FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 2 OF 3

SAN MATEO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

COMMUNITY NAME	NUMBER	COMMUNITY NAME	NUMBER
ATHERTON, TOWN OF*	060312	SOUTH SAN FRANCISCO, CITY OF	065062
BELMONT, CITY OF	065016	WOODSIDE, TOWN OF	060330
BRISBANE, CITY OF	060314		
BURLINGAME, CITY OF	065019		
COLMA, TOWN OF	060316		
DALY CITY, CITY OF	060317		
EAST PALO ALTO, CITY OF	060708		
FOSTER CITY, CITY OF	060318		
HALF MOON BAY, CITY OF	060319		
HILLSBOROUGH, TOWN OF	060320		
MENLO PARK, CITY OF	060321		
MILLBRAE, CITY OF	065045		
PACIFICA, CITY OF	060323		
PORTOLA VALLEY, TOWN OF	065052		
REDWOOD CITY, CITY OF	060325		
SAN BRUNO, CITY OF *	060326		
SAN CARLOS, CITY OF	060327		
SAN MATEO COUNTY (UNINCORPORATED AREAS)	060311		
SAN MATEO, CITY OF	060328		

*No Special Flood Hazard Areas Identified

PRELIMINARY

SEP 14, 2015

REVISED:

FEMA

FLOOD INSURANCE STUDY NUMBER
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Exhibits

Flood Profiles	Panel
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Colma Creek	05 P
Cordilleras Creek	06-09 P
Corte Madera Creek	10-15 P
Denniston Creek	16-17 P
Devonshire Branch of Pulgas Creek	18 P
El Granada Creek	19-20 P
Harbor Industrial District Channel	21-22 P
La Honda Creek	23-24 P

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Exhibits

Flood Profiles	Panel
Montara Creek	25-26 P
Pescadero Creek	27-31 P
Pulgas Creek	32-36 P
San Gregorio Creek	37-39 P
San Mateo Creek	40-42 P
San Vicente Creek	43-44 P
Sausal Creek	45-48 P
West Union Creek	49-50 P
Woodhams Creek	51-53 P
16th Avenue Drainageway Channel	54-55 P
19th Avenue Drainageway Channel	56 P
Laurel Creek	57-59 P

Published Separately

Flood Insurance Rate Map (FIRM)

5.3.4 Wave Hazard Analyses

Overland wave hazards were evaluated to determine the combined effects of ground elevation, vegetation, and physical features on overland wave propagation and wave runup. These analyses were performed at representative transects along all shorelines for which waves were expected to be present during the floods of the selected recurrence intervals. The results of these analyses were used to determine elevations for the 1% annual chance flood.

Transect locations were chosen with consideration given to the physical land characteristics as well as development type and density so that they would closely represent conditions in their locality. Additional consideration was given to changes in the total stillwater elevation. Transects were spaced close together in areas of complex topography and dense development or where total stillwater elevations varied. In areas having more uniform characteristics, transects were spaced at larger intervals. Transects shown in Figure , "Transect Location Map," are also depicted on the FIRM. Table provides the location, stillwater elevations, and starting wave conditions for each transect evaluated for overland wave hazards. In this table, "starting" indicates the parameter value at the beginning of the transect.

Wave Height Analysis

Wave height analyses were performed to determine wave heights and corresponding wave crest elevations for the areas inundated by coastal flooding and subject to overland wave propagation hazards. Refer to Figure 6 for a schematic of a coastal transect evaluated for overland wave propagation hazards.

Wave heights and wave crest elevations were modeled using the methods and models listed in Table 15, "Summary of Coastal Analyses".

Wave Runup Analysis

Wave runup analyses were performed to determine the height and extent of runup beyond the limit of stillwater inundation for the 1% annual chance flood. Wave runup elevations were modeled using the methods and models listed in Table 15.

Table 17: Coastal Transect Parameters

Transect	X,Y Coordinates (Meters, NAD83 UTM Zone 10)		Total Water Elevation (feet NAVD88)[1]				Zone	BFE (ft)
	X	Y	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		
1	543121.40	4172275.94	19.0	22.7	24.7	30.4	VE	25
2	543460.60	4170731.60	19.7	21.8	22.6	24.6	VE	23
3	543670.03	4169232.55	18.2	23.7	26.9	36.9	VE	27
4	543726.64	4168096.51	24.5	26.9	27.8	29.9	VE	28
5	543698.93	4167097.82	22.0	23.7	24.4	25.8	VE	24
6	543519.80	4165866.55	26.6	30.4	31.9	35.4	VE	32
7	543440.47	4165327.29	23.1	25.5	26.5	28.8	VE	26*

Transect	X,Y Coordinates (Meters, NAD83 UTM Zone 10)		Total Water Elevation (feet NAVD88)[1]				Zone	BFE (ft)
	X	Y	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		
8	543413.41	4164957.51	21.0	23.1	24.1	26.3	VE	24
9	543426.56	4164532.72	19.7	21.6	22.4	24.1	VE	22
10	543553.83	4163300.91	31.3	34.2	35.3	37.6	VE	35
11	543550.06	4162993.94	21.3	23.3	24.1	26.0	VE	24
12	543547.03	4162952.16	29.6	31.6	32.3	33.8	VE	32
13	543545.67	4162936.09	21.3	23.1	23.8	25.3	VE	24
14	543496.57	4161934.23	18.2	19.4	19.9	20.8	VE	20
15	543391.97	4161784.39	16.6	17.8	18.2	19.0	VE	18

Transect	X,Y Coordinates (Meters, NAD83 UTM Zone 10)		Total Water Elevation (feet NAVD88)[1]				Zone	BFE (ft)
	X	Y	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		
16	543343.74	4161790.35	15.6	16.7	17.1	18.0	VE	17
17	543069.75	4161992.60	16.1	17.1	17.5	18.3	VE	17*
18	541577.76	4161777.60	27.0	29.2	30.1	32.0	VE	30
19	541565.23	4158996.65	18.9	20.7	21.3	22.5	VE	21
20	541635.60	4157596.21	27.9	32.4	34.4	39.3	VE	34
21	541805.83	4156305.95	23.2	25.5	26.5	28.8	VE	27
22	541772.88	4155917.28	29.0	32.2	33.6	36.9	VE	34
23	541311.25	4153873.77	19.3	23.7	25.7	30.4	VE	26

Transect	X,Y Coordinates (Meters, NAD83 UTM Zone 10)		Total Water Elevation (feet NAVD88)[1]				Zone	BFE (ft)
	X	Y	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		
24	541523.56	4152835.31	21.5	26.4	29.1	37.4	VE	29
25	541871.75	4152045.76	24.6	26.7	27.5	29.3	VE	28
26	542482.18	4150968.15	26.9	32.2	34.3	38.7	VE	34
27	543099.43	4150176.53	26.1	28.5	29.5	31.6	VE	29*
28	545417.85	4149151.03	9.1	10.2	10.7	11.9	VE	11
29	545546.15	4149322.72	10.7	12.8	13.9	16.6	VE	14
30	545771.20	4149387.91	11.6	13.0	13.6	14.6	VE	14
31	545956.11	4149397.35	28.9	34.3	36.7	42.7	VE	37

Transect	X,Y Coordinates (Meters, NAD83 UTM Zone 10)		Total Water Elevation (feet NAVD88)[1]				Zone	BFE (ft)
	X	Y	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		
32	546450.51	4149357.57	16.3	18.1	18.8	20.5	VE	19
33	546911.27	4149176.40	15.4	18.4	20.0	24.3	VE	20
34	547504.99	4148429.49	19.2	21.2	22.0	24.0	VE	22
35	547799.99	4147740.07	29.2	32.0	33.1	35.5	VE	33
36	548020.94	4146592.62	33	36.8	38.5	42.3	VE	38*
37	548027.95	4145027.91	27.6	30.3	31.5	34.0	VE	31*
38	549163.40	4140902.59	19.2	25.7	29.4	40.4	VE	29
39	550178.70	4138144.48	25.3	28.1	29.3	32.0	VE	29

Transect	X,Y Coordinates (Meters, NAD83 UTM Zone 10)		Total Water Elevation (feet NAVD88)[1]				Zone	BFE (ft)
	X	Y	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		
40	551185.20	4136302.10	31.3	34.7	36.1	39.2	VE	36
41	552260.56	4133175.75	17.5	19.3	20.1	21.8	VE	20
42	551752.22	4129900.39	17.5	18.9	19.5	20.7	VE	19*
43	551626.11	4128203.56	19.7	21.7	22.6	24.8	VE	23
44	551521.59	4127226.49	20.8	23.1	24.1	26.5	VE	24
45	551263.82	4125337.16	21.0	22.9	23.6	25.4	VE	24
46	550567.40	4122996.12	19.7	21.9	22.9	25.3	VE	23
47	550707.83	4121185.08	23.6	25.9	26.9	29.0	VE	27

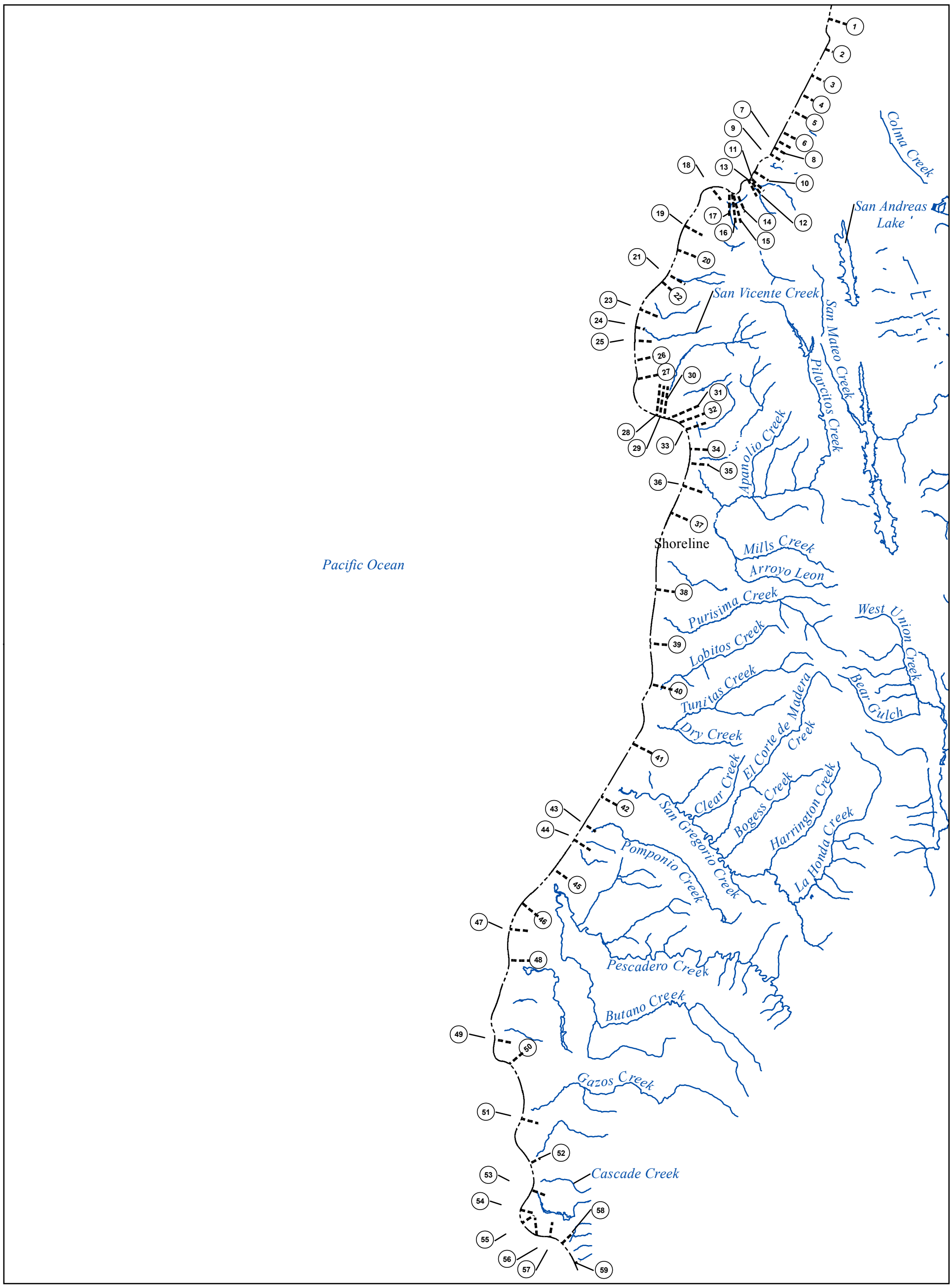
Transect	X,Y Coordinates (Meters, NAD83 UTM Zone 10)		Total Water Elevation (feet NAVD88)[1]				Zone	BFE (ft)
	X	Y	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		
48	551412.10	4119630.96	14.8	18.7	21.1	28.8	VE	21
49	552625.18	4115590.28	26.4	29.2	30.4	33.4	VE	30
50	554128.12	4114232.28	27.3	32.5	34.8	40.2	VE	35
51	555755.36	4112530.15	18.5	20.6	21.5	23.8	VE	22
52	557185.60	4109860.02	21.5	25.0	26.7	31.3	VE	27
53	557246.23	4109399.49	16.9	18.4	19.0	20.3	VE	19
54	557480.62	4108058.09	19.2	21.0	21.7	23.3	VE	22
55	558407.42	4106818.94	25.3	30.0	31.9	35.8	VE	32

Transect	X,Y Coordinates (Meters, NAD83 UTM Zone 10)		Total Water Elevation (feet NAVD88)[1]				Zone	BFE (ft)
	X	Y	10% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance		
56	560431.85	4106743.90	16.7	19.2	20.5	24.2	VE	21
57	560849.75	4106974.66	20.3	24.3	26.4	31.8	VE	26
58	561086.72	4106974.00	15.1	17.2	18.3	21.1	VE	18
59	562066.44	4106651.23	16.7	18.8	19.8	22.1	VE	20

[1]North American Vertical Datum of 1988

*Value has been rounded to the nearest tenth of a foot – precision of results to the hundredths of a foot resulted in rounding the BFE on the FIRM down to the nearest whole foot.

Figure 9: Transect Location Map



1 inch = 19,374 feet 1:232,483

Feet
0 5,500 11,000 22,000 33,000 44,000

Map Projection:
Universal Transeverse Mercator Zone 10 North;
North American Datum 1983

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM

Transect Location Map

SAN MATEO COUNTY, CALIFORNIA

PANELS WITH TRANSECTS:
0009G, 0017F*, 0019F*, 0028G, 0036F, 0038F, 0107F*, 0109F, 0117F, 0119F, 0126F, 0128E, 0138F, 0140E, 0232F, 0251F, 0252G, 0254G, 0262F, 0266G, 0268G, 0269G, 0356G, 0357G, 0358F*, 0359G, 0366G, 0367G, 0368F, 0369E, 0431G, 0432E, 0434G, 0441F*, 0442G, 0461G, 0463G, 0464G, 0501F*, 0502G, 0506G

*Panel Not Printed

FEMA

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 18: Summary of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

Table 19: Results of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]

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, 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.

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

Table 20: Countywide Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

A countywide conversion factor from NGVD29 to NAVD88 was +2.75 feet in San Mateo County for all streams and Stillwater elevations.

Calculations for the vertical offsets on a stream by stream basis are depicted in Table 21**.**

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 Flood Risk Analysis and Mapping*, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

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
Digital Orthophoto	US Department of Agriculture	2010	*	2010 NAIP Imagery
Digital Orthophoto	Coastal Services Center	2011	*	Coastal California LiDAR and Digital Imagery
Political boundaries	California Spatial Information Library	2004	1:24,000	County Boundaries
Transportation Features	US Census Bureau	2009	*	TIGER/Line shapefiles for San Mateo County, CA
Public Land Survey System (PLSS)	United States Geological Survey	1997	*	Public Land Survey System
Levees	FEMA	2007	*	San Mateo Levees

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
San Mateo County	Pacific Ocean	Coastal California LiDAR and Digital Imagery	*	*	*

*Data not available

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

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	100	74	481	8.7	327.8	326.1[2]	326.1	0.0
B	270	67	528	8.0	327.8	327.0[2]	327.0	0.0
C	390	43	318	13.2	327.8	327.2[2]	327.2	0.0
D	790	44	324	13.0	330.6	330.6	331.4	0.8
E	1,440	67	448	9.4	337.0	337.0	337.9	0.9
F	1,850	50	299	14.0	344.9	344.9	344.9	0.0
G	2,300	56	312	13.5	352.5	352.5	352.5	0.0
H	2,670	55	376	11.2	361.6	361.6	361.7	0.1
I	3,060	49	356	11.8	365.1	365.1	365.1	0.0
J	3,910	89	362	11.6	376.0	376.0	376.0	0.0
K	4,400	195	535	7.8	383.4	383.4	383.4	0.0
L	4,700	237	1,363	3.1	393.5	393.5	393.5	0.0
M	4,940	206	1,402	3.0	393.6	393.6	393.6	0.0
N	5,980	49	298	14.1	416.7	416.7	416.7	0.0
O	6,770	69	302	11.9	436.3	436.3	436.3	0.0
P	7,590	28	229	15.7	449.6	449.6	449.6	0.0

[1]Feet above mouth
[2]Elevations computed without consideration of backwater

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	197	261	3,265	7.7	17.3	17.3	17.4	0.1
B	1,705	1,999	22,137	1.1	17.8	17.8	18.4	0.6
C	3,115	2,933	32,014	0.7	17.9	17.9	18.5	0.6
D	4,344	3,316	35,043	0.7	17.9	17.9	18.5	0.6
E	5,465	2,739	28,014	0.9	17.9	17.9	18.5	0.6
F	6,321	1,831	17,109	1.4	17.9	17.9	18.5	0.6
G	7,938	2,138	15,446	1.6	17.9	17.9	18.5	0.6
H	8,940	1,201	3,141	5.3	18.0	18.0	18.6	0.6
I	10,722	850	2,566	6.5	23.8	23.8	24.8	1.0
J	12,017	545	2,122	7.9	30.9	30.9	30.9	0.0
K	13,599	1,217	5,534	3.0	35.2	35.2	35.6	0.4
L	14,545	675	1,924	8.7	36.7	36.7	37.4	0.7
M	15,710	191	1,892	8.8	39.8	39.8	39.8	0.0
N	16,948	165	2,773	6.0	44.9	44.9	44.9	0.0
O	17,645	185	2,440	6.8	45.3	45.3	45.4	0.1
P	19,338	562	3,571	4.7	47.6	47.6	48.1	0.5
Q	20,368	394	2,624	6.4	49.6	49.6	49.8	0.2
R	21,004	315	2,573	6.5	51.3	51.3	51.3	0.0
S	21,140	278	2,024	8.3	51.3	51.3	51.6	0.3
T	21,933	190	1,848	9.0	53.7	53.7	53.7	0.0
U	22,461	344	3,466	4.8	54.7	54.7	55.3	0.6

