**US Army Corps
of Engineers
Alaska District**

JUNEAU FIELD OFFICE
Regulatory Division (1145)
CEPOA-RD
Post Office Box 22270
Juneau, Alaska 99802-2270

Public Notice of Application for Permit

PUBLIC NOTICE DATE:	**November 21, 2019**
EXPIRATION DATE:	**December 06, 2019**
REFERENCE NUMBER:	**POA-1981-00334**
WATERWAY:	**Taiya Inlet**

Interested parties are hereby notified that a Department of the Army permit application has been received for work in waters of the United States (U.S.) as described below and shown on the enclosed project drawings.

All comments regarding this Public Notice (PN) should be sent to the address noted above. If you desire to submit your comments by email, you should send it to the Project Manager's email as listed below or to regpagemaster@usace.army.mil. All comments should include the PN reference number listed above.

All comments should reach this office no later than the expiration date of this PN to become part of the record and be considered in the decision. Please contact Matthew Brody at (907) 790-4493, or by email at: Matthew.T.Brody@usace.army.mil if further information is desired concerning this notice.

APPLICANT: Mr. Bob Berto – White Pass & Yukon Route

AGENT: Julia Fitts – Anchor QEA, LLC.

LOCATION: The project site is located within Section 14, T. 28 S., R. 59 E., Copper River Meridian; USGS Quad Map Skagway B-1; Latitude 59.451358º N., Longitude -135.325289º W.; in Skagway, Alaska.

SPECIAL AREA DESIGNATION: The project is located within the Skagway and White Pass National Historic Landmark District.

PURPOSE: The applicant's stated purpose is to remove contaminated sediments from the Skagway Ore Basin that are associated with periodic spillage from historical ore loading operations.

PROPOSED WORK: The applicant is proposing to conduct remedial dredging of contaminate sediments within waters of the U.S. below the Mean High Water Mark (+15.7 feet above the 0.0 foot contour). Specifically the work would include the mechanical dredging of 10,000 cubic yards of contaminated sediments from 19,000 square feet of tidal waters and the placement of 1,100 cubic yards (CY) of clean sand cover material into 19,000 square feet of tidal waters. All work would be performed in accordance with the enclosed plan (sheets 1-10), dated November 7, 2019.

APPLICANT PROPOSED MITIGATION: The applicant proposes the following mitigation measures to avoid, minimize, and compensate for impacts to waters of the U.S. from activities involving discharges of dredged or fill material.

a. Avoidance: Avoidance of impacts to waters of the U.S. was not possible because the contaminated material is located within marine waters.

b. Minimization: The project has been designed to minimize impacts to waters of the U.S. through the use of mechanical dredging instead of hydraulic dredging, to reduce generation of contaminated water and associated management issues that have the potential to negatively impact waters of the U.S. Additionally the applicant has proposed a suite of best management practices (attached) to reduce the impact associated with the proposed project to prevent any remaining contaminants from being available for dispersion or bioavailability the applicant is proposing to place a layer of cover material over the area where dredging would occur.

c. Compensatory Mitigation: The project will ultimately result in improvements relative to current environmental conditions in the Skagway Ore Basin; therefore, the applicant has proposed no compensatory mitigation.

ADDITIONAL INFORMATION: Up to 10,000 CY of sediment will be removed using mechanical dredging, treated (i.e., stabilized) following removal to address leachable characteristics of the material, and disposed of at a permitted upland disposal facility. Up to 1,100 CY of clean sand cover material will be placed within the dredging area following removal. The community has expressed a need to address legacy contamination in the Skagway Ore Basin. The Remedial Action Options Analysis for the Skagway Ore Terminal (Anchor QEA 2019) assessed potential remedial options to address legacy sediment contamination at the site. That analysis, which was reviewed and approved by Alaska Department of Environmental Conservation (ADEC) in October 2019, identified dredging (mass removal) of contaminated sediments in the Skagway Ore Basin as the preferred remedial option that met the remedial objectives. The proposed project will remove the majority of the mass of lead contamination from the site, reduce potential human health and benthic risks by reducing surface sediment concentrations, and remove sediment that could

potentially become a source to other areas without adversely impacting existing site uses. All material would be stabilized and barged to an approved upland disposal facility.

WATER QUALITY CERTIFICATION: A permit for the described work will not be issued until a certification or waiver of certification, as required under Section 401 of the Clean Water Act (Public Law 95-217), has been received from the ADEC.

CULTURAL RESOURCES: The latest published version of the Alaska Heritage Resources Survey (AHRS) has been consulted for the presence or absence of historic properties, including those listed in or eligible for inclusion in the National Register of Historic Places. We have defined our scope of analysis under Appendix C of 33 CFR 325 (permit area) to be the footprint of the proposed work within Navigable Waters of the U.S. consisting of 0.44-acres and shown on sheet 6 of 10, dated November 7, 2019. There are cultural resources in the permit area and within the vicinity of the permit area. The proposed project is located within the Skagway and White Pass National Historic Landmark District (SKG-00013). Consultation of the AHRS constitutes the extent of cultural resource investigations by the U.S. Army Corps of Engineers (Corps) at this time. Due to the projects location within marine waters and the nature of the proposed activity the Corps has made a No Adverse Effect determination for the proposed project. This application is being coordinated with State Historic Preservation Office (SHPO) and the National Park Service (NPS). Any comments SHPO or NPS may have concerning presently unknown archeological or historic data that may be lost or destroyed by work under the requested permit will be considered in our final assessment of the described work.

ENDANGERED SPECIES: The project area is within the known or historic range of the threatened Mexico Distinct Population Segment (DPS) of humpback whale (*Megaptera novaeangliae*) and the endangered Western DPS Steller sea lions (*Eumetopias jubatus*).

We have determined the described activity may affect the Mexico DPS of humpback whale and Western DPS Steller sea lion. We will initiate the appropriate consultation procedures under section 7 of the Endangered Species Act with the National Marine Fisheries Service (NMFS). Any comments they may have concerning endangered or threatened wildlife or plants or their critical habitat will be considered in our final assessment of the described work.

ESSENTIAL FISH HABITAT: The Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996, requires all Federal agencies to consult with the NMFS on all actions, or proposed actions, permitted, funded, or undertaken by the agency, that may adversely affect Essential Fish Habitat (EFH).

The project area is within the known range of the Chum (*Oncorhynchus keta*), Sockeye (*Oncorhynchus nerka*), Chinook (*Oncorhynchus tshawytscha*), Silver (*Oncorhynchus kisutch*), and Pink (*Oncorhynchus gorbuscha*) Salmon.

The activities described for this proposed project will not result in long-term, permanent adverse impacts to EFH. The short-term, highly localized, and temporary impacts associated

with the proposed project are insignificant and will be offset by conservation measures that will be used during construction. Additionally the proposed project would result in the removal of contaminated material from the aquatic environment that would improve the quality of EFH in the project area. Therefore we have determined the described activity would not adversely affect EFH in the project area. Any comments or recommendations concerning EFH will be considered in our final assessment of the described work.

TRIBAL CONSULTATION: The Alaska District fully supports tribal self-governance and government-to-government relations between Federally recognized Tribes and the Federal government. Tribes with protected rights or resources that could be significantly affected by a proposed Federal action (e.g., a permit decision) have the right to consult with the Alaska District on a government-to-government basis. Views of each Tribe regarding protected rights and resources will be accorded due consideration in this process. This PN serves as notification to the Tribes within the area potentially affected by the proposed work and invites their participation in the Federal decision-making process regarding the protected Tribal right or resource. Consultation may be initiated by the affected Tribe upon written request to the District Commander during the public comment period.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, reasons for holding a public hearing.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activity and its intended use on the public interest. Evaluation of the probable impacts, which the proposed activity may have on the public interest, requires a careful weighing of all the factors that become relevant in each particular case. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. The outcome of the general balancing process would determine whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur. The decision should reflect the national concern for both protection and utilization of important resources. All factors, which may be relevant to the proposal, must be considered including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general, the needs and welfare of the people. For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(l) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria (see Sections 320.2 and 320.3), a permit will be granted unless the District Commander determines that it would be contrary to the public interest.

The Corps is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the

impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

AUTHORITY: This permit will be issued or denied under the following authorities:

(**X**) Perform work in or affecting navigable waters of the U.S. – Section 10 Rivers and Harbors Act 1899 (33 U.S.C. 403).

(**X**) Discharge dredged or fill material into waters of the U.S. – Section 404 Clean Water Act (33 U.S.C. 1344). Therefore, our public interest review will consider the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

Project drawings and a Notice of Application for State Water Quality Certification are enclosed with this Public Notice.

District Commander
U.S. Army, Corps of Engineers

Enclosures

STATE OF ALASKA

DEPT. OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
Wastewater Discharge Authorization Program (WDAP) / 401 Certification

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
WDAP/401 CERTIFICATION
555 CORDOVA STREET
ANCHORAGE, ALASKA 99501-2617
PHONE: (907) 269-6285 | EMAIL: dec-401cert@alaska.gov

NOTICE OF APPLICATION FOR STATE WATER QUALITY CERTIFICATION

Any applicant for a federal license or permit to conduct an activity that might result in a discharge into navigable waters, in accordance with Section 401 of the Clean Water Act of 1977 (PL95-217), also must apply for and obtain certification from the Alaska Department of Environmental Conservation that the discharge will comply with the Clean Water Act, the Alaska Water Quality Standards, and other applicable State laws. By agreement between the U.S. Army Corps of Engineers and the Department of Environmental Conservation, application for a Department of the Army permit to discharge dredged or fill material into navigable waters under Section 404 of the Clean Water Act also may serve as application for State Water Quality Certification.

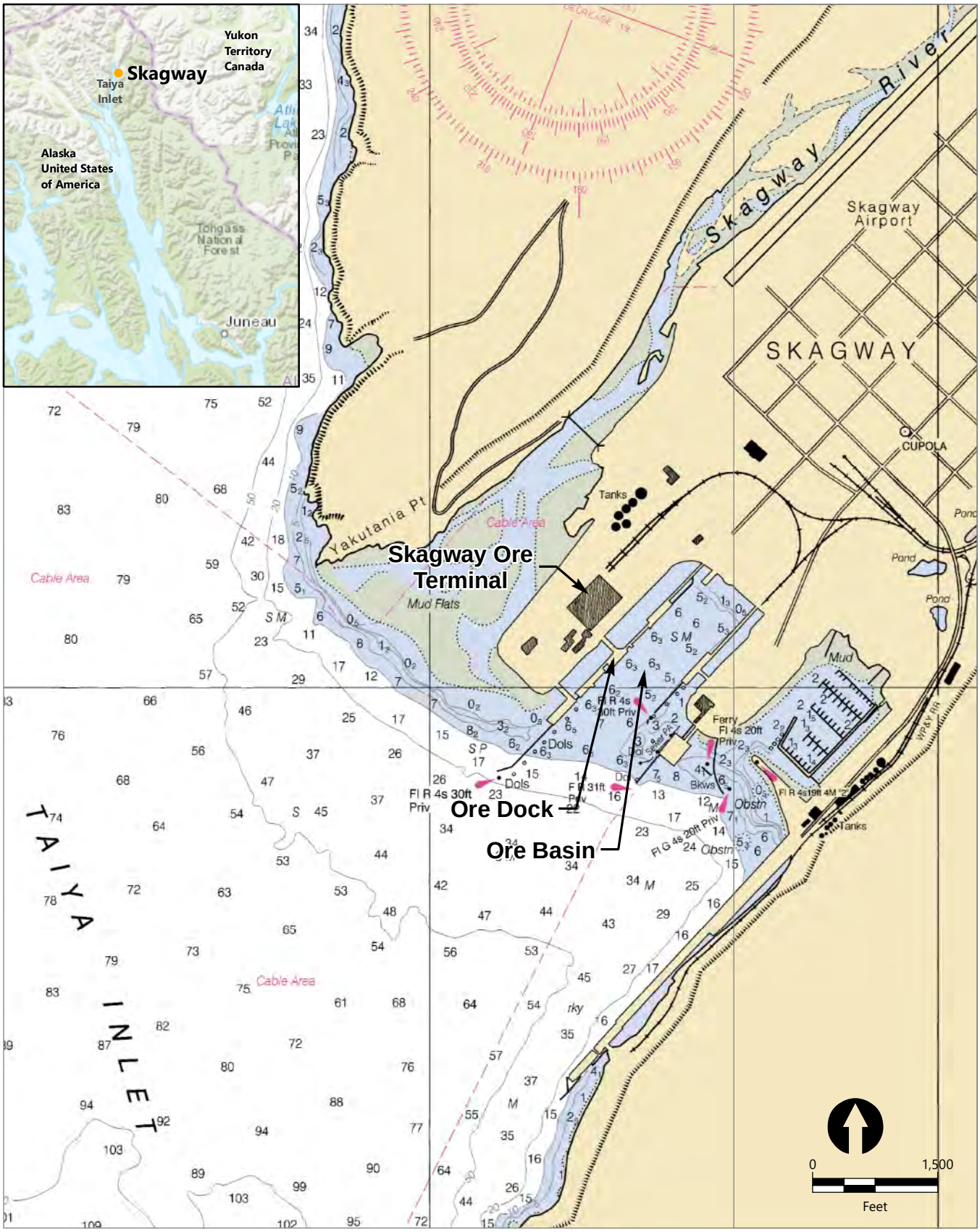
Notice is hereby given that the application for a Department of the Army Permit described in the Corps of Engineers' Public Notice (PN) Reference Number **POA-1981-00334, Taiya Inlet**, serves as application for State Water Quality Certification from the Department of Environmental Conservation.

After reviewing the application, the Department may certify there is reasonable assurance the activity, and any discharge that might result, will comply with the Clean Water Act, the Alaska Water Quality Standards, and other applicable State laws. The Department also may deny or waive certification.

Any person desiring to comment on the project with respect to Water Quality Certification, may submit written comments to the address above or via email to dec-401cert@alaska.gov by the expiration date of the Corps of Engineer's Public Notice. All comments should include the PN reference number listed above. Mailed comments must be postmarked on or before the expiration date of the public notice.

Disability Reasonable Accommodation Notice

The State of Alaska, Department of Environmental Conservation complies with Title II of the Americans with Disabilities Act of 1990. If you are a person with a disability who may need special accommodation in order to participate in this public process, please contact Theresa Zimmerman at 907-465-6171 or TDD Relay Service 1-800-770-8973/TTY or dial 711 within 5 days of the expiration date of this public notice to ensure that any necessary accommodations can be provided.



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ANCHOR QEA

Figure 1
Vicinity Map
Project Description
Skagway Ore Terminal Sediment Remediation Project

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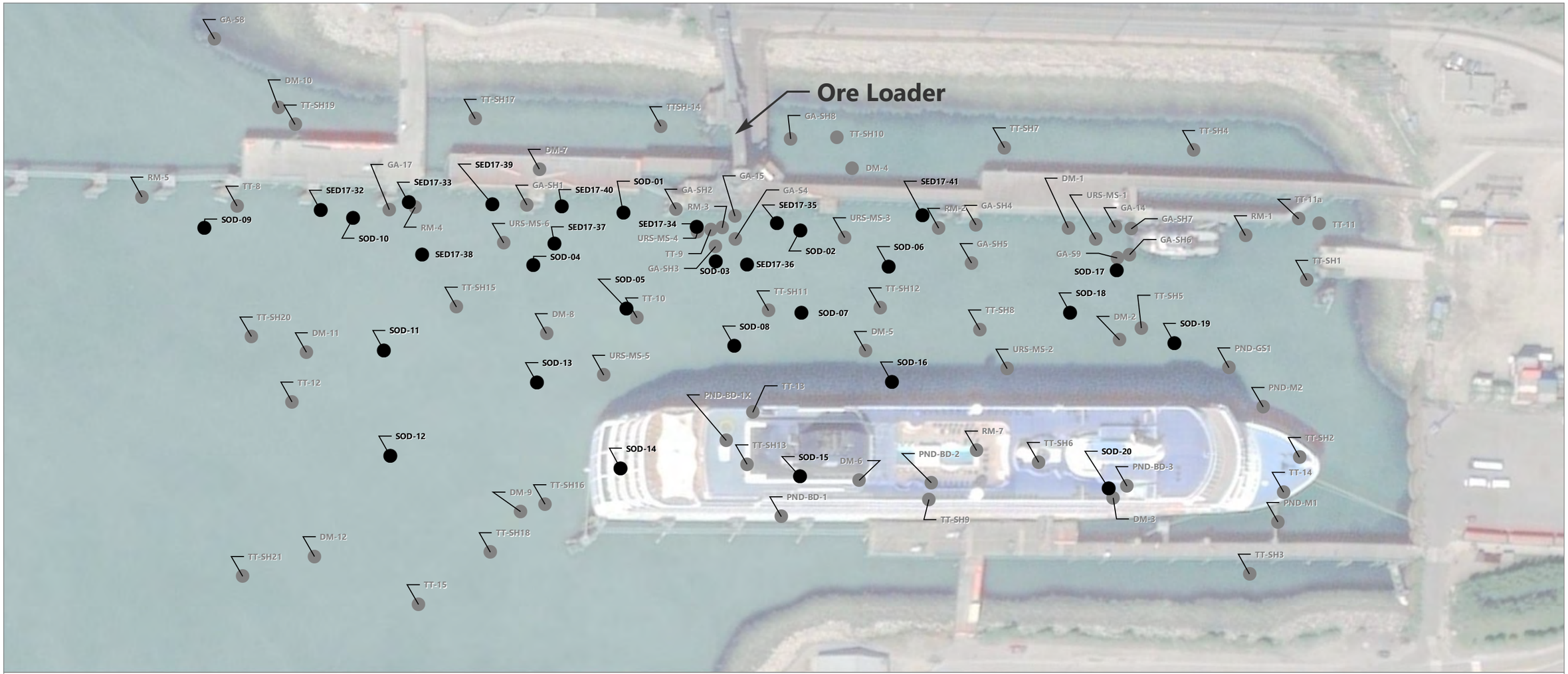
Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 2
Site Features
Project Description
Skagway Ore Terminal Sediment Remediation Project



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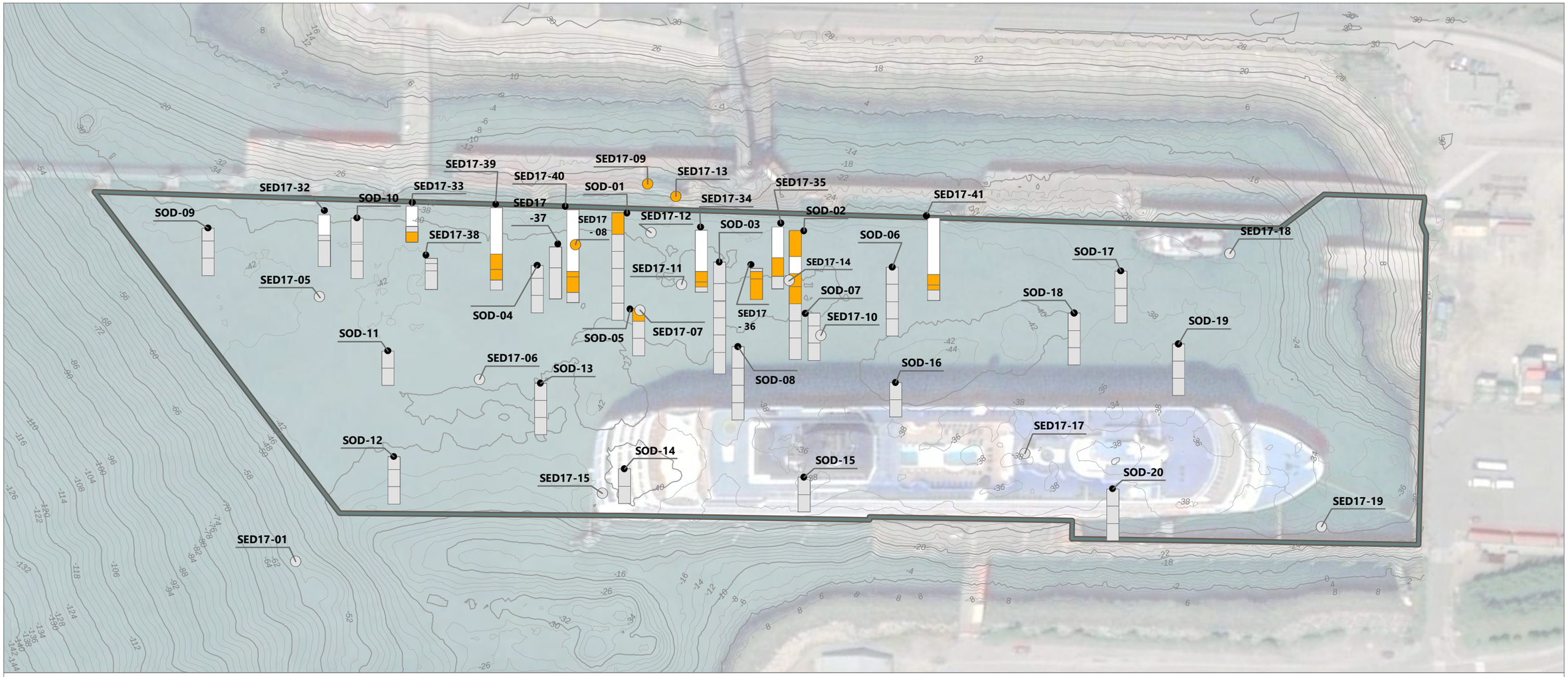
Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 3
Design-Level and Historical Sediment Sampling Locations
Project Description
Skagway Ore Terminal Sediment Remediation Project



LEGEND:

- Ore Basin
- **Bathymetry (feet MLLW)**
- Major Contour
- Minor Contour
- Subsurface Sediment Sampling Location
- Surface Sediment Sampling Location
- Subsurface Core Interval
- **Exceedance Criteria**
- Passes CSL for All Chemicals
- Exceeds CSL for Any Chemical
- No Data

NOTES:
1. MLLW: mean lower low water
2. CSL: cleanup screening level
3. Bathymetry from TerraSond, dated October 28, 2014
4. Design-level data include samples from Anchor QEA 2015 and Golder 2018.

