

NAD 83 CHANNEL ANGLE POINTS

Δ PT	X	Y	Δ PT	X	Y	Δ PT	X	Y	Δ PT	X	Y
1	6048873.57	2300446.64	47	6044630.47	2285146.44	83	6046298.27	2255227.24	139	6049190.67	2287601.84
2	6050024.67	2298966.64	48	6045030.77	2284491.14	84	6045574.57	2256380.54	140	6049243.67	2287705.64
3	6050305.17	2299620.14	50	6045226.77	2283841.64	85	6046203.57	2256914.24	141	6049210.67	2288166.64
4	6050350.27	2299393.14	51	6044820.67	2279884.34	87	6041162.17	2256023.54	143	6048831.47	2289301.14
5	6050326.57	2299292.84	52	6048508.87	2275952.34	88	6040567.87	2256659.04	144	6048602.27	2290109.14
6	6050223.27	2299176.84	53	6048361.87	2275686.34	89	6040716.47	2260379.84	145	6048861.57	2290447.34
7	6050162.57	2299074.94	54	6048224.67	2275357.34	90	6040339.47	2261458.84	146	6048756.57	2290621.34
8	6050130.67	2298957.84	55	6047934.67	2275096.34	101	6040309.17	2262182.24	147	6048887.57	2290758.24
9	6050155.67	2298904.34	56	6047896.87	2274999.34	102	6040088.17	2263335.04	148	6049021.67	2290872.64
10	6050374.67	2298200.34	57	6048816.67	2274013.34	103	6040056.67	2263787.24	149	6049362.87	2291081.64
11	6050438.67	2297901.34	58	6048585.67	2273808.34	104	6040555.87	2264731.14	150	6049682.17	2291392.64
12	6050400.67	2297591.34	59	6048747.67	2273932.34	105	6040392.17	2265208.54	151	6049759.67	2291533.54
13	6049965.67	2298886.34	60	6044027.67	2274440.34	106	6042363.87	2266814.94	152	6049888.27	2292043.64
14	6049862.97	2298190.84	61	6043887.87	2274244.34	107	6042461.77	2268207.44	153	6050071.17	2292414.14
15	6049747.87	2298076.34	62	6043927.87	2273781.34	108	6042717.07	2268696.74	154	6050078.67	2292731.34
16	6049027.87	2298116.54	63	6042289.87	2273516.34	109	6041765.47	2269501.94	155	6049997.67	2292940.34
17	6049027.87	2298425.54	64	6041777.87	2273546.34	110	6041425.07	2270606.74	156	6049759.67	2293176.34
18	6049130.87	2298461.94	65	6041569.87	2271791.34	111	6041470.17	2271806.74	157	6049616.67	2293271.34
19	6049355.47	2298321.84	66	6041525.67	2270640.34	112	6041884.17	2272583.44	158	6049492.27	2293419.84
20	6049167.87	2298266.34	67	6041855.57	2269548.54	113	6042209.87	2273560.14	159	6049399.87	2293470.34
21	6049093.67	2298308.34	68	6042372.87	2268724.04	114	6042778.37	2274606.64	160	6049937.67	2293831.34
22	6050217.67	2297275.34	69	6042835.67	2268399.34	115	6043647.07	2275336.34	161	6048937.67	2295181.34
23	6050505.67	2297013.34	70	6043521.47	2268775.44	116	6043968.57	2276221.64	162	6049236.17	2295496.34
24	6049827.47	2295124.44	71	6043982.47	2268266.44	117	6044915.47	2277373.54	163	6049392.27	2295857.34
25	6049743.97	2295148.14	72	6044617.87	2268471.34	118	6044832.07	2278000.74	164	6049095.67	2296191.34
26	6049406.27	2295102.14	73	6044160.57	2268377.04	119	6044908.77	2278113.54	165	6049778.67	2296201.34
27	6049065.77	2294811.74	74	6044114.97	2268317.64	120	6047548.97	2278101.64	166	6049874.67	2296881.54
28	6048939.07	2294703.64	75	6044008.67	2268196.34	121	6047853.87	2278225.44	167	6050330.17	2297616.74
29	6048911.87	2294576.74	76	6044309.67	2268145.34	122	6044114.07	2278459.64	168	6050363.67	2297971.74
30	6048733.37	2294422.44	77	6044031.67	2268034.34	123	6044226.67	2278626.34	169	6050302.97	2298176.94
31	6048676.07	2294113.14	78	6044001.67	2268093.34	124	6048279.57	2278534.64	170	6050082.17	2298675.14
32	6048905.17	2293816.14	79	6044061.67	2268149.34	125	6048409.57	2278907.84	171	6050064.67	2298964.34
33	6048982.87	2293867.44	80	6041115.47	2258219.34	126	6048724.37	2279911.74	172	6050093.27	2299105.54
34	6049000.67	2293843.54	81	6044227.87	2257612.54	127	6049106.27	2281073.74	173	6050168.77	2299221.54
35	6049320.77	2293756.54	82	604872.87	2257505.84	128	6049165.47	2281483.14	174	6050237.17	2299327.74
36	6049392.67	2293493.84	83	604649.57	2256449.54	129	6049122.77	2282092.54	175	6050272.17	2299389.34
37	6049394.67	2293238.34	84	6046392.27	2256284.24	130	6049364.97	2282613.94	176	6050237.67	2299486.04
38	6049251.67	2293156.34	85	6046565.17	2256282.84	131	6049397.87	2283254.34	177	6050254.97	2299582.84
39	6048947.67	2292766.34	86	6046207.47	2254899.84	132	6049230.87	2283737.34	178	6049967.47	2299807.94
40	6048702.67	2292377.34	87	6046556.47	2254702.84	133	6048875.07	2283969.14	179	6049809.17	2300071.14
41	6048675.67	2292025.34	88	6048964.47	2254853.94	134	6048967.47	2284204.44			
42	6048736.67	2291639.34	89	6048776.47	2254801.84	135	6048599.77	2284521.54			
43	6049024.67	2291028.34	90	6048465.77	2254890.64	136	6048623.57	2284792.74			
44	6049286.67	2290383.34	91	6048104.57	2254861.44	137	6048979.77	2285288.14			
45	6049459.67	2289726.34	92	6048463.57	2254889.24	138	6048886.47	2285711.64			

