



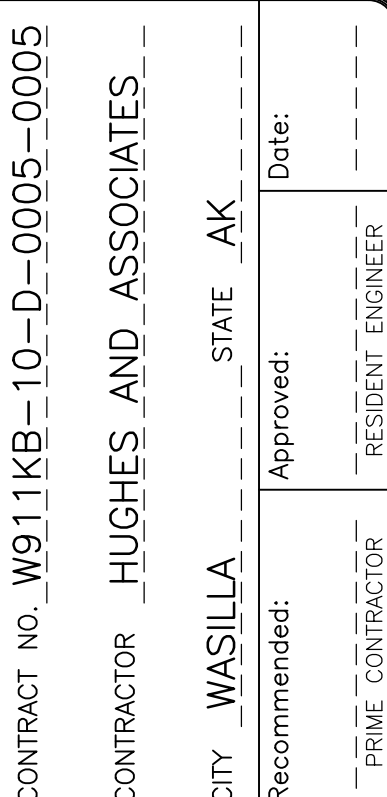
1. HORIZONTAL CONTROLS ALASKA STATE PLANE, ZONE 1, NAD83, IN US SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE PUBLISHED NAD83 (CORES) 2002.00 EPOCH VALUES OF NGU (NORSK STATIONS): "GUSTAVUS 6 GPS ARB" (GUSE - PID 2002.00), "AS IN 2,410,518.31" (ALAS66, 69.67) (ALASKA STATE PLANE, ZONE 1), AND "JENEAU WAS 1 CORRS ARP" (JN1 - PID DF4367) AS N 2,385,816.86 E 25,094,433.55 (ALASKA STATE PLANE, ZONE 1, NAD 83) AND "MENDENHALLAK2005 CORRS ARP" (AB50 - PID DM7454) N 2,405,518.31 E 2,517,456.53 (ALASKA STATE PLANE, ZONE 1, NAD 83). CORES TIDAL STATE PLANE COORDINATES ARE DERIVED FROM LAT/LONG USING IGS02 COORDINATE SPCS83(V2-1). RESULTANT COORDINATES AT PRIMARY HARBOR CONTROL HOLD USACE DOWMED BC "SH-D 2000" AS N 2,785,922.80 E, E 2,378,480.18 AND USACE DOWMED BC "SH-D 2000" AS N 2,785,514.48 E, E 2,377,444.58.
2. VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0'), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST: "9454200.00, SKAGWAY, TAYNA INLET, ALASKA", PUBLISHED 05/26/2010. THIS TIDAL DATUM IS BASED ON THE 2002-2003 TIDAL EPOCH AND IS REPRESENTED BY HOLDING USCGS TIDAL BENCHMARK "945 2044 TIDAL 11" AS 35.55' AND USCGS TIDAL BENCHMARK "945 2040 TIDAL 8" AS 34.63'. ALSO PROVIDED ARE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAD83) EQUIVALENTS, HOLDING USACE DOWMED BC "SH-D 2000" AS 23.57', BASED ON GPS OBSERVATIONS FROM JULY 29 & 30, 2011.
3. THE SURVEY WAS CONDUCTED ON JULY 29-31, 2011. HYDROGRAPHIC SOUNDING DATA WAS COLLECTED USING MULTIBEAM ECHOSOUNDING (1200KHZ, 120 DEGREE SWATH-WIDTH WITH 240, 0.75 DEGREE BEAMS). POSITIONING AND VESSEL ATTITUDE WERE SWATHED IN REAL TIME USING A TRIMBLE 461 RTK GPS RECEIVER OPERATING ON KINEMATIC CORRECTORS BROADCAST FROM A TRIMBLE 5700 RTK BASE RECEIVER SET AT CONTROL STATION. "SH-D 2000" COORDINATES WERE PROVIDED IN REAL TIME BY THE TRIMBLE 461 BAR PRO, AND WAS PROVIDED IN REAL TIME AT THE SOUNDER HEAD USING AN ODOM DIGI-BAR V. DATA COLLECTION AND NAVIGATION WERE PERFORMED USING HYPACK HYSWEEP (2010) SOFTWARE. MULTIBEAM SURVEY DATA WAS POST-PROCESSED USING HYPACK HYSWEEP (2010) SOFTWARE.
4. HORIZONTAL COORDINATES FOR BREAKWATER RM1 1959 WERE NOT UPDATED THIS SURVEY.
5. SOUNDING VALUES SHOWN ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
6. THIS DRAWING IS INDICATIVE OF GENERAL SEAFLOOR CONDITIONS ON THE DATES OF SURVEY.
7. THIS SURVEY WAS CONDUCTED BY HUGHES AND ASSOCIATES, WASILLA, AK.

