

APPENDIX 2

**Evaluation under Section
404 (b)(1) of the Clean Water Act Two Moon Bay**

EVALUATION UNDER SECTION 404(b)(1)
OF THE CLEAN WATER ACT
FOR
TWO MOON BAY DISPOSAL AREA
VALDEZ, ALASKA

I. PROPOSED PROJECT DESCRIPTION

The proposed recommended harbor plan (East Site 320-Vessel Plan) would construct an approximately 5.7 hectare harbor at Valdez, Alaska. The harbor would accommodate approximately 320 commercial fishing and recreational vessels. Harbor construction includes a 473-meter-long south breakwater, 240-meter-long east breakwater and a 30-meter-long stub breakwater. The rubblemound breakwaters would require approximately 86,450 cubic meters (m³) of rock discharged at the site. The mooring basin and the entrance and maneuvering channels would require 186,400 m³ of dredging. The footprint of the harbor, including the basin and breakwaters, would be approximately 10 ha. The harbor improvements would benefit local economic development and provide for transient and permanent moorage. Approximately 72,280 m³ of the dredged material would be used in creating a staging area in the intertidal zone. A 404(b)(1) analysis was undertaken for the harbor site construction and is included as a separate appendix to the accompanying integrated feasibility report/environmental assessment.

The excess dredged material, estimated at 119,720 m³, would be disposed of in 40 to 60 feet of water at Two Moon Bay as part of a beneficial use of dredged material disposal plan. This site is approximately 50 km from Valdez. The footprint of the Two Moon Bay disposal site would be approximately 5 to 8 hectares. This 404(b)(1) analysis is specific to the Two Moon Bay beneficial use disposal site. A more detailed description of the proposed action and alternatives is in the integrated feasibility report/environmental assessment.

II. SUBPART B—COMPLIANCE WITH THE GUIDELINES

Sec 230.10 Restrictions on discharge.

(a) Alternatives Test:

Alternative disposal sites have been rejected as being impracticable and/or not fulfilling USACE Environmental Operating Principles. A disposal alternatives discussion is contained in Section 4 of the environmental assessment. The beneficial use of dredged material in Two Moon Bay is the least damaging practicable alternative after taking into consideration cost, environmental considerations, existing technology, and logistics in light of the overall project purpose.

1. Based on the discussions in subparts D & E, there are no available, practicable alternatives having less adverse impacts on the aquatic ecosystem and without other

significant adverse environmental consequences that do not involve discharges into “waters of the U.S.” or at other locations within these waters.

2. Based on subpart E, the proposed disposal site is not located within a special aquatic site.

(b) Special Restrictions.

1. The proposed discharge would not violate state water quality standards.

The proposed project would not be expected to have a long-term adverse effect on water quality or recreation. The proposed disposal action is not expected to introduce substantial petroleum hydrocarbons, radioactive materials, residues, or other pollutants into wetlands and other waters of the United States. The proposed dredge area was tested in May 2000 and no contaminations were found. The material was deemed suitable for beneficial use disposal (USACE, 2000). The sediments associated with this project are suitable for in water disposal and are natural sediments that would be taken from an area east of Valdez Harbor and transported to Two Moon Bay. There would be no net loss or gain of sediments in Valdez Arm as a result of this disposal action.

2. The proposed discharge would not violate toxic effluent standards [under Section 307] of the Clean Water Act.

The proposed project is not expected to increase levels of contaminants to the aquatic ecosystem in Valdez Arm. The proposed dredge site was tested in May 2008 and was found to have no contamination (USACE, 2008). Best management practices on the vessels are also taken to prevent spills and contaminant release into the environment from equipment associated with the disposal action.

3. The proposed discharge would not jeopardize endangered or threatened species or their critical habitat.

The proposed project would not have an adverse effect on Steller sea lions or whale species that are listed as threatened or endangered or their critical habitat. This determination has been coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, agencies responsible for management of protected species.

4. The proposed discharge would not violate standards set by the Department of Commerce to protect marine sanctuaries, as there are no marine sanctuaries in the project area.

(c) Other restrictions:

1. The discharge would not contribute to significant degradation of “waters of the U.S.” through adverse impacts to human health or welfare, through pollution of municipal water supplies, fish, shellfish, wildlife and/or special aquatic sites.