0 200
Feet

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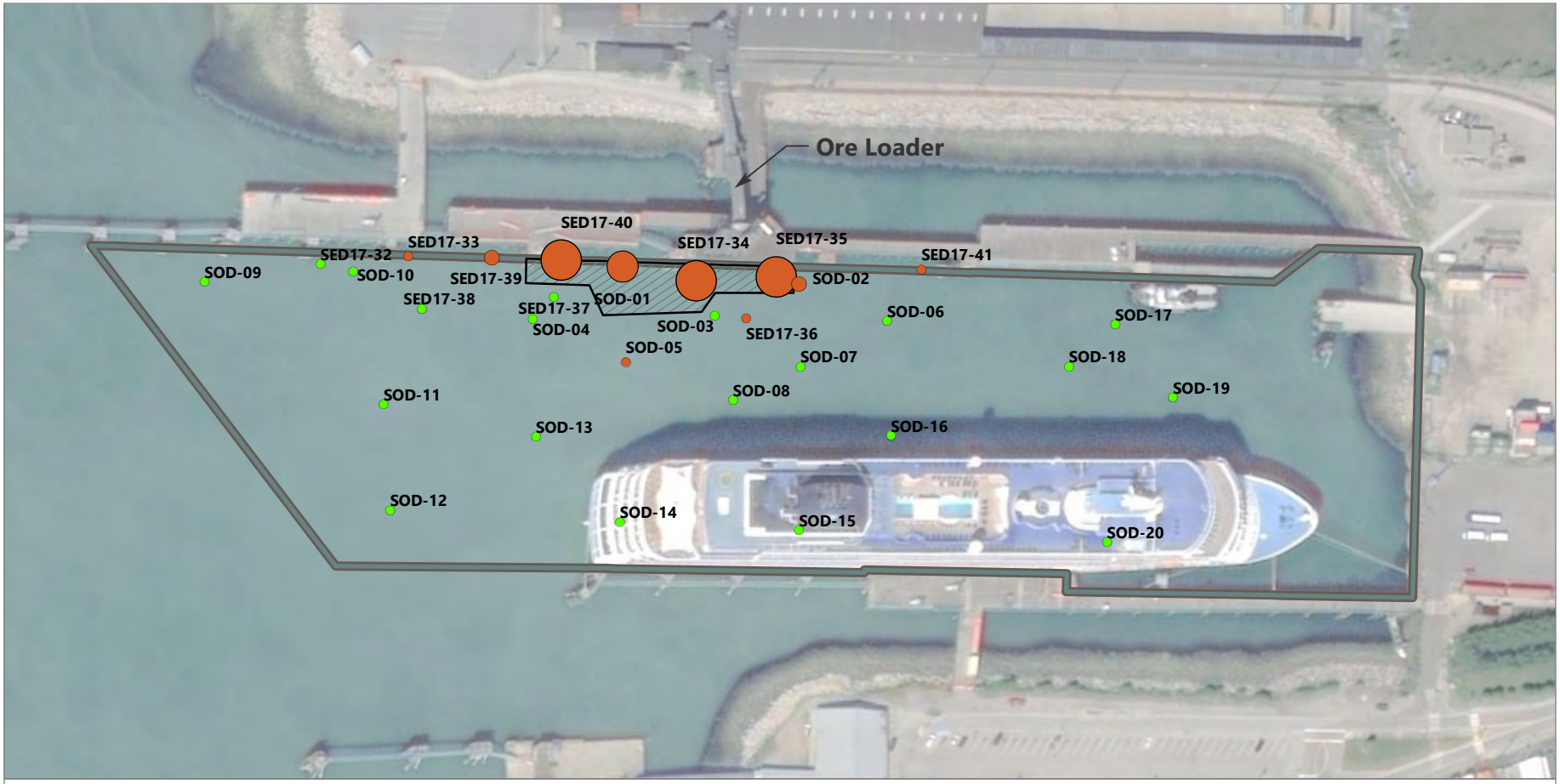
Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 4
Summary of Design-Level Sediment Data
Project Description
Skagway Ore Terminal Sediment Remediation Project



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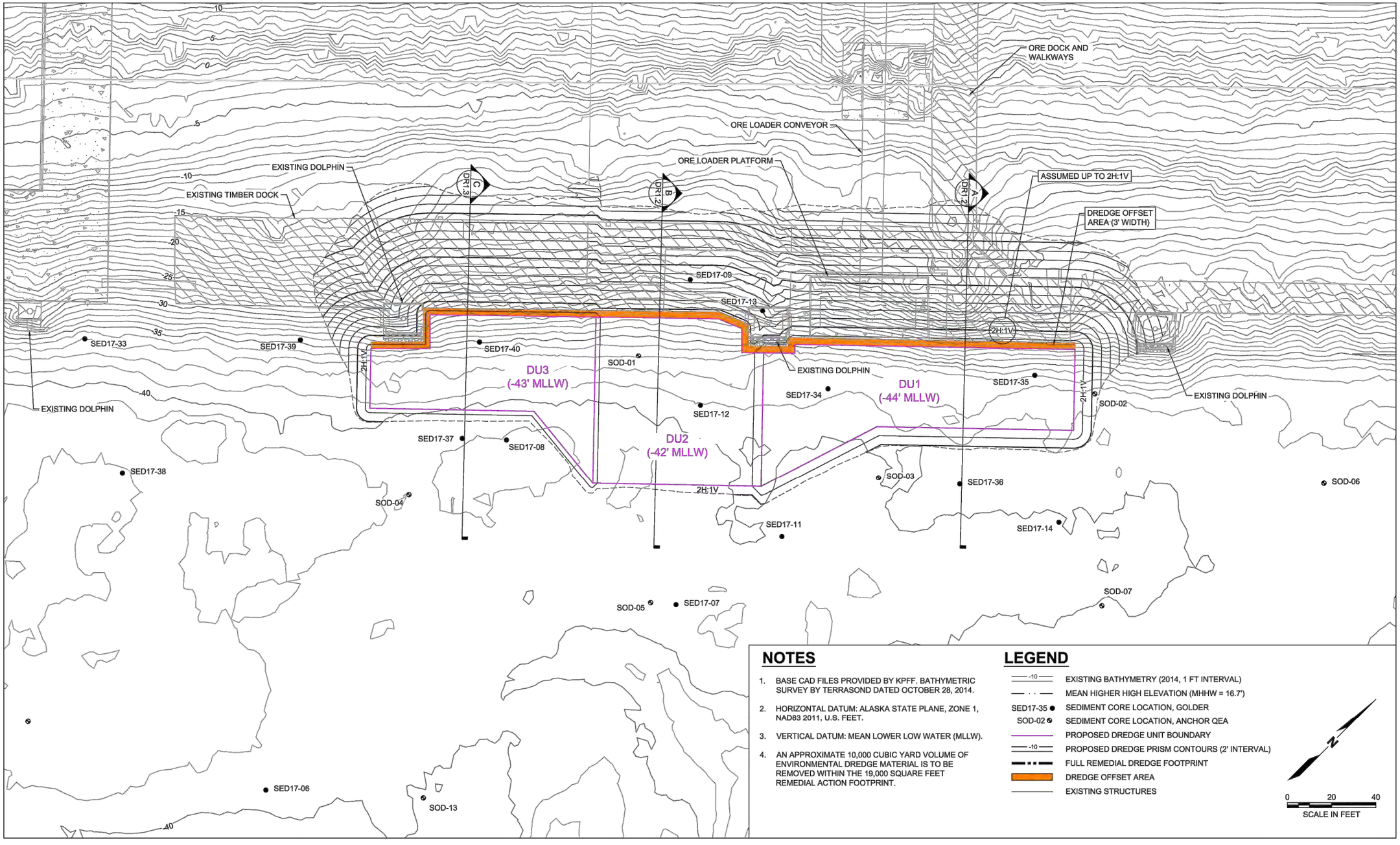
Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 5
Proposed Remedial Action Footprint
Project Description
Skagway Ore Terminal Sediment Remediation Project



NOTES

1. BASE CAD FILES PROVIDED BY KPFF. BATHYMETRIC SURVEY BY TERRASOND DATED OCTOBER 28, 2014.
2. HORIZONTAL DATUM: ALASKA STATE PLANE, ZONE 1, NAD83 2011, U.S. FEET.
3. VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW).
4. AN APPROXIMATE 10,000 CUBIC YARD VOLUME OF ENVIRONMENTAL DREDGE MATERIAL IS TO BE REMOVED WITHIN THE 19,000 SQUARE FEET REMEDIAL ACTION FOOTPRINT.

LEGEND

- -10 — EXISTING BATHYMETRY (2014, 1 FT INTERVAL)
- MEAN HIGHER HIGH ELEVATION (MHHW = 16.7')
- SED17-35 ● SEDIMENT CORE LOCATION, GOLDER
- SOD-02 ⊗ SEDIMENT CORE LOCATION, ANCHOR QEA
- PROPOSED DREDGE UNIT BOUNDARY
- -10 — PROPOSED DREDGE PRISM CONTOURS (2' INTERVAL)
- FULL REMEDIAL DREDGE FOOTPRINT
- DREDGE OFFSET AREA
- EXISTING STRUCTURES

N

0 20 40
SCALE IN FEET

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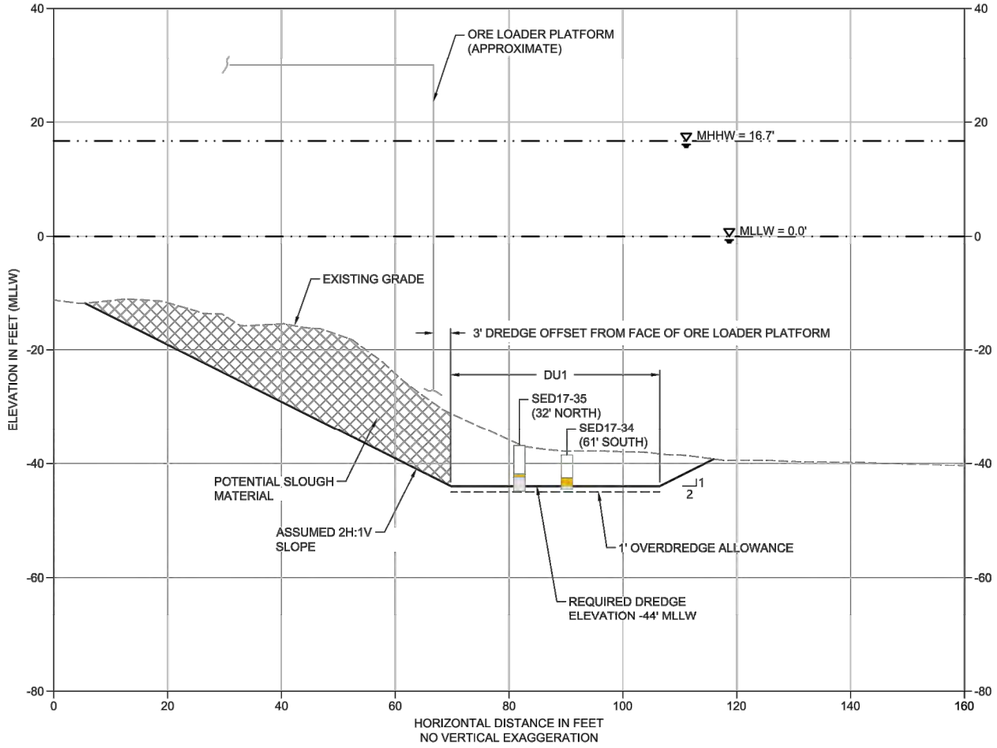
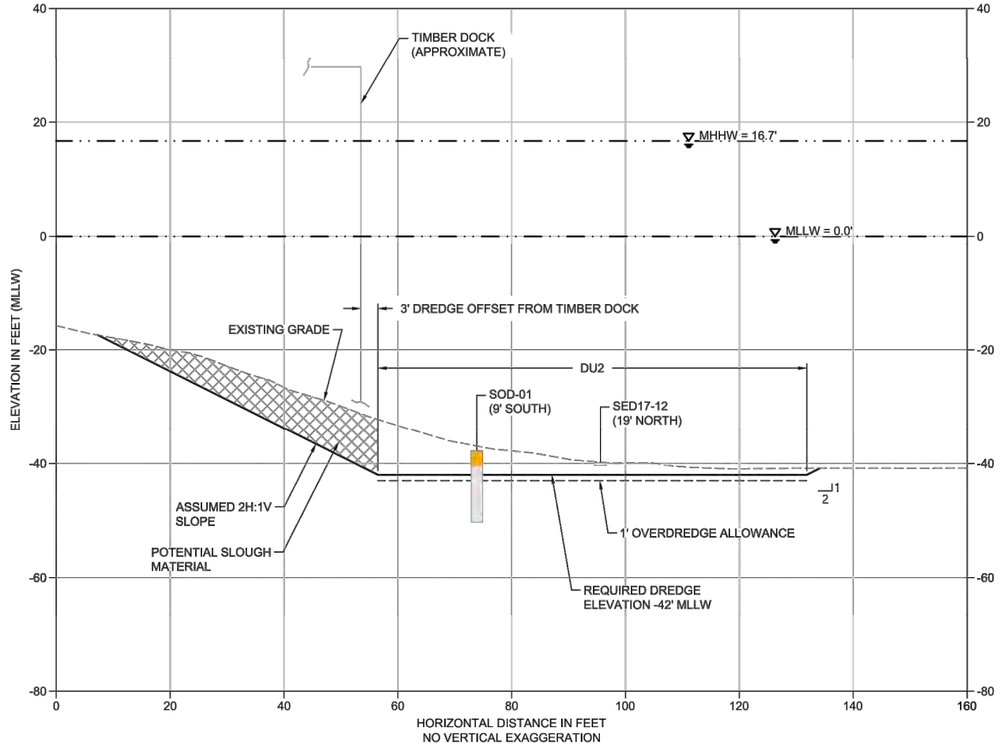
Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 6
Preliminary Dredging Plan
Skagway Ore Terminal Sediment Remediation Project
Skagway, Alaska

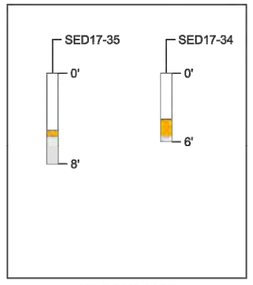


A DR1.1 **DREDGE SECTION**
SCALE:1" = 12'



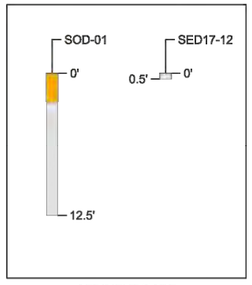
B DR1.1 **DREDGE SECTION**
SCALE:1" = 12'

NOTES:
1. CONTRACTOR MUST DREDGE AS SHOWN ON DRAWING DR1.1.
2. CONTRACTOR MUST NOT PERFORM EXCESSIVE OVERDREDGING AT TOE OF CUT OR ON SLOPE AREAS. ANY DAMAGE TO EXISTING DOLPHINS, ORE LOADER PLATFORM, OR SLOPES CAUSED BY OVERDREDGING MUST BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
3. POTENTIAL SLOUGH MATERIAL IS DEFINED AS SEDIMENT ON A SIDE SLOPE THAT LOSES TOE SUPPORT AND SLOUGHS INTO THE DREDGE PRISM, INCLUDING FROM INTERNAL VERTICAL DREDGE CUTS BETWEEN DREDGE UNITS. CONTRACTOR MUST REMOVE SLOUGH MATERIAL TO ACHIEVE THE REQUIRED DREDGE ELEVATION/DREDGE CUT.
4. CONTRACTOR MUST SELECT MEANS AND METHODS TO PROTECT EXISTING STRUCTURES.
5. OVERDREDGE ALLOWANCE IS 1' IN REQUIRED DREDGE AREAS.
6. CLEANUP SCREENING LEVEL (CSL) FOR LEAD, AS PER WASHINGTON STATE DEPARTMENT OF ECOLOGY.



SEDIMENT CORE
2X VERTICAL EXAGGERATION

CORE PROFILE LEGEND:
- BELOW CSL FOR ALL CHEMICALS
- ABOVE CSL FOR ANY CHEMICAL
- NO DATA



SEDIMENT CORE
2X VERTICAL EXAGGERATION

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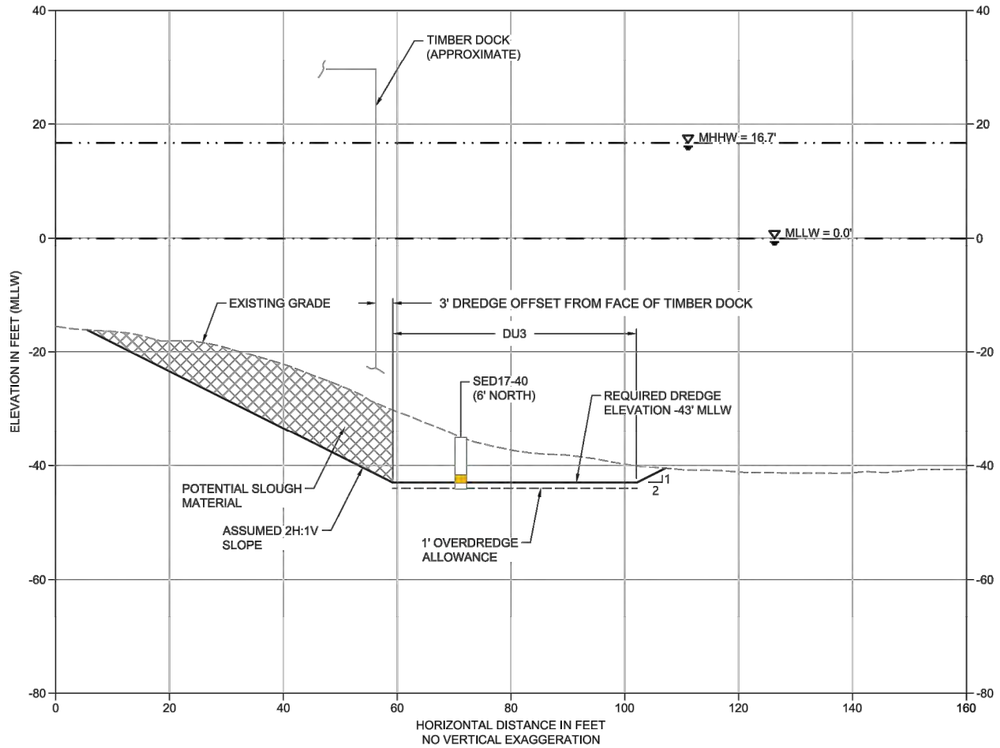
Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 7
Preliminary Dredging Cross Sections (1 of 2)
Skagway Ore Terminal Sediment Remediation Project
Skagway, Alaska



C / DR1.1 DREDGE SECTION
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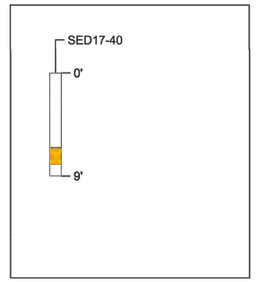

SEDIMENT CORE
2X VERTICAL EXAGGERATION

CORE PROFILE LEGEND:
- BELOW CSL FOR ALL CHEMICALS
- ABOVE CSL FOR ANY CHEMICAL
- NO DATA

NOTES:
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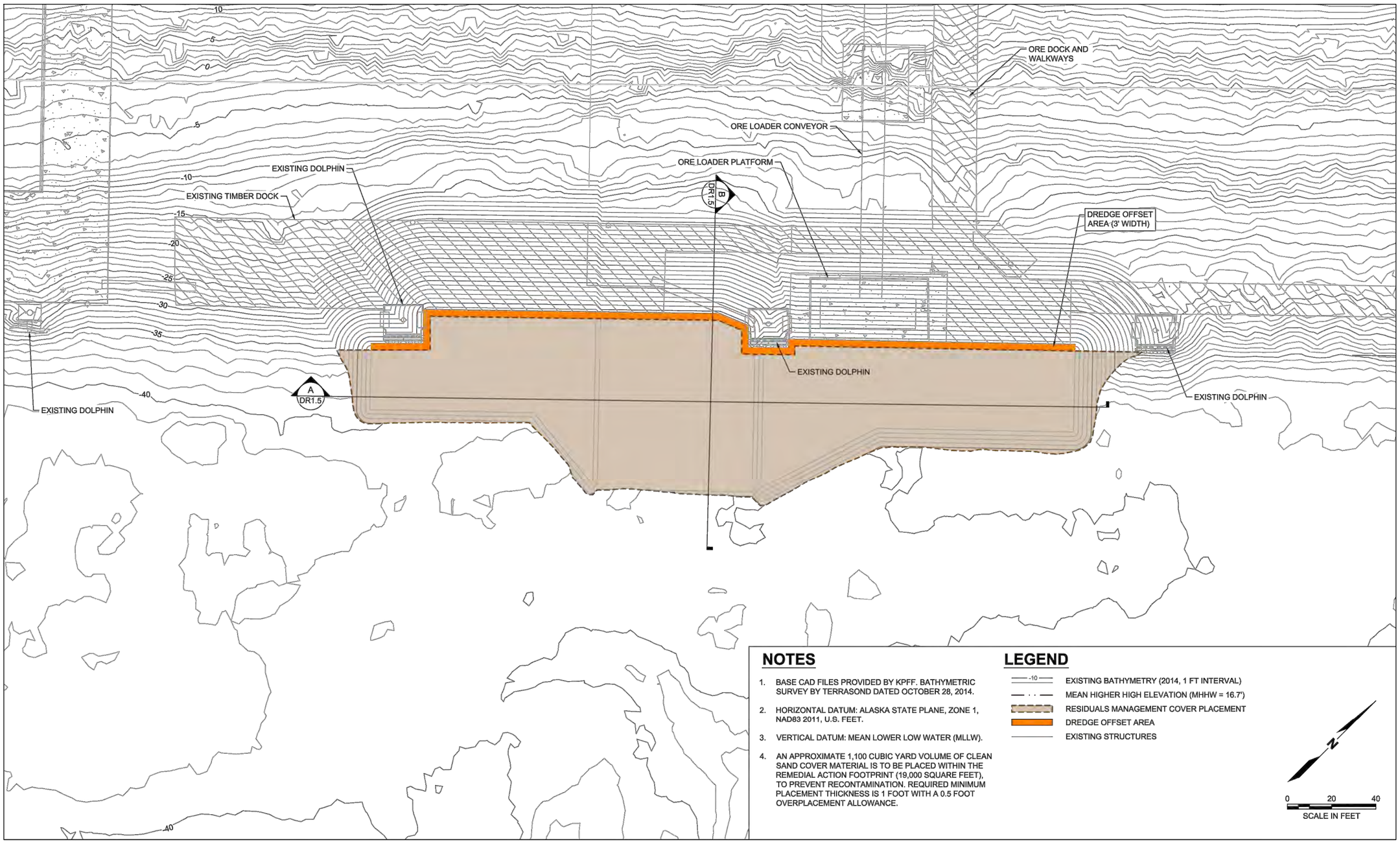
Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 8
Preliminary Dredging Cross Sections (2 of 2)
Skagway Ore Terminal Sediment Remediation Project
Skagway, Alaska



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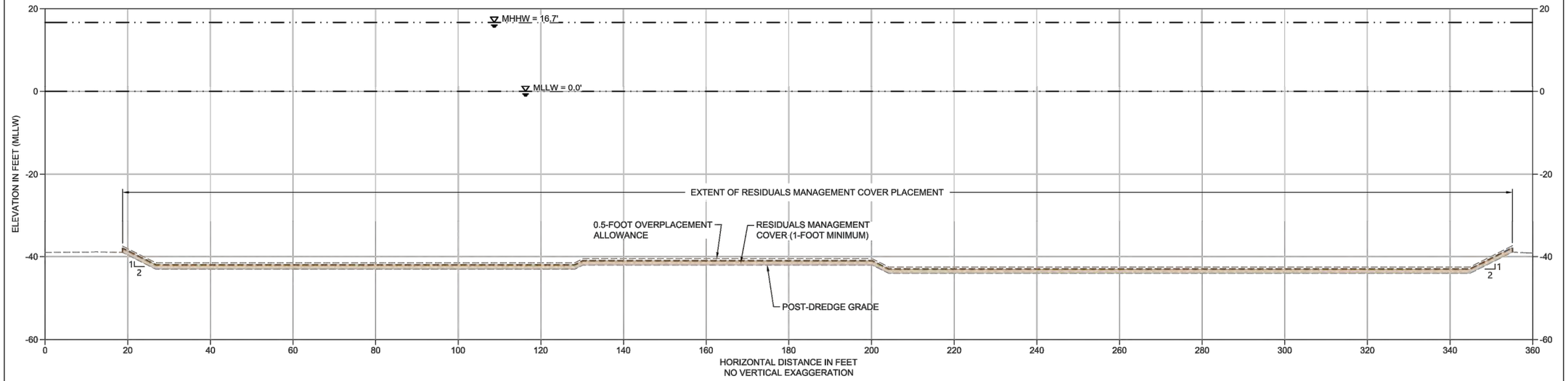
Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 9
Preliminary Placement Plan

Skagway Ore Terminal Sediment Remediation Project
Skagway, Alaska



A DR1.4 **PLACEMENT SECTION**
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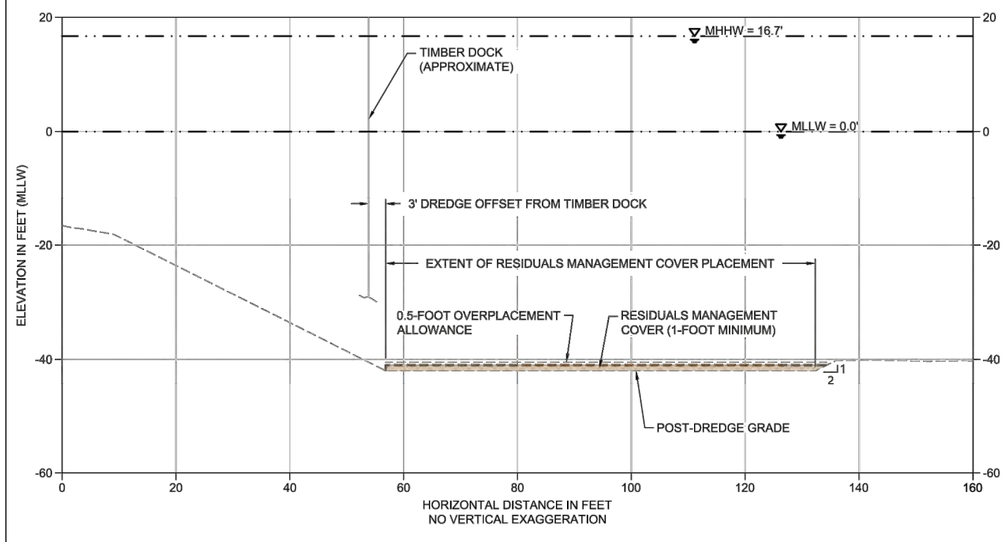

B DR1.4 **PLACEMENT SECTION**
SCALE: 1" = 12'

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Taiya Inlet
Skagway, Alaska
White Pass & Yukon Route

Figure 10
Preliminary Placement Cross Sections
Skagway Ore Terminal Sediment Remediation Project
Skagway, Alaska

1605 Cornwall Avenue
Bellingham, Washington 98225
360.733.4311

ANCHOR QEA

October 2, 2019

Matthew Brody
U.S. Army Corps of Engineers, Alaska District
Regulatory Division
CEPOA-RD
P.O. Box 6898
JBER, Alaska 99506-0898

Re: Application for Department of the Army Permit for the Skagway Ore Terminal Sediment Remediation Project

Dear Matthew:

On behalf of White Pass & Yukon Route, Anchor QEA, LLC, is pleased to submit the enclosed Application for Department of the Army Permit for the Skagway Ore Terminal Sediment Remediation Project. The project involves environmental dredging of contaminated sediments in the Skagway Ore Basin adjacent to the Skagway Ore Terminal facility in Skagway, Alaska. Placement of residual management cover would occur following dredging.

