ANCHOR ENVIRONMENTAL, L.L.C.

Anchor Environmental, L.L.C.
1423 3rd Avenue, Suite 300
Seattle, Washington 98101
Phone 206.287.9130
Fax 206.287.9131

June 4, 2007

000029-02

Sean Sheldrake
U.S. EPA Region 10
Attn: ECL-110
1200 Sixth Avenue
Seattle, Washington 98101

Re: NW Natural Responses to EPA Comments on the Year 0 Event 1 and Year 0 Event 2 Long-Term Monitoring Data Summary Reports, "Gasco" Site Removal Action

Dear Sean:

The following presents a summary of NW Natural's responses to 1) the U.S. Environmental Protection Agency's (EPA's) comments (dated April 18, 2007) to NW Natural's responses to EPA comments on the *Gasco Data Summary Report –Year 0 Event 1 Long-Term Pilot Cap Monitoring*; and 2) EPA's comments on the *Gasco Data Summary Report –Year 0 Event 2 Long-Term Pilot Cap Monitoring*. This response letter is meant to serve as an addendum to the aforementioned data reports. This addendum will be included as an appendix to the *Annual Data Evaluation Monitoring Report -Year 0 Long-Term Pilot Cap Monitoring*. Any requested EPA revisions to future data presentations and/or data evaluations noted in this addendum will also be incorporated into future data summary and data evaluation reports, as necessary.

For your reference, EPA's original comments are provided in bold text above NW Natural's response.

NW NATURAL RESPONSES TO EPA COMMENTS ON THE NW NATURAL RESPONSES TO EPA COMMENTS ON THE YEAR 0 EVENT 1 LONG-TERM MONITORING DATA SUMMARY REPORT

1. **As described in the EPA General Comment #3 (in the November 17, 2006 comment letter), the diver video for the Year 0, Event 1 was unusable due to inadequate lighting. The diver video submitted by NW Natural for the Year 0, Event 2 monitoring was superior and is of adequate quality for EPA purposes. The procedures and lighting techniques used in the Year 0, Event 2 monitoring should be utilized for all future dive events. However, NW Natural indicated in the response to EPA General Comment #3, that "the**

diver did not identify any seeps of product or encounter tar/product on his gloves". In review of the diver video for the Year 0, Event 2, EPA noted that tar material or other staining was visible on the diver glove after the diver placed his hand in the sediment to check for evidence of tar/contamination in at least one location. Only a limited number of probe attempts by the diver were completed to check for contamination in the pilot cap. In future events, additional hand probes and visual inspection of the cap material should be completed. The diver should wear light colored gloves (i.e. green lab-grade nitrile as shown at http://yosemite.epa.gov/R10/OEA.NSF/webpage/Dive+Team) so any staining will be clearly visible on the gloves. The diver should clear any accumulated sediment on top of the cap and then dig several inches into the cap by hand, extending to resistance or the bottom of the cap, whichever comes first. This hand probing and visual inspection should be completed at a minimum of every 10 feet along each transect.

NW Natural Response: As requested by EPA, the same video procedures and lighting techniques will be used for all future diver reconnaissance surveys.

EPA is correct that staining of the diver's glove occurred during the Year 0 Event 2 diver survey. The statement referenced by EPA above was made relative to survey results within the pilot cap area as indicated by NW Natural's full response to General Comment #3: "The physical characteristics throughout the pilot cap were very similar – depositional silt to varying depths. The diver did not identify any seeps of product or encounter tar/product on his gloves." The staining was identified at a single location at a tape distance of 40 feet shoreward from the transect survey point 30-2 (see Figure 3 of the Year 0 Event 2 Data Summary Report). This location is channelward of the pilot cap area and within the area where dredging did not occur in order to protect the fuel-oil pipeline supports from potential damage. The diver video indicates that the staining occurred during hand probing along the steep side slope created by the dredging outside of the protected area. It is anticipated that the diver encountered contaminated material that was identified during the design characterization (see Figure 3 of the Removal Action Project Plan; Anchor 2005), but not removed by the dredging in this protected area. For future monitoring events, all signs of staining will be identified throughout the diver survey transect and the location of the material will be noted relative to the pilot cap area.

During the Year 0 Event 2 sampling, the diver probed the sediments every 20 feet along each of the four transects. In accordance with EPA's request, the probe interval will be increased to every 10 feet. In addition, the diver will wear lightly colored gloves, as commercially available, to increase the potential visibility of staining. Due to the physical conditions present at the Gasco site, the diver will be unable to clear any accumulated sediment on top of the pilot cap and then dig several inches into the cap by hand given that the cap is covered by the armor layer.

