

Station Information for Sand Point, AK

Water Level Station Information:

Station Name: **Sand Point, AK**

Station Identification Number: **9459450**

Latitude: **55° 20.2' N**

Longitude: **160° 30.1' W**

Date Established: **Sep 10 1972**

Maximum Water Level: **4.35 ft. above [MHHW](#)**

1 (12/31/1986)

Minimum Water Level: **-3.68 ft. below [MLLW](#)**

(11/15/1993)

[Mean Range](#): **5.19 ft.**

[Diurnal Range](#): **7.23 ft.**

Bench Mark Data Sheet: **Click [HERE](#)**

Mean Lower Low Water (MLLW): A tidal datum. The average of the lower low water height of each tidal day observed over the National Tidal Datum Epoch. For stations with shorter series, simultaneous observational comparisons are made with a control tide station in order to derive the equivalent datum of the National Tidal Datum Epoch.

Mean Higher High Water (MHHW): A tidal datum. The average of the higher high water height of each tidal day observed over the National Tidal Datum Epoch. For stations with shorter series, simultaneous observational comparisons are made with a control tide station in order to derive the equivalent datum of the National Tidal Datum Epoch.

Location: To reach the tidal benchmarks from the Airport, proceed on the only road that leads to town. Make the first left as you proceed towards town, veer left at the small boat harbor and follow down until you reach the causeway that leads to the City Dock. The gauge is located on the south side of the storage building on the City Dock. The benchmarks were in the vicinity.

APPENDIX IV – TIDES AND WATER LEVELS

Abstract of Times of Hydrography

Date Flown	JD	Sortie No	Database	On Task (UTC)	Off Task (UTC)	Time On Task
22-Apr-03	112	1	Shum 1	17:50	22:40	4:50
23-Apr-03	113	3	Shum 1	17:15	22:45	5:30
24-Apr-03	114	4	Shum 1	17:36	22:45	5:09
25-Apr-03	115	5	Shum 1	17:35	22:25	4:50
26-Apr-03	116	6	Shum 1	17:30	23:10	5:40
27-Apr-03	117	2	Shum 2	17:35	23:15	5:40
28-Apr-03	118	7	Shum 1	18:26	20:30	2:04
28-Apr-03	118	3	Shum 2	20:30	23:15	2:45
4-May-03	124	1	Shum 3	17:50	19:00	1:10
4-May-03	124	8	Shum 1	19:00	1:30	5:30
5-May-03	125	9	Shum 1	21:00	22:20	1:20
5-May-03	125	4	Shum 2	22:20	0:30	2:10
9-May-03	129	10	Shum 1	17:30	0:00	6:30
9-May-03	129	5	Shum 2	0:00	2:55	2:55
10-May-03	130	2	Shum 3	18:45	1:00	6:15
11-May-03	131	6	Shum 2	17:50	23:35	5:45
12-May-03	132	7	Shum 2	18:00	20:55	2:55
14-May-03	134	9	Shum 2	18:10	21:20	3:10
14-May-03	134	3	Shum 3	21:20	23:10	1:50
14-May-03	134	11	Shum 1	23:00	23:30	0:30
21-May-03	141	4	Shum 3	17:50	21:50	4:00
21-May-03	141	10	Shum 2	0:05	1:50	1:45
21-May-03	141	12	Shum 1	1:50	2:30	0:40
22-May-03	142	5	Shum 3	17:20	20:30	3:10
22-May-03	142	13	Shum 1	20:30	22:40	2:10
23-May-03	143	6	Shum 3	15:30	17:00	1:30
23-May-03	143	14	Shum 1	17:00	19:25	2:25
23-May-03	143	12	Shum 2	20:40	23:50	3:10
25-May-03	145	7	Shum 3	1:30	3:40	2:10
25-May-03	145	14	Shum 2	3:40	4:30	0:50
5-Jun-03	156	15	Shum 1	0:18	2:55	2:37
5-Jun-03	156	15	Shum 2	3:20	4:35	1:15
6-Jun-03	157	16	Shum 2	18:00	19:30	1:30
6-Jun-03	157	9	Shum 3	19:45	21:55	2:10
11-Jun-03	162	11	Shum 3	19:55	22:55	3:00
11-Jun-03	162	17	Shum 2	23:28	0:15	0:47
13-Jun-03	164	12	Shum 3	19:55	22:20	2:25

