DOCKETED

Docket Number:	15-AFC-02
Project Title:	Mission Rock Energy Center
TN #:	216155
Document Title:	Mission Rock Energy Center CLOMR-F Study
Description:	N/A
Filer:	Eric Janssen
Organization:	Ellison, Schneider & Harris L.L.P.
Submitter Role:	Applicant Representative
Submission Date:	2/21/2017 4:31:07 PM
Docketed Date:	2/21/2017

ELLISON SCHNEIDER HARRIS & DONLAN LLP

ATTORNEYS AT LAW

2600 CAPITOL AVENUE, SUITE 400
SACRAMENTO, CALIFORNIA 95816
TELEPHONE: (916) 447-2166
http://www.eslawfirm.com

February 21, 2017

Mike Monasmith
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

RE: Mission Rock Energy Center (15-AFC-02): CLOMR-F Study

Dear Mr. Monasmith:

Mission Rock Energy Center, LLC (the "Applicant") hereby provides the *Community Acknowledgment Form* and the *Conditional Letter of Map Revision Based on Fill (CLOMR-F) Mission Rock Energy Center (MREC) Parcel 090-0-190-165 Ventura County, CA* that were submitted to the Department of Homeland Security- Federal Emergency Management Agency on behalf of the Mission Rock Energy Center.

Please let me know if you have any questions regarding the attached documents.

Thank you.

Sincerely,

ELLISON SCHNEIDER HARRIS & DONLAN L.L.P.
Greggory L. Wheatland
Samantha G. Neumyer

Attorneys for the Applicant

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

COMMUNITY ACKNOWLEDGMENT FORM

O.M.B. NO. 1660-0015
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this data collection is estimated to average 1.38 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the form. This collection is required to obtain or retain benefits. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0015). NOTE: Do not send your completed form to this address.

This form must be completed for requests involving the existing or proposed placement of fill (complete Section A) ***OR*** to provide acknowledgment of this request to remove a property from the SFHA which was previously located within the regulatory floodway (complete Section B).

This form must be completed and signed by the official responsible for floodplain management in the community. **The six digit NFIP community number and the subject property address must appear in the spaces provided below. Incomplete submissions will result in processing delays.** Please refer to the MT-1 instructions for additional information about this form.

Community Number: 060413

Property Name or Address: 1025 Mission Rock Road Santa Paula, CA 93060 (mailing address)
(Unincorporated Ventura County)

A. REQUESTS INVOLVING THE PLACEMENT OF FILL

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision Based on Fill (LOMR-F) or Conditional LOMR-F request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a Conditional LOMR-F, will be obtained. For Conditional LOMR-F requests, the applicant has or will document Endangered Species Act (ESA) compliance to FEMA prior to issuance of the Conditional LOMR-F determination. For LOMR-F requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by DHS-FEMA, all analyses and documentation used to make this determination. For LOMR-F requests, we understand that this request is being forwarded to DHS-FEMA for a possible map revision.

Community Comments:

Community Official's Name and Title: (*Please Print or Type*)		Telephone No.:
Jeff Pratt, PE Floodplain Administrator — jeff.pratt@ventura.org		(805) 654-2073
Community Name: Ventura County	Community Official's Signature (required)	Date: 2/8/17

B. PROPERTY LOCATED WITHIN THE REGULATORY FLOODWAY

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this request for a LOMA. We understand that this request is being forwarded to DHS-FEMA to determine if this property has been inadvertently included in the regulatory floodway. We acknowledge that no fill on this property has been or will be placed within the designated regulatory floodway. We find that the completed or proposed project meets or is designed to meet all of the community floodplain management requirements.

Community Comments:

Community Official's Name and Title: (*Please Print or Type*)		Telephone No.:
Community Name:	Community Official's Signature (required):	Date:

Conditional Letter of Map Revision Based on Fill (CLOMR-F) Mission Rock Energy Center (MREC) Parcel 090-0-190-165 Ventura County, CA

Prepared for:

Mission Rock Energy Center
c/o Calpine Corporation
Parcel 090-0-190-165
1025 Mission Rock Rd
Santa Paula, CA 93060

Prepared by:

Rich Gleason, PE
Hassan Kasraie, PE

KASRAIE CONSULTING
201 Burnett Avenue
Ventura, CA 93003
Phone: (805) 340-4744
www.KasraieConsulting.com

EXP 3/31/2018

November 28, 2016

Table of Contents

List of Figures

List of Tables

List of Appendices

1. EXECUTIVE SUMMARY

The property of interest (POI), parcel 090-0-0190-165, is located in the Unincorporated Area of Ventura County. It has a total area of approximately 9.7 acres. Based on the May 2014 aerial topographic analysis, the ground elevation of the property generally varies from 182 -187 (NAVD88). Proposed development and resultant floodplain conditions were reviewed against the *Ventura County Floodplain Management Ordinance* (No. 3841, Amended by Nos. 3890, 3902, 3954, 4465) for compliance. This report outlines the FEMA required modeling and documentation needed to obtain a Conditional Letter of Map Revision based on Fill (CLOMR-F).

Figure 1 – Project Location/Vicinity Map

The project is located in an industrial park is south of Highway 126, about two miles west of the Santa Paula city limits. The majority of the present site is paved and includes several buildings. Storage for boats and recreational vehicles is the current use condition of the parcel. Adjacent parcel uses vary from industrial to agricultural (Figure 1).

Mission Rock Energy Center, LLC (Mission Rock) proposes to construct, own, and operate an electrical generating plant in Ventura County, California. The Mission Rock Energy Center (MREC) will be a natural gas-fired, simple-cycle combustion turbine electrical

generating facility rated at a nominal generating capacity of 275 megawatts (MW), co-located with battery units for the storage of electricity that can deliver an additional 25 MW. The proposed landuse is consistent with current zoning and County land-use policies. Site is to be raised to the calculated 100-year floodplain elevation with 2:1 side slopes to existing grade around all sides. All top of equipment foundation footings will be one foot above the calculated 100-year floodplain elevation (Figure 2 and in Appendix B).

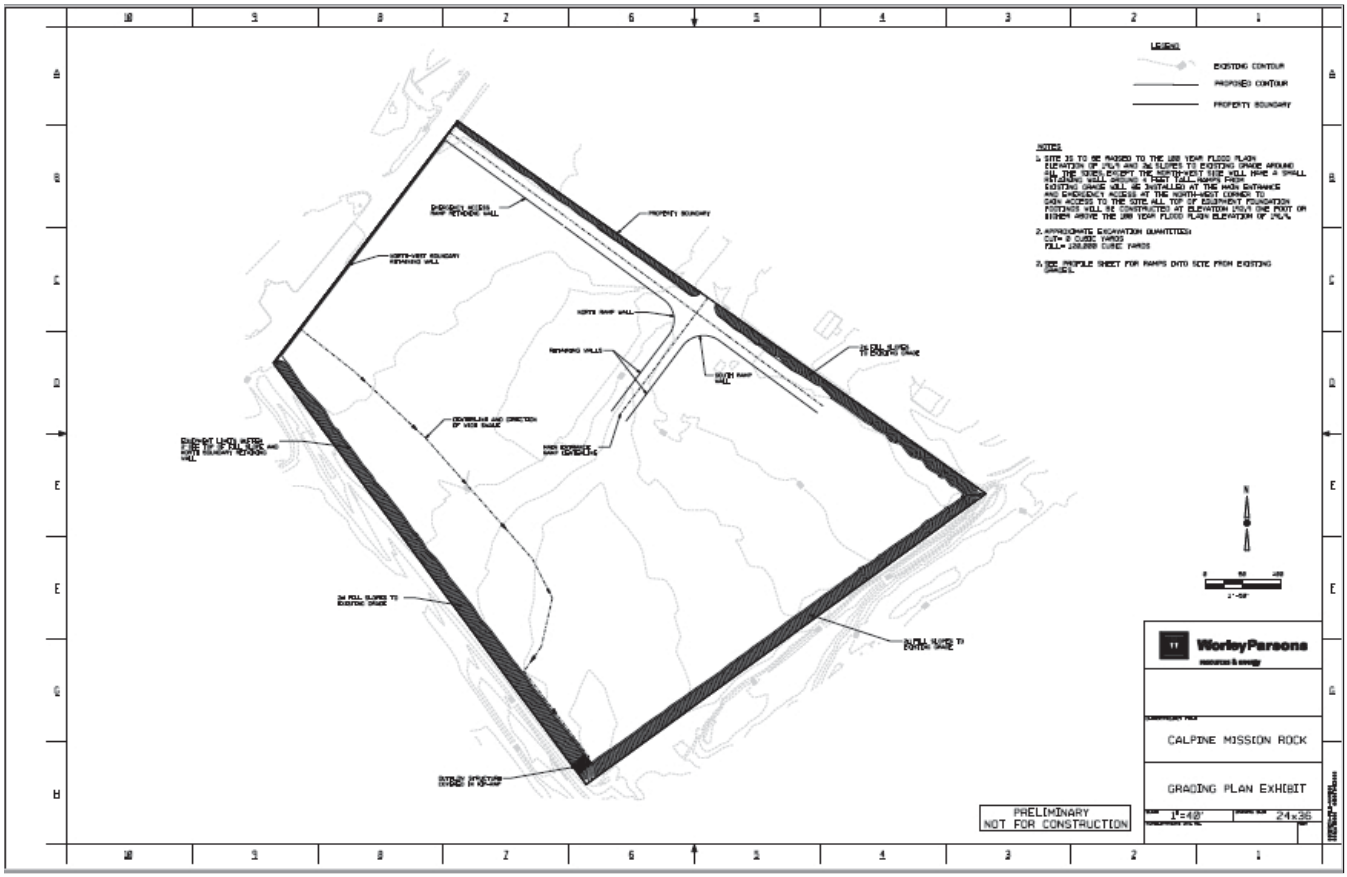


Figure 2 – Conceptual Grading Plan (*not for construction*)

The current effective Flood Insurance Rate Map (FIRM) panel 06111C0790E and Flood Insurance Study (FIS) for Ventura County and Incorporated Areas are dated January 20, 2010 and January 7, 2015 respectively. Hydrologic/hydraulic modeling and mapping for the Santa Clara is based on work originally completed in July 1983 (Figure 3).

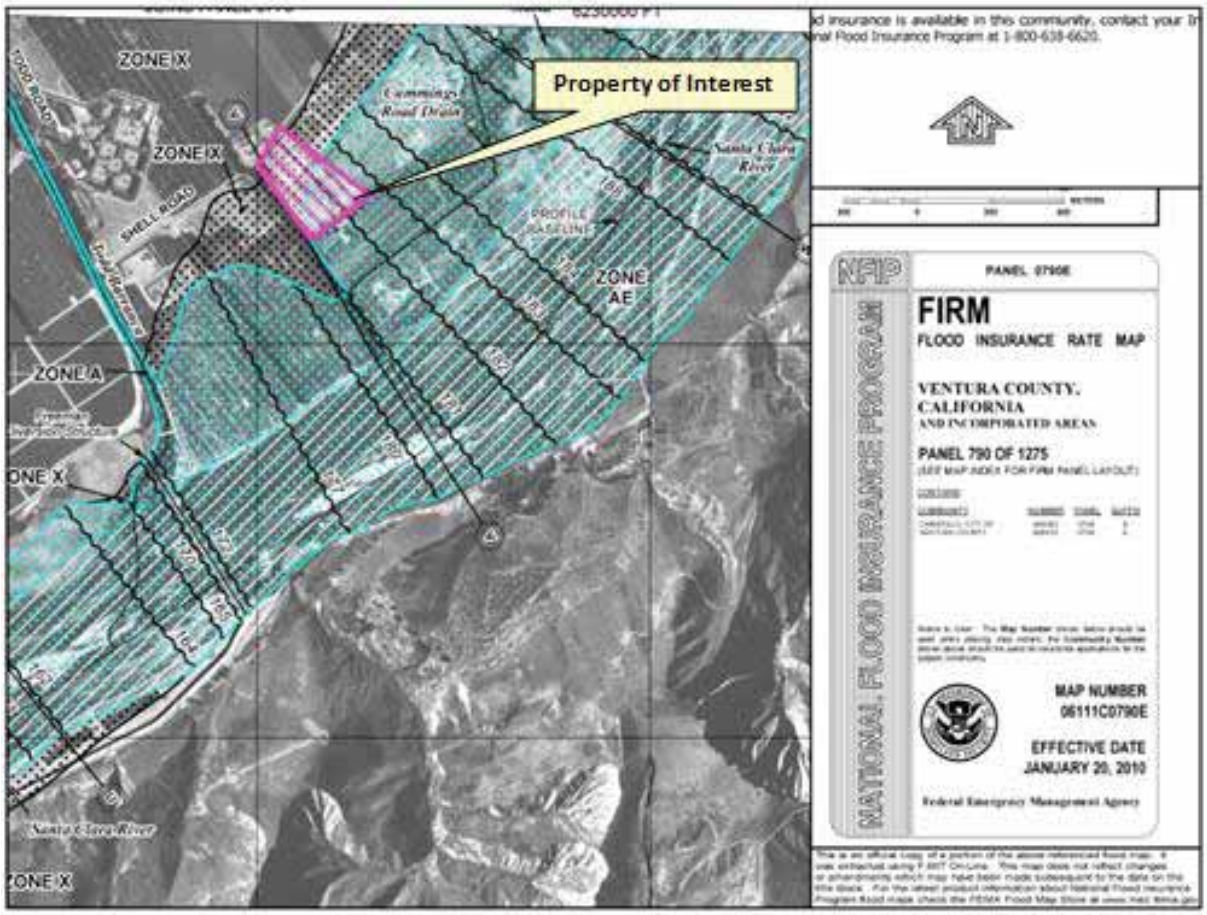


Figure 3 – Effective DFRIM Panel 06111C0790E, January 20, 2010

Since the completion of this work, several large storms of record have occurred. In addition, Ventura County generated aerial photography and LiDAR elevation data in 2005. Subsequently, hydrology and hydraulics were revised and included in a FEMA Technical Support Data Notebook (TSDN) that was prepared in 2009 and then revised again in 2014 by AECOM.

Flow rates (Table 1) on the Santa Clara River for this revision were significantly increased, resulting in higher water surface profiles.

Table 1 – Differences in 1% Annual Chance Flows (100-year)

	January 20, 2010 VENTURA COUNTY AND INCORPORATED AREA FIS	AECOM 2014 TSDN
At Mouth	161,000	227,000
At State Route 118 Bridge	161,000	226,000
At South Mountain Road	161,000	223,850

A preliminary map panel (06111C0790) was not prepared for the area of interest even though the hydraulic modeling reach includes the property. Panels were created immediately adjacent to the north (06111C0778F and 06111C0779F). Although not effective and preliminary the latter is considered the best available starting point for evaluating flood hazards within the reach containing the project site. This model, supporting data, and maps became available by the Ventura County Watershed Protection District (VCWPD), at the instruction of FEMA Region IX (Mr. Ed Curtis). Please see the supporting email correspondence dated August 2015 which is included in Appendix A.

Cross-section 60936 bisects the parcel of interest. Based on this data, the POI is shown within the 1% Annual Chance Floodplain. However, it is outside of the floodway. Flood elevations across the property range from 188.0-190.0 (NAVD).

After careful examination of the *AECOM 2014* hydraulic model the following model components were determined to need adjustments:

- Cross-section geometry used in the AECOM model is based on 2005 Ventura County LiDAR data and then filtered (simplified) using tools within HEC-RAS. A new aerial survey and topography was acquired in May 2014 for this reach of the Santa Clara River to more accurately reflect the current condition.
- Freeman Diversion – The *AECOM 2014* TSDN model does not have the correct crest elevations or dimensions.
- Manning's "n" values were determined on a macro level and do not reflect actual 2014/15 ground conditions.
- Ineffective flow areas were inconsistently applied upstream of Freeman Diversion.

- Downstream reach lengths were set constant across the overbank and main channels and should vary depending on how the channel lengths were determined.
- Cross-section 58901 defaulted to critical depth due to incorrect geometry modeled at cross-section 58295.
- Additional sections were needed to better define the flood hazards at the boundary of the proposed project.

Changes in topography, Freeman Diversion, ineffective flow areas, reach lengths, bank stations, and Manning's "n" values were incorporated to create a ***Corrected Effective*** model. Additionally a proposed regulatory floodway was determined such that expected surcharges are less than 1-foot as defined by FEMA and required by Ventura County.

2. CONCLUSIONS

Revised results showed elevations on the property ranging from 188.1-191.5 (NAVD) with the parcel remaining outside of the regulatory floodway.

The *Ventura County Floodplain Management Ordinance Section 5.2.2* for Non Residential Construction indicates that any "new construction and substantial improvement of any commercial, industrial, or other non-residential structure shall either have the lowest floor including basement, elevated to one foot above the base flood elevation... ". Alternatively, Sections 5.2.2.1-5.2.2.6 allow for placement of utilities and/or structures at less than one foot ***above*** the base flood elevation (the pad still must be above) as long as they are flood-proofed and designed resistant to hydrostatic, hydrodynamic, and/or impact loads dependent on corresponding flow velocities.

Therefore the final design will at a minimum include proposed fill placed such that the lowest adjacent grade and subsequent pad elevation are greater than the proposed base flood elevation (see below). Structures and utilities will be either placed at least one foot above the (proposed) base flood elevation or designed according to Sections 5.2.2.1-5.2.2.6 of the Ventura County Floodplain Management Ordinance.

A second HEC-RAS hydraulic model, ***Proposed Condition***, was created to reflect the planned fill condition on cross-sections 60436-61765. Although not in the floodway, the fill is expected to create minor increases in the 1% Annual Chance floodplain elevation (Base Flood Elevation, 188.0-191.9) with a maximum increase of 0.5 feet approximately 300 feet upstream of the project and a total sphere of influence (where there is any increase) approximately 4000' upstream of the project. A second floodway run maintaining the same encroachments from the Corrected Effective model was included using geometry based on the proposed fill. Floodway elevations (i.e. Base Flood Elevation with Floodway) did not change, while the allowable surcharge decreased. This makes sense because if the 1% Annual Chance floodplain elevation increases because of the project, then future allowable surcharges must decrease to maintain the same Base Flood Elevation with Floodway:

Base Flood Elevation With Floodway = Base Flood Elevation + Allowable Surcharge

Ventura County Floodplain Management Ordinance Section 5.2.7.1 indicates that "Encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway that would result in any increase in flood levels for the base flood elevation with floodway as specified in the Flood Insurance Study during the occurrence of the base flood discharge are prohibited."

The Proposed Condition model illustrates that the planned fill will meet this condition (i.e. no change in Base Flood Elevation with Floodway).

It is concluded that the above information as well as the included report details, appendices, and completed FEMA MT-1 forms (Appendix B) are sufficient to obtain a CLOMR-F.

3. HYDRAULIC ANALYSIS

Three Hydrologic Engineering Center River Analysis System (HEC-RAS) steady-state (peak flows only, no change with time) hydraulic models were evaluated and/or prepared as part of the analysis:

AECOM 2014 TSDN – This model was taken directly from the digital 2014 AECOM Santa Clara River TSDN submittal.

Topography/Cross-section Station and Elevation Data -

- ✓ Topography and generalized roughness values were based on the Ventura County 2005 Aerial Imagery and Light Detection and Ranging (LiDAR) elevations. Raw LiDAR data was imported and filtered/simplified within the HEC-RAS model (Figure 4). These generalizations lead to significantly different calculated water surface elevations.

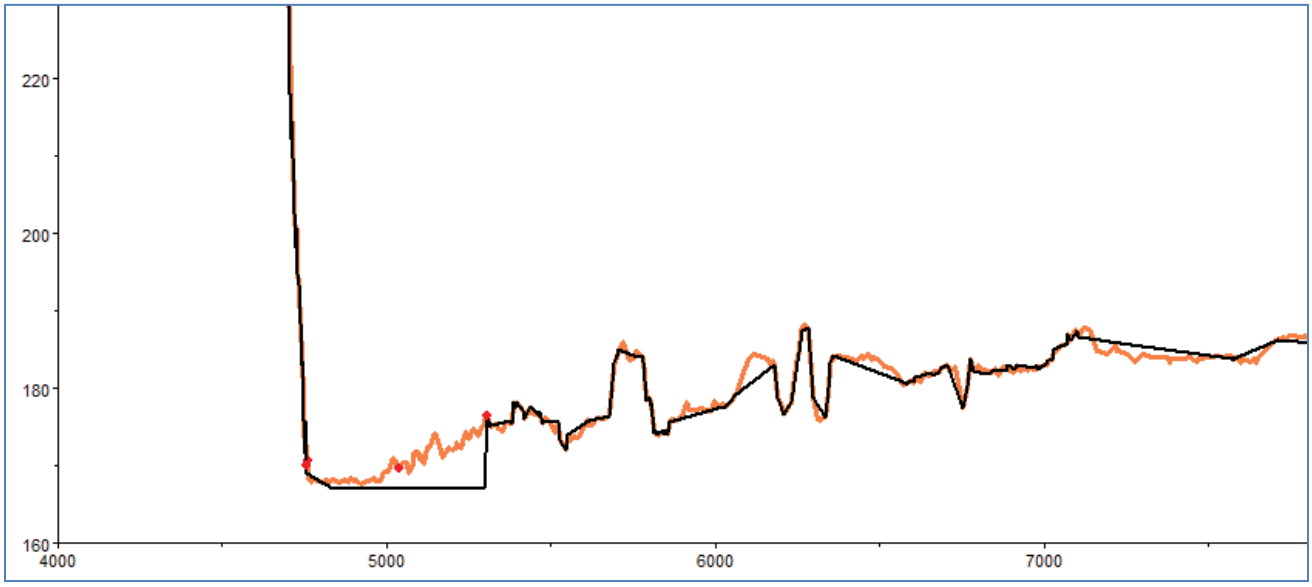


Figure 4 – Comparison of Raw LiDAR (orange) to Filtered/Simplified Cross-section (black)

- ✓ AECOM Section 58295 has a minimum channel elevation of 139.6 and a general bottom elevation of 147.8. This does not fit with the general minimum elevation range (>160.0 NAVD) of all of the other cross-sections upstream of Freeman Diversion (Figure 5).

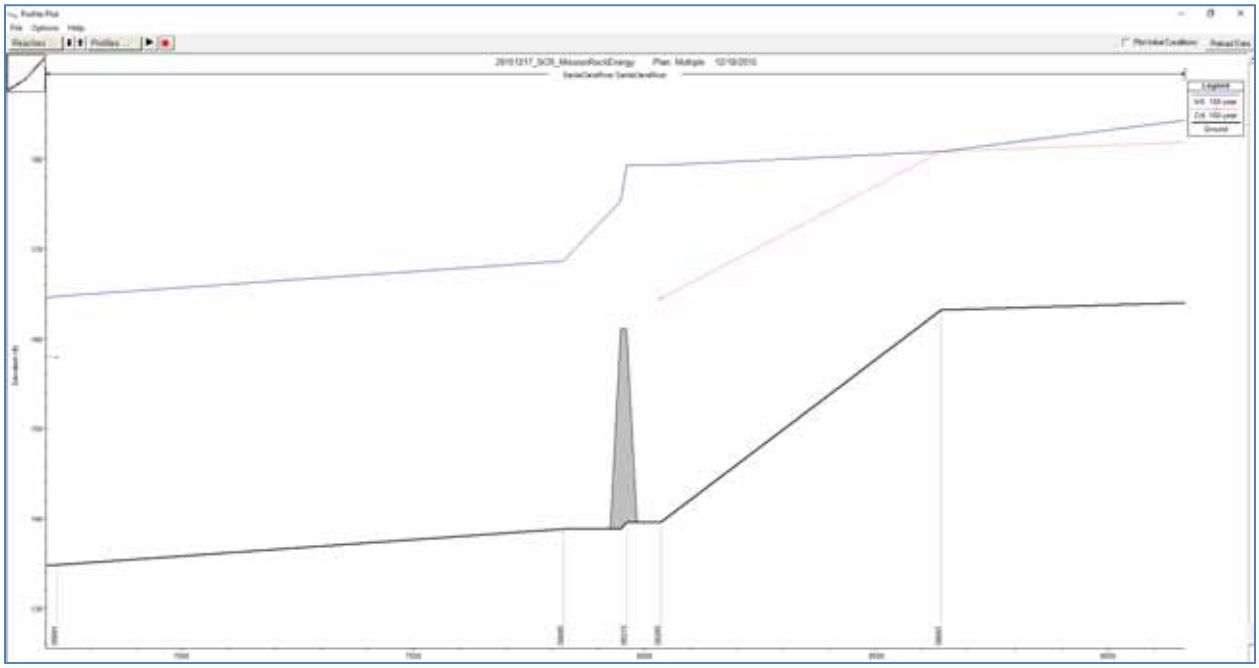


Figure 5 – Profile at Freeman Diversion as modeled in the 2014 AECOM Model

Freeman Diversion -

Freeman Diversion was modeled as an inline weir using an "approximate" geometry as indicated within the description text in the HEC-RAS file (Figure 6). Inline structure elevations and crest lengths do not match the as-built plans or field notes.

The model shows and approximate crest length of 1250 feet at an elevations ranging from 161.1-167.5 (NAVD). Based on the as-built plans (Figure 7) the dam crest (not including gates) is supposed to be 1175' at an elevation of 162.0 (NGVD). Using the conversion factor of 2.58 feet listed in the FIS, the crest elevation should be 164.58 (NAVD). In addition, the bounding cross-sections are over 200' apart, which may contribute to some error in overall water surface elevation calculations at the structure.

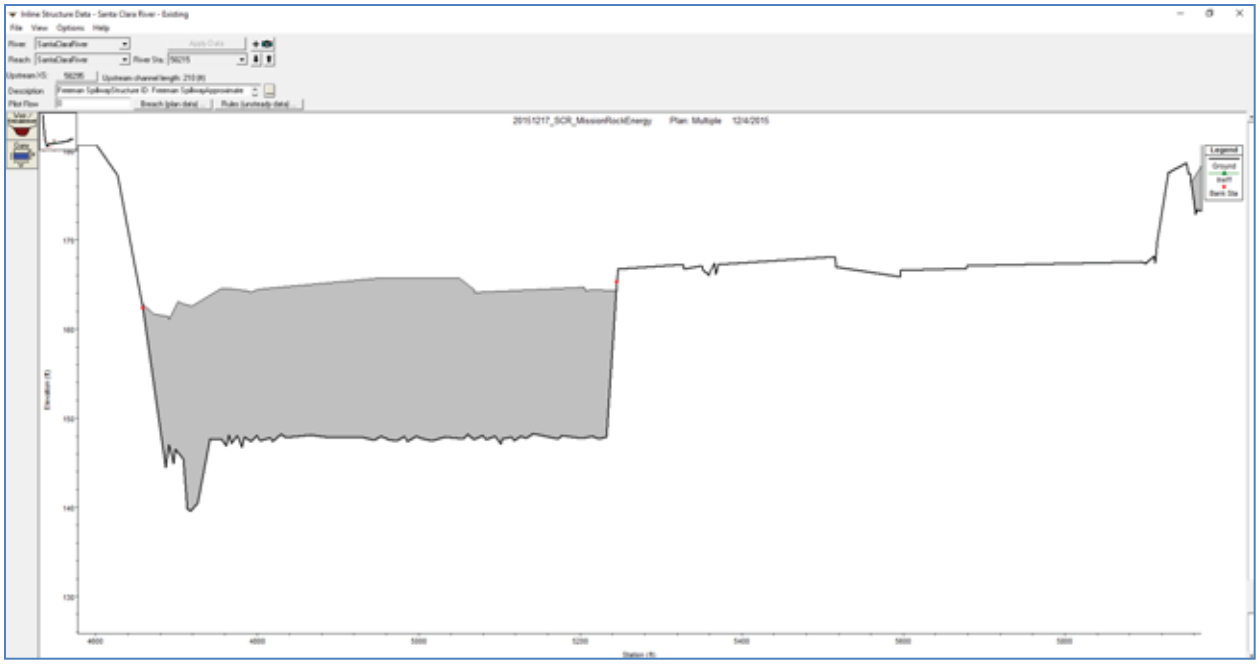


Figure 6 – Diversion as Modeled in 2014 AECOM HEC-RAS Model

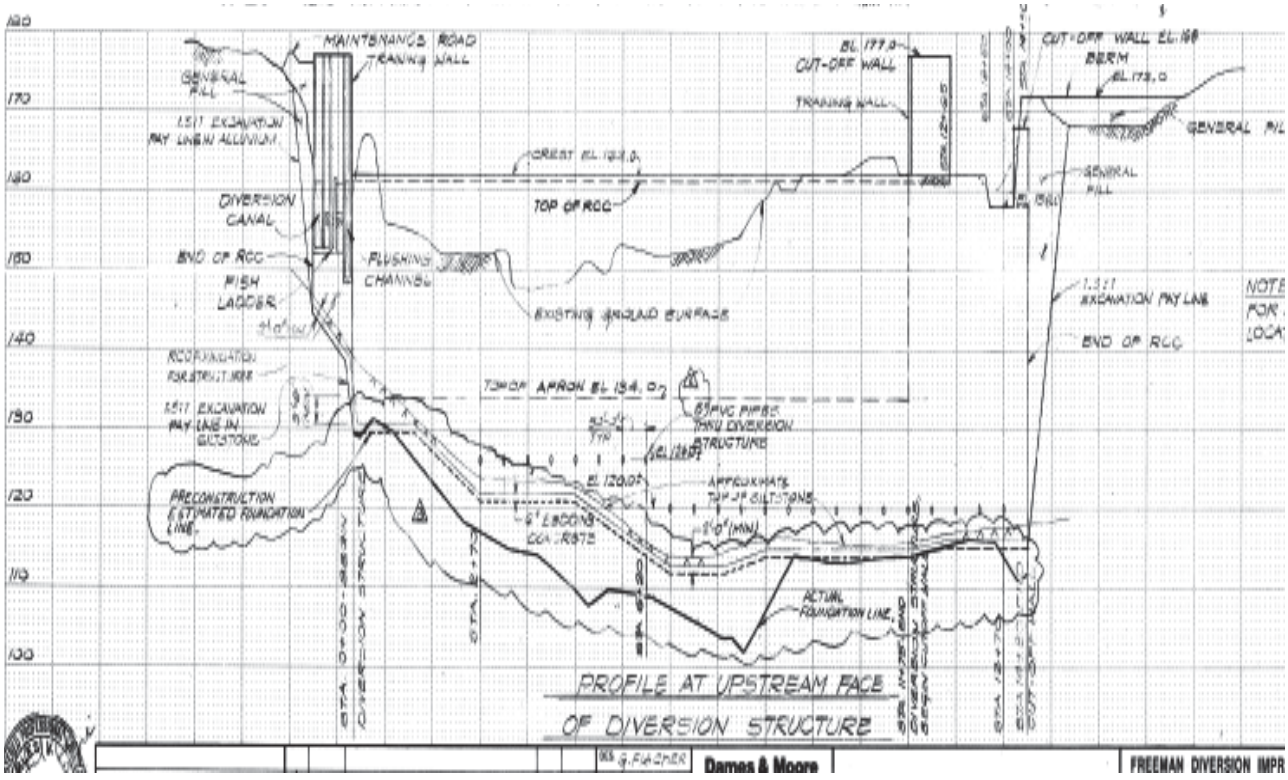


Figure 7 – VCWPD As-built Plan Y2-2423

Manning's "n" Values -

Manning's "n" values are based on the Ventura County 2005 Aerial Imagery which is over 9-years old. Discussion of this is included in detail within the Corrected Effective model section.

Ineffective Flow Areas -

- ✓ Immediately upstream of Freeman Diversion (AECOM Station 58295), the ineffective flow area is set wider than at the next upstream cross-section (AECOM Station 58901). This is counter-intuitive. If the structure restricts flow, the ineffective flow areas should be placed to smoothly transition into the weir (red oval on Figure 8).
- ✓ AECOM Station 62349 allows conveyance across the entire cross-section where the cross-sections immediately upstream (60554) and downstream (64059) do not (red rectangle on Figure 8).

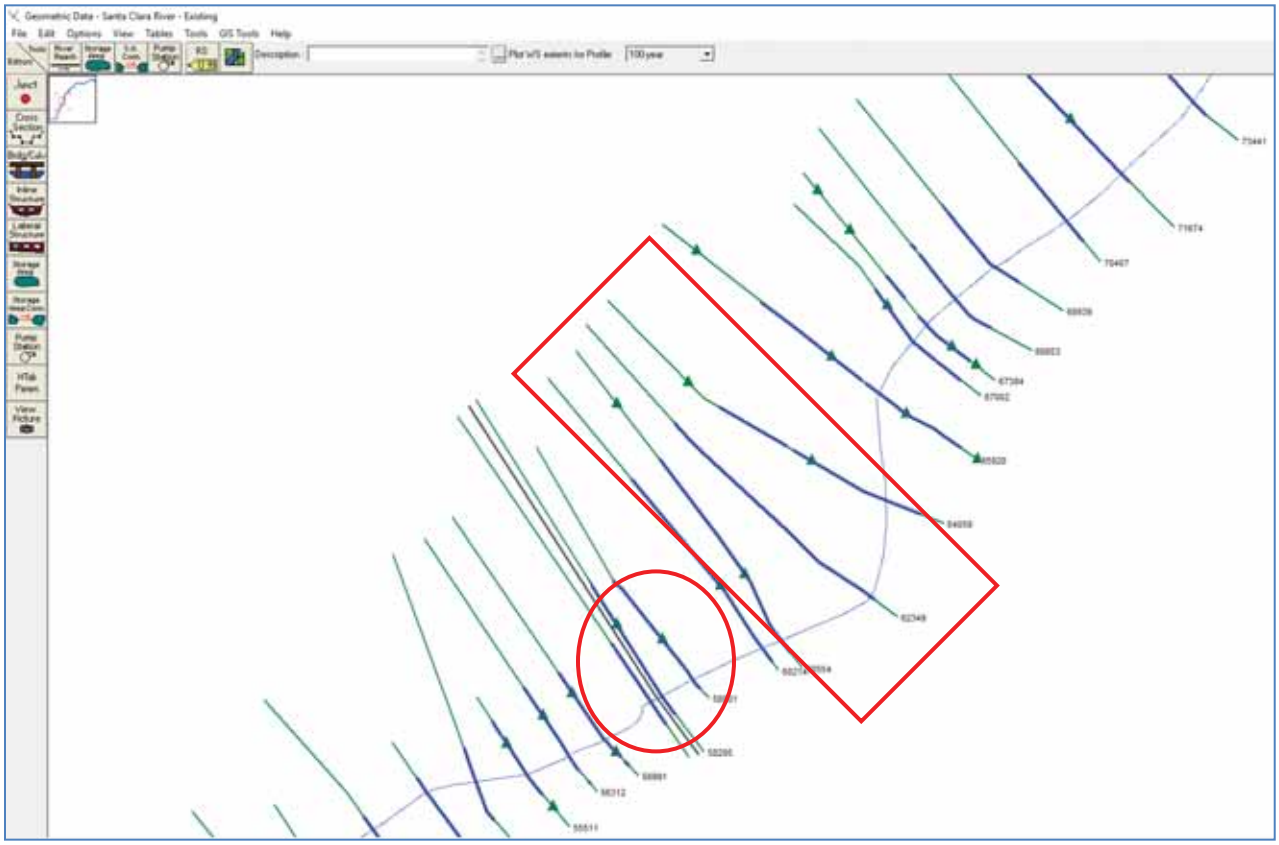


Figure 8 – HEC-RAS Plan Schematic Showing Inconsistent Ineffective Flow Area Placement
Green Triangles = Ineffective Flow Area Placement

Reach Lengths -

Channel lengths are based on the thalweg (dark blue line) of the channel and do not reflect the center of flow distances in the right overbank (Figure 9). The HEC-RAS model utilizes the same downstream reach lengths for both the overbank and channel.

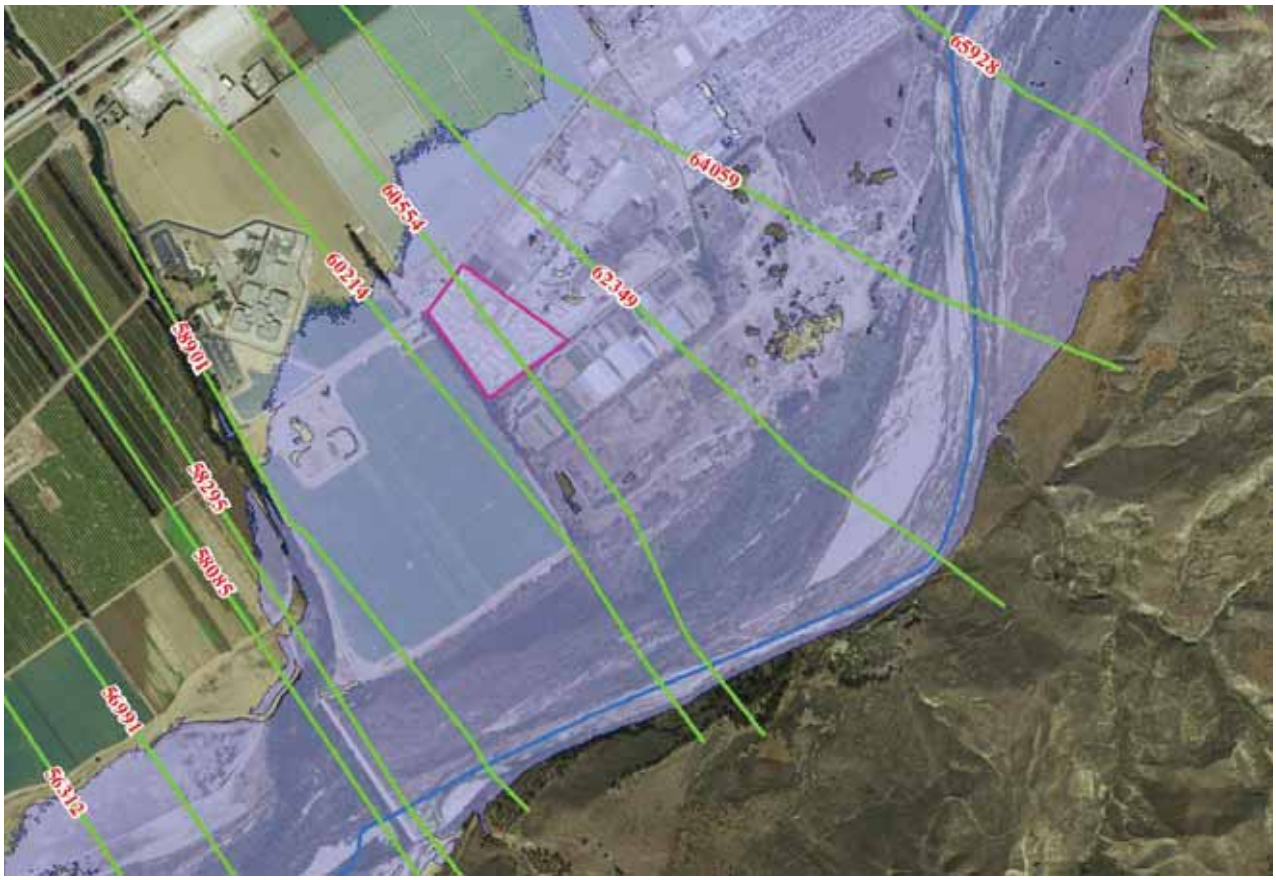


Figure 9 – Plan View of Reach Illustrating Difference in Length of Channel Thalweg and Right Overbank based on the Placement of Cross-section

Model Calculations -

AECOM Section 58901 defaults to critical depth, which is not appropriate for a natural channel having a generally consistent slope and profile is not passing through a critical structure. It appears to be the result of erroneous cross-section geometry at AECOM Section 58295 (see previous geometry discussion).

Corrected Effective Model – Based on a thorough evaluation of the HEC-RAS model included in the 2014 AECOM TSDN, it was determined that several inconsistencies in the model needed to be addressed. A summary of changes made are as follows:

Topography/Cross-section Station and Elevation Data -

- ✓ A new aerial topographic survey was conducted by Jensen Design & Survey (JDS) and provided to Kasraie Consulting May 12, 2014. In addition to points, detailed breaklines were included. ESRI ArcMap Geographical Information Systems (GIS) software was used to create an updated Triangular Irregular Network (TIN) ground surface based on a combination of the 2014 aerial survey within the project area and the 2005 Ventura County LiDAR for all other locations (Figure 10). Revised station/elevation data was extracted for use in HEC-RAS through the ArcMap GeoRAS extension.

