U.S. DEPARTMENT OF HOMELAND SECURITY

ELEVATION CERTIFICATE

OMB No. 1660-0008 Expires March 31, 2012

Federal Emergency Management Agency

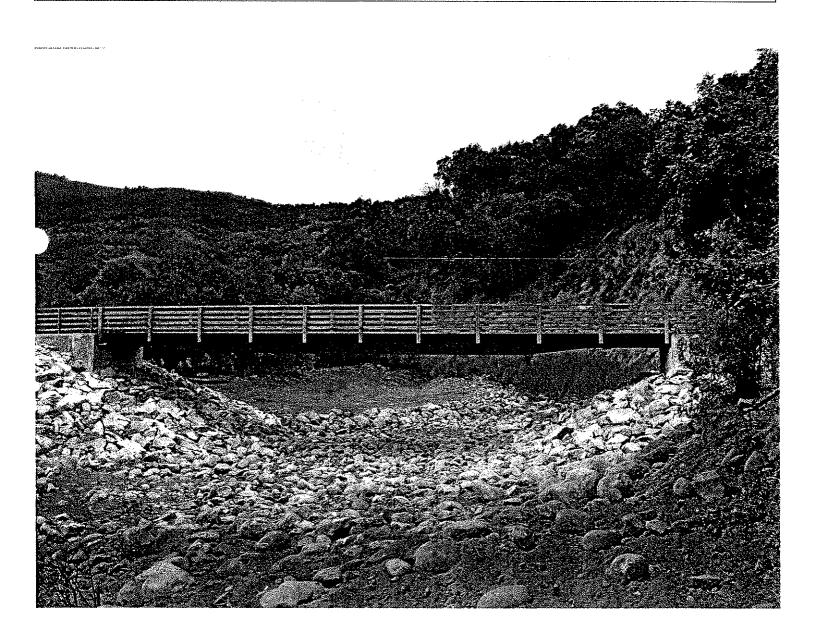
National Flood Insurance Program	Important:			
		ION A - PROPERTY IN	IFORMATION	For Insurance Company Use:
A1. Building Owner's Name Mary Bergen				Policy Number
A2. Building Street Address (including Apt. 11584 Creek Road /1730 C	., Unit, Suite, and/or B	ldg. No.) or P.O. Route ar	d Box No.	Company NAIC Number
City Ojai State CA ZIP Code 93	3023			
A3. Property Description (Lot and Block No APN 035-0-050-055	umbers, Tax Parcel Nu	umber, Legal Description,	etc.)	
A4. Building Use (e.g., Residential, Non-Ro A5. Latitude/Longitude: Lat. Long.	esidential, Addition, Addition Hori	ccessory, etc.) Private bric	Ige to single family dwell	•
A6. Attach at least 2 photographs of the bu	uilding if the Certificate	is being used to obtain flo	ood insurance.	10mg 1190 151 46.18 W
A7. Building Diagram Number N/A Pri A8. For a building with a crawlspace or end	ivate bridge		Datus W	
Square footage of crawlspace or en	enclosure(s)	N/A sqft	For a building with an a a) Square footage of a	
 b) No. of permanent flood openings in 	n the crawispace or		b) No. of permanent f	ood openings in the attached garage
enclosure(s) within 1.0 foot above a c) Total net area of flood openings in	·	<u>N/A</u> N/A sqin	within 1.0 foot abov	
	Yes No	<u>N/A</u> sq in	d) Engineered flood o	ood openings in A9.b N/A sq in penings? Yes No
SECTION B - FLOOD INSURANCE R	ATE MAP (FIRM) II	NEORMATION		
B1. NFIP Community Name & Community I				
Ventura County (Unincorporated Areas) 06		B2. County Name Ventura County		B3. State California
B4. Map/Panel Number B5. Suffix	B6. FIRM Index	B7. FIRM Pane	B8. Flood	B9. Base Flood Elevation(s) (Zo
0611C / 0567 E	Date	Effective/Revised I		AO, use base flood depth)
obnic .	Jan. 20, 2010	Ja n. 20, 2010	A	N/A
310. Indicate the source of the Base Flood FIS Profile FIRM	Community Dete			ering Corp. (See Attachment)
P12. Is the building located in a Coastal Bar Designation Date <u>N/A</u>	rrier Resources Syster	n (CBRS) area or Otherwi	se Protected Area (OPA)	cribe) ?? □ Yes ⊠ No
P12. Is the building located in a Coastal Bar Designation Date <u>N/A</u>		☐ CBRS ☐ OI	se Protected Area (OPA)	? Yes No
P12. Is the building located in a Coastal Bar Designation Date N/A SECTION C - BUILDING ELEVATION C1. Building elevations are based on:	I INFORMATION (S	☐ CBRS ☐ OI URVEY REQUIRED) wings* ☐ Buildin	se Protected Area (OPA) PA ng Under Construction*	Yes ⊠ No M Finished Construction
P12. Is the building located in a Coastal Bar Designation Date N/A SECTION C - BUILDING ELEVATION C1. Building elevations are based on: *A new Elevation Certificate will be requiced. Elevations - Zones A1-A30, AE, AH, A (I INFORMATION (S Construction Drawired when construction (with BFE), VE, V1-V3	CBRS O	se Protected Area (OPA) PA Ing Under Construction* te. A. AR/AE, AR/A1-A30, A8	Yes No Yes No Finished Construction Balber oney
P12. Is the building located in a Coastal Bar Designation Date N/A SECTION C - BUILDING ELEVATION C1. Building elevations are based on: *A new Elevation Certificate will be requiced. Elevations - Zones A1-A30, AE, AH, A (below according to the building diagram)	I INFORMATION (S ☐ Construction Drawired when construction (with BFE), VE, V1-V3 specified in Item A7.	CBRS O	se Protected Area (OPA) PA Ing Under Construction* te. A. AR/AE, AR/A1-A30, A8	Yes ⊠ No Yes ⊠ No Finished Construction Balb4€ on4 R/AH, AR/AO. Complete Items C2.a-h
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212. Is the building located in a Coastal Bar Designation Date N/A SECTION C - BUILDING ELEVATION 21. Building elevations are based on: *A new Elevation Certificate will be required. 22. Elevations – Zones A1-A30, AE, AH, A (below according to the building diagram Benchmark Utilized Vertical Datu Conversion/Comments a) Top of bottom floor (including basel)	INFORMATION (S ☐ Construction Dra lired when construction (with BFE), VE, V1-V3 a specified in Item A7. Im 1988 NAVD	CBRS OF CBRS O	se Protected Area (OPA) PA Ing Under Construction* te. A, AR/AE, AR/A1-A30, Al he BFE. Check the meas	Finished Construction Balbas only R/AH, AR/AO. Complete Items C2.a-h urement used.
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212. Is the building located in a Coastal Bar Designation Date N/A SECTION C - BUILDING ELEVATION C1. Building elevations are based on: *A new Elevation Certificate will be requiced. C2. Elevations - Zones A1-A30, AE, AH, A (below according to the building diagram Benchmark UtilizedVertical Datu Conversion/Comments a) Top of bottom floor (including baser b) Top of the next higher floor c) Bottom of the lowest horizontal stru	INFORMATION (S Construction Drainined when construction (with BFE), VE, V1-V3 aspecified in Item A7. Im /988 A/AVD ment, crawlspace, or exceptions are included in item A7.	CBRS OF CBRS O	se Protected Area (OPA) PA Ing Under Construction* te. A, AR/AE, AR/A1-A30, Al he BFE. Check the meas feet feet feet	Finished Construction Balbase only R/AH, AR/AO. Complete Items C2.a-h urement used. meters (Puerto Rico only) meters (Puerto Rico only) meters (Puerto Rico only)
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IMPORTANT: In these spaces, copy the co			For Insurance Company Use:
	and/or Bldg. No.) or P.O. Route and	Box No.	Policy Number
City OjaiState CA ZIP Code 93023		Company NAIC Number	
ECTION D - SURVEYOR, ENGINEER, OR A	ARCHITECT CERTIFICATION (CONTINUED)	
Copy both sides of this Elevation Certificate for (1) or			
Comments The lowest horizontal structure member feet above the 1-ft. freeboard above the calculated B (Richmond, CA) inva report dated November 16, 200	BFE which is 555.37 feet (NAVD 196 17 (Attachment).	vate residential bridge is 556.43 B Datum). BFE determined by $2/15/U$	3 feet (NAVD 1988 datum) which is 0.06 v Questa Engineering Corporation
Signature	Date		
SECTION E - BUILDING ELEVATION INFOR	MATION (SURVEY NOT REQU	JIRED) FOR ZONE AO AN	D ZONE A (WITHOUT BFE)
For Zones AO and A (without BFE), complete Items and C. For Items E1-E4, use natural grade, if availate E1. Provide elevation information for the following grade (HAG) and the lowest adjacent grade (La) Top of bottom floor (including basement, crab) Top of bot	able. Check the measurement used and check the appropriate boxes to AG). awispace, or enclosure) is N/h. awispace, or enclosure) is N/h. od openings provided in Section A It g is N/h. feet	In Puerto Rico only, enter me show whether the elevation is feet meters meters feet meters tems 8 and/or 9 (see pages 8-9 eters above or below the e or below the HAG feet meters at elevated in accordance with the	eters. above or below the highest adjacent above or below the HAG. above or below the LAG. of Instructions), the next higher floor he HAG. bove or below the HAG. e community's floodplain management
SECTION F - PROPERTY OWNER (OR OWN			
The property owner or owner's authorized represent or Zone AO must sign here. The statements in Section Property Owner's or Owner's Authorized Representatives are Bergen	ions A, B, and E are correct to the I	and E for Zone A (without a FE pest of my knowledge.	EMA-issued or community-issued BFE)
Idress 11584 Creek Road	City Oja	ai State (CA ZIP Code 93023
Signature 4	Date	Teleph	none (805) 649-5207
Comments BF6 determined by Questa Engineering	2 - f g Corporation (Richmond, CA) in a i	eport dated November 16, 200	7. See Attachment.
			☐ Check here if attachment
SECTION G - COMMUNITY INFORMATION (
The local official who is authorized by law or ordinance and G of this Elevation Certificate. Complete the appl G1. The information in Section C was taken from is authorized by law to certify elevation information. G2. A community official completed Section E for G3. The following information (Items G4-G9) is	licable item(s) and sign below. Che in other documentation that has bee imation. (Indicate the source and d or a building located in Zone A (with	ck the measurement used in It in signed and sealed by a licen- ate of the elevation data in the out a FEMA-issued or commur	ems G8 and G9. sed surveyor, engineer, or architect who Comments area below.)
G4. Permit Number G5. Date F	Permit Issued	G6. Date Certificate Of Cor	mpliance/Occupancy Issued
	onstruction Substantial Imment) of the building: 556.43	provement feet meters (PR) Date feet meters (PR) Date feet meters (PR) Date	um
Local Official's Name Brian Trishing	Tit	le Flordplan Man	aset
Community Name County of Venture		lephone (205) 477	1/1967
Signature	Da	= 7 1 - 1	
mments Project is a private bor free board Beilding on	dge crossing Both	o 2/23/11 im of sofit is 0.0 resistant	No fact above the BFE+1-1
0 7			Check here if attachmen

