



Project Instructions

Date Submitted: August 10, 2017

Platform: NOAA Ship *Fairweather*

Project Number: (OMAO) FA-17-03

Project Title: Yakutat Bay, Alaska

Project Dates: September 11 to November 3, 2017

Prepared by: _____ Dated: 8/11/2017
Lieutenant Russell Quintero, NOAA
Chief, Operations Branch
Hydrographic Surveys Division

Approved by: _____ Dated: 8/11/2017
Captain Richard Brennan, NOAA
Chief, Hydrographic Surveys Division
Office of Coast Survey

Approved by: _____ Dated: _____
Captain Keith W. Roberts, NOAA
Commanding Officer,
Marine Operations Center - Pacific



I. Overview

A. Brief Summary and Project Period

This survey is scheduled to begin September and end in November, 2017. This project is conducted in support of NOAA’s Office of Coast Survey to provide contemporary hydrographic data in order to update the nautical charting products and reduce survey backlog in the area.

B. Days at Sea (DAS)

Of the 47 DAS planned for this project, 0 DAS are funded by an OMAO allocation, 47 DAS are funded by Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a High Operational Tempo.

C. Operating Area

The project area is Yakutat Bay, Alaska. A map of the project area may be found in the detailed project instructions appended to these instructions.

D. Summary of Objectives

This project will support the following primary mission:
To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation as identified during the course of survey operations.

E. Participating Institutions

Office of Coast Survey

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Annie Raymond	Physical Scientist	9/25/2017	10/6/2017	F	PHB	USA

G. Administrative

1. Points of Contacts:

Principal Investigator:
Lieutenant Russell Quintero, NOAA
Chief, Operations Branch
Hydrographic Surveys Division
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Silver Spring, MD 20910
240-533-0038
russell.quintero@noaa.gov

Project Manager:
Starla Robinson
Physical Scientist, Operations Branch
Hydrographic Surveys Division
1315 East West Hwy, #6112
240-533-0034
starla.robinson@noaa.gov

Project Manager:
Douglas Wood
Physical Scientist, Operations Branch
Hydrographic Surveys Division
1315 East West Hwy, #6202
Silver Spring, MD 20910
240-533-0042
douglas.wood@noaa.gov

Chief Scientist:
Commander Mark Van Waes, NOAA
Commanding Officer, NOAA Ship *Fairweather*
2002 SE Marine Science Drive
Newport, Oregon 97365-5229
907-254-2842
CO.Fairweather@noaa.gov

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

The Office of Coast Survey is sensitive to the potential effects of its operations on the physical, biological, and cultural marine environment. In accordance with the National Environmental Policy Act, Coast Survey prepared a Programmatic Environmental Assessment to gauge the environmental impacts resulting from surveying and other data-gathering activities. As a result, the National Ocean Service has published a Finding of No Significant Impact (FONSI) for the Office of Coast Survey program of conducting hydrographic surveys for the calendar years 2013 - 2018.

In addition The Office of Coast Survey has implemented Best Management Practices (BMPs) based on the ESA mitigation and monitoring measures agreed to between the OCS Hydrographic Services Division (HSD) and the NMFS Office of Protected Resources (OPR-ESA) and documented in the April 30, 2013 Biological Opinion. They were adopted in the context of the ESA, but include BMPs for marine mammals listed in the ESA (“depleted” under MMPA).

For further information on the BMPs, please refer to the Environmental Compliance Section of the Hydrographic Survey Project Instructions. For further information on OCS Regulations and Policies go to: <http://www.nauticalcharts.noaa.gov/Legal/>

II. Operations

The Chief Scientist is responsible for ensuring the scientific staff is trained in planned operations and are knowledgeable of project objectives and priorities. The Chief Scientist is responsible for ensuring all operations conform to the ship’s accepted practices and procedures.

A. Project Itinerary:

Itinerary will be based upon the ship’s schedule and executed under the direction of the Chief Scientist. Every effort shall be made by the Chief Scientist to maximize the operational efficiency of assigned projects. Please refer to the ship’s sailing schedule below.

FY 2017
Operating Schedule
NOAA SHIP Fairweather
Revised: 2017 May 19

POC: Chief, Operations Division
Marine Operations Center, Pacific
2002 SE Marine Science Dr
Newport, OR 97365
Tel: 541-867-8703

Project	Event Code	Depart	Arrive	Programs	DAS	Cumulative DAS
SE Alaska (FA-17-03 - Leg 1)	PDAS	Kodiak, AK 2017-09-11	Juneau, AK 2017-09-22	NOS	12	151
SE Alaska (FA-17-03 - Leg 2)	PDAS	Juneau, AK 2017-09-25	Underway 2017-09-30	NOS	6	157

FY 2018
FAP Baseline Schedule
NOAA SHIP Fairweather
Revised: 2017 Jul 25

POC: Chief, Operations Division
Marine Operations Center, Pacific
2002 SE Marine Science Dr
Newport, OR 97365
Tel: 541-867-8703

Project	Event Code	Depart	Arrive	Programs	DAS	Cumulative DAS
SE Alaska (FA-17-03 - Leg 2)	PDAS	Underway 2017-10-01	Juneau, AK 2017-10-06	NOS	6	6
SE Alaska (FA-17-03 - Leg 3)	PDAS	Juneau, AK 2017-10-10	Skagway, AK 2017-10-20	NOS	11	17
SE Alaska (FA-17-03 - Leg 4)	PDAS	Skagway, AK 2017-10-23	Ketchikan, AK 2017-11-03	NOS	12	29

B. Staging and Destaging: N/A

C. Operations to be Conducted:

Hydrographic survey operations shall be conducted per the appended project Instructions. The ship and/or survey launches shall operate for a combined total of 40 hr/day for data acquisition and project field support. To achieve this, the Commanding Officer may elect to run 24 hr ship survey operations for short or extended periods of time with reduced launch operations as long as the total hours per day are achieved.

D. Dive Plan

Dives are not planned for this project. All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program

(<http://www.ndc.noaa.gov/dr.html>) and require the approval of the ship's Commanding Officer.

E. Applicable Restrictions

Conditions which preclude normal operations:

- Poor weather conditions
- Equipment failure
- Safety concerns
- Personnel shortage

III. Equipment

A. Equipment and Capabilities provided by the ship

- Four survey launches fully-outfitted with hydrographic survey equipment to support multibeam and/or side scan and/or vertical beam sonar survey operations.
- Ship fully-outfitted with hydrographic survey equipment to support multibeam and/or side scan sonar survey operations.
- Personnel to staff and operate the survey equipment on the launches and ship for the required operational hours/day described in Section II. C. Operations to be Conducted.
- A fully-staffed survey department to efficiently manage the project's data processing requirements.

