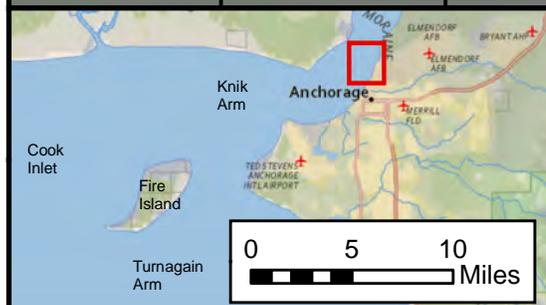
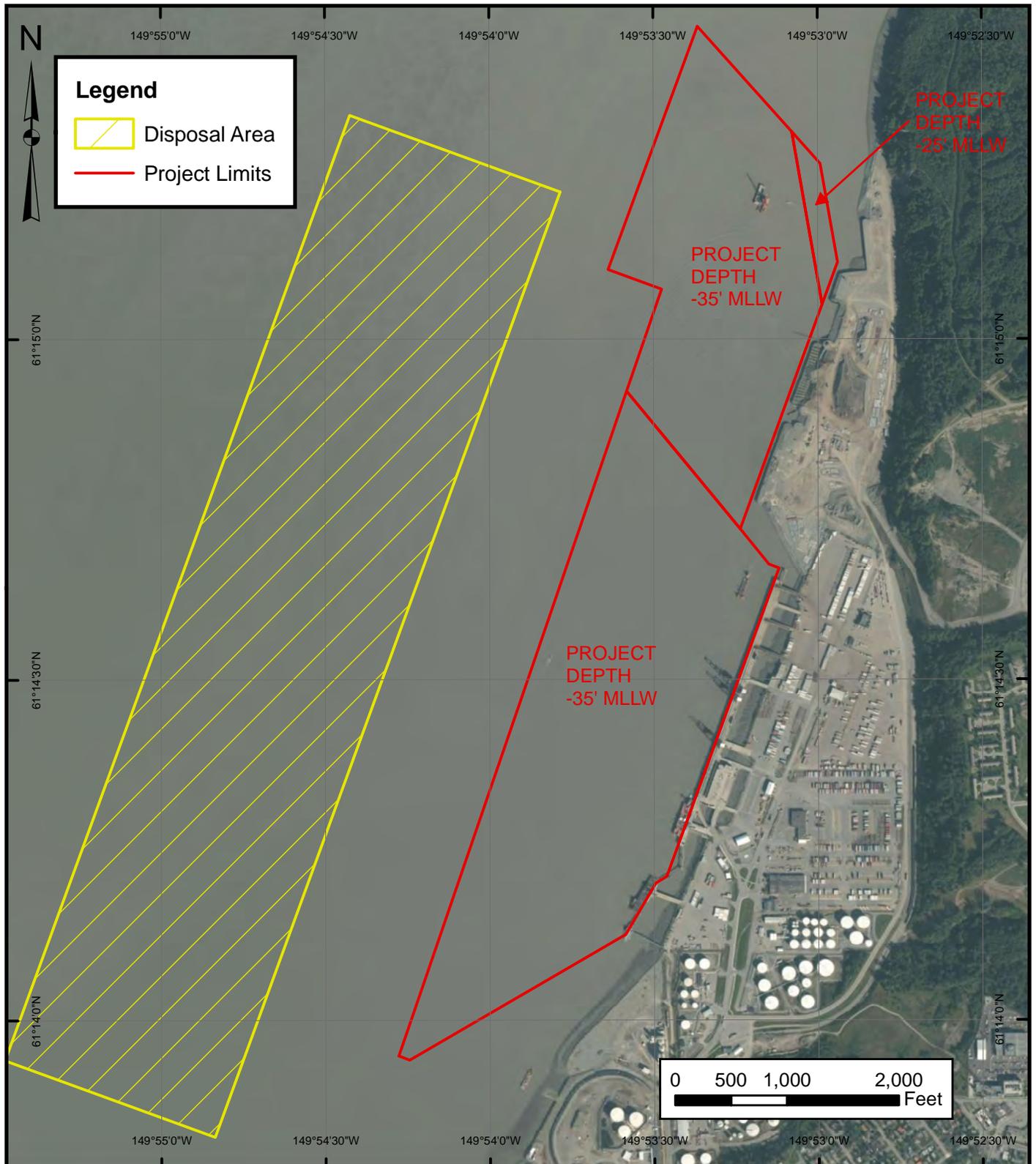


# **Anchorage Harbor**



**ANCHORAGE HARBOR ALASKA**

3 MAY 2013

NOTES:  
1. THIS LOCALITY IS SHOWN ON NOAA CHART NOS. 16665, 16660, AND 500.

