

# FLOOD INSURANCE STUDY

## FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 2 OF 4



## VENTURA COUNTY, CALIFORNIA AND INCORPORATED AREAS

### Notice

This preliminary FIS report includes only revised Flood Profiles and Floodway Data tables. See “Notice to Flood Insurance Study Users” page for additional details.

COMMUNITY NAME	COMMUNITY NUMBER
CAMARILLO, CITY OF	065020
FILLMORE, CITY OF	060415
MOORPARK, CITY OF	060712
OJAI, CITY OF	060416
OXNARD, CITY OF	060417
PORT HUENEME, CITY OF	065051
SAN BUENAVENTURA, CITY OF	060419
SANTA PAULA, CITY OF	060420
SIMI VALLEY, CITY OF	060421
THOUSAND OAKS, CITY OF	060422
VENTURA COUNTY UNINCORPORATED AREAS	060413

**PRELIMINARY 03/25/2016**

FLOOD INSURANCE STUDY NUMBER

**06111CV002D**

Version Number 2.3.3.2



# FEMA

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**Published Separately**

Flood Insurance Rate Map (FIRM)

# FLOOD INSURANCE STUDY REPORT VENTURA COUNTY, CALIFORNIA

## SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, “Incorporated Letters of Map Change”, which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, “FIRM Revisions.”

### 5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. A summary of stillwater elevations developed for non-coastal flooding sources is provided in Table 11. (Coastal stillwater elevations are discussed in Section 5.3 and shown in Table 17.) Stream gage information is provided in Table 12.

**Table 10: Summary of Discharges**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Adams Canyon Creek	At Telegraph Road	8.4	1,200	*	3,100	4,200	*	7,400
Alamos Canyon Creek	At Southern Pacific Railroad	6	*	*	*	3,800	*	*
Arroyo Las Posas	Upstream of confluence of Peach Hill Wash	117.4	8,260	*	17,120	22,090	*	36,520
Arroyo Las Posas	Downstream of confluence of Long Canyon Creek	143.4	9,390	*	19,460	25,100	*	41,500
Arroyo Santa Rosa	Upstream of confluence With Arroyo Conejo	14.35	1,970	*	3,770	4,740	*	7,510
Arroyo Santa Rosa	At confluence of Arroyo Santa Rosa Tributary	13.04	1,980	*	3,800	4,770	*	7,570
Arroyo Santa Rosa	At East Las Poras Road	8.33	1,861	*	3,561	4,473	*	7,099
Arroyo Santa Rosa	At Santa Rosa Road	8.61	1,770	*	2,610	2,830	*	3,650
Arroyo Santa Rosa	Downstream of Duval Road	9.29	1,750	*	2,580	2,790	*	3,580
Arroyo Santa Rosa Tributary	Upstream of confluence with Arroyo Santa Rosa	3.75	950	*	2,590	3,700	*	6,720
Arroyo Santa Rosa Tributary	At Vista Arroyo Drive	1.73	550	*	1,060	1,330	*	2,110

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Arroyo Simi	Downstream of confluence with Happy Camp Canyon Creek	113.2	8,300	*	17,200	22,190	*	36,670
Arroyo Simi	Downstream of Alamos Canyon	88.7	5,670	*	13,060	17,460	*	31,200
Arroyo Simi	Downstream of North Simi Canyon	69.5	5,600	*	12,890	17,240	*	30,810
Arroyo Simi	Upstream of Bus Canyon Drain	61.5	5,110	*	11,950	15,900	*	28,580
Arroyo Simi	Upstream of Tapo Canyon Channel	32.3	4,440	*	10,220	13,670	*	24,420
Arroyo Simi	Downstream of Meier Canyon	30.9	4,460	*	10,270	13,730	*	24,540
Arroyo Simi	Upstream of Las Lajas Canyon Channel	10.4	2,410	*	5,540	7,400	*	13,230
Arroyo Simi	Upstream of White Oak Canyon	2.7	1,000	*	2,300	3,080	*	5,500
Arundell Barranca	At U.S. Highway 101	9.24	1,360	*	4,420	6,200	*	11,500
Barlow Barranca	At U.S. Highway 101	2.13	380	*	1,250	1,700	*	3,200
Beardsley Wash	At Ventura Freeway <sup>1</sup>	15	2,100	*	4,600	6,200	*	11,000
Beardsley Wash	Upstream of Wright Road	14	2,300	*	5,000	6,800	*	12,000

<sup>1</sup> Decrease due to overbank losses upstream

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Bell Canyon Creek	Upstream of Ventura/Los Angeles County boundary (approximately 1,860 feet downstream of East Bell Canyon Road)	5.13	700	*	2,340	3,300	*	6,200
Bell Canyon Creek	Upstream of elevation 1,128 feet (approximately 2150 feet downstream of North Buckskin Road)	3.32	490	*	1,650	2,300	*	4,300
Brea Canyon Creek	At confluence with Arroyo Simi	2.1	*	*	*	1,250	*	*
Brown Barranca	At confluence with Santa Clara River	3.49	600	*	1,930	2,660	*	5,000
Brown Barranca	Upstream of Telegraph Road	1.81	325	*	1,050	1,450	*	2,700
Bus Canyon Drain	At confluence with Arroyo Simi	5.1	*	*	*	3,050	*	*
Bus Canyon Drain	Above confluence of Bus Canyon Drain Tributary	3.7	*	*	*	2,800	*	*
Bus Canyon Drain Tributary	At First Street	1.1	*	*	*	1,300	*	*
Bus Canyon Drain Tributary	At Fitzgerald Road	0.8	*	*	*	1,050	*	*

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Calleguas Creek	At Highway 1 <sup>2</sup>	262	12,230	*	28,140	37,630	*	67,240
Calleguas Creek	Downstream of confluence of Conejo Creek	248.3	16,000	*	30,610	38,460	*	61,030
Calleguas Creek	Upstream of Conejo Creek & Lewis Drain	168.7	10,390	*	21,520	27,770	*	45,900
Calleguas Creek	At Seminary Road	164.9	10,350	*	21,450	27,680	*	45,760
Camarillo Hills Drain	Upstream of confluence with Revolon Slough	8.1	1,720	*	3,564	3,564	*	7,620
Camarillo Hills Drain	Upstream of confluence of Las Posas Estates Drain <sup>1</sup>	7.5	1,670	*	3,336	3,336	*	7,440
Camarillo Hills Drain	Downstream of confluence of Crestview Drain	5.55	1,780	*	3,640	4,790	*	7,920
Camarillo Hills Drain	At Ventura Freeway	*	*	*	*	3,220	*	*
Camarillo Hills Drain	At Lantana Street	*	*	*	*	2,226	*	*
Camarillo Hills Drain	At Dunnigan Street	*	*	*	*	842	*	*
Camarillo Hills Drain	Downstream of Ponderosa Drive	*	*	*	*	737	*	*
Conejo Creek	At confluence with Calleguas Creek	77.6	9,300	*	17,800	22,300	*	35,500

<sup>1</sup> Decrease due to overbank losses upstream

<sup>2</sup> Decrease due to Bajo Aqua timing of hydrograph attenuation (Calleguas Creek)

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Conejo Creek	At Highway 101 bridge	71.9	9,560	*	18,300	22,000	*	36,500
Conejo Creek	Downstream of confluence of Arroyo Conejo	60	9,660	*	18,500	23,200	*	36,900
Coyote Creek	Upstream of Confluence with Ventura River	41.1	680	*	1,980	3,410	*	4,830
Coyote Creek	Approximately 570 feet downstream of Casitas Dam Spillway	40.1	671	*	1,953	3,363	*	4,766
Coyote Creek	At Casitas Dam Spillway	38.5	120	*	370	2,590	*	3,750
Doris Avenue Drain	At Patterson Road	0.4	50	*	150	250	*	750
Doris Avenue Drain	Approximately 1,000 feet west of Ventura Road	0.1	10	*	20	50	*	130
Dry Canyon Drain	At Heywood Street	3.7	*	*	*	3,350	*	*
Dry Canyon Drain	At Southern Pacific Railroad	2.9	*	*	*	2,400	*	*
Dry Canyon Drain	At Highway 118/Simi Valley Freeway	2.2	*	*	*	1,750	*	*

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
East Ojai Avenue Drain	At confluence with Fox Canyon Storm Drain <sup>1,4</sup>	*	64	*	80	91	*	147
East Ojai Avenue Drain	Near East Aliso Street <sup>1,4</sup>	*	74	*	179	232	*	373
East Ojai Avenue Drain	At Grand Avenue <sup>1,4</sup>	*	66	*	145	189	*	327
East Ojai Avenue Drain	Approximately 380 feet upstream of Grand Avenue <sup>1,4</sup>	*	28	*	69	98	*	201
East Ojai Avenue Drain	Approximately 220 feet upstream of Pleasant Avenue <sup>1,4</sup>	*	17	*	28	37	*	95
Edgemore Drain	Downstream of Getman Street	*	*	*	*	451	*	*
Edgemore Drain	Downstream of Aileen Street	*	*	*	*	366	*	*
El Rio Drain	At Confluence with Santa Clara River	1.7	90	*	220	300	*	800
El Rio Drain	At Vineyard Avenue	1.6	90	*	190	250	*	800
El Rio Drain	Downstream of Ventura Freeway	1.4	90	*	160	200	*	760

<sup>1</sup> Decrease due to overbank losses upstream

<sup>4</sup> Discharge received from adjacent overbank flow

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
El Rio Drain	Upstream of Ventura Freeway	0.87	170	*	450	580	*	1,100
El Rio Drain	Downstream of Walnut Drive	0.26	70	*	170	220	*	400
Erringer Drain	Upstream of confluence with Arroyo Simi	1.4	*	*	*	1,420	*	*
Erringer Drain	At Arcane Street	1.3	*	*	*	1,410	*	*
Erringer Drain	At Fitzgerald Street	1.2	*	*	*	1,410	*	*
Fagan Canyon Creek	At the Southern Pacific Railroad tracks	3.4	800	*	2,100	2,800	*	5,200
Fox Canyon Storm Drain	At confluence with Steward Canyon	2.3	1,400	*	2,300	2,800	*	4,000
Franklin Barranca	At confluence with Santa Clara River	4.96	700	*	2,380	3,350	*	6,200
Franklin Barranca	Upstream of Santa Paula Freeway	1.47	250	*	820	1,140	*	2,100
Happy Valley Drain	Upstream of Diversion with Happy Valley Drain South	1.22	275	*	840	1,140	*	1,950
Happy Valley Drain	Upstream of El Roblar Drive	0.42	110	*	350	180	*	810
Happy Valley Drain South	At Cruzero Street	0.59	130	*	240	360	*	510

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Harmon Barranca	At confluence with Santa Clara River	5.28	700	*	2,320	3,270	*	6,100
Harmon Barranca	Upstream of Telephone Road	4.59	610	*	2,070	2,900	*	5,400
Hummingbird Creek	At Alscot Avenue	1.9	*	*	*	1,790	*	*
Hummingbird Creek	At Kyehner Drive	1.8	*	*	*	1,570	*	*
Hummingbird Creek	At Freeway	1.6	*	*	*	1,480	*	*
J Street Drain	At mouth	1.9	200	*	550	900	*	3,000
J Street Drain	At Pleasant Valley Road	1.7	200	*	500	850	*	2,900
J Street Drain	At Bard Road	1.5	150	*	450	750	*	2,450
J Street Drain	At Redwood Street	0.9	100	*	300	450	*	1,500
Lang Creek	Upstream of confluence of Arroyo Conejo	6.8	1,390	*	2,670	3,350	*	5,320
Lang Creek	Downstream of Wilbur Road	6	1,390	*	2,610	3,280	*	5,210
Las Lajas Canyon Channel	At Industrial Street	12.5	*	*	*	2,800	*	*
Las Posas Estates Drain	Upstream of confluence with Camarillo Hills Drive	2.5	380	*	1,240	1,710	*	3,200

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Las Posas Estates Drain	Northeast of Central Avenue at elevation 103 feet	1.88	310	*	980	1,360	*	2,600
McNell Creek	Upstream of confluence with San Antonio Creek	2.2	570	*	1,540	2,170	*	4,240
McNell Creek	Downstream of confluences of North and South Tributaries	1.1	470	*	1,270	1,780	*	3,470
McNell Creek	Downstream of Upper McNell Creek South	0.6	220	*	590	833	*	1,630
Mills Road Drain	At U.S. Highway 101	1.3	240	*	790	1,100	*	2,000
Mira Monte Drain	Upstream of Ventura River	1.51	360	*	1,050	1,420	*	2,420
Mira Monte Drain	Upstream of confluence of Happy Valley Drain South	0.79	200	*	600	810	*	1,390
Mira Monte Drain	Upstream of Loma Drive	0.32	90	*	290	390	*	670
Mirror Lake Drain	At confluence with Ventura River <sup>1</sup>	0.39	139	*	330	433	*	851
Mirror Lake Drain	Just upstream of Bonmark Drive <sup>1</sup>	*	139	*	238	294	*	620

<sup>1</sup> Decrease due to overbank losses upstream

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Mirror Lake Drain	Approximately 80 feet downstream of North Ventura Avenue <sup>1</sup>	*	16	*	34	46	*	80
Mirror Lake Drain	Approximately 250 feet upstream of North Ventura Avenue <sup>1</sup>	*	16	*	39	54	*	102
Mission Drain	Downstream of Glenbrook Avenue	*	*	*	*	570	*	*
Mission Drain	Downstream of Coe Street	*	*	*	*	666	*	*
North Simi Drain	At confluence with Arroyo Simi	2.2	*	*	*	1,952	*	*
North Simi Drain	At First Street	1.8	*	*	*	1,610	*	*
North Simi Drain	At Simi Valley Freeway	1.4	*	*	*	789	*	*
Oxnard Industrial Drain	At mouth	8.9	500	*	1,400	2,100	*	7,600
Oxnard Industrial Drain	Above confluence of Rice Avenue Drain	3.4	250	*	600	950	*	3,400
Oxnard Industrial Drain	At East Wooley Road	1.9	150	*	400	650	*	2,300
Oxnard West Drain	At Edison Company Water Canal	4.9	400	*	1,050	1,750	*	5,850
Oxnard West Drain	At Channel Islands Boulevard	3.5	300	*	800	1,300	*	4,400

