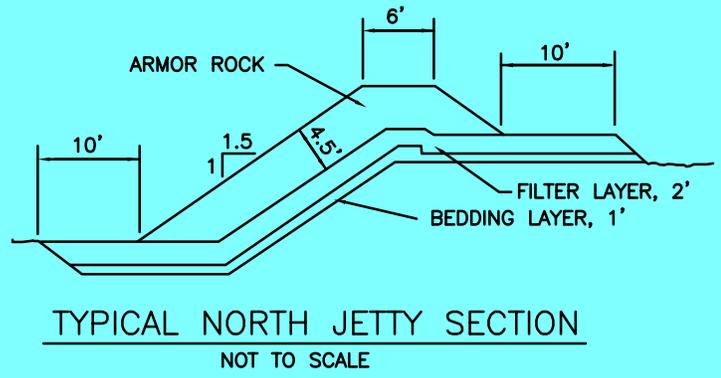
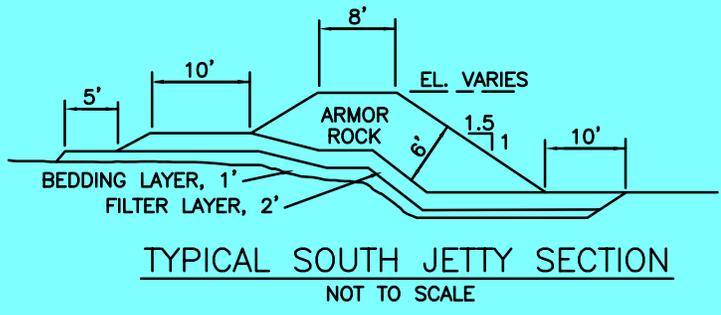
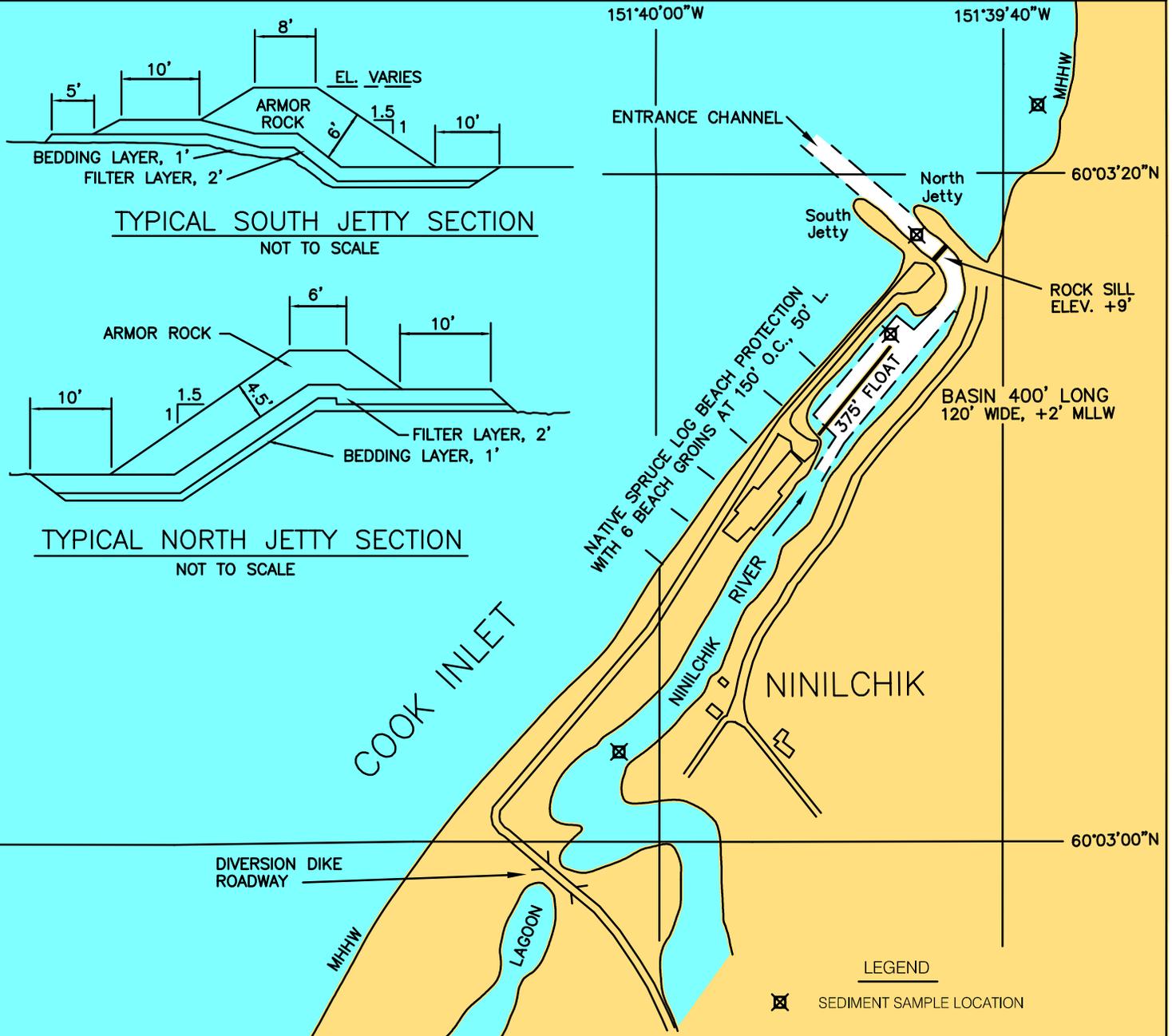