In order to excavate through the armoring to the sand cap a large amount of armor material must be removed to create access to the cap. Due to movement of armor into the hole during excavation a conical hole approximately 3 feet in diameter is required on the gentlest slopes of the cap. In a previous outing this was attempted, and the diver unsuccessfully spent nearly an hour digging with tools and by hand to reach the cap. Hand tools were ineffective because the rocks locked so firmly together. Digging along the more typical, steeper slopes of the cap causes upslope armor and sediments to slough into the digging area, compounding the problem.

In addition, to the effort involved in digging these holes is the very real concern that disturbance to this degree every 10 ft on each transect would likely compromise the integrity of the cap.

2. **Sediment and cap surface observations should include a rigorous accounting of sheens observed and where the diver was at the time of sheen occurrence. Dive sampling activities by others (SEA Engineering Sedflume sampling in March 2006) in the vicinity of the GASCO site noted pure product seepage and sheen in sampling cores. It is recommended that photographs (or video) be taken of all cores collected during the cap monitoring event to provide documentation of the presence or lack of product or sheens.**

   NW Natural Response: The diver reconnaissance surveys include accounting of any sheens and/or product observed, visibility permitting. Photographs have been taken of all cores collected during the Year 0 Event 1, 2, and 3 pilot cap monitoring events. Anchor plans to continue to photograph the entire length of all collected cores. Oftentimes, it is difficult to see identified sheens in the photographs due to glare, shadows, or overexposure on bright days and therefore the photographs have not been provided in the monitoring reports. Rather, all intervals with identified sheens are appropriately noted in the core logs, which are provided as appendices to each of the monitoring reports.

   Sediment contamination, including product and sheens, in the vicinity of the pilot cap area is well documented, including in some cores collected during the Removal Action design characterization (July 2004) as well as by the LWG during their Round 2 surface and subsurface sediment coring. However, the presence of product or sheens outside of the cap area is not an indication of "seepage" as stated in EPA's comment. The much more likely explanation for the presence of products and sheen outside the cap area is the historical direct deposition of these materials all along the shoreline. Only the presence of product or substantial sheens in capping materials within the actual cap area (where the historically placed product has been removed) would be a potential indication of seepage. Per our previous reports and notifications, to date, no indication of seepage has been observed at the cap.

NW NATURAL RESPONSE TO EPA GENERAL COMMENTS ON THE YEAR 0 EVENT 2 SUBMITTALS

1. **NW Natural indicates that a meeting is proposed following the submittal of the Draft Year 0 Annual Evaluation Report to discuss a revised frequency for monitoring compliance with the RAOs and a proposed revised monitoring approach to further evaluate the potential effectiveness of capping as a long-term remedy. As noted in the Monitoring and Reporting Plan (MARP), additional cap monitoring events are scheduled for August and November 2007.**

   Revising the frequency of monitoring and approach will be considered by EPA in future events. However, at this time, sufficient data does not exist to support a revision of the monitoring approach. As noted by EPA in the November 16, 2005 comment letter on the Draft MARP, "it is recommended that the proposed monitoring activities be conducted at a minimum of twice per year for the first two years. Depending on the results from the first two years of monitoring, sampling frequency may then be reduced, if appropriate." The NW Natural response to MARP comments (in an email from Carl Stivers dated 12/21/05) does not indicate disagreement with the EPA recommendation and the Final MARP was submitted with an appropriate cap monitoring schedule and approach. EPA stands by this understanding of the cap monitoring requirements.

   NW Natural Response: Although the similarity of the first three round of monitoring events continues to suggest that the pilot cap monitoring objectives and activities should be revised to focus on the collection of data that best support and inform the efficient performance of any anticipated long-term remedial actions, NW Natural will conduct long-term monitoring in August and November in 2007 per the EPA-approved Monitoring and Reporting Plan (Anchor 2006), as requested by EPA. Visual monitoring will continue to occur on a monthly basis unless a change in pilot cap conditions occurs and/or sheens/product is identified as emanating from the pilot cap area. If changes occur, NW Natural will coordinate with EPA on a proposed revised monitoring frequency.

2. **As this is a pilot cap, the collection of sufficient data is necessary to effectively evaluate the cap and make future decisions on remedial alternatives. Future events should help in evaluating the following issues:**
   - **Potential groundwater plumes reaching the river are of concern, given that porewater and near-bottom surface water concentrations have generally increased between events.**
   - **Near-bottom surface water PAH concentrations continue to increase, given that "slight" increases have resulted in screening level value exceedances.**
   - **As expected, the more mobile chemicals, naphthalene and benzene, appear to have the most changes. Additional monitoring is necessary to map the movement of the less mobile chemicals, which are likely to change more slowly.**

- **The report correctly states that it is difficult to determine whether observed changes indicate migration of chemicals or sampling variations. As such, the following questions should be addressed in future sampling events:**
  - **Are the elevated levels in near-bottom surface water data relative to upstream and downstream surface water samples PCM-13, PCM-19, and PCM-20 significant?**
  - **Is cap sediment contamination a result of groundwater advection through underlying sediments or migration from upland sources?**

Continued monitoring of the cap is necessary to monitor the nature and extent of any plumes going into the river and to understand the cap performance. However, after Year 1 data has been collected and evaluated (i.e. Year 1 Annual Data Evaluation Report), the frequency and approach to monitoring may be revisited in coordination with EPA.

