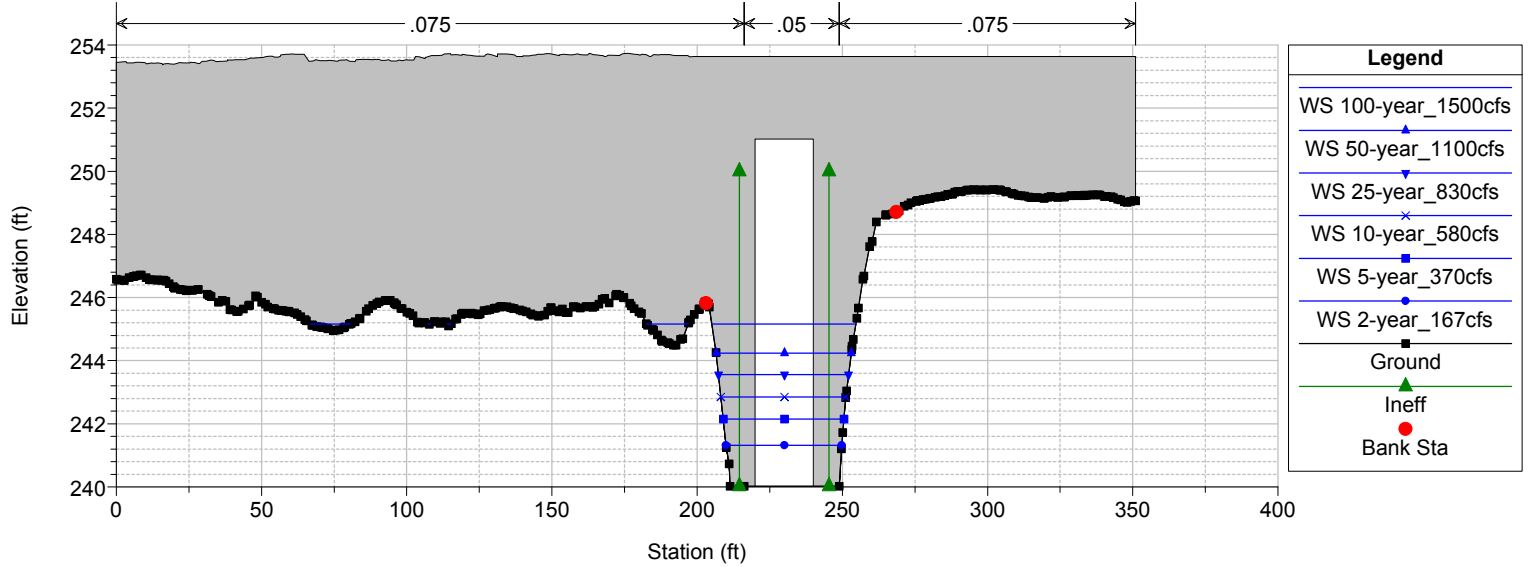




SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

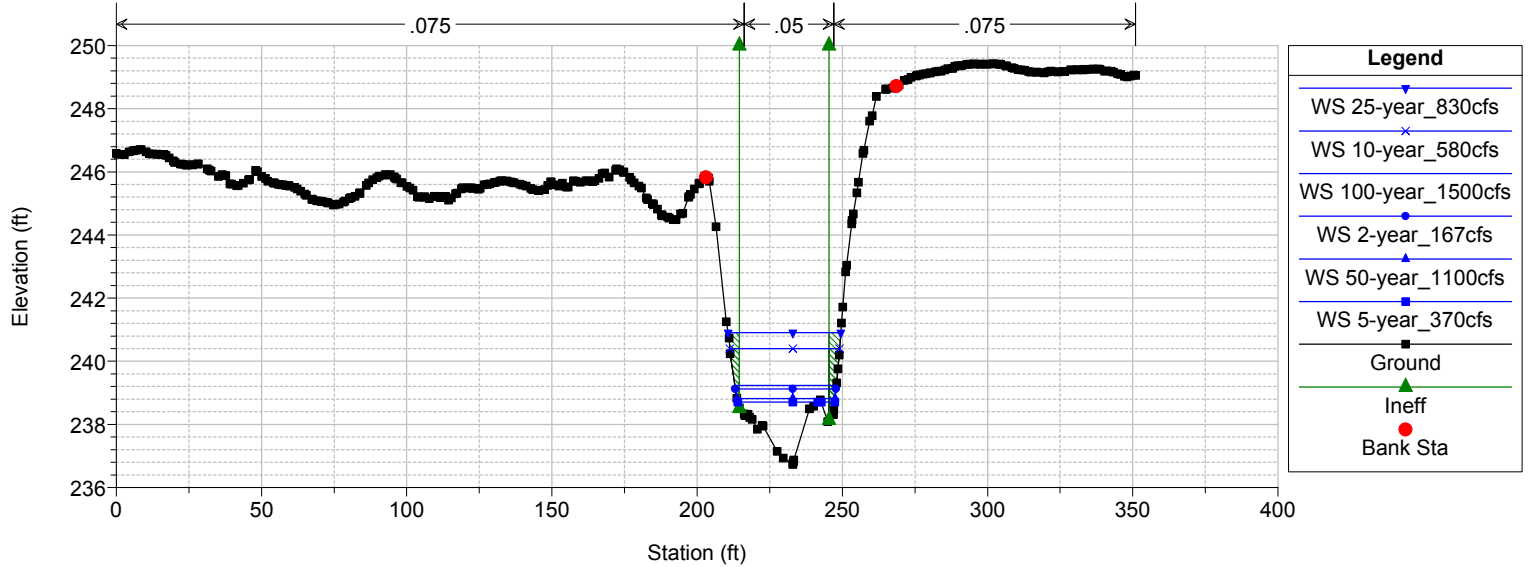
River = SChollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

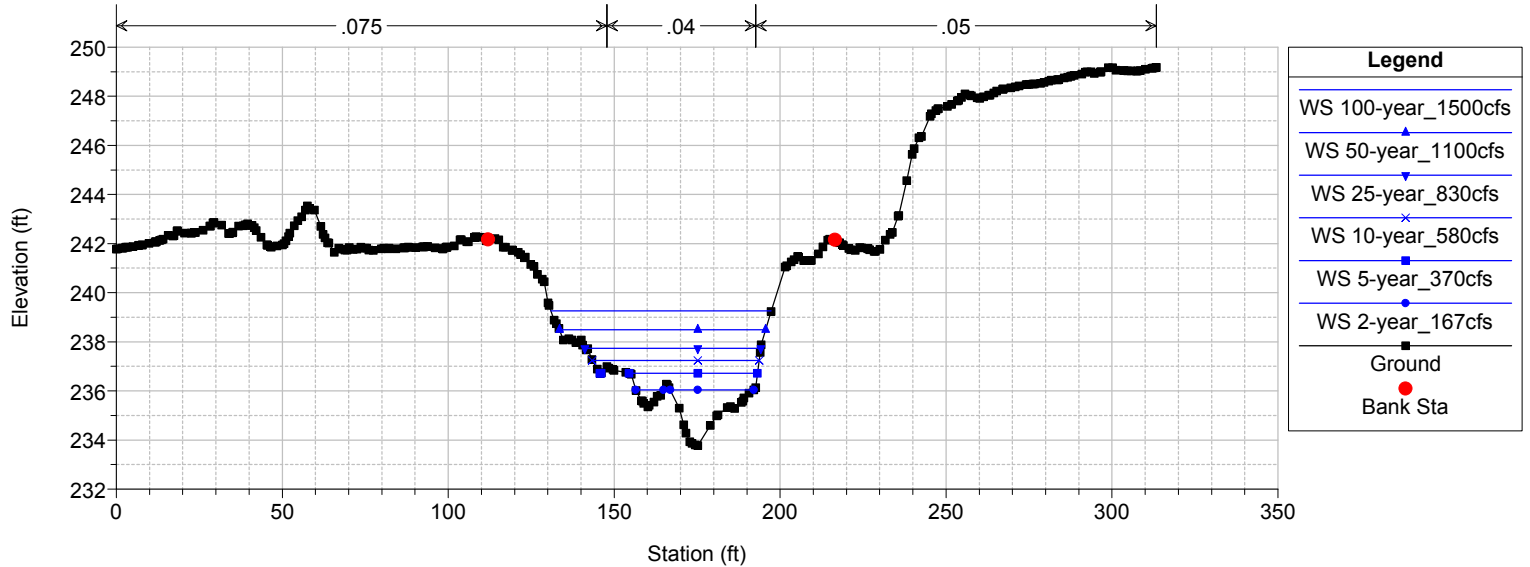
River = SChollasMap101 Reach = MainReach RS = 292.8245



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

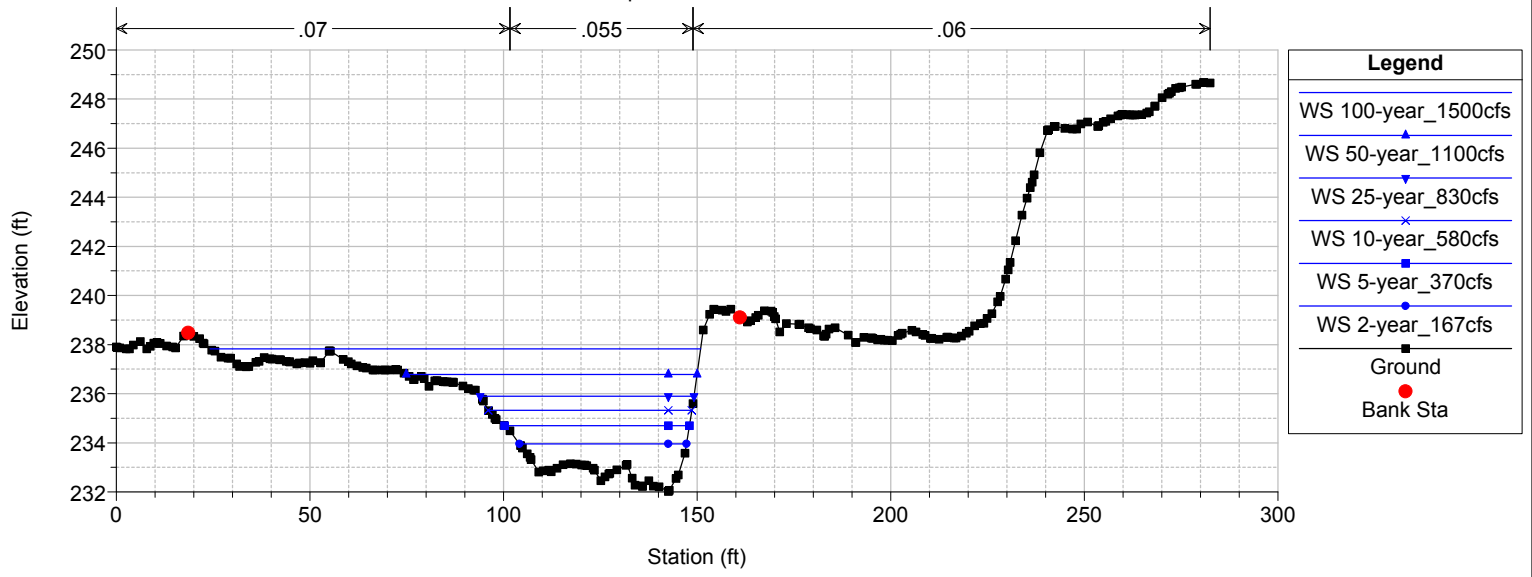
River = SChollasMap101 Reach = MainReach RS = 147.2868



SChollas\_Map101 Plan: CurrentCondition 12/14/2016

Geom: CurrentCondition\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 28.06381