CONTROL DATA						
STATION	NORTHING	EASTING	ELEV (MLW)	ELEV (NAVD83)	DESCRIPTION	
BREAKWATER 1959	2785305.50	2377647.39	26.40	22.36	USCSG TR1 STATION SBC	
BREAKWATER RM1 1959	2785330.39	2377625.71	27.91	23.87	USCSG REFERENCE MARK SBC	
SH-C 2000	2785922.80	2378480.18	25.40	21.36	USACE 3-1/4" DOMED BC	
SH-D 2000	2785514.48	2377444.58	27.61	23.57	USACE 3-1/4" DOMED BC	
SH-E 2008	2785480.32	2378347.55	28.44	24.40	USACE 3-1/4" DOMED BC	
SH-F 2011	2785790.95	2377747.93	28.34	24.30	3-1/4" DOMED BC	

PROJECT LIMITS						
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING	
1	2,377,792.70	2,377,792.70	6	2,785,334.31	2,377,439.86	
2	2,785,498.96	2,377,792.70	7	2,785,301.19	2,377,477.57	
3	2,785,635.48	2,377,795.81	8	2,785,406.02	2,377,570.07	
4	2,785,610.75	2,377,773.94	9	2,785,418.70	2,377,691.35	
5	2,785,514.05	2,377,598.88				
DEEP DRAFT LIMITS						
1	2,784,128.76	2,377,104.83				
2	2,784,632.08	2,377,591.31				
3	2,784,325.88	2,377,230.31				

☆ NAVIGATION AIDS ☆			
DESCRIPTION	USCG NO.	NORTHING	EASTING
SKAGWAY BREAKWATER LIGHT 2	23935	2.785.331.0	2.377.622.7

VOLUME COMPUTATIONS		
PROJECT DEPTH -8.0'		
AVAILABLE TO PROJECT DEPTH (-8.0')		14 cy
AVAILABLE BETWEEN PROJECT DEPTH (-8.0') AND MAX PAY DEPTH (-9.0')		32 cy
TOTAL MATERIAL AVAILABLE		46 cy
PROJECT DEPTH -20.0'		
AVAILABLE TO PROJECT DEPTH (-20.0')		0 cy
AVAILABLE BETWEEN PROJECT DEPTH (-20.0') AND MAX PAY DEPTH (-21.0')		0 cy
TOTAL MATERIAL AVAILABLE		0 cy
PROJECT DEPTH -30.0'		
AVAILABLE TO PROJECT DEPTH (-30.0')		0 cy
AVAILABLE BETWEEN PROJECT DEPTH (-30.0') AND MAX PAY DEPTH (-31.0')		0 cy
TOTAL MATERIAL AVAILABLE		0 cy
SIDE SLOPES		
AVAILABLE ALONG SIDE SLOPES		79 cy

[illegible]

	
U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ANCHORAGE, ALASKA	
Project:	
Program:	TNL
Requester:	CSH
Designation:	DES-_____
Submitted:	Section _____
Checked:	_____
Drawing #:	Branch _____

