This suitability determination was amended on April 10, 2015. The dredge prism was modified and the volume increased to 38,500 cubic yards.

CENWS-OD-TS-DMMO

MEMORANDUM FOR: RECORD May 20, 2011

SUBJECT: DETERMINATION REGARDING THE SUITABILITY OF PROPOSED DREDGED MATERIAL FROM NAVAL AIR STATION (NAS) WHIDBEY ISLAND FUEL PIER, ISLAND COUNTY FOR UNCONFINED OPEN-WATER DISPOSAL AT A DMMP NON-DISPERSIVE DISPOSAL SITE.

1. Introduction. This memorandum reflects the consensus determination of the Dredged Material Management Program (DMMP) agencies (U.S. Army Corps of Engineers, Washington Departments of Ecology and Natural Resources, and the Environmental Protection Agency) regarding the suitability of up to 25,000 cubic yards (cy) of dredged material from NAS Whidbey Island Fuel Pier for disposal at a DMMP non-dispersive open-water site.

2. Background. NAS Whidbey Island is located near Oak Harbor, Washington, in Island County. The Naval Air Station has four separate geographic components: Ault Field, Seaplane Base, Lake Hancock and the Naval Outlying Field. The Fuel Pier is located at the Seaplane Base (see Figure 1) adjacent to the city of Oak Harbor. Portions of NAS Whidbey Island were listed on the CERCLA National Priorities List. One operable Unit, OU-4, was located on the Seaplane Base, and was associated with upland maintenance facilities; sediments were not an impacted media for this site. The area was remediated, and OU-4 was removed from the NPL in September 1995.

3. Project Summary. Table 1 includes project summary and tracking information.

Table 1. Project Summary

| | |
|---|---|
| Project ranking | Moderate |
| Proposed dredging volume | 25,000 cubic yards |
| Proposed dredging depth | -20 feet MLLW plus 1 foot overdepth |
| SAP received | July 28, 2010 |
| SAP approved | August 12, 2010 |
| Sampling date | August 24, 2010 |
| Final data report received | January 31, 2011 |
| DAIS Tracking number | NASFP-1-A-F-303 |
| USACE Permit Application Number | NWS-2011-1028 |
| Recency Determination (Moderate Rank = 5 years) | August 2015 |

4. Project Ranking and Sampling Requirements. In a moderate-ranked area the number of samples and analyses are calculated using the following guidelines (DMMP, 2008a):
   - Maximum volume of sediment represented by each field sample = 4,000 cubic yards
   - Maximum volume of sediment represented by each analysis in the upper 4-feet of the dredging prism (surface sediment) = 16,000 cubic yards
   - Maximum volume of sediment represented by each analysis in the subsurface portion of the

dredging prism = 24,000 cubic yards

The dredging prism consists of surface and subsurface sediments, so the SAP proposed four DMMUs, two surface and two subsurface, with three cores per DMMU.

5. Sampling. Sampling took place on August 24 and 25, 2010 using a vibracore sampler. A heavy clay layer was encountered in the first 1-2 feet of sample stations DMMP 01, DMMP 02 and DMMP03, resulting in inadequate retention of sediments. The core tube was bent in attempting to achieve sampling depth of 8 feet at station DMMP 06.

   Due to the heavy clay layer, the DMMP agencies agreed that the proposed sampling and compositing scheme should be altered, and analyses be run on the overlying depositional sediment, with the lower, clay layers being archived. For this reason, softer sediments at stations DMMP 01, 02 and 03 were composited for analysis (as DMMU 1) and the clay layer archived (which would have been DMMU 2). Stations DMMP 04, DMMP 05 and DMMP 06 were composited according to the SAP (the surface layer, 0-4 feet, was composited for DMMU 3 and the -4-5 ft. layer composted for DMMU 4). The material at the bottom of cores 04, 05 and 06 was individually archived as z-layer samples. The sampling and compositing scheme is presented in Table 2.

