Homer Harbor

Condition of Improvements
31 December 2019
Homer Harbor, Alaska
(CWIS No. 014432, 080508, 087138)

Authorization **(1)** Rivers and Harbors Act, 3 July 1958 (P.L. 85-500 House Doc. 34, 85th Congress, 1st Session) as adopted for the original project, provides for a boat basin (300' x 400') at a depth of -12 feet MLLW and protected by a rubble-mound jetty 850' in length. **(2)** Rivers and Harbors Act, 19 August 1964 (P.L. 88-451) authorized as amended by the Chief of Engineers, 21 December 1971, provides for construction of a small boat basin within Homer Spit approximately 10 acres in area dredged to a depth of -12 feet MLLW over 2.75 acres and -15 feet MLLW over 7.25 acres, a northerly entrance channel, a main rock breakwater 1,018 feet long, and a secondary rock breakwater 238 feet long; includes provisions for further expansion of the basin. **(3)** Section 107 of the Rivers and Harbors Act, 14 July 1960 (P.L. 86-645) as amended, provides for expanding the harbor basin to approximately 50 acres with depths of -10, -15, and -20 feet MLLW and a corresponding channel. Dredged material would be used in constructing an outer berm and staging area.

Table 1

Existing Project	**Length** (max)	**Width** (max)	**Depth** ft.
Outer Entrance Channel	700	varies	-20
Inner Entrance Channel	850	90	-20
Maneuvering Channel	2790	100	-10,-15,-20
Basin (50 acres) maintained by others	2985	720	-10,-15,-20
Main Breakwater	1018		
Secondary Breakwater	238		

Project Usage The expanded small boat basin provides sheltered moorage for approximately 1,525 vessels. The project extends the fishing season an extra four months each year and is an integral part of Homer's economy.

Progress of Work

1961	Harbor dimensions are revised to 180' x 672' with a 840' rock-mound jetty. Dredging and construction of the breakwater begin in September and are curtailed in November.
1962	Work is resumed in May with completion of the dredging in June and the breakwater in September.
1963	Storm damage over the winter requires repair to the breakwater and some basin side slope protection.
1964	The earthquake of 27 March 1964 causes major damage to the project. Repair work on the first leg of the breakwater runs from July through August. Harbor restoration commences in August, and the expansion phase begins in November.
1965	The expansion phase for harbor enlargement is completed in March. The restoration phase is concluded successfully in May.
1968	The basin and protective berm are extended 100 feet by the local government.
1969	The basin and protective berm are extended again by local government for an additional 600 feet during FY 69-70 under Corps supervision to insure the integrity of the project.
1972	Starting this year maintenance dredging of the entrance channel becomes an annual event.
1973	Removal of a submerged portion of the original breakwater begins in June and is completed in August; additional beach protection provides further improvement to the project.
1977	From 1977 to 1988, maintenance dredging of the Federal project is conducted by the Corps' pipeline dredge "Warren George".
1984	Work begins on a major harbor expansion project to increase the boat basin from 16.5 acres to 50 acres.
1985	The harbor expansion project is completed to 50 acres including the construction of a 30 acre staging area and the placement of 130,000 cubic yards of armor rock.
1989	Starting this fiscal year maintenance dredging is accomplished by contract.
1993	Sampling and testing of harbor sediments is conducted.
2002	The entrance channel is dredged under contract. A new ferry terminal and Coast Guard berth are constructed by local interests.
2003	The U.S. Coast Guard berth is dredged in June and September for a total of 1,938 yards. Annual maintenance dredging of the Federal entrance channel removes 4,438 cubic yards in September. A Dredged Material Management Plan (DMMP) study is initiated.

