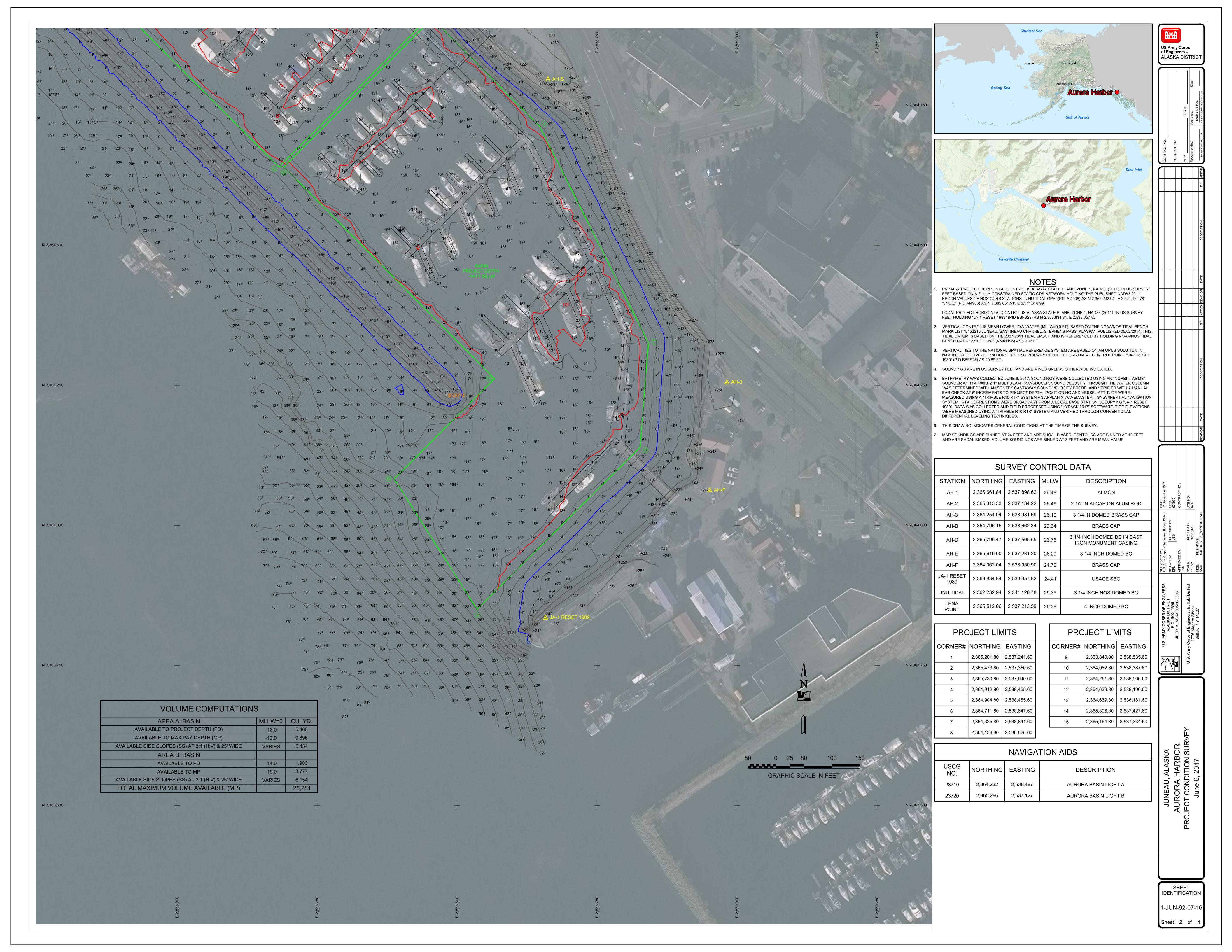
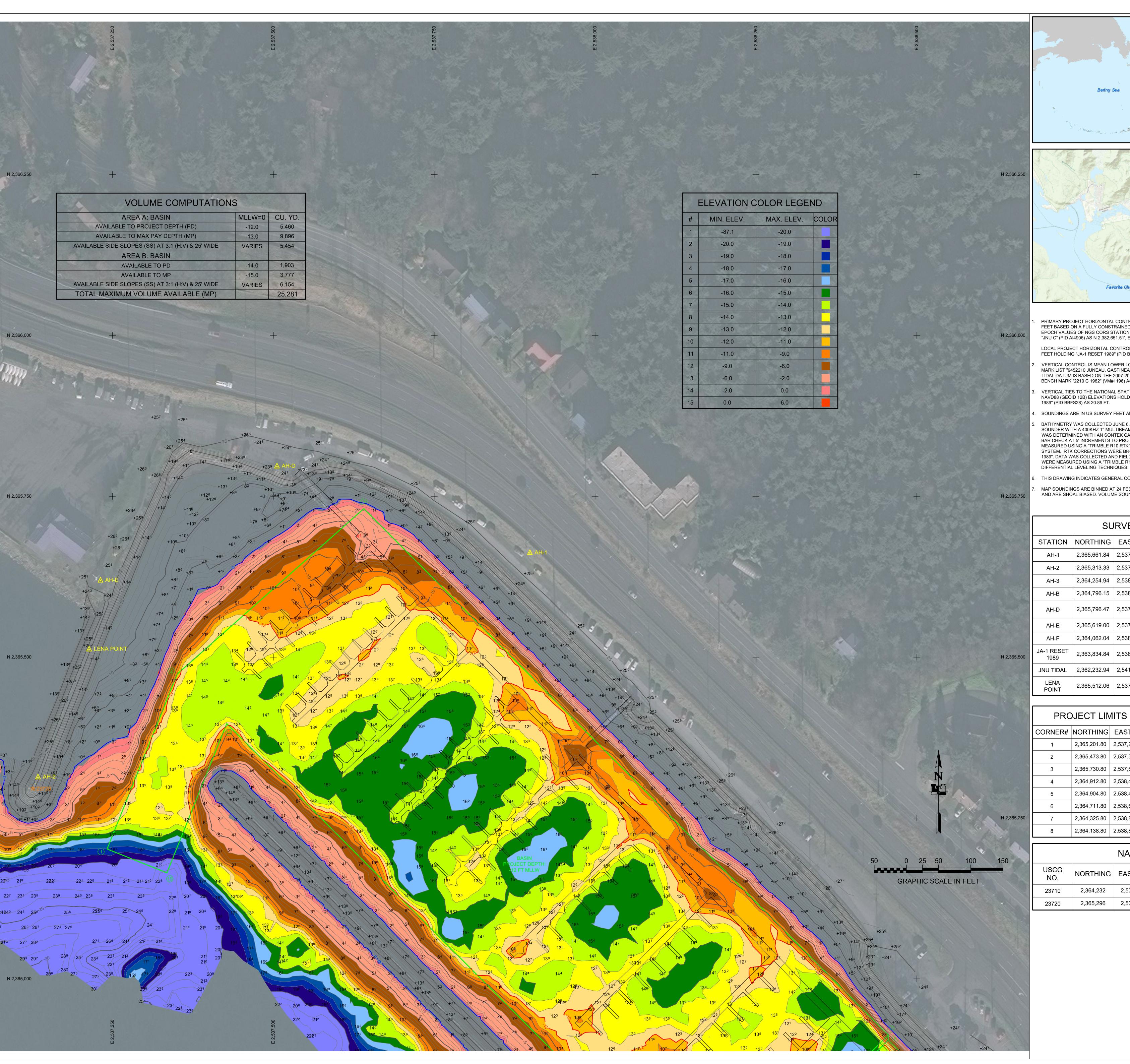