Please do not hesitate to contact me at 360-715-2708 or jfitts@anchorqea.com should there be any questions regarding this application.

Sincerely,

Julia Fitts, L.G.
Anchor QEA, LLC

Attachments

Attachment 1 Application for Department of the Army Permit
Attachment 2 Project Description
Attachment 3 Biological Evaluation

Attachment 1
Application for
Department of the Army Permit

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

OMB APPROVAL NO. 0710-0003
EXPIRES: 28 FEBRUARY 2013

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Bob Middle - Last - Berto	First - Julia Middle - Eileen Last - Fitts
Company - White Pass & Yukon Route	Company - Anchor QEA, LLC
E-mail Address - bberto@claalaska.com	E-mail Address - jfitts@anchorqea.com
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- P.O. Box 435	Address- 1605 Cornwall Ave
City - Skagway State - AK Zip - 99840 Country - USA	City - Bellingham State - WA Zip - 98225 Country - USA
7. APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business 907-617-1212 c. Fax	a. Residence b. Business 360-715-2708 c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, Julia Fitts to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

SIGNATURE OF APPLICANT — DATE: OCT 1 2019

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)
Skagway Ore Terminal Sediment Remediation Project

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Taiya Inlet	Address 295 Congress Way
15. LOCATION OF PROJECT Latitude: °N 59 27' 2.44" Longitude: °W 135 19' 36.45"	City - Skagway State- AK Zip- 99840

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality Skagway
Section - 14 Township - 28 S Range - 59 E, Copper River Meridian

17. DIRECTIONS TO THE SITE

From the Skagway airport, follow State Street west to Broadway Street. Turn left on Broadway Street, then right on Congress Way. Follow Congress Way to the site address.

18. Nature of Activity (Description of project, include all features)

See Attachment 2, Project Description.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

See Attachment 2, Project Description.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

See Attachment 2, Project Description.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
1,100 clean residual management cover		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres 0.44 ac

or

Linear Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

A list of conservation measures and best management practices is included in Attachment 2, Project Description. Ultimately, the Project will result in environmental improvements over existing conditions within Skagway Harbor, including remediation of legacy contamination in site sediment. Therefore, as the Project by nature will result in positive environmental improvements, no formal mitigation plan has been prepared for the Project.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

N/A

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- See List of Property Owners and Lessees, Appendix A of the Project Description (Attachment 2)

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT 10/6/19 DATE

SIGNATURE OF AGENT 10/1/2019 DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Attachment 2
Project Description

October 2019
Skagway Ore Terminal Sediment Remediation Project

ANCHOR QEA

Project Description

Prepared for White Pass & Yukon Route

October 2019
Skagway Ore Terminal Sediment Remediation Project

Project Description

Prepared for
White Pass & Yukon Route
PO Box 435
Skagway, Alaska 99840-0435

Prepared by
Anchor QEA, LLC
1605 Cornwall Avenue
Bellingham, Washington 98225

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ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
BE	Biological Evaluation
BMP	best management practice
cy	cubic yard
EFH	Essential Fish Habitat
MLLW	mean lower low water
MOS	Municipality of Skagway
Ore Basin	Skagway Ore Basin
Ore Terminal	Skagway Ore Terminal
PAH	polycyclic aromatic hydrocarbon
Project	Skagway Ore Terminal Sediment Remediation Project
RMC	residual management cover
site	Skagway Ore Terminal Facility and Ore Basin
SPCC	Spill Prevention, Control, and Countermeasure
WPYR	White Pass & Yukon Route

Executive Summary

White Pass & Yukon Route (WPYR) proposes to conduct environmental dredging of contaminated sediments in the Skagway Ore Basin (Ore Basin) adjacent to the Skagway Ore Terminal facility (Ore Terminal; collectively, the site) in Skagway, Alaska. The Skagway Ore Terminal Sediment Remediation Project (Project) will remove metals-impacted sediments from the site through mechanical dredging to address legacy contamination associated with spillage from historical ore loading operations. The Project will result in removal and disposal of contaminated sediments from the site, including the following actions:

- Dredging of up to 10,000 cubic yards (cy) of sediment
- On-site stabilization of dredged material
- Off-site disposal of stabilized material at a permitted upland landfill facility
- Placement of up to 1,100 cy of clean sand cover material (i.e., residual management cover) within the remedial action footprint

Ultimately, the Project will result in environmental improvements over existing conditions within Skagway Harbor.

1 Background

1.1 Project Location

Skagway is the city farthest north in the Southeast Alaska region (Figure 1) and provides the nearest access to tidewater for much of the neighboring Yukon Territory, Canada. The town is at the southwestern end of the 2.5-mile-long Skagway River valley; much of the valley lies between the Skagway River to the northwest and mountains to the southeast. The Skagway River empties into Taiya Inlet at the head of Lynn Canal, the northernmost fjord on the Inside Passage of the south coast of Alaska. Pullen Creek empties into the Skagway Ore Basin (Ore Basin) at the southeast corner of the basin (Figure 2). A municipal wastewater outfall is located within the Ore Basin near the end of the Broadway Dock (Figure 2).

The Ore Basin is a deepwater port that transitions sharply from a limited nearshore area into deep marine waters of the Lynn Canal (Figure 1). The Skagway Ore Terminal (Ore Terminal) is located along the northern berth of the Ore Basin (Figure 2). The Ore Terminal and Ore Basin are collectively referred to as the site. The Ore Basin is currently used to moor cruise ships and also for a variety of industrial purposes including cargo and petroleum transfer. Cruise ships, which frequently use the dock and walkways at the Ore Basin for passenger debarkation and embarkation during the cruise season (i.e., from April to October), are a vital part of Skagway's local economy. A list of property owners and lessees adjacent to the site is attached as Appendix A.

The Ore Terminal was constructed between 1967 and 1969 by dredging Skagway Harbor and using the dredged material as fill. As-built drawings are available from 1969 showing a basin-wide dredge depth of -42.5 feet mean lower low water (MLLW; Tippets 1969). Current basin depths typically range from -45 to -34 feet MLLW, with a generally more-consistent elevation in the vicinity of the ore loader that ranges from -42 to -38 feet MLLW (TerraSond 2014).

1.2 Existing Conditions

1.2.1 Physical Site Conditions

Structures in the Ore Basin consist of numerous docks, walkways, and dolphins to support cruise ship operations, but also other local industrial and commercial operations. Structures present along the north side of the basin include a concrete cruise ship dock and dolphins that facilitate cruise ship berthing and the loading/unloading of cruise ship passengers, a timber dock, and the ore loader and walkways (Figure 2). Petroleum transfer occurs adjacent to the ore loader through a series of pipelines that feed the adjacent tank farm. On the south side of the basin are the Broadway Dock (used for cruise ships) and the Alaska State Ferry Dock (Figure 2). At the head of the Ore Basin is the Alaska Marine Lines Dock, which is primarily used for cargo transfer to and from Skagway.

The slope under the ore loader consists of riprap on the upper portion of the slope that terminates in a constructed keyway (i.e., a structural notch at the foot of the riprap portion of the slope that is used to aid in riprap stability) at an approximate elevation of -12 feet MLLW. Below the riprap, the slope has been characterized as deposited sediment overlying a constructed slope of 2.75 horizontal to 1 vertical (2.75H:1V) down to the basin floor (Tippets 1969). Minimal information exists regarding sediment conditions or quality in this area due to the inaccessibility of the slope under and behind the ore loader and associated structures (collectively referred to here as "underpier"). This is because of the high density of aging pilings, which limit access, and the lack of success in previous underpier investigative sampling.

A preliminary review of available structural (KPFF 2019) and geotechnical information (Hart Crowser 2019) was conducted to identify potential impacts of remediation on adjacent structures and provide supporting information for grain size and slopes. A detailed engineering analysis of existing structures has not yet been performed, but it is currently assumed that, because remedial dredging will be confined to similar depths as documented in previous as-built conditions and will occur only in currently accessible areas of the Ore Basin, the dredging will not impact existing structures. Further assessment of potential impacts to structures and the adjacent slope(s) will be evaluated during future stages of the dredging design.

A recent sediment transport analysis for the Ore Basin (Golder 2018, Appendix A) concluded that the Ore Basin is predominantly depositional and that fine-grained sediments from the Skagway River gradually accumulate in the Ore Basin over time, particularly in the area adjacent to the ore loader and along the toe of the slope. That conclusion is supported by changes in site bathymetry over time and recent subsurface sediment core logs that show a relatively thick (greater than 6 feet) unit of soft, fine-grained silt and sand over a dense gravelly sand, which is considered to be native harbor material, near the face of the ore dock. The sediment transport analysis also identified that vessel propeller wash scour is capable of resuspending and redistributing surficial sediments in some areas of the Ore Basin, but this appears to be localized, because propeller wash scour-like depression features were identified in three localized areas away from the face of the ore dock.

Ore Basin sediment lithologies are characteristic of a depositional tidal environment that has replaced a high-energy fluvial and deltaic environment. Based on review of sampling logs from the *Sediment Characterization Report* (Anchor QEA 2015) and site *Risk Assessment* (Golder 2018), surface sediments in the Ore Basin typically consist of fine-grained silts with organic material overlying silty sand just below the surface that sits atop a thick sequence of dense gravelly sand that is considered to be native (i.e., deposited prior to construction of the harbor). The finer-grained surficial material is thickest adjacent to the face of the ore dock at the toe of the slope under the ore loader, with core logs showing deposition to be greater than 6 feet in some places.

In nearly all of the observed cores from the aforementioned two studies, contamination by ore-related metals was strongly associated with the finer-grained silt unit, although not necessarily at the surface. Golder (2018) found lower concentrations of ore-related metals in the upper 30 centimeters of sediment, and both Anchor QEA (2015) and Golder (2018) found only low metals concentrations in the deeper gravelly sand unit assumed to be native material. The nature and extent of sediment contamination is further described in Section 2.2.3.

1.2.2 Habitat

The Skagway Ore Terminal Sediment Remediation Project (Project) will occur entirely in the Ore Basin of Skagway Harbor and within currently accessible areas adjacent to the ore dock. The Ore Terminal shoreline is completely armored with large riprap boulders and contains little to no riparian vegetation. The armoring extends well below mean higher high water along the sloping shoreline, to an approximate depth of -12 feet MLLW. The bottom sediments in the harbor consist of fine-grained sand and silt that overlie coarser sand and gravel (assumed native sediment) at depth.

The intertidal and subtidal zones of Taiya Inlet contain habitat for invertebrates and vertebrates including shellfish (clams, cockles, mussels, tanner crab, and shrimp); finfish (Dolly Varden char, steelhead, true cod, rockfish, flounder, sole, halibut, coho salmon, chum salmon, pink salmon, and possibly Chinook salmon); and marine mammals (seals, sea lions, whales, and porpoises). Waterfowl and other birds feed and rest along tideflats, stream banks and channels, and wetlands (MOS 1990).

The Skagway River flows into Taiya Inlet northwest of the Ore Basin. The river provides spawning, rearing, and over-wintering habitat for coho salmon, pink salmon, chum salmon, Dolly Varden char, and eulachon smelt. The Skagway River has been identified as Essential Fish Habitat under the Magnuson-Stevens Fishery Conservation and Management Act (16 United States Code 1801-1812).

The Skagway Harbor watershed, which includes the Ore Basin, is approximately 6.2 square miles. The only drainage feeding directly into Skagway Harbor is Pullen Creek, which flows into the Ore Basin. The entire length (1.5 miles) of Pullen Creek runs along and over the southern boundary of the Municipality of Skagway (MOS). Its headwaters begin in the rail yard at the northeast end of the MOS and it empties into Skagway Harbor adjacent to the Broadway Dock. For much of its route, Pullen Creek flows adjacent to the White Pass & Yukon Route (WPYR) railway, which borders the City of Skagway to the southeast. Two spring-fed tributaries enter Pullen Creek along its length, and it also receives inflows from the Dewey Lakes Hydroelectric Plant (Skagway Traditional Council 2005). Pullen Creek provides over-wintering rearing habitat for Dolly Varden char and coho salmon, and spawning habitat for coho, pink, and chum salmon (Skagway Traditional Council 2005).

1.2.3 Site Sediment Quality

Several previous investigations have characterized sediment quality at the site. These studies are divided into the following two categories based on data quality and recency:

- **Historical studies**, which are those completed more than 7 years ago, have been used to characterize harbor sediments and have questionable or low data quality (e.g., outdated sampling and/or analytical methods, uncertain sample locations/depths, and insufficient data quality assurance/quality control).
- **Design-level studies**, which are those completed within the last 7 years, have high data quality, appear more representative of current conditions, and are considered usable for remedial design.

Sediment sampling locations from historical and design-level studies are shown in Figure 3.

Historical studies identified contaminants of potential concern in Ore Basin sediments, including metals associated with ore concentrates (e.g., lead, zinc, mercury, and copper), as well as polycyclic aromatic hydrocarbons (PAHs). Multiple studies observed that lead and zinc concentrations were highest adjacent to the ore loader and decreased with distance from the ore loader and ore dock.

The two investigations with data quality suitable for remedial design are the *Sediment Characterization Report* (Anchor QEA 2015) and the *Skagway Ore Basin Risk Assessment* (Golder 2018). In 2015, the MOS's Gateway Initiative Project characterized sediments throughout the site to define the nature and extent of sediment contamination in the Ore Basin and identify a potential option for active remediation. The results of that study (*Sediment Characterization Report: Skagway Ore Dock and Small Boat Harbor Dredging*; Anchor QEA 2015) were accepted by the Alaska Department of Environmental Conservation (ADEC) and indicated that a majority of Ore Basin sediments were below example risk-based cleanup levels (e.g., the cleanup screening level from Washington State Sediment Management Standards), with the exception of metals-impacted sediments in a localized area adjacent to the ore loader (Figure 4; Anchor QEA 2015). The sediment impacts (primarily lead and zinc, and to a lesser degree mercury and PAHs) were typically observed in the top 4 feet below the mudline, were concentrated in the area adjacent to the ore loader (e.g., at stations SOD-01, -02, -03, and -05; Figure 3) and are bounded at depth by clean samples at the bottom of the core (Figure 4; Anchor QEA 2015).

2 Project Elements

2.1 Project Overview

The Project will remove contaminated sediment within the remediation footprint through mechanical dredging to enhance sediment quality in Skagway Harbor. The Project will result in the removal and disposal of contaminated sediments from the site, including the following actions:

- Dredging of up to 10,000 cubic yards (cy) of sediment within the remedial action footprint, as shown in Figure 5
- On-site stabilization of dredged material
- Off-site disposal of dredged material at a permitted upland landfill facility
- Placement of up to 1,100 cy of clean sand cover material (i.e., residual management cover [RMC]) within the remedial action footprint, as shown in Figure 5

2.2 Project Timing

The Project will be constructed in a manner so as to minimize disruption to Ore Terminal operations throughout construction. The Project is expected to begin once all approvals and permits have been received. In-water work will adhere to allowable in-water work windows (if applicable) to minimize impacts to marine mammals as identified by applicable agencies. WPYR is proposing to commence construction as soon as possible, but outside of the cruise ship season, which typically occurs from April to October. Construction, including mobilization and demobilization, is estimated to take 6 weeks to complete, assuming no weather delays.

2.3 Remedial Actions

2.3.1 Environmental Dredging

Dredging would occur within the remedial action footprint shown in Figure 5. The proposed remedial action footprint was designed to remove a majority (i.e., approximately 85%) of the known mass of lead-impacted sediments, as shown in Figure 5. Dredging would occur to an approximate depth of -42 to -44 feet MLLW (plus a 1-foot over-dredge to account for equipment tolerances). The vertical and horizontal extents of proposed dredging (cross sections) are shown in Figures 6 through 8. Following placement of RMC (see Section 2.3.3), post-project elevations will be similar to as-built elevations of -42.5 feet MLLW.

The current estimated dredge volume (including 1-foot over-dredge) and associated approximate surface area, pending final design and geotechnical and structural considerations, are shown in Tables 1 and 2. The dredge volume includes potential incidental slough material that may fall into the dredge footprint due to losing toe support through dredging in the remedial footprint. The selected contractor will be required to remove any slough material that falls into the dredge footprint.

Table 1
Environmental Dredge Material Approximate Volume

Project Component	Total[1]
Contaminated dredge material removed[2]	10,000 cy

Notes:

1. Volume is in cubic yards and includes defined over-dredge allowances and an assumed incidental slough volume.
2. Contaminated dredged materials will be disposed of in an appropriately permitted landfill.

Table 2
Environmental Dredge Material Approximate Surface Area

Project Component	Total[1]
Environmental dredge footprint	19,000

Note:

1. Area is in square feet.

2.3.2 Sediment Stabilization and Disposal

Sediment will be dredged and placed in barges. Stabilization will then be conducted in Skagway Harbor for transport and disposal purposes. The selected future contractor will determine the final stabilization method, with acceptance by WPYR, but it is assumed that this would consist of adding Portland cement or another amendment to reduce the leachable potential of lead in the sediment. Preliminary bench-scale treatment conducted as part of the Gateway Initiative Project (Anchor QEA 2016) indicates that mixing amendments would reduce the leachability of lead in the sediment upon removal to levels that meet non-hazardous transport and landfill disposal criteria.

The stabilized sediment will then be transferred via covered barges to the contiguous United States for offloading and transport to the disposal facility. The material will be offloaded at a permitted transloading facility with appropriate best management practices (BMPs; e.g., spill plates) and water quality treatment facilities and transferred either to trucks or rail cars for transport to a permitted landfill for disposal. While the contractor will propose an appropriate landfill for acceptance by WPYR, it is assumed that dredged sediments will be disposed of in Washington or Oregon at an appropriate permitted upland landfill facility in accordance with federal and state waste regulations (i.e., 40 Code of Federal Regulations § 261.24; 18 Alaska Administrative Code 60; 18 Alaska Administrative Code 75), because there are currently no landfills in Alaska that are permitted to accept the material.

2.3.3 Residual Management Cover Material Placement

Complete removal of contaminated sediments within the aquatic environment is limited by technical and logistical capabilities of dredging equipment and methods, as well as the spatial extent and composition of the sediment contamination, typically resulting in generated residuals. Generated

residuals are contaminated post-dredge surface sediments that result from dislodged or suspended sediments generated by the dredging operation and ancillary activities (such as vessel movement) that are subsequently re-deposited on the mudline within and adjacent to the dredge area. Generated residuals are typically deposited as a thin layer (e.g., several inches thick) and are inherent in dredging operations and, therefore, need to be accounted for and managed appropriately.

As such, RMC material will be placed within the remedial action footprint shown in Figure 5 following dredging to provide clean surface sediment concentrations and minimize recontamination potential from generated residuals that are not removed during remedial dredging activities. RMC will consist of a thin layer of clean sand (a minimum of 1 foot plus an allowable 6 inches of over-placement) placed on the dredge footprint to address generated residuals. The current estimated RMC placement volume and associated approximate surface area, pending final design and geotechnical and structural considerations, are shown in Tables 3 and 4.

Table 3
Environmental Cover Placement Approximate Volume

Project Component	Total[1]
Clean cover material placed	1,100 cy

Note:
1. Volume is in cubic yards and includes defined over-placement allowances.

Table 4
Environmental Cover Placement Approximate Surface Area

Project Component	Total[1]
Clean cover material placed	19,000

Note:
1. Area is in square feet.

3 Best Management Practices

The following BMPs will be implemented during construction to avoid or minimize potential impacts to the environment:

- All applicable permits for the Project will be obtained prior to construction. All work will be performed according to the requirements and conditions of these permits.
- Turbidity and other water quality parameters will be monitored to ensure construction activities are in compliance with ADEC standards.
  - No petroleum products, chemicals, or other toxic or deleterious materials will be allowed to enter surface waters.
  - Materials will not be stored where high tides, wave action, or upland runoff can cause materials to enter surface waters.
- Appropriate BMPs will be employed to minimize sediment loss and turbidity generation during dredging. BMPs may include, but are not limited to, the following:
  - Eliminating multiple bites while the bucket is on the seafloor
  - No stockpiling of dredged material on the seafloor
  - No seafloor leveling
- Depending on the results of the water quality monitoring program, enhanced BMPs may also be implemented to further control turbidity. Enhanced BMPs may include, but are not limited to, the following:
  - Slowing the velocity (i.e., increasing the cycle time) of the ascending loaded clamshell bucket through the water column
  - Pausing the dredge bucket near the bottom while descending and near the water line while ascending
  - Placing filter material over the barge scuppers to clear return water
- Barges will be managed such that the dredged sediment load does not exceed the capacity of the barge. The load will be placed in the barge to maintain an even keel and avoid listing. If determined to be necessary based on sediment sampling results, hay bales and/or filter fabric may be placed over the barge scuppers to help filter suspended sediment from the barge effluent.
- Dredge vessel personnel will be trained in hazardous material handling and spill response and will be equipped with appropriate response tools, including absorbent oil booms. If a spill occurs, spill cleanup and containment efforts will begin immediately and will take precedence over normal work.
- The dredging contractor will inspect fuel hoses, oil or fuel transfer valves, and fittings on a regular basis for drips or leaks in order to prevent spills into the surface water.
- The contractor shall be responsible for the preparation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan to be used for the duration of the Project. The SPCC Plan shall

be submitted to the Project Engineer prior to the commencement of any construction activities. A copy of the SPCC Plan, and any updates, will be maintained at the work site by the contractor and will include the following:

- The SPCC Plan shall identify construction planning elements and recognize potential spill sources at the work site. The SPCC Plan shall outline responsive actions in the event of a spill or release and shall describe notification and reporting procedures. The SPCC Plan shall outline contractor management elements such as personnel responsibilities, Project site security, site inspections, and training.
- The SPCC Plan will outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. These items include, but are not limited to, gasoline, oils, and chemicals.
- The contractor shall maintain at the job site the applicable equipment and material designated in the SPCC Plan.

For placement of RMC cover, the following measures will be observed:

- Bathymetry survey information or similar will be used to confirm adequate coverage during and following material placement.
- Imported materials will consist of clean, granular material free of roots, organic material, contaminants, and all other deleterious material.

Marine wildlife monitoring (if required) will adhere to the following protocol:

- A wildlife observer must be able to identify the designated marine species and be equipped with binoculars, range finder, two-way radio communication with construction foreman/superintendent, and log book.
- If a marine mammal comes within the designated marine wildlife observation area, all in-water work will be halted immediately; work may resume when the animal(s) moves outside the observation area of its own accord.
- The wildlife observer will have the authority to stop dredging if a marine mammal is observed within the observation area.
- The wildlife observer will have no other primary duty than to watch for and report on events related to marine mammal species.
- In-water construction will occur in winter months when marine mammal species are less likely to occur in the vicinity of Taiya Inlet.
- Construction during the winter will minimize potential impacts to prey species for marine mammals. There is a large eulachon run in the Taiya Inlet in April and May some years, which can attract large numbers of marine mammals.

4 Mitigation

Ultimately, the Project will result in environmental improvements over existing conditions within Skagway Harbor, including remediation of legacy contamination in site sediment. Therefore, as the Project by nature will result in positive environmental improvements, no formal mitigation plan has been prepared for the Project.

5 Summary

The Project will result in improvements to the environmental conditions in Skagway Harbor through the removal of legacy contamination in sediment adjacent to the ore loader.

