

Appendix E

Summary of Sediment Quality Characteristics

Appendix E – Summary of Sediment Quality Characteristics

This section presents an evaluation of the sediment data, including sediment lithology; surface, under-pier, and subsurface sediment distributions of chemicals of potential concern (COPCs); and a comparison of sediment data to sediment quality guidelines (SQGs). These data were initially presented in the Terminal 4 Early Action Characterization Report (BBL, 2004a), which discusses data quality. This evaluation includes the evaluation of:

- surface sediment quality characteristics (i.e., the nature and lateral extent of contamination);
- under-pier sediment quality characteristics; and
- subsurface sediment quality characteristics (i.e., the nature and vertical extent of contamination).

“Surface sediment” refers to sediment samples collected from 0 to 1 ft below mudline. “Subsurface sediment” refers to sediment samples collected below 1 ft below the mudline. The last two digits in a sample identifier indicate the depth below mudline from which a sample was collected. For example, sample T4-VC22-0-1 was collected from 0 to 1 foot below mudline.

To facilitate discussion, sediment data are presented below by Removal Action Area subareas:

- Berth 401;
- Slip 1;
- Wheeler Bay;
- Slip 3; and
- North of Berth 414.

These subareas were used to provide smaller areas than the Removal Action Area to discuss the data and are presented in Figure E-1. These subareas are not intended to represent final Removal Action Area subareas.

A number of complex congener families were evaluated by summing certain analytes within the family. Total summations were calculated for polycyclic aromatic hydrocarbons (PAH) compounds, dichlorodiphenyldichloroethane (DDD) isomers, dichlorodiphenyldichloroethene (DDE) isomers, and dichlorodiphenyltrichloroethane (DDT) isomers. A summation (Σ) of all DDT isomers and metabolites (i.e., Σ DDTs) is included to identify the sum total of this family of chlorinated pesticides. Total polychlorinated biphenyls (PCBs) (as Aroclors) were also calculated.

Total concentrations were calculated using the detected concentrations of individual constituents. Analytes that were not detected (i.e., “non-detects”) at the method reporting limit (MRL) were treated as having a concentration of zero. Please note that in Appendix M, for risk screening purposes, one half the detection limit was used for total summation calculations. If all the individual constituents in a family of analytes were not detected, the total concentration is reported as non-detect using the highest detection limit (i.e., the highest MRL) for the constituents summed. Total summations were calculated as follows:

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

-
- Total PAHs: the sum of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene (Swartz, 1999)
 - Total DDD: the sum of 2,4'-DDD and 4,4'-DDD
 - Total DDE: the sum of 2,4'-DDE and 4,4'-DDE
 - Total DDT: the sum of 2,4'-DDT and 4,4'-DDT
 - Σ DDTs: the sum of total DDD, total DDE, and total DDT
 - Total PCBs: the sum of Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268.

Sediment data were compared to SQGs, including the threshold effects concentrations (TECs) (MacDonald et al., 2000a) and the probable effects concentrations (PECs) (MacDonald et al., 2000a), to preliminarily delineate the horizontal and vertical extent of contaminated sediments. The use of these guidelines does not imply that they should or would be used as cleanup levels for the Removal Action Area. The TEC is a low (i.e., threshold) effects guideline that represents concentrations below which toxicity effects are unlikely to be observed in freshwater benthic invertebrates. The PEC is a probable effects guideline that represents concentrations above which toxicity effects are likely to be observed in freshwater benthic invertebrates. The SQGs used in this analysis are all toxicity-based for freshwater benthic invertebrates. Bioaccumulation-based SQGs are not widely available. Delineation of horizontal and vertical extent of contamination sediments for the engineering evaluation/cost analysis (EE/CA), including toxicity and bioaccumulation effects, was based on the risk evaluation, which is presented in Appendix M.

Total petroleum hydrocarbons (TPH), phthalates, conventionals, and grain size data are not compared to SQGs because there are no PEC and TEC criteria for these compounds. TEC and PEC values for phthalates in freshwater sediments are not available. The Oregon Department of Environmental Quality (DEQ) lists an SQG of 750 $\mu\text{g}/\text{kg}$ for bis(2-ethylhexyl)phthalate, which is based on a Lowest Apparent Effects Threshold from the Washington Department of Ecology. This value was used for comparisons in this appendix.

Sediment data are sometimes discussed as exceedance ratios, terminology that is used in this report. An exceedance ratio is the concentration of a constituent in a sediment sample result divided by the SQG. A TEC exceedance ratio of greater than 1 indicates a concentration greater than the TEC. A PEC exceedance ratio of greater than 1 indicates concentration greater than the PEC.

E.1 Evaluation of Historical and EE/CA Sediment Data

The Port has been investigating the nature and extent of sediment contamination at Terminal 4 since 1988. Other organizations, including the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (USEPA), and Oregon Department of Environmental Quality (DEQ), have investigated the nature and extent of sediment contamination in the Willamette River and have collected sediment samples from Terminal 4 as part of their investigations. These data were described in the Terminal 4 Early Action Work Plan (BBL,

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

2004b). Because maintenance dredging has occurred periodically in Slip 1 and Slip 3 to maintain operational draft depths at the berths, data from the dredge prisms (i.e., sediment that was dredged and is no longer present at Terminal 4) are not included in the historical data set.

Historical sediment data presented in the Terminal 4 Early Action Engineering Evaluation/Cost Analysis Work Plan (BBL, 2004b) were compared to EE/CA sediment data collected as part of the Terminal 4 Early Action Engineering Evaluation/Cost Analysis Work Plan (BBL, 2004b). Sediment data were compared by subarea (Berth 401, Slip 1, Wheeler Bay, Slip 3, and north of Berth 414) and by type of sediment sample (surface and subsurface). The majority of historical surface sediment samples were collected from 0 to 0.33 foot below mudline, although some samples were collected from 0 to 0.5 foot below mudline. All surface sediment samples collected for the EE/CA were collected from 0 to 1 foot below mudline. For EE/CA data, surface and under-pier sediment samples were grouped together. There are no historical under-pier sediment data. A summary of the comparison is presented in Table E-1.

Historical data were obtained from the National Oceanic and Atmospheric Administration (NOAA) Query Manager 2.51 database for Terminal 4 of the Willamette River. No changes were made to NOAA's total summations. NOAA's total summation method appears to be the same method described at the beginning of this appendix (i.e., analytes that were not detected at the MRL were treated as having a concentration of zero.) For historical data, a slightly different list of PAHs was used for the summation: acenaphthene, anthracene, biphenyl, naphthalene, 2,6-dimethylnaphthalene, fluorene, 1-methylnaphthalene, 2-methylnaphthalene, 1-methylphenanthrene, phenanthrene, benzo(a)anthracene, benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, fluoranthene, perylene, and pyrene. The PAH summation in the historical data appears to be based on a NOAA PAH summation. The EE/CA total PAH summation is based on Swartz (1999), because total PAH results were compared to the TEC and PEC. The list of compounds for the TEC and PEC total PAH criteria is from Swartz (1999). Total PCB data presented in the historical database are the sum of the seven standard Aroclors. It appears that the same Aroclors were used for the total PCB sum in each study. This was a different list of Aroclors than was used for the EE/CA total PCB summation, because EE/CA samples were analyzed for Aroclors 1262 and 1268 in addition to the seven standard Aroclors. To be conservative, the EE/CA total PCB summation used all nine Aroclors for which EE/CA samples were analyzed.

The data comparison included the following list of compounds:

- Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc);
- Total PAHs;
- Phthalates;
- Σ DDTs;
- Total PCBs;
- Diesel range organics TPH;
- Heavy oil range organics TPH; and
- Gasoline range organics TPH.

Data were compared to see if generally;

- similar compounds were detected in historical and EE/CA data;
- compounds were detected in similar locations in historical and EE/CA data; and

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

-
- range of concentrations were similar between historical and EE/CA data.

E.1.1 Surface Sediment

This section presents the comparison of historical and EE/CA surface sediment data.

E.1.1.1 Berth 401

Metals, total PAH, Σ DDTs, and total PCB results were similar between historical and EE/CA sediment data. The one detected concentration of bis(2-ethylhexyl)phthalate was higher than the maximum EE/CA concentration. There were no historical diesel range, heavy oil range, or gasoline range organics data to compare to the EE/CA data for Berth 401 surface sediment data.

E.1.1.2 Slip 1

Metals results were similar between historical and EE/CA sediment data except for chromium concentrations at the head of Slip 1. Historical data samples PPA438221, PPB438222, and PPE438225 contained concentrations of chromium above the PEC. The EE/CA data did not contain chromium exceedances. Historical samples PPA438221, PPB438222, and PPE438225 were collected in 1994 and may not represent current surface sediment conditions in Slip 1 as a result of sediment resuspension and deposition. The concentration of phthalates was generally higher in historical sediment samples from Slip 1. However, the pattern of highest concentrations at the east end of the slip is similar in both data sets. Total PAH, Σ DDTs, and total PCB results were similar between historical and EE/CA sediment data. There were no historical diesel range, heavy oil range, or gasoline range organics data to compare to the EE/CA data for Slip 1 surface sediment data.

E.1.1.3 Wheeler Bay

Metals, total PAH, and Σ DDTs results were similar between historical and EE/CA sediment data. The concentration of phthalates was higher in historical samples than in EE/CA sediment samples. There were no historical total PCBs or gasoline range organics data to compare to the EE/CA data for Wheeler Bay surface sediment data. Diesel range organics and heavy oil range organics were not-detected in the historical data but were detected in the EE/CA data at concentrations about two times the MRL.

E.1.1.4 Slip 3

Metals results were similar between historical and EE/CA data except for lead and zinc. The concentration of lead and zinc were higher (including a number of concentrations above the TEC) in historical data in the western half of the slip than in the EE/CA data. Total PAH concentrations were higher (including PEC and TEC exceedances) in historical data in the western half of the slip than in the EE/CA data. Phthalates, Σ DDTs, total PCB, and diesel range organics results were similar between historical and EE/CA sediment data. Heavy oil

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

range organics were slightly different between historical and EE/CA data. Heavy oil range organics were detected in the western half of the slip in historical data. In EE/CA data, they were detected at the head of the slip and at the southwest end of Pier 5. There were no historical gasoline range organics data to compare to the EE/CA data for Slip 3 surface sediment data. The resuspension and deposition of surface sediment may be the reason for the differences between historical and EE/CA surface sediment data in Slip 3.

E.1.1.5 North of Berth 414

Metals results were similar between historical and EE/CA data except for lead and zinc. The concentration of lead and zinc were higher (including a number of concentrations above the TEC) in historical data than in the EE/CA data. Total PAH concentrations were higher (including PEC and TEC exceedances) in historical data in the northern half of the subarea than in the EE/CA data. The concentration of phthalates was higher in historical samples than in EE/CA sediment samples. Σ DDTs results were similar between historical and EE/CA sediment data. Total PCBs were not-detected in the historical data. A comparison of the historical and EE/CA data can not be made because the historical data contain higher detection limits. Diesel and heavy oil range organics were not detected in the historical surface sediment samples. Diesel and heavy oil range organics were detected in the EE/CA surface sediment samples. There were no historical gasoline range organics data to compare to the EE/CA data for north of Berth 414 surface sediment data. The differences in historical and EE/CA surface sediment data in north of Berth 414 may be a result of sediment resuspension and deposition.

E.1.2 Subsurface Sediment

This section presents the comparison of historical and EE/CA subsurface sediment data.

E.1.2.1 Berth 401

Metals, total PAH, and total PCB results were similar between historical and EE/CA sediment data. Bis(2-ethylhexyl)phthalate was not detected in historical samples but was detected in one EE/CA sediment sample (T4-VC01-1-3). Bis(2-ethylhexyl)phthalate was not detected in the remaining EE/CA Berth 401 subsurface sediment samples. Of the two historical subsurface sediment samples from Berth 401 that were analyzed for bis(2-ethylhexyl)phthalate, one sample contained a detection limit similar to the EE/CA sediment samples. The other historical sample contained a bis(2-ethylhexyl)phthalate detection limit that was ten times the EE/CA sediment data. This elevated detection limit may explain, in part, why this phthalate was not detected in historical investigations. The concentration of Σ DDTs was higher in one sample from the historical sediment data than in the EE/CA data. Historical sample B401C1, located west of EE/CA core T4-VC02, and outside of the Removal Action Area, contained a Σ DDTs concentration of 479.8 $\mu\text{g}/\text{kg}$. This concentration was higher than any EE/CA surface or subsurface sediment Σ DDTs concentration from within the Removal Action Area. Because sample B401C1, collected from zero to three ft below mudline, was outside of the Removal Action Area, and because similar Σ DDTs concentrations were not observed in nearby Berth 401 EE/CA subsurface sediment samples, the Σ DDTs concentration in sample B401C1 is not considered representative of Berth 401 Removal Action Area sediment conditions. There were no historical diesel range, heavy oil range, or gasoline range organics data to compare to the EE/CA data for Berth 401 subsurface sediment data.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

E.1.2.2 Slip 1

Metals, total PAH, and phthalate results were similar between historical and EE/CA sediment data. There were no historical Σ DDTs, total PCBs, diesel range, heavy oil range, or gasoline range organics data to compare to the EE/CA data for Slip 1 subsurface sediment data.

E.1.2.3 Wheeler Bay

Metals and total PAH results were similar between historical and EE/CA sediment data. Phthalates were not detected in historical samples but were detected in EE/CA sediment samples. The detection limits for phthalates in the historical data were about 200 times greater than the detection limits for the EE/CA data. Detected concentrations of bis(2-ethylhexyl)phthalate in EE/CA sediment samples were less than the detection limits of the historical sediment samples. As with the Berth 401 area, the elevated detection limits in historical data may help explain why phthalates were not detected previously. There were no historical Σ DDTs, total PCBs, diesel range, heavy oil range, or gasoline range organics data to compare to the EE/CA data for Slip 1 subsurface sediment data.

E.1.2.4 Slip 3

Metals results were similar between historical and EE/CA sediment data. Total PAH results were similar between historical and EE/CA data except the concentrations of historical sample HC32 (0 to 2 feet below mudline), which contained a total PAH TEC exceedance. The nearby EE/CA samples at T4-VC22 did not contain total PAH TEC exceedances. This area and elevation is proposed for dredging in all alternatives and therefore will likely be addressed by removal actions. Phthalate results were similar between historical and EE/CA sediment data. There were no historical Σ DDTs, total PCBs, or gasoline range organics data to compare to the EE/CA data for Slip 3 subsurface sediment data. Diesel range organics and heavy oil range organics were not detected in the historical data but were detected in a number of EE/CA data. Particularly, cores T4-VC26, T4-CV29, and T4-VC32 contained slightly elevated concentrations of diesel range organics and heavy oil range organics in the less than 5 feet below mudline samples.

E.1.2.5 North of Berth 414

Metals, total PAH, and phthalate results were similar between historical and EE/CA sediment data. There were no historical Σ DDTs, total PCBs, diesel range organics, heavy oil range organics, or gasoline range organics data to compare to the EE/CA data for north of Berth 414 surface sediment data.

E.1.3 Conclusion of Data Comparison

The data comparison generally showed that historical and EE/CA sediment data are comparable. There were some surface sediment samples that did not compare well but this may be a result of sediment resuspension and

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

deposition that has changed the surface sediment profile with time. Historical data were not used in the EE/CA because:

- Historical data tend to be comparable to EE/CA data; and
- Historical data quality has not been verified pursuant to USEPA CERCLA guidelines.

To ensure that the EE/CA is completed with data of acceptable quality according to USEPA CERCLA guidelines, it was decided to only use EE/CA data. The discussion of sediment data in Sections E.2, E.3, and E.4 presents only EE/CA sediment data.

E.2 Surface Sediment Quality

Surface sediment chemistry data pertain to the nature and lateral extent of contamination. The surface sediment data for Berth 401, Slip 1, Wheeler Bay, Slip 3, and north of Berth 414 are discussed below by subarea and constituent class: metals, semivolatile organics (SVOCs) (PAHs and phthalates), pesticides (including total DDD, total DDE, and total DDT), PCBs, TPH, conventionals [total organic carbon (TOC) and total solids], and grain size. Figure E-1 presents surface sediment sample locations. The lateral extent of lead and zinc, total PAH, Σ DDT, and total PCB concentrations in surface sediment is presented on Figures E-2, E-3, E-4, and E-5, respectively.

E.2.1 Berth 401

Two surface sediment samples (T4-VC01-0-1 and T4-VC02-0-1) were collected from Berth 401. Table E-2 summarizes Berth 401 surface sediment chemistry results. There were no PEC exceedances in Berth 401 surface sediment data. Excepting pesticides, TEC exceedances occurred only in sample T4-VC01-0-1. Both Berth 401 surface sediment samples (T4-VC01-0-1 and T4-VC02-0-1) contained pesticide concentrations above the TEC.

All metals results were below the PEC in Berth 401 surface sediment samples. Metals concentrations in sample T4-VC02-0-1 were below the PEC and TEC. Sample T4-VC01-0-1 contained copper and nickel concentrations above the TEC. The remaining metals were not detected at concentrations above the TEC in Berth 401 surface sediment samples. Copper and nickel concentrations in sample T4-VC01-0-1 were less than twice the TEC, indicating concentrations were just slightly above the TEC.

All individual and total PAH concentrations were less than the PEC in Berth 401 surface sediment samples. Concentrations of individual and total PAHs in sample T4-VC02-0-1 were below the PEC and TEC. Concentrations of pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, and total PAHs in sample T4-VC01-0-1 were greater than the TEC. The remaining PAHs were not detected at concentrations above the TEC in Berth 401 surface sediment samples. The total PAH TEC exceedance ratio was less than 2 in sample T4-VC01-0-1.

Butylbenzyl phthalate was detected in one Berth 401 surface sediment sample at a concentration of 93 $\mu\text{g}/\text{kg}$. Bis(2-ethylhexyl)phthalate was detected in both Berth 401 surface sediment samples. The concentration of bis(2-ethylhexyl)phthalate (1,400 $\mu\text{g}/\text{kg}$) in sample T4-VC01-0-1 was greater than the DEQ SQG (750 $\mu\text{g}/\text{kg}$). The concentration of bis(2-ethylhexyl)phthalate in the remaining Berth 401 surface sediment sample was below the DEQ SQG.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

All pesticide concentrations were less than the PEC in Berth 401 surface sediment samples. Total DDE, total DDT, and Σ DDT concentrations in at least one Berth 401 surface sediment sample were greater than the TEC. The remaining pesticide results were below the TEC in Berth 401 surface sediment samples. The maximum Σ DDTs TEC exceedance ratio was 5 in sample T4-VC01-0-1.

All PCB concentrations were less than the PEC in Berth 401 surface sediment samples. The concentration of total PCBs was less than the PEC and TEC in sample T4-VC02-0-1. The total PCB concentration was greater than the TEC in sample T4-VC01-0-1, with an exceedance ratio of 4.

TPH organic compounds in the diesel range and residual range were detected in both Berth 401 surface sediment samples. Gasoline-range TPH was not detected in either sample. Diesel-range and residual-range TPH results tend to correspond with total PAH results.

TOC concentrations ranged from 1.43 to 1.83% in the Berth 401 surface sediment samples. Total solids ranged from 57.4 to 66.2%. Grain size analysis indicates that Berth 401 surface sediment samples are generally sandy silts.

E.2.2 Slip 1

Fifteen surface sediment samples (T4-VC03-0-1 through T4-VC17-0-1) were collected from Slip 1. Table E-3 summarizes Slip 1 surface sediment chemistry results. Surface sediment samples from T4-VC12 and T4-VC13 and Berth 405 contain concentrations of PAHs, pesticides, and PCBs above the SQGs. Surface sediment samples from Berth 408 contain concentrations of metals, PAHs, pesticides, and PCBs above the SQGs. Slight TEC exceedances for metals, PAHs, and pesticides are widespread in Slip 1 surface sediment samples.

All metals results were below the PEC in Slip 1 surface sediment samples. Metals concentrations in samples T4-VC10-0-1, T4-VC13-0-1, and T4-VC14-0-1 were below the PEC and TEC. Cadmium, copper, lead, nickel, and zinc concentrations were above the TEC in at least one Slip 1 surface sediment sample. The remaining metals were not detected at concentrations above the TEC in Slip 1 surface sediment samples. Cadmium, copper, and nickel TEC exceedance ratios in Slip 1 surface sediment samples were all less than 2, indicating concentrations were just slightly above the TEC. Lead and zinc exceedance ratios were less than 2 except in samples T4-VC15-0-1 and T4-VC16-0-1, with exceedance ratios between 2 and 3.

Concentrations of individual and total PAHs in samples T4-VC03-0-1, T4-VC10-0-1, and T4-VC14-0-1 were below the PEC and TEC. Concentrations of phenanthrene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, fluorene, dibenz(a,h)anthracene, and total PAHs were each above the PEC in at least one of the following samples: T4-VC07-0-1, T4-VC09-0-1, T4-VC12-0-1, T4-VC13-0-1, T4-VC15-0-1, and T4-VC16-0-1. The maximum PEC exceedance ratio for total PAHs was 2 in sample T4-VC12-0-1. All PAHs having TEC criteria had exceedances in at least one Slip 1 surface sediment sample.

Butylbenzyl phthalate was detected in 13 Slip 1 surface sediment samples, with a maximum concentration of 110 $\mu\text{g}/\text{kg}$ in T4-VC16-0-1. Bis(2-ethylhexyl)phthalate was detected in nine Slip 1 surface sediment samples. The maximum Slip 1 surface sediment concentration of bis(2-ethylhexyl)phthalate was 580 $\mu\text{g}/\text{kg}$ in T4-VC16-0-1 which was below the DEQ SQG (750 $\mu\text{g}/\text{kg}$).

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

Pesticide concentrations in samples T4-VC10-0-1, T4-VC12-0-1, and T4-VC14-0-1 were below the PEC and TEC. Total DDT concentrations were greater than the PEC in sample T4-VC13-0-1, with a PEC exceedance ratio of less than 2. The remaining pesticide concentrations were less than the PEC in Slip 1 surface sediment samples. Total DDD, total DDE, total DDT, and Σ DDT concentrations were greater than the TEC in at least one Slip 1 surface sediment sample.

The total PCB concentrations in samples T4-VC03, T4-VC04, T4-VC05, T4-VC06, T4-VC07, T4-VC08, T4-VC10, T4-VC11, T4-VC12, T4-VC14, and T4-VC17 were below the PEC and TEC. Sample T4-VC13-0-1 contained total PCB concentrations greater than the PEC, with a PEC exceedance ratio of less than 2. The remaining Slip 1 surface sediment samples contained total PCB concentrations below the PEC. Samples T4-VC09-0-1, T4-VC13-0-1, T4-VC15-0-1, and T4-VC16-0-1 contained total PCB concentrations greater than the TEC. The remaining total PCB concentrations in Slip 1 surface sediment samples were below the TEC.

Diesel-range, residual-range, and gasoline-range TPHs were detected at least once in the Slip 1 surface sediment samples. The number of Slip 1 surface sediment samples that these TPH compounds were detected in ranged from one to 13. Diesel-range and residual-range TPH results generally corresponded with total PAH results. Gasoline-range organics were infrequently detected at concentrations near the MRL.

TOC concentrations ranged from 0.05 to 2.13% in the Slip 1 surface sediment samples. Total solids ranged from 45.0 to 88.1%. Grain size analysis indicates that Slip 1 surface sediment samples are generally sandy silt.

E.2.3 Wheeler Bay

Four surface sediment samples (T4-VC18-0-1 through T4-VC21-0-1) were collected from Wheeler Bay. Table E-4 summarizes Wheeler Bay surface sediment chemistry results. Surface sediment sample T4-VC18-0-1 contained lead at a concentration above the PEC, and sample T4-VC19-0-1 contained concentrations of PAHs above the PEC. Slight TEC exceedances for PAHs and pesticides are widespread in Wheeler Bay surface sediment samples.

Metals concentrations in sample T4-VC20-0-1 were less than the PEC and TEC. The concentration of lead in sample T4-VC18-0-1 was above the PEC, with a PEC exceedance ratio of less than 2. The remaining metals concentrations in Wheeler Bay surface sediment samples were below the PEC. Cadmium, copper, lead, nickel, and zinc concentrations were above the TEC in at least one Wheeler Bay surface sediment sample. The remaining metals were not detected at concentrations above the TEC. Cadmium, copper, nickel, and zinc TEC exceedance ratios were all less than 2, indicating concentrations were just slightly above the TEC. Lead TEC exceedance ratios were less than 2 except in sample T4-VC18-0-1, which had a TEC exceedance ratio of 3.

Concentrations of phenanthrene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, and total PAHs were above the PEC in sample T4-VC19-0-1, which had a PEC exceedance ratio for total PAHs of less than 2. All PAHs having TEC criteria had at least one exceedance in Wheeler Bay surface sediment samples.

Butylbenzyl phthalate was detected in three Wheeler Bay surface sediment samples, with a maximum concentration of 19 $\mu\text{g}/\text{kg}$ in T4-VC20-0-1. Bis(2-ethylhexyl)phthalate was detected in two Wheeler Bay

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

surface sediment samples. The maximum Wheeler Bay surface sediment concentration of bis(2-ethylhexyl)phthalate was 90 µg/kg in T4-VC20-0-1 which was below the DEQ SQG (750 µg/kg).

All pesticide concentrations were below the PEC in Wheeler Bay surface sediment samples. Total DDD, total DDE, total DDT, and Σ DDT concentrations were greater than the TEC in at least one Wheeler Bay surface sediment sample. The highest Σ DDTs TEC exceedance ratio was 7, which occurred in sample T4-VC21-0-1.

All Wheeler Bay surface sediment samples had total PCB concentrations below the PEC and TEC.

Diesel-range TPH was detected in each of the Wheeler Bay surface sediment samples. Residual-range TPH was detected in three of the four samples. Gasoline-range TPH was not detected in any of the four samples. Diesel-range and residual-range TPH results tended to correspond to total PAH results.

TOC concentrations ranged from 1.78 to 2.00% in the Wheeler Bay surface sediment samples. Total solids ranged from 47.6 to 57.2%. Grain size analysis indicates that Wheeler Bay surface sediment samples are generally silty sand.

E.2.4 Slip 3

Nine surface sediment samples (T4-VC22-0-1 through T4-VC29-0-1 and T4-VC32-0-1) were collected from Slip 3. Table E-5 summarizes Slip 3 surface sediment chemistry results. Slip 3 surface sediment samples from the vicinity of Berth 411 contained PEC exceedances of lead, zinc, and PAHs. Surface sediment samples from the former Pier 5 contained concentrations of lead and PAHs above the PEC. Total PAH concentrations were above the PEC in five Slip 3 surface sediment samples.

Metals concentrations in samples T4-VC22-0-1, T4-VC25-0-1, T4-VC27-0-1, and T4-VC28-0-1 were less than the PEC and TEC. Concentrations of lead and zinc in sample T4-VC24-0-1 and of lead in sample T4-VC29-0-1 were above the PEC. The PEC exceedance ratios for lead were 5 in T4-VC24-0-1 and 2 in T4-VC29-0-1. The PEC exceedance ratio for zinc in sample T4-VC24-0-1 was less than 2. Arsenic, cadmium, copper, lead, nickel, and zinc concentrations were above the TEC in at least one Slip 3 surface sediment sample. TEC exceedance ratios for cadmium, copper, lead, and zinc were greater than 2 in T4-VC24-0-1. TEC exceedance ratios for lead and zinc in samples T4-VC29-0-1 and T4-VC32-0-1 were greater than 2. TEC exceedance ratios for arsenic, cadmium, copper, lead, nickel, and zinc were below 2, indicating concentrations just slightly above the TEC.

The concentrations of individual and total PAHs in samples T4-VC22-0-1 and T4-VC25-0-1 were below the PEC and TEC. Naphthalene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, and total PAH concentrations were above the PEC in at least one of the following samples: T4-VC23-0-1, T4-VC24-0-1, T4-VC26-0-1, T4-VC29-0-1, and T4-VC32-0-1. The maximum PEC exceedance ratio for total PAHs was 26 in sample T4-VC24-0-1. All the PAHs having TEC criteria (i.e., naphthalene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, dibenz(a,h)anthracene, and total PAHs) had concentrations above the TEC in at least one Slip 3 surface sediment sample.

Butylbenzyl phthalate was detected in four Slip 3 surface sediment samples at a maximum concentration of 180 µg/kg in T4-VC24-0-1. Bis(2-ethylhexyl)phthalate was detected in five Slip 3 surface sediment samples. The

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

maximum Slip 3 surface sediment concentration of bis(2-ethylhexyl)phthalate was 520 µg/kg in T4-VC27-0-1 which was below the DEQ SQG (750 µg/kg).

All pesticide concentrations were below the PEC in Slip 3 surface sediment samples. The concentrations of pesticides in samples T4-VC22-0-1, T4-VC25-0-1, T4-VC27-0-1, and T4-VC28-0-1 were less than the PEC and TEC. Total DDD, total DDE, total DDT, and Σ DDT concentrations were greater than the TEC in at least one Slip 3 surface sediment sample. The highest exceedance ratio for Σ DDTs was 4 in sample T4-VC32-0-1.

All Slip 3 surface sediment samples contained total PCB concentrations below the PEC and TEC.

Diesel-range organics and residual-range organics were not detected in T4-VC25-0-1. Diesel-range organics and residual-range organics were detected in the other eight Slip 3 surface sediment samples, excepting diesel-range organics in T4-VC22-0-1 and residual-range organics in T4-VC27-0-1. Gasoline-range TPH was not detected in any of the Slip 3 surface sediment samples. Diesel-range and residual-range TPH results generally correspond with total PAH results.

TOC concentrations ranged from 0.15 to 2.73% in the Slip 3 surface sediment samples. Total solids ranged from 48.7 to 91.5%. Grain size analysis indicates that Slip 3 surface sediment samples are generally silty sand.

E.2.5 North of Berth 414

Two surface sediment samples (T4-VC30-0-1 and T4-VC31-0-1) were collected from north of Berth 414. Table E-6 summarizes surface sediment chemistry results for the north of Berth 414 subarea. North of Berth 414 surface sediment samples contained concentrations of pesticides above the TEC but below the PEC. The concentrations of metals, PAHs, and PCBs in north of Berth 414 surface sediment samples were less than the PEC and TEC.

All metals results were below the PEC and TEC in north of Berth 414 surface sediment samples.

All PAH concentrations were below the PEC and TEC in sample T4-VC30-0-1. Sample T4-VC31-0-1 contained concentrations of PAHs above the TEC. The total PAH exceedance ratio was 3.

Butylbenzyl phthalate was detected in one north of Berth 414 surface sediment sample (T4-VC31-0-1) at a concentration of 6.7 µg/kg. Bis(2-ethylhexyl)phthalate was not detected in the two north of Berth 414 surface sediment samples.

All pesticide concentrations were below the PEC in north of Berth 414 surface sediment samples. Total DDD, total DDE, and Σ DDT concentrations were above the TEC. The highest TEC exceedance ratio for Σ DDTs was 2 in sample T4-VC31-0-1.

All total PCB concentrations were below the PEC and TEC in north of Berth 414 surface sediment samples.

Diesel-range and residual-range TPH were detected in both north of Berth 414 surface sediment samples. Gasoline-range TPH was not detected in either sample. Diesel-range and residual-range TPH results tended to correspond to total PAH results.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

TOC concentrations ranged from 1.79 to 1.87% in the north of Berth 414 surface sediment samples. Total solids ranged from 50.7 to 51.2%. Grain size analysis indicates that north of Berth 414 surface sediment samples are generally silty sands.

E.3 Under-Pier Sediment Quality

The under-pier sediment data for Berth 401, Slip 1, and Slip 3 are discussed below. Under-pier sediment samples were not collected from the Wheeler Bay or north of Berth 414 subareas. The data are presented by subarea and constituent class: metals, SVOCs (e.g., PAHs and phthalates), pesticides (including total DDD, total DDE, and total DDT), PCBs, TPH, conventionals (e.g., TOC and total solids), and grain size. Figure E-6 presents under-pier sediment sample locations. The lateral extent of lead and zinc, total PAH, Σ DDT, and total PCB concentrations in under-pier sediment is presented in Figures E-2, E-3, E-4, and E-5, respectively.

E.3.1 Berth 401

Two under-pier sediment samples (T4-UP01-0-1 and T4-UP02-0-1) were collected from Berth 401. Table E-7 summarizes Berth 401 under-pier sediment chemistry results. There were no PEC exceedances in Berth 401 under-pier sediment samples. Sample T4-UP01-0-1 contained concentrations of PAHs and pesticides above the TEC.

All metals results were below the PEC and TEC in Berth 401 under-pier sediment samples.

All PAH concentrations were less than the PEC in Berth 401 under-pier sediment samples. Concentrations of individual and total PAHs in sample T4-UP02-0-1 were below the PEC and TEC. Concentrations of phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, and total PAHs were greater than the TEC in sample T4-UP01-0-1. The TEC exceedance ratio for this sample for total PAHs was 2. The remaining PAHs were not detected at concentrations above the TEC in Berth 401 under-pier sediment samples.

Butylbenzyl phthalate was detected in one Berth 401 under-pier sediment sample (T4-UP01-0-1) at a concentration of 13 $\mu\text{g}/\text{kg}$. Bis(2-ethylhexyl)phthalate was detected in both Berth 401 under-pier sediment samples. The maximum Berth 401 under-pier sediment concentration of bis(2-ethylhexyl)phthalate was 62 $\mu\text{g}/\text{kg}$ in sample T4-UP01-0-1 which was below the DEQ SQG (750 $\mu\text{g}/\text{kg}$).

All pesticide concentrations were less than the PEC in Berth 401 under-pier sediment samples. Pesticide concentrations in sample T4-UP02-0-1 were below the PEC and TEC. Total DDD, total DDT, and Σ DDT concentrations were greater than the TEC in sample T4-UP01-0-1. The Σ DDTs TEC exceedance ratio was 3 for this sample. The remaining pesticide results were below the TEC in Berth 401 under-pier sediment samples.

All PCB concentrations were less than the PEC and TEC in Berth 401 under-pier sediment samples.

Diesel-range organics, residual-range organics, and gasoline-range organics were detected at least once in the two Berth 401 under-pier sediment samples. Diesel-range and residual-range TPH results generally correspond

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

to total PAH results. Gasoline-range organics were only detected in one sample at a concentration below the MRL.

TOC concentrations ranged from 0.28 to 1.24% in the Berth 401 under-pier sediment samples. Total solids ranged from 62.5 to 77.3%. Grain size analysis indicates that Berth 401 under-pier sediment samples are generally slightly silty sands.

E.3.2 Slip 1

Six under-pier sediment samples (T4-UP03 through T4-UP08-0-1) were collected from Slip 1. Three of the samples (T4-UP03 through T4-UP05) were collected underneath Berth 405 and three samples (T4-UP06-0-1 through T4-UP08-0-1) were collected underneath Berth 408. Table E-8 summarizes Slip 1 under-pier sediment chemistry results. Slip 1 under-pier sediment concentrations for metals and PAHs were above the PEC in samples from Berth 408. Berth 405 sediment samples contained metals, PAH, pesticide, and PCB concentrations below the PEC and TEC.

The metals concentrations in samples T4-UP03, T4-UP04, and T4-UP05 were below the PEC and TEC. Concentrations of cadmium, lead, and zinc were above the PEC in sample T4-UP07-0-1. The exceedance ratios for cadmium, lead, and zinc were 1, 15, and 2, respectively, in this sample. Cadmium, copper, lead, and zinc concentrations were above the TEC in Slip 1 under-pier sediment samples. The remaining metals were not detected at concentrations above the TEC in Slip 1 under-pier sediment samples. Excepting sample T4-UP07-0-1, cadmium, copper, lead, and zinc TEC exceedance ratios were all less than 2, indicating concentrations were just slightly above the TEC.

The concentrations of individual and total PAHs in samples T4-UP03, T4-UP04, and T4-UP05 were below the PEC and TEC. Concentrations of anthracene, fluoranthene, pyrene, benz(a)anthracene, and chrysene were above the PEC in at least one of the following samples: T4-UP06-0-1 and T4-UP07-0-1. Concentrations of fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, dibenz(a,h)anthracene, and total PAHs were above the TEC in at least one of the following samples: T4-UP06-0-1, T4-UP07-0-1, and T4-UP08-0-1. The maximum total PAH TEC exceedance ratio was 10 in sample T4-UP07-0-1.

Butylbenzyl phthalate was detected in one Slip 1 under-pier sediment sample (T4-UP06-0-1) at a concentration of 51 µg/kg. Bis(2-ethylhexyl)phthalate was detected in two Slip 1 under-pier sediment samples, with a maximum concentration of 620 µg/kg in T4-UP06-0-1 which was below the DEQ SQG (750 µg/kg).

All pesticide concentrations were below the PEC in Slip 1 under-pier sediment samples. Pesticide concentrations in samples T4-UP03, T4-UP04, T4-UP05, and T4-UP08-0-1 were below the PEC and TEC. Total DDD, total DDE, total DDT, and Σ DDT concentrations were greater than the TEC in at least one of the following samples: T4-UP06-0-1 and T4-UP07-0-1. The highest Σ DDTs TEC exceedance ratio was 2 in sample T4-UP06-0-1.

All total PCB concentrations were below the PEC in Slip 1 under-pier sediment samples. Total PCB concentrations in samples T4-UP03, T4-UP04, T4-UP05, T4-UP07-0-1, and T4-UP08-0-1 were less than the

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PEC and TEC. Sample T4-UP06-0-1 contained total PCB concentrations greater than the TEC, with an exceedance ratio of less than 2.

Diesel-range organics and residual-range TPH were detected in each of the Slip 1 under-pier sediment samples except T4-UP05 and T4-UP08-0-1, where diesel-range TPH was not detected. Gasoline-range TPH was not detected in any of the Slip 1 under-pier sediment samples. Diesel-range and residual-range TPH results tend to correspond with total PAH results.

TOC concentrations ranged from 0.09 to 3.81% in the Slip 1 under-pier sediment samples. Total solids ranged from 36.7 to 75.4%. Grain size analysis indicates that Slip 1 under-pier sediment samples are generally silty sand.

E.3.3 Slip 3

Six under-pier sediment samples (T4-UP09-0-1, T4-UP10-0-1, T4-UP10-0-2, T4-UP12-0-1, T4-UP13-0-1, and T4-UP14) were collected from five locations in Slip 3 (two samples were collected from location T4-UP10). Table E-9 summarizes Slip 3 under-pier sediment chemistry results. Slip 3 under-pier sediment samples contained concentrations of cadmium, lead, zinc, and PAHs above the PEC.

Concentrations of cadmium, lead, and zinc were above the PEC in at least one of the following samples: T4-UP12-0-1, T4-UP13-0-1, and T4-UP14. The maximum PEC exceedance ratios for cadmium, lead, and zinc were 2, 13, and 4, respectively, all in sample T4-UP13-0-1. Arsenic, cadmium, copper, lead, and zinc concentrations were above the TEC in at least one Slip 3 under-pier sediment sample. Arsenic and copper TEC exceedance ratios were less than 2. Cadmium TEC exceedance ratios were greater than 2 in the three samples that had cadmium TEC exceedances (T4-UP12-0-1, T4-UP13-0-1, and T4-UP14). Lead and zinc TEC exceedance ratios were greater than 2 in samples T4-UP12-0-1, T4-UP13-0-1, and T4-UP14.

Naphthalene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, and total PAH concentrations were above the PEC in at least one of the following samples: T4-UP12-0-1, T4-UP13-0-1, and T4-UP14. The maximum PEC exceedance ratio for total PAHs was 18 in sample T4-UP13-0-1. All the PAHs having TEC criteria (i.e., naphthalene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, dibenz(a,h)anthracene, and total PAHs) had concentrations above the TEC in at least one Slip 3 under-pier sediment sample.

Butylbenzyl phthalate was detected in three Slip 3 under-pier sediment samples, with a maximum concentration of 27 µg/kg in T4-UP10-0-1. Bis(2-ethylhexyl)phthalate was detected in three Slip 3 under-pier sediment samples, with a maximum concentration of 140 µg/kg in T4-UP10-0-1 which was below the DEQ SQG (750 µg/kg).

All pesticide concentrations were below the PEC in Slip 3 under-pier sediment samples. Pesticide concentrations in samples T4-UP10-0-1 and T4-UP12-0-1 were below the PEC and TEC. Total DDD, total DDE, total DDT, and Σ DDT concentrations were greater than the TEC in at least one Slip 3 under-pier sediment sample. The highest exceedance ratio for Σ DDTs was 6 in sample T4-UP14.

All total PCB concentrations in Slip 3 under-pier sediment samples were below the PEC and TEC.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

Diesel-range organics and residual-range organics were detected in all of the Slip 3 under-pier sediment samples. Gasoline-range TPH was detected only in samples T4-UP13-0-1 and T4-UP14. Diesel-range and residual-range TPH results generally correspond with total PAH results. Gasoline-range organics concentrations were below the MRL.

TOC concentrations ranged from 0.24 to 2.83% in the Slip 3 under-pier sediment samples. Total solids ranged from 54.2 to 81.4%. Grain size analysis indicates that Slip 3 under-pier sediment samples are generally silty sand.

E.4 Subsurface Sediment Quality

The subsurface sediment data for Berth 401, Slip 1, Wheeler Bay, Slip 3, and north of Berth 414 are discussed below by subarea and constituent class: metals, SVOCs (e.g., PAHs and phthalates), pesticides (including total DDD, total DDE, and total DDT), PCBs, TPH, and conventionals (e.g., TOC and total solids). Figure E-7 presents subsurface sediment sample locations. Figure E-8 shows the locations of cross sections, which are discussed below.

E.4.1 Berth 401

Vibracores were collected from two locations (T4-VC01 and T4-VC02) from Berth 401 for a total of six subsurface sediment samples. The deepest sediment sample collected at Berth 401 was 7 to 9 feet below mudline. Table E-2 summarizes Berth 401 subsurface sediment chemistry results. Figure E-9 shows chemistry results for lead, zinc, total PAHs, total PCBs, and Σ DDTs posted on the geologic cross section. Sediments at Berth 401 consist of a thin layer of silt (approximately 1 foot in thickness) underlain by sand. Potentially contaminated sediment appears to be limited to the silt layer and the upper 2 feet of the sand layer at Berth 401. TEC and PEC exceedances do not extend below 3 feet below mudline in the Berth 401 subsurface sediment samples.

Zinc is the only metal with concentrations above the PEC in Berth 401 subsurface sediment samples. Samples T4-VC01-1-3 and T4-VC02-1-3 contain zinc TEC exceedances. The concentration of zinc in sample T4-VC02-1-3 is above the PEC, with an exceedance ratio of less than 2. The concentration of mercury in sample T4-VC02-1-3 is above the TEC, with an exceedance ratio of 3. The remaining metals were not detected at concentrations above the TEC in Berth 401 subsurface sediment samples. Metals concentrations in Berth 401 subsurface sediment samples below 3 feet below mudline did not exceed the PEC and TEC.

All PAH concentrations were below the PEC in Berth 401 subsurface sediment samples. Concentrations of phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, dibenz(a,h)anthracene, and total PAHs were greater than the TEC in at least one of the following samples: T4-VC01-1-3 and T4-VC02-1-3. The remaining PAHs were not detected at concentrations above the TEC. The maximum total PAH TEC exceedance ratio was 3 in sample T4-VC01-1-3. Berth 401 subsurface sediment samples from below 3 feet below mudline did not contain PAH concentrations greater than the TEC or PEC.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

Butylbenzyl phthalate was detected in two Berth 401 subsurface sediment samples at a maximum concentration of 170 µg/kg (T4-VC01-1-3). Bis(2-ethylhexyl)phthalate was detected in one Berth 401 subsurface sediment sample at a concentration of 350 µg/kg (T4-VC01-1-3) which was below the DEQ SQG (750 µg/kg).

All pesticide concentrations were below the PEC in Berth 401 subsurface sediment samples. Total DDD, total DDT, and Σ DDT concentrations were greater than the TEC in at least one of the following samples: T4-VC01-1-3 and T4-VC02-1-3. The remaining pesticide results were below the TEC. The maximum TEC exceedance ratio for Σ DDTs was 4 in sample T4-VC02-1-3. Pesticide concentrations were below the TEC and PEC in Berth 401 subsurface sediment samples from below 3 feet below the mudline.

All PCB concentrations were below the PEC in Berth 401 subsurface sediment samples. Total PCB concentrations were greater than the TEC in samples T4-VC01-1-3 and T4-VC02-1-3. The maximum TEC exceedance ratio was 2 in sample T4-VC01-1-3. Total PCB concentrations in Berth 401 subsurface sediment samples below 3 feet below mudline did not exceed the TEC and PEC.

Diesel-range organics, residual-range organics, and gasoline-range organics were each detected at least once in the Berth 401 subsurface sediment samples. The frequency of detection ranged from one to three samples. Diesel-range and residual-range TPH results tend to correspond with total PAH results. Gasoline-range organics was only detected in one sample at a concentration below the MRL.

TOC concentrations ranged from 0.03 to 1.15% in the Berth 401 subsurface sediment samples. Total solids ranged from 74.7 to 83.6%.

E.4.2 Slip 1

Vibracores were collected from 15 locations (T4-VC03 through T4-VC17) from Slip 1 for a total of 73 subsurface sediment samples. The deepest sediment sample collected at Slip 1 was 15 to 17 feet below mudline. Table E-3 summarizes Slip 1 subsurface sediment chemistry results. Figure E-10 shows chemistry results for lead, zinc, total PAHs, total PCBs, and Σ DDTs posted on the geologic cross sections. Sediments at Slip 1 generally consist of a thin layer of silt underlain by sand. The layer of silt ranges from approximately 1 foot to 3 feet in thickness in the western portion of the slip (west of about T4-VC08), except at T4-VC17, where the silt layer is about 5 feet thick. East of this, the silt layer is thicker, generally greater than 11 feet in thickness. The two exceptions to this stratigraphy in Slip 1 are (1) in the vicinity of T4-VC10 and (2) in the vicinity of T4-VC13 and T4-VC14. In both areas, there is a sand layer underlain by a silt layer underlain by a sand layer.

Metals concentrations in subsurface sediment samples from locations T4-VC03, T4-VC06, T4-VC13, and T4-VC14 were below the PEC and TEC. Concentrations of lead and zinc in sample T4-VC15-1-3 are greater than the PEC, with exceedance ratios of 2 and 1, respectively. The remaining Slip 1 subsurface sediment samples contained metals concentrations below the PEC.

TEC metals exceedances are limited to the 1-foot to 3-feet below mudline interval in Slip 1 subsurface sediment samples, except in the vicinity of Berth 405, Berth 408, and locations T4-VC12 and T4-VC17. TEC exceedance ratios within the 1-foot to 3-feet below mudline interval are less than 2 except in sample T4-VC07-1-3, which contains concentrations of lead and zinc with TEC exceedance ratios of 2 and 2, respectively. At locations T4-VC12 and T4-VC17, TEC exceedances for metals extended to 5 feet below mudline. The concentrations of

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

copper, lead, mercury, nickel, and zinc were above the TEC in at least one of the following subsurface sediment samples: T4-VC12-1-3, T4-VC12-3-5, T4-VC17-1-3, and T4-VC17-3-5. The TEC exceedance ratios for these metals were 2 or less. Metals concentrations below 5 feet below mudline were below the TEC in T4-VC12 and T4-VC17 subsurface sediment samples. Subsurface sediment samples from Berth 405 (locations T4-VC08, T4-VC09, and T4-VC10) and Berth 408 (locations T4-VC15 and T4-VC16) contained metals TEC exceedances to a depth of at least 11 feet below mudline (i.e., the deepest samples collected at each location). Location T4-VC08 contained TEC exceedances of nickel in a number of subsurface sediment samples, with exceedance ratios of less than 2. Location T4-VC09 contained TEC exceedances of cadmium, copper, lead, nickel, and zinc in subsurface sediment samples. Concentrations of cadmium, copper, and nickel in T4-VC09 subsurface sediment samples were less than two times the TEC. Concentrations of lead and zinc contained TEC exceedance ratios of 2 or less in samples T4-VC09-1-3 and T4-VC09-3-5. Sample T4-VC10-5-7 contained concentrations of copper, mercury, and nickel above the TEC, with exceedance ratios of less than 2. The remaining subsurface sediment samples at location T4-VC10 were below the PEC and TEC. Locations T4-VC15 and T4-VC16 contained TEC exceedances of cadmium, copper, lead, mercury, nickel, and zinc in subsurface sediment samples. Sediment sample T4-VC15-1-3 contained concentrations of cadmium, lead, and zinc with TEC exceedance ratios of 3, 7, and 5, respectively. The remaining metals TEC exceedance ratios in subsurface sediment samples at locations T4-VC15 and T4-VC16 were less than 2.

The concentrations of individual and total PAHs in subsurface sediment samples from locations T4-VC08, T4-VC10, and T4-VC13 were below the PEC and TEC. Samples T4-VC07-1-3, T4-VC09-1-3, and T4-VC17-3-5 contained PAH PEC exceedances. Total PAH concentrations for these samples were below the PEC.

PAH TEC exceedances occur in the 1-foot to 3-feet below mudline sediment samples except at locations T4-VC04, T4-VC07, T4-VC09, T4-VC12, T4-VC14, T4-VC15, and T4-VC17. These locations can generally be grouped as representing locations near the mouth of the slip (T4-VC04, T4-VC12, and T4-VC17), locations near Berth 405 (T4-VC07 and T4-VC09), and locations near Berth 408 (T4-VC14 and T4-VC15). At the mouth of the slip, TEC exceedances at location T4-VC04 occur in the 1-foot to 3-feet below mudline interval except for a TEC exceedance of pyrene in sample T4-VC04-10-12, with a TEC exceedance ratio of less than 2. Location T4-VC12 contains PAH TEC exceedances in the 1-foot to 3-feet and 3- to 5-feet below mudline intervals, with a maximum total PAH TEC exceedance ratio of 2 in sample T4-VC12-3-5. Sediment samples below this interval contain PAHs at concentrations below the TEC. Location T4-VC17 contains PAH TEC exceedances in the 1-foot to 3-feet, 3- to 5-feet, and 5- to 7-feet below mudline intervals, with a maximum total PAH exceedance ratio of 7 in sample T4-VC17-3-5. Sediment samples below these intervals contain PAH concentrations below the TEC. At Berth 405, PAH TEC exceedances are limited to the upper 5 feet of sediment at locations T4-VC07 and T4-VC09. The maximum total PAH TEC exceedance ratio is 11 in sample T4-VC09-1-3. Sediment samples from T4-VC07 and T4-VC09 collected below 5 feet below the mudline contain PAHs below the TEC. At location T4-VC14, subsurface sediment PAH exceedances are limited to sample T4-VC14-5-7, with a total PAH exceedance ratio of less than 2. At location T4-VC15, PAH exceedance is limited to 5 feet below mudline. The maximum total PAH exceedance ratio is 3 in sample T4-VC15-1-3.

Butylbenzyl phthalate was detected in ten Slip 1 subsurface sediment samples at a maximum concentration of 22 µg/kg in T4-VC09-1-3. Bis(2-ethylhexyl)phthalate was detected in 16 Slip 1 subsurface sediment samples, with a maximum concentration of 470 µg/kg in T4-VC04-3-5 which was below the DEQ SQG (750 µg/kg).

Pesticide concentrations in subsurface sediment samples at locations T4-VC03, T4-VC06, T4-VC08, T4-VC10, and T4-VC13 were below the PEC and TEC. Total DDD concentrations were greater than the PEC in sample

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

T4-VC17-3-5, with an exceedance ratio of 2. The remaining pesticide concentrations were below the PEC in Slip 1 subsurface sediment samples.

Locations T4-VC04, T4-VC05, T4-VC15, and T4-VC16 contained pesticide TEC exceedances in the 1-foot to 3-feet below mudline interval. Locations T4-VC07, T4-VC09, T4-VC11, T4-VC12, and T4-VC17 contained pesticide exceedances down to 5 feet below mudline. Sample T4-VC14-5-7 contained concentrations of pesticides above the TEC.

All total PCB concentrations in Slip 1 subsurface sediment samples were below the PEC. Subsurface sediment samples at locations T4-VC03, T4-VC04, T4-VC05, T4-VC06, T4-VC08, T4-VC10, T4-VC13, T4-VC14, and T4-VC16 contained total PCB concentrations below the PEC and TEC.

Locations near the mouth of Slip 1, near Berth 405, and near Berth 408 contained total PCB concentrations above the TEC. Locations near the mouth of the slip included T4-VC11, T4-VC12, and T4-VC17. Total PCB exceedances did not extend below 5 feet below mudline at these locations. The maximum total PCB TEC exceedance ratio was 4 in sample T4-VC17-3-5. At locations in the vicinity of Berth 405 (T4-VC07 and T4-VC09), total PCB TEC exceedances do not extend below 5 feet below mudline, with a maximum exceedance ratio of 3 in sample T4-VC09-3-5. At Berth 408 (T4-VC15), total PCB exceedances do not extend below 3 feet below mudline, with an exceedance ratio of 3 in sample T4-VC15-1-3.

Diesel-range organics, residual-range organics, and gasoline-range organics were detected at least once in the Slip 1 subsurface sediment samples. The frequency of detection ranged from nine to 39 samples. Diesel-range and residual-range TPH results generally corresponded with total PAH results. Gasoline-range organics were infrequently detected at concentrations near the MRL.

TOC concentrations ranged from 0.02 to 2.30% in the Slip 1 subsurface sediment samples. Total solids ranged from 54.2 to 93.0%.

E.4.3 Wheeler Bay

Vibracores were collected from four locations (T4-VC18 through T4-VC21) from Wheeler Bay for a total of 25 subsurface sediment samples. The deepest sediment sample collected at Wheeler Bay was 20 to 22 feet below mudline. Table E-4 summarizes Wheeler Bay subsurface sediment chemistry results. Figure E-11 shows chemistry results for lead, zinc, total PAHs, total PCBs, and Σ DDTs posted on the geologic cross sections. Sediments at Wheeler Bay generally consist of silt underlain by sand. The layer of silt ranges from approximately 2 to 3 feet in thickness near the shore (T4-VC18 and T4-VC19) to greater than 12 feet in thickness in the center of the bay and near the harbor line (T4-VC20 and T4-VC21).

