## VOLUME COMPUTATIONS

| AREA A: DILLINGHAM HARBOR | MLLW=0 | CU. YD. |
|---|---|---|
| REMOVED TO PROJECT DEPTH (PD) | 0.0 | 73,013 |
| REMOVED TO MAX PAY DEPTH (MP) | -2.0 | 86,414 |
| REMOVED SIDE SLOPES (SS) AT 8:1 (H:V) | VARIES | 14,380 |
| TOTAL VOLUME REMOVED (MP+SS) | | 100,794 |
| OVERDREDGE VOLUME WITHIN HARBOR BASIN | | 2,192 |

## NOTES

1. PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 6, NAD83 (2011), IN US SURVEY FEET BASED ON NGS PUBLISHED VALUES, HOLDING USC&GS STATION "DILLINGHAM 1947" (PID UV7691) AS N 1,849,383.08', E 1,551,809.45' AND USC&GS AZIMUTH MARK "DILLINGHAM AZ MK 1947" (PID UV7690) AS N 1,841,347.21', E 1,553,844.91'.

   LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 6, NAD83 (2011), IN US SURVEY FEET HOLDING USACE DOMED BC "1277-3 1984" AS N 1,840,427.98', E 1,550,887.60'.

2. VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0'), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST: "946 5374, SNAG POINT, NUSHAGAK BAY, DILLINGHAM, ALASKA" PUBLISHED 04/29/2013. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCH MARK "5374 D 2007" AS 60.45'.

3. VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 12B) ELEVATIONS HOLDING NOAA BENCHMARK "946 5374 B 2007" (PID BBBF17) AS 18.46'.

4. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.

5. BATHYMETRY WAS COLLECTED JUNE 2 & 3, 2018. SOUNDINGS WERE COLLECTED USING AN CEESCOPE ECHO SOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE X2 SOUND VELOCITY PROBE. POSITION AND TIDES WERE PROVIDED IN REAL TIME USING A TRIMBLE R8 RTK GPS RECEIVER OPERATING ON KINEMATIC CORRECTIONS BROADCAST FROM A TRIMBLE R8 RTK BASE RECEIVER SET AT CONTROL STATION , "1277-3". DATA WAS COLLECTED AND PROCESSED USING HYPACK 2018 INTEGRATED SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS VERIFIED DURING THE PRE DREDGE SURVEY.

6. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.

7. MAP SOUNDINGS, CONTOURS, COLOR RELIEF, AND VOLUME COMPUTATIONS ARE BASED ON A 10 FOOT SORT.

## SURVEY CONTROL DATA

| STATION | NORTHING | EASTING | MLLW | DESCRIPTION |
|---|---|---|---|---|
| 1277-1 1984 | 1,841,622.39 | 1,550,745.71 | 32.11 | 3.25 INCH USACE SBC |
| 1277-2 1984 | 1,840,494.00 | 1,550,879.74 | 30.86 | 3.25 INCH USACE SBC |
| 1277-3 1984 | 1,840,427.98 | 1,550,887.60 | 30.21 | 3.25 INCH USACE SBC |
| 5374 A 2007 | | | 25.62 | NOAA/NOS TIDAL BM |
| 5374 B 2007 | | | 24.87 | NOAA/NOS TIDAL BM |
| DILL 1998 | 1,840,505.33 | 1,550,674.26 | 29.80 | 3.25 INCH FLAT ALCAP |
| DILLINGHAM 1947 | 1,849,383.08 | 1,551,809.45 | | 3.5 INCH USCGS SBC |
| DILLINGHAM AZ MK | 1,841,347.21 | 1,553,844.91 | | 2 INCH USCGS IRON PIPE |
| PICKEL 1998 | 1,841,509.51 | 1,550,437.81 | 28.82 | 3.25 INCH FLAT ALCAP |
| WDS-2 2001 | 1,841,419.33 | 1,549,910.66 | 22.77 | 3.25 INCH DOMED ALCAP |

