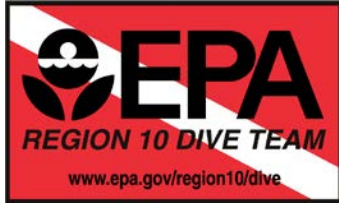


US EPA ARCHIVE DOCUMENT



EPA Region 10 Dive Unit

Disposal of Dredged-material at Open-water Sites 1979-2013

What: The Region 10 Dive Unit participated in an interagency effort to assess benthic conditions at dredged-material open-water disposal sites around Region 10. In 1979 and 1982, surveys were conducted in Bellingham and Padilla Bays, located near Bellingham and Anacortes, WA, respectively. In 2008 and 2009, various locations were surveyed off of the Oregon Coast.

Why: At Bellingham Bay there was concern that the 58 acre marine disposal site lacked the capacity to contain additional dredged material from Corps of Engineers and Georgia Pacific dredging projects. At Padilla Bay, state resource agencies wanted to evaluate the effect of disposing of 150,000 cubic yards of sandy Swinomish Channel dredged material on an existing silt bottom. It was believed that a sandier substrate might improve Dungeness crab habitat at the disposal site.

This information will be used by the program to assist with determinations relative to:

- Movement of materials toward productive fishery or shellfishery areas [§ 228.10 (b) (2)]
- Evaluation of significant effects on biota characteristic of the general area [§ 228.10 (b) (3)]
- Dredge material disposed of at the site has accumulated at the site or in areas adjacent to it, to such an extent that major uses of the site or of adjacent areas are significantly impaired [§ 228.10 (c) (1)(iii)]

Where: Center coordinates for the disposal sites are: 48° 49' 40" N Lat. and 122° 31' 30" W Long. in Bellingham Bay; 48° 31' 04" N Lat. and 122° 33' 05" W Long. in Padilla Bay. 2008 surveys took place off the Columbia River, Coquille River, and Chetco sites. 2009 and 2013 surveys took place off the Chetco River site. The Chetco ODMDS is near Brookings, OR, at the outlet of the Chetco River, near the California/Oregon State line.

When: The Bellingham Bay site was inspected in February 1979 and April 1982. The Padilla Bay site was inspected in April 1982. 2008 surveys took place off the Columbia River, Coquille River, and Chetco sites. Chetco River was again surveyed in September of 2009 and August 2013.

How: For early work, benthic observations were made along transects radiating out from the approximate center of the disposal areas. A buoy was located near the center of each site. Still photographs were taken. No sediment samples were taken.

In 2009, Divers utilized sidescan images taken from the June 2008 Bold survey to identify potential higher value habitat areas that could be adversely impacted by dredge disposal. These waypointed targets were investigated for the type of rocky features that would support abundant marine life that could be adversely impacted by dredge material disposal.

Equipment: EPA vessel Monitor was used as the dive platform to add safety in the event of heavy swell expected for the area over smaller Region 10 vessels, SCUBA equipment, 32% Nitrox to extend bottom

time and safety, HC7 high definition video camera to take high definition (HD) video while shooting 6 megapixel still images. Weather continued to be a significant issue at Chetco as it was during the 2008 survey aboard the Bold.

Results: In 1979 at Bellingham Bay, the divers noted that 1) the bottom was composed mainly of compacted clay and silty sand, 2) the profile in the disposal area was very uneven (hummocky), and 3) some of the dredged material was located outside of the established disposal site (it was unclear whether the cause was "drift" from the site or short-dumping). By 1982, the profile at the Bellingham Bay site appeared to be much more even and the dredged material appeared to have settled. No evidence of erosion was observed and benthic animals were recolonizing the area. In Padilla Bay, the divers noted that despite the disposal of sandy dredged material, the dominant substrate still appeared to be silt. Based on the observations, the interagency dive teams recommended that continued dumping could occur at both disposal sites.