SKAGWAY, ALASKA
SKAGWAY HARBOR AND DEEP DRAFT DOCK
CONDITION SURVEY
JULY 29-31, 2011

Reference
number:
V-101
Sheet 1 of 4



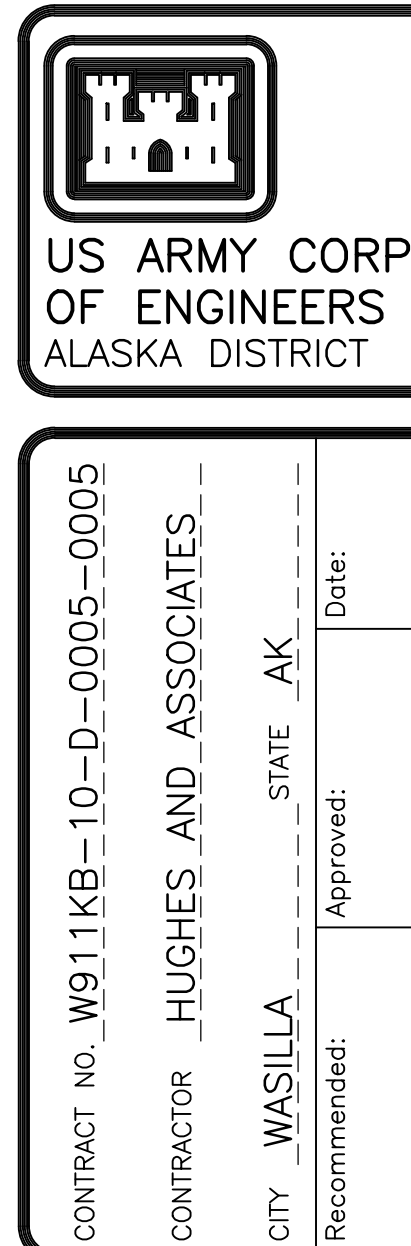
1. HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, IN US SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE PUBLISHED NAD83 (CORS) 2002.00 VERTICAL VALUES OF NGCS CORS STATIONS: "GUSTAVUS 6 CORS ARP" (G0594435 - PID DK6231) AS IN N 2,140,603.01, 2,296,696.71 (ALASKA STATE PLANE, ZONE 1, NAD83) AND "LEWIS AND CLARK 1 CORS ARP" (JHUT - PID DF4367) AS IN N 2,385,918.66, E 250944.55 (ALASKA STATE PLANE, ZONE 1, NAD 83) AND "MENDENHALLAK2005 CORS ARP" (AB50 - PID DM7454) IN N 2,405,518.31, E 2,517,456.53 (ALASKA STATE PLANE, ZONE 1, NAD 83). CORS STATIONS STATE PLANE COORDINATES ARE CONVERTED FROM LAT/LONG USING NGS PROGRAM SPCS83(VZ-1). RESULTANT COORDINATES AT PRIMARY HARBOR CONTROL HOLD USACE DOME D B "SH-D 2000" AS IN N 2,785,922.80, E 2,378,480.18 AND USACE DOME D B "SH-D 2000" AS IN N 2,785,514.48, E 2,377,444.58.
2. VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0'), BASED ON THE NOAA/NOS DATED BENCH MARK LIST: "9452400, SKAGWAY, TAYNA INLET, ALASKA", PUBLISHED 05/26/2010. THIS BENCHMARK IS APPROXIMATELY 100 METERS FROM THE 2006 TIDE GAUGE. USACE DOME D B "SH-D 2000" IS EQUIVALENT TO BENCHMARK "945 2400 TIDE 11" IN 35.55' AND USACE DATED BENCHMARK "945 2400 TIDE 8" AS 34.63'. ALSO PROVIDED ARE THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) EQUIVALENTS, HOLDING USACE DOME D B "SH-D 2000" AS 23.57', BASED ON GPS OBSERVATIONS FROM JULY 29 & 30, 2011.
3. THE SURVEY WAS CONDUCTED ON JULY 29-31, 2011. HYDROGRAPHIC SOUNDING DATA WAS COLLECTED USING AN ECHO SSS MATH BEAM ECHO SOUNDER (200KHZ, 120-DEGREE SWATH) WITH WIRE DEPTHS, 10-200 METERS. POSITIONING AND VESSEL ATTITUDE WERE PROVIDED IN REAL TIME USING A TRIMBLE 4611 RTK GPS RECEIVER OPERATING ON KINEMATIC CORRECTORS BROADCAST FROM A TRIMBLE 5700 RTK BASE RECEIVER SET AT CONTROL STATION. SH-D 2000 AND SH-D 2000 PROFILE DATA WERE PROVIDED IN DIGI-BAR PRO, AND WAS PROVIDED IN REAL TIME AT THE SOUNDER HEAD USING AN ODOM DIGI-BAR V. DATA COLLECTION AND NAVIGATION WERE PERFORMED USING HYPACK HYSWEEP (2010) SOFTWARE. MULTI-BEAM SURVEY DATA WAS POST-PROCESSED USING HYPACK HYSWEEP (2010) SOFTWARE.
4. HORIZONTAL COORDINATES FOR BREAKWATER BULK 1959 WERE NOT UPDATED THIS SURVEY.
5. SOUNDING VALUES SHOWN ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
6. THIS DRAWING IS INDICATIVE OF GENERAL SEAFLOOR CONDITIONS ON THE DATE OF SURVEY.
7. THIS SURVEY WAS CONDUCTED BY HUGHES AND ASSOCIATES, WASILLA, AK.

