UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue, Suite 900
Seattle, Washington 98101-3140

Reply To
Attn Of: ECL-115

September 18, 2008

Jayne Allen
Portland General Electric
121 SW Salmon Street
3WTCBR05
Portland, Oregon 97204

Re: EPA Comments on the Preliminary Site Characterization Report for the Harbor Oil Site, August 8, 2008

Dear Ms. Allen:

The United States Environmental Protection Agency has reviewed the Voluntary Group's Preliminary Site Characterization Report for the Harbor Oil Site (Report). Attached are comments on the Report. EPA does not expect a revision of the report, but does want a response to comments and a Phase 2 Workplan Amendment (to the extent necessary) for collection of data to complete the Remedial Investigation Report. EPA expects the Remedial Investigation Report to address the concerns raised in these comments.

Please contact me if the Voluntary Group does not agree to the proposed approach, or to discuss the comments. I can be reached at (206) 553-1478.

Sincerely,

Christopher Cora
Project Manager

Enclosure

cc: Ted Buerger, USFWS
Brian Cunningham, Confederated Tribes of Warm Springs
Tom Downey, Confederated Tribes of Siletz Indians
Mike Karnosh, Confederated Tribes of the Grand Ronde

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Mavis Kent, ODEQ
Rose Longoria, Confederated Tribes and Bands of the Yakama Nation
Erin Madden, Nez Perce Tribe
Rob Neeley, NOAA
Allison O'Brien, DOI
Mark Stephan, HOCAG

OVERVIEW

EPA has reviewed the Preliminary Site Characterization Report (Report) and prepared the following comments. We recognize that these comments may expand upon the Voluntary Groups objective for the Report. However, rationale for obtaining additional data, or not, are needed prior to concluding the data acquisition phase of the remedial investigation, and EPA believes this is the most appropriate time to identify concerns for completing the RI within the current schedule.

It is difficult to reach conclusions regarding the presence of data gaps without the benefit of additional data presentation and analysis. It would be helpful if maps were presented that included identification of concentrations exceeding screening levels, combined wetland soil and on-Facility soil data, combined groundwater and surface water data, key site features, and concentrations of related chemicals. Concentration contours for key chemicals would also be a helpful planning tool to identify hotspots and potential contaminant sources. In addition, if historic data is going to be used in the analysis, it should be presented along with the Phase 1 data.

The goals of phase 2 need to be clarified to allow determination of whether the proposed phase 2 sampling will address all the data needs for completing the RI. For example, one objective would be to delimit a source area, either for remediation or bounded to assess a sources impact on receptors. Another objective would be to evaluate the sufficiency of the data to determine whether contamination is migrating off the Facility where it may present a threat to ecological receptors. These goals would require different sampling densities and possibly different sampling locations.

It is EPA's assessment, without additional rationale from the Voluntary Group, that additional soil and groundwater sample locations are needed to adequately determine the extent of the contamination identified. Although we identify some data gaps in the sections below, the types of additional data presentation and analysis in these comments needs to be proposed by the Voluntary Group in verifying data gaps and possibly identifying other data gaps. Also, since a complete analysis of chemicals of potential concern was not the purpose of this report, all the Phase 2 samples should be analyzed for the comprehensive list of analytes, or additional justification presented for limiting those analytes.

Data have not been adequately evaluated for some chemicals, including VOCs and DDTs. VOCs and TPH-gasoline are present in soil and groundwater on the facility above screening levels but were not adequately addressed in the evaluation to identify if there is an on-facility source. DDTs and their breakdown products should be further analyzed to assess whether there is an on-Facility source.

Remedial decisions will need to address whether contaminated soils are saturated or unsaturated. The data discussions and current categories of soil depths (shallow, intermediate, deep) do not fully address this issue. Inadequate data and discussion of the extent of LNAPL prevent evaluation of the impact the LNAPL may be having on the Site and for potential remedial action decisions.

