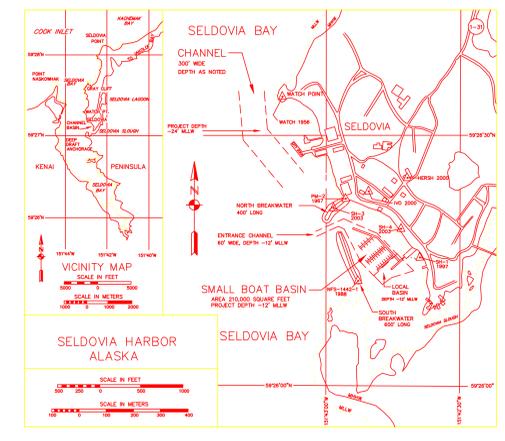


Elevations Table			
Number	Minimum Elevation	Maximum Elevation	Color
1	-47.770	-44.000	Dark Blue
2	-44.000	-40.000	Blue
3	-40.000	-36.000	Light Blue
4	-36.000	-34.000	Light Green
5	-34.000	-32.000	Green
6	-32.000	-30.000	Yellow-Green
7	-30.000	-28.000	Yellow
8	-28.000	-26.000	Light Yellow
9	-26.000	-24.000	Orange
10	-24.000	-22.000	Light Orange
11	-22.000	-20.000	Light Red
12	-20.000	-18.000	Red
13	-18.000	-16.000	Dark Red
14	-16.000	-14.000	Brown
15	-14.000	-10.000	Dark Brown



- ### NOTES
- HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD83, IN US SURVEY FEET, HOLDING DOMED BC "SH-1 1997" AS N 1,990,007.30, E 1,321,629.31 AND USACE SBC "PM-2 1967" AS N 1,990,886.91, E 1,320,690.54.
 - VERTICAL CONTROL IS IN FEET, REFERRING TO MEAN LOWER LOW WATER (MLLW=0.0'), HOLDING USACE'S TIDAL BENCHMARK "BM 19 1967" AS 29.83' AND USE TIDAL BENCHMARK "PM-2 1967" AS 29.51'. TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH FROM NOAA/NOS TIDAL BENCH MARK LIST: "9455500 SELDOVIA, COOK INLET, ALASKA", PUBLISHED 09/12/2007.
 - SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
 - THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF SURVEY.
 - SURVEY WAS CONDUCTED FROM SEPTEMBER 17-21, 2010 BY HUGHES AND ASSOCIATES, WASILLA, AK. SOUNDINGS WERE COLLECTED USING AN ODOM E53 MULTI-BEAM DEPTH SOUNDER (200KHZ, 120-DEGREE SWATH-WIDTH WITH 240, 0.75 DEGREE BEAMS), SOUND VELOCITY PROFILE WAS PROVIDED USING AN ODOM DIGI-BAR PRO, AND WAS PROVIDED IN REAL TIME AT THE SOUNDER HEAD USING AN ODOM DIGI-BAR V. POSITIONING AND TIDES WERE PROVIDED 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, "PM-2, 1967". VESSEL NAVIGATION, DATA COLLECTION AND PROCESSING WERE PERFORMED USING HYPACK 2010 INTEGRATED SOFTWARE. ALL BREAKWATERS, BASINS, AND SURROUNDING AREAS WERE SURVEYED USING TRIMBLE 5700 AND R8 RTK SURVEY ROVERS.
 - HORIZONTAL CONTROL WAS UPDATED THROUGH A STATIC GPS NETWORK AND A LEAST SQUARES ADJUSTMENT. ADJUSTMENT WAS COMPLETED HOLDING USACE DOMED BC "SH-1, 1997" AS N 1,990,007.30, E 1,321,629.31 AND DOMED BC "SH-6, 2006" AS N 1,991,765.52, E 1,320,514.90.
 - VERTICAL CONTROL WAS UPDATED THROUGH DIFFERENTIAL LEVELING USING A DIGITAL LEVEL AND HOLDING BENCHMARKS "PM-2 1967" AS 29.51' AND "BM 19 1967" AS 29.83'.