B. Equipment and Capabilities provided by the scientists (itemized)

None.

IV. Hazardous Materials

A. Policy and Compliance

No Hazardous Materials are being brought aboard the ship for this project.

B. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary ("Piggyback") Projects

No Supplementary Projects are planned.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA's Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

VII. Meetings, Vessel Familiarization, and Project Evaluations

- A. Pre-Project Meeting: The Principal Investigator and Chief Scientist will conduct a meeting of pertinent members of the scientific party and ship's crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship's Operations Officer is usually delegated to assist the Chief Scientist in arranging this meeting.
- B. Vessel Familiarization Meeting: The Chief Scientist is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.
- C. Post-Project Meeting: The Chief Scientist is responsible for conducting a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and shortcomings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.

- D. Project Evaluation Report : Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <https://sites.google.com/a/noaa.gov/omao-intranet-dev/operations/marine/customer-satisfaction-survey> and provides a “Submit” button at the end of the form. It is also located at https://docs.google.com/a/noaa.gov/forms/d/1a5hCCkgIwaSII4DmrHPudAehQ9HqhRqY3J_FXqbJp9g/viewform. Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Although the complete form is not shared with the ships, specific concerns and praises are followed up on while not divulging the identity of the evaluator.

VIII. Miscellaneous

A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example: a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship’s command at least seven days prior to the project.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist will work on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship’s complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food or are reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Chief Scientist. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website:

<http://www.corporateservices.noaa.gov/noaaforms/eforms/nf57-10-01.pdf>.

All NHSQs submitted after March 1, 2014 must be accompanied by [NOAA Form \(NF\) 57-10-02](#) - Tuberculosis Screening Document in compliance with [OMAO Policy 1008](#) (Tuberculosis Protection Program).

The completed forms should be sent to the Regional Director of Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of either form. Ensure to fully complete each form and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

The participant can mail, fax, or email the forms to the contact information below. Participants should take precautions to protect their Personally Identifiable Information (PII) and medical information and ensure all correspondence adheres to DOC guidance

(http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240).

The only secure email process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to setup an account. [Accellion's Web Users Guide](#) is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to accellionAlerts@doc.gov requesting access to the "Send Tab" function. They will notify you via email

usually within 1 business day of your approval. The ‘Send Tab’ function will be accessible for 30 days.

Contact information:
Regional Director of Health Services
Marine Operations Center – Pacific
2002 SE Marine Science Dr.
Newport, OR 97365
Telephone 541-867-8822
Fax 541-867-8856
Email MOP.Health-Services@noaa.gov

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

C. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship’s Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship’s primary means of communication with the Marine Operations Center is via email and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased

bandwidth is being considered, program accounting is required and it must be arranged through the ship's Chief Scientist at least 30 days in advance.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *OMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of the above requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms

Foreign National access to the NOAA ship or Federal Facilities is not required for this project.

VIII. Appendices

1. Primary Project Instructions: OPR-O346-FA-17, Yakutat Bay, AK

Hydrographic Survey Project Instructions

Project Name:	Yakutat Bay
Project Number:	OPR-O346-FA-17
Assigned Field Unit:	NOAA Ship <i>Fairweather</i>
Assigned Processing Branch:	Pacific Hydrographic Branch
Signed Date:	08/10/2017
Project Instructions Version:	Final
Planned Acquisition Time:	Start Date: 09/2017 End Date: 11/2017
Delivery Dates:	120 days from completion of data acquisition.

Purpose and Location:

Yakutat Bay has seen a rapid increase in the number and size of visiting vessels in recent years. Much of this can be attributed to ecotourism amid the area's glaciers, wilderness, and Tongass National Forest.

Hubbard Glacier, one of four glaciers which terminate in Disenchantment Bay at the north end of Yakutat Bay, is the largest tidewater glacier in North America. Unlike most other glaciers in Alaska, which are receding, Hubbard's terminus is predicted to continue advancing during the next several years*. As a result of this advancement, and the glacier's dramatic calving displays, the glacier is likely to draw more vessel traffic for the foreseeable future to an area of shifting moraines and lag deposits.

Under keel clearance is a risk for the larger cruise ships, which can draft up to 8 meters. Although the bay itself is deep, reaching over 140 fathoms, all traffic has to pass over a glacial terminal moraine, which forms a sill at the mouth of the bay. Near the center of this entrance is a shoal reported to be 6.4 meters (3 ½ fathoms) deep in an area where surveys have not been updated in over 35 years. Royal Caribbean has reported significant chart discrepancies off of the primary route.

The local community of Yakutat is dependent on barge access for delivery of its supplies and groceries. Their economy is largely timber, subsistence hunting, fishing, and tourism. Modern surveys will increase the safety of all of these activities.

The Yakutat Bay survey will provide modern bathymetry to update the 1978 vintage survey data. This data will update Coast Survey charts and products, improving maritime safety and protecting the local economy and environment.

*Goff, J. A., Lawson, D. E., Willems, B. A., Davis, M., & Gulick, S. P. (2012). Morainal bank progradation and sediment accumulation in Disenchantment Bay, Alaska: Response to advancing Hubbard Glacier. *Journal of Geophysical Research: Earth Surface*, 117(F2).

Supporting Documents:
Hydrography shall consist of Navigable Area Surveys in accordance with the following support documents.
NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD), April, 2017
NOS Field Procedures Manual for Hydrographic Surveying (FPM), April, 2014
Hydrographic Survey Technical Directive (HTD): 2017-2 Variable Resolution Bathymetric Grids
Hydrographic Survey Technical Directive (HTD): 2017-3 Configuration Management
Hydrographic Survey Technical Directive (HTD): 2017-4 Processed Backscatter

PERSONNEL SAFETY AND DATA QUALITY SHALL ALWAYS BE EMPHASIZED OVER DATA QUANTITY! THE HYDROGRAPHER SHALL NEVER SUBJECT PERSONNEL OR BOATS TO UNDUE RISKS AND HAZARDS.