Concentrations of lead and mercury were above the PEC in sample T4-PS21-15-17, with exceedance ratios of 24 and 1, respectively. The remaining Wheeler Bay subsurface sediment samples had metals concentrations below the PEC.

Metals TEC exceedances in locations T4-VC18 and T4-VC19 were limited to the 3- to 5-feet and 1-foot to 3-feet below mudline intervals, respectively. Metals exceedance ratios (including copper and lead) were less than 2 in samples T4-VC18-3-5 and T4-VC19-1-3. Locations T4-VC20 and T4-VC21 contained metals TEC

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

exceedances to the bottom of the core, 22 feet below mudline. These two locations contained copper, lead, mercury, nickel, and zinc TEC exceedances. Copper exceedance ratios were less than 2 except in sample T4-PS21-15-17, which had an exceedance ratio of 3. Nickel and mercury exceedance ratios were less than 2, excepting mercury in sample T4-PS21-15-17 with an exceedance ratio of 9. Lead and zinc exceedance ratios were greater than 2 in samples T4-VC20-7-9 and T4-PS21-15-17.

Concentrations of PAHs were above the PEC in samples T4-VC19-1-3, T4-VC20-11-13, T4-PS20-15-17, T4-VC21-7-9, T4-VC21-9-11, and T4-PS21-15-17. The maximum total PAH PEC exceedance ratio of 4 occurred in sample T4-VC19-1-3. Concentrations of at least one PAH were above the TEC in each Wheeler Bay subsurface sediment sample except samples T4-VC20-1-3 and T4-VC21-1-3.

Butylbenzyl phthalate was detected in five Wheeler Bay subsurface sediment samples, with a maximum concentration of 110 µg/kg in T4-PS21-15-17. Bis(2-ethylhexyl)phthalate was detected in nine Wheeler Bay subsurface sediment samples, with a maximum concentration of 3,000 µg/kg in T4-VC20-5-7. Sample T4-VC20-5-7 was the only Wheeler Bay subsurface sediment sample with a concentration of bis(2-ethylhexyl)phthalate above the DEQ SQG (750 µg/kg).

All pesticide concentrations were below the PEC in Wheeler Bay subsurface sediment samples. Total DDD, DDE, total DDT, and Σ DDT concentrations in at least one Wheeler Bay subsurface sediment sample were greater than the TEC. The highest Σ DDTs exceedance ratio was 9 in sample T4-VC20-7-9.

All total PCB concentrations in Wheeler Bay subsurface sediment samples were below the PEC. Total PCB concentrations in samples T4-VC18-3-5 and T4-VC19-3-5 were above the TEC, with exceedance ratios of less than 2. At location T4-VC20, total PCB exceedances occurred in sample intervals 5 to 7 feet, 7 to 9 feet, 9 to 11 feet, 11 to 13 feet, and 15 to 17 feet (no sample was taken at 13 to 15 feet). The maximum TEC exceedance ratio of 4 occurred in sample T4-VC20-9-11. At location T4-VC21, total PCB exceedances occurred in sample intervals 5 to 7 feet, 7 to 9 feet, 9 to 11 feet, and 11 to 13 feet. The maximum TEC exceedance ratio of 2 occurred in sample T4-VC21-5-7.

Diesel-range organics, residual-range organics, and gasoline-range organics were detected at least once in the Wheeler Bay subsurface sediment samples. The frequency of detection ranged from 11 to 24 samples. Diesel-range and residual-range TPH results tended to correspond to total PAH results. Gasoline-range organics were infrequently detected at concentrations near the MRL.

TOC concentrations ranged from 0.37 to 4.25% in the Wheeler Bay subsurface sediment samples. Total solids ranged from 51.8 to 77.0%.

E.4.4 Slip 3

Vibracores were collected from ten locations (T4-VC22 through T4-VC29, T4-VC32, and T4-VC33) from Slip 3 for a total of 51 subsurface sediment samples. The deepest sediment sample collected at Slip 3 was 20 to 22 feet below mudline. Table E-5 summarizes Slip 3 subsurface sediment chemistry results. Figures E-12 and E-13 show chemistry results for lead, zinc, total PAHs, total PCBs, and Σ DDTs posted on the geologic cross sections. Sediments at Slip 3 generally consist of silt underlain by sand. The silt layer is not present near Berths 410 and 411, particularly at locations T4-VC22, T4-VC23, and T4-PS33.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

Metals concentrations in subsurface sediment samples from locations T4-VC23, T4-VC25, and T4-VC27 were below the PEC and TEC. Concentrations of mercury in sample T4-VC22-9-11 and lead in samples T4-VC24-1-3, T4-VC29-1-3, T4-VC29-3-5, T4-VC32-1-3, and T4-VC32-3-5 were above the PEC. PEC exceedance ratios were 2 or less for mercury and lead in these samples.

Locations T4-VC22, T4-VC24, T4-VC26, T4-VC28, T4-VC29, T4-VC32, and T4-VC33 contained subsurface sediment samples with concentrations above the TEC of at least one of the following metals: arsenic, cadmium, copper, mercury, nickel, lead, and zinc. Exceedance ratios for these metals tended to be less than 2 except for lead and mercury in sample T4-VC22-9-11, which had exceedance ratios of greater than 2.

Concentrations of individual and total PAHs in subsurface sediment samples from locations T4-VC22, T4-VC23, T4-VC25, T4-VC27, T4-VC28, and T4-VC33 were below the PEC and TEC. Concentrations of PAHs in samples T4-VC24-1-3, T4-VC26-1-3, T4-VC29-1-3, T4-VC29-3-5, T4-VC32-1-3, and T4-VC32-3-5 were above the PEC, with the maximum total PAH PEC exceedance ratio of 3 in sample T4-VC29-1-3. TEC PAH exceedance ratios occur at location T4-VC24 to 1 foot to 3 feet below mudline and locations T4-VC26, T4-VC29, and T4-VC32 to 3 to 5 feet below mudline. Sample T4-VC32-15-17 also contained concentrations of PAHs above the TEC.

Butylbenzyl phthalate was detected in four Slip 3 subsurface sediment samples at a maximum concentration of 13 µg/kg in T4-VC26-1-3. Bis(2-ethylhexyl)phthalate was detected in 14 Slip 3 subsurface sediment samples, with a maximum concentration of 180 µg/kg in T4-VC32-3-5 which was below the DEQ SQG (750 µg/kg).

Pesticide concentrations in subsurface sediment samples from locations T4-VC22, T4-VC23, T4-VC24, T4-VC25, T4-VC27, T4-VC28, and T4-VC33 were below the PEC or TEC. Concentrations of total DDD and total DDT were above the PEC in sample T4-VC29-1-3, with exceedance ratios of 2 and 1, respectively.

T4-VC26 contained pesticide TEC exceedances down to 5 to 7 feet below mudline, with a maximum TEC exceedance ratio for Σ DDTs of 5 in sample T4-VC26-3-5. Location T4-VC29 contained TEC pesticide exceedances down to 3 to 5 feet, with a maximum exceedance ratio for Σ DDTs of 33 in sample T4-VC29-1-3. T4-VC32 contained pesticide TEC exceedances down to 3 to 5 feet, with a maximum exceedance ratio of 3 in sample T4-VC32-1-3.

The concentrations of total PCBs in subsurface sediment samples from locations T4-VC22, T4-VC23, T4-VC24, T4-VC25, T4-VC27, T4-VC28, and T4-VC33 were below the PEC or TEC. The concentration of total PCBs was above the PEC in sample T4-VC29-1-3, with an exceedance ratio of less than 2. T4-VC26-3-5 contained total PCBs above the TEC with an exceedance ratio of 3. T4-VC29-1-3 contained total PCBs above the TEC with an exceedance ratio of 16. T4-VC32-1-3 contained total PCBs above the TEC with an exceedance ratio of less than 2.

Diesel-range organics, residual-range organics, and gasoline-range organics were detected at least once in the Slip 3 subsurface sediment samples. The frequency of detection ranged from two to 25 samples. Diesel-range and residual-range TPH results generally correspond with total PAH results. Gasoline-range organics were infrequently detected at concentrations near the MRL.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

TOC concentrations ranged from 0.03 to 5.71% in the Slip 3 subsurface sediment samples. Total solids ranged from 51.7 to 92.2%.

E.4.5 North of Berth 414

Vibracores were collected from two locations (T4-VC30 and T4-VC31) from north of Berth 414 for a total of 12 subsurface sediment samples. The deepest sediment sample collected at north of Berth 414 was 20.5 to 22.5 feet below mudline. Table E-6 summarizes north of Berth 414 subsurface sediment chemistry results. Figure E-9 shows chemistry results for lead, zinc, total PAHs, total PCBs, and Σ DDTs posted on the geologic cross section. Sediments at north of Berth 414 generally consist of silt underlain by sand. The layer of silt ranges from approximately 8 to 9 feet in thickness.

All metals results were below the PEC in north of Berth 414 subsurface sediment samples. Concentrations of cadmium, copper, lead, mercury, and zinc were above the TEC in north of Berth 414 subsurface sediment samples. Metals TEC exceedances extended to 7 to 9 feet below mudline at location T4-VC30 and to 20.5 to 22.5 feet below mudline at location T4-VC31 (the bottom sample in the core). The concentrations of cadmium and copper are less than two times the TEC. The maximum lead and zinc exceedance ratios are 3 and 2, respectively, in sample T4-VC30-5-7. The maximum mercury exceedance is 4 in sample T4-VC31-7-9.

All PAH concentrations were below the PEC in north of Berth 414 subsurface sediment samples. PAH TEC exceedances extend to 7 to 9 feet below mudline at location T4-VC30 and 9 to 11 feet below mudline at location T4-VC31. The maximum total PAH TEC exceedance ratio is 3 in sample T4-VC31-7-9.

Butylbenzyl phthalate was detected in three north of Berth 414 subsurface sediment samples, with maximum concentrations of 7.5 $\mu\text{g}/\text{kg}$ in T4-VC30-5-7 and T4-VC31-3-5. Bis(2-ethylhexyl)phthalate was detected in five north of Berth 414 subsurface sediment samples, with a maximum concentration of 72 $\mu\text{g}/\text{kg}$ in T4-VC31-1-3 which was below the DEQ SQG (750 $\mu\text{g}/\text{kg}$).

All pesticide concentrations were below the PEC in north of Berth 414 surface sediment samples. Total DDD, total DDE, total DDT, and Σ DDT concentrations above the TEC extend to 7 to 9 feet below mudline at location T4-VC30 and 15 to 17 feet below mudline at location T4-VC31. The maximum exceedance ratio for Σ DDTs was 7 in sample T4-VC30-7-9.

All total PCB concentrations in north of Berth 414 surface sediment samples were below the PEC. Total PCB TEC exceedances extended to 7 to 9 feet below mudline at location T4-VC30 and to 3 to 5 feet below mudline at location T4-VC31. The maximum total PCB TEC exceedance ratio was 2 in sample T4-VC30-3-5.

Diesel-range organics, residual-range organics, and gasoline-range organics were detected at least once in the north of Berth 414 subsurface sediment samples. The frequency of detection ranged from five to 10 samples. Diesel-range and residual-range TPH results tended to correspond to total PAH results. Gasoline-range organics were infrequently detected at concentrations near the MRL.

TOC concentrations ranged from 0.07 to 2.77% in the north of Berth 414 subsurface sediment samples. Total solids ranged from 52.8 to 78.3%.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

E.5 Summary of Sediment Toxicity Testing Data

Sediment toxicity testing data are available for the Removal Action Area from the Slip 3 Remedial Investigation Report (Hart Crowser, 2000a). Sixteen sediment samples from Slip 3 and the immediate vicinity were tested: 14 from Slip 3, one from Wheeler Bay, and one from the Pier 5 area just upstream of the Slip 3 mouth (Figure E-14). In addition, two reference area samples were collected from the Columbia River downstream of the Willamette River confluence. Two reference samples were needed to account for the range in grain size of the Slip 3 sediment samples. Test sediments with less than 59.5% fines were compared to reference sample Ref-C; those with greater than 59.5% fines were compared to reference sample Ref-B. The study area and reference sampling locations were approved by DEQ.

The toxicity tests were conducted according to standard test protocols (USEPA, 1994b; ASTM, 1995). The tests employed were:

- acute 10-day amphipod survival test (*Hyallolella azteca*);
- acute 10-day midge survival test (*Chironomus tentans*); and
- chronic 10-day midge growth test (*Chironomus tentans*).

Results of the tests are shown in Tables E-10, E-11, and E-12 as they appeared in Hart Crowser (2000a). Decision criteria were based on the Dredge Management Evaluation Framework for the Lower Columbia River Management Area (USACE et al., 1998). For amphipod survival, tests were considered to fail if the mortality in the test samples exceeded that of reference samples by more than 15% and results in test samples were statistically different from reference ($\alpha \leq 0.05$). Similarly, midge survivorship bioassays failed if mortality in test samples exceeded reference samples by more than 20% and test sample results were statistically different from reference ($\alpha \leq 0.05$). The midge growth test failed if test sample biomass was less than 60% of reference and test sample results were statistically different from reference ($\alpha \leq 0.05$).

Tests were conducted in two phases. Phase I used samples from areas of low to moderate contamination. Phase II was conducted with samples from more contaminated areas. In general, samples from the outer (i.e., riverward) half of Slip 3 did not fail any toxicity tests (samples HCS26, HCS28, HCS30, HCS35, HCS36, HCS39, and HCS42). Six of nine (HCS01, HCS04, HCS05, HCS07, HCS16, and HCS22) samples tested from the inland half of Slip 3 failed at least one of the toxicity tests. Although correlation with contaminant concentrations were difficult to discern, test failures were more frequent in the more contaminated areas of Slip 3.

E.6 References

American Society for Testing and Materials (ASTM), 1995. Standard Test Methods for Measuring the Toxicity of Sediment-associated Contaminants with Fresh Water Invertebrates. E1706-95.

Blasland, Bouck, & Lee, Inc. (BBL), 2004a. Characterization Report, Terminal 4 Early Action, Port of Portland, Portland, Oregon. September 17.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

Blasland, Bouck, & Lee, Inc. (BBL), 2004b. Work Plan, Terminal 4 Early Action Engineering Evaluation/Cost Analysis, Port of Portland, Portland, Oregon. February 23.

Hart Crowser, 2000a. Remedial Investigation Report, Terminal 4, Slip 3 Sediments (Volume I) with tables, figures, and Appendices A through E, Port of Portland, Portland, Oregon (available in hard copy and electronically), April 18, 2000.

MacDonald, D.D., C.G. Ingersoll, and T.A. Berger, 2000a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Ecosystems, in Archives of Environmental Contamination and Toxicology, 39, 20-31.

Swartz, Richard C., 1999. Consensus Sediment Quality Guidelines for Polycyclic Aromatic Hydrocarbon Mixtures. Environmental Toxicology and Chemistry, Vol. 18, No. 4, 780-787.

U.S. Army Corps of Engineers (USACE), U.S. Environmental Protection Agency Region 10, Washington Department of Ecology, Oregon Department of Environmental Quality, and Washington Department of Natural Resources, 1998. Dredged Material Evaluation Framework, Lower Columbia River Management Area, November 1998.

U.S. Environmental Protection Agency (USEPA), 1994b. Methods for Measuring the Toxicity and Bioaccumulation of Sediment-associated Contaminants with Freshwater Invertebrates. EPA/600/R-94/024.

DRAFT DOCUMENT: Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

**Table E-1
Historical Sediment Data Compared to EE/CA Sediment Data**

Subarea	Number of Historical Sediment Samples (a)	Number of EE/CA Sediment Samples (b)	Metals (c)	Total PAHs (d, e)	ΣDDT (d, f)	Total PCBs (d, g)	Diesel Range TPH	Heavy Oil TPH	Gasoline TPH
Berth 401 surface	2	4	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	NA	NA	NA
Berth 401 subsurface	2	6	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	Historical results higher than EE/CA results.	Historical results similar to EE/CA results.	NA	NA	NA
Slip 1 surface	23	21	Historical data contains chromium PEC exceedances at head of slip in vicinity of VC10. Chromium exceedances not observed in EE/CA data.	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	NA	NA	NA
Slip 1 subsurface	1	73	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	NA	NA	NA	NA	NA
Wheeler Bay surface	6	4	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	NA	Not-detected in historical data. Detected in EE/CA data at concentrations about two times MRL.	Not-detected in historical data. Detected in EE/CA data at concentrations about two times MRL.	NA
Wheeler Bay subsurface	2	25	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	NA	NA	NA	NA	NA
Slip 3 surface	31	15	Lead and zinc concentrations higher in historical data at western half of slip than EE/CA concentrations.	Concentrations higher in historical data at western half of slip than EE/CA concentrations.	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	Detected in head of slip and southwest end of pier 5 in historical data and EE/CA data.	Detected in western half of slip in historical data. Detected in head of slip and southwest end of pier 5 in EE/CA data.	NA

DRAFT DOCUMENT:
Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

**Table E-1
Historical Sediment Data Compared to EE/CA Sediment Data**

Subarea	Number of Historical Sediment Samples (a)	Number of EE/CA Sediment Samples (b)	Metals (c)	Total PAHs (d, e)	ΣDDT (d, f)	Total PCBs (d, g)	Diesel Range TPH	Heavy Oil TPH	Gasoline TPH
Slip 3 subsurface	15	51	Historical results similar to EE/CA results.	Concentrations in historical data in vicinity of T4-VC22 higher than EE/CA concentrations.	NA	NA	Not-detected in historical data. Slightly elevated concentrations in VC26, VC29, and VC32 in EE/CA data.	Not-detected in historical data. Slightly elevated concentrations in VC26, VC29, and VC32 in EE/CA data.	NA
North of Berth 414 surface	4	2	Lead and zinc concentrations in historical data higher than EE/CA concentrations.	Concentrations in historical data higher than EE/CA concentrations.	Historical results similar to EE/CA results.	Not-detected in historical results. Can't compare data because higher detection limits in historical data.	Not-detected in historical data. Detected in EE/CA data at about two times MRL.	Not-detected in historical data. Detected in EE/CA data at about two times MRL.	NA
North of Berth 414 subsurface	2	12	Historical results similar to EE/CA results.	Historical results similar to EE/CA results.	NA	NA	NA	NA	NA

NA = no historical data available.

MRL = method reporting limit.

a. Includes historical sediment samples discussed in the Terminal 4 Early Action Engineering Evaluation/Cost Analysis Work Plan (BBL, 2004).

b. Includes sediment samples collected as part of the Terminal 4 Early Action Engineering Evaluation/Cost Analysis Work Plan (BBL, 2004).

Surface samples include surface and under-pier sediment samples.

c. Includes arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, and zinc.

d. For historical data, total concentrations were calculated using the detected values or the highest non-detect detection limit if all results were non-detect. If the highest non-detect detection limit was greater than the summed detected values, then the non-detect detection limit was used. For EE/CA data, total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.

e. For historical data, total PAH is the sum of acenaphthene, anthracene, biphenyl, naphthalene, 2,6-dimethylnaphthalene, fluorene, 1-methylnaphthalene, 2-methylnaphthalene, 1-methylphenanthrene, and phenanthrene, benzo(a)anthracene, benzo(a)pyrene, chrysene, dibenz(a,h)anthracene, fluoranthene, perylene, and pyrene. For EE/CA data, total PAH is the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.

f. ΣDDTs is the sum of 2,4'-DDD, 4,4'-DDD, 2,4'-DDE, 4,4'-DDE, 2,4'-DDT, and 4,4'-DDT.

DRAFT DOCUMENT:

Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

**Table E-1
Historical Sediment Data Compared to EE/CA Sediment Data**

Subarea	Number of Historical Sediment Samples (a)	Number of EE/CA Sediment Samples (b)	Metals (c)	Total PAHs (d, e)	Σ DDT (d, f)	Total PCBs (d, g)	Diesel Range TPH	Heavy Oil TPH	Gasoline TPH
---------	---	--------------------------------------	------------	-------------------	---------------------	-------------------	------------------	---------------	--------------

g. For historical data, total PCB is presented in the database and is the sum of the Aroclors. It appears that the same Aroclors were used for the total PCB sum in each study. For EE/CA data, total PCBs is the sum of Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268.

DRAFT DOCUMENT:
Do Not Quote or Cite.

This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

Table E-2
Berth 401 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC01-0-1 K2401958-011 03/16/2004	T4-VC01-1-3 K2401958-012 03/16/2004	T4-VC01-3-5 K2401958-013 03/16/2004	T4-VC02-0-1 K2402051-001 03/18/2004	T4-VC02-1-3 K2402051-002 03/18/2004	T4-VC02-3-5 K2402051-003 03/18/2004	T4-VC02-5-7 K2402051-005 03/18/2004	T4-VC02-7-9 K2402051-006 03/18/2004
Metals (mg/kg)										
Arsenic	9.79	33	3.8	3.5	3.6	3.4	3.4	2.9	2.5	2.9
Cadmium	0.99	4.98	0.46	0.54	0.1	0.228	0.191	0.049 B	0.058	0.066
Chromium	43.4	111	30.4 J	17.5 J	14 J	20.3 J	10.8 J	10 J	10 J	11.7 J
Copper	31.6	149	44.3 J	28.3 J	16.5 J	28.1 J	18.2 J	12.6 J	12.4 J	13.5 J
Lead	35.8	128	22.5	31.9	6.4	15.8	13.6	4.32	2.39	2.56
Mercury	0.18	1.06	0.094	0.118	0.015 B	0.05	0.541	0.008 B	0.011 B	0.019 U
Nickel	22.7	48.6	24.8 J	21.2 J	19.4 J	19.5 J	14.6 J	14.4 J	14.2 J	16.3 J
Selenium	NS	NS	0.17 J	0.12 J	0.1 UJ	0.07 J	0.12 UJ	0.11 UJ	0.11 UJ	0.11 J
Silver	NS	NS	0.26	0.09	0.03	0.31	0.11	0.02 U	0.02 U	0.02 U
Zinc	121	459	111 J	151 J	48 J	79.9 J	566 J	39.4 J	50.1 J	45.2 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	22	90	17	14	140	1.3 J	5.0 U	5.0 U
2-Methylnaphthalene	NS	NS	8.8	68	4.0 J	4.8 J	95	1.0 J	5.0 U	5.0 U
1-Methylnaphthalene	NS	NS	5.2	36	2.5 J	3.2 J	42	0.78 J	5.0 U	5.0 U
Biphenyl	NS	NS	4.8 J	15	2.2 J	5.1 U	24	5.0 U	5.0 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	7.7	74	3.9 J	3.3 J	62	0.46 J	5.0 U	5.0 U
Acenaphthylene	NS	NS	8.0	28	4.9 J	6.7	24	0.78 J	5.0 U	5.0 U
Acenaphthene	NS	NS	26	69	6.2	14	76	0.93 J	5.0 U	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	11	98	3.6 J	3.5 J	24	5.0 U	5.0 U	5.0 U
Fluorene	77.4	536	22	77	4.5 J	11	70	0.91 J	5.0 U	5.0 U
Phenanthrene	204	1,170	170	690	86	65	440	3.1 J	5.0 U	5.0 U
Anthracene	57.2	845	35	130	9.0	18	130	1.0 J	5.0 U	5.0 U
1-Methylphenanthrene	NS	NS	22	82	5.7	6.0	44	0.28 J	5.0 U	5.0 U
Fluoranthene	423	2,230	340	900	39	130	440	3.6 J	5.0 U	5.0 U
Pyrene	195	1,520	410	1,300	80	150	640	6.3	5.0 U	5.0 U
Benz(a)anthracene	108	1,050	180	320	12	69	190	3.3 J	5.0 U	5.0 U
Chrysene	166	1,290	240	450	17	99	240	4.8 J	5.0 U	5.0 U
Benzo(b)fluoranthene	NS	NS	230	310	11	90	200	5.0 J	5.0 U	5.0 U
Benzo(k)fluoranthene	NS	NS	190	290	12	75	190	5.3	5.0 U	5.0 U
Benzo(e)pyrene	NS	NS	190	300	13	82	180	5.8	5.0 U	5.0 U
Benzo(a)pyrene	150	1,450	230	400	15	98	250	6.9 J	5.0 U	5.0 U
Perylene	NS	NS	190	130	19	47	92	3.0 J	2.8 J	0.50 J
Indeno(1,2,3-cd)pyrene	NS	NS	200	340	13	83	190	4.6 J	5.0 U	5.0 U
Dibenz(a,h)anthracene	33	NS	32	38	1.2 J	13	29	0.51 J	5.0 U	5.0 U
Benzo(g,h,i)perylene	NS	NS	190	380	18	85	200	6.5	5.0 U	5.0 U
Dimethyl phthalate	NS	NS	19 J	40 U	20 U	21 U	20 U	20 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-2
Berth 401 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC01-0-1 K2401958-011 03/16/2004	T4-VC01-1-3 K2401958-012 03/16/2004	T4-VC01-3-5 K2401958-013 03/16/2004	T4-VC02-0-1 K2402051-001 03/18/2004	T4-VC02-1-3 K2402051-002 03/18/2004	T4-VC02-3-5 K2402051-003 03/18/2004	T4-VC02-5-7 K2402051-005 03/18/2004	T4-VC02-7-9 K2402051-006 03/18/2004
Diethyl phthalate	NS	NS	40 U	40 U	20 U	21 U	20 U	20 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	40 U	40 U	20 U	61 U	20 U	20 U	20 U	20 U
Butylbenzyl phthalate	NS	NS	93	170	20 U	21 U	17 J	20 U	20 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	1400	350	20 U	490	76 U	20 U	20 U	20 U
Di-n-octyl phthalate	NS	NS	29 J	40 U	20 U	21 U	20 U	20 U	20 U	20 U
Total PAHs (c,d)	1,610	22,800	2,103	5,054	314	840	3,030	43	5.0 U	5.0 U
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	7.0 J	0.44 U	0.42 U	3.8 J	4.0 U	0.40 U	0.40 U	0.40 U
4,4'-DDD	NS	NS	4.7	1.0	0.42 U	4.5	2.6 J	0.40 U	0.40 U	0.40 U
4,4'-DDT	NS	NS	12 J	4.3 U	0.42 U	3.1 J	9.9	0.099 J	0.40 U	0.40 U
2,4'-DDE	NS	NS	0.15 J	0.43 U	0.42 U	4.1 U	4.0 U	0.40 U	0.40 U	0.40 U
2,4'-DDD	NS	NS	2.1 U	5.2	0.42 U	4.1 U	4.0 U	0.40 U	0.40 U	0.40 U
2,4'-DDT	NS	NS	5.1	3.7 J	0.42 U	4.1 U	8.8 J	0.40 U	0.40 U	0.40 U
Total DDD (c,e)	4.88	28	4.7	6.2	0.42 U	4.5	2.6 J	0.40 U	0.40 U	0.40 U
Total DDE (c,f)	3.16	31.3	7.2 J	0.44 U	0.42 U	3.8 J	4.0 U	0.40 U	0.40 U	0.40 U
Total DDT (c,g)	4.16	62.9	17	3.7 J	0.42 U	3.1 J	19	0.099 J	0.40 U	0.40 U
ΣDDTs (c,h)	5.28	572	29	9.9	0.42 U	11	21	0.099 J	0.40 U	0.40 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	6.7 U	5.3 U	5.3 U	5.1 U	25 U	5.0 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	14 U	11 U	11 U	11 U	50 U	10 U	10 U	10 U
Aroclor 1232	NS	NS	6.7 U	5.3 U	5.3 U	5.1 U	25 U	5.0 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	120	69	5.3 U	5.1 U	25 U	5.0 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	6.7 U	5.3 U	5.3 U	6.1	25 U	5.0 U	5.0 U	5.0 U
Aroclor 1254	NS	NS	130	82	5.3 U	11 U	140	5.0 U	5.0 U	5.0 U
Aroclor 1260	NS	NS	6.7 U	5.3 U	5.3 U	8.7	25 U	5.0 U	5.0 U	5.0 U
Aroclor 1262	NS	NS	6.7 U	5.3 U	5.3 U	5.1 U	25 U	5.0 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	6.7 U	5.3 U	5.3 U	5.1 U	25 U	5.0 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	250	151	11 U	15	140	10 U	10 U	10 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	110 J	200 J	20 U	41 J	55 J	19 U	21 U	21 U
Residual Range Organics (RRO)	NS	NS	410 J	410 J	19 J	220 J	130 J	73 U	81 U	83 U
Gasoline Range Organics (GRO)	NS	NS	4.3 U	2.3 J	3.2 U	3.7 U	3.0 U	3.2 U	3.3 U	3.3 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-2
Berth 401 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC01-0-1 K2401958-011 03/16/2004	T4-VC01-1-3 K2401958-012 03/16/2004	T4-VC01-3-5 K2401958-013 03/16/2004	T4-VC02-0-1 K2402051-001 03/18/2004	T4-VC02-1-3 K2402051-002 03/18/2004	T4-VC02-3-5 K2402051-003 03/18/2004	T4-VC02-5-7 K2402051-005 03/18/2004	T4-VC02-7-9 K2402051-006 03/18/2004
Total organic carbon	NS	NS	1.83	1.15	0.18 U	1.43	0.82	0.04 J	0.25	0.03 J
Total solids	NS	NS	57.4	78.8	79.9	66.2	83.6	79.1	74.7	75.8
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	98.6	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	98.7	100	100	100	98.6	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	99.9	98.7	100	100	99.7	98.6	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	99.9	98.3	99.7	99.7	99.7	98.5	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	100	99.3	97.7	99.3	98.4	97.3	97.4	99.4
Sand, Coarse No. 40 (0.425 mm)	NS	NS	99.6	79.5	86.7	97.0	73.1	63.8	66.0	81.2
Sand, Medium No. 60 (0.250 mm)	NS	NS	98.0	33.1	20.7	89.7	31.3	12.0	16.6	21.8
Sand, Fine No. 140 (0.106 mm)	NS	NS	94.6 J	15.9 J	9.06 J	76.0 J	15.3 J	3.56 J	4.54 J	5.14 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	89.6	14.4	8.30	73.6	13.8	3.35	4.14	4.53
Silt (0.074 mm)	NS	NS	82.9	12.7	2.23	57.7	12.4	1.64	3.00	2.18
Clay (0.005 mm)	NS	NS	28.9	4.62	1.2	17.9	3.45	0	0.61	0.28
Clay (0.001 mm)	NS	NS	0	0	0.59	0	0	0	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-2
Berth 401 Surface and Subsurface Sediment Data Compared to SQGs

NS = No screening level.

NA = Not analyzed because of insufficient sample volume.

U = Analyte was not detected above the reported sample quantitation limit.

J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

B = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

The approximate concentration is less than the method report limit but greater than the method detection limit.

Boxed values indicate concentration is greater than TEC.

Shaded values indicate concentration is greater than PEC.

- a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based threshold effect concentrations (TEC). Represents concentration below which toxicity is unlikely to be observed.
- b. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based probable effect concentrations (PEC). Represents concentration above which toxicity is likely to be observed.
- c. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
- d. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
- e. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
- f. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
- g. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
- h. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes e, f, and g for the definitions of total DDD, total DDE, and total DDT, respectively.
- i. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).
- j. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use.

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC03-0-1 K2401908-001 03/16/2004	T4-VC03-1-3 K2401908-002 03/16/2004	T4-VC03-3-5 K2401908-003 03/16/2004	T4-VC03-5-7 K2401908-004 03/16/2004	T4-PS03-11-13 K2402526-024 04/02/2004	T4-PS03-15-17 K2402526-025 04/02/2004	T4-VC04-0-1 K2401908-005 03/16/2004	T4-VC04-1-3 K2401908-006 03/16/2004
Metals (mg/kg)										
Arsenic	9.79	33	3.4	3.3	2.4	2.6	3.4	2.2	3.7	4.5
Cadmium	0.99	4.98	0.25	0.12	0.09	0.12	0.12	0.11	0.31	0.36
Chromium	43.4	111	21.2 J	13 J	10.9 J	9.66 J	11.4	10.5	24.3 J	28.4 J
Copper	31.6	149	31.7 J	16.3 J	14.7 J	14.8 J	30.4	26.1	35.8 J	40.7 J
Lead	35.8	128	13	6.33	2.48	2.5	5.13	3.75	21.7	20.5
Mercury	0.18	1.06	0.048 J	0.021 J	0.012 J	0.026 J	0.01 B	0.02 U	0.096 J	0.067 J
Nickel	22.7	48.6	20.4 J	17.9 J	16.1 J	14.4 J	15.7 J	14.7 J	21.4 J	25.1 J
Selenium	NS	NS	0.09 J	0.03 J	0.11 UJ	0.12 UJ	0.1 UJ	0.11 UJ	0.15 J	0.17 J
Silver	NS	NS	0.12	0.03	0.02	0.03	0.06	0.03	0.19	0.2
Zinc	121	459	77.7 J	54.7 J	41.7 J	35.9 J	43 J	40.3 J	86.4 J	106 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	11	32	0.27 J	0.52 J	8.9	0.56 J	19	25
2-Methylnaphthalene	NS	NS	3.3 J	12	5.0 U	4.9 U	2.1 J	5.0 U	9.3	8.9
1-Methylnaphthalene	NS	NS	2.4 J	9.7	5.0 U	4.9 U	1.2 J	5.0 U	6.8	4.5 J
Biphenyl	NS	NS	2.3 J	4.1 J	5.0 U	4.9 U	5.1 U	5.0 U	4.0 J	3.2 J
2,6-Dimethylnaphthalene	NS	NS	3.0 J	9.3	5.0 U	4.9 U	1.3 J	5.0 U	6.1	5.2
Acenaphthylene	NS	NS	4.4 J	5.9	5.0 U	0.32 J	1.5 J	5.0 U	9.9	5.4
Acenaphthene	NS	NS	16	15	0.51 J	72	11	1.3 J	29	32
2,3,5-Trimethylnaphthalene	NS	NS	3.1 J	6.0	5.0 U	4.9 U	0.97 J	5.0 U	5.5	3.7 J
Fluorene	77.4	536	11	14	5.0 U	4.9 U	1.9 J	0.28 J	32	20
Phenanthrene	204	1,170	60	78	5.0 U	4.9 U	18	2.0 J	210	120
Anthracene	57.2	845	14	17	5.0 U	4.9 U	3.0 J	0.34 J	34	25
1-Methylphenanthrene	NS	NS	5.3	8.4	5.0 U	0.17 J	1.5 J	0.21 J	18	8.7
Fluoranthene	423	2,230	98	130	5.0 U	4.9 U	18	3.2 J	380	210
Pyrene	195	1,520	130	220	5.0 U	4.9 U	25	3.4 J	440	260
Benz(a)anthracene	108	1,050	43	61	0.17 J	0.24 J	7.2	1.5 J	170	130
Chrysene	166	1,290	64	66	0.27 J	0.43 J	10	2.3 J	240	170
Benzo(b)fluoranthene	NS	NS	53	40	0.34 J	0.24 J	7.1	2.0 J	230	180
Benzo(k)fluoranthene	NS	NS	52	44	0.21 J	0.22 J	6.7	1.4 J	180	160
Benzo(e)pyrene	NS	NS	48	41	0.21 J	0.23 J	7.0	1.7 J	180	140
Benzo(a)pyrene	150	1,450	59	53	0.16 J	4.9 U	9.5	1.6 J	220	180
Perylene	NS	NS	54	29	0.48 J	5.9	10	1.1 J	130	89
Indeno(1,2,3-cd)pyrene	NS	NS	49	34	0.22 J	4.9 U	9.0 J	5.0 UJ	180	150
Dibenz(a,h)anthracene	33	NS	6.7	4.2 J	5.0 U	4.9 U	1.5 J	5.0 UJ	28	24
Benzo(g,h,i)perylene	NS	NS	55	42	0.27 J	0.28 J	10	5.0 U	180	150
Dimethyl phthalate	NS	NS	20 UJ	20 U	20 U	20 U	11 U	10 U	18 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC03-0-1 K2401908-001 03/16/2004	T4-VC03-1-3 K2401908-002 03/16/2004	T4-VC03-3-5 K2401908-003 03/16/2004	T4-VC03-5-7 K2401908-004 03/16/2004	T4-PS03-11-13 K2402526-024 04/02/2004	T4-PS03-15-17 K2402526-025 04/02/2004	T4-VC04-0-1 K2401908-005 03/16/2004	T4-VC04-1-3 K2401908-006 03/16/2004
Diethyl phthalate	NS	NS	20 UJ	20 U	20 U	20 U	11 U	10 U	18 U	20 U
Di-n-butyl phthalate	NS	NS	20 UJ	20 U	20 U	20 U	11 U	10 U	18 U	20 U
Butylbenzyl phthalate	NS	NS	12 J	20 U	20 U	20 U	11 U	10 U	13 J	14 J
Bis(2-ethylhexyl) phthalate	NS	NS	39 J	20 U	20 U	20 U	85	95	56	54
Di-n-octyl phthalate	NS	NS	20 UJ	20 U	20 U	20 U	23	10 U	18 U	20 U
Total PAHs (c,d)	1,610	22,800	615	776	1.9 J	74	128	20 J	2,194	1,517
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	2.7	0.40 U	0.40 U	0.40 U	0.43 U	0.43 U	2.7	4.1
4,4'-DDD	NS	NS	1.8	0.40 U	0.40 U	0.40 U	0.43 U	0.43 U	1.6	2.9
4,4'-DDT	NS	NS	0.40 U	0.12 J	0.40 U	0.40 U	0.43 U	0.43 U	0.4 U	13
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.43 U	0.4 U	0.4 U
2,4'-DDD	NS	NS	1.1 J	0.40 U	0.40 U	0.40 U	0.43 U	0.43 U	1.4 J	1.4 J
2,4'-DDT	NS	NS	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.43 U	0.43	0.4 U
Total DDD (c,e)	4.88	28	2.9	0.40 U	0.40 U	0.40 U	0.43 U	0.43 U	3.0	4.3
Total DDE (c,f)	3.16	31.3	2.7	0.40 U	0.40 U	0.40 U	0.43 U	0.43 U	2.7	4.1
Total DDT (c,g)	4.16	62.9	0.40 U	0.12 J	0.40 U	0.40 U	0.43 U	0.43 U	0.43	13
ΣDDTs (c,h)	5.28	572	5.6	0.12 J	0.40 U	0.40 U	0.43 U	0.43 U	6.1	21
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.3 U	5.4 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	10 U	10 U	10 U	10 U	11 U	11 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.3 U	5.4 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.3 U	5.4 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	4.1 J	5.0 U	5.0 U	5.0 U	5.3 U	5.4 U	5.0 U	5.9
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.3 U	5.4 U	5.0 U	18 U
Aroclor 1260	NS	NS	8.0	5.0 U	5.0 U	5.0 U	5.3 U	5.4 U	8.9	12
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.3 U	5.4 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.3 U	5.4 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	12	10 U	10 U	10 U	11 U	11 U	8.9	17.9
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	28 J	24 J	20 U	20 U	20 U	21 U	47 J	62 J
Residual Range Organics (RRO)	NS	NS	96 J	74 J	78 U	79 U	9.8 J	82 U	180 J	200 J
Gasoline Range Organics (GRO)	NS	NS	4.1 U	3.3 U	2.8 U	3.6 U	3.2 U	3.3 U	4.2 U	4.3 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC03-0-1 K2401908-001 03/16/2004	T4-VC03-1-3 K2401908-002 03/16/2004	T4-VC03-3-5 K2401908-003 03/16/2004	T4-VC03-5-7 K2401908-004 03/16/2004	T4-PS03-11-13 K2402526-024 04/02/2004	T4-PS03-15-17 K2402526-025 04/02/2004	T4-VC04-0-1 K2401908-005 03/16/2004	T4-VC04-1-3 K2401908-006 03/16/2004
Total organic carbon	NS	NS	1.31	0.2	0.09 U	1.85	0.25	0.02 J	1.92	2.03
Total solids	NS	NS	61	76.2	89.1	70.6	76.8	75.3	58.4	57.4
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	93.2	NA	NA	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	89.4	NA	NA	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	99.5	100	100	88.1	NA	NA	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.5	99.9	100	86	NA	NA	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	98.2	99.3	99.5	83.9	NA	NA	99.9	99.9
Sand, Coarse No. 40 (0.425 mm)	NS	NS	83.6	72.2	68.1	50.9	NA	NA	99.3	97.1
Sand, Medium No. 60 (0.250 mm)	NS	NS	68.8 J	24.3 J	11.1 J	16.8 J	NA	NA	98.1 J	89.9 J
Sand, Fine No. 140 (0.106 mm)	NS	NS	62.3	6.8	3.86	5.99	NA	NA	94.7	85.2
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	57.3	6.18	3.54	5.37	NA	NA	88.3	81.3
Silt (0.074 mm)	NS	NS	53.1	5.77	2.33	4.9	NA	NA	67.1	66.9
Clay (0.005 mm)	NS	NS	16.1	2.5	1.84	2.24	NA	NA	30.9	32.7
Clay (0.001 mm)	NS	NS	0	0.54	1.55	0.64	NA	NA	9.34	12.2

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC04-3-5 K2401908-007 03/16/2004	T4-VC04-5-7 K2401908-009 03/16/2004	T4-VC04-7-9 K2401908-010 03/16/2004	T4-PS04-10-12 K2402526-008 04/05/2004	T4-PS04-15-17 K2402526-009 04/05/2004	T4-VC05-0-1 K2401958-014 03/16/2004	T4-VC05-1-3 K2401958-015 03/16/2004	T4-VC05-3-5 K2401958-016 03/16/2004
Metals (mg/kg)										
Arsenic	9.79	33	2.9	2.9	4.2	3.1	2.4	3.4	3.1	2.1
Cadmium	0.99	4.98	0.11	0.09	0.12	0.14	0.12	0.33	0.4	0.16
Chromium	43.4	111	12.9 J	9.52 J	13.3 J	11.4	9.88	24.7 J	16.8 J	11.1 J
Copper	31.6	149	15.7 J	13.1 J	16.9 J	21.3	29.1	39.9 J	21.7 J	16.4 J
Lead	35.8	128	4.11	4.29	5.67	9.95	4.09	20.5	19.1	8.06
Mercury	0.18	1.06	0.014 J	0.011 J	0.009 J	0.03	0.02 U	0.104	0.037	0.042
Nickel	22.7	48.6	17 J	15.2 J	18.3 J	15.2 J	14.6 J	22.2 J	19.5 J	17.2 J
Selenium	NS	NS	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.1 UJ	0.14 J	0.1 UJ	0.11 UJ
Silver	NS	NS	0.03	0.04	0.03	0.04	0.02	0.24	0.09	0.08
Zinc	121	459	49.7 J	46.1 J	58.4 J	43.3 J	36 J	87.8 J	125 J	58.7 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	12 J	0.98 J	2.7 J	53	0.48 J	33	54	25
2-Methylnaphthalene	NS	NS	4.3 J	5.0 U	1.1 J	12	5.0 U	16	20	14
1-Methylnaphthalene	NS	NS	2.0 J	5.0 U	0.66 J	6.5	5.0 U	10	8.6	8.6
Biphenyl	NS	NS	2.0 J	5.0 U	5.0 U	4.2 J	5.0 U	5.0	5.3	2.8 J
2,6-Dimethylnaphthalene	NS	NS	1.8 J	5.0 U	0.38 J	6.9	5.0 U	9.0	9.9	9.7
Acenaphthylene	NS	NS	2.7 J	0.43 J	0.62 J	22	5.0 U	8.1	31	2.7 J
Acenaphthene	NS	NS	14	0.35 J	5.4	20	0.35 J	75	38	10
2,3,5-Trimethylnaphthalene	NS	NS	1.5 J	5.0 U	0.55 J	10	5.0 U	9.6	7.7	4.9 J
Fluorene	77.4	536	7.6	5.0 U	2.2 J	13	5.0 U	51	17	11
Phenanthrene	204	1,170	82 J	5.0 U	16	160	1.3 J	370	130	77
Anthracene	57.2	845	13 J	5.0 U	5.0 U	53	0.30 J	60	34	12
1-Methylphenanthrene	NS	NS	5.6	0.29 J	2.7 J	25	0.20 J	22	25	11
Fluoranthene	423	2,230	120 J	3.0 J	31	230	3.9 J	690	200	54
Pyrene	195	1,520	150 J	8.1	45	250	4.3 J	750	420	130
Benz(a)anthracene	108	1,050	61 J	3.1 J	16	100	3.1 J	400	200	21
Chrysene	166	1,290	74 J	4.3 J	24	150	3.0 J	510	250	31
Benzo(b)fluoranthene	NS	NS	62 J	3.4 J	25	83	3.5 J	610	190	16
Benzo(k)fluoranthene	NS	NS	53 J	2.9 J	19	78	3.0 J	420	190	17
Benzo(e)pyrene	NS	NS	51 J	3.0 J	20	86	2.7 J	430	200	17
Benzo(a)pyrene	150	1,450	68 J	2.8 J	22	110	2.0 J	560	280	20
Perylene	NS	NS	28	7.7	14	48	1.5 J	340	120	18
Indeno(1,2,3-cd)pyrene	NS	NS	52 J	1.7 J	17	82 J	5.0 UJ	510	200	15
Dibenz(a,h)anthracene	33	NS	7.2	5.0 U	3.2 J	19 J	5.0 UJ	100	32	1.7 J
Benzo(g,h,i)perylene	NS	NS	56 J	2.3 J	19	87	5.0 U	460	210	19
Dimethyl phthalate	NS	NS	20 U	20 U	20 U	50 U	10 U	40 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC04-3-5 K2401908-007 03/16/2004	T4-VC04-5-7 K2401908-009 03/16/2004	T4-VC04-7-9 K2401908-010 03/16/2004	T4-PS04-10-12 K2402526-008 04/05/2004	T4-PS04-15-17 K2402526-009 04/05/2004	T4-VC05-0-1 K2401958-014 03/16/2004	T4-VC05-1-3 K2401958-015 03/16/2004	T4-VC05-3-5 K2401958-016 03/16/2004
Diethyl phthalate	NS	NS	20 U	20 U	20 U	50 U	10 U	40 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	20 U	50 U	10 U	40 U	20 U	20 U
Butylbenzyl phthalate	NS	NS	20 U	20 U	20 U	50 U	10 U	13 J	20 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	470 J	20 U	20 U	80	44	72	34	20 U
Di-n-octyl phthalate	NS	NS	20 U	20 U	20 U	50 U	10 U	40 U	20 U	20 U
Total PAHs (c,d)	1,610	22,800	719	29	209	1,322	25 J	4,537	2,034	427
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.35 J	0.40 U	0.41 U	0.50 J	0.42 U	4.6	2.6 J	1.1 J
4,4'-DDD	NS	NS	0.34 J	0.40 U	0.41 U	2.1	0.42 U	3.4	3.2	0.99
4,4'-DDT	NS	NS	0.53 J	0.40 U	0.087 J	0.52 U	0.42 U	2.5	2.1	0.77
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.41 U	0.5 U	0.42 U	0.21 J	0.43 U	0.41 U
2,4'-DDD	NS	NS	0.40 U	0.40 U	0.41 U	0.83 U	0.42 U	1.8 J	3.1 J	0.92 J
2,4'-DDT	NS	NS	0.40 U	0.40 U	0.41 U	1.2 U	0.42 U	0.88 U	1.5 U	0.39 J
Total DDD (c,e)	4.88	28	0.34 J	0.40 U	0.41 U	2.1	0.42 U	5.2	6.3	1.9
Total DDE (c,f)	3.16	31.3	0.35 J	0.40 U	0.41 U	0.5 J	0.42 U	4.8	2.6 J	1.1 J
Total DDT (c,g)	4.16	62.9	0.53 J	0.40 U	0.087 J	1.2 U	0.42 U	2.5	2.1	1.2
ΣDDTs (c,h)	5.28	572	1.2 J	0.40 U	0.087 J	2.6	0.42 U	13	11	4.2
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.1 U	5.5 U	5.3 U	6.7 U	5.2 U	5.1 U
Aroclor 1221	NS	NS	10 U	10 U	11 U	11 U	11 U	14 U	11 U	11 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.1 U	5.5 U	5.3 U	6.7 U	5.2 U	5.1 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.1 U	5.5 U	5.3 U	6.7 U	5.2 U	5.1 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	5.1 U	5.5 U	5.3 U	7.4	34 J	4.1 J
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.1 U	5.5 U	5.3 U	6.7 U	37 U	12 U
Aroclor 1260	NS	NS	3.7 J	5.0 U	5.1 U	3.9 J	5.3 U	25	25	8.7
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.1 U	5.5 U	5.3 U	6.7 U	5.2 U	5.1 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.1 U	5.5 U	5.3 U	6.7 U	5.2 U	5.1 U
Total PCBs (c,i)	59.8	676	3.7 J	10 U	11 U	3.9 J	11 U	32	59	13
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	23 U	18 U	43 J	27 J	21 U	69 J	51 J	24 J
Residual Range Organics (RRO)	NS	NS	26 J	71 U	94 J	100 J	83 U	220 J	120 J	42 J
Gasoline Range Organics (GRO)	NS	NS	3.3 U	3.3 U	3.2 U	2.0 J	3.2 U	4.7 U	3.1 U	3.2 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC04-3-5 K2401908-007 03/16/2004	T4-VC04-5-7 K2401908-009 03/16/2004	T4-VC04-7-9 K2401908-010 03/16/2004	T4-PS04-10-12 K2402526-008 04/05/2004	T4-PS04-15-17 K2402526-009 04/05/2004	T4-VC05-0-1 K2401958-014 03/16/2004	T4-VC05-1-3 K2401958-015 03/16/2004	T4-VC05-3-5 K2401958-016 03/16/2004
Total organic carbon	NS	NS	1.05 J	0.15 U	0.22	0.55	0.05	1.78	0.63	0.46
Total solids	NS	NS	74.8	75.8	77.6	70.7	77.6	53.9	79.8	78.9
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	NA	NA	96.4	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	NA	NA	96.4	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	NA	NA	96.4	100	99.9
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	100	99.6	NA	NA	96.4	99.4	99.8
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.4	99.4	97.9	NA	NA	96.3	98.2	98.3
Sand, Coarse No. 40 (0.425 mm)	NS	NS	67.6	68.1	68.4	NA	NA	95.8	75	58.5
Sand, Medium No. 60 (0.250 mm)	NS	NS	21.4 J	18.2 J	11.7 J	NA	NA	93.9	24.9	19.2
Sand, Fine No. 140 (0.106 mm)	NS	NS	6.85	3.54	3.73	NA	NA	89.9 J	13.6 J	7.96 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	6.36	3.13	3.37	NA	NA	86.6	12.5	7.42
Silt (0.074 mm)	NS	NS	4.19	1.16	2.54	NA	NA	72.2	11.4	6.09
Clay (0.005 mm)	NS	NS	2.42	1.16	1.32	NA	NA	43.1	4.14	1.92
Clay (0.001 mm)	NS	NS	1.37	1.16	0.59	NA	NA	25.8	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC05-5-7 K2401958-017 03/16/2004	T4-VC05-7-9 K2401958-018 03/16/2004	T4-VC06-0-1 K2401949-001 03/16/2004	T4-VC06-1-3 K2401949-002 03/16/2004	T4-VC06-3-5 K2401949-003 03/16/2004	T4-VC06-5-7 K2401949-004 03/16/2004	T4-VC06-7-9 K2401949-005 03/16/2004	T4-VC07-0-1 K2401958-008 03/17/2004
Metals (mg/kg)										
Arsenic	9.79	33	3	1.8	4.2	1.6	1.5	1.2	1.4	5.3
Cadmium	0.99	4.98	0.13	0.1	0.63	0.22	0.12	0.09	0.09	0.71
Chromium	43.4	111	14.7 J	11.8 J	25.1 J	11.6 J	13 J	11.2 J	10.2 J	29.7 J
Copper	31.6	149	18.6 J	16.1 J	40.2 J	15.9 J	17.2 J	15 J	14.6 J	45.9 J
Lead	35.8	128	3.07	2.74	39	11.4	3.12	2.49	2.54	50.3
Mercury	0.18	1.06	0.019 U	0.011 B	0.075	0.032	0.019 U	0.014 B	0.025	0.096
Nickel	22.7	48.6	19.2 J	17.4 J	21.6 J	15.4 J	19.1 J	17.5 J	16.5 J	24.3 J
Selenium	NS	NS	0.12 UJ	0.11 UJ	0.16 J	0.04 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.17 J
Silver	NS	NS	0.03	0.03	0.29	0.09	0.04	0.02	0.02 U	0.37
Zinc	121	459	50.9 J	44.8 J	145 J	67.6 J	46.5 J	39.5 J	38.2 J	173 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	0.28 J	5.0 U	44	70	5.0 U	0.30 J	5.0 U	91
2-Methylnaphthalene	NS	NS	5.0 U	5.0 U	20	33	5.0 U	5.0 U	5.0 U	33
1-Methylnaphthalene	NS	NS	5.0 U	5.0 U	11	15	5.0 U	5.0 U	5.0 U	19
Biphenyl	NS	NS	5.0 U	5.0 U	5.5	8.3	5.0 U	5.0 U	5.0 U	11
2,6-Dimethylnaphthalene	NS	NS	5.0 U	5.0 U	10	25	5.0 U	5.0 U	5.0 U	18
Acenaphthylene	NS	NS	5.0 U	5.0 U	12	12	5.0 U	5.0 U	5.0 U	22
Acenaphthene	NS	NS	5.0 U	5.0 U	150	44	5.0 U	5.0 U	5.0 U	280
2,3,5-Trimethylnaphthalene	NS	NS	5.0 U	5.0 U	12	51	5.0 U	5.0 U	0.34 J	17
Fluorene	77.4	536	5.0 U	5.0 U	62	24	0.23 J	5.0 U	5.0 U	130
Phenanthrene	204	1,170	5.0 U	5.0 U	590	290	5.0 U	5.0 U	5.0 U	1,300
Anthracene	57.2	845	5.0 U	5.0 U	130	41	0.29 J	0.32 J	0.32 J	280
1-Methylphenanthrene	NS	NS	5.0 U	5.0 U	41	40	5.0 U	5.0 U	0.83 J	95
Fluoranthene	423	2,230	5.0 U	5.0 U	1,200	240	5.0 U	5.0 U	2.1 J	2,600
Pyrene	195	1,520	5.0 U	5.0 U	1,400	420	5.0 U	5.0 U	5.0 U	2,800
Benz(a)anthracene	108	1,050	5.0 U	5.0 U	810	100	5.0 U	5.0 U	0.28 J	1,600
Chrysene	166	1,290	0.21 J	5.0 U	950	140	5.0 U	0.17 J	0.34 J	1,900
Benzo(b)fluoranthene	NS	NS	5.0 U	5.0 U	1000	89	5.0 U	5.0 U	5.0 U	2,100
Benzo(k)fluoranthene	NS	NS	5.0 U	5.0 U	920	88	5.0 U	5.0 U	0.43 J	1,900
Benzo(e)pyrene	NS	NS	5.0 U	5.0 U	840	90	5.0 U	5.0 U	0.19 J	1,700
Benzo(a)pyrene	150	1,450	5.0 U	5.0 U	1,100	110	5.0 U	5.0 U	0.23 J	2,300
Perylene	NS	NS	0.56 J	5.0 U	390	120	0.45 J	0.32 J	5.0 U	800
Indeno(1,2,3-cd)pyrene	NS	NS	5.0 U	5.0 U	860	92	5.0 U	5.0 U	0.24 J	1,800
Dibenz(a,h)anthracene	33	NS	5.0 U	5.0 U	210	12	5.0 U	5.0 U	5.0 U	340
Benzo(g,h,i)perylene	NS	NS	5.0 U	5.0 U	880	110	5.0 U	5.0 U	0.29 J	1,700
Dimethyl phthalate	NS	NS	20 U	20 U	39 U	20 U	20 U	20 U	20 U	80 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC05-5-7 K2401958-017 03/16/2004	T4-VC05-7-9 K2401958-018 03/16/2004	T4-VC06-0-1 K2401949-001 03/16/2004	T4-VC06-1-3 K2401949-002 03/16/2004	T4-VC06-3-5 K2401949-003 03/16/2004	T4-VC06-5-7 K2401949-004 03/16/2004	T4-VC06-7-9 K2401949-005 03/16/2004	T4-VC07-0-1 K2401958-008 03/17/2004
Diethyl phthalate	NS	NS	20 U	20 U	39 U	20 U	20 U	20 U	20 U	80 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	39 U	20 U	20 U	20 U	20 U	80 U
Butylbenzyl phthalate	NS	NS	20 U	20 U	22 J	20 U	20 U	20 U	20 U	39 J
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	20 U	230	32 U	22 U	50 U	37 U	330
Di-n-octyl phthalate	NS	NS	20 U	20 U	39 U	20 U	20 U	20 U	20 U	80 U
Total PAHs (c,d)	1,610	22,800	0.49 J	5.0 U	8,368	1,668	0.52 J	0.79 J	3.7 J	17,303
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.42 U	0.42 U	3.1	1.5 J	0.40 U	0.40 U	0.40 U	2.3
4,4'-DDD	NS	NS	0.42 U	0.42 U	2.9	1.0	0.40 U	0.40 U	0.40 U	2.1
4,4'-DDT	NS	NS	0.42 U	0.42 U	5.8	1.1	0.40 U	0.40 U	0.40 U	2.8 J
2,4'-DDE	NS	NS	0.42 U	0.42 U	0.4 U	0.4 U	0.40 U	0.40 U	0.40 U	0.53 U
2,4'-DDD	NS	NS	0.42 U	0.42 U	2.7 J	1.1 J	0.40 U	0.40 U	0.40 U	2.4 J
2,4'-DDT	NS	NS	0.42 U	0.42 U	2.1 U	0.49 J	0.40 U	0.40 U	0.40 U	0.69 J
Total DDD (c,e)	4.88	28	0.42 U	0.42 U	5.6	2.1	0.40 U	0.40 U	0.40 U	4.5
Total DDE (c,f)	3.16	31.3	0.42 U	0.42 U	3.1	1.5 J	0.40 U	0.40 U	0.40 U	2.3
Total DDT (c,g)	4.16	62.9	0.42 U	0.42 U	5.8	1.6	0.40 U	0.40 U	0.40 U	3.5 J
ΣDDTs (c,h)	5.28	572	0.42 U	0.42 U	15	5.2	0.40 U	0.40 U	0.40 U	10
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.2 U	5.2 U	5.0 U	6.6 U				
Aroclor 1221	NS	NS	11 U	11 U	10 U	14 U				
Aroclor 1232	NS	NS	5.2 U	5.2 U	5.0 U	6.6 U				
Aroclor 1242	NS	NS	5.2 U	5.2 U	5.0 U	6.6 U				
Aroclor 1248	NS	NS	5.2 U	5.2 U	13	7.6	5.0 U	5.0 U	5.0 U	12
Aroclor 1254	NS	NS	5.2 U	5.2 U	33 U	20 U	5.0 U	5.0 U	5.0 U	31 U
Aroclor 1260	NS	NS	5.2 U	5.2 U	23	15	5.0 U	5.0 U	5.0 U	27
Aroclor 1262	NS	NS	5.2 U	5.2 U	5.0 U	6.6 U				
Aroclor 1268	NS	NS	5.2 U	5.2 U	5.0 U	6.6 U				
Total PCBs (c,i)	59.8	676	11 U	11 U	36	23	10 U	10 U	10 U	39
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	21 U	20 U	140 J	53 J	16 U	14 U	21 U	240 J
Residual Range Organics (RRO)	NS	NS	81 U	78 U	490 J	110 J	64 U	54 U	82 U	790 J
Gasoline Range Organics (GRO)	NS	NS	3.0 U	3.3 U	2.0 J	3.0 J	3.2 U	2.7 U	3.1 U	4.9 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC05-5-7 K2401958-017 03/16/2004	T4-VC05-7-9 K2401958-018 03/16/2004	T4-VC06-0-1 K2401949-001 03/16/2004	T4-VC06-1-3 K2401949-002 03/16/2004	T4-VC06-3-5 K2401949-003 03/16/2004	T4-VC06-5-7 K2401949-004 03/16/2004	T4-VC06-7-9 K2401949-005 03/16/2004	T4-VC07-0-1 K2401958-008 03/17/2004
Total organic carbon	NS	NS	0.18	0.09 U	1.43	0.46	0.14 U	0.15 U	0.12 U	1.7
Total solids	NS	NS	80.7	77.2	62.2	82.6	77.5	92.5	78.5	51.1
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	99.2	100	100	98.5	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	99.9	100	100	99	100	100	97.9	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.8	99.8	99.9	98.9	99.9	99.8	97.6	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	98.9	98.2	99.6	97.5	97.3	98.7	94.2	99.7
Sand, Coarse No. 40 (0.425 mm)	NS	NS	66.3	59.7	92.9	70.5	56.7	59.2	56.7	96.2
Sand, Medium No. 60 (0.250 mm)	NS	NS	18.1	13.9	71.2	23.2	15.2	16.7	14.4	85.6
Sand, Fine No. 140 (0.106 mm)	NS	NS	4.18 J	3.79 J	56.1 J	13.5 J	3.65 J	2.63 J	3.24 J	72.2 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	3.86	3.42	54.1	12.8	3.31	2.33	2.83	69.7
Silt (0.074 mm)	NS	NS	2.68	2.11	57.2	12.1	3.7	3.07	1.6	66.7
Clay (0.005 mm)	NS	NS	0.48	0.46	21.8	4.35	0.5	0.57	0.47	34.8
Clay (0.001 mm)	NS	NS	0	0	0.66	0	0	0	0	15.8