US Army Corps ALASKA DISTRIC

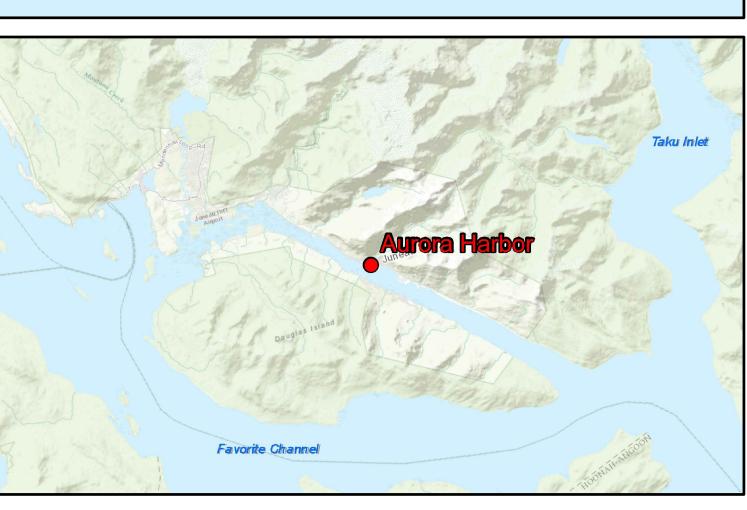
IDENTIFICATION 1-JUN-92-07-16 Sheet 1 of 4







US Army Corps of Engineers ⊗ ALASKA DISTRICT



NOTES

PRIMARY PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83, (2011), IN US SURVEY FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE PUBLISHED NAD83 2011 EPOCH VALUES OF NGS CORS STATIONS: "JNU TIDAL GPS" (PID AI4908) AS N 2,362,232.94', E 2,541,120.78'; "JNU C" (PID AI4906) AS N 2,382,651.51', E 2,511,618.99'.