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	2299606.14	51	6049447.87	2284552.54
4	6050271.37	2299603.04	52	6049174.77	2283887.14
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	6049372.57	2281988.04
8	6050127.97	2299090.24	56	6048459.07	2278660.14
9	6050092.67	2298981.04	57	6048320.67	2276710.44
10	6050118.87	2298894.74	58	6048294.17	2276638.34
11	6050338.87	2298188.84	59	6048169.37	2276408.44
12	6050401.67	2297999.54	60	6047894.27	2276160.84
13	6050367.87	2297903.34	61	6047622.37	2276055.84
14	6049910.47	2297658.44	62	6046811.77	2276063.44
15	6049815.77	2297496.14	63	6046583.37	2275853.54
16	6049876.67	2297393.84	64	6046485.07	2275532.84
17	6049882.67	2297148.94	65	6046398.17	2274481.04
18	6049882.67	2296828.44	66	6046367.37	2274290.34
19	6049895.27	2296466.14	67	6046280.37	2274015.64
20	6049813.87	2296070.84	68	6046249.97	2273848.24
21	6049887.17	2295688.84	69	6046159.97	2273799.04
22	6049758.67	2295221.34	70	6046147.37	2273653.54
23	6050063.67	2294989.34	71	6046181.07	2273542.54
24	6050148.17	2294728.04	72	6046231.97	2273401.14
25	6050106.67	2294401.94	73	6046246.77	2273303.34
26	6050023.87	2294031.74	74	6046242.57	2273252.54
27	6049793.57	2293517.54	75	6046219.87	2273262.54
28	6049713.07	2293170.44	76	6046076.77	2273071.24
29	6049396.07	2291951.84	77	6046108.57	2273719.14
30	6049403.67	2291804.14	78	6046006.57	2273236.34
31	6048913.27	2291730.94	79	6046038.97	2272189.24
32	6048917.07	2291509.94	80	6046038.97	2272189.24
33	6048897.47	2291204.34	81	6046028.07	2272036.34
34	6048640.67	2291111.14	82	6046058.77	2271882.14
35	6048868.27	2289308.84	83	6046071.27	2271587.64
36	6048944.07	2288995.24	84	6046115.77	2271511.74
37	6048961.77	2288529.34	85	6046210.77	2271586.34
38	6049265.67	2288221.44	86	6046481.27	2270960.04
39	6049301.67	2288140.84	87	6046612.07	2270515.04
40	6049313.67	2287847.84	88	6046343.47	2270524.34
41	6049319.17	2287770.94	89	6046514.37	2270386.04
42	6049221.17	2287579.34	90	6046555.37	2270302.84
43	6048913.67	2287282.24	91	6046551.07	2270161.84
44	6048666.17	2286782.04	92	6048819.87	2270329.54
45	6048637.77	2286523.44			
46	6048702.07	2286224.34			
47	6048899.87	2285997.74			
48	6049258.67	2285762.84			

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San Francisco District
450 Market Street
San Francisco, CA 94102

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Prepared Under the Direction of	John D. Cunningham
Submittal	Hydro Survey Team Leader
Recommendation	Chief, Hydro Survey Section
Approval	Chief, Construction Branch
Surveyed By:	Mar 19, 2021
Plotted By:	PDT
Checked By:	PDT

