

NOTES

- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83 (2011), IN US SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE PUBLISHED NAD83 (2011)2010.00 EPOCH VALUES OF NGS CORS STATIONS: "JUNEAU WAAS 1 CORS ARP" (JNU1 - PID DF4367), "KLAUOCKAIRAK 2006 CORS ARP" (AB49 - PID DM7451) AND "LEVEL ISLAND 6 CORS ARP" (LEV6 - PID DJ3035).
- LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, IN US SURVEY FEET HOLDING "SBC 'DH-C 2000' AS N 2,353,359.31, E 2,546,726.69 AND USACE SBC 'RAMP 1975' AS N 2,353,048.30, E 2,547,438.98
- VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0'), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST: "945 2210 JUNEAU COASTLINE TIDAL BENCH MARKS, ALASKA" PUBLISHED 05/02/2014. THIS TIDAL DATUM IS BASED ON THE 2007-2011 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCH MARK "2210 C 1982" (VM# 1196) AS 29.96'
- VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON NAVD88 (GEOID 12B) ELEVATIONS HOLDING NGS BENCHMARK "DH-C 2000" AS 20.53'
- SOUNDINGS ARE IN U.S. FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
- BATHYMETRY WAS COLLECTED MARCH 1, 2016. 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 POSIMV 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.
- THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.

SURVEY CONTROL DATA

STATION	NORTHING	EASTING	MLLW	DESCRIPTION
DH-3	2,354,095.52	2,546,951.23	26.26	3.25" DSBC
DH-C 2000	2,353,359.31	2,546,726.69	25.97	3.25" DSBC
DH-D 2000	2,353,103.36	2,547,126.72	25.67	3.25" DSBC
DHAR	2,353,388.57	2,547,704.09	24.02	3.5" USACE BRASS CAP
DL-1 1978	2,353,650.68	2,547,782.25	64.40	3.5"USACE BRASS CAP
RAMP 1975	2,353,048.30	2,547,438.98	23.30	3.5" USACE BRASS CAP

NAVIGATION AIDS

USCG NO.	NORTHING	EASTING	DESCRIPTION
23680	2,353,940	2,547,137	DOUGLAS BOAT HARBOR LIGHT ID

FEDERAL DREDGE BASIN

CORNER#	NORTHING	EASTING
1	2,353,746.99	2,547,214.45
2	2,353,443.04	2,547,023.77
3	2,353,381.92	2,547,121.19
4	2,353,353.12	2,547,103.12

FEDERAL DREDGE BASIN

CORNER#	NORTHING	EASTING
5	2,353,177.75	2,547,382.66
6	2,353,499.66	2,547,584.60
7	2,353,712.22	2,547,245.76

VOLUME COMPUTATIONS

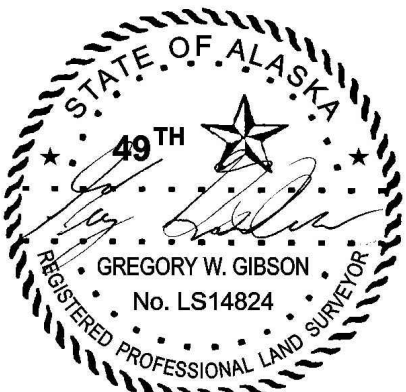
MATERIAL ADDED	CU. YD.
HARBOR (DREDGE LIMITS +20 FEET)	4,584

DISPOSAL BASE LINE

BASE LINE	NORTHING	EASTING
DISP BL-5	2,355,554.60	2,547,981.16
DISP BL-6	2,352,624.80	2,550,904.88

HARBOR BASE LINE

BASE LINE	NORTHING	EASTING
N-S BL1	2,353,126.57	2,547,087.90
N-S BL2	2,353,719.55	2,547,459.89
E-W BL3	2,353,669.51	2,546,956.31
E-W BL4	2,353,244.38	2,547,634.00