Building Photographs See Instructions for Item A6.

Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No. 11584 Creek Road 11730 Creek Road	Policy Number
City Ojai State CA ZIP Code 93023	Company NAIC Number

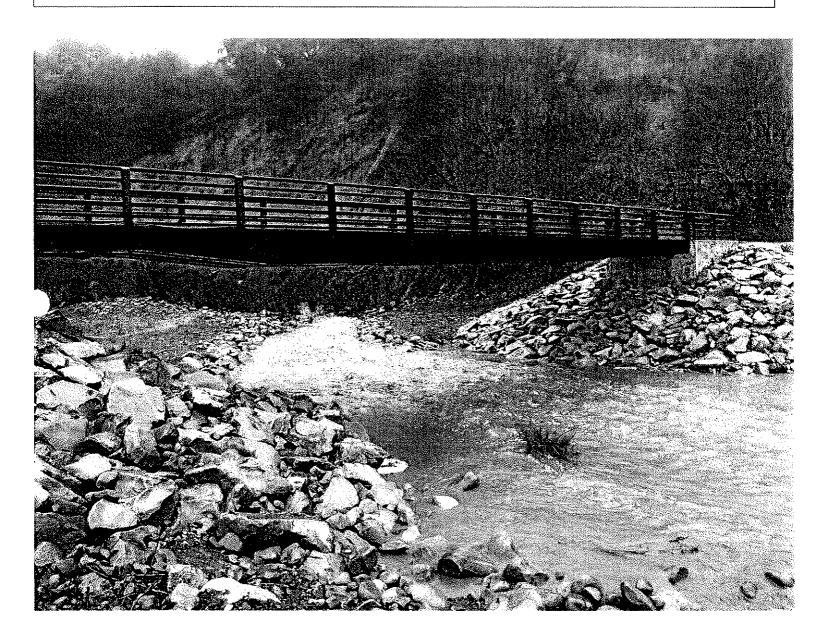
If using the Elevation Certificate to obtain NFIP flood insurance, affix at least two building photographs below according to the instructions for Item A6. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." If submitting more photographs than will fit on this page, use the Continuation Page, following.



Building Photographs Continuation Page

	For Insurance Company Use:
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.	Policy Number
1584-Greek-Road 11730 Creek Kord	
City Ojai State CA ZIP Code 93023	Company NAIC Number

If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View."



Survey Monument Data Sheet

County of Ventura - Public Works Agency

Dato Revised: 3/6/1997		Services des Control of Mills of Mills of the South of th	Printed: 6/17/2008
VCPID	974	Stamping	49-13 RM 1 1986
Designation	49-13 RM 1	Magnetic	NO
NGSPID		Special Cont	rol VCBN (LBN)
Alias		Specific Sett	ng WALL
Search Northing	337450	Character	VENTURA COUNTY BRASS DISK
Search Easting	1617730	Vicinity	OAK VIEW

Visit Date	Ground to Mark	Visit By Description	Condition Description
01-Jan-86	3	VENTURA COUNTY	ESTABLISHED
01-Jan-92	3	VENTURA COUNTY	GOOD
Vîsit Date	S. Company of the South of the	To Reach	والمستورة والمراجعة والمستورة والمست

01-Jan-86 3.2 MILE NORTHEASTERLY ALONG CREEK ROAD FROM ITS INTERSECTION WITH HIGHWAY 33, 25.0 FEET WESTERLY FROM THE CENTER OF CREEK ROAD, 15.0 FEET SOUTHERLY FROM NORTHERLY END OF WALL.

Ortho Height (meters)	Ortho Datum	Ortho Epoch	Ortho Order Class	Survey Date
gantered to the time the proposition to make the second section of the section of the second section of the second section of the section of the second section of the section of t	CONTRACTOR OF THE PROPERTY OF			

546.30			VEN CO ADJ PUB 1992	2ND-I	1/1/1992
543.75°	165.736	NGVD 29	SCRP PUB 1980	IST	1/1/1986

WARNINGIII

in Ventura County there is a variable difference of approximately 3/4 meter between the National Geodetic Vertical Datum of 1929 (NGVD' 29) and the North American Vertical Datum of 1988 (NAVD'88)

2.55 DIFFERENCE MAVO 88 18 2.55 HIGHER THAN NGVO 29

BRIDGE SOFFIT ELEV. 553.88 (NGVD 1929) + 2.55 556,43 (NAVD 1988)

556.43 -555.37' !.06' !.06' | SOFFIT 0.06' | ABOVE !-FT

BFE = 552.82 (NGVD 1929) QUESTA REPORT DATED 11/16/2007 = 555.37 (NAVD 1988)



TECHNICAL MEMORANDUM

Date:

November 16, 2007

Subject:

Base Flood Elevation Determination for Lions Canyon Creek at 11584 Creek

Road, Ojai, California

To:

Mary Bergen

From:

Sydney Temple P.E. Questa Engineering Corporation

Introduction

This memo discusses the hydrologic and hydraulic analysis for base flood elevation determination for the bridge design on Lions Canyon Creek in Ojai, California. The following sections describe 1) determination of the BFE, 2) the hydraulic model and assumptions used, 3) the modeled proposed bridge configuration, and 4) water surface elevations for the proposed bridge configuration.

