IEc

MEMORANDUM | February 19, 2026

TO	Erin McDonnell and David Lacey, Oregon Department of Environmental Quality (DEQ)
FROM	Peter Shanahan, HydroAnalysis LLC (HALLC); Jennifer Hart and Gail Fricano, Industrial Economics, Inc. (IEc)
SUBJECT	Five Tribe review of "Updated Groundwater Source Control Evaluation" and "Supplementary Groundwater Source Control Evaluation Sampling Data Report" for the Willamette Cove upland site, dated January 22, 2026

This memorandum, submitted on behalf of the Five Tribes,[1] reviews the *Updated Groundwater Source Control Evaluation* (Updated SCE) and *Supplementary Groundwater Source Control Evaluation Sampling Data Report* (Data Report) prepared by Apex on behalf of the Port of Portland and Metro (Apex 2026a, 2026b).

General Comments

1. The Updated SCE concludes that "groundwater is not a source control concern and no further action is needed." We note that the 2023 version of the SCE stated, "Overall, these results indicate that arsenic concentrations in groundwater are above background in groundwater beneath the West Parcel" (Apex 2023). In the Updated SCE, this statement was revised to state, "Overall, these results indicate that arsenic concentrations in groundwater at the Facility are within background concentration ranges except potentially beneath the West Parcel" (Apex 2026a). We recommend the Port and Metro provide a more complete discussion of how they reached the current conclusion regarding comparisons with background, and why arsenic concentrations in the West Basin are not a source control concern.

2. As detailed in Comment #4 below, we question the results of the hydrogeologic analysis and the conclusion that contamination associated with MW-1 will travel so slowly as to never reach the Willamette River. We strongly encourage the Port and Metro to undertake a critical review of the current model or consider conducting additional analyses to verify these results and to provide some additional assurance.

Substantive Comments on the Updated SCE

3. We recommend that the discussion of the West Parcel in Section 2.4 report that "creosote-like" odor is reported in the logs for wells MW-1 and MW-2 (in Appendix F), "naphthalene-like" odor

[1] The five tribes are the Confederated Tribes of the Grand Ronde Community of Oregon, the Nez Perce Tribe, the Confederated Tribes of Siletz Indians, the Confederated Tribes of the Umatilla Indian Reservation, and the Confederated Tribes of the Warm Springs Reservation of Oregon.

in the log for angled boring T3-BOT (in Apex, 2026b), "petroleum-like odor" in the logs for B-4 and B-7 (in Appendix F), and "strong petroleum-like odor" in the log for T3-BOT (in Apex, 2026b). These findings during subsurface exploration provide important information on site history that should be highlighted in the Updated SCE.

4. The analysis in Section 6.3.5 regarding groundwater velocities is based on hydraulic conductivity values estimated from soil type, which are highly approximate. The estimated hydraulic conductivity for MW-1 is an outlier, with a much lower value than at other wells on the site. Based on this estimate, the distance traveled by groundwater at MW-1 is much lower than at other wells as shown in Figure 1. However, this appears to be inconsistent with the hydrographs in Appendix G, which show MW-1 to be only slightly less responsive to changes in river elevation than wells MW-3, MW-4, MW-5, and MW-9. The alleged low hydraulic conductivity at MW-1 figures prominently in Section 8.1, where it is argued that "potential impacts from arsenic in groundwater are less severe than suggested by detected concentrations in MW-1." This statement is not well supported, and we recommend that the potential for transport to the river from MW-1 be evaluated further. In particular, we recommend that MW-1 be slug tested to develop a better estimate of hydraulic conductivity.

5. Section 6.4 tabulates specific discharge according to Sample Stations A, B, C, and D and includes the mean discharge for each station group. In general, geometric means are used for hydraulic conductivity and for related variables, such as specific discharge, and we recommend it in this instance.

6. For Section 6, we recommend that a summary be added to this section to describe the site conceptual model, describe the conclusions to be drawn regarding groundwater discharge to the river, and discuss the significance of those findings to chemical transport to the river.

7. Section 8.2 refers to Figures 31 through 33 but fails to mention the offshore porewater sample locations. These data seem to provide evidence that the higher concentrations in the grab samples are not being transported to the river.

Editorial Comments on the Updated SCE

8. We recommend that all panels in Figure 17 use the same x-axis limits to facilitate comparisons between the wells.

9. Section 6.4 refers to sample stations, but without clearly defining them. We recommend the language be changed from "…grouped by sample stations (corresponding to distance from the shoreline)" to "grouped by sample stations (corresponding to distance from the shoreline as indicated by the station prefix in Figure 20)."

10. In Section 8.1, we recommend striking the word "relative" from "The greatest relative concentrations of arsenic were detected in MW-1."

11. Section 8.2 states "The grab samples were collected closer to the river, but assuming only a 1-month travel time, the retardation factor implies that the travel time for BaP Eq [benzo(a)pyrene toxicity equivalent] would be centuries." We recommend the following more precise wording: "The grab samples were collected closer to the river, but assuming only a 1-month groundwater

travel time from the grab sample locations to the river, the retardation factor implies that the travel time for BaP Eq to the river would be centuries."

12. CPT (which is not defined but presumably is the acronym for 'cone penetrometer test') samples are shown in various figures (e.g., CP003 in Figure 25) but are not referenced in the text of the report nor included in Appendix A.

13. The DP borings are not identified in Figures 25 through 27 or subsequent similar figures.

14. Figure 30 is very hard to follow, particularly on the West Parcel. In many instances, it is impossible to tell which concentration value (shown in green) corresponds to which well/grab sample location (labeled in black). There also appear to be extraneous sample locations for which there is no corresponding concentration value; these add unnecessary clutter to the figure.

Editorial Comment on the Data Report

15. The contents of Table 2 appear to be incomplete. Table A-10 in the Updated SCE includes additional parameters (e.g., arsenic species and sulfide) for the same sample IDs and dates.

References

Apex. 2023. Updated Groundwater Source Control Evaluation, Willamette Cove Upland Facility, Portland, Oregon. Prepared for: Port of Portland and Metro. Apex Companies, LLC, Tigard, Oregon. December 5, 2023.

Apex. 2026a. Updated Groundwater Source Control Evaluation, Willamette Cove Upland Facility, Portland, Oregon, Prepared for: Port of Portland and Metro. Apex Companies, LLC, Tigard, Oregon. January 22, 2026.

Apex. 2026b. Supplementary Groundwater Source Control Evaluation Sampling Data Report, Willamette Cove Upland Facility, Portland, Oregon, Prepared for: Port of Portland and Metro. Apex Companies, LLC, Tigard, Oregon. January 22, 2026.