Condition of Improvements  
 30 December 2014  
**Anchorage Harbor, Alaska**  
 (CWIS No. 000360, 010534)

**Authorization** (1) Rivers and Harbors Act, 3 July 1958 (House Doc. 34, P.L. 85-500, 85th Congress, 1st Session) as adopted, provides for a deep water harbor by dredging to a depth of -35 feet MLLW adjacent to docks and protected by two jetties or other works as required. (2) The Consolidated Appropriations Act, 2005, P.L. 108-447, Division C – Energy and Water Development Appropriations, Section 118(a) and 118(d) modified the project authorization for the Port of Anchorage in Anchorage, Alaska, directing the Secretary of the Army to construct a harbor depth to minus 45 feet mean lower low water for a length of 10,860 feet. Federal maintenance shall be in accordance with Section 101 of the River and Harbor Act of 1958, except that the project shall be maintained at a depth of minus 45 feet mean lower low water for a length 10,860 feet.

**Table 1**

<b>Existing Project</b>	<b>Length ft.</b>	<b>Width ft.</b>	<b>Depth ft.</b>
Basin	3000	Varies	-35

**Project Usage** The Federal project accommodates three dry cargo berths and an oil handling facility. It is the main supply and distribution center for the south-central and interior areas and the large Joint Military Base (JBER) that lies within the Municipality of Anchorage. The Port of Anchorage is the largest cargo port in Alaska; 4,358,766 tons of cargo (all commodities) passed through the port in 2008. There was 2.7 million tons of cargo reported for 2010.

**Progress of Work**

1959	The City of Anchorage constructs the first dry cargo berth at City Dock from 1959 through 1961, and dredges its approach to -35 feet MLLW.
1961	The approach to Ocean Dock is increased to a depth of -32 feet MLLW at a distance of 50 feet from the dock face, and with a depth of -10 feet MLLW at the dock face.

## Progress of Work

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- 1964 The earthquake of March 27th destroys the federally owned Army Dock, and damages Terminal 1 and the POL Dock. Repairs are authorized under the River and Harbor Act of August 19, 1964 (P.L. 88-451) as amended. Terminal 1 and the POL Dock are repaired.
- 1965 Emergency maintenance dredging is performed off the face of City Dock during July and August. The entire project basin is modified to a depth of -35 feet MLLW.
- 1966 Dredging begins in October 1966 and is completed in June 1967; it includes 2 feet of advance maintenance to 37 feet MLLW.
- 1967 Annual maintenance dredging begins by the Corps.
- 1968 Terminal 2 construction begins.
- 1970 Terminal 2 construction is completed.
- 1973 Terminal 3 construction begins.
- 1977 In early fiscal year 1977, Congress approves extending the original 2,000 foot project limit baseline to the present 3,000 foot length (P.L. 94-587, 22 OCT 76). Proposed jetties for the northern and southern ends of the project are de-authorized in November.
- 1978 Development of large shoals in the northern and southern ends of the project necessitates emergency dredging from October 1978 through January 1979. All phases of Terminal 3 construction are completed.
- 1981 Excessive shoaling during the spring and summer of 1981 requires using the Corps-owned dredge "BIDDLE", in addition to a contract dredge, to remove 894,076 cubic yards of material to reach project depth by the end of the ice free season.
- 1982 Annual maintenance dredging by contract begins during the summer; an average of 350 to 400 thousand cubic yards is removed each year through 1988.
- 1988 The angles of the dredging limits at the north and south ends of the project are changed from 45 to 30 degrees.
- 1992 The POL 2 terminal is completed.
- 1994 Sampling and testing of bottom sediments is conducted.
- 1995 Maintenance dredging quantities since 1988 average 200,000 to 250,000 cubic yards per year.
- 1997 The contractor removes 196,162 cubic yards of material during Phase I of the dredging which ended 15 August 1997.
- 1998 During the second year of a five year continuing contract, the combined quantity from 1 October 1997 through 30 September 1998 equals 356,000 cubic yards.
- 1999 Maintenance dredging removes 438,800 from 1 October 1998 through 30 September 1999.
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## Progress of Work

