EPA Comments on Section 11 of Round 2 Report

GENERAL COMMENTS:

EPA has developed these comments based on a review of Section 11 of the Round 2 Comprehensive Site Summary and Data Gaps Analysis Report (Round 2 Report). In general, EPA believes that the information presented in Section 11 of the Round 2 Report represents an appropriate level of detail for the draft remedial investigation report (RI Report). Due to the lack of upland loading data and uncertainties about the contribution of contamination from certain key migration pathways (e.g., river bank erosion, stormwater discharges and historic over-water releases), EPA does not recommend a quantitative evaluation. Rather, information regarding upland contamination on a pathway by pathway basis should be discussed in relation to the observed distribution of in-water sediment, biota, surface water and transition zone water contamination.

General Process:

EPA has outlined the general process for developing the CSM to be presented in Section 10 of the draft RI report and updating the CSM on an sediment management area (SMA) basis in the draft feasibility study report (FS Report). In outlining this process, EPA has taken recent discussions between EPA and the Lower Willamette Group regarding Remedial Investigation Report presentation, the development of areas of potential concern (AOPCs) and development of SMAs.

Identify Indicator Chemicals: The Round 2 Report identified 23 Indicator Chemicals for mapping purposes. In addition, process that was used to develop chemicals for identifying AOPCs in Section 10 was unclear. EPA's general comments on the Round 2 Report (January 15, 2008). Indentified an additional 14 chemicals for mapping. EPA expects that approximately 40 indicator chemicals will be selected for mapping purposes in the draft RI Report. Indicator chemicals will be selected for each media of concern based on a combination of risk, sources and frequency of detection.

Develop RI Conceptual Site Model: EPA agrees that Section 10 of the RI Report should present the Remedial Investigation Conceptual Site Model (CSM) for key indicator chemicals. The CSMs should be developed for each indicator chemical selected above. For each indicator chemical, the RI report should provide a summary similar to the presentation in Section 11.2 (Site-Wide AOPC for PCBs). A discussion of all key sources and pathways (See Section 11.2.3) and the relationship between sources and in-water contamination (See Section 11.2.4) should be provided. The goal of the CSM is to develop and understand, in a qualitative manner, the relationship between sources, pathways and the distribution of contamination. In general, the level of detail presented in Section 11 of the Round 2 Report is adequate for the draft RI Report.

Develop Preliminary Remediation Goals and Identify Areas of Potential Concern: EPA expects that preliminary remediation goals (PRGs) will be mapped based on the results of the baseline human health and ecological risk assessments for the purpose of identifying AOPCs. EPA further expects that this mapping step will presented in an interim document to be submitted

prior to submittal of the Remedial Action Alternatives Development and Screening Memorandum.

Develop Sediment Management Area Specific Conceptual Site Models: Following the development of SMAs in the Remedial Alternatives Development and Screening Evaluation Technical Memorandum, SMA specific CSMs should be developed to support the development, evaluation and selection of remedial action alternatives in the FS. EPA expects that more detail regarding sources and pathways of contamination in relation to in-water contaminant distributions and a semi-quantitative evaluation will be presented.

SPECIFIC COMMENTS:

Section 11.0 – Conceptual Site Model

The stated objectives of the conceptual site model (CSM) presented in Section 11 are:

- Identify the key historical and ongoing sources and migration pathways contribution to risk at the harbor-wide and iAOPC-specific scales
- Qualitatively assess the relative magnitude of current and historical sources and migration pathways at the harbor-wide and AOPC-specific scales.

Although EPA is in general agreement with the stated objectives, the CSM presented in the draft remedial investigation report (RI Report) should not attempt to develop a quantitative link between sources and pathways of contamination and site risk. Rather, as stated above, the goal of the CSM should be to qualitatively connect the dots between upland and in-water source of contamination (current and historical) and the observed nature and extent of sediment, biota, surface water and transition zone water contamination. Factual information regarding sources of contamination should be summarized and discussed in relation to the observed nature and extent of in-water contamination for all media sampled.

Section 11.1.1 – iCOCs and Potential iCOCs

iCOCs were developed in Section 10 and presented in Table 10.5.1. However, as stated in our comments on Section 10, the process for selecting the iCOCs presented in Table 10.5.1 and discussed further in Section 11 is unclear. In general, EPA believes that the list of iCOCs is incomplete. Numerous chemicals that may pose a risk to human health or the environment at a given iAOPC are not presented. In addition, many chemicals with documented upland sources and release mechanisms are not discussed. For example, at iAOPC 1, chemicals such as lead, chromium and PAHs are known to have been released at the upland facility and may pose a risk based on a preliminary risk evaluation but are not included in the CSM.

When evaluating sources and pathways of contamination to the Willamette River, it is important that a comprehensive set of set of chemicals be evaluated to avoid overlooking key release areas and migration pathways. As stated in our January 15, 2008 general comments, other potential indicator chemicals should include metals such as chromium, copper, lead, nickel, and possibly cadmium, selenium and silver and key organic chemical such as dieldrin, endrin,

hexachlorobutadiene, TPH, di-n-butyl phthalate and phenol. Although a final set of indicator chemicals have not been developed, to the extent these chemicals pose a potential risk to human health and the environment and have known sources associated with a given AOPC, they should be discussed in the CSM.