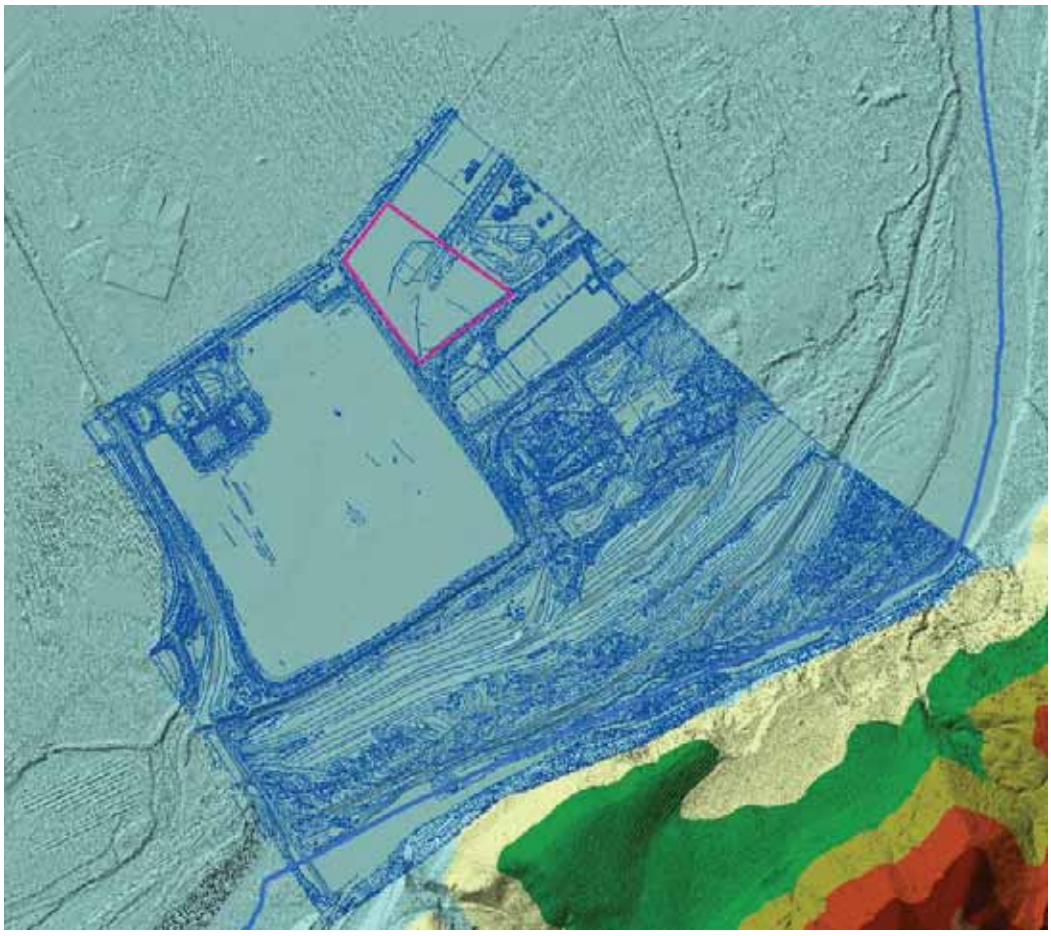


Figure 10 – Updated TIN Surface based on Combination of 2014 JDS Survey and 2005 Ventura County LiDAR

Comparison of the 2014 AECOM and Corrected Effective Model cross-section bi-secting the property (AECOM Station 60554/Corrected Effective Station 60605.83) is included in Figure 11 below. Additional comparisons are included in Appendix C.

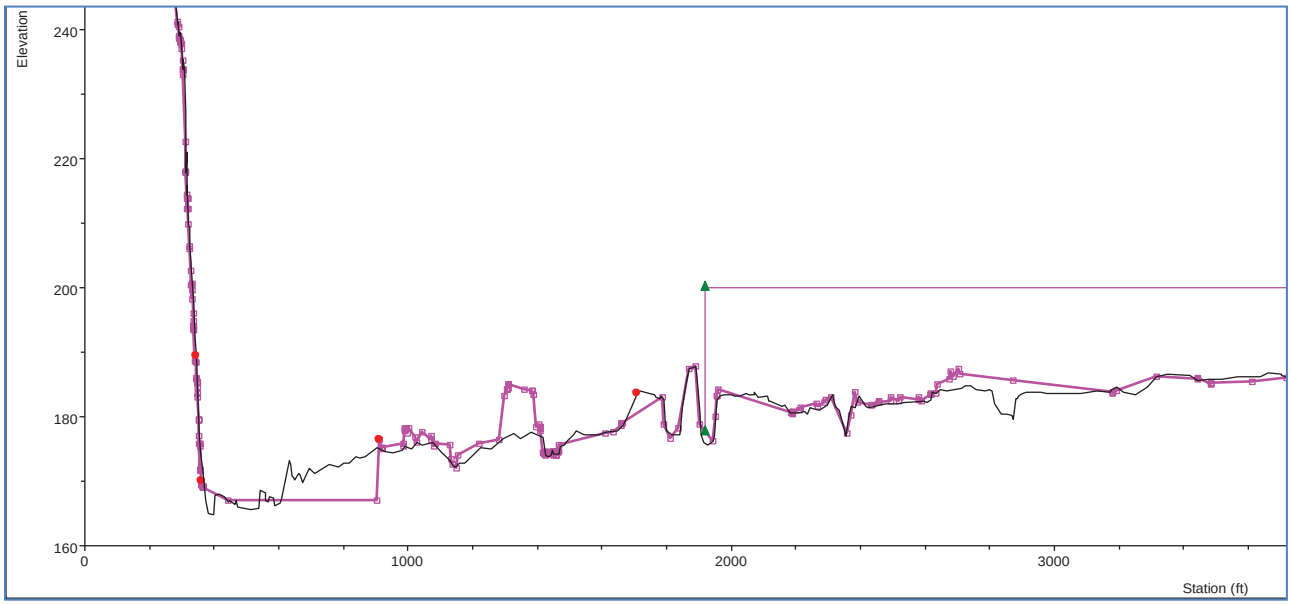


Figure 11: Comparison of AECOM (pink) and Corrected Effective Model (black) at Mission Rock Energy Center Property

- ✓ Additional model cross-sections were added to better define potential flood hazards at the Mission Rock Energy Center property (60435.76 and 61764.94) as well as within the transition area in the vicinity of the Freeman Diversion (58053.88-58407.46).

Freeman Diversion -

✓ HEC-RAS modeling was adjusted to reflect structure dimensions located on as-built plan Y2-2423 (Figure 12). Although insignificant during a large event, the diversion and flushing channel gates were included and assumed to be completely open.

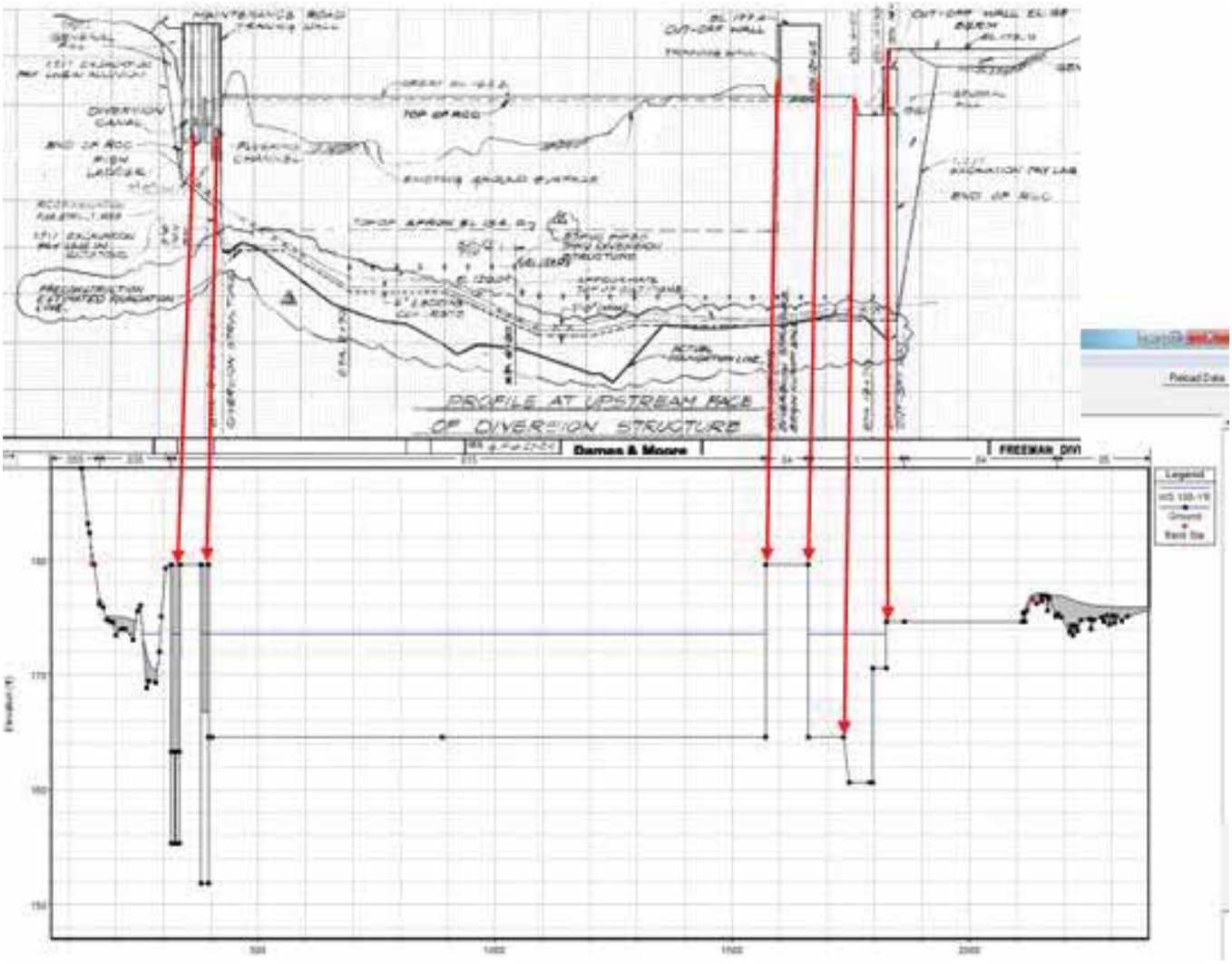


Figure 12 – Revised Freeman Diversion Dimensions as included in the Corrected Effective model

✓ The two existing bounding cross-sections in the 2014 AECOM model (58085 and 58295) were replaced with four new sections(58053.88-58407.46) to better define any transition flow near the diversion. For the section (58255.77) immediately upstream of the diversion, showed some elevations significantly higher than the crest. This is not reflective of available field photographs or the aerial photographs included as part of the 2014 aerial survey. In both of these instances (Figures 13 and 14) the crest is clear

and unobstructed by the upstream section. Instead, the cross-section station/elevation data was set to be the same as that used for the inline structure.

Figure 13 – Field Photo of Freeman Diversion

Figure 14 – Aerial Photo of Freeman Diversion based on 2014 Google Maps Oblique

Ineffective Flow Areas -

An initial model run was completed without ineffective flow areas and the resulting floodplain was mapped using the ESRI ArcGIS GeoRAS Extension. Ineffective flow areas (Figure 15) were then added to reflect flow transitions within the reach of interest.

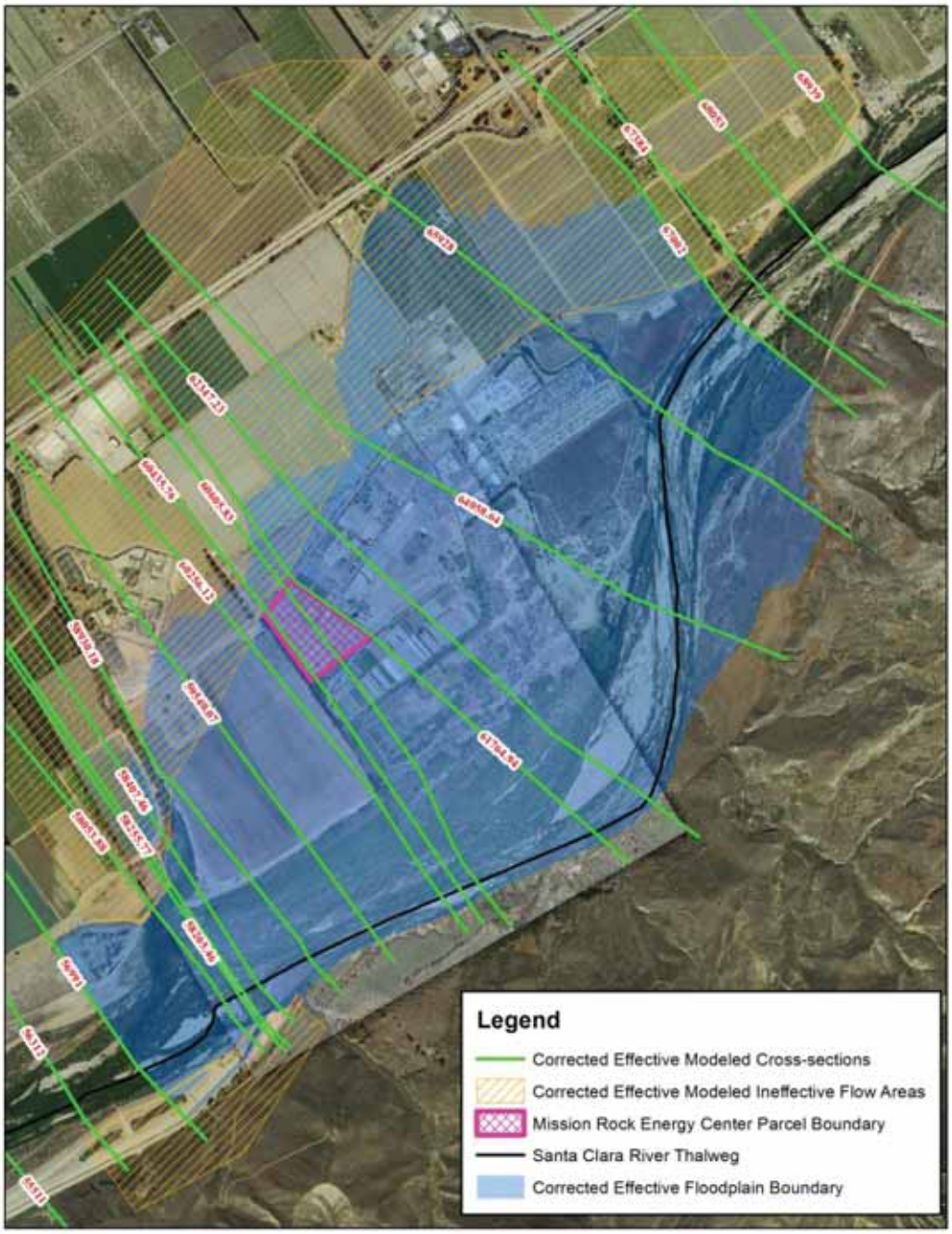


Figure 15 – Corrected Effective Model Ineffective Flow Areas (orange hatch)

Manning's "n" Roughness Values -

Manning's "n" values were revised to reflect conditions shown by the 2014 aerial survey in the vicinity of the POI. The right overbank areas for cross-sections 59260-62677 in the "Current" 2009 TSDN model utilized a value of 0.085 to reflect dense farming activity and 0.13 for developed areas. These values were assigned on a macro scale and do not reflect existing conditions (Figure 16).

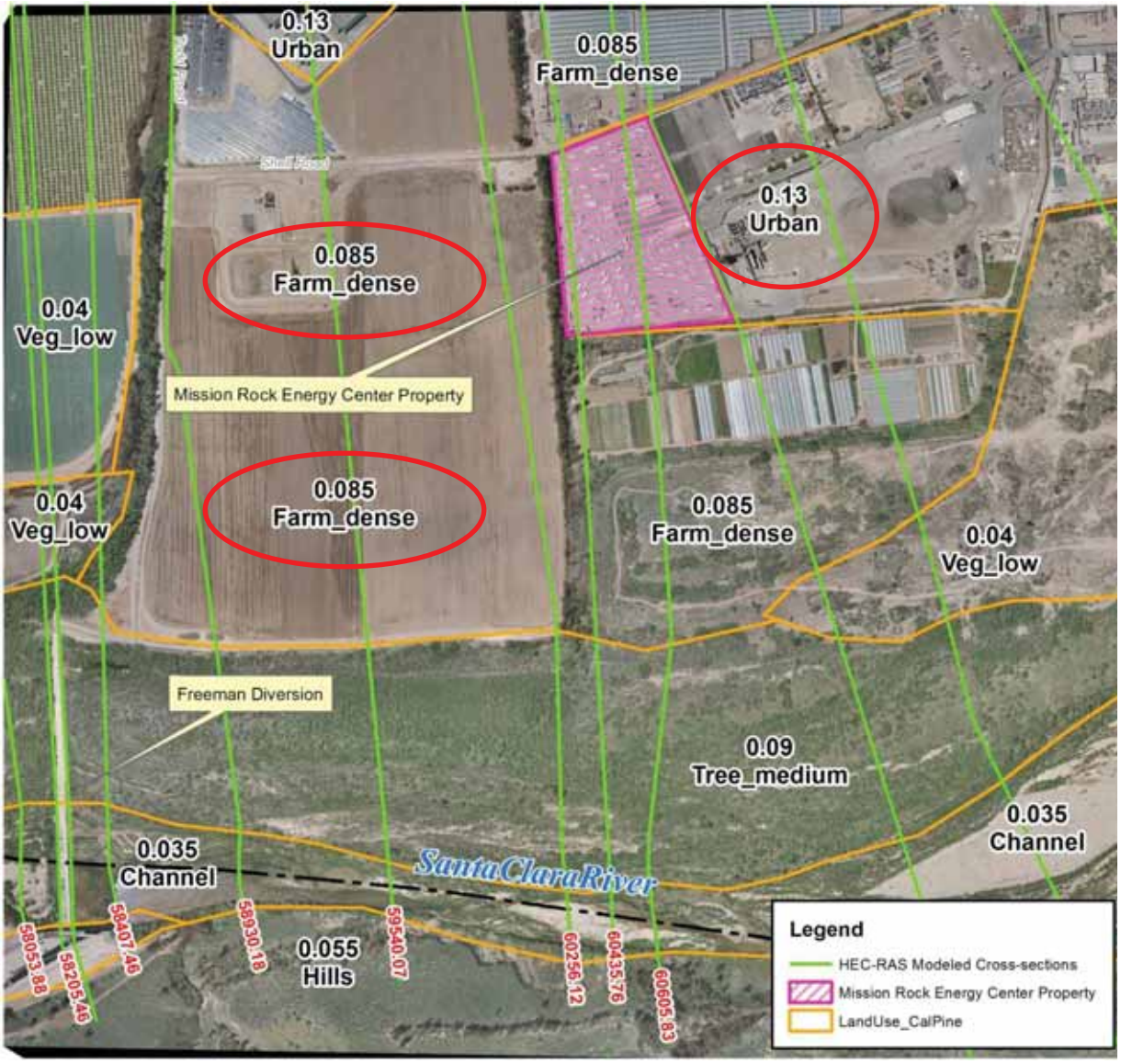


Figure 16 – Comparison of 2014 AECOM (from 2005 Ventura County Aerials) Roughness Values with the 2014 Aerial Survey

As can be seen in the figure above, the right overbank area defined as "Farm_Dense" is barren. The "Urban" classification is being used for an area where vehicle and

material storage are the primary land use. During a large flood these vehicles and materials would not remain stationary as the higher roughness value would indicate. Based on the 2014 aerial survey, a more appropriate set of values was determined and included in an updated GIS landuse layer. Updated "n" values were extracted for use in HEC-RAS through the ArcMap GeoRAS extension. An overview of the revised values is shown in Figure 17:

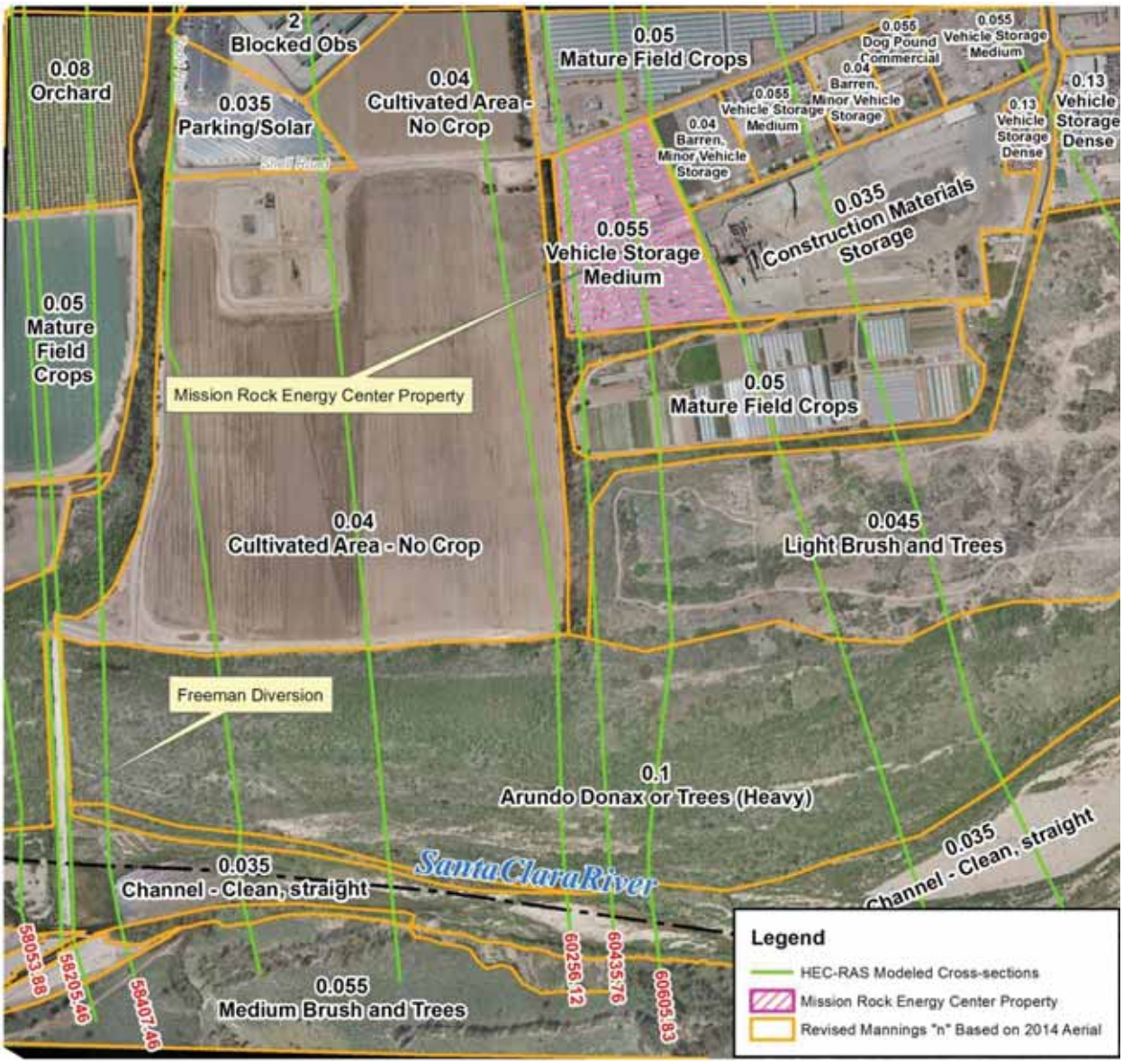


Figure 17 – Revised Manning's "n" Values based on the 2014 Aerial Survey

Reach Lengths -

Estimated center of flow lines were added to the left and right overbank areas within the reach of interest. Downstream flow lengths were automatically calculated using the ESRI ArcGIS GeoRAS extension (Figure 18).

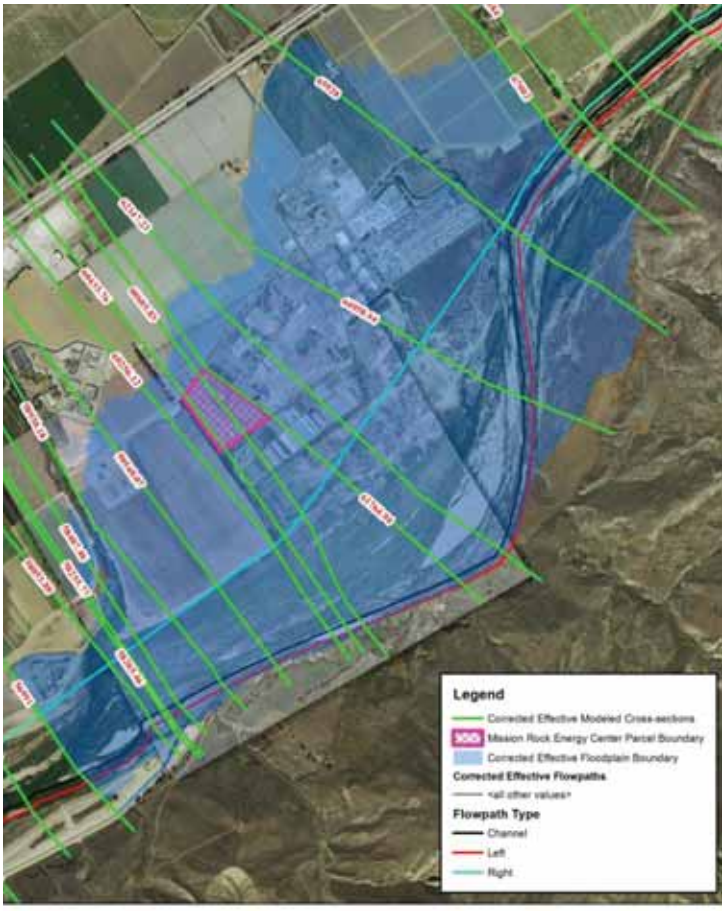


Figure 18 – Corrected Effective Model Channel and Overbank Flowpaths

Model Calculations -

The following items were changed to eliminate erroneous defaults to critical depth as well as improve energy loss calculations:

- ✓ Additional cross-sections were added.
- ✓ An initial model run was completed and bank stations were then adjusted within the reach of interest to closer coincide with the initial 10-year floodplain.
- ✓ Main channel Manning's "n" values for the main channels were increased from 0.035 to 0.045 at cross-sections 60435.76 and 64058.64.

Corrected Effective Floodplain/Floodway Map -

Revised results showed elevations on the property ranging from 188.1-191.5 (NAVD) with the parcel remaining outside of the regulatory floodway. The following workmap is based on the Corrected Effective Model (Figure 19):

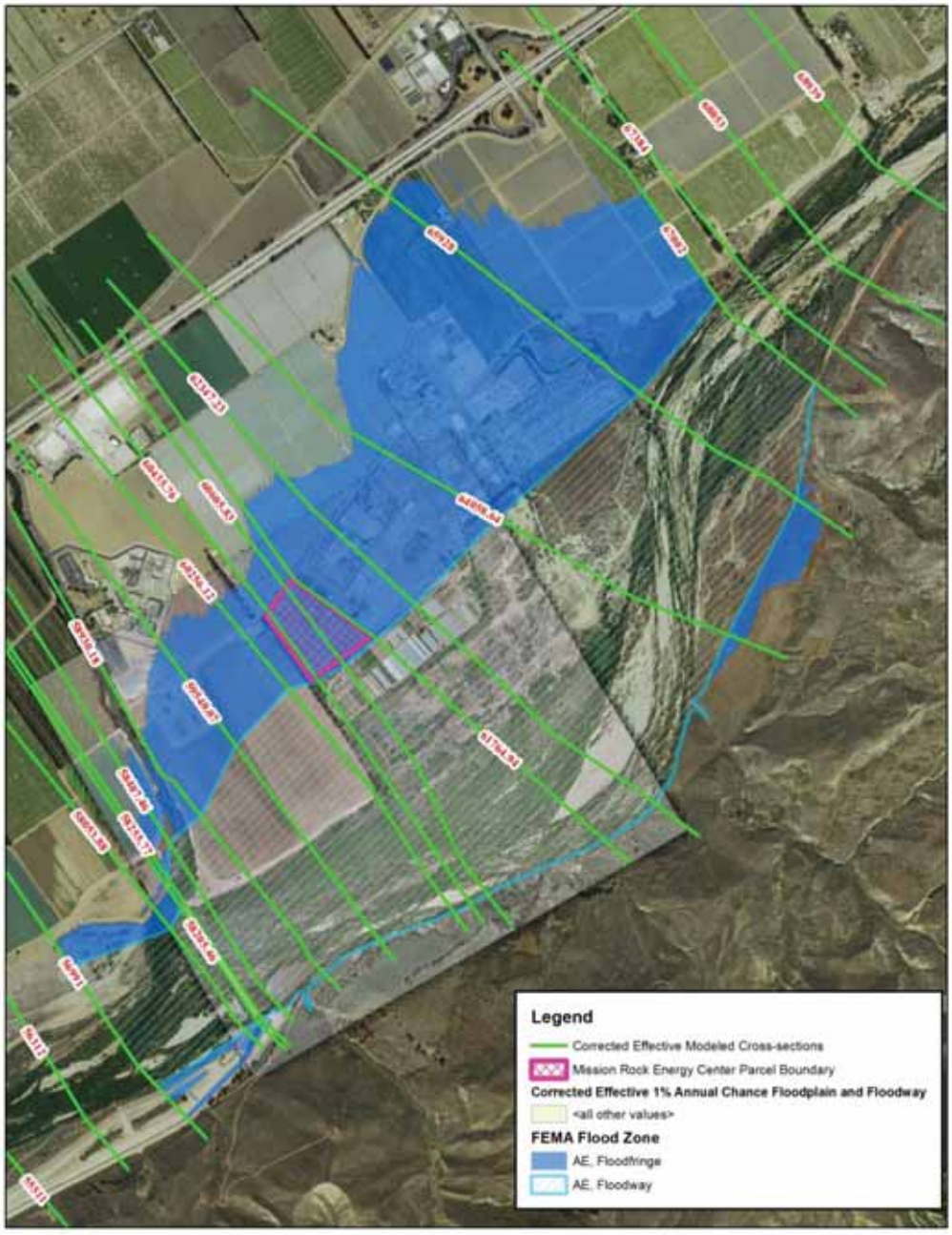
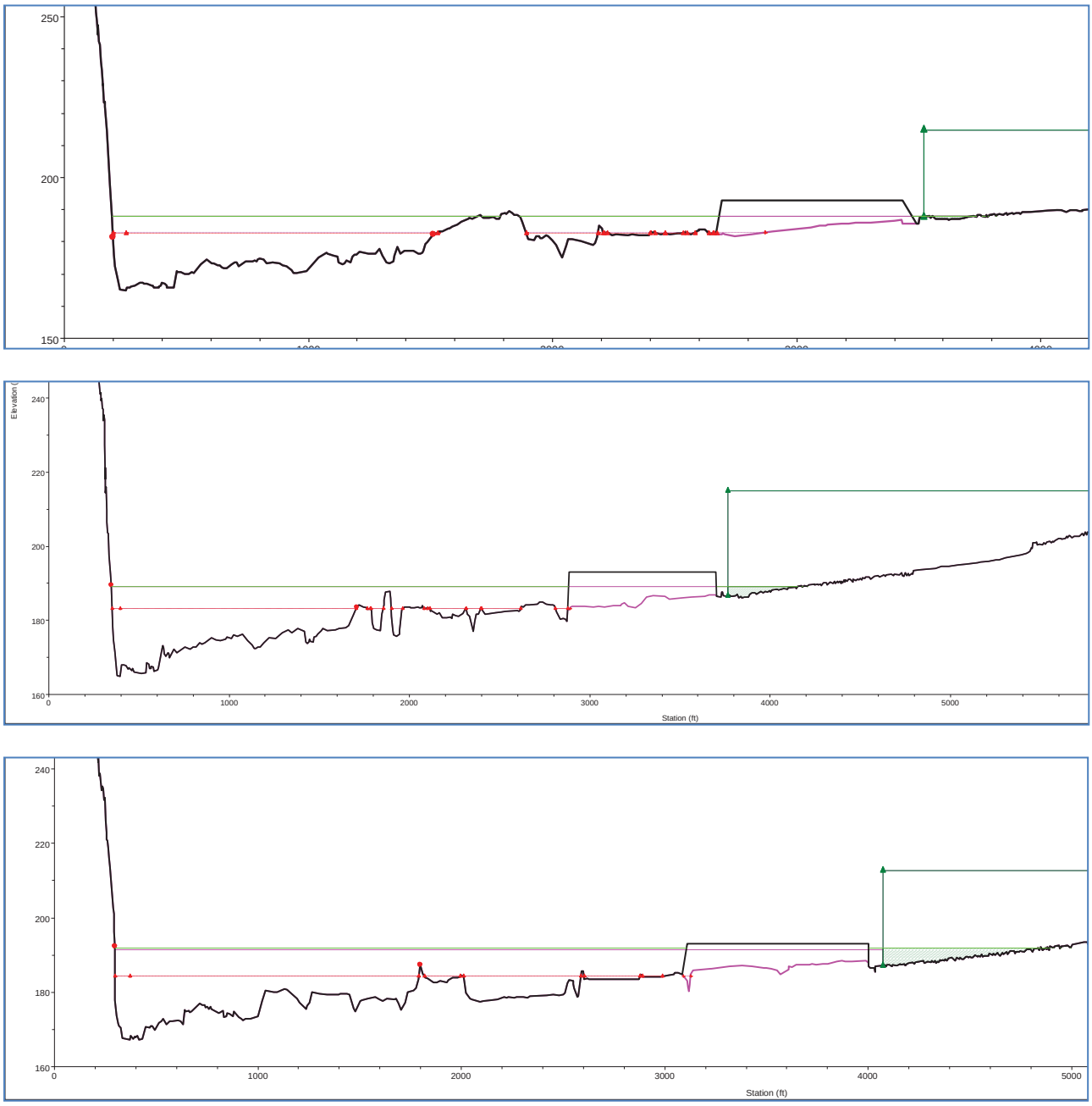


Figure 19 – Corrected Effective Floodplain/Floodway Map

Proposed Condition Model – Elevations representing the Mission Rock Energy Center parcel on cross-sections 60435.76-61764.94 were raised to an elevation of 192.91 (NAVD) to represent proposed fill (Figures 20-22).



Figures 20-22 – Cross-sections 60435.76-61764.94 Adjusted to Reflect Proposed Fill (pink = Corrected Effective, black = Proposed Condition)

The proposed fill will create minor increases in the 1% Annual Chance floodplain elevation (Base Flood Elevation, 188.0-191.9) with a maximum increase of 0.5 feet approximately 300 feet upstream of the project and a total sphere of influence (where there is any increase) approximately 4000' upstream of the project. A second floodway run maintaining the same encroachments from the Corrected Effective model was included using geometry based on the proposed fill. Floodway elevations (i.e. Base Flood Elevation with Floodway) did not change, while the allowable surcharge decreased. Model results indicate that the proposed project will be compliant with both the Ventura County Floodplain Management Ordinance and Section 60.3 of the FEMA National Flood Insurance Program (NFIP) regulations.

4. Comparison of 2014 AECOM, Corrected Effective, and Proposed Condition Models

Water Surface Elevations, Flood Depths, and Profiles –

Model results for the 2014 AECOM, Corrected Effective, and Proposed Condition models were exported from HEC-RAS to ArcMap using the GeoRAS extension. For each condition, water surface elevation TIN surfaces and 1% annual chance (100-year) floodplain boundaries were generated and then used to determine water surface elevations at the corners of the POI. The following table (Table 2) shows the differences in water surface elevations at the property:

Table 2 – Differences in Water Surface Elevations at the POI

	2014 AECOM Model[1]	Corrected Effective Model	Proposed Condition Model
North	188.6	191.5	191.9
East (SE)	189.9	191.5	191.9
South	188.2[2]	188.1	188.0
West (NW)	188.1	188.1	188.0

[1]Estimated based on water surface TIN created from modeled cross-sections
[2]Current location of storm drain catchbasin

Appendix D contains the HEC-RAS model results for each run. Note that the stationing for the Corrected Effective and Proposed Condition models do not match in all cases for cross-sections between 56991 and 65928. This is due to the addition and change in location of modeled cross-sections near Freeman Diversion and at the project site.

The following (Figures 23 and 24) is a comparison of the Corrected Effective (**blue**) and AECOM (**green**) flood/ground profiles and cross-sections with the approximate extent of the property location shown by the **red** arrows.

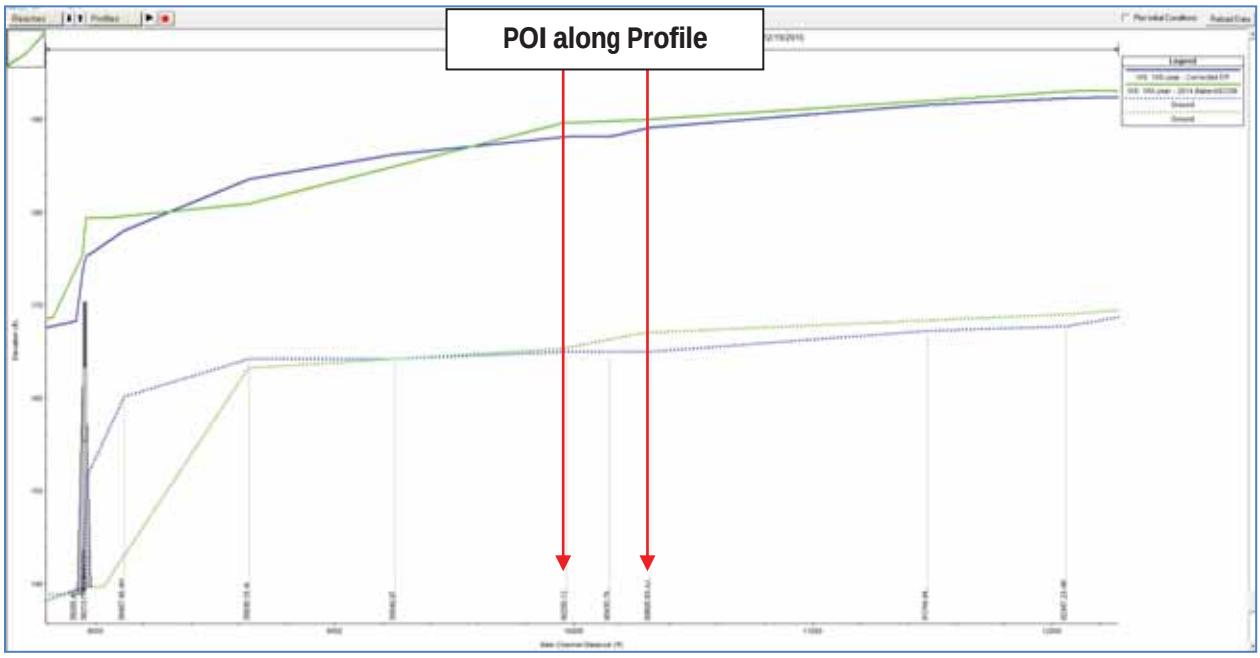


Figure 23– Comparison of 2014 AECOM and Corrected Effective ground and water surface profiles

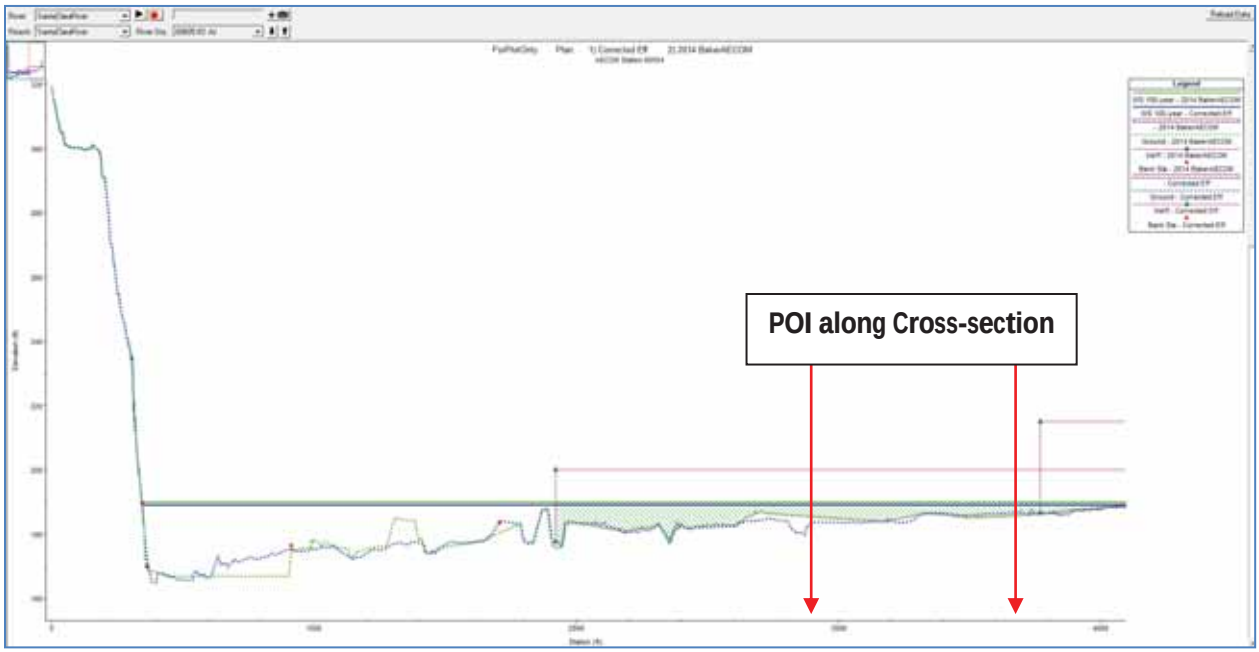


Figure 24 – Comparison of 2014 AECOM and Corrected Effective ground and water surface elevation at cross-section 60605.83 (AECOM 60554) through the POI

Due to the corrected stream stationing, it was not possible to show both the AECOM and Corrected Effective/Proposed HEC-RAS results directly within the model side-by-side. HEC-RAS "Standard Table 1" and "Encroachment 1" output as well as simplified Floodway Data Table format are included for each model run in Appendix D.