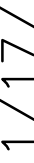
CONTROL DATA					
STATION	NORTHING	EASTING	ELEV (MLLW)	ELEV (NAVD88)	DESCRIPTION
BREAKWATER 1959	2785305.50	2377647.39	26.40	22.36	USCGS TRI STATION SBC
BREAKWATER RM1 1959	2785330.75	2377626.71	27.91	23.87	USCGS REFERENCE MARK SEC
SH-C 2000	2785922.80	2378480.18	25.20	21.36	USACE 3-1/4" DOMED BC
SH-D 2000	2785514.48	2377444.58	27.61	23.57	USACE 3-1/4" DOMED BC
SH-E 2008	2785480.32	2378347.55	28.44	24.40	USACE 3-1/4" DOMED BC
SH-F 2011	2785790.95	2377747.93	28.34	24.30	3-1/4" DOMED BC
SEE NOTES 2 AND 4 FOR CONTROL DATA TABLE DETAILS					

PROJECT LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	2,377,792.70	2,377,792.70	6	2,785,334.31	2,377,439.88
2	2,785,498.96	2,377,792.70	7	2,785,301.18	2,377,447.91
3	2,785,635.48	2,377,795.81	8	2,785,406.02	2,377,570.00
4	2,785,610.75	2,377,773.94	9	2,785,418.70	2,377,691.33
5	2,785,514.05	2,377,598.88			
DEEP DRAFT LIMITS					
1	2,784,128.76	2,377,104.83			
2	2,784,632.08	2,377,591.11			
3	2,784,775.89	2,377,730.31			

☆ NAVIGATION AIDS ☆			
DESCRIPTION	USCG NO.	NORTHING	EASTING
SKAGWAY BREAKWATER LIGHT 2	23935	2.785.331.0	2.377.622.7

VOLUME COMPUTATIONS	
PROJECT DEPTH -8.0'	
AVAILABLE TO PROJECT DEPTH (-8.0')	14.0
AVAILABLE BETWEEN PROJECT DEPTH (-8.0') AND MAX PAY DEPTH (-9.0')	32.0
TOTAL MATERIAL AVAILABLE	46.0
PROJECT DEPTH -20.0'	
AVAILABLE TO PROJECT DEPTH (-20.0')	0.0
AVAILABLE BETWEEN PROJECT DEPTH (-20.0') AND MAX PAY DEPTH (-21.0')	0.0
TOTAL MATERIAL AVAILABLE	0.0
PROJECT DEPTH -30.0'	
AVAILABLE TO PROJECT DEPTH (-30.0')	0.0
AVAILABLE BETWEEN PROJECT DEPTH (-30.0') AND MAX PAY DEPTH (-31.0')	0.0
TOTAL MATERIAL AVAILABLE	0.0
SIDE SLOPES	
AVAILABLE ALONG SIDE SLOPES	79.0

