FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 3 OF 4

CITY AND COUNTY OF HONOLULU, HAWAII

COMMUNITY NAME	COMMUNITY NUMBER
CITY AND COUNTY OF HONOLULU	150001

FEMA

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Table 23: Floodway Data *(continued)*

LOCATION		FLOODWAY[1]			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (LOCAL TIDAL DATUM)			
CROSS SECTION[2]	DISTANCE [3]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	564	1,217	3,550	3.3	9.0	9.0	9.5	0.5
B	1,158	1164[4]	2,601	2.1	11.0	11.0	11.3	0.3
C	1,718	412[4]	1,236	3.6	14.0	14.0	14.3	0.3
D	2,207	548[4]	1,388	3.3	20.0	20.0	20.3	0.3
E	2,686	610[4]	1,507	3.6	25.0	25.0	25.5	0.5
F	3,099	626	828	3.4	34.0	34.0	34.1	0.1
G	3,431	54	446	16.7	40.0	40.0	40.3	0.3
H	3,871	96	802	21.4	46.0	46.0	46.6	0.6
I	4,060	90	793	18.2	54.0	54.0	54.8	0.8
J	4,332	58	436	17.8	63.1	63.1	63.4	0.3
K	4,475	68	434	13.8	68.0	68.0	68.2	0.2
L	4,913	47	375	20.2	78.0	78.0	78.1	0.1
M	5,246	54	364	23.6	84.8	84.8	84.9	0.1
N	5,461	41	437	15.8	95.0	95.0	95.5	0.5
O	5,695	79	789	15.1	102.0	102.0	102.5	0.5
P	5,974	200	1,835	16.0	110.0	110.0	110.3	0.3
Q	6,170	105	1,056	16.1	117.9	117.9	118.0	0.1
R	6,287	95	725	7.2	127.0	127.0	127.2	0.2
S	6,599	311	1,854	13.1	130.0	130.0	130.6	0.6
T	6,834	56	359	28.5	137.0	137.0	137.9	0.5

[1] Values reported are based on averages calculated across evaluation lines. Refer to model result grids for modeled variability in elevation and surcharge across the floodway

[2] Floodway computed by 2D Model at this location

[3] Feet above confluence with Pacific Ocean

[4] Width includes split flow area

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HAWAII

FLOODWAY DATA

FLOODING SOURCE: WAILUPE STREAM

Table 23: Floodway Data *(continued)*

LOCATION		FLOODWAY[1]			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (LOCAL TIDAL DATUM)			
CROSS SECTION[2]	DISTANCE[3]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
U	7,072	31	224	22.1	147.0	147.0	147.6	0.6
V	7,227	34	264	18.1	156.0	156.0	156.9	0.9
W	7,414	31	227	21.8	165.0	165.0	165.9	0.9
X	7,601	32	220	22.0	175.0	175.0	175.6	0.6
Y	7,823	32	233	21.9	185.0	185.0	185.5	0.5
Z	8,051	32	237	19.7	195.0	195.0	195.3	0.3
AA	8,286	34	252	21.3	205.0	205.0	205.2	0.4
AB	8,474	31	301	14.3	215.0	215.0	215.5	0.5
AC	8,651	121	502	15.1	223.0	223.0	223.4	0.4
AD	8,735	88	208	16.8	229.0	229.0	229.2	0.2
AE	8,855	35	186	19.4	238.0	238.0	238.1	0.1
AF	8,952	49	286	16.9	247.0	247.0	247.4	0.4
AG	9,160	72	268	18.1	257.0	257.0	257.2	0.2
AH	9,353	83	431	18.8	267.0	267.0	267.4	0.4
AI	9,462	80	421	22.3	272.0	272.0	272.2	0.2

[1] Values reported are based on averages calculated across evaluation lines. Refer to model result grids for modeled variability in elevation and surcharge across the floodway

[2] Floodway computed by 2D Model at this location

[3] Feet above confluence with Pacific Ocean

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HAWAII

FLOODWAY DATA

FLOODING SOURCE: WAILUPE STREAM

Table 23: Floodway Data *(continued)*

LOCATION		FLOODWAY[1]			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION[2] (LOCAL TIDAL DATUM)			
CROSS SECTION[2]	DISTANCE[3]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	322	*	*	*	3.9	3.9	*	*
B	789	*	*	*	7.2	7.2	*	*
C	1,628	*	*	*	8.0	8.0	*	*
D	2,000	*	*	*	8.0	8.0	*	*
E	2,500	*	*	*	8.0	8.0	*	*
F	3,057	*	*	*	7.7	7.7	*	*
G	3,440	*	*	*	7.7	7.7	*	*
H	3,689	*	*	*	7.7	7.7	*	*
I	4,000	*	*	*	8.7	8.7	*	*
J	4,760	61	433	13.9	10.0	10.0	10.0	0.0
K	5,380	64	346	17.9	12.0	12.0	12.1	0.1
L	5,958	63	285	21.8	15.0	15.0	15.0	0.0
M	6,462	71	316	20.8	19.0	19.0	19.0	0.0
N	6,903	50	254	22.8	24.0	24.0	24.0	0.0
O	7,221	48	261	24.7	27.0	27.0	27.1	0.1
P	8,145	115	358	16.7	37.0	37.0	37.0	0.0
Q	8,327	73	138	49.9	46.0	46.0	46.1	0.1
R	8,575	75	364	18.9	50.0	50.0	50.0	0.0
S	8,612	71	897	5.3	60.0	60.0	60.0	0.0
T	9,385	57	471	12.9	61.0	61.0	61.0	0.0
U	9,889	60	426	11.9	69.0	69.0	69.1	0.1
V	10,360	86	476	9.7	76.0	76.0	76.0	0.0
W	10,873	93	501	9.3	83.0	83.0	83.0	0.0
X	11,341	54	195	6.6	87.0	87.0	87.1	0.1

[1] Values reported are based on averages calculated across evaluation lines. Refer to model result grids for modeled variability in elevation and surcharge across the floodway
[2] Floodway computed by 2D Model at this location
[3] Feet above East Loch, Pearl Harbor
* Floodway not computed/shown for this cross section

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HAWAII

FLOODWAY DATA

FLOODING SOURCE: WAIMALU STREAM

Table 23: Floodway Data *(continued)*

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY (FEET LOCAL TIDAL DATUM)	WITHOUT FLOODWAY (FEET LOCAL TIDAL DATUM)	WITH FLOODWAY (FEET LOCAL TIDAL DATUM)	INCREASE (FEET)
Waimanalo Stream								
A	280	863	6,754	2.3	13.0	13.0	14.0	1.0
B	820	1,074	11,170	1.4	13.3	13.3	14.3	1.0
C	1,930	1,103	9,738	1.7	13.4	13.4	14.4	1.0
D	3,000	287	3,334	4.7	13.5	13.5	14.5	1.0
E	4,100	387	3,101	5.0	14.0	14.0	15.0	1.0
F	5,000	464	4,719	3.3	15.1	15.1	16.1	1.0
G	6,040	1,648	18,221	0.9	15.5	15.5	16.5	1.0
H	7,350	1,001	8,140	0.9	15.5	15.5	16.5	1.0
I	8,330	162	771	9.9	24.8	24.8	25.7	0.9
J	9,300	164	679	10.0	31.6	31.6	32.6	1.0
K	10,250	168	542	12.5	41.0	41.0	42.0	1.0
L	11,360	91	409	13.4	53.0	53.0	53.4	0.4
M	12,130	57	457	12.0	62.8	62.8	63.8	1.0
N	12,740	50	434	12.7	72.5	72.5	73.5	1.0

[1] Feet above mouth

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

FLOODWAY DATA

WAIMANALO STREAM

Table 23: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (LOCAL TIDAL DATUM)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
G	6,191	500	1,687	3.0	21.1	21.1	22.1	1.0
H	6,619	193	640	7.8	25.7	25.7	26.7	1.0
I	7,656	203	458	10.9	41.5	41.5	42.3	0.8
J	8,423	114	606	8.3	59.9	59.9	60.9	1.0

[1] Feet above confluence with Pacific Ocean

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HAWAII

FLOODWAY DATA

FLOODING SOURCE: WAIMANALO STREAM: INOAOLE STREAM

Table 23: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (LOCAL TIDAL DATUM)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Waimanalo: Stream A								
A	1,000	460	1,650	2.4	15.7	15.7	16.7	1.0
B	1,500	205	1,223	3.3	16.6	16.6	17.3	0.7
C	2,500	73	515	7.8	20.9	20.9	21.8	0.9
D	3,000	32	284	14.1	22.4	22.4	23.0	0.6
E	3,500	38	368	10.9	30.4	30.4	30.9	0.5
F	4,001	72	486	8.3	36.9	36.9	37.3	0.4
G	4,484	42	173	9.4	43.1	43.1	43.3	0.2
H	5,004	85	344	4.7	51.7	51.7	52.7	1.0
I	5,688	120	405	4.0	67.2	67.2	68.2	1.0
J	5,910	67	231	7.0	73.2	73.2	73.3	0.1
K	6,469	41	159	10.2	88.6	88.6	88.7	0.1
L	6,939	54	250	6.5	99.9	99.9	100.6	0.7
M	7,391	60	193	8.4	112.1	112.1	112.2	0.1
N	7,905	24	138	11.8	125.1	125.1	125.4	0.3
O	8,298	40	219	7.4	141.6	141.6	141.9	0.3
Waimanalo Stream: Stream B								
A	175[2]	52	233	12.9	37.3	37.3	38.3	1.0
B	300[2]	119	437	6.9	43.0	43.0	44.0	1.0
C	1,050[2]	41	233	12.9	55.5	55.5	56.5	1.0
D	1,250[2]	90	244	12.3	61.7	61.7	62.7	1.0
E	2,070[2]	400	88	27.3	75.6	75.6	75.6	0.0
F	2,530[2]	122	240	10.0	91.0	91.0	92.0	1.0
G	2,910[2]	41	93	11.8	101.3	101.3	102.3	1.0
H	3,410[2]	47	190	5.8	119.3	119.3	120.3	1.0

[1] Feet above confluence with Waimanalo Stream
[2] Feet above confluence with Waimanalo Stream: Stream A

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HAWAII

FLOODWAY DATA

WAIMANALO STREAM: STREAM A
WAIMANALO STREAM: STREAM B

Table 23: Floodway Data *(continued)*

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (LOCAL TIDAL DATUM)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Waimanalo Stream: Stream C								
A	2,600[1]	145	564	3.1	18.9	18.9	19.9	1.0
B	3,200[1]	100	190	9.2	21.1	21.1	21.9	0.8
C	4,060[1]	129	178	9.8	30.4	30.4	31.4	1.0
D	4,410[1]	40	170	10.2	38.3	38.3	39.3	1.0
E	5,000[1]	57	175	9.9	46.1	46.1	47.1	1.0
F	5,665[1]	101	166	7.3	60.8	60.8	61.8	1.0
G	6,530[1]	20	70	17.4	82.6	82.6	83.5	0.9
H	6,880[1]	20	68	17.9	97.4	97.4	98.4	1.0
I	7,530[1]	10	59	20.7	117.0	117.0	117.0	0.0
Waimanalo Stream: Stream D								
A	300[2]	300	535	3.5	19.8	19.8	20.8	1.0
B	900[2]	354	591	3.1	29.6	29.6	30.4	0.8
C	1,260[2]	257	414	4.5	35.6	35.6	36.6	1.0
D	1,500[2]	71	140	13.3	37.4	37.4	38.4	1.0
E	2,020[2]	95	229	8.1	49.3	49.3	50.3	1.0
F	2,500[2]	111	208	6.3	55.7	55.7	56.7	1.0
G	3,000[2]	30	96	13.6	63.4	63.4	64.2	0.8
H	3,640[2]	20	51	14.9	76.7	76.7	77.6	0.9
I	4,320[2]	150	76	10.0	94.5	94.5	95.4	0.9
J	4,670[2]	180	39	19.5	105.9	105.9	105.9	0.0
K	5,080[2]	83	200	3.8	125.3	125.3	126.3	1.0

[1]Feet above confluence with Inoaole Stream
[2]Feet above confluence with Stream C

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

FLOODWAY DATA

WAIMANALO STREAM: STREAM C – WAIMANALO STREAM: STREAM D

Table 23: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (LOCAL TIDAL DATUM)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY[2]	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1,210	270	1,909	6.6	7.8	7.8	8.6	0.8
B	1,710	276	2,789	4.5	9.3	9.3	10.1	0.8
C	2,450	101	888	12.6	10.3	10.3	11.3	1.0
D	2,800	100	966	11.6	13.3	13.3	14.3	1.0

[1] Feet above mouth
[2] Flooding controlled by Pacific Ocean static elevations

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HAWAII

FLOODWAY DATA

FLOODING SOURCE: WAIMEA RIVER

Table 23: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (LOCAL TIDAL DATUM)			
CROSS SECTION	DISTANCE [1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	500	189	408	6.6	10.5	10.5	11.5	1.0
B	770	207	834	3.2	14.6	14.6	15.6	1.0

[1] Feet above mouth

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HAWAII

FLOODWAY DATA

FLOODING SOURCE: WAIPILOPILO STREAM

Table 23: Floodway Data *(continued)*

LOCATION		FLOODWAY[1]			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (LOCAL TIDAL DATUM)			
CROSS SECTION[2]	DISTANCE[3]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	257	45	306	8.4	21.0	21.0	21.4	0.4
B	544	31	208	14.8	28.0	28.0	28.9	0.9
C	667	31	275	10.4	36.0	36.0	36.6	0.6
D	842	37	228	15.8	41.0	41.0	41.2	0.2
E	1,012	62	372	14.5	48.0	48.0	48.2	0.2
F	1,300	40	199	14.3	57.0	57.0	57.0	0.0
G	1,518	61	321	13.7	63.0	63.0	63.2	0.2
H	1,897	63	323	15.7	72.0	72.0	72.1	0.1
I	2,204	43	234	13.0	82.0	82.0	82.1	0.1
J	2,373	29	167	18.1	91.0	91.0	91.6	0.6
K	2,530	53	226	18.4	100.0	100.0	100.1	0.1
L	2,679	31	180	18.2	110.0	110.0	110.4	0.4
M	2,816	36	176	15.3	118.0	118.0	118.5	0.5
N	2,921	46	358	7.8	127.0	127.0	127.7	0.7
O	2,949	77	625	4.3	133.0	133.0	133.8	0.8
P	3,230	38	179	16.1	135.0	135.0	135.3	0.3
Q	3,361	39	258	15.0	143.0	143.0	143.4	0.4
R	3,549	49	256	11.9	151.0	151.0	151.2	0.2
S	3,843	44	324	14.0	160.0	160.0	160.4	0.4
T	4,070	52	235	17.4	164.9	164.9	165.1	0.2
U	4,210	35	308	10.6	174.0	174.0	174.4	0.4
V	4,399	58	373	8.9	182.0	182.0	182.2	0.2
W	4,502	65	449	5.4	188.0	188.0	188.4	0.4

[1] Values reported are based on averages calculated across evaluation lines. Refer to model result grids for modeled variability in elevation and surcharge across the floodway.
[2] Floodway computed by 2-D or hybrid 1-D 2-D model at this location
[3] Feet above confluence with Nuuanu Stream

TABLE 23

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HAWAII

FLOODWAY DATA

FLOODING SOURCE: WAOLANI STREAM

Table 24: 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 22.

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-percent-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 25 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 25: Summary of Coastal Transect Mapping Considerations

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis — Zone Designation and BFE (ft NAVD88)	Wave Height Analysis — Zone Designation and BFE (ft NAVD88)	Zone VE Limit	SFHA Boundary
1		VE 9 AE 9	N/A	Runup	Overtopping
2		N/A	VE 10-12 AE 1-10	Wave Height	SWEL
3		N/A	VE 10-12 AE 6-10	Wave Height	SWEL
4		N/A	VE 10-12 AE 7-10	Wave Height	SWEL
5		N/A	VE 10-12 AE 7-10	Wave Height	SWEL
6		N/A	VE 10-12 AE 8-10	Wave Height	SWEL
7		VE 10-12 AE 6-10	N/A	Runup	Overtopping
8		VE 10-12 AE 8-10	N/A	Runup	Overtopping
9		VE 9-11 AE 7-9	N/A	Runup	Overtopping
10		N/A	VE 10-12 AE 5-10	Wave Height	SWEL
11		N/A	VE 10-12 AE 5-10	Wave Height	SWEL
12		VE 12 AE 12	N/A	Runup	Overtopping
13		N/A	VE 10-12 AE 4-10	Wave Height	SWEL
14		N/A	VE 11-13 AE 4-11	Wave Height	SWEL
15		N/A	VE 11-13 AE 8-11	Wave Height	SWEL
16		N/A	VE 10-12 AE 8-10	Wave Height	SWEL
17		VE 7 AE 5-7	N/A	Runup	Overtopping
18		VE 6 AE 6	N/A	Runup	Overtopping

Table 25: Summary of Coastal Transect Mapping Considerations *(continued)*

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD88)	Zone Designation and BFE (ft NAVD88)		
19		VE 6 AE 6 AO (Depth 1)	N/A	Runup	Overtopping
20		N/A	VE 3 AE 2-3	Wave Height	SWEL
21		VE 4 AE 4	N/A	Runup	Overtopping
22		N/A	VE 4 AE 2-4	Wave Height	SWEL
23		VE 3 AE 2-3	N/A	Runup	Overtopping
24		VE 7 AE 7 AE 1	N/A	Runup	Overtopping
25		VE 7 AE 5-7	N/A	Runup	Overtopping
26		VE 8-9 AE 6-8	N/A	Runup	Overtopping
27		VE 8-9 AE 6-8	N/A	Runup	Overtopping
28		VE 7-8 AE 5-7	N/A	Runup	Overtopping
29		VE 9 AE 9	N/A	Runup	Overtopping
30		VE 9 AE 9	N/A	Runup	Overtopping
31		VE 7-8 AE 5-7	N/A	Runup	Overtopping
32		VE 7-8 AE 7	N/A	Runup	Overtopping
33		VE 11 AE 11	N/A	Runup	Overtopping
34		VE 14 AE 14	N/A	Runup	Overtopping
35		VE 7-8 AE 5-7	N/A	Runup	Overtopping

Table 25: Summary of Coastal Transect Mapping Considerations *(continued)*

Coastal Transect	Primary Frontal Dune (PFD) Identified	Wave Runup Analysis	Wave Height Analysis	Zone VE Limit	SFHA Boundary
		Zone Designation and BFE (ft NAVD88)	Zone Designation and BFE (ft NAVD88)		
36		VE 7-8 AE 5-7 AE 1	N/A	Runup	Overtopping
37		VE 9 AE 9	N/A	Runup	Overtopping
38		VE 17 AE 17	N/A	Runup	Overtopping
39		VE 8-9 AE 8	N/A	Runup	Overtopping
40	✓	VE 7 AE 4-7	N/A	PFD	PFD
41		VE 11 AE 11	N/A	Runup	Overtopping
42		VE 13 AE 13	N/A	Runup	Overtopping
43	✓	VE 8 AE 8	N/A	PFD	PFD
44		VE 11 AE 11	N/A	Runup	Overtopping

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 30, “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/flood-maps/change-your-flood-zone 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/flood-maps/tutorials.

For more information about how to apply for a LOMA, call the FEMA Mapping and Insurance 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/flood-maps/change-your-flood-zone 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 Mapping and Insurance 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/flood-maps/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/flood-maps/change-your-flood-zone 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 Mapping and Insurance 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 City of County of Honolulu FIRM are listed in Table 26. 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 26: Incorporated Letters of Map Change

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
22-09-0548P	05/03/2023	Pacific Ocean	15003C0362H
21-09-0747P	12/06/2022	Kapakahi Stream #2 Waikele Stream Wailani Drainage Canal	15003C0238H 15003C0239H 15003C0326H
20-09-0544P	01/04/2021	Kahauiki Stream	15003C0353H
20-09-0413P[1]	01/24/2020	Fish Pond Kahauiki Stream Moanalua Stream (Lower)	15003C0334G 15003C0351H 15003C0353H
18-09-2230P	11/25/2019	Kaukonahua Stream	15003C0115H
18-09-1196P	10/30/2018	Pacific Ocean	15003C0362H
18-09-0118P	05/29/2018	Pacific Ocean	15003C0362H
17-09-2310P	04/26/2018	Manoa Stream Palolo Stream	15003C0366H
13-09-1536P	01/03/2014	Pacific Ocean	15003C0020G
12-09-1556P	11/12/2012	Makaha Stream West Makaha Stream	15003C0185H
11-09-0171P	03/21/2011	Makaleha Stream	15003C0085G

[1]Although a portion of LOMR 20-09-0413P falls within the scope of this map revision, panel 15003C0334G was not revised. Therefore, users must continue to refer to the annotated FIRM attachment for this LOMR for FIRM panel 15003C0334G.

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is 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 Floods & Maps "Change Your Flood Zone Designation" 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 the City and County of Honolulu. 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 4, "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 4 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 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.

- *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 PMRs 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 City and County of Honolulu FIRMs in countywide format was 11/20/2000.

Table 27: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
City and County of Honolulu	06/05/1970	06/05/1970	06/04/1971	09/03/1980	06/10/2026 11/05/2014 01/19/2011 06/02/2005 09/30/2004 11/20/2000 09/30/1995 09/28/1990 09/04/1987 01/06/1983

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 28 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 28: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Ahuimanu Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
	04/29/2026	*	20-09-0413P	September 2017	City and County of Honolulu
Ahuimanu Stream Tributary	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Aiea Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Ala Wai Canal	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Anahulu River	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Eku Stream	09/30/1995	R.M. Towill Corporation	*	July 1993	City and County of Honolulu
Kawiwi Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Fish Pond	04/29/2026	*	20-09-0413P	January 2020	City and County of Honolulu

Table 28: Summary of Contracted Studies Included in this FIS Report *(continued)*

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Flow Along Cane Haul Road	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Haiamoa Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Halawa Stream	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Hanahimoa Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Heeia Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Helemano Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Hoaeae Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Honouliuli Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Hoolapa Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Ihiihi Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Inoaole Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Inoaole Stream Tributary	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
James Campbell Industrial Park (JCIP) Drainage Canal	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Kaaawa Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kaalaea Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Kaelepulu Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kaelepulu Stream Tributary	09/28/1990	R.M Towill Corporation	EMW-86-C-2228	March 1989	City and County of Honolulu
Kahaluu Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Kahana Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kahauiki Stream	04/29/2026	*	20-09-0413P	January 2020	City and County of Honolulu
	04/29/2026	*	20-09-0544P	January 2021	City and County of Honolulu

Table 28: Summary of Contracted Studies Included in this FIS Report *(continued)*

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Kahawainui Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Kaipapau Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kalaeokahipa Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kalauao Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Kalihi Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kaloi Gulch	09/28/1990	R.M Towill Corporation	EMW-86-C-2228	March 1989	City and County of Honolulu
Kaluanui Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kamanaiki Stream	09/28/1990	R.M Towill Corporation	EMW-88-C-2606	May 1989	City and County of Honolulu
Kamooalii Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Kaneohe Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kapakahi Stream #1	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kapakahi Stream #2	04/29/2026	*	21-09-0747P	December 2022	City and County of Honolulu
Kapalama Drainage Canal	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Kapalama Drainage Canal Tributary	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Kaukonahua Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
	04/29/2026	*	*	November 2019	City and County of Honolulu
Kaupuni Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Kawainui Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Kawa Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kawiwi Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu

Table 28: Summary of Contracted Studies Included in this FIS Report *(continued)*

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Keaahala Stream	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Keaaulu Gulch	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Kiikii Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Kuliouou Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Kului Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Ma'ili'ili Channel	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Maipalaoa Stream	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Makaha Stream	11/05/2014	*	*	November 2012	City and County of Honolulu
Makaleha Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
	04/29/2026	*	11-09-0171P	March 2011	City and County of Honolulu
Makiki Stream	09/03/1980	M&E Pacific, Inc.	84-77-C-0069	February 1979	City and County of Honolulu
Malaekahana Stream	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Manaiki Stream	11/20/2000	R.M Towill Corporation	EMW-93-C-4221	May 1997	City and County of Honolulu
Manoa-Palolo Drainage Canal	09/03/1980	M&E Pacific, Inc.	84-77-C-0069	February 1979	City and County of Honolulu
Manoa Stream	09/03/1980	M&E Pacific, Inc.	84-77-C-0069	February 1979	City and County of Honolulu
Moanalua Stream (Lower)	01/06/1983	U.S. Army Corps of Engineers	*	December 1982	City and County of Honolulu
	04/29/2026	*	20-09-0413P	January 2020	City and County of Honolulu
	01/06/1983	U.S. Army Corps of Engineers	*	December 1982	City and County of Honolulu
Moanalua Stream (Upper)	01/06/1983	U.S. Army Corps of Engineers	*	December 1982	City and County of Honolulu
Nanakuli Stream	09/28/1990	R.M Towill Corporation	EMW-86-C-2228	March 1989	City and County of Honolulu

Table 28: Summary of Contracted Studies Included in this FIS Report *(continued)*

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Niu Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Niu Tributary Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
North Halawa Stream	09/28/1990	R.M Towill Corporation	EMW-86-C-2228	March 1989	City and County of Honolulu
Nuuanu Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Ohia Stream	06/04/1971	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Ohia Stream (East)	06/04/1971	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Oneawa Channel	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	January 2013	City and County of Honolulu
Opaeula Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Overflow of Waiawa Stream	11/20/2000	R.M Towill Corporation	EMW-93-C-4221	May 1997	City and County of Honolulu
Pacific Ocean	01/19/2011	RMTC/URS	EM-2003-CO-0046	July 2006	City and County of Honolulu
Pahipahialua Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Palolo Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Panakauahi Gulch	11/20/2000	R.M Towill Corporation	EMW-93-C-4221	May 1997	City and County of Honolulu
Paukauila Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Poamoho Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Punaluu Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Tributary to Kawa Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Ulehawa Stream	09/28/1990	R.M Towill Corporation	EMW-86-C-2228	March 1989	City and County of Honolulu
Unnamed Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu

Table 28: Summary of Contracted Studies Included in this FIS Report *(continued)*

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Waiahole Stream	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Waialae-Iki Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Waialae-Major Drain	09/03/1980	R.M Towill Corporation	(IAA)-H-10-77	August 1976	City and County of Honolulu
Waialae-Nui Stream	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Waiawa Stream	11/20/2000	R.M Towill Corporation	EMW-93-C-4221	May 1997	City and County of Honolulu
Waihee Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Waihee Stream Tributary	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu
Waikakalua Stream	09/28/1990	R.M Towill Corporation	EMW-86-C-2228	March 1989	City and County of Honolulu
Waikane Stream	09/03/1980	R.M. Towill Corporation	IAA-H-10-77	August 1976	City and County of Honolulu
Waikele Stream	04/29/2026	*	21-09-0747P	December 2022	City and County of Honolulu
	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Wailani Drainage Canal	09/30/1995	R.M Towill Corporation	*	July 1993	City and County of Honolulu
	04/29/2026	*	21-09-0747P	December 2022	City and County of Honolulu
Wailele Stream	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Wailele Stream Left Overbank	09/04/1987	R.M Towill Corporation	EMW-86-C-2228	March 1989	City and County of Honolulu
Wailele Stream Right Overbank	09/04/1987	R.M Towill Corporation	EMW-86-C-2228	March 1989	City and County of Honolulu
Wailupe Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Waimalu Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Waimanalo Stream	09/03/1980	R.M. Towill Corporation	IAA-H-10-77	August 1976	City and County of Honolulu
Waimanalo Stream: Inoaole Stream	09/04/1987	R.M Towill Corporation	EMW-83-C-1186	April 1985	City and County of Honolulu

Table 28: Summary of Contracted Studies Included in this FIS Report *(continued)*

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Waimanalo Stream: Stream A	11/05/2014	BakerAECOM	HSFEHQ-09-D-0368	August 2013	City and County of Honolulu
Waimanalo Stream: Stream B	09/03/1980	R.M. Towill Corporation	IAA-H-10-77	August 1976	City and County of Honolulu
Waimanalo Stream: Stream C	09/03/1980	R.M. Towill Corporation	IAA-H-10-77	August 1976	City and County of Honolulu
Waimanalo Stream: Stream D	09/03/1980	R.M. Towill Corporation	IAA-H-10-77	August 1976	City and County of Honolulu
Waimea River	09/03/1980	R.M. Towill Corporation	IAA-H-10-77	August 1976	City and County of Honolulu
Waipilopilo Stream	09/03/1980	R.M. Towill Corporation	IAA-H-10-77	August 1976	City and County of Honolulu
Waolani Stream	04/29/2026	Compass	HSFE60-15-D-0003	March 2023	City and County of Honolulu
Zone A Flood Sources	09/03/1980	R.M. Towill Corporation	IAA-H-10-77	August 1976	City and County of Honolulu
1D BLE Zone A Flood Sources	04/29/2026	STARR II	70FA6021D 00000005	December 2023	City and County of Honolulu
2D BLE Zone A Flood Sources	04/29/2026	STARR II	70FA6021D 00000005	December 2023	City and County of Honolulu

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 29. 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 29: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
City and County of Honolulu	06/10/2026	09/18/2024	CCO Meeting	FEMA, Hawaii Department of Land and Natural Resources, City and County of Honolulu, and STARR II
		07/28/2022	Flood Risk Review Meeting	FEMA, State of Hawaii, Compass, and the community
		10/05/2021	Local Levee Partnership Team Meeting	FEMA, State of Hawaii, Compass, and the community

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 www.fema.gov.

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for the City and County of Honolulu, (FEMA 2014).

Table 30 is a list of the locations where FIRMs for the City and County of Honolulu 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 30: Map Repositories

Community	Address	City	State	Zip Code
City and County of Honolulu	Department of Planning and Permitting 650 South King Street, 7th Floor	Honolulu	HI	96813

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 8.