Tabular results for the Corrected Effective/Proposed Condition models are shown below (Figure 25).

HEC-RAS River: SantaClaraRiver Reach: SantaClaraRiver

Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Flow Area	Top Width Act	Vel Total	Prof Delta WS
				(cfs)	(ft)	(ft)	(sq ft)	(ft)	(ft/s)	(ft)
SantaClaraRiver	67384	100-year	Corrected Eff	225118.0	182.3	202.1	16858	1205	13.4	
SantaClaraRiver	67384	100-year	Proposed Cond	225118.0	182.3	202.1	16832	1202	13.4	
SantaClaraRiver	67384	100-FW	Corrected Eff	225118.0	182.3	202.5	16778	1093	13.4	0.4
SantaClaraRiver	67384	100-FW	Proposed Cond	225118.0	182.3	202.5	16778	1093	13.4	0.4
SantaClaraRiver	67002	100-year	Corrected Eff	225118.0	180.8	200.1	15673	1414	14.4	
SantaClaraRiver	67002	100-year	Proposed Cond	225118.0	180.8	200.0	15589	1412	14.4	
SantaClaraRiver	67002	100-FW	Corrected Eff	225118.0	180.8	200.8	15882	1155	14.2	0.7
SantaClaraRiver	67002	100-FW	Proposed Cond	225118.0	180.8	200.8	15882	1155	14.2	0.8
SantaClaraRiver	65928 AM	100-year	Corrected Eff	225118.0	178.8	199.3	27053	3089	8.3	
SantaClaraRiver	65928 AM	100-year	Proposed Cond	225118.0	178.8	199.1	26581	3066	8.5	
SantaClaraRiver	65928 AM	100-FW	Corrected Eff	225118.0	178.8	199.8	22869	1730	9.8	0.5
SantaClaraRiver	65928 AM	100-FW	Proposed Cond	225118.0	178.8	199.8	22869	1730	9.8	0.7
SantaClaraRiver	64058.64 AL	100-year	Corrected Eff	225118.0	175.4	193.2	22292	3606	10.1	
SantaClaraRiver	64058.64 AL	100-year	Proposed Cond	225118.0	175.4	193.6	23581	3812	9.5	
SantaClaraRiver	64058.64 AL	100-FW	Corrected Eff	225118.0	175.4	194.2	20065	2325	11.2	1.0
SantaClaraRiver	64058.64 AL	100-FW	Proposed Cond	225118.0	175.4	194.2	20065	2325	11.2	0.7
SantaClaraRiver	62347.23 AK	100-year	Corrected Eff	225118.0	167.7	192.2	43867	4024	5.1	
SantaClaraRiver	62347.23 AK	100-year	Proposed Cond	225118.0	167.7	192.7	45811	4026	4.9	
SantaClaraRiver	62347.23 AK	100-FW	Corrected Eff	225118.0	167.7	193.0	38539	2839	5.8	0.8
SantaClaraRiver	62347.23 AK	100-FW	Proposed Cond	225118.0	167.7	193.0	38539	2839	5.8	0.3
SantaClaraRiver	61764.94	100-year	Corrected Eff	225118.0	167.1	191.5	41080	3773	5.5	
SantaClaraRiver	61764.94	100-year	Proposed Cond	225118.0	167.1	191.9	37925	2880	6.0	
SantaClaraRiver	61764.94	100-FW	Corrected Eff	225118.0	167.1	192.3	38191	2759	5.9	0.7
SantaClaraRiver	61764.94	100-FW	Proposed Cond	225118.0	167.1	192.3	38191	2759	5.9	0.4
SantaClaraRiver	60605.83 AJ	100-year	Corrected Eff	225118.0	164.9	189.1	32689	3422	6.9	
SantaClaraRiver	60605.83 AJ	100-year	Proposed Cond	225118.0	164.9	189.1	29388	2601	7.7	
SantaClaraRiver	60605.83 AJ	100-FW	Corrected Eff	225118.0	164.9	189.8	30414	2471	7.4	0.7
SantaClaraRiver	60605.83 AJ	100-FW	Proposed Cond	225118.0	164.9	189.8	30414	2471	7.4	0.7
SantaClaraRiver	60435.76	100-year	Corrected Eff	225118.0	164.9	188.1	29208	3249	7.7	
SantaClaraRiver	60435.76	100-year	Proposed Cond	225118.0	164.9	188.0	25841	2450	8.7	
SantaClaraRiver	60435.76	100-FW	Corrected Eff	225118.0	164.9	188.9	27874	2434	8.1	0.8
SantaClaraRiver	60435.76	100-FW	Proposed Cond	225118.0	164.9	188.9	27874	2434	8.1	0.9
SantaClaraRiver	60256.12	100-year	Corrected Eff	225118.0	164.9	188.1	36414	3101	6.2	
SantaClaraRiver	60256.12	100-year	Proposed Cond	225118.0	164.9	188.1	36414	3101	6.2	
SantaClaraRiver	60256.12	100-FW	Corrected Eff	225118.0	164.9	188.8	34434	2548	6.5	0.8
SantaClaraRiver	60256.12	100-FW	Proposed Cond	225118.0	164.9	188.8	34434	2548	6.5	0.8
SantaClaraRiver	59540.07	100-year	Corrected Eff	225118.0	164.1	186.2	32344	2555	7.0	
SantaClaraRiver	59540.07	100-year	Proposed Cond	225118.0	164.1	186.2	32344	2555	7.0	
SantaClaraRiver	59540.07	100-FW	Corrected Eff	225118.0	164.1	186.9	31204	2213	7.2	0.7
SantaClaraRiver	59540.07	100-FW	Proposed Cond	225118.0	164.1	186.9	31204	2213	7.2	0.7
SantaClaraRiver	58930.18 AI	100-year	Corrected Eff	225118.0	164.1	183.5	25715	2242	8.8	
SantaClaraRiver	58930.18 AI	100-year	Proposed Cond	225118.0	164.1	183.5	25715	2242	8.8	
SantaClaraRiver	58930.18 AI	100-FW	Corrected Eff	225118.0	164.1	183.7	23172	1813	9.7	0.2
SantaClaraRiver	58930.18 AI	100-FW	Proposed Cond	225118.0	164.1	183.7	23172	1813	9.7	0.2
SantaClaraRiver	56407.46 AH	100-year	Corrected Eff	225118.0	160.1	178.0	18348	1767	12.3	
SantaClaraRiver	56407.46 AH	100-year	Proposed Cond	225118.0	160.1	178.0	18348	1767	12.3	
SantaClaraRiver	56407.46 AH	100-FW	Corrected Eff	225118.0	160.1	178.0	18350	1767	12.3	0.0
SantaClaraRiver	56407.46 AH	100-FW	Proposed Cond	225118.0	160.1	178.0	18350	1767	12.3	0.0
SantaClaraRiver	56255.77	100-year	Corrected Eff	225118.0	151.8	175.3	15136	1430	14.9	
SantaClaraRiver	56255.77	100-year	Proposed Cond	225118.0	151.8	175.3	15136	1430	14.9	
SantaClaraRiver	56255.77	100-FW	Corrected Eff	225118.0	151.8	175.3	15136	1430	14.9	0.0
SantaClaraRiver	56255.77	100-FW	Proposed Cond	225118.0	151.8	175.3	15136	1430	14.9	0.0
SantaClaraRiver	56215 FREEMAN DIV			Inl Struct						

Figure 25 – Comparison of Corrected Effective and Proposed Condition Floodplain and Floodway Runs

Tabular results for the 2014 AECOM Floodplain and Floodway Runs are shown below (Figure 26).

HEC-RAS Plan: 2014 BakerAECOM River: SantaClaraRiver Reach: SantaClaraRiver

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Flow Area	Top Wdth Act	Vel Total	Prof Delta WS
			(cfs)	(ft)	(ft)	(sq ft)	(ft)	(ft/s)	(ft)
SantaClaraRiver	67384	100-year	225118.0	182.3	201.9	16835	1683	13.4	
SantaClaraRiver	67384	100-FW	225118.0	182.3	202.0	16273	1093	13.8	0.12
SantaClaraRiver	67002	100-year	225118.0	180.8	199.5	15250	1770	14.8	
SantaClaraRiver	67002	100-FW	225118.0	180.8	199.7	14643	1128	15.4	0.23
SantaClaraRiver	65928	100-year	225118.0	179.0	197.6	22919	2629	9.8	
SantaClaraRiver	65928	100-FW	225118.0	179.0	198.1	21283	1730	10.6	0.41
SantaClaraRiver	64059	100-year	225118.0	173.1	193.0	24294	3812	9.3	
SantaClaraRiver	64059	100-FW	225118.0	173.1	193.4	19705	1802	11.4	0.48
SantaClaraRiver	62349	100-year	225118.0	169.0	193.0	50986	4624	4.4	
SantaClaraRiver	62349	100-FW	225118.0	169.0	193.1	33836	1926	6.7	0.14
SantaClaraRiver	60554	100-year	225118.0	167.0	189.9	24517	1580	9.2	
SantaClaraRiver	60554	100-FW	225118.0	167.0	190.0	22922	1378	9.8	0.08
SantaClaraRiver	60214	100-year	225118.0	165.3	189.5	25919	1576	8.7	
SantaClaraRiver	60214	100-FW	225118.0	165.3	189.5	24078	1397	9.3	0.01
SantaClaraRiver	58901	100-year	225118.0	163.2	180.8	13947	1078	16.1	
SantaClaraRiver	58901	100-FW	225118.0	163.2	180.8	13944	1075	16.1	0.00
SantaClaraRiver	58295	100-year	225118.0	139.6	179.3	32563	1853	6.9	
SantaClaraRiver	58295	100-FW	225118.0	139.6	180.3	30662	1533	7.3	1.00
SantaClaraRiver	58215		Inl Struct						

Figure 26 – 2014 AECOM Floodplain and Floodway Runs

5. Mapping/FIS Changes

Flood Insurance Rate Map (FIRM) panel 06111C0790E and Flood Insurance Study (FIS) for Ventura County and Incorporated Areas are dated January 20, 2010 and January 7, 2015 respectively. Hydrologic/hydraulic modeling and mapping for the Santa Clara is based on work originally completed in July 1983 and therefore will not be able to be tied into.

A preliminary map panel (06111C0790) was not prepared for the area of interest even though the hydraulic modeling reach includes the property.

It is recommended that this model be used by FEMA's contractor to create a revised preliminary map for 06111C0709. Appendix E contains the proposed floodplain for the project reach.

6. Endangered Species Act (ESA) Evaluation

An Endangered Species Act Biological Evaluation was completed by Davey Resource Group (dated 05/06/2016) and is included in Appendix F.

As stated in the submittal/transmittal, "*the included Biological Evaluation letter documents pre-project compliance with the ESA. We conclude the project will not result in unmitigated "Take" (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) to Federally-listed threatened and endangered species. No significant, unmitigated impacts to Federally-listed special status species are expected to result from construction and operation of the Mission Rock Energy Center.*

The California Energy Commission (CEC) is the lead agency for ESA compliance on this project. All CEC environmental conditions of certification will be followed, implemented, and documented as part of a final Letter of Map Revision-Fill (LOMR-F) submittal.

Appendix A:
Preliminary Santa Clara River TSDN Transmittal Letter

Hassan Kasraie <kasraie@kasraieconsulting.com>

Preliminary Santa Clara River TSDN

8 messages

Hassan Kasraie <kasraie@kasraieconsulting.com> Mon, Aug 10, 2015 at 12:53 PM
To: Raymond Gutierrez <raymond.gutierrez@ventura.org>
Cc: Sergio Vargas <Sergio.Vargas@ventura.org>

Ray,

As a follow-up to our email conversation today, I contacted FEMA Map Specialists. They referred me to their website where I downloaded the Preliminary FIRM panels. The preliminary panels stop short of the Freeman Diversion structure and our client's project.

When I inquired about the HEC-RAS model for AECOM's TSDN, they referred me to the Community, and gave me a phone number for Jeff Pratt.

Is that something that I may get from PWA? If not, they said I can request it from the FEMA Engineering Library.

Thank you, Hassan

--
Hassan Kasraie, PE
Certified Floodplain Manager
Professional Hydrologist

KASRAIE CONSULTING
Phone: (805) 340-4744
Email: kasraie@kasraieconsulting.com
www.KasraieConsulting.com

Su, Yunsheng <Yunsheng.Su@ventura.org> Wed, Aug 12, 2015 at 3:58 PM
To: Hassan Kasraie <kasraie@kasraieconsulting.com>
Cc: "Hosseinipour, Zia" <Zia.Hosseinipour@ventura.org>, "Vargas, Sergio" <Sergio.Vargas@ventura.org>, "Gutierrez, Raymond" <Raymond.Gutierrez@ventura.org>

Hassan:

Here is the data you requested. Please review and let me know if you have any questions

Thanks

Yunsheng

From: Vargas, Sergio
Sent: Wednesday, August 12, 2015 2:58 PM
To: Su, Yunsheng <Yunsheng.Su@ventura.org>
Subject: FW: Preliminary Santa Clara River TSDN

Yunsheng,

Please forward AECOM TSDN data to Hassan for their use at their own risk.

Thanks.

From: Hassan Kasraie [mailto:kasraie@kasraieconsulting.com]
Sent: Monday, August 10, 2015 12:54 PM
To: Gutierrez, Raymond <Raymond.Gutierrez@ventura.org>
Cc: Vargas, Sergio <Sergio.Vargas@ventura.org>
Subject: Preliminary Santa Clara River TSDN

[Quoted text hidden]

SCR.zip
4686K

Hassan Kasraie <kasraie@kasraieconsulting.com> Wed, Aug 12, 2015 at 5:07 PM
To: "Su, Yunsheng" <Yunsheng.Su@ventura.org>
Cc: "Hosseinipour, Zia" <Zia.Hosseinipour@ventura.org>, "Vargas, Sergio" <Sergio.Vargas@ventura.org>, "Gutierrez, Raymond" <Raymond.Gutierrez@ventura.org>

Yunsheng,

Thank you for sharing the HEC-RAS model. It's labeled July 2009, which is probably the one MAP9 did back then.

I'm looking for a TSDN that AECOM put together in 2014 (enhancing and or correcting the 2009 model). Ed Curtis had mentioned that they had provided it to the local Community.

If you do have the AECOM TSDN, I'd also appreciate having a copy of their workmap so I know what their map looks like.

The one that I'm looking for in particular is in the vicinity of the Freeman Diversion structure at the downstream end.

Thank you, Hassan

[Quoted text hidden]

Vargas, Sergio <Sergio.Vargas@ventura.org> Wed, Aug 12, 2015 at 6:00 PM
To: Hassan Kasraie <kasraie@kasraieconsulting.com>, "Su, Yunsheng" <Yunsheng.Su@ventura.org>
Cc: "Hosseinipour, Zia" <Zia.Hosseinipour@ventura.org>, "Gutierrez, Raymond" <Raymond.Gutierrez@ventura.org>

Hassan,

The HEC RAS Model provided was generated and provided by AECOM – notice that the profile only includes cross sections starting near the Freeman Diversion and end at the County Line. It is likely that the original models were either modified or completely replaced, I am not sure. Also, notice that the cross sections in both the 2009 model and the 2014 AECOM model have about a 300 foot difference in stationing.

Hope this helps.

From: Hassan Kasraie [mailto:kasraie@kasraieconsulting.com]
Sent: Wednesday, August 12, 2015 5:07 PM
To: Su, Yunsheng <Yunsheng.Su@ventura.org>

Cc: Hosseinipour, Zia <Zia.Hosseinipour@ventura.org>; Vargas, Sergio <Sergio.Vargas@ventura.org>; Gutierrez, Raymond <Raymond.Gutierrez@ventura.org>
Subject: Re: Preliminary Santa Clara River TSDN

[Quoted text hidden]

Su, Yunsheng <Yunsheng.Su@ventura.org> Thu, Aug 13, 2015 at 9:38 AM
To: "Vargas, Sergio" <Sergio.Vargas@ventura.org>, Hassan Kasraie <kasraie@kasraieconsulting.com>
Cc: "Hosseinipour, Zia" <Zia.Hosseinipour@ventura.org>, "Gutierrez, Raymond" <Raymond.Gutierrez@ventura.org>

Hassan: Sergio is right. Even though they bear the same labels, they are different. You can compare the two if you have the Map9 model, or let me know if you don't.

You can download the maps from FEMA website, or I will send to you in a separate email. I have attached the shapefile for your reference.

Please note these are preliminary data and you bear the full responsibility for using it.

Thanks

Yusnheng

From: Vargas, Sergio
Sent: Wednesday, August 12, 2015 6:00 PM
To: Hassan Kasraie <kasraie@kasraieconsulting.com>; Su, Yunsheng <Yunsheng.Su@ventura.org>
Cc: Hosseinipour, Zia <Zia.Hosseinipour@ventura.org>; Gutierrez, Raymond <Raymond.Gutierrez@ventura.org>
Subject: RE: Preliminary Santa Clara River TSDN

[Quoted text hidden]

FIRMDB_11132014_Ventura County_California.zip
15544K

Su, Yunsheng <Yunsheng.Su@ventura.org> Thu, Aug 13, 2015 at 9:42 AM

To: Hassan Kasraie <kasraie@kasraieconsulting.com>
Cc: "Hosseinipour, Zia" <Zia.Hosseinipour@ventura.org>

FYI, map 0778F is the most downstream panel.

Thanks

Yunsheng

From: Vargas, Sergio
Sent: Wednesday, August 12, 2015 6:00 PM
To: Hassan Kasraie <kasraie@kasraieconsulting.com>; Su, Yunsheng <Yunsheng.Su@ventura.org>
Cc: Hosseinipour, Zia <Zia.Hosseinipour@ventura.org>; Gutierrez, Raymond <Raymond.Gutierrez@ventura.org>
Subject: RE: Preliminary Santa Clara River TSDN

[Quoted text hidden]

3 attachments

06111C0778F.pdf
2712K

06111C0779F.pdf
3326K

06111C0777F.pdf
2856K

Hassan Kasraie <kasraie@kasraieconsulting.com> Thu, Aug 13, 2015 at 2:11 PM
To: "Vargas, Sergio" <Sergio.Vargas@ventura.org>
Cc: "Su, Yunsheng" <Yunsheng.Su@ventura.org>, "Hosseinipour, Zia" <Zia.Hosseinipour@ventura.org>, "Gutierrez, Raymond" <Raymond.Gutierrez@ventura.org>

Sergio, Thank you for the clarification. I'll look at the data shortly. Hassan
[Quoted text hidden]

Hassan Kasraie <kasraie@kasraieconsulting.com> Thu, Aug 13, 2015 at 6:24 PM
To: "Su, Yunsheng" <Yunsheng.Su@ventura.org>
Cc: "Vargas, Sergio" <Sergio.Vargas@ventura.org>, "Hosseinipour, Zia" <Zia.Hosseinipour@ventura.org>, "Gutierrez, Raymond" <Raymond.Gutierrez@ventura.org>

Yunsheng,
Thank you for sending the HEC-RAS and Shapefiles.
Hassan
[Quoted text hidden]

Appendix B:
Completed MT-1 Forms, Proposed Grading Plan, and Subdivision Plat

APPLICATION FORMS FOR CONDITIONAL AND FINAL LETTERS OF MAP AMENDMENT AND LETTERS OF MAP REVISION BASED ON FILL

General Background Information

In 1968, the U.S. Congress passed the National Flood Insurance Act, which created the National Flood Insurance Program (NFIP). The NFIP was designed to reduce future flood losses through local floodplain management and to provide protection for property owners against potential losses through an insurance mechanism that allows a premium to be paid for the protection of those most in need. The creation of the NFIP represented a major shift in Federal strategy from previous structural flood-control and disaster relief programs.

As part of the agreement for making flood insurance available to a community, the NFIP requires the community to adopt floodplain management ordinances that meet certain minimum requirements intended to reduce future flood losses. The community official or agency responsible for floodplain management in a community may be able to provide information that would be useful to a requester. This official or agency usually is responsible for engineering, public works, flood control, or planning in the community as well.

Use of Application Forms

The Department of Homeland Security's Federal Emergency Management Agency (FEMA) implemented the use of application forms for requesting revisions or amendments to NFIP maps for two reasons. First, because the forms provide a step-by-step process for requesters to follow and are comprehensive, requesters are assured of providing all of the necessary information to support their requests without having to go through an iterative process of providing additional information in a piecemeal fashion, which can result in a time-consuming and cost-intensive process. Second, use of the forms ensures that the requesters' submissions are complete and more logically structured, and generally allows DHS-FEMA to complete its review in a shorter timeframe.

The application forms included in this package were designed to assist requesters (community officials, individual property owners, and others) in gathering the information DHS-FEMA needs to determine whether property (parcels of land or structures) is likely to be flooded during the flood event that has a 1-percent-annual-chance of being equaled or exceeded in any given year (base flood). Lands that are at risk of being inundated by the base flood are called Special Flood Hazard Areas (SFHAs).

The forms in this package shall be used to request Letters of Map Amendment (LOMAs), Conditional Letters of Map Amendment (CLOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), and Conditional Letters of Map Revision Based on Fill (CLOMR-Fs), as defined below. Please note that not all of the forms apply to every request. Only those forms that apply to the request should be submitted.

LOMA	A letter from DHS-FEMA stating that an **existing** structure or parcel of land that has not been elevated by fill (**natural grade**) would not be inundated by the base flood.
CLOMA	A letter from DHS-FEMA stating that a **proposed** structure that is not to be elevated by fill (**natural grade**) would not be inundated by the base flood if built as proposed.
LOMR-F	A letter from DHS-FEMA stating that an **existing** structure or parcel of land that has been **elevated by fill** would not be inundated by the base flood.
CLOMR-F	A letter from DHS-FEMA stating that a parcel of land or **proposed** structure that will be **elevated by fill** would not be inundated by the base flood if fill is placed on the parcel as proposed or the structure is built as proposed.

If the request is being made for a LOMA to be issued on a single residential property, the MT-EZ form, entitled "Application Form for Single Lot or Structure, Amendments to National Flood Insurance Program Maps," may be used instead of the forms in this package. Forms for this purpose may be downloaded from our website at http://www.fema.gov/plan/prevent/fhm/dl_mt-ez.shtm. This form is available in both an English and Spanish version.

A fast alternative to using the MT-1 application is eLOMA. eLOMA is a web-based application that provides licensed land surveyors and professional engineers a system to submit simple LOMA requests to FEMA. Many LOMA requests can be submitted to FEMA using eLOMA. You can find additional information about eLOMA, including the types of LOMA requests that qualify for the eLOMA process, at http://hazards.fema.gov.

The forms in this package and the form entitled "Application Form for Single Lot or Structure, Amendments to National Flood Insurance Program Maps," **shall not be used** in the following instances:

- Requests involving changes in Base Flood Elevations (BFEs);
- Requests involving changes in regulatory floodway boundary delineations;
- Requests for properties in alluvial fan areas;
- Requests involving property and/or structures that have been elevated by fill placed within the regulatory floodway, channelization projects, bridge/culvert replacement projects, or other flood control improvements; or
- Requests involving changes in coastal high hazard areas (V zones).

For such requests, the community must submit the request to DHS-FEMA in accordance with Title 44, Chapter I, Code of Federal Regulations (CFR), Part 65 of the NFIP regulations, which is available online at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfrv1_02.html, using the separately published MT-2 application forms package entitled "Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision." Forms for this purpose may be downloaded from our website at http://www.fema.gov/plan/prevent/fhm/dl_mt-2.shtm.

Please note that the forms in this package may be used for property that has been inadvertently included in a V zone or the regulatory floodway. However, if the property is to be removed from a V zone, it must not be located seaward of the landward toe of the primary frontal dune.

For additional assistance in completing these forms, you may consult the LOMA Tutorial, available on DHS-FEMA's Internet site at: http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm.

Data Submission Requirements

In accordance with the NFIP regulations, DHS-FEMA will use the information provided by these application forms to make a determination on whether a property (parcel(s) of land or a structure(s)) is located within a designated SFHA. In certain instances, additional data that are not referenced on these forms may be required. A DHS-FEMA representative will notify the requester of any additional requirements.

DHS-FEMA encourages the submission of the required data in digital format (e.g. scanned documents on a CD). This may help expedite the processing of your request.

Applicable Regulations

The regulations pertaining to LOMAs, CLOMAs, LOMR-Fs, and CLOMR-Fs are presented in Title 44, Chapter I, CFR, Parts 65 and 70, which is available online at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfrv1_02.html. The purpose of Part 70 is to provide an administrative procedure whereby DHS-FEMA will review information submitted by an owner or lessee of property who believes that their property has been inadvertently included in a designated SFHA. Part 70 provides information about the technical difficulty of accurately delineating the SFHA boundaries on a NFIP map for a community. Part 70 procedures shall not apply if the topography has been altered to raise the original ground to or above the BFE since the effective date of the first NFIP map [i.e., a Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map] showing the property to be within the SFHA. Requests involving changes in topography (such as the placement of fill) are handled under the procedures described in Part 65.

Fee Requirements

Title 44, Chapter I, CFR, Part 72 of the NFIP regulations, which is available online at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfrv1_02.html, presents information regarding the reimbursement procedure initiated by DHS-FEMA to allow for the recovery of costs associated with the review of requests for CLOMAs, CLOMR-Fs, and LOMR-Fs via a review and processing fee. There is no review and processing fee for requests for single/multiple, lot/structure LOMAs.

Revised fee schedules are published periodically, but no more than once annually, as a notice in the *Federal Register*. For the most up-to-date fee schedule, please contact the DHS-FEMA Map Information eXchange (FMIX) toll free at 1-877-FEMA MAP (1-877-336-2627) or consult the DHS-FEMA Internet site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm.

Payment must be submitted in the form of a check or money order, made payable in U.S. funds to the ***National Flood Insurance Program***, or by credit card payment. In addition, the requester must complete the Payment Information Form. The payment should be mailed **together** with the application and supporting data to the address listed in the Address for Submitting Requests section of these instructions.

Basis of Determination

If no fill has been placed, DHS-FEMA's determination as to whether the SFHA designation may be removed from the structure(s) on a property will be based on a comparison of the BFE with the elevation of the Lowest Adjacent Grade to the structure (lowest ground touching the structure) including any attached decks or garage. If fill has been placed, DHS-FEMA's determination will be based on a comparison of the BFE with the elevation of the lowest adjacent grade to the structure (lowest ground touching the structure) including any attached decks or garage and a completed Community Acknowledgment Form (see instructions for the Community Acknowledgment Form [Form 3] for more information).

For DHS-FEMA to remove the SFHA designation from a legally defined property or portion of property that does not have a structure on it, the elevation of the lowest ground on the property must be at or above the BFE.

Please note the following special considerations that may affect DHS-FEMA's determination:

- In areas of shallow/sheet flooding (Zone AO), the elevation of the Lowest Adjacent Grade (including deck posts) of the structure(s) must be above the surrounding grade by an amount equal to or greater than the depth shown on the NFIP map. In addition, adequate drainage paths are required to guide floodwaters around and away from the structure(s); the structure(s) should be on an elevated pad within the Zone AO area. With your application package, in addition to elevation information regarding the structure(s), provide a map showing the topographic data of the property and the immediate surrounding area, and the location of any structure(s) existing on the property (certified by a registered professional engineer or licensed land surveyor) to demonstrate that the above criteria have been met.
- If the lowest floor of a building has been elevated on posts, piers, or pilings above the BFE and any portion of the structure (i.e., posts, pilings, or piers) is still below the BFE, the building will not be removed from the SFHA.

Response Timeframe

In accordance with the procedures of Title 44, Chapter I, CFR, Part 72, which is available online at http://www.access.gpo.gov/nara/cfr/waisidx_02/44cfrv1_02.html, DHS-FEMA will notify the requester of the determination in writing within 60 days of the date of receipt of all required data. Information about the status of active Letter of Map Change (LOMC) requests is available from DHS-FEMA's Mapping Information Platform (MIP) at https://hazards.fema.gov. The MIP allows requesters to search Open LOMCs by entering their Project (Case) Number and Project Type to find out the status of their request. From the MIP Home Page requesters should click on Tools & Links, Public Reports and select Public Reports from the Report Category dropdown.

Effect on Insurance Purchase Requirements

Although DHS-FEMA may issue a LOMA or LOMR-F removing a structure(s) from the SFHA, it is the lending institution's prerogative to require flood insurance, as a condition of a loan, if it deems such action appropriate. Historically, about 25% of all flood claims occur in areas outside of the SFHA. Property owners are strongly encouraged to convert their existing policy, using the premiums already paid for that policy, to a lower-cost Preferred Risk Policy (PRP), which is available for structures located outside the SFHA. For more information about the PRP, contact your agent or broker or visit http://floodsmart.gov/prp.

If the lending institution agrees to waive the flood insurance purchase requirement for a structure, the property owner is eligible for a full refund of the premium paid for the current policy year, provided that no claim is pending or has been paid on the policy in question during the same policy year. If the property owner has been required to renew his or her policy during a period when a revised NFIP map was being printed, the premium will be refunded for an additional year. To initiate processing of the refund, the property owner should provide the LOMA or LOMR-F and evidence of the waiver of the flood insurance requirement from the lending institution to the insurance agent or broker who sold the policy.

Conditional Determinations

To qualify for a CLOMA or CLOMR-F, the proposed project must meet the same criteria as those required for a LOMA or LOMR-F. After construction is completed or fill is placed, certified as-built information must be submitted to DHS-FEMA for a LOMA or LOMR-F to be issued. The NFIP regulations do not require that a CLOMA or CLOMR-F be requested and issued for a proposed project. Check with local community officials to see if they are required.

Property owners and developers should note that a CLOMA or CLOMR-F does not remove the mandatory purchase of flood insurance requirements, it merely provides comment on the proposed plan and does not revise or amend the NFIP map. Once the project has been completed another application will have to be submitted with the as built conditions to receive a LOMA or a LOMR-F which in turn removes the federal requirements for mandatory purchase of flood insurance. It also does not relieve Federal agencies of the need to comply in carrying out their responsibilities for providing federally undertaken, financed, or assisted construction and improvements or in their regulating and licensing activities, in accordance with the provisions of Executive Order 11988 (http://www.fema.gov/plan/ehp/ehplaws/eo11988.shtm).

Endangered Species Act Compliance

CLOMR-F applicants are responsible for documenting to FEMA that Endangered Species Act (ESA) compliance has been achieved prior to FEMA's review of a CLOMR-F application. ESA compliance may be documented by submitting to FEMA a copy of an Incidental Take Permit, an Incidental Take Statement, a "not likely to adversely affect" determination from the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS), or an official letter from NMFS or USFWS concurring that the project has "No Effect" on proposed or listed species or designated critical habitat. The applicant may begin by contacting a NMFS or USFWS office, State wildlife agency office, or independent biologist to identify whether threatened or endangered species exist on the subject property and whether the project associated with the CLOMR-F request would adversely affect species or designated critical habitat. These entities are also available to discuss questions pertaining to listed species and ESA compliance. If potential adverse impacts could occur, then NMFS or USFWS may require changes to the proposed activity and/or mitigation.

For CLOMA, LOMA, and LOMR-F requests involving floodplain activities that have occurred already, private individuals and local and state jurisdictions are required to comply with the ESA independently of FEMA's process. These requests do not provide the same opportunity as CLOMR-Fs for FEMA to comment on the project because CLOMAs and LOMAs do not involve a physical modification to the floodplain and because LOMR-Fs are issued only after the physical action has been undertaken in the floodplain.

Additional information about the ESA and these requirements is available on http://www.fema.gov/library/viewRecord.do?id=4312 or by requesting a copy from the DHS-FEMA Map Information eXchange (FMIX) toll free at 1-877-FEMA MAP (1-877-336-2627). Although FEMA's staff is not available to assist with this process, NMFS and the USFWS both have staff available around the country to answer questions about threatened and endangered species and ESA compliance.

Address for Submitting Requests

Please submit all application forms and data to support a request for a flood zone determination, including any applicable fees to the address listed below. **Incomplete submissions will result in processing delays.**

DHS-FEMA encourages the submission of all required data in digital format (e.g. scanned documents on a CD).

Mail your request to…

LOMC CLEARINGHOUSE
847 SOUTH PICKETT STREET
ALEXANDRIA, VA 22304-4605
Attn.: LOMA Manager

FEMA REGIONS

INSTRUCTIONS FOR COMPLETING THE PROPERTY INFORMATION FORM (FORM 1)

General Instructions

The Property Information Form (Form 1) may be completed by the property owner, or on behalf of the property owner by authorized persons including but not limited to; the property owner's agent, licensed land surveyor, or registered professional engineer to support a request for a Letter of Map Amendment (LOMA), Conditional Letter of Map Amendment (CLOMA), Letter of Map Revision Based on Fill (LOMR-F), or Conditional Letter of Map Revision Based on Fill (CLOMR-F) for existing or proposed, single or multiple lots/structures.

Before completing this form, the requester must obtain the following documents from the County/Parish Clerk, Recorder, or Register of Deeds for the community:

- A copy of the Deed for the property, showing the recordation information (e.g., Book/Volume and Page numbers or Document/Instrument number) containing the recorder's seal and recordation date, accompanied by a tax assessor's or other suitable map showing the surveyed location of the property.

OR

- A copy of the Plat Map for the property, showing the recordation information (e.g., Book/Volume and Page numbers or Document/Instrument number) and containing the recorder's seal and recordation date.

The requester also must obtain a photocopy of the effective FIRM panel (including the Title Block) that shows the area in which the property is located. The FIRM should be available at the community map repository or from the community official or agency responsible for floodplain management. However, digital copies of the FIRM Index and FIRM panels may be ordered from the Map Service Center (MSC), for a nominal fee. To place orders from the MSC, go to their Internet site: http://www.msc.fema.gov. A FIRMette, which can be printed free of charge from the MSC website, may be submitted in lieu of a photocopy of the FIRM.

This site allows requesters to search the MSC for maps and other technical data historically available from the MSC online. Requesters can search by the three following criteria: Catalog, Map Search, and Quick Order. Catalog allows requesters to search through the DHS-FEMA's Map Service Center for available data. Map Search allows requesters to search for data available for an individually specified map area. Quick Order allows requesters to search and order available data by specific FIRM panel or Community number. Payment must be in the form of a credit card. Visa, MasterCard, Discover and American Express, are accepted. Requesters without Internet access should contact the DHS-FEMA Map Information eXchange by calling 1-877-336-2627. They may fax their map order requests to the MSC at 1-800-358-9620.

Requesters should note that for multiple property (structure or lot) requests, this form should only be completed once to describe the entire project. One form for each lot is not necessary.

Specific Instructions

Basis of Request

Select the type of MT-1 Letter of Map Change (LOMC) being requested, by checking only one box. Next to each type of LOMC a brief definition has been provided to assist the requester in making an informed selection.

Fill Placement

Fill is defined as material from any source (including the subject property) placed that raises the ground (natural grade) to or above the Base (1%-annual-chance) Flood Elevation (BFE). The common construction practice of removing unsuitable existing material (topsoil) and backfilling with select structural material is not considered the placement of fill if the practice does not alter the existing (natural grade) elevation, which is at or above the BFE. **Fill that is placed before the date of the first National Flood Insurance Program (NFIP) map showing the area in a Special Flood Hazard Area is considered natural grade. The Special Flood Hazard Area (SFHA) is the area that would be inundated by the base flood.** Assistance to ascertain if fill has been placed on your property may be available from the community official or agency responsible for floodplain management. You may consult with the community map repository to obtain previous editions of the NFIP map, archived topographic data, or

permit drawings related to construction on the site. If the structure footprint is located on ground higher than the surrounding area, fill may have been placed. Additional sources for assistance would include the developer or engineer/designer of the subdivision, previous owners of the site, persons who have owned or resided on adjacent parcels, and large scale aerial photographs (check the tax assessor's office). In addition, digital copies of historic NFIP maps may be available on DHS-FEMA's Map Service Center (MSC), for a nominal fee. To place orders from the MSC, interested parties may visit the MSC website at http://www.msc.fema.gov.. For additional information regarding historic maps, interested parties may contact the DHS-FEMA Map Information eXchange toll free, at 1-877-FEMA MAP (1-877-336-2627).

Regardless of the type of LOMC being requested, DHS-FEMA must require the requester to clearly state, to the best of his or her knowledge, whether fill was or was not placed on his or her property. The requester must select either "yes" or "no." If fill was placed on the property, the requester must provide the month and year fill was placed.

In addition, for proposed projects, DHS-FEMA requires the requester to clearly state whether fill will be placed on his or her property. If fill will be placed, the requester must provide the month and year fill will be placed. In addition, the applicant must then provide documentation to show that ESA compliance has been achieved. Additional information about these requirements is available on Page 4 of this instruction packet.

Number 1 - Street Address

Enter the street address (911 type) for the structure or property being reviewed (subject property). For requests involving multiple lots, structures, or units, attach a separate piece of paper including all street addresses when space is insufficient.

Number 2 - Legal Description

Describe the property by referring to the Deed or Plat Map. The description may consist of a lot number and subdivision name, a parcel number, a tract number, or any other information provided in the Deed or Plat to identify the property (e.g. Lot 2, Block 1, Floodville Estates). It is not necessary to reproduce a lengthy description of the property as it appears in the Deed.

Number 3 - Subject of Determination

DHS-FEMA makes determinations on parcels of land or structures. The requester should select structure, portion of a parcel, or a parcel of land. If the request is for a structure on a property, the date of construction must be provided in this section. Date of construction information may usually be obtained from real estate settlement documents, the property developer, or the local government office where real estate and/or land development transactions are recorded. If there is more than one structure on a property, attach a separate piece of paper with the dates of construction. If the request is for a portion of a parcel, a certified metes and bounds description and map of the area to be removed, certified by a licensed land surveyor or registered professional engineer, are **required.** The metes and bounds description must cover the specific area to be removed, and it must be tied to an identifiable starting point. If the description is for a legally recorded lot or parcel, the metes and bounds description should commence or begin at the lot or parcel corner. Metes and bounds descriptions must not intersect or coincide with the footprint of an existing structure. Please see the example below for the preferred format of metes and bounds descriptions.

> BEGINNING at the northeast lot corner; thence S16°42'22"E, 100.00 feet; thence S33°14'40"W, 145.92 feet; thence S89°13'29"W, 156.01 feet; thence N16°42'22"W, 223.14 feet; thence 210.49 feet along a curve to the left having a radius of 542.00 feet to the POINT OF BEGINNING

DHS - FEMA encourages the submission of metes and bounds descriptions in digital format on CD. This may help expedite the processing of your request.

Number 4 - Number of Structures or Properties

DHS-FEMA makes determinations on single or multiple, lots (parcels of land) or structures. Select the choice that best describes your request.