In 2009, Photos, video, and narrative descriptions were conveyed to Region 10 Aquatic Resource Unit staff (ARU). Due to continued low to zero visibility conditions as well as heavy surge/swell encountered at Chetco, limited photos and video could be taken. Though visibility on the bottom was inhibited, visibility 1-3 meters above the bottom was quite clear (15 foot horizontal visibility), suggesting significant sand movement near the bottom. Divers found substantial agreement between observed rocky reef areas and sidescan data. All sizeable, suspected rocky areas that were dove based on the sidescan were indeed rock substrate that had a variety of marine life growing on them. With this information EPA will assess whether the management of areas within the ODMDS need to be changed to better manage any high value habitat there. 2013 surveys experienced calm conditions allowing more expansive video surveys to help guide sediment placement.

Conditions were substantially better in 2013, with several days of calm conditions. Rocky reef areas were captured on video and still photos for use by ARU staff in disposal decision making. See figure below.

More Details:

[Video: Chetco ODMDS Survey](#) (2 minutes 30 seconds, 27 MB, Quicktime Video Format)

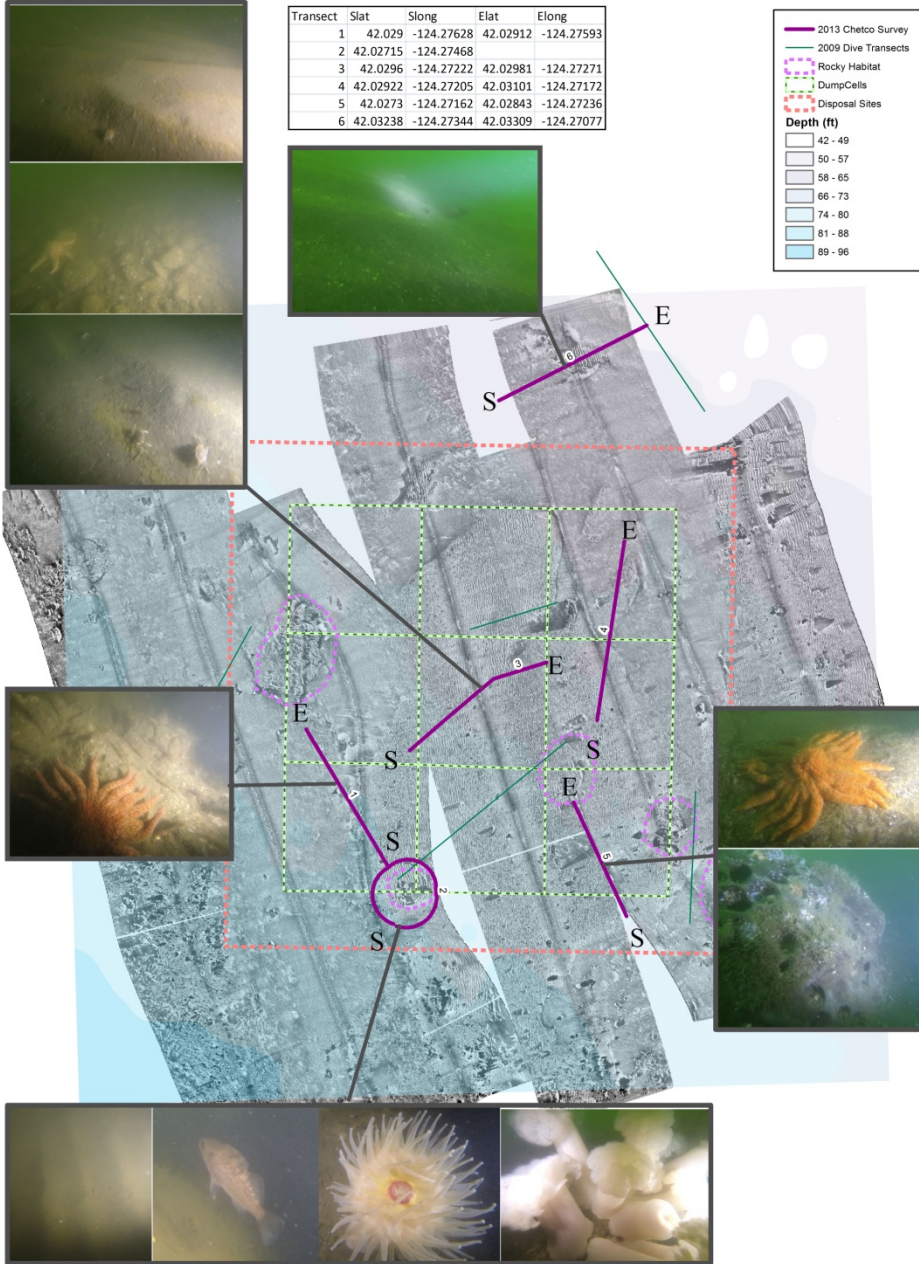
[Video: Diver Survey of Coquille Ocean Dredged Material Disposal Site, Southwest Corner \(Coquille #3\)](#), August 27, 2008, 3:30, (60 MB Quicktime video)

