CHETCO RIVER ODMDS

(Local Sponsor: Port of Brookings Harbor)

DESCRIPTION

The Chetco River ocean dredged material disposal site (ODMDS) is located approximately one mile from the Chetco River entrance on the southern Oregon Coast (Figure 1). A detailed description of the disposal site and its historical use is presented in the Chetco Ocean Dredged Material Disposal Site ODMDS Designation, Final Environmental Impact Statement, prepared by the U.S. Environmental Protection Agency (USEPA), Region 10 in August 1991. This EIS was prepared by EPA using the July 1988 site evaluation report prepared by Portland District.

The Chetco River project has been dredged since 1962. Initial maintenance was performed with draglines and upland placement. Hopper dredging and ocean disposal at the project began in 1972. The current ocean disposal site was designated an Interim site by the U.S. Environmental Protection Agency in 1977 (40 CFR 228.12). On October 19, 1991 the site received final site designation. An average of around 37,000 cubic yards (cy) is disposed offshore annually, based on the 5-year period of 1999-2003. Disposal has ranged from a low of 7,800 cy in 1977 to a maximum quantity of 76,300 cy in 1981. Since 1996 dredged material has primarily been placed in a CWA Section 404 site nearshore to provide material to the beach south of the Chetco River jetties. The disposal history at the Chetco River is presented in Table 1.

Corner Coordinates (NAD 1983) for the Chetco River Section 102 ODMDS are:

42° 01' 55” N, 124° 16' 37” W;
42° 01' 55” N, 124° 16' 13” W;
42° 01' 37” N, 124° 16' 13” W;
42° 01' 37” N, 124° 16' 37” W.

Dimensions: 1,800' x 1,800'
Azimuth: 270° T
Average Depth: 70'

Project use, normal maintenance practices, and management practices are further described in various project documents as well as in the Chetco River Management/Monitoring Plan.

DREDGED MATERIAL DESCRIPTION

The sediment at the Chetco River entrance is primarily sand at the entrance and sand with accumulations of rock, gravel, and cobbles inside of RM 0+05. Sediments inside of the two boat

basins consist of sand with higher percentages of fine-grained sediments. Sediments within the Federal navigation project are tested periodically, generally every five years, to ensure they are still suitable for ocean disposal. Generally, this testing is limited to physical analyses since the material meets exclusion criteria found in the MPRSA regulations.