CALIFORNIA

NAPA COUNTY

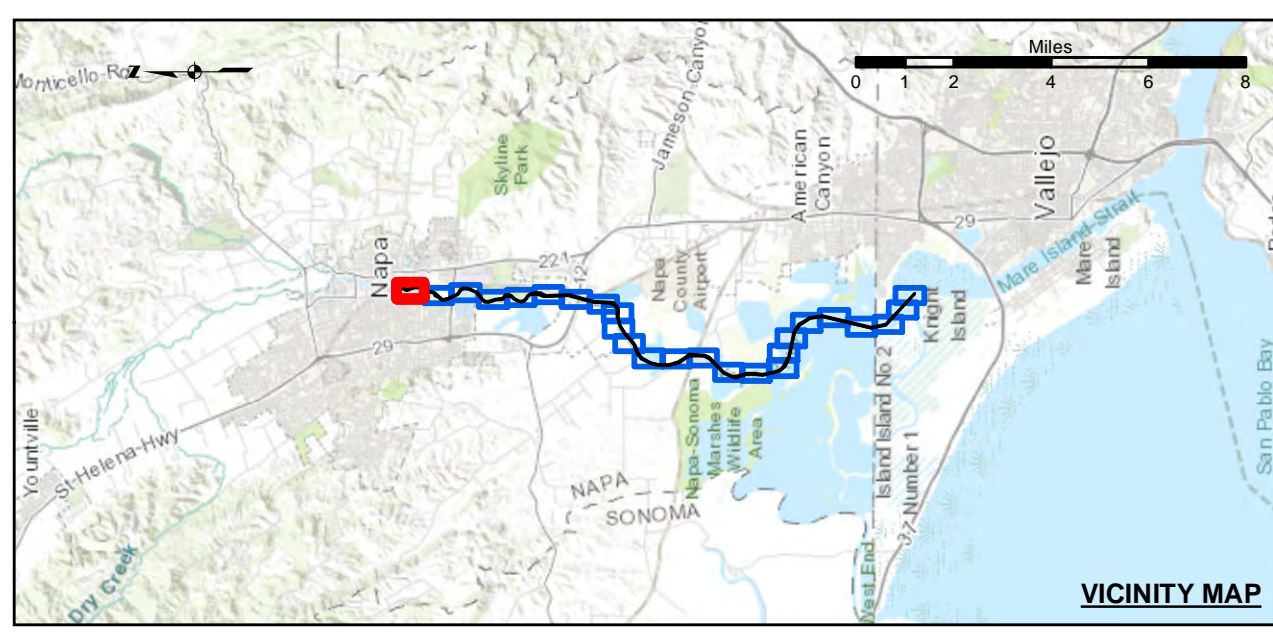
NAPA RIVER

UPPER NAPA

CONDITION SURVEY

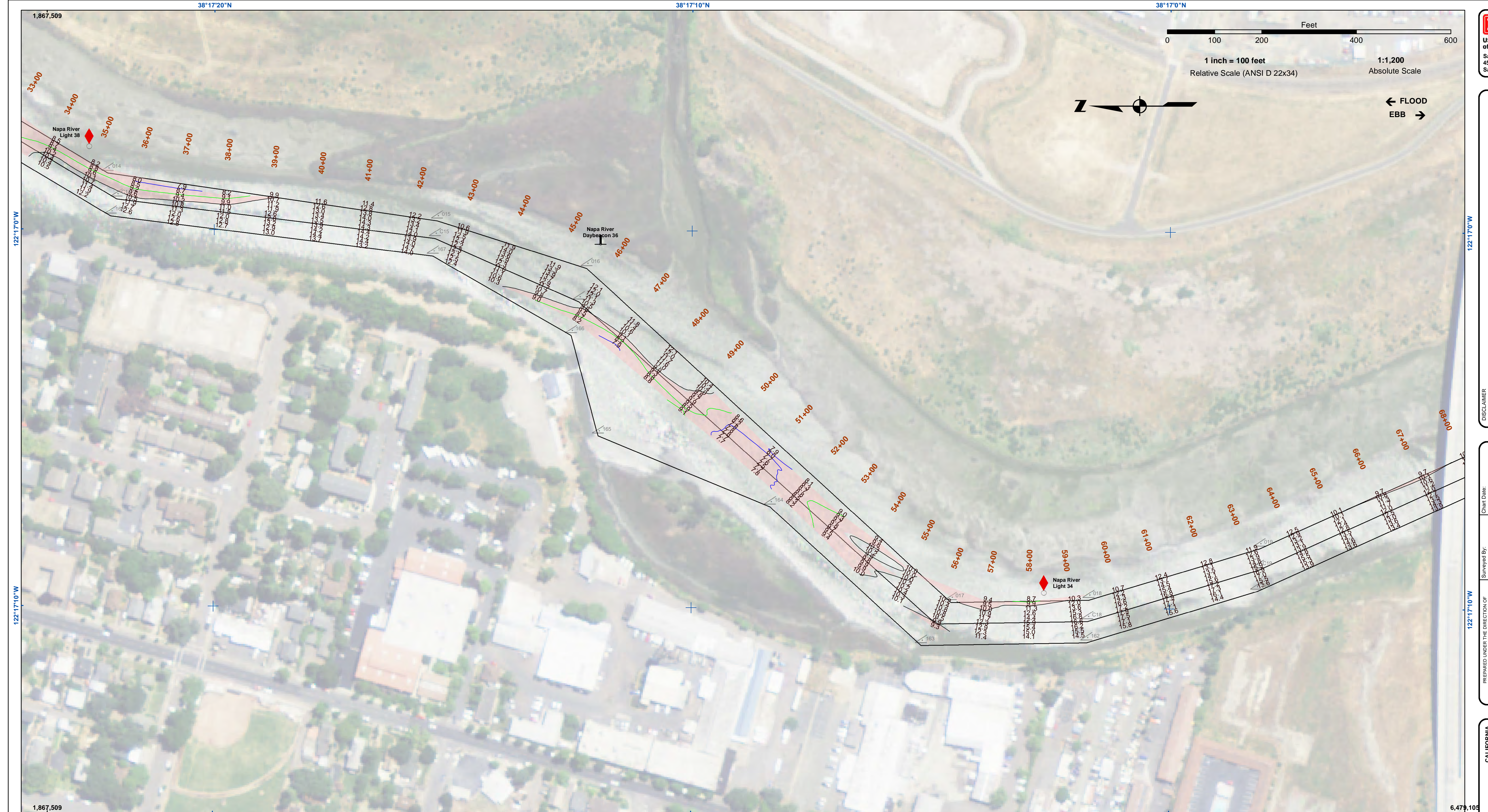
12-15 MARCH 2021

Sheet Reference Number
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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*
— -10
— -9
— -8
— -7