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

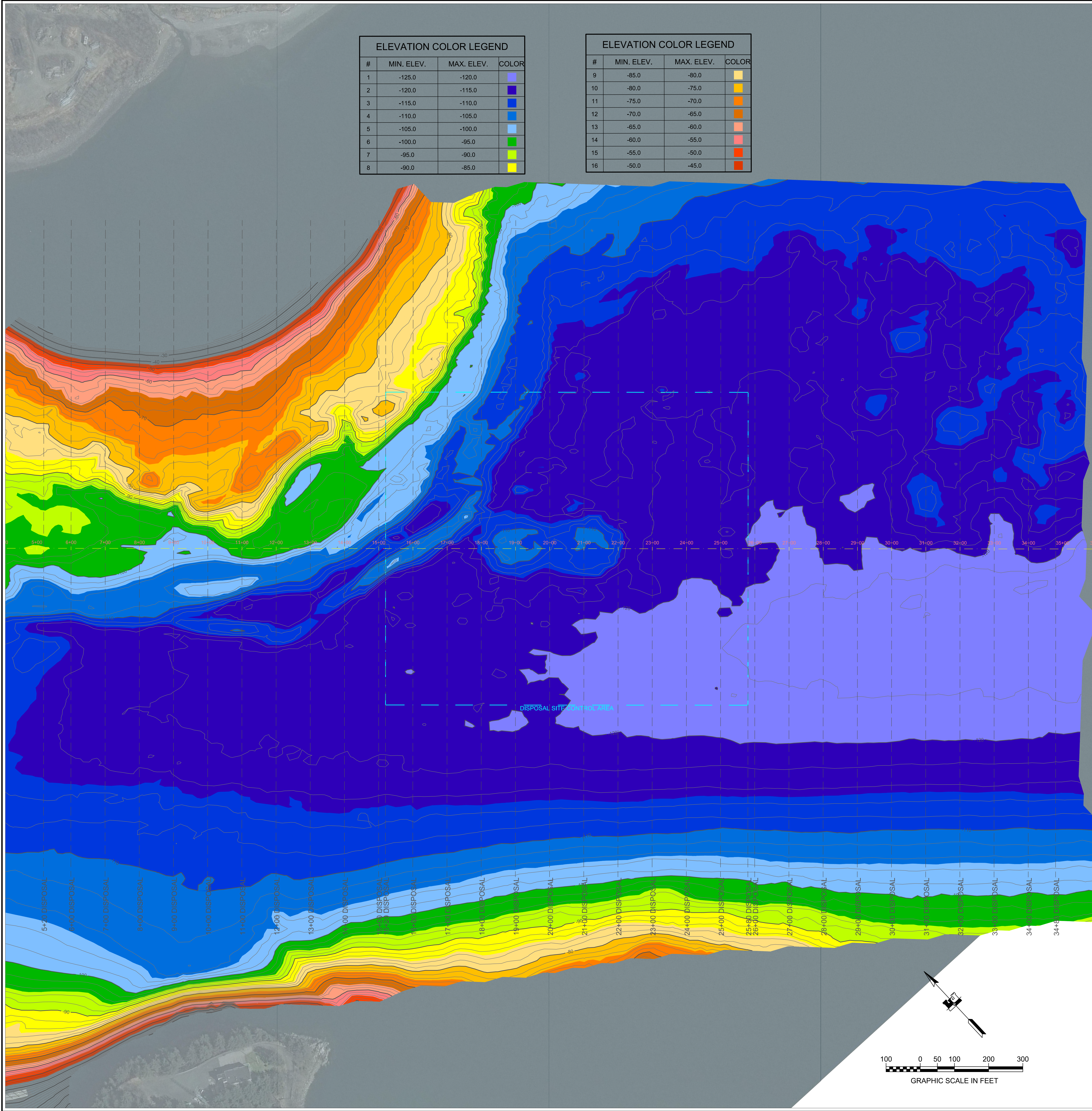
David R. Neff C.H. (275)

US Army Corps of Engineers
ALASKA DISTRICT

CONTRACT NO. W0110B-15-0-017
CONTRACTOR: Western Marine Consultants
CITY: Seattle
STATE: Washington
Approved: [Signature]
Date: [Blank]
DRAWN BY: [Blank]
CHECKED BY: [Blank]
DATE: [Blank]