[1]Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: PESCADERO CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	50,000	70	505	14.3	233.9	233.9	233.9	0.0
B	50,450	75	555	13.0	241.6	241.6	241.6	0.0
C	50,830	59	477	15.1	245.8	245.8	246.0	0.2
D	51,670	101	869	8.3	253.2	253.2	253.6	0.4
E	52,070	164	1,444	5.0	254.6	254.6	255.5	0.9
F	52,290	144	1,782	4.0	255.8	255.8	256.7	0.9
G	52,420	114	1,048	6.9	255.5	255.5	256.5	1.0
H	52,720	360	1,425	5.1	256.6	256.6	257.1	0.5
I	52,980	362	2,522	2.9	259.9	259.9	259.9	0.0
J	53,450	72	483	14.9	263.6	263.6	263.6	0.0
K	53,960	50	430	16.7	269.1	269.1	269.1	0.0
L	54,430	45	482	14.9	275.1	275.1	275.8	0.7
M	54,830	73	952	7.6	281.3	281.3	281.5	0.2
N	56,150	59	528	13.5	291.8	291.8	292.7	0.9
O	56,300	68	536	13.2	293.5	293.5	294.3	0.8
P	56,500	65	550	12.9	296.8	296.8	296.8	0.0
Q	56,820	54	435	16.3	300.6	300.6	300.6	0.0
R	57,230	141	911	7.8	306.8	306.8	306.9	0.1
S	57,510	137	680	10.4	310.8	310.8	310.9	0.1
T	58,340	113	618	11.5	318.7	318.7	318.7	0.0
U	58,940	63	584	12.1	323.8	323.8	323.9	0.1
V	59,240	86	603	11.8	326.2	326.2	326.4	0.2
W	59,530	65	603	6.0	329.1	329.1	329.3	0.2
X	59,960	86	338	10.7	338.2	338.2	338.2	0.0
Y	60,400	40	305	11.8	342.5	342.5	342.6	0.1
Z	61,210	40	377	9.5	348.8	348.8	348.9	0.1
AA	62,380	72	307	11.5	373.9	373.9	373.9	0.0

[1]Feet above mouth

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SAN GREGORIO CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A-D[2]								
E[3]								
F	10,890	67	603	3.5	34.9	34.9	35.2	0.3
G	11,970	36	322	6.6	37.1	37.1	37.3	0.2
H	13,165	72	602	3.5	44.5	44.5	44.7	0.2
I	14,260	37	302	7.0	47.3	47.3	47.5	0.2
J	15,070	43	342	6.2	50.3	50.3	50.8	0.5
K	15,810	41	321	6.7	53.2	53.2	53.9	0.7
L	16,580	36	238	8.9	57.6	57.6	57.7	0.1
M	17,185	68	426	5.0	63.2	63.2	63.2	0.0

[1]Feet above confluence with San Francisco Bay
[2]No floodway determined
[3]Data not available

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SAN MATEO CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	0	247	460	3.3	351.7	351.7	352.7	1.0
B	1,110	302	800	1.9	352.9	352.9	353.9	1.0
C	1,920	92	211	7.1	358.2	358.2	359.2	1.0
D	2,720	73	195	4.8	369.5	369.5	370.4	0.9
E	3,600	64	183	5.1	378.4	378.4	379.4	1.0

[1]Feet above Limit of Detailed Study at Family Farm Road

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CALIFORNIA

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SAUSAL CREEK

Non-encroachment areas may be delineated where it is not possible to delineate floodways because specific channel profiles with bridge and culvert geometry were not developed. Any non-encroachment determinations for this Flood Risk Project have been tabulated for selected cross sections and are shown in Table 25. The non-encroachment width indicates the measured distance left and right (looking downstream) from the mapped center of the stream to the non-encroachment boundary based on a surcharge of 1.0 foot or less.

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

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

Flood insurance zones and BFEs including the wave effects were identified on each transect based on the results from the onshore wave hazard analyses. Between transects, elevations were interpolated using topographic maps, land-use and land-cover data, and knowledge of coastal flood processes to determine the aerial extent of flooding. 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 ft^3/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 indicates the coastal analyses used for floodplain mapping and the criteria used to determine the inland limit of the open-coast Zone VE and the SFHA boundary at each transect.

Table 26: Summary of Coastal Transect Mapping Considerations

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
1	✓		VE 25	Runup	
2			VE 23	Runup	
3			VE 27	Runup	Overtopping
4			VE 28	Runup	
5			VE 24	Runup	
6			VE 32	Runup	Overtopping
7			VE 26	Runup	Overtopping
8			VE 24	Runup	Overtopping
9			VE 22	Runup	
10			VE 35	Runup	
11			VE 24	Runup	Overtopping
12			VE 32- 49	Runup	Overtopping
13			VE 24 AE 24	Runup	Overtopping
14	✓		VE 20 AH 14	Runup	PFD
15			VE 18 AH 14	Runup	Overtopping
16			VE 17 AH 14	Runup	Overtopping
17			VE 17	Runup	
18			VE 26 – 30	Runup	Overtopping
19			VE 21	Runup	
20			VE 34	Runup	
21			VE 27	Runup	
22			VE 34	Runup	
23			VE 26	Runup	
24			VE 29	Runup	

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
25			VE 28	Runup	
26			VE 34	Runup	
27			VE 29	Runup	
28			VE 11 – 37	Runup	Overtopping
29			VE 14 – 37	Runup	Overtopping
30			VE 14 – 37	Runup	
31			VE 26 – 37	Runup	Overtopping
32			VE 19	Runup	
33			VE 20	Runup	Overtopping
34			VE 22	Runup	
35			VE 32 – 33	Runup	Overtopping
36			VE 35 – 38	Runup	Overtopping
37			VE 31	Runup	
38			VE 29	Runup	
39			VE 29	Runup	
40			VE 36	Runup	
41			VE 19	Runup	
42			VE 19	Runup	
43			VE 23 AE 23	Runup	
44			VE 24	Runup	
45	✓		VE 24	Runup	PFD
46			VE 23	Runup	
47			VE 27	Runup	
48			VE 21	Runup	
49			VE 30	Runup	
50			VE 35	Runup	Overtopping
51			VE 22	Runup	
52			VE 27	Runup	
53			VE 19	Runup	
54	✓		VE 22	Runup	PFD

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD 88)	Zone Designation and BFE (ft NAVD 88)		
55			VE 29 – 32	Runup	Overtopping
56			VE 21	Runup	Overtopping
57			VE 26	Runup	
58			VE 18	Runup	
59			VE 20	Runup	

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 www.fema.gov/floodplain-management/letter-map-amendment-loma 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 www.fema.gov/online-tutorials.

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 www.fema.gov/floodplain-management/letter-map-amendment-loma 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 www.fema.gov/online-tutorials.

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 www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions 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 San Mateo County FIRM are listed in Table 27. No LOMRs have been issued since the effective FIS date of October 16, 2012.

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 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 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 San Mateo County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) 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 San Mateo County FIRMs in countywide format was 10/16/2012.

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)
Atherton, Town of[1]	07/16/2015	N/A	N/A	N/A	10/16/2012
Belmont, City of	07/19/1974	7/19/1974	08/20/1976	03/09/1982	07/16/2015 10/16/2012
Brisbane, City of	05/24/1974	05/24/1974	010/10/1975	03/29/1983	10/16/2012
Burlingame, City of	06/28/1974	06/28/1974	03/04/1977 08/29/1975	09/16/1981	07/16/2015 10/16/2012
Colma, Town of	10/16/2012	10/16/2012	N/A	10/16/2012	10/16/2012
Daly City, City of	10/16/2012	10/16/2012	N/A	10/16/2012	10/16/2012
East Palo Alto, City of	09/19/1984	09/19/1984	N/A	09/19/1984	10/16/2012 08/23/1999
Foster City, City of	06/14/1974	06/14/1974	12/12/1975	01/07/1977	07/16/2015 10/16/2012 01/19/1995
Half Moon Bay, City of	06/03/1986	N/A	N/A	06/03/1986	10/16/2012
Hillsborough, Town of	10/06/1999	N/A	N/A	10/06/1999	07/16/2015 10/16/2012
Menlo Park, City of	06/14/1974	06/14/1974	02/13/1979 08/08/1975	02/04/1981	10/16/2012 04/21/1999
Millbrae, City of	07/19/1974	07/19/1974	12/05/1975	09/30/1981	10/16/2012
Pacifica, City of	06/28/1974	06/28/1974	09/26/1978 12/05/1975	02/04/1981	10/16/2012 02/19/1987
Portola Valley, Town of	06/21/1974	06/21/1974	02/13/1976	10/17/1978	10/16/2012 09/22/1981 11/13/1979
Redwood City, City of	06/28/1974	06/28/1974	01/02/1976	05/17/1982	07/16/2015 10/16/2012
San Bruno, City of[1]	07/16/2015	N/A	N/A	N/A	10/16/2012

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)
San Carlos, City of	06/28/1974	06/28/1974	08/08/1975	09/01/1977	07/16/2015 10/16/2012 08/21/1979
San Mateo County, Unincorporated Areas	11/01/1974	11/01/1974	04/15/1977	07/05/1984	07/16/2015 10/16/2012 08/05/1986
San Mateo, City of	10/19/2001	N/A	N/A	10/19/2001	07/16/2015 10/16/2012
South San Francisco, City of	01/10/1975	01/10/1975	01/17/1978	09/02/1981	10/16/2012
Woodside, Town of	06/14/1974	06/14/1974	04/09/1976	11/15/1979	10/16/2012

[1] No Special Flood Hazard Areas Identified

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
Pacific Ocean		BakerAECOM	NSFEHQ-09-D-0368	June 2015	San Mateo County
San Francisco Bay	October 16, 2012	MAP-IX Mainland	EMF-2003-CO-0047	August 2010	Redwood City, City of; San Carlos, City of; San Mateo County, Unincorporated Areas

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
San Francisco Bay	October 16, 2012	Nolte Engineering Company	EMF-2003-CO-0047	June 2007	Burlingame, City of; Colma, Town of; Foster City, City of; Pacifica, City of; Redwood City, City of; San Carlos, City of; San Mateo, City of; South San Francisco, City of
San Francisco Bay	October 16, 2012	MAP-IX Mainland	EMF-2003-CO-0047	October – November 2007	Belmont, City of; Burlingame, City of; Colma, Town of; Redwood City, City of; San Carlos, City of; South San Francisco, City of
Sources within City of Burlingame		Tudor Engineering Company	H-4608	July 1980	Burlingame, City of
Sources within City of East Palo Alto		Ensign & Buckley	EMW-90-C-3133	August 1999	East Palo Alto, City of
Sources within Town of Hillsborough		Ensign & Buckley	EMW-94-C-4572	February 1998	Hillsborough, Town of
Sources within City of Menlo Park		Ensign & Buckley	EMW-90-C-3133	April 1999	Menlo Park, City of
Sources within City of Millbrae		Tudor Engineering Company	H-4608	July 1980	Millbrae, City of
Sources within City of Pacifica		Tudor Engineering Company	H-4608	November 1979	Pacifica, City of
Sources within Town of Portola Valley		U.S. Department of Agriculture, Soil Conservation Service	IAA-H-16-72	March 1975	Portola Valley, Town of

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Sources within City of Redwood City		Tudor Engineering Company	H-4608	October 1979	Redwood City, City of
Sources within City of San Carlos		U.S. Geological Survey, Water Resources Division, California District	IAA-H-3-73	June 1976	San Carlos, City of
Sources within City of San Mateo	October 16, 20102	BakerAECOM	EMF-2003-CO-0047	February 2012	San Mateo, City of
Sources within City of South San Francisco		Tudor Engineering Company	H-4608	July 1980	South San Francisco, City of
Sources within Town of Woodside		USGS, Water Resources Division, California District	IAA-H-3-73	April 1974	Woodside, Town of
Sources within San Mateo County, Unincorporated Areas		Tudor Engineering Company	H-4608	December 1980	San Mateo County, Unincorporated Areas

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
Belmont, City of	[1]	[1]	Initial CCO	[1]
		[1]	Final CCO	[1]
Brisbane, City of	[1]	[1]	Initial CCO	[1]
		[1]	Final CCO	[1]
Burlingame, City of	[1]	07/28/1977	Initial CCO	FEMA, this community and the study contractor
		11/13/1979	Final CCO	FEMA, this community and the study contractor
Colma, Town of	[1]	[1]	Initial CCO	[1]
		[1]	Final CCO	[1]
Daly City, City of	[1]	[1]	Initial CCO	[1]
		[1]	Final CCO	[1]
East Palo Alto, City of	[1]	06/28/1983	Initial CCO	FEMA, this community and the study contractor
		11/01/1983	Final CCO	FEMA, this community and the study contractor
		08/18/1990	Initial CCO	FEMA, this community and the study contractor
Foster City, City of	[1]	[1]	Initial CCO	[1]
		[1]	Final CCO	[1]
Half Moon Bay, City of	[1]	06/1985	Initial CCO	FEMA, this community and the study contractor
		[1]	Final CCO	[1]
Hillsborough, Town of	[1]	[1]	Initial CCO	[1]
		09/30/1998	Final CCO	FEMA, this community and the study contractor
Menlo Park, City of	[1]	08/04/1977	Initial CCO	FEMA, this community and the study contractor
		08/28/1979	Final CCO	FEMA, this community and the study contractor

[1]Data not available

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Menlo Park, City of	[1]	08/19/1990	Initial CCO	FEMA, this community and the study contractor
		[1]	Final CCO	[1]
Pacifica, City of	[1]	07/1977	Initial CCO	FEMA, this community and the study contractor
		08/28/1979	Final CCO	FEMA, this community and the study contractor
		05/1983	Initial CCO	FEMA, this community and the study contractor
		[1]	Final CCO	[1]
Portola Valley, Town of	[1]	[1]	Initial CCO	[1]
		07/13/1977	Final CCO	FEMA, this community and the study contractor
Redwood City, City of	[1]	08/04/1977	Initial CCO	FEMA, this community and the study contractor
		11/20/1979	Final CCO	FEMA, this community and the study contractor
San Carlos, City of	[1]	[1]	Initial CCO	[1]
		04/18/1975	Final CCO	FEMA, this community and the study contractor
San Mateo County, Unincorporated Areas	[1]	08/04/1977	Initial CCO	FEMA, this community and the study contractor
		05/21/1982	Final CCO	FEMA, this community and the study contractor
		05/1983	Initial CCO	FEMA, this community and the study contractor
		[1]	Final CCO	[1]
		03/08/2011	Initial CCO	FEMA, this community and the study contractor
San Mateo, City of	[1]	[1]	Initial CCO	[1]
		10/20/1998	Final CCO	FEMA, this community and the study contractor
South San Francisco, City of	[1]	07/28/1977	Initial CCO	FEMA, this community and the study contractor
		08/29/1979	Final CCO	FEMA, this community and the study contractor
Woodside, Town of	[1]	[1]	Initial CCO	[1]
		08/15/1977	Final CCO	FEMA, this community and the study contractor

[1]Data 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.