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC07-1-3 K2401958-009 03/17/2004	T4-VC07-3-5 K2401958-010 03/17/2004	T4-VC07-5-7 K2401949-013 03/17/2004	T4-VC07-7-9 K2401949-014 03/17/2004	T4-VC08-0-1 K2401949-015 03/17/2004	T4-VC08-1-3 K2401949-016 03/17/2004	T4-VC08-3-5 K2401949-017 03/17/2004	T4-VC08-5-7 K2401949-018 03/17/2004
Metals (mg/kg)										
Arsenic	9.79	33	5.6	3.2	2.1	2.1	3.6	2.4	1.9	1.6
Cadmium	0.99	4.98	1.14	0.38	0.12	0.1	0.94	0.19	0.15	0.12
Chromium	43.4	111	31 J	20.2 J	14.1 J	13 J	20.8 J	22.7 J	17.7 J	16.9 J
Copper	31.6	149	51 J	25.4 J	16.1 J	17 J	33.3 J	26.1 J	21.7 J	18.9 J
Lead	35.8	128	102	28.1	5.4	2.83	66.4	5.79	3.85	3.1
Mercury	0.18	1.06	0.17	0.055	0.017 B	0.029	0.077	0.022	0.023	0.01 B
Nickel	22.7	48.6	24.7 J	20.3 J	18.7 J	18 J	22.1 J	26.5 J	22.5 J	22.2 J
Selenium	NS	NS	0.17 J	0.06 J	0.11 UJ	0.12 UJ	0.07 UJ	0.04 UJ	0.11 J	0.11 UJ
Silver	NS	NS	0.69	0.16	0.04	0.03	0.28	0.05	0.04	0.03
Zinc	121	459	250 J	108 J	49.7 J	44.2 J	191 J	59.1 J	47.9 J	48.3 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	130	52	6.2	5.0 U	56	2.9 J	4.9 U	5.0 U
2-Methylnaphthalene	NS	NS	81	25	1.2 J	5.0 U	26	1.4 J	4.9 U	5.0 U
1-Methylnaphthalene	NS	NS	30	10	0.68 J	5.0 U	13	0.67 J	4.9 U	5.0 U
Biphenyl	NS	NS	24	6.2	5.0 U	5.0 U	6.0	4.9 U	4.9 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	57	15	0.89 J	5.0 U	15	0.91 J	4.9 U	5.0 U
Acenaphthylene	NS	NS	36	8.3	1.7 J	5.0 U	10	0.43 J	4.9 U	5.0 U
Acenaphthene	NS	NS	210	36	7.7	0.30 J	160	4.1 J	4.9 U	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	58	13	1.9 J	5.0 U	15	0.99 J	4.9 U	5.0 U
Fluorene	77.4	536	370	34	2.6 J	5.0 U	78	1.4 J	4.9 U	5.0 U
Phenanthrene	204	1,170	1,500	160	37	1.4 J	600	14	4.9 U	5.0 U
Anthracene	57.2	845	380	36	5.5	0.27 J	140	3.1 J	0.28 J	5.0 U
1-Methylphenanthrene	NS	NS	140	17	4.5 J	0.17 J	45	1.3 J	4.9 U	5.0 U
Fluoranthene	423	2,230	1,400	240	29	5.0 U	1,200	24	4.9 U	5.0 U
Pyrene	195	1,520	1,600	310	52	1.6 J	1,400	30	4.9 U	5.0 U
Benz(a)anthracene	108	1,050	520	110	17	0.33 J	830	14	0.63 J	5.0 U
Chrysene	166	1,290	730	160	22	0.47 J	950	17	0.36 J	5.0 U
Benzo(b)fluoranthene	NS	NS	570	140	12	0.28 J	980	16	0.19 J	0.23 J
Benzo(k)fluoranthene	NS	NS	420	120	15	0.24 J	950	17	0.37 J	5.0 U
Benzo(e)pyrene	NS	NS	440	120	12	0.25 J	830	14	0.27 J	5.0 U
Benzo(a)pyrene	150	1,450	520	140	15	0.2 J	1,100	17	4.9 U	5.0 U
Perylene	NS	NS	300	120	20	1.8 J	380	220	94	11
Indeno(1,2,3-cd)pyrene	NS	NS	410	120	8.7	5.0 U	990	12	4.9 U	5.0 U
Dibenz(a,h)anthracene	33	NS	85	22	1.4 J	5.0 U	200	1.8 J	4.9 U	5.0 U
Benzo(g,h,i)perylene	NS	NS	400	120	11	0.16 J	870	14	4.9 U	5.0 U
Dimethyl phthalate	NS	NS	80 U	20 U	20 U	20 U	37 U	22 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC07-1-3 K2401958-009 03/17/2004	T4-VC07-3-5 K2401958-010 03/17/2004	T4-VC07-5-7 K2401949-013 03/17/2004	T4-VC07-7-9 K2401949-014 03/17/2004	T4-VC08-0-1 K2401949-015 03/17/2004	T4-VC08-1-3 K2401949-016 03/17/2004	T4-VC08-3-5 K2401949-017 03/17/2004	T4-VC08-5-7 K2401949-018 03/17/2004
Diethyl phthalate	NS	NS	80 U	20 U	20 U	20 U	37 U	22 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	80 U	20 U	20 U	20 U	37 U	22 U	20 U	20 U
Butylbenzyl phthalate	NS	NS	80 U	20 U	2.5 J	20 U	15 J	22 U	20 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	280	58	59 U	51 U	170 U	25 U	20 U	22 U
Di-n-octyl phthalate	NS	NS	80 U	20 U	20 U	20 U	37 U	22 U	20 U	20 U
Total PAHs (c,d)	1,610	22,800	8,386	1,546	223	5.1 J	8,454	161	1.8 J	0.23 J
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	11 J	2.7 J	0.22 J	0.40 U	2.4	0.40 U	0.40 U	0.40 U
4,4'-DDD	NS	NS	5.2	1.2	0.36 J	0.40 U	1.8	0.40 U	0.40 U	0.40 U
4,4'-DDT	NS	NS	9.5	3.6 J	0.31 J	0.11 J	2.7	0.19 J	0.40 U	0.40 U
2,4'-DDE	NS	NS	1.3	0.38 U	0.40 U					
2,4'-DDD	NS	NS	3.0 U	3.0 J	0.27 J	0.40 U	2.5 J	0.40 U	0.40 U	0.40 U
2,4'-DDT	NS	NS	6.7	1.9	0.13 J	0.40 U	1.5 J	0.40 U	0.40 U	0.40 U
Total DDD (c,e)	4.88	28	5.2	4.2	0.63 J	0.40 U	4.3	0.40 U	0.40 U	0.40 U
Total DDE (c,f)	3.16	31.3	12	2.7 J	0.22 J	0.40 U	2.4	0.40 U	0.40 U	0.40 U
Total DDT (c,g)	4.16	62.9	16	5.5	0.44 J	0.11 J	4.2	0.19 J	0.40 U	0.40 U
ΣDDTs (c,h)	5.28	572	34	12	1.3 J	0.11 J	11	0.19 J	0.40 U	0.40 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	7.0 U	4.8 U	5.0 U					
Aroclor 1221	NS	NS	14 U	9.5 U	10 U	10 U	10 U	10 U	10 U	10 U
Aroclor 1232	NS	NS	7.0 U	4.8 U	5.0 U					
Aroclor 1242	NS	NS	7.0 U	4.8 U	5.0 U					
Aroclor 1248	NS	NS	56	20	5.0 U	5.0 U	16	5.0 U	5.0 U	5.0 U
Aroclor 1254	NS	NS	150 U	52 U	5.0 U	5.0 U	37 U	5.0 U	5.0 U	5.0 U
Aroclor 1260	NS	NS	130	47	3.3 J	5.0 U	30	5.0 U	5.0 U	5.0 U
Aroclor 1262	NS	NS	7.0 U	4.8 U	5.0 U					
Aroclor 1268	NS	NS	7.0 U	4.8 U	5.0 U					
Total PCBs (c,i)	59.8	676	186	67	3.3 J	10 U	46	10 U	10 U	10 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	360 J	100 J	18 U	20 U	140 J	24 U	21 U	20 U
Residual Range Organics (RRO)	NS	NS	960 J	260 J	72 U	79 U	400 J	96 U	83 U	80 U
Gasoline Range Organics (GRO)	NS	NS	4.5 U	3.6 U	2.8 U	2.9 U	3.9 U	3.5 U	3.4 U	3.3 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC07-1-3 K2401958-009 03/17/2004	T4-VC07-3-5 K2401958-010 03/17/2004	T4-VC07-5-7 K2401949-013 03/17/2004	T4-VC07-7-9 K2401949-014 03/17/2004	T4-VC08-0-1 K2401949-015 03/17/2004	T4-VC08-1-3 K2401949-016 03/17/2004	T4-VC08-3-5 K2401949-017 03/17/2004	T4-VC08-5-7 K2401949-018 03/17/2004
Total organic carbon	NS	NS	2.1	0.8	0.17	0.2	0.86	0.38	0.32	0.15 U
Total solids	NS	NS	55.1	70.7	90	83.2	62.2	71.7	74.6	77
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	99.5	100	100	99	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.5	99.8	99.9	98	99.9	100	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.4	99.1	97.9	96.3	99.3	99.9	100	99.8
Sand, Coarse No. 40 (0.425 mm)	NS	NS	98.1	82.7	72.7	54.4	90.3	98.6	98.5	84.3
Sand, Medium No. 60 (0.250 mm)	NS	NS	92.1	45.7	26	16.7	58.8	84.3	62	38.2
Sand, Fine No. 140 (0.106 mm)	NS	NS	84 J	28.1 J	8.09 J	3.89 J	37.8 J	44.9 J	27.3 J	7.82 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	79.7	26.5	6.67	3.53	34.5	39.1	24.7	7.06
Silt (0.074 mm)	NS	NS	65.8	26	4.97	2.49	32.7	33.1	19.9	5.49
Clay (0.005 mm)	NS	NS	30.4	8.91	1.8	0.45	10.5	10.7	6.08	2
Clay (0.001 mm)	NS	NS	9.2	0	0	0	0	0	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC08-7-9 K2402012-001 03/17/2004	T4-VC08-9-11 K2402012-002 03/17/2004	T4-VC09-0-1 K2402012-004 03/17/2004	T4-VC09-1-3 K2402012-005 03/17/2004	T4-VC09-3-5 K2402008-010 03/17/2004	T4-VC09-5-7 K2402008-011 03/17/2004	T4-VC09-7-9 K2402008-012 03/17/2004	T4-VC09-9-11 K2402008-013 03/17/2004
Metals (mg/kg)										
Arsenic	9.79	33	1.6	4	5.3	3.9	4.8 J	2.4 J	3 J	2.5 J
Cadmium	0.99	4.98	0.13	0.13	0.53	1	1.12	0.17	0.23	0.24
Chromium	43.4	111	22.2 J	19.9 J	32 J	23.7 J	24.1 J	29.6 J	24.2 J	25.4 J
Copper	31.6	149	27.7 J	26.6 J	44.3 J	38.2 J	54.3 J	35.1 J	31.4 J	34.5 J
Lead	35.8	128	4.76	4.58	47.4	72.2	88 J	7.13 J	5.36 J	5.45 J
Mercury	0.18	1.06	0.021	0.061	0.088	0.085	0.126	0.075	0.028	0.033
Nickel	22.7	48.6	25.8	30.1	23.6	21	23.8 J	27.7 J	22.4 J	27.9 J
Selenium	NS	NS	0.1 UJ	0.1 UJ	0.08 UJ	0.09 UJ	0.12 UJ	0.04 J	0.11 UJ	0.1 UJ
Silver	NS	NS	0.04	0.05	0.27	0.3	0.31	0.06	0.07	0.06 J
Zinc	121	459	55.6 J	53.9 J	133 J	202 J	253 J	70.4 J	64.4 J	63.6 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	5.0 U	5.0 U	56	87	46	4.9 U	5.0 U	5.0 U
2-Methylnaphthalene	NS	NS	5.0 U	5.0 U	29	39	24	4.9 U	5.0 U	5.0 U
1-Methylnaphthalene	NS	NS	5.0 U	5.0 U	17	19	12	4.9 U	5.0 U	5.0 U
Biphenyl	NS	NS	5.0 U	5.0 U	8.3	9.1	6.8	4.9 U	5.0 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	5.0 U	5.0 U	17	21	17	4.9 U	5.0 U	5.0 U
Acenaphthylene	NS	NS	5.0 U	5.0 U	18	21	14	4.9 U	5.0 U	5.0 U
Acenaphthene	NS	NS	5.0 U	5.0 U	360	340	85	0.84 J	5.0 U	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	5.0 U	5.0 U	12	15	29	4.9 U	5.0 U	5.0 U
Fluorene	77.4	536	5.0 U	5.0 U	200	150	82	4.9 U	5.0 U	5.0 U
Phenanthrene	204	1,170	5.0 U	5.0 U	1,900	1,300	470	4.9 U	5.0 U	5.0 U
Anthracene	57.2	845	5.0 U	5.0 U	450	330	81	4.9 U	5.0 U	5.0 U
1-Methylphenanthrene	NS	NS	5.0 U	5.0 U	120	91	49	4.9 U	5.0 U	5.0 U
Fluoranthene	423	2,230	5.0 U	5.0 U	4,100	2,500	720	4.9 U	5.0 U	5.0 U
Pyrene	195	1,520	5.0 U	5.0 U	4,400	2,800	760	4.9 U	5.0 U	5.0 U
Benz(a)anthracene	108	1,050	5.0 U	0.33 J	2,900	1,800	310	4.9 U	0.27 J	5.0 U
Chrysene	166	1,290	5.0 U	5.0 U	3,400	2,000	430	0.29 J	0.50 J	5.0 U
Benzo(b)fluoranthene	NS	NS	0.29 J	5.0 U	4,100	2,300	360	0.36 J	0.53 J	0.51 J
Benzo(k)fluoranthene	NS	NS	5.0 U	5.0 U	3,300	1,900	300	0.26 J	5.0 U	5.0 U
Benzo(e)pyrene	NS	NS	5.0 U	5.0 U	3,100	1,700	280	0.3 J	0.36 J	0.25 J
Benzo(a)pyrene	150	1,450	5.0 U	5.0 U	4,200	2,400	330	4.9 U	5.0 U	5.0 U
Perylene	NS	NS	64	68	1,300	780	200	210	210	130
Indeno(1,2,3-cd)pyrene	NS	NS	5.0 U	5.0 U	3,400	1,900	270	4.9 U	5.0 U	5.0 U
Dibenz(a,h)anthracene	33	NS	5.0 U	5.0 U	650	480	43	4.9 U	5.0 U	5.0 U
Benzo(g,h,i)perylene	NS	NS	5.0 U	5.0 U	3,100	1,700	260	0.21 J	0.20 J	5.0 U
Dimethyl phthalate	NS	NS	20 U	20 U	23 U	20 U	19 U	20 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC08-7-9 K2402012-001 03/17/2004	T4-VC08-9-11 K2402012-002 03/17/2004	T4-VC09-0-1 K2402012-004 03/17/2004	T4-VC09-1-3 K2402012-005 03/17/2004	T4-VC09-3-5 K2402008-010 03/17/2004	T4-VC09-5-7 K2402008-011 03/17/2004	T4-VC09-7-9 K2402008-012 03/17/2004	T4-VC09-9-11 K2402008-013 03/17/2004
Diethyl phthalate	NS	NS	20 U	20 U	23 U	20 U	19 U	20 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	23 U	20 U	19 U	20 U	20 U	20 U
Butylbenzyl phthalate	NS	NS	20 U	20 U	36	22	22	20 U	20 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	20 U	370	190	110	20 U	20 U	20 U
Di-n-octyl phthalate	NS	NS	20 U	20 U	23 U	20 U	19 U	20 U	20 U	20 U
Total PAHs (c,d)	1,610	22,800	0.29 J	0.33 J	29,384	17,928	3,988	1.8 J	1.3 J	0.51 J
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.39 U	0.43 U	4.8	3.0 J	5.6 J	0.39 U	0.40 U	0.40 U
4,4'-DDD	NS	NS	0.39 U	0.43 U	4.1	2.4	4.6	0.39 U	0.40 U	0.40 U
4,4'-DDT	NS	NS	0.39 U	0.43 U	5.6	3.9	14	0.39 U	0.40 U	0.40 U
2,4'-DDE	NS	NS	0.39 U	0.43 U	0.64 U	0.48 U	2.3 U	0.39 U	0.40 U	0.40 U
2,4'-DDD	NS	NS	0.39 U	0.43 U	3.6 J	3.9 J	3.6 U	0.39 U	0.40 U	0.40 U
2,4'-DDT	NS	NS	0.39 U	0.43 U	2.1 U	2.2	7.8	0.39 U	0.40 U	0.40 U
Total DDD (c,e)	4.88	28	0.39 U	0.43 U	7.7	6.3	4.6	0.39 U	0.40 U	0.40 U
Total DDE (c,f)	3.16	31.3	0.39 U	0.43 U	4.8	3.0 J	5.6 J	0.39 U	0.40 U	0.40 U
Total DDT (c,g)	4.16	62.9	0.39 U	0.43 U	5.6	6.1	22	0.39 U	0.40 U	0.40 U
ΣDDTs (c,h)	5.28	572	0.39 U	0.43 U	18	15	32	0.39 U	0.40 U	0.40 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	4.8 U	5.4 U	8.0 U	6.0 U	4.6 U	4.8 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	9.6 U	11 U	16 U	12 U	9.1 U	9.6 U	9.9 U	10 U
Aroclor 1232	NS	NS	4.8 U	5.4 U	8.0 U	6.0 U	4.6 U	4.8 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	4.8 U	5.4 U	8.0 U	6.0 U	4.6 U	4.8 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	4.8 U	5.4 U	31 J	43 J	72 J	4.8 U	5.0 U	5.0 U
Aroclor 1254	NS	NS	4.8 U	5.4 U	54 U	61 U	150 U	4.8 U	5.0 U	5.0 U
Aroclor 1260	NS	NS	4.8 U	5.4 U	60	56	160	4.8 U	5.0 U	5.0 U
Aroclor 1262	NS	NS	4.8 U	5.4 U	8.0 U	6.0 U	4.6 U	4.8 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	4.8 U	5.4 U	8.0 U	6.0 U	4.6 U	4.8 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	9.6 U	11 U	91	99	232	9.6 U	9.9 U	10 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	25 U	24 U	130 J	140 J	150 J	22 U	23 U	24 U
Residual Range Organics (RRO)	NS	NS	98 U	95 U	560 J	520 J	380 J	12 J	16 J	95 U
Gasoline Range Organics (GRO)	NS	NS	3.5 U	3.5 U	4.9 U	4.2 U	2.1 J	3.9 U	3.9 U	3.7 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC08-7-9 K2402012-001 03/17/2004	T4-VC08-9-11 K2402012-002 03/17/2004	T4-VC09-0-1 K2402012-004 03/17/2004	T4-VC09-1-3 K2402012-005 03/17/2004	T4-VC09-3-5 K2402008-010 03/17/2004	T4-VC09-5-7 K2402008-011 03/17/2004	T4-VC09-7-9 K2402008-012 03/17/2004	T4-VC09-9-11 K2402008-013 03/17/2004
Total organic carbon	NS	NS	0.13	0.16	1.96	1.31	0.87	1.09	1.51	0.56
Total solids	NS	NS	69.9	69.2	45	59.3	70.4	64.4	64.1	67.4
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	99.9	99.8	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	100	100	99.6	99.3	100	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	100	100	100	99.3	98.3	99.9	100	100
Sand, Coarse No. 40 (0.425 mm)	NS	NS	99.8	99.7	99.7	96.7	88	99.6	99.8	99.9
Sand, Medium No. 60 (0.250 mm)	NS	NS	99	99.1	98.9	88.6	65.5	99.3	99.6	99.8
Sand, Fine No. 140 (0.106 mm)	NS	NS	62	55.6	96.9	66.7	39.8	98.4	96.9	99
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	48	42.8	95.7	57	31.2	94.1	89	94
Silt (0.074 mm)	NS	NS	31.7	28.9	80.4	55.2	23.2	70.1	67.3	67.6
Clay (0.005 mm)	NS	NS	9.82	8.86	53.8	15.1	7.52	36.1	30.8	30.7
Clay (0.001 mm)	NS	NS	0	0	38	0	0	15.8	9.05	8.58

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC10-0-1 K2402008-017 03/18/2004	T4-VC10-1-3 K2402008-018 03/18/2004	T4-VC10-3-5 K2402008-019 03/18/2004	T4-VC10-5-7 K2402008-020 03/18/2004	T4-VC10-7-9 K2402012-006 03/18/2004	T4-VC10-9-11 K2402008-002 03/18/2004	T4-VC10-11-13 K2402008-003 03/18/2004	T4-VC11-0-1 K2402051-007 03/18/2004
Metals (mg/kg)										
Arsenic	9.79	33	3.4 J	3.2 J	3.1 J	4.2 J	2.8	3.1 J	3.3 J	4.5
Cadmium	0.99	4.98	0.13	0.15	0.19	0.25	0.17	0.19	0.18	0.237
Chromium	43.4	111	12.6 J	14.7 J	25.2 J	26.1 J	25.4 J	21.7 J	22.7 J	23.7 J
Copper	31.6	149	15 J	19.2 J	30.1 J	32.7 J	30 J	30.8 J	29 J	32 J
Lead	35.8	128	8.68 J	6.9 J	5.68 J	6.56 J	5.77	5.9 J	5.44 J	16.7
Mercury	0.18	1.06	0.011 B	0.016 B	0.065	0.211	0.079	0.148	0.047	0.062
Nickel	22.7	48.6	16.3 J	17.5 J	22.2 J	25.2 J	22.5	21.1 J	22.6 J	19.7 J
Selenium	NS	NS	0.11 UJ	0.11 UJ	0.11 UJ	0.04 J	0.1 UJ	0.05 J	0.03 J	0.08 J
Silver	NS	NS	0.02	0.03	0.07	0.07	0.06	0.07	0.06	0.22
Zinc	121	459	51 J	51.3 J	59.6 J	63.1 J	58.1 J	58.1 J	56.6 J	77.6 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	0.45 J	0.70 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	14
2-Methylnaphthalene	NS	NS	5.0 U	0.30 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	6.1
1-Methylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	3.6 J
Biphenyl	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	5.0 U	0.21 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	3.3 J
Acenaphthylene	NS	NS	0.76 J	0.67 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	5.6
Acenaphthene	NS	NS	0.59 J	0.4 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	24
2,3,5-Trimethylnaphthalene	NS	NS	5.0 U	0.25 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	3.6 J
Fluorene	77.4	536	0.50 J	0.42 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	20
Phenanthrene	204	1,170	3.1 J	2.8 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	170
Anthracene	57.2	845	2.1 J	1.4 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	38
1-Methylphenanthrene	NS	NS	0.40 J	1.1 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	11
Fluoranthene	423	2,230	8.6	16	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	350
Pyrene	195	1,520	10	23	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	390
Benz(a)anthracene	108	1,050	4.5 J	9.4	5.0 U	4.9 U	5.0 U	0.22 J	0.94 J	190
Chrysene	166	1,290	6.4	11	0.29 J	0.36 J	5.0 U	0.41 J	1.1 J	240
Benzo(b)fluoranthene	NS	NS	5.3	7.6	0.29 J	0.63 J	0.78 J	0.45 J	1.3 J	280
Benzo(k)fluoranthene	NS	NS	6.4	10	5.0 U	4.9 U	5.0 U	0.33 J	0.70 J	210
Benzo(e)pyrene	NS	NS	5.4	8.0	0.20 J	0.28 J	5.0 U	0.33 J	0.86 J	210
Benzo(a)pyrene	150	1,450	4.6 J	8.1	5.0 U	4.9 U	5.0 U	5.0 U	0.80 J	260
Perylene	NS	NS	1.7 J	74	140	240	410	260	310	120
Indeno(1,2,3-cd)pyrene	NS	NS	3.1 J	4.5 J	5.0 U	4.9 U	5.0 U	5.0 U	0.76 J	220
Dibenz(a,h)anthracene	33	NS	0.51 J	0.52 J	5.0 U	4.9 U	5.0 U	5.0 U	4.9 U	38
Benzo(g,h,i)perylene	NS	NS	4.1 J	5.7	5.0 U	0.19 J	5.0 U	0.23 J	0.82 J	210
Dimethyl phthalate	NS	NS	20 U	20 U	20 U					

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC10-0-1 K2402008-017 03/18/2004	T4-VC10-1-3 K2402008-018 03/18/2004	T4-VC10-3-5 K2402008-019 03/18/2004	T4-VC10-5-7 K2402008-020 03/18/2004	T4-VC10-7-9 K2402012-006 03/18/2004	T4-VC10-9-11 K2402008-002 03/18/2004	T4-VC10-11-13 K2402008-003 03/18/2004	T4-VC11-0-1 K2402051-007 03/18/2004
Diethyl phthalate	NS	NS	20 U	20 U	20 U					
Di-n-butyl phthalate	NS	NS	20 U	20 U	20 U					
Butylbenzyl phthalate	NS	NS	20 U	20 U	6.1 J					
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	20 U	90 U					
Di-n-octyl phthalate	NS	NS	20 U	20 U	20 U					
Total PAHs (c,d)	1,610	22,800	53	91	0.58 J	0.99 J	0.78 J	1.4 J	4.8 J	2,192
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.40 U	0.39 U	3.0					
4,4'-DDD	NS	NS	0.40 U	0.39 U	2.1					
4,4'-DDT	NS	NS	0.40 U	0.52	0.40 U	0.40 U	0.40 U	0.40 U	0.39 U	0.40 U
2,4'-DDE	NS	NS	0.40 U	0.39 U	0.40 U					
2,4'-DDD	NS	NS	0.40 U	0.40 U	0.40 U	0.52 U	0.40 U	0.40 U	0.40 U	1.6 J
2,4'-DDT	NS	NS	0.40 U	0.39 U	0.28 J					
Total DDD (c,e)	4.88	28	0.40 U	0.40 U	0.40 U	0.52 U	0.40 U	0.40 U	0.40 U	3.7
Total DDE (c,f)	3.16	31.3	0.40 U	0.39 U	3.0					
Total DDT (c,g)	4.16	62.9	0.40 U	0.52	0.40 U	0.40 U	0.40 U	0.40 U	0.39 U	0.28 J
ΣDDTs (c,h)	5.28	572	0.40 U	0.52	0.40 U	0.52 U	0.40 U	0.40 U	0.40 U	7.0
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	5.0 U	4.9 U	5.0 U
Aroclor 1221	NS	NS	10 U	10 U	9.8 U	10 U	10 U	10 U	9.8 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	5.0 U	4.9 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	5.0 U	4.9 U	5.0 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	5.0 U	4.9 U	6.4
Aroclor 1254	NS	NS	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	5.0 U	4.9 U	14 U
Aroclor 1260	NS	NS	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	5.0 U	4.9 U	15
Aroclor 1262	NS	NS	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	5.0 U	4.9 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	5.0 U	4.9 U	5.0 U
Total PCBs (c,i)	59.8	676	10 U	10 U	9.8 U	10 U	10 U	10 U	9.8 U	21
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	22 U	22 U	23 U	24 U	23 U	24 U	24 U	57 J
Residual Range Organics (RRO)	NS	NS	87 U	85 U	9.2 J	17 J	17 J	13 J	9.7 J	210 J
Gasoline Range Organics (GRO)	NS	NS	3.3 U	3.4 U	1.6 J	4.2 U	3.7 U	3.8 U	3.7 U	4.4 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC10-0-1 K2402008-017 03/18/2004	T4-VC10-1-3 K2402008-018 03/18/2004	T4-VC10-3-5 K2402008-019 03/18/2004	T4-VC10-5-7 K2402008-020 03/18/2004	T4-VC10-7-9 K2402012-006 03/18/2004	T4-VC10-9-11 K2402008-002 03/18/2004	T4-VC10-11-13 K2402008-003 03/18/2004	T4-VC11-0-1 K2402051-007 03/18/2004
Total organic carbon	NS	NS	0.11	0.54	1.26	1.83	0.74	1.22	1.07	1.85
Total solids	NS	NS	76.9	74.8	66.3	59.7	67.8	65.6	68.5	55.1
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	99.9	100	100	100	100	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.7	98.9	100	99.9	100	100	100	100
Sand, Coarse No. 40 (0.425 mm)	NS	NS	65.4	64	99.8	99.5	99.9	99.9	99.8	99.7
Sand, Medium No. 60 (0.250 mm)	NS	NS	9.82	31	99.3	99	99.8	99.8	99.7	99.1
Sand, Fine No. 140 (0.106 mm)	NS	NS	3.11	22.3	94.7	97.7	89.7	98.2	95	96.7 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	2.91	20	89.9	95.7	82.3	96.3	90.7	93.7
Silt (0.074 mm)	NS	NS	2.14	15.2	67.3	71	69.8	71.2	68.4	92.5
Clay (0.005 mm)	NS	NS	0.27	3.53	30.1	36	22.8	36.3	32	27.3
Clay (0.001 mm)	NS	NS	0	0	7.94	15.2	0	15.4	10.2	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC11-1-3 K2402051-008 03/18/2004	T4-VC11-3-5 K2402051-009 03/18/2004	T4-VC11-5-7 K2402051-010 03/18/2004	T4-VC11-7-9 K2402051-011 03/18/2004	T4-VC11-9-11 K2402051-012 03/18/2004	T4-VC12-0-1 K2402051-013 03/19/2004	T4-VC12-1-3 K2402051-014 03/19/2004	T4-VC12-3-5 K2402051-015 03/19/2004
Metals (mg/kg)										
Arsenic	9.79	33	5	2.3	2.6	2.5	2	3.7	4.9	4.9
Cadmium	0.99	4.98	0.391	0.08	0.051 B	0.047 B	0.037 B	0.284	0.713	0.325
Chromium	43.4	111	22.9 J	7.95 J	8.59 J	8.57 J	6.41 J	18.5 J	21.1 J	13.9 J
Copper	31.6	149	37.7 J	11.9 J	11.5 J	11.7 J	9.42 J	31.7 J	36 J	21.2 J
Lead	35.8	128	22	5.14	2.44	2.28	1.95	19.8	53.3	31.9
Mercury	0.18	1.06	0.078	0.022	0.009 B	0.015 B	0.018 U	0.074	0.139	0.273
Nickel	22.7	48.6	20.3 J	14.2 J	13.8 J	14 J	12.2 J	17.3 J	20.2 J	17.7 J
Selenium	NS	NS	0.08 J	0.11 UJ	0.11 UJ	0.12 UJ	0.12 UJ	0.05 J	0.04 J	0.12 UJ
Silver	NS	NS	0.28	0.04	0.02 U	0.02 U	0.02 U	0.5	0.31	0.19
Zinc	121	459	102 J	43.9 J	33.6 J	34.2 J	27.3 J	79.2 J	172 J	93.5 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	15	17	2.0 J	5.0 U	5.0 U	360	120	110
2-Methylnaphthalene	NS	NS	7.0	5.4	0.88 J	5.0 U	5.0 U	330	66	53
1-Methylnaphthalene	NS	NS	4.1 J	2.3 J	0.39 J	5.0 U	5.0 U	190	27	22
Biphenyl	NS	NS	5.0 U	42	13	12				
2,6-Dimethylnaphthalene	NS	NS	4.0 J	2.9 J	0.39 J	5.0 U	5.0 U	110	40	69
Acenaphthylene	NS	NS	7.9	3.1 J	0.3 J	5.0 U	5.0 U	22 J	18	21
Acenaphthene	NS	NS	44	16	1.9 J	5.0 U	5.0 U	1,200	160	180
2,3,5-Trimethylnaphthalene	NS	NS	3.2 J	5.1	0.31 J	5.0 U	5.0 U	38	53	100
Fluorene	77.4	536	22	4.7 J	0.47 J	5.0 U	5.0 U	1,000	130	170
Phenanthrene	204	1,170	170	60	6.6	5.0 U	5.0 U	4,900	550	890
Anthracene	57.2	845	44	9.3	0.87 J	5.0 U	5.0 U	640	72	100
1-Methylphenanthrene	NS	NS	9.4	6.9	0.88 J	5.0 U	5.0 U	190	46	63
Fluoranthene	423	2,230	370	75	6.4	5.0 U	5.0 U	9,700	500	490
Pyrene	195	1,520	430	100	12	5.0 U	5.0 U	7,200	610	620
Benz(a)anthracene	108	1,050	260	28	2.3 J	5.0 U	5.0 U	4,000	210	160
Chrysene	166	1,290	300	38	3.4 J	5.0 U	5.0 U	4,900	260	210
Benzo(b)fluoranthene	NS	NS	340	27	1.7 J	5.0 U	5.0 U	6,200	230	150
Benzo(k)fluoranthene	NS	NS	270	22	1.7 J	5.0 U	5.0 U	4,000	200	120
Benzo(e)pyrene	NS	NS	260	24	1.8 J	5.0 U	5.0 U	4,100	190	140
Benzo(a)pyrene	150	1,450	350	28	1.6 J	5.0 UJ	5.0 UJ	6,300 J	240	180
Perylene	NS	NS	130	28	2.6 J	5.0 U	5.0 U	1,700	180	87
Indeno(1,2,3-cd)pyrene	NS	NS	280	21	5.0 U	5.0 UJ	5.0 UJ	4,700	200	150
Dibenz(a,h)anthracene	33	NS	54	3.0 J	0.22 J	5.0 UJ	5.0 UJ	1,100	32	19
Benzo(g,h,i)perylene	NS	NS	260	24	1.5 J	5.0 U	5.0 U	4,100	210	180
Dimethyl phthalate	NS	NS	20 U	41 U	20 U	20 U				

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC11-1-3 K2402051-008 03/18/2004	T4-VC11-3-5 K2402051-009 03/18/2004	T4-VC11-5-7 K2402051-010 03/18/2004	T4-VC11-7-9 K2402051-011 03/18/2004	T4-VC11-9-11 K2402051-012 03/18/2004	T4-VC12-0-1 K2402051-013 03/19/2004	T4-VC12-1-3 K2402051-014 03/19/2004	T4-VC12-3-5 K2402051-015 03/19/2004
Diethyl phthalate	NS	NS	20 U	41 U	20 U	20 U				
Di-n-butyl phthalate	NS	NS	20 U	41 U	20 U	20 U				
Butylbenzyl phthalate	NS	NS	6.5 J	20 U	20 U	20 U	20 U	11 J	8.6 J	14 J
Bis(2-ethylhexyl) phthalate	NS	NS	66 U	20 U	20 U	20 U	20 U	95 U	40 U	28 U
Di-n-octyl phthalate	NS	NS	20 U	41 U	20 U	20 U				
Total PAHs (c,d)	1,610	22,800	2,623	428	41	5.0 U	5.0 U	50,422	3,300	3,401
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	3.9	0.89	0.40 U	0.40 U	0.40 U	2.8	7.3	15 J
4,4'-DDD	NS	NS	3.0	1.4	0.40 U	0.40 U	0.40 U	1.7	5	9.5
4,4'-DDT	NS	NS	2.0 J	2.9	0.07 J	0.40 U	0.40 U	0.54 U	3.3	7.1 J
2,4'-DDE	NS	NS	0.75 U	0.40 U	0.40 U	0.40 U	0.40 U	0.53 U	0.49 U	3
2,4'-DDD	NS	NS	2.2 J	1.3	0.40 U	0.40 U	0.40 U	2.3 U	5.3 J	5.6 J
2,4'-DDT	NS	NS	1.1 U	0.98 U	0.40 U	0.40 U	0.40 U	0.53 J	1.5 J	4.9
Total DDD (c,e)	4.88	28	5.2	2.7	0.40 U	0.40 U	0.40 U	1.7	10	15
Total DDE (c,f)	3.16	31.3	3.9	0.89	0.40 U	0.40 U	0.40 U	2.8	7.3	18
Total DDT (c,g)	4.16	62.9	2 J	2.9	0.07 J	0.40 U	0.40 U	0.53 J	4.8	12
ΣDDTs (c,h)	5.28	572	11	6.5	0.07 J	0.40 U	0.40 U	5.0	22	45
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U				
Aroclor 1221	NS	NS	10 U	10 U	10 U	10 U				
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U				
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U				
Aroclor 1248	NS	NS	10	10	5.0 U	5.0 U	5.0 U	9.7 J	47 J	13
Aroclor 1254	NS	NS	20 U	20 U	5.0 U	5.0 U	5.0 U	16 U	83 U	51 U
Aroclor 1260	NS	NS	16	64	5.0 U	5.0 U	5.0 U	15	48	83
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U				
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U				
Total PCBs (c,i)	59.8	676	26	74	10 U	10 U	10 U	25	95	96
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	110 J	31	15 U	17 U	15 U	130 J	210 J	310 J
Residual Range Organics (RRO)	NS	NS	390 J	61 J	60 U	68 U	60 U	380 J	390 J	480 J
Gasoline Range Organics (GRO)	NS	NS	4.4 U	3.2 U	2.7 U	3.0 U	3.0 U	4.7 U	4.1 U	3.5 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC11-1-3 K2402051-008 03/18/2004	T4-VC11-3-5 K2402051-009 03/18/2004	T4-VC11-5-7 K2402051-010 03/18/2004	T4-VC11-7-9 K2402051-011 03/18/2004	T4-VC11-9-11 K2402051-012 03/18/2004	T4-VC12-0-1 K2402051-013 03/19/2004	T4-VC12-1-3 K2402051-014 03/19/2004	T4-VC12-3-5 K2402051-015 03/19/2004
Total organic carbon	NS	NS	1.97	0.46	0.03 J	0.02 J	0.02 J	1.86	1.55	0.97
Total solids	NS	NS	56.8	78.6	93	81.8	85	49.8	60.5	71.3
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	98.1
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	100	100	100	98.1
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	99.9	100	99.9	100	100	99.9	97.9
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.9	99	99.4	98.4	98.8	99.9	98.5	95.4
Sand, Coarse No. 40 (0.425 mm)	NS	NS	97.8	69	72.3	64.9	76.8	98.9	88.6	64.6
Sand, Medium No. 60 (0.250 mm)	NS	NS	90.7	20.9	12.3	19.9	11.2	94.7	72.8	35.8
Sand, Fine No. 140 (0.106 mm)	NS	NS	85.9 J	11.3 J	4.87 J	3.3 J	2.92 J	89.9 J	67.4 J	29.3 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	82.5	10.7	4.69	2.96	2.7	87.2	65.5	28.5
Silt (0.074 mm)	NS	NS	81	9.16	0	1.38	0	70.6	59.6	28.7
Clay (0.005 mm)	NS	NS	24.3	2.09	0	0.13	0	37.3	24.7	8.48
Clay (0.001 mm)	NS	NS	0	0	0	0	0	17.3	3.85	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC12-5-7 K2402051-016 03/19/2004	T4-VC12-7-9 K2402051-018 03/19/2004	T4-PS12-10-12 K2402526-003 04/05/2004	T4-PS12-15-17 K2402526-004 04/05/2004	T4-VC13-0-1 K2402051-019 03/19/2004	T4-VC13-1-3 K2402051-020 03/19/2004	T4-VC13-3-5 K2402055-001 03/19/2004	T4-VC13-5-7 K2402055-002 03/19/2004
Metals (mg/kg)										
Arsenic	9.79	33	2.8	3.9	2.1	1.9	4.7	3.1	3.6	2
Cadmium	0.99	4.98	0.047 B	0.046 B	0.11	0.08	0.117	0.074	0.09	0.09
Chromium	43.4	111	7.11 J	9.59 J	9.38	9.61	10 J	10.2 J	14.4 J	13.2 J
Copper	31.6	149	10.7 J	12.5 J	23.4	27.8	14.1 J	13.1 J	16.2 J	15.5 J
Lead	35.8	128	2.25	2.38	3.43	3.46	7.5	6.29	2.87	2.65
Mercury	0.18	1.06	0.016 U	0.018 U	0.02 U	0.02 U	0.014 B	0.01 B	0.011 B	0.02 U
Nickel	22.7	48.6	12.9 J	15.7 J	13.3 J	14 J	14.2 J	13.7 J	18.1	17.1
Selenium	NS	NS	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.11 UJ	0.12 UJ	0.11 UJ
Silver	NS	NS	0.02 U	0.02 U	0.02	0.02	0.03	0.04	0.02	0.02
Zinc	121	459	30.4 J	37.2 J	34.2 J	32.2 J	67.5 J	43.6 J	47.1 J	44.6 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	5.0 U	5.0 U	0.63 J	5.1 U	3.8 J	1.6 J	2.6 J	1.7 J
2-Methylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	22	1.1 J	0.43 J	0.36 J
1-Methylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	23	0.61 J	0.31 J	4.9 U
Biphenyl	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	3.1 J	5.0 U	5.0 U	4.9 U
2,6-Dimethylnaphthalene	NS	NS	5.0 U	5.0 U	0.37 J	5.1 U	49	0.53 J	0.18 J	4.9 U
Acenaphthylene	NS	NS	5.0 U	5.0 U	1.2 J	5.1 U	5.4	0.32 J	0.30 J	0.28 J
Acenaphthene	NS	NS	5.0 U	5.0 U	0.89 J	5.1 U	170	6.7	0.35 J	4.9 U
2,3,5-Trimethylnaphthalene	NS	NS	5.0 U	5.0 U	0.50 J	5.1 U	54	0.29 J	5.0 U	4.9 U
Fluorene	77.4	536	5.0 U	5.0 U	0.93 J	5.1 U	270	7.2	0.57 J	0.35 J
Phenanthrene	204	1,170	5.0 U	5.0 U	12	5.1 U	1,500	42	5.0 U	4.9 U
Anthracene	57.2	845	0.22 J	5.0 U	5.3	5.1 U	280	5.8	0.41 J	0.41 J
1-Methylphenanthrene	NS	NS	0.20 J	5.0 U	3.6 J	5.1 U	76	1.2 J	0.19 J	4.9 U
Fluoranthene	423	2,230	5.0 U	5.0 U	19	5.1 U	1,400	84	5.0 U	4.9 U
Pyrene	195	1,520	5.0 U	5.0 U	25	1.7 J	950	82	2.4 J	3.2 J
Benz(a)anthracene	108	1,050	0.70 J	5.0 U	11	0.74 J	130	34	0.89 J	1.1 J
Chrysene	166	1,290	0.56 J	5.0 U	12	0.88 J	190	42	5.0 U	1.1 J
Benzo(b)fluoranthene	NS	NS	0.95 J	5.0 U	5.1	0.27 J	94	39	0.95 J	0.59 J
Benzo(k)fluoranthene	NS	NS	0.64 J	5.0 U	7.9	0.22 J	71	33	5.0 U	0.90 J
Benzo(e)pyrene	NS	NS	1.0 J	5.0 U	5.8	0.28 J	88	30	0.90 J	0.70 J
Benzo(a)pyrene	150	1,450	0.33 J	5.0 U	8.9	5.1 U	78	35	0.73 J	0.83 J
Perylene	NS	NS	0.31 J	0.33 J	2.7 J	0.57 J	33	16	5.0 J	2.9 J
Indeno(1,2,3-cd)pyrene	NS	NS	5.0 U	5.0 U	4.9 J	5.1 UJ	51	28	0.45 J	0.36 J
Dibenz(a,h)anthracene	33	NS	0.34 J	5.0 U	5.0 UJ	5.1 UJ	13	5.8	5.0 U	4.9 U
Benzo(g,h,i)perylene	NS	NS	1.1 J	5.0 U	4.7 J	5.1 U	54	30	0.79 J	0.58 J
Dimethyl phthalate	NS	NS	20 U	20 U	10 U	11 U	20 U	20 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC12-5-7 K2402051-016 03/19/2004	T4-VC12-7-9 K2402051-018 03/19/2004	T4-PS12-10-12 K2402526-003 04/05/2004	T4-PS12-15-17 K2402526-004 04/05/2004	T4-VC13-0-1 K2402051-019 03/19/2004	T4-VC13-1-3 K2402051-020 03/19/2004	T4-VC13-3-5 K2402055-001 03/19/2004	T4-VC13-5-7 K2402055-002 03/19/2004
Diethyl phthalate	NS	NS	20 U	20 U	10 U	11 U	20 U	20 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	10 U	11 U	20 U	20 U	20 U	20 U
Butylbenzyl phthalate	NS	NS	20 U	20 U	10 U	11 U	11 J	20 U	20 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	20 U	120	32	21 U	20 U	20 U	20 U
Di-n-octyl phthalate	NS	NS	20 U	20 U	10 U	11 U	20 U	20 U	20 U	20 U
Total PAHs (c,d)	1,610	22,800	3.4 J	5.0 U	110	3.8 J	5,142	413	9.2 J	10 J
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.40 U	0.40 U	0.43 U	0.43 U	0.40 U	0.40 U	0.40 U	0.43 U
4,4'-DDD	NS	NS	0.40 U	0.40 U	0.43 U	0.43 U	0.40 U	0.40 U	0.40 U	0.43 U
4,4'-DDT	NS	NS	0.40 U	0.40 U	0.43 U	0.43 U	65	1.7	0.40 U	0.43 U
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.43 U	0.43 U	0.40 U	0.40 U	0.40 U	0.43 U
2,4'-DDD	NS	NS	0.40 U	0.40 U	0.43 U	0.43 U	9.5	2.3 J	0.40 U	0.43 U
2,4'-DDT	NS	NS	0.40 U	0.40 U	0.43 U	0.43 U	7.1 U	0.45 U	0.40 U	0.43 U
Total DDD (c,e)	4.88	28	0.40 U	0.40 U	0.43 U	0.43 U	9.5	2.3 J	0.40 U	0.43 U
Total DDE (c,f)	3.16	31.3	0.40 U	0.40 U	0.43 U	0.43 U	0.40 U	0.40 U	0.40 U	0.43 U
Total DDT (c,g)	4.16	62.9	0.40 U	0.40 U	0.43 U	0.43 U	65	1.7	0.40 U	0.43 U
ΣDDTs (c,h)	5.28	572	0.40 U	0.40 U	0.43 U	0.43 U	75	4.0	0.40 U	0.43 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.3 U	5.4 U	50 U	5.0 U	5.0 U	5.4 U
Aroclor 1221	NS	NS	10 U	10 U	11 U	11 U	100 U	10 U	10 U	11 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.3 U	5.4 U	50 U	5.0 U	5.0 U	5.4 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.3 U	5.4 U	50 U	5.0 U	5.0 U	5.4 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	5.3 U	5.4 U	50 U	5.0 U	5.0 U	5.4 U
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.3 U	5.4 U	50 U	37	5.0 U	5.4 U
Aroclor 1260	NS	NS	5.0 U	5.0 U	5.3 U	5.4 U	820	5.0 U	5.0 U	5.4 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.3 U	5.4 U	50 U	5.0 U	5.0 U	5.4 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.3 U	5.4 U	50 U	5.0 U	5.0 U	5.4 U
Total PCBs (c,i)	59.8	676	10 U	10 U	11 U	11 U	820	37	10 U	11 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	17 U	18 U	20 U	23 U	13 J	16 U	24 U	25 U
Residual Range Organics (RRO)	NS	NS	67 U	71 U	14 J	89 U	33 J	7.5 J	93 U	98 U
Gasoline Range Organics (GRO)	NS	NS	2.8 U	3.2 U	1.7 J	3.3 U	2.8 U	2.8 U	2.9 U	3.2 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC12-5-7 K2402051-016 03/19/2004	T4-VC12-7-9 K2402051-018 03/19/2004	T4-PS12-10-12 K2402526-003 04/05/2004	T4-PS12-15-17 K2402526-004 04/05/2004	T4-VC13-0-1 K2402051-019 03/19/2004	T4-VC13-1-3 K2402051-020 03/19/2004	T4-VC13-3-5 K2402055-001 03/19/2004	T4-VC13-5-7 K2402055-002 03/19/2004
Total organic carbon	NS	NS	0.09	0.12	0.05	0.05 U	0.65	0.11	0.11	0.05
Total solids	NS	NS	88.9	77.1	77.5	74.5	88.1	91.2	83.2	77.7
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	NA	NA	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	NA	NA	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	99.9	NA	NA	97.8	100	99.6	99.5
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.3	99.8	NA	NA	96.6	99.6	99.1	99.4
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	94.6	97.7	NA	NA	93.6	98.1	95.9	98.9
Sand, Coarse No. 40 (0.425 mm)	NS	NS	53.8	60.4	NA	NA	59.1	68.5	65.6	81.5
Sand, Medium No. 60 (0.250 mm)	NS	NS	10.2	13.9	NA	NA	19.4	13.9	15	17.2
Sand, Fine No. 140 (0.106 mm)	NS	NS	3.08 J	4.05 J	NA	NA	7.51 J	3.24 J	3.88	3.66
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	2.77	3.6	NA	NA	6.71	2.97	3.40	3.22
Silt (0.074 mm)	NS	NS	0	0	NA	NA	4.1	0	1.05	1.05
Clay (0.005 mm)	NS	NS	0	0	NA	NA	1.06	0	0.02	0.03
Clay (0.001 mm)	NS	NS	0	0	NA	NA	0	0	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC13-7-9 K2402055-003 03/19/2004	T4-VC14-0-1 K2402008-004 03/18/2004	T4-VC14-1-3 K2402008-005 03/18/2004	T4-VC14-3-5 K2402008-007 03/18/2004	T4-VC14-5-7 K2402008-008 03/18/2004	T4-VC14-7-9 K2402008-009 03/18/2004	T4-VC15-0-1 K2401958-020 03/16/2004	T4-VC15-1-3 K2401949-007 03/16/2004
Metals (mg/kg)										
Arsenic	9.79	33	2.9	2.9 J	2.7 J	2.9 J	3.1 J	1.4 J	6.1	6.8
Cadmium	0.99	4.98	0.13	0.2	0.19	0.2	0.39	0.07	1.5	3.4
Chromium	43.4	111	17.4 J	11.1 J	9.96 J	13 J	15.9 J	9.3 J	32.3 J	33.2 J
Copper	31.6	149	20.9 J	14 J	13.4 J	16 J	21.8 J	13.3 J	54.1 J	54.9 J
Lead	35.8	128	7.28	9.75 J	9.59 J	9.42 J	28.4 J	2.19 J	124	242
Mercury	0.18	1.06	0.04	0.009 B	0.019 U	0.019 B	0.075	0.016 B	0.131	0.251
Nickel	22.7	48.6	19.9	15 J	14.9 J	15.4 J	18.3 J	15.9 J	24.7 J	26.4 J
Selenium	NS	NS	0.11 UJ	0.12 UJ	0.1 UJ	0.11 UJ	0.12 UJ	0.1 UJ	0.22	0.23
Silver	NS	NS	0.06	0.03	0.03	0.05	0.13	0.02 U	0.79	1.43
Zinc	121	459	54.6 J	56.9 J	54.9 J	59.4 J	110 J	35.6 J	271 J	654 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	16	0.63 J	5.0 U	3.4 J	61	4.8 U	70	100
2-Methylnaphthalene	NS	NS	2.5 J	0.37 J	5.0 U	1.6 J	22	4.8 U	35	63
1-Methylnaphthalene	NS	NS	1.5 J	5.0 U	5.0 U	0.9 J	11	4.8 U	18	28
Biphenyl	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	6.0	4.8 U	9.0	14
2,6-Dimethylnaphthalene	NS	NS	1.6 J	0.27 J	5.0 U	1.2 J	9.8	4.8 U	24	65
Acenaphthylene	NS	NS	4.2 J	0.34 J	0.37 J	0.99 J	7.9	4.8 U	20	24
Acenaphthene	NS	NS	1.7 J	0.36 J	5.0 U	9.0	62	4.8 U	290	140
2,3,5-Trimethylnaphthalene	NS	NS	1.4 J	0.24 J	0.31 J	1.6 J	9.7	4.8 U	18	150
Fluorene	77.4	536	3.3 J	0.37 J	0.22 J	6.1	42	4.8 U	160	140
Phenanthrene	204	1,170	22	3.0 J	5.0 U	41	360	4.8 U	1,200	750
Anthracene	57.2	845	5.1	0.93 J	0.88 J	10	81	4.8 U	270	110
1-Methylphenanthrene	NS	NS	3.2 J	0.38 J	0.23 J	3.2 J	31	4.8 U	92	110
Fluoranthene	423	2,230	24	5.8	4.2 J	84	410	4.8 U	2,500	920
Pyrene	195	1,520	53	13	11	110	510	4.8 U	2,700	1,200
Benz(a)anthracene	108	1,050	11	3.3 J	3.0 J	51	250	4.8 U	1,600	410
Chrysene	166	1,290	16	5.4	4.2 J	64	300	4.8 U	2,000	550
Benzo(b)fluoranthene	NS	NS	8.5	4.1 J	5.0 J	69	290	4.8 U	2,000	470
Benzo(k)fluoranthene	NS	NS	14	5.6	4.5 J	61	250	4.8 U	2,000	370
Benzo(e)pyrene	NS	NS	12	4.8 J	4.4 J	57	220	4.8 U	1,700	370
Benzo(a)pyrene	150	1,450	12	3.0 J	3.7 J	71	300	0.20 J	2,300	450
Perylene	NS	NS	62	1.9 J	1.7 J	34	120	4.8 U	800	300
Indeno(1,2,3-cd)pyrene	NS	NS	8	2.4 J	3.5 J	57	220	4.8 U	1,800	370
Dibenz(a,h)anthracene	33	NS	0.74 J	0.5 J	0.66 J	9.2	39	4.8 U	360	76
Benzo(g,h,i)perylene	NS	NS	15	3.8 J	3.8 J	56	210	4.8 U	1,700	370
Dimethyl phthalate	NS	NS	20 U	44 U	20 U					