6. Chemical Analysis. The approved sampling and analysis plan (SEE, 2010) was followed (with the exception noted above) and quality control guidelines specified by the PSEP and DMMP programs were generally met. The sediment conventional results can be found in Table 3. The grain-size data show that the proposed dredged material is predominantly sand. The total organic carbon concentration (TOC) was 0.20 to 0.32 percent. The chemical results (see Table 4) indicated that there were no exceedances of DMMP screening levels (SL), so bioassays were not required. One chemical, 2,4-dimethylphenol, was undetected in samples with a Method Reporting Limit above the SL (undetected at 30 µg/kg for DMMU 1, 31 µg/kg for DMMU 3 and 31 µg/kg for DMMU 4). However, it was not detected at the Method Detection Limit of 5.6 ug/kg, which is below the screening level of 29 µg/kg. The agencies determined that this chemical was not likely to be present above the screening level, and bioassays were not required.

7. Sediment Exposed by Dredging (SED). The DMMP antidegradation guidelines (DMMP, 2008b) state that chemical analysis of the z-sample is required if the testing results for the overlying sediment are a) found to be unsuitable for unconfined aquatic disposal, or b) if any other project in the same waterbody has shown evidence of subsurface sediments with greater contamination than surface sediments, or c) if there is any other site-specific reason to believe that the SED may fail to meet the antidegradation policy. The agencies determined that z-sample analysis was not required for this project.

8. Suitability Determination. This memorandum documents the evaluation of the suitability of sediment proposed for dredging from NAS Whidbey Island for open-water disposal. The approved sampling and analysis plan was followed. The data gathered were deemed sufficient and acceptable for regulatory decision-making under the DMMP program.

   There were no SL exceedances for DMMP chemicals of concern. All material is suitable for disposal at a non-dispersive open-water disposal site.

   In summary, based on the results of the previously described testing, the DMMP agencies conclude that **all 25,000 cubic yards are suitable** for open-water disposal at a non-dispersive disposal site.

   This suitability determination does ***not*** constitute final agency approval of the project. During the public comment period that follows a public notice, the resource agencies will provide input on the overall project. A final decision will be made after full consideration of agency input, and after an alternatives analysis is done under section 404(b)(1) of the Clean Water Act.

   *A pre-dredge meeting with DNR, Ecology and the Corps of Engineers is required. A dredging quality control plan must be developed and submitted to the Regulatory Branch of the Seattle District Corps of Engineers at least 7 days prior to the pre-dredge meeting. A DNR site use authorization must also be acquired.*

9. References.

SEE 2010. *Dredged Material Characterization, Naval Air Station Whidbey Island, Oak Harbor WA: Sampling and Analysis Plan*. Prepared by SEE and TEC, for Naval Facilities, Northwest, Silverdale WA. August 2010.

SEE 2011. *Dredged Material Characterization, Naval Air Station Whidbey Island, Oak Harbor WA: Final Report. Prepared by SEE and TEC for Naval Facilities Northwest, Silverdale WA.*

DMMP, 2008a. *Dredged Material Evaluation and Disposal Procedures (Users Manual)*. Prepared by the Seattle District Dredged Material Management Office for the Dredged Material Management Program, July 2008.

DMMP, 2008b. *Quality of Post-Dredge Sediment Surfaces (Updated).* A Clarification Paper Prepared by David Fox (USACE), Erika Hoffman (EPA) and Tom Gries (Ecology) for the Dredged Material Management Program, June 2008.

## 10. Agency Signatures.

Concur:

6/2/11
Date — Stephanie Stirling - Seattle District Corps of Engineers

6/2/11
Date — Justine Barton - Environmental Protection Agency

06/02/2011
Date — Laura Inouye, Ph.D. - Washington Department of Ecology

6/2/11
Date — Lionel Klikoff - Washington Department of Natural Resources

Copies furnished:

DMMP signatories
Dwight Leisle, NAVFAC Northwest
Tim Thompson, SEE
Regulatory Branch