Progress of Work

2004	The U.S. Coast Guard berth is dredged in the winter with 8,530 cubic yards removed, and again in September with 2,270 cubic yards for a total of 10,800 yards. Annual maintenance dredging of the Federal entrance channel removes 7,289 cubic yards in September. The DMMP work continues.
2005	The City of Homer passes a resolution on 14 February adapting the base plan identified in the draft DMMP. The September dredging effort shows 5,305 cubic yards removed from the U.S. Coast Guard berth and 8,500 yards removed from the Federal entrance channel.
2006	The U.S. Coast Guard berth is dredged in April and again in September along with the Federal entrance channel. The Coast Guard quantity totaled 7,072 cubic yards and the entrance channel 5,000 yards. The DMMP work continues toward a final draft for Division Office review.
2007	The Coast Guard berth is dredged in April and September, totaling 8,000 cubic yards, and the Federal entrance channel is dredged in September totaling 8,500 cubic yards.
2008	In August a pre-dredge survey was conducted. 4,218 cubic yards of material was removed from the harbor entrance channel. An additional 3,025 cubic yards was also removed from the U.S. Coast Guard berth. A post-dredge survey was conducted in September.
2009	Dredging of the U.S. Coast Guard berth removes 5,240 cubic yards of material. No maintenance dredging within the Federal Limits is performed this year due to the absence of an approved disposal site. A project condition survey of the entrance channel and Coast Guard berth is conducted in September.
2010	Hydraulic and clamshell dredging removed a total of 8,200 cubic yards from the USCG dock in May and September. Hydraulic dredging removed 8,600 cubic yards from the entrance channel in September. A spring condition survey of the entrance channel was conducted in May. Pre and post surveys were conducted for both the spring and fall dredge events.
2011	Hydraulic dredging removed a total of 1,177 cubic yards from the USCG Dock in April and September. Hydraulic dredging removed 4,427 cubic yards from the entrance channel and an additional 4,578 cubic yards from the -20 inner harbor channel for a total of 9,007 cubic yards removed. In November, about 10,000 cubic yards was excavated with shore based equipment for a sediment trap between the piers of the Pioneer Dock; this excavation should trap sediments before they enter the USCG Hickory Berth and entrance channel.

Progress of Work

2012	In the entrance channel 4,662 cubic yards were removed with an additional 8,613 cubic yards from the -15 portion of the inner harbor channel for a total of 13,275 cubic yards. Hydraulic dredging removed a total of 1,956 cubic yards from the USCG dock in September under a cost reimbursable agreement with USCG. Dredging was performed by Alaska Marine Excavation under the first year of a five-year contract. USACE Comprehensive Evaluation of Project Datums Compliance report completed and recorded in September.
2013	Annual maintenance dredging removed 1,381 cubic yards from the entrance channel and 1,005 cubic yards from the USCG's Hickory Berth in September.
2014	Annual maintenance dredging was conducted in September for the entrance channel and the realignment dredging of the inner channel was also completed. The USCG's Hickory Berth was also dredged in September. Material was dewatered and hauled to the City's stockpile site on the Homer Spit.
2015	A project condition survey of the breakwaters is conducted in June. The USCG Hickory Berth is dredged in April removing 2,471 cubic yards and in September removing 1,187 cubic yards. The outer entrance channel to Homer Harbor is also dredged in September removing 1,665 cubic yards. Work is accomplished with a cutterhead pipeline dredge. The dredge material placement area located northwest of the harbor basin has 100% available capacity as of September.
2016	The final year of a five-year dredging contract removes 2,732 cubic yards from the Coast Guard berth and 2,503 cubic yards from the Federal entrance channel in September.
2017	A new, three year maintenance dredging contract was awarded to Alaska Marine Excavation with 2,158 cubic yards removed from the entrance channel and 1,085 cubic yards from the Coast Guard berth.
2018	Spring and fall maintenance dredging of the Coast Guard berth removes a total of 6,160 cubic yards under a cost reimbursable agreement. The Federal entrance channel is also dredged in the fall removing 2,796 cubic yards.
2019	Samples from the dredge prism, background locations, Z-layer, and dredged material stockpile were taken for chemical analysis. The Coast Guard berth is dredged in the spring and fall removing a total of 6,366 cubic yards. Annual maintenance dredging of the Federal entrance channel removes 4,242 cubic yards in the fall. Four obstructions (two tires and two rocks) identified during the 2015 project condition survey were removed from the channel in December. Afterwards, a survey was performed which identified several new obstructions not previously identified. Real estate and environmental approvals are obtained to use dredged material beneficially for beach nourishment starting in 2020.

