

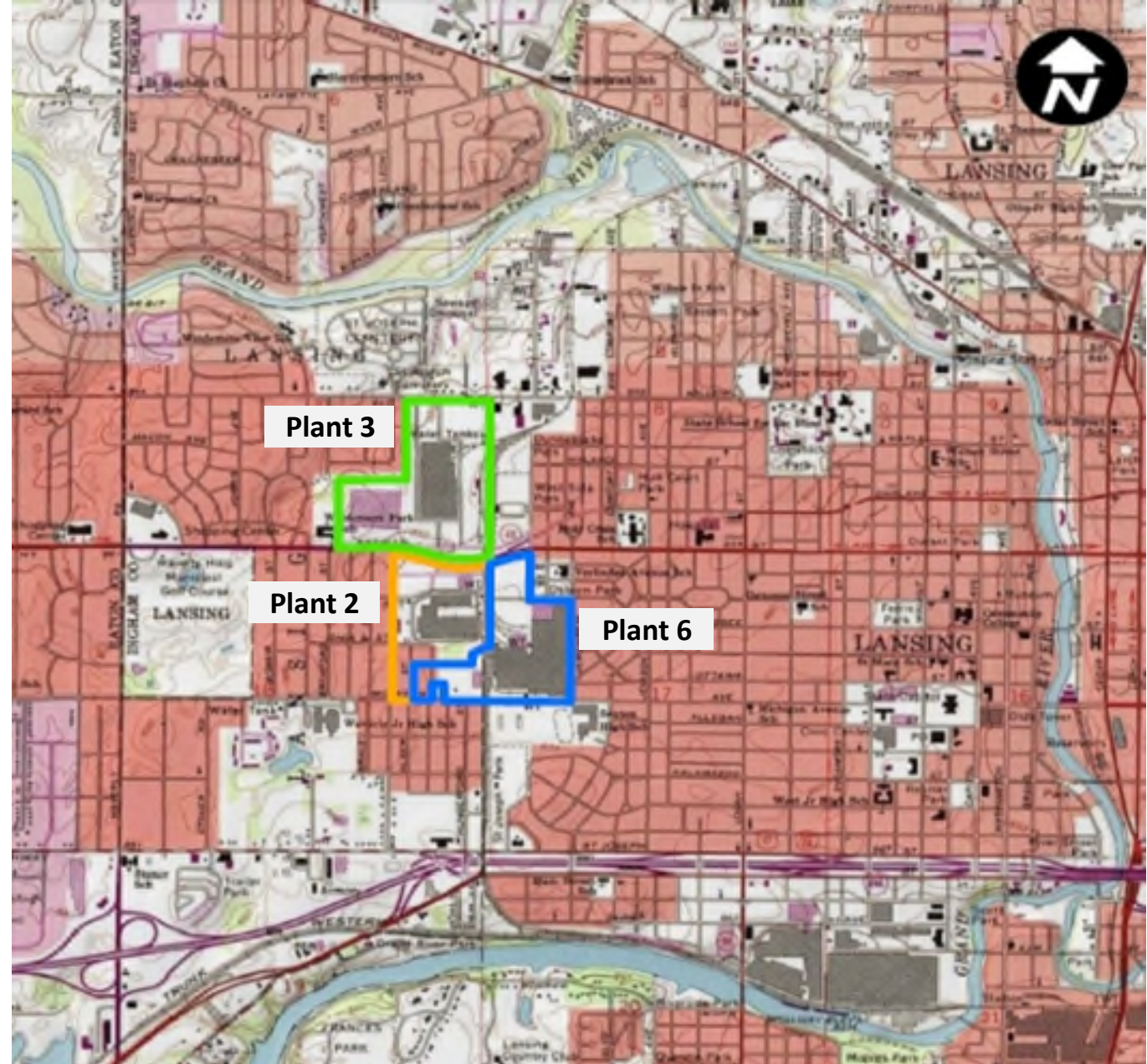
# RACER TRUST LANSING PLANTS 2, 3, & 6

4Q 2020 Quarterly Progress Report | January 15, 2021



# 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 complete exposure pathways for area residents associated with 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 3Q 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. Interim actions for PFAS include storm sewer modifications on Plants 2, 3 and 6 to eliminate PFAS discharge offsite through the storm sewers.
- Characterization 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, and 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**