Table 31 is a list of the locations where FIRMs for San Mateo 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
Atherton, Town of	Building Department 91 Ashfield Road	Atherton	CA	94027
Belmont, City of	Public Works Department One Twin Pines Lane	Belmont	CA	94002
Brisbane, City of	Public Works 50 Park Place	Brisbane	CA	94005
Burlingame, City of	City Hall 501 Primrose Road	Burlingame	CA	94010
Colma, Town of	Town Hall 1198 El Camino Real	Colma	CA	94014
Daly City, City of	Public Works, Engineering Division 333 90th Street	Daly City	CA	94015
East Palo Alto, City of	Community and Economic Development Department 1960 Tate Street	East Palo Alto	CA	94303
Foster City, City of	Public Works 610 Foster City Boulevard	Foster City	CA	94404
Half Moon Bay, City of	City Hall 501 Main Street	Half Moon Bay	CA	94019
Hillsborough, Town of	City Hall 1600 Floribunda Avenue	Hillsborough	CA	94010
Menlo Park, City of	City Hall 701 Laurel Street	Menlo Park	CA	94025
Millbrae, City of	City Hall 621 Magnolia Avenue	Millbrae	CA	94030

Community	Address	City	State	Zip Code
Pacifica, City of	Engineering Division 151 Milagra Drive	Pacifica	CA	94044
Portola Valley, Town of	Town Hall 765 Portola Road	Portola Valley	CA	94028
Redwood City, City of	City Hall 1017 Middlefield Road	Redwood City	CA	94063
San Bruno, City of	Public Works 567 El Camino Real	San Bruno	CA	94066
San Carlos, City of	Building Division 600 Elm Street	San Carlos	CA	94070
San Mateo County, Unincorporated Areas	Planning and Building Department 455 County Center	Redwood City	CA	94063
San Mateo, City of	Public Works Department 330 West 20th Avenue	San Mateo	CA	94403
South San Francisco, City of	City Hall 400 Grand Avenue	South San Francisco	CA	94080
Woodside, Town of	Town Hall 2955 Woodside Road	Woodside	CA	94062

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	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov

FEMA Region IX	Federal Regional IX, 1111 Broadway, Suite 1200, Oakland, CA 94607 (510) 627-7029
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Ricardo Pineda, PE, CFM California Department of Water Resources 1416 9th Street, Room 1601 Sacramento, CA 95814 916-574-0611 rpineda@water.ca.gov
State GIS Coordinator	David Harris Agency Information Officer California Natural 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	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 1	Federal Emergency Management Agency	*Flood Insurance Study, San Mateo County, California Unincorporated Areas*			1982	FEMA Map Service Center http://msc.fema.gov
Reference 2	San Mateo County League of Women Voters	*A Guide to County Government*			1971	
Reference 3	San Mateo County Planning Department	*The Physical Setting of San Mateo County*			June 1972	
Reference 4	Ott Water Engineers, Inc.	*Northern California Coastal Studies*			August 1984	
Reference 5	U.S. Department of Commerce	*Annual Summary, Climatological Data, California*	NOAA, Environmental Data Service		1977	
Reference 6	U.S. Department of the Army, Corps of Engineers, San Francisco District	*Water Resources Development Interim Survey Report, Pescadero Creek, Pacific Coastal Streams, San Mateo County*			December 1969	
Reference 7	EarthInfo, Inc	*USGS Daily Values*			1992	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 8	U.S. Department of the Army, Corps of Engineers	*Working Paper, Environmental Evaluation of Alternatives for Flood Damage Mitigation for San Pedro Creek*			April 1975	
Reference 9	Charles S. McCandless and Company	*Storm Drainage-Brittan Creek (above El Camino Real), City of San Carlos, San Mateo County, California*			1965	
Reference 10	U.S. Department of the Army, Corps of Engineers	*Report of Floods of October 1972 and January 1973 in Colma Creek Basin, California*			November 1970	
Reference 11	U.S. Department of the Army, Corps of Engineers	*Colma Creek Basin, San Mateo County, California, Report on Standard Project Flood Determination*		San Francisco, California	August 1970	
Reference 12	Santa Clara Valley Water District	*Development of Regional Regression Equations for Solution of Certain Hydrologic Problems in and Adjacent to Santa Clara County*	A.D. Saah, R. Talley, and W.J. Sanchez, JR.		Unpublished	
Reference 13	U.S. Department of the Interior, Geological Survey	*National Water Data Storage and Retrieval System (WATSTORE)*			March 1979	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 14	U.S. Water Resources Council	*"Guidelines for Determining Flood Flow Frequency," Bulletin 17A*			June 1977	
Reference 15	U.S. Department of Urban Housing and Urban Development and U.S. Department of the Interior	*Basic Data Contribution 32, San Francisco Bay Region Environment and Resources Planning Study, Mean Annual Precipitation Depth-Duration-Frequency Data for the San Francisco Bay Region, California*	S.E. Rantz	Menlo Park, California	1971	
Reference 16	U.S. Department of the Interior, Geological Survey	*Suggested Criteria for Hydrologic Design of Storm-Drainage Facilities in San Francisco Bay Region, California*	S.E. Rantz	Menlo Park, California	1971	
Reference 17	Federal Emergency Management Agency	*Flood Insurance Study, City of Palo Alto, California*			August 1979	FEMA Map Service Center http://msc.fema.gov
Reference 18	U.S. Department of the Army, Corps of Engineers, San Francisco District	*Survey Report on San Francisquito Creek, San Mateo and Santa Clara Counties, California, for Flood Control and Allied Purposes*			June 1972	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 19	U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center	*HEC-2 Water-Surface profiles, Generalized Computer Program*		Davis, California	November 1976	
Reference 20	Federal Emergency Management Agency	*Flood Insurance Study, City of East Palo Alto, San Mateo County, California*			March 19, 1984	FEMA Map Service Center http://msc.fema.gov
Reference 21	Federal Emergency Management Agency	*Flood Insurance Study, City of Half Moon Bay, San Mateo County, California*			June 3, 1986	FEMA Map Service Center http://msc.fema.gov
Reference 22	U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center	*HEC-1 Flood Hydrography Package, Generalized Computer Program*		Davis, California	September 1990	
Reference 23	U.S. Department of the Interior, Geological Survey	*Mean Annual Precipitation Depth-Duration-Frequency Data for the San Francisco Bay Region, California*			May 1991	
Reference 24	U.S. Department of Agriculture, Natural Resources Conservation Service	*Soil Survey of San Mateo County, Eastern Park and San Francisco County, California*			May 1991	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 25	U.S. Department of Agriculture, Natural Resources Conservation Service	*Technical Release No.6, Earth Dams and Reservoirs*			October 1985	
Reference 26	U.S. Department of the Army, Corps of Engineers	*Survey Report for Streams at and in the Vicinity of San Mateo*			November 1965	
Reference 27	Santa Clara Valley Water District	*San Francisquito Creek Hydrology – Determination of Design Flows, Draft Report*			Undated	
Reference 28	Stanford University	*Report EEP-28, Alternative methods of Flood Control, San Francisquito Creek*	J.B. Vincent		May 1968	
Reference 29	Federal Emergency Management Agency	*Flood Insurance Study, City of Menlo Park, San Mateo County, California*			February 4, 1981	FEMA Map Service Center http://msc.fema.gov
Reference 30	U.S. Department of the Army, Corps of Engineers, San Francisco District	*San Pedro Creek Basin, San Mateo County, California, Hydrology Report*			August 1974	
Reference 31	U.S. Department of Agriculture, Natural Resources Conservation Service, Design Hydrograph Method	Design Hydrograph Method , *National Engineering Handbook 4, Chapter 21*				

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 32	Federal Emergency Management Agency	*Flood Insurance Study, City of San Carlos, San Mateo County, California*			September 1977	FEMA Map Service Center http://msc.fema.gov
Reference 33	U.S. Geological Survey, Water Resources Division	*"A Uniform Technique for Determining Flood Flow Frequencies," Water Resources Council, Bulletin 15*			December 1967	
Reference 34	Tudor Engineering Company	*HP-9845 Prismatic Channel District Step Backwater Program*		Unpublished	October 1977	
Reference 35	Harl Pugh and Associates	*Topographic Maps (Manuscript), Scale 1":4,800', contour Interval 2 Feet; San Mateo County, California*			July 1978	
Reference 36	U.S. Department of Commerce, Coast and Geodetic Survey, National Ocean Survey	*San Francisco Bay and San Joaquin – Sacramento Delta Region*			1972	
Reference 37	U.S. Department of Transportation, Federal Highway Administration	*Hydraulic Engineering Circular 12, Drainage of Highway Pavements*			March 1969	
Reference 38	Tudor Engineering Company	*HP-9845 Culvert analysis Program*		Unpublished	October 1977	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 39	Geonex, Inc.	*Topographic Map – Menlo Park and East Palo Alto, Scale 1":400', Contour Interval 2 Feet*			May 15, 1992	
Reference 40	Santa Clara Valley Water District	*San Francisquito Creek Improvement Plans, Scale 1":600'*			October 14, 1969	
Reference 41	Santa Clara Valley Water District	*Interim Emergency Flood Protection Measures for San Francisquito Creek*			October 1969	
Reference 42	Nolte and Associates, Inc.	*Menlo Park Floodplain Mapping, Scale 1":2,400'*			May 1998	
Reference 43	U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center	*HEC-2 Water-Surface Profiles, Generalized Computer Program, Version 4.6.2*		Davis, California	September 1990	
Reference 44	Ensign & Buckley	*San Mateo Flood Study, Topographic Mapping, Scale 1":200', Contour Interval 2 Feet*			Undated	
Reference 45	U.S. Department of the Army, Corps of Engineers, San Francisco District	*San Francisco Bay, Tidal Stage vs. Frequency Study*			October 1984	
Reference 46	State of California, Department of Transportation	*As-Built plans for Various Locations of State Highway 1, 2*		Unpublished		

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 47		*Portland WSP Computer Program*				
Reference 48	U.S. Department of the Interior, Geological Survey	*7.5-Minute Series Topographic Maps, Scale 1":24,000', Contour Interval 10 feet: Palo Alto, California (1973); San Mateo, California (1973); Redwood Point, California (1973); Woodside, California (1973)*			1973	http://topomaps.usgs.gov
Reference 49		*"Preparation of Input Data for Automatic Computers of Base Stage Discharge Relations of Culverts," Book 7, Chapter C3, Unpublished Technical Guide for the U.S. Geological Survey*	Matthai, Howarth, Stuoll, Harold E., and Davidian, Jacob	Unpublished	1970	
Reference 50		*"Computation of Water-Surface Profiles in Open Channels,," Book 1, Chapter 1, of Surface Water Techniques, Unpublished Technical Guide for the U.S. Geological Survey*	Anderson, W.L., and Anderson, D.G.	Unpublished	1964	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 51		*Preparation of Input Data for Automatic Computation of Stage-Discharge Relations at Culverts*			January 1978	
Reference 52	U.S. Department of the Interior, Geological Survey	*7.5-Minute Series Topographic Maps, Scale 1":24,000', Contour Interval 40 feet: La Honda, California (1961), Photorevised (1968)*			Various	http://topomaps.usgs.gov
Reference 53	U.S. Department of the Interior, Geological Survey	*7.5-Minute Series Maps of Flood Prone Areas, Scale 1":24,000' Pigeon Point, California (1971): Can Gregorio, California (1971)*			1971	http://topomaps.usgs.gov
Reference 54	Federal Emergency Management Agency	*Flood Hazard Boundary Map, San Mateo County, California Unincorporated Areas, Scale 1":24,000'*			1977	FEMA Map Service Center http://msc.fema.gov
Reference 55	U.S. Department of the Interior, Geological Survey	*7.5-Minute Series Topographic Maps, Scale 1":24,000', Contour Interval 25 feet: San Francisco South, California (1956), Photorevised (1968 and 1973)*			1973	http://topomaps.usgs.gov

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 56	U.S. Department of the Interior, Geological Survey	*7.5-Minute Series Topographic Maps, Scale 1":24,000', Contour Interval 40 feet: San Gregorio, California (1961), Photorevised (1968), Photoinspected (1973)*			Various	http://topomaps.usgs.gov
Reference 57	City of Pacific, Department of Public Works	*Calera Creek Realignment*			August 4, 2010	
Reference 58	Federal Emergency Management Agency	*Flood Insurance Study, City of Menlo Park, San Mateo County, California*			April 21, 1999	FEMA Map Service Center http://msc.fema.gov
Reference 59	Federal Emergency Management Agency	*Flood Insurance Study, San Mateo County, California (Unincorporated Areas)*			August 5, 1986	FEMA Map Service Center http://msc.fema.gov
Reference 60	Federal Emergency Management Agency	*Flood Insurance Study, City of Palo Alto, California*			August 23, 1999	FEMA Map Service Center http://msc.fema.gov
Reference 61	RM Parsons Laboratory, M.I.T.	*A Two-dimensional Finite Element Circulation Model, A User's Manual for CAFÉ-1*	James R. Pagenkopf, et al		August 1976	
Reference 62	U.S. Department of Commerce, National Climatic Data Center	*Meteorological Record for San Francisco, California, Airport*		Asheville, North Carolina	1944-1983	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 63	U.S. Department of Commerce, National Climatic Data Center	*Three-Hourly North American Surface Weather Maps*		Asheville, North Carolina	1955-1983	
Reference 64	U.S. Department of Commerce, National Oceanic and Atmospheric Administration	*Tide Tables, High and Low Water Predictions, West Coast of North and South America*			1945-1983	
Reference 65	U.S. Department of the Army, Corps of Engineers	*Shore Protection Manual*			1977	
Reference 66	U.S Department of the Army, Corps of Engineers	*California Coast Storm Damage, Winter 1977-1978*	G.W. Domurat		1978	
Reference 67		*"Design of Seawalls and Breakwaters," Proceedings of the ASCE, Vol. 85, No, WW3*	I.J. Hunt		1959	
Reference 68	U.S. Department of the Army, Corps of Engineers, Coastal Engineering Research Center	*Technical Aid No. 78-2, Revised Wave Runup Curves for Smooth Slopes*	P.N. Stoa		July 1978	
Reference 69	Stanford University	*A Program to Construct Refraction Diagrams and Compute Wave Heights for Waves Moving Into Shoaling Waters*	R.S. Dobson		March 1967	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 70	Meteorology International, Inc.	*Deep-Water Wave Statistics for the California Coast*				
Reference 71	U.S. Department of the Army, Corps of Engineers, Waterway Experiment Station	*Technical Report H-78-26, Flood Insurance Study: Tsunami Prediction for the West Coast of the Continental United States*	J.R. Houston and A.W. Garcia		December 1978	
Reference 72	U.S. Department of the Army, Corps of Engineers, Waterway Experiment Station	*Technical Report H-74-3, Flood Insurance Study: Tsunami Prediction for Pacific Coastal Communities*	J.R. Houston and A.W. Garcia		May 1974	
Reference 73	U.S. Department of the Army, Corps of Engineers, Waterways Experiment Station, Hydraulics Laboratory	*Technical Report H-79-2, A Numerical Model for Tsunami Inundation*	J.R. Houston and H.L. Butler		February 1979	
Reference 74	U.S. Department of the Army, Corps of Engineers, Waterways Experiment Station, Hydraulics Laboratory	*Technical Report H-75-17, Type 16 Flood Insurance Study: Tsunami Predictions for Monterey and San Francisco Bays and Puget Sound*		Vicksburg, Mississippi	November 1975	

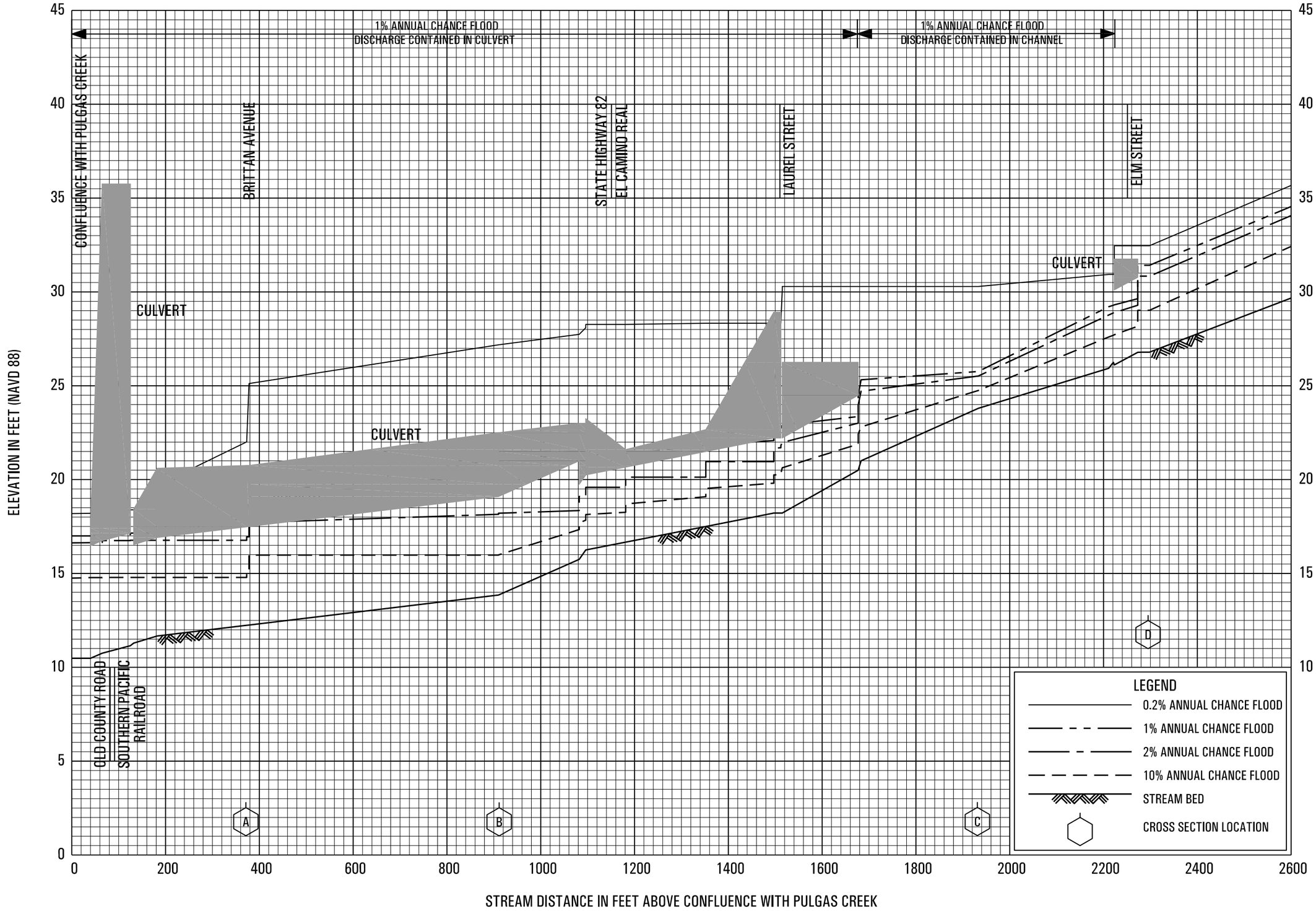
Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 75	U.S. Department of the Army, Corps of Engineers	*Comprehensive Survey of San Francisco Bay and Tributaries, California*			1961	
Reference 76	Foster City	*Contour Interval 1 Foot*			2008	
Reference 77	Ott Water Engineers, Inc.	*Aerial Photography, Scale 1":4,800', contour Interval 4 Feet*			1983	
Reference 78	Harl Pugh and Associates	*Topographic Maps, Scale 1":4,800', contour Interval 2 Feet: San Mateo County California*			April 1977	
Reference 79	Federal Emergency Management Agency	*Flood Insurance Rate Boundary Map, City of Pacifica, California*			February 4, 1981	FEMA Map Service Center http://msc.fema.gov
Reference 80	Photogrammetric Surveyor, San Francisco	*Town of Portola Valley, Photogrammetric Maps, Scale 1":200', Contour Interval 10 Feet*	Chambers, Wayne R.			

