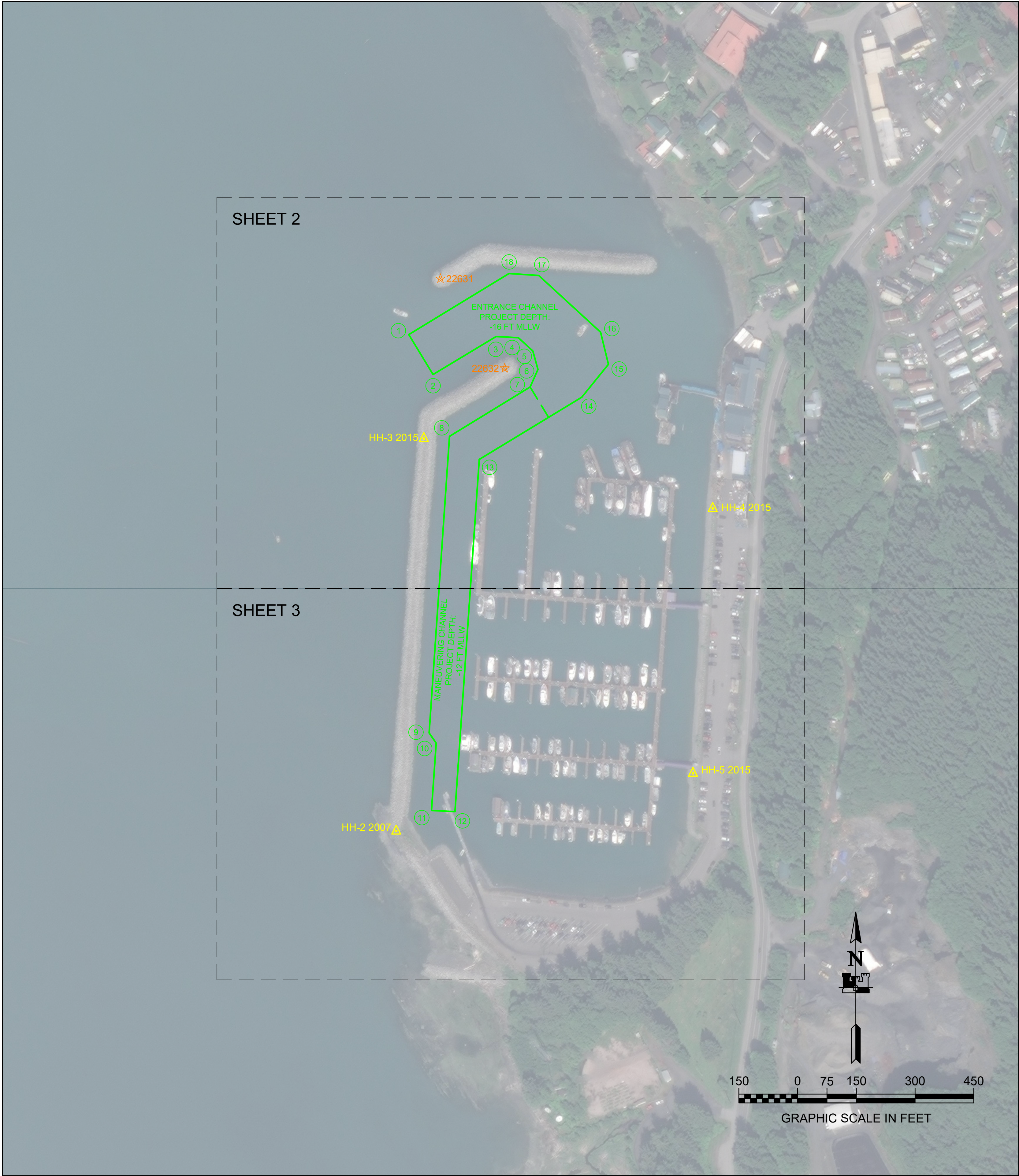




NAVIGATION AIDS			
NO.	NORTHING	EASTING	DESCRIPTION
22631	1,691,792	2,945,071	CEMETERY POINT LIGHT 1 FI G 6S
22632	1,691,563	2,945,235	CEMETERY POINT LIGHT 2 FI R 2.5S