There are no municipal water supplies in the area that could be negatively affected by the proposed project. This disposal action would result in taking sediment suitable for in water disposal from one place in Valdez Arm and placing it in another. There would be no net loss or gain of sediment in Valdez Arm. Although there would initially be increases in sediment and turbidity, no substantial impacts are expected to occur to plankton, fish, shellfish, and/or wildlife. There are no special aquatic sites within the proposed disposal site

2. The discharge would not contribute to significant degradation of “waters of the U.S.” through adverse impacts to life stages of aquatic life and/or wildlife.

The disposal would not substantially impact various life stages of aquatic life and/or wildlife. For further discussion see Subparts C and D below.

3. The discharge would not contribute to significant degradation of “waters of the U.S.” through adverse impacts to diversity, productivity, and stability of the aquatic life and other wildlife or its habitats, nor to the loss of the capacity of wetlands to assimilate nutrients, purify water or reduce wave energy.

The disposal of these materials would occur in Two Moon Bay. Disposal Methodology would ensure that target parameters are met in order to successfully cap the log transfer site at Two Moon Bay. The actual discharge would likely take place below the water surface from the hull of a hopper dredge, so surface feeders are minimally affected. The disposal has no impact on wetlands ability to assimilate nutrients, purify water or reduce wave energy.

4. The discharge would not contribute to significant degradation of “waters of the U.S.” through adverse impacts to recreational, aesthetic, and/or economic values.

Conversely, if dredging does not occur to accommodate the Port’s needs, recreational and economic values will be impacted, as both commercial and recreational vessels will have delays and/or the inability to dock at the port.

(d) Actions to minimize potential adverse impacts [mitigation].

All appropriate and practicable steps [40 CFR 230.70-77] would be taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem. Disposal is in an area where the sediments would be used to cap an existing log transfer facility and provide an improvement in the overall benthic environment.

Sec 230.11 Factual Determinations (Short/Long term effects on physical, chemical, & biological components of aquatic environment)

(a) Physical substrate determinations. See Subpart C below.

(b) Water Circulation, Fluctuation, and salinity determinations. See Subpart C below.

(c) Suspended particulate/turbidity determinations. See Subpart C below.

(d) Contaminant determinations.

As further discussed in Subpart G below, there are no contaminants in levels of concern to be found in the materials that are to be disposed.

(e) Aquatic ecosystem and organism determinations.

At the disposal site, non-motile and most slow moving organisms (e.g. crab, shrimp, and other invertebrates) could be smothered by the dredged material. However, given the low habitat value of the bark debris, organisms are not abundant. Most groundfish and other highly motile organisms would be expected to avoid the area until turbidity levels returned to near normal conditions. Benthic organisms, crustaceans, groundfish, and other life forms would be expected to colonize the restored bottom habitat. Further discussion of the aquatic resources and anticipated impacts is contained in the environmental assessment (Sections 7 and 8 of the integrated feasibility report and environmental assessment).

(f) Proposed disposal site determinations.

1. The disposal site was chosen because of the existence of the log transfer facility and the desire of stakeholders to cap the debris field. The Two Moon Bay disposal site could also serve as a location for future disposal if needed.

2. The following factors were considered in determining the acceptability of a proposed site:

(i) Depth of water at the disposal site: Not applicable;

(ii) Current velocity, direction, and variability at the disposal site: Velocities and direction are variable due to the tides; however, they are conducive to placing material in a manner that would improve the benthic habitat at the site;

(iii) Degree of turbulence: turbidity levels would likely be minimal in Two Moon Bay as Port Fidlago is somewhat sheltered from the rest of Valdez Arm; Some increases in turbidity would be noticed within the water column during initial disposal but would likely return to normal conditions within the water column quickly following the disposal activity;

- (iv) Stratification attributable to causes such as obstructions, salinity or density profiles at the disposal site: Not applicable;
- (v) Discharge vessel speed and direction if appropriate; Care will be taken to place the material in a manner that will maximize the area of coverage at specified depths to maximize the capping of the existing debris field;
- (vi) Rate of discharge. Discharge rate is relative to density and composition of dredged material;
- (vii) Ambient concentration of constituents of interest.
- (viii) Dredged material characteristics, particularly concentrations of constituents, amount of material, type of material (sand, silt, clay etc.) and settling velocities: The beach surface at the harbor site has a fairly flat sandy profile that consists primarily of coarse sand and cobble, scattered boulders, and some silt. At the outer extent of the harbor the profile slopes to deep water. Bedrock next to the shoreline may extend into the subsurface requiring blasting to create the moorage basin.;
- (ix) Number of discharge actions per unit of time.
- (x) Other factors of the disposal site that affect the rates and patterns of mixing.