EPA proposes that the Voluntary Group respond to these comments and submit a Phase 2 Work Plan Amendment, versus a revised Report.

GENERAL COMMENTS (Per the September 10, 2008 meeting, these comments are intended for preparation of Phase 2 data collection and presentation of information in the RI/FS Report)

1. The report is difficult for a reader/reviewer to follow and understand mainly due to inconsistencies in data presentation (i.e., tables, figures, and text), and logic flow. A reader/reviewer has to go through tables, figures, and text in several sections to attempt to understand the rationale and conclusions derived. Some information is not presented, and other useful information is presented in Section 6 when it could be used earlier in the report. EPA expects the RI to utilize a clearer and more comprehensive format for data presentation. An example figure or map and table should be provided with the response to comments.

2. Because this is a Superfund site, the report should follow Superfund guidance. It is suggested that the regulatory framework and/or guidance followed in this report be clearly stated. For example, it is not clear what guidance the ecological risk assessment followed – ODEQ's or EPA's? If one is more appropriate for a particular circumstance, please note it in the text.

3. Screening criteria used should be clearly documented and EPA documents should also be considered such as EPA's EcoSSL. In addition, if several screening levels are considered, then hierarchy of these levels should also be stated.

4. Surface water samples should be analyzed for hardness which is necessary for adjusting screening levels for some metals. The EPA 2006 National Recommended Water Criteria was the primary source for surface water screening levels in this report which are derived using a default hardness value of 100 mg/L. Thus, site-specific hardness values are necessary to adjust surface water screening levels.

5. Brief supporting objectives and rationale should be provided to better support the evaluation of Phase 2 needs. Although the objective or decision questions in Section 6 are useful, some information earlier in the report would greatly benefit the discussions and presentation of information. For example, such information should answer questions such as the following. Are the "deep" wetland soil samples (0.5 – 1.0 ft and 2 – 3 ft) collected for delineating the vertical extent of contamination? Will these samples be used in any evaluation of potential human health and ecological risks? What is the future land use for the wetland area? Is future construction work anticipated?

6. If the historic data are to be used for supporting Phase 2 decisions, then the introduction to the report and specifically Section 6 must identify this, and the locations with data must be shown on maps.

7. Definition of surface soil and subsurface soil should be given. The report uses "surface", "intermediate", and "deep" soil, as well as "surface" and subsurface soils. Surface and subsurface soils are commonly used for remedial investigations/feasibility studies/risk assessments. If there are special reasons for grouping soils into the surface, intermediate and deep groups, then please define and provide purpose (human receptor activities?). It is suggested these terms be consistent and depths for different soils be defined.

8. Much of the tabulated information (such as Tables 2-1 and 2-2, 2-6, 2-7, and 2-10), are not useful for the objectives related to identifying extent of chemicals detected, and the Phase 2 planning purposes of this report. Such information should be in an appendix. However, some of the footnotes such as the identification of parent/duplicate pairs and locations of split samples should be tabulated and provided in the text.

9. There is no need to tabulate the general water chemistry parameters ("conventionals") and sediment grain size (Table 5-9) in the frequency of detection, nor in the comparison to criteria tables. The chemistry parameters can be tabulated separately and used to support a general discussion of characteristics of the groundwater across the site.

10. The reporting style commonly places relatively important information in footnotes rather than fully explaining and describing this information in the main body of the text. If the information is worth including, it should be specifically described in the text developed and used.

11. Use of figures versus maps is unclear and difficult to follow. The map symbols and other such identifying information should be consistent throughout the report. The figures have sample ID symbols that are less obtrusive and easy to read, but should be revised to better differentiate between existing versus new wells, and the use of white versus black symbols is not explained in the legend. These maps should be separated by media and not have soil and ground water on the same map. The maps have too many locations showing on one map. The mapping in the work plan was easier to follow. Grouping of related source or release chemicals on one map should be used to benefit the evaluations.

