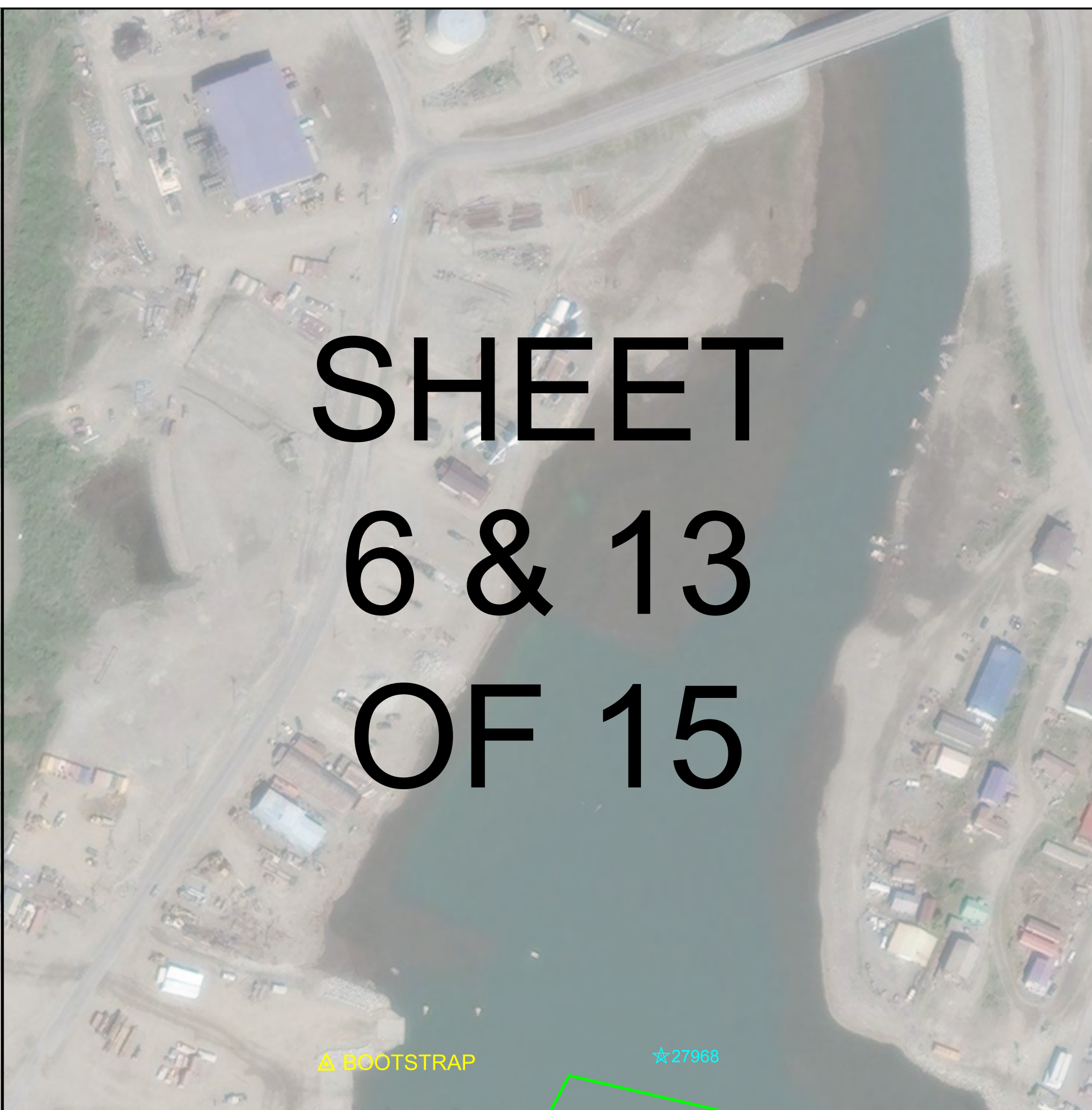


PROJECT LIMITS			PROJECT LIMITS		
CORNER#	NORTHING	EASTING	CORNER#	NORTHING	EASTING
1	3,835,149.55	1,729,399.02	23	3,835,941.14	1,729,224.59
2	3,836,072.82	1,729,918.93	24	3,835,263.17	1,729,026.05
3	3,836,470.43	1,730,028.07	25	3,835,168.52	1,729,218.48
4	3,837,258.32	1,730,471.76	26	3,837,716.95	1,731,572.37
5	3,837,512.08	1,730,639.04	30	3,837,169.70	1,729,826.82
6	3,837,682.32	1,730,850.05	31	3,837,188.08	1,729,724.66
7	3,837,676.52	1,731,038.64	32	3,837,141.72	1,729,440.28
8	3,837,477.28	1,731,471.47	33	3,836,920.50	1,729,383.90
9	3,837,389.71	1,731,661.72	34	3,836,712.15	1,729,439.22
10	3,837,780.09	1,731,841.42	35	3,836,753.91	1,729,609.77
11	3,837,960.29	1,731,879.63	36	3,836,795.08	1,729,685.94
12	3,838,065.59	1,731,647.06	37	3,836,877.58	1,729,717.05
13	3,837,889.01	1,731,563.78	38	3,836,889.71	1,729,804.27
14	3,837,833.67	1,731,450.42	39	3,837,022.53	1,729,867.08
15	3,838,004.90	1,730,713.69	40	3,837,887.27	1,730,662.63
16	3,837,805.36	1,730,607.88	41	3,837,690.63	1,730,843.85
17	3,837,331.92	1,730,341.06	42	3,837,413.08	1,730,561.80
18	3,836,544.03	1,729,897.37	43	3,837,483.02	1,730,437.69
19	3,836,244.56	1,729,613.96	51	3,837,645.05	1,731,549.07
20	3,836,256.67	1,729,127.44	52	3,837,846.12	1,730,965.73
21	3,836,166.59	1,729,127.64	53	3,837,725.78	1,730,648.92
22	3,836,166.59	1,729,227.64	54	3,835,142.70	1,729,194.32



SHEET  
6 & 13  
OF 15

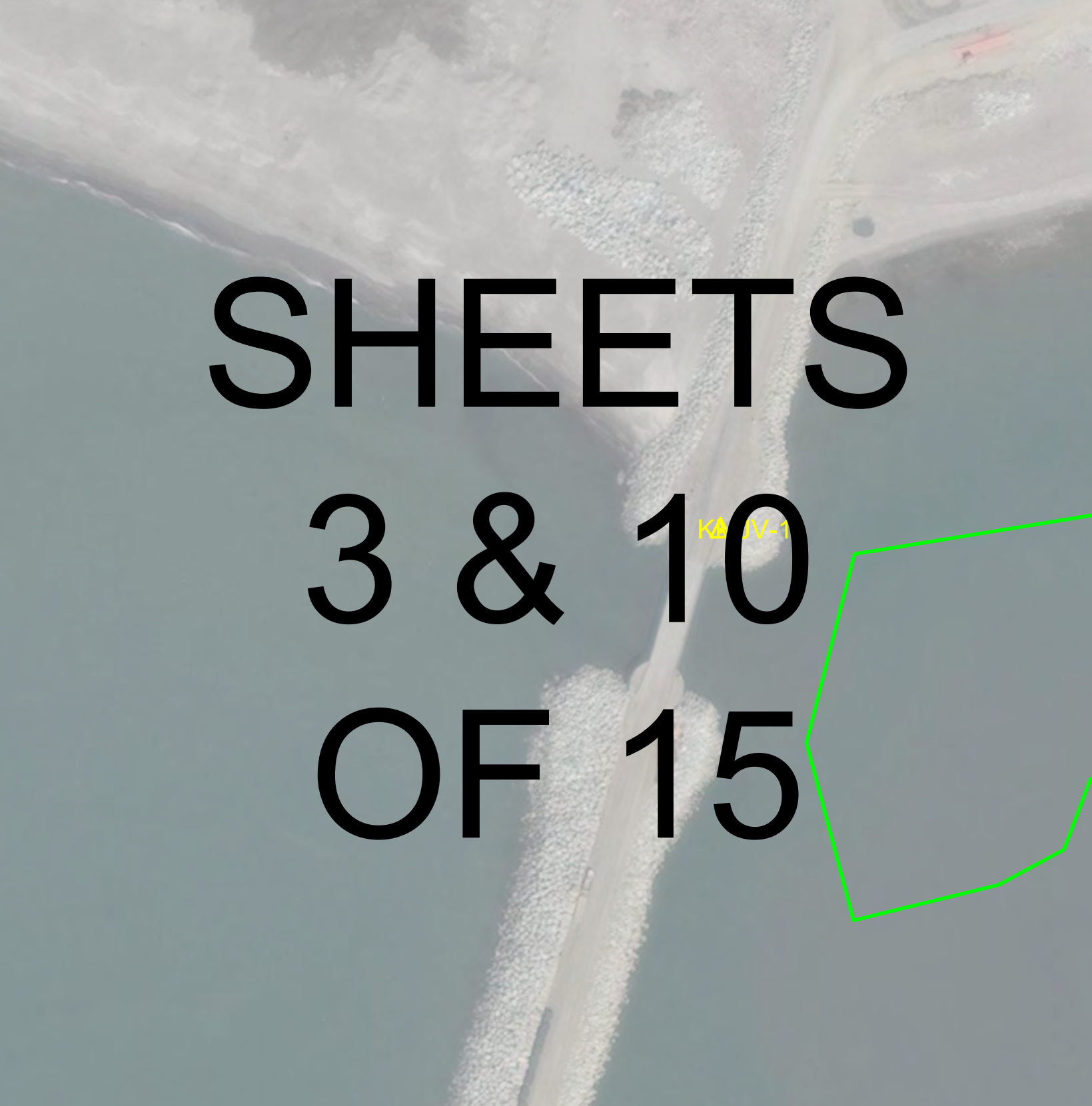
△ BOOTSTRAP

△ 27968



SHEETS  
8 & 15  
OF 15

▲ NH-02



SHEETS  
3 & 10  
OF 15

PROV

SHEETS  
5 & 12  
OF 15

PROJECT DEPTH -10 MLLW

PROJECT DEPTH -12 MLLW

NH03

NH04

NH05

NH06

NH07

NH08

NH09

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PROJECT DEPTH: 8 MLW

PUMP

# SHEETS 7 & 14 OF 15

SHEETS  
2 & 9  
OF 15

27904

A-100 L

A-100 W

A-100 W

A-100 W

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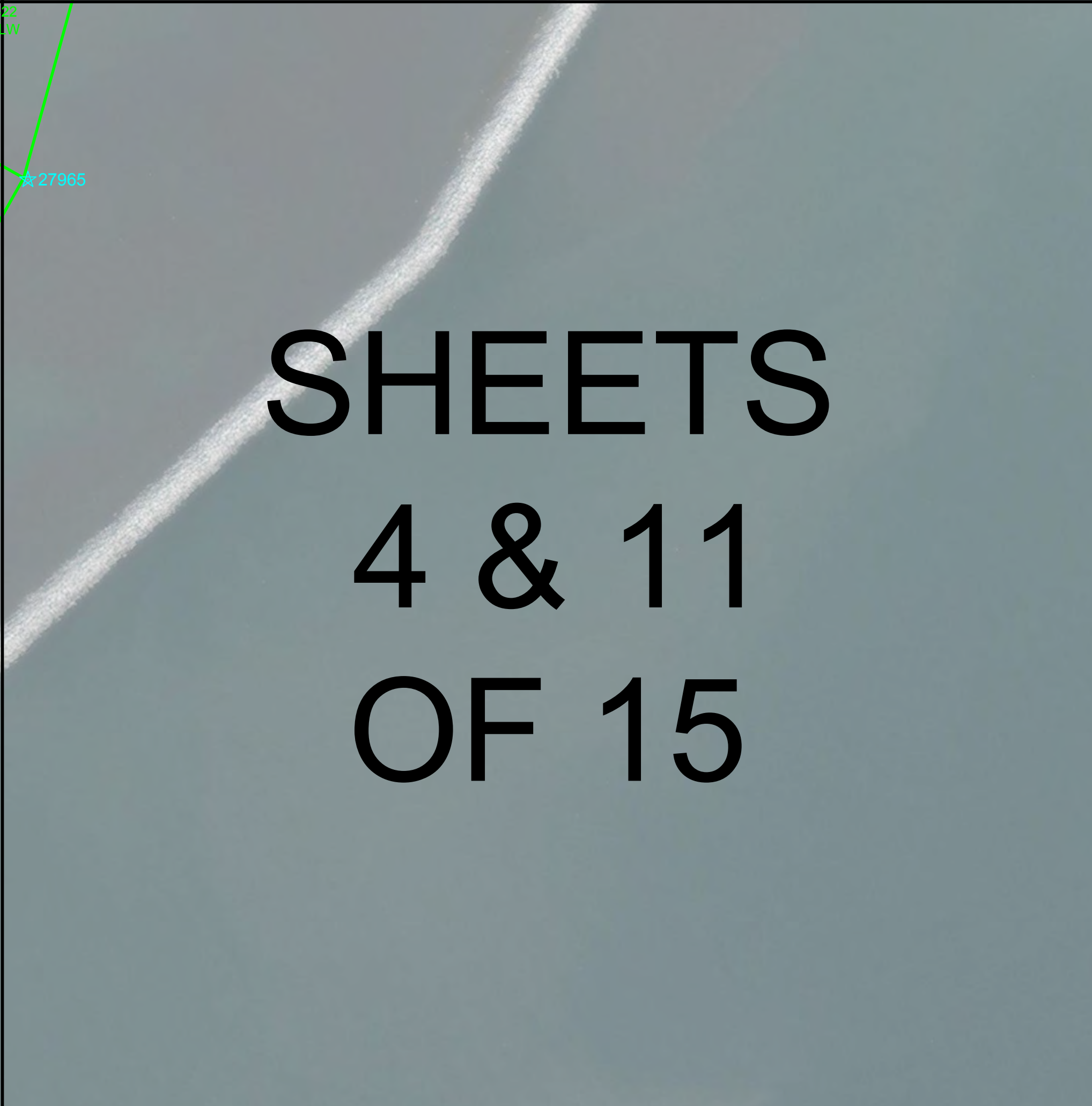
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A dark gray background with a diagonal white line running from the bottom left towards the top right. In the top left corner, there is a green line forming a small triangle, with the number '27965' written in green next to it.

