



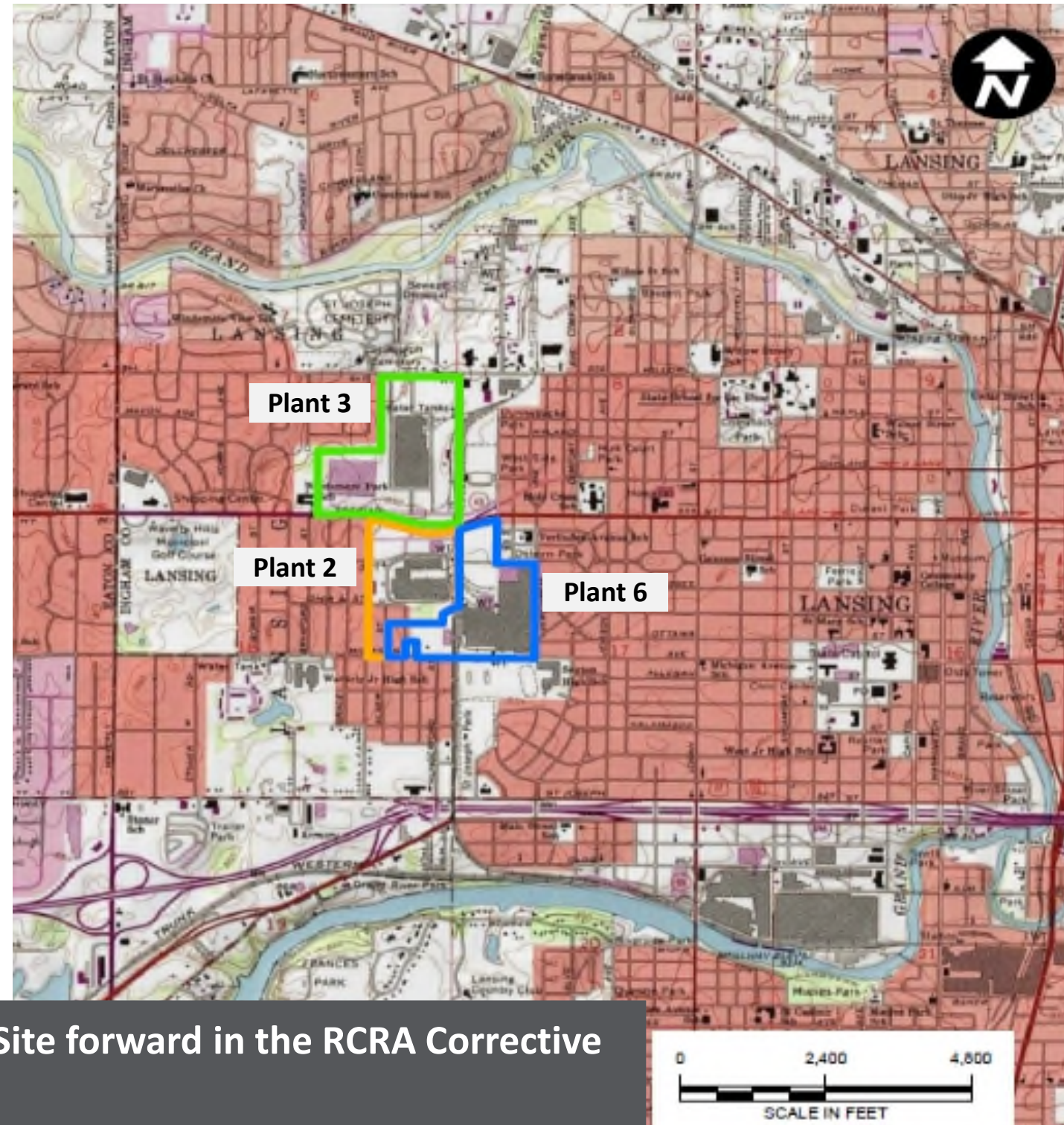
RACER TRUST LANSING PLANTS 2, 3, & 6

2021 Third Quarter Progress Report | October 15, 2021

More detailed reports are available on RACER's Webpage for this Site:
<https://www.racertrust.org/properties/lansing-plant-2-industrial-land>