Table 31 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 31: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/flood-maps/products-tools/know-your-risk/engineers-surveyors-architects
NFIP website	www.fema.gov/flood-insurance
NFHL Dataset	msc.fema.gov
FEMA Region 9	1111 Broadway, Suite 1200 Oakland, CA 94607 (510) 627-7029

Table 31: Additional Information *(continued)*

Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Hawaii Department of Land and Natural Resources 1151 Punchbowl Street, #221 Honolulu, HI 96813
State GIS Coordinator	GIS Program Manager Post Office Box 2359 Honolulu, HI 96813

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 32 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 32: 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
Chow 1959	Blackburn Press	Open Channel Hydraulics	Ven Te Chow	New York, NY	January 1959	
Compass 2023	Compass PTS JV	Hydrologic and Hydraulic Study of Honolulu County, HI	Compass PTS JV	Arlington, VA	March 2023	https://msc.fema.gov/
DPPCCH 2017	Department of Permitting and Planning, City and County of Honolulu	Storm Drainage Standards	Department of Permitting and Planning, City and County of Honolulu	Honolulu, HI	August 2017	https://www.honolulu.gov/rep/site/dpp/dpp_docs/rules-storm-drainage-standards.pdf
FEMA 2009	Federal Emergency Management Agency	National Flood Hazard Layer, Honolulu County, Hawaii	Federal Emergency Management Agency	Washington, D.C.	January 2009	https://msc.fema.gov/
FEMA 2009a	Federal Emergency Management Agency	Honolulu Effective features	Federal Emergency Management Agency	Washington, D.C.	January 2009	https://msc.fema.gov/
FEMA 2009b	Federal Emergency Management Agency	Effective Honolulu Features	Federal Emergency Management Agency	Washington, D.C.	January 2009	https://msc.fema.gov/
FEMA 2009c	Federal Emergency Management Agency	Effective Honolulu Features	Federal Emergency Management Agency	Washington, D.C.	January 2009	https://msc.fema.gov/

Table 32: Bibliography and References *(continued)*

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA 2009d	Federal Emergency Management Agency	Effective Honolulu Features	Federal Emergency Management Agency	Washington, D.C.	January 2009	https://msc.fema.gov/
FEMA 2009e	Federal Emergency Management Agency	Effective Honolulu Features	Federal Emergency Management Agency	Washington, D.C.	January 2009	https://msc.fema.gov/
FEMA 2009f	Federal Emergency Management Agency	Effective Honolulu Features	Federal Emergency Management Agency	Washington, D.C.	January 2009	https://msc.fema.gov/
FEMA 2011A	Federal Emergency Management Agency	LOMR 11-09-0171P	Federal Emergency Management Agency	Washington, D.C.	March 2011	https://msc.fema.gov/
FEMA 2011b	Federal Emergency Management Agency	LOMR 10-09-3709P	Federal Emergency Management Agency	Washington, D.C.	November 2011	https://msc.fema.gov
FEMA 2012	Federal Emergency Management Agency	LOMR 12-09-1556P	Federal Emergency Management Agency	Washington, D.C.	November 2012	https://msc.fema.gov/
FEMA 2014	Federal Emergency Management Agency	Flood Insurance Study, City and County of Honolulu, Hawaii	Federal Emergency Management Agency	Washington, D.C.	November 2014	https://msc.fema.gov/
FEMA 2014	Federal Emergency Management Agency	LOMR 13-09-1536P	Federal Emergency Management Agency	Washington, D.C.	January 2014	https://msc.fema.gov/

Table 32: Bibliography and References *(continued)*

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA 2014b	Federal Emergency Management Agency	National Flood Hazard Layer	Federal Emergency Management Agency	Washington, D.C.	November 2014	https://msc.fema.gov
FEMA 2016	Federal Emergency Management Agency	Guidance for Flood Risk Analysis and Mapping General Hydraulics Considerations	Federal Emergency Management Agency	Washington, D.C.	November 2016	https://www.fema.gov/flood-maps/guidance-reports/guidelines-standards
FEMA 2017	Federal Emergency Management Agency	LOMR 16-09-2530P	Federal Emergency Management Agency	Washington, D.C.	September 2017	https://msc.fema.gov/
FEMA 2018	Federal Emergency Management Agency	LOMR 17-09-2310P	Federal Emergency Management Agency	Washington, D.C.	April 2018	https://msc.fema.gov/
FEMA 2018b	Federal Emergency Management Agency	LOMR 18-09-0118P	Federal Emergency Management Agency	Washington, D.C.	May 2018	https://msc.fema.gov/
FEMA 2018c	Federal Emergency Management Agency	LOMR 18-09-1196P	Federal Emergency Management Agency	Washington, D.C.	October 2018	https://msc.fema.gov/
FEMA 2019	Federal Emergency Management Agency	Guidance for Flood Risk Analysis and Mapping - Hydrology: Rainfall-Runoff Analysis	Federal Emergency Management Agency	Washington, D.C.	February 2019	https://www.fema.gov/sites/default/files/2020-02/Hydrologic_Rainfall_Runoff_Analysis_Feb_2019.pdf

Table 32: Bibliography and References *(continued)*

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA 2019b	Federal Emergency Management Agency	LOMR 18-09-2230P	Federal Emergency Management Agency	Washington, D.C.	November 2019	https://msc.fema.gov
FEMA 2020	Federal Emergency Management Agency	LOMR 20-09-0413P	Federal Emergency Management Agency	Washington, D.C.	January 2020	https://msc.fema.gov
FEMA 2022a	Federal Emergency Management Agency	LOMR 21-09-0747P	Federal Emergency Management Agency	Washington, D.C.	December 2022	https://msc.fema.gov/
FEMA 2022b	Federal Emergency Management Agency	LOMR 20-09-0544P	Federal Emergency Management Agency	Washington, D.C.	January 2021	https://msc.fema.gov
FEMA 2022c	Federal Emergency Management Agency	LOMR 22-09-0548P	Federal Emergency Management Agency	Washington, D.C.	May 2023	https://msc.fema.gov
HOLIS 2019	Honolulu Land Information System (HOLIS)	Roads - Honolulu County	Honolulu Land Information System (HOLIS), C&C of Honolulu	Honolulu, HI	March 2023	https://honolulu-cchnl.opendata.arcgis.com/
MRLC 2021	Multi-Resolution Land Characteristics (MRLC) Consortium	National Land Cover Database (NLCD)	Multi-Resolution Land Characteristics (MRLC) Consortium	Sioux Falls, SD	September 2021	https://www.mrlc.gov/

Table 32: Bibliography and References *(continued)*

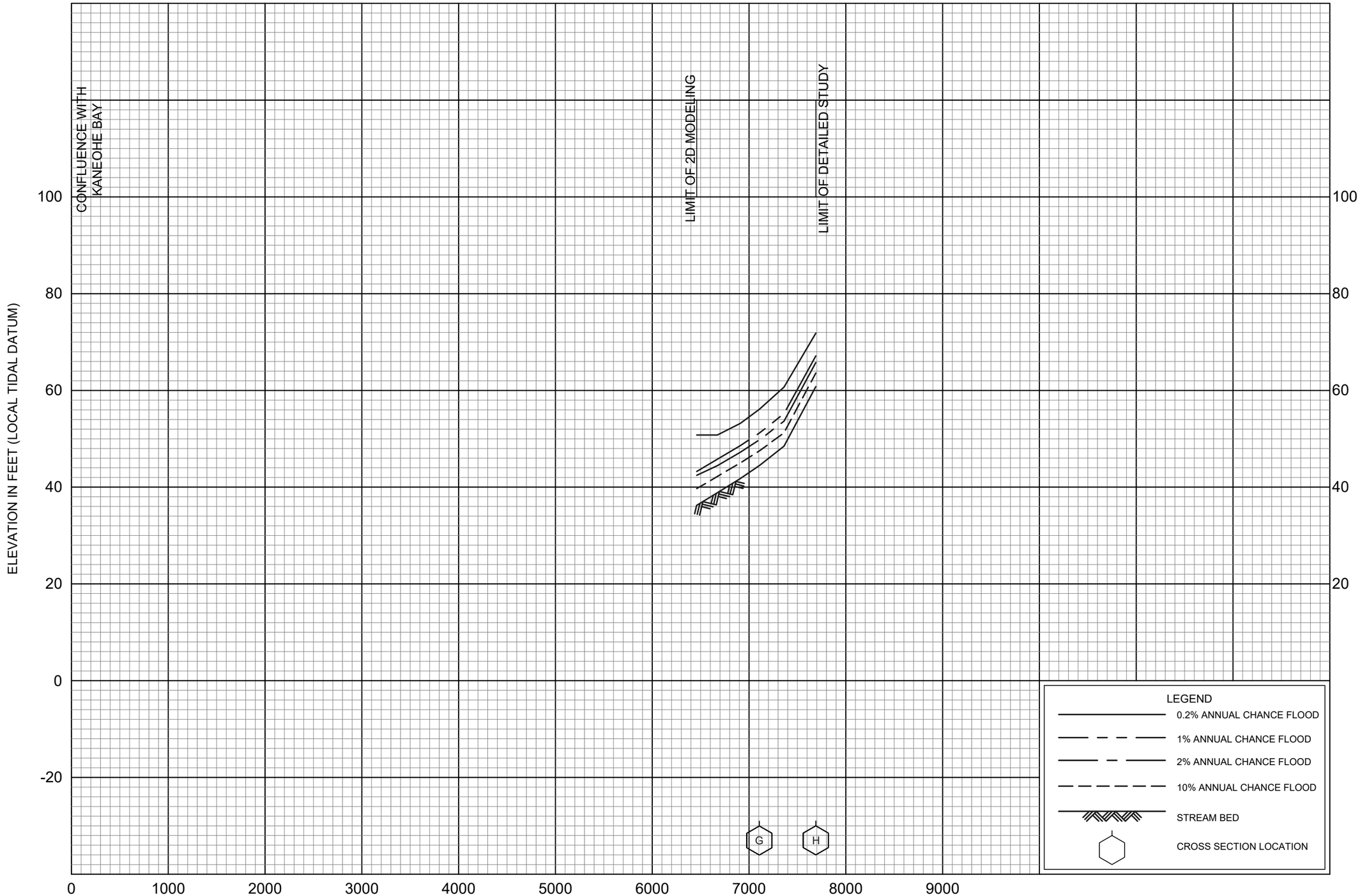
Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
NOAA 2013	National Oceanic and Atmospheric Administration	NOAA-USGS 2013 Oahu Light Detection and Ranging data (LiDAR)	National Oceanic and Atmospheric Administration	Washington, D.C.	January 2013	
NOAA 2014	National Oceanic and Atmospheric Administration Coastal Services Center	Technical Guide for OpenNSPECT, Version 1.2	National Oceanic and Atmospheric Administration	Charleston, SC	May 2014	https://coast.noaa.gov/data/digitalcoast/pdf/opennspect-technical-guide.pdf
NOAA 2021	National Oceanic and Atmospheric Administration	NOAA (National Oceanic and Atmospheric Administration) Atlas-14, Hydrometeorological Design Studies Center, Precipitation Frequency Data Server	National Oceanic and Atmospheric Administration	Silver Spring, MD	April 2021	https://hdsc.nws.noaa.gov/hdsc/pfds/
NRCS 1986	Natural Resources and Conservation Service	Urban Hydrology for Small Watersheds TR-55	Cronshey, R.; McCuen, R.; Miller, N.; Rawls, W.; Robbins, S.; Woodward, D. et. al	Washington, D.C.	June 1986	https://www.nrc.gov/docs/ML1421/ML14219A437.pdf
NWS 2022	National Weather Service	Record Kauai and Oahu Rainfall and Flooding - April 2018	National Weather Service	Honolulu, HI	May 2022	https://www.weather.gov/hfo/RecordKauaiandOahuRainfallAndFlooding-April2018
STARR II 2019	Federal Emergency Management Agency	Oahu Base Level Engineering Study 1D	STARR II	Washington, D.C.	June 2019	https://msc.fema.gov/

Table 32: Bibliography and References *(continued)*

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
STARR II 2022	Federal Emergency Management Agency	Oahu Base Level Engineering Study 2D	STARR II	Washington, D.C.	December 2023	https://msc.fema.gov/
STARR II 2024	Federal Emergency Management Agency	Honolulu PMR Footprint 2024	STARR II	Atlanta, GA	-	https://msc.fema.gov/
USACE 2009	United States Army Corps of Engineers, Hydrologic Engineering Center	HEC-HMS Flood Hydrograph Package v3.40	United States Army Corps of Engineers, Hydrologic Engineering Center	Davis, CA	August 2009	https://www.hec.usace.army.mil/software/hec-hms/documentation/HEC-HMS_Users_Manual_3.4.pdf
USACE 2020	United States Army Corps of Engineers	Ala Wai Flood Risk Management Project Honolulu, Hawaii Engineering Documentation Report	United States Army Corps of Engineers	Fort Shafter, HI	July 2020	https://www.poh.usace.army.mil/Portals/10/docs/Ala%20Wai%20FRM/Ala%20Wai%20EDR%20Signed.pdf?ver=QaO0uUE_k-lrwzlMcPsl4w%3D%3D
USACE 2021	United States Army Corps of Engineers, Hydrologic Engineering Center	HEC-RAS, River Analysis System Hydraulic Reference Manual Version 6.0	United States Army Corps of Engineers, Hydrologic Engineering Center	Davis, CA	May 2021	https://www.hec.usace.army.mil/confluence/rasdocs/ras1dtechref/latest
USDA 2016	United States Department of Agriculture	Gridded Soil Survey Geographic (gSSURGO) Database	United States Department of Agriculture	Washington, D.C.	December 2016	https://geodata.lib.ncsu.edu/fedgov/nrcs/gSSURGO_UserGuide.pdf

Table 32: Bibliography and References *(continued)*

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USGS 1982	United States Geological Survey	Guidelines for Determining Flood Flow Frequency, Bulletin 17B of the Hydrology Subcommittee	United States Geological Survey	Reston, VA	March 1982	https://water.usgs.gov/osw/bulletin17b/dl_flow.pdf
USGS 2000	United States Geological Survey	7.5-Minute Series Topographic Quadrangle Maps	United States Geological Survey	Reston, VA	June 2019	http://www.soest.hawaii.edu/coasts/data/oahu/drg.html
USGS 2020b	United States Geological Survey	Current Conditions for Hawaii: Streamflow	United States Geological Survey	Reston, VA	October 2020	https://waterdata.usgs.gov/hi/nwis/current/?type=flow
USGS 2024	United States Geological Survey	USGS HUC8s	United States Geological Survey	Reston, VA	January 2024	https://www.usgs.gov/national-hydrography/access-national-hydrography-products



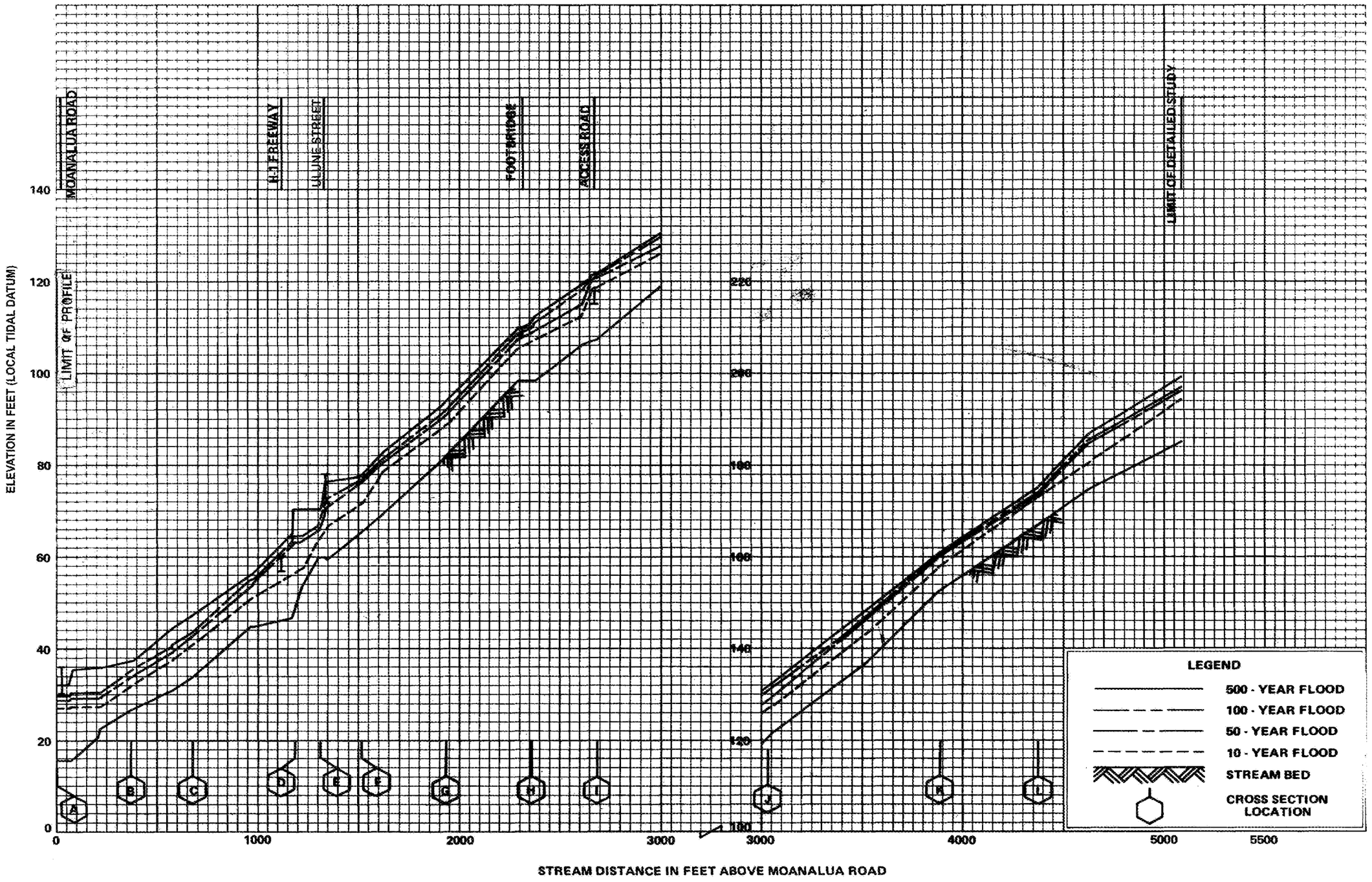
FLOOD PROFILES

AHUIMANU STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

01P



FLOOD PROFILES

AIEA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

02P

ELEVATION IN FEET (LOCAL TIDAL DATUM)

10
5
0
-5
-10
-15
-20

THE 10,50 AND 500 -YEAR FLOOD PROFILES ARE TOO CLOSE TO THE 100-YEAR ELEVATION TO BE SHOWN SEPARATELY

BEGINNING OF SHALLOW FLOODING

LIMIT OF DETAILED STUDY

A B C D E F G

LEGEND

- 500 YEAR FLOOD
- 100 YEAR FLOOD
- 50 YEAR FLOOD
- 10 YEAR FLOOD
- STREAM BED
- CROSS SECTION LOCATION (A)

60 64 68 72 76 80 84 88 92 96 100

STREAM DISTANCE IN HUNDREDS OF FEET ABOVE MOUTH

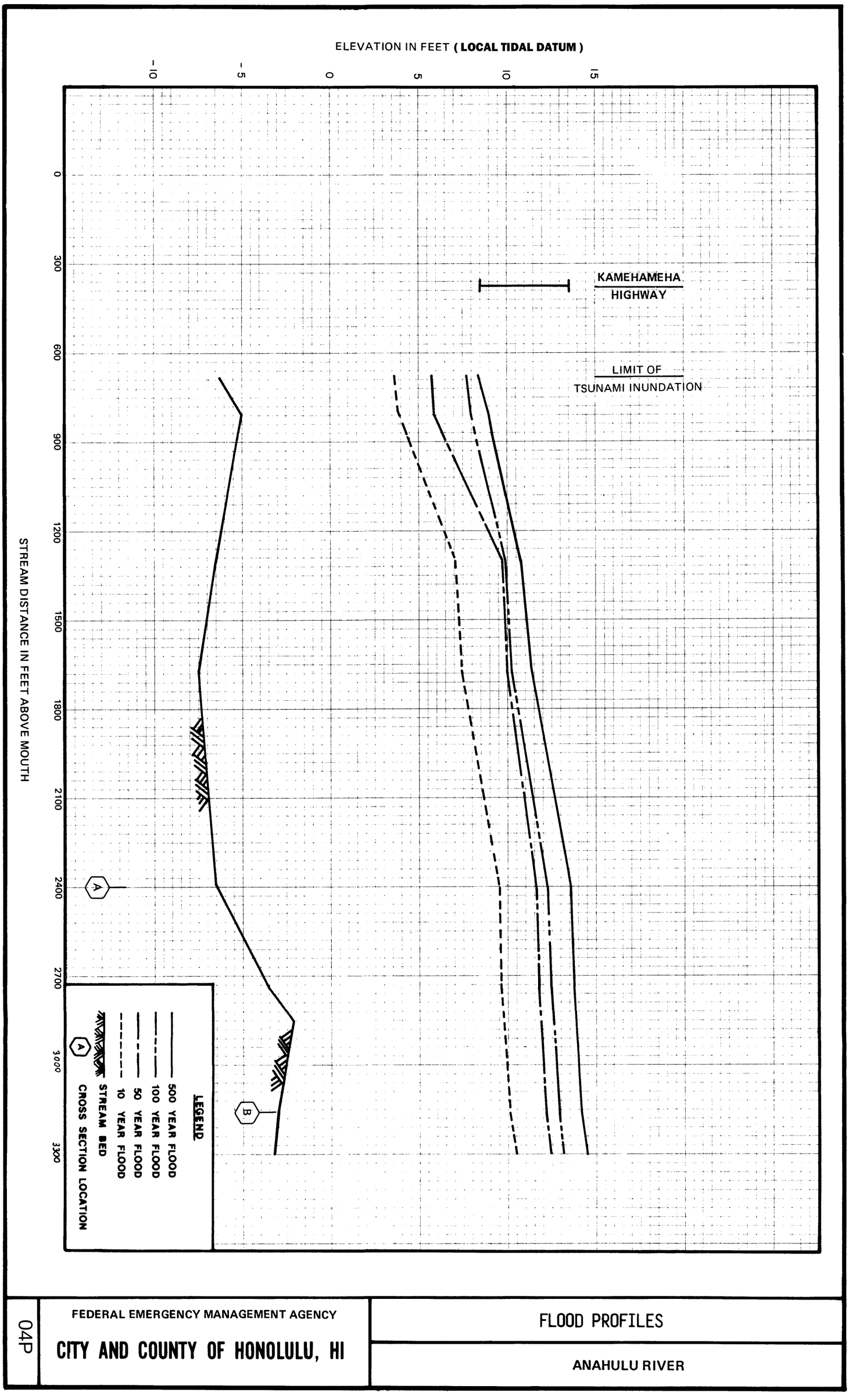
FLOOD PROFILES

ALA WAI CANAL

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU HI

03P



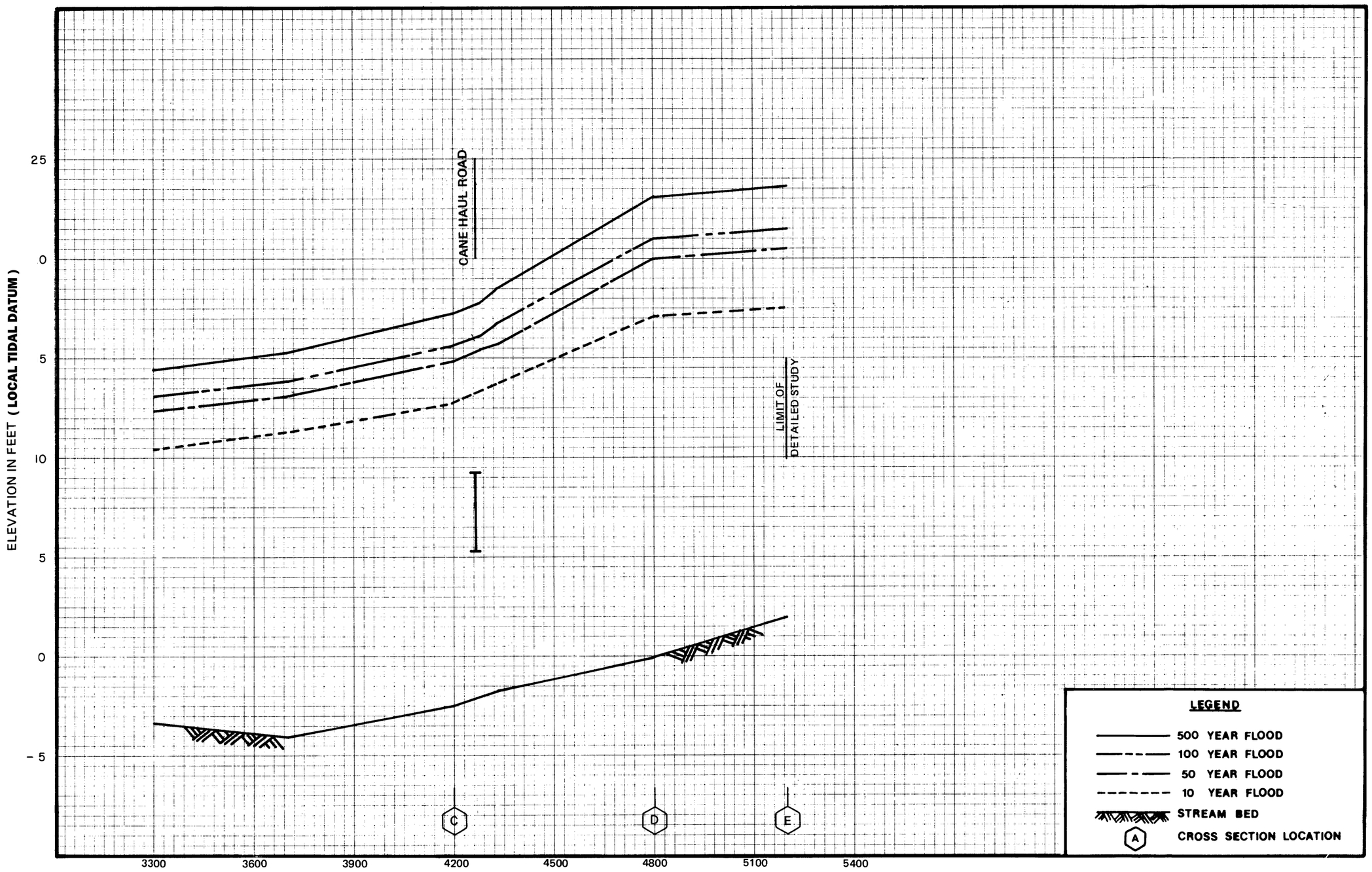
04P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