Table 2 Cost to Date

Project	Description	Cost $
080508	CG Appropriations	17,594
	CG Costs	0
	O&M Appropriations	16,022,714
	O&M Costs	15,365,439
	Rehab Appropriations	67,974
	Rehab Costs	67,974
087138	CG Appropriations	3,486,677
	CG Costs	3,486,677
	CG Contributed Appropriations	10,021,437
	CG Contributed Costs	10,021,437

Table 3 Range of Tides in feet

Current Tide Station	Mean Range	Diurnal Range	Extreme Range
945 5558 Coal Point AK	15.94	18.43	

NOAA Publication Date: 04/10/2019

Legacy Tide Station	Mean Range	Diurnal Range	Extreme Range
945 5557 Homer AK	15.83	18.32	31.3

NOAA Publication Date: 08/11/2003

Controlling Depth In the 2019 post-dredge survey, the -20 feet MLLW area of the entrance channel has a controlling depth of -13.0 feet MLLW. The -15 feet MLLW area of the entrance channel has a controlling depth of -11.7 feet MLLW. The -10 feet MLLW area of the entrance channel has a controlling depth of -10.9 feet MLLW.

Table 4 Dredged Quantities and Contract Costs

Year	Quantity (cubic yards)	Cost $
2012	13,275	488,588
2013	1,381	279,437
2014	6,205	447,478
2015	1,665	278,255
2016	2,503	269,159
2017	2,158	463,160
2018	2,796	475,920
2019	4,242	504,840

Maintenance Dredging Supplement

A. General

1. Annual dredging of the Homer entrance channel is carried out by contract, typically for a three year term. Dredging at Ninilchik Harbor is included under the same contract.
2. The outer/inner entrance channel and the Coast Guard dock are subject to shoaling and require annual maintenance. The maneuvering channel where the depth is -15 and -10 feet MLLW requires dredging far less frequently. The remainder of the mooring basin is maintained by local interests.
3. No work will occur from 1 May through 15 July each year in order to protect juvenile salmon during a critical portion of their life cycle. The dredging window runs from 16 July to 30 April. Dredging typically begins in early September and is accomplished in one to two weeks depending on the quantity of shoaled material and weather conditions during construction.
4. Dredging is accomplished with a hydraulic cutter-head and pipeline suction dredge which conveys the effluent to a dewatering site located on the Homer Spit. Starting in 2020, the dewatered dredge material is used beneficially for beach nourishment.

B. Sampling & Testing

1. A total of twenty-two (nineteen primary and three duplicate) soil and sediment samples were collected in August/September 2011. These samples were collected in the Federal channel, US Coast Guard berth, and upland stockpile area. Chemical analysis was performed using seven test methods. One area of the Federal channel was considered potentially contaminated with Diesel Range Organics (DRO) and was delineated so as not to dredge in this location. The remaining sediment samples indicated that the material did not contain compounds at concentrations above the most stringent Alaska

Department of Environmental Conservation (ADEC) cleanup levels except for arsenic and chromium, which are considered naturally occurring.

2. Samples were collected in April 2013 to characterize the sediments that would be dredged as part of the channel realignment. A total of eight primary samples from four locations were collected from the harbor entrance and continued to the northwest end of the harbor. In addition, one duplicate and one trip blank sample were collected for a total of ten samples. Chemical analysis was performed using nine test methods. Again, arsenic and chromium were found above ADEC cleanup levels but considered to be naturally occurring. All other compounds were not detected or below minimum cleanup levels.
3. A total of three primary (and one duplicate) samples were taken from three dredged material management units (DMMUs) as part of a chemical investigation of the sediments in the federal channel and adjacent US Coast Guard berth in March 2019. DRO, selenium, and arsenic were all detected at concentrations exceeding ADEC screening criteria for unrestricted upland disposal. DRO and selenium detects were potentially the artifacts of non-sediment materials being present and analyzed by the lab (coal and brass respectively). A background metals investigation was also conducted for the proposed upland dewatering and placement sites finding that the dredged materials are not expected to negatively impact these storage or reuse sites. Arsenic was once again found to be within natural background ranges. Finally, dredged material was compared to the Sediment Evaluation Framework for the Pacific Northwest (SEF) to determine suitability for beach nourishment. Zinc was the only analyte detected at a concentration above the screening level. The presence of this metal was attributed to the suspected brass component and not representative of metals contamination. Since beach nourishment was a scope change not in the original sampling analysis plan, it was recommended that additional sampling for ammonia, total volatile solids, and tributyltin be performed should in-water placement be the selected alternative.
4. A total of three primary (and one duplicate) samples were taken in September 2019 from the Z-layer of the three DMMUs previously sampled in March 2019. Chemical results were compared to the SEF as well as ADEC soil cleanup levels. No analytes in the Z-layer were detected above the SEF screening criteria. Arsenic was once again detected above ADEC screening criteria but concentrations of this metal remain consistent with background levels. Naphthalene, vinyl chloride, 2,6-dinitrotoluene, and nitrobenzene all exceeded ADEC screening levels but had multiple QC failures associated with them and are assumed to be false positives. There was also one detection of hexachlorobutadiene in the 8260C-SIM analysis that was rejected due to multiple lines of evidence.
5. The 2019 spring and fall dredged material, still stockpiled in the dewatering area, was sampled again in December 2019 to confirm the presence of analytes detected above screening criteria during the March 2019 chemical investigation. Stockpile samples (one sample collected in triplicate) using the Increment Sampling Methodology were all found below the ADEC and SEF promulgated values for DRO, Selenium, and Zinc.