Required Data

All requests must include the following data:

- Property description documentation must be enclosed for every request and will consist of either the Plat Map or Deed (containing the recorder's stamp and recordation date) accompanied by a tax assessor's map or other suitable map showing the surveyed location of the property. The recordation data (e.g., Book, Volume, Page, Reel, Document Number, and Date) must be evident on the copies of these documents so that DHS-FEMA may use the legal description of the property. In addition, DHS-FEMA must be able to identify the property exactly. If the property is not recorded on a Plat Map, a copy of a tax assessor's map or other suitable map must be submitted to aid DHS-FEMA in locating the property. The map should include at least one street intersection that is shown on the FIRM panel.
- A photocopy of the effective FIRM panel, annotated to show where the property is located, must be submitted for every request. If your community has a separate Flood Boundary and Floodway Map (FBFM), please include a copy. The panel number and effective date of the FIRM must appear on the copy submitted. The actual map or a photographic copy must be used.
- The Elevation Form (Form 2) must be included for all requests, ***except*** requests for determinations in which the FIRM already shows the property to be CLEARLY outside the SFHA. For cases in which the determination for the property or structure is uncertain, elevation data must be submitted to provide a definitive determination. This form must be completed by a licensed land surveyor or registered professional engineer. If an NFIP Elevation Certificate has been completed for a structure, it may be submitted in lieu of this form. The Elevation Certificate must be certified by a licensed land surveyor or registered professional engineer.
- The Community Acknowledgment Form (Form 3) must be included for all LOMR-F or CLOMR-F, or for LOMA requests in which the property has been inadvertently included within the NFIP regulatory floodway. For LOMR-F and CLOMR-F requests only Section A needs to be completed. For LOMA requests in which the property has been inadvertently included within the regulatory floodway, only Section B needs to be completed (see INSTRUCTIONS FOR COMPLETING OPTIONAL FORMS of these instructions for additional information on the certification requirements of this form).
- Documented ESA compliance must be submitted for CLOMR-Fs only. Appropriate documentation includes a copy of an Incidental Take Permit, an Incidental Take Statement, a “not likely to adversely affect” determination from NMFS or USFWS, or an official letter from NMFS or USFWS concurring that the project has “No Effect” on proposed or listed species or designated critical habitat. Additional information about these requirements is available on Page 4 of this instruction packet.

Review and Processing Fee

The appropriate review and processing fee must be submitted for requests involving proposed projects and for requests involving the placement of fill (e.g., CLOMA, LOMR-F, or CLOMR-F). The Payment Information Form should be included with the processing fee. No fee is required to obtain a determination based on existing conditions (i.e. LOMA) as long as no fill has been placed. For the current fee schedule visits DHS-FEMA’s Flood Map-Related Fees Internet site: http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm.

Signature

The requester must provide his or her name, mailing address, and telephone number. The requester must also sign and date, where indicated, to certify the accuracy of the information provided. A Licensed Land Surveyor, Registered Professional Engineer, or other designated agent may sign this form for the requester if they are submitting on their behalf. Providing an email address is optional, however, providing one will make it easier for DHS-FEMA to contact you if necessary and may facilitate the processing of your request.

INSTRUCTIONS FOR COMPLETING THE ELEVATION FORM (FORM 2)

General Instructions

The Elevation Form (Form 2) must be completed by a licensed land surveyor or registered professional engineer (authorized by law to certify the information requested). If the request is to make a determination on the structure, and an NFIP Elevation Certificate has already been completed for this property, it may be submitted in lieu of this form. If the request is to make a determination on the entire legally recorded property, or a portion thereof, the lowest lot elevation must be provided on Form 2. If the request is to have the SFHA designation determined for the entire legally recorded property, but the only elevation provided is the Lowest Adjacent Grade to Structure, the determination will be issued for the structure.

For a licensed land surveyor or registered professional engineer to complete this form, it will be necessary to obtain the effective Flood Insurance Rate Map (FIRM) panel, effective Flood Boundary and Floodway Map (FBFM) panel (if printed), and Flood Insurance Study (FIS) report that cover the area in which the property is located. These can be obtained from the community map repository or ordered from the Map Service Center (MSC), for a nominal fee. To place orders from the MSC, go to their Internet site: http://www.msc.fema.gov.

The DHS-FEMA Map Service Center allows users, including homeowners, surveyors, and engineers, to search the MSC for maps and other technical data. Searches can be conducted under the three following criteria: Catalog, Map Search, and Quick Order. Catalog allows surveyors and engineers to search through the Map Service Center for available data. Map Search allows surveyors and engineers to search for data available for an individually specified map area. Quick Order allows surveyors and engineers to search available data by a specific FIRM panel or Community number. All search criteria will allow surveyors and engineers to search desired data and add that data to a "shopping cart" for later payment options. Payment must be in the form of a credit card. Visa, MasterCard, Discover and American Express are accepted.

Surveyors and engineers that do not have Internet access should contact the DHS-FEMA Map Information eXchange by calling 1-877-FEMA MAP (1-877-336-2627). They may fax their map order requests to the MSC at 1-800-358-9620.

Number 1 - Community Number

Provide the six digit NFIP community number as it appears in the Title Block of the FIRM panel. In addition, include the name of the property (i.e. legal description) and/or the property's address.

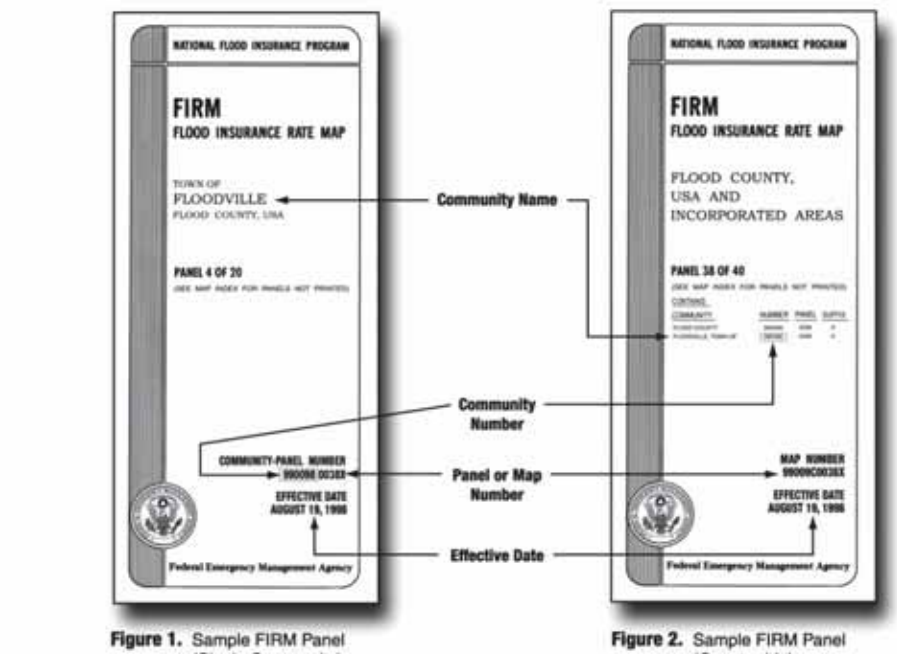


Figure 1. Sample FIRM Panel (Single Community)

Figure 2. Sample FIRM Panel (Countywide)

For additional information on reading FIRM panels you may consult the tutorial "How to Read a FIRM" on DHS-FEMA's Internet site: http://www.fema.gov/media/fhm/firm/ot firm.htm.

*Please note that, in some communities, the only NFIP maps available may be Flood Hazard Boundary Maps, instead of FIRMs.

Number 2 - Conditionals

Identify whether the elevations being provided are based on existing or proposed conditions.

Number 3 - Type of Construction

If the request involves or will involve a structure, provide the type of construction.

> ***Crawl Space*** – The bottom floor is below the first floor, is enclosed by solid and partial perimeter walls, and may be above ground level (grade) on one or more sides. Spaces below ground level on all sides must meet the requirements of FEMA Technical Bulletin 11-01. Spaces with a bottom floor elevation more than 2.0 feet below the Lowest Adjacent Exterior Grade (LAG) elevation will be classified as a basement.
>
> ***Slab on Grade*** – The bottom floor is at or above ground level (grade) on at least one side.
>
> ***Basement/Enclosure*** – The bottom floor (basement or underground garage) is below ground level (grade) on all sides. See Crawl Space above.
>
> ***Other*** – All other structure types not listed above including, but not limited to split levels, structures on piers, mobile homes, etc. Please be as detailed as possible.

Number 4 - Elevation Datum

Provide the elevation datum (e.g., NGVD 29, NAVD 88, or other specified) for which the property elevations shown on the form are referenced. If the datum being referenced is different than the datum used to produce the effective FIS, please provide the datum conversion. Please note that mean sea level datum (MSL) is used within the Commonwealth of Puerto Rico and local tidal datum (LTD) is used within the U.S. Virgin Islands.

Number 5 - Geographic Coordinate Data

The surveyor or engineer must provide the latitude and longitude of the property in decimal degrees to the 5th decimal place (00.00000), and indicate the appropriate horizontal datum, WGS84, NAD83, or NAD27.

Number 6 - Subsidence or Uplift

Land subsidence is the lowering of the ground as a result of water, oil, gas extraction, as well as other phenomena such as soil compaction, decomposition of organic material, and tectonic movement. Periodically, the National Geodetic Survey re-levels some benchmarks to determine new elevations above the National Geodetic Vertical Datum of 1929 (NGVD 29) or above the North American Vertical Datum of 1988 (NAVD 88); however, not all benchmarks are re-leveled each time.

Check "yes" if the area of the property is in an area of subsidence or uplift, and provide the date of the current re-leveling; check "no" if the area of the property is not in an area of subsidence or uplift. In areas experiencing ground subsidence (e.g., Harris County, Texas, and Incorporated Areas); the most recently adjusted Elevation Reference Mark (ERM) must be used for accurate ground and structure elevations. Please consult the effective Flood Insurance Study (FIS) for your community or local floodplain administrator for the most current ERM data.

In general, the effects of subsidence can be accounted for by determining grade and structure elevations using benchmark elevations with the same re-level date as the benchmarks used to develop the Base (1%-annual-chance) Flood Elevations (BFEs) on the FIRM. Please be aware that benchmark re-level dates can be different for different flooding sources. No adjustment is necessary to the BFEs on the FIRM.

Elevation Table

A row in the elevation table must be completed for each property (parcels of land or structures) involved in this request (subject property).

Address – Provide the street address (911 type) for subject property.

Lot/Block Number – Provide the property's lot and/or block number if available. In the absence of a lot or block number, the registered professional engineer or licensed land surveyor must include an identifier that clearly states for what the elevations are being referenced (e.g. residential structure, commercial building, unit 1, etc.).

Lowest Lot Elevation – For requests involving property, or a portion thereof, provide the lowest lot elevation to the nearest tenth (0.1) of a foot or meter. If the FIRM shows BFEs in meters, the accuracy of the lowest lot elevation must be to the nearest tenth of a meter. If the BFE varies across the property, please provide a certified site plan showing the range of elevations across the property.

Lowest Adjacent Grade (LAG) to the Structure – For requests involving a structure, provide the LAG elevation (the elevation of the lowest ground touching the structure including attached patios, stairs, deck supports or garages), to the nearest tenth (0.1) of a foot or meter. If the FIRM shows BFEs in meters, the accuracy of the LAG elevation must be to the nearest tenth of a meter.

Base Flood Elevation – Provide the BFE affecting the property. FEMA will verify the BFE during the review process. BFEs can be obtained by locating the property on the effective FIRM for the community in which the property is located. Upon locating the property on the FIRM, the engineer or surveyor should determine the type of flooding and in which flood zone the property is located. The summary below will provide direction for how to determine the BFE as a result of the flooding type and flood zone determination.

Base Flood Elevation Source – Provide the source used in determining the BFE (e.g. FIRM, profile, floodway data table, Community Determined, or other source). When submitting a BFE that is either community determined or from an alternate source, please include in the request, sufficient data that supports the BFE.

- **Riverine Flooding Systems (Zones AE or A1-A30)** – Consult the FIS report for the community in which the property is located. Next, locate the flood profile for the flooding source by name. Estimate the property's location along the flood profile and interpolate the BFE using the 100-yr. flood profile line.

- **Lacustrine (Stillwater) Flooding Systems** – Consult the FIS report for the community in which the property is located. Next, locate the Summary of Stillwater Elevations table. Locate the flooding source, by name, and use the BFE listed in the table. The flooding source's BFE is normally shown to the nearest one-tenth of a foot. If the flooding source is not listed in the "Summary of Stillwater Elevations" table, use the BFE as shown on the FIRM.

- **Coastal Flooding Systems (Zones AE or A1-A30 and VE or V1-V30)** – First, obtain the BFE from the FIRM panel. Next, consult the FIS report for the community in which the property is located. Locate the Summary of Stillwater Elevations table in the FIS report. Identify the flooding source, by name, and use the BFE listed in the table. Compare the BFE listed in this table to the BFE obtained from the FIRM. If the stillwater elevation listed in this table is less than or equal to the whole-foot BFE shown on the map minus 0.5 foot, a wave height, wave runup, and/or wave setup component exists. In this case, the whole-foot BFE shown on the map should be used for rating, construction, and floodplain management purposes. If the stillwater elevation listed in the "Summary of Stillwater Elevations" table is greater than the whole-foot BFE shown on the map minus 0.4 foot, the stillwater elevation shown in the table shall be used as the BFE. **(Any property/structure located seaward of the landward toe of the primary frontal dune may not be removed from a Zone VE or V1-V30).**

- **Zone A Flooding** – If the property is located in a Zone A, an area of approximate flooding with no BFEs determined, a BFE will need to be determined by the engineer or surveyor. First, the engineer or surveyor should determine if a Federal, State, or local government agency has developed a BFE. Such agencies include the U.S. Army Corps of Engineers, the U.S. Geological Survey, the State's Department of Natural Resources, Department of Environmental Quality, or Department of Transportation; or the local Planning

and Zoning Department. If one has been developed, all supporting data and calculations used to develop the BFE must be submitted, or a letter directly from the government agency must be submitted. If a BFE has not previously been developed, the engineer or surveyor should consult DHS-FEMA 265, *Managing Floodplain Development in Approximate Zone A Areas: A Guide for Obtaining and Developing Base (100-year) Flood Elevations,* available online at http://www.fema.gov/library/viewRecord.do?id=2215. This publication is an excellent resource, which details the appropriate methods for determining BFEs in SFHAs designated flood zone A. To obtain additional information about developing BFEs, contact the DHS-FEMA Map Information eXchange at 1-877-FEMA MAP (1-877-336-2627). If the property is greater than 50 lots or 5 acres, whichever is the lesser, the engineer or surveyor must determine a BFE as a provision of Part 60.3(b)(3), which is available online at http://www.access.gpo.gov/nara/cfr/waisidx_03/44cfr60_03.html.

- **Shallow Flooding (Zone AH)** – If the property is located in flood zone AH, locate the Summary of Stillwater Elevations table in the FIS report. Identify the flooding source, by name, and use the BFE listed in the table. If no Summary of Stillwater Elevations table exists, use the BFE shown on the FIRM If different elevations appear within the same SFHA, the BFE is obtained by linear interpolation between two adjacent BFE lines.

- **Shallow/Sheet Flooding (Zone AO)** – For a property located in Zone AO, the characteristics of the Zone AO area shown on the NFIP map will determine the appropriate methodology to be used to develop the BFE for the property. If the flooding is conveyed by the street, provide the highest top of curb or crown of street elevation (whichever is higher) along the property line and add this to the depth of flooding. The lowest adjacent grade elevation must be above the curb or street elevation by an amount equal to or greater than the depth of flooding shown on the NFIP map. If the entire property is inundated by the SFHA and the flow is not conveyed by the street, add the depth of flooding to the average surrounding grade. If the property is partially inundated by the SFHA and the street does not convey the flow, add the depth of flooding to the lowest lot elevation. Along with the information required for one of the above-mentioned methods, provide sufficient certified topographic information, including flow paths, to show that the structure is located on high ground relative to the depth indicated on the NFIP map.

If the request involves multiple properties (parcels of land or structures), elevations must be provided for each property. If the number of properties for which DHS-FEMA is to make a determination exceeds the number of rows on the Elevation Table, additional photocopies of the table may be attached to the back of the Elevation Form.

Certification (by a licensed land surveyor, registered professional engineer, or architect)

The certifier must provide his or her name, license number and expiration date, his or her company name, telephone number and, if applicable, his or her fax number and email address. The certifier's seal, if available, may be provided here. The certifier must sign and date the Elevation Form, where indicated, to certify the accuracy of the information provided. Not all states authorize architects and engineers to certify elevation information. Consult the state board of registration for more information.

INSTRUCTIONS FOR COMPLETING OPTIONAL FORMS

General

While Forms 1 and 2 must be completed for all requests, Form 3 must only be completed when applicable. Instructions for completing this form are provided below.

Community Acknowledgment Form (Form 3)

The Community Acknowledgment Form (Form 3) must be completed for all requests involving the placement of fill, existing or proposed, or requests for land or structures that are inadvertently included in the NFIP regulatory floodway. The form must be completed and signed by the community official responsible for floodplain management in the community. The community name and the subject property address shown in Items 1 and 2 of the Property Information Form must appear in the spaces provided. Space has been provided within each section for the community official to provide comments on the project (e.g. Section A - The project is reasonably safe from flooding and satisfies Parts 60.3 and 65.5 of the NFIP regulations. Section B - Removal of the project from the regulatory floodway will not result in an increase in Base Flood Elevations.). If additional space is required by the community official to provide the community's comments on a project, additional sheets may be attached to the back of this form.

Section A – Requests Involving the Placement of Fill

Instructions for Communities:

As a participant in the NFIP under 44 CFR 60.3(a)(2), you are required to ensure, prior to issuing a floodplain development permit, that an applicant is in compliance with local and NFIP regulations and has obtained all necessary Federal and State permits related to development. For CLOMR-F requests, applicants must document ESA compliance to FEMA prior to issuance of the CLOMR-F determination. For LOMR-F requests, ESA compliance is required independently of FEMA's process. The community must ensure that appropriate ESA permits are obtained per requirement under Section 60.3(a)(2) of FEMA's regulations. Additional information about these requirements is available on Page 4 of this instruction packet. Another common Federal permit requirement may include wetland permits under Section 404 of the Clean Water Act of 1972. If you need a wetlands permit or are not sure if one is required, contact your local U.S. Army Corps of Engineers District Office. Necessary State permits vary depending on the State.

Instructions for Applicants:

You are responsible for obtaining all necessary Federal, State, and local permits as a condition of obtaining a LOMR-F or CLOMR-F. Your community is required to verify that you have obtained these necessary permits prior to issuing a floodplain development permit or signing the Community Acknowledgment Form (MT-1 Form 3). In addition, for CLOMR-F requests, you must document to FEMA that ESA compliance has been achieved prior to issuance of the CLOMR-F determination. For LOMR-F requests, ESA compliance is required independently of FEMA's process. Your community must ensure that appropriate ESA permits are obtained per requirement under Section 60.3(a)(2) of FEMA's regulations. Additional information about these requirements is available on Page 4of this instruction packet. Another common Federal permit requirement may include wetland permits under Section 404 of the Clean Water Act of 1972. If you need a wetlands permit or are not sure if one is required, contact your local U.S. Army Corps of Engineers District Office. Necessary State permits vary depending on the State.

To assist communities in determining if a property or structure, existing or proposed, is reasonably safe from flooding, DHS-FEMA has published Technical Bulletin 10-01. This bulletin outlines safe building practices, which when followed, may reduce the risk of flood damage to a property or structure. Community Officials interested in obtaining copies of this bulletin should visit our Internet site at http://www.fema.gov/pdf/fima/tb1001.pdf. Community Officials that do not have Internet access should contact the FMIX toll free at 1-877-FEMA MAP (1-877-336-2627).

All inquires regarding these, or other NFIP regulations, should contact the FMIX for assistance.

Section B – Property Located within the Regulatory Floodway

Required for all requests that are inadvertently included in the regulatory floodway. The regulatory floodway is the area of the Special Flood Hazard Area that must remain unobstructed in order to prevent unacceptable increases in Base Flood Elevations. This form must be signed by a community official, responsible for floodplain management, to acknowledge the community's acceptance of a revision to the regulatory floodway within the community.

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

PROPERTY INFORMATION FORM

O.M.B. NO. 1660-0015
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this data collection is estimated to average 1.63 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the form. This collection is required to obtain or retain benefits. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0015). **NOTE: Do not send your completed form to this address.**

This form may be completed by the property owner, property owner's agent, licensed land surveyor, or registered professional engineer to support a request for a Letter of Map Amendment (LOMA), Conditional Letter of Map Amendment (CLOMA), Letter of Map Revision Based on Fill (LOMR-F), or Conditional Letter of Map Revision Based on Fill (CLOMR-F) for existing or proposed, single or multiple lots/structures. In order to process your request, all information on this form must be completed ***in its entirety***, unless stated as optional. **Incomplete submissions will result in processing delays.** Please check the item below that describes your request:

☐ LOMA	A letter from DHS-FEMA stating that an existing structure or parcel of land that has not been elevated by fill (natural grade) would not be inundated by the base flood.
☐ CLOMA	A letter from DHS-FEMA stating that a proposed structure that is not to be elevated by fill (natural grade) would not be inundated by the base flood if built as proposed.
☐ LOMR-F	A letter from DHS-FEMA stating that an **existing** structure or parcel of land that has been **elevated by fill** would not be inundated by the base flood.
☒ CLOMR-F	A letter from DHS-FEMA stating that a parcel of land or **proposed** structure that will be **elevated by fill** would not be inundated by the base flood if fill is placed on the parcel as proposed or the structure is built as proposed.

Fill is defined as material from any source (including the subject property) placed that raises the ground to or above the Base Flood Elevation (BFE). The common construction practice of removing unsuitable existing material (topsoil) and backfilling with select structural material is not considered the placement of fill if the practice does not alter the existing (natural grade) elevation, which is at or above the BFE. **Fill that is placed before the date of the first National Flood Insurance Program (NFIP) map showing the area in a Special Flood Hazard Area (SFHA) is considered natural grade.**

Has fill been placed on your property to raise ground that was previously below the BFE? ☐ Yes ☒ No If yes, when was fill placed? / month/year

Will fill be placed on your property to raise ground that is below the BFE? ☒ Yes* ☐ No If yes, when will fill be placed? 10/2018 month/year

* If yes, Endangered Species Act (ESA) compliance must be documented to FEMA prior to issuance of the CLOMR-F determination (please refer page 4 to the MT-1 instructions).

1. Street Address of the Property (if request is for multiple structures or units, please attach additional sheet referencing each address and enter street names below):
   1025 Mission Rock Road Santa Paula, CA 93060

2. Legal description of Property (Lot, Block, Subdivision or abbreviated description from the Deed):
   APN# 090-0-190-165, Tract 55002

3. Are you requesting that a flood zone determination be completed for (check one):
   - ☐ Structures on the property? What are the dates of construction? _____ (MM/YYYY)
   - ☐ A portion of land within the bounds of the property? (A certified metes and bounds description and map of the area to be removed, certified by a licensed land surveyor or registered professional engineer, are **required**. For the preferred format of metes and bounds descriptions, please refer to the MT-1 Form 1 Instructions.)
   - ☒ The entire legally recorded property?

4. Is this request for a (check one):
   - ☐ Single structure
   - ☒ Single lot
   - ☐ Multiple structures (How many structures are involved in your request? List the number: _____)
   - ☐ Multiple lots (How many lots are involved in your request? List the number: _____)

In addition to this form (MT-1 Form 1), please complete the checklist below. **ALL** requests must include one copy of the following:

- ■ Copy of the effective FIRM panel on which the structure and/or property location has been accurately plotted (property inadvertently located in the NFIP regulatory floodway will require Section B of MT-1 Form 3)
- ☐ Copy of the Subdivision Plat Map for the property **(with recordation data and stamp of the Recorder's Office)**

OR

- ■ Copy of the Property Deed **(with recordation data and stamp of the Recorder's Office)**, ***accompanied by*** a tax assessor's map or other certified map showing the surveyed location of the property relative to local streets and watercourses. The map should include at least one street intersection that is shown on the FIRM panel.
- ■ Form 2 – Elevation Form. If the request is to remove the structure, and an Elevation Certificate has already been completed for this property, it may be submitted in lieu of Form 2. If the request is to remove the entire legally recorded property, or a portion thereof, the lowest lot elevation must be provided on Form 2.
- ■ Please include a map scale and North arrow on all maps submitted.

For LOMR-Fs and CLOMR-Fs, the following must be submitted in addition to the items listed above:

- ■ Form 3 – Community Acknowledgment Form

For CLOMR-Fs, the following must be submitted in addition to the items listed above:

- ■ Documented ESA compliance, which may include a copy of an Incidental Take Permit, an Incidental Take Statement, a "not likely to adversely affect" determination from the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service (USFWS), or an official letter from NMFS or USFWS concurring that the project has "No Effect" on proposed or listed species or designated critical habitat. Please refer to the MT-1 instructions for additional information.

Please do *not* submit original documents. Please retain a copy of all submitted documents for your records.

DHS-FEMA encourages the submission of all required data in a digital format (e.g. scanned documents and images on Compact Disc [CD]). Digital submissions help to further DHS-FEMA's Digital Vision and also may facilitate the processing of your request.

Incomplete submissions will result in processing delays. For additional information regarding this form, including where to obtain the supporting documents listed above, please refer to the MT-1 Form Instructions located at http://www.fema.gov/plan/prevent/fhm/dl_mt-1.shtm.

Processing Fee (see instructions for appropriate mailing address; or visit http://www.fema.gov/fhm/frm_fees.shtm **for** the most current fee schedule)

Revised fee schedules are published periodically, but no more than once annually, as noted in the **Federal Register**. Please note: single/multiple lot(s)/structure(s) LOMAs are fee exempt. The current review and processing fees are listed below:

Check the fee that applies to your request:

- ☐ $325 (single lot/structure LOMR-F following a CLOMR-F)
- ☐ $425 (single lot/structure LOMR-F)
- ■ $500 (single lot/structure CLOMA or CLOMR-F)
- ☐ $700 (multiple lot/structure LOMR-F following a CLOMR-F, or multiple lot/structure CLOMA)
- ☐ $800 (multiple lot/structure LOMR-F or CLOMR-F)

Please submit the Payment Information Form for remittance of applicable fees. Please make your check or money order payable to:
National Flood Insurance Program.

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Applicant's Name (required): Alexandre B. Makler

Company (if applicable): Mission Rock Energy Ctr c/o Calpine

Mailing Address (required):
4160 Dublin Boulevard, Suite 100 Dublin, CA 94568

Daytime Telephone No. (required): (925) 557-2285

E-Mail Address (optional): ■ By checking here you may receive correspondence electronically at the email address provided):

Fax No. (optional):

pso@calpine.com

Date (required)

Signature of Applicant (required)

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

ELEVATION FORM

O.M.B. NO. 1660-0015
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this data collection is estimated to average 1.25 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the form. This collection is required to obtain or retain benefits. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0015). **NOTE: Do not send your completed form to this address.**

This form must be completed for requests and must be completed and signed by a registered professional engineer or licensed land surveyor. **A DHS - FEMA National Flood Insurance Program (NFIP) Elevation Certificate may be submitted in lieu of this form for single structure requests.**

For requests to remove a structure on natural grade OR on engineered fill from the Special Flood Hazard Area (SFHA), submit the lowest adjacent grade (the lowest ground touching the structure), ***including an attached deck or garage***. For requests to remove an entire parcel of land from the SFHA, provide the lowest lot elevation; or, if the request involves an area described by metes and bounds, provide the lowest elevation within the metes and bounds description. All measurements are to be rounded to nearest tenth of a foot. In order to process your request, all information on this form must be completed ***in its entirety*****. Incomplete submissions will result in processing delays.**

1. NFIP Community Number: 060413 Property Name or Address: 1025 Mission Rock Road Santa Paula, CA 93060 (mailing address)
   (Unincorporated Ventura County)

2. Are the elevations listed below based on ☐ ***existing*** or ☒ ***proposed*** conditions? (Check one)

3. For the existing or proposed structures listed below, what are the types of construction? (check all that apply)
   ☐ crawl space ☒ slab on grade ☐ basement/enclosure ☐ other (explain)

4. Has DHS - FEMA identified this area as subject to land subsidence or uplift? (see instructions) ☐ Yes ☒ No
   If yes, what is the date of the current re-leveling? / (month/year)

5. What is the elevation datum? ☐ NGVD 29 ☒ NAVD 88 ☐ Other (explain)
   If any of the elevations listed below were computed using a datum different than the datum used for the effective Flood Insurance Rate Map (FIRM) (e.g., NGVD 29 or NAVD 88), what was the conversion factor?
   Local Elevation +/- ft. = FIRM Datum

6. Please provide the Latitude and Longitude of the most upstream edge of the ***structure*** (in decimal degrees to the nearest fifth decimal place):
   Indicate Datum: ☐ WGS84 ☐ NAD83 ☐ NAD27 Lat. . Long. .
   Please provide the Latitude and Longitude of the most upstream edge of the ***property*** (in decimal degrees to the nearest fifth decimal place):
   Indicate Datum: ☒ WGS84 ☐ NAD83 ☐ NAD27 Lat. 34.30861 Long. -119.10514

Address	Lot Number	Block Number	Lowest Lot Elevation*	Lowest Adjacent Grade To Structure	Base Flood Elevation	BFE Source
1025 Mission Rock Road Santa Paula, CA 93060	APN# 090-0-190-165	Tract 55002	>188.1-191.5 (NAVD88)		188.1-191.5 (NAVD88)	Other - Corrected Effective (included in submittal)

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Hassan Kasraie, PE, CFM	License No.: C42360	Expiration Date: 03/31/18
Company Name: Kasraie Consulting	Telephone No.: (805) 340-4744	
Email: kasraie@kasraieconsulting.com	Fax No.	
Signature: HASSAN KASRAIE	Date: 11/28/2016	

* For requests involving a portion of property, include the lowest ground elevation within the metes and bounds description.
Please note: If the Lowest Adjacent Grade to Structure is the only elevation provided, a determination will be issued for the structure only.

Seal (optional)

Continued from Page 1.

Address	Lot Number	Block Number	Lowest Lot Elevation*	Lowest Adjacent Grade To Structure	Base Flood Elevation	BFE Source

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name:	License No.:	Expiration Date:
Company Name:	Telephone No.:	
Email:	Fax No.	
Signature:	Date:	

Seal (optional)

* For requests involving a portion of property, include the lowest ground elevation within the metes and bounds description.
Please note: If the Lowest Adjacent Grade to Structure is the only elevation provided, a determination will be issued for the structure only.

DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

COMMUNITY ACKNOWLEDGMENT FORM

O.M.B. NO. 1660-0015
Expires February 28, 2014

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this data collection is estimated to average 1.38 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and submitting the form. This collection is required to obtain or retain benefits. You are not required to respond to this collection of information unless a valid OMB control number is displayed on this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Department of Homeland Security, Federal Emergency Management Agency, 1800 South Bell Street, Arlington, VA 20598-3005, Paperwork Reduction Project (1660-0015). NOTE: Do not send your completed form to this address.

This form must be completed for requests involving the existing or proposed placement of fill (complete Section A) ***OR*** to provide acknowledgment of this request to remove a property from the SFHA which was previously located within the regulatory floodway (complete Section B).

This form must be completed and signed by the official responsible for floodplain management in the community. **The six digit NFIP community number and the subject property address must appear in the spaces provided below. Incomplete submissions will result in processing delays.** Please refer to the MT-1 instructions for additional information about this form.

Community Number**:** 060413

Property Name or Address**:** 1025 Mission Rock Road Santa Paula, CA 93060 (mailing address)
(Unincorporated Ventura County)

A. REQUESTS INVOLVING THE PLACEMENT OF FILL

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision Based on Fill (LOMR-F) or Conditional LOMR-F request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a Conditional LOMR-F, will be obtained. For Conditional LOMR-F requests, the applicant has or will document Endangered Species Act (ESA) compliance to FEMA prior to issuance of the Conditional LOMR-F determination. For LOMR-F requests, I acknowledge that compliance with Sections 9 and 10 of the ESA has been achieved independently of FEMA's process. Section 9 of the ESA prohibits anyone from "taking" or harming an endangered species. If an action might harm an endangered species, a permit is required from U.S. Fish and Wildlife Service or National Marine Fisheries Service under Section 10 of the ESA. For actions authorized, funded, or being carried out by Federal or State agencies, documentation from the agency showing its compliance with Section 7(a)(2) of the ESA will be submitted. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by DHS-FEMA, all analyses and documentation used to make this determination. For LOMR-F requests, we understand that this request is being forwarded to DHS-FEMA for a possible map revision.

Community Comments:

Community Official's Name and Title: (*Please Print or Type*)		Telephone No.:
Jeff Pratt, PE jeff.pratt@ventura.org		(805) 654-2073
Community Name: Ventura County	Community Official's Signature: (required)	Date:

B. PROPERTY LOCATED WITHIN THE REGULATORY FLOODWAY

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this request for a LOMA. We understand that this request is being forwarded to DHS-FEMA to determine if this property has been inadvertently included in the regulatory floodway. We acknowledge that no fill on this property has been or will be placed within the designated regulatory floodway. We find that the completed or proposed project meets or is designed to meet all of the community floodplain management requirements.

Community Comments:

Community Official's Name and Title: (*Please Print or Type*)		Telephone No.:
Community Name:	Community Official's Signature (required):	Date:

FEDERAL EMERGENCY MANAGEMENT AGENCY

PAYMENT INFORMATION FORM

Community Name: Ventura County

Project Identifier: Mission Rock Energy Center c/o Calpine

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO THE ADDRESS BELOW OR FAXED TO THE FAX NUMBER BELOW.

Please make check or money order payable to the National Flood Insurance Program.

Type of Request:

☒ MT-1 application
☐ MT-2 application

LOMC Clearinghouse
847 South Pickett Street
Alexandria, VA 22304-4605
Attn.: LOMC Manager

☐ EDR application

FEMA Project Library
847 South Pickett Street
Alexandria, VA 22304-4605
FAX (703) 212-4090

Request No. (if known): _____ **Check No.:** _____ **Amount: $500.00**

☐ INITIAL FEE* ☐ FINAL FEE ☐ FEE BALANCE** ☒ MASTER CARD ☐ VISA ☐ CHECK ☐ MONEY ORDER

*Note: Check only for EDR and/or Alluvial Fan requests (as appropriate).

****Note: Check only if submitting a corrected fee for an ongoing request.**

COMPLETE THIS SECTION *ONLY* IF PAYING BY CREDIT CARD

CARD NUMBER EXP. DATE

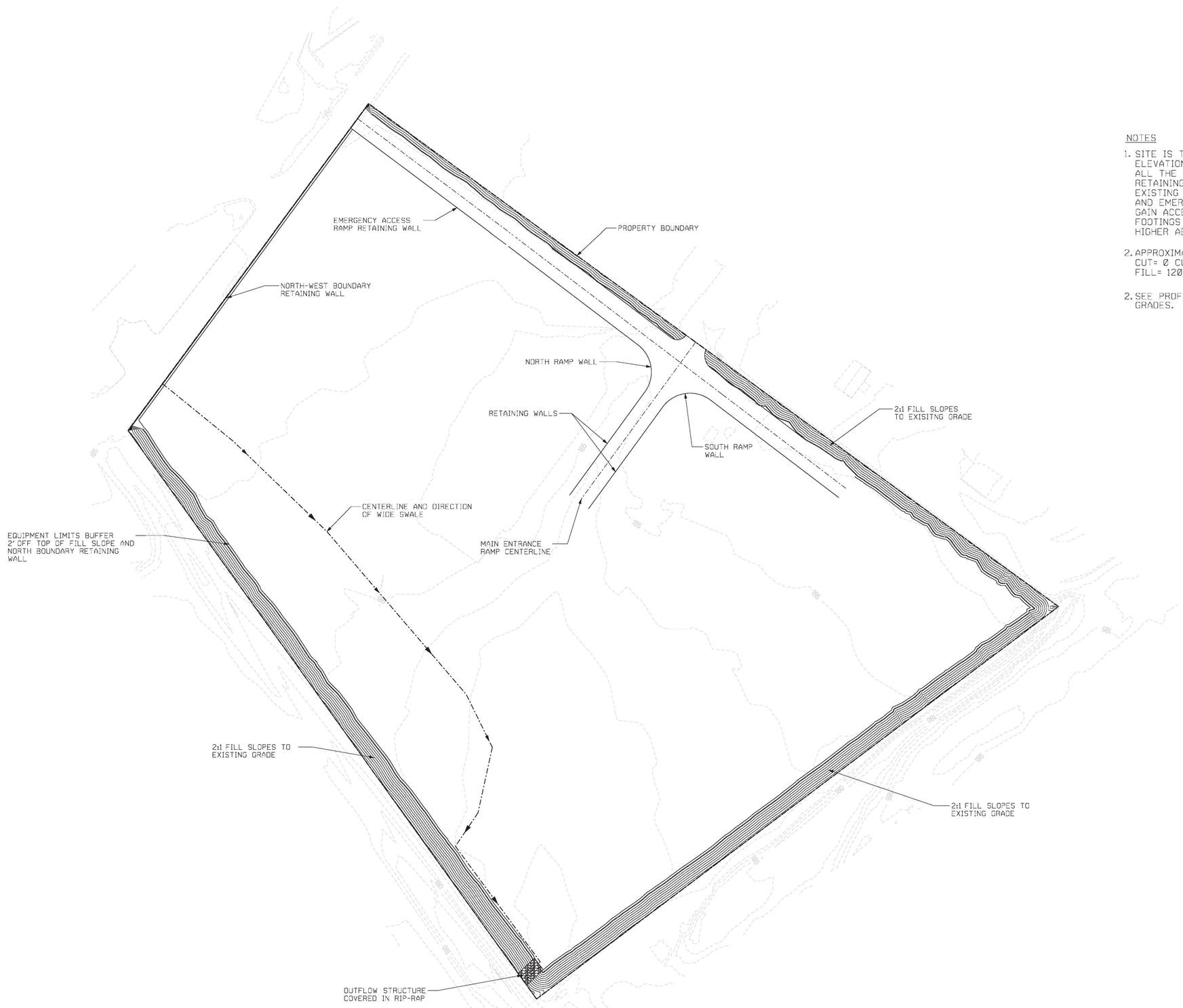
				–					–					–					–			
1	2	3	4		5	6	7	8		9	10	11	12		13	14	15	16		Month			Year

_____ _____
Date Signature

NAME *(AS IT APPEARS ON CARD)*: _____
(please print or type)

ADDRESS: _____
(*for your credit card receipt-please print or type*) _____

DAYTIME PHONE: _____



LEGEND

EXISTING CONTOUR

PROPOSED CONTOUR

PROPERTY BOUNDARY

NOTES

1. SITE IS TO BE RAISED TO THE 100 YEAR FLOOD PLAIN ELEVATION OF 191.9 AND 2:1 SLOPES TO EXISTING GRADE AROUND ALL THE SIDES, EXCEPT THE NORTH-WEST SIDE WILL HAVE A SMALL RETAINING WALL AROUND 4 FEET TALL. RAMPS FROM EXISTING GRADE WILL BE INSTALLED AT THE MAIN ENTRANCE AND EMERGENCY ACCESS AT THE NORTH-WEST CORNER TO GAIN ACCESS TO THE SITE. ALL TOP OF EQUIPMENT FOUNDATION FOOTINGS WILL BE CONSTRUCTED AT ELEVATION 192.9 ONE FOOT OR HIGHER ABOVE THE 100 YEAR FLOOD PLAIN ELEVATION OF 191.9.

