



# RACER TRUST LANSING PLANTS 2, 3, & 6

2025 Second Quarter Progress Report | July 16, 2025

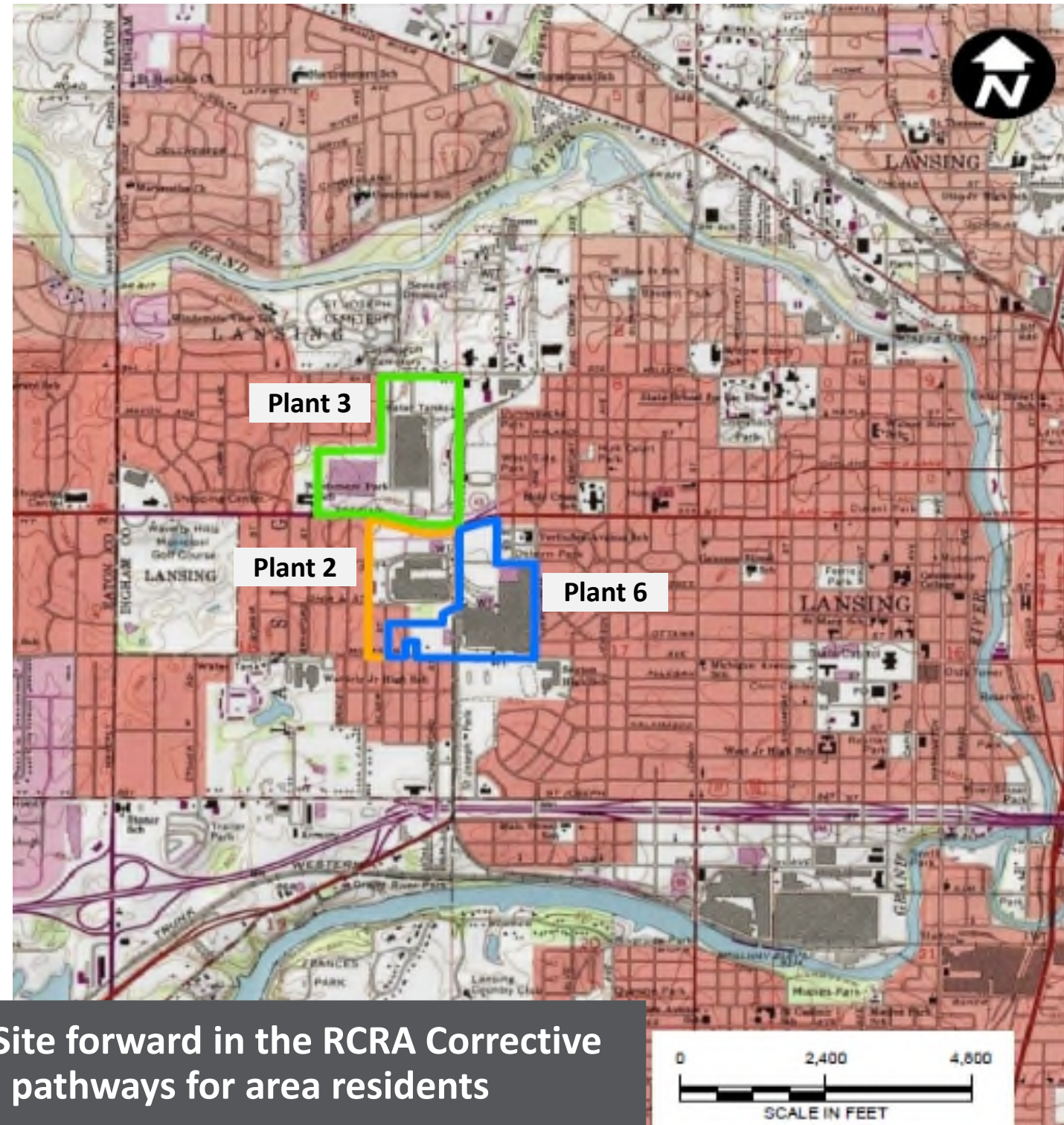
More detailed reports are available on RACER's Webpage for this Site:  
<https://www.racertrust.org/properties/lansing-plant-2-industrial-land>

