Juneau
Douglas Harbor

Condition of Improvements
31 December 2022
Douglas Harbor, Alaska
(CWIS No. 072789, 180942)

Authorization Rivers and Harbors Act, 3 July 1958 (House Doc. 286, 84th Congress, 2nd Session) as adopted, provides for a boat basin of 5.2 acres with entrance channel both to a depth of -12 feet MLLW and protected by a rock jetty about 90 feet long off the northerly shore of Juneau Isle adjacent to the basin entrance. A 130-foot breakwater extension on the northwest side of the entrance channel, a 105-foot breakwater extension on the southeast side of the entrance channel and a 230 foot floating breakwater were constructed under the authority of Section 107(b) of the Rivers and Harbors Act, 14 July 1960 (Public Law 86-645), as amended. Water Resources and Development Act of 2007, November 9, 2007 (Public Law 110-114), Section 2022 amends Section 107(b) of Public Law 86-645 to increase the statutory limitation for projects under this authority to $7,000,000.

Table 1

Existing Project	**Length** (ft.)	**Width** (ft.)	**Depth** (ft.)
Basin	400	380	-12
Entrance Channel	345	60	-12
Jetty	105		
Northwest Breakwater Extension	130		
Southeast Breakwater Extension	105		
Floating Breakwater	230		

Project Usage The small boat basin provides protected moorage for 100 small craft. Douglas Harbor is one of three Corps of Engineers projects that provide moorage for the large commercial fleet and recreational vessels in the Juneau/Douglas area (see Juneau Harbor and Gastineau Channel). The government, commercial fishing, and tourism provide a unique and diversified economy in the metropolitan area. All transportation to the area is by sea or air.

Progress of Work

1961	Plans and specifications are prepared, and the contract is awarded.
1962	Construction of the breakwater begins in January and is completed in June. Dredging of the basin follows in June and is completed in August. The finished project includes gravel berm protection, gravel slope protection, and quarry run slope protection rock.
1993	A condition survey is performed in April.
1995	Sampling and testing of harbor sediments is conducted.
1997	The entrance channel is straightened and dredged to two feet over project depth; 24,242 cubic yards of material are removed within the new limits.
2000	The condition of the Federal project is checked by hydrographic survey in May.
2003	A Detailed Project Report is completed and approved in April for expansion of the project. Vertical aerial photography is obtained in May.
2004	A condition survey is performed in May.
2007	Breakwater plans and specifications are prepared to protect the new mooring area. Construction is scheduled for 2008.
2008	A contract is awarded to Western Marine to construct a 130-foot rubble-mound breakwater extension on the northwest side of the entrance channel and a 105 foot rubble-mound breakwater extension on the southeast side of the entrance channel at the end of the existing jetty on Juneau Island. Work was completed in November 2008.
2009	A project condition survey is completed in August.
2011	The project is selected to participate in a pilot program where the Corps provides engineering and design assistance to the local community for dredging the Federal project. Funds were received in late August to initiate the project and assist the community in obtaining environmental clearances for dredging the boat basin.
2012	A new concrete floating breakwater 230 feet long, 18 feet wide, and 8 feet tall with 20 inches of freeboard and supported by pipe plies, was installed in the entrance channel. [Inspection of cathodic protection should be scheduled after 15 years (2027)] USACE Comprehensive Evaluation of Project Datums Compliance report completed and recorded in September.
2013	A condition survey was performed in May. In addition to the project limits, a proposed disposal area was surveyed. There are 12,215 CY available to Project depth and 4,605 CY available along the side slopes.