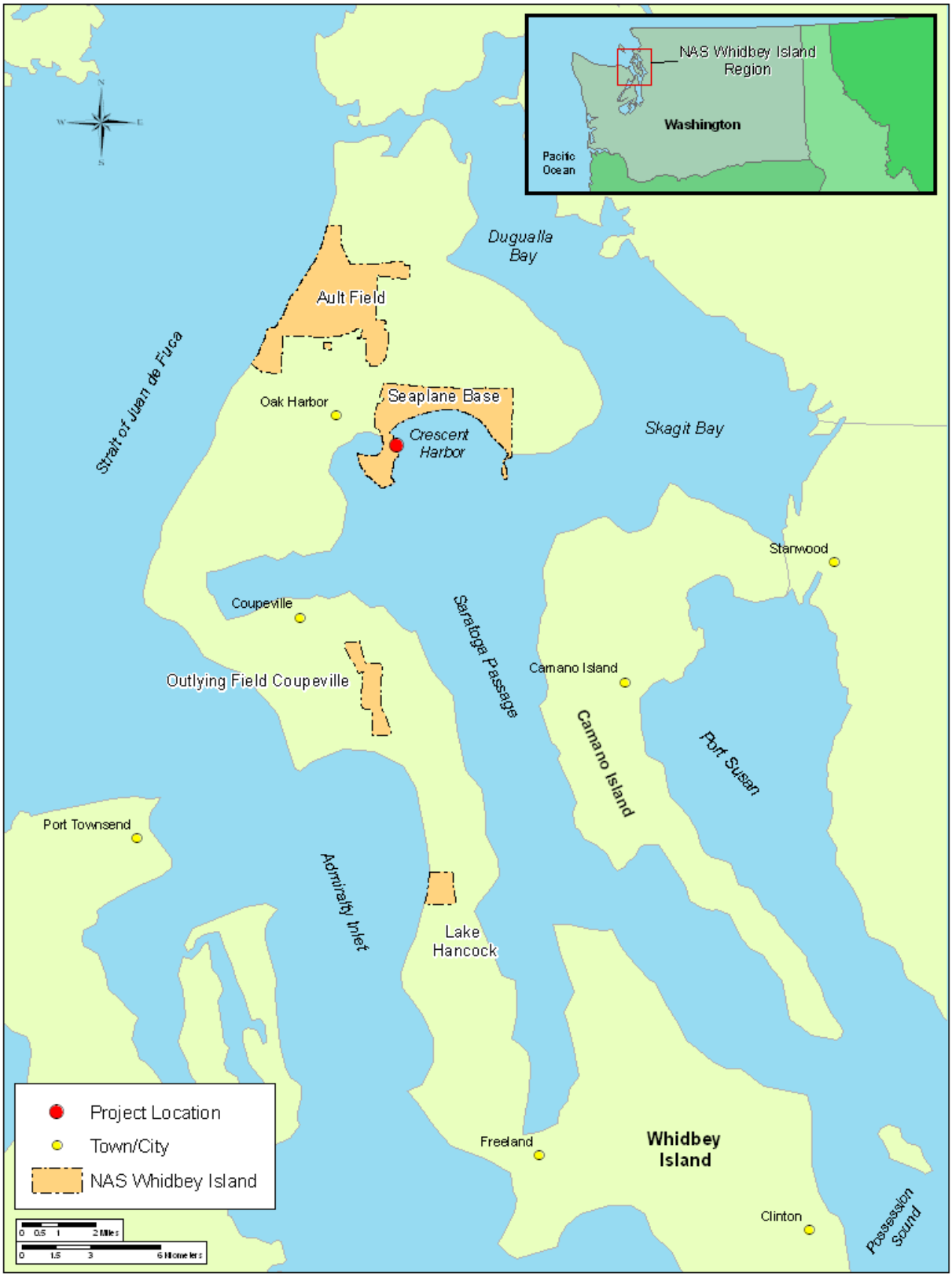


Figure 1. Project Location, NAS Whidbey

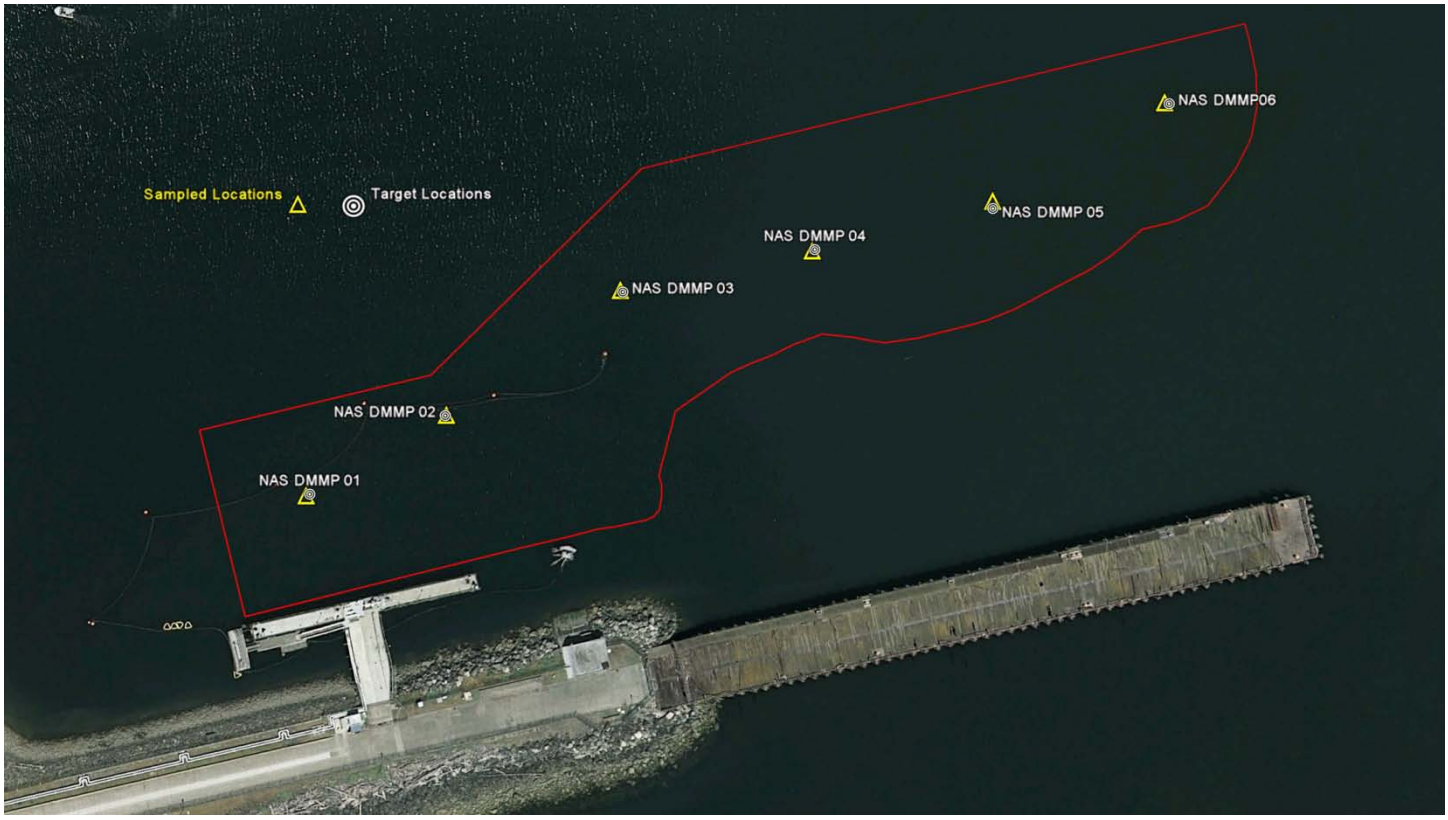


Figure 2 – Sample Locations, NAS Whidbey Fuel Pier

Table 2. Sampling and Compositing Scheme

| SAP I.D. | Field I.D. | Stations Sampled | Explanation |
|---|---|---|---|
| DMMU 01 | DMMU1 0-4 | NAS DMMP 01 | • 0–1.1 ft composited with NAS DMMP 02 and 03 |
| | | NAS DMMP 02 | • 0 -1.3 ft composited with NAS DMMP 01 and 03 |
| | | NAS DMMP 03 | • 0–2.4 ft composited with NAS DMMP 01 and 02 |
| DMMU 02 | No composite samples from SAP-designated DMMU 02. Field error lead to DMMU 03 and DMMU 04 being labeled as DMMU2 0–4 and DMMU2 4–5, respectively | | • Hard, compact organic clay layer in lower segments of DMMP 01, 02 and 03 required individual archiving.<br>• Field error in mislabeling the stations. |
| DMMU 03 | DMMU2 0-4 | NAS DMMP 04 | • 0-4 ft composited with NAS DMMP 05 and 06 |
| | | NAS DMMP 05 | • 0-4 ft composited with NAS DMMP 04 and 06 |