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# Site Introduction

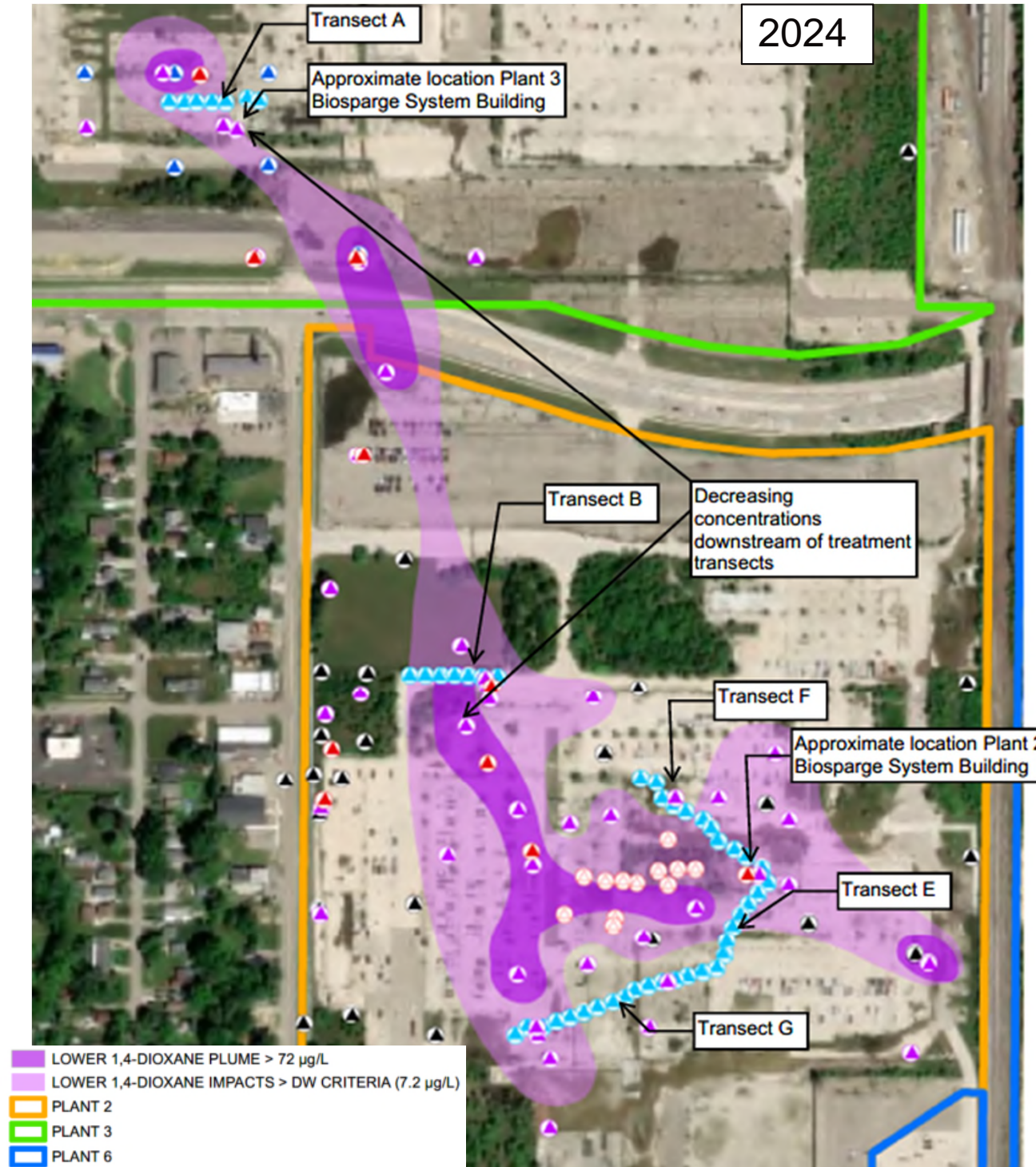
- Remediation at the RACER Lansing Site is being performed through the Resource Conservation and Recovery Act (RCRA) Corrective Action program under the oversight of the Michigan Department of Environment, Great Lakes, and Energy (EGLE). Current activities include focused site characterization and interim 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**

