

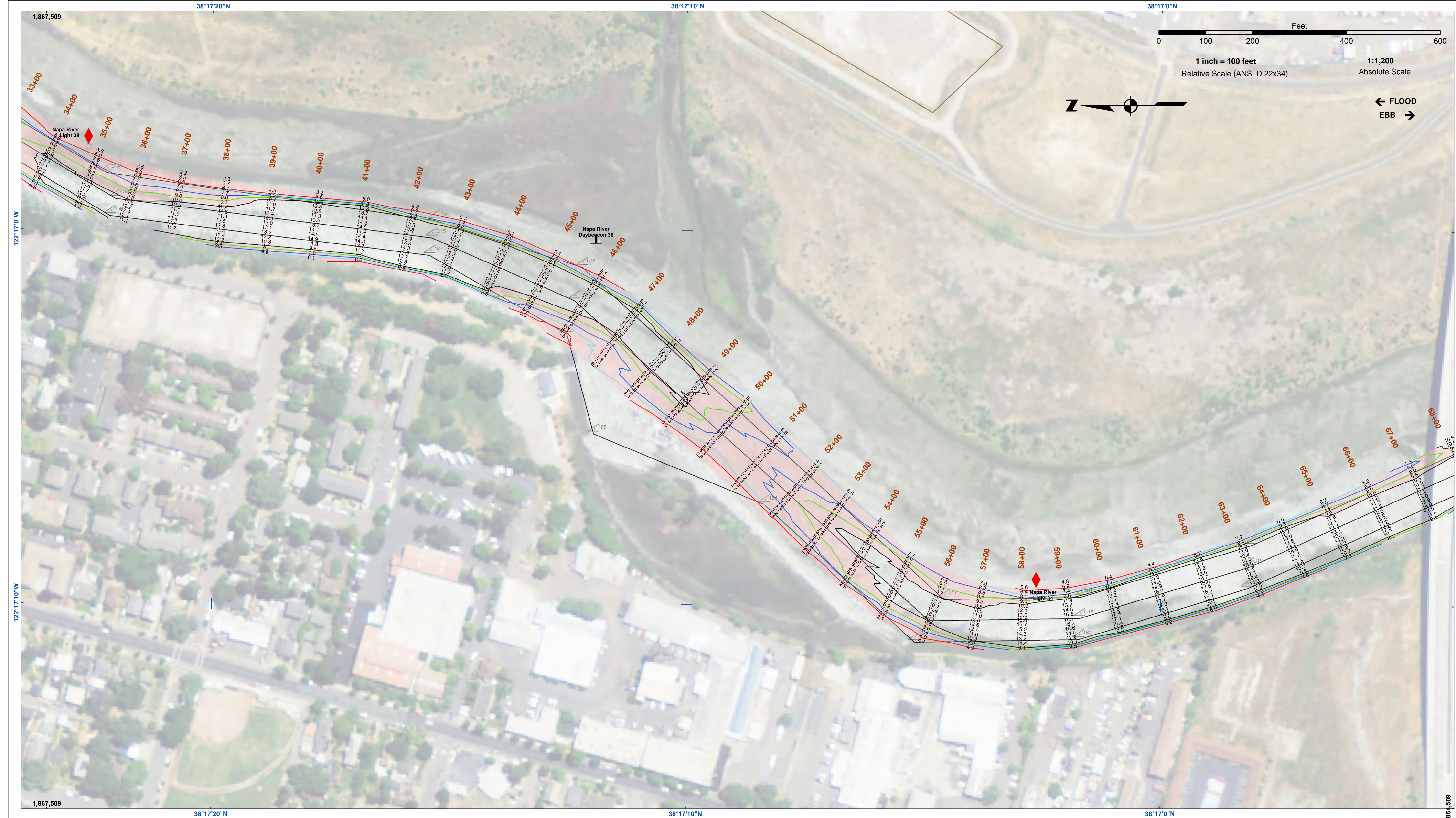
US Army Corps of Engineers
 San Francisco District
 450 Market Street
 San Francisco, CA 94102

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Chart Date: Jul 24, 2019
Designed by: [Name]
Plotted by: [Name]
Checked by: [Name]
Drawn by: [Name]
Scale: 1:200
Projection: NAD 83
Units: Feet