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 81	U.S. Geological Survey	*Quadrangle Maps, Scale 1":24,000, contour Interval 20 Feet: Woodside, California, 1961, Photorevised 1968 and 1973; Palo Alto, California, 1961, Photorevised 1968 and 1973; Mindego Hill, California, 1961, Photorevised 1968; and La Honda, California, 1961, Photorevised 1968*			Various	
Reference 82	U.S. Geological Survey	*Flood-Prone Area Map*		Mindego Hill, California	1968	
Reference 83	Tudor Engineering Company	*City of San Mateo, Work Map Panel No. 5-1*			November 1979, Revised April 1980	
Reference 84	City of San Mateo Department of Public Works	*Underground Maps*			September 9, 1994	
Reference 85	R.M. Towill Corporation	*Topographic Maps, Scale 1":4,800'*		Woodside, California	1967	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 86	U.S. Department of the Interior, Geological Survey	*7.5-Minute Series Topographic Maps, Scale 1":24,000', contour Interval 10 Feet: La Honda, California (1961), Palo Alto, California (1961), Woodside, California (1961)*			1961	http://topomaps.usgs.gov
Reference 87	Robert H. Born Consulting Engineers, Inc.	*Report on Analysis of Foster City Levees*			December 15, 1987	
Reference 88	Schaaf & Wheeler Consulting Civil Engineers, Interior Drainage Analysis	*South of San Mateo Creek*		San Mateo, California	October 2009	
Reference 89	Robert H. Born Consulting Engineers, Inc.	*City of Foster City – Report of Analysis of Foster City Levees*		Foster City, California	December 15, 1987	
Reference 90	HJW GeoSpatial	*San Mateo County LiDAR Data Acquisition*			October 2005 & January 2006	
Reference 91	City of Redwood City	*Redwood Shores Levee System Certification*		Redwood City, California	May 12, 2010	
Reference 92	Federal Emergency Management Agency	*Guidelines and Specifications for Flood Hazard Mapping Partners*			2009	FEMA Map Service Center http://msc.fema.gov

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 93	Federal Emergency Management Agency	*Flood Insurance Study, San Mateo County, California and Incorporated Areas*			October 16, 2012	FEMA Map Service Center http://msc.fema.gov
Reference 94	Federal Emergency Management Agency	*Letter of Map Revision Case Number 12-09-2887P, Laurel Creek Update LOMR*			March 4, 2013	FEMA Map Service Center http://msc.fema.gov
Reference 95	Schaaf & Wheeler Consulting Civil Engineers	*Foster City Central Lagoon Base Flood Elevation*			April 2014	
Reference 96		*Supplementary WHAFIS Documentation: WHAFIS 4.0, A Revision of FEMA's WHAFIS 3.0 Program*	Divoky, D.	Atlanta, Georgia	2007	
Reference 97	Federal Emergency Management Agency	*Wave Height Analysis for Flood Insurance Studies(Technical Documentation for WHAFIS program Version 3.0)*		Washington, D.C.	1988	FEMA Map Service Center http://msc.fema.gov
Reference 98	Coastal Engineering research Center, Department of the Army, Waterways Experiment Station, U.S. Army Corps of Engineers	*Automated Coastal Engineering System, version 1.07*	Leenknecht, David, Andre Szuwalski, and Ann R. Sherlock		1992	

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
Reference 99	U.S. Army Corps of Engineers, Waterways Experiment Station	*Shore Protection Manual, Volumes 1-3*		Washington, D.C.	1984	
Reference 100	Technical Advisory Committee for Water Retaining Structures	*Wave Run-up and Overtopping at Dikes*	Van der Meer, J.W.	Delft, the Netherlands	2002	



FLOOD PROFILES

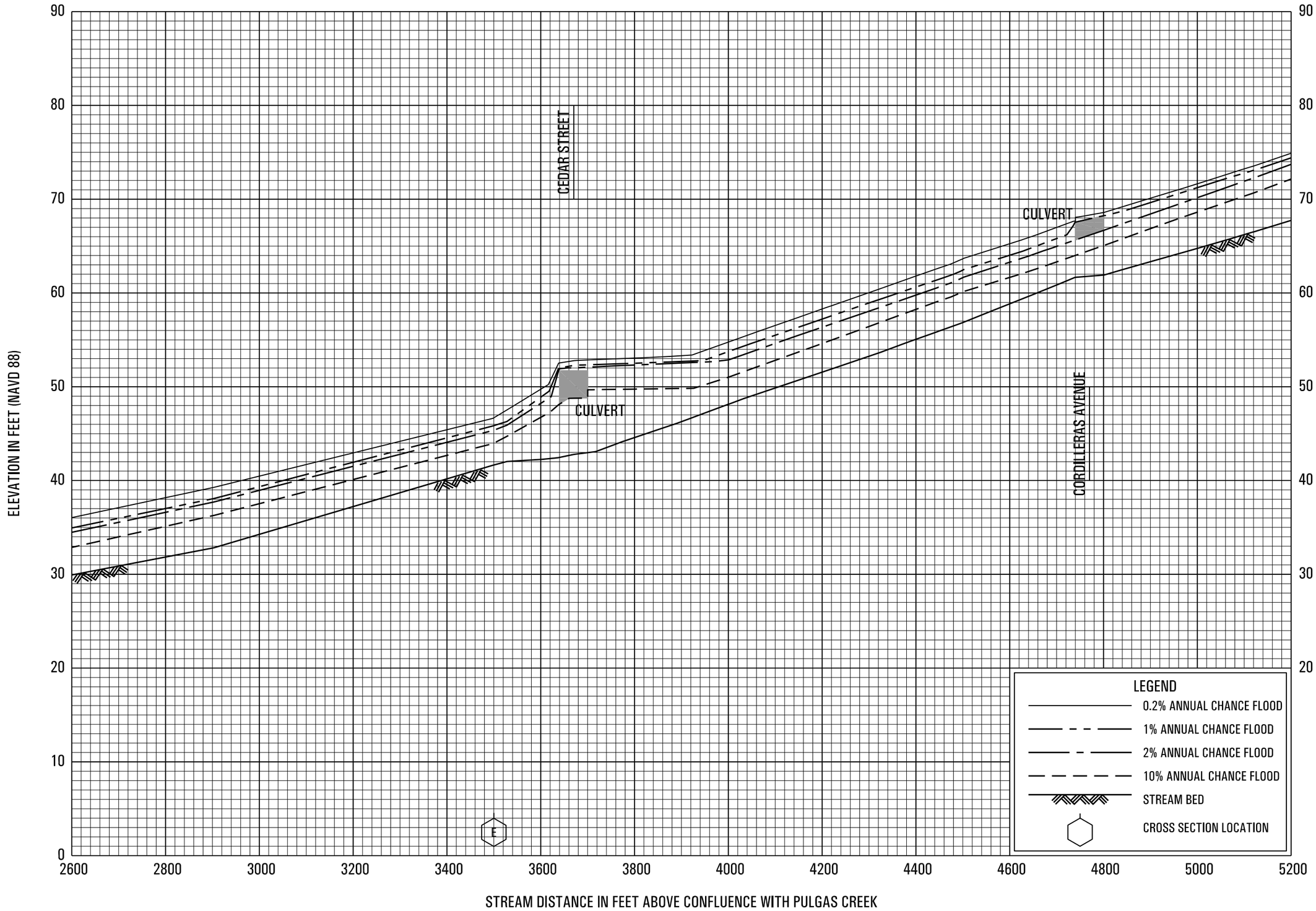
BRITTAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

01P



FLOOD PROFILES

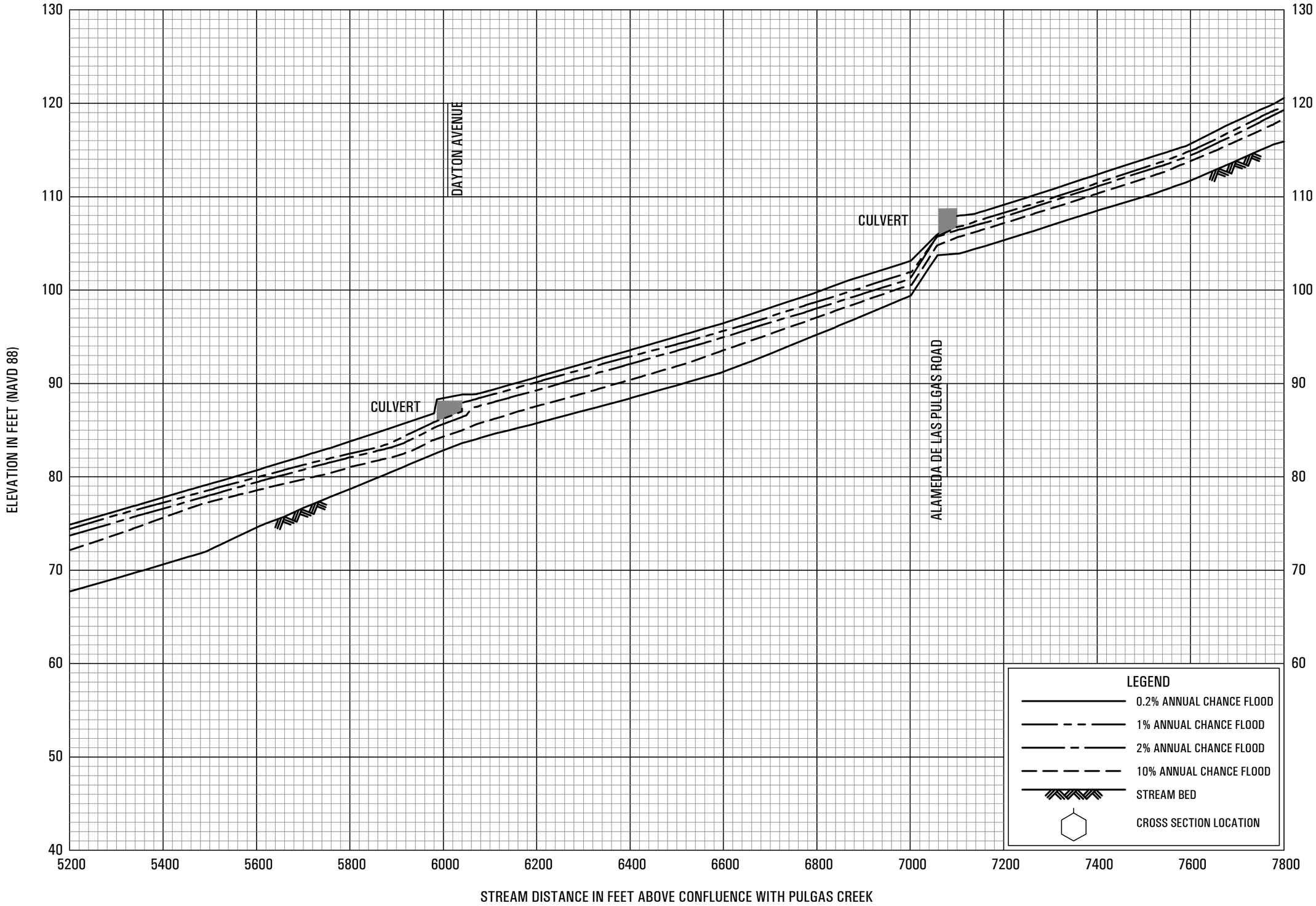
BRITTAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

02P



FLOOD PROFILES

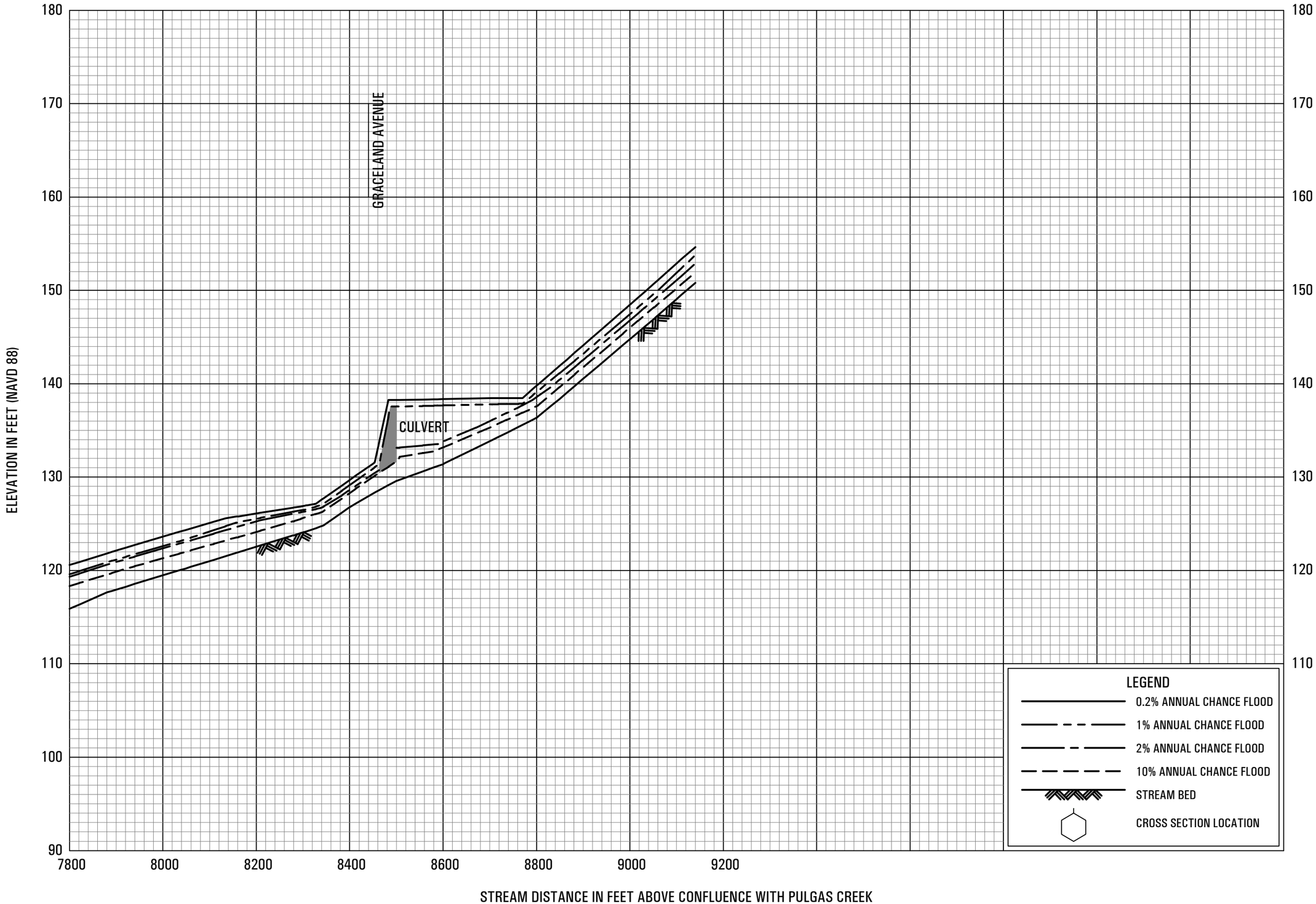
BRITTAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

03P



FLOOD PROFILES

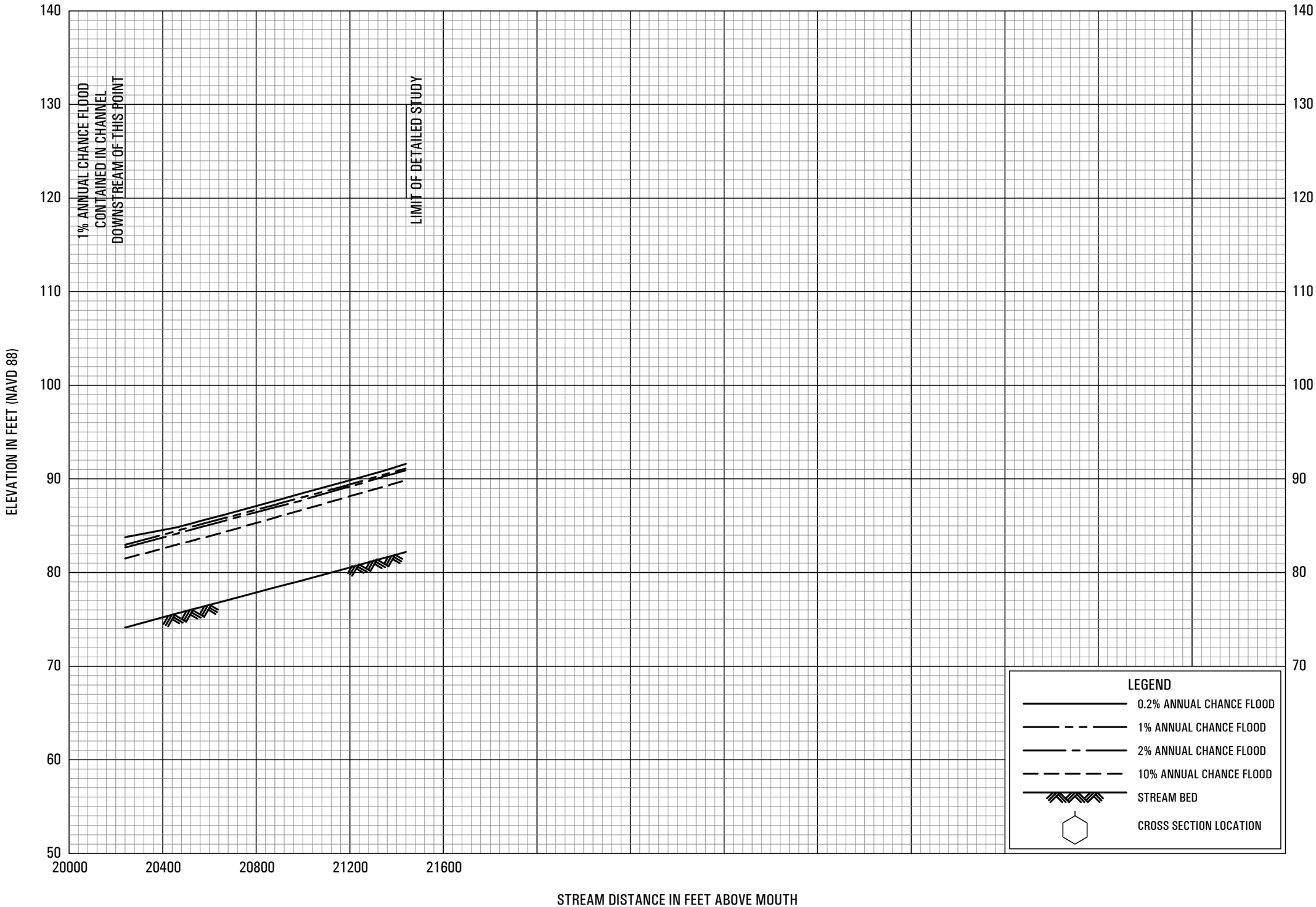
BRITTAN CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