Two design constraints exist based on state and county regulations:

- 1 foot of freeboard above the 100-year water surface elevation is required for the low chord (bottom) of the bridge deck, and
- the bridge must be able to facilitate use by a fire truck.

BFE Determination

The Ventura County Floodplain Manager determined that the site is located in a FEMAdetermined 100-year floodplain, with a designation of "Approximate Zone 'A' Area," meaning that FEMA has not calculated the 100-year water surface elevation, known as the "Base Flood Elevation," or BFE. As such, the property owner is required to retain a civil engineer to use FEMA-established base flood elevation methodologies to calculate the BFE for the site.

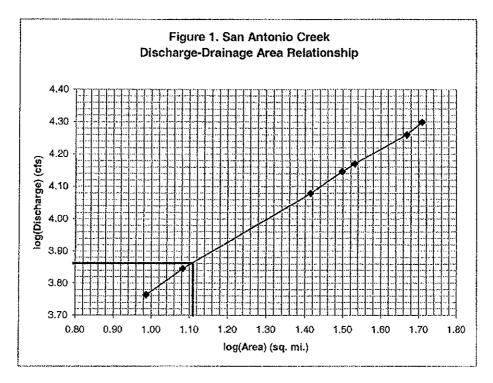
The FEMA Technical Bulletin 265 (July 1995) "Managing Floodplain Development in Approximate Zone A Areas" was followed to determine the BFE for the site. The Discharge-Drainage Area Relationships method resulted in the highest 100-year peak flow, and was used to provide a conservative analysis of BFE for the proposed site. The two other methods used to estimate BFE are also shown below for comparison.

Discharge-Drainage Area Relationships

A discharge-drainage area relationship was plotted from San Antonio Creek 100-year flow rates and corresponding drainage areas (Flood Insurance Study, Ventura County, Unincorporated Areas, FEMA, 1997). Table 1 shows the discharges and areas for the San Antonio Creek watershed from the FEMA studies, which are plotted on a log-log plot, shown on Figure 1. This method results in a 100-year peak flow rate of 7,278 cfs.

Table 1. FEMA Summary of Discharges and Drainage Areas for San Antonio Creek Watershed

	Drainage Area (sq. mi.)	log(Area)	Discharge (cfs)	log(Discharge)
	9.7	0.99	5,800	3.76
	12.1	1.08	7,000	3.85
	26	1.41	12,000	4.08
	31.5	1.50	14,000	4.15
	34	1.53	14,800	4.17
	46.7	1.67	18,200	4.26
	51.2	1.71	19,900	4.30
Proposed Site	12,92	1.11	7,278	3.86



Regression Equations

The 100-year peak flow rate was also estimated using the California regression equations found in "Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites," (U.S. Geological Survey Water-Resources Investigations Report 94-4002, 1993).

 $Q100 = 1.95 A^{0.83} P^{1.87}$

where:

Q100 = the 100-year peak flow rate

A = drainage area (sq. mi.)

P = mean annual precipitation (in.)

Table 2. Regression Equation Results

Area (sq. mi.)	Mean Annual Precipitation (in.)	Q100 (cfs)	
12.92	21	4,840	

Using regression equations, the estimated 100-year peak flow rate is 4,840 cfs.

Log-Pearson, Type III Analysis of 50-year Gage Data

The 100-year peak flow rate was also estimated by analyzing 50 years of stream gage data for San Antonio Creek using a log-Pearson, Type III analysis. The Log-Pearson calculations are shown in Appendix A The peak discharges for San Antonio Creek were then scaled, by drainage area, to find appropriate discharges for Lion's Canyon Creek. The watershed area for San Antonio Creek at the gage location is 34 square miles; the watershed area for Lion's Canyon Creek at the bridge site is 12.92 square miles. Thus, the San Antonio Creek discharges must be scaled by 38% to determine Lion's Canyon Creek discharges. The 100-year peak flow rate for the bridge site estimated from the Log-Pearson, Type III analysis is 5,580 cfs.

Table 3, Log-Pearson, Type III Results

Table 3. Log-Fear soft, Type III Results					
Recurrence Interval (years)	San Antonio Creek Peak Flow Rates (cfs)	Lion's Canyon Creek Peak Flow Rates Scaled from San Antonio Creek Flows (cfs)			
1	8	3			
2	345	131			
5	1,340	509			
10	2,725	1,035			
25	5,807	2,206			
50	9,467	3,598			
100	14,684	5,580			
200	21,980	8,352			

Thus, 7,278 cfs, the highest 100-year peak flow rate estimated from the discharge-drainage area relationship of the FEMA methodologies, was used to determine base flood elevations at the project site.

Hydraulic Model

A hydraulic model was used to simulate the response of the existing channel geometry with the proposed bridge configurations. HEC-RAS (Hydrologic Engineering Center River Analysis System version 3.1, 2002) was used to predict the hydraulic response of the proposed structure. In order to run a hydraulic model the channel geometry and the discharge for the design storms need to be specified. Surveyed channel topography was used to generate cross-section geometry data for the model. Overall 18 cross-sections spaced 50 to 100 feet apart were used. Roughness coefficients were (Manning's n value) assigned a value of 0.043 in the channel and 0.05 for overbank flows. These values were selected from the publication "Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains" (USGS WSP-2339). For each modeled design storm, boundary conditions are necessary at the upstream and downstream ends of the river system. This analysis used a "Normal Depth" boundary condition at the upstream and downstream boundaries. This requires an energy slope to be used in calculating normal depth (Manning's equation) at each cross-section for each profile. Since the energy slope was unknown, the average slope of the channel bottom was used (S=0.023).

Proposed Bridge Modeling Results

The bridge proposed for the site is an 85-ft span "rail-road" bridge that uses railroad components for the bridge deck. The longitudinal width is 14 ft, and the elevation of the low chord is 553.82 ft (NGVD29).

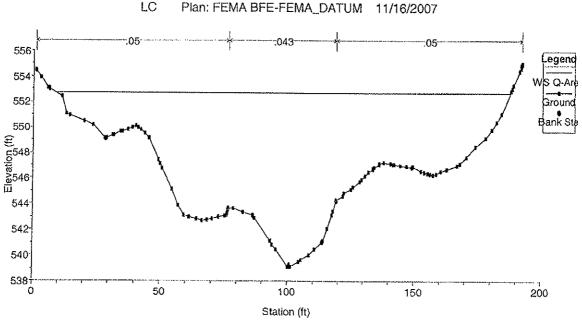


Figure 2. Base Flood Elevations (100-year Water Surface Elevation) at RS 5+00

Figure 2 shows that the estimated existing BFE for the site is 552.75 ft, which provides the 1-ft required freeboard below the bridge low chord. The BFE was taken from the cross-section at RS 5+00, 2 feet upstream of the proposed bridge, to adequately capture the backwater effects of the proposed bridge. Figure 3 shows the longitudinal profile of the channel.

Figure 3. Longitudinal Profile of the Project Reach showing 100-year Water Surface Elevations.

