



April 3, 2025

Ms. Leslie Dixon
327 E. Reservoir Condominium Association, Inc.
327 E. Reservoir Ave.
Milwaukee, WI 53214
Electronic mail only to lhdxon4@gmail.com

Subject: Review of Site Investigation Report and Remedial Action Plan
Barrel Plating Services Fmr, 325-327 E. Reservoir Ave., Milwaukee, WI
BRRTS #02-41-594249, FID #341369710

Dear Ms. Dixon:

On February 2, 2025, the Wisconsin Department of Natural Resources (DNR) received the *Site Investigation Report (SIR) and Remedial Action Plan (RAP)*, dated January 31, 2025, submitted on your behalf by Terracon Consultants, Inc. (Terracon) for the site referenced above. The DNR received the applicable fee for providing a review and response, in accordance with Wis. Admin. Code § NR 749.04 (1).

Background

The 1.4-acre site was part of an electroplating facility that was in operation until 1999. After operations ceased, environmental investigation activities were conducted that were focused on the former wastewater treatment system and plating operations areas. Chlorinated volatile organic compounds (CVOCs) and Resource Conservation and Recovery Act (RCRA) metals were detected in these areas. In October 2000, approximately 1,900 tons of soil were excavated and disposed, with highly contaminated areas treated as needed to remove the hazardous characteristics before disposal. Overall, soil was excavated to 4 feet below ground surface (ft bgs), and two highly contaminated areas were excavated up to 16 ft bgs. The exact dimensions of the deeper excavation areas were not identified on site figures. Residual contamination was covered with a tennis court, and the northeast building was redeveloped as a condominium.

In 2024, Terracon conducted an investigation of potential impacts to soil, groundwater and vapor in areas around the tennis court and the condominium building. Non-soil waste fill material was observed in all soil borings to depths of 37 ft bgs on the south side and 40 ft bgs on the north side. Soil and groundwater investigation activities to date have identified CVOCs, RCRA metals, polycyclic aromatic hydrocarbons (PAHs) and per- and polyfluorinated alkyl substances (PFAS) in soil and/or groundwater. Petroleum VOCs were detected in indoor air samples collected in the residential building.

Based on review of the SIR, RAP, and previously submitted information, the DNR has determined that additional investigation and documentation are necessary to comply with Wis. Admin. Code ch. NR 716. The DNR's comments regarding the incomplete site investigation are summarized below. The RAP cannot be evaluated until the degree and extent of contamination is adequately understood.

Sources

Provide information about the potential sources of the discharge that have contributed to the high levels of contamination in the tennis court area.

1. The discharge was originally attributed to the failure of the piping from the wastewater treatment system to the utilities in Reservoir Avenue. Provide additional information about whether the piping remains on site after the treatment system and the building were removed and a figure that shows where the piping was located.
2. Provide a copy of the Phase I Environmental Site Assessment, dated April 24, 2024, by SET Engineering LLC, which was referenced and summarized in the SIR.

Soil

The current degree and extent of soil contamination is not clear after removal of approximately 1,900 tons of soil in 2000.

3. Provide an evaluation of the contamination reported in the 1998-2000 investigations and what likely remains after the 2000 excavation in relation to the current investigation. Although Terracon stated that the majority of CVOCs were likely removed by excavation, there were high concentrations detected at the base of the excavation that were not vertically defined. For example, the TCE concentration of 15,000 micrograms per kilogram (ug/kg) at GP-13 at 10-14 ft bgs appears to have been outside the area that was treated at depth and is still present. Soil data should be combined on one figure to provide an overall assessment of residual contamination.
4. Describe how the extent of soil contamination attributable to facility operations has been defined to the north. Boring AG-8 was placed north of the excavated area and may be in the right-of-way. TCE was detected in AG-8 at 600 ug/kg at 0 to 4 ft bgs, which exceeds the groundwater pathway Residual Contaminant Level (RCL).
5. Terracon did not state how PAHs associated with non-soil waste fill have been defined at the site with the limited sampling conducted. If additional sampling cannot be conducted due to physical site constraints, then PAH contamination must be inferred to be sitewide to the property lines at concentrations that exceed the direct contact pathway RCL. You may provide information concerning the soil between the building and the retaining wall, if clean soil was imported to provide a level surface in this area.
6. Provide a cross-section(s) that depicts the extent of the excavation, and include data collected in confirmation base samples, and from deeper investigative borings in the excavated area of the site.
7. Cross sections should be revised to identify the presence of non-soil waste fill materials that have been described across the site.

Emerging Contaminants

8. Terracon stated that the low levels of 1,1,1-trichloroethane indicate that there is a low likelihood that 1,4-dioxane is present. However, 1,4-dioxane has also historically been used as a stabilizer for TCE solvents. Considering the very high TCE concentrations that have been detected at this site, the DNR is requesting that 1,4-dioxane be included in future groundwater sampling events.