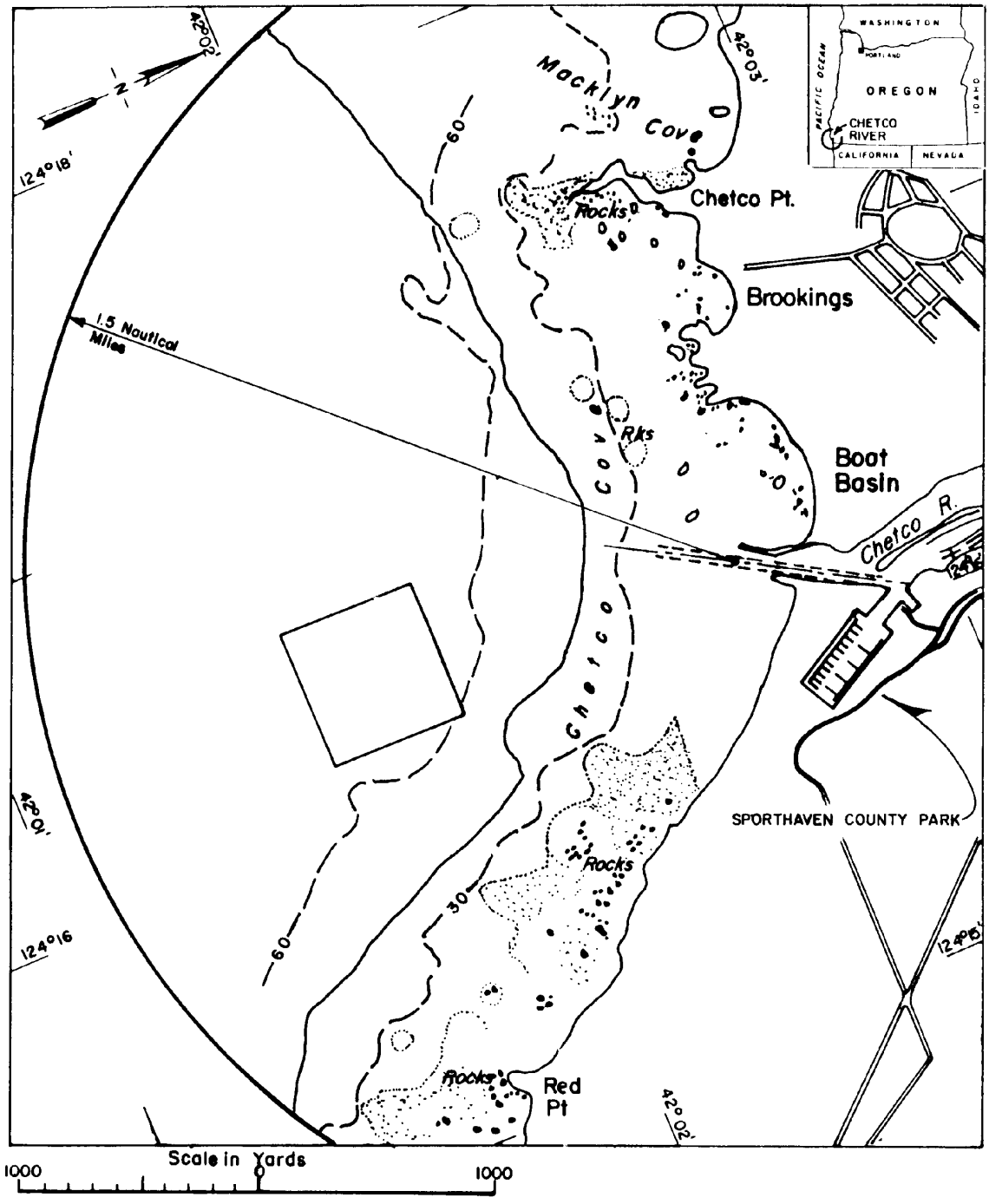


Figure 1: Chetco River ODMDS and vicinity

SEDIMENT EVALUATION

1974 June and 1981 February, Sediment samples from the channel of the Chetco Federal navigation project were collected by the USACE, Portland District.

1982 April, Sediment analyses included elutriate and bulk chemistry as well as physical characterizations of the Chetco River Navigation Project. Material from the mouth of the turning basin outward met exclusionary criteria and was suitable for unconfined in-water disposal. Material from the turning basin and small boat access channel had moderate levels of arsenic, cadmium, copper, and iron in the bulk sediment analyses indicating slight anthropogenic contamination. However, it was concluded that ocean disposal would be unlikely to cause significant biological or chemical impacts.

1991 May, Sediments analyses included bulk chemistry and physical characterization of channel, turning basin, and both the public and commercial turning basins. EPA funded this study which included analysis of material outside of the Federal channel. Physical analyses were similar to 1982. The small boat basin sediments contained PAHs (total 231-601 ppb) and pesticides (3-20 ppb). One sample had PCBs at 277 ppb. Metal concentrations were comparative to concentration found in 1982. Sediments from the upper ends of each of the two boat basins would require additional evaluations including biological analyses prior to ocean disposal. Material within the Federal portion of the project was considered suitable for unconfined in-water disposal.

1996 June, FEDERAL PROJECT. On June 24, 1996 nine samples were collected using a Ponar grab sampler from the Federal project area. Four samples were selected for chemical analysis. Three samples were from the turning basin (CHR-P-6, 7, & 8) and one (CHR-P-11) was from the entrance channel near the seaward end of the south jetty. The fine-grained character of the material represented by CHR-P-11, 13, and 14 was unexpected. Shoreward and seaward of this location the material is sand and gravel typical of material collected during previous evaluations. It is believed that the high flows experienced in February 1996 scoured a depression in this area. Subsequently fine grained material and organic debris filled this area during lower flow conditions. Sediment from the entrance channel is gray-colored sand and gravel except for the fine-grained material located near the seaward end of the jetties. Material from the turning basin consisted of silty sand. Total organic carbon (TOC) in the turning basin ranged from 1.33% to 2.12% while CHR-P-11 from the end of the jetties was 6.42%. No metals from the Federal project exceeded screening levels (SL). Pesticides and PCBs were undetected. Maximum TBT was 13 ppb (CHR-P-8) well below the established 73 ppb SL. PAHs were all below SLs in the Federal channel. All material from the Federal project was determined to be suitable for unconfined in-water disposal.