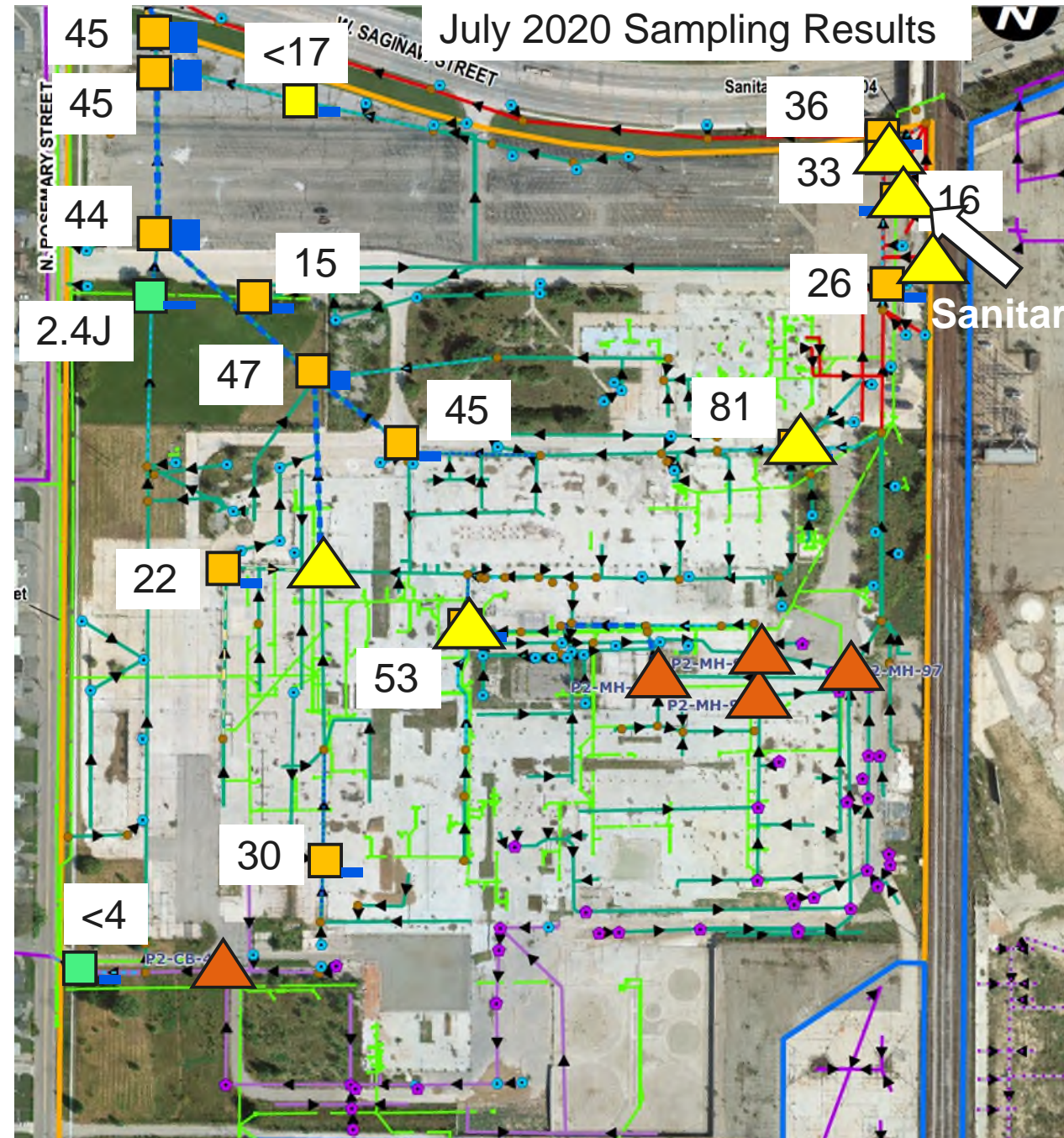
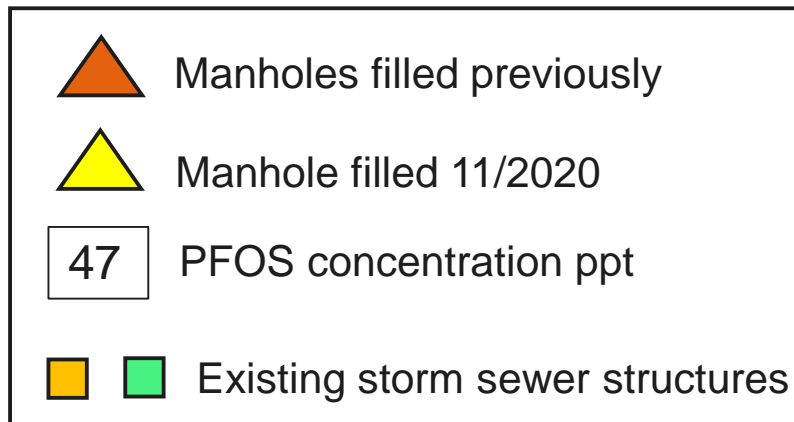
# Remediation of 1,4-Dioxane in Weathered Bedrock

- Biosparge systems at Plant 2 and Plant 3 are fully operational
  - Plant 2 – 99% uptime since start up in August 2020
  - Plant 3 - 97% uptime since compressor upgrade in July 2020
  - Downtime related to an area wide power outage due to high winds
- Q4 performance monitoring was conducted in December 2020. Results from this event will be presented in a separate report to be prepared in Q1 2021.

# Remediation of PFAS Impacts

## Plant 2 Sewer Modifications

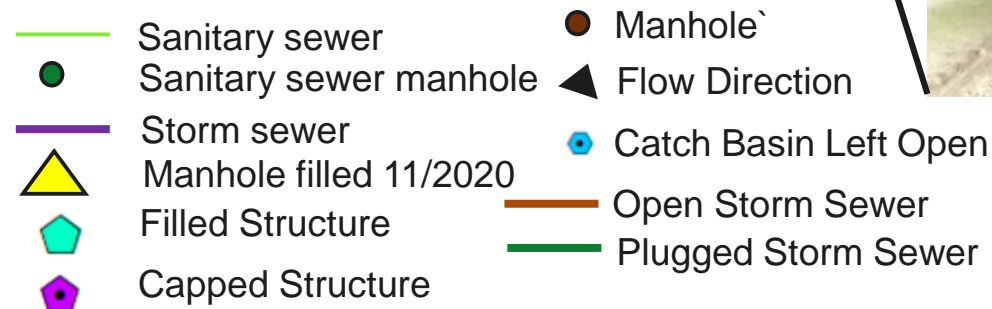