12. The analytical results for and distribution of VOCs were not discussed in detail, mapped, or evaluated. The VOC data should be evaluated and a potential release area (source) identified.

13. To better support the recommendations and evaluate Planning of Phase 2, it is recommended that screening levels and all location IDs be listed on all concentration

maps (Maps 3 through 16). The locations of exceedances should be included on these maps support the text and identification of exceedances and localized impacted areas are clearly identified to support Phase 2 planning.

14. The location of key site features relied upon in the text should be shown on the maps.

15. Maps need to include a legend to better identify the list of results presented. For example, Map 8 shows between 1 and 3 values (one location appears to have 4 values) at a soil sample location. It is unclear how this relates to the sample depth intervals (surface, intermediate and deep). In addition, when adding the named intervals, the depth in feet should be included in the legend or on the figure with the results.

16. The acronym list should include all acronyms cited in this document. Many acronyms are not currently included.

17. Table of Contents: For convenience to readers, it is suggested that all levels of section and subsection titles be listed. The present table of content only lists the first two levels of sections titles such as 3.0 and 3.1. A complete section of titles, including all levels such as 3.0, 3.1, 3.1.1, 3.1.1.1, etc. should be included.

18. Additional information on the LNAPL is necessary to determine the lateral and vertical extent of the LNAPL.

19. There is no proposal to evaluate off-Site concentrations of COPCs in Phase 2. There may be value in evaluating regional concentrations of COPCs either through a literature search or off-Site sampling.

SPECIFIC COMMENTS

1. **The Executive Summary** is missing critical summary facts or statements to support the conclusions. Although a brief executive summary style is greatly appreciated, the brevity does not provide the substance needed. The summary of local geology and hydrogeology is of questionable value, but given its presence, facts such as the depth of groundwater, relationship to Force lake, and or expected fluctuations in water table depth would be very useful for evaluating future sampling and remedial decisions.

2. **Section 2.1.1 Deviations/Facility Soil Sampling.**
   a. When changes are made, the report should remark on whether the change had an impact on the objectives or goals of the investigations. Location changes, such as SL-26 should specifically identify how the new location meets the objective of the original location.

   b. The revised sample depths are related to changes in the thickness of "fill." It is unclear how depth of fill changes the sample depths. There should be some

discussion regarding if the depth to groundwater impacted "soil" sampling. Often the "soil" is defined as vadose zone or unsaturated soil. With the depth to groundwater, later identified as 2-3 feet bgs, many soil samples may actually be below the water table. Remedial decisions will need to consider this information and it is not always clear in the report.

3. **Section 2.1.3 and Table 2-4:** should include a discussion and identify on the table, those wells that have screened interval compatible with detecting the presence of LNAPL. Listing all wells in this table including the column for LNAPL measurement is misleading as many of these wells have construction that prevents LNAPL from entering the well and can never have LNAPL present. Please revise to present a separate table for wells that are constructed for LNAPL measurements and include well screen interval.

4. **Section 2.1.6 Slug Tests:** The static water level relative to the well screen should be reported to support that the appropriate test method was applied. Of the two types of tests, "slug-in/falling head," and the "slug-out/rising head," the description of the test used appears to be the slug-out/rising head. The rationale for revising the method to the "rising head" method could have the last bullet refined to better describe why the "falling head" method would be inappropriate for several of the intermediate wells that have static water levels within the screened interval. For wells where the static water level is above the top of the screened interval, both the falling head and the rising head test are appropriate. If the static water level is within the screened interval, only the rising head test is appropriate because it is a measure of saturated hydraulic conditions as water in the aquifer is flowing into the well while the water returns to the static level. The falling head test is not applicable when the static water levels are within the screened interval because in this situation, it is a measure of unsaturated flow as groundwater is flowing from the well into that portion of the screened interval that is within the unsaturated portion of the aquifer.

5. **Section 2.1.6.** Rather than Appendix C, there should be a summary of the calculated hydraulic conductivities in a table.