Groundwater

Provide an evaluation of the groundwater contaminant plume and its relationship to soil contamination, and the adequacy of the current well network for monitoring trends.

9. A monitoring well is needed in the source area to determine whether CVOC contamination has leached to groundwater, as high CVOC concentrations were detected at depth in soil (17,000 ug/kg TCE at 10-14 ft bgs at GP-9 and 15,000 ug/kg at the same depth at GP-13). The three monitoring wells do not appear to be adequately placed to intercept the groundwater contaminant plume. Soil samples should also be collected during well installation.
10. Consider whether one or more piezometers are needed to assess a CVOC contaminant plume that may be sinking.
11. PFAS concentrations in groundwater include PFHxS above the Wisconsin Department of Health Services recommended enforcement standard (ES) of 10 nanograms per liter (ng/L) and PFOA above the recommended ES of 4 ng/L at MW-3. PFOA was detected at the ES in the first sampling event and J-flagged but above the ES in the second sampling event at MW-2. Stable or decreasing trends are needed to complete the investigation. The extent of contamination must also be adequately defined.

Vapor

The vapor intrusion pathway discussion does not adequately assess the risk of vapor intrusion based on residual contamination at the site.

12. Collect an additional round of on-site sub-slab vapor and indoor air samples. For residential settings, at least three rounds of vapor sampling should be conducted to rule out vapor intrusion. The results of the sampling should be evaluated to determine whether additional sampling or mitigation is warranted.
13. Provide a building layout plan for the on-site building. Consider if an additional sub-slab sample location should be added closer to the known soil impacts, near the southwest portion of the building.
14. Collect an additional head space vapor sample from the sump crock. TCE was detected at 1.79 micrograms per cubic meter (ug/m³) in the previous sample. Sump crock head space vapor sample results should be compared to the residential Vapor Action Level (VAL). The DNR recommends using passive samplers for this and other indoor air sampling. The results of the sampling should be evaluated to determine whether additional sampling or mitigation is warranted.
15. Complete a vapor risk screening evaluation to determine if vapor sampling is warranted at any off-site buildings after a reinterpretation of residual contamination is conducted. Site-specific information such as contaminant type, concentrations, preferential pathways, and distances from off-site receptors should be considered in the evaluation. Refer to DNR document RR-800, *Addressing Vapor Intrusion at Remediation and Redevelopment Site in Wisconsin*, for guidance on performing a vapor intrusion screening evaluation.
16. Explain the actions taken to reduce potential sources of contaminants from the garage prior to sampling in the basement and the length of time between removing potential sources and sample collection. If potential sources are regularly stored in the garage, consider collecting a vapor sample from the garage during the next sampling event to confirm that the garage is the source of contaminants when compared to the basement indoor air sample results.
17. Based on the identified contamination and site history, which included disposal of wastewater into the sanitary sewer, conduct a utility vapor investigation. The DNR recommends using passive samplers appropriate for use in sanitary sewers. Refer to DNR document RR-649, *Guidance for Documenting the Investigation of Human-made Preferential Pathways Including Utility Corridors* for information on conducting preferential pathway investigations.

Next Steps

In consideration of administrative code requirements, the DNR is requesting the implementation of the following schedule:

- Per Wis. Admin. Code § NR 716.09 (1), the DNR requests that a Site Investigation Work Plan (SIWP) be submitted within 60 days of receipt of this letter, **by June 3, 2025**. The SIWP should describe the scope and additional field investigation activities proposed to incorporate all the comments in this letter. Include detailed responses to any of the above comments if no additional field work is recommended to address the DNR's concerns. The DNR recommends submitting the SIWP with a Technical Assistance fee for review.
- Per Wis. Admin. Code § NR 716.14, all sampling results are required to be submitted to the DNR within 10 days of receiving laboratory data.

The site investigation can be an iterative process, and additional information may indicate that further assessment is needed to define the degree and extent of contamination. After additional investigative work has been completed and documented, the DNR requests the submittal of a Comprehensive SIR with a review fee. After the contamination in all media is delineated, the DNR requires the site investigation results to be used to evaluate and identify remedial actions to address the identified contamination, as applicable, per Wis. Admin. Code ch. NR 722. The RAP that was included with this SIR may need to be revised.

The DNR appreciates your efforts to address the contamination at this site. If you have any questions, please contact me, the DNR Project Manager, at Linda.Michalets@wisconsin.gov or at 414-435-8010.

Sincerely,



Linda Michalets
Hydrogeologist
Remediation and Redevelopment Program

cc: Brian Kappen, Terracon Consultants, Inc. (bjkappen@terracon.com)