NINILCHIK HARBOR



LEGEND

☒ SEDIMENT SAMPLE LOCATION

NOTES

1. ELEVATIONS AND DEPTHS ARE IN FEET AND REFER TO MEAN LOWER LOW WATER (MLLW = 0.0').
2. THIS LOCALITY IS SHOWN ON USC & GS CHART NOs. 16640, 16013.



NINILCHIK HARBOR ALASKA

REVISED 1996

250 0 250 500
SCALE IN FEET

100 0 100 200
SCALE IN METERS

NINILCHIK HARBOR, ALASKA
(CWIS NO. 12640, 87345)

Condition of Improvement 30 September 2011

AUTHORIZATION: Rivers and Harbors Act, 3 July 1958 (P.L. 85-500 House Doc. 34, 85th Congress, 1st Session) as adopted, provides for a small boat basin 320 feet long by 150 feet wide to a depth of 2 feet above MLLW, an approach channel 400 feet in length and 50 feet wide to a depth of 9 feet above MLLW, and protected by a pile jetty 410 feet long.

EXISTING PROJECT:	<u>LENGTH</u>	<u>DEPTH</u>	<u>WIDTH</u>
• Basin	400 ft	+2 ft	120 ft
• Entrance Channel	575 ft	+9 ft	50 ft
• North Jetty	240 ft		
• South Jetty	240 ft		

PROJECT USAGE: The small boat basin provides protected moorage with half-tide access for 32 vessels. The basin and channel also provides access for fishing boats to unload their catch and take on supplies. The basin is an important harbor-of-refuge for lower Cook Inlet.

PROGRESS OF WORK:

- 1960 - A hydrographic survey and subsurface investigation are carried out in November.
- 1961 - During the design stage the pile jetty is deleted and the harbor dimensions are revised to 125'x 400'. Dredging and the placement of slope protection are completed in November.
- 1963 - The upstream sill is repaired, the entrance channel is realigned, and 20,780 cubic yards are removed from the basin and entrance channel by October.
- 1966 - Emergency work in June consists of the construction of a timber groin on the south side of the channel and realignment of the entrance channel.
- 1967 - A rehabilitation contract is initiated in May and completed in September to include: dredging to project depth, placement of slope protection, construction of two jetties, river diversion, and timber crib beach protection.
- 1968 - Maintenance dredging of the entrance channel is accomplished in May and June.
- 1969 - Emergency work is initiated in April to prevent erosion of the adjacent bluff. The entrance channel is dredged to project depth in May with the removal of 16,000 cubic yards of material. The basin is dredged in October to 0 feet MLLW by removing 11,000 cubic yards of material. A river diversion contract is carried out upstream in October and November. Sedimentation studies continue.
- 1970 - Emergency dredging in the southeast corner of the basin is carried out in June. Beach erosion protection is completed in August. Sedimentation studies continue.
- 1971 - Emergency dredging is again conducted in June. (Maintenance dredging becomes an annual event.) Repair of beach protection begins in October.
- 1972 - Annual maintenance dredging in May and June removes 12,000 cubic yards. Rehabilitation of beach protection is completed in June.

Continues on page 1-31a

NINILCHIK, ALASKA (continued)

30 September 2011

- 1974 - A beach groin contract is completed in June in addition to the annual maintenance dredging.
- 1978 - The log groin beach protection is removed and replaced with several types of experimental beach protection. Annual maintenance dredging is accomplished with the Corps owned pipeline suction dredge "WARREN GEORGE" beginning this year through 1988.
- 1992 - Sampling and testing of bottom sediments is conducted.
- 1994 - Littoral drift along the beach necessitates additional dredging of the entrance channel in June.
- 2003 - Severe flooding in November 2002 necessitates a winter hydrographic survey in December. Maintenance dredging is performed by contract with 11,432 cubic yards removed in May.
- 2004 - The normal annual maintenance dredging removes 9,856 cubic yards in May. Shoaling in the outer entrance channel necessitates minor emergency dredging later in the summer.
- 2005 - The contractor removes 5,303 cubic yards in the annual maintenance dredging effort. No dredging is required in the entrance channel.
- 2006 - Annual maintenance dredging removes 7,652 cubic yards from the federal project.
- 2007 - The dredging contractor removes 9,000 cubic yards from the entrance and mooring basin.
- 2008 - A pre-dredge survey was conducted in early May. Dredging removes 3,114 cubic yards from the inner harbor, 918 cubic from the outer entrance channel, and 134 cubic yards from the inner entrance channel. Thus, a total of 4,166 cubic yards was removed from Ninilchik. A post-dredge survey was conducted in late May.
- 2009 - No annual maintenance dredging was performed in the inner harbor due to the absence of a pipeline dredge in the area. Approximately 2,000 cubic yards were removed from the entrance channel with a small dozer and stockpiled on the beach south of the harbor entrance for ADOT&PF for road maintenance.
- 2010 - Maintenance dredging removed 13,996 cubic yards of material from the harbor basin and entrance channel. The harbor basin was hydraulically dredged and material in the entrance channel was removed with a dozer. A post-dredge survey revealed that project depth was not achieved in several areas. In late June, an extended dredging effort removed about 2,000 cubic yards in the entrance channel from the rock sill seaward.
- 2011 - Hydraulic and mechanical dredging removed a total of 12,296 cubic yards from the harbor basin and entrance channel.

COST TO DATE:

CG Appropriation 87345	\$838,245
CG Costs 87345	\$838,245
O&M Appropriation 12640	\$8,309,499
O&M Costs 12640	\$8,220,281

RANGE OF TIDE:

<u>Mean Range</u>	<u>Diurnal Range</u>	<u>Extreme Range</u>
16.6'	19.3'	32.0'

Continues on page 1-31b

NINILCHIK, ALASKA (continued)

30 September 2011

CONTROLLING DEPTH: A depth of +8.2 feet MLLW controls in the outer portion of the entrance channel, +10.5 feet MLLW on the inter channel, and a depth of +1.8 feet MLLW controls in the mooring basin from the post-dredge survey, May 2011. The project is subject to rapid shoaling due to sediments from Cook Inlet.