Date Flown	JD	Sortie No	Database	On Task (UTC)	Off Task (UTC)	Time On Task
13-Jun-03	164	13	Shum 3	22:50	23:20	0:30
14-Jun-03	165	17	Shum 1	0:30	2:00	1:30
14-Jun-03	165	14	Shum 3	20:15	22:35	2:20
16-Jun-03	167	18	Shum 1	22:47	1:03	2:16
17-Jun-03	168	18	Shum 2	1:19	2:30	1:11
17-Jun-03	168	15	Shum 3	2:36	3:01	0:25
2-Jul-03	183	1	Shum 4	22:30	5:48	7:18
3-Jul-03	184	3	Shum 4	22:30	4:54	6:24
4-Jul-03	185	19	Shum 2	4:00	7:00	3:00
5-Jul-03	186	5	Shum 4	22:00	2:48	4:48
6-Jul-03	187	19	Shum 1	1:00	4:00	3:00
7-Jul-03	188	6	Shum 4	22:30	6:54	8:24
8-Jul-03	189	7	Shum 4	22:30	2:48	4:18
10-Jul-03	191	8	Shum 4	0:00	7:30	7:30
13-Jul-03	194	17	Shum 3	21:30	3:00	5:30
13-Jul-03	194	10	Shum 4	0:30	2:00	1:30
15-Jul-03	196	21	Shum 1	0:30	5:54	5:24
15-Jul-03	196	11	Shum 4	0:00	5:54	5:54
20-Jul-03	201	12	Shum 4	22:23	2:37	4:14

