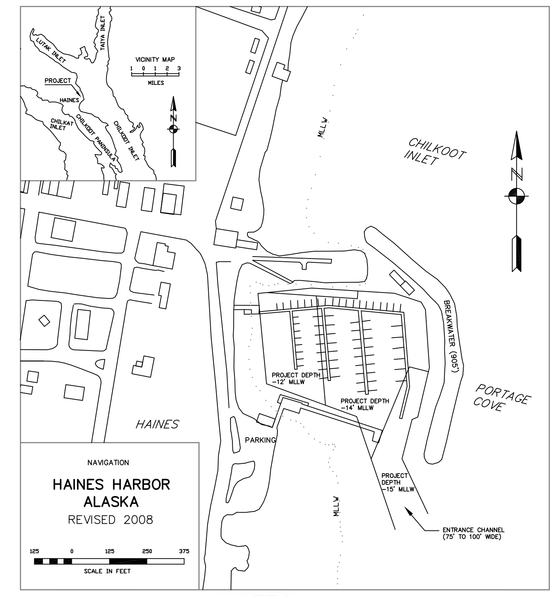
CORPS OF ENGINEERS

U. S. ARMY



NOTES

1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83(CORS) IN U.S. SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE EPOCH 2003 (CURRENT) VALUES OF NGS CORS STATIONS: "BIORKA ISLAND 1 CORS ARP" (BIS1 – PID AI5022) AS N1,838,783.13, E 2,311,186.49; "JUNEAU WAAS 1 CORS ARP" (JNU1 – PID DF4367) AS N2,385,816.86, E 2,509,443.56 AND "GUSTAVUS 2 CORS ARP" (GUS2 – PID AF9622) AS N2,410,602.97, E 2,296,696.67.

2. VERTICAL CONTROL IS IN U.S. SURVEY FEET AND REFERS TO MEAN-LOWER-LOW-WATER DATUM (MLLW=0.0'). THE MLLW VALUES SHOWN ON THIS PLAT ARE BASED ON ELEVATIONS PROVIDED BY USACE ALASKA DISTRICT, HOLDING AKDOT "HNS-7 GPS 1995" AS 35.62 FEET, USACE SURVEY MARK SBC "HH-1" AS 25.63 FEET AND USACE DOMED BC "HH-20 1997" AS 32.20 FEET, TO REFLECT THE 1983-2001 TIDAL EPOCH AS REFERENCED BY NOAA/NOS TIDE STATION: "9452421, CHILKAT INLET, ALASKA, PUBLISHED 06/23/2003" AND MORE PARTICULARLY HOLDING NOAA/NOS BENCH MARK "2421 A 1998" AS 23.04 FEET.

3. VERTICAL CONTROL WAS ALSO TIED INTO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) HOLDING THE NGS PUBLISHED VALUES OF USCGS BENCH MARK SBC "945 2435 TIDAL 5 1943" (PID TT0058) AS 24.10 FEET AND USCGS BENCH MARK SBC "945 2435 TIDAL 8 1948" (PID TT0056) AS 20.82 FEET. THE PUBLISHED VALUES OF THESE MONUMENTS WERE RETRIEVED FROM THE NGS WEBSITE ON MAY 29, 2008.

4. THE HORIZONTAL CONTROL SURVEY WAS CONDUCTED JUNE 2, 2008 USING THREE (3) TRIMBLE R8 GPS RECEIVERS AND A COMBINATION OF STATIC GPS AND REAL-TIME-KINEMATIC GPS SURVEY PROCEDURES AND TECHNIQUES. GPS DATA PROCESSING WAS ACCOMPLISHED USING TRIMBLE GEOMATICS OFFICE V1.6.

5. THE TOPOGRAPHIC AND PLANIMETRIC SURVEYS WERE CONDUCTED JUNE 4-5, 2008 USING TRIMBLE R8 GPS RECEIVERS AND REAL-TIME-KINEMATIC PROCEDURES. FIXED AIDS-TO-NAVIGATION WERE TIED AT THE LIGHT GLOBE.