Site Introduction

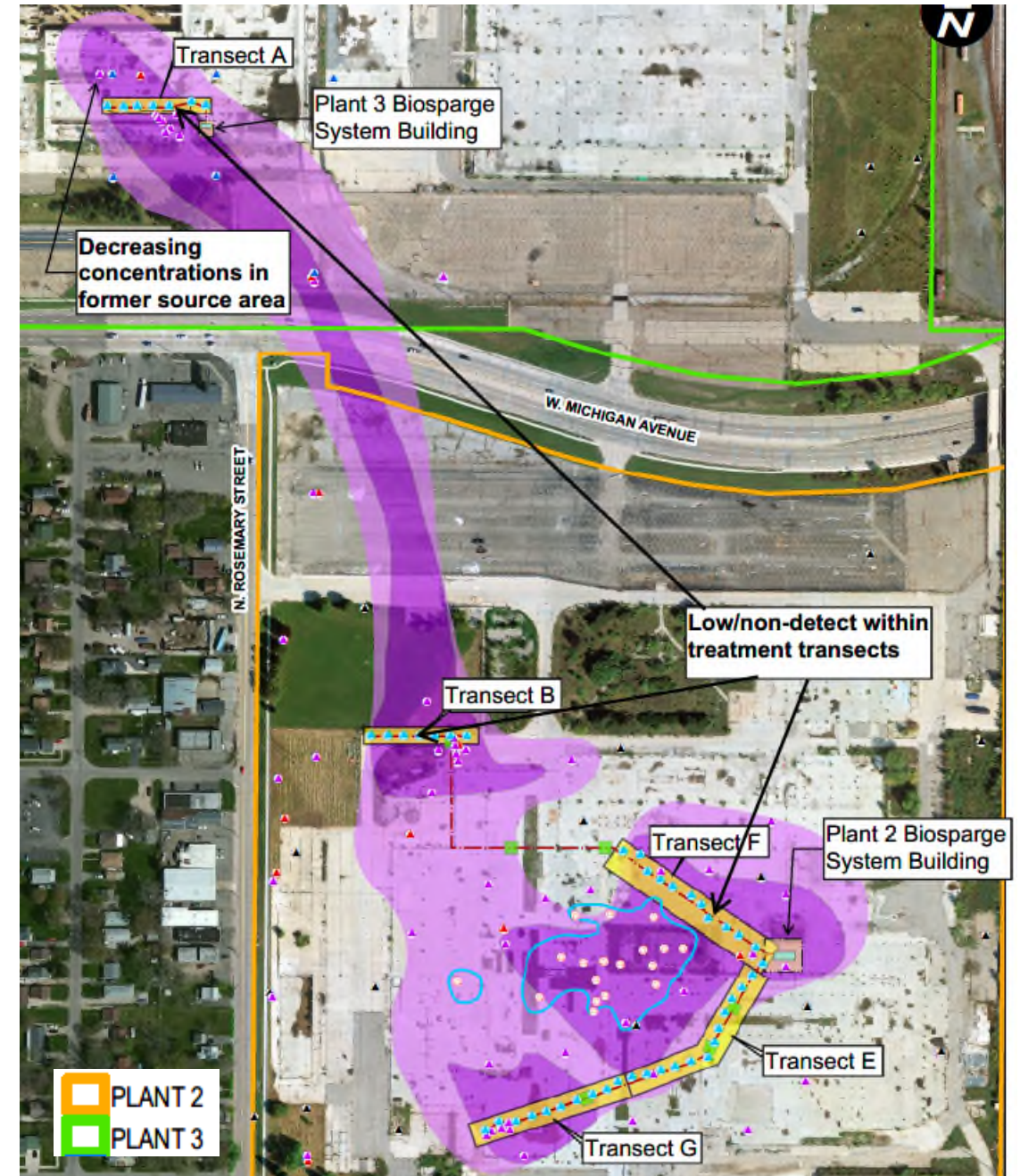
- Remediation at the RACER Lansing Site is being performed through the Resource Conservation and Recovery Act (RCRA) Corrective Action program under the oversight of the Michigan Department of Environment, Great Lakes, and Energy (EGLE). Current activities include focused site characterization, interim remedial actions, and evaluation of remedial alternatives.
- There is currently no known exposure pathways for area residents associated with the site contaminants.
- Characterization of the 1,4-dioxane plume in weathered bedrock at a depth of approximately 60 to 75 feet below the ground surface is complete. Remediation of 1,4-dioxane in the weathered bedrock includes operation of the Plant 2 and Plant 3 biosparge systems (Plant 2 system started operations during the third quarter of 2020). It is anticipated that portions of the Plant 2 biosparge system may need to operate for 10 to 15 years. See the appendix at the end of this report for more information on biosparging.
- Characterization of per and polyfluoroalkyl substances (PFAS) is ongoing to the north, east, and south of Plant 6. Interim actions for PFAS include storm sewer modifications on Plants 2, 3, and 6 to eliminate groundwater containing PFAS from infiltrating into and then discharging off-site through the storm sewers.
- Monitoring of potential soil vapor intrusion (VI) to indoor air is ongoing and will continue in the northeast portion of Plant 6 and the adjacent off-site area.
- Routine groundwater monitoring on Plants 2, 3, & 6 in the shallow (perched) zone, weathered bedrock, shallow bedrock, and deep bedrock is ongoing and is anticipated to continue for 25 to 30 years.



