CLEAN WATER ACT SECTION 404 (b)(1) EVALUATION
U.S. ARMY CORPS OF ENGINEERS

PROJECT: Bar Point Harbor Rubblemound Breakwater Repair

PROJECT MANAGER: Merlin Peterson Phone: 907-753-2671

FORM COMPLETED BY: Matt Ferguson Phone: 907-753-2711

PROJECT DESCRIPTION: The U.S. Army Corps of Engineers (USACE) proposes to repair both rubblemound breakwaters at Bar Point Harbor. The deteriorated existing armor rock would be removed from above the mean lower low water (MLLW) elevation and used to armor the seaward toe of the detached breakwater. A layer of B rock (also called quarry run) with an average weight of 210 lbs would be laid down on the exposed breakwater core and a layer of new armor stone (also called A rock) with an average weight of 2,100 lbs would be placed on the breakwaters to construct the design slope of 1.5H:1V and increase the height of the breakwaters to +25.5' MLLW. A typical section view of the repaired and heightened breakwater is shown in Figure 1. The plan view of the proposed breakwater repair footprint is shown in Figure 2.

The rock would be provided by the contractor and subject to USACE specifications. Approximately 42,000 cubic yards of deteriorated rock would be used to build the toe berm and approximately 44,000 cubic yards of new rock would be used to repair and increase the height of the breakwaters. Estimated rock quantities are shown in Table 1.

The construction work would be substantially completed by marine-based equipment. Work would take place during the winter (October1 through April 1) for two consecutive construction seasons to minimize impacts to marine mammals, aquatic vegetation, and fish. Eelgrass vitality appears to peak in August and is well into senescence by the beginning of October.

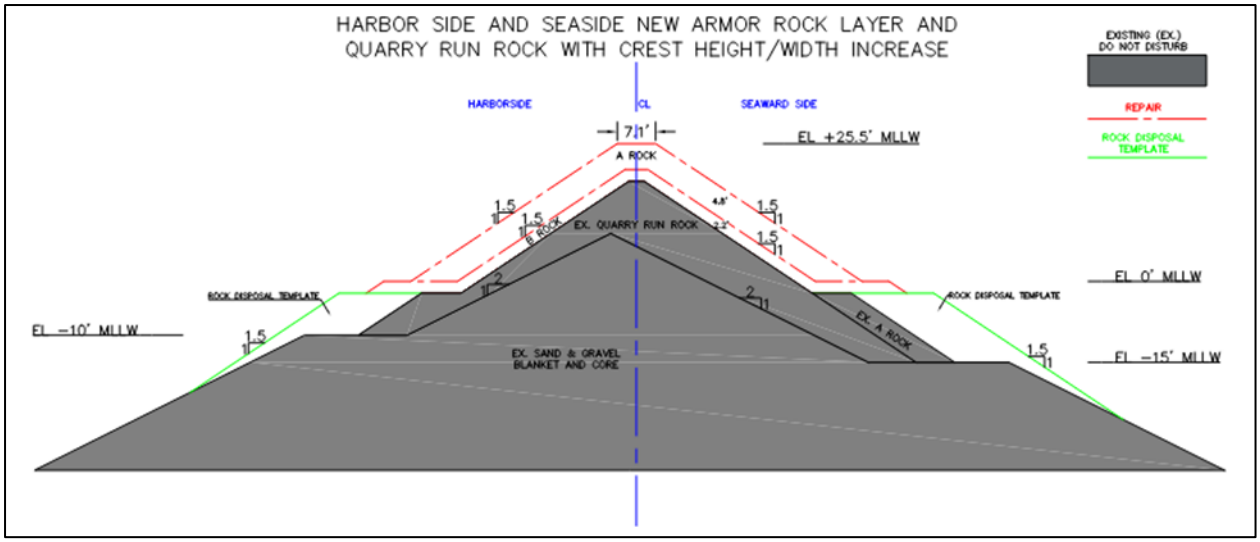


Figure 1. Typical section view of the repaired and heightened breakwater.