Schollas\_Map101.rep

HEC-RAS Version 4.1.0 Jan 2010  
 U.S. Army Corps of Engineers  
 Hydrologic Engineering Center  
 609 Second Street  
 Davis, California

```

X   X   XXXXXX   XXXX   XXXX   XX   XXXX
X   X   X       X   X   X   X   X   X   X
X   X   X       X   X   X   X   X   X   X
XXXXXXXX XXXX   X   XXX XXXX XXXXXX XXXX
X   X   X       X   X   X   X   X   X   X
X   X   X       X   X   X   X   X   X   X
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PROJECT DATA  
 Project Title: Schollas\_Map101  
 Project File : Schollas\_Map101.prj  
 Run Date and Time: 12/14/2016 9:25:00 AM

Project in English units

PLAN DATA

Plan Title: CurrentCondition  
 Plan File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.p01

Geometry Title: CurrentCondition\_Geo  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g02

Flow Title : SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.f01

Plan Summary Information:  
 Number of: Cross Sections = 20 Multiple Openings = 0  
 Culverts = 1 Inline Structures = 0  
 Bridges = 0 Lateral Structures = 0

Computational Information  
 water surface calculation tolerance = 0.01  
 critical depth calculation tolerance = 0.01  
 Maximum number of iterations = 20  
 Maximum difference tolerance = 0.3  
 Flow tolerance factor = 0.001

Computation Options  
 Critical depth computed only where necessary  
 Conveyance Calculation Method: At breaks in n values only  
 Friction Slope Method: Average Conveyance  
 Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.f01

Flow Data (cfs)

River	Reach	RS	100-year_1500cfs	50-year_1100cfs	25-year_830cfs
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Schollas\_Map101.rep

10-year_580cfs	5-year_370cfs	2-year_167cfs	Schollas_Map101.rep			
SchollasMap101	MainReach	2306.424	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	2200	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	2098.664	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	2000	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	1800	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	1600	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	1400	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	1200	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	1004.18	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	976.6697	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	926.7529	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	915.6229	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	781.5157	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	684.4379	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	599.9999	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	524.6492	1500	1100	830	
580	370	167				
SchollasMap101	MainReach	417.4621	1500	1100	830	
580	370	167				

Boundary Conditions

River	Reach	Profile	Upstream	
SchollasMap101	MainReach	100-year_1500cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	50-year_1100cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	25-year_830cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	10-year_580cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	5-year_370cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	2-year_167cfs	Normal S = 0.035	Normal S =
0.014				

GEOMETRY DATA

Geometry Title: CurrentCondition\_Geo  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g02

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach RS: 2306.424

Schollas\_Map101.rep

INPUT

Description: Boundary between Lemon Grove and City. Rectangular channel w/ minimal vegetation on bottom of channel

Table with columns: Station, Elevation, Data, num=198. Contains stationing data from Sta 0 to Sta 186.18.

Manning's n Values table with columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. num=4.

Bank Sta: Left, Right, Lengths: Left Channel, Right, Coeff, Contr., Expan. table. num=1.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 2200

INPUT

Table with columns: Station, Elevation, Data, num=183. Contains stationing data from Sta 0 to Sta 42.54.

Schollas\_Map101.rep

Table with columns: Station, Elevation, Data, num=200. Contains stationing data from Sta 47.91 to Sta 199.29.

Manning's n Values table with columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. num=4.

Bank Sta: Left, Right, Lengths: Left Channel, Right, Coeff, Contr., Expan. table. num=1.

Blocked Obstructions table with columns: Sta L, Sta R, Elev, num=1.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 2098.664

INPUT

Description: Channel transitions to a trapezoidal concrete channel. Bank stations are at the top of the concrete channel.

Table with columns: Station, Elevation, Data, num=200. Contains stationing data from Sta 0 to Sta 106.41.



Schollas\_Map101.rep

110.63	269.08	111.08	268.87	111.39	268.78	113	268.38	114.56	268.34
114.9	268.32	115.25	268.32	116.63	268.3	118.17	268.3	118.33	268.3
118.47	268.3	120.35	268.38	122.34	268.82	122.38	268.83	122.41	268.85
124	269.86	125.63	270.8	125.69	270.85	125.76	270.92	127.59	272.54
129.13	273.93	129.24	274.02	129.7	274.34	132.28	276.01	132.47	276.16
132.71	276.32	134.47	277.44	135.96	278.04	136.64	278.43	139.04	280.17
139.17	280.25	139.35	280.32	141.19	281.19	141.69	281.39	142.63	281.74
143.29	281.87	145.06	282.06	145.52	282.11	145.68	282.12	147.68	282.4
149.35	282.65	149.71	282.7	150.09	282.74	151.31	282.93	152.44	283.1
153.13	283.24	154.4	283.53	155.53	283.81	156.14	283.94	157.58	284.19
159.13	284.24	160.82	284.46	162	284.41	162.28	284.52	162.71	284.6
165.22	285.34	165.82	285.52	166.01	285.57	166.64	285.72	168.83	286.2
169.52	286.34	170.82	286.7	172.39	287.1	172.68	287.18	175.4	288.47
175.78	288.65	175.82	288.67	177.51	289.26	178.82	289.94	180.28	290.65
182.36	291.85	182.78	292.08	183.29	292.34	184.35	292.95	185.23	293.31
186.89	294.28	188.62	295.13	189.39	295.56	190.23	296.27	191.4	297.1
192.95	297.9	194.84	298.95	195.49	299.28	197.75	300.12	197.99	300.18
198.43	300.04	200.18	299.67	201.17	299.88	202.37	300.3	203.83	300.14
204.72	300.06	206.7	300.05	207.2	300.04	207.43	300.04	209.38	300.05
210.13	300.02	211.77	299.97	213.49	299.96	214.07	299.96	215.24	299.92

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.018	89.06	.03	103.09	.018	110.63	.03	122.34	.018
129.24	.06								

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

103.09	129.24	101.57	98.66	97.84	.1	.3
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CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 2000

INPUT Description: Station Elevation Data num= 166

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	277.96	1.27	277.95	3.72	277.96	4.13	277.96	4.83	277.94
6.87	277.88	8.04	277.9	9.76	277.88	11.84	277.86	12.84	277.83
13.66	277.82	15.54	277.84	18.03	277.88	18.13	277.88	18.25	277.88
21.25	277.81	23.53	277.83	24.14	277.84	24.86	277.84	26.47	277.81
27.8	277.81	29.21	277.79	31.35	277.76	32.47	277.75	33.24	277.74
34.99	277.72	37.05	277.79	37.28	277.78	37.46	277.78	39.48	277.66
40.9	277.6	41.69	277.56	42.82	277.55	43.85	277.55	44.91	277.52
45.98	277.5	46.99	277.48	48.1	277.44	48.92	277.45	50.28	277.45
52.13	277.38	52.46	277.37	52.79	277.37	54.53	277.38	56.24	277.37
56.65	277.36	57	277.35	59.06	277.31	61.4	277.29	61.44	277.29
61.48	277.29	63.34	277.27	65.15	277.29	65.25	277.29	65.35	277.29
67.68	277.28	69.92	277.2	70.12	277.19	70.34	277.18	73.37	277
74.24	277	76.23	276.96	78.68	276.01	79.02	275.92	79.12	275.87
79.17	275.85	79.31	275.78	86.13	272.65	86.76	272.45	87.54	272.23
87.86	272.12	88.01	272.04	90.66	270.42	91.62	269.79	93.79	268.5
96.56	267.39	96.93	267.3	97.88	267.08	99.56	266.62	100.22	266.59
102.65	266.55	105.06	266.98	105.66	267.2	106.87	267.75	107.88	268.19
108.38	268.48	109.95	269.47	111.17	270.35	112.01	270.93	113.12	271.83
113.5	272.21	114	272.71	115.25	273.54	115.94	274.02	116.44	274.28
117.98	274.94	119.17	275.86	119.99	276.42	121.05	276.91	121.93	277.26
122.91	277.65	123.67	278.09	124.35	278.43	126.31	279.43	128.62	280.12
129.03	280.24	129.56	280.38	130.88	280.73	132.31	281.38	133.9	281.95
136.86	282.75	136.95	282.78	137.05	282.81	140.08	283.98	140.21	284.02
144.79	284.76	144.86	284.79	144.92	284.79	145	284.8	147.83	284.88
148.3	284.88	150.58	284.91	153.05	285.06	153.29	285.16	154.66	285.59
155.98	286.04	156.22	286.1	158.61	286.63	160.7	287.6	161.15	287.74
162.36	288.31	163.88	288.81	165.45	289.63	166.45	290.5	168.4	291.95
169.08	292.3	170.73	292.44	171.2	292.48	171.39	292.53	174.16	293.91
175.72	294.79	176.65	295.27	178.49	296.02	178.61	296.06	178.67	296.09
180.59	296.89	182.32	297.16	182.61	297.22	182.95	297.19	184.5	297.13
185.8	297.49	186.36	297.54	186.85	297.48	188.37	297.27	190.06	297.25
190.33	297.25	190.69	297.23	191.9	297.16	192.82	297.14	193.7	297.11
194.66	297.11	195.91	297.09	197.1	297.09	198.6	297.04	199.88	297.01
200	297.01								

Schollas\_Map101.rep

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.018	73.37	.03	87.54	.018	96.56	.03	105.06	.018
113.5	.06								

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

87.54	113.5	201.58	200	197.43	.1	.3
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CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 1800

INPUT Description: Station Elevation Data num= 138

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	276.61	1.94	276.59	19.31	276.33	39.26	276.08	39.72	276.01
40.18	276.05	41.19	276.02	41.56	276.02	41.92	275.99	42.42	275.98
44	275.94	45.64	275.88	45.84	275.87	46.07	275.86	47.49	275.79
48.82	275.74	49.43	275.73	50.02	275.72	51.74	275.6	52.22	275.57
53.38	275.52	53.5	275.52	55.3	275.51	56.04	275.51	56.85	275.5
57.54	275.49	59.19	275.46	60.54	275.4	61.3	275.38	62.23	275.39
62.91	275.37	65.54	275.34	66.3	275.34	67.33	275.34	68.54	275.35
69.79	275.33	70.49	275.33	71.18	275.34	72.82	275.33	73.29	275.33
74.9	275.47	77.44	274.81	78.27	274.51	79.08	274.13	79.65	273.8
81.35	272.71	83.15	271.54	83.69	271.21	84.19	270.95	85.56	270.37
85.83	270.25	86.6	269.92	88.18	269.18	89.93	268.19	90.7	267.79
91.42	267.34	93.6	265.9	93.95	265.68	94.07	265.6	94.21	265.53
96.74	264.14	99.01	263.57	99.25	263.55	99.69	263.54	100.98	263.49
101.67	263.49	103.28	263.77	104.95	263.85	106	263.98	107.03	264.44
107.98	265.02	109.16	265.8	109.76	266.19	111.9	267.86	113.86	269.22
114.56	269.73	115.34	269.99	117.83	269.99	118.28	270.07	123.59	271.58
124.09	271.72	124.16	271.74	124.22	271.76	126.87	272.93	126.98	272.98
127.09	273.08	130.81	276.94	133.18	279.26	135.09	280.26	136.22	280.6
137.37	281.01	140.46	281.21	141.61	281.27	142.46	281.22	144.11	281.09
145.52	281.02	146.26	280.98	146.71	280.97	148.62	281.02	150.44	281.13
150.96	281.19	151.85	281.23	153.03	281.4	154.78	281.72	155	281.81
157.37	283.15	159.04	284.12	159.92	284.54	161.31	285.3	162.09	285.61
163.11	285.97	163.82	286.21	164.35	286.36	166.11	287.11	167.29	287.72
168.68	288.32	170.78	289.56	171.32	289.9	173.72	291.11	174.37	291.23
174.89	291.27	177.31	291.28	180.22	291.49	180.27	291.5	180.32	291.5
183.17	291.57	183.28	291.57	186.17	291.44	188.71	291.38	189.21	291.37
189.79	291.35	191.82	291.26	192.71	291.26	194.74	291.26	196.72	291.23
197.93	291.19	199.17	291.18	200	291.16				

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.018	73.29	.03	88.18	.018	96.74	.03	107.03	.018
113.86	.06								

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

88.18	113.86	198.88	200	200.59	.1	.3
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Blocked Obstructions num= 1

Sta L	Sta R	Elev
0	42.08	296.61

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 1600

INPUT Description: Station Elevation Data num= 209

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	274.72	18.29	274.37	19.71	274.38	23.56	274.41	26.33	274.34
28.76	274.28	31.78	274.28	33.26	274.23	34.61	274.15	35.51	274.12
38.2	274.19	38.58	274.23	40.16	274.22	40.3	274.22	40.75	274.22
41.19	274.22	42.75	274.19	44.19	274.14	44.66	274.1	45.07	274.09











Schollas\_Map101.rep  
 Sta n Val Sta n Val Sta n Val Sta n Val  
 0 .018 108.25 .03 113.28 .055 134.84 .035 151.24 .06  
 Bank Sta: Left Right Lengths: Left Channel Right  
 97.09 151.24 86.87 107.19 109.33  
 Coeff Contr. Expan.  
 .1 .3

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach RS: 417.4621

INPUT  
 Description: Cross Section upstream of Bridge at Federal Blvd  
 Station Elevation Data num= 316

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	250.04	.66	250.03	2.23	250.04	2.76	250.04	4.82	250.01
4.85	250.01	4.86	250.01	6.81	250.03	7.78	250.03	8.81	250
10.79	250.01	10.82	250.01	10.89	250.01	12.83	249.99	13.29	250
14.86	249.95	15.78	249.95	16.87	249.93	18.26	249.89	18.87	249.91
20.71	249.87	20.87	249.87	21.55	249.86	22.83	249.87	23.55	249.87
24.82	249.89	26.64	249.88	26.83	249.88	27.16	249.88	28.97	249.85
29.48	249.85	31.18	249.83	32.26	249.79	33.37	249.77	35.02	249.76
35.55	249.75	37.46	249.74	37.73	249.74	37.87	249.74	39.67	249.74
40.84	249.7	41.64	249.7	43.12	249.66	43.69	249.65	43.84	249.65
45.9	249.68	46.62	249.67	48.12	249.63	49.45	249.62	50.34	249.6
52.24	249.56	52.54	249.56	53.67	249.53	54.53	249.52	54.91	249.51
56.3	249.47	57.54	249.46	58.11	249.47	59.34	249.44	59.96	249.43
60.09	249.42	61.86	249.43	62.41	249.44	63.28	249.41	64.7	249.37
65.63	249.35	67	249.34	69.14	249.35	69.28	249.35	69.81	249.34
71.31	249.29	72.25	249.29	73.3	249.29	74.87	249.23	75.26	249.21
75.35	249.21	77.25	249.18	77.77	249.16	79.23	249.15	80.18	249.15
81.2	249.14	82.54	249.13	83.13	249.12	84.9	249.08	85.07	249.08
85.85	249.07	86.85	249.07	87.37	249.06	88.58	249.05	89.93	249.07
90.3	249.06	91.05	249.04	92.15	248.99	92.4	248.99	94.14	248.92
94.81	248.9	96.08	248.89	97.14	248.9	97.99	248.88	99.48	248.85
99.92	248.84	101.78	248.83	101.82	248.83	102	248.83	103.79	248.8
105.13	248.8	105.77	248.8	106.64	248.8	107.91	248.79	108.24	248.78
110.15	248.76	111	248.79	112.35	248.8	113.74	248.74	114.56	248.73
116.43	248.76	116.72	248.75	117.84	248.8	118.85	248.83	119.71	248.8
120.95	248.74	122.51	248.82	123.03	248.84	123.14	248.84	125.07	248.97
125.64	248.96	127.16	248.79	128.18	248.8	129.21	248.79	130.65	248.91
131.23	248.91	133.12	248.86	133.25	248.86	133.84	248.89	135.25	248.92
136.28	248.94	137.29	249	138.66	248.99	139.42	249.01	139.61	249.02
141.66	249.09	142.4	249.12	143.88	249.18	145.17	249.27	146.1	249.29
146.85	249.37	147.9	249.48	148.29	249.49	149.93	249.61	150.42	249.51
150.89	249.33	152.24	248.37	152.54	248.27	154.32	248.25	154.72	248.08
154.81	248.04	156.87	247.22	157.47	246.97	159.01	246.37	160.14	245.62
161.21	245.51	161.93	244.72	163.64	244.36	165.49	242.78	165.54	242.75
165.74	242.63	167.16	242.13	167.37	242.18	167.88	242.15	170.03	241.11
171.61	240.37	172.65	240.24	173.22	240.04	174.15	239.89	175.53	239.59
176.81	239.24	177.48	239.11	179.67	239.1	181.03	239.11	182.85	238.97
183.39	238.91	186.5	239.24	186.68	239.13	187.73	239.09	188.99	239.59
191.17	240.44	191.18	240.45	192.41	241.41	194.22	243.56	195.33	244.91
196.05	245.72	197.25	247.04	197.49	247.24	200.28	248.85	201.14	249.27
202.02	249.71	202.41	249.84	202.73	249.96	203.89	250.38	205.66	251.26
205.67	251.27	206.47	251.48	207.45	251.68	208.28	251.73	210.7	252.12
211.44	252.14	213.01	252.2	213.81	252.22	215.16	252.2	215.85	252.19
217.38	252.19	217.51	252.19	217.58	252.19	219.83	252.25	221.06	252.28
222.07	252.29	223.99	252.27	224.2	252.28	224.87	252.24	225.84	252.16
226.15	252.14	228.17	251.85	229.32	251.39	230.63	251.01	232.94	250.13
233.89	250.03	235.54	249.87	236.91	249.55	237.85	249.79	238.71	249.82
239.79	249.9	240.71	250.2	242.84	249.83	244.09	249.56	244.96	249.57
245.3	249.6	246.91	250.13	250.73	249.1	250.88	249.13	250.94	249.15
251.12	249.17	252.28	249.53	253.3	249.5	253.78	249.74	253.94	249.73
254.41	249.52	256.53	249.9	257.55	249.98	259.04	249.89	259.37	249.87
260.28	250	260.88	250.1	261.57	250.11	262.1	250.2	262.56	250.34
263.81	250.83	264.32	250.7	265.91	250.75	267.12	250.95	267.91	250.93
269.83	251.24	269.85	251.24	269.97	251.26	271.68	251.51	272.01	251.51
273.88	251.3	274.68	251.44	276.05	251.4	277.7	251.81	278.13	251.77
279.07	251.84	280.12	251.92	281.25	251.97	282.3	251.83	282.72	251.93
284.58	251.81	285.88	252.22	286.73	252.25	288.72	252.48	288.87	252.49
290.93	252.73	291.03	252.73	291.14	252.77	293.96	253.18	295.21	253.37

Schollas\_Map101.rep  
 296.71 253.78 297.19 253.86 298.46 254.02 299.22 254.2 300.42 254.41  
 301.54 254.53 302.02 254.63 303.81 255.04 305.19 255.4 306.01 255.57  
 307.92 255.81 308.22 255.87 310.02 256.21 310.45 256.3 310.65 256.35  
 312.95 256.97 314.24 257.3 315.3 257.55 317.53 258.01 317.6 258.02  
 319.49 258.36 319.89 258.46 320.07 258.48 322.21 258.83 323.3 259.08  
 324.43 259.3 326.51 259.44 326.68 259.47 327.06 259.51 327.93 259.86  
 327.95 259.86

Manning's n values num= 7  
 Sta n Val Sta n Val Sta n Val Sta n Val  
 0 .018 163.64 .035 167.16 .1 175.53 .03 188.99 .045  
 195.33 .03 202.02 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 150.42 202.02 131.21 124.64 127.74 .3 .5  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 149.87 249.65 F  
 213.08 327.95 252.31 F

CULVERT

RIVER: SchollasMap101  
 REACH: MainReach RS: 362.8132

INPUT  
 Description: Single span bridge at Federal Blvd  
 Distance from Upstream XS = 23  
 Deck/Roadway width = 80  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates				num= 205			
Sta	Hi	Cord	Lo	Sta	Hi	Cord	Lo
0	253.45	.15	253.45	.8	253.45		
1.78	253.46	3.33	253.47	3.49	253.45		
3.54	253.43	5.84	253.43	6.74	253.45		
8.16	253.45	9.86	253.44	10.45	253.4		
12.13	253.43	12.61	253.42	12.93	253.42		
14.3	253.43	15.74	253.41	16.01	253.37		
16.41	253.4	17.89	253.41	18.28	253.4		
19.79	253.39	20.7	253.41	21.69	253.44		
23.09	253.43	23.57	253.43	25.29	253.43		
25.42	253.44	25.51	253.45	27.07	253.44		
28.19	253.41	28.69	253.41	29.49	253.48		
30.52	253.48	30.8	253.48	32.51	253.52		
33.34	253.51	34.47	253.47	35.8	253.48		
36.38	253.48	38.24	253.49	38.3	253.53		
38.51	253.52	40.02	253.52	41.15	253.53		
41.75	253.53	42.54	253.53	43.57	253.53		
43.84	253.53	44.29	253.53	46.17	253.58		
47.42	253.58	48.53	253.59	50.54	253.6		
50.84	253.61	51.69	253.63	52.77	253.65		
53.61	253.65	54.51	253.61	55.66	253.61		
56.38	253.64	56.6	253.69	58.45	253.71		
59.25	253.71	60.49	253.72	61.87	253.71		
62.51	253.71	64.49	253.71	64.52	253.71		
64.63	253.71	66.29	253.48	67.67	253.49		
68.07	253.5	68.54	253.53	70.14	253.5		
70.64	253.5	72.31	253.5	73.45	253.51		
74.46	253.5	76.24	253.48	76.6	253.51		
77.73	253.52	78.53	253.52	79.32	253.53		
80.28	253.48	81.3	253.48	82.23	253.47		
82.54	253.53	84.42	253.54	85.41	253.54		
86.56	253.54	88.24	253.53	88.7	253.54		
90.12	253.54	90.7	253.53	91.28	253.51		
92.55	253.51	93.81	253.53	94.5	253.49		
94.7	253.49	96.54	253.49	97.29	253.52		
98.54	253.5	99.83	253.53	100.52	253.52		
102.34	253.52	102.48	253.53	102.99	253.63		
104.37	253.62	106.14	253.57	106.29	253.57		
106.41	253.6	108.51	253.67	109.2	253.67		
110.73	253.67	112.15	253.68	112.91	253.72		

Schollas\_Map101.rep

Table with 4 columns of station and elevation data. Rows include values such as 115.01 253.73, 117.02 253.7, 119.12 253.71, etc.

Upstream Bridge Cross Section Data

Table with 4 columns: Station, Elev, Sta, Elev. num= 300. Rows include station/elevation pairs like 0 250.04, 4.85 250.01, 10.79 250.01, etc.

Schollas\_Map101.rep

Table with 10 columns of station and elevation data. Rows include values such as 217.51 252.19, 217.58 252.19, 219.83 252.25, etc.

Manning's n Values

Table with 4 columns: Sta, n Val, Sta, n Val. num= 5. Rows include 0 .018, 150.89, 0.035, 159.01, etc.

Bank Sta: Left Right

Table with 4 columns: Left, Right, Coeff Contr., Expan. num= .5. Rows include 150.42, 202.02, .3, .5.

Ineffective Flow

Table with 4 columns: Sta L, Sta R, Elev, Permanent. num= 2. Rows include 0 149.87, 249.65, F, 213.08, 327.95, 252.31, F.

Downstream Deck/Roadway Coordinates

Table with 8 columns: Sta, Hi Cord, Lo Cord, Sta, Hi Cord, Lo Cord, Sta, Hi Cord, Lo Cord. num= 206. Rows include 0 253.45, .15 253.45, .8 253.45, etc.

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106.41	253.6	108.51	253.67	109.2	253.67
110.73	253.67	112.15	253.68	112.91	253.72
115.01	253.73	115.07	253.73	115.23	253.69
117.02	253.7	118.68	253.68	119.03	253.68
119.12	253.71	121.08	253.68	121.74	253.68
123.09	253.66	124.3	253.65	125.08	253.65
126.78	253.65	127	253.69	127.8	253.72
129.03	253.7	131.05	253.64	131.19	253.64
131.28	253.72	133.46	253.72	134.16	253.72
135.66	253.71	137.06	253.69	137.83	253.64
139.92	253.64	139.99	253.66	140.22	253.66
142.22	253.66	143.26	253.68	144.58	253.69
145.01	253.71	146.89	253.71	148.04	253.73
149.15	253.73	151	253.7	151.37	253.69
152.49	253.67	152.5	253.69	153.83	253.71
153.86	253.71	153.89	253.71	153.97	253.71
156.58	253.69	157.72	253.7	158.55	253.72
158.97	253.72	159.59	253.7	161.1	253.69
162.35	253.69	162.86	253.74	163.64	253.72
164.12	253.7	165.36	253.69	166.97	253.67
167.6	253.67	168.08	253.63	168.61	253.63
169.42	253.68	170.5	253.68	173.32	253.67
173.69	253.7	174.57	253.73	176.23	253.74
178.56	253.71	178.6	253.71	179.8	253.7
180.33	253.68	180.92	253.71	182.4	253.7
183.71	253.63	183.99	253.64	185.01	253.7
186.72	253.69	187.44	253.7	188.1	253.7
188.71	253.7	190.44	253.7	190.62	253.7
191.48	253.68	192.61	253.67	194.73	253.67
194.76	253.67	194.77	253.67	196.84	253.67
197.35	253.62	198.89	253.63	199.88	253.64
200.92	253.64	352	253.64		

Downstream Bridge Cross Section Data

Station	Elevation	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	246.58	.6	246.55	2.64	246.55	2.65	246.55	2.66	246.55		
4.4	246.63	5.71	246.66	6.17	246.67	6.8	246.69	8.17	246.71		
8.6	246.71	10.28	246.63	11.39	246.57	12.38	246.56	14.12	246.56		
14.46	246.55	15.54	246.55	16.38	246.55	17.04	246.52	18.17	246.44		
19.57	246.35	20	246.31	20.14	246.3	22.07	246.25	22.81	246.24		
24.13	246.21	25.49	246.23	26.18	246.22	28.14	246.25	28.25	246.25		
31.3	246.1	31.91	246.06	32.6	246.03	35.16	245.85	36.46	245.91		
37.64	245.88	39.15	245.62	39.67	245.61	41.44	245.56	41.68	245.57		
41.93	245.57	43.71	245.64	45.47	245.74	45.79	245.76	45.88	245.76		
47.9	246.05	48.64	246.01	50.04	245.85	51.38	245.79	52.11	245.7		
54.1	245.65	54.2	245.65	54.52	245.64	55.85	245.6	56.82	245.59		
57.46	245.59	58.39	245.57	59.29	245.57	59.55	245.55	61.36	245.51		
62.23	245.46	63.42	245.39	64.89	245.3	65.45	245.26	67.36	245.13		
67.47	245.13	67.54	245.12	69.02	245.08	70.3	245.07	70.65	245.06		
71.16	245.05	72.6	245.03	73	245.01	74.66	244.95	75.66	244.97		
76.68	244.98	78.24	245.04	78.69	245.07	80.21	245.15	80.56	245.17		
80.87	245.18	82.21	245.23	83.74	245.32	83.84	245.33	83.88	245.34		
86.08	245.57	86.84	245.65	88.3	245.75	89.74	245.81	90.47	245.86		
92.6	245.9	92.64	245.9	92.75	245.9	94.31	245.91	95.61	245.84		
96.03	245.8	96.53	245.77	97.99	245.66	98.4	245.65	100.06	245.54		
101.04	245.49	102.1	245.42	103.64	245.22	104.13	245.19	105.85	245.2		
106.08	245.2	106.27	245.2	107.79	245.15	109.41	245.23	109.51	245.23		
109.64	245.23	111.48	245.18	111.95	245.23	113.4	245.23	114.39	245.1		
115.33	245.17	116.78	245.31	117.21	245.33	118.77	245.46	119.03	245.48		
119.3	245.5	120.77	245.49	122.21	245.5	122.59	245.48	122.69	245.48		
124.63	245.45	125.24	245.48	126.62	245.59	127.73	245.6	128.61	245.62		
130.19	245.66	130.55	245.67	131.98	245.7	132.48	245.72	133.1	245.71		
134.51	245.71	135.74	245.68	136.69	245.66	136.95	245.65	138.9	245.61		
139.84	245.58	141.12	245.55	142.69	245.48	143.31	245.44	145.36	245.41		
145.45	245.41	145.6	245.42	147.45	245.44	148.57	245.57	149.5	245.68		
149.75	245.68	151.56	245.59	152.37	245.55	153.63	245.64	154.93	245.52		
155.63	245.52	157.39	245.71	157.57	245.71	158.29	245.7	159.74	245.67		
161.62	245.71	162	245.71	162.09	245.71	164.11	245.69	164.73	245.72		
166.14	245.79	167.27	245.94	168.16	245.97	169.65	245.83	171.93	246.05		
172.2	246.1	173.29	246.07	174.64	246	174.69	246	174.74	245.99		
176.78	245.82	177.33	245.74	178.25	245.65	179.9	245.55	180.88	245.49		
182.47	245.17	182.93	245.12	184.62	244.99	184.83	244.98	185.05	244.96		

Schollas\_Map101.rep

186.32	244.82	187.61	244.65	187.9	244.62	187.97	244.61	189.87	244.57
190.4	244.54	191.81	244.49	192.77	244.49	194.22	244.67	195.03	244.69
197.03	245.19	197.19	245.22	197.72	245.29	198.98	245.46	200.62	245.62
200.7	245.64	200.76	245.64	202.65	245.86	203.09	245.82	203.99	245.8
204.15	245.7	206.55	244.26	210.03	241.25	211	240.73	211.38	240.02
216.16	240.02	248.88	240.02	249.74	241.21	250.17	241.72	251.14	242.83
251.43	243.04	253.21	244.35	253.38	244.46	253.78	244.67	255.01	245.34
255.58	245.67	257.07	246.58	257.45	246.68	259.36	247.61	260.33	247.78
261.69	248.39	264.99	248.62	265.02	248.62	265.03	248.62	267.18	248.65
268.65	248.71	268.99	248.72	269.55	248.75	271.31	248.89	272.58	248.93
273.56	249	275.51	249.04	275.76	249.07	276.54	249.07	277.84	249.1
278.73	249.11	279.95	249.13	280.28	249.14	281.98	249.17	282.82	249.19
283.95	249.19	285.31	249.23	286.26	249.27	287.7	249.28	287.88	249.28
288.72	249.34	289.64	249.36	290.5	249.36	291.04	249.36	292.82	249.4
293.28	249.41	295.11	249.42	295.47	249.41	297.38	249.41	297.66	249.41
299.63	249.41	299.82	249.41	301.89	249.42	301.99	249.42	304.14	249.41
304.16	249.41	304.47	249.4	306.26	249.36	306.55	249.35	308.42	249.3
309.07	249.28	310.56	249.24	311.58	249.23	312.76	249.22	314.11	249.18
314.98	249.16	316.69	249.16	317.23	249.16	319.29	249.14	319.53	249.14
320.79	249.17	321.78	249.19	321.83	249.19	324.04	249.17	324.16	249.17
326.3	249.18	326.49	249.18	328.57	249.23	328.85	249.23	330.8	249.24
331.16	249.23	333.03	249.23	333.47	249.25	333.95	249.24	335.78	249.25
336.33	249.26	338.04	249.26	338.69	249.25	340.31	249.19	341.04	249.2
342.59	249.19	343.41	249.16	344.84	249.11	345.74	249.09	347.08	249.03
348.06	249.01	349.33	249.04	350.4	249.07	350.92	249.06		

Manning's n values num= 3  
 Sta n Val Sta n Val  
 0 .075 216.16 .05 248.88 .075

Bank Sta: Left Right Coeff Contr. Expan.  
 203.09 268.65 .3 .5  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 214.59 250 T  
 245.41 350.92 250 T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 Weir crest shape = Broad Crested

Number of Culverts = 1

Culvert Name Shape Rise Span  
 Culvert #1 Box 11 20  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef Exit Loss

Coeff	23	80	.018	.035	0	.5	1
Upstream Elevation	= 241.36						
Centerline Station	= 180						
Downstream Elevation	= 240.02						
Centerline Station	= 230						

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach RS: 292.8245

INPUT

Description:  
 Station Elevation Data num= 335  
 Sta Elev Sta Elev Sta Elev Sta Elev  
 0 246.58 .6 246.55 2.64 246.55 2.65 246.55 2.66 246.55  
 4.4 246.63 5.71 246.66 6.17 246.67 6.8 246.69 8.17 246.71  
 8.6 246.71 10.28 246.63 11.39 246.57 12.38 246.56 14.12 246.56

Schollas\_Map101.rep

Table with 10 columns of numerical data representing station elevations and coordinates for Schollas\_Map101.rep. Values range from 14.46 to 347.08.

Manning's n values table with 4 columns: Sta, n Val, Sta, n Val. Values include 0, .075, 216.16, .05, 247.09, .075.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Ineffective Flow Sta L Sta R Elev Permanent. Values include 203.09, 268.65, 152.28, 145.54, 135.2, .3, .5, 296.6, 298.89, 299.17, 300.13, 249.17, 301.21, 249.06, 303.52, 249.05, 303.58, 249.05, 304.73, 249.03, 305.79, 249.03, 307.4, 249.02.

Schollas\_Map101.rep

0 214.59 250 T
245.41 350.92 250 T

CROSS SECTION

RIVER: SchollasMap101
REACH: MainReach RS: 147.2868

INPUT
Description:

Station Elevation Data table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. num= 307. Values range from 0 to 303.52.

SChollas\_Map101.rep  
 307.78 249.04 308.54 249.05 310.06 249.1 312 249.14 312.41 249.15  
 313.21 249.17 313.36 249.18

Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .075 147.84 .04 192.6 .05

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 112.06 216.58 114.51 119.22 123.59 .1 .3

CROSS SECTION

RIVER: SChollasMap101  
 REACH: MainReach RS: 28.06381

INPUT Description:

Station Elevation Data		num= 258		Sta Elev		Sta Elev		Sta Elev		Sta Elev	
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	237.9	.24	237.88	.95	237.86	2.56	237.83	3.39	237.83		
4.37	237.98	6.21	238.12	7.88	237.83	8.73	237.93	9.63	238.06		
10.53	238.09	10.92	238.05	11.31	238.05	12.97	237.94	14.53	237.9		
15.25	237.87	17.37	238.35	18.14	238.44	18.57	238.48	20.04	238.33		
21.45	238.24	22.42	238.06	22.66	238.04	24.65	237.77	25.46	237.74		
26.99	237.49	28.82	237.45	29.47	237.45	31.07	237.22	31.84	237.11		
33.54	237.09	34.03	237.11	34.19	237.11	36.07	237.28	36.9	237.32		
38.17	237.47	39.67	237.42	40.24	237.41	42.13	237.38	42.39	237.38		
43.91	237.32	44.7	237.3	44.83	237.29	46.65	237.22	47.27	237.25		
48.67	237.26	49.96	237.24	50.72	237.34	52.7	237.26	52.76	237.25		
55	237.73	55.08	237.75	55.29	237.73	58.63	237.4	59.89	237.31		
60.62	237.22	62.19	237.13	63.6	237.07	64.51	237.05	66.28	236.96		
66.72	236.96	68.59	236.97	69.42	236.97	70.62	236.96	72.19	236.99		
72.68	236.97	74.32	236.84	75.66	236.7	76.77	236.58	76.84	236.57		
76.86	236.57	78.79	236.71	79.51	236.62	80.73	236.3	82.21	236.52		
82.78	236.53	84.38	236.5	84.83	236.48	85.47	236.48	86.77	236.47		
87	236.47	87.05	236.46	89.53	236.32	90.9	236.21	92.31	236.14		
92.75	236.15	94.53	235.78	94.66	235.75	94.81	235.7	96.09	235.31		
97.12	235.16	97.76	235	98.07	234.95	100.11	234.71	101.64	234.49		
104.37	233.89	104.86	233.79	106.08	233.55	106.82	233.41	107.11	233.31		
109.13	232.81	110.25	232.86	111.67	232.89	112.33	232.82	113.8	232.96		
115.37	233.11	117.26	233.15	118.74	233.14	120.17	233.09	120.96	233.1		
121.48	233.07	123.12	232.97	123.51	232.89	125.11	232.45	126.21	232.61		
127.22	232.73	127.46	232.76	129.28	232.9	131.64	233.08	131.92	233.12		
133.25	232.56	134	232.28	135.85	232.24	135.88	232.24	135.89	232.24		
137.56	232.45	138.67	232.24	140.15	232.21	142.57	232.02	142.59	232.02		
142.77	232.07	144.56	232.55	145.1	232.69	146.87	233.58	148.92	235.6		
151.55	238.59	153.19	239.24	154.29	239.44	154.41	239.43	156.47	239.4		
157.47	239.35	158.69	239.44	160.77	239.14	160.9	239.13	161.09	239.11		
161.16	239.1	162.98	238.92	163.81	238.97	165.11	239.11	165.78	239.2		
167.32	239.38	169.08	239.36	169.51	239.31	169.93	239.14	170.27	239.05		
171.34	238.52	173.06	238.86	176.3	238.83	176.36	238.82	176.41	238.83		
176.56	238.82	178.73	238.69	179.23	238.65	180.9	238.6	182.65	238.36		
182.88	238.33	183.31	238.43	184.08	238.63	185.6	238.69	189.01	238.39		
190.9	238.09	191	238.09	193.05	238.29	194.93	238.27	195.15	238.27		
195.4	238.25	196.64	238.19	197.44	238.22	198.35	238.18	199.14	238.18		
200.44	238.17	201.92	238.37	202.6	238.43	202.95	238.47	205.48	238.58		
206.49	238.52	208.28	238.41	208.82	238.37	210.26	238.26	210.43	238.25		
210.57	238.25	212.52	238.22	214.49	238.3	214.63	238.31	214.8	238.3		
216.38	238.27	216.82	238.27	218.28	238.35	219.49	238.47	220.27	238.54		
221.64	238.77	223.12	238.85	224.07	238.87	224.85	239.06	226.12	239.26		
227.64	239.74	228.24	239.97	229.69	240.67	230.33	241.05	230.84	241.35		
232.26	242.23	233.87	243.27	235.23	243.96	236	244.39	236.56	244.62		
237	244.92	238.54	245.81	240.48	246.71	240.53	246.73	240.78	246.75		
242.24	246.89	242.47	246.88	245	246.81	246.98	246.78	248.01	246.78		
249.07	246.99	250.84	247.07	253.47	246.89	253.56	246.9	253.7	246.92		
254.85	247.05	255.55	247.09	256.76	247.2	258.69	247.31	259.4	247.36		
259.86	247.38	260.91	247.37	261.84	247.36	262.44	247.35	263.17	247.36		
264.77	247.37	266.1	247.43	266.75	247.49	268.22	247.71	268.3	247.72		
270.12	248.06	271.58	248.2	271.99	248.24	272.52	248.31	273.55	248.43		
274.52	248.46	275.15	248.49	278.78	248.61	279.04	248.61	280.83	248.67		
280.85	248.67	280.86	248.67	282.51	248.66						

SChollas\_Map101.rep  
 Manning's n Values num= 3  
 Sta n Val Sta n Val  
 0 .07 101.64 .055 148.92 .06  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 18.57 161.09 23.87 28.06 33.25 .1 .3

SUMMARY OF MANNING'S N VALUES

River: SChollasMap101

Reach	River Sta.	n1	n2	n3	n4	n5	n6
MainReach	2306.424	.018	.03	.018	.06		
MainReach	2200	.018	.03	.018	.06		
MainReach	2098.664	.018	.03	.018	.03	.018	.06
MainReach	2000	.018	.03	.018	.03	.018	.06
MainReach	1800	.018	.03	.018	.03	.018	.06
MainReach	1600	.018	.03	.018	.03	.018	.06
MainReach	1400	.018	.03	.018	.03	.018	.06
MainReach	1200	.018	.03	.018	.03	.018	.06
MainReach	1004.18	.018	.03	.018	.03	.018	.06
MainReach	976.6697	.018	.03	.018	.03	.042	.06
MainReach	926.7529	.018	.1	.09	.06		
MainReach	915.6229	.018	.1	.09	.06		
MainReach	781.5157	.018	.1	.03	.09	.06	
MainReach	684.4379	.018	.1	.05	.06		
MainReach	599.9999	.018	.075	.03	.07	.06	
MainReach	524.6492	.018	.03	.055	.035	.06	
MainReach	417.4621	.018	.035	.1	.03	.045	.03
MainReach	362.8132	Culvert					
MainReach	292.8245	.075	.05	.075			
MainReach	147.2868	.075	.04	.05			
MainReach	28.06381	.07	.055	.06			

SUMMARY OF REACH LENGTHS

River: SChollasMap101

Reach	River Sta.	Left	Channel	Right
MainReach	2306.424	107.15	106.42	105.18
MainReach	2200	101.52	101.34	97.26



SchoLLas_Map101.rep				
MainReach	2098.664	101.57	98.66	97.84
MainReach	2000	201.58	200	197.43
MainReach	1800	198.88	200	200.59
MainReach	1600	199.8	200	200.08
MainReach	1400	199.83	200	200.13
MainReach	1200	197.21	195.82	194.66
MainReach	1004.18	29.27	27.51	26.96
MainReach	976.6697	49.84	49.92	47.71
MainReach	926.7529	11.65	11.13	10.82
MainReach	915.6229	131.26	134.11	137.05
MainReach	781.5157	95.92	97.08	98.64
MainReach	684.4379	77.17	84.44	89.29
MainReach	599.9999	66.24	75.35	84.98
MainReach	524.6492	86.87	107.19	109.33
MainReach	417.4621	131.21	124.64	127.74
MainReach	362.8132	Culvert		
MainReach	292.8245	152.28	145.54	135.2
MainReach	147.2868	114.51	119.22	123.59
MainReach	28.06381	23.87	28.06	33.25

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS  
River: SchoLLasMap101

Reach	River Sta.	Contr.	Expan.
MainReach	2306.424	.1	.3
MainReach	2200	.1	.3
MainReach	2098.664	.1	.3
MainReach	2000	.1	.3
MainReach	1800	.1	.3
MainReach	1600	.1	.3
MainReach	1400	.1	.3
MainReach	1200	.1	.3
MainReach	1004.18	.1	.3
MainReach	976.6697	.1	.3
MainReach	926.7529	.1	.3
MainReach	915.6229	.1	.3
MainReach	781.5157	.1	.3
MainReach	684.4379	.1	.3
MainReach	599.9999	.1	.3
MainReach	524.6492	.1	.3
MainReach	417.4621	.3	.5
MainReach	362.8132	Culvert	
MainReach	292.8245	.3	.5
MainReach	147.2868	.1	.3
MainReach	28.06381	.1	.3

**Attachment 12 - DETAILED HYDRAULIC RESULTS FOR ULTIMATE VEGETATED  
CONDITION MODEL**

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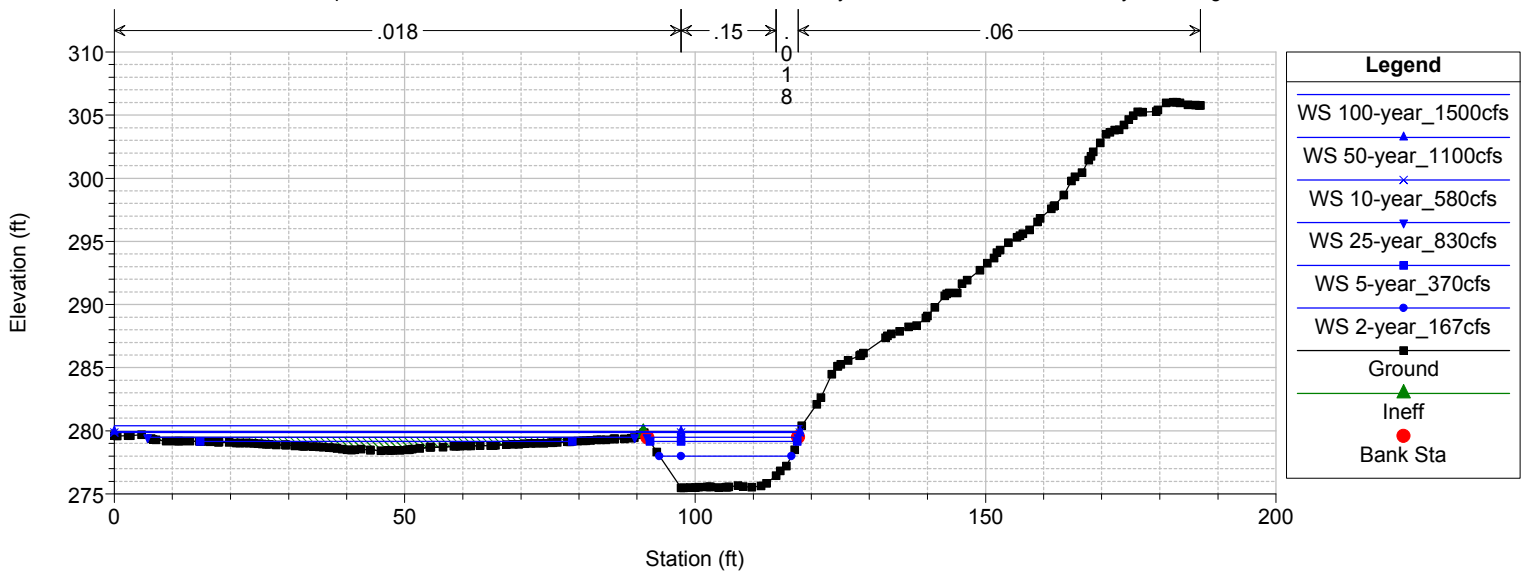
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
MainReach	2306.424	100-year_1500cfs	1500.00	275.47	280.41	280.41	281.44	0.007568	2.92	237.93	118.38	0.25
MainReach	2306.424	50-year_1100cfs	1100.00	275.47	279.94	279.94	280.85	0.012207	3.42	182.17	118.06	0.32
MainReach	2306.424	25-year_830cfs	830.00	275.47	279.48	279.48	281.06	0.126813	10.09	82.26	109.86	1.00
MainReach	2306.424	10-year_580cfs	580.00	275.47	279.87	278.74	280.15	0.004031	1.94	174.87	118.02	0.18
MainReach	2306.424	5-year_370cfs	370.00	275.47	279.15	278.00	279.54	0.036011	5.01	73.84	89.41	0.52
MainReach	2306.424	2-year_167cfs	167.00	275.47	278.00	277.07	278.20	0.035179	3.63	45.98	22.72	0.45
MainReach	2200	100-year_1500cfs	1500.00	271.72	277.96	277.39	279.03	0.008370	3.61	241.19	94.74	0.27
MainReach	2200	50-year_1100cfs	1100.00	271.72	277.36	276.46	278.20	0.013829	4.31	184.48	90.42	0.34
MainReach	2200	25-year_830cfs	830.00	271.72	276.86	275.61	277.56	0.019928	4.82	142.99	71.67	0.40
MainReach	2200	10-year_580cfs	580.00	271.72	276.31		276.77	0.028230	5.26	107.38	56.75	0.47
MainReach	2200	5-year_370cfs	370.00	271.72	275.43		275.80	0.034231	4.92	75.24	23.65	0.49
MainReach	2200	2-year_167cfs	167.00	271.72	274.09		274.31	0.038017	3.70	45.09	21.61	0.45
MainReach	2098.664	100-year_1500cfs	1500.00	268.30	276.84		277.79	0.018218	7.83	194.29	36.92	0.53
MainReach	2098.664	50-year_1100cfs	1100.00	268.30	275.84		276.59	0.018053	7.01	159.02	33.40	0.51
MainReach	2098.664	25-year_830cfs	830.00	268.30	275.01		275.62	0.017877	6.30	132.71	30.08	0.50
MainReach	2098.664	10-year_580cfs	580.00	268.30	274.08		274.54	0.017551	5.44	106.54	26.40	0.48
MainReach	2098.664	5-year_370cfs	370.00	268.30	273.08		273.40	0.017109	4.53	81.63	23.70	0.43
MainReach	2098.664	2-year_167cfs	167.00	268.30	271.68		271.85	0.016672	3.29	50.74	20.27	0.37
MainReach	2000	100-year_1500cfs	1500.00	266.55	275.21		276.21	0.014024	8.11	189.73	37.77	0.55
MainReach	2000	50-year_1100cfs	1100.00	266.55	274.26		275.05	0.013594	7.20	155.61	33.76	0.53
MainReach	2000	25-year_830cfs	830.00	266.55	273.46		274.10	0.013387	6.46	129.91	30.76	0.52
MainReach	2000	10-year_580cfs	580.00	266.55	272.55		273.04	0.013325	5.62	103.43	27.39	0.50
MainReach	2000	5-year_370cfs	370.00	266.55	271.58		271.92	0.013211	4.70	78.71	24.05	0.46
MainReach	2000	2-year_167cfs	167.00	266.55	270.21		270.40	0.013072	3.44	48.56	20.00	0.39
MainReach	1800	100-year_1500cfs	1500.00	263.49	272.15		273.10	0.017150	7.93	197.04	42.89	0.54
MainReach	1800	50-year_1100cfs	1100.00	263.49	271.20		271.99	0.017302	7.19	158.34	38.56	0.53
MainReach	1800	25-year_830cfs	830.00	263.49	270.43		271.08	0.017201	6.50	130.15	34.12	0.52
MainReach	1800	10-year_580cfs	580.00	263.49	269.49		269.99	0.017641	5.71	101.77	26.70	0.51
MainReach	1800	5-year_370cfs	370.00	263.49	268.48		268.84	0.018200	4.83	76.58	23.37	0.47
MainReach	1800	2-year_167cfs	167.00	263.49	267.04		267.24	0.019337	3.61	46.29	18.98	0.41
MainReach	1600	100-year_1500cfs	1500.00	260.30	269.02		270.02	0.013789	8.26	194.33	43.37	0.56
MainReach	1600	50-year_1100cfs	1100.00	260.30	268.17		268.98	0.013181	7.37	158.16	40.86	0.54
MainReach	1600	25-year_830cfs	830.00	260.30	267.37		268.06	0.013311	6.71	127.17	35.44	0.53
MainReach	1600	10-year_580cfs	580.00	260.30	266.46		266.98	0.012969	5.80	100.26	26.13	0.50
MainReach	1600	5-year_370cfs	370.00	260.30	265.49		265.85	0.012487	4.82	76.83	22.41	0.46
MainReach	1600	2-year_167cfs	167.00	260.30	264.09		264.28	0.011693	3.47	48.16	18.59	0.38
MainReach	1400	100-year_1500cfs	1500.00	257.36	265.59		266.78	0.019177	8.88	176.43	40.95	0.65
MainReach	1400	50-year_1100cfs	1100.00	257.36	264.51		265.58	0.022298	8.35	134.16	36.71	0.67
MainReach	1400	25-year_830cfs	830.00	257.36	263.83		264.69	0.021800	7.45	112.27	30.78	0.65
MainReach	1400	10-year_580cfs	580.00	257.36	263.08		263.71	0.021065	6.40	90.63	27.02	0.62
MainReach	1400	5-year_370cfs	370.00	257.36	262.20		262.66	0.021123	5.39	68.66	23.34	0.55
MainReach	1400	2-year_167cfs	167.00	257.36	260.88		261.13	0.022215	4.03	41.48	17.50	0.46
MainReach	1200	100-year_1500cfs	1500.00	254.41	262.44		263.88	0.011132	9.73	160.17	34.32	0.71
MainReach	1200	50-year_1100cfs	1100.00	254.41	261.72		262.77	0.009603	8.27	136.12	32.07	0.65
MainReach	1200	25-year_830cfs	830.00	254.41	260.81		261.72	0.010692	7.66	108.90	28.06	0.66
MainReach	1200	10-year_580cfs	580.00	254.41	259.89		260.62	0.011770	6.86	84.53	24.80	0.65
MainReach	1200	5-year_370cfs	370.00	254.41	258.96		259.50	0.012248	5.87	63.03	21.59	0.61
MainReach	1200	2-year_167cfs	167.00	254.41	257.77		258.05	0.011307	4.23	39.47	17.91	0.50
MainReach	1004.18	100-year_1500cfs	1500.00	251.37	258.81	258.81	260.48	0.030203	10.56	154.22	56.43	0.81
MainReach	1004.18	50-year_1100cfs	1100.00	251.37	257.60	257.35	259.28	0.041375	10.41	106.00	27.32	0.91
MainReach	1004.18	25-year_830cfs	830.00	251.37	257.31		258.42	0.030005	8.45	98.32	26.40	0.76
MainReach	1004.18	10-year_580cfs	580.00	251.37	256.91		257.59	0.021073	6.59	87.97	24.99	0.62
MainReach	1004.18	5-year_370cfs	370.00	251.37	256.16		256.59	0.017897	5.27	70.18	22.64	0.53
MainReach	1004.18	2-year_167cfs	167.00	251.37	254.64		254.92	0.024191	4.24	39.35	17.77	0.50
MainReach	976.6697	100-year_1500cfs	1500.00	250.21	256.47	257.35	259.04	0.092770	12.88	116.80	28.88	1.10
MainReach	976.6697	50-year_1100cfs	1100.00	250.21	257.08		258.10	0.030967	8.14	139.19	45.66	0.65
MainReach	976.6697	25-year_830cfs	830.00	250.21	257.04		257.63	0.018318	6.22	137.04	44.95	0.50
MainReach	976.6697	10-year_580cfs	580.00	250.21	256.73		257.07	0.011330	4.68	124.56	30.65	0.39
MainReach	976.6697	5-year_370cfs	370.00	250.21	256.00		256.20	0.008263	3.56	103.85	27.09	0.32
MainReach	976.6697	2-year_167cfs	167.00	250.21	254.43		254.53	0.007395	2.56	65.30	22.27	0.26
MainReach	926.7529	100-year_1500cfs	1500.00	251.19	257.91	255.94	258.29	0.001669	1.19	464.88	162.26	0.10
MainReach	926.7529	50-year_1100cfs	1100.00	251.19	256.85		257.35	0.006283	1.95	294.05	159.23	0.18
MainReach	926.7529	25-year_830cfs	830.00	251.19	256.38		256.79	0.013809	2.64	219.17	157.06	0.26
MainReach	926.7529	10-year_580cfs	580.00	251.19	255.99		256.22	0.025543	3.33	161.22	138.54	0.35
MainReach	926.7529	5-year_370cfs	370.00	251.19	255.24		255.44	0.037191	3.56	103.93	43.61	0.41
MainReach	926.7529	2-year_167cfs	167.00	251.19	253.76		253.89	0.027039	2.88	57.89	25.85	0.34
MainReach	915.6229	100-year_1500cfs	1500.00	251.19	257.03	255.78	258.17	0.018995	3.70	274.04	111.93	0.32
MainReach	915.6229	50-year_1100cfs	1100.00	251.19	256.58		257.21	0.026671	4.06	223.35	110.83	0.37
MainReach	915.6229	25-year_830cfs	830.00	251.19	256.12		256.55	0.035239	4.28	178.65	86.99	0.42

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
MainReach	915.6229	10-year_580cfs	580.00	251.19	255.56		255.84	0.044550	4.25	136.18	58.48	0.45
MainReach	915.6229	5-year_370cfs	370.00	251.19	254.75		254.97	0.047042	3.81	97.23	43.78	0.45
MainReach	915.6229	2-year_167cfs	167.00	251.19	253.36		253.53	0.040280	3.26	51.22	25.97	0.41
MainReach	781.5157	100-year_1500cfs	1500.00	246.95	255.50		255.75	0.013951	4.07	368.74	71.07	0.28
MainReach	781.5157	50-year_1100cfs	1100.00	246.95	254.31		254.52	0.014388	3.68	298.63	55.45	0.28
MainReach	781.5157	25-year_830cfs	830.00	246.95	253.34		253.52	0.015085	3.38	245.37	53.88	0.28
MainReach	781.5157	10-year_580cfs	580.00	246.95	252.33		252.47	0.015862	3.03	191.69	51.86	0.28
MainReach	781.5157	5-year_370cfs	370.00	246.95	251.31		251.42	0.016709	2.63	140.57	48.88	0.27
MainReach	781.5157	2-year_167cfs	167.00	246.95	249.99		250.05	0.017817	2.08	80.18	41.75	0.26
MainReach	684.4379	100-year_1500cfs	1500.00	245.01	253.98		254.36	0.014590	4.91	305.71	47.46	0.34
MainReach	684.4379	50-year_1100cfs	1100.00	245.01	252.81		253.11	0.014601	4.36	252.29	42.69	0.32
MainReach	684.4379	25-year_830cfs	830.00	245.01	251.80		252.04	0.015221	3.96	209.48	41.41	0.31
MainReach	684.4379	10-year_580cfs	580.00	245.01	250.75		250.94	0.015599	3.48	166.88	39.95	0.30
MainReach	684.4379	5-year_370cfs	370.00	245.01	249.72		249.86	0.015585	2.92	126.70	38.09	0.28
MainReach	684.4379	2-year_167cfs	167.00	245.01	248.43		248.50	0.014540	2.10	79.49	34.90	0.25
MainReach	599.9999	100-year_1500cfs	1500.00	243.47	252.58		252.98	0.018192	5.10	294.20	44.50	0.35
MainReach	599.9999	50-year_1100cfs	1100.00	243.47	251.47		251.78	0.017074	4.45	247.16	41.07	0.32
MainReach	599.9999	25-year_830cfs	830.00	243.47	250.37		250.63	0.018496	4.09	202.79	39.72	0.32
MainReach	599.9999	10-year_580cfs	580.00	243.47	249.23		249.44	0.020348	3.67	158.21	38.55	0.32
MainReach	599.9999	5-year_370cfs	370.00	243.47	248.14		248.29	0.022338	3.17	116.89	37.14	0.31
MainReach	599.9999	2-year_167cfs	167.00	243.47	246.89		246.97	0.023065	2.34	71.44	35.69	0.29
MainReach	524.6492	100-year_1500cfs	1500.00	241.09	251.06		251.49	0.021545	5.27	284.44	44.25	0.37
MainReach	524.6492	50-year_1100cfs	1100.00	241.09	250.18		250.49	0.017088	4.46	246.83	41.28	0.32
MainReach	524.6492	25-year_830cfs	830.00	241.09	248.99		249.26	0.017746	4.15	199.84	37.84	0.32
MainReach	524.6492	10-year_580cfs	580.00	241.09	247.75		247.97	0.018718	3.75	154.62	35.15	0.32
MainReach	524.6492	5-year_370cfs	370.00	241.09	246.51		246.68	0.020555	3.29	112.40	33.05	0.31
MainReach	524.6492	2-year_167cfs	167.00	241.09	244.84		244.97	0.031150	2.80	59.73	30.24	0.35
MainReach	417.4621	100-year_1500cfs	1500.00	238.91	251.02	244.65	251.15	0.000910	1.49	664.48	243.05	0.09
MainReach	417.4621	50-year_1100cfs	1100.00	238.91	249.12	243.76	249.31	0.007264	3.53	311.58	108.97	0.25
MainReach	417.4621	25-year_830cfs	830.00	238.91	247.78	243.11	247.95	0.008591	3.33	249.00	42.95	0.24
MainReach	417.4621	10-year_580cfs	580.00	238.91	246.41	242.41	246.55	0.009513	2.99	194.01	37.77	0.23
MainReach	417.4621	5-year_370cfs	370.00	238.91	245.11	241.65	245.21	0.009601	2.51	147.26	33.93	0.21
MainReach	417.4621	2-year_167cfs	167.00	238.91	243.57	240.74	243.62	0.006607	1.69	98.57	29.66	0.16
MainReach	362.8132		Culvert									
MainReach	292.8245	100-year_1500cfs	1500.00	236.73	239.24	242.01	257.70	0.918499	34.48	43.50	34.95	5.11
MainReach	292.8245	50-year_1100cfs	1100.00	236.73	238.81	241.21	259.00	1.612344	36.06	30.51	33.82	6.39
MainReach	292.8245	25-year_830cfs	830.00	236.73	240.90	240.65	242.09	0.020846	8.74	94.96	38.81	0.88
MainReach	292.8245	10-year_580cfs	580.00	236.73	240.40		241.23	0.018564	7.31	79.30	37.79	0.80
MainReach	292.8245	5-year_370cfs	370.00	236.73	238.70	239.46	241.59	0.256864	13.65	27.11	32.16	2.51
MainReach	292.8245	2-year_167cfs	167.00	236.73	239.12		239.39	0.015081	4.18	39.98	34.65	0.65
MainReach	147.2868	100-year_1500cfs	1500.00	233.77	239.26	238.74	240.15	0.016269	7.56	198.32	66.39	0.77
MainReach	147.2868	50-year_1100cfs	1100.00	233.77	238.49	238.20	239.34	0.019921	7.40	148.73	62.12	0.84
MainReach	147.2868	25-year_830cfs	830.00	233.77	237.74	237.70	238.70	0.024365	7.88	105.36	53.03	0.99
MainReach	147.2868	10-year_580cfs	580.00	233.77	237.25	237.24	238.06	0.025716	7.25	79.95	50.26	1.01
MainReach	147.2868	5-year_370cfs	370.00	233.77	236.73	236.73	237.42	0.021825	6.67	55.45	39.18	0.99
MainReach	147.2868	2-year_167cfs	167.00	233.77	236.04	236.04	236.51	0.025791	5.50	30.37	33.56	1.02
MainReach	28.06381	100-year_1500cfs	1500.00	232.02	237.83	236.11	238.20	0.014014	4.87	308.14	126.65	0.55
MainReach	28.06381	50-year_1100cfs	1100.00	232.02	236.78	235.54	237.25	0.013998	5.48	200.82	75.08	0.59
MainReach	28.06381	25-year_830cfs	830.00	232.02	235.90	235.11	236.41	0.014002	5.72	145.09	55.22	0.62
MainReach	28.06381	10-year_580cfs	580.00	232.02	235.32	234.61	235.72	0.014001	5.09	113.88	52.57	0.61
MainReach	28.06381	5-year_370cfs	370.00	232.02	234.70	234.13	235.01	0.014028	4.49	82.49	47.79	0.60
MainReach	28.06381	2-year_167cfs	167.00	232.02	233.95	233.56	234.13	0.014010	3.42	48.79	43.15	0.57

SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

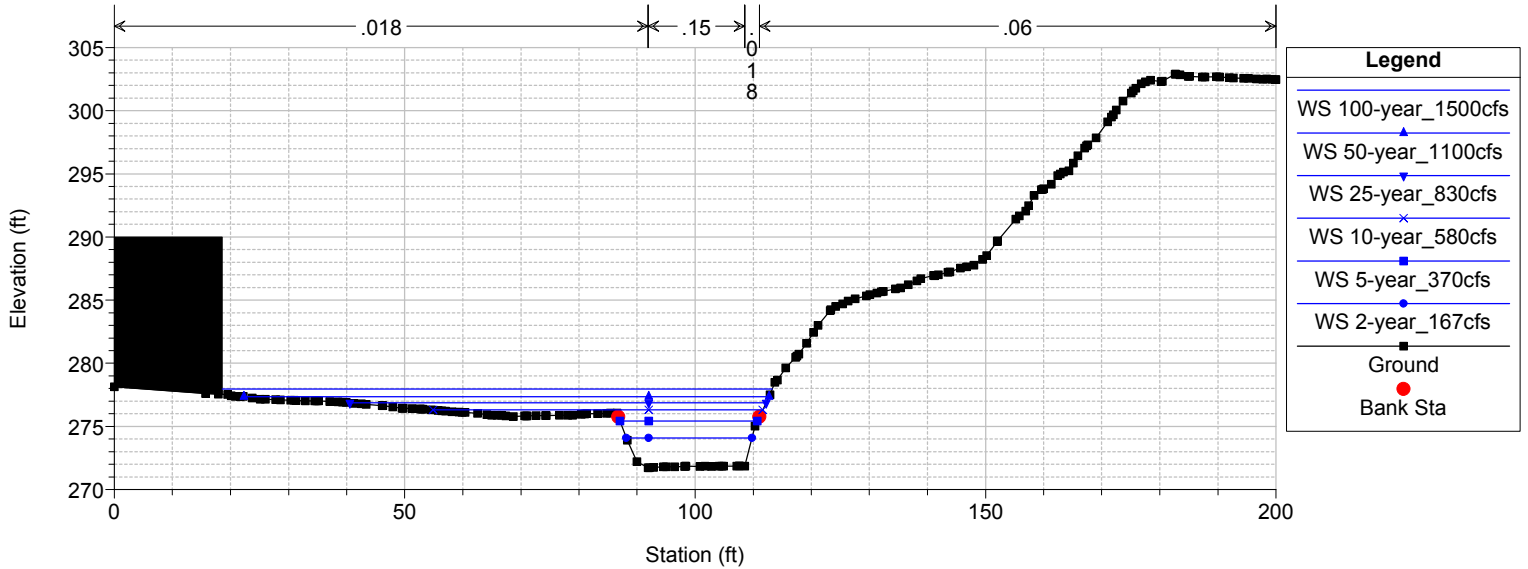
River = SChollasMap101 Reach = MainReach RS = 2306.424 Boundary between Lemon Grove and City. Rectangular channel w/ m



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

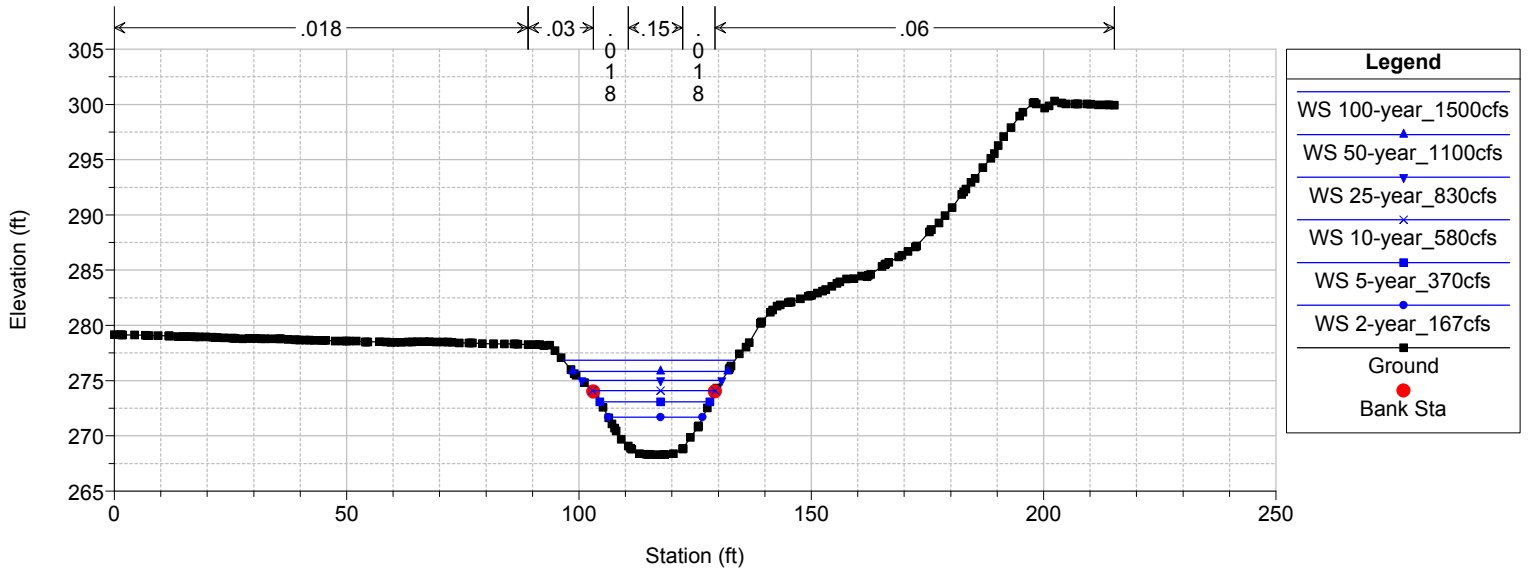
River = SChollasMap101 Reach = MainReach RS = 2200



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 2098.664 Channel transitions to a trapezoidal concrete channel. Bank sta

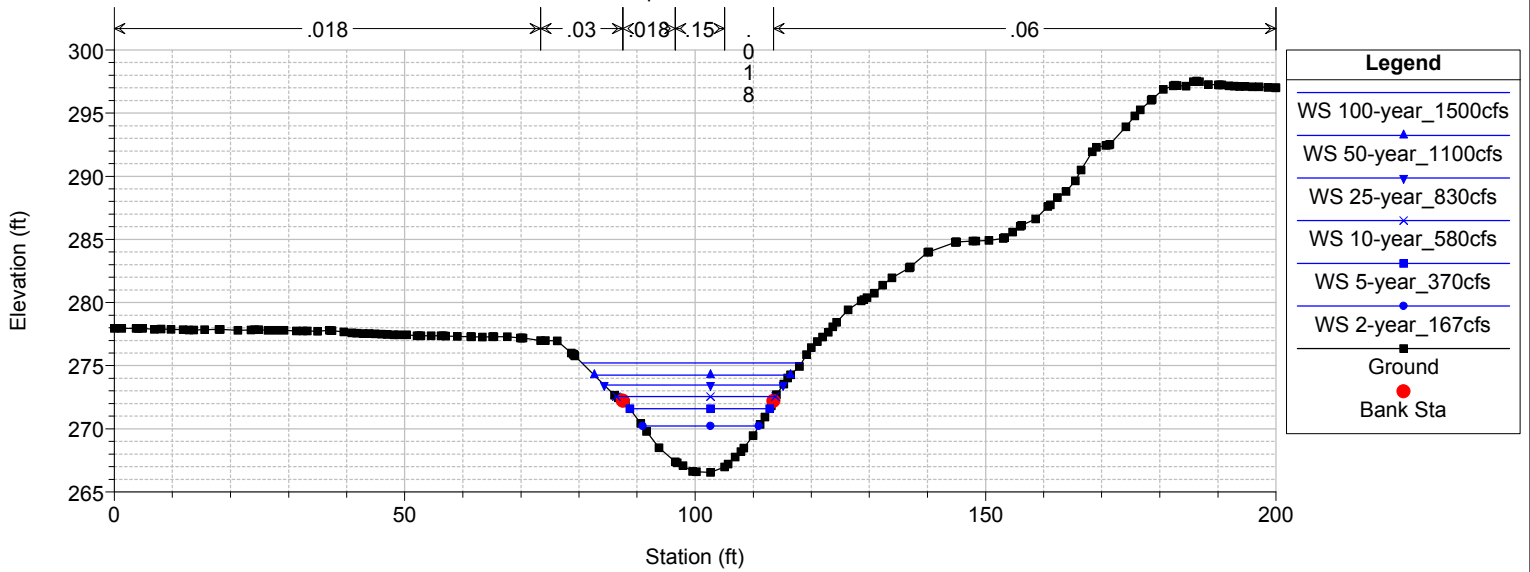




SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

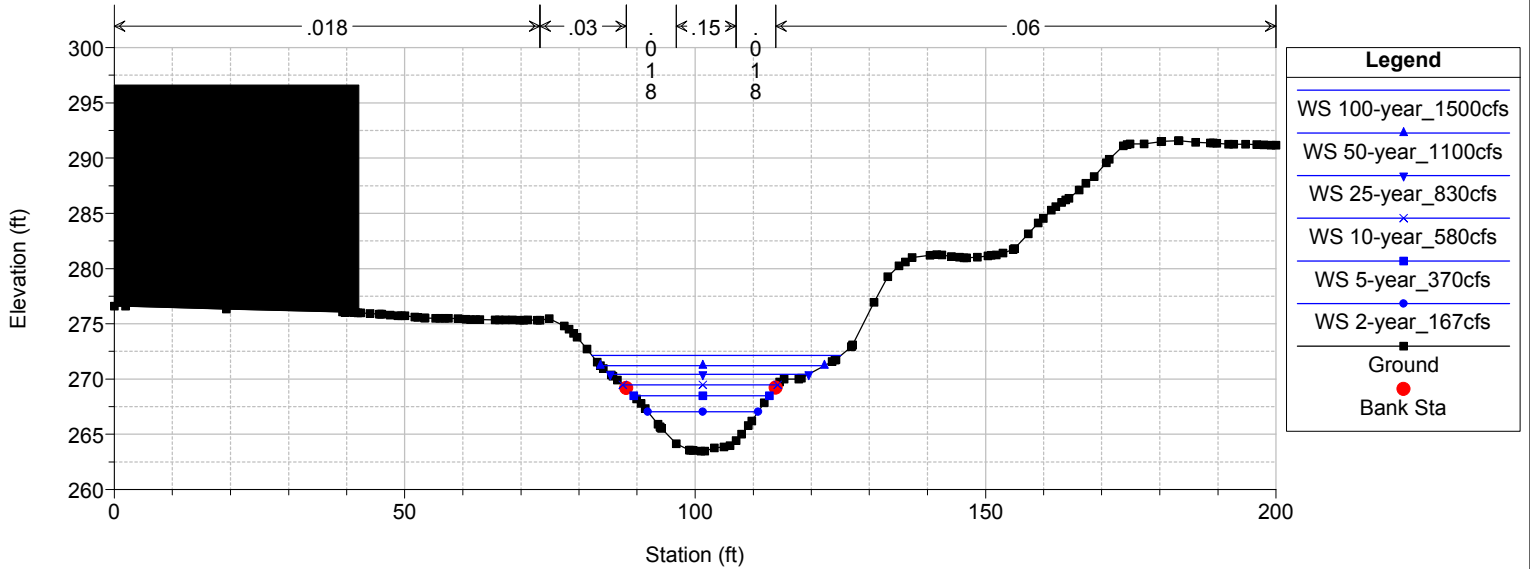
River = SChollasMap101 Reach = MainReach RS = 2000



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

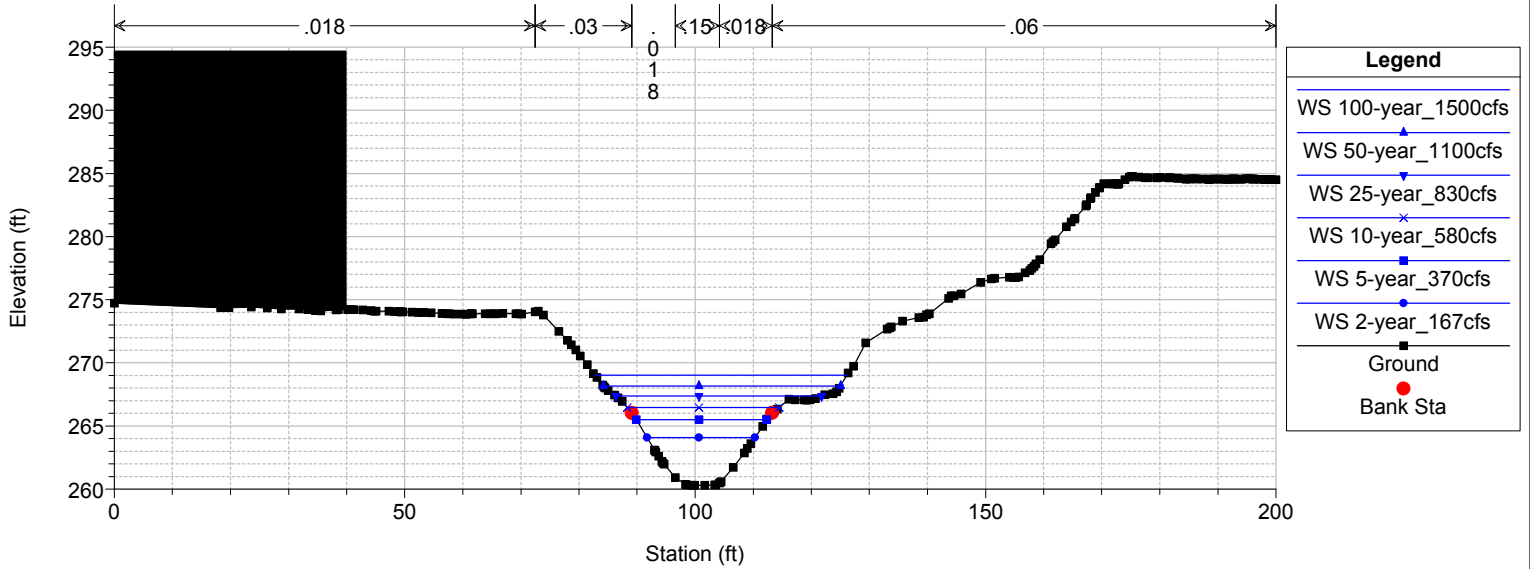
River = SChollasMap101 Reach = MainReach RS = 1800



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

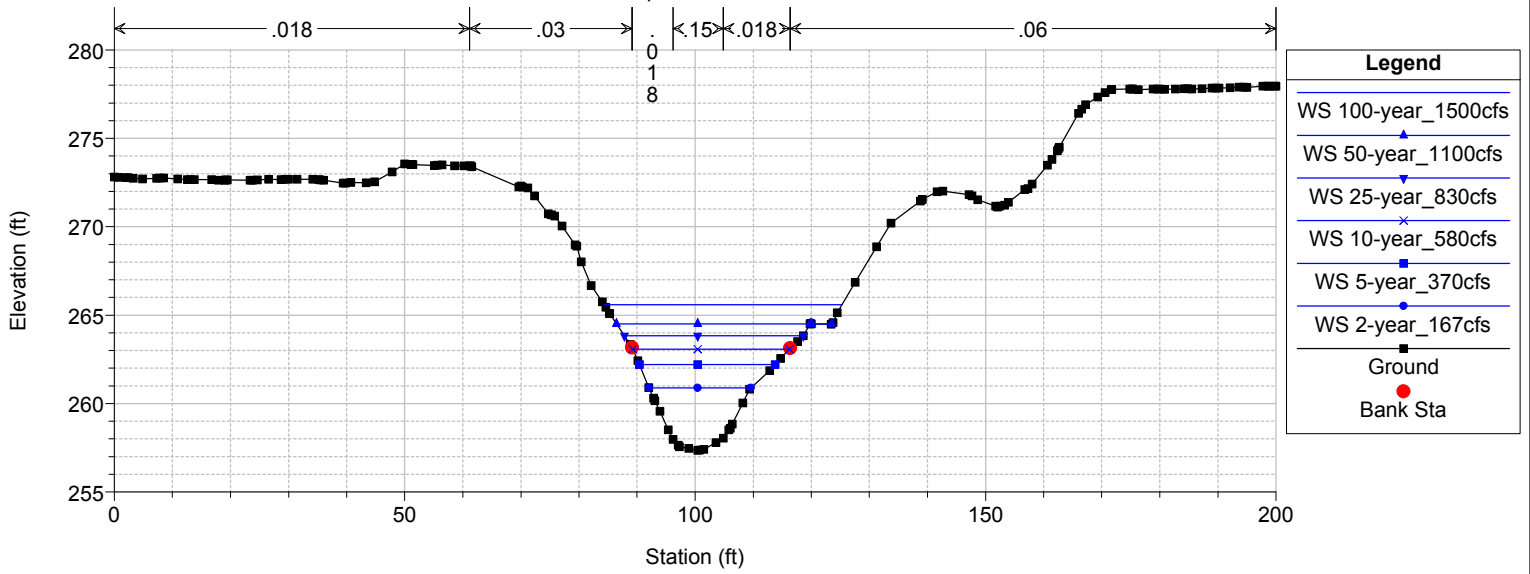
River = SChollasMap101 Reach = MainReach RS = 1600



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

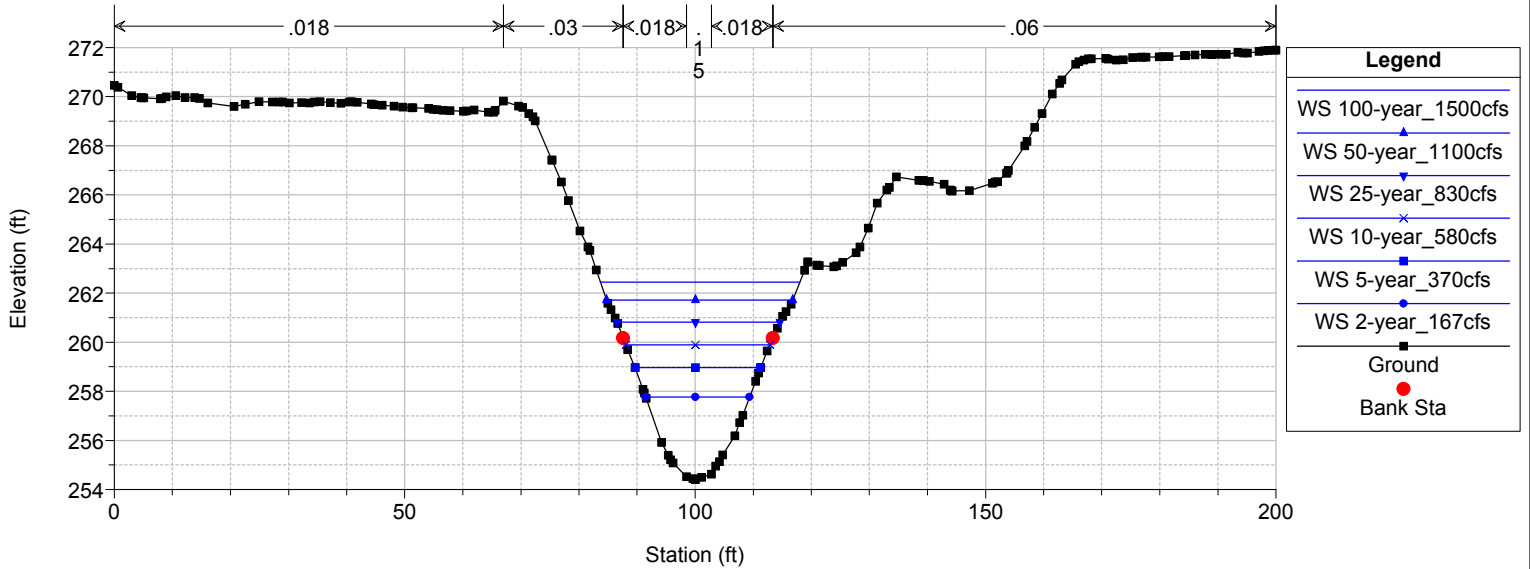
River = SChollasMap101 Reach = MainReach RS = 1400



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

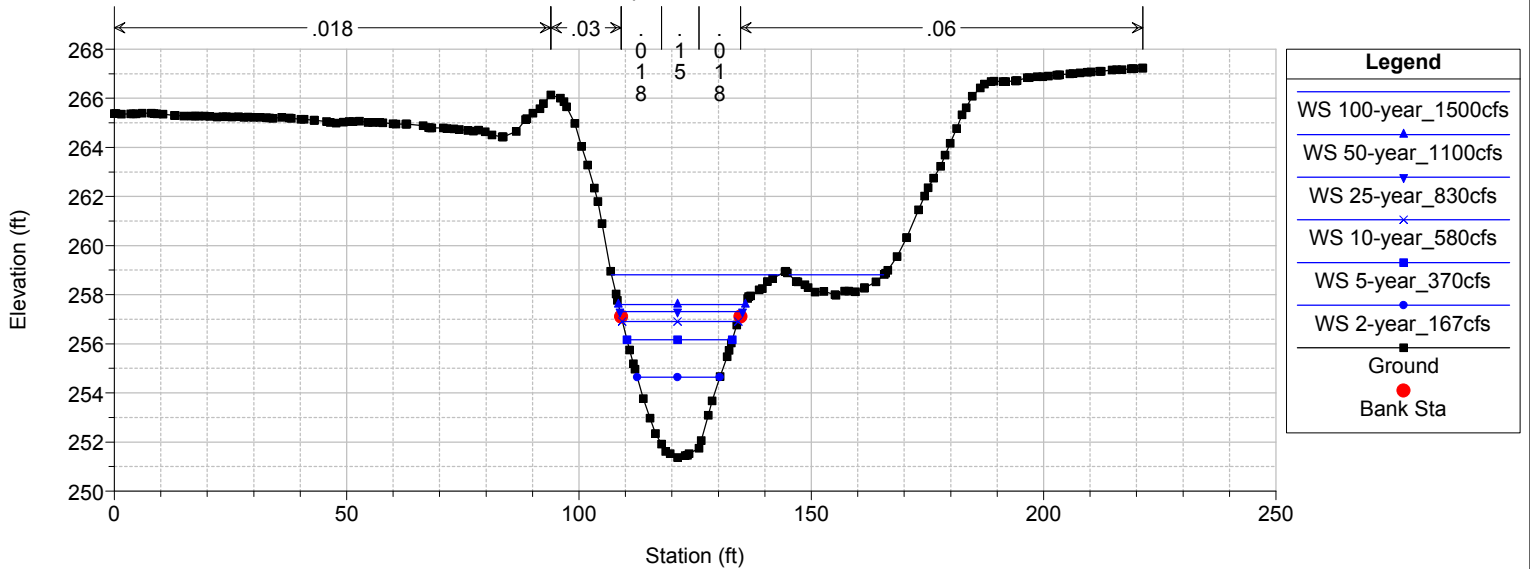
River = SChollasMap101 Reach = MainReach RS = 1200



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

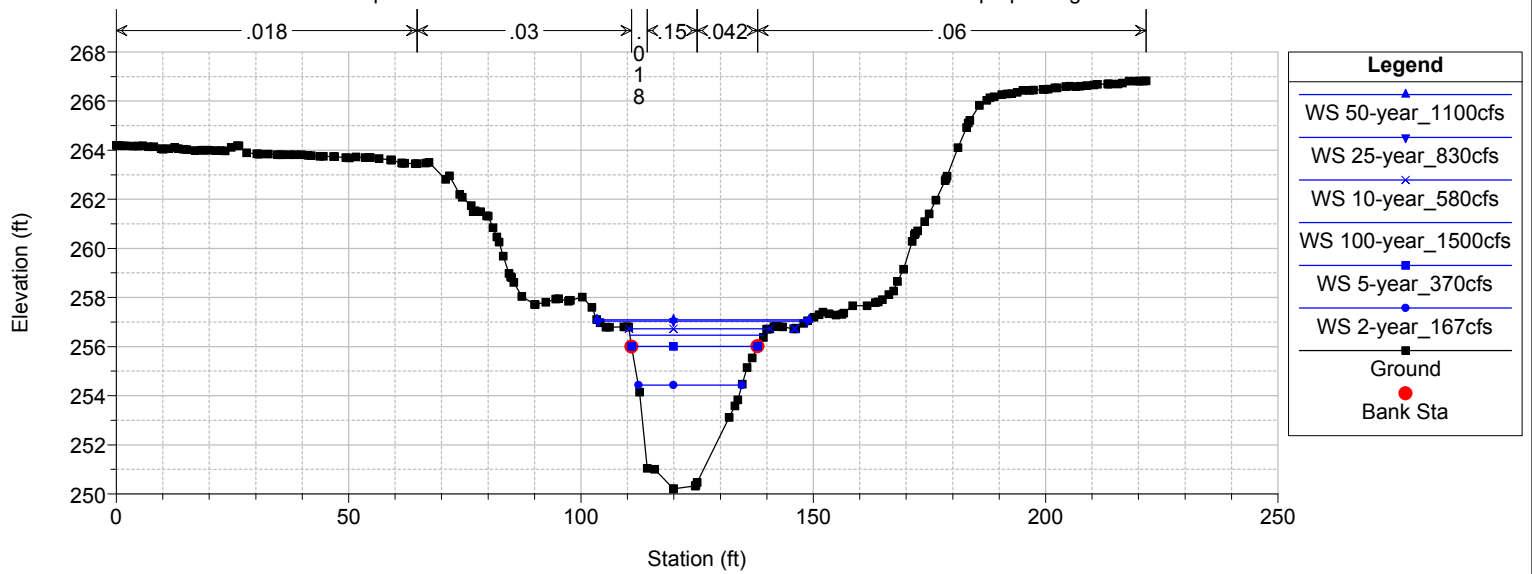
River = SChollasMap101 Reach = MainReach RS = 1004.18



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

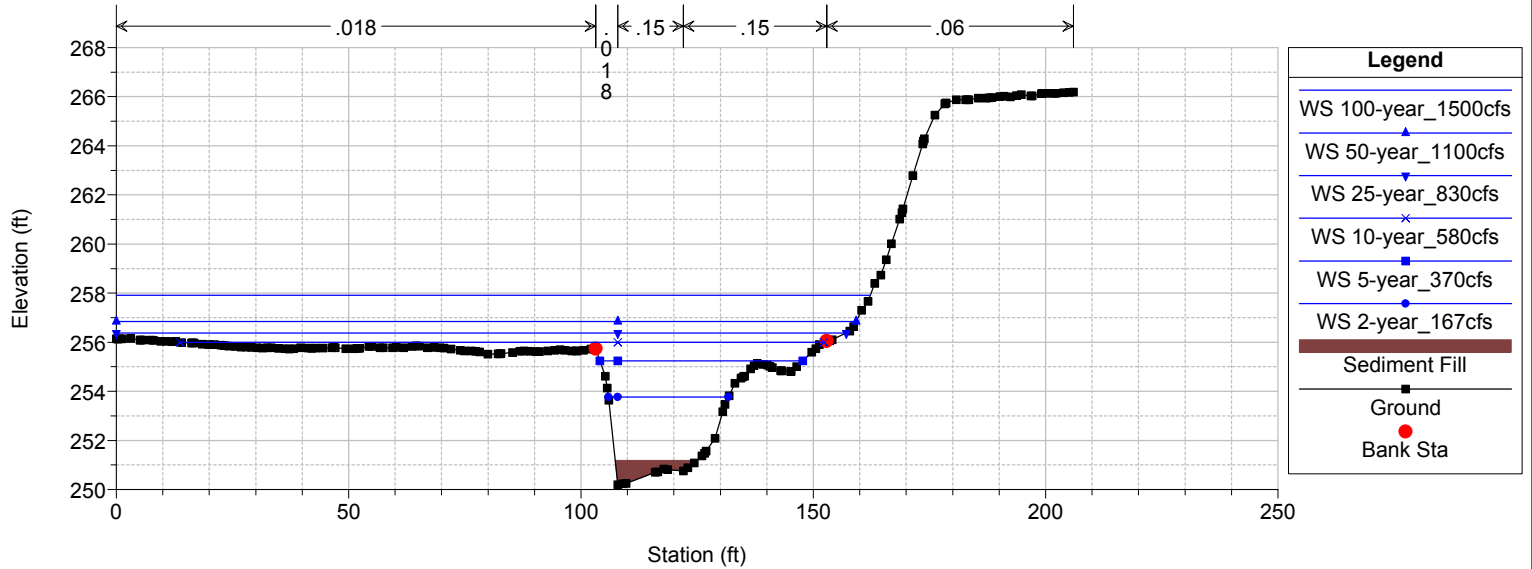
River = SChollasMap101 Reach = MainReach RS = 976.6697 Grouted 2ton riprap on right bank of concrete channel



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

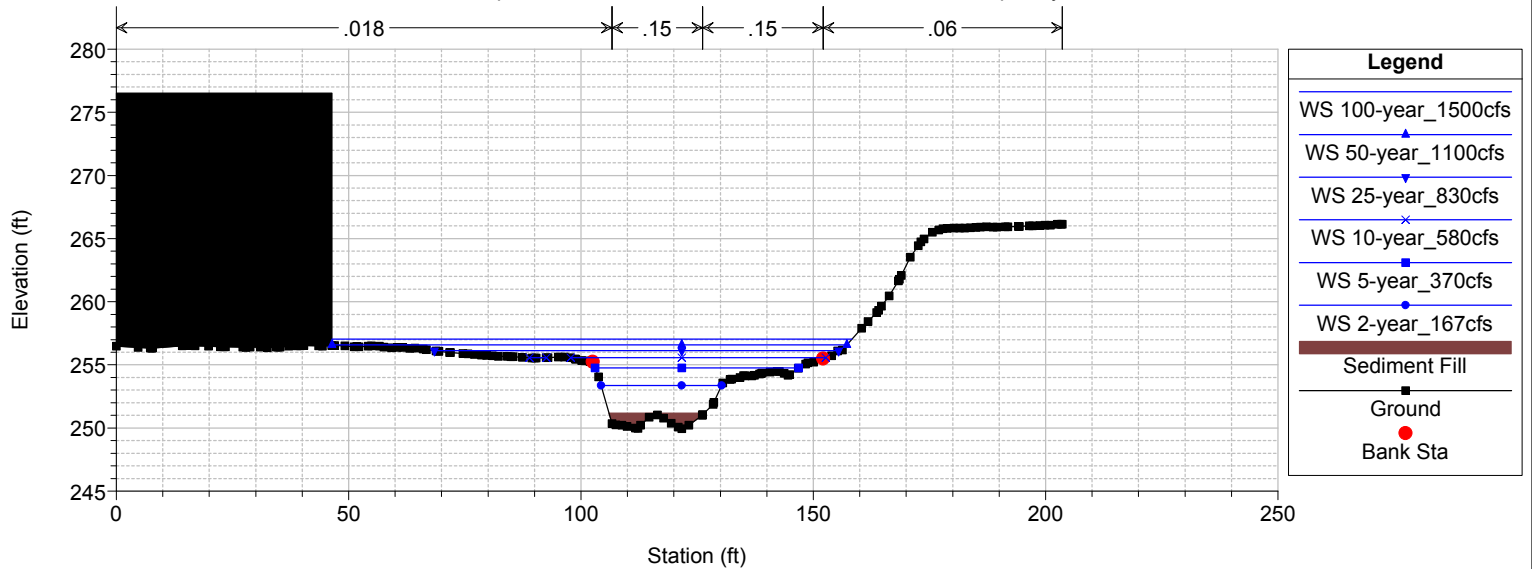
River = SChollasMap101 Reach = MainReach RS = 926.7529 transition to earthen channel. 2ton riprap



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

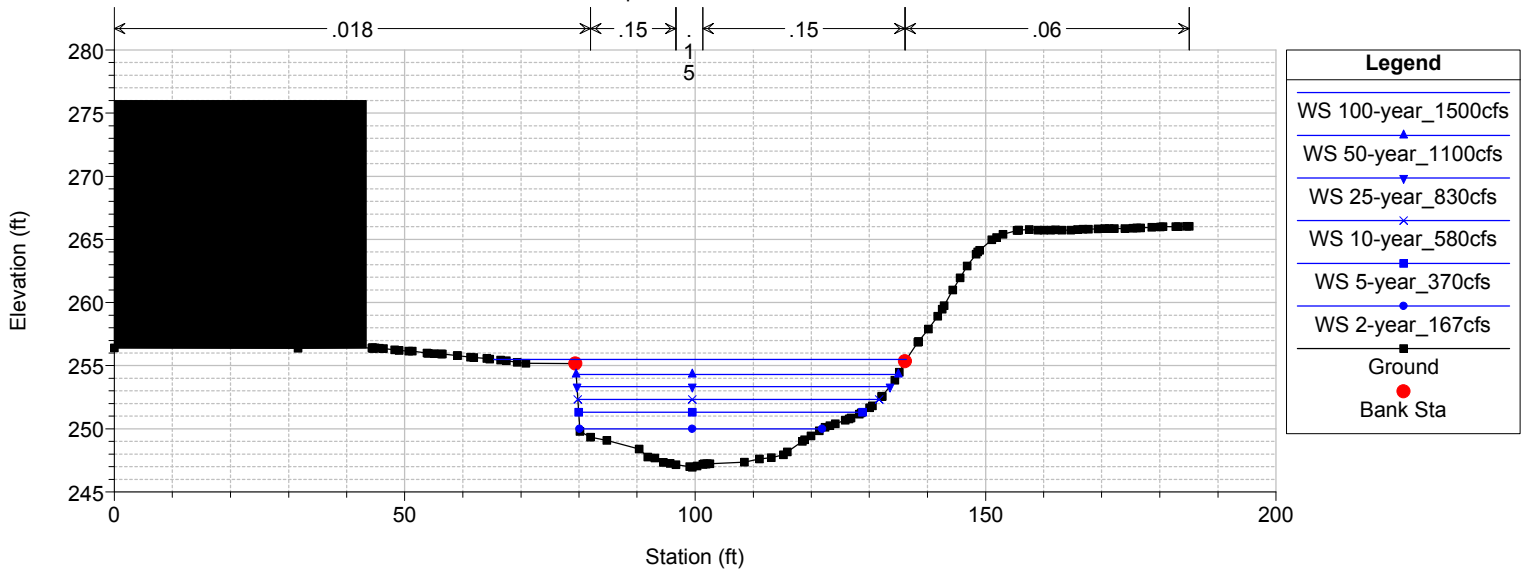
River = SChollasMap101 Reach = MainReach RS = 915.6229 completely earthen channel



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

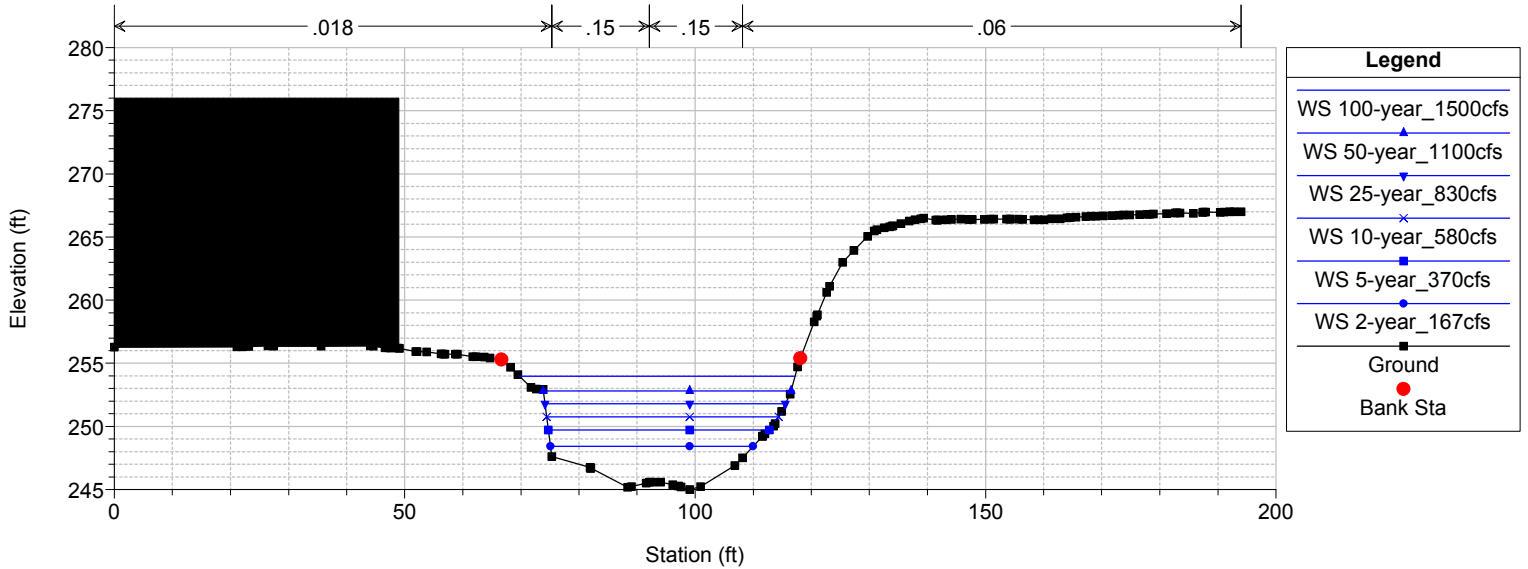
River = SChollasMap101 Reach = MainReach RS = 781.5157



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

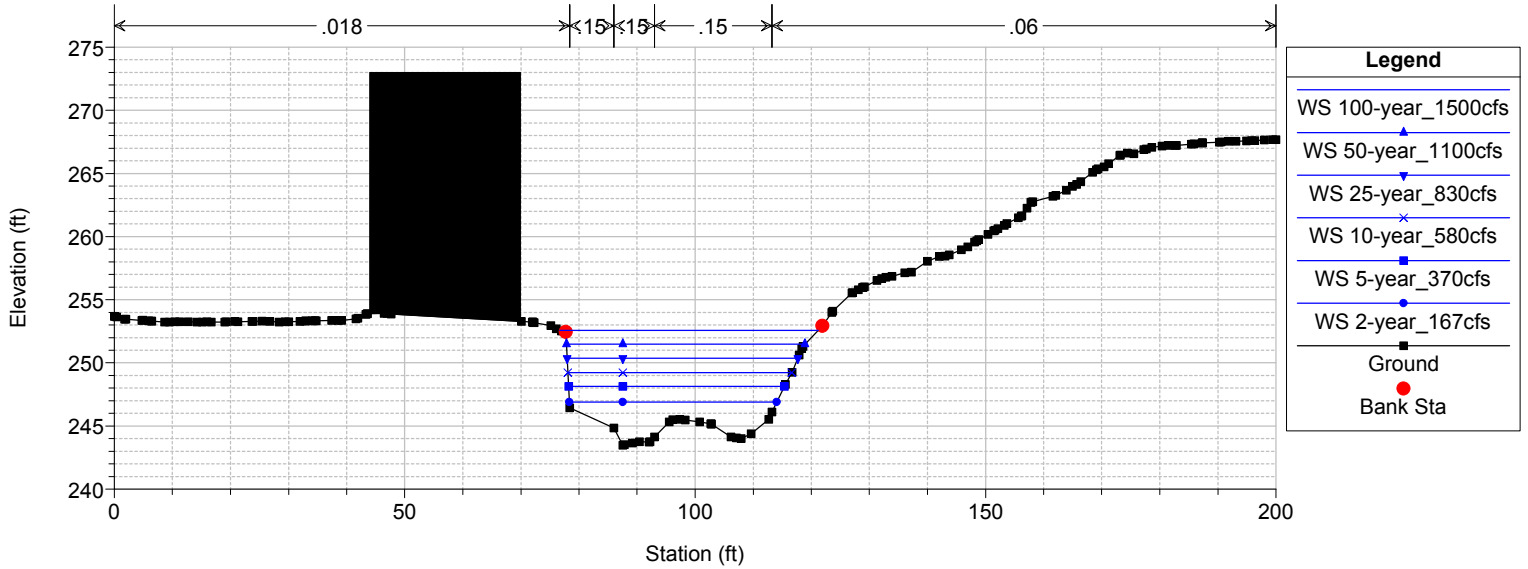
River = SChollasMap101 Reach = MainReach RS = 684.4379

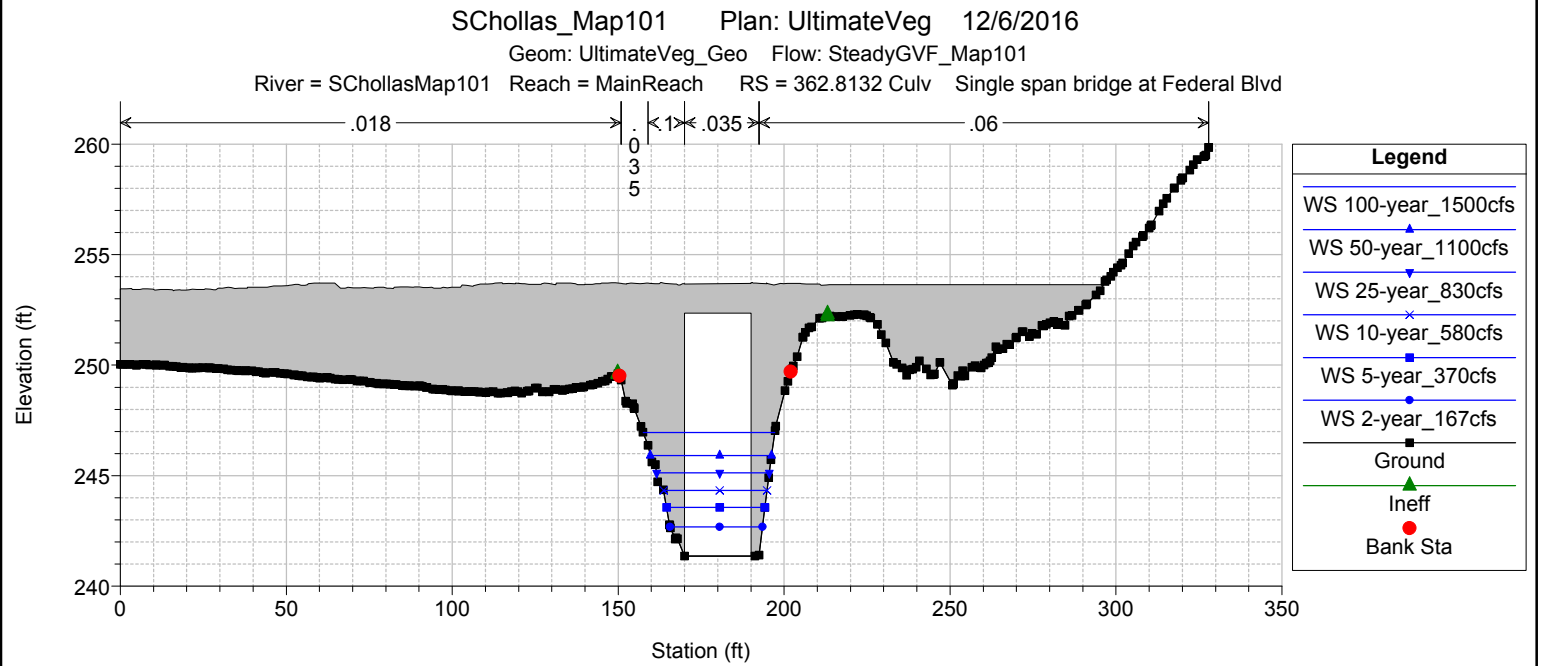
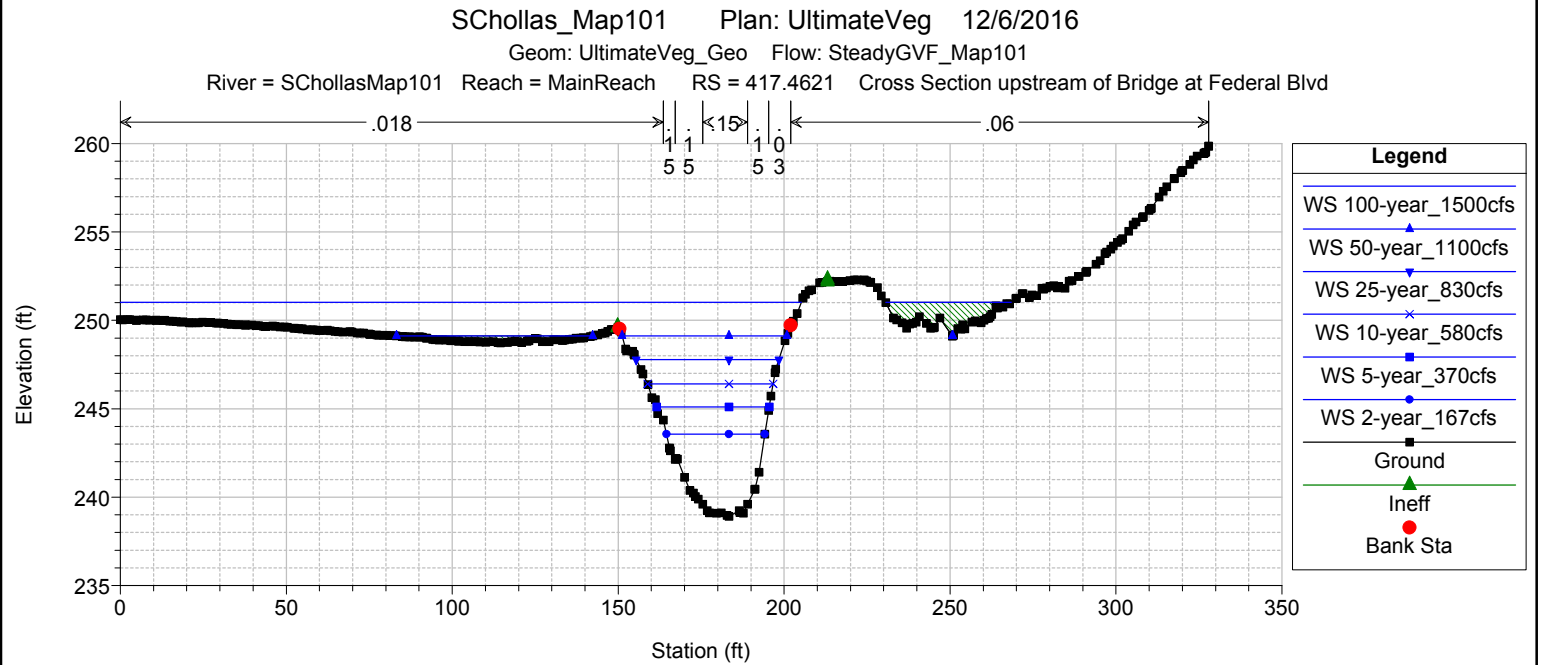
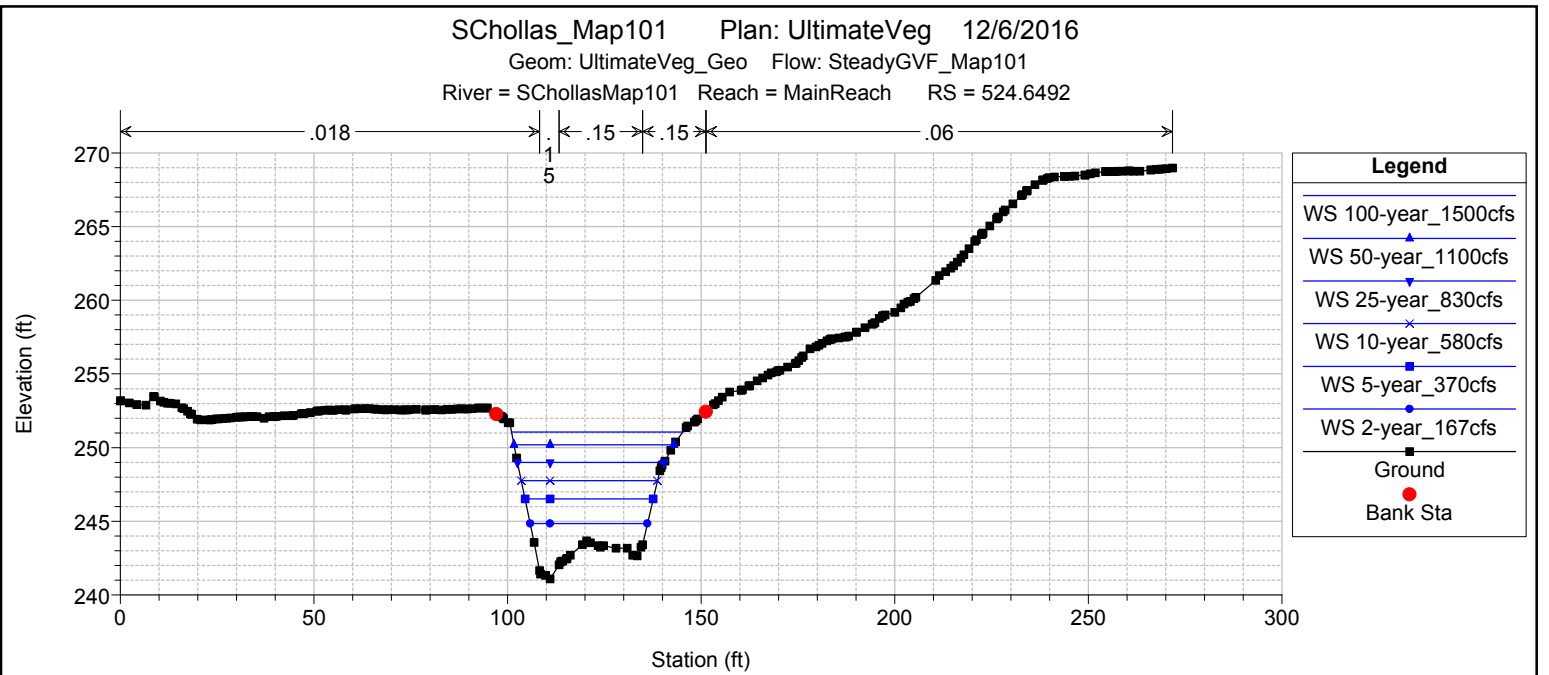


SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 599.9999

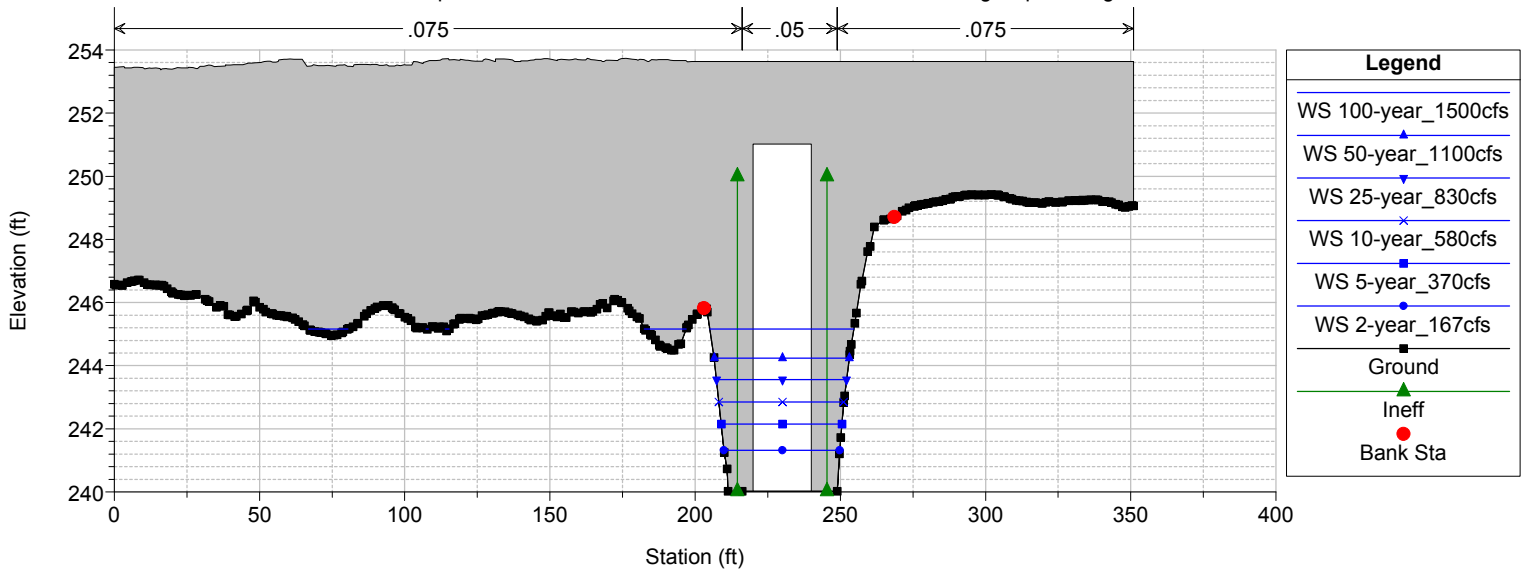




SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

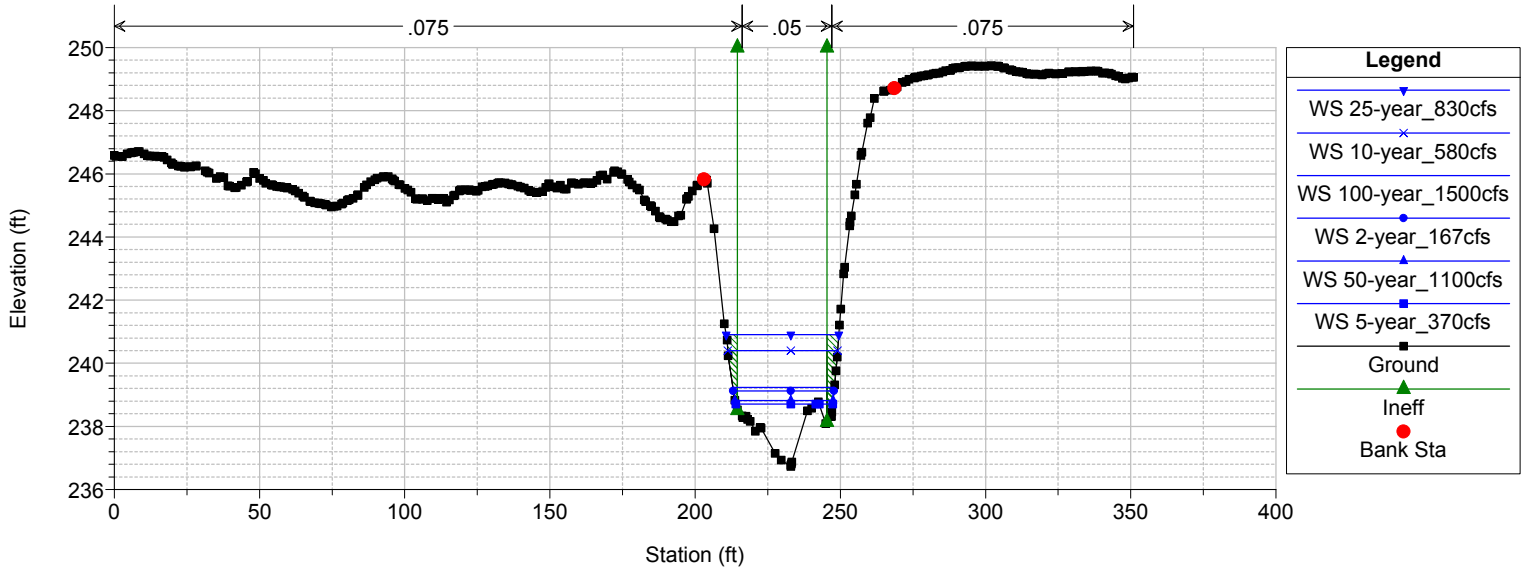
River = SChollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

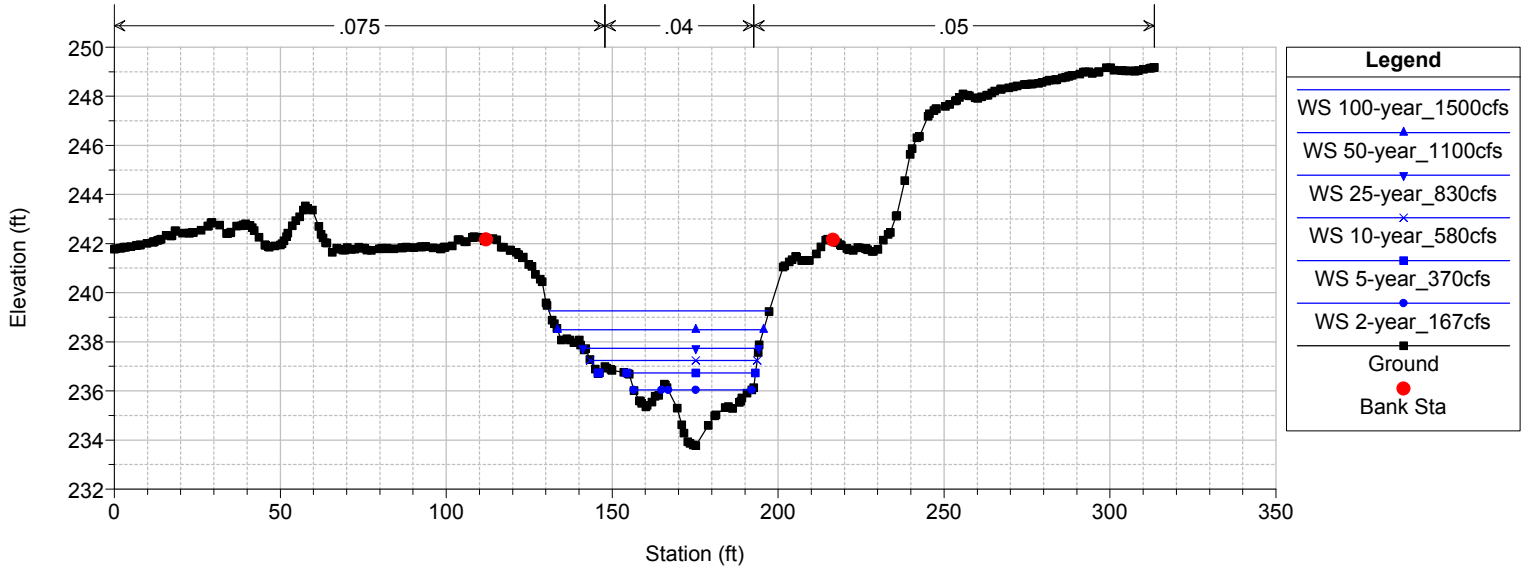
River = SChollasMap101 Reach = MainReach RS = 292.8245



SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 147.2868

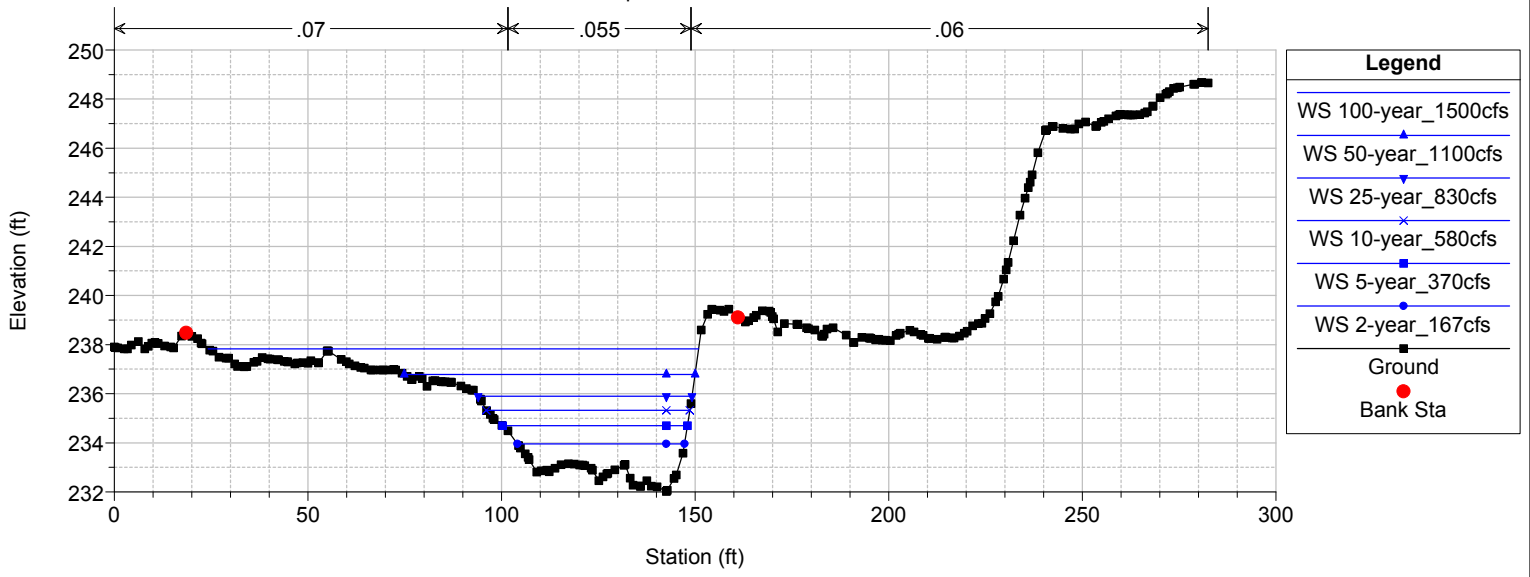




SChollas\_Map101 Plan: UltimateVeg 12/6/2016

Geom: UltimateVeg\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 28.06381



Schollas\_Map101.rep

HEC-RAS Version 4.1.0 Jan 2010  
 U.S. Army Corps of Engineers  
 Hydrologic Engineering Center  
 609 Second Street  
 Davis, California

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X   X   XXXXXX   XXXX   XXXX   XX   XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
XXXXXXXX XXXX   X   XXX XXXX XXXXXX XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
X   X   XXXXXX   XXXX   X   X   X   X   XXXXXX
    
```

PROJECT DATA  
 Project Title: Schollas\_Map101  
 Project File : Schollas\_Map101.prj  
 Run Date and Time: 12/6/2016 8:45:12 AM

Project in English units

PLAN DATA

Plan Title: UltimateVeg  
 Plan File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.p02

Geometry Title: UltimateVeg\_Geo  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g03

Flow Title : SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.f01

Plan Description:  
 Schollas\_Map101 Ultimate Vegetated Condition

Plan Summary Information:  
 Number of: Cross Sections = 20 Multiple Openings = 0  
 Culverts = 1 Inline Structures = 0  
 Bridges = 0 Lateral Structures = 0

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

Computation Options  
 Critical depth computed only where necessary  
 Conveyance Calculation Method: At breaks in n values only  
 Friction Slope Method: Average Conveyance  
 Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.f01

Schollas\_Map101.rep

Flow Data (cfs)

River	Reach	RS	100-year_1500cfs	50-year_1100cfs	25-year_830cfs
10-year_580cfs	5-year_370cfs	2-year_167cfs			
SchollasMap101	MainReach	2306.424	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2200	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2098.664	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2000	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1800	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1600	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1400	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1200	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1004.18	1500	1100	830
580	370	167			
SchollasMap101	MainReach	976.6697	1500	1100	830
580	370	167			
SchollasMap101	MainReach	926.7529	1500	1100	830
580	370	167			
SchollasMap101	MainReach	915.6229	1500	1100	830
580	370	167			
SchollasMap101	MainReach	781.5157	1500	1100	830
580	370	167			
SchollasMap101	MainReach	684.4379	1500	1100	830
580	370	167			
SchollasMap101	MainReach	599.9999	1500	1100	830
580	370	167			
SchollasMap101	MainReach	524.6492	1500	1100	830
580	370	167			
SchollasMap101	MainReach	417.4621	1500	1100	830
580	370	167			

Boundary Conditions

River	Reach	Profile	Upstream
SchollasMap101	MainReach	100-year_1500cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	50-year_1100cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	25-year_830cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	10-year_580cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	5-year_370cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	2-year_167cfs	Normal S = 0.035
0.014			Normal S =

GEOMETRY DATA

Geometry Title: UltimateVeg\_Geo  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g03

CROSS SECTION

Schollas\_Map101.rep

RIVER: SchollasMap101  
REACH: MainReach RS: 2306.424

INPUT  
Description: Boundary between Lemon Grove and City. Rectangular channel w/  
minimal vegetation on bottom of channel

Table with 10 columns: Station, Elevation, Data, num=, Sta, Elev, Sta, Elev, Sta, Elev. Contains 198 rows of station data.

Manning's n values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values include 0, .018, 97.56, .15, 113.92, .018, 117.76, .06.

Bank Sta: Left, Right, Lengths: Left, Channel, Right, Coeff, Contr., Expan. Values include 91.8, 117.76, 107.15, 106.42, 105.18, .1, .3.

Ineffective Flow table with 10 columns: Sta L, Sta R, Elev, num=, Permanent, F. Values include 0, 91.09, 279.84, 1.

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 2200

INPUT Description: Channel transitions to a trapezoidal concrete channel. Bank stations are at the top of the concrete channel. Table with 10 columns: Station, Elevation, Data, num=, Sta, Elev, Sta, Elev, Sta, Elev. Values include 0, 278.13, 15.69, 277.6, 17.89, 277.55, 19.52, 277.53, 20.13, 277.42, 20.81, 277.38, 21.65, 277.36, 22.18, 277.37, 23.77, 277.26, 25.11, 277.15.

Schollas\_Map101.rep

Table with 10 columns: Station, Elevation, Data, num=, Sta, Elev, Sta, Elev, Sta, Elev. Contains 199 rows of station data.

Manning's n values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values include 0, .018, 91.88, .15, 108.56, .018, 111.05, .06.

Bank Sta: Left, Right, Lengths: Left, Channel, Right, Coeff, Contr., Expan. Values include 86.79, 111.05, 101.52, 101.34, 97.26, .1, .3.