6. **Section 3.2 and Table 3-1**: The footnotes need to have supporting text to better describe how the characteristics were estimated. Also, as noted in previous comment, please tabulate the hydraulic conductivity values.

7. **Figures 3-1 and 3-2:** The water level contours should have the data points mapped with the actual elevations used.

8. **Table 4-1** would be much more informative by replacing the "X" with the quantity of samples analyzed by the specific method.

9. **Section 5.0 Nature and Extent**:
    a. The last paragraph warrants detailed description of how duplicates were handled and reported. Identify the specific tables referred to; identify which are duplicate versus replicate samples, state if results of split samples are reported/evaluated.

b. Based upon comments below, the text of Section 5 does not support a discussion of "Nature and Extent."
c. As the initial opening statement of each subsection, please include a concise objective statement from the Work Plan.
d. The Work Plan identified specific areas and activities, such as ditch, stormwater outfall, that were targeted in the objectives. These areas should be shown on the figures/maps and discussed.

10. Section 5.1.1 Soil:

a. The count of Facility Soil Sample locations apparently could be interpreted to total 54 (33 surface and 21 subsurface). However, the count of soil sample locations identified in Section 2.1 is reported as 43. Please clarify. Also, Table 5-1 indicates that there could be 22 samples analyzed from the intermediate depth. Is this 22 sample locations? Please clarify the sample and location count and how the frequencies were calculated in Table 5-1.
b. It is very unusual to present a summary by number of detected analytes. To support "extent" discussion, the detections should be related to number of locations. It would be more informative to present, for example, that total carcinogenic PAHs were detected in 94% of surface samples; 84% of intermediate depth samples, and 100% of soil berm and soil stockpile. Based upon BaP, there were 42% of surface samples exceeding the industrial criteria, and 85% exceeding residential criteria. For the berm samples, 33% exceeded industrial criteria and 89% exceed residential criteria. The number of locations with analyte concentration greater than criteria should be reported, and the location of the maximum concentration should be reported. The discussion should include both residential and industrial criteria.
c. For the inorganics, Table 12 in the Work Plan presented regional background values that should be part of the discussion by comparison to values. For example, the detections of copper, although infrequently exceeding criteria, are significantly greater than regional background. The background values for arsenic, lead and mercury should also be discussed relative to the results.
d. A map of analytical results of VOCs in soil should be provided.
e. Map 5 shows two concentrations for SL-15 and this is a surface sample.
f. Map 5 appears to have the intermediate and deep concentrations switched for MW-2i.

11. Table 5-1: To best serve the objectives of the report, please add a column for "Location of Maximum." This information can then be discussed in the narrative of Section 5.1.1, to better describe the extent and to clarify the last paragraph of the section.

12. Table 5-2:

a. It is unclear how the percentage of detected analyte concentrations greater than criteria is used to support the objectives. Would be best to have some narrative identifying the distribution, by location, of analytical results that exceed criteria.
b. The use of human health criteria for comparison does not answer the question regarding if the release of chemicals on the facility presents a threat to ecological

receptors. There is potential for the chemicals to migrate, therefore, some discussion regarding the potential for on-Facility chemicals to pose a threat to off-Facility ecological receptors should be addressed.

c. The criteria used are summarized in the footnotes, and appear to be a mix of different pathways including indoor air, and leaching to groundwater. A more useful presentation should be made by identifying specific criteria and their exposures.
d. The screening levels for lead are listed 3 mg/kg for residential and industrial receptors. EPA Region 6 website lists 400 mg and 800 mg/kg, respectively. Mercury screening levels are also different from those on the website (23 vs. 2.3 mg/kg for residential, 340 vs. 9.3 mg/kg for industrial). Either clarifications, definitions of sources and/or corrections should be made in this table and subsequent tables.