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- 2000 The Corps hopper dredge ESSAYONS is mobilized to the port in November 1999, and removes 565,000 cubic yards of hazardous shoaling in 15 days of work. The annual maintenance dredging contract removes an additional 893,236 cubic yards from 1 October 1999 through 30 September 2000.
- 2001 Two dredging contractors remove 167,140 cubic yards in October 2000 to achieve project depth. From June through September 2001, the dredging contractor removes 284,291 cubic yards of material. Dredging will continue through October.
- 2002 The dredging contractor removes 631,728 cubic yards from June through September, and with a carryover of 131,540 yards from last October, a total of 763,268 cubic yards is removed in this fiscal year. New vertical aerial photography is also taken.
- 2003 Dredging with clamshell only was insufficient to keep up with heavy infill to the project. Raise-the-Flag procedures were implemented in July and September to augment dredging needs with Manson's WESTPORT and Great Lakes' SUGAR ISLAND hopper dredges. With carryover yardage of 117,726 from October 2002 added to the clamshell yardage of 427,242 and the 300,000 cubic yards removed by the hopper dredge, we see a total of 844,968 cubic yards removed by contract in FY03.
- 2004 Utilizing both clamshell and hopper dredges; dredging contractors remove 2,504,511 cubic yards in FY04.
- 2005 The Consolidated Appropriations Act, 2005, P.L. 108-447, Division C – Energy and Water Development Appropriations, Section 118(a) and 118 (d) modified the original project authorization. Maintenance dredging removes 1,832,610 yards in FY05 using both a clamshell and hopper dredge. Plans for port expansion are underway.
- 2006 Port expansion work begins with fill on the north end backlands. Maintenance dredging for FY06 saw the removal of 1,749,385 cubic yards utilizing both a clamshell and hopper dredge.
- 2007 Port expansion continues with the completion of fill for the north end backlands. The planned expansion would move the dock face 400 feet seaward and lengthen it by about 5,000 feet. Annual maintenance dredging saw the removal of 1,766,357 cubic yards in FY07 using both a clamshell and hopper dredge. A total of 48 locations were bored for a geotechnical investigation of the sediments. Six of these locations were sampled to characterize the dredge material and newly exposed materials.
- 2008 Maintenance dredging continues with 1,338,281 cubic yards of material removed from the original project area. Port expansion will continue to the north for barge berth and north port areas. USACE Comprehensive Evaluation of Project Datums Compliance report completed and recorded in November.

## Progress of Work

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- 2009 Installation of the new sheet pile structure is nearly completed in the north expansion. Transitional dredging begins and removes 936,831 cubic yards of material within the new project limits by clamshell. Maintenance dredging continues with 702,366 cubic yards removed by clamshell and hopper dredges. A heavy shoaling rate along the north dock face in terminal three deposits three to five feet of material between November and December.
- 2010 Heavy shoaling along the dock face in Terminal 3 (TOTE berth) requires winter dredging during March and April. A Manitowoc 777 truck crane located on the dock edge and equipped with a clamshell bucket removed 8,275 cubic yards of material, which was hauled by truck to an upland disposal site at a cost of \$835,000. The operation was considered unsuccessful due to high cost and inability to achieve project depth 100 feet seaward of the dock face. The TOTE ship had to pull away from the dock face four times between 27 February and 3 May due to insufficient keel clearances. The Port-MARAD dock expansion project continues with inspection and removal of some of the previously placed sheet pile in the north expansion area. Members of the Corps, Port of Anchorage, Port MacKenzie, Coast Guard, Knik Arm Bridge and Toll Authority, and State Senate visit the physical and numerical models at ERDC in September. Several of the Anchorage Baseline Profiles are surveyed again in late October to further the ERDC modeling efforts. Manson Construction continued transitional and maintenance dredging, removing 1,013,122 and 619,506 cubic yards of material, respectively. Manson also removed two 120 ton WWII concrete pill boxes from the transitional dredging area and placed them in the project disposal site 109 feet below the water surface. Finally, in preparation for another winter of heavy shoaling in the TOTE berth, Manson used the clamshell and hopper dredges to complete advance maintenance dredging in late October.
- 2011 Manson Construction finished the last of their 3-year contract for transitional and maintenance dredging, removing 683,856 and 944,462 cubic yards, respectively. This completes the planned transitional dredging in the north extension area of the Port of Anchorage's dock expansion. In preparation for another winter of heavy shoaling in the TOTE berth, Manson used the clamshell NJORD and hopper dredge WESTPORT to complete advance maintenance dredging in late October. Sixty-nine surveys were completed during the dredge season.
- 2012 Manson Construction completed the first of a 3-year maintenance dredging contract, removing 1,067,684 cubic yards. A total of fifty-surveys were completed this dredge season. Manson used the hopper dredge WESTPORT to complete advance maintenance dredging in preparation for heavy shoaling in the TOTE berth during the winter.