Activities completed during this period move the Site forward in the RCRA Corrective Action process

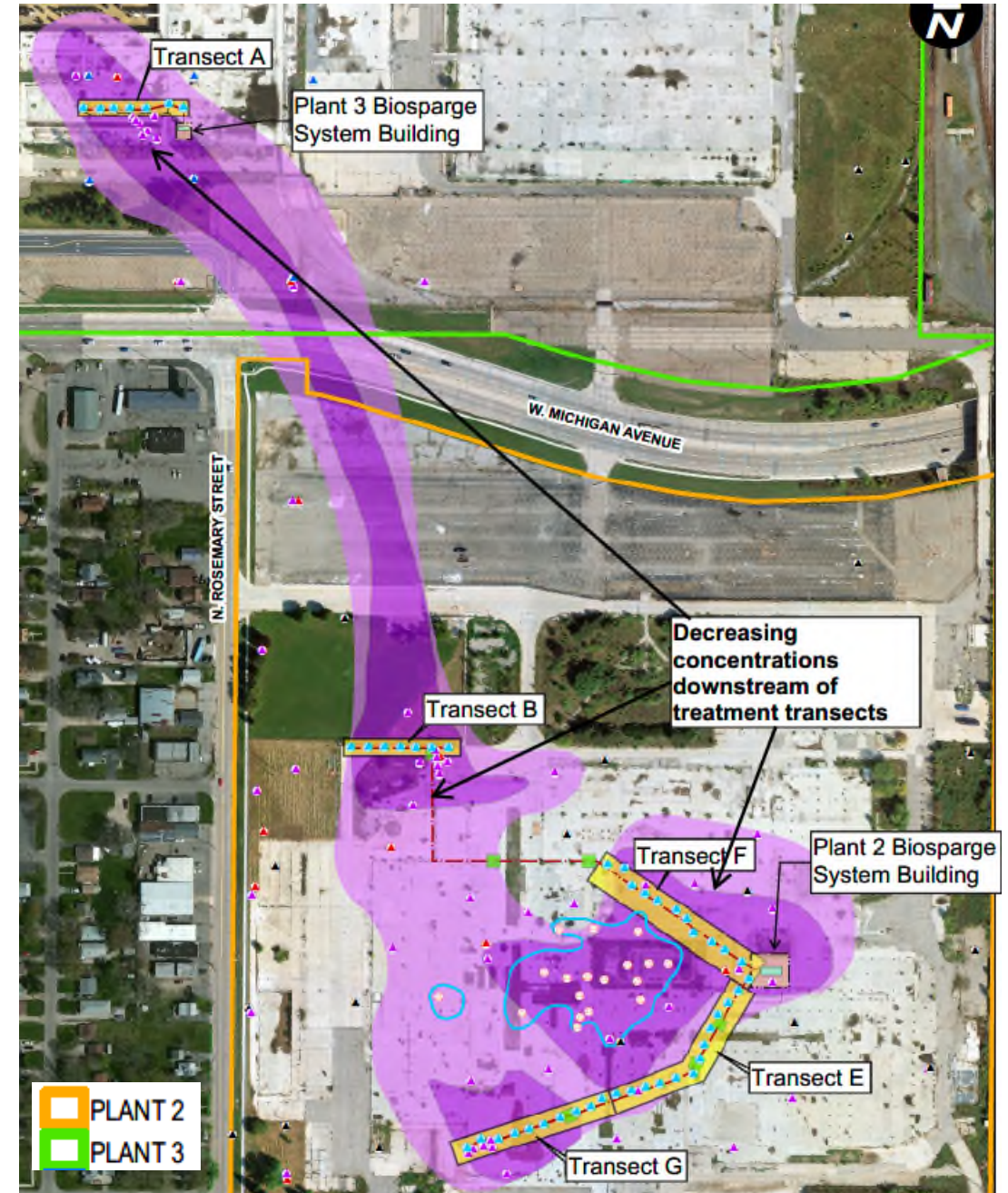
Remediation of 1,4-Dioxane in Weathered Bedrock