<sup>1</sup> Decrease due to overbank losses upstream

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Oxnard West Drain	At West Hemlock Street	3.2	300	*	750	1,250	*	4,100
Oxnard West Drain	At Wooley Road	2.8	250	*	620	1,050	*	3,450
Oxnard West Drain	At West Fifth Street	2.2	200	*	500	800	*	2,650
Peach Hill Wash	Upstream of confluence with Calleguas Creek/Arroyo Las Posas/Arroyo Simi	3.95	700	*	1,450	1,870	*	3,090
Peach Hill Wash	Upstream of Home Acres Drive	2.6	470	*	970	1,250	*	2,060
Peach Hill Wash	Downstream of confluence of Small Dam/Debris Basin Dike	1.13	530	*	1,100	1,420	*	2,350
Peach Hill Wash	Upstream of Peach Hill Road	0.43	240	*	500	650	*	1,080
Peck Road Drain	At confluence with Santa Clara River	1.2	370 <sup>1</sup>	650	980	1,150	*	1,370
Peck Road Drain	At Santa Paula Street <sup>1</sup>	*	410	530	630	730	*	990
Peck Road Drain	Just downstream of Foothill Road	*	850	1,200	1,500	1,820	*	2,730

<sup>1</sup> Decrease due to overbank losses upstream

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Piru Creek	At confluence with Santa Clara River	441	2,500	*	33,000	41,000	*	60,000
Pole Creek	At confluence with Santa Clara River	9.1	6,178	*	6,827	7,484	*	14,686
Ponderosa Drain	Downstream of Mobil Avenue	*	*	*	*	308	*	*
Reeves Creek	At confluence with Thacher Creek	4.9	1,530	*	4,150	5,840	*	11,400
Reeves Creek	Upstream of confluence of McAndrews Canyon Creek	4.2	1,390	*	3,760	5,290	*	10,330
Reeves Creek	Downstream of Upper Reeves Creek	1.9	880	*	2,380	3,350	*	6,540
Revolon Slough	Downstream of Camarillo Hills Drain	38.7	2,500	*	7,100	10,000	*	20,000
Revolon Slough	At Highway 101	30	2,200	*	6,200	8,700	*	16,500
Rice Avenue (Road) Drain	At Rose Avenue	4.4	230	*	600	900	*	3,050
Rice Avenue (Road) Drain	At Etting Road	4.1	200	*	550	800	*	2,600
Rice Avenue (Road) Drain	At Ventura County limits south of Wooley Road	2.2	50	*	110	150	*	1,500

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Rice Avenue (Road) Drain	Approximately 500 feet upstream Southern Pacific Railroad crossing	1.3	110	*	300	500	*	1,650
Rincon Creek	At confluence with Pacific Ocean	14.6	2,990	*	7,530	10,320	*	*
Rincon Creek	At U.S. Highway 101 culvert	14.6	2,990	*	7,530	8,500	*	*
Rincon Creek	Upstream of U.S. Highway 101 culvert	14.6	2,990	*	7,530	10,320	*	*
Runkle Canyon Creek	At confluence with Arroyo Simi	2.8	*	*	*	1,400	*	*
Runkle Canyon Creek	At Fitzgerald Road	2.4	*	*	*	1,200	*	*
San Antonio Creek	At confluence with Ventura River	51.2	7,000	*	15,700	19,900	*	30,000
San Antonio Creek	Downstream of confluence of Lion Creek	46.70	6,400	*	14,400	18,200	*	27,400
San Antonio Creek	Upstream of confluence of Lion Creek	34.00	5,200	*	11,700	14,800	*	22,300
San Antonio Creek	Downstream of confluence of Stewart Canyon	31.5	4,900	*	11,000	14,000	*	21,000

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
San Antonio Creek	Upstream of confluence of Stewart Canyon	26.00	4,200	*	9,500	12,000	*	18,000
San Antonio Creek	Downsrteam of confluence of Thacher Creek	24.90	4,200	*	9,600	12,000	*	18,000
San Antonio Creek	Upstream of confluence of Thacher Creek	15.0	2,500	*	5,600	7,000	*	11,000
San Antonio Creek	Upstream of confluence of McNell Creek	12.10	2,500	*	5,600	7,000	*	11,000
San Antonio Creek	Downstream of confluence of Gridley Canyon	9.70	2,100	*	4,700	5,800	*	9,200
Santa Clara Ditch	Upstream of Nyeland Sump	9.26	920	*	3,120	4,430	*	8,200
Santa Clara Ditch	Upstream of Central Avenue	6.65	750	*	2,530	3,580	*	6,600
Santa Clara River	At mouth	1,625	41,000	*	116,000	161,000	*	270,000
Santa Clara River	At Willard Bridge	1,534	41,000	*	116,000	161,000	*	270,000
Santa Clara River	Upstream of confluence of Santa Paula Creek	1,505	40,000	*	113,000	157,000	*	265,000

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Santa Clara River	Downstream of confluence of Sespe Creek	1,500	40,000	*	113,000	157,000	*	265,000
Santa Clara River	Upstream of confluence of Sespe Creek	1,182	23,000	*	66,000	92,000	*	160,000
Santa Clara River	Downstream of confluence of Hopper Canyon Creek	1,174	40,000	*	113,000	157,000	*	265,000
Santa Clara River	Downstream of confluence of Piru Creek	1,100	40,000	*	113,000	157,000	*	265,000
Santa Clara River	At Ventura/Los Angeles County boundary	644	15,000	*	43,000	60,000	*	104,000
Santa Clara River Breakout	At mouth at Pacific Ocean	*	*	*	28,000	73,000	*	182,000
Santa Paula Creek	Downstream of confluence with Mud Creek (north of the City of Santa Paula)	42	7,300	*	19,000	28,000	*	51,000
Santa Paula Creek	At stream gauging station	40	6,800	*	18,000	26,000	*	48,000
Sespe Creek	Approximately 4,000 feet downstream of Highway 126	263	33,000	*	72,000	92,000	*	145,000

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Sespe Creek	Approximately 5,000 feet upstream of Southern Pacific Railroad	259	29,000	*	62,000	80,000	*	131,000
Skyline Drain	At the confluence with Ventura River <sup>4,5</sup>	1.0	400	*	737	936	*	1,427
Skyline Drain	Approximately 0.4 mile upstream of confluence with Ventura River <sup>4,5</sup>	*	10	*	137	336	*	827
Skyline Drain	Approximately 130 feet downstream of Willey Street <sup>4,5</sup>	*	10	*	45	202	*	629
Skyline Drain	Approximately 200 feet downstream of North Ventura Avenue <sup>4,5</sup>	*	10	*	29	180	*	594
Skyline Drain	Approximately 100 feet downstream of Valley Meadow Court	*	340	*	598	726	*	1,092
Somis Drain	At Corby Avenue	*	*	*	*	582	*	*
Somis Drain	At Shepherd Drive	*	*	*	*	952	*	*

<sup>4</sup> Discharge received from adjacent overbank flow

<sup>5</sup> Discharge decreased to due stormwater conduit

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
South Branch Arroyo Conejo	Upstream of Ventura Freeway	10.72	1,470	*	4,850	6,800	*	12,800
South Branch Arroyo Conejo	Upstream of Jenny Drive Extension	7.46	1,210	*	4,000	5,700	*	10,700
Stewart Canyon Creek	Upstream of confluence with San Antonio Creek	5.00	1,400	*	3,800	5,500	*	7,900
Stewart Canyon Storm Channel	At confluence with San Antonio Creek	5.00	2,400	*	4,600	5,500	*	7,900
Stewart Canyon Storm Channel	Upstream of confluence with Fox Canyon	2.60	980	*	2,200	2,700	*	3,900
Sycamore Canyon Creek	Below Detention Dam	*	*	*	*	184	*	*
Tapo Canyon Channel	At confluence with Arroyo Simi	20.7	*	*	*	8,500	*	*
Tapo Canyon Channel	At Tapo Canyon Road	17.8	*	*	*	8,500	*	*
Telephone Road Drain	At confluence with Arundell Barranca	2.02	430	*	1,290	1,760	*	3,300
Telephone Road Drain	Upstream of U.S. Highway 101	1.68	375	*	1,110	1,500	*	2,800
Thacher Creek	At confluence with San Antonio Creek	10.6	2,860	*	7,750	10,900	*	21,280
Thacher Creek	Downstream of confluence of Reeves Creek	8.7	3,200	*	8,670	12,200	*	23,810

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Thacher Creek	Upstream of confluence of Reeves Creek	3.4	1,730	*	4,690	6,590	*	12,860
Thousand Oaks North Drain	Upstream of confluence of Arroyo Conejo	1.26	780	*	1,490	1,870	*	2,970
Thousand Oaks North Drain	At State Highway 23	1.13	740	*	1,420	1,780	*	2,830
Thousand Oaks North Drain	At La Jolla Drive	0.9	630	*	1,210	1,530	*	2,420
Ventura River	At Pacific Ocean <sup>3</sup>	226	34,000	*	67,000	78,000	*	103,000
Ventura River	At Shell Chemical Plant	222	34,000	*	66,000	77,000	*	102,000
Ventura River	At Casitas Vista Road	184	30,000	*	58,000	68,000	*	90,000
Ventura River	At Casitas Springs	143	29,000	*	55,000	65,000	*	86,000
Ventura River	At Baldwin Road	81.0	16,000	*	31,000	36,000	*	48,000
Ventura River	Downstream of confluence of North Fork Matilija Creek	70.40	15,000	*	30,000	34,500	*	46,000
Ventura River	Upstream of confluence of North Fork Matilija Creek	54.30	12,000	*	23,500	27,500	*	36,500
Walnut Canyon Drain	At Walnut Canyon Road	0.61	310	*	640	820	*	1,360

<sup>3</sup> Discharges are larger than those downstream due to updated hydrology (San Antonio Creek & Ventura River)

\* Data not available

**Table 10: Summary of Discharges, continued**

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
West Camarillo Hills Tributary	At Euclid Avenue	*	*	*	*	820	*	*
West Wooley Drain	At West Hemlock Street	0.8	100	*	300	450	*	1,550
West Wooley Drain	At Ventura Railway crossing	0.2	25	*	70	100	*	390
White Oak Creek	At confluence with Arroyo Simi	4.2	*	*	*	3,470	*	*
White Oak Creek	At confluence of Hummingbird Creek	3.7	*	*	*	2,670	*	*
White Oak Creek	At freeway	1.5	*	*	*	960	*	*

\* Data not available

**Figure 7: Frequency Discharge-Drainage Area Curves**  
**[Not applicable to this Flood Risk Project]**

**Table 11: Summary of Non-Coastal Stillwater Elevations**

Flooding Source	Location	Elevations ( Feet NAVD88)					
		10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance	1% Plus Annual Chance
Lake Sherwood	Ventura County	959.42	959.86	960.15	960.42	960.97	961.19
Westlake Lake	Ventura County	875.45	976.16	876.63	877.08	878.09	878.47