LOCAL PROJECT HORIZONTAL CONTROL IS ALASKA STATE PLANE, ZONE 1, NAD83 (2011), IN US SURVEY FEET HOLDING "JA-1 RESET 1989" (PID BBFS28) AS N 2,363,834.84, E 2,538,657.82.

VERTICAL CONTROL IS MEAN LOWER LOW WATER (MLLW=0.0 FT), BASED ON THE NOAA/NOS TIDAL BENCH MARK LIST "9452210 JUNEAU, GASTINEAU CHANNEL, STEPHENS PASS, ALASKA", PUBLISHED 05/02/2014. THIS TIDAL DATUM IS BASED ON THE 2007-2011 TIDAL EPOCH AND IS REFERENCED BY HOLDING NOAA/NOS TIDAL BENCH MARK "2210 C 1982" (VM#1196) AS 29.96 FT.

VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON AN OPUS SOLUTION IN NAVD88 (GEOID 12B) ELEVATIONS HOLDING PRIMARY PROJECT HORIZONTAL CONTROL POINT "JA-1 RESET 1989" (PID BBFS28) AS 20.89 FT.

SOUNDINGS ARE IN US SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.

BATHYMETRY WAS COLLECTED JUNE 6, 2017. SOUNDINGS WERE COLLECTED USING AN "NORBIT-IWBMS" SOUNDER WITH A 400KHZ 1° MULTIBEAM TRANSDUCER. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN SONTEK CASTAWAY SOUND VELOCITY PROBE, AND VERIFIED WITH A MANUAL BAR CHECK AT 5' INCREMENTS TO PROJECT DEPTH. POSITIONING AND VESSEL ATTITUDE WERE MEASURED USING A "TRIMBLE R10 RTK" SYSTEM AN APPLANIX WAVEMASTER II GNSS/INERTIAL NAVIGATION SYSTEM. RTK CORRECTIONS WERE BROADCAST FROM A LOCAL BASE STATION OCCUPYING "JA-1 RESET 1989". DATA WAS COLLECTED AND FIELD PROCESSED USING "HYPACK 2017" SOFTWARE. TIDE ELEVATIONS WERE MEASURED USING A "TRIMBLE R10 RTK" SYSTEM AND VERIFIED THROUGH CONVENTIONAL DIFFERENTIAL LEVELING TECHNIQUES.