— -6

NOTES:
 THE LOCATION OF ALL NAVIGATION AIDS ARE BASED ON THE 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



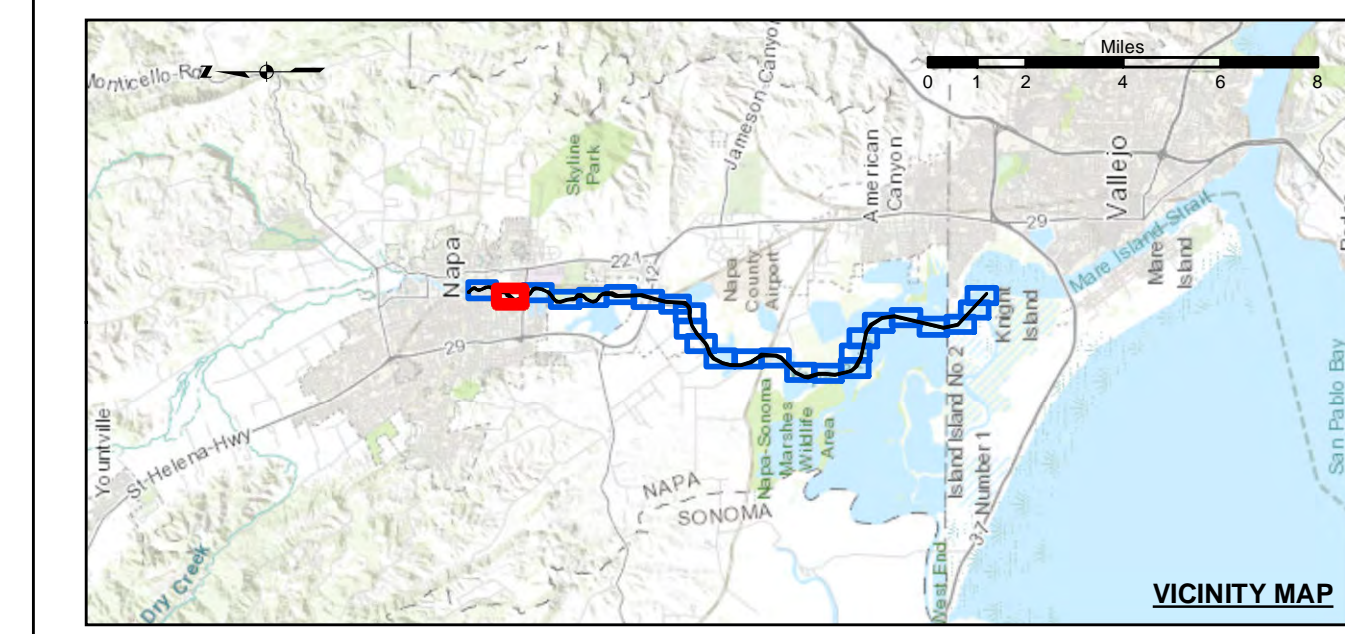
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Chart Date:	Mar 19, 2021
Designed by:	PDT
Surveyed By:	PDT
Plotted By:	PDT
Checked By:	PDT
Drawn by:	PDT