Section 11.1.2 – Loading, Fate and Transport Processes

During recent discussions, the LWG has stated that the hybrid fate and transport model will be used to support the CSM to be presented in the draft RI Report. EPA believes that the hybrid fate and transport model is primarily a tool for performing a comparative analysis of remedial action alternatives in the FS. It should be noted that the there is a large amount of uncertainty associated with the results of the hybrid fate and transport model. While the model may be a useful tool to understand chemical loading, fate and transport processes generally, it should be used with caution.

Section 11.1.2.1 – External Loading Terms

EPA agrees that the loading terms range from quantitative estimates to terms for which little information is available. In particular, little or no information may be available to estimate historic loading terms.

Factual information and greater detail regarding chemical loading was presented in Sections 5 and 7 and Appendix D of the Round 2 Report. EPA comments on these sections should be incorporated into the updated CSM presented in the draft RI Report as appropriate.

- *Upstream Surface Water and Sediment Loading*: This section states that upstream sediment and surface water loading terms are defined as the mass loading rate passing RM 11 into the study area. In our January 15, 2008 general comments on the Round 2 Report, EPA commented that upstream loading should be estimated based on data collected at RM 15. The basis for this comment is that known sources of site contaminants (i.e., PCBs off-shore of the CLD facility at RM 11.5) are present just upstream of RM 11. In addition, based on recent discussions, the study area boundary as expanded to RM 11.8 to account for the presence of the RM 11.5 PCB source.

- *Stormwater*: The stormwater technical team is developing an approach for estimating stormwater loads based on recently collected stormwater data. Once this approach has been finalized, it should be used to estimate external loading terms for stormwater discharges to Portland Harbor.

- *Groundwater Advection Through Sediments*: Statements in this section appear to contradict statements presented in the Upland Groundwater Plume Discharge section above. This section states "Qualitative estimates of loading to surface water through sediments are presented in Appendix D." However, in the previous section, it refers to this pathway as a "transport process within the Study Area, as opposed to an external loading term." During recent discussions, it was agreed that subsurface loading to surface sediments/pore water would be included as a loading term.

- *Atmospheric Deposition*: EPA commented previously that the atmospheric deposition pathway should consider atmospheric deposition to the watershed in addition to direct deposition to surface water. During recent discussions, it was agreed that that a literature based evaluation focusing on local data would be performed to qualitatively understand the contribution to upstream loading and study area runoff.

- *Permitted Wastewater Discharges*: EPA commented previously that the evaluation of permitted wastewater discharges should also include 1500 and 1300J permits. During recent discussions, it was agreed that 1500 and 1300J discharges would be evaluated.

- *Riverbank Erosion*: It should be noted that river bank erosion is also the result of wind driven wave and wake action.

Section 11.1.2.2 – Fate and Transport Processes

Sediment Transport: This section does not refer to bedload. As stated in our comments on the fate and transport modeling effort, additional information regarding the significance of bedload in transporting contaminants within the Portland Harbor site should be presented.

Uptake into Biota: This does not appear to be a significant fate and transport process.

Section 11.1.3 – Loading, Fate and Transport of iCOCs and Potential iCOCs

EPA understands that the LWG is proposing to develop the CSM for the draft RI Report on a chemical by chemical basis. This is an acceptable approach as long as a comprehensive set of chemicals is evaluated and information regarding specific contaminant sources and release mechanisms is provided. Key sources of contamination for each chemical presented in the CSM should be identified and presented on site maps. Relevant migration pathways should be identified and information about the concentration, volume and duration of the release should be presented.

Information regarding current and historic sources of contamination should be evaluated with respect to the observed distribution of contamination in all relevant media. Factual information collected at upland investigations should be considered. The discussion should be similar to some of the evaluations presented in Section 11. For example, the discussion of the patterns of contamination relative to stormwater outfalls presented in Section 11.3.3.

More detail should be provided regarding potential sources of contamination within the study area. For example, in the discussion of dioxins and furans, key sources and migration pathways should be indentified. For example, more information regarding operations that may have generated dioxins at the Rhone Poulenc site, the location and time period over which those release occurred and key migration pathways that may have transport releases to the River should be presented and discussed.

Section 11.2 – Site Wide iAOPC:

The presentation of information regarding the site-wide iAOPC represents a good model for how information should be presented in the RI CSM. For each chemical evaluated, information should be presented on:

- *Chemical Distribution in all relevant media (11.2.2)*: Information should be presented for all media. Information about the mixture patterns and chemical form (e.g., total vs. dissolved concentrations) should be presented.
- *Potential Sources of iCOCs (11.2.3)*: All key sources and migrations pathways should be identified and discussed.
- *Relationship of Upland Sources to the Distribution of iCOCs (11.2.4)*: Information regarding sources and pathways should be related to the in-water chemical distribution.