13. **Section 5.1.2 Groundwater:** Many of the comments from Section 5.1.1 apply regarding the summary discussions. Revisions and/or supplemental information are needed to meet the objectives of supporting a "nature and extent" discussion.
    a. The discussion in the text should make better use of the information in the tables. For example, the text could identify the fairly predominate present of petroleum related impacts, specifically gasoline, when discussing the detections of several VOC in shallow groundwater.
    b. Should include a map of petroleum VOC in groundwater. Benzene is present in four wells above the screening criteria, at concentrations up to 140 ug/L.
    c. The presence of DDT could have some discussion related to possible transport to surface water and ecological receptors.
    d. The distribution of DDT and its metabolic byproducts, DDE and DDD (in groundwater and soil), should be evaluated and mapped to possibly identify a source area.

14. **LNAPL**:
    a. Although the introduction to this section mentions LNAPL analyses, there is no discussion of the results and no discussion of the possible extent of LNAPL. The narrative should be revised to present this information.
    b. If one of the investigation objectives was to identify the extent of LNAPL, the objective was not met. Wells were not located in the vicinity of GA-30 (historically known to have LNAPL). Please compare the screen intervals in Table 2-3 with the depth to water measurements in Table 2-4 as part of the discussion regarding measurements of LNAPL. The addition of a column on Table 2-4 for the screened interval would be useful. It appears that MW-1s is the only well with a screen interval compatible with identifying the presence of LNAPL. The discussion of a wells ability to represent the presence of LNAPL should also include GA-30. Additional characterization of the extent of the LNAPL should be a part of Phase 2 sampling.
    c. Previous investigations reported the presence of pesticides and PCB in samples of the LNAPL. Therefore, the LNAPL, and its release area (source) should be

evaluated in detail as a potential source of contaminants throughout the Facility and study area.

d. Table 5-4 does not include any pesticides results, is that because non were detected or pesticide analysis on the LNAPL was not done?
e. The field notes indicate "sheen" at a number of borings during phase 1. Additional information should be provided on the nature and extent of the sheen.

15. **Section 5.2 Wetland Soil Sampling.**
    a. Summary of results by number of analytes does not support nature and extent discussions.
    b. Discussion of analytical results for inorganics should include mention of regional background values.
    c. Because the maps do not include sample location identification, they are not particularly useful to support the text which reference specific locations of interest.
    d. The last paragraph identifies "notable" locations; however, the text should be expanded to provide technical reasons why specific locations are mentioned. For example, mention of the "highest concentrations" does not relate to the objectives of identifying impacts and "nature and extent" type discussions.
    e. A statement of the objectives would help guide the presentation of information and support discussions in subsequent sections.

16. **Section 5.3 Lake Sampling**. Map 2 should identify Force Lake and North Lake. The legend should be relocated, or made with transparent background so it does not obscure sample locations.

17. **Section 5.3.1 Surface Water**. The discussion should clarify that the Tables are only for analytes detected at one or more locations and the list of analytical groups (methods) should be provided to support the nature of non-detected analytes.

18. **Section 5.4.2** Surface Sediment Likely should be 5.3.2.
    a. The second paragraph first sentence is an apparent contradiction regarding the consistency of concentrations for PCB and pesticides. Perhaps this sentence is actually referring to the concentrations of inorganics and would be supportive of the second sentence. In the third sentence, the discussion identifies that the distribution of PCB and pesticide concentrations vary by location and Figures 10 and 11 show that the concentrations differ by an order of magnitude. The text should be revised to better correlate with the information shown on the figures and in the tables.
    b. The discussion should mention the exceedance of ecological criteria. The inorganics mentioned must be expanded and focused on the ecological objectives.
    c. Regional background soils values previously referred to on page ES-5 are not on tables or discussed in Section 5.4.2. Nor are regional background soil values discussed elsewhere in the document

19. **Section 6 Data Gaps**

a. The summary discussion in Section 6.0 should identify what analytes are driving the decisions.