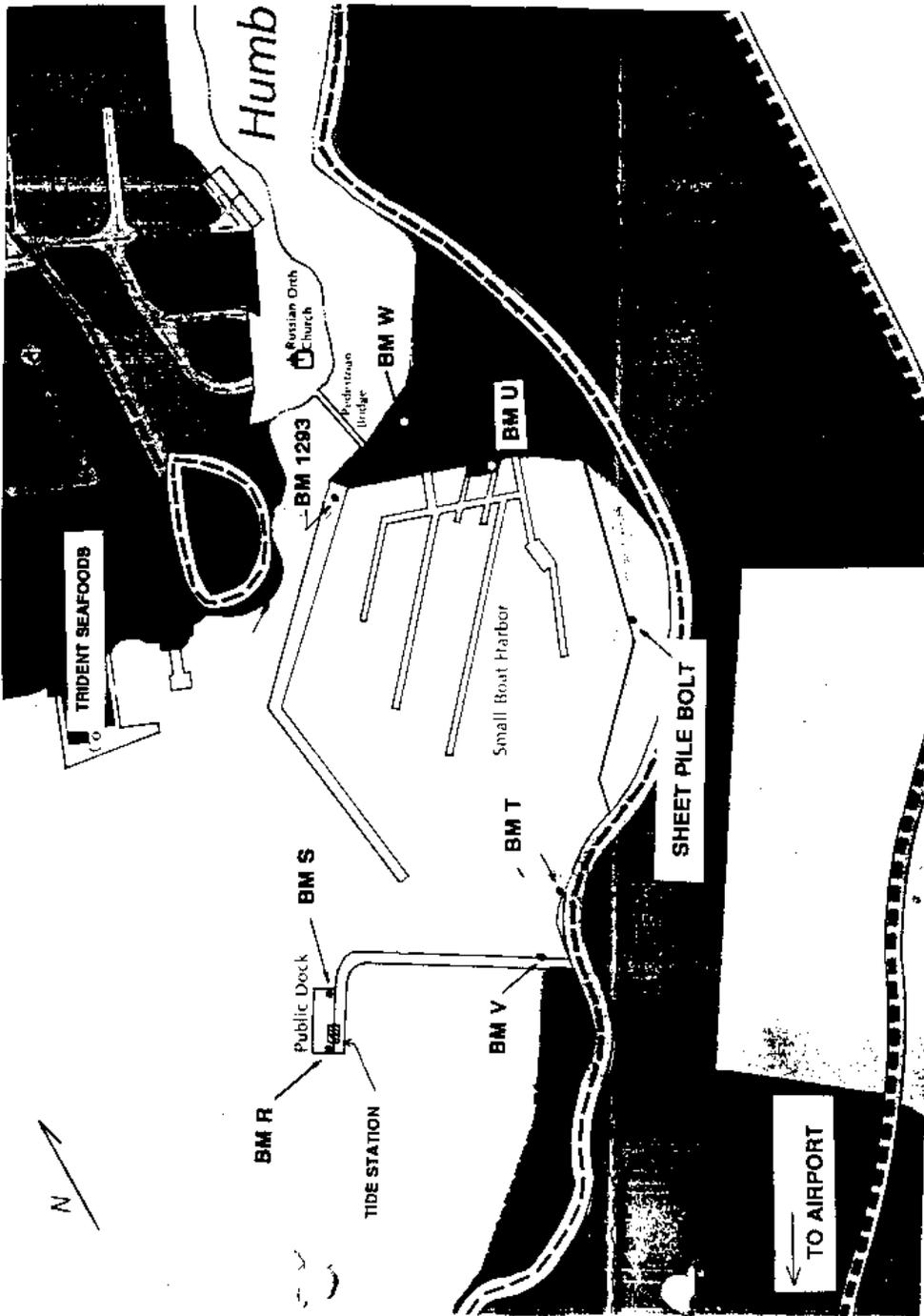
TIDAL DATUMS

Tidal datums at SAND POINT, POPOF ISLAND based on:

LENGTH OF SERIES: 19 Years
TIME PERIOD: January 1983 - December 2001
TIDAL EPOCH: 1983-2001
CONTROL TIDE STATION:

Elevations of tidal datums referred to Mean Lower Low Water (MLLW), in METERS:

HIGHEST OBSERVED WATER LEVEL (12/31/1986)	3.531
MEAN HIGHER HIGH WATER (MHHW)	2.204
MEAN HIGH WATER (MHW)	1.988
MEAN TIDE LEVEL (MTL)	1.197
MEAN SEA LEVEL (MSL)	1.181
MEAN LOW WATER (MLW)	0.406
MEAN LOWER LOW WATER (MLLW)	0.000
LOWEST OBSERVED WATER LEVEL (11/15/1993)	-1.120



NOAA FORM 78-119 (8-83) BENCHMARK SKETCH STATION NAME SAND POINT, ALASKA		U.S. Department of Commerce National Oceanic and Atmospheric Administration National Ocean Service		FIELD UNIT P. O. S. STATION NO. 945-9450	DRAWN BY CSW REVISIONS BY JSS DATE 7-22-95	DATE 7-24-92 REVISIONS BY JSS DATE 8-24-94 REVISIONS BY JSS DATE 7-22-95
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Tidal Zone Analysis Compiled By John Oswald and Associates, LLC

John Oswald and Associates, LLC

12001 Audubon Drive
Anchorage, Alaska 99516

Date: April 16, 2003

To: Darren Stephenson
Tenix/LADS

Fm: John Oswald
John Oswald and Assoc.