In summary, the net environmental effects of the Project will include the following:

- Removing up to 10,000 cy of contaminated sediment from the 19,000-square-foot remedial action footprint in Skagway Harbor
- Placing up to 1,100 cy of clean cover materials within the remedial action footprint to prevent recontamination

Ultimately, the Project will result in environmental improvements over existing conditions within Skagway Harbor through these actions.

6 References

Anchor QEA (Anchor QEA, LLC), 2015. *Sediment Characterization Report, Skagway Ore Dock and Small Boat Harbor Dredging: Gateway Intermodal Dock Reconstruction Project and Legacy Harbor Contaminant Mitigation Program*. Prepared for Alaska Department of Environmental Conservation, U.S. Environmental Protection Agency and U.S. Army Corps of Engineers on behalf of the Municipality of Skagway, Alaska. June 2015.

Anchor QEA, 2016. *Laboratory Treatability Report, Gateway Intermodal Dock, Skagway, Alaska*. Prepared for Alaska Department of Environmental Conservation on behalf of the Municipality of Skagway, Alaska. July 2016.

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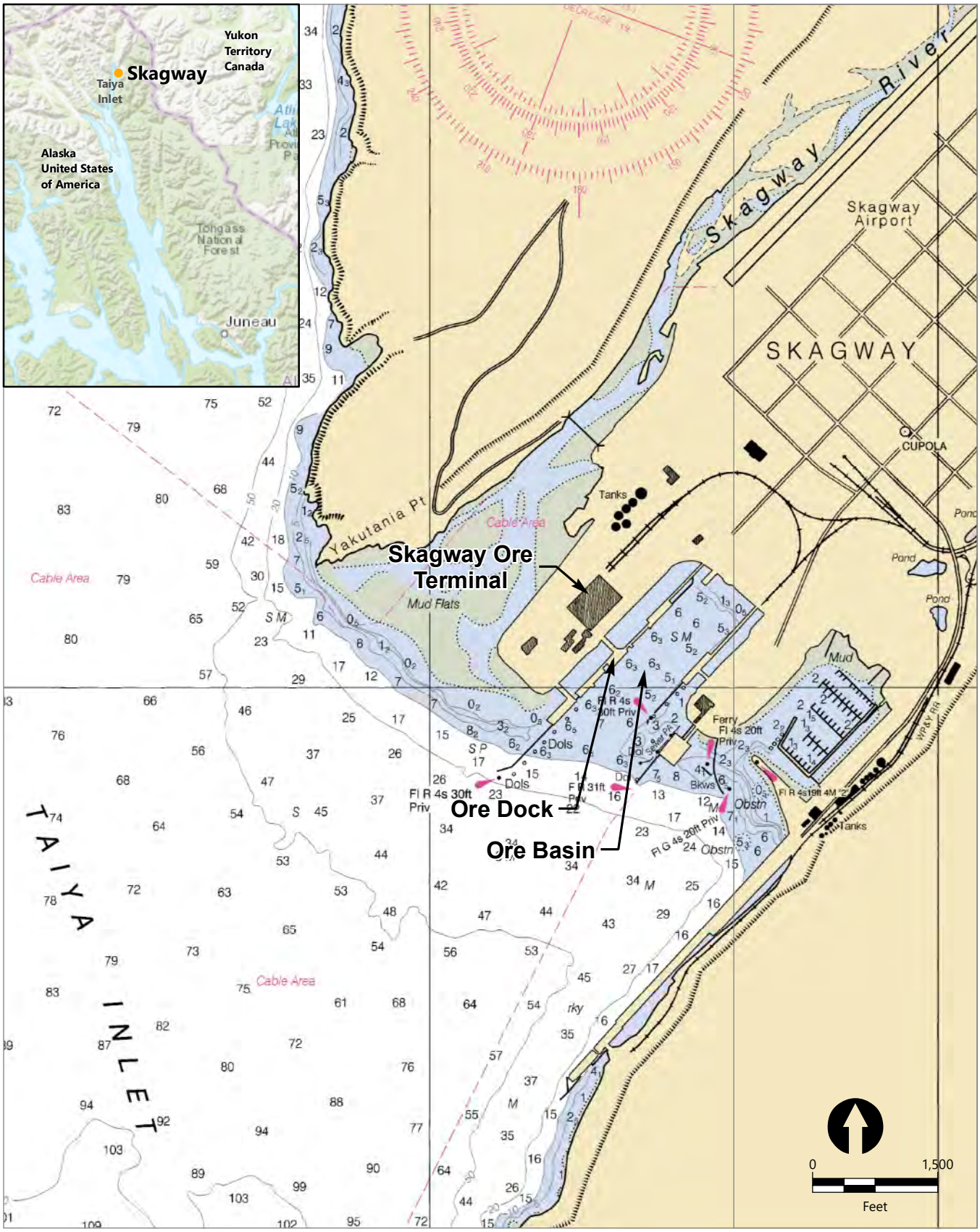
Tippets (Tippets-Abbett-McCarthy-Stratton, Engineers and Architects), 1969. *Schedule of Drawings and Tide Data*. Ore Handling Terminal Phase 1, Skagway, Alaska. March 14, 1969.

Figures



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ANCHOR QEA

Figure 1
Vicinity Map
Project Description
Skagway Ore Terminal Sediment Remediation Project

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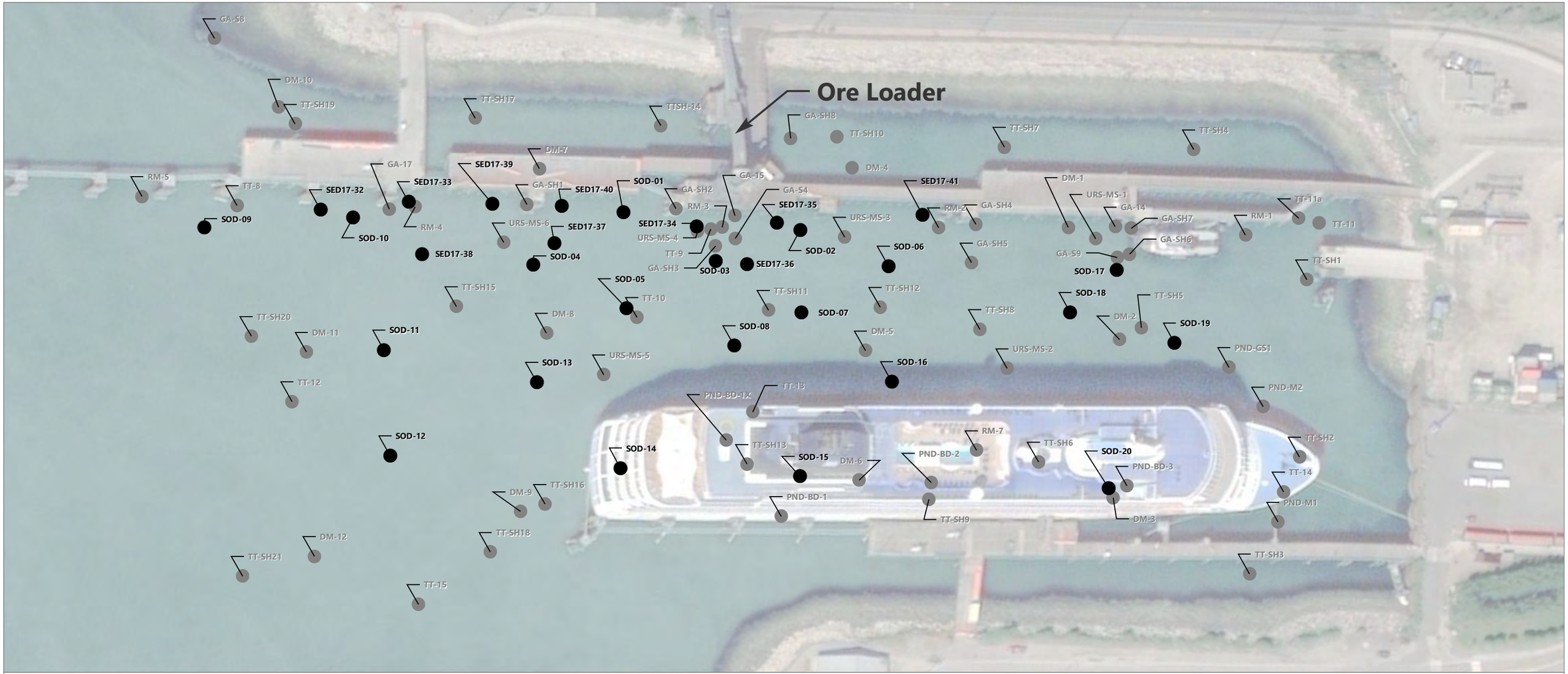
ANCHOR QEA

Figure 2
Site Features
Project Description
Skagway Ore Terminal Sediment Remediation Project



LEGEND:

- Design-Level Sediment Sampling Location (post-2012)
- Historical Sediment Sampling Location (pre-2012)

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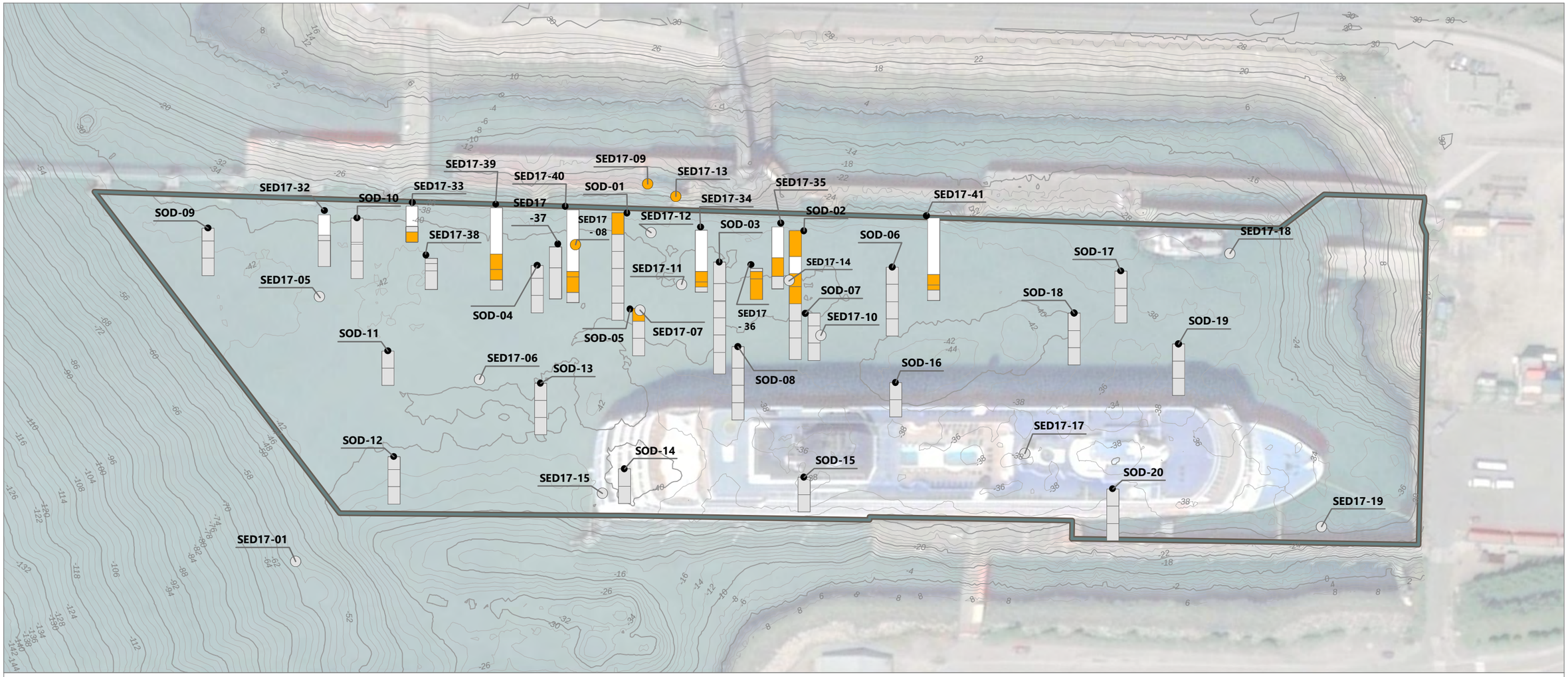
ANCHOR QEA

Figure 3
Design-Level and Historical Sediment Sampling Locations
Project Description
Skagway Ore Terminal Sediment Remediation Project



LEGEND:

- Ore Basin

Bathymetry (feet MLLW)

- Major Contour
- Minor Contour
- Subsurface Sediment Sampling Location
- Surface Sediment Sampling Location
- Subsurface Core Interval

Exceedance Criteria

- Passes CSL for All Chemicals
- Exceeds CSL for Any Chemical
- No Data

NOTES:

1. MLLW: mean lower low water
2. CSL: cleanup screening level
3. Bathymetry from TerraSond, dated October 28, 2014
4. Design-level data include samples from Anchor QEA 2015 and Golder 2018.

0 200
Feet

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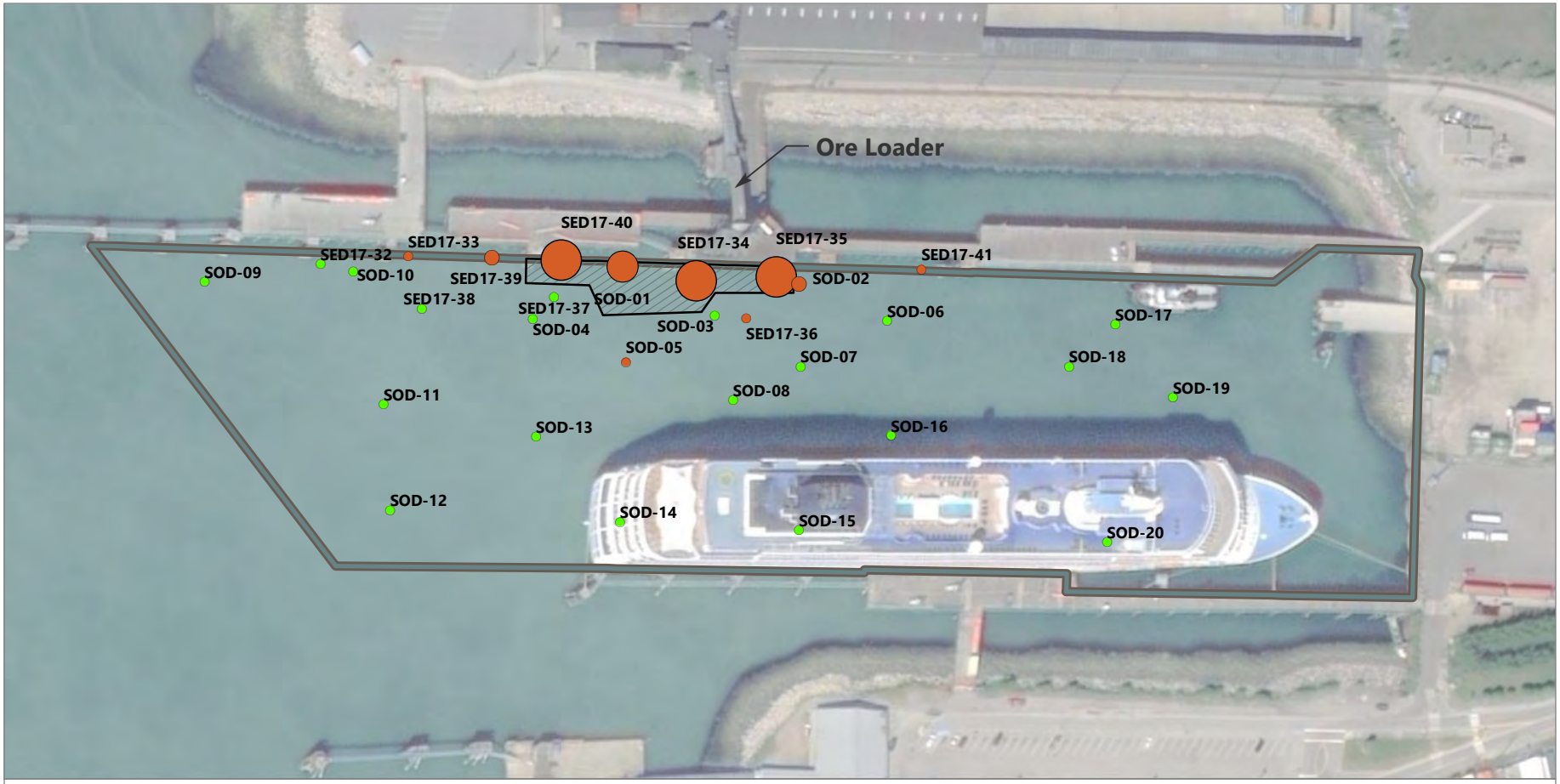
ANCHOR QEA

Figure 4
Summary of Design-Level Sediment Data
Project Description
Skagway Ore Terminal Sediment Remediation Project



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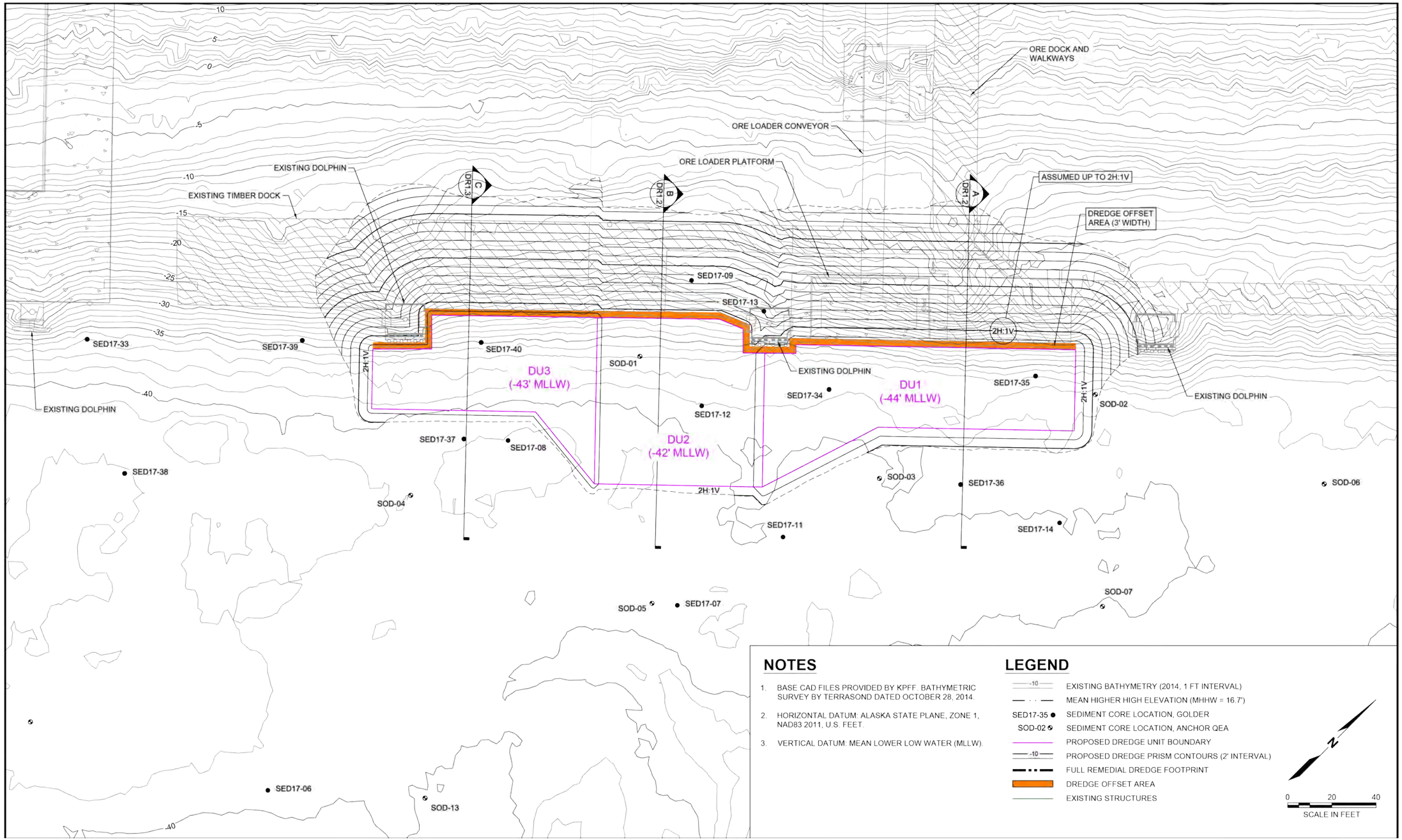
ANCHOR QEA

Figure 5
Proposed Remedial Action Footprint
Project Description
Skagway Ore Terminal Sediment Remediation Project



NOTES

1. BASE CAD FILES PROVIDED BY KPFF. BATHYMETRIC SURVEY BY TERRASOND DATED OCTOBER 28, 2014.
2. HORIZONTAL DATUM: ALASKA STATE PLANE, ZONE 1, NAD83 2011, U.S. FEET.
3. VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW).