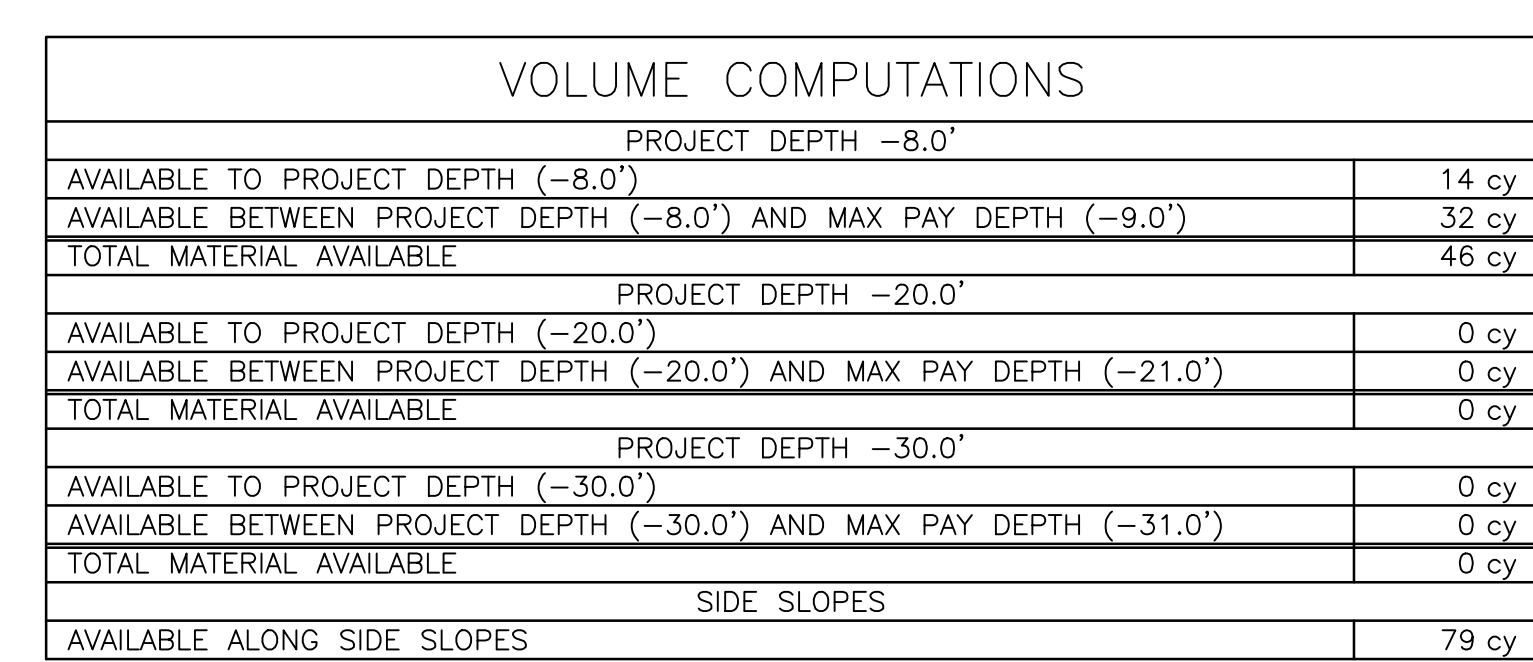
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 U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ANCHORAGE, ALASKA	Designed	Date: 11/17/11
	Drawn: TNL	Two Scale: 1" = 50'
	Field No.: CSH	Plot Scale:
	Submitted:	File:
	Chief:	Drawing #:

SKAGWAY HARBOR AND DEEP DRAFT DOCK
CONDITION SURVEY
JULY 29-31, 2011

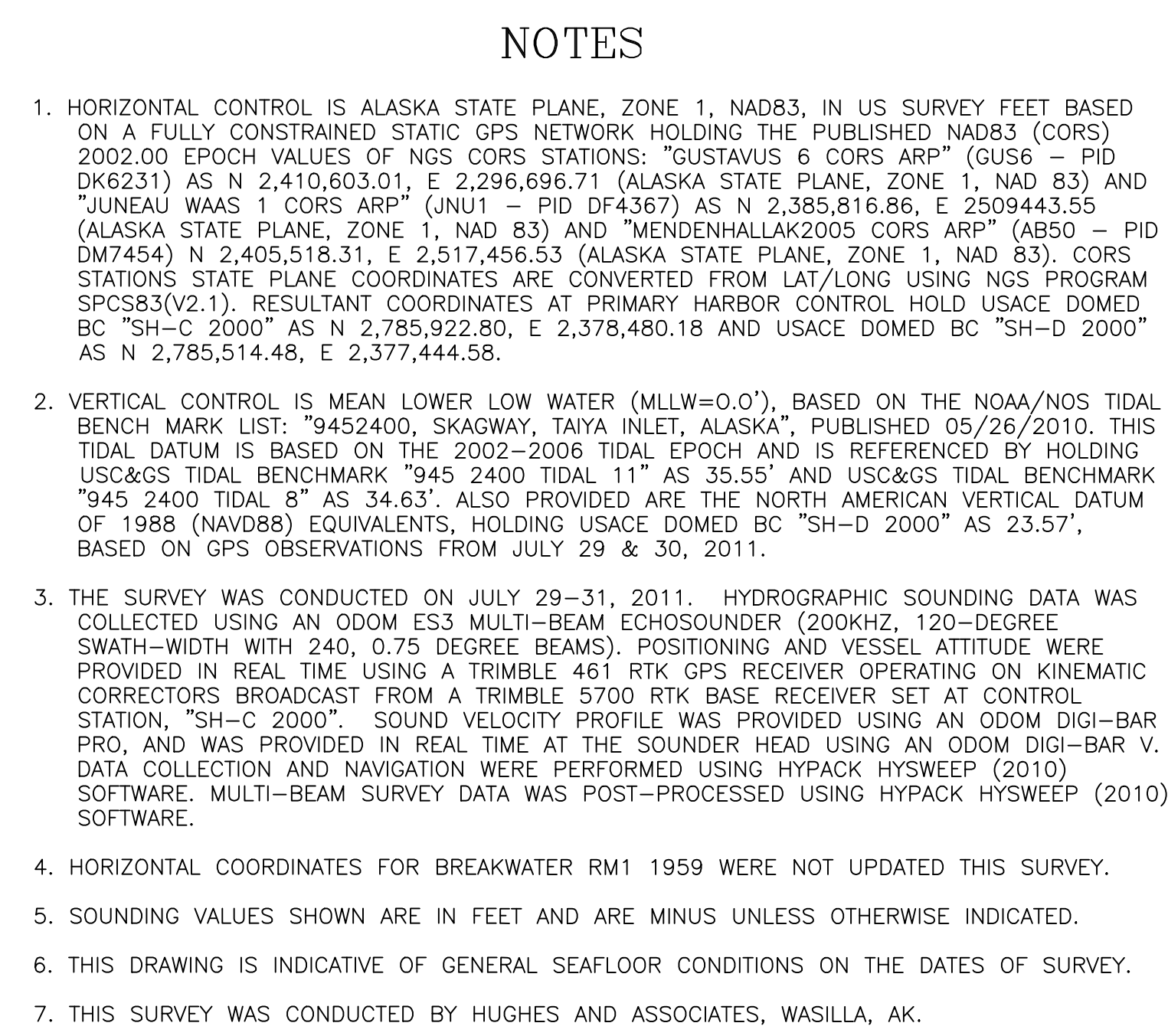
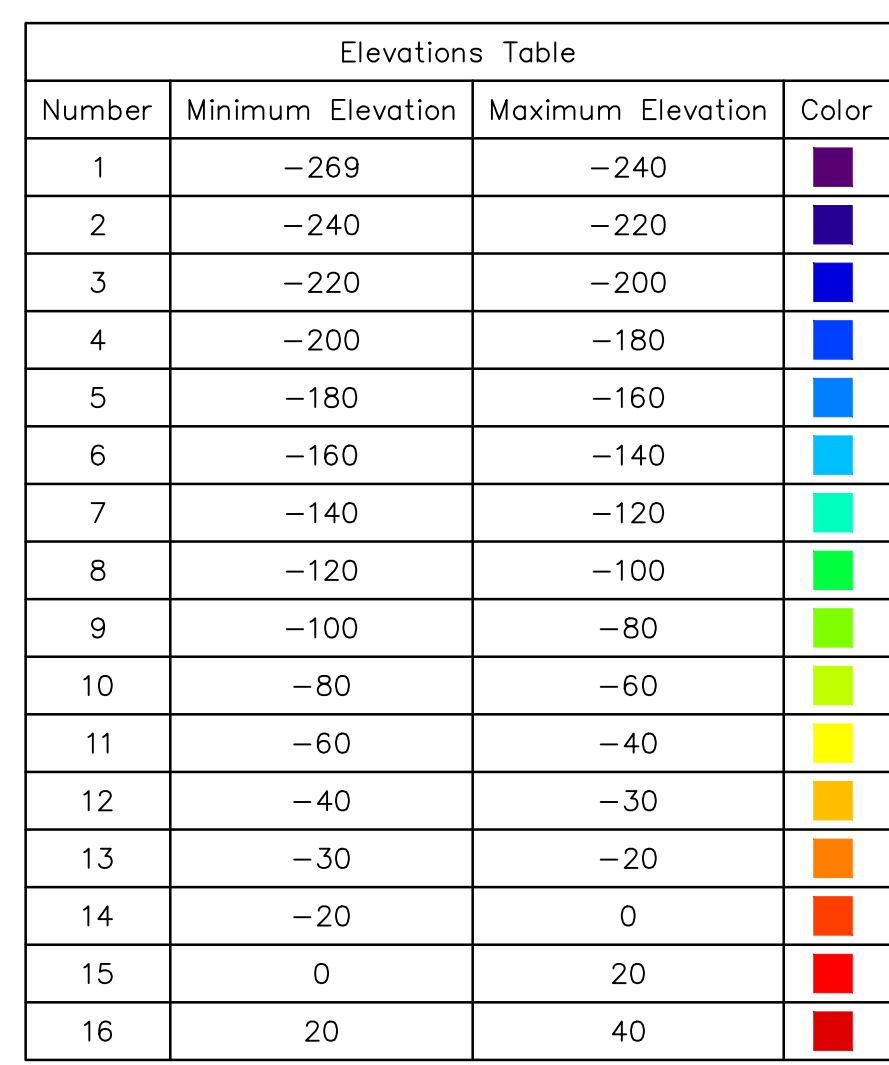
Reference
number:

V-102
Sheet 2 of 4



Reference
number:
V-103
Sheet 3 of 4



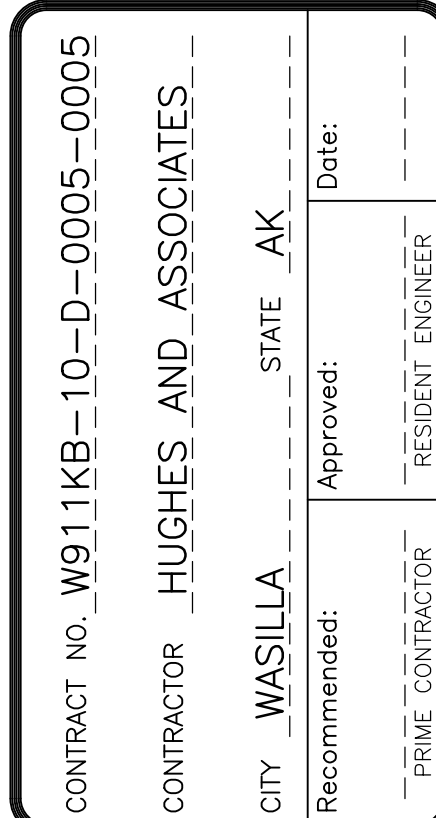
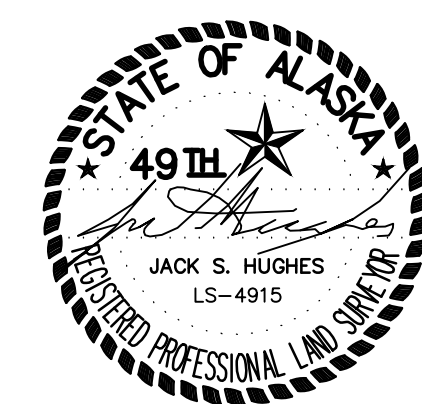