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

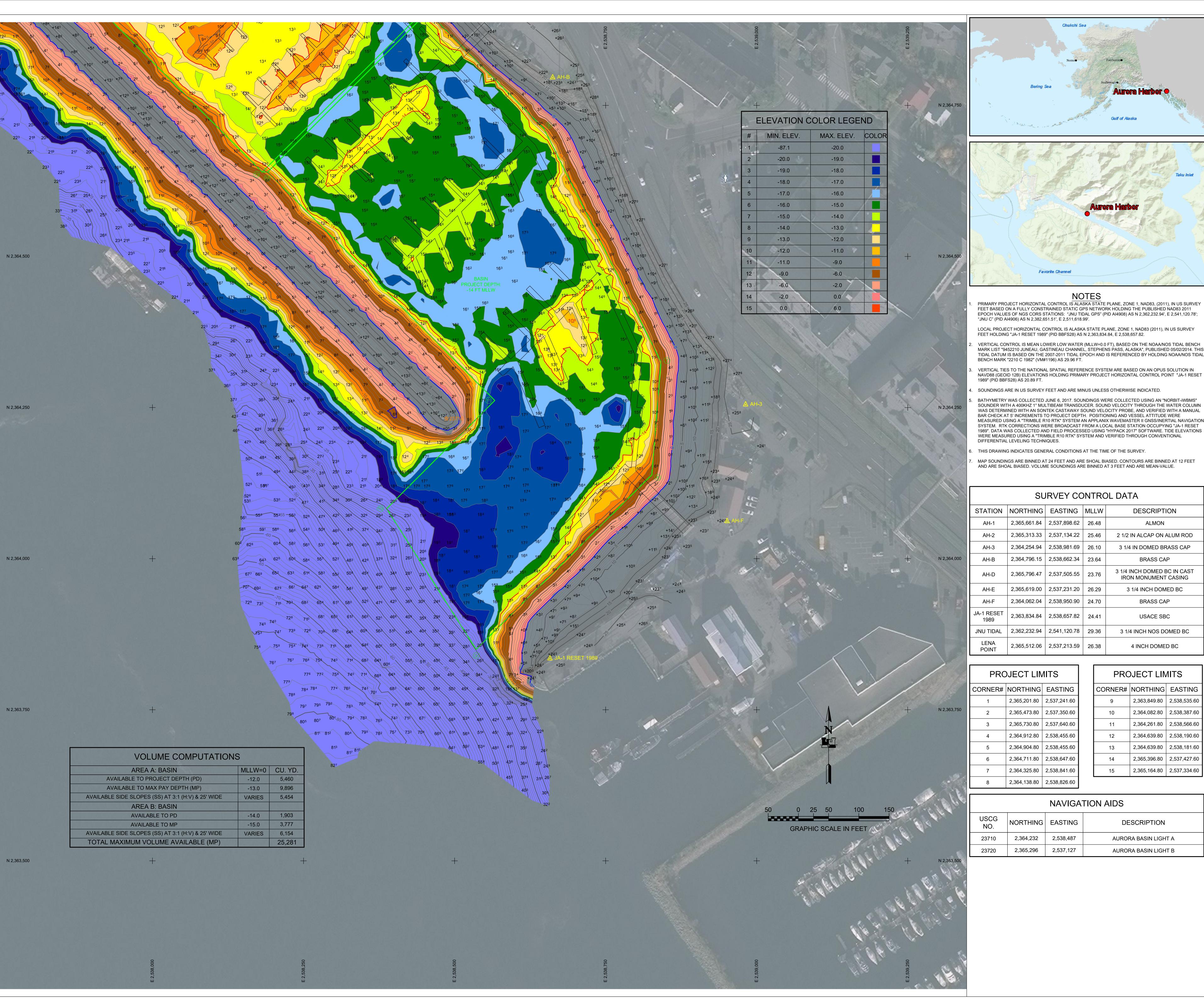
MAP SOUNDINGS ARE BINNED AT 24 FEET AND ARE SHOAL BIASED. CONTOURS ARE BINNED AT 12 FEET AND ARE SHOAL BIASED. VOLUME SOUNDINGS ARE BINNED AT 3 FEET AND ARE MEAN-VALUE.

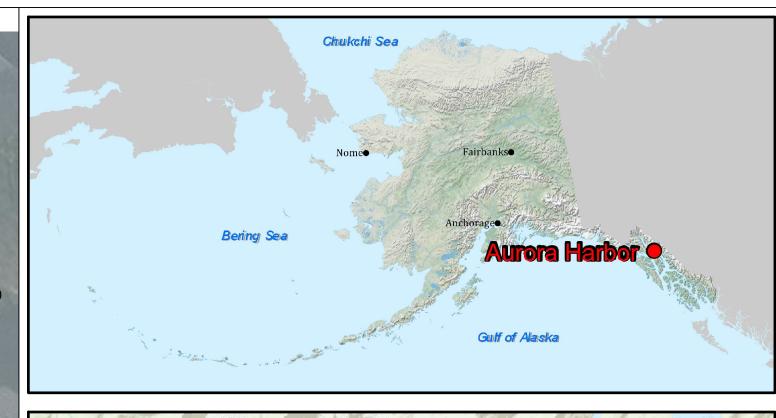
SURVEY CONTROL DATA				
STATION	NORTHING	EASTING	MLLW	DESCRIPTION
AH-1	2,365,661.84	2,537,898.62	26.48	ALMON
AH-2	2,365,313.33	2,537,134.22	25.46	2 1/2 IN ALCAP ON ALUM ROD
AH-3	2,364,254.94	2,538,981.69	26.10	3 1/4 IN DOMED BRASS CAP
AH-B	2,364,796.15	2,538,662.34	23.64	BRASS CAP
AH-D	2,365,796.47	2,537,505.55	23.76	3 1/4 INCH DOMED BC IN CAST IRON MONUMENT CASING
AH-E	2,365,619.00	2,537,231.20	26.29	3 1/4 INCH DOMED BC
AH-F	2,364,062.04	2,538,950.90	24.70	BRASS CAP
JA-1 RESET 1989	2,363,834.84	2,538,657.82	24.41	USACE SBC
JNU TIDAL	2,362,232.94	2,541,120.78	29.36	3 1/4 INCH NOS DOMED BC
LENA POINT	2,365,512.06	2,537,213.59	26.38	4 INCH DOMED BC