## Progress of Work

2013	Manson Construction completed the second of a 3-year maintenance dredging contract, removing 1,021,088 cubic yards. Ten winter condition surveys and 56 dredge surveys were completed this dredge season. Manson used the hopper dredge WESTPORT to complete advance maintenance dredging in preparation for heavy shoaling in the TOTE berth during the winter.
2014	Above average shoaling in Terminal 3 between November and March resulted in mobilizing Manson Construction's clamshell dredge Andrew and the scow East Port to dredge the dock face between March 10 and April 30, a time not usually dredged in Anchorage. Sixteen winter surveys were performed. Manson Construction resumed normal dredging operations at the Port of Anchorage in May with the Westport hopper dredge which continued throughout the summer and through October. Fifty-four summer surveys were conducted. This was the last year of a 3-year dredging contract. The open water disposal site abeam the dock continued to be used.

**Table 2 Cost to Date**

Project	Description	Cost \$
010534	CG Appropriation	533,235
	CG Costs	533,235
000360	O&M ARRA Appropriation	26,874,313
	O&M ARRA Costs	26,874,313
	O&M Appropriation	165,846,413
	O&M Costs	164,730,707
	O&M Appropriation	3,274,000
	O&M Costs	3,274,000
	O&M Contributed Appropriation	638,080
	O&M Contributed Costs	638,080

**Table 3 Range of Tides in feet**

Tide Station	Mean Range	Diurnal Range	Extreme Range
945 5920 Anchorage AK	26.19	29.16	41.53

**Controlling Depth** The post-dredge survey conducted 31 October, 2014 shows that project depth is available over most of the Federal project. The port is subject to heavy shoaling and strong tidal currents.

**Table 4 Dredged Quantities and Contract Costs**

<b>Year</b>	<b>Quantity (cubic yards)</b>	<b>Cost \$</b>
2008	1,338,281	12,269,992
2009	1,639,197	19,745,417
2010	1,632,628	20,141,985
2011	1,628,318	13,326,782
2012	1,067,684	7,777,772
2013	1,021,088	7,084,970
2014	1,117,886	9,890,755

*Note - Quantities and costs are based on the dredging season.*

## **Maintenance Dredging Supplement**

### **A. General**

1. Anchorage Harbor is an annual maintenance dredging project; contract years have varied in duration from 1 to 5 years.
2. Heavy shoaling typically occurs along the main dock face, the POL dock, the area between the POL dock and the main dock, and along the 30 degree project limit extensions.
3. The project is open to dredge activity during the ice-free season. Work begins in the spring and continues through summer; when shoaling is greatest, and on into the fall until depth is achieved or ice conditions make further dredging untenable.
4. Historically, dredging operations were most often conducted with a clamshell and barge. Recently a small hopper dredge has been employed.

### **B. Sampling & Testing**

1. Samples were taken at five sites within the project, June 1994; all material was classified as silt (ML). One disposal site sample was taken and classified as silty gravel (GM).
2. Chemical analysis was conducted using (7) test methods as outlined with results below

**Table 5A Chemical Testing**

<b>Method</b>	<b>Chemical analysis</b>	<b>Results</b>
8080	Pesticides and PCB's	ND (none detected)
Series 6000-7000's	(8) RCRA Metals* (6 samples)	Arsenic 7-17 ppm, Barium 74-167 ppm, Chromium 23-47 ppm, Lead 4.1-13 ppm
415.1	Total Organic Carbon (1 sample)	2,450 ppm
418.1	Total Recoverable Petroleum Hydrocarbons	ND
160.3	Percent Solids	65.5 - 77.1 %
8260	Volatile Organic Compounds	ND
8270	Semi-Volatile Organic Compounds	ND

\* All heavy metal concentrations well below management levels; no cadmium, mercury, selenium, or silver were detected.