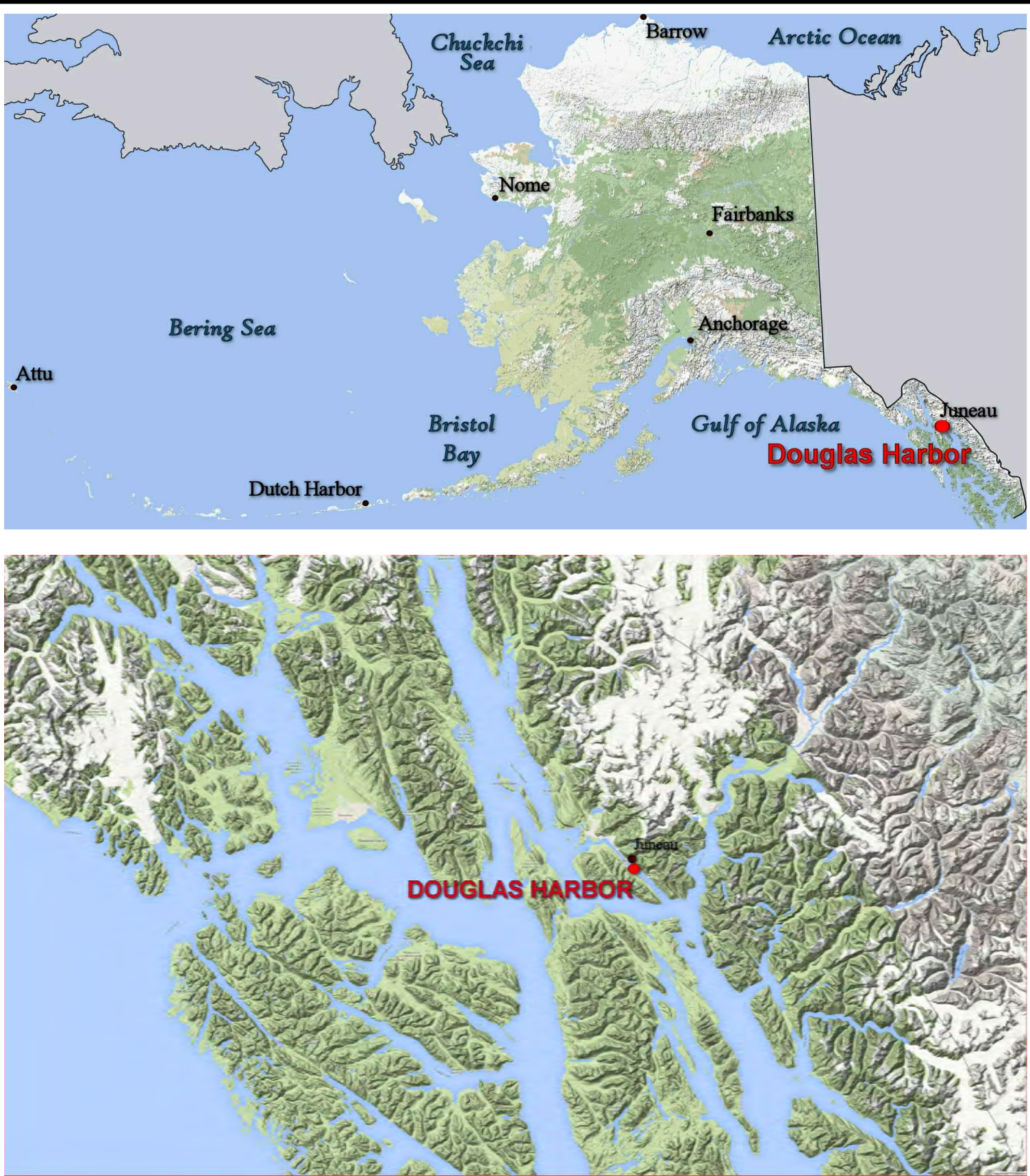
DOUGLAS HARBOR
DOUGLAS HARBOR
HYDROGRAPHIC SURVEY
MARCH 01, 2016

SHEET IDENTIFICATION
V-101
Sheet 1 of 19



ELEVATION COLOR LEGEND			
#	MIN. ELEV.	MAX. ELEV.	COLOR
1	-125.0	-120.0	Light Blue
2	-120.0	-115.0	Blue
3	-115.0	-110.0	Dark Blue
4	-110.0	-105.0	Light Blue
5	-105.0	-100.0	Light Green
6	-100.0	-95.0	Green
7	-95.0	-90.0	Yellow
8	-90.0	-85.0	Orange

ELEVATION COLOR LEGEND			
#	MIN. ELEV.	MAX. ELEV.	COLOR
9	-85.0	-80.0	Yellow
10	-80.0	-75.0	Orange
11	-75.0	-70.0	Dark Orange
12	-70.0	-65.0	Red
13	-65.0	-60.0	Dark Red
14	-60.0	-55.0	Red
15	-55.0	-50.0	Dark Red
16	-50.0	-45.0	Red



- NOTES**
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 6. BATHYMETRY WAS COLLECTED MARCH 1, 2016. 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 APRANK POSNAV 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.
 7. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.
 8. MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL-BIASED. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN.

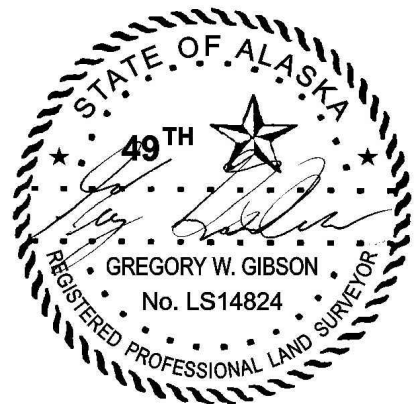
SURVEY CONTROL DATA				
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VOLUME COMPUTATIONS	
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DISPOSAL BASE LINE			HARBOR BASE LINE		
BASE LINE	NORTHING	EASTING	BASE LINE	NORTHING	EASTING
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David R. Neff C.H. (275)

US Army Corps of Engineers - ALASKA DISTRICT

CONTRACT NO. W01H015-C-0017

CONTRACTOR: Western Marine Construction

CITY: Seattle

STATE: Washington

APPROVED: [Signature]

DATE: [Date]

NO.	DESCRIPTION	DATE
1	DISPOSAL SITE	03/01/2016

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

8160
637 JBER ST, Ste 100
San Rafael, CA 94901

DOUGLAS, ALASKA
DOUGLAS HARBOR
HYDROGRAPHIC SURVEY
MARCH 01, 2016

SHEET IDENTIFICATION

V-106

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