NAD 83 CHANNEL ANGLE POINTS											
Δ PT	X	Y	Δ PT	X	Y	Δ PT	X	Y	Δ PT	X	Y
1	6049871.57	2300026.94	47	6049871.57	2300026.94	48	6049415.67	2285525.34	49	6049415.67	2285525.34
2	6050021.27	2299856.64	49	6049530.77	2285146.44	50	6049450.57	2285335.44	51	6049450.57	2285335.44
3	6050021.27	2299856.64	50	6049530.77	2285146.44	51	6049450.57	2285335.44	52	6049450.57	2285335.44
4	6050021.27	2299856.64	51	6049530.77	2285146.44	52	6049450.57	2285335.44	53	6049450.57	2285335.44
5	6050021.27	2299856.64	52	6049530.77	2285146.44	53	6049450.57	2285335.44	54	6049450.57	2285335.44
6	6050021.27	2299856.64	53	6049530.77	2285146.44	54	6049450.57	2285335.44	55	6049450.57	2285335.44
7	6050021.27	2299856.64	54	6049530.77	2285146.44	55	6049450.57	2285335.44	56	6049450.57	2285335.44
8	6050021.27	2299856.64	55	6049530.77	2285146.44	56	6049450.57	2285335.44	57	6049450.57	2285335.44
9	6050021.27	2299856.64	56	6049530.77	2285146.44	57	6049450.57	2285335.44	58	6049450.57	2285335.44
10	6050021.27	2299856.64	57	6049530.77	2285146.44	58	6049450.57	2285335.44	59	6049450.57	2285335.44
11	6050021.27	2299856.64	58	6049530.77	2285146.44	59	6049450.57	2285335.44	60	6049450.57	2285335.44
12	6050021.27	2299856.64	59	6049530.77	2285146.44	60	6049450.57	2285335.44	61	6049450.57	2285335.44
13	6050021.27	2299856.64	60	6049530.77	2285146.44	61	6049450.57	2285335.44	62	6049450.57	2285335.44
14	6050021.27	2299856.64	61	6049530.77	2285146.44	62	6049450.57	2285335.44	63	6049450.57	2285335.44
15	6050021.27	2299856.64	62	6049530.77	2285146.44	63	6049450.57	2285335.44	64	6049450.57	2285335.44
16	6050021.27	2299856.64	63	6049530.77	2285146.44	64	6049450.57	2285335.44	65	6049450.57	2285335.44
17	6050021.27	2299856.64	64	6049530.77	2285146.44	65	6049450.57	2285335.44	66	6049450.57	2285335.44
18	6050021.27	2299856.64	65	6049530.77	2285146.44	66	6049450.57	2285335.44	67	6049450.57	2285335.44
19	6050021.27	2299856.64	66	6049530.77	2285146.44	67	6049450.57	2285335.44	68	6049450.57	2285335.44
20	6050021.27	2299856.64	67	6049530.77	2285146.44	68	6049450.57	2285335.44	69	6049450.57	2285335.44
21	6050021.27	2299856.64	68	6049530.77	2285146.44	69	6049450.57	2285335.44	70	6049450.57	2285335.44
22	6050021.27	2299856.64	69	6049530.77	2285146.44	70	6049450.57	2285335.44	71	6049450.57	2285335.44
23	6050021.27	2299856.64	70	6049530.77	2285146.44	71	6049450.57	2285335.44	72	6049450.57	2285335.44
24	6050021.27	2299856.64	71	6049530.77	2285146.44	72	6049450.57	2285335.44	73	6049450.57	2285335.44
25	6050021.27	2299856.64	72	6049530.77	2285146.44	73	6049450.57	2285335.44	74	6049450.57	2285335.44
26	6050021.27	2299856.64	73	6049530.77	2285146.44	74	6049450.57	2285335.44	75	6049450.57	2285335.44
27	6050021.27	2299856.64	74	6049530.77	2285146.44	75	6049450.57	2285335.44	76	6049450.57	2285335.44
28	6050021.27	2299856.64	75	6049530.77	2285146.44	76	6049450.57	2285335.44	77	6049450.57	2285335.44
29	6050021.27	2299856.64	76	6049530.77	2285146.44	77	6049450.57	2285335.44	78	6049450.57	2285335.44
30	6050021.27	2299856.64	77	6049530.77	2285146.44	78	6049450.57	2285335.44	79	6049450.57	2285335.44
31	6050021.27	2299856.64	78	6049530.77	2285146.44	79	6049450.57	2285335.44	80	6049450.57	2285335.44
32	6050021.27	2299856.64	79	6049530.77	2285146.44	80	6049450.57	2285335.44	81	6049450.57	2285335.44
33	6050021.27	2299856.64	80	6049530.77	2285146.44	81	6049450.57	2285335.44	82	6049450.57	2285335.44
34	6050021.27	2299856.64	81	6049530.77	2285146.44	82	6049450.57	2285335.44	83	6049450.57	2285335.44
35	6050021.27	2299856.64	82	6049530.77	2285146.44	83	6049450.57	2285335.44	84	6049450.57	2285335.44
36	6050021.27	2299856.64	83	6049530.77	2285146.44	84	6049450.57	2285335.44	85	6049450.57	2285335.44
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40	6050021.27	2299856.64	87	6049530.77	2285146.44	88	6049450.57	2285335.44	89	6049450.57	2285335.44
41	6050021.27	2299856.64	88	6049530.77	2285146.44	89	6049450.57	2285335.44	90	6049450.57	2285335.44
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49	6050021.27	2299856.64	96	6049530.77	2285146.44	97	6049450.57	2285335.44	98	6049450.57	2285335.44
50	6050021.27	2299856.64	97	6049530.77	2285146.44	98	6049450.57	2285335.44	99	6049450.57	2285335.44
51	6050021.27	2299856.64	98	6049530.77	2285146.44	99	6049450.57	2285335.44	100	6049450.57	2285335.44

NAD 83 CENTERLINE ANGLE POINTS					
Δ PT	X	Y	Δ PT	X	Y
1	6049841.27	2300026.94	49	6049415.67	2285525.34
2	6049996.07	2299832.24	50	6049450.57	2285335.44
3	6050201.77	2299608.14	51	6049447.87	2284522.54
4	6050271.37	2299503.94	52	6049174.77	2283987.14
5	6050311.17	2299391.54	53	6049217.17	2283156.14
6	6050292.17	2299310.24	54	6049187.67	2282116.14
7	6050197.07	2299199.14	55	6048772.57	2279898.04
8	6050127.97	2299090.24	56	6048459.07	2278600.14
9	6050092.67	2298981.04	57	6048330.67	2277610.44
10	6050118.97	2298884.14	58	6048294.17	2276638.34
11	6050338.87	2298188.64	59	6048169.37	2276408.44
12	6050401.67	2297899.54	60	6047894.27	2276160.84
13	6050367.67	2297603.34	61	6047623.37	2275850.54
14	6049910.47	2296868.44	62	6046811.77	2275063.44
15	6049815.77	2296196.14	63	6046539.37	2274853.54
16	6049676.67	2295683.84	64	6046445.07	2274532.64
17	6049882.67	2295148.94	65	6046398.17	2274481.04
18	6049882.67	2294828.44	66	6046367.37	2274290.34
19	6049085.27	2294466.14	67	6046280.27	2274015.64
20	6049513.87	2294370.94	68	6046224.97	2273848.24
21	6049687.17	2293268.84	69	6046159.97	2273199.04
22	6049758.67	2293221.34	70	60461475.37	2272063.54
23	6049513.87	2293249.34	71	60461810.47	2269525.54
24	6050148.17	2292728.04	72	6046232.17	2268710.44
25	6050106.87	2292401.94	73	60462548.77	2268303.34
26	6050023.87	2292331.54	74	6046244.27	2268052.54
27	6049793.57	2292157.54	75	6046192.87	2267237.44
28	6049713.07	2291370.44	76	60460576.77	2264701.24
29	6049396.07	2291051.84	77	6046108.67	2263719.14
30	6049043.67	2290642.14	78	6046006.57	2263236.34
31	6048913.27	2290730.94	79	6046038.97	2262189.24
32	6048787.07	2290599.04	80	6046389.57	2261457.14
33	6048687.87	2290434.94	81	6046021.07	2260382.14
34	6048640.67	2290111.14	82	6045847.27	2258826.14
35	6048688.27	2289308.54	83	6046071.47	2258575.64
36	6048944.07	2288695.24	84	6046113.77	2258117.14
37	6048961.77	2288529.24	85	6046210.77	2257586.34
38	6048265.67	2288221.44	86	6046485.27	2256990.04
39	6048301.67	2288140.84	87	6046561.27	225615.04
40	6048313.67	2287847.84	88	6046343.47	2255244.34
41	6048319.17	2287770.94	89	6046514.37	2253886.04
42	6048221.17	2287579.24	90	6046515.97	2248600.64
43	6048813.67	2287282.24	91	6046511.07	2247016.84
44	6048666.17	2286782.04	92	6046819.87	2243829.54
45	6048637.77	2286523.44			
46	6048702.07	2286224.34			
47	6048899.87	2285997.74			
48	6049258.67	2285762.84			