| | | NAS DMMP 06 | • 0-4 ft composited with NAS DMMP 04 and 05 |
| DMMU 04 | DMMU2 4-5 | NAS DMMP 04 | • 4-5 ft composited with NAS DMMP 05 and 06 |
| | | NAS DMMP 05 | • 4-5 ft composited with NAS DMMP 04 and 06 |
| | | NAS DMMP 06 | • 4-5 ft composited with NAS DMMP 04 and 05 |
| NAS DMMP 01 | DMMP1 1.1–3.4 | 1.1–3.4 ft core section | • Hard, compact inorganic clay layer archived |
| NAS DMMP 02 | DMMP2 1.3–4.0 | 1.4–4.0 ft core section | • Hard, compact inorganic clay layer archived |
| | DMMP2 4.0–5.0 | 4.0–5.0 f. core section | • Hard, compact inorganic clay layer archived |
| | DMMP2R 0–4 | 0.0–4.0 ft core section | • Hard, compact inorganic clay layer archived |
| NAS DMMP 03 | DMMP3 2.9–4.1 | 2.9–4.1 ft core section | • Hard, compact inorganic clay layer archived |
| NAS DMMP 01Z | Not collected | | • Insufficient core penetration to collect 5–6 ft |
| NAS DMMP 02Z | Not collected | | • Insufficient core penetration to collect 5–6 ft |