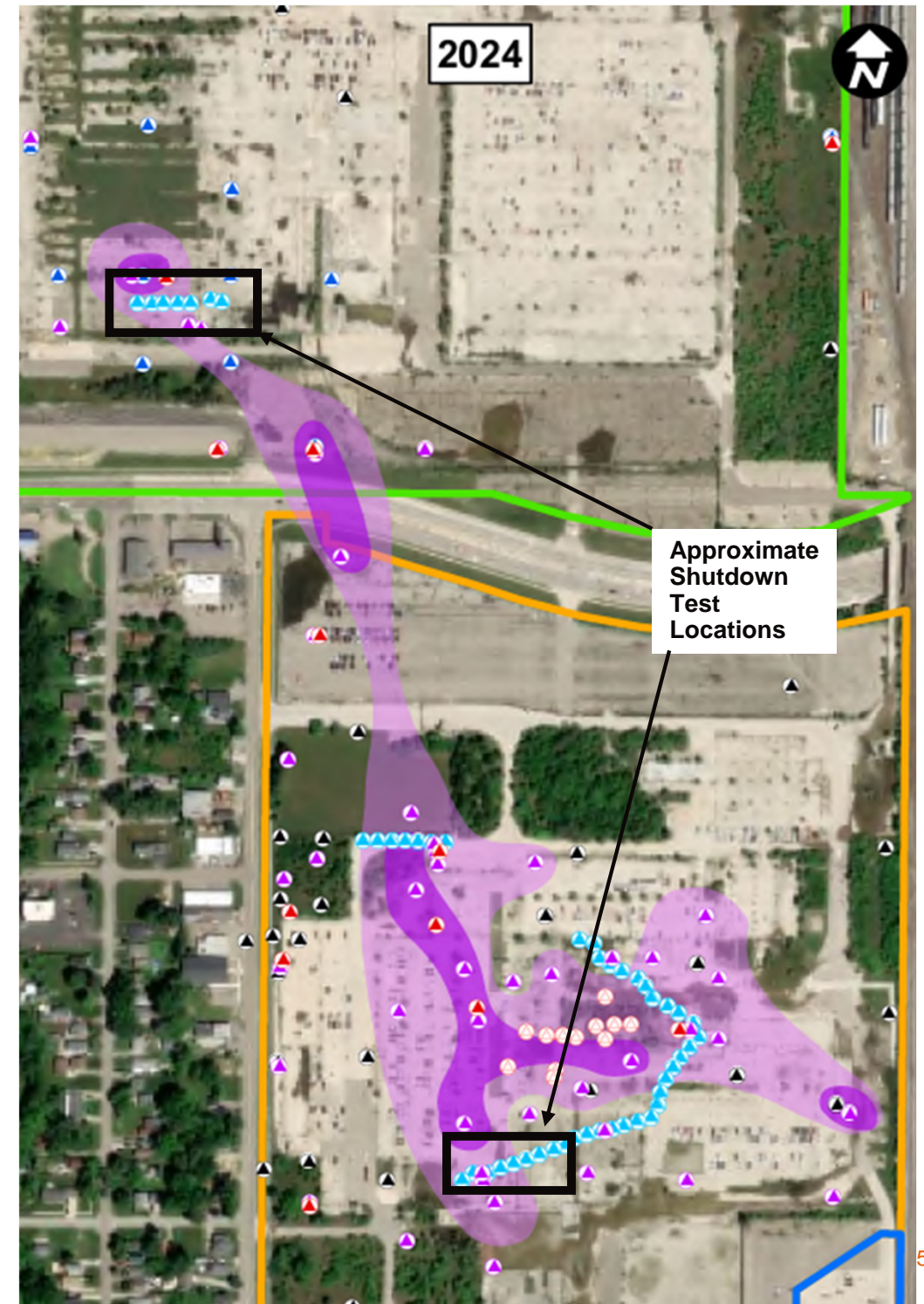
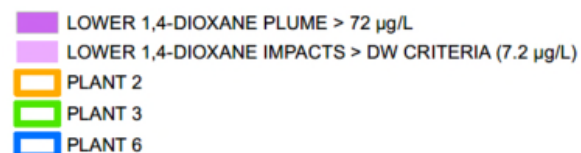
# Remediation of 1,4-Dioxane in Weathered Bedrock