27965

**SHEETS**  
**4 & 11**  
**OF 15**



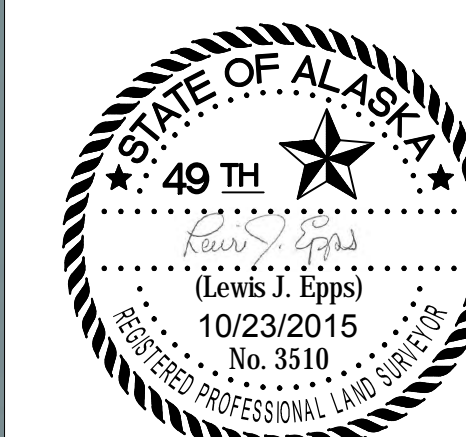
## NOTES

1. PRIMARY PROJECT HORIZONTAL CONTROL IN ALASKA STATE PLANE, ZONE 8, NAD83 (NRSR2002) IN U.S. FEET BASED ON COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL, STATIONS "OME A" (PID P36551), AS N 3,841,096.47 AND E 1,729,070.64 AND "OME B" (PID P36525) AS N 3,842,264.55 AND E 1,729,661.41. MONUMENTS ARE SECONDARY AND REFERENCE CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.
2. LOCAL PROJECT HORIZONTAL CONTROL IN ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USACE BC "NH-04" AS N 3,837,212.71, E 1,731,266.48.
3. VERTICAL CONTROL IS MEAN LOW LOW WATER (MLLW=0.0), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST "946 8796 NOME, NORTON SOUND, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED ON 1983-2011 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCH MARK "946 8796 G 1992" (VMH12154/PID BBBD24) AS 12.84".
4. VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD08 (128) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "946 8796 G 1992" (VMH12154/PID BBBD24) AS 15.42".
5. SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
6. BATHYMETRY WAS COLLECTED AUGUST 22, 2015. SOUNDINGS WERE COLLECTED USING AN RS200C 2012 MULTIBeam ECHOSOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE S SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE DETERMINED USING A REAL TIME KINEMATIC (RTK) GPS SYSTEM. DATA WAS COLLECTED USING A REAL TIME PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL VELOCITY TECHNIQUES.
7. TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REI, VZ400 3D LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITIVE VESSEL ORIENTATION WERE MEASURED USING AN APPLIX POS QINSY OCEANMASTER V5 SYSTEM.
8. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
9. MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BIASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BIASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE SOUNDINGS.

SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
DINGO	3,836,890.97	1,732,407.19	19.34	3.5" DOMED USACE BC
KMUJ-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.34	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.64	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

\*Bench marks with elevation precision of 0.1' were measured by RTK GNSS.

NAVIGATION AIDS			
USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



THIS HYDROGRAPHIC SURVEY WAS COMPLETED  
UNDER THE OVERSIGHT OF AN ACSM/THOSOA  
CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)

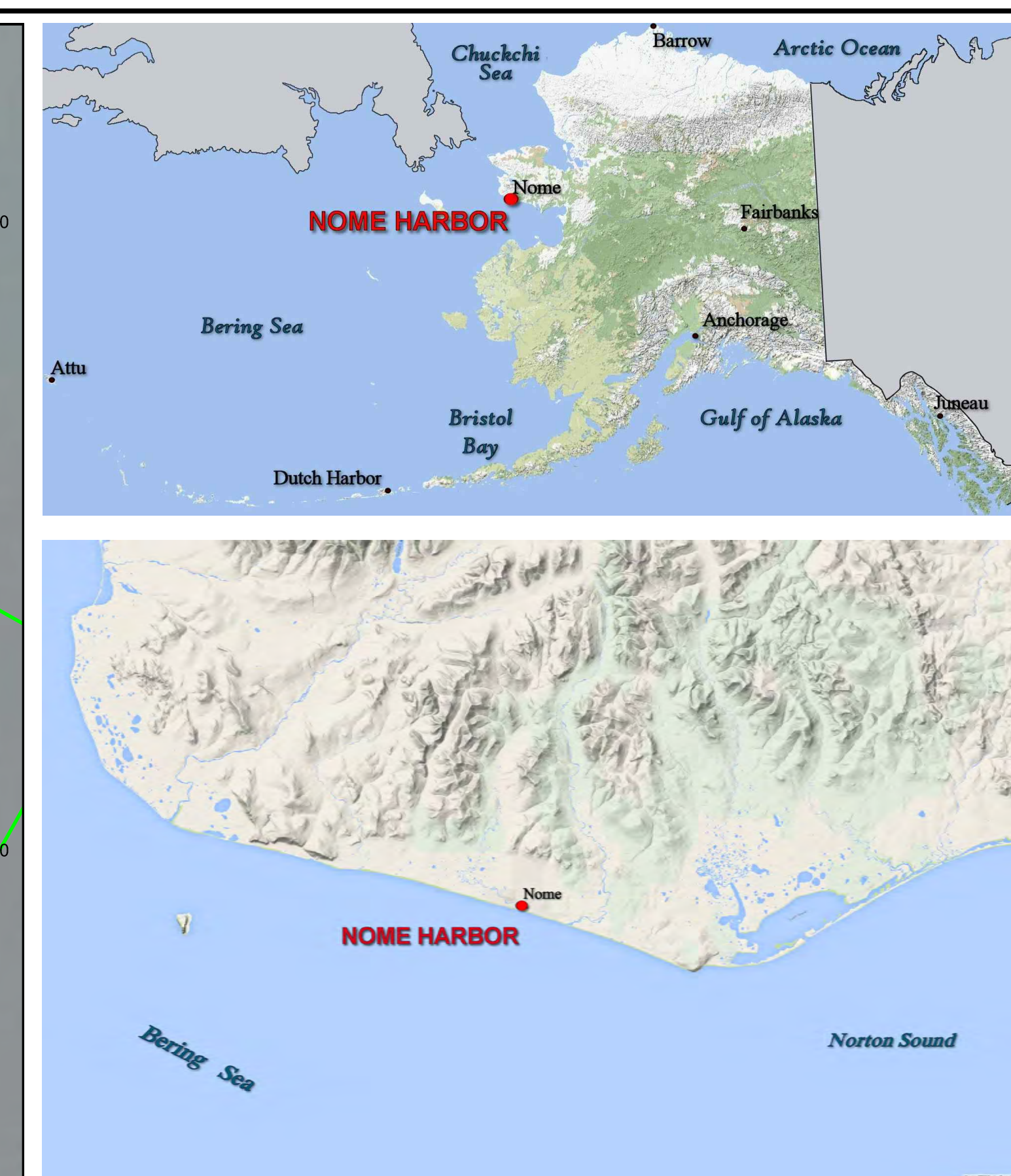


PROJECT LIMITS		
CORNER#	NORTHING	EASTING
1	8,835,149.55	1,729,399.02
2	8,836,072.82	1,729,918.93
3	8,836,470.43	1,730,028.07
4	8,837,258.32	1,730,471.76
5	8,837,512.08	1,730,639.04
6	8,837,682.32	1,730,850.05
7	8,837,676.52	1,731,038.64
8	8,837,477.28	1,731,471.47
9	8,837,389.71	1,731,661.72
10	8,837,780.09	1,731,841.42
11	8,837,960.29	1,731,879.63
12	8,838,068.59	1,731,847.06
13	8,837,889.01	1,731,563.78
14	8,837,833.67	1,731,450.42
15	8,838,004.90	1,730,713.69
16	8,837,805.36	1,730,607.88
17	8,837,331.92	1,730,341.06
18	8,836,544.03	1,729,897.37
19	8,836,244.56	1,729,613.96
20	8,836,256.67	1,729,127.44
21	8,836,166.59	1,729,127.64
22	8,836,166.59	1,729,227.64
23	8,835,941.14	1,729,224.59
24	8,835,263.17	1,729,026.05
25	8,835,168.52	1,729,218.48
26	8,837,716.35	1,731,572.37
30	8,837,169.70	1,729,826.82
31	8,837,188.08	1,729,724.66
32	8,837,141.72	1,729,440.28
33	8,836,920.50	1,729,383.90
34	8,836,712.15	1,729,439.22
35	8,836,753.91	1,729,609.77
36	8,836,795.08	1,729,685.94
37	8,836,877.58	1,729,717.05
38	8,836,889.71	1,729,804.27
39	8,837,022.53	1,729,867.08
40	8,837,887.27	1,730,662.63
41	8,837,690.63	1,730,843.85
42	8,837,413.08	1,730,561.80
43	8,837,483.02	1,730,437.69
51	8,837,645.05	1,731,549.07
52	8,837,846.12	1,730,965.73
53	8,837,725.78	1,730,848.92
54	8,835,142.70	1,729,194.32




SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
DINGO	3,836,890.97	1,732,407.19	19.34	3.5" DOMED USACE BC
KMJV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.64	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

NAVIGATION AIDS			
USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



# NOTES

1. PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NRSR2007) IN U.S. FEET BASIS OF COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "ONE A" (PID DF3051), "AS 3,841,096.47 AND E 1,728,070.64 AND "ONE B" (PID DF3652), "AS 3,842,264.55 AND E 1,729,661.41". MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.  
  
LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING UASC "N" 04 "AS N 8,537,212.71", E 1,731,266.48.
2. VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW+0.0), BASED ON THE NOAA/NOS TIDAL BENCH MARK 1992 "LAS 8756 NOME, NORTON SOUND, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCH MARK 1992 "LAS 8756 NOME" (VNM11254/PID BBB024) AS 12.84".
3. VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 128) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "LAS 8756 G" 1992" (VNM11254/PID BBB024) AS 15.42".
4. SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
5. BATHYMETRY WAS COLLECTED AUGUST 22, 2015. SOUNDINGS WERE COLLECTED USING AN RZSONIC 2200 MULTIBeam ECHOSOUNDING OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS MEASURED WITH AN RZSONIC 2200 SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV/ OCEANMASTER V5 SYSTEM. DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
6. TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REIGL VZ400 3D LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV/ OCEANMASTER V5 SYSTEM.
7. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
8. MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE SOUNDINGS.