LEGEND

- EXISTING BATHYMETRY (2014, 1 FT INTERVAL)
- MEAN HIGHER HIGH ELEVATION (MHHW = 16.7')
- SED17-35 ● SEDIMENT CORE LOCATION, GOLDER
- SOD-02 SEDIMENT CORE LOCATION, ANCHOR QEA
- PROPOSED DREDGE UNIT BOUNDARY
- PROPOSED DREDGE PRISM CONTOURS (2' INTERVAL)
- FULL REMEDIAL DREDGE FOOTPRINT
- DREDGE OFFSET AREA
- EXISTING STRUCTURES

N

0 20 40
SCALE IN FEET

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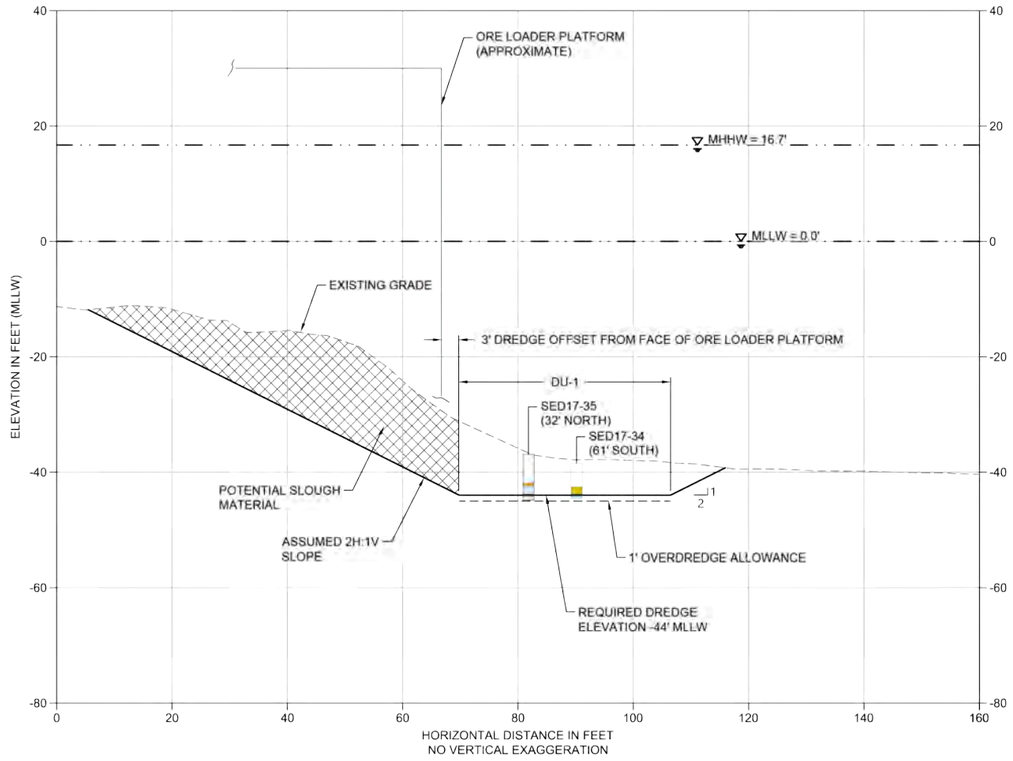
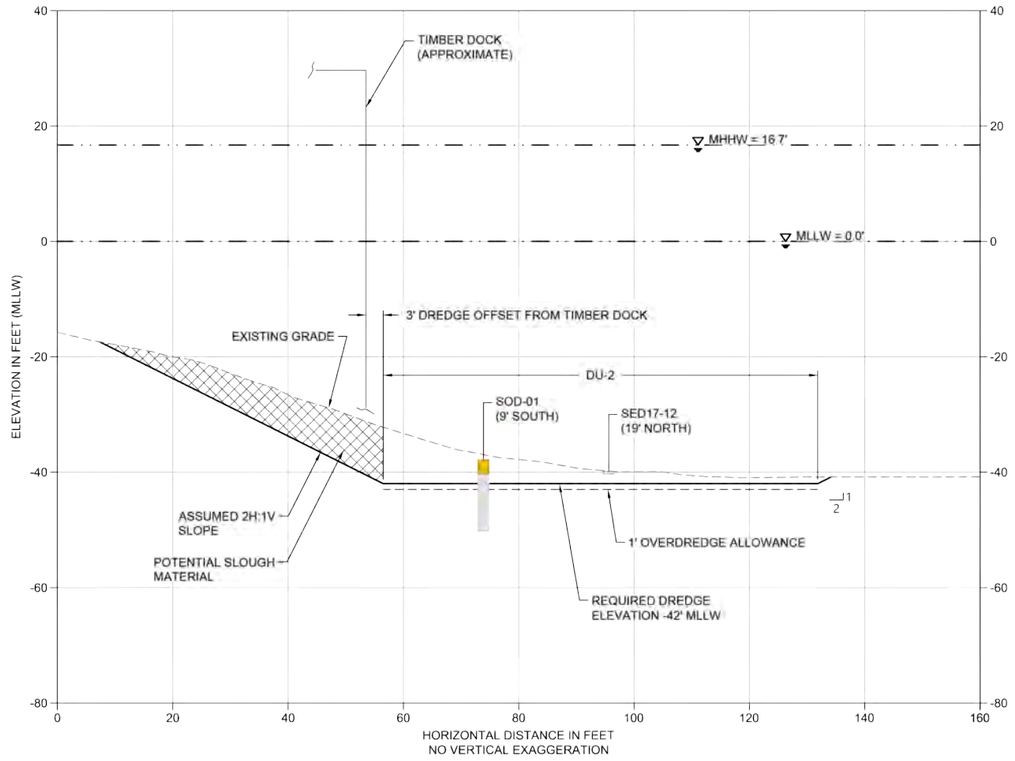
ANCHOR QEA

Figure 6
Preliminary Dredging Plan
Project Description
Skagway Ore Terminal Sediment Remediation Project

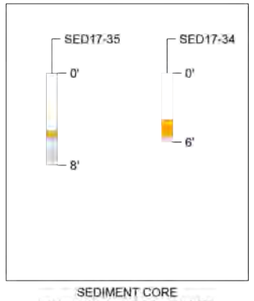


A DR1.1 DREDGE SECTION
SCALE: 1" = 12'



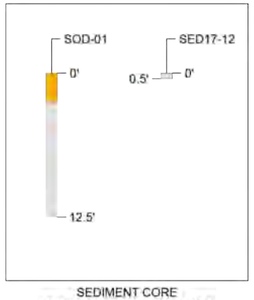
B DR1.1 DREDGE SECTION
SCALE: 1" = 12'

NOTES:
1. CONTRACTOR MUST DREDGE AS SHOWN ON DRAWING DR1.1.
2. CONTRACTOR MUST NOT PERFORM EXCESSIVE OVERDREDGING AT TOE OF CUT OR ON SLOPE AREAS. ANY DAMAGE TO EXISTING DOLPHINS, ORE LOADER PLATFORM, OR SLOPES CAUSED BY OVERDREDGING MUST BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
3. POTENTIAL SLOUGH MATERIAL IS DEFINED AS SEDIMENT ON A SIDE SLOPE THAT LOSES TOE SUPPORT AND SLOUGHS INTO THE DREDGE PRISM, INCLUDING FROM INTERNAL VERTICAL DREDGE CUTS BETWEEN DREDGE UNITS. CONTRACTOR MUST REMOVE SLOUGH MATERIAL TO ACHIEVE THE REQUIRED DREDGE ELEVATION/DREDGE CUT.
4. CONTRACTOR MUST SELECT MEANS AND METHODS TO PROTECT EXISTING STRUCTURES.
5. OVERDREDGE ALLOWANCE IS 1' IN REQUIRED DREDGE AREAS.
6. CLEANUP SCREENING LEVEL (CSL) FOR LEAD, AS PER WASHINGTON STATE DEPARTMENT OF ECOLOGY.



SEDIMENT CORE
2X VERTICAL EXAGGERATION

CORE PROFILE LEGEND:
- BELOW CSL FOR ALL CHEMICALS
- ABOVE CSL FOR ANY CHEMICAL
- NO DATA



SEDIMENT CORE
2X VERTICAL EXAGGERATION

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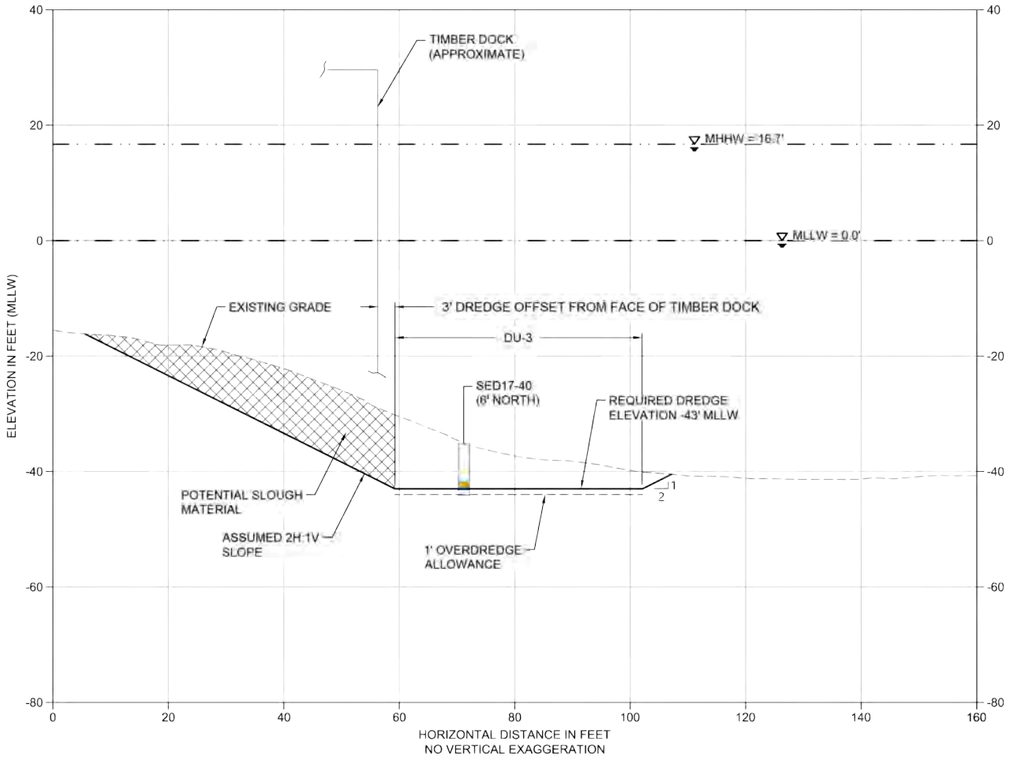
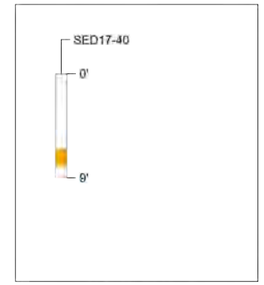
ANCHOR QEA

Figure 7
Preliminary Dredging Cross Sections (1 of 2)
Project Description
Skagway Ore Terminal Sediment Remediation Project



C / DR1.1 DREDGE SECTION
SCALE: 1" = 12'



SEDIMENT CORE
2X VERTICAL EXAGGERATION

CORE PROFILE LEGEND:
- BELOW CSL FOR ALL CHEMICALS
- ABOVE CSL FOR ANY CHEMICAL
- NO DATA

NOTES:
1. CONTRACTOR MUST DREDGE AS SHOWN ON DRAWING DR1.1.
2. CONTRACTOR MUST NOT PERFORM EXCESSIVE OVERDREDGING AT TOE OF CUT OR ON SLOPE AREAS. ANY DAMAGE TO EXISTING DOLPHINS, ORE LOADER PLATFORM, OR SLOPES CAUSED BY OVERDREDGING MUST BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
3. POTENTIAL SLOUGH MATERIAL IS DEFINED AS SEDIMENT ON A SIDE SLOPE THAT LOSES TOE SUPPORT AND SLOUGHS INTO THE DREDGE PRISM, INCLUDING FROM INTERNAL VERTICAL DREDGE CUTS BETWEEN DREDGE UNITS. CONTRACTOR MUST REMOVE SLOUGH MATERIAL TO ACHIEVE THE REQUIRED DREDGE ELEVATION/DREDGE CUT.
4. CONTRACTOR MUST SELECT MEANS AND METHODS TO PROTECT EXISTING STRUCTURES.
5. OVERDREDGE ALLOWANCE IS 1' IN REQUIRED DREDGE AREAS.
6. CLEANUP SCREENING LEVEL (CSL) FOR LEAD, AS PER WASHINGTON STATE DEPARTMENT OF ECOLOGY.

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ANCHOR QEA

Figure 8
Preliminary Dredging Cross Sections (2 of 2)
Project Description
Skagway Ore Terminal Sediment Remediation Project

Appendix A
List of Property Owners and Lessees

Property Owners and Lessees Adjacent to the Skagway Ore Terminal

- Alaska Industrial Development and Export Authority
  813 West Northern Lights Boulevard
  Anchorage, Alaska, 99503

- Alaska Marine Highway System, AKDOT&PF
  7559 North Tongass Highway
  Ketchikan, Alaska 99901

- White Pass & Yukon Route
  231 2nd Avenue
  Skagway, Alaska 99840

- Alaska Marine Lines
  1048 E Whitney Road
  Anchorage, Alaska 99501

- PetroMarine Services
  3111 C Street #500
  Anchorage, Alaska 99503

- Temsco Helicopters, Inc.
  901 Terminal Way
  Skagway, Alaska 99840

Attachment 3
Biological Evaluation

October 2019
Skagway Ore Terminal Sediment Remediation Project

ANCHOR QEA

Biological Evaluation

Prepared for White Pass & Yukon Route

October 2019
Skagway Ore Terminal Sediment Remediation Project

Biological Evaluation

Prepared for
White Pass & Yukon Route
PO Box 435
Skagway, Alaska 99840-0435

Prepared by
Anchor QEA, LLC
1605 Cornwall Avenue
Bellingham, Washington 98225

Project Number: 180159-02.02
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APPENDICES

ABBREVIATIONS

BE	Biological Evaluation
BMP	best management practice
CFR	Code of Federal Regulations
cy	cubic yard
dB	decibel
dBA	A-weighted decibel
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
MHHW	mean higher high water
MLLW	mean lower low water
MSA	Magnuson-Stevens Fisheries Conservation and Management Act
NLTAA	not likely to adversely affect
NMFS	National Marine Fisheries Service
NPFMC	North Pacific Fisheries Management Council
Ore Basin	Skagway Ore Basin
Ore Terminal	Skagway Ore Terminal
Project	Skagway Ore Terminal Sediment Remediation Project
RMC	residual management cover
RMS	root mean square
SPCC	Spill Prevention, Control, and Countermeasure
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WPYR	White Pass & Yukon Route

Executive Summary

This Biological Evaluation (BE) was prepared in accordance with Section 7(a)(2) and Section 3(5)(A) of the Endangered Species Act (ESA) regarding the potential effects on federally listed fish, wildlife, and plant species and their habitats from the Skagway Ore Terminal Sediment Remediation Project (Project) in Skagway, Alaska. White Pass & Yukon Route (WPYR) proposes to conduct environmental dredging of contaminated sediments in the Skagway Ore Basin (Ore Basin) adjacent to the Skagway Ore Terminal facility (Ore Terminal; collectively, the site) in Skagway, Alaska. Species identified as potentially occurring within the Action Area and addressed in this BE include humpback whale (*Megaptera novaeangliae*) Mexico Distinct Population Segment (DPS) and Steller sea lion (*Eumetopias jubatus*) Western DPS.

The Project is located in Skagway, Alaska, within the Ore Basin. The Ore Basin is an industrial waterway located within Taiya Inlet at the western edge of the Municipality of Skagway, as shown in Figure 1. The Skagway and Taiya rivers discharge into Taiya Inlet northwest of the Project. The Ore Basin is a deepwater port that transitions sharply from a limited nearshore area into deep marine waters of the Lynn Canal (Figure 1). The Ore Terminal is located along the northern berth of the Ore Basin (Figure 2). The Ore Basin is currently used to moor cruise ships and for a variety of industrial purposes including cargo and petroleum transfer. Cruise ships, which frequently use the dock and walkways at the Ore Basin for passenger debarkation and embarkation during the cruise season (i.e., from April to October), are a vital part of Skagway's local economy. An aerial photograph of the Project area is shown in Figure 2.

Sediment contamination has been identified and is likely associated with historical ore loading operations in the Ore Basin. WPYR is proposing to perform remedial dredging to address the legacy contamination. The Project will remove metals-impacted sediments from the site through mechanical dredging. The Project will result in removal and disposal of contaminated sediments from the site, including the following actions:

- Dredging of up to 10,000 cubic yards (cy) of sediment
- On-site stabilization of dredged material
- Off-site disposal of stabilized material at a permitted upland landfill facility
- Placement of up to 1,100 cy of clean sand cover material (i.e., residual management cover)

Threatened or endangered (also called ESA-listed) or proposed species and critical habitats under the National Marine Fisheries Service (NMFS; 2019a, 2019b) and U.S. Fish and Wildlife Service (USFWS; 2019a) jurisdiction that may occur in the proposed Action Area were identified. No ESA-listed or proposed species or critical habitats under USFWS jurisdiction are identified as potentially occurring within 10 miles of the Action Area. Two ESA-listed species under NMFS jurisdiction are identified as potentially occurring within the Action Area, humpback whale Mexico DPS and Steller

sea lion Western DPS. Steller sea lions occurring in Taiya Inlet/Lynn Canal could belong to either the Western or Eastern DPS. Steller sea lion Western DPS critical habitat is located in Lynn Canal, about 20 miles downstream of the Action Area (Figure 3). The Action Area is shown in Figure 2.

There are seven additional ESA-listed species under NMFS jurisdiction that occur in the Gulf of Alaska that are not addressed in this BE due to the location of the Action Area in the upstream reach of the Taiya Inlet and the NMFS distribution and life history information (NMFS 2019a, 2019b). These seven species include the following:

- Blue whale (*Balaenoptera musculus*)
- Sei whale (*B. borealis*)
- Fin whale (*B. physalus*)
- Bowhead whale (*Balaena physalus*)
- Northern right whale (*Eubalaena glacialis*)
- Sperm whale (*Physeter macrocephalus*)
- Southern resident orca (*Orcinus orca*)

These seven species occur in the Gulf of Alaska, but they are not identified by NMFS as having distribution in the inlets, canals, straits, or passages inland of the western area of the Gulf of Alaska associated with the Action Area. Designated critical habitat for these species includes areas east of the Aleutian Trench in eastern Gulf of Alaska or areas of the Gulf of Alaska more than 100 miles from the Action Area. Because the Project would have no effect on these seven ESA-listed species, they are not addressed further in this BE.

The effect of the proposed Project on these species and critical habitat was determined by documenting environmental baseline conditions and evaluating effects of the proposed Project on the species and environmental baseline. Species and effect determinations in the proposed Project are summarized in Table ES-1. Section 4 provides details on these determinations.

Table ES-1
Effect Determinations for ESA-Listed Species and Critical Habitat that May Occur in the Action Area

Species	Status	Agency	Effect Determination	Critical Habitat	Critical Habitat Effect Determination
Humpback whale Mexico DPS	Threatened	NMFS	NLTAA	None designated	N/A
Steller sea lion Western DPS	Endangered	NMFS	NLTAA	Designated outside Action Area	No effect

Note:
NLTAA: not likely to adversely affect

Based on consideration of the Essential Fish Habitat (EFH) requirements of the applicable fisheries, the proposed Project will have no adverse effect on Gulf of Alaska groundfish species, Alaska stocks of Pacific salmon, and forage fish complex species EFH. To avoid or minimize potential impacts to EFH, best management practices and conservation measures (see Section 2.5) will be implemented during construction. The EFH Assessment is included as Appendix A.

1 Introduction

This Biological Evaluation (BE) was prepared to comply with the Endangered Species Act (ESA) of 1973 (as amended), which requires protection of threatened and endangered species and their habitats. In accordance with Section 7(a)(2) and Section 3(5)(A) of the ESA, this BE addresses the potential effects on federally listed fish, wildlife, and plant species and their habitats for the proposed Skagway Ore Terminal Remediation Project (Project) (Figures 1 and 2). Species identified as potentially occurring within the Action Area and addressed in this BE include humpback whale (*Megaptera novaeangliae*) Mexico Distinct Population Segment (DPS) and Steller sea lion (*Eumetopias jubatus*) Western DPS.

White Pass & Yukon Route (WPYR) is seeking regulatory approvals for implementation of the Project, which includes environmental dredging of contaminated sediments in the Skagway Ore Basin (Ore Basin) adjacent to the Skagway Ore Terminal facility (Ore Terminal). The Project includes construction in and over water and is therefore under the jurisdiction of the U.S. Army Corps of Engineers (USACE), with associated permit requirements and ESA and Essential Fish Habitat (EFH) Assessment.

This BE is prepared to support the ESA consultation led by the USACE under Section 7(a)(2) of the ESA, which requires that:

> each Federal agency shall, in consultation with and with the assistance of the Secretary, ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section.

1.1 Project Overview

The Project will remove contaminated sediments within the Ore Basin through mechanical dredging to enhance sediment quality in Skagway Harbor.

The Project will result in the removal and disposal of contaminated sediments from the Action Area, including dredging, on-site stabilization, off-site disposal, and placement of clean cover. The proposed Project design is shown in Appendix B.

In-water work (below the mean higher high water [MHHW] mark) for the Project will include mechanical dredging, placement on a barge, stabilization of the material, placement of clean materials, and transport by barge.

1.2 ESA-Listed Species and Habitats that May Occur in the Action Area

Threatened or endangered (also called ESA-listed) or proposed species and critical habitats under the National Marine Fisheries Service (NMFS; 2019a, 2019b) and U.S. Fish and Wildlife Service (USFWS; 2019a) jurisdiction that may occur in the proposed Action Area were identified. Two ESA-listed threatened or endangered species under the jurisdiction of NMFS (NMFS 2019a, 2019b) may occur in the Action Area during Project construction, humpback whale Mexico DPS and Steller sea lion Western DPS. Steller sea lions occurring in Taiya Inlet/Lynn Canal could belong to either the Western or Eastern DPS (Table 1). Critical habitat for one ESA-listed species, Steller sea lion Western DPS, is located about 20 miles downstream of the Action Area (Figure 3). The Action Area is shown in Figure 2. No ESA-listed or proposed species or critical habitats under USFWS jurisdiction are identified as potentially occurring within 10 miles the Action Area.

Table 1
ESA-Listed Species and Critical Habitat that May Occur in the Action Area

Species	Status	Agency	Critical Habitat
Humpback whale (Mexico DPS)	Threatened	NMFS	None designated
Steller sea lion (Western DPS)	Endangered	NMFS	Designated outside Action Area

There are seven additional ESA-listed species under NMFS jurisdiction that occur in the Gulf of Alaska that are not addressed in this BE due to the location of the Action Area in the upstream reach of the Taiya Inlet and the NMFS distribution and life history information (2019a, 2019b). These seven species include the following:

- Blue whale (*Balaenoptera musculus*)
- Sei whale (*B. borealis*)
- Fin whale (*B. physalus*)
- Bowhead whale (*Balaena physalus*)
- Northern right whale (*Eubalaena glacialis*)
- Sperm whale (*Physeter macrocephalus*)
- Southern resident orca (*Orcinus orca*)

These seven species occur in the Gulf of Alaska, but they are not identified by NMFS as having distribution in the inlets, canals, straits, or passages inland of the western area of the Gulf of Alaska associated with the Action Area. Designated critical habitat for these species includes areas east of the Aleutian Trench in eastern Gulf of Alaska or areas of the Gulf of Alaska more than 100 miles from the Action Area. Because the Project would have no effect on these seven ESA-listed species, they are not addressed further in this BE.

1.3 Essential Fish Habitat Assessment

This BE also provides an Effects Analysis and Determination for EFH pursuant to the Magnuson-Stevens Fisheries Conservation and Management Act (MSA), the 1996 Sustainable Fisheries Act, and the North Pacific Fisheries Management Council (NPFMC). Under this legislation, an evaluation of impacts to EFH is necessary for activities that may adversely affect EFH. EFH is defined by the MSA in Code of Federal Regulations (CFR) Title 50, Section 600.905-930 as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Within the Action Area, EFH is designated for Gulf of Alaska groundfish species, Alaska stocks of Pacific salmon, and forage fish complex species. It is concluded that the proposed Project will have no adverse effect on EFH for any managed species assemblage. The EFH Assessment is included as Appendix A.

2 Proposed Project

2.1 Project Location

Skagway is the city farthest north in the Southeast Alaska region (Figure 1) and provides the nearest access to tidewater for much of the neighboring Yukon Territory, Canada. The town is at the southwestern end of the 2.5-mile-long Skagway River valley; much of the valley lies between the Skagway River to the northwest and mountains to the southeast. The Skagway River empties into Taiya Inlet at the head of Lynn Canal, the northernmost fjord on the Inside Passage of the south coast of Alaska.

2.2 Project Setting

The Ore Basin is a deepwater port that transitions sharply from a limited nearshore area into deep marine waters of the Lynn Canal (Figure 1). The Ore Terminal is located along the northern berth of the Ore Basin (Figure 2). The Ore Basin is currently used to moor cruise ships and for a variety of industrial purposes including cargo and petroleum transfer. Cruise ships, which frequently use the dock and walkways at the Ore Basin for passenger debarkation and embarkation during the cruise season (i.e., from April to October), are a vital part of Skagway's local economy.

The Ore Terminal was constructed between 1967 and 1969 by dredging Skagway Harbor and using the dredged material as fill. As-built drawings are available from 1969 showing a basin-wide dredge depth of -42.5 feet mean lower low water (MLLW; Tippets 1969). Current basin depths typically range from -45 to -34 feet MLLW, with a generally more-consistent elevation in the vicinity of the ore loader that ranges from -42 to -38 feet MLLW (TerraSond 2014).

2.3 Project Description

The Project will remove contaminated sediment within the remediation footprint through mechanical dredging to enhance sediment quality in Skagway Harbor. The Project will result in the removal and disposal of contaminated sediments from the Action Area, including the following actions:

- Dredging of up to 10,000 cubic yards (cy) of sediment
- On-site stabilization of dredged material
- Off-site disposal of stabilized material at a permitted upland landfill facility
- Placement of up to 1,100 cy of clean sand cover material (i.e., residual management cover [RMC])

In-water work for the Project will include the following activities:

- Mechanical dredging of sediments
- Placing dredged material on a barge

- Stabilization of the dredged material through the addition of an amendment to be proposed by the selected contractor, but likely to be Portland cement
- Transporting stabilized sediment by barge to an off-site offloading facility for landfill disposal in the contiguous United States

2.4 Project Timing

The Project will be constructed in a manner so as to minimize disruption to Ore Terminal operations throughout construction. The Project is expected to begin once all approvals and permits have been received. In-water work will adhere to allowable in-water work windows (if applicable) to minimize impacts to marine mammals as identified by applicable agencies. WPYR is proposing to commence construction as soon as possible, but outside of the cruise ship season, which occurs from April to October. Construction, including mobilization and demobilization, is estimated to take 6 weeks to complete, assuming no weather delays.