CALIFORNIA
 NAPA COUNTY
**NAPA RIVER
 UPPER NAPA
 CONDITION SURVEY
 12-15 MARCH 2021**

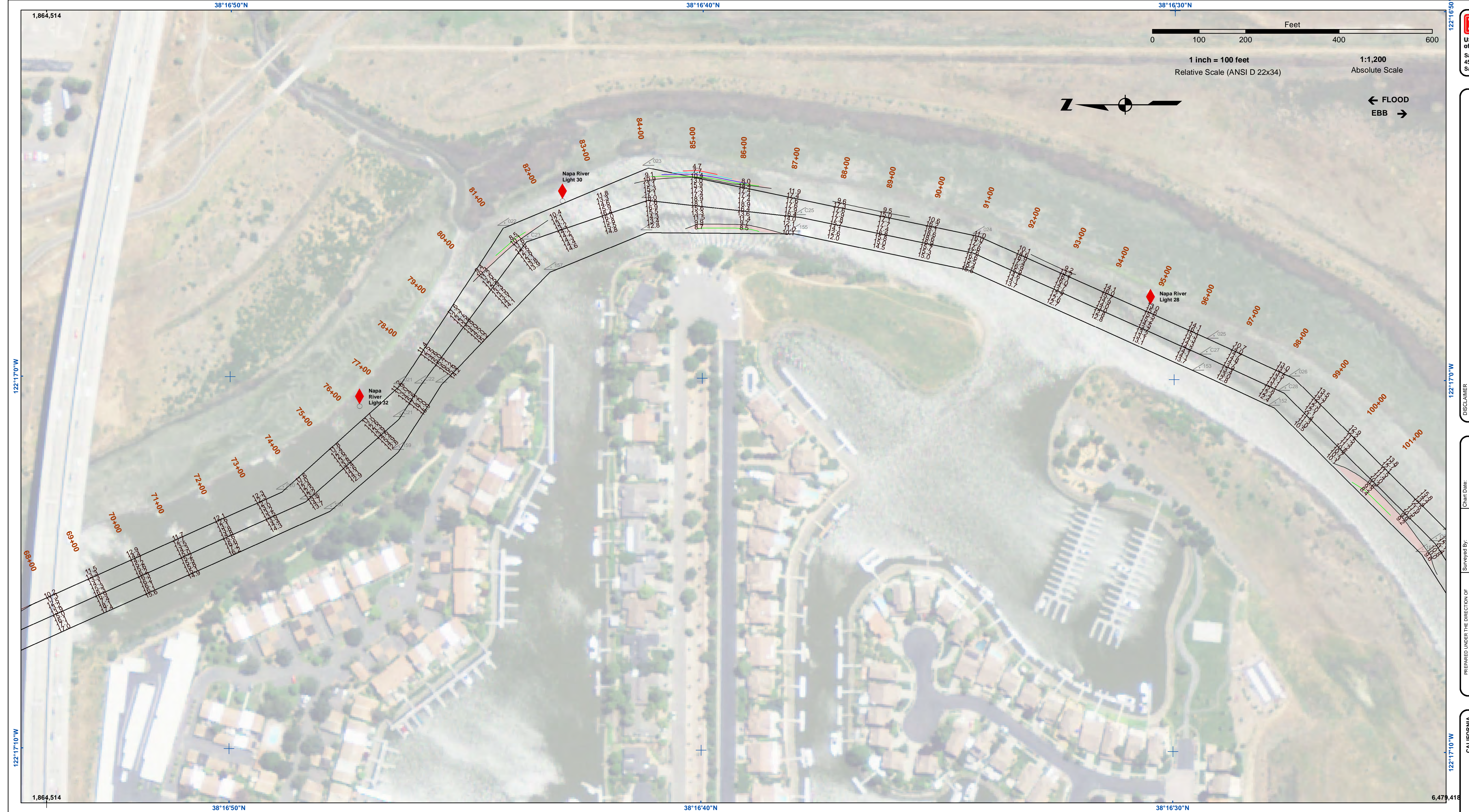
**Sheet
 Reference
 Number
 2 of 25**



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:
 THE LOCATION OF ALL NAVIGATION AIDS ARE BASED ON 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 OCEANIC AND ATMOSPHERIC ADMINISTRATION, U.S. DEPARTMENT OF COMMERCE, WASHINGTON, D.C. 20543.
 *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 (10 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 FROM TRANSECT 11 AND NRFP4 USING RTK OBSERVATIONS 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.