04P



FLOOD PROFILES

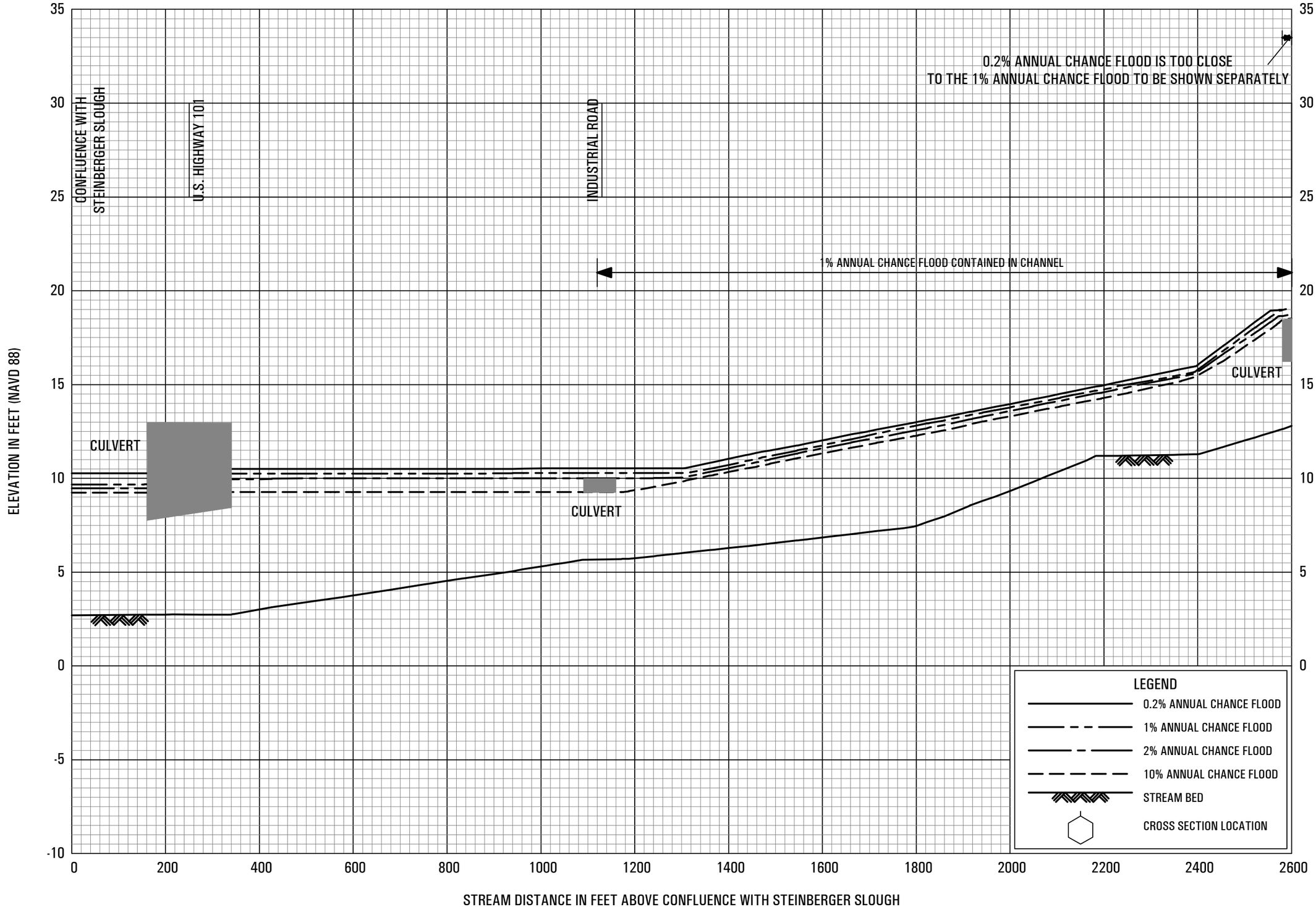
COLMA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

05P



FLOOD PROFILES

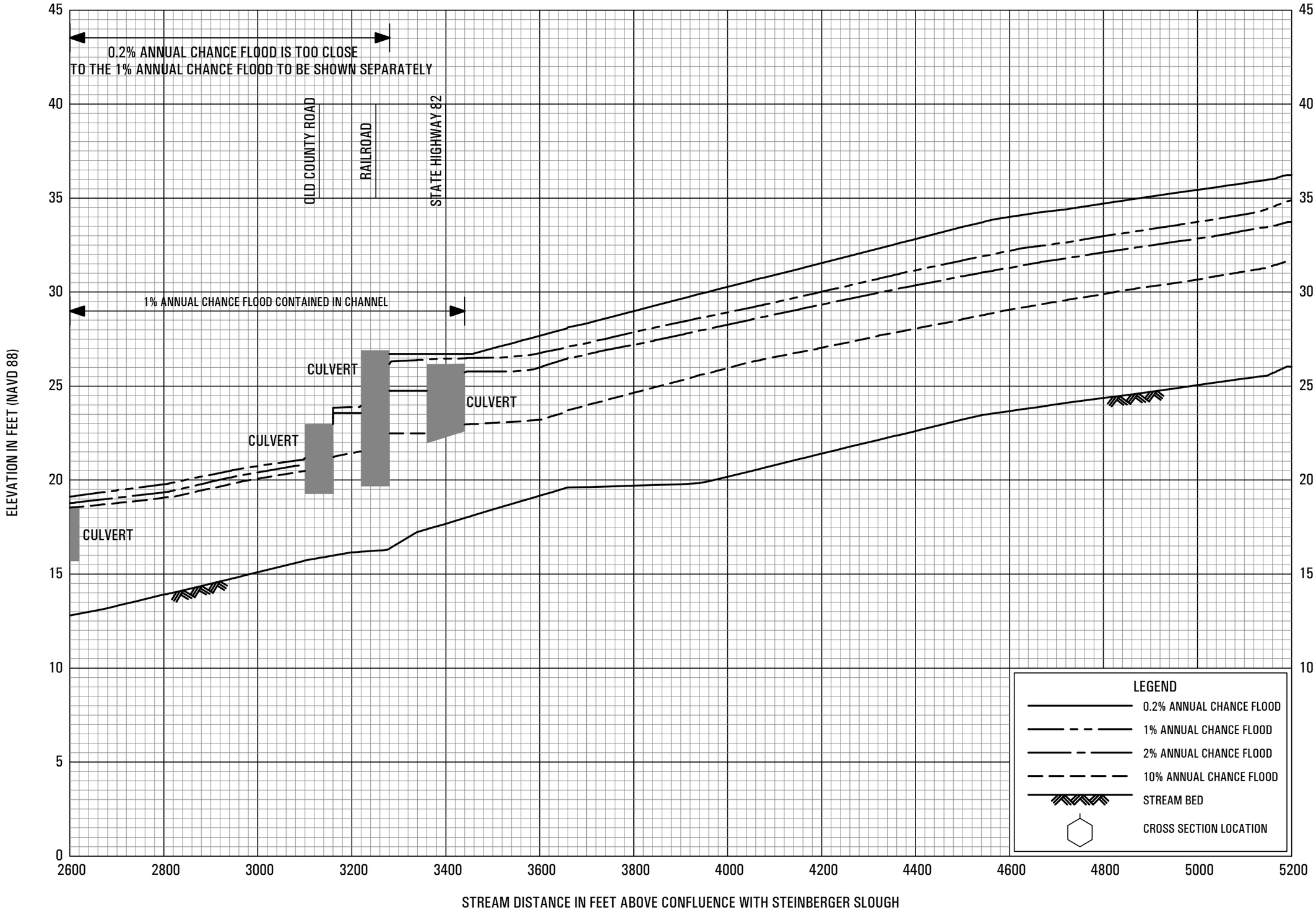
CORDILLERAS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

06P



FLOOD PROFILES

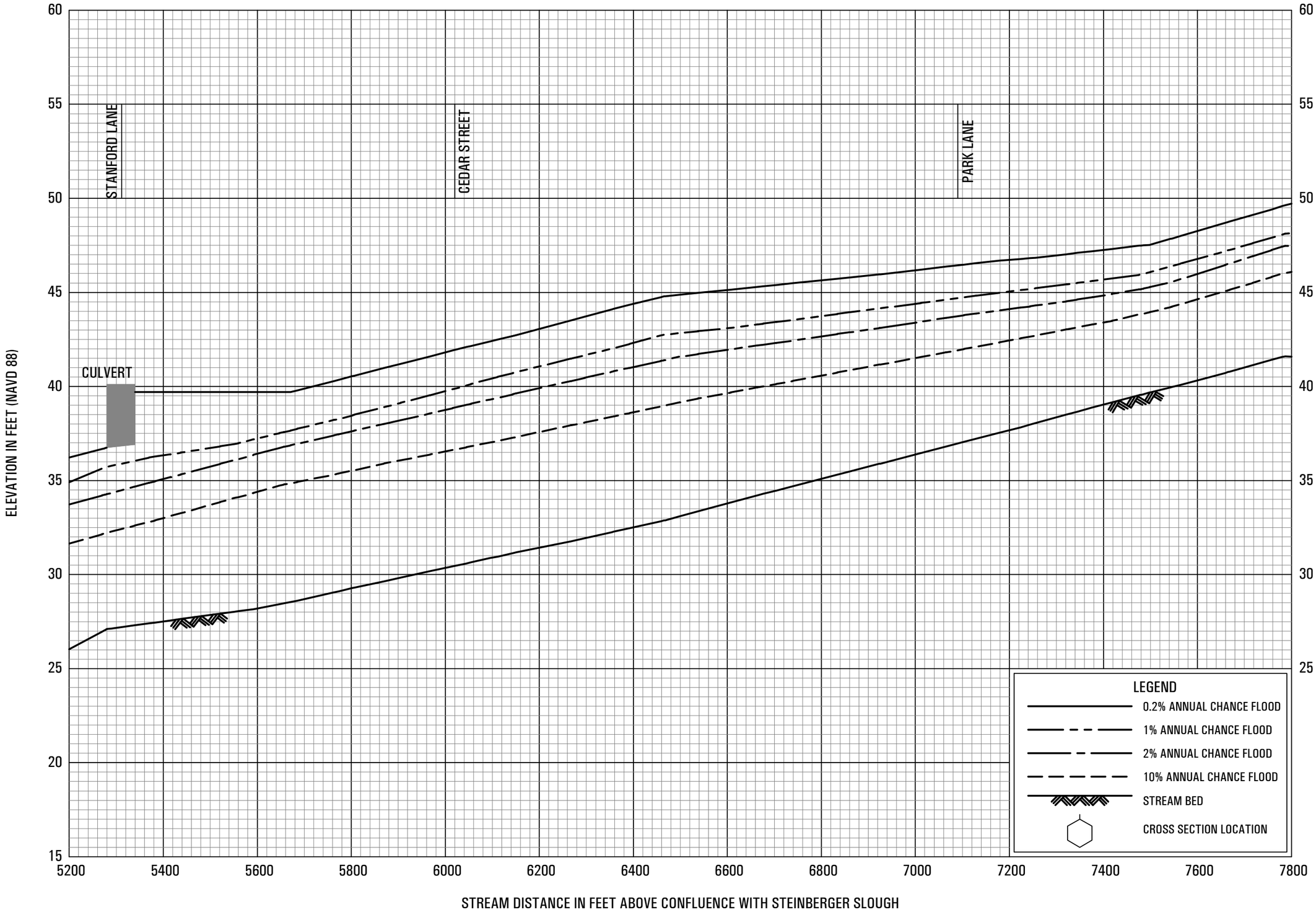
CORDILLERAS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

07P



FLOOD PROFILES

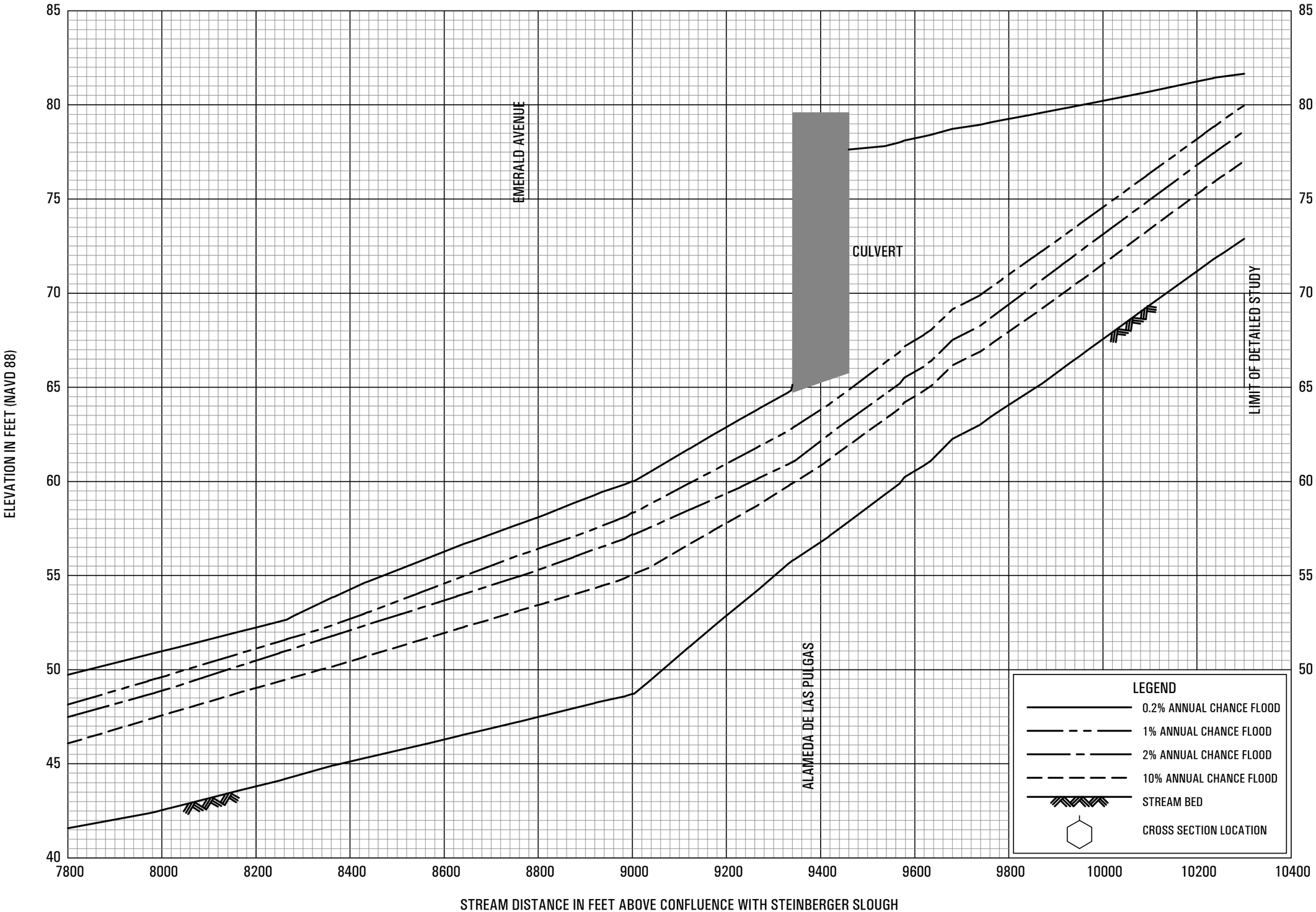
CORDILLERAS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

08P



FLOOD PROFILES

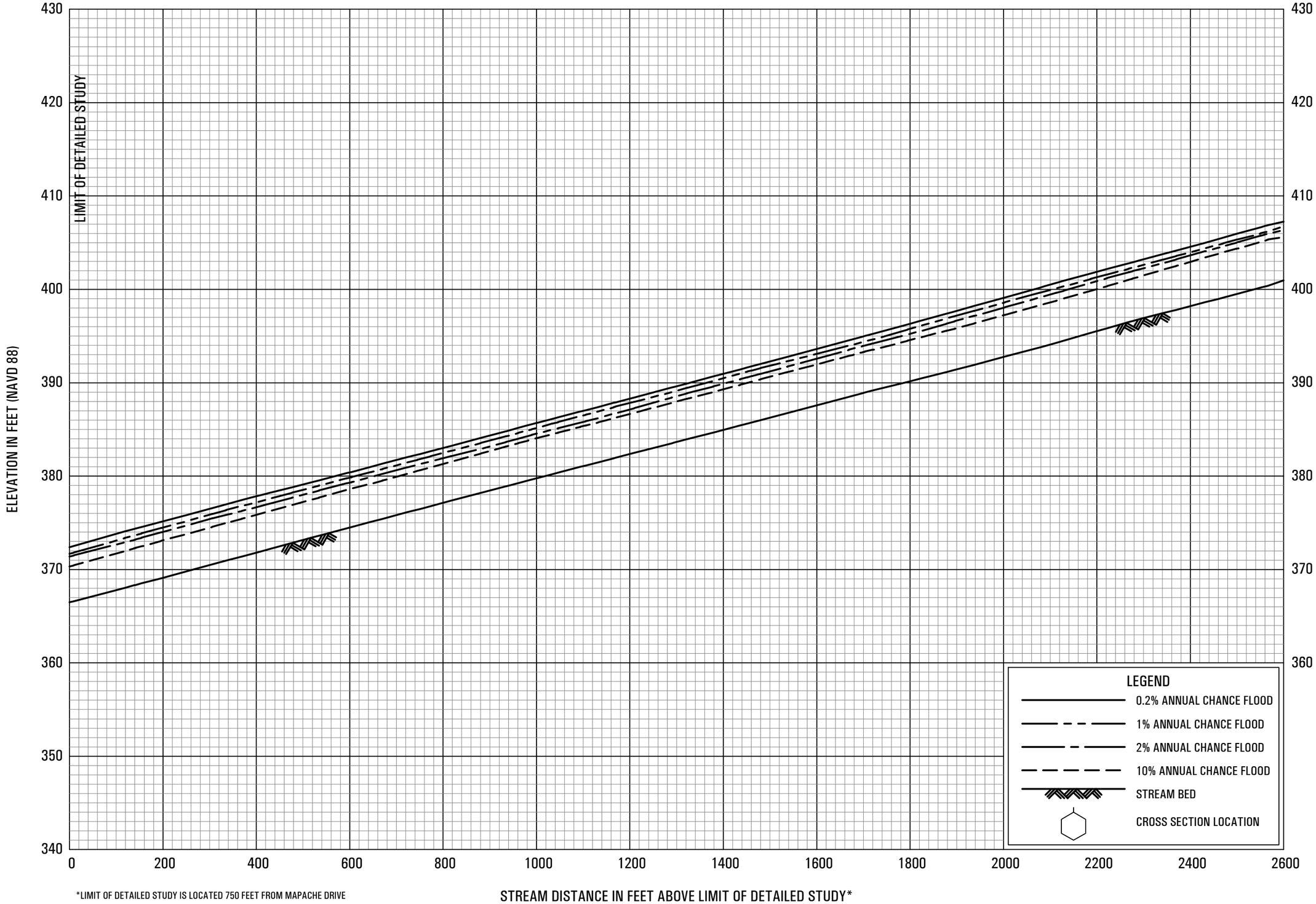
CORDILLERAS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