2. APPROXIMATE EXCAVATION QUANTITIES:
   CUT= 0 CUBIC YARDS
   FILL= 120,000 CUBIC YARDS

2. SEE PROFILE SHEET FOR RAMPS INTO SITE FROM EXISTING GRADES.

N

0 50 100

1"=50'

PRELIMINARY
NOT FOR CONSTRUCTION

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

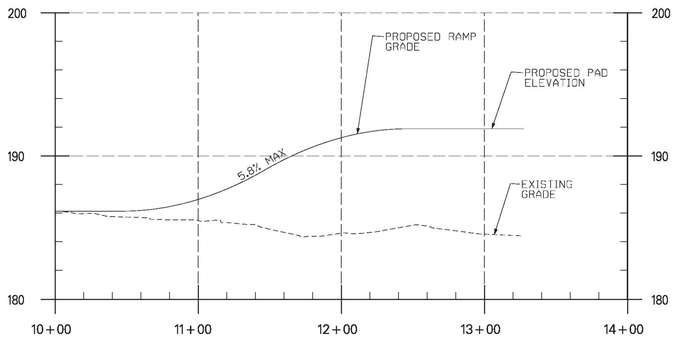
CALPINE MISSION ROCK

GRADING PLAN EXHIBIT

SCALE 1"=40' | DRAWING SIZE 24x36

WORLEYPARSONS DWG. NO. | REV

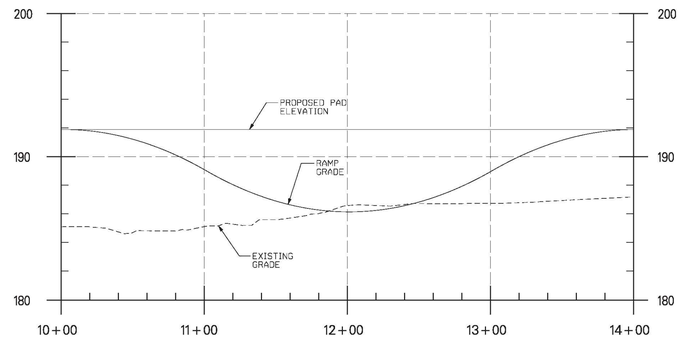
$$DESIGN-FILE-NAME$$
$$SUBDATE$$ $$SAMPLE$$



LINE	SURFACE	OFFSET
——	Mission Rock Pad 191.3	
——	Mission Rock Topo 082615	

Scaled 10.0000 Times Ver.
Scaled 1.0000 Times Hor.

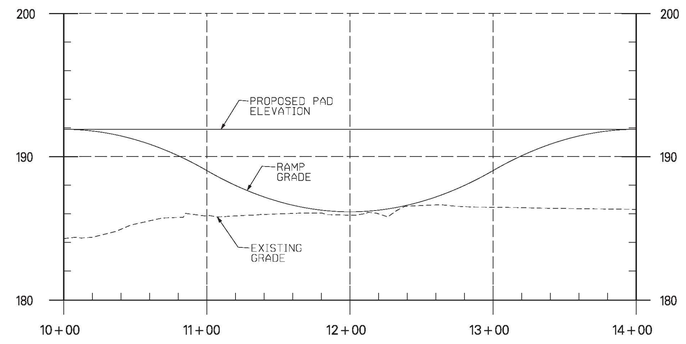
Main Entrance Ramp Profile
NOT TO SCALE



LINE	SURFACE	OFFSET
——	Mission Rock Pad 191.3	
——	Mission Rock Topo 082615	

Scaled 10.0000 Times Ver.
Scaled 1.0000 Times Hor.

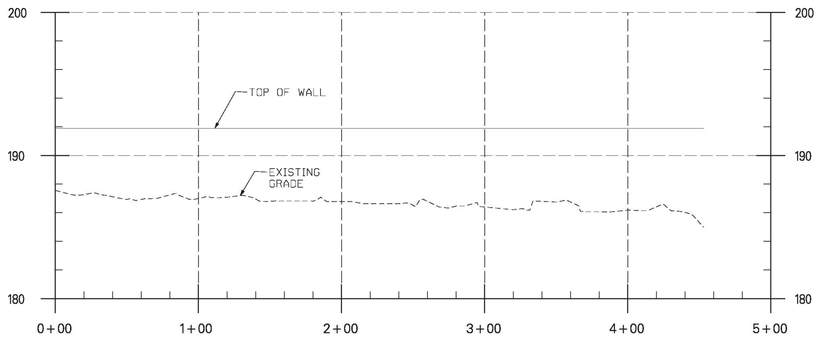
North Ramp Wall Profile
NOT TO SCALE



LINE	SURFACE	OFFSET
——	Mission Rock Pad 191.3	
——	Mission Rock Topo 082615	

Scaled 10.0000 Times Ver.
Scaled 1.0000 Times Hor.

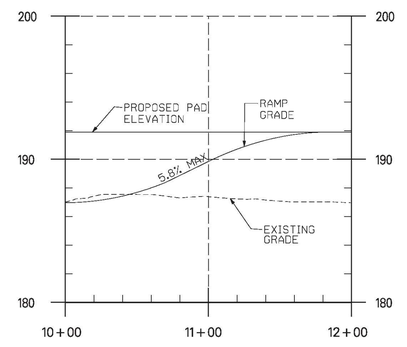
South Ramp Wall Profile
NOT TO SCALE



LINE	SURFACE	OFFSET
——	Mission Rock Pad 191.3	
——	Mission Rock Topo 082615	

Scaled 10.0000 Times Ver.
Scaled 1.0000 Times Hor.

North-West Boundary Wall Profile
NOT TO SCALE



LINE	SURFACE	OFFSET
——	Mission Rock Pad 191.3	
——	Mission Rock Topo 082615	

Scaled 10.0000 Times Ver.
Scaled 1.0000 Times Hor.

Emergency Access Wall Profile
NOT TO SCALE

WorleyParsons
resources & energy

CLIENT/PROJECT TITLE

CALPINE MISSION ROCK

GRADING PLAN EXHIBIT
RAMP PROFILES

SCALE 1"=50'
DRAWING SIZE 24x36
WORLEYPARSONS DWG. NO.
REV

$$DESIGN-FILE-NAME:$$
$$SUBTITLE:$$ $$SHEETLINE:$$

RANCHO SANTA PAULA Y SATICOY

Tax Rate Area
55002
55005

90–19

1" = 800'

Bk 99

Bk 107

Bk 109

Detail 1
Scale: 1"=400'

Detail 2
Scale: 1"=300'

Detail 3
Scale: 1"=400'

SEE DETAIL 1

SEE DETAIL 2

SEE DETAIL 3

Portion Beckwith Partition, M.R. Bk.5, Pg.50
Rancho Santa Paula y Saticoy, M.R. Bk.A, Pg.290

NOTE: ASSESSOR PARCELS SHOWN ON THIS PAGE DO NOT NECESSARILY CONSTITUTE LEGAL LOTS. CHECK WITH COUNTY SURVEYOR'S OFFICE OR PLANNING DIVISION TO VERIFY.

UNINCORPORATED AREA
Ventura County Assessor's Map.

Assessor's Block Numbers Shown in Ellipses.
Assessor's Parcel Numbers Shown in Circles.
Assessor's Mineral Numbers Shown in Squares.

DRAWN		REVISED	1-4-2011
REDRAWN		CREATED	
INKED	PLOTTED	EFFECTIVE	ROLL
Compiled By Ventura County Assessor's Office			

This is a true certified copy of the original public record if it bears the seal, imprinted in purple ink, of the County Clerk and Recorder.

DEC 17 2015

MARK A. LUNN
County Clerk and Recorder
Ventura County, California

MARK A. LUNN

County Clerk and Recorder
800 South Victoria Ave
Ventura, CA 93009 -1260
(805) 654-3665
Fax (805) 654-2392

If this document contains any restriction based on race, color, religion, sex, gender, gender identity, gender expression, sexual orientation, familial status, marital status, disability, genetic information, national origin, source of income as defined in subdivision (p) of Section 12955, or ancestry, that restriction violates state and federal fair housing laws and is void, and may be removed pursuant to Section 12956.2 of the Government Code.

Lawful restrictions under state and federal law on the age of occupants in senior housing or housing for older persons shall not be construed as restrictions based on familial status.

RECORDING REQUESTED BY:
Chicago Title Company
Order No.: 131302340

When Recorded Mail Document To:
Mission Rock Energy Center, LLC
c/o Calpine Corporation
4160 Dublin Blvd, Suite 100
Dublin, CA 94568
Attention: Marjorie Oxsen

20140110-00003173-0 1/4
Ventura County Clerk and Recorder
MARK A. LUNN
01/10/2014 08:00:00 AM
784045 $6953.00 PE

APN/Parcel ID(s): 090-0-190-165

SPACE ABOVE THIS LINE FOR RECORDER'S USE

GRANT DEED

The undersigned grantor(s) declare(s)

☐ This transfer is exempt from the documentary transfer tax.
☑ **The documentary transfer tax is $6,919.00** and is computed on:
  ☑ the full value of the interest or property conveyed.
  ☐ the full value less the liens or encumbrances remaining thereon at the time of sale.
The property is located in ☑ an Unincorporated area of **Santa Paula.**

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged, Dean L. Stines and Jacklyn A. Stines, as Trustee of the Stines Trust Dated June 3, 2002, as Community Property, as to an undivided 50% interest and David Homer Stines and Diane Stines, husband and wife as joint tenants, as to an undivided 50% DBA as Minn-Cal Enterprises,

hereby GRANT(S) to Mission Rock Energy Center, LLC, a Delaware limited liability company

the following described real property in the Unincorporated Area of the County of Ventura, State of California:

SEE EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

MAIL TAX STATEMENTS AS DIRECTED ABOVE

GRANT DEED
(continued)

APN/Parcel ID(s): 090-0-190-165

Dated: January 7, 2014

IN WITNESS WHEREOF, the undersigned have executed this document on the date(s) set forth below.

Stines Trust Dated June 3, 2002, as Community Property

BY: _____
Dean L. Stines, Trustee

By: _____
Jacklyn A. Stines, Trustee

_____
David Homer Stines

_____
Diane Stines

State of California

County of Ventura

On January 8 2014 before me, R. Viesca ~~a~~ notary public in and for said state, personally appeared Dean L. Stines, Jacklyn A. Stines, David Homer Stines & Diane Stines who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

(Seal)

_____
Signature

R. VIESCA
COMM. # 2050918
NOTARY PUBLIC - CALIFORNIA
VENTURA COUNTY
COMM. EXPIRES JAN. 2, 2018

01180-61837

EXHIBIT "A"

LEGAL DESCRIPTION

PARCEL 1:

Those portions of lots 68 and 79, Rancho Santa Paula y Saticoy, according to the map recorded in book 'A', page 290 of miscellaneous records (Transcribed records from Santa Barbara County), in the office

of the county recorder of said Ventura County, also being a portion of Parcel 4, Beckwith Partition, according to the map recorded in book 5, page 50 of maps, described as follows:

Beginning at a 1-1/2 inch iron pipe set in the line common to parcels 4 and 5, as shown on said partition map, at the westerly terminus of that certain agreed boundary as recorded in book 653, page 449 of official records, and as shown on the map recorded in book 8, page 58 of Records of Survey; thence along said common line,

1st: South 36° 02' East 721.64 feet; thence,

2nd: North 52° 43' 45" East 673.12 feet; thence,

3rd: North 54° 15' 20" West 880.02 feet to a point on said agreed boundary; thence along said agreed common boundary,

4th- South 36° 01' 40" West 418.11 feet to the point of beginning.

EXCEPT all minerals of every description and all the petroleum and asphaltum, together with the right to explore, dig and sink wells, pits and shafts for the purpose of obtaining, extracting and appropriating all minerals and substances with rights of way and the right to erect houses and workmen and all buildings required for smelting and working the same, as conveyed by George G. Briggs to Edward W. Haskell in that certain document recorded December 30, 1864 in Book B page 153 records of Santa Barbara County.

PARCEL 2:

An easement for ingress and egress as conveyed within the document entitled "Declaration of Covenants, Conditions and Restrictions Establishing the Mission Rock Road Owners Association", recorded May 30, 1991 as Instrument No. 1991-074145 of Official Records.

S E C U R E D P R O P E R T Y D A T A B A S E

SV22001A SCREEN 1 OF 2 PUBLIC INQUIRY 15:59 12/17/15

APN: **090-0-190-165** TRA: **55002** ARC: **0851432** APN STATUS: **ACTIVE**

NAME.1: **MISSION ROCK ENERGY CTR LLC** DOC.NR: **140003173**

NAME.2: DOC.DT: **01/10/2014**

MAIL.ADDR: **717 TEXAS AV #1000** DOC.TYPE: **GD**

CTY.STA: **HOUSTON TX** ZIP: **77002** EFF.DOC.DT:

SITUS.ADDR: **1025 MISSION ROCK RD SANTA PAULA**

TRACT: **-** MAP.NR: PREV.APN: VOID.YR:

BLOCK: CONDO.REF: DT.SALE: **01/10/2014** DTS: **6919.00**

LOT: CONDO.BLDG: BSE.YR.APN: **090-0-190-165** BASE.YR: **1516**

LOT.SUB: CONDO.UNIT: EFF.TAX.YR: **2016**

==========

LAND.VALUE: --EXEMPTION DATA-- NON.TAX.CD:

IMPROVE.VAL: CODE VALUES LOW.VAL.FLAG:

MIN.RTS.VAL: NO.VAL.FLAG:

PERS.PROP.V:

TR.FIXT.VAL:

TREE.VINE.V:

UNIT.TF.VAL: PENALTY:

UNIT.PP.VAL: **DISCLAIMER - SEE PAGE 2**

PG: 1 OF 2 APN: 090 0 190 165 FORMAT-CD: 01 INDEX-CD: 50 YEAR: 2016

MESSAGE: **SELECT FORMAT-CD 00 TO RETURN TO MENU.**

S E C U R E D P R O P E R T Y D A T A B A S E

SV22003C ****** **ACTIVE** ****** **04** MAPPING & PROP TRANSFER 12/17/15 15:59

APN: **090-0-190-165** TRA: **55002** EFF.TAX.YR: **2016**

		DOC.NR	DOC.DT	APL.CD	DOC.TYPE	RSN.CD	SEQ.NR
		140003173	**01/10/14**	**01**	**GD**	**ZL**	
DOC.HS	1	**020151646**	**06/26/02**	**02**	**GD**	**10**	**08**
	2	**010037235**	**03/05/01**	**01**	**GD**	**ZF**	**07**
	3	**960015874**	**02/12/96**	**01**	**GD**	**ZJ**	**06**
	4	**940141897**	**08/31/94**	**01**	**TS**	**ZQ**	**05**
	5	**940028984**	**02/17/94**	**01**	**GD**	**ZL**	**04**
	6	**920014737**	**01/29/92**	**01**	**GD**	**ZA**	**03**
	7	**005629427**	**04/02/80**	**02**	**QD**	**10**	**02**
	8	**002776131**	**04/26/65**				**01**
	9						
	10						
	11						
	12						
	13						
	14						
	15						

PG: 3 OF 3 APN: 090 0 190 165 FORMAT-CD: 03 INDEX-CD: 50 YR: 2016

MSG AREA: F2=DISPLAY COMMENTS F9=ADD COMMENTS

VENTURA COUNTY CLERK AND RECORDER
Hall of Administration, Main Plaza
800 South Victoria Avenue
Ventura, CA 93009
805-654-2295 http://recorder.countyofventura.org

MARK A. LUNN

CLERK AND RECORDER

Receipt for Services

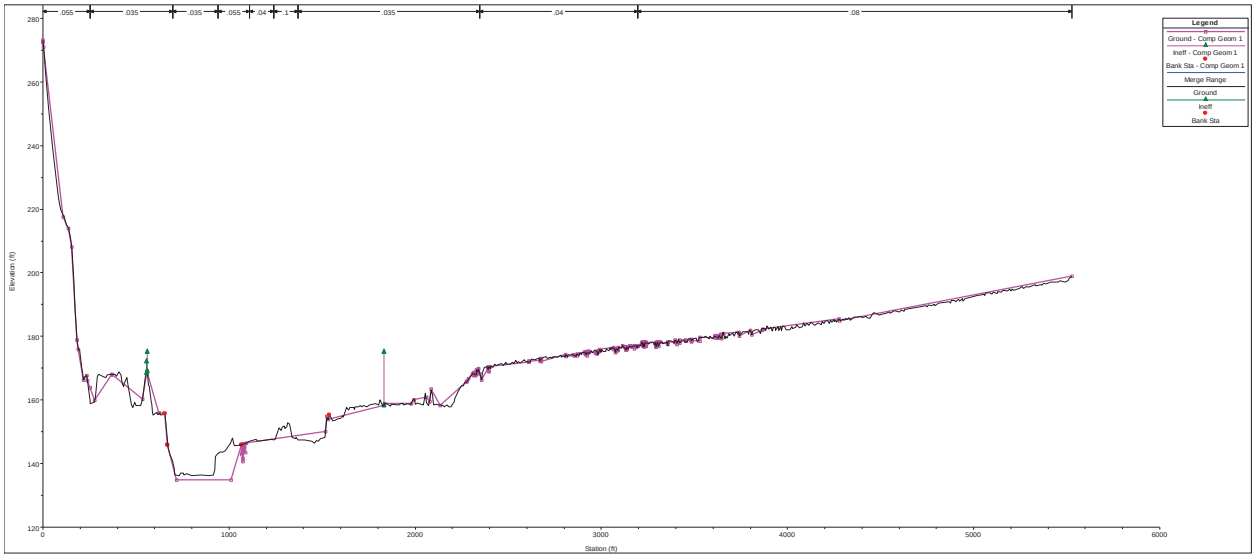
Cashier	MCVICKG			**Batch #**	1013694
Customer	KASRAIE HASSAN H	**Date:**	12/17/2015	**Time:**	04:01:32PM

Doc. Type	Instrument No	GF Number	Rec Fees	PCOR	Survey Fees	Taxes	Total
RCOPIES			0.00	0.00	0.00	0.00	6.00
					Total Fee:		**6.00**

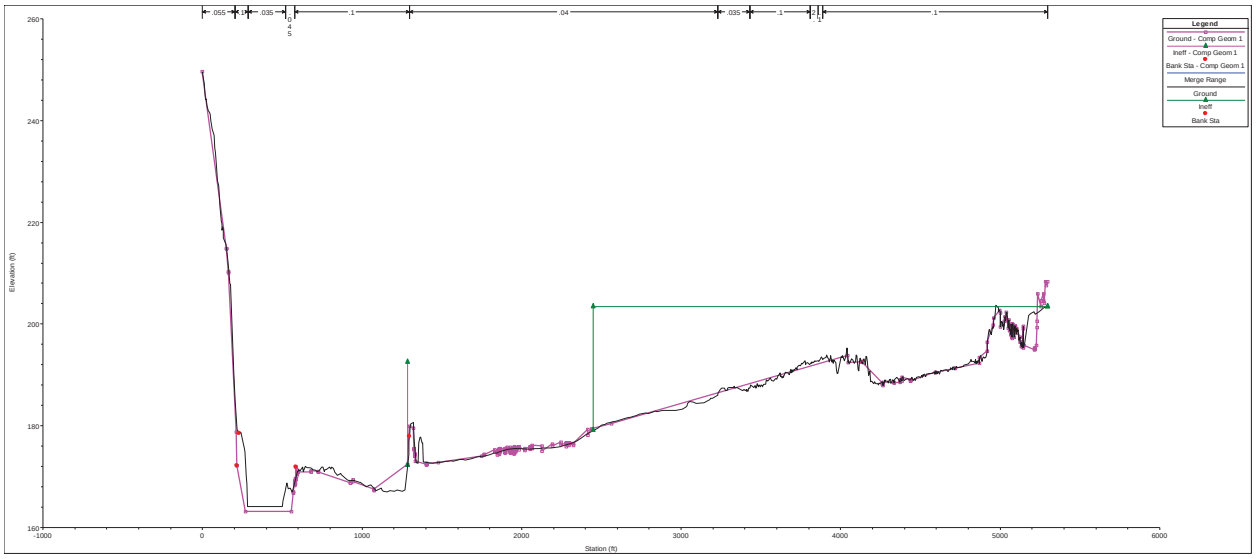
CHECK	1230	6.00
	Payment Total:	**6.00**

Appendix C:
2014 AECOM Comparison with Corrected Effective Cross-section Geometry

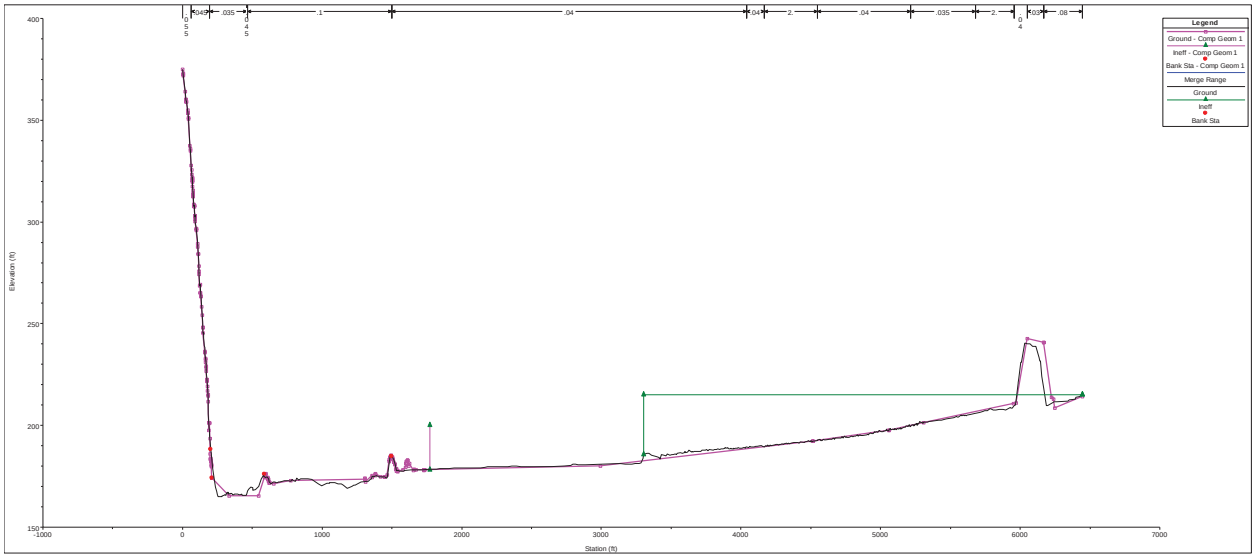
Corrected Effective Station 56991 (black) versus 2014 AECOM Station 56991 (pink):



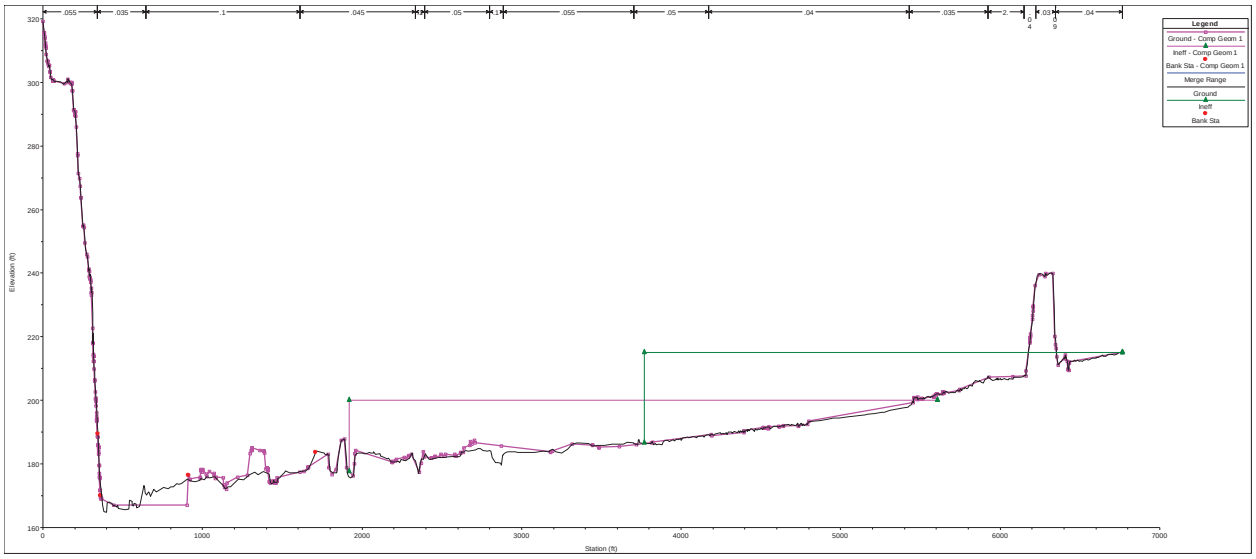
Corrected Effective Station 58930.18 (black) versus 2014 AECOM Station 58901 (pink):



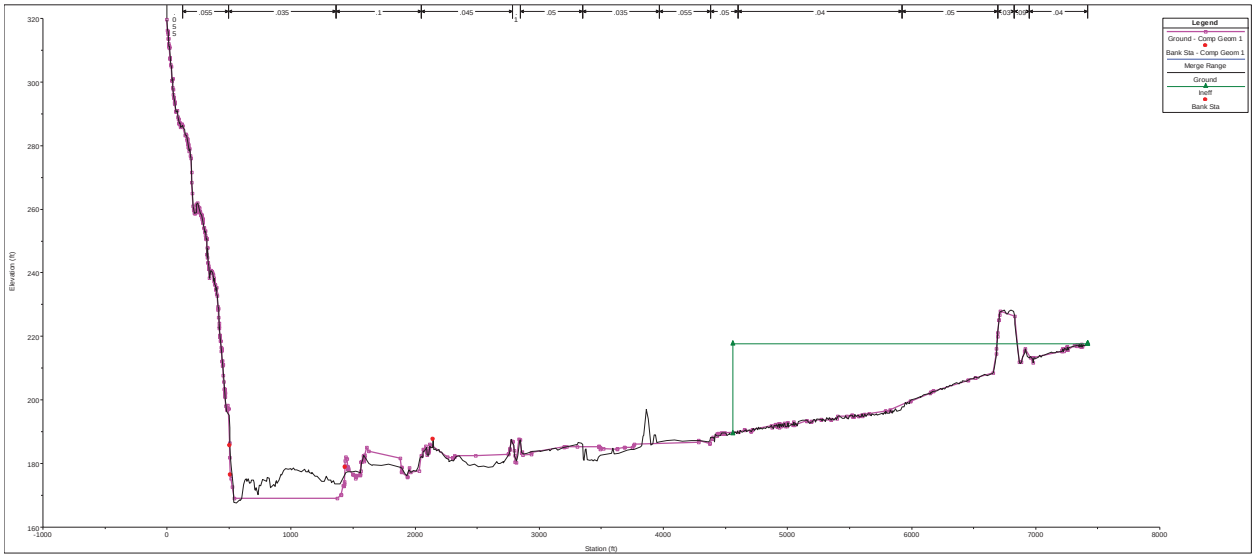
Corrected Effective Station 60256.12 (black) versus 2014 AECOM Station (pink):



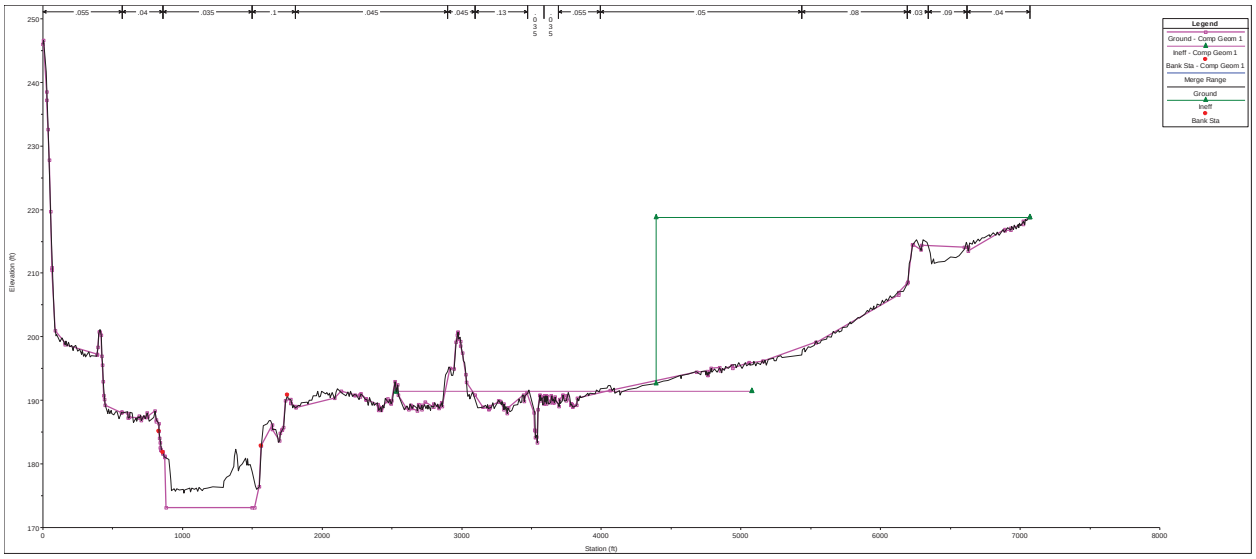
Corrected Effective Station 60605.83 (black) versus 2014 AECOM Station 60554 (pink):



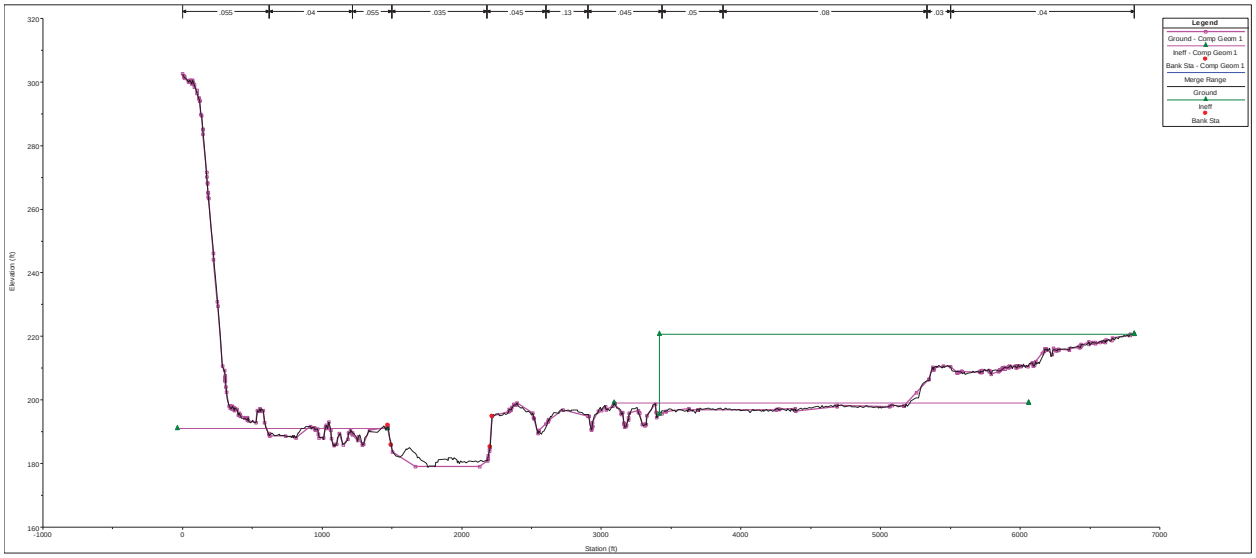
Corrected Effective Station 62347.23 (black) versus 2014 AECOM Station 62349 (pink):



Corrected Effective Station 64058 (black) versus 2014 AECOM Station 64059 (pink):

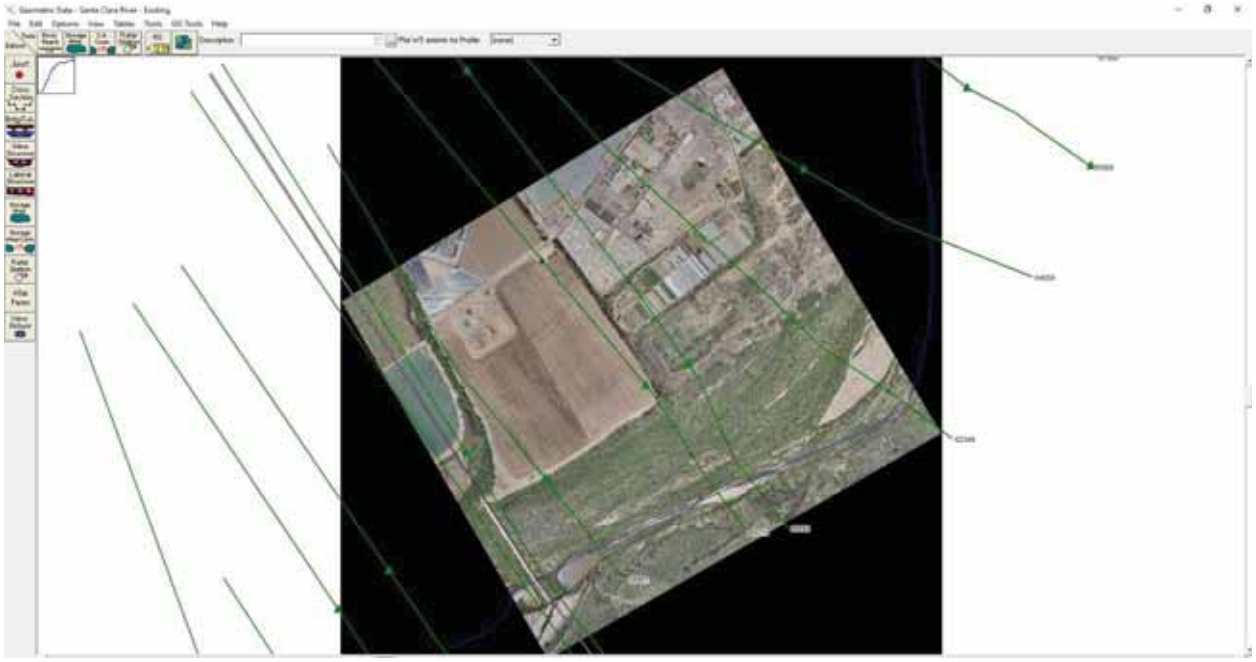


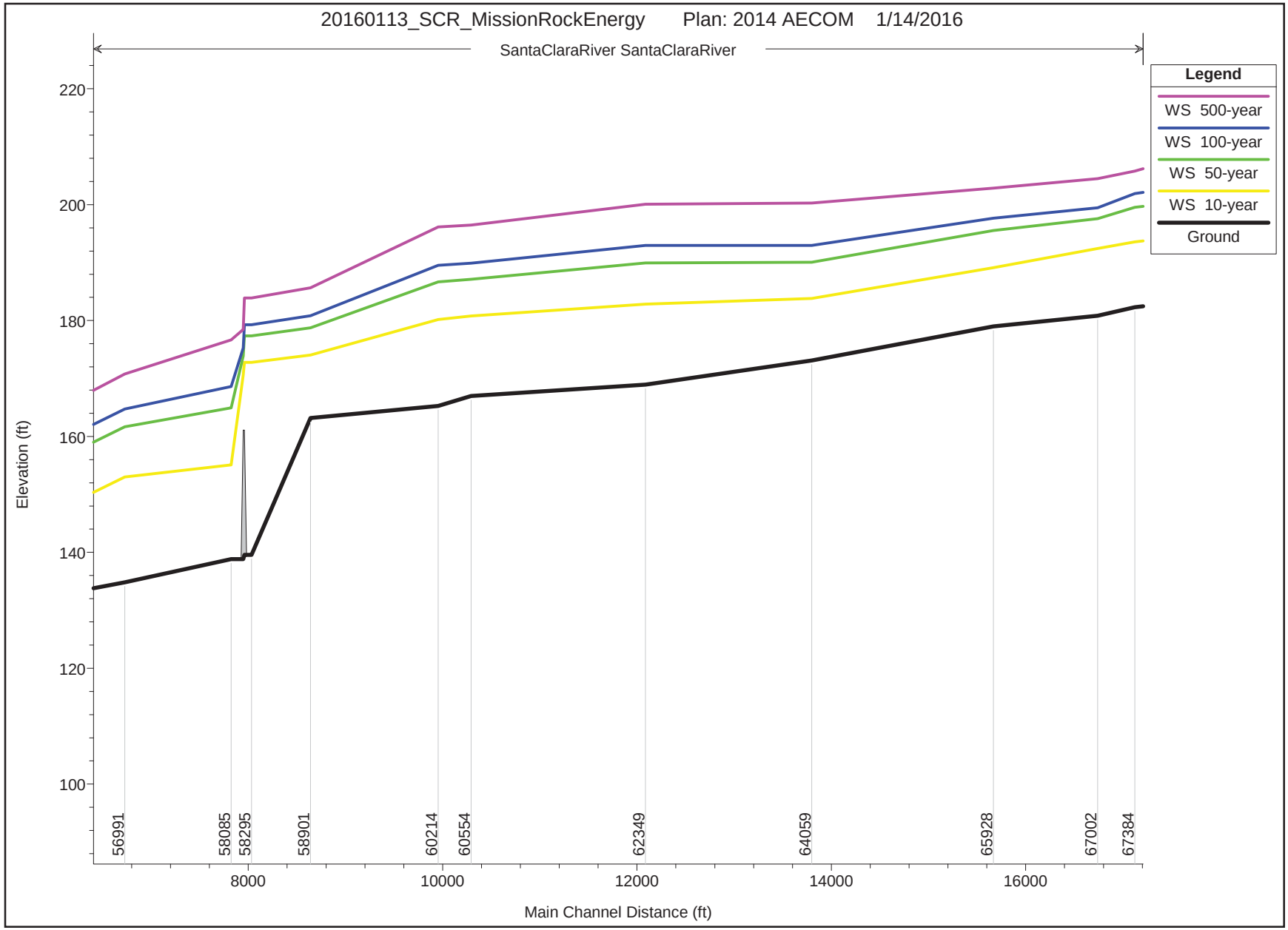
Corrected Effective Station 65928 (black) versus 2014 AECOM Station 65928 (pink):



Appendix D:
2014 AECOM, Corrected Effective, Proposed Condition HEC-RAS Model Results

2014 AECOM HEC-RAS Model Results




20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
SantaClaraRiver SantaClaraRiver
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Elevation (ft)
220
200
180
160
140
120
100
56991
58085
58295
58901
60214
60554
62349
64059
65928
67002
67384
8000
10000
12000
14000
16000
Main Channel Distance (ft)

HEC-RAS Plan: 2014 AECOM River: SantaClaraRiver Reach: SantaClaraRiver

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Flow Area	Top Wdth Act	Vel Total
			(cfs)	(ft)	(ft)	(sq ft)	(ft)	(ft/s)
SantaClaraRiver	67384	10-year	72518.0	182.3	193.57	7193	672	10.1
SantaClaraRiver	67384	50-year	171330.0	182.3	199.54	13835	1174	12.4
SantaClaraRiver	67384	100-year	225118.0	182.3	201.92	16835	1683	13.4
SantaClaraRiver	67384	500-year	371553.0	182.3	205.81	26940	3413	13.8
SantaClaraRiver	67002	10-year	72518.0	180.8	192.43	7176	845	10.1
SantaClaraRiver	67002	50-year	171330.0	180.8	197.57	12452	1123	13.8
SantaClaraRiver	67002	100-year	225118.0	180.8	199.47	15250	1770	14.8
SantaClaraRiver	67002	500-year	371553.0	180.8	204.50	29578	3676	12.6
SantaClaraRiver	65928	10-year	72518.0	179.0	189.11	6623	726	10.9
SantaClaraRiver	65928	50-year	171330.0	179.0	195.54	17864	2121	9.6
SantaClaraRiver	65928	100-year	225118.0	179.0	197.65	22919	2629	9.8
SantaClaraRiver	65928	500-year	371553.0	179.0	202.87	49880	4957	7.4
SantaClaraRiver	64059	10-year	72518.0	173.1	183.80	7272	755	10.0
SantaClaraRiver	64059	50-year	171330.0	173.1	190.05	13850	1744	12.4
SantaClaraRiver	64059	100-year	225118.0	173.1	192.97	24294	3812	9.3
SantaClaraRiver	64059	500-year	371553.0	173.1	200.28	58778	5506	6.3
SantaClaraRiver	62349	10-year	72518.0	169.0	182.83	14495	2029	5.0
SantaClaraRiver	62349	50-year	171330.0	169.0	189.93	37762	4115	4.5
SantaClaraRiver	62349	100-year	225118.0	169.0	192.96	50986	4624	4.4
SantaClaraRiver	62349	500-year	371553.0	169.0	200.08	88058	5561	4.2
SantaClaraRiver	60554	10-year	72518.0	167.0	180.77	10817	1343	6.7
SantaClaraRiver	60554	50-year	171330.0	167.0	187.11	20128	1553	8.5
SantaClaraRiver	60554	100-year	225118.0	167.0	189.90	24517	1580	9.2
SantaClaraRiver	60554	500-year	371553.0	167.0	196.47	34924	1586	10.6
SantaClaraRiver	60214	10-year	72518.0	165.3	180.19	11438	1485	6.3
SantaClaraRiver	60214	50-year	171330.0	165.3	186.69	21450	1576	8.0
SantaClaraRiver	60214	100-year	225118.0	165.3	189.52	25919	1576	8.7
SantaClaraRiver	60214	500-year	371553.0	165.3	196.16	36376	1577	10.2
SantaClaraRiver	58901	10-year	72518.0	163.2	174.05	6675	1072	10.9
SantaClaraRiver	58901	50-year	171330.0	163.2	178.76	11724	1075	14.6
SantaClaraRiver	58901	100-year	225118.0	163.2	180.82	13947	1078	16.1
SantaClaraRiver	58901	500-year	371553.0	163.2	185.66	19178	1085	19.4
SantaClaraRiver	58295	10-year	72518.0	139.6	172.78	20795	1755	3.5
SantaClaraRiver	58295	50-year	171330.0	139.6	177.34	28971	1809	5.9
SantaClaraRiver	58295	100-year	225118.0	139.6	179.30	32563	1853	6.9
SantaClaraRiver	58295	500-year	371553.0	139.6	183.88	41134	1888	9.0
SantaClaraRiver	58215		Inl Struct					