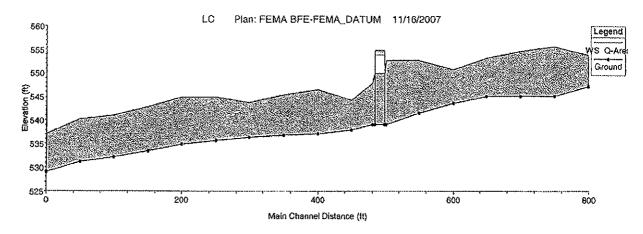
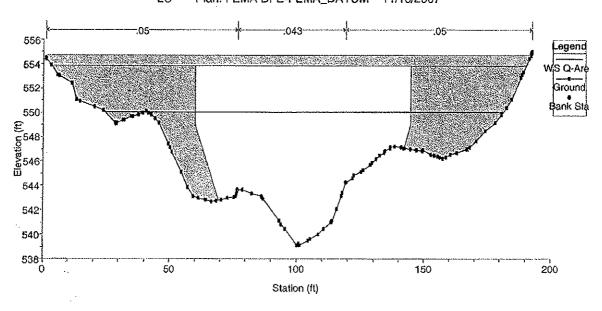


Figure 4 shows the cross-section at the bridge location RS 4+92. The base flood elevations are lower here than at RS 5+00 because flow undergoes a constriction upon flowing below the bridge deck. This decrease in water surface elevation is also seen in the longitudinal profile above. The 100-year water surface elevation directly under the bridge deck is 549.64 ft.

Figure 4. Base Flood Elevations (100-year Water Surface Elevation) at RS 4+98 LC Plan: FEMA BFE-FEMA_DATUM 11/16/2007



Thus, the proposed bridge will have more than the required 1-ft of freeboard below the low chord of the bridge.

Table 4. Modeling Results

RS	Description	100-year Peak Flow (cfs)	BFE (FT-NGVD29)	Low Chord Elevation (FT-NGVD29)	Freeboard (ft)
5+00	2-ft upstream of bridge	7278	552.75	553.82	1.07
4+98	directly below bridge deck	7278	550.03	553.82	3.79

I trust this is the information you require at this time. If you have any questions feel free to call Chien Wang or me at 510-236-6114.

Sincerely,

Sydney Temple, P.E.

Principal/Senior Hydrologist

Appendix A Log-Pearson Type III Analysis of San Antonio Creek Gage Data

	T				MAXIMUM Q			······································	
Rank	Water Year	Annual AVERAGE (cfs)	Annual MAX (cfs)	Annual MIN (cfs)	Log Q	logQ- avg(logQ)^2	logQ- avg(logQ)^3	т	Р
52	1955	0.24	19	0	1.278754	1,584642	-1.994787	1.019231	0.981132
51	1961	0.20	21.00	0.00	1.322219	1.477099	-1,795207	1.039216	0.962264
50	2002	1.52	27.00	0.00	1.431364	1.223712	-1.353689	1.06	0.943396
49	1960	0.64	30.00	0.00	1.477121	1.124571	-1.19256	1.081633	0.924528
48	1987	1.93	30.00	0.00	1.477121	1.124571	-1.19256	1.104167	0.90566
47	1964	0.44	32.00	0,00	1.50515	1.06591	-1.100476	1.12766	0.886792
46	1999	5.45	38.00	0.61	1.579784	0.917372	-0.878655	1.152174	0.867925
45	1953	1.92	48	0	1.681241	0.733314	-0.627965	1.177778	0.849057
44	1990	0.41	51.00	0.00	1.70757	0.688915	-0.571805	1,204545	0.830189
43	1957	0.30	52.00	0.00	1.716003	0.674987	-0.554553	1.232558	0.811321
42	1989	1.02	60.00	0.00	1.778151	0.576731	-0.437985	1.261905	0.792453
41	1977	1.19	66.00	0.00	1.819544	0.515574	-0.370201	1.292683	0.773585
40	1959	3.15	92.00	0.00	1.963788	0.329236	-0.188913	1.325	0.754717
39	1954	1.81	104	0	2.017033	0.270968	-0.141051	1.358974	0.735849
38	1985	2.41	109.00	0.00	2.037426	0.250153	-0.125114	1,394737	0.71698
37	1968	3.91	126.00	0.00	2.100371	0.191151	-0.083573	1.432432	0.698113
36	1976	1.72	135.00	0.00	2.130334	0.165849	-0.067541	1.472222	0.679245
35	1984	7.20	147.00	0.36	2.167317	0.137094	-0.050761	1.514286	0.66037
34	1965	1.22	153.00	0.00	2.184691	0.12453	-0.043945	1,558824	0.641509
33	1963	1.48	191.00	0.00	2.281033	0.065816	-0.016885	1.606061	0.622642
32	1982	4.46	191.00	0.64	2.281033	0.065816	-0.016885	1.65625	0.603774
31	1981	6.23	216.00	0.53	2.334454	0.04126	-0.008381	1.709677	0.58490
30	1994	4.57	225.00	0.09	2.352183	0.034372	-0.006372	1.766667	0.566038
29	1970	7.13	318.00	0.64	2.502427	0.001236	-4.34E-05	1.827586	0.54717
28	1972	2,72	321,00	0.00	2.506505	0,000966	-3E-05	1.892857	0.52830
27	1956	1,59	357	0	2.552668	0.000228	3.44E-06	1.962963	0.50943
26	1988	3.08	360.00	0.00	2.556303	0.000351	6.56E-06	2.038462	0.49056
25	1975	7.05	417.00	0.09	2.620136	0.006816	0.000563	2.12	0.47169
24	2000	7.47	428.00	0.19	2.631444	0.008811	0.000827	2.208333	0.45283
23	2003	3.85	483.00	0.00	2.683947	0.021424	0.003136	2.304348	0.43396
22	1971	7.61	525.00	0.44	2.720159	0.033336	0.006086	2.409091	0.41509
21	1979	15.88	620.00	3.10	2.792392	0.064929	0.016545	2.52381	0.39622
20	1974	6.70	683.00	0.29	2.834421	0.088115	0.026156	2.65	0.37735
19	1996	6.51	696.00	0.19	2.842609	0.093043	0.028381	2.789474	0.35849
18	1991	9.23	708,00	0.00	2.850033	0.097628	0.030504	2.944444	0.33962
17	1997	12.09	775.00	0.24	2.889302	0.123709	0.043511	3.117647	0.32075
16	1986	17.73	808.00	0.00	2.907411	0.136776	0.050584	3.3125	0.30188
15	1952	17.12	1460	0	3.164353	0.392845	0.246225	3,533333	0,283011
14	1966	17,58	1520.00	0.00	3.181844	0.415077	0.267419	3.785714	0.26415
13	1962	19.05	1860,00	0.00	3.269513	0.535727	0.392117	4.076923	0.24528
12	1958	32,97	1890.00	00,0	3.276462		0.403391	4.416667	0.22641
11	1980	37.71	1890.00	2,60	3.276462	0.545948	0.403391	4.818182	0.20754
10	1992	28.33	1980.00	0.00	3.296665	0.576212	0.437394	5,3	0.18867
9	1967	24.26	2150.00	0.00	3.332438	0.631801	0.502193	5.888889	0.16981
8	2001	25.42	2390.00	0.37	3.378398	0.706976	0,594439	6.625	0.15094