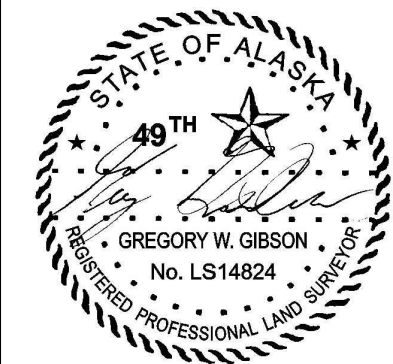
PROJECT LIMITS			PROJECT LIMITS		
CORNER#	NORTHING	EASTING	CORNER#	NORTHING	EASTING
1	1,691,649.00	2,944,990.00	10	1,690,605.00	2,945,060.00
2	1,691,547.00	2,945,052.00	11	1,690,433.00	2,945,048.00
3	1,691,644.00	2,945,213.00	12	1,690,430.00	2,945,108.00
4	1,691,641.00	2,945,270.00	13	1,691,330.00	2,945,170.00
5	1,691,607.00	2,945,307.00	14	1,691,489.00	2,945,432.00
6	1,691,560.00	2,945,320.00	15	1,691,573.00	2,945,500.00
7	1,691,515.00	2,945,300.00	16	1,691,655.00	2,945,480.00
8	1,691,389.00	2,945,094.00	17	1,691,800.00	2,945,322.00
9	1,690,631.00	2,945,042.00	18	1,691,805.00	2,945,246.00

SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
1204 BM 5	1,696,448.86	2,945,337.04	57.71	3.75 INCH SBC
HH-2 2007	1,690,380.29	2,944,957.99	25.11	3 INCH DOMED SBC
HH-3 2015	1,691,383.21	2,945,028.60	24.49	3.5 INCH USACE DOMED SBC
HH-4 2015	1,691,204.65	2,945,766.27	26.97	3.5 INCH USACE DOMED SBC
HH-5 2015	1,690,528.07	2,945,715.80	24.98	3.5 INCH USACE DOMED SBC
LARGE-2 1922	1,683,964.45	2,925,896.83	21.2	3.5 INCH USCGS DOMED SBC
NL-1 1977	1,694,521.22	2,944,940.27	14.66	3.5 INCH USACE DOMED SBC
NL-3 1977	1,693,954.53	2,945,863.80	13.46	3.5 INCH USACE DOMED SBC
NL-4 1977	1,693,712.40	2,946,152.17	14.29	3.5 INCH USACE DOMED SBC
NL-5 1977	1,693,630.72	2,946,551.87	14.46	3.5 INCH USACE DOMED SBC
NL-9 1977	1,693,741.95	2,945,267.89	15.83	3.5 INCH USACE DOMED SBC
NL-10 1977	1,693,860.13	2,945,206.54	14.10	3.5 INCH USACE DOMED SBC
NL-11 1977	1,694,239.54	2,944,835.11	20.15	3.5 INCH USACE DOMED SBC
NO-6 1954	1,696,366.66	2,944,512.60	40.27	3.5 INCH USCGS DOMED SBC

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

LEGEND

CULVERT	<
CATCH BASIN	⊠
VALVE OR VALVE CONNECTION	⊠
SIGN	○
ELECTRICAL PEDESTAL	⊠
ELECTRICAL PEDESTAL WITH LIGHT	⊠
ELECTRICAL JUNCTION BOX	⊠
ELECTRICAL SWITCH	⊠
TRANSFORMER	▲
MAN HOLE	□
LIGHT POLE	○
GUARD POST	●
FIRE HYDRANT	⊠
BUILDING	⊠
ASPHALT	⊠
PIPELINE SUPPORT STRUCTURE	⊠



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

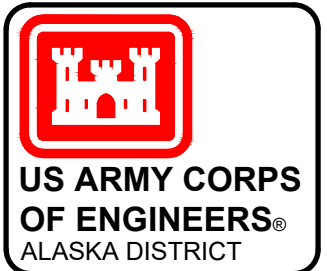
Gregory W. Gibson (317)