b. Maps should be provided to show the locations and concentrations for the specific locations of interest that are proposed to be addressed by Phase 2.

c. Table 6-1: The inclusion of a single sample analyzed for VOCs does not seem to be adequate to address data gaps. Owing to the presence of petroleum related VOCs in a great percentage of surface soil samples, there should be analyses for petroleum related VOCs in all soil samples collected in Phase 2.

d. Table 6-1, Proposed sample program: Wet chemistry analysis should be included, such as total carbon organics, pH, grain size….etc. In addition, are there any reasons for not including mercury and lead analyses?

e. Table 6-2: Soils are grouped into three – surface, intermediate, and deep. Please provide the rationale for using these three groups, rather using surface and subsurface. Is this based on conceptual site model and exposures or identification extent of impacts for remedial design?

f. Because the site and Facility features identified in the text are not shown on the Figures or maps, and the proposed locations on Map 17 and 18 are not numbered, the discussion of locations is not very useful or clear. Features and proposed location numbering should be added and used in the text and tables.

g. The second paragraph on this page states that two additional subsurface soil samples be collected from a location near MW2i. Are these the two samples shown in Table 6-1 planned for depths of 16 to 18 feet bgs and 20 to 22 feet bgs? What is the objective? At this depth the media should not be considered "Facility Soil" because groundwater is present at a depth of 3 to 4 feet bgs. Are there no planned Phase 2 "surface soil" samples from this location?

h. The text on pages 96-99, does not mention planned Phase 2 subsurface soil samples to be collected from this location (MW2i). Page 93 should be consistent with page 96-99.

i. Wetland Soil: Subsurface wetland soil samples are proposed to be collected at WS-11 and WS-25 for delineating vertical extent of contamination. These two locations were also selected because detected chemical concentrations were high. It is noted that WS-20 has higher detected concentrations of most chemicals (total DDT, total PAHs, total TPHs, arsenic, and lead) than WS-11 and WS-25. Are there reasons that subsurface wetland soils are not proposed for WS-20?

j. Biota Tissue: The text indicates collection of biota samples is dependent upon the presence of shrew which is terrestrial. However, aquatic organisms should also be addressed here especially since there are fish and invertebrates present in the lake. EPA requests fish and invertebrate tissues be analyzed to evaluate the potential exposure risks from recreational fish consumption to humans and ecological risk from consumption of aquatic organisms.

20. Section 6.1.1

a. There should be some discussion of a remedial objective and associated data gap for the LNAPL. There is a bullet item for "GA-30" which is intended to address this point but it is not identified as an objective. Perhaps the same discussion regarding LNAPL can be added to Section 6.2 for groundwater.
b. Driveway Area. Location SL-12 with the maximum PCB concentration should have additional soil samples to better delimit this impact. The locations mentioned are at least 100 feet away and may not adequately bound this potential source area. In addition, the nearest data point to the southwest, towards Force Lake (SL-18), is over 200 feet away and does not bound the impacted area.
c. Central Area. In addition to Phase 2 samples proposed near SL-17 and SL-18, Phase 2 soil sampling should include 2 samples in the area between SL-15, SL-28 and SL-29; and between SL-16 and SL-17, where there are few data points and concentrations of PCB, DDT, PAH, and inorganics (lead) are significant.
d. Southwest Corner Area. As noted in the text, the source area for impacts in this area is not known. The area to the south towards Force Lake is not bounded. Phase 2 recommendations should include soil samples in the area south of SL-05 and west of SL-20.
e. GA-30. Phase 2 plans should include at least two monitoring wells, or other means of characterization, in the vicinity to monitor the occurrence of LNAPL, and potential related dissolved phase chemicals. Although the text discusses gasoline range hydrocarbons in soil at SL-24, there should be mention if this correlates to the characterization of hydrocarbons in the LNAPL sample. Other comparisons should be made to evaluate if the LNAPL in GA-30 is related to nearby impacts, or if other potential sources maybe present.
f. It is unclear why PAH analysis is not included for the additional samples to be collected near GA-30.