**Table 12: Stream Gage Information used to Determine Discharges**  
**[Not Applicable to this Flood Risk Project]**

## 5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

**Table 13: Summary of Hydrologic and Hydraulic Analyses**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Alamos Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Alamos Canyon Creek Tributary (Unnamed)	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Arneill Drain	Not Provided	Not Provided	VCRAT	FLO-2D	09/05/2008	AE, AO	See 316-PMR, LOMR 08-09-0512P
Arroyo Colorado	Confluence with Honda Barranca	Approximately 0.4 miles upstream of La Loma Avenue	Log-Pearson Type III Frequency Analysis	HEC-2	01/01/1988	AE	
Arroyo Conejo	Confluence with Conejo Creek	Approximately 1,400 feet upstream of Hill Canyon Fire Road	HEC-1	HEC-2	01/01/1976	AE w/ Floodway	
Arroyo Conejo	Approximately 1,400 feet upstream of Hill Canyon Fire Road	At 101 Freeway	HEC-1	HEC-2	01/01/1976	A	
Arroyo Conejo	At 101 Freeway	Approximately 1,100 feet upstream of Hodencamp Road	HEC-1	HEC-2	01/01/1976	AE	
Arroyo Conejo Tributary 1 (Unnamed)	Confluence with Arroyo Conejo	At Camino Dos Rios	HEC-1	HEC-2	01/01/1976	AE	
Arroyo Las Posas	Confluence with Calleguas Creek	Confluence of Arroyo Simi	HEC-1	HEC-2	01/01/1988	AE w/ Floodway	
Arroyo Santa Rosa	Confluence with Conejo Creek	Approximately 0.6 miles upstream of Las Posas Road	VCRAT 2.2	HEC-RAS 3.1	09/01/2004; 05/01/2008	AE w/ Floodway	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Arroyo Santa Rosa	Approximately 0.6 miles upstream of Las Posas Road	Approximately 750 feet upstream of Lexington Hills Private Drive	HEC-1	HEC-2	01/01/1988	A	
Arroyo Santa Rosa	Approximately 750 feet upstream of Lexington Hills Private Drive	Approximately 0.5 miles upstream of N 23 Freeway	VCRAT 2.2	HEC-RAS 3.1	09/01/2004; 05/01/2008	AE w/ Floodway	
Arroyo Santa Rosa Diversion	Confluence with Arroyo Santa Rosa	Approximately 650 feet upstream of Sunset Valley Road	VCRAT 2.2	HEC-RAS 3.1	09/01/2004; 05/01/2008	AE w/ Floodway	
Arroyo Santa Rosa Tributary	Confluence with Arroyo Santa Rosa	Approximately 400 feet upstream of Santa Rosa Road	VCRAT 2.2	HEC-RAS 3.1	09/01/2004; 05/01/2008	AE, AO w/Floodway	
Arroyo Santa Rosa Tributary	Approximately 400 feet upstream of Santa Rosa Road	Approximately 650 feet upstream of Marvella Court	HEC-1	HEC-2	01/01/1988	A	
Arroyo Simi	Confluence with Arroyo Las Posas	Approximately 0.5 miles downstream of Madera Road	HEC-1	HEC-2	06/01/1995	AE, AH w/Floodway	
Arroyo Simi	Approximately 0.5 miles downstream of Madera Road	Approximately 1,200 feet upstream of 1st Street	VCRAT	HEC-2	06/01/1995	AE, AO	
Arroyo Simi	Approximately 1,200 feet upstream of 1st Street	Approximately 550 feet upstream of Rory Lane	VCRAT	HEC-2	06/01/1995	AE, AH, AO w/Floodway	
Arroyo Simi	Approximately 550 feet upstream of Rory Lane	Approximately 750 feet upstream of Katherine Road	VCRAT	HEC-2	06/01/1995	AE, AH, AO	
Arroyo Simi	Approximately 750 feet upstream of Katherine Road	Approximately 0.8 miles upstream of Kuehner Drive	VCRAT	HEC-2	06/01/1995	AE w/ Floodway	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Arundell Barranca	Not Provided	Not Provided	HEC-1	HEC-2	05/01/1983	A, AH	
Arundell Barranca	Not Provided	Not Provided	HEC-1	HEC-2	05/01/1983	A	
Auto Center Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	AH	
Barbara Drive Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Bardsdale Ditch	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Barlow Barranca	Not Provided	Not Provided	HEC-1	HEC-2	05/01/1983	A	
Beardsley Wash	Approximately 0.4 miles downstream of Wright Road	Approximately 0.4 miles upstream of Wright Road	HEC-1	HEC-2	01/01/1988	AE w/ Floodway	
Beardsley Wash	Approximately 0.4 miles upstream of Wright Road	Confluence of Honda Barranca	HEC-1	HEC-2	01/01/1988	A	
Bell Canyon Creek	At Ventura—Los Angeles County Boundary	At Buckskin Court	HEC-1	HEC-2	01/01/1988	AE	
Bell Canyon Creek Tributary 1	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Berylwood Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Big Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Big Mountain Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Big Sycamore Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Big Sycamore Canyon Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Boosey Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Boulder Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Brea Canyon Creek	At View Lane Drive	At Brea Canyon Road	HEC-1	HEC-2	01/01/1988	AE	
Brea Canyon Creek Tributary 1 (Unnamed)	Confluence with Brea Canyon Creek	Approximately 0.5 miles upstream of confluence with Brea Canyon Creek	HEC-1	HEC-2	01/01/1988	AE	
Brea Canyon Creek Tributary 1-1 (Unnamed)	Confluence with Brea Canyon Creek Tributary 1	Approximately 1,100 feet upstream of confluence with Brea Canyon Creek Tributary 1	HEC-1	HEC-2	01/01/1988	AE	
Brown Barranca	Confluence with Santa Clara River	Immediately downstream of Blackburn Road	HEC-1	HEC-2	05/01/1983	A, AH	
Brown Barranca	Immediately downstream of Blackburn Road	Approximately 420 feet upstream of Telegraph Road	HEC-1	HEC-2	05/01/1983	AE	
Bus Canyon Drain	Confluence with Arroyo Simi	Approximately 150 feet upstream of Bennett Street	VCRAT	HEC-2	06/01/1995	AE, AO	
Bus Canyon Drain	Not Provided	Not Provided	VCRAT	HEC-2	06/01/1995	A	
Bus Canyon Drain Tributary	Confluence with Bus Canyon Drain	At Fitzgerald Road	VCRAT	HEC-2	06/01/1995	AE, AH, AO	
Calleguas Creek	At State Highway 1	Immediately downstream of U.S. Highway 101	VCRAT 2.2	HEC-RAS 3.1	09/01/2004; 05/01/2008	AE, AO	
Calleguas Creek	Immediately downstream of U.S. Highway 101	Approximately 1.0 miles upstream of Seminary Road	VCRAT	FLO-2D	09/05/2008	AE w/ Floodway	See 316-PMR, LOMR 08-09-0512P
Camarillo Hills Drain	Confluence with Revolon slough	At City of Camarillo Corporate Limit	VCRAT; HEC-HMS	FLO-2D	02/01/2011	AE	See 316-PMR, Case No. 11-09-3535P

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Camarillo Hills Drain	At City of Camarillo Corporate Limit	At Las Posas Road	VCRAT	FLO-2D	07/19/2011	AE w/ Floodway	Hydrology - Ventura County Modified Rational Method with Areal Reduction applied (see LOMR 11-09-0883P)
Camarillo Hills Drain	At Las Posas Road	At Arneill Road	VCRAT; HEC-HMS	FLO-2D	02/01/2011	AE, AO	See 316-PMR, Case No. 11-09-3535P
Canada De Aliso	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Channel Islands Harbor	Not Provided	Not Provided	HEC-1	HEC-2	1984	A	
Channel Islands Harbor	Not Provided	Not Provided	HEC-1	HEC-2	1984	AE	
Chaparral Road Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Chivo Canyon Creek	Not Provided	Not Provided	VCRAT	HEC-2	06/01/1995	A	
Coastal Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Conejo Creek	Confluence with Calleguas Creek	Confluences of Arroyo Conejo and Arroyo Santa Rosa	VCRAT 2.2	HEC-RAS 3.1	09/01/2004; 05/01/2008	AE w/ Floodway	See LOMR 10-09-2501P
Conejo Mountain Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1976	A	
Conejo Park Creek	Not Provided	Not Provided	HEC-1	HEC-2	05/01/1983	A	
Conejo Park Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	05/01/1983	A	
Cooper Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Coyote Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Coyote Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Coyote Canyon Wash	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Coyote Creek	Confluence with Ventura River	Downstream outlet of Casitas Lake Dam Spillway	HSPF	HEC-RAS 4.1	04/24/2015	AE w/ Floodway	
Coyote Creek (Lake Casitas)	At Casitas Dam	Approximately 0.7 miles upstream of State Highway 150	HEC-1	HEC-2	01/01/1988	A	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Cozy Del Canyon	Confluence with Ventura River	Approximately 0.4 mile upstream of Maricopa Highway	HSPF	HEC-RAS 4.1	04/24/2015	AE w/ Floodway	
Crestview Drain	Confluence with Camarillo Hills Drain	At Las Posas Road	VCRAT	FLO-2D	09/05/2008	AE, AO	See 316-PMR, LOMR 08-09-0512P
Crooked Creek	Not Provided	Not Provided	HSPF	FLO-2D; HEC-RAS	03/25/2013	AE, AO	Hydrologic Simulation Program-FORTRAN
Donlon Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Doris Avenue Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	A	
Dron Creek	Not Provided	Not Provided	HSPF	FLO-2D; HEC-RAS	03/25/2013	AE, AO	
Dry Canyon Drain	Confluence with Arroyo Simi	Approximately 1,100 feet upstream of Alamo Street	VCRAT	HEC-2	06/01/1995	AE, AO	
Dry Canyon Drain	Approximately 1,100 feet upstream of Alamo Street	Approximately 1,600 feet downstream of Lost Canyons Drive	VCRAT	HEC-2	06/01/1995	A	
Dry Canyon Drain	Approximately 1,600 feet downstream of Lost Canyons Drive	At Lost Canyons Drive	VCRAT	HEC-2	06/01/1995	AE	
Dry Canyon Drain Tributary	Not Provided	Not Provided	VCRAT	HEC-2	06/01/1995	A	
E Street Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	AE	
E Street Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	A	
East Fork Honda Barranca	Confluence with Honda Barranca	Approximately 1,700 feet upstream of La Loma Avenue	Log-Pearson Type III Frequency Analysis	HEC-2	01/01/1988	AE	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
East Fork Lord Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
East Fork Medea Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
East Fork Medea Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
East Fork Tripas Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
East Las Virgenes Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
East Las Virgenes Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
East Tributary	Confluence with Dry Canyon Creek	At Sycamore Drive	VCRAT	HEC-2	06/01/1995	AO	
East Tributary Meier Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1990	A	
East Tributary Somis Drain	Confluence with Somis Drain	Not Provided	VCRAT	FLO-2D	09/05/2008	AO	See 316-PMR, LOMR 08-09-0512P
Edgemoor Drain	Confluence with Camarillo Hills Drain	Approximately 400 feet upstream of Getman Street	VCRAT; HEC-HMS	FLO-2D	02/01/2011	AE, AO	See 316-PMR, Case No. 11-09-3535P
Edwards Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Ellsworth Barranca	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Erringer Drain	Confluence with Arroyo Simi	Approximately 1,600 feet upstream of Fitzgerald Road	VCRAT	HEC-2	06/01/1995	AE, AO	
Eureka Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Fox Barranca	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Fox Canyon Storm Drain	Confluence with Stewart Canyon Creek	Approximately 1,360 feet upstream of North Montgomery Street	HSPF	HEC-RAS 4.1	04/24/2015	AE w/ Floodway	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Franklin Barranca	Confluence with Santa Clara River	At Darling Road	HEC-1	HEC-2	05/01/1983	A	
Frey Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Gabbert Canyon Creek	Confluence with Arroyo Las Posas	At Los Angeles Avenue	HEC-1	HEC-2	07/01/1983	AE w/ Floodway	
Gabbert Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Gill Barranca	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Gillibrand Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Guadalasca Road Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Hammond Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Hammond Canyon Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Happy Camp Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1983	A	
Happy Camp Canyon Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1983	A	
Happy Valley Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Happy Valley Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	AE, AH	
Happy Valley Drain South	Confluence with Ventura River	Upstream splits from Happy Valley Drain	HSPF	HEC-RAS 4.1	04/24/2015	AE w/ Floodway	
Happy Valley Drain Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	AE	
Harmon Barranca	Confluence with Santa Clara River	At Railroad	HEC-1	HEC-2	05/01/1983	A	
Harmon Barranca	At Railroad	Approximately 370 feet upstream of Ralston Street	HEC-1	HEC-2	05/01/1983	AE	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Hidden Valley Road Wash	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Hidden Valley Wash	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Hill Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1976	A	
Hilltop Lane Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Holser Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Honda Barranca	Not Provided	Not Provided	Log-Pearson Type III Frequency Analysis	HEC-2	01/01/1988	A	
Honda Barranca Tributary	Not Provided	Not Provided	Log-Pearson Type III Frequency Analysis	HEC-2	01/01/1988	A	
Hueneme Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	X	
Hummingbird Creek	Not Provided	Not Provided	VCRAT	HEC-2	03/01/1993	A, AH	
Hummingbird Creek Tributary	Not Provided	Not Provided	VCRAT	HEC-2	03/01/1993	AH	
Hunt Wash	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
J Street Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	X	
Javon Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Jepson Wash	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Kenny Grove Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Koenigstein Road Wash	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
La Jolla Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Lake Eleanor Creek (Lake Eleanor)	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Lake Sherwood	Not Provided	Not Provided	HEC-HMS 4.0	—	2015	AE	
Lake Sherwood	Not Provided	Not Provided	HEC-HMS 4.0	—	2015	A	
Lake Sherwood Tributary 1	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Lake Sherwood Tributary 2	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Lang Creek	Confluence with Arroyo Conejo	Approximately 500 feet upstream of Combes Private Avenue	VCRAT 2.2	HEC-RAS 3.1	09/01/2004	AE	
Las Lajas Canyon Channel	Confluence with Arroyo Simi	Approximately 200 feet downstream of Yosemite Avenue	VCRAT	HEC-2	06/01/1995	AE, AH, AO	
Las Lajas Canyon Channel	Not Provided	Not Provided	VCRAT	HEC-2	06/01/1995	A	
Las Posas Estates Drain	Confluence with Camarillo Hills Drain	At Central Avenue	HEC-1	HEC-2	05/01/1983	A	
Las Posas Estates Drain	At Central Avenue	At Avenida De Autlan	HEC-1	HEC-2	05/01/1983	AE w/ Floodway	
Las Posas Estates Drain	At Avenida De Autlan	Approximately 500 feet upstream of Avocado Place	HEC-1	HEC-2	05/01/1983	A	
Las Sauces Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Las Virgenes Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Las Virgenes Canyon Creek Tributary 1	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Laskey Mesa West	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Lime Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Lindero Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Lion Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Little Happy Camp Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1983	A	
Little Happy Camp Canyon Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1983	A	
Little Sycamore Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Long Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Long Canyon Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Long Grade Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Madranio Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Magnolia Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Mahan Barranca	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Matilija Creek	Confluence with Ventura River	At Matilija Dam	HEC-1	HEC-2	01/01/1988	AE w/ Floodway	
Maxy Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
McNell Creek	Confluence with San Antonio Creek	Approximately 0.8 miles upstream of Chaparral Road	HSPF	FLO-2D; HEC-RAS	03/25/2013	AE w/ Floodway	
Medea Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Medea Creek Tributary 1	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Meier Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1990	A	
Miles Road Drain	Not Provided	Not Provided	HEC-1	HEC-2	05/01/1983	A	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mira Monte Drain	Confluence with Happy Valley Drain South	Approximately 1,480 feet upstream Loma Drive	HSPF	HEC-RAS 4.1	04/24/2015	AE w/ Floodway	
Mission Drain	Confluence with Camarillo Hills Drain	Approximately 1,200 feet upstream of Glenbrook Avenue	VCRAT; HEC-HMS	FLO-2D	02/01/2011	AE, AO	See 316-PMR, Case No. 11-09-3535P
Moon Ditch	Confluence with Santa Clara River	At Railroad	HEC-1	HEC-2	05/01/1983	AE	
Moore Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Mud Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
North Branch Alamos Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
North Fork Canada De Los Alamos	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
North Fork Tributary 1	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
North Fork Tributary 2	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
North Ramona Place Drain	Not Provided	Not Provided	HEC-1	HEC-2	05/01/1983	A	
North Simi Drain	Confluence with Arroyo Simi	Approximately 0.3 miles upstream of Legends Drive	VCRAT	HEC-2	06/01/1995	AE, AO	
Nyland Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Nyland Drain Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	AO	
Oak Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1990	A	
Oak Canyon Creek (North)	Confluence with Dry Canyon Creek	At Lost Canyons Drive	VCRAT	HEC-2	06/01/1995	AE	
Oak Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Oxnard Industrial Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	AO	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Oxnard West Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	A	
Padre Juan Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Palo Comado Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Paso Flores Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Peach Hill Wash	Confluence with Arroyo Las Posas	Approximately 1,200 feet upstream of Country Hill Road	VCRAT 2.2	HEC-RAS 3.1	09/01/2004; 05/01/2008	AE w/ Floodway	
Piru Creek (Lake Piru)	At Santa Felicia Dam	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Pole Creek	Approximately 0.9 miles upstream of Telegraph Road	Not Provided	HEC-1	HEC-2	06/01/1977	A	
Ponderosa Drain	Confluence with Camarillo Hills Drain	At Temple Avenue	VCRAT; HEC-HMS	FLO-2D	02/01/2011	AE, AO	See 316-PMR, Case No. 11-09-3535P
Poplin Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Poplin Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Potrero Valley Creek (Lake Sherwood)	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Puerta Zuela Barranca	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Punte Gorda Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Reeves Creek	Confluence with Thacher Creek	Approximately 0.8 miles upstream of McAndrew Road	HSPF	FLO-2D; HEC-RAS	03/25/2013	AE, AO w/Floodway	
Reeves Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Reeves Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Revolon Slough	Not Provided	Not Provided	VCRAT 2.2	HEC-RAS 3.1	09/01/2004; 05/01/2008	A	
Rice Avenue (Road) Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	A	
Rincon Creek	Confluence with Pacific Ocean	Approximately 1,800 feet upstream of Railroad	Log-Pearson Type III Frequency Analysis	HEC-2	01/01/1988	AE, AO w/Floodway	
Rincon Creek	Approximately 1,800 feet upstream of Railroad	Approximately 1,400 feet upstream of State Highway 150	Log-Pearson Type III Frequency Analysis	HEC-2	01/01/1988	A	
Runkle Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1990	A, AH	
Salt Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
San Antonio Creek	Confluence with Ventura River	Approximately 410 feet upstream of confluence of East Ojai Drain	HSPF	HEC-RAS 4.1	04/24/2015	AE w/ Floodway	
San Antonio Creek	Approximately 1.3 miles upstream of Creek Road	Approximately 1,800 feet upstream of Hermitage Road	HSPF	FLO-2D; HEC-RAS	03/25/2013	AE w/ Floodway	
Sand Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Santa Ana Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Santa Ana Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Santa Clara River	Confluence with Pacific Ocean	At Ventura—Los Angeles County Boundary	Log-Pearson Type III Frequency Analysis	HEC-2	07/01/1983	AE w/ Floodway	
Santa Clara River Breakout (Tributary)	Confluence with Pacific Ocean	Confluence with Santa Clara River	HEC-1	HEC-2	01/01/1988	AE w/ Floodway	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Santa Felicia Spillway	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Santa Paula Creek	Not Provided	Not Provided	Log-Pearson Type III Frequency Analysis	HEC-2	07/01/1983	AE	
Santa Paula Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Santa Susana West Drain	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1990	AH, AO	
Scarab Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Serrano Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Sespe Creek	Approximately 1.0 miles upstream of Old Telegraph Road	Approximately 3.5 miles upstream of Old Telegraph Road	HEC-1	HEC-2	01/01/1988	AE w/ Floodway	
Sespe Creek	Approximately 3.5 miles upstream of Old Telegraph Road	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Shekel Road Drain	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Sherwood Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Sherwood Creek Tributary 1	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Shields Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Sisar Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Smith Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Solano Verde Wash	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Solano Verde Wash Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Somis Drain	Confluence with Calleguas Creek	At Las Posas Road	VCRAT; HEC-HMS	FLO-2D	02/01/2011	AE, AO	See 316-PMR, Case No. 11-09-3535P
South Branch Arroyo Conejo	Confluence with Arroyo Conejo	At Ventu Park Road	HEC-1	HEC-2	01/01/1976	A	
South Branch Arroyo Conejo	At Ventu Park Road	At Maurice Drive	HEC-1	HEC-2	01/01/1976	AE	
South Branch Arroyo Conejo	At Maurice Drive	Approximately 0.5 miles upstream of Sycamore Canyon Road	HEC-1	HEC-2	01/01/1976	A	
South Branch Arroyo Conejo Tributary 1	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1976	A	
South Branch Arroyo Conejo Tributary 2	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1976	A	
South Fork Canada De Los Alamos	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
South Grimes Canyon Wash	Not Provided	Not Provided	VCRAT 2.2	FLO-2D	09/01/2004; 05/01/2008	A	
South Grimes Canyon Wash (North)	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
South Grimes Canyon Wash Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Stewart Canyon Creek	Confluence with San Antonio Creek	Approximately 0.4 mile upstream of Canada Street conduit inlet	HSPF	HEC-RAS 4.1	04/24/2015	AE	
Stewart Canyon Left Overbank	Confluence with Fox Canyon Barranca	At overflow split near Canada Street conduit inlet	HSPF	HEC-RAS 4.1	04/24/2015	AE	
Sulphur Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Sycamore Canyon Creek	Confluence with Arroyo Simi	At E Bonita Drive	HEC-1	HEC-2	07/01/1990	AO	
Sycamore Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1990	A	
Sycamore Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Tapo Canyon Channel	Confluence with Arroyo Simi	Approximately 600 feet upstream of State Highway 118	VCRAT	HEC-2	06/01/1995	AE, AH, AO	
Tapo Canyon Channel	Approximately 600 feet upstream of State Highway 118	Approximately 1,200 feet upstream of Walnut Street	VCRAT	HEC-2	06/01/1995	A	
Tapo Canyon Channel	Approximately 1,200 feet upstream of Walnut Street	Confluence of Tapo Canyon Creek	VCRAT	HEC-2	06/01/1995	AE	
Tapo Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Tapo Canyon Creek (North)	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Tapo Canyon Creek Tributary 2	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Tapo Canyon Creek Tributary 3 (Unnamed)	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Telephone Road Drain	Not Provided	Not Provided	HEC-1	HEC-2	05/01/1983	X	
Thacher Creek	Confluence with San Antonio Creek	Approximately 800 feet upstream of McNell Road	HSPF	FLO-2D; HEC-RAS	03/25/2013	AE, AO w/Floodway	
Thacher Creek	Approximately 800 feet upstream of McNell Road	Approximately 480 feet upstream of Grand Avenue	HSPF	FLO-2D; HEC-RAS	03/25/2013	AO	