| NAS DMMP 03Z | Not collected | | • Insufficient core penetration to collect 5–6 ft |
| NAS DMMP 04Z | DMMP4 Z | NAS DMMP 04 | • 5–5.6 ft inorganic clay archived |
| NAS DMMP 05Z | DMMP5 Z | NAS DMMP 05 | • 5–6.3 ft silty sand archived |
| NAS DMMP 06Z | DMMP6 Z | NAS DMMP 06 | • 5–6 ft silty sand archived |
| NAS DMMU 52 | NAS DMMU 52 0-4 | Subsample from DMMU2 4–5 | • Field Duplicate |

Table 3. Sediment Conventional Data.

| | | DMMU 1 | DMMU 3 | DMMU 4 |
|---|---|---|---|---|
| DAIS ID: | | S1 | S2 | S3 |
| GRAIN SIZE | % Gravel: | 6.7 | 0.7 | 1.61 |
| | % Sand: | 65.1 | 85.9 | 65.35 |
| | % Silt: | 11.5 | 7.9 | 12.2 |
| | % Clay: | 8.4 | 6.5 | 15.1 |
| | % Fines (clay+silt): | 19.9 | 14.4 | 27.3 |
| Total Solids (%): | | 83.5 | 81.2 | 81.8 |
| Volatile Solids (%): | | 1.9 | 1.8 | 2.05 |
| Total Organic Carbon (%): | | 0.28 | 0.21 | 0.316 |
| Total Sulfides (mg/kg): | | 1.51 | 11.3 | 1.64 |
| Total Ammonia (mg N/kg): | | 31.4 | 1.96 | 3.89 |

Table 4. Chemical results compared to DMMP regulatory guidelines.