Progress of Work

2015	Plans and specifications were prepared to dredge the federal portion of the harbor boat basin to -14 feet MLLW and dispose of the dredge material in Gastineau Channel. Due to the presence of methyl mercury in the harbor sediment, the project also includes placing a sand cap over the dredged area of the harbor and the dredge material in the disposal site. In August, contract W911KB-15-C-0017 was awarded to Western Marine Construction in the amount $5,797,100. The contract includes monitoring activities during construction and 1-year after construction is completed. Monitoring includes water quality monitoring during disposal activities, chemical monitoring of bottom sediments and Sediment Profile Imaging (SPI) and Plan View Imaging (PVI).
2016	Western Marine completed dredging in the harbor and placement of sand caps in the harbor and the Gastineau Channel disposal site by early March. A total of 26,200 CY was dredged and placed in the disposal site; 4,500 cubic yards of sand cap placed in the harbor and 42,000 cubic yards of sand cap placed at the disposal site. Post sand cap surveys, Sediment Profile Imaging (SPI) and Plan View Imaging (PVI) indicated an approximate 1-foot sand cap in the harbor and 4-7 feet of sand on the main disposal mound at the disposal site. A thinner sand cap layer extended to the flanks of the main disposal mound.
2017	One-Year Monitoring activities are completed in the harbor and Gastineau Channel disposal site in March. Monitoring activities include a hydrographic survey, Sediment Profile Imaging (SPI), Plan View Imaging (PVI) and chemical testing. The harbor sand cap remains intact. A new layer of sediment has settled on top of the disposal site sand cap. Five-year monitoring is scheduled for 2021.
2019	A condition survey of the harbor is conducted in March.
2021	Year 5 Sediment Cap Monitoring activities in the harbor and Gastineau Channel disposal area are completed by NewFields Government Services in May. Monitoring activities included a hydrographic survey, Sediment Profile Imaging (SPI), Plan View Imaging (PVI) and chemical testing. The sediment caps remain intact, and no cap repairs were required. As the result of benthic recolonization, SPI and PVI of the harbor and SPI of the disposal area can be eliminated in future monitoring events. The next monitoring event will be Year 10 in 2026.

Table 2 Cost to Date

Project	Description	Cost $
072789	O&M Appropriations	8,507,498
	O&M Costs	8,160,873
180942	CG Appropriations	4,614,246
	CG Costs	4,614,246
	CG Contributed Appropriations	1,110,104
	CG Contributed Costs	1,110,106

Table 3 Range of Tides in feet

Tide Station	Mean Range	Diurnal Range	Extreme Range
945 2210 Juneau AK	13.74	16.31	30.71

NOAA Publication Date: 02/16/2018

Controlling Depth: As of March 2019, most of the entrance channel is at project depth -12 feet MLLW although points near the northern toe of the southern breakwater extension are as high as -9.5 feet MLLW. Project depth -12 MLLW is effectively available throughout the Federal portion of the basin, March 2019. Controlling depth is -10.5 under the Northeasterly sections of the floats as you enter the basin.

Maintenance Dredging Supplement

A. General

1. The first maintenance dredging for this project is conducted Aug-Sep 1997 (a 35-year span).
2. The entrance channel was straightened and dredged under the 1997 dredging contract.
3. A “no dredging” window from 15 April to 15 June is established by the State of Alaska.
4. Harbor is dredged to -14 feet MLLW and a sand cap is placed to a maximum finished elevation of -13 feet MLLW to contain methylmercury contamination in 2015/2016.

B. Sampling & Testing

1. Harbor sediment characterization performed for the City and Borough of Juneau in 2007 revealed elevated levels of methylmercury and total mercury in the harbor sediment. USACE permit POA-2000-495-M3 was issued to the City and Borough of Juneau in

2014 for dredging in Douglas Harbor with a requirement for sand capping and future monitoring. USACE ultimately adopted the permit and associated special conditions for federal dredging of 26,217 cubic yards of material in 2015. A sand cap was placed in the harbor and over the disposal mound in Gastineau Channel and both sites are currently under a long-term monitoring plan. Backup documentation is available through the USACE Operations Branch.

2. Sediment samples were collected for methylmercury analysis before and after dredging under the 2015 dredging contract. Four (4) out of four (4) samples in the harbor, three (3) out of eight (8) samples at the disposal site and three (3) reference samples taken 3-5 miles down Gastineau Channel exceeded the Puget Sound Dredged Disposal Analysis (PSDDA) screening levels prior to dredging. After dredging, three (3) out of four (4) samples in the harbor, three (3) out of seven (7) samples at the disposal site and three (3) reference samples taken 3-5 miles down Gastineau Channel exceeded the PSDDA screening levels. Chemical sampling was not performed after placement of the sand cap but will be included in the 1-year monitoring in 2017.
3. In 2017, the Year 1 sediment cap monitoring activity collected four (4) samples in Douglas Harbor, eight (8) samples in the Gastineau Channel disposal area and three (3) reference samples 3-5 miles down Gastineau Channel at the same locations sampled in 2015. Samples that exceeded the threshold level for methylmercury in porewater in the harbor are areas where sand was minimal in the harbor either due to breakwater rock or being on the side slope where sand was not required. In the disposal area, there appears to be an accumulation of new sediment from the surrounding environment settling on top of the sand cap.