NW Natural Response: NW Natural concurs that groundwater transport of chemicals from the uplands to the Willamette River is a concern. Investigation of groundwater sources to the river is being conducted by NW Natural in coordination with the Oregon Department of Environmental Quality (ODEQ) as part of the uplands source control investigation. Although porewater and near-bottom surface water concentrations generally increased slightly from the Event 1 to Event 2 sampling, the Event 3 concentrations decreased to similar levels to the Event 1 concentrations, indicating that a consistent long-term increase in concentrations is not occurring. The additional monitoring conducted during the Year 1 sampling events will provide additional data and facilitate a more accurate evaluation of temporal and spatial concentration trends, as noted by EPA.

An evaluation of the significance of the near-bottom surface water concentrations overlying the pilot cap area relative to the upstream and downstream ambient monitoring stations will be provided in the *Annual Data Evaluation Monitoring Report -Year 0 Long-Term Pilot Cap Monitoring* based on the monitoring data collected during the Year 0 monitoring events. In addition, NW Natural will evaluate whether the observed pilot cap sediment and porewater concentrations are due to groundwater advection through contaminated underlying sediments or migration from upland sources to the extent that the current monitoring program allows for that determination. NW Natural's proposal to change monitoring requirements was partially to help assist in a better evaluation of this issue than can be determined from the current monitoring program.

2. **As noted previously in the EPA's November 17, 2006 comment letter, the diver video for the Year 0, Event 1 was unusable due to inadequate lighting. The diver video submitted by NW Natural for the Year 0, Event 2 monitoring was superior and is of adequate quality for EPA purposes. The procedures and lighting techniques used in the Year 0, Event 2 monitoring should be utilized for all future dive events.**

NW Natural Response: As requested by EPA, the same video procedures and lighting techniques will be used for the diver reconnaissance videos for all future monitoring events. As noted in previous responses, the lighting used in the first event was due to equipment failure and was not the planned approach.

3. **NW Natural indicated that no areas of sheen or product release were identified during collection of the cores and no shoreline product seepage was identified during any of the visual monitoring events. This may be true; however, the diver reconnaissance video clearly shows tar/staining of the diver gloves during hand probing of the cap material during the Year 0, Event 2 monitoring. Only a limited number of probe attempts by the diver were completed to check for contamination in the pilot cap. In future events, additional hand probes and visual inspection of the cap material should be completed. The diver should wear light colored gloves (i.e. green lab-grade nitrile as shown at http://yosemite.epa.gov/R10/OEA.NSF/webpage/Dive+Team) so any staining will be clearly visible on the gloves. The diver should clear any accumulated sediment on top of the cap and then dig several inches into the cap by hand, extending to resistance or the bottom of the cap, whichever comes first. This hand probing and visual inspection should be completed at a minimum of every 10 feet along each transect. It is also recommended that photographs (or video) be taken of all cores collected during the cap monitoring event to provide documentation of the presence or lack of product or sheens.**

   NW Natural Response: See NW Natural Response #1 above from the section entitled NW Natural Responses to EPA Comments on the NW Natural Responses to EPA Comments on the *Year 0 Event 1 Long-Term Monitoring Data Summary Report*.

4. **NW Natural indicated that the small-volume passive peeper methods used during the Year 0, Event 1 sampling has been discontinued because the results did not differ from the piezometer method. EPA concurs with this assessment and will not require passive peepers in future events.**

   NW Natural Response: Comment noted.

NW NATURAL RESPONSE TO EPA SPECIFIC COMMENTS ON THE YEAR 0 EVENT 2 LONG-TERM MONITORING APPROACH LETTER

1. **Page 3, Potential Product Seepage Monitoring. The report indicates that no areas of sheen or product release were identified during collection of the cores and no shoreline product seepage was identified during any of the visual monitoring events. The diver reconnaissance video clearly shows tar/staining of the diver gloves during hand probing of the cap material. These facts should be noted in this section.**

NW Natural Response: See NW Natural Response #1 from the section above entitled NW Natural Responses to EPA Comments on the NW Natural Responses to EPA Comments on the *Year 0 Event 1 Long-Term Monitoring Data Summary Report*.

2. **Page 3, Long Term Remedy Information. Note that the date for construction completion was October 2005, not October 2006. Please make this change in the final report.**

   NW Natural Response*:* This change will be made in the *Annual Data Evaluation Monitoring Report -Year 0 Long-Term Pilot Cap Monitoring*.