Table 1. Estimated rock quantities for breakwater repair.

Alternative	Excavation (cy)	Armor Rock (cy)	B rock (cy)	Total Fill (cy)
Detached (Alt H)	34,143	22,725	12,663	35,388
Stub	7,401	5,201	2,947	8,148
Both (Alt G)	41,544	27,925	15,610	43,535

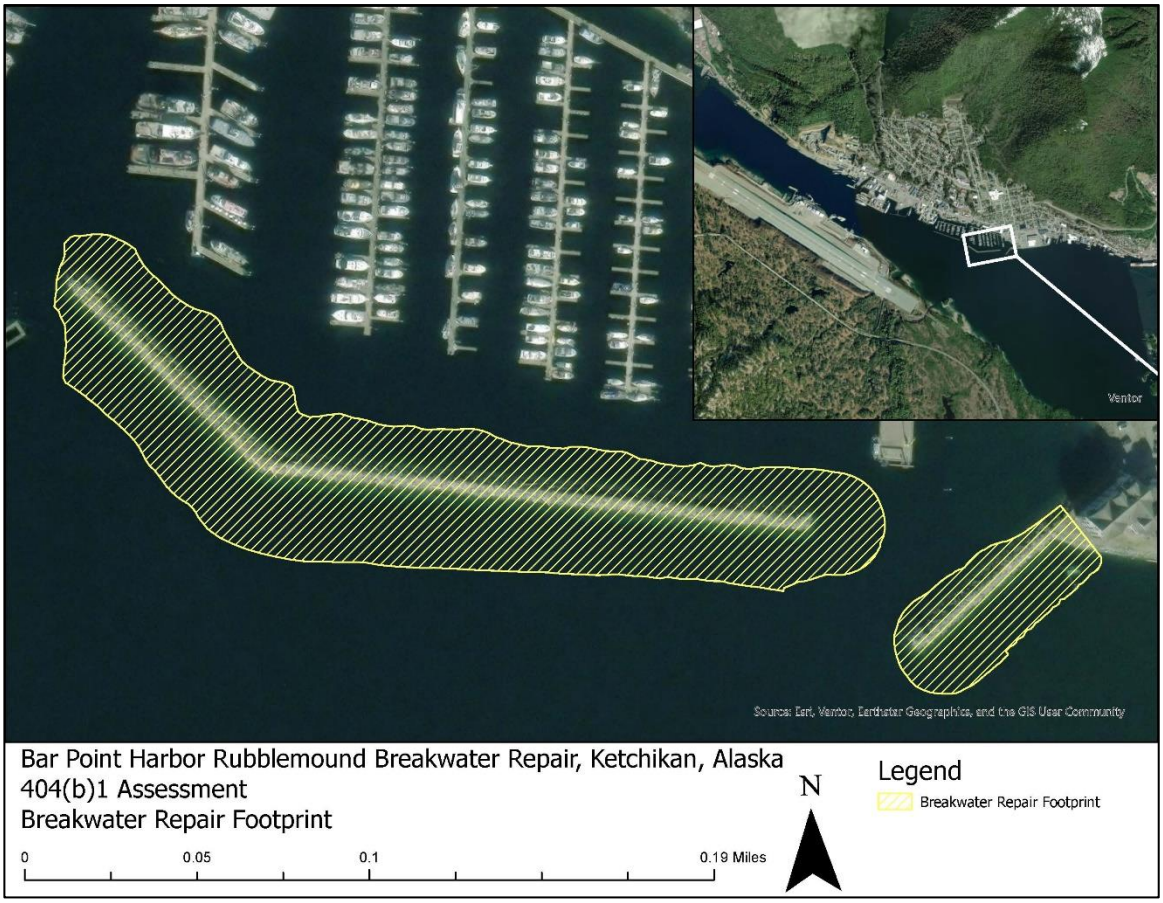


Figure 2. Bar Point Harbor Rubblemound Breakwater Repair Footprint

1. Review of Compliance (Section 230.10(a)-(d)).
    a. The discharge represents the least environmentally damaging practicable alternative and if in a special aquatic site, the activity associated with the discharge must have direct access or proximity to, or be located in the aquatic ecosystem to fulfill its basic purpose.