1996 JUNE, NON-FEDERAL PROJECT. Funded by EPA, 5 samples were collected from the 2 boat basins, outside of the Federal project and subjected to chemical analyses. Generally, grain size decreased while organic content increased towards the back of each basin. Sediment in the boat basins is dark gray and black silt with sand. Cadmium was slightly over the screening level (1.05 vs. 0.96 ppb SL) in one sample (CHR-P-1). The pesticides DDE and DDT

were found at 0.8 ppb and 1.0 ppb respectively at one location in the commercial boat basin (CHR-P-4). This is below the method reporting level (MRL) but above the method detection level (MDL). The SL for total DDT's is 6.9 ppb. There were no PCB's found in any of the samples tested in 1996, however, the 1991 investigation disclosed a PCB level of 277 ppb in the upstream portion of the sport basin near the dock. That same site, (CHR-P-2) was sampled during this study. The SLs for individual and total PAHs were exceeded in sample CHR-P-4 and CHR-P-5. Analytical results for TBT were below established level of concern, 73ppb (TBT). The highest concentration, sample CHR-P-5 (56ppb), was taken in the closed end of the commercial basin. CHR-P-4 was specifically collected to address the concerns expressed by DEQ with respect to the reported sandblasting of the FV Miss Sarah in 1994. Their concern over potential TBT contamination from this activity delayed Water Quality Certification for the placement of material dredged from the Federal project into the nearshore berm for the purpose of beach nourishment. A TBT level at CHR-P-4 was 13 ppb. While TBT is below concern levels, PAHs exceed concern levels in several areas. Further testing would be required prior to unconfined in-water disposal of material dredged in these Non-Federal areas.

2001 August, Six (6) sediment surface grab samples were collected from the Chetco River. All samples were submitted for physical analyses (mean 0.098 mm, with an average of 69.48 % sand and 30.19 % fines), with 3 samples analyzed for metals (9 inorganic), total organic carbon (TOC), pesticides/polychlorinated biphenyls (PCBs), phenols, phthalates, miscellaneous extractables, polynuclear aromatic hydrocarbons (PAHs) and organotin (TBT) pore water analysis.

Sediment represented by samples CHET-P-01 & CHET-P-02 collected during this sampling event exceeded DMEF screening levels (SL) for silver (Ag) nickel (Ni) and for 3 & 4 Methylphenol. The re-analysis of Ag does not indicate Ag to exceed SL. Re-analysis of Ni indicates levels to be at the 140 mg/kg SL. Three (3) analyses of 3 & 4 Methylphenol have varied results, with 2 of 3 analyses under the SL. The sediment represented by samples CHET-P-01 & CHET-P-02 is not suitable for unconfined in-water placement; further characterization will be necessary.

2002 August, The August 20, 2002 sampling event, at the Chetco Federal Navigational Project, was a follow-up to detected levels of nickel (Ni) and 3- & 4-Methylphenol above Dredge Material Evaluation Framework (DMEF) screening levels (SLs) reported in data from the August 21, 2001 sampling event. These levels were suspected to be laboratory error, as the compounds did not show up at the same levels in all sequential runs. Because it could not conclusively be determine from the existing data, that the results accurately characterized the sediment, it was determined that re-sampling and analysis be conducted to establish a weight of evidence of analytical data, that best reflects levels of contaminates of concern in the potential dredging prism.

A total of five (5) surface grab sediment samples were collected from the Chetco Federal Project on August 20, 2002 from the area referenced above as needing characterization due to unresolved analytical issues. All samples were submitted for physical analyses including total volatile solids. All five (5) sediment samples were submitted for analyses of only the chemicals in

question, nickel (Ni) and phenols, plus total organic carbon (TOC).

Mean grain size for all the samples is 0.07 mm, with 0.00% gravel, 56.35% sand and 43.72% fines, with 5.03% volatile solids.

None of the contaminants tested were found to be at or above the DMEF screening level (SL) upon re-sampling. Some low levels of phenols was detected, but not at levels of concern. Nickel (Ni) was, also, detected, but at levels sufficiently below the SL, hence, all sediment was determined suitable for unconfined, in-water placement without further characterization.

August 2007: A total of six (6) sediment samples were collected from the Chetco River Federal channel and boat basin entrance channel. The samples were collected using a Ponar sampling device, with all samples submitted to the lab for physical analyses including Total Volatile Solids. Four (4) sediment samples were analyzed for metals (9 inorganic), TOC, pesticides, PCBs, organotin, phenols, phthalates, miscellaneous extractables, and PAHs.