2.5 Conservation Measures and Best Management Practices

The following best management practices (BMPs) will be implemented during construction to avoid or minimize potential impacts to the environment:

- All applicable permits for the Project will be obtained prior to construction. All work will be performed according to the requirements and conditions of these permits.
- Turbidity and other water quality parameters will be monitored to ensure construction activities are in compliance with Alaska Department of Environmental Conservation standards.
  - No petroleum products, chemicals, or other toxic or deleterious materials will be allowed to enter surface waters.
  - Materials will not be stored where high tides, wave action, or upland runoff can cause materials to enter surface waters.
- Appropriate BMPs will be employed to minimize sediment loss and turbidity generation during dredging. BMPs may include, but are not limited to, the following:
  - Eliminating multiple bites while the bucket is on the seafloor
  - No stockpiling of dredged material on the seafloor
  - No seafloor leveling
- Depending on the results of the water quality monitoring program, enhanced BMPs may also be implemented to further control turbidity. Enhanced BMPs may include, but are not limited to, the following:
  - Slowing the velocity (i.e., increasing the cycle time) of the ascending loaded clamshell bucket through the water column
  - Pausing the dredge bucket near the bottom while descending and near the water line while ascending
  - Placing filter material over the barge scuppers to clear return water

- Barges will be managed such that the dredged sediment load does not exceed the capacity of the barge. The load will be placed in the barge to maintain an even keel and avoid listing. If determined to be necessary based on sediment sampling results, hay bales and/or filter fabric may be placed over the barge scuppers to help filter suspended sediment from the barge effluent.
- Dredge vessel personnel will be trained in hazardous material handling and spill response and will be equipped with appropriate response tools, including absorbent oil booms. If a spill occurs, spill cleanup and containment efforts will begin immediately and will take precedence over normal work.
- The dredging contractor will inspect fuel hoses, oil or fuel transfer valves, and fittings on a regular basis for drips or leaks in order to prevent spills into the surface water.
- The contractor shall be responsible for the preparation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan to be used for the duration of the Project. The SPCC Plan shall be submitted to the Project Engineer prior to the commencement of any construction activities. A copy of the SPCC Plan, and any updates, will be maintained at the work site by the contractor and will include the following:
  - The SPCC Plan shall identify construction planning elements and recognize potential spill sources at the work site. The SPCC Plan shall outline responsive actions in the event of a spill or release and shall describe notification and reporting procedures. The SPCC Plan shall outline contractor management elements such as personnel responsibilities, Project site security, site inspections, and training.
  - The SPCC Plan will outline what measures shall be taken by the contractor to prevent the release or spread of hazardous materials, either found on site and encountered during construction but not identified in contract documents, or any hazardous materials that the contractor stores, uses, or generates on the construction site during construction activities. These items include, but are not limited to, gasoline, oils, and chemicals.
  - The contractor shall maintain at the job site the applicable equipment and material designated in the SPCC Plan.

For placement of RMC cover, the following measures will be observed:

- Bathymetry survey information or similar will be used to confirm adequate coverage during and following material placement.
- Imported materials will consist of clean, granular material free of roots, organic material, contaminants, and all other deleterious material.

Marine wildlife monitoring (if required) will adhere to the following protocol:

- A wildlife observer must be able to identify the designated marine species and be equipped with binoculars, range finder, two-way radio communication with construction foreman/superintendent, and log book.
- If a marine mammal comes within the designated marine wildlife observation area, all in-water work will be halted immediately; work may resume when the animal(s) moves outside the observation area of its own accord.
- The wildlife observer will have the authority to stop dredging if a marine mammal is observed within the observation area.
- The wildlife observer will have no other primary duty than to watch for and report on events related to marine mammal species.
- In-water construction will occur in winter months when marine mammal species are less likely to occur in the area of Taiya Inlet.
- Construction during the winter will minimize potential impacts to prey species for marine mammals. There is a large eulachon run in the Taiya Inlet in April and May some years, which can attract large numbers of marine mammals.

3 Environmental Baseline

3.1 Action Area

The Action Area is the area to be directly or indirectly affected by the federal action (50 CFR §402.02). The Action Area is the defined geographic area potentially affected by the Project. For the purposes of establishing baseline conditions from which to evaluate potential effects of the Project, the types of activities to be performed and physical site conditions were examined and evaluated. Based on the types of activities proposed, the Action Area for the Project includes the geographic area potentially affected by the dredging activities in the Ore Basin. Potential impacts from dredging include both underwater and in-air noise, turbidity, entrainment, residual contaminant uptake, and changes to fish distribution and abundance. Potential in-air impacts from dredging are anticipated to be noise-related. The farthest-reaching effect from the proposed Project is likely to be turbidity; thus, the in-water portion of the Action Area is defined by the limits of turbidity. In Alaska, water quality standards vary by project. For this Project, this mixing zone is expected not to extend more than 300 feet from the bucket location, though this anticipated distance will be determined during permitting. Therefore, the Action Area is set to extend 300 feet in water from the dredge area.

3.2 Action Area Description

The Action Area is located on the northern side of the Ore Basin, adjacent to the Ore Terminal (Figures 1 and 2). The Alaska Marine Highway System uses the southern portion of the Ore Basin, with multiple ferries each day. Vessels such as ferries, cruise ships, recreational, and commercial traffic travel up Taiya Inlet to reach Skagway Harbor; however, there is less vessel traffic in the winter months when Project construction is planned. Shoreline land use east of the Action Area is primarily commercial and is owned by the Municipality of Skagway with lessees occupying the parcels. Outside of the community of Skagway the area is dominated by sloped forested hillsides.

3.2.1 Underwater Noise

In-water noise from construction equipment will be generated. The in-water noise generated by dredging is not a widely evaluated topic due to the lower level of noise generated relative to other in-water construction activities (e.g., pile driving), but some studies have been completed on the topic (McQueen et al. 2018). Dredging operations produce sounds that can be categorized as both continuous (similar to noise produced by propellers, pumps, and generators) and repetitive (produced by the dredge bucket striking the sea floor, closing the bucket, placement of material in/on a barge). The nature of the noise produced varies by the nature of material being dredged and the type and size of the dredge equipment, but it is expected that repetitive sounds represent the peak noise levels for the proposed Project. For example, clamshell dredging in Cook Inlet produced repetitive noise levels ranging from 82 to 124 decibels (dB) root-mean-square (RMS) pressure (Dickerson et al. 2001).

These measurements occurred during activities such as winches and derrick barge movement, bucket contact with substrate, digging into substrate, bucket closing, and emptying of material into a barge or scow. Repetitive sounds for dredging are repeated approximately every minute with intermittent interruptions due to barge maneuvering and maintenance activities (Dickerson et al. 2001; McQueen 2018). Underwater source sounds for this Project are estimated to range between 82 and 124 dB RMS, similar to other clamshell dredging operations.

The proposed activities would occur in an active marine transportation and industrial facility zone where elevated ambient noise levels are common. The Ore Basin is used for industrial and other municipal activities, including large marine vessels such as cruise ships and ferries. Limited data exist on ambient in-water noise levels for the Ore Basin. To be conservative, ambient in-water noise levels typical for Puget Sound waters are used for this analysis, which are estimated at approximately 135 dB RMS (MacGillivray et al. 2007). Therefore, it is reasonable to expect that noise emitted from dredging operations, which comprise the majority of the Project noise impacts, would be below anticipated ambient noise levels during routine vessel traffic in the Ore Basin. Additionally, marine mammals are likely to swim away from water-disturbing activities such as dredging. Therefore, it is unlikely that any marine mammals would be present in the immediate vicinity of the dredge bucket during dredging at the point of contact with the sea floor when noise levels are likely to be at their peak.

3.2.2 In-Air Noise

Based on NMFS threshold guidance (NOAA 2019c), dredging activities are not anticipated to generate in-air noise at levels that would injure Steller sea lions that spend time on land or make use of haul-outs within the vicinity of the Action Area. Humpback whales are also not expected to be exposed to in-air noise because they are unlikely to be within the vicinity of the Action Area and do not haul out or spend time on land. NMFS identifies behavioral disturbance isopleths in-air thresholds for pinnipeds as 100 dB and does not identify any in-air thresholds for cetaceans (NMFS 2019c). It should also be noted that there are no active haul-outs for marine mammals in the vicinity of the Action Area.

In-air noise from construction equipment will be generated. Average measured in-air noise levels for common construction equipment to be used for this project (excavators, loaders, crane) range from 79 to 81 A-weighted decibels (dBA) measured at 50 feet (WSDOT 2019). These levels are commensurate to existing conditions because the proposed dredging will occur in and near an active marine transportation zone and industrial facilities that use similar equipment. As a result, noise generated from dredging and related activity is not anticipated to exceed typical background noise in the Action Area or the thresholds set for ESA-listed species.

3.3 Physical Indicators

3.3.1 Marine

The proposed Project is located in Skagway Harbor, an embayment of Taiya Inlet. Taiya Inlet is part of upper Lynn Canal. The Project will occur entirely in the Ore Terminal basin of Skagway Harbor and primarily along and adjacent to the Ore Terminal (Figure 2).

3.3.2 Saltwater/Freshwater Mixing

Taiya Inlet is an estuarine system and is identified on USFWS maps as extending downstream into the Chilkoot Inlet and continuing through the downstream reach of Lynn Canal (USFWS 2019b). The Skagway River and Taiya River flow into Taiya Inlet northwest of the Action Area. Pullen Creek empties into the Ore Basin.

3.3.3 Shoreline Conditions

The Ore Terminal shoreline is completely armored with large riprap boulders and contains no riparian vegetation (Figure 2). The armoring extends well below MHHW along the sloping shoreline, to an approximate depth of -12 feet MLLW. Shoreline land use east of the Action Area is primarily commercial and is owned by the Municipality of Skagway with lessees occupying the parcels. Outside of the community of Skagway the area is dominated by sloped forested hillsides.

3.3.4 Substrate

Ore Basin sediments consist of fine-grained sand and silt that overlie coarser sand and gravel (assumed native sediment) at depth (Anchor QEA 2015; Golder Associates 2018).

3.4 Biological Indicators

No formal biological surveys of the Project area were performed for this BE. The following information is based on existing information such as permits associated with other projects in Skagway Harbor.

3.4.1 Aquatic and Upland Vegetation

There is no aquatic or upland vegetation located within the Action Area. Upland areas at the Action Area are completely developed and the shoreline is completely armored with large riprap boulders (Figure 2).

3.4.2 Fish

The Skagway River provides spawning, rearing, and over-wintering habitat for Coho salmon (*Oncorhynchus kisutch*), pink salmon (*O. gorbuscha*), chum salmon (*O. keta*), Dolly Varden char

(*Salvelinus malma*), and eulachon smelt (*Thaleichthys pacificus*). The Taiya River is located northwest of the Action Area and supports similar species as the Skagway River. Pullen Creek provides over-wintering rearing habitat for Dolly Varden char and Coho salmon, and spawning habitat for Coho, pink, and chum salmon. Annual eulachon runs during the spring and salmon runs in the fall attract marine mammals to the inlet such as Steller sea lions and humpback whales (PND Engineers, Inc. and Owl Ridge NRC 2018).

3.4.3 Wildlife

The intertidal and subtidal zones of Taiya Inlet contain habitat for invertebrates and vertebrates including shellfish (clams, cockles, mussels, crab, and shrimp) and marine mammals (seals, sea lions, whales, and porpoises). Waterfowl and other birds feed and rest along tideflats, stream banks and channels, and wetlands (MOS 1990). Invertebrate species collected during sampling efforts in the Ore Terminal include blue mussel (*Mytilus edulis*), Dungeness crab (*Metacarcinus magister*), Alaskan pink shrimp (*Pandalus eous*), spot prawn (*P. platyceros*), and Coonstripe shrimp (*P. hypsinotis*) (Golder Associates 2018).

4 Species Occurrence, Effects Analysis, and Effects Determination

Listed and proposed endangered and threatened species that could occur in the Action Area during construction include humpback whale and Steller sea lion. No ESA-listed fish, terrestrial wildlife, or plant species are identified as potentially occurring within 10 miles of the Action Area (NMFS 2019a, 2019b; USFWS 2019a). Designated ESA critical habitat is not located within the Action Area, but designated critical habitat for Steller sea lion is located about 20 miles downstream of the Action Area.

Potential effects related to the proposed Project that could affect fish, wildlife, and associated habitats include water quality impacts, vessel strike or entrainment in dredging equipment, and prey effects. Permanent impacts are not anticipated as a result of the Project.

4.1 Humpback Whale (Megaptera novaeangliae)

4.1.1 Status

The humpback whale Mexico DPS is listed as threatened and the Western North Pacific DPS is listed as endangered.

4.1.2 Critical Habitat

No critical habitat has been designated for humpback whales.

4.1.3 Biology and Distribution

The humpback whale is distributed worldwide in all ocean basins. Relatively high densities of humpback whales are found in feeding grounds in Southeast Alaska and northern British Columbia, particularly during summer months. In the North Pacific, five DPSs that breed in subtropical and tropical waters from Asia to Central America then migrate north to feed in highly productive North Pacific feeding grounds are identified (Bettridge et al. 2015). Whales from three of these DPSs migrate to Alaskan waters: the Mexico DPS (ESA-listed as threatened), the Western North Pacific DPS (ESA-listed as endangered), and the Hawaii DPS (delisted) (81 Federal Register 62260).

Intermixed DPSs are not visually distinguishable; their identity can only be determined by DNA or photo identification. NMFS estimates assume 94% of humpbacks in Southeast Alaska are from the Hawaii DPS, 6% are from the Mexico DPS, and none are from the Western North Pacific DPS (Wade et al. 2016).

Humpback whales migrate to Alaska to feed after months of fasting in low latitude breeding grounds. The timing of migration varies among individuals: most humpbacks begin returning to

Alaska in spring and most depart Alaska for southern breeding grounds in fall or winter. Peak numbers of humpbacks in Southeast Alaska occur during late summer to early fall. Since there is significant overlap between departing and returning whales, humpbacks can be found in Alaska feeding grounds in every month of the year (Baker et al. 1985; Straley 1990; Witteveen et al. 2008). There is also an apparent increase in the number of humpbacks overwintering in feeding grounds in Alaska (Straley 2017).

Whales in the Mexico DPS typically breed off the Revillagigedo Islands in Mexico and migrate to northern feeding grounds ranging from British Columbia to the western Gulf of Alaska. Given their widespread range and their opportunistic foraging strategies, Mexico DPS humpback whales may be in the vicinity during the proposed Project activities (PND Engineers, Inc. and Owl Ridge NRC 2018).

Humpback whales occur in relatively low numbers seasonally in the Action Area for brief periods. The distribution of humpback whales in Taiya Inlet according the NMFS data is shown in Figure 3 (NMFS 2019b). Local observations indicated humpback whales were present in Taiya Inlet infrequently and are most commonly sighted in April and May during the eulachon run. Humpback whale sightings during winter months have not been reported, which is consistent with seasonal migration patterns (PND Engineers, Inc. and Owl Ridge NRC 2018). Humpback whales are present in Taiya Inlet off and on with four to five whales often observed near Skagway from spring through fall (Hart Crowser 2016). Thus, it is anticipated few, if any, will be present in the Action Area during construction.

4.1.4 Foraging

Humpback whales in Alaskan feeding grounds prey on a variety of euphausiids and small schooling fishes including Pacific herring (*Clupea pallasii*), longfin smelt (*Spirinchus thaleichthys*), capelin (*Mallotus villosus*), Pacific sand lance (*Ammodytes hexapterus*), juvenile walleye pollock (*Theragra chalcogramma*), and salmon (*Oncorhynchus* spp.) smolts (Nemoto 1957; Kawamura 1980; Krieger and Wing 1986; Witteveen et al. 2008; Straley 2017; Chenoweth et al. 2017). The local distribution of humpbacks in Southeast Alaska appears to be correlated with the density and seasonal availability of prey, particularly herring and euphausiids (Moran et al. 2017).

During the non-breeding season of autumn and winter, humpbacks remaining in Southeast Alaska target areas where herring and eulachon are abundant, including Lynn Canal (Krieger and Wing 1986; Moran et al. 2017).

4.1.5 Direct and Indirect Effects

Potential direct and indirect effects to humpback whales from the Project include short-term temporary turbidity and suspended sediments released during dredging activities, vessel strikes, and effects on the whales' food supply (potential effects to forage fish). Permanent impacts are not anticipated as a result of the Project.

4.1.5.1 Vessel Strike or Entrainment

Aquatic organisms, including listed species, present within the immediate dredging vicinity could potentially be injured or killed if entrained or struck by the dredge bucket or if struck by dredge vessels. The entrainment potential for aquatic organisms is based on many factors related to both the dredging operation and behavior of the organism itself, the abundance of organisms in the area, swimming ability of the organism, behavioral responses of the organism to dredging activity, total area dredged, duration of dredging, and speed of dredging (Kimley et al. 2009). However, large organisms such as whales are unlikely to be entrained or struck due to their strong swimming ability compared to smaller organisms such as fish (Kimley et al. 2009; SWCA 2009). This potential impact is insignificant due to the short-term nature of the work. Additionally, work will be conducted during the winter, making it unlikely that humpback whales will be present during this time.

4.1.5.2 Disturbance of Benthic Species

Dredging activities will occur within a small area containing limited benthic species. The dredging will cause the temporary but complete removal of benthic species within the dredging footprint. This could lead to a temporary loss of foraging opportunities for aquatic species including salmonids in the vicinity of the dredging action; however, humpback whales are not expected to be foraging during the work period nor in the Action Area. The recolonization of the dredged area with benthic species is expected to occur quickly, so disturbance to benthic species is considered insignificant.

4.1.5.3 Noise Effects

As described in Section 3.2.1, it is expected that noise emitted from the dredging action would be below anticipated ambient noise levels due to ongoing vessel operations in the Ore Terminal. Additionally, marine mammals are likely to swim away from water disturbing activities such as dredging as the bucket enters the water. Therefore, it is unlikely that any would be present in the immediate vicinity of the dredge bucket during dredging at the point of channel bottom contact when noise levels potentially exceed background sound levels and could behaviorally affect humpback whales. This effect is considered insignificant because it would occur in the immediate vicinity of the dredging operations where humpback whales are unlikely to be present.

No potential noise impacts to humpback whales from Project activities are identified.

4.1.5.4 Degradation of Water Quality

Dredging and disposal activities can affect water quality by suspending sediments and increasing turbidity. Turbidity occurs when suspended organic and inorganic particles in the water column scatter light wavelengths and reduce the light available to underwater environments. Sediments can be temporarily suspended during dredging and disposal activities, which increase turbidity throughout the water column at varying levels. Levels of suspended sediment are expected to be highest closest to the dredging operations. For this dredging action, larger plumes and elevated

suspension levels would be expected near the area of impact of the clamshell with the substrate bottom. The extent of resuspension is a byproduct of several factors, including physical properties of the sediment, site conditions, nature and extent of debris and obstructions, and operational considerations of the dredge equipment and operator. Sediment plume sizes typically decrease exponentially with movement away from the dredging site both vertically and horizontally, as well as with time due to movement of suspended material downstream (Bridges et al. 2008; Nightingale and Simenstad 2001).

Suspended sediment and turbidity can affect fish (particularly salmon) via several mechanisms, including direct mortality, gill tissue damage, physiological stress, and behavioral changes. The level of impact to individuals depends on the amount of time an individual is exposed to suspended sediments, the concentration of suspended sediment in the water column, the composition of the sediments (fine-grained versus coarse-grained, chemical associations, etc.), and the concentration of contaminants associated with the sediments. Impacts could result in lethal or sublethal physical or behavioral responses from aquatic organisms. Studies have shown that typical resuspension rates range from less than 0.1% to more than 5%, with clamshell bucket type equipment more likely to produce resuspension rates at the high end of this range (Anchor Environmental 2003). Dredging and disposal BMPs described previously in this document will be implemented during construction to limit turbidity. It is unlikely that humpback whales will enter the Action Area during dredging operations, but prey species may be affected by turbidity, as described in the next section.

Short-term effects on humpback whales may also occur if petroleum or other contaminants accidentally spill into Taiya Inlet from machinery or vessels during construction activities. Assuming normal construction and vessel activities, discharges of petroleum hydrocarbons are expected to be small and are not expected to result in high concentrations of contaminants within the surface waters.

Conservation measures and BMPs detailed in Section 2.5 will be implemented to limit turbidity and minimize the risk of fuel spills and other potential sources of contamination. An approved SPCC Plan including provisions for on-site containment equipment (including a boom) will be developed prior to any construction activities. Spill prevention and spill response procedures will be maintained throughout construction activities. Therefore, short-term effects on humpback whales are expected to be insignificant and limited to the area of dredging.

4.1.5.5 Prey Resources Effects

Prey species for humpback whales include marine invertebrates and small forage fish species. It is expected that these types of prey will disperse from the Action Area due to noise and turbidity generated by Project activities. This effect is expected to be minor and short-term on the overall population of marine invertebrates and forage fish in Taiya Inlet because Skagway Harbor is already

a busy port. All in-water work will occur during the winter, when marine forage fish species are only present in limited numbers.

Increased turbidity and resuspension of sediments is expected to occur in the immediate vicinity of the dredging activities. The short-term changes in turbidity affect only a small proportion of the available habitat in the Taiya Inlet and suspended sediments and particulates are expected to dissipate quickly within a single tidal cycle.

Because these effects are short-term and limited to the extent of turbidity and suspended sediments in proximity to the dredging activity, it is expected that potential impacts to prey species for humpback whales will be insignificant.

4.1.5.6 Loss or Modifications of Habitat

The placement of the dredge barges and presence of equipment during construction will result in a temporary and minor loss of benthic habitat and potentially change underwater features for marine aquatic species. These changes are insignificant and limited to the area of dredging. Recolonization is anticipated to occur rapidly, and future benthic habitat conditions will be improved (Wilber and Clark 2007).

4.1.5.7 Residual Contaminant Uptake

Generated residuals are contaminated post-dredge surface sediments that result from dislodged or suspended sediments generated by the dredging operation and ancillary activities (such as vessel movement) that are subsequently re-deposited on the mudline within and adjacent to the dredge area. Generated residuals are typically deposited as a thin layer (e.g., several inches thick) and are inherent in dredging operations. It is unlikely that a humpback whale would be exposed to these residuals in the period between dredging and RMC material placement. RMC material will be placed within the dredging footprint (Appendix B) to provide clean surface sediment concentrations and minimize recontamination potential from generated residuals that are not removed during remedial dredging activities. RMC will consist of a thin layer of clean sand (a minimum of 1.0 foot plus an allowable 6 inches of over-placement) placed on the dredge footprint to address generated residuals. The anticipated effect of residual contaminant uptake is insignificant.

4.1.6 Effects Determination

As described above, the potential impacts to humpback whales from the proposed Project include minor and short-term temporary turbidity and suspended sediments released during dredging, vessel strikes, and effects on the whales' food supply (potential effects to forage fish).

The activities described in this BE will not result in long-term, negative permanent impacts to humpback whale populations.

The potential for effects is reduced by the following factors:

- Construction of the Project will occur during winter months when humpback whales are unlikely to occur in the Action Area.
- Conservation measures will be employed, as described in Section 2.5, to minimize potential impacts to marine mammals.
- Disturbances associated with proposed in-water activities will occur in a heavily used terminal basin associated with an industrial waterway.
- An RMC will be placed to address residuals generated during dredging.

This Project **may affect** humpback whales because of the following:

- Construction activities will occur in marine aquatic habitat.
- While unlikely, humpback whales could occur in the Action Area during dredging activities and be temporarily displaced from foraging.
- While unlikely, prey species could be entrained or negatively affected by turbidity generated during dredging operations.
- While unlikely, humpback whales could be struck by dredge vessels.
- While unlikely, humpback whales may be exposed to residual contaminants.

This Project is **not likely to adversely affect** humpback whales because of the following:

- Humpback whales have not been reported using the Action Area, particularly during the anticipated work period.
- Impacts to water quality, prey resources, and modification of habitat are all minor, localized, and limited to the area in the immediate vicinity of dredging operations, where humpback whales would be likely to avoid even if they were in the Action Area during the anticipated work period.
- Generated residuals will be addressed by placement of RMC.

4.2 Steller Sea Lion (Eumetopias jubatus)

4.2.1 Status

Both Eastern and Western DPSs of Steller sea lions may occur within the Action Area. The Western DPS is listed as endangered while the Eastern DPS has been delisted.

4.2.2 Critical Habitat

Steller sea lion Western DPS critical habitat is not located within the Action Area. Critical habitat is associated with breeding and haul-out areas in Alaska, California, and Oregon (NMFS 1993). Steller sea lions use terrestrial haul-out sites to rest and take refuge. The nearest critical habitat to the Action Area is identified as the Gran Point haul-out (NMFS 2019b). The Gran Point haul-out is located

in Lynn Canal, about 20 miles downstream of the Action Area (Figure 3). This haul-out is most active with Steller sea lions during the eulachon run (Hart Crowser 2016).

