



RACER TRUST LANSING PLANTS 2, 3, & 6

2024 Fourth Quarter Progress Report | January 29, 2024

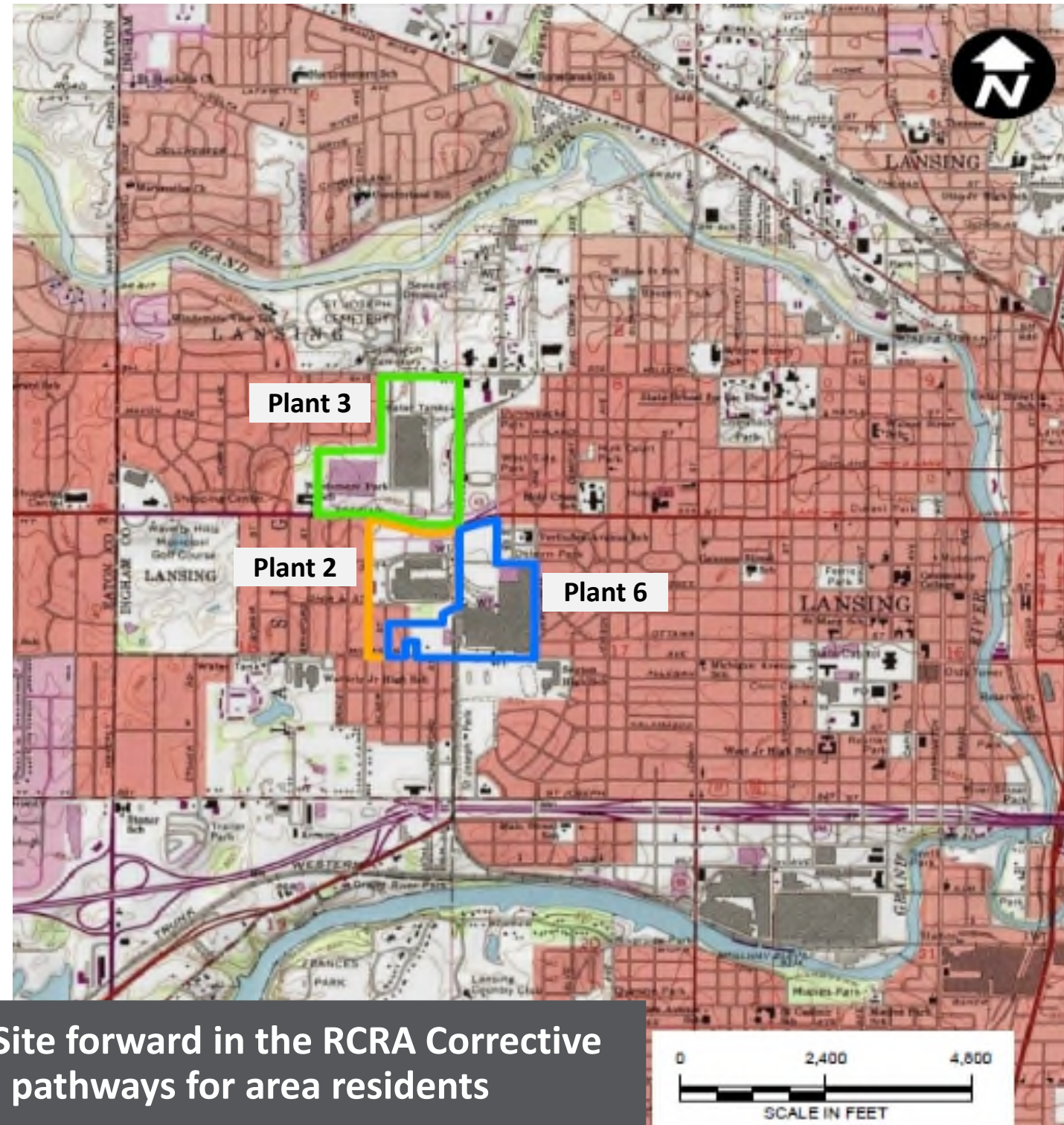
More detailed reports are available on RACER's Webpage for this Site:
<https://www.racertrust.org/properties/lansing-plant-2-industrial-land>