Blocked Obstructions table with 10 columns: Sta L, Sta R, Elev, num=, Permanent, F. Values include 0, 18.55, 290, 1.

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 2098.664

INPUT  
Description: Channel transitions to a trapezoidal concrete channel. Bank stations are at the top of the concrete channel.

Table with 10 columns: Station, Elevation, Data, num=, Sta, Elev, Sta, Elev, Sta, Elev. Contains 200 rows of station data.

Schollas\_Map101.rep

90.7	278.27	91.52	278.28	92.4	278.19	93.66	278.22	94.81	277.72
96.14	277.07	98.3	276.01	98.98	275.63	99.4	275.49	101.17	274.81
103	274.05	103.09	274.01	103.23	273.95	103.46	273.81	105.18	272.6
106.41	271.63	107.09	271.09	107.62	270.7	107.98	270.44	109.08	269.68
110.63	269.08	111.08	268.87	111.39	268.78	113	268.38	114.56	268.34
114.9	268.32	115.25	268.32	116.63	268.3	118.17	268.3	118.33	268.3
118.47	268.3	120.35	268.38	122.34	268.82	122.38	268.83	122.41	268.85
124	269.86	125.63	270.8	125.69	270.85	125.76	270.92	127.59	272.54
129.13	273.93	129.24	274.02	129.7	274.34	132.28	276.01	132.47	276.16
132.71	276.32	134.47	277.44	135.96	278.04	136.64	278.43	139.04	280.17
139.17	280.25	139.35	280.32	141.19	281.19	141.69	281.39	142.63	281.74
143.29	281.87	145.06	282.06	145.52	282.11	145.68	282.12	147.68	282.4
149.35	282.65	149.71	282.7	150.09	282.74	151.31	282.93	152.44	283.1
153.13	283.24	154.4	283.53	155.53	283.81	156.14	283.94	157.58	284.19
159.13	284.24	160.82	284.46	162	284.41	162.28	284.52	162.71	284.6
165.22	285.34	165.82	285.52	166.01	285.57	166.64	285.72	168.83	286.2
169.52	286.34	170.82	286.7	172.39	287.1	172.68	287.18	174.5	288.47
175.78	288.65	175.82	288.67	177.51	289.26	178.82	289.94	180.28	290.65
182.36	291.85	182.78	292.08	183.29	292.34	184.35	292.95	185.23	293.31
186.89	294.28	188.62	295.13	189.39	295.56	190.23	296.27	191.4	297.1
192.95	297.9	194.84	298.95	195.49	299.28	197.75	300.12	197.99	300.18
198.43	300.04	200.18	299.67	201.17	299.88	202.37	300.3	203.83	300.14
204.72	300.06	206.7	300.05	207.2	300.04	207.43	300.04	209.38	300.05
210.13	300.02	211.77	299.97	213.49	299.96	214.07	299.96	215.24	299.92

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val		
0	.018	89.06	.03	103.09	.018	110.63	.15	122.34	.018
129.24	.06								

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

103.09	129.24	101.57	98.66	97.84	.1	.3	
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CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 2000

INPUT Description: Station Elevation Data num= 166

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	277.96	1.27	277.95	3.72	277.96	4.13	277.96	4.83	277.94
6.87	277.88	8.04	277.9	9.76	277.88	11.84	277.88	12.84	277.83
13.66	277.82	15.54	277.84	18.03	277.88	18.13	277.88	18.25	277.88
21.25	277.81	23.53	277.83	24.14	277.84	24.86	277.84	26.47	277.81
27.8	277.81	29.21	277.79	31.35	277.76	32.47	277.75	33.24	277.74
34.99	277.72	37.05	277.79	37.28	277.78	37.46	277.78	39.48	277.66
40.9	277.6	41.69	277.56	42.82	277.55	43.85	277.55	44.91	277.52
45.98	277.5	46.99	277.48	48.1	277.44	48.92	277.45	50.28	277.45
52.13	277.38	52.46	277.37	52.79	277.37	54.53	277.38	56.24	277.37
56.65	277.36	57	277.35	59.06	277.31	61.4	277.29	61.44	277.29
61.48	277.29	63.34	277.27	65.15	277.29	65.25	277.29	65.35	277.29
67.68	277.28	69.92	277.2	70.12	277.19	70.34	277.18	73.37	277
74.24	277	76.23	276.96	78.68	276.01	79.02	275.92	79.12	275.87
79.17	275.85	79.31	275.78	86.13	272.65	86.76	272.45	87.54	272.23
87.86	272.12	88.01	272.04	90.66	270.42	91.62	269.79	93.79	268.5
96.56	267.39	96.93	267.3	97.88	267.08	99.56	266.62	100.22	266.59
102.65	266.55	105.06	266.98	105.66	267.2	106.87	267.75	107.88	268.19
108.38	268.48	109.95	269.47	111.17	270.35	112.01	270.93	113.12	271.83
113.5	272.21	114	272.71	115.25	273.54	115.94	274.02	116.44	274.28
117.98	274.94	119.17	275.86	119.99	276.42	121.05	276.91	121.93	277.26
122.91	277.65	123.67	278.09	124.35	278.43	126.31	279.43	128.62	280.12
129.03	280.24	129.56	280.38	130.88	280.73	132.31	281.38	133.9	281.95
136.86	282.75	136.95	282.78	137.05	282.81	140.08	283.98	140.21	284.02
144.79	284.76	144.86	284.79	144.92	284.79	145	284.8	147.83	284.88
148.3	284.88	150.58	284.91	153.05	285.06	153.29	285.16	154.66	285.59
155.98	286.04	156.22	286.1	158.61	286.63	160.7	287.6	161.15	287.74
162.36	288.31	163.88	288.81	165.45	289.63	166.45	290.5	168.4	291.95
169.08	292.3	170.73	292.44	171.2	292.48	171.39	292.53	174.16	293.91
175.72	294.79	176.65	295.27	178.49	296.02	178.61	296.06	178.67	296.09
180.59	296.89	182.32	297.16	182.61	297.22	182.95	297.19	184.5	297.13

Schollas\_Map101.rep

185.8	297.49	186.36	297.54	186.85	297.48	188.37	297.27	190.06	297.25
190.33	297.25	190.69	297.23	191.9	297.16	192.82	297.14	193.7	297.11
194.66	297.11	195.91	297.09	197.1	297.09	198.6	297.04	199.88	297.01
200	297.01								

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val		
0	.018	73.37	.03	87.54	.018	96.56	.15	105.06	.018
113.5	.06								

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

87.54	113.5	201.58	200	197.43	.1	.3	
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CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 1800

INPUT Description: Station Elevation Data num= 138

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	276.61	1.94	276.59	19.31	276.33	39.26	276.08	39.72	276.01
40.18	276.05	41.19	276.02	41.56	276.02	41.92	275.99	42.42	275.98
44	275.94	45.64	275.88	45.84	275.87	46.07	275.86	47.49	275.79
48.82	275.74	49.43	275.73	50.02	275.72	51.74	275.6	52.22	275.57
53.38	275.52	53.5	275.52	55.3	275.51	56.04	275.51	56.85	275.5
57.94	275.49	59.19	275.46	60.54	275.4	61.3	275.38	62.23	275.39
62.91	275.37	65.54	275.34	66.3	275.34	67.33	275.34	68.54	275.35
69.79	275.33	70.49	275.33	71.18	275.34	72.82	275.33	73.29	275.33
74.9	275.47	77.44	274.81	78.27	274.51	79.08	274.13	79.65	273.8
81.35	272.71	83.15	271.54	83.69	271.21	84.19	270.95	85.56	270.37
85.83	270.25	86.6	269.92	88.18	269.18	89.93	268.19	90.7	267.79
91.42	267.34	93.6	265.9	93.95	265.68	94.07	265.6	94.21	265.53
96.74	264.14	99.01	263.57	99.25	263.55	99.69	263.54	100.98	263.49
101.67	263.49	103.28	263.77	104.95	263.85	106	263.98	107.03	264.44
107.98	265.02	109.16	265.8	109.76	266.19	111.9	267.86	113.86	269.22
114.56	269.73	115.34	269.99	117.83	269.99	118.28	270.07	123.59	271.58
124.09	271.72	124.16	271.74	124.22	271.76	126.87	272.93	126.98	272.98
127.09	273.08	130.81	276.94	133.18	279.26	135.09	280.26	136.22	280.6
137.37	281.01	140.46	281.21	141.61	281.27	142.46	281.22	144.11	281.09
145.52	281.02	146.26	280.98	146.71	280.97	148.62	281.02	150.44	281.13
150.96	281.19	151.85	281.23	153.03	281.4	154.78	281.72	155	281.81
157.37	283.15	159.04	284.12	159.92	284.54	161.31	285.3	162.09	285.61
163.11	285.97	163.82	286.21	164.35	286.36	166.11	287.11	167.29	287.72
168.68	288.32	170.78	289.56	171.32	289.9	173.72	291.11	174.37	291.23
174.89	291.27	177.31	291.28	180.22	291.49	180.27	291.5	180.32	291.5
183.17	291.57	183.28	291.57	186.17	291.44	188.71	291.38	189.21	291.37
189.79	291.35	191.82	291.26	192.71	291.26	194.74	291.26	196.72	291.23
197.93	291.19	199.17	291.18	200	291.16				

Manning's n Values num= 6

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val		
0	.018	73.29	.03	88.18	.018	96.74	.15	107.03	.018
113.86	.06								

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

88.18	113.86	198.88	200	200.59	.1	.3	
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Blocked Obstructions num= 1

Sta L	Sta R	Elev
0	42.08	296.61

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 1600

INPUT Description: Station Elevation Data num= 209

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	276.61	1.94	276.59	19.31	276.33	39.26	276.08	39.72	276.01



Schollas\_Map101.rep

Table with 11 columns representing stationing and elevation data for Schollas\_Map101.rep. Columns include Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev.

Manning's n Values table with 11 columns: Manning's n, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Blocked Obstructions table.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach

RS: 1400

INPUT Description:

Station Elevation Data table with 11 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev.

Schollas\_Map101.rep

Table with 11 columns representing stationing and elevation data for Schollas\_Map101.rep. Columns include Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev.

Manning's n Values table with 11 columns: Manning's n, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val.

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

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach

RS: 1200

INPUT Description:

Station Elevation Data table with 11 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev.

Schollas\_Map101.rep  
193.46 271.8 194.39 271.78 195.11 271.78 197.1 271.84 197.96 271.87  
198.6 271.88 199.71 271.89 200 271.9

Manning's n Values num= 6  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 66.99 .03 87.63 .018 98.53 .15 102.79 .018  
113.41 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
87.63 113.41 197.21 195.82 194.66 .1 .3

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 1004.18

INPUT  
Description: Station Elevation Data num= 190  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
0 265.38 .33 265.38 1.53 265.36 3.49 265.37 4.06 265.37  
4.68 265.37 6 265.39 7.96 265.39 8.57 265.38 9.13 265.37  
10.47 265.35 12.95 265.3 13.04 265.3 13.1 265.3 14.94 265.27  
16.59 265.28 17.45 265.28 18.27 265.28 19.43 265.27 20.55 265.26  
22.11 265.24 23.33 265.25 24.09 265.25 25.28 265.24 26.7 265.25  
27.87 265.23 28.77 265.24 29.96 265.23 31.42 265.23 32.72 265.21  
33.43 265.2 34.14 265.19 36.03 265.23 37.65 265.2 38.11 265.19  
40.16 265.15 40.81 265.14 43 265.11 43.03 265.11 43.07 265.11  
45.63 265.05 46.47 265.02 47.74 264.99 49.31 265.03 50.54 265.06  
51.35 265.05 52.78 265.07 54.61 265.02 55.56 265.01 57.1 265.01  
57.75 265 59.97 264.96 60.61 264.95 62.74 264.95 62.81 264.95  
62.95 264.95 66.45 264.88 67.62 264.81 67.95 264.8 68.32 264.8  
70.82 264.79 71.58 264.77 73.1 264.75 74.25 264.73 76.09 264.69  
77.28 264.66 78.4 264.7 79.79 264.64 81.24 264.51 83.45 264.43  
83.6 264.43 83.67 264.43 86.51 264.65 88.47 265.13 88.8 265.17  
90.05 265.39 91.63 265.58 92.35 265.78 93.94 266.13 95.98 266  
96.76 265.86 97.31 265.66 99.11 264.98 100.57 264.04 101.84 263.28  
103.32 262.34 104.05 261.8 104.98 260.89 106.8 258.96 107.96 258.03  
108.29 257.77 109.07 257.1 110.9 255.75 111.71 255.19 112.05 254.96  
113.82 253.77 115.3 252.97 116.48 252.34 117.76 251.91 118.65 251.62  
119.61 251.52 121.21 251.37 122.88 251.45 123.33 251.46 123.67 251.52  
125.82 251.75 126.31 252.06 127.85 253.09 128.67 253.67 130.34 254.67  
131.89 255.48 132.28 255.73 132.78 256.04 133.94 256.76 134.78 257.1  
136.31 257.84 136.49 257.92 136.89 257.95 138.79 258.2 139.48 258.25  
140.58 258.54 141.7 258.66 144.35 258.94 144.52 258.95 144.82 258.89  
146.74 258.54 147.1 258.52 148.62 258.41 149.28 258.29 150.86 258.11  
152.72 258.13 155.09 258 155.33 257.98 157.13 258.15 158.09 258.14  
159.49 258.12 161.41 258.28 161.43 258.28 161.45 258.28 163.91 258.52  
165.73 258.83 166 258.88 166.45 259 168.44 259.56 170.54 260.32  
170.55 260.32 173.09 261.46 174.38 262.02 175.17 262.36 176.29 262.75  
177.83 263.23 178.82 263.69 179.92 264.17 181.25 264.77 182.45 265.33  
183.31 265.62 184.63 266.08 186.39 266.42 187.24 266.58 188.72 266.68  
189.32 266.7 191.31 266.68 191.82 266.68 193.95 266.71 193.99 266.71  
194.29 266.72 196.5 266.84 196.93 266.84 198.64 266.88 199.76 266.88  
201.05 266.91 202.8 266.95 203.19 266.95 203.45 266.96 205.63 267  
206.31 267.01 207.85 267.04 209.43 267.06 210.22 267.08 212.06 267.1  
212.26 267.1 212.37 267.1 214.73 267.15 215.69 267.17 216.86 267.16  
218.89 267.2 219.2 267.21 219.36 267.21 221.27 267.23 221.35 267.23

Manning's n Values num= 6  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 93.94 .03 109.07 .018 117.76 .15 125.82 .018  
134.78 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
109.07 134.78 29.27 27.51 26.96 .1 .3

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 976.6697

Schollas\_Map101.rep

INPUT  
Description: Grouted 2ton riprap on right bank of concrete channel  
Station Elevation Data num= 190  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
0 264.19 .34 264.19 .97 264.18 1.8 264.18 3.54 264.17  
4.69 264.17 5.62 264.18 6.89 264.14 8.06 264.14 9.65 264.06  
10.07 264.04 11.31 264.07 12.52 264.11 13.26 264.07 14.48 264.04  
15.17 264.03 16.94 263.98 18.35 264 18.95 264 19.89 264  
21.36 263.98 22.54 263.98 23.41 263.97 24.73 264.11 26 264.18  
26.41 264.18 28.04 263.89 30.2 263.85 30.52 263.84 30.84 263.84  
32.69 263.84 34.67 263.82 35.23 263.81 35.83 263.81 37.3 263.81  
38.45 263.81 39.84 263.81 41.22 263.79 41.97 263.78 43.8 263.75  
44.59 263.75 46.77 263.74 46.86 263.74 46.95 263.74 49.4 263.7  
50.11 263.69 51.56 263.72 53.57 263.7 54.28 263.7 54.7 263.7  
56.57 263.66 59.02 263.61 59.25 263.6 61.46 263.48 61.53 263.48  
62.02 263.47 64.31 263.45 64.72 263.45 66.61 263.48 67.31 263.5  
70.87 262.81 71.68 262.95 73.93 262.2 74.47 262.08 76.41 261.75  
76.82 261.5 77.22 261.54 78.39 261.5 79.7 261.33 80 261.32  
81.06 260.84 81.86 260.47 82.34 260.26 83.28 259.69 84.51 258.98  
84.84 258.85 85.08 258.81 85.56 258.61 87.24 258.04 90.07 257.72  
90.08 257.72 90.09 257.72 92.42 257.81 94.59 257.94 95.17 257.95  
97.28 257.84 97.55 257.89 97.74 257.88 100.3 258.02 102.37 257.6  
103.37 257.1 104.13 256.97 105.36 256.79 106.12 256.79 109.23 256.8  
109.88 256.81 110.28 256.81 110.9 256 112.63 254.15 114.27 251.04  
115.83 251 119.92 250.21 119.93 250.21 124.61 250.33 124.67 250.33  
124.72 250.35 125.01 250.47 131.89 253.12 133.14 253.59 133.78 253.83  
134.7 254.47 135.74 255.15 136.83 255.54 138 256.01 139.23 256.38  
139.96 256.71 140.48 256.71 141.55 256.82 142.04 256.82 142.52 256.82  
143.38 256.81 145.82 256.73 146.04 256.73 146.12 256.73 146.22 256.75  
147.96 256.95 148.79 257.05 150.13 257.19 151.25 257.3 152.06 257.4  
153.36 257.34 154.92 257.29 156.15 257.31 156.55 257.37 158.44 257.66  
161.55 257.66 163.36 257.79 163.98 257.82 164.85 257.91 166.26 258.12  
167.27 258.27 168.14 258.65 169.39 259.15 171.27 260.29 171.78 260.56  
171.95 260.61 172.44 260.72 173.94 261.09 174.94 261.4 176.4 261.96  
178.37 262.76 178.56 262.84 178.76 262.94 181.16 264.1 182.98 264.93  
183.32 265.1 183.7 265.21 185.76 265.82 187.31 266.03 188.01 266.13  
188.88 266.17 190.55 266.26 191.72 266.29 192.69 266.31 193.89 266.36  
195.13 266.43 196.58 266.44 197.35 266.45 199.46 266.47 199.8 266.47  
200.56 266.49 201.98 266.54 202.47 266.54 204.33 266.59 205.1 266.6  
206.52 266.59 207.47 266.61 208.91 266.63 210.43 266.66 211.19 266.68  
213.39 266.7 213.51 266.7 213.78 266.7 215.57 266.7 216.55 266.74  
217.98 266.81 219.67 266.81 220.21 266.82 221.07 266.82 221.6 266.83

Manning's n Values num= 6  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 64.72 .03 110.9 .018 114.27 .15 125.01 .042  
138 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
110.9 138 49.84 49.92 47.71 .1 .3

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 926.7529

INPUT  
Description: transition to earthen channel. 2ton riprap  
Station Elevation Data num= 175  
Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
0 256.14 .35 256.13 .71 256.14 1.3 256.14 3.07 256.15  
5.09 256.09 5.15 256.09 5.67 256.09 7.54 256.09 7.98 256.08  
9.6 256.04 10.74 256.04 12 256.02 12.77 256.03 14.07 255.98  
16.16 255.97 16.4 255.97 16.71 255.97 18.53 255.92 19.93 255.91  
21.05 255.9 22.53 255.88 23.18 255.86 24.17 255.84 25.61 255.82  
26.84 255.8 27.87 255.8 29.09 255.79 30.28 255.78 31.47 255.76  
32.49 255.77 33.33 255.77 34.91 255.75 36.32 255.73 37.17 255.72  
38.13 255.74 39.65 255.77 41.33 255.76 42.07 255.75 42.92 255.76  
44.48 255.76 46.41 255.78 46.76 255.79 47.11 255.78 49.37 255.73  
51.25 255.74 51.82 255.75 52.37 255.75 54.37 255.82 54.98 255.82  
56.75 255.77 57.42 255.77 59.42 255.78 60.23 255.79 61.83 255.78











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94.7	253.49	96.54	253.49	97.29	253.52
98.54	253.5	99.83	253.53	100.52	253.52
102.34	253.52	102.48	253.53	102.99	253.63
104.37	253.62	106.14	253.57	106.29	253.57
106.41	253.6	108.51	253.67	109.2	253.67
110.73	253.67	112.15	253.68	112.91	253.72
115.01	253.73	115.07	253.73	115.23	253.69
117.02	253.7	118.68	253.68	119.03	253.68
119.12	253.71	121.08	253.68	121.74	253.68
123.09	253.66	124.3	253.65	125.08	253.65
126.78	253.65	127	253.69	127.8	253.72
129.03	253.7	131.05	253.64	131.19	253.64
131.28	253.72	133.46	253.72	134.16	253.72
135.66	253.71	137.06	253.69	137.83	253.64
139.92	253.64	139.99	253.66	140.22	253.66
142.22	253.66	143.26	253.68	144.58	253.69
145.01	253.71	146.89	253.71	148.04	253.73
149.15	253.73	151	253.7	151.37	253.69
152.49	253.67	152.5	253.69	153.83	253.71
153.86	253.71	153.89	253.71	153.97	253.71
156.58	253.69	157.72	253.7	158.55	253.72
158.97	253.72	159.59	253.7	161.1	253.69
162.35	253.69	162.86	253.74	163.64	253.72
164.12	253.7	165.36	253.69	166.97	253.67
167.6	253.67	168.08	253.63	168.61	253.63
169.42	253.68	170.5	253.68	173.32	253.67
173.69	253.7	174.57	253.73	176.23	253.74
178.56	253.71	178.6	253.71	179.8	253.7
180.33	253.68	180.92	253.71	182.4	253.7
183.71	253.63	183.99	253.64	185.01	253.7
186.72	253.69	187.44	253.7	188.1	253.7
188.71	253.7	190.44	253.7	190.62	253.7
191.48	253.68	192.61	253.67	194.73	253.67
194.76	253.67	194.77	253.67	196.84	253.67
197.35	253.62	198.89	253.63	199.88	253.64
200.92	253.64	352	253.64		

Downstream Bridge Cross Section Data

Station	Elevation	Data	num=	309	
0	246.58	.6	246.55	2.64	246.55
4.4	246.63	5.71	246.66	6.17	246.67
8.6	246.71	10.28	246.63	11.39	246.57
14.46	246.55	15.54	246.55	16.38	246.55
19.57	246.35	20	246.31	20.14	246.3
24.13	246.21	25.49	246.23	26.18	246.22
31.3	246.1	31.91	246.06	32.6	246.03
37.64	245.88	39.15	245.62	39.67	245.61
41.93	245.57	43.71	245.64	45.47	245.74
47.9	246.05	48.64	246.01	50.04	245.85
54.1	245.65	54.2	245.65	54.52	245.64
57.46	245.59	58.39	245.57	59.29	245.57
62.23	245.46	63.42	245.39	64.89	245.3
67.47	245.13	67.54	245.12	69.02	245.08
71.16	245.05	72.6	245.03	73	245.01
76.68	244.98	78.24	245.04	78.69	245.07
80.87	245.18	82.21	245.23	83.74	245.32
86.08	245.57	86.84	245.65	88.3	245.75
92.6	245.9	92.64	245.9	92.75	245.9
96.03	245.8	96.53	245.77	97.99	245.66
101.04	245.49	102.1	245.42	103.64	245.22
106.08	245.2	106.27	245.2	107.79	245.15
109.64	245.23	111.48	245.18	111.95	245.23
115.33	245.17	116.78	245.31	117.21	245.33
119.3	245.5	120.77	245.49	122.21	245.5
124.63	245.45	125.24	245.48	126.62	245.59
130.19	245.66	130.55	245.67	131.98	245.7
134.51	245.71	135.74	245.68	136.69	245.66
139.84	245.58	141.12	245.55	142.69	245.48
145.45	245.41	145.6	245.42	147.45	245.44
149.75	245.68	151.56	245.59	152.37	245.55
155.63	245.52	157.39	245.71	157.57	245.71
161.62	245.71	162	245.71	162.09	245.71

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166.14	245.79	167.27	245.94	168.16	245.97	169.65	245.83	171.93	246.05
172.2	246.1	173.29	246.07	174.64	246	174.69	246	174.74	245.99
176.78	245.82	177.33	245.74	178.25	245.65	179.9	245.55	180.88	245.49
182.47	245.17	182.93	245.12	184.62	244.99	184.83	244.98	185.05	244.96
186.32	244.82	187.61	244.65	187.9	244.62	187.97	244.61	189.87	244.57
190.4	244.54	191.81	244.49	192.77	244.49	194.22	244.67	195.03	244.69
197.03	245.19	197.19	245.22	197.72	245.29	198.98	245.46	200.62	245.62
200.7	245.64	200.76	245.64	202.65	245.86	203.09	245.82	203.99	245.8
204.15	245.7	206.55	244.26	210.03	241.25	211	240.73	211.38	240.02
216.16	240.02	248.88	240.02	249.74	241.21	250.17	241.72	251.14	242.83
251.43	243.04	253.21	244.35	253.38	244.46	253.78	244.67	255.01	245.34
255.58	245.67	257.07	246.58	257.45	246.68	259.36	247.61	260.33	247.78
261.69	248.39	264.99	248.62	265.02	248.62	265.03	248.62	267.18	248.65
268.65	248.71	268.99	248.72	269.55	248.75	271.31	248.89	272.58	248.93
273.56	249	275.51	249.04	275.76	249.07	276.54	249.07	277.84	249.1
278.73	249.11	279.95	249.13	280.28	249.14	281.98	249.17	282.82	249.19
283.95	249.19	285.31	249.23	286.26	249.27	287.7	249.28	287.88	249.28
288.72	249.34	289.64	249.36	290.5	249.36	291.04	249.36	292.82	249.4
293.28	249.41	295.11	249.42	295.47	249.41	297.38	249.41	297.66	249.41
299.63	249.41	299.82	249.41	301.89	249.42	301.99	249.42	304.14	249.41
304.16	249.41	304.47	249.4	306.26	249.36	306.55	249.35	308.42	249.3
309.07	249.28	310.56	249.24	311.58	249.23	312.76	249.22	314.11	249.18
314.98	249.16	316.69	249.16	317.23	249.16	319.29	249.14	319.53	249.14
320.79	249.17	321.78	249.19	321.83	249.19	324.04	249.17	324.16	249.17
326.3	249.18	326.49	249.18	328.57	249.23	328.85	249.23	330.8	249.24
331.16	249.23	333.03	249.23	333.47	249.25	333.95	249.24	335.78	249.25
336.33	249.26	338.04	249.26	338.69	249.25	340.31	249.19	341.04	249.2
342.59	249.19	343.41	249.16	344.84	249.11	345.74	249.09	347.08	249.03
348.06	249.01	349.33	249.04	350.4	249.07	350.92	249.06		

Manning's n values num= 3  
 Sta n Val Sta n Val  
 0 .075 216.16 .05 248.88 .075

Bank Sta: Left Right Coeff Contr. Expan.  
 203.09 268.65 .3 .5  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 214.59 250 T  
 245.41 350.92 250 T

Upstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Downstream Embankment side slope = 0 horiz. to 1.0 vertical  
 Maximum allowable submergence for weir flow = .98  
 Elevation at which weir flow begins =  
 Energy head used in spillway design =  
 Spillway height used in design =  
 weir crest shape = Broad Crested

Number of Culverts = 1  
 Culvert Name Shape Rise Span  
 Culvert #1 Box 11 20  
 FHWA Chart # 8 - flared wingwalls  
 FHWA Scale # 1 - wingwall flared 30 to 75 deg.  
 Solution Criteria = Highest U.S. EG  
 Culvert Upstrm Dist Length Top n Bottom n Depth Blocked Entrance Loss Coef Exit Loss  
 Coef 23 80 .018 .035 0 .5 1  
 Upstream Elevation = 241.36  
 Centerline Station = 180  
 Downstream Elevation = 240.02  
 Centerline Station = 230

CROSS SECTION  
 RIVER: SchollasMap101  
 REACH: MainReach RS: 292.8245  
 INPUT  
 Description:  
 Station Elevation Data num= 335





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286.61	248.78	287.49	248.81	287.72	248.83	288.62	248.85	290.92	248.91
291.97	248.98	292.55	249	293.68	248.99	294.69	248.93	296.44	248.98
296.6	248.99	296.68	248.99	298.89	249.17	300.13	249.17	301.21	249.06
303.52	249.05	303.58	249.05	304.73	249.03	305.79	249.03	307.4	249.02
307.78	249.04	308.54	249.05	310.06	249.1	312	249.14	312.41	249.15
313.21	249.17	313.36	249.18						

Manning's n values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.075	147.84	.04	192.6	.05

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

112.06	216.58	114.51	119.22	123.59	.1	.3
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CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 28.06381

INPUT Description:

Station Elevation Data num= 258

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	237.9	24	237.88	95	237.86	2.56	237.83	3.39	237.83
4.37	237.98	6.21	238.12	7.88	237.83	8.73	237.93	9.63	238.06
10.53	238.09	10.92	238.05	11.31	238.05	12.97	237.94	14.53	237.9
15.25	237.87	17.37	238.35	18.14	238.44	18.57	238.48	20.04	238.33
21.45	238.24	22.42	238.06	22.66	238.04	24.65	237.77	25.46	237.74
26.99	237.49	28.82	237.45	29.47	237.45	31.07	237.22	31.84	237.11
33.54	237.09	34.03	237.11	34.19	237.11	36.07	237.28	36.9	237.32
38.17	237.47	39.67	237.42	40.24	237.41	42.13	237.38	42.39	237.38
43.91	237.32	44.7	237.3	44.83	237.29	46.65	237.22	47.27	237.25
48.67	237.26	49.96	237.24	50.72	237.34	52.7	237.26	52.76	237.25
55	237.73	55.08	237.75	55.29	237.73	58.63	237.4	59.89	237.31
60.62	237.22	62.19	237.13	63.6	237.07	64.51	237.05	66.28	236.96
66.72	236.96	68.59	236.97	69.42	236.97	70.62	236.96	72.19	236.99
72.68	236.97	74.32	236.84	75.66	236.7	76.77	236.58	76.84	236.57
76.86	236.57	78.79	236.71	79.51	236.62	80.73	236.3	82.21	236.52
82.78	236.53	84.38	236.5	84.83	236.48	85.47	236.48	86.77	236.47
87	236.47	87.05	236.46	89.53	236.32	90.9	236.21	92.31	236.14
92.75	236.15	94.53	235.78	94.66	235.75	94.81	235.7	96.09	235.31
97.12	235.16	97.76	235	98.07	234.95	100.11	234.71	101.64	234.49
104.37	233.89	104.86	233.79	106.08	233.55	106.82	233.41	107.11	233.31
109.13	232.81	110.25	232.86	111.67	232.89	112.33	232.82	113.8	232.96
115.37	232.11	117.26	233.15	118.74	233.14	120.17	233.09	120.96	233.1
121.48	233.07	123.12	232.97	123.51	232.89	125.11	232.45	126.21	232.61
127.22	232.73	127.46	232.76	129.28	232.9	131.64	233.08	131.92	233.12
133.25	232.56	134	232.28	135.85	232.24	135.88	232.24	135.89	232.24
137.56	232.45	138.67	232.24	140.15	232.21	142.57	232.02	142.59	232.02
142.77	232.07	144.56	232.55	145.1	232.69	146.87	233.58	148.92	235.6
151.55	238.59	153.19	239.24	154.29	239.44	154.41	239.43	156.47	239.4
157.47	239.35	158.69	239.44	160.77	239.14	160.9	239.13	161.09	239.11
161.16	239.1	162.98	238.92	163.81	238.97	165.11	239.11	165.78	239.2
167.32	239.38	169.08	239.36	169.51	239.31	169.93	239.14	170.27	239.05
171.34	238.52	173.06	238.86	176.3	238.83	176.36	238.82	176.41	238.83
176.56	238.82	178.73	238.69	179.23	238.65	180.9	238.6	182.65	238.36
182.88	238.33	183.31	238.43	184.08	238.63	185.6	238.69	189.01	238.39
190.9	238.09	191	238.09	193.05	238.29	194.93	238.27	195.15	238.27
195.4	238.25	196.64	238.19	197.44	238.22	198.35	238.18	199.14	238.18
200.44	238.17	201.92	238.37	202.6	238.43	202.95	238.47	205.48	238.58
206.49	238.52	208.28	238.41	208.82	238.37	210.26	238.26	210.43	238.25
210.57	238.25	212.52	238.22	214.49	238.3	214.63	238.31	214.8	238.3
216.38	238.27	216.82	238.27	218.28	238.35	219.49	238.47	220.27	238.54
221.64	238.77	223.12	238.85	224.07	238.87	224.85	239.06	226.12	239.26
227.64	239.74	228.24	239.97	229.69	240.67	230.33	241.05	230.84	241.35
232.26	242.23	233.87	243.27	235.23	243.96	236	244.39	236.56	244.62
237	244.92	238.54	245.81	240.48	246.71	240.53	246.73	240.78	246.75
242.24	246.89	242.47	246.88	245	246.81	246.98	246.78	248.01	246.78
249.07	246.99	250.84	247.07	253.47	246.89	253.56	246.9	253.7	246.92
254.85	247.05	255.55	247.09	256.76	247.2	258.69	247.31	259.4	247.36
259.86	247.38	260.91	247.37	261.84	247.36	262.44	247.35	263.17	247.36
264.77	247.37	266.1	247.43	266.75	247.49	268.22	247.71	268.3	247.72

Schollas\_Map101.rep

270.12	248.06	271.58	248.2	271.99	248.24	272.52	248.31	273.55	248.43
274.52	248.46	275.15	248.49	278.78	248.61	279.04	248.61	280.83	248.67
280.85	248.67	280.86	248.67	282.51	248.66				

Manning's n values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	101.64	.055	148.92	.06

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

18.57	161.09	23.87	28.06	33.25	.1	.3
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SUMMARY OF MANNING'S N VALUES

River: SchollasMap101

n7	Reach	River Sta.	n1	n2	n3	n4	n5	n6
	MainReach	2306.424	.018	.15	.018	.06		
	MainReach	2200	.018	.15	.018	.06		
	MainReach	2098.664	.018	.03	.018	.15	.018	.06
	MainReach	2000	.018	.03	.018	.15	.018	.06
	MainReach	1800	.018	.03	.018	.15	.018	.06
	MainReach	1600	.018	.03	.018	.15	.018	.06
	MainReach	1400	.018	.03	.018	.15	.018	.06
	MainReach	1200	.018	.03	.018	.15	.018	.06
	MainReach	1004.18	.018	.03	.018	.15	.018	.06
	MainReach	976.6697	.018	.03	.018	.15	.042	.06
	MainReach	926.7529	.018	.018	.15	.15	.06	
	MainReach	915.6229	.018	.15	.15	.06		
	MainReach	781.5157	.018	.15	.15	.15	.06	
	MainReach	684.4379	.018	.15	.15	.06		
	MainReach	599.9999	.018	.15	.15	.15	.06	
	MainReach	524.6492	.018	.15	.15	.15	.06	
	MainReach	417.4621	.018	.15	.15	.15	.15	.03
	MainReach	362.8132	Culvert					
	MainReach	292.8245	.075	.05	.075			
	MainReach	147.2868	.075	.04	.05			
	MainReach	28.06381	.07	.055	.06			

SUMMARY OF REACH LENGTHS

River: SchollasMap101

Reach	River Sta.	Schollas_Map101.rep		
		Left	Channel	Right
MainReach	2306.424	107.15	106.42	105.18
MainReach	2200	101.52	101.34	97.26
MainReach	2098.664	101.57	98.66	97.84
MainReach	2000	201.58	200	197.43
MainReach	1800	198.88	200	200.59
MainReach	1600	199.8	200	200.08
MainReach	1400	199.83	200	200.13
MainReach	1200	197.21	195.82	194.66
MainReach	1004.18	29.27	27.51	26.96
MainReach	976.6697	49.84	49.92	47.71
MainReach	926.7529	11.65	11.13	10.82
MainReach	915.6229	131.26	134.11	137.05
MainReach	781.5157	95.92	97.08	98.64
MainReach	684.4379	77.17	84.44	89.29
MainReach	599.9999	66.24	75.35	84.98
MainReach	524.6492	86.87	107.19	109.33
MainReach	417.4621	131.21	124.64	127.74
MainReach	362.8132	Culvert		
MainReach	292.8245	152.28	145.54	135.2
MainReach	147.2868	114.51	119.22	123.59
MainReach	28.06381	23.87	28.06	33.25

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS  
River: SchollasMap101

Reach	River Sta.	Contr.	Expan.
MainReach	2306.424	.1	.3
MainReach	2200	.1	.3
MainReach	2098.664	.1	.3
MainReach	2000	.1	.3
MainReach	1800	.1	.3
MainReach	1600	.1	.3
MainReach	1400	.1	.3
MainReach	1200	.1	.3
MainReach	1004.18	.1	.3
MainReach	976.6697	.1	.3
MainReach	926.7529	.1	.3
MainReach	915.6229	.1	.3
MainReach	781.5157	.1	.3
MainReach	684.4379	.1	.3
MainReach	599.9999	.1	.3
MainReach	524.6492	.1	.3
MainReach	417.4621	.3	.5
MainReach	362.8132	Culvert	
MainReach	292.8245	.3	.5
MainReach	147.2868	.1	.3
MainReach	28.06381	.1	.3

**Attachment 13 - DETAILED HYDRAULIC RESULTS FOR MAINTAINED CONDITION  
MODEL – VEGETATION ONLY (NO SEDIMENT REMOVED)**

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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
MainReach	2306.424	100-year_1500cfs	1500.00	275.47	278.47	280.38	289.23	0.035059	26.32	56.98	29.33	3.01
MainReach	2306.424	50-year_1100cfs	1100.00	275.47	278.01	280.03	286.81	0.035046	23.82	46.19	22.75	2.95
MainReach	2306.424	25-year_830cfs	830.00	275.47	277.65	279.48	284.96	0.035041	21.70	38.25	21.84	2.89
MainReach	2306.424	10-year_580cfs	580.00	275.47	277.27	278.74	283.01	0.035044	19.22	30.18	20.87	2.82
MainReach	2306.424	5-year_370cfs	370.00	275.47	276.88	278.00	281.17	0.035061	16.62	22.27	19.30	2.73
MainReach	2306.424	2-year_167cfs	167.00	275.47	276.39	277.07	278.86	0.035044	12.61	13.24	17.55	2.56
MainReach	2200	100-year_1500cfs	1500.00	271.72	274.62	277.68	285.51	0.034778	26.48	56.65	22.33	2.93
MainReach	2200	50-year_1100cfs	1100.00	271.72	274.13	276.83	283.05	0.035384	23.97	45.88	21.66	2.90
MainReach	2200	25-year_830cfs	830.00	271.72	273.76	275.62	281.18	0.035918	21.85	37.98	21.13	2.87
MainReach	2200	10-year_580cfs	580.00	271.72	273.38	274.84	279.19	0.036508	19.36	29.96	20.56	2.83
MainReach	2200	5-year_370cfs	370.00	271.72	272.99	274.09	277.29	0.037814	16.64	22.24	19.99	2.78
MainReach	2200	2-year_167cfs	167.00	271.72	272.55	273.17	274.95	0.038405	12.43	13.44	19.32	2.63
MainReach	2098.664	100-year_1500cfs	1500.00	268.30	272.07	274.70	282.13	0.027610	25.45	58.93	21.21	2.69
MainReach	2098.664	50-year_1100cfs	1100.00	268.30	271.54	273.76	279.73	0.026872	22.98	47.87	19.93	2.61
MainReach	2098.664	25-year_830cfs	830.00	268.30	271.12	272.99	277.89	0.026215	20.89	39.73	18.92	2.54
MainReach	2098.664	10-year_580cfs	580.00	268.30	270.66	272.16	275.98	0.025459	18.51	31.33	17.71	2.45
MainReach	2098.664	5-year_370cfs	370.00	268.30	270.18	271.30	274.13	0.024667	15.95	23.20	16.20	2.35
MainReach	2098.664	2-year_167cfs	167.00	268.30	269.55	270.23	271.88	0.024112	12.27	13.61	14.09	2.20
MainReach	2000	100-year_1500cfs	1500.00	266.55	271.00	273.29	279.21	0.021081	23.00	65.22	22.38	2.37
MainReach	2000	50-year_1100cfs	1100.00	266.55	270.46	272.37	276.99	0.019481	20.51	53.63	20.74	2.25
MainReach	2000	25-year_830cfs	830.00	266.55	270.03	271.63	275.32	0.018140	18.45	44.99	19.48	2.14
MainReach	2000	10-year_580cfs	580.00	266.55	269.55	270.80	273.59	0.016675	16.13	35.96	18.04	2.01
MainReach	2000	5-year_370cfs	370.00	266.55	269.03	269.94	271.94	0.015197	13.68	27.04	16.36	1.88
MainReach	2000	2-year_167cfs	167.00	266.55	268.32	268.82	269.96	0.013232	10.27	16.27	13.87	1.67
MainReach	1800	100-year_1500cfs	1500.00	263.49	268.25	270.30	275.13	0.016240	21.05	71.26	22.62	2.09
MainReach	1800	50-year_1100cfs	1100.00	263.49	267.62	269.35	273.26	0.015446	19.06	57.72	20.62	2.01
MainReach	1800	25-year_830cfs	830.00	263.49	267.11	268.60	271.85	0.015097	17.47	47.51	19.16	1.96
MainReach	1800	10-year_580cfs	580.00	263.49	266.53	267.74	270.36	0.014974	15.71	36.91	17.54	1.91
MainReach	1800	5-year_370cfs	370.00	263.49	265.92	266.85	268.89	0.015207	13.84	26.74	15.77	1.87
MainReach	1800	2-year_167cfs	167.00	263.49	265.11	265.70	267.02	0.016087	11.10	15.05	13.14	1.83
MainReach	1600	100-year_1500cfs	1500.00	260.30	265.29	267.32	271.94	0.014982	20.69	72.49	21.89	2.00
MainReach	1600	50-year_1100cfs	1100.00	260.30	264.59	266.34	270.22	0.014982	19.03	57.80	19.98	1.97
MainReach	1600	25-year_830cfs	830.00	260.30	264.04	265.56	268.84	0.014882	17.58	47.22	18.45	1.94
MainReach	1600	10-year_580cfs	580.00	260.30	263.43	264.68	267.36	0.014915	15.92	36.44	16.73	1.90
MainReach	1600	5-year_370cfs	370.00	260.30	262.79	263.75	265.85	0.015062	14.04	26.35	14.93	1.86
MainReach	1600	2-year_167cfs	167.00	260.30	261.96	262.56	263.89	0.015175	11.17	14.96	12.26	1.78
MainReach	1400	100-year_1500cfs	1500.00	257.36	262.43	264.31	268.80	0.015604	20.26	74.06	24.24	2.04
MainReach	1400	50-year_1100cfs	1100.00	257.36	261.79	263.45	267.13	0.015065	18.54	59.34	21.65	1.97
MainReach	1400	25-year_830cfs	830.00	257.36	261.25	262.74	265.84	0.014519	17.19	48.28	19.19	1.91
MainReach	1400	10-year_580cfs	580.00	257.36	260.62	261.88	264.43	0.014116	15.66	37.03	16.64	1.85
MainReach	1400	5-year_370cfs	370.00	257.36	259.97	260.91	262.91	0.013954	13.75	26.91	14.76	1.79
MainReach	1400	2-year_167cfs	167.00	257.36	259.12	259.69	260.95	0.013952	10.87	15.36	12.26	1.71
MainReach	1200	100-year_1500cfs	1500.00	254.41	259.47	261.35	265.77	0.014533	20.14	74.50	23.33	1.99
MainReach	1200	50-year_1100cfs	1100.00	254.41	258.78	260.45	264.16	0.014583	18.61	59.10	20.99	1.96
MainReach	1200	25-year_830cfs	830.00	254.41	258.22	259.71	262.89	0.014853	17.35	47.85	19.30	1.94
MainReach	1200	10-year_580cfs	580.00	254.41	257.61	258.83	261.49	0.015124	15.80	36.70	17.42	1.92
MainReach	1200	5-year_370cfs	370.00	254.41	257.00	257.96	260.00	0.015128	13.88	26.65	15.56	1.87
MainReach	1200	2-year_167cfs	167.00	254.41	256.21	256.78	258.05	0.015023	10.90	15.33	13.07	1.77
MainReach	1004.18	100-year_1500cfs	1500.00	251.37	256.29	258.30	262.83	0.015257	20.52	73.10	23.01	2.03
MainReach	1004.18	50-year_1100cfs	1100.00	251.37	255.60	257.31	261.19	0.015509	18.97	57.99	20.97	2.01
MainReach	1004.18	25-year_830cfs	830.00	251.37	255.06	256.56	259.89	0.015615	17.64	47.05	19.18	1.98
MainReach	1004.18	10-year_580cfs	580.00	251.37	254.46	255.71	258.45	0.015683	16.04	36.17	17.19	1.95
MainReach	1004.18	5-year_370cfs	370.00	251.37	253.84	254.82	256.95	0.015820	14.16	26.13	15.24	1.91
MainReach	1004.18	2-year_167cfs	167.00	251.37	253.03	253.64	255.00	0.016040	11.26	14.83	12.56	1.83
MainReach	976.6697	100-year_1500cfs	1500.00	250.21	254.57	256.88	262.04	0.050296	21.93	68.38	22.61	2.22
MainReach	976.6697	50-year_1100cfs	1100.00	250.21	253.90	255.85	260.38	0.052586	20.44	53.82	21.12	2.26
MainReach	976.6697	25-year_830cfs	830.00	250.21	253.38	255.06	259.08	0.052417	19.16	43.32	19.56	2.27
MainReach	976.6697	10-year_580cfs	580.00	250.21	252.83	254.24	257.65	0.051847	17.63	32.90	17.80	2.29
MainReach	976.6697	5-year_370cfs	370.00	250.21	252.26	253.40	256.16	0.051367	15.84	23.36	16.04	2.31
MainReach	976.6697	2-year_167cfs	167.00	250.21	251.55	252.30	254.20	0.052047	13.05	12.79	13.82	2.39
MainReach	926.7529	100-year_1500cfs	1500.00	251.19	255.65	256.40	257.97	0.050781	12.22	123.60	67.45	1.33
MainReach	926.7529	50-year_1100cfs	1100.00	251.19	255.58	256.16	256.90	0.029712	9.24	119.30	52.79	1.01
MainReach	926.7529	25-year_830cfs	830.00	251.19	255.01	255.01	256.21	0.029078	8.81	94.20	38.18	0.99
MainReach	926.7529	10-year_580cfs	580.00	251.19	254.30	254.04	255.30	0.022451	8.03	72.27	27.51	0.87
MainReach	926.7529	5-year_370cfs	370.00	251.19	253.69	253.33	254.37	0.019538	6.61	55.99	25.61	0.79
MainReach	926.7529	2-year_167cfs	167.00	251.19	252.84	252.49	253.19	0.016713	4.74	35.25	23.63	0.68
MainReach	915.6229	100-year_1500cfs	1500.00	251.19	255.35	256.21	257.59	0.022111	12.02	124.96	50.94	1.32
MainReach	915.6229	50-year_1100cfs	1100.00	251.19	254.95	255.27	256.62	0.018371	10.35	106.28	44.93	1.19
MainReach	915.6229	25-year_830cfs	830.00	251.19	254.50	254.75	255.93	0.019397	9.59	86.55	42.61	1.19

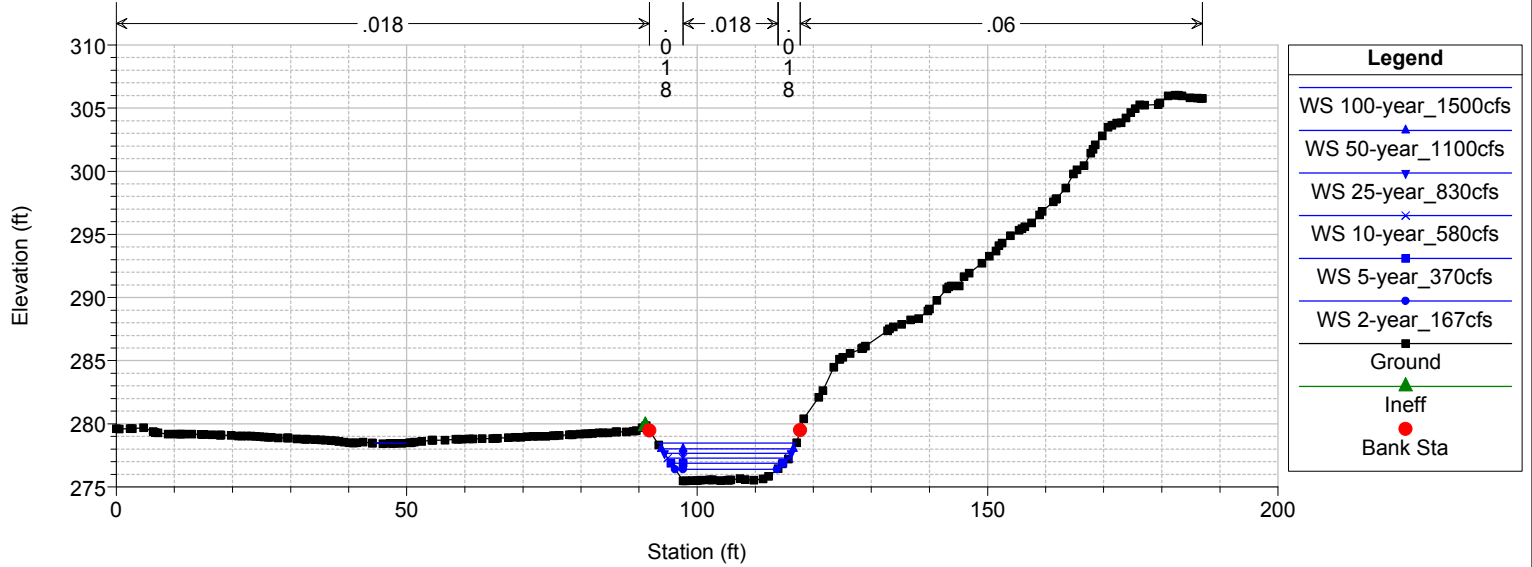


Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
MainReach	915.6229	10-year_580cfs	580.00	251.19	253.96	253.96	255.10	0.013483	8.59	67.54	29.93	1.01
MainReach	915.6229	5-year_370cfs	370.00	251.19	253.22	253.22	254.16	0.014358	7.77	47.61	25.68	1.01
MainReach	915.6229	2-year_167cfs	167.00	251.19	252.41	252.41	252.98	0.016811	6.09	27.41	24.02	1.01
MainReach	781.5157	100-year_1500cfs	1500.00	246.95	250.57	251.53	253.72	0.037285	14.24	105.36	45.14	1.64
MainReach	781.5157	50-year_1100cfs	1100.00	246.95	250.00	250.89	252.87	0.043492	13.59	80.92	41.82	1.72
MainReach	781.5157	25-year_830cfs	830.00	246.95	249.66	250.39	252.06	0.044154	12.43	66.78	40.01	1.70
MainReach	781.5157	10-year_580cfs	580.00	246.95	249.10	249.87	251.60	0.061165	12.68	45.76	34.02	1.93
MainReach	781.5157	5-year_370cfs	370.00	246.95	248.71	249.33	250.61	0.058870	11.06	33.46	29.70	1.84
MainReach	781.5157	2-year_167cfs	167.00	246.95	248.23	248.55	249.28	0.051398	8.25	20.25	25.27	1.62
MainReach	684.4379	100-year_1500cfs	1500.00	245.01	250.85	250.04	252.05	0.006572	8.78	170.92	40.09	0.75
MainReach	684.4379	50-year_1100cfs	1100.00	245.01	249.31	249.31	250.83	0.013157	9.91	111.03	36.98	1.01
MainReach	684.4379	25-year_830cfs	830.00	245.01	248.75	248.75	250.05	0.013854	9.14	90.84	35.65	1.01
MainReach	684.4379	10-year_580cfs	580.00	245.01	248.17	248.17	249.22	0.014845	8.22	70.55	34.31	1.01
MainReach	684.4379	5-year_370cfs	370.00	245.01	247.70	247.61	248.41	0.013555	6.78	54.56	33.21	0.93
MainReach	684.4379	2-year_167cfs	167.00	245.01	246.99	246.78	247.39	0.011041	5.04	33.14	27.08	0.80
MainReach	599.9999	100-year_1500cfs	1500.00	243.47	250.82		251.54	0.003067	6.79	220.85	40.18	0.51
MainReach	599.9999	50-year_1100cfs	1100.00	243.47	248.99	247.99	249.83	0.005557	7.39	148.93	38.23	0.66
MainReach	599.9999	25-year_830cfs	830.00	243.47	247.32	247.46	248.74	0.017253	9.56	86.80	36.19	1.09
MainReach	599.9999	10-year_580cfs	580.00	243.47	246.87	246.89	247.91	0.016250	8.21	70.67	35.67	1.03
MainReach	599.9999	5-year_370cfs	370.00	243.47	246.35	246.35	247.12	0.017065	7.06	52.41	34.66	1.01
MainReach	599.9999	2-year_167cfs	167.00	243.47	245.64	245.64	246.15	0.020198	5.69	29.37	30.62	1.02
MainReach	524.6492	100-year_1500cfs	1500.00	241.09	250.84		251.31	0.001449	5.46	274.97	43.49	0.38
MainReach	524.6492	50-year_1100cfs	1100.00	241.09	249.03		249.49	0.001856	5.47	201.23	37.97	0.42
MainReach	524.6492	25-year_830cfs	830.00	241.09	247.69	245.75	248.15	0.002390	5.44	152.64	35.05	0.46
MainReach	524.6492	10-year_580cfs	580.00	241.09	246.31	245.13	246.78	0.003586	5.48	105.90	32.72	0.54
MainReach	524.6492	5-year_370cfs	370.00	241.09	244.94	244.52	245.48	0.007540	5.90	62.74	30.41	0.72
MainReach	524.6492	2-year_167cfs	167.00	241.09	243.66	243.80	244.35	0.029358	6.67	25.04	28.08	1.24
MainReach	417.4621	100-year_1500cfs	1500.00	238.91	251.06	244.65	251.15	0.000213	2.56	672.87	243.53	0.16
MainReach	417.4621	50-year_1100cfs	1100.00	238.91	249.12	243.76	249.31	0.000560	3.53	311.58	108.97	0.25
MainReach	417.4621	25-year_830cfs	830.00	238.91	247.78	243.11	247.95	0.000590	3.33	249.00	42.95	0.24
MainReach	417.4621	10-year_580cfs	580.00	238.91	246.41	242.41	246.55	0.000589	2.99	194.01	37.77	0.23
MainReach	417.4621	5-year_370cfs	370.00	238.91	245.11	241.65	245.21	0.000542	2.51	147.26	33.93	0.21
MainReach	417.4621	2-year_167cfs	167.00	238.91	243.57	240.74	243.62	0.000360	1.69	98.57	29.66	0.16
MainReach	362.8132		Culvert									
MainReach	292.8245	100-year_1500cfs	1500.00	236.73	239.24	242.01	257.70	0.918499	34.48	43.50	34.95	5.11
MainReach	292.8245	50-year_1100cfs	1100.00	236.73	238.81	241.21	259.00	1.612344	36.06	30.51	33.82	6.39
MainReach	292.8245	25-year_830cfs	830.00	236.73	240.90	240.65	242.09	0.020846	8.74	94.96	38.81	0.88
MainReach	292.8245	10-year_580cfs	580.00	236.73	240.40		241.23	0.018513	7.31	79.36	37.79	0.80
MainReach	292.8245	5-year_370cfs	370.00	236.73	238.70	239.46	241.59	0.256864	13.65	27.11	32.16	2.51
MainReach	292.8245	2-year_167cfs	167.00	236.73	239.12		239.39	0.015081	4.18	39.98	34.65	0.65
MainReach	147.2868	100-year_1500cfs	1500.00	233.77	239.26	238.71	240.15	0.016269	7.56	198.32	66.39	0.77
MainReach	147.2868	50-year_1100cfs	1100.00	233.77	238.49	238.20	239.34	0.019921	7.40	148.73	62.12	0.84
MainReach	147.2868	25-year_830cfs	830.00	233.77	237.74	237.70	238.70	0.024365	7.88	105.35	53.03	0.99
MainReach	147.2868	10-year_580cfs	580.00	233.77	237.24	237.24	238.06	0.025874	7.27	79.78	50.25	1.02
MainReach	147.2868	5-year_370cfs	370.00	233.77	236.72	236.72	237.42	0.021835	6.68	55.37	39.10	0.99
MainReach	147.2868	2-year_167cfs	167.00	233.77	236.04	236.04	236.51	0.025791	5.50	30.37	33.56	1.02
MainReach	28.06381	100-year_1500cfs	1500.00	232.02	237.83	236.11	238.20	0.014014	4.87	308.14	126.65	0.55
MainReach	28.06381	50-year_1100cfs	1100.00	232.02	236.78	235.54	237.25	0.013998	5.48	200.82	75.08	0.59
MainReach	28.06381	25-year_830cfs	830.00	232.02	235.90	235.11	236.41	0.014002	5.72	145.09	55.22	0.62
MainReach	28.06381	10-year_580cfs	580.00	232.02	235.32	234.61	235.72	0.014001	5.09	113.88	52.57	0.61
MainReach	28.06381	5-year_370cfs	370.00	232.02	234.70	234.13	235.01	0.014027	4.49	82.49	47.79	0.60
MainReach	28.06381	2-year_167cfs	167.00	232.02	233.95	233.56	234.13	0.014010	3.42	48.79	43.15	0.57

SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

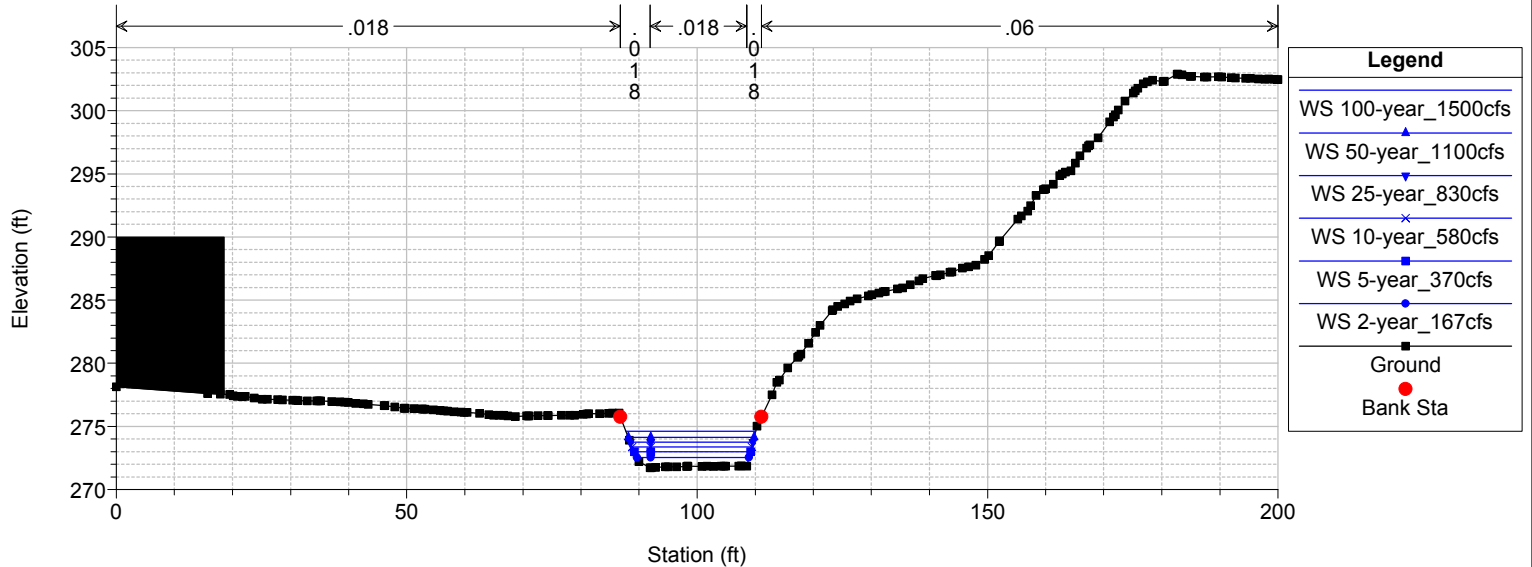
River = SChollasMap101 Reach = MainReach RS = 2306.424 Boundary between Lemon Grove and City. Rectangular channel w/ m



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

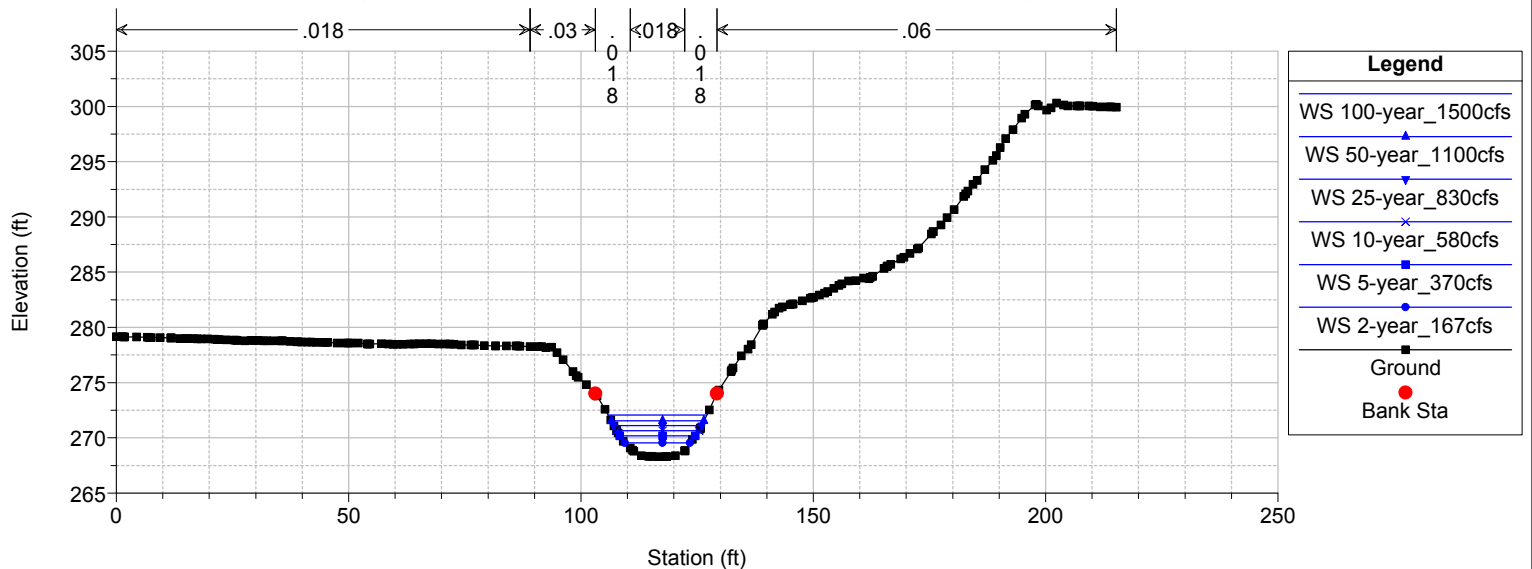
River = SChollasMap101 Reach = MainReach RS = 2200



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

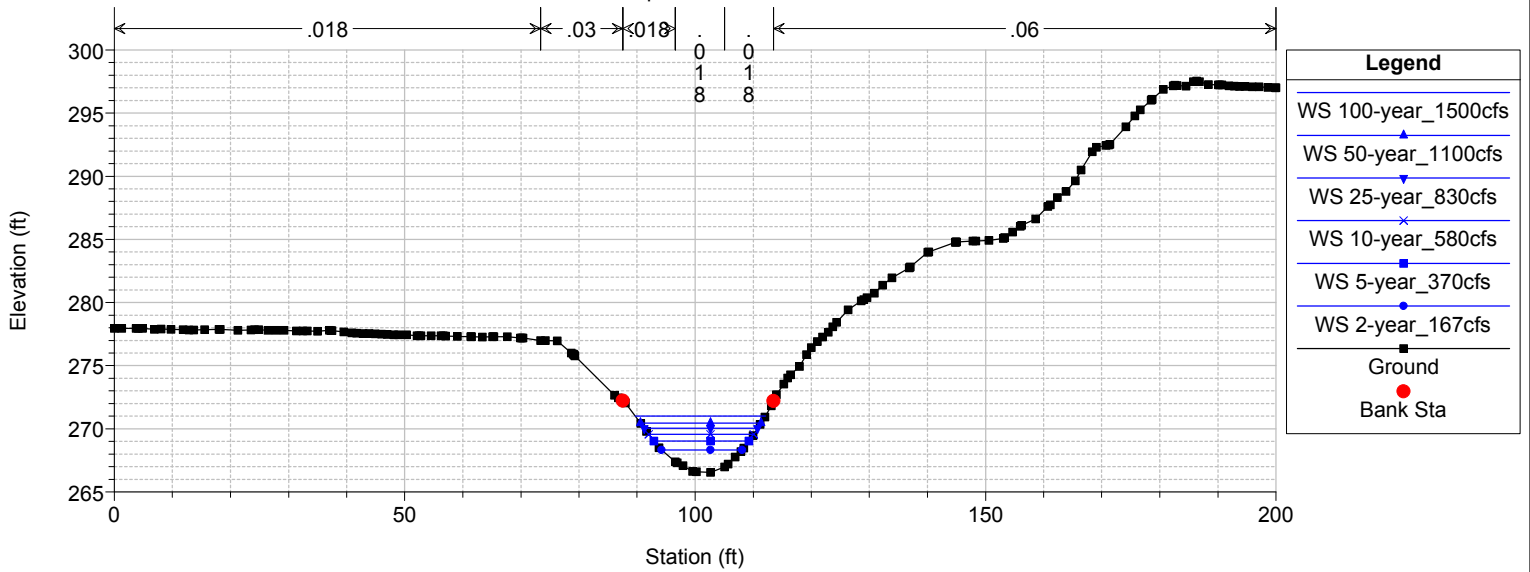
River = SChollasMap101 Reach = MainReach RS = 2098.664 Channel transitions to a trapezoidal concrete channel. Bank sta



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

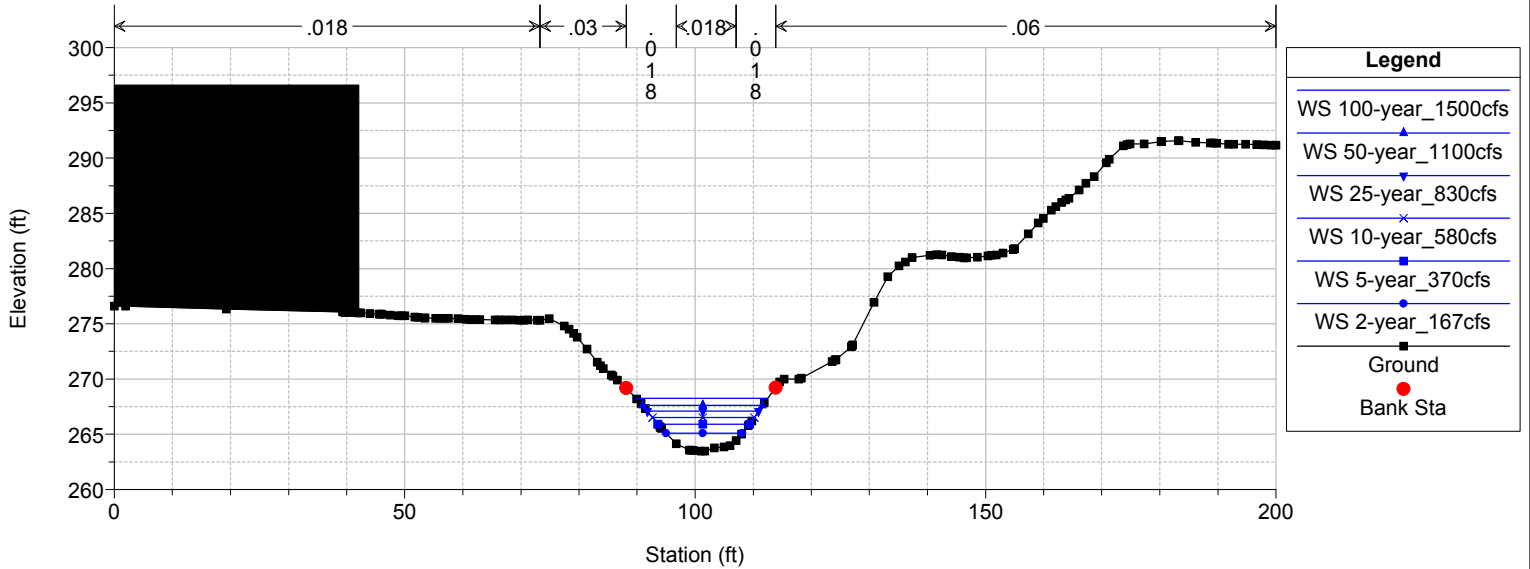
River = SChollasMap101 Reach = MainReach RS = 2000