3. **Page 4, Pilot Cap Objective Results Evaluation: It is difficult to evaluate how the pilot cap sediments and porewater concentration data are "similar" given how the data are presented. The data show absolute concentration differences, which can be informative, but may not be a true representation of what is happening at the site. The data should be presented such that a reader can differentiate when contaminant levels are initially high and remain high (large absolute, but small relative change), or substantial contaminant migration has taken place, but at low concentration (small absolute, but large relative change).**

   NW Natural Response: At a minimum, the data for all future Annual Data Evaluation Monitoring Report submittals will be presented showing actual concentrations.

4. **Figures A-1 through A-5. The figures, while accurate, do not present the data as clearly as they could. The concentration differences presented in Figures A-1 through A-5 would be more informative shown as relative concentration changes. It may be misleading to state that a naphthalene porewater concentration increase of about 6,000 μg/L (PCM-04, Figure A-3) is "similar" between events, while a near-bottom naphthalene surface water concentration increase of about 2 μg/L (PCM-04, Figure A-5) is "slightly elevated". While porewater concentration differences may be expected to be higher than surface water, presenting the relative concentration differences should clear up any misunderstanding of the analysis. Please make the change in the final Event 2 summary report**

   In future reports, please produce figures showing a minimum screening level value for each chemical along with the concentration data from multiple events.

   NW Natural Response: The *Annual Data Evaluation Monitoring Report -Year 0 Long-Term Pilot Cap Monitoring* will present all of the Year 0 sampling data in the format requested by EPA above. As per the MARP (Anchor 2006) reporting requirements, the format requested by EPA will be provided in the Annual Evaluation Monitoring Reports but not the event-specific Data Summary Monitoring Reports.

   The minimum porewater and near-bottom surface water screening levels for multiple analytes are orders of magnitude higher than the observed concentrations for these media.

Therefore, plotting of the minimum screening levels on figures showing the data will eliminate the ability to view the data due the extreme differences in scale. Due to this issue NW Natural will be unable to develop these figures. However, this issue does not exist for the bulk sediment screening levels so these screening levels will be shown on the pilot cap sediment figures in the *Annual Data Evaluation Monitoring Report -Year 0 Long-Term Pilot Cap Monitoring*.

The *Year 0 Event 2 Long-Term Monitoring Data Summary Report* will not be revised given the *Annual Data Evaluation Monitoring Report -Year 0 Long-Term Pilot Cap Monitoring* will provide the requested modified data presentation and provide a copy of these EPA comments and NW Natural comments as an appendix.

5. **Figures A-3 and A-5. The near bottom surface water concentration changes shown on Figure A-5 appear significant for naphthalene; in contrast, the changes appear insignificant for benzo(a)pyrene, which actually depict an increase from undetected values at PCM-02, PCM-04, and PCM-05 in Event 1 to exceeding one or more ecological or human health screening level values in Event 2 (small absolute, but large relative change with potentially deleterious effects). Please discuss this in the final report.**

   NW Natural Response: An evaluation of all data collected during the Year 0 Event sampling events, including the requested evaluation by EPA above, will be provided in the *Annual Data Evaluation Monitoring Report -Year 0 Long-Term Pilot Cap Monitoring.*

NW NATURAL RESPONSE TO EPA SPECIFIC COMMENTS ON THE YEAR 0 EVENT 2 LONG-TERM MONITORING DATA SUMMARY REPORT

1. **Section 3.1, Visual Inspection/Diver Survey. The report indicates that no areas of sheen or product release were identified during any of the visual inspections. The diver reconnaissance video clearly shows tar/staining of the diver gloves during hand probing of the cap material. These facts should be noted in this section.**

   NW Natural Response: See NW Natural Response #1 above from the section entitled NW Natural Responses to EPA Comments on the NW Natural Responses to EPA Comments on the *Year 0 Event 1 Long-Term Monitoring Data Summary Report*.

2. **Section 3.3, Potential Product Seepage Monitoring. Sediment and cap surface observations should include a rigorous accounting of sheens observed and where the diver was at the time of sheen occurrence. Dive sampling activities by others (SEA Engineering Sedflume sampling in March 2006) in the vicinity of the GASCO site noted pure product seepage and sheen in sampling cores. It is recommended that photographs**

(or video) be taken of all cores collected during the cap monitoring event to provide documentation of the presence or lack of product or sheens.

NW Natural Response: See NW Natural Response #2 above from the section entitled NW Natural Responses to EPA Comments on the NW Natural Responses to EPA Comments on the *Year 0 Event 1 Long-Term Monitoring Data Summary Report*.

Sincerely,

Ryan Barth and Carl Stivers
Anchor Environmental, L.L.C.

Cc:
Randy Pratt, Parametrix
Bob Wyatt, NW Natural
Patty Dost, Schwabe, Williamson, and Wyatt