6. HYDROGRAPHIC DATA ACQUISITION WAS CONDUCTED JUNE 3-5, 2008 USING AN ODOM HYDROTRAC PRECISION DEPTH SOUNDER WITH A 200KHZ, 4 DEGREE BEAM-WIDTH, SINGLE-BEAM TRANSDUCER. VESSEL POSITIONING AND TIDES WERE PROVIDED IN REAL-TIME USING A TRIMBLE R8 GPS RECEIVER (CO-LOCATED ABOVE SINGLE-BEAM TRANSDUCER) OPERATING ON KINEMATIC CORRECTORS BROADCAST FROM A TRIMBLE R8 GPS BASE RECEIVER SET AT USACE DOMED BC "HH-1 1997". SOUND VELOCITY WAS DETERMINED USING STANDARD "BAR CHECK" METHODS TO REFLECT SITE CONDITIONS. NAVIGATION, DATA COLLECTION AND DATA PROCESSING WERE PERFORMED USING HYPACK V6.2A INTEGRATED SOFTWARE.

7. SOUNDINGS ARE SHOWN IN U.S. SURVEY FEET AND ARE MINUS UNLESS NOTED OTHERWISE.

8. THIS SURVEY IS INDICATIVE OF CONDITIONS ON THE DATES OF SURVEY.

OPUS CONTROL DATA

STATION	LATITUDE (N)	LONGITUDE (W)	ELL HEIGHT	NAVD88 HEIGHT (GEOID06)	DESCRIPTION
HH-1	59-14-04.33337	135-26-23.82691	11.697 (m)	6.603 (m)	USACE SURVEY MARK SBC
HNS-7 1995	59-13-54.97507	135-26-30.65972	14.731 (m)	9.638 (m)	AKDOT 3 1/4" DOMED BRASS CAP

9. CONTROL VALUES IN THE ABOVE TABLE WERE COMPUTED USING NGS OPUS-DB. THESE VALUES ARE BEING PUBLISHED ON THIS PLAT FOR THE PURPOSE OF PROVIDING A RELATIVE BASELINE FOR MONITORING CRUSTAL UPLIFT AND ISOSTATIC REBOUND. THE VALUES SHOWN IN THE TABLE ARE BASED ON THE NAD83(CORS96)(EPOCH 2003.0000) REFERENCE FRAME HOLDING THE NGS CORS STATIONS LISTED IN NOTE 1.THE NAVD88 HEIGHT SHOWN WAS COMPUTED USING GEOID06.

CONTROL DATA

STATION	NORTHING	EASTING	ELEV(MLLW)	ELEV(NAVD88)	DESCRIPTION
HH-1	2,707,596.74	2,353,756.24	25.63	19.35 *	USACE SURVEY MARK SBC
HH-5	2,706,584.96	2,353,459.66	24.60	18.32 *	USACE SURVEY MARK SBC
HH-6	2,706,922.44	2,354,071.69	25.74	19.46 *	USACE SURVEY MARK SBC
HH-7	2,707,206.36	2,354,151.30	26.14	19.86 *	USACE SURVEY MARK SBC
HH-8	2,707,421.65	2,354,139.70	24.74	18.46 *	USACE SURVEY MARK SBC
HH-9	2,707,492.21	2,354,105.03	25.53	19.25 *	USACE SURVEY MARK SBC
HNS-7 GPS 1995	2,706,656.25	2,353,376.14	35.62	29.34	AKDOT 3-1/4" DOMED BRASS CAP
HH-20 1997	2,707,554.58	2,353,405.41	32.20	25.92 *	USACE 3-1/4" DOMED BRASS CAP
HH-21 1997	2,707,160.28	2,353,378.80	33.62	27.34 *	USACE 3-1/4" DOMED BRASS CAP
HH-22 2000	2,707,107.66	2,353,549.04	26.67	20.39 *	USACE 3-1/4" DOMED BRASS CAP
HH-23 2000	2,706,660.62	2,353,359.97	35.55	29.27	USACE 3-1/4" DOMED BRASS CAP
945 2435 TIDAL 5 1943	–	–	30.41 *	24.13	USCGS BENCH MARK SBC
945 2435 TIDAL 8 1948	–	–	27.13 *	20.85	USCGS BENCH MARK SBC