The physical analyses varied widely, with the two (2) samples, located closest to the mouth, being 100% gravel with 0% volatile solids. The other four (4) samples were all less than 5% gravel. Samples CHET-P-03 and CHET-P-06 are classified as silty sand with 78% and 64% sand, respectively. Samples CHET-P-04 and CHET-P-05, furthest into the boat and turning basins, are classified as sandy silt with 55% and 61% silt, respectively. Volatile solids for these four (4) samples ranged from 6.13% to 8.17 %.

Chemical analyses and historical data were used to evaluate material within the proposed dredging prism and determine it suitable for unconfined, in-water placement without further characterization.

March 2011: A tsunami struck the southern Oregon Coast, including the Port of Brookings. Surges from the tsunami snapped dock pilings, sunk boats in the two boat basins, and destroyed the sea wall opposite the boat basin entrance channel. Due to the contamination in the northern boat basin and the potential introduction of new sources of contamination, the Corps proposed to resample the federal project ahead of the normally scheduled sampling.

Six box core grab samples were collected from the entrance channel, turning basin, and boat basin access channels on June 9, 2011. All of the samples were submitted for physical analysis with two further analyzed for chemicals of concern. A gravity core sample was planned but not completed in the northern boat basin because of gravels and cobbles present at the location.

The material was classified as poorly graded sand with silt or gravel, with an average of 45% gravel, 49% sand, and 6% fines. Total organic carbon (TOC) averaged 0.519%. Levels of metals were consistent with historical values and did not approach the SEF screening levels (SLs). No pesticides or PCBs were detected in any of the samples above the laboratory method reporting limits. All method reporting limits (MRLs) were well below the SEF screening levels. No chlorinated hydrocarbons were detected above MRLs in any of the samples. No LPAHs or HPAHs were detected in sample BC-01 above the MRLs. Sample BC-05 contained only very

low concentrations of LPAHs (total of 26.45 ug/kg) and HPAHs (73.7 ug/kg), several orders of magnitude below the SEF marine SLs of 5,200 ug/kg and 12,000 mg/kg. The samples were analyzed for bulk TBT in-lieu of the porewater analysis. Bulk TBT was not detected in either of the samples (SL = 75 ug/kg). Gasoline, diesel, and residual range petroleum hydrocarbons were not detected in either sample. The material within the study area is suitable for dredging and unconfined in-water placement without further characterization.

ODMDS HISTORY

Designation

1977. The Chetco River ODMDS received interim site designation from EPA.

In 1991 August, EPA, Region 10 published the Chetco, Oregon Dredged Material Disposal Site Designation, Final EIS. The final rule was published in the Federal Register on **September 19, 1991**, effective date of final designation was **October 19, 1991**.

Evaluation

In 1978, the USACE, Portland District issued a report entitled "Technical Report, Chetco River Hopper Dredge Scheduling Analysis." The study included a cursory analysis of the physical and biological conditions of the offshore disposal site and a series of bottom photographs which clearly illustrated the coarse material in a portion of the site.

In 1984 August, the USACE, Portland District conducted an underwater video survey of the disposal site to determine the extent of the gravel/cobble and the suitability of the general area for fish trawling.

During August and September 1984, Site specific geologic information and geophysical investigations by sidescan sonar and sub-bottom acoustic reflection profiling was performed. In addition, existing geologic and oceanographic data pertinent to the Chetco River interim ODMDS was compiled.

In 1988 July, the Chetco Ocean Dredged Material Disposal Site Evaluation, Final Report was published by the Portland District.

Management/Monitoring

A pilot **Management/Monitoring Plan**, for the Chetco River ODMDS was completed and coordinated for public review in **June 1996**.

Bathymetric surveys are to be conducted annually as a Tier I activity as described in the management/monitoring plan for this project. Surveys of the ODMDS have been conducted in **August 1985, April 1986, September 1992, July 1994**, **May 1996**, **May 1997, July 2000, June 2001**, **May 2002**, **September 2003**, **September 2004**, **March 2005**, **May 2006, April 2007**, **August 2008**, **May 2009**, **June 2010**, and **September 2010.** Surveys of the nearshore berm have been completed for **April 1995, July 1996, May 1997**, **May 1998**, **September 1998**, **July 2000**, **June 2001**, **May 2002**, **September 2003**, **September 2004**, **March 2005, June 2006, April 2007**, **August 2008, June 2009**, **June 2010**, and **August 2011**. Copies of the ODMDS bathymetric surveys along with bathymetric difference plots for Chetco River are included at the end of this section.