09P



*LIMIT OF DETAILED STUDY IS LOCATED 750 FEET FROM MAPACHE DRIVE

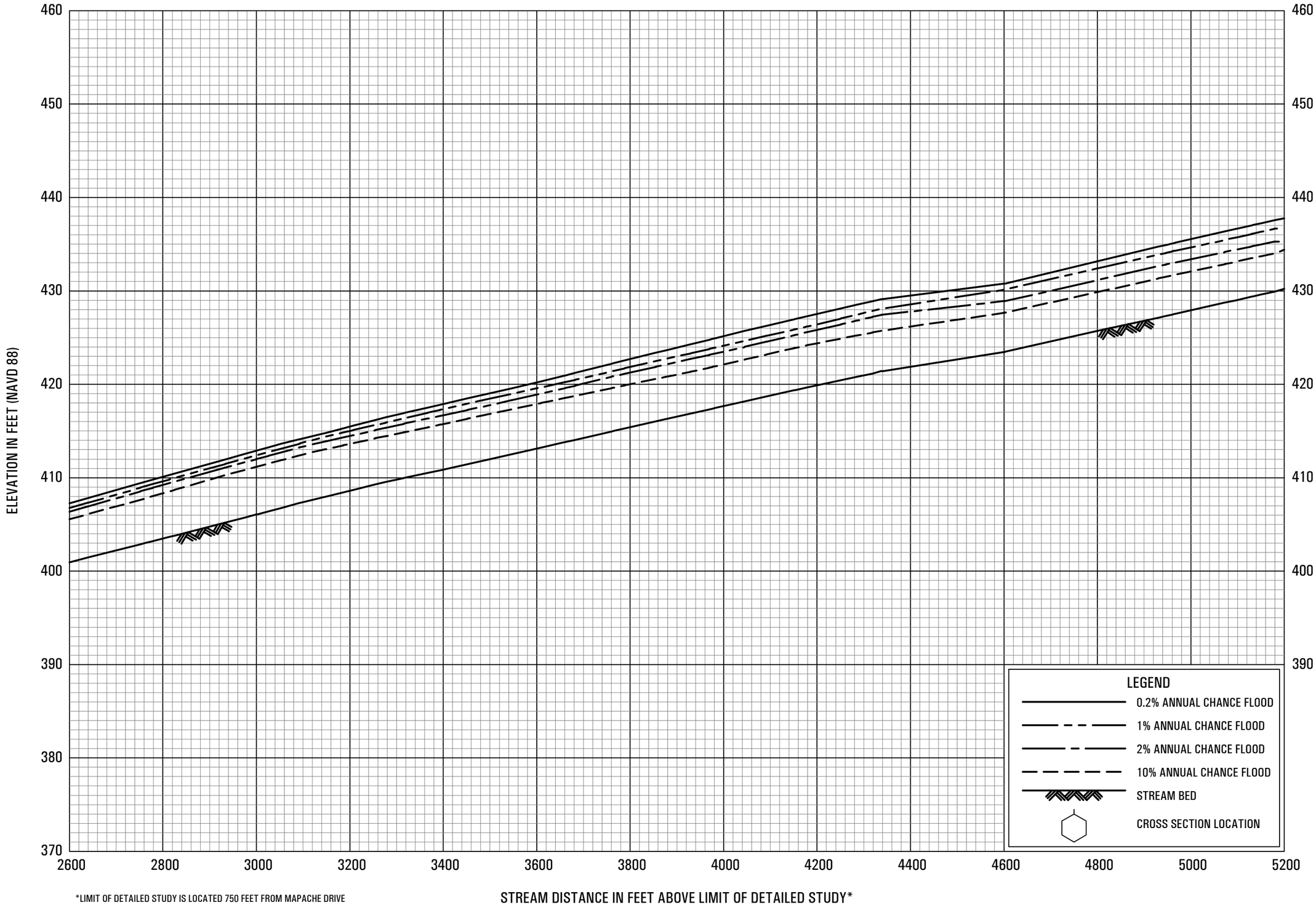
FLOOD PROFILES

CORTE MADERA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



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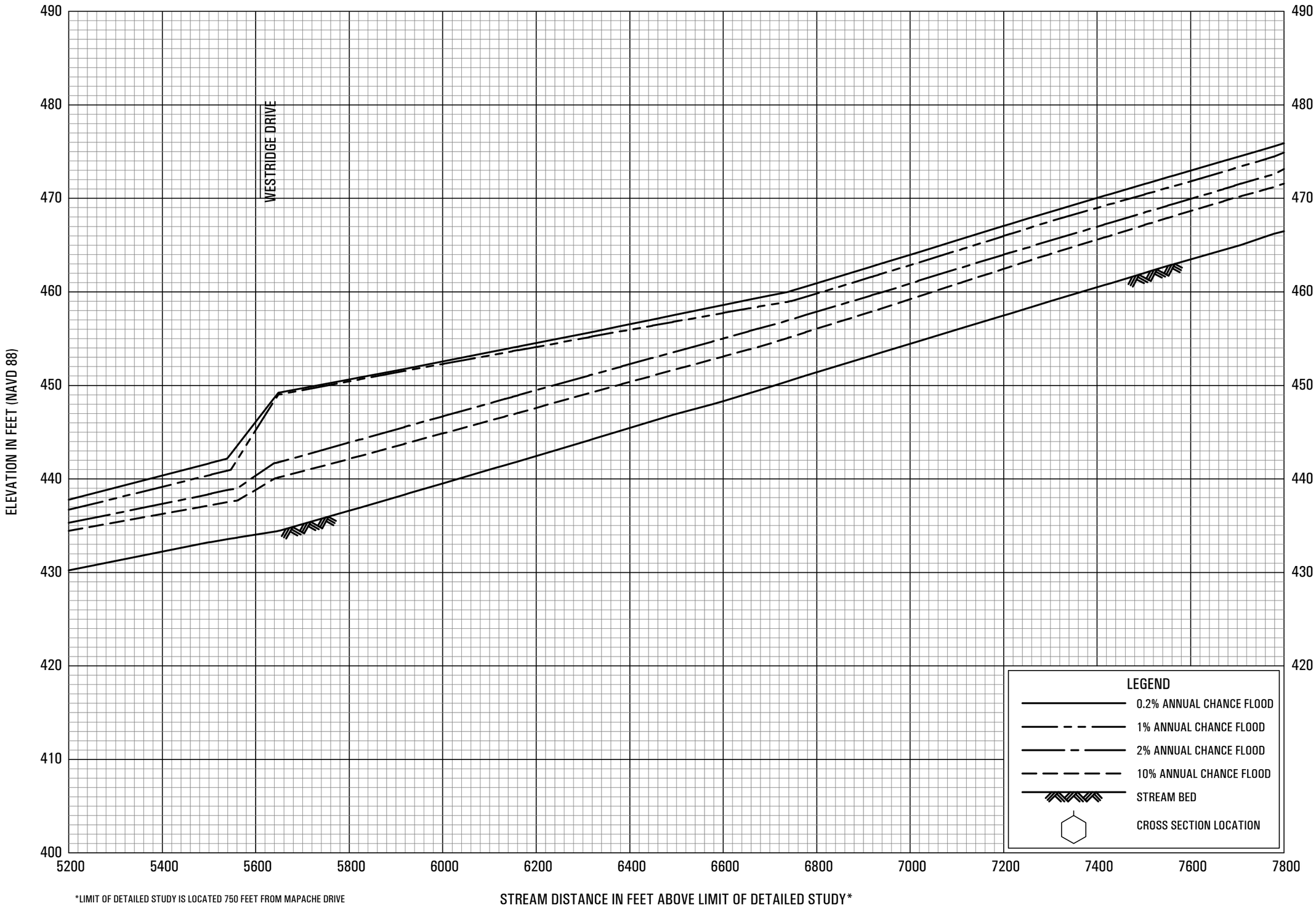
FLOOD PROFILES

CORTE MADERA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



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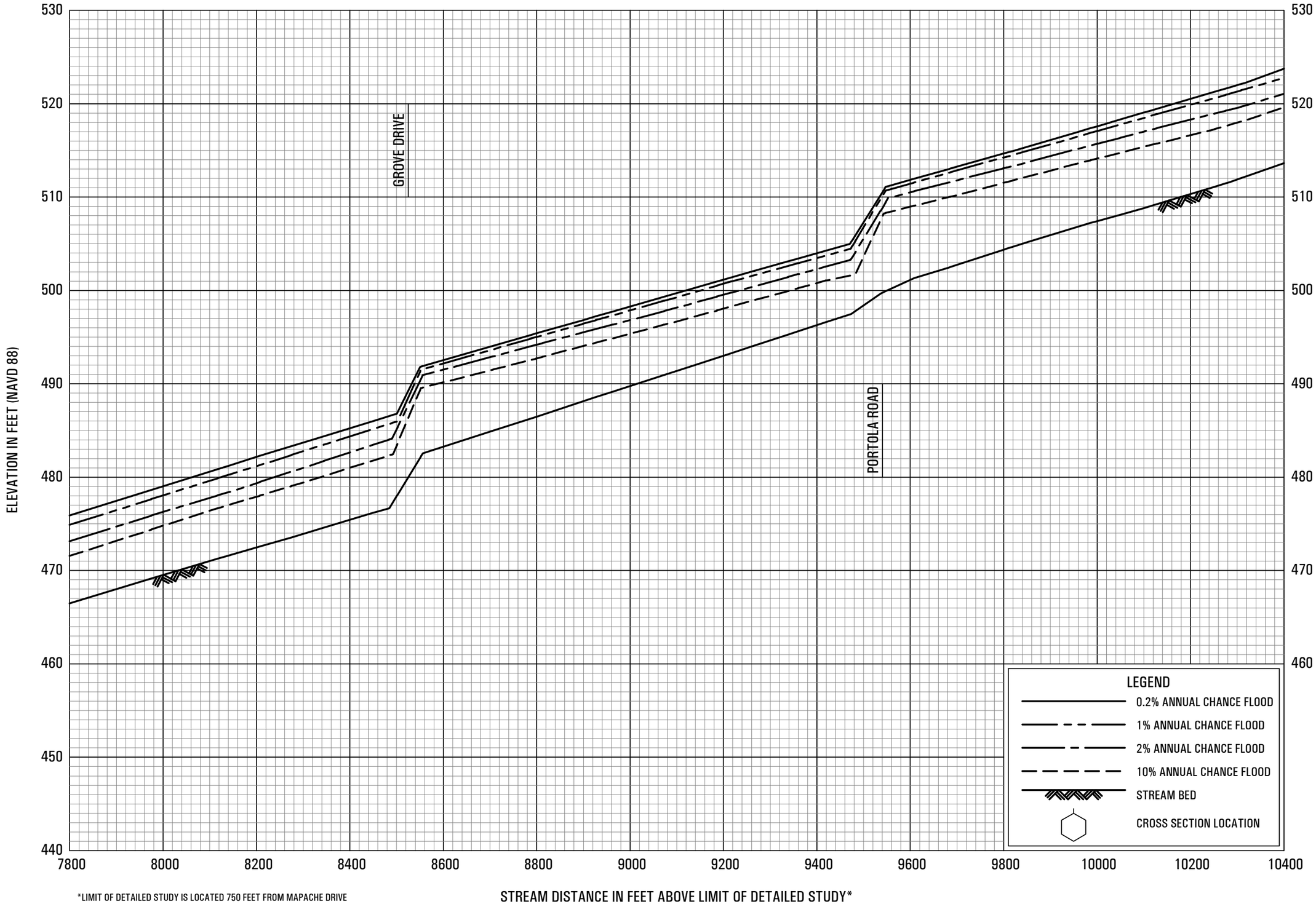
FLOOD PROFILES

CORTE MADERA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



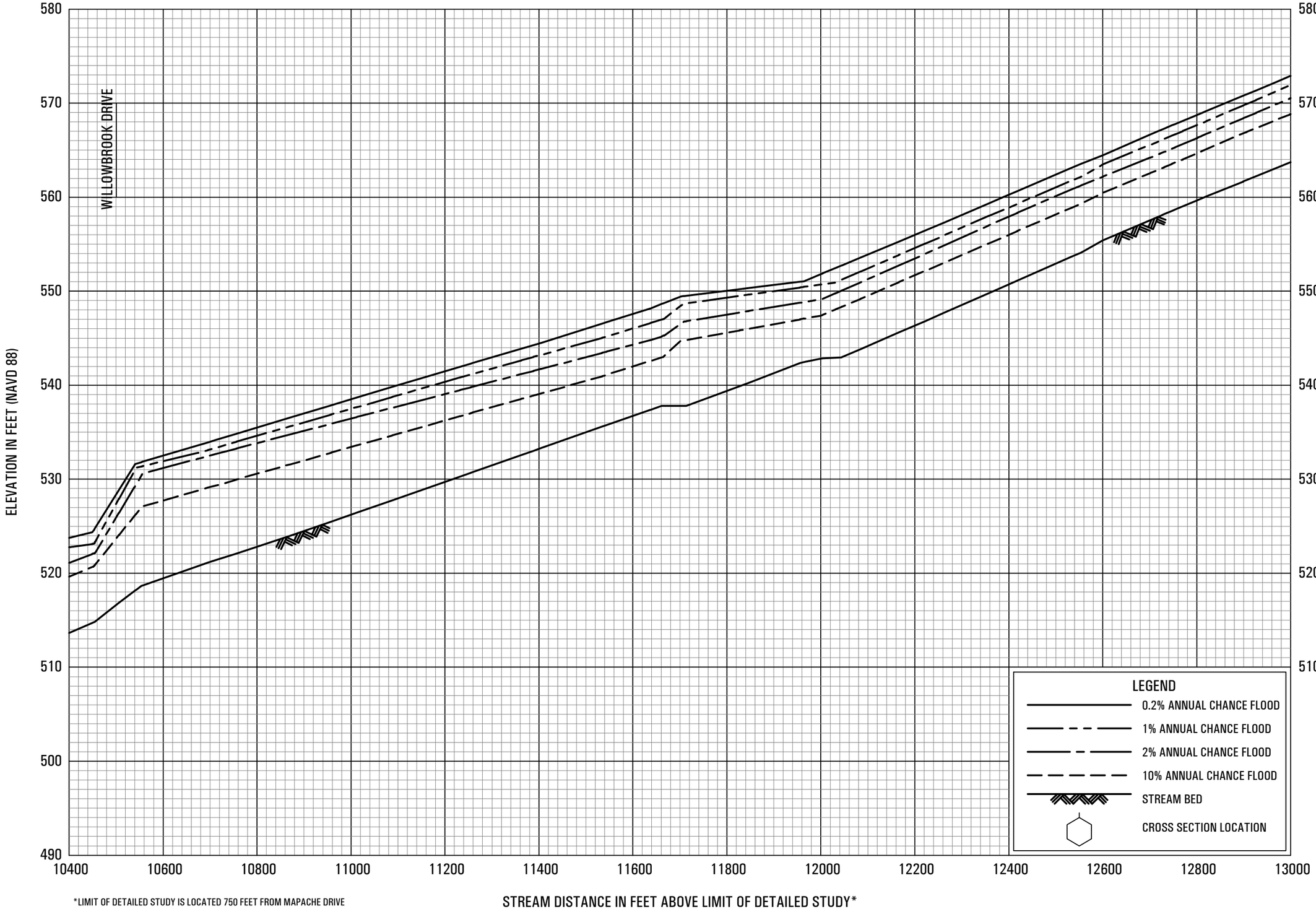
FLOOD PROFILES

CORTE MADERA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



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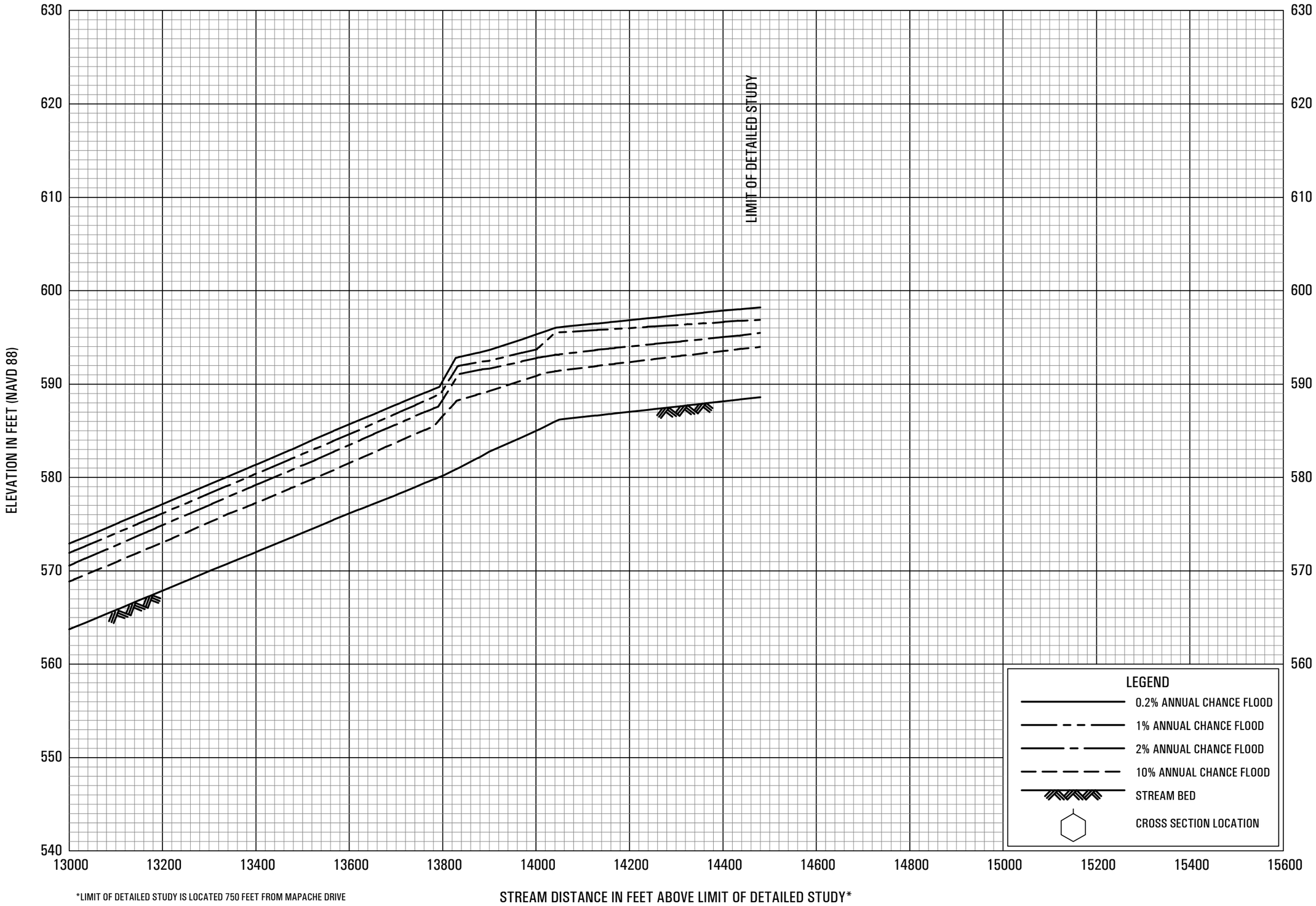
FLOOD PROFILES