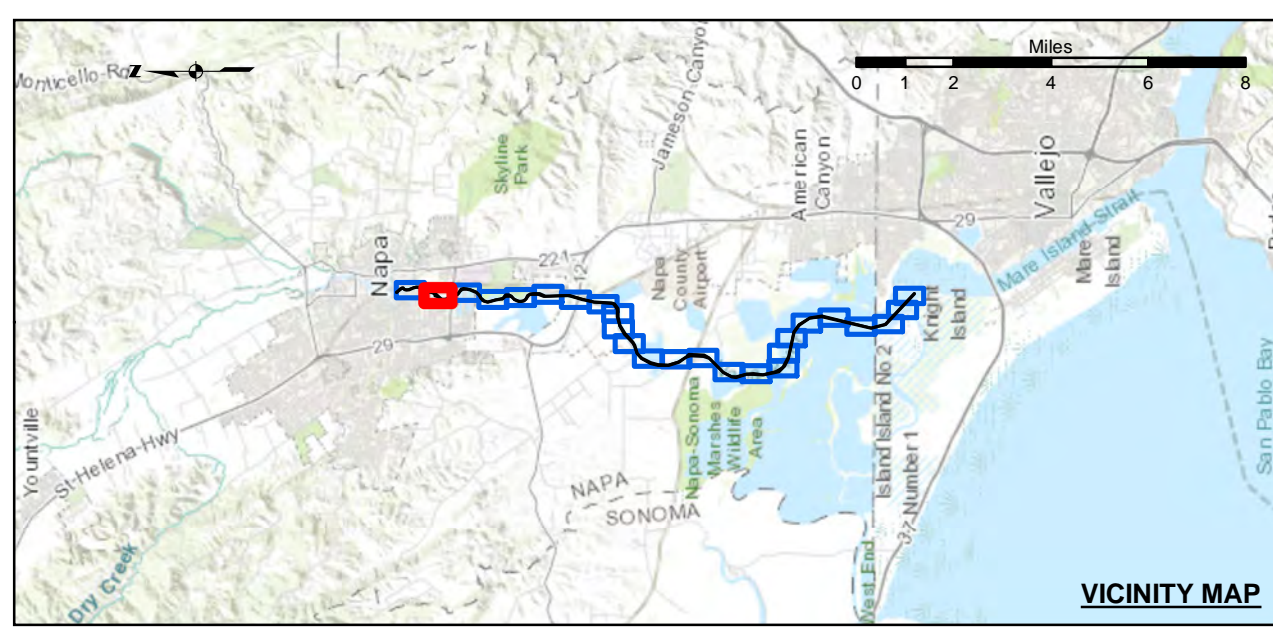
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Chart Date:	Jul 24, 2019
Designed by:	PDT
Drawn by:	PDT
Checked by:	PDT
Approved:	Chief, Construction Branch