In 1993 July, Sidescan sonar surveys were conducted at the Chetco River ODMDS in response to comments and concerns by representatives from ODFW and the Oregon Department of Land Conservation and Development (DLCD). They suggested at a **January 22, 1992** meeting that the management plan for this project require selective placement of gravel

sediments from the channel. Their concern was that dredged material was altering the bottom substrate at the site. An ODFW study had identified gravel substrates as being much more productive then previously thought. The survey indicated little change to the substrate and that alteration to the present disposal practices at the site was not necessary.

Management/Monitoring Actions and Recommendations

Beginning in **1993**, CENWP-OP-NWH was notified of requirements for annual bathymetric surveys of all ODMDSs as a Tier I monitoring requirement. Monitoring has indicated no mounding or other reasons to modify present management practices at this location. Continuation of present management and monitoring practices is recommended to meet project and regulatory obligations. Special studies such as the **1993** sidescan sonar survey should be conducted as needed.

At the request of the local sponsor, the Port of Brookings Harbor, material dredged since **1996** has been placed at a nearshore berm in an effort to feed sand to the beach. This is a Clean Water Act Section 404 Site not an ODMDS regulated under the MPRSA. The nearshore berm continues to be a dispersive site at the present volume and rate of material placement. No long term mounding has occurred therefore it is recommended that this site and disposal practice continue. The dredged material placed into this site appears to be feeding the beach as intended. Monitoring and management of the nearshore berm shall be similar to the ODMDS.

It is recommended that the nearshore 404 site (Nearshore Berm) be used to the maximum extend practicable each year. This is considered a beneficial use site for material dredged form the Chetco River project.

A total of 38,332cy of dredged material in **2001** was placed in the Chetco River ODMDS. In **2010** a total of 10,835 cy of fine grained material dredged by clam-shell and barge from the Chetco Harbor turning basin was placed at the EPA designated ODMDS. It was felt that this material would not be suitable for nearshore placement to feed the beach. That year 24,608 cy of sandy dredged material from the entrance dredged by hopper dredge was placed at the nearshore berm placement area.

The **2001** sediment evaluation for two (2) of six (6) samples collected within the Chetco Project, indicated that sediment should not be dredged without further characterization, due to inconclusive lab results. The re-sampling and evaluation, of the area in question, was conducted in **2002**. All material from the Chetco Project was then determined to be suitable for unconfined, in-water placement without further characterization (see the **2001** & **2002** Chetco Sediment Evaluation Reports or sediment report summaries, included above, for additional details).

Chemical analyses and physical data collected in **2007** along with historical data were used to evaluate material within the proposed dredging prism and determine it suitable for unconfined, in-water placement without further characterization.

On **March 11, 2011** a tsunami struck the southern Oregon Coast, including the Port of Brookings. Surges from the tsunami snapped dock pilings, sunk boats in the two boat basins, and destroyed the sea wall opposite the boat basin entrance channel. Due to the contamination in the northern boat basin and the potential introduction of new sources of contamination, the Corps sampled the federal project ahead of the normally scheduled sampling. Gravel and rock as well

as a mix of fine grained material and rock were found in the inner basin where historically only fine grained material was located. The effect of the tsunami was to scour out the fine grained material in areas maintained by the USACE. No contaminates of concern were found approaching any marine screening level.

