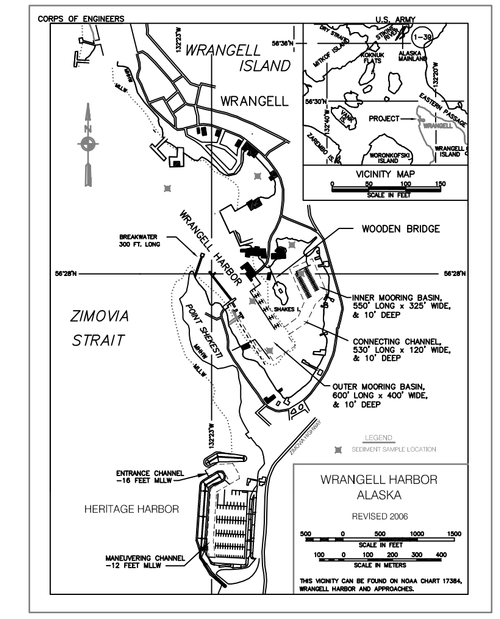
VOLUME COMPUTATIONS					
Project Depth -12' MLLW			Project Depth -16' MLLW		
PROJECT DEPTH (-12' MLLW)	130	(cubic yards)	PROJECT DEPTH (-16' MLLW)	969	(cubic yards)
Between PROJECT DEPTH and MAXIMUM PAY LINE (-13' MLLW)	174	(cubic yards)	Between PROJECT DEPTH and MAXIMUM PAY LINE (-17' MLLW)	328	(cubic yards)
TOTAL (-12')	304	(cubic yards)	TOTAL (-16')	1,297	(cubic yards)
SIDESLOPES (3:1)	4,243	(cubic yards)			
TOTAL (Entire Basin)	5,844	(cubic yards)			

STATE OF ALASKA 49TH JACK S. HUGHES LS-4915 REGISTERED PROFESSIONAL LAND SURVEYOR



NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, IN US SURVEY FEET, HOLDING USACE DOMED BRASS CAP "WH-1 1998" AS N 1,694,295.97 E 2,945929.40 AND USACE DOMED BRASS CAP "WH-2 2001" AS N 1,694,551.96 E 2,946,343.53.
2. VERTICAL CONTROL IS MEAN LOWER LOW WATER DATUM, IN US SURVEY FEET (MLLW = 0.0') HOLDING NOAA/NOS TIDAL BENCH MARK "1204 A 2001" AS 25.60' AND NOAA/NOS TIDAL BENCH MARK "1204 B 2001" AS 25.18'. TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH FROM NOAA/NOS TIDAL BENCH MARK LIST: "9451204 WRANGELL ISLAND, ALASKA", PUBLISHED 7/15/04.
3. SOUNDINGS ARE IN US SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
4. THIS SURVEY INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
5. SOUNDING OPERATIONS WERE CONDUCTED ON MAY 21-22, 2007 USING AN INNERSPACE 448 ECHO SOUNDER WITH A 200 KHZ, 3 DEGREE BEAM-WIDTH, SINGLE BEAM TRANSDUCER. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN ODOM DIGIBAR PRO SOUND VELOCITY PROBE, AND VERIFIED WITH A BAR CHECK AT 10' INCREMENTS TO PROJECT DEPTH. POSITIONING WAS PROVIDED USING A TRIMBLE 5700 RECEIVER OPERATING ON RTK CORRECTIONS BROADCAST FROM A TRIMBLE 5700 BASE STATION SET AT USACE DOMED BRASS CAP MONUMENT "WH-1 1998". NAVIGATION, DATA COLLECTION AND DATA PROCESSING WERE PERFORMED USING HYPACK MAX 6.2 INTEGRATED SOFTWARE. TIDE CORRECTIONS WERE PROVIDED BY TRIMBLE 5700 RTK GPS RECEIVER AND CHECKED THROUGH CONVENTIONAL METHODS.
6. HORIZONTAL CONTROL WAS SURVEYED MAY 19-21, 2007 USING BOTH STATIC AND REAL-TIME KINEMATIC GPS EQUIPMENT AND TECHNIQUES. ALL BREAKWATER, BASINS, HARBOR LEADLINE SOUNDINGS AND SURROUNDING AREAS WERE SURVEYED USING A TRIMBLE 5700 RTK SURVEY ROVER.