Table 4 Chemical Testing Year 1 Sediment Cap Monitoring

Method	Chemical analysis	Results
PSEP	Total Solids (%)	51-80%
EPA 9060	Total Organic Carbon (%)	0.17-1.28%
EPA 1630	Methylmercury (porewater)	13 of 15 detected. 10 exceeded monitoring threshold value of 0.295 ng/L with results ranging from 0.374 ng/L to 0.796 ng/L in the harbor; 0.341 ng/L to 1.55 ng/L in the disposal area and 6.26 ng/L to 12.2 ng/L at the reference sites.

PSEP = Puget Sound Estuary Program

4. In 2021, the Year 5 sediment cap monitoring collected four (4) samples in Douglas Harbor, eight (8) samples in the Gastineau Channel disposal area and three (3) reference samples 3-5 miles down Gastineau Channel at the same locations sampled in 2015 and 2017.

Table 5 Chemical Testing Year 5 Sediment Cap Monitoring

Method	Chemical analysis	Results
SM2540	Total Solids (%)	41-72%
EPA 9060	Total Organic Carbon (%)	0.55-1.6%
EPA 7471	Mercury (sediment)	One sample in the harbor (0.50 mg/kg) exceeded the DMMP 2021 screening level (0.41 mg/kg); all other samples detected levels below the screening level.
EPA 1630	Methylmercury (porewater)	15 of 15 detected and exceeded monitoring threshold value of 0.295 ng/L. Results ranged from 1.49 ng/L to 13.1 ng/L in the harbor; 0.615 ng/L to 2.71 ng/L in the disposal area and 1.20 ng/L to 7.74 ng/L at the reference sites.

C. Disposal

1. Two dredge disposal sites were considered as possibilities for the 1997 contract: one, a shallow water site across Gastineau Channel requiring additional improvement, and a deep water site (> 100' deep) near the project entrance.
2. A deep water site was selected for the 2015 dredging with the following NAD 83 geographic coordinates.

Table 6 Disposal Area

Corner	Latitude (N)	Longitude (W)
1	58°16'44.90"	134°22'33.32"
2	58°16'37.85"	134°22'18.69"
3	58°16'31.20"	134°22'30.24"
4	58°16'38.25"	134°22'44.87"

3. Various options, including the possibility of upland disposal, must be considered for future soils disposal.

D. Environmental Permits and Reports

1. USACE Permit POA 2000-495-M3 was issued to the City and Borough of Juneau on 20 June 2014 for dredging and placing sand cap in Douglas Harbor.
2. USACE subsequently received funding to dredge and cap the federal portion of the harbor. An Environmental Assessment (EA) was disseminated by the Corps on 7 May 2015, and a Finding of No Significant Impact (FONSI) was signed by the District Engineer on 29 May 2015.
3. A Sediment Cap Monitoring Plan dated 5 February 2015 was prepared by NewFields and was adopted for the 2015 dredging and sand cap project.
4. A Chemical Data Report was previously prepared by the Corps in April 1995 subsequent to the sampling and testing of harbor sediments. Further sediment characterization was performed by NewFields in November 2007. The screening level was exceeded for mercury in all samples. All other chemicals of concern were below screening level.
5. Tier III/IV assessment conducted in 2008 and 2011 found mercury exceeded screening levels but there is a lack of measurable biological effects.
6. The following permits or authorizations are listed by agency below:

Table 7 Environmental Permits

Agency Name	Date of Issue	Date of Expiration
USACE Permit POA-2000-495-M3	20-Jun-14	n/a
Environmental Assessment	May-15	n/a
Finding of No Significant Impact	29-May-15	n/a
ADEC Water Quality Certification	2-Jun-15	2-Jun-20

Douglas Harbor, Douglas, Alaska

Oblique of Douglas Harbor, July 2013

Douglas Harbor, March 2017

Douglas Harbor, Douglas, Alaska

Entrance Channel, June 2017

Douglas Harbor, June 2017