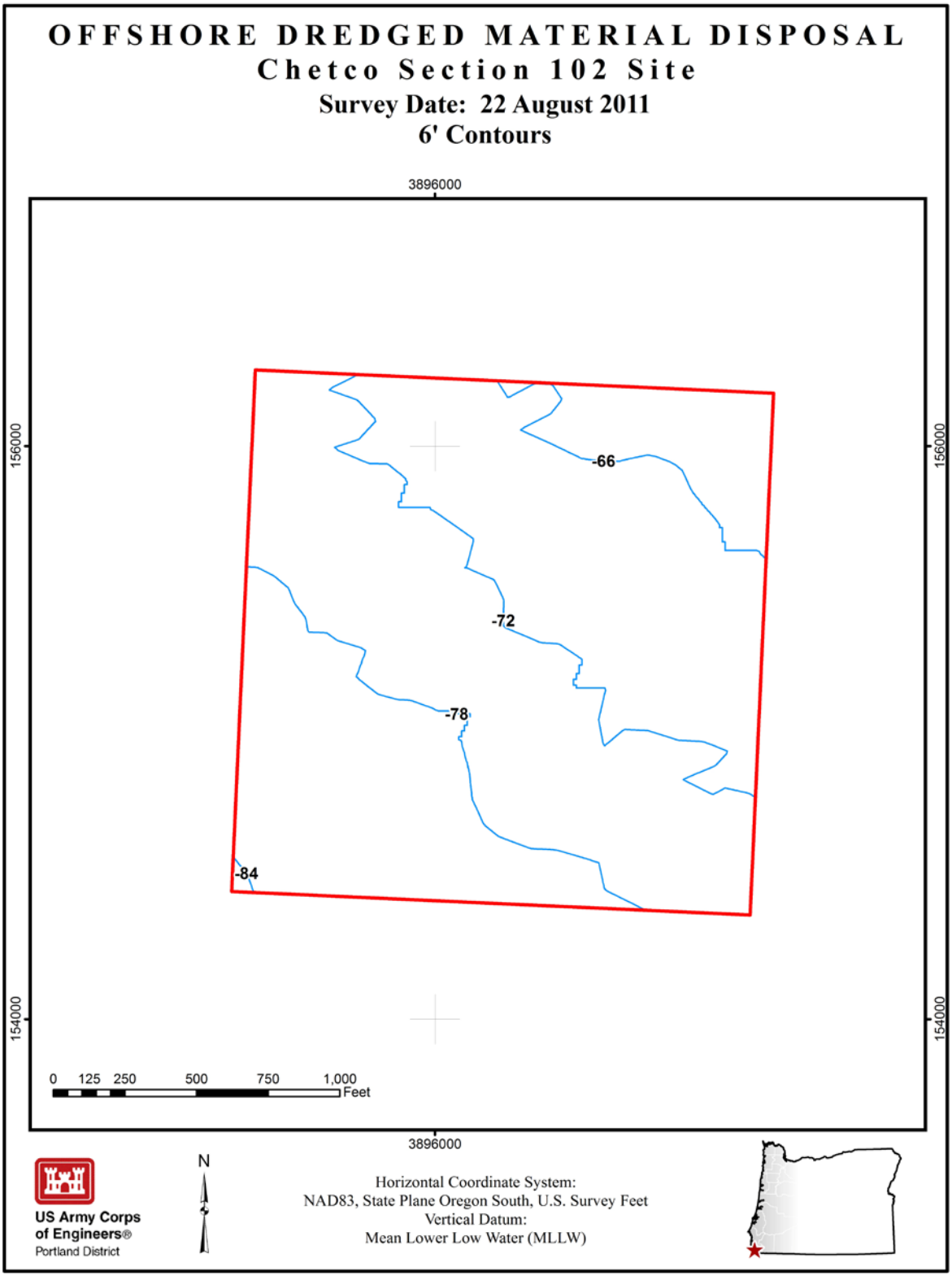
In **2012** the Port of Brookings is proposing to dredge the boat basin using a pipeline dredge. Up to 28,000 cy of dredged material will be directly placed by pipeline into the EPA Section 102 ODMDS in 2012 with up to 12,000cy placed each subsequent year. This is the first time on the Oregon Coast that such placement has been proposed.