CALIFORNIA
 NAPA COUNTY
**NAPA RIVER
 UPPER CHANNEL
 CONDITION SURVEY**
 10 JULY 2019

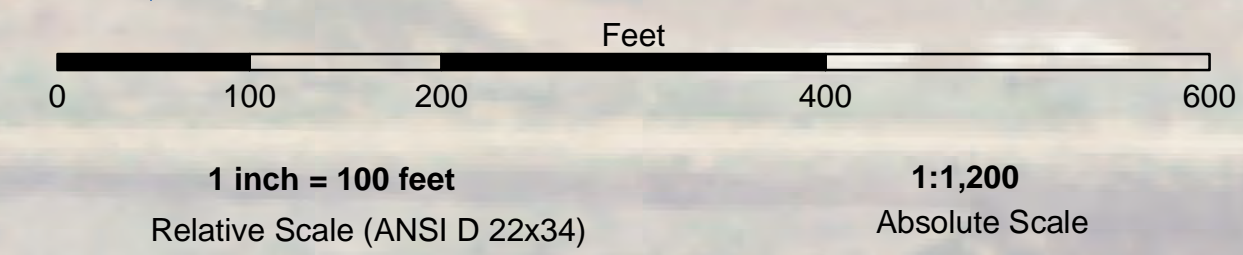
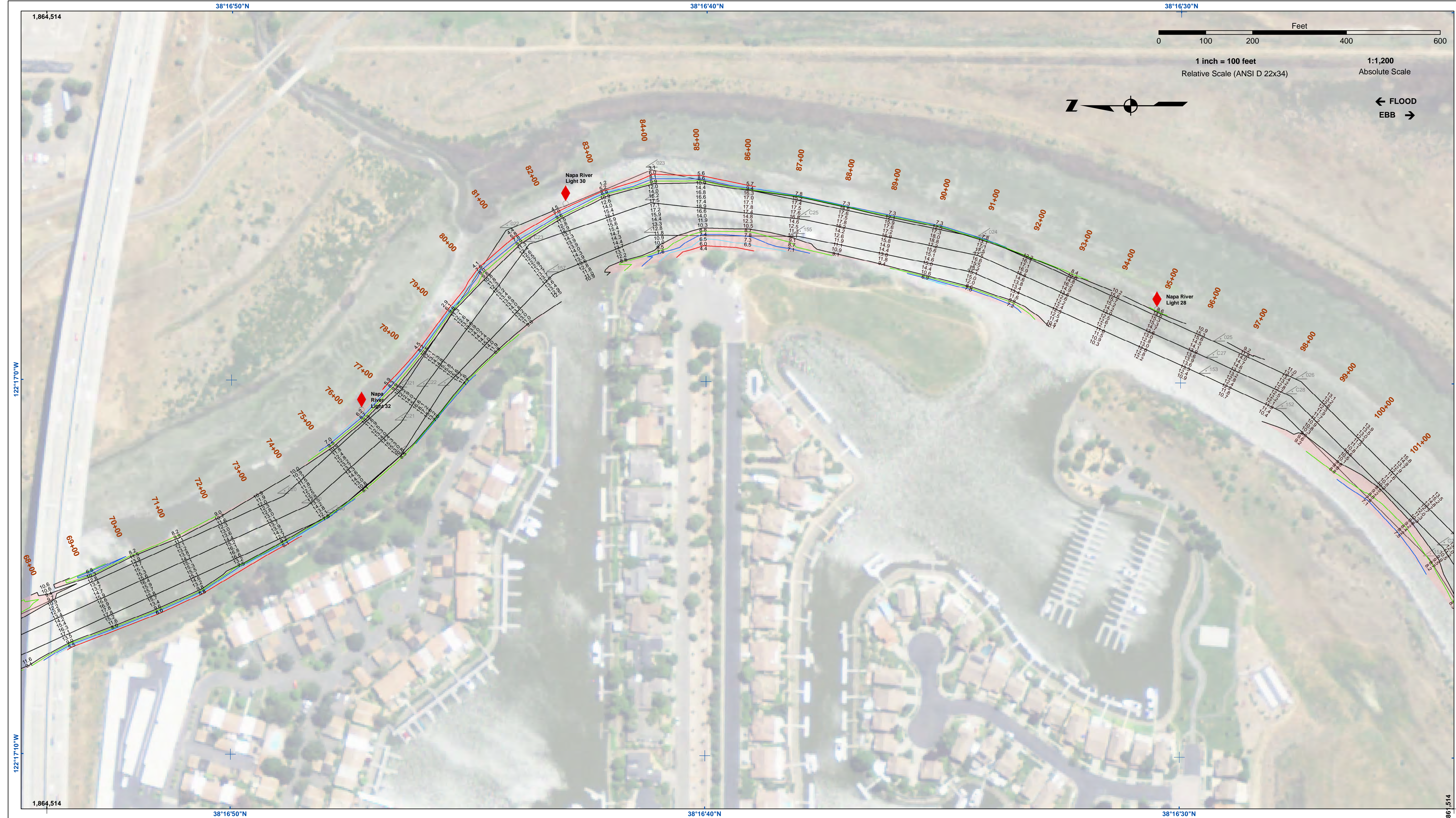
**Sheet
 Reference
 Number**
 2 of 25



Federal Navigation Channel	Beacon, General	Contours
Shoaling Area	Obstruction Point	
Placement Area	Navigation Buoy	
Anchorage Area	Navigation Buoy	
Wreck Area	Shoalest Sounding*	
Submerged Wreck		
Angle Point		-10
		-9
		-8
		-7
		-6

NOTES:
 HORIZONTAL COORDINATE SYSTEM:
 NORTH AMERICAN DATUM OF 1983 (NAD83), PROJECTED TO THE STATE PLANE COORDINATE SYSTEM (SPCS), CALIFORNIA ZONE II. DISTANCE UNITS IN U.S. SURVEY FEET.
 VERTICAL DATUM:
 SOUNDINGS ARE SHOWN IN FEET AND INDICATE DEPTHS BELOW MEAN LOWER LOW WATER.
 THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF A SURVEY CONDUCTED ON THE DATE INDICATED AND CAN ONLY BE CONSIDERED TO REPRESENT THE GENERAL CONDITION EXISTING AT THAT TIME.
 PLANE GRID, BEARING AND COORDINATES ARE BASED ON THE STATE OF CALIFORNIA COORDINATE SYSTEM, LAMBERT CONFORMAL PROJECTION, ZONE II NAD 83, CALIFORNIA, AS DESCRIBED IN SPECIAL PUBLICATION NO. 235, PUBLISHED BY NATIONAL OCEAN SURVEY. BASE MAPS ARE USDA NAIP 2010.
 *SHOALEST SOUNDING PER QUARTER PER REACH