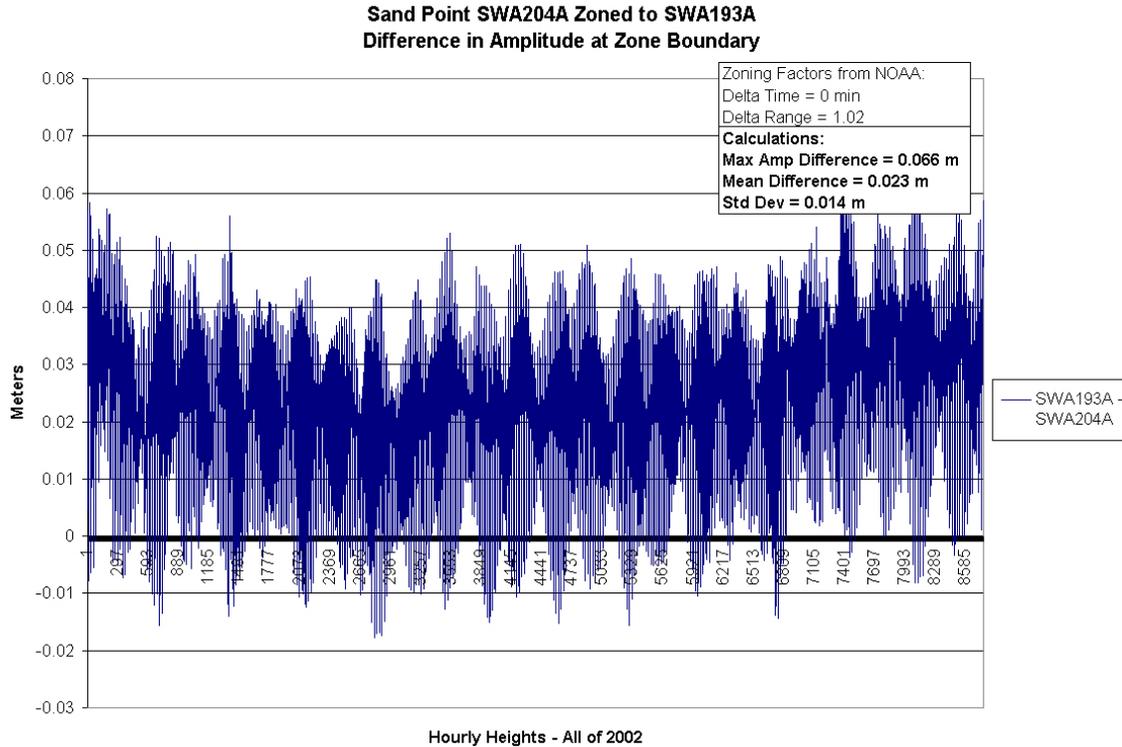
Re: Tidal Zoning for Shumagin Lidar Project

Here is the zoning analysis we were asked to provide regarding the Shumagin Island bathymetric lidar project you are mobilizing this week. Erik Oppgaard did this analysis the past several days. Based on 2002 data at Sand Point and the zoning that NOAA provided in the SOW, Attachment #7, dated Jan 14, 2003, the zoning for this project should be adequate to meet the specifications. One note of caution needs to be mentioned. Since you plan to use predicted tides (initially) coupled with the NOAA zoning for the first reduction/QC of your bathymetric data, beware that weather effects will not be modeled. Only by using the NOAA verified data at Sand Point will these effects be removed. Weather effects could approach several feet.