Arsenic was found above the ADEC levels but was comparable to historical background levels.

C. Disposal

1. The suspended sediments are conveyed via a portable pipeline from the floating dredge plant to a bermed dewatering site on the spit.
2. The dewatering site is approximately 360 feet by 190 feet, about 1.23 acres, with its center at 59°36'04.1"N 151°24'51.7"W. The dewatered dredge material is later transported by trucks to a beach nourishment area across from the Nick Dudiak Fishing Lagoon; the area is approximately 325 feet by 600 feet on about 4.48 acres with its center at 59°36'31.5"N 151°26'27.3"W.
3. The removal of excavated gravel, gravel fill or fill material from any beach or from any portion of the Homer Spit is regulated by the City of Homer (Homer City Code 19.12.030), and per city code, no such material was permitted to leave the Homer Spit. However, on March 14, 2011, the City of Homer passed Ordinance 11-09 amending Homer City Code 19.12.050 (Exceptions) providing for the use and disposal of dredged material in the following order of priority:
    a. Replacement of material removed from City beaches by storms or erosion.
    b. Fill to improve City port and harbor facilities on the Homer Spit.
    c. Sale for use as fill on privately owned or leased property on the Homer Spit.
    d. Emergency repairs or erosion.
    e. Sale for use as fill material at locations off the Homer Spit.
4. The real estate interests necessary to use the dredge pipeline corridor, upland dewatering site, and beach placement site are coordinated with the City of Homer and Alaska Department of Transportation and Public Facilities.

D. Environmental Permits and Reports

1. The Final O&M Environmental Impact Statement (FEIS) was issued in 1974. The Corps completed an O&M Environmental Assessment (EA) in 1978 with Finding of No Significant Impact (FONSI). A Dredged Material Management Plan with EA/FONSI was respectively prepared and signed on Aug. 7, 2007 and Dec. 10, 2007. An updated O&M EA and FONSI was prepared and signed in 2019.
2. The following permits or authorizations have been issued for current dredging operations:

Table 6 Environmental Permits

Agency Name	Purpose	Date of Issue	Date of Expiration
AK Department of Environmental Conservation	Section 401 Certificate of Reasonable Assurance ER-19-013	15-Nov-19	15-Nov-24
AK Department of Fish and Game	Special Area Permit 19-V-0232-SA	9-Sep-19	31-Dec-22
AK Department of Natural Resources	Section 106 Assessment – National Historic Preservation Act	22-Aug-19	n/a
NOAA – National Marine Fisheries Service	Section 7 Consultation – Endangered Species Act	10-Sep-19	n/a
NOAA – National Marine Fisheries Service	Magnuson-Stevens Fisheries Conservation and Management Act – Essential Fish Habitat	30-Sep-19	n/a

3. The Homer small boat harbor and entire area encompassing the Homer Port was excluded from the Kachemak Bay Critical Habitat Area (KBCHA) in 2014. However, the effluent from the dewatering area as well as the dewatered dredge material are placed within the boundaries of the KBCHA.

Homer Harbor, Homer, Alaska

Oblique of Homer Harbor, 2015

Oblique of Homer Harbor, 2015

Homer Harbor, Homer, Alaska

Maintenance dredging of the outer entrance channel, September 2019

Obstructions removed from the outer entrance channel, December 2019