Section 11.3 – CSM for iAOPCs:

In general, the information presented in section 11.3 is accurate, comprehensive and well presented. The primary concern with the presentation is the lack of chemicals discussed which made it difficult to develop a comprehensive understanding of the relationship between upland sources and pathways of contamination and the in-water contaminant distribution. In order to develop detailed comments on Section 11 of the Round 2 Report, EPA consulted DEQ project managers with direct knowledge of each of the specific iAOPCs. The focus of this review was to evaluate the conceptual release models presented for the various upland and overwater activities and sites for consistency with DEQ's conceptual understanding of the site.

Section 11.3.1 - iAOPC 1 – Oregon Steel Mills

Chemicals of Concern: The Round 2 Report identified PCBs as initial chemicals of concern (iCOCs) and zinc and dibutyl phthalate as potential iCOCs. Other COIs in the vicinity of iAOPC 1 include chromium, lead and PAHs. In addition, sediments collected in the vicinity of iAOPC have a high to very high potential for benthic toxicity based on and evaluation of empirical bioassay results and other lines of evidence such as application of sediment quality guidelines (SQGs) and predictive models developed for the Portland Harbor site.

Factual Errors: Map 10.5-3j is intended to show iAOPCs within River Mile 10 to 11. Instead, this map shows River Mile 2 to 3. In addition, Section 11.3.1.3.5, Riverbank Erosion, Page 11-70, 2nd full paragraph, last sentence should be revised to state that the source control measure currently being evaluated by DEQ includes bank stabilization, removal and capping.

Section 11.3.2 - iAOPC 2 - OF-53A & OSM

Chemicals of Concern: Evaluation of additional chemicals of concern may identify more upland sources and migration pathways associated with iAOPC 2.

Section 11.3.3 - iAOPCs 3,4 and 5 - PEO and Schnitzer Steel

Chemicals of Concern: It is unclear why many of the upland COIs (e.g., metals including lead in particular) were not evaluated for iAOPCs 3,4 and 5. In addition, residual range hydrocarbons (RRH) and zinc are listed as part of iAOPC 3 but not discussed in text.

Factual Errors/Omissions: Additional information regarding upland contamination should be presented. There are known minor sources of PCBs and hydrocarbons in shallow soil at the Schnitzer site and upland investigations are ongoing. A multitude of contaminants have been detected in sediment. Stormwater and over water activities are a likely source of these contaminants.

Section 11.3.4 - iAOPC T-4

Chemicals of Concern: Evaluation of additional chemicals of concern may identify more upland sources and migration pathways associated with iAOPC T-4.

Section 11.3.5 - iAOPC 6 - Arco/BP

Chemicals of Concern: iCOCs for the Arco/BP site include mercury and silver which do not appear to be site related. Diesel range hydrocarbons (DRH) is assumed to come from the Arco. However, Arco has done forensic evaluation of PAH sources that should be considered.

Factual Errors/Omissions: The draft RI should discuss the near-shore sediment removal planned for this summer/fall.

Section 11.3.6 - iAOPC 7 – MarCom North and South Parcel

Chemicals of Concern: Several upland COIs were not included in the evaluation (chromium, lead, copper, zinc, PAHs and butyltins). It is unclear why silver was selected as an iCOC for iAOPC 7. It is unclear whether upland sources of silver and DRA are present.

Factual Errors/Omissions: There are some questionable conclusions drawn about outfall 52A and the private outfall WR-285; existing stormwater data is insufficient to support the conclusions. It should be noted that visible sandblast grit is present along the exposed beach area. An upland/beach removal action to address sandblast grit is in the planning stage a the MarCom South parcel. Additional sampling to delineate the distribution of grit in-water and the future boundary of the pending upland action may be required. There is some minor PCB contamination in upland soils that was not discussed in text. Likely sources include historic stormwater discharges and historic over water activities.

Section 11.3.7 - iAOPC 8 and 9 – Former Marine Finance

Factual Errors/Omissions:

In general, the discussion presented in this section does not take into account source control actions and site investigation findings. Substantial source control work has been conducted at the site, including excavation of over 1000 cubic yards of surface soil to eliminate soil

concentrations above JSCS levels. COPCs were monitored in groundwater; all groundwater detections were below screening levels during a three sampling events. Little if any mention of this is made in Section 11.3.7. Other source control measures included capping of the site with asphalt and/or the building, virtually eliminating the overland flow or storm water pathway as pathways of concern. Storm water sampling has shown COPCs to be below JSCS criteria.

The description of site activities (historic versus current) is unclear. Current site activities should be described as follows:

> *Advanced American Construction, Inc. (AAC) is a heavy, civil, marine contractor. The 7+ acre site at 8444 NW St. Helens Road, Portland, Oregon is AAC's headquarters (and only) site. AAC has owned the site since November 2004, occupied the new building May 8, 2006, and currently utilizes the entire site. None of the yard is leased to any other tenant for any other use. Site operations include barge and tug moorage, on-land and in-building equipment storage and maintenance, machine shop, and offices for support of off-site construction projects throughout the western United States. Hendren Towboats ceased operations and moved out September 1, 2005.*

The text should clarify that the site has been developed and that virtually all site structures shown on Map 11.3.7-1 discussed in the text have been removed. The text also states that PCBs were not identified as COIs by DEQ in the upland. This is incorrect. During the 2000 site investigation a total of three subsurface and seven surface soil samples were analyzed for PCBs. PCBs were not detected above the detection limit of 100 ug/kg. These data are contained in Appendix D of the October 2000 SI Report. Based on this information, DEQ determined that PCBs were adequately evaluated and they were ruled out as a contaminant of potential concern at the site.