CONTROL DATA				
STATION	NORTHING	EASTING	ELEV.	DESCRIPTION
LIGHT 1965*	1,990,669.92	1,320,458.88	27.08	USACE SBC
PM-2 1967	1,990,886.91	1,320,690.54	29.51	USACE SBC
PM-3 1967	1,990,473.59	1,320,621.09	23.75	USACE SBC
NFS-1442-1 1988	1,989,901.00	1,320,831.45	26.27	USACE SBC
WATCH 1956	1,992,238.98	1,320,070.90	-	USCGS SBC
SEL-4	1,992,069.44	1,320,447.95	28.80	USACE DOMED BC
SH-1 1997	1,990,007.30	1,321,629.31	28.56	USACE DOMED BC
SH-2 1997	1,991,667.21	1,320,124.09	29.40	USACE DOMED BC
HERSH 2000*	1,991,108.36	1,321,511.89	42.52	USACE DOMED BC
IVO 2000	1,991,107.02	1,320,909.51	61.78	USACE DOMED AL-CAP
SH-3 2003	1,990,730.70	1,320,500.94	29.08	USACE DOMED BC
SH-4 2003	1,990,453.39	1,321,371.78	29.63	USACE DOMED BC
SH-5 2006	1,990,685.60	1,321,157.57	29.02	3 1/4" DOMED BC
SH-6 2006	1,991,765.52	1,320,514.90	29.78	3 1/4" DOMED BC

*NOTE: COORDINATES FOR "LIGHT 1965" AND "HERSH 2000" HAVE NOT BEEN UPDATED BECAUSE THEY ARE NOT SUITABLE FOR GPS USE.

PROJECT LIMITS					
CORNER	NORTHING	EASTING	CORNER	NORTHING	EASTING
1	1,992,302.21	1,319,862.36	4	1,991,127.38	1,319,984.12
2	1,991,832.20	1,319,860.50	5	1,991,735.91	1,319,560.13
3	1,991,298.31	1,320,230.66	6	1,992,303.39	1,319,562.36

NAVIGATION AIDS			
USCG No.	DESCRIPTION	NORTHING	EASTING
26165	LIGHT 3	1,992,242.2	1,320,045.0
26170	SELDOVIA DOCK LIGHTS (2) (North)	1,991,663.9	1,320,106.2
26170	SELDOVIA DOCK LIGHTS (2) (South)	1,991,486.2	1,320,222.8
26170	SELDOVIA DOCK LIGHT POLE (South)	1,991,499.0	1,320,234.2
26170	SELDOVIA DOCK LIGHT POLE (North)	1,991,663.2	1,320,119.8
26175	DAYBEACON 4	1,991,461.6	1,319,167.7
26180	SELDOVIA BREAKWATER LIGHT 5	1,990,668.6	1,320,457.8

VOLUME COMPUTATIONS	
VOLUME AVAILABLE TO PROJECT DEPTH (-24 FT)	157 cy
VOLUME AVAILABLE BETWEEN PROJECT DEPTH (-24 FT) AND MAX-PAY DEPTH (-25 FT)	113 cy
VOLUME AVAILABLE ALONG SIDE SLOPES	453 cy
TOTAL VOLUME AVAILABLE	723 cy