21. **Section 6.1.2 Depth of Impacts.** This section states that arsenic, lead, and mercury concentrations approach background levels. Metal background concentrations should be presented here. Regional metal background concentrations are only included in Table 6-5.

22. **Table 6-4:** It is recommended that screening levels for each listed chemicals be included since this table shows exceedances.

23. **Table 6-5:**

a. Footnote [a] states "EPCs are UCLs calculated using ProUCL 4.0 (EPA 2007b), the maximum detect, or half of the maximum reporting limit, as described in the draft Risk Assessment Scoping Memo." It is not clear what EPC represents – 95%UCL? Maximum detect? Or half of maximum reporting limit? Please clarify. This comment is also applied to Table 6-6. Please also note that this footnote is wrongly listed as [c] and it should be [a].

b. EPC under "Wetland Soil Boundary Concentrations" column: Was ProUCL used to obtain 95%UCLs? There are only seven samples in this dataset. EPA recommends that sampling data from Superfund sites be ten samples per exposure

area in order to be statistical meaningful (EPA 1992 *Supplemental Guidance to RAGS: Calculating the Concentration Term*, PB92-963373). Seven appears to be an insufficient dataset for calculating 95%UCL. This comment is also applied to Table 6-6. (is there a reason why only those seven samples are used to define the exposure area?)

i. LOAEL-based TRVs are listed in this table for comparison to EPCs. In addition to LOAEL-based TRVs, NOAEL-based TRVs should also be included to compare to EPCs.

c. LOAEL-based and NOAEL-based hazard quotient (HQ) should also be presented in this table.

24. Section 6.2 Groundwater.

a. Because the extent of LNAPL is not delimited, additional shallow wells or other LNAPL characterization methods should be recommended in the general vicinity of GA-30. Delineation of LNAPL should be a specifically stated objective.
b. Further discussion and investigation should be recommended related to the potential for the DDT compounds in shallow groundwater to be related to DDT in sediment of Force Lake.

25. Section 6.2.1.

a. The conclusion in the last paragraph, "facility groundwater data are sufficient to characterize migration of constituents in shallow groundwater to off-facility areas" is not adequately supported.
b. There is a facility-wide impact to groundwater from petroleum hydrocarbons, particularly gasoline related (benzene, MTBE, and trimethylbenzenes) and DDT. This contamination needs to be delimited, and the source area identified to support remedial decisions.
c. Table 5-3. This table should compare groundwater results to ecological surface water criteria. Workplan Response to Comment 60, states that groundwater (wells 2s, 2i, A20, GA33) will be compared to SWQCs

26. Section 6.2.2:

This section states that the "presence of DDTs in the deep zone reflects a problem with the integrity of deep well B-4." Adequate evidence is not presented to support this conclusion. Furthermore, if there is a problem with the integrity of well B-4, immediate action may be required to address the issue of potential cross-contamination.

27. **Section 6.3.1**:
    a. The wetland surface soil impacts have not been adequately delineated. As the text identified, the significant concentrations of PCB and DDT at locations WS-20 and WS-21 have not been delineated. Recommendations should include additional wetland surface soil samples near these locations to identify the limits of the impacted area.
    b. Table 6-3 should be location specific similar to Table 6-2.
    c. Wetland subsurface soils. The recommendations for subsurface soil sample at WS-25 should include WS-20 and WS-21.
    d. The conclusion that concentrations of various analytes decrease with depth from surface to subsurface sample depths is not substantiated by the information presented. Subsurface wetland soil samples should be collected at other locations. Closer evaluation of the data should be performed and other locations identified accordingly.

28. **Table 6-4**: The development and application of this table needs further explanation. There appears to be some bias in the presentation of locations towards analytes in subsurface sample results and overlooking surface sample results.