 <b>US Army Corps of Engineers</b> <b>ALASKA DISTRICT</b>	
CONTRACT NO. W0108-AL-D-031.0229 CONTRACTOR ERMAC INC. CITY SAN RAFAEL STATE CALIFORNIA ADDRESS 10000 PHONE NUMBER 706-344-1111 FAX 706-344-1111 E-MAIL ERMAC@AOL.COM PROJECT CONTRACTOR DATE 10/23/2015	
DRAWN BY: 10/29/15, 12/23/2015 CHECKED BY: 10/29/15, 12/23/2015 INCHES: 1/8" = 1'-0" PROJECT NO. W0108-AL-D-031.0229 JOB NO. 10000 SCALE: 1" = 100' PLOT DATE: 10/23/2015 FILE NAME: 10/23/2015-10/23/2015 ANSI E	
U.S. ARMY CORPS OF ENGINEERS ALASKA DISTRICT 637 Linden St., Ste 100 San Rafael, CA 94601 415-498-1111	
NOME, ALASKA NOME HARBOR TOPOGRAPHIC / HYDROGRAPHIC SURVEY AUGUST 17-23, 2015	
SHEET IDENTIFICATION 6-NOM-92-07-54	
Sheet 2 of 10	





PROJECT LIMITS		
CORNER#	NORTHING	EASTING
1	3,835,149.55	1,729,399.02
2	3,836,072.82	1,729,918.93
3	3,836,470.43	1,730,028.07
4	3,837,258.32	1,730,471.76
5	3,837,512.08	1,730,639.04
6	3,837,682.32	1,730,850.05
7	3,837,676.52	1,731,038.64
8	3,837,477.28	1,731,471.47
9	3,837,389.71	1,731,661.72
10	3,837,780.09	1,731,841.42
11	3,837,960.29	1,731,879.63
12	3,838,068.59	1,731,647.06
13	3,837,889.01	1,731,563.78
14	3,837,833.67	1,731,450.42
15	3,838,004.90	1,730,713.69
16	3,837,805.36	1,730,607.88
17	3,837,331.92	1,730,341.06
18	3,836,544.03	1,729,897.37
19	3,836,244.56	1,729,613.96
20	3,836,256.67	1,729,127.44
21	3,836,166.59	1,729,127.64
22	3,836,166.59	1,729,227.64
23	3,835,941.14	1,729,224.59
24	3,835,263.17	1,729,026.05
25	3,835,168.52	1,729,218.48
26	3,837,716.35	1,731,572.37
30	3,837,169.70	1,729,826.82
31	3,837,188.08	1,729,724.66
32	3,837,141.72	1,729,440.28
33	3,836,920.50	1,729,383.90
34	3,836,712.15	1,729,439.22
35	3,836,753.91	1,729,609.77
36	3,836,795.08	1,729,685.94
37	3,836,877.58	1,729,717.05
38	3,836,889.71	1,729,804.27
39	3,837,022.53	1,729,867.08
40	3,837,887.27	1,730,662.63
41	3,837,690.63	1,730,843.85
42	3,837,413.08	1,730,561.80
43	3,837,483.02	1,730,437.69
51	3,837,645.05	1,731,549.07
52	3,837,846.12	1,730,965.73
53	3,837,725.78	1,730,648.92
54	3,835,142.70	1,729,194.32



#### NOTES

- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NSRS2007) IN U.S. FEET. BASIS OF COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "OME A" (PID DF3651), AS N 3,841,096.47 AND E 1,728,070.64 AND "OME B" (PID DF3652), AS N 3,842,264.55 AND E 1,729,661.41. MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.
- LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USACE BC "NH-04" AS N 3,837,212.71; E 1,731,266.48.
- VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW+0.0), BASED ON THE NOAA'S TIDAL BENCH MARK LIST "946 8756 NOME, NORTON SOUND, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA'S TIDAL BENCH MARK "946 8756 G 1992" (VM#12154/PID BB8D24) AS 12.84.
- VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 128) ELEVATIONS HOLDING NOAA'S TIDAL BENCH MARK "946 8756 G 1992" (VM#12154/PID BB8D24) AS 15.42.
- SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
- BATHYMETRY WAS COLLECTED AUGUST 22, 2015. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2022 MULTIBeam ECHOSOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE X SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER V5 SYSTEM. DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
- TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REIGL V2400 3D LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER V5 SYSTEM.
- THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
- MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BIASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BIASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE SOUNDINGS.

#### SURVEY CONTROL DATA

STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
DINGO	3,836,890.97	1,732,407.19	19.34	3.5" DOMED USACE BC
KMUV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.64	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

\*Bench marks with elevation precision of 0.1' were measured by RTK GNSS.

#### NAVIGATION AIDS

USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THOSOA CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)

US Army Corps of Engineers  
ALASKA DISTRICT

CONTRACT NO. W11H14-L-0011.0029

CONTRACTOR: EITM&C, INC.

CITY: SAN RAFAEL STATE: CALIFORNIA

Drawn By: MICHAEL E. NEFF

Approved: THOMAS A. BLUM

Date: 10/23/2015

NO.	DESCRIPTION	DATE	BY	APP'D
1	PROJECT LIMITS	10/23/2015	ME	TS
2	NAVIGATION AIDS	10/23/2015	ME	TS
3	PROJECT LIMITS	10/23/2015	ME	TS
4	NAVIGATION AIDS	10/23/2015	ME	TS
5	PROJECT LIMITS	10/23/2015	ME	TS
6	NAVIGATION AIDS	10/23/2015	ME	TS
7	PROJECT LIMITS	10/23/2015	ME	TS
8	NAVIGATION AIDS	10/23/2015	ME	TS
9	PROJECT LIMITS	10/23/2015	ME	TS
10	NAVIGATION AIDS	10/23/2015	ME	TS
11	PROJECT LIMITS	10/23/2015	ME	TS
12	NAVIGATION AIDS	10/23/2015	ME	TS
13	PROJECT LIMITS	10/23/2015	ME	TS
14	NAVIGATION AIDS	10/23/2015	ME	TS
15	PROJECT LIMITS	10/23/2015	ME	TS
16	NAVIGATION AIDS	10/23/2015	ME	TS
17	PROJECT LIMITS	10/23/2015	ME	TS
18	NAVIGATION AIDS	10/23/2015	ME	TS
19	PROJECT LIMITS	10/23/2015	ME	TS
20	NAVIGATION AIDS	10/23/2015	ME	TS
21	PROJECT LIMITS	10/23/2015	ME	TS
22	NAVIGATION AIDS	10/23/2015	ME	TS
23	PROJECT LIMITS	10/23/2015	ME	TS
24	NAVIGATION AIDS	10/23/2015	ME	TS
25	PROJECT LIMITS	10/23/2015	ME	TS
26	NAVIGATION AIDS	10/23/2015	ME	TS
27	PROJECT LIMITS	10/23/2015	ME	TS
28	NAVIGATION AIDS	10/23/2015	ME	TS
29	PROJECT LIMITS	10/23/2015	ME	TS
30	NAVIGATION AIDS	10/23/2015	ME	TS
31	PROJECT LIMITS	10/23/2015	ME	TS
32	NAVIGATION AIDS	10/23/2015	ME	TS
33	PROJECT LIMITS	10/23/2015	ME	TS
34	NAVIGATION AIDS	10/23/2015	ME	TS
35	PROJECT LIMITS	10/23/2015	ME	TS
36	NAVIGATION AIDS	10/23/2015	ME	TS
37	PROJECT LIMITS	10/23/2015	ME	TS
38	NAVIGATION AIDS	10/23/2015	ME	TS
39	PROJECT LIMITS	10/23/2015	ME	TS
40	NAVIGATION AIDS	10/23/2015	ME	TS
41	PROJECT LIMITS	10/23/2015	ME	TS
42	NAVIGATION AIDS	10/23/2015	ME	TS
43	PROJECT LIMITS	10/23/2015	ME	TS
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45	PROJECT LIMITS	10/23/2015	ME	TS
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47	PROJECT LIMITS	10/23/2015	ME	TS
48	NAVIGATION AIDS	10/23/2015	ME	TS
49	PROJECT LIMITS	10/23/2015	ME	TS
50	NAVIGATION AIDS	10/23/2015	ME	TS
51	PROJECT LIMITS	10/23/2015	ME	TS
52	NAVIGATION AIDS	10/23/2015	ME	TS
53	PROJECT LIMITS	10/23/2015	ME	TS
54	NAVIGATION AIDS	10/23/2015	ME	TS
55	PROJECT LIMITS	10/23/2015	ME	TS
56	NAVIGATION AIDS	10/23/2015	ME	TS
57	PROJECT LIMITS	10/23/2015	ME	TS
58	NAVIGATION AIDS	10/23/2015	ME	TS
59	PROJECT LIMITS	10/23/2015	ME	TS
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63	PROJECT LIMITS	10/23/2015	ME	TS
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65	PROJECT LIMITS	10/23/2015	ME	TS
66	NAVIGATION AIDS	10/23/2015	ME	TS
67	PROJECT LIMITS	10/23/2015	ME	TS
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85	PROJECT LIMITS	10/23/2015	ME	TS
86	NAVIGATION AIDS	10/23/2015	ME	TS
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93	PROJECT LIMITS	10/23/2015	ME	TS
94	NAVIGATION AIDS	10/23/2015	ME	TS
95	PROJECT LIMITS	10/23/2015	ME	TS
96	NAVIGATION AIDS	10/23/2015	ME	TS
97	PROJECT LIMITS	10/23/2015	ME	TS
98	NAVIGATION AIDS	10/23/2015	ME	TS
99	PROJECT LIMITS	10/23/2015	ME	TS
100	NAVIGATION AIDS	10/23/2015	ME	TS

U.S. ARMY CORPS OF ENGINEERS  
ALASKA DISTRICT  
JBER, ALASKA 99506-0988

637 6th Ave.  
San Rafael, CA 94901

10/23/2015

NOME, ALASKA  
NOME HARBOR  
TOPOGRAPHIC / HYDROGRAPHIC SURVEY  
AUGUST 17-23, 2015

SHEET IDENTIFICATION  
6-NOM-92-07-54  
Sheet 3 of 15





PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NRSR2007) IN U.S. FEET. BASE OF COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATION "ONE A" (PID 0F3561). "ONE A" HAS "Easting" of 728,070.04 and "NORTH" of 1,349,264.50 AND "E" 1.728 661 41". MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NEAR AIRPORT, ALASKA.

LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USAGE BC "NH-04" IS 8.837,212.71", "E" 1.731,266.48".

VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST "846 8796 NOON, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED ON MEAN LOWER LOW WATER OF THE "846 8796 NOON, ALASKA" TIDAL BENCH MARK "846 8796 G 1992" (VNM12154/PID BBBD02A) IS NOT SURVEYED BY HOLDING NOAA/NOS TIDAL BENCH MARK "846 8796 G 1992" (VNM12154/PID BBBD02A) IS NOT SURVEYED.

VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD83 (GEOID 12.02) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "846 8796 G 1992" (VNM12154/PID BBBD02A) AS 15.42".

SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.

BATHYMETRY WAS COLLECTED AUGUST 22, 2015. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2002 MULTIBEAM ECHOSOUNDER OPERATING AT 220 KHZ, SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AK, BSE X SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APLINX POSMV OCEANMETER VESSEL DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS SURVEYING METHODS AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.

TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REIGL V2400 3D LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APLINX POSMV OCEANMETER VESSEL DATA.

THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.

MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE SOUNDINGS.


SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.99	1,729,122.30	12.90	ALUMINUM MON
DINGO	3,836,890.97	1,732,407.19	19.34	3.5" DOMED USACE BC
KMUJV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.64	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

Bench marks with elevation precision of 0.1' were measured by RTK GNSS

NAVIGATION AIDS			
USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9

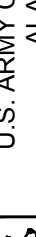


THIS HYDROGRAPHIC SURVEY WAS COMPLETED  
UNDER THE OVERSIGHT OF AN ACSM/THOSOA  
CERTIFIED HYDROGRAPHER

  
David R. Neff C.H. (275)

CONTRACT NO. W911KB-14-D-0013 / 0020	
CONTRACTOR ETRAC INC.	
CITY SAN RAFAEL STATE CALIFORNIA	
Recommended:	Approved:
MICHAEL E. MUELLER PRIME CONTRACTOR	THOMAS A. SLOAN CHIEF GEOMATICS SECTION
	Date: 10/23/2015

[illegible]

	<b>U.S. ARMY CORPS OF ENGINEERS</b> 637 1st St. S. San Rafael, CA 94801		DATE: 07/24/95 TIME: 09:25	
	DRAWN BY: CHECKED BY: T. A. S. H. W. G.		DATE: 07/24/95 TIME: 09:25	
PROJECT NO.: 6888 DRAWN BY: Gregory W. Gibson CHECKED BY: T. A. S. H. W. G.		CONTRACT NO.: WY16-14-0013.028 JOB NO.: 174		FILE NAME: 07242.WYS.DWG
APPROVED BY: Thomas A. Bane, Chief Domestic Section		SCALE: 1" = 400'		SIZE:

NOME, ALASKA  
NOME HARBOR  
HIC / HYDROGRAPHIC SURVEY  
AUGUST 17-23, 2015

SHEET  
IDENTIFICATION

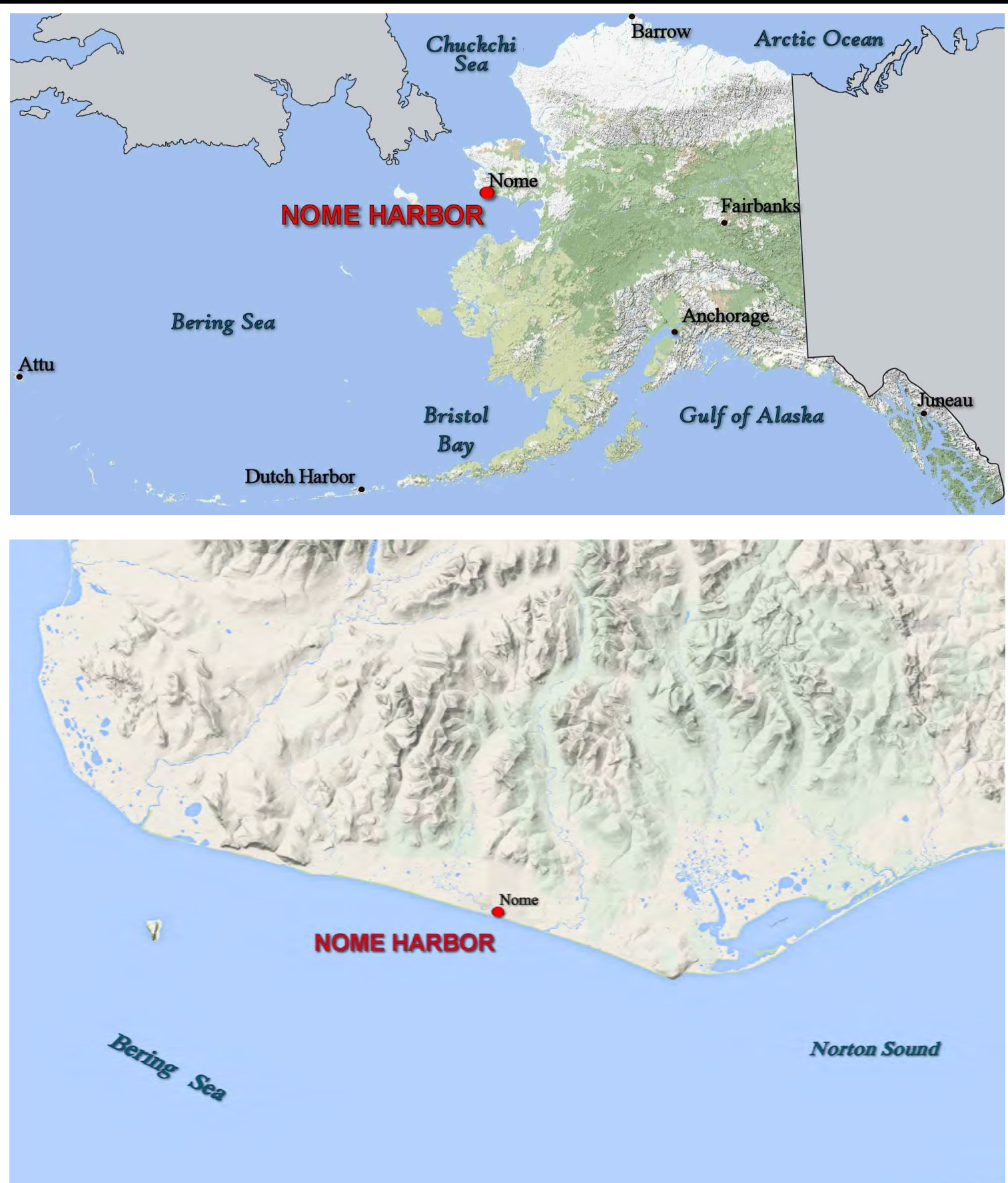
6-NOM-92-07-54





PROJECT LIMITS		
CORNER#	NORTHING	EASTING
1	3,835,149.55	1,729,399.02
2	3,836,072.82	1,729,918.93
3	3,836,470.43	1,730,028.07
4	3,837,258.32	1,730,471.76
5	3,837,512.08	1,730,639.04
6	3,837,682.32	1,730,850.05
7	3,837,676.52	1,731,038.64
8	3,837,477.28	1,731,471.47
9	3,837,389.71	1,731,661.72
10	3,837,780.09	1,731,841.42
11	3,837,960.29	1,731,879.63
12	3,838,068.59	1,731,647.06
13	3,837,889.01	1,731,563.78
14	3,837,833.67	1,731,450.42
15	3,838,004.90	1,730,713.69
16	3,837,805.36	1,730,607.88
17	3,837,331.92	1,730,341.06
18	3,836,544.03	1,729,897.37
19	3,836,244.56	1,729,613.96
20	3,836,256.67	1,729,127.44
21	3,836,166.59	1,729,127.64
22	3,836,166.59	1,729,227.64

PROJECT LIMITS		
CORNER#	NORTHING	EASTING
23	3,835,941.14	1,729,224.59
24	3,835,263.17	1,729,026.05
25	3,835,168.52	1,729,218.48
26	3,837,716.35	1,731,572.37
30	3,837,169.70	1,729,826.82
31	3,837,188.08	1,729,724.66
32	3,837,141.72	1,729,440.28
33	3,836,920.50	1,729,383.90
34	3,836,712.15	1,729,439.22
35	3,836,753.91	1,729,609.77
36	3,836,795.08	1,729,685.94
37	3,836,877.58	1,729,717.05
38	3,836,889.71	1,729,804.27
39	3,837,022.53	1,729,867.08
40	3,837,887.27	1,730,662.63
41	3,837,690.63	1,730,843.85
42	3,837,413.08	1,730,561.80
43	3,837,483.02	1,730,437.69
51	3,837,645.05	1,731,549.07
52	3,837,846.12	1,730,965.73
53	3,837,725.78	1,730,648.92
54	3,835,142.70	1,729,194.32



#### NOTES

- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NSRS2007) IN U.S. FEET. BASIS OF COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "OME A" (PID DF3651), AS N 3,841,096.47 AND E 1,728,070.64 AND "OME B" (PID DF3652), AS N 3,842,264.55 AND E 1,729,661.41. MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.
- LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USACE BC "NH-04" AS N 3,837,212.71; E 1,731,266.48.
- VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW+0.0'), BASED ON THE NOAA/NOA TIDAL BENCH MARK LIST "946 8756 NOME, NORTON SOUND, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOA TIDAL BENCH MARK "946 8756 G 1992" (VM#12154/PID BB8D24) AS 12.84'.
- VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 128) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "946 8756 G 1992" (VM#12154/PID BB8D24) AS 15.42'.
- SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
- BATHYMETRY WAS COLLECTED AUGUST 22, 2015. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2022 MULTIBeam ECHOSOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE X SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER V5 SYSTEM. DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
- TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REIGL V2400 3D LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER V5 SYSTEM.
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- MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BIASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BIASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE SOUNDINGS.

#### SURVEY CONTROL DATA

STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
DINGO	3,836,890.97	1,732,407.19	19.34	3.5" DOMED USACE BC
KMJV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.64	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

\*Bench marks with elevation precision of 0.1' were measured by RTK GNSS.

#### NAVIGATION AIDS

USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THOSOA CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)

US Army Corps of Engineers  
of Engineers  
ALASKA DISTRICT

CONTRACT NO. W01H04-14-0011.0-0209  
CONTRACTOR: ETIMC, INC.  
CITY: SAN RAFAEL  
STATE: CALIFORNIA  
Date: 10/23/2015  
Approved: MICHAEL E. MEYER  
Recommended: THOMAS A. BLON

BY: JACOB  
DATE: 10/23/2015  
DESCRIPTION: TOPOGRAPHIC / HYDROGRAPHIC SURVEY

U.S. ARMY CORPS OF ENGINEERS  
ALASKA DISTRICT  
JBER, ALASKA 99508-0888  
627 1st Street  
San Rafael, CA 94901

FILE NAME: 10232015  
SHEET: 5 OF 15  
DATE: 10/23/2015

NOME, ALASKA  
NOME HARBOR  
TOPOGRAPHIC / HYDROGRAPHIC SURVEY  
AUGUST 17-23, 2015

SHEET IDENTIFICATION  
6-NOM-92-07-54  
Sheet 5 of 15





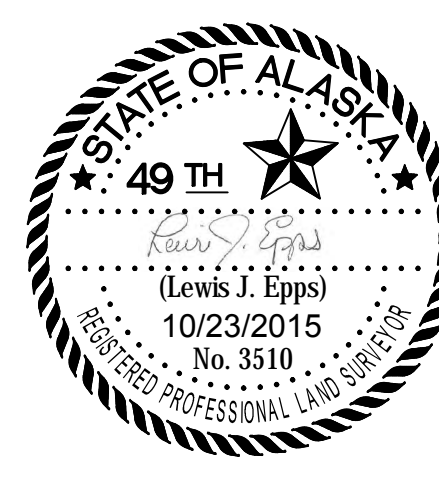




- NOTES**
- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NSRS2007) IN U.S. FEET. BASIS OF COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "OME A" (PID DF3651), AS N 3,841,096.47 AND E 1,728,070.84 AND "OME B" (PID DF3652), AS N 3,842,264.55 AND E 1,729,661.41. MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.
  - LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USACE BC "NH-04" AS N 3,837,212.71; E 1,731,266.48.
  - VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW+0.0), BASED ON THE NOAA'S TIDAL BENCH MARK LIST "946 8756 NOME, NORTON SOUND, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA'S TIDAL BENCH MARK "946 8756 G 1992" (VM#12154/PID BBBD24) AS 12.84.
  - VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 128) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "946 8756 G 1992" (VM#12154/PID BBBD24) AS 15.42.
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  - BATHYMETRY WAS COLLECTED AUGUST 22, 2015. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2022 MULTIBEAM ECHOSOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE X SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER V5 SYSTEM. DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
  - TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REIGL V2400 3D LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER V5 SYSTEM.
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PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

NAVIGATION AIDS			
USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
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27971	3,837,805	1,731,401	BUOY 9



THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THOSOA CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)

US Army Corps of Engineers  
ALASKA DISTRICT

CONTRACT NO. W01H04-L4-D011.0-0209

CONTRACTOR: ETIMC, INC.

CITY: SAN RAFAEL STATE: CALIFORNIA

Drawn by: MICHAEL E. NEFFER

Recommended by: THOMAS A. BLUM

Date: 10/23/2015

www.usace.army.mil

NO.	DESCRIPTION	DATE	BY	APP'D
1	DESIGN			
2	CONSTRUCTION			
3	AS-BUILT			

U.S. ARMY CORPS OF ENGINEERS  
ALASKA DISTRICT  
JBER, ALASKA 99508-0988

637 1<sup>st</sup> Street, Ste. 100  
San Rafael, CA 94901

10/23/2015

FILE NAME: 027422-275.dwg

SCALE: 1" = 50'

NOME, ALASKA  
NOME HARBOR  
TOPOGRAPHIC / HYDROGRAPHIC SURVEY  
AUGUST 17-23, 2015

SHEET IDENTIFICATION  
6-NOM-92-07-54  
Sheet 7 of 15





PROJECT LIMITS		
CORNER#	NORTHING	EASTING
1	3,835,149.55	1,729,399.02
2	3,836,072.82	1,729,918.93
3	3,836,470.43	1,730,028.07
4	3,837,258.32	1,730,471.76
5	3,837,512.08	1,730,639.04
6	3,837,682.32	1,730,850.05
7	3,837,676.52	1,731,038.64
8	3,837,477.28	1,731,471.47
9	3,837,389.71	1,731,661.72
10	3,837,780.09	1,731,841.42
11	3,837,960.29	1,731,879.63
12	3,838,068.59	1,731,647.06
13	3,837,889.01	1,731,563.78
14	3,837,833.67	1,731,450.42
15	3,838,004.90	1,730,713.69
16	3,837,805.36	1,730,607.88
17	3,837,331.92	1,730,341.06
18	3,836,544.03	1,729,897.37
19	3,836,244.56	1,729,613.96
20	3,836,256.67	1,729,127.44
21	3,836,166.59	1,729,127.64
22	3,836,166.59	1,729,227.64
23	3,835,941.14	1,729,224.59
24	3,835,263.17	1,729,026.05
25	3,835,168.52	1,729,218.48
26	3,837,716.35	1,731,572.37
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31	3,837,188.08	1,729,724.66
32	3,837,141.72	1,729,440.28
33	3,836,920.50	1,729,383.90
34	3,836,712.15	1,729,439.22
35	3,836,753.91	1,729,609.77
36	3,836,795.08	1,729,685.94
37	3,836,877.58	1,729,717.05
38	3,836,889.71	1,729,804.27
39	3,837,022.53	1,729,867.08
40	3,837,887.27	1,730,662.63
41	3,837,690.63	1,730,843.85
42	3,837,413.08	1,730,561.80
43	3,837,483.02	1,730,437.69
51	3,837,645.05	1,731,549.07
52	3,837,846.12	1,730,965.73
53	3,837,725.78	1,730,648.92
54	3,835,142.70	1,729,194.32

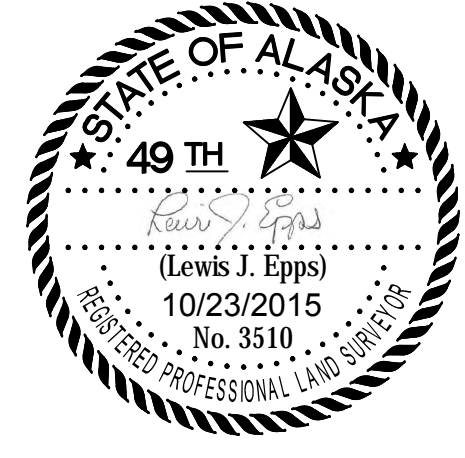


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*David R. Neff*

David R. Neff C.H. (275)

US Army Corps of Engineers - ALASKA DISTRICT

CONTRACT NO. W01H014-L-0010.0029

CONTRACTOR: ETMO, INC.