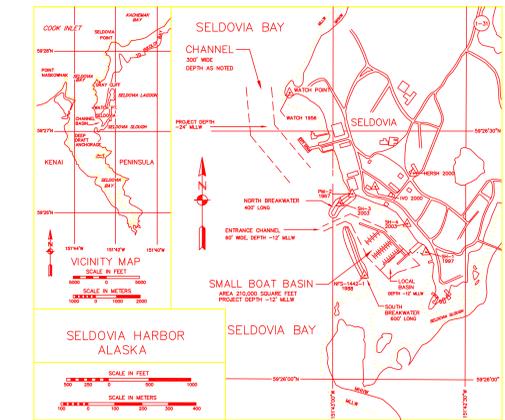
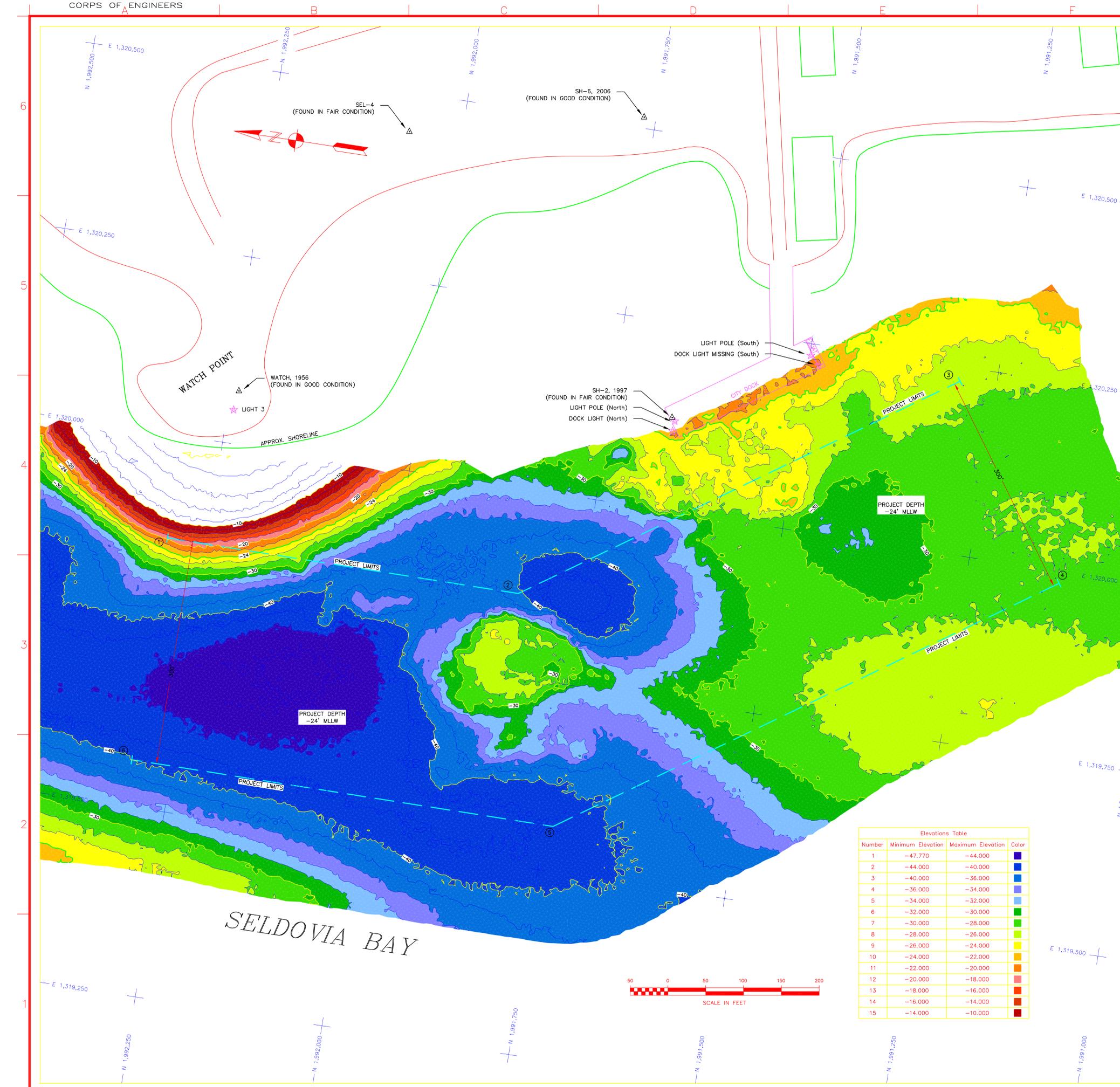


CONTRACT NO. W911KB-10-D-0005
 CONTRACTOR HUGHES AND ASSOCIATES
 CITY WASILLA STATE AK
 Recommended: _____ Approved: _____
 PRIME CONTRACTOR RESIDENT ENGINEER

Date	Appr'd	Description	Sym.	Action

Date: 09/21/2010
 Drawn: REH
 Design: U.S. ARMY ENGINEER DISTRICT ANCHORAGE, ALASKA
 Project: SELDOVIA DEEP DRAFT CHANNEL
 Scale: 1"=60'
 Plot Scale: 1"=60'
 Section: 2819-10
 Sheet: 2 of 2

SELDOVIA, ALASKA
 SELDOVIA DEEP DRAFT CHANNEL
 CONDITION SURVEY
 SEPTEMBER 17-21, 2010



US ARMY CORPS OF ENGINEERS ALASKA DISTRICT

CONTRACT NO. W911KB-10-D-0005
 CONTRACTOR: HUGHES AND ASSOCIATES
 CITY: WASILLA, STATE: AK
 Recommended: [Signature] Approved: [Signature] Date: []
 PRIME CONTRACTOR: RESIDENT ENGINEER