NOTE: * DENOTES AN ELEVATION COMPUTED BY APPLYING A CONSTANT DELTA VALUE

NAVIGATION AIDS

DESCRIPTION	USCG No.	NORTHING	EASTING
HAINES SMALL BOAT HARBOR LIGHT 2	23910	2,706,927.5	2,354,070.8

VOLUME COMPUTATIONS

Project Depth -11' MLLW		Project Depth -14' MLLW	
PROJECT DEPTH (-11' MLLW)	47 (cubic yards)	PROJECT DEPTH (-14' MLLW)	1,131 (cubic yards)
Between PROJECT DEPTH and MAXIMUM PAY LINE (-12' MLLW)	44 (cubic yards)	Between PROJECT DEPTH and MAXIMUM PAY LINE (-15' MLLW)	1,104 (cubic yards)
TOTAL	91 (cubic yards)	TOTAL	2,235 (cubic yards)
SIDE SLOPE	752 (cubic yards)	SIDE SLOPE	514 (cubic yards)
Project Depth -12' MLLW		**Project Depth -15' MLLW**	
PROJECT DEPTH (-12' MLLW)	816 (cubic yards)	PROJECT DEPTH (-15' MLLW)	254 (cubic yards)
Between PROJECT DEPTH and MAXIMUM PAY LINE (-13' MLLW)	751 (cubic yards)	Between MINIMUM PAY LINE and MAXIMUM PAY LINE (-16' MLLW)	110 (cubic yards)
TOTAL	1,567 (cubic yards)	TOTAL	364 (cubic yards)
SIDE SLOPE	860 (cubic yards)	SIDE SLOPE	687 (cubic yards)
TOTAL (Entire Project)	7,849 (cubic yards)		

PROJECT LIMITS

CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	2,706,923.77	2,353,871.15	12	2,707,441.74	2,354,057.16
2	2,707,060.76	2,353,830.15	13	2,707,420.74	2,354,070.16
3	2,707,104.76	2,353,724.15	14	2,707,224.75	2,354,080.15
4	2,707,184.76	2,353,529.16	15	2,707,209.75	2,354,076.15
5	2,707,493.75	2,353,509.16	16	2,707,230.75	2,354,004.15
6	2,707,495.75	2,353,549.16	17	2,707,057.76	2,354,034.15
7	2,707,503.75	2,353,699.16	18	2,707,042.76	2,354,013.15
8	2,707,478.75	2,353,700.16	19	2,706,915.76	2,353,978.15
9	2,707,463.74	2,353,839.16	20	2,706,718.77	2,354,050.15
10	2,707,489.74	2,353,841.16	21	2,706,670.78	2,353,948.14
11	2,707,476.74	2,353,969.16			

CONTRACT NO. W911KB-08-D-0002-0004

CONTRACTOR TERRASOND, LTD

CITY PALMER STATE ALASKA

ALASKA DISTRICT
CORPS OF ENGINEERS
ANCHORAGE, ALASKA

SURVEYED: MRE/KLW

DRAWN: SJL/LG/KNB

CHECKED: KDW

SUBMITTED:

HAINES, ALASKA
HAINES HARBOR
PROJECT CONDITION SURVEY
JUNE 01-05, 2008

RECOMMENDED: PROJECT MANAGER

APPROVED: CHIEF OPERATIONS-READINESS BRANCH

DATE:

SURVEY NO. 2509-08

SCALE: 1"= 50'

SHEET 1 OF 1