DEQ did not identify DDT and associated breakdown products during its expanded preliminary assessment because no source or use at the site was identified. The only evidence for DDT compounds was a drum labeled "pesticides" observed during the investigation. DDT was detected at moderate concentration (272 ug/kg) in one sample collected near the former Hendren Dock. DDT is an area-wide contaminant in Portland Harbor and there are DDT source areas immediately upstream. However, due to the lack of use of DDT at the upland site, it is unclear whether iAOPCs 8 and 9 are a significant source of DDT contamination.

Chromium copper, lead, mercury, nickel, silver and zinc were sporadically detected in groundwater samples. With the exception of silver, only one detected concentration for each of these metals exceeded screening criteria. Silver exceeded its screening criteria in two samples. Based on the general low frequency of detection, and very limited detections above screening level criteria, DEQ concluded that discharge of shallow groundwater does not appear to present a significant threat to the Willamette River for any of these metals. Although arsenic was detected at a higher frequency (6 of 18 samples), the reported concentrations are below the applicable screening criterion.

DEQ does not agree that the site is a "medium" as a potential DDT source. It appears that this conclusion is based on the fact that a single drum on site was observed to be labeled "pesticides", and one moderately elevated DDT sample collected near the Hendren Dock.

Section 11.3.8 - iAOPC 10 - Crawford Street Corporation and City of Portland Water Lab

Chemicals of Concern: iCOCs identified for iAOPC 10 are limited to PCBs and arsenic. However other metals such as copper were detected in offshore sediments collected as part of the RI/FS and in post-excavation beach samples collected in 2001.

Section 11.3.9 - iAOPC 11 – GASCO, Siltronic and US Moorings

Chemicals of Concern: The lists of iCOCs and iCOPCs should be revised to include constituents of MGP waste (e.g., PAHs, cyanide, metals, and BTEX compounds) and chemicals detected offshore of the Siltronic facility (e.g., TCE and breakdown products such as vinyl chloride).

Factual Errors and Omissions:

The indentation in the iAOPC boundary off-shore of the northern corner of the Siltronic facility should be removed (i.e., the AOPC should be roughly rectangular in shape) to ensure that TCE contamination "Area 2" is fully contained with the area.

The results of the in-water Phase 2 Offshore Field Sampling Approach that took place in 2007 should be evaluated to determine whether any modifications to the CSM for iAOPC 11 are required.

The following changes to the summary of contaminant transport pathways should be made:

- The groundwater (alluvial water-bearing zone [WBZ[, alluvial WBZ) and riverbank erodible soils pathways are complete and currently considered the most significant uplands contaminant transport pathways in the iAOPC.
- The storm water conveyance systems are potentially complete pathways and are currently being evaluated at both sites.
- Source control for DNAPL, groundwater, and riverbank soils is required from the downstream property of the GASCO site to upstream of the former lowland effluent pond overflow areas on the Siltronic site. From there to the upstream property line of the Siltronic site source control is considered warranted and is being further evaluated during field work scheduled for this year.

For clarification, Siltronic is currently evaluating facility storm water conveyance system and has not identified all COIs shown in table which is more consistent with detections in Doane Creek.

Extent of cyanide and SVOC and VOC plumes off-shore of the Siltronic and GASCO sites has not been fully characterized. Site Figures should be reviewed and revised pending the results of in-water Phase 2 Offshore Field Sampling Approach to conducted in 2007. The TCE plume originating from Siltronic should be depicted as being continuous from the uplands source (i.e., from former TCE USTs), under the river, and surrounding the areas of TZW exceedances shown.

Figure 5.1-1h appears to be incomplete as groundwater has been heavily impacted by constituents of MGP waste (i.e., diesel-range and residual-range petroleum hydrocarbons)

Figure should be reviewed and revised pending the results of in-water Phase 2 Offshore Field Sampling Approach to be conducted by NW Natural beginning in July 2007

Section 11.3.10 - iAOPC 12 – Navigation Channel off-shore of Willamette Cove

Chemicals of Concern: Evaluation of additional chemicals of concern may identify more upland sources and migration pathways associated with iAOPC 12.

Section 11.3.11 - iAOPC 13 – Willamette Cove and downstream of McCormick and Baxter

Chemicals of Concern: The Round 2 Report identified PCBs, dioxin and pesticides as iCOC and mercury and TPH as potential iCOCs for iAOPC 13. It should be noted that PCBs were not identified as a COC in the McCormick and Baxter RI. Section 11.3.11 does not adequately describe the petroleum contamination located along the shoreline in the northeastern corner of Willamette Cove.

Factual Errors and Omissions:

The basis for extending the area of iAOPC13 over the McCormick and Baxter Site sediment cap is questioned. Rather, it may be more appropriate to terminate iAOCP13 at the edge of the sediment cap and to extend this iAOPC to include all of the area between the sediment cap and the current downstream boundary of iAOPC13. This boundary revision would result in iAOCP13 being segregated from iAOPC 12.