7	1993	84.37	2430.00	1,30	3.385606	0.71915	0.609859	7.571429	0.132075
6	1973	26.45	2500.00	0.00	3.39794	0.740221	0.636857	8.833333	0.113208
5	1983	69.22	2930.00	0.64	3.466868	0.863577	0.802512	10,6	0.09434
4	1995	67.13	4260.00	0.09	3.62941	1.192094	1.301565	13.25	0.075472
3	1978	74.52	4300.00	0.00	3.633468	1.200974	1.316134	17.66667	0.056604
2	1998	101.53	5420.00	0.04	3.733999	1.431421	1.712581	26.5	0.037736
1 .	1969	108.30	10405.00	0.00	4.017242	2.189403	3.239578	53	0.018868
			AVERAGE		AVERAGE	sum	sum		
			1097.058		2.537579	26.74838	0.252023		
								VARIANCE	0.52
								SD	0.70
								CS, SKEW	0.01
									0.01353
					Cs=0	Cs=0.1	Cs=0.01		
			RAS Profile	Tr	K	K	К	avg(logQ)+KSy	` Q
			1	1	-2.326	-2.252	-2.32526	0.909364	В
			2	2	0	-0.017	-0.00017	2.53746	345
			3	5	0.842	0.836	0.84194	3,12713	1340 -
			4	10	1.282	1.292	1.2821	3,435343	2725
		******	5	25	1.751	1.785	1.75134	3.763919	5807
~~~~			6	50	2.054	2.107	2.05453	3.976221	9467
			7	100	2,326	2.4	2.32674	4.16683	14684
			8	200	2.576	2.67	2.57694	4.342028	21980

5 3 K

## U.S. DEPARTMENT OF HOMELAND SECURITY

## **ELEVATION CERTIFICATE**

Federal Emergency Management Agency
National Flood Insurance Program

Important: Read the instructions on pages 1-9.

OMB No. 1660-0008 Expires March 31, 2012

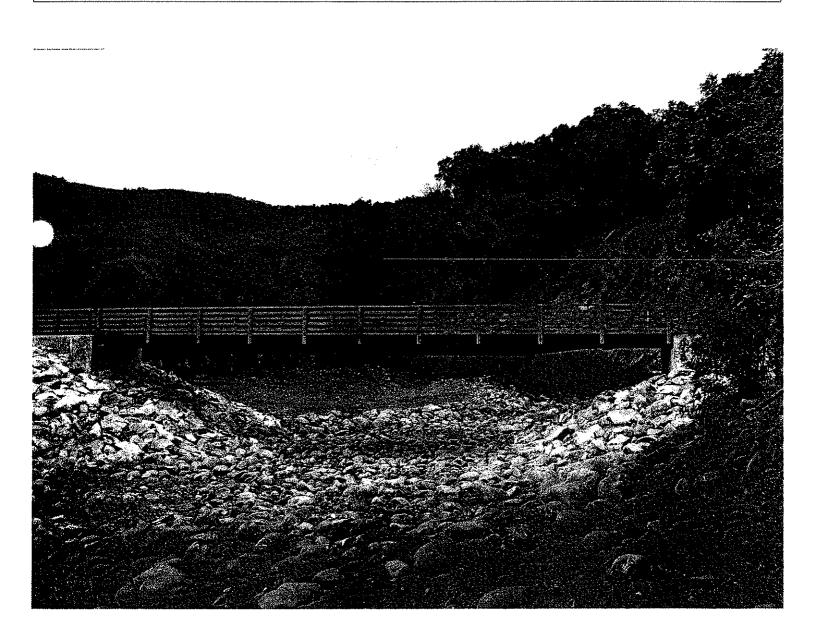
amportant	t. Acede the matractions on pe	1903 1-0.	
	CTION A - PROPERTY INFORM	ATION	For Insurance Company Use:
. Building Owner's Name Mary Bergen			Policy Number
A2. Building Street Address (including Apt., Unit, Suite, and/or 11584 Creek Road /1730 Creek Roce	Bldg. No.) or P.O. Route and Box No	0.	Company NAIC Number
City Ojaí State CA ZIP Code 93023			
A3. Property Description (Lot and Block Numbers, Tax Parcel APN 035-0-050-055	Number, Legal Description, etc.)		
A4. Building Use (e.g., Residential, Non-Residential, Addition, A5. Latitude/Longitude: Lat. Long. How A6. Attach at least 2 photographs of the building if the Certifica A7. Building Diagram Number N/A Private Bridge A8. For a building with a crawlspace or enclosure(s):  a) Square footage of crawlspace or enclosure(s) b) No. of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade c) Total net area of flood openings in A8.b d) Engineered flood openings?	orizontal Datum: NAD 1927 Nate is being used to obtain flood insured A9. For a being used for a being used to obtain flood insured A9. For a being used for a b	rance.  Datum: W & Duilding with an attacluare footage of attack	S & f hed garage: hed garage N/A sq ft openings in the attached garage jacent grade N/A sq in
SECTION B - FLOOD INSURANCE RATE MAP (FIRM)	INFORMATION		
B1. NFIP Community Name & Community Number Ventura County (Unincorporated Areas) 060413	B2. County Name Ventura County		33. State California
B4. Map/Panel Number         B5. Suffix         B6. FIRM Index           0611C / 0567         E         Date           0611C         Jan. 20, 2010	B7. FIRM Panel Effective/Revised Date Jan. 20, 2010	B8. Flood Zone(s) A	B9. Base Flood Elevation(s) (Zone AO, use base flood depth) N/A
☐ FIS Profile ☐ FIRM ☐ Community De  B11. Indicate elevation datum used for BFE in Item B9: ☐ NG  Is the building located in a Coastal Barrier Resources Syst  Designation Date N/A	VD 1929 ⊠ NAVD 1988	☐ Other (Describe)	g Corp. (See Attachment) ) ☐ Yes ☑ No
SECTION C - BUILDING ELEVATION INFORMATION	(SURVEY REQUIRED)		
C1. Building elevations are based on:  *A new Elevation Certificate will be required when construction  C2. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V  below according to the building diagram specified in Item A7  Benchmark Utilized	ion of the building is complete. /30, V (with BFE), AR, AR/A, AR/AE, 7. Use the same datum as the BFE.		<b>7ED</b> 2011
a) Top of bottom floor (including basement, crawlspace, o b) Top of the next higher floor c) Bottom of the lowest horizontal structural member (1-2) d) Attached garage (top of slab)	r enclosure floor) [ [ ]  OGE ONCY 556 43 [ ]  Oge he building	☐ feet ☐ m	eters (Puerto Rico only)
f) Lowest adjacent (finished) grade next to building (LAG) g) Highest adjacent (finished) grade next to building (HAG) h) Lowest adjacent grade at lowest elevation of deck or structural support	·) [	☐ feet ☐ m	eters (Puerto Rico only) eters (Puerto Rico only) eters (Puerto Rico only)
SECTION D - SURVEYOR, ENGINEER, OR ARCHITEC	T CERTIFICATION	····	
This certification is to be signed and sealed by a land surveyor, information. I certify that the information on this Certificate represented that any false statement may be punishable by fine of Check here if comments are provided on back of form.	engineer, or architect authorized by lesents my best efforts to interpret the	e data available.I e, Section 1001.⊠ tion A provided by a	SEO PROFESSIONAL CO
Certifier's Name	License Number	C 46005	No. C46005
ie Civil Engineer Company Name	Morris Engineering		Exp /31/12/
Address 6901 Lorene Road City Redwood Va	illey State CA	ZIP Code 95470	CIVIL CORNIE
Signature Date	2/15/11 Telephone (707) 4	485-1133	JALTU

		information from Section A.	For Insurance Company Use:
ATOUT DIOUNTIVAU IV	ling Apt., Unit, Suite, and/or Bldg. No. 	) or P.O. Route and Box No. ஆக்கும்	Policy Number
City OjaiState CA ZIP Code		g	Company NAIC Number
.CTION D - SURVEYOR,	, ENGINEER, OR ARCHITECT C	ERTIFICATION (CONTINUED)	
Copy both sides of this Elevation	on Certificate for (1) community officia	al, (2) insurance agent/company, and (3	) building owner.
feet above the 1-ft. freeboard at (Richmond, CA) it a report date	ntal structure member (bottom of brid boye the calculated BFE which is 55! ed November 16, 2007 (Attachment)	5.37 feet (NAVD 1988 Datum). BFE det	ge is 556.43 feet (NAVD 1988 datum) which is 0 termined by Questa Engineering Corporation
SECTION E - BILL DING EL	I EVATION INFORMATION (SIII	Date / PROFINED FOR ZON	☐ Check here if attachme E AO AND ZONE A (WITHOUT BFE)