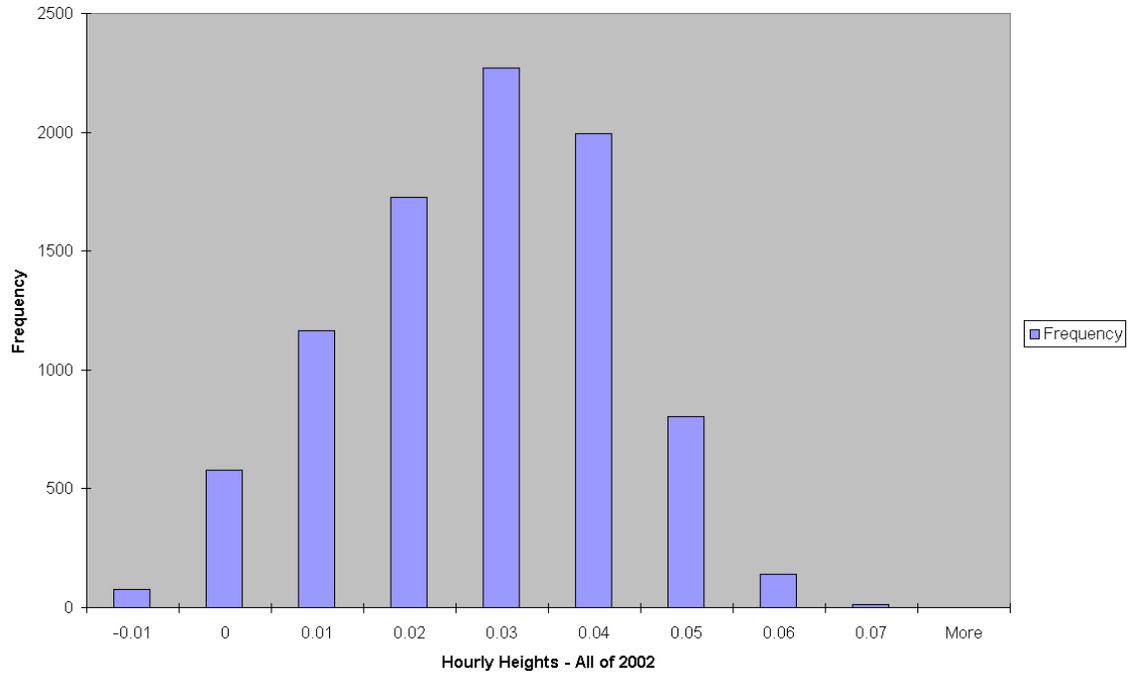
Analysis of the Amplitude Change along the Shumagin Islands Zone Boundary

- 2 There are two tidal zones that make up the majority of the 2003 Shumagin Islands bathymetric lidar project area. The zones are SWA204A and SWA193A, the former containing the Sand Point control station with a zero minute time shift and 1.00-range corrector. The second zone is adjacent and to the north and has a zero minute time shift and a 1.02 range corrector from Sand Point. All data is on the NTDE of 1960-1978. Note this NTDE is expected to be updated by NOAA on April 21, 2003.
- 3 The Sand Point control station run by NOAA has a published mean range (MHW – MLW) of 1.585 meters and a published Great Diurnal (GT) Range (MHHW – MLLW) of 2.198 meters. Using the Great Diurnal Range for zone SWA204A and scaling it by 1.02 to form the predicted tide found in zone SWA193A yields a GT of 2.242, or a difference of 0.044 meters. This should be roughly the typical jump between the two zone boundaries.

- 4 To test this, one year of verified Hourly Height data at MLLW from NOAA was downloaded. This file was scaled by 1.02 and differenced with the original file. The largest magnitude of difference between the two zones for 2002 is 0.066 m with a mean of 0.023 m and a standard deviation of 0.014 m. There is a 50% increase between the predicted range difference and the computed range difference for the two zones in 2002. Several factors play a role in this jump. One, the predicted is based on 19-year means; there is still some tide above and below the GT. Secondly, storms have been somewhat removed from the predicted amplitudes yielding a dampened range.



**Histogram of Sand Point SWA204A Zoned to SWA193A
Distribution of the Difference in Amplitude at Zone Boundary**



Summary:

For a hydrographic survey, the zoning provided by NOAA should be adequate to meet the accuracy specifications for soundings. The datum jump should be below 0.070 meters with the majority of differences in the 2 – 3 cm category.