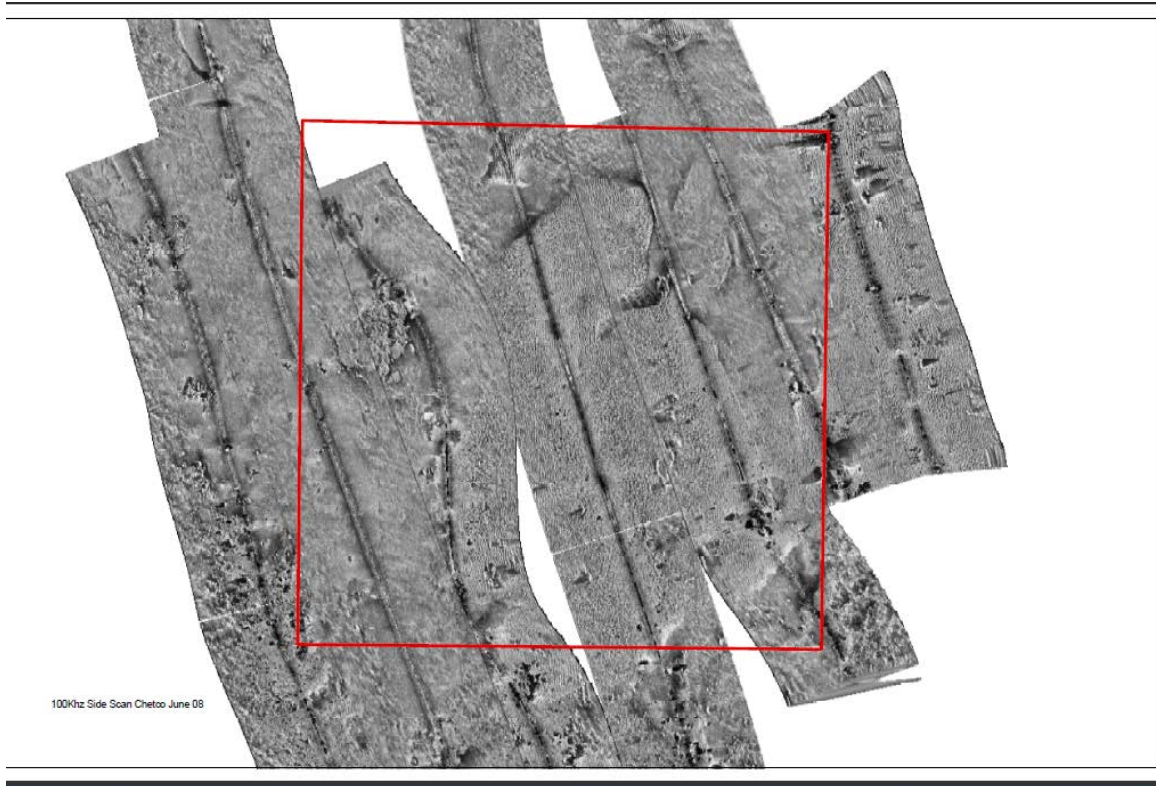
Contact Info: [Sean Sheldrake](#), (206) 553-1220, Sheldrake.sean@epa.gov
Rob Pedersen; pedersen.rob@epa.gov