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC13-7-9 K2402055-003 03/19/2004	T4-VC14-0-1 K2402008-004 03/18/2004	T4-VC14-1-3 K2402008-005 03/18/2004	T4-VC14-3-5 K2402008-007 03/18/2004	T4-VC14-5-7 K2402008-008 03/18/2004	T4-VC14-7-9 K2402008-009 03/18/2004	T4-VC15-0-1 K2401958-020 03/16/2004	T4-VC15-1-3 K2401949-007 03/16/2004
Diethyl phthalate	NS	NS	20 U	11 J	20 U					
Di-n-butyl phthalate	NS	NS	20 U	44 U	20 U					
Butylbenzyl phthalate	NS	NS	20 U	20 U	20 U	2.7 J	13 J	20 U	33 J	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	20 U	20 U	20 U	42 U	20 U	280	150 U
Di-n-octyl phthalate	NS	NS	20 U	44 U	20 U					
Total PAHs (c,d)	1,610	22,800	191	46	37	580	2,924	0.20 J	17,110	5,634
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.42 U	0.40 U	0.40 U	0.88	2.7 J	0.40 U	4.7	9.5 J
4,4'-DDD	NS	NS	0.42 U	0.33 J	0.34 J	0.88	1.6	0.40 U	3.1	4.8
4,4'-DDT	NS	NS	0.42 U	0.83	0.91	1	3.3	0.40 U	5.7	13
2,4'-DDE	NS	NS	0.42 U	0.095 J	0.40 U	0.39 U	0.64 J	0.40 U	0.59 U	2.3 U
2,4'-DDD	NS	NS	0.42 U	0.40 U	0.40 U	0.7 J	3.4 J	0.40 U	4.4 J	11 J
2,4'-DDT	NS	NS	0.42 U	0.40 U	0.40 U	0.39 U	1.9	0.40 U	2.5 J	6.6
Total DDD (c,e)	4.88	28	0.42 U	0.33 J	0.34 J	1.6	5.0	0.40 U	7.5	16
Total DDE (c,f)	3.16	31.3	0.42 U	0.095 J	0.40 U	0.88	3.3 J	0.40 U	4.7	9.5 J
Total DDT (c,g)	4.16	62.9	0.42 U	0.83	0.91	1.0	5.2	0.40 U	8.2	20
ΣDDTs (c,h)	5.28	572	0.42 U	1.3	1.3	3.5	14	0.40 U	20	45
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.2 U	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	7.4 U	5.0 U
Aroclor 1221	NS	NS	11 U	10 U	10 U	9.7 U	10 U	10 U	15 U	10 U
Aroclor 1232	NS	NS	5.2 U	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	7.4 U	5.0 U
Aroclor 1242	NS	NS	5.2 U	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	7.4 U	5.0 U
Aroclor 1248	NS	NS	5.2 U	5.0 U	5.0 U	3.1 J	14	5.0 U	28	72
Aroclor 1254	NS	NS	5.2 U	5.0 U	5.0 U	6.1 U	38 U	5.0 U	61 U	180 U
Aroclor 1260	NS	NS	5.2 U	5.3	5.4	6.1	35	5.0 U	52	160
Aroclor 1262	NS	NS	5.2 U	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	7.4 U	5.0 U
Aroclor 1268	NS	NS	5.2 U	5.0 U	5.0 U	4.9 U	5.0 U	5.0 U	7.4 U	5.0 U
Total PCBs (c,i)	59.8	676	11 U	5.3	5.4	9.2	49	10 U	80	232
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	17 J	18 U	20 U	21 U	97 J	19 U	290 J	580 J
Residual Range Organics (RRO)	NS	NS	24 J	71 U	79 U	18 J	180 J	74 U	910 J	1200 J
Gasoline Range Organics (GRO)	NS	NS	3.4 U	3.0 U	3.2 U	3.3 U	1.5 J	3.2 U	5.0 U	2.2 J
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC13-7-9 K2402055-003 03/19/2004	T4-VC14-0-1 K2402008-004 03/18/2004	T4-VC14-1-3 K2402008-005 03/18/2004	T4-VC14-3-5 K2402008-007 03/18/2004	T4-VC14-5-7 K2402008-008 03/18/2004	T4-VC14-7-9 K2402008-009 03/18/2004	T4-VC15-0-1 K2401958-020 03/16/2004	T4-VC15-1-3 K2401949-007 03/16/2004
Total organic carbon	NS	NS	0.29	0.05	0.04 J	0.2	0.51	0.05	2.04	1.69
Total solids	NS	NS	74.4	83.6	78.1	77.5	81.7	77.9	45.3	56.9
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	97.5	100	100	100	96.2
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	99.9	99.4	97.4	99	100	100	96.2
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.8	99.7	99.1	96.6	98.6	99.7	100	96.2
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.3	96.9	95.7	93.1	97.2	99.1	99.9	95.8
Sand, Coarse No. 40 (0.425 mm)	NS	NS	82.3	60.6	60	56.8	72.2	76.8	98.8	94.1
Sand, Medium No. 60 (0.250 mm)	NS	NS	36.1	9.52	10	15.1	32	15.7	95.3	88.9
Sand, Fine No. 140 (0.106 mm)	NS	NS	22.3	2.27	2.71	9.65	19.7	3.24	87.8 J	78.5 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	21.6	2.13	2.57	9.42	18.5	5.6	84.6	73.8
Silt (0.074 mm)	NS	NS	18.3	0.69	0.68	9.82	19.3	1.51	73.7	64.3
Clay (0.005 mm)	NS	NS	5.75	0.42	0.42	4.4	6.21	0.29	43.4	31.4
Clay (0.001 mm)	NS	NS	0	0.26	0.26	1.17	0	0	25.3	11.7

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC15-3-5 K2401949-008 03/16/2004	T4-VC15-5-7 K2401949-009 03/16/2004	T4-VC15-7-9 K2401949-010 03/16/2004	T4-VC15-9-11 K2401949-011 03/16/2004	T4-VC16-0-1 K2401958-001 03/17/2004	T4-VC16-1-3 K2401958-002 03/17/2004	T4-VC16-3-5 K2401958-003 03/17/2004	T4-VC16-5-7 K2401958-004 03/17/2004
Metals (mg/kg)										
Arsenic	9.79	33	3.8	2	2.8	2.3	4.9	2.9	2.5	2.7
Cadmium	0.99	4.98	0.35	0.17	0.23	0.19	1.52	0.42	0.18	0.27
Chromium	43.4	111	29.9 J	25.9 J	30.2 J	29.7 J	23.2 J	17.4 J	21.1 J	27 J
Copper	31.6	149	35.3 J	35.7 J	35.3 J	31.5 J	37.5 J	24.1 J	24.4 J	43.8 J
Lead	35.8	128	14.4	6.85	6.7	5.46	126	54.4	4.5	6.88
Mercury	0.18	1.06	0.097	0.068	0.05	0.037	0.097	0.132	0.053	0.038
Nickel	22.7	48.6	29.9 J	20 J	25.3 J	26.5 J	17.4 J	21.1 J	30.4 J	26.2 J
Selenium	NS	NS	0.13 UJ	0.1 UJ	0.1 UJ	0.09 UJ	0.13 J	0.11 UJ	0.07 J	0.14 J
Silver	NS	NS	0.18	0.07	0.08	0.08	0.44	0.09	0.05	0.07
Zinc	121	459	82.1 J	67.2 J	62 J	59.6 J	287 J	98.7 J	52.6 J	70.1 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	21	4.9 U	5.0 U	4.9 U	120	300	5.0 U	5.0 U
2-Methylnaphthalene	NS	NS	8.4	4.9 U	5.0 U	4.9 U	63	85	5.0 U	5.0 U
1-Methylnaphthalene	NS	NS	3.7 J	4.9 U	5.0 U	4.9 U	34	23	5.0 U	5.0 U
Biphenyl	NS	NS	4.0 J	4.9 U	5.0 U	4.9 U	14	6.0	5.0 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	5.6	4.9 U	5.0 U	4.9 U	39	21	5.0 U	5.0 U
Acenaphthylene	NS	NS	6.3	4.9 U	5.0 U	4.9 U	30	4.9 J	5.0 U	5.0 U
Acenaphthene	NS	NS	20	4.9 U	5.0 U	4.9 U	740	96	5.0 U	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	28	4.9 U	5.0 U	4.9 U	40	17	5.0 U	5.0 U
Fluorene	77.4	536	22	4.9 U	5.0 U	4.9 U	600	62	5.0 U	5.0 U
Phenanthrene	204	1,170	180	4.9 U	5.0 U	4.9 U	4,000	280	5.0 U	5.0 U
Anthracene	57.2	845	29	4.9 U	5.0 U	4.9 U	630	43	5.0 U	5.0 U
1-Methylphenanthrene	NS	NS	30	4.9 U	5.0 U	4.9 U	220	27	5.0 U	5.0 U
Fluoranthene	423	2,230	250	4.9 U	5.0 U	4.9 U	6,600	330	5.0 U	5.0 U
Pyrene	195	1,520	370	4.9 U	2.2 J	4.9 U	7,100	420	5.0 U	5.0 U
Benz(a)anthracene	108	1,050	110	0.35 J	1.1 J	0.27 J	4,300	170	0.23 J	0.48 J
Chrysene	166	1,290	150	0.82 J	1.6 J	0.56 J	5,100	210	0.36 J	0.52 J
Benzo(b)fluoranthene	NS	NS	90	0.75 J	1.6 J	0.78 J	5,500	200	0.47 J	0.48 J
Benzo(k)fluoranthene	NS	NS	92	0.38 J	1.2 J	0.53 J	4,900	190	0.35 J	0.34 J
Benzo(e)pyrene	NS	NS	96	0.49 J	1.2 J	0.60 J	4,300	170	0.46 J	0.42 J
Benzo(a)pyrene	150	1,450	130	4.9 U	0.8 J	4.9 U	5,900	210	0.23 J	0.24 J
Perylene	NS	NS	310	510	280	310	1,800	150	97	290
Indeno(1,2,3-cd)pyrene	NS	NS	96	4.9 U	0.56 J	4.9 U	4,800	170	0.24 J	0.28 J
Dibenz(a,h)anthracene	33	NS	11	4.9 U	5.0 U	4.9 U	960	21	5.0 U	5.0 U
Benzo(g,h,i)perylene	NS	NS	120	0.27 J	0.91 J	0.33 J	4,300	180	0.27 J	0.35 J
Dimethyl phthalate	NS	NS	20 U	20 U	20 U	20 U	100 U	20 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC15-3-5 K2401949-008 03/16/2004	T4-VC15-5-7 K2401949-009 03/16/2004	T4-VC15-7-9 K2401949-010 03/16/2004	T4-VC15-9-11 K2401949-011 03/16/2004	T4-VC16-0-1 K2401958-001 03/17/2004	T4-VC16-1-3 K2401958-002 03/17/2004	T4-VC16-3-5 K2401958-003 03/17/2004	T4-VC16-5-7 K2401958-004 03/17/2004
Diethyl phthalate	NS	NS	20 U	20 U	20 U	20 U	100 U	20 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	20 U	20 U	100 U	20 U	20 U	20 U
Butylbenzyl phthalate	NS	NS	20 U	20 U	20 U	20 U	110	20 U	20 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	43 U	20 U	31 U	27 U	580	27 U	20 U	20 U
Di-n-octyl phthalate	NS	NS	20 U	20 U	20 U	20 U	100 U	20 U	20 U	20 U
Total PAHs (c,d)	1,610	22,800	1,470	2.3 J	8.5 J	2.1 J	45,520	2,516	1.6 J	2.1 J
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.82 J	0.40 U	0.40 U	0.40 U	3.1	1.4 J	0.48 U	0.50 U
4,4'-DDD	NS	NS	0.49	0.40 U	0.40 U	0.40 U	2.8	1.6	0.48 U	0.50 U
4,4'-DDT	NS	NS	0.81	0.40 U	0.40 U	0.40 U	9.1 J	3.3 J	0.48 U	0.50 U
2,4'-DDE	NS	NS	0.4 U	0.40 U	0.40 U	0.40 U	0.41 U	0.44 U	0.48 U	0.50 U
2,4'-DDD	NS	NS	0.91	0.40 U	0.40 U	0.40 U	4.2 J	1.7 J	0.48 U	0.50 U
2,4'-DDT	NS	NS	0.34 J	0.40 U	0.40 U	0.40 U	2.1 J	0.96	0.48 U	0.50 U
Total DDD (c,e)	4.88	28	1.4	0.40 U	0.40 U	0.40 U	7.0	3.3	0.48 U	0.50 U
Total DDE (c,f)	3.16	31.3	0.82 J	0.40 U	0.40 U	0.40 U	3.1	1.4 J	0.48 U	0.50 U
Total DDT (c,g)	4.16	62.9	1.2	0.40 U	0.40 U	0.40 U	11 J	4.3	0.48 U	0.50 U
ΣDDTs (c,h)	5.28	572	3.4	0.40 U	0.40 U	0.40 U	21	9.0	0.48 U	0.50 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.5 U	6.0 U	6.3 U
Aroclor 1221	NS	NS	10 U	10 U	10 U	10 U	11 U	11 U	12 U	13 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.5 U	6.0 U	6.3 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.5 U	6.0 U	6.3 U
Aroclor 1248	NS	NS	9.1	5.0 U	5.0 U	5.0 U	34	17 J	6.0 U	6.3 U
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	64 U	25 U	6.0 U	6.3 U
Aroclor 1260	NS	NS	14	5.0 U	5.0 U	5.0 U	62	19	6.0 U	6.3 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.5 U	6.0 U	6.3 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.5 U	6.0 U	6.3 U
Total PCBs (c,i)	59.8	676	23.1	10 U	10 U	10 U	96	36	12 U	13 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	77 J	24 U	25 U	25 U	180 J	75 J	24 U	24 U
Residual Range Organics (RRO)	NS	NS	170 J	20 J	31 J	97 U	590 J	170 J	93 U	11 J
Gasoline Range Organics (GRO)	NS	NS	4.1 U	4.0 U	1.6 J	3.7 U	3.7 U	3.4 U	3.5 U	3.8 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC15-3-5 K2401949-008 03/16/2004	T4-VC15-5-7 K2401949-009 03/16/2004	T4-VC15-7-9 K2401949-010 03/16/2004	T4-VC15-9-11 K2401949-011 03/16/2004	T4-VC16-0-1 K2401958-001 03/17/2004	T4-VC16-1-3 K2401958-002 03/17/2004	T4-VC16-3-5 K2401958-003 03/17/2004	T4-VC16-5-7 K2401958-004 03/17/2004
Total organic carbon	NS	NS	1.23	1.23	1.11	0.49	2.13	0.53	0.72	1.1
Total solids	NS	NS	62.3	63.2	61	65.9	65.5	72.8	69.7	66.4
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	99.7	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	99.8	99.7	99.7	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	99.9	100	100	99.3	99.6	99.6	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.9	99.8	99.9	100	97.5	97.1	99.3	100
Sand, Coarse No. 40 (0.425 mm)	NS	NS	99.4	99.6	99.7	99.9	88.1	78.1	98.8	99.8
Sand, Medium No. 60 (0.250 mm)	NS	NS	98.6	99.4	99.6	99.8	69.5	61.8	97.1	99.7
Sand, Fine No. 140 (0.106 mm)	NS	NS	88.2 J	96.3 J	91.7 J	98.1 J	55.1 J	43.4 J	49.1 J	99 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	80.5	90.1	82.3	90.3	50.2	37.7	36.8	97.4
Silt (0.074 mm)	NS	NS	65	68	65.8	65.9	50.5	29.5	27.6	89.3
Clay (0.005 mm)	NS	NS	27.9	32.8	29.8	28.3	15.1	8.49	9.88	30.6
Clay (0.001 mm)	NS	NS	5.69	11.8	8.29	5.93	0	0	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC16-7-9 K2401958-005 03/17/2004	T4-VC16-9-11 K2401958-006 03/17/2004
Metals (mg/kg)				
Arsenic	9.79	33	2.1	2.8
Cadmium	0.99	4.98	0.19	0.16
Chromium	43.4	111	24.5 J	25.7 J
Copper	31.6	149	31.4 J	30.2 J
Lead	35.8	128	5.18	4.84
Mercury	0.18	1.06	0.184	0.025
Nickel	22.7	48.6	27.2 J	25.4 J
Selenium	NS	NS	0.1 UJ	0.06 J
Silver	NS	NS	0.06	0.05
Zinc	121	459	58.1 J	54.7 J
Semivolatile Organics (ug/kg)				
Naphthalene	176	561	4.7 U	5.0 U
2-Methylnaphthalene	NS	NS	4.7 U	5.0 U
1-Methylnaphthalene	NS	NS	4.7 U	5.0 U
Biphenyl	NS	NS	4.7 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	4.7 U	5.0 U
Acenaphthylene	NS	NS	4.7 U	5.0 U
Acenaphthene	NS	NS	4.7 U	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	4.7 U	5.0 U
Fluorene	77.4	536	4.7 U	5.0 U
Phenanthrene	204	1,170	4.7 U	5.0 U
Anthracene	57.2	845	4.7 U	5.0 U
1-Methylphenanthrene	NS	NS	4.7 U	5.0 U
Fluoranthene	423	2,230	4.7 U	5.0 U
Pyrene	195	1,520	4.7 U	5.0 U
Benz(a)anthracene	108	1,050	4.7 U	5.0 U
Chrysene	166	1,290	4.7 U	5.0 U
Benzo(b)fluoranthene	NS	NS	0.21 J	0.21 J
Benzo(k)fluoranthene	NS	NS	4.7 U	5.0 U
Benzo(e)pyrene	NS	NS	0.18 J	0.21 J
Benzo(a)pyrene	150	1,450	4.7 U	5.0 U
Perylene	NS	NS	180	160
Indeno(1,2,3-cd)pyrene	NS	NS	4.7 U	5.0 U
Dibenz(a,h)anthracene	33	NS	4.7 U	5.0 U
Benzo(g,h,i)perylene	NS	NS	4.7 U	0.15 J
Dimethyl phthalate	NS	NS	19 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC16-7-9 K2401958-005 03/17/2004	T4-VC16-9-11 K2401958-006 03/17/2004
Diethyl phthalate	NS	NS	19 U	20 U
Di-n-butyl phthalate	NS	NS	19 U	20 U
Butylbenzyl phthalate	NS	NS	19 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	19 U	20 U
Di-n-octyl phthalate	NS	NS	19 U	20 U
Total PAHs (c,d)	1,610	22,800	0.21 J	0.21 J
Pesticides (ug/kg)				
4,4'-DDE	NS	NS	0.40 U	0.39 U
4,4'-DDD	NS	NS	0.40 U	0.39 U
4,4'-DDT	NS	NS	0.40 UJ	0.39 UJ
2,4'-DDE	NS	NS	0.40 U	0.39 U
2,4'-DDD	NS	NS	0.40 U	0.39 U
2,4'-DDT	NS	NS	0.40 U	0.39 U
Total DDD (c,e)	4.88	28	0.40 U	0.39 U
Total DDE (c,f)	3.16	31.3	0.40 U	0.39 U
Total DDT (c,g)	4.16	62.9	0.40 U	0.39 U
ΣDDTs (c,h)	5.28	572	0.40 U	0.39 U
PCBs (ug/kg)				
Aroclor 1016	NS	NS	5.0 U	4.9 U
Aroclor 1221	NS	NS	9.9 U	9.7 U
Aroclor 1232	NS	NS	5.0 U	4.9 U
Aroclor 1242	NS	NS	5.0 U	4.9 U
Aroclor 1248	NS	NS	5.0 U	4.9 U
Aroclor 1254	NS	NS	5.0 U	4.9 U
Aroclor 1260	NS	NS	5.0 U	4.9 U
Aroclor 1262	NS	NS	5.0 U	4.9 U
Aroclor 1268	NS	NS	5.0 U	4.9 U
Total PCBs (c,i)	59.8	676	9.9 U	9.7 U
Petroleum Hydrocarbons (mg/kg)				
Diesel Range Organics (DRO)	NS	NS	22 U	23 U
Residual Range Organics (RRO)	NS	NS	88 U	92 U
Gasoline Range Organics (GRO)	NS	NS	3.7 U	3.6 U
Conventionals (percent)				

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC16-7-9 K2401958-005 03/17/2004	T4-VC16-9-11 K2401958-006 03/17/2004
Total organic carbon	NS	NS	0.28	0.3
Total solids	NS	NS	67.4	68.9
Grain Size (percent) (j)				
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	100	100
Sand, Coarse No. 40 (0.425 mm)	NS	NS	100	99.9
Sand, Medium No. 60 (0.250 mm)	NS	NS	99.9	99.6
Sand, Fine No. 140 (0.106 mm)	NS	NS	81.6 J	82.2 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	69.4	74
Silt (0.074 mm)	NS	NS	51.2	57.7
Clay (0.005 mm)	NS	NS	17.4	18.5
Clay (0.001 mm)	NS	NS	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-3
Slip 1 Surface and Subsurface Sediment Data Compared to SQGs

NS = No screening level.

NA = Not analyzed because of insufficient sample volume.

U = Analyte was not detected above the reported sample quantitation limit.

J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

B = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

The approximate concentration is less than the method report limit but greater than the method detection limit.

Boxed values indicate concentration is greater than TEC.

Shaded values indicate concentration is greater than PEC.

- a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based threshold effect concentrations (TEC). Represents concentration below which toxicity is unlikely to be observed.
- b. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based probable effect concentrations (PEC). Represents concentration above which toxicity is likely to be observed.
- c. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
- d. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
- e. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
- f. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
- g. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
- h. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes e, f, and g for the definitions of total DDD, total DDE, and total DDT, respectively.
- i. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).
- j. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use.

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC17-0-1 K2401908-014 03/15/2004	T4-VC17-1-3 K2401908-015 03/15/2004	T4-VC17-3-5 K2401908-016 03/15/2004	T4-VC17-5-7 K2401908-017 03/15/2004	T4-PS17-10-12 K2402526-012 04/02/2004	T4-PS17-15-17 K2402526-013 04/02/2004	T4-VC18-0-1 K2401792-005 03/11/2004	T4-VC18-1-3 K2401792-006 03/11/2004
Metals (mg/kg)										
Arsenic	9.79	33	3.6	3.9	4.1	3.2	3.3	2.5	3.4	2.8
Cadmium	0.99	4.98	0.31	0.41	0.62	0.24	0.12	0.09	1.03	0.48
Chromium	43.4	111	25.3 J	26.4 J	29.7 J	16.9 J	11.7	9.56	24.3 J	19.1 J
Copper	31.6	149	34.6 J	38.6 J	39.9 J	20.5 J	30	30	32.1 J	27.3 J
Lead	35.8	128	16.6	26.4	33.1	11.6	5.54	4.39	131	33.6
Mercury	0.18	1.06	0.089 J	0.097 J	0.376 J	0.105 J	0.02	0.01 B	0.079	0.078
Nickel	22.7	48.6	22.3 J	23.3 J	25.2 J	19.6 J	16.6 J	14.2 J	20.7 J	18.1 J
Selenium	NS	NS	0.15 J	0.17 J	0.15 J	0.07 J	0.11 UJ	0.11 UJ	0.22	0.19
Silver	NS	NS	0.16	0.22	0.44	0.13	0.03	0.03	0.49	0.2
Zinc	121	459	81.9 J	119 J	127 J	77.2 J	40.9 J	38.7 J	144 J	111 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	14	130	580	350	24	2.1 J	36	170
2-Methylnaphthalene	NS	NS	7.2	71	160	62	4.5 J	0.59 J	26	100
1-Methylnaphthalene	NS	NS	5.7	26	83	36	2.4 J	0.33 J	21	45
Biphenyl	NS	NS	2.9 J	16	63	27	4.9 U	4.9 U	7.7	19
2,6-Dimethylnaphthalene	NS	NS	6.6	30	130	52	3.6 J	0.53 J	18	61
Acenaphthylene	NS	NS	5.3	28	96	64	6.0	0.44 J	11	17
Acenaphthene	NS	NS	34	69	210	41	5.7	0.79 J	52	250
2,3,5-Trimethylnaphthalene	NS	NS	5.8	20	160	49	3.9 J	0.45 J	73	97
Fluorene	77.4	536	38	63	180	65	5.4	0.83 J	39	180
Phenanthrene	204	1,170	200	340	1,600	560	52	6.0	160	710
Anthracene	57.2	845	24	69	280	110	12	0.98 J	33	91
1-Methylphenanthrene	NS	NS	9.0	36	160	50	5.9	0.8 J	16	70
Fluoranthene	423	2,230	190	520	2,100	650	77	9.5	300	690
Pyrene	195	1,520	220	690	3,300	980	98	12	390	770
Benz(a)anthracene	108	1,050	89	270	730	210	27	3.5 J	160	220
Chrysene	166	1,290	130	360	970	300	38	4.8 J	220	310
Benzo(b)fluoranthene	NS	NS	120	330	650	200	22	3.2 J	220	190
Benzo(k)fluoranthene	NS	NS	110	290	680	200	25	3.3 J	190	170
Benzo(e)pyrene	NS	NS	110	300	720	220	24	3.5 J	190	160
Benzo(a)pyrene	150	1,450	120	410	1,000	300	34	3.9 J	250	210
Perylene	NS	NS	61	160	330	150	27	4.5 J	100	110
Indeno(1,2,3-cd)pyrene	NS	NS	100	360	800	230	30 J	4.9 UJ	220	160
Dibenz(a,h)anthracene	33	NS	16	46	78	21	3.8 J	4.9 UJ	36	28
Benzo(g,h,i)perylene	NS	NS	110	380	1,000	290	36	4.6 J	220	170
Dimethyl phthalate	NS	NS	20 U	20 U	39 U	23 U	9.8 U	9.8 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC17-0-1 K2401908-014 03/15/2004	T4-VC17-1-3 K2401908-015 03/15/2004	T4-VC17-3-5 K2401908-016 03/15/2004	T4-VC17-5-7 K2401908-017 03/15/2004	T4-PS17-10-12 K2402526-012 04/02/2004	T4-PS17-15-17 K2402526-013 04/02/2004	T4-VC18-0-1 K2401792-005 03/11/2004	T4-VC18-1-3 K2401792-006 03/11/2004
Diethyl phthalate	NS	NS	20 U	20 U	39 U	23 U	9.8 U	9.8 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	39 U	23 U	20 U	9.8 U	20 U	180 U
Butylbenzyl phthalate	NS	NS	7.6 J	9.7 J	39 U	23 U	9.8 U	9.8 U	9.5 J	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	54	100	39 U	23 U	60	63	57 U	72
Di-n-octyl phthalate	NS	NS	20 U	20 U	39 U	23 U	9.8 U	9.8 U	20 UJ	20 UJ
Total PAHs (c,d)	1,610	22,800	1,294	3,569	12,376	4,030	426	51	2,061	3,978
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	3.1	5.6 J	25 J	0.41 U	0.45 J	0.43 U	4.9	3.8
4,4'-DDD	NS	NS	2.0	4.5	43	0.41 U	0.94	0.43 U	3.3	4.4
4,4'-DDT	NS	NS	0.45 U	3.3	8.2 J	0.62	2.8	0.43 U	4.7 J	1.9 J
2,4'-DDE	NS	NS	0.4 U	0.86 U	1.9 U	0.41 U	0.44 U	0.43 U	0.40 U	0.40 U
2,4'-DDD	NS	NS	1.2	3.7 J	30	0.41 U	0.73	0.43 U	1.8 J	2.9
2,4'-DDT	NS	NS	0.44	2.2 J	13 U	0.41 U	0.44 U	0.43 U	1.2 U	1
Total DDD (c,e)	4.88	28	3.2	8.2	73	0.41 U	1.7	0.43 U	5.1	7.3
Total DDE (c,f)	3.16	31.3	3.1	5.6 J	25 J	0.41 U	0.45 J	0.43 U	4.9	3.8
Total DDT (c,g)	4.16	62.9	0.44	5.5	8.2 J	0.62	2.8	0.43 U	4.7	2.9
ΣDDTs (c,h)	5.28	572	6.7	19	106	0.62	4.9	0.43 U	15	14
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.5 U	5.4 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	10 U	11 U	10 U	11 U	11 U	11 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.5 U	5.4 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.5 U	5.4 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	4.7 J	20	13 J	5.1 U	5.5 U	5.4 U	11	19
Aroclor 1254	NS	NS	5.0 U	71 U	270 U	5.1 U	5.5 U	5.4 U	24 U	35 U
Aroclor 1260	NS	NS	10	54	180 J	15	5.5 U	5.4 U	28	25
Aroclor 1262	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.5 U	5.4 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	5.1 U	51 J	15	5.5 U	5.4 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	15	74	244 J	30	11 U	11 U	39	44
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	29 J	79 J	390 J	120 J	22 U	21 U	46 J	80 J
Residual Range Organics (RRO)	NS	NS	100 J	210 J	660 J	220 J	17 J	83 U	150 U	160 J
Gasoline Range Organics (GRO)	NS	NS	4.5 U	4.6 U	7.1 J	3.4 U	3.5 U	3.4 U	4.1 U	3.7 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC17-0-1 K2401908-014 03/15/2004	T4-VC17-1-3 K2401908-015 03/15/2004	T4-VC17-3-5 K2401908-016 03/15/2004	T4-VC17-5-7 K2401908-017 03/15/2004	T4-PS17-10-12 K2402526-012 04/02/2004	T4-PS17-15-17 K2402526-013 04/02/2004	T4-VC18-0-1 K2401792-005 03/11/2004	T4-VC18-1-3 K2401792-006 03/11/2004
Total organic carbon	NS	NS	1.69	2.25	2.3	0.84	0.13	0.06	1.78	1.33
Total solids	NS	NS	54.8	54.2	60	71.7	72.5	73.3	57.2	61.9
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	NA	NA	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	NA	NA	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	99.9	NA	NA	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	99.9	100	99.8	NA	NA	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.8	99.7	100	98.1	NA	NA	99.9	99.4
Sand, Coarse No. 40 (0.425 mm)	NS	NS	98.2	98.4	99.5	75.3	NA	NA	99.4	87.9
Sand, Medium No. 60 (0.250 mm)	NS	NS	95.4 J	94 J	97.3 J	32.9 J	NA	NA	96.8	71.6
Sand, Fine No. 140 (0.106 mm)	NS	NS	87.6	87.2	89.4	19.7	NA	NA	88.5 J	61.3 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	79.2	81.2	81.8	17.2	NA	NA	79.2 J	55.1 J
Silt (0.074 mm)	NS	NS	64.5	67.4	64.8	14	NA	NA	63.2	53.7
Clay (0.005 mm)	NS	NS	28	32.7	28.4	4.46	NA	NA	25.5	15.4
Clay (0.001 mm)	NS	NS	6.22	11.9	6.62	0	NA	NA	2.96	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC18-3-5 K2401792-007 03/11/2004	T4-VC18-5-7 K2401792-008 03/11/2004	T4-VC18-7-9 K2401792-009 03/11/2004	T4-VC19-0-1 K2401768-008 03/10/2004	T4-VC19-1-3 K2401768-009 03/10/2004	T4-VC19-3-5 K2401768-010 03/10/2004	T4-VC19-5-7 K2401792-001 03/10/2004	T4-VC19-7-9 K2401792-003 03/10/2004
Metals (mg/kg)										
Arsenic	9.79	33	2.8	2.3	2.3	2.9	3.3	2.9	1.8	2.5
Cadmium	0.99	4.98	0.34	0.11	0.08	0.5	0.52	0.47	0.21	0.34
Chromium	43.4	111	25.5 J	11 J	10.9 J	22.7 J	21.6 J	22.7 J	20.6 J	19.5 J
Copper	31.6	149	31.8 J	14.2 J	13.4 J	31.9 J	36.9 J	29.5 J	19.1 J	22.7 J
Lead	35.8	128	22.1	5.17	2.62	43.2	38.6	34.1	11.1 J	20.6
Mercury	0.18	1.06	0.163	0.088	0.009 J	0.071	0.076	0.093	0.096	0.113
Nickel	22.7	48.6	21.4 J	14.8 J	15.4 J	18.7 J	18.2 J	20.9 J	22.1 J	19.1 J
Selenium	NS	NS	0.22	0.11 U	0.11 U	0.23	0.22	0.2	0.18	0.11
Silver	NS	NS	0.22	0.05	0.02 U	0.23	0.33	0.19	0.12	0.17
Zinc	121	459	88.1 J	46.4 J	40.7 J	91.7 J	106 J	97.2 J	59.6 J	85.1 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	200	98	24 J	69	330	100	120	190
2-Methylnaphthalene	NS	NS	130	52	3.9 J	51	160	69	54	51
1-Methylnaphthalene	NS	NS	62	20	1.4 J	34	84	33	23	27
Biphenyl	NS	NS	19	12	3 J	11	26	12	13	16
2,6-Dimethylnaphthalene	NS	NS	62	28	1.6 J	21	51	38	66	41
Acenaphthylene	NS	NS	14	27	8	12	14	25	33 J	30
Acenaphthene	NS	NS	300	180	4.1 J	350	1,700	190	170	92
2,3,5-Trimethylnaphthalene	NS	NS	41	38	0.77 J	31	44	52	120	50
Fluorene	77.4	536	160	110	2.1 J	220	790	120	100	59
Phenanthrene	204	1,170	410	710	44 J	1,900	7,300	600	690	510
Anthracene	57.2	845	49	54	8.4	370	1,700	95	65 J	62
1-Methylphenanthrene	NS	NS	24	79	7.4 J	110	380	54	110	62
Fluoranthene	423	2,230	250	530	38 J	4,400	14,000	970	810 J	480
Pyrene	195	1,520	280	700	170	4,300	16,000	1,200	1,200 J	720
Benz(a)anthracene	108	1,050	84	230	120 J	2,900	9,600	630	270 J	220
Chrysene	166	1,290	100	290	160 J	3,500	11,000	820	340 J	290
Benzo(b)fluoranthene	NS	NS	82	150	130 J	4,000	11,000	870	200 J	190
Benzo(k)fluoranthene	NS	NS	74	160	140 J	3,100	11,000	560	180 J	200
Benzo(e)pyrene	NS	NS	79	170	140 J	2,900	9,000	610	200 J	210
Benzo(a)pyrene	150	1,450	110	250	220 J	3,800	13,000	810	280 J	320
Perylene	NS	NS	110	76	59 J	1,200	3,800	350	270	120
Indeno(1,2,3-cd)pyrene	NS	NS	91	170	170 J	3,100	10,000	690	210 J	240
Dibenz(a,h)anthracene	33	NS	12	24	22 J	800	2,000	150	32 J	30
Benzo(g,h,i)perylene	NS	NS	100	190	170 J	2,700	9,000	630	230 J	260
Dimethyl phthalate	NS	NS	20 U	20 U	20 U	20 U	100 U	20 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC18-3-5 K2401792-007 03/11/2004	T4-VC18-5-7 K2401792-008 03/11/2004	T4-VC18-7-9 K2401792-009 03/11/2004	T4-VC19-0-1 K2401768-008 03/10/2004	T4-VC19-1-3 K2401768-009 03/10/2004	T4-VC19-3-5 K2401768-010 03/10/2004	T4-VC19-5-7 K2401792-001 03/10/2004	T4-VC19-7-9 K2401792-003 03/10/2004
Diethyl phthalate	NS	NS	7.5 J	20 U	20 U	7.4 J	100 U	20 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	20 U	20 U	100 U	20 U	20 U	20 U
Butylbenzyl phthalate	NS	NS	20 U	20 U	20 U	17 J	100 U	20 U	20 U	22
Bis(2-ethylhexyl) phthalate	NS	NS	24 U	20 U	30 U	73	130	55 U	280 J	20 U
Di-n-octyl phthalate	NS	NS	20 UJ	20 UJ	20 UJ	20 UJ	100 UJ	20 UJ	20 UJ	20 UJ
Total PAHs (c,d)	1,610	22,800	2,113	3,489	1,069	28,921	97,434	6,990	4,458	3,363
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	9.3	1.7	1.1	2.9	4.3 J	8.5	3.8	1.6 J
4,4'-DDD	NS	NS	7.5	2.2	12 J	2	2.5 J	4.1	3.4	3.8
4,4'-DDT	NS	NS	1.5 U	5.7	0.75 J	0.88 U	3 J	3.3	1.6	0.87 J
2,4'-DDE	NS	NS	0.87 U	0.37 J	0.40 U	0.73 U	0.56 UJ	0.64 U	0.53 U	0.56
2,4'-DDD	NS	NS	3.7	1.2	4.4 J	1.6 J	2.4 J	3 J	2.4 J	2.9
2,4'-DDT	NS	NS	1.5 U	0.63 J	0.40 U	0.39 U	1.4 UJ	1.5 U	1.2	0.40 U
Total DDD (c,e)	4.88	28	11	3.4	16	3.6	4.9 J	7.1	5.8	6.7
Total DDE (c,f)	3.16	31.3	9.3	2.1	1.1	2.9	4.3 J	8.5	3.8	2.2
Total DDT (c,g)	4.16	62.9	1.5 U	6.3	0.75 J	0.88 U	3 J	3.3	2.8	0.87
ΣDDTs (c,h)	5.28	572	21	12	18.3	6.5	12 J	19	12	9.7
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	5.0 UJ	5.0 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	10 U	10 U	10 U	9.7 U	10 UJ	10 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	5.0 UJ	5.0 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	5.0 UJ	5.0 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	28	8.7 J	5.0 U	13 J	17 J	22	22 J	5.0 U
Aroclor 1254	NS	NS	37 U	16 U	5.0 U	21 U	30 UJ	36 U	30 U	5.0 U
Aroclor 1260	NS	NS	42	7.9	5.0 U	26	25 J	48	20	5.0 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	5.0 UJ	5.0 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	5.0 UJ	5.0 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	70	17	10 U	39	42 J	70	42	10 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	83 J	48 J	18 U	69 J	170 J	88 J	200 J	67 J
Residual Range Organics (RRO)	NS	NS	180 J	76 U	71 U	270 J	520 J	210 J	460 J	130 J
Gasoline Range Organics (GRO)	NS	NS	3.9 U	3.2 U	3.2 U	4.5 U	4.1 U	3.4 U	7.3 J	2.7 J
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC18-3-5 K2401792-007 03/11/2004	T4-VC18-5-7 K2401792-008 03/11/2004	T4-VC18-7-9 K2401792-009 03/11/2004	T4-VC19-0-1 K2401768-008 03/10/2004	T4-VC19-1-3 K2401768-009 03/10/2004	T4-VC19-3-5 K2401768-010 03/10/2004	T4-VC19-5-7 K2401792-001 03/10/2004	T4-VC19-7-9 K2401792-003 03/10/2004
Total organic carbon	NS	NS	1.86	0.48	0.09 U	1.78	2.29	1.6	0.86	0.67
Total solids	NS	NS	58.3	75.5	77	53.8	51.8	63.7	68.8	69.5
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	99.9	99.8	100	100	99.9	100	99.9
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	100	97.9	97.7	100	99.9	99.2	99.8	99.6
Sand, Coarse No. 40 (0.425 mm)	NS	NS	99.4	65.2	52.9	99.8	99.6	90.8	98.7	97.0
Sand, Medium No. 60 (0.250 mm)	NS	NS	98.1	22.9	11.0	99.5	98.0	76.9	95.4	83.8
Sand, Fine No. 140 (0.106 mm)	NS	NS	91.2 J	15.8 J	2.72 J	96.5 J	93.6 J	65.3 J	70.5 J	44.9 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	85.6 J	15.0 J	2.50 J	90.9 J	88.7 J	61.4 J	55.5 J	31.1 J
Silt (0.074 mm)	NS	NS	66.2	11.6	1.03	67.8	70.0	58.2	53.4	14.6
Clay (0.005 mm)	NS	NS	30.4	3.84	0.03	30.9	35.8	21.9	10.7	4.04
Clay (0.001 mm)	NS	NS	8.95	0	0	8.81	15.4	0.3	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC19-9-11 K2401792-004 03/10/2004	T4-VC20-0-1 K2401768-001 03/09/2004	T4-VC20-1-3 K2401768-002 03/09/2004	T4-VC20-3-5 K2401768-003 03/09/2004	T4-VC20-5-7 K2401768-004 03/09/2004	T4-VC20-7-9 K2401768-005 03/09/2004	T4-VC20-9-11 K2401768-006 03/09/2004	T4-VC20-11-13 K2401768-007 03/09/2004
Metals (mg/kg)										
Arsenic	9.79	33	2	2.8	2.6	3.2	3.2	3.6	4.6	2.9
Cadmium	0.99	4.98	0.13	0.26	0.26	0.39	0.44	0.72	0.84	0.44
Chromium	43.4	111	11.4 J	22.7 J	20 J	24.5 J	24.4 J	24.1 J	27.2 J	23.2 J
Copper	31.6	149	16.9 J	29.8 J	29.6 J	38.8 J	36.1 J	37 J	39.7 J	29.7 J
Lead	35.8	128	7.24	15.1	13.8	25.2	38.3	62.5	61.7	20.5
Mercury	0.18	1.06	0.021	0.06	0.069	0.085	0.117	0.17	0.187	0.316
Nickel	22.7	48.6	16.8 J	18.9 J	18.3 J	20.1 J	20.3 J	20.2 J	20.6 J	19.2 J
Selenium	NS	NS	0.12 U	0.26	0.25	0.28	0.25	0.23	0.28	0.19
Silver	NS	NS	0.03	0.17	0.17	0.29	0.32	0.41	0.45	0.34
Zinc	121	459	39.8 J	67.3 J	65.7 J	94 J	122 J	271 J	235 J	98.1 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	87	14	12	40	74	350	190	420
2-Methylnaphthalene	NS	NS	14	6	4.7 J	19	35	180	290	160
1-Methylnaphthalene	NS	NS	13	3.9 J	3.7 J	11	14	150	480	120
Biphenyl	NS	NS	5.1	2.4 J	1.9 J	4.7 J	8.8	31	30	39
2,6-Dimethylnaphthalene	NS	NS	20	3.4 J	3.5 J	8.5	21	78	180	130
Acenaphthylene	NS	NS	14	5.8	3.3 J	8.7	15	24	20	62
Acenaphthene	NS	NS	22	17	18	120	56	240	560	240
2,3,5-Trimethylnaphthalene	NS	NS	19	3.4 J	3.1 J	5.7	18	44	82	130
Fluorene	77.4	536	12	14	11	54	50	140	340	180
Phenanthrene	204	1,170	95	110	84	420	200	450	790	960
Anthracene	57.2	845	20	29	20	110	54	77	140	190
1-Methylphenanthrene	NS	NS	18	8.9	7.2	30	22	43	67	120
Fluoranthene	423	2,230	99	230	160	850	300	380	560	1,300
Pyrene	195	1,520	230	280	180	920	370	450	600	2,000
Benz(a)anthracene	108	1,050	70	120	96	620	130	180	160	440
Chrysene	166	1,290	96	160	130	710	190	230	190	600
Benzo(b)fluoranthene	NS	NS	64	160	130	810	160	180	120	460
Benzo(k)fluoranthene	NS	NS	66	140	110	650	140	190	100	410
Benzo(e)pyrene	NS	NS	72	130	100	610	140	190	110	460
Benzo(a)pyrene	150	1,450	100	170	130	870	170	280	150	660
Perylene	NS	NS	48	81	56	280	130	84	60	250
Indeno(1,2,3-cd)pyrene	NS	NS	81	140	100	710	140	210	120	580
Dibenz(a,h)anthracene	33	NS	10	26	20	150	26	28	17	65
Benzo(g,h,i)perylene	NS	NS	95	150	100	630	150	240	130	650
Dimethyl phthalate	NS	NS	20 U	8.8 J	20 U	98 U				

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC19-9-11 K2401792-004 03/10/2004	T4-VC20-0-1 K2401768-001 03/09/2004	T4-VC20-1-3 K2401768-002 03/09/2004	T4-VC20-3-5 K2401768-003 03/09/2004	T4-VC20-5-7 K2401768-004 03/09/2004	T4-VC20-7-9 K2401768-005 03/09/2004	T4-VC20-9-11 K2401768-006 03/09/2004	T4-VC20-11-13 K2401768-007 03/09/2004
Diethyl phthalate	NS	NS	20 U	15 J	8.7 J	20 U	7.9 J	20 U	20 U	98 U
Di-n-butyl phthalate	NS	NS	20 U	52 U	20 U	21 U	20 U	20 U	20 U	98 U
Butylbenzyl phthalate	NS	NS	6.4 J	19 J	20 U	14 J	17 J	20 U	20 U	98 U
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	90	69	150	3000	57 U	45 U	98 U
Di-n-octyl phthalate	NS	NS	20 UJ	16 J	20 UJ	98 UJ				
Total PAHs (c,d)	1,610	22,800	975	1,450	1,084	6,183	1,909	3,171	3,920	7,922
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.40 U	2.6	3.7	3.3	6.8 J	11 J	14 J	6.3 J
4,4'-DDD	NS	NS	1.3	2.2	2.6	2.9	4.3	7.6	8.4	8.4
4,4'-DDT	NS	NS	0.25 J	4.9	0.40 U	1.8 J	4.8	16	12	2.8
2,4'-DDE	NS	NS	0.40 U	0.41 U	0.40 U	0.48 U	0.87 U	2.0 U	1.7 U	1.6
2,4'-DDD	NS	NS	0.72	0.64 U	1.5 J	1.8 J	4.9 J	8.3 J	3.9 U	5.2
2,4'-DDT	NS	NS	0.40 U	0.41 U	0.49 U	0.67 U	3	4.8	8.2	2.5 U
Total DDD (c,e)	4.88	28	2.0	2.2	4.1	4.7	9.2	16	8.4	14
Total DDE (c,f)	3.16	31.3	0.40 U	2.6	3.7	3.3	6.8	11	14 J	7.9
Total DDT (c,g)	4.16	62.9	0.25 J	4.9	0.49 U	1.8 J	7.8	21	20	2.8
ΣDDTs (c,h)	5.28	572	2.3	9.7	7.8	9.8	24	48	43	24
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	11 U
Aroclor 1221	NS	NS	10 U	11 U	10 U	11 U	10 U	10 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	17 U
Aroclor 1242	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	14 U
Aroclor 1248	NS	NS	5.0 U	5.5	9.8 J	13 J	41	78	110	7.8 U
Aroclor 1254	NS	NS	5.0 U	7.4 U	14 U	22 U	75 U	160 U	240 U	54 U
Aroclor 1260	NS	NS	5.0 U	11	12	16	69	170	160	41
Aroclor 1262	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	5.1 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	53
Total PCBs (c,i)	59.8	676	10 U	17	22	29	110	248	270	94
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	27 J	47 J	50 J	110 J	180 J	300 J	330 J	310 J
Residual Range Organics (RRO)	NS	NS	59 J	170 J	180 J	350 J	440 J	560 J	560 J	530 J
Gasoline Range Organics (GRO)	NS	NS	3.5 U	4.7 U	4.5 U	4.5 U	4.3 U	3.8 J	3.7 J	8 J
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC19-9-11 K2401792-004 03/10/2004	T4-VC20-0-1 K2401768-001 03/09/2004	T4-VC20-1-3 K2401768-002 03/09/2004	T4-VC20-3-5 K2401768-003 03/09/2004	T4-VC20-5-7 K2401768-004 03/09/2004	T4-VC20-7-9 K2401768-005 03/09/2004	T4-VC20-9-11 K2401768-006 03/09/2004	T4-VC20-11-13 K2401768-007 03/09/2004
Total organic carbon	NS	NS	0.53	1.8	1.86	2.36	1.99	2.12	2.62	1.81
Total solids	NS	NS	70.9	49.4	54.4	52.6	55.8	55.3	54.5	63.6
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.9	100	100	100	100	100	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.6	100	99.9	100	100	99.9	100	99.6
Sand, Coarse No. 40 (0.425 mm)	NS	NS	90.8	99.9	99.7	99.7	99.7	99.5	99.8	93.3
Sand, Medium No. 60 (0.250 mm)	NS	NS	56.8	99.0	99.2	98.0	99.1	96.8	99.3	80.7
Sand, Fine No. 140 (0.106 mm)	NS	NS	19.0 J	94.5 J	89.8 J	95.0 J	96.1 J	88.2 J	96.9 J	73.3 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	12.0 J	88.6 J	82.8 J	90.3 J	91.9 J	82.8 J	93.6 J	68.8 J
Silt (0.074 mm)	NS	NS	5.49	66.2	67.7	70.8	72.7	69.3	75.3	59.4
Clay (0.005 mm)	NS	NS	1.70	28.2	32.4	36.8	40.4	35.5	44.8	22.3
Clay (0.001 mm)	NS	NS	0	5.61	11.2	16.5	21.1	15.3	26.5	0.21