- Biosparge systems at Plant 2 and Plant 3 are fully operational
  - Minimal downtime in second quarter for external system maintenance related to weathering (June 2025)
- 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



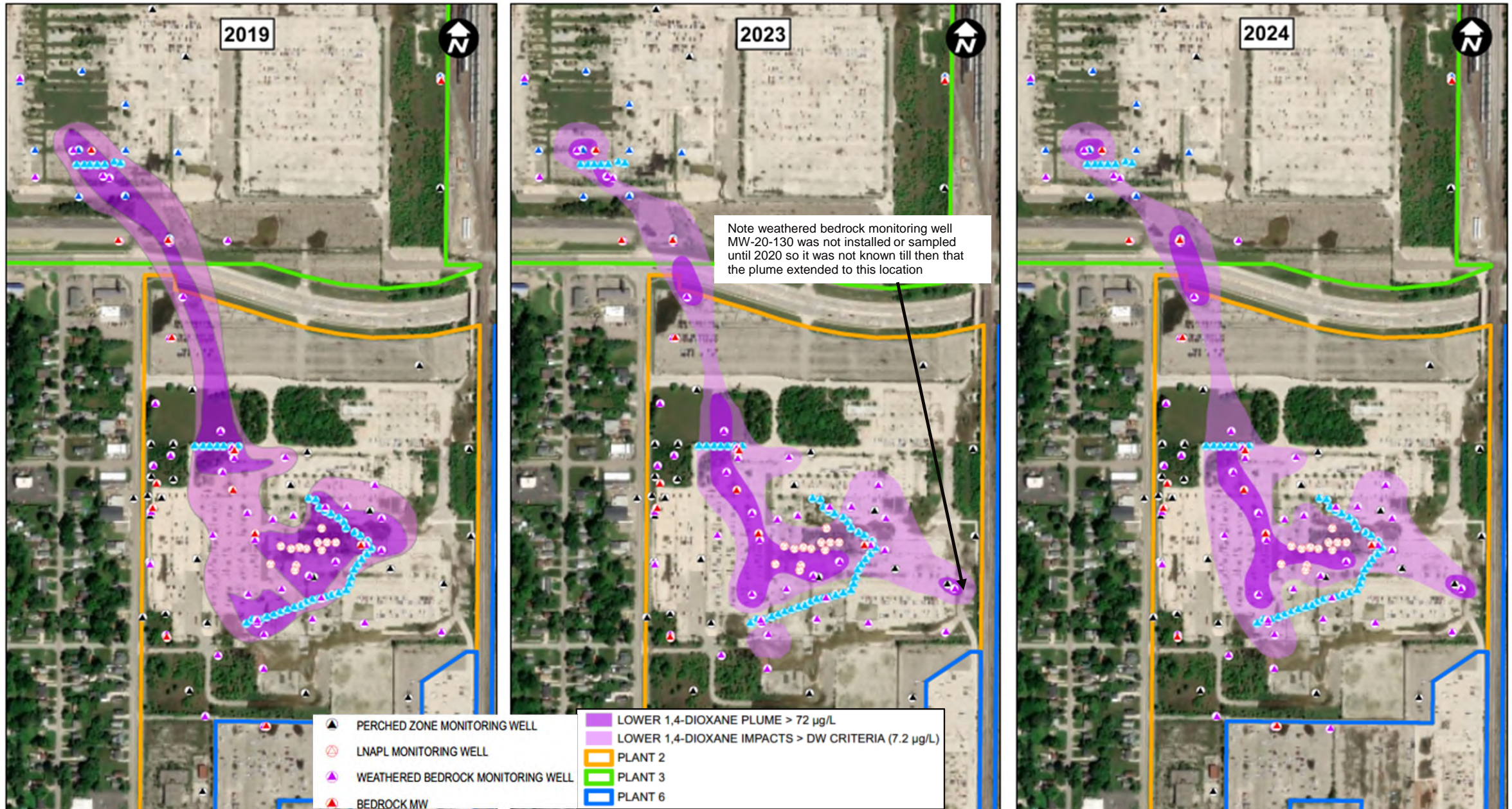
# Remediation of 1,4-Dioxane in Weathered Bedrock