Floodway Data Table Format

HEC-RAS Plan: 2014 AECOM River: SantaClaraRiver Reach: SantaClaraRiver

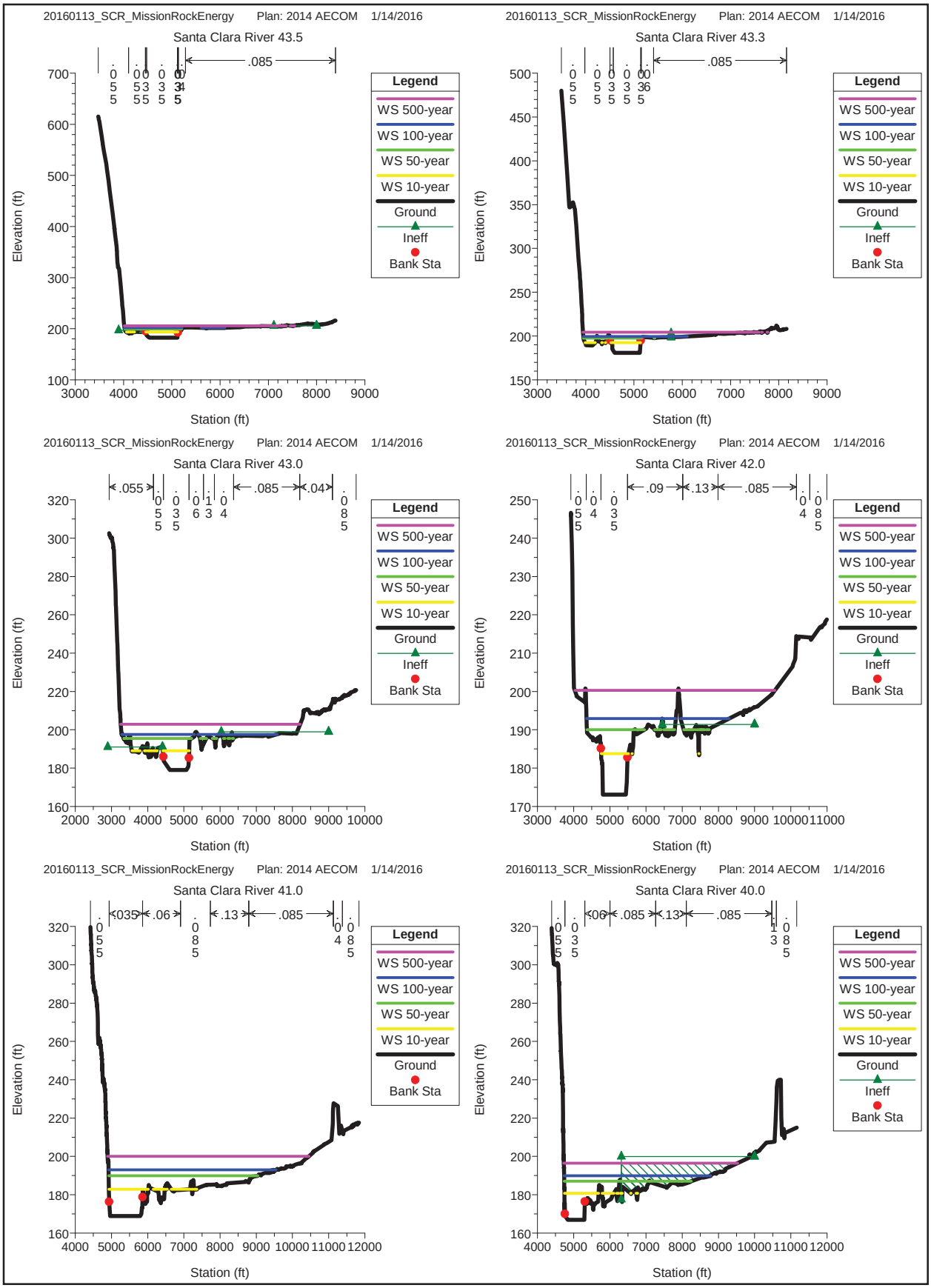
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
SantaClaraRiver	67384	10-year	72518.00	182.31	193.57	189.89	195.15	0.002405	10.09	7192.68	813.53	0.54
SantaClaraRiver	67384	50-year	171330.00	182.31	199.54	195.55	202.50	0.002683	14.25	13834.58	1173.53	0.61
SantaClaraRiver	67384	100-year	225118.00	182.31	201.92	198.53	205.50	0.002789	15.88	16834.57	1682.61	0.64
SantaClaraRiver	67384	500-year	371553.00	182.31	205.81	204.39	211.22	0.003519	20.19	26939.75	3413.06	0.74
SantaClaraRiver	67002	10-year	72518.00	180.81	192.43	188.93	194.18	0.002594	10.72	7176.09	844.74	0.57
SantaClaraRiver	67002	50-year	171330.00	180.81	197.57	195.45	201.25	0.003572	15.96	12452.09	1123.45	0.71
SantaClaraRiver	67002	100-year	225118.00	180.81	199.47	197.82	204.13	0.004008	18.18	15250.38	2112.02	0.77
SantaClaraRiver	67002	500-year	371553.00	180.81	204.50	204.50	209.84	0.003701	20.56	29578.35	3676.19	0.77
SantaClaraRiver	65928	10-year	72518.00	178.98	189.11	186.67	190.98	0.003420	11.00	6623.09	1219.44	0.63
SantaClaraRiver	65928	50-year	171330.00	178.98	195.54	192.70	197.74	0.002337	12.89	17864.24	2265.25	0.57
SantaClaraRiver	65928	100-year	225118.00	178.98	197.65	194.64	200.22	0.002405	14.22	22918.50	4134.27	0.59
SantaClaraRiver	65928	500-year	371553.00	178.98	202.87	199.73	204.88	0.001656	14.00	49880.03	4957.31	0.51
SantaClaraRiver	64059	10-year	72518.00	173.10	183.80	180.34	185.35	0.002592	9.99	7272.02	757.06	0.56
SantaClaraRiver	64059	50-year	171330.00	173.10	190.05	185.94	193.03	0.002705	14.06	13849.62	2534.86	0.62
SantaClaraRiver	64059	100-year	225118.00	173.10	192.97	188.95	195.88	0.002284	14.43	24293.98	3812.16	0.58
SantaClaraRiver	64059	500-year	371553.00	173.10	200.28	195.04	202.27	0.001264	13.32	58777.83	5505.54	0.46
SantaClaraRiver	62349	10-year	72518.00	168.95	182.83		183.30	0.000535	5.59	14494.69	2029.34	0.27
SantaClaraRiver	62349	50-year	171330.00	168.95	189.93		190.63	0.000528	7.34	37761.71	4115.20	0.28
SantaClaraRiver	62349	100-year	225118.00	168.95	192.96		193.68	0.000492	7.76	50986.00	4623.86	0.28
SantaClaraRiver	62349	500-year	371553.00	168.95	200.08		200.80	0.000404	8.37	88058.20	5561.38	0.27
SantaClaraRiver	60554	10-year	72518.00	166.96	180.77	175.45	181.82	0.001297	8.65	10816.67	1429.31	0.41
SantaClaraRiver	60554	50-year	171330.00	166.96	187.11	181.65	188.99	0.001559	12.25	20128.11	3483.95	0.48
SantaClaraRiver	60554	100-year	225118.00	166.96	189.90	183.76	192.08	0.001576	13.44	24517.21	4052.19	0.50
SantaClaraRiver	60554	500-year	371553.00	166.96	196.47	188.70	199.32	0.001549	15.79	34923.79	4803.08	0.51
SantaClaraRiver	60214	10-year	72518.00	165.25	180.19	177.18	181.29	0.001815	9.96	11437.71	2714.22	0.49
SantaClaraRiver	60214	50-year	171330.00	165.25	186.69	181.62	188.36	0.001812	13.04	21450.10	3623.01	0.52
SantaClaraRiver	60214	100-year	225118.00	165.25	189.52	183.45	191.43	0.001781	14.15	25918.59	3980.61	0.53
SantaClaraRiver	60214	500-year	371553.00	165.25	196.16	187.69	198.66	0.001714	16.52	36376.44	4729.87	0.54
SantaClaraRiver	58901	10-year	72518.00	163.17	174.05	174.05	177.06	0.006313	15.45	6674.94	1494.04	0.86
SantaClaraRiver	58901	50-year	171330.00	163.17	178.76	178.76	183.83	0.007038	21.14	11724.44	2173.80	0.97
SantaClaraRiver	58901	100-year	225118.00	163.17	180.82	180.82	186.86	0.007180	23.32	13946.80	2406.76	1.01
SantaClaraRiver	58901	500-year	371553.00	163.17	185.66	185.66	194.00	0.007291	27.84	19177.89	2944.85	1.06
SantaClaraRiver	58295	10-year	72518.00	139.55	172.78	155.45	173.04	0.000152	4.33	20795.28	1759.67	0.15
SantaClaraRiver	58295	50-year	171330.00	139.55	177.34	161.65	178.07	0.000375	7.59	28970.71	2247.46	0.25
SantaClaraRiver	58295	100-year	225118.00	139.55	179.30	164.44	180.28	0.000478	8.95	32563.34	2569.51	0.28
SantaClaraRiver	58295	500-year	371553.00	139.55	183.88	173.23	185.48	0.000674	11.63	41133.79	3244.30	0.34
SantaClaraRiver	58215		Inl Struct									

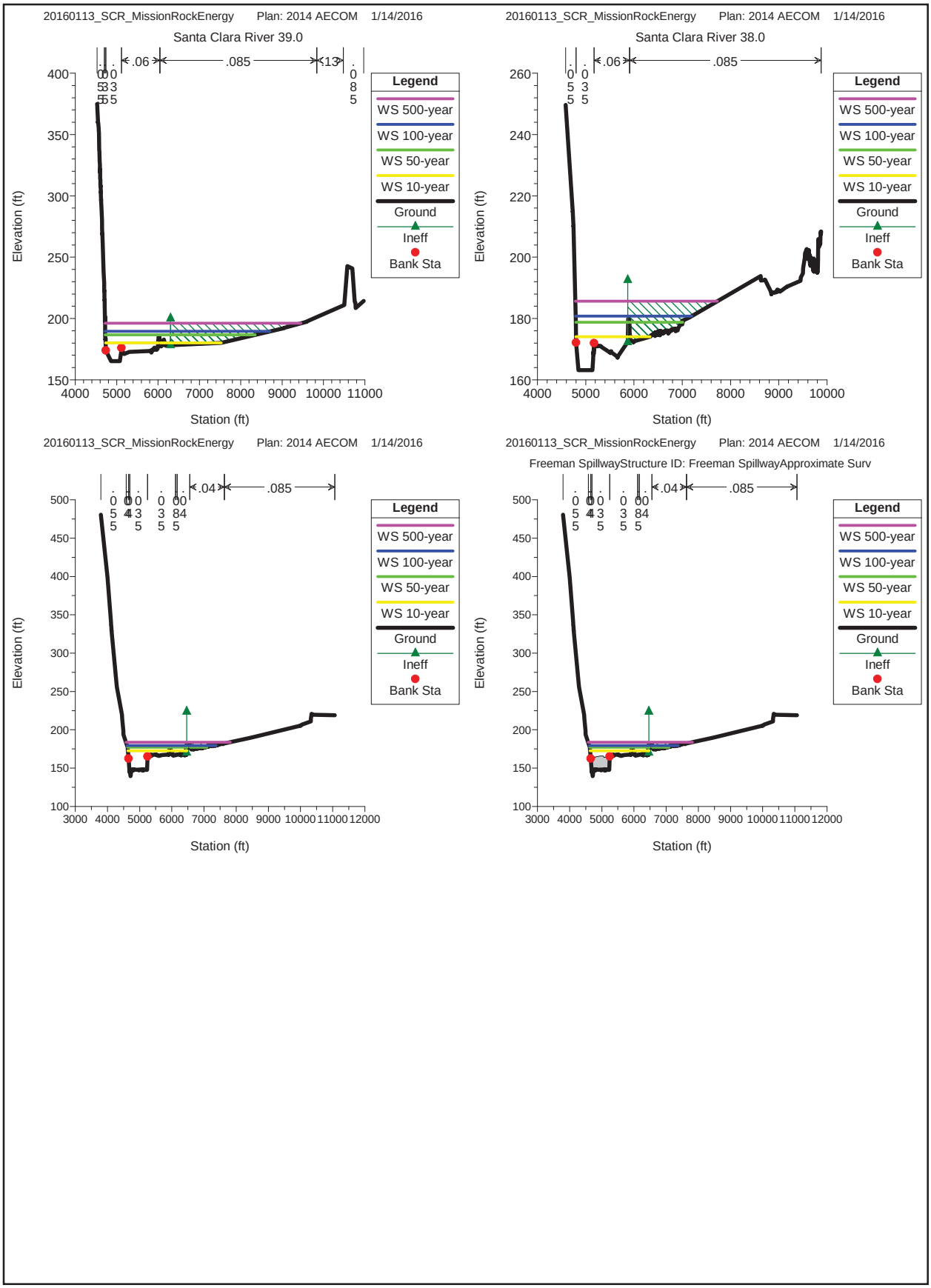
Standard Table 1 Format

HEC-RAS Plan: 2014AECOMFW River: SantaClaraRiver Reach: SantaClaraRiver

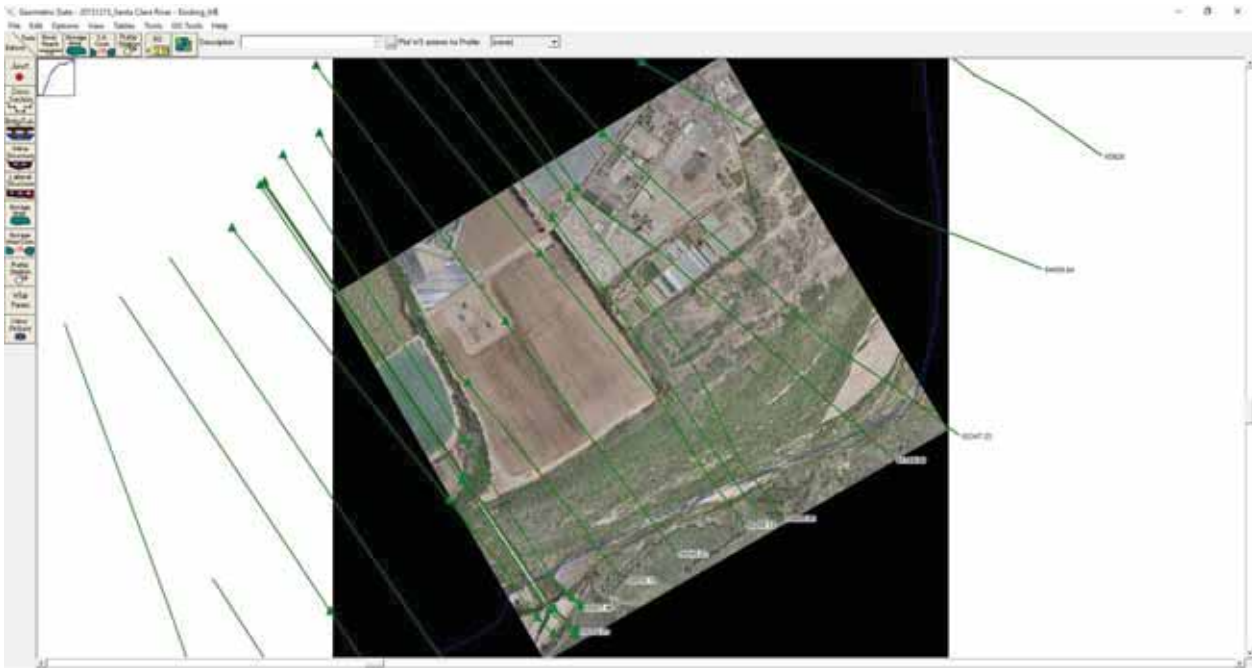
Reach	River Sta	Profile	W.S. Elev	Prof Delta WS	E.G. Elev	Top Wdth Act	Q Left	Q Channel	Q Right	Enc Sta L	Ch Sta L	Ch Sta R	Enc Sta R
			(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)
SantaClaraRiver	67384	100-year	201.92		205.50	1682.61	19320.63	203024.00	2773.41		4453.10	5123.60	
SantaClaraRiver	67384	100-FW	202.04	0.12	205.69	1092.90	17946.74	205330.60	1840.70	4071.00	4453.10	5123.60	5163.90
SantaClaraRiver	67002	100-year	199.47		204.13	1770.23	22228.83	201754.30	1134.89		4502.60	5140.30	
SantaClaraRiver	67002	100-FW	199.69	0.23	204.35	1128.36	21356.76	203395.80	365.46	3996.00	4502.60	5140.30	5165.60
SantaClaraRiver	65928	100-year	197.65		200.22	2629.16	41373.35	179332.50	4412.19		4435.20	5140.90	
SantaClaraRiver	65928	100-FW	198.05	0.41	200.58	1730.30	43713.13	180397.50	1007.34	3545.00	4435.20	5140.90	5275.30
SantaClaraRiver	64059	100-year	192.97		195.88	3812.16	10481.87	201413.60	13222.50		4755.20	5486.50	
SantaClaraRiver	64059	100-FW	193.45	0.48	196.43	1802.00	11771.73	206304.20	7042.10	4375.00	4755.20	5486.50	6177.00
SantaClaraRiver	62349	100-year	192.96		193.68	4623.86	245.71	169979.20	54893.05		4935.00	5857.10	
SantaClaraRiver	62349	100-FW	193.11	0.14	194.09	1925.90	227.74	188867.90	36022.41	4926.10	4935.00	5857.10	6852.00
SantaClaraRiver	60554	100-year	189.90		192.08	1579.64	687.48	168248.00	56182.53		4756.50	5307.90	
SantaClaraRiver	60554	100-FW	189.98	0.08	192.30	1377.50	707.40	171839.30	52571.29	4736.50	4756.50	5307.90	6114.00
SantaClaraRiver	60214	100-year	189.52		191.43	1575.74	876.94	118711.30	105529.70		4741.40	5117.20	
SantaClaraRiver	60214	100-FW	189.54	0.01	191.64	1396.50	518.13	122466.60	102133.30	4733.50	4741.40	5117.20	6130.00
SantaClaraRiver	58901	100-year	180.82		186.86	1077.85	102.82	145054.50	79960.73		4798.20	5171.10	
SantaClaraRiver	58901	100-FW	180.82	0.00	186.89	1074.86	92.69	145476.10	79549.19	4793.90	4798.20	5171.10	5868.76
SantaClaraRiver	58295	100-year	179.30		180.28	1852.53	850.57	165214.80	59052.68		4658.40	5245.70	
SantaClaraRiver	58295	100-FW	180.30	1.00	181.33	1532.80	1102.47	171183.50	52832.05	4627.20	4658.40	5245.70	6160.00
SantaClaraRiver	58215		Inl Struct										

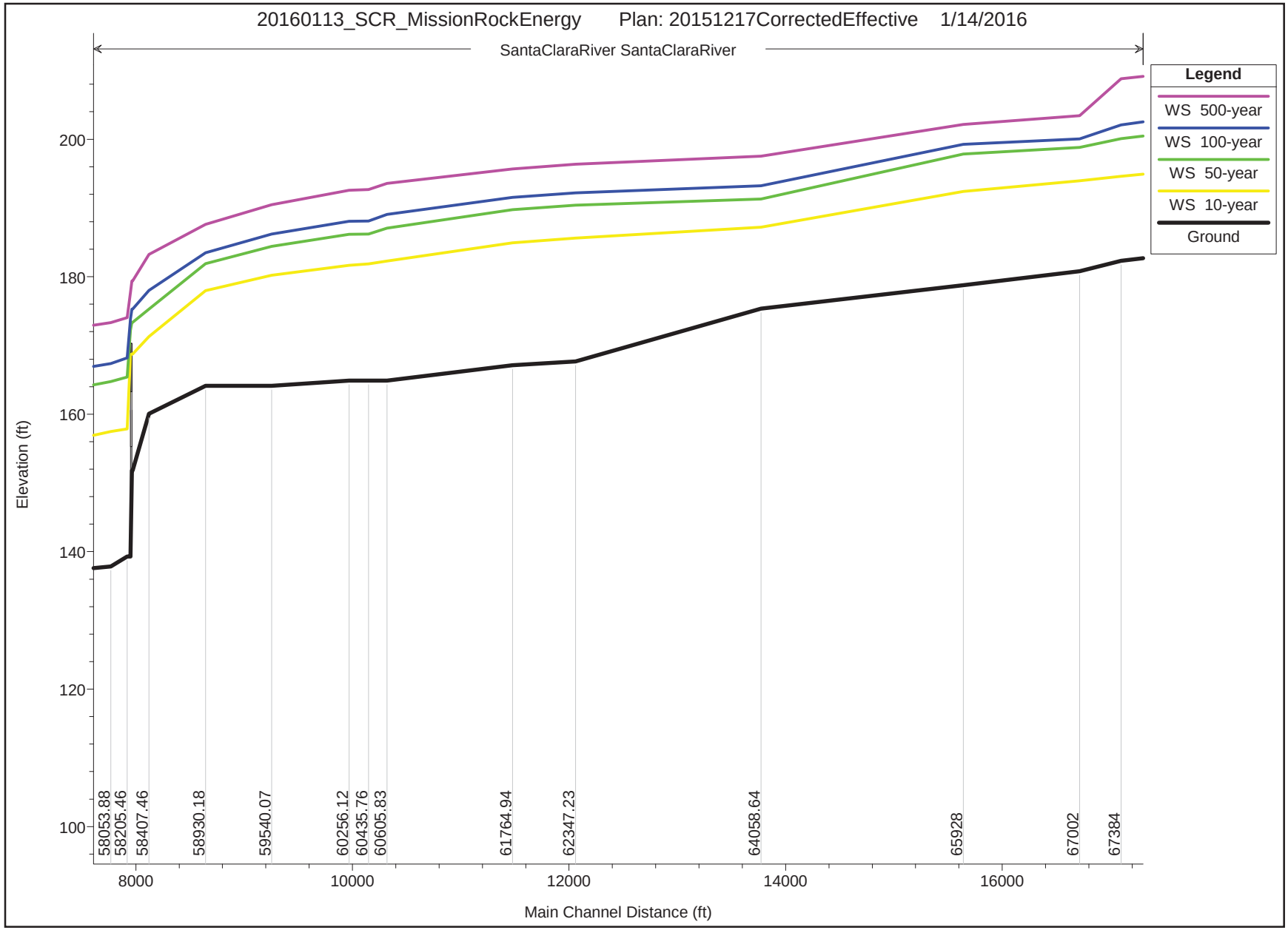
Encroachment 1 Table Format


20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 43.5
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 43.3
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 43.0
.055
.085
.04
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 42.0
.09
.13
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 41.0
.035
.06
.13
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 40.0
.06
.085
.13
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 39.0
.06
.085
.13
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 38.0
.06
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
.04
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Freeman SpillwayStructure ID: Freeman SpillwayApproximate Surv
.04
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

Corrected Effective HEC-RAS Model Results




20160113_SCR_MissionRockEnergy Plan: 20151217CorrectedEffective 1/14/2016
SantaClaraRiver SantaClaraRiver
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Elevation (ft)
200
180
160
140
120
100
58053.88
58205.46
58407.46
58930.18
59540.07
60256.12
60435.76
60605.83
61764.94
62347.23
64058.64
65928
67002
67384
8000
10000
12000
14000
16000
Main Channel Distance (ft)

HEC-RAS Plan: 20151217CorEff River: SantaClaraRiver Reach: SantaClaraRiver

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Flow Area	Top Wdth Act	Vel Total
			(cfs)	(ft)	(ft)	(sq ft)	(ft)	(ft/s)
SantaClaraRiver	67384	10-year	72518.0	182.3	194.63	8394	1031	8.6
SantaClaraRiver	67384	50-year	171330.0	182.3	200.10	14498	1182	11.8
SantaClaraRiver	67384	100-year	225118.0	182.3	202.09	16858	1205	13.4
SantaClaraRiver	67384	500-year	371553.0	182.3	208.81	37797	3872	9.8
SantaClaraRiver	67002	10-year	72518.0	180.8	193.97	8606	1007	8.4
SantaClaraRiver	67002	50-year	171330.0	180.8	198.81	13924	1328	12.3
SantaClaraRiver	67002	100-year	225118.0	180.8	200.07	15673	1414	14.4
SantaClaraRiver	67002	500-year	371553.0	180.8	203.43	20529	1455	18.1
SantaClaraRiver	65928 AM	10-year	72518.0	178.8	192.42	10774	1760	6.7
SantaClaraRiver	65928 AM	50-year	171330.0	178.8	197.83	22717	2964	7.5
SantaClaraRiver	65928 AM	100-year	225118.0	178.8	199.26	27053	3089	8.3
SantaClaraRiver	65928 AM	500-year	371553.0	178.8	202.15	35985	3099	10.3
SantaClaraRiver	64058.64 AL	10-year	72518.0	175.4	187.22	7264	1025	10.0
SantaClaraRiver	64058.64 AL	50-year	171330.0	175.4	191.31	15333	3293	11.2
SantaClaraRiver	64058.64 AL	100-year	225118.0	175.4	193.22	22292	3808	10.1
SantaClaraRiver	64058.64 AL	500-year	371553.0	175.4	197.54	39087	4033	9.5
SantaClaraRiver	62347.23 AK	10-year	72518.0	167.7	185.64	19014	3176	3.8
SantaClaraRiver	62347.23 AK	50-year	171330.0	167.7	190.40	36616	4016	4.7
SantaClaraRiver	62347.23 AK	100-year	225118.0	167.7	192.21	43887	4024	5.1
SantaClaraRiver	62347.23 AK	500-year	371553.0	167.7	196.38	60750	4073	6.1
SantaClaraRiver	61764.94 62095.04	10-year	72518.0	167.1	184.93	18076	2787	4.0
SantaClaraRiver	61764.94 62095.04	50-year	171330.0	167.1	189.75	34306	3773	5.0
SantaClaraRiver	61764.94 62095.04	100-year	225118.0	167.1	191.54	41080	3773	5.5
SantaClaraRiver	61764.94 62095.04	500-year	371553.0	167.1	195.68	56687	3775	6.6
SantaClaraRiver	60605.83 AJ	10-year	72518.0	164.9	182.28	12863	1895	5.6
SantaClaraRiver	60605.83 AJ	50-year	171330.0	164.9	187.08	25912	3385	6.6
SantaClaraRiver	60605.83 AJ	100-year	225118.0	164.9	189.07	32689	3422	6.9
SantaClaraRiver	60605.83 AJ	500-year	371553.0	164.9	193.58	48129	3427	7.7
SantaClaraRiver	60435.76 60765.85	10-year	72518.0	164.9	181.87	12691	1671	5.7
SantaClaraRiver	60435.76 60765.85	50-year	171330.0	164.9	186.21	23287	2980	7.4
SantaClaraRiver	60435.76 60765.85	100-year	225118.0	164.9	188.10	29208	3249	7.7
SantaClaraRiver	60435.76 60765.85	500-year	371553.0	164.9	192.68	44376	3326	8.4
SantaClaraRiver	60256.12	10-year	72518.0	164.9	181.67	16696	3031	4.3
SantaClaraRiver	60256.12	50-year	171330.0	164.9	186.19	30542	3098	5.6
SantaClaraRiver	60256.12	100-year	225118.0	164.9	188.08	36414	3101	6.2
SantaClaraRiver	60256.12	500-year	371553.0	164.9	192.57	50338	3106	7.4
SantaClaraRiver	59540.07 59870.16	10-year	72518.0	164.1	180.21	17180	2507	4.2
SantaClaraRiver	59540.07 59870.16	50-year	171330.0	164.1	184.43	27840	2546	6.2
SantaClaraRiver	59540.07 59870.16	100-year	225118.0	164.1	186.19	32344	2555	7.0
SantaClaraRiver	59540.07 59870.16	500-year	371553.0	164.1	190.47	43292	2564	8.6
SantaClaraRiver	58930.18 AI	10-year	72518.0	164.1	177.97	13480	2114	5.4
SantaClaraRiver	58930.18 AI	50-year	171330.0	164.1	181.89	22123	2238	7.7
SantaClaraRiver	58930.18 AI	100-year	225118.0	164.1	183.49	25715	2242	8.8
SantaClaraRiver	58930.18 AI	500-year	371553.0	164.1	187.62	34979	2248	10.6
SantaClaraRiver	58407.46 AH	10-year	72518.0	160.1	171.30	6931	1572	10.5
SantaClaraRiver	58407.46 AH	50-year	171330.0	160.1	175.30	13624	1734	12.6
SantaClaraRiver	58407.46 AH	100-year	225118.0	160.1	178.00	18348	1767	12.3
SantaClaraRiver	58407.46 AH	500-year	371553.0	160.1	183.24	27983	1857	13.3
SantaClaraRiver	58255.77	10-year	72518.0	151.8	168.76	6193	1344	11.7
SantaClaraRiver	58255.77	50-year	171330.0	151.8	173.36	12468	1375	13.7
SantaClaraRiver	58255.77	100-year	225118.0	151.8	175.27	15136	1430	14.9
SantaClaraRiver	58255.77	500-year	371553.0	151.8	179.40	21042	1430	17.7
SantaClaraRiver	58215 FREEMAN DIVERSIO		Inl Struct					

Floodway Data Table Format

HEC-RAS Plan: 20151217CorEff River: SantaClaraRiver Reach: SantaClaraRiver

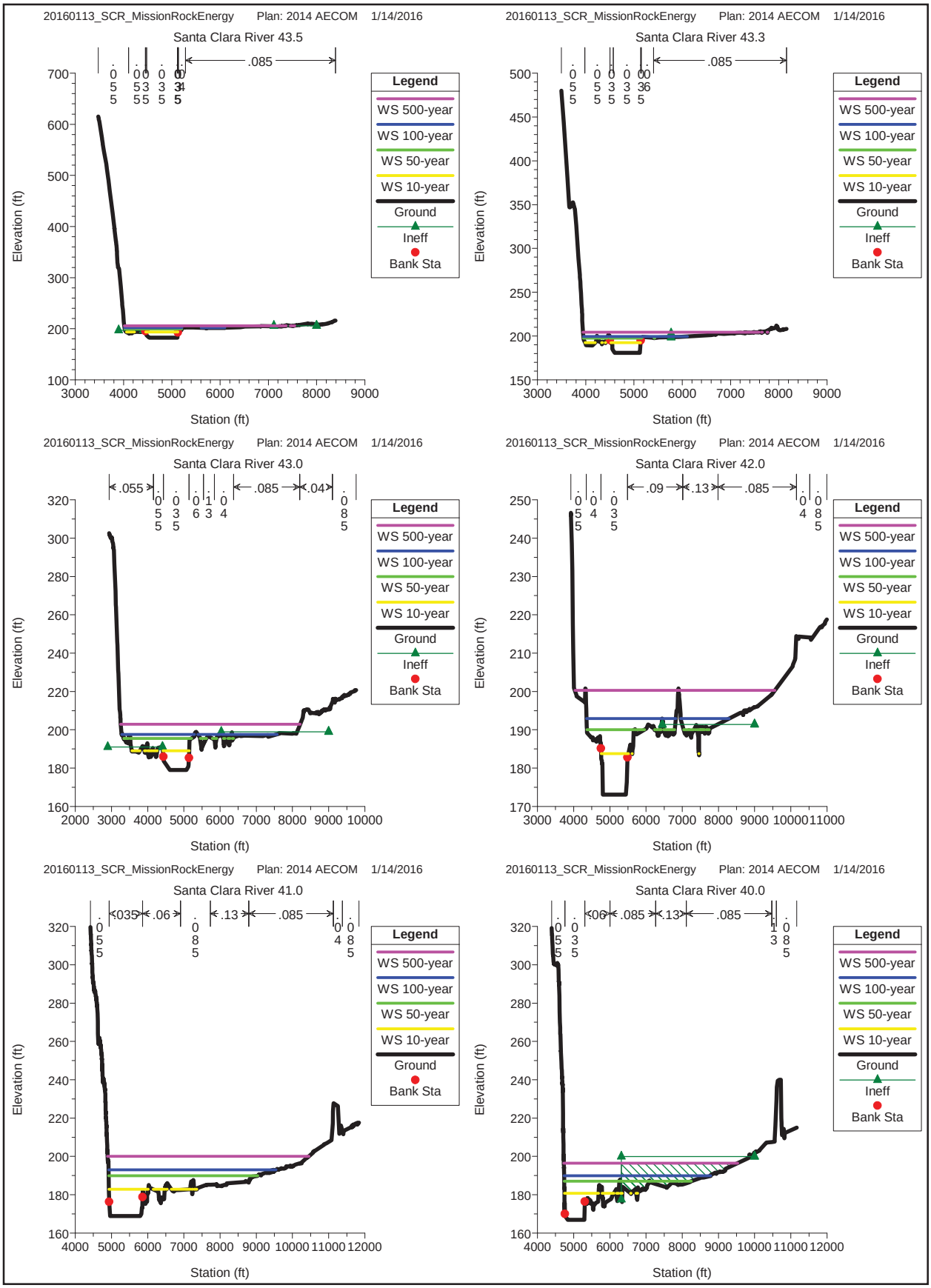
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
SantaClaraRiver	67384	10-year	72518.00	182.31	194.63	189.89	195.90	0.001732	9.09	8394.15	1030.54	0.47
SantaClaraRiver	67384	50-year	171330.00	182.31	200.10	196.10	202.81	0.002366	13.68	14497.64	1181.66	0.58
SantaClaraRiver	67384	100-year	225118.00	182.31	202.09	198.52	205.59	0.002695	15.71	16857.88	1773.36	0.63
SantaClaraRiver	67384	500-year	371553.00	182.31	208.81	203.81	212.14	0.001977	16.42	37796.74	3871.79	0.57
SantaClaraRiver	67002	10-year	72518.00	180.81	193.97	188.93	195.25	0.001639	9.22	8605.82	1007.32	0.47
SantaClaraRiver	67002	50-year	171330.00	180.81	198.81	195.48	201.83	0.002693	14.54	13924.49	1777.59	0.63
SantaClaraRiver	67002	100-year	225118.00	180.81	200.07	197.82	204.35	0.003540	17.46	15673.31	2294.53	0.73
SantaClaraRiver	67002	500-year	371553.00	180.81	203.43	203.43	210.63	0.004983	23.12	20529.19	3189.50	0.88
SantaClaraRiver	65928 AM	10-year	72518.00	178.78	192.42	188.55	193.34	0.001728	8.11	10774.12	1759.76	0.44
SantaClaraRiver	65928 AM	50-year	171330.00	178.78	197.83	193.70	199.11	0.001602	10.25	22716.76	4308.66	0.45
SantaClaraRiver	65928 AM	100-year	225118.00	178.78	199.26	195.26	200.85	0.001854	11.67	27052.70	4885.69	0.49
SantaClaraRiver	65928 AM	500-year	371553.00	178.78	202.15	199.19	204.55	0.002422	14.78	35984.82	4963.10	0.58
SantaClaraRiver	64058.64 AL	10-year	72518.00	175.36	187.22	184.60	188.81	0.003510	10.17	7263.63	1025.42	0.63
SantaClaraRiver	64058.64 AL	50-year	171330.00	175.36	191.31	191.08	194.21	0.004696	14.37	15332.55	3293.09	0.73
SantaClaraRiver	64058.64 AL	100-year	225118.00	175.36	193.22	192.88	195.88	0.004066	14.45	22291.50	3903.22	0.68
SantaClaraRiver	64058.64 AL	500-year	371553.00	175.36	197.54	195.51	199.70	0.002873	14.10	39087.17	5077.34	0.58
SantaClaraRiver	62347.23 AK	10-year	72518.00	167.66	185.64	180.56	185.89	0.000831	4.32	19013.86	3176.26	0.26
SantaClaraRiver	62347.23 AK	50-year	171330.00	167.66	190.40	183.64	190.78	0.000830	5.41	36615.64	4142.70	0.26
SantaClaraRiver	62347.23 AK	100-year	225118.00	167.66	192.21	185.21	192.65	0.000854	5.89	43887.08	4476.62	0.27
SantaClaraRiver	62347.23 AK	500-year	371553.00	167.66	196.38	187.60	196.99	0.000875	6.86	60749.52	5352.70	0.27
SantaClaraRiver	61764.94 62095.04	10-year	72518.00	167.14	184.93	179.80	185.18	0.002211	4.04	18075.83	2787.23	0.23
SantaClaraRiver	61764.94 62095.04	50-year	171330.00	167.14	189.75	182.53	190.13	0.001854	4.89	34306.44	4275.89	0.23
SantaClaraRiver	61764.94 62095.04	100-year	225118.00	167.14	191.54	184.23	192.01	0.001803	5.23	41080.29	4533.93	0.23
SantaClaraRiver	61764.94 62095.04	500-year	371553.00	167.14	195.68	187.00	196.37	0.001685	5.90	56687.45	5176.83	0.23
SantaClaraRiver	60605.83 AJ	10-year	72518.00	164.88	182.28	177.84	182.80	0.002138	5.88	12863.26	1894.70	0.35
SantaClaraRiver	60605.83 AJ	50-year	171330.00	164.88	187.08	181.45	187.89	0.002670	7.71	25912.07	3509.71	0.37
SantaClaraRiver	60605.83 AJ	100-year	225118.00	164.88	189.07	183.16	189.91	0.002569	8.04	32689.13	3815.75	0.36
SantaClaraRiver	60605.83 AJ	500-year	371553.00	164.88	193.58	187.16	194.56	0.002292	8.67	48129.00	4504.02	0.34
SantaClaraRiver	60435.76 60765.85	10-year	72518.00	164.88	181.87	176.92	182.41	0.002288	5.92	12690.95	1671.24	0.34
SantaClaraRiver	60435.76 60765.85	50-year	171330.00	164.88	186.21	180.60	187.27	0.003622	8.65	23287.36	2979.75	0.41
SantaClaraRiver	60435.76 60765.85	100-year	225118.00	164.88	188.10	182.79	189.27	0.003700	9.29	29208.49	3504.89	0.42
SantaClaraRiver	60435.76 60765.85	500-year	371553.00	164.88	192.68	187.04	193.93	0.003280	9.97	44375.86	4380.86	0.39
SantaClaraRiver	60256.12	10-year	72518.00	164.88	181.67	175.84	182.00	0.001678	4.86	16695.62	3030.86	0.27
SantaClaraRiver	60256.12	50-year	171330.00	164.88	186.19	180.66	186.68	0.001730	5.78	30542.24	3318.38	0.27
SantaClaraRiver	60256.12	100-year	225118.00	164.88	188.08	182.16	188.68	0.001710	6.10	36413.63	3607.77	0.26
SantaClaraRiver	60256.12	500-year	371553.00	164.88	192.57	184.30	193.44	0.001600	6.76	50337.61	4355.15	0.26
SantaClaraRiver	59540.07 59870.16	10-year	72518.00	164.12	180.21	174.58	180.49	0.002580	4.02	17179.71	2522.05	0.22
SantaClaraRiver	59540.07 59870.16	50-year	171330.00	164.12	184.43	178.69	185.09	0.002691	5.08	27839.66	2993.39	0.23
SantaClaraRiver	59540.07 59870.16	100-year	225118.00	164.12	186.19	179.59	187.07	0.002742	5.53	32343.84	3246.97	0.24
SantaClaraRiver	59540.07 59870.16	500-year	371553.00	164.12	190.47	181.93	191.88	0.002677	6.37	43291.57	3447.86	0.25
SantaClaraRiver	58930.18 AI	10-year	72518.00	164.12	177.97	173.92	178.42	0.004648	5.34	13480.12	2113.62	0.30
SantaClaraRiver	58930.18 AI	50-year	171330.00	164.12	181.89	177.46	182.89	0.004973	6.86	22123.14	2490.32	0.33
SantaClaraRiver	58930.18 AI	100-year	225118.00	164.12	183.49	178.60	184.82	0.005072	7.48	25714.70	2810.48	0.34
SantaClaraRiver	58930.18 AI	500-year	371553.00	164.12	187.62	181.31	189.70	0.004715	8.48	34979.43	3239.29	0.34
SantaClaraRiver	58407.46 AH	10-year	72518.00	160.06	171.30	170.96	173.12	0.036116	11.03	6931.24	1571.60	0.85
SantaClaraRiver	58407.46 AH	50-year	171330.00	160.06	175.30	174.30	177.88	0.025891	13.42	13624.30	1761.66	0.78
SantaClaraRiver	58407.46 AH	100-year	225118.00	160.06	178.00	175.66	180.42	0.017469	13.01	18348.16	2222.62	0.67
SantaClaraRiver	58407.46 AH	500-year	371553.00	160.06	183.24	178.93	186.04	0.012352	13.95	27983.46	3070.18	0.60
SantaClaraRiver	58255.77	10-year	72518.00	151.80	168.76	168.63	170.88	0.007400	11.71	6192.50	1344.34	0.96
SantaClaraRiver	58255.77	50-year	171330.00	151.80	173.36	172.13	176.29	0.005014	13.74	12467.61	1418.06	0.80
SantaClaraRiver	58255.77	100-year	225118.00	151.80	175.27	173.71	178.71	0.005604	14.87	15136.00	1941.17	0.81
SantaClaraRiver	58255.77	500-year	371553.00	151.80	179.40	177.50	184.24	0.005214	17.66	21041.82	2661.26	0.81
SantaClaraRiver	58215 FREEMAN DIVERSIO		Inl Struct									