FLOOD PROFILES

ANAHULU RIVER



FLOOD PROFILES

ANAHULU RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

05P

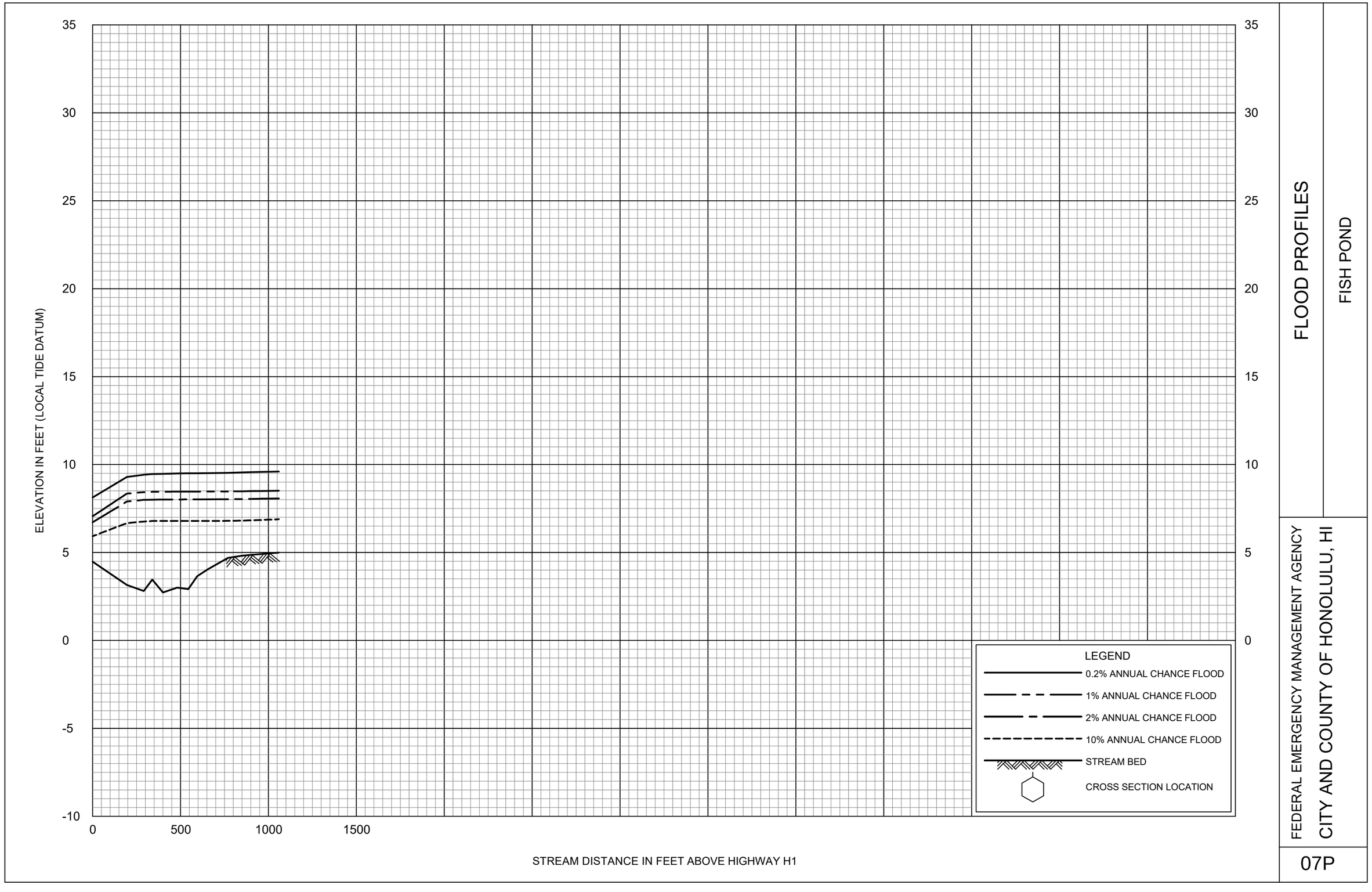
FLOOD PROFILES

EKU STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

06P



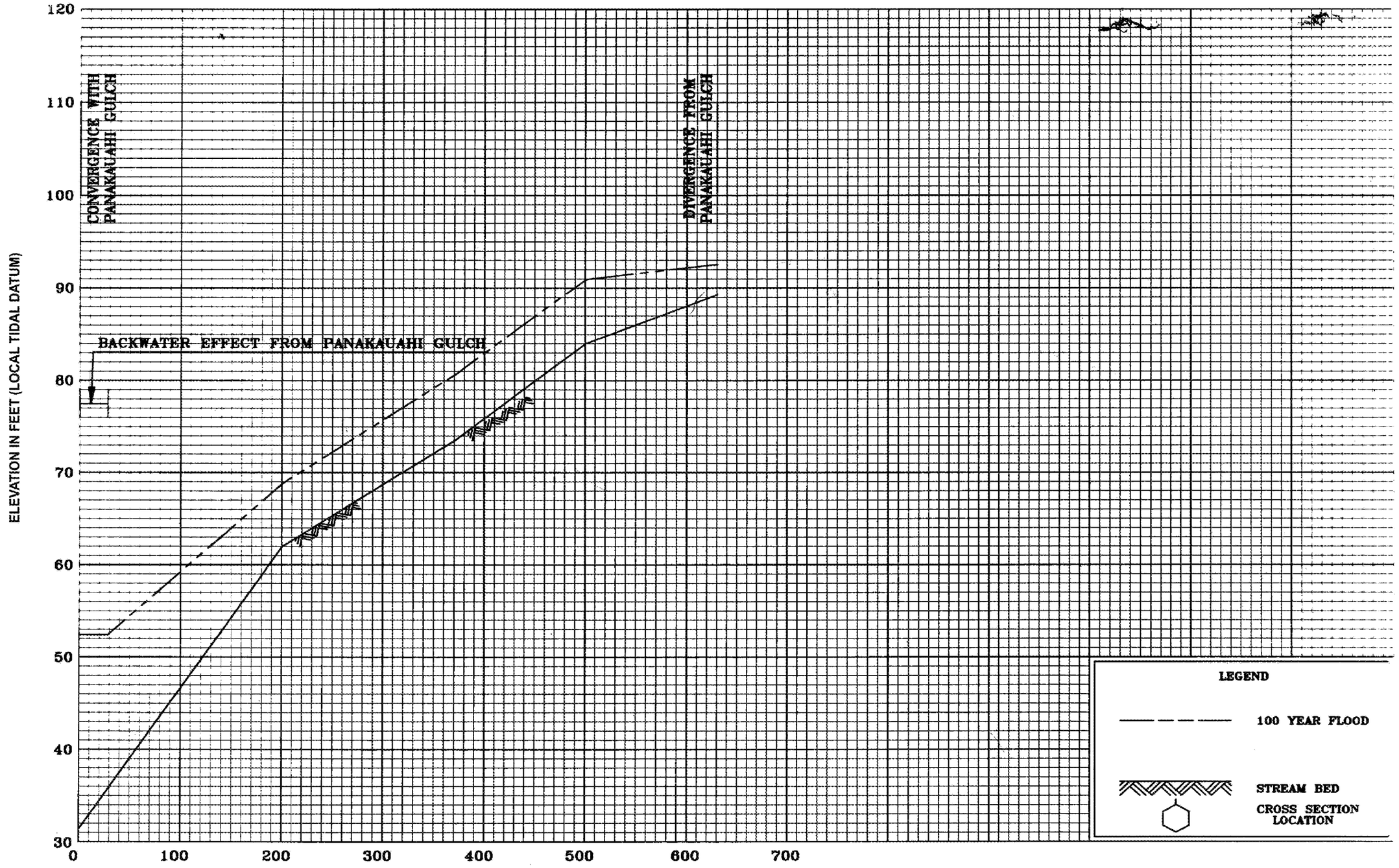
FLOOD PROFILES

FISH POND

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

07P



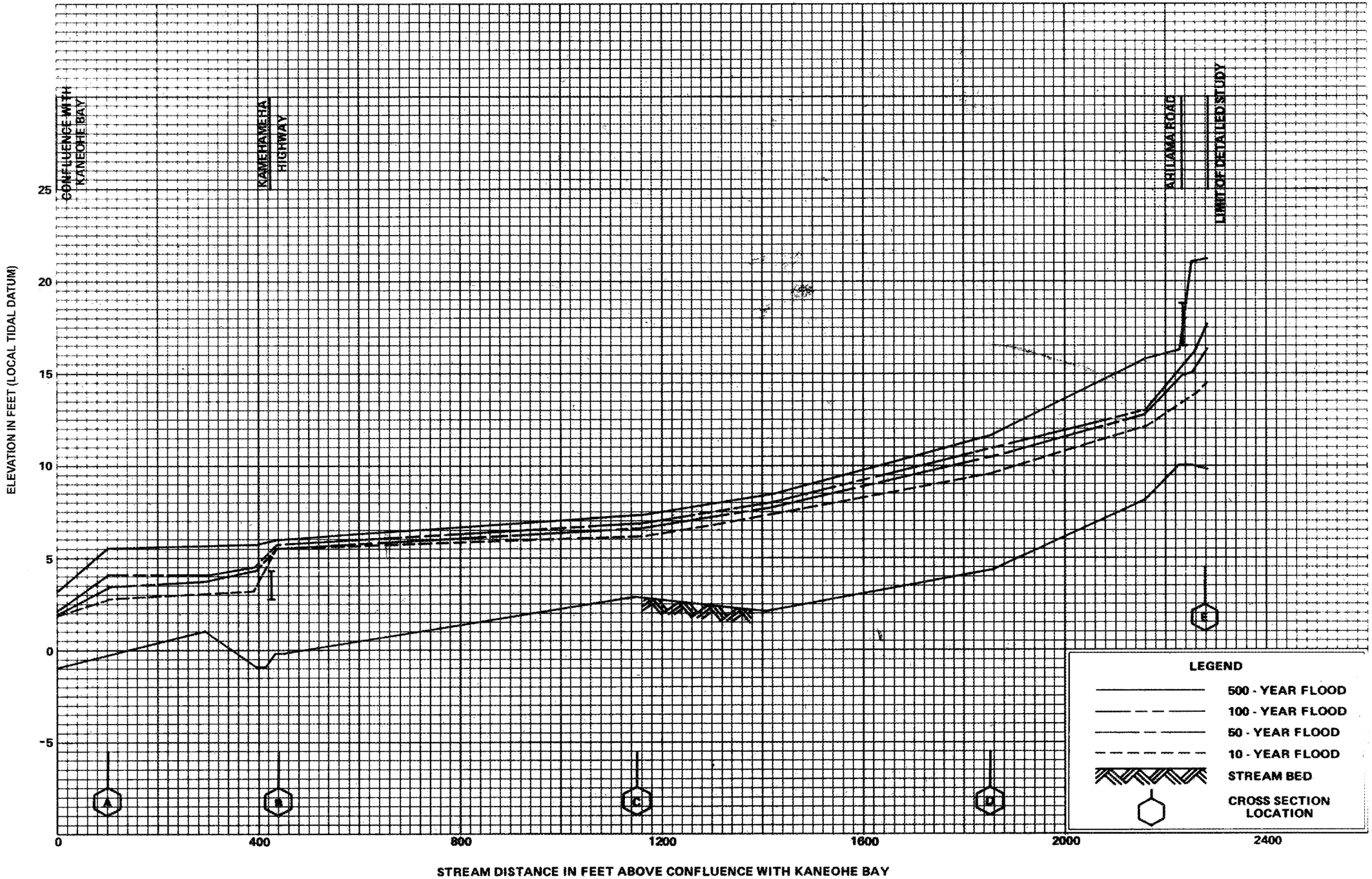
FLOOD PROFILES

FLOW ALONG CANE HAUL ROAD

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU HI

08P

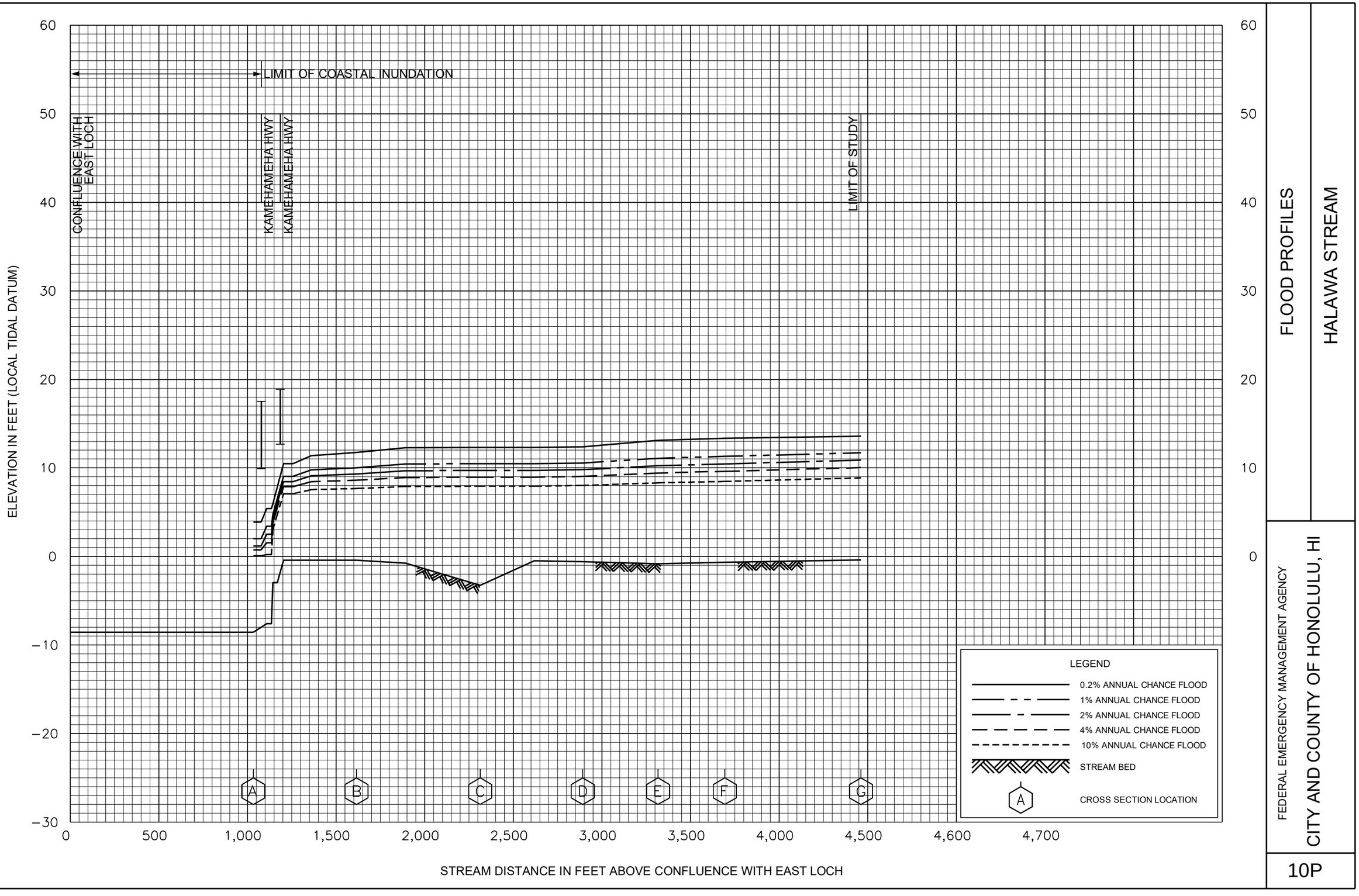


FLOOD PROFILES

HAIAMOA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



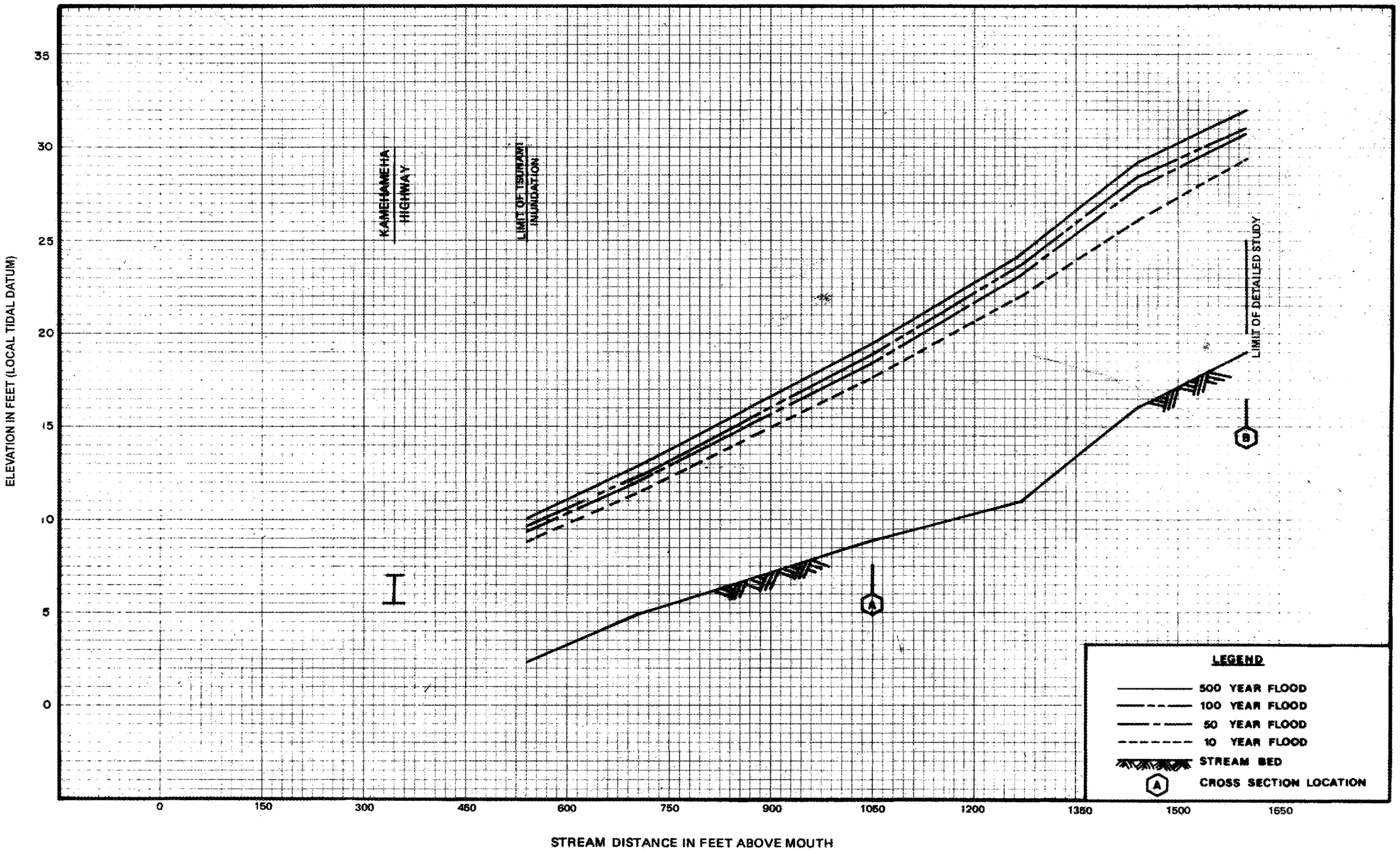
FLOOD PROFILES

HALAWA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

10P



FLOOD PROFILES

HANAHIMOA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

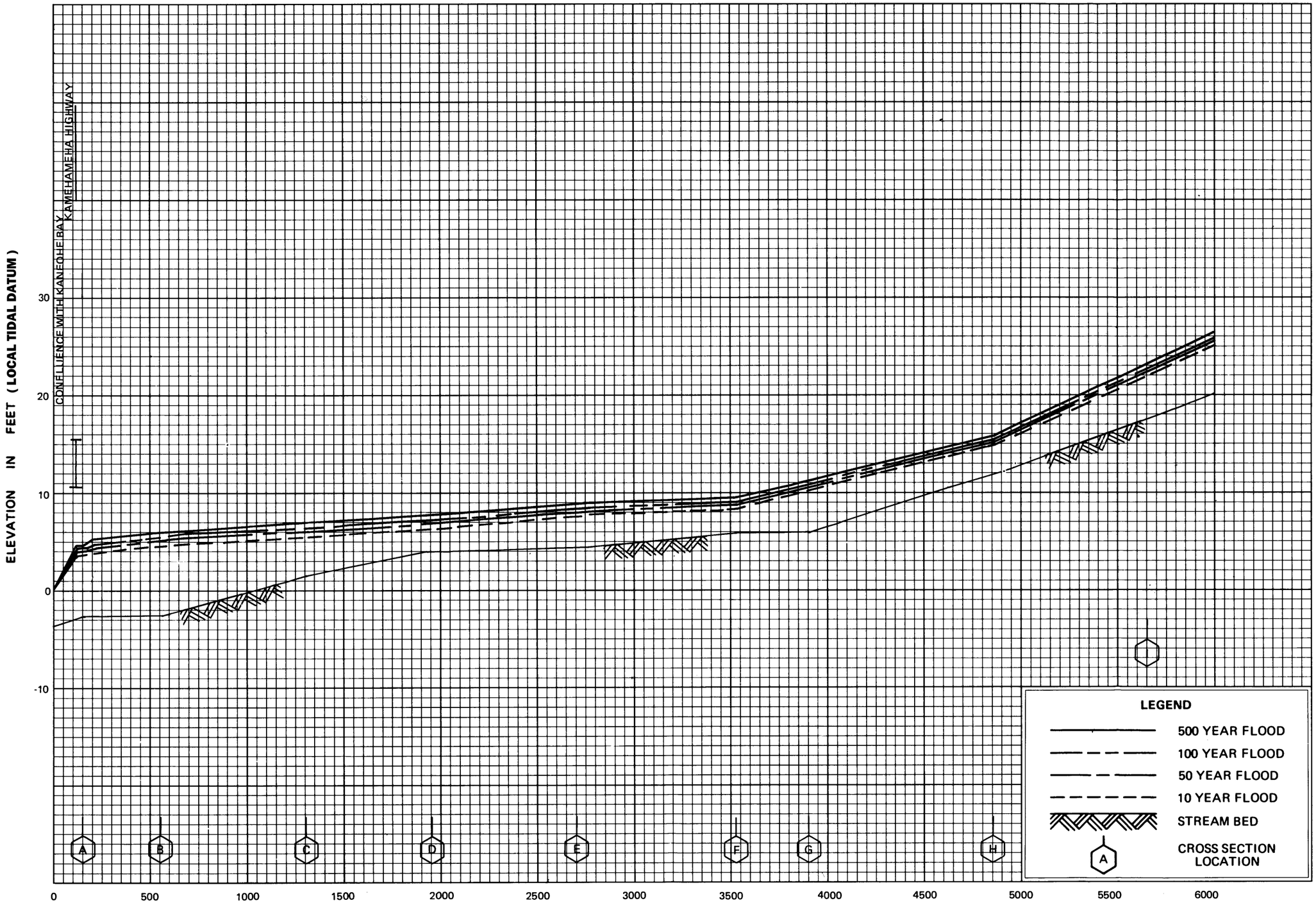
CITY AND COUNTY OF HONOLULU, HI

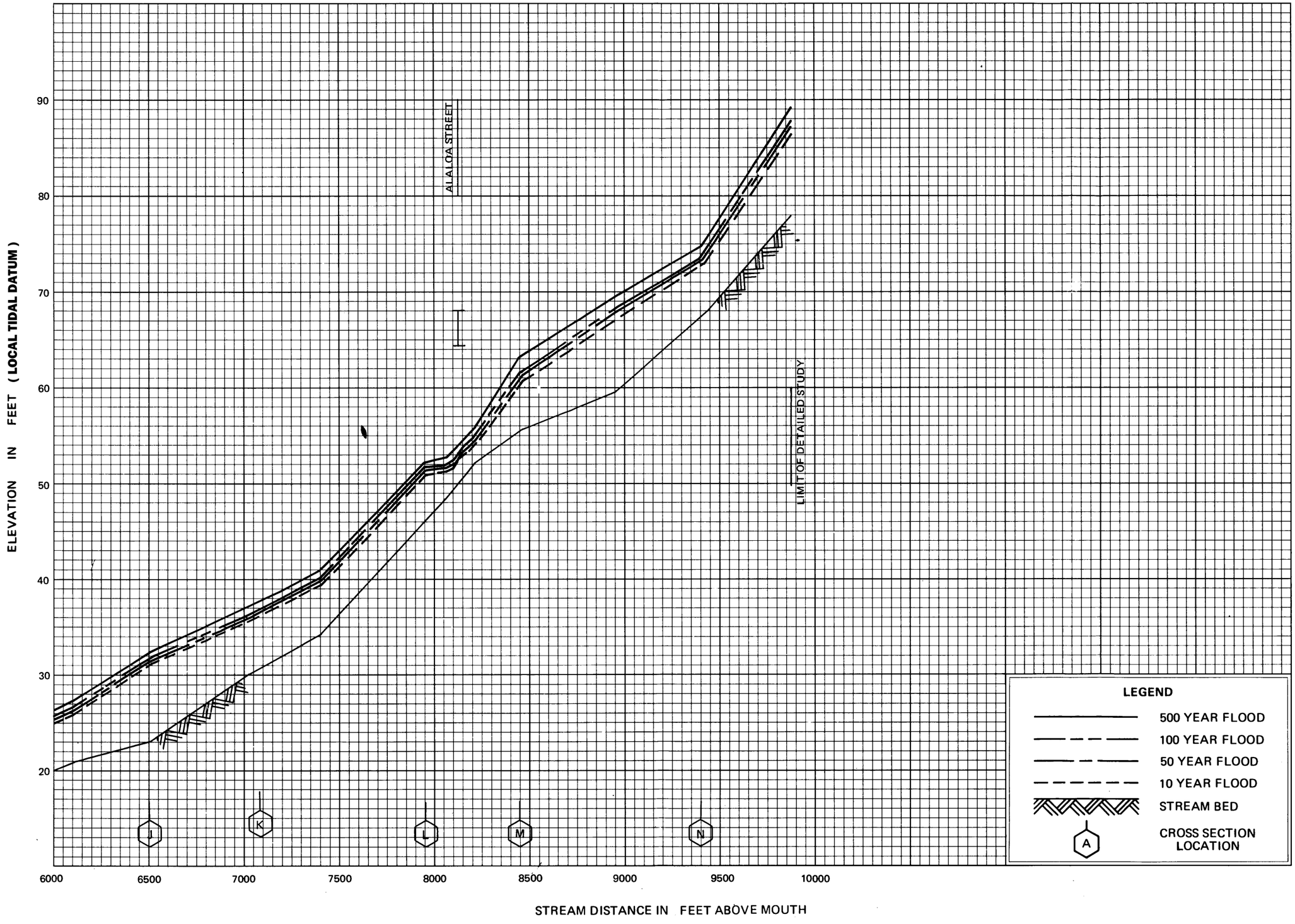
FLOOD PROFILES

HEEIA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



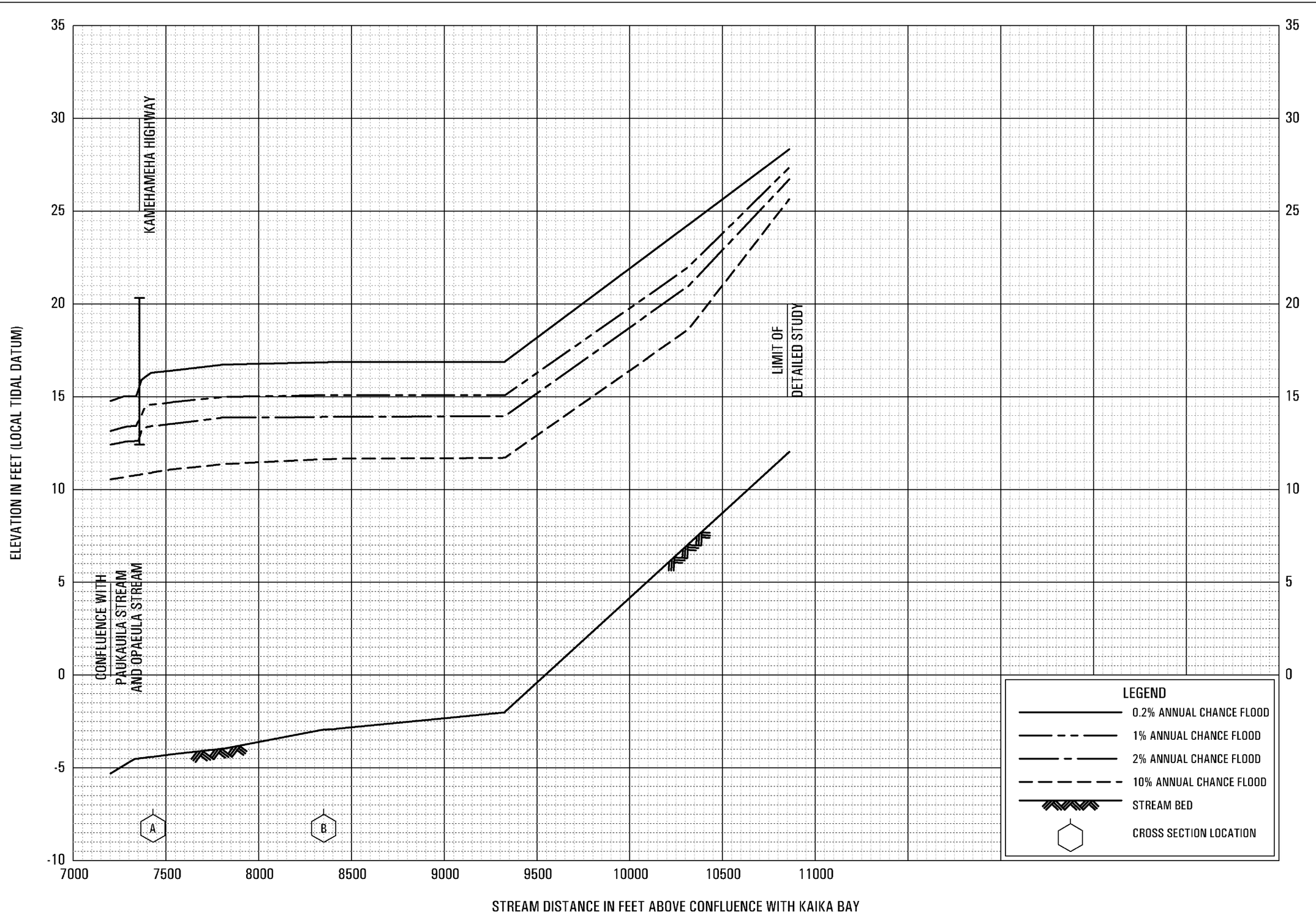


FLOOD PROFILES

HEEIA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

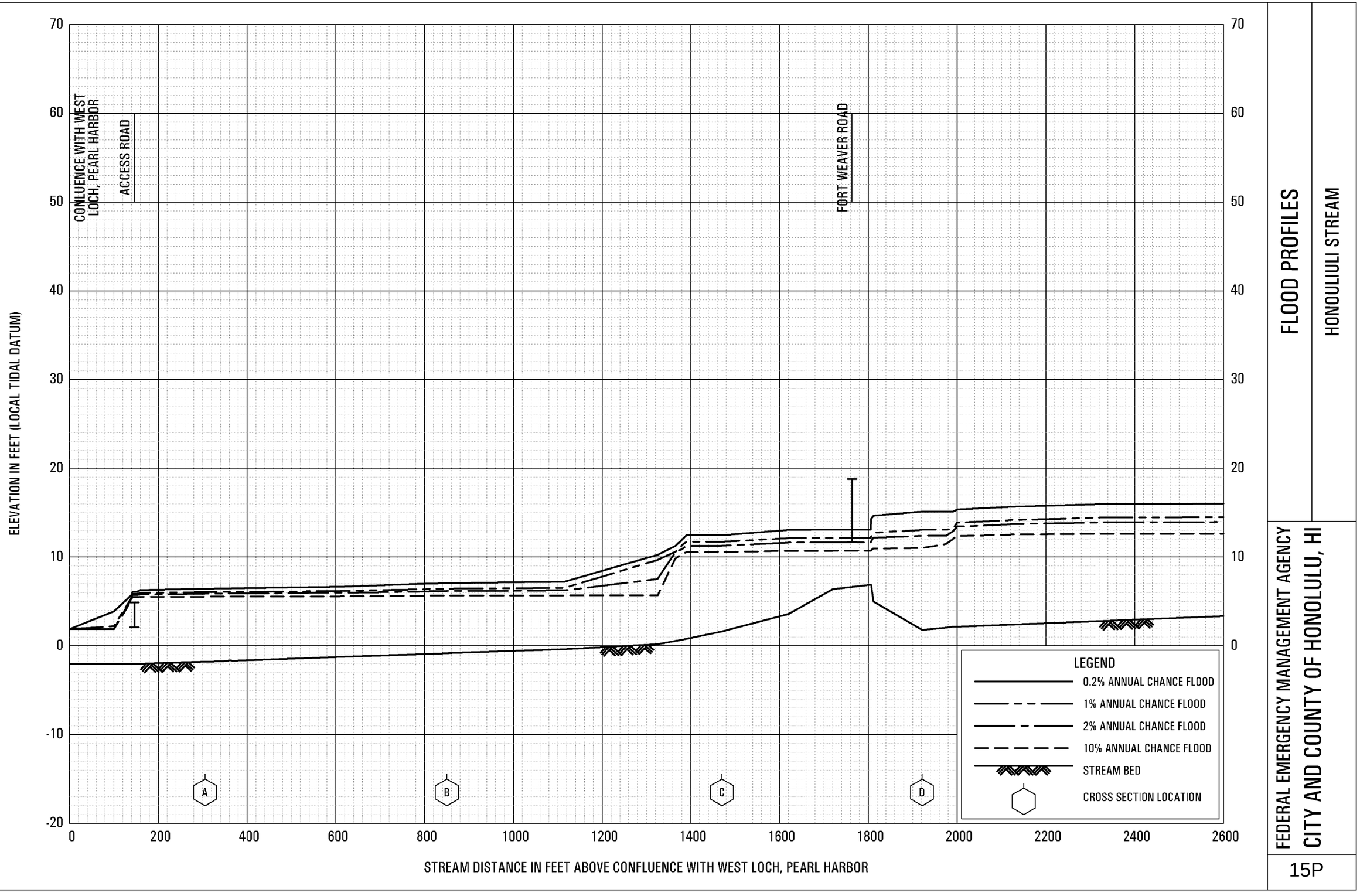


FLOOD PROFILES

HELEMANO STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI

14P

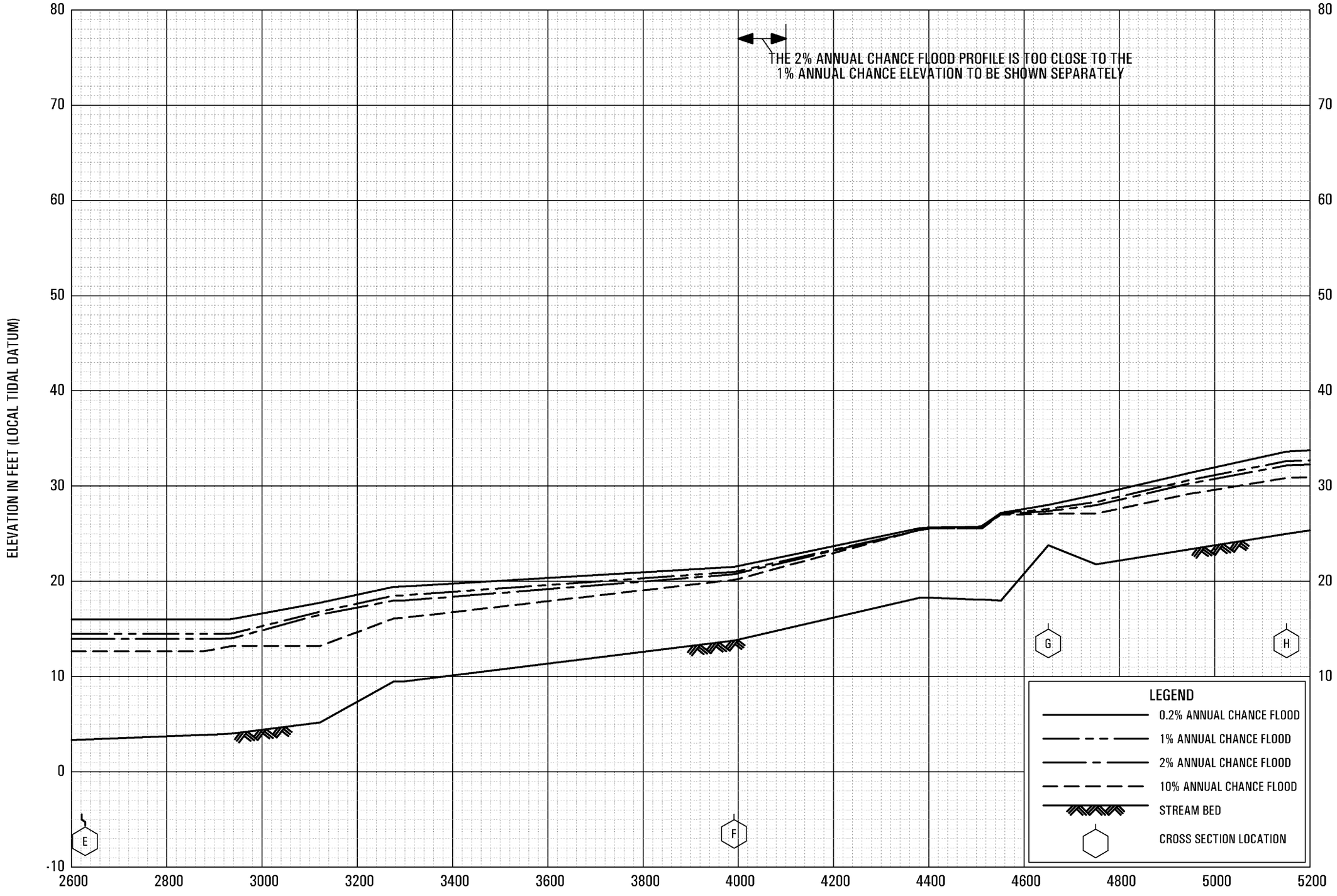


FLOOD PROFILES

HONOULIULI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI

15P

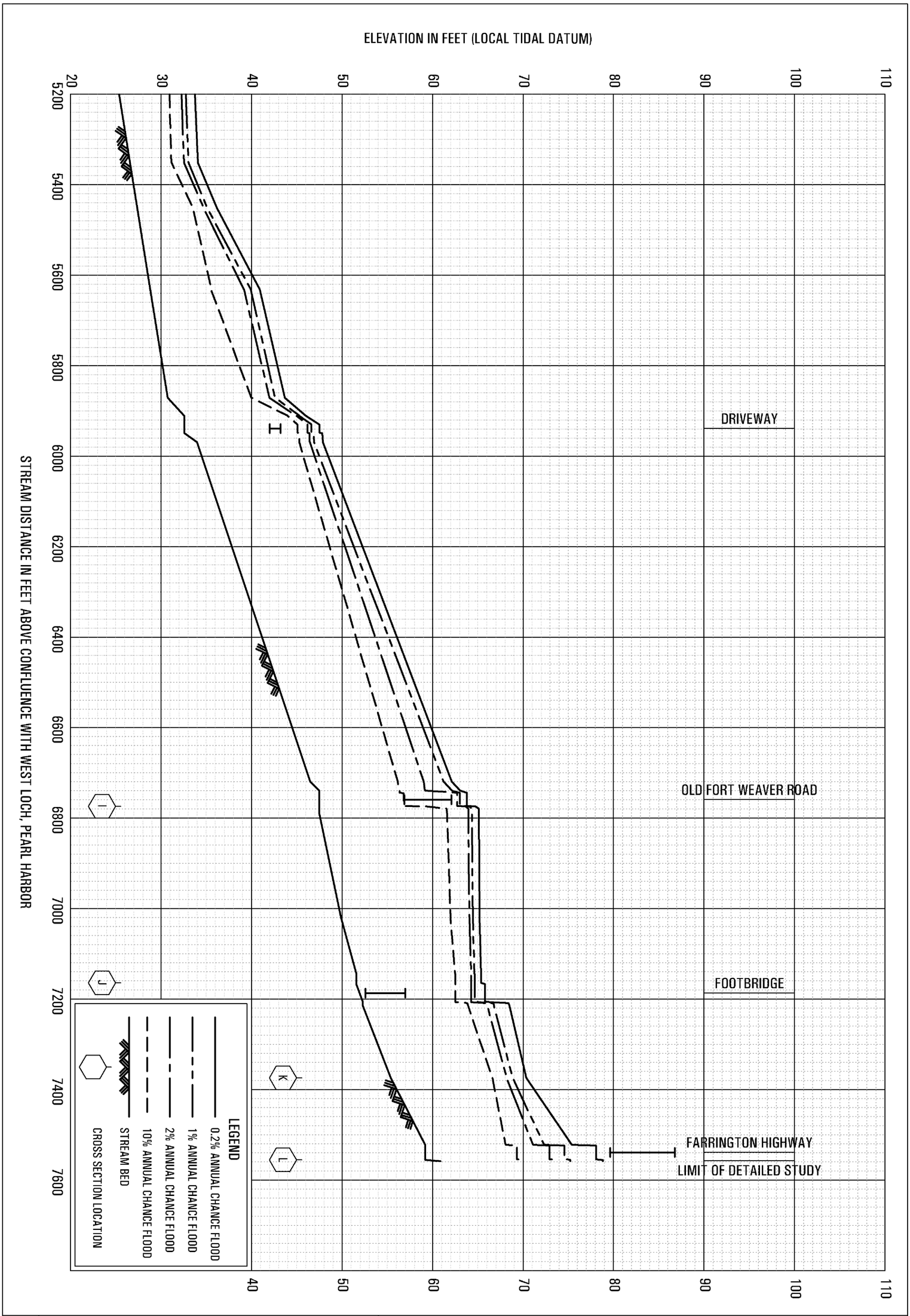


FLOOD PROFILES

HONOULIULI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI

16P



17P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

FLOOD PROFILES

HONOULIULI STREAM

ELEVATION IN FEET (LOCAL TIDAL DATUM)

45
40
35
30
25
20
15
10
5
0

FLOODING DOWNSTREAM OF THIS POINT CONTOLLED BY PACIFIC OCEAN COASTAL INFLUENCE

KAMEHAMEHA HIGHWAY

LIMIT OF DETAILED STUDY

A
B
C

LEGEND
- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

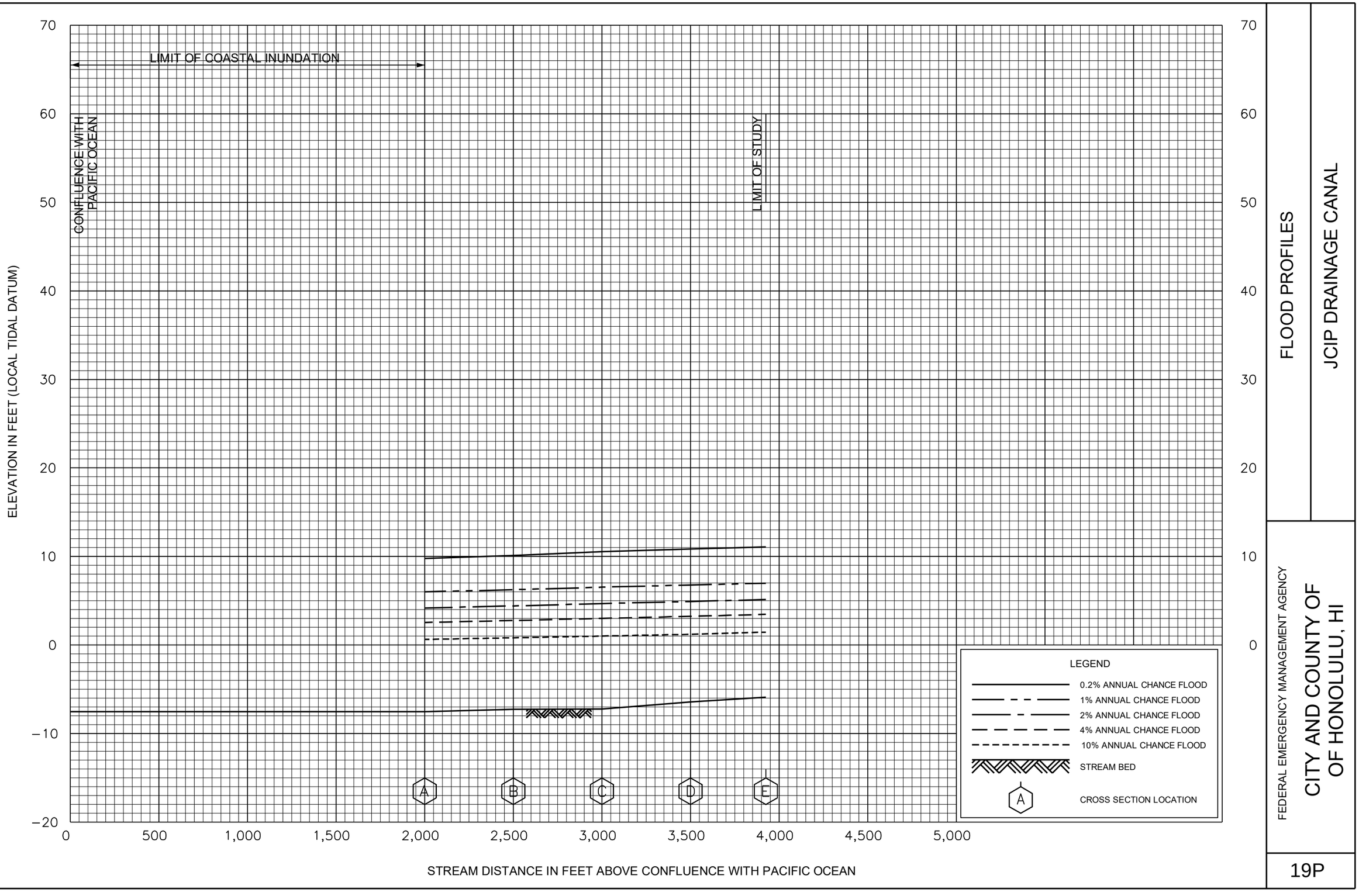
-600 -500 -400 -300 -200 -100 0 100 200 300 400