        ☒YES ☐NO

    b. The activity does not appear to: violate applicable state water quality standards or effluent standards prohibited under Section 307 of the CWA; 2) jeopardize the existence of Federally listed threatened and endangered species or their critical habitat; and 3) violate requirements of any Federally designated marine sanctuary.

        ☒YES ☐NO

    c. The activity will not cause or contribute to significant degradation of waters of the U.S. including adverse effects on human health, life stages of organisms dependent on the aquatic ecosystem, ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values.

        ☒YES ☐NO

    d. Appropriate and practicable steps have been taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem

        ☒YES ☐NO

2. Technical Evaluation Factors (Subparts C-F)
    a. Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem (Subpart C) (Sec. 230.20-230.25).

Table 2. Potential impacts on physical and chemical characteristics of the aquatic ecosystem

Component	Significant	Insignificant	N/A
Substrate		X	
Suspended particulates/turbidity		X	
Water			X
Current patterns and water circulation			X
Normal water fluctuations			X
Salinity gradients			X

Minor impacts to substrate would be caused by the widening of the breakwater toe and associated conversion of soft, sandy, and shell bottom type to rocky bottom. Minor impacts to suspended sediment/turbidity would be caused by the disturbance of in situ sediments from rock placement and potential to release fine-grained material with the new rock.

    b. Potential Impacts on Biological Characteristics of the Aquatic Ecosystem (Subpart D) (Sec. 230.30-230.32).

Table 3. Potential impacts on biological characteristics of the aquatic ecosystem

Component	Significant	Insignificant	N/A
Threatened and endangered species			X
Fish, crustaceans, mollusks, and other aquatic organisms in the food web		X	
Other wildlife		X	

Minor temporary impacts to aquatic and semiaquatic species would be caused by disturbance during construction. Minor, permanent impacts would be caused by the conversion of existing mixed substrate habitat to rocky habitat.

    c. Potential Impacts on Special Aquatic Sites (Subpart E) (Sec. 230.40-230.45).

Table 4. Potential impacts on special aquatic sites

Component	Significant	Insignificant	N/A
Sanctuaries and refuges			X
Wetlands			X
Mudflats			X
Vegetated shallows		X	
Coral reefs			X
Riffle and pool complexes			X

As much as 0.1 acre of eelgrass adjacent to the stub breakwater would be permanently lost due to the widening of the toe and construction access impacts.

    d. Potential Effects on Human Use Characteristics (Subpart F) (Sec 230.50-230.45)

Table 5. Potential effects on human use characteristics

Component	Significant	Insignificant	N/A
Municipal and private water supplies			X
Recreational and commercial fisheries	X		
Water-related recreation		X	
Aesthetics			X
Parks, national and historic monuments, national seashores, wilderness areas, research sites, and similar preserves			X

Repair of the breakwaters would have a significant beneficial impact on recreational and commercial fisheries, and water-related recreation because the repair would reduce damages to recreational and commercial vessels moored in the Harbor.

3. Evaluation and Testing (Subpart G) (Sec. 230.60-230.61)
    a. The following information has been considered in evaluating the biological availability of possible contaminants in dredged or fill material:

Physical characteristics	☒YES	☐NO
Hydrogeography in relation to known or anticipated sources of contamination	☒YES	☐NO
Results from previous testing of the material or similar material in the vicinity of the project	☒YES	☐NO
Known, significant sources of persistent pesticides from land runoff or percolation	☒YES	☐NO
Spill records for petroleum products or designated hazardous substances (Section 311 of CWA)	☒YES	☐NO
Public records of significant introduction of contaminants from industries, municipalities, or other sources	☒YES	☐NO
Known existence of substantial material deposits of substances which could be released in harmful quantities to the aquatic environment by man-induced discharge activities	☒YES	☐NO
Other sources (specify)	☐YES	☐NO

The existing breakwater rock that would be degraded into the toe berm has been in place and exposed to waves, currents, and precipitation for over 60 years. The new rock would be provided via contract and be required to meet applicable standards.

    b. An evaluation of the appropriate information in 3a above indicates that there is reason to believe the proposed dredge or fill material is not a carrier of contaminants, or that levels of contaminants are substantively similar at extraction and disposal sites and not likely to require constraints. The material meets the testing exclusion criteria.