## DREDGE LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| DL-1 | 1,840,656.89 | 1,550,430.66 |
| DL-2 | 1,840,645.10 | 1,550,447.69 |
| DL-3 | 1,840,669.87 | 1,550,654.63 |
| DL-4 | 1,841,364.89 | 1,550,571.44 |
| DL-5 | 1,841,318.54 | 1,550,184.21 |

## DREDGE LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| DL-6 | 1,840,930.19 | 1,550,305.22 |
| DL-7 | 1,840,662.40 | 1,550,337.15 |
| DL-8 | 1,840,535.05 | 1,550,329.96 |
| DL-9 | 1,840,531.77 | 1,550,369.82 |
| DL-10 | 1,840,653.73 | 1,550,376.57 |

## SURVEY LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| SL-1 | 1,840,423.95 | 1,550,449.36 |
| SL-2 | 1,840,458.17 | 1,550,413.54 |
| SL-3 | 1,840,564.87 | 1,550,408.42 |
| SL-4 | 1,840,610.25 | 1,550,787.66 |
| SL-5 | 1,841,437.06 | 1,550,688.69 |
| SL-6 | 1,841,461.80 | 1,550,593.75 |
| SL-7 | 1,841,405.12 | 1,550,578.98 |
| SL-8 | 1,841,432.20 | 1,550,396.29 |
| SL-9 | 1,841,432.01 | 1,550,133.89 |

## SURVEY LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| SL-10 | 1,841,362.83 | 1,550,065.66 |
| SL-11 | 1,840,909.22 | 1,550,207.01 |
| SL-12 | 1,840,362.44 | 1,550,272.21 |
| SL-13 | 1,840,166.00 | 1,550,359.57 |
| SL-14 | 1,839,293.60 | 1,550,359.57 |
| SL-15 | 1,839,293.60 | 1,551,455.40 |
| SL-16 | 1,840,166.00 | 1,551,455.40 |
| SL-17 | 1,840,166.00 | 1,550,808.47 |

## DISPOSAL LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| DS-1 | 1,839,502.58 | 1,551,238.87 |
| DS-2 | 1,839,739.66 | 1,551,159.55 |
| DS-3 | 1,839,644.47 | 1,550,875.05 |
| DS-4 | 1,839,407.39 | 1,550,954.38 |

THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THOSOA CERTIFIED HYDROGRAPHER

CORY S. HUGHES C.H. (245)

STATE OF ALASKA 49TH CORY S. HUGHES LS-13809 REGISTERED PROFESSIONAL LAND SURVEYOR

US Army Corps of Engineers
ALASKA DISTRICT

CONTRACT NO. W91X8-17-C-0005
CONTRACTOR ALASKA MARINE EXCAVATION
CITY ANCHOR POINT STATE ALASKA
Recommended: Approved: Date:
RESIDENT ENGINEER RESIDENT ENGINEER

| REVISION | DATE | DESCRIPTION | BY | APPVD |
|---|---|---|---|---|
| | | | | |

| REVISION | DATE | DESCRIPTION | BY | APPVD |
|---|---|---|---|---|
| | | | | |

SURVEYED BY: CSH & SCA
DRAWN BY: SCA
APPROVED BY:
DATE: 9 July 2018
UPC: XXXXXXX
CHECKED BY: CSH
CONTRACT NO.: W91X8-17-C-0005
PROJECT NO.: XXXXXX
SCALE: 1" = 50'
SIZE: ARCH D
PLOT DATE: 07/05/2018
FILE NAME: P:\DILLINGHAM_POST-DREDGE_2018\SIG2.DWG