STREAM DISTANCE IN FEET ABOVE KAMEHAMEHA HIGHWAY

FLOOD PROFILES

HOOLAPA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI



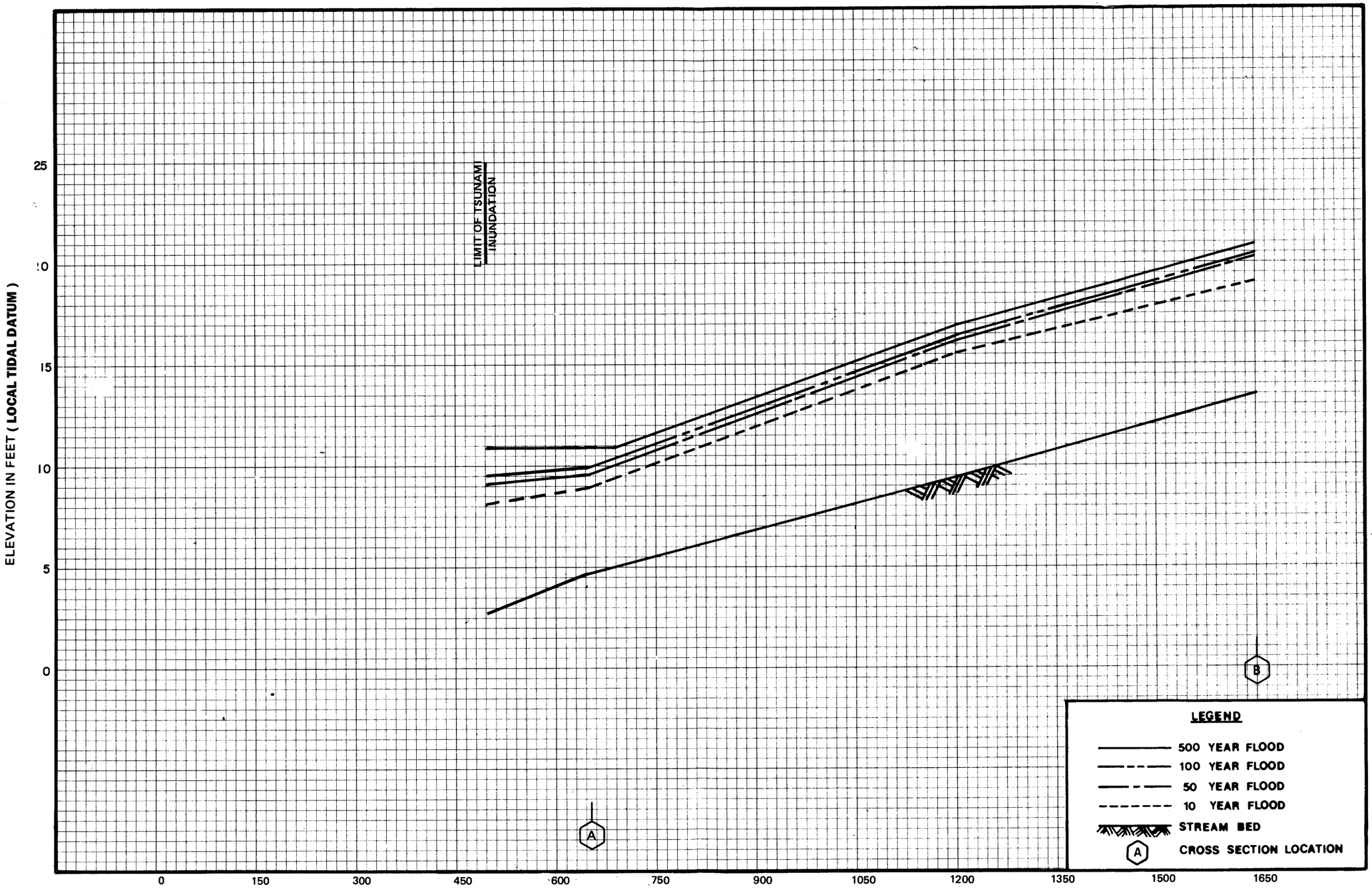
FLOOD PROFILES

JCIP DRAINAGE CANAL

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF OF HONOLULU, HI

19P



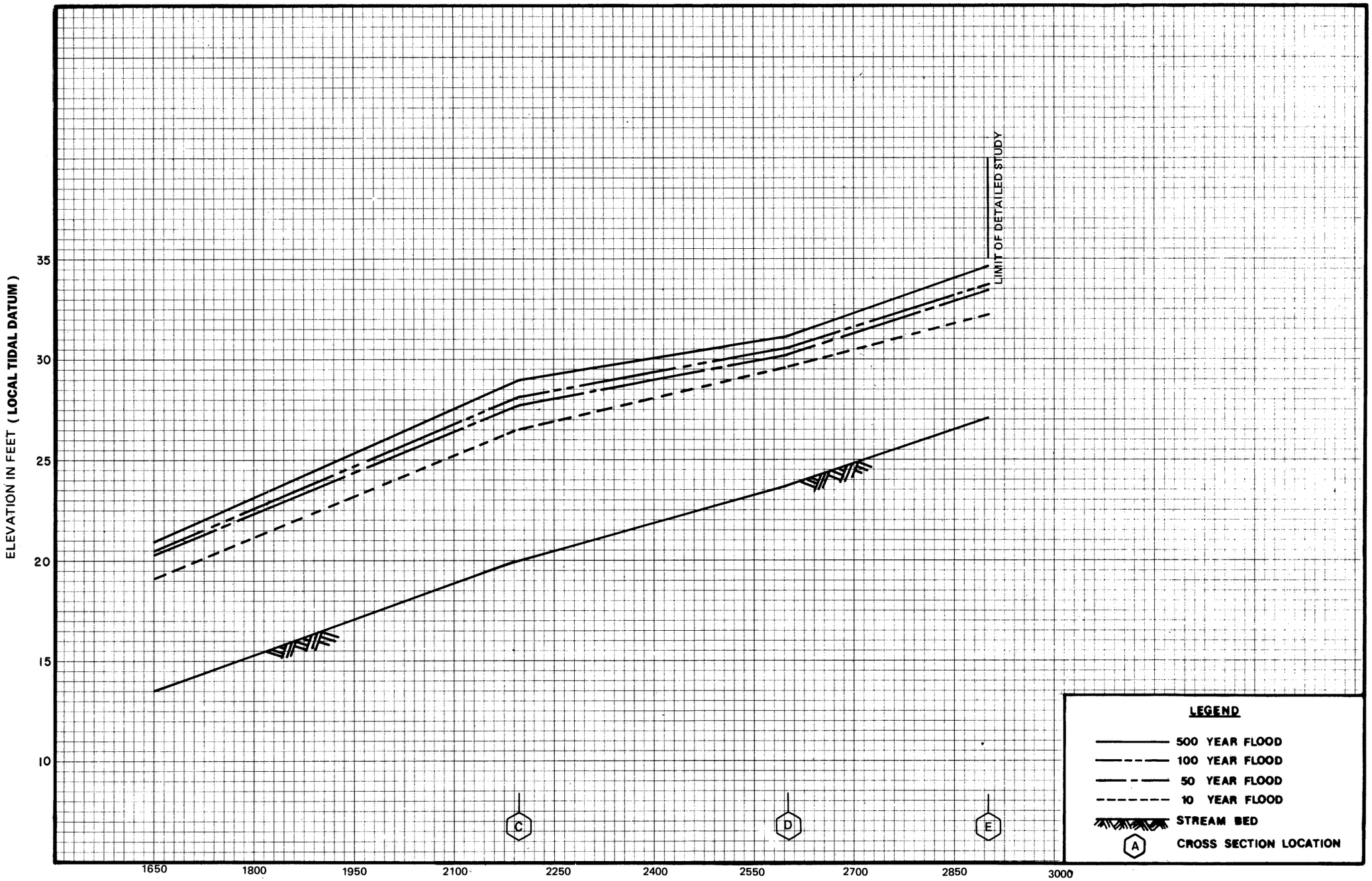
FLOOD PROFILES

KA'AAWA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

20P



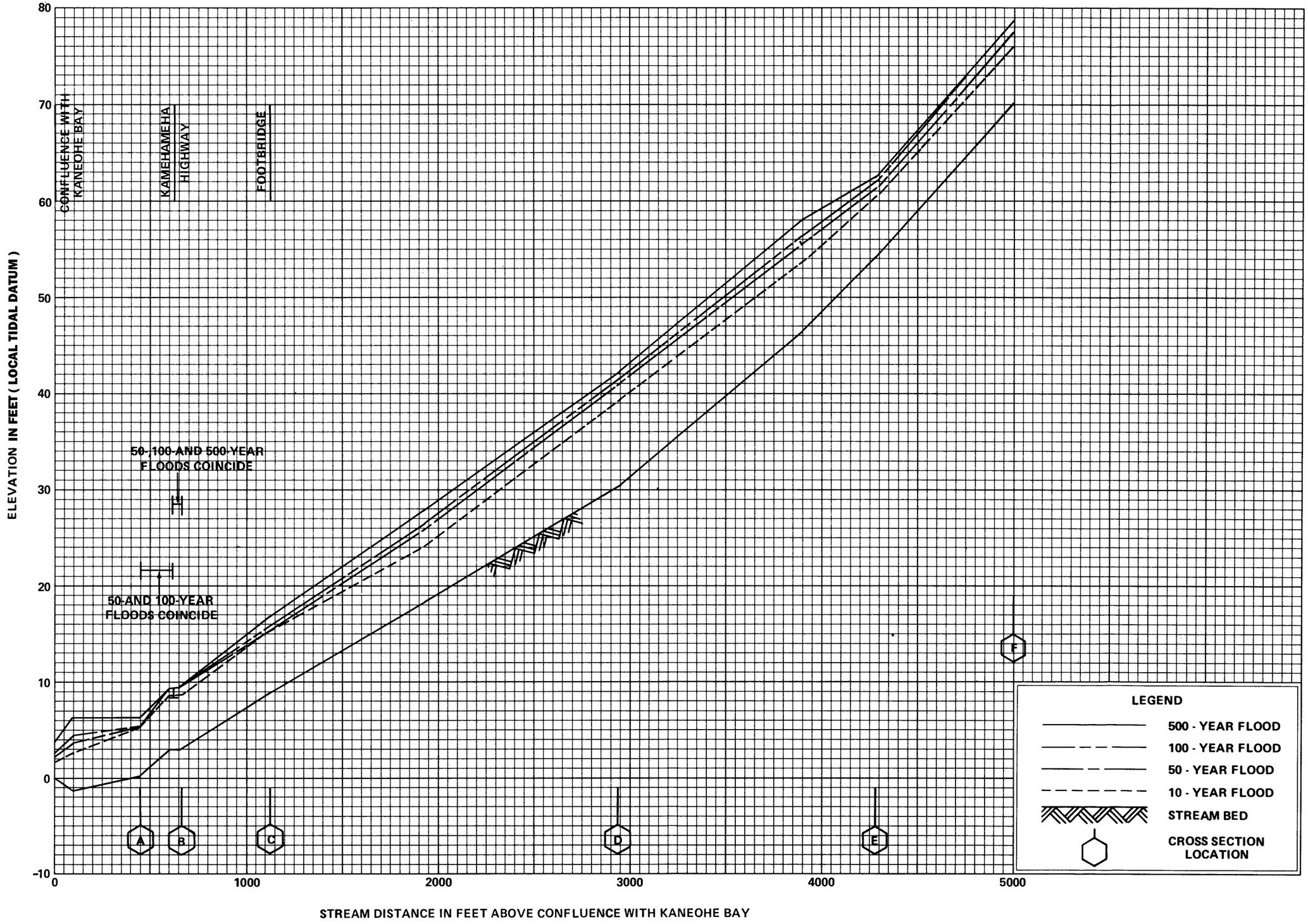
STREAM DISTANCE IN FEET ABOVE MOUTH

FLOOD PROFILES

KAAAWA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



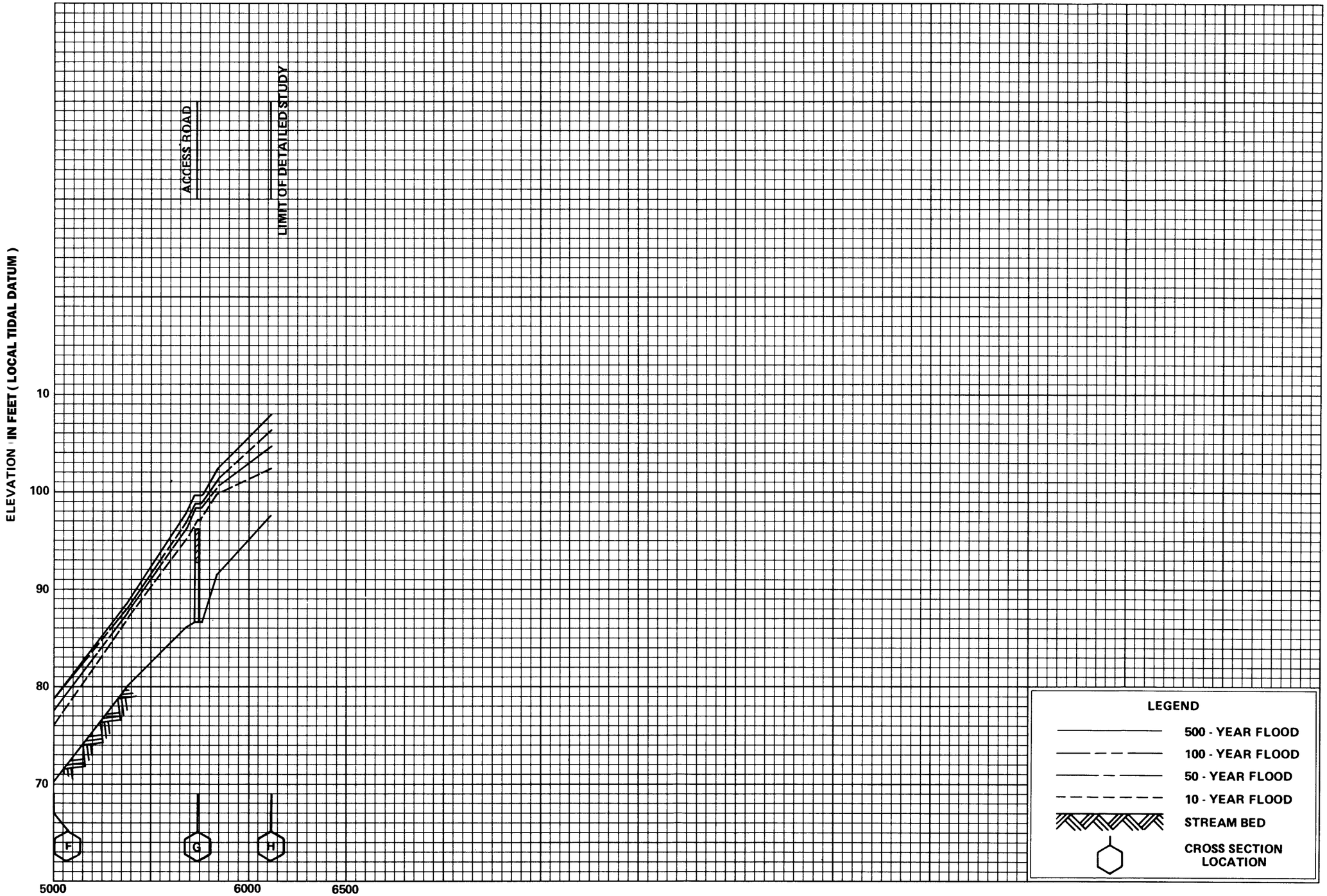
FLOOD PROFILES

KAALAEA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

22P

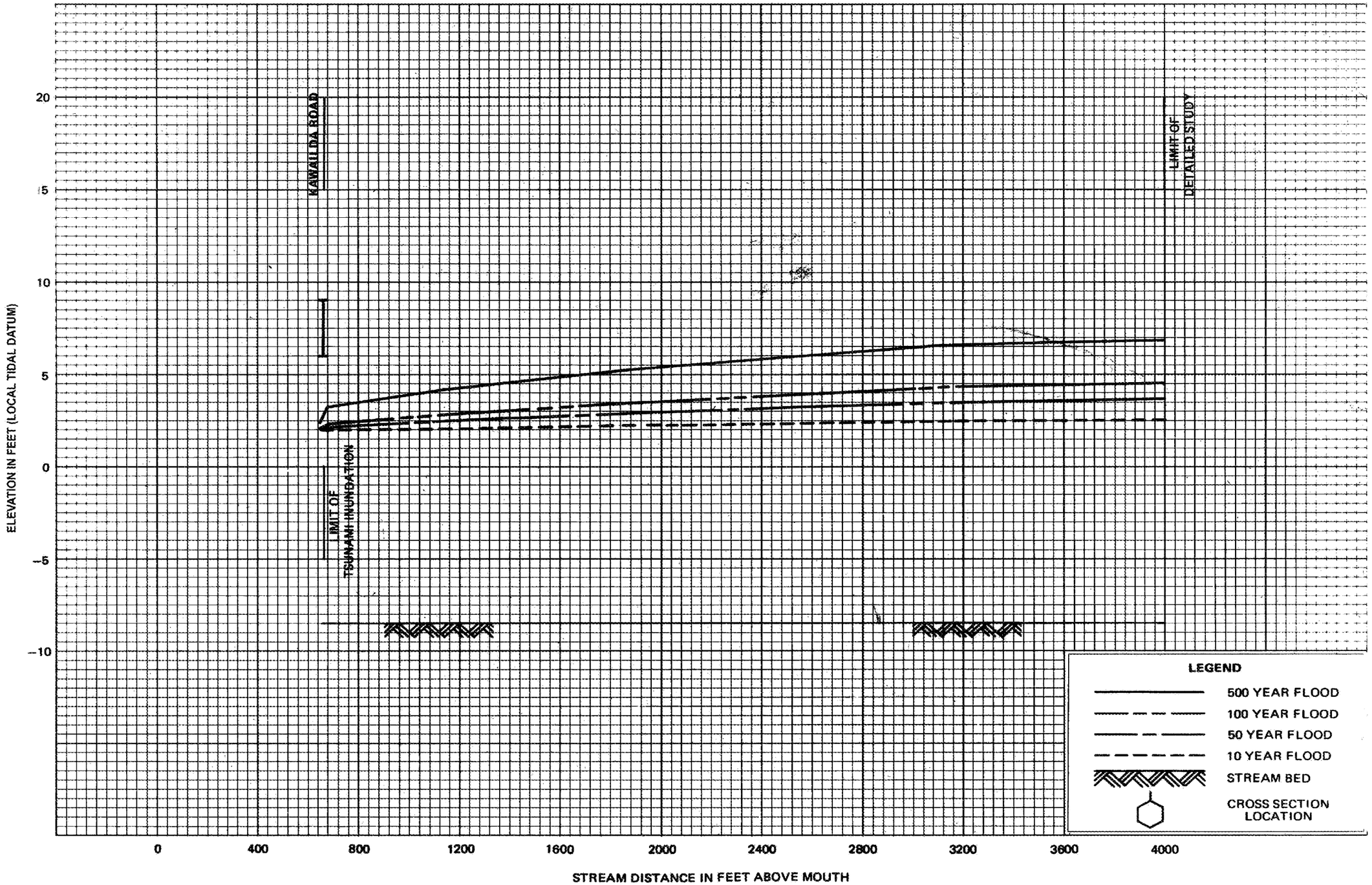


FLOOD PROFILES

KAALAEA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

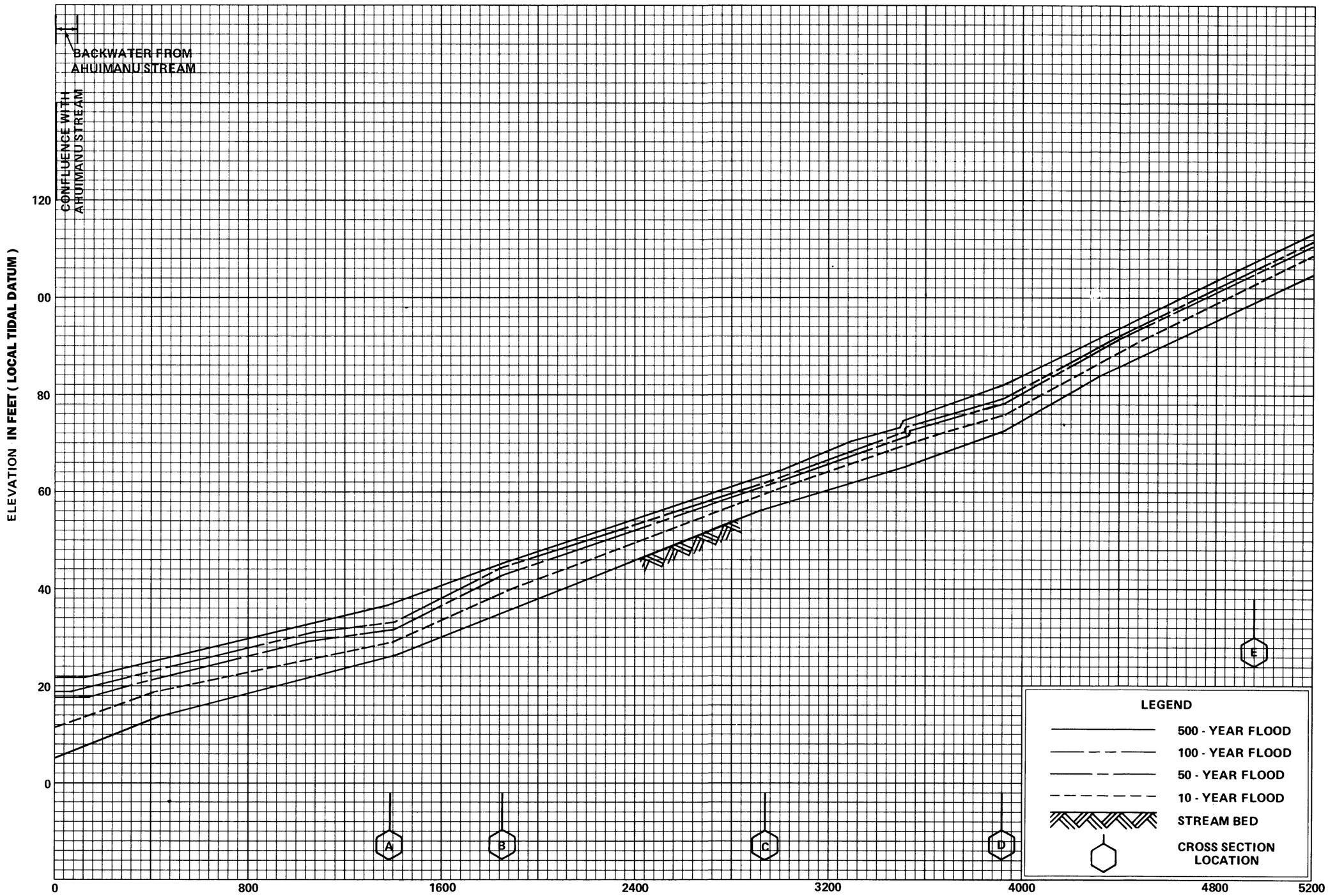


FLOOD PROFILES

KAELEPULU STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

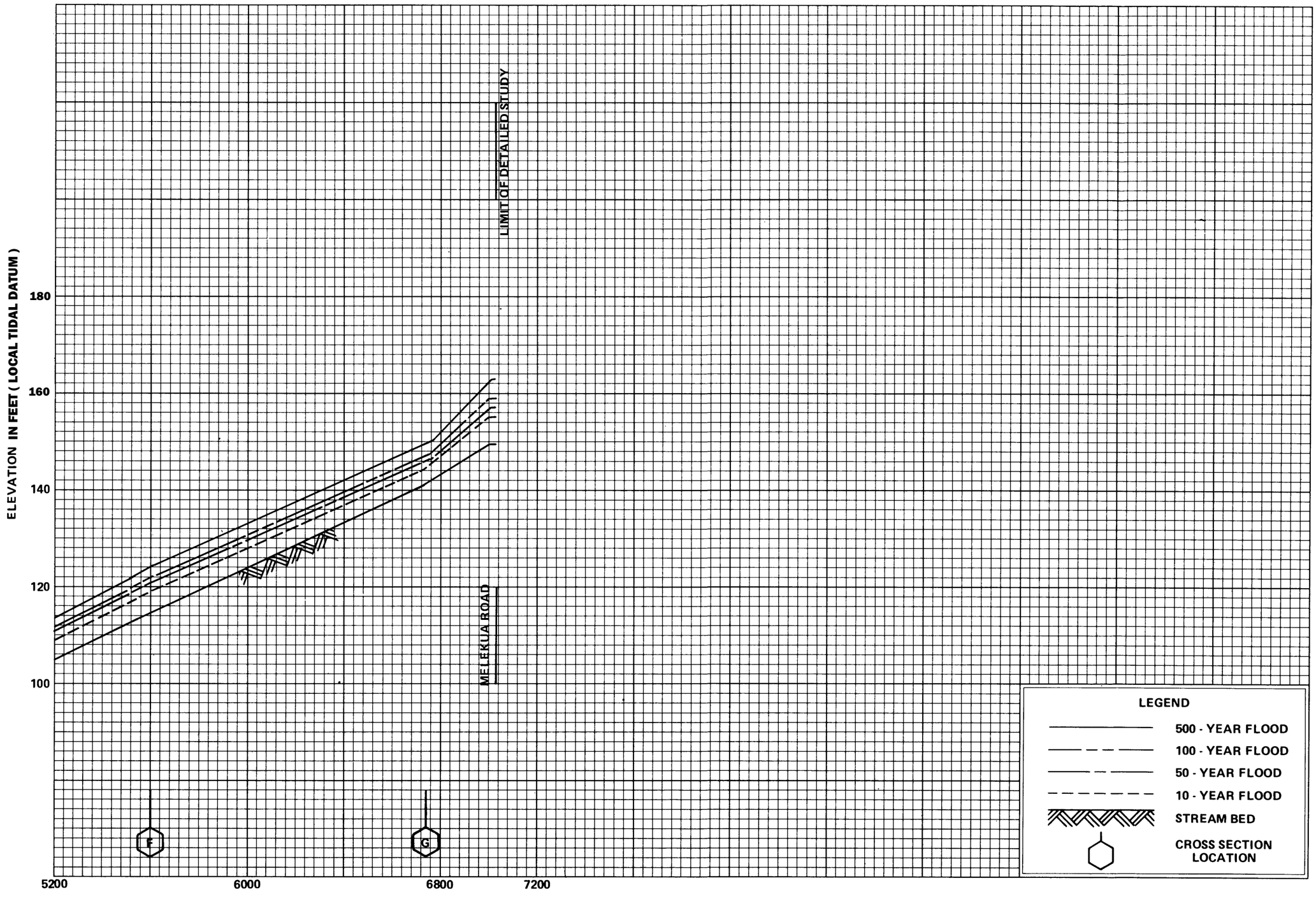


FLOOD PROFILES

KAHALUU STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

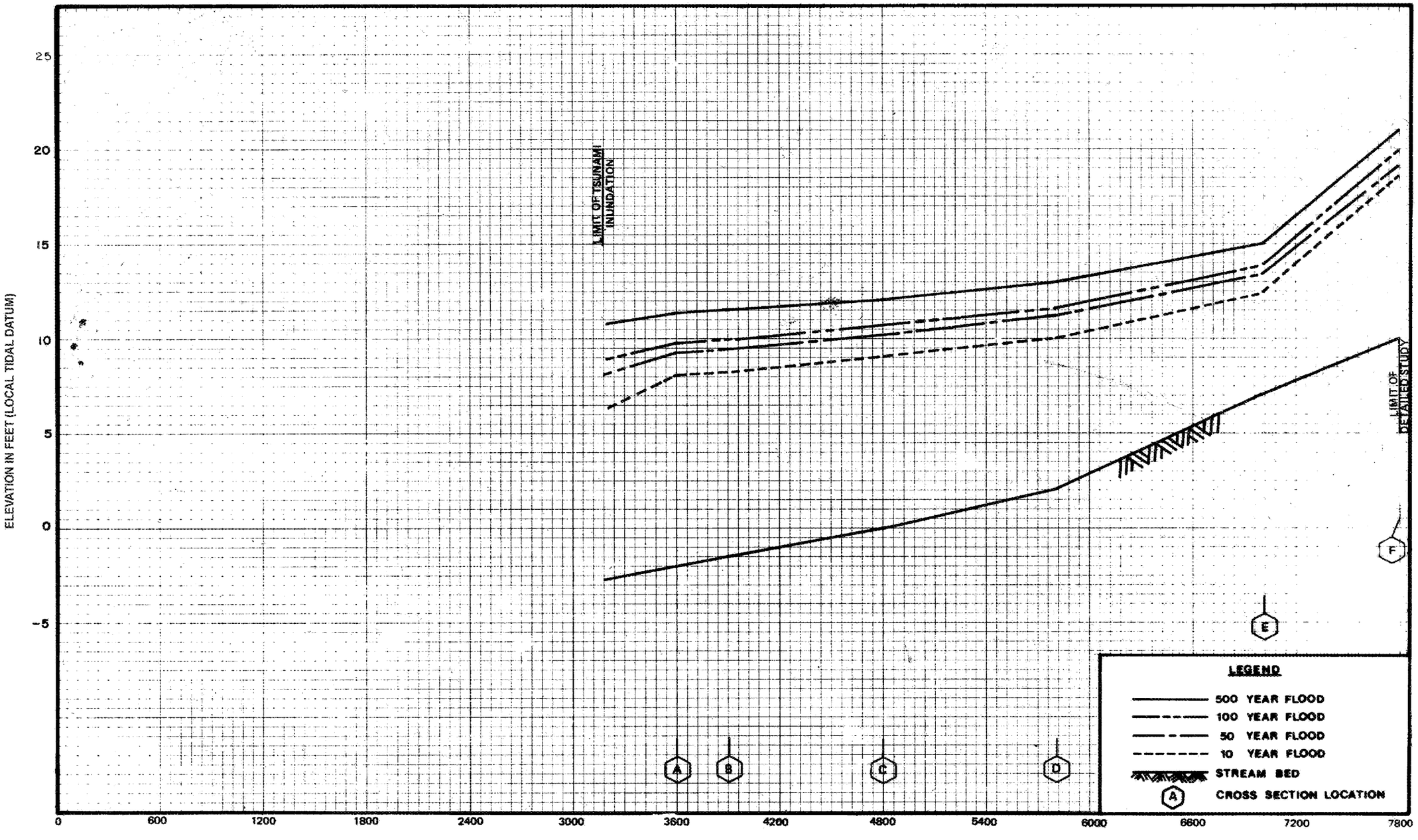


FLOOD PROFILES

KAHALUU STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



FLOOD PROFILES

KAHANA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

27P

1% ANNUAL CHANCE FLOOD ELEVATIONS CONTROLLED BY COASTAL INUNDATION

CONFLUENCE WITH MOANALUA STREAM (LOWER)

ABANDONED BRIDGE

GOVERNMENT ROAD

MOANALUA HIGHWAY

LIMIT OF DETAILED STUDY

ELEVATION IN FEET (LOCAL TIDE DATUM)

30
25
20
15
10
5
0
-5
-10
-15

0
500
1000
1500
2000
2500
3000
3500
4000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH MOANALUA STREAM (LOWER)

A
B
C
D

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

KAHAUIKI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

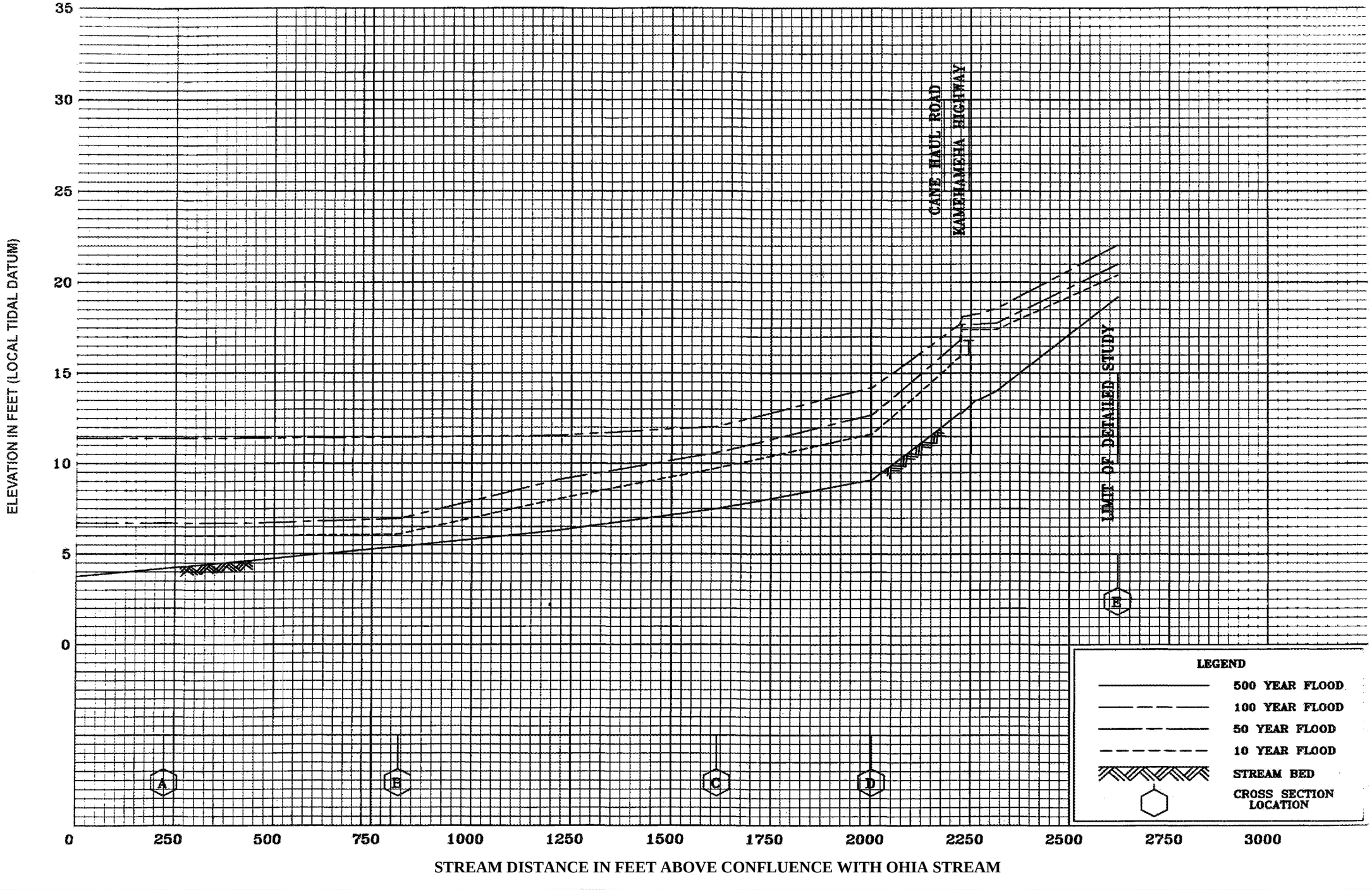
CITY AND COUNTY OF HONOLULU, HI

FLOOD PROFILES

KAIPAPAU STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



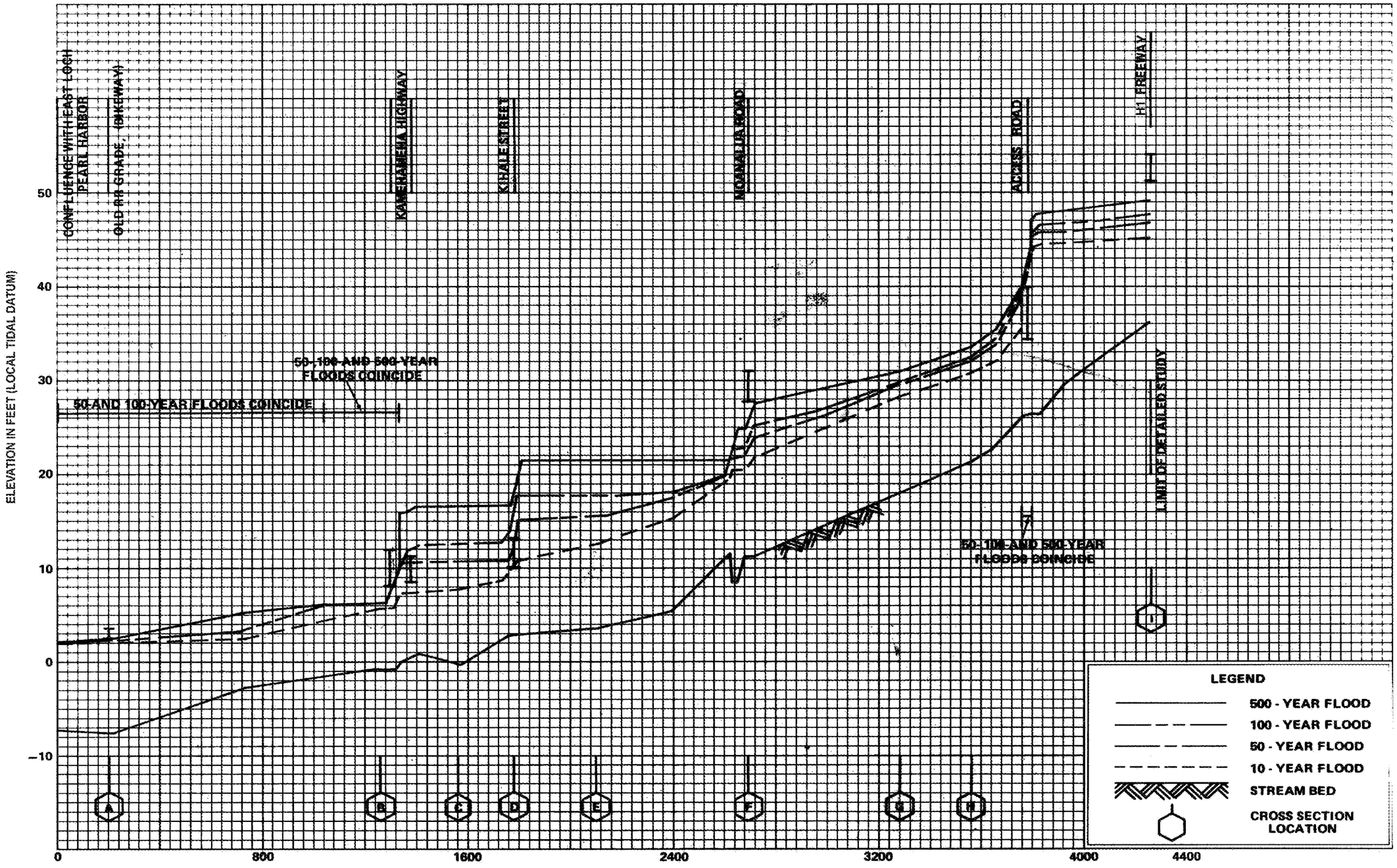
FLOOD PROFILES

KALAEOKAHIPA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU HI

30P



FLOOD PROFILES

KALAUAO STREAM (AIEA AREA)

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

Note: Cross Sections A - M are newly studied by 2D modeling and no profile was created

ELEVATION IN FEET (LOCAL TIDAL DATUM)

180
70
60
150
140
130
120

220
210
180
200
170
190
160
180
150
170
140
160
130
120

CONFLUENCE WITH KAMANAIKI STREAM

220
210
200
190
180
170
160

N

O

LEGEND

500 - YEAR FLOOD
100 - YEAR FLOOD
50 - YEAR FLOOD
10 - YEAR FLOOD
STREAM BED
CROSS SECTION LOCATION

11.00 11.25 11.50 11.75 12.00 12.25 12.50 12.50 12.75 13.00 13.25 13.50 13.75 14.00