NOTES

- PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83 (2011) 2010.00, IN US SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE PUBLISHED NAD83 2003.00 EPOCH VALUES OF NGS CORS STATIONS: "KLAWOCKAIRAK2006 CORS ARP" (PID DM7451); "LEV6 LEVEL ISLAND 6 CORS ARP" (PID DJ3035); "A1S5 ANNETTE ISLAND 5 CORS ARP" (PID DK6482).
- LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, IN U.S. SURVEY FEET HOLDING USACE DOMED SBC "HH-5 2015" AS N 1,690,528.07', E 2,945,715.80'.
- VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0'), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST "9451204 WRANGELL, WRANGELL ISLAND, ALASKA", PUBLISHED 7/15/04. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCH MARK "945 1204 BM 5" (PID BBDG97 / VM#16496) AS 57.71'.
- VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 12B) ELEVATIONS HOLDING NOAA/NOS TIDAL BENCH MARK "945 1204 BM 5" (PID BBDG97 / VM#16496) AS 54.46'.
- SOUNDINGS ARE IN U.S. SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
- BATHYMETRY WAS COLLECTED AUGUST 10-13, 2019. SOUNDINGS WERE COLLECTED USING AN R2SONIC 2020 MULTIBEAM ECHOSOUNDER OPERATING AT 400 KHZ. SOUND VELOCITY THOUGH THE WATER COLUMN WAS DETERMINED WITH A AML BASE X SOUND VELOCITY PROBE. POSITION AND VESSEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV WAVEMASTER V5 SYSTEM RECEIVING RTK CORRECTIONS FROM A TRIMBLE R8 MODEL 3 GPS RECEIVER SET AT CONTROL STATION "HH-5 2015". DATA WAS COLLECTED AND PROCESSED USING QINSY 8.1 AND QIMERA 1.6 SOFTWARE. HORIZONTAL CONTROL WAS VERIFIED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS SURVEYED USING DIFFERENTIAL LEVELING TECHNIQUES.
- TERRESTIAL LASER SCANNING DATA WAS COLLECTED AUGUST 10-13, 2019. DATA WAS COLLECTED USING A RIEGL VZ400 LASER SCANNER AND PROCESSED USING QINSY 8.1 AND QIMERA 1.6 SOFTWARE. POSITION AND VESEL ORIENTATION WERE MEASURED USING AN APPLANIX POSMV WAVEMASTER 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.

VOLUME COMPUTATIONS		
AREA A: ENTRANCE CHANNEL	MLLW=0	CU. YD.
AVAILABLE TO PROJECT DEPTH (PD)	-16.0	878
AVAILABLE TO MAX PAY DEPTH (MP)	-17.0	1,231
AVAILABLE SIDE SLOPES (SS) AT 3:1 (H:V) & 25' WIDE	VARIES	1,251
AREA B: MANEUVERING CHANNEL		
AVAILABLE TO PD	-12.0	86
AVAILABLE TO MP	-13.0	365
AVAILABLE SS AT 3:1 (H:V) & 25' WIDE	VARIES	1,464
TOTAL MAXIMUM VOLUME AVAILABLE (MP + SS)		4,311



