Oregon
Tina Kotek, Governor

Department of Environmental Quality
Northwest Region
700 NE Multnomah Street, Suite 600
Portland, OR 97232
(503) 229-5263
FAX (503) 229-6945
TTY 711

February 1, 2023 *via electronic delivery*

Bob Wyatt
Northwest Natural Gas Company
220 NW 2nd Avenue
Portland, OR 97209

Re: Year 2 Long-Term Monitoring Report
Portland Gas Manufacturing site
ECSI# 1138

Dear Mr. Wyatt,

DEQ reviewed the *Year 2 Monitoring Report: PGM Long-Term Monitoring and Maintenance (Report)* for the Portland Gas Manufacturing site prepared by Anchor QEA on behalf of NW Natural and dated January 9, 2023. The Year 2 monitoring event documented in the report was conducted in accordance with the *Long-Term Monitoring and Maintenance Plan, Year 2 Addendum (Year 2 Addendum)* dated June 22, 2022. The Year 2 Addendum included modifications to the Year 2 monitoring program outlined in the *Long-Term Monitoring and Maintenance Plan* (Appendix F of the DEQ-approved *Revised Final Design Report, Version 4* dated March 2, 2020) due to erosion observed during the Year 1 (2021) bathymetry survey.

While chemical monitoring performed during Year 2 indicates that the remedy is currently protective of human health and the environment, significant sediment movement and loss of activated carbon in select areas is concerning to DEQ and warrants more frequent monitoring to evaluate whether the design is performing as intended and will remain protective in the long-term. No corrective actions are required at this time; however, ongoing long-term monitoring will be used to identify whether future response actions may be necessary. To support an ongoing evaluation of remedy performance against the remedy design assumptions, DEQ requests that the next bathymetry survey be conducted in 2023 (Year 3) following downtown Fleet Week activities, including expected docking of large military ships over the remediation/monitoring area. These results will be used to evaluate whether riverbed conditions continue to change and if corrective measures taken to reduce vessel impacts are effective. DEQ anticipates that annual bathymetry surveys, with targeted chemical monitoring where significant erosion is observed, will be necessary until it can be demonstrated that riverbed elevations are stable or increasing across the project area and current institutional controls are adequate.

DEQ comments on the Year 2 Monitoring Report are provided below.

Specific

1. **Section 3.2.2 Geologic Description of Surface Sediments.** Isolated sheen was observed in several surface sediment grab samples. The presence of sheen should continue to be carefully documented in future monitoring events. DEQ expects that these sheen observations will diminish over time. If not, this may be an indicator that the remedy is not performing as intended.