CONTROL DATA

STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
CG-2 1959	1,693,452.67	2,946,498.84	13.30	U.S. COAST GUARD SBC
BM-6 1954	1,696,367.07	2,944,513.29	39.32	USC&GS SBC
LARGE-2 1922	1,683,964.55	2,925,897.62	19.71	USC&GS SBC
JD-1 1977	1,695,637.76	2,945,226.43	15.66	USACE SBC
JD-2 1977	1,695,779.79	2,944,876.13	21.24	USACE SBC
NL-1 1977	1,694,521.18	2,944,940.56	14.05	USACE SBC
NL-2 1977	1,694,429.21	2,945,781.19	13.74	USACE SBC
NL-3 1977	1,693,954.34	2,945,864.91	12.46	USACE SBC
NL-4 1977	1,693,712.00	2,946,153.16	13.28	USACE SBC
NL-5 1977	1,693,630.18	2,946,552.85	13.48	USACE SBC
NL-6 1977	1,692,817.92	2,946,314.45	10.99	USACE SBC
NL-7 1977	1,693,054.19	2,945,648.88	17.55	USACE SBC
NL-8 1977	1,693,348.73	2,945,442.52	10.56	USACE SBC
NL-9 1977	1,693,741.56	2,945,268.61	14.82	USACE SBC
1304-1 1985	1,693,890.03	2,946,046.62	19.75	USACE SBC
1304-2 1985	1,692,538.46	2,946,153.30	25.01	USACE SBC
1348-1 1986	1,694,140.33	2,944,812.91	28.23	USACE SBC
WH-1 1998	1,694,295.97	2,945,929.40	22.84	USACE DOMED BC
WH-2 2001	1,694,551.96	2,946,343.53	21.50	USACE DOMED BC
HH-1 2007	1,690,368.14	2,945,750.64	26.61	SET 3 1/4" BRASS CAP
HH-2 2007	1,690,380.29	2,944,958.06	25.18	SET 3 1/4" BRASS CAP

PROJECT LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,691,649	2,944,990	10	1,690,605	2,945,060
2	1,691,547	2,945,052	11	1,690,433	2,945,048
3	1,691,644	2,945,213	12	1,690,430	2,945,108
4	1,691,641	2,945,270	13	1,691,330	2,945,170
5	1,691,607	2,945,307	14	1,691,489	2,945,432
6	1,691,560	2,945,320	15	1,691,573	2,945,500
7	1,691,515	2,945,300	16	1,691,655	2,945,480
8	1,691,389	2,945,094	17	1,691,800	2,945,322
9	1,690,631	2,945,042	18	1,691,805	2,945,246