NOTES

- HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 4, NAD83, IN US SURVEY FEET, HOLDING DOMED BC "SH-1 1997" AS N 1,990,007.30, E 1,321,629.31 AND USACE SBC "PM-2 1967" AS N 1,990,886.91, E 1,320,690.54.
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CONTROL DATA				
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WATCH 1956	1,992,238.98	1,320,070.90	-	USACE SBC
SEL-4	1,992,069.44	1,320,447.95	28.80	USACE DOMED BC
SH-1 1997	1,990,007.30	1,321,629.31	28.93	USACE DOMED BC
SH-2 1997	1,991,667.21	1,320,124.09	29.40	USACE DOMED BC
HERSH 2000*	1,991,108.36	1,321,511.89	42.52	USACE DOMED BC
IVO 2000	1,991,107.02	1,320,909.51	61.78	USACE DOMED AL-CAP
SH-3 2003	1,990,730.70	1,320,500.94	29.08	USACE DOMED BC
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*NOTE: COORDINATES FOR "LIGHT 1965" AND "HERSH 2000" HAVE NOT BEEN UPDATED BECAUSE THEY ARE NOT SUITABLE FOR GPS USE.

PROJECT LIMITS					
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1	1,992,302.21	1,319,862.36	4	1,991,127.38	1,319,984.12
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3	1,991,298.31	1,320,230.66	6	1,992,303.39	1,319,562.36

NAVIGATION AIDS			
USCG No.	DESCRIPTION	NORTHING	EASTING
26165	LIGHT 3	1,992,242.2	1,320,045.0
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VOLUME AVAILABLE TO PROJECT DEPTH (-24 FT)	157 cy
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6	-32.000	-30.000	Green-Blue
7	-30.000	-28.000	Green
8	-28.000	-26.000	Light Green
9	-26.000	-24.000	Yellow-Green
10	-24.000	-22.000	Yellow
11	-22.000	-20.000	Light Yellow
12	-20.000	-18.000	Orange
13	-18.000	-16.000	Light Orange
14	-16.000	-14.000	Red-Orange
15	-14.000	-10.000	Dark Red



Date	Approval	Description	Signature

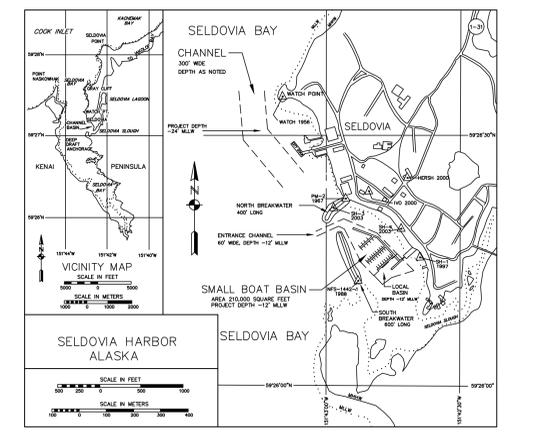
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 Draw Scale: 1"=50'
 Review: CSH
 Chief: [Signature]
 Submitter: [Signature]
 Branch: []
 Drawing #: 2819-10

U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 ANCHORAGE, ALASKA

SELDOVIA, ALASKA
 SELDOVIA DEEP DRAFT CHANNEL
 CONDITION SURVEY
 SEPTEMBER 17-21, 2010

Reference number:
V-701
 Sheet 2 of 2





CONTRACT NO. W911KB-10-D-0005
 CONTRACTOR HUGHES AND ASSOCIATES
 CITY WASILLA STATE AK
 Recommended: _____ Approved: _____
 Resident Engineer: _____
 Date: _____

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VOLUME AVAILABLE BETWEEN PROJECT DEPTH (-24 FT) AND MAX-PAY DEPTH (-25 FT)		113 cy
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Date	Description
09/21/2010 <td>Design</td>	Design
09/21/2010 <td>Drawn</td>	Drawn
09/21/2010 <td>Reviewed</td>	Reviewed
09/21/2010 <td>Checked</td>	Checked
09/21/2010 <td>Submitted</td>	Submitted
09/21/2010 <td>Accepted</td>	Accepted

U.S. ARMY ENGINEER DISTRICT
 CORPS OF ENGINEERS
 ANCHORAGE, ALASKA
 Design: REH
 Drawn: REH
 Reviewed: CSH
 Checked: CSH
 Submitted: CSH
 Accepted: CSH
 Date: 09/21/2010
 Drawn Scale: 1"=50'
 First Scale: _____
 Section: _____
 Branch: _____
 Drawing #: _____
 2819-10

SELOVIA, ALASKA
 SELDOVIA DEEP DRAFT CHANNEL
 CONDITION SURVEY
 SEPTEMBER 17-21, 2010

Reference number:
V-101
 Sheet 1 of 2