- Biosparge systems at Plant 2 and Plant 3 are fully operational
 - Plants 2 and 3 - 92% uptime since August 2020
 - Downtime related to either equipment upgrades/replacement or weather-related power outages
- Results from the Second Quarter 2021 performance monitoring show that concentrations of 1,4-Dioxane at Plant 2 and Plant 3 continue to decrease:
 - 1,4-dioxane concentrations upstream of biosparge treatment transect on Plant 3 is decreasing, indicating that the former source of contamination is depleted and attenuating
 - 1,4-dioxane concentrations in groundwater have reduced to low or non-detectable levels within the biosparge treatment transects
 - 1,4-dioxane concentrations in groundwater downstream of the biosparge treatment transects have started to decrease as treated groundwater flows downstream



Remediation of 1,4-Dioxane in Weathered Bedrock

- Nutrient injections for the system were completed in September 2021
- Results show that the biosparge systems are achieving the short-term objective of reducing 1,4-dioxane concentrations and mass along the core of the weathered bedrock plume
- 2021 Third Quarter performance monitoring was conducted in August 2021 and the results will be summarized in the 2021 Fourth Quarter Progress Report
- Performance sampling will be moving to a semi-annual schedule in 2022
- Results from the 2021 quarterly sampling results will be presented in a Lower 1,4-Dioxane Biosparge Update Report, submitted annually to EGLE (targeted submittal of March 2022)