0	PROJECT LIMITS					
	CORNER#	NORTHING	EASTING			
	1	2,365,201.80	2,537,241.60			
	2	2,365,473.80	2,537,350.60			
	3	2,365,730.80	2,537,640.60			
	4	2,364,912.80	2,538,455.60			
- 8	5	2,364,904.80	2,538,455.60			
100	6	2,364,711.80	2,538,647.60			
0	7	2,364,325.80	2,538,841.60			
	8	2,364,138.80	2,538,826.60			

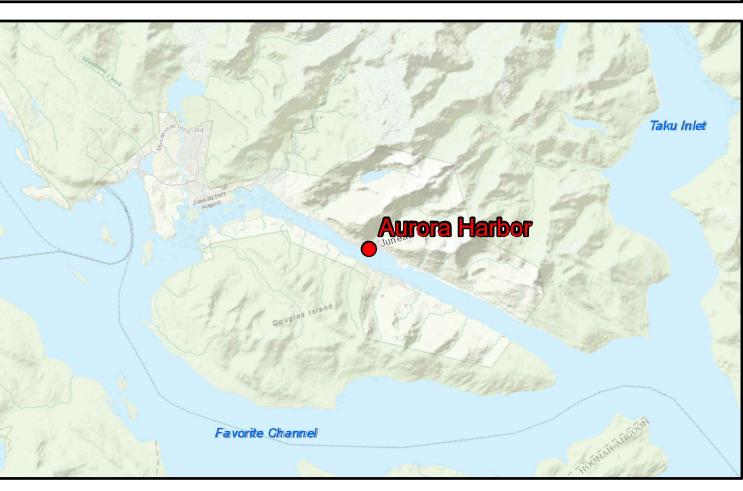
PRC	PROJECT LIMITS				
CORNER#	NORTHING	EASTING			
9	2,363,849.80	2,538,535.60			
10	2,364,082.80	2,538,387.60			
11	2,364,261.80	2,538,566.60			
12	2,364,639.80	2,538,190.60			
13	2,364,639.80	2,538,181.60			
14	2,365,396.80	2,537,427.60			
15	2,365,164.80	2,537,334.60			

NAVIGATION AIDS				
USCG NO.	NORTHING	EASTING	DESCRIPTION	
23710	2,364,232	2,538,487	AURORA BASIN LIGHT A	
23720	2,365,296	2,537,127	AURORA BASIN LIGHT B	





US Army Corps of Engineers ® ALASKA DISTRICT



NOTES

FEET BASED ON A FULLY CONSTRAINED STATIC GPS NETWORK HOLDING THE PUBLISHED NAD83 2011 EPOCH VALUES OF NGS CORS STATIONS: "JNU TIDAL GPS" (PID AI4908) AS N 2,362,232.94', E 2,541,120.78'; "JNU C" (PID AI4906) AS N 2,382,651.51', E 2,511,618.99'.

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- VERTICAL TIES TO THE NATIONAL SPATIAL REFERENCE SYSTEM ARE BASED ON AN OPUS SOLUTION IN NAVD88 (GEOID 12B) ELEVATIONS HOLDING PRIMARY PROJECT HORIZONTAL CONTROL POINT "JA-1 RESET
- SOUNDINGS ARE IN US SURVEY FEET AND ARE MINUS UNLESS OTHERWISE INDICATED.
- BATHYMETRY WAS COLLECTED JUNE 6, 2017. SOUNDINGS WERE COLLECTED USING AN "NORBIT-IWBMS" SOUNDER WITH A 400KHZ 1° MULTIBEAM TRANSDUCER. SOUND VELOCITY THROUGH THE WATER COLUMN WAS DETERMINED WITH AN SONTEK CASTAWAY SOUND VELOCITY PROBE, AND VERIFIED WITH A MANUAL BAR CHECK AT 5' INCREMENTS TO PROJECT DEPTH. POSITIONING AND VESSEL ATTITUDE WERE MEASURED USING A "TRIMBLE R10 RTK" SYSTEM AN APPLANIX WAVEMASTER II GNSS/INERTIAL NAVIGATION SYSTEM. RTK CORRECTIONS WERE BROADCAST FROM A LOCAL BASE STATION OCCUPYING "JA-1 RESET 1989". DATA WAS COLLECTED AND FIELD PROCESSED USING "HYPACK 2017" SOFTWARE. TIDE ELEVATIONS WERE MEASURED USING A "TRIMBLE R10 RTK" SYSTEM AND VERIFIED THROUGH CONVENTIONAL DIFFERENTIAL LEVELING TECHNIQUES.
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SHEET IDENTIFICATION 1-JUN-92-07-16