Attachment 13.E

Memo

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To: Brandon Smith (West Bay Development Group, LLC)

From: Troy Bussey, P.E., L.G., L.HG. and Joel Hecker, L.G., L.HG. (PIONEER Technologies Corporation [PIONEER])

cc: Heather Burgess (Phillips Burgess Law), Kim Seely (Coastline Law Group)

Date: February 14, 2022

Subject: Summary of Recent Methane Investigation
Hardel Mutual Plywood Corporation Site
1210 West Bay Drive NW, Olympia, Washington
Voluntary Cleanup Program (VCP) Project ID SW1757, Cleanup Site ID 3704

This memo summarizes (1) subsurface methane results obtained during October and November 2021 remedial investigation (RI) data gap activities conducted at the Hardel Mutual Plywood Corporation (Hardel) Site (Site) in support of the planned West Bay Yards brownfield redevelopment project, and (2) the recommended path forward based on these results. PIONEER and Coastline Law Group are working closely with the Washington State Department of Ecology (Ecology) under the VCP to ensure that all Model Toxics Control Act (MTCA) requirements for the Site, including any requirements related to the presence of subsurface methane, are satisfactorily addressed (Ecology 2021). Methane soil gas and pressure differential measurements collected from two soil vapor probes (SVPs) in June 2020 indicated that no further action was necessary regarding a potential methane hazard in accordance with ASTM International Designation E2993-16 (Standard Guide for Evaluating Potential Methane Hazards as a Result of Methane in the Vadose Zone). However, additional methane investigation activities were conducted in October and November 2021 because of the amount of subsurface wood debris at the Site, the relatively high methane concentration in one of the June 2020 SVPs (23%), and the limited nature of the June 2020 methane investigation activities (PIONEER 2020, 2021a, 2021b, 2021c).

Investigation Activities

In accordance with the amended work plan (PIONEER 2021a, 2021c), 18 additional SVPs were installed in October 2021, and methane sampling events were conducted in October and November 2021.[1] Field measurements of the pressure differentials and methane, oxygen, and carbon dioxide soil gas concentrations were obtained from all 18 installed SVPs during at least two different sampling events. In addition, soil gas samples were collected from the three SVPs with the highest field methane concentrations and submitted to Fremont Analytical for analysis of methane, oxygen, carbon dioxide, and nitrogen by USEPA Method 3C.[2] Supporting details for the 2021 methane investigation activities and results will be presented in a forthcoming report prepared for the USEPA brownfield assessment grant.

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[1] In accordance with the amended work plan, three of the 21 proposed SVPs were not installed because the depths to groundwater at these proposed locations were less than three feet below ground surface.

[2] Apart from the laboratory analyses of these three soil gas samples, the 2021 investigation activities were funded by the City of Olympia's United States Environmental Protection Agency (USEPA) brownfield assessment grant.

Investigation Results

At most SVP locations, the October and November 2021 methane investigation results replicated the June 2020 methane investigation results. In accordance with ASTM International Designation E2993-16, no further action is necessary at 14 of the 18 SVPs sampled in 2021 based on the maximum methane soil gas concentrations and measured pressure differentials at those 14 locations. However, further investigation activities and methane mitigation measures are recommended for the other four SVP locations since the maximum methane soil gas concentrations exceeded 30%. The methane soil gas concentrations at these four locations (and the methane soil gas detections throughout the Site) are most likely caused by bacteria decomposing subsurface wood debris. The presence of elevated methane soil gas concentrations is a common occurrence at MTCA sites containing subsurface wood debris or petroleum contamination.

Project Implications and Recommendations

The potential for subsurface methane to cause an indoor air hazard at this Site is low for several key reasons. First, there are no current buildings on the Site. Second, the proposed development includes the addition of clean soil fill material, which will raise the ground surface of the upland area from the current elevations of 13 to 16 feet North American Vertical Datum of 1988 (NAVD88) to a final elevation of 17 feet NAVD88 (PIONEER 2021b). For instance, approximately two feet of clean fill will be added during the planned development in the vicinity of the four SVPs with maximum methane soil gas concentrations exceeding 30% (PIONEER 2021b). This added soil will provide additional attenuation of methane between subsurface soil gas and indoor air. Third, the only indoor air space in the proposed development below an elevation of 26 feet NAVD88 will be a large subsurface parking garage underneath the buildings. In other words, there is a limited indoor air space for potential methane transport. Finally, in accordance with building, mechanical, and fire code requirements, the subsurface parking garage will have a mechanical ventilation system that satisfies code-required air exchange requirements for an enclosed structure and satisfies code-required vertical and horizontal separation distances between the exhaust and fresh air intakes.[3] In other words, the ventilation system will prevent methane from accumulating within indoor air.

Although the potential for an indoor air methane hazard is low, additional methane investigation activities and methane mitigation measures are recommended to eliminate this potential pathway. Additional methane soil gas investigation activities are recommended to (1) define the extent of the four locations where maximum methane soil gas concentrations exceed 30%, and (2) confirm that methane concentrations at three SVPs remain less than 30% (since methane concentrations at these three SVPs increased over time as the amount of SVP purging increased, with a final concentration between 20% and 29%). The results from these additional methane investigation activities would define the areas where specific components of the MTCA methane remedy (e.g., long-term methane indoor air monitoring) would apply. The recommended methane mitigation measures are (1) implementing engineering controls for worker safety during all intrusive subsurface work, (2) installing a passive convertible venting system under the proposed parking garage, (3) installing an impervious vapor barrier under the parking garage between the passive convertible venting system and the garage slab, and (4) collecting indoor air samples following garage construction. Ecology was supportive of the recommended mitigation measures during an informal technical consultation call on January 11, 2022.

[3] Personal correspondence between Josh Gobel of Thomas Architecture Studios and Troy Bussey of PIONEER.

References

Ecology. 2021. Letter from Nicholas Acklam to Kimberly Seely with the subject of "Application Acceptance – Voluntary Cleanup Program" for Hardel Mutual Plywood, 1210 West Bay Drive NW, Olympia, Thurston County, WA 98502. September 30.

PIONEER. 2020. Phase II Environmental Site Assessment, Hardel Mutual Plywood Corporation, 1210 West Bay Drive NW, Olympia, Washington. October.

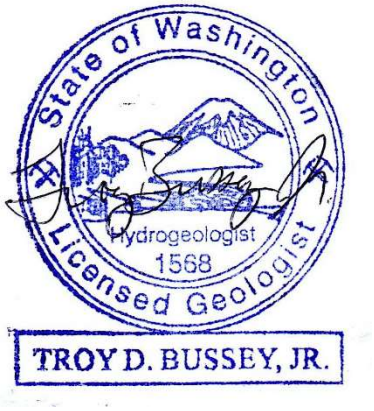
PIONEER. 2021a. RI Data Gaps Investigation Work Plan, Hardel Mutual Plywood Corporation, 1210 West Bay Drive NW, Olympia, Washington. March.

PIONEER. 2021b. Remedial Investigation Data Gap Report, Hardel Mutual Plywood Corporation Site, 1210 West Bay Drive NW, Olympia, Washington. August.

PIONEER. 2021c. Minor Updates/Clarifications to the March 2021 RI Data Gaps Investigation Work Plan for Methane Soil Vapor Sampling at the Hardel Mutual Plywood Corporation Site, Olympia Washington USEPA Brownfield Assessment Grant (BF01J66201). September 28.

Professional Certification

This document was prepared under my direction. The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I hereby certify that I was in responsible charge of the work performed for this document.



February 14, 2022

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