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-PS20-15-17 K2402764-011 04/13/2004	T4-PS20-20-22 K2402764-012 04/13/2004	T4-VC21-0-1 K2401844-001 03/11/2004	T4-VC21-1-3 K2401844-002 03/11/2004	T4-VC21-3-5 K2401844-003 03/11/2004	T4-VC21-5-7 K2401844-004 03/11/2004	T4-VC21-7-9 K2401844-005 03/11/2004	T4-VC21-9-11 K2401844-006 03/11/2004
Metals (mg/kg)										
Arsenic	9.79	33	4.4	3.3	4.3	3.2	4.7	5.1	4.7	4.1
Cadmium	0.99	4.98	0.66	0.2	0.35	0.26	0.52	0.73	0.78	0.54
Chromium	43.4	111	23.9 J	13.6 J	27.2 J	22.6 J	29.4 J	26.5 J	25.2 J	31.3 J
Copper	31.6	149	35.7 J	32.7 J	39.4 J	35.2 J	51.5 J	43.7 J	41.7 J	38.4 J
Lead	35.8	128	28.7 J	9.71 J	21.2	14.6	36.2	64.3	62	29.7
Mercury	0.18	1.06	0.238	0.031	0.065	0.068	0.09	0.131	0.155	0.301
Nickel	22.7	48.6	21.1 J	16.2 J	22.8 J	20.5 J	27.9 J	22.8 J	22.4 J	24.5 J
Selenium	NS	NS	0.142 U	0.074 U	0.17 J	0.1 J	0.17 J	0.12 J	0.19	0.18 J
Silver	NS	NS	0.31	0.09	0.21	0.16	0.39	0.32	0.22	0.32
Zinc	121	459	133 J	60.6 J	96.9 J	73.9 J	132 J	224 J	214 J	139 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	450	75	15	14	38	170	660	200
2-Methylnaphthalene	NS	NS	350	89	5.9	7.7	16	100	390	87
1-Methylnaphthalene	NS	NS	870	120	3.9 J	6	8.8	62	400	74
Biphenyl	NS	NS	44	9.4	2.7 J	2.5 J	5 J	17	59	19
2,6-Dimethylnaphthalene	NS	NS	510	71	3.6 J	4.7 J	8.7	65	220	120
Acenaphthylene	NS	NS	82	9.9	7.6	6.3	8.8	16	20	48
Acenaphthene	NS	NS	1300	190	35	21	100	210	650	350
2,3,5-Trimethylnaphthalene	NS	NS	260	34	3.7 J	3.5 J	7.2	63	140	130
Fluorene	77.4	536	890	160	28	14	52	150	420	320
Phenanthrene	204	1,170	2,900	500	130	79	410	510	1,200	1,600
Anthracene	57.2	845	520	81	37	16	96	81	180	280
1-Methylphenanthrene	NS	NS	220	35	11	7.9	30	45	88	160
Fluoranthene	423	2,230	1,900	330	340	150	810	430	810	980
Pyrene	195	1,520	1,700	270	400	190	870	480	810	1,200
Benz(a)anthracene	108	1,050	500	74	190	90	550	130	210	260
Chrysene	166	1,290	640	95	240	110	630	160	240	330
Benzo(b)fluoranthene	NS	NS	360	47	250	110	690	120	120	220
Benzo(k)fluoranthene	NS	NS	330	46	210	89	590	110	130	200
Benzo(e)pyrene	NS	NS	330	44	200	90	540	110	100	220
Benzo(a)pyrene	150	1,450	530	59	270	120	770	140	140	320
Perylene	NS	NS	190	23	87	68	270	82	84	140
Indeno(1,2,3-cd)pyrene	NS	NS	430 J	47 J	230	100	650	120	89	280
Dibenz(a,h)anthracene	33	NS	80 J	7.6 J	42	19	140	17	16	37
Benzo(g,h,i)perylene	NS	NS	470	54	220	100	570	130	98	310
Dimethyl phthalate	NS	NS	10 UJ	10 U	21 U	20 U	20 U	99 U	100 U	100 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-PS20-15-17 K2402764-011 04/13/2004	T4-PS20-20-22 K2402764-012 04/13/2004	T4-VC21-0-1 K2401844-001 03/11/2004	T4-VC21-1-3 K2401844-002 03/11/2004	T4-VC21-3-5 K2401844-003 03/11/2004	T4-VC21-5-7 K2401844-004 03/11/2004	T4-VC21-7-9 K2401844-005 03/11/2004	T4-VC21-9-11 K2401844-006 03/11/2004
Diethyl phthalate	NS	NS	10 UJ	10 U	21 U	20 U	20 U	99 U	100 U	100 U
Di-n-butyl phthalate	NS	NS	10 UJ	10 U	21 U	20 U	26 U	99 U	100 U	100 U
Butylbenzyl phthalate	NS	NS	10 UJ	10 U	21 U	20 U	20 U	99 U	100 U	100 U
Bis(2-ethylhexyl) phthalate	NS	NS	77 J	140	120 U	41 U	140 U	99 U	100 U	100 U
Di-n-octyl phthalate	NS	NS	10 UJ	10 U	21 U	20 U	20 U	99 U	100 U	100 U
Total PAHs (c,d)	1,610	22,800	12,102	1,937	2,153	1,009	5,615	2,707	5,590	6,308
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	11 J	1.7 J	2.5	4.1	3.8	9.5 J	10	6.7 J
4,4'-DDD	NS	NS	7.6	0.83	2.4	3.8	1.8	5.7	7.5	7.7
4,4'-DDT	NS	NS	2.3 J	2.4	31	0.40 U	2.7	5.5	3.1	2.6
2,4'-DDE	NS	NS	1.6 U	0.40 U	0.42 U	0.40 U	0.40 U	0.63 U	1.3 U	1.3 U
2,4'-DDD	NS	NS	3.7	0.8	0.61 J	1.3	2 J	5.9 J	4.1	3.7
2,4'-DDT	NS	NS	2.9 U	1.9	0.86 U	0.40 U	1.2	3.3	1.8 J	1.8 U
Total DDD (c,e)	4.88	28	11	1.6	3.0	5.1	3.8	12	12	11
Total DDE (c,f)	3.16	31.3	11 J	1.7 J	2.5	4.1	3.8	9.5	10	6.7 J
Total DDT (c,g)	4.16	62.9	2.3 J	4.3	31	0.40 U	3.9	8.8	4.9	2.6
ΣDDTs (c,h)	5.28	572	25	7.6	37	9.2	12	30	27	21
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.3 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	10 U	10 U	11 U	10 U	10 U	11 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.3 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	27 J	5.0 U	5.3 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	6.7	6.3	18	63	36	26
Aroclor 1254	NS	NS	52 J	17 J	17 U	13 U	32 U	83 U	55 U	51 U
Aroclor 1260	NS	NS	47 J	7 J	16	10	33	87	53	43
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.3 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	20 J	5.0 U	5.3 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	146 J	24 J	23	16	51	150	89	69
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	550 J	56 J	59 J	51 J	180 J	220 J	170 J	280 J
Residual Range Organics (RRO)	NS	NS	670 J	83 J	230 J	170 J	510 J	440 J	330 J	450 J
Gasoline Range Organics (GRO)	NS	NS	3.9 J	3.4 U	4.8 U	3.9 U	4.1 U	4.1 J	2.3 J	3.5 J
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-PS20-15-17 K2402764-011 04/13/2004	T4-PS20-20-22 K2402764-012 04/13/2004	T4-VC21-0-1 K2401844-001 03/11/2004	T4-VC21-1-3 K2401844-002 03/11/2004	T4-VC21-3-5 K2401844-003 03/11/2004	T4-VC21-5-7 K2401844-004 03/11/2004	T4-VC21-7-9 K2401844-005 03/11/2004	T4-VC21-9-11 K2401844-006 03/11/2004
Total organic carbon	NS	NS	1.26	0.37	2	1.9	2.23	4.25	2.45	1.66
Total solids	NS	NS	64.4	72.8	47.6	56.1	53.9	58.7	58.8	63.8
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	99.4	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	99.4	100	100	100	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.4	100	100	100	100	100	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	98.2	97.6	100	100	100	99.9	100	100
Sand, Coarse No. 40 (0.425 mm)	NS	NS	85.6	49.4	99.8	99.8	99.8	99.5	99.8	99.9
Sand, Medium No. 60 (0.250 mm)	NS	NS	60.0	21.9	99.4	99.7	99.5	99.1	99.2	99.8
Sand, Fine No. 140 (0.106 mm)	NS	NS	53.3	15.0	96.8	95.0	97.7	94.6	92.6	96.5
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	51.1	14.0	91.9	89.1	93.8	89.9	86.9	89.2
Silt (0.074 mm)	NS	NS	51.1	12.6	71.4	72.4	73.9	73.5	72.4	63.6
Clay (0.005 mm)	NS	NS	16.3	4.54	37.6	39.9	42.3	42.0	40.5	23.5
Clay (0.001 mm)	NS	NS	0	0	17.4	20.5	23.4	23.2	21.5	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC21-11-13 K2401844-007 03/11/2004	T4-PS21-15-17 K2402764-018 04/13/2004	T4-PS21-20-22 K2402764-019 04/13/2004
Metals (mg/kg)					
Arsenic	9.79	33	5.9	7.6	4.8
Cadmium	0.99	4.98	0.94	0.86	0.39
Chromium	43.4	111	35.3 J	29.7 J	29.2 J
Copper	31.6	149	48 J	98.5 J	37.4 J
Lead	35.8	128	40.5	3,130 J	21.8 J
Mercury	0.18	1.06	0.517	1.66	0.235
Nickel	22.7	48.6	24.9 J	23.3 J	24.3 J
Selenium	NS	NS	0.21	0.217 U	0.174 U
Silver	NS	NS	0.53	0.49	0.28
Zinc	121	459	154 J	181 J	85 J
Semivolatile Organics (ug/kg)					
Naphthalene	176	561	140	220	120
2-Methylnaphthalene	NS	NS	36	71	25
1-Methylnaphthalene	NS	NS	19	39	13
Biphenyl	NS	NS	16	27	14
2,6-Dimethylnaphthalene	NS	NS	32	80	21
Acenaphthylene	NS	NS	49	98	46
Acenaphthene	NS	NS	29	140	28
2,3,5-Trimethylnaphthalene	NS	NS	34	130	22
Fluorene	77.4	536	41	140	31
Phenanthrene	204	1,170	390	1,100	290
Anthracene	57.2	845	90	240	68
1-Methylphenanthrene	NS	NS	50	200	39
Fluoranthene	423	2,230	620	1,900	660
Pyrene	195	1,520	940	1,800	720
Benz(a)anthracene	108	1,050	220	670	200
Chrysene	166	1,290	320	870	290
Benzo(b)fluoranthene	NS	NS	280	790	230
Benzo(k)fluoranthene	NS	NS	220	530	210
Benzo(e)pyrene	NS	NS	280	650	240
Benzo(a)pyrene	150	1,450	380	990	380
Perylene	NS	NS	220	590	380
Indeno(1,2,3-cd)pyrene	NS	NS	380	930 J	390 J
Dibenz(a,h)anthracene	33	NS	39	190 J	46 J
Benzo(g,h,i)perylene	NS	NS	450	980	490
Dimethyl phthalate	NS	NS	99 U	100 U	10 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC21-11-13 K2401844-007 03/11/2004	T4-PS21-15-17 K2402764-018 04/13/2004	T4-PS21-20-22 K2402764-019 04/13/2004
Diethyl phthalate	NS	NS	99 U	100 U	10 U
Di-n-butyl phthalate	NS	NS	99 U	100 U	10 U
Butylbenzyl phthalate	NS	NS	99 U	110	10 U
Bis(2-ethylhexyl) phthalate	NS	NS	99 U	240 U	200
Di-n-octyl phthalate	NS	NS	99 U	100 U	10 U
Total PAHs (c,d)	1,610	22,800	3,719	9,488	3,273
Pesticides (ug/kg)					
4,4'-DDE	NS	NS	0.40 U	0.41 U	0.40 U
4,4'-DDD	NS	NS	0.40 U	0.93	0.40 U
4,4'-DDT	NS	NS	0.40 U	0.43 U	0.40 U
2,4'-DDE	NS	NS	0.40 U	0.41 U	0.40 U
2,4'-DDD	NS	NS	0.40 U	0.41 U	0.40 U
2,4'-DDT	NS	NS	0.25 J	0.41 U	0.40 U
Total DDD (c,e)	4.88	28	0.40 U	0.93	0.40 U
Total DDE (c,f)	3.16	31.3	0.40 U	0.41 U	0.40 U
Total DDT (c,g)	4.16	62.9	0.25 J	0.43 U	0.40 U
ΣDDTs (c,h)	5.28	572	0.25 J	0.93	0.40 U
PCBs (ug/kg)					
Aroclor 1016	NS	NS	5.0 U	5.1 U	5.0 U
Aroclor 1221	NS	NS	10 U	11 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.1 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.1 U	5.0 U
Aroclor 1248	NS	NS	5.0 U	5.1 U	5.0 U
Aroclor 1254	NS	NS	5.0 U	12 J	5.0 U
Aroclor 1260	NS	NS	7.4 U	7.5 J	5.0 U
Aroclor 1262	NS	NS	9.0 U	5.1 U	5.0 U
Aroclor 1268	NS	NS	77 J	5.1 U	5.0 U
Total PCBs (c,i)	59.8	676	77 J	20 J	10 U
Petroleum Hydrocarbons (mg/kg)					
Diesel Range Organics (DRO)	NS	NS	430 J	380 J	250 J
Residual Range Organics (RRO)	NS	NS	840 J	630 J	410 J
Gasoline Range Organics (GRO)	NS	NS	7.3 J	2.8 J	4.3 U
Conventionals (percent)					

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC21-11-13 K2401844-007 03/11/2004	T4-PS21-15-17 K2402764-018 04/13/2004	T4-PS21-20-22 K2402764-019 04/13/2004
Total organic carbon	NS	NS	2.2	2.78	1.81
Total solids	NS	NS	59.5	59.1	58.9
Grain Size (percent) (j)					
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	99.9	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	100	99.8	100
Sand, Coarse No. 40 (0.425 mm)	NS	NS	99.9	99.5	99.8
Sand, Medium No. 60 (0.250 mm)	NS	NS	99.3	98.6	99.7
Sand, Fine No. 140 (0.106 mm)	NS	NS	97.3	95.3	96.8
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	94.8	92.5	92.0
Silt (0.074 mm)	NS	NS	76.3	91.9	93.0
Clay (0.005 mm)	NS	NS	46.2	27.2	24.0
Clay (0.001 mm)	NS	NS	28.2	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-4
Wheeler Bay Surface and Subsurface Sediment Data Compared to SQGs

NS = No screening level.

NA = Not analyzed because of insufficient sample volume.

U = Analyte was not detected above the reported sample quantitation limit.

J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

B = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

The approximate concentration is less than the method report limit but greater than the method detection limit.

Boxed values indicate concentration is greater than TEC.

Shaded values indicate concentration is greater than PEC.

- a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based threshold effect concentrations (TEC). Represents concentration below which toxicity is unlikely to be observed.
- b. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based probable effect concentrations (PEC). Represents concentration above which toxicity is likely to be observed.
- c. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
- d. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
- e. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
- f. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
- g. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
- h. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes e, f, and g for the definitions of total DDD, total DDE, and total DDT, respectively.
- i. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).
- j. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use.

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC22-0-1 K2401844-008 03/11/2004	T4-VC22-1-3 K2401844-009 03/11/2004	T4-VC22-3-5 K2401844-010 03/11/2004	T4-VC22-5-7 K2401844-011 03/11/2004	T4-VC22-7-9 K2401844-012 03/11/2004	T4-VC22-9-11 K2401844-014 03/11/2004	T4-PS22-15-17 K2402764-025 04/13/2004	T4-PS22-20-22 K2402764-026 04/13/2004
Metals (mg/kg)										
Arsenic	9.79	33	1.2	0.9	2.1	1.4	1.5	1.3	1.7	1.6
Cadmium	0.99	4.98	0.09	0.07	0.09	0.09	0.08	0.08	0.14	0.14
Chromium	43.4	111	9.63 J	8.34 J	12.4 J	13.1 J	11.9 J	8.97 J	12.5 J	12.1 J
Copper	31.6	149	13.3 J	12.3 J	16.3 J	16.3 J	14.6 J	13.5 J	39.8 J	42.6 J
Lead	35.8	128	2.72	2.08	2.65	2.67	2.3	2.27	5.35 J	5.55 J
Mercury	0.18	1.06	0.009 B	0.019 U	0.013 B	0.041 J	0.011 B	2.15	0.041	0.014 B
Nickel	22.7	48.6	14.4 J	14.6 J	18.3 J	18.1 J	20 J	15.9 J	17.4 J	18.2 J
Selenium	NS	NS	0.11 UJ	0.11 UJ	0.12 UJ	0.12 UJ	0.11 UJ	0.11 UJ	0.063 U	0.067 U
Silver	NS	NS	0.03	0.02	0.02 U	0.02	0.02	0.02	0.06	0.05
Zinc	121	459	38.6 J	34.3 J	52.7 J	46.8 J	40.8 J	35.2 J	43.4 J	44 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	1.5 J	5.0 U	0.36 J	0.46 J				
2-Methylnaphthalene	NS	NS	0.61 J	5.0 U	5.0 U	5.0 U				
1-Methylnaphthalene	NS	NS	0.24 J	5.0 U	5.0 U	5.0 U				
Biphenyl	NS	NS	0.68 J	0.46 J	0.37 J	0.35 J	0.33 J	0.29 J	5.0 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	0.2 J	5.0 U	5.0 U	0.19 J				
Acenaphthylene	NS	NS	0.73 J	5.0 U	5.0 U	5.0 U				
Acenaphthene	NS	NS	2.6 J	5.0 U	5.0 U	0.34 J				
2,3,5-Trimethylnaphthalene	NS	NS	5 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Fluorene	77.4	536	1.1 J	5.0 U	0.29 J	0.36 J				
Phenanthrene	204	1,170	11	5.0 U	1.5 J	2.0 J				
Anthracene	57.2	845	3.2 J	5.0 U	0.3 J	0.36 J				
1-Methylphenanthrene	NS	NS	0.93 J	5.0 U	0.21 J	0.21 J				
Fluoranthene	423	2,230	30	5.0 U	2.3 J	3.5 J				
Pyrene	195	1,520	44	0.16 J	5.0 U	5.0 U	0.20 J	5.0 U	5.0 U	2.4 J
Benz(a)anthracene	108	1,050	18	5.0 U	5.0 U	1.0 J				
Chrysene	166	1,290	22	5.0 U	5.0 U	1.4 J				
Benzo(b)fluoranthene	NS	NS	19	5.0 U	5.0 U	5.0 U				
Benzo(k)fluoranthene	NS	NS	22	5.0 U	5.0 U	5.0 U				
Benzo(e)pyrene	NS	NS	19	5.0 U	5.0 U	5.0 U				
Benzo(a)pyrene	150	1,450	25	5.0 U	0.96 J	1.4 J				
Perylene	NS	NS	7.9	5.0 U	5.0 U	1.3 J				
Indeno(1,2,3-cd)pyrene	NS	NS	18	5.0 U	5.0 UJ	5.0 UJ				
Dibenz(a,h)anthracene	33	NS	2.6 J	5.0 U	5.0 UJ	5.0 UJ				
Benzo(g,h,i)perylene	NS	NS	21	5.0 U	5.0 U	0.15 J	5.0 U	5.0 U	5.0 U	5.0 U
Dimethyl phthalate	NS	NS	20 U	20 U	2.9 J	20 U	20 U	20 U	10 UJ	10 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC22-0-1 K2401844-008 03/11/2004	T4-VC22-1-3 K2401844-009 03/11/2004	T4-VC22-3-5 K2401844-010 03/11/2004	T4-VC22-5-7 K2401844-011 03/11/2004	T4-VC22-7-9 K2401844-012 03/11/2004	T4-VC22-9-11 K2401844-014 03/11/2004	T4-PS22-15-17 K2402764-025 04/13/2004	T4-PS22-20-22 K2402764-026 04/13/2004
Diethyl phthalate	NS	NS	20 U	10 UJ	10 U					
Di-n-butyl phthalate	NS	NS	20 U	4.4 UJ	10 U					
Butylbenzyl phthalate	NS	NS	20 U	10 UJ	10 U					
Bis(2-ethylhexyl) phthalate	NS	NS	22 U	27 U	53 U	22 U	20 U	39 U	53 J	110
Di-n-octyl phthalate	NS	NS	20 U	10 UJ	10 U					
Total PAHs (c,d)	1,610	22,800	200	0.16 J	5.0 U	0.20 J	5.0 U	5.0 U	11 J	15 J
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.40 U	0.40 U	0.40 U					
4,4'-DDD	NS	NS	0.40 U	0.40 U	0.40 U					
4,4'-DDT	NS	NS	0.40 U	0.40 U	0.40 U					
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.40 U					
2,4'-DDD	NS	NS	0.40 U	0.40 U	0.40 U					
2,4'-DDT	NS	NS	0.40 U	0.40 U	0.40 U					
Total DDD (c,e)	4.88	28	0.40 U	0.40 U	0.40 U					
Total DDE (c,f)	3.16	31.3	0.40 U	0.40 U	0.40 U					
Total DDT (c,g)	4.16	62.9	0.40 U	0.40 U	0.40 U					
ΣDDTs (c,h)	5.28	572	0.40 U	0.40 U	0.40 U					
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1221	NS	NS	10 U	10 U	10 U					
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1248	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1260	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U					
Total PCBs (c,i)	59.8	676	10 U	10 U	10 U					
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	14 U	14 U	16 U	15 U	17 U	17 U	24 U	21 U
Residual Range Organics (RRO)	NS	NS	8.7 J	5.9 J	6.5 J	7.9 J	11 J	7.1 J	93 U	84 U
Gasoline Range Organics (GRO)	NS	NS	2.7 U	2.7 U	3.0 U	3.0 U	3.2 U	2.9 U	3.1 U	3.2 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC22-0-1 K2401844-008 03/11/2004	T4-VC22-1-3 K2401844-009 03/11/2004	T4-VC22-3-5 K2401844-010 03/11/2004	T4-VC22-5-7 K2401844-011 03/11/2004	T4-VC22-7-9 K2401844-012 03/11/2004	T4-VC22-9-11 K2401844-014 03/11/2004	T4-PS22-15-17 K2402764-025 04/13/2004	T4-PS22-20-22 K2402764-026 04/13/2004
Total organic carbon	NS	NS	0.08 U	0.06 U	0.06 U	0.06 U	0.06 U	0.05 U	0.03 J	0.04 J
Total solids	NS	NS	91.4	92.2	80.9	84	77.6	76.2	77	76.3
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	99.5	100	100	100	99.7	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	100	99.5	100	100	100	99.1	99.9
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.6	99.7	96.1	98.3	98.5	99	98.8	98.9
Sand, Coarse No. 40 (0.425 mm)	NS	NS	61.2	76.5	51	55.9	60.5	66.5	72	70.4
Sand, Medium No. 60 (0.250 mm)	NS	NS	12.9	12	10.2	17.2	14.7	13.4	24.8	26.1
Sand, Fine No. 140 (0.106 mm)	NS	NS	3.83	2.89	3.68	4.28	4	4.14	10.9	11.1
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	3.58	2.66	3.4	3.93	3.6	3.81	9.59	9.5
Silt (0.074 mm)	NS	NS	1.62	1.86	2.24	3.18	2.24	2.64	6.62	5.98
Clay (0.005 mm)	NS	NS	0.81	0.31	1.21	1.31	1.22	0.32	1.88	1.43
Clay (0.001 mm)	NS	NS	0.33	0	0.59	0.2	0.6	0	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC23-0-1 K2401559-001 03/03/2004	T4-VC23-1-3 K2401559-002 03/03/2004	T4-VC23-3-5 K2401559-003 03/03/2004	T4-VC23-5-7 K2401559-004 03/03/2004	T4-VC23-7-9 K2401559-005 03/03/2004	T4-VC23-9-11 K2402524-001 03/03/2004	T4-VC24-0-1 K2401559-007 03/03/2004	T4-VC24-1-3 K2401559-008 03/03/2004
Metals (mg/kg)										
Arsenic	9.79	33	4.2	2.1	1.8	1.8	1.7	4.2	15.1	5.5
Cadmium	0.99	4.98	0.61	0.1	0.1	0.11	0.12	0.176	4.44	0.92
Chromium	43.4	111	13.9 J	10.1 J	9.91 J	9.21 J	9.37 J	12.6	25.4 J	22.8 J
Copper	31.6	149	29 J	20.6 J	13.9 J	13.8 J	13.5 J	16.6	72.4 J	41 J
Lead	35.8	128	69.2	3.22	2.4	2.77	2.39	2.54	681	153
Mercury	0.18	1.06	0.033 J	0.019 UJ	0.014 J	0.014 J	0.012 J	0.02 B	0.129	0.034 J
Nickel	22.7	48.6	19.3 J	15.5 J	16.6 J	15.5 J	14.9 J	19 J	21 J	23.3 J
Selenium	NS	NS	0.25	0.11	0.24 J	0.12	0.27	0.1 J	0.24	0.28
Silver	NS	NS	0.23	0.05	0.04	0.04	0.04	0.03	1.46	0.15
Zinc	121	459	115 J	38.2 J	37.6 J	35.8 J	37.1 J	37.6 J	768 J	151 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	39	0.42 J	0.32 J	0.32 J	0.33 J	0.73 J	11,000	140
2-Methylnaphthalene	NS	NS	19	5.0 U	5.0 U	5.1 U	5.0 U	0.88 J	2,900	76
1-Methylnaphthalene	NS	NS	12	5.0 U	5.0 U	5.1 U	5.0 U	1.6 J	1,500	43
Biphenyl	NS	NS	5.4	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	670	14 J
2,6-Dimethylnaphthalene	NS	NS	8.4	5.0 U	5.0 U	5.1 U	5.0 U	0.76 J	660	28
Acenaphthylene	NS	NS	6.1	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	53 J	7.4 J
Acenaphthene	NS	NS	200	1.3 J	5.0 U	5.1 U	5.0 U	0.46 J	16,000	960
2,3,5-Trimethylnaphthalene	NS	NS	9.4	5.0 U	5.0 U	5.1 U	5.0 U	2.3 J	170 J	20 J
Fluorene	77.4	536	93	0.79 J	5.0 U	5.1 U	5.0 U	0.46 J	9,900	390
Phenanthrene	204	1,170	820	9.6	5.0 U	5.1 U	5.0 U	5.4	66,000	3,500
Anthracene	57.2	845	210	2.4 J	5.0 U	5.1 U	5.0 U	0.69 J	15,000	930
1-Methylphenanthrene	NS	NS	54	0.68 J	5.0 U	5.1 U	5.0 U	41	2,300	210
Fluoranthene	423	2,230	1,600	21	5.0 U	5.1 U	5.0 U	5.0 U	110,000	6,600
Pyrene	195	1,520	1,800	24	0.19 J	0.26 J	0.22 J	3.1 J	100,000	7,600
Benz(a)anthracene	108	1,050	1,100	14	5.0 U	5.1 U	5.0 U	4.3 J	56,000	4,500
Chrysene	166	1,290	1,300	17	5.0 U	5.1 U	5.0 U	2.9 J	56,000	5,100
Benzo(b)fluoranthene	NS	NS	1,500	17	5.0 U	5.1 U	5.0 U	0.76 J	55,000	5,500
Benzo(k)fluoranthene	NS	NS	1,300	16	5.0 U	5.1 U	5.0 U	4.2 J	53,000	5,300
Benzo(e)pyrene	NS	NS	1,100	15	5.0 U	5.1 U	5.0 U	1.3 J	36,000	4,500
Benzo(a)pyrene	150	1,450	1,600	18	5.0 U	5.1 U	5.0 U	1.9 J	55,000	6,500
Perylene	NS	NS	470	5.9	5.0 U	0.26 J	5.0 U	17	14,000	1,900
Indeno(1,2,3-cd)pyrene	NS	NS	1,300	13	5.0 U	5.1 U	5.0 U	5.0 UJ	36,000	5,000
Dibenz(a,h)anthracene	33	NS	270	2.2 J	5.0 U	5.1 U	5.0 U	5.0 UJ	8,400	970
Benzo(g,h,i)perylene	NS	NS	1,200	14	5.0 U	5.1 U	5.0 U	5.0 U	26,000	4,600
Dimethyl phthalate	NS	NS	20 U	10 U	10 U	11 U	10 U	50 U	200 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC23-0-1 K2401559-001 03/03/2004	T4-VC23-1-3 K2401559-002 03/03/2004	T4-VC23-3-5 K2401559-003 03/03/2004	T4-VC23-5-7 K2401559-004 03/03/2004	T4-VC23-7-9 K2401559-005 03/03/2004	T4-VC23-9-11 K2402524-001 03/03/2004	T4-VC24-0-1 K2401559-007 03/03/2004	T4-VC24-1-3 K2401559-008 03/03/2004
Diethyl phthalate	NS	NS	20 U	10 U	10 U	11 U	10 U	50 U	200 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	10 U	10 U	11 U	20 U	50 U	200 U	28
Butylbenzyl phthalate	NS	NS	20 U	10 U	10 U	11 U	10 U	50 U	180 J	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	68	10 U	10 U	11 U	10 U	50 U	200 U	58
Di-n-octyl phthalate	NS	NS	20 UJ	10 UJ	10 UJ	11 UJ	10 UJ	50 U	200 UJ	20 UJ
Total PAHs (c,d)	1,610	22,800	11,568	142	0.51 J	0.58 J	0.55 J	25	602,953	47,027
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	2.1	0.40 U	0.40 U	0.40 U	0.40 U	0.48 U	6.0	1.2
4,4'-DDD	NS	NS	2.0	0.40 U	0.40 U	0.40 U	0.55 U	0.48 U	5.6	1.5
4,4'-DDT	NS	NS	1.8 J	0.40 U	0.40 U	0.40 U	0.40 U	0.24 J	6.5	0.40 U
2,4'-DDE	NS	NS	0.44 U	0.40 U	0.40 U	0.40 U	0.40 U	0.48 U	0.72 U	0.40 U
2,4'-DDD	NS	NS	1.1	0.40 U	0.40 U	0.40 U	0.40 U	0.48 U	3.0	1.0
2,4'-DDT	NS	NS	1.1 J	0.40 U	0.40 U	0.40 U	0.40 U	0.63 U	0.84 U	0.61 J
Total DDD (c,e)	4.88	28	3.1	0.40 U	0.40 U	0.40 U	0.55 U	0.48 U	8.6	2.5
Total DDE (c,f)	3.16	31.3	2.1	0.40 U	0.40 U	0.40 U	0.40 U	0.48 U	6	1.2
Total DDT (c,g)	4.16	62.9	2.9 J	0.40 U	0.40 U	0.40 U	0.40 U	0.24 J	6.5	0.61 J
ΣDDTs (c,h)	5.28	572	8.1	0.40 U	0.40 U	0.40 U	0.55 U	0.24 J	21.1	4.3
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	6.0 U	5.1 U	5.0 U				
Aroclor 1221	NS	NS	9.9 U	10 U	10 U	10 U	10 U	12 U	11 U	9.9 U
Aroclor 1232	NS	NS	5.0 U	6.0 U	5.1 U	5.0 U				
Aroclor 1242	NS	NS	5.0 U	6.0 U	5.1 U	5.0 U				
Aroclor 1248	NS	NS	5.0 U	6.0 U	5.1 U	5.0 U				
Aroclor 1254	NS	NS	5.0 U	6.0 U	5.1 U	11				
Aroclor 1260	NS	NS	12	5.0 U	5.0 U	5.0 U	5.0 U	6.0 U	53	10 J
Aroclor 1262	NS	NS	5.0 U	6.0 U	5.1 U	5.0 U				
Aroclor 1268	NS	NS	5.0 U	6.0 U	5.1 U	5.0 U				
Total PCBs (c,i)	59.8	676	12	10 U	10 U	10 U	10 U	12 U	53	21
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	49 J	13 U	13 U	13 U	13 U	22 U	290 J	44 J
Residual Range Organics (RRO)	NS	NS	140 J	50 U	51 U	50 U	50 U	38 J	790 J	140 J
Gasoline Range Organics (GRO)	NS	NS	4.9 U	4.2 U	3.9 U	5.0 U				
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC23-0-1 K2401559-001 03/03/2004	T4-VC23-1-3 K2401559-002 03/03/2004	T4-VC23-3-5 K2401559-003 03/03/2004	T4-VC23-5-7 K2401559-004 03/03/2004	T4-VC23-7-9 K2401559-005 03/03/2004	T4-VC23-9-11 K2402524-001 03/03/2004	T4-VC24-0-1 K2401559-007 03/03/2004	T4-VC24-1-3 K2401559-008 03/03/2004
Total organic carbon	NS	NS	0.7	0.05	0.05	0.27	0.08	5.71	2.28	0.86
Total solids	NS	NS	70.9	79	78.1	76.1	75.9	59.4	48.9	67.6
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	NA	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	NA	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	99.9	100	100	100	100	NA	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.8	99.6	99.8	99.4	99.8	NA	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	98.3	96.1	98.2	96.5	97.6	NA	100	99.9
Sand, Coarse No. 40 (0.425 mm)	NS	NS	74.5	49.8	68.3	65.3	63.7	NA	96.4	98.3
Sand, Medium No. 60 (0.250 mm)	NS	NS	38.8	15.6	11.6	22.3	13	NA	89.7	94.9
Sand, Fine No. 140 (0.106 mm)	NS	NS	28.8	5.31	2.83	3.98	3.61	NA	84.7	86.6
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	27.2	5.02	2.62	3.57	3.29	NA	81.4	76.6
Silt (0.074 mm)	NS	NS	34	4.43	2.82	4.12	3.48	NA	72.7	62.3
Clay (0.005 mm)	NS	NS	12.2	2.59	1.66	2.46	2.98	NA	43.9	24.5
Clay (0.001 mm)	NS	NS	0	1.5	0.98	1.47	2.68	NA	26.7	1.97

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC24-3-5 K2401559-009 03/03/2004	T4-VC24-5-7 K2401615-001 03/03/2004	T4-VC24-7-9 K2401615-002 03/03/2004	T4-VC24-9-11 K2401615-003 03/03/2004	T4-VC24-11-13 K2402524-002 03/03/2004	T4-VC25-0-1 K2401844-015 03/11/2004	T4-VC25-1-3 K2401844-016 03/11/2004	T4-VC25-3-5 K2401844-017 03/11/2004
Metals (mg/kg)										
Arsenic	9.79	33	2.3	2.4	1.8	2.8	2.1	2.8	2.2	2.4
Cadmium	0.99	4.98	0.2	0.2	0.21	0.23	0.163	0.09	0.09	0.11
Chromium	43.4	111	19.4 J	21 J	20.1 J	20.5 J	20.2	12.4 J	9.71 J	12.2 J
Copper	31.6	149	27.7 J	26.3 J	28.3 J	26.3 J	25.8	16.3 J	14.4 J	16 J
Lead	35.8	128	4.93	4.6	4.77	4.71	4.22	2.64	2.58	2.52
Mercury	0.18	1.06	0.035 J	0.023	0.083	0.027	0.08	0.023	0.013 B	0.02 U
Nickel	22.7	48.6	22.5 J	23.9 J	23.1 J	22.7 J	22.4 J	16.9 J	16.2 J	16.6 J
Selenium	NS	NS	0.2	0.16	0.25	0.29	0.05 J	0.11 UJ	2.58	0.11 UJ
Silver	NS	NS	0.09	0.07	0.07	0.07	0.04	0.03	0.03	0.03
Zinc	121	459	50.6 J	53.6 J	52.9 J	51.2 J	48.2 J	45.8 J	40.5 J	47.1 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	0.37 J	5.0 U	5.0 U	5.0 U	5.1 U	0.27 J	0.53 J	5.0 U
2-Methylnaphthalene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	0.56 J	5.0 U
1-Methylnaphthalene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	0.41 J	5.0 U
Biphenyl	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	0.44 J	0.5 J	0.30 J
2,6-Dimethylnaphthalene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	0.15 J	5.0 U
Acenaphthylene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U
Acenaphthene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	0.33 J	5.0 U	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U
Fluorene	77.4	536	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U
Phenanthrene	204	1,170	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	0.75 J	0.24 J	5.0 U
Anthracene	57.2	845	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U
1-Methylphenanthrene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U
Fluoranthene	423	2,230	4.9 U	0.47 J	5.0 U	5.0 U	5.1 U	2.1 J	0.24 J	0.28 J
Pyrene	195	1,520	0.29 J	0.45 J	5.0 U	0.31 J	5.1 U	2.8 J	0.16 J	0.20 J
Benz(a)anthracene	108	1,050	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	1.6 J	0.33 J	5.0 U
Chrysene	166	1,290	4.9 U	0.31 J	5.0 U	5.0 U	5.1 U	2.1 J	0.27 J	0.21 J
Benzo(b)fluoranthene	NS	NS	4.9 U	0.22 J	0.22 J	5.0 U	5.1 U	2.2 J	0.22 J	0.24 J
Benzo(k)fluoranthene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	1.6 J	0.23 J	5.0 U
Benzo(e)pyrene	NS	NS	0.19 J	0.19 J	5.0 U	5.0 U	5.1 U	1.6 J	5.0 U	0.20 J
Benzo(a)pyrene	150	1,450	4.9 U	5.0 U	5.0 U	5.0 U	5.1 U	1.6 J	0.18 J	5.0 U
Perylene	NS	NS	68	76	64	120	150	0.95 J	0.85 J	5.0 U
Indeno(1,2,3-cd)pyrene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	0.35 J	0.90 J	5.0 U	5.0 U
Dibenz(a,h)anthracene	33	NS	4.9 U	5.0 U	5.0 U	5.0 U	5.1 UJ	0.22 J	5.0 U	5.0 U
Benzo(g,h,i)perylene	NS	NS	4.9 U	5.0 U	5.0 U	5.0 U	0.26 J	1.3 J	0.2 J	0.15 J
Dimethyl phthalate	NS	NS	9.8 U	20 U	20 U	20 U	11 U	20 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC24-3-5 K2401559-009 03/03/2004	T4-VC24-5-7 K2401615-001 03/03/2004	T4-VC24-7-9 K2401615-002 03/03/2004	T4-VC24-9-11 K2401615-003 03/03/2004	T4-VC24-11-13 K2402524-002 03/03/2004	T4-VC25-0-1 K2401844-015 03/11/2004	T4-VC25-1-3 K2401844-016 03/11/2004	T4-VC25-3-5 K2401844-017 03/11/2004
Diethyl phthalate	NS	NS	9.8 U	20 U	20 U	20 U	11 U	20 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	76	20	4.7 J	6.9 J	11 U	20 U	20 U	20 U
Butylbenzyl phthalate	NS	NS	9.8 U	20 U	20 U	20 U	11 U	20 U	20 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	9.8 U	20 U	20 U	20 U	11 U	26 U	20 U	20 U
Di-n-octyl phthalate	NS	NS	9.8 UJ	20 UJ	20 UJ	20 UJ	11 U	20 U	20 U	20 U
Total PAHs (c,d)	1,610	22,800	0.66 J	1.5 J	0.22 J	0.31 J	5.1 U	15 J	2.4 J	0.93 J
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
4,4'-DDD	NS	NS	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
4,4'-DDT	NS	NS	0.40 U	0.40 U	0.12 J	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
2,4'-DDD	NS	NS	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
2,4'-DDT	NS	NS	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
Total DDD (c,e)	4.88	28	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
Total DDE (c,f)	3.16	31.3	0.40 U	0.40 U	0.40 U	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
Total DDT (c,g)	4.16	62.9	0.40 U	0.40 U	0.12 J	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
ΣDDTs (c,h)	5.28	572	0.40 U	0.40 U	0.12 J	0.40 U	0.43 U	0.40 U	0.40 U	0.40 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.4 U	5.0 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	9.9 U	9.9 U	9.9 U	10 U	11 U	10 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.4 U	5.0 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.4 U	5.0 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.4 U	5.0 U	5.0 U	5.0 U
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.4 U	5.0 U	5.0 U	5.0 U
Aroclor 1260	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.4 U	5.0 U	5.0 U	5.0 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.4 U	5.0 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.4 U	5.0 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	9.9 U	9.9 U	9.9 U	10 U	11 U	10 U	10 U	10 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	13 U	18 U	21 U	18 U	21 U	14 U	9.6 J	13 J
Residual Range Organics (RRO)	NS	NS	42 J	9.3 J	81 U	13 J	82 U	54 U	7.4 J	11 J
Gasoline Range Organics (GRO)	NS	NS	4.9 U	4.9 U	4.8 U	4.9 U	3.4 U	2.8 U	2.7 U	3.2 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC24-3-5 K2401559-009 03/03/2004	T4-VC24-5-7 K2401615-001 03/03/2004	T4-VC24-7-9 K2401615-002 03/03/2004	T4-VC24-9-11 K2401615-003 03/03/2004	T4-VC24-11-13 K2402524-002 03/03/2004	T4-VC25-0-1 K2401844-015 03/11/2004	T4-VC25-1-3 K2401844-016 03/11/2004	T4-VC25-3-5 K2401844-017 03/11/2004
Total organic carbon	NS	NS	0.75	0.83	0.56	1.32	0.49	0.19	0.08 U	0.07 U
Total solids	NS	NS	66.3	68.1	68.4	69.1	72	91.5	92	77
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	NA	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	NA	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	NA	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	100	100	99.9	NA	100	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	100	99.7	100	99.8	NA	99.5	99.1	99.7
Sand, Coarse No. 40 (0.425 mm)	NS	NS	99.8	99.1	99.9	99.5	NA	63.8	70.2	56.1
Sand, Medium No. 60 (0.250 mm)	NS	NS	99.6	98.3	99.6	98.4	NA	16.8	14	11.4
Sand, Fine No. 140 (0.106 mm)	NS	NS	95.5	80.8	83.3	83.9	NA	3.83	3.39	2.47
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	87.2	65.4	67.3	72.6	NA	3.48	3.03	2.24
Silt (0.074 mm)	NS	NS	67.7	43.3	44	45.2	NA	4.07	1.25	1.35
Clay (0.005 mm)	NS	NS	32.2	18.1	16.9	17.9	NA	1.46	1.25	0.13
Clay (0.001 mm)	NS	NS	10.9	3	0.77	1.54	NA	0	1.25	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC25-5-7 K2401844-018 03/11/2004	T4-VC25-7-9 K2401844-019 03/11/2004	T4-VC25-9-11 K2401844-020 03/11/2004	T4-V26-0-1 K2401654-007 03/04/2004	T4-V26-1-3 K2401654-008 03/04/2004	T4-VC26-3-5 K2401654-009 03/05/2004	T4-VC26-5-7 K2401654-010 03/05/2004	T4-VC26-7-9 K2401677-001 03/05/2004
Metals (mg/kg)										
Arsenic	9.79	33	2.4	2.7	2.5	3.2	4.8	3.9	2.5	2.1
Cadmium	0.99	4.98	0.1	0.11	0.09	0.49	0.8	0.8	0.17	0.12
Chromium	43.4	111	11.1 J	13 J	11.3 J	25.2	25	23.6	12.1	11.7
Copper	31.6	149	15.6 J	17.3 J	16.1 J	33.4 J	43.1 J	35.6 J	16.5 J	14.6 J
Lead	35.8	128	2.58	2.72	2.65	31.4	109	71.5	13.6	2.77
Mercury	0.18	1.06	0.037	0.025	0.011 B	0.074	0.088	0.102	0.017 B	0.02
Nickel	22.7	48.6	17 J	16.7 J	16.3 J	20.5 J	20.4 J	20.8 J	16 J	15.4 J
Selenium	NS	NS	0.12 UJ	0.13 UJ	0.11 UJ	0.24 U	0.24 U	0.18 U	0.04 U	0.03 U
Silver	NS	NS	0.03	0.02 U	0.02	0.21	0.46	0.37	0.04	0.03
Zinc	121	459	44.8 J	47.8 J	46.3 J	97.8 J	150 J	152 J	57.9 J	42.6 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	5.0 U	5.0 U	5.0 U	48	49	37	20	0.27 J
2-Methylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	19	24	22	7.5	5.0 U
1-Methylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	12	14	12	3.1 J	5.0 U
Biphenyl	NS	NS	0.33 J	0.38 J	0.34 J	7.9	6.3	5.5	2.4 J	5.0 U
2,6-Dimethylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	8.2	9.9	10	4.2 J	5.0 U
Acenaphthylene	NS	NS	5.0 U	5.0 U	5.0 U	20	8.3	7.4	2.2 J	5.0 U
Acenaphthene	NS	NS	5.0 U	5.0 U	5.0 U	98	270	74	14	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	10	8.7	10	4.7 J	5.0 U
Fluorene	77.4	536	5.0 U	5.0 U	5.0 U	64	120	46	5.7	5.0 U
Phenanthrene	204	1,170	5.0 U	5.0 U	5.0 U	600	1,100	340	50	1.4 J
Anthracene	57.2	845	5.0 U	5.0 U	5.0 U	140	280	59	7.2	5.0 U
1-Methylphenanthrene	NS	NS	5.0 U	5.0 U	5.0 U	42	69	23	6.4	0.15 J
Fluoranthene	423	2,230	5.0 U	5.0 U	5.0 U	1,300	2,400	680	47	2.0 J
Pyrene	195	1,520	5.0 U	5.0 U	0.23 J	1,600	2,700	730	69	2.5 J
Benz(a)anthracene	108	1,050	5.0 U	5.0 U	5.0 U	750	1,800	410	18	1.1 J
Chrysene	166	1,290	5.0 U	5.0 U	5.0 U	930	2,000	530	27	1.5 J
Benzo(b)fluoranthene	NS	NS	5.0 U	5.0 U	0.23 J	1000	2,400	580	17	1.2 J
Benzo(k)fluoranthene	NS	NS	5.0 U	5.0 U	0.23 J	870	1,900	450	18	1.2 J
Benzo(e)pyrene	NS	NS	5.0 U	5.0 U	0.21 J	820	1,800	430	18	1.2 J
Benzo(a)pyrene	150	1,450	5.0 U	5.0 U	5.0 U	1,100	2,600	570	21	1.0 J
Perylene	NS	NS	5.0 U	5.0 U	0.28 J	330	760	200	18	0.62 J
Indeno(1,2,3-cd)pyrene	NS	NS	5.0 U	5.0 U	5.0 U	900	2,100	500	16	0.48 J
Dibenz(a,h)anthracene	33	NS	5.0 U	5.0 U	5.0 U	160	430	110	2.2 J	5.0 U
Benzo(g,h,i)perylene	NS	NS	5.0 U	5.0 U	0.21 J	870	1,900	460	20	0.85 J
Dimethyl phthalate	NS	NS	20 U	20 U	20 U	20 U	20 U	20 U	10 U	10 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC25-5-7 K2401844-018 03/11/2004	T4-VC25-7-9 K2401844-019 03/11/2004	T4-VC25-9-11 K2401844-020 03/11/2004	T4-V26-0-1 K2401654-007 03/04/2004	T4-V26-1-3 K2401654-008 03/04/2004	T4-VC26-3-5 K2401654-009 03/05/2004	T4-VC26-5-7 K2401654-010 03/05/2004	T4-VC26-7-9 K2401677-001 03/05/2004
Diethyl phthalate	NS	NS	20 U	20 U	20 U	20 U	20 U	20 U	10 U	10 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	20 U	7.8 J	5.3 J	13 J	10 U	3.5 J
Butylbenzyl phthalate	NS	NS	20 U	20 U	20 U	4.4 J	13 J	7.5 J	10 U	10 U
Bis(2-ethylhexyl) phthalate	NS	NS	35 U	20 U	21 U	40	58	86	10 U	10 U
Di-n-octyl phthalate	NS	NS	20 U	20 U	20 U	20 UJ	20 UJ	20 UJ	10 UJ	10 UJ
Total PAHs (c,d)	1,610	22,800	5.0 U	5.0 U	0.69 J	8,520	17,627	4,513	316	12 J
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.40 U	0.40 U	0.40 U	3.5	3.7	4.7 J	2.2 J	0.41 U
4,4'-DDD	NS	NS	0.40 U	0.40 U	0.40 U	2.5	3.1	3.3	1.8	0.41 U
4,4'-DDT	NS	NS	0.40 U	0.40 U	0.40 U	2.0 J	1.7	13	1.5	0.41 U
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.40 U	0.40 U	0.62 U	0.40 U	0.41 U	0.41 U
2,4'-DDD	NS	NS	0.40 U	0.40 U	0.40 U	1.2	2.1	4.2 J	2.1 J	0.41 U
2,4'-DDT	NS	NS	0.40 U	0.40 U	0.40 U	0.74	0.93 J	3.1 J	1	0.41 U
Total DDD (c,e)	4.88	28	0.40 U	0.40 U	0.40 U	3.7	5.2	7.5	3.9	0.41 U
Total DDE (c,f)	3.16	31.3	0.40 U	0.40 U	0.40 U	3.5	3.7	4.7 J	2.2	0.41 U
Total DDT (c,g)	4.16	62.9	0.40 U	0.40 U	0.40 U	2.7	2.6	16	2.5	0.41 U
ΣDDTs (c,h)	5.28	572	0.40 U	0.40 U	0.40 U	9.9	12	28	8.6	0.41 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.1 U
Aroclor 1221	NS	NS	10 U	10 U	10 U	10 U	11 U	10 U	11 U	11 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.1 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.1 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	5.0 U	6.0	13	53	18	5.1 U
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.0 U	15 U	29 U	88 U	33 U	5.1 U
Aroclor 1260	NS	NS	5.0 U	5.0 U	5.0 U	16	28	130	26	5.1 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.1 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.1 U
Total PCBs (c,i)	59.8	676	10 U	10 U	10 U	22	41	183	44	11 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	16 U	16 U	17 U	88 J	170 J	270 J	37 J	16 U
Residual Range Organics (RRO)	NS	NS	6.6 J	8.1 J	7.9 J	260 J	480 J	580 J	58 J	63 U
Gasoline Range Organics (GRO)	NS	NS	3.1 U	3.2 U	3.2 U	3.2 U	3.2 U	4.9 U	1.4 J	4.9 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC25-5-7 K2401844-018 03/11/2004	T4-VC25-7-9 K2401844-019 03/11/2004	T4-VC25-9-11 K2401844-020 03/11/2004	T4-V26-0-1 K2401654-007 03/04/2004	T4-V26-1-3 K2401654-008 03/04/2004	T4-VC26-3-5 K2401654-009 03/05/2004	T4-VC26-5-7 K2401654-010 03/05/2004	T4-VC26-7-9 K2401677-001 03/05/2004
Total organic carbon	NS	NS	0.06 U	0.08 U	0.12	1.71	2.05	3.71	0.73	0.09 U
Total solids	NS	NS	81.4	80.3	77	51.5	51.7	59.6	77.9	79.2
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	100	100	100	100	100	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.4	98.9	97.7	99.9	99.8	99.4	99.1	99.3
Sand, Coarse No. 40 (0.425 mm)	NS	NS	62.4	54.5	57.4	99.1	97.1	87.7	72.6	58.2
Sand, Medium No. 60 (0.250 mm)	NS	NS	8.62	13.6	10.8	97.1	89.4	72.4	31.9	12.8 J
Sand, Fine No. 140 (0.106 mm)	NS	NS	2.75	3.5	3.21	91.4	84.7	67.1	25.2	3.31
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	2.55	3.2	2.97	85.6	81.3	65.1	24.1	3.06
Silt (0.074 mm)	NS	NS	1.2	1.69	2.75	72.8	67.7	59.4	24.3	2.36
Clay (0.005 mm)	NS	NS	1.2	0.49	0.52	41.6	34.2	24.5	7.54	0.18
Clay (0.001 mm)	NS	NS	1.2	0	0	23	14.2	3.7	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC27-0-1 K2401716-004 03/09/2004	T4-VC27-1-3 K2401716-005 03/09/2004	T4-VC27-3-5 K2401716-006 03/09/2004	T4-VC27-5-7 K2401716-007 03/09/2004	T4-VC27-7-9 K2401716-008 03/09/2004	T4-VC28-0-1 K2401615-006 03/04/2004	T4-VC28-1-3 K2401615-007 03/04/2004	T4-VC28-3-5 K2401615-009 03/04/2004
Metals (mg/kg)										
Arsenic	9.79	33	1.8	1.6	1.9	1.6	1.4	2.8	2.2	2.1
Cadmium	0.99	4.98	0.1	0.08	0.08	0.08	0.08	0.18	0.24	0.14
Chromium	43.4	111	9.22 J	9.11 J	11 J	11.6 J	10.4 J	11.9 J	12.2 J	11.2 J
Copper	31.6	149	13.1 J	12 J	13.6 J	13.8 J	13.3 J	15.5 J	15.5 J	14.8 J
Lead	35.8	128	4	2.46	2.39	2.26	2.46	3.24	2.6	2.46
Mercury	0.18	1.06	0.019	0.01 B	0.014 B	0.016 U	0.014 B	0.011 B	0.018 U	0.02 U
Nickel	22.7	48.6	14.1 J	13.6 J	15 J	15.2 J	14.8 J	16.8 J	18 J	16.7 J
Selenium	NS	NS	0.12 U	0.11 U	0.12 U	0.11 U	0.11 U	0.11	0.11	0.25
Silver	NS	NS	0.03	0.02 U	0.03	0.02	0.02 U	0.05	0.03	0.03
Zinc	121	459	39.2	37	40.6	39.1	36.9	41.3 J	43.1 J	39.6 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	95	3.7 J	0.32 J	5.0 U	5.0 U	60	0.29 J	5.0 U
2-Methylnaphthalene	NS	NS	45	0.65 J	5.0 U	5.0 U	5.0 U	17	5.0 U	5.0 U
1-Methylnaphthalene	NS	NS	21	0.53 J	5.0 U	5.0 U	5.0 U	9.7	5.0 U	5.0 U
Biphenyl	NS	NS	11	5.0 U	5.0 U	5.0 U	5.0 U	14	5.0 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	22	0.74 J	5.0 U	5.0 U	5.0 U	7.7	5.0 U	5.0 U
Acenaphthylene	NS	NS	13	0.34 J	5.0 U	5.0 U	5.0 U	25	5.0 U	5.0 U
Acenaphthene	NS	NS	27	1.2 J	5.0 U	5.0 U	5.0 U	47	5.0 U	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	32	1.4 J	5.0 U	5.0 U	5.0 U	12	5.0 U	5.0 U
Fluorene	77.4	536	29	1.3 J	5.0 U	5.0 U	5.0 U	44	5.0 U	5.0 U
Phenanthrene	204	1,170	160	7.2	5.0 U	0.30 J	5.0 U	290	5.0 U	5.0 U
Anthracene	57.2	845	47	2.1 J	5.0 U	5.0 U	5.0 U	140	5.0 U	5.0 U
1-Methylphenanthrene	NS	NS	26	1.2 J	5.0 U	5.0 U	5.0 U	25	5.0 U	5.0 U
Fluoranthene	423	2,230	430	12	5.0 U	0.47 J	0.26 J	560	0.54 J	5.0 U
Pyrene	195	1,520	800	45	0.16 J	0.62 J	0.24 J	830	0.63 J	5.0 U
Benz(a)anthracene	108	1,050	220	9.8	5.0 U	0.22 J	5.0 U	240	5.0 U	5.0 U
Chrysene	166	1,290	310	14	5.0 U	0.36 J	5.0 U	290	0.22 J	5.0 U
Benzo(b)fluoranthene	NS	NS	200	6.1	5.0 U	0.26 J	5.0 U	180	5.0 U	5.0 U
Benzo(k)fluoranthene	NS	NS	170	8.8	5.0 U	0.19 J	5.0 U	210	5.0 U	5.0 U
Benzo(e)pyrene	NS	NS	200	8.6	5.0 U	0.25 J	5.0 U	190	5.0 U	5.0 U
Benzo(a)pyrene	150	1,450	280	9.8	5 U	0.24 J	5.0 U	320	5.0 U	5.0 U
Perylene	NS	NS	100	5.5	0.32 J	0.32 J	5.0 U	78	5.0 U	0.30 J
Indeno(1,2,3-cd)pyrene	NS	NS	230	6.8	5.0 U	0.18 J	5.0 U	220	5.0 U	5.0 U
Dibenz(a,h)anthracene	33	NS	29	0.65 J	5.0 U	5.0 U	5.0 U	28	5.0 U	5.0 U
Benzo(g,h,i)perylene	NS	NS	250	9.0	5.0 U	0.26 J	5.0 U	230	5.0 U	5.0 U
Dimethyl phthalate	NS	NS	20 U	10 U	10 U	10 U	5.0 J	20 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC27-0-1 K2401716-004 03/09/2004	T4-VC27-1-3 K2401716-005 03/09/2004	T4-VC27-3-5 K2401716-006 03/09/2004	T4-VC27-5-7 K2401716-007 03/09/2004	T4-VC27-7-9 K2401716-008 03/09/2004	T4-VC28-0-1 K2401615-006 03/04/2004	T4-VC28-1-3 K2401615-007 03/04/2004	T4-VC28-3-5 K2401615-009 03/04/2004
Diethyl phthalate	NS	NS	20 U	10 U	10 U	10 U	8.2 J	20 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	10 U	10 U	10 U	11 U	9.4 J	3.4 J	4.3 J
Butylbenzyl phthalate	NS	NS	20 U	10 U	10 U	10 U	6.3 J	20 U	20 U	3.4 J
Bis(2-ethylhexyl) phthalate	NS	NS	520	10 U	10 U	10 U	12 U	20 U	20 U	20 U
Di-n-octyl phthalate	NS	NS	20 UJ	10 UJ	10 UJ	10 UJ	8.0 J	20 UJ	20 UJ	20 UJ
Total PAHs (c,d)	1,610	22,800	2,781	121	0.48 J	2.7 J	0.5 J	3,236	1.7 J	5.0 U
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.64 J	0.40 U	0.40 U	0.41 U	0.40 U	0.26 J	0.40 U	0.40 U
4,4'-DDD	NS	NS	2 J	0.40 U	0.40 U	0.41 U	0.40 U	0.40 U	0.40 U	0.40 U
4,4'-DDT	NS	NS	0.63	0.40 U	0.40 U	0.41 U	0.40 U	0.40 U	0.40 U	0.40 U
2,4'-DDE	NS	NS	0.3 J	0.40 U	0.40 U	0.41 U	0.40 U	0.40 U	0.40 U	0.40 U
2,4'-DDD	NS	NS	1.2	0.40 U	0.40 U	0.41 U	0.40 U	0.31 J	0.40 U	0.40 U
2,4'-DDT	NS	NS	0.49 U	0.40 U	0.40 U	0.41 U	0.40 U	0.40 U	0.40 U	0.40 U
Total DDD (c,e)	4.88	28	3.2	0.40 U	0.40 U	0.41 U	0.40 U	0.31 J	0.40 U	0.40 U
Total DDE (c,f)	3.16	31.3	0.94 J	0.40 U	0.40 U	0.41 U	0.40 U	0.26 J	0.40 U	0.40 U
Total DDT (c,g)	4.16	62.9	0.63	0.40 U	0.40 U	0.41 U	0.40 U	0.40 U	0.40 U	0.40 U
ΣDDTs (c,h)	5.28	572	4.8	0.40 U	0.40 U	0.41 U	0.40 U	0.57 J	0.40 U	0.40 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	10 U	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1260	NS	NS	6.8	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.0 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	6.8	10 U	10 U	11 U	10 U	10 U	10 U	10 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	46 J	14 U	15 U	14 U	16 U	9.1 J	16 U	15 U
Residual Range Organics (RRO)	NS	NS	87 U	55 U	60 U	55 U	63 U	20 J	62 U	60 U
Gasoline Range Organics (GRO)	NS	NS	2.9 U	2.7 U	2.9 U	2.7 U	3.2 U	4.8 U	4.9 U	4.9 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC27-0-1 K2401716-004 03/09/2004	T4-VC27-1-3 K2401716-005 03/09/2004	T4-VC27-3-5 K2401716-006 03/09/2004	T4-VC27-5-7 K2401716-007 03/09/2004	T4-VC27-7-9 K2401716-008 03/09/2004	T4-VC28-0-1 K2401615-006 03/04/2004	T4-VC28-1-3 K2401615-007 03/04/2004	T4-VC28-3-5 K2401615-009 03/04/2004
Total organic carbon	NS	NS	0.15	0.07 U	0.04 U	0.04 U	0.05 U	0.19	0.09	0.45
Total solids	NS	NS	86.9	89.7	83.1	90.2	78.5	78.7	78.9	79.7
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	99.5	100	100	100	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.5	100	100	100	99.9	100	99.9	99.9
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	98.7	99.4	98.8	99.6	98.6	98.5	99.1	97.9
Sand, Coarse No. 40 (0.425 mm)	NS	NS	67.2	53.4	57.5	65.7	63.8	70.8	83.9	73.7
Sand, Medium No. 60 (0.250 mm)	NS	NS	16.3 J	9.53 J	7.3 J	14.3 J	15.8 J	14.8	18.2	18.8
Sand, Fine No. 140 (0.106 mm)	NS	NS	10.4	2.41	2.42	2.97	3.85	3.69	3.7	3.83
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	10	2.24	2.2	2.69	3.5	3.35	3.27	3.43
Silt (0.074 mm)	NS	NS	8.64	0.99	0.71	1.03	1.87	3.49	2.96	2.97
Clay (0.005 mm)	NS	NS	3.35	0.56	0.43	0.55	0.87	2.43	1.85	2.35
Clay (0.001 mm)	NS	NS	0.18	0.3	0.27	0.26	0.27	1.8	1.19	1.99