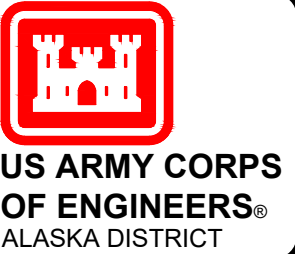
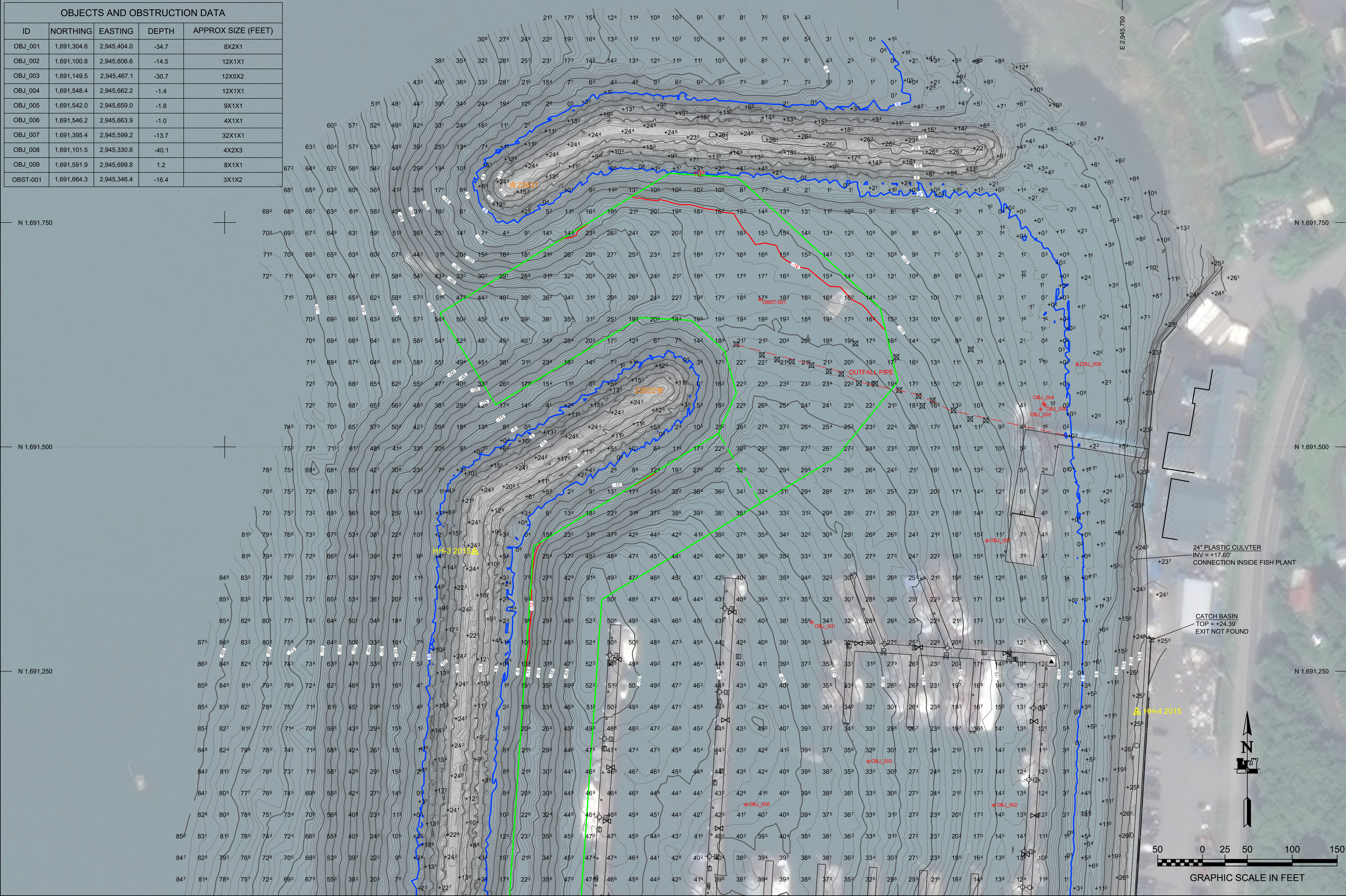
REV.	DATE	BY	APPR.	DESCRIPTION

U.S. ARMY CORPS OF ENGINEERS ALASKA DISTRICT 2204 3RD STREET DEER, ALASKA 99506-0888	SURVEYED BY: GREGORY W. GIBSON DRAWN BY: ROBERT GOUGHNOUR CHECKED BY: TASJG/SGG APPROVED BY: TASJG/SGG	UPC: 010435	PLOT DATE: 08 October 2019	TASK ORDER NO.: 19PD066	JOB NO.: 1019	CONTRACTOR: LEIF INC.	STATE: ALASKA

WRANGELL, ALASKA
010435 - HERITAGE HARBOR
PROJECT CONDITION SURVEY
AUGUST 8 - AUGUST 14, 2019

REFERENCE NUMBER:
1-WRA-92-07-55
SHEET 1 OF 4

OBJECTS AND OBSTRUCTION DATA				
ID	NORTHING	EASTING	DEPTH	APPROX SIZE (FEET)
OBJ_001	1,691,304.6	2,945,404.0	-34.7	8X2X1
OBJ_002	1,691,100.8	2,945,606.6	-14.5	12X1X1
OBJ_003	1,691,149.5	2,945,467.1	-30.7	12X5X2
OBJ_004	1,691,548.4	2,945,662.2	-1.4	12X1X1
OBJ_005	1,691,542.0	2,945,659.0	-1.8	9X1X1
OBJ_006	1,691,546.2	2,945,663.9	-1.0	4X1X1
OBJ_007	1,691,395.4	2,945,599.2	-13.7	32X1X1
OBJ_008	1,691,101.5	2,945,330.6	-40.1	4X2X3
OBJ_009	1,691,591.9	2,945,699.8	1.2	8X1X1
OBST-001	1,691,664.3	2,945,346.4	-16.4	3X1X2