Registry Details:						
General Locality: Yakutat Bay						
<i>Registry Number</i>	<i>Sheet Number</i>	<i>Sublocality</i>	<i>State or Territory</i>	<i>Scale</i>	<i>Estimated SNM</i>	<i>Instructions</i>
H13069	1	South Yakutat Bay	Alaska	40000	25	
H13070	2	Monti Bay	Alaska	40000	19	
H13071	3	Disenchantment Bay	Alaska	40000	21	
H13072	4	Bancas Point to Blizhni Point	Alaska	40000	43	
H13073	5	East Yakutat Bay	Alaska	40000	72	
H13074	6	Southwest Yakutat Bay	Alaska	40000	16	
H13075	7	Krutoi Island	Alaska	40000	23	
H13076	8	Broken Oar Cove	Alaska	40000	27	
H13077	9	Knight Island	Alaska	40000	18	
H13078	10	West Yakutat Bay	Alaska	40000	62	

Limits & Coverage:	
Inshore Limit: The Inshore Limit is the Navigable Area Limit Line (Refer to HSSD 1.3.2). Vessels are recommended to not approach closer than 1/4 mile from the glacier.	
Coverage Requirements:	
<i>Coverage Water Depth</i>	<i>Coverage Required</i>
All waters in survey area	Complete Coverage (refer to HSSD Section 5.2.2.3)
Extents of 1:10000 US5AK3XM within H13070 Monti Bay	Object Detection Coverage (refer to HSSD Section 5.2.2.2)

Assigned Tasks

Acknowledgement:

The project manager for this project is Starla Robinson. Contact information for the project manager may be found in the User Contacts section of this document. The field unit shall acknowledge receipt of these instructions and submit any comments or questions via email to the project managers. Additionally, the project managers shall be included on all discussions or correspondence involving issues concerning the project.

Environmental Compliance Requirements

Comply with the marine mammal observation and reporting requirements in HSSD Section 1.5 and all Best Management Practices (BMPs) listed at the end of the Project Instructions.

Aids to Navigation (ATONs):

There are no ATONs specifically assigned for this project. Any ATONs located within the survey area should be verified so that they serve their intended purpose in accordance with Section 7.3.5 of the HSSD.

Maritime Boundary Points (MBPs):

There are no Maritime Boundary investigation requirements for this project.

Bottom Samples:

Obtain bottom samples in accordance with HSSD Sections 7.2 and 7.2.3. Create a bottom sample strategy based on the chart, bathymetry, and backscatter mosaics for waters shoaler than 80 meters. Submit the backscatter plan to the project managers for review.

The mosaic and bottom samples will be compared with the historic charted bottom samples provided in the composite source file. If in conflict, a new bottom sample should be taken within 2 mm at chart scale (160 meters) to disprove a historic bottom sample. Keep the project managers informed of any discrepancies so they can modify the guidance if necessary.

Chart Comparison:

Perform a chart comparison in accordance with Sections 8.1.4 and D.1 of the HSSD. Use only the latest editions of the largest scale NOS charts covering the project area. Resolve any discrepancies identified in the field and explain them in the Descriptive Report. The charts, listed below, were used in the preparation of these project instructions and accompanying project files.

Affected ENC's

<i>ENC Name</i>	<i>Scale</i>	<i>Edition</i>	<i>Update Application Date</i>	<i>Issue Date</i>	<i>Preliminary</i>
US5AK3XM	10000	3	11/21/2016	11/21/2016	NO
US4AK3XM	80000	4	07/30/2015	07/30/2015	NO
US3AK38M	300000	11	02/05/2016	02/05/2016	NO
US2AK30M	1969756	17	11/15/2016	11/15/2016	NO

Coast Pilot:

Perform a Coast Pilot Review as described in HSSD Section 8.1.3.

Dangers to Navigation (DTONs):

Generate DTON reports in accordance with Section 1.6 of the HSSD. DTON reports should be sent to ocs.ndb@noaa.gov with a courtesy copy to the project manager. It is of paramount importance that DTONs be reported as soon as possible.

Junctions:

No junctioning surveys have been provided for this project.

Progress Reports:

Submit weekly (refer to HSSD Section 8.1.1.1) and monthly (refer to HSSD Section 8.1.1.2) progress reports.

Survey Outlines:

Generate and submit survey outline in accordance with Section 8.1.2 of the HSSD.

Horizontal Control Requirements:

Comply with the horizontal control requirements in Section 3 of the HSSD.

PPK

This project has a requirement to acquire survey data vertically-referenced to the ellipsoid, supported by a horizontal requirement of Post Processed Kinematic (PPK) positioning.

PPK will require the installment of up to two user-installed base stations. Permission to set up a base station at the Yakutat Airport has been arranged. If the site is selected, the ship will call the airport POC Robert Lekanof (907-784-3476), a couple weeks ahead of the install to work out logistics. Permitting for alternative sites near Haenke and Knight Islands are pending. Conduct an early assessment to confirm that the uncertainty requirements are achieved.

User-Installed Base Stations

<i>Station</i>	<i>Name</i>	<i>Position</i>	<i>Ellipsoid Height</i>	<i>Rate</i>	<i>Owner/Agency</i>	<i>Requirement</i>
TBA	Haenke Is. NW	59.971666 N 139.548333 W	16.7 meters	TBA hertz		Mandatory
TBA	Yakutat Airport	59.509761 N -139.668221 W	16.089 meters	TBA hertz		Mandatory

Vertical Control Requirements:

Comply with the vertical control requirements in Section 4 of the HSSD.

TCARI

Comply with the requirements from CO-OPS which are included with the project data from the Operations Branch. Submit surveys with final approved water levels applied in accordance with Section 4.6.6 of the HSSD. Contact the Operations Branch if this causes the survey to miss a submission deadline.

Ellipsoidally-Referenced Survey via Poor Mans VDATUM

This project has a requirement to acquire survey data vertically-referenced to the ellipsoid. Based on an analysis of available infrastructure, the assigned method is via PMVD, with an approved alternative of ERZT if analysis in the field, with consultation with the HSD Project Manager, concludes it is the superior option. All survey lines shall be delivered with 3D trajectory and associated uncertainty files applied (i.e. SBET and RMS) and GPS Tides computed. All delivered grids shall be derived via the ellipsoid.

If at any point the field unit experiences difficulty in realizing chart datum via the ellipsoid, the field shall communicate with the HSD Project Manager for guidance on how to proceed.

NWLON Gauges

<i>Operating Water Level Station</i>	<i>Station ID</i>
Yakutat, Yakutat Bay, AK	9453220

Orthometric Imagery:

No Orthometric Imagery has been provided for this project.

