



Oregon

Tina Kotek, Governor

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June 30, 2023

Todd Slater
Legacy Site Services LLC
665 Stockton Drive, Suite 100
Exton, PA 19341

Subject: 2022 GWET System Effectiveness Evaluation
Arkema Facility, ECSI No. 398

Dear Mr. Slater:

The Oregon Department of Environmental Quality received the *GWET System Effectiveness Evaluation* (GWET SEE) dated April 12, 2023. The report was prepared by Environmental Resources Management (ERM) for Legacy Site Services LLC (Legacy). ERM submitted the GWET SEE to provide an update on the system, evaluate the extent of capture achieved, and propose actions to improve hydraulic capture.

The GWET system represents the primary method of groundwater contaminant source control at the Arkema site, a high priority project in the Portland Harbor Superfund Site. The system is a hydraulic containment system designed with the objective of preventing contaminated groundwater behind the slurry wall from migrating to the river. To achieve this objective, the wells must extract groundwater at rates greater than or equal to the groundwater flux through the alluvial water bearing zones lying immediately upgradient of the wall. The performance criteria for the barrier wall-groundwater extraction system is: 1) inward hydraulic gradients, and 2) an absence of mounding behind the wall. Although, neither of these performance criteria have been achieved at the Arkema site, they will remain the primary lines of evidence in evaluating source control performance.

DEQ has the following specific comments on the GWET SEE.

- 1) The Legacy/ERM response to DEQ's July 6, 2022 Specific Comments No. 7 and No. 8 on the 2021 GWET SEE, and the information provided in Section 7.4.2 of the 2022 GWET SEE intended to address these comments are inadequate. DEQ has the following comments:
 - a. The first bullet in Section 7.4.2 of the 2022 GWET SEE states "No increases in chloride at GCC2 and GCC3 were observed in Deep Zone wells on either side of the GWBW (PA-30D and PA-21D) within each well cluster, indicating that the GWBW is effectively preventing plume migration." DEQ clarifies that chloride concentrations on the riverside of GCC2 (PA-19D) **are** increasing. As we

previously noted, there is a concentration gradient from PA-30D (interior of GCC2) to PA-19D (exterior of GCC2), chloride concentrations continue to increase on the riverside of the GWBW at GCC2, there have been consistent downward vertical hydraulic gradients at GCC2, and PA-19D and PA-30D are both screened at the base of the groundwater barrier wall (GWBW) close to the basalt water barring zone. Legacy/ERM have provided no information or evaluation that would support a conclusion that the GWBW is effectively preventing plume migration for chloride at GCC2.

- b. The 2022 SEE does not provide any discussion of chloride concentrations at PA-26D or the potential for chloride migration below and/or around the groundwater barrier wall.
- 2) **Section 9, Recommendations.** The last bullet that states “As outlined in Section 8 above, the annual groundwater monitoring data evaluation concluded that increasing concentrations identified are sporadic and overall conclusions are consistent with previous evaluations, which indicated that mounding behind the GWBW is not causing significant migration of COCs.” Is not supported by the data presented earlier in the SEE that indicate concentrations of chloride (PA-19D), chlorobenzene (MWA-31i[D]), and perchlorate (MWA-56D and 58D) are increasing in select areas outside the GWBW. Additionally, there are indications of changes to chemical conditions within the GWBW such as chloride (PA-08 and PA-20D) and chlorobenzene (PA-30D).

EPA and partners have reviewed the GWET SEE. EPA, the Five Tribes, and the Yakama Nations Fisheries did not provide comments to DEQ on this report.

Please contact me at 503-860-3943 or by email at Katie.Daugherty@deq.oregon.gov if you have any questions.

Sincerely,

Katie DAUGHERTY

Katie Daugherty, R.G.
Project Manager
Cleanup Program
Northwest Region

cc: Administrative File
ecc David Lacey, DEQ
Brendan Robinson, ERM
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