CITY: SAN RAFAEL STATE: CALIFORNIA

Recommended: MICHAEL E. MEYER Approved: THOMAS A. BLUM Date: 10/23/2015

Drawn by: [blank] Check by: [blank] Date: [blank]

Scale: [blank] Date: [blank]

BY: [blank] DATE: [blank]

DESCRIPTION: [blank]

U.S. ARMY CORPS OF ENGINEERS  
ALASKA DISTRICT  
JBER, ALASKA 99506-0988

637 6th Street  
San Rafael, CA 94901

FILE NAME: [blank]  
DATE: 10/23/2015

U.S. ARMY CORPS OF ENGINEERS  
ALASKA DISTRICT  
JBER, ALASKA 99506-0988

637 6th Street  
San Rafael, CA 94901

FILE NAME: [blank]  
DATE: 10/23/2015

NOME, ALASKA  
NOME HARBOR  
TOPOGRAPHIC / HYDROGRAPHIC SURVEY  
AUGUST 17-23, 2015

SHEET IDENTIFICATION  
6-NOM-92-07-54  
Sheet 8 of 15



**PROJECT LIMITS**

CORNER#	NORTHING	EASTING
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52	3,837,846.12	1,730,965.73
53	3,837,725.78	1,730,648.92
54	3,835,142.70	1,729,194.32

**OBSTRUCTION DATA**

ID	NORTHING	EASTING	DEPTH	APPROX SIZE (FEET)
OBST-1	3,835,635.9	1,729,241.4	-20.2	7X5X2.5

**ELEVATION COLOR LEGEND**

#	MIN. ELEV.	MAX. ELEV.	COLOR
1	-40.0	-20.0	Purple
2	-20.0	-10.0	Dark Blue
3	-10.0	-6.0	Blue
4	-6.0	-2.0	Light Blue
5	-2.0	0.0	White
6	0.0	2.0	Green
7	2.0	4.0	Yellow-Green
8	4.0	6.0	Yellow
9	6.0	8.0	Orange-Yellow
10	8.0	10.0	Orange
11	10.0	12.0	Red-Orange
12	12.0	14.0	Red
13	14.0	16.0	Dark Red
14	16.0	20.0	Brown
15	20.0	24.0	Dark Brown
16	24.0	40.0	Black

OUTER ENTRANCE  
CHANNEL  
PROJECT DEPTH:  
-22 MLLW

NO SURVEY DATA DUE TO ACTIVE CONSTRUCTION

NO SURVEY DATA DUE TO SHIPS AT BERTH

NO SURVEY DATA DUE TO SHIPS AT BERTH

NO SURVEY DATA DUE TO SHIPS AT BERTH

NO SURVEY DATA DUE TO CONTAINER BOX STACK

GRAPHIC SCALE IN FEET

A horizontal graphic scale bar with a black and white checkered pattern from 0 to 25 feet, and solid black from 25 to 150 feet. Numerical labels are placed at 50, 0, 25, 50, 100, and 150 feet. The text "GRAPHIC SCALE IN FEET" is centered below the bar.

- ## SURVEY CONTROL DATA



\*Bench marks with elevation precision of 0.1' were measured by RTK GNSS.

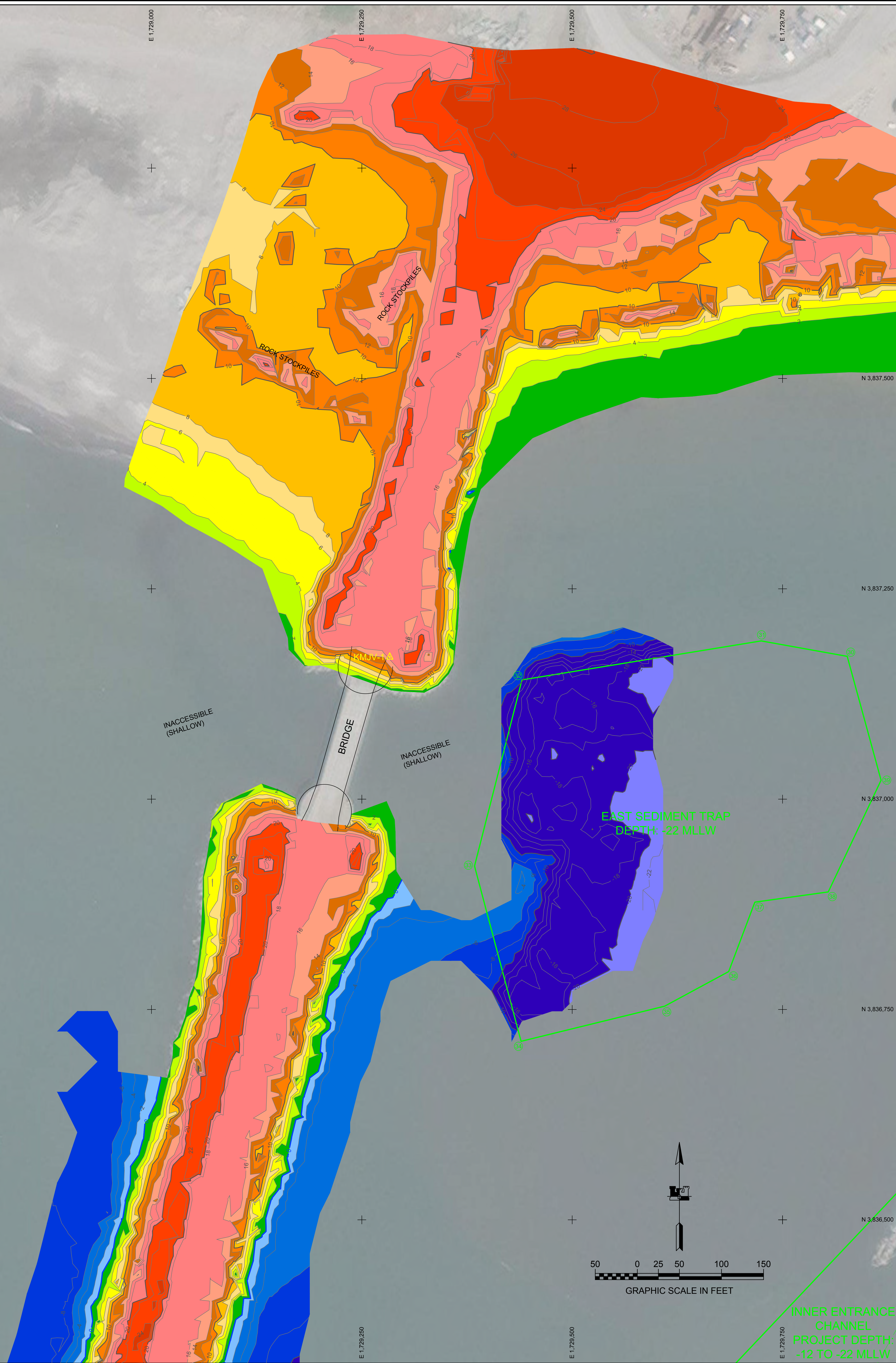
STATE OF ALASKA  
49 TH  
Lewis J. Epps  
(Lewis J. Epps)  
10/23/2015  
No. 3510  
REGISTERED PROFESSIONAL LAND SURVEYOR

THIS HYDROGRAPHIC SURVEY WAS COMPLETED  
UNDER THE OVERSIGHT OF AN ACSM/THOSOA  
CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)



ELEVATION COLOR LEGEND			
#	MIN. ELEV.	MAX. ELEV.	COLOR
1	-40.0	-20.0	
2	-20.0	-10.0	
3	-10.0	-6.0	
4	-6.0	-2.0	
5	-2.0	0.0	
6	0.0	2.0	
7	2.0	4.0	
8	4.0	6.0	
9	6.0	8.0	
10	8.0	10.0	
11	10.0	12.0	
12	12.0	14.0	
13	14.0	16.0	
14	16.0	20.0	
15	20.0	24.0	
16	24.0	40.0	



1. PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NRSR2007) IN U.S. FEET BASED ON COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "OME" (IP ID PF3651), "AS" (IP ID PF3652) AND "28.070.64" AND "ONE B" (PID PF3650). AS IN S.3462.2664 AND 1.728.6611. MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.
2. LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USACE BC "NH-04" IN S.3.837.212.71; E. 1.731.266.48.
3. VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0'), BASED ON THE NOANAS TIDAL BENCH MARK LIST "946 8756 NOME, NORTH SOUN, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED ON MEAN LOWER LOW WATER (MLLW) OF 0.0' REFERENCED BY HOLDING NOANAS TIDAL BENCH MARK "946 8756 G 1992" (VMW12154/PID BB8024) AS 12.120.
4. VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAD83 (GEOID 12B) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCH MARK "946 8756 G 1992" (VMW12154/PID BB8024) AS 15.42.
5. SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
6. BATHYMETRY WAS COLLECTED AUGUST 22, 2015. SOUNDINGS WERE COLLECTED USING AN RESONIC Z200 MULTIBEAM ECHOSOUNDER OPERATING AT 200 kHz, SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE K SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE DETERMINED USING AN APPLIX POSMV OCEANMASTER V5 SYSTEM. DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS OBSERVATIONS AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
7. TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REIGL VZ400 30 LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLIX POSMV OCEANMASTER V5 SYSTEM.
8. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
9. MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BIASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BIASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE SOUNDINGS.

STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
DINGO	3,836,890.97	1,732,407.19	19.34	3.5" DOMED USACE BC
KIMJV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.64	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