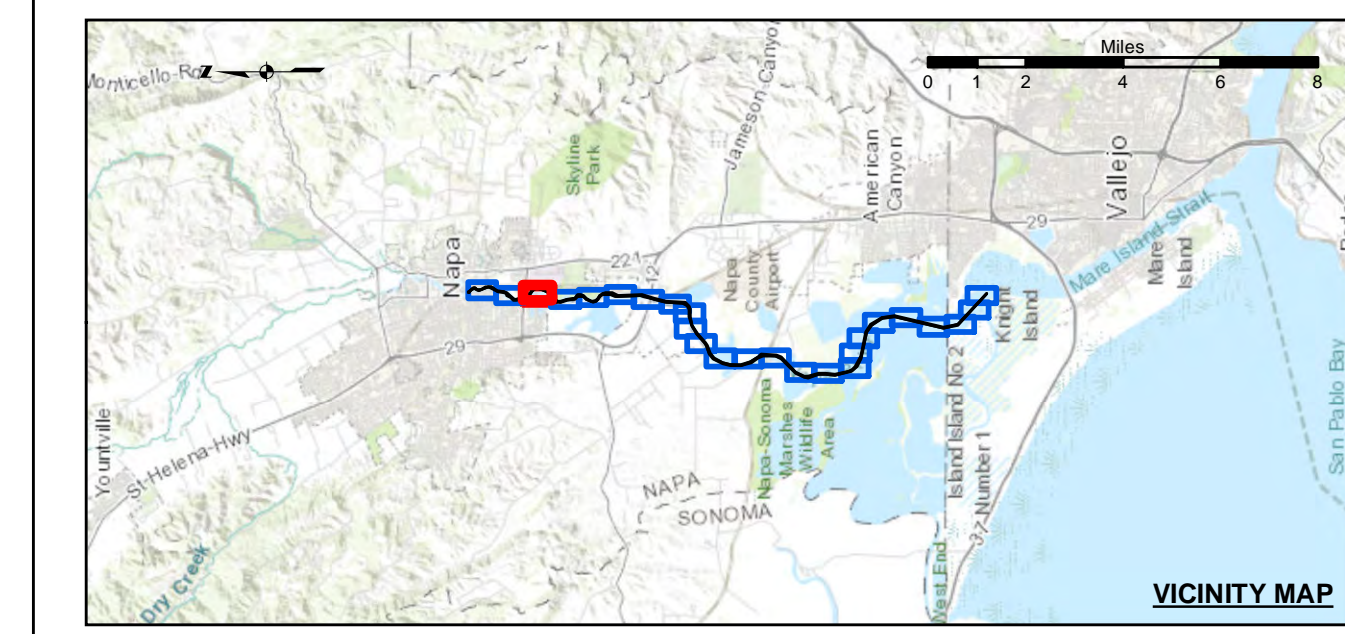
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Prepared Under the Direction of	Chart Date:
JOHN D. CUNNINGHAM	Mar 19, 2021
Submittal:	Designed by:
Hydro Survey Team Leader	PDT
Recommended:	Checked by:
Chief, Hydro Survey Section	PDT
Approved:	Drawn by:
Chief, Construction Branch	PDT