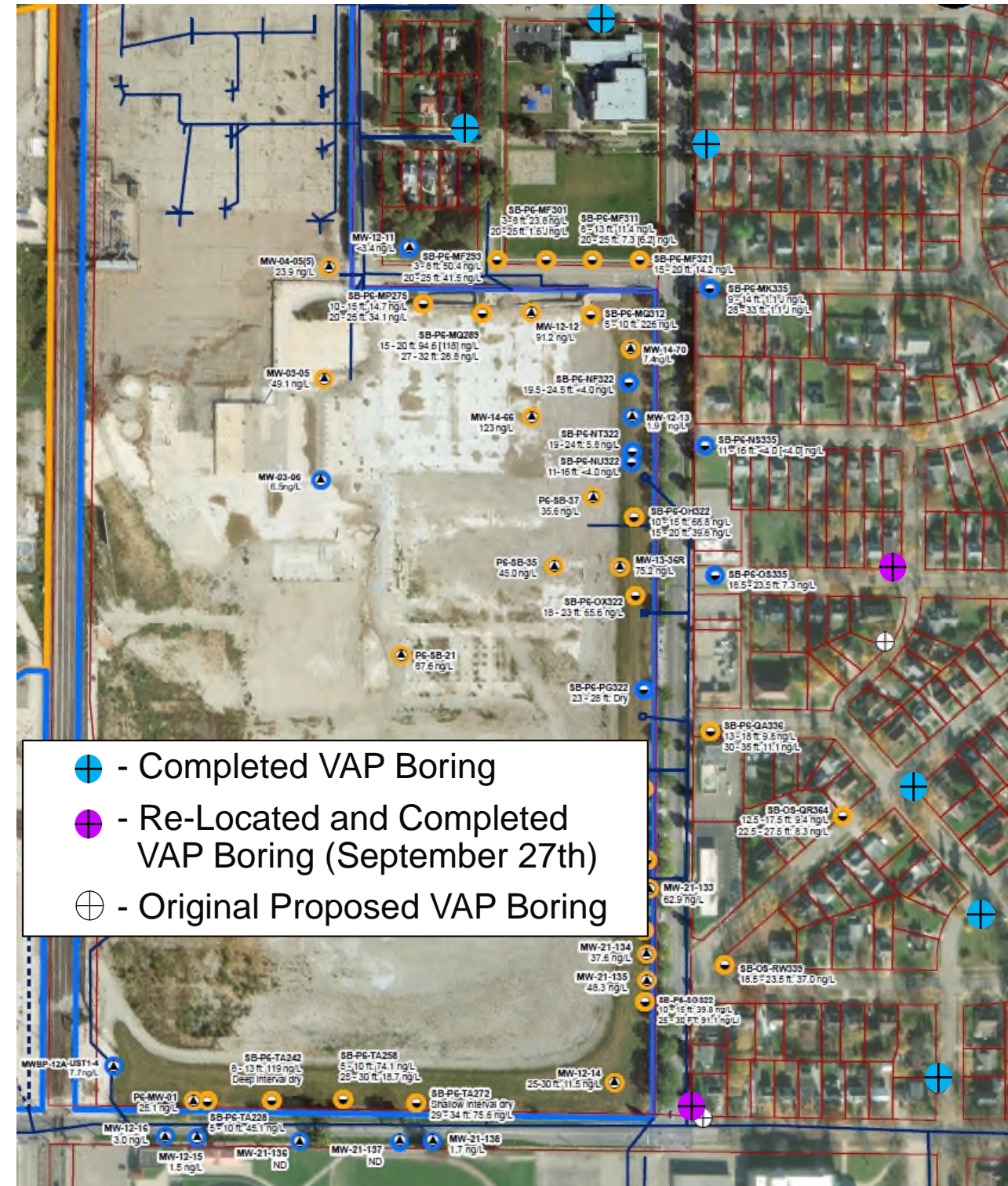


PFAS Investigation

Plant 6 Off-site Investigation

Off-site PFAS GW investigation commenced the week of September 6th:

- Eight vertical aquifer profile (VAP) borings were completed to log geology and collect groundwater samples from within zones where water for collection was present. Two of the locations had to be re-located due to the presence of underground utilities and were completed on September 27th, 2021.
- Lithology is like previous borings surrounding Plant 6, consisting of clays with discontinuous sand seams
- Shallow groundwater encountered in sand seams ranging from 7.5 to 15 ft at all but one location
- Saturated sand seams encountered between 20 and 30 feet at 4 of the 8 locations
- Dry sands encountered below 32 to 35 feet at 2 locations
- A total of 11 groundwater samples were submitted for PFAS analysis
- The results will be provided in a brief project update and the Fourth Quarter Progress Report