\*Bench marks with elevation precision of 0.1' were measured by RTK GNSS

USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



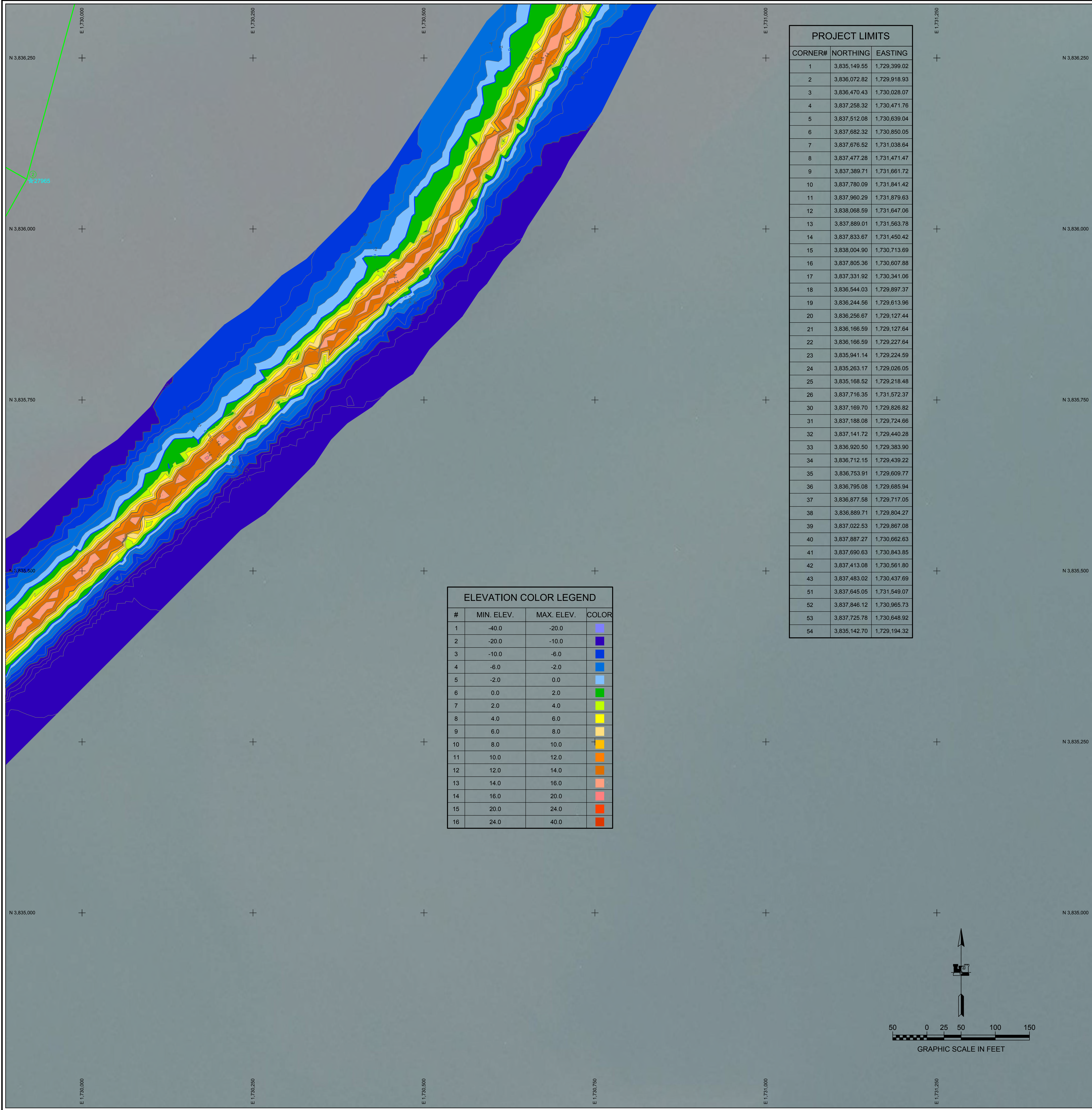
THIS HYDROGRAPHIC SURVEY WAS COMPLETED  
UNDER THE OVERSIGHT OF AN ACSM/THOSOA  
CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)

[illegible]

SURVEYED BY: Gregory W. Gibson	DATE: 23 October 2015
DRAWN BY: Gregory W. Gibson	UFC: 072742
CHECKED BY: TASIEHLUWIG	CONTRACT NO.: W11K6-14-D-0013 0029
APPROVED BY: Thomas A. Spear, Chief Geomatics Section	JOB NO.: 1915
SCALE: 1" = 50'	PLOT DATE: 10/23/2015
SIZE: ANSI E	FILE NAME: 072742-W001.DWG





- NOTES**
- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NSRS2007) IN U.S. FEET. BASIS OF COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "OME A" (PID DF3651), AS N 3,841,096.47 AND E 1,728,070.64 AND "OME B" (PID DF3652), AS N 3,842,264.55 AND E 1,729,661.41. MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.
  - LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USACE BC "NH-04" AS N 3,837,212.71; E 1,731,266.48.
  - VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW+0.0), BASED ON THE NOAA/NOIS TIDAL BENCH MARK LIST "946 8756 NOME, NORTON SOUND, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOIS TIDAL BENCH MARK "946 8756 G 1992" (VM#12154/PID BBBD24) AS 12.84.
  - VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 128) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "946 8756 G 1992" (VM#12154/PID BBBD24) AS 15.42.
  - SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
  - BATHYMETRY WAS COLLECTED AUGUST 22, 2015. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2022 MULTIBeam ECHOSOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE X SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER VS SYSTEM. DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
  - TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REIGL V2400 3D LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV OCEANMASTER VS SYSTEM.
  - THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
  - MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BIASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BIASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE SOUNDINGS.

SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
DINGO	3,836,890.97	1,732,407.19	19.34	3.5" DOMED USACE BC
KMJV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
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NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.64	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

\*Bench marks with elevation precision of 0.1' were measured by RTK GNSS.

NAVIGATION AIDS			
USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THOSOA CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)

US Army Corps of Engineers  
ALASKA DISTRICT

CONTRACT NO. W01H014-14-0011.0-0209  
CONTRACTOR: EITM&C, INC.  
CITY: SAN RAFAEL, STATE: CALIFORNIA  
RECOMMENDED: MICHAEL E. NEFF  
APPROVED: THOMAS A. BLUM  
DATE: 10/23/2015  
DRAWN BY: [Signature]

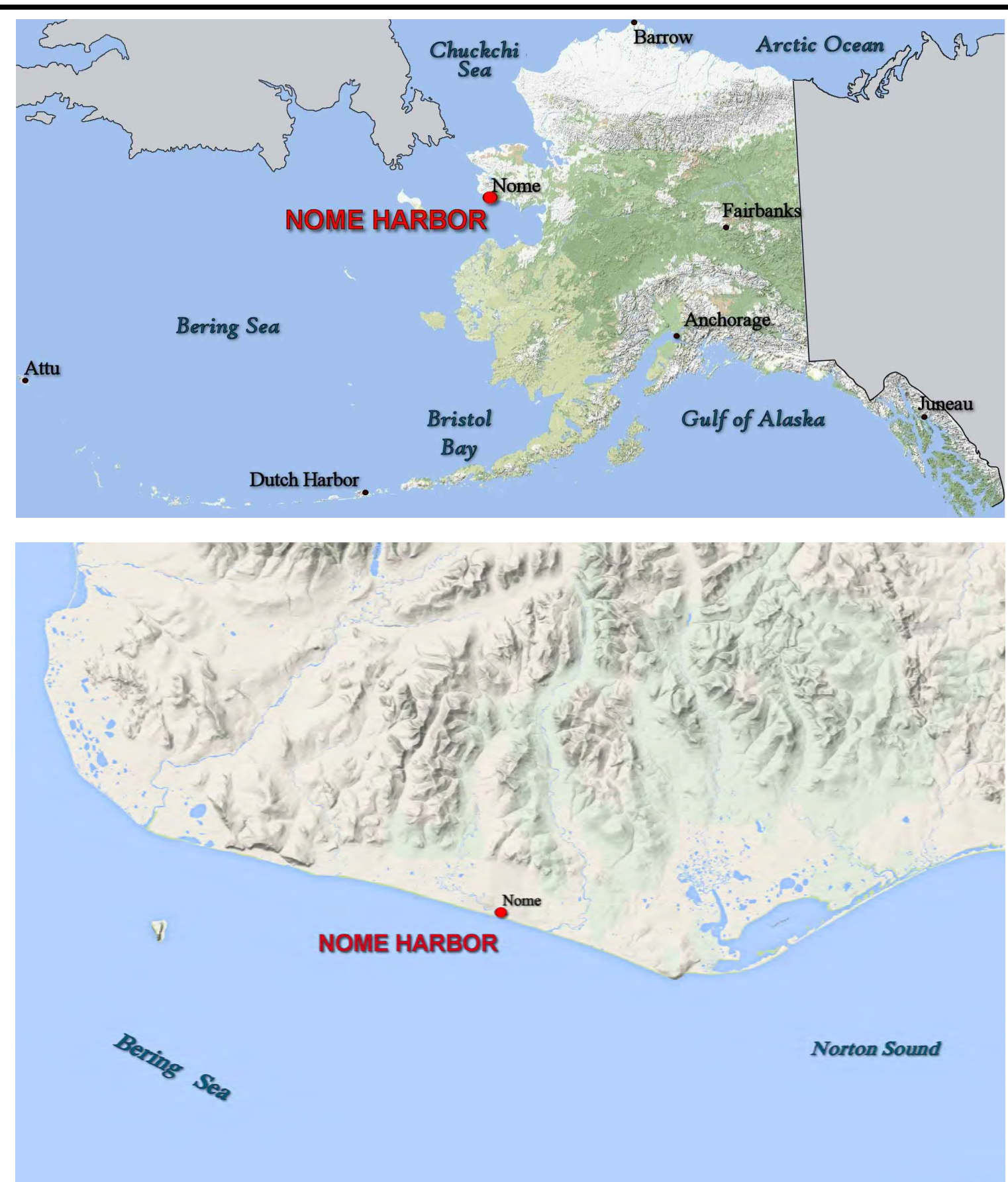
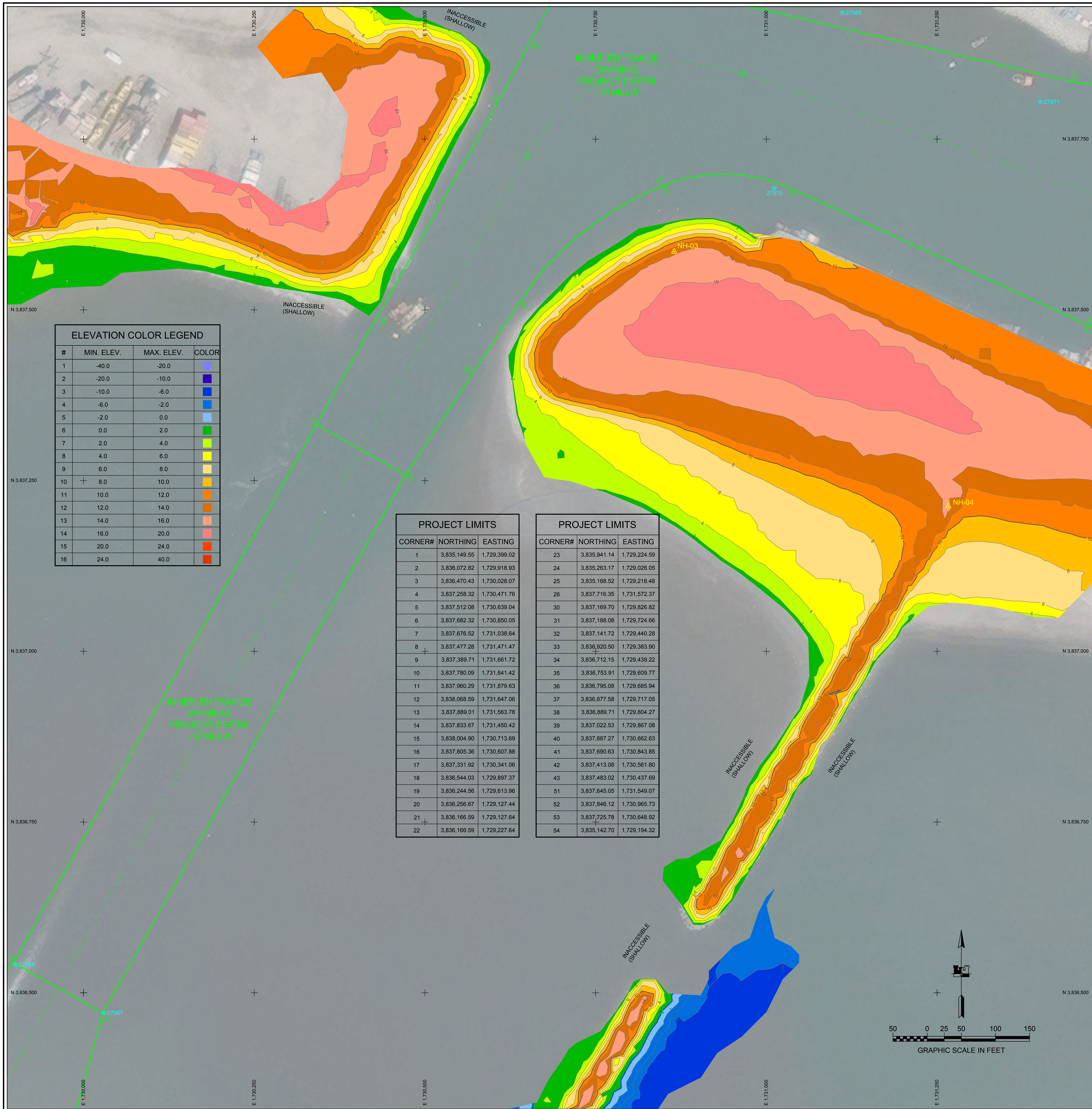
DATE: 10/23/2015  
BY: [Signature]  
DESCRIPTION: TOPOGRAPHIC / HYDROGRAPHIC SURVEY  
DATE: 10/23/2015  
BY: [Signature]  
DESCRIPTION: [Blank]

U.S. ARMY CORPS OF ENGINEERS  
ALASKA DISTRICT  
JBER, ALASKA 99505-0988  
637 6th Street, Ste. 100  
San Rafael, CA 94901

NOME, ALASKA  
NOME HARBOR  
TOPOGRAPHIC / HYDROGRAPHIC SURVEY  
AUGUST 17-23, 2015

SHEET IDENTIFICATION  
6-NOM-92-07-54  
Sheet 11 of 15





## NOTES

1. PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NRSR2002) WITH A SET OF COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "OME A" (PID OF 3551) AND "OME B" (PID OF 3552) WITH ELEVATIONS OF 128.070145 AND E. 1729.65145. MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.
2. LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USACE BC "NH-04" A US 8.387 212.71 E. 1.731 266.45.
3. VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0') BASED ON THE NOAANOS TIDAL BENCH MARK LIST "946 8756 NOME, NORTON SOUND, ALASKA" PUBLISHED 10/06/2011. THIS TIDAL DATUM IS BASED MEAN SEA LEVEL USING AN APPLICAN POSMV OCEANMETER VS SYSTEM DATA COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS OBSERVATIONS AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
4. TERRESTRIAL LASER SCANNING DATA COLLECTED AUGUST 20-23, 2015. DATA WAS COLLECTED USING A REIGL Z4000 3D LASER SCANNER. MOBILE SCANNING WAS COLLECTED AND PROCESSED USING QINSY 8.1 SOFTWARE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLICAN POSMV OCEANMETER VS SYSTEM DATA.
5. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
6. MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BASED. CONTOURS ARE BASED ON 12 FEET BINNED SHOAL-BIASED SOUNDINGS. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN VALUE SOUNDINGS.