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC28-5-7 K2401615-010 03/04/2004	T4-VC28-7-9 K2401654-001 03/04/2004	T4-PS28-10-12 K2402526-020 04/02/2004	T4-PS28-15-17 K2402526-021 04/02/2004	T4-VC29-0-1 K2401677-002 03/05/2004	T4-VC29-1-3 K2401677-003 03/05/2004	T4-VC29-3-5 K2401677-004 03/05/2004	T4-VC29-5-7 K2401677-005 03/05/2004
Metals (mg/kg)										
Arsenic	9.79	33	1.7	1.4	1.6	1.8	6.4	5.4	3.8	1.4
Cadmium	0.99	4.98	0.13	0.12	0.08	0.1	1.9	1.81	0.88	0.09
Chromium	43.4	111	11.5 J	9.47	10.4	10	21.9	28	15.7	13.9
Copper	31.6	149	14.9 J	14.3 J	49.5	34	44.9 J	43.9 J	28.6 J	15 J
Lead	35.8	128	2.64	2.35	7.33	5.01	338	240	129	2.74
Mercury	0.18	1.06	0.02	0.011 B	0.01 B	0.01 B	0.088	0.078	0.053	0.014 B
Nickel	22.7	48.6	16.6 J	15.6 J	16 J	15.4 J	19 J	21.7 J	18.7 J	17.2 J
Selenium	NS	NS	0.2	0.05 J	0.11 UJ	0.11 UJ	0.19 U	0.21 U	0.13 U	0.11 U
Silver	NS	NS	0.03	0.03 U	0.03	0.03	0.7	0.54	0.28	0.02
Zinc	121	459	43.1 J	37.2 J	38.4 J	39.9 J	281 J	263 J	155 J	43.5 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	5.0 U	5.0 U	0.60 J	0.34 J	190	360	120	5.0 U
2-Methylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	82	140	48	5.0 U
1-Methylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	48	95	32	5.0 U
Biphenyl	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	26	67	15	5.0 U
2,6-Dimethylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	27	64	27	5.0 U
Acenaphthylene	NS	NS	5.0 U	5.0 U	0.25 J	4.9 U	57	150	27	5.0 U
Acenaphthene	NS	NS	5.0 U	5.0 U	0.28 J	4.9 U	600	840	400	0.46 J
2,3,5-Trimethylnaphthalene	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	22	120	45	5.0 U
Fluorene	77.4	536	5.0 U	5.0 U	0.53 J	0.28 J	310	510	190	5.0 U
Phenanthrene	204	1,170	5.0 U	5.0 U	3.1 J	1.8 J	2,700	4,500	1,700	1.3 J
Anthracene	57.2	845	5.0 U	5.0 U	0.71 J	0.42 J	720	1,200	370	5.0 U
1-Methylphenanthrene	NS	NS	5.0 U	5.0 U	0.29 J	4.9 U	170	340	100	5.0 U
Fluoranthene	423	2,230	5.0 U	5.0 U	8.6	5.6	6,000	9,600	4,000	0.74 J
Pyrene	195	1,520	5.0 U	0.15 J	10	6.9	7,000	13,000	4,400	0.70 J
Benz(a)anthracene	108	1,050	5.0 U	5.0 U	2.5 J	1.7 J	3,800	6,600	2,600	5.0 U
Chrysene	166	1,290	5.0 U	5.0 U	3.8 J	2.5 J	4,300	7,400	3,000	5.0 U
Benzo(b)fluoranthene	NS	NS	5.0 U	5.0 U	2.0 J	1.7 J	4,900	8,600	3,200	5.0 U
Benzo(k)fluoranthene	NS	NS	5.0 U	5.0 U	2.6 J	1.7 J	4,100	6,600	2,900	5.0 U
Benzo(e)pyrene	NS	NS	5.0 U	5.0 U	2.6 J	1.8 J	3,800	6,500	2,500	5.0 U
Benzo(a)pyrene	150	1,450	5.0 U	5.0 U	2.5 J	1.6 J	5,600	9,500	3,600	5.0 U
Perylene	NS	NS	0.36 J	5.0 U	1.2 J	1.0 J	1,600	2,700	1,000	5.5
Indeno(1,2,3-cd)pyrene	NS	NS	5.0 U	5.0 U	5.0 UJ	4.9 UJ	4,600	7,900	2,800	5.0 U
Dibenz(a,h)anthracene	33	NS	5.0 U	5.0 U	5.0 UJ	4.9 UJ	880	1,400	550	5.0 U
Benzo(g,h,i)perylene	NS	NS	5.0 U	5.0 U	5.0 U	4.9 U	4,100	7,100	2,600	5.0 U
Dimethyl phthalate	NS	NS	20 U	10 U	10 U	9.8 U	20 U	100 U	100 U	10 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC28-5-7 K2401615-010 03/04/2004	T4-VC28-7-9 K2401654-001 03/04/2004	T4-PS28-10-12 K2402526-020 04/02/2004	T4-PS28-15-17 K2402526-021 04/02/2004	T4-VC29-0-1 K2401677-002 03/05/2004	T4-VC29-1-3 K2401677-003 03/05/2004	T4-VC29-3-5 K2401677-004 03/05/2004	T4-VC29-5-7 K2401677-005 03/05/2004
Diethyl phthalate	NS	NS	20 U	10 U	10 U	9.8 U	20 U	100 U	100 U	10 U
Di-n-butyl phthalate	NS	NS	3.6 J	10 U	10 U	9.8 U	10 J	100 U	100 U	21 J
Butylbenzyl phthalate	NS	NS	20 U	10 U	10 U	9.8 U	19 J	100 U	100 U	10 U
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	10 U	60	94	70	130	64 J	10 U
Di-n-octyl phthalate	NS	NS	20 UJ	10 UJ	10 U	9.8 U	20 UJ	100 UJ	100 UJ	10 UJ
Total PAHs (c,d)	1,610	22,800	5.0 U	0.15 J	37	25	40,277	68,860	26,507	3.2 J
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.40 U	0.40 U	0.43 U	0.42 U	2.2	4.1	1.8	0.40 U
4,4'-DDD	NS	NS	0.40 U	0.40 U	0.43 U	0.42 U	3.4	64 J	2.5	0.40 U
4,4'-DDT	NS	NS	0.40 U	0.40 U	0.43 U	0.42 U	2.8 J	90	1.6	0.40 U
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.43 U	0.42 U	0.75	0.67 U	0.40 U	0.40 U
2,4'-DDD	NS	NS	0.40 U	0.40 U	0.43 U	0.42 U	2.4	16	1.8 J	0.40 U
2,4'-DDT	NS	NS	0.40 U	0.40 U	0.43 U	0.42 U	0.63 U	24 U	0.40 U	0.40 U
Total DDD (c,e)	4.88	28	0.40 U	0.40 U	0.43 U	0.42 U	5.8	80	4.3	0.40 U
Total DDE (c,f)	3.16	31.3	0.40 U	0.40 U	0.43 U	0.42 U	3.0	4.1	1.8	0.40 U
Total DDT (c,g)	4.16	62.9	0.40 U	0.40 U	0.43 U	0.42 U	2.8	90	1.6	0.40 U
ΣDDTs (c,h)	5.28	572	0.40 U	0.40 U	0.43 U	0.42 U	12	174	7.7	0.40 U
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.3 U	5.3 U	5.2 U	50 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	10 U	10 U	11 U	11 U	11 U	100 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.3 U	5.3 U	5.2 U	50 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.3 U	5.3 U	5.2 U	50 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	5.3 U	5.3 U	11	50 U	6.7	5.0 U
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.3 U	5.3 U	19 U	240 U	22 U	5.0 U
Aroclor 1260	NS	NS	5.0 U	5.0 U	5.3 U	5.3 U	31	1000	17	5.0 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.3 U	5.3 U	5.2 U	50 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.3 U	5.3 U	5.2 U	50 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	10 U	10 U	11 U	11 U	42	1000	24	10 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	16 U	15 U	21 U	22 U	250 J	340 J	96 J	17 U
Residual Range Organics (RRO)	NS	NS	62 U	60 U	83 U	87 U	450 J	420 J	230 J	66 U
Gasoline Range Organics (GRO)	NS	NS	4.9 U	5.0 U	3.3 U	3.2 U	3.4 U	3.1 U	4.8 U	4.8 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC28-5-7 K2401615-010 03/04/2004	T4-VC28-7-9 K2401654-001 03/04/2004	T4-PS28-10-12 K2402526-020 04/02/2004	T4-PS28-15-17 K2402526-021 04/02/2004	T4-VC29-0-1 K2401677-002 03/05/2004	T4-VC29-1-3 K2401677-003 03/05/2004	T4-VC29-3-5 K2401677-004 03/05/2004	T4-VC29-5-7 K2401677-005 03/05/2004
Total organic carbon	NS	NS	0.09	0.03 J	0.05 U	0.04 J	1.89	2.06	0.86	0.15 U
Total solids	NS	NS	78.4	80.1	76.6	77.9	48.7	54.2	68.5	76.9
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	NA	NA	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	NA	NA	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	NA	NA	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.9	99.4	NA	NA	100	100	100	99.9
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	98.2	91.6	NA	NA	99.5	99.6	99.7	99.6
Sand, Coarse No. 40 (0.425 mm)	NS	NS	60.4	39.4	NA	NA	93.7	94	94.1	80
Sand, Medium No. 60 (0.250 mm)	NS	NS	20.2	11.7	NA	NA	79.3	82.9 J	49.4	20.6 J
Sand, Fine No. 140 (0.106 mm)	NS	NS	4.95	3.07	NA	NA	71	74.7	32.6	7.05
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	4.62	2.78	NA	NA	68.1	71	30	6.45
Silt (0.074 mm)	NS	NS	3.3	2.85	NA	NA	62.1	63.4	29.5	4.72
Clay (0.005 mm)	NS	NS	2.85	0.43	NA	NA	27.6	28.9	10	1.8
Clay (0.001 mm)	NS	NS	2.58	0	NA	NA	6.98	8.35	0	0.06

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC29-7-9 K2401677-007 03/05/2004	T4-VC29-9-11 K2401677-008 03/05/2004	T4-VC32-0-1 K2401654-002 03/04/2004	T4-VC32-1-3 K2401654-003 03/04/2004	T4-VC32-3-5 K2401654-004 03/04/2004	T4-VC32-5-7 K2401654-005 03/04/2004	T4-VC32-7-9 K2402524-003 03/03/2004	T4-PS32-10-12 K2402526-016 04/02/2004
Metals (mg/kg)										
Arsenic	9.79	33	2	1.7	5.1	5.2	4.6	2.3	23.3	2.3
Cadmium	0.99	4.98	0.18	0.15	1.69	1.19	1.23	0.1	0.136	0.12
Chromium	43.4	111	24.8	21.5	23	26.4	19.6	9.59	12	11.5
Copper	31.6	149	26 J	25.1 J	44 J	53.7 J	49.7 J	13.9 J	16.3	41.5
Lead	35.8	128	5.45	4.73	176	151	161	2.69	2.59	7.74
Mercury	0.18	1.06	0.031	0.023	0.083	0.11	0.086	0.012 B	0.02	0.03
Nickel	22.7	48.6	23.8 J	20.8 J	22.8 J	23.7 J	20.5 J	14.8 J	23.9 J	17.7 J
Selenium	NS	NS	0.08 U	0.08 U	0.17 J	0.2 J	0.35 J	0.12 U	0.04 J	0.1 U
Silver	NS	NS	0.05	0.04	0.57	0.48	0.77	0.02 U	0.03	0.04
Zinc	121	459	54.4 J	46 J	253 J	188 J	207 J	38 J	40.9 J	46.1 J
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	4.9 U	5.0 U	290	170	170	0.37 J	5.3 U	8.4
2-Methylnaphthalene	NS	NS	4.9 U	5.0 U	84	74	82	5.0 U	5.3 U	3.3 J
1-Methylnaphthalene	NS	NS	4.9 U	5.0 U	63	47	45	5.0 U	5.3 U	1.8 J
Biphenyl	NS	NS	4.9 U	5.0 U	58	27	17 J	5.0 U	5.3 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	4.9 U	5.0 U	58	43	30	5.0 U	5.3 U	2.4 J
Acenaphthylene	NS	NS	4.9 U	5.0 U	130	54	23 J	5.0 U	5.3 U	1.6 J
Acenaphthene	NS	NS	4.9 U	5.0 U	340	390	1,000	0.40 J	0.83 J	10
2,3,5-Trimethylnaphthalene	NS	NS	4.9 U	5.0 U	120	63	26	5.0 U	5.3 U	6.0
Fluorene	77.4	536	4.9 U	5.0 U	330	260	400	0.24 J	5.3 U	5.9
Phenanthrene	204	1,170	4.9 U	5.0 U	2,600	1,900	3,700	1.9 J	5.3 U	47
Anthracene	57.2	845	4.9 U	5.0 U	660	410	1,000	0.45 J	5.3 U	10
1-Methylphenanthrene	NS	NS	4.9 U	5.0 U	170	150	260	0.15 J	5.3 U	5.6
Fluoranthene	423	2,230	4.9 U	5.0 U	5,100	4,300	7,900	4.0 J	5.3 U	88
Pyrene	195	1,520	4.9 U	5.0 U	7,600	4,800	9,200	5.2	5.3 U	97
Benz(a)anthracene	108	1,050	4.9 U	5.0 U	2,500	2,800	5,600	1.9 J	5.3 U	42
Chrysene	166	1,290	4.9 U	5.0 U	3,400	3,400	6,200	2.5 J	5.3 U	55
Benzo(b)fluoranthene	NS	NS	4.9 U	0.23 J	3,000	3,700	6,900	2.2 J	1.6 J	49
Benzo(k)fluoranthene	NS	NS	4.9 U	5.0 U	3,000	2,500	6,200	2.0 J	5.3 U	47
Benzo(e)pyrene	NS	NS	4.9 U	5.0 U	2,900	2,800	5,500	2.0 J	5.3 U	43
Benzo(a)pyrene	150	1,450	4.9 U	5.0 U	3,500	3,900	8,000	1.8 J	5.3 U	58
Perylene	NS	NS	140	160	1,100	1,100	2,300	0.91 J	3.4 J	21
Indeno(1,2,3-cd)pyrene	NS	NS	4.9 U	5.0 U	2,400	3,300	6,600	0.81 J	5.3 U	54 J
Dibenz(a,h)anthracene	33	NS	4.9 U	5.0 U	630	690	1,400	5.0 U	5.3 U	6.7 J
Benzo(g,h,i)perylene	NS	NS	4.9 U	5.0 U	3,100	3,000	5,900	1.5 J	5.3 U	53
Dimethyl phthalate	NS	NS	9.8 U	10 U	20 U	20 U	20 U	9.9 U	11 U	9.9 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC29-7-9 K2401677-007 03/05/2004	T4-VC29-9-11 K2401677-008 03/05/2004	T4-VC32-0-1 K2401654-002 03/04/2004	T4-VC32-1-3 K2401654-003 03/04/2004	T4-VC32-3-5 K2401654-004 03/04/2004	T4-VC32-5-7 K2401654-005 03/04/2004	T4-VC32-7-9 K2402524-003 03/03/2004	T4-PS32-10-12 K2402526-016 04/02/2004
Diethyl phthalate	NS	NS	9.8 U	10 U	20 U	20 U	20 U	9.9 U	11 U	9.9 U
Di-n-butyl phthalate	NS	NS	9.8 U	10 U	32	14 J	13 J	9.9 U	11 U	9.9 U
Butylbenzyl phthalate	NS	NS	9.8 U	10 U	9.5 J	20 U	20 U	9.9 U	11 U	9.9 U
Bis(2-ethylhexyl) phthalate	NS	NS	13 U	37 U	79	130	180	9.9 U	11 U	110
Di-n-octyl phthalate	NS	NS	9.8 UJ	10 UJ	20 UJ	20 UJ	20 UJ	9.9 UJ	11 U	9.9 U
Total PAHs (c,d)	1,610	22,800	4.9 U	0.23 J	32,450	28,584	56,293	23	2.4 J	519
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	0.40 U	0.40 U	2.9	4.9	3.6	0.41 U	0.46 U	0.36 J
4,4'-DDD	NS	NS	0.40 U	0.40 U	5.4	4.5	3.7	0.41 U	0.46 U	0.32 J
4,4'-DDT	NS	NS	0.40 U	0.40 U	9.8	4	2.8	0.41 U	0.46 U	0.43 J
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.93 U	0.79 U	0.69 U	0.41 U	0.46 U	0.43 U
2,4'-DDD	NS	NS	0.40 U	0.40 U	2.8	3	2.5	0.41 U	0.46 U	0.43 U
2,4'-DDT	NS	NS	0.40 U	0.40 U	1.4 J	1.3 J	0.66 U	0.41 U	0.46 U	0.43 U
Total DDD (c,e)	4.88	28	0.40 U	0.40 U	8.2	7.5	6.2	0.41 U	0.46 U	0.32 J
Total DDE (c,f)	3.16	31.3	0.40 U	0.40 U	2.9	4.9	3.6	0.41 U	0.46 U	0.36 J
Total DDT (c,g)	4.16	62.9	0.40 U	0.40 U	11	5.3	2.8	0.41 U	0.46 U	0.43 J
ΣDDTs (c,h)	5.28	572	0.40 U	0.40 U	22	18	13	0.41 U	0.46 U	1.1 J
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.7 U	5.3 U
Aroclor 1221	NS	NS	10 U	10 U	10 U	11 U	10 U	11 U	12 U	11 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.7 U	5.3 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.7 U	5.3 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	11 J	24	22	5.1 U	5.7 U	5.3 U
Aroclor 1254	NS	NS	5.0 U	5.0 U	28 U	45 U	33 U	5.1 U	5.7 U	5.3 U
Aroclor 1260	NS	NS	5.0 U	5.0 U	46	64	29	5.1 U	5.7 U	5.3 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.7 U	5.3 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	5.1 U	5.0 U	5.1 U	5.7 U	5.3 U
Total PCBs (c,i)	59.8	676	10 U	10 U	57	88	51	11 U	12 U	11 U
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	22 U	23 U	210 J	280 J	260 J	16 U	20 U	23 U
Residual Range Organics (RRO)	NS	NS	86 U	89 U	440 J	630 J	690 J	62 U	78 U	21 J
Gasoline Range Organics (GRO)	NS	NS	4.9 U	4.9 U	3.4 U	3.0 U	5.0 U	4.9 U	3.4 U	1.3 J
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC29-7-9 K2401677-007 03/05/2004	T4-VC29-9-11 K2401677-008 03/05/2004	T4-VC32-0-1 K2401654-002 03/04/2004	T4-VC32-1-3 K2401654-003 03/04/2004	T4-VC32-3-5 K2401654-004 03/04/2004	T4-VC32-5-7 K2401654-005 03/04/2004	T4-VC32-7-9 K2402524-003 03/03/2004	T4-PS32-10-12 K2402526-016 04/02/2004
Total organic carbon	NS	NS	0.65	0.35	2.73	2.25	1.68	0.05	4.55	0.19
Total solids	NS	NS	70.4	67.5	51	53.7	59.3	80.7	76.7	77.1
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	NA	NA
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	NA	NA
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	100	100	NA	NA
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	100	100	100	100	100	NA	NA
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	100	99.9	99.7	99.5	99.4	97.9	NA	NA
Sand, Coarse No. 40 (0.425 mm)	NS	NS	99.7	99.7	96	96.8	87	54.8	NA	NA
Sand, Medium No. 60 (0.250 mm)	NS	NS	98.5 J	99.5 J	84.8	89.9	74.8	14.3	NA	NA
Sand, Fine No. 140 (0.106 mm)	NS	NS	84.6	87.3	75.4	84.9	67.6	4.08	NA	NA
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	74.1	69.9	71.3	81.3	65	3.69	NA	NA
Silt (0.074 mm)	NS	NS	59.6	57	64.3	67.9	60.6	3.63	NA	NA
Clay (0.005 mm)	NS	NS	19.4	14.6	30.2	35	26.5	0.44	NA	NA
Clay (0.001 mm)	NS	NS	0	0	9.79	15.4	6.15	0	NA	NA

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-PS32-15-17 K2402526-017 04/02/2004	T4-VC33-5-7 K2402350-002 03/26/2004	T4-VC33-9-11 K2402350-003 03/26/2004	T4-VC33-11-13 K2402350-004 03/26/2004
Metals (mg/kg)						
Arsenic	9.79	33	4.8	1.7	3.9	2.7
Cadmium	0.99	4.98	0.3	0.12	0.25	0.21
Chromium	43.4	111	14.3	9.3	24.4	19.7
Copper	31.6	149	31	35.1	32.2	27.2
Lead	35.8	128	6.46	5.44	5.32	4.03
Mercury	0.18	1.06	0.02	0.01 J	0.02 J	0.03 J
Nickel	22.7	48.6	22.7 J	14.7 J	32.9 J	21.8 J
Selenium	NS	NS	0.9	0.11 UJ	0.11 J	0.07 J
Silver	NS	NS	0.03	0.03	0.05	0.04
Zinc	121	459	47.1 J	34	51	44.4
Semivolatile Organics (ug/kg)						
Naphthalene	176	561	12	9.0	5.1 U	5.0 U
2-Methylnaphthalene	NS	NS	3.7 J	5.6	5.1 U	5.0 U
1-Methylnaphthalene	NS	NS	1.9 J	3.3 J	5.1 U	5.0 U
Biphenyl	NS	NS	4.9 U	5.1 U	5.1 U	5.0 U
2,6-Dimethylnaphthalene	NS	NS	1.9 J	1.2 J	5.1 U	5.0 U
Acenaphthylene	NS	NS	3.5 J	5.1 U	5.1 U	5.0 U
Acenaphthene	NS	NS	7.9	22	0.51 J	5.0 U
2,3,5-Trimethylnaphthalene	NS	NS	2.1 J	0.3 J	5.1 U	5.0 U
Fluorene	77.4	536	7.9	9.9	5.1 U	5.0 U
Phenanthrene	204	1,170	140	89	2.0 J	5.0 U
Anthracene	57.2	845	39	14	0.42 J	5.0 U
1-Methylphenanthrene	NS	NS	15	4.7 J	5.1 U	5.0 U
Fluoranthene	423	2,230	350	220	4.7 J	5.0 U
Pyrene	195	1,520	400	170	4.5 J	5.0 U
Benz(a)anthracene	108	1,050	130	94	2.7 J	5.0 U
Chrysene	166	1,290	170	140	3.8 J	5.0 U
Benzo(b)fluoranthene	NS	NS	120	150	3.7 J	5.0 U
Benzo(k)fluoranthene	NS	NS	120	110	3.1 J	5.0 U
Benzo(e)pyrene	NS	NS	120	110	3.1 J	5.0 U
Benzo(a)pyrene	150	1,450	180	130	3.3 J	5.0 U
Perylene	NS	NS	45	37	100	36
Indeno(1,2,3-cd)pyrene	NS	NS	150 J	110 J	5.1 UJ	5.0 UJ
Dibenz(a,h)anthracene	33	NS	23 J	31 J	5.1 UJ	5.0 UJ
Benzo(g,h,i)perylene	NS	NS	160	110	5.1 U	5.0 U
Dimethyl phthalate	NS	NS	9.8 U	11 U	11 U	10 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-PS32-15-17 K2402526-017 04/02/2004	T4-VC33-5-7 K2402350-002 03/26/2004	T4-VC33-9-11 K2402350-003 03/26/2004	T4-VC33-11-13 K2402350-004 03/26/2004
Diethyl phthalate	NS	NS	9.8 U	11 U	11 U	10 U
Di-n-butyl phthalate	NS	NS	9.8 U	11 U	11 U	10 U
Butylbenzyl phthalate	NS	NS	9.8 U	11 U	11 U	10 U
Bis(2-ethylhexyl) phthalate	NS	NS	80	47	71 U	10 U
Di-n-octyl phthalate	NS	NS	9.8 U	11 U	11 U	10 U
Total PAHs (c,d)	1,610	22,800	1,680	1,158	28.73 J	5.0 U
Pesticides (ug/kg)						
4,4'-DDE	NS	NS	0.43 U	0.41 U	0.41 U	0.40 U
4,4'-DDD	NS	NS	0.43 U	0.41 U	0.48 U	0.87 U
4,4'-DDT	NS	NS	0.29 J	0.41 U	0.41 U	0.40 U
2,4'-DDE	NS	NS	0.43 U	0.41 U	0.41 U	0.40 U
2,4'-DDD	NS	NS	0.43 U	0.41 U	0.41 U	0.40 U
2,4'-DDT	NS	NS	0.43 U	0.41 U	0.41 U	0.40 U
Total DDD (c,e)	4.88	28	0.43 U	0.41 U	0.48 U	0.87 U
Total DDE (c,f)	3.16	31.3	0.43 U	0.41 U	0.41 U	0.40 U
Total DDT (c,g)	4.16	62.9	0.29 J	0.41 U	0.41 U	0.40 U
ΣDDTs (c,h)	5.28	572	0.29 J	0.41 U	0.48 U	0.87 U
PCBs (ug/kg)						
Aroclor 1016	NS	NS	5.4 U	5.1 U	5.1 U	5.0 U
Aroclor 1221	NS	NS	11 U	11 U	11 U	10 U
Aroclor 1232	NS	NS	5.4 U	5.1 U	5.1 U	5.0 U
Aroclor 1242	NS	NS	5.4 U	5.1 U	5.1 U	5.0 U
Aroclor 1248	NS	NS	5.4 U	5.1 U	5.1 U	5.0 U
Aroclor 1254	NS	NS	5.4 U	5.1 U	5.1 U	5.0 U
Aroclor 1260	NS	NS	5.4 U	5.1 U	5.1 U	5.0 U
Aroclor 1262	NS	NS	5.4 U	5.1 U	5.1 U	5.0 U
Aroclor 1268	NS	NS	5.4 U	5.1 U	5.1 U	5.0 U
Total PCBs (c,i)	59.8	676	11 U	11 U	11 U	10 U
Petroleum Hydrocarbons (mg/kg)						
Diesel Range Organics (DRO)	NS	NS	24 U	23 U	24 U	24 U
Residual Range Organics (RRO)	NS	NS	13 J	92 U	12 J	93 U
Gasoline Range Organics (GRO)	NS	NS	3.3 U	3.4 U	3.9 U	3.5 U
Conventionals (percent)						

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-PS32-15-17 K2402526-017 04/02/2004	T4-VC33-5-7 K2402350-002 03/26/2004	T4-VC33-9-11 K2402350-003 03/26/2004	T4-VC33-11-13 K2402350-004 03/26/2004
Total organic carbon	NS	NS	0.54	0.07	1.2	0.58
Total solids	NS	NS	74.8	73.2	64.2	71.2
Grain Size (percent) (j)						
Gravel No. 3/4" (19.0 mm)	NS	NS	NA	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	NA	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	NA	100	100	99.5
Gravel, Fine No. 10 (2.00 mm)	NS	NS	NA	99.9	99.3	99.5
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	NA	99.1	99.1	99.4
Sand, Coarse No. 40 (0.425 mm)	NS	NS	NA	75.0	98.6	99.3
Sand, Medium No. 60 (0.250 mm)	NS	NS	NA	28.7	97.9	98.9
Sand, Fine No. 140 (0.106 mm)	NS	NS	NA	11.8	75.2	72.3
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	NA	10.5	63.2	56.7
Silt (0.074 mm)	NS	NS	NA	6.01	59	54.9
Clay (0.005 mm)	NS	NS	NA	1.32	19.9	13.1
Clay (0.001 mm)	NS	NS	NA	0	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-5
Slip 3 Surface and Subsurface Sediment Data Compared to SQGs

NS = No screening level.

NA = Not analyzed because of insufficient sample volume.

U = Analyte was not detected above the reported sample quantitation limit.

J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

B = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

The approximate concentration is less than the method report limit but greater than the method detection limit.

Boxed values indicate concentration is greater than TEC.

Shaded values indicate concentration is greater than PEC.

- a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based threshold effect concentrations (TEC). Represents concentration below which toxicity is unlikely to be observed.
- b. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based probable effect concentrations (PEC). Represents concentration above which toxicity is likely to be observed.
- c. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
- d. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
- e. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
- f. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
- g. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
- h. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes e, f, and g for the definitions of total DDD, total DDE, and total DDT, respectively.
- i. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).
- j. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use.

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-6
North of Berth 414 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC30-0-1 K2401716-016 03/08/2004	T4-VC30-1-3 K2401716-017 03/08/2004	T4-VC30-3-5 K2401716-018 03/08/2004	T4-VC30-5-7 K2401716-001 03/08/2004	T4-VC30-7-9 K2401716-002 03/08/2004	T4-VC30-9-11 K2401716-003 03/08/2004	T4-VC31-0-1 K2401716-010 03/08/2004	T4-VC31-1-3 K2401716-011 03/08/2004
Metals (mg/kg)										
Arsenic	9.79	33	2.6	3.1	3.6	4.3	2.5	1.9	2.9	2.9
Cadmium	0.99	4.98	0.26	0.45	0.85	1.61	0.51	0.07	0.28	0.33
Chromium	43.4	111	19.6 J	27.1 J	24.4 J	21.7 J	18.6 J	10.1 J	24.4 J	25.1 J
Copper	31.6	149	28.6 J	35.8 J	34.1 J	36.2 J	29.9 J	12.9 J	30.1 J	31.7 J
Lead	35.8	128	15.2	32.2	82	125	34.5	2.22	17.7	24.1
Mercury	0.18	1.06	0.069	0.093	0.141	0.148	0.282	0.038	0.073	0.082
Nickel	22.7	48.6	16.9 J	20 J	21.1 J	20.9 J	17.3 J	14 J	19.5 J	19.4 J
Selenium	NS	NS	0.15 U	0.16 U	0.16 U	0.23	0.2	0.11 U	0.16	0.18
Silver	NS	NS	0.15	0.31	0.36	0.44	0.36	0.03	0.16	0.2
Zinc	121	459	64.7	95.3	295	326	107	35	72.2	78.3
Semivolatile Organics (ug/kg)										
Naphthalene	176	561	9.6	12	81	220	180	5.0 U	11	16
2-Methylnaphthalene	NS	NS	3.6 J	5.9	39	150	120	5.0 U	17	10
1-Methylnaphthalene	NS	NS	2.5 J	3.4 J	18	120	170	5.0 U	11	6.2
Biphenyl	NS	NS	1.4 J	2.5 J	9.6	25	19	5.0 U	3.1 J	3.5 J
2,6-Dimethylnaphthalene	NS	NS	1.9 J	2.8 J	23	80	90	5.0 U	6.1	3.8 J
Acenaphthylene	NS	NS	2.4 J	5.4	25	24	30	5.0 U	1.5 J	11
Acenaphthene	NS	NS	15	25	68	190	320	5.0 U	87	48
2,3,5-Trimethylnaphthalene	NS	NS	2.0 J	3.0 J	23	45	67	5.0 U	2.2 J	2.7 J
Fluorene	77.4	536	9.3	16	65	130	180	5.0 U	59	34
Phenanthrene	204	1,170	76	130	290	380	610	0.42 J	540	280
Anthracene	57.2	845	16	26	65	81	120	5.0 U	88	52
1-Methylphenanthrene	NS	NS	4.2 J	9.4	33	35	59	5.0 U	22	13
Fluoranthene	423	2,230	150	300	550	390	560	0.52 J	940	550
Pyrene	195	1,520	160	330	750	550	710	0.66 J	890	600
Benz(a)anthracene	108	1,050	87	170	310	180	220	5.0 U	570	320
Chrysene	166	1,290	110	220	400	230	280	0.25 J	740	440
Benzo(b)fluoranthene	NS	NS	120	230	320	180	230	0.25 J	900	510
Benzo(k)fluoranthene	NS	NS	96	190	280	190	200	5.0 U	550	390
Benzo(e)pyrene	NS	NS	95	180	300	190	230	0.21 J	590	440
Benzo(a)pyrene	150	1,450	120	240	460	280	340	0.21 J	740	550
Perylene	NS	NS	46	84	130	84	96	5.0 U	240	190
Indeno(1,2,3-cd)pyrene	NS	NS	100	200	350	240	300	5.0 U	640	580
Dibenz(a,h)anthracene	33	NS	22	40	47	29	38	5.0 U	150	94
Benzo(g,h,i)perylene	NS	NS	98	190	370	260	320	0.22 J	550	630
Dimethyl phthalate	NS	NS	20 U	20 U	20 U	4.9 J	20 U	10 U	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-6
North of Berth 414 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC30-0-1 K2401716-016 03/08/2004	T4-VC30-1-3 K2401716-017 03/08/2004	T4-VC30-3-5 K2401716-018 03/08/2004	T4-VC30-5-7 K2401716-001 03/08/2004	T4-VC30-7-9 K2401716-002 03/08/2004	T4-VC30-9-11 K2401716-003 03/08/2004	T4-VC31-0-1 K2401716-010 03/08/2004	T4-VC31-1-3 K2401716-011 03/08/2004
Diethyl phthalate	NS	NS	20 U	20 U	20 U	7.5 J	20 U	10 U	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	10 U	20 U	20 U				
Butylbenzyl phthalate	NS	NS	20 U	20 U	20 U	7.5 J	20 U	10 U	6.7 J	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	33 U	48	20 U	20 U	10 U	20 U	72
Di-n-octyl phthalate	NS	NS	20 UJ	10 UJ	20 UJ	20 UJ				
Total PAHs (c,d)	1,610	22,800	971	1,894	3,664	3,025	3,980	2.3 J	6,117	3,801
Pesticides (ug/kg)										
4,4'-DDE	NS	NS	3.8	4.3	10	8.9	15 J	0.40 U	3.7	3.3
4,4'-DDD	NS	NS	2.8	2.4	10	10	12	0.40 U	3.1	2
4,4'-DDT	NS	NS	1.4 J	3	6.8	4.2	5.2	0.40 U	2.1 J	2.1
2,4'-DDE	NS	NS	0.4 U	0.40 U	1.6 U	1.4 U	2.2 U	0.40 U	0.40 U	0.40 U
2,4'-DDD	NS	NS	1.5	2.5 J	7.7 J	5	6.1 J	0.40 U	1.8	1.7
2,4'-DDT	NS	NS	0.36 J	1.4 J	3.7 J	2.2	2.2 J	0.40 U	0.61 J	0.71 U
Total DDD (c,e)	4.88	28	4.3	4.9	18	15	18	0.40 U	4.9	3.7
Total DDE (c,f)	3.16	31.3	3.8	4.3	10	8.9	15 J	0.40 U	3.7	3.3
Total DDT (c,g)	4.16	62.9	1.8 J	4.4	11	6.4	7.4	0.40 U	2.7 J	2.1
ΣDDTs (c,h)	5.28	572	9.9	14	38	30	41	0.40 U	11	9.1
PCBs (ug/kg)										
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1221	NS	NS	10 U	10 U	10 U					
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1248	NS	NS	6.9	19	73	37	50	5.0 U	9.2	9.0
Aroclor 1254	NS	NS	14 U	43 U	130 U	71 U	110 U	5.0 U	18 U	18 U
Aroclor 1260	NS	NS	13 J	50	96	57	83	5.0 U	13	22
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U					
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U					
Total PCBs (c,i)	59.8	676	20	69	169	94	133	10 U	22	31
Petroleum Hydrocarbons (mg/kg)										
Diesel Range Organics (DRO)	NS	NS	64 J	130 J	210 J	210 J	400 J	17 U	58 J	85 J
Residual Range Organics (RRO)	NS	NS	200 J	350 J	410 J	380 J	590 J	66 U	190 J	250 J
Gasoline Range Organics (GRO)	NS	NS	4.5 U	4.3 U	4.5 U	1.9 J	5.2 J	3.1 U	4.8 U	4.2 U
Conventionals (percent)										

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-6
North of Berth 414 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC30-0-1 K2401716-016 03/08/2004	T4-VC30-1-3 K2401716-017 03/08/2004	T4-VC30-3-5 K2401716-018 03/08/2004	T4-VC30-5-7 K2401716-001 03/08/2004	T4-VC30-7-9 K2401716-002 03/08/2004	T4-VC30-9-11 K2401716-003 03/08/2004	T4-VC31-0-1 K2401716-010 03/08/2004	T4-VC31-1-3 K2401716-011 03/08/2004
Total organic carbon	NS	NS	1.87	2.05	1.83	2.07	1.89	0.06 U	1.79	1.98
Total solids	NS	NS	50.7	51.8	55.9	60.9	60.8	76.2	51.2	52.8
Grain Size (percent) (j)										
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	100	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	100	100	100	100	99.8	100	100	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	100	99.9	99.8	99.9	99.3	99.1	99.9	99.8
Sand, Coarse No. 40 (0.425 mm)	NS	NS	92.3	99.4	96.9	97.8	93.4	73.1	99.4	97.5
Sand, Medium No. 60 (0.250 mm)	NS	NS	91.7 J	97.5 J	89.5 J	88.1 J	83.6 J	11.3 J	98.3 J	92.9 J
Sand, Fine No. 140 (0.106 mm)	NS	NS	84.9	93.9	85.6	78.7	78.8	3.57	90.9	88.9
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	78.1	90.1	82.1	73.5	76.1	3.24	84.4	85.3
Silt (0.074 mm)	NS	NS	69.1	72.6	67.1	65.5	64.5	2.44	69.7	68.6
Clay (0.005 mm)	NS	NS	37.3	41	33	31.6	30.4	1.27	36.2	35.1
Clay (0.001 mm)	NS	NS	18.3	22	12.6	11.4	10.1	0.57	16.2	15

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-6
North of Berth 414 Surface and Subsurface Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC31-3-5 K2401716-012 03/08/2004	T4-VC31-5-7 K2401716-013 03/08/2004	T4-VC31-7-9 K2401716-014 03/08/2004	T4-VC31-9-11 K2401716-015 03/08/2004	T4-PS31-15-17 K2402764-004 04/14/2004	T4-PS31-20.5-22.5 K2402764-005 04/14/2004
Metals (mg/kg)								
Arsenic	9.79	33	2.8	2.9	3.9	3.8	2.1	2
Cadmium	0.99	4.98	0.38	0.37	0.99	0.99	0.32	0.12
Chromium	43.4	111	21.1 J	27.6 J	29.4 J	20.5 J	10 J	8.52 J
Copper	31.6	149	28.4 J	30.8 J	36.4 J	24.5 J	20 J	35.3 J
Lead	35.8	128	31.3	38.4	41.4	27.8	6.8 J	5.52 J
Mercury	0.18	1.06	0.149	0.313	0.714	0.228	0.045	0.015 B
Nickel	22.7	48.6	18 J	18.9 J	18.7 J	17.6 J	14.1 J	13.8 J
Selenium	NS	NS	0.13 U	0.13 U	0.14 U	0.05 U	0.052 U	0.088 U
Silver	NS	NS	0.24	0.55	0.59	0.2	0.07	0.05
Zinc	121	459	112	106	173	175	73.8 J	42.6 J
Semivolatile Organics (ug/kg)								
Naphthalene	176	561	38	120	250	120	24	11
2-Methylnaphthalene	NS	NS	23	60	150	51	13	2.9 J
1-Methylnaphthalene	NS	NS	11	45	100	30	9.0	1.6 J
Biphenyl	NS	NS	5.1	12	26	13	4.0 J	5.0 U
2,6-Dimethylnaphthalene	NS	NS	16	36	210	65	8.8	2.0 J
Acenaphthylene	NS	NS	7.5	19	70	41	3.5 J	0.68 J
Acenaphthene	NS	NS	39	90	76	46	18	2.6 J
2,3,5-Trimethylnaphthalene	NS	NS	18	26	240	74	9.2	1.5 J
Fluorene	77.4	536	29	49	82	42	10	2.5 J
Phenanthrene	204	1,170	120	170	690	390	100	16
Anthracene	57.2	845	19	31	130	76	21	3.1 J
1-Methylphenanthrene	NS	NS	13	22	180	73	11	1.8 J
Fluoranthene	423	2,230	150	180	800	490	140	17
Pyrene	195	1,520	200	250	1,400	720	170	23
Benz(a)anthracene	108	1,050	74	90	290	180	36	5.6
Chrysene	166	1,290	97	120	460	250	56	8.9
Benzo(b)fluoranthene	NS	NS	85	99	330	180	32	5.4
Benzo(k)fluoranthene	NS	NS	79	110	240	180	33	6.3
Benzo(e)pyrene	NS	NS	77	110	330	200	35	6.4
Benzo(a)pyrene	150	1,450	100	160	440	290	50	7.6
Perylene	NS	NS	45	62	210	120	17	3.3 J
Indeno(1,2,3-cd)pyrene	NS	NS	87	130	390	270	46 J	7.7 J
Dibenz(a,h)anthracene	33	NS	15	17	42	28	5.3 J	5 UJ
Benzo(g,h,i)perylene	NS	NS	92	150	450	300	57	10
Dimethyl phthalate	NS	NS	20 U	20 U	20 U	20 U	11 U	10 UJ

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-6
North of Berth 414 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC31-3-5 K2401716-012 03/08/2004	T4-VC31-5-7 K2401716-013 03/08/2004	T4-VC31-7-9 K2401716-014 03/08/2004	T4-VC31-9-11 K2401716-015 03/08/2004	T4-PS31-15-17 K2402764-004 04/14/2004	T4-PS31-20.5-22.5 K2402764-005 04/14/2004
Diethyl phthalate	NS	NS	20 U	20 U	20 U	20 U	11 U	10 UJ
Di-n-butyl phthalate	NS	NS	23 U	22 U	20 U	29 U	11 U	10 UJ
Butylbenzyl phthalate	NS	NS	7.5 J	20 U	20 U	20 U	11 U	10 UJ
Bis(2-ethylhexyl) phthalate	NS	NS	37	20 U	20 U	20 U	65	60 J
Di-n-octyl phthalate	NS	NS	20 UJ	20 UJ	20 UJ	20 UJ	11 U	10 UJ
Total PAHs (c,d)	1,610	22,800	1,038	1,488	5,258	3,005	694	110
Pesticides (ug/kg)								
4,4'-DDE	NS	NS	5.3	5.3	0.40 U	0.22 J	0.78 J	0.40 U
4,4'-DDD	NS	NS	4.4	12	0.40 U	0.40 U	3.1	0.43
4,4'-DDT	NS	NS	4.3	1.6	0.40 U	0.40 U	5.1	0.40 U
2,4'-DDE	NS	NS	0.63 U	1.2 J	0.40 U	0.40 U	0.40 U	0.40 U
2,4'-DDD	NS	NS	3.8 J	10	0.40 U	0.40 U	2.1	0.28 J
2,4'-DDT	NS	NS	2.1	1.3 J	0.25 J	0.40 U	0.5	0.40 U
Total DDD (c,e)	4.88	28	8.2	22	0.40 U	0.40 U	5.2	0.71
Total DDE (c,f)	3.16	31.3	5.3	6.5	0.40 U	0.22 J	0.78 J	0.40 U
Total DDT (c,g)	4.16	62.9	6.4	2.9	0.25 J	0.40 U	5.6	0.40 U
ΣDDTs (c,h)	5.28	572	20	31	0.25 J	0.22 J	12	0.71
PCBs (ug/kg)								
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1221	NS	NS	10 U	10 U	10 U	10 U	10 U	10 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1248	NS	NS	38	12 J	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1254	NS	NS	66 U	42 U	5.0 U	5.0 U	5.0 U	5.0 U
Aroclor 1260	NS	NS	58	25 J	14 U	5.0 U	5.0 U	5.0 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	13 U	5.0 U	5.0 U	5.0 U
Aroclor 1268	NS	NS	5.0 U	20 J	49 J	5.0 U	5.0 U	5.0 U
Total PCBs (c,i)	59.8	676	96	57 J	49 J	10 U	10 U	10 U
Petroleum Hydrocarbons (mg/kg)								
Diesel Range Organics (DRO)	NS	NS	120 J	160 J	620 J	220 J	15 J	22 U
Residual Range Organics (RRO)	NS	NS	270 J	310 J	950 J	360 J	20 J	85 U
Gasoline Range Organics (GRO)	NS	NS	3.9 U	5.1 J	13 J	6.1 J	3.1 U	3.3 U
Conventionals (percent)								

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-6
North of Berth 414 Surface and Subsurface Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-VC31-3-5 K2401716-012 03/08/2004	T4-VC31-5-7 K2401716-013 03/08/2004	T4-VC31-7-9 K2401716-014 03/08/2004	T4-VC31-9-11 K2401716-015 03/08/2004	T4-PS31-15-17 K2402764-004 04/14/2004	T4-PS31-20.5-22.5 K2402764-005 04/14/2004
Total organic carbon	NS	NS	1.58	2.22	2.77	1.13	0.21	0.07
Total solids	NS	NS	59.8	58.5	62.7	72.2	78.3	75.5
Grain Size (percent) (j)								
Gravel No. 3/4" (19.0 mm)	NS	NS	99.9	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	99.9	100	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	99.3	100	100	100	100	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.3	99.7	100	100	99.8	100
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	98.6	99.2	99.7	98.5	98.6	99.6
Sand, Coarse No. 40 (0.425 mm)	NS	NS	92.4	98	96.7	76.6	68.3	65.9
Sand, Medium No. 60 (0.250 mm)	NS	NS	81.7 J	95.1 J	88.3 J	54.1 J	24.6	20.8
Sand, Fine No. 140 (0.106 mm)	NS	NS	74.2	85.4	80.4	44.6	12.6	9.54
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	70.2	79.2	76.4	41.9	11.1	8.34
Silt (0.074 mm)	NS	NS	61.8	67.6	65.9	36.9	9.75	6.38
Clay (0.005 mm)	NS	NS	26.6	34.5	32	13.9	2.92	2.04
Clay (0.001 mm)	NS	NS	5.57	14.7	11.8	0.13	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-6
North of Berth 414 Surface and Subsurface Sediment Data Compared to SQGs

NS = No screening level.