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Site Introduction

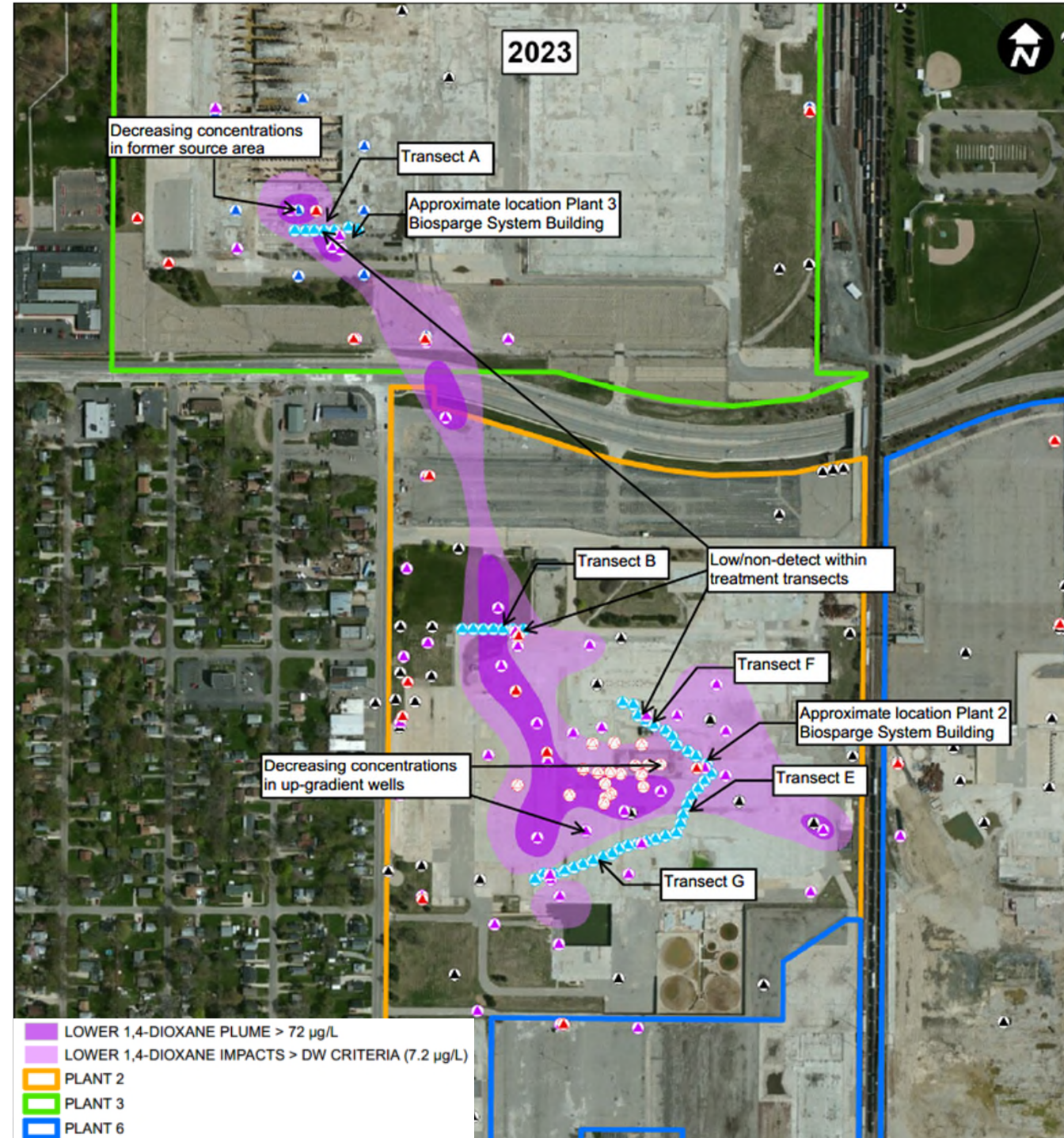
- Remediation at the RACER Lansing Site is being performed through the Resource Conservation and Recovery Act (RCRA) Corrective Action program under the oversight of the Michigan Department of Environment, Great Lakes, and Energy (EGLE). Current activities include focused site characterization and interim remedial actions.
- There is currently no known complete 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 (The Plant 3 system began operating in 2019 and the Plant 2 system began operating in 2020). The biosparge system has successfully reduced concentrations of 1,4-dioxane in the weathered bedrock. Short-term system objectives continue to be met.
- Routine groundwater monitoring on and in certain areas adjacent to Plants 2, 3, & 6 in the shallow (perched) zone, weathered bedrock, shallow bedrock, and deep bedrock is ongoing and is anticipated to continue for several years.