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

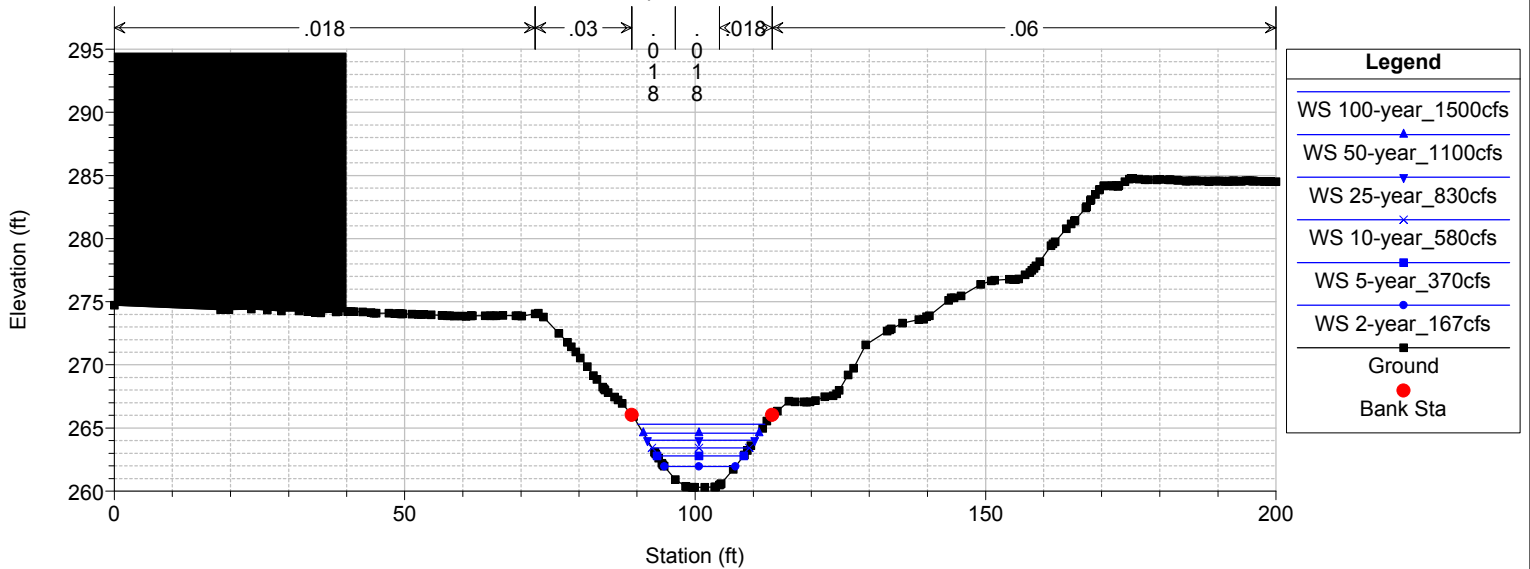
River = SChollasMap101 Reach = MainReach RS = 1800



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

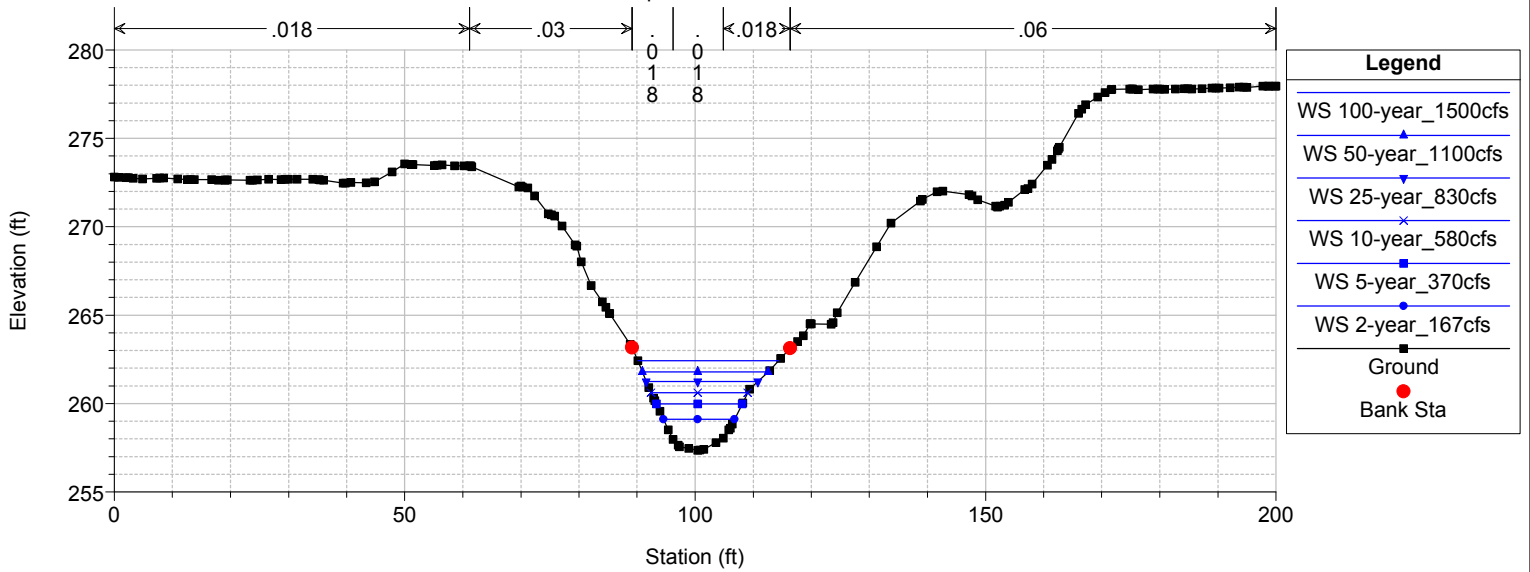
River = SChollasMap101 Reach = MainReach RS = 1600



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

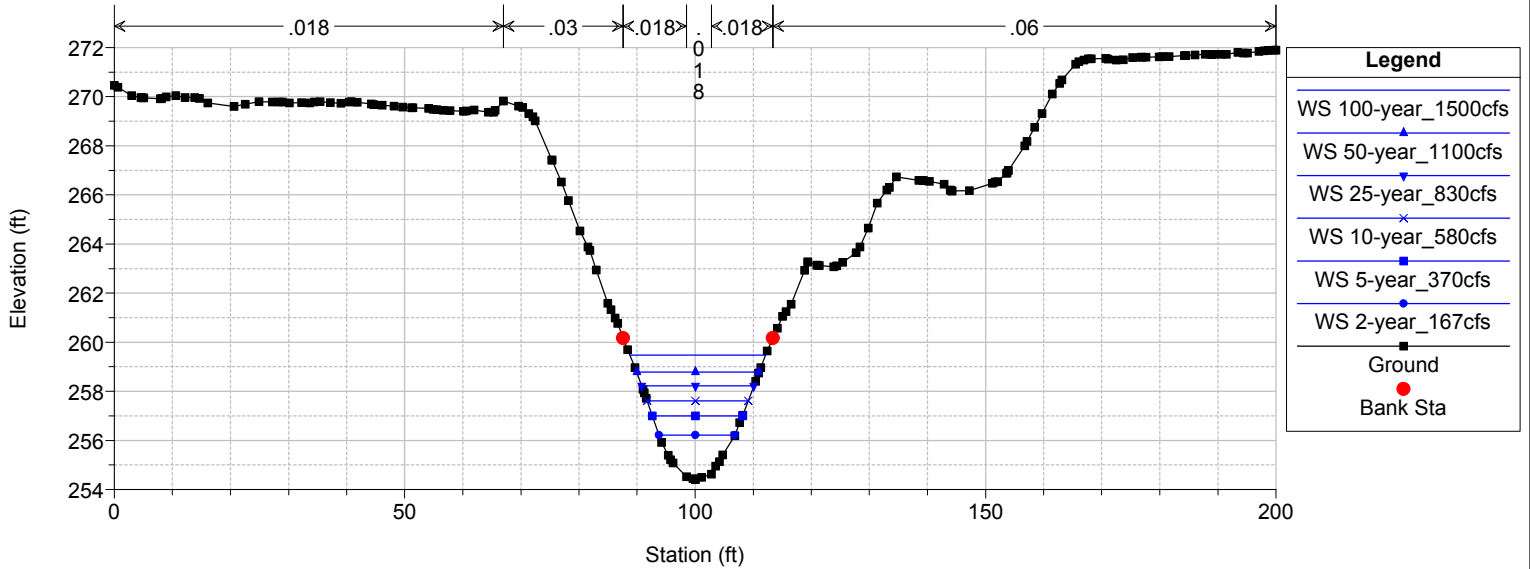
River = SChollasMap101 Reach = MainReach RS = 1400



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

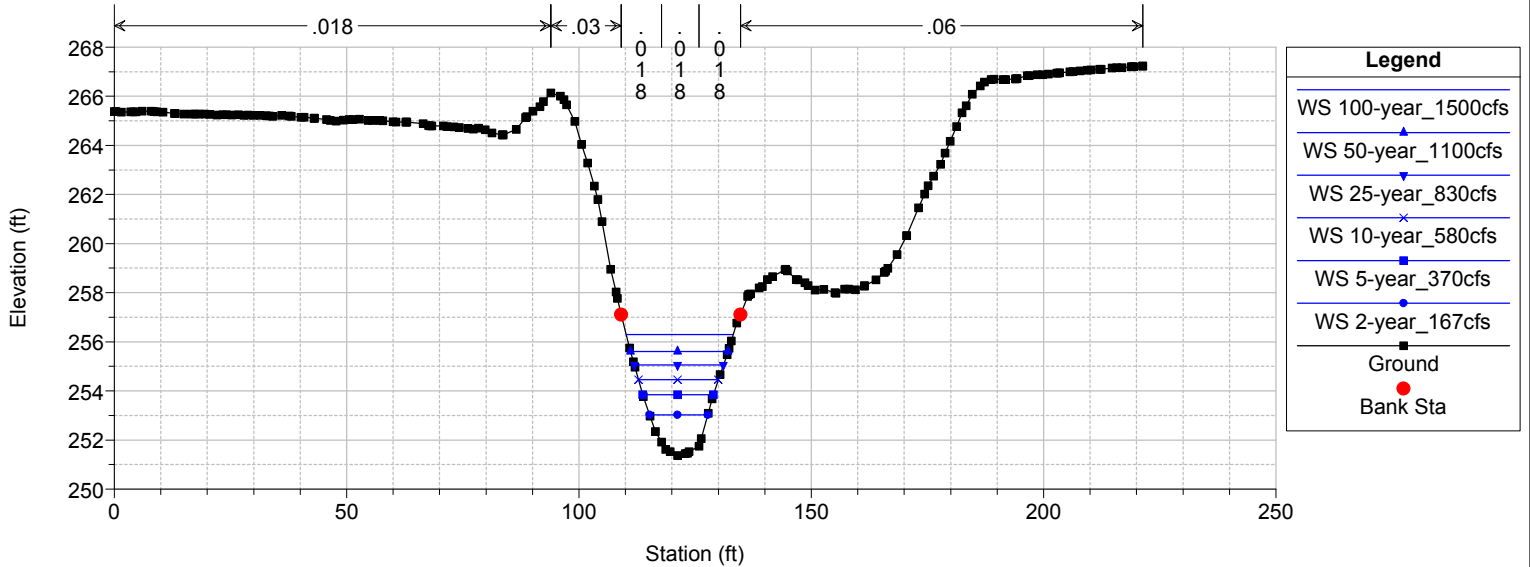
River = SChollasMap101 Reach = MainReach RS = 1200



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 1004.18



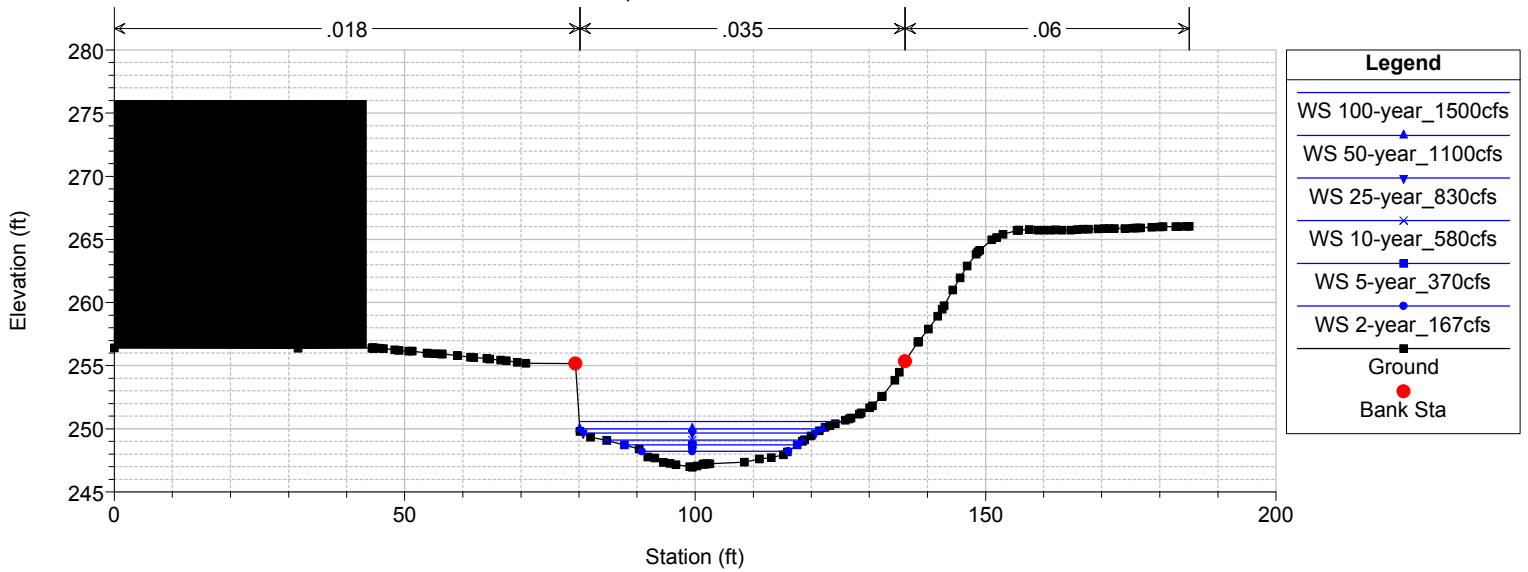




SCollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

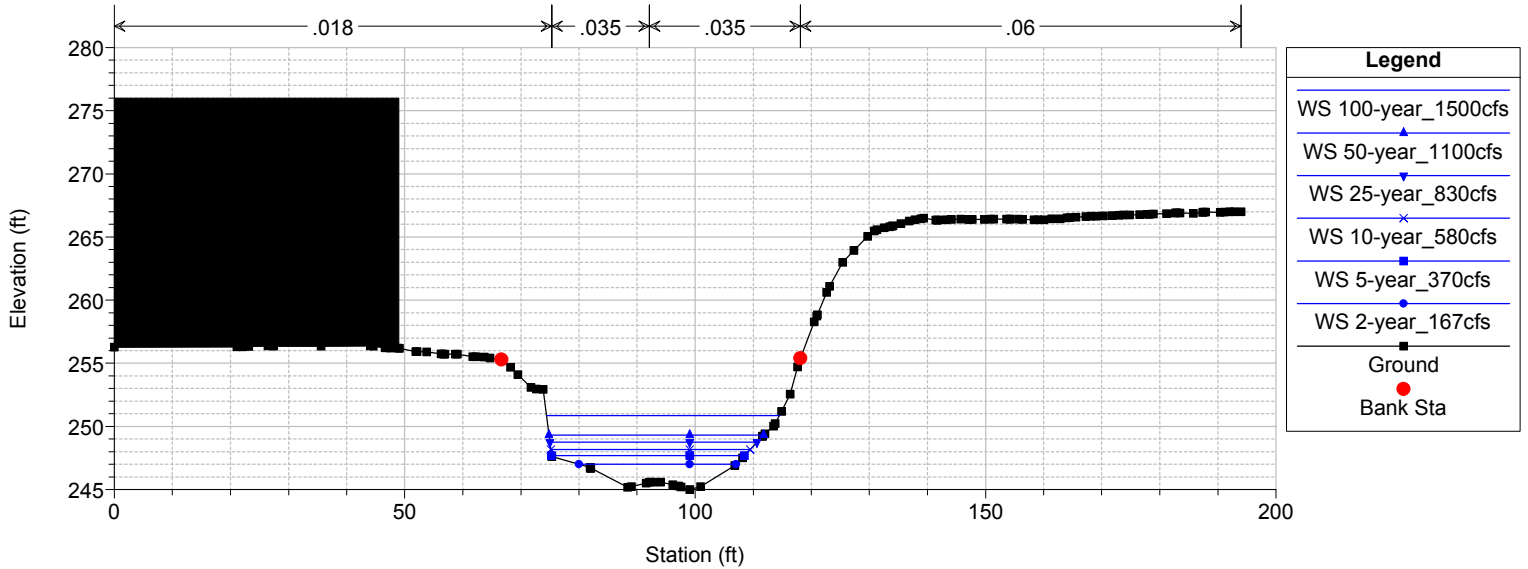
River = SCollasMap101 Reach = MainReach RS = 781.5157



SCollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

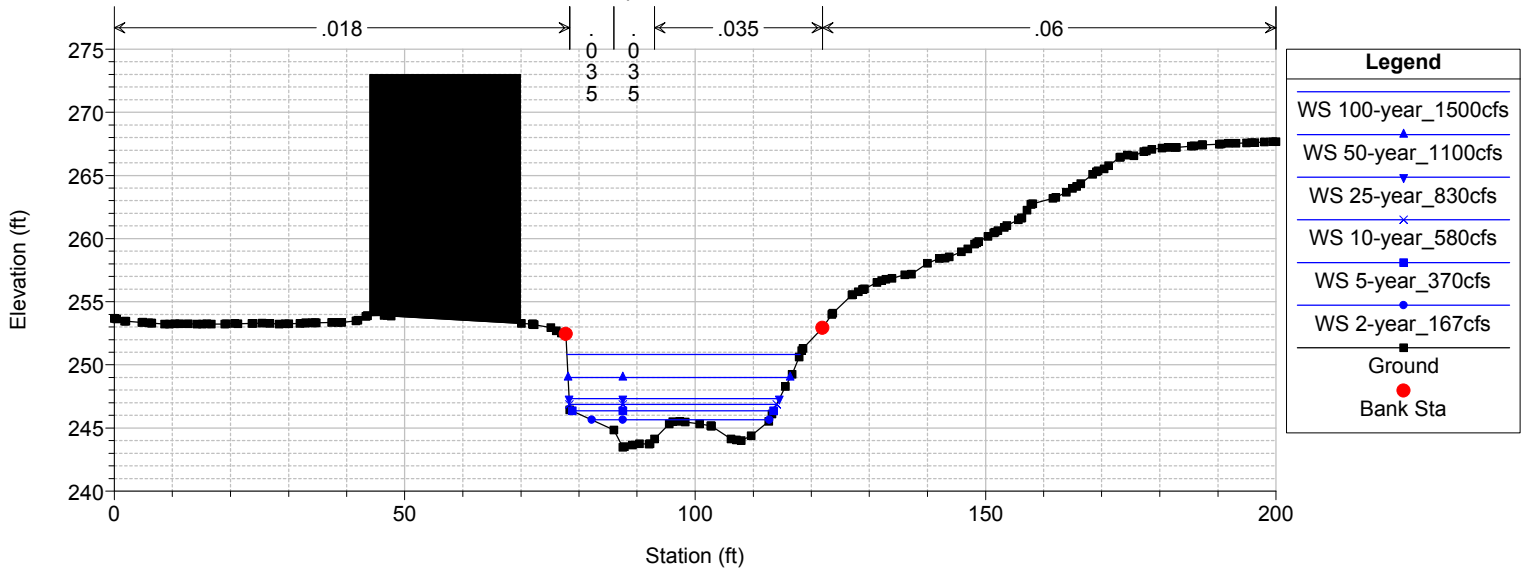
River = SCollasMap101 Reach = MainReach RS = 684.4379



SCollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

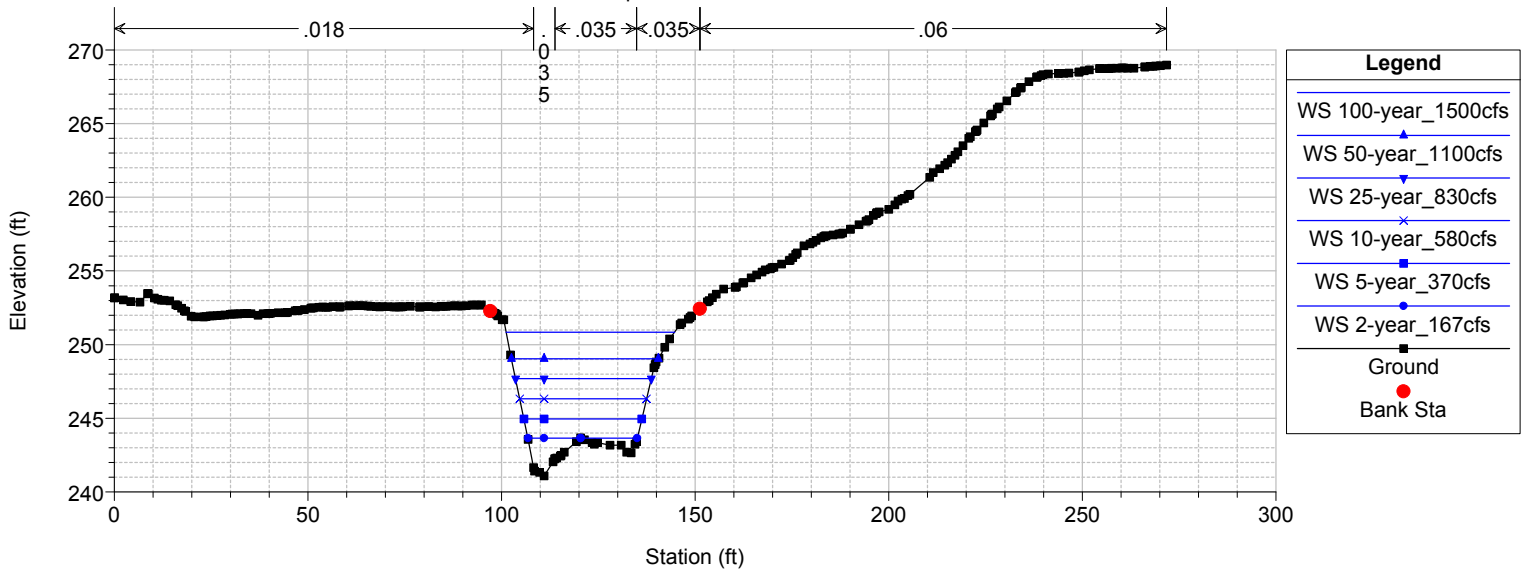
River = SCollasMap101 Reach = MainReach RS = 599.9999



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

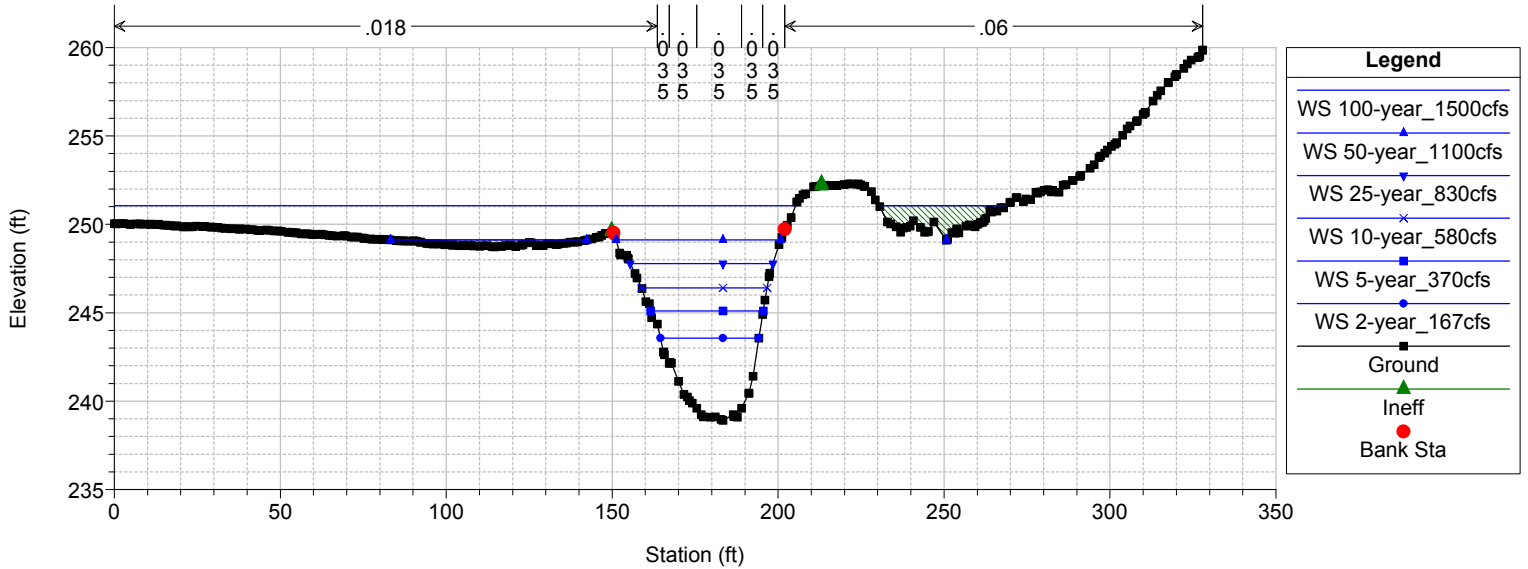
River = SChollasMap101 Reach = MainReach RS = 524.6492



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

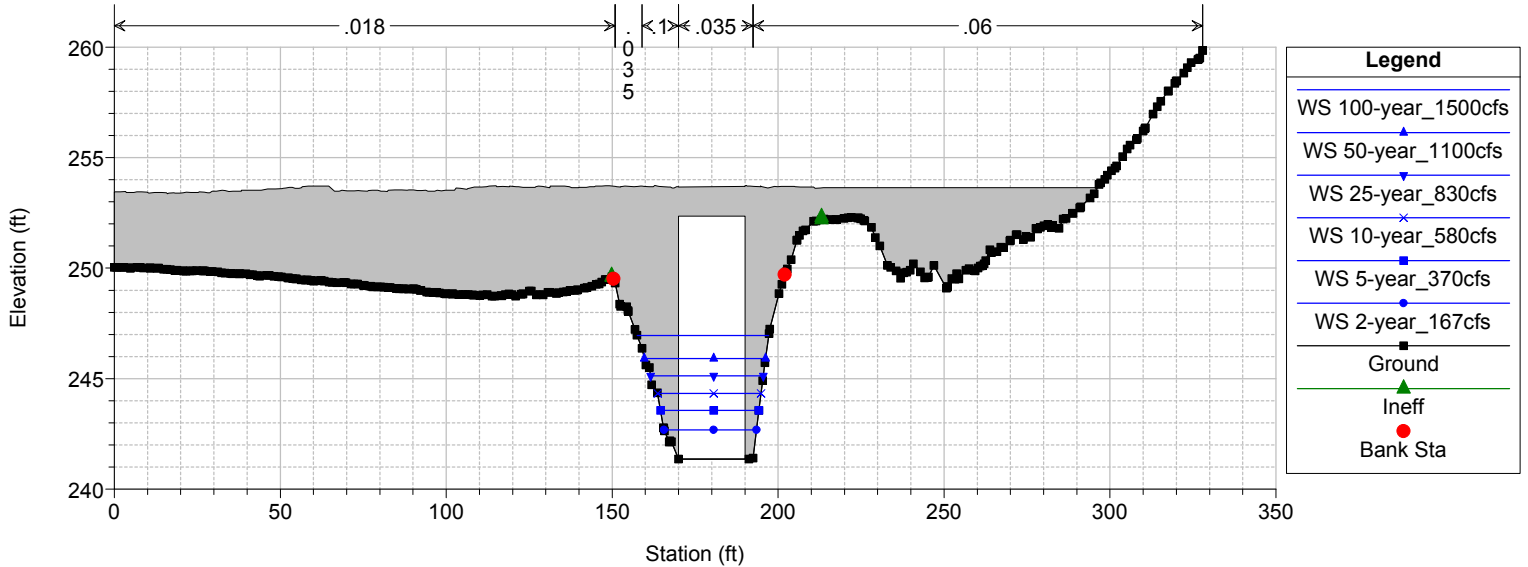
River = SChollasMap101 Reach = MainReach RS = 417.4621 Cross Section upstream of Bridge at Federal Blvd



SChollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

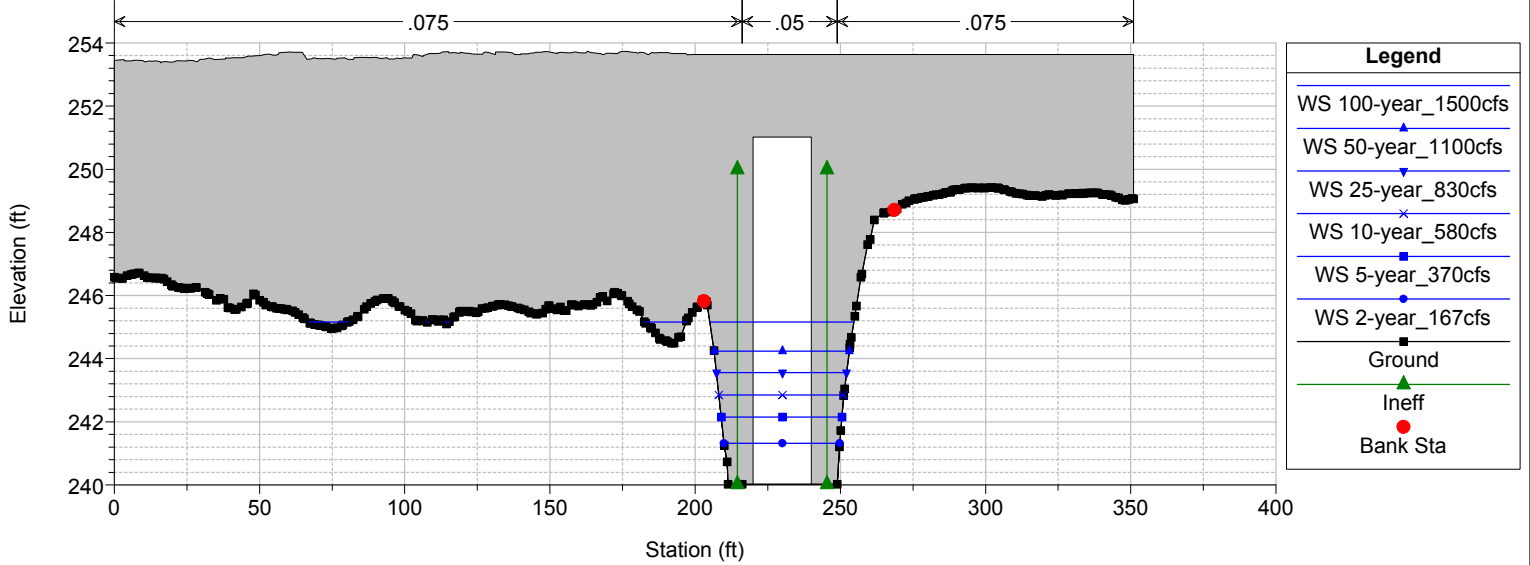
River = SChollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd



SCollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

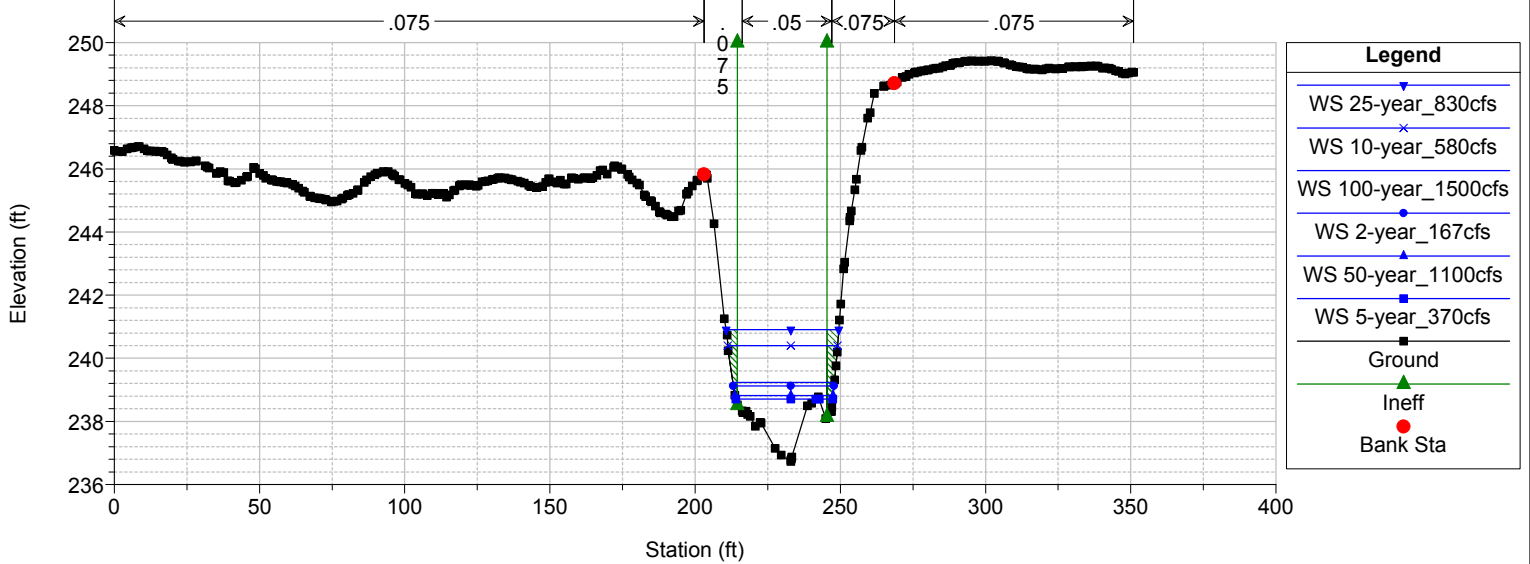
River = SCollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd



SCollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

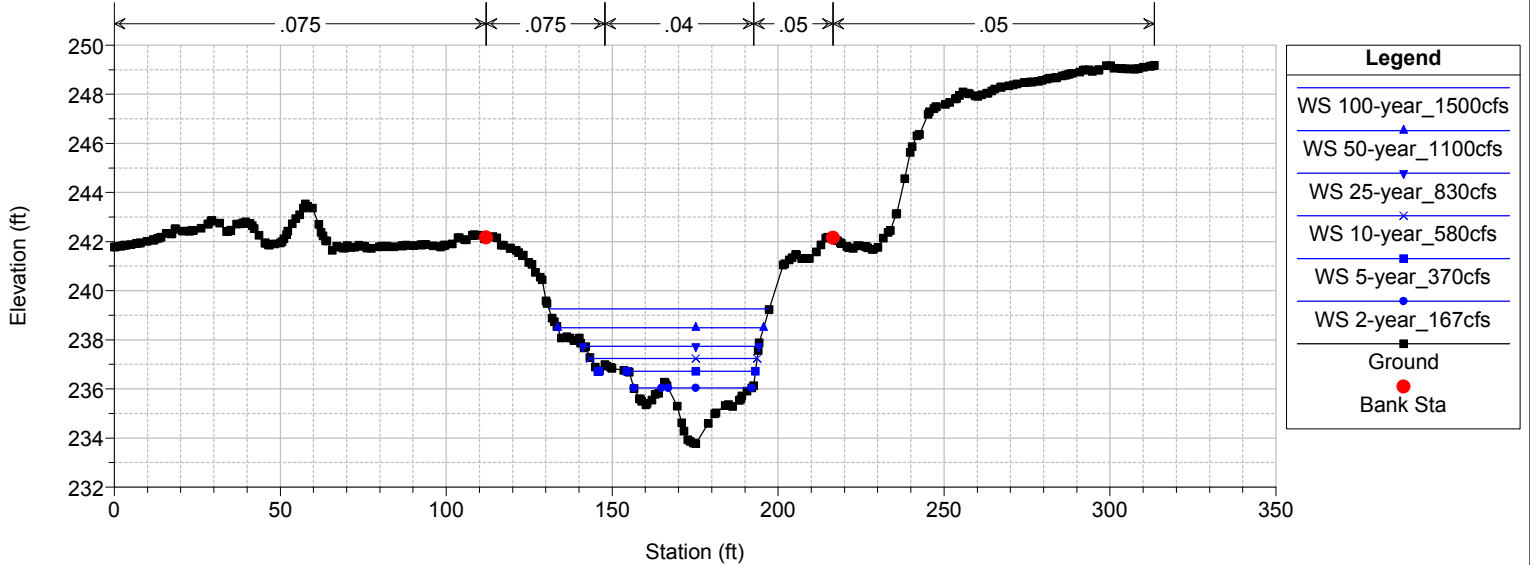
River = SCollasMap101 Reach = MainReach RS = 292.8245



SCollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

River = SCollasMap101 Reach = MainReach RS = 147.2868

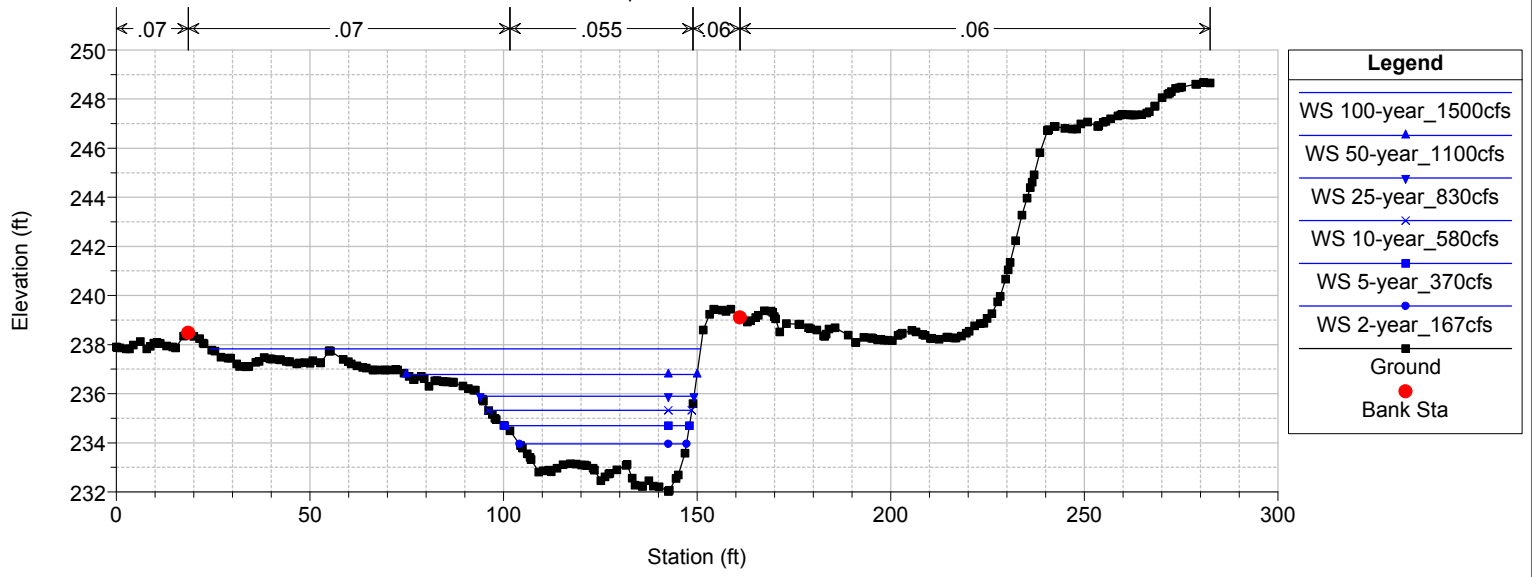




SCollas\_Map101 Plan: MaintainedCondition(Veg Only) 12/14/2016

Geom: MaintainedCondition(Veg Only)\_Geo Flow: SteadyGVF\_Map101

River = SCollasMap101 Reach = MainReach RS = 28.06381



Schollas\_Map101.rep

HEC-RAS Version 4.1.0 Jan 2010  
 U.S. Army Corps of Engineers  
 Hydrologic Engineering Center  
 609 Second Street  
 Davis, California

```

X   X   XXXXXX   XXXX   XXXX   XX   XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
XXXXXXXX XXXX   X   XXX XXXX XXXXXX XXXX
X   X   X       X   X   X   X   X   X
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PROJECT DATA  
 Project Title: Schollas\_Map101  
 Project File : Schollas\_Map101.prj  
 Run Date and Time: 12/14/2016 7:08:19 AM

Project in English units

PLAN DATA

Plan Title: MaintainedCondition(Veg Only)  
 Plan File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.p03

Geometry Title: MaintainedCondition(Veg Only)\_Geo  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g04

Flow Title : SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.f01

Plan Description:  
 Schollas Map 101 Maintained Condition (Vegetation Only)

Plan Summary Information:  
 Number of: Cross Sections = 20 Multiple Openings = 0  
 Culverts = 1 Inline Structures = 0  
 Bridges = 0 Lateral Structures = 0

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

Computation Options  
 Critical depth computed only where necessary  
 Conveyance Calculation Method: At breaks in n values only  
 Friction Slope Method: Average Conveyance  
 Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.f01

Schollas\_Map101.rep

Flow Data (cfs)

River	Reach	RS	100-year_1500cfs	50-year_1100cfs	25-year_830cfs
10-year_580cfs	5-year_370cfs	2-year_167cfs			
SchollasMap101	MainReach	2306.424	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2200	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2098.664	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2000	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1800	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1600	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1400	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1200	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1004.18	1500	1100	830
580	370	167			
SchollasMap101	MainReach	976.6697	1500	1100	830
580	370	167			
SchollasMap101	MainReach	926.7529	1500	1100	830
580	370	167			
SchollasMap101	MainReach	915.6229	1500	1100	830
580	370	167			
SchollasMap101	MainReach	781.5157	1500	1100	830
580	370	167			
SchollasMap101	MainReach	684.4379	1500	1100	830
580	370	167			
SchollasMap101	MainReach	599.9999	1500	1100	830
580	370	167			
SchollasMap101	MainReach	524.6492	1500	1100	830
580	370	167			
SchollasMap101	MainReach	417.4621	1500	1100	830
580	370	167			

Boundary Conditions

River	Reach	Profile	Upstream
SchollasMap101	MainReach	100-year_1500cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	50-year_1100cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	25-year_830cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	10-year_580cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	5-year_370cfs	Normal S = 0.035
0.014			Normal S =
SchollasMap101	MainReach	2-year_167cfs	Normal S = 0.035
0.014			Normal S =

GEOMETRY DATA

Geometry Title: MaintainedCondition(Veg Only)\_Geo  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g04

CROSS SECTION









Schollas\_Map101.rep  
 193.46 271.8 194.39 271.78 195.11 271.78 197.1 271.84 197.96 271.87  
 198.6 271.88 199.71 271.89 200 271.9

Manning's n Values num= 6  
 Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
 0 .018 66.99 .03 87.63 .018 98.53 .018 102.79 .018  
 113.41 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 87.63 113.41 197.21 195.82 194.66 .1 .3

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach

RS: 1004.18

INPUT  
 Description: Station Elevation Data num= 190  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 265.38 .33 265.38 1.53 265.36 3.49 265.37 4.06 265.37  
 4.68 265.37 6 265.39 7.96 265.39 8.57 265.38 9.13 265.37  
 10.47 265.35 12.95 265.3 13.04 265.3 13.1 265.3 14.94 265.27  
 16.59 265.28 17.45 265.28 18.27 265.28 19.43 265.27 20.55 265.26  
 22.11 265.24 23.33 265.25 24.09 265.25 25.28 265.24 26.7 265.25  
 27.87 265.23 28.77 265.24 29.96 265.23 31.42 265.23 32.72 265.21  
 33.43 265.2 34.14 265.19 36.03 265.23 37.65 265.2 38.11 265.19  
 40.16 265.15 40.81 265.14 43 265.11 43.03 265.11 43.07 265.11  
 45.63 265.05 46.47 265.02 47.74 264.99 49.31 265.03 50.54 265.06  
 51.35 265.05 52.78 265.07 54.61 265.02 55.56 265.01 57.1 265.01  
 57.75 265 59.97 264.96 60.61 264.95 62.74 264.95 62.81 264.95  
 62.95 264.95 66.45 264.88 67.62 264.81 67.95 264.8 68.32 264.8  
 70.82 264.79 71.58 264.77 73.1 264.75 74.25 264.73 76.09 264.69  
 77.28 264.66 78.4 264.7 79.79 264.64 81.24 264.51 83.45 264.43  
 83.6 264.43 83.67 264.43 86.51 264.65 88.47 265.13 88.8 265.17  
 90.05 265.39 91.63 265.58 92.35 265.78 93.94 266.13 95.98 266  
 96.76 265.86 97.31 265.66 99.11 264.98 100.57 264.04 101.84 263.28  
 103.32 262.34 104.05 261.8 104.98 260.89 106.8 258.96 107.96 258.03  
 108.29 257.77 109.07 257.1 110.9 255.75 111.71 255.19 112.05 254.96  
 113.82 253.77 115.3 252.97 116.48 252.34 117.76 251.91 118.65 251.62  
 119.61 251.52 121.21 251.37 122.88 251.45 123.33 251.46 123.67 251.52  
 125.82 251.75 126.31 252.06 127.85 253.09 128.67 253.67 130.34 254.67  
 131.89 255.48 132.28 255.73 132.78 256.04 133.94 256.76 134.78 257.1  
 136.31 257.84 136.49 257.92 136.89 257.95 138.79 258.2 139.48 258.25  
 140.58 258.54 141.7 258.66 144.35 258.94 144.52 258.95 144.82 258.89  
 146.74 258.54 147.1 258.52 148.62 258.41 149.28 258.29 150.86 258.11  
 152.72 258.13 155.09 258 155.33 257.98 157.13 258.15 158.09 258.14  
 159.49 258.12 161.41 258.28 161.43 258.28 161.45 258.28 163.91 258.52  
 165.73 258.83 166 258.88 166.45 259 168.44 259.56 170.54 260.32  
 170.55 260.32 173.09 261.46 174.38 262.02 175.17 262.36 176.29 262.75  
 177.83 263.23 178.82 263.69 179.92 264.17 181.25 264.77 182.45 265.33  
 183.31 265.62 184.63 266.08 186.39 266.42 187.24 266.58 188.72 266.68  
 189.32 266.7 191.31 266.68 191.82 266.68 193.95 266.71 193.99 266.71  
 194.29 266.72 196.5 266.84 196.93 266.84 198.64 266.88 199.76 266.88  
 201.05 266.91 202.8 266.95 203.19 266.95 203.45 266.96 205.63 267  
 206.31 267.01 207.85 267.04 209.43 267.06 210.22 267.08 212.06 267.1  
 212.26 267.1 212.37 267.1 214.73 267.15 215.69 267.17 216.86 267.16  
 218.89 267.2 219.2 267.21 219.36 267.21 221.27 267.23 221.35 267.23

Manning's n Values num= 6  
 Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
 0 .018 93.94 .03 109.07 .018 117.76 .018 125.82 .018  
 134.78 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 109.07 134.78 29.27 27.51 26.96 .1 .3

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach

RS: 976.6697

Schollas\_Map101.rep

INPUT  
 Description: Grouted 2ton riprap on right bank of concrete channel  
 Station Elevation Data num= 190  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 264.19 .34 264.19 .97 264.18 1.8 264.18 3.54 264.17  
 4.69 264.17 5.62 264.18 6.89 264.14 8.06 264.14 9.65 264.06  
 10.07 264.04 11.31 264.07 12.52 264.11 13.26 264.07 14.48 264.04  
 15.17 264.03 16.94 263.98 18.35 264 18.95 264 19.89 264  
 21.36 263.98 22.54 263.98 23.41 263.97 24.73 264.11 26 264.18  
 26.41 264.18 28.04 263.89 30.2 263.85 30.52 263.84 30.84 263.84  
 32.69 263.84 34.67 263.82 35.23 263.81 35.83 263.81 37.3 263.81  
 38.45 263.81 39.84 263.81 41.22 263.79 41.97 263.78 43.8 263.75  
 44.59 263.75 46.77 263.74 46.86 263.74 46.95 263.74 49.4 263.7  
 50.11 263.69 51.56 263.72 53.57 263.7 54.28 263.7 54.7 263.7  
 56.57 263.66 59.02 263.61 59.25 263.6 61.46 263.48 61.53 263.48  
 62.02 263.47 64.31 263.45 64.72 263.45 66.61 263.48 67.31 263.5  
 70.87 262.81 71.68 262.95 73.93 262.2 74.47 262.08 76.41 261.75  
 76.82 261.5 77.22 261.54 78.39 261.5 79.7 261.33 80 261.32  
 81.06 260.84 81.86 260.47 82.34 260.26 83.28 259.69 84.51 258.98  
 84.84 258.85 85.08 258.81 85.56 258.61 87.24 258.04 90.07 257.72  
 90.08 257.72 90.09 257.72 92.42 257.81 94.59 257.94 95.17 257.95  
 97.28 257.84 97.55 257.89 97.74 257.88 100.3 258.02 102.37 257.6  
 103.37 257.1 104.13 256.97 105.36 256.79 106.12 256.79 109.23 256.8  
 109.88 256.81 110.28 256.81 110.9 256 112.63 254.15 114.27 251.04  
 115.83 251 119.92 250.21 119.93 250.21 124.61 250.33 124.67 250.33  
 124.72 250.35 125.01 250.47 131.89 253.12 133.14 253.59 133.78 253.83  
 134.7 254.47 135.74 255.15 136.83 255.54 138 256.01 139.23 256.38  
 139.96 256.71 140.48 256.71 141.55 256.82 142.04 256.82 142.52 256.82  
 143.38 256.81 145.82 256.73 146.04 256.73 146.12 256.73 146.22 256.75  
 147.96 256.95 148.79 257.05 150.13 257.19 151.25 257.3 152.06 257.4  
 153.36 257.34 154.92 257.29 156.15 257.31 156.55 257.37 158.44 257.66  
 161.55 257.66 163.36 257.79 163.98 257.82 164.85 257.91 166.26 258.12  
 167.27 258.27 168.14 258.65 169.39 259.15 171.27 260.29 171.78 260.56  
 171.95 260.61 172.44 260.72 173.94 261.09 174.94 261.4 176.4 261.96  
 178.37 262.76 178.56 262.84 178.76 262.94 181.16 264.1 182.98 264.93  
 183.32 265.1 183.7 265.21 185.76 265.82 187.31 266.03 188.01 266.13  
 188.88 266.17 190.55 266.26 191.72 266.29 192.69 266.31 193.89 266.36  
 195.13 266.43 196.58 266.44 197.35 266.45 199.46 266.47 199.8 266.47  
 200.56 266.49 201.98 266.54 202.47 266.54 204.33 266.59 205.1 266.6  
 206.52 266.59 207.47 266.61 208.91 266.63 210.43 266.66 211.19 266.68  
 213.39 266.7 213.51 266.7 213.78 266.7 215.57 266.7 216.55 266.74  
 217.98 266.81 219.67 266.81 220.21 266.82 221.07 266.82 221.6 266.83

Manning's n Values num= 6  
 Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
 0 .018 64.72 .03 110.9 .018 114.27 .018 125.01 .042  
 138 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 110.9 138 49.84 49.92 47.71 .1 .3

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach

RS: 926.7529

INPUT  
 Description: transition to earthen channel. 2ton riprap  
 Station Elevation Data num= 175  
 Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev  
 0 256.14 .35 256.13 .71 256.14 1.3 256.14 3.07 256.15  
 5.09 256.09 5.15 256.09 5.67 256.09 7.54 256.09 7.98 256.08  
 9.6 256.04 10.74 256.04 12 256.02 12.77 256.03 14.07 255.98  
 16.16 255.97 16.4 255.97 16.71 255.97 18.53 255.92 19.93 255.91  
 21.05 255.9 22.53 255.88 23.18 255.86 24.17 255.84 25.61 255.82  
 26.84 255.8 27.87 255.8 29.09 255.79 30.28 255.78 31.47 255.76  
 32.49 255.77 33.33 255.77 34.91 255.75 36.32 255.73 37.17 255.72  
 38.13 255.74 39.65 255.77 41.33 255.76 42.07 255.75 42.92 255.76  
 44.48 255.76 46.41 255.78 46.76 255.79 47.11 255.78 49.37 255.73  
 51.25 255.74 51.82 255.75 52.37 255.75 54.37 255.82 54.98 255.82  
 56.75 255.77 57.42 255.77 59.42 255.78 60.23 255.79 61.83 255.78













Schollas\_Map101.rep. Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev. Manning's n Values num= 5. Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val

Schollas\_Map101.rep. Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Ineffective Flow num= 2. Sta L Sta R Elev Permanent. CROSS SECTION. RIVER: SchollasMap101 REACH: MainReach RS: 147.2868. INPUT Description: Station Elevation Data num= 307. Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev Sta Elev

Schollas\_Map101.rep

286.61	248.78	287.49	248.81	287.72	248.83	288.62	248.85	290.92	248.91
291.97	248.98	292.55	249	293.68	248.99	294.69	248.93	296.44	248.98
296.6	248.99	296.68	248.99	298.89	249.17	300.13	249.17	301.21	249.06
303.52	249.05	303.58	249.05	304.73	249.03	305.79	249.03	307.4	249.02
307.78	249.04	308.54	249.05	310.06	249.1	312	249.14	312.41	249.15
313.21	249.17	313.36	249.18						

Manning's n values

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.075	112.06	.075	147.84	.04	192.6	.05	216.58	.05

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

0	112.06	216.58	114.51	119.22	123.59		.1		.3
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CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 28.06381

INPUT Description:

Station Elevation Data num= 258

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	237.9	24	237.88	95	237.86	2.56	237.83	3.39	237.83
4.37	237.98	6.21	238.12	7.88	237.83	8.73	237.93	9.63	238.06
10.53	238.09	10.92	238.05	11.31	238.05	12.97	237.94	14.53	237.9
15.25	237.87	17.37	238.35	18.14	238.44	18.57	238.48	20.04	238.33
21.45	238.24	22.42	238.06	22.66	238.04	24.65	237.77	25.46	237.74
26.99	237.49	28.82	237.45	29.47	237.45	31.07	237.22	31.84	237.11
33.54	237.09	34.03	237.11	34.19	237.11	36.07	237.28	36.9	237.32
38.17	237.47	39.67	237.42	40.24	237.41	42.13	237.38	42.39	237.38
43.91	237.32	44.7	237.3	44.83	237.29	46.65	237.22	47.27	237.25
48.67	237.26	49.96	237.24	50.72	237.34	52.7	237.26	52.76	237.25
55	237.73	55.08	237.75	55.29	237.73	58.63	237.4	59.89	237.31
60.62	237.22	62.19	237.13	63.6	237.07	64.51	237.05	66.28	236.96
66.72	236.96	68.59	236.97	69.42	236.97	70.62	236.96	72.19	236.99
72.68	236.97	74.32	236.84	75.66	236.7	76.77	236.58	76.84	236.57
76.86	236.57	78.79	236.71	79.51	236.62	80.73	236.3	82.21	236.52
82.78	236.53	84.38	236.5	84.83	236.48	85.47	236.48	86.77	236.47
87	236.47	87.05	236.46	89.53	236.32	90.9	236.21	92.31	236.14
92.75	236.15	94.53	235.78	94.66	235.75	94.81	235.7	96.09	235.31
97.12	235.16	97.76	235	98.07	234.95	100.11	234.71	101.64	234.49
104.37	233.89	104.86	233.79	106.08	233.55	106.82	233.41	107.11	233.31
109.13	232.81	110.25	232.86	111.67	232.89	112.33	232.82	113.8	232.96
115.37	232.11	117.26	233.15	118.74	233.14	120.17	233.09	120.96	233.1
121.48	233.07	123.12	232.97	123.51	232.89	125.11	232.45	126.21	232.61
127.22	232.73	127.46	232.76	129.28	232.9	131.64	233.08	131.92	233.12
133.25	232.56	134	232.28	135.85	232.24	135.88	232.24	135.89	232.24
137.56	232.45	138.67	232.24	140.15	232.21	142.57	232.02	142.59	232.02
142.77	232.07	144.56	232.55	145.1	232.69	146.87	233.58	148.92	235.6
151.55	238.59	153.19	239.24	154.29	239.44	154.41	239.43	156.47	239.4
157.47	239.35	158.69	239.44	160.77	239.14	160.9	239.13	161.09	239.11
161.16	239.1	162.98	238.92	163.81	238.97	165.11	239.11	165.78	239.2
167.32	239.38	169.08	239.36	169.51	239.31	169.93	239.14	170.27	239.05
171.34	238.52	173.06	238.86	176.3	238.83	176.36	238.82	176.41	238.83
176.56	238.82	178.73	238.69	179.23	238.65	180.9	238.6	182.65	238.36
182.88	238.33	183.31	238.43	184.08	238.63	185.6	238.69	189.01	238.39
190.9	238.09	191	238.09	193.05	238.29	194.93	238.27	195.15	238.27
195.4	238.25	196.64	238.19	197.44	238.22	198.35	238.18	199.14	238.18
200.44	238.17	201.92	238.37	202.6	238.43	202.95	238.47	205.48	238.58
206.49	238.52	208.28	238.41	208.82	238.37	210.26	238.26	210.43	238.25
210.57	238.25	212.52	238.22	214.49	238.3	214.63	238.31	214.8	238.3
216.38	238.27	216.82	238.27	218.28	238.35	219.49	238.47	220.27	238.54
221.64	238.77	223.12	238.85	224.07	238.87	224.85	239.06	226.12	239.26
227.64	239.74	228.24	239.97	229.69	240.67	230.33	241.05	230.84	241.35
232.26	242.23	233.87	243.27	235.23	243.96	236	244.39	236.56	244.62
237	244.92	238.54	245.81	240.48	246.71	240.53	246.73	240.78	246.75
242.24	246.89	242.47	246.88	245	246.81	246.98	246.78	248.01	246.78
249.07	246.99	250.84	247.07	253.47	246.89	253.56	246.9	253.7	246.92
254.85	247.05	255.55	247.09	256.76	247.2	258.69	247.31	259.4	247.36
259.86	247.38	260.91	247.37	261.84	247.36	262.44	247.35	263.17	247.36
264.77	247.37	266.1	247.43	266.75	247.49	268.22	247.71	268.3	247.72

Schollas\_Map101.rep

270.12	248.06	271.58	248.2	271.99	248.24	272.52	248.31	273.55	248.43
274.52	248.46	275.15	248.49	278.78	248.61	279.04	248.61	280.83	248.67
280.85	248.67	280.86	248.67	282.51	248.66				

Manning's n values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.07	18.57	.07	101.64	.055	148.92	.06	161.09	.06

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

18.57	161.09	23.87	28.06	33.25		.1		.3
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SUMMARY OF MANNING'S N VALUES

River: SchollasMap101

n7	Reach	River Sta.	n1	n2	n3	n4	n5	n6
MainReach		2306.424	.018	.018	.018	.018	.06	
MainReach		2200	.018	.018	.018	.018	.06	
MainReach		2098.664	.018	.03	.018	.018	.018	.06
MainReach		2000	.018	.03	.018	.018	.018	.06
MainReach		1800	.018	.03	.018	.018	.018	.06
MainReach		1600	.018	.03	.018	.018	.018	.06
MainReach		1400	.018	.03	.018	.018	.018	.06
MainReach		1200	.018	.03	.018	.018	.018	.06
MainReach		1004.18	.018	.03	.018	.018	.018	.06
MainReach		976.6697	.018	.03	.018	.018	.042	.06
MainReach		926.7529	.018	.054	.054	.06		
MainReach		915.6229	.018	.035	.06			
MainReach		781.5157	.018	.035	.06			
MainReach		684.4379	.018	.035	.035	.06		
MainReach		599.9999	.018	.035	.035	.035	.06	
MainReach		524.6492	.018	.035	.035	.035	.06	
MainReach		417.4621	.018	.035	.035	.035	.035	.035
MainReach		362.8132						
MainReach	Culvert							
MainReach		292.8245	.075	.075	.05	.075	.075	
MainReach		147.2868	.075	.075	.04	.05	.05	
MainReach		28.06381	.07	.07	.055	.06	.06	

SUMMARY OF REACH LENGTHS

River: SchollasMap101



Reach	River Sta.	Schollas_Map101.rep		
		Left	Channel	Right
MainReach	2306.424	107.15	106.42	105.18
MainReach	2200	101.52	101.34	97.26
MainReach	2098.664	101.57	98.66	97.84
MainReach	2000	201.58	200	197.43
MainReach	1800	198.88	200	200.59
MainReach	1600	199.8	200	200.08
MainReach	1400	199.83	200	200.13
MainReach	1200	197.21	195.82	194.66
MainReach	1004.18	29.27	27.51	26.96
MainReach	976.6697	49.84	49.92	47.71
MainReach	926.7529	11.65	11.13	10.82
MainReach	915.6229	131.26	134.11	137.05
MainReach	781.5157	95.92	97.08	98.64
MainReach	684.4379	77.17	84.44	89.29
MainReach	599.9999	66.24	75.35	84.98
MainReach	524.6492	86.87	107.19	109.33
MainReach	417.4621	131.21	124.64	127.74
MainReach	362.8132	Culvert		
MainReach	292.8245	152.28	145.54	135.2
MainReach	147.2868	114.51	119.22	123.59
MainReach	28.06381	23.87	28.06	33.25

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS  
River: SchollasMap101

Reach	River Sta.	Contr.	Expan.
MainReach	2306.424	.1	.3
MainReach	2200	.1	.3
MainReach	2098.664	.1	.3
MainReach	2000	.1	.3
MainReach	1800	.1	.3
MainReach	1600	.1	.3
MainReach	1400	.1	.3
MainReach	1200	.1	.3
MainReach	1004.18	.1	.3
MainReach	976.6697	.1	.3
MainReach	926.7529	.1	.3
MainReach	915.6229	.1	.3
MainReach	781.5157	.1	.3
MainReach	684.4379	.1	.3
MainReach	599.9999	.1	.3
MainReach	524.6492	.1	.3
MainReach	417.4621	.3	.5
MainReach	362.8132	Culvert	
MainReach	292.8245	.3	.5
MainReach	147.2868	.1	.3
MainReach	28.06381	.1	.3

**Attachment 14 - DETAILED HYDRAULIC RESULTS FOR MAINTAINED CONDITION  
MODEL – SEDIMENT AND VEGETATION ONLY**

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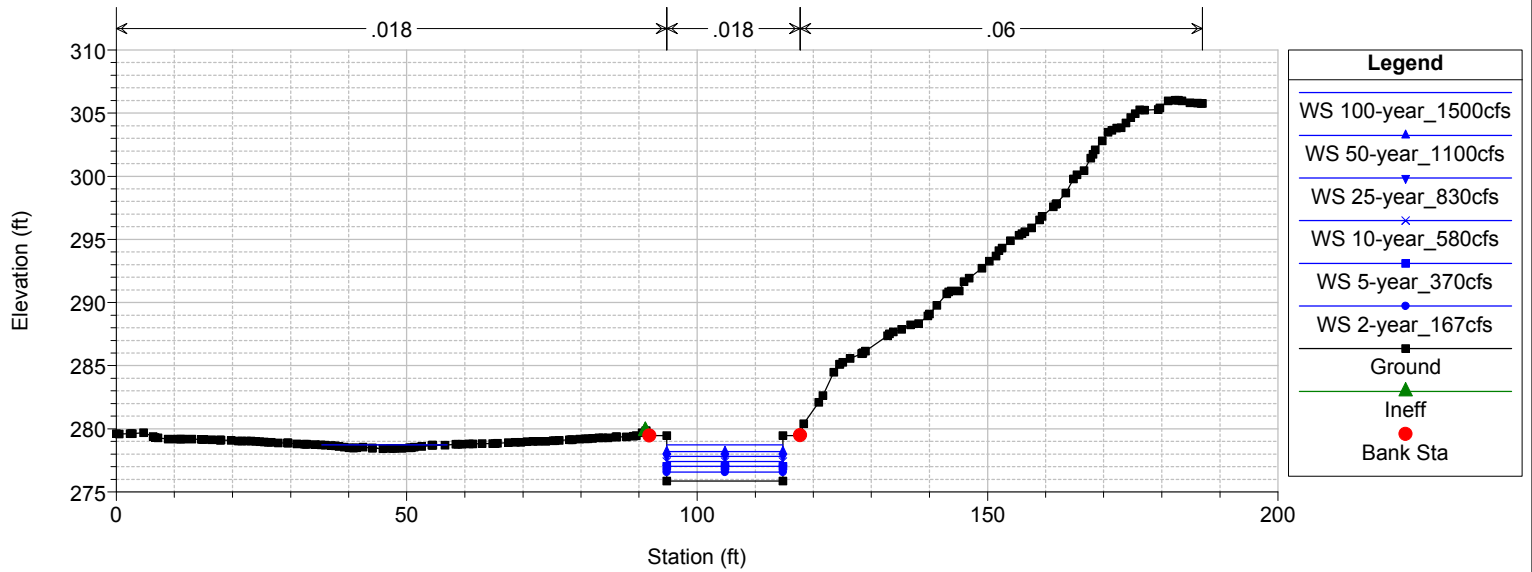
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
MainReach	2306.424	100-year_1500cfs	1500.00	275.87	278.72	280.40	289.46	0.035049	26.29	57.05	41.59	2.74
MainReach	2306.424	50-year_1100cfs	1100.00	275.87	278.20	280.09	286.86	0.035069	23.62	46.57	20.00	2.73
MainReach	2306.424	25-year_830cfs	830.00	275.87	277.81	279.85	284.90	0.035012	21.36	38.85	20.00	2.70
MainReach	2306.424	10-year_580cfs	580.00	275.87	277.42	278.84	282.88	0.035017	18.76	30.91	20.00	2.66
MainReach	2306.424	5-year_370cfs	370.00	275.87	277.03	278.07	280.95	0.035028	15.89	23.29	20.00	2.59
MainReach	2306.424	2-year_167cfs	167.00	275.87	276.58	277.17	278.73	0.035050	11.75	14.21	20.00	2.46
MainReach	2200	100-year_1500cfs	1500.00	272.16	275.02	277.79	285.73	0.034921	26.26	57.11	20.00	2.74
MainReach	2200	50-year_1100cfs	1100.00	272.16	274.49	277.24	283.14	0.034972	23.60	46.61	20.00	2.72
MainReach	2200	25-year_830cfs	830.00	272.16	274.11	276.58	281.17	0.034855	21.33	38.91	20.00	2.70
MainReach	2200	10-year_580cfs	580.00	272.16	273.71	275.12	279.15	0.034800	18.73	30.97	20.00	2.65
MainReach	2200	5-year_370cfs	370.00	272.16	273.33	274.35	277.23	0.034832	15.86	23.33	20.00	2.59
MainReach	2200	2-year_167cfs	167.00	272.16	272.87	273.45	275.01	0.034806	11.73	14.24	20.00	2.45
MainReach	2098.664	100-year_1500cfs	1500.00	268.59	271.44	274.55	282.18	0.035053	26.30	57.04	20.00	2.74
MainReach	2098.664	50-year_1100cfs	1100.00	268.59	270.92	273.13	279.59	0.035102	23.63	46.56	20.00	2.73
MainReach	2098.664	25-year_830cfs	830.00	268.59	270.53	272.35	277.63	0.035091	21.38	38.82	20.00	2.70
MainReach	2098.664	10-year_580cfs	580.00	268.59	270.13	271.55	275.61	0.035072	18.77	30.90	20.00	2.66
MainReach	2098.664	5-year_370cfs	370.00	268.59	269.75	270.78	273.68	0.035137	15.90	23.26	20.00	2.60
MainReach	2098.664	2-year_167cfs	167.00	268.59	269.30	269.88	271.45	0.035270	11.78	14.18	20.00	2.46
MainReach	2000	100-year_1500cfs	1500.00	266.60	271.16	273.38	278.80	0.018573	22.18	67.63	21.67	2.21
MainReach	2000	50-year_1100cfs	1100.00	266.60	270.63	272.48	276.48	0.016168	19.41	56.67	20.10	2.04
MainReach	2000	25-year_830cfs	830.00	266.60	270.21	271.66	274.78	0.014191	17.15	48.39	18.82	1.89
MainReach	2000	10-year_580cfs	580.00	266.60	269.71	270.78	273.07	0.012165	14.70	39.45	17.34	1.72
MainReach	2000	5-year_370cfs	370.00	266.60	269.16	269.86	271.48	0.010373	12.24	30.23	15.66	1.55
MainReach	2000	2-year_167cfs	167.00	266.60	268.31	268.67	269.63	0.009005	9.22	18.11	13.14	1.38
MainReach	1800	100-year_1500cfs	1500.00	263.60	268.35	270.40	275.12	0.015771	20.88	71.83	22.25	2.05
MainReach	1800	50-year_1100cfs	1100.00	263.60	267.71	269.47	273.27	0.015093	18.92	58.12	20.32	1.97
MainReach	1800	25-year_830cfs	830.00	263.60	267.17	268.66	271.87	0.014750	17.39	47.72	18.72	1.92
MainReach	1800	10-year_580cfs	580.00	263.60	266.57	267.78	270.38	0.014474	15.66	37.05	16.92	1.86
MainReach	1800	5-year_370cfs	370.00	263.60	265.91	266.87	268.94	0.014996	13.96	26.51	14.93	1.85
MainReach	1800	2-year_167cfs	167.00	263.60	265.02	265.67	267.11	0.017503	11.61	14.38	12.26	1.89
MainReach	1600	100-year_1500cfs	1500.00	260.60	265.40	267.40	271.97	0.015107	20.56	72.96	22.38	2.01
MainReach	1600	50-year_1100cfs	1100.00	260.60	264.72	266.42	270.24	0.014951	18.86	58.31	20.33	1.96
MainReach	1600	25-year_830cfs	830.00	260.60	264.16	265.68	268.90	0.014919	17.47	47.51	18.67	1.93
MainReach	1600	10-year_580cfs	580.00	260.60	263.55	264.78	267.44	0.014877	15.81	36.68	16.84	1.89
MainReach	1600	5-year_370cfs	370.00	260.60	262.91	263.87	265.94	0.014997	13.96	26.50	14.92	1.85
MainReach	1600	2-year_167cfs	167.00	260.60	262.11	262.67	263.91	0.013960	10.74	15.55	12.53	1.70
MainReach	1400	100-year_1500cfs	1500.00	257.60	262.41	264.37	268.95	0.015048	20.53	73.08	22.42	2.00
MainReach	1400	50-year_1100cfs	1100.00	257.60	261.71	263.53	267.25	0.015012	18.89	58.24	20.33	1.97
MainReach	1400	25-year_830cfs	830.00	257.60	261.16	262.66	265.91	0.014986	17.50	47.44	18.67	1.93
MainReach	1400	10-year_580cfs	580.00	257.60	260.55	261.78	264.45	0.014972	15.85	36.60	16.84	1.89
MainReach	1400	5-year_370cfs	370.00	257.60	259.91	260.87	262.93	0.014966	13.95	26.52	14.94	1.84
MainReach	1400	2-year_167cfs	167.00	257.60	259.08	259.67	260.98	0.015230	11.07	15.09	12.43	1.77
MainReach	1200	100-year_1500cfs	1500.00	254.60	259.41	261.38	265.94	0.015039	20.52	73.10	22.42	2.00
MainReach	1200	50-year_1100cfs	1100.00	254.60	258.71	260.47	264.25	0.015006	18.88	58.25	20.34	1.97
MainReach	1200	25-year_830cfs	830.00	254.60	258.16	259.66	262.91	0.015008	17.50	47.42	18.67	1.94
MainReach	1200	10-year_580cfs	580.00	254.60	257.54	258.78	261.45	0.015019	15.86	36.56	16.84	1.90
MainReach	1200	5-year_370cfs	370.00	254.60	256.91	257.86	259.94	0.015014	13.96	26.50	14.94	1.85
MainReach	1200	2-year_167cfs	167.00	254.60	256.09	256.67	257.96	0.014842	10.97	15.23	12.47	1.75
MainReach	1004.18	100-year_1500cfs	1500.00	251.66	256.47	258.54	263.01	0.015048	20.53	73.08	22.42	2.00
MainReach	1004.18	50-year_1100cfs	1100.00	251.66	255.77	257.53	261.31	0.015001	18.88	58.26	20.34	1.97
MainReach	1004.18	25-year_830cfs	830.00	251.66	255.22	256.73	259.97	0.014962	17.49	47.47	18.68	1.93
MainReach	1004.18	10-year_580cfs	580.00	251.66	254.61	255.84	258.50	0.014957	15.84	36.61	16.84	1.89
MainReach	1004.18	5-year_370cfs	370.00	251.66	253.97	254.93	257.00	0.015012	13.96	26.50	14.93	1.85
MainReach	1004.18	2-year_167cfs	167.00	251.66	253.14	253.73	255.03	0.015051	11.02	15.15	12.45	1.76
MainReach	976.6697	100-year_1500cfs	1500.00	251.19	255.98	258.28	262.58	0.015236	20.62	72.74	22.36	2.01
MainReach	976.6697	50-year_1100cfs	1100.00	251.19	255.29	257.12	260.88	0.015220	18.98	57.94	20.28	1.98
MainReach	976.6697	25-year_830cfs	830.00	251.19	254.73	256.38	259.54	0.015218	17.60	47.17	18.62	1.95
MainReach	976.6697	10-year_580cfs	580.00	251.19	254.12	255.37	258.08	0.015261	15.96	36.35	16.79	1.91
MainReach	976.6697	5-year_370cfs	370.00	251.19	253.49	254.46	256.57	0.015371	14.08	26.27	14.88	1.87
MainReach	976.6697	2-year_167cfs	167.00	251.19	252.65	253.26	254.61	0.015854	11.22	14.88	12.38	1.80
MainReach	926.7529	100-year_1500cfs	1500.00	250.16	252.68	254.79	260.61	0.185382	22.60	66.36	28.68	2.62
MainReach	926.7529	50-year_1100cfs	1100.00	250.16	252.21	253.97	258.90	0.201758	20.76	52.99	27.80	2.65
MainReach	926.7529	25-year_830cfs	830.00	250.16	251.85	253.34	257.55	0.216918	19.15	43.34	27.15	2.67
MainReach	926.7529	10-year_580cfs	580.00	250.16	251.50	252.69	256.08	0.234656	17.17	33.78	26.48	2.68
MainReach	926.7529	5-year_370cfs	370.00	250.16	251.16	252.05	254.56	0.250651	14.78	25.03	25.86	2.65
MainReach	926.7529	2-year_167cfs	167.00	250.16	250.80	251.29	252.56	0.233101	10.65	15.69	25.18	2.38
MainReach	915.6229	100-year_1500cfs	1500.00	249.97	252.74	254.60	259.18	0.051823	20.36	73.68	29.20	2.26
MainReach	915.6229	50-year_1100cfs	1100.00	249.97	252.28	253.78	257.42	0.051454	18.20	60.43	28.34	2.20
MainReach	915.6229	25-year_830cfs	830.00	249.97	251.94	253.15	256.07	0.050041	16.30	50.91	27.70	2.12

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
MainReach	915.6229	10-year_580cfs	580.00	249.97	251.60	252.50	254.63	0.046510	13.97	41.50	27.05	1.99
MainReach	915.6229	5-year_370cfs	370.00	249.97	251.28	251.86	253.23	0.039190	11.21	33.01	26.46	1.77
MainReach	915.6229	2-year_167cfs	167.00	249.97	250.94	251.09	251.68	0.022058	6.94	24.05	25.81	1.27
MainReach	781.5157	100-year_1500cfs	1500.00	247.90	251.95	252.55	254.75	0.014601	13.43	111.72	31.19	1.25
MainReach	781.5157	50-year_1100cfs	1100.00	247.90	251.42	251.72	253.48	0.012603	11.52	95.51	30.25	1.14
MainReach	781.5157	25-year_830cfs	830.00	247.90	251.00	251.09	252.56	0.011085	10.02	82.80	29.49	1.05
MainReach	781.5157	10-year_580cfs	580.00	247.90	250.44	250.44	251.61	0.010596	8.71	66.56	28.50	1.00
MainReach	781.5157	5-year_370cfs	370.00	247.90	249.79	249.79	250.69	0.011513	7.62	48.58	27.36	1.01
MainReach	781.5157	2-year_167cfs	167.00	247.90	249.03	249.03	249.57	0.013307	5.94	28.13	26.00	1.01
MainReach	684.4379	100-year_1500cfs	1500.00	246.28	250.35	250.97	253.23	0.016624	13.61	110.20	30.11	1.25
MainReach	684.4379	50-year_1100cfs	1100.00	246.28	249.61	250.13	252.02	0.017275	12.46	88.28	28.99	1.26
MainReach	684.4379	25-year_830cfs	830.00	246.28	249.01	249.50	251.12	0.018787	11.66	71.21	28.10	1.29
MainReach	684.4379	10-year_580cfs	580.00	246.28	248.41	248.83	250.16	0.020640	10.62	54.63	27.20	1.32
MainReach	684.4379	5-year_370cfs	370.00	246.28	247.89	248.18	249.18	0.020992	9.09	40.69	26.42	1.29
MainReach	684.4379	2-year_167cfs	167.00	246.28	247.29	247.41	247.98	0.020069	6.69	24.97	25.51	1.19
MainReach	599.9999	100-year_1500cfs	1500.00	244.78	250.60	249.43	251.82	0.004238	8.85	169.51	34.24	0.70
MainReach	599.9999	50-year_1100cfs	1100.00	244.78	247.98	248.60	250.53	0.017475	12.82	85.78	29.63	1.33
MainReach	599.9999	25-year_830cfs	830.00	244.78	247.49	247.98	249.58	0.017394	11.61	71.50	28.77	1.30
MainReach	599.9999	10-year_580cfs	580.00	244.78	247.02	247.32	248.56	0.016158	9.98	58.10	27.94	1.22
MainReach	599.9999	5-year_370cfs	370.00	244.78	246.51	246.67	247.60	0.015454	8.36	44.25	27.05	1.15
MainReach	599.9999	2-year_167cfs	167.00	244.78	245.85	245.91	246.46	0.015829	6.27	26.65	25.88	1.09
MainReach	524.6492	100-year_1500cfs	1500.00	243.62	250.61	251.45	251.45	0.002798	7.34	204.36	34.48	0.53
MainReach	524.6492	50-year_1100cfs	1100.00	243.62	248.77	247.47	249.68	0.004149	7.67	143.34	31.71	0.64
MainReach	524.6492	25-year_830cfs	830.00	243.62	247.37	246.84	248.43	0.006655	8.25	100.65	29.63	0.79
MainReach	524.6492	10-year_580cfs	580.00	243.62	246.03	246.17	247.38	0.013922	9.34	62.10	27.61	1.10
MainReach	524.6492	5-year_370cfs	370.00	243.62	245.41	245.52	246.44	0.015020	8.17	45.29	26.68	1.10
MainReach	524.6492	2-year_167cfs	167.00	243.62	244.73	244.75	245.30	0.014785	6.08	27.48	25.66	1.04
MainReach	417.4621	100-year_1500cfs	1500.00	241.80	251.04	246.46	251.15	0.000373	2.92	573.75	243.23	0.21
MainReach	417.4621	50-year_1100cfs	1100.00	241.80	248.91	245.64	249.32	0.001141	5.12	215.05	74.18	0.37
MainReach	417.4621	25-year_830cfs	830.00	241.80	247.57	245.00	247.95	0.001335	4.94	167.88	34.15	0.39
MainReach	417.4621	10-year_580cfs	580.00	241.80	246.21	244.35	246.55	0.001645	4.72	122.80	31.75	0.42
MainReach	417.4621	5-year_370cfs	370.00	241.80	244.90	243.70	245.21	0.002206	4.47	82.76	29.44	0.47
MainReach	417.4621	2-year_167cfs	167.00	241.80	243.32	242.93	243.61	0.004853	4.33	38.59	26.68	0.63
MainReach	362.8132		Culvert									
MainReach	292.8245	100-year_1500cfs	1500.00	236.73	239.24	242.01	257.70	0.918499	34.48	43.50	34.95	5.11
MainReach	292.8245	50-year_1100cfs	1100.00	236.73	238.81	241.21	258.98	1.608704	36.03	30.53	33.82	6.38
MainReach	292.8245	25-year_830cfs	830.00	236.73	240.90	240.65	242.09	0.020846	8.74	94.96	38.81	0.88
MainReach	292.8245	10-year_580cfs	580.00	236.73	240.40	241.23	241.23	0.018523	7.31	79.35	37.79	0.80
MainReach	292.8245	5-year_370cfs	370.00	236.73	238.70	239.46	241.59	0.256864	13.65	27.11	32.16	2.51
MainReach	292.8245	2-year_167cfs	167.00	236.73	239.12	239.39	239.39	0.015081	4.18	39.98	34.65	0.65
MainReach	147.2868	100-year_1500cfs	1500.00	233.77	239.26	238.74	240.15	0.016269	7.56	198.32	66.39	0.77
MainReach	147.2868	50-year_1100cfs	1100.00	233.77	238.49	238.20	239.34	0.019921	7.40	148.73	62.12	0.84
MainReach	147.2868	25-year_830cfs	830.00	233.77	237.74	237.70	238.70	0.024365	7.88	105.35	53.03	0.99
MainReach	147.2868	10-year_580cfs	580.00	233.77	237.24	237.24	238.06	0.025845	7.27	79.81	50.25	1.02
MainReach	147.2868	5-year_370cfs	370.00	233.77	236.72	236.72	237.42	0.021836	6.68	55.37	39.09	0.99
MainReach	147.2868	2-year_167cfs	167.00	233.77	236.04	236.04	236.51	0.025791	5.50	30.37	33.56	1.02
MainReach	28.06381	100-year_1500cfs	1500.00	232.02	237.83	236.11	238.20	0.014014	4.87	308.14	126.65	0.55
MainReach	28.06381	50-year_1100cfs	1100.00	232.02	236.78	235.54	237.25	0.013998	5.48	200.82	75.08	0.59
MainReach	28.06381	25-year_830cfs	830.00	232.02	235.90	235.11	236.41	0.014002	5.72	145.09	55.22	0.62
MainReach	28.06381	10-year_580cfs	580.00	232.02	235.32	234.61	235.72	0.014001	5.09	113.88	52.57	0.61
MainReach	28.06381	5-year_370cfs	370.00	232.02	234.70	234.13	235.01	0.014027	4.49	82.49	47.79	0.60
MainReach	28.06381	2-year_167cfs	167.00	232.02	233.95	233.56	234.13	0.014009	3.42	48.79	43.15	0.57

SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

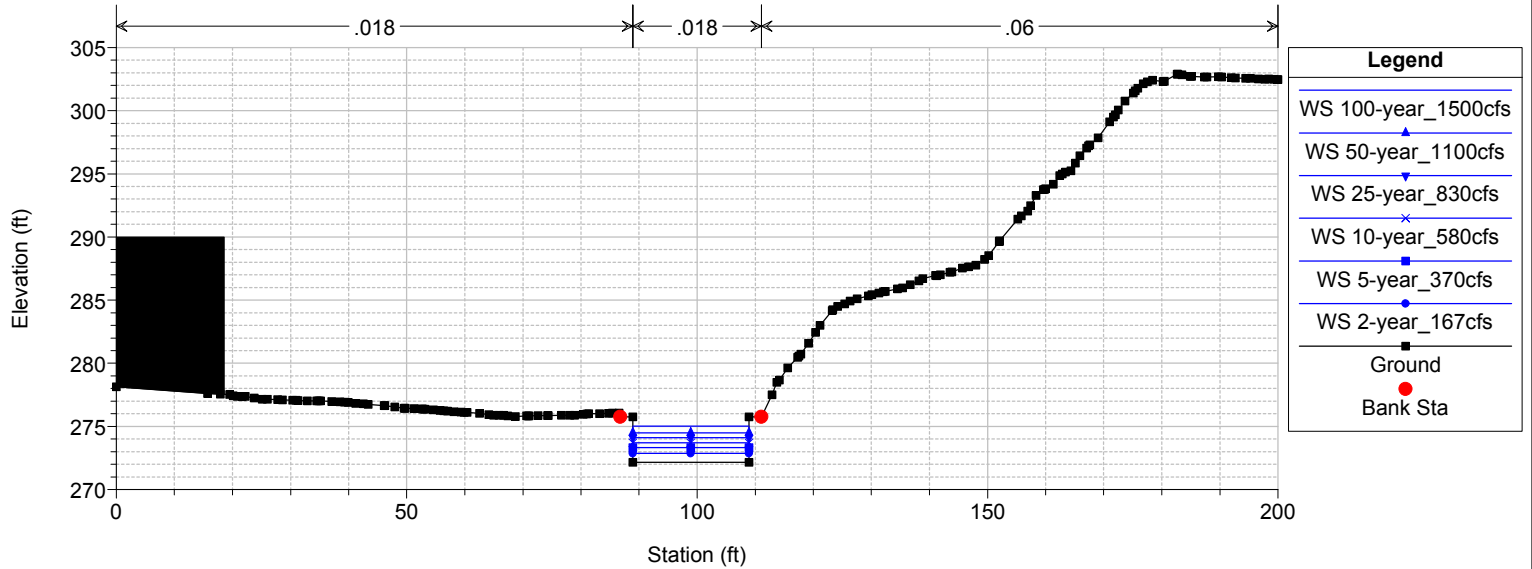
River = SChollasMap101 Reach = MainReach RS = 2306.424 Boundary between Lemon Grove and City. Rectangular channel w/ m



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

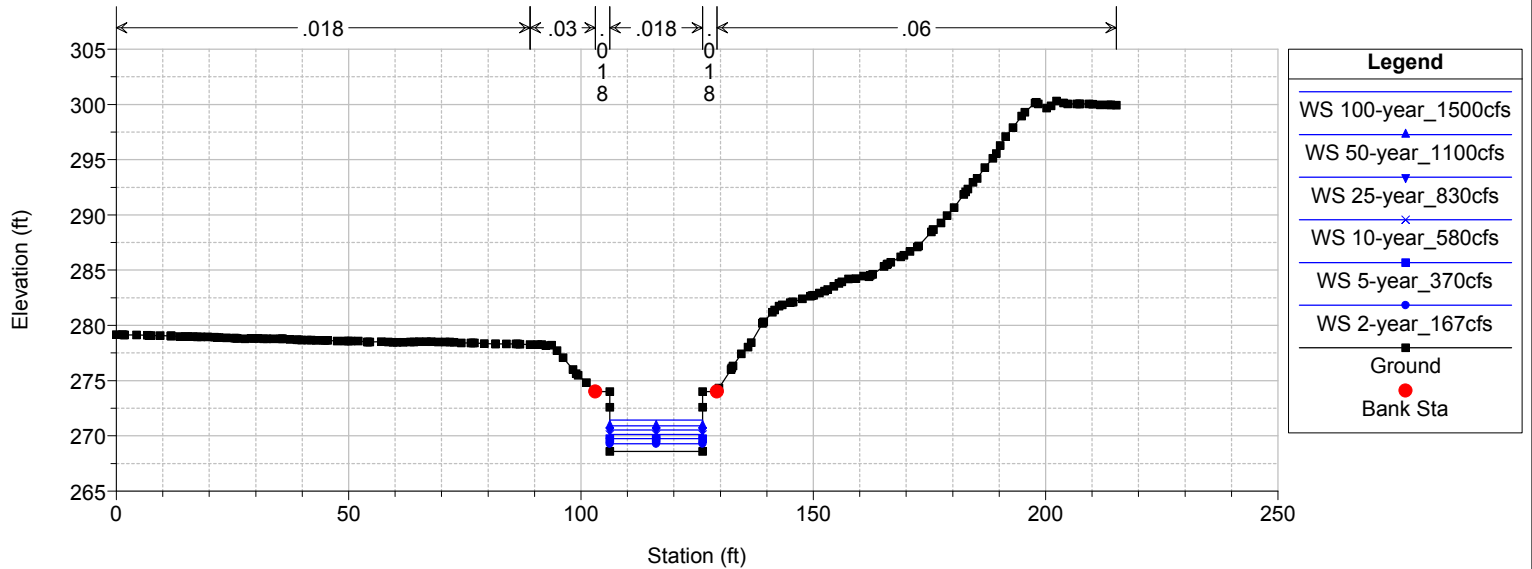
River = SChollasMap101 Reach = MainReach RS = 2200



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 2098.664 Channel transitions to a trapezoidal concrete channel. Bank sta

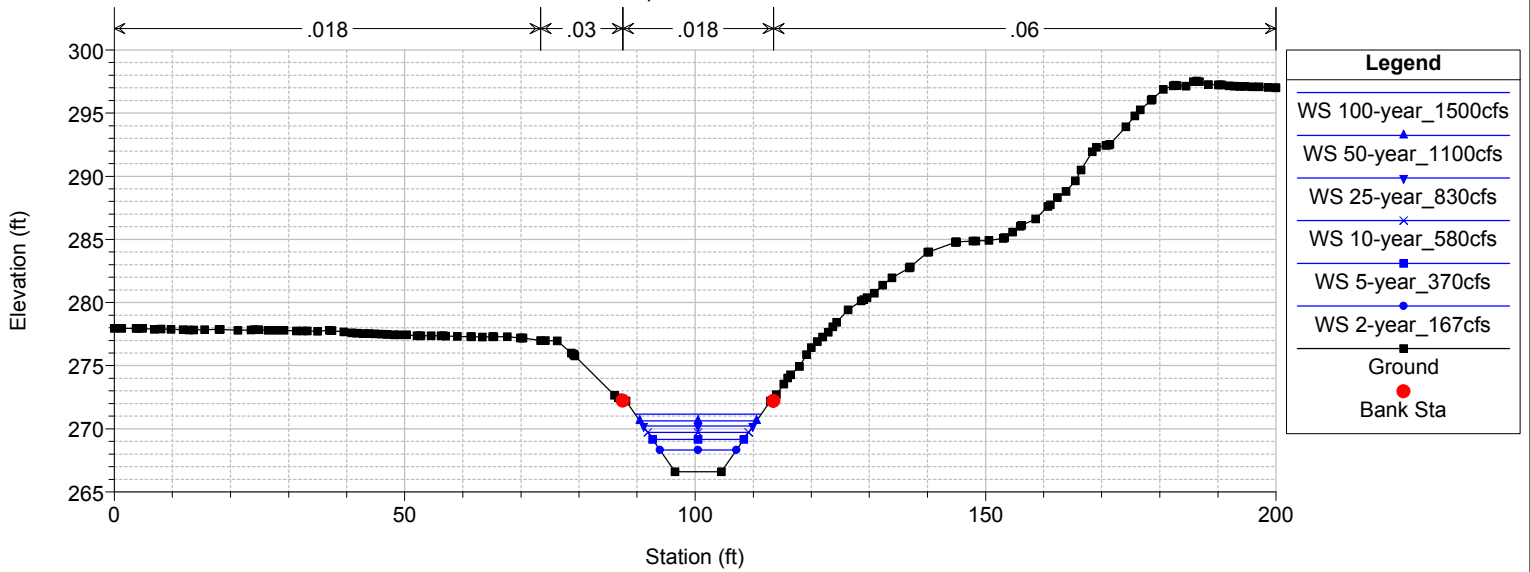




SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

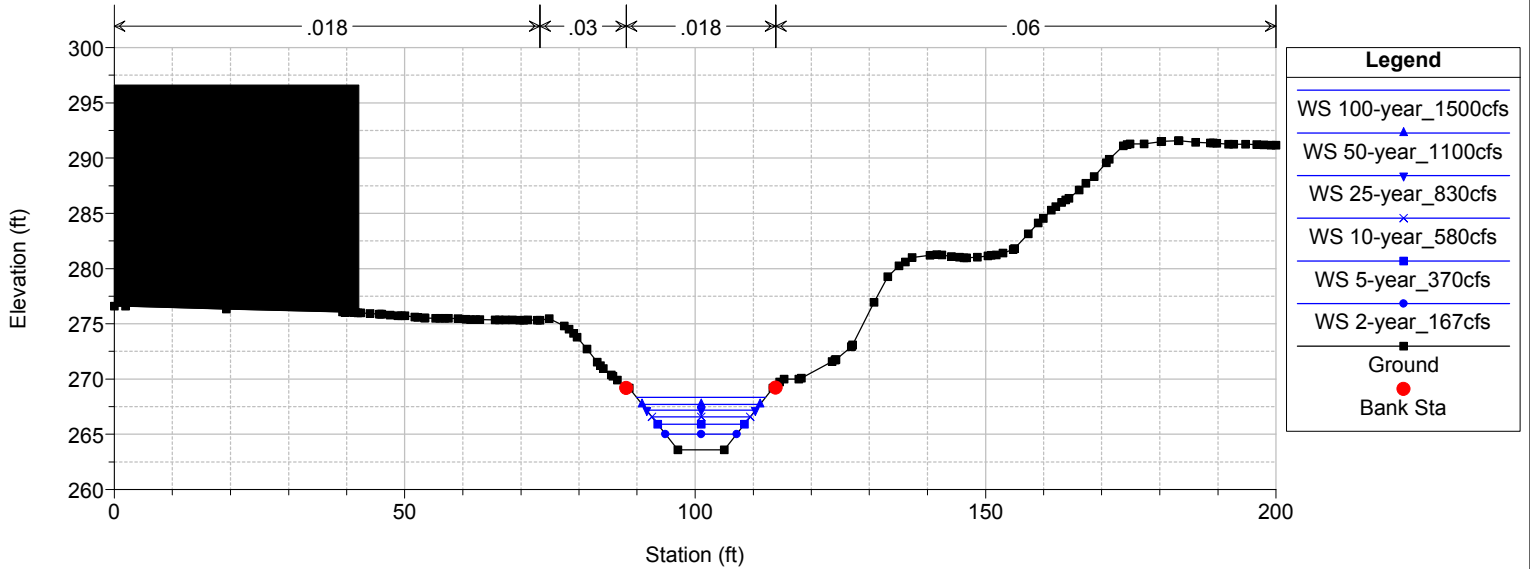
River = SChollasMap101 Reach = MainReach RS = 2000



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

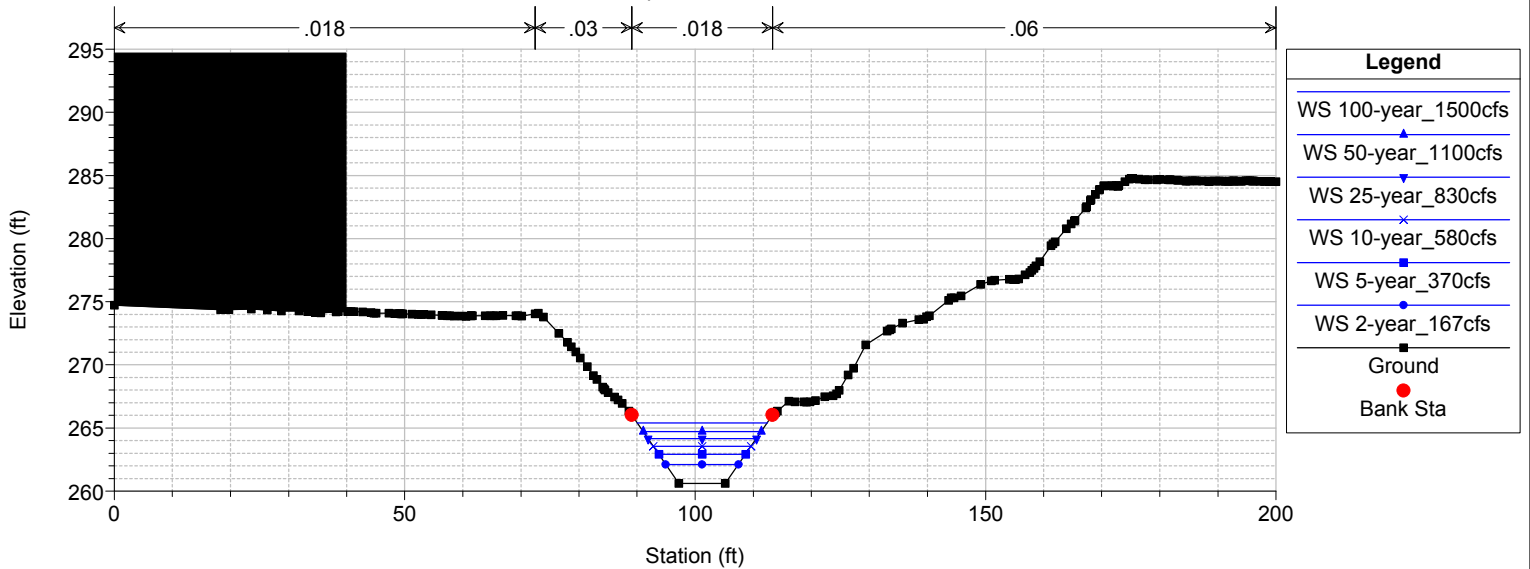
River = SChollasMap101 Reach = MainReach RS = 1800



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

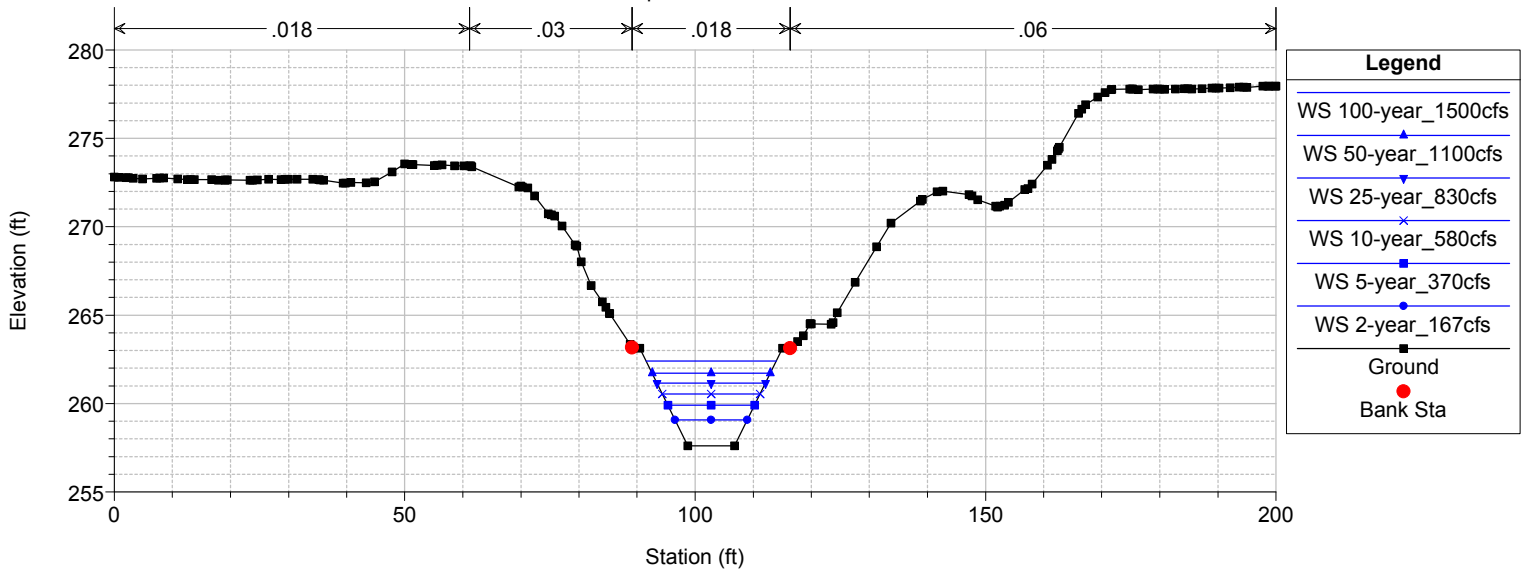
River = SChollasMap101 Reach = MainReach RS = 1600



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

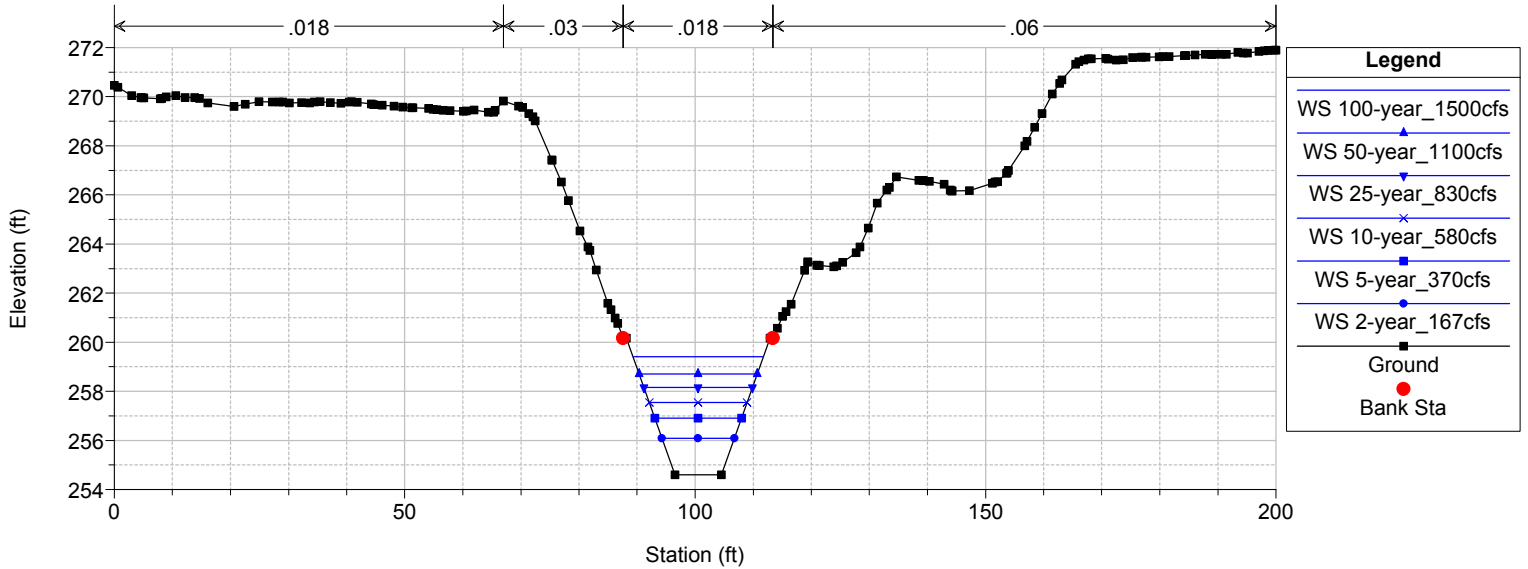
River = SChollasMap101 Reach = MainReach RS = 1400



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

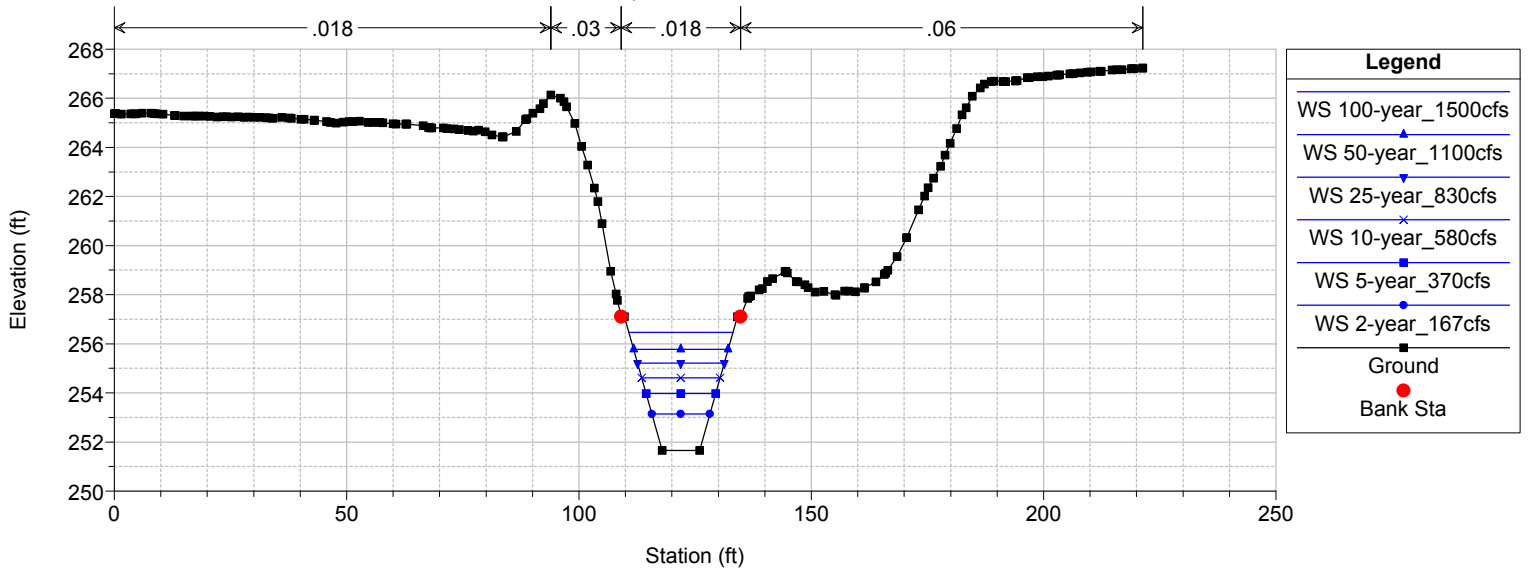
River = SChollasMap101 Reach = MainReach RS = 1200



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

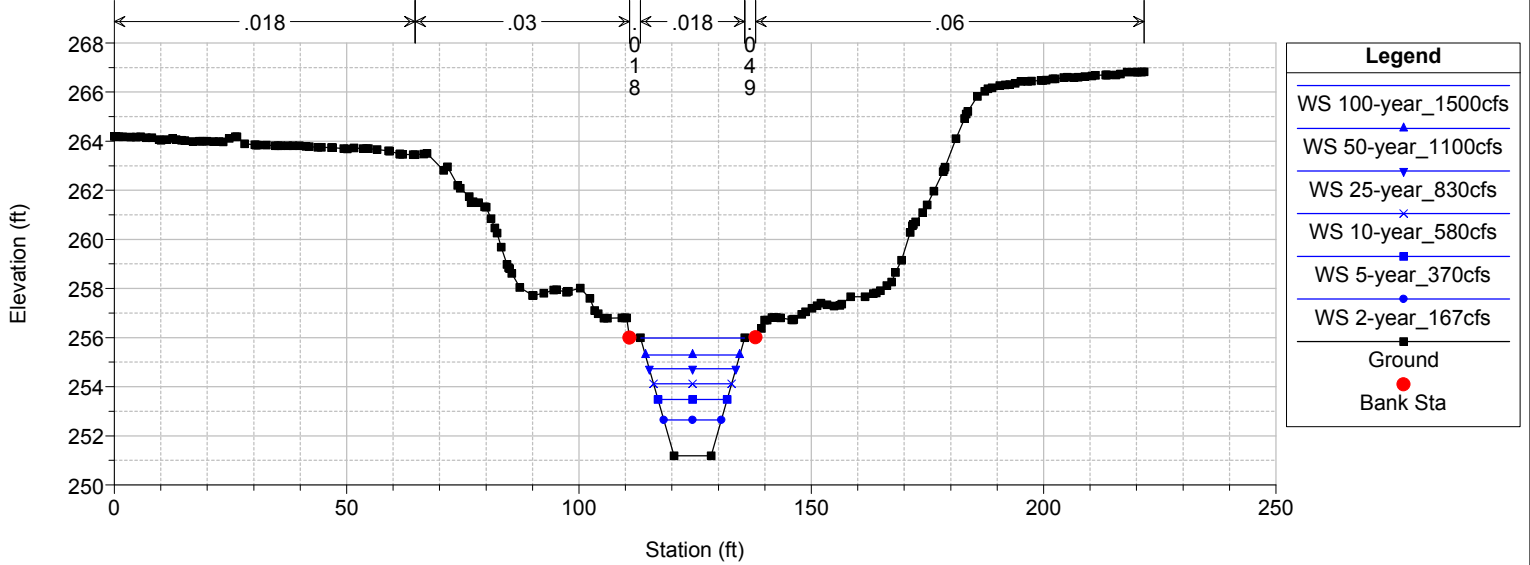
River = SChollasMap101 Reach = MainReach RS = 1004.18



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

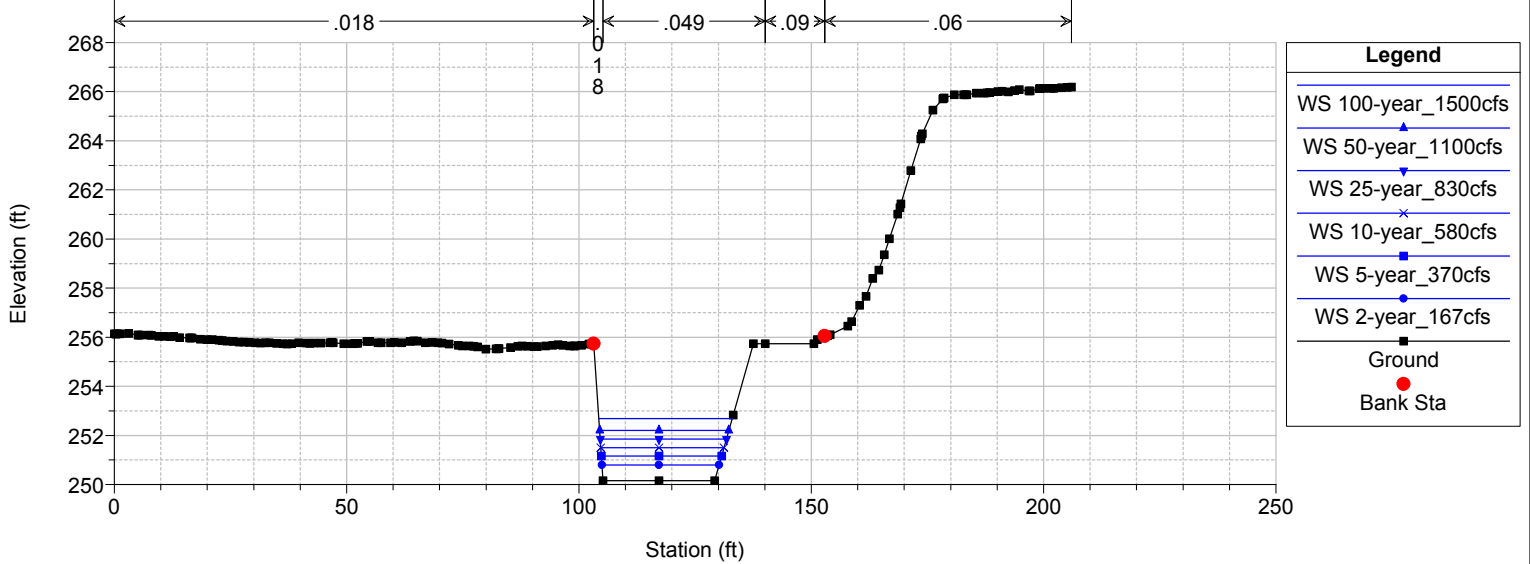
River = SChollasMap101 Reach = MainReach RS = 976.6697 Grouted 2ton riprap on right bank of concrete channel



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

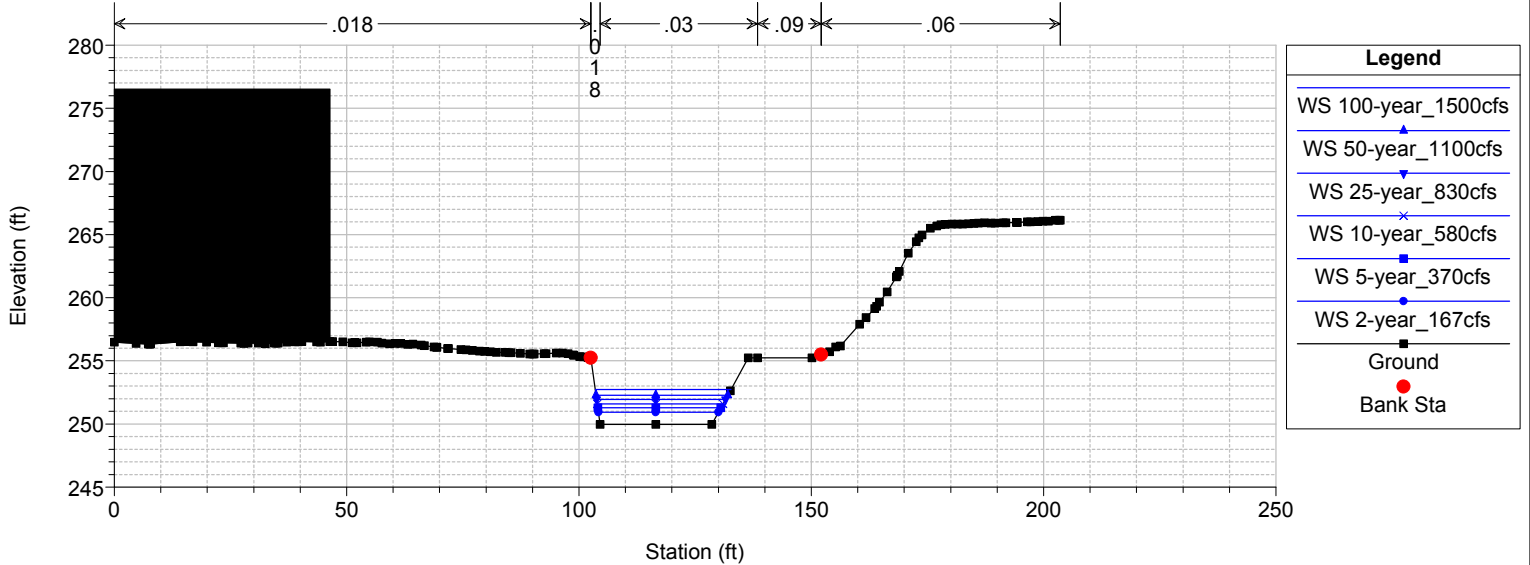
River = SChollasMap101 Reach = MainReach RS = 926.7529 transition to earthen channel. 2ton riprap



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

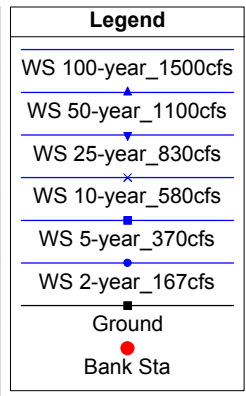
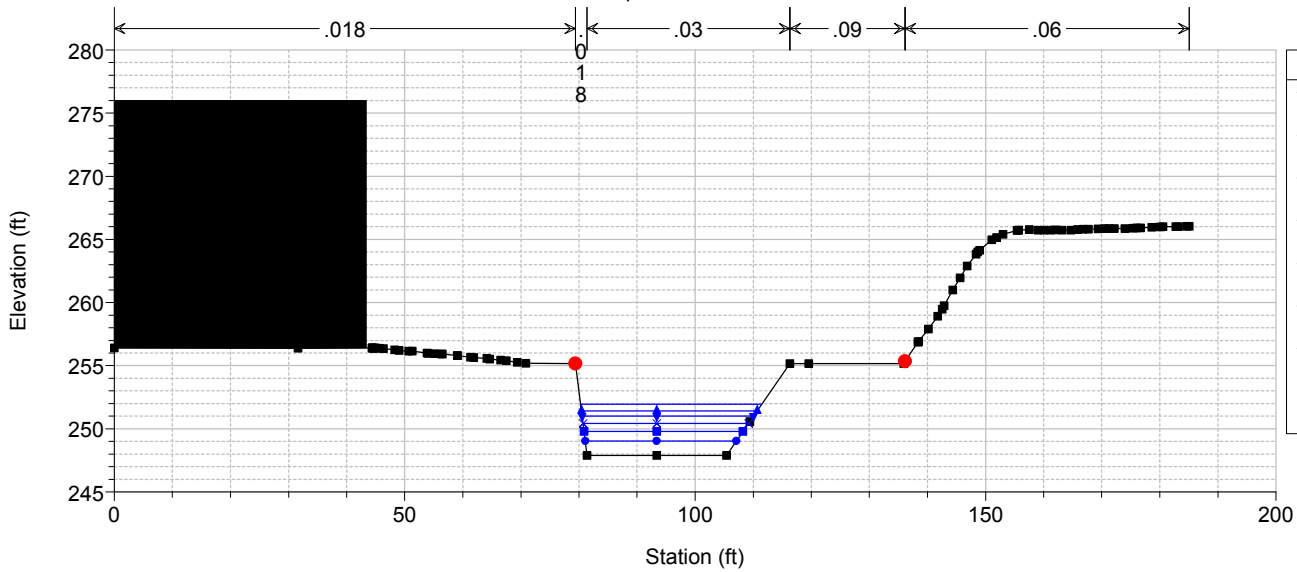
River = SChollasMap101 Reach = MainReach RS = 915.6229 completely earthen channel



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

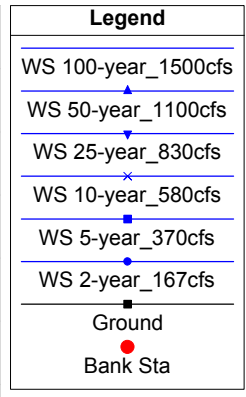
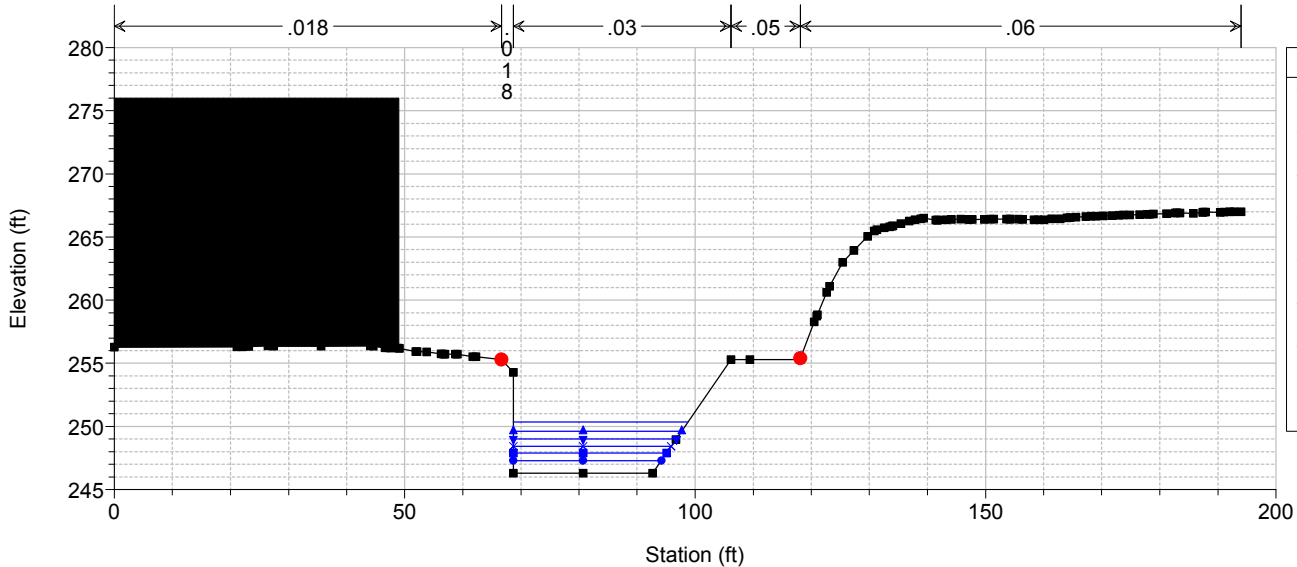
River = SChollasMap101 Reach = MainReach RS = 781.5157



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

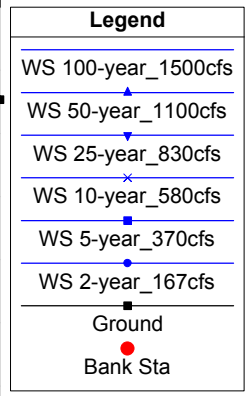
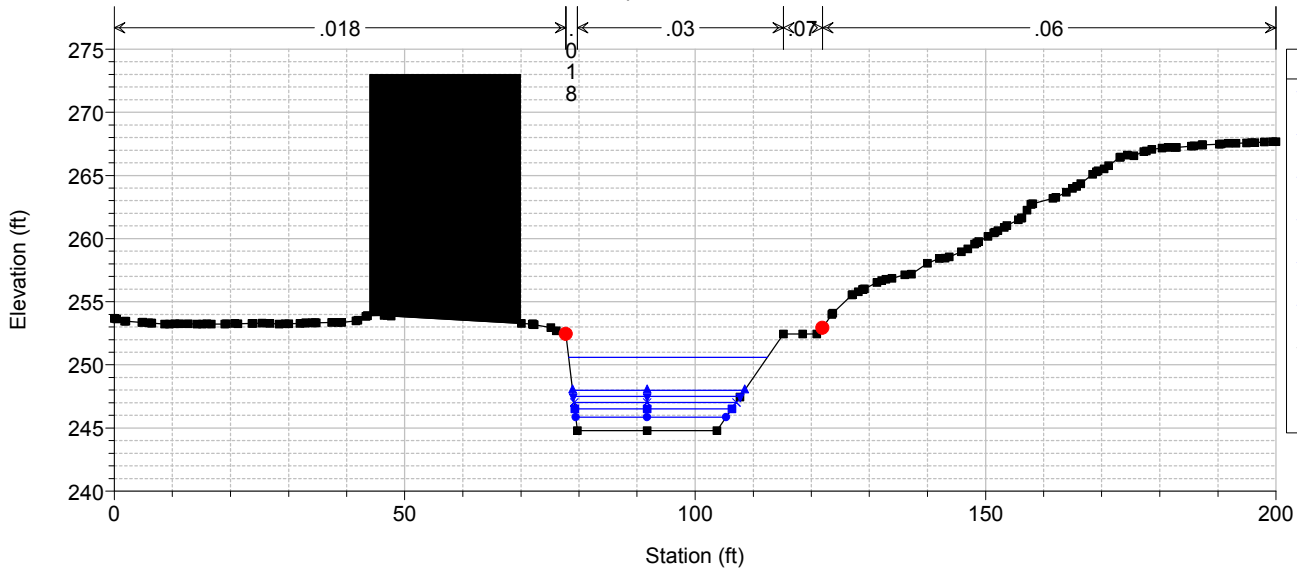
River = SChollasMap101 Reach = MainReach RS = 684.4379



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

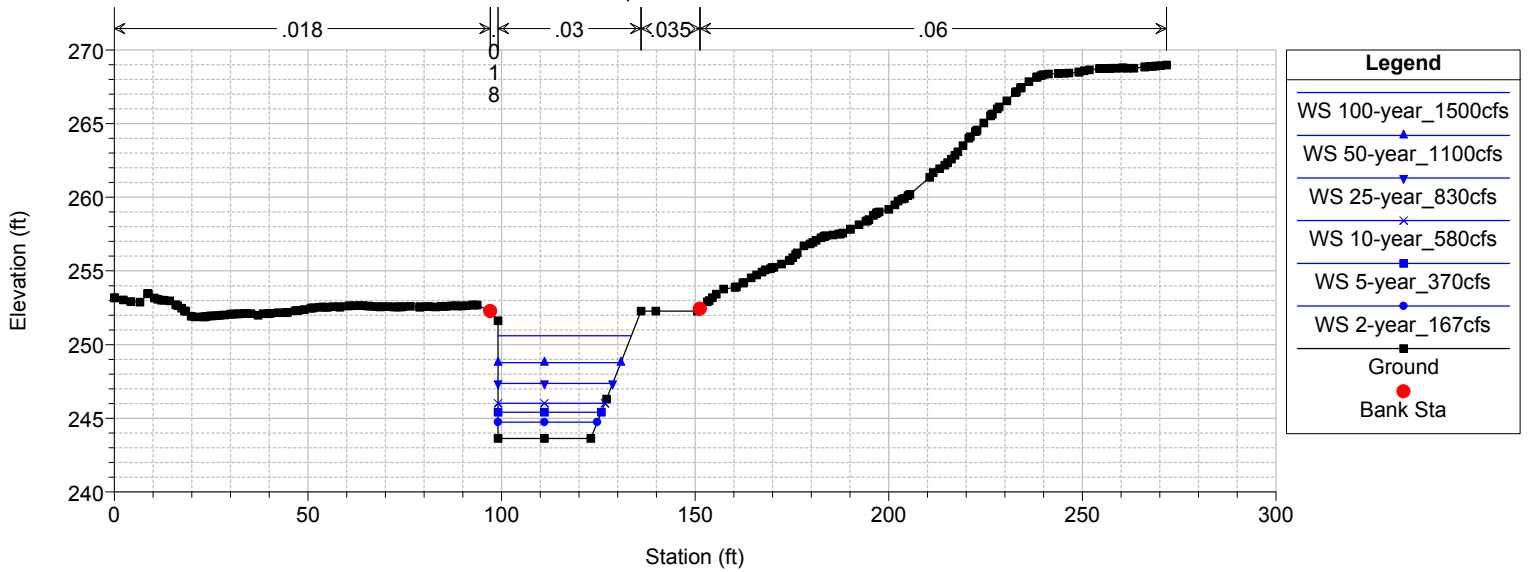
River = SChollasMap101 Reach = MainReach RS = 599.9999



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

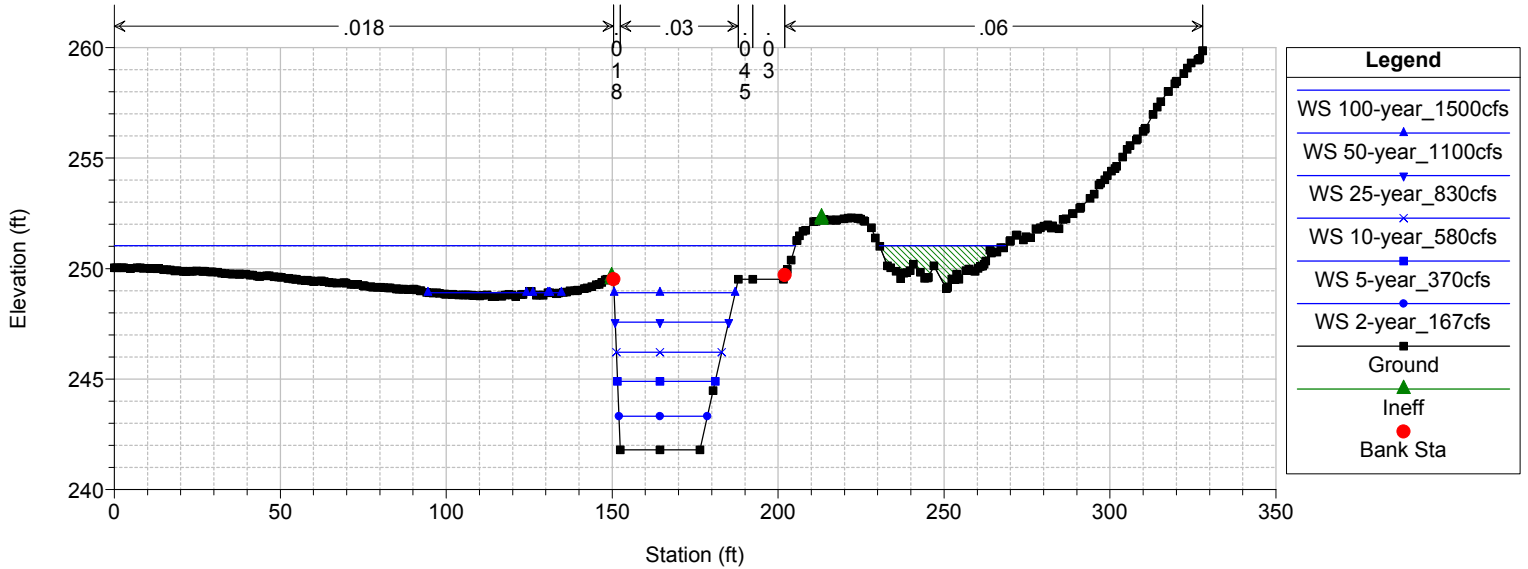
River = SChollasMap101 Reach = MainReach RS = 524.6492



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

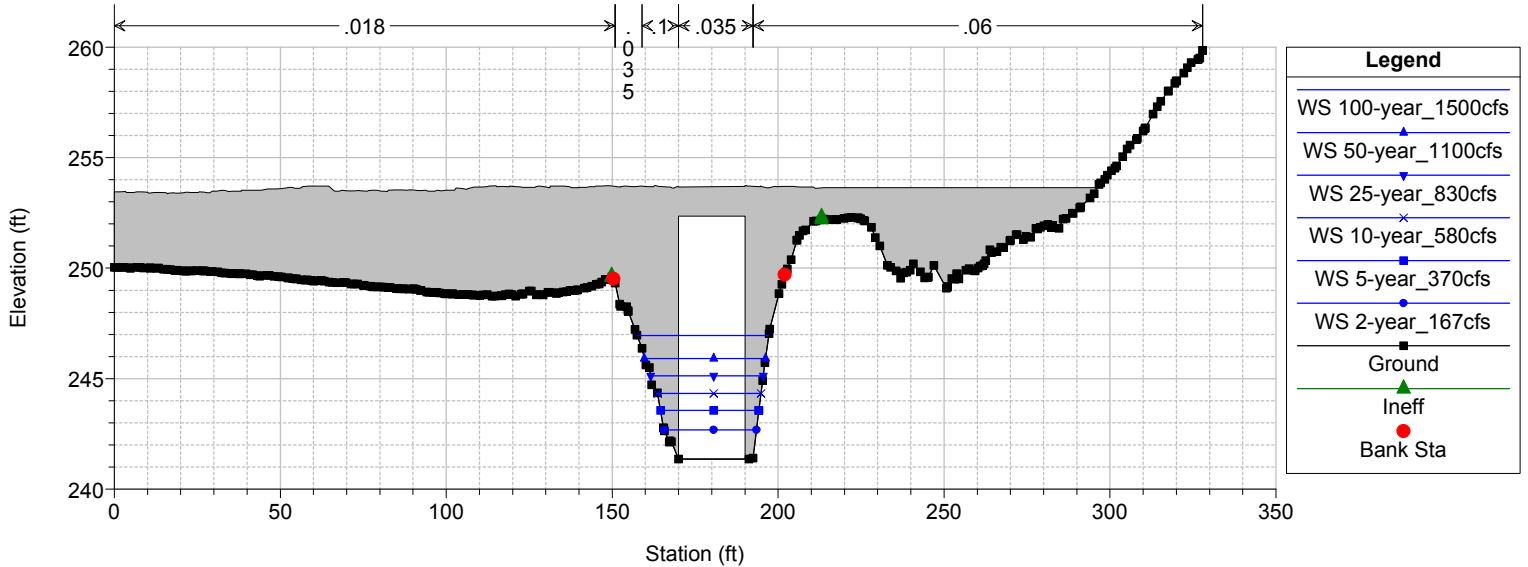
River = SChollasMap101 Reach = MainReach RS = 417.4621 Cross Section upstream of Bridge at Federal Blvd



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd

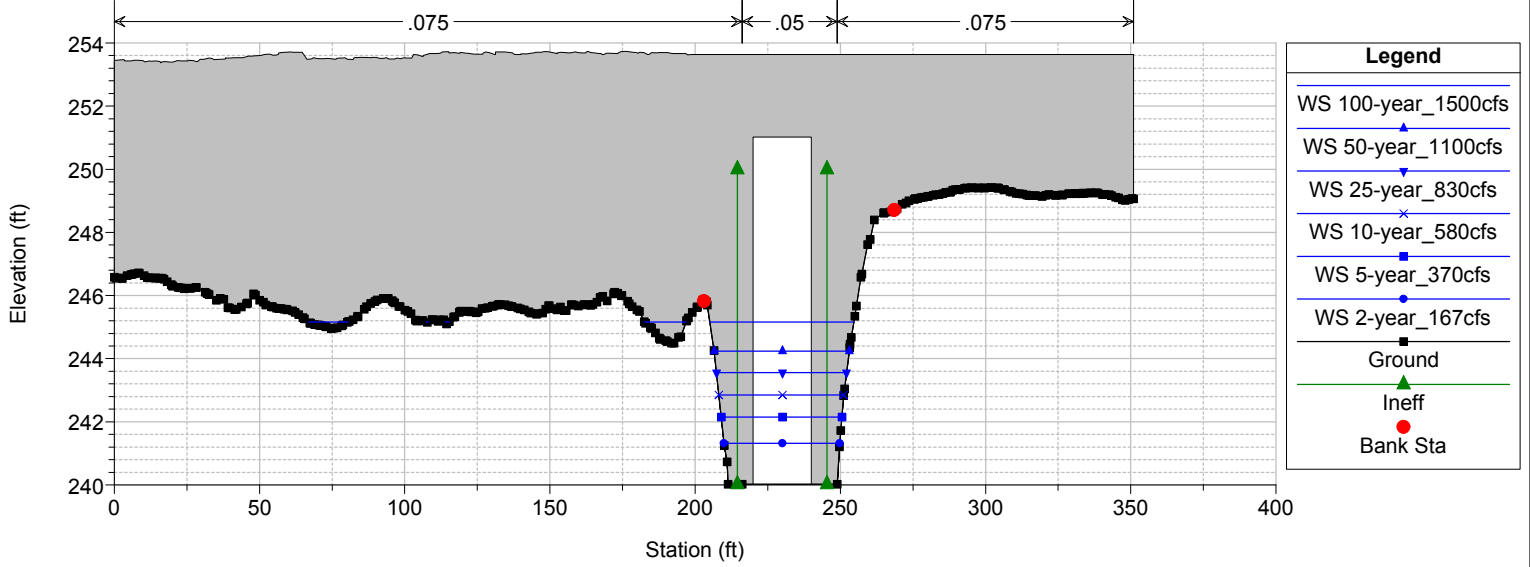




SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

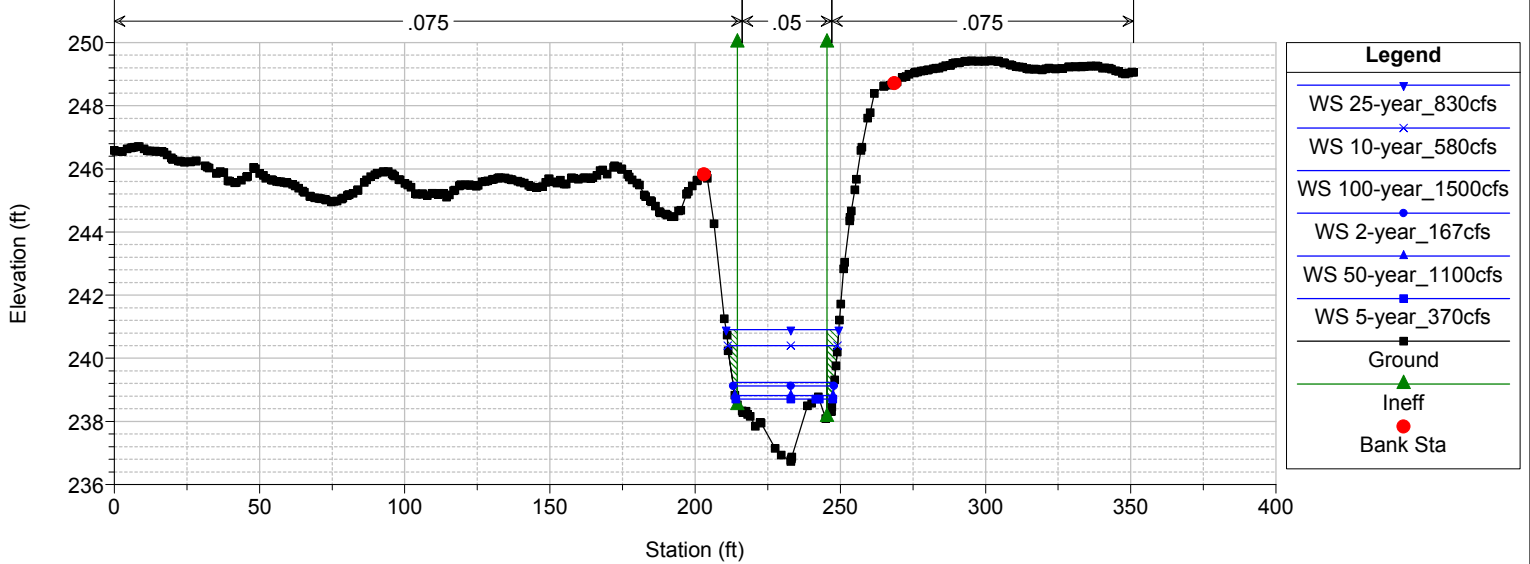
River = SChollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

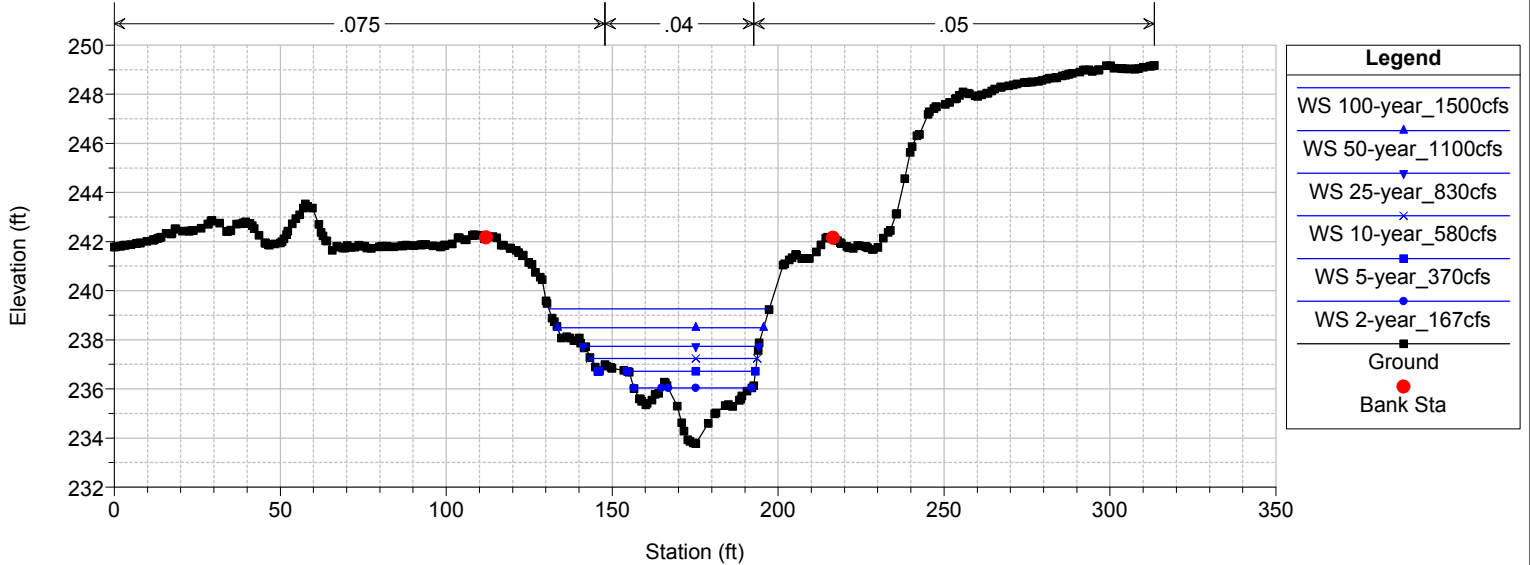
River = SChollasMap101 Reach = MainReach RS = 292.8245



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

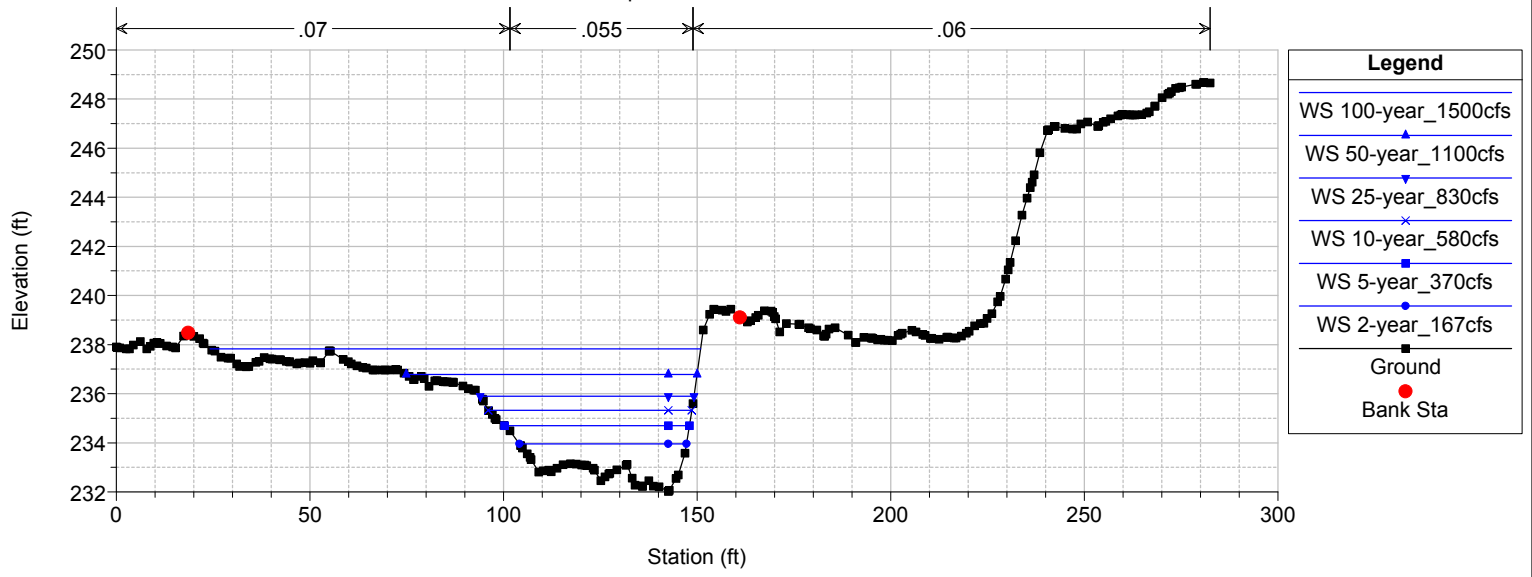
River = SChollasMap101 Reach = MainReach RS = 147.2868



SChollas\_Map101 Plan: MaintainedCondition(Veg+Sed) 1/23/2017

Geom: MaintainedCondition(Sediment+Veg)\_Geo Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 28.06381



Schollas\_Map101.rep

HEC-RAS Version 4.1.0 Jan 2010  
 U.S. Army Corps of Engineers  
 Hydrologic Engineering Center  
 609 Second Street  
 Davis, California

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X   X   XXXXXX   XXXX   XXXX   XX   XXXX
X   X   X       X   X   X   X   X   X   X
X   X   X       X   X   X   X   X   X   X
XXXXXXXX XXXX   X   XXX XXXX XXXXXX XXXX
X   X   X       X   X   X   X   X   X   X
X   X   X       X   X   X   X   X   X   X
X   X   XXXXXX   XXXX   X   X   X   X   XXXXX
    
```

PROJECT DATA  
 Project Title: Schollas\_Map101  
 Project File : Schollas\_Map101.prj  
 Run Date and Time: 1/23/2017 1:25:10 PM

Project in English units

PLAN DATA

Plan Title: MaintainedCondition(Veg+Sed)  
 Plan File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.p04

Geometry Title: MaintainedCondition(Sediment+Veg)\_Geo  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g05

Flow Title : SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.f01

Plan Summary Information:  
 Number of: Cross Sections = 20 Multiple Openings = 0  
 Culverts = 1 Inline Structures = 0  
 Bridges = 0 Lateral Structures = 0

Computational Information  
 water surface calculation tolerance = 0.01  
 critical depth calculation tolerance = 0.01  
 Maximum number of iterations = 20  
 Maximum difference tolerance = 0.3  
 Flow tolerance factor = 0.001

Computation Options  
 Critical depth computed only where necessary  
 Conveyance Calculation Method: At breaks in n values only  
 Friction Slope Method: Average Conveyance  
 Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.f01

Flow Data (cfs)

River	Reach	RS	100-year_1500cfs	50-year_1100cfs	25-year_830cfs
-------	-------	----	------------------	-----------------	----------------

Schollas\_Map101.rep

10-year_580cfs	5-year_370cfs	2-year_167cfs			
SchollasMap101	MainReach	2306.424	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2200	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2098.664	1500	1100	830
580	370	167			
SchollasMap101	MainReach	2000	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1800	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1600	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1400	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1200	1500	1100	830
580	370	167			
SchollasMap101	MainReach	1004.18	1500	1100	830
580	370	167			
SchollasMap101	MainReach	976.6697	1500	1100	830
580	370	167			
SchollasMap101	MainReach	926.7529	1500	1100	830
580	370	167			
SchollasMap101	MainReach	915.6229	1500	1100	830
580	370	167			
SchollasMap101	MainReach	781.5157	1500	1100	830
580	370	167			
SchollasMap101	MainReach	684.4379	1500	1100	830
580	370	167			
SchollasMap101	MainReach	599.9999	1500	1100	830
580	370	167			
SchollasMap101	MainReach	524.6492	1500	1100	830
580	370	167			
SchollasMap101	MainReach	417.4621	1500	1100	830
580	370	167			

Boundary Conditions

River	Reach	Profile	Upstream	
SchollasMap101	MainReach	100-year_1500cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	50-year_1100cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	25-year_830cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	10-year_580cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	5-year_370cfs	Normal S = 0.035	Normal S =
0.014				
SchollasMap101	MainReach	2-year_167cfs	Normal S = 0.035	Normal S =
0.014				

GEOMETRY DATA

Geometry Title: MaintainedCondition(Sediment+Veg)\_Geo  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g05

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach RS: 2306.424

Schollas\_Map101.rep

INPUT
Description: Boundary between Lemon Grove and City. Rectangular channel w/ minimal vegetation on bottom of channel

Table with 10 columns: Station, Elevation, Data, num=, Sta, Elev, Sta, Elev, Sta, Elev. Contains 181 data points for a rectangular channel.