NA = Not analyzed because of insufficient sample volume.

U = Analyte was not detected above the reported sample quantitation limit.

J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

B = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

The approximate concentration is less than the method report limit but greater than the method detection limit.

Boxed values indicate concentration is greater than TEC.

Shaded values indicate concentration is greater than PEC.

- a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based threshold effect concentrations (TEC). Represents concentration below which toxicity is unlikely to be observed.
- b. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based probable effect concentrations (PEC). Represents concentration above which toxicity is likely to be observed.
- c. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
- d. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
- e. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
- f. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
- g. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
- h. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes e, f, and g for the definitions of total DDD, total DDE, and total DDT, respectively.
- i. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).
- j. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use.

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-7
Berth 401 Under-pier Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP01-0-1 K2401845-001 03/12/2004	T4-UP02-0-1 K2401845-002 03/12/2004
Metals (mg/kg)				
Arsenic	9.79	33	3.8	1.9
Cadmium	0.99	4.98	0.34	0.15
Chromium	43.4	111	17.8	7.17
Copper	31.6	149	24.2 J	9.3 J
Lead	35.8	128	33.7	7.6
Mercury	0.18	1.06	0.127	0.017 B
Nickel	22.7	48.6	18.2 J	9.21 J
Selenium	NS	NS	0.09 U	0.11 U
Silver	NS	NS	0.2	0.04
Zinc	121	459	94.6 J	48.8 J
Semivolatile Organics (ug/kg)				
Naphthalene	176	561	82	1.8 J
2-Methylnaphthalene	NS	NS	25	0.70 J
1-Methylnaphthalene	NS	NS	11	0.44 J
Biphenyl	NS	NS	14	5.0 U
2,6-Dimethylnaphthalene	NS	NS	21	0.41 J
Acenaphthylene	NS	NS	18	1.7 J
Acenaphthene	NS	NS	85	1.6 J
2,3,5-Trimethylnaphthalene	NS	NS	46	0.52 J
Fluorene	77.4	536	48	1.1 J
Phenanthrene	204	1,170	630	9.8
Anthracene	57.2	845	71	5.5
1-Methylphenanthrene	NS	NS	66	1.5 J
Fluoranthene	423	2,230	730	23
Pyrene	195	1,520	1,200	33
Benz(a)anthracene	108	1,050	240	10
Chrysene	166	1,290	320	16
Benzo(b)fluoranthene	NS	NS	220	13
Benzo(k)fluoranthene	NS	NS	240	14
Benzo(e)pyrene	NS	NS	240	17
Benzo(a)pyrene	150	1,450	350	13
Perylene	NS	NS	110	7.3
Indeno(1,2,3-cd)pyrene	NS	NS	310	12
Dibenz(a,h)anthracene	33	NS	31	1.8 J
Benzo(g,h,i)perylene	NS	NS	360	15
Dimethyl phthalate	NS	NS	20 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-7
Berth 401 Under-pier Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP01-0-1 K2401845-001 03/12/2004	T4-UP02-0-1 K2401845-002 03/12/2004
Diethyl phthalate	NS	NS	20 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	20 U
Butylbenzyl phthalate	NS	NS	13 J	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	62	33
Di-n-octyl phthalate	NS	NS	20 U	20 U
Total PAHs (c,d)	1,610	22,800	4,234	144
Pesticides (ug/kg)				
4,4'-DDE	NS	NS	3.2 U	0.21 J
4,4'-DDD	NS	NS	8.8	0.42 U
4,4'-DDT	NS	NS	4.2	0.84
2,4'-DDE	NS	NS	0.95 U	0.42 U
2,4'-DDD	NS	NS	5.7	0.42 U
2,4'-DDT	NS	NS	1.2 U	0.42 U
Total DDD (c,e)	4.88	28	15	0.42 U
Total DDE (c,f)	3.16	31.3	3.2 U	0.21 J
Total DDT (c,g)	4.16	62.9	4.2	0.84
ΣDDTs (c,h)	5.28	572	19	1.1
PCBs (ug/kg)				
Aroclor 1016	NS	NS	5.4 U	5.2 U
Aroclor 1221	NS	NS	11 U	11 U
Aroclor 1232	NS	NS	5.4 U	5.2 U
Aroclor 1242	NS	NS	5.4 U	5.2 U
Aroclor 1248	NS	NS	22 J	2.9 J
Aroclor 1254	NS	NS	19 U	5.2 U
Aroclor 1260	NS	NS	29 J	5.2 U
Aroclor 1262	NS	NS	5.4 U	5.2 U
Aroclor 1268	NS	NS	5.4 U	5.2 U
Total PCBs (c,i)	59.8	676	51 J	2.9 J
Petroleum Hydrocarbons (mg/kg)				
Diesel Range Organics (DRO)	NS	NS	200 J	20 U
Residual Range Organics (RRO)	NS	NS	530 J	30 J
Gasoline Range Organics (GRO)	NS	NS	1.9 J	3.3 U
Conventionals (percent)				

DRAFT DOCUMENT:
Do Not Quote or Cite.

**Table E-7
Berth 401 Under-pier Sediment Data Compared to SQGs**

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP01-0-1 K2401845-001 03/12/2004	T4-UP02-0-1 K2401845-002 03/12/2004
Total organic carbon	NS	NS	1.24	0.28
Total solids	NS	NS	62.5	77.3
Grain Size (percent) (j)				
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	99.7	100
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.3	98.5
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	97.8 J	93.4 J
Sand, Coarse No. 40 (0.425 mm)	NS	NS	78.4	66.7
Sand, Medium No. 60 (0.250 mm)	NS	NS	34.4	23.1
Sand, Fine No. 140 (0.106 mm)	NS	NS	22.9 J	6.48 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	21.2	6.08
Silt (0.074 mm)	NS	NS	20.4	5.11
Clay (0.005 mm)	NS	NS	6.98	2.33
Clay (0.001 mm)	NS	NS	0	0.67

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-7
Berth 401 Under-pier Sediment Data Compared to SQGs

NS = No screening level.

NA = Not analyzed because of insufficient sample volume.

U = Analyte was not detected above the reported sample quantitation limit.

J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

B = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

The approximate concentration is less than the method report limit but greater than the method detection limit.

Boxed values indicate concentration is greater than TEC.

Shaded values indicate concentration is greater than PEC.

- a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based threshold effect concentrations (TEC). Represents concentration below which toxicity is unlikely to be observed.
- b. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based probable effect concentrations (PEC). Represents concentration above which toxicity is likely to be observed.
- c. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
- d. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
- e. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
- f. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
- g. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
- h. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes e, f, and g for the definitions of total DDD, total DDE, and total DDT, respectively.
- i. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).
- j. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use.

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-8
Slip 1 Under-pier Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP03 K2402940-001 04/21/2004	T4-UP04 K2402940-003 04/21/2004	T4-UP05 K2402940-004 04/21/2004	T4-UP06-0-1 K2401845-003 03/12/2004	T4-UP07-0-1 K2401845-004 03/12/2004	T4-UP08-0-1 K2401845-005 03/12/2004
Metals (mg/kg)								
Arsenic	9.79	33	2.3	3.3	2.8	5.7	7	2.4
Cadmium	0.99	4.98	0.17	0.17	0.17	1.02	5.79	0.5
Chromium	43.4	111	12.9	12.4	10.4	24.4	23.8	18
Copper	31.6	149	16.4 J	13.9 J	13.4 J	37.3 J	49.8 J	18.9 J
Lead	35.8	128	17.3	11.2	11.9	49.4	1950	40.8
Mercury	0.18	1.06	0.026	0.013 B	0.036	0.123	0.067	0.021
Nickel	22.7	48.6	15.3 J	14.8 J	14.2 J	18.9 J	18.8 J	19.9 J
Selenium	NS	NS	0.03 J	0.08 UJ	0.08 UJ	0.21 U	0.27 U	0.08 U
Silver	NS	NS	0.07	0.06	0.04	0.25	0.75	0.06
Zinc	121	459	65.5 J	52.4 J	51.6 J	178 J	1000 J	114 J
Semivolatile Organics (ug/kg)								
Naphthalene	176	561	6.9	1.3 J	1.8 J	15	28	2.9 J
2-Methylnaphthalene	NS	NS	0.74 J	0.85 J	1.0 J	8.6	21	0.99 J
1-Methylnaphthalene	NS	NS	0.51 J	0.46 J	0.5 J	4.6 J	13	0.6 J
Biphenyl	NS	NS	5.0 U	5.0 U	5.0 U	3.5 J	5.0 J	4.9 U
2,6-Dimethylnaphthalene	NS	NS	0.3 J	1.1 J	0.58 J	12	36	0.56 J
Acenaphthylene	NS	NS	2.0 J	1.0 J	3.0 J	38	46	1.4 J
Acenaphthene	NS	NS	2.1 J	3.8 J	1.7 J	39	130	4.9 J
2,3,5-Trimethylnaphthalene	NS	NS	0.82 J	0.88 J	0.5 J	12	32	0.75 J
Fluorene	77.4	536	1.6 J	2.6 J	1.7 J	82	210	4.4 J
Phenanthrene	204	1,170	15	18	12	410	960	19
Anthracene	57.2	845	2.5 J	5.2	7.7	320	2,500	6.8
1-Methylphenanthrene	NS	NS	1.1 J	1.8 J	1.3 J	52	140	1.7 J
Fluoranthene	423	2,230	32	47	57	850	2,800	150
Pyrene	195	1,520	29	46	45	910	2,700	230
Benz(a)anthracene	108	1,050	13	26	21	880	1,700	46
Chrysene	166	1,290	21	37	28	1,400	2,500	68
Benzo(b)fluoranthene	NS	NS	16	34	27	820	1,200	55
Benzo(k)fluoranthene	NS	NS	19	33	29	690	1,200	40
Benzo(e)pyrene	NS	NS	14	34	25	660	920	47
Benzo(a)pyrene	150	1,450	16	38	25	710	1,000	41
Perylene	NS	NS	15	26	7.7	220	390	96
Indeno(1,2,3-cd)pyrene	NS	NS	14	31	18	500	800	26
Dibenz(a,h)anthracene	33	NS	2.0 J	5.0	2.8 J	120	200	5.0
Benzo(g,h,i)perylene	NS	NS	15	37	23	410	590	27
Dimethyl phthalate	NS	NS	20 U	20 U	20 U	140 U	99 U	20 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-8
Slip 1 Under-pier Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP03 K2402940-001 04/21/2004	T4-UP04 K2402940-003 04/21/2004	T4-UP05 K2402940-004 04/21/2004	T4-UP06-0-1 K2401845-003 03/12/2004	T4-UP07-0-1 K2401845-004 03/12/2004	T4-UP08-0-1 K2401845-005 03/12/2004
Diethyl phthalate	NS	NS	20 U	20 U	20 U	140 U	99 U	20 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	20 U	140 U	99 U	20 U
Butylbenzyl phthalate	NS	NS	20 U	20 U	20 U	51 J	99 U	20 U
Bis(2-ethylhexyl) phthalate	NS	NS	20 U	23 U	20 U	620	250	20 U
Di-n-octyl phthalate	NS	NS	20 U	20 U	20 U	140 U	99 U	20 U
Total PAHs (c,d)	1,610	22,800	176	293	260	7,164	16,974	669
Pesticides (ug/kg)								
4,4'-DDE	NS	NS	0.40 U	0.32 J	0.40 U	3.3	2.7	0.43 U
4,4'-DDD	NS	NS	0.40 U	0.39 J	0.55	2.4 J	3.8	0.43 U
4,4'-DDT	NS	NS	0.39 J	1.4	1.6	6.6 J	3.3 J	0.37 J
2,4'-DDE	NS	NS	0.40 U	0.40 U	0.15 J	1.1 U	0.54 U	0.43 U
2,4'-DDD	NS	NS	0.40 U	0.40 U	0.40 U	1.8 J	3.4 J	0.43 U
2,4'-DDT	NS	NS	0.40 U	0.58 J	0.22 J	0.73 U	0.91 U	0.2 J
Total DDD (c,e)	4.88	28	0.40 U	0.39 J	0.55	4.2 J	7.2	0.43 U
Total DDE (c,f)	3.16	31.3	0.40 U	0.32 J	0.15 J	3.3	2.7	0.43 U
Total DDT (c,g)	4.16	62.9	0.39 J	2.0	1.8	6.6 J	3.3 J	0.57 J
ΣDDTs (c,h)	5.28	572	0.39 J	2.7	2.5	14	13	0.57 J
PCBs (ug/kg)								
Aroclor 1016	NS	NS	5.0 U	5.0 U	5.0 U	9.1 U	6.8 U	5.3 U
Aroclor 1221	NS	NS	9.9 U	10 U	10 U	19 U	14 U	11 U
Aroclor 1232	NS	NS	5.0 U	5.0 U	5.0 U	9.1 U	6.8 U	5.3 U
Aroclor 1242	NS	NS	5.0 U	5.0 U	5.0 U	9.1 U	6.8 U	5.3 U
Aroclor 1248	NS	NS	5.0 U	5.0 U	5.0 U	25	10 J	5.3 U
Aroclor 1254	NS	NS	5.0 U	5.0 U	5.0 U	40 U	40 U	7.4
Aroclor 1260	NS	NS	5.0 U	6.6	5.0 U	63	34	5.3 U
Aroclor 1262	NS	NS	5.0 U	5.0 U	5.0 U	9.1 U	6.8 U	5.3 U
Aroclor 1268	NS	NS	5.0 U	5.0 U	5.0 U	9.1 U	6.8 U	5.3 U
Total PCBs (c,i)	59.8	676	9.9 U	6.6	10 U	88	44	7.4
Petroleum Hydrocarbons (mg/kg)								
Diesel Range Organics (DRO)	NS	NS	17 J	31 J	19 U	160 J	190 J	23 U
Residual Range Organics (RRO)	NS	NS	35 J	130 J	7.7 J	710 J	830 J	45 J
Gasoline Range Organics (GRO)	NS	NS	3.0 U	3.2 U	3.3 U	5.0 U	4.6 U	3.3 U
Conventionals (percent)								

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-8
Slip 1 Under-pier Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP03 K2402940-001 04/21/2004	T4-UP04 K2402940-003 04/21/2004	T4-UP05 K2402940-004 04/21/2004	T4-UP06-0-1 K2401845-003 03/12/2004	T4-UP07-0-1 K2401845-004 03/12/2004	T4-UP08-0-1 K2401845-005 03/12/2004
Total organic carbon	NS	NS	0.4	0.42	0.09	3.81	1.7	0.29
Total solids	NS	NS	70.7	72.4	71.8	36.7	53.1	75.4
Grain Size (percent) (j)								
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	100	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	98.1	100	100	100	100
Gravel, Medium No. 4 (4.75 mm)	NS	NS	96.9	93.9	100	99.2	97.9	99.7
Gravel, Fine No. 10 (2.00 mm)	NS	NS	96.2	90.1	99.9	98.3	95.9	99.4
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	93	86.7	98.6	95.8 J	91.2 J	98.5 J
Sand, Coarse No. 40 (0.425 mm)	NS	NS	66	59.8	67.9	83.8	75.7	87.6
Sand, Medium No. 60 (0.250 mm)	NS	NS	32.1	19.3	15.4	66.6	47	68.6
Sand, Fine No. 140 (0.106 mm)	NS	NS	21.6	7.1	4.9	55.8 J	32.2 J	30.4 J
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	20.2	6.1	4.5	53.4	30	24.2
Silt (0.074 mm)	NS	NS	33.8	27.3	28.1	55.9	33.7	23.8
Clay (0.005 mm)	NS	NS	0	0	0	21.9	12.1	10.4
Clay (0.001 mm)	NS	NS	0	0	0	1.66	0	2.43

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-8
Slip 1 Under-pier Sediment Data Compared to SQGs

NS = No screening level.

NA = Not analyzed because of insufficient sample volume.

U = Analyte was not detected above the reported sample quantitation limit.

J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

B = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

The approximate concentration is less than the method report limit but greater than the method detection limit.

Boxed values indicate concentration is greater than TEC.

Shaded values indicate concentration is greater than PEC.

- a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based threshold effect concentrations (TEC). Represents concentration below which toxicity is unlikely to be observed.
- b. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based probable effect concentrations (PEC). Represents concentration above which toxicity is likely to be observed.
- c. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
- d. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
- e. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
- f. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
- g. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
- h. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes e, f, and g for the definitions of total DDD, total DDE, and total DDT, respectively.
- i. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).
- j. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use.

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-9
Slip 3 Under-pier Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP09-0-2 K2401908-012 03/15/2004	T4-UP10-0-1 K2401845-006 03/12/2004	T4-UP10-0-2 K2401908-011 03/15/2004	T4-UP12-0-1 K2401949-006 03/12/2004	T4-UP13-0-1 K2402008-001 03/18/2004	T4-UP14 K2402940-002 04/21/2004
Metals (mg/kg)								
Arsenic	9.79	33	3.6	3.3	3.6	6.2	12.3 J	6.4
Cadmium	0.99	4.98	0.3	0.34	0.35	6.99	10.1	2.99
Chromium	43.4	111	24.5 J	20.6	24.3 J	12.5 J	15.7 J	21.9
Copper	31.6	149	35.8 J	38.5 J	35 J	43.2 J	55.5 J	37.7 J
Lead	35.8	128	17.3	27.4	23.1	924	1,670 J	198
Mercury	0.18	1.06	0.06 J	0.085	0.061 J	0.043	0.09	0.119
Nickel	22.7	48.6	22.5 J	21.8 J	22.2 J	15 J	18.5 J	20.1 J
Selenium	NS	NS	0.17 J	0.08 U	0.15 J	0.07 UJ	0.06 J	0.04 J
Silver	NS	NS	0.17	0.13	0.14	2.43	3.53	0.39
Zinc	121	459	91.2 J	96.3 J	94.7 J	1130 J	2,050 J	458 J
Semivolatile Organics (ug/kg)								
Naphthalene	176	561	43	58	69 J	130	1,700	320
2-Methylnaphthalene	NS	NS	29	29	42 J	87	940	120
1-Methylnaphthalene	NS	NS	30	18	42 J	46 J	490	60
Biphenyl	NS	NS	8.4	8.3	12	15 J	120	53
2,6-Dimethylnaphthalene	NS	NS	34	18	40 J	25 J	250	80
Acenaphthylene	NS	NS	12	20	29 J	12 J	25	120
Acenaphthene	NS	NS	150	86	180 J	2,500	11,000	220
2,3,5-Trimethylnaphthalene	NS	NS	29	15	33 J	20 J	98	220
Fluorene	77.4	536	150	74	170 J	730	3,400	210
Phenanthrene	204	1,170	630	420	820 J	7,600	32,000	1,900
Anthracene	57.2	845	110	110	180 J	2,300	8,700	410
1-Methylphenanthrene	NS	NS	50	35	64 J	610	1,800	170
Fluoranthene	423	2,230	680	770	1,300 J	17,000	64,000	4,900
Pyrene	195	1,520	710	910	1,400 J	15,000	74,000	4,900
Benz(a)anthracene	108	1,050	240	510	640 J	13,000	41,000	2,400
Chrysene	166	1,290	280	600	780 J	11,000	44,000	3,000
Benzo(b)fluoranthene	NS	NS	240	680	840 J	13,000	44,000	2,200
Benzo(k)fluoranthene	NS	NS	210	560	700 J	11,000	42,000	2,500
Benzo(e)pyrene	NS	NS	200	560	690 J	9,600	32,000	2,100
Benzo(a)pyrene	150	1,450	250	720	880 J	18,000 J	48,000	3,300
Perylene	NS	NS	120	220	310 J	4,300	13,000	840
Indeno(1,2,3-cd)pyrene	NS	NS	200	650	780 J	14,000 J	31,000	2,700
Dibenz(a,h)anthracene	33	NS	30	120	150 J	2,400	6,500	430
Benzo(g,h,i)perylene	NS	NS	200	600	720 J	9,700	25,000	2,700
Dimethyl phthalate	NS	NS	20 U	20 U	39 U	38 UJ	200 U	100 U

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-9
Slip 3 Under-pier Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP09-0-2 K2401908-012 03/15/2004	T4-UP10-0-1 K2401845-006 03/12/2004	T4-UP10-0-2 K2401908-011 03/15/2004	T4-UP12-0-1 K2401949-006 03/12/2004	T4-UP13-0-1 K2402008-001 03/18/2004	T4-UP14 K2402940-002 04/21/2004
Diethyl phthalate	NS	NS	20 U	20 U	39 U	38 UJ	200 U	100 U
Di-n-butyl phthalate	NS	NS	20 U	20 U	39 U	38 UJ	200 U	100 U
Butylbenzyl phthalate	NS	NS	8.8 J	27	17 J	38 UJ	200 U	100 U
Bis(2-ethylhexyl) phthalate	NS	NS	61	140	130	59 UJ	200 U	100 U
Di-n-octyl phthalate	NS	NS	20 U	20 U	39 U	38 UJ	200 U	100 U
Total PAHs (c,d)	1,610	22,800	3,705	5,518	7,988 J	111,272	413,825	26,380
Pesticides (ug/kg)								
4,4'-DDE	NS	NS	3.1	1.4	2.5	0.27 J	4.0 U	3.4 J
4,4'-DDD	NS	NS	2	2	2.3	0.65	4.0 U	13
4,4'-DDT	NS	NS	0.40 U	0.47 U	0.40 U	0.40 U	4.4	14
2,4'-DDE	NS	NS	0.40 U	0.47 U	0.40 U	0.40 U	4.0 U	4.0 U
2,4'-DDD	NS	NS	1.2 J	1.3	1.4	0.55 U	4.5 U	4.7
2,4'-DDT	NS	NS	0.40 U	0.47 U	0.40 U	0.40 U	4.0 U	4.0 U
Total DDD (c,e)	4.88	28	3.2	3.3	3.7	0.65	4.5 U	18
Total DDE (c,f)	3.16	31.3	3.1	1.4	2.5	0.27 J	4.0 U	3.4 J
Total DDT (c,g)	4.16	62.9	0.40 U	0.47 U	0.40 U	0.40 U	4.4	14
ΣDDTs (c,h)	5.28	572	6.3	4.7	6.2	0.92	4.4	35
PCBs (ug/kg)								
Aroclor 1016	NS	NS	5.0 U	5.9 U	5.0 U	5.0 U	5.0 U	50 U
Aroclor 1221	NS	NS	10 U	12 U	10 U	10 U	10 U	100 U
Aroclor 1232	NS	NS	5.0 U	5.9 U	5.0 U	5.0 U	5.0 U	50 U
Aroclor 1242	NS	NS	5.0 U	5.9 U	5.0 U	5.0 U	5.0 U	50 U
Aroclor 1248	NS	NS	5.1	5.7 J	8.0	6.0	5.0 U	50 U
Aroclor 1254	NS	NS	5.0 U	10 U	5.0 U	7.5 U	5.0 U	50 U
Aroclor 1260	NS	NS	9.1	8.6	12	5.6	33	50 U
Aroclor 1262	NS	NS	5.0 U	5.9 U	5.0 U	5.0 U	5.0 U	50 U
Aroclor 1268	NS	NS	5.0 U	5.9 U	5.0 U	5.0 U	5.0 U	50 U
Total PCBs (c,i)	59.8	676	14	14	20	12	33	100 U
Petroleum Hydrocarbons (mg/kg)								
Diesel Range Organics (DRO)	NS	NS	44 J	58 J	41 J	23 J	360 J	330 J
Residual Range Organics (RRO)	NS	NS	130 J	260 J	140 J	74 J	1200 J	360 J
Gasoline Range Organics (GRO)	NS	NS	4.5 U	4.1 U	4.1 U	3.1 U	1.5 J	2.3 J
Conventionals (percent)								

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-9
Slip 3 Under-pier Sediment Data Compared to SQGs

Sample ID: Lab ID: Date Sampled:	TEC (a)	PEC (b)	T4-UP09-0-2 K2401908-012 03/15/2004	T4-UP10-0-1 K2401845-006 03/12/2004	T4-UP10-0-2 K2401908-011 03/15/2004	T4-UP12-0-1 K2401949-006 03/12/2004	T4-UP13-0-1 K2402008-001 03/18/2004	T4-UP14 K2402940-002 04/21/2004
Total organic carbon	NS	NS	1.82	1.08	1.53	0.24	2.83	1.53
Total solids	NS	NS	54.2	60.4	59.3	80.7	81.4	62.2
Grain Size (percent) (j)								
Gravel No. 3/4" (19.0 mm)	NS	NS	100	100	100	NA	100	100
Gravel No. 3/8" (9.50 mm)	NS	NS	100	100	100	NA	93.6	96.3
Gravel, Medium No. 4 (4.75 mm)	NS	NS	100	100	100	NA	87.7	96
Gravel, Fine No. 10 (2.00 mm)	NS	NS	99.8	99.7	100	NA	85.6	94.3
Sand, Very Coarse No. 20 (0.850 mm)	NS	NS	99.5	99.3 J	99.7	NA	81.7	91.4
Sand, Coarse No. 40 (0.425 mm)	NS	NS	98.1	90.9	96.5 J	NA	53.2	67.8
Sand, Medium No. 60 (0.250 mm)	NS	NS	93.8 J	60.1	84.2 J	NA	18.6	35.8
Sand, Fine No. 140 (0.106 mm)	NS	NS	84.1	49.6 J	75	NA	7.14	20.1
Sand, Very Fine No. 200 (0.0750 mm)	NS	NS	75.8	45.3	67.3	NA	6.29	16.3
Silt (0.074 mm)	NS	NS	64.5	46.9	57.1	NA	5.17	32.6
Clay (0.005 mm)	NS	NS	28.8	11.6	17.8	NA	1.73	0
Clay (0.001 mm)	NS	NS	7.54	0	0	NA	0	0

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-9
Slip 3 Under-pier Sediment Data Compared to SQGs

NS = No screening level.

NA = Not analyzed because of insufficient sample volume.

U = Analyte was not detected above the reported sample quantitation limit.

J = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ = Analyte was not detected above the reported sample quantitation limit. The reported quantitation limit is approximate.

B = Analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

The approximate concentration is less than the method report limit but greater than the method detection limit.

Boxed values indicate concentration is greater than TEC.

Shaded values indicate concentration is greater than PEC.

- a. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based threshold effect concentrations (TEC). Represents concentration below which toxicity is unlikely to be observed.
- b. Development and Evaluation of Consensus-based Sediment Quality Guidelines for Freshwater Receptors (MacDonald et al., 2000a). Consensus based probable effect concentrations (PEC). Represents concentration above which toxicity is likely to be observed.
- c. Total concentrations are calculated using the detected concentrations of individual constituents. Non-detects are treated as zeros. If all the individual constituents are non-detect, the total concentration is reported as non-detect using the highest detection limit.
- d. Swartz, 1999, which MacDonald et al., 2000a references as the source of the PAH screening levels, describes the total PAH criteria as the sum of the following polycyclic aromatic compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene.
- e. The total DDD criteria represent the sum of the following compounds: 2,4'-DDD and 4,4'-DDD.
- f. The total DDE criteria represent the sum of the following compounds: 2,4'-DDE and 4,4'-DDE.
- g. The total DDT criteria represent the sum of the following compounds: 2,4'-DDT and 4,4'-DDT.
- h. ΣDDTs criteria represent the sum of the following compounds: total DDD, total DDE, and total DDT. See footnotes e, f, and g for the definitions of total DDD, total DDE, and total DDT, respectively.
- i. MacDonald et al., 2000b, which MacDonald et al., 2000a references as the source of the PCB screening levels, does not describe which individual Aroclors make up the total PCB criteria. It was assumed that total PCBs consisted of all the Aroclors that were analyzed for (Aroclor 1016, Aroclor 1221, Aroclor 1232, Aroclor 1242, Aroclor 1248, Aroclor 1254, Aroclor 1260, Aroclor 1262, and Aroclor 1268).
- j. Grain size analysis was performed by sieve and hydrometer (ASTM D 422). There were occasional calibration discrepancies between the sieves and hydrometer which are inherent in the method. These discrepancies occasionally resulted in an increase in the percent passing fraction between very fine sand and silt. As these discrepancies are inherent in the method, the data are considered acceptable for use.

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-10
Summary of Sediment Bioassay Results - Amphipod Bioassay (*Hyallolella azteca*)
Port of Portland, Terminal 4 - Slip 3

Sample Identification	Test Mean Mortality (M _T) in percent	Reference Mean Mortality (M _R) in percent	M _T -M _R	P-Value	Single-Hit Criteria ¹ (M _T - M _R > 15%)	Two-Hit Criteria ² (significant diff. btwn M _T and M _R)	Overall Result ³
PHASE 1							
HC-S-26	7.5	1.3	6.2	0.04	Pass	yes	Pass
HC-S-28	16.3	3.8	12.5	0.01	Pass	yes	Pass
HC-S-35	5.0	3.8	1.2	-	Pass	no	Pass
HC-S-36	3.8	1.3	2.5	-	Pass	no	Pass
HC-S-39	6.3	3.8	2.5	-	Pass	no	Pass
HC-S-42	7.5	3.8	3.7	-	Pass	no	Pass
Ref B	3.8	-	-	-	-	-	-
Ref C	1.3	-	-	-	-	-	-
Neg. Control	1.3	-	-	-	-	-	-
PHASE 2							
HC-S-01	35.0	13.8	21.2	0.003	Fail	yes	Fail
HC-S-04	37.5	13.8	23.7	0.002	Fail	yes	Fail
HC-S-05	28.8	13.8	15	0.04	Pass	yes	Fail
HC-S-07	20.0	13.8	6.2	-	Pass	no	Fail
HC-S-11	18.8	13.8	5	-	Pass	no	Pass
HC-S-16	27.5	13.8	13.7	0.04	Pass	yes	Fail
HC-S-19	16.3	26.3	-10	-	Pass	no	Pass
HC-S-22	30.0	13.8	16.2	0.01	Fail	yes	Fail
HC-S-24	33.8	26.3	7.5	-	Pass	no	Pass
HC-S-30	12.5	26.3	-13.8	-	Pass	no	Pass
Ref B	13.8	-	-	-	-	-	-
Ref C	26.3	-	-	-	-	-	-
Neg. Control	15.0	-	-	-	-	-	-

Source: Hart Crowser, 2000.

Notes:

¹ One Hit Required to Fail Bioassay

² Two Hits Required to Fail Bioassay

³ A test fails if either of the following is true:

"Fail" of the single-hit criteria for the corresponding sample from any of the toxicity tests.

"Yes" for any two-hit criteria for the corresponding sample from any of the toxicity tests.

DRAFT DOCUMENT:

Do Not Quote or Cite.

Table E-11
Summary of Sediment Bioassay Results - Midge Acute Bioassay (Chironomus tentans)
Port of Portland, Terminal 4 - Slip 3

Sample Identification	Test Mean Mortality (M _T) in percent	Reference Mean Mortality (M _R) in percent	M _T -M _R	P-Value	Single-Hit Criteria ¹ (M _T - M _R > 20%)	Two-Hit Criteria ² (significant diff. btwn M _T and M _R)	Overall Result ³
PHASE 1							
HC-S-26	27.5	20.0	7.5	-	Pass	no	Pass
HC-S-28	40.0	28.8	11.2	-	Pass	no	Pass
HC-S-35	35.0	28.8	6.2	-	Pass	no	Pass
HC-S-36	26.3	20.0	6.3	-	Pass	no	Pass
HC-S-39	41.3	28.8	12.5	0.03	Pass	yes	Pass
HC-S-42	28.8	28.8	0	-	Pass	no	Pass
Ref B	28.8	-	-	-	-	-	-
Ref C	20.0	-	-	-	-	-	-
Neg. Control	15.0	-	-	-	-	-	-
PHASE 2							
HC-S-01	47.5	12.5	35	0.00001	Fail	yes	Fail
HC-S-04	30.0	12.5	17.5	0.03	Pass	yes	Fail
HC-S-05	31.3	12.5	18.8	0.04	Pass	yes	Fail
HC-S-07	25.0	12.5	12.5	-	Pass	no	Fail
HC-S-11	26.3	12.5	13.8	-	Pass	no	Pass
HC-S-16	17.5	12.5	5	-	Pass	no	Fail
HC-S-19	12.5	21.3	-8.8	-	Pass	no	Pass
HC-S-22	33.8	12.5	21.3	0.007	Fail	yes	Fail
HC-S-24	30.0	21.3	8.7	-	Pass	no	Pass
HC-S-30	8.6	21.3	-12.7	-	Pass	no	Pass
Ref B	12.5	-	-	-	-	-	-
Ref C	21.3	-	-	-	-	-	-
Neg. Control	3.8	-	-	-	-	-	-

Source: Hart Crowser, 2000.

Notes:

¹ One Hit Required to Fail Bioassay

² Two Hits Required to Fail Bioassay

³ A test fails if either of the following is true:

"Fail" of the single-hit criteria for the corresponding sample from any of the toxicity tests.

"Yes" for any two-hit criteria for the corresponding sample from any of the toxicity tests.

DRAFT DOCUMENT:
Do Not Quote or Cite.

Table E-12
Summary of Sediment Bioassay Results - Midge Chronic Bioassay (Chironomus tentans)
Port of Portland, Terminal 4 - Slip 3

Sample Identification	Test Mean Individual Biomass (B _T) in mg	Reference Mean Individual Biomass (B _R) in mg	B _T /B _R *100	P-Value	Single-Hit Criteria ¹ (B _T /B _R < 60%)	Two-Hit Criteria ² (significant diff. btwn B _T and B _R)	Overall Result ³
PHASE 1							
HC-S-26	2.01	1.73	116.2	-	Pass	no	Pass
HC-S-28	1.32	1.60	82.5	-	Pass	no	Pass
HC-S-35	1.71	1.60	106.9	-	Pass	no	Pass
HC-S-36	1.50	1.73	86.7	-	Pass	no	Pass
HC-S-39	1.64	1.60	102.5	-	Pass	no	Pass
HC-S-42	1.46	1.60	91.3	-	Pass	no	Pass
Ref B	1.60	-	-	-	-	-	-
Ref C	1.73	-	-	-	-	-	-
Neg. Control	1.69	-	-	-	-	-	-
PHASE 2							
HC-S-01	0.19	1.15	16.5	0.00002	Fail	yes	Fail
HC-S-04	0.37	1.15	32.2	0.00001	Fail	yes	Fail
HC-S-05	0.51	1.15	44.3	0.00002	Fail	yes	Fail
HC-S-07	0.59	1.15	51.3	0.0003	Fail	yes	Fail
HC-S-11	0.81	1.15	70.4	0.009	Pass	yes	Pass
HC-S-16	0.74	1.15	64.3	0.002	Pass	yes	Fail
HC-S-19	1.09	1.37	79.6	-	Pass	no	Pass
HC-S-22	1.02	1.15	88.7	-	Pass	no	Fail
HC-S-24	0.96	1.37	70.1	0.08	Pass	yes	Pass
HC-S-30	0.95	1.37	69.3	0.01	Pass	yes	Pass
Ref B	1.15	-	-	-	-	-	-
Ref C	1.37	-	-	-	-	-	-
Neg. Control	1.46	-	-	-	-	-	-

Source: Hart Crowser, 2000.

Notes:

¹ One Hit Required to Fail Bioassay

² Two Hits Required to Fail Bioassay

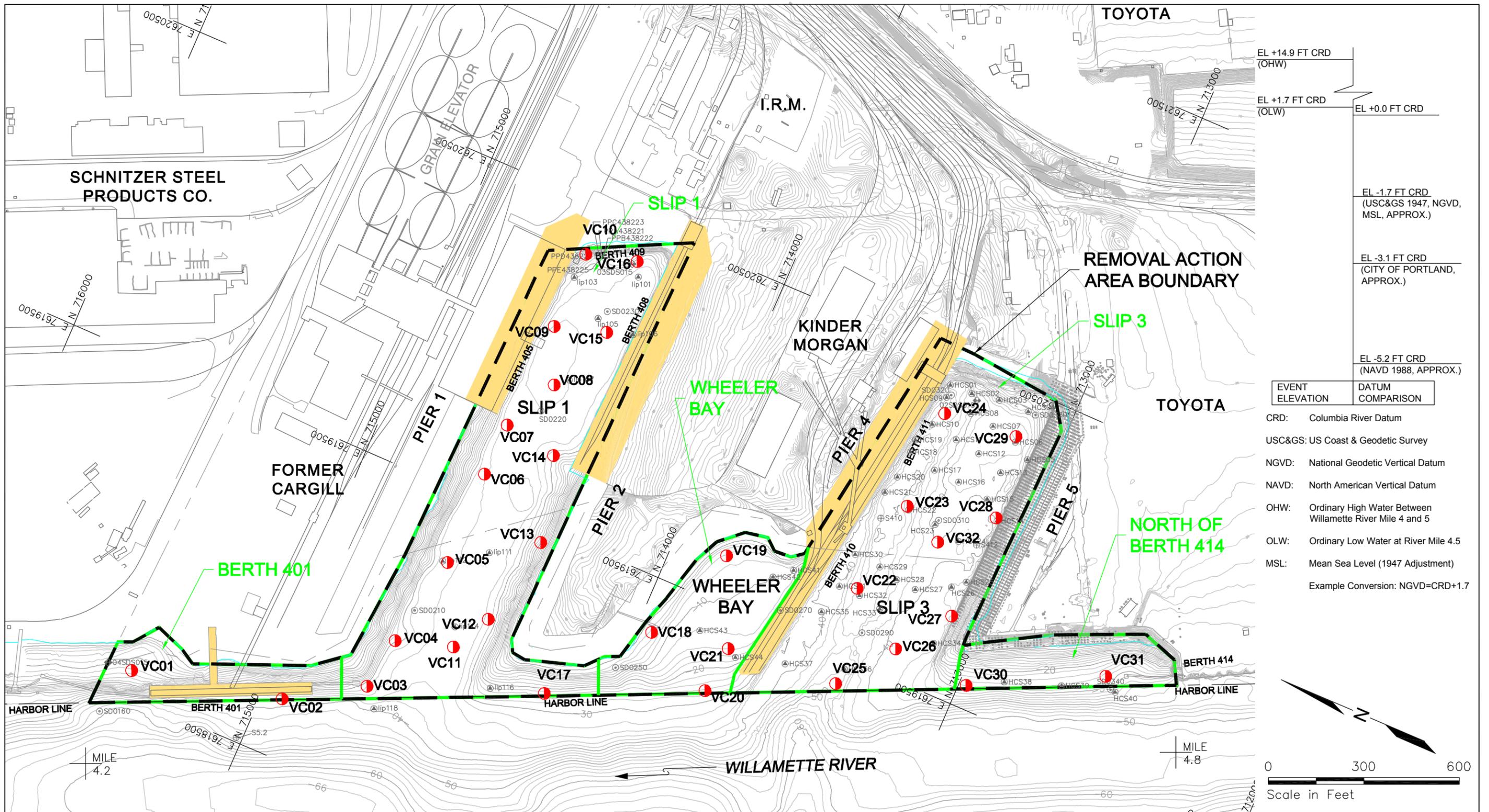
³ A test fails if either of the following is true:

"Fail" of the single-hit criteria for the corresponding sample from any of the toxicity tests.

"Yes" for any two-hit criteria for the corresponding sample from any of the toxicity tests.

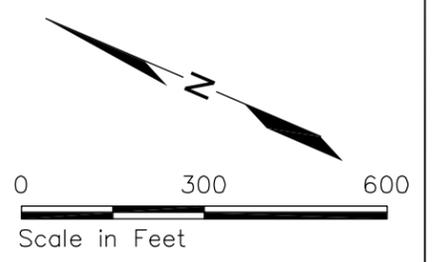
DRAFT DOCUMENT:

Do Not Quote or Cite.



EL +14.9 FT CRD (OHW)	EL +0.0 FT CRD
EL +1.7 FT CRD (OLW)	EL -1.7 FT CRD (USC&GS 1947, NGVD, MSL, APPROX.)
	EL -3.1 FT CRD (CITY OF PORTLAND, APPROX.)
	EL -5.2 FT CRD (NAVD 1988, APPROX.)
EVENT ELEVATION	DATUM COMPARISON

CRD: Columbia River Datum
 USC&GS: US Coast & Geodetic Survey
 NGVD: National Geodetic Vertical Datum
 NAVD: North American Vertical Datum
 OHW: Ordinary High Water Between Willamette River Mile 4 and 5
 OLW: Ordinary Low Water at River Mile 4.5
 MSL: Mean Sea Level (1947 Adjustment)
 Example Conversion: NGVD=CRD+1.7



Existing Piers

Field-verified Sediment Core Sample Location

- Existing Surface Sediment Sample Location by Others
- SDS015 Round 1 Portland Harbor Data
 - HCS43 RI Report (Hart Crowser, 2000)
 - PPA438221 Storm Water Report (Hartman Associates/Fishman Environmental Services, 1995)
 - SD0220 Portland Harbor Sediment Investigation (Roy F. Weston, Inc., 1998)
 - S412 Willamette Sediment Report (USACE, 1987b)

- Notes:
1. Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 2. Site Plan is based on drawings provided by the Port of Portland.
 3. Shoreline boundary for Ordinary High Water is approximate.
 4. Willamette River Mile reference marks are approximate.
 5. Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 6. Datum conversion tables to CRD provided by Port of Portland.
 7. Ordinary Low Water elevation provided by USACE.
 8. Ordinary High Water elevation provided by Port of Portland.

DRAFT DOCUMENT

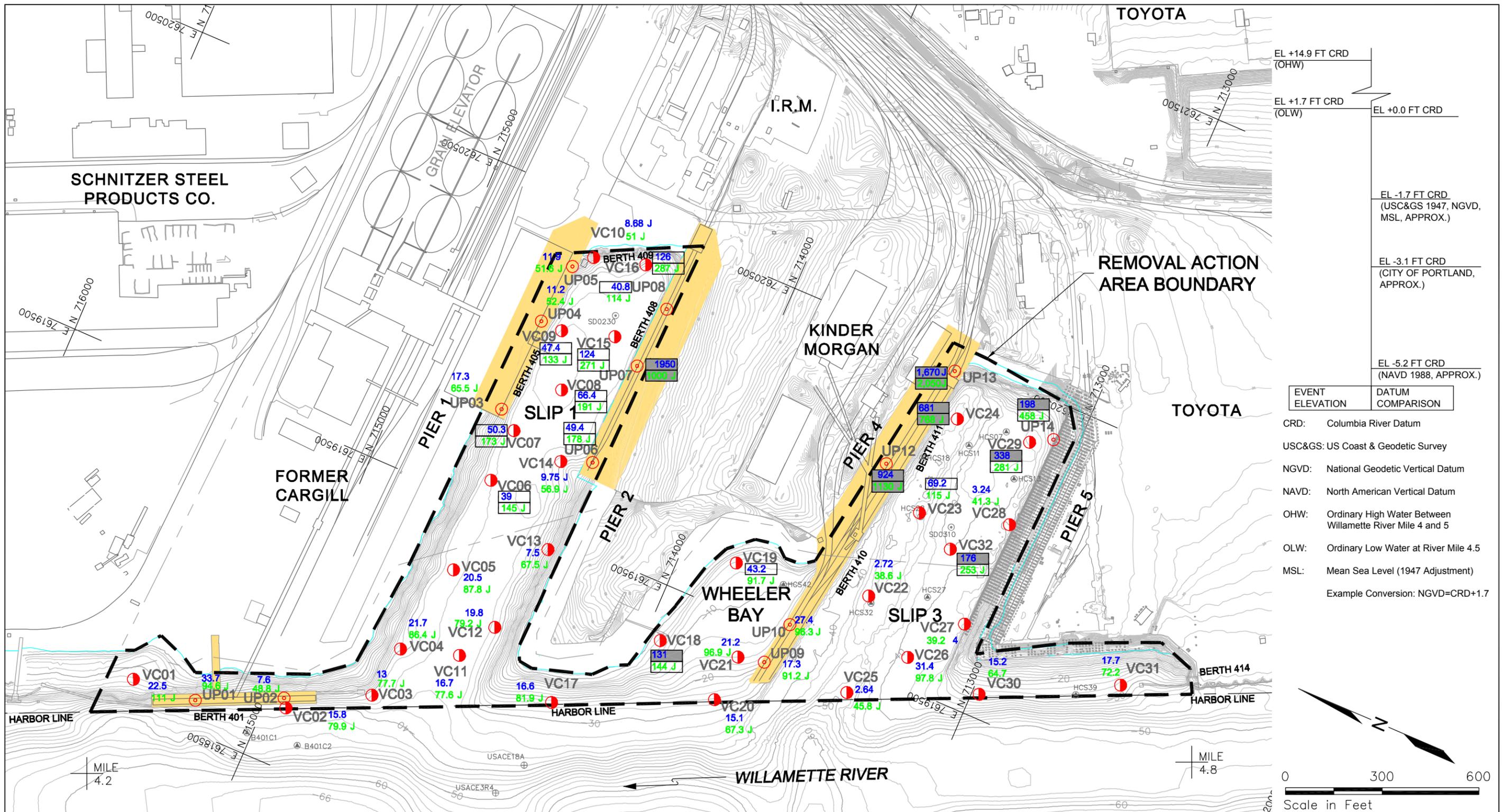
Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
 PORTLAND, OREGON
**TERMINAL 4 EARLY ACTION
 EE/CA REPORT**

**SURFACE SEDIMENT
 SAMPLE LOCATIONS**

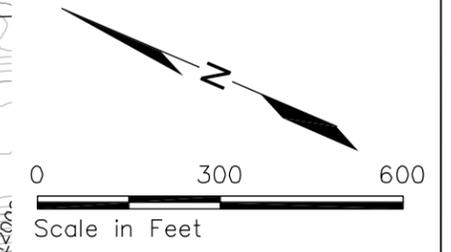


FIGURE
E-1



EL +14.9 FT CRD (OHW)	EL +0.0 FT CRD
EL +1.7 FT CRD (OLW)	EL -1.7 FT CRD (USC&GS 1947, NGVD, MSL, APPROX.)
	EL -3.1 FT CRD (CITY OF PORTLAND, APPROX.)
	EL -5.2 FT CRD (NAVD 1988, APPROX.)
EVENT ELEVATION	DATUM COMPARISON

CRD: Columbia River Datum
 USC&GS: US Coast & Geodetic Survey
 NGVD: National Geodetic Vertical Datum
 NAVD: North American Vertical Datum
 OHW: Ordinary High Water Between Willamette River Mile 4 and 5
 OLW: Ordinary Low Water at River Mile 4.5
 MSL: Mean Sea Level (1947 Adjustment)
 Example Conversion: NGVD=CRD+1.7



- Notes:
- Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 - Site Plan is based on drawings provided by the Port of Portland.
 - Shoreline boundary for Ordinary High Water is approximate.
 - Willamette River Mile reference marks are approximate.
 - Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 - Datum conversion tables to CRD provided by Port of Portland.
 - Ordinary Low Water elevation provided by USACE.
 - Ordinary High Water elevation provided by Port of Portland.
 - Datum conversion tables to CRD provided by Port of Portland.

<p>Existing Piers</p> <p>Field-verified Surface Sediment Sample Location</p> <p>Field-verified Under-Pier Surface Sediment Sample Location</p> <p>22.5 Total Lead Concentrations in mg/kg 111 Total Zinc Concentrations in mg/kg U = compound not detected J = estimated value □ = concentration is greater than TEC ■ = concentration is greater than PEC</p>	<p>Present Study Sediment Sample Location</p> <p>Existing Surface Sediment Sample Location by Others</p> <p>●HCS07 Sediment Characterization Study and RI Report (Hart Crowser, 1999, 2000)</p> <p>○SD0230 Portland Harbor Sediment Investigation (Roy F. Weston, Inc., 1998)</p> <p>⊕USACE18A Willamette River Raw Data (USACE, 1988)</p>
--	--

DRAFT DOCUMENT

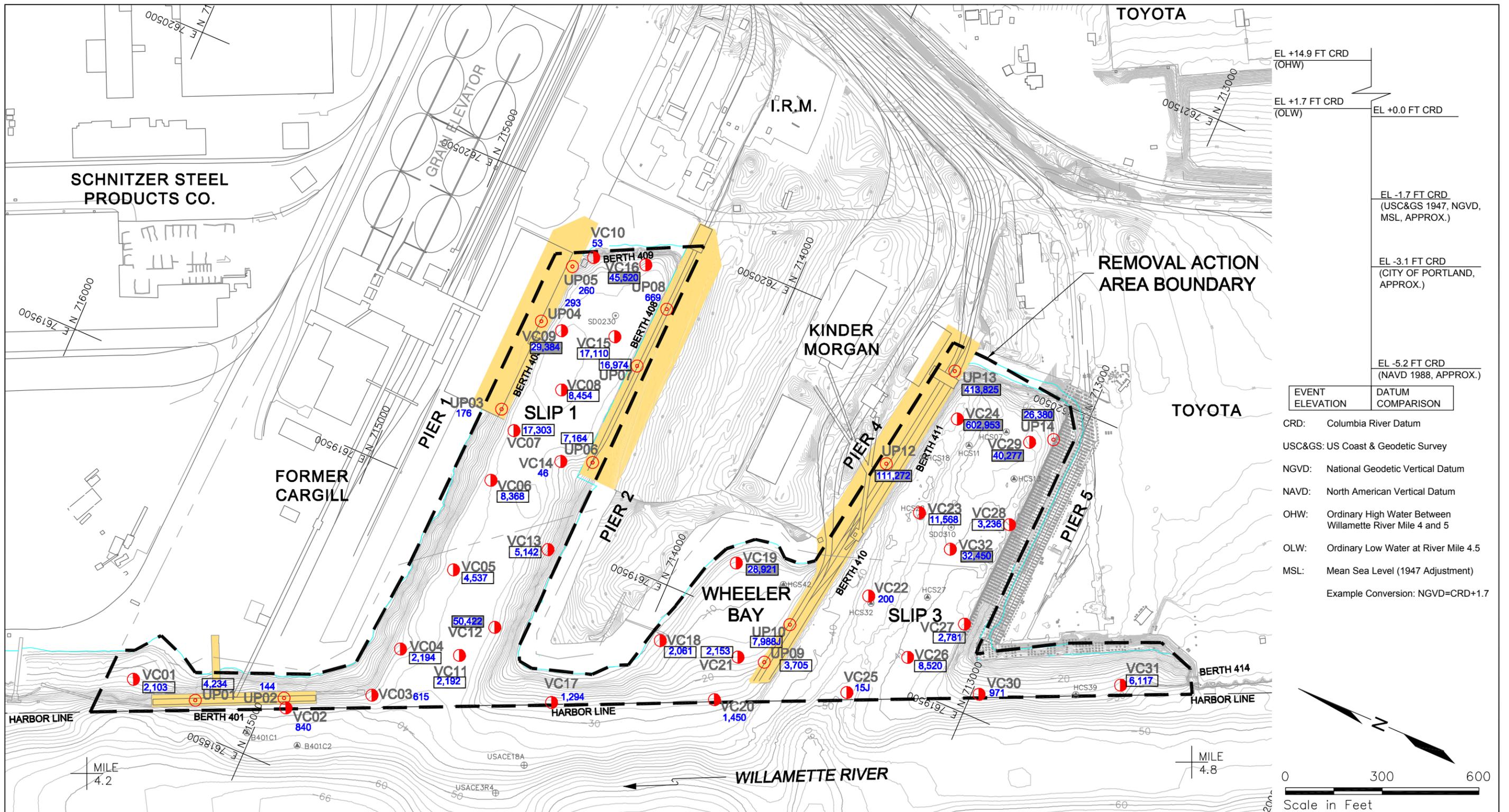
Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

**PORT OF PORTLAND
 PORTLAND, OREGON
 TERMINAL 4 EARLY ACTION
 EE/CA REPORT**

**SURFACE SEDIMENT LEAD
 AND ZINC CONCENTRATIONS**



FIGURE
E-2



EL +14.9 FT CRD (OHW)	EL +0.0 FT CRD
EL +1.7 FT CRD (OLW)	EL -1.7 FT CRD (USC&GS 1947, NGVD, MSL, APPROX.)
	EL -3.1 FT CRD (CITY OF PORTLAND, APPROX.)
	EL -5.2 FT CRD (NAVD 1988, APPROX.)