U.S. ARMY CORPS OF ENGINEERS
ALASKA DISTRICT
P.O. BOX 6898
JBER, ALASKA 99506-0898

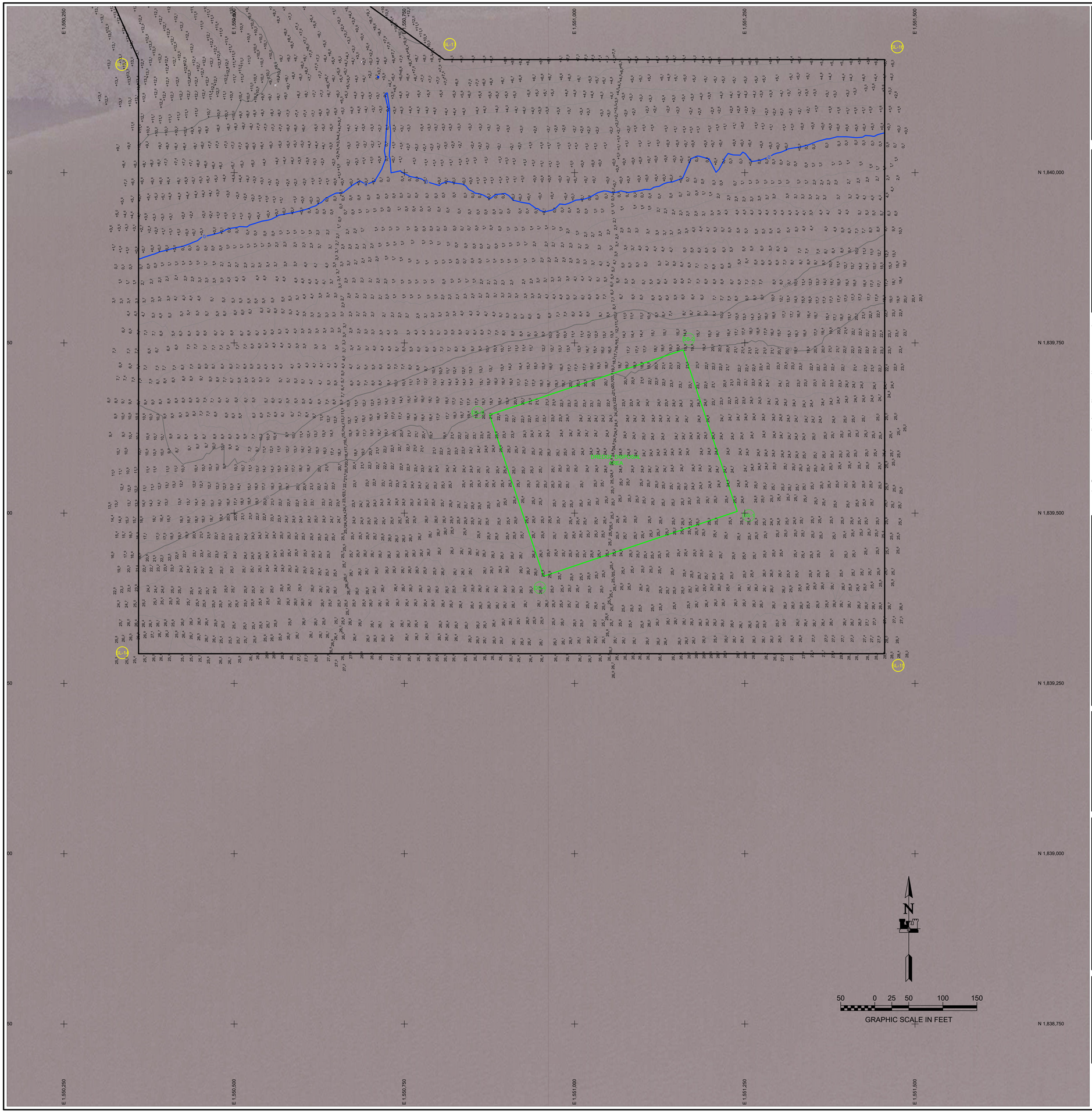
HUGHES & ASSOCIATES
2970 COTTLE LOOP
WASILLA, AK 99654

# DILLINGHAM ALASKA
# DILLINGHAM HARBOR
## POST DREDGE SURVEY
## JUNE 2 & 3, 2018

SHEET IDENTIFICATION

5-DIL-92-07-47

Sheet 1 of 4



## NOTES

1. PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 6, NAD83 (2011), IN US SURVEY FEET BASED ON NGS PUBLISHED VALUES, HOLDING USC&GS STATION "DILLINGHAM 1947" (PID UV7691) AS N 1,849,383.08', E 1,551,809.45' AND USC&GS AZIMUTH MARK "DILLINGHAM AZ MK 1947" (PID UV7690) AS N 1,841,347.21', E 1,553,844.91'.

   LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 6, NAD83 (2011), IN US SURVEY FEET HOLDING USACE DOMED BC "1277-3 1984" AS N 1,840,427.98', E 1,550,887.60'.

2. VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0'), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST: "946 5374, SNAG POINT, NUSHAGAK BAY, DILLINGHAM, ALASKA" PUBLISHED 04/29/2013. THIS TIDAL DATUM IS BASED ON THE 1983-2001 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCH MARK "5374 D 2007" AS 60.45'.

3. VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON PUBLISHED NAVD88 (GEOID 12B) ELEVATIONS HOLDING NOAA BENCHMARK "946 5374 B 2007" (PID BBBF17) AS 18.46'.

4. SOUNDINGS ARE IN FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.

5. BATHYMETRY WAS COLLECTED JUNE 2 & 3, 2018. SOUNDINGS WERE COLLECTED USING AN CEESCOPE ECHO SOUNDER OPERATING AT 200 KHZ. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN AML BASE X2 SOUND VELOCITY PROBE. POSITION AND TIDES WERE PROVIDED IN REAL TIME USING A TRIMBLE R8 RTK GPS RECEIVER OPERATING ON KINEMATIC CORRECTIONS BROADCAST FROM A TRIMBLE R8 RTK BASE RECEIVER SET AT CONTROL STATION , "1277-3". DATA WAS COLLECTED AND PROCESSED USING HYPACK 2018 INTEGRATED SOFTWARE. HORIZONTAL CONTROL WAS SURVEYED USING RTK GNSS EQUIPMENT AND TECHNIQUES. VERTICAL CONTROL WAS VERIFIED DURING THE PRE DREDGE SURVEY.

6. THIS DRAWING INDICATES GENERAL CONDITIONS AT THE TIME OF THE SURVEY.

7. MAP SOUNDINGS, CONTOURS, COLOR RELIEF, AND VOLUME COMPUTATIONS ARE BASED ON A 10 FOOT SORT.

## SURVEY CONTROL DATA

| STATION | NORTHING | EASTING | MLLW | DESCRIPTION |
|---|---|---|---|---|
| 1277-1 1984 | 1,841,622.39 | 1,550,745.71 | 32.11 | 3.25 INCH USACE SBC |
| 1277-2 1984 | 1,840,494.00 | 1,550,879.74 | 30.86 | 3.25 INCH USACE SBC |
| 1277-3 1984 | 1,840,427.98 | 1,550,887.60 | 30.21 | 3.25 INCH USACE SBC |
| 5374 A 2007 | | | 25.62 | NOAA/NOS TIDAL BM |
| 5374 B 2007 | | | 24.87 | NOAA/NOS TIDAL BM |
| DILL 1998 | 1,840,505.33 | 1,550,674.26 | 29.80 | 3.25 INCH FLAT ALCAP |
| DILLINGHAM 1947 | 1,849,383.08 | 1,551,809.45 | | 3.5 INCH USCGS SBC |
| DILLINGHAM AZ MK | 1,841,347.21 | 1,553,844.91 | | 2 INCH USCGS IRON PIPE |
| PICKEL 1998 | 1,841,509.51 | 1,550,437.81 | 28.82 | 3.25 INCH FLAT ALCAP |
| WDS-2 2001 | 1,841,419.33 | 1,549,910.66 | 22.77 | 3.25 INCH DOMED ALCAP |

## DREDGE LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| DL-1 | 1,840,656.89 | 1,550,430.66 |
| DL-2 | 1,840,645.10 | 1,550,447.69 |
| DL-3 | 1,840,669.87 | 1,550,654.63 |
| DL-4 | 1,841,364.89 | 1,550,571.44 |
| DL-5 | 1,841,318.54 | 1,550,184.21 |