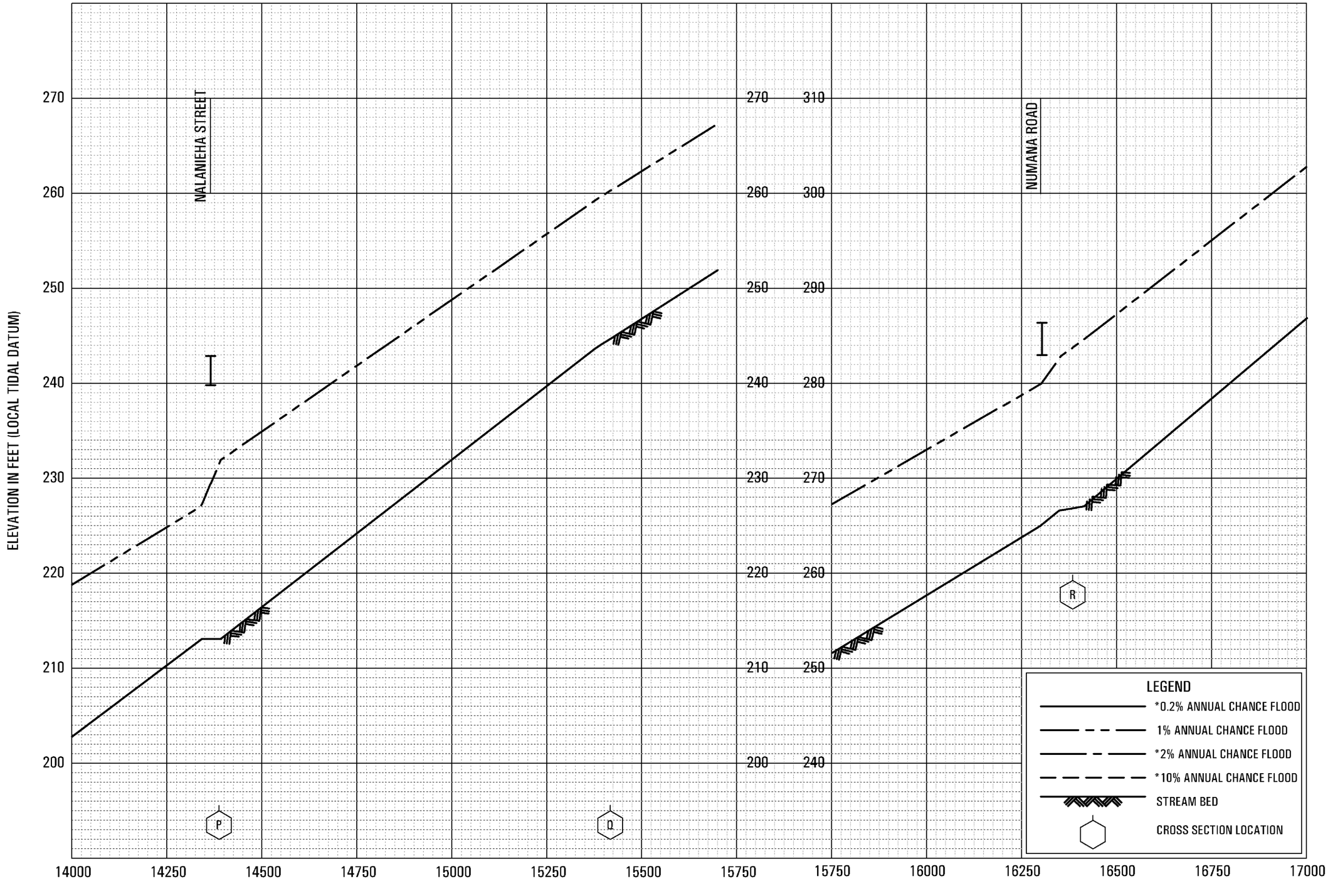
STREAM DISTANCE IN THOUSANDS OF FEET ABOVE CONFLUENCE WITH KEEHI LAGOON

FLOOD PROFILES

KALIHI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU,HI



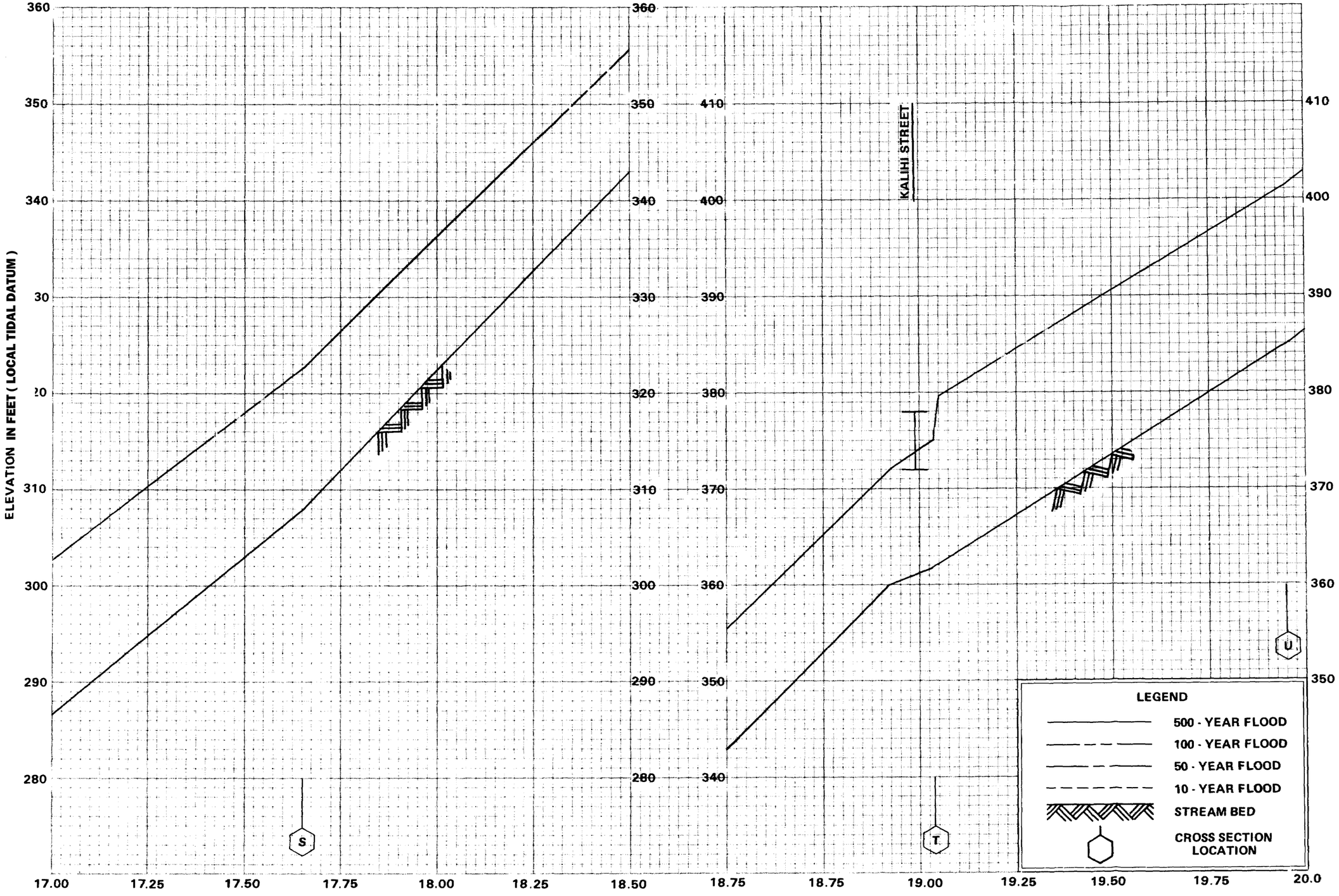
FLOOD PROFILES

KALIHI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

33P

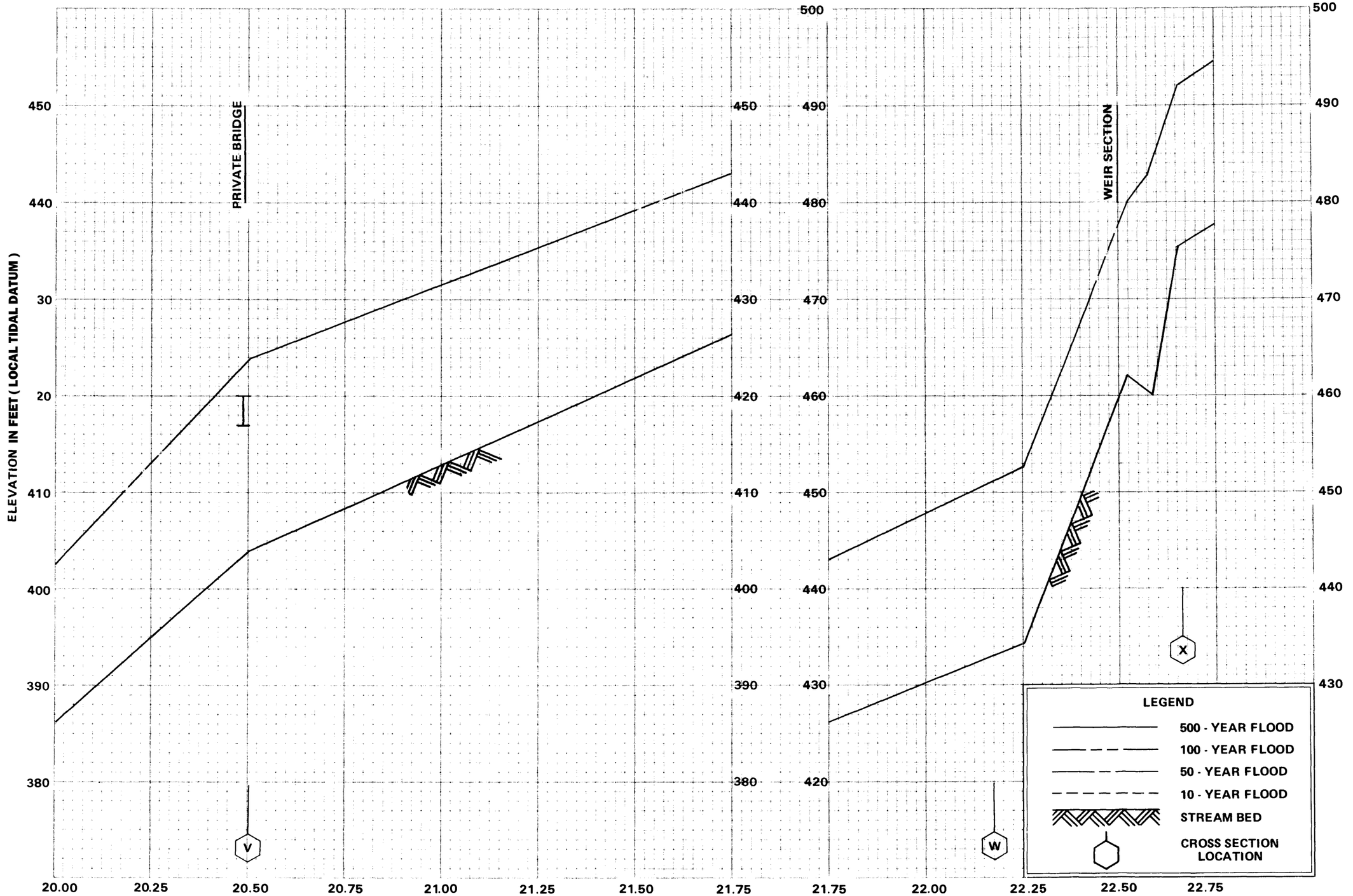


FLOOD PROFILES

KALIHI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



FLOOD PROFILES

KALIHI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

35P

FLOOD PROFILES

KALIHI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

ELEVATION IN FEET (LOCAL TIDAL DATUM)

LIMIT OF DETAILED STUDY
C.R & L. RAILROAD
KAPOLEI PARKWAY
RENTON ROAD
BASIN NO. 4 OUTLET
BASIN NO. 3 OUTLET
BASIN NO. 2 OUTLET
BASIN NO. 1 OUTLET
MANGO TREE ROAD
LIMIT OF DETAILED STUDY

90
80
70
60
50
40
30
20
10
0

2100 2600 3100 3600 4100 4600 5100 5600 6100 6600 7100 7600 8100 8600

A B C D E F G H

LEGEND
*0.2% ANNUAL CHANCE FLOOD
1% ANNUAL CHANCE FLOOD
*2% ANNUAL CHANCE FLOOD
*10% ANNUAL CHANCE FLOOD
STREAM BED
CROSS SECTION LOCATION