CORTE MADERA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



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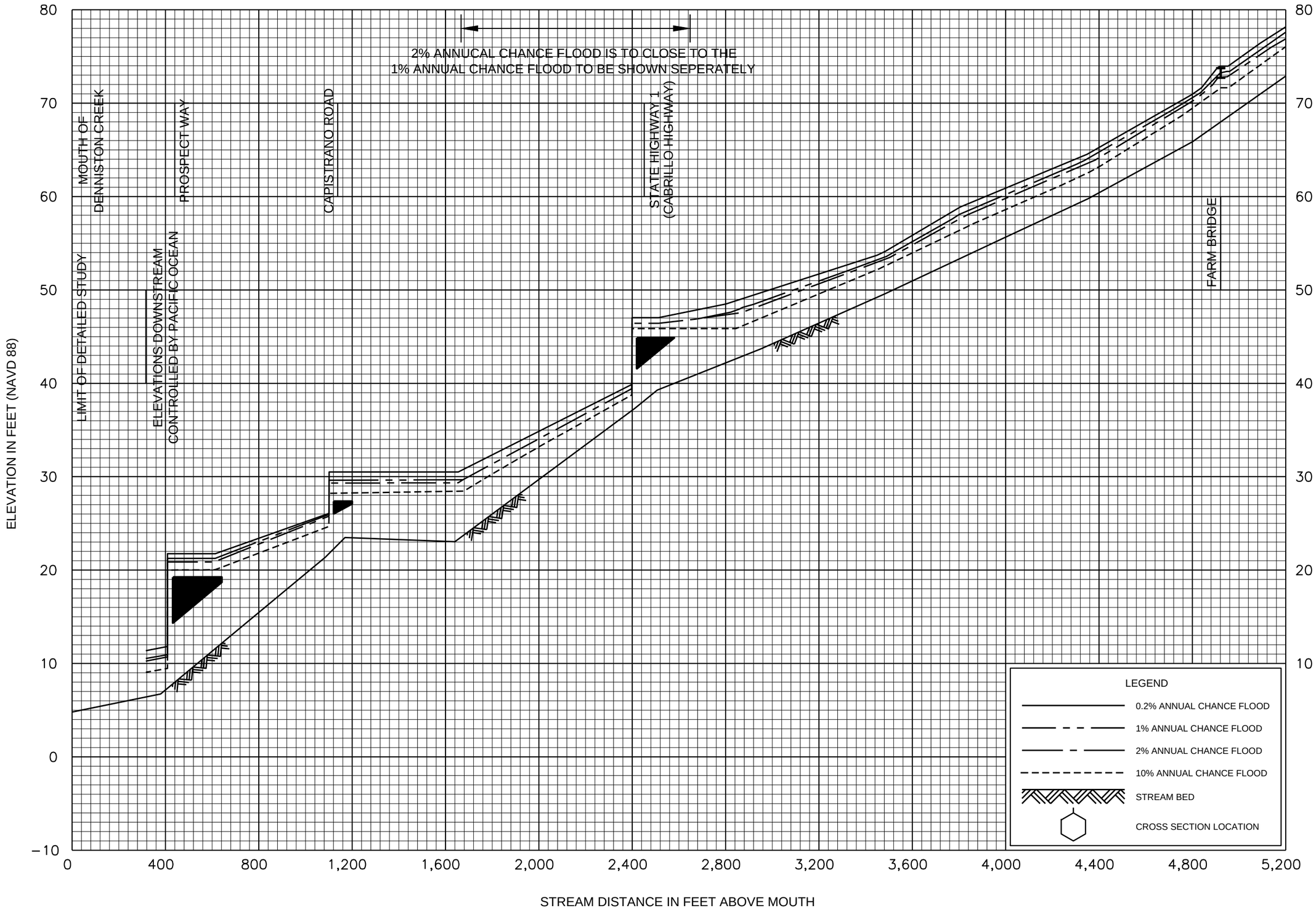
FLOOD PROFILES

CORTE MADERA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS

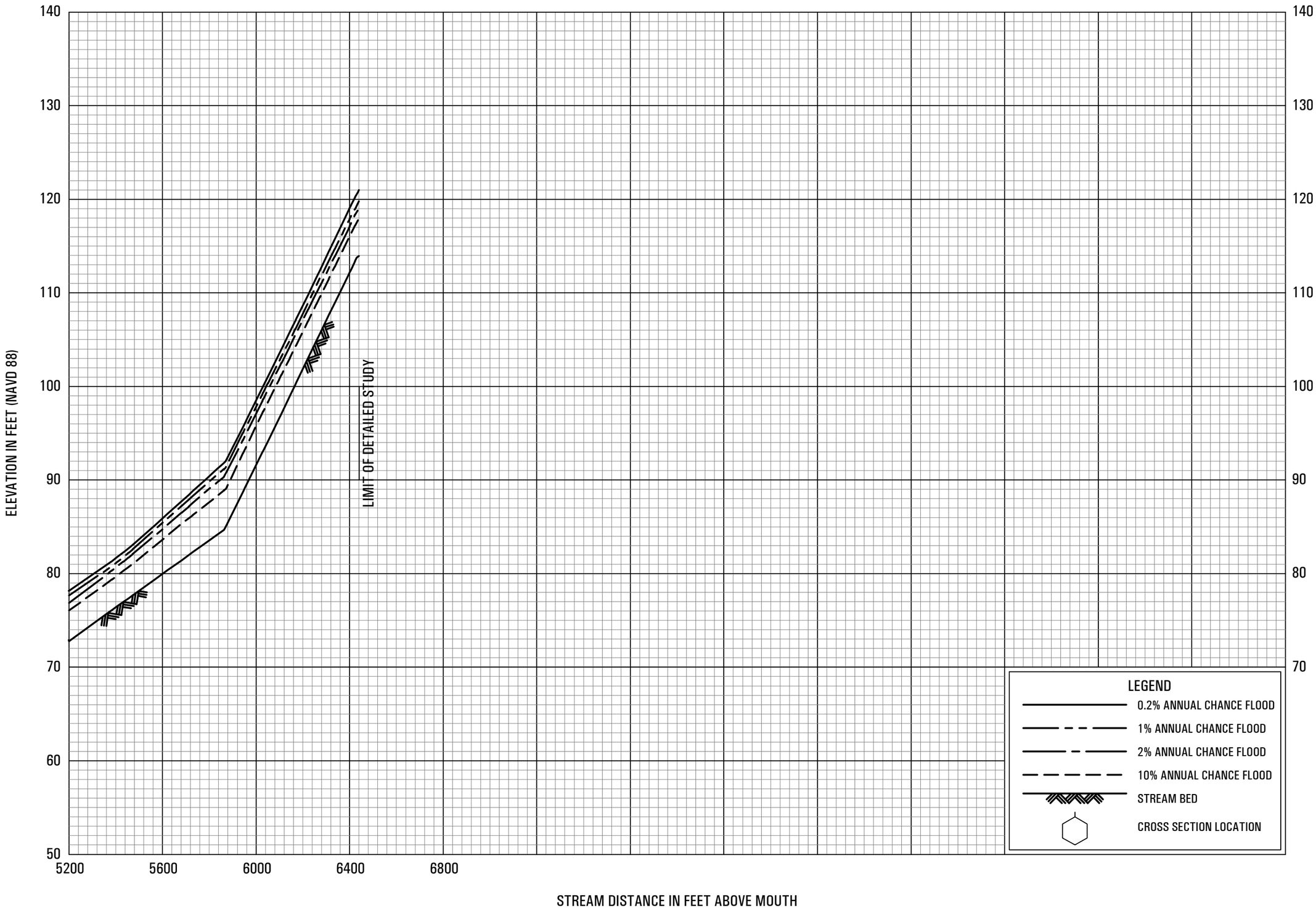


FLOOD PROFILES

DENNISTON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA
AND INCORPORATED AREAS



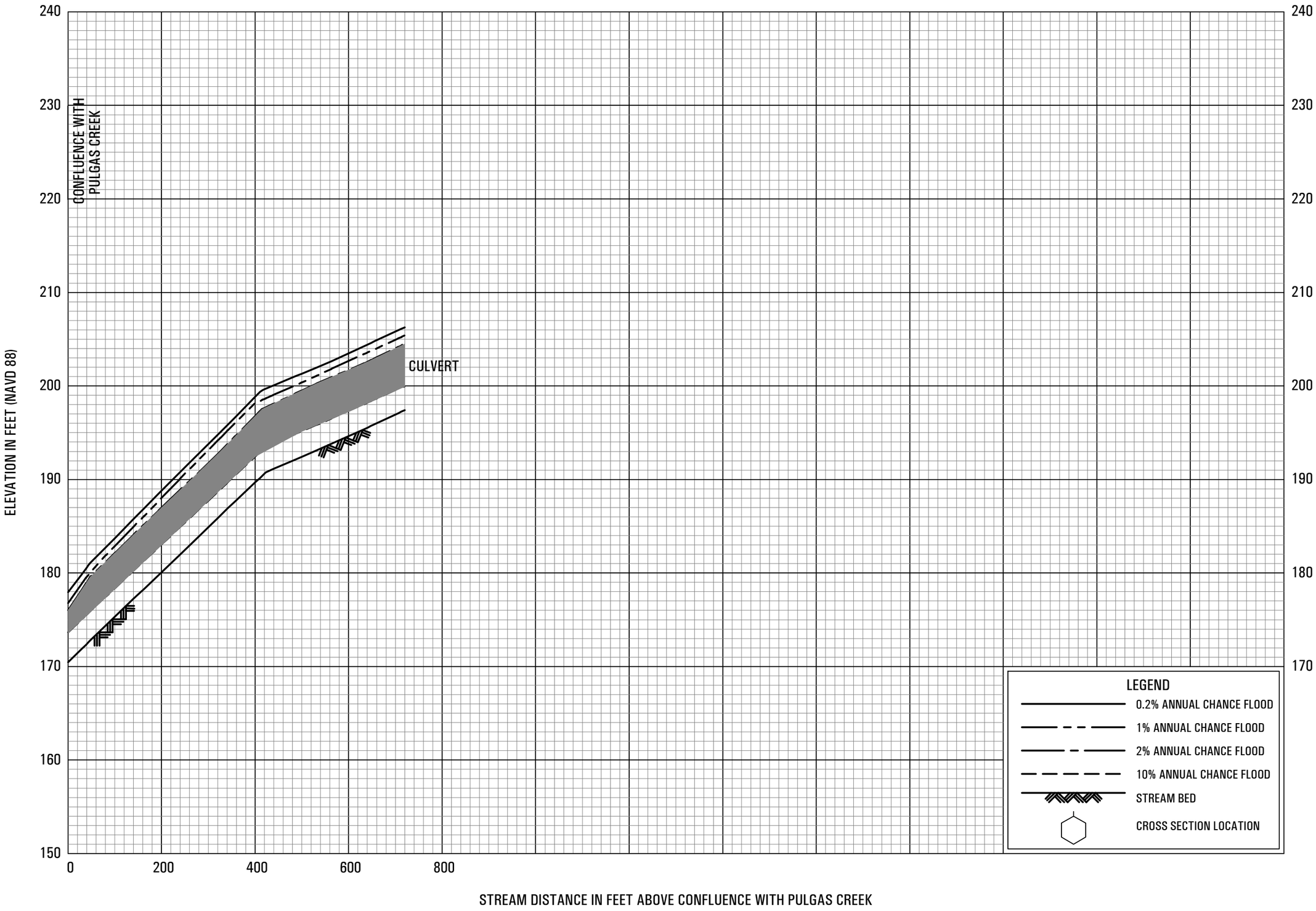
FLOOD PROFILES

DENNISTON CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



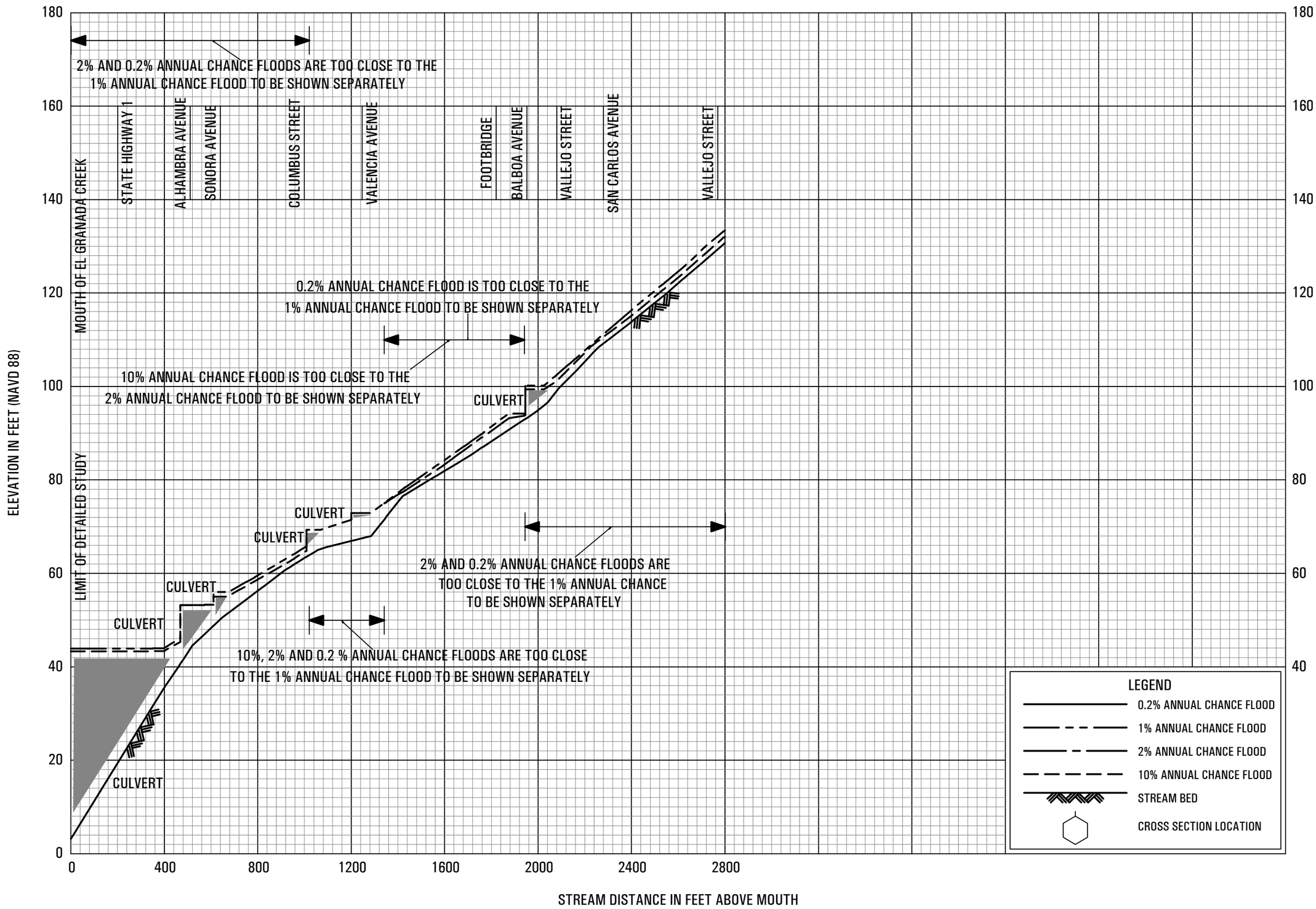
FLOOD PROFILES

DEVONSHIRE BRANCH OF PULGAS CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