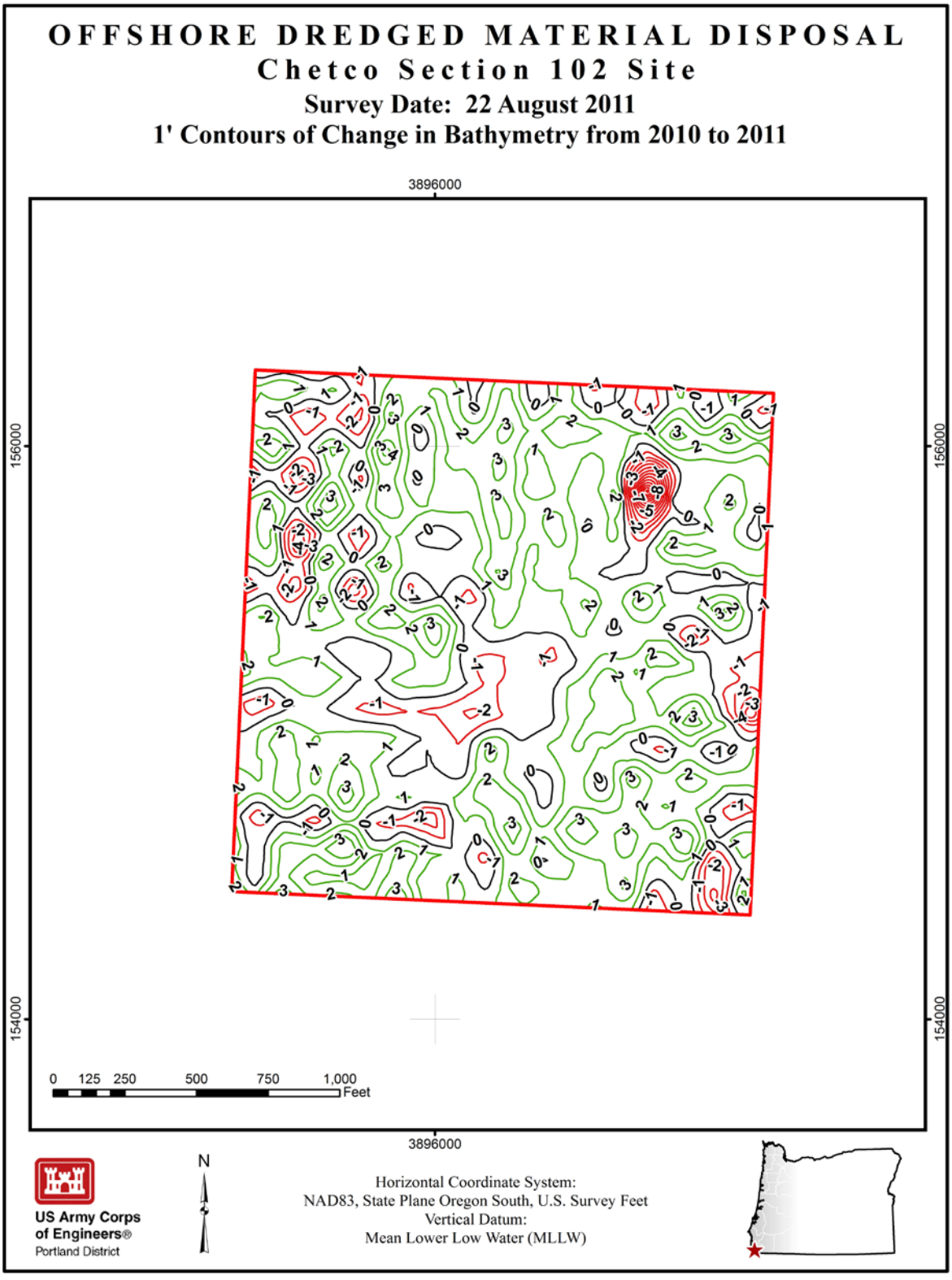
The San Francisco District has made inquiries as to the possibility of using the Chetco River ODMDS for material dredged from the entrance and harbor at Crescent City, California. Questions that need to be address should this option be further pursued are sediment quality, volume of material, and compatibility of material with the existing substrate at the Chetco River ODMDS.