Remediation of PFAS Impacts

Sewer Modifications and Performance Sampling

- Post construction/modification storm sewer inspections were completed at each Plant in July 2021 following a period of rainfall - the purpose of these inspections is to evaluate the Plants for ponding and the potential for storm water runoff onto neighboring properties
 - Ponding was observed in northeast Plant 2, but water was contained onsite
 - No discharges were observed at bulkheaded or filled outfall manholes
- No sewer modifications were completed during third quarter 2021. However, the modifications completed in April 2021 were summarized in a storm sewer modifications completion update report submitted to EGLE in September 2021.
- Third Quarter site wide performance monitoring of storm sewers was conducted on August 30, 2021. Results from the August 2021 sampling event will be summarized in the Fourth Quarter Progress Report.

Closure of Plant 2 Vault

- A vault containing contaminated water is present at Plant 2 (pink box area in figure)
- A scope of work to properly clean and close the vault was submitted to EGLE on April 13, 2021, for approval
- EGLE approved the scope of work and activities are scheduled to be completed in October 2021



Work in Progress and Near-Term Milestones Anticipated During the Fourth Quarter of 2021



Activity	Schedule
Remediation of 1,4-Dioxane in the Weathered Bedrock	
Plants 2 and 3 Biosparge System Operation	Ongoing
Plant 2 1,4 Dioxane Investigation and Pilot Test Well Abandonment	October 2021
Remediation and Investigation of PFAS	
Plant 6 Osborn Catch Basin Replacement and Additional Storm Sewer Modifications	November/December 2021
Quarterly Storm Sewer Sampling	November 2021
Other investigations and Sampling	
Perched Well Abandonment	November 2021
Plant 2 TSCA (PCB) Soils IM Work Plan Submittal	November/December 2021
Plant 2 PCB Vault Closure Scope of Work Implementation	October 2021
Plant 2 and 3 Soils Corrective Measure Summary Report	November 2021
Updated RFI and CMS Draft Report Submittals	December 2021
2021 Semi-Annual Groundwater Monitoring Report Submittal	October 2021
Fourth Quarter 2021 Groundwater Monitoring and Biosparge Performance Monitoring	December 2021

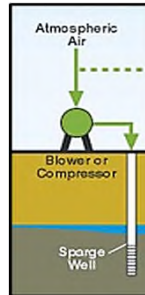
Appendix

BIOSPARGING TREATMENT OF 1,4-DIOXANE

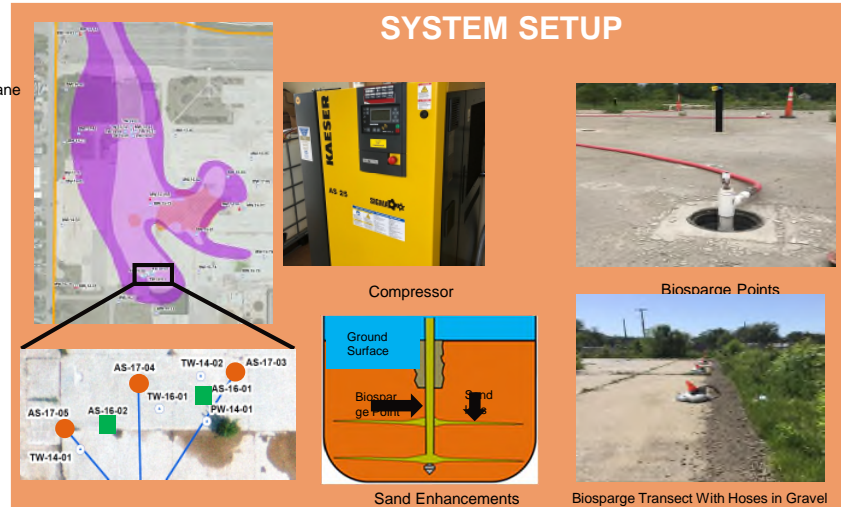
Lansing Industrial Land, Lansing and Lansing Township, Michigan

WHAT IS BIOSPARGING?