| CHEMICAL | SL | BT | ML | DMMU 1 | | DMMU 3 | | DMMU 4 | |
|---|---|---|---|---|---|---|---|---|---|
| METALS (mg/kg dry) | | | | conc | QL | conc | QL | conc | QL |
| Antimony | 150 | --- | 200 | 0.46 | j | 0.03 | j | 0.039 | j |
| Arsenic | 57 | 507 | 700 | 2.84 | | 2.82 | | 4.01 | |
| Cadmium | 5.1 | 11.3 | 14 | 0.116 | | 0.126 | | 0.224 | |
| Chromium | --- | 267 | --- | 23.3 | | 15.8 | | 24.4 | |
| Copper | 390 | 1,027 | 1,300 | 13.2 | | 6.51 | | 10.9 | |
| Lead | 450 | 975 | 1,200 | 2.5 | | 1.51 | | 2.1 | |
| Mercury | 0.41 | 1.5 | 2.3 | 0.024 | | 0.018 | | 0.024 | |
| Nickel | 140 | 370 | 370 | 36 | | 21.7 | | 28.6 | |
| Selenium | --- | 3.0 | --- | 0.8 | u | 1.2 | u | 1.1 | |
| Silver | 6.1 | 6.1 | 8.4 | 0.046 | | 0.035 | | 0.044 | |
| Zinc | 410 | 2,783 | 3,800 | 25.9 | | 18.5 | | 26 | |
| Organometallic Compounds (ug/kg dry) | | | | | | | | | |
| Tributyltin | 73 | | | 1.2 | u | 1.3 | u | 1.3 | u |
| LPAH (ug/kg dry) | | | | | | | | | |
| 2-Methylnaphthalene | 670 | --- | 1,900 | 8.9 | u | 9.1 | u | 9.2 | u |
| Acenaphthene | 500 | --- | 2,000 | 8.9 | u | 9.1 | u | 9.2 | u |
| Acenaphthylene | 560 | --- | 1,300 | 8.9 | u | 9.1 | u | 9.2 | u |
| Anthracene | 960 | --- | 13,000 | 4.3 | j | 9.1 | u | 9.2 | u |
| Fluorene | 540 | --- | 3,600 | 1.5 | j | 9.1 | u | 9.2 | j |
| Naphthalene | 2,100 | --- | 2,400 | 8.9 | u | 9.1 | u | 9.2 | u |
| Phenanthrene | 1,500 | --- | 21,000 | 6.8 | j | 9.1 | u | 9.2 | u |
| Total LPAH | 5,200 | --- | 29,000 | 12.6 | | 9.1 | u | 1.7 | |
| HPAH (ug/kg dry) | | | | | | | | | |
| Benzo(a)anthracene | 1,300 | --- | 5,100 | 9.5 | | 9.1 | u | 9.2 | u |
| Benzo(a)pyrene | 1,600 | --- | 3,600 | 11 | | 9.1 | u | 9.2 | u |
| Benzo(g,h,i)perylene | 670 | --- | 3,200 | 5.2 | j | 9.1 | | 9.2 | u |
| Benzofluoranthenes | 3,200 | --- | 9,900 | 23.9 | | 1.7 | j | 9.2 | u |
| Chrysene | 1,400 | --- | 21,000 | 18 | | 1.6 | u | 9.2 | u |
| Dibenzo(a,h)anthracene | 230 | --- | 1,900 | 1.9 | j | 9.1 | u | 9.2 | u |
| Fluoranthene | 1,700 | 4,600 | 30,000 | 20 | | 2.3 | j | 9.2 | u |
| Indeno(1,2,3-c,d)pyrene | 600 | --- | 4,400 | 5.9 | j | 9.1 | u | 9.2 | u |
| Pyrene | 2,600 | 11,980 | 16,000 | 28 | | 2.6 | j | 9.2 | u |
| Total HPAH | 12,000 | --- | 69,000 | 123.4 | | 9.9 | | 9.2 | u |
| CHLORINATED HYDROCARBONS (ug/kg dry) | | | | | | | | | |
| 1,2,4-Trichlorobenzene | 31 | --- | 64 | 24 | u | 25 | u | 24 | uj |
| 1,2-Dichlorobenzene | 35 | --- | 110 | 5.9 | u | 6.1 | u | 6 | uj |
| 1,3-Dichlorobenzene | 170 | --- | --- | 7.1 | u | 7.3 | u | 7.2 | uj |