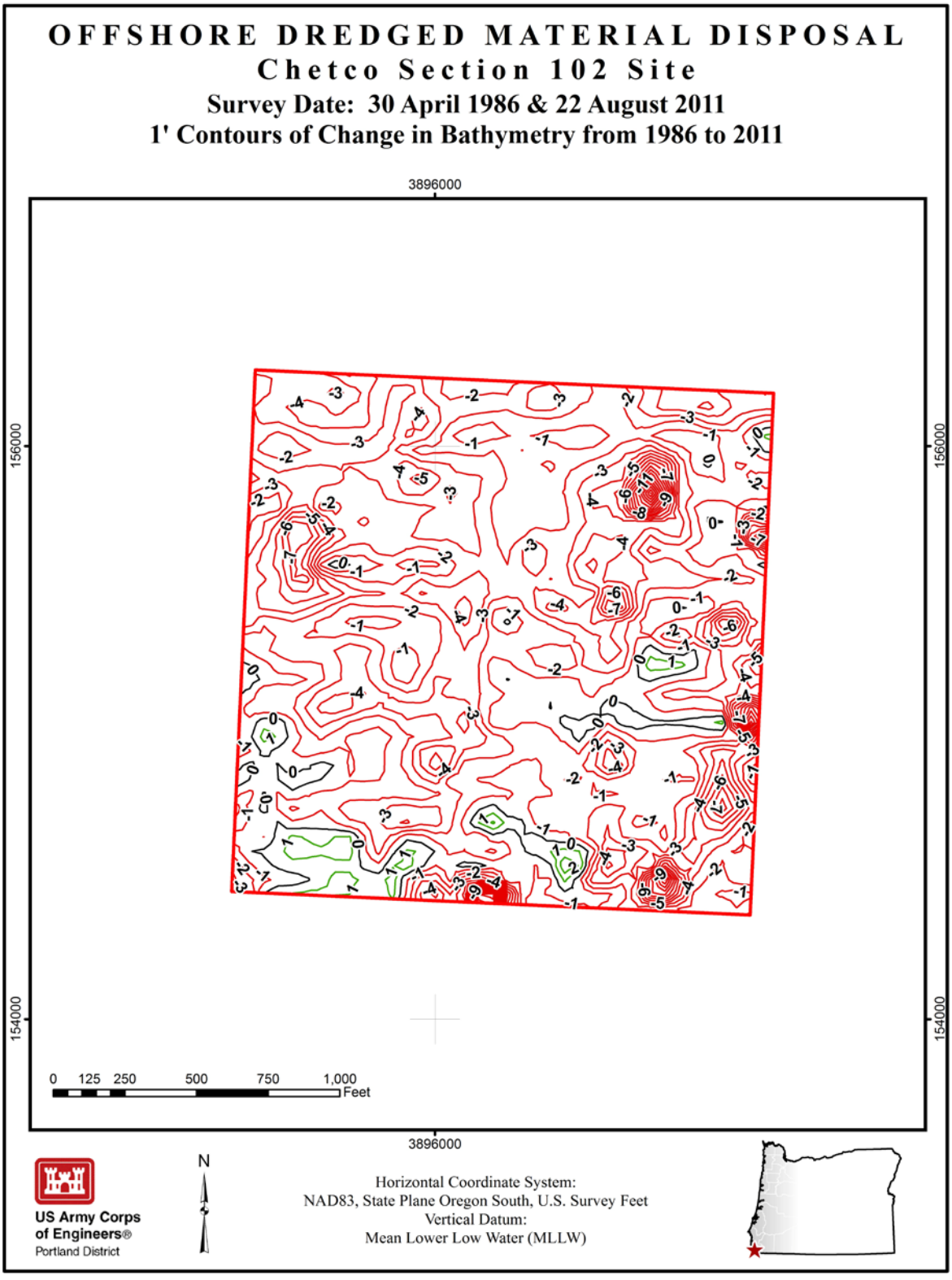
TABLE 1
Ocean Disposal History
Chetco River Ocean Disposal Site
(Cubic Yards)

Fiscal Year	Hopper Dredge
1972-1982	508,746
1983	59,715
1984	31,874
1985	35,145
1986	40,267
1987	15,167
1988	53,569
1989	20,041
1990	36,756
1991	31,481
1992	27,800
1993	35,300
1994	15,772
1995	29,805
1996*	30,262
1997*	36,638
1998*	38,548
1999*	39,813
2000*	36,094
2001	38,332
2002*	33,900
2003*	35,770
2004*	27,716
2005*	29,005
2006*	22,149
2007*	31,089
2008*	18,501
2009*	23,791
2010**	35,443
2011*	10,011

*Material placed in the nearshore berm.
**In 2010 a total of 10,835 cy of fine grained material went to the ODMDS.


OFFSHORE DREDGED MATERIAL DISPOSAL
Chetco Section 102 Site
Survey Date: 22 August 2011
6' Contours
3896000
156000
154000
-66
-72
-78
-84
0 125 250 500 750 1,000
Feet
US Army Corps
of Engineers®
Portland District
N
Horizontal Coordinate System:
NAD83, State Plane Oregon South, U.S. Survey Feet
Vertical Datum:
Mean Lower Low Water (MLLW)


OFFSHORE DREDGED MATERIAL DISPOSAL
Chetco Section 102 Site
Survey Date: 22 August 2011
1' Contours of Change in Bathymetry from 2010 to 2011
3896000
156000
154000
0 125 250 500 750 1,000
Feet
US Army Corps
of Engineers®
Portland District
N
Horizontal Coordinate System:
NAD83, State Plane Oregon South, U.S. Survey Feet
Vertical Datum:
Mean Lower Low Water (MLLW)


OFFSHORE DREDGED MATERIAL DISPOSAL
Chetco Section 102 Site
Survey Date: 30 April 1986 & 22 August 2011
1' Contours of Change in Bathymetry from 1986 to 2011
3896000
156000
154000
0 125 250 500 750 1,000
Feet
US Army Corps
of Engineers®
Portland District
N
Horizontal Coordinate System:
NAD83, State Plane Oregon South, U.S. Survey Feet
Vertical Datum:
Mean Lower Low Water (MLLW)