## DREDGE LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| DL-6 | 1,840,930.19 | 1,550,305.22 |
| DL-7 | 1,840,662.40 | 1,550,337.15 |
| DL-8 | 1,840,535.05 | 1,550,329.96 |
| DL-9 | 1,840,531.77 | 1,550,369.82 |
| DL-10 | 1,840,653.73 | 1,550,376.57 |

## SURVEY LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| SL-1 | 1,840,423.95 | 1,550,449.36 |
| SL-2 | 1,840,458.17 | 1,550,413.54 |
| SL-3 | 1,840,564.87 | 1,550,408.42 |
| SL-4 | 1,840,610.25 | 1,550,787.66 |
| SL-5 | 1,841,437.06 | 1,550,688.69 |
| SL-6 | 1,841,461.80 | 1,550,593.75 |
| SL-7 | 1,841,405.12 | 1,550,578.98 |
| SL-8 | 1,841,432.20 | 1,550,396.29 |
| SL-9 | 1,841,432.01 | 1,550,133.89 |

## SURVEY LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| SL-10 | 1,841,362.83 | 1,550,065.66 |
| SL-11 | 1,840,909.22 | 1,550,207.01 |
| SL-12 | 1,840,362.44 | 1,550,272.21 |
| SL-13 | 1,840,166.00 | 1,550,359.57 |
| SL-14 | 1,839,293.60 | 1,550,359.57 |
| SL-15 | 1,839,293.60 | 1,551,455.40 |
| SL-16 | 1,840,166.00 | 1,551,455.40 |
| SL-17 | 1,840,166.00 | 1,550,808.47 |

## DISPOSAL LIMITS

| CORNER# | NORTHING | EASTING |
|---|---|---|
| DS-1 | 1,839,502.58 | 1,551,238.87 |
| DS-2 | 1,839,739.66 | 1,551,159.55 |
| DS-3 | 1,839,644.47 | 1,550,875.05 |
| DS-4 | 1,839,407.39 | 1,550,954.38 |

THIS HYDROGRAPHIC SURVEY WAS COMPLETED UNDER THE OVERSIGHT OF AN ACSM/THOSOA CERTIFIED HYDROGRAPHER

CORY S. HUGHES C.H. (245)

STATE OF ALASKA 49TH CORY S. HUGHES LS-13059 REGISTERED PROFESSIONAL LAND SURVEYOR

US Army Corps of Engineers
ALASKA DISTRICT

CONTRACT NO. W91YKB-17-C-0005
CONTRACTOR ALASKA MARINE EXCAVATION
CITY ANCHOR POINT STATE ALASKA
Recommended Approved Date:
CHIEF, ENGINEERING SECTION
PROJECT MANAGER

| NO. | REVISION | DATE | DESCRIPTION | BY | APP'D |
|---|---|---|---|---|---|
| | | | | | |

| NO. | REVISION | DATE | DESCRIPTION | BY | APP'D |
|---|---|---|---|---|---|
| | | | | | |

SURVEYED BY: CSH & SCA
DRAWN BY: DPC
APPROVED BY:

DATE: 9 July 2018
DPC: 07/09/2018
CHECKED BY: CSH
PLOT DATE: 07/05/2018
SCALE: 1" = 50'
SIZE: ANSI D
CONTRACT NO.: W91YKB-17-C-0005
JOB NO.: XXX-XXX
FILE NAME: 2018 DILLINGHAM POST-DREDGE 20180602.DWG

U.S. ARMY CORPS OF ENGINEERS
ALASKA DISTRICT
P.O. BOX 6898
JBER, ALASKA 99506-0898

HUGHES & ASSOCIATES
2970 COTTLE LOOP
WASILLA, AK 99654

DILLINGHAM, ALASKA
DILLINGHAM HARBOR
POST DREDGE SURVEY
JUNE 2 & 3, 2018

SHEET IDENTIFICATION

5-DIL-92-07-47

Sheet 2 of 4