4.2.3 Biology and Distribution

Steller sea lions range throughout the North Pacific Ocean from Japan, east to Alaska, and south to central California (Muto et al. 2018). Their range extends around the North Pacific Ocean rim, with most sea lions occupying either rookeries or haul-outs, depending on the season. Male sea lions are more likely to disperse beyond their typical habitat, but this primarily occurs after the breeding season (NMFS 2019a). Steller sea lions are not known to migrate, but individuals disperse widely outside of the breeding season (late May to early July). Sea lions move on- and offshore to pelagic waters for feeding excursions. They are also capable of traveling long distances in a season. Sea lions may make semi-permanent or permanent one-way movements from one site to another (Chumbley et al. 1997; Burkanov and Loughlin 2005).

Land sites used by Steller sea lions are referred to as rookeries and haul-outs. Rookeries are used by adult sea lions for pupping, nursing, and mating during the reproductive season (generally from late May to early July). Haul-outs are used by all age classes of both genders but are generally not where sea lions reproduce (PND Engineers, Inc. and Owl Ridge NRC 2018).

Most Steller sea lions in the Action Area are expected to be from the Eastern DPS but approximately 6% of the sea lions inhabiting these waters originate from the Western DPS population (Jemison et al. 2013). However, it is not possible to visually distinguish between the two DPSs without brandings.

Steller sea lions occur seasonally in the Action Area. However, as described in Section 4.2.2, the Action Area does not overlap with any haul-out sites. The distribution of Steller sea lions in Taiya Inlet according to the NMFS data is shown in Figure 3 (NMFS 2019b). Observations from local charter boat captains and watershed stewards indicate Steller sea lions can be abundant in the Action Area, particularly in April and May during the eulachon run, but are less frequent in the Action Area during the winter (PND Engineers, Inc. and Owl Ridge NRC 2018). Steller sea lions are relatively rare as far north as Skagway and are primarily seen in the Taiya inlet during the eulachon run in April and May, and thereafter are scarce (Hart Crowser 2016).

4.2.4 Foraging

Steller sea lions are opportunistic predators, feeding in nearshore and pelagic waters primarily on a wide variety of fishes (e.g., capelin, cod, herring, mackerel, pollock, rockfish, salmon, sand lance), bivalves, cephalopods (e.g., squid and octopus) and gastropods (Pitcher 1981; Merrick et al. 1997). On rare occasions, Steller sea lions prey on seals and possibly sea otter pups. Their diet may vary seasonally depending on the abundance and distribution of prey. Womble et al. (2009) found that "a

reasonable annual foraging strategy for Steller sea lions is to forage on herring aggregations in winter, spawning aggregations of forage fish in spring, salmon in summer and autumn, and pollock (*Theragra chalcogramma*) and Pacific hake (*Merluccius productus*) throughout the year."

4.2.5 Direct and Indirect Effects

Potential direct and indirect effects to Stellar sea lions from the Project include short-term temporary turbidity and suspended sediments released during dredging activities, vessel strikes, and effects on food supply. Permanent impacts are not anticipated as a result of the Project.

4.2.5.1 Vessel Strike or Entrainment

Aquatic organisms, including listed species, present within the immediate dredging vicinity could potentially be injured or killed if entrained or struck by the dredge bucket or if struck by dredge vessels. The entrainment potential for aquatic organisms is based on many factors related to both the dredging operation and behavior of the organism itself, the abundance of organisms in the area, swimming ability of the organism, behavioral responses of the organism to dredging activity, total area dredged, duration of dredging, and speed of dredging (Kimley et al. 2009). However, large organisms such as sea lions are unlikely to be entrained or struck due to their strong swimming ability compared to smaller organisms such as fish (Kimley et al. 2009; SWCA 2009). This potential impact is insignificant due to the short-term nature of the work. Additionally, work will be conducted during the winter (outside of the cruise ship season), making it unlikely that sea lions will be present during this time.

4.2.5.2 Disturbance of Benthic Species

Dredging activities will occur within a small area containing limited benthic species. The dredging will cause the temporary but complete removal of benthic species within the dredging footprint. This could lead to a temporary loss of foraging opportunities for aquatic species including salmonids in the vicinity of the dredging action; however, Stellar sea lions are not expected to be foraging during the work period. The recolonization of the dredged area with benthic species is expected to occur quickly, so disturbance to benthic species is considered insignificant.

4.2.5.3 Noise Effects

As described in Section 3.2.1, it is expected that noise emitted from the dredging action would be below anticipated ambient noise levels due to ongoing vessel operations in the Ore Terminal. Additionally, marine mammals are likely to swim away from water disturbing activities such as dredging as the bucket enters the water. Therefore, it is unlikely that any would be present in the immediate vicinity of the dredge bucket during dredging at the point of channel bottom contact when noise levels potentially exceed background sound levels and could behaviorally affect Stellar

sea lions. This effect is considered insignificant because it would occur in the immediate vicinity of the dredging operations where Stellar sea lions are unlikely to be present.

No potential noise impacts to Stellar sea lions from Project activities are identified.

4.2.5.4 Degradation of Water Quality

Dredging and disposal activities can affect water quality by suspending sediments and increasing turbidity. Turbidity occurs when suspended organic and inorganic particles in the water column scatter light wavelengths and reduce the light available to underwater environments. Sediments can be temporarily suspended during dredging and disposal activities, which increase turbidity throughout the water column at varying levels. Levels of suspended sediment are expected to be highest closest to the dredging operations. For this dredging action, larger plumes and elevated suspension levels would be expected near the area of impact of the clamshell with the substrate bottom. The extent of resuspension is a byproduct of several factors, including physical properties of the sediment, site conditions, nature and extent of debris and obstructions, and operational considerations of the dredge equipment and operator. Sediment plume sizes typically decrease exponentially with movement away from the dredging site both vertically and horizontally, as well as with time due to movement of suspended material downstream (Bridges et al. 2008; Nightingale and Simenstad 2001).

Suspended sediment and turbidity can affect fish (particularly salmon) via several mechanisms, including direct mortality, gill tissue damage, physiological stress, and behavioral changes. The level of impact to individuals depends on the amount of time an individual is exposed to suspended sediments, the concentration of suspended sediment in the water column, the composition of the sediments (fine-grained versus coarse-grained, chemical associations, etc.), and the concentration of contaminants associated with the sediments. Impacts could result in lethal or sublethal physical or behavioral responses from aquatic organisms. Studies have shown that typical resuspension rates range from less than 0.1% to more than 5%, with clamshell bucket type equipment more likely to produce resuspension rates at the high end of this range (Anchor Environmental 2003). Dredging and disposal BMPs described previously in this document will be implemented during construction to limit turbidity. It is unlikely that Stellar sea lions will enter the Action Area during dredging operations, but prey species may be affected by turbidity, as described in the next section.

Short-term effects on Stellar sea lions may also occur if petroleum or other contaminants accidentally spill into Taiya Inlet from machinery or vessels during construction activities. Assuming normal construction and vessel activities, discharges of petroleum hydrocarbons are expected to be small and are not expected to result in high concentrations of contaminants within the surface waters.

Conservation measures and BMPs detailed in Section 2.5 will be implemented to limit turbidity and minimize the risk of fuel spills and other potential sources of contamination. An approved SPCC Plan including provisions for on-site containment equipment (including a boom) will be developed prior

to any construction activities. Spill prevention and spill response procedures will be maintained throughout construction activities. Therefore, short-term effects on Stellar sea lions are expected to be insignificant and limited to the area of dredging.

4.2.5.5 Prey Resources Effects

Prey species for Stellar sea lions in the Project area include forage fish species, salmon, and other fishes. It is expected that these types of prey will disperse from the Action Area due to noise and turbidity generated by Project activities. This effect is expected to be minor and short-term on the overall population of forage fish in Taiya Inlet because Skagway Harbor is already a busy port. All in-water work will occur during the winter (outside of the cruise ship season), when marine forage fish species are only present in limited numbers.

Increased turbidity and resuspension of sediments is expected to occur in the immediate vicinity of the dredging activities. The short-term changes in turbidity affect only a small proportion of the available habitat in the Taiya Inlet and suspended sediments and particulates are expected to dissipate quickly within a single tidal cycle.

Because these effects are short-term and limited to the extent of turbidity and suspended sediments in proximity to the dredging activity, it is expected that potential impacts to prey species for Stellar sea lions will be insignificant.

4.2.5.6 Loss or Modifications of Habitat

The placement of the dredge barges and presence of equipment during construction will result in a temporary and minor loss of benthic habitat and potentially change underwater features for marine aquatic species. These changes are insignificant and limited to the area of dredging. Recolonization is anticipated to occur rapidly, and future benthic habitat conditions will be improved (Wilber and Clark 2007).

4.2.5.7 Residual Contaminant Uptake

Generated residuals are contaminated post-dredge surface sediments that result from dislodged or suspended sediments generated by the dredging operation and ancillary activities (such as vessel movement) that are subsequently re-deposited on the mudline within and adjacent to the dredge area. Generated residuals are typically deposited as a thin layer (e.g., several inches thick) and are inherent in dredging operations. It is unlikely that a Stellar sea lion would be exposed to these residuals in the period between dredging and RMC material placement. RMC material will be placed within the dredging footprint to provide clean surface sediment concentrations and minimize recontamination potential from generated residuals that are not removed during remedial dredging activities. RMC will consist of a thin layer of clean sand (a minimum of 1.0 foot plus an allowable

6 inches of over-placement) placed on the dredge footprint to address generated residuals. The anticipated effect of residual contaminant uptake is insignificant.

4.2.6 Effects Determination

As described above, the potential impacts to Stellar sea lions from the proposed Project include minor and short-term temporary turbidity during dredging, vessel strikes, and effects on the whales' food supply (potential effects to forage fish).

The activities described in this BE will not result in long-term, negative permanent impacts to Stellar sea lion populations.

The potential for effects is reduced by the following factors:

- Construction of the Project will occur during winter months when Stellar sea lions are unlikely to occur in the Action Area.
- Conservation measures will be employed, as described in Section 2.5, to minimize potential impacts to marine mammals.
- Disturbances associated with proposed in-water activities will occur in a heavily used terminal basin associated with an industrial waterway.
- RMC placement will cover residuals generated during dredging.

This Project **may affect** Stellar sea lions because of the following:

- Construction activities will occur in marine aquatic habitat.
- While unlikely, Stellar sea lions could occur in the Action Area during dredging activities and be temporarily displaced from foraging.
- While unlikely, prey species could be entrained or negatively affected by turbidity generated during dredging operating.
- While unlikely, Stellar sea lions could be struck by dredge vessels.
- While unlikely, Stellar sea lions may be exposed to residual contaminants.
- Generated residuals will be covered by RMC.

This Project is **not likely to adversely affect** Stellar sea lions because of the following:

- Stellar sea lions are rarely reported using the Action Area during the anticipated work period.
- Impacts to water quality, prey resources, and modification of habitat are all minor, localized, and limited to the area in the immediate vicinity of dredging operations, where Stellar sea lions would be likely to avoid even if they were in the Action Area during the anticipated work period.

4.2.7 Critical Habitat Effects Determination

This project will have **no effect** on Western DPS Steller sea lion designated habitat because of the following:

- Designated critical habitat is located about 20 miles downstream of the Action Area, outside the range of potential impacts associated with the Project.

4.3 Interdependent and Interrelated Actions and Cumulative Effects

4.3.1 Effects from Interdependent Activities

Interdependent actions have no independent utility apart from the proposed action. For the Project, two interdependent activities will occur: 1) sediment stabilization and 2) sediment disposal.

Sediment will be dredged and placed in barges. Stabilization will then be conducted in Skagway Harbor for transport and disposal purposes. The selected future contractor will determine the final stabilization method, with acceptance by WPYR, but it is assumed that this would consist of adding Portland cement or another amendment to reduce the leachable potential of the sediment to levels that meet non-hazardous transport and landfill disposal criteria.

The stabilized sediment will then be transferred via covered barges to the contiguous United States for offloading and transport to the disposal facility. The material will be offloaded at a permitted transloading facility with appropriate BMPs (e.g., spill plates) and water quality treatment facilities and transferred either to trucks or rail cars for transport to a permitted landfill for disposal. It is assumed that dredged sediments will be disposed of in Washington or Oregon at an appropriate permitted upland landfill facility in accordance with federal and state waste regulations.

It is possible that some material could fall back into the water during the transfer processes. This could cause some minor, short-term turbidity in the vicinity of the barge or transloading facility. BMPs would be in place to avoid or minimize any material displacement during transfer and stabilization.

4.3.2 Effects from Interrelated Activities

Interrelated actions are part of a larger action and though they rely upon that action for their justification, the action could occur as part of another project. For this project, there are no interrelated activities and thus no impacts will occur from interrelated activities.

4.3.3 Cumulative Effects

From an ESA perspective, the analysis of cumulative effects considers future non-federal actions that may affect habitats and ESA-listed species in the Action Area. Any future project that entails in-water work would require a federal permit and appropriate ESA review. There are no foreseeable future state or private activities that are reasonably certain to occur within the Action Area. Redevelopment of the upland areas near the Ore Terminal could occur but there is no known planned activity or timeline.

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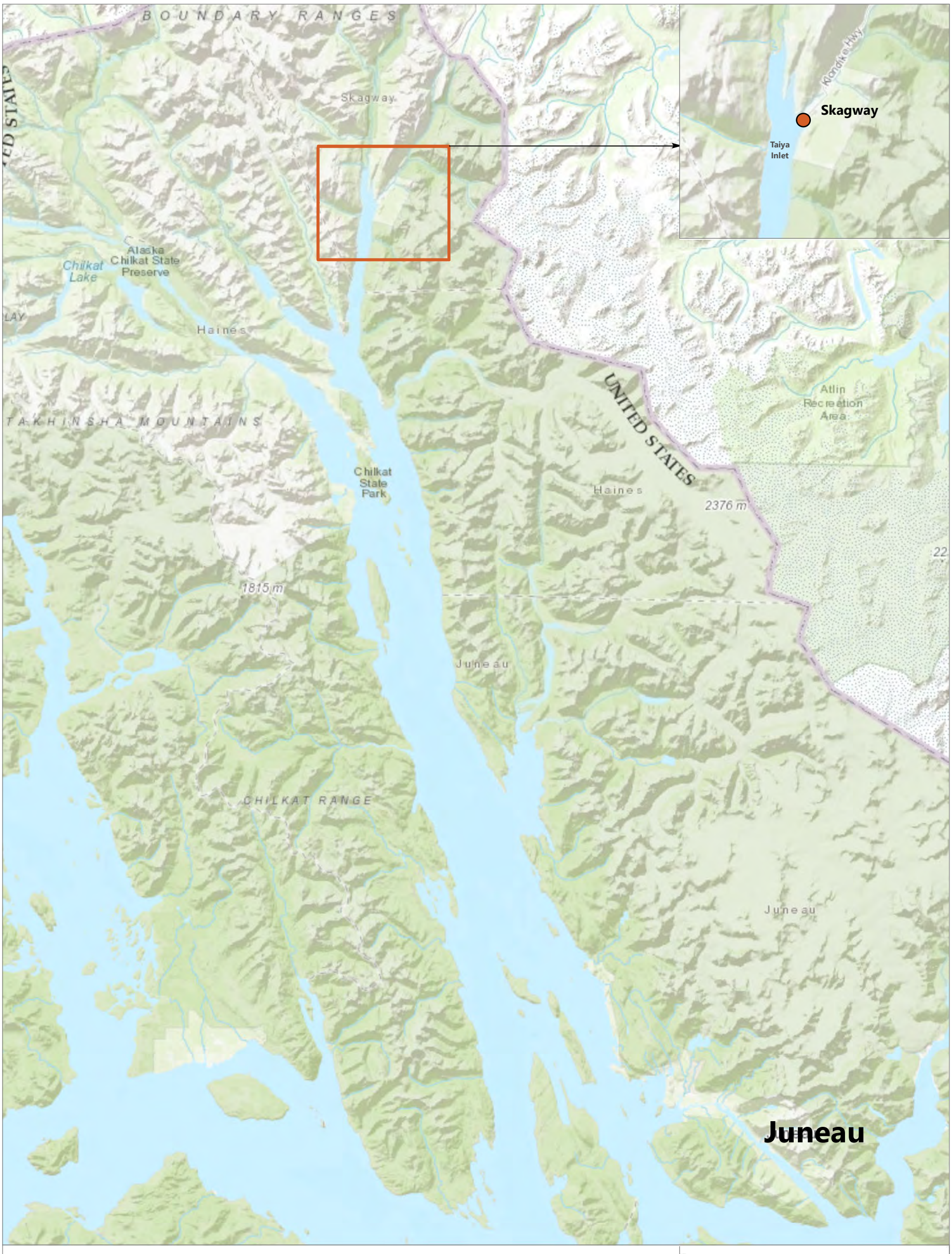
Figures



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ANCHOR QEA

Figure 1
Vicinity Map
Biological Evaluation
Skagway Ore Terminal Sediment Remediation Project

LEGEND:

- Stream
- Action Area

NOTES:

1. Basemap: Esri World Imagery

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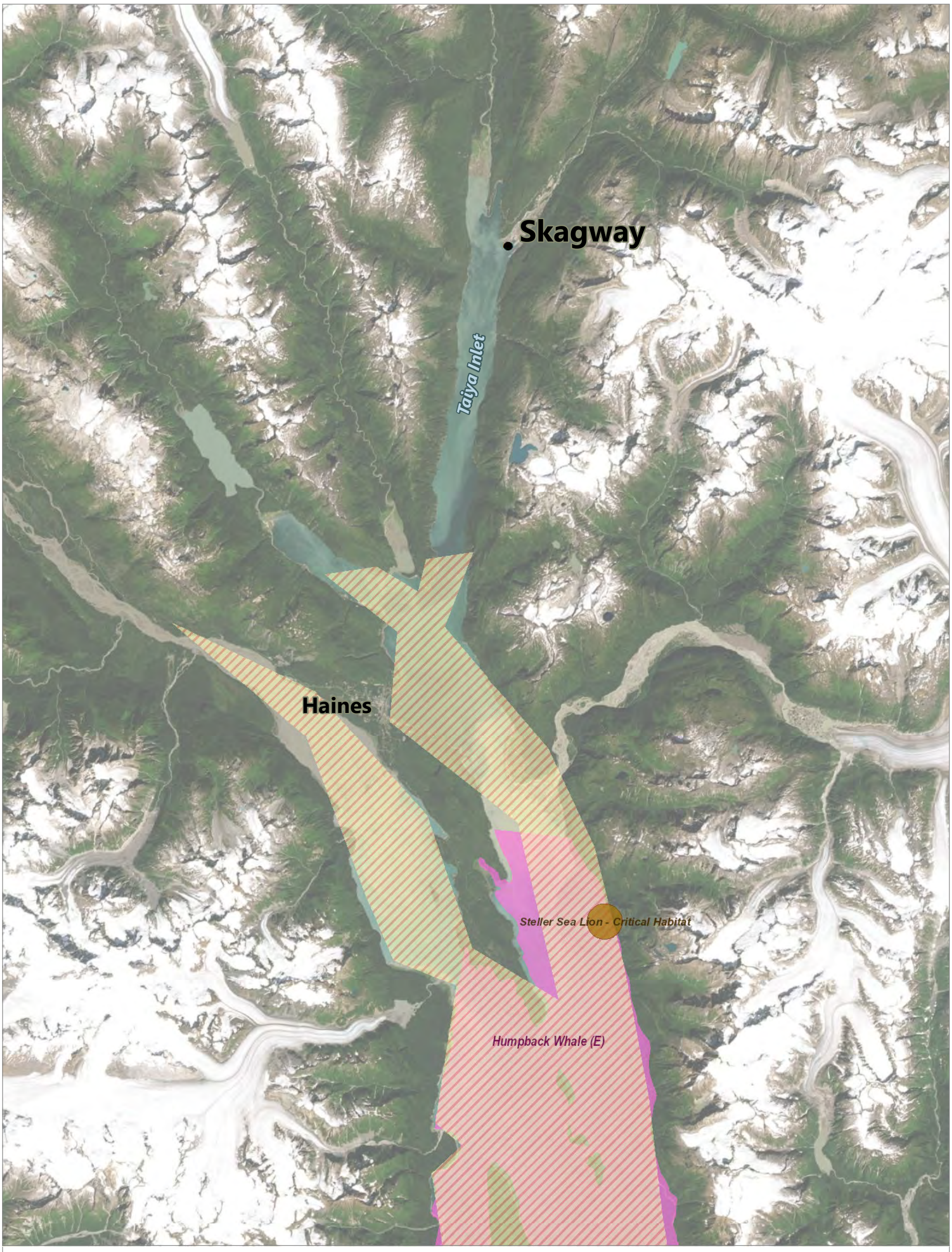
Figure 2
Project Site Existing Conditions
Biological Evaluation
Skagway Ore Terminal Sediment Remediation Project



LEGEND:

- Project Site
- Steller Sea Lion Western DPS Critical Habitat
- Humpback Whale Distribution
- Steller Sea Lion Distribution (Western DPS overlap into Eastern DPS)

NOTES:

1. Basemap: Esri World Imagery
2. Species distribution and critical habitat: NMFS 2019b
3. DPS: distinct population segment

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Figure 3
Species Distribution and Designated Critical Habitat
Biological Evaluation
Skagway Ore Terminal Sediment Remediation Project

Appendix A
Essential Fish Habitat Assessment

Essential Fish Habitat Assessment

White Pass & Yukon Route (WPYR) is seeking regulatory approvals for environmental dredging of contaminated sediments in the Skagway Ore Basin (Ore Basin) adjacent to the Skagway Ore Terminal facility (Ore Terminal; collectively, the site) in Skagway, Alaska. The Skagway Ore Terminal Sediment Remediation Project (Project) will remove metals-contaminated sediments from the site through mechanical dredging to address legacy contamination associated with historical ore loading operations. The Project includes construction in and over water and is therefore under the jurisdiction of the U.S. Army Corps of Engineers (USACE), with associated permit requirements and Endangered Species Act (ESA) and Essential Fish Habitat (EFH) Assessment. The Project is located within Taiya Inlet and Lynn Canal in Skagway, Alaska, within the Ore Basin. The Ore Basin is an industrial waterway located within Taiya Inlet in Southeast Alaska at the western edge of the Municipality of Skagway.

The Project will result in removal and disposal of contaminated sediments from the site, including the following actions:

- Dredging of up to 10,000 cubic yards (cy) of sediment
- On-site stabilization of dredged material
- Off-site disposal of stabilized material at a permitted upland landfill facility
- Placement of up to 1,100 cy of clean sand cover material (i.e., residual management cover [RMC])

Ultimately, the Project will result in environmental improvements over existing conditions within Skagway Harbor.

Citations for references in this EFH Assessment are found in Section 5 of this Biological Evaluation (BE). The Project is described in Section 2.3 of the BE. Existing conditions in the Project area are described in Section 3 of the BE.

Essential Fish Habitat Background

Pursuant to the Magnuson-Stevens Fisheries Conservation and Management Act (MSA) and the 1996 Sustainable Fisheries Act (SFA), an EFH evaluation of impacts is necessary for activities that may adversely affect EFH. EFH is defined by the MSA in 50 Code of Federal Regulations 600.905-930 as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

This appendix was prepared as a resource document for concurrent consultation with National Marine Fisheries Service (NMFS) for compliance with the MSA. EFH consultations are required for federally managed fishery species. Federal agencies, such as the USACE, which fund, permit, or undertake activities that may adversely affect EFH, are required to consult with NMFS regarding the potential effects of their actions on EFH.

In addition to evaluating the potential effects of Project actions on EFH, as required by the MSA, this EFH Assessment describes how actions proposed by the Project may affect EFH designated by the NMFS and the North Pacific Fisheries Management Council (NPFMC). According to the NPFMC, EFH within the Gulf of Alaska includes all estuarine and marine waters and substrates from the shoreline to the seaward limit of the Exclusive Economic Zone, which includes Southeast Alaska and the Project and Action Areas within Chilkoot Inlet. This EFH Assessment focuses on analysis of the direct and indirect effects on EFH for the managed fish species and their major food sources.

Taiya Inlet and Skagway Harbor are considered EFH for federally managed species. The Skagway River, Taiya River, and Pullen Creek are also designated as EFH because they contain habitat important for spawning, breeding, feeding, and growth to maturity for a variety of anadromous species of fish, including coho, pink, and chum salmon, and Dolly Varden char and the anadromous forage fish species eulachon (PFMC 1999). Those federally managed species that may be found in Taiya Inlet are presented in Table A-1.