The footprint of the McCormick and Baxter sediment cap is incorrectly shown on the folio maps. The maps should be updated with as-built drawings of the McCormick and Baxter sediment cap. (The difference is very significant along the shoreline where the sediment cap extends several hundred feet further into Willamette Cove.)

The Round 2 Report provides various references to sources of contamination originating or potential originating from the McCormick and Baxter site but does not clarify that these releases occurred prior to implementation of the McCormick and Baxter remedial actions. Furthermore, the report does not adequately distinguish between pre- and post-RA sampling results (e.g., sediment sample locations which have since been covered by the sediment cap) and does not provide or reference McCormick and Baxter data collected since remedy implementation. For example, the Oregon DEQ has collected surface water and sediment pore water samples from within the sediment cap footprint in Willamette Cove in fall-2002, fall-2003, fall-2005, spring-2006, fall-2006 and spring-2007. By excluding these data and focusing on historic, pre-RA conditions, the CSM raises undue uncertainty about the nature, extent and source of iCOPs in IAOPC13.

The iAOCP13 CSM presentation should identify and discuss the potential for hazardous substances to be associated with the submerged barge located along the Willamette Cove shoreline, in the vicinity of the historic dry docks, as shown in the figure below. This barge is located close to several of the highest sediment PCB sample locations. This barge should not be confused with the barge incorrectly shown on Folio Map 11.3.10-1, which was removed in 2004.

The November 2004 Multibeam bathymetric survey was performed by DEQ following construction of the McCormick and Baxter sediment cap.

Surface water and tissue data from the cove suggest an active PCB source which is not consistent with the sediment data. Additional investigation is needed to identify the PCB source suggested by the high surface water and tissue detections.

The iAOCP13 CSM presentation does not adequately describe the petroleum contamination located along the shoreline in the northeastern corner of Willamette Cove (Section 11.3.10.3.4 downplays its nature and extent). This contamination was discovered during construction of the M&B sediment cap and was confirmed to be a separate and discrete source from the McCormick and Baxter site. Although contaminated sediments located above Ordinary Low Water (OLW) were removed by DEQ's construction contractor, under an interagency agreement with Metro, substantial contamination remains below OLW. The nature and extent of the remaining contamination should to be characterized.

The discussion of overwater discharges should identify as a potential overwater source the transformers which were historically located overwater on the former dry docks.

Section 11.3.12 - iAOPC 14 – Rhone Poulenc and Arkema

Chemicals of Concern: A number of iCOCs were not included for the Rhone Poulenc iAOPC. For example, arsenic is present at the beach near the railroad bridge well in excess of industrial PRGs and background values and there are a large suite of organochlorine pesticides present at the upland facility and in off-shore sediments that were not discussed. In addition, some significant COPCs were screened out (e.g., perchlorate, chlorobenzene and chromium) at the Arkema site.

Despite the availability of transition zone water data, intermediate/deep groundwater discharges into or below the river and has not been fully characterized. Given that the contaminant levels in the intermediate/deep groundwater zone may exceed levels observed in shallower transition zone data, additional characterization of the Rhone Poulenc groundwater discharge may be required to support upland source control and in-water remedial design efforts.

Factual Errors and Omissions:

The Round 2 Report focuses on chloroform and TCE as being the primary concern for the groundwater pathway. However, other VOCs such as mono- and dichlorobenzene and vinyl chloride are also present. Arsenic, dioxins/furans, phthalate compounds and silvex are also concerns. While upland groundwater plumes may generally not be expected to be a significant source of dioxins, dioxin transport via the groundwater pathway is a concern for the Rhone Poulenc groundwater plume and is currently being evaluated. Note that the dioxin plume at Rhone Poulenc extends farther north on the Siltronic property than is shown. The Rhone Poulenc 1,2-Dichlorobenzene plume extends farther north than shown, almost to the boundary between Siltronic and NW Natural. Benzene and TCE extends from the Rhone Poulenc facility to the

river and south to Arkema Lots 1 and 2 and north to the BNSF railroad. Also, a petroleum plume originates from the Rhone Poulenc facility which is not shown on the summary groundwater figures.

The Round 2 Report concludes that "loads generally increase through the Study Area to RM 6.3". It is more likely the middle data point at RM 6.3 reflects a spike in concentrations of pesticides related to the Rhone Poulenc and Arkema sites rather than a study area trend.

Section 11.3.13 - iAOPC 15 and 16 – City outfall 048 and Triangle Park

Chemicals of Concern: iCOCs indentified in the Round 2 Report for iAOPC 16 are limited to PCBs. In addition, iAOPC 16 is restricted to the downstream corner of the embayment at Triangle Park. The upstream corner of the embayment contains elevated concentrations of metals, TBT, PCBs, PAHs, TPH and possibly pesticides. These chemicals should be included as iCOCs for iAOPC 16.

Factual Errors and Omissions:

The basis for extending the area of iAOPC15 over the McCormick and Baxter sediment cap is questioned. Rather, it may be more appropriate the terminate iAOCP15 at the edge of the sediment cap and extend this iAOPC to include all of the area between the sediment cap, Triangle Park and the riverward edge of the historic dock discussed in the specific comment below.