SECTION E - BOILDING EI	LEVATION INFORMATION (50)	RVET NOT REQUIRED) FOR ZON	E AO AND ZONE A (WITHOUT BEE)
and C. For Items E1-E4, use n E1. Provide elevation informa grade (HAG) and the low a) Top of bottom floor (inc	natural grade, if available. Check the	measurement used. In Puerto Rico on appropriate boxes to show whether the colosure) is N/h feet	A or LOMR-F request, complete Sections A, B, ly, enter meters.  elevation is above or below the highest adjacent  meters  above or below the HAG.  meters above or below the LAG.
E2. For Building Diagrams 6-t (elevation C2.b in the diagrams) E3. Attached garage (top of s	9 with permanent flood openings programs) of the building is	vided in Section A Items 8 and/or 9 (see ☐ feet ☐ meters ☐ above or ☐ ☐ meters ☐ above or ☐ below the H	pages 8-9 of Instructions), the next higher floo ☐ below the HAG.
			ince with the community's floodplain managem G. N/A (See Section G Connect
SECTION F - PROPERTY (	OWNER (OR OWNER'S REPRE	SENTATIVE) CERTIFICATION	
	•	letes Sections A, B, and E for Zone A (v E are correct to the best of my knowledg	vithout a FEMA-issued or community-issued BF
Property Owner's or Owner's A	uthorized Representative's Name	The second of the morning	
y Bergen Address 11584 Creek Road		City Ojai	State CA ZIP Code 93023
<del></del>		Date	Telephone (805) 649-5207
Signature /-			relephone (000) 049-0207
1	0 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2-18-11	40.0007.04/
1	y Questa Engineering Corporation (R	Z - /f - // Richmond, CA) in a report dated Novemb	per 16, 2007. See Attachment.
1	y Questa Engineering Corporation (R		
Comments Bros determined by	y Questa Engineering Corporation (R		
Comments Browdetermined by SECTION G - COMMUNITY he local official who is authorize	(INFORMATION (OPTIONAL)  ed by law or ordinance to administer t	kichmond, CA) in a report dated November to the community's floodplain management	☑ Check here if attach
SECTION G - COMMUNITY ne local official who is authorize nd G of this Elevation Certificate 1. The information in Section	Y INFORMATION (OPTIONAL)  ed by law or ordinance to administer to e. Complete the applicable item(s) and tion C was taken from other document	the community's floodplain management of sign below. Check the measurement of that has been signed and sealed	
SECTION G - COMMUNITY ne local official who is authorize nd G of this Elevation Certificate 1. The information in Sect is authorized by law to	r INFORMATION (OPTIONAL)  ed by law or ordinance to administer te  e. Complete the applicable item(s) and  tion C was taken from other document  certify elevation information. (Indica	the community's floodplain management	☑ Check here if attached tordinance can complete Sections A, B, C (or left used in Items G8 and G9.  I by a licensed surveyor, engineer, or architect data in the Comments area below.)
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## Building Photographs See Instructions for Item A6.

	For Insurance Company Use:
Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.	Policy Number
11584 Crook Road 11730 Creek Road	
City Ojai State CA ZIP Code 93023	Company NAIC Number

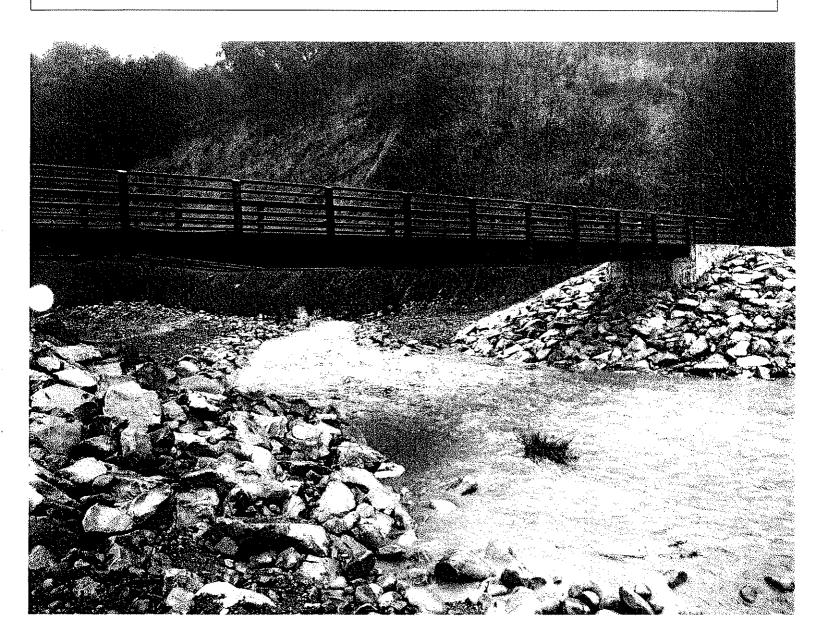
If using the Elevation Certificate to obtain NFIP flood insurance, affix at least two building photographs below according to the instructions for Item A6. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View." If submitting more photographs than will fit on this page, use the Continuation Page, following.



# Building Photographs Continuation Page

	For Insurance Company Use:
ilding Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.	Policy Number
11730 Creek Kord	
City Ojai State CA ZIP Code 93023	Company NAIC Number

If submitting more photographs than will fit on the preceding page, affix the additional photographs below. Identify all photographs with: date taken; "Front View" and "Rear View"; and, if required, "Right Side View" and "Left Side View."



## Survey Monument Data Sheet

## County of Ventura - Public Works Agency

District of the Control of Control of the Control o		Printed: 6/17/2008
974	Stamping	49-13 RM I 1986
49-13 RM 1	Magnetic	МО
	Special Cont	rol VCBN (LBN)
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337450	Character	VENTURA COUNTY BRASS DISK
1617730	Vicinity	OAK VIEW
	974 49-13 RM 1 337450	974 Stamping 49-13 RM 1 Magnetic Special Cont Specific Setti 337450 Character

Visit Date	Ground to Mark	Visit By Description	Condition Description
01-Jan-86	3	VENTURA COUNTY	ESTABLISHED
01-Jan-92	3	VENTURA COUNTY	GOOD

STATE OF THE PARTY	
Visit Date	To Reach
	1 × 11,444(

01-Jan-86

3.2 MILE NORTHEASTERLY ALONG CREEK ROAD FROM ITS INTERSECTION WITH HIGHWAY 33, 25.0 FEET WESTERLY FROM THE CENTER OF CREEK ROAD, 15.0 FEET SOUTHERLY FROM NORTHERLY END OF WALL.

Better and ettern	Ortho Height (meters)	Ortho Datum	Ortho Epoch	Ortho Order Class	Survey Date
₽_					1

546.30'		NAVD 88	VEN CO ADJ PUB 1992	2ND-I	1/1/1992
543.75°	165.736	NGVD 29	SCRP PUB 1980	1ST	1/1/1986

#### WARNING!!!

In Ventura County there is a variable difference of approximately 3/4 meter between the National Geodetic Vertical Datum of 1929 (NGVD' 29) and the North American Vertical Datum of 1988 (NAVD'88)

2.55 DIFFERENCE WAVO 58 IS 2.55 HIGHER THAN NGVO 29

BRIDGE SOFTIT ELEV. 553.88 (NGVD 1929) + 2.55 556,43 (NAVD 1988) 556.43' -555.37' 1.06' SOFFIT 0.06' ABOVE !-FT

BFE = 552.82 (NGVD 1929)
QUESTA REPORT DATED 11/16/2007
= 555.37 (NAVD 1988)



## TECHNICAL MEMORANDUM

Date:

November 16, 2007

Subject:

Base Flood Elevation Determination for Lions Canyon Creek at 11584 Creek

Road, Ojai, California

To:

Mary Bergen

From:

Sydney Temple P.E. Questa Engineering Corporation

#### Introduction

This memo discusses the hydrologic and hydraulic analysis for base flood elevation determination for the bridge design on Lions Canyon Creek in Ojai, California. The following sections describe 1) determination of the BFE, 2) the hydraulic model and assumptions used, 3) the modeled proposed bridge configuration, and 4) water surface elevations for the proposed bridge configuration.