Manning's n Values table with 5 columns: Sta, n Val, Sta, n Val, Sta, n Val. Values range from 0 to 117.76.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. table with 7 columns.

Ineffective Flow table with 5 columns: Sta L, Sta R, Elev, Permanent, F. Values range from 0 to 279.84.

CROSS SECTION

RIVER: SchollasMap101
REACH: MainReach RS: 2200

INPUT Description: Station Elevation Data num= 167. Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Contains 167 data points.

Schollas\_Map101.rep

Table with 10 columns: Station, Elevation, Data, num=, Sta, Elev, Sta, Elev, Sta, Elev. Contains 181 data points for a rectangular channel.

Manning's n Values table with 5 columns: Sta, n Val, Sta, n Val, Sta, n Val. Values range from 0 to 111.05.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. table with 7 columns.

Blocked Obstructions table with 3 columns: Sta L, Sta R, Elev. Values range from 0 to 290.

CROSS SECTION

RIVER: SchollasMap101
REACH: MainReach RS: 2098.664

INPUT Description: Channel transitions to a trapezoidal concrete channel. Bank stations are at the top of the concrete channel.

Table with 10 columns: Station, Elevation, Data, num=, Sta, Elev, Sta, Elev, Sta, Elev. Contains 178 data points for a trapezoidal channel.

Schollas\_Map101.rep

Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Data rows include values like 162, 284.41, 162.28, 284.52, etc.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values include 126.17, .018, 89.06, .03, 103.09, .018, 106.17, .018, 106.17, .018.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Values include 103.09, 129.24, 101.57, 98.66, 97.84, .1, .3.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 2000

INPUT Description: Station Elevation Data num= 151. Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Data rows include values like 0, 277.96, 1.27, 277.95, etc.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values include 0, .018, 73.37, .03, 87.54, .018, 113.5, .06.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Values include 87.54, 113.5, 201.58, 200, 197.43, .1, .3.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 1800

Schollas\_Map101.rep

INPUT Description: Station Elevation Data num= 122. Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Data rows include values like 0, 276.61, 1.94, 276.59, etc.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values include 0, .018, 73.29, .03, 88.18, .018, 113.86, .06.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Values include 88.18, 113.86, 198.88, 200, 200.59, .1, .3.

Blocked Obstructions table with 3 columns: Sta L, Sta R, Elev. Values include 0, 42.08, 296.61.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 1600

INPUT Description: Station Elevation Data num= 184. Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Data rows include values like 0, 274.72, 18.29, 274.37, etc.



Schollas\_Map101.rep

158.32	277.65	158.69	277.84	159.34	278.17	161.28	279.45	161.61	279.6
161.99	279.74	163.93	280.79	164.76	281.15	165.27	281.39	165.38	281.44
167.28	282.44	167.4	282.52	168.07	283.02	168.17	283.09	168.94	283.49
169.59	283.85	169.66	283.89	170.38	284.17	170.43	284.18	171.71	284.2
171.91	284.16	172.48	284.2	172.76	284.14	172.96	284.21	173.97	284.52
174.76	284.72	175.07	284.77	175.32	284.75	176.4	284.72	177.44	284.67
178.01	284.66	179.49	284.67	179.53	284.67	180.01	284.69	181.5	284.67
181.72	284.65	181.84	284.67	182.97	284.63	183.22	284.61	184.45	284.56
184.57	284.56	185.14	284.57	185.64	284.59	186.05	284.58	186.4	284.57
187.33	284.55	188.33	284.55	188.46	284.53	188.5	284.52	189.29	284.56
189.63	284.56	190.23	284.57	190.77	284.56	191.27	284.53	191.68	284.54
191.95	284.56	192.52	284.56	192.66	284.56	192.7	284.56	192.77	284.55
193.7	284.55	194.07	284.54	194.81	284.58	195.15	284.58	195.54	284.58
195.92	284.56	196.05	284.56	196.23	284.56	197.27	284.54	197.96	284.54
198.14	284.54	198.84	284.51	199.06	284.53	200	284.5		

Manning's n Values	num=	4
Sta n Val	Sta n Val	Sta n Val
0 .018	72.46	89.1
		113.36
		.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
89.1	113.36	199.8	200	200.08	.1	.1	.3

Blocked Obstructions	num=	1
Sta L	Sta R	Elev
0	39.88	294.7

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 1400

INPUT											
Description:											
Station Elevation Data num= 137											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	272.81	.84	272.79	2.03	272.77	2.4	272.78	3.24	272.74		
4.87	272.71	7.27	272.74	7.82	272.75	8.49	272.75	10.92	272.7		
12.55	272.67	13.12	272.67	13.8	272.67	16.76	272.66	17.9	272.63		
19.05	272.64	19.14	272.65	19.44	272.65	23.35	272.63	23.82	272.63		
24.61	272.65	26.56	272.68	28.72	272.67	29.37	272.69	30	272.69		
31.47	272.69	34.17	272.69	35.21	272.66	35.43	272.65	36.05	272.63		
39.41	272.47	39.77	272.47	40.71	272.5	43.36	272.48	44.8	272.54		
47.82	273.11	49.99	273.56	51.14	273.52	51.2	273.52	51.39	273.52		
55.12	273.47	55.6	273.48	56.41	273.5	58.56	273.45	60.19	273.45		
61.15	273.45	61.35	273.44	61.55	273.39	69.66	272.26	69.97	272.3		
70.27	272.25	71.16	272.19	72.35	271.75	74.72	270.74	75.27	270.68		
75.84	270.6	77.07	270.05	79.33	268.98	79.63	268.9	80.4	268.02		
82.08	266.67	84.02	265.75	84.62	265.45	85.26	265.1	85.29	265.08		
88.83	263.34	88.99	263.23	89.13	263.16	89.18	263.12	90.48	263.12		
98.76	257.6	106.76	257.6	115.04	263.12	116.39	263.12	117.61	263.5		
118.63	263.83	119.76	264.51	119.81	264.52	119.99	264.51	123.41	264.48		
123.75	264.58	124.45	265.13	127.56	266.85	131.25	268.86	133.73	270.21		
138.8	271.45	139.12	271.55	141.65	271.98	142.65	272.01	147.14	271.81		
147.67	271.75	148.66	271.53	151.73	271.16	152.06	271.12	152.45	271.16		
153.27	271.22	153.96	271.38	156.76	272.1	157.29	272.17	158.01	272.41		
160.66	273.48	161.41	273.8	162.35	274.29	162.56	274.4	162.71	274.49		
165.99	276.41	166.55	276.65	167.21	276.91	169.29	277.33	170.56	277.59		
171.6	277.76	171.72	277.78	174.83	277.8	175.15	277.8	175.38	277.79		
176.32	277.75	178.87	277.79	179.64	277.8	179.99	277.8	180.85	277.77		
182.72	277.79	184.23	277.81	184.82	277.81	185.49	277.8	187.28	277.81		
188.99	277.85	189.66	277.85	190.18	277.84	192.1	277.87	193.64	277.9		
194.42	277.9	194.96	277.88	197.72	277.95	198.58	277.96	198.79	277.95		
199.81	277.95	200	277.95								

Manning's n Values	num=	4
Sta n Val	Sta n Val	Sta n Val
0 .018	61.15	89.13
		116.39
		.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
89.13	116.39	199.83	200	200.13	.1	.1	.3

CROSS SECTION

Schollas\_Map101.rep

RIVER: SchollasMap101  
REACH: MainReach RS: 1200

INPUT											
Description:											
Station Elevation Data num= 148											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	270.46	.59	270.38	3	270.04	4.56	269.97	4.77	269.95		
5.08	269.95	7.91	269.91	8.15	269.93	8.92	269.99	10.59	270.05		
12.16	269.97	13.81	269.97	14.67	269.93	16.11	269.75	20.6	269.6		
22.54	269.69	24.93	269.8	27.2	269.79	28.37	269.79	28.98	269.78		
30.14	269.74	32.21	269.76	33.63	269.75	34.46	269.78	35.41	269.8		
37.17	269.76	39.02	269.73	40.45	269.79	40.8	269.8	41.82	269.77		
44.26	269.7	44.63	269.68	46.1	269.65	48.13	269.61	49.64	269.58		
51.19	269.55	51.43	269.55	54.12	269.52	54.85	269.49	55.54	269.47		
56.64	269.45	57.82	269.43	60.11	269.41	60.61	269.42	61.93	269.46		
64.39	269.37	65.27	269.37	65.58	269.45	66.99	269.82	69.58	269.62		
70.3	269.56	71.36	269.32	72.09	269.19	72.45	269.01	75.32	267.43		
75.35	267.41	76.95	266.53	78.16	265.77	80.15	264.53	81.53	263.88		
81.85	263.73	82.98	262.94	84.96	261.58	85.49	261.32	86.2	260.98		
86.64	260.77	87.63	260.17	88.16	260.17	96.52	254.6	104.52	254.6		
112.88	260.17	113.41	260.17	114.16	260.57	115.06	261.05	115.62	261.25		
116.55	261.55	118.83	262.93	119.39	263.27	119.41	263.27	120.96	263.14		
121.05	263.14	121.36	263.13	123.85	263.07	124.37	263.11	125.4	263.25		
127.72	263.64	128.38	263.88	129.78	264.65	131.37	265.66	133	266.2		
133.47	266.31	134.67	266.74	138.51	266.59	139.21	266.99	139.36	266.58		
140.31	266.55	142.89	266.43	143.91	266.2	144.1	266.17	144.18	266.16		
144.26	266.16	147.24	266.18	151.2	266.48	151.62	266.52	152.07	266.54		
153.59	266.88	153.7	266.91	153.93	266.99	156.73	268	157.14	268.18		
158.45	268.75	159.71	269.31	161.49	270.11	162.73	270.54	163.16	270.69		
165.52	271.32	166.07	271.42	166.94	271.49	167.74	271.55	168.23	271.55		
170.69	271.56	171.07	271.53	172.49	271.49	173.72	271.5	175.34	271.59		
176.77	271.61	176.97	271.61	177.64	271.61	179.89	271.62	180.51	271.64		
181.6	271.64	184.25	271.68	184.41	271.68	184.47	271.68	186.06	271.7		
187.8	271.72	188.95	271.71	189.26	271.72	190.63	271.72	191.48	271.73		
193.46	271.8	194.39	271.78	195.11	271.78	197.1	271.84	197.96	271.87		
198.6	271.88	199.71	271.89	200	271.9						

Manning's n Values	num=	4
Sta n Val	Sta n Val	Sta n Val
0 .018	66.99	87.63
		113.41
		.06

Bank Sta: Left	Right	Lengths: Left	Channel	Right	Coeff	Contr.	Expan.
87.63	113.41	197.21	195.82	194.66	.1	.1	.3

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 1004.18

INPUT											
Description:											
Station Elevation Data num= 172											
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	265.38	.33	265.38	1.53	265.36	3.49	265.37	4.06	265.37		
4.68	265.37	6	265.39	7.96	265.39	8.57	265.38	9.13	265.37		
10.47	265.35	12.95	265.3	13.04	265.3	13.1	265.3	14.94	265.27		
16.59	265.28	17.45	265.28	18.27	265.28	19.43	265.27	20.55	265.26		
22.11	265.24	23.33	265.25	24.09	265.25	25.28	265.24	26.7	265.25		
27.87	265.23	28.77	265.24	29.96	265.23	31.42	265.23	32.72	265.21		
33.43	265.2	34.14	265.19	36.03	265.23	37.65	265.2	38.11	265.19		
40.16	265.15	40.81	265.14	43	265.11	43.03	265.11	43.07	265.11		
45.63	265.05	46.47	265.02	47.74	264.99	49.31	265.03	50.54	265.06		
51.35	265.05	52.78	265.07	54.61	265.02	55.56	265.01	57.1	265.01		
57.75	265	59.97	264.96	60.61	264.95	62.74	264.95	62.81	264.95		
62.95	264.95	66.45	264.88	67.62	264.81	67.95	264.8	68.32	264.8		
70.82	264.79	71.58	264.77	73.1	264.75	74.25	264.73	76.09	264.69		
77.28	264.66	78.4	264.7	79.79	264.64	81.24	264.51	83.45	264.43		
83.6	264.43	83.67	264.43	86.51	264.65	88.47	265.13	88.8</			

Schollas_Map101.rep										
96.76	265.86	97.31	265.66	99.11	264.98	100.57	264.04	101.84	263.28	
103.32	262.34	104.05	261.8	104.98	260.89	106.8	258.96	107.96	258.03	
108.29	257.77	109.07	257.1	109.77	257.1	117.93	251.66	125.93	251.66	
134.09	257.1	134.78	257.1	136.31	257.84	136.49	257.92	136.89	257.95	
138.79	258.2	139.48	258.25	140.58	258.54	141.7	258.66	144.35	258.94	
144.52	258.95	144.82	258.89	146.74	258.54	147.1	258.52	148.62	258.41	
149.28	258.29	150.86	258.11	152.72	258.13	155.09	258	155.33	257.98	
157.13	258.15	158.09	258.14	159.49	258.12	161.41	258.28	161.43	258.28	
161.45	258.28	163.91	258.52	165.73	258.83	166	258.88	166.45	259	
168.44	259.56	170.54	260.32	170.55	260.32	173.09	261.46	174.38	262.02	
175.17	262.36	176.29	262.75	177.83	263.23	178.82	263.69	179.92	264.17	
181.25	264.77	182.45	265.33	183.31	265.62	184.63	266.08	186.39	266.42	
187.24	266.58	188.72	266.68	189.32	266.7	191.31	266.68	191.82	266.68	
193.95	266.71	193.99	266.71	194.29	266.72	196.5	266.84	196.93	266.84	
198.64	266.88	199.76	266.88	201.05	266.91	202.8	266.95	203.19	266.95	
203.45	266.96	205.63	267	206.31	267.01	207.85	267.04	209.43	267.06	
210.22	267.08	212.06	267.1	212.26	267.1	212.37	267.1	214.73	267.15	
215.69	267.17	216.86	267.16	218.89	267.2	219.2	267.21	219.36	267.21	
221.27	267.23	221.35	267.23							

Manning's n Values										
num=	4									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	
0	.018	93.94	.03	109.07	.018	134.78	.06			

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.										
	109.07	134.78		29.27	27.51	26.96		.1	.3	

CROSS SECTION  
RIVER: SchollasMap101  
REACH: MainReach RS: 976.6697

INPUT  
Description: Grouted 2ton riprap on right bank of concrete channel  
Station Elevation Data num= 180

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	264.19	.34	264.19	.97	264.18	1.8	264.18	3.54	264.17		
4.69	264.17	5.62	264.18	6.89	264.14	8.06	264.14	9.65	264.06		
10.07	264.04	11.31	264.07	12.52	264.11	13.26	264.07	14.48	264.04		
15.14	264.03	16.94	263.98	18.35	264	18.95	264	19.89	264		
21.36	263.98	22.54	263.98	23.41	263.97	24.73	264.11	26	264.18		
26.41	264.18	28.04	263.89	30.2	263.85	30.52	263.84	30.84	263.84		
32.69	263.84	34.67	263.82	35.23	263.81	35.83	263.81	37.3	263.81		
38.45	263.81	39.84	263.81	41.22	263.79	41.97	263.78	43.8	263.75		
44.59	263.75	46.77	263.74	46.86	263.74	46.95	263.74	49.4	263.7		
50.11	263.69	51.56	263.72	53.57	263.7	54.28	263.7	54.7	263.7		
56.57	263.66	59.02	263.61	59.25	263.6	61.46	263.48	61.53	263.48		
62.02	263.47	64.31	263.45	64.72	263.45	66.61	263.48	67.31	263.5		
70.87	262.81	71.68	262.95	73.93	262.2	74.47	262.08	76.41	261.75		
76.82	261.5	77.22	261.54	78.39	261.5	79.7	261.33	80	261.32		
81.06	260.84	81.86	260.47	82.34	260.26	83.28	259.69	84.51	258.98		
84.84	258.85	85.08	258.81	85.56	258.61	87.24	258.04	90.07	257.72		
90.08	257.72	90.09	257.72	92.42	257.81	94.59	257.94	95.17	257.95		
97.28	257.84	97.55	257.89	97.74	257.88	100.3	258.02	102.37	257.6		
103.37	257.1	104.13	256.97	105.36	256.79	106.12	256.79	109.23	256.8		
109.88	256.81	110.28	256.81	110.9	256	113.24	256	120.45	251.19		
128.45	251.19	135.66	256	137.97	256	138	256.01	139.23	256.38		
139.96	256.71	140.48	256.71	141.55	256.82	142.04	256.82	142.52	256.82		
143.38	256.81	145.82	256.73	146.04	256.73	146.12	256.73	146.22	256.75		
147.96	256.95	148.79	257.05	150.13	257.19	151.25	257.3	152.06	257.4		
153.36	257.34	154.92	257.29	156.15	257.31	156.55	257.37	158.44	257.66		
161.55	257.66	163.36	257.79	163.98	257.82	164.85	257.91	166.26	258.12		
167.27	258.27	168.14	258.65	169.39	259.15	171.27	260.29	171.78	260.56		
171.95	260.61	172.44	260.72	173.94	261.09	174.94	261.4	176.4	261.96		
178.37	262.76	178.56	262.84	178.76	262.94	181.16	264.1	182.98	264.93		
183.32	265.1	183.7	265.21	185.76	265.82	187.31	266.03	188.01	266.13		
188.88	266.17	190.55	266.26	191.72	266.29	192.69	266.31	193.89	266.36		
195.13	266.43	196.58	266.44	197.35	266.45	199.46	266.47	199.8	266.47		
200.56	266.49	201.98	266.54	202.47	266.54	204.33	266.59	205.1	266.6		
206.52	266.59	207.47	266.61	208.91	266.63	210.43	266.66	211.19	266.68		
213.39	266.7	213.51	266.7	213.78	266.7	215.57	266.7	216.55	266.74		
217.98	266.81	219.67	266.81	220.21	266.82	221.07	266.82	221.6	266.83		

Schollas_Map101.rep										
Manning's n Values	num= 6									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	
0	.018	64.72	.03	110.9	.018	113.24	.018	135.66	.049	

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.										
	110.9	138		49.84	49.92	47.71		.1	.3	

CROSS SECTION  
RIVER: SchollasMap101  
REACH: MainReach RS: 926.7529

INPUT  
Description: transition to earthen channel. 2ton riprap  
Station Elevation Data num= 142

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	256.14	.35	256.13	.71	256.14	1.3	256.14	3.07	256.15		
5.09	256.09	5.15	256.09	5.67	256.09	7.54	256.09	7.54	256.09		
9.6	256.04	10.74	256.04	12	256.02	12.77	256.03	14.07	255.98		
16.16	255.97	16.4	255.97	16.71	255.97	18.53	255.92	19.93	255.91		
21.05	255.9	22.53	255.88	23.18	255.86	24.17	255.84	25.61	255.82		
26.84	255.8	27.87	255.8	29.09	255.79	30.28	255.78	31.47	255.76		
32.49	255.77	33.33	255.77	34.91	255.75	36.32	255.73	37.17	255.72		
38.13	255.74	39.65	255.77	41.33	255.76	42.07	255.75	42.92	255.76		
44.48	255.76	46.41	255.78	46.76	255.79	47.11	255.78	49.37	255.73		
51.25	255.74	51.82	255.75	52.37	255.75	54.37	255.82	54.98	255.82		
56.75	255.77	57.42	255.77	59.42	255.78	60.23	255.79	61.83	255.78		
63.66	255.83	64.48	255.85	65.24	255.84	66.92	255.78	68.46	255.79		
69.6	255.78	70.51	255.76	72.06	255.72	74.07	255.67	74.87	255.65		
76.37	255.64	77.36	255.63	78.15	255.6	79.99	255.51	82.15	255.53		
82.52	255.53	82.75	255.54	85.24	255.58	86.84	255.63	87.74	255.65		
88.91	255.63	90.36	255.62	91.04	255.62	92.84	255.65	94.33	255.67		
95.49	255.69	96.51	255.67	97.99	255.65	98.95	255.64	99.16	255.64		
100.55	255.67	102.12	255.72	102.68	255.72	103.19	255.74	105.19	255.76		
117.19	250.16	129.19	250.16	133.19	252.83	137.56	255.74	140.09	250.14		
150.58	255.74	151.32	255.91	152.88	256.05	153.49	256.06	154.04	256.1		
157.87	256.45	158.7	256.64	160.38	257.3	161.76	257.66	163.24	258.4		
164.55	258.73	165.7	259.36	166.81	260.01	168.61	261.02	169.05	261.27		
169.31	261.43	171.42	262.79	173.52	264.08	173.7	264.19	173.9	264.28		
176.15	265.25	178.28	265.7	178.43	265.73	178.56	265.74	180.78	265.88		
182.75	265.88	183.12	265.88	183.49	265.88	185.53	265.94	187.22	265.94		
187.79	265.96	188.41	265.97	190.13	266.01	191.06	266.02	192.44	265.99		
193.75	266.05	194.78	266.08	196.85	266.03	197.08	266.03	199.08	266.12		
199.33	266.14	200	266.14	201.62	266.13	202.21	266.14	203.89	266.16		
205.13	266.18	205.98	266.19								

Manning's n Values										
num=	5									
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	
0	.018	103.19	.018	105.19	.049	140.09	.09	152.88	.06	

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.										
	103.19	152.88		11.65	11.13	10.82		.1	.3	

CROSS SECTION  
RIVER: SchollasMap101  
REACH: MainReach RS: 915.6229

INPUT  
Description: completely earthen channel  
Station Elevation Data num= 126

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	256.48	4.69	256.38	7.32	256.33	7.64	256.32	7.78	256.33		
14.22	256.5	15.83	256.53	16.44	256.53	16.94	256.51	19.83			

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56.58	256.49	57.57	256.41	59.21	256.36	60.48	256.39	61.66	256.37
63.18	256.31	64.25	256.33	66.03	256.25	66.73	256.19	68.82	256.1
69.32	256.08	69.44	256.07	71.77	255.98	71.83	255.98	71.84	255.98
71.85	255.98	74.57	255.9	75.69	255.86	77.1	255.81	78.59	255.77
79.68	255.75	80.92	255.72	82.24	255.68	84.19	255.66	84.9	255.65
85.39	255.64	87.41	255.6	89.4	255.55	90	255.54	90.35	255.54
92.49	255.56	92.88	255.57	95.1	255.61	96.45	255.63	97.63	255.58
98.73	255.46	98.88	255.45	100.14	255.35	100.88	255.32	101.93	255.26
102.56	255.23	104.56	249.97	116.56	249.97	128.56	249.97	132.56	252.64
136.45	255.23	138.41	255.23	150.15	255.23	152.14	255.49	153.91	255.73
155.26	256.1	156.27	256.18	160.43	257.89	161.78	258.43	163.61	259.15
164.06	259.32	164.67	259.64	166.29	260.45	168.32	261.64	168.56	261.78
168.94	262.07	170.89	263.52	172.59	264.43	173.17	264.74	173.84	264.96
175.62	265.51	176.99	265.67	177.92	265.79	178.79	265.8	180.22	265.83
181.46	265.83	182.58	265.84	183.8	265.87	184.99	265.89	185.94	265.91
187.26	265.93	188.68	265.92	189.55	265.91	191.3	265.93	191.9	265.93
194.14	265.97	194.19	265.97	194.33	265.97	196.52	266	197.15	266.01
198.73	266.04	199.84	266.05	201.05	266.06	202.52	266.13	203.3	266.14
203.6	266.14								

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.018	102.56	.018	104.56	.03	138.41	.09	152.14	.06

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

102.56	152.14	131.26	134.11	137.05	.1	.3
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Blocked Obstructions num= 1

Sta L	Sta R	Elev
0	46.41	276.52

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 781.5157

INPUT Description: Station Elevation Data num= 82

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	256.4	31.6	256.39	44.38	256.4	44.41	256.4	44.46	256.39
44.53	256.4	44.64	256.39	44.88	256.41	45.63	256.37	46.33	256.35
48.24	256.25	49.03	256.21	50.67	256.15	51.32	256.14	53.83	255.99
54.07	255.97	55.09	255.95	56.29	255.93	56.49	255.92	59.05	255.8
59.07	255.8	61.32	255.66	61.87	255.64	64.14	255.57	64.64	255.53
66.49	255.44	67.48	255.38	69.37	255.26	70.88	255.2	79.4	255.16
81.4	247.9	93.4	247.9	105.4	247.9	109.4	250.57	116.29	255.16
119.54	255.16	135.94	255.16	136.13	255.33	138.37	256.85	138.43	256.89
138.47	256.91	140.19	257.89	141.74	258.92	142.51	259.46	142.86	259.76
144.34	260.99	145.63	261.95	146.85	262.89	148.36	263.82	148.66	264.02
148.97	264.14	151.08	264.97	151.89	265.14	153.03	265.39	155.43	265.71
155.62	265.74	155.69	265.74	157.5	265.78	159.03	265.74	160.06	265.73
161.21	265.74	162.04	265.75	163.13	265.74	164.67	265.74	165.86	265.78
166.75	265.81	167.7	265.82	169.36	265.84	170.53	265.86	171.29	265.87
172.17	265.86	173.97	265.87	175.37	265.88	176.01	265.91	176.71	265.92
178.63	265.96	180.09	265.99	180.57	266	182.74	266.01	183.22	266.01
184.65	266.03	185.05	266.04						

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.018	79.4	.018	81.4	.03	116.29	.09	136.13	.06

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

79.4	136.13	95.92	97.08	98.64	.1	.3
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Blocked Obstructions num= 1

Sta L	Sta R	Elev
0	43.38	276

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 684.4379

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INPUT Description: Station Elevation Data num= 103

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	256.28	21.12	256.3	22.09	256.3	23.15	256.32	26.42	256.37
27.42	256.36	35.59	256.35	44.06	256.38	44.59	256.36	46.63	256.24
46.96	256.22	47.57	256.21	48.88	256.19	49.07	256.18	51.9	255.92
52.11	255.92	53.77	255.89	56.26	255.75	56.71	255.73	56.92	255.73
58.72	255.73	59.08	255.71	61.71	255.52	62.26	255.51	66.69	255.28
68.69	254.28	68.69	246.28	80.69	246.28	92.69	246.28	96.69	248.95
106.19	255.28	109.44	255.28	118.05	255.28	118.13	255.39	120.5	258.27
120.94	258.73	121.02	258.85	122.67	260.6	123.13	261.1	125.39	262.99
127.35	263.92	129.72	265.05	130.86	265.49	131.3	265.58	132.54	265.74
133.49	265.81	133.86	265.86	134.06	265.88	135.41	266.06	136.84	266.27
137.86	266.37	138.84	266.43	139.32	266.5	141.46	266.34	141.73	266.34
141.78	266.34	143.22	266.37	144.12	266.38	145.75	266.41	147.09	266.4
147.29	266.4	147.72	266.39	149.79	266.38	150.84	266.41	151.41	266.41
153.61	266.42	154.15	266.42	154.28	266.42	155.72	266.41	156.35	266.4
158.36	266.36	159.08	266.36	160.07	266.36	161.4	266.43	162.85	266.45
164.02	266.51	164.5	266.53	165.54	266.56	167.27	266.63	168.16	266.65
169.02	266.65	170.32	266.68	171.87	266.7	173.02	266.72	173.73	266.74
174.8	266.75	176.54	266.76	177.87	266.79	178.24	266.8	178.9	266.81
181.15	266.85	182.65	266.9	182.94	266.91	183.47	266.9	185.79	266.88
187.41	266.96	187.52	266.97	187.86	266.97	190.39	266.95	191.1	266.98
192.09	267	192.71	267.01	193.97	267				

Manning's n Values num= 5

Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val
0	.018	66.69	.018	68.69	.03	106.19	.05	118.13	.06

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

66.69	118.13	77.17	84.44	89.29	.1	.3
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Blocked Obstructions num= 1

Sta L	Sta R	Elev
0	48.99	276

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 599.9999

INPUT Description: Station Elevation Data num= 138

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	253.68	0.06	253.68	36	253.64	1.75	253.46	1.97	253.45
4.74	253.36	4.88	253.37	5.89	253.32	6.39	253.31	6.46	253.31
8.66	253.24	9.47	253.22	10.4	253.25	11.25	253.25	12.71	253.26
14.22	253.24	15.16	253.22	15.95	253.25	16.71	253.23	19.02	253.24
19.31	253.26	20.74	253.27	21.29	253.26	23.68	253.29	23.92	253.29
25.44	253.31	26.75	253.27	28.38	253.24	29.43	253.25	30.03	253.26
31.98	253.29	32.86	253.31	32.99	253.32	34.05	253.33	34.51	253.34
34.57	253.34	34.78	253.34	37.42	253.35	38.53	253.36	39.1	253.36
41.6	253.48	41.93	253.54	43.29	253.84	43.53	253.9	43.59	253.9
46.47	253.92	47.02	253.91	47.65	253.87	70.09	253.27	71.97	253.23
72.06	253.22	72.08	253.22	72.13	253.21	72.31	253.19	75.17	252.95
76.1	252.69	77.73	252.45	79.73	244.78	91.73	244.78	103.73	244.78
107.73	247.45	115.23	252.45	118.49	252.45	120.93	252.45	121.92	252.93
123.51	253.99	123.68	254.08	127.02	255.53	127.1	255.56	128.1	255.79
128.84	255.96	128.92	255.98	129.12	256.02	131.28	256.53	132.14	256.68
132.82	256.77	133.87	256.86	136.08	257.13	137.25	257.18	140	258.05
142.06	258.43	143.03	258.44	143.74	258.56	145.85	258.96	146.95	259.19
148.1	259.56	148.51	259.67	148.82	259.76	150.4	260.18	151.43	260.45
151.63	260.5	152.11	260.62	153.2	260.88	153.65	261.04	155.67	261.49
156.14	261.61	156.24	261.64	157.11	262.24	157.77	262.7	157.89	262.73
158.12	262.77	161.58	263.18	162.12	263.27	163.89	263.67	164.95	263.97
165.66	264.14	166.37	264.36	168.44	265.1	169.08	265.3	169.37	265.36
170.42	265.52	171.21	265.77	173.09	266.43	173.2	266.46	174.43	266.62
175.55	266.57	177.24	266.88	177.66	266.94	178.63	267.07	180.36	267.17
181.43	267.21	182.66	267.23	182.88	267.23	185.43	267.33	185.9	267.35
187.29	267.41	187.31	267.41	187.4	267.41	190.27	267.48	190.6	267.49

Schollas\_Map101.rep  
191.79 267.55 193.12 267.56 194.91 267.57 195.84 267.6 196.37 267.61  
198.04 267.65 199.47 267.68 200 267.68

Manning's n Values num= 5  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 77.73 .018 79.73 .03 115.23 .07 121.92 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
77.73 121.92 66.24 75.35 84.98 .1 .3  
Blocked Obstructions num= 1  
Sta L Sta R Elev  
43.96 69.92 273

CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 524.6492

INPUT  
Description: Cross Section upstream of Bridge at Federal Blvd  
Station Elevation Data num= 215

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	253.17	.12	253.18	2.33	253.04	4.25	252.92	6.63	252.88
8.61	253.46	8.68	253.46	8.76	253.45	10.29	253.17	11.28	253.07
12.12	253.02	12.89	253.02	14.3	252.96	15.83	252.71	16.34	252.65
17.38	252.46	18.09	252.3	18.45	252.26	19.86	251.92	20.77	251.88
22.92	251.89	23.26	251.89	23.75	251.91	24.73	251.95	25.41	251.95
26.52	251.96	27.42	251.99	28.55	252.02	29.95	252.06	30.4	252.07
31.03	252.07	31.87	252.08	32.46	252.09	33.54	252.11	34.22	252.12
35.33	252.11	37.1	252	38.44	252.09	39.6	252.11	39.94	252.11
40.3	252.12	42.28	252.16	44.24	252.17	44.67	252.18	46.66	252.29
47.16	252.31	47.49	252.32	49.07	252.38	50.71	252.47	51	252.49
51.41	252.49	52.8	252.54	53.79	252.55	54.61	252.53	55.13	252.54
56.42	252.57	58.12	252.55	58.22	252.56	58.38	252.55	60.48	252.63
60.84	252.64	62.41	252.65	63.42	252.64	64.22	252.64	65.45	252.63
66.21	252.61	67.68	252.57	68.49	252.56	69.26	252.57	70.65	252.58
72.12	252.55	72.61	252.55	73.52	252.55	74.15	252.56	74.49	252.57
76.41	252.6	78.83	252.55	78.9	252.55	78.95	252.55	80.97	252.57
81.25	252.57	82.96	252.56	84.37	252.59	84.96	252.61	85.68	252.61
86.84	252.63	87.85	252.64	88.83	252.62	89.66	252.62	90.94	252.64
92.45	252.69	92.96	252.69	93.69	252.69	97.09	252.27	99.09	251.62
99.09	243.62	111.09	243.62	123.09	243.62	127.09	246.29	136.06	252.27
139.86	252.27	150.58	252.27	151.24	252.42	153.15	252.91	153.64	252.99
154.49	253.18	155.42	253.43	157.35	253.77	160.29	253.88	160.67	253.92
162.33	254.18	162.47	254.19	162.57	254.21	164.47	254.54	165.88	254.72
167.27	254.92	168.13	255.07	169.41	255.14	169.86	255.23	170.34	255.25
172.35	255.47	174.27	255.7	174.58	255.73	175.21	255.91	175.99	256.11
176.36	256.23	178.06	256.7	179.64	256.84	180.4	256.94	181.22	257.07
182.49	257.24	183.2	257.34	183.58	257.37	183.84	257.37	185.59	257.45
187.12	257.5	187.52	257.51	188.11	257.58	190.08	257.83	190.09	257.83
192.29	258.13	194.15	258.38	194.48	258.4	194.85	258.48	196.05	258.76
196.77	258.9	196.96	258.96	197.51	259.01	199.97	259.18	201.56	259.48
202.42	259.75	203.38	259.87	204.09	259.91	204.96	260.11	205.46	260.2
210.61	261.36	211.45	261.68	213.11	261.95	214.46	262.18	215.19	262.36
216.19	262.6	217.07	262.85	217.82	263.09	219.17	263.5	220.7	264.01
221.06	264.12	222.38	264.45	222.61	264.51	222.79	264.56	224.56	265.05
226.28	265.52	226.57	265.61	226.8	265.66	228	266.01	228.51	266.14
230.47	266.55	232.69	267.11	233	267.18	234.01	267.41	234.16	267.44
234.2	267.45	236.22	267.85	238.21	268.15	238.26	268.16	238.32	268.17
239.33	268.27	239.83	268.32	241.24	268.37	243.77	268.42	243.82	268.42
245.19	268.42	246.53	268.43	249.11	268.51	249.15	268.51	250.5	268.59
251.83	268.65	254.47	268.73	254.53	268.73	254.55	268.73	254.59	268.73
256.03	268.74	256.85	268.75	257.55	268.76	258.76	268.77	260.15	268.78
260.69	268.78	261.64	268.77	263.29	268.77	266.1	268.84	266.18	268.84
267.49	268.89	268.29	268.9	268.9	268.91	270.2	268.93	271.76	268.97

Manning's n Values num= 5  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 97.09 .018 99.09 .03 136.06 .035 151.24 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
97.09 151.24 86.87 107.19 109.33 .1 .3

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CROSS SECTION

RIVER: SchollasMap101  
REACH: MainReach RS: 417.4621

INPUT  
Description: Cross Section upstream of Bridge at Federal Blvd  
Station Elevation Data num= 278

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	250.04	.66	250.03	2.23	250.04	2.76	250.04	4.82	250.01
4.85	250.01	4.86	250.01	6.81	250.03	7.78	250.03	8.81	250
10.79	250.01	10.82	250.01	10.89	250.01	12.83	249.99	13.29	250
14.86	249.95	15.78	249.95	16.87	249.93	18.26	249.89	18.87	249.91
20.71	249.87	20.87	249.87	21.55	249.86	22.83	249.87	23.55	249.87
24.82	249.89	26.64	249.88	26.83	249.88	27.16	249.88	28.97	249.85
29.48	249.85	31.18	249.83	32.26	249.79	33.37	249.77	35.02	249.76
35.55	249.75	37.46	249.74	37.73	249.74	37.87	249.74	39.67	249.74
40.84	249.7	41.64	249.7	43.12	249.66	43.69	249.65	43.84	249.65
45.9	249.68	46.62	249.67	48.12	249.63	49.45	249.62	50.34	249.6
52.24	249.56	52.54	249.56	53.67	249.53	54.53	249.52	54.91	249.51
56.3	249.47	57.54	249.46	58.11	249.47	59.34	249.44	59.96	249.43
60.09	249.42	61.86	249.43	62.41	249.44	63.28	249.41	64.7	249.37
65.63	249.35	67	249.34	69.14	249.35	69.28	249.35	69.81	249.34
71.31	249.29	72.25	249.29	73.3	249.29	74.87	249.23	75.26	249.21
75.35	249.21	77.25	249.18	77.77	249.16	79.23	249.15	80.18	249.15
81.2	249.14	82.54	249.13	83.13	249.12	84.9	249.08	85.07	249.08
85.85	249.07	86.85	249.07	87.37	249.06	88.58	249.05	89.93	249.07
90.3	249.06	91.05	249.04	92.15	248.99	92.4	248.99	94.14	248.92
94.81	248.9	96.08	248.89	97.14	248.9	97.99	248.88	99.48	248.85
99.92	248.84	101.78	248.83	101.82	248.83	102	248.83	103.79	248.8
105.13	248.8	105.77	248.8	106.64	248.8	107.91	248.79	108.24	248.78
110.15	248.76	111	248.79	112.35	248.8	113.74	248.74	114.56	248.73
116.43	248.76	116.72	248.75	117.84	248.8	118.85	248.83	119.71	248.8
120.95	248.74	122.51	248.82	123.03	248.84	123.14	248.84	125.07	248.97
125.64	248.96	127.16	248.79	128.18	248.8	129.21	248.79	130.65	248.91
131.23	248.91	133.12	248.86	133.25	248.86	133.84	248.89	135.25	248.92
136.28	248.94	137.29	249	138.66	248.99	139.42	249.01	139.61	249.02
141.66	249.09	142.4	249.12	143.88	249.18	145.17	249.27	146.1	249.29
146.85	249.37	147.9	249.48	148.29	249.49	148.52	249.51	150.42	249.51
152.42	241.8	164.42	241.8	176.42	241.8	180.42	244.47	187.98	249.51
192.32	249.51	201.62	249.51	202.02	249.71	202.41	249.84	202.73	249.96
203.89	250.38	205.66	251.26	205.67	251.27	206.47	251.48	207.45	251.68
208.28	251.73	210.7	252.12	211.44	252.14	213.01	252.2	213.81	252.22
215.16	252.2	215.85	252.19	217.38	252.19	217.51	252.19	217.58	252.19
219.83	252.25	221.06	252.28	222.07	252.29	223.99	252.27	224.2	252.28
224.87	252.24	225.84	252.16	226.15	252.14	228.17	251.85	229.32	251.39
230.63	251.01	232.94	250.13	233.89	250.03	235.54	249.87	236.91	249.55
237.85	249.79	238.71	249.82	239.79	249.9	240.71	250.2	242.84	249.83
244.09	249.56	244.96	249.57	245.3	249.6	246.91	250.13	250.73	249.1
250.88	249.13	250.94	249.15	251.12	249.17	252.28	249.53	253.3	249.5
253.78	249.74	253.94	249.73	254.41	249.52	256.53	249.9	257.55	249.98
259.04	249.89	259.37	249.87	260.28	250	260.88	250.1	261.57	250.11
262.1	250.2	262.56	250.34	263.81	250.83	264.32	250.7	265.91	250.75
267.12	250.95	267.91	250.93	269.83	251.24	269.85	251.24	269.97	251.26
271.68	251.51	272.01	251.51	273.88	251.3	274.68	251.44	276.05	251.4
277.7	251.81	278.13	251.77	279.07	251.84	280.12	251.92	281.25	251.97
282.3	251.83	282.72	251.93	284.58	251.81	285.88	252.22	286.73	252.25
288.72	252.48	288.87	252.49	290.93	252.73	291.03	252.73	291.14	252.77
293.96	253.18	295.21	253.37	296.71	253.78	297.19	253.86	298.46	254.02
299.22	254.2	300.42	254.41	301.54	254.53	302.02	254.63	303.81	255.04
305.19	255.4	306.01	255.57	307.92	255.81	308.22	255.87	310.02	256.21
310.45	256.3	310.65	256.35	312.95	256.97	314.24	257.3	315.3	257.55
317.53	258.01	317.6	258.02	319.49	258.36	319.89	258.46	320.07	258.48
322.21	258.83	323.3	259.08	324.43	259.3	326.51	259.44	326.68	259.47
327.06	259.51	327.93	259.86	327.95	259.86				

Manning's n Values num= 6  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 150.42 .018 152.42 .03 187.98 .045 192.32 .03

Schollas\_Map101.rep  
 Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
 150.42 202.02 131.21 124.64 127.74 .3 .5  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 149.87 249.65 F  
 213.08 327.95 252.31 F

CULVERT

RIVER: SchollasMap101  
 REACH: MainReach RS: 362.8132

INPUT

Description: Single span bridge at Federal Blvd  
 Distance from Upstream XS = 23  
 Deck/Roadway Width = 80  
 Weir Coefficient = 2.6

Upstream				Deck				Roadway				Coordinates			
num= 205															
Sta	Hi Cord	Lo Cord		Sta	Hi Cord	Lo Cord		Sta	Hi Cord	Lo Cord		Sta	Hi Cord	Lo Cord	
0	253.45			.15	253.45			.8	253.45			.8	253.45		
1.78	253.46			3.33	253.47			3.49	253.45			3.49	253.45		
3.54	253.43			5.84	253.43			6.74	253.45			6.74	253.45		
8.16	253.45			9.86	253.44			10.45	253.4			10.45	253.4		
12.13	253.43			12.61	253.42			12.93	253.42			12.93	253.42		
14.3	253.43			15.74	253.41			16.01	253.37			16.01	253.37		
16.41	253.4			17.89	253.41			18.28	253.4			18.28	253.4		
19.79	253.39			20.7	253.41			21.69	253.44			21.69	253.44		
23.09	253.43			23.57	253.43			25.29	253.43			25.29	253.43		
25.42	253.44			25.51	253.45			27.07	253.44			27.07	253.44		
28.19	253.41			28.69	253.41			29.49	253.48			29.49	253.48		
30.52	253.48			30.8	253.48			32.51	253.52			32.51	253.52		
33.34	253.51			34.47	253.47			35.8	253.48			35.8	253.48		
36.38	253.48			38.24	253.49			38.3	253.53			38.3	253.53		
38.51	253.52			40.02	253.52			41.15	253.53			41.15	253.53		
41.75	253.53			42.54	253.53			43.57	253.53			43.57	253.53		
43.84	253.53			44.29	253.53			46.17	253.58			46.17	253.58		
47.42	253.58			48.53	253.59			50.54	253.6			50.54	253.6		
50.84	253.61			51.69	253.63			52.77	253.65			52.77	253.65		
53.61	253.65			54.51	253.61			55.66	253.61			55.66	253.61		
56.38	253.64			56.6	253.69			58.45	253.71			58.45	253.71		
59.25	253.71			60.49	253.72			61.87	253.71			61.87	253.71		
62.51	253.71			64.49	253.71			64.52	253.71			64.52	253.71		
64.63	253.71			66.29	253.48			67.67	253.49			67.67	253.49		
68.07	253.5			68.54	253.53			70.14	253.5			70.14	253.5		
70.64	253.5			72.31	253.5			73.45	253.51			73.45	253.51		
74.46	253.5			76.24	253.48			76.6	253.51			76.6	253.51		
77.73	253.52			78.53	253.52			79.32	253.53			79.32	253.53		
80.28	253.48			81.3	253.48			82.23	253.47			82.23	253.47		
82.54	253.53			84.42	253.54			85.41	253.54			85.41	253.54		
86.56	253.54			88.24	253.53			88.7	253.54			88.7	253.54		
90.12	253.54			90.7	253.53			91.28	253.51			91.28	253.51		
92.55	253.51			93.81	253.53			94.5	253.49			94.5	253.49		
94.7	253.49			96.54	253.49			97.29	253.52			97.29	253.52		
98.54	253.5			99.83	253.53			100.52	253.52			100.52	253.52		
102.34	253.52			102.48	253.53			102.99	253.63			102.99	253.63		
104.37	253.62			106.14	253.57			106.29	253.57			106.29	253.57		
106.41	253.6			108.51	253.67			109.2	253.67			109.2	253.67		
110.73	253.67			112.15	253.68			112.91	253.72			112.91	253.72		
115.01	253.73			115.07	253.73			115.23	253.69			115.23	253.69		
117.02	253.7			118.68	253.68			119.03	253.68			119.03	253.68		
119.12	253.71			121.08	253.68			121.74	253.68			121.74	253.68		
123.09	253.66			124.3	253.65			125.08	253.65			125.08	253.65		
126.78	253.65			127	253.69			127.8	253.72			127.8	253.72		
129.03	253.7			131.05	253.64			131.19	253.64			131.19	253.64		
131.28	253.72			133.46	253.72			134.16	253.72			134.16	253.72		
135.66	253.71			137.06	253.69			137.83	253.64			137.83	253.64		
139.92	253.64			139.99	253.66			140.22	253.66			140.22	253.66		
142.22	253.66			143.26	253.68			144.58	253.69			144.58	253.69		
145.01	253.71			146.89	253.71			148.04	253.73			148.04	253.73		
149.15	253.73			151	253.7			151.37	253.69			151.37	253.69		
152.49	253.67			152.5	253.69			153.83	253.71			153.83	253.71		

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153.86	253.71	153.89	253.71	153.97	253.71
156.58	253.69	157.72	253.7	158.55	253.72
158.97	253.72	159.59	253.7	161.1	253.69
162.35	253.69	162.86	253.74	163.64	253.72
164.12	253.7	165.36	253.69	166.97	253.67
167.6	253.67	168.08	253.63	168.61	253.63
169.42	253.68	170	253.68	170	253.67
190	253.7	190	253.73	190.44	253.74
190.62	253.71	191.48	253.71	192.61	253.7
194.73	253.68	194.76	253.71	194.77	253.7
196.84	253.63	197.35	253.64	198.89	253.7
199.88	253.69	200.92	253.7	202.38	253.7
202.92	253.7	204.82	253.7	204.89	253.7
205.19	253.68	206.68	253.67	208.42	253.67
208.49	253.67	208.51	253.67	210.63	253.67
211.13	253.62	212.69	253.63	213.66	253.64
300	253.64				

Upstream Bridge Cross Section Data

Station				Elevation Data				num= 300					
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	250.04	.66	250.03	2.23	250.04	2.76	250.04	4.82	250.01	4.82	250.01	4.82	250.01
4.85	250.01	4.86	250.01	6.81	250.03	7.78	250.03	8.81	250	8.81	250	8.81	250
10.79	250.01	10.82	250.01	10.89	250.01	12.83	249.99	13.29	250	13.29	250	13.29	250
14.86	249.95	15.78	249.95	16.87	249.93	18.26	249.89	18.87	249.91	18.87	249.91	18.87	249.91
20.71	249.87	20.87	249.87	21.55	249.86	22.83	249.87	23.55	249.87	23.55	249.87	23.55	249.87
24.82	249.89	26.64	249.88	26.83	249.88	27.16	249.88	28.97	249.85	28.97	249.85	28.97	249.85
29.48	249.85	31.18	249.83	32.26	249.79	33.37	249.77	35.02	249.76	35.02	249.76	35.02	249.76
35.55	249.75	37.46	249.74	37.73	249.74	37.87	249.74	39.67	249.74	39.67	249.74	39.67	249.74
40.84	249.7	41.64	249.7	43.12	249.66	43.69	249.65	43.84	249.65	43.84	249.65	43.84	249.65
45.9	249.68	46.62	249.67	48.12	249.63	49.45	249.62	50.34	249.6	50.34	249.6	50.34	249.6
52.24	249.56	52.54	249.56	53.67	249.53	54.53	249.52	54.91	249.51	54.91	249.51	54.91	249.51
56.3	249.47	57.54	249.46	58.11	249.47	59.34	249.44	59.96	249.43	59.96	249.43	59.96	249.43
60.09	249.42	61.86	249.43	62.41	249.44	63.28	249.41	64.7	249.37	64.7	249.37	64.7	249.37
65.63	249.35	67	249.34	69.14	249.35	69.28	249.35	69.81	249.34	69.81	249.34	69.81	249.34
71.31	249.29	72.25	249.29	73.3	249.29	74.87	249.23	75.26	249.21	75.26	249.21	75.26	249.21
75.35	249.21	77.25	249.18	77.77	249.16	79.23	249.15	80.18	249.15	80.18	249.15	80.18	249.15
81.2	249.14	82.54	249.13	83.13	249.12	84.9	249.08	85.07	249.08	85.07	249.08	85.07	249.08
85.85	249.07	86.85	249.07	87.37	249.06	88.58	249.05	89.93	249.07	89.93	249.07	89.93	249.07
90.3	249.06	91.05	249.04	92.15	248.99	92.4	248.99	94.14	248.92	94.14	248.92	94.14	248.92
94.81	248.9	96.08	248.89	97.14	248.9	97.99	248.88	99.48	248.85	99.48	248.85	99.48	248.85
99.92	248.84	101.78	248.83	101.82	248.83	102	248.83	103.79	248.8	103.79	248.8	103.79	248.8
105.13	248.8	105.77	248.8	106.64	248.8	107.91	248.79	108.24	248.78	108.24	248.78	108.24	248.78
110.15	248.76	111	248.79	112.35	248.8	113.74	248.74	114.56	248.73	114.56	248.73	114.56	248.73
116.43	248.76	116.72	248.75	117.84	248.8	118.85	248.83	119.71	248.8	119.71	248.8	119.71	248.8
120.95	248.74	122.51	248.82	123.03	248.84	123.14	248.84	125.07	248.97	125.07	248.97	125.07	248.97
125.64	248.96	127.16	248.79	128.18	248.8	129.21	248.79	130.65	248.91	130.65	248.91	130.65	248.91
131.23</													









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n7	Reach n8	River Sta.	n1	n2	n3	n4	n5	n6
MainReach		2306.424	.018	.018	.06			
MainReach		2200	.018	.018	.06			
MainReach	.06	2098.664	.018	.03	.018	.018	.018	.018
MainReach		2000	.018	.03	.018	.06		
MainReach		1800	.018	.03	.018	.06		
MainReach		1600	.018	.03	.018	.06		
MainReach		1400	.018	.03	.018	.06		
MainReach		1200	.018	.03	.018	.06		
MainReach		1004.18	.018	.03	.018	.06		
MainReach		976.6697	.018	.03	.018	.018	.049	.06
MainReach		926.7529	.018	.018	.049	.09	.06	
MainReach		915.6229	.018	.018	.03	.09	.06	
MainReach		781.5157	.018	.018	.03	.09	.06	
MainReach		684.4379	.018	.018	.03	.05	.06	
MainReach		599.9999	.018	.018	.03	.07	.06	
MainReach		524.6492	.018	.018	.03	.035	.06	
MainReach		417.4621	.018	.018	.03	.045	.03	.06
MainReach		362.8132	Culvert					
MainReach		292.8245	.075	.05	.075			
MainReach		147.2868	.075	.04	.05			
MainReach		28.06381	.07	.055	.06			

SUMMARY OF REACH LENGTHS

River: SchollasMap101

Reach	River Sta.	Left	Channel	Right
MainReach	2306.424	107.15	106.42	105.18
MainReach	2200	101.52	101.34	97.26
MainReach	2098.664	101.57	98.66	97.84
MainReach	2000	201.58	200	197.43
MainReach	1800	198.88	200	200.59
MainReach	1600	199.8	200	200.08
MainReach	1400	199.83	200	200.13
MainReach	1200	197.21	195.82	194.66
MainReach	1004.18	29.27	27.51	26.96
MainReach	976.6697	49.84	49.92	47.71
MainReach	926.7529	11.65	11.13	10.82
MainReach	915.6229	131.26	134.11	137.05
MainReach	781.5157	95.92	97.08	98.64
MainReach	684.4379	77.17	84.44	89.29
MainReach	599.9999	66.24	75.35	84.98

Schollas\_Map101.rep

MainReach	524.6492	86.87	107.19	109.33
MainReach	417.4621	131.21	124.64	127.74
MainReach	362.8132	Culvert		
MainReach	292.8245	152.28	145.54	135.2
MainReach	147.2868	114.51	119.22	123.59
MainReach	28.06381	23.87	28.06	33.25

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS  
River: SchollasMap101

Reach	River Sta.	Contr.	Expan.
MainReach	2306.424	.1	.3
MainReach	2200	.1	.3
MainReach	2098.664	.1	.3
MainReach	2000	.1	.3
MainReach	1800	.1	.3
MainReach	1600	.1	.3
MainReach	1400	.1	.3
MainReach	1200	.1	.3
MainReach	1004.18	.1	.3
MainReach	976.6697	.1	.3
MainReach	926.7529	.1	.3
MainReach	915.6229	.1	.3
MainReach	781.5157	.1	.3
MainReach	684.4379	.1	.3
MainReach	599.9999	.1	.3
MainReach	524.6492	.1	.3
MainReach	417.4621	.3	.5
MainReach	362.8132	Culvert	
MainReach	292.8245	.3	.5
MainReach	147.2868	.1	.3
MainReach	28.06381	.1	.3

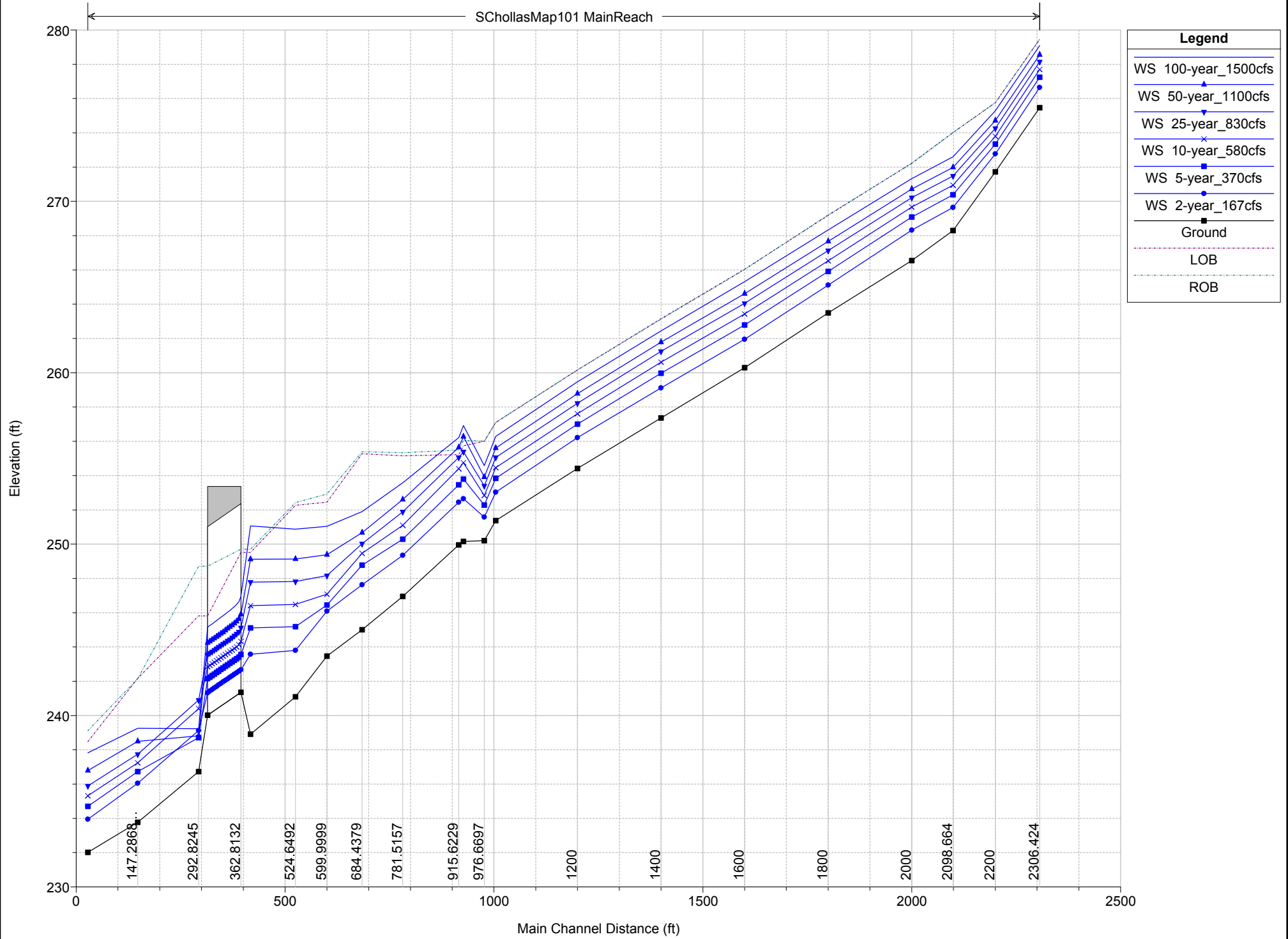
**Attachment 15 – HYDRAULIC PROFILES AND DETAILED HYDRAULIC RESULTS  
FOR RECOMMENDED MAINTENANCE CONDITION**

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SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101