- First semi-annual sampling event was completed in Second Quarter (May 2025).
- Results from the Second Quarter 2025 performance monitoring continue to show stable to decreasing concentrations of 1,4-dioxane for both systems at Plant 2 and Plant 3.
- The annual Biosparge Summary Report summarizing the 2024-year data was submitted to EGLE in April 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 approval letter before full implementation of test. Planning to complete pre-shut down testing during the second semi-annual sampling event planned for Fourth Quarter 2025 (October)



# Remediation of 1,4-Dioxane in Weathered Bedrock

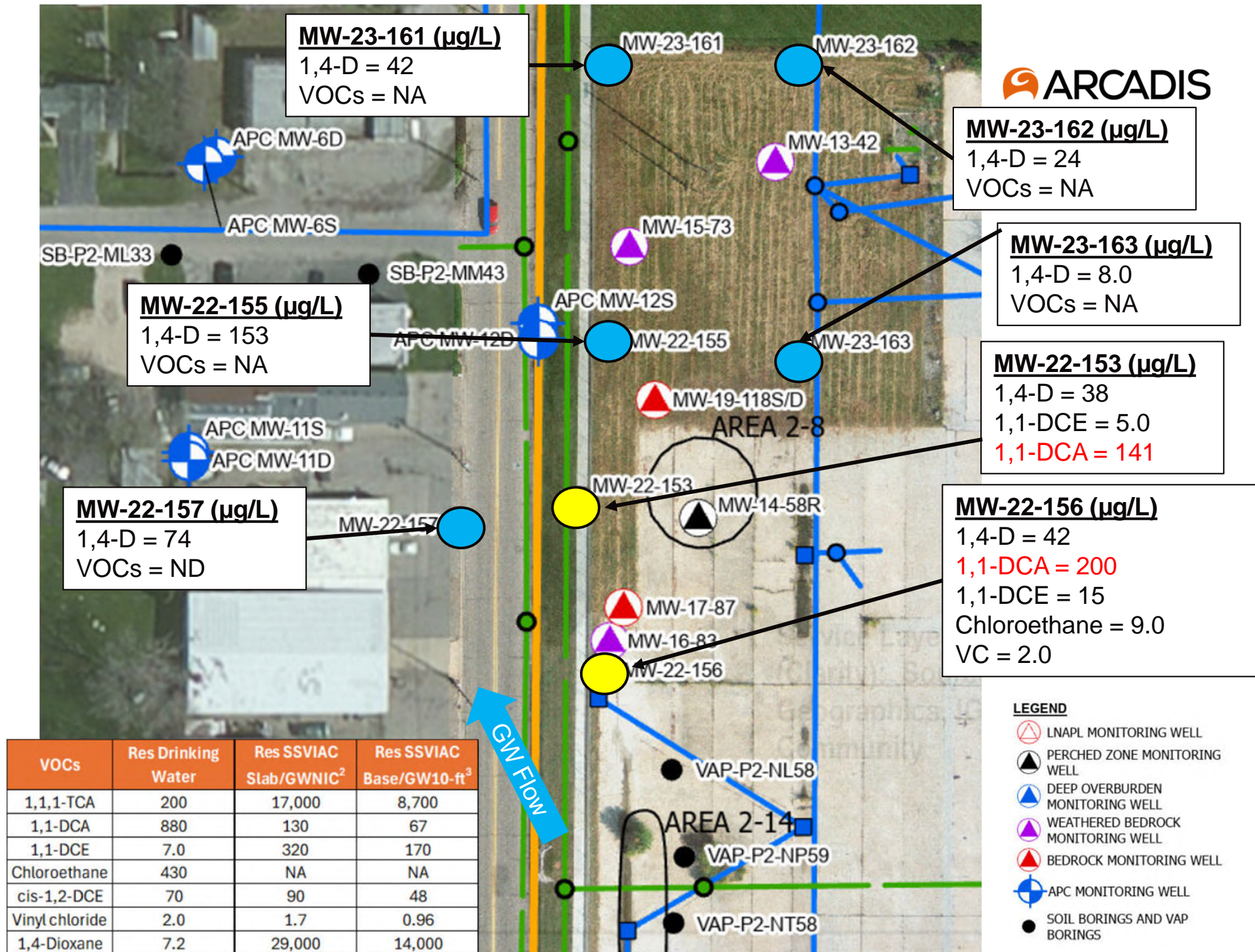
Visual depiction of lower 1,4-dioxane plume (located within the deep overburden and weathered bedrock) distribution in 2019, 2023 and 2024