STREAM DISTANCE IN FEET ABOVE GEIGER ROAD

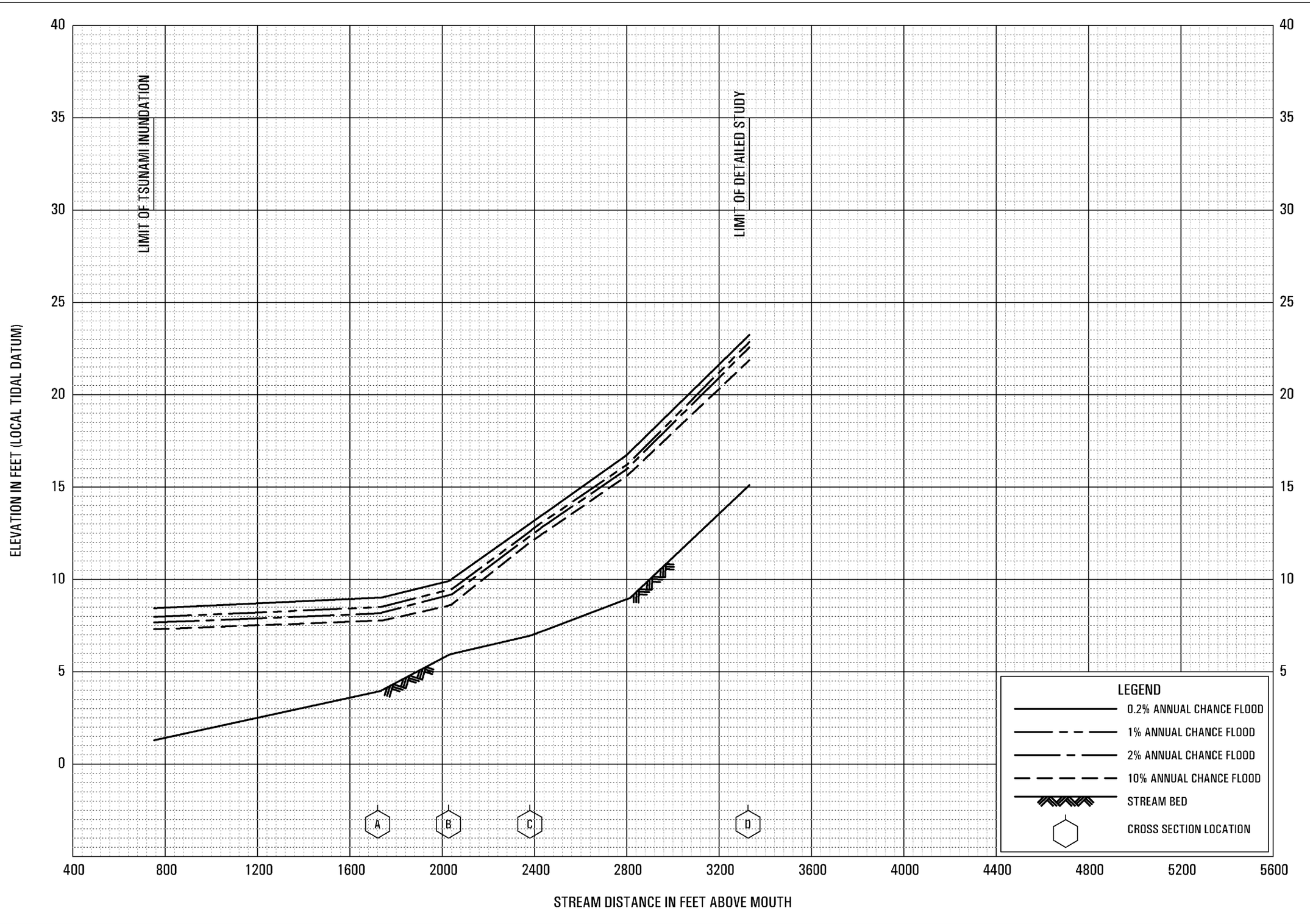
* DATA NOT AVAILABLE

FLOOD PROFILES

KALOI GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONLULU, HI

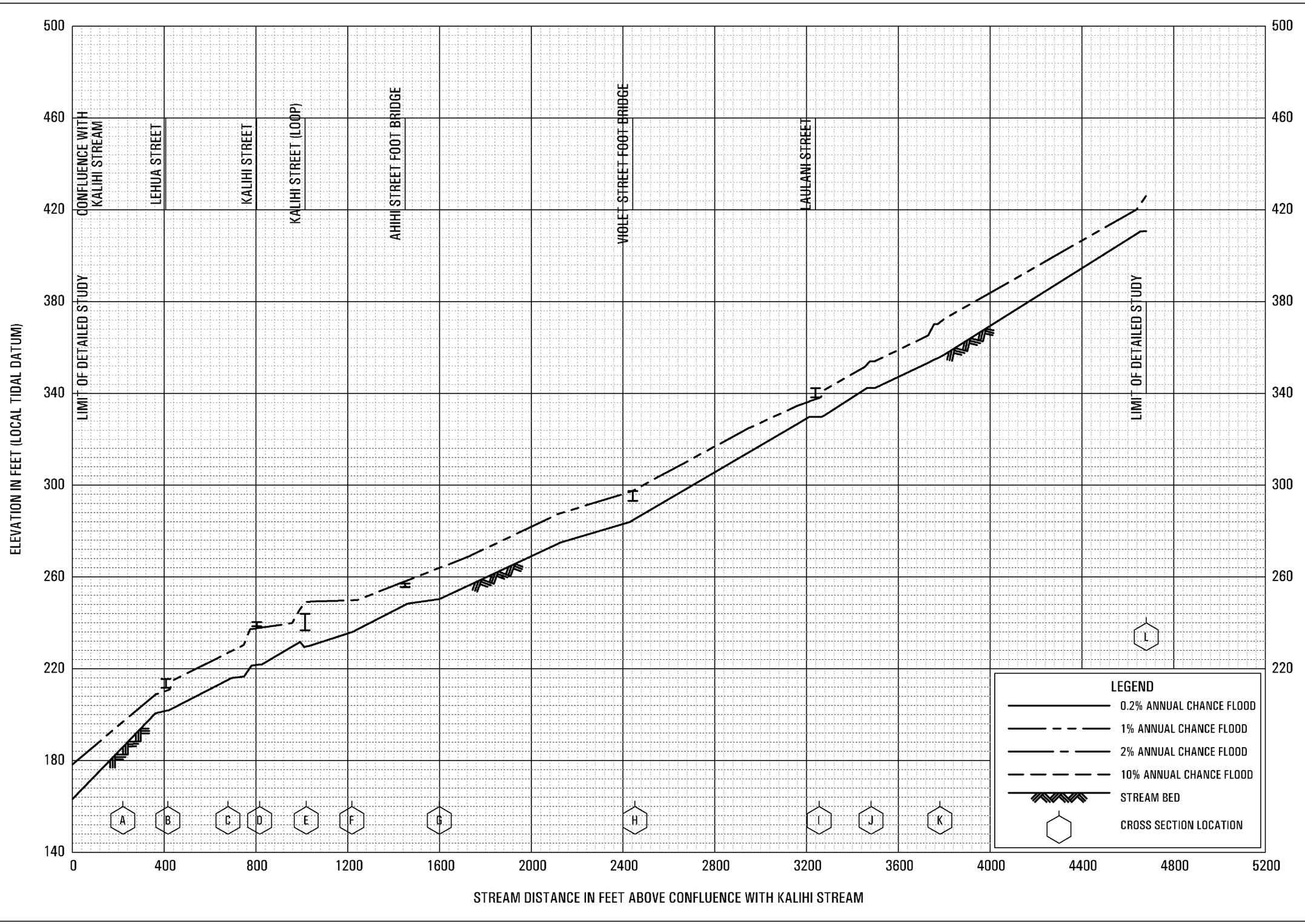
37P



FLOOD PROFILES

KALUANUI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI

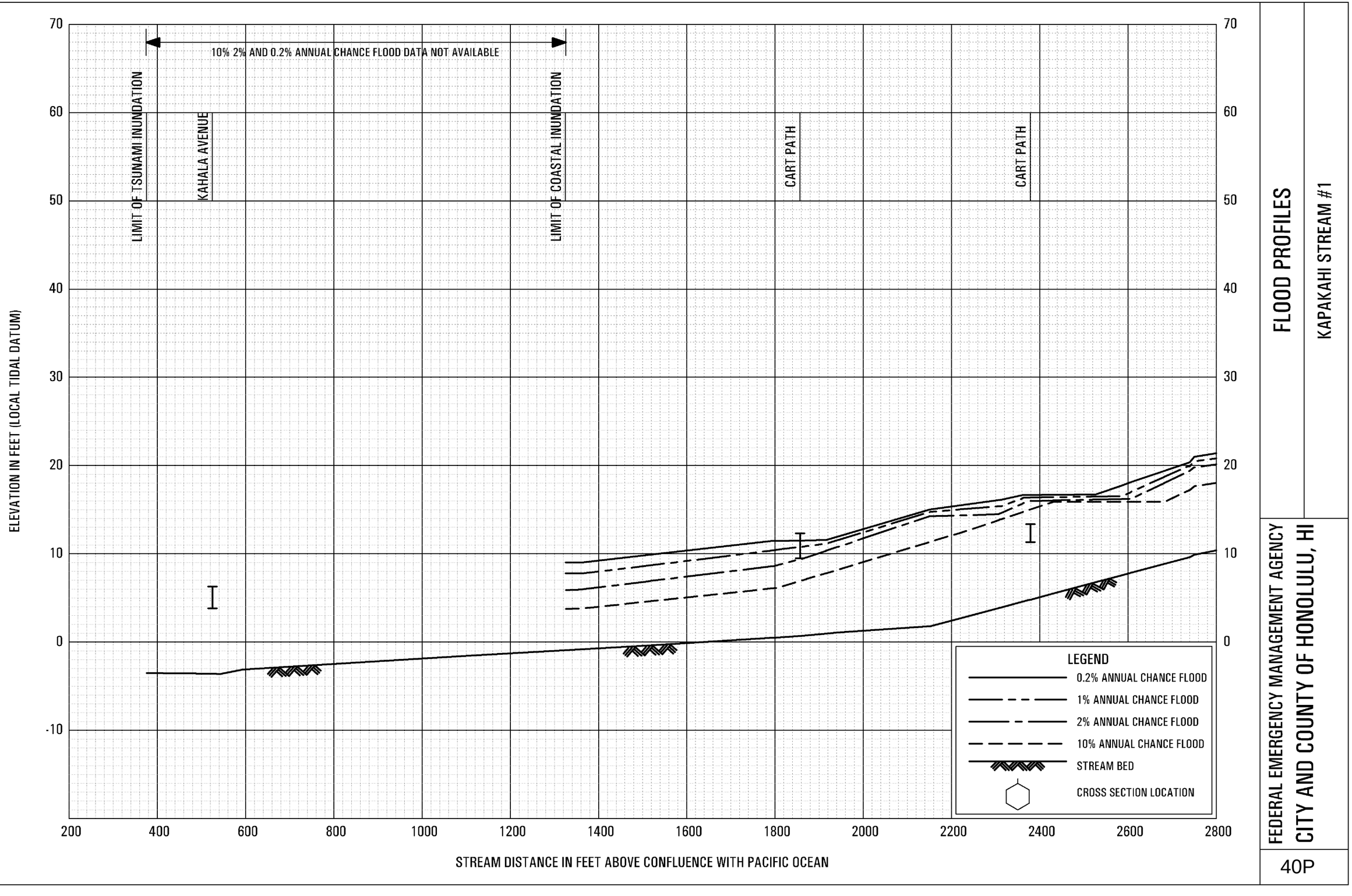


FLOOD PROFILES

KAMANAIKI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI

39P

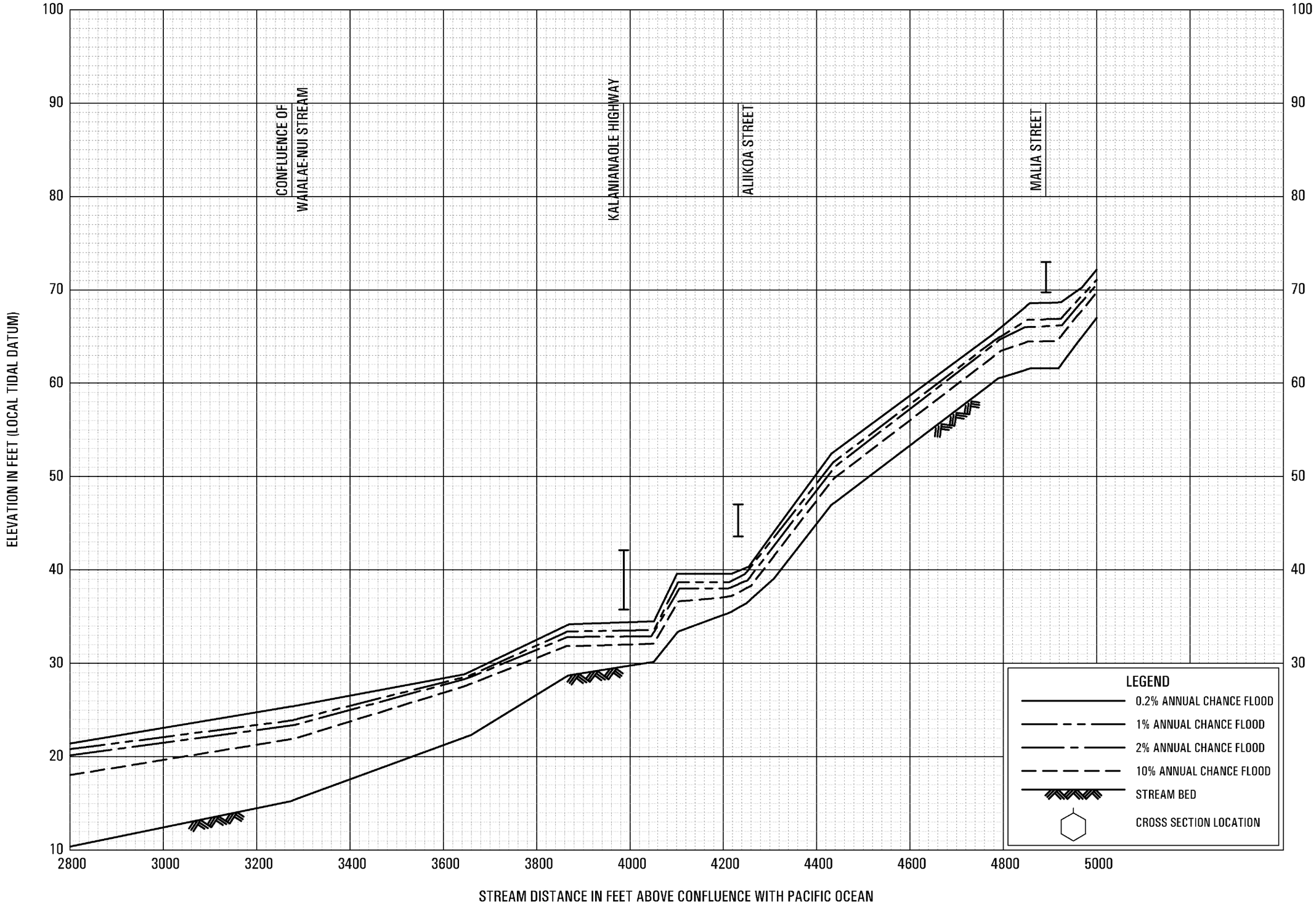


FLOOD PROFILES

KAPAKAHI STREAM #1

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI

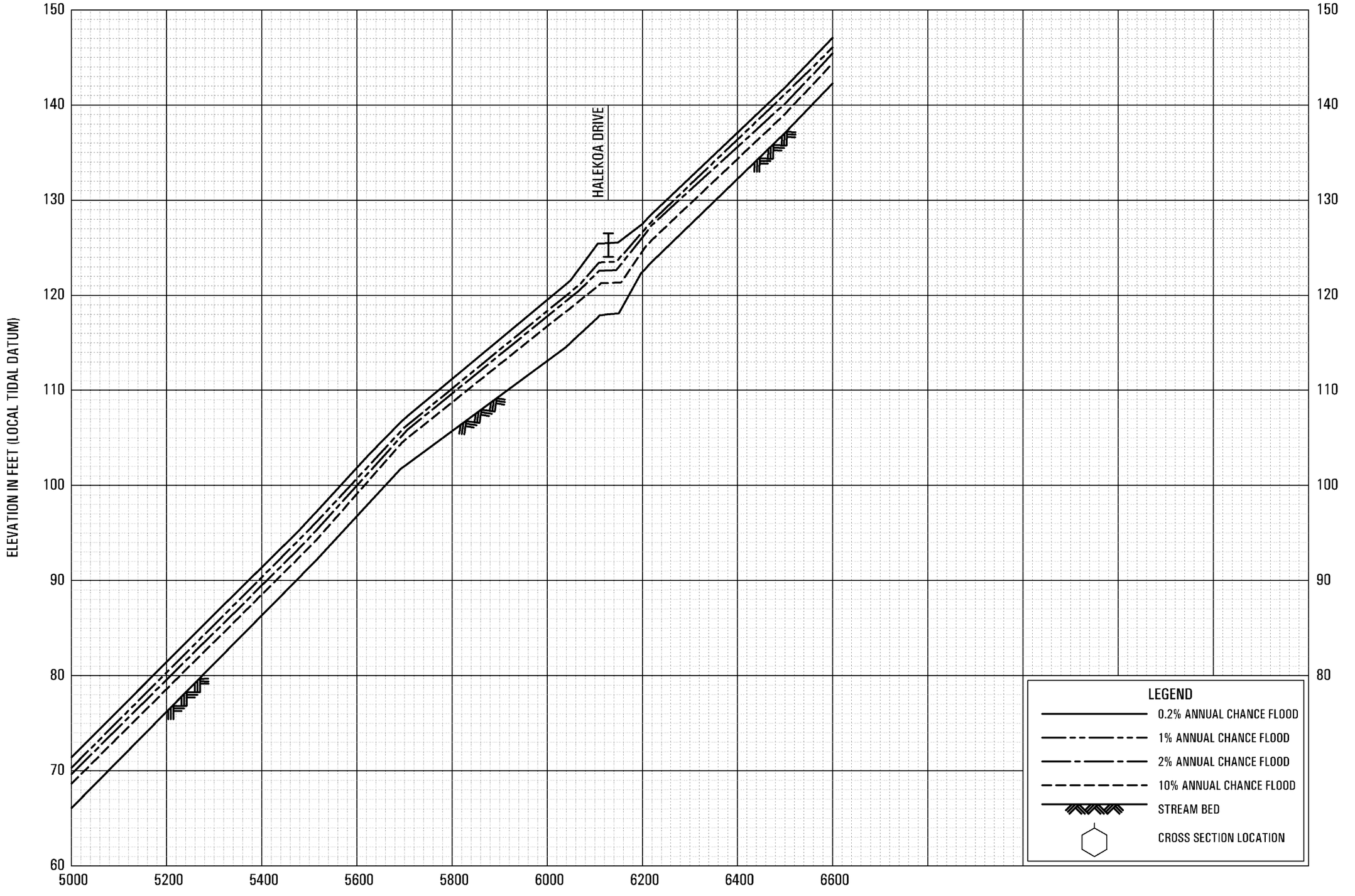
40P



FLOOD PROFILES

KAPAKAHI STREAM #1

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI

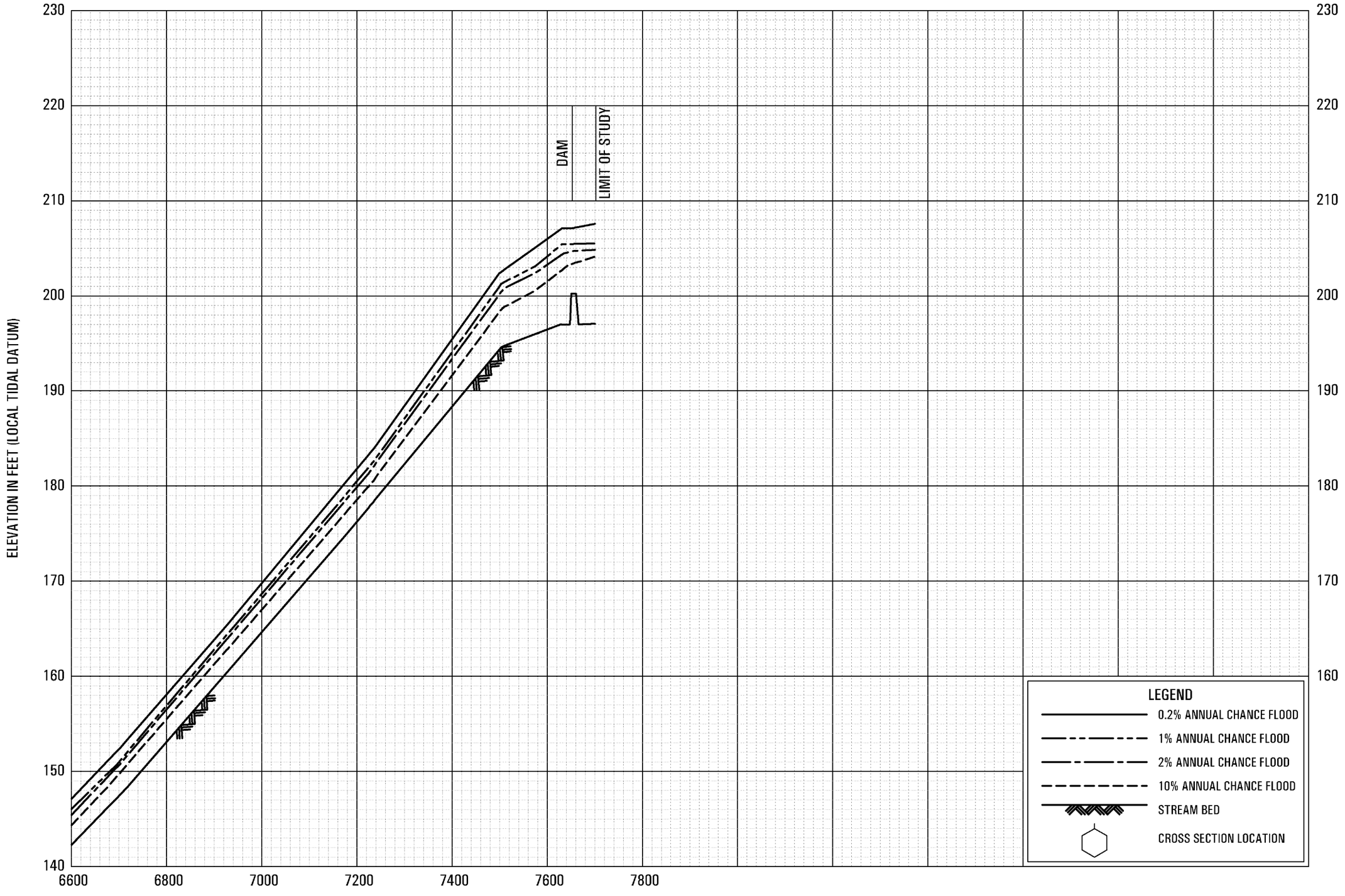


FLOOD PROFILES

KAPAKAHI STREAM #1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

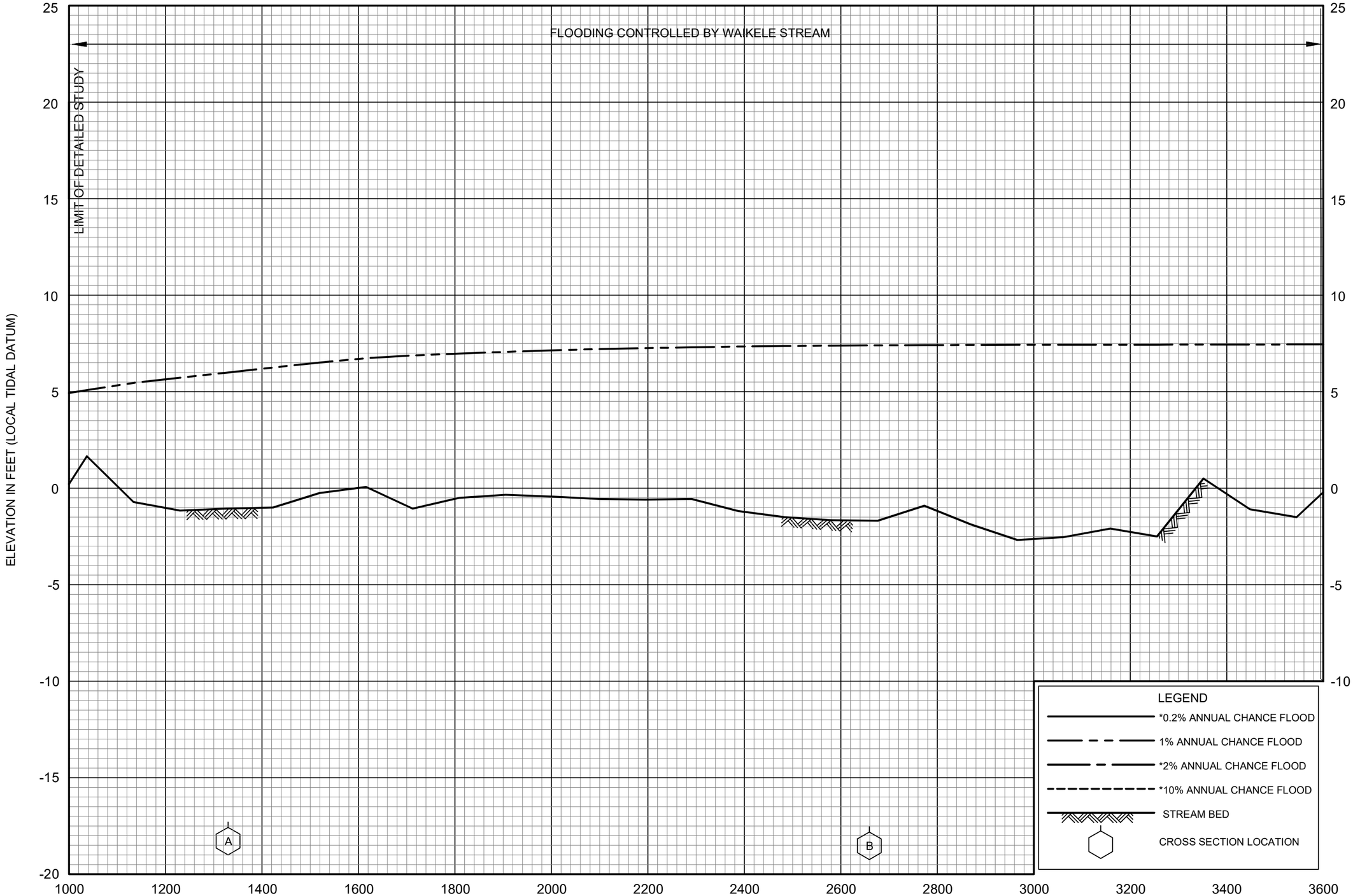


FLOOD PROFILES

KAPAKAHI STREAM #1

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

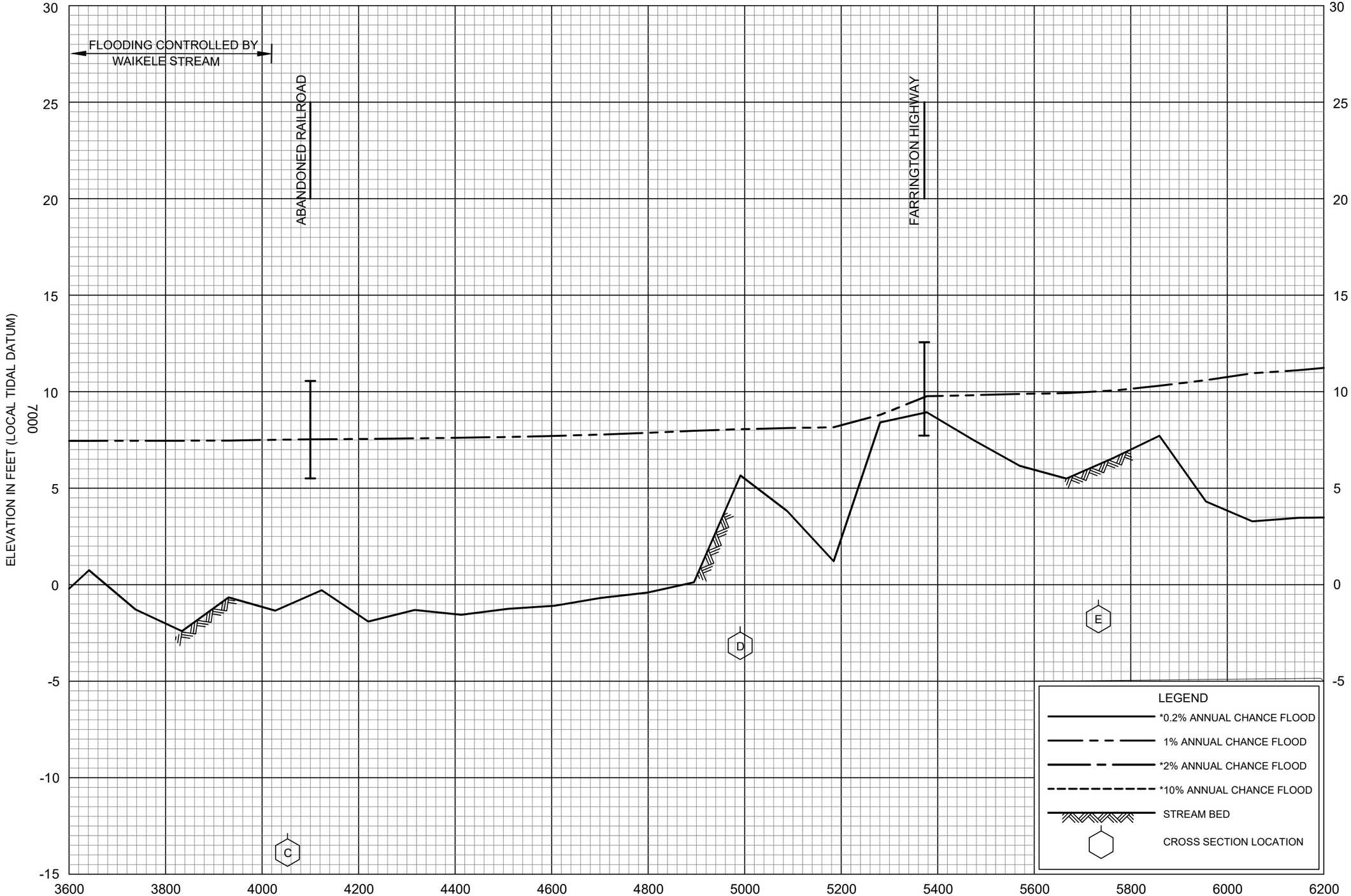


FLOOD PROFILES

KAPAKAHI STREAM #2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



FLOOD PROFILES

KAPAKAHI STREAM #2

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

ELEVATION IN FEET (LOCAL TIDAL DATUM)

40
35
30
25
20
15
10
5
0
-5

LIMIT OF DETAILED STUDY

F

G

6200
6400
6600
6800
7000
7200
7400
7600
7800
8000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH WEST LOCH, PEARL HARBOR

LEGEND

- *0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- *2% ANNUAL CHANCE FLOOD
- *10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