Activities completed during this period move the Site forward in the RCRA Corrective Action process and verified no complete exposure pathways for area residents

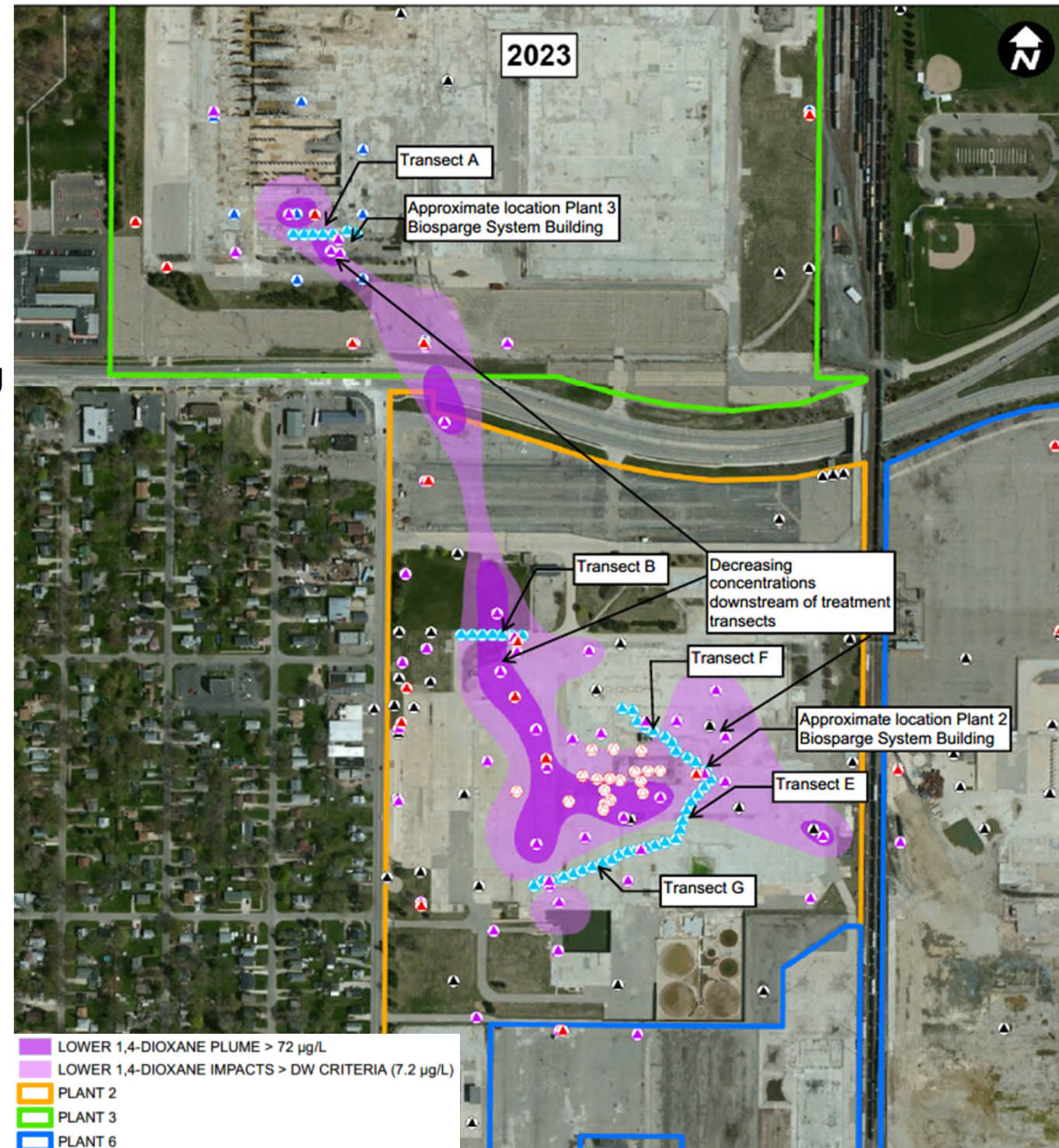
Remediation of 1,4-Dioxane in Weathered Bedrock