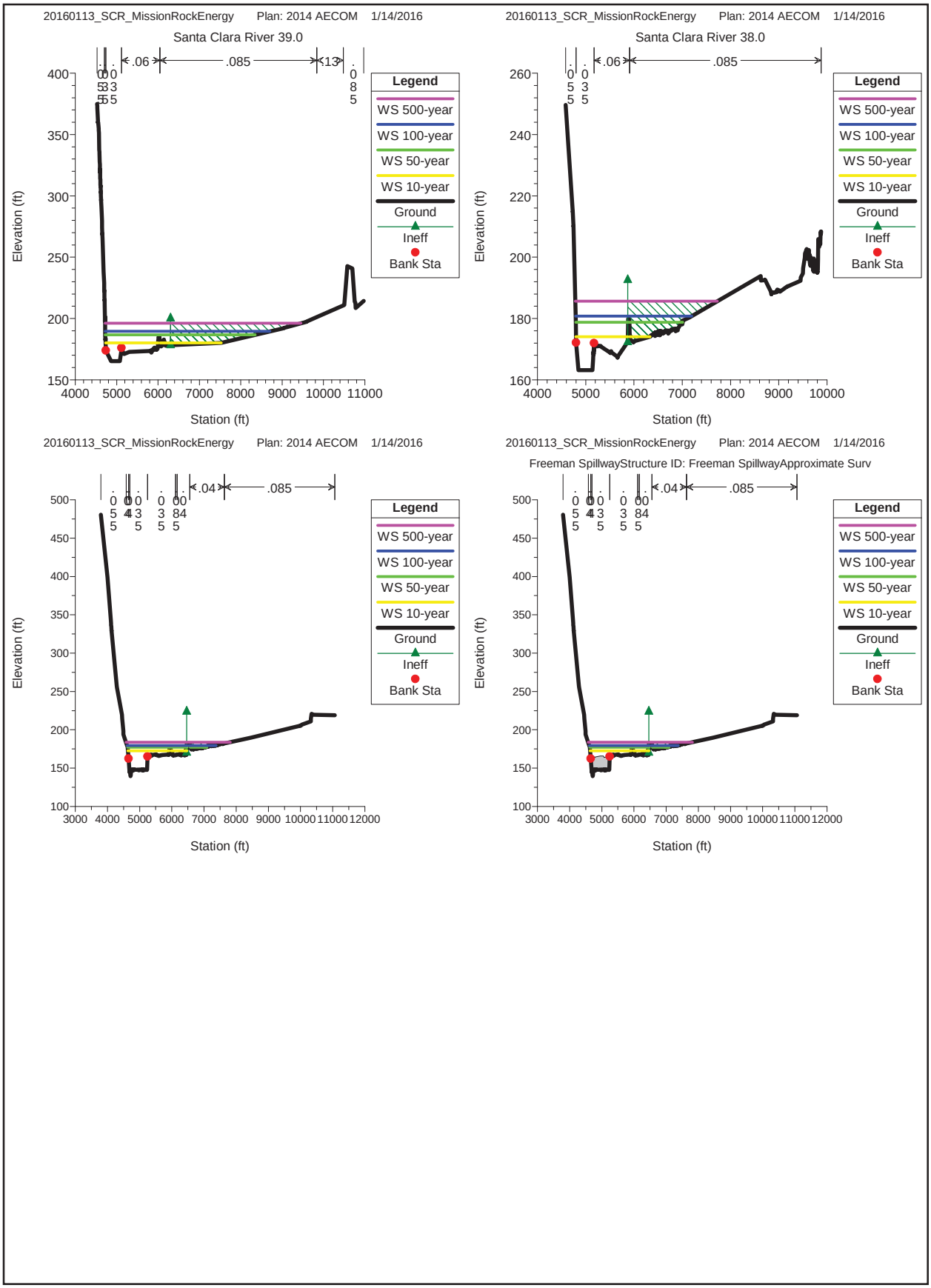
Standard Table 1 Format

HEC-RAS Plan: 20151217CorEffFW River: SantaClaraRiver Reach: SantaClaraRiver

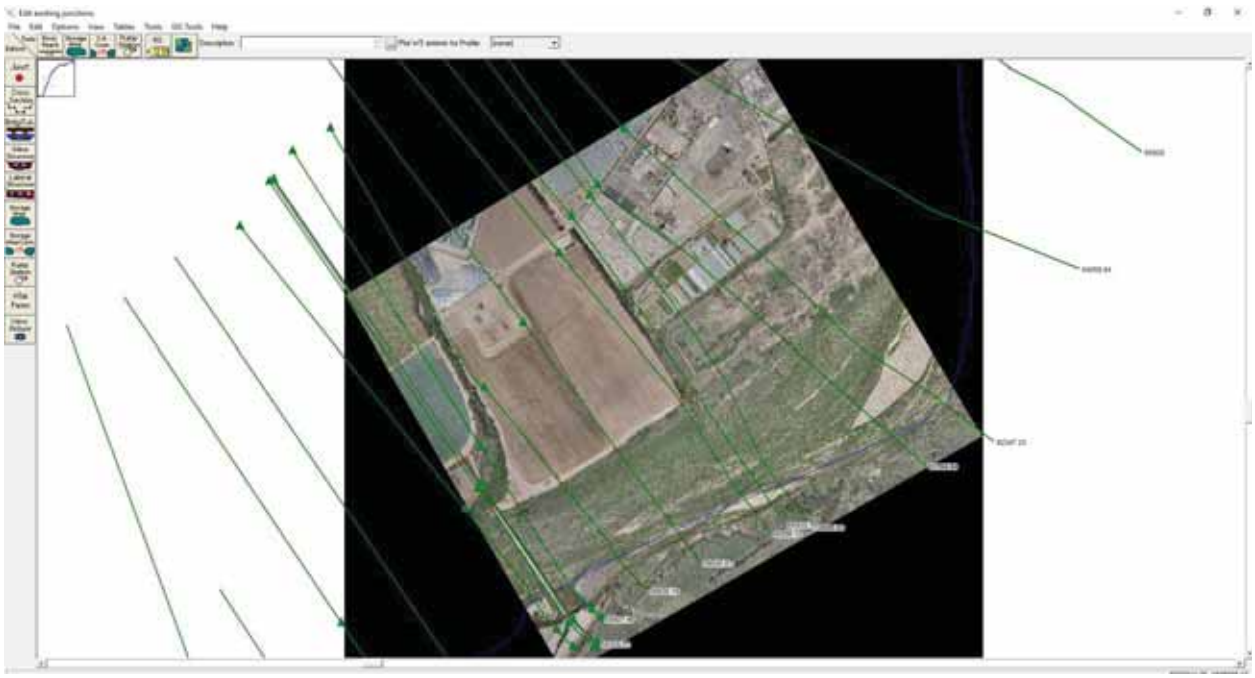
Reach	River Sta	Profile	W.S. Elev	Prof Delta WS	E.G. Elev	Top Wdth Act	Q Left	Q Channel	Q Right	Enc Sta L	Ch Sta L	Ch Sta R	Enc Sta R
			(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)
SantaClaraRiver	67384	100-year	202.09		205.59	1204.72	19686.40	202653.00	2778.59		974.50	1645.00	
SantaClaraRiver	67384	100-FW	202.50	0.41	205.94	1092.90	18793.35	204369.90	1954.75	592.40	974.50	1645.00	1685.30
SantaClaraRiver	67002	100-year	200.07		204.35	1413.62	23630.97	200416.00	1071.03		1004.40	1642.10	
SantaClaraRiver	67002	100-FW	200.78	0.71	204.81	1154.92	22979.33	201622.90	515.80	497.80	1004.40	1642.10	1667.40
SantaClaraRiver	65928 AM	100-year	199.26		200.85	3088.57	61517.35	151100.20	12500.47		1468.59	2216.00	
SantaClaraRiver	65928 AM	100-FW	199.76	0.50	201.56	1730.30	63472.25	159719.40	1926.33	605.90	1468.59	2216.00	2336.20
SantaClaraRiver	64058.64 AL	100-year	193.22		195.88	3808.08	18046.13	178230.90	28840.96		861.09	1751.90	
SantaClaraRiver	64058.64 AL	100-FW	194.22	1.00	196.83	2324.59	16850.75	184767.10	23500.12	580.00	861.09	1751.90	2937.66
SantaClaraRiver	62347.23 AK	100-year	192.21		192.65	4024.19	32.08	146959.00	78126.92		508.17	2143.97	
SantaClaraRiver	62347.23 AK	100-FW	192.96	0.75	193.52	2839.01	44.20	168024.70	57049.09	503.17	508.17	2143.97	3342.46
SantaClaraRiver	61764.94 62095.04	100-year	191.54		192.01	3773.48		123738.30	101379.70		297.55	1800.54	
SantaClaraRiver	61764.94 62095.04	100-FW	192.26	0.72	192.82	2759.01		135521.50	89596.50	292.55	297.55	1800.54	3056.57
SantaClaraRiver	60605.83 AJ	100-year	189.07		189.91	3421.54		169587.20	55530.81		345.59	1708.40	
SantaClaraRiver	60605.83 AJ	100-FW	189.79	0.72	190.68	2470.99	0.04	176980.50	48137.46	340.59	345.59	1708.40	2816.15
SantaClaraRiver	60435.76 60765.85	100-year	188.10		189.27	3249.22	72.52	188856.20	36189.26		201.22	1513.63	
SantaClaraRiver	60435.76 60765.85	100-FW	188.90	0.80	190.09	2434.36	92.64	196763.70	28261.64	196.22	201.22	1513.63	2649.19
SantaClaraRiver	60256.12	100-year	188.08		188.68	3100.93		130778.00	94339.98		202.07	1497.49	
SantaClaraRiver	60256.12	100-FW	188.85	0.77	189.52	2547.75	0.24	141477.30	83640.45	197.07	202.07	1497.49	2749.01
SantaClaraRiver	59540.07 59870.16	100-year	186.19		187.07	2555.47	1.74	101336.80	123779.40		236.89	1344.63	
SantaClaraRiver	59540.07 59870.16	100-FW	186.91	0.72	187.89	2212.85	3.72	109391.20	115723.10	231.89	236.89	1344.63	2447.71
SantaClaraRiver	58930.18 AI	100-year	183.49		184.82	2241.61	177.66	119265.60	105674.80		229.06	1296.80	
SantaClaraRiver	58930.18 AI	100-FW	183.72	0.23	185.40	1812.80	55.15	135474.80	89588.03	224.06	229.06	1296.80	2036.86
SantaClaraRiver	58407.46 AH	100-year	178.00		180.42	1766.63		184836.70	40281.27		138.46	1349.46	
SantaClaraRiver	58407.46 AH	100-FW	178.00	0.00	180.42	1766.65		184833.10	40284.92	122.66	138.46	1349.46	1985.96
SantaClaraRiver	58255.77	100-year	175.27		178.71	1429.98		225118.00			150.94	2134.74	
SantaClaraRiver	58255.77	100-FW	175.27	0.00	178.71	1429.98		225118.00		315.35	150.94	2134.74	1881.05
SantaClaraRiver	58215 FREEMAN DIVERSIO		Inl Struct										

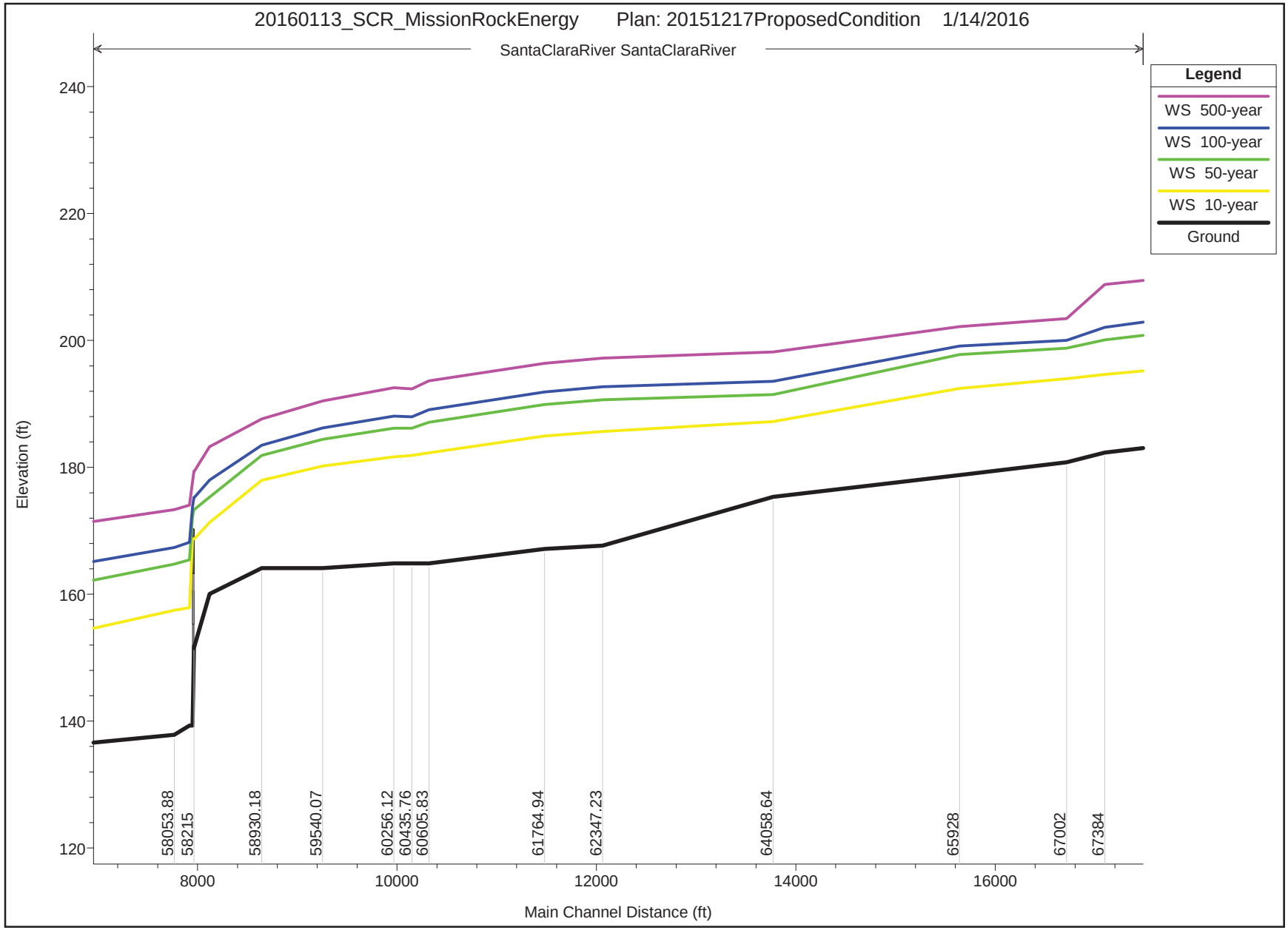
Encroachment 1 Table Format


20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 43.5
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 43.3
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 43.0
.055
.085
.04
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 42.0
.09
.13
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 41.0
.035
.06
.13
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 40.0
.06
.085
.13
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 39.0
.06
.085
.13
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Santa Clara River 38.0
.06
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
.04
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 2014 AECOM 1/14/2016
Freeman SpillwayStructure ID: Freeman SpillwayApproximate Surv
.04
.085
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

Proposed Condition HEC-RAS Model Results




20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
SantaClaraRiver SantaClaraRiver
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Elevation (ft)
240
220
200
180
160
140
120
58053.88
58215
58930.18
59540.07
60256.12
60435.76
60605.83
61764.94
62347.23
64058.64
65928
67002
67384
8000
10000
12000
14000
16000
Main Channel Distance (ft)

HEC-RAS Plan: 20151217PropC River: SantaClaraRiver Reach: SantaClaraRiver

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Flow Area	Top Wdth Act	Vel Total
			(cfs)	(ft)	(ft)	(sq ft)	(ft)	(ft/s)
SantaClaraRiver	67384	10-year	72518.0	182.3	194.63	8394	1031	8.6
SantaClaraRiver	67384	50-year	171330.0	182.3	200.09	14480	1181	11.8
SantaClaraRiver	67384	100-year	225118.0	182.3	202.07	16832	1202	13.4
SantaClaraRiver	67384	500-year	371553.0	182.3	208.81	37797	3872	9.8
SantaClaraRiver	67002	10-year	72518.0	180.8	193.97	8606	1007	8.4
SantaClaraRiver	67002	50-year	171330.0	180.8	198.79	13891	1321	12.3
SantaClaraRiver	67002	100-year	225118.0	180.8	200.01	15589	1412	14.4
SantaClaraRiver	67002	500-year	371553.0	180.8	203.43	20529	1455	18.1
SantaClaraRiver	65928 AM	10-year	72518.0	178.8	192.42	10774	1760	6.7
SantaClaraRiver	65928 AM	50-year	171330.0	178.8	197.78	22561	2954	7.6
SantaClaraRiver	65928 AM	100-year	225118.0	178.8	199.11	26581	3088	8.5
SantaClaraRiver	65928 AM	500-year	371553.0	178.8	202.18	36106	3099	10.3
SantaClaraRiver	64058.64 AL	10-year	72518.0	175.4	187.22	7265	1026	10.0
SantaClaraRiver	64058.64 AL	50-year	171330.0	175.4	191.45	15800	3367	10.8
SantaClaraRiver	64058.64 AL	100-year	225118.0	175.4	193.56	23581	3812	9.5
SantaClaraRiver	64058.64 AL	500-year	371553.0	175.4	198.18	41672	4095	8.9
SantaClaraRiver	62347.23 AK	10-year	72518.0	167.7	185.64	19034	3177	3.8
SantaClaraRiver	62347.23 AK	50-year	171330.0	167.7	190.65	37604	4017	4.6
SantaClaraRiver	62347.23 AK	100-year	225118.0	167.7	192.69	45811	4026	4.9
SantaClaraRiver	62347.23 AK	500-year	371553.0	167.7	197.21	64099	4083	5.8
SantaClaraRiver	61764.94 62095.04	10-year	72518.0	167.1	184.93	18003	2738	4.0
SantaClaraRiver	61764.94 62095.04	50-year	171330.0	167.1	189.92	32127	2873	5.3
SantaClaraRiver	61764.94 62095.04	100-year	225118.0	167.1	191.90	37825	2880	6.0
SantaClaraRiver	61764.94 62095.04	500-year	371553.0	167.1	196.38	53852	3776	6.9
SantaClaraRiver	60605.83 AJ	10-year	72518.0	164.9	182.28	12863	1895	5.6
SantaClaraRiver	60605.83 AJ	50-year	171330.0	164.9	187.08	24200	2563	7.1
SantaClaraRiver	60605.83 AJ	100-year	225118.0	164.9	189.09	29388	2601	7.7
SantaClaraRiver	60605.83 AJ	500-year	371553.0	164.9	193.65	41875	3427	8.9
SantaClaraRiver	60435.76 60765.85	10-year	72518.0	164.9	181.87	12680	1614	5.7
SantaClaraRiver	60435.76 60765.85	50-year	171330.0	164.9	186.16	21627	2248	7.9
SantaClaraRiver	60435.76 60765.85	100-year	225118.0	164.9	187.97	25841	2450	8.7
SantaClaraRiver	60435.76 60765.85	500-year	371553.0	164.9	192.36	37017	2581	10.0
SantaClaraRiver	60256.12	10-year	72518.0	164.9	181.67	16696	3031	4.3
SantaClaraRiver	60256.12	50-year	171330.0	164.9	186.19	30542	3098	5.6
SantaClaraRiver	60256.12	100-year	225118.0	164.9	188.08	36414	3101	6.2
SantaClaraRiver	60256.12	500-year	371553.0	164.9	192.57	50338	3106	7.4
SantaClaraRiver	59540.07 59870.16	10-year	72518.0	164.1	180.21	17180	2507	4.2
SantaClaraRiver	59540.07 59870.16	50-year	171330.0	164.1	184.43	27840	2546	6.2
SantaClaraRiver	59540.07 59870.16	100-year	225118.0	164.1	186.19	32344	2555	7.0
SantaClaraRiver	59540.07 59870.16	500-year	371553.0	164.1	190.47	43292	2564	8.6
SantaClaraRiver	58930.18 AI	10-year	72518.0	164.1	177.97	13480	2114	5.4
SantaClaraRiver	58930.18 AI	50-year	171330.0	164.1	181.89	22123	2238	7.7
SantaClaraRiver	58930.18 AI	100-year	225118.0	164.1	183.49	25715	2242	8.8
SantaClaraRiver	58930.18 AI	500-year	371553.0	164.1	187.62	34979	2248	10.6
SantaClaraRiver	58407.46 AH	10-year	72518.0	160.1	171.30	6931	1572	10.5
SantaClaraRiver	58407.46 AH	50-year	171330.0	160.1	175.30	13624	1734	12.6
SantaClaraRiver	58407.46 AH	100-year	225118.0	160.1	178.00	18348	1767	12.3
SantaClaraRiver	58407.46 AH	500-year	371553.0	160.1	183.24	27983	1857	13.3
SantaClaraRiver	58255.77	10-year	72518.0	151.8	168.76	6193	1344	11.7
SantaClaraRiver	58255.77	50-year	171330.0	151.8	173.36	12468	1375	13.7
SantaClaraRiver	58255.77	100-year	225118.0	151.8	175.27	15136	1430	14.9
SantaClaraRiver	58255.77	500-year	371553.0	151.8	179.40	21042	1430	17.7
SantaClaraRiver	58215 FREEMAN DIVERSIO		Inl Struct					

Floodway Data Table Format

HEC-RAS Plan: 20151217PropC River: SantaClaraRiver Reach: SantaClaraRiver

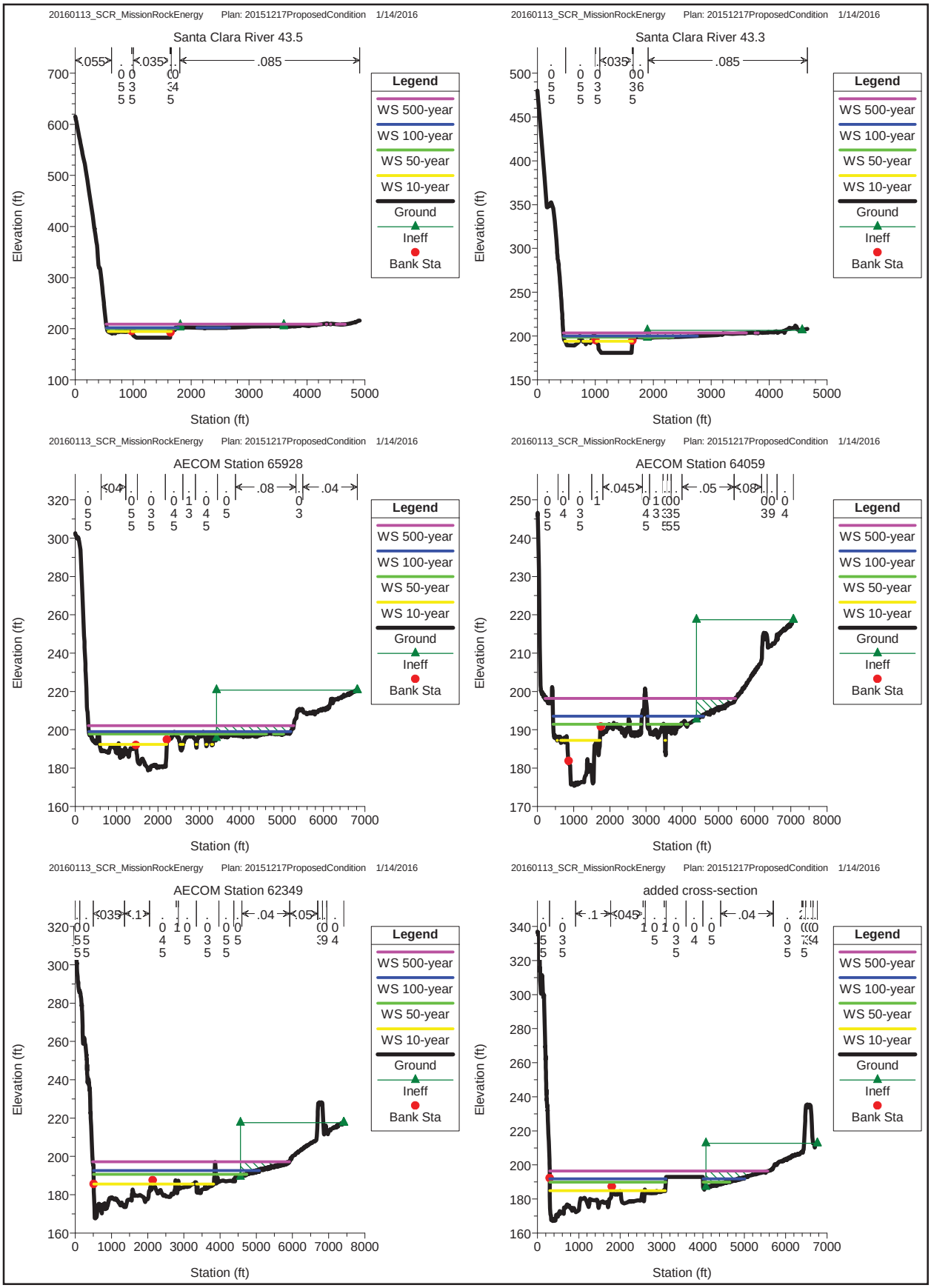
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
SantaClaraRiver	67384	10-year	72518.00	182.31	194.63	189.89	195.90	0.001732	9.09	8394.10	1030.53	0.47
SantaClaraRiver	67384	50-year	171330.00	182.31	200.09	196.10	202.81	0.002374	13.70	14480.26	1181.45	0.58
SantaClaraRiver	67384	100-year	225118.00	182.31	202.07	198.52	205.58	0.002707	15.73	16831.60	1764.80	0.63
SantaClaraRiver	67384	500-year	371553.00	182.31	208.81	203.81	212.14	0.001977	16.42	37796.74	3871.79	0.57
SantaClaraRiver	67002	10-year	72518.00	180.81	193.97	188.93	195.25	0.001639	9.22	8605.74	1007.32	0.47
SantaClaraRiver	67002	50-year	171330.00	180.81	198.79	195.48	201.81	0.002708	14.57	13890.62	1766.12	0.63
SantaClaraRiver	67002	100-year	225118.00	180.81	200.01	197.82	204.33	0.003585	17.53	15589.44	2276.46	0.73
SantaClaraRiver	67002	500-year	371553.00	180.81	203.43	203.43	210.63	0.004983	23.12	20529.19	3189.50	0.88
SantaClaraRiver	65928 AM	10-year	72518.00	178.78	192.42	188.55	193.34	0.001728	8.11	10773.87	1759.75	0.44
SantaClaraRiver	65928 AM	50-year	171330.00	178.78	197.78	193.70	199.07	0.001627	10.30	22560.77	4219.12	0.46
SantaClaraRiver	65928 AM	100-year	225118.00	178.78	199.11	195.26	200.76	0.001934	11.85	26581.35	4883.42	0.50
SantaClaraRiver	65928 AM	500-year	371553.00	178.78	202.18	199.19	204.58	0.002400	14.74	36106.36	4963.39	0.58
SantaClaraRiver	64058.64 AL	10-year	72518.00	175.36	187.22	184.60	188.81	0.003508	10.17	7264.96	1025.79	0.63
SantaClaraRiver	64058.64 AL	50-year	171330.00	175.36	191.45	191.08	194.23	0.004471	14.10	15800.40	3366.71	0.72
SantaClaraRiver	64058.64 AL	100-year	225118.00	175.36	193.56	192.88	195.94	0.003608	13.78	23581.42	3949.98	0.64
SantaClaraRiver	64058.64 AL	500-year	371553.00	175.36	198.18	195.51	200.04	0.002427	13.22	41671.57	5174.30	0.54
SantaClaraRiver	62347.23 AK	10-year	72518.00	167.66	185.64	180.56	185.90	0.000828	4.31	19033.97	3177.28	0.26
SantaClaraRiver	62347.23 AK	50-year	171330.00	167.66	190.65	183.64	191.00	0.000770	5.26	37604.23	4178.95	0.25
SantaClaraRiver	62347.23 AK	100-year	225118.00	167.66	192.69	185.21	193.09	0.000753	5.62	45810.66	4543.09	0.25
SantaClaraRiver	62347.23 AK	500-year	371553.00	167.66	197.21	187.60	197.75	0.000745	6.49	64099.21	5436.43	0.25
SantaClaraRiver	61764.94 62095.04	10-year	72518.00	167.14	184.93	179.80	185.19	0.002221	4.05	18002.93	2738.01	0.24
SantaClaraRiver	61764.94 62095.04	50-year	171330.00	167.14	189.92	182.54	190.36	0.001983	5.10	32126.79	3397.28	0.24
SantaClaraRiver	61764.94 62095.04	100-year	225118.00	167.14	191.90	184.23	192.46	0.001998	5.58	37825.16	3700.55	0.25
SantaClaraRiver	61764.94 62095.04	500-year	371553.00	167.14	196.38	186.70	197.14	0.001906	6.42	53852.07	5272.82	0.25
SantaClaraRiver	60605.83 AJ	10-year	72518.00	164.88	182.28	177.84	182.80	0.002138	5.88	12863.44	1894.72	0.35
SantaClaraRiver	60605.83 AJ	50-year	171330.00	164.88	187.08	181.45	187.95	0.002796	7.89	24200.17	2687.44	0.38
SantaClaraRiver	60605.83 AJ	100-year	225118.00	164.88	189.09	183.17	190.07	0.002846	8.47	29388.44	2998.98	0.38
SantaClaraRiver	60605.83 AJ	500-year	371553.00	164.88	193.65	186.84	194.91	0.002801	9.60	41875.33	4523.40	0.38
SantaClaraRiver	60435.76 60765.85	10-year	72518.00	164.88	181.87	176.92	182.41	0.002288	5.92	12680.18	1614.09	0.34
SantaClaraRiver	60435.76 60765.85	50-year	171330.00	164.88	186.16	180.60	187.31	0.003854	8.91	21627.16	2248.49	0.43
SantaClaraRiver	60435.76 60765.85	100-year	225118.00	164.88	187.97	182.68	189.36	0.004264	9.93	25840.94	2695.99	0.45
SantaClaraRiver	60435.76 60765.85	500-year	371553.00	164.88	192.36	186.60	194.14	0.004446	11.51	37017.38	3603.77	0.46
SantaClaraRiver	60256.12	10-year	72518.00	164.88	181.67	175.84	182.00	0.001678	4.86	16695.62	3030.86	0.27
SantaClaraRiver	60256.12	50-year	171330.00	164.88	186.19	180.66	186.68	0.001730	5.78	30542.24	3318.38	0.27
SantaClaraRiver	60256.12	100-year	225118.00	164.88	188.08	182.16	188.68	0.001710	6.10	36413.63	3607.77	0.26
SantaClaraRiver	60256.12	500-year	371553.00	164.88	192.57	184.30	193.44	0.001600	6.76	50337.61	4355.15	0.26
SantaClaraRiver	59540.07 59870.16	10-year	72518.00	164.12	180.21	174.58	180.49	0.002580	4.02	17179.71	2522.05	0.22
SantaClaraRiver	59540.07 59870.16	50-year	171330.00	164.12	184.43	178.69	185.09	0.002691	5.08	27839.66	2993.39	0.23
SantaClaraRiver	59540.07 59870.16	100-year	225118.00	164.12	186.19	179.59	187.07	0.002742	5.53	32343.84	3246.97	0.24
SantaClaraRiver	59540.07 59870.16	500-year	371553.00	164.12	190.47	181.93	191.88	0.002677	6.37	43291.57	3447.86	0.25
SantaClaraRiver	58930.18 AI	10-year	72518.00	164.12	177.97	173.92	178.42	0.004648	5.34	13480.12	2113.62	0.30
SantaClaraRiver	58930.18 AI	50-year	171330.00	164.12	181.89	177.46	182.89	0.004973	6.86	22123.14	2490.32	0.33
SantaClaraRiver	58930.18 AI	100-year	225118.00	164.12	183.49	178.60	184.82	0.005072	7.48	25714.70	2810.48	0.34
SantaClaraRiver	58930.18 AI	500-year	371553.00	164.12	187.62	181.31	189.70	0.004715	8.48	34979.43	3239.29	0.34
SantaClaraRiver	58407.46 AH	10-year	72518.00	160.06	171.30	170.96	173.12	0.036116	11.03	6931.24	1571.60	0.85
SantaClaraRiver	58407.46 AH	50-year	171330.00	160.06	175.30	174.30	177.88	0.025891	13.42	13624.30	1761.66	0.78
SantaClaraRiver	58407.46 AH	100-year	225118.00	160.06	178.00	175.66	180.42	0.017469	13.01	18348.16	2222.62	0.67
SantaClaraRiver	58407.46 AH	500-year	371553.00	160.06	183.24	178.93	186.04	0.012352	13.95	27983.46	3070.18	0.60
SantaClaraRiver	58255.77	10-year	72518.00	151.80	168.76	168.63	170.88	0.007400	11.71	6192.50	1344.34	0.96
SantaClaraRiver	58255.77	50-year	171330.00	151.80	173.36	172.13	176.29	0.005014	13.74	12467.61	1418.06	0.80
SantaClaraRiver	58255.77	100-year	225118.00	151.80	175.27	173.71	178.71	0.005604	14.87	15136.00	1941.17	0.81
SantaClaraRiver	58255.77	500-year	371553.00	151.80	179.40	177.50	184.24	0.005214	17.66	21041.82	2661.26	0.81
SantaClaraRiver	58215 FREEMAN DIVERSIO		Inl Struct									

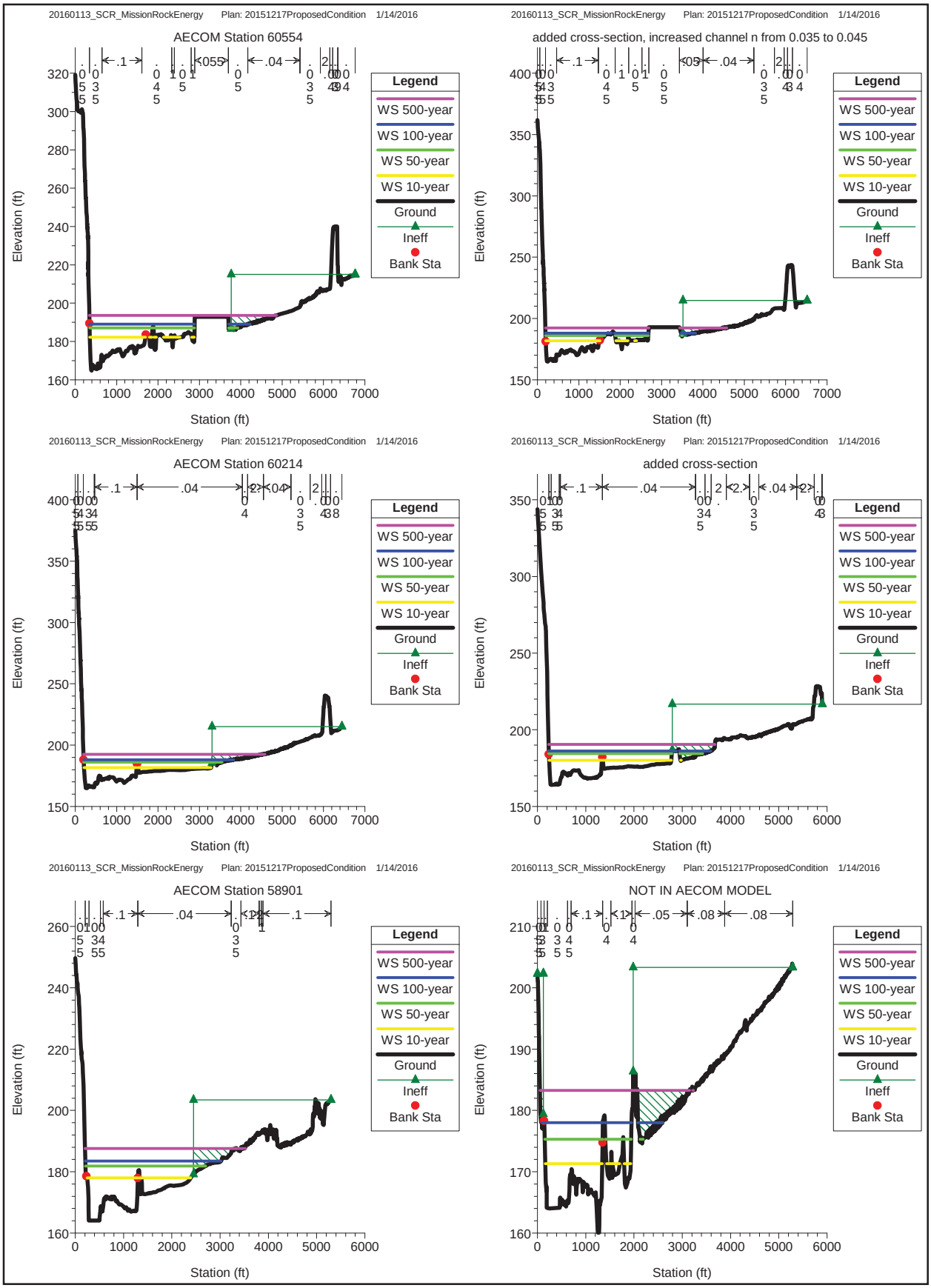
Standard Table 1 Format

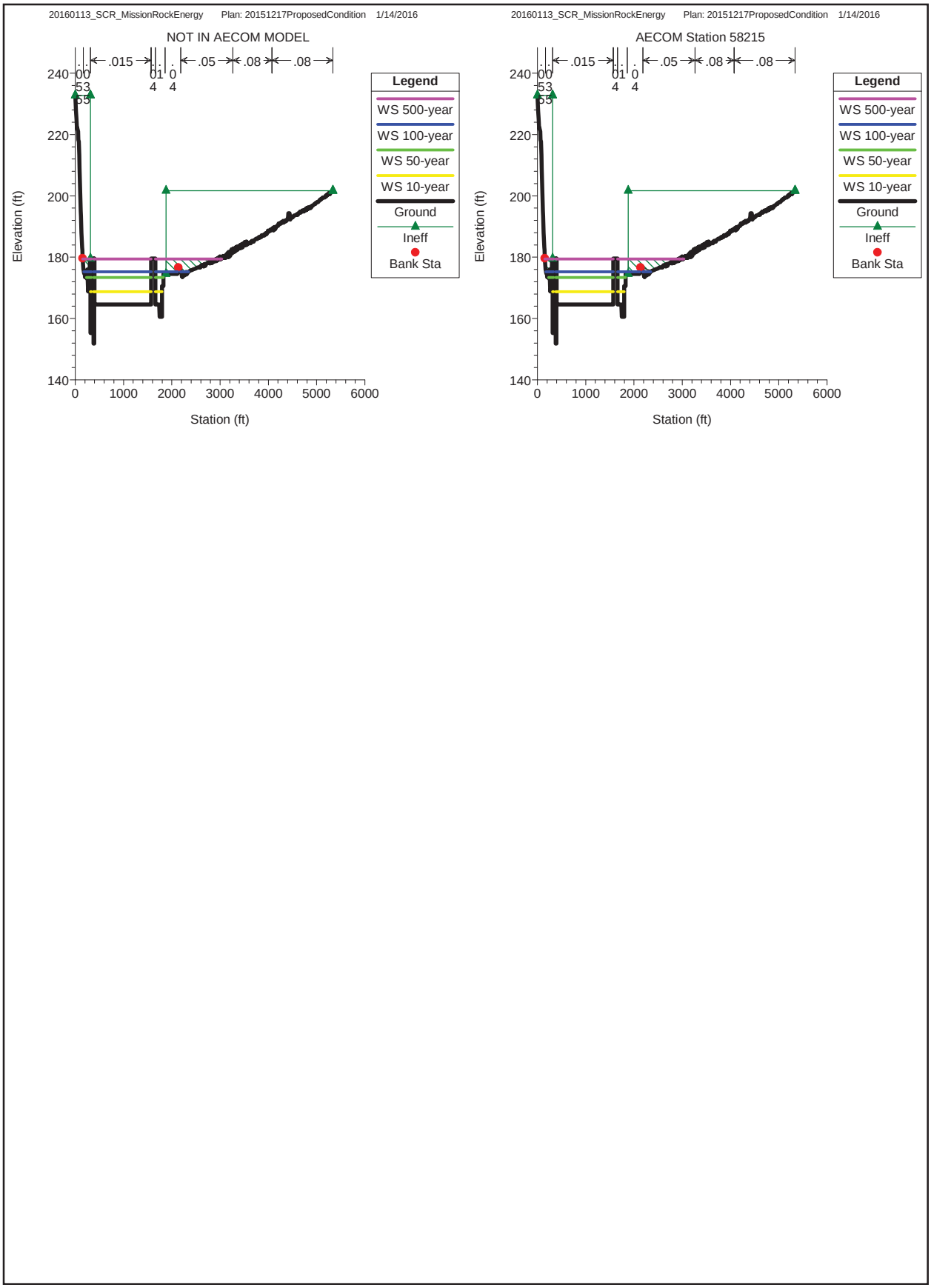
HEC-RAS Plan: 20151217PropCFW River: SantaClaraRiver Reach: SantaClaraRiver