## SURVEY CONTROL DATA

STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
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KIMJV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
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OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
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\*Bench marks with elevation precision of 0.1' were measured by RTK GNSS


## NAVIGATION AIDS

USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



THIS HYDROGRAPHIC SURVEY WAS COMPLETED  
UNDER THE OVERSIGHT OF AN ACSM/THOSOA  
CERTIFIED HYDROGRAPHER


David R. Neff C.H. (275)



US Army Corps  
of Engineers  
ALASKA DISTRICT

CONTRACT NO. <u>W91K8-14-D-0013 / 0029</u>	
CONTRACTOR <u>ETRAC INC.</u>	
CITY <u>SAN RAFAEL</u>	STATE <u>CALIFORNIA</u>
Recommended: <u>MICHAEL E. MUELLER</u> PRIME CONTRACTOR	Approved: <u>THOMAS A. SLOAN</u> CHIEF GEOMATICS SECTION
Date: <u>10/23/2015</u>	

[illegible]

	U.S. ARMY CORPS OF ENGINEERS		DATE: 07/27/2015
	ALASKA DISTRICT		TIME: 10:44:00 AM
P.O. BOX 6888		CHECKED BY: MFC	DATE: 07/27/2015
JBER, ALASKA 99508-4888		DOWN BY: TASENVLGNG	TIME: 10:44:00 AM
		APPROVED BY: Thomas A. Sloan, Chief Geomatics Section	CONTRACT NO: W10148-14-0-0029
		SCALE: 1"=40'	JOB NO: 1714
		PLOT DATE: 07/27/2015	
		SIZE: 17X22-VM01 DWG	
		ANSI E	

NOME, ALASKA  
NOME HARBOR  
HIC / HYDROGRAPHIC SURVEY  
AUGUST 17-23, 2015

SHEET  
IDENTIFICATION

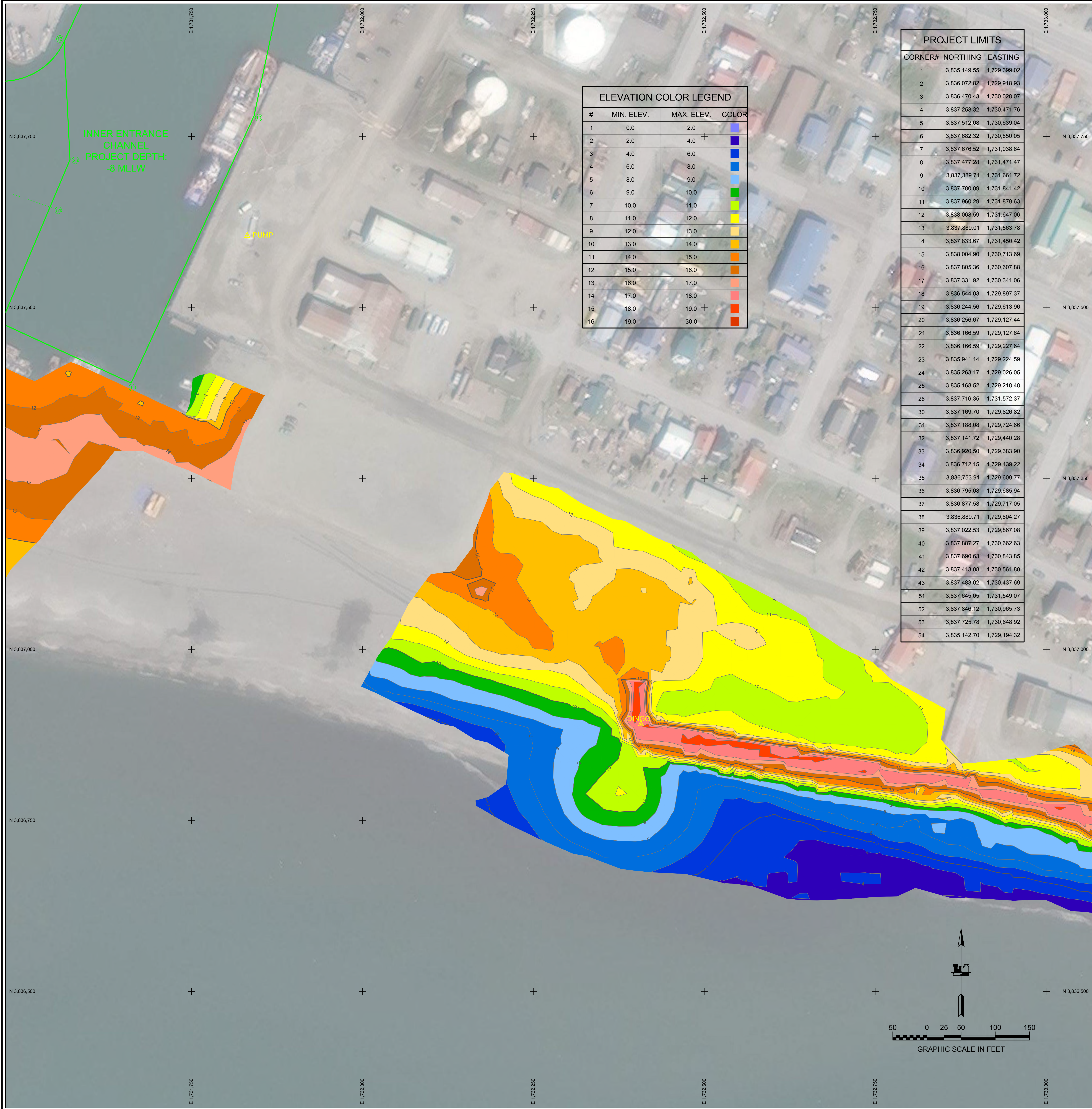
6-NOM-92-07-54

Sheet 12 of 15









- NOTES
- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NSRS2007) IN U.S. FEET. BASIS OF COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "OME A" (PID DF3651), AS N 3,841,096.47 AND E 1,728,070.84 AND "OME B" (PID DF3652), AS N 3,842,264.55 AND E 1,729,661.41. MONUMENTS ARE SECONDARY AIRPORT CONTROL STATIONS (SACS) AT NOME AIRPORT, ALASKA.
  - LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83, IN U.S. SURVEY FEET HOLDING USACE BC "NH-04" AS N 3,837,212.71; E 1,731,266.48.
  - VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW+0), BASED ON THE NOAA/NOA TIDAL BENCH MARK LIST "946 8756 NOME, NORTON SOUND, ALASKA" PUBLISHED 10/05/2011. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOA TIDAL BENCH MARK "946 8756 G 1992" (VM#12154/PID BBBD24) AS 12.84.
  - VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 12B) ELEVATIONS HOLDING NOAA/USACE TIDAL BENCHMARK "946 8756 G 1992" (VM#12154/PID BBBD24) AS 15.42.
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SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838,021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
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KMJV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.84	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

NAVIGATION AIDS			
USCG NO.	NORTHING	EASTING	DESCRIPTION
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27967	3,836,470	1,730,030	BUOY 4
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27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THOSOA CERTIFIED HYDROGRAPHER

David R. Neff C.H. (275)

US Army Corps of Engineers  
ALASKA DISTRICT

CONTRACT NO. W11H14-L-0011.0-020

CONTRACTOR: ETMO, INC.

CITY: SAN RAFAEL

STATE: CALIFORNIA

Date: 10/23/2015

Recommended by: MICHAEL E. MEYER

Approved: THOMAS A. BLUM

Drawn by: DAVID R. NEFF

DATE: 10/23/2015

BY: JACOB

DESCRIPTION: TOPOGRAPHIC / HYDROGRAPHIC SURVEY

DATE: 10/23/2015

BY: JACOB

DESCRIPTION: TOPOGRAPHIC / HYDROGRAPHIC SURVEY

U.S. ARMY CORPS OF ENGINEERS  
ALASKA DISTRICT  
JBER, ALASKA 99505-0988

637 6th Ave.  
San Rafael, CA 94901

FILE NAME: 10/23/2015

SIZE: 1" = 40'

SCALE: 1" = 40'

NOME, ALASKA  
NOME HARBOR  
TOPOGRAPHIC / HYDROGRAPHIC SURVEY  
AUGUST 17-23, 2015

SHEET IDENTIFICATION  
6-NOM-92-07-54  
Sheet 14 of 15





PROJECT LIMITS		
CORNER#	NORTHING	EASTING
1	8,835,149.55	1,729,399.02
2	8,836,072.82	1,729,918.93
3	8,836,470.43	1,730,028.07
4	8,837,258.32	1,731,471.76
5	8,837,512.08	1,730,639.04
6	8,837,682.32	1,730,850.85
7	8,837,676.52	1,731,038.64
8	8,837,477.28	1,731,471.47
9	8,837,389.71	1,731,661.72
10	8,837,780.09	1,731,841.42
11	8,837,960.29	1,731,879.63
12	8,838,068.59	1,731,647.06
13	8,837,889.01	1,731,563.78
14	8,837,833.67	1,731,450.42
15	8,838,004.90	1,730,713.69
16	8,837,805.36	1,730,607.88
17	8,837,331.92	1,730,341.06
18	8,836,544.03	1,729,897.37
19	8,836,244.56	1,729,613.96
20	8,836,256.67	1,729,127.44
21	8,836,166.59	1,729,127.64
22	8,836,166.59	1,729,227.64
23	8,835,941.14	1,729,224.59
24	8,835,263.17	1,729,026.05
25	8,835,168.52	1,729,218.48
26	8,837,716.35	1,731,572.37
30	8,837,169.70	1,729,826.82
31	8,837,188.08	1,729,724.66
32	8,837,141.72	1,729,440.28
33	8,836,920.50	1,729,383.90
34	8,836,712.15	1,729,439.22
35	8,836,753.91	1,729,609.77
36	8,836,795.08	1,729,685.94
37	8,836,877.58	1,729,717.05
38	8,836,889.71	1,729,804.27
39	8,837,022.53	1,729,867.08
40	8,837,887.27	1,730,662.63
41	8,837,690.63	1,730,843.85
42	8,837,413.08	1,730,561.80
43	8,837,483.02	1,730,437.69
51	8,837,645.05	1,731,549.07
52	8,837,846.12	1,730,965.73
53	8,837,725.78	1,730,648.92
54	8,835,142.70	1,729,194.32