- Biosparge systems at Plant 2 and Plant 3 are fully operational
 - Some downtime in November 2024 for additional compressor maintenance needed on top of quarterly maintenance. Oil/air separator needed additional cleaning.
 - Wells AS-19-B06 and AS-19-B07 are currently turned off and have been for a couple of years
- Results of performance monitoring 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



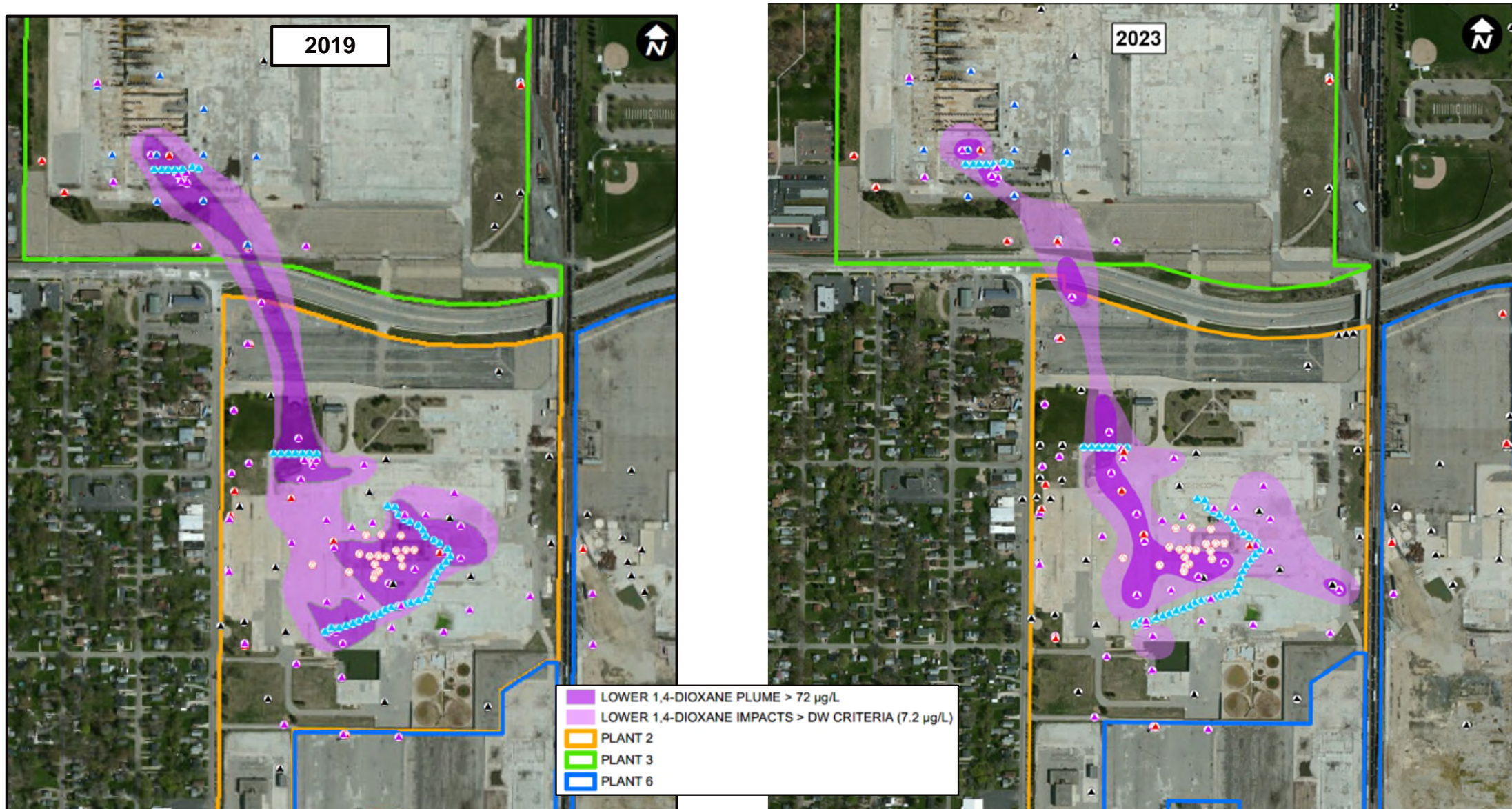
Remediation of 1,4-Dioxane in Weathered Bedrock