2. **Section 4.3.1 Sediment Characteristics.** The GAC content in areas of thinned cover in SDU stations SED-12.1 and SED-12.2 were measured at 1.8% and 2.0%, respectively. The PGM design called for 4% GAC content; however, the actual placed GAC content was approximately 10% due to significant overdosing intended to account for losses during placement. This equates to an approximate 80% loss in the first 2 years post-construction. DEQ notes that if the original 4% design GAC content had been placed, an 80% loss would have resulted in an in-place GAC content of only 0.8% which is only slightly above the minimum cap modeling requirement of 0.7% GAC. GAC content should continue to be monitored, particularly in areas of sediment loss to ensure that the remedial criteria continue to be met.
3. **Section 4.3.2 Sediment Chemical Concentrations.** While DEQ is optimistic that the scour hole is a transient feature that will infill over time, the design did not account for periodic scouring of MNR areas. If institutional controls and attempts to coordinate with the Harbor Master prove to be ineffective, DEQ may require additional actions to achieve protectiveness. DEQ notes that mercury exceeded the PGM CUL at sediment sampling location LTM-02.1 which is located within the scour hole. The report indicates that this result is consistent with historic sampling results. If these results are repeated in future monitoring events, it may be an indicator that MNR is not an effective technology for this area.
4. **Conclusions.** The conclusions state that "The Year 2 chemical analytic results confirm that the PGM remedy is continuing to perform as designed." DEQ disagrees with this statement and asks that it be revised to say that the "remedy is protective." While the remedy is not performing as originally designed given the impacts from Fleet Week, changes in sediment elevation, and significant GAC losses, DEQ agrees that the remedy is *currently protective*. Remedy performance and compliance with the PGM cleanup levels will continue to be monitored as part of the long-term monitoring program.
5. **Recommendations.** DEQ generally agrees with the recommendations for future monitoring events as described in this section; however, NW Natural should also consider collecting additional information on the river flow velocities in MNR and ENR areas where significant sediment movement or erosion has been observed. In particular, the losses of GAC and gravelly nature of remaining cover material in SDU D may be indicative of higher-than-anticipated river flow velocities. These data may be useful to validate the hydrodynamic conditions in areas where the design concluded that MNR and ENR would be effective remedial technologies on a long-term basis. This section should also include a statement on when the next long-term monitoring event will be conducted. Per DEQ's introductory statement, we recommend that a bathymetric survey be conducted in 2023 after Fleet Week ships have departed, with follow-up chemical monitoring if areas of significant cover loss are observed.
6. **Table 8.** For chemicals with a bioaccumulation-based CUL, include a column or separate table that calculates the site-wide average concentration compared to the applicable CUL.
7. **Figures 5a-5c.** The remedy description for each SDU should be revised to match the as-built remedial technology descriptions presented in Section 1.2 of the report (see embedded table). For example, SDU B2 is currently described as a Sand Cover (Enhanced MNR); however, the remedy that was applied in SDU B2 is a Gravelly Sand Cover.
8. **Figures.** In DEQ comments on the Year 2 preliminary results, cross sections were requested showing the pre-remedy, post-construction, and Year 2 riverbed elevations with respect to historic contamination, targeting areas with observed elevation loss. The historic contamination should be added to the existing cross sections or shown on separate figures. These figures will be important for tracking changes in sediment elevation and the potential for future exposure of underlying contamination over time (particularly sediment with contaminant concentrations exceeding CULs).

Editorial

1. The report uses subjective terms throughout to interpret the significance of the observed changes in elevation or chemical monitoring results. DEQ requests that terms such as "minor", "significant", "substantial", etc. be replaced or supplemented with the data (i.e., thickness, percentage, or other). This is needed to allow the reader to independently determine the significance of reported results and the degree to which the design criteria are or are not being met, whether it be carbon content, cover thickness, cleanup level exceedance, or other applicable criteria. Some examples include:

   Section 2.2 Year 2 Bathymetry Surveys.

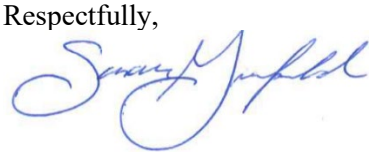
   a. The second paragraph states that "There were negligible changes in bathymetric elevations…" Clarify whether negligible means within the accuracy of the survey or specify the range of elevation change observed.
   b. The third paragraph, first bullet states that SDU C1 "accumulated a significant thickness of new sediment." Specify the sediment thickness measured.
   c. The third paragraph, third bullet states that "significant deposition was observed." Specify the deposition thickness measured.

   Section 3.1.3 Sand Covers

   d. SDU B2 bullet states that "SDU B2 retained substantial thickness of sand cover material. There was a minor area near the seawall…." Specify the sand cover thickness and approximate lateral extent of areas not meeting the 12-inch minimum placement criteria.

If you have questions or comments, please don't hesitate to contact me at (503) 229-5245 or sarah.greenfield@deq.oregon.gov.

Respectfully,



Sarah Greenfield, P.E.
Project Manager/Engineer
NWR Cleanup Section

Ec: Heidi Nelson, DEQ
Dan Hafley, DEQ
Todd Thornburg, Anchor
Kendra Skellenger, Anchor

Cc: ECSI# 1138