    ☒YES ☐NO

4. Disposal Site Delineation (Section 230.11(f))
    a. The following factors, as appropriate, have been considered in evaluating the disposal site:

Depth of water at the disposal site	☒YES	☐NO
Current velocity, direction, and variability at the disposal site	☒YES	☐NO
Degree of turbulence	☒YES	☐NO
Water column stratification	☒YES	☐NO
Discharge vessel speed and direction	☒YES	☐NO
Rate of discharge	☒YES	☐NO
Dredged material characteristics (constituents, amount, and type)	☒YES	☐NO
Number of discharges per unit of time	☒YES	☐NO
Other factors affecting rates and patterns of mixing (specify)	☐YES	☐NO

The placement site is adjacent to the extraction site and has been evaluated for ecological productivity and navigation impacts.

    b. An evaluation of the appropriate factors in 4a above indicates that the disposal site and/or size of mixing zone are acceptable:

    ☒YES ☐NO

5. Actions to Minimize Adverse Effects (Subpart H) (Sec. 230.70-230.77)
    a. All appropriate and practicable steps have been taken, through application of recommendation of Section 230.70-230.77 to ensure minimal adverse effects of the proposed discharge:

    ☒YES ☐NO

        i) Reasonable precautions and controls would be used to prevent incidental and accidental discharge of petroleum products or other hazardous substances.
        ii) Fuel storage and handling activities for equipment would be sited and conducted so there is no petroleum contamination of the ground, subsurface, or surface waterbodies.
        iii) During construction, spill response equipment and supplies such as sorbent pads would be available and used immediately to contain and cleanup oil, fuel, hydraulic fluid, antifreeze, or other pollutant spills.
        iv) Construction equipment would not run aground or allowed to go dry in soft bottom areas.
        v) Silt curtains would be erected around the work area to prevent suspended sediment from migrating to surrounding areas.
        vi) Project vessels would not operate in water so shallow that propeller wash is allowed to suspend sediments in soft bottom areas, potentially requiring tidal restrictions to access certain areas.

vii) New quarry and armor rock would be mechanically sorted to remove fine-grained material to the extent practicable prior to placement.
viii) Trash, debris, and other undesirable materials would be removed from the breakwaters and disposed properly prior to the removal of deteriorated rock.

6. Factual Determinations (Section 230.11).

A review of appropriate information as identified in items 2 - 5 above indicates that there is minimal potential for short or long term environmental effects of the proposed discharge as related to:

Physical substrate (review sections 2a, 3, 4, and 5 above)	☒YES	☐NO
Water circulation, fluctuation, and salinity (review sections 2a, 3, 4, and 5 above)	☒YES	☐NO
Suspended particulates/turbidity (review sections 2a, 3, 4, and 5 above)	☒YES	☐NO
Contaminant availability (review sections 2a, 3, and 4 above)	☒YES	☐NO
Aquatic ecosystem structure, function, and organisms (review sections 2b and c, 3, and 5 above)	☒YES	☐NO
Proposed disposal site (review sections 2, 4, and 5 above)	☒YES	☐NO
Cumulative effects on the aquatic ecosystem	☒YES	☐NO
Secondary effects on the aquatic ecosystem	☒YES	☐NO

7. Findings of Compliance or Non-compliance

The proposed disposal site for discharge of dredged or fill material complies with the Section 404(b)(1) guidelines:

☒YES ☐NO

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DATE Michael B. Rouse
Chief, Environmental Resources