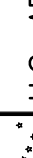
CONTROL DATA					
STATION	NORTHING	EASTING	ELEV (MLW)	ELEV (NAVD88)	DESCRIPTION
BREAKWATER 1959	2785305.50	2737647.39	26.40	22.36	USCSG TRI STATION SBC
BREAKWATER RM1 1959	2785330.75	2737625.71	27.91	23.87	USCSG REFERENCE MARK SBC
SH-C 2000	2785922.80	2784860.18	25.40	21.36	USACE 3-1/4" DOMED BC
SH-D 2000	2785514.48	2737444.58	27.61	23.57	USACE 3-1/4" DOMED BC
SH-E 2008	2785480.32	278347.55	28.44	24.40	USACE 3-1/4" DOMED BC
SH-F 2011	2785790.95	2737747.93	28.34	24.34	USACE 3-1/4" DOMED BC
SEE NOTES 2 AND 4 FOR CONTROL DATA TABLE DETAILS					

PROJECT LIMITS						
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING	
1	2,377,792.70	2,377,792.70	6	2,785,334.31	2,377,439.86	
2	2,785,698.95	2,377,792.70	7	2,785,361.18	2,377,437.50	
3	2,785,635.48	2,785,995.81	8	2,785,406.02	2,377,570.07	
4	2,785,610.75	2,377,773.94	9	2,785,418.70	2,377,691.35	
5	2,785,514.05	2,377,598.88				
DEEP DRAFT LIMITS						
1	2,784,128.76	2,377,104.83				
2	2,784,632.08	2,377,591.31				
3	2,784,725.89	2,377,730.31				

☆ NAVIGATION AIDS ☆			
DESCRIPTION	USCG NO.	NORTHING	EASTING
SKAGWAY BREAKWATER LIGHT 2	23935	2,785,331.0	2,377,622.7

VOLUME COMPUTATIONS	
PROJECT DEPTH -8.0'	
AVAILABLE TO PROJECT DEPTH (-8.0')	14 cy
AVAILABLE BETWEEN PROJECT DEPTH (-8.0') AND MAX PAY DEPTH (-9.0')	32 cy
TOTAL MATERIAL AVAILABLE	46 cy
PROJECT DEPTH -20.0'	
AVAILABLE TO PROJECT DEPTH (-20.0')	0 cy
AVAILABLE BETWEEN PROJECT DEPTH (-20.0') AND MAX PAY DEPTH (-21.0')	0 cy
TOTAL MATERIAL AVAILABLE	0 cy
PROJECT DEPTH -30.0'	
AVAILABLE TO PROJECT DEPTH (-30.0')	0 cy
AVAILABLE BETWEEN PROJECT DEPTH (-30.0') AND MAX PAY DEPTH (-31.0')	0 cy
TOTAL MATERIAL AVAILABLE	0 cy
SIDE SLOPES	
AVAILABLE ALONG SIDE SLOPES	79 cy

[illegible]

 U.S. ARMY ENGINEER DISTRICT CORPS OF ENGINEERS ANCHORAGE, ALASKA	Designed: _____	Date: 11/17/11
	Drawn: TNL	Dwg Scale: 1"=50'
	Reviewed: CSH	Plot Scale: _____
	Chief: _____	Section: _____
	Submitted: _____	File: _____
	Drawing #: _____ Branch: _____	
		2957-11

SKAGWAY, ALASKA
SKAGWAY HARBOR AND DEEP DRAFT DOCK
CONDITION SURVEY
JULY 29-31, 2011

Reference
number:
V-104
Sheet 4 of 4

SURVEY