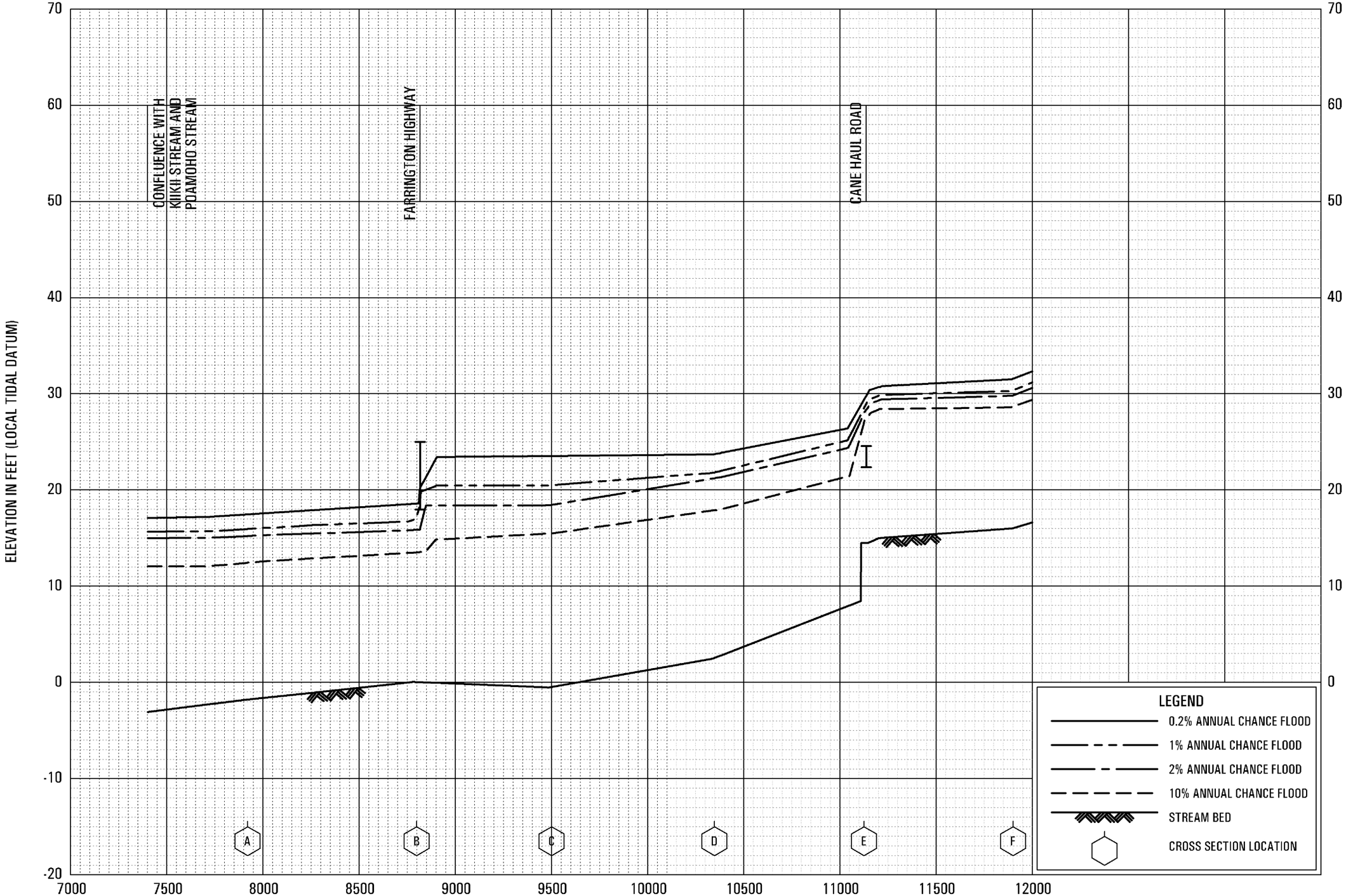
*NO DATA AVAILABLE

FLOOD PROFILES

KAPAKAHI STREAM #2

FEDERAL EMERGENCY MANAGEMENT AGENCY

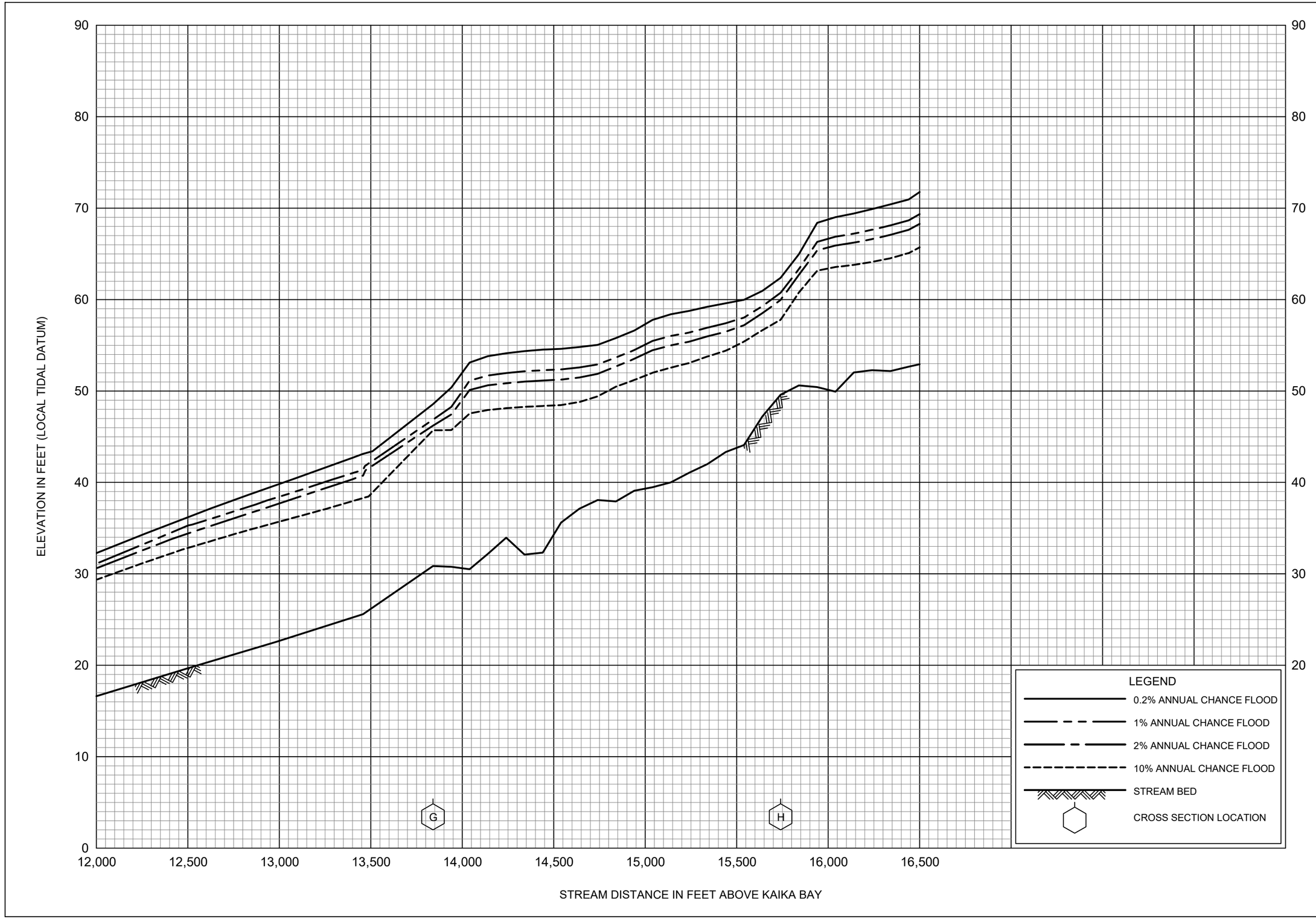
CITY AND COUNTY OF HONOLULU, HI



FLOOD PROFILES

KAUKONAHUA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY
CITY AND COUNTY OF HONOLULU, HI



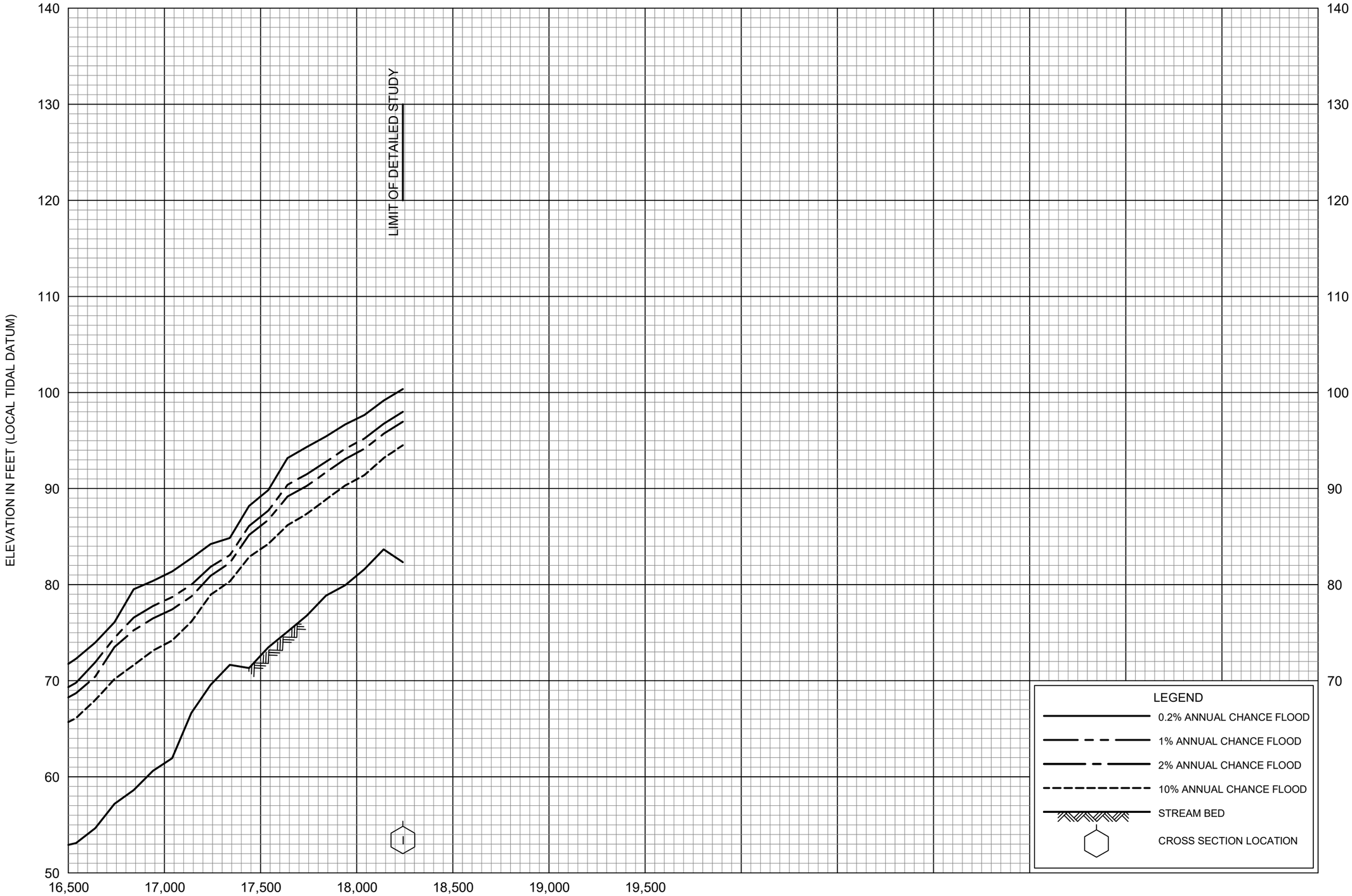
FLOOD PROFILES

KAUKONAHUA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

48P

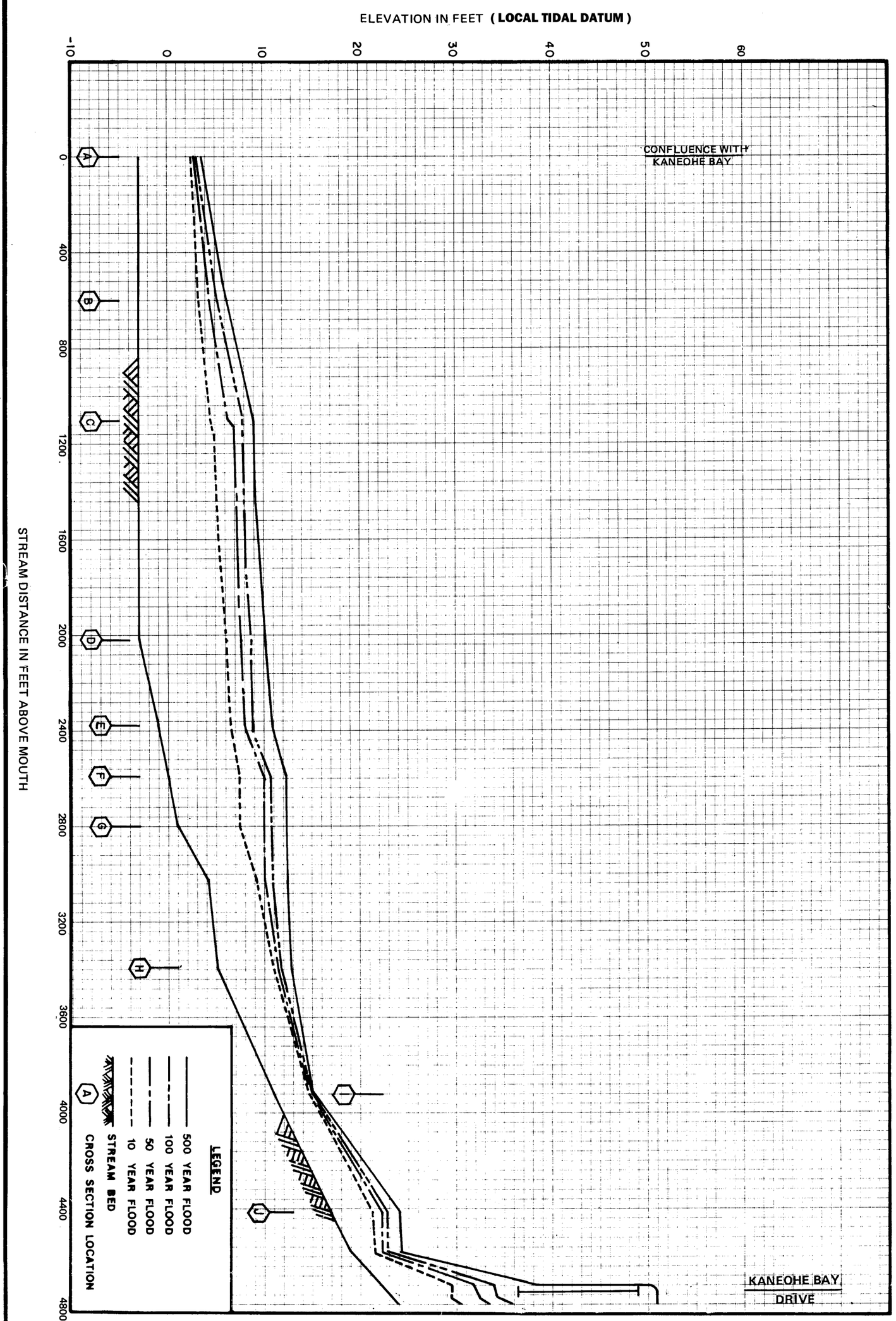


FLOOD PROFILES

KAUKONAHUA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



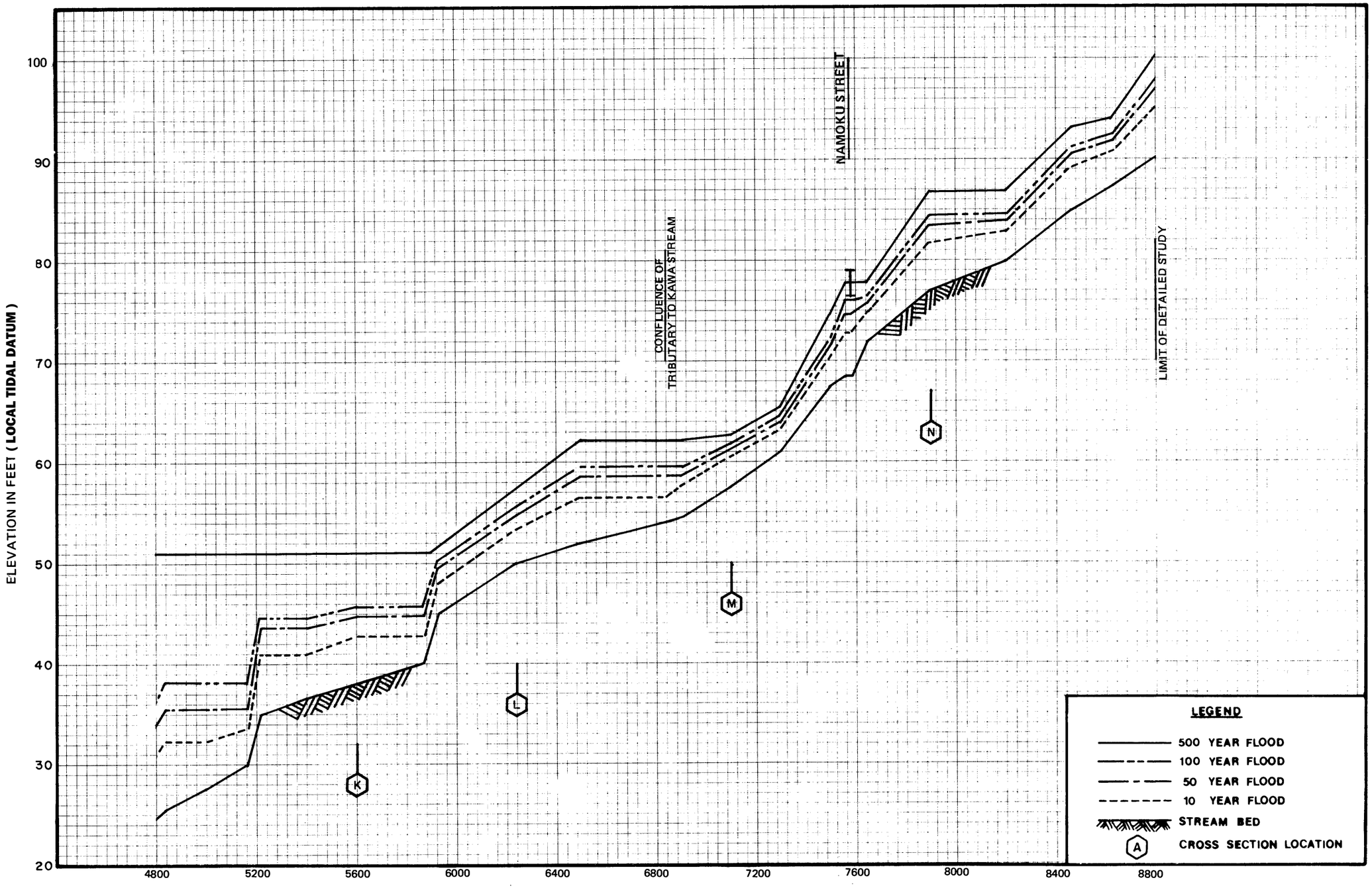
50P

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

FLOOD PROFILES

KAWA STREAM



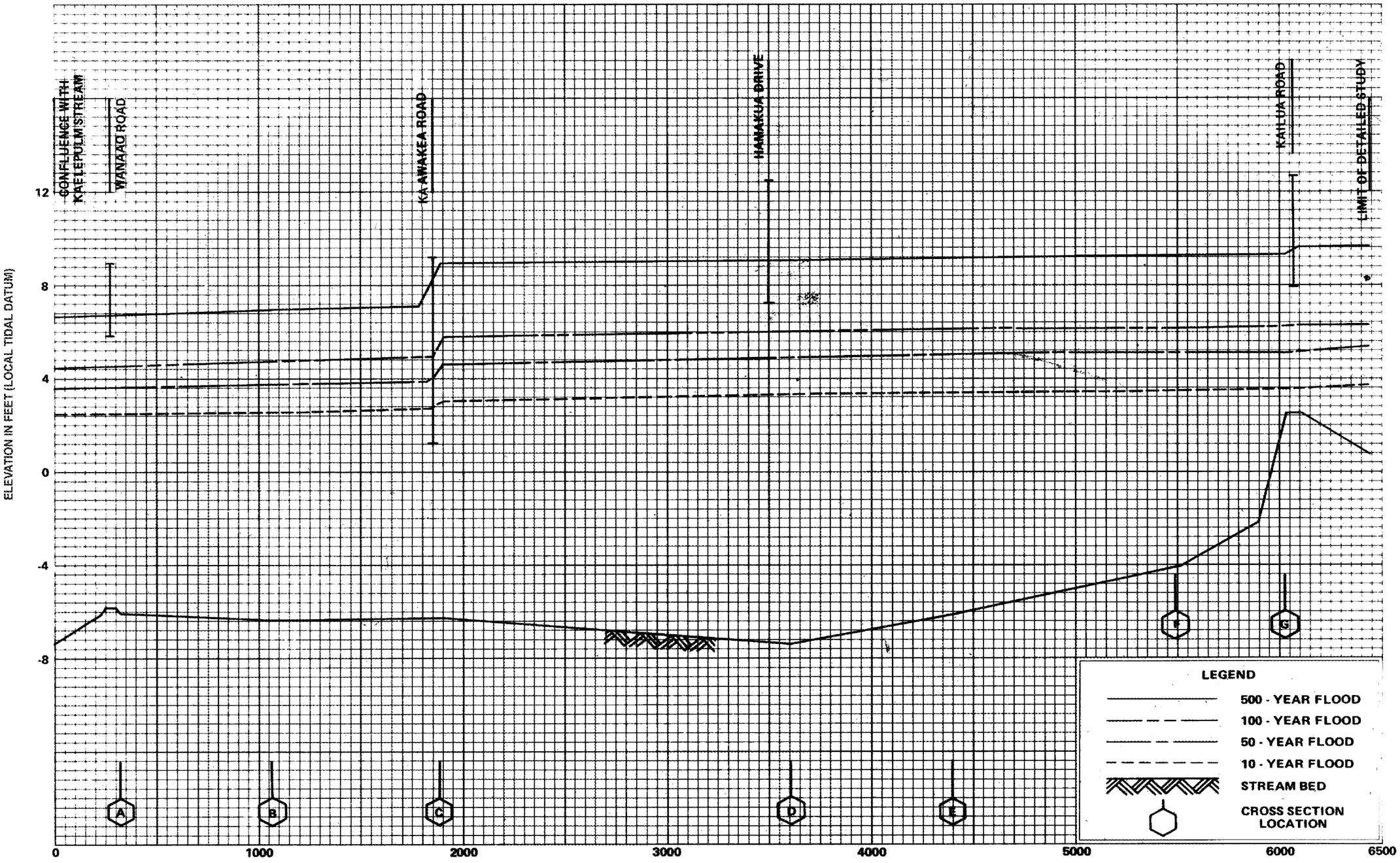
FLOOD PROFILES

KAWA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

51P

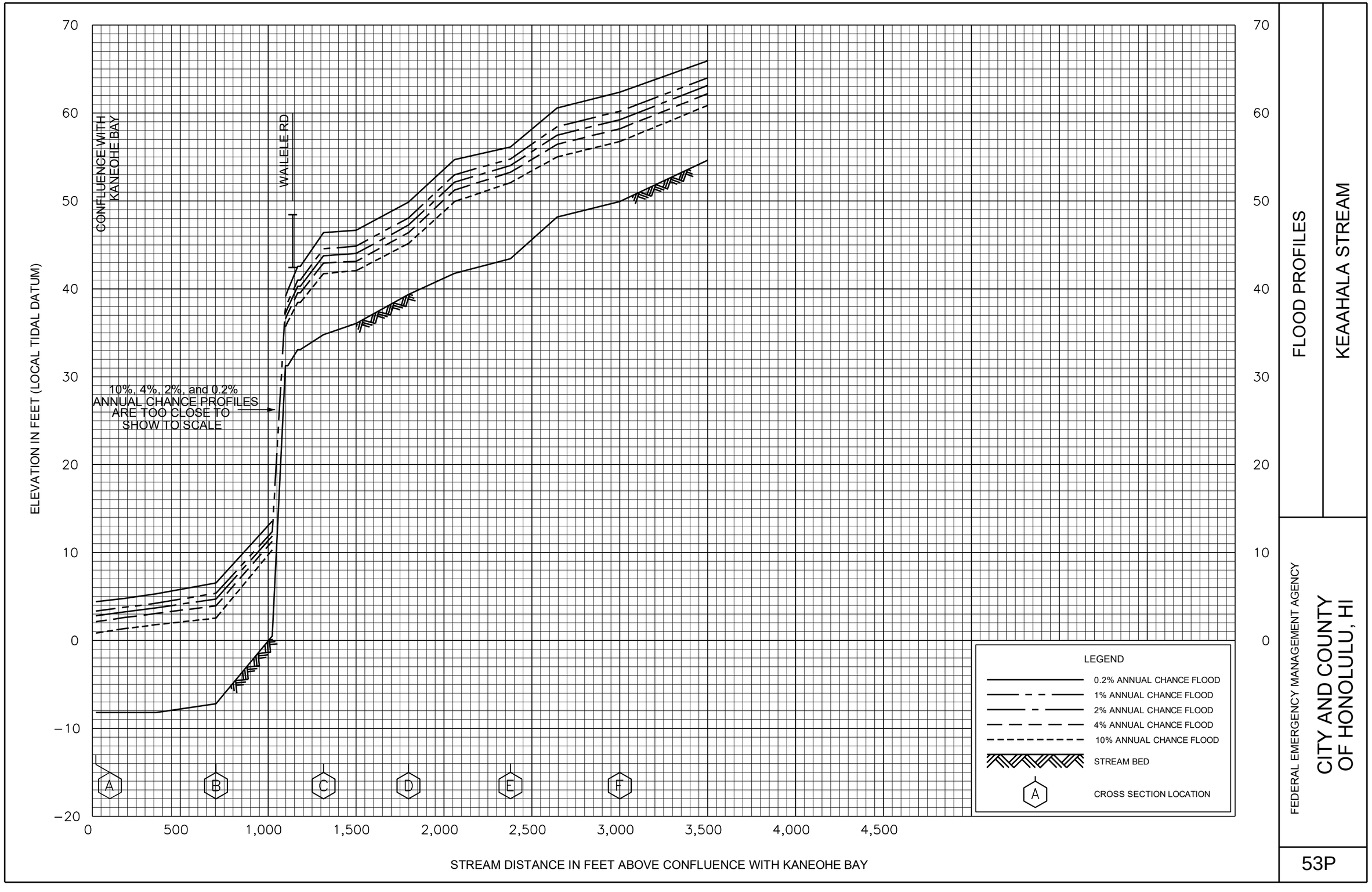


FLOOD PROFILES

KAWAINUI STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI



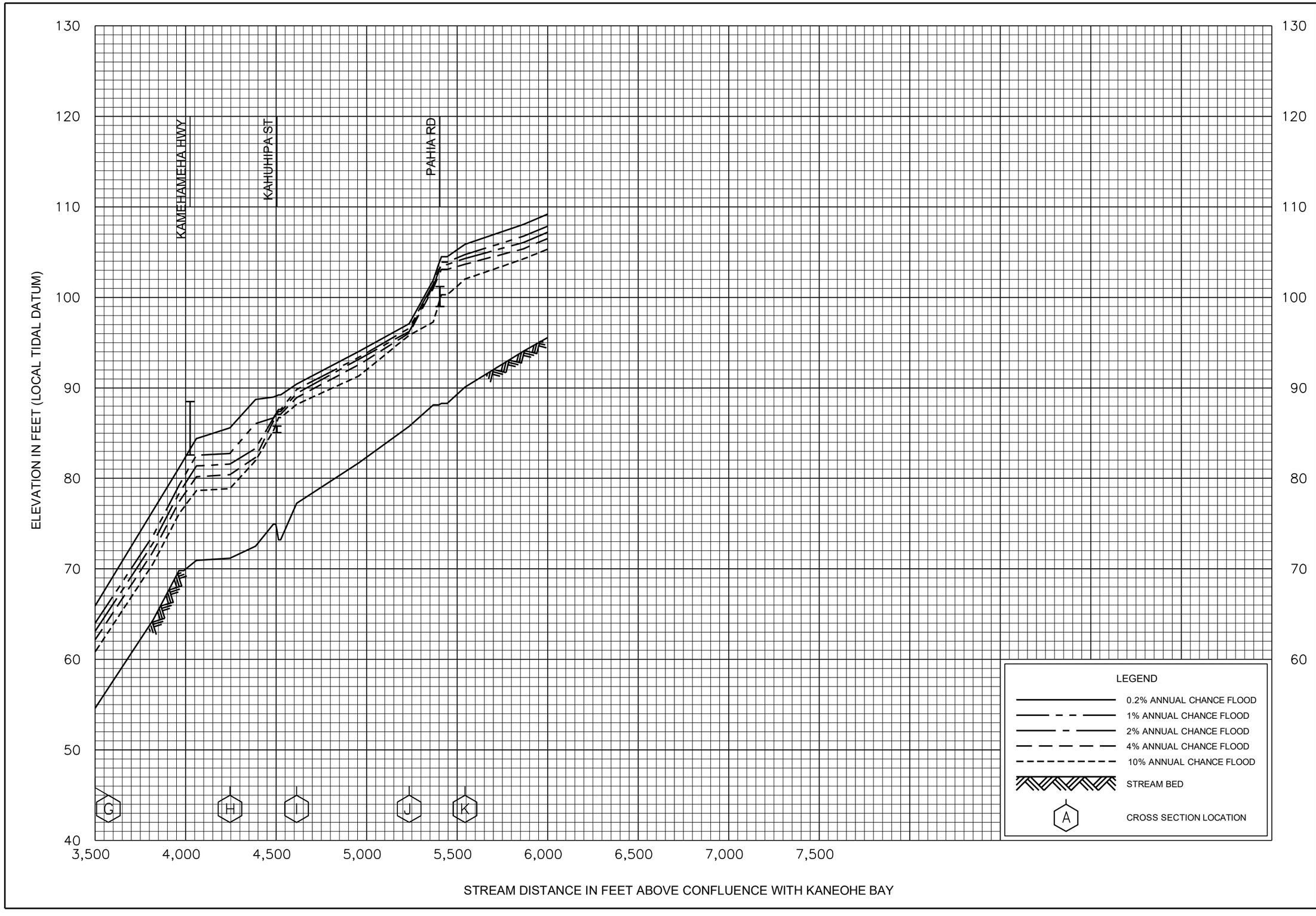
FLOOD PROFILES

KEAAHALA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

53P



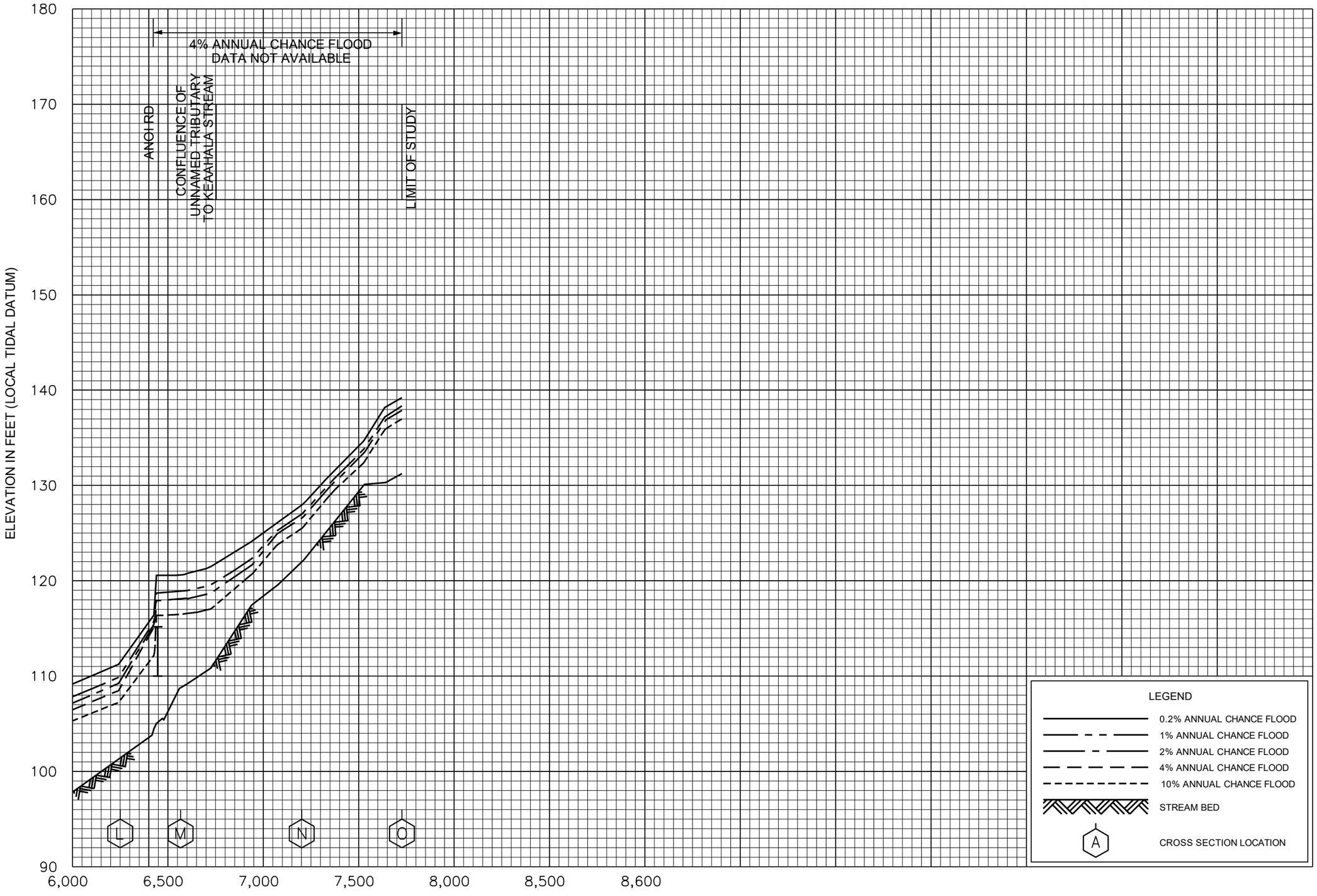
FLOOD PROFILES

KEAAHALA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY
OF HONOLULU, HI

54P



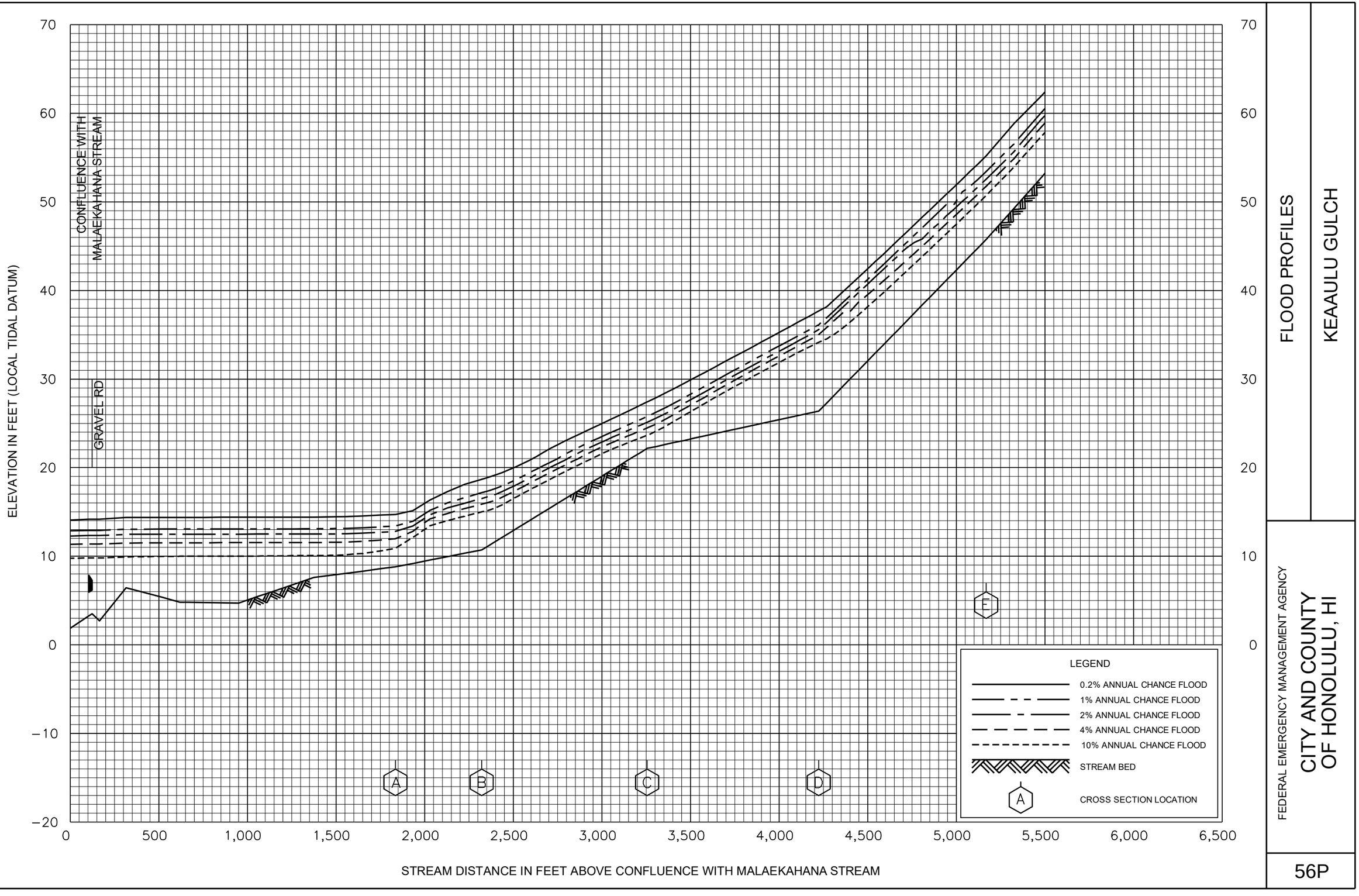
FLOOD PROFILES

KEAAHALA STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY
OF HONOLULU, HI

55P



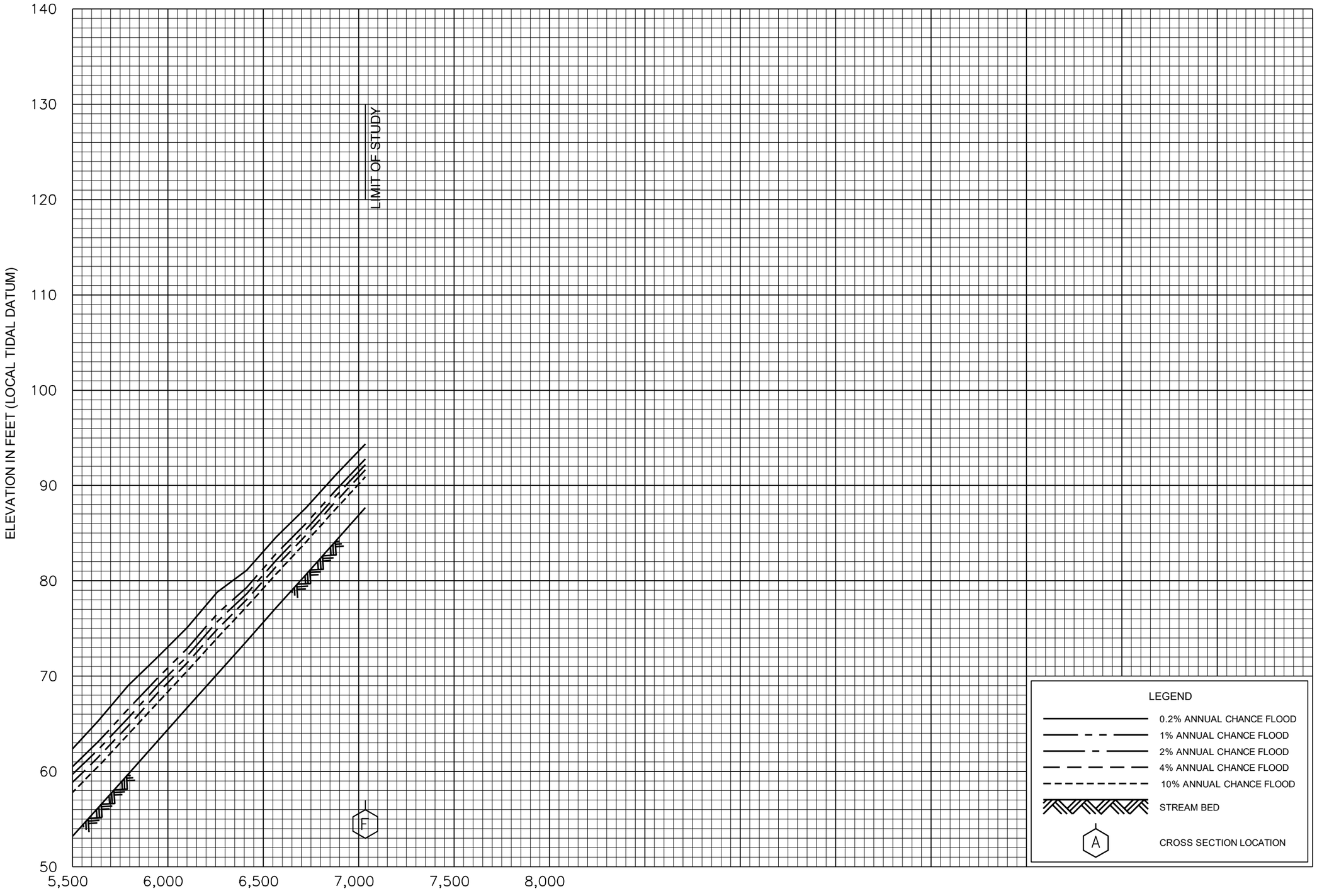
FLOOD PROFILES

KEAAULU GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

56P



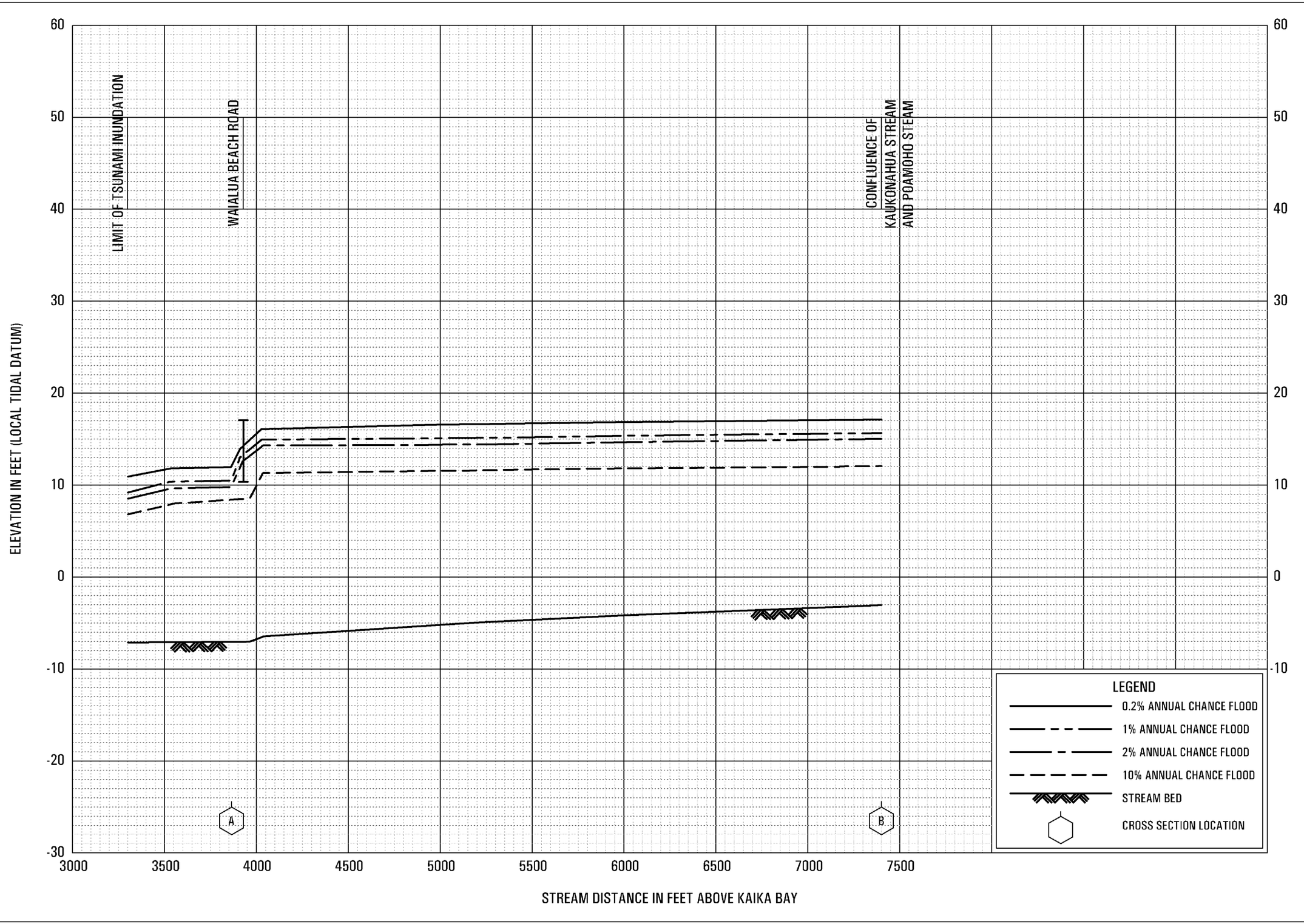
FLOOD PROFILES

KEAAULU GULCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY
OF HONOLULU, HI

57P



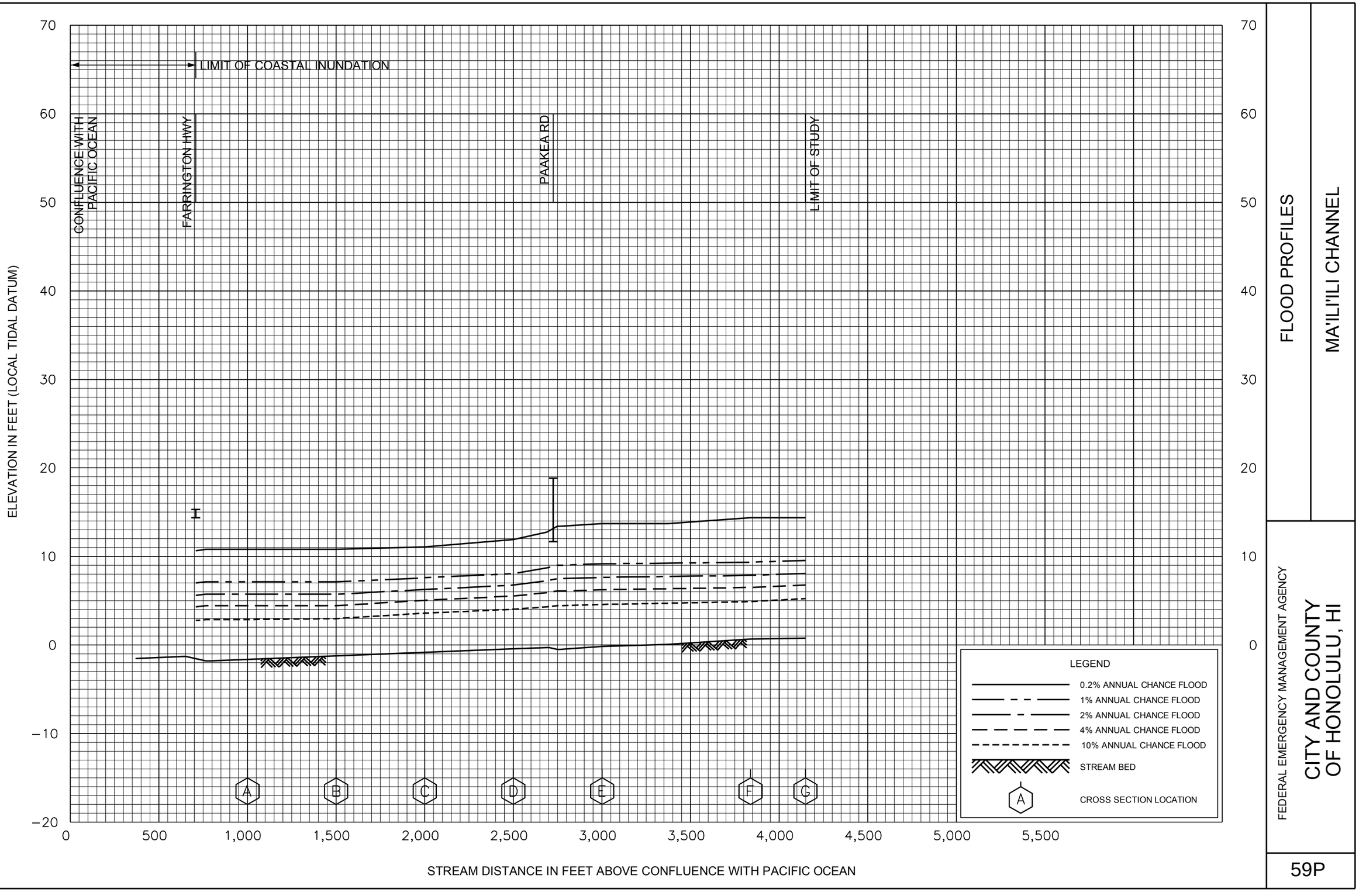
FLOOD PROFILES

KIIKII STREAM

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

58P



FLOOD PROFILES

MA'ILI'ILI CHANNEL

FEDERAL EMERGENCY MANAGEMENT AGENCY

CITY AND COUNTY OF HONOLULU, HI

59P