(g) Determination of cumulative effects on the aquatic ecosystem.

The designated disposal site could also serve as a disposal site for future maintenance dredging associated with Valdez Harbor and potentially other future dredging or construction projects. Given the extent of the bark debris and water depths in Two Moon Bay, disposal at this site would provide benefit to benthic organisms within Port Fidalgo. Furthermore, support exists for future disposal in an effort to further raise the bottom elevation in order to support eel grass within the photosynthetic layer of the water column. No substantial negative cumulative effects are expected to occur as a result of this project. Further and future analysis of effects will be generated from monitoring the site after project construction.

(h) Determination of secondary effects on the aquatic ecosystem.

Secondary effects of this project would include:

- temporary increases in noise and vessel traffic during operation. Based upon noise readings from ERDC, any expected noises from the proposed work would remain below thresholds known as harmful to marine mammals.
- increased frequency of temporary disturbance to wildlife using Two Moon Bay. The physical presence of tugs and barges would temporarily displace most sea birds and marine mammals from the immediate disposal area during dumping operations. Juvenile salmon and other fishes are mostly surface oriented due to the high sediment bed-loads in strongly mixed tidal estuaries like Upper Cook Inlet. These fishes would tend to avoid temporary increases in surface turbidity and would temporarily be displaced from the area. This temporary displacement from a relatively small part of Two Moon Bay is not expected to have more than a minimal impact on the growth rates or overall survival of juvenile salmonids or

other fishes in Port Fidalgo. There could be mortality of bottom-dwelling fish and less mobile aquatic organisms such as smolts;

- potential for marine mammal strikes from vessels. This is not likely.
- the potential for fuel to be introduced into the water column from dredge and boat equipment. These potentials are minimized by using best management practices;

Secondary effects resulting from the proposed project would not be substantial.

III. SUBPART C – POTENTIAL IMPACTS ON PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM.

Sec. 230.20 Substrate.

Prior to the site being used as a log transfer facility, a pre-project assessment of the site for the log transfer facility was conducted by U.S. Fish and Wildlife Service and the Alaska Department of Game and Fish (ADFG) in 1985. The area was originally characterized as a shallow gravel shelf that was approximately 60 feet in length. The report documented that the gravel shelf ended approximately 90 feet offshore with a steep 25 foot drop off where the substrate flattened to a silt/mud bottom. A bark accumulation monitoring study conducted in 1992 divided the project site into transects and reported on each transect. The study found sections along each transect with “fairly deep” depositional areas of bark accumulation (>15cm). The heaviest bark accumulation occurred at the base of the slope adjacent to the LTF face and generally tapered off as distance from the LTF increased.

This disposal of dredge material at this location is intended to cap the existing woody debris and change substrate composition to benefit the benthic environment.

Sec 230.21 Suspended particulates/turbidity.

An increase in suspended sediment load and turbidity would be expected during and immediately following periods of work. Due to the size and type of sediment to be dredged and discharged, significant plumes would not be expected to occur. Plumes would be localized and short-lived. Based upon an analysis of the forces acting on the disposal of the dredged material as it is dumped below the water surface, most material would be directly deposited over approximately 5 hectares on the seabottom. The discharge would purposely cap the decomposing bark debris covering the sea bottom. Fines would be displaced over a larger area. Concentrations would not be expected to approach lethal dosages for aquatic species known to occur in the area.

Sec 230.22 Water.

The discharge of dredged material in association with this project will not change the chemistry and the physical characteristics of the receiving water at the disposal site through the introduction of any chemical constituents in suspended or dissolved form.

Sec 230.23 Current patterns and water circulation.