- Semi-annual sampling event was completed in November 2024.
- Results from Fourth Quarter 2024 performance monitoring continue to show stable to decreasing concentrations of 1,4-dioxane.
- An annual Biosparge Summary Report summarizing the 2024-year data is anticipated to be submitted to EGLE during the First Quarter of 2025
- A test was proposed to temporarily shut down portions of the biosparge system to evaluate how the groundwater concentrations respond and to assess if modifications to the operation of the biosparge system are needed to reduce concentrations further. Awaiting EGLE response before implementation.
- Semi-annual performance monitoring will be conducted in the First Quarter of 2025.



Remediation of 1,4-Dioxane in Weathered Bedrock

Visual depiction of lower 1,4-dioxane plume (located within the deep overburden and weathered bedrock) distribution in 2019 vs. 2023



Reports Submitted to EGLE Fourth Quarter 2024

- Biosparge Response to EGLE Comments provided to EGLE December 9, 2024
- Revised Interim Monitoring Plan (IMP) submitted to EGLE for consideration and approval on December 20, 2024
- Exposure Barrier Inspection Report submitted to EGLE on December 20, 2024
- Reports can be viewed or downloaded from the RACER Website for the Lansing Property:
<https://www.racertrust.org/properties/lansing-plant-2-industrial-land>

Work in Progress and Near-Term Milestones Anticipated During the First Quarter of 2025



Activity	Schedule
Remediation of 1,4-Dioxane in the Weathered Bedrock	
Plants 2 and 3 Biosparge System Operation	Ongoing
Biosparge Shut Down Test	Pending EGLE Concurrence
2024 Biosparge Summary Report Submittal	March 2025
Investigation of 1,4-Dioxane	
MS-14-58R Area Vapor Intrusion Assessment Report Submittal	March 2025
Investigation and Remediation of PFAS	
Semi-Annual Storm Sewer Sampling	May 2025
Other investigations, Sampling and Reporting	
Annual Groundwater Monitoring Report for 2024	Second Quarter 2025

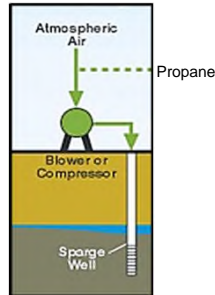
Appendix

BIOSPARGING TREATMENT OF 1,4-DIOXANE

Lansing Industrial Land, Lansing and Lansing Township, Michigan

WHAT IS BIOSPARGING?

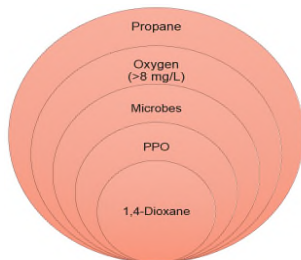
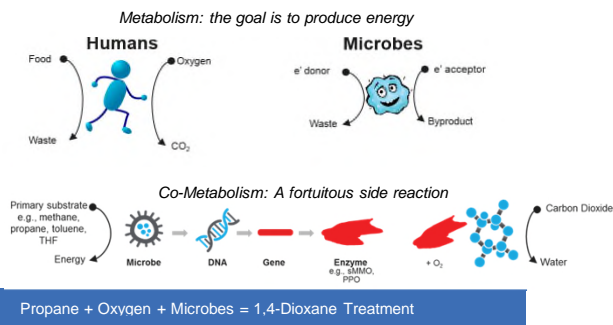
- Air and small amounts of propane are injected into the ground through wells
- Promotes biodegradation of chemicals in groundwater, much faster than it would occur naturally
- 1,4-dioxane is treated in the ground, so minimal waste is generated
- Nearby wells are sampled to make sure treatment is occurring