- Air and small amounts of propane are injected into the ground through wells
- Promotes biodegradation of chemicals in groundwater, much faster than it would occur naturally
- 1,4-dioxane is treated in the ground, so minimal waste is generated
- Nearby wells are sampled to make sure treatment is occurring

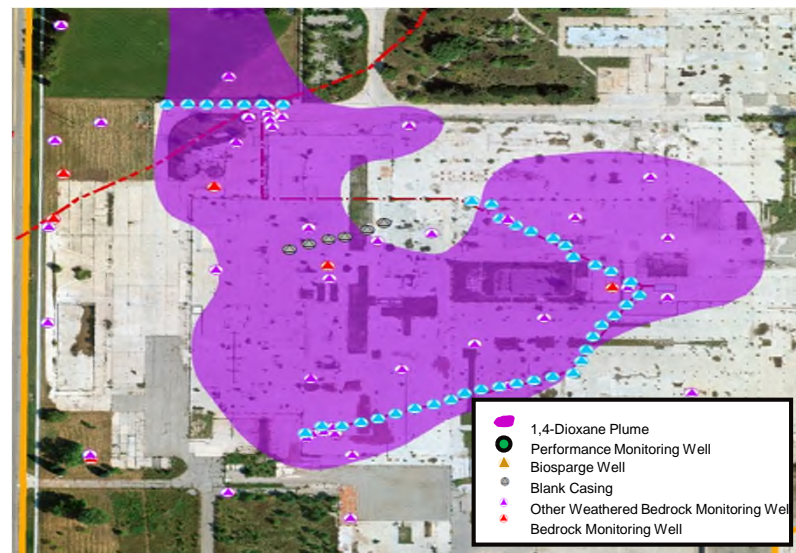


SYSTEM SETUP



- 2016 Pilot Test Biosparge Points
- 2018 Pre-Design Study Biosparge Points With Sand Enhancements
- Weathered Bedrock Monitoring Well

Plant 2 Biosparge Transect Layout



CONCLUSIONS

- Biosparging is a low cost, effective, safe and sustainable method for treating 1,4-dioxane
- Installation of sand enhancements improves treatment
- Continual monitoring of the treatment system improves results
- Technology can be scaled up to treat the rest of the site

FULL-SCALE DESIGN

- 5 transects with 48 air sparge wells across Plants 2 and 4
- Nearly 5 miles of air hose and an air/propane injection network
- Groundwater flows from northwest to southeast and is cleaned by each transect
- Tubing installed above grade to save on costs and to accommodate future development
- Network of monitoring wells to track treatment progress



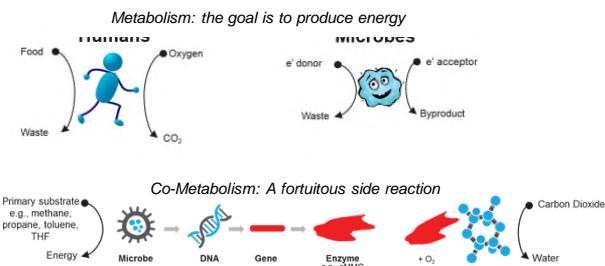
Plant 2 Biosparge Unit and Nutrient Injection Tanks



TREATMENT OBJECTIVES

- Reduce onsite concentrations of 1,4-dioxane in the top/weathered zone of the bedrock aquifer
- Prevent off-site migration of 1,4-dioxane

CO-METABOLIC BIODEGRADATION OF 1,4-DIOXANE:



Propane + Oxygen + Microbes = 1,4-Dioxane Treatment