Shoreline and Nearshore Features:

Submit a Final Feature File in accordance with HSSD Section 7. Contact the HSD Project Manager if there are any questions regarding feature assignments and feature management.

Additional Task: *Public Relations*

Submit Coast Survey blog content as per the attached guidance, at least once per project.

Additional Task: *Change Analysis*

Compare H13071 to prior data H10902 in the descriptive report. HSD OPS will provide a surface for the comparison. Report on general trends and areas of significant change. Notify the project managers of the results.

User Contacts

The following primary offices and persons shall be contacted at or near the beginning and end of the field operations to discuss survey objectives and accomplishment (Mandatory) or are listed for contact at the discretion of the Commanding Officer (Reference).

Project Manager

Starla Robinson

NOAA

Phone: 240-533-0034

Fax: 301-713-4533

Email: starla.robinson@noaa.gov

Obligation: Mandatory

Project Backup-Manager

Douglas Wood

NOAA

Phone: 240-533-0024

Fax: 301-713-4533

Email: douglas.wood@noaa.gov

Obligation: Mandatory

NOAA Navigation Manager, Alaska

Lieutenant Bart O. Buessler

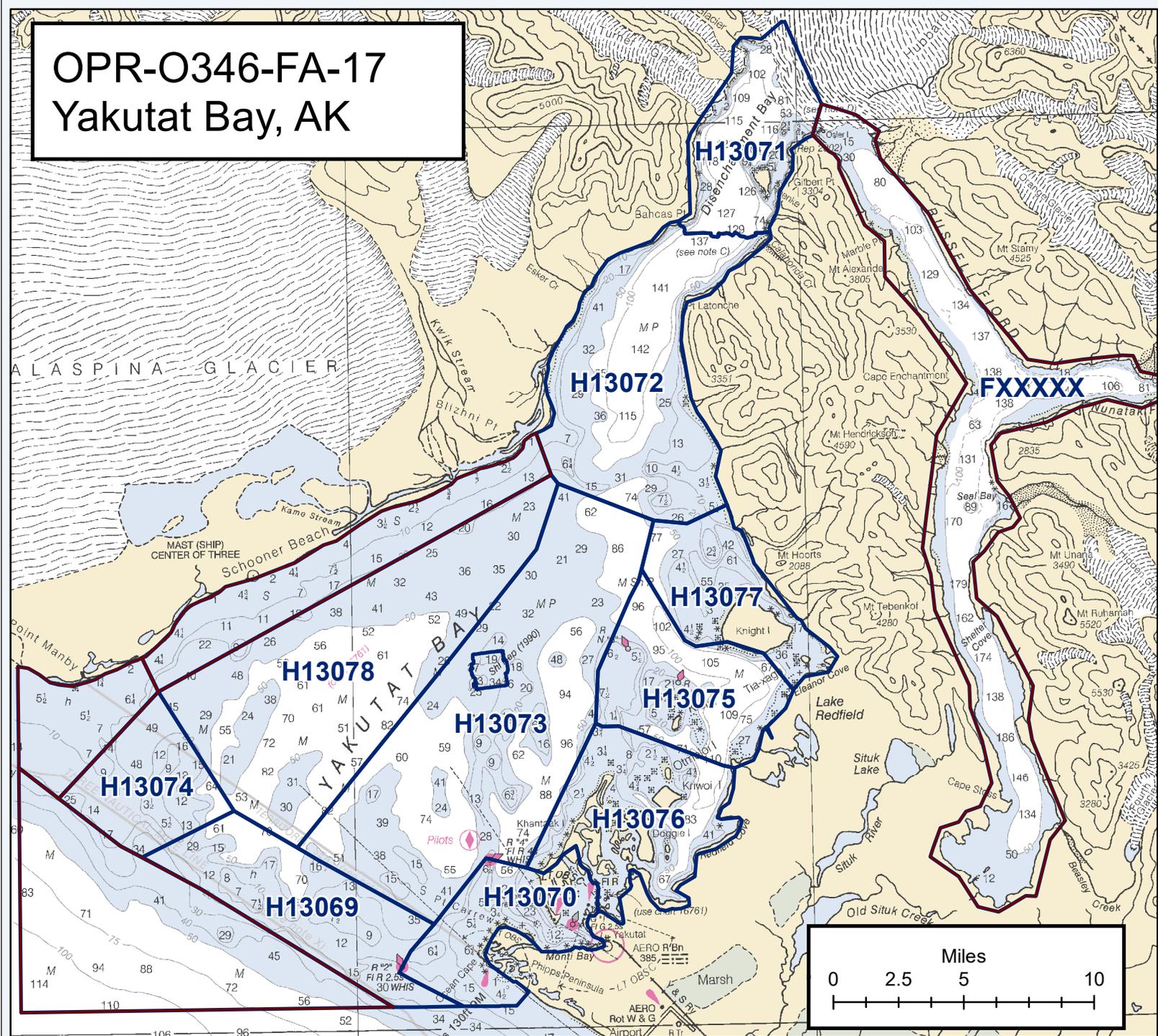
NOAA

Phone: 907 271 3327

Email: Bart.O.Buesseler@noaa.gov

Obligation: For Reference

OPR-O346-FA-17 Yakutat Bay, AK



Unassigned
 Survey Sheet

Total SNM Assigned
300

Registry Number	Sheet Priority	Sub-Locality	Area (SNM)	Survey Scale
H13069	1	South Yakutat Bay	26	40000
H13070	2	Monti Bay	19	40000
H13071	3	Disenchantment Fjord	21	40000
H13072	4	Bancas Point to Blizhni Point	44	40000
H13073	5	East Yakutat Bay	72	40000
H13074	6	Southwest Yakutat Bay	16	40000
H13075	7	Krutoi Island	23	40000
H13076	8	Broken Oar Cove	27	40000
H13077	9	Knight Island	18	40000
H13078	10	West Yakutat Bay	62	40000

PUBLIC COMMUNICATIONS

NOAA gives OMAO platforms significant latitude in planning their own public affairs activities. However, the chief science officer is obligated to provide at least one blog post for this project. The blog post should describe, in plain language, one or more of the following project aspects:

- Contribution to the marine transportation system or ocean planning partnerships
- Collaboration with local or regional communities or industry
- Innovative use of science or technology
- Project relationship to historical events or programs
- Other project aspects, mutually agreed between the science officer and Coast Survey communications staff

The length of the blog post should be as long as required to effectively communicate the main idea, but ideally run about 1,000 words. The absolute maximum is 2,500 words. See the blog at <https://noaacoastsurvey.wordpress.com> for examples of writing styles.