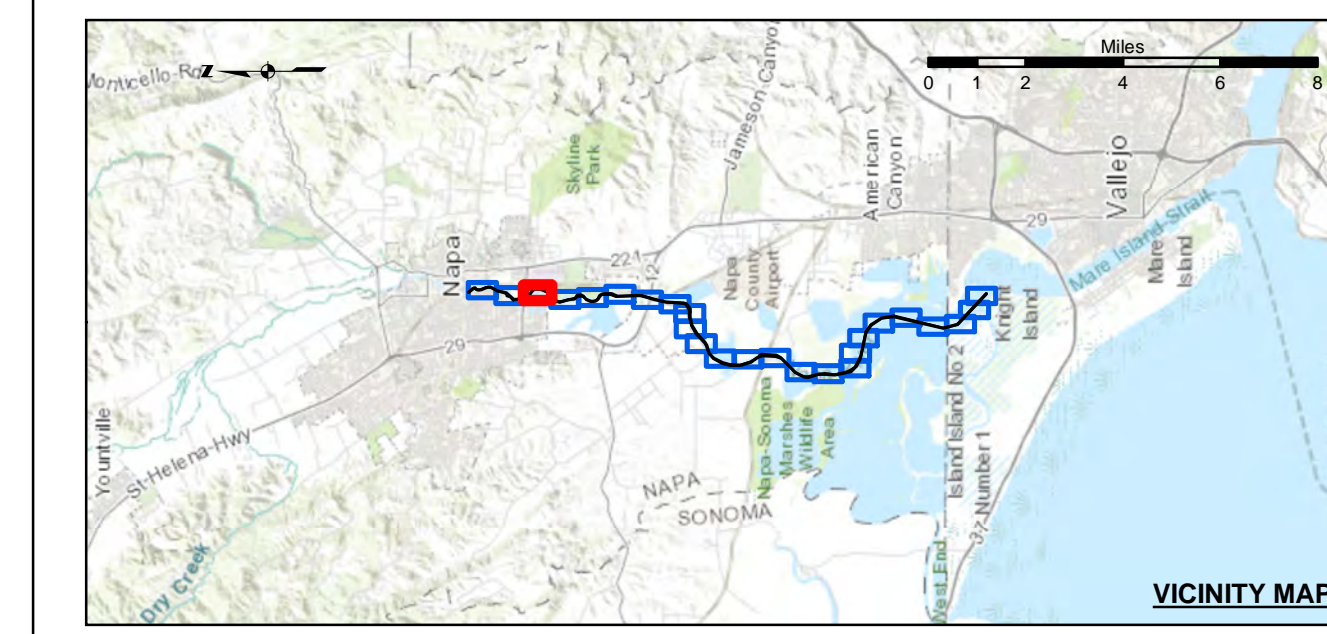
DRAWING NOT TO BE USED FOR NAVIGATION. ONLY CHANNEL CONDITION AT DATE OF SURVEY.
 THE LOCATION OF ALL NAVIGATION AIDS ARE BASED ON INFORMATION PROVIDED BY THE U.S. COAST GUARD. BUOY LOCATIONS REPRESENT THE POSITION OF THE SINKER ONLY. SURVEYED BY THE CORPS OF ENGINEERS.
 SOUNDINGS FOR THE OUTSIDE CHANNEL (100 FT. WIDE) TAKEN BY FATHOMETER. THE INSIDE CHANNEL (60 FT. WIDE) TAKEN BY LEADLINE, AND ARE SHOWN TO THE NEAREST FOOT AND TENTHS OF A FOOT.
 SOUNDINGS ARE BASED ON THE DATUM OF MEAN LOWER LOW WATER AT THE LOCALITY.
 THE PROJECT DEPTH IS 15 FEET FROM ENTRANCE AT THE MARE ISLAND CAUSEWAY TO ASYLUM SLOUGH, THENCE 10 FEET TO HEAD OF NAVIGATION.
 VERTICAL CONTROLS:
 0+00 TO 175+00 - NRFP4 - 30.54ft - USACE - RTK BASE STATION TRANSECT 11 - 6.593m MLLW - USACE - MLLW LEVELED FROM 20 AND TIDAL 5 FROM TIDE STATION 941 5623 ON 3/29/2012.
 176+00 TO 224+00 - NAPAR01 - 2.652m MLLW, -29.111m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. CALCULATED BY INTERPOLATING ELEVATIONS BETWEEN NOAA TIDE STATIONS 941 5623 AND 941 5218 PID PENDING.
 225+00 TO 640+00 - NAPAR02 - 3.653m MLLW -28.241m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. CALCULATED BY INTERPOLATING ELEVATIONS BETWEEN NOAA TIDE STATIONS 941 5623 AND 941 5218 PID PENDING.
 641+00 TO 692+00 - NAPAR03 - 3.553m MLLW -28.416m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. TRANSFERRED FROM BM 5218 J 1976 VIA RTK ON 4/10/2012 PID PENDING.