CALIFORNIA
 NAPA COUNTY
 NAPA RIVER
 UPPER NAPA
 CONDITION SURVEY
 12-15 MARCH 2021

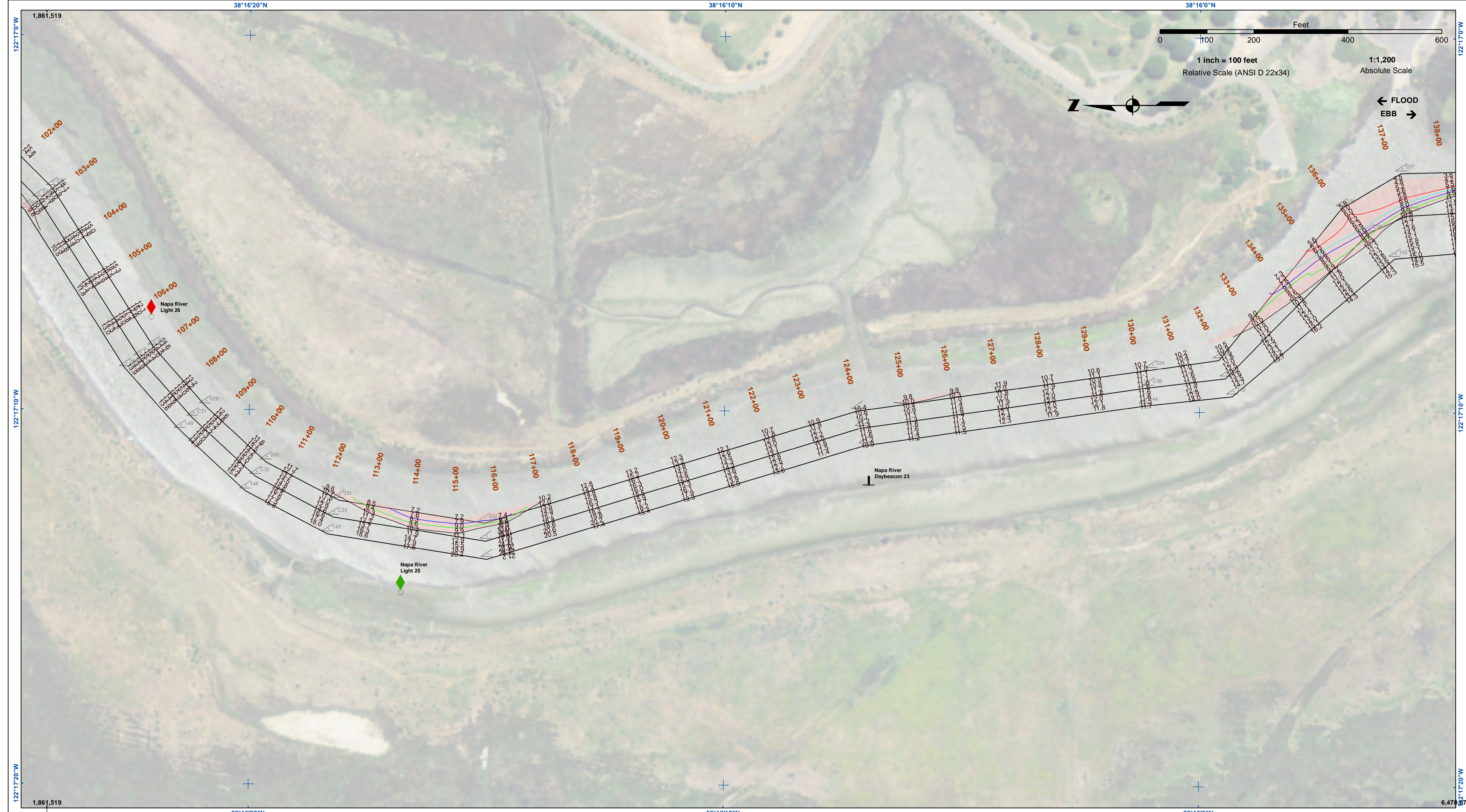
Sheet
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Federal Navigation Channel	Beacon, General	Contours
Shoaling Area	Obstruction Point	
Placement Area	Navigation Buoy	
Anchorage Area	Navigation Buoy	
Wreck Area	Shoalest Sounding*	
Submerged Wreck		
Angle Point		-10
		-9
		-8
		-7
		-6

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.
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 *SHOALEST SOUNDING PER QUARTER PER REACH

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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 TRANSVERSE 11 AND NRFP4 USING RTK OBSERVATIONS PID PENDING.
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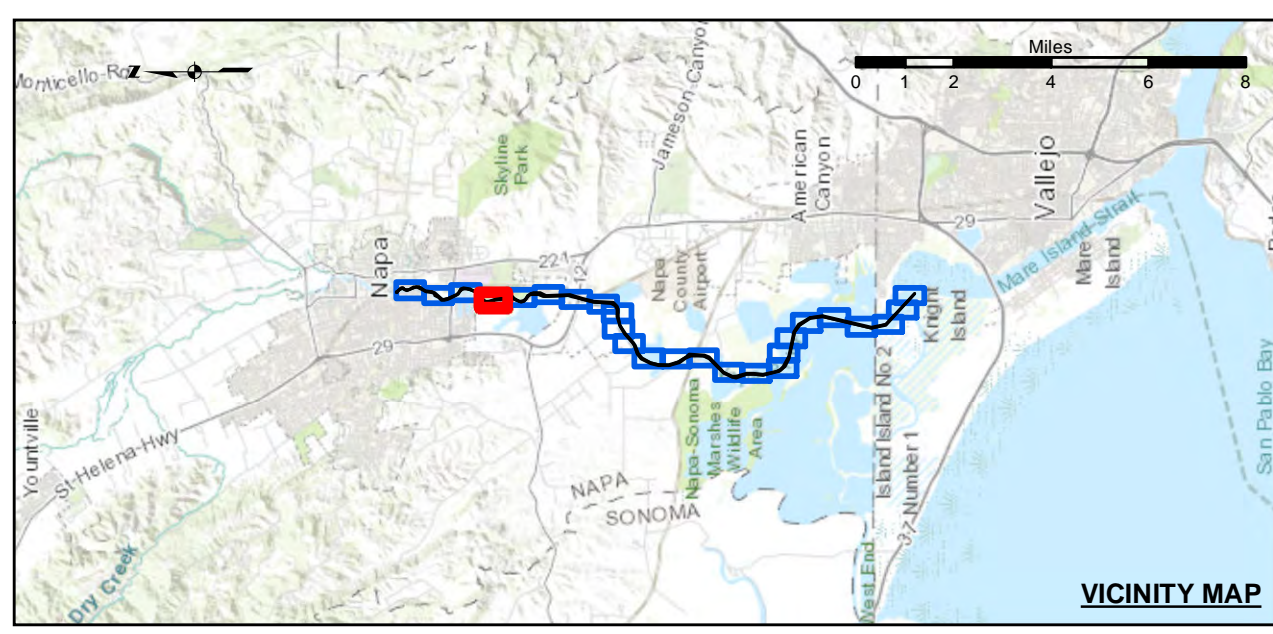
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PREPARED UNDER THE DIRECTION OF JOHN D. CUNNINGHAM LT COLONEL, C.E. DISTRICT ENGINEER	Chart Date: Mar 19, 2021
Submitted: Hydro Survey Team Leader	Designed by: PDT
Recommended: Chief, Hydro Survey Section	Checked by: PDT
Approved: Chief, Construction Branch	Drawn by: PDT