Consult with Coast Survey communications staff (coastsurveycommunications@noaa.gov) to schedule submission and publication dates. Submit the draft post in Word format. Include the name and rank of the author. Photos and other images must be submitted as separate digital files (not embedded in the Word document – except to illustrate image placement). Include suggested image captions, with all people identified by name. Any photo showing the faces of children under the age of 18 must be accompanied with a NOAA Talent Release Form, signed by the parent or guardian. (Commerce Department-authorized release forms are at: <https://ogc.commerce.gov/page/intellectual-property-1>.)

In most cases, giving a photo credit is at your discretion. For example, if you are using a photograph taken and provided by a NOAA employee while on official duty, that photograph will be considered the property of NOAA and may be used freely with or without credit. The same holds true if you obtained a photograph from another federal agency. However, as a courtesy, you may give a photo credit.

(REMINDER: You could be violating the Marine Mammal Protection Act if you disturb animals while taking photos of them. It's against the law to harass mammals, and harassment is defined very broadly to include "causing disruption of behavioral patterns.")

The Coast Survey communications staff will coordinate review and edits of the blog post with the OMAO public affairs office, and will provide suggested final text to the author and science officer, for final review, prior to publication.

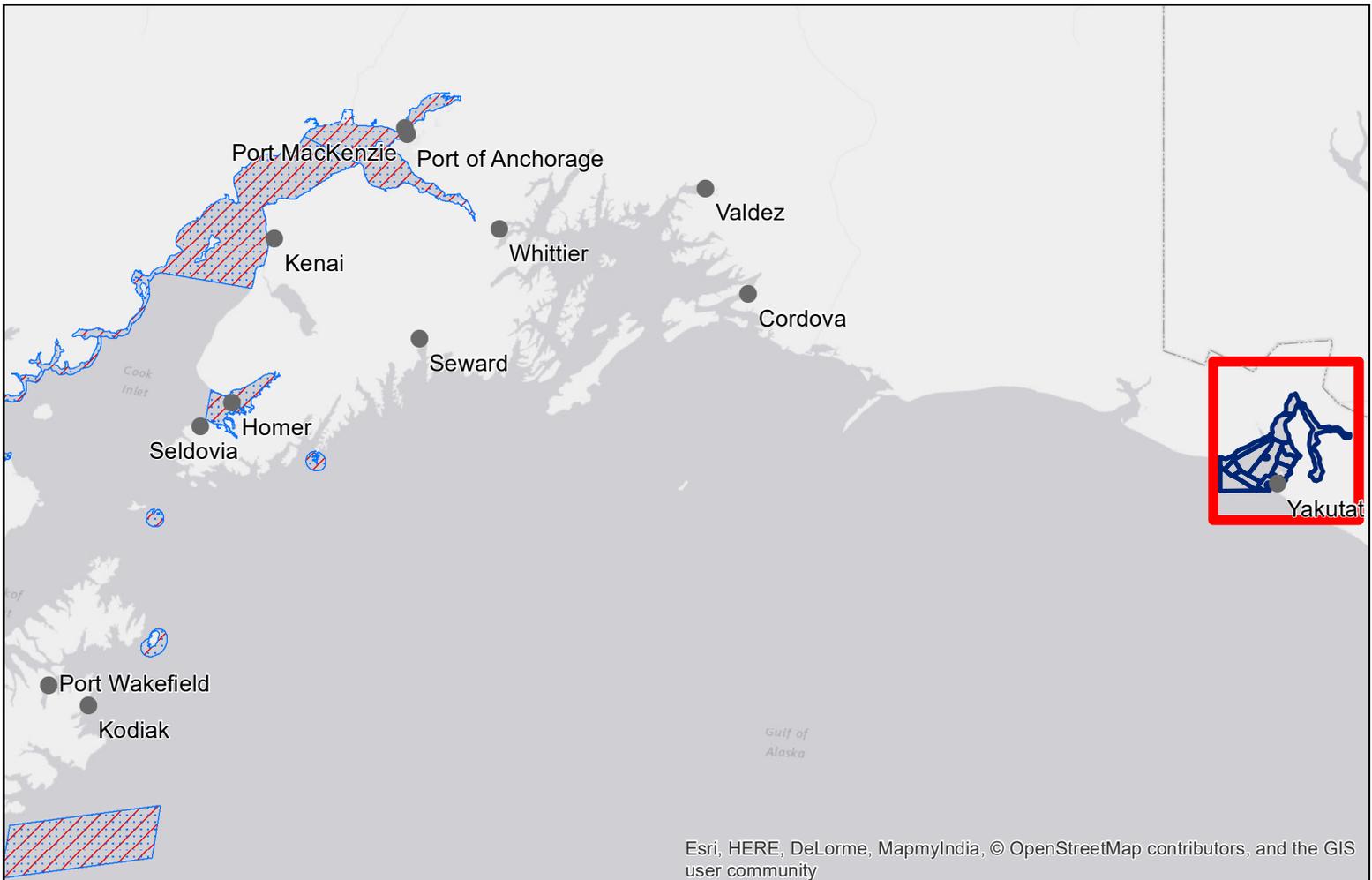
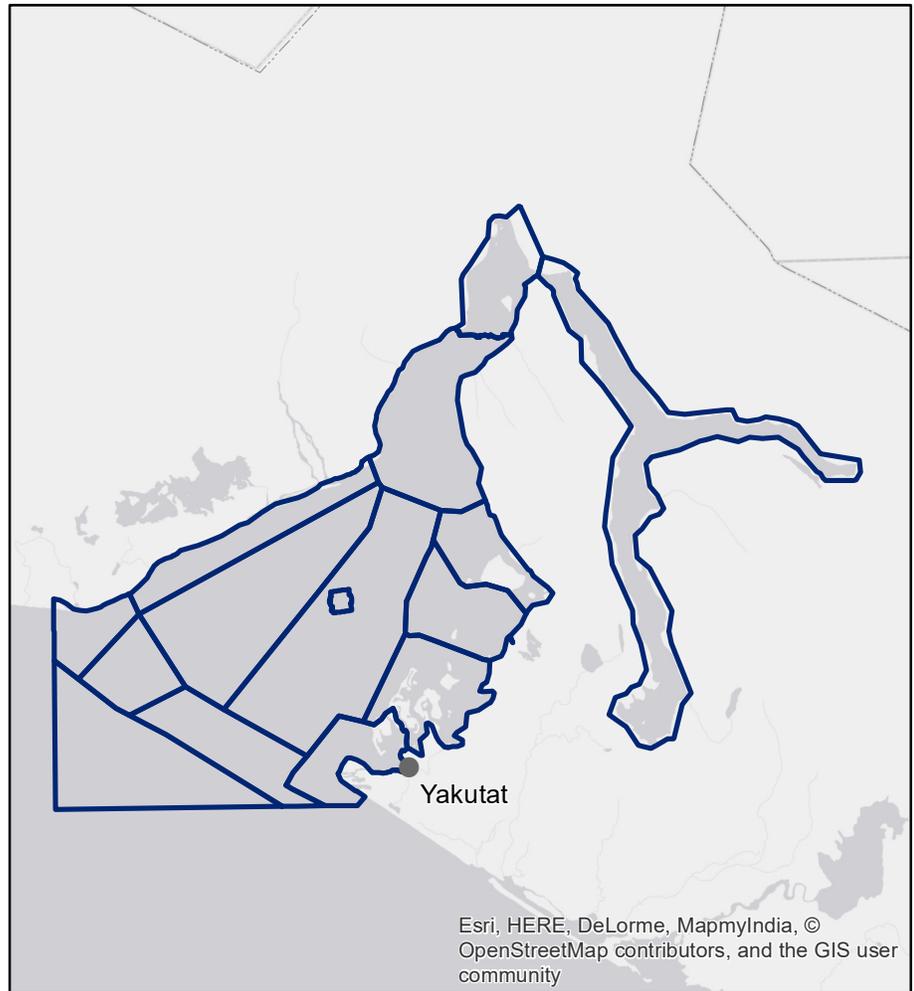
OPR-O346-FA-17 Yakutat Bay