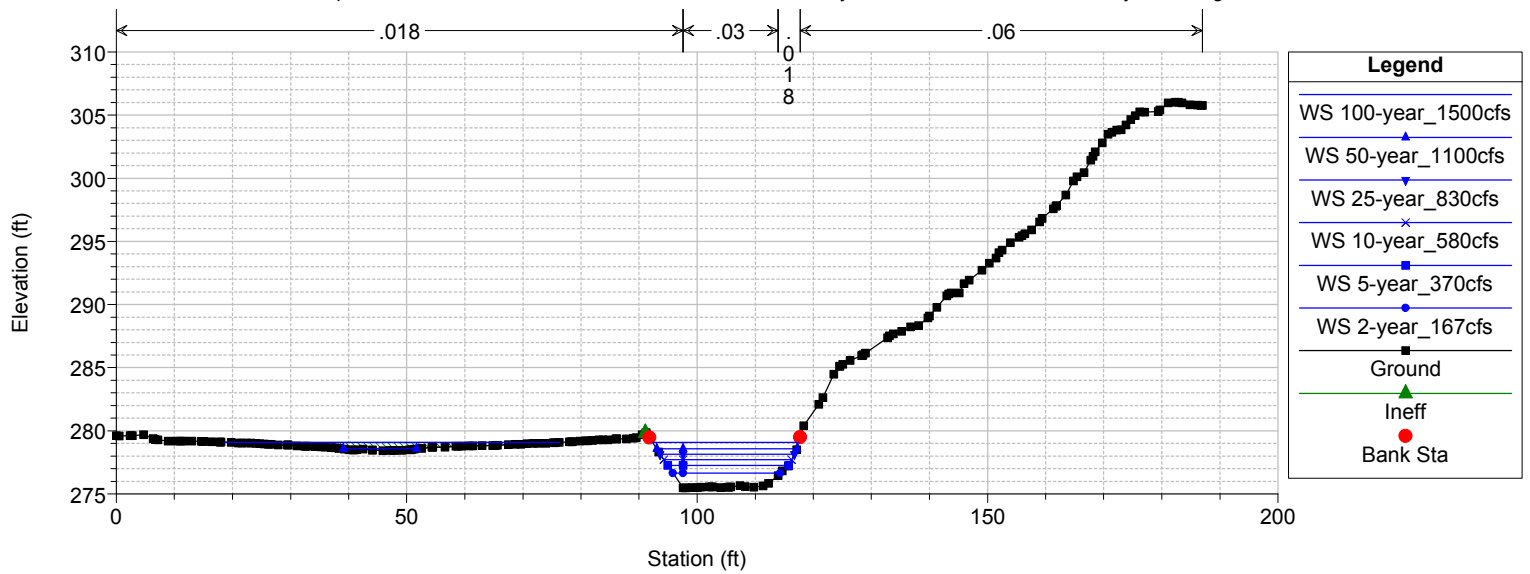
Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
MainReach	2306.424	100-year_1500cfs	1500.00	275.47	279.09	280.24	285.78	0.035068	20.75	72.28	82.90	2.16
MainReach	2306.424	50-year_1100cfs	1100.00	275.47	278.56	279.95	283.92	0.035056	18.58	59.21	36.76	2.09
MainReach	2306.424	25-year_830cfs	830.00	275.47	278.15	279.48	282.53	0.035053	16.80	49.41	23.10	2.02
MainReach	2306.424	10-year_580cfs	580.00	275.47	277.70	278.74	281.08	0.035042	14.75	39.32	21.96	1.94
MainReach	2306.424	5-year_370cfs	370.00	275.47	277.25	278.00	279.67	0.035037	12.50	29.60	20.80	1.85
MainReach	2306.424	2-year_167cfs	167.00	275.47	276.65	277.07	278.00	0.035006	9.34	17.88	18.47	1.67
MainReach	2200	100-year_1500cfs	1500.00	271.72	275.29	277.60	282.04	0.035216	20.86	71.92	23.39	2.10
MainReach	2200	50-year_1100cfs	1100.00	271.72	274.71	276.89	280.16	0.035569	18.72	58.75	22.46	2.04
MainReach	2200	25-year_830cfs	830.00	271.72	274.27	275.62	278.74	0.036103	16.97	48.91	21.85	2.00
MainReach	2200	10-year_580cfs	580.00	271.72	273.80	274.84	277.26	0.036560	14.92	38.88	21.20	1.94
MainReach	2200	5-year_370cfs	370.00	271.72	273.34	274.09	275.83	0.037127	12.66	29.23	20.51	1.87
MainReach	2200	2-year_167cfs	167.00	271.72	272.77	273.17	274.14	0.037658	9.38	17.80	19.66	1.74
MainReach	2098.664	100-year_1500cfs	1500.00	268.30	272.60	274.70	279.64	0.016683	21.29	70.44	22.48	2.12
MainReach	2098.664	50-year_1100cfs	1100.00	268.30	271.98	273.77	277.77	0.016341	19.31	56.98	20.99	2.07
MainReach	2098.664	25-year_830cfs	830.00	268.30	271.49	272.99	276.35	0.016203	17.69	46.92	19.81	2.03
MainReach	2098.664	10-year_580cfs	580.00	268.30	270.95	272.16	274.85	0.016215	15.84	36.62	18.51	1.98
MainReach	2098.664	5-year_370cfs	370.00	268.30	270.39	271.30	273.38	0.016448	13.87	26.68	16.87	1.94
MainReach	2098.664	2-year_167cfs	167.00	268.30	269.65	270.23	271.55	0.017843	11.06	15.10	14.52	1.91
MainReach	2000	100-year_1500cfs	1500.00	266.55	271.33	273.29	277.92	0.015526	20.59	72.83	23.34	2.05
MainReach	2000	50-year_1100cfs	1100.00	266.55	270.72	272.37	276.11	0.014943	18.64	59.02	21.52	1.98
MainReach	2000	25-year_830cfs	830.00	266.55	270.22	271.63	274.73	0.014525	17.05	48.69	20.02	1.93
MainReach	2000	10-year_580cfs	580.00	266.55	269.67	270.80	273.26	0.014147	15.22	38.11	18.40	1.86
MainReach	2000	5-year_370cfs	370.00	266.55	269.09	269.94	271.81	0.013871	13.25	27.92	16.53	1.80
MainReach	2000	2-year_167cfs	167.00	266.55	268.32	268.82	269.96	0.013334	10.29	16.22	13.86	1.68
MainReach	1800	100-year_1500cfs	1500.00	263.49	268.34	270.30	274.84	0.015039	20.46	73.31	22.91	2.02
MainReach	1800	50-year_1100cfs	1100.00	263.49	267.66	269.35	273.13	0.014795	18.76	58.63	20.74	1.97
MainReach	1800	25-year_830cfs	830.00	263.49	267.13	268.60	271.79	0.014752	17.33	47.90	19.21	1.93
MainReach	1800	10-year_580cfs	580.00	263.49	266.54	267.74	270.34	0.014812	15.65	37.05	17.57	1.90
MainReach	1800	5-year_370cfs	370.00	263.49	265.92	266.85	268.89	0.015183	13.83	26.75	15.77	1.87
MainReach	1800	2-year_167cfs	167.00	263.49	265.11	265.70	267.02	0.016049	11.09	15.06	13.15	1.83
MainReach	1600	100-year_1500cfs	1500.00	260.30	265.32	267.32	271.86	0.014655	20.53	73.07	21.96	1.98
MainReach	1600	50-year_1100cfs	1100.00	260.30	264.61	266.34	270.17	0.014735	18.92	58.15	20.03	1.96
MainReach	1600	25-year_830cfs	830.00	260.30	264.05	265.56	268.83	0.014796	17.54	47.31	18.46	1.93
MainReach	1600	10-year_580cfs	580.00	260.30	263.43	264.68	267.36	0.014879	15.90	36.47	16.74	1.90
MainReach	1600	5-year_370cfs	370.00	260.30	262.79	263.75	265.85	0.015068	14.04	26.35	14.93	1.86
MainReach	1600	2-year_167cfs	167.00	260.30	261.96	262.56	263.89	0.015185	11.17	14.95	12.26	1.78
MainReach	1400	100-year_1500cfs	1500.00	257.36	262.44	264.31	268.78	0.015510	20.21	74.23	24.27	2.04
MainReach	1400	50-year_1100cfs	1100.00	257.36	261.79	263.45	267.12	0.015043	18.53	59.37	21.66	1.97
MainReach	1400	25-year_830cfs	830.00	257.36	261.25	262.74	265.84	0.014519	17.19	48.28	19.19	1.91
MainReach	1400	10-year_580cfs	580.00	257.36	260.62	261.88	264.43	0.014119	15.66	37.03	16.64	1.85
MainReach	1400	5-year_370cfs	370.00	257.36	259.97	260.91	262.91	0.013953	13.75	26.91	14.76	1.79
MainReach	1400	2-year_167cfs	167.00	257.36	259.12	259.69	260.95	0.013947	10.87	15.36	12.26	1.71
MainReach	1200	100-year_1500cfs	1500.00	254.41	259.47	261.35	265.76	0.014517	20.13	74.53	23.34	1.98
MainReach	1200	50-year_1100cfs	1100.00	254.41	258.78	260.45	264.16	0.014573	18.61	59.11	21.00	1.95
MainReach	1200	25-year_830cfs	830.00	254.41	258.22	259.71	262.89	0.014851	17.35	47.85	19.30	1.94
MainReach	1200	10-year_580cfs	580.00	254.41	257.61	258.83	261.49	0.015118	15.80	36.71	17.43	1.92
MainReach	1200	5-year_370cfs	370.00	254.41	257.00	257.96	260.00	0.015129	13.88	26.65	15.56	1.87
MainReach	1200	2-year_167cfs	167.00	254.41	256.21	256.78	258.05	0.015022	10.90	15.33	13.07	1.77
MainReach	1004.18	100-year_1500cfs	1500.00	251.37	256.29	258.30	262.83	0.015249	20.52	73.11	23.02	2.03
MainReach	1004.18	50-year_1100cfs	1100.00	251.37	255.60	257.31	261.19	0.015505	18.97	58.00	20.97	2.01
MainReach	1004.18	25-year_830cfs	830.00	251.37	255.06	256.56	259.89	0.015615	17.64	47.05	19.18	1.98
MainReach	1004.18	10-year_580cfs	580.00	251.37	254.46	255.71	258.45	0.015681	16.04	36.17	17.19	1.95
MainReach	1004.18	5-year_370cfs	370.00	251.37	253.84	254.82	256.95	0.015821	14.16	26.13	15.24	1.91
MainReach	1004.18	2-year_167cfs	167.00	251.37	253.03	253.64	255.00	0.016040	11.26	14.83	12.56	1.83
MainReach	976.6697	100-year_1500cfs	1500.00	250.21	254.58	256.92	261.98	0.065712	21.82	68.74	22.64	2.21
MainReach	976.6697	50-year_1100cfs	1100.00	250.21	253.92	255.85	260.32	0.070282	20.31	54.16	21.15	2.24
MainReach	976.6697	25-year_830cfs	830.00	250.21	253.40	255.06	259.02	0.072455	19.02	43.64	19.61	2.25
MainReach	976.6697	10-year_580cfs	580.00	250.21	252.85	254.24	257.57	0.074690	17.44	33.26	17.86	2.25
MainReach	976.6697	5-year_370cfs	370.00	250.21	252.29	253.40	256.05	0.077927	15.58	23.76	16.11	2.26
MainReach	976.6697	2-year_167cfs	167.00	250.21	251.58	252.30	254.08	0.086797	12.68	13.17	13.91	2.30
MainReach	926.7529	100-year_1500cfs	1500.00	250.16	256.92	254.79	257.25	0.003610	3.93	341.90	159.42	0.33
MainReach	926.7529	50-year_1100cfs	1100.00	250.16	256.27	253.97	256.60	0.006500	4.75	239.01	155.91	0.43
MainReach	926.7529	25-year_830cfs	830.00	250.16	255.39	253.35	255.86	0.004620	5.50	150.99	33.72	0.46
MainReach	926.7529	10-year_580cfs	580.00	250.16	254.75	252.69	255.06	0.003547	4.47	129.81	32.53	0.39
MainReach	926.7529	5-year_370cfs	370.00	250.16	253.79	252.05	254.01	0.003237	3.72	99.45	30.75	0.36
MainReach	926.7529	2-year_167cfs	167.00	250.16	252.65	251.28	252.75	0.002400	2.55	65.45	28.62	0.30
MainReach	915.6229	100-year_1500cfs	1500.00	249.95	256.22	255.87	257.10	0.034259	7.18	203.26	89.96	0.66
MainReach	915.6229	50-year_1100cfs	1100.00	249.95	255.64		256.41	0.041411	7.06	156.84	68.01	0.70
MainReach	915.6229	25-year_830cfs	830.00	249.95	255.06		255.73	0.042033	6.56	126.53	45.52	0.69

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
MainReach	915.6229	10-year_580cfs	580.00	249.95	254.40		254.95	0.040081	5.92	98.00	39.02	0.66
MainReach	915.6229	5-year_370cfs	370.00	249.95	253.46		253.90	0.032101	5.34	69.34	26.17	0.58
MainReach	915.6229	2-year_167cfs	167.00	249.95	252.45		252.67	0.027620	3.80	43.89	24.10	0.50
MainReach	781.5157	100-year_1500cfs	1500.00	246.95	253.58		254.10	0.014807	5.81	258.25	54.32	0.47
MainReach	781.5157	50-year_1100cfs	1100.00	246.95	252.60		253.04	0.016055	5.34	205.94	52.48	0.48
MainReach	781.5157	25-year_830cfs	830.00	246.95	251.89		252.26	0.016726	4.90	169.38	50.84	0.47
MainReach	781.5157	10-year_580cfs	580.00	246.95	251.10		251.41	0.018047	4.45	130.30	48.03	0.48
MainReach	781.5157	5-year_370cfs	370.00	246.95	250.29		250.53	0.019554	3.98	92.98	43.32	0.48
MainReach	781.5157	2-year_167cfs	167.00	246.95	249.35		249.49	0.020253	3.05	54.73	37.70	0.45
MainReach	684.4379	100-year_1500cfs	1500.00	245.01	251.89		252.66	0.014418	7.03	213.49	41.55	0.55
MainReach	684.4379	50-year_1100cfs	1100.00	245.01	250.67		251.37	0.017900	6.72	163.76	39.84	0.58
MainReach	684.4379	25-year_830cfs	830.00	245.01	250.02		250.58	0.017465	6.01	138.21	38.88	0.56
MainReach	684.4379	10-year_580cfs	580.00	245.01	249.47		249.85	0.014284	4.95	117.10	37.41	0.49
MainReach	684.4379	5-year_370cfs	370.00	245.01	248.77		249.02	0.012593	4.04	91.62	35.70	0.44
MainReach	684.4379	2-year_167cfs	167.00	245.01	247.63		247.79	0.015442	3.19	52.31	33.06	0.45
MainReach	599.9999	100-year_1500cfs	1500.00	243.47	251.04		251.70	0.008632	6.53	229.70	40.40	0.48
MainReach	599.9999	50-year_1100cfs	1100.00	243.47	249.38		250.08	0.013299	6.71	163.93	38.71	0.57
MainReach	599.9999	25-year_830cfs	830.00	243.47	248.17		248.94	0.021262	7.03	118.08	37.18	0.70
MainReach	599.9999	10-year_580cfs	580.00	243.47	247.08	246.90	247.93	0.038696	7.41	78.27	35.92	0.88
MainReach	599.9999	5-year_370cfs	370.00	243.47	246.45	246.35	247.13	0.046629	6.61	55.96	35.19	0.92
MainReach	599.9999	2-year_167cfs	167.00	243.47	246.09		246.32	0.019595	3.82	43.74	33.18	0.59
MainReach	524.6492	100-year_1500cfs	1500.00	241.09	250.88		251.33	0.002362	5.43	276.32	43.60	0.38
MainReach	524.6492	50-year_1100cfs	1100.00	241.09	249.13		249.58	0.003070	5.36	205.09	38.30	0.41
MainReach	524.6492	25-year_830cfs	830.00	241.09	247.82		248.25	0.003957	5.28	157.18	35.27	0.44
MainReach	524.6492	10-year_580cfs	580.00	241.09	246.48		246.90	0.005740	5.21	111.41	33.00	0.50
MainReach	524.6492	5-year_370cfs	370.00	241.09	245.18		245.62	0.010317	5.28	70.09	30.81	0.62
MainReach	524.6492	2-year_167cfs	167.00	241.09	243.80	243.80	244.31	0.037086	5.75	29.04	28.47	1.00
MainReach	417.4621	100-year_1500cfs	1500.00	238.91	251.07	244.65	251.15	0.000335	2.27	674.28	243.61	0.14
MainReach	417.4621	50-year_1100cfs	1100.00	238.91	249.12	243.76	249.31	0.001145	3.53	311.58	108.97	0.25
MainReach	417.4621	25-year_830cfs	830.00	238.91	247.78	243.11	247.95	0.001288	3.33	249.00	42.95	0.24
MainReach	417.4621	10-year_580cfs	580.00	238.91	246.41	242.41	246.55	0.001367	2.99	194.01	37.77	0.23
MainReach	417.4621	5-year_370cfs	370.00	238.91	245.11	241.65	245.21	0.001332	2.51	147.26	33.93	0.21
MainReach	417.4621	2-year_167cfs	167.00	238.91	243.57	240.74	243.62	0.000943	1.69	98.57	29.66	0.16
MainReach	362.8132		Culvert									
MainReach	292.8245	100-year_1500cfs	1500.00	236.73	239.24	242.01	257.70	0.918499	34.48	43.50	34.95	5.11
MainReach	292.8245	50-year_1100cfs	1100.00	236.73	238.81	241.21	258.98	1.608704	36.03	30.53	33.82	6.38
MainReach	292.8245	25-year_830cfs	830.00	236.73	240.90	240.65	242.09	0.020846	8.74	94.96	38.81	0.88
MainReach	292.8245	10-year_580cfs	580.00	236.73	240.40		241.23	0.018566	7.31	79.29	37.79	0.80
MainReach	292.8245	5-year_370cfs	370.00	236.73	238.70	239.46	241.59	0.256864	13.65	27.11	32.16	2.51
MainReach	292.8245	2-year_167cfs	167.00	236.73	239.12		239.39	0.015081	4.18	39.98	34.65	0.65
MainReach	147.2868	100-year_1500cfs	1500.00	233.77	239.26	238.73	240.15	0.016269	7.56	198.32	66.39	0.77
MainReach	147.2868	50-year_1100cfs	1100.00	233.77	238.49	238.20	239.34	0.019921	7.40	148.73	62.12	0.84
MainReach	147.2868	25-year_830cfs	830.00	233.77	237.74	237.70	238.70	0.024365	7.88	105.35	53.03	0.99
MainReach	147.2868	10-year_580cfs	580.00	233.77	237.25	237.24	238.06	0.025710	7.25	79.96	50.27	1.01
MainReach	147.2868	5-year_370cfs	370.00	233.77	236.72	236.72	237.42	0.021835	6.68	55.37	39.10	0.99
MainReach	147.2868	2-year_167cfs	167.00	233.77	236.04	236.04	236.51	0.025791	5.50	30.37	33.56	1.02
MainReach	28.06381	100-year_1500cfs	1500.00	232.02	237.83	236.11	238.20	0.014014	4.87	308.14	126.65	0.55
MainReach	28.06381	50-year_1100cfs	1100.00	232.02	236.78	235.54	237.25	0.013998	5.48	200.82	75.08	0.59
MainReach	28.06381	25-year_830cfs	830.00	232.02	235.90	235.11	236.41	0.014002	5.72	145.09	55.22	0.62
MainReach	28.06381	10-year_580cfs	580.00	232.02	235.32	234.61	235.72	0.014001	5.09	113.88	52.57	0.61
MainReach	28.06381	5-year_370cfs	370.00	232.02	234.70	234.13	235.01	0.014027	4.49	82.49	47.79	0.60
MainReach	28.06381	2-year_167cfs	167.00	232.02	233.95	233.56	234.13	0.014010	3.42	48.79	43.15	0.57

SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

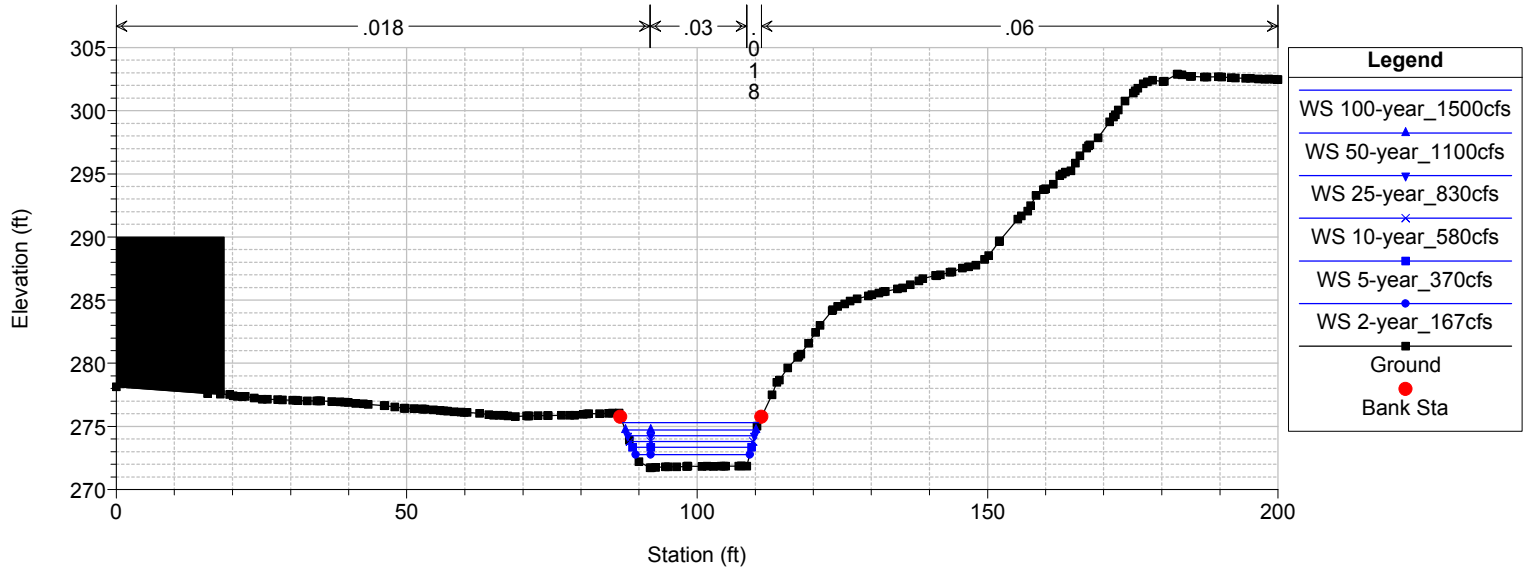
River = SChollasMap101 Reach = MainReach RS = 2306.424 Boundary between Lemon Grove and City. Rectangular channel w/ m



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

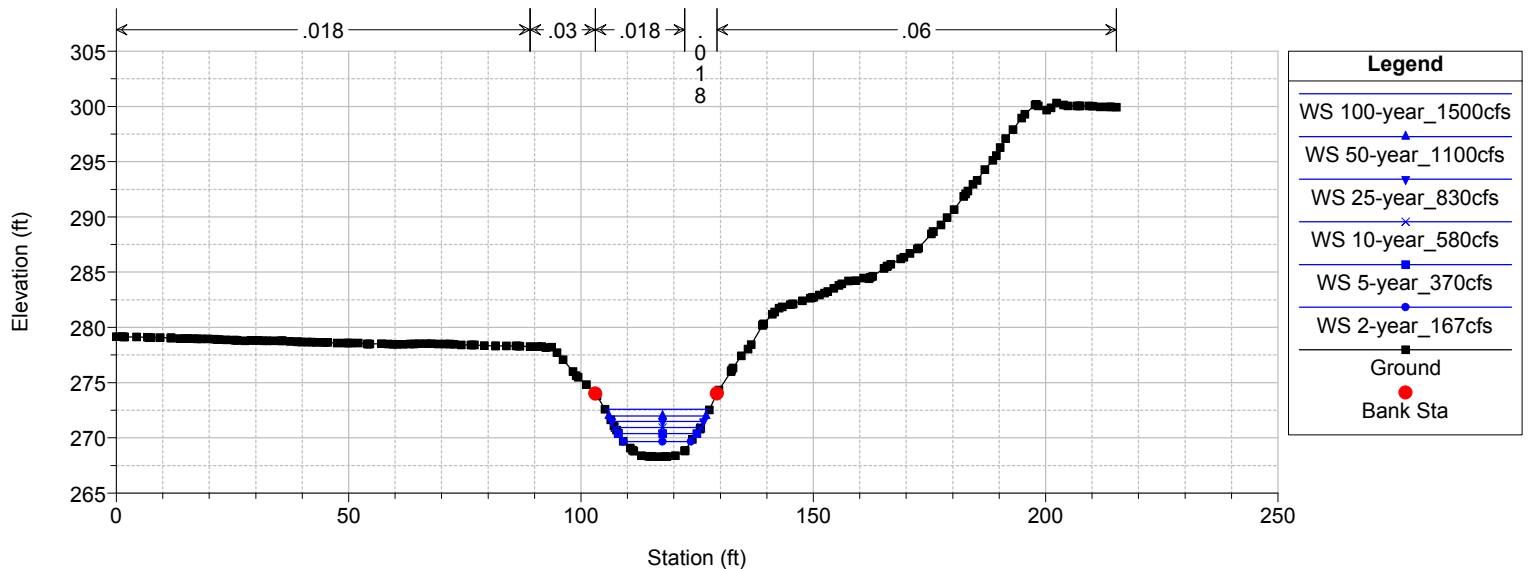
River = SChollasMap101 Reach = MainReach RS = 2200



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

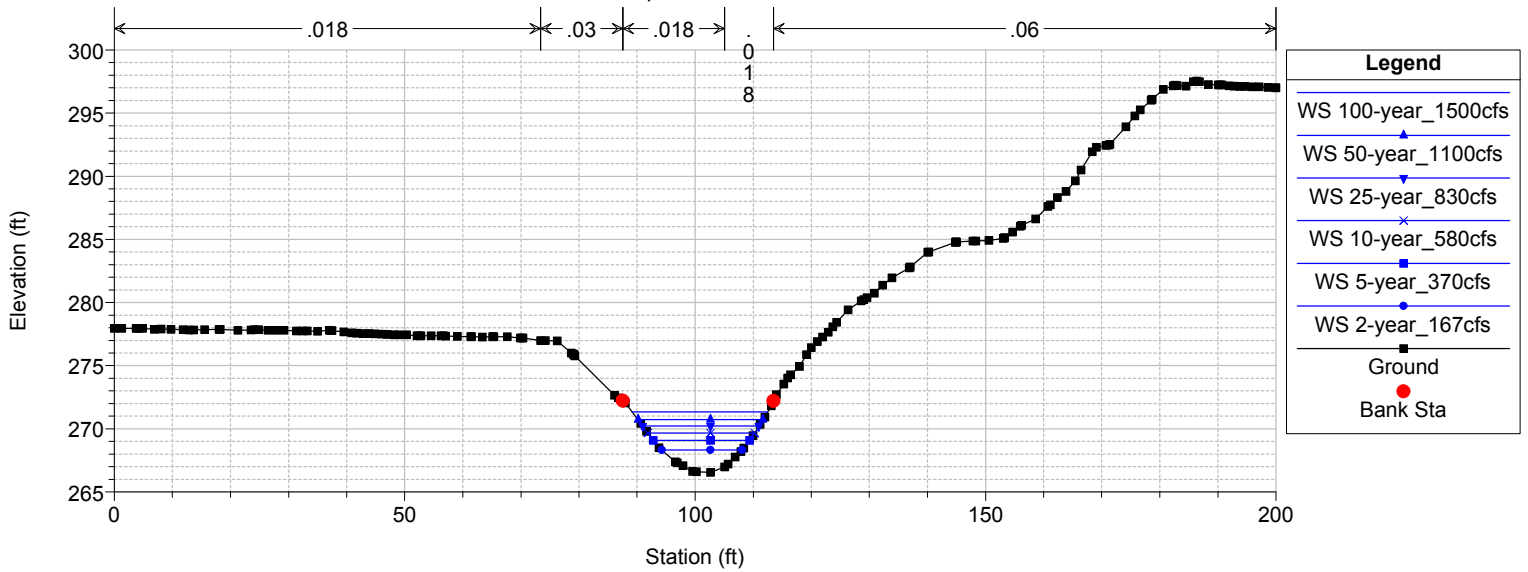
River = SChollasMap101 Reach = MainReach RS = 2098.664 Channel transitions to a trapezoidal concrete channel. Bank sta



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

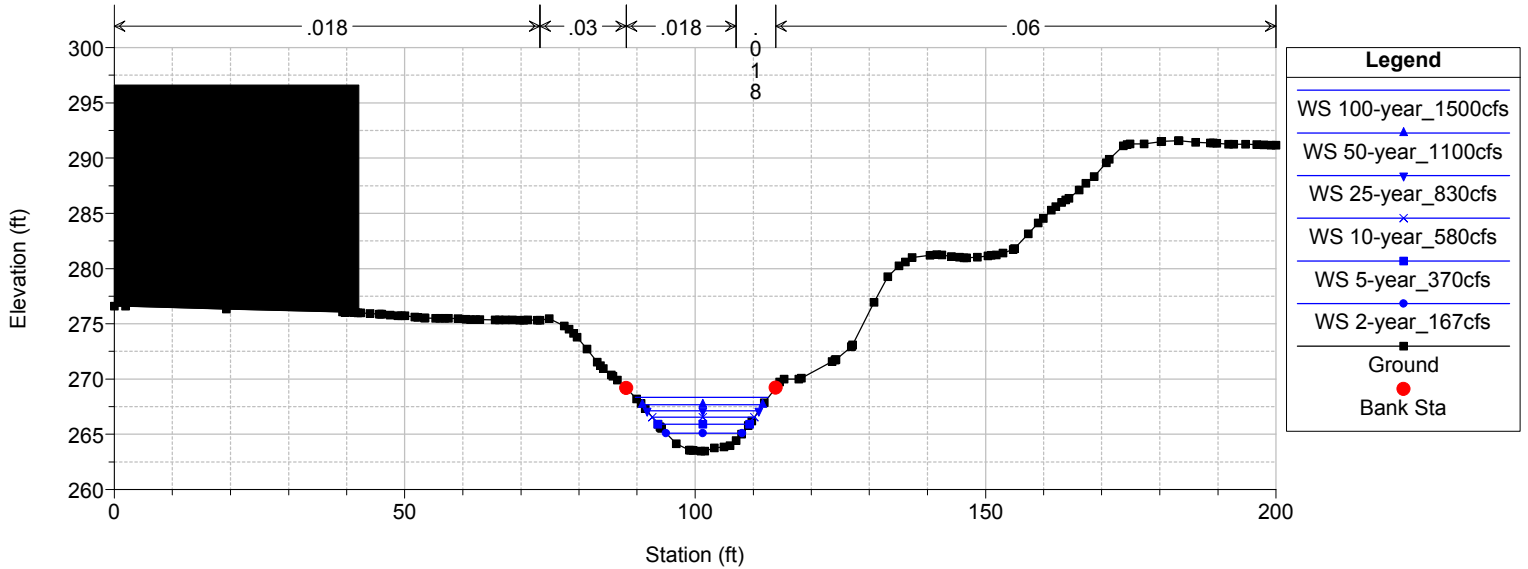
River = SChollasMap101 Reach = MainReach RS = 2000



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

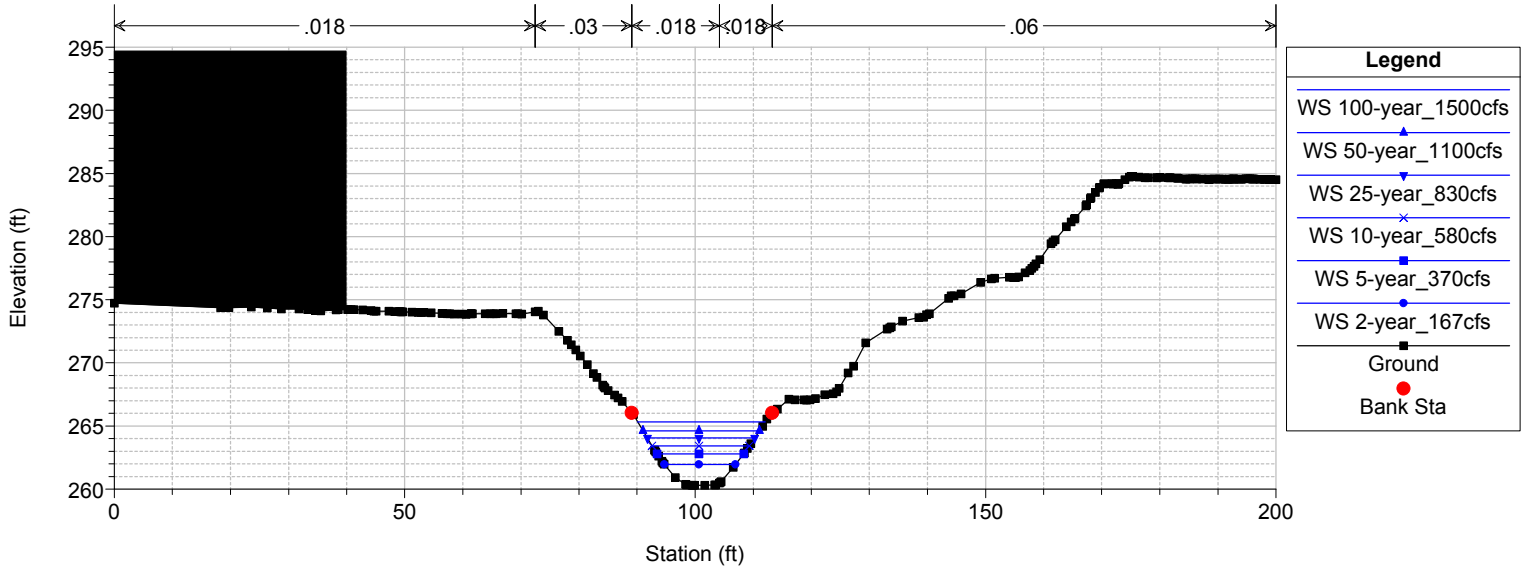
River = SChollasMap101 Reach = MainReach RS = 1800



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 1600

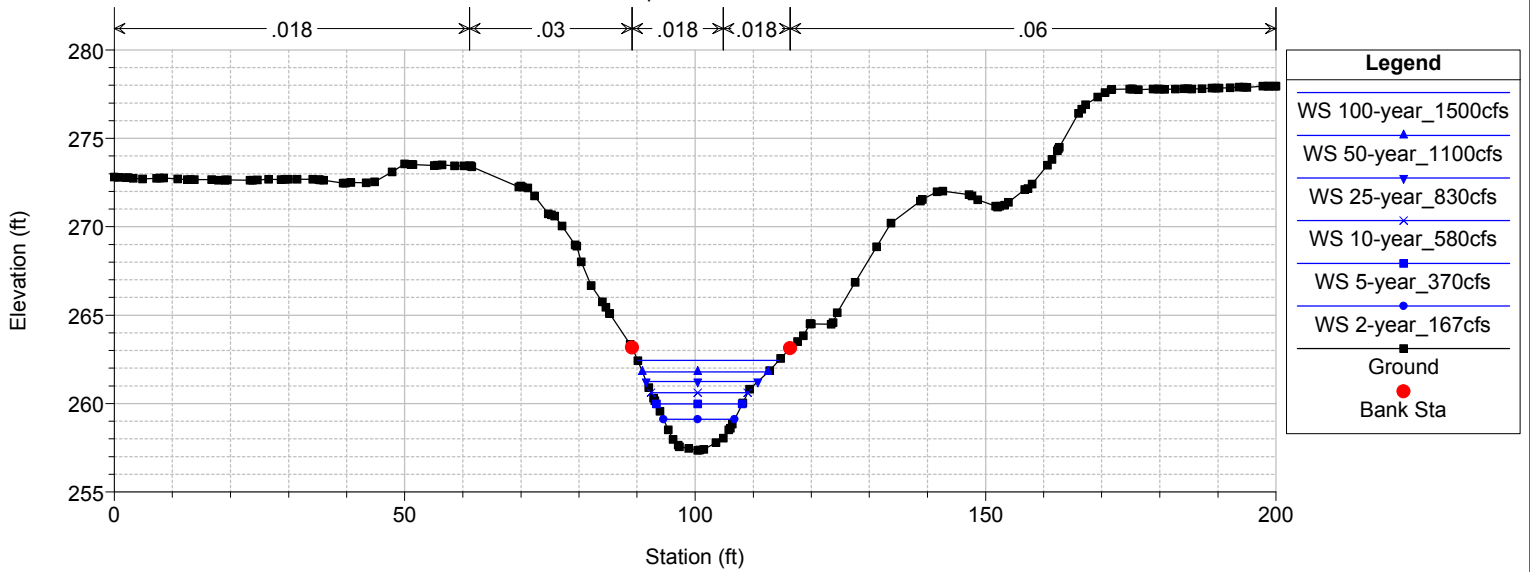




SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

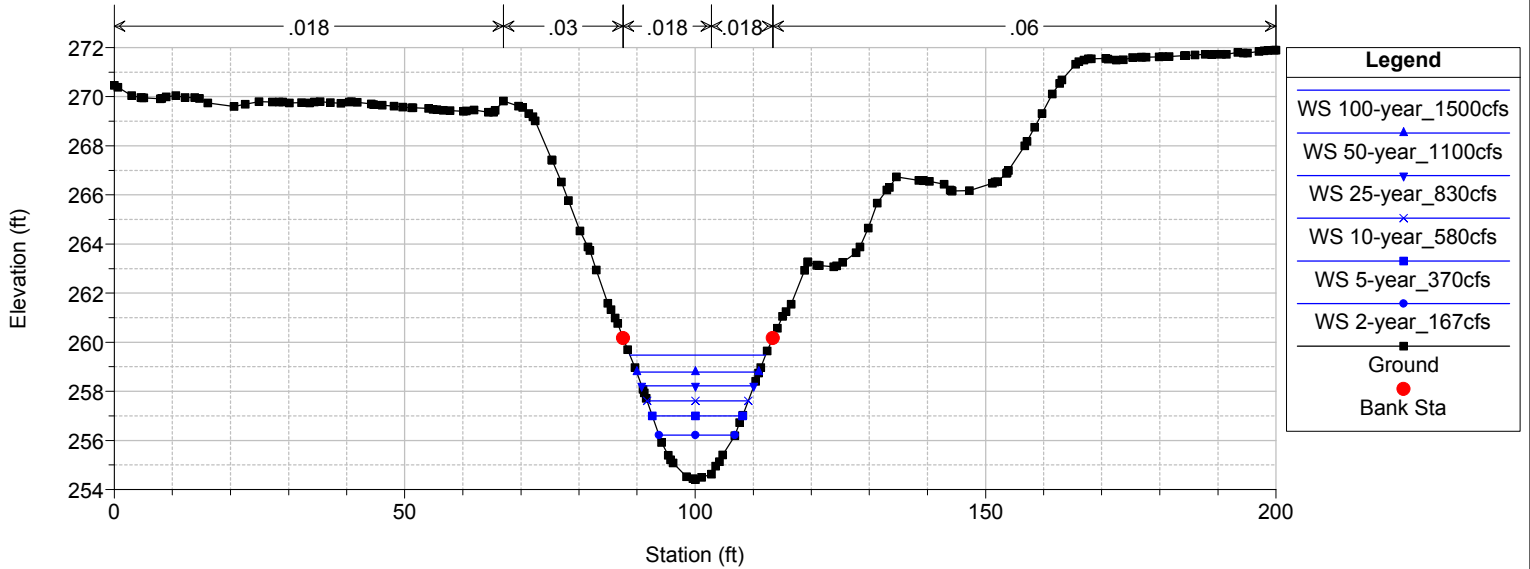
River = SChollasMap101 Reach = MainReach RS = 1400



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

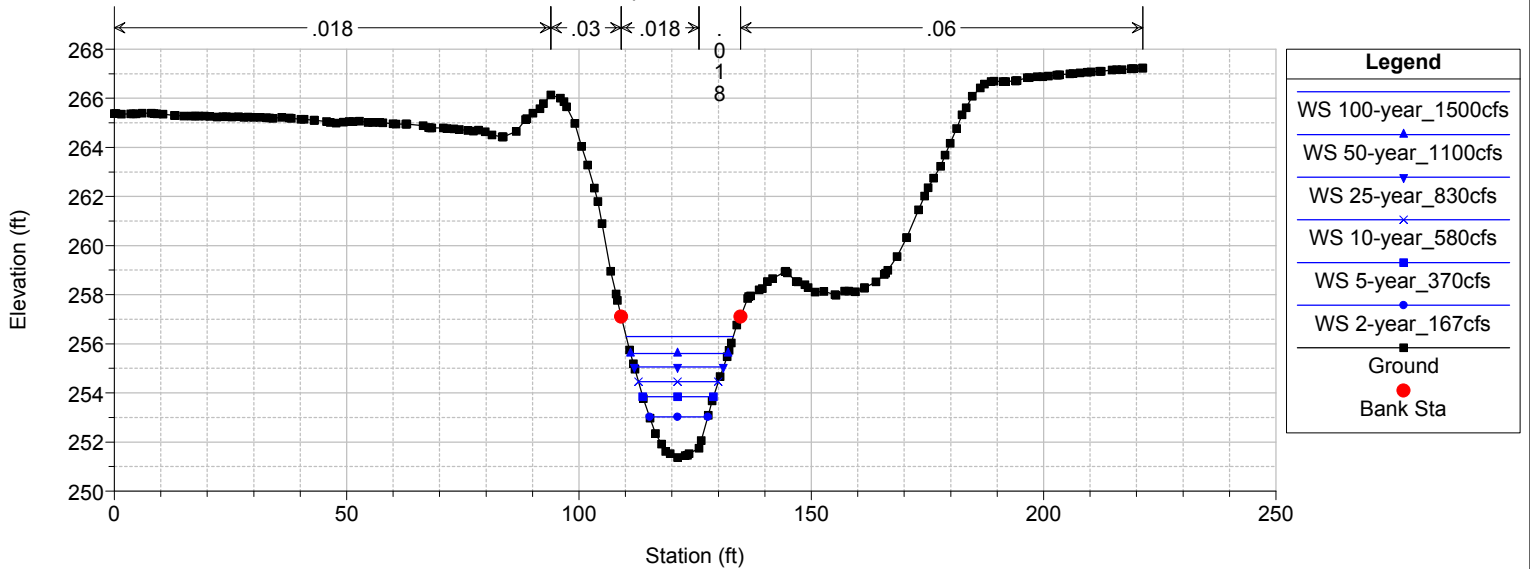
River = SChollasMap101 Reach = MainReach RS = 1200



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

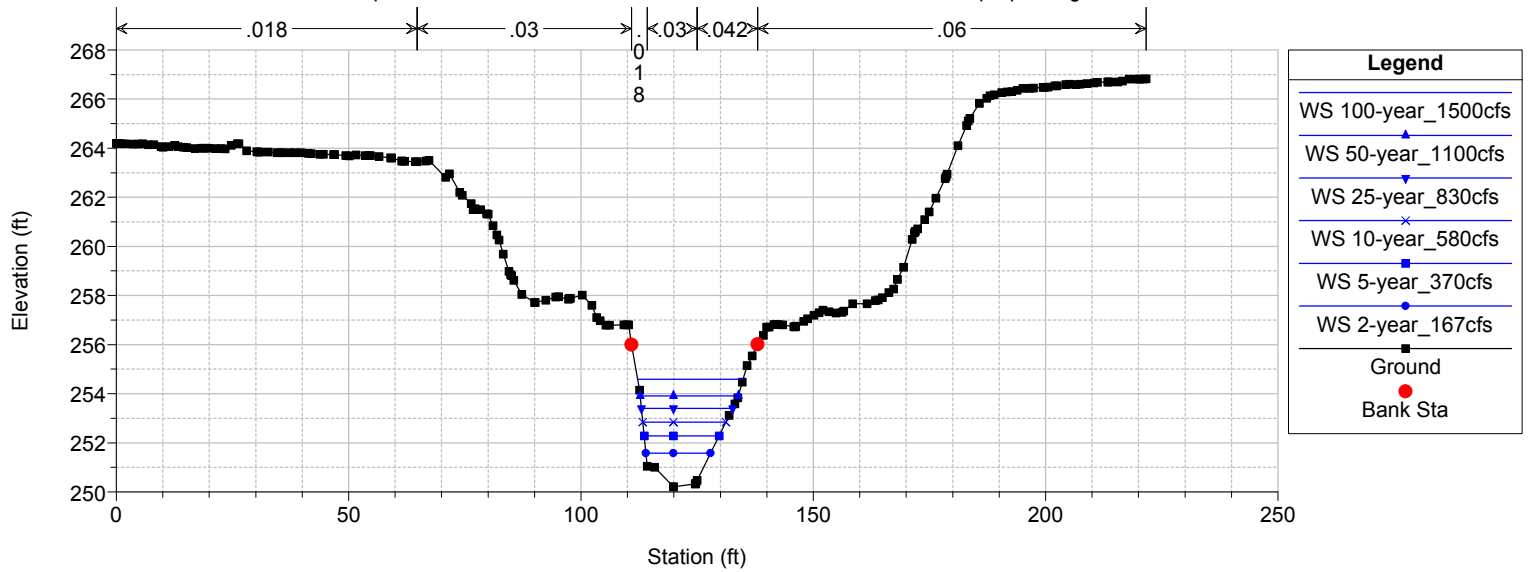
River = SChollasMap101 Reach = MainReach RS = 1004.18



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

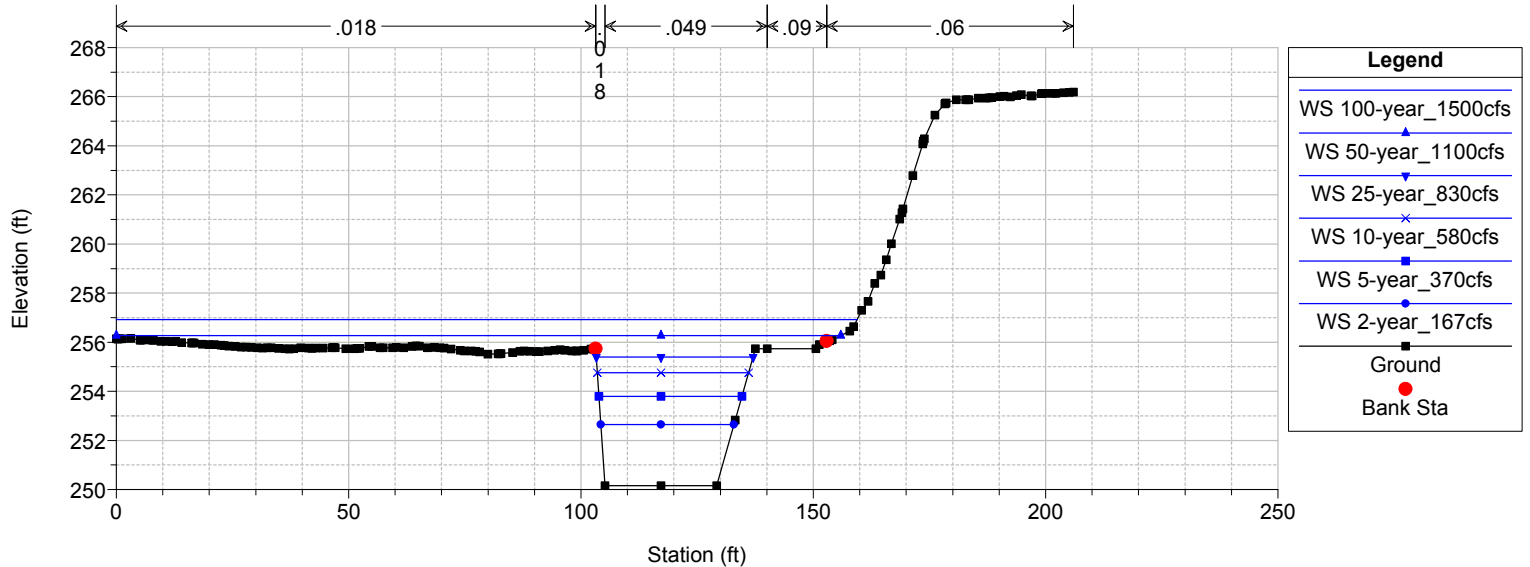
River = SChollasMap101 Reach = MainReach RS = 976.6697 Grouted 2ton riprap on right bank of concrete channel



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

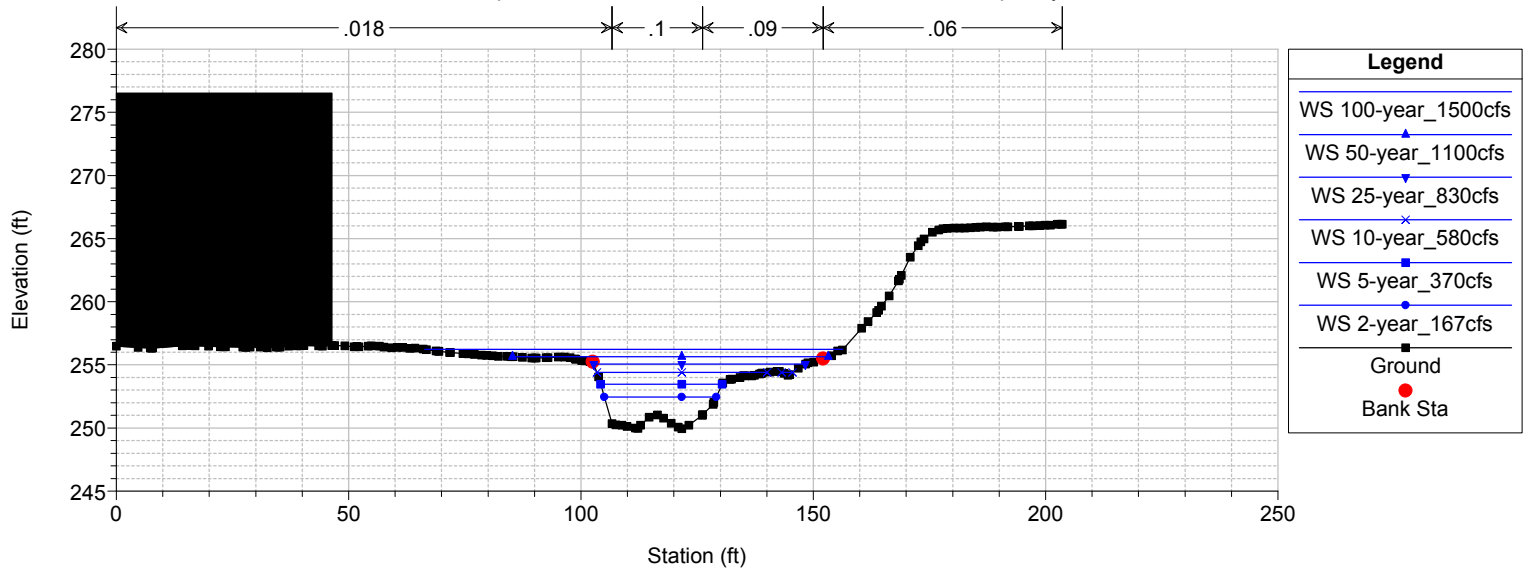
River = SChollasMap101 Reach = MainReach RS = 926.7529 transition to earthen channel. 2ton riprap



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

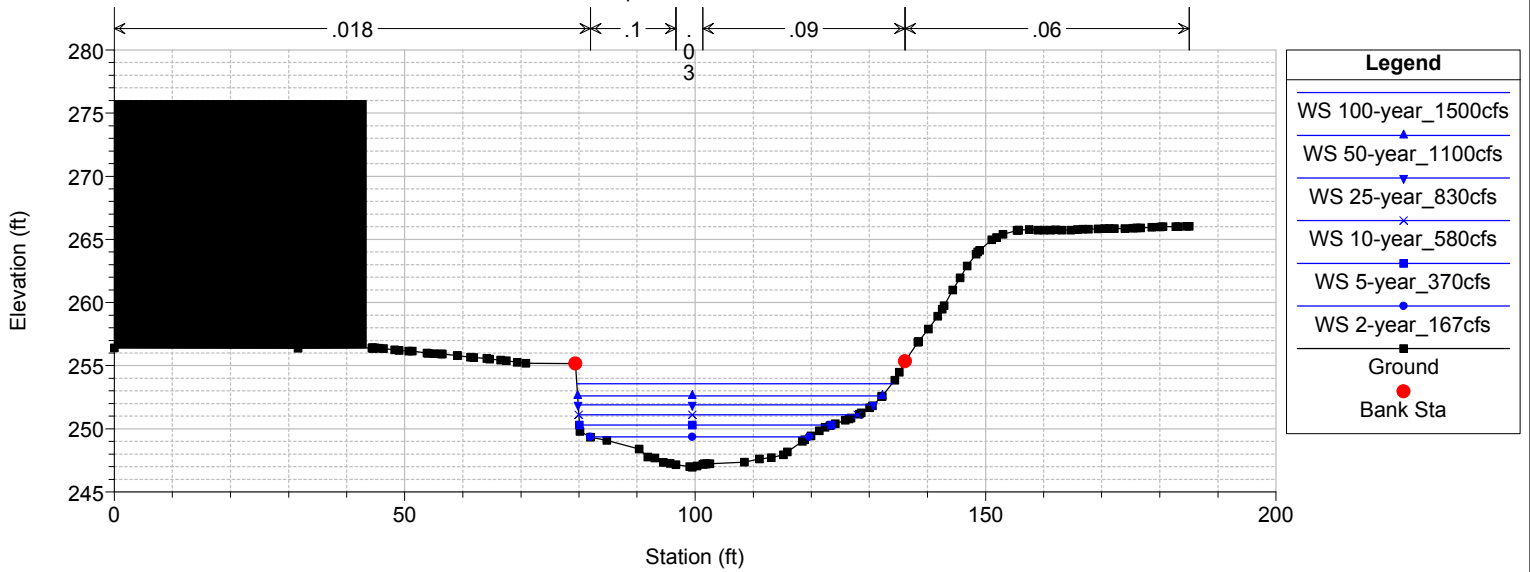
River = SChollasMap101 Reach = MainReach RS = 915.6229 completely earthen channel



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

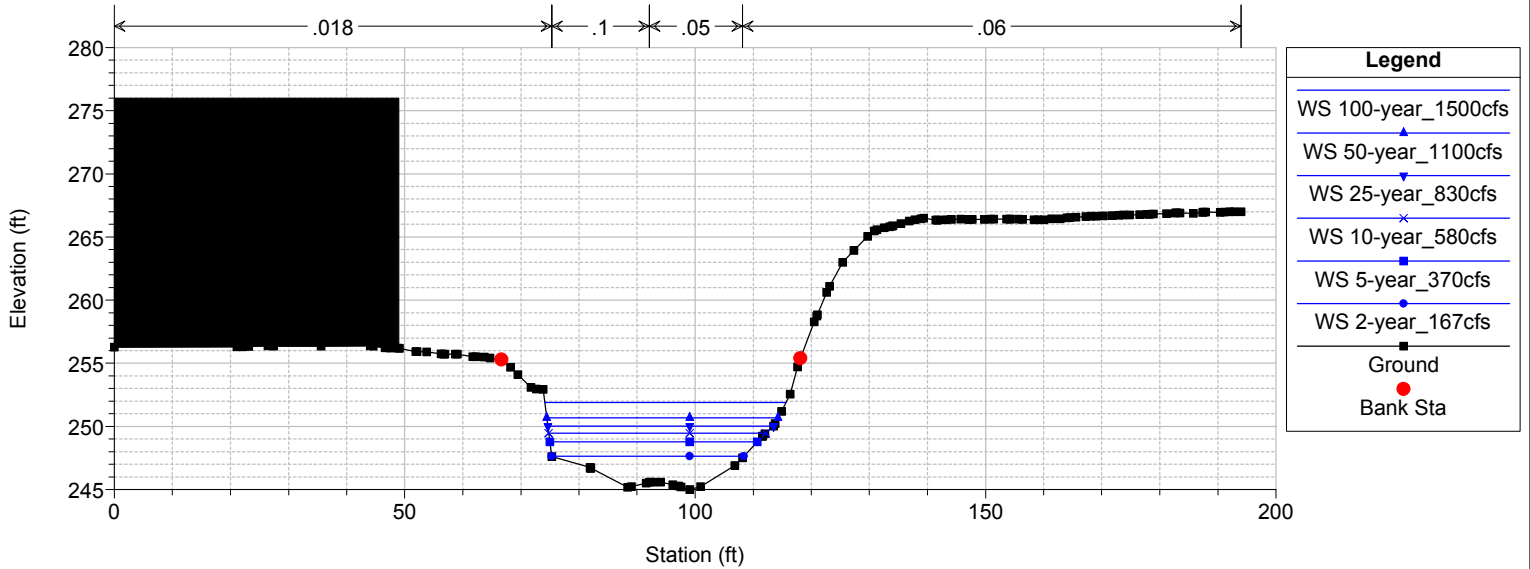
River = SChollasMap101 Reach = MainReach RS = 781.5157



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

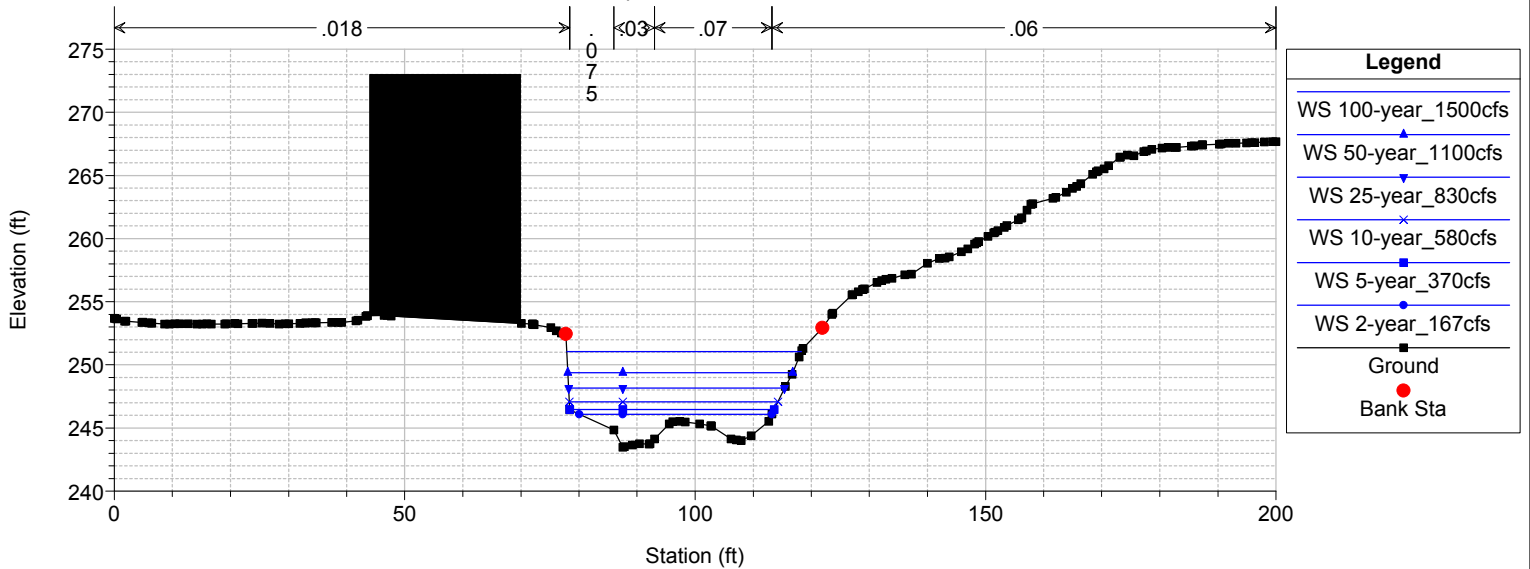
River = SChollasMap101 Reach = MainReach RS = 684.4379



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

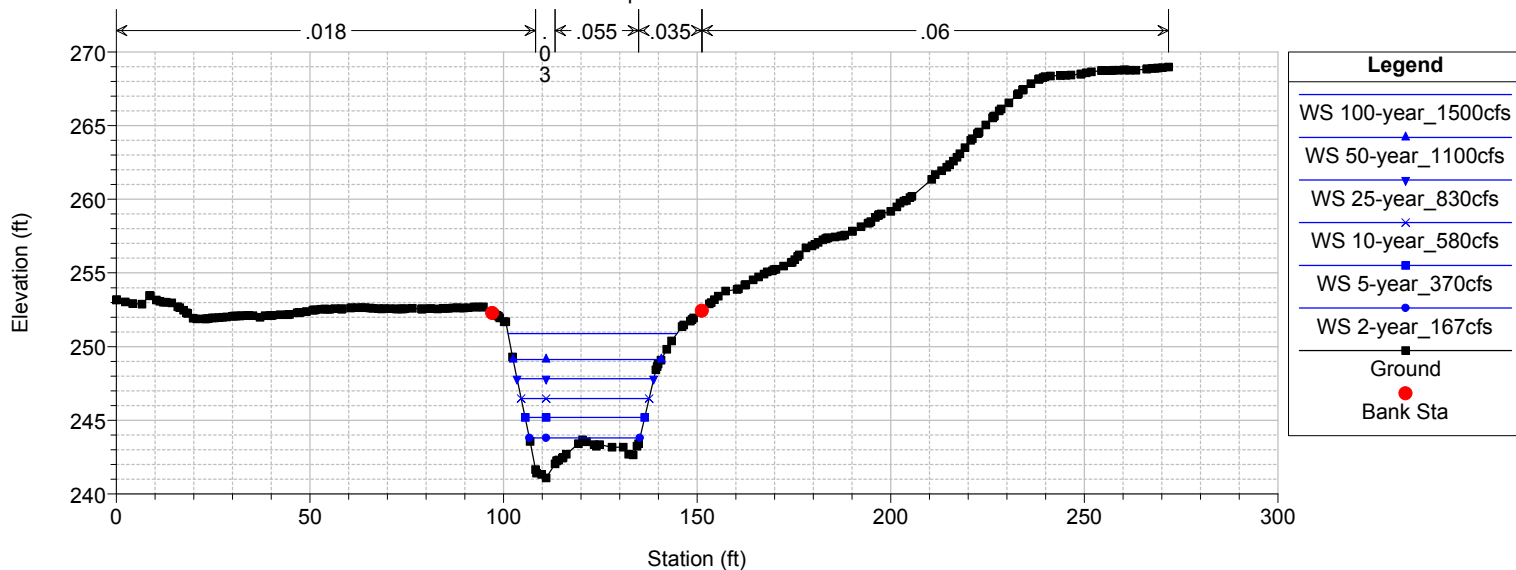
River = SChollasMap101 Reach = MainReach RS = 599.9999



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

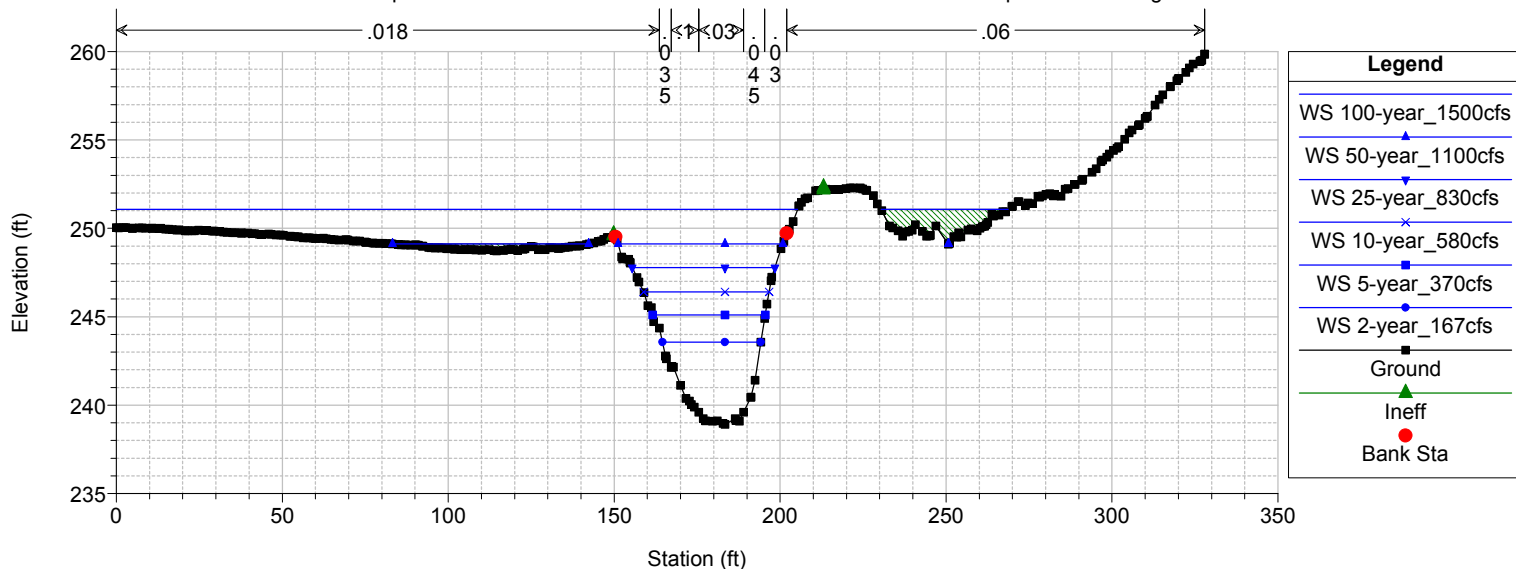
River = SChollasMap101 Reach = MainReach RS = 524.6492



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

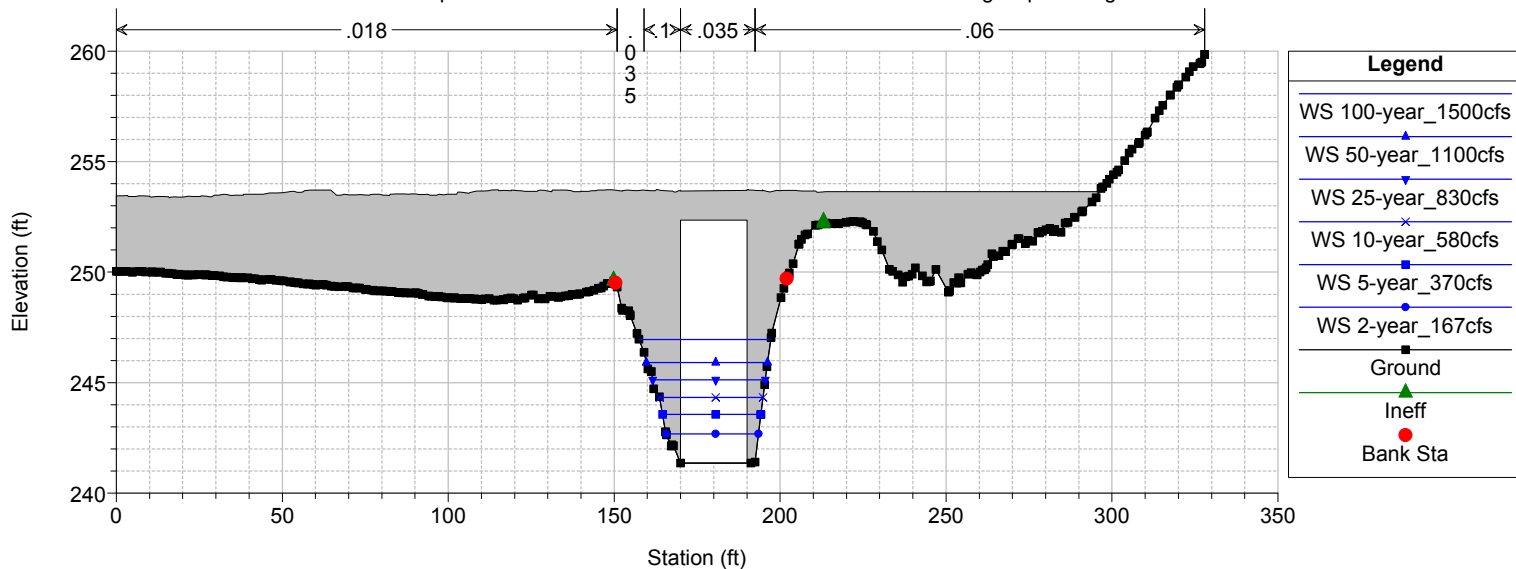
River = SChollasMap101 Reach = MainReach RS = 417.4621 Cross Section upstream of Bridge at Federal Blvd



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

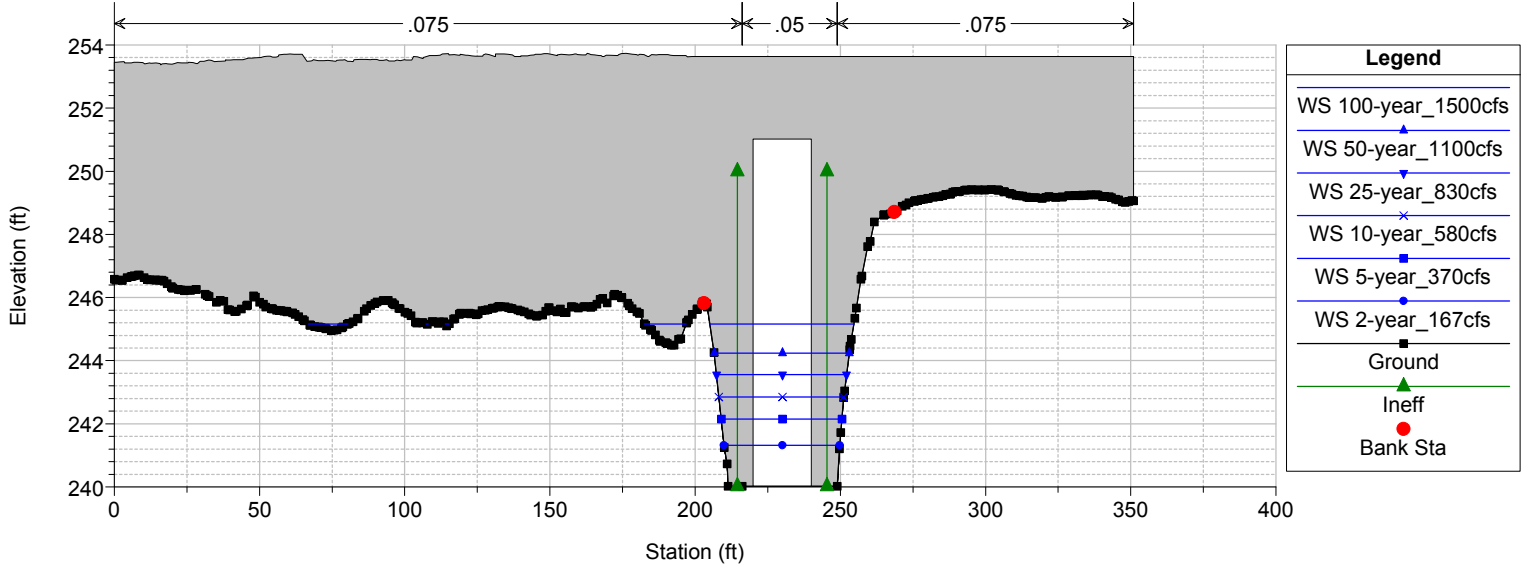
River = SChollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

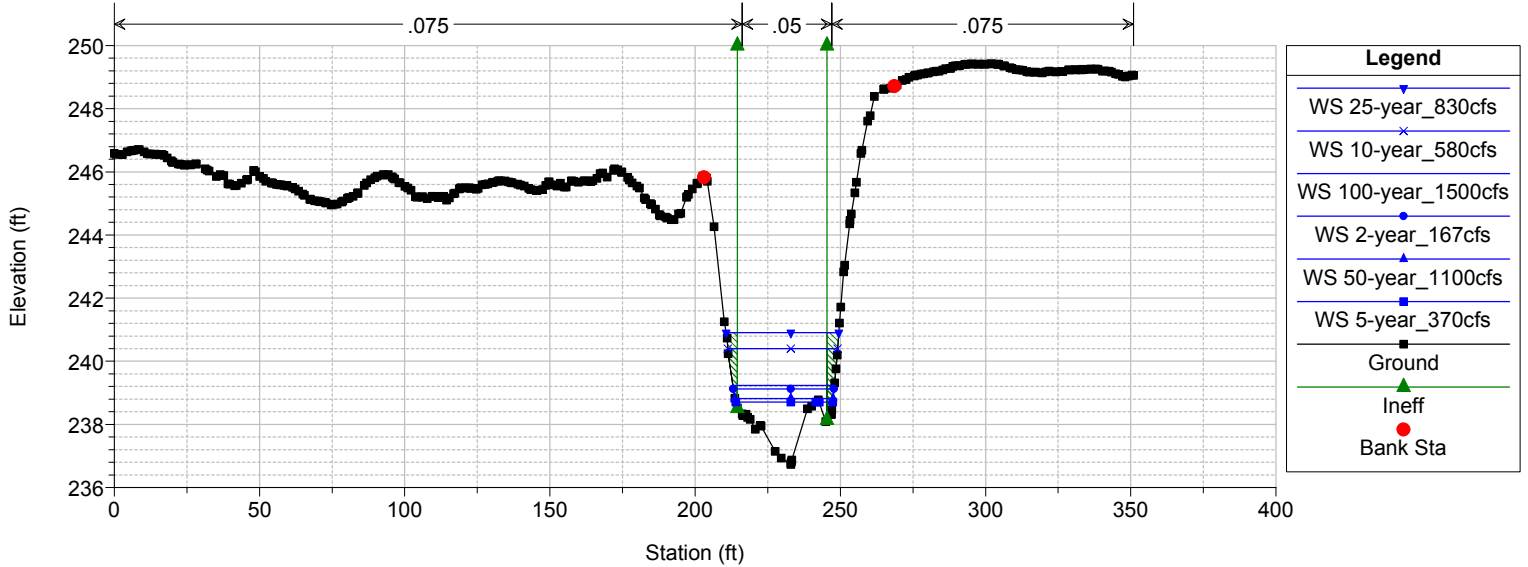
River = SChollasMap101 Reach = MainReach RS = 362.8132 Culv Single span bridge at Federal Blvd