| 1,4-Dichlorobenzene | 110 | --- | 120 | 2.4 | u | 2.4 | u | 2.4 | uj |
| Hexachlorobenzene | 22 | 168 | 230 | 8.9 | u | 9.1 | u | 9.2 | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PHTHALATES (ug/kg dry) | | | | | | | | | |
| Bis(2-ethylhexyl)phthalate | 1,300 | --- | 8,300 | 60 | u | 61 | u | 62 | u |
| Butyl benzyl phthalate | 63 | --- | 970 | 8.9 | u | 9.1 | u | 9.2 | u |
| Di-n-butyl phthalate | 1,400 | --- | 5,100 | 18 | u | 19 | u | 19 | u |
| Di-n-octyl phthalate | 6,200 | --- | 6,200 | 8.9 | u | 9.1 | u | 9.2 | u |
| Diethyl phthalate | 200 | --- | 1,200 | 8,9 | u | 9.1 | u | 9.2 | u |
| Dimethyl phthalate | 71 | --- | 1,400 | 8.9 | u | 9.1 | u | 9.2 | u |
| PHENOLS (ug/kg dry) | | | | | | | | | |
| 2 Methylphenol | 63 | --- | 77 | 8.9 | u | 9.1 | u | 9.2 | u |
| 2,4-Dimethylphenol | 29 | --- | 210 | 30 | u | 31 | u | 31 | u |
| 4 Methylphenol | 670 | --- | 3,600 | 2.4 | j | 2.8 | j | 9.2 | u |
| Pentachlorophenol | 400 | 504 | 690 | 60 | u | 61 | u | 62 | u |
| Phenol | 420 | --- | 1,200 | 3.8 | j | 3.4 | j | 19 | u |
| MISCELLANEOUS EXTRACTABLES (ug/kg dry) | | | | | | | | | |
| Benzoic acid | 650 | --- | 760 | 180 | u | 190 | u | 190 | u |
| Benzyl alcohol | 57 | --- | 870 | 12 | u | 13 | u | 13 | u |
| Dibenzofuran | 540 | --- | 1,700 | | u | | u | | |
| Hexachlorobutadiene | 29 | --- | 270 | 8.9 | u | 9.1 | u | 9.2 | u |
| Hexachloroethane | 1,400 | --- | 14,000 | 8.9 | u | 9.1 | u | 9.2 | u |
| N-Nitrosodiphenylamine | 28 | --- | 130 | 8.9 | u | 9.1 | u | 9.2 | u |
| VOLATILE ORGANICS (ug/kg dry) | | | | | | | | | |
| Ethylbenzene | 10 | --- | 50 | 5.9 | u | 6.1 | u | 6 | uj |
| Tetrachloroethene | 57 | --- | 210 | 5.9 | u | 6.1 | u | 6 | uj |
| Total Xylene | 40 | --- | 160 | 5.9 | u | 6.1 | u | 6 | uj |
| Trichloroethene | 160 | --- | 1,600 | 5.9 | u | 6.1 | u | 6 | uj |
| PESTICIDES AND PCBs (ug/kg dry) | | | | | | | | | |
| Aldrin | 10 | --- | --- | 0.6 | u | 0.62 | u | 0.62 | u |
| Chlordane | 10 | 37 | --- | 6 | u | 6.2 | u | 6.2 | u |
| Dieldrin | 10 | --- | --- | 0.6 | u | 0.62 | u | 0.62 | u |
| Heptachlor | 10 | --- | --- | 0.6 | u | 0.62 | u | 0.62 | u |
| Lindane | 10 | --- | --- | 0.6 | u | 0.62 | u | 0.62 | u |
| Total DDT | 6.9 | 50 | 69 | 0.6 | u | 0.62 | u | 0.62 | u |
| Total PCBs | 130 | --- | 3,100 | 12 | u | 13 | u | 13 | u |
| Total PCBs (mg/kg OC) | --- | 38 | --- | | | | | | |

j = esitmated value

u = undetected

QL = laboratory qualifier

OC = organic carbon

SL = screening level

BT = bioaccumulation trigger

ML = maximum level