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Thacher Creek	Approximately 480 feet upstream of Grand Avenue	Approximately 0.4 miles upstream of Thacher Road	HSPF	FLO-2D; HEC-RAS	03/25/2013	AE w/ Floodway	
Thousand Oaks North Drain	Confluence with Arroyo Conejo	Approximately 800 feet upstream of El Cerrito Drive	VCRAT 2.2	HEC-RAS 3.1	09/01/2004	AE	
Tierra Rejada Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	AE, AO	
Timber Canyon Creek Tributary 1	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Torrey Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Tripas Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Tripas Canyon Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Ventura Marina	Not Provided	Not Provided	HEC-1	HEC-2	1984	AE	
Ventura River	Confluence with Pacific Ocean	Approximately 0.6 mile upstream of Shell Road	HEC-1	HEC-2	01/01/1988	AE, AH, AO w/Floodway	
Ventura River	Approximately 0.6 mile upstream of Shell Road	Downstream of Matijila Reservoir	HSPF	HEC-RAS 4.1	04/24/2015	AE w/ Floodway	
Walnut Canyon Drain	Confluence with Gabbert Canyon Creek	Approximately 1,300 feet upstream of Casey Road	VCRAT 2.2	HEC-RAS 3.1	09/01/2004	AE, AO	
Walnut Canyon Drain (Gabbert Road)	Not Provided	Not Provided	VCRAT 2.2	HEC-RAS 3.1	09/01/2004	A	
Warring Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Warring Wash	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
West Camarillo Hills Tributary	Confluence with Camarillo Hills Drain	At Las Posas Road	VCRAT; HEC-HMS	FLO-2D	02/01/2011	AE, AO	See 316-PMR, Case No. 11-09-3535P

**Table 13: Summary of Hydrologic and Hydraulic Analyses, continued**

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
West Fifth Street Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	A	
West Fork Orcutt Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
West Fork Salt Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
West Fork Salt Canyon Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
West Fork Sycamore Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1990	A	
West Fork Sycamore Canyon Creek (Wood Ranch Reservoir)	Not Provided	Not Provided	HEC-1	HEC-2	07/01/1990	A	
Westlake Lake	At the LA County Boundary	Confluence with School House Canyon	HEC-HMS 4.0	—	2015	AE	
West Tributary	Confluence with Dry Canyon Creek	At Erringer Road	VCRAT	HEC-2	06/01/1995	AH, AO	
West Tributary Long Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
West Wooley Drain	Not Provided	Not Provided	HEC-1	HEC-2	03/01/1977	A	
White Oak Creek	Not Provided	Not Provided	VCRAT	HEC-2	03/01/1993	A	
White Oak Creek Tributary	Not Provided	Not Provided	VCRAT	HEC-2	03/01/1993	A	
Windmill Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Windmill Canyon Creek Tributary	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	
Wood Canyon Creek	Not Provided	Not Provided	HEC-1	HEC-2	01/01/1988	A	

**Table 14: Roughness Coefficients**

Flooding Source	Channel “n”	Overbank “n”
Adams Canyon Creek	0.060	*
Arundell Barranca	0.015	0.030
Arroyo Simi	0.015-0.120	*
Barlow Barranca	0.024	*
Brown Barranca	0.015-0.030	0.050
Calleguas Creek	0.030-0.035	0.040-0.090
Camarillo Hills Drain	0.030-0.060	0.030-0.040
Canada Larga	0.015-0.093	0.045-0.121
Canada Larga Left Overbank	0.030	0.090-0.121
Canada Larga Right Overbank	0.018-0.070	0.045-0.090
Conejo Creek	0.025-0.030	0.150
Coyote Creek	0.014-0.051	0.035-0.158
Cozy Del Canyon Creek	0.039-0.044	0.039-0.073
East Ojai Avenue Drain	0.016-0.050	0.050-0.150
East Ojai Drain	0.033-0.096	0.033-0.096
Edgemore Drain	0.030-0.036	0.035-0.221
Fagan Canyon	0.014	0.035
Fox Canyon Storm Drain	0.015-0.035	0.020-0.060
Franklin Barranca	0.015	0.030-0.100
Happy Valley Drain South	0.035-0.083	0.047-0.083
Harmon Barranca	0.040	0.070
Las Posas Estates Drain	0.015-0.050	0.040-0.070
Manuel Canyon Creek	0.015-0.035	0.035-0.060
Manuel Canyon Creek Left Overbank	0.035	0.035
McDonald Canyon Drain South	0.035-0.063	0.031-0.083
McNell Creek	0.066	0.015-0.045
Mills Road Drain	0.015	*
Mira Monte Drain	0.032-0.050	0.083
Mirror Lake Drain	0.030-0.035	0.071-0.072
Mirror Lake Drain Overland Reach	0.041	0.071
Mission Drain	0.030-0.043	0.035-0.221
Oak View Drain	0.012-0.051	0.020-0.095
Pole Creek	0.015-0.040	0.040-0.070
Reeves Creek	0.066	0.015-0.045
Rincon Creek	0.012-0.125	0.060-0.150
San Antonio Creek	0.032-0.067	0.030-0.093

**Table 14: Roughness Coefficients, continued**

Flooding Source	Channel “n”	Overbank “n”
Santa Clara River	0.025-0.030	0.040-0.070
Santa Paula Creek	0.035	*
Sespe Creek	0.060	0.070
Skyline Drain	0.034-0.047	0.062-0.071
Somis Drain	0.030-0.045	0.035-0.221
Stewart Canyon Creek	0.011-0.083	0.016-0.094
Stewart Canyon Creek Left Overbank	0.083	0.083
Telephone Road Drain	0.015	*
Thacher Creek	0.066	0.015-0.045
Ventura River	0.025-0.068	0.033-0.068
West Camarillo Hills Tributary	0.030-0.039	0.035-0.221

\*Data Not Available

### 5.3 Coastal Analyses

For the areas of Ventura County that are impacted by coastal flooding processes, coastal flood hazard analyses were performed to provide estimates of coastal BFEs. Coastal BFEs reflect the increase in water levels during a flood event due to extreme tides and storm surge as well as overland wave effects.

The following subsections provide summaries of how each coastal process was considered for this FIS Report. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation (FEMA, 1984; Tetra Tech, Inc., 1982). Table 15 summarizes the methods and/or models used for the coastal analyses. Refer to Section 2.5.1 for descriptions of the terms used in this section.