29. **Section 6.3.2:**

    a. The draft risk scoping memorandum requires revisions before being used as referenced here. This section will need to be revised based upon revisions to the Draft Risk Scoping memorandum. (Noted: EPA is not requiring re-submittal of the Risk Memo or the Report, but the comments will need to be responded to and addressed in the RI report.)

    b. This section addresses the question "Are additional wetland soil data needed to characterize the extent of *Facility-related* impacts in soils beyond the designated wetland soil sampling area in Phase 1?" Whether the contaminants originated at the Facility has not been specifically addressed. The report also states that "concentration gradients relative to the Phase 1 western and southwestern site boundary were examined for total PCBs and mercury." It appears that mercury concentrations appear to increase away from the Facility and PCB concentrations appear to decrease. However, the recommendations do not appear consistent with the information presented since the recommended Phase 2 testing includes PAHs, TPH, and PCBs, but not mercury.

30. **Section 6.5.1** Lack of subsurface sediment samples will limit the ability to fully characterize the nature and extent of contamination in Force Lake for the RI/FS.

31. **Section 6.5.2** This section states that there is no clear gradient in North Lake sediment constituent concentrations, and therefore migration from Force Lake has been limited . Determination of gradient versus sample heterogeneities is difficult to determine since all three locations are in close proximity near the inlet of North Lake.

32. **Section 6.6 Biota Tissue** This page states that soil and sediment data from Phase 1 would be evaluated to determine if tissue should be collected as part of Phase 2 effort. It should state how the soil and sediment data from Phase 1 would make such a determination – via food chain modeling? Since that evaluation has not been done in Phase 1, EPA requests the tissue data be obtained during Phase 2.

33. **Section 6.6.2 Comparison to Calculated Risk-Based Thresholds**: This section states "Preliminary risk-based thresholds were back-calculated for ecological receptors for representative bioaccumulative constituents and were compared to soil concentrations for terrestrial receptors and to sediment concentrations for aquatic receptors."

    It is not clear the purpose for the back-calculated preliminary risk-based thresholds. Hazard quotients (HQs) which indicate which, if any, contaminants and exposure pathways may pose ecological threats, are not presented in this report. Consequently, it is not clear to readers whether there are any potential ecological risks due to release of contaminants. Moreover, if there are potential ecological risks, no indication is given as to which contaminants may pose ecological through direct contact or via food chain.

    It is strongly suggested that HQs for contaminants in soil and sediments for potential receptors through different exposure pathways be presented in tables and discussed in the text. For bioaccumulative contaminants, a food chain model is suggested for high trophic levels, specifically for red-tailed hawk which would be exposed to contaminants in prey species more than directly exposed to contaminants in soil or sediment through incidental ingestion.

    Section 6.6.2.1 Terrestrial Species and table 6-10 should also be revised per the suggestions listed above

34. **Appendix A.** Total TPH concentrations do not include the results of the TPH gasoline fraction. Footnote 4 on page 31 indicates that the Total TPH is the sum of the three fractions (gasoline, diesel and motor oil). For example, in sample SL-25 36-60 in, TPH-gasoline is 550 ug/kg, TPH-diesel is 19 mg/kg, and TPH-motor oil is 23 mg/kg, and the total TPH is 42 mg/kg.

35. **Appendix D – Data Management, page 3, Calculated Totals:** It states how total PCBs, DDT, and chlordane were calculated when all chemicals or isomers in these groups are either all detected or all non-detected. However, it does not state how the totals will be calculated if a combination of detected and non-detected chemicals or isomers are in these groups. It is recommended this be stated. In addition, it should state if such a combination occurs in a group of chemicals such as PCBs, and how non-detects are treated in calculating the totals. For example, will the RLs or half of RL be included in the calculations?

36. **Appendix H – Parameters for Risk-Based Threshold Calculations**: It is recommended that TRVs for various receptors be consistent with those employed in ecological risk assessment prepared for the Portland Harbor Superfund site.