← FLOOD
EBB →

US Army Corps of Engineers
San Francisco District
450 Market Street
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Federal Navigation Channel	Beacon, General	Contours
Shoaling Area	Obstruction Point	
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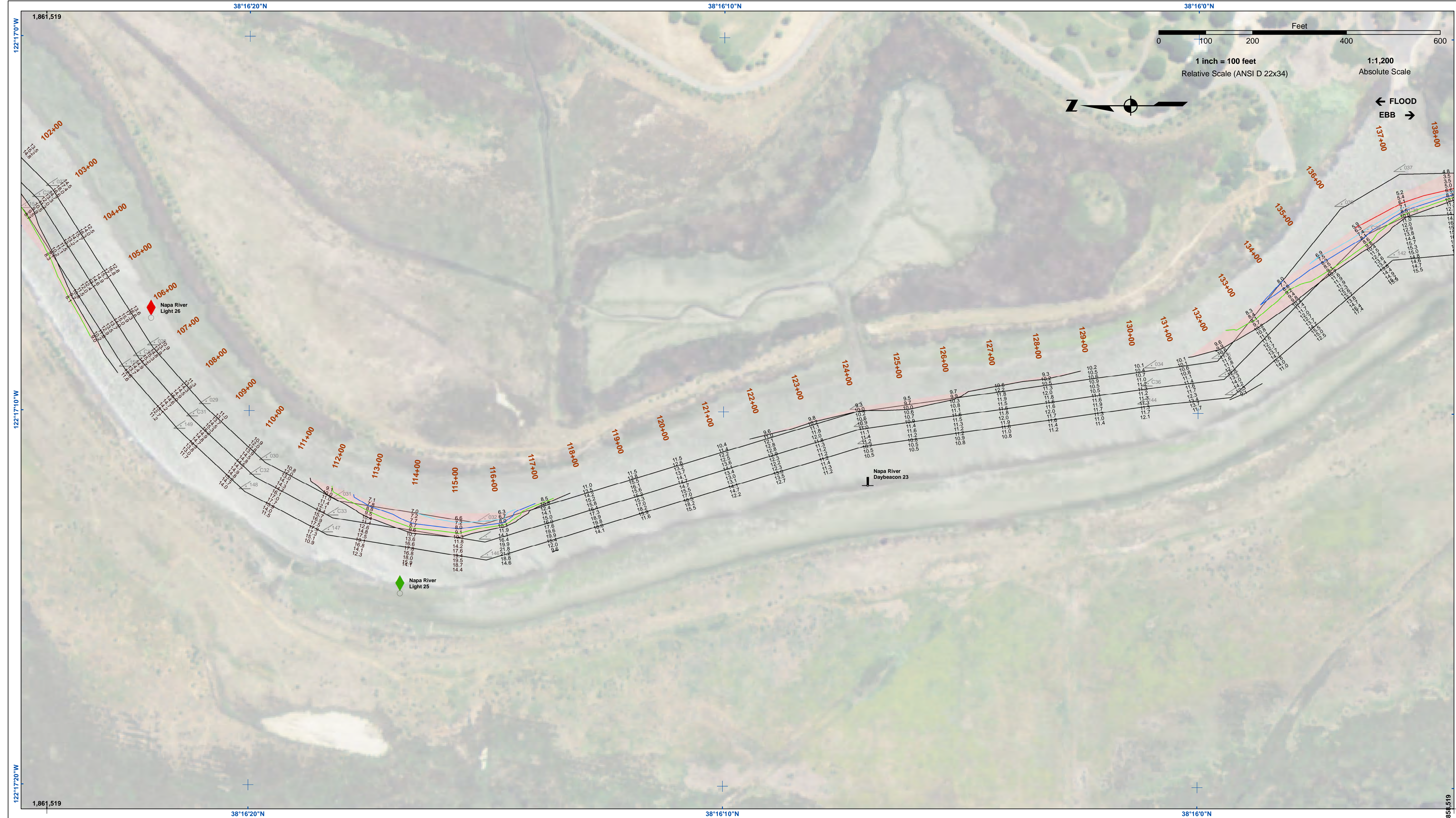
NOTES:
HORIZONTAL COORDINATE SYSTEM: NORTH AMERICAN DATUM OF 1983 (NAD83), PROJECTED TO THE STATE PLANE COORDINATE SYSTEM (SPCS), CALIFORNIA ZONE II. DISTANCE UNITS IN U.S. SURVEY FEET.
VERTICAL DATUM: SOUNDINGS ARE SHOWN IN FEET AND INDICATE DEPTHS BELOW MEAN LOWER LOW WATER.
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176+00 TO 224+00 - NAPA01 - 2.652m MLLW, -29.111m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. CALCULATED FROM TRANSECT 11 AND NRFP4 USING RTK OBSERVATIONS PID PENDING.
225+00 TO 640+00 - NAPA02 - 3.653m MLLW -28.241m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. CALCULATED BY INTERPOLATING ELEVATIONS BETWEEN NOAA TIDE STATIONS 941 5623 AND 941 5218 PID PENDING.
641+00 TO 692+00 - NAPA03 - 3.553m MLLW -28.416m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. TRANSFERRED FROM BM 5218 J 1976 VIA RTK ON 4/10/2012 PID PENDING.

Prepared Under the Direction of JOHN D. CUNNINGHAM LT COLONEL, C.E. DISTRICT ENGINEER	Chart Date: Jul 24, 2019
Submitted: Hydro Survey Team Leader	Designed by: PDT
Recommended: Chief, Hydro Survey Section	Plotted by: PDT
Approved: Chief, Construction Branch	Checked by: PDT
	Drawn by: PDT

CALIFORNIA
**NAPA RIVER
UPPER CHANNEL
CONDITION SURVEY
10 JULY 2019**

**Sheet
Reference
Number
3 of 25**



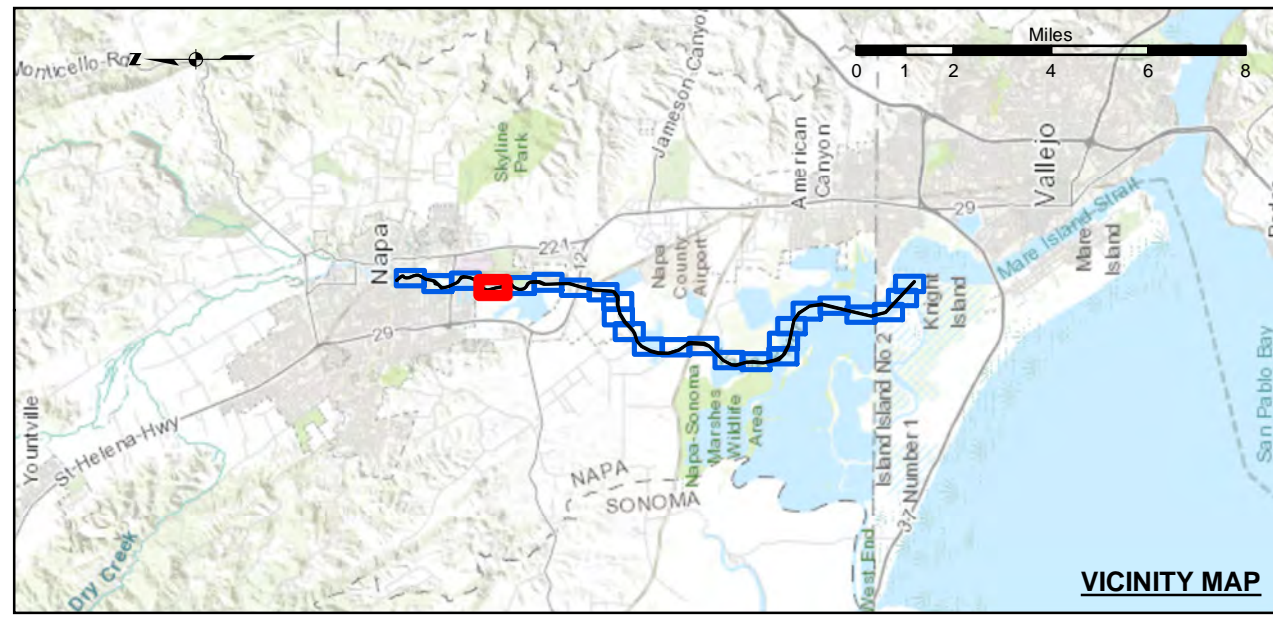
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Prepared Under the Direction of JOHN D. CUNNINGHAM LT Colonel, C.E. District Engineer	Chart Date: Jul 24, 2019
Submitted by: Hydro Survey Team Leader	Designed by: PDT
Recommended by: Chief, Hydro Survey Section	Drawn by: PDT
Approved by: Chief, Construction Branch	