## Additional Groundwater Sampling – Western Plant 2

- Groundwater samples were collected Second Quarter 2025 (May) and analyzed for 1,4-dioxane and volatile organic compounds (VOCs).
- Volatile organic compounds that exceed the site-specific vapor intrusion criteria continue to be defined by monitoring wells west of Rosemary Street, and to the north.
- Routine groundwater monitoring in this area will continue to be completed in accordance with the revised 2025 Interim Monitoring Plan

 Exceeds Res SSVIAC





# Reports Submitted to EGLE Second Quarter 2025

- 2024 Biosparge Annual Report submitted to EGLE on April 16, 2025
- Final Interim Monitoring Plan (IMP) submitted to EGLE on April 18, 2025, after addressing additional comments.
- First Quarter 2025 Progress Report submitted to EGLE on April 18, 2025
- 2024 Annual Groundwater Sampling Report submitted to EGLE on June 13, 2025
- Reports can be viewed or downloaded from the RACER Website for the Lansing Property (RACER is working through updates to website since some recently submitted reports are not showing up on the website):  
<https://www.racertrust.org/properties/lansing-plant-2-industrial-land>

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



Activity	Schedule
<b>Remediation of 1,4-Dioxane in the Weathered Bedrock</b>	
<b>Plants 2 and 3 Biosparge System Operation</b>	<b>Ongoing</b>
<b>Biosparge Shut Down Test</b>	<b>Pre-test groundwater sampling tentatively scheduled for October 2025</b>
<b>Investigation of 1,4-Dioxane</b>	
<b>None Planned for Third Quarter 2025</b>	
<b>Investigation and Remediation of PFAS</b>	
<b>None Planned for Third Quarter 2025</b>	
<b>Other Investigations, Sampling and Reporting</b>	
<b>Semi-Annual Groundwater Monitoring Memo for 2025</b>	<b>August 2025</b>
<b>2025 Annual Exposure Barrier Inspections and Reporting</b>	<b>August 2025</b>