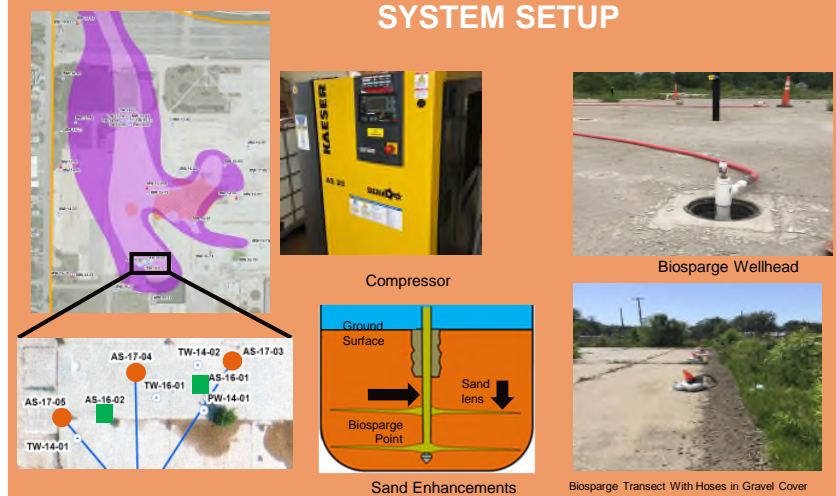
TREATMENT OBJECTIVES

- 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:

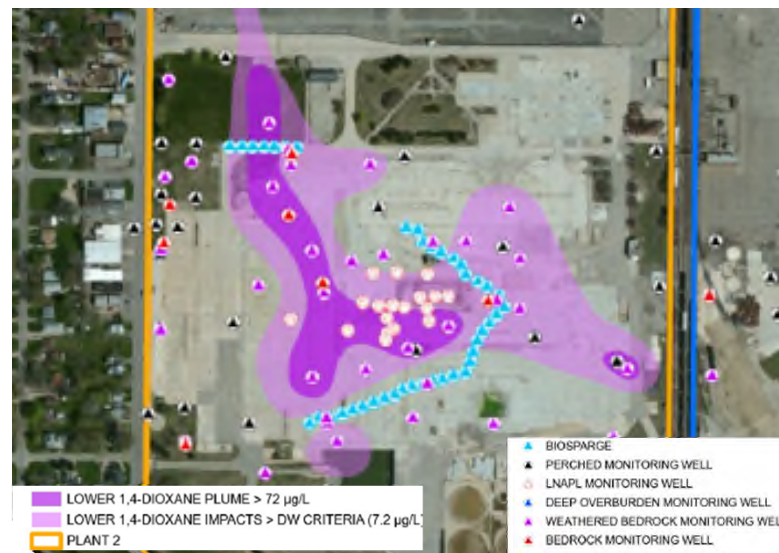


SYSTEM SETUP



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

Plant 2 Biosparge Transect Layout



RACER Lansing Biosparge System

- Testing showed that biosparging is a low cost, effective, safe, and sustainable method for treating 1,4-dioxane at the Site and that the installation of sand enhancements improves treatment
- Biosparge system includes 5 treatment transects with 48 sparge wells across Plants 2 and 3
- Biosparge equipment buildings are located on Plant 2 and 3 with nearly 5 miles of hose to convey air/propane from the buildings to the injection wells
- Treated groundwater flows from northwest to southeast as it is cleaned by each treatment transect
- Network of monitoring wells is to track treatment progress
- After 4 to 5 years of operation, the biosparge system has reduced average 1,4-dioxane plume concentrations from a range of 160 - 485 µg/L down to a range of 20 - 50 µg/L and has met the treatment objectives



Plant 2 Biosparge Building, Propane Tank, Hoses, and Nutrient Injection Tanks