DREDGED QUANTITY AND CONTRACT COSTS:

Item	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Quantity Cubic Yards	7,652	9,000	5,600	2,000	13,996	8,842
Contract Cost	\$147,636	\$160,064	\$161,900	\$72,720	\$77,206	\$205,538

MAINTENANCE DREDGING SUPPLEMENT:

A. General

1. Ninilchik small boat harbor is an annual dredging project under a two year contract; Homer harbor is awarded under the same contract.
2. Shoaling is most prevalent in the boat basin and outer entrance channel, which is subject to littoral drift and major change from storm events.
3. The dredging window runs from 1 December to 15 May, usually commencing with ice out and ending as soon as possible to avoid conflicts with the in-coming salmon run.
4. The basin area is dredged from a floating plant with a hydraulic cutterhead, and the effluent conveyed by suction pipeline to an upland or low intertidal site. The outer entrance channel, seaward of the rock sill, is maintained by bulldozing the material out and away from the project.

B. Sampling & Testing

1. Four sites were sampled, two within the Federal project, in April 1992. The entrance channel site sample and the upland disposal composite sample were both classed as poorly graded sand with gravel (SP). The small boat harbor sample was classified as silt (ML).
2. Chemical analysis was conducted using (6) tests as outlined with results below:

Method 160.3 mod.	Total Solids	45.1 - 96.9 %
Method 415.1 mod.	Total Organic Carbon	0.36 - 2.63 %
Series 6000-7000's	(8) RCRA Metals*	Arsenic 3 - 16 ppm Barium 26 - 152 ppm Chromium 16 - 39 ppm
Methods 3540/8080	Pesticides and PCB's	(5) traces < 0.04 ppm detected from harbor sample, all below threshold
Method 8240	Volatile Organics	all below minimum thresholds or ND
Method 8270	Semivolatile Organics	TIC's 1.3 - 66.3 ppm, unknown hydrocarbons predominate

* (3) of (8) detected with ranges shown; all below minimum management levels.

C. Disposal

1. Sediments are conveyed via suction pipeline from the basin to enrich the beach north of the project or may be contained for use on local roadways. Material bulldozed from the entrance channel is now used as a containment dike for dredge spoils from the basin.
2. The traditional disposal site is located a minimum of 350 feet north of the project and below the +10 foot MLLW tide level (60°03'24"N lat. & 151°39'40"W long.). Material dredged during the 1995 through 2002 seasons was contained on the upper beach seaward of the project (center, 60°03'16.381"N 151°39'51.234"W) and removed for use on road construction.
3. Arrangements were made with ADOT for their continued use of the dredged material temporarily stock-piled at the upper beach site.

D. Environmental Permits and Reports

1. A Final Environmental Impact Statement (FEIS) for operation and maintenance was circulated in December 1973. Environmental Assessments for maintenance dredging were completed in April 1976, January 1978, and most recently in March 1996 by the Corps of Engineers. Findings of No Significant Impact (FONSI's) for maintenance dredging were signed in April 1980, February 1987, and most recently in April 1996. The Corps of Engineers also prepared a Disposal Management/Monitoring Plan (DMMP) and Beneficial Uses of Dredged Materials report at the time of the 1996 EA/FONSI.
2. The following permits or authorizations have been issued for current dredging operations:

Agency Name	Purpose	Date of Issue	Date of Expiration*
DGC	AK Coastal Management Program Review	April 24, 1996	N/A
ADEC	Clean Water Act - Section 401, Water Quality Certificate	April 26, 1996	N/A
ADOT&PF	MOA	April 21, 1997	N/A
Kenai River Center	Floodplain Permit KRC#8103	December 1, 2009	December 1, 2010
ADF&G	Combined Special Area Permit & Fish Habitat Permit #09-V-0163-SA	November 20, 2009	December 31, 2012

*A substantial change in project scope would trigger additional agency review and project authorization.

The Ninilchik project is located within the State of Alaska Clam Gulch Critical Habitat Area; therefore, agency project review and project monitoring are essential and continually necessary.

3. Water Quality: Five physical parameters were measured through the water column at the boat basin site, April 1992; temperature, pH, oxidation-reduction potential, conductivity, and salinity were recorded in the field at three depths. No chemical analysis was conducted.