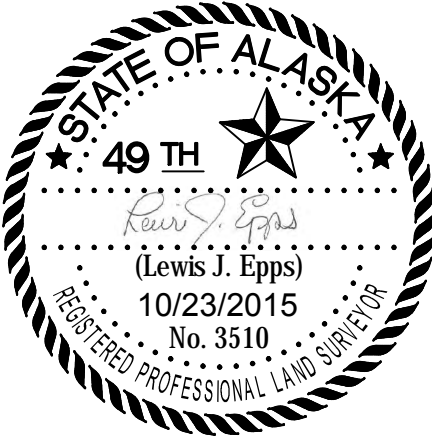
## NOTES

- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 8, NAD83 (NRSR2007) AT 3 FEET. BEST AVAILABLE COORDINATES IS NATIONAL GEODETIC SURVEY (NGS) CONTROL STATIONS "OME A" (PID D3551), "OME B" (PID D3552), "OME C" (PID D3553), "OME D" (PID D3554), "OME E" (PID D3555), "OME F" (PID D3556), "OME G" (PID D3557), "OME H" (PID D3558), "OME I" (PID D3559), "OME J" (PID D3560), "OME K" (PID D3561), "OME L" (PID D3562), "OME M" (PID D3563), "OME N" (PID D3564), "OME O" (PID D3565), "OME P" (PID D3566), "OME Q" (PID D3567), "OME R" (PID D3568), "OME S" (PID D3569), "OME T" (PID D3570), "OME U" (PID D3571), "OME V" (PID D3572), "OME W" (PID D3573), "OME X" (PID D3574), "OME Y" (PID D3575), "OME Z" (PID D3576), "OME AA" (PID D3577), "OME AB" (PID D3578), "OME AC" (PID D3579), "OME AD" (PID D3580), "OME AE" (PID D3581), "OME AF" (PID D3582), "OME AG" (PID D3583), "OME AH" (PID D3584), "OME AI" (PID D3585), "OME AJ" (PID D3586), "OME AK" (PID D3587), "OME AL" (PID D3588), "OME AM" (PID D3589), "OME AN" (PID D3590), "OME AO" (PID D3591), "OME AP" (PID D3592), "OME AQ" (PID D3593), "OME AR" (PID D3594), "OME AS" (PID D3595), "OME AT" (PID D3596), "OME AU" (PID D3597), "OME AV" (PID D3598), "OME AW" (PID D3599), "OME AX" (PID D3600), "OME AY" (PID D3601), "OME AZ" (PID D3602), "OME BA" (PID D3603), "OME BB" (PID D3604), "OME BC" (PID D3605), "OME BD" (PID D3606), "OME BE" (PID D3607), "OME BF" (PID D3608), "OME BG" (PID D3609), "OME BH" (PID D3610), "OME BI" (PID D3611), "OME BJ" (PID D3612), "OME BK" (PID D3613), "OME BL" (PID D3614), "OME BM" (PID D3615), "OME BN" (PID D3616), "OME BO" (PID D3617), "OME BP" (PID D3618), "OME BQ" (PID D3619), "OME BR" (PID D3620), "OME BS" (PID D3621), "OME BT" (PID D3622), "OME BU" (PID D3623), "OME BV" (PID D3624), "OME BW" (PID D3625), "OME BX" (PID D3626), "OME BY" (PID D3627), "OME BZ" (PID D3628), "OME CA" (PID D3629), "OME CB" (PID D3630), "OME CC" (PID D3631), "OME CD" (PID D3632), "OME CE" (PID D3633), "OME CF" (PID D3634), "OME CG" (PID D3635), "OME CH" (PID D3636), "OME CI" (PID D3637), "OME CJ" (PID D3638), "OME CK" (PID D3639), "OME CL" (PID D3640), "OME CM" (PID D3641), "OME CN" (PID D3642), "OME CO" (PID D3643), "OME CP" (PID D3644), "OME CQ" (PID D3645), "OME CR" (PID D3646), "OME CS" (PID D3647), "OME CT" (PID D3648), "OME CU" (PID D3649), "OME CV" (PID D3650), "OME CW" (PID D3651), "OME CX" (PID D3652), "OME CY" (PID D3653), "OME CZ" (PID D3654), "OME DA" (PID D3655), "OME DB" (PID D3656), "OME DC" (PID D3657), "OME DD" (PID D3658), "OME DE" (PID D3659), "OME DF" (PID D3660), "OME DG" (PID D3661), "OME DH" (PID D3662), "OME DI" (PID D3663), "OME DJ" (PID D3664), "OME DK" (PID D3665), "OME DL" (PID D3666), "OME DM" (PID D3667), "OME DN" (PID D3668), "OME DO" (PID D3669), "OME DP" (PID D3670), "OME DQ" (PID D3671), "OME DR" (PID D3672), "OME DS" (PID D3673), "OME DT" (PID D3674), "OME DU" (PID D3675), "OME DV" (PID D3676), "OME DW" (PID D3677), "OME DX" (PID D3678), "OME DY" (PID D3679), "OME DZ" (PID D3680), "OME EA" (PID D3681), "OME EB" (PID D3682), "OME EC" (PID D3683), "OME ED" (PID D3684), "OME EE" (PID D3685), "OME EF" (PID D3686), "OME EG" (PID D3687), "OME EH" (PID D3688), "OME EI" (PID D3689), "OME EJ" (PID D3690), "OME EK" (PID D3691), "OME EL" (PID D3692), "OME EM" (PID D3693), "OME EN" (PID D3694), "OME EO" (PID D3695), "OME EP" (PID D3696), "OME EQ" (PID D3697), "OME ER" (PID D3698), "OME ES" (PID D3699), "OME ET" (PID D3700), "OME EU" (PID D3701), "OME EV" (PID D3702), "OME EW" (PID D3703), "OME EX" (PID D3704), "OME EY" (PID D3705), "OME EZ" (PID D3706), "OME FA" (PID D3707), "OME FB" (PID D3708), "OME FC" (PID D3709), "OME FD" (PID D3710), "OME FE" (PID D3711), "OME FF" (PID D3712), "OME FG" (PID D3713), "OME FH" (PID D3714), "OME FI" (PID D3715), "OME FJ" (PID D3716), "OME FK" (PID D3717), "OME FL" (PID D3718), "OME FM" (PID D3719), "OME FN" (PID D3720), "OME FO" (PID D3721), "OME FP" (PID D3722), "OME FQ" (PID D3723), "OME FR" (PID D3724), "OME FS" (PID D3725), "OME FT" (PID D3726), "OME FU" (PID D3727), "OME FV" (PID D3728), "OME FW" (PID D3729), "OME FX" (PID D3730), "OME FY" (PID D3731), "OME FZ" (PID D3732), "OME GA" (PID D3733), "OME GB" (PID D3734), "OME GC" (PID D3735), "OME GD" (PID D3736), "OME GE" (PID D3737), "OME GF" (PID D3738), "OME GH" (PID D3739), "OME GI" (PID D3740), "OME GJ" (PID D3741), "OME GK" (PID D3742), "OME GL" (PID D3743), "OME GM" (PID D3744), "OME GN" (PID D3745), "OME GO" (PID D3746), "OME GP" (PID D3747), "OME GQ" (PID D3748), "OME GR" (PID D3749), "OME GS" (PID D3750), "OME GT" (PID D3751), "OME GU" (PID D3752), "OME GV" (PID D3753), "OME GW" (PID D3754), "OME GX" (PID D3755), "OME GY" (PID D3756), "OME GZ" (PID D3757), "OME HA" (PID D3758), "OME HB" (PID D3759), "OME HC" (PID D3760), "OME HD" (PID D3761), "OME HE" (PID D3762), "OME HF" (PID D3763), "OME HG" (PID D3764), "OME HH" (PID D3765), "OME HI" (PID D3766), "OME HJ" (PID D3767), "OME HK" (PID D3768), "OME HL" (PID D3769), "OME HM" (PID D3770), "OME HN" (PID D3771), "OME HO" (PID D3772), "OME HP" (PID D3773), "OME HQ" (PID D3774), "OME HR" (PID D3775), "OME HS" (PID D3776), "OME HT" (PID D3777), "OME HU" (PID D3778), "OME HV" (PID D3779), "OME HW" (PID D3780), "OME HX" (PID D3781), "OME HY" (PID D3782), "OME HZ" (PID D3783), "OME IA" (PID D3784), "OME IB" (PID D3785), "OME IC" (PID D3786), "OME ID" (PID D3787), "OME IE" (PID D3788), "OME IF" (PID D3789), "OME IG" (PID D3790), "OME IH" (PID D3791), "OME II" (PID D3792), "OME IJ" (PID D3793), "OME IK" (PID D3794), "OME IL" (PID D3795), "OME IM" (PID D3796), "OME IN" (PID D3797), "OME IO" (PID D3798), "OME IP" (PID D3799), "OME IQ" (PID D3800), "OME IR" (PID D3801), "OME IS" (PID D3802), "OME IT" (PID D3803), "OME IU" (PID D3804), "OME IV" (PID D3805), "OME IW" (PID D3806), "OME IX" (PID D3807), "OME IY" (PID D3808), "OME IZ" (PID D3809), "OME JA" (PID D3810), "OME JB" (PID D3811), "OME JC" (PID D3812), "OME JD" (PID D3813), "OME JE" (PID D3814), "OME JF" (PID D3815), "OME JG" (PID D3816), "OME JH" (PID D3817), "OME JI" (PID D3818), "OME JJ" (PID D3819), "OME JK" (PID D3820), "OME JL" (PID D3821), "OME JM" (PID D3822), "OME JN" (PID D3823), "OME JO" (PID D3824), "OME JP" (PID D3825), "OME JQ" (PID D3826), "OME JR" (PID D3827), "OME JS" (PID D3828), "OME JT" (PID D3829), "OME JU" (PID D3830), "OME JV" (PID D3831), "OME JW" (PID D3832), "OME JX" (PID D3833), "OME JY" (PID D3834), "OME JZ" (PID D3835), "OME KA" (PID D3836), "OME KB" (PID D3837), "OME KC" (PID D3838), "OME KD" (PID D3839), "OME KE" (PID D3840), "OME KF" (PID D3841), "OME KG" (PID D3842), "OME KH" (PID D3843), "OME KI" (PID D3844), "OME KJ" (PID D3845), "OME KK" (PID D3846), "OME KL" (PID D3847), "OME KM" (PID D3848), "OME KN" (PID D3849), "OME KO" (PID D3850), "OME KP" (PID D3851), "OME KQ" (PID D3852), "OME KR" (PID D3853), "OME KS" (PID D3854), "OME KT" (PID D3855), "OME KU" (PID D3856), "OME KV" (PID D3857), "OME KW" (PID D3858), "OME KX" (PID D3859), "OME KY" (PID D3860), "OME KZ" (PID D3861), "OME LA" (PID D3862), "OME LB" (PID D3863), "OME LC" (PID D3864), "OME LD" (PID D3865), "OME LE" (PID D3866), "OME LF" (PID D3867), "OME LG" (PID D3868), "OME LH" (PID D3869), "OME LI" (PID D3870), "OME LJ" (PID D3871), "OME LK" (PID D3872), "OME LL" (PID D3873), "OME LM" (PID D3874), "OME LN" (PID D3875), "OME LO" (PID D3876), "OME LP" (PID D3877), "OME LQ" (PID D3878), "OME LR" (PID D3879), "OME LS" (PID D3880), "OME LT" (PID D3881), "OME LU" (PID D3882), "OME LV" (PID D3883), "OME LW"


SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
BOOTSTRAP	3,838.021.15	1,730,359.97	6.69	3.5" DOMED USACE BC
CELL	3,835,965.90	1,729,122.30	12.90	ALUMINUM MON
DINGO	3,836,890.97	1,732,407.19	19.34	3.5" DOMED USACE BC
KMJV-1	3,837,168.87	1,729,283.15	16.50	3.5" DOMED USACE BC
NH-02	3,838,272.50	1,731,835.01	12.44	3.5" DOMED USACE BC
NH-03	3,837,585.34	1,730,864.94	13.83	3.5" DOMED USACE BC
NH-04	3,837,212.71	1,731,266.48	15.24	3.5" DOMED USACE BC
NH-05	3,834,957.98	1,729,422.33	16.4	3.5" DOMED USACE BC
NH-06	3,834,888.51	1,728,762.20	14.05	3.5" DOMED USACE BC
OME A	3,841,096.47	1,728,070.64	11.3	3" DOMED NGS BC
OME B	3,842,264.55	1,729,661.41	53.8	3" DOMED NGS BC
PUMP	3,837,605.19	1,731,831.48	9.17	3.5" DOMED USACE BC

## NAVIGATION AIDS

USCG NO.	NORTHING	EASTING	DESCRIPTION
27962	3,834,922	1,729,388	ENTRANCE LIGHT 2
27963	3,834,844	1,728,782	ENTRANCE LIGHT 1
27964	3,836,250	1,729,618	BUOY 1
27965	3,836,070	1,729,925	BUOY 2
27966	3,836,541	1,729,900	BUOY 3
27967	3,836,470	1,730,030	BUOY 4
27968	3,838,033	1,730,848	BUOY 5
27969	3,837,935	1,731,111	BUOY 7
27970	3,837,678	1,731,012	BUOY 8
27971	3,837,805	1,731,401	BUOY 9



THIS HYDROGRAPHIC SURVEY WAS COMPLETED  
UNDER THE OVERSIGHT OF AN ACSM/THOSOA  
CERTIFIED HYDROGRAPHER



\_\_\_\_\_  
David R. Neff C.H. (275)