**Table 15: Summary of Coastal Analyses**

Flooding Source	Study Limits		Hazard Evaluated	Model or Method Used	Date Analysis was Completed
	From	To			
Pacific Ocean	Santa Barbara/Ventura County Boundary	Ventura/Los Angeles County Boundary	wave setup, open coast; wave setup, sheltered waters; wave runup	regression relations (FEMA, 1984; Tetra Tech, Inc., 1982)	1984

#### Wave Setup Analysis

Coastal flood hazard areas subject to inundation by the Pacific Ocean were determined on the basis of water-surface elevations established from regression relations defined by Thomas (FEMA, 1984). These regression relations were defined as a practical method for establishing inundation elevations at any site along the southern California mainland coast. They were defined through analysis of water-surface elevations established for 125 locations in a complex and comprehensive model study by Tetra Tech, Inc. (Tetra Tech, Inc., 1982). The regression relations establish wave run-up and wave setup elevations having 01, 0.01, and 0.002 chances of

occurring in any year and are sometimes referred to as the 10-, 1-, and 0.2-percent-annual-chance flood events, respectively. Wave setup elevations determined from the regression equations on the basis of location along the coast were used to identify flood hazard areas along bays, coves, and areas sheltered from direct action of deep-water waves.

### **Wave Runup Analysis**

Wave run-up elevations were used to determine flood hazard areas for sites along the open coast that are subject to direct assault by deep-water waves. Run-up elevations vary with location and local beach slope and were computed at 0.5-mile intervals, or more frequently in areas where the beach profile changes significantly over short distances. Areas with ground elevations 3.0 feet or more below the 1-percent-annual-chance wave run-up elevation are subject to velocity hazard.

#### **5.3.1 Total Stillwater Elevations**

This section is not applicable to this Flood Risk Project.

#### **Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas**

[Not Applicable to this Flood Risk Project]

#### **Table 16: Tide Gage Analysis Specifics**

[Not applicable to this Flood Risk Project]

#### **5.3.2 Waves**

This section is not applicable to this Flood Risk Project.

#### **5.3.3 Coastal Erosion**

This section is not applicable to this Flood Risk Project.

#### **5.3.4 Wave Hazard Analyses**

This section is not applicable to this Flood Risk Project.

#### **Table 17: Coastal Transect Parameters**

[Not applicable to this Flood Risk Project]

#### **Figure 9: Transect Location Map**

[Not Applicable to this Flood Risk Project]

## 5.4 Alluvial Fan Analyses

Alluvial fan flooding can pose significant risk to communities due to uncertain flow paths and the potential for mud and debris flows. Alluvial fans and flooding on alluvial fans show great diversity because of variations in climate, fan history, rates and styles of tectonism, source area lithology, vegetation, and land use. Acknowledging this diversity, FEMA developed an approach that considers site-specific conditions in the identification and mapping of flood hazards on alluvial fans. The FEMA alluvial fan methodology was used to determine the flood depths and velocities on the alluvial fans described in Table 18.

A summary of the peak discharge at the fan apex and results for the 1% annual chance determinations for all the streams studied by alluvial fan analyses is shown in Table 19, “Results of Alluvial Fan Analyses.”

Alluvial fan methodologies were applied to calculate flow depths and velocities in portions of San Antonio Creek and Thacher Creek (David R. Dawdy, 1979). Alluvial fans are characterized by unstable channel systems due to slope and soil conditions. Consequently, flows rarely spread evenly over the surface of an alluvial fan and can be concentrated in an identifiable temporary channel or confined to only portions of the fan surface. The ability to scour and deposit sediment makes flow paths prone to lateral migration and relocation to any portion of the fan during a single runoff event and subsequent events. This erratic, unpredictable behavior subjects all portions of the fan to potential flood hazard, regardless of location. As the fan widens, the probability of flooding at a given depth and velocity at a specific point generally decreases.

**Table 18: Summary of Alluvial Fan Analyses**

Flooding Source	Location From (apex)	Location To (toe)	Drainage Area above Apex (sq mi)	Model(s) Used	Date Analysis was Completed	Method Description
Crooked Creek	Apex of fan	Confluence with San Antonio Creek	0.7	FLO-2D version 2006.01	2011	Composite Methods
Dron Creek	Apex of fan	Confluence with San Antonio Creek	0.9	FLO-2D version 2006.01	2011	Composite Methods
San Antonio Creek	Apex of fan	Confluence of Thacher Creek	9.7	FLO-2D version 2006.01, HEC-RAS, FEMA FAN	2011	Composite Methods, Flood hazards on the active fan area were defined by the FEMA FAN computer program
Thacher Creek	Apex of fan	Confluence with San Antonio Creek	3.8	FLO-2D version 2006.01, HEC-RAS, FEMA FAN	2011	Composite Methods, Flood hazards on the active fan area were defined by the FEMA FAN computer program

**Table 19: Results of Alluvial Fan Analyses**

Flooding Source	Location From (apex)	Location To (toe)	1% Annual Chance Peak Flow at Fan Apex (cfs)	Flood Zones and Depths (ft)	Minimum Velocity (fps)	Maximum Velocity (fps)
Crooked Creek	Apex of fan	Confluence with San Antonio Creek	831	AO 1-2', AE	4	6
Dron Creek	Apex of fan	Confluence with San Antonio Creek	1,620	AO 1-2', AE	4	6
San Antonio Creek	Apex of fan	Confluence of Thacher Creek	17,500	AE	—	—
Thacher Creek	Apex of fan	Confluence with San Antonio Creek	6,590	AO 1-4', AE	4	9

## SECTION 6.0 – MAPPING METHODS

### 6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at [www.ngs.noaa.gov](http://www.ngs.noaa.gov), or contact the National Geodetic Survey at the following address:

NGS Information Services  
NOAA, N/NGS12  
National Geodetic Survey  
SSMC-3, #9202  
1315 East-West Highway  
Silver Spring, Maryland 20910-3282  
(301) 713-3242

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at [www.ngs.noaa.gov](http://www.ngs.noaa.gov).

The datum conversion locations and values that were calculated for Ventura County are provided in Table 20.

#### **Table 20: Countywide Vertical Datum Conversion**

[Not Applicable to this Flood Risk Project]

#### **Table 21: Stream-Based Vertical Datum Conversion**

[Not Applicable to this Flood Risk Project]

## 6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA’s FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA’s *Guidelines and Standards for Mapping Partners*, Appendix L.

Base map information shown on the FIRM was derived from the sources described in Table 22.

**Table 22: Base Map Sources**

Data Type	Data Provider	Data Date	Data Scale	Data Description
Panel Features	U.S. Geological Survey (USGS)	1989	1:24,000	Spatial and attribute information for the index of USGS 7.5-Minute Series Topographic Map boundaries
Digital Orthophoto	U.S. Geological Survey (USGS)	2004	1:12,000	Spatial and attribute information for some streamlines, roads and some general structures
Digital Orthophoto	U.S. Dept. of Agriculture - Farm Service Agency	2014	1 meter GSD	Digital ortho imagery for Ventura County, CA
Public Land Survey System (PLSS)	Bureau of Land Management	2008	1:12,000	Spatial and attribute information for PLSS Section, Township, and Range Gridlines
National Forest Boundaries	GreenInfo Network - California Protected Areas Database	2014	1:12,000	Spatial and attribute information for National Forests.
Political Boundaries	Ventura County	2013	1:12,000	Spatial and attribute information for political boundaries for Ventura County and Incorporated areas
Political Boundaries	Bureau of Land Management	2005	1:12,000	Spatial and attribute information for Federal Lands and Military base

**Table 22: Base Map Sources, continued**

Data Type	Data Provider	Data Date	Data Scale	Data Description
Transportation Features	U.S. Dept. of Commerce, U.S. Census Bureau, Geography Division	2014	1:12,000	Spatial and attribute information for transportation labels

### 6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23. For each coastal flooding source studied as part of this FIS Report, the mapped floodplain boundaries on the FIRM have been delineated using the flood and wave elevations determined at each transect; between transects, boundaries were delineated using land use and land cover data, the topographic elevation data described in Table 23, and knowledge of coastal flood processes. In ponding areas, flood elevations were determined at each junction of the model; between junctions, boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

Certain flooding sources may have been studied that do not have published BFEs on the FIRMs, or for which there is a need to report the 1% annual chance flood elevations at selected cross sections because a published Flood Profile does not exist in this FIS Report. These streams may have also been studied using methods to determine non-encroachment zones rather than floodways. For these flooding sources, the 1% annual chance floodplain boundaries have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23. All topographic data used for modeling or mapping has been converted as necessary to NAVD 88. The 1% annual chance elevations for selected cross sections along these flooding sources, along with their non-encroachment widths, if calculated, are shown in Table 25, "Flood Hazard and Non-Encroachment Data for Selected Streams."

**Table 23: Summary of Topographic Elevation Data used in Mapping**

Community	Flooding Source	Source for Topographic Elevation Data			
		Description	Scale	Contour Interval	Citation
Ventura County and Incorporated Areas	All revised streams within this FIS report	LiDAR	Altitude: 1,371 meters	1 meter	Ventura County 2005 LiDAR

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.

**Table 24: Floodway Data**

**[The Preliminary FIS report does not include unrevised Floodway Data tables or unrevised Flood Profiles. These unrevised components will appear in the final FIS report.]**

**Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams**

[Not Applicable to this Flood Risk Project]

#### **6.4 Coastal Flood Hazard Mapping**

Coastal floodplain boundaries were delineated using the wave run-up or wave setup elevations computed at each 0.5-mile interval. Between these points, the boundaries were interpolated using topographic maps at a scale of 1:24,000, with contour intervals of 5, 10, 20, 25, 40, and 50 feet (U.S. Department of the Interior, 1943, et cetera). Sources for topographic data are shown in Table 23.

Zone VE is subdivided into elevation zones and BFEs are provided on the FIRM.

The limit of Zone VE shown on the FIRM is defined as the farthest inland extent of any of these criteria (determined for the 1% annual chance flood condition):

- The *primary frontal dune zone* is defined in 44 CFR Section 59.1 of the NFIP regulations. The primary frontal dune represents a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes that occur immediately landward and adjacent to the beach. The primary frontal dune zone is subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune zone occurs at the point where there is a distinct change from a relatively steep slope to a relatively mild slope.
- The *wave runup zone* occurs where the (eroded) ground profile is 3.0 feet or more below the 2-percent wave runup elevation.
- The *wave overtopping splash zone* is the area landward of the crest of an overtopped barrier, in cases where the potential 2-percent wave runup exceeds the barrier crest elevation by 3.0 feet or more.
- The *breaking wave height zone* occurs where 3-foot or greater wave heights could occur (this is the area where the wave crest profile is 2.1 feet or more above the total stillwater elevation).
- The *high-velocity flow zone* is landward of the overtopping splash zone (or area on a sloping beach or other shore type), where the product of depth of flow times the flow velocity squared ( $hv^2$ ) is greater than or equal to  $200 \text{ ft}^3/\text{sec}^2$ . This zone may only be used on the Pacific Coast.

The SFHA boundary indicates the limit of SFHAs shown on the FIRM as either “V” zones or “A” zones.

**Table 26 : Summary of Coastal Transect Mapping Considerations**

[Not applicable to this Flood Risk Project]

## **6.5 FIRM Revisions**

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, “Map Repositories”).

### **6.5.1 Letters of Map Amendment**

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA. A LOMA cannot be issued for properties located on the PFD (primary frontal dune).

To obtain an application for a LOMA, visit <http://www.fema.gov> and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at [http://www.fema.gov/plan/prevent/fhm/ot\\_lmreq.shtm](http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm).

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

### **6.5.2 Letters of Map Revision Based on Fill**

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA’s determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting <http://www.fema.gov> for the “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill” or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the “Flood Map-Related Fees” section.

A tutorial for LOMR-F is available at [http://www.fema.gov/plan/prevent/fhm/ot\\_lmreq.shtm](http://www.fema.gov/plan/prevent/fhm/ot_lmreq.shtm).

### **6.5.3 Letters of Map Revision**

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All

requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit <http://www.fema.gov> and download the form “MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision”. Visit the “Flood Map-Related Fees” section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Ventura County FIRM are listed in Table 27. Please note that this table only includes LOMCs that have been issued on the FIRM panels updated by this map revision. For all other areas within this county, users should be aware that revisions to the FIS Report made by prior LOMRs may not be reflected herein and users will need to continue to use the previously issued LOMRs to obtain the most current data.

### **Table 27 : Incorporated Letters of Map Change**

**[Not applicable to this Flood Risk Project]**

#### **6.5.4 Physical Map Revisions**

PMRs are an official republication of a community’s NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community’s chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit <http://www.fema.gov> and visit the “Flood Map Revision Processes” section.

#### **6.5.5 Contracted Restudies**

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit [www.fema.gov](http://www.fema.gov) to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

#### **6.5.6 Community Map History**

The current FIRM presents flooding information for the entire geographic area of Ventura

County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBM) and/or Flood Boundary and Floodway Maps (FBFM) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.
- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.
- *Initial FHBM Effective Date* is the effective date of the first Flood Hazard Boundary Map (FHBM). This date may be the same date as the Initial NFIP Map Date.
- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.
- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community. This is the first effective date that is shown on the FIRM panel.
- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as Physical Map Revisions (PMR) of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Ventura County FIRMs in countywide format was 01/20/2010.