- Twelve primary samples were collected from six new borings, September 2007. Most of the sediments consisted of fine grained silts and clays, however some gravels were encountered in a few borings.
- Chemical analysis was conducted using (6) test methods as outlined with results below

**Table 5B Chemical Testing**

<b>Method</b>	<b>Chemical analysis</b>	<b>Results</b>
8260B	Volatile Organic Compounds	ND (none detect) or below minimum cleanup levels
8270C	Semi-Volatile Organic Compounds	ND or below cleanup levels
8082	Polychlorinated Biphenyls (PCBs)	ND
Series 6000-7000's	(8) RCRA Metals	(8) of (8) detected; all below cleanup levels
8081A	Chlorinated Pesticides	ND or below minimum cleanup levels
9060	Total Organic Carbon	2000-7000 ppm

Results were screened against Puget Sound Dredge Disposal Analysis (PSSDA) and the State of Washington Sediment Management Standards (SMS).

### C. Disposal

1. Dredged material is moved by barge and tug to the deep water site, dumped, and dispersed by tidal activity.
2. Prior to the 2009 dredging season, material is disposed in a rectangular site (2,000' x 3,000') 3,000 feet seaward from the southern end of the project. The geographic coordinates are as follows:

**Table 6A Original Disposal Area**

Corner	Latitude (N)	Longitude (W)
1	61°14'17.492"	149°54'29.236"
2	61°14'24.255"	149°55'07.622"
3	61°13'56.506"	149°55'28.663"
4	61°13'49.745"	149°54'50.285"

3. In 2009 the dredge disposal site was expanded to the north (2,000' x 6,000') to accommodate the new transitional dredging project. New geographic coordinates are as follows:

**Table 6B Current Disposal Area**

Corner	Latitude (N)	Longitude (W)
DS1	61°13'56.506"	149°55'28.663"
DS2	61°15'19.751"	149°54'25.510"
DS3	61°15'12.985"	149°53'47.108"
DS4	61°13'49.745"	149°54'50.285"

### D. Environmental Permits and Reports

1. A Final Environmental Impact Statement (FEIS) for operation and maintenance was circulated in January 1974. Environmental Assessments for maintenance dredging were completed in January 1978, March 1983, March 2001, and most recently in August 2008 by the Corps of Engineers. Findings of No Significant Impact (FONSI's) for maintenance dredging were signed in January 1978, April 1980, May 1983, April 2001, October 2008, and most recently in June 2009. A Biological Assessment (BA) of the Cook Inlet beluga whale was completed in April 2009 for Port expansion and associated dredging. The U.S. Fish and Wildlife Service issued a Final Coordination Act Report in April 2008 for dredging and disposal operations.
2. The following permits or authorizations have been issued for current dredging operations:

**Table 7 Environmental Permits**

<b>Agency Name</b>	<b>Date of Issue</b>	<b>Date of Expiration</b>
AK Department of Natural Resources	September 30, 2008	n/a
AK Department of Environmental Conservation	May 20, 2009	May 20, 2014
National Marine Fisheries Service	May 12, 2009	n/a

3. Water Quality: Four physical parameters were measured through (40) feet of water column in June of 1994; temperature, pH, conductivity, and oxidation-reduction potential (ORP). No chemical analysis was conducted. A geotechnical investigation for the Harbor Deepening Study was conducted in September 2007. Six locations were chosen for chemical sampling. Analysis showed no contamination detected above or approaching the Puget Sound Dredge Disposal Analysis (PSDDA) screening levels.

# Port of Anchorage, Alaska



Manson clam shell dredge - dredging the Port of Anchorage, March 2014.



Dredging operations, March 2014.

# Port of Anchorage, Alaska



The Port of Anchorage, February 2014.



Manson's Westport dredging the Port of Anchorage, 13 September 2013.

# Port of Anchorage, Alaska



Dredging operations, August 2011.



The North Expansion Area, 26 August 2011.