Critical Habitat

- US Port
- ▭ Survey
- ▭ State Boundaries
- ▭ Avoid Ballast Discharge (All Waters)
- ▭ Avoid Entering
- ▭ Avoid Bottom Sample
- ▭ National Marine Sanctuaries

300 SNM Assigned

- Alaska has no CZMA
- No Avoid Anchoring Sites
- No Avoid Bottom Sampling Sites
- No Tide Gauges are Planned



INTERIM BEST MANAGEMENT PRACTICES (BMPs) FOR HYDROGRAPHIC SURVEYS

The following BMPs are based on the Endangered Species Act (ESA) mitigation and monitoring measures agreed to between the OCS Hydrographic Surveys Division (HSD) and the NMFS Office of Protected Resources (OPR-ESA) and documented in the April 30, 2013 Biological Opinion¹ and in a May 12, 2017 Letter of Concurrence for revised speed limits.² They were adopted in the context of the ESA, but include BMPs for marine mammals listed in the ESA (“depleted” under MMPA). OCS follows these BMPs during all OCS hydro work while MMPA compliance is underway. In all cases BMPs will be communicated to ship and boat crews via project instructions. Contractors will additionally be made aware of BMPs via contract RFPs.

Universal BMPs (those to be included in all OCS project instructions):

Vessel Speed Limits

- Vessels over 65 feet in overall length are limited to a speed of 13 knots or less at all times, unless a slower speed limit applies to the area (e.g., posted speed limits for the protection of manatees).
- Vessels of 65 feet in overall length or less are limited to a speed of 13 knots or less while mapping, unless a slower speed limit applies to the area.

Echo sounder Restrictions

- Avoid using sonar frequencies < 180 kHz when possible
 - Suspend **multibeam** sonar transmissions of < 125 kHz, when Southern Resident killer whales or Cook Inlet beluga whale are observed within hearing range (750 yards)
 - If **multibeam** sonar frequencies < 180 kHz must be employed, use echosounders at ≥ 50 kHz frequencies, with the lowest possible power and ping-rate
 - If **single beam** sonar frequencies < 180 kHz must be employed, use echo sounders at ≥ 30 kHz frequencies, with the lowest possible power and ping-rate and a 12° beam angle.
 - If **single beam** sonar frequencies < 30 kHz must be employed, suspend transmissions of 30 kHz or lower when ESA-listed cetacean species (whales, dolphins, and porpoises) are within hearing range (i.e., the 4.2 meter beam width).

Vessel Maintenance Requirements

- Meet all EPA Vessel General Permits and Coast Guard requirements
- Use anti-fouling coatings
- Clean hull regularly to remove aquatic nuisance species
- Avoid cleaners with nonylphenols

¹ http://www.nmfs.noaa.gov/pr/consultation/opinions/biop_ocs_04302013.pdf

² *Concurrence Letter on Revised Protective Measures to be Followed during Coast Survey Operations*, NMFS Office of Protected Resources, May 12, 2017

- Rinse anchor with high-powered hose after retrieval

Anchoring Restrictions

- Use designated anchorage area when available
- Use mapping data to anchor in mud or sand, to avoid anchoring on corals
- Minimize anchor drag

Visual Monitoring Requirements

- Maintain trained observers aboard all vessels; 100% observer coverage
- Make species identification keys (for marine mammals, sea turtles, corals, abalone, and seagrasses) available on all vessels

Animal Approach Restrictions

- Avoid nearshore surveys when Steller sea lions are observed onshore
- Avoid approaching within 100 yards of in-water pinnipeds (seals, sea lions, and walruses)
- When possible, suspend single beam sonar transmissions when ESA-listed pinnipeds (seals, sea lions, and walruses) are within hearing range (i.e., within the 4.2 meter beam width).
- Avoid approaching within 200 yards of cetaceans (whales, dolphins, and porpoises), 500 yards for right whales
- Suspend single beam sonar transmissions of 30 kHz or lower when ESA-listed cetaceans (whales, dolphins, and porpoises) are within hearing range (i.e., within the 4.2 meter beam width).
- Avoid approaching within 50 yards of sea turtles
- When possible, maintain a vessel distance of at least 3 nautical miles (5.5 km) and a landbased distance of 0.5 miles (0.8 km) of Steller sea lion rookeries listed in 50 CFR 223.202.

Discharge Restrictions

- Avoid discharge of ballast water and hull cleaning in designated critical habitat

Animal Approach Restrictions (Survey Specific)

- When possible, maintain a vessel distance of at least 3 nautical miles (5.5 km) and a landbased distance of 0.5 miles (0.8 km) of Steller sea lion rookeries listed in 50 CFR 223.202.