NAVIGATION AIDS

DESCRIPTION	NORTHING	EASTING
BREAKWATER LIGHT 1	1,691,564	2,945,239
BREAKWATER LIGHT 2	1,691,792	2,945,073

CONTRACT NO. W911KB04-D-0007
CONTRACTOR HUGHES & ASSOCIATES
CITY WASILLA STATE ALASKA

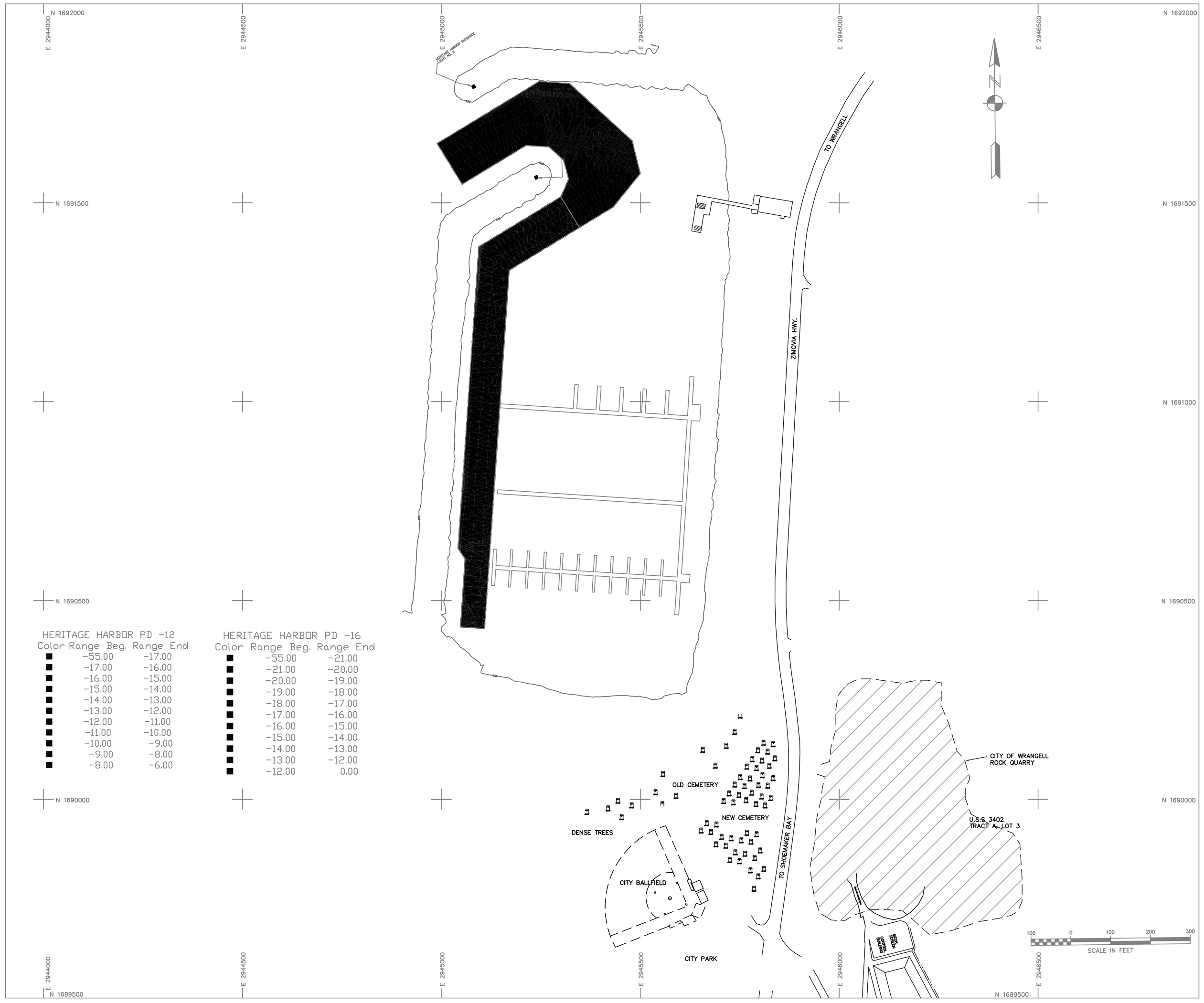
ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: HUGHES & ASSOCIATES
DRAWN: CSH/EJC
CHECKED: JSH
SUBMITTED:

WRANGELL, ALASKA
HERITAGE HARBOR
MAY 18-23, 2007
PROJECT CONDITION SURVEY

RECOMMENDED: PROJECT MANAGER
APPROVED: CHIEF OPERATIONS-READINESS BRANCH
DATE:

SURVEY NO. 2448-07
SCALE: 1" = 100'
SHEET 1 OF 1

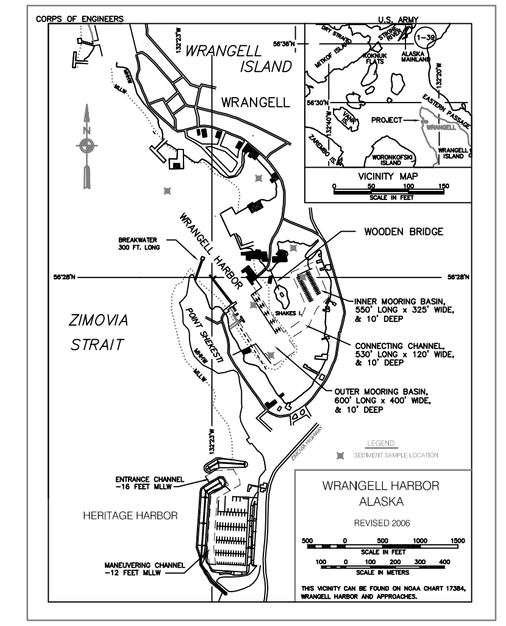


HERITAGE HARBOR PD -12

Color Range Beg.	Range End
-55.00	-17.00
-17.00	-16.00
-16.00	-15.00
-15.00	-14.00
-14.00	-13.00
-13.00	-12.00
-12.00	-11.00
-11.00	-10.00
-10.00	-9.00
-9.00	-8.00
-8.00	-6.00

HERITAGE HARBOR PD -16

Color Range Beg.	Range End
-55.00	-21.00
-21.00	-20.00
-20.00	-19.00
-19.00	-18.00
-18.00	-17.00
-17.00	-16.00
-16.00	-15.00
-15.00	-14.00
-14.00	-13.00
-13.00	-12.00
-12.00	0.00



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