Potential impacts from the former dock structure as well as historic operations over the dock should be discussed as a potential data gap for iAOCP15.

The footprint of the McCormick and Baxter sediment cap is incorrectly shown on the folio maps. The maps should be updated with as-built drawings of the sediment cap. (Although, the deviation is minor for iAOPC15, the difference is very significant for iAOPC13 where the sediment cap extends several hundred feet further into Willamette Cove.)

The Round 2 Report provides various references to sources of contamination originating or potential originating from the McCormick and Baxter site but does not clarify that these releases occurred prior to implementation of the McCormick and Baxter remedial actions. Furthermore, the report does not adequately distinguish between pre- and post-RA sampling results (e.g., sediment sample locations which have since been covered by the sediment cap) and does not provide or reference McCormick and Baxter data collected since remedy implementation. For example, the Oregon DEQ has collected surface water and sediment pore water samples from within the sediment cap footprint in Willamette Cove in fall-2002, fall-2003, fall-2005, spring-2006, fall-2006 and spring-2007. By excluding these data and focusing on historic, pre-RA conditions, the CSM raises undue uncertainty about the nature, extent and source of iCOPs in IAOPC15.

The statement in Section 11.3.12.1.1, that most structures have been removed is not entirely correct. A very large dock historically separated the Triangle Park and McCormick and Baxter

properties. This dock extended into the river forming a "T". The Triangle Park property was filled landward of the dock. The portion of the dock extending in front of the M&B property appears to have mostly collapsed into the river by the early 1970s. Several hundred pilings of this dock were removed in 2004 as a conservation measure of the Endangered Species Act Biological Opinion. During these removal operations, construction workers reported substantial debris, presumable the dock's surface decking, littering the river bottom.

The LWG identified dioxin as an iCOC & As as a potential iCOC for iAOPC 15. In Section 12 of the report, the LWG concluded that additional surface sediment samples were needed to better define this iAOPC. The LWG should collect these samples, but also analyze the samples for other likely risk-driving COIs such as Zn & PAHs.

Section 11.3.12.1.3, Upland Hydrogeology, Page 11-209, 5th full paragraph - The sediment cap was constructed over a two year period during 2004 and 2005; the barrier wall encompasses 18 acres; and the upland cap was placed over 41 acres. The purpose of the soil cap is to prevent direct contact with contaminated soil and help reduce infiltration.

Section 11.3.12.2.1, Sediments, Page 11-210, 1st full paragraph – The text should distinguish the sediment samples collected from locations which have since been covered by the sediment cap.

Section 11.3.12.3.4, Groundwater Discharge, Page 11-214, Last paragraph – Sampling of monitoring wells in May 2006 at the M&B site, including MW-3s and MW-59s (a new well located in the vicinity of MW-3s), for As, Cr, Cu, Zn, PAHs and PCP indicates low to non-detectable levels of analytes in groundwater. These data should be used instead of the earlier 2002 sampling data. (Note that extensive surface water and cap pore water samples have been collected in the subject area between fall 2002 and spring 2007.)

Section 11.3.12.3.4, Groundwater Discharge, Page 11-215, 1st full paragraph – The purpose of the subsurface barrier wall is to minimize NAPL migration to the river.

Section 11.3.13 - iAOPC 17 – Willbridge

Chemicals of Concern: iCOCs indentified in the Round 2 Report for iAOPC 17 are limited to PCBs, DDT and related breakdown products and chlorinated dioxins and furans. Petroleum hydrocarbons should be included as a iCOC for iAOPC 17.

Section 11.3.14 - iAOPC 18- Shaver Transportation/Front Ave LP, Outfall 19

Chemicals of Concern: iCOCs indentified in the Round 2 Report for iAOPC 18 are limited to PCBs and ammonia. Evaluation of additional chemicals of concern may identify more upland sources and migration pathways associated with iAOPC 18.

Likely sources of iAOPC sediment contamination include Outfall 19 and Shaver Transportation's overwater operations. Other possible upland sources of iAOPC 18 sediment contamination include bank erosion, overland runoff and several private and/or public outfalls that discharge in the vicinity of iAOPC 18.

Calbag Metals: Section 11.3.14 - iCOCs include PCBs, yet elevated metals (cadmium, chromium, copper, and lead) and phthalates in storm system catch basin and piping sediment were encountered during 2005 removal activities suggesting a historical source of these other iCOCs to the river.

Section 11.3.15 - iAOPC 19 – Gunderson

Chemicals of Concern: iCOCs indentified in the Round 2 Report for iAOPC 19 do not correspond with the COPC list currently in use in the uplands investigation. In addition to the iCOCs and potential iCOCs listed in Section 11.3.15; arsenic, lead, zinc, copper PAHs, nickel, chromium, antimony, dibutyl phthalate, bis-(2-ethylhexyl)phthalate, selenium, butyltins, dibenzofuran, and dioxins/furans may be COPCs based on exceedances of sediment SLVs in sediment samples.