**Table 28: Community Map History**

Community Name	Initial Identification Date (First NFIP Map Published)	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
City of Camarillo	07/19/1974	07/19/1974	10/24/1975	09/29/1986	01/07/2015 01/20/2010
City of Fillmore	01/18/1974	01/23/1974	12/19/1975	10/17/1978	01/20/2010 02/01/1984 05/19/1981
City of Moorpark	09/29/1986	—	—	09/29/1986	01/20/2010
City of Ojai	05/03/1974	11/28/1975	—	10/17/1978	09/26/2014 01/20/2010 04/19/1983
City of Oxnard	08/09/1974	08/09/1974	10/24/1975	03/01/1979	01/20/2010 10/15/1985
City of Port Hueneme	05/14/1971	05/14/1971	10/03/1975	09/24/1984	01/20/2010
City of San Buenaventura	05/31/1974	05/31/1974	12/19/1975	09/29/1986	01/20/2010 08/19/1987
City of Santa Paula	05/24/1974	05/24/1974	—	04/15/1980	01/20/2010 09/03/1997 09/18/1985
City of Simi Valley	05/17/1974	05/17/1974	—	09/27/1991	01/20/2010 09/03/1997
City of Thousand Oaks	06/07/1974	06/07/1974	—	09/29/1978	01/20/2010 01/03/1983
Ventura County Unincorporated Areas	09/15/1970	09/15/1970	10/18/1977	10/31/1985	09/26/2014 01/20/2010 09/03/1997 09/28/1990 01/05/1989

**SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION**

**7.1 Contracted Studies**

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

**Table 29: Summary of Contracted Studies Included in this FIS Report**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Adams Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Santa Paula; Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Alamos Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Simi Valley; Ventura County
Alamos Canyon Creek Tributary (Unnamed)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Arneill Drain	01/20/2010	City of Camarillo; Kasraie Consulting	316-PMR, LOMR 08-09-0512P	October 2008	City of Camarillo
Arroyo Colorado	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Arroyo Conejo	03/01/1978	Soil Conservation Service (SCS)	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks; Ventura County
Arroyo Conejo	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks
Arroyo Conejo	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks
Arroyo Conejo Tributary 1 (Unnamed)	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks; Ventura County
Arroyo Las Posas	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Arroyo Santa Rosa	01/20/2010	Nolte Associates, Inc.; Ventura County Watershed Protection District (VCWPD)	EMS-2000-CO-0057, Order No. T005; —	September 2004; May 2008	Ventura County
Arroyo Santa Rosa	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Arroyo Santa Rosa	01/20/2010	Nolte Associates, Inc.; VCWPD	EMS-2000-CO-0057, Order No. T005; —	September 2004; May 2008	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Arroyo Santa Rosa Diversion	01/20/2010	Nolte Associates, Inc.; VCWPD	EMS-2000-CO-0057, Order No. T005; —	September 2004; May 2008	Ventura County
Arroyo Santa Rosa Tributary	01/20/2010	Nolte Associates, Inc.; VCWPD	EMS-2000-CO-0057, Order No. T005; —	September 2004; May 2008	City of Thousand Oaks; Ventura County
Arroyo Santa Rosa Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Thousand Oaks; Ventura County
Arroyo Simi	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
Arundell Barranca	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura; Ventura County
Auto Center Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Oxnard, Ventura County
Barbara Drive Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Bardsdale Ditch	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Barlow Barranca	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura; Ventura County
Beardsley Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Camarillo; Ventura County
Bell Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Bell Canyon Creek Tributary 1	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Berylwood Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Big Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Big Mountain Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Simi Valley
Big Sycamore Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Big Sycamore Canyon Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Boosey Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Boulder Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Brea Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Simi Valley; Ventura County
Brea Canyon Creek Tributary 1 (Unnamed)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Brea Canyon Creek Tributary 1-1 (Unnamed)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Brown Barranca	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura; Ventura County
Bus Canyon Drain	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
Bus Canyon Drain Tributary	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
Calleguas Creek	01/20/2010	Nolte Associates, Inc.; VCWPD	EMS-2000-CO-0057, Order No. T005; —	September 2004; May 2008	City of Camarillo; Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Calleguas Creek	01/20/2010	City of Camarillo; Kasraie Consulting	316-PMR, LOMR 08-09-0512P	October 2008	City of Camarillo
Camarillo Hills Drain	01/07/2015	Kasraie Consulting	316-PMR, Case No. 11-09-3535P	February 2011	City of Camarillo; Ventura County
Camarillo Hills Drain	—	—	LOMR 11-09- 0883P	July 2011	City of Camarillo; Ventura County
Camarillo Hills Drain	01/07/2015	Kasraie Consulting	316-PMR, Case No. 11-09-3535P	February 2011	City of Camarillo
Canada De Aliso	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW- 89-C-2227	January 1988	Ventura County
Channel Islands Harbor	—	Dames & Moore	Contract No. C- 0970	1984	City of Oxnard
Chaparral Road Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW- 89-C-2227	January 1988	Ventura County
Chivo Canyon Creek	09/03/1997	Schaaf & Wheeler	Contract No. 92-C- 4042	June 1995	City of Simi Valley; Ventura County
Coastal Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW- 89-C-2227	January 1988	Ventura County
Conejo Creek	01/20/2010	Nolte Associates, Inc.; VCWPD	EMS-2000-CO- 0057, Order No. T005; —	September 2004; May 2008	City of Camarillo; Ventura County
Conejo Mountain Creek	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks
Conejo Park Creek	09/26/1986	PRC Toups	Contract No. H- 4032	May 1983	Ventura County
Conejo Park Creek Tributary	09/26/1986	PRC Toups	Contract No. H- 4032	May 1983	Ventura County
Cooper Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW- 89-C-2227	January 1988	Ventura County
Coyote Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW- 89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Coyote Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Coyote Canyon Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Coyote Creek (Lake Casitas)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Crestview Drain	01/20/2010	City of Camarillo; Kasraie Consulting	316-PMR, LOMR 08-09-0512P	October 2008	City of Camarillo; Ventura County
Crooked Creek	09/26/2014	VCWPD	EMF-2010-GR-1013	March 2013	Ventura County
Donlon Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Doris Avenue Drain	03/01/1979	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Oxnard; Ventura County
Dron Creek	09/26/2014	VCWPD	EMF-2010-GR-1013	March 2013	Ventura County
Dry Canyon Creek	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley; Ventura County
Dry Canyon Creek	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley; Ventura County
Dry Canyon Creek	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley; Ventura County
Dry Canyon Creek Tributary	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
E Street Drain	03/01/1979	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Oxnard; Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
East Fork Honda Barranca	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
East Fork Lord Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
East Fork Medea Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
East Fork Medea Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
East Fork Tripas Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
East Las Virgenes Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
East Las Virgenes Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
East Tributary	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
East Tributary Meier Canyon Creek	—	Aqua Resources Inc.	EMW-89-C-2844	July 1990	Ventura County
East Tributary Somis Drain	01/20/2010	City of Camarillo; Kasraie Consulting	316-PMR, LOMR 08-09-0512P	October 2008	City of Camarillo; Ventura County
Edgemore Drain	01/07/2015	AECOM	316-PMR, Case No. 11-09-3535P	February 2011	City of Camarillo
Edwards Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Ellsworth Barranca	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Erringer Drain	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
Eureka Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Fox Barranca	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Franklin Barranca	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura; Ventura County
Frey Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Gabbert Canyon Creek	09/26/1986	PRC Toups, Inc.	Contract No. H-4032	July 1983	City of Moorpark; Ventura County
Gabbert Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Moorpark; Ventura County
Gill Barranca	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Gillibrand Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Simi Valley; Ventura County
Guadalasca Road Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Hammond Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Hammond Canyon Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Happy Camp Canyon Creek	09/26/1986	PRC Toups, Inc.	Contract No. H-4032	July 1983	City of Moorpark; Ventura County
Happy Camp Canyon Creek Tributary	09/26/1986	PRC Toups, Inc.	Contract No. H-4032	July 1983	Ventura County
Happy Valley Drain	01/07/2015	Kasraie Consulting	Contract No. AE No. 11-045	October 2012	Ventura County
Happy Valley Drain Tributary	01/07/2015	Kasraie Consulting	Contract No. AE No. 11-045	October 2012	City of Ojai; Ventura County
Harmon Barranca	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura; Ventura County
Harmon Barranca	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura
Hidden Valley Road Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Hidden Valley Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Hill Canyon Creek	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks
Hilltop Lane Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Holser Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Honda Barranca	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Honda Barranca Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Hueneme Drain	03/01/1979	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Oxnard
Hummingbird Creek	09/03/1997	Ensign & Buckley Consulting Engineers	EMW-90-C-9133	March 1993	City of Simi Valley
Hummingbird Creek Tributary	09/03/1997	Ensign & Buckley Consulting Engineers	EMW-90-C-9133	March 1993	City of Simi Valley
Hunt Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
J Street Drain	03/01/1979	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Oxnard; City of Port Hueneme
Javon Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Jepson Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Kenny Grove Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Koenigstein Road Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
La Jolla Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Lake Eleanor Creek (Lake Eleanor)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Thousand Oaks

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Lake Sherwood	—	BakerAECOM	Contract No. HSFEHQ-09-D-0368	—	City of Thousand Oaks; Ventura County
Lake Sherwood Tributary 1	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Thousand Oaks; Ventura County
Lake Sherwood Tributary 2	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Lang Creek	01/20/2010	Nolte Associates, Inc.	EMS-2000-CO-0057, Order No. T005	September 2004	City of Thousand Oaks
Las Lajas Canyon Channel	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
Las Lajas Canyon Channel	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley; Ventura County
Las Posas Estates Drain	09/26/1986	PRC Toups	Contract No. H-4032	May 1983	City of Camarillo; Ventura County
Las Sauces Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Las Virgenes Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Las Virgenes Canyon Creek Tributary 1	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Laskey Mesa West	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Lime Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Lindero Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Lion Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Little Happy Camp Canyon Creek	09/26/1986	PRC Toups, Inc.	Contract No. H-4032	July 1983	Ventura County
Little Happy Camp Canyon Creek Tributary	09/26/1986	PRC Toups, Inc.	Contract No. H-4032	July 1983	Ventura County
Little Sycamore Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Long Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Long Canyon Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Long Grade Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Madranio Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Magnolia Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Mahan Barranca	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Matilija Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Maxy Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
McDonald Canyon Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
McNell Creek	09/26/2014	VCWPD	EMF-2010-GR-1013	March 2013	City of Ojai; Ventura County
Medea Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Medea Creek Tributary 1	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Meier Canyon Creek		Aqua Resources Inc.	EMW-89-C-2844	July 1990	City of Simi Valley; Ventura County
Miles Road Drain	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura; Ventura County
Mission Drain	01/07/2015	Kasraie Consulting	316-PMR, Case No. 11-09-3535P	February 2011	City of Camarillo
Moon Ditch	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura; Ventura County
Moore Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Mud Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
North Branch Alamos Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
North Fork Canada De Los Alamos	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
North Fork Tributary 1	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
North Fork Tributary 2	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
North Ramona Place Drain	09/26/1986	PRC Toups	Contract No. H-4032	May 1983	City of Camarillo; Ventura County
North Simi Drain	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
Nyland Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Oxnard, Ventura County
Nyland Drain Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Oxnard, Ventura County
Oak Canyon Creek		Aqua Resources Inc.	EMW-89-C-2844	July 1990	City of Simi Valley
Oak Canyon Creek (North)	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
Oak View Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Oxnard Industrial Drain	03/01/1979	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Oxnard
Oxnard West Drain	03/01/1979	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Port Hueneme
Padre Juan Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Palo Comado Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Paso Flores Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Peach Hill Wash	01/20/2010	Nolte Associates, Inc.; VCWPD	EMS-2000-CO-0057, Order No. T005; —	September 2004; May 2008	City of Moorpark; Ventura County
Piru Creek (Lake Piru)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Pole Creek	04/01/1978	Harris-Toups Associates	Contract No. H-4032	June 1977	Ventura County
Ponderosa Drain	01/07/2015	Kasraie Consulting	316-PMR, Case No. 11-09-3535P	February 2011	City of Camarillo
Poplin Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Poplin Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Potrero Valley Creek (Lake Sherwood)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Puerta Zuela Barranca	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Punte Gorda Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Reeves Creek	09/26/2014	VCWPD	EMF-2010-GR-1013	March 2013	Ventura County
Reeves Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Reeves Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Revolon Slough	01/20/2010	Nolte Associates, Inc.; VCWPD	EMS-2000-CO-0057, Order No. T005; —	September 2004; May 2008	Ventura County
Rice Avenue (Road) Drain	03/01/1979	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Oxnard; Ventura County
Rincon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Rincon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Runkle Canyon Creek		Aqua Resources Inc.	EMW-89-C-2844	July 1990	City of Simi Valley
Salt Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
San Antonio Creek	09/26/2014	VCWPD	EMF-2010-GR-1013	March 2013	City of Ojai; Ventura County
Sand Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Santa Ana Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Santa Ana Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Santa Clara River	01/01/1984	PRC Toups	Contract No. H-4032	July 1983	City of Fillmore; City of Oxnard; City of San Buenaventura; City of Santa Paula; Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Santa Clara River Breakout (Tributary)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Oxnard; Ventura County
Santa Felicia Spillway	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Santa Paula Creek		PRC Toups	Contract No. H-4032	July 1983	City of Santa Paula; Ventura County
Santa Paula Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Santa Susana West Drain		Aqua Resources Inc.	EMW-89-C-2844	July 1990	City of Simi Valley
Scarab Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Serrano Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Sespe Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Shekel Road Drain	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Sherwood Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Sherwood Creek Tributary 1	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Shields Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Sisar Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Smith Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Solano Verde Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Solano Verde Wash Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Somis Drain	01/07/2015	Kasraie Consulting	316-PMR, Case No. 11-09-3535P	February 2011	City of Camarillo
South Branch Arroyo Conejo	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks
South Branch Arroyo Conejo	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks; Ventura County
South Branch Arroyo Conejo	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	City of Thousand Oaks; Ventura County
South Branch Arroyo Conejo Tributary 1	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	Ventura County
South Branch Arroyo Conejo Tributary 2	03/01/1978	SCS	(IAA) H-16-72, Project Order No. 7	January 1976	Ventura County
South Fork Canada De Los Alamos	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
South Grimes Canyon Wash	01/20/2010	Nolte Associates, Inc.; VCWPD	EMS-2000-CO-0057, Order No. T005; —	September 2004; May 2008	City of Moorpark; Ventura County
South Grimes Canyon Wash (North)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
South Grimes Canyon Wash Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Sulphur Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Sycamore Canyon Creek	—	Aqua Resources Inc.	EMW-89-C-2844	July 1990	City of Simi Valley
Sycamore Canyon Creek	—	Aqua Resources Inc.	EMW-89-C-2844	July 1990	City of Simi Valley
Sycamore Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Tapo Canyon Channel	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
Tapo Canyon Channel	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley; Ventura County
Tapo Canyon Channel	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley; Ventura County
Tapo Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Simi Valley; Ventura County
Tapo Canyon Creek (North)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Tapo Canyon Creek Tributary 2	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Simi Valley; Ventura County
Tapo Canyon Creek Tributary 3 (Unnamed)	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of Simi Valley
Telephone Road Drain	09/29/1986	PRC Toups	Contract No. H-4032	May 1983	City of San Buenaventura; Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Thacher Creek	09/26/2014	VCWPD	EMF-2010-GR-1013	March 2013	City of Ojai; Ventura County
Thacher Creek	09/26/2014	VCWPD	EMF-2010-GR-1013	March 2013	Ventura County
Thousand Oaks North Drain	01/20/2010	Nolte Associates, Inc.	EMS-2000-CO-0057, Order No. T005	September 2004	City of Thousand Oaks
Tierra Rejada Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Timber Canyon Creek Tributary 1	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Torrey Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Tripas Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Tripas Canyon Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Ventura Marina	09/29/1986	Dames & Moore	Contract No. C-0970	1984	City of San Buenaventura; Ventura County
Ventura River	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	City of San Buenaventura; Ventura County
Walnut Canyon Drain	01/20/2010	Nolte Associates, Inc.	EMS-2000-CO-0057, Order No. T005	September 2004	City of Moorpark; Ventura County
Walnut Canyon Drain (Gabbert Road)	01/20/2010	Nolte Associates, Inc.	EMS-2000-CO-0057, Order No. T005	September 2004	City of Moorpark; Ventura County
Warring Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Warring Wash	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
West Camarillo Hills Tributary	01/07/2015	Kasraie Consulting	316-PMR, Case No. 11-09-3535P	February 2011	City of Camarillo
West Fifth Street Drain	Original	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Oxnard; Ventura County
West Fork Orcutt Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
West Fork Salt Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
West Fork Salt Canyon Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
West Fork Sycamore Canyon Creek	—	Aqua Resources Inc.	EMW-89-C-2844	July 1990	City of Simi Valley
West Fork Sycamore Canyon Creek (Wood Ranch Reservoir)	—	Aqua Resources Inc.	EMW-89-C-2844	July 1990	City of Simi Valley
Westlake Lake	—	BakerAECOM	Contract No. HSFHQ-09-D-0368	—	Ventura County
West Tributary	09/03/1997	Schaaf & Wheeler	Contract No. 92-C-4042	June 1995	City of Simi Valley
West Tributary Long Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
West Wooley Drain	03/01/1979	USACE	(IAA) H-19-74, Project Order No. 13; (IAA) H-16-75, Project Order No. 17	March 1977	City of Port Hueneme