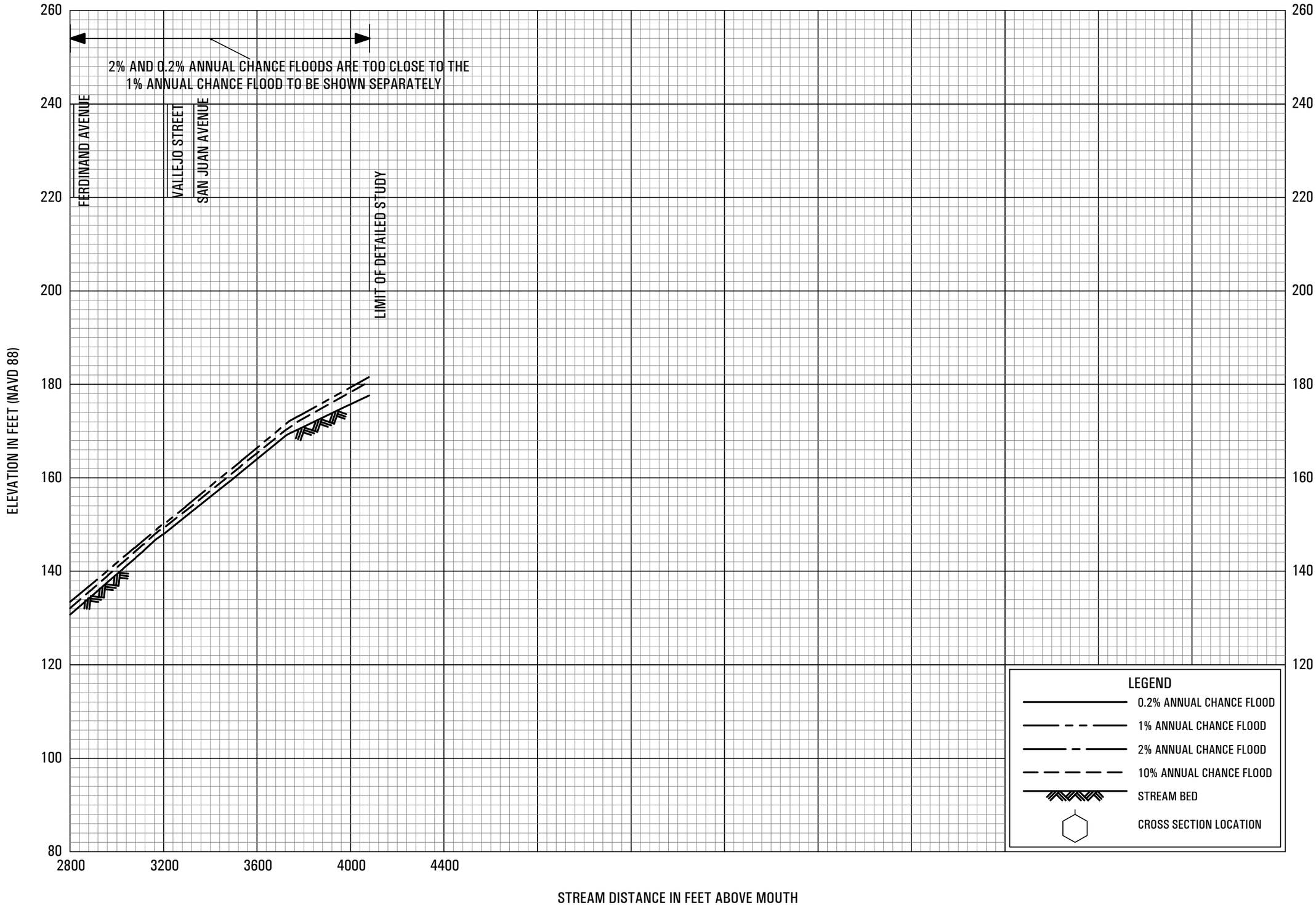
FLOOD PROFILES

EL GRANADA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



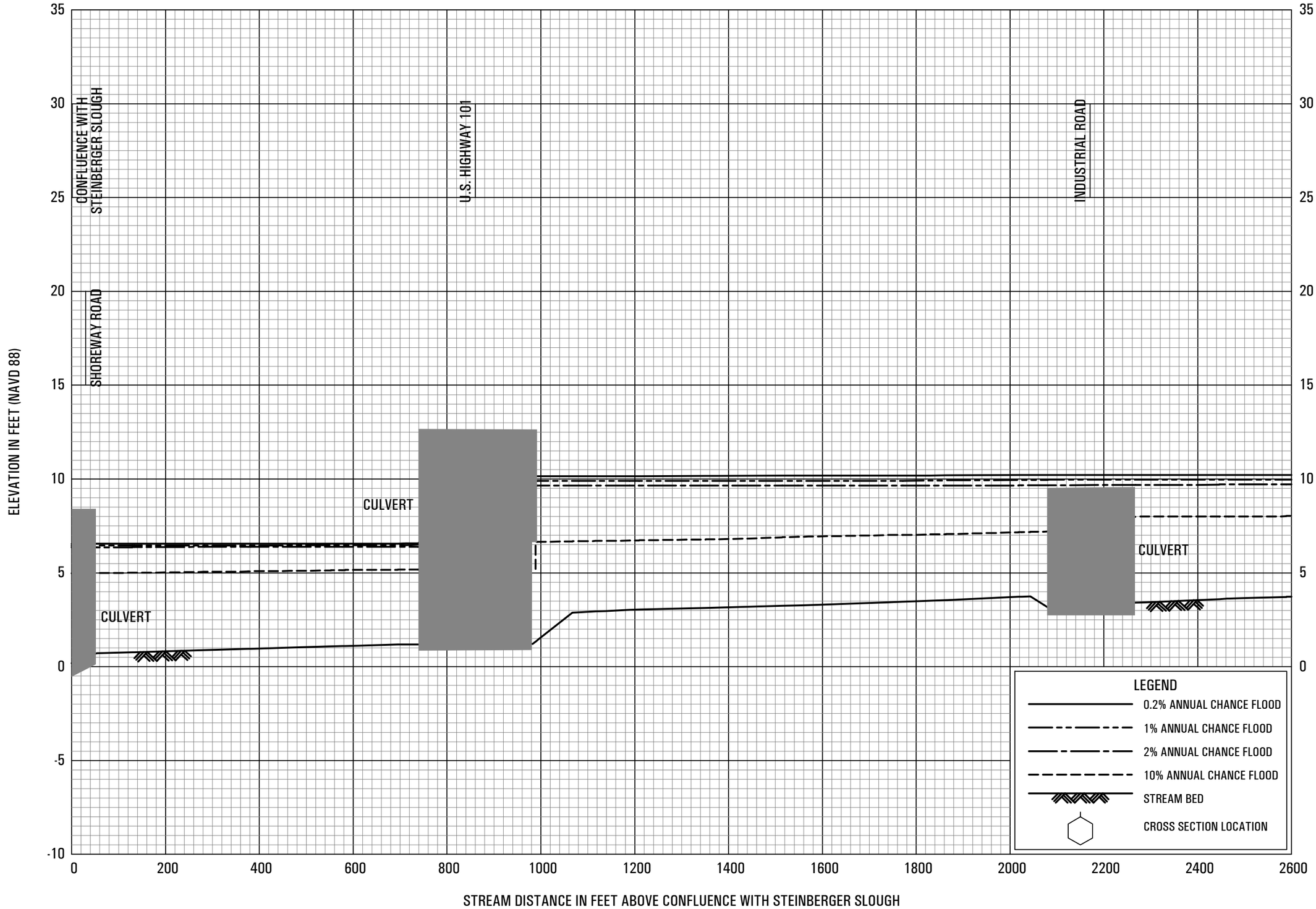
FLOOD PROFILES

EL GRANADA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



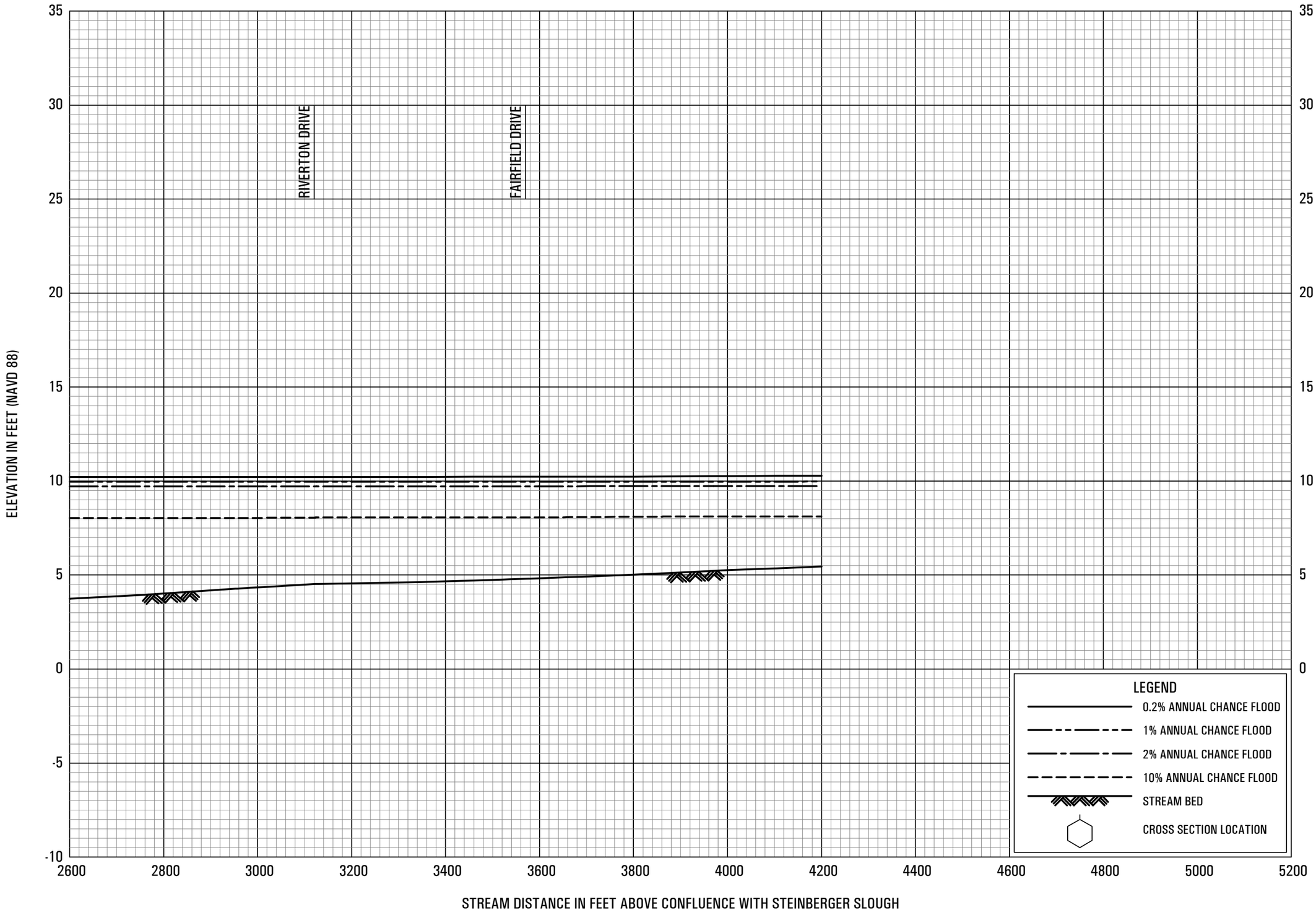
FLOOD PROFILES

HARBOR INDUSTRIAL DISTRICT CHANNEL

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



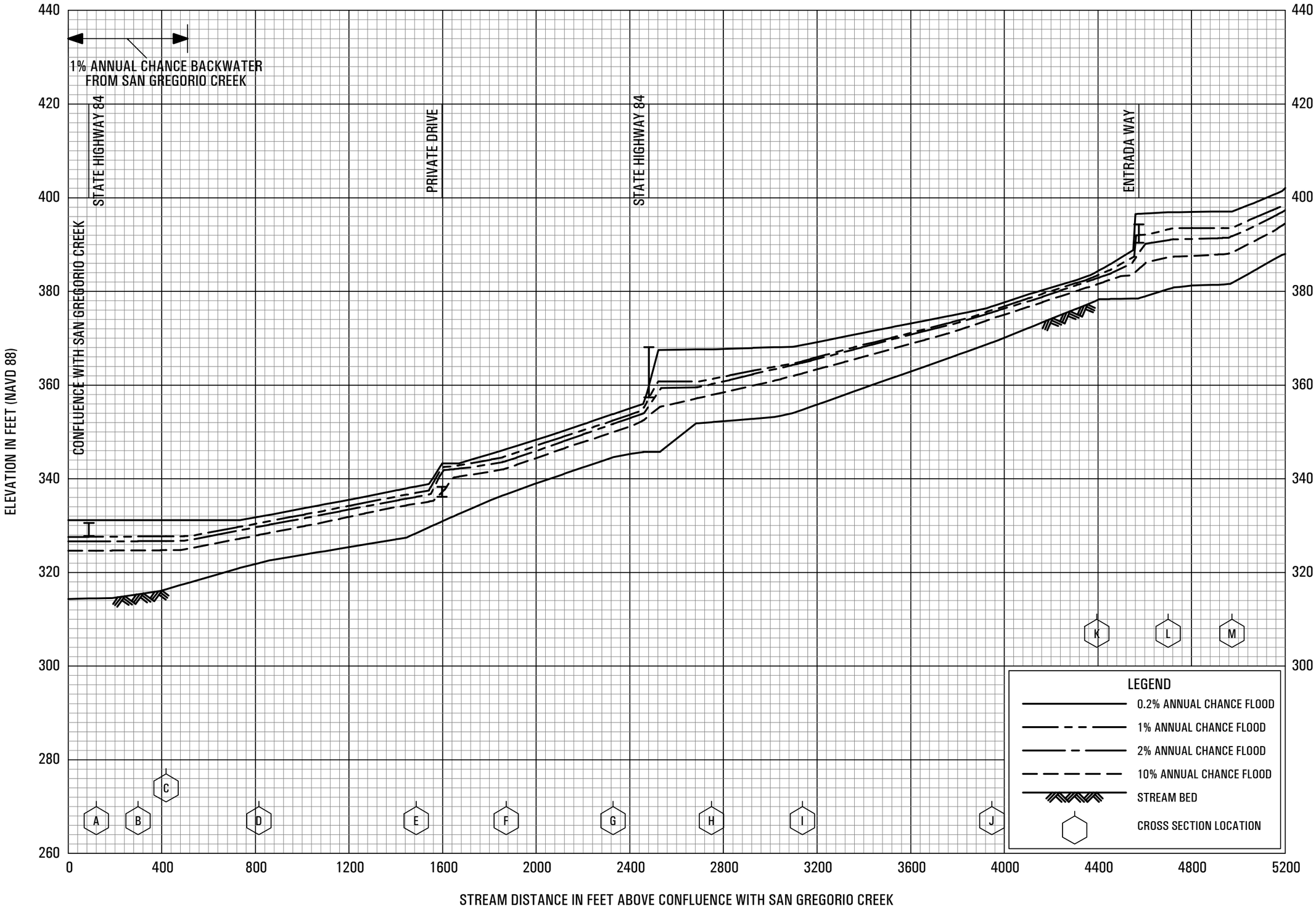
FLOOD PROFILES

HARBOR INDUSTRIAL DISTRICT CHANNEL

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



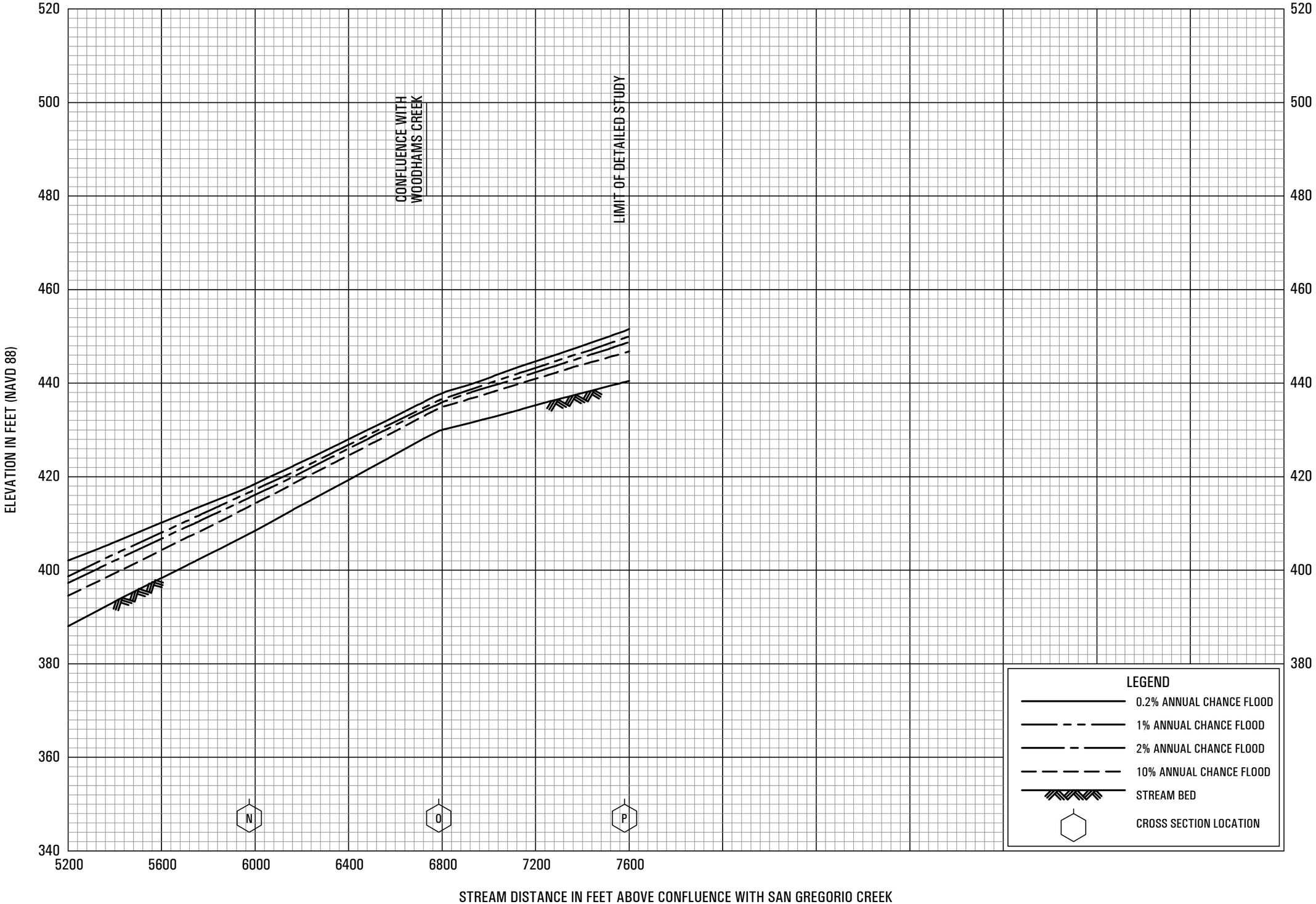
FLOOD PROFILES

LA HONDA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS



FLOOD PROFILES

LA HONDA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

SAN MATEO COUNTY, CA

AND INCORPORATED AREAS