CALIFORNIA
NAPA RIVER
 UPPER CHANNEL
 CONDITION SURVEY
 10 JULY 2019

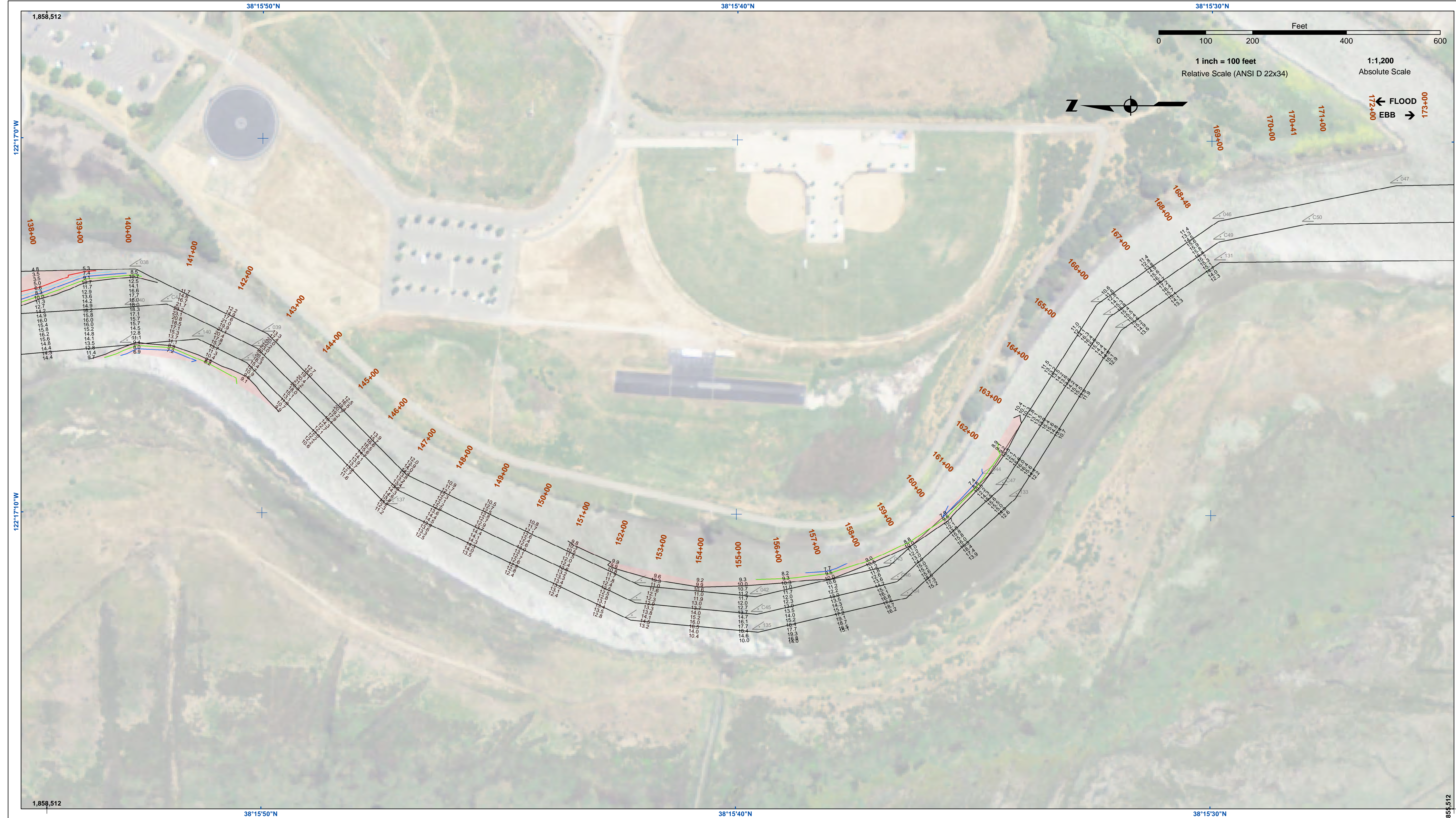
Sheet Number
 4 of 25



Federal Navigation Channel	Shoaling Area	Placement Area	Anchorage Area	Wreck Area	Submerged Wreck	Angle Point	Beacon, General	Obstruction Point	Navigation Buoy	Navigation Buoy	Shoalest Sounding*
						Contours					
						-10					
						-9					
						-8					
						-7					
						-6					

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 *SHOALEST SOUNDING PER QUARTER PER REACH