Two design constraints exist based on state and county regulations:

- 1 foot of freeboard above the 100-year water surface elevation is required for the low chord (bottom) of the bridge deck, and
- the bridge must be able to facilitate use by a fire truck.

#### **BFE Determination**

The Ventura County Floodplain Manager determined that the site is located in a FEMA-determined 100-year floodplain, with a designation of "Approximate Zone 'A' Area," meaning that FEMA has not calculated the 100-year water surface elevation, known as the "Base Flood Elevation," or BFE. As such, the property owner is required to retain a civil engineer to use FEMA-established base flood elevation methodologies to calculate the BFE for the site.

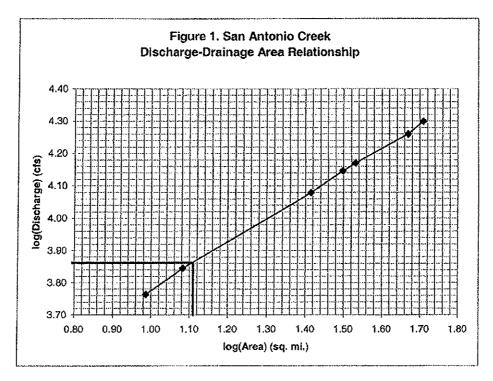
The FEMA Technical Bulletin 265 (July 1995) "Managing Floodplain Development in Approximate Zone A Areas" was followed to determine the BFE for the site. The Discharge-Drainage Area Relationships method resulted in the highest 100-year peak flow, and was used to provide a conservative analysis of BFE for the proposed site. The two other methods used to estimate BFE are also shown below for comparison.

#### Discharge-Drainage Area Relationships

A discharge-drainage area relationship was plotted from San Antonio Creek 100-year flow rates and corresponding drainage areas (Flood Insurance Study, Ventura County, Unincorporated Areas, FEMA, 1997). Table 1 shows the discharges and areas for the San Antonio Creek watershed from the FEMA studies, which are plotted on a log-log plot, shown on Figure 1. This method results in a 100-year peak flow rate of 7,278 cfs.

Table 1. FEMA Summary of Discharges and Drainage Areas for San Antonio Creek Watershed

	Drainage Area (sq. mi.)	log(Area)	Discharge (cfs)	log(Discharge)
	9.7	0.99	5,800	3.76
	12.1	1.08	7,000	3.85
	26	1.41	12,000	4.08
	31.5	1.50	14,000	4.15
	34	1.53	14,800	4.17
	46.7	1.67	18,200	4.26
	51.2	1.71	19,900	4.30
Proposed Site	12.92	1.11	7,278	3,86



## Regression Equations

The 100-year peak flow rate was also estimated using the California regression equations found in "Nationwide summary of U.S. Geological Survey regional regression equations for estimating magnitude and frequency of floods for ungaged sites," (U.S. Geological Survey Water-Resources Investigations Report 94-4002, 1993).

 $Q100 = 1.95 A^{0.83} P^{1.87}$ 

where:

Q100 = the 100-year peak flow rate

A = drainage area (sq. mi.)

P = mean annual precipitation (in.)

**Table 2. Regression Equation Results** 

Area (sq. mi.)	Mean Annual Precipitation (in.)	Q100 (cfs)	
12.92	21	4,840	

Using regression equations, the estimated 100-year peak flow rate is 4,840 cfs.

#### Log-Pearson, Type III Analysis of 50-year Gage Data

The 100-year peak flow rate was also estimated by analyzing 50 years of stream gage data for San Antonio Creek using a log-Pearson, Type III analysis. The Log-Pearson calculations are shown in Appendix A The peak discharges for San Antonio Creek were then scaled, by drainage area, to find appropriate discharges for Lion's Canyon Creek. The watershed area for San Antonio Creek at the gage location is 34 square miles; the watershed area for Lion's Canyon Creek at the bridge site is 12.92 square miles. Thus, the San Antonio Creek discharges must be scaled by 38% to determine Lion's Canyon Creek discharges. The 100-year peak flow rate for the bridge site estimated from the Log-Pearson, Type III analysis is 5,580 cfs.

Table 3, Log-Pearson, Type III Results

rapie a. Log-rearson, Type in results								
Recurrence Interval (years)	San Antonio Creek Peak Flow Rates (cfs)	Lion's Canyon Creek Peak Flow Rates Scaled from San Antonio Creek Flows (cfs)						
1 -	8	3						
2	345	131						
5	1,340	509						
10	2,725	1,035						
25	5,807	2,206						
50	9,467	3,598						
100	14,684	5,580						
200	21,980	8,352						

Thus, 7,278 cfs, the highest 100-year peak flow rate estimated from the discharge-drainage area relationship of the FEMA methodologies, was used to determine base flood elevations at the project site.

## Hydraulic Model

A hydraulic model was used to simulate the response of the existing channel geometry with the proposed bridge configurations. HEC-RAS (Hydrologic Engineering Center River Analysis System version 3.1, 2002) was used to predict the hydraulic response of the proposed structure. In order to run a hydraulic model the channel geometry and the discharge for the design storms need to be specified. Surveyed channel topography was used to generate cross-section geometry data for the model. Overall 18 cross-sections spaced 50 to 100 feet apart were used. Roughness coefficients were (Manning's n value) assigned a value of 0.043 in the channel and 0.05 for overbank flows. These values were selected from the publication "Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains" (USGS WSP-2339). For each modeled design storm, boundary conditions are necessary at the upstream and downstream ends of the river system. This analysis used a "Normal Depth" boundary condition at the upstream and downstream boundaries. This requires an energy slope to be used in calculating normal depth (Manning's equation) at each cross-section for each profile. Since the energy slope was unknown, the average slope of the channel bottom was used (S=0.023).

### **Proposed Bridge Modeling Results**

The bridge proposed for the site is an 85-ft span "rail-road" bridge that uses railroad components for the bridge deck. The longitudinal width is 14 ft, and the elevation of the low chord is 553.82 ft (NGVD29).

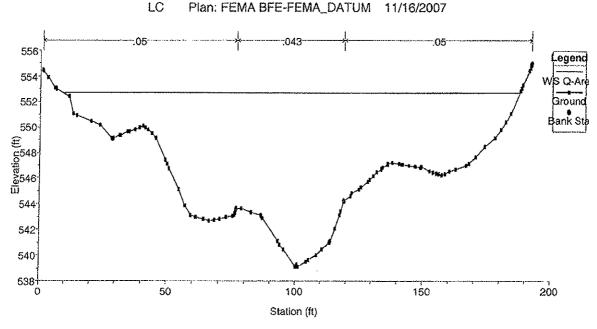


Figure 2. Base Flood Elevations (100-year Water Surface Elevation) at RS 5+00