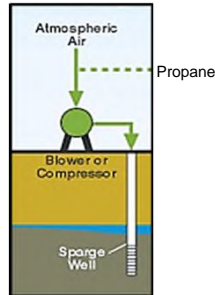
# Appendix

# BIOSPARGING TREATMENT OF 1,4-DIOXANE

## Lansing Industrial Land, Lansing and Lansing Township, Michigan

### WHAT IS BIOSPARGING?

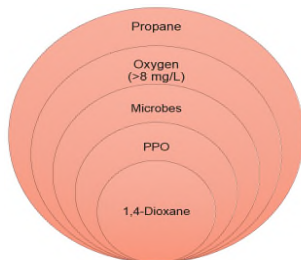
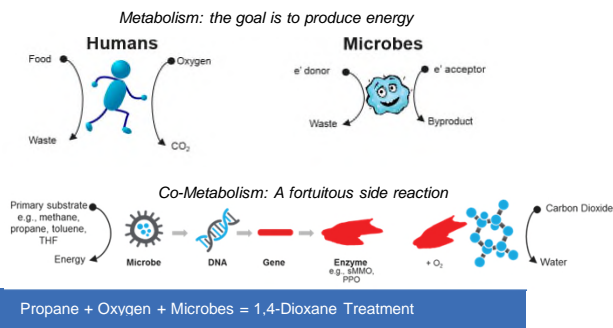
- Air and small amounts of propane are injected into the ground through wells
- Promotes biodegradation of chemicals in groundwater, much faster than it would occur naturally
- 1,4-dioxane is treated in the ground, so minimal waste is generated
- Nearby wells are sampled to make sure treatment is occurring



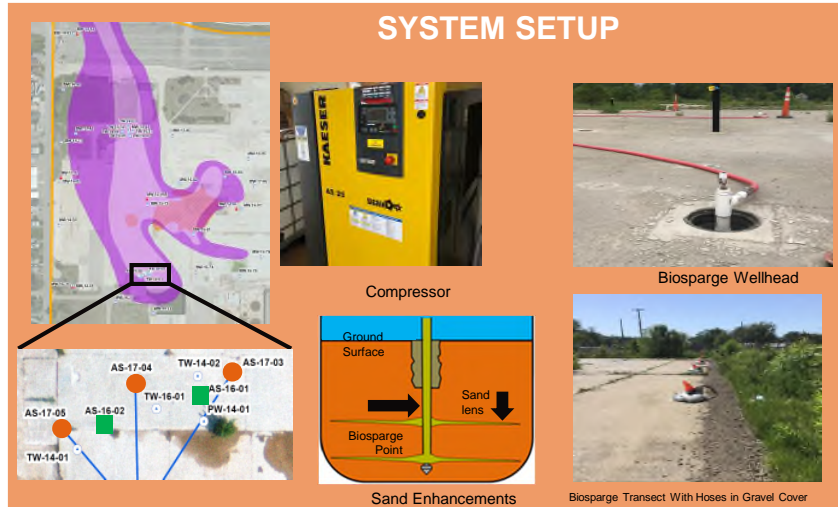
### TREATMENT OBJECTIVES

- 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:

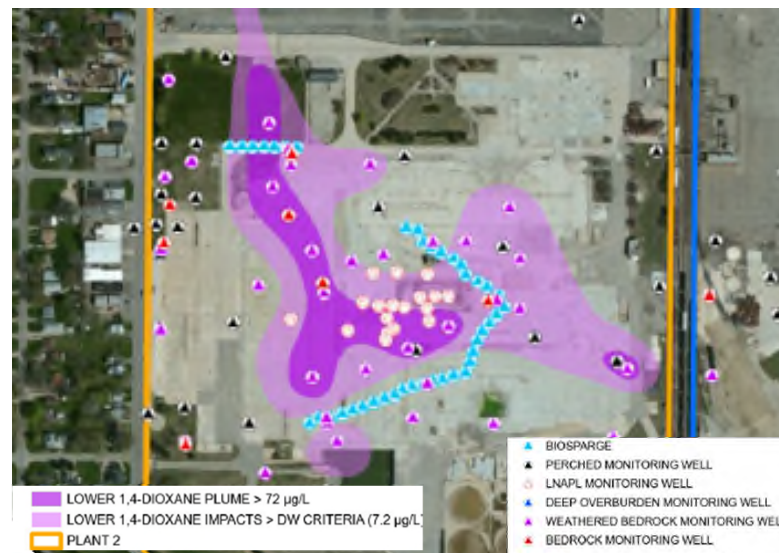


### SYSTEM SETUP



- 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