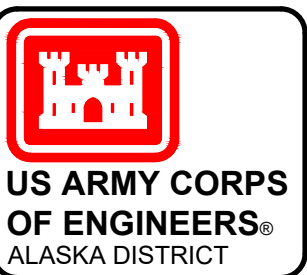
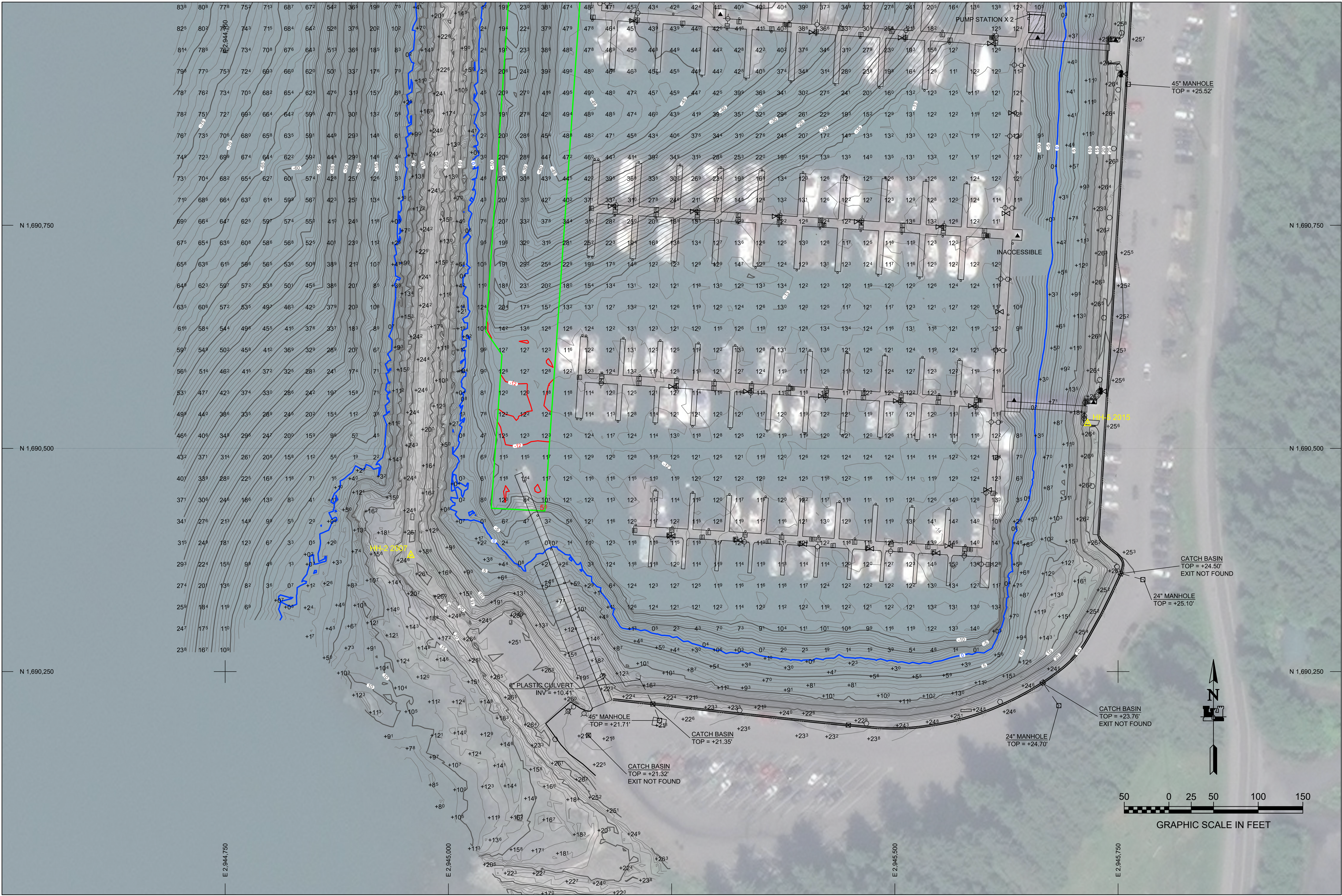