Terrestrial Work Restrictions

- Do not collect birds (live or dead) or their eggs, nests, or parts (e.g., feathers).
- Take all necessary precautions to prevent wounding any birds or disturbing any bird nests.

WATER LEVEL INSTRUCTIONS
OPR-O346-FA-2017 Yakutat Bay, AK
(02/28/2017 DW)

1.0. TIDES AND WATER LEVELS

1.1. Specifications

Tidal data acquisition, data processing, tidal datum computation and final tidal zoning shall be performed utilizing sound engineering and oceanographic practices as specified in National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables (HSSD), dated March 2016, and OCS Field Procedures Manual (FPM), dated April 2014. Specifically reference Chapter 4 of the HSSD and Sections 1.5.8, 1.5.9, 2.4.3, and 3.4.2 of the FPM.

1.2. Vertical Datums

The tidal datums for this project are referenced to Chart Datum, Mean Lower Low Water (MLLW) and Mean High Water (MHW). Soundings are referenced to MLLW and heights of overhead obstructions (bridges and cables) are referenced to MHW.

1.2.1. Water Level Data Acquisition Monitoring

The Commanding Officer (or Team Leader) and the Center for Operational Oceanographic Products and Services (CO-OPS) are jointly responsible for ensuring that valid water level data are collected during periods of hydrography. The Commanding Officer (or Team Leader) is required to monitor the pertinent water level data via the CO-OPS Web site at <http://tidesandcurrents.noaa.gov/hydro.shtml>, or through regular communications with CO-OPS/Oceanographic Division (OD) personnel before and during operations. During traditional non duty hours, the Commanding Officer/Team Leader may contact the Continuous Operational Real-Time Monitoring System (CORMS) watch stander who is available 24 hours/day - 7 days/week for assistance in assessing the status of applicable water level station operation. The CORMS watch stander may be contacted either by phone at 301-713-2540 or by email: CORMS@noaa.gov. Problems or concerns regarding the acquisition of valid water level data identified by the Commanding Officer/Team Leader shall be communicated with CO-OPS/OD (nos.coops.hpt@noaa.gov) to coordinate the appropriate course of action to be taken such as gauge repair and/or developing contingency plans for hydrographic survey operations. In addition, CO-OPS is required to coordinate with the Commanding Officer/Team Leader before interrupting the acquisition of water level data for the NWLON gauges mentioned above for any reason during periods of hydrography.

1.2.2. The Hydro Hot List (HHL)

Please contact the CO-OPS/Hydrographic Planning Team (HPT) at nos.coops.hpt@noaa.gov and Operational Engineering Team (OET) at nos.coops.oetteam@noaa.gov at least three business days before survey operations begin, and within 1 business day after survey operations are completed so that the appropriate CO-OPS National Water Level Observation Network (NWLON) control water level stations, as well as any required subordinate stations, are added to or removed from the CO-OPS Hydro Hotlist (HHL) (<http://tidesandcurrents.noaa.gov/hydro>). Include start and end survey dates, full project number (e.g. OPR-H355-TJ-10), and control and subordinate station numbers. The notification must be sent to both teams as OET is responsible

for configuring the station in the CO-OPS data base and HPT manages the addition and removal of stations from the HHL.

Station	Station ID	Residual or Datum Control or Subordinate Installation	Type (NWLON, PORTS [®] , etc.)	Comment
Yakutat, AK	9453220	Residual and Datum Control	NWLON	

Table 1: All stations that need to be added to the HHL in support of O346-FA-2017.

This project requires a subordinate installation. Therefore, please contact OET and HPT via e-mail at least three business days before the subordinate stations are installed and send the site report listing the DCP and sensor serial numbers and GOES satellite information so that stations can be configured in the database and added to HHL. For station removal, inform OET and HPT 3 business days prior to the actual removal of a station and confirm with OET upon final station removal.

It is important to know that the addition of a water level station to the HHL ensures the station is monitored by CORMS and any problems are reported daily. However, platforms should view the HHL each morning of active survey operations and click on the “Plot” to double check that there are not problems with the required stations on that day. If a platform notices problems with data on their survey day of operation, please contact HPT at nos.coops.hpt@noaa.gov, CORMS at CORMS@noaa.gov, and the respective headquarters point of contact at HSD or NSD. Stations on the HHL are given priority for maintenance should a station cease normal operation during scheduled times of hydrography. CO-OPS will notify a field unit within 1 business day if a HHL water level station ceases operation during scheduled times of hydrography. This is in addition to the daily CORMS report that CORMS sends to NOAA field units, if the field unit's e-mail address is added to the CORM's daily e-mail list. To be added to the CORMS daily HHL report, the platform should contact CO-OPS' Data Monitoring and Analysis Team (DMAT) at nos.co-ops.dmat@noaa.gov and request to be added.

If the stations are listed on HHL, then weekly priority processing will occur and, for those water level stations, verified 6-minute water level data will be made available every week on Monday or Tuesday. If Monday happens to be a federal holiday, then the 6-minute verified water level data will be made available on the following Tuesday or Wednesday. In order to ensure that verified data is correctly downloaded please **select a date that is more than 7 days prior to the day of interest** in the 'From' field on the CO-OPS website.

1.3. Operating Tide Reducer and Datum Control Stations

1.3.1. CO-OPS Long Term Water Level Station Operation and Maintenance

The NWLON station Yakutat, AK (9453220) will provide water level reducers for this project. Therefore it is critical that it remain in operation during the survey. See Sections 1.1. and 1.2. concerning responsibilities.

The operating NWLON station at Yakutat, AK (9453220) will serve as a datum control station for the subordinate installation. Therefore, it is critical that it remains in operation during all periods of hydrography.

No leveling is required at Yakutat, AK (9453220) by NOAA's Fairweather personnel.

CO-OPS/FOD is responsible for the operation and maintenance of all NWLON primary control stations. If a problem is identified at an NWLON primary control station, FOD shall make all reasonable efforts to repair the malfunctioning station. However, CO-OPS may request assistance from the NOAA ship or NRT personnel in the actual repair of the water level station to facilitate a rapid repair. CO-OPS/FOD and the Commanding Officer (or Team Leader) shall maintain the required communications until the repairs to the water level station have been completed.