Water circulation within Two Moon Bay is influenced by the tidal prism and water depths within the bay. Two Moon Bay probably experiences less wave energy as a result of being protected waters from Port Fidalgo or Valdez Arm. As with any coastal bay, salinities likely fluctuate seasonally and may stratify within the water column depending on weather, tides, and other environmental conditions. The reason for choosing the LTF at Two Moon Bay for dredge material disposal is to cap the existing bark accumulation that has created a dead zone within the benthic layer. As a result, the discharge of the dredged material would occur in open water using methodologies that would ensure that the existing bark layer would be capped. The disposal of the dredge material would be expected to have a positive effect on the area and will not likely impact circulation patterns within the project area.

The proposed disposal is not expected to have a measurable effect on current patterns or water circulation.

Sec 230.24 Normal water fluctuations.

This disposal project will not affect water fluctuations in Two Moon Bay.

Sec. 230.25 Salinity gradients.

This disposal project has no affect on salinity gradients in Two Moon Bay.

IV. SUBPART D – POTENTIAL IMPACTS ON BIOLOGICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Sec 230.30 Threatened and endangered species.

The proposed project would not have an adverse effect on Steller sea lions or whale species that are listed as threatened or endangered or their critical habitat. This determination has been coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service, agencies responsible for management of protected species.

Sec. 230.31 Fish, crustaceans, mollusks, and other aquatic organisms in the food web.

A complete list of species can be found in the Environmental Assessment to which this evaluation is appended. Several of these species are important for commercial, recreational, subsistence, and personal uses. Species include five species of Pacific salmon of the genus *Oncorhynchus*, Pacific herring, arrowtooth flounder, rex soul, flathead sole, yellowfin sole, Pacific cod, Walleye Pollock, and tanner crab.

Of major importance are the juveniles of the five Pacific salmon species. These juvenile salmonids migrate and feed throughout Valdez Arm. Depending on the species, they can spend up to about 4 months feeding on zooplankton, shrimp-like invertebrates, small fish, and even terrestrial insects throughout the Valdez Arm area.

This disposal action would not adversely impact essential fish habitat (EFH) including salmon, groundfish, and forage fish populations or their habitats. It will result in temporary turbidity that juvenile and adult Pacific salmon will avoid, but it will not interfere with the homing instinct of migration timing of adults and will have only minor effects, if any on juvenile salmon. However, there is potential for some impact to smolt not strong enough to navigate the tides and currents well enough to avoid more turbid areas, and/or to groundfish who are not visual navigators. Any potential impacts are expected to be minor and limited to a small area in the vicinity of the dredge hull.

This determination has been coordinated with the National Marine Fisheries Service, which is responsible for managing EFH under the Magnuson-Stevens Fishery Conservation and Management Act.

Invertebrates are scarce at the Two Moon Bay log transfer facility as a result of the woody debris. Thus invertebrate habitat improvement is the primary objective of capping the log transfer facility at this point in time.

Sec 230.32 Other wildlife.

Wildlife on the disposal site consists of marine mammals, fish, invertebrates, and marine birds. Marine mammals in the project area consist primarily of harbor seal, sea otter, and sea lions that use Two Moon Bay and the surrounding marine waters for feeding and resting.

V. SUBPART E – POTENTIAL IMPACTS ON SPECIAL AQUATIC SITES.

The definition of special aquatic sites is found in Sec. 230.3 (q-1).

None of this Subpart E is applicable to this project.

Sec. 230.40 Sanctuaries and refuges.

None are in the project area.

Sec. 230.41 Wetlands.

None are in the project area.

Sec. 230.42 Mud flats.

None are in the project area.

Sec. 230.43 Vegetated shallows.

None are in the project area.

Sec. 230.44 Coral reefs.

None are in the project area.

Sec 230.45 Riffle and pool complexes.

None are in the project area.

VI. SUBPART F – POTENTIAL EFFECTS ON HUMAN USE
CHARACTERISTICS

Sec. 230.50 Municipal and private water supplies.

There are no water supply sources or uses associated with this project.

Sec. 230.51 Recreational and commercial fisheries.

Commercial fisheries

Commercial Fisheries in Valdez Arm are managed by the Alaska Department of Fish and Game with Prince William Sound Eastern Subdistrict Management Plan and Strategies defined by the Alaska Board of Fisheries. The commercial fisheries regulated by these plans and strategies are conservatively managed. Commercial fishing takes place throughout Valdez Arm and adjoining bays.

Sport Fishing

Sport fishing takes place throughout Valdez Arm and adjoining bays.

