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MEMORANDUM | March 29, 2023

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 "Semi-Annual Groundwater Source Control Measure Performance Monitoring Report, Quarters 3 & 4, 2022, Premier Edible Oils (PEO) Site" dated February 17, 2023

This memorandum, submitted on behalf of the Five Tribes,[1] reviews the *Semi-Annual Groundwater Source Control Measure Performance Monitoring Report, Quarters 3 & 4, 2022, Premier Edible Oils (PEO) Site* prepared by ERM on behalf of Burgard, A Series of MMGL LLC (MMGL) (ERM 2023).

General Comments

1. Section 5 (page 13) includes a description of a four-month shutdown of the site's groundwater source control system. This discussion follows numerous references in the preceding text to the shutdown. In order for those references to have context, we recommend the system shutdown be described earlier in the report (e.g., in Section 1). Overall, the significance of this unexpected operational deviation should be highlighted, particularly with respect to its impact on the performance of the groundwater source control measure.
2. Despite the dramatic change in conditions resulting from the four-month pause in air sparging, the Performance Evaluation in Section 5.3 does not account for the change. The dissolved oxygen (DO) concentration at some wells decreased dramatically within a week of the air sparging shutdown and then remained low. This showed that there was vigorous degradation of organics, a process which consumes oxygen. We recommend that the report include more discussion of what the pause in air sparging revealed about the system's behavior. Based on our evaluation of the data, the system's response to the shutdown appears to show that air sparging continues to be an effective remedial technology for this site.
3. Page 16 includes a proposal to drop a number of wells from the chemical monitoring program: "The six wells being excluded (MW-03, MW-06, MW-08, MW-19, MW-25, and MW-28A) are located upgradient of the air sparge zone and have stable COC concentrations trends." As the apparent result of the cessation of air sparging, the DO concentration and temperature dropped at MW-25 and the concentration of manganese increased from 0.51 to 1,050 µg/L. It thus appears

[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.

that MW-25 is influenced by the air sparging system and should be retained in the monitoring program. Indeed, Figure D-15 seems to show MW-25 to be extremely sensitive to the operation of the air sparging system.

4. Review of the report and comparison of the concentrations of DO and the oxidation reduction potential (ORP) between Table Q3-9 and Table Q4-9 revealed several potentially anomalous results. We provide the following examples and recommend that these anomalous trends be addressed in the report:

    a. Table Q3-9 reports groundwater field parameters on August 18 immediately after a system shutdown on August 16. Since the air sparging system had been running fairly recently, DO concentrations remained moderately high in many wells. Table Q4-9 reports those same parameters in December, after the air sparging system had been inoperable for four months. Not surprisingly, without the introduction of oxygen by air sparging, measured DO concentrations were generally lower in December than in August. However, contrary to the change in DO concentrations, ORP readings increased.

    b. Table Q3-9 reports on measurements in three wells, MW-32, MW-33, and MW-36, on August 25. The first two wells experienced dramatic drops in DO in apparently rapid response to the shutdown of air sparging. As one of many examples, the DO concentration at MW-32 decreased from 3.49 milligrams per liter (mg/L) in August 18 to 0.76 mg/L in December, but the ORP increased from -75.9 millivolts (mV) to 102.6 mV in December. This is illogical and suggests some sort of instrument or reporting error for ORP.

    c. The concentrations of dissolved manganese at MW-32 are seen in Figure D-23 to increase markedly from August to December. The increase in dissolved manganese, which is sensitive to the redox state, confirms that conditions became more reducing, consistent with the DO readings and also contrary to the ORP readings.

Specific Comments

5. Page 2 makes reference to “The performance monitoring wells upland of the top of the tank…” We believe the word “tank” should instead be “bank.”

6. At the top of page 14, it is stated “The water levels of MW-34 and MW-11 continue to be high throughout the reporting period.” This language appears in prior performance monitoring reports for quarters when the air sparging system was operational. It does not appear to be true during Q4, when the system was not operational.

7. Page 16 includes the statement “As described in Section 2.7, the potentiometric surfaces and clustered hydrographs were generally consistent with previous events and historical seasonal fluctuations.” There is no Section 2.7 in this report.

8. At the bottom of page 16, relating to MMGL’s previous request to suspend extractable petroleum hydrocarbons (EPH) analysis, it is stated “MMGL provided the following responses to EPA and Five Tribes’ comments (in italics).” None of the text that follows is in italics. Further, MMGL’s response to the Five Tribes’ comment on page 17 is substantially different from the response

provided to DEQ via email on September 27, 2022. The previous response indicated the EPH and volatile petroleum hydrocarbon (VPH) methods target heavier and lighter petroleum hydrocarbons, respectively; however, their ranges overlap such that either can be used to quantify C10-C12 aliphatics. The response provided in the Performance Monitoring Report asserts petroleum hydrocarbon contamination at the site was caused by diesel releases from bulk fuel tanks, which does not specifically address the Five Tribes' original comment.

References

ERM. 2022. Semi-Annual Groundwater Source Control Measure Performance Monitoring Report, Quarters 3 & 4, 2022, Premier Edible Oils (PEO) Site, 10400 North Burgard Way, Portland, Oregon. ERM, Portland, Oregon. February 27, 2022.