1.3.2. Subordinate Station Requirements

For this project, it will be necessary to deploy and continuously operate a GPS tide buoy at one or more approved subordinate station locations. These subordinate stations identified for hydrography are required to be installed to provide the tidal datums, water level reducers, refinement of final zoning, and harmonic constituents for predictions needed to meet NOS hydrographic specifications' accuracies as well as to support other NOAA objectives. The stations listed in the second paragraph of Section 1.3.1. will provide control for datum computations at subordinate stations by using the NOS method of comparison of simultaneous observations.

A 30-day minimum of continuous data acquisition is required for all required subordinate station installations. If the data is collected for less than 30 days at the required subordinate stations, then according to the operating guidelines and business rules, CO-OPS may not publish tidal datums. This means CO-OPS may not be able to provide final tides (tide reducers) for less than 30 days of valid and good data. Since all data including water level data collected for hydrographic or photogrammetry surveys is used to derive products that support various NOS multipurpose applications, collection of minimum of 30-days of data is a crucial requirement.

For all subordinate stations, data must be collected throughout the entire survey period in specified areas for which they are applicable, from 4 hours before to 4 hours after the period of hydrography and not less than 30 continuous days. If the subordinate tide gauges are required to support the TCARI process, then all the gauges are required to collect the data for the entire period of the survey (in addition to the 30 day requirement) because the TCARI tidal grid is developed based upon all the gauges. This is necessary not only to facilitate the computation of an accurate datum reference as per NOS hydro graphic specifications (<http://www.nauticalcharts.noaa.gov/hsd/specs/specs.htm>), but also to ensure a functional data set that meets CO-OPS' multi-purpose products use and dissemination standards. If the subordinate station has a currently published datum, every effort must be made to set the station datum for the new installation to the historic station datum, so that all newly collected observations are on the same zero reference as the currently accepted datum. If the length of the new series of observations is shorter than that of the accepted datum time series, the newly submitted datum may be validated as acceptable for the hydrographic survey but may not supersede the longer already published datum.

Additionally, supplemental and/or back-up stations may also be necessary based upon the complexity of the hydrodynamics and/or the severity of environmental conditions at the project area. If the Commanding Officer (or Team Leader) determines that additional or alternative water level stations are necessary to those required by CO-OPS, then he or she must coordinate with CO-OPS to obtain CO-OPS' approval and to define the timing and location of the additional or alternative subordinate station(s). For all subordinate stations that are approved and installed, minimum 30 continuous days of data must be collected throughout the entire survey period for

which they are applicable. If the minimum 30-day data collection requirement is not met, CO-OPS may not be able to provide the tide reducers for the survey.

Since NOS uses the data and products derived from the operational NOS Hydrographic Surveys Program, installation of training gauges is discouraged during the operations. Also for training purposes, only Temporary Bench Marks (TBM) shall be installed and permanent bench marks shall not be installed. CO-OPS will not publish water level datums on TBM and CO-OPS is not required to provide data processing for training gauges. Any gauges required for providing tide reducers either via TCARI or discreet tidal zoning shall not be considered training gauges.

All additions and modifications to the original subordinate gauge installation requirements shall be documented via an amendment to the Project Instructions. Delivery of the amended Project Instructions to OCS's Hydrographic Surveys Division Operations Branch will signify CO-OPS' approval of the additions and/or modifications to the gauge installations requirements.

The following GPS buoy is required:

<u>Station Number</u>	<u>Station Name</u>	<u>Approximate Latitude (N)</u>	<u>Approximate Longitude (W)</u>
945AAAA*	Nunatak Fjord	59.815°	-138.97°

* Conduct reconnaissance of the area to establish a suitable location for the placement of the water level gauge and provide the CO-OPS personnel listed in Section 1.2.1 with the proposed name and location.

1.3.3. Tide Component Error Estimation

This section is not applicable for this project. Tidal Constituent And Residual Interpolator (TCARI) automatically calculates the error associated with water level interpolation. This error is incorporated into the residual/harmonic solutions and included in the Total Propagated Error (TPE) for the survey. Uncertainty values input into TCARI model are 2-sigma. Pydro will automatically supply 1-sigma values to CARIS when computing uncertainty.

Final Tide Notes will include an updated TCARI grid (using the products from the subordinate station or buoy deployment) and will include an updated error model.

1.3.4. GOES Satellite Enabled Subordinate Stations

This section is not applicable for this project.

1.3.5. Benchmark Recovery and GPS Requirements

This section is not applicable for this project.

1.3.6. Residual Water Level Station(s) Data

The Tidal Constituent And Residual Interpolation (TCARI) method uses harmonic constituents and residuals from historical and operating water level stations to provide precise water level

correction for bathymetric surveys. Download the Preliminary/Verified data at following water level stations for all periods of survey.

The operating stations at Yakutat, AK (9453220) will provide residuals for this project and must remain in operation during all periods of hydrography.

<u>Station Number</u>	<u>Station Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
9453220	Yakutat, AK	59.548°	139.73°

1.4. Tidal Constituent and Residual Interpolation (TCARI)

1.4.1. For hydrography in the area of Buzzards Bay, apply the TCARI grid “O346FA2017.tc” supplied in conjunction with the water level data from Section 1.3.6 to produce a seamless tide correction. Refer to the TCARI Field SOP for detailed TCARI instructions.

1.4.2. This section is not applicable for this project.

1.4.3. TCARI Diagram(s)

A diagram created which includes the exported TCARI grid boundary, is provided in digital copy format to assist with the information provided in section 1.4.1.

1.4.4. TCARI Final Solutions

Upon completion of project, submit a Pydro generated request for smooth tides, with times of hydrography abstract and mid/mif tracklines attached. Forward this request to final.tides@noaa.gov. Provide the project number, as well as sheet number, in the subject line of the email.

CO-OPS will review the times of hydrography, final tracklines, and six-minute water level data from all applicable water level gauges. If there are any discrepancies, CO-OPS will make the appropriate adjustments and forward a revised TCARI grid and solutions to the field group and processing branch for final processing.

1.6 Water Level Records

Submit water level data, such as leveling records, field reports, and any other relevant data/reports, including the data downloaded onto diskette/CD as specified in the latest version of the NOS Specifications and Deliverables document.

1.6.1 Water level records should be forwarded to the following address:

NOAA/National Ocean Service/CO-OPS
Chief, Engineering Division
N/OPS1 - SSMC4, Station 6531
1305 East-West Highway
Silver Spring, MD 20910

**Preliminary TCARI grid for
0346-FA-2017
Yakutat Bay, AK**

945AAAA Nunatak Fjord

9453220 YAKUTAT, YAKUTAT BAY