Table A-1
Species of Fish with Designated Essential Fish Habitat in Taiya Inlet

Gulf of Alaska Groundfish Species	Alaska Stocks of Pacific Salmon	Forage Fish Complex
Alaska plaice (*Pleuronectes quadrituberculatus*)	Chinook salmon (*Oncorhynchus tshawytscha*)	Octopus
Arrowtooth flounder (*Atheresthes stomias*)	Chum salmon (*O. keta*)	Squid
Atka mackerel (*Pleurogrammus monopterygius*)	Coho salmon (*O. kisutch*)	
Dover sole (*Microstomus pacificus*)	Pink salmon (*O. gorbuscha*)	
Dusky rockfish (*Sebastes ciliatus*)	Sockeye salmon (*O. nerka*)	
Flathead sole (*Hippoglossoides elassodon*)		
Northern rockfish (*S. polyspinis*)		
Pacific cod (*Gadus microcephalus*)		
Pacific Ocean perch (*S. alutus*)		
Rex sole (*Errex zachirus*)		
Rock sole (*Pleuronectes bilineata*)		
Rougheye rockfish (*S. aleutianus*)		
Sablefish (*Anoplopoma fimbria*)		
Shortraker rockfish (*S. borealis*)		
Thornyheads (*Sebastolobus* spp.)		
Yelloweye rockfish (*S. ruberrimus*)		
Yellowfin sole (*Limanda aspera*)		
Walleye pollock (*Theragra chalcogramma*)		
Sculpins (*Cottidae*)		
Skates (*Rajidae*)		
Sharks		

Analysis of Effects on EFH

The specific elements of the Project that could impact Gulf of Alaska groundfish species, Alaska stocks of Pacific salmon, and forage fish complex species EFH include short-term, temporary noise disturbance associated with dredging and other construction activities, residual contaminants, and minor and short-term temporary turbidity and suspended sediments released during dredging.

Direct and indirect impacts to aquatic habitat associated with these Project activities are described in Section 4 of the BE. Potential impacts to EFH are described in the following sections.

Direct and indirect impacts to aquatic habitat associated with these Project activities are described in Section 4 of the BE.

Construction activities in the form of dredging noise and associated short-term increased turbidity have the potential for short-term effects on EFH for Gulf of Alaska Groundfish species and EFH for Alaska salmon, particularly habitats used by juvenile salmonids, and the forage fish complex species. Juvenile salmon use EFH within the Action Area as a juvenile migratory corridor, juvenile rearing area, and adult migratory corridor. Forage fish and demersal species are marine residents that likely use the area for year-round residence and feeding. In addition, no Pacific herring or other forage fish spawning has been reported in the area.

Noise

Even though Project noise is not expected to exceed thresholds for disturbance, noise in the habitats of the Action Area may cause EFH-managed juvenile salmonids, forage fish species, and demersal species to temporarily avoid the Action Area. Noise levels are likely to be at their peak when the dredge bucket makes contact with the channel bottom; however the peak noise is anticipated to be below the behavioral disturbance threshold for fish (150 decibels root-mean-square; NMFS 2019c). There will be a temporary increase of noise in the Action Area, potentially causing EFH habitat to be avoided by EFH species, but noise levels are not anticipated to reach a level of behavioral disturbance. No long-term effects on EFH will occur; after dredging is completed, ecological functions and habitat use will return to pre-construction levels.

Water Quality

Dredging could cause temporary and localized impacts to the water quality of EFH in the vicinity of active work, as discussed in Section 4. The increase in turbidity that could occur would take place in a limited mixing zone within the construction area. Conservation measures will be implemented to reduce the area of increased turbidity and the introduction of construction-related debris into the water. Localized turbidity plumes are expected to dissipate relatively rapidly by tidal mixing present in the area.

Based on these measures, it is unlikely that the short-term and localized elevated turbidity generated by the proposed action would directly affect EFH for juvenile or adult salmonids. This is especially the case when background turbidity is already elevated due to the influence of the glacially fed Skagway River, which impacts background turbidity in the Ore Basin.

Short-term effects on designated EFH may occur if petroleum or other contaminants accidentally spill into Taiya Inlet, but discharges are expected to be small and are not expected to result in high concentrations of contamination within the surface waters. Best management practices and an approved SPCC Plan will be implemented to minimize the risk of fuel spills and other potential sources of contamination.

No long-term effects on the water quality of EFH are expected to occur in the Action Area as the result of the proposed action.

Residual Contaminants

Generated residuals are contaminated post-dredge surface sediments that result from dislodged or suspended sediments generated by the dredging operation and ancillary activities (such as vessel movement) that are subsequently re-deposited on the mudline within the dredge area. Generated residuals are typically deposited as a thin layer (e.g., several inches thick) and are inherent in dredging operations. RMC material will be placed within the dredging footprint to address generated residuals and minimize recontamination potential from residuals that may not be removed during remedial dredging activities. RMC will consist of a thin layer of clean sand (a minimum of 1.0 foot plus an allowable 6 inches of over-placement). Removing the contaminants and covering the generated residuals will improve water quality in the Ore Basin in the long term. No long-term effects on the water quality of EFH are expected to occur in the Action Area as the result of the proposed action.

Habitat and Biota

Short-term alteration of designated EFH will result from the substrate disturbing activities and placement of new material. However, there are no anticipated negative long-term changes to habitat conditions in the Ore Basin as a result of the Project. Removal of contaminated material will result in a long-term net positive effect on designated EFH for Alaska salmon stocks.

Proposed Conservation and Minimization Measures

Project conservation measures and best management practices to minimize Project impacts are described in Section 2.5 of this BE.

Cumulative Effects

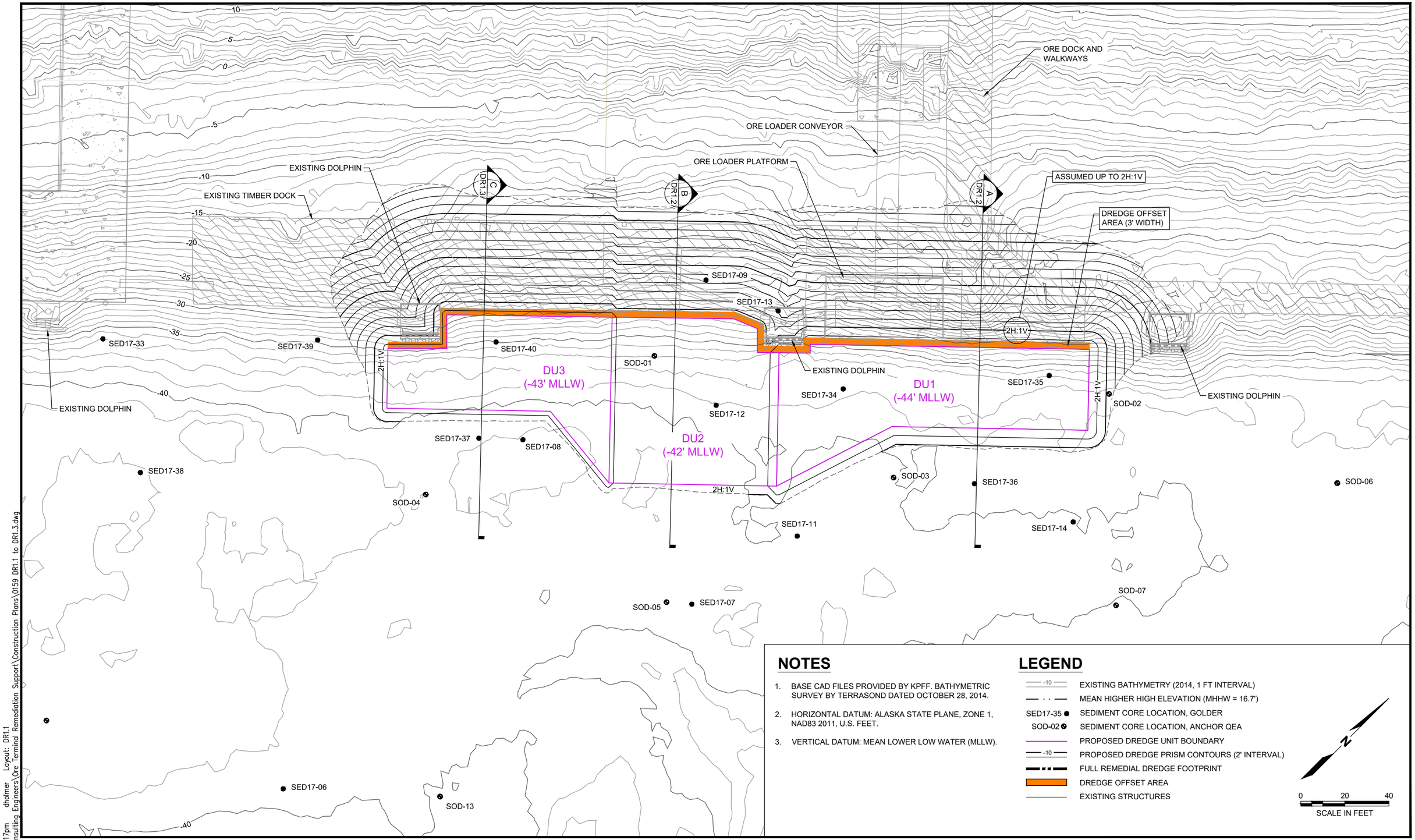
Cumulative effects from the Project on marine aquatic habitat will improve habitat conditions over existing conditions.

Conclusions and Determination of Effect

The activities described for this proposed Project will not result in long-term, permanent adverse impacts to Gulf of Alaska groundfish species, Alaska stocks of Pacific salmon, and forage fish complex species EFH. The short-term, highly localized, and temporary impacts associated with the proposed Project are insignificant and will be offset by conservation measures that will be used during construction.

Based on the guidance and definitions provided above and the previously discussed Project effects, this Project will have **no adverse effect** on designated EFH in the Project and Action Area.

Appendix B
Project Design Figures



NOTES

1. BASE CAD FILES PROVIDED BY KPFF. BATHYMETRIC SURVEY BY TERRASOND DATED OCTOBER 28, 2014.
2. HORIZONTAL DATUM: ALASKA STATE PLANE, ZONE 1, NAD83 2011, U.S. FEET.
3. VERTICAL DATUM: MEAN LOWER LOW WATER (MLLW).

LEGEND

- -10 — EXISTING BATHYMETRY (2014, 1 FT INTERVAL)
- MEAN HIGHER HIGH ELEVATION (MHHW = 16.7')
- SED17-35 ● — SEDIMENT CORE LOCATION, GOLDER
- SOD-02 ✪ — SEDIMENT CORE LOCATION, ANCHOR QEA
- PROPOSED DREDGE UNIT BOUNDARY
- -10 — PROPOSED DREDGE PRISM CONTOURS (2' INTERVAL)
- FULL REMEDIAL DREDGE FOOTPRINT
- DREDGE OFFSET AREA
- EXISTING STRUCTURES

N

0 20 40
SCALE IN FEET

ANCHOR QEA

NO.	DATE	BY	REVISION

ORE TERMINAL REMEDIATION
SKAGWAY, ALASKA

PRELIMINARY DREDGING PLAN

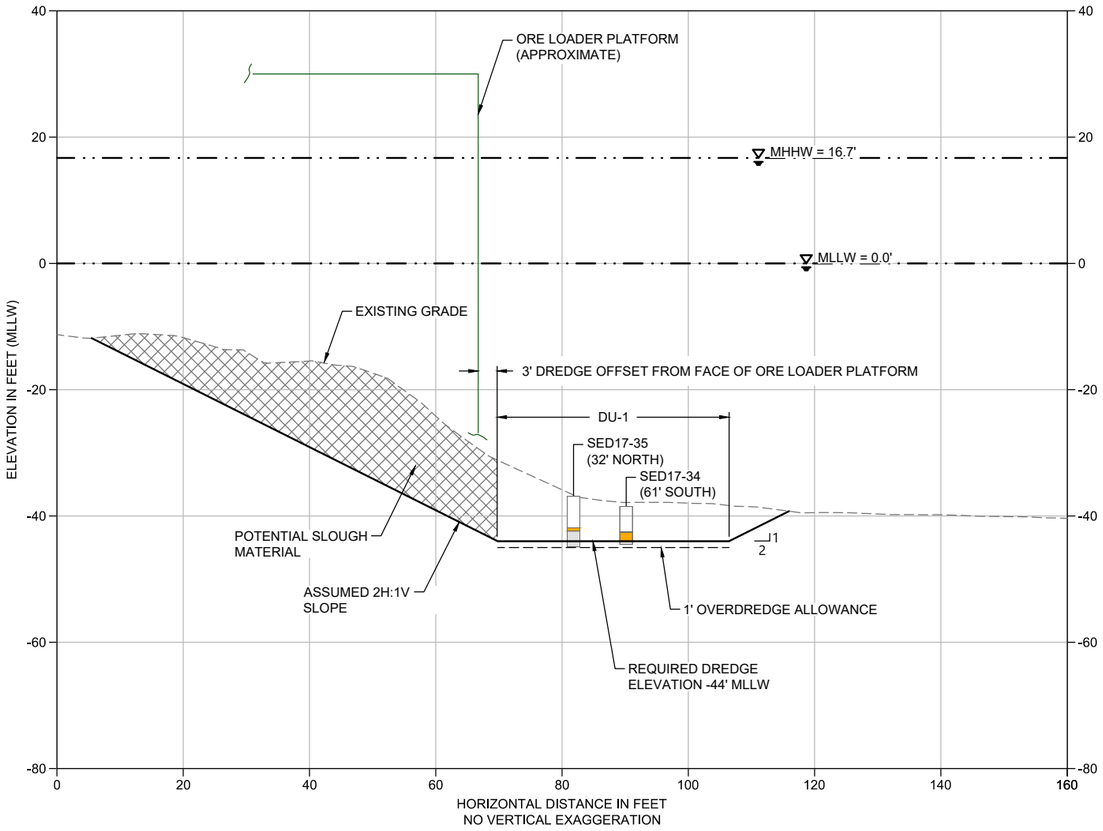
DRAWN:	DH	PROJECT NO.:	180159-02.03
DESIGN:	DO	SCALE:	AS SHOWN
CHECKED:	TW	DATE:	JULY 2019

DRAWING NO. **DR1.1**

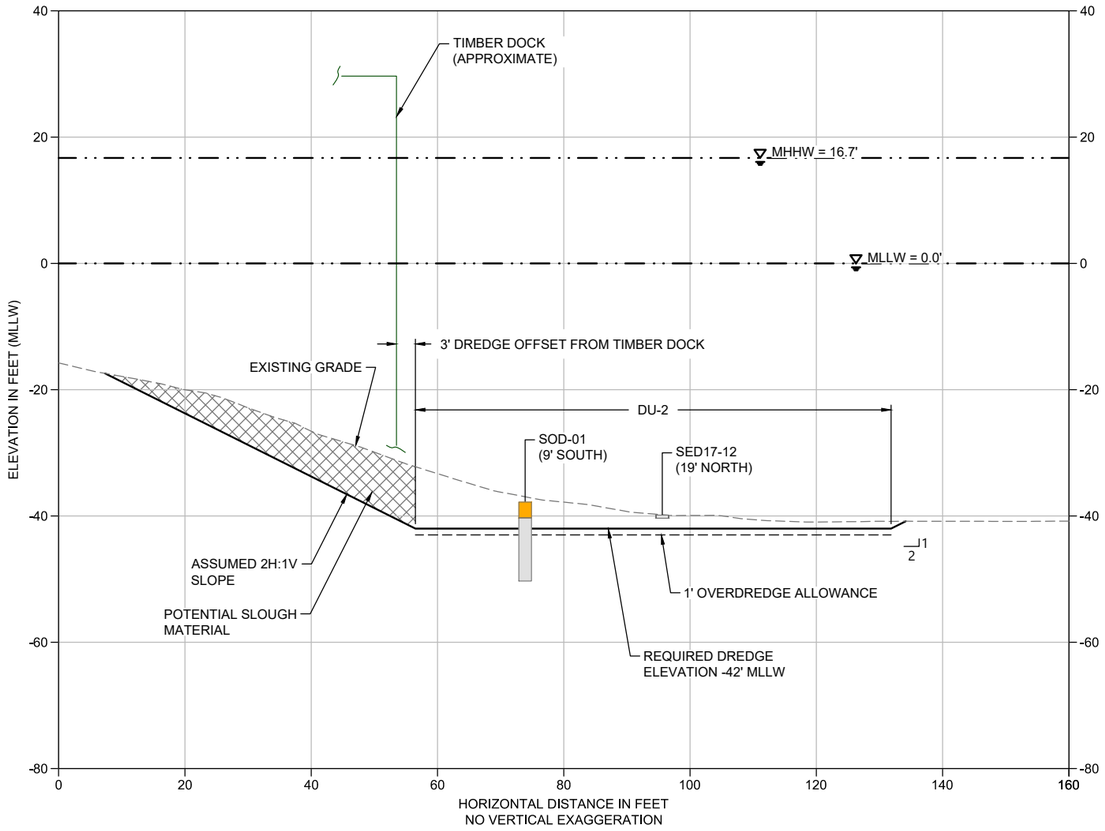
SHEET NO. 1 OF 3

NOT FOR CONSTRUCTION

Plotted: Jul 24, 2019 – 1:17pm dholmer Layout: DR1.1
K:\Projects\0159-KPFF Consulting Engineers\Ore Terminal Remediation Support\Construction Plans\0159 DR1.1 to DR1.3.dwg

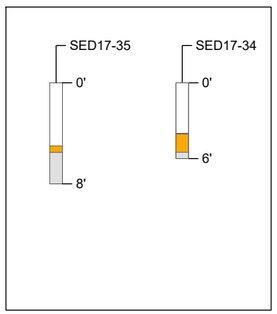


A DR1.1 **DREDGE SECTION**
SCALE:1" = 12'



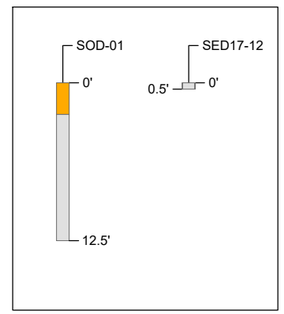
B DR1.1 **DREDGE SECTION**
SCALE:1" = 12'

NOTES:
1. CONTRACTOR MUST DREDGE AS SHOWN ON DRAWING DR1.1.
2. CONTRACTOR MUST NOT PERFORM EXCESSIVE OVERDREDGING AT TOE OF CUT OR ON SLOPE AREAS. ANY DAMAGE TO EXISTING DOLPHINS, ORE LOADER PLATFORM, OR SLOPES CAUSED BY OVERDREDGING MUST BE REPAIRED AT THE EXPENSE OF THE CONTRACTOR.
3. POTENTIAL SLOUGH MATERIAL IS DEFINED AS SEDIMENT ON A SIDE SLOPE THAT LOSES TOE SUPPORT AND SLOUGHS INTO THE DREDGE PRISM, INCLUDING FROM INTERNAL VERTICAL DREDGE CUTS BETWEEN DREDGE UNITS. CONTRACTOR MUST REMOVE SLOUGH MATERIAL TO ACHIEVE THE REQUIRED DREDGE ELEVATION/DREDGE CUT.
4. CONTRACTOR MUST SELECT MEANS AND METHODS TO PROTECT EXISTING STRUCTURES.
5. OVERDREDGE ALLOWANCE IS 1' IN REQUIRED DREDGE AREAS.
6. CLEANUP SCREENING LEVEL (CSL) FOR LEAD, AS PER WASHINGTON STATE DEPARTMENT OF ECOLOGY.



SEDIMENT CORE
2X VERTICAL EXAGGERATION

CORE PROFILE LEGEND:
- BELOW CSL FOR ALL CHEMICALS
- ABOVE CSL FOR ANY CHEMICAL
- NO DATA



SEDIMENT CORE
2X VERTICAL EXAGGERATION

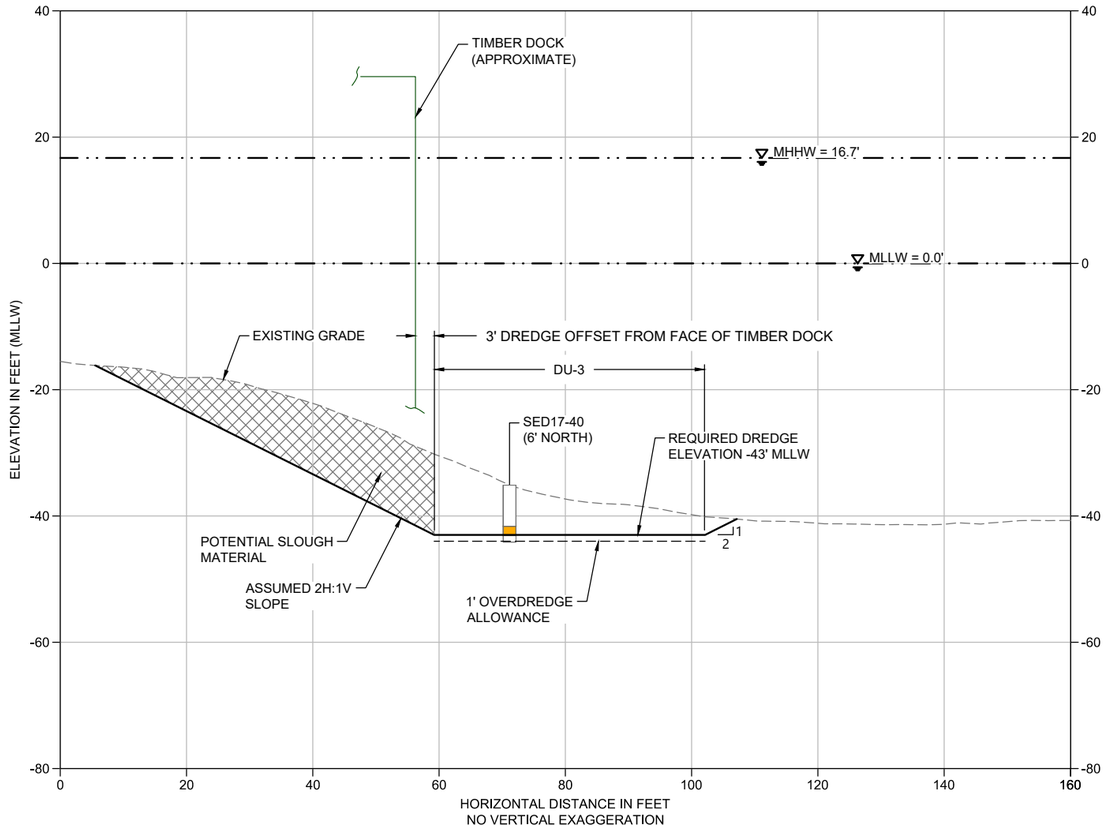
NO.	DATE	BY	REVISION

ORE TERMINAL REMEDIATION
SKAGWAY, ALASKA

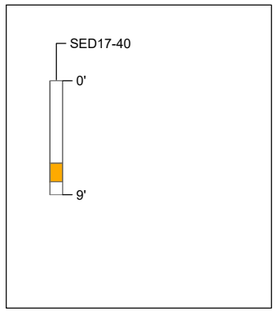
PRELIMINARY DREDGING CROSS SECTIONS (1 OF 2)

DRAWN:	DH	PROJECT NO.:	180159-02.03
DESIGN:	DO	SCALE:	AS SHOWN
CHECKED:	TW	DATE:	JULY 2019
DRAWING NO.		**DR1.2**	
SHEET NO.		**2** OF **3**	

NOT FOR CONSTRUCTION



C / DR1.1 DREDGE SECTION
SCALE:1" = 12'



SEDIMENT CORE
2X VERTICAL EXAGGERATION

CORE PROFILE LEGEND:
- BELOW CSL FOR ALL CHEMICALS
- ABOVE CSL FOR ANY CHEMICAL
- NO DATA

NOTES:
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ANCHOR QEA

NO.	DATE	BY	REVISION

ORE TERMINAL REMEDIATION
SKAGWAY, ALASKA

PRELIMINARY DREDGING CROSS SECTIONS (2 OF 2)

DRAWN: DH	PROJECT NO.: 180159-02.03
DESIGN: DO	SCALE: AS SHOWN
CHECKED: TW	DATE: JULY 2019
DRAWING NO.	DR1.3
SHEET NO.	3 OF 3

NOT FOR CONSTRUCTION

Plotted: Jul 24, 2019 – 1:18pm dholmer Layout: DR1.3
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