Photos:

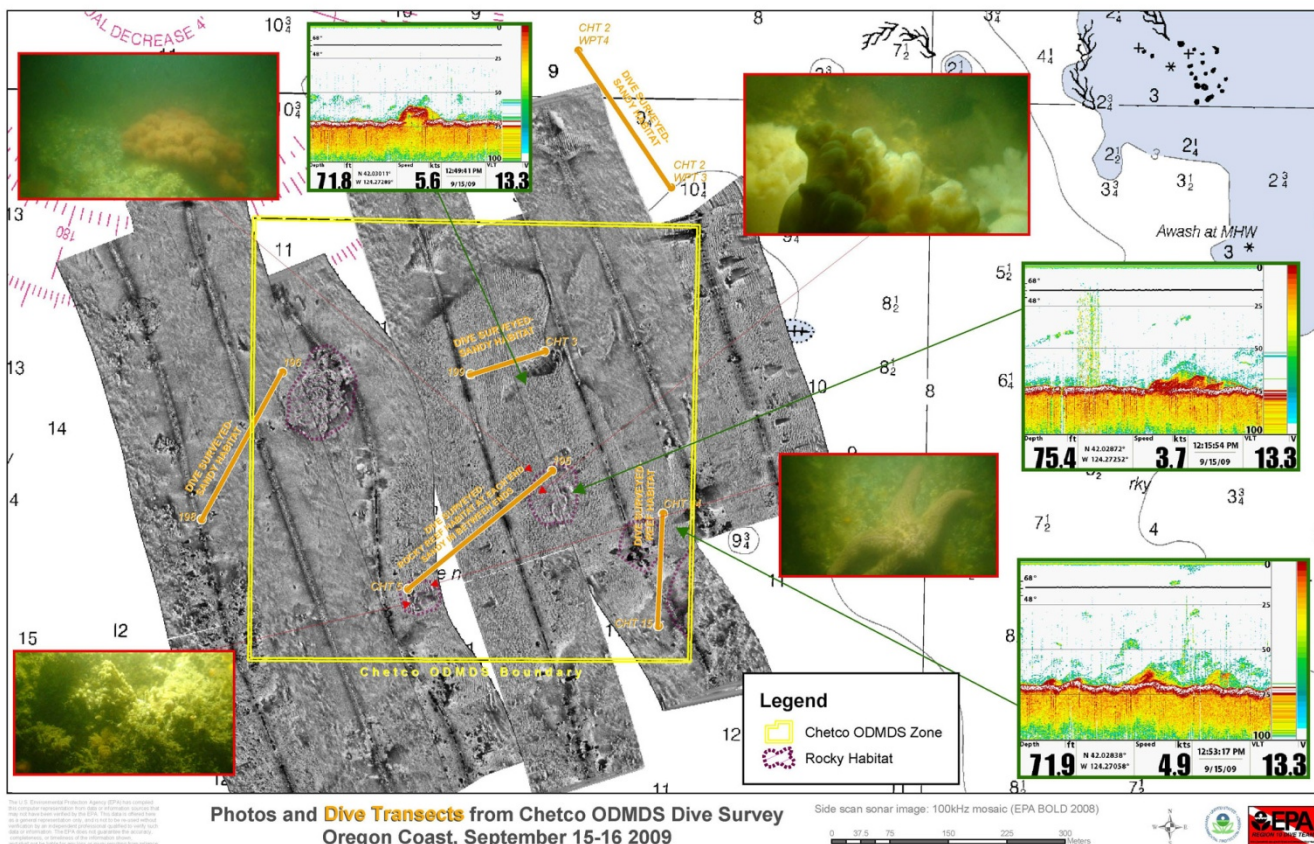
2013 Survey and findings:

Chetco ODMDS





2008 sidescan of the Chetco River ODMDS off the OSV Bold

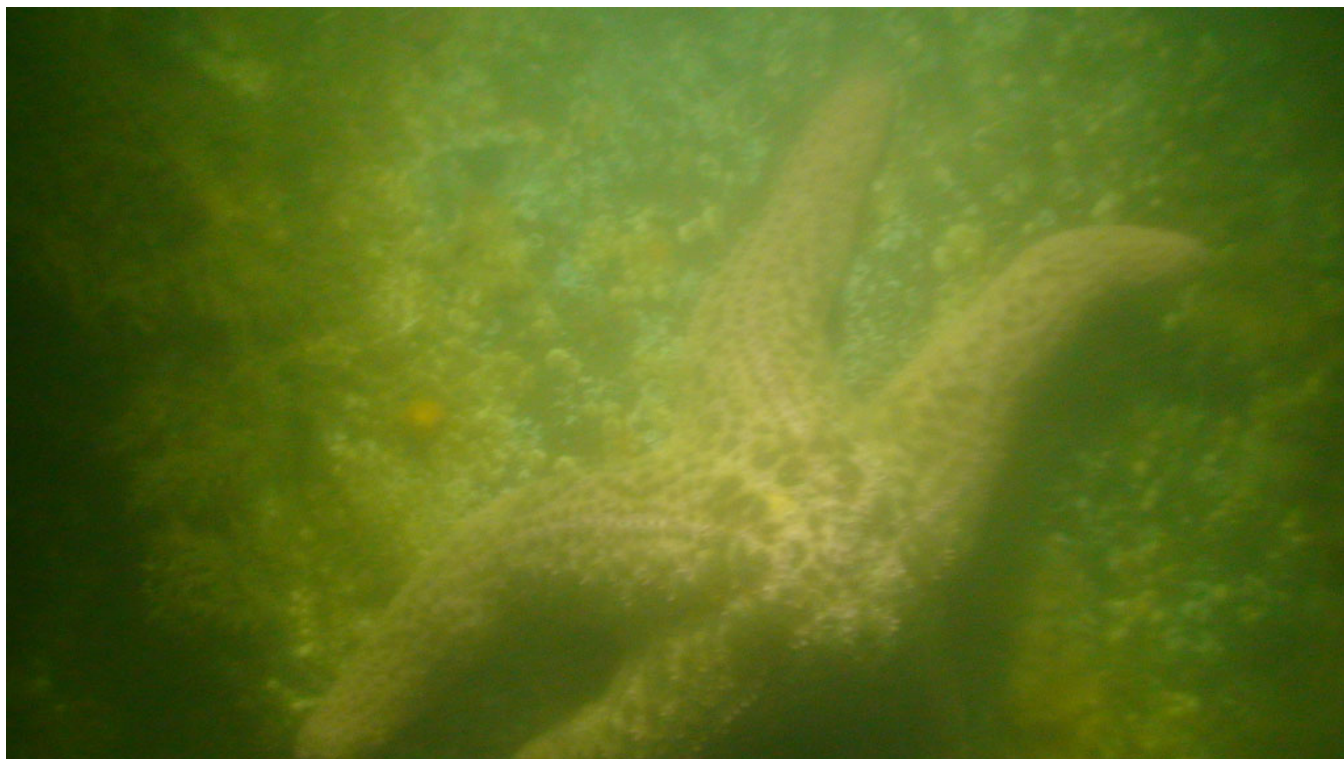




View of EPA Region 10 dive platform, Monitor, in low swell found on the first day of diving, which progressively deteriorated to 8+ foot swells at 10 seconds.



Photo of a variety of marine life, including hydroids (brown plant looking material) and whelks. This photo was taken near the center of the ODMDS on a large reef area. The improved 2 foot visibility was found over one meter above the seafloor, away from the moving sand on the bottom.