EVENT ELEVATION	DATUM COMPARISON
CRD:	Columbia River Datum
USC&GS:	US Coast & Geodetic Survey
NGVD:	National Geodetic Vertical Datum
NAVD:	North American Vertical Datum
OHW:	Ordinary High Water Between Willamette River Mile 4 and 5
OLW:	Ordinary Low Water at River Mile 4.5
MSL:	Mean Sea Level (1947 Adjustment)
Example Conversion: NGVD=CRD+1.7	

- Notes:
- Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 - Site Plan is based on drawings provided by the Port of Portland.
 - Shoreline boundary for Ordinary High Water is approximate.
 - Willamette River Mile reference marks are approximate.
 - Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 - Datum conversion tables to CRD provided by Port of Portland.
 - Ordinary Low Water elevation provided by USACE.
 - Ordinary High Water elevation provided by Port of Portland.
 - Total PAH is the sum of naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, and benzo(a)pyrene. Non-detects were treated as zero. If all results were non-detect, the total represents the highest detection limit.

<p>Existing Piers</p> <p>Field-verified Surface Sediment Sample Location</p> <p>Field-verified Under-Pier Surface Sediment Sample Location</p> <p>2103 Total PAH Concentrations in ug/kg</p> <p>U = compound not detected</p> <p>J = estimated value</p> <p>☐ = concentration is greater than TEC</p> <p>▒ = concentration is greater than PEC</p>	<p>Existing Surface Sediment Sample Location by Others</p> <p>HCS07 Sediment Characterization Study and RI Report (Hart Crowser, 1999, 2000)</p> <p>SD0230 Portland Harbor Sediment Investigation (Roy F. Weston, Inc., 1998)</p> <p>USACE18A Willamette River Raw Data (USACE, 1988)</p>
--	---

DRAFT DOCUMENT

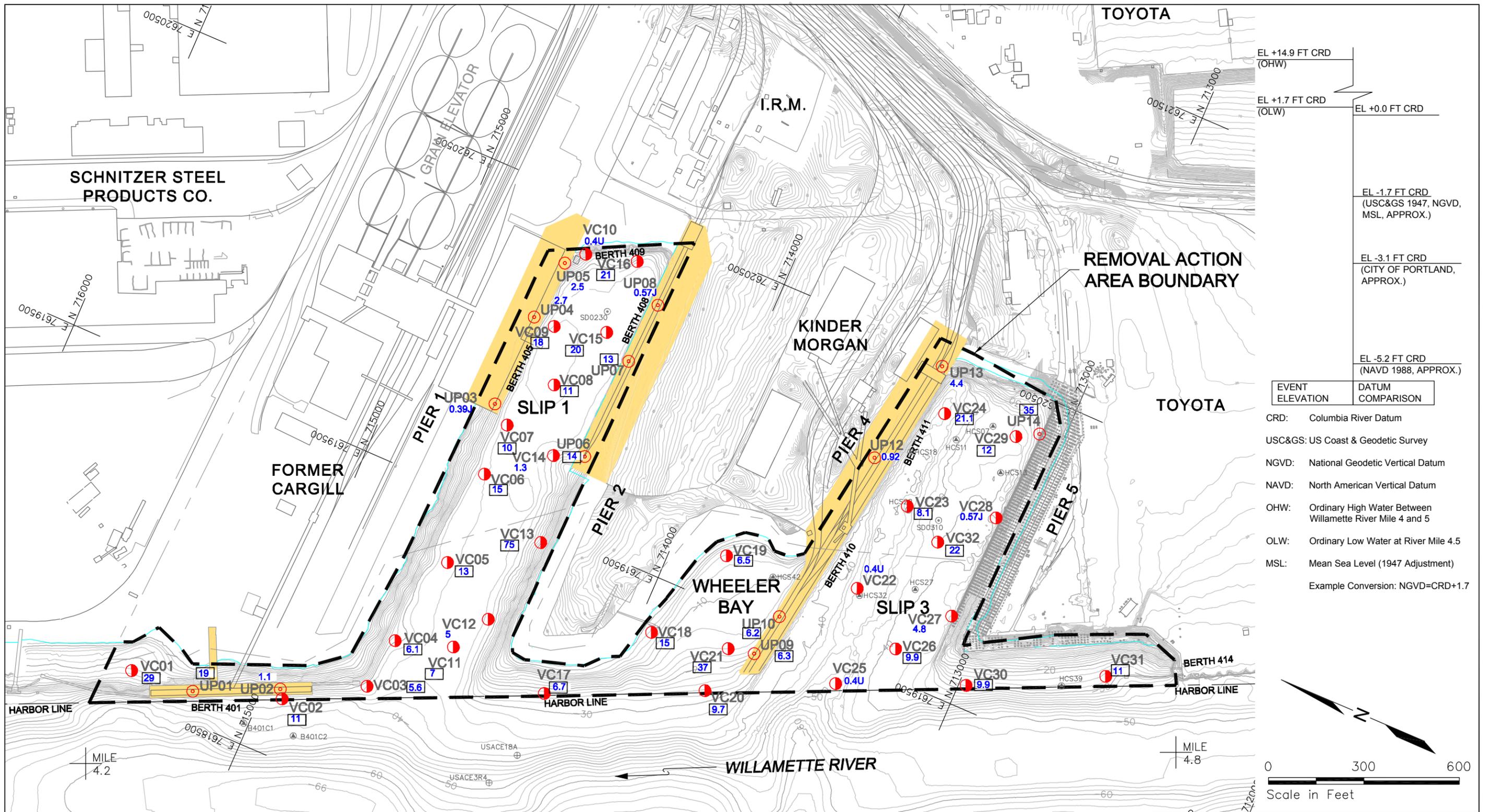
Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
PORTLAND, OREGON
TERMINAL 4 EARLY ACTION
EE/CA REPORT

**SURFACE SEDIMENT TOTAL
PAH CONCENTRATIONS**

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
E-3



- Notes:
- Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 - Site Plan is based on drawings provided by the Port of Portland.
 - Shoreline boundary for Ordinary High Water is approximate.
 - Willamette River Mile reference marks are approximate.
 - Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 - Datum conversion tables to CRD provided by Port of Portland.
 - Ordinary Low Water elevation provided by USACE.
 - Ordinary High Water elevation provided by Port of Portland.
 - ΣDDTs is the sum of the 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT results. Non-detects were treated as zero. If all results were non-detect, the total represents the highest detection limit.

<p>Existing Piers</p> <p>Field-verified Surface Sediment Sample Location</p> <p>Field-verified Under-Pier Surface Sediment Sample Location</p> <p>ΣDDTs Concentrations in ug/kg U = compound not detected J = estimated value □ = concentration is greater than TEC</p>	<p>Present Study Sediment Sample Location</p> <p>Existing Surface Sediment Sample Location by Others</p> <p>⊙HCS07 Sediment Characterization Study and RI Report (Hart Crowser, 1999, 2000)</p> <p>⊙SD0230 Portland Harbor Sediment Investigation (Roy F. Weston, Inc., 1998)</p> <p>⊕USACE18A Willamette River Raw Data (USACE, 1988)</p>
---	---

DRAFT DOCUMENT

Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
 PORTLAND, OREGON
**TERMINAL 4 EARLY ACTION
 EE/CA REPORT**

**SURFACE SEDIMENT
 Σ DDT CONCENTRATIONS**

BBL
 BLASLAND, BOUCK & LEE, INC.
 engineers & scientists

FIGURE
E-4



EL +14.9 FT CRD (OHW)	EL +0.0 FT CRD
EL +1.7 FT CRD (OLW)	EL -1.7 FT CRD (USC&GS 1947, NGVD, MSL, APPROX.)
	EL -3.1 FT CRD (CITY OF PORTLAND, APPROX.)
	EL -5.2 FT CRD (NAVD 1988, APPROX.)

EVENT ELEVATION	DATUM COMPARISON
CRD:	Columbia River Datum
USC&GS:	US Coast & Geodetic Survey
NGVD:	National Geodetic Vertical Datum
NAVD:	North American Vertical Datum
OHW:	Ordinary High Water Between Willamette River Mile 4 and 5
OLW:	Ordinary Low Water at River Mile 4.5
MSL:	Mean Sea Level (1947 Adjustment)
Example Conversion: NGVD=CRD+1.7	

- Notes:
- Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 - Site Plan is based on drawings provided by the Port of Portland.
 - Shoreline boundary for Ordinary High Water is approximate.
 - Willamette River Mile reference marks are approximate.
 - Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 - Datum conversion tables to CRD provided by Port of Portland.
 - Ordinary Low Water elevation provided by USACE.
 - Ordinary High Water elevation provided by Port of Portland.
 - Total PCBs is the sum of Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260, 1262, and 1268. Non-detects were treated as zero. If all results were non-detect, the total represents the highest detection limit.

<p>Existing Piers</p> <p>Field-verified Surface Sediment Sample Location</p> <p>Field-verified Under-Pier Surface Sediment Sample Location</p> <p>14.7 Total PCB Concentrations in ug/kg</p> <p>U = compound not detected</p> <p>J = estimated value</p> <p>☐ = concentration is greater than TEC</p> <p>▒ = concentration is greater than PEC</p>	<p>Present Study Sediment Sample Location</p> <p>Existing Surface Sediment Sample Location by Others</p> <p>HCS07 Sediment Characterization Study and RI Report (Hart Crowser, 1999, 2000)</p> <p>SD0230 Portland Harbor Sediment Investigation (Roy F. Weston, Inc., 1998)</p> <p>USACE18A Willamette River Raw Data (USACE, 1988)</p>
---	--

DRAFT DOCUMENT

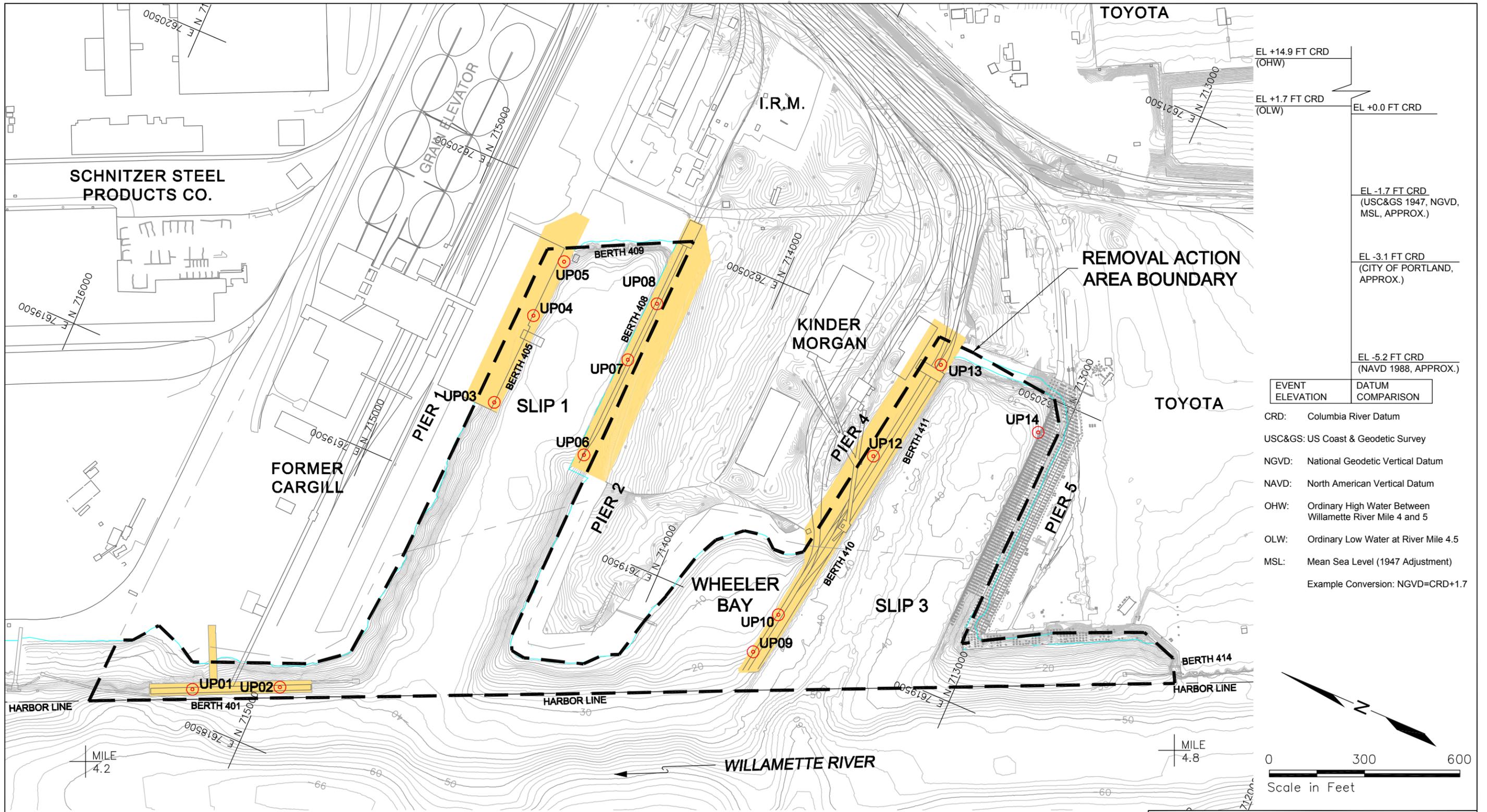
Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
PORTLAND, OREGON
**TERMINAL 4 EARLY ACTION
EE/CA REPORT**

**SURFACE SEDIMENT TOTAL
PCB CONCENTRATIONS**

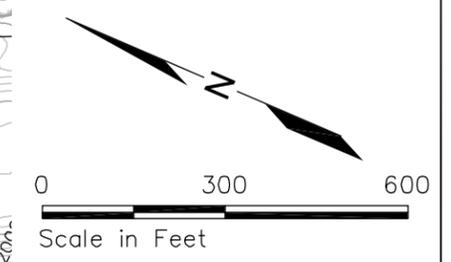
BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
E-5



EL +14.9 FT CRD (OHW)	EL +0.0 FT CRD
EL +1.7 FT CRD (OLW)	EL -1.7 FT CRD (USC&GS 1947, NGVD, MSL, APPROX.)
	EL -3.1 FT CRD (CITY OF PORTLAND, APPROX.)
	EL -5.2 FT CRD (NAVD 1988, APPROX.)
EVENT ELEVATION	DATUM COMPARISON

CRD: Columbia River Datum
 USC&GS: US Coast & Geodetic Survey
 NGVD: National Geodetic Vertical Datum
 NAVD: North American Vertical Datum
 OHW: Ordinary High Water Between Willamette River Mile 4 and 5
 OLW: Ordinary Low Water at River Mile 4.5
 MSL: Mean Sea Level (1947 Adjustment)
 Example Conversion: NGVD=CRD+1.7



- Notes:
- Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 - Site Plan is based on drawings provided by the Port of Portland.
 - Shoreline boundary for Ordinary High Water is approximate.
 - Willamette River Mile reference marks are approximate.
 - Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 - Datum conversion tables to CRD provided by Port of Portland.
 - Ordinary Low Water elevation provided by USACE.
 - Ordinary High Water elevation provided by Port of Portland.

- Field-verified Under-Pier Surface Sediment Sample Location
- Existing Piers

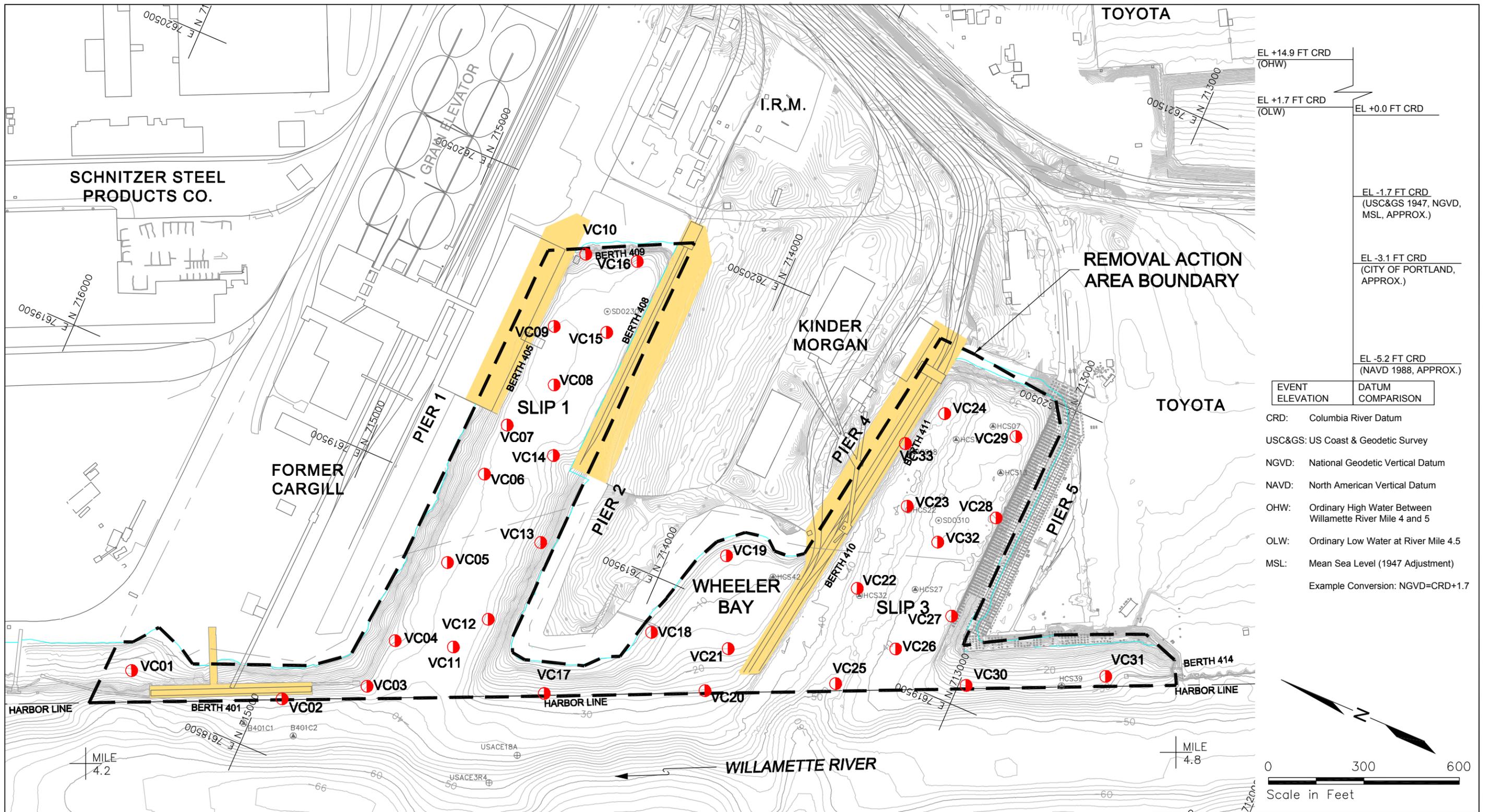
DRAFT DOCUMENT

Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
 PORTLAND, OREGON
**TERMINAL 4 EARLY ACTION
 EE/CA REPORT**

**UNDER-PIER SEDIMENT
 SAMPLE LOCATIONS**

FIGURE
E-6



EL +14.9 FT CRD (OHW)	EL +0.0 FT CRD
EL +1.7 FT CRD (OLW)	EL -1.7 FT CRD (USC&GS 1947, NGVD, MSL, APPROX.)
	EL -3.1 FT CRD (CITY OF PORTLAND, APPROX.)
	EL -5.2 FT CRD (NAVD 1988, APPROX.)
EVENT ELEVATION	DATUM COMPARISON

CRD: Columbia River Datum
 USC&GS: US Coast & Geodetic Survey
 NGVD: National Geodetic Vertical Datum
 NAVD: North American Vertical Datum
 OHW: Ordinary High Water Between Willamette River Mile 4 and 5
 OLW: Ordinary Low Water at River Mile 4.5
 MSL: Mean Sea Level (1947 Adjustment)
 Example Conversion: NGVD=CRD+1.7

- Notes:
- Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 - Site Plan is based on drawings provided by the Port of Portland.
 - Shoreline boundary for Ordinary High Water is approximate.
 - Willamette River Mile reference marks are approximate.
 - Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 - Datum conversion tables to CRD provided by Port of Portland.
 - Ordinary Low Water elevation provided by USACE.
 - Ordinary High Water elevation provided by Port of Portland.

- Existing Subsurface Sediment Sample Location by Others
- ⊙HCS07 Sediment Characterization Study and RI Report (Hart Crowser, 1999, 2000)
 - ⊙SD0230 Portland Harbor Sediment Investigation (Roy F. Weston, Inc., 1998)
 - ⊕USACE18A Willamette River Raw Data (USACE, 1988)

DRAFT DOCUMENT

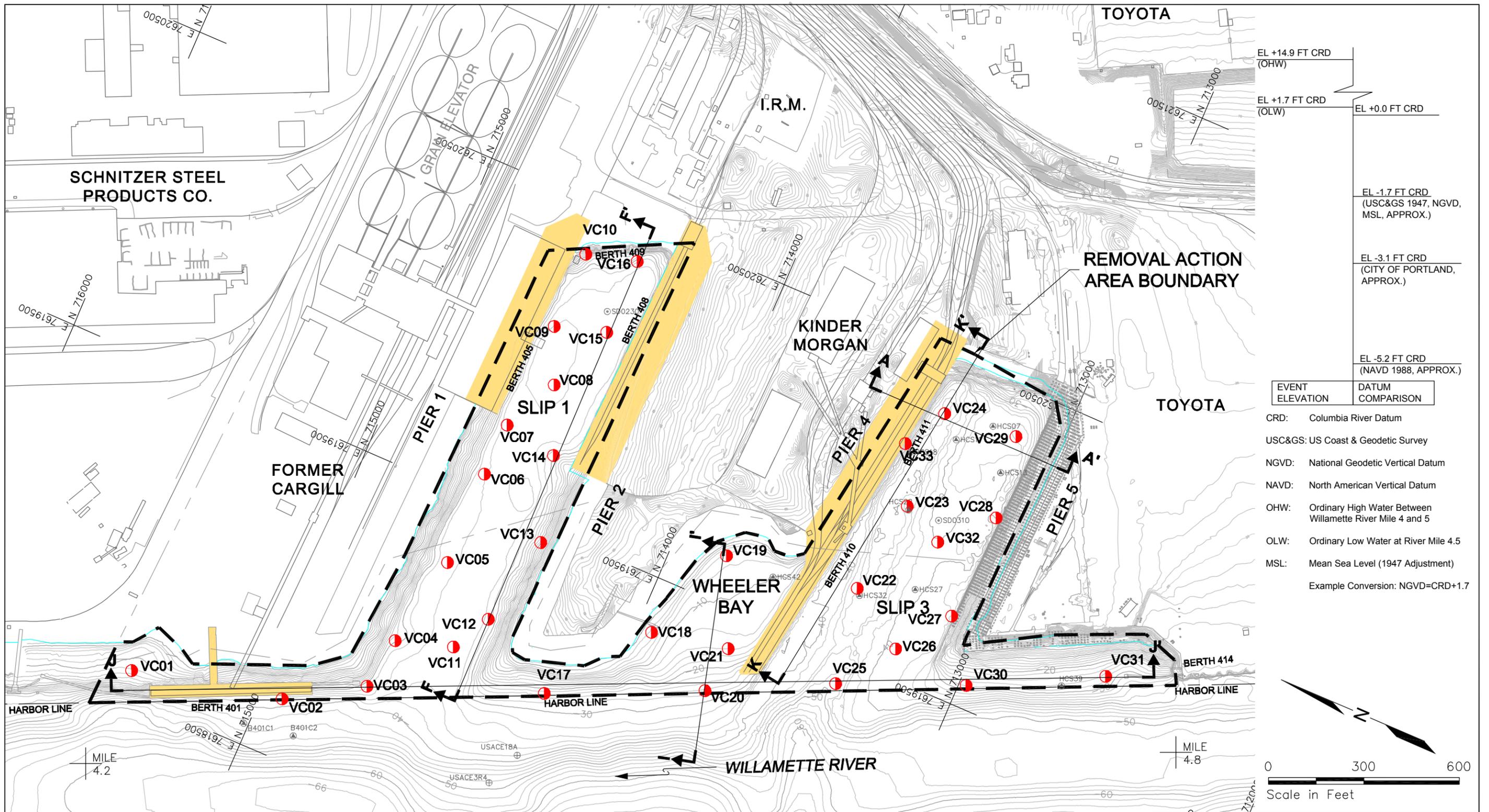
Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
 PORTLAND, OREGON
**TERMINAL 4 EARLY ACTION
 EE/CA REPORT**

**SUBSURFACE SEDIMENT
 SAMPLE LOCATIONS**

BBL
 BLASLAND, BOUCK & LEE, INC.
 engineers & scientists

FIGURE
E-7



EL +14.9 FT CRD (OHW)	EL +0.0 FT CRD
EL +1.7 FT CRD (OLW)	EL -1.7 FT CRD (USC&GS 1947, NGVD, MSL, APPROX.)
	EL -3.1 FT CRD (CITY OF PORTLAND, APPROX.)
	EL -5.2 FT CRD (NAVD 1988, APPROX.)

EVENT ELEVATION	DATUM COMPARISON
CRD:	Columbia River Datum
USC&GS:	US Coast & Geodetic Survey
NGVD:	National Geodetic Vertical Datum
NAVD:	North American Vertical Datum
OHW:	Ordinary High Water Between Willamette River Mile 4 and 5
OLW:	Ordinary Low Water at River Mile 4.5
MSL:	Mean Sea Level (1947 Adjustment)
Example Conversion: NGVD=CRD+1.7	

- Notes:**
- 1. Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 - 2. Site Plan is based on drawings provided by the Port of Portland.
 - 3. Shoreline boundary for Ordinary High Water is approximate.
 - 4. Willamette River Mile reference marks are approximate.
 - 5. Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 - 6. Datum conversion tables to CRD provided by Port of Portland.
 - 7. Ordinary Low Water elevation provided by USACE.
 - 8. Ordinary High Water elevation provided by Port of Portland.

- | | | |
|----------------|--|--|
| Existing Piers | Field-verified Surface and Subsurface Sediment Sample Location | Existing Subsurface Sediment Sample Location by Others |
| | | HCS07 Sediment Characterization Study and RI Report (Hart Crowser, 1999, 2000) |
| | | SD0230 Portland Harbor Sediment Investigation (Roy F. Weston, Inc., 1998) |
| | | USACE18A Willamette River Raw Data (USACE, 1988) |

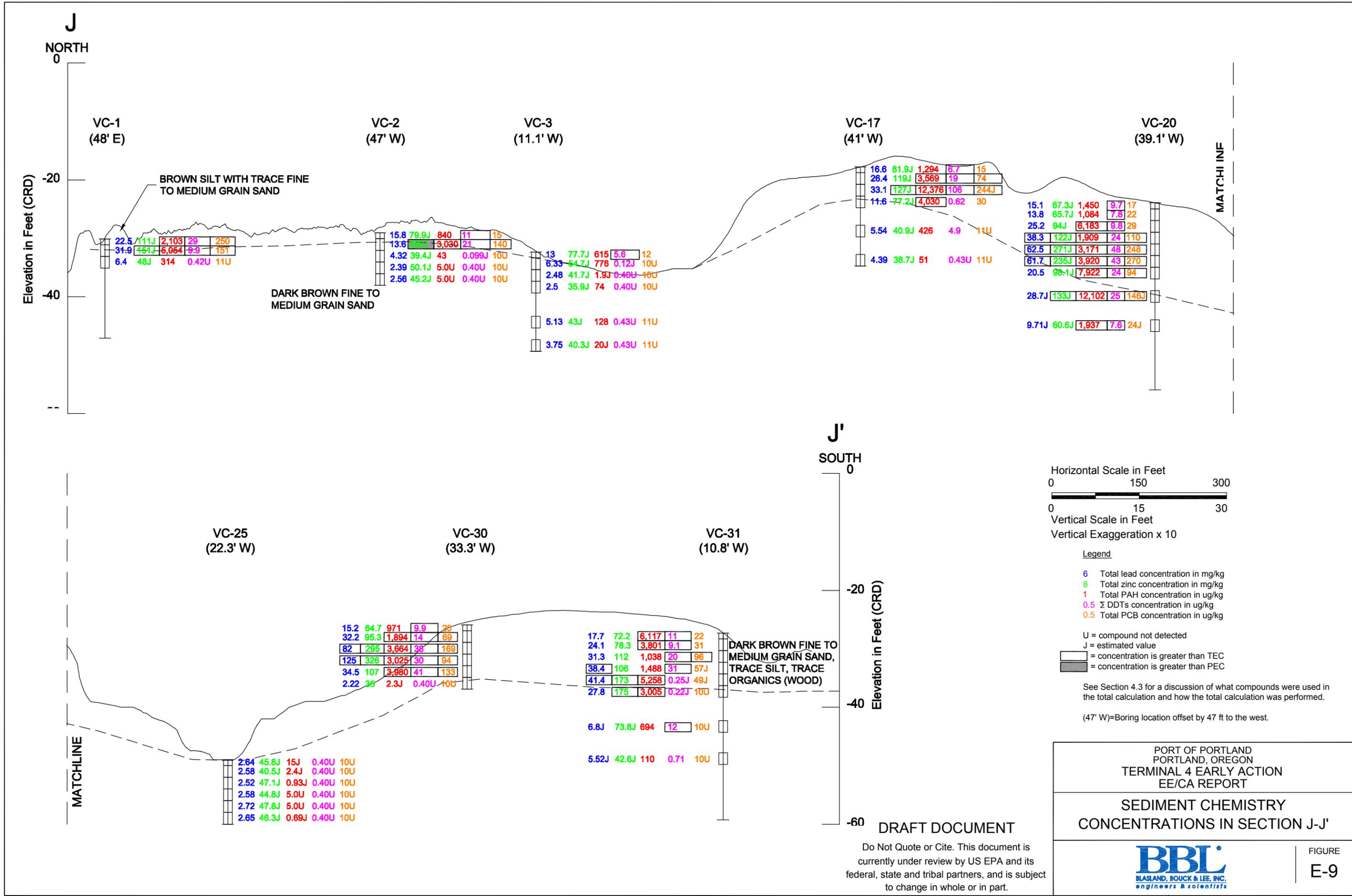
DRAFT DOCUMENT

Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

CROSS SECTION LOCATIONS



FIGURE E-8



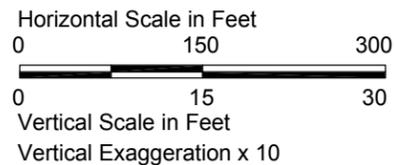
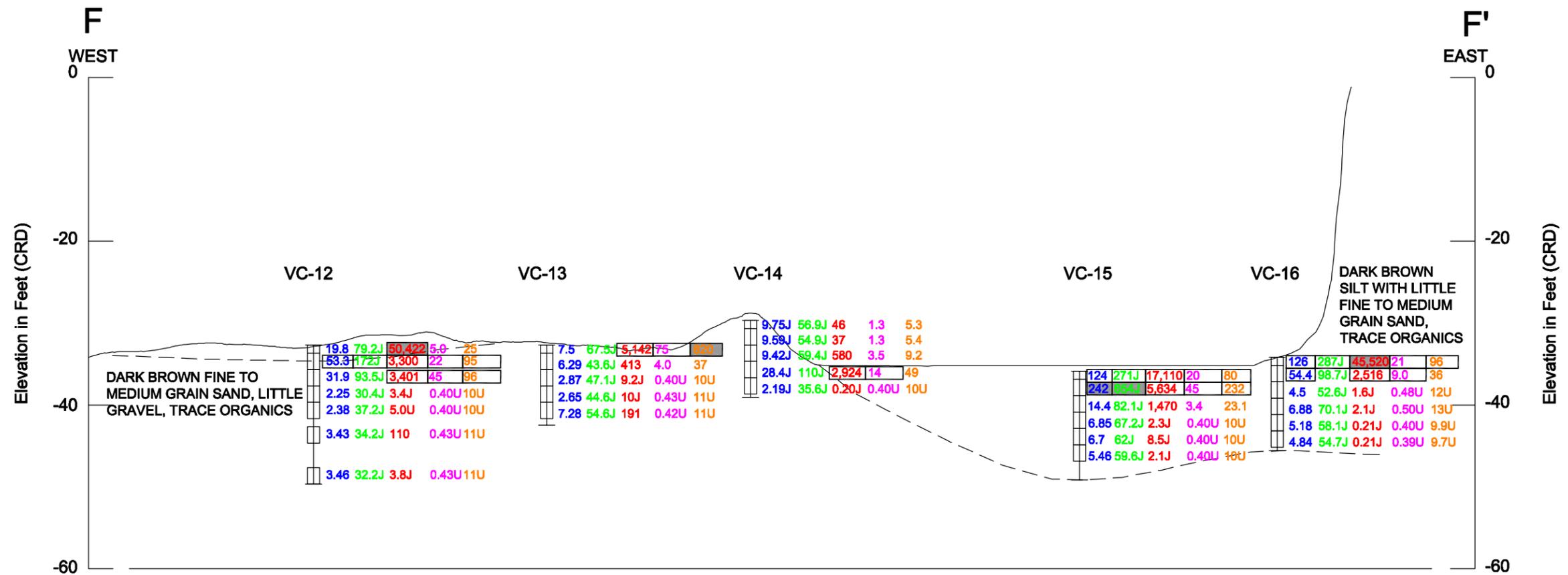
DRAFT DOCUMENT
 Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
 PORTLAND, OREGON
 TERMINAL 4 EARLY ACTION
 EE/CA REPORT

**SEDIMENT CHEMISTRY
 CONCENTRATIONS IN SECTION J-J'**

BBL
 BLASLAND, BOUCK & LEE, INC.
 engineers & scientists

FIGURE
E-9



Legend

- 6 Total lead concentration in mg/kg
- 8 Total zinc concentration in mg/kg
- 1 Total PAH concentration in ug/kg
- 0.5 Σ DDTs concentration in ug/kg
- 0.5 Total PCB concentration in ug/kg

- U = compound not detected
- J = estimated value
- [White box] = concentration is greater than TEC
- [Grey box] = concentration is greater than PEC

See Section 4.3 for a discussion of what compounds were used in the total calculation and how the total calculation was performed.

(47' W)=Boring location offset by 47 ft to the west.

DRAFT DOCUMENT

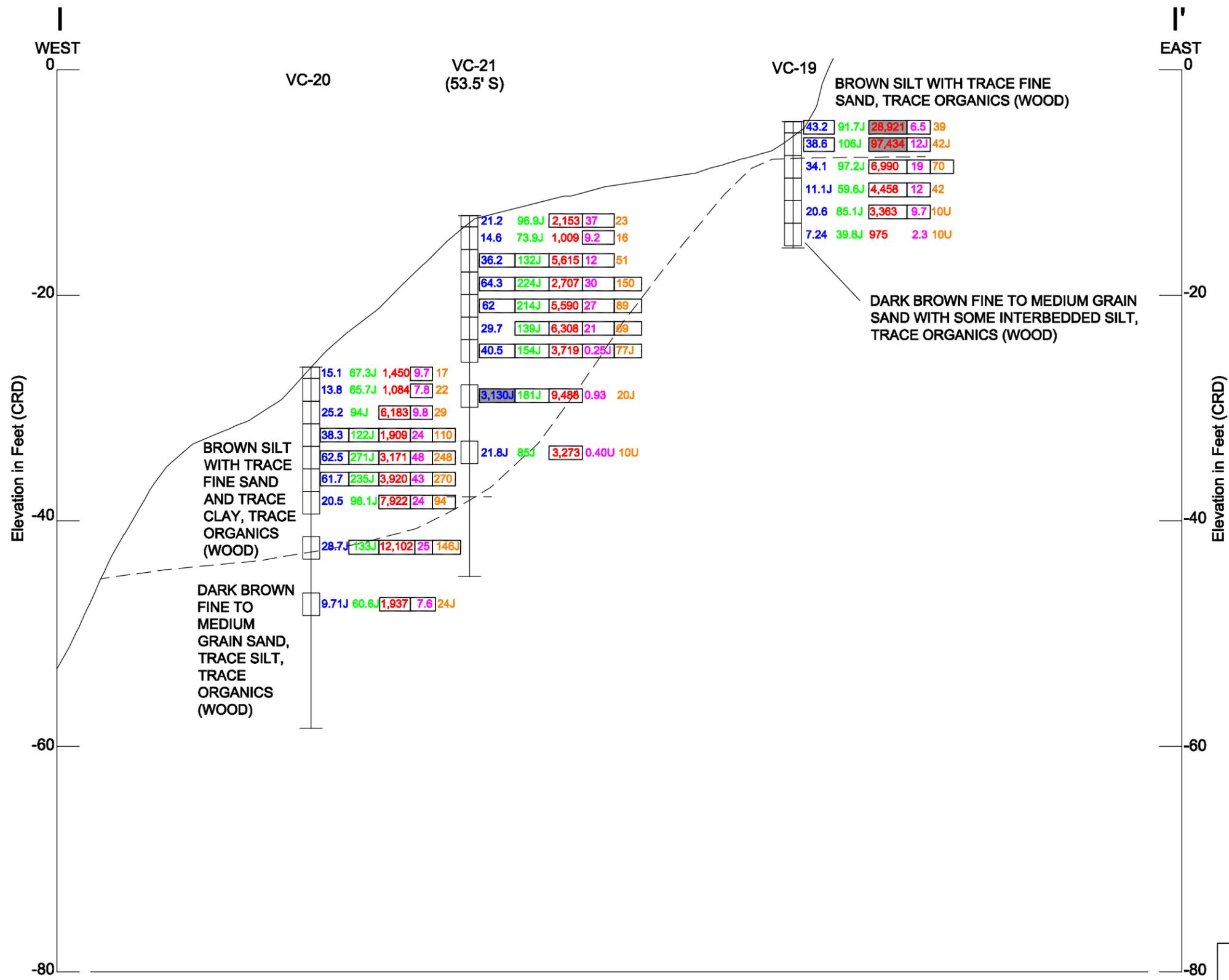
Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
 PORTLAND, OREGON
 TERMINAL 4 EARLY ACTION
 EE/CA REPORT

**SEDIMENT CHEMISTRY
 CONCENTRATIONS IN SECTION F-F'**



FIGURE
E-10



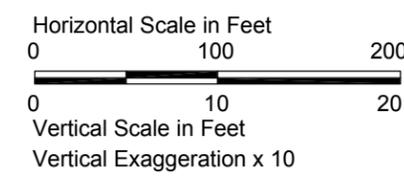
Legend

- 6 Total lead concentration in mg/kg
- 8 Total zinc concentration in mg/kg
- 1 Total PAH concentration in ug/kg
- 0.5 Σ DDTs concentration in ug/kg
- 0.5 Total PCB concentration in ug/kg

U = compound not detected
 J = estimated value
 [White box] = concentration is greater than TEC
 [Grey box] = concentration is greater than PEC

See Section 4.3 for a discussion of what compounds were used in the total calculation and how the total calculation was performed.

(47' W)=Boring location offset by 47 ft to the west.



DRAFT DOCUMENT

Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
 PORTLAND, OREGON
 TERMINAL 4 EARLY ACTION
 EE/CA REPORT

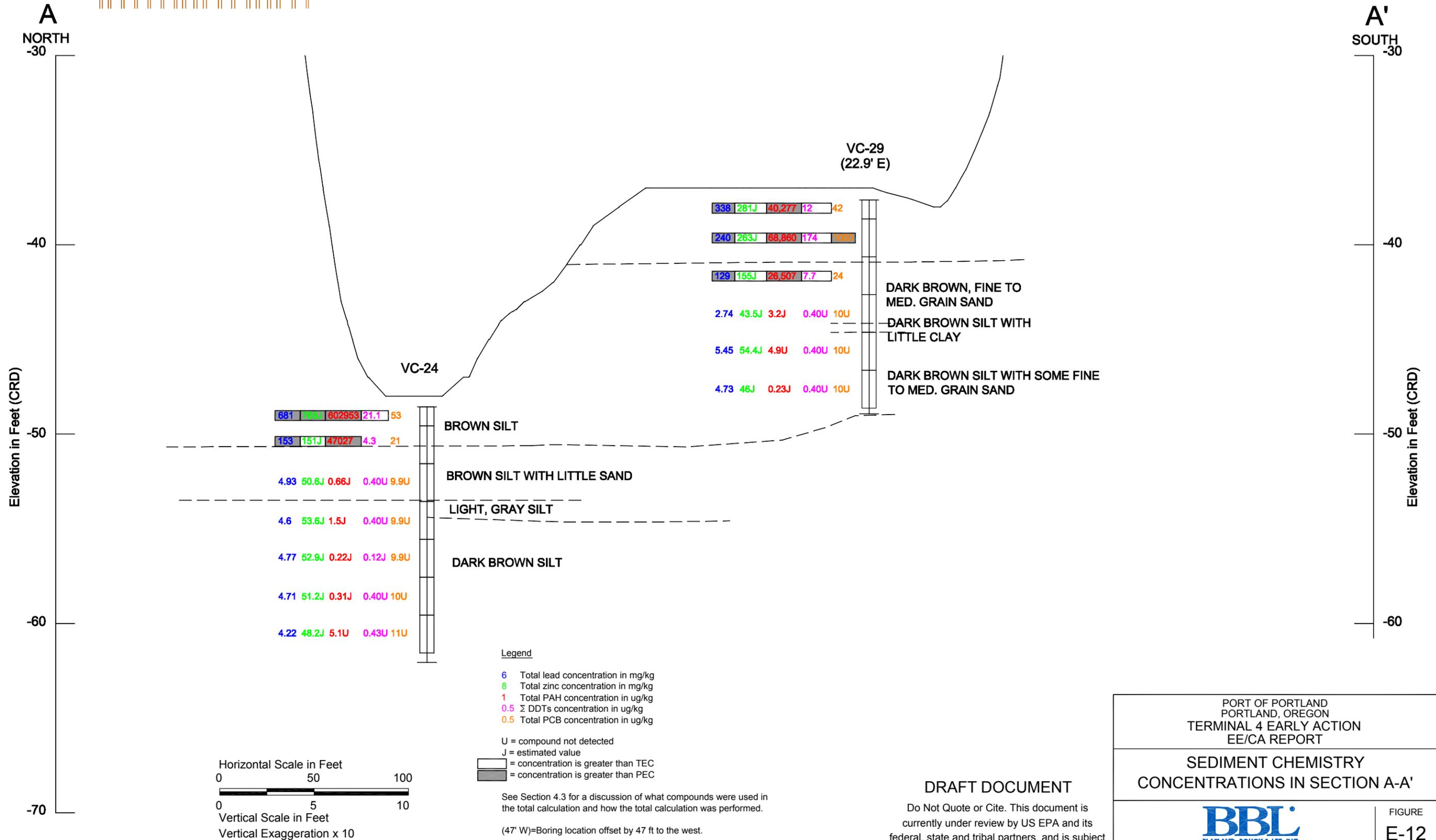
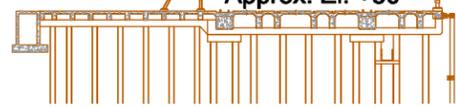
**SEDIMENT CHEMISTRY
 CONCENTRATIONS IN SECTION I-I'**

BBL
 BLASLAND, BOUCK & LEE, INC.
 engineers & scientists

FIGURE
E-11

BERTH 411 PIER STRUCTURE

Approx. El. +30



PORT OF PORTLAND
PORTLAND, OREGON
TERMINAL 4 EARLY ACTION
EE/CA REPORT

**SEDIMENT CHEMISTRY
CONCENTRATIONS IN SECTION A-A'**

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

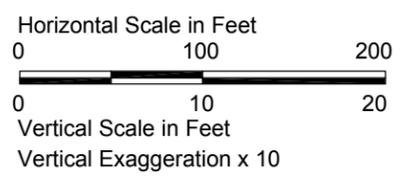
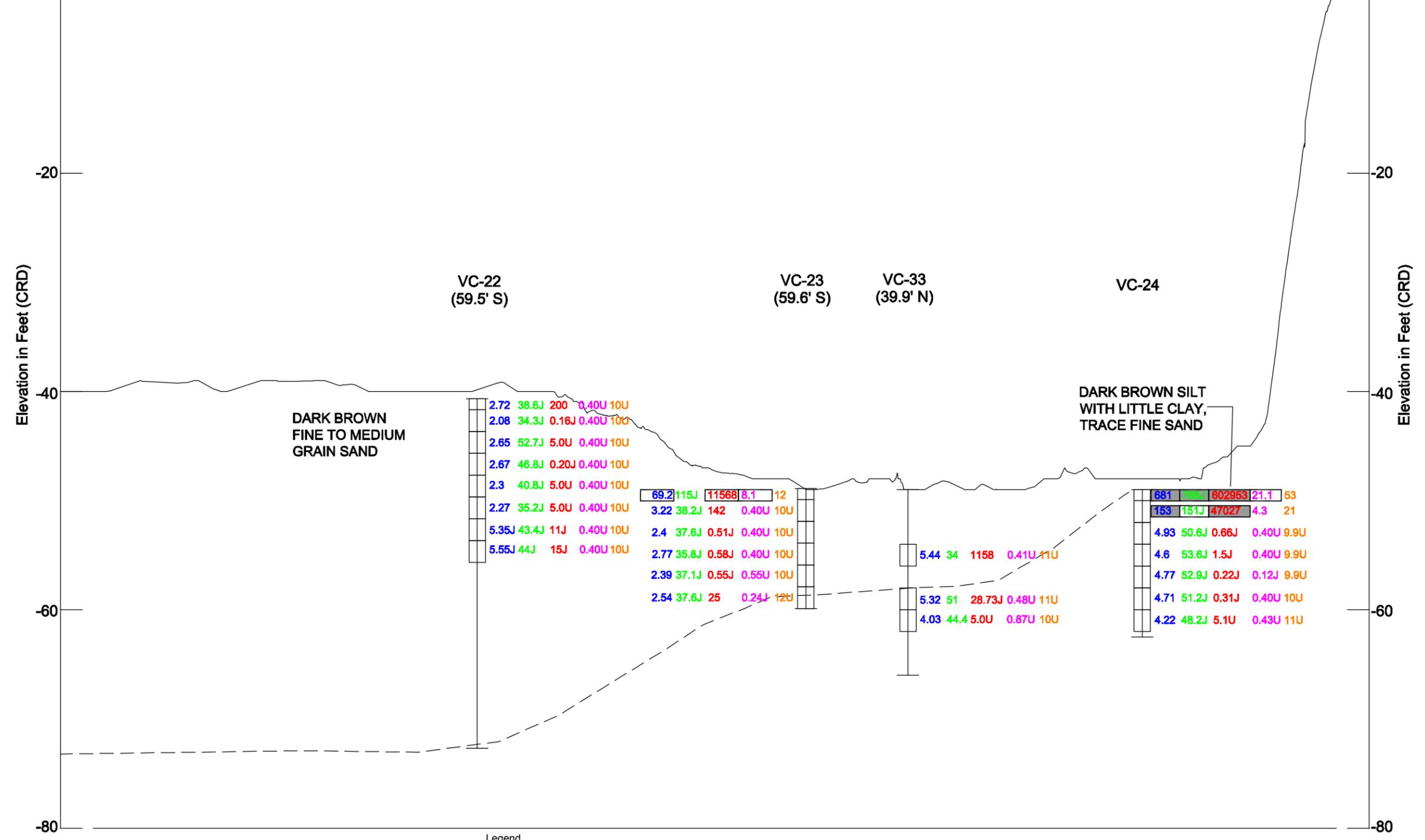
FIGURE
E-12

DRAFT DOCUMENT

Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

K WEST

K' EAST



Legend
 6 Total lead concentration in mg/kg
 8 Total zinc concentration in mg/kg
 1 Total PAH concentration in ug/kg
 0.5 Σ DDTs concentration in ug/kg
 0.5 Total PCB concentration in ug/kg

U = compound not detected
 J = estimated value
 [] = concentration is greater than TEC
 [] = concentration is greater than PEC

See Section 4.3 for a discussion of what compounds were used in the total calculation and how the total calculation was performed.
 (47' W)=Boring location offset by 47 ft to the west.

DRAFT DOCUMENT

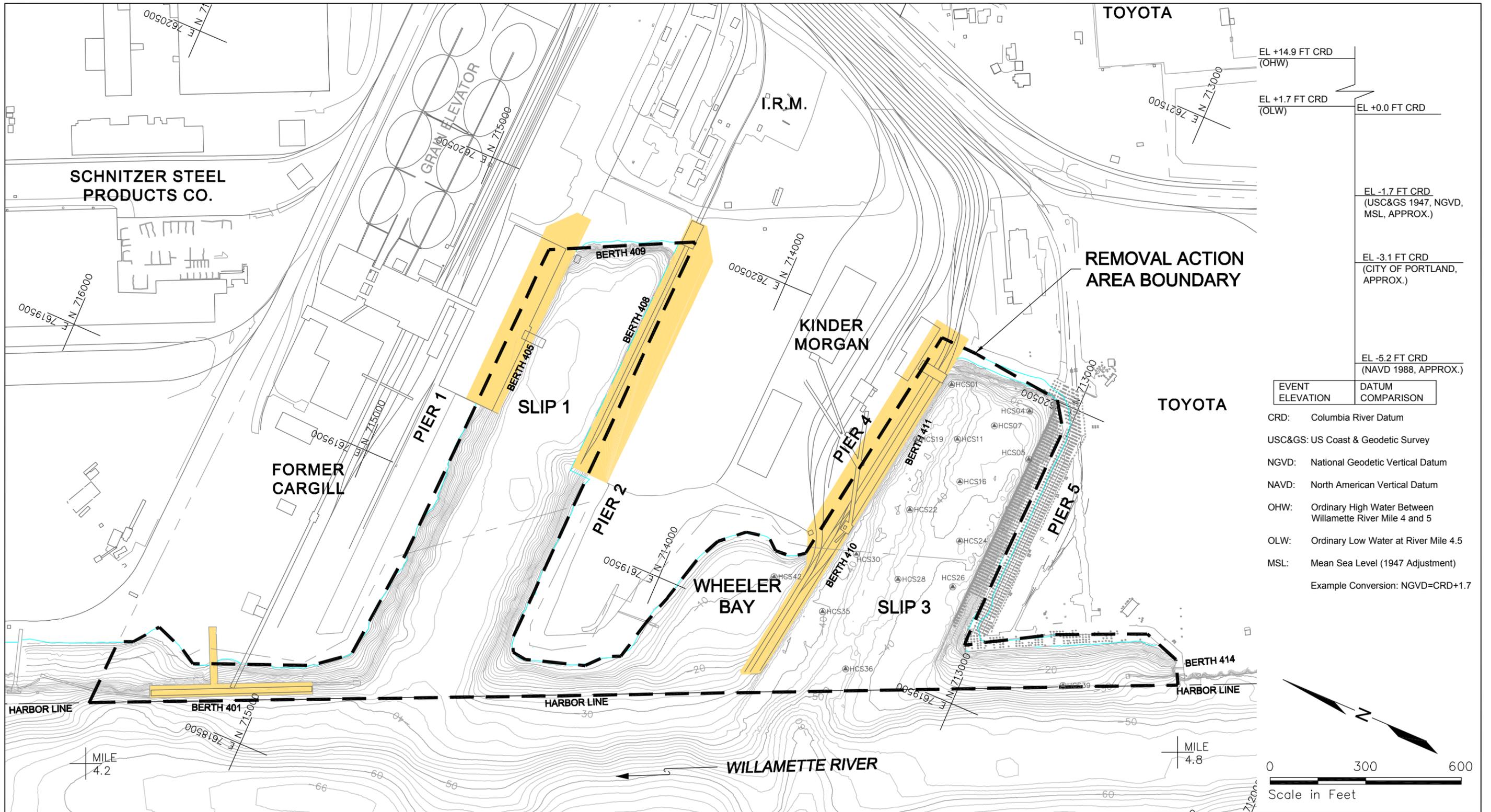
Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
 PORTLAND, OREGON
 TERMINAL 4 EARLY ACTION
 EE/CA REPORT

SEDIMENT CHEMISTRY
 CONCENTRATIONS IN SECTION K-K'

BBL
 BLASLAND, BOUCK & LEE, INC.
 engineers & scientists

FIGURE
 E-13



EL +14.9 FT CRD (OHW)	EL +0.0 FT CRD
EL +1.7 FT CRD (OLW)	EL -1.7 FT CRD (USC&GS 1947, NGVD, MSL, APPROX.)
	EL -3.1 FT CRD (CITY OF PORTLAND, APPROX.)
	EL -5.2 FT CRD (NAVD 1988, APPROX.)

EVENT ELEVATION	DATUM COMPARISON
CRD:	Columbia River Datum
USC&GS:	US Coast & Geodetic Survey
NGVD:	National Geodetic Vertical Datum
NAVD:	North American Vertical Datum
OHW:	Ordinary High Water Between Willamette River Mile 4 and 5
OLW:	Ordinary Low Water at River Mile 4.5
MSL:	Mean Sea Level (1947 Adjustment)
Example Conversion: NGVD=CRD+1.7	

- Notes:
- 1. Upland topographic vertical datum is NGVD; Bathymetric vertical datum is CRD.
 - 2. Site Plan is based on drawings provided by the Port of Portland.
 - 3. Shoreline boundary for Ordinary High Water is approximate.
 - 4. Willamette River Mile reference marks are approximate.
 - 5. Diurnal tide range during low river stages is 2.2 feet at St. Johns and 2.4 feet at Portland.
 - 6. Datum conversion tables to CRD provided by Port of Portland.
 - 7. Ordinary Low Water elevation provided by USACE.
 - 8. Ordinary High Water elevation provided by Port of Portland.

Existing Piers (Yellow shaded area)

Existing Bioassay Sample Location (Symbol: HCS01)

RI Report (Hart Crowser, 2000)

DRAFT DOCUMENT

Do Not Quote or Cite. This document is currently under review by US EPA and its federal, state and tribal partners, and is subject to change in whole or in part.

PORT OF PORTLAND
PORTLAND, OREGON
**TERMINAL 4 EARLY ACTION
EEICA REPORT**

**EXISTING BIOASSAY
SAMPLE LOCATIONS**

BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
E-14