**Table 29: Summary of Contracted Studies Included in this FIS Report, continued**

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
White Oak Creek	09/03/1997	Ensign & Buckley Consulting Engineers	EMW-90-C-9133	March 1993	City of Simi Valley
White Oak Creek Tributary	09/03/1997	Ensign & Buckley Consulting Engineers	EMW-90-C-9133	March 1993	City of Simi Valley
Windmill Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Windmill Canyon Creek Tributary	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County
Wood Canyon Creek	09/28/1990	DMA Consulting Engineers, Inc.	Contract No. EMW-89-C-2227	January 1988	Ventura County

## 7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and any previous Flood Risk Projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

**Table 30: Community Meetings**

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Ventura County and Incorporated Areas	01/07/2015	04/29/2010	Initial CCO	Federal Emergency Management Agency (FEMA), a Representative of the District, the District Chief of Staff for Congress, community officials, U.S. Army Corps of Engineers (USACE), and the study contractor
		08/28/2013	Final CCO	FEMA, Ventura County Watershed Protection District (VCWPD), and the study contractor (BakerAECOM)
	09/26/2014	11/10/2010	Initial CCO	FEMA, the City of Ojai, VCWPD, and the study contractor (BakerAECOM)
		05/22/2013	Final CCO	FEMA, , and the study contractor (BakerAECOM)
	01/20/2010	07/29/2004	Initial CCO	FEMA), this VCWPD community, and the study contractor
		01/11/2008 09/21/2005	Final CCO	FEMA, VCWPD, and the study contractor
City of Camarillo	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Camarillo, and the study contractor
		11/05/2008 09/21/2005	Final CCO	FEMA, City of Camarillo, and the study contractor
	09/29/1986	12/14/1977	Initial CCO	FEMA, City of Camarillo, and the study contractor
		12/15/1982	Final CCO	FEMA, City of Camarillo, and the study contractor

**Table 30: Community Meeting, continued**

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
City of Fillmore	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Fillmore, and the study contractor
		09/21/2005	Final CCO	FEMA, City of Fillmore, and the study contractor
	04/01/1978	05/03/1977	Initial CCO	FEMA, City of Fillmore, and the study contractor
		09/16/1977	Final CCO	FEMA, City of Fillmore, and the study contractor
City of Moorpark	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Moorpark, and the study contractor
		09/21/2005	Final CCO	FEMA, City of Moorpark, and the study contractor
	09/29/1986	8/15/1984	Initial CCO	FEMA, City of Moorpark, and the study contractor
		12/12/1984	Final CCO	FEMA, City of Moorpark, and the study contractor
City of Ojai	09/26/2014	11/10/2010	Initial CCO	FEMA, City of Ojai, VCWPD, and the study contractor (BakerAECOM)
		05/22/2013	Final CCO	FEMA, City of Ojai, VCWPD, and the study contractor (BakerAECOM)
	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Ojai, and the study contractor
		09/21/2005	Final CCO	FEMA, City of Ojai, and the study contractors
	04/01/1978	05/03/1977	Initial CCO	FEMA, City of Ojai, and the study contractor
		09/16/1977	Final CCO	FEMA, City of Ojai, and the study contractors
City of Oxnard	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Oxnard, and the study contractor
		09/21/2005	Final CCO	FEMA, City of Oxnard, and the study contractors
	10/15/1985	*	Initial CCO	FEMA, City of Oxnard, and the study contractors
		*	Final CCO	FEMA, City of Oxnard, and the study contractors
	03/01/1979	11/22/1974	Initial CCO	FEMA, City of Oxnard, and the study contractors
		01/25/1978	Final CCO	FEMA, City of Oxnard, and the study contractors

**Table 30: Community Meeting, continued**

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
City of Port Hueneme	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Port Hueneme, and the study contractors
		09/21/2005	Final CCO	FEMA, City of Port Hueneme, and the study contractors
City of San Buenaventura	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Ventura, and the study contractor
		09/21/2005	Final CCO	FEMA, City of Ventura, and the study contractors
	08/19/1987	*	Initial CCO	FEMA, City of Ventura, and the study contractors
		*	Final CCO	FEMA, City of Ventura and the study contractors
	09/29/1986	12/14/1977	Initial CCO	FEMA, City of Ventura, and the study contractors
		12/15/1982	Final CCO	FEMA, City of Ventura, and the study contractors
City of Santa Paula	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Santa Paula, and the study contractors
		09/21/2005	Final CCO	FEMA, City of Santa Paula, and the study contractors
	09/03/1997	*	Initial CCO	FEMA, City of Santa Paula, and the study contractors
		*	Final CCO	FEMA, City of Santa Paula, and the study contractors
	04/15/1980	*	Initial CCO	FEMA, City of Santa Paula, and the study contractors
		02/27/1978	Final CCO	FEMA, City of Santa Paula, and the study contractors
City of Simi Valley	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Santa Paula, and the study contractors
		09/21/2005	Final CCO	FEMA, City of Santa Paula, and the study contractors
	09/03/1997	*	Initial CCO	FEMA, City of Santa Paula, and the study contractors

**Table 30: Community Meeting, continued**

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
		*	Final CCO	FEMA, City of Santa Paula, and the study contractors
		12/04/1990	Final CCO	FEMA, City of Santa Paula, and the study contractors
City of Thousand Oaks	01/20/2010	07/29/2004	Initial CCO	FEMA, City of Thousand Oaks, and the study contractors
		01/11/2008 09/21/2005	Final CCO	FEMA, City of Thousand Oaks, and the study contractors
	01/03/1983	*	Initial CCO	FEMA, City of Thousand Oaks, and the study contractors
		*	Final CCO	FEMA, City of Thousand Oaks, and the study contractors
	03/19/1978	*	Initial CCO	FEMA, City of Thousand Oaks, and the study contractors
		06/29/1977	Final CCO	FEMA, City of Thousand Oaks, and the study contractors
Ventura County, Unincorporated Areas	09/03/1997	*	Initial CCO	FEMA, VCWPD, and the study contractors
		*	Final CCO	FEMA, VCWPD, and the study contractors
	09/28/1990	01/09/1986	Initial CCO	FEMA, VCWPD, and the study contractors
		11/24/1987	Final CCO	FEMA, VCWPD, and the study contractors
	01/04/1989	*	Initial CCO	FEMA, VCWPD, and the study contractors
		*	Final CCO	FEMA, VCWPD, and the study contractors
	10/31/1985	12/14/1977	Initial CCO	FEMA, VCWPD, and the study contractors
		12/18/1982	Final CCO	FEMA, VCWPD, and the study contractors

\* Date not available

## SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see <http://www.fema.gov>.

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for Ventura County, California and Incorporated Areas, (FEMA 2015).

Table 31 is a list of the locations where FIRMs for Ventura County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

**Table 31: Map Repositories**

Community	Address	City	State	Zip Code
City of Camarillo	Camarillo City Hall 601 Carmen Drive	Camarillo	CA	93010
City of Fillmore	Fillmore City Hall 250 Central Avenue	Fillmore	CA	93015
City of Moorpark	Moorpark Public Works Department 799 Moorpark Avenue	Moorpark	CA	93021
City of Ojai	Ojai Public Works Department 408 South Signal Street	Ojai	CA	93023
City of Oxnard	City of Oxnard Service Center Development Service Support 214 South C Street	Oxnard	CA	93030
City of Port Hueneme	Port Hueneme City Hall 250 North Ventura Road	Port Hueneme	CA	93041
City of San Buenaventura	San Buenaventura City Hall 501 Poli Street	Ventura	CA	93001
City of Santa Paula	Santa Paula Public Works Department 866 East Main Street	Santa Paula	CA	93060
City of Simi Valley	Simi Valley City Hall 2929 Tapo Canyon Road	Simi Valley	CA	93063
City of Thousand Oaks	Thousand Oaks City Hall 2100 East Thousand Oaks Boulevard	Thousand Oaks	CA	91362
Ventura County	Ventura County Public Works Agency 800 South Victoria Avenue	Ventura	CA	93009

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the state NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated

an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of state and local GIS data in their state.

**Table 32: Additional Information**

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	<a href="http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library">http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library</a>
NFIP website	<a href="http://www.fema.gov/national-flood-insurance-program">http://www.fema.gov/national-flood-insurance-program</a>
NFHL Dataset	<a href="http://msc.fema.gov">http://msc.fema.gov</a>
FEMA Region IX	Federal Emergency Management Agency, 1111 Broadway, Suite 1200, Oakland, CA 94607-4052 (510) 627-7006
Other Federal Agencies	
USGS website	<a href="http://www.usgs.gov">http://www.usgs.gov</a>
Hydraulic Engineering Center website	<a href="http://www.hec.usace.army.mil">http://www.hec.usace.army.mil</a>
State Agencies and Organizations	
State NFIP Coordinator	James Eto, PE, CFM California Department of Water Resources 3464 El Camino Avenue Suite 200 Sacramento, CA 95821 916-574-1409 jeto@water.ca.gov
State GIS Coordinator	David Harris Agency Information Officer California Resources Agency 1416 Ninth Street, Room 1311 Sacramento, CA 95814 Phone: 916-445-5088 david.harris@resources.ca.gov

## SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

**Table 33: Bibliography and References**

Citation in this FIS	Publisher/ Issuer	<i>Publication Title, "Article,"</i> Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Aerial Topographic Maps, 1977	Aerial Topographic Maps	<i>Topographic Map, Rincon Creek near Rincon Point, Scale 1:4,800, Contour Interval 4 feet</i>			February 1987	
ASCE, 1979	American Society of Civil Engineers	"Flood Frequency Estimates on Alluvial Fans," <i>Journal of the Hydraulics Division ASCE, Proceedings</i> , Vol. 105, No. HY11	David R. Dawdy		1979	<a href="http://www.asce.org/">http://www.asce.org/</a>
California, 1980	State of California, Department of Boating and Waterways	<i>Summary Report of Man's Impact on the California Coastal Zone</i>	Dr. Douglas L. Inman		June 1980	
CalSTA, 1968	State of California, Transportation Agency	<i>As-Built Plans, U.S. Highway 10—Bridge Culvert, Rincon Creek</i>			1968	<a href="http://www.calsta.ca.gov/">http://www.calsta.ca.gov/</a>
California Coastal Commission, 1978	California Coastal Commission	<i>Wave Damage Along the California Coast, Winter 1977-78, California Tomorrow Environmental Intern Program</i>	Steve Howe		December 11, 1978	<a href="http://www.coastal.ca.gov/">http://www.coastal.ca.gov/</a>
California Geology, 1981	California Geology	<i>Tsunamis</i>	Diane Pierzinski		March 1981	<a href="http://redirect.conservation.ca.gov/CGS/information/calgeology/index.asp">http://redirect.conservation.ca.gov/CGS/information/calgeology/index.asp</a>
Daily Free Press, 1907	Daily Free Press	<i>High Seas Wreck Ventura Wharf</i>			December 1907	