Ninilchik Harbor



Salmon fishing season is in full swing. Photo taken 10 July 2009.

Ninilchik Harbor



Salmon season brings many sport fishing boats. Photo taken 10 July 2009.

Ninilchik Harbor



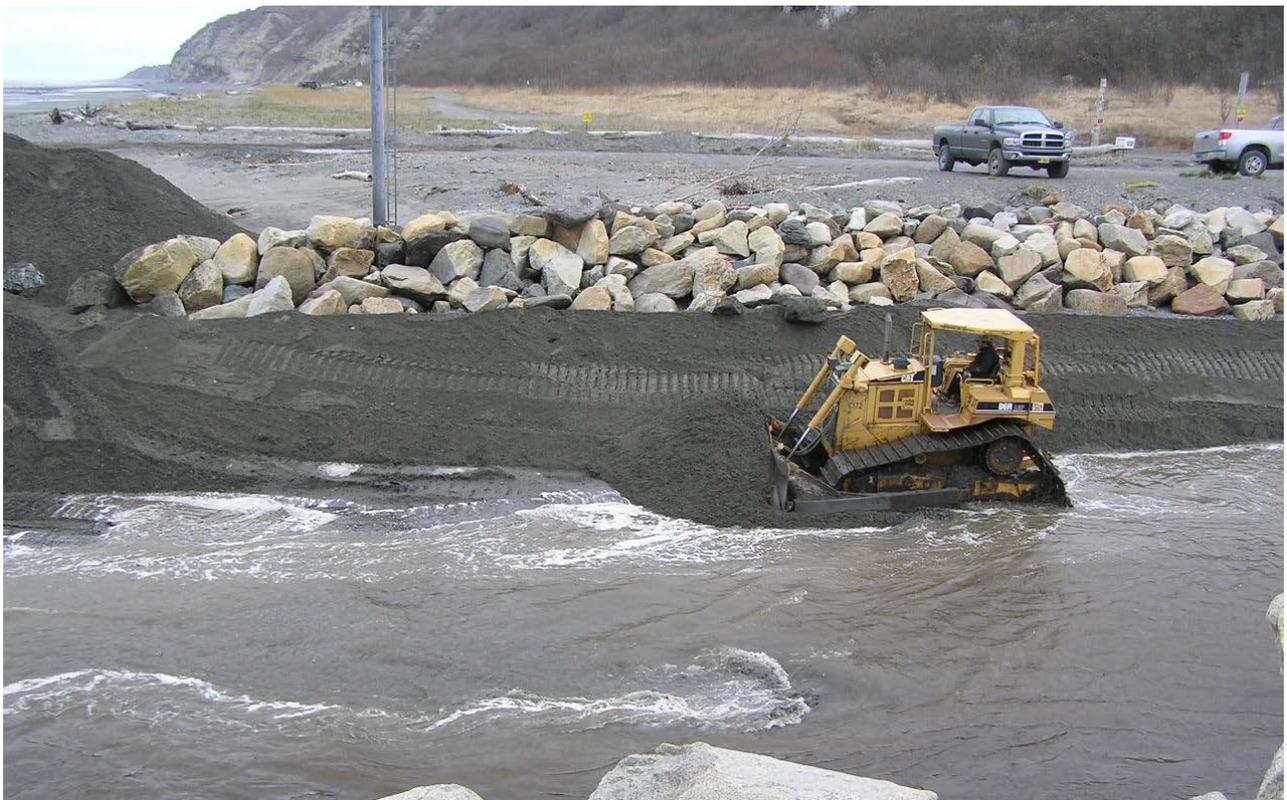
Ninilchik entrance channel (top) and Ninilchik Harbor (bottom) in September 2011.

Ninilchik Harbor



Ninilchik dredge with “BAR FLY” dredge (top) and entrance channel dredging in 2010.

Ninilchik Harbor



Ninilchik entrance dredging in 2010.