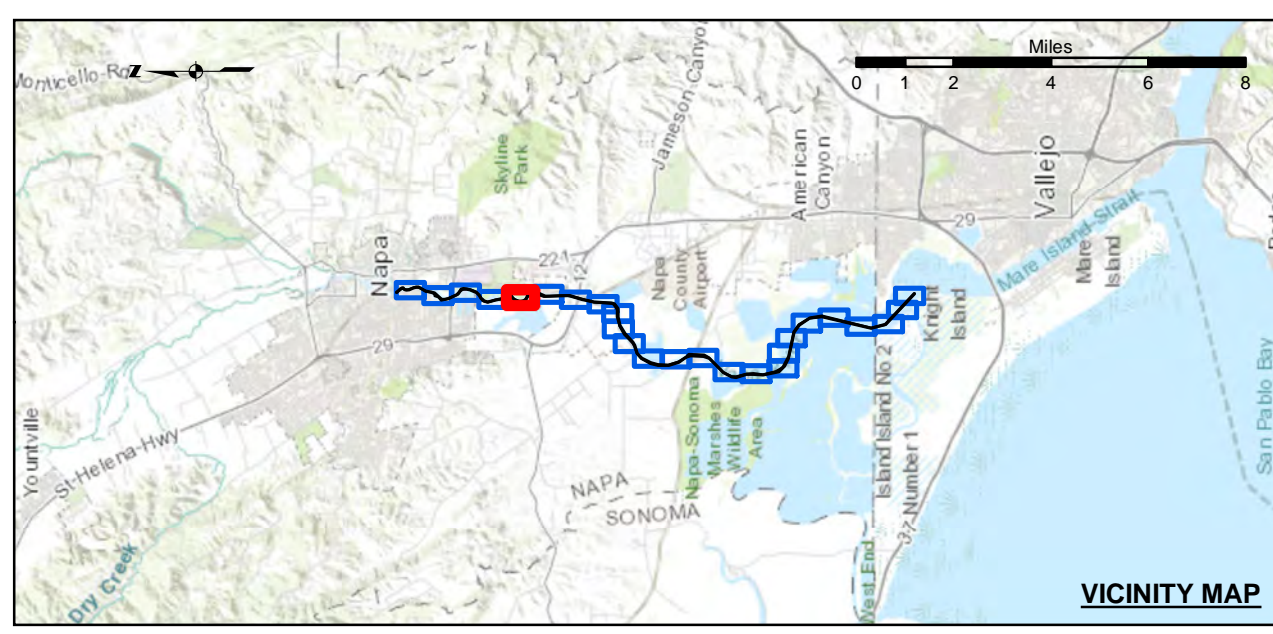
DRAWING NOT TO BE USED FOR NAVIGATION. ONLY CHANNEL CONDITION AT DATE OF SURVEY.
 THE LOCATION OF ALL NAVIGATION AIDS ARE BASED ON INFORMATION PROVIDED BY THE U.S. COAST GUARD. BUOY LOCATIONS REPRESENT THE POSITION OF THE SINKER ONLY. SOUNDINGS FOR THE OUTSIDE CHANNEL (100 FT. WIDE) TAKEN BY FATHOMETER. THE INSIDE CHANNEL (60 FT. WIDE) TAKEN BY LEADLINE, AND ARE SHOWN TO THE NEAREST FOOT AND TENTHS OF A FOOT. SOUNDINGS ARE BASED ON THE DATUM OF MEAN LOWER LOW WATER AT THE LOCALITY.
 THE PROJECT DEPTH IS 15' FROM ENTRANCE AT THE MARE ISLAND CAUSEWAY TO ASYLUM SLOUGH, THENCE 10 FEET TO HEAD OF NAVIGATION.
 VERTICAL CONTROLS:
 0+00 TO 175+00 - NRFP4 - 30.54ft - USACE - RTK BASE STATION TRANSECT 11 - 6.593m MLLW - USACE - MLLW LEVELED FROM 20 AND TIDAL 5 FROM TIDE STATION 941 5623 ON 3/29/2012.
 176+00 TO 224+00 - NAPA01 - 2.652m MLLW, -29.111m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. CALCULATED FROM TRANSECT 11 AND NRFP4 USING RTK OBSERVATIONS PID PENDING.
 225+00 TO 640+00 - NAPA02 - 3.653m MLLW -28.241m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. CALCULATED BY INTERPOLATING ELEVATIONS BETWEEN NOAA TIDE STATIONS 941 5623 AND 941 5218 PID PENDING.
 641+00 TO 692+00 - NAPA03 - 3.553m MLLW -28.416m WGS-84 - USACE - RTK BASE STATION WGS-84 ELEVATION FROM OPUS SOLUTION MLLW ELEV. TRANSFERRED FROM BM 5218 J 1976 VIA RTK ON 4/10/2012 PID PENDING.



US Army Corps of Engineers
 San Francisco District
 450 Market Street
 San Francisco, CA 94102

DISCLAIMER
 The United States Government furnishes these data for informational purposes only. The data represents the results of a survey conducted on the date indicated and can only be considered to represent the general condition existing at that time. The user is responsible for the results of any application of the data for other than its intended purpose. The user is responsible for the results of any application of the data for other than its intended purpose. The user is responsible for the results of any application of the data for other than its intended purpose.

Prepared Under the Direction of	Chart Date:
JOHN D. CUNNINGHAM	Jul 24, 2019
Submittal:	Plotted By:
Hydro Survey Team Leader	PDT
Recommended:	Checked By:
Chief, Hydro Survey Section	PDT
Approved:	Drawn by:
Chief, Construction Branch	PDT



Federal Navigation Channel	Beacon, General	Contours
Shoaling Area	Obstruction Point	-9
Placement Area	Navigation Buoy	-8
Anchorage Area	Navigation Buoy	-7
Wreck Area	Shoalest Sounding*	-6
Submerged Wreck		
Angle Point		

NOTES:
 HORIZONTAL COORDINATE SYSTEM:
 NORTH AMERICAN DATUM OF 1983 (NAD83), PROJECTED TO THE STATE PLANE COORDINATE SYSTEM (SPCS), CALIFORNIA ZONE II. DISTANCE UNITS IN U.S. SURVEY FEET.
 VERTICAL DATUM:
 SOUNDINGS ARE SHOWN IN FEET AND INDICATE DEPTHS BELOW MEAN LOWER LOW WATER.
 THE INFORMATION DEPICTED ON THIS MAP REPRESENTS THE RESULTS OF A SURVEY CONDUCTED ON THE DATE INDICATED AND CAN ONLY BE CONSIDERED TO REPRESENT THE GENERAL CONDITION EXISTING AT THAT TIME.
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CALIFORNIA
 NAPA COUNTY
**NAPA RIVER
 UPPER CHANNEL
 CONDITION SURVEY**
 10 JULY 2019

**Sheet
 Reference
 Number**
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