Contaminant Transport Pathways

Based on the information collected at the site to date, the primary upland contaminant migration pathways identified at the Gunderson site include erosion of riverbank soils and storm water.

Section 11.3.15.3.2 discusses Stormwater/Overland Transport at the site. Storm water is considered an uplands contaminant transport pathway warranting source control. Gunderson has collected a large amount of storm water system data, including a comprehensive catch basin/oil-water separator sediment sampling effort in the fall of 2006, however there is little discussion of site-specific data included in the report. Discussions of storm water emphasize potential sources to the City's Outfall 18 drainage basin other than Gunderson. Future versions of the document should be revised to focus on Gunderson's storm water and storm water system data.

Section 11.3.15.3.5 It should be noted that the actual riverbank fill material in Area 3 consists of debris such as firebrick, friable asbestos, ship engines etc. that may be wastes related to the former ship dismantling operations.

Shaver Transportation

Section 11.3.1.4 Incorrect figure is referenced. It should be 11.3.14-1.

Section 11.3.14.2.1 While the highest PCB concentrations are located near the Shaver Dock, it should be noted that most samples in this area were collections near the docks, in an area of general sediment accumulation. The dock area is a back eddy. The proximity of these samples to Outfall 19 also should be noted here.

Section 11.3.14.4 Shaver Transportation is not included on Table 11.3.14-2.

Table 10.5-1 Although no significant source areas were identified, a number of pathways are listed as "insufficient information". The DEQ PM disagrees with the interpretation in this table.

Section 11.3.16 - iAOPCs 20, 21, 22 and 23 – Portland Shipyard and Swan Island Lagoon

It is unclear whether the Cascade General site is a likely current source for the PCB contamination found in iAOPC 22. The site is paved and the PCB sources were primarily historical. Furthermore, Cascade Generally cleans the stormwater system on a regular basis.

On page 11-262, the last dash refers to Berth 308 indicating that uses are unknown (also referenced in last bullet on page 11-265). The Port has completed an initial evaluation of the upland area associated with Berth 308 to support a DEQ No Further Action determination. There are no current pathways for contamination migration to the Swan Island Lagoon.

The third bullet on page 11-265 discusses property associated with Berth 311. DEQ provided an NFA determination for a portion of this property owned by the Port in December 2005. The portion of the property covered by the NFA consists of an approximately 60-foot wide, 500-foot long, L-shaped driveway that provides access from North Basin Avenue to the southeast end of a concrete pier/lay berth located within and on the east side of Swan Island Lagoon. The Uplands site does not include the Berth itself or the immediate shoreline adjacent to the Berth and Swan Island Lagoon.

There are a few references (e.g., page 11-272 last part of first paragraph under iAOPC 21) to Cascade General discharging treated stormwater from the ballast water treatment plant to the river as an option under their NPDES permit. For the last several years Cascade General has directed this water to the City's sanitary sewer. Also, under iAOPC 22, 2nd paragraph, they identify discharge from the ballast water treatment plant as a potentially complete pathway to the river which is not true under this current operation.

On page 11-273, 1st paragraph under iAOPC 23 identifies the N Channel Ave fabrication site as a potential source - shouldn't this be a potential source to iAOPC 20? Later in the paragraph the report refers to this area as "this portion of the Cascade General site." If the reference is referring to the fabrication site - this is Port property.

In the 3rd paragraph from the bottom of page 11-279, the statement is made that no riverbank investigations have been performed at iAOPC 20. In Sept 2006, the Port collected samples along the shoreline of the N Channel Ave Fabrication site at three locations corresponding to discharge points of parking lot drains.

iAOPC 21 – USCG

Section 11.3.16.3.1-2 incorrectly state that no soil investigations were conducted at the site; see 2/01 RI Report for soil results from 14 samples.

Sediment in six stormwater catch basins showed low levels of Aroclor 1254 and 1260; Arclor 1254 (the dominent Aroclor in this Swan Island iAOPC) concentrations ranged from 14-1800 ug/kg (PEC = 300), and Aroclor 1260 ranged from 31-2200 ug/kg (PEC = 200). It is not clear to what extent the USCG site contributed to the in-water PCB contamination observed adjacent to

their site compred to potential sediment movement (i.e., prop wash, etc.) from other Swan Island PCB sources.

iAOPC 22 – Fred Devine Diving and Salvage (FDDS)

Page 11-273. It appears based on plumbing records that the oil water separator at FDDS was always plumbed to the sanitary sewer, and there is no indication that it ever discharged to the storm drain or river. Based on results from the XPA, DEQ has determined that the storm water pathway is the only pathway of concern to the river requiring evaluation in the Source Control Evaluation

The primary connection to the river is via City of Portland Outfall M-1. Chemicals recently detected in catch basis sediments include PCB Aroclor 1254, bis-1-ethylhexyl phthalate, arsenic, cadmium, chromium, copper, lead and zinc. These should be included as potential COIs for stormwater pathway and discussed in the text.

iAOPCs 21, 22, and 23 – Portland Shipyard and Swan Island Lagoon

The only iCOCs the identified in the Round 2 Report is PCBs. Other chemicals identified as iCOCs for iAOPC 21 (Portland Shipyard) are arsenic, zinc, di-n-butyl phthalate and TPH. However other chemicals including copper, TBT and PAHs should also be evaluated at this facility. .