CALIFORNIA
 NAPA COUNTY
**NAPA RIVER
 UPPER NAPA
 CONDITION SURVEY
 12-15 MARCH 2021**

**Sheet
 Reference
 Number
 4 of 25**



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

NOTES:
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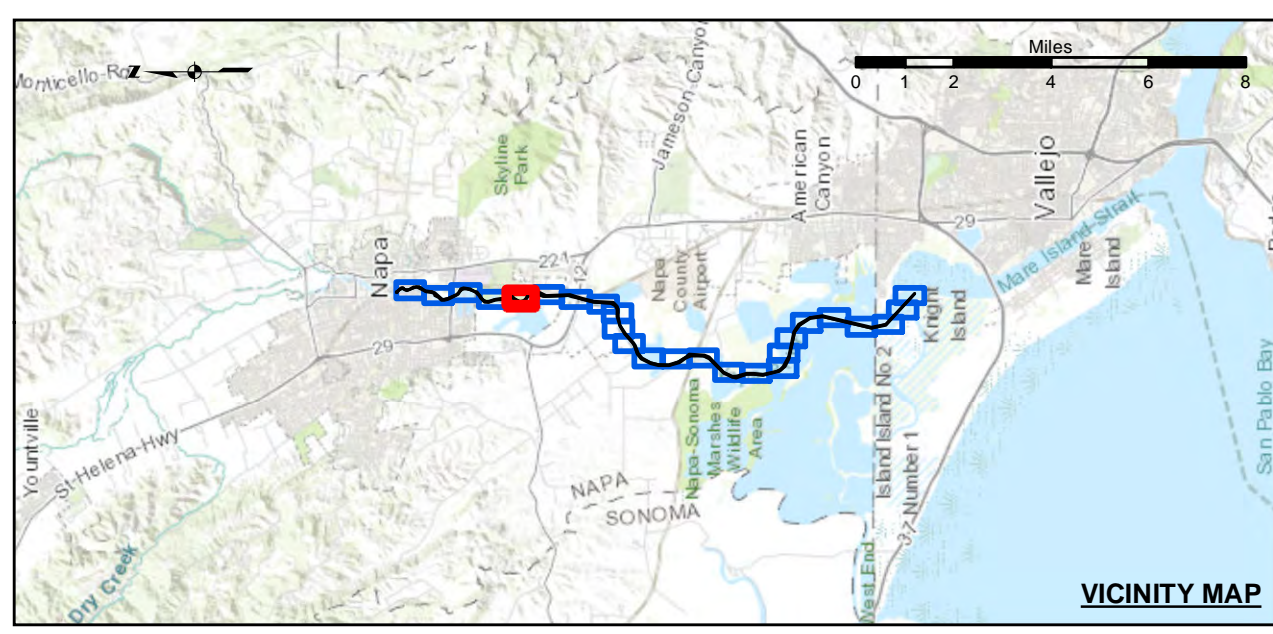
DRAWING NOT TO BE USED FOR NAVIGATION. ONLY CHANNEL CONDITION AT DATE OF SURVEY.
 THE LOCATION OF ALL NAVIGATION AIDS ARE BASED ON INFORMATION PROVIDED BY THE U.S. COAST GUARD. BUOY LOCATIONS REPRESENT THE POSITION OF THE SINKER ONLY. SURVEYED BY THE CORPS OF ENGINEERS.
 SOUNDINGS FOR THE OUTSIDE CHANNEL (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' 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
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Prepared Under the Direction of	Chart Date:	Mar 19, 2021
JOHN D. CUNNINGHAM	Surveyed By:	
LT Colonel, C.E., District Engineer	Plotted By:	PDT
Subject: Hydro Survey Team Leader	Checked By:	PDT
Recommended: Chief, Hydro Survey Section	Drawn by:	PDT
Approved: Chief, Construction Branch		



Federal Navigation Channel	Beacon, General	Contours
Shoaling Area	Obstruction Point	
Placement Area	Navigation Buoy	
Anchorage Area	Navigation Buoy	
Wreck Area	Navigation Buoy	
Submerged Wreck	Shoalest Sounding*	
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

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 SOUNDINGS FOR THE OUTSIDE CHANNEL (10 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.
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CALIFORNIA
 NAPA COUNTY
**NAPA RIVER
 UPPER NAPA
 CONDITION SURVEY
 12-15 MARCH 2021**

**Sheet
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 Number
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