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Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
ESSA, 1969	Environmental Science Services Administration	<i>The Climate of Ventura County</i>			September 1969	<a href="http://www.noaa.gov/">http://www.noaa.gov/</a>
FEMA, (unpublished)	Federal Emergency Management Agency	<i>Flood Insurance Study: Ventura County, CA (Unincorporated Areas)</i>		Ventura County, CA	unpublished	FEMA Map Service Center <a href="http://msc.fema.gov">http://msc.fema.gov</a>
FEMA, 1984	Federal Emergency Management Agency	<i>Coastal Flood Frequency in Southern California</i>	Donald M. Thomas, Dames & Moore	Washington D.C.	July 1984	FEMA Map Service Center <a href="http://msc.fema.gov">http://msc.fema.gov</a>
Kasraie Consulting, 2007	Kasraie Consulting	<i>Floodplain Map Revision, City of Camarillo, CA</i>		City of Camarillo, CA	November 2007	City of Camarillo Library
MAPIX, 2008	Mainland, Joint Venture of Airborne 1, Dewberry, Schaaf and Wheeler, TerraPoint, and URS	<i>Flood Insurance Restudy, Santa Clara River and Tributaries, Ventura County, CA</i>			May 2008	<a href="http://www.mapix.com">www.mapix.com</a>
Nolte Associates, Inc., 2004	Nolte Associates, Inc.	<i>Ventura County Flood Insurance Study, Prepared for the Federal Emergency Management Agency</i>			September 2004	<a href="http://www.nv5.com/">http://www.nv5.com/</a>
Oxnard, 1968	City of Oxnard	<i>Topographic Maps, Scale 1:4,800, Contour Interval 10 feet</i>		City of Oxnard, CA	Various	City of Oxnard Library

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PRC Toups, 1978	PRC Toups	<i>Santa Clara River Diversion Structure Engineering Report</i>			August 1978	
Simi Valley, 1987	City of Simi Valley	<i>Photo Maps, Scale 1:1,200</i>		City of Simi Valley, CA	March 1987	City of Simi Valley Library
SIO, 1980	Scripps Institution of Oceanography	<i>Artificial Sediment Transport and Structures in Coastal Southern California</i>	Martha J. Shaw		December 1980	<a href="https://scripps.ucsd.edu/">https://scripps.ucsd.edu/</a>
Tetra Tech, Inc 1982	Tetra Tech, Inc	<i>Methodology for Computing Coastal Flood Statistics in Southern California, Report No. TC-3205</i>			1982	<a href="http://www.tetrattech.com/">http://www.tetrattech.com/</a>
Tetra Tech, Inc 2007	Tetra Tech, Inc	<i>Appeal of Preliminary Flood Insurance Study and Flood Insurance Rate Map (Dated September 16, 2005) in the City of Moorpark, CA</i>		City of Moorpark, CA	August 2007	<a href="http://www.tetrattech.com/">http://www.tetrattech.com/</a>
SCS, 1971	U.S. Department of Agriculture, Soil Conservation Service	<i>National Engineering Handbook, Section 4, Hydrology</i>			1971	<a href="http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/">http://www.nrcs.usda.gov/wps/portal/nrcs/site/national/home/</a>
USACE, 1962	U.S. Department of the Army, Corps of Engineers	<i>Statistical Methods in Hydrology</i>	L. R. Beard	City of Sacramento, CA	January 1962	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>

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Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE, 1969	U.S. Department of the Army, Corps of Engineers	<i>Appendix C: Report on Floods of January and February 1969 in Ventura County</i>			1969	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1969	U.S. Department of the Army, Corps of Engineers	<i>Hydrology for Floodplain Information Studies, Santa Clara River (Vicinity of Santa Paula), Ventura County, California</i>			December 1969	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1970	U.S. Department of the Army, Corps of Engineers	<i>Hydrology for Floodplain Information Studies, Ventura River, Ventura County, California</i>			December 1970	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1971	U.S. Department of the Army, Corps of Engineers	<i>Floodplain Information, Santa Clara River and Sespe Creek, Vicinity of Fillmore, California</i>			June 1972	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1971	U.S. Department of the Army, Corps of Engineers	<i>Floodplain Information, Ventura River (Including Coyote Creek)</i>			June 1971	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1971	U.S. Department of the Army, Corps of Engineers	<i>National Shoreline Study: California Regional Inventory</i>			August 1971	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1972	U.S. Department of the Army, Corps of Engineers	<i>Hydrology for Floodplain Information Studies, Santa Clara River and Tributaries, Ventura County, California</i>			August 4, 1972	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>

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USACE, 1972	U.S. Department of the Army, Corps of Engineers	<i>Supplementary Design for Santa Paula Creek Channel</i> Design Memorandum No. 4,			March 1972	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1973	U.S. Department of the Army, Corps of Engineers	<i>Floodplain Information, San Antonio Creek and Tributaries, Vicinity of Ojai, California</i>			June 1973	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1973	U.S. Department of the Army, Corps of Engineers	<i>Floodplain Information, Santa Clara River, Saticoy to Pacific Ocean,</i> June 1968, revised June 1973		Ventura County, CA	Various	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1973	U.S. Department of the Army, Corps of Engineers	<i>Hydrology for Floodplain Information Report, San Antonio and Thatcher Creeks, Ventura County, California</i>			March 1973	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1973	U.S. Department of the Army, Corps of Engineers	<i>Hydrology for Floodplain Information and Flood Insurance Studies, Santa Clara River and Tributaries, Ventura County, California</i>			April 1973	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1977	U.S. Department of the Army, Corps of Engineers	<i>Hydrology for Flood Insurance Studies, City of Santa Paula, Ventura County</i>			February 1977	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>

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Citation in this FIS	Publisher/ Issuer	Publication Title, "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE, 1977	U.S. Department of the Army, Corps of Engineers	<i>Hydrology for Special Flood Hazard Study, Calleguas Creek and Revolon Slough, Ventura County, California</i>			August 1977	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1977	U.S. Department of the Army, Corps of Engineers	<i>Regional Flood Frequency Study, Newhall, Saugus and Vicinity, Los Angeles County, Santa Clara River and Tributaries</i>			April 1977	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1977	U.S. Department of the Army, Corps of Engineers	<i>Topographic Map, Santa Paula Creek, Scale 1:2,400, Contour Interval 2 feet</i>			June 1977	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1978	U.S. Department of the Army, Corps of Engineers	<i>Hydrology for Definite Project Report, Sespe Creek at Fillmore, California</i>			October 1978	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1972	U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center	<i>HEC-2 Water Surface Profiles, Generalized Computer Program, User's Manual</i>		Davis, CA	February 1972	U.S. Army Corps of Engineers Hydrologic Engineering Center <a href="http://www.hec.usace.army.mil/">http://www.hec.usace.army.mil/</a>

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USACE, 1973	U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center	<i>HEC-1 Flood Hydrograph Package, Generalized Computer Program, User's Manual</i>		Davis, CA	January 1973	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1973	U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center	<i>HEC-2 Water-Surface Profiles, Computer Program 723X6-L202A.</i>		Davis, CA	October 1973	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1982	U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center	<i>HEC-2 Water Surface Profiles, Generalized Computer Program</i>		Davis, CA	September 1982	U.S. Army Corps of Engineers Hydrologic Engineering Center <a href="http://www.hec.usace.army.mil/">http://www.hec.usace.army.mil/</a>
USACE, 1985	U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center	<i>HEC-2 Water Surface Profiles, Generalized Computer Program, User's Manual</i>		Davis, CA	September 1985	U.S. Army Corps of Engineers Hydrologic Engineering Center <a href="http://www.hec.usace.army.mil/">http://www.hec.usace.army.mil/</a>

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USACE, 1967	U.S. Department of the Army, Corps of Engineers, Los Angeles District	<i>Generalized Standard Project Rainflood Criteria, Southern California Coastal Streams</i>		City of Sacramento, CA	March 1967	<a href="http://www.spl.usace.army.mil/">http://www.spl.usace.army.mil/</a>
USACE, 1980	U.S. Department of the Army, Corps of Engineers, Los Angeles District	<i>Ventura County, California: Survey Report for Beach Erosion Control</i>			May 1980	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1985	U.S. Department of the Army, Corps of Engineers, Los Angeles District	<i>Cameros Creek Debris / Detention Basin, Goleta, California, Reconnaissance Report, Hydrology, Preliminary</i>			April 1985	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 1987	U.S. Department of the Army, Corps of Engineers, Los Angeles District	<i>Calleguas Creek Hydrology for Survey Report, Ventura County, California</i>			November 1987	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USACE, 2003	U.S. Department of the Army, Corps of Engineers, Los Angeles District	<i>Calleguas Creek Watershed Feasibility Study, Hydrology Appendix</i>			February 2003	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>

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USACE, 1978	U.S. Department of the Army, Corps of Engineers, Los Angeles and San Francisco Districts	<i>Winter Storm Damage Along the California Coast 1977-1978</i>	George W. Domurat		1977-78	<a href="http://geoplatform.usace.army.mil/home/index.html">http://geoplatform.usace.army.mil/home/index.html</a>
USGS, Various	U.S. Department of the Interior, Geological Survey	<i>7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 5 feet</i>			Various	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>
USGS, Various	U.S. Department of the Interior, Geological Survey	<i>7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 10 feet</i>			Various	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>
USGS, Various	U.S. Department of the Interior, Geological Survey	<i>7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 20 feet</i>			Various	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>
USGS, Various	U.S. Department of the Interior, Geological Survey	<i>7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 25 feet</i>			Various	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>
USGS, Various	U.S. Department of the Interior, Geological Survey	<i>7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 40 feet</i>			Various	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>
USGS, Various	U.S. Department of the Interior, Geological Survey	<i>7.5-Minute Series Topographic Maps, Scale 1:24,000, Contour Interval 50 feet</i>			Various	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>

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USGS, 1974	U.S. Department of the Interior, Geological Survey	<i>Digital Simulation of the Effects of Urbanization on Runoff in the Upper Santa Ana Valley, California,</i> Water-Resources Investigations, 41-73			February 1974	<a href="http://www.usgs.gov/">http://www.usgs.gov/</a>
USGS, 1977	U.S. Department of the Interior, Geological Survey	<i>Magnitude and Frequency of Floods in California,</i> Water-Resources Investigations, 77-21	A. O. Waananen, J. R. Crippen	Washington, D.C.	1977	<a href="http://pubs.usgs.gov/wri/wri77-21/">http://pubs.usgs.gov/wri/wri77-21/</a>
USGS, 1982	U.S. Department of the Interior, Geological Survey	<i>Guidelines for Determining Flood Flow Frequency,</i> Hydrology Subcommittee, Bulletin #17B		Reston, VA	1982	<a href="http://water.usgs.gov/osw/bulletin17b/dl_flow.pdf">http://water.usgs.gov/osw/bulletin17b/dl_flow.pdf</a>
Ventura County	Ventura County, Flood Control District	Personal Correspondence		Ventura County, CA		<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, Various	Ventura County, Flood Control District	<i>Topographic Maps, Scale 1:1,200, Contour Intervals 2 and 5 feet</i>		City of Fillmore, CA	Various	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 1969	Ventura County, Flood Control District	<i>The Great Floods of 1969</i>		Ventura County, CA	September 1969	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 1975	Ventura County, Flood Control District	<i>Topographic Maps, Scale 1:2,400, Contour Intervals 2 or 5 feet, 1970, revised 1975</i>		City of Oxnard, CA	Various	<a href="http://www.ventura.org/">http://www.ventura.org/</a>

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Ventura County, 1977	Ventura County, Flood Control District, and Surveying and Mapping Division	<i>Topographic Maps</i> , Scale 1:2,400, Contour Interval 2 feet		City of Ojai, CA	1977	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County	Ventura County, Department of Public Works	<i>Topographic Maps</i> , Scale 1:6,000, Contour Interval 20 feet		Ventura County, CA		<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 1979	Ventura County, Department of Public Works	<i>Topographic Maps</i> , Scale 1:2,400, Contour Intervals 2 and 5 feet, 1967-1979		Ventura County, CA	Various	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 1968	Ventura County, Public Works Agency	<i>Topographic Maps, Flood Control District—Zone III—Calleguas Creek Watershed</i> , Scale 1:2,400, Contour Interval 2 feet		Ventura County, CA	September 1968	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 1976	Ventura County, Public Works Agency	<i>Biannual Report of Hydrologic Data—1973-74/1974-75.</i>		Ventura County, CA	May 1976	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 1983	Ventura County, Public Works Agency, Flood Control and Water Resources Department	<i>Report of 1983 Flood</i>		Ventura County, CA	October 1983	<a href="http://www.ventura.org/">http://www.ventura.org/</a>

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Ventura County, 1985	Ventura County, Public Works Agency, Flood Control and Water Resources Department	<i>Hydrology Manual</i>		Ventura County, CA	Reprinted 1985	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 2003	Ventura County, Public Works Agency, Watershed Protection District	<i>Calleguas Creek Watershed Hydrology Study</i>		Ventura County, CA	March 2003	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 2006	Ventura County, Public Works Agency, Watershed Protection District	<i>Santa Clara River 2006 Hydrology Update</i>		Ventura County, CA	December 2006	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Ventura County, 1939	Ventura County Star Free Press	Articles on storm		Ventura County, CA	September 1939	<a href="http://www.ventura.org/">http://www.ventura.org/</a>
Woodyard and Associates, 1980	Woodyard and Associates	<i>As-Built Plans—Leisure Village, Scale 1:480</i>			1980	