Section 11.3.17 - iAOPC 24 – Fire Boat Cove

The only iCOC the LWG identified thrú their risk screening & RD2 risk assessment for iAOPC 24 were PCBs. In Section 12 of the report, the LWG identified the need for additional 1 surface & 1 subsurface sediment sample in iAOPC 24. Any additional surface & subsurface samples should also be analyzed for these other potential risk-driving chemcials: metals (particualrly Zn), dioxin, pesticides, possibly PAHs, DBP, & possibly TPH. Zn is specifically called out as DEQ has documentation of discharge of Zn-containing galvanizing process wastes to the storm line discharging to the cove.

General Electric

Section 11.3.17 While stormwater confirmation data is pending, onsite legacy sediment is unlikely due to recent extensive SCMs (Section 11.3.17.3.10)

Galvanizers Company

Section 11.3.17 discusses iAOPC 24 (i.e., Balch Creek Cove) which includes the City Outfall 17 (OF 17). The second paragraph of Section 11.3.17.1 mentions the ECSI sites that discharge storm water into Outfall 17, including GE Decommissioning (ECSI #4003) and a portion of the Burlington Northern Railroad Yard (ECSI #100). Although Galvanizers Company (ECSI #1196) discharges storm water into the OF 17 sub-basin it is not mentioned.

The Galvanizers Company site is located nearly a mile from the river. As such, it only connection to the Portland Harbor is via storm water. Storm water data for the Galvanizers Company facility should be reviewed and the site considered as a potential source of impacts to iAOPC 24 for the following reasons.

- Certain site COI have been detected in storm water leaving the Galvanizers Company site at concentrations exceeding JSCS criteria (i.e., cadmium, copper, lead, and zinc).
- On-site storm water system sediment detections exceed PECs (lead, zinc) and default soil background values (cadmium, copper, lead, and zinc).
- Site COI have been detected in the City's lines at concentrations that exceed PECs (cadmium, lead, zinc) and soil background values (cadmium, lead, zinc).
- Analyses of sediment in the iAOPC detected site COI greater than PECs (zinc) and soil background values (lead, zinc).

Recent sediment data collected at the site suggest it may also contribute phthalates to the City's storm lines and ultimately iAOPC 24.

Section 11.3.18 - iAOPC 25 – Goldendale Aluminum, Outfall 47 and UPRR Albina

Chemicals of Concern: Evaluation of additional chemicals of concern may identify more upland sources and migration pathways associated with iAOPC 18.

Section 11.3.19 - iAOPC 26 – Sulzer Pump and Outfall 15

Chemicals of Concern: The only iCOC the LWG identified thru their risk screening & RD2 risk assessment for iAOPC 26 were PCBs. Other potential risk-driving COIs include pesticides, metals and PAHs.

Section 11.3.19 The conclusion that there is an active source because shallow PCB contamination levels are similar to deeper levels is questionable. Section 11.3.19.1.1 indicates the area along the site is in "dynamic equilibrium" for sedimentation accumulation, defined as sediment moving in or out of the area with no net change. Therefore it is possible that surficial sediment and associated contamination may reflects upstream sources. It should be noted that City outfall15 is located just upstream of the iAOPC.

Section 11.3.19.3.1 Historical maps show an oil pipeline extending from the PGE Station E northerly along the eastern site boundary of the Sulzer (now Dolan) property to the River near current City outfall15. The presence of this pipe was investigated by PGE through soil borings and test pits. Evidence of the pipeline (i.e. significant contamination, direct observation) was not observed, and it was concluded the pipe had been removed. DEQ did not require additional evaluation of the pipeline.

Section 11.3.19.3.4 There is not an active groundwater treatment system at the site. The system was shut down in the mid 1990s with DEQ approval. The system addressed gasoline-related constituents. A release of chlorinated hydrocarbons from a waste oil tank impacted groundwater. A soil removal was conducted in the mid 1990s and concentrations of chlorinated hydrocarbons

in groundwater were below their respective DEQ Level II Screening Level Values (SLVs) for aquatic receptors in freshwater.

More recently, PAH concentrations were detected in direct-push borings, advanced along the shoreline, near or marginally above screening level values. It should be noted that PAHs have not been identified as an iCOC in sediment near the site.

Groundwater occurs at a depth of approximately 20 feet, well below the depth of the local storm drain lines. Therefore groundwater migration along a preferential pathway can be ruled out.

Section 11.3.19 - iAOPC 27- WR 282, WR 282, WR 291 & OF 45

Chemicals of Concern: The only iCOC identified in the Round 2 Report for iAOPC 27 is PCBs. Other potential risk-driving COIs include TPH & PAHs.

City CSO Project Table 10.5-1

Based on the City's preliminary evaluation, the following are COIs identified for their outfalls that are not listed on the table:

- iAOPC 14: PAHs
- iAOPC 17: PAHs
- iAOPC 18: PAHs, Bis-phthalate, metals
- iAOPC 19: Lead, Zinc
- iAOPCs 20, 21, 22, 23: PAHs
- iAOPC 24: Zinc