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

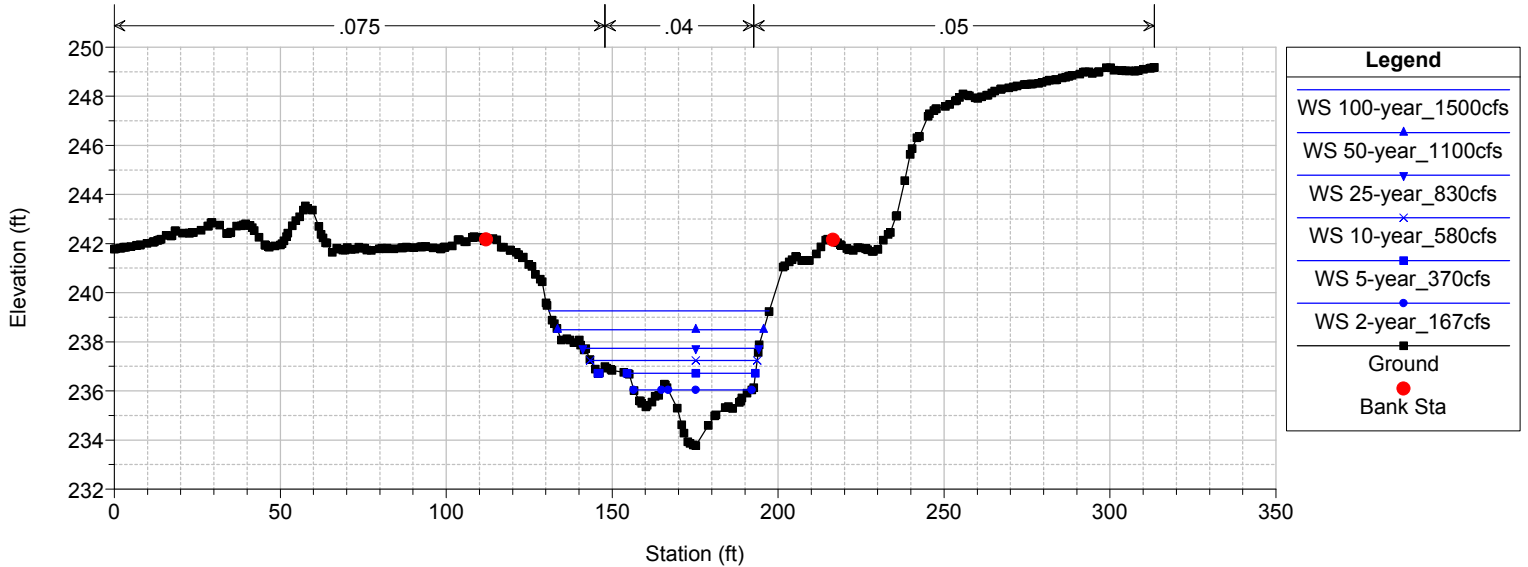
River = SChollasMap101 Reach = MainReach RS = 292.8245



SChollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

River = SChollasMap101 Reach = MainReach RS = 147.2868

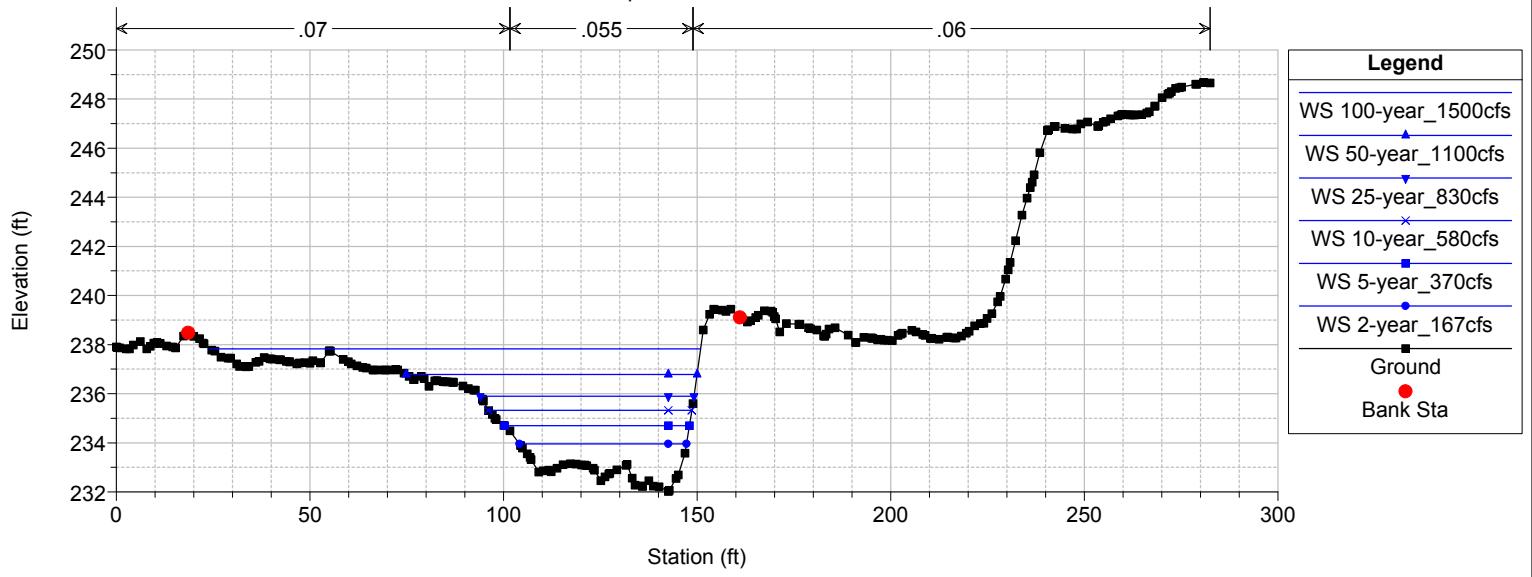




SCollas\_Map101 Plan: MaintenanceRecommended 3/14/2017

Geom: MaintainedRecommended\_R2\_Sed\_R3\_veg Flow: SteadyGVF\_Map101

River = SCollasMap101 Reach = MainReach RS = 28.06381



SChollas\_Map101.rep

HEC-RAS Version 4.1.0 Jan 2010  
 U.S. Army Corps of Engineers  
 Hydrologic Engineering Center  
 609 Second Street  
 Davis, California

```

X   X   XXXXXX   XXXX   XXXX   XX   XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
XXXXXXXX XXXX   X   XXX XXXX XXXXXXX XXXX
X   X   X       X   X   X   X   X   X
X   X   X       X   X   X   X   X   X
X   X   XXXXXX   XXXX   X   X   X   X   XXXXX
    
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PROJECT DATA  
 Project Title: SChollas\_Map101  
 Project File : SChollas\_Map101.prj  
 Run Date and Time: 3/14/2017 7:40:08 AM

Project in English units

PLAN DATA

Plan Title: MaintenanceRecommended  
 Plan File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\SChollas\_Map101.p20

Geometry Title: MaintainedRecommended\_R2\_Sed\_R3\_veg  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\SChollas\_Map101.g21

Flow Title : SteadyGVF\_Map101  
 Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\SChollas\_Map101.f01

Plan Description:  
 This maintenance condition removes the sediment and vegetation along the riprap section in Reach 2. This maintenance condition also removes the vegetation from XS 2098.664-976.67. Vegetation maintenance within Reach 3 must occur due to O&M crews accessing site.

Plan Summary Information:  
 Number of: Cross Sections = 20 Multiple Openings = 0  
 Culverts = 1 Inline Structures = 0  
 Bridges = 0 Lateral Structures = 0

Computational Information  
 water surface calculation tolerance = 0.01  
 Critical depth calculation tolerance = 0.01  
 Maximum number of iterations = 20  
 Maximum difference tolerance = 0.3  
 Flow tolerance factor = 0.001

Computation Options  
 Critical depth computed only where necessary  
 Conveyance Calculation Method: At breaks in n values only  
 Friction Slope Method: Average Conveyance  
 Computational Flow Regime: Mixed Flow

FLOW DATA

Flow Title: SteadyGVF\_Map101

SChollas\_Map101.rep

Flow File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map  
 101\WaterResources\Hydraulics\HecRas\SChollas\_Map101.f01

Flow Data (cfs)

River	Reach	RS	100-year_1500cfs	50-year_1100cfs	25-year_830cfs
10-year_580cfs	5-year_370cfs	2-year_167cfs			
SChollasMap101	MainReach	2306.424	1500	1100	830
580	370	167			
SChollasMap101	MainReach	2200	1500	1100	830
580	370	167			
SChollasMap101	MainReach	2098.664	1500	1100	830
580	370	167			
SChollasMap101	MainReach	2000	1500	1100	830
580	370	167			
SChollasMap101	MainReach	1800	1500	1100	830
580	370	167			
SChollasMap101	MainReach	1600	1500	1100	830
580	370	167			
SChollasMap101	MainReach	1400	1500	1100	830
580	370	167			
SChollasMap101	MainReach	1200	1500	1100	830
580	370	167			
SChollasMap101	MainReach	1004.18	1500	1100	830
580	370	167			
SChollasMap101	MainReach	976.6697	1500	1100	830
580	370	167			
SChollasMap101	MainReach	926.7529	1500	1100	830
580	370	167			
SChollasMap101	MainReach	915.6229	1500	1100	830
580	370	167			
SChollasMap101	MainReach	781.5157	1500	1100	830
580	370	167			
SChollasMap101	MainReach	684.4379	1500	1100	830
580	370	167			
SChollasMap101	MainReach	599.9999	1500	1100	830
580	370	167			
SChollasMap101	MainReach	524.6492	1500	1100	830
580	370	167			
SChollasMap101	MainReach	417.4621	1500	1100	830
580	370	167			

Boundary Conditions

River	Reach	Profile	Upstream
SChollasMap101	MainReach	100-year_1500cfs	Normal S = 0.035
0.014			Normal S =
SChollasMap101	MainReach	50-year_1100cfs	Normal S = 0.035
0.014			Normal S =
SChollasMap101	MainReach	25-year_830cfs	Normal S = 0.035
0.014			Normal S =
SChollasMap101	MainReach	10-year_580cfs	Normal S = 0.035
0.014			Normal S =
SChollasMap101	MainReach	5-year_370cfs	Normal S = 0.035
0.014			Normal S =
SChollasMap101	MainReach	2-year_167cfs	Normal S = 0.035
0.014			Normal S =

GEOMETRY DATA

Geometry Title: MaintainedRecommended\_R2\_Sed\_R3\_veg  
 Geometry File : w:\17204-L\_TO#39\_IHHA\_FY17\2\_ South Chollas Creek Map

Schollas\_Map101.rep  
 101\WaterResources\Hydraulics\HecRas\Schollas\_Map101.g21

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach RS: 2306.424

INPUT  
 Description: Boundary between Lemon Grove and City. Rectangular channel w/  
 minimal vegetation on bottom of channel

Station	Elevation	Data	num=	198
Sta	Elev	Sta	Elev	Sta Elev
0	279.6	4.7	279.58	2.39 279.61 2.61 279.61 2.78 279.62
4.66	279.68	6.32	279.38	6.69 279.32 7.18 279.28 8.92 279.17
10.3	279.17	11.06	279.17	11.65 279.17 13 279.18 14.68 279.16
14.86	279.15	15.02	279.15	16.41 279.13 17.83 279.1 17.91 279.1
18.01	279.1	19.76	279.08	21 279.04 21.61 279.02 22.45 279.02
23.22	279.02	23.94	279.01	24.68 278.98 25.47 278.96 26.19 278.94
26.68	278.93	27.86	278.89	29.46 278.87 29.5 278.87 29.57 278.87
31.08	278.79	32.41	278.78	32.6 278.78 32.83 278.78 34.29 278.76
35.26	278.73	35.97	278.69	37.03 278.67 37.66 278.64 38.35 278.61
39.25	278.55	40.07	278.51	40.85 278.47 41.39 278.5 42.49 278.54
44.08	278.48	44.09	278.48	45.88 278.42 47.14 278.44 47.6 278.44
47.88	278.45	49.17	278.45	50.46 278.49 50.79 278.5 51.3 278.54
52.55	278.61	54.31	278.7	54.43 278.71 54.51 278.71 56.61 278.71
58.47	278.77	58.78	278.77	59.48 278.78 60.78 278.8 61.37 278.81
62.97	278.83	64.82	278.83	65.26 278.83 65.64 278.84 67.48 278.91
68.72	278.93	69.63	278.94	70.68 278.99 71.71 279.01 72.57 279.01
73.95	279.01	75.19	279.05	75.52 279.06 76.25 279.09 78.04 279.13
78.36	279.14	78.49	279.14	79.77 279.19 80.79 279.2 81.22 279.21
81.99	279.24	83.09	279.28	83.73 279.29 84.67 279.29 86.03 279.37
86.09	279.37	86.16	279.37	87.81 279.36 89.02 279.42 89.51 279.46
90.52	279.7	91.13	279.83	91.25 279.83 91.6 279.59 91.8 279.45
93.38	278.32	97.56	275.47	98.03 275.48 99.04 275.5 100.08 275.51
100.63	275.53	102.03	275.55	102.49 275.56 102.67 275.56 104.03 275.51
105.28	275.52	105.52	275.53	105.77 275.55 107.41 275.66 108.28 275.59
109.76	275.53	111.33	275.63	112.27 275.84 113.92 276.45 114.65 276.83
115.72	277.21	117.13	278.51	117.76 279.48 118.35 280.39 120.95 282.09
121.64	282.64	123.54	284.47	124.53 285.11 124.57 285.12 125.05 285.27
126.33	285.56	128.34	285.95	128.42 285.96 128.47 285.98 128.56 286.02
128.96	286.15	132.76	287.36	133.12 287.52 133.78 287.67 135.23 287.88
136.76	288.22	138.14	288.32	139.72 288.95 140 289.09 141.28 289.78
142.96	290.7	143.33	290.84	143.73 290.91 145.11 290.91 145.95 291.65
146.83	291.94	149.04	292.72	150.29 293.28 151.44 293.69 151.95 294.11
152.5	294.3	153.94	294.89	155.41 295.32 155.93 295.45 156.4 295.6
157.6	295.91	158.93	296.54	159.42 296.82 161.32 297.59 161.75 297.78
161.86	297.83	163.45	298.66	164.78 299.79 165.4 300.11 166.61 300.44
167.79	301.44	168.16	301.74	168.54 302.09 169.76 302.79 170.75 303.49
171.41	303.65	172.25	303.81	173.03 303.83 173.82 304.23 174.63 304.65
175.42	304.95	176.21	305.27	177 305.24 179.37 305.28 179.67 305.42
181.09	305.98	182.34	306.03	182.89 306.03 183.47 305.98 184.85 305.81
186.18	305.8	186.77	305.78	187.02 305.77

Manning's n Values				
num=	4			
Sta	n Val	Sta	n Val	Sta
0	.018	97.56	.03	113.92

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	91.8	117.76		107.15	106.42	105.18	.1	.3
Ineffective Flow	num=							
	Sta L	Sta R	Elev	Permanent				
0	91.09	279.84	F	1				

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach RS: 2200

INPUT  
 Description: Channel transitions to a trapezoidal concrete channel. Bank  
 stations are at the top of the concrete channel.

Station	Elevation	Data	num=	183
---------	-----------	------	------	-----

Schollas\_Map101.rep

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	278.13	15.69	277.6	17.89	277.55	19.52	277.53	20.13	277.42
20.81	277.38	21.65	277.36	22.18	277.37	23.77	277.26	25.11	277.15
26.01	277.15	27.76	277.13	28.61	277.09	30.35	277.07	30.98	277.06
31.29	277.05	32.92	277.03	34.47	277.01	34.8	277.01	35.14	277.01
37.08	276.97	38.51	276.94	39.27	276.93	39.96	276.89	41.2	276.82
42.54	276.78	43.36	276.75	46.11	276.65	46.15	276.65	46.2	276.65
47.91	276.54	49.55	276.44	49.65	276.44	49.77	276.44	51.27	276.41
52.66	276.38	52.91	276.37	53.18	276.36	54.61	276.32	55.77	276.26
56.34	276.24	57.02	276.21	58.11	276.16	59.35	276.13	59.91	276.11
60.4	276.1	62.51	276.03	64.13	275.93	64.94	275.87	65.87	275.87
66.69	275.87	67.41	275.83	68.71	275.79	70.64	275.82	70.89	275.83
71.06	275.83	72.59	275.85	74.25	275.86	74.3	275.86	74.34	275.86
76.65	275.89	78.09	275.88	78.89	275.87	80.38	275.95	81	275.99
81.33	276	83.17	276.01	84.74	276.04	85.4	276.05	86.55	276.06
86.79	275.76	88.33	273.91	89.95	272.2	91.88	271.72	92.1	271.72
92.82	271.74	94.53	271.79	95.05	271.79	96.48	271.81	98.16	271.83
98.3	271.84	98.42	271.84	100.8	271.83	101.69	271.84	102.81	271.83
104.12	271.84	104.55	271.85	104.9	271.84	107.16	271.86	107.62	271.87
108.56	271.84	110.29	275.02	111.05	275.75	112.9	277.5	113.73	278.49
114.15	278.68	115.59	279.64	117.3	280.46	117.54	280.58	117.83	280.72
119.2	281.59	120.38	282.44	121.16	283.01	123.26	284.17	123.37	284.24
124.16	284.49	125.39	284.71	126.31	284.94	127.57	285.1	129.5	285.33
130.11	285.44	131.31	285.57	132.04	285.67	132.41	285.7	134.47	285.9
135.35	285.97	136.71	286.22	138.18	286.53	138.86	286.71	141.06	286.95
141.19	286.94	141.87	287.01	143.55	287.2	143.88	287.23	145.68	287.55
146.71	287.63	147.97	287.76	149.45	288.22	150.21	288.52	151.99	289.65
152.04	289.67	152.09	289.69	155.23	291.42	155.82	291.68	156.89	292.04
157.4	292.48	158.37	293.29	159.6	293.74	159.81	293.77	159.98	293.83
161.32	294.17	162.41	294.85	162.84	294.99	163.42	295.14	164.38	295.25
165.12	295.84	165.9	296.44	167.06	297.05	167.39	297.23	167.61	297.29
169.05	297.85	171.02	299.13	171.68	299.49	171.99	299.68	172.5	300.06
173.68	300.76	175.09	301.41	175.42	301.58	175.86	301.77	176.79	302.14
177.54	302.28	178.41	302.41	180.23	302.32	180.42	302.35	182.64	302.89
182.76	302.9	183.45	302.84	184.88	302.73	185.14	302.72	187.35	302.66
187.75	302.66	189.76	302.69	190.33	302.68	191.96	302.61	192.65	302.58
194.45	302.56	195.25	302.57	196.64	302.51	197.72	302.5	198.42	302.52
199.29	302.48	199.91	302.47	200	302.46				

Manning's n Values				
num=	4			
Sta	n Val	Sta	n Val	Sta
0	.018	91.88	.03	108.56

Bank Sta:	Left	Right	Lengths:	Left Channel	Right	Coeff	Contr.	Expan.
	86.79	111.05		101.52	101.34	97.26	.1	.3
Blocked Obstructions	num=							
	Sta L	Sta R	Elev					
0	18.55	290	1					

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach RS: 2098.664

INPUT  
 Description: Channel transitions to a trapezoidal concrete channel. Bank  
 stations are at the top of the concrete channel.

Station	Elevation	Data	num=	200
Sta	Elev	Sta	Elev	Sta Elev
0	279.17	1.33	279.15	1.56 279.14 1.78 279.13 4.36 279.13
6.7	279.1	7.11	279.08	7.49 279.08 9.46 279.08 11.69 279.04
11.77	279.04	11.83	279.04	13.62 279 14.79 278.99 15.44 278.99
16.51	278.98	17.44	278.97	18.25 278.97 19.6 278.96 21.15 278.92
21.71	278.9	22.09	278.9	23.68 278.87 25.44 278.84 25.67 278.84
26	278.83	27.67	278.8	28.97 278.83 29.71 278.83 30.61 278.81
31.69	278.79	32.47	278.79	33.65 278.78 35.31 278.79 35.6 278.79
35.8	278.79	37.43	278.72	38.85 278.69 39.26 278.69 39.85 278.68
41.09	278.68	41.94	278.67	42.99 278.64 44.66 278.65 45 278.65
45.43	278.64	47.54	278.59	49.16 278.58 49.93 278.58 50.52 278.58
52.04	278.58	54.01	278.51	54.2 278.51 54.52 278.51 57.03 278.54
58.53	278.5	59.54	278.48	60.39 278.47 61.72 278.48 63.3 278.49
64.04	278.5	65.12	278.52	66.72 278.53 67.8 278.52 69.28 278.49

Schollas\_Map101.rep

Table with 10 columns of elevation data for Schollas\_Map101.rep, including station numbers and elevations.

Manning's n values table with 10 columns: Manning's n, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. table with 8 columns.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 2000

INPUT Description: Station Elevation Data num= 166

Table with 10 columns of elevation data for Schollas\_Map101.rep, including station numbers and elevations.

Schollas\_Map101.rep

Table with 10 columns of elevation data for Schollas\_Map101.rep, including station numbers and elevations.

Manning's n values table with 10 columns: Manning's n, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. table with 8 columns.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 1800

INPUT Description: Station Elevation Data num= 138

Table with 10 columns of elevation data for Schollas\_Map101.rep, including station numbers and elevations.

Manning's n values table with 10 columns: Manning's n, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. table with 8 columns.

Blocked Obstructions table with 4 columns: Sta L, Sta R, Elev, num=.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 1600

INPUT Description: Station Elevation Data num= 209

Table with 10 columns of elevation data for Schollas\_Map101.rep, including station numbers and elevations.

Schollas_Map101.rep												
0	274.72	18.29	274.37	19.71	274.38	23.56	274.41	26.33	274.34			
28.76	274.28	31.78	274.28	33.26	274.23	34.61	274.15	35.51	274.12			
38.2	274.19	38.58	274.23	40.16	274.22	40.3	274.22	40.75	274.22			
41.19	274.22	42.75	274.19	44.19	274.14	44.66	274.14	45.07	274.09			
47.3	274.08	48.28	274.06	49.07	274.06	49.26	274.05	49.4	274.05			
49.62	274.05	51.23	274.01	52.34	273.99	52.83	273.98	53.27	273.98			
54.53	273.97	56.44	273.91	56.53	273.91	57.32	273.89	57.74	273.88			
58.52	273.87	59.83	273.86	60.54	273.85	61.37	273.88	61.44	273.88			
61.51	273.88	61.67	273.88	63.83	273.9	64.74	273.9	65.28	273.88			
65.75	273.9	66.86	273.91	69.14	273.89	69.49	273.89	70.12	273.87			
72.46	274.03	72.98	274.08	73.89	273.78	76.53	272.5	78.02	271.79			
78.68	271.43	79.45	271.02	80.23	270.55	81.44	269.86	82.46	269.16			
83.11	268.85	84.06	268.24	84.28	268.11	84.48	268.02	85.02	267.81			
86.1	267.45	86.73	267.23	87.46	266.95	89.1	266.04	89.28	265.94			
89.31	265.93	89.34	265.9	93.02	263.1	93.08	263.06	93.22	262.95			
93.71	262.6	94.28	262.21	94.46	262.08	94.66	261.98	96.58	260.91			
98.32	260.39	98.5	260.34	99.45	260.31	99.65	260.3	99.88	260.3			
101.65	260.3	103.36	260.32	103.53	260.33	104.21	260.49	104.41	260.57			
104.46	260.59	106.58	261.73	108.5	262.87	108.99	263.21	109.58	263.6			
111.61	264.98	112.36	265.54	113.3	266.02	113.57	266.1	114.14	266.33			
116.14	267.12	117.19	267.07	118.73	267.06	119.2	267.05	119.76	267.07			
120.7	267.16	122.3	267.47	123.75	267.55	124.35	267.71	124.82	267.98			
126.35	269.21	127.25	269.72	129.38	271.58	133.06	272.68	133.51	272.78			
133.75	272.84	135.69	273.3	138.52	273.59	139.35	273.6	139.86	273.8			
140.35	273.9	143.61	273.11	144.08	275.3	144.57	275.3	145.8	275.47			
149.12	276.38	151.02	276.66	151.55	276.69	154.12	276.78	154.81	276.74			
155.15	276.75	155.69	276.8	156.83	277.12	157.61	277.31	157.98	277.48			
158.32	277.65	158.69	277.84	159.34	278.17	161.28	279.45	161.61	279.6			
161.99	279.74	163.93	280.79	164.76	281.15	165.27	281.39	165.38	281.44			
167.28	282.44	167.4	282.52	168.07	283.02	168.17	283.09	168.94	283.49			
169.59	283.85	169.66	283.89	170.38	284.17	170.43	284.18	171.71	284.2			
171.91	284.16	172.48	284.2	172.76	284.14	172.96	284.21	173.97	284.52			
174.76	284.72	175.07	284.77	175.32	284.75	176.4	284.72	177.44	284.67			
178.01	284.66	179.49	284.67	179.53	284.67	180.01	284.69	181.5	284.67			
181.72	284.65	181.84	284.67	182.97	284.63	183.22	284.61	184.45	284.56			
184.57	284.56	185.14	284.57	185.64	284.59	186.05	284.58	186.4	284.57			
187.33	284.55	188.33	284.55	188.46	284.53	188.5	284.52	189.29	284.56			
189.63	284.56	190.23	284.57	190.77	284.56	191.27	284.53	191.68	284.54			
191.95	284.56	192.52	284.56	192.66	284.56	192.7	284.56	192.77	284.55			
193.7	284.55	194.02	284.54	194.81	284.58	195.15	284.58	195.54	284.58			
195.92	284.56	196.05	284.56	196.23	284.56	197.27	284.54	197.96	284.54			
198.14	284.54	198.84	284.51	199.06	284.53	200	284.5					
Manning's n Values												
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	n Val
0	.018	72.46	.03	89.1	.018	104.21	.018	113.3	.06			
Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.												
89.1	113.3	199.8	200	200.08	.1	.3						
Blocked Obstructions												
Sta L	Sta R	Elev										
0	39.88	294.7										
CROSS SECTION												
RIVER: SchollasMap101												
REACH: MainReach RS: 1400												
INPUT												
Description:												
Station	Elevation	Data	num=	154								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Elev
0	272.81	.84	272.79	2.03	272.77	2.4	272.78	3.24	272.74			
4.87	272.71	7.27	272.74	7.82	272.75	8.49	272.75	10.92	272.7			
12.55	272.67	13.12	272.67	13.8	272.67	16.76	272.66	17.9	272.63			
19.05	272.64	19.14	272.65	19.44	272.65	23.35	272.63	23.82	272.63			
24.61	272.65	26.56	272.68	28.72	272.67	29.37	272.69	30	272.69			
31.47	272.69	34.17	272.69	35.21	272.66	35.43	272.65	36.05	272.63			
39.41	272.47	39.77	272.47	40.71	272.5	43.36	272.48	44.8	272.54			
47.82	273.11	49.99	273.56	51.14	273.52	51.2	273.52	51.39	273.52			
55.12	273.47	55.6	273.48	56.41	273.5	58.56	273.45	60.19	273.45			
61.15	273.45	61.35	273.44	61.55	273.39	69.66	272.26	69.97	272.3			

Schollas_Map101.rep												
70.27	272.25	71.16	272.19	72.35	271.75	74.72	270.74	75.27	270.68			
75.84	270.6	77.07	270.05	79.33	268.98	79.63	268.9	80.4	268.02			
82.08	266.67	84.02	265.75	84.62	265.45	85.26	265.1	85.29	265.08			
88.83	263.34	88.99	263.23	89.13	263.16	90.13	262.43	92.03	260.9			
92.84	260.3	93.05	260.16	93.92	259.57	95.35	258.51	96.21	257.96			
97.09	257.64	97.3	257.56	98.9	257.46	100.42	257.36	100.85	257.37			
101.5	257.4	103.59	257.78	104.84	258.04	105.81	258.51	106.04	258.61			
106.37	258.84	108.19	260.04	109.34	260.81	112.84	261.87	114.69	262.55			
116.39	263.12	117.61	263.5	118.63	263.83	119.76	264.51	119.81	264.52			
119.99	264.51	123.41	264.48	123.75	264.58	124.45	265.13	127.56	266.85			
131.25	268.86	133.73	270.21	138.8	271.45	139.12	271.55	141.65	271.98			
142.65	272.01	147.14	271.81	147.67	271.75	148.66	271.53	151.73	271.16			
152.06	271.12	152.45	271.16	153.27	271.22	153.96	271.38	156.76	272.1			
157.29	272.17	158.01	272.41	160.66	273.48	161.41	273.8	162.35	274.29			
162.56	274.4	162.71	274.49	165.99	276.41	166.55	276.65	167.21	276.91			
169.29	277.33	170.56	277.59	171.6	277.76	171.72	277.78	174.83	277.8			
175.15	277.8	175.38	277.79	176.32	277.75	178.87	277.79	179.64	277.8			
179.99	277.8	180.85	277.77	182.72	277.79	184.23	277.81	184.82	277.81			
185.49	277.8	187.28	277.81	188.99	277.85	189.66	277.85	190.18	277.84			
192.1	277.87	193.64	277.9	194.42	277.9	194.96	277.88	197.72	277.95			
198.58	277.96	198.79	277.95	199.81	277.95	200	277.95					
Manning's n Values												
Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	Sta	n Val	n Val
0	.018	61.15	.03	89.13	.018	104.84	.018	116.39	.06			
Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.												
89.13	116.39	199.83	200	200.13	.1	.3						
CROSS SECTION												
RIVER: SchollasMap101												
REACH: MainReach RS: 1200												
INPUT												
Description:												
Station	Elevation	Data	num=	168								
Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Elev
0	270.46	.59	270.38	3	270.04	4.56	269.97	4.77	269.95			
5.08	269.95	7.91	269.91	8.15	269.93	8.92	269.99	10.59	270.05			
12.16	269.97	13.81	269.97	14.67	269.93	16.11	269.75	20.6	269.6			
22.54	269.69	24.93	269.8	27.2	269.79	28.37	269.79	28.98	269.78			
30.14	269.74	32.21	269.76	33.63	269.75	34.46	269.78	35.41	269.8			
37.17	269.76	39.02	269.73	40.45	269.79	40.8	269.8	41.82	269.77			
44.26	269.7	44.63	269.68	46.1	269.65	48.13	269.61	49.64	269.58			
51.19	269.55	51.43	269.55	54.12	269.52	54.85	269.49	55.54	269.47			
56.64	269.45	57.82	269.43	60.11	269.41	60.61	269.42	61.93	269.46			
64.39	269.37	65.27	269.37	65.58	269.45	66.99	269.82	69.58	269.62			
70.3	269.56	71.36	269.32	72.09	269.19	72.45	269.01	75.32	267.43			
75.35	267.41	76.95	266.53	78.16	265.77	80.15	264.53	81.53	263.88			
81.85	263.73	82.98	262.94	84.96	261.58	85.49	261.32	86.2	260.98			
86.64	260.77	87.63	260.17	88.38	259.7	89.66	258.97	91.02	258.08			
91.23	257.94	91.56	257.72	94.22	255.91	95.36	255.39	95.74	255.21			
96.22	255.08	98.53	254.52	99.6	254.44	100.03						



Schollas\_Map101.rep

Manning's n Values num= 5  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 66.99 .03 87.63 .018 102.79 .018 113.41 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
87.63 113.41 197.21 195.82 194.66 .1 .3

CROSS SECTION

RIVER: SchollasMap101

REACH: MainReach RS: 1004.18

INPUT Description:

Station Elevation Data num= 190

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	265.38	.33	265.38	1.53	265.36	3.49	265.37	4.06	265.37
4.68	265.37	6	265.39	7.96	265.39	8.57	265.38	9.13	265.37
10.47	265.35	12.95	265.3	13.04	265.3	13.1	265.3	14.94	265.27
16.59	265.28	17.45	265.28	18.27	265.28	19.43	265.27	20.55	265.26
22.11	265.24	23.33	265.25	24.09	265.25	25.28	265.24	26.7	265.25
27.87	265.23	28.77	265.24	29.96	265.23	31.42	265.23	32.72	265.21
33.43	265.2	34.14	265.19	36.03	265.23	37.65	265.2	38.11	265.19
40.16	265.15	40.81	265.14	43	265.11	43.03	265.11	43.07	265.11
45.63	265.05	46.47	265.02	47.74	264.99	49.31	265.03	50.54	265.06
51.35	265.05	52.78	265.07	54.61	265.02	55.56	265.01	57.1	265.01
57.75	265	59.97	264.96	60.61	264.95	62.74	264.95	62.81	264.95
62.95	264.95	66.45	264.88	67.62	264.81	67.95	264.8	68.32	264.8
70.82	264.79	71.58	264.77	73.1	264.75	74.25	264.73	76.09	264.69
77.28	264.66	78.4	264.7	79.79	264.64	81.24	264.51	83.45	264.43
83.6	264.43	83.67	264.43	86.51	264.65	88.47	265.13	88.8	265.17
90.05	265.39	91.63	265.58	92.35	265.78	93.94	266.13	95.98	266
96.76	265.86	97.31	265.66	99.11	264.98	100.57	264.04	101.84	263.28
103.32	262.34	104.05	261.8	104.98	260.89	106.8	258.96	107.96	258.03
108.29	257.77	109.07	257.1	110.9	255.75	111.71	255.19	112.05	254.96
113.82	253.77	115.3	252.97	116.48	252.34	117.76	251.91	118.65	251.62
119.61	251.52	121.21	251.37	122.88	251.45	123.33	251.46	123.67	251.52
125.82	251.75	126.31	252.06	127.85	253.09	128.67	253.67	130.34	254.67
131.89	255.48	132.28	255.73	132.78	256.04	133.94	256.76	134.78	257.1
136.31	257.84	136.49	257.92	136.89	257.95	138.79	258.12	139.48	258.25
140.58	258.54	141.7	258.66	144.35	258.94	144.52	258.95	144.82	258.89
146.74	258.54	147.1	258.52	148.62	258.41	149.28	258.29	150.86	258.11
152.72	258.13	155.09	258	155.33	257.98	157.13	258.15	158.09	258.14
159.49	258.12	161.41	258.28	161.43	258.28	161.45	258.28	163.91	258.52
165.73	258.83	166	258.88	166.45	259	168.44	259.56	170.54	260.32
170.55	260.32	173.09	261.46	174.38	262.02	175.17	262.36	176.29	262.75
177.83	263.23	178.82	263.69	179.92	264.17	181.25	264.77	182.45	265.33
183.31	265.62	184.63	266.08	186.39	266.42	187.24	266.58	188.72	266.68
189.32	266.7	191.31	266.68	191.82	266.68	193.95	266.71	193.99	266.71
194.29	266.72	196.5	266.84	196.93	266.84	198.64	266.88	199.76	266.88
201.05	266.91	202.8	266.95	203.19	266.95	203.45	266.96	205.63	267
206.31	267.01	207.85	267.04	209.43	267.06	210.22	267.08	212.06	267.1
212.26	267.1	212.37	267.1	214.73	267.15	215.69	267.17	216.86	267.16
218.89	267.2	219.2	267.21	219.36	267.21	221.27	267.23	221.35	267.23

Manning's n Values num= 5  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 93.94 .03 109.07 .018 125.82 .018 134.78 .06

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
109.07 134.78 29.27 27.51 26.96 .1 .3

CROSS SECTION

RIVER: SchollasMap101

REACH: MainReach RS: 976.6697

INPUT Description: Grouted 2ton riprap on right bank of concrete channel

Station Elevation Data num= 190

Schollas\_Map101.rep

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	264.19	.34	264.19	.97	264.18	1.8	264.18	3.54	264.17
4.69	264.17	5.62	264.18	6.89	264.14	8.06	264.14	9.65	264.06
10.07	264.04	11.31	264.07	12.52	264.11	13.26	264.07	14.48	264.04
15.14	264.03	16.94	263.98	18.35	264	18.95	264	19.89	264.04
21.36	263.98	22.54	263.98	23.41	263.97	24.73	264.11	26	264.18
26.41	264.18	28.04	263.89	30.2	263.85	30.52	263.84	30.84	263.84
32.69	263.84	34.67	263.82	35.23	263.81	35.83	263.81	37.3	263.81
38.45	263.81	39.84	263.81	41.22	263.79	41.97	263.78	43.8	263.75
44.59	263.75	46.77	263.74	46.86	263.74	46.95	263.74	49.4	263.7
50.11	263.69	51.56	263.72	53.57	263.7	54.28	263.7	54.7	263.7
56.57	263.66	59.02	263.61	59.25	263.6	61.46	263.48	61.53	263.48
62.02	263.47	64.31	263.45	64.72	263.45	66.61	263.48	67.31	263.5
70.87	262.81	71.68	262.95	73.93	262.2	74.47	262.08	76.41	261.75
76.82	261.5	77.22	261.54	78.39	261.5	79.7	261.33	80	261.32
81.06	260.84	81.86	260.47	82.34	260.26	83.28	259.69	84.51	258.98
84.84	258.85	85.08	258.81	85.56	258.61	87.24	258.04	87.07	257.72
90.08	257.72	90.09	257.72	92.42	257.81	94.59	257.94	95.17	257.95
97.28	257.84	97.55	257.89	97.74	257.88	100.3	258.02	102.37	257.6
103.37	257.1	104.13	256.97	105.36	256.79	106.12	256.79	109.23	256.8
109.88	256.81	110.28	256.81	110.9	256	112.63	254.15	114.27	251.04
115.83	251	119.92	250.21	119.93	250.21	124.61	250.33	124.67	250.33
124.72	250.35	125.01	250.47	131.89	253.12	133.14	253.59	133.78	253.83
134.7	254.47	135.74	255.15	136.83	255.54	138	256.01	139.23	256.38
139.96	256.71	140.48	256.71	141.55	256.82	142.04	256.82	142.52	256.82
143.38	256.81	145.82	256.73	146.04	256.73	146.12	256.73	146.22	256.75
147.96	256.95	148.79	257.05	150.13	257.19	151.25	257.3	152.06	257.4
153.36	257.34	154.92	257.29	156.15	257.31	156.55	257.37	158.44	257.66
161.55	257.66	163.36	257.79	163.98	257.82	164.85	257.91	166.26	258.12
167.27	258.27	168.14	258.65	169.39	259.15	171.27	260.29	171.78	260.56
171.95	260.61	172.44	260.72	173.94	261.09	174.94	261.4	176.4	261.96
178.37	262.76	178.56	262.84	178.76	262.94	181.16	264.1	182.98	264.93
183.32	265.1	183.7	265.21	185.76	265.82	187.31	266.03	188.01	266.13
188.88	266.17	190.55	266.26	191.72	266.29	192.69	266.31	193.89	266.36
195.13	266.43	196.58	266.44	197.35	266.45	199.46	266.47	199.8	266.47
200.56	266.49	201.98	266.54	202.47	266.54	204.33	266.59	205.1	266.6
206.52	266.59	207.47	266.61	208.91	266.63	210.43	266.66	211.19	266.68
213.39	266.7	213.51	266.7	213.78	266.7	215.57	266.7	216.55	266.74
217.98	266.81	219.67	266.81	220.21	266.82	221.07	266.82	221.6	266.83

Manning's n Values num= 6  
Sta n Val Sta n Val Sta n Val Sta n Val Sta n Val  
0 .018 64.72 .03 110.9 .018 114.27 .03 125.01 .042

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.  
110.9 138 49.84 49.92 47.71 .1 .3

CROSS SECTION

RIVER: SchollasMap101

REACH: MainReach RS: 926.7529

INPUT Description: transition to earthen channel. 2ton riprap

Station Elevation Data num= 142

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	256.14	.35	256.13	.71	256.14	1.3	256.14	3.07	256.15
5.09	256.09	5.15	256.09	5.67	256.09	7.54	256.09	7.98	256.08
9.6	256.04	10.74	256.04	12	256.02	12.77	256.03	14.07	255.98
16.16	255.97	16.4	255.97	16.71	255.97	18.53	255.92	19.93	255.91
21.05	255.9	22.53	255.88	23.18	255.86	24.17	255.84	25.61	255.82
26.84	255.8	27.87	255.8	29.09	255.79	30.28	255.78	31.47	255.76
32.49	255.77	33.33	255.77	34.91	255.75	36.32	255.73	37.17	255.72
38.13	255.74	39.65	255.77	41.33	255.76	42.07	255.75	42.92	255.76
44.48	255.76	46.41	255.78	46.76	255.79	47.11	255.78	49.37	255.73
51.25	255.74	51.82	255.75	52.37	255.75	54.37	255.82	54.98	255.82
56.75	255.77	57.42	255.77	59.42	255.78	60.23	255.79	61.83	255.78
63.66	255.83	64.48	255.85	65.24	255.84	66.92	255.78	68.46	255.79
69.6	255.78	70.51	255.76	72.06	255.72	74.07	255.67	74.87	255.65
76.37	255.64	77.36	255.63	78.15	255.6	79.99	255.51	82.15	255.53
82.52	255.53	82.75	255.54	85.24	255.58	86.84	255.63	87.74	255.65

Schollas\_Map101.rep

Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Data ranges from Sta 88.91 to 205.13.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values include n=5 and n=0.018.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Table with 8 columns.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 915.6229

INPUT Description: completely earthen channel Station Elevation Data num= 160

Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Data ranges from Sta 14.22 to 199.84.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values include n=4 and n=0.018.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Table with 8 columns.

Blocked Obstructions table with 3 columns: Sta L, Sta R, Elev. num= 1

Schollas\_Map101.rep

0 46.41 276.52

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 781.5157

INPUT Description: Station Elevation Data num= 116

Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Data ranges from Sta 0 to 185.05.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values include n=5 and n=0.018.

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan. Table with 8 columns.

Blocked Obstructions table with 3 columns: Sta L, Sta R, Elev. num= 1

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 684.4379

INPUT Description: Station Elevation Data num= 130

Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Data ranges from Sta 27.42 to 135.41.

Schollas\_Map101.rep

Table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Values range from 141.46 to 190.39 and 266.34 to 267.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values range from 0 to 108.14 and .018 to .06.

Blocked Obstructions table with 4 columns: Sta L, Sta R, Elev, num=. Values include 66.69, 118.13, 77.17, 84.44, 89.29, 0, 48.99, 276.

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 599.9999

Large table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Values range from 0 to 200 and 253.68 to 267.68.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values range from 0 to 113.23 and .018 to .06.

Blocked Obstructions table with 4 columns: Sta L, Sta R, Elev, num=. Values include 77.73, 121.92, 66.24, 75.35, 84.98, 1, 200, 267.68.

Schollas\_Map101.rep

43.96 69.92 273

CROSS SECTION

RIVER: SchollasMap101 REACH: MainReach RS: 524.6492

Large table with 10 columns: Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev, Sta, Elev. Values range from 0 to 271.76 and 253.17 to 268.97.

Manning's n Values table with 10 columns: Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val, Sta, n Val. Values range from 0 to 113.28 and .018 to .06.

Blocked Obstructions table with 4 columns: Sta L, Sta R, Elev, num=. Values include 97.09, 151.24, 86.87, 107.19, 109.33, 1, 200, 268.97.

CROSS SECTION

Schollas\_Map101.rep

RIVER: SchollasMap101  
 REACH: MainReach RS: 417.4621

INPUT  
 Description: Cross Section upstream of Bridge at Federal Blvd

Station	Elevation	Data	num=	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	250.04		316	.66	250.03	2.23	250.04	2.76	250.04	4.82	250.01
4.85	250.01	4.86		250.01	6.81	250.03		7.78	250.03	8.81	250
10.79	250.01	10.82		250.01	10.89	250.01		12.83	249.99	13.29	250
14.86	249.95	15.78		249.95	16.87	249.93		18.26	249.89	18.87	249.91
20.71	249.87	20.87		249.87	21.55	249.86		22.83	249.87	23.55	249.87
24.82	249.89	26.64		249.88	26.83	249.88		27.16	249.88	28.97	249.85
29.48	249.85	31.18		249.83	32.26	249.79		33.37	249.77	35.02	249.76
35.55	249.75	37.46		249.74	37.73	249.74		37.87	249.74	39.67	249.74
40.84	249.7	41.64		249.7	43.12	249.66		43.69	249.65	43.84	249.65
45.9	249.68	46.62		249.67	48.12	249.63		49.45	249.62	50.34	249.6
52.24	249.56	52.54		249.56	53.67	249.53		54.53	249.52	54.91	249.51
56.3	249.47	57.54		249.46	58.11	249.47		59.34	249.44	59.96	249.43
60.09	249.42	61.86		249.43	62.41	249.44		63.28	249.41	64.7	249.37
65.63	249.35	67		249.34	69.14	249.35		69.28	249.35	69.81	249.34
71.31	249.29	72.25		249.29	73.3	249.29		74.87	249.23	75.26	249.21
75.35	249.21	77.25		249.18	77.77	249.16		79.23	249.15	80.18	249.15
81.2	249.14	82.54		249.13	83.13	249.12		84.9	249.08	85.07	249.08
85.85	249.07	86.85		249.07	87.37	249.06		88.58	249.05	89.93	249.07
90.3	249.06	91.05		249.04	92.15	248.99		92.4	248.99	94.14	248.92
94.81	248.9	96.08		248.89	97.14	248.9		97.99	248.88	99.48	248.85
99.92	248.84	101.78		248.83	101.82	248.83		102	248.83	103.79	248.8
105.13	248.8	105.77		248.8	106.64	248.8		107.91	248.79	108.24	248.78
110.15	248.76	111		248.79	112.35	248.8		113.74	248.74	114.56	248.73
116.43	248.76	116.72		248.75	117.84	248.8		118.85	248.83	119.71	248.8
120.95	248.74	122.51		248.82	123.03	248.84		123.14	248.84	125.07	248.97
125.64	248.96	127.16		248.79	128.18	248.8		129.21	248.79	130.65	248.91
131.23	248.91	133.12		248.86	133.25	248.86		133.84	248.89	135.25	248.92
136.28	248.94	137.29		249	138.66	248.99		139.42	249.01	139.61	249.02
141.66	249.09	142.4		249.12	143.88	249.18		145.17	249.27	146.1	249.29
146.85	249.37	147.9		249.48	148.29	249.49		149.93	249.61	150.42	249.51
150.89	249.33	152.24		248.37	152.54	248.27		154.32	248.25	154.72	248.08
154.81	248.04	156.87		247.22	157.47	246.97		159.01	246.37	160.14	245.62
161.21	245.51	161.93		244.72	163.64	244.36		165.49	242.78	165.54	242.75
165.74	242.63	167.16		242.13	167.37	242.18		167.88	242.15	170.03	241.11
171.61	240.37	172.65		240.24	173.22	240.04		174.15	239.89	175.53	239.59
176.81	239.24	177.48		239.11	179.67	239.1		181.03	239.11	182.85	238.97
183.39	238.91	186.5		239.24	186.68	239.13		187.73	239.09	188.99	239.59
191.17	240.44	191.18		240.45	192.41	241.41		194.22	243.56	195.33	244.91
196.05	245.72	197.25		247.04	197.49	247.24		200.28	248.85	201.14	249.27
202.02	249.71	202.41		249.84	202.73	249.96		203.89	250.38	205.66	251.26
205.67	251.27	206.47		251.48	207.45	251.68		208.28	251.73	210.7	252.12
211.44	252.14	213.01		252.2	213.81	252.22		215.16	252.2	215.85	252.19
217.38	252.19	217.51		252.19	217.58	252.19		219.83	252.25	221.06	252.28
222.07	252.29	223.99		252.27	224.2	252.28		224.87	252.24	225.84	252.16
226.15	252.14	228.17		251.85	229.32	251.39		230.63	251.01	232.94	250.13
233.89	250.03	235.54		249.87	236.91	249.55		237.85	249.79	238.71	249.82
239.79	249.9	240.71		250.2	242.84	249.83		244.09	249.56	244.96	249.57
245.3	249.6	246.91		250.13	250.73	249.1		250.88	249.13	250.94	249.15
251.12	249.17	252.28		249.53	253.3	249.5		253.78	249.74	253.94	249.73
254.41	249.52	256.53		249.9	257.55	249.98		259.04	249.89	259.37	249.87
260.28	250	260.88		250.1	261.57	250.11		262.1	250.2	262.56	250.34
263.81	250.83	264.32		250.7	265.91	250.75		267.12	250.95	267.91	250.93
269.83	251.24	269.85		251.24	269.97	251.26		271.68	251.51	272.01	251.51
273.88	251.3	274.68		251.44	276.05	251.4		277.7	251.81	278.13	251.77
279.07	251.84	280.12		251.92	281.25	251.97		282.3	251.83	282.72	251.93
284.58	251.81	285.88		252.22	286.73	252.25		288.72	252.48	288.87	252.49
290.93	252.73	291.03		252.73	291.14	252.77		293.96	253.18	295.21	253.37
296.71	253.78	297.19		253.86	298.46	254.02		299.22	254.2	300.42	254.41
301.54	254.53	302.02		254.63	303.81	255.04		305.19	255.4	306.01	255.57
307.92	255.81	308.22		255.87	310.02	256.21		310.45	256.3	310.65	256.35
312.95	256.97	314.24		257.3	315.3	257.55		317.53	258.01	317.6	258.02
319.49	258.36	319.89		258.46	320.07	258.48		322.21	258.83	323.3	259.08
324.43	259.3	326.51		259.44	326.68	259.47		327.06	259.51	327.93	259.86

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Manning's n Values num= 7  
 Sta n Val Sta n Val Sta n Val Sta n Val  
 0 .018 163.64 .035 167.16 .1 175.53 .03 188.99 .045  
 195.33 .03 202.02 .06

Bank Sta: Left 150.42 Right 202.02 Lengths: Left Channel 131.21 Right 124.64 127.74  
 Ineffective Flow num= 2  
 Sta L Sta R Elev Permanent  
 0 149.87 249.65 F  
 213.08 327.95 252.31 F

CULVERT

RIVER: SchollasMap101  
 REACH: MainReach RS: 362.8132

INPUT

Description: Single span bridge at Federal Blvd  
 Distance from Upstream XS = 23  
 Deck/Roadway Width = 80  
 Weir Coefficient = 2.6

Upstream Deck/Roadway Coordinates

num=	Sta	Hi	Cord	Lo Cord	Sta	Hi	Cord	Lo Cord	Sta	Hi	Cord	Lo Cord
205	0	253.45			.15	253.45			.8	253.45		
	1.78	253.46			3.33	253.47			3.49	253.45		
	3.54	253.43			5.84	253.43			6.74	253.45		
	8.16	253.45			9.86	253.44			10.45	253.4		
	12.13	253.43			12.61	253.42			12.93	253.42		
	14.3	253.43			15.74	253.41			16.01	253.37		
	16.41	253.4			17.89	253.41			18.28	253.4		
	19.79	253.39			20.7	253.41			21.69	253.44		
	23.09	253.43			23.57	253.43			25.29	253.43		
	25.42	253.44			25.51	253.45			27.07	253.44		
	28.19	253.41			28.69	253.41			29.49	253.48		
	30.52	253.48			30.8	253.48			32.51	253.52		
	33.34	253.51			34.47	253.47			35.8	253.48		
	36.38	253.48			38.24	253.49			38.3	253.53		
	38.51	253.52			40.02	253.52			41.15	253.53		
	41.75	253.53			42.54	253.53			43.57	253.53		
	43.84	253.53			44.29	253.53			46.17	253.58		
	47.42	253.58			48.53	253.59			50.54	253.6		
	50.84	253.61			51.69	253.63			52.77	253.65		
	53.61	253.65			54.51	253.61			55.66	253.61		
	56.38	253.64			56.6	253.69			58.45	253.71		
	59.25	253.71			60.49	253.72			61.87	253.71		
	62.51	253.71			64.49	253.71			64.52	253.71		
	64.63	253.71			66.29	253.48			67.67	253.49		
	68.07	253.5			68.54	253.53			70.14	253.5		
	70.64	253.5			72.31	253.5			73.45			

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139.92	253.64	139.99	253.66	140.22	253.66
142.22	253.66	143.26	253.68	144.58	253.69
145.01	253.71	146.89	253.71	148.04	253.73
149.15	253.73	151	253.7	151.37	253.69
152.49	253.67	152.5	253.69	153.83	253.71
153.86	253.71	153.89	253.71	153.97	253.71
156.58	253.69	157.72	253.7	158.55	253.72
158.97	253.72	159.59	253.7	161.1	253.69
162.35	253.69	162.86	253.74	163.64	253.72
164.12	253.7	165.36	253.69	166.97	253.67
167.6	253.67	168.08	253.63	168.61	253.63
169.42	253.68	170	253.68	170	253.67
190	253.7	190	253.73	190.44	253.74
190.62	253.71	191.48	253.71	192.61	253.7
194.73	253.68	194.76	253.71	194.77	253.7
196.84	253.63	197.35	253.64	198.89	253.7
199.88	253.69	200.92	253.7	202.38	253.7
202.92	253.7	204.82	253.7	204.89	253.7
205.19	253.68	206.68	253.67	208.42	253.67
208.49	253.67	208.51	253.67	210.63	253.67
211.13	253.62	212.69	253.63	213.66	253.64
300	253.64				

Upstream Bridge Cross Section Data Station Elevation Data

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	250.04	4.86	250.01	10.82	250.01	16.78	249.95	22.74	249.87
4.85	250.01	10.79	250.01	16.72	249.95	22.67	249.87	28.62	249.79
10.79	250.01	16.72	249.95	22.67	249.87	28.62	249.79	34.56	249.75
14.86	249.95	20.71	249.87	26.64	249.88	32.26	249.79	37.73	249.74
20.71	249.87	26.64	249.88	32.26	249.79	37.73	249.74	43.12	249.66
24.82	249.89	31.18	249.83	37.73	249.74	43.12	249.66	49.45	249.63
29.48	249.85	37.46	249.74	43.12	249.66	49.45	249.63	55.34	249.56
35.55	249.75	41.64	249.7	48.12	249.63	54.53	249.52	59.34	249.43
40.84	249.7	46.62	249.67	53.67	249.53	59.34	249.43	64.7	249.37
45.9	249.68	52.54	249.56	58.11	249.47	64.7	249.37	69.28	249.35
52.24	249.56	57.54	249.46	62.41	249.44	69.28	249.35	74.87	249.23
56.3	249.47	61.86	249.43	69.14	249.35	74.87	249.23	80.18	249.15
60.09	249.42	67	249.34	73.3	249.29	80.18	249.15	85.07	249.08
65.63	249.35	77.25	249.29	77.77	249.16	85.07	249.08	89.93	249.07
71.31	249.29	82.54	249.13	83.13	249.12	89.93	249.07	94.14	248.92
75.35	249.21	88.85	249.07	88.58	249.05	94.14	248.92	99.48	248.85
81.2	249.14	96.08	248.99	92.41	248.99	99.48	248.85	103.79	248.8
85.85	249.07	97.14	248.9	97.99	248.88	103.79	248.8	107.91	248.79
90.3	249.06	101.78	248.83	102	248.83	107.91	248.79	111.74	248.74
94.81	248.9	105.77	248.8	106.64	248.8	111.74	248.74	115.56	248.73
99.92	248.84	111	248.79	112.35	248.8	115.56	248.73	119.71	248.8
105.13	248.8	116.72	248.75	117.84	248.8	119.71	248.8	123.14	248.84
110.15	248.76	122.51	248.82	123.03	248.84	123.14	248.84	127.07	248.97
116.43	248.76	127.16	248.79	128.18	248.8	127.07	248.97	130.65	248.91
120.95	248.74	133.12	248.86	133.25	248.86	130.65	248.91	133.25	248.92
125.64	248.96	137.29	249	138.66	248.99	133.25	248.92	139.42	249.01
131.23	248.91	142.4	249.12	143.88	249.18	143.88	249.18	147.17	249.27
136.28	248.94	147.9	249.48	148.29	249.49	147.17	249.27	150.42	249.51
141.66	249.09	152.24	248.37	152.54	248.27	150.42	249.51	154.72	248.08
146.85	249.37	157.47	246.97	159.01	246.37	154.72	248.08	160.14	245.62
150.89	249.33	161.93	244.72	163.64	244.36	160.14	245.62	165.54	242.75
154.81	248.04	167.16	242.13	167.37	242.18	165.54	242.75	170.03	241.36
161.21	245.51	172.41	241.41	194.22	243.56	167.37	242.18	196.05	245.72
165.74	242.63	199.49	247.24	200.28	248.85	194.22	243.56	202.02	249.71
191.18	241.36	202.73	249.96	203.89	250.38	200.28	248.85	205.67	251.27
197.25	247.04	207.45	251.68	208.28	251.73	203.89	250.38	211.4	252.14
202.41	249.84	212.81	252.22	215.16	252.2	208.28	251.73	217.38	252.19
206.47	251.48	217.58	252.19	219.83	252.25	215.16	252.2	222.07	252.29
213.01	252.2	224.2	252.28	224.87	252.24	217.58	252.19	226.15	252.14
217.51	252.19	231.39	250.63	231.94	250.13	224.87	252.24	233.89	250.03
223.99	252.27	236.91	249.55	237.85	249.79	231.94	250.13	241.9	249.9
228.17	251.85	242.84	249.83	244.09	249.56	237.85	249.79	245.3	249.6
235.54	249.87	249.55	250.88	249.13	250.94	244.09	249.56	251.12	249.17
240.71	250.2	253.3	249.5	253.78	249.74	249.55	250.88	254.41	249.52
246.91	250.13	259.04	249.89	259.37	249.87	253.78	249.74	260.28	250
252.28	249.53					259.04	249.89		
256.53	249.9					259.37	249.87		

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260.88	250.1	261.57	250.11	262.1	250.2	262.56	250.34	263.81	250.83
264.32	250.7	265.91	250.75	267.12	250.95	267.91	250.93	269.83	251.24
269.85	251.24	269.97	251.26	271.68	251.51	272.01	251.51	273.88	251.3
274.68	251.44	276.05	251.4	277.7	251.81	278.13	251.77	279.07	251.84
280.12	251.92	281.25	251.97	282.3	251.83	282.72	251.93	284.58	251.81
285.88	252.22	286.73	252.25	288.72	252.48	288.87	252.49	290.93	252.73
291.03	252.73	291.14	252.77	293.96	253.18	295.21	253.37	296.71	253.78
297.19	253.86	298.46	254.02	299.22	254.2	300.42	254.41	301.54	254.53
302.02	254.63	303.81	255.04	305.19	255.4	306.01	255.57	307.92	255.81
308.22	255.87	310.02	256.21	310.45	256.3	310.65	256.35	312.95	256.97
314.24	257.3	315.3	257.55	317.53	258.01	317.6	258.02	319.49	258.36
319.89	258.46	320.07	258.48	322.21	258.83	323.3	259.08	324.43	259.3
326.51	259.44	326.68	259.47	327.06	259.51	327.93	259.86	327.95	259.86

Manning's n Values	num=	5							
Sta n Val	Sta n Val	Sta n Val	Sta n Val	Sta n Val	Sta n Val	Sta n Val	Sta n Val	Sta n Val	Sta n Val
0	.018	150.89	.035	159.01	.1	170.03	.035	192.41	.06

Bank Sta: Left	Right	Coeff	Contr.	Expan.					
150.42	202.02		.3	.5					
Ineffective Flow	num=	2							
Sta L	Sta R	Elev	Permanent						
0	149.87	249.65	F						
213.08	327.95	252.31	F						

Downstream Deck/Roadway Coordinates	num=	206							
Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord	Sta Hi Cord	Lo Cord
0	253.45	.15	253.45	.8	253.45	1.5	253.45	2.2	253.45
1.78	253.46	3.33	253.47	4.97	253.47	6.65	253.47	8.37	253.47
3.54	253.43	5.84	253.43	8.68	253.43	12.06	253.43	15.97	253.43
8.16	253.45	9.86	253.44	13.72	253.44	18.03	253.44	22.6	253.44
12.13	253.43	12.61	253.42	15.74	253.41	19.99	253.41	27.78	253.41
14.3	253.43	15.74	253.41	18.28	253.4	22.6	253.4	26.92	253.4
16.41	253.4	17.89	253.41	20.7	253.41	25.29	253.43	29.49	253.48
19.79	253.39	20.7	253.41	23.09	253.43	25.29	253.43	27.07	253.44
23.09	253.43	23.57	253.43	25.51	253.45	28.19	253.48	31.47	253.5
25.42	253.44	25.51	253.45	28.69	253.41	30.8	253.48	32.51	253.52
28.19	253.41	28.69	253.41	30.8	253.48	33.34	253.51	34.47	253.47
30.52	253.48	33.34	253.51	36.38	253.48	38.24	253.49	38.3	253.53
33.34	253.51	36.38	253.48	38.24	253.49	40.02	253.52	41.15	253.53
36.38	253.48	41.75	253.53	42.54	253.53	42.54	253.53	43.57	253.53
43.84	253.53	44.29	253.53	47.84	253.58	48.53	253.59	46.17	253.58
47.84	253.58	50.84	253.61	51.69	253.63	54.51	253.61	50.54	253.6
50.84	253.61	53.61	253.65	56.38	253.64	56.6	253.69	52.77	253.65
53.61	253.65	56.38	253.64	59.25	253.71	60.49	253.72	55.66	253.61
56.38	253.64	59.25	253.71	62.51	253.71	64.49	253.71	58.45	253.71
59.25	253.71	64.49	253.71	66.29	253.48	68.54	253.53	61.87	253.71
64.49	253.71	68.07	253.5	68.54	253.53	70.14	253.5	64.52	253.71
68.07	253.5	70.64	253.5	72.31	253.5	73.45	253.51	67.67	253.49
70.64	253.5	74.46	253.5	76.24	253.48	76.6	253.51	70.14	253.5
74.46	253.5	77.73	253.52	78.53	253.52	79.32	253.53	73.45	253.51
77.73	253.52	80.28	253.48	81.3	253.48	82.23	253.47	76.6	253.51
80.28	253.48	82.54	253.53	84.42	253.54	85.41	253.54	79.32	253.53
82.54	253.53	86.56	253.54	88.24	253.53	88.7	253.54	82.23	253.47
86.56	253.54	90.12	253.54	90.7	253.53	91.28	253		







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 112.06 216.58 114.51 119.22 123.59 .1 .3

CROSS SECTION

RIVER: SchollasMap101  
 REACH: MainReach RS: 28.06381

INPUT Description: Station Elevation Data num= 258

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	237.9	.24	237.88	.95	237.86	2.56	237.83	3.39	237.83
4.37	237.98	6.21	238.12	7.88	237.83	8.73	237.93	9.63	238.06
10.53	238.09	10.92	238.05	11.31	238.05	12.97	237.94	14.53	237.9
15.25	237.87	17.37	238.35	18.14	238.44	18.57	238.48	20.04	238.33
21.45	238.24	22.42	238.06	22.66	238.04	24.65	237.77	25.46	237.74
26.99	237.49	28.82	237.45	29.47	237.45	31.07	237.22	31.84	237.11
33.54	237.09	34.03	237.11	34.19	237.11	36.07	237.28	36.9	237.32
38.17	237.47	39.67	237.42	40.24	237.41	42.13	237.38	42.39	237.38
43.91	237.32	44.7	237.3	44.83	237.29	46.65	237.22	47.27	237.25
48.67	237.26	49.96	237.24	50.72	237.34	52.7	237.26	52.76	237.25
55	237.73	55.08	237.75	55.29	237.73	58.63	237.4	59.89	237.31
60.62	237.22	62.19	237.13	63.6	237.07	64.51	237.05	66.28	236.96
66.72	236.96	68.59	236.97	69.42	236.97	70.62	236.96	72.19	236.99
72.68	236.97	74.32	236.84	75.66	236.7	76.77	236.58	76.84	236.57
76.86	236.57	78.79	236.71	79.51	236.62	80.73	236.3	82.21	236.52
82.78	236.53	84.38	236.5	84.83	236.48	85.47	236.48	86.77	236.47
87	236.47	87.05	236.46	89.53	236.32	90.9	236.21	92.31	236.14
92.75	236.15	94.53	235.78	94.66	235.75	94.81	235.7	96.09	235.31
97.12	235.16	97.76	235	98.07	234.95	100.11	234.71	101.64	234.49
104.37	233.89	104.86	233.79	106.08	233.55	106.82	233.41	107.11	233.31
109.13	232.81	110.25	232.86	111.67	232.89	112.33	232.82	113.8	232.96
115.37	233.11	117.26	233.15	118.74	233.14	120.17	233.09	120.96	233.1
121.48	233.07	123.12	232.97	123.51	232.89	125.11	232.45	126.21	232.61
127.22	232.73	127.46	232.76	129.28	232.9	131.64	233.08	131.92	233.12
133.25	232.56	134	232.28	135.85	232.24	135.88	232.24	135.89	232.24
137.56	232.45	138.67	232.24	140.15	232.21	142.57	232.02	142.59	232.02
142.77	232.07	144.56	232.55	145.1	232.69	146.87	233.58	148.92	235.6
151.55	238.59	153.19	239.24	154.29	239.44	154.41	239.43	156.47	239.4
157.47	239.35	158.69	239.44	160.77	239.14	160.9	239.13	161.09	239.11
161.16	239.1	162.98	238.92	163.81	238.97	165.11	239.11	165.78	239.2
167.32	239.38	169.08	239.36	169.51	239.31	169.93	239.14	170.27	239.05
171.34	238.52	173.06	238.86	176.3	238.83	176.36	238.82	176.41	238.83
176.56	238.82	178.73	238.69	179.23	238.65	180.9	238.6	182.65	238.36
182.88	238.33	183.31	238.43	184.08	238.63	185.6	238.69	189.01	238.39
190.9	238.09	191	238.09	193.05	238.29	194.93	238.27	195.15	238.27
195.4	238.25	196.64	238.19	197.44	238.22	198.35	238.18	199.14	238.18
200.44	238.17	201.92	238.37	202.6	238.43	202.95	238.47	205.48	238.58
206.49	238.52	208.28	238.41	208.82	238.37	210.26	238.26	210.43	238.25
210.57	238.25	212.52	238.22	214.49	238.3	214.63	238.31	214.8	238.3
216.38	238.27	216.82	238.27	218.28	238.35	219.49	238.47	220.27	238.54
221.64	238.77	223.12	238.85	224.07	238.87	224.85	239.06	226.12	239.26
227.64	239.74	228.24	239.97	229.69	240.67	230.33	241.05	230.84	241.35
232.26	242.23	233.87	243.27	235.23	243.96	236	244.39	236.56	244.62
237	244.92	238.54	245.81	240.48	246.71	240.53	246.73	240.78	246.75
242.24	246.89	242.47	246.88	245	246.81	246.98	246.78	248.01	246.78
249.07	246.99	250.84	247.07	253.47	246.89	253.56	246.9	253.7	246.92
254.85	247.05	255.55	247.09	256.76	247.2	258.69	247.31	259.4	247.36
259.86	247.38	260.91	247.37	261.84	247.36	262.44	247.35	263.17	247.36
264.77	247.37	266.1	247.43	266.75	247.49	268.22	247.71	268.3	247.72
270.12	248.06	271.58	248.2	271.99	248.24	272.52	248.31	273.55	248.43
274.52	248.46	275.15	248.49	278.78	248.61	279.04	248.61	280.83	248.67
280.85	248.67	280.86	248.67	282.51	248.66				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.07	101.64	.055	148.92	.06

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

Left	Right	Left	Channel	Right	Coeff	Contr.	Expan.
18.57	161.09	23.87	28.06	33.25	.1	.3	

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SUMMARY OF MANNING'S N VALUES

River: SchollasMap101

Reach	River Sta.	n1	n2	n3	n4	n5	n6
MainReach	2306.424	.018	.03	.018	.06		
MainReach	2200	.018	.03	.018	.06		
MainReach	2098.664	.018	.03	.018	.018	.06	
MainReach	2000	.018	.03	.018	.018	.06	
MainReach	1800	.018	.03	.018	.018	.06	
MainReach	1600	.018	.03	.018	.018	.06	
MainReach	1400	.018	.03	.018	.018	.06	
MainReach	1200	.018	.03	.018	.018	.06	
MainReach	1004.18	.018	.03	.018	.018	.06	
MainReach	976.6697	.018	.03	.018	.03	.042	.06
MainReach	926.7529	.018	.018	.049	.09	.06	
MainReach	915.6229	.018	.1	.09	.06		
MainReach	781.5157	.018	.1	.03	.09	.06	
MainReach	684.4379	.018	.1	.05	.06		
MainReach	599.9999	.018	.075	.03	.07	.06	
MainReach	524.6492	.018	.03	.055	.035	.06	
MainReach	417.4621	.018	.035	.1	.03	.045	.03
MainReach	362.8132	Culvert					
MainReach	292.8245	.075	.05	.075			
MainReach	147.2868	.075	.04	.05			
MainReach	28.06381	.07	.055	.06			

SUMMARY OF REACH LENGTHS

River: SchollasMap101

Reach	River Sta.	Left	Channel	Right
MainReach	2306.424	107.15	106.42	105.18
MainReach	2200	101.52	101.34	97.26
MainReach	2098.664	101.57	98.66	97.84
MainReach	2000	201.58	200	197.43
MainReach	1800	198.88	200	200.59
MainReach	1600	199.8	200	200.08
MainReach	1400	199.83	200	200.13
MainReach	1200	197.21	195.82	194.66
MainReach	1004.18	29.27	27.51	26.96
MainReach	976.6697	49.84	49.92	47.71

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MainReach	926.7529	11.65	11.13	10.82
MainReach	915.6229	131.26	134.11	137.05
MainReach	781.5157	95.92	97.08	98.64
MainReach	684.4379	77.17	84.44	89.29
MainReach	599.9999	66.24	75.35	84.98
MainReach	524.6492	86.87	107.19	109.33
MainReach	417.4621	131.21	124.64	127.74
MainReach	362.8132	Culvert		
MainReach	292.8245	152.28	145.54	135.2
MainReach	147.2868	114.51	119.22	123.59
MainReach	28.06381	23.87	28.06	33.25

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS  
River: SchoLLasMap101

Reach	River Sta.	Contr.	Expan.
MainReach	2306.424	.1	.3
MainReach	2200	.1	.3
MainReach	2098.664	.1	.3
MainReach	2000	.1	.3
MainReach	1800	.1	.3
MainReach	1600	.1	.3
MainReach	1400	.1	.3
MainReach	1200	.1	.3
MainReach	1004.18	.1	.3
MainReach	976.6697	.1	.3
MainReach	926.7529	.1	.3
MainReach	915.6229	.1	.3
MainReach	781.5157	.1	.3
MainReach	684.4379	.1	.3
MainReach	599.9999	.1	.3
MainReach	524.6492	.1	.3
MainReach	417.4621	.3	.5
MainReach	362.8132	Culvert	
MainReach	292.8245	.3	.5
MainReach	147.2868	.1	.3
MainReach	28.06381	.1	.3