Reach	River Sta	Profile	W.S. Elev	Prof Delta WS	E.G. Elev	Top Wdth Act	Q Left	Q Channel	Q Right	Enc Sta L	Ch Sta L	Ch Sta R	Enc Sta R
			(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)	(ft)	(ft)	(ft)
SantaClaraRiver	67384	100-year	202.07		205.58	1202.36	19641.93	202709.20	2766.87		974.50	1645.00	
SantaClaraRiver	67384	100-FW	202.50	0.43	205.94	1092.90	18793.35	204369.90	1954.75	592.40	974.50	1645.00	1685.30
SantaClaraRiver	67002	100-year	200.01		204.33	1412.40	23500.01	200595.20	1022.82		1004.40	1642.10	
SantaClaraRiver	67002	100-FW	200.78	0.77	204.81	1154.92	22979.33	201622.90	515.80	497.80	1004.40	1642.10	1667.40
SantaClaraRiver	65928 AM	100-year	199.11		200.76	3087.63	61126.02	152088.30	11903.67		1468.59	2216.00	
SantaClaraRiver	65928 AM	100-FW	199.76	0.65	201.56	1730.30	63472.25	159719.40	1926.33	605.90	1468.59	2216.00	2336.20
SantaClaraRiver	64058.64 AL	100-year	193.56		195.94	3812.16	18629.54	174229.40	32259.08		861.09	1751.90	
SantaClaraRiver	64058.64 AL	100-FW	194.22	0.66	196.83	2324.59	16850.75	184767.10	23500.12	580.00	861.09	1751.90	2937.66
SantaClaraRiver	62347.23 AK	100-year	192.69		193.09	4026.16	35.76	144837.20	80245.03		508.17	2143.97	
SantaClaraRiver	62347.23 AK	100-FW	192.96	0.27	193.52	2839.01	44.20	168024.70	57049.09	503.17	508.17	2143.97	3342.46
SantaClaraRiver	61764.94 62095.04	100-year	191.90		192.46	2879.96		135162.80	89955.24		297.55	1800.54	
SantaClaraRiver	61764.94 62095.04	100-FW	192.26	0.37	192.82	2759.01		135521.50	89596.50	292.55	297.55	1800.54	3056.57
SantaClaraRiver	60605.83 AJ	100-year	189.09		190.07	2601.25		178800.10	46317.87		345.59	1708.40	
SantaClaraRiver	60605.83 AJ	100-FW	189.79	0.70	190.68	2470.99	0.04	176980.50	48137.46	340.59	345.59	1708.40	2816.15
SantaClaraRiver	60435.76 60765.85	100-year	187.97		189.36	2450.25	72.98	200150.90	24894.15		201.22	1513.63	
SantaClaraRiver	60435.76 60765.85	100-FW	188.90	0.93	190.09	2434.36	92.64	196763.70	28261.64	196.22	201.22	1513.63	2649.19
SantaClaraRiver	60256.12	100-year	188.08		188.68	3100.93		130778.00	94339.98		202.07	1497.49	
SantaClaraRiver	60256.12	100-FW	188.85	0.77	189.52	2547.75	0.24	141477.30	83640.45	197.07	202.07	1497.49	2749.01
SantaClaraRiver	59540.07 59870.16	100-year	186.19		187.07	2555.47	1.74	101336.80	123779.40		236.89	1344.63	
SantaClaraRiver	59540.07 59870.16	100-FW	186.91	0.72	187.89	2212.85	3.72	109391.20	115723.10	231.89	236.89	1344.63	2447.71
SantaClaraRiver	58930.18 AI	100-year	183.49		184.82	2241.61	177.66	119265.60	105674.80		229.06	1296.80	
SantaClaraRiver	58930.18 AI	100-FW	183.72	0.23	185.40	1812.80	55.15	135474.80	89588.03	224.06	229.06	1296.80	2036.86
SantaClaraRiver	58407.46 AH	100-year	178.00		180.42	1766.63		184836.70	40281.27		138.46	1349.46	
SantaClaraRiver	58407.46 AH	100-FW	178.00	0.00	180.42	1766.65		184833.10	40284.92	122.66	138.46	1349.46	1985.96
SantaClaraRiver	58255.77	100-year	175.27		178.71	1429.98		225118.00			150.94	2134.74	
SantaClaraRiver	58255.77	100-FW	175.27	0.00	178.71	1429.98		225118.00		315.35	150.94	2134.74	1881.05
SantaClaraRiver	58215 FREEMAN DIVERSIO		Inl Struct										

Encroachment 1 Table Format

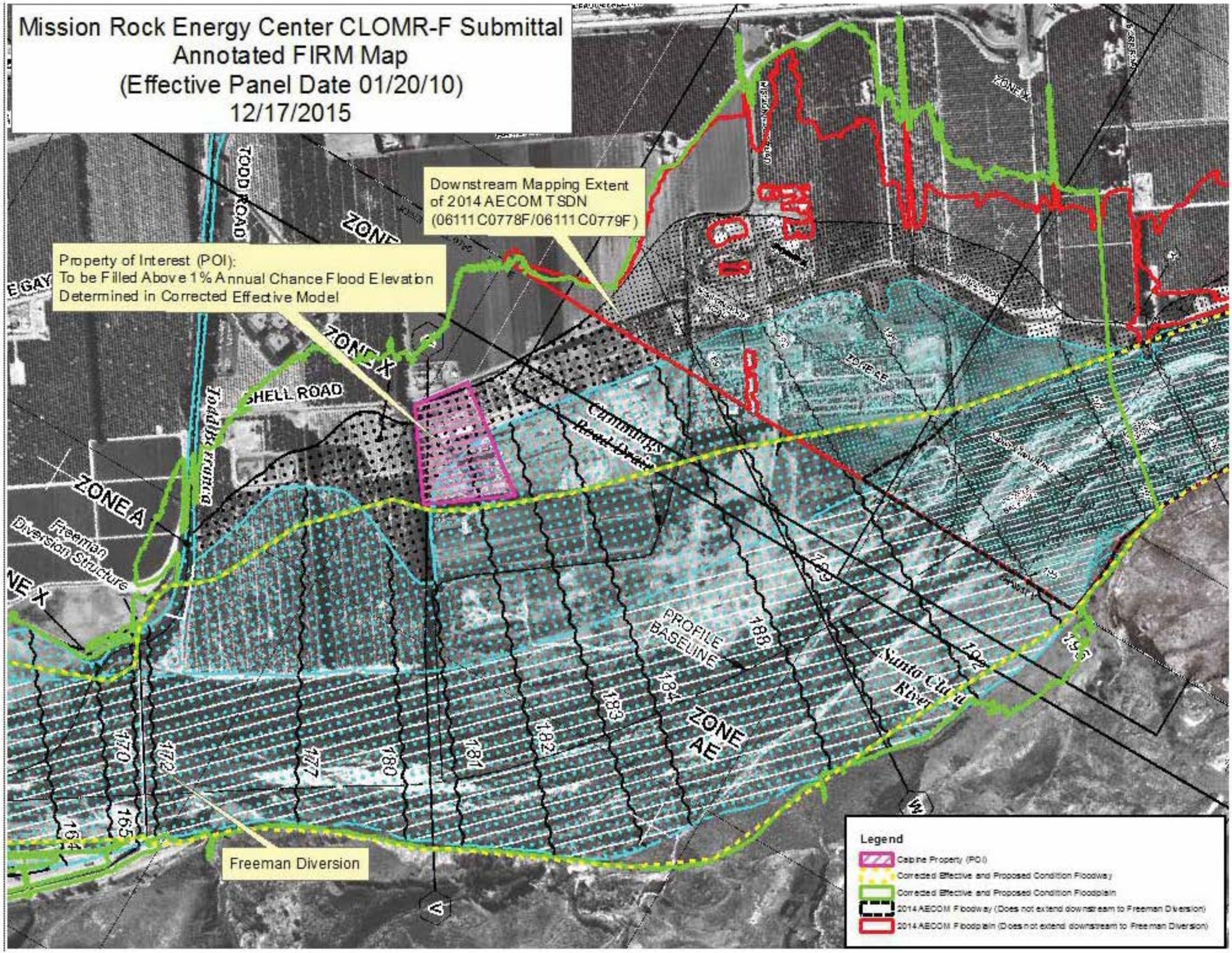

20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
Santa Clara River 43.5
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
Santa Clara River 43.3
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
AECOM Station 65928
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
AECOM Station 64059
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
AECOM Station 62349
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
added cross-section
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta


20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
AECOM Station 60554
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
added cross-section, increased channel n from 0.035 to 0.045
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
AECOM Station 60214
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
added cross-section
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
AECOM Station 58901
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
NOT IN AECOM MODEL
Elevation (ft)
Station (ft)
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta


20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
NOT IN AECOM MODEL
.015
.05
.08
.08
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
20160113_SCR_MissionRockEnergy Plan: 20151217ProposedCondition 1/14/2016
AECOM Station 58215
.015
.05
.08
.08
Legend
WS 500-year
WS 100-year
WS 50-year
WS 10-year
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


191.9
189.1
191.9
188.1
189.1
191.9
188.1
189.1
188.1
Legend
" Minimum Required Pad/Fill Elevation
Mission Rock Energy Center Property Boundary

Appendix E: Proposed Floodplain Mapping


Mission Rock Energy Center CLOMR-F Submittal
Annotated FIRM Map
(Effective Panel Date 01/20/10)
12/17/2015
Downstream Mapping Extent of 2014 AECOM TSDN (06111C0778F/06111C0779F)
Property of Interest (POI):
To be Filled Above 1% Annual Chance Flood Elevation Determined in Corrected Effective Model
TODD ROAD
SHELL ROAD
Toadlily Furrow
Cummings Road Drain
Freeman Diversion Structure
PROFILE BASELINE
Santa Clara River
ZONE AE
ZONE A
ZONE X
Freeman Diversion
Legend
Calpine Property (POI)
Corrected Effective and Proposed Condition Floodway
Corrected Effective and Proposed Condition Floodplain
2014 AECOM Floodway (Does not extend downstream to Freeman Diversion)
2014 AECOM Floodplain (Does not extend downstream to Freeman Diversion)

Appendix F:
ESA Biological Evaluation by Davey Resource Group
Dated 05/06/2016

May 6, 2016

Hassan Kasraie
Kasraie Consulting
201 Burnett Avenue
Ventura, CA 93003

Subject: **Biological Evaluation**
1025 Mission Rock Rd Project,
City of Santa Paula, CA 93060

Dear Mr. Kasraie:

I am pleased to present you with this Biological Evaluation as required by the Endangered Species Act (ESA) for Federal Emergency Management Agency (FEMA) Conditional Letters of Map Revision Based on Fill (CLOMR-F) for the project listed above. This Evaluation was executed to evaluate the project area and the areas surrounding the project, henceforth called the Site or Project Site, for the presence of listed plant and animal species and their respective habitats.

Conclusions:

- **This Biological Evaluation letter documents pre-project compliance with the ESA. We conclude the project will not result in unmitigated "Take" (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) to Federally-listed threatened and endangered species.**

- **No significant, unmitigated impacts to Federally-listed special status species are expected to result from construction and operation of the Mission Rock Energy Center.**

Thank you for the opportunity to provide you with this Biological Evaluation. If there are any questions regarding this report, please contact the undersigned at the phone number listed below.

Sincerely,

David N. Lee,
Sr. Biologist
805.451.3504

Attachments: Appendix A. Project Site Plans, Maps & Photographs, Appendix B. CNDDB data, Appendix C. Official USFWS species list

Regulatory Background

This project includes a Conditional Letter of Map Revision Based on Fill. CLOMR-F applicants must provide FEMA with documentation that Endangered Species Act (ESA) compliance has been achieved prior to FEMA's review of a CLOMR-F application.

Based on the CLOMR-F application, "*The applicant may begin by contacting a NMFS or USFWS office, State wildlife agency office, or independent biologist to identify whether threatened or endangered species exist on the subject property and whether the project associated with the CLOMR-F request would adversely affect species or designated critical habitat.*"

Based on our interpretation of the above statement, an independent biologist has provided the required documentation on whether threatened or endangered species exist on the subject property (FEMA Form 81-107). Our documentation includes whether the project associated with the CLOMR-F request would adversely affect species or designated critical habitat. If potential adverse impacts could occur, then the U.S. Fish and Wildlife Service (USFWS) may require changes to the proposed activity and/or mitigation.

This Biological Evaluation provides the required documentation. See below.

Per FEMA guidelines, this Biological Evaluation contains the following ESA documentation requirements:

1) A description of the action to be considered.
2) A description of the specific area that may be affected by the action.
3) A description of all federally listed (threatened or endangered) species and critical habitat that may be affected by the action.
4) A description of the manner in which the action may affect each of the listed species or critical habitat and an analysis of any cumulative effects.
5) Relevant reports, including a biological assessment.
6) Any other relevant available information on the action, the affected listed species, and critical habitat.

Furthermore, the ESA requires federal agencies, including FEMA, to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action" (pursuant to 50 CFR 402.12). The request includes a list of species and critical habitats that should be considered under Section 7 of the ESA. An official USFWS species list was requested and received on October 30, 2015. Please see Appendix C.

1. Project Description

Located at 1025 Mission Rock Rd, Santa Paula, CA 93060, this project includes construction of a 275 MW, natural gas-fired power plant to be located in unincorporated Ventura County near Santa Paula, California. The project will include construction of 5 energy combustion turbine generators, 20 battery enclosures, 6.6 miles of 230-kv transmission line, 2.4 miles of natural gas pipeline, 1.7 miles of recycled water pipeline, and an industrial waste water system. See Appendix A for detailed plans.

2. Project Area

The project area is approximately 9.8 acres in size. It is located in an industrial area on the north side of the Santa Clara river basin, approximately 3.71 miles southwest of the Santa Paula Airport and 0.58 miles southeast of Highway 126 (see satellite photos, Appendix A).

3. Listed species and critical habitat

A desktop literature search and site visit were conducted to determine the potential presence of any listed species on or near the project site. Please see Methods below for details. Potential habitat for (3) federally listed bird species occurs in riparian vegetation adjacent to the site.

One federally listed fish species has the potential to exist in the Santa Clara River near the project site. Please see Table 1 below for details.

While there is designated Southwestern willow flycatcher critical habitat nearby, there is none onsite. Please see Table 1 for details on each species and their habitat requirements.

4. Potential effects

Of the several listed species found in the general area, some marginal foraging habitat exists for a slight chance that three endangered bird species could potentially occur near the site during the breeding season: Western yellow-billed cuckoo, Least Bell's vireo, and Southwestern willow flycatcher. It is unlikely that project activities would affect these species. However, preconstruction surveys for these species should be conducted before any springtime vegetation clearing.

Critical habitat has been designated for Southwestern willow flycatcher (SWFL), including in the Santa Clara River watershed. While the project site contains no critical habitat, designated SWFL critical habit does exist approximately 1,200 feet southeast of the project site. See Appendix A, critical habitat map.

Nesting birds are protected by the Migratory Bird Treaty Act. Since several species of nesting birds may occur onsite, pre-construction surveys should be conducted before springtime vegetation clearing begins.

The federally listed Steelhead trout has the potential to exist in the Santa Clara River near the project site. Please see Table 1 below for details.

In addition, the Coast horned lizard (CHL) has some potential to occur onsite. CHL is a California state species of special concern. Effects to this species should be mitigated by conducting a pre-construction survey before grading activities begin and re-locating any CHL found onsite.

5. Biological Evaluation

Methods

Literature Review

On April 19, 2016 Mr. Lee reviewed the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) Rarefind 5 data and BIOS websites. The literature search included an area within five (5) miles of the Project Site.

Additionally, Mr. Lee reviewed previous biological reports of the project, the architecture and engineering drawings provided by the property owner, aerial photography and satellite imagery to assess the characteristics and suitability of the Project Site and areas surrounding for species habitat.

On April 19, 2016 Mr. Lee requested an official species list from USFWS' Information for Planning and Conservation (IPaC) website. Please see Appendix C for the official FWS letter and species list.

Site Visit

On March 16, 2016 Mr. Lee visited the site to conduct a general biological evaluation. The evaluation consisted of a visual inspection and walk-through of the existing Project Site using binoculars to identify wildlife species observed. Digital photographs were made. Focused surveys for specific animals or plants were not conducted.

Findings and Conclusions

Literature Review

Biological studies and surveys have previously been conducted at the site as part of the California Energy Commission Application for Certification (AFC) [1]

Biological Resources (Section 5.2.2.2) of the AFC concluded:

> *"Temporary and permanent impacts to special-status wildlife could occur from vegetation removal or crushing (resulting in a loss of nesting and foraging habitat), trenching, entombment of animals in dens or burrows, collisions with vehicles, disturbance from noise, and further fragmentation of habitat. These impacts have the potential to be significant in the absence of mitigation.*
>
> *To avoid significant impacts the following measures will be implemented: worker environmental awareness program (WEAP), pre-construction and clearance surveys, avoidance and minimization measures proposed by Mission Rock, and other measured discussed in Section 5.2.4. No significant, unmitigated impacts to special status species are expected to result from construction and operation of the MREC."*

1. Mission Rock Energy Center Application for Certification. 12/18/2015. California Energy Commission.

Our literature review indicated that the project site is within the range of several listed species. However, the site does not support suitable habitat for most of these species. Four (4) listed species do have the potential to occur on site. Please see Table 1 for details.

Table 1. Listed species known to occur within five (5) miles of Site. Data per CNDDB and IPaC, 2016.

Common Name	*Scientific Name*	Federal ESA	Habitat	Potential to occur on site
southwestern willow flycatcher 	*Empidonax traillii extimus*	Endangered	Riparian woodlands in Southern California.	Some potential to occur on or near site during breeding season. Project is unlikely to adversely affect this species.
unarmored threespine stickleback 	*Gasterosteus aculeatus williamsoni*	Endangered	Weedy pools, backwaters, and among emergent vegetation at the stream edge in small streams.	Unlikely to occur on or near site - limited suitable habitat. Project is unlikely to adversely affect this species.
least Bell's vireo 	*Vireo bellii pusillus*	Endangered	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft.	Some potential to occur on or near site during breeding season. Project is unlikely to adversely affect this species.
steelhead - southern California DPS 	*Oncorhynchus mykiss irideus*	Endangered	Fed listing refers to pops from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego Co.)	Some potential to occur on or near site during migration. Project is unlikely to adversely affect this species.
western yellow-billed cuckoo 	*Coccyzus americanus occidentalis*	Threatened	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Some potential to occur on or near site during breeding season. Project is unlikely to adversely affect this species.

Common Name	*Scientific Name*	Federal ESA	Habitat	Potential to occur on site
Santa Ana sucker 	*Catostomus santaanae*	Threatened	Endemic to Los Angeles Basin south coastal streams.	Unlikely to occur on or near site - limited suitable habitat. Project is unlikely to adversely affect this species.
coastal California gnatcatcher 	*Polioptila californica californica*	Threatened	Obligate, permanent resident of coastal sage scrub below 2500 ft in Southern California.	Unlikely to occur on or near site - limited suitable habitat. Project is unlikely to adversely affect this species.
steelhead - southern California DPS 	*Oncorhynchus mykiss irideus*	Endangered	Fed listing refers to pops from Santa Maria River south to southern extent of range (San Mateo Creek in San Diego Co.)	Steelhead occur in parts of the Santa Clara River near the project site. Project is unlikely to adversely affect this species.

Site visit
During the site visit several common bird and plant species were observed. No sensitive plant or wildlife species were observed. Protocol surveys for listed species were not performed. Some marginal foraging habitat for riparian birds exists in and along a drain channel on the west edge of the project area. The drain channel is approximately 10 feet wide and two feet deep.

Conclusions
Based on our literature review and site visit, we conclude:

- **This Biological Evaluation letter documents pre-project compliance with the ESA. We conclude the project will not result in unmitigated "Take" (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) to Federally-listed threatened and endangered species.**

- **No significant, unmitigated impacts to Federally-listed special status species are expected to result from construction and operation of the Mission Rock Energy Center.**

Limitations and Restrictions
Species of Special Concern and State and Federally Listed Threatened and/or Endangered Species and their habitat have been researched remotely using a review of available species data, aerial photography and photographs. Although a general site survey was performed outside of the breeding season, protocol field surveys during the breeding season were not conducted to search the Project Site for rare or listed species, including Species of Special Concern, State and Federally Listed Threatened and/or Endangered Species.

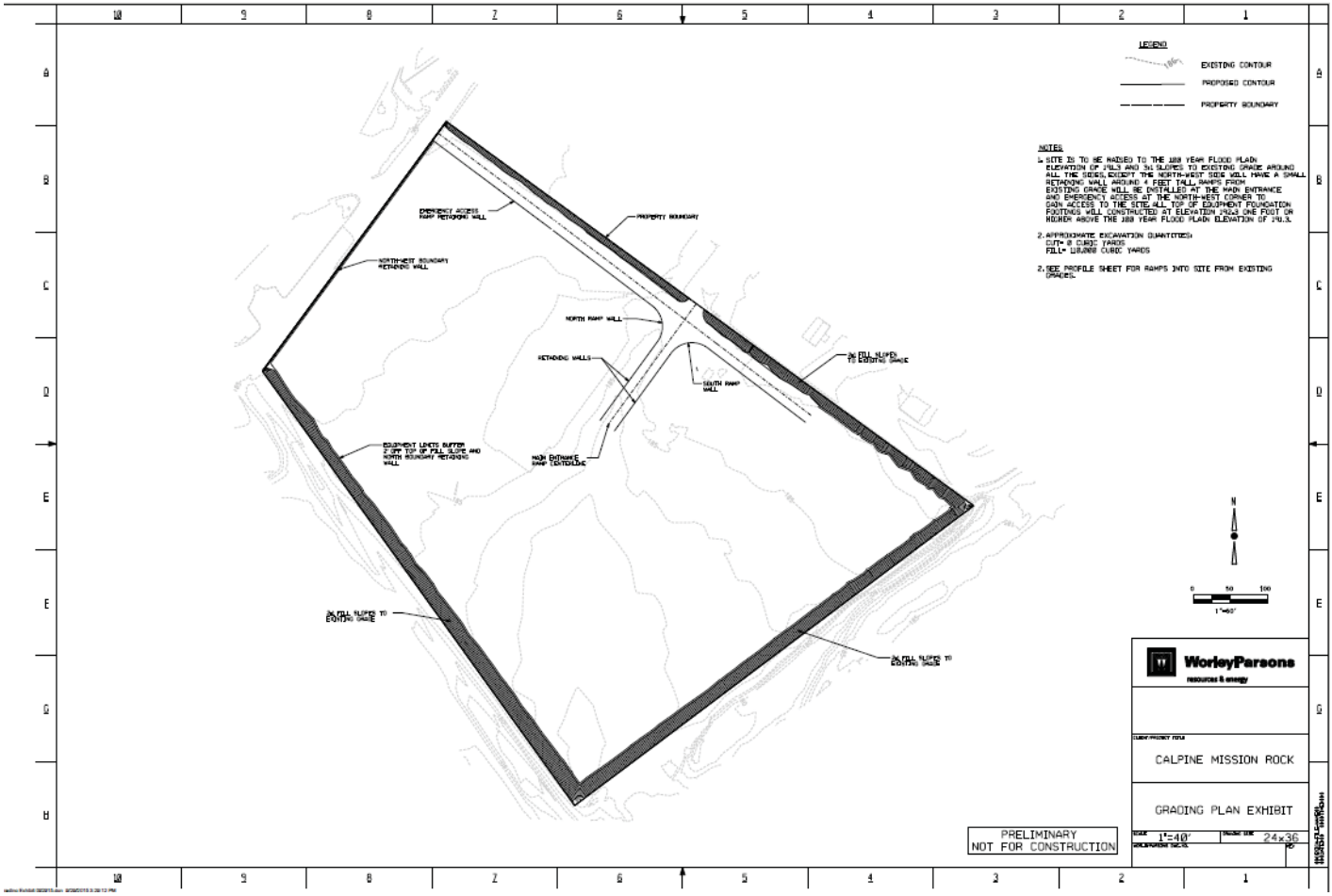
Appendix A.

Project Site Maps, Plans & Photographs

Location map of Project Site (Red Pin)

Satellite view of project site. Approximate project area shaded in yellow.

Critical habitat map, showing location of Southwestern willow flycatcher critical habitat (red). Approximate project location is shaded in yellow.



Project plan overview.

Project Site Photographs

Project area is mostly paved with asphalt and used as a storage facility.

Panorama showing vegetation along west boundary of property.

Riparian habitat located along the west edge of property. West fence is located just the right of photo.

View of riparian habitat along south fence, looking southwest. Santa Clara River is to the left of the photo.

Appendix B. CNDDB Data

CNDDB Search Results – 5 mile radius

Selected Elements by Element Code
California Department of Fish and Wildlife
California Natural Diversity Database

Query Criteria: BIOS selection

Element Code	Species	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
ABNJB05035	***Branta hutchinsii leucopareia*** cackling (=Aleutian Canada) goose	Delisted	None	G5T3	S2	
ABNKC19070	***Buteo swainsoni*** Swainson's hawk	None	Threatened	G5	S3	
ABNRB02022	***Coccyzus americanus occidentalis*** western yellow-billed cuckoo	Threatened	Endangered	G5T2T3	S1	
ABPAE33043	***Empidonax traillii extimus*** southwestern willow flycatcher	Endangered	Endangered	G5T2	S1	
ABPAU08010	***Riparia riparia*** bank swallow	None	Threatened	G5	S2	
ABPBJ08081	***Polioptila californica californica*** coastal California gnatcatcher	Threatened	None	G4G5T2Q	S2	SSC
ABPBW01114	***Vireo bellii pusillus*** least Bell's vireo	Endangered	Endangered	G5T2	S2	
ABPBXB0020	***Agelaius tricolor*** tricolored blackbird	None	None	G2G3	S1S2	SSC
AFCHA0209J	***Oncorhynchus mykiss irideus*** steelhead - southern California DPS	Endangered	None	G5T1Q	S1	
AFCHA0209K	***Oncorhynchus mykiss irideus*** steelhead - Central Valley DPS	Threatened	None	G5T2Q	S2	
AFCJC02190	***Catostomus santaanae*** Santa Ana sucker	Threatened	None	G1	S1	
AFCPA03011	***Gasterosteus aculeatus williamsoni*** unarmored threespine stickleback	Endangered	Endangered	G5T1	S1	FP
AMACC10010	***Antrozous pallidus*** pallid bat	None	None	G5	S3	SSC
AMAJF04010	***Taxidea taxus*** American badger	None	None	G5	S3	SSC
ARADB3613F	***Thamnophis sirtalis ssp.*** south coast garter snake	None	None	G5T1T2	S1S2	SSC
ARADB36150	***Thamnophis gigas*** giant garter snake	Threatened	Threatened	G2	S2	
ARADB36160	***Thamnophis hammondii*** two-striped garter snake	None	None	G4	S3S4	SSC
CTT63300CA	***Southern Riparian Scrub*** Southern Riparian Scrub	None	None	G3	S3.2	
IICOL48011	***Desmocerus californicus dimorphus*** valley elderberry longhorn beetle	Threatened	None	G3T2	S2	
IIHYM24480	***Bombus crotchii*** Crotch bumble bee	None	None	G3G4	S1S2	

Commercial Version -- Dated April, 1 2016 -- Biogeographic Data Branch
Report Printed on Wednesday, April 13, 2016

Page 1 of 2
Information Expires 10/1/2016

Appendix C.

USFWS Official Species list

U.S. Fish & Wildlife Service

Mission Rock Energy

IPaC Trust Resources Report

Generated April 18, 2016 05:11 PM MDT, IPaC v3.0.2

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.

IPaC - Information for Planning and Conservation (https://ecos.fws.gov/ipac/): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

Appendix G:
Ventura County Floodplain Management Ordinance
Section 5. 2.

Section 5.2 SPECIFIC STANDARDS

In all areas of special flood hazard where base flood elevation data has been provided as set forth in Section 3.2, or Section 4.3.3, the following provisions are required.

5.2.1 RESIDENTIAL CONSTRUCTION – New construction and substantial improvement of any residential structure shall have the lowest floor, including basement, elevated to one foot above the base flood elevation; and

5.2.1.1 Where average velocities of flow exceed five feet per second, any fill material used to support the structure and its foundations shall be armored to prevent loss of the fill material.

5.2.1.2 Shall have the elevation of the lowest floor certified by a person qualified in the State of California to practice surveying. Such certification shall be provided to the Director of Public Works in a form prescribed by the Director of Public Works. The certification shall be provided prior to occupancy of the structure.

5.2.1.3 When fill is not used and velocities of flow are less than five feet per second, structural components such as piers used to support the structure shall be designed to resist hydrostatic loads.

5.2.1.4 When fill is not used and velocities of flow are equal to or greater than five feet per second and equal to or less than 10 feet per second, the components used to support the structure shall be designed to resist hydrostatic and hydrodynamic loads.

5.2.1.5 When depths of water exceed three feet, structural components used to support the structure shall be designed for impact loads.

5.2.1.6 When fill is not used and velocities of flow exceed 10 feet per second, the use of structural components to support a structure is prohibited.

5.2.2 NONRESIDENTIAL CONSTRUCTION – New construction and substantial improvement of any commercial, industrial or other nonresidential structure shall either have the lowest floor, including basement, elevated to one foot above the base flood elevation and meet the requirements of Section 5.2.1; or together with attendant utility and sanitary facilities, shall:

5.2.2.1 Be flood-proofed so that below a level one foot above the base flood elevation the structure is watertight with walls substantially impermeable to the passage of water;

5.2.2.2 Be certified by a registered professional engineer or architect that the standards of this section are satisfied. Such certification shall be provided to the Director of Public Works in a form prescribed by the Director of Public Works. The certification shall be provided prior to occupancy of the structure.

5.2.2.3 Where velocities of flow are less than five feet per second, structural components of the structure shall be designed to resist hydrostatic loads.

5.2.2.4 Where velocities of flow are equal to or greater than five feet per second and equal to or less than 10 feet per second, the structure shall be designed to resist hydrostatic and hydrodynamic loads.

5.2.2.5 When depths of water exceed three feet, the structure shall be designed for impact loads.

5.2.2.6 Where velocities of flow exceed 10 feet per second, structures with floors below water surface elevations and the use of structural components to support the structure are prohibited.

5.2.3 MANUFACTURED HOMES AND RECREATIONAL VEHICLES – Manufactured homes and recreational vehicles shall meet the following standards:

5.2.3.1 Manufactured homes that are placed or substantially improved within Zone A1-30, AH, or AE on the Ventura County FIRM, but which are:

(a) outside of a manufactured home park or subdivision,

(b) in a new manufactured home park or home park or subdivision, or

(c) in an expansion to an existing manufactured home park or subdivision, or

(d) in an existing manufactured home park or subdivision on which a manufactured home has incurred "substantial damage" as a result of a flood, shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to an elevation one foot or more above the base flood elevation, and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.

5.2.3.2 Manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision that are within zones A1-30, AH or AE on the Ventura County FIRM that are not subject to the provisions of Subdivision 5.2.3.1 shall be elevated so that either:

(a) the lowest floor of the manufactured home is at or above the base flood elevation, plus one foot, or

(b) the manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than 36 inches in height above grade, and be securely anchored to an adequately anchored foundation system to resist flotation, collapse, and lateral movement.

5.2.3.3 Manufactured homes place or substantially improved within Zones V1-30, V or VE in the Ventura County FIRM on sites:

(a) outside of a manufactured home park of subdivision,

(b) in a new manufactured home park or subdivision,

(c) in an expansion to an existing mobile home park or subdivision, or

(d) in an existing mobile home park or subdivision on which a manufactured home has incurred "substantial damage" as the result of a flood shall meet the standards of Subdivision 5.2.6 Coastal Hazard Areas.

5.2.3.4 Recreational Vehicles placed on sites within areas of special flood hazard on the Ventura County FIRM must either:

(a) be on the site for fewer than 180 consecutive days,

(b) be fully licensed and ready for highway use, or

(c) within Zones A1-30, AH and AE, meet the requirements of Subdivision 5.2.3.1, or

(d) within Zones V1-30, V, and VE, meet the requirements of Subdivision 5.2.6 Coastal Hazard Areas.

5.2.3.4.1 A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions.

5.2.4 SHALLOW FLOODING – Located within the Areas of Special Flood Hazard established in Section 3.2, are areas designated as AO and AH zones. These areas have special flood hazard associated with base flood depths of one to three feet where a clearly defined channel does not exist and where the path of flooding is unpredictable and indeterminate; therefore the following provisions apply:

5.2.4.1 All new construction and substantial improvements of residential structures in AO zones shall have the lowest floor, including basement, elevated above the highest grade to the depth number specified on the community's FIRM plus one foot.

5.2.4.2 All new construction and substantial improvements of residential structures in AH zones shall have the lowest floor, including basement, elevated above the base flood elevation plus one foot.

5.2.4.3 All new construction and substantial improvements of nonresidential structures in AO zones shall:

(1) Have the lowest floor, including basement, elevated above the highest grade to the depth number specified on the FIRM plus one foot, or

(2) Together with attendant utility and sanitary facilities to be completely flood-proofed to or above that level so that any space below that level is watertight with walls substantially impermeable to the passage of water and with structural components which have the capability to withstand hydrostatic and hydrodynamic loads and the effects of buoyancy.

(a) Where velocities of flow are less than five feet per second, structural components shall be designed to resist hydrostatic loads.

(b) Where velocities of flow are equal to or greater than five feet per second and equal to or less than 10 feet per

second, the structural components shall be designed to resist hydrostatic and hydrodynamic loads.

(c) Where velocities of flow exceed 10 feet per second, structures with floors below water surface elevations are prohibited and the use of structural components to support the structure are prohibited.

(d) Adequate drainage paths shall be provided around structures on slopes to guide floodwaters around and away from the proposed structures.

5.2.4.4 All new construction and substantial improvements of non-residential structures in AH zones shall:

(1) Have the lowest floor, including basement, elevated to the base flood elevation specified on the FIRM plus one foot, or

(2) Meet the standards set forth in Section 5.2.4.3.

5.2.5 ALLUVIAL FANS – Areas subject to alluvial fan flooding have irregular flow paths that result in erosion of existing channels and the undermining of the fill material. Those areas are identified on the Flood Insurance Rate Map as AO zones with velocities.

5.2.5.1 All structures must be securely anchored to minimize the impact of the flood and sediment damage.

5.2.5.2 All new construction and substantial improvements of structures shall have the lowest floor, including basement, elevated to or above the depth number plus one foot.

5.2.5.3 All fill materials must be armored to protect the material from the velocity of the flood flow.

5.2.5.4 All proposals for subdivision development must provide a mitigation plan that identifies the engineering methods used to:

(1) Protect the structures from erosion and scour caused by the velocity of the flood flow.

(2) Capture or transport flood and sediment flow through the subdivision to a safe point of disposition.

5.2.6 COASTAL HAZARD AREAS – Located within the Areas of Special Flood Hazard established in Section 3.2, are areas designated as coastal hazard areas identified as Zones VI-30, VE, and V. These areas have special flood hazards associated with wave run-up and beach erosion in which the following provisions shall apply.

5.2.6.1 All new construction and substantial improvements shall:

(1) Be elevated and secured to adequately anchored pilings and columns so that the lowest portion of structural members of the lowest floor, excluding pilings or columns, is elevated one foot above the base flood level.

(2) Have space below the lowest floor free of obstruction, or constructed with breakaway walls intended to collapse under stress without jeopardizing the structural support.

(3) Not use any fill for structural support.

(4) Have the pile or column foundation and structure attached thereto anchored to resist floatation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values shall be those associated with the base flood. Wind loads shall be those required by the Building Official.

5.2.6.2 All new construction shall be located landward of the mean high tide line.

5.2.6.3 Compliance with the provisions of Section 5.2.6.1 of Section 5.2shall be certified by a registered professional engineer or architect and provided to the Director of Public Works. This certification shall be provided to the Director of Public Works prior to occupancy of the structure.

5.2.6.4 Any man-made alteration of sand dunes which would increase potential flood damage is prohibited.

5.2.7 REGULATORY FLOODWAY – The regulatory floodway shown in the Flood Insurance Study has been selected and adopted on the principle that the area chosen for the regulatory floodway must be designed to carry the waters of the base flood without increasing the water surface of that flood more than one foot at any point. In accordance with this principle the following provisions shall apply:

5.2.7.1 Encroachments, including fill, new construction, substantial improvements, and other development within the adopted regulatory floodway that would result in any increase in flood levels for the base flood elevation with floodway as specified in the Flood Insurance Study during the occurrence of the base flood discharge are prohibited.

5.2.7.2 The placement of residential structures within the adopted regulatory floodway is prohibited.

5.2.8 REGULATORY FLOODWAY NOT DEFINED – Where no floodway is identified, the applicant for a Flood Plain Development Permit shall provide an engineering study for the project area that establishes a set-back where no encroachment of any new development shall be allowed that would increase the water surface elevation of the base flood plus one foot; or establish a setback from the stream bank equal to five times the width of the stream at the top of the bank or 20 feet on each side from the top of the bank, whichever is greater.

CHAPTER 6: LOADING

Section 6.1 GENERAL

6.1.1 All structures covered by this ordinance shall be capable of resisting all loads required by the Ventura County Building Code and, in addition, all loads prescribed in this Chapter without exceeding allowable stresses.