REV.	DATE	BY	APPR.	DESCRIPTION

	SURVEYED BY: GREGORY W. GIBSON		UPC: 010435	CONTRACT NO.: W911KG-16-D-0014
	DRAWN BY: ROBERT GOUGHNOUR		PLOT DATE: 08 October 2019	TASK ORDER NO.: 19FD0066
	CHECKED BY: TASHI GONG		SIZE: 11 x 50	JOB NO.: 1019
	APPROVED BY: TASHI GONG		FILE: 010435_VH02.DWG	STATE: ALASKA

WRANGELL, ALASKA
010435 - HERITAGE HARBOR
PROJECT CONDITION SURVEY
AUGUST 8 - AUGUST 14, 2019

REFERENCE
NUMBER:
1-WRA-92-07-55
SHEET 2 OF 4



REV.		DATE	BY	APPR.	DESCRIPTION

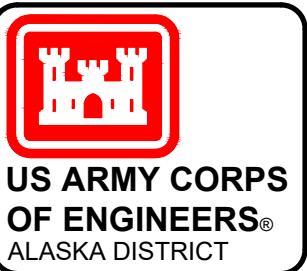
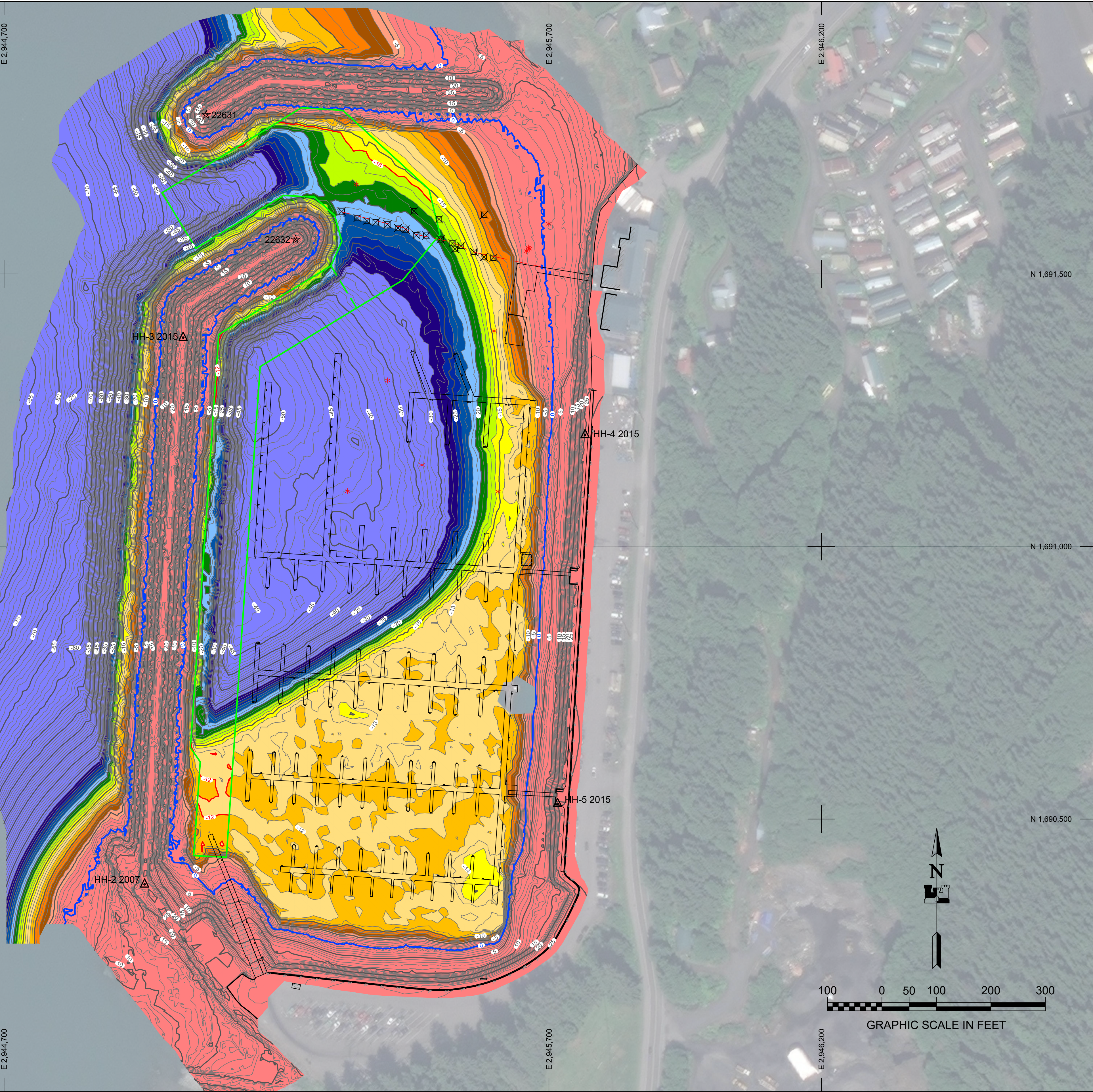
SURVEYED BY: GREGORY W. GIBSON		UPC: 010435	CONTRACT NO.: W811K16-D-0014
DRAWN BY: ROBERT GOUGHNOUR		PLOT DATE: 08 October 2019	TASK ORDER NO.: 19PD066
CHECKED BY: TASJGGG		SIZE: 11 x 17	JOB NO.: 1019
APPROVED BY: THOMAS SLOAN, CHIEF GEOMATICS SECTION		FILE:	CONTRACTOR: LETRAC INC.
STATE: ALASKA		CITY: WRANGELL	