View of a seastar (*Pisaster brevispinus*) attached to the rocky reef within the ODMDS

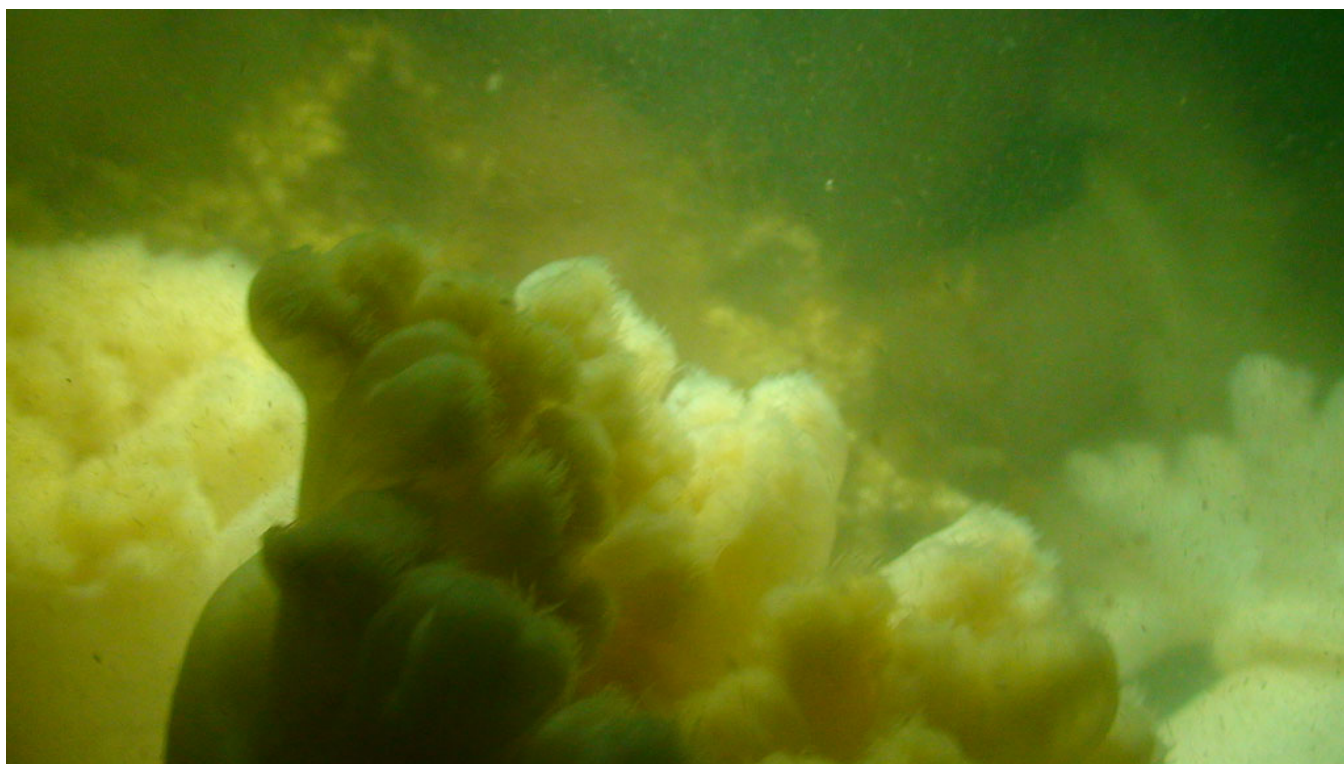


Photo of a variety of anemones attached to the reef.



Photo of soft coral (*Gersemia rubiformis*) attached to the reef.



Diver undergoing a safety stop at 15 feet of sea water to off-gas dissolved nitrogen. A stop at 15 feet helps to add a safety factor to the deeper dives done at Chetco (all between 60 and 100 feet), by allowing additional opportunity to off-gas before getting to the surface, further curtailing the risk of decompression illness.

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