Sec 230.52. Water-related recreation.

Water-related recreation may occur in Two Moon Bay; however, due to the remote is likely to be infrequent at the Two Moon Bay disposal site.

Sec. 230.53 Aesthetics.

The act of disposing dredged material into Two Moon Bay at the designated site would have the effect of seeing and hearing the dredged and transport barge in operation during the dredging periods listed in Table 2. Port Fidalgo experiences some recreational and subsistence use but is not a heavily traveled area. The temporary addition of a dredge

barge, hopper barge, and tugs would have only minor effects on the aesthetics of the Port Fidalgo area for the occasional users.

Sec. 230.54 Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves.

There are no parks or preserves associated with this project. However, the project area is located seaward of the Chugach National Forest.

VII. SUBPART G – EVALUATION AND TESTING

Sec. 230.60 General evaluation of dredged or fill material.

Sediment from the Port of Valdez was last tested for contamination in 2006(USACE, 2007). No petroleum hydrocarbons, pesticides or PCBs were detected. All heavy metal concentrations were well below management levels and the sediment is suitable for in water disposal. Sediment dredged from the Port of Valdez would be taken from the vicinity of port construction and placed in the beneficial use disposal site. Heavier materials would sink to the bottom of the disposal area and the finer sediments that would remain in suspension for a longer time would be spread thinly in many areas of Two Moon Bay. The concentration of heavier sediments on the bottom and the thin layer of finer sediment that settles out within the old log transfer facility are expected to have positive effects on the aquatic ecosystem of Two Moon Bay. Post construction monitoring of the site will evaluate the success or failure of the beneficial use of the dredge material.

VIII. SUBPART H – ACTIONS TO MINIMIZE ADVERSE EFFECTS

Note: There are many actions which can be undertaken in response to Sec. 230.10(d) to minimize the adverse effects of discharges of dredged or fill material. Some of these, grouped by type of activity, are listed in this subpart.

Sec. 230.70 Actions concerning the location of the discharged material.

The location for disposal of materials associated with construction at the Port of Valdez has been identified as a beneficial use site. The disposal site is an old log transfer facility. The material for disposal is similar in content to substrate in the disposal area prior to the accumulation of woody debris at the site.

Sec. 230.71 Actions concerning the material to be discharged.

Based upon testing results, the proposed dredge material is free of contaminants in levels of any concern. Therefore, all of the material is suitable for disposal at the Two Moon Bay disposal site.

Sec. 230.72 Actions controlling the material after discharge.

The disposal methodology will ensure maximum coverage of the beneficial use site for the purpose of capping the existing woody debris presently smothering the benthic layer. However, based upon testing results, there is no need to contain or control the material after discharge. The idea is to cap the existing log debris facility as efficiently as possible and allow the benthic layer to naturally recolonize. Currents within Two Moon Bay are relatively slow and should allow for maximum coverage of the site for the purpose of capping.

Sec. 230.73 Actions affecting the method of dispersion.

The Corps is proposing to use the footprint of the old log transfer facility to orient the material that will maximize the area to be capped. The Corps will make the best use of currents and circulation patterns to cap the existing woody debris within the footprint of the old log transfer facility.

Sec. 230.74 Actions related to technology.

The intent of this section is to address technologies that would reduce the impact to wetlands or waters of the U.S. In this type of operation, the only way to remove the materials and then dispose of them is via dredge equipment. Both clam shell and hydraulic suction dredges are used at Port of Valdez; however, the disposal method is the same. The material in each operation ends up on a barge that discharges the material approximately 10 feet below the water surface via a split hull.

Sec. 230.75 Actions affecting plant and animal populations.

Use of a split hull for disposal would disperse sediments beginning approximately 10 feet below the water surface. This would reduce potential impacts to smolt which are found at the water's surface.

Sec. 230.76 Actions affecting human use.

The discharges do not appear near public water supplies or affecting aesthetic features of the system.

Sec. 230.77 Other actions.

There are no items under this section that apply to this action.

Sec. 230.12 Findings of Compliance or Non-compliance with the restrictions on discharge:

The discharge complies with the guidelines.

REFERENCES

Chemical Data Report, Valdez Harbor Expansion study for Valdez Harbor Expansion, NPDL WO#08-060 Materials Section, Engineering Services Branch, March 2009