WRANGELL, ALASKA
010435 - HERITAGE HARBOR
PROJECT CONDITION SURVEY
AUGUST 8 - AUGUST 14, 2019

REFERENCE
NUMBER:
1-WRA-92-07-55
SHEET 3 OF 4

ELEVATION COLOR LEGEND			
#	MIN. ELEV.	MAX. ELEV.	COLOR
1	-87.6	-28.0	
2	-28.0	-26.0	
3	-26.0	-24.0	
4	-24.0	-22.0	
5	-22.0	-20.0	
6	-20.0	-18.0	
7	-18.0	-16.0	
8	-16.0	-14.0	
9	-14.0	-12.0	
10	-12.0	-10.0	
11	-10.0	-8.0	
12	-8.0	-6.0	
13	-6.0	-4.0	
14	-4.0	28.1	

4'x4'x2' PIPE SUPPORT DATA			
ID	NORTHING	EASTING	DEPTH
SB-001	1,691,529.5	2,945,598.1	-9.8
SB-002	1,691,595.0	2,945,381.9	-21.1
SB-003	1,691,602.5	2,945,348.6	-21.2
SB-004	1,691,597.3	2,945,365.5	-21.4
SB-005	1,691,584.3	2,945,423.0	-20.7
SB-006	1,691,581.4	2,945,437.0	-21.6
SB-007	1,691,570.4	2,945,474.8	-19.3
SB-008	1,691,556.6	2,945,523.0	-16.2
SB-009	1,691,551.8	2,945,538.6	-15.3
SB-010	1,691,531.1	2,945,580.5	-11.5
SB-011	1,691,614.5	2,945,319.8	-20.5
SB-012	1,691,545.8	2,945,527.2	-16.9
SB-013	1,691,563.2	2,945,501.3	-17.6
SB-014	1,691,571.0	2,945,456.7	-20.8
SB-015	1,691,540.7	2,945,562.1	-13.7
SB-016	1,691,591.0	2,945,403.6	-20.2
SB-017	1,691,608.7	2,945,581.2	-8.3
SB-018	1,691,615.2	2,945,452.6	-18.2
SB-019	1,691,600.1	2,945,498.2	-16.4



REV.	DATE	BY	APPR.	DESCRIPTION

	SURVEYED BY: GREGORY W. GIBSON		UPC: 010435	CONTRACT NO.: W811K6-16-D-0014	
	DRAWN BY: ROBERT GOUGHNOUR		PLOT DATE: 08 October 2019	TASK ORDER NO.: 19PD066	
	CHECKED BY: TASJGGWG		SIZE: ANSI D	JOB NO.: 1019	
	APPROVED BY: THOMAS SLOAN, CHIEF GEOMATICS SECTION		SCALE: 1" = 100'	CONTRACTOR: ETEC INC.	
FILE: 010435_VH02.DWG			CITY: WASILLA	STATE: ALASKA	

WRANGELL, ALASKA
010435 - HERITAGE HARBOR
PROJECT CONDITION SURVEY
AUGUST 8 - AUGUST 14, 2019

REFERENCE
NUMBER:
1-WRA-92-07-55
SHEET 4 OF 4