Figure 2 shows that the estimated existing BFF for the site is \$552.75 ft, which provides the 1-ft required freeboard below the bridge low chord. The BFE was taken from the cross-section at RS 5+00, 2 feet upstream of the proposed bridge, to adequately capture the backwater effects of the proposed bridge. Figure 3 shows the longitudinal profile of the channel.

Figure 3. Longitudinal Profile of the Project Reach showing 100-year Water Surface Elevations.

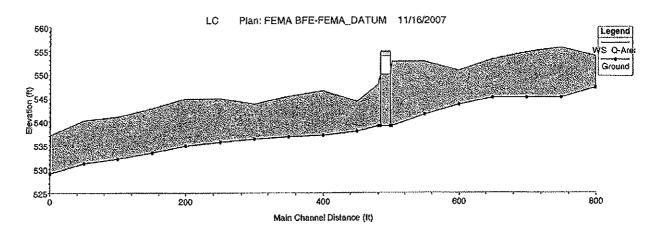
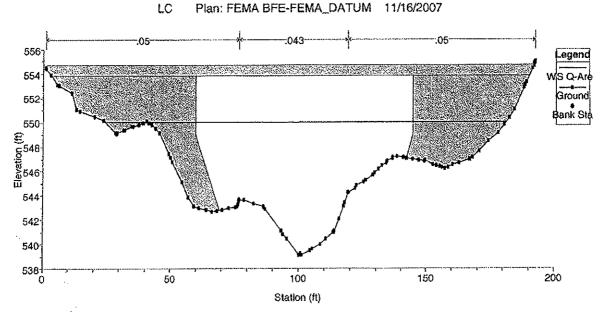


Figure 4 shows the cross-section at the bridge location RS 4+92. The base flood elevations are lower here than at RS 5+00 because flow undergoes a constriction upon flowing below the bridge deck. This decrease in water surface elevation is also seen in the longitudinal profile above. The 100-year water surface elevation directly under the bridge deck is 549.64 ft.

Figure 4. Base Flood Elevations (100-year Water Surface Elevation) at RS 4+98



Thus, the proposed bridge will have more than the required 1-ft of freeboard below the low chord of the bridge.

Table 4. Modeling Results

RS	Description	100-year Peak Flow (cfs)	BFE (FT-NGVD29)	Low Chord Elevation (FT-NGVD29)	Freeboard (ft)
5+00	2-ft upstream of bridge	7278	552.75	553.82	1.07
4+98	directly below bridge deck	7278	550.03	553.82	3.79

I trust this is the information you require at this time. If you have any questions feel free to call Chien Wang or me at 510-236-6114.

Sincerely,

Sydney Temple, P.E.

Principal/Senior Hydrologist

		1			MAXIMUM Q				
Rank	Water Year	Annual AVERAGE (cfs)	Annual MAX (cfs)	Annual MIN (cfs)	Log Q		logQ- avg(logQ)^3	т	P
52	1955	0.24	19	0	1.278754	1.584642	-1.994787	1.019231	0.981132
51	1961	0.20	21.00	0.00	1.322219	1.477099	-1.795207	1.039216	0.962264
50	2002	1.52	27.00	0,00	1.431364	1.223712	-1.353689	1.06	0.943396
49	1960	0.64	30.00	0.00	1.477121	1.124571	-1.19256	1.081633	0.924528
48	1987	1.93	30.00	0.00	1.477121	1.124571	-1,19256	1.104167	0.90566
47	1964	0.44	32.00	0.00	1.50515	1.06591	-1.100476	1.12766	0.886792
46	1999	5.45	38.00	0.61	1.579784	0.917372	-0.878655	1.152174	0.867925
45	1953	1.92	48	0	1.681241	0.733314	-0.627965	1.177778	0.849057
44	1990	0.41	51.00	0.00	1.70757	0.688915	-0.571805	1,204545	0.830189
43	1957	0,30	52.00	0.00	1.716003	0.674987	-0.554553	1.232558	0.811321
42	1989	1.02	60.00	0.00	1.778151	0.576731	-0.437985	1.261905	0.792453
41	1977	1.19	66,00	0.00	1.819544	0.515574	-0.370201	1.292683	0.773585
40	1959	3.15	92.00	0.00	1.963788	0.329236	-0.188913	1.325	0.754717
39	1954	1,81	104	0	2.017033	0,270968	-0.141051	1.358974	0.735849
38	1985	2.41	109.00	00,00	2.037426	0.250153	-0.125114	1.394737	0.716981
37	1968	3.91	126.00	0.00	2.100371	0.191151	-0.083573	1.432432	0.698113
36	1976	1.72	135.00	0.00	2.130334	0.165849	-0.067541	1,472222	0.679245
35	1984	7.20	147.00	0.36	2.167317	0.137094	-0.050761	1.514286	0.660377
34	1965	1.22	153,00	0.00	2.184691	0.12453	-0.043945	1.558824	0.641509
33	1963	1.48	191.00	0.00	2.281033	0.065816	-0.016885	1,606061	0.622642
32	1982	4.46	191.00	0.64	2.281033	0.065816	-0.016885	1.65625	0.603774
31	1981	6.23	216.00	0.53	2.334454	0.04126	-0.008381	1.709677	0.584906
30	1994	4.57	225.00	0.09	2,352183	0.034372	-0.006372	1.766667	0.566038
29	1970	7.13	318.00	0.64	2.502427	0.001236	-4.34E-05	1.827586	0.54717
28	1972	2.72	321.00	00,0	2.506505	0.000966	-3E-05	1.892857	0.528302
27	1956	1.59	357	0	2.552668	0.000228	3.44E-06	1.962963	0.509434
26	1988	3.08	360.00	0.00	2.556303	0.000351	6.56E-06	2.038462	0.490566
25	1975	7.05	417.00	0.09	2.620136	0,006816	0.000563	2.12	0.471698
24	2000	7.47	428.00	0,19	2.631444	0.008811	0.000827	2.208333	0.45283
23	2003	3.85	483.00	0.00	2.683947	0.021424	0.003136	2.304348	0.433962
22	1971	7.61	525.00	0.44	2.720159	0.033336	0.006086	2.409091	0.415094
21	1979	15.88	620.00	3.10	2.792392		0.016545	2.52381	0.396226
	1974	6.70	683.00	0.10	2.834421	0.088115	0.026156	2.65	0.377358
20		6.51	696.00	0.19	2.842609	0.093043	0.028381	2.789474	0.35849
19	1996	9.23	708.00	0.00	2.850033	1	0.030504	2.944444	0.33962
18	1991		775.00	0.24	2.889302	0.123709	0.043511	3.117647	0.32075
17	1997	12.09	808.00	0.00	2.907411	0.136776	0.050584	3,3125	0.30188
16	1986	17.73		0.00	3.164353	0.392845	0.246225	3,533333	0.283019
15	1952	17.12	1460 1520.00	0.00	3.181844	0.415077	0.267419	3.785714	0.26415
14	1966	17.58		1	3.269513	7	0.392117	4.076923	0.24528
13	1962	19.05	1860,00	0.00	3,276462	0.535727	0.403391	4.416667	0.22641
12	1958	32.97	1890.00	0,00	1	0.545948	0.403391	4.818182	0.20754
11	1980	37.71	1890.00	2.60	3.276462	0.576212	0.437394	5,3	0.18867
10	1992	28.33	1980.00	0.00	3.296665	1	0.437394	5.888889	0.16981
9 8	1967 2001	24.26 25.42	2150.00 2390.00	0.00	3.332438 3.378398		0.594439	6.625	0.15094

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7	1993	84.37	2430.00	1.30	3.385606	0.71915	0.609859	7.571429	0.132075
6	1973	26.45	2500.00	0.00	3.39794	0.740221	0.636857	8.833333	0.113208
5	1983	69.22	2930.00	0.64	3.466868	0.863577	0.802512	10,6	0.09434
4	1995	67.13	4260.00	0.09	3.62941	1.192094	1,301565	13.25	0.075472
3	1978	74.52	4300.00	0.00	3.633468	1.200974	1.316134	17.66667	0.05660
2	1998	101,53	5420.00	0.04	3.733999	1.431421	1,712581	26.5	0.03773
1	1969	108.30	10405.00	0.00	4.017242	2.189403	3.239578	53	0.01886
			AVERAGE		AVERAGE	sum	sum		
			1097.058		2.537579	26.74838	0.252023		
								VARIANCE	0.52
								SD	0.70
***								CS, SKEW	0.01
									0.01353
**********					Cs=0	Cs=0.1	Cs=0.01		
			RAS Profile	Tr	K	K	К	avg(logQ)+KSy	Q
			1	1	-2.326	-2.252	-2.32526	0.909364	8
			2	2	0	-0.017	-0.00017	2.53746	345
			3	5	0.842	0.836	0.84194	3.12713	1340
			4	10	1.282	1.292	1.2821	3,435343	2725
·····			5	25	1.751	1.785	1.75134	3,763919	5807
			6	50	2.054	2.107	2.05453	3.976221	9467
***************************************			7	100	2.326	2.4	2.32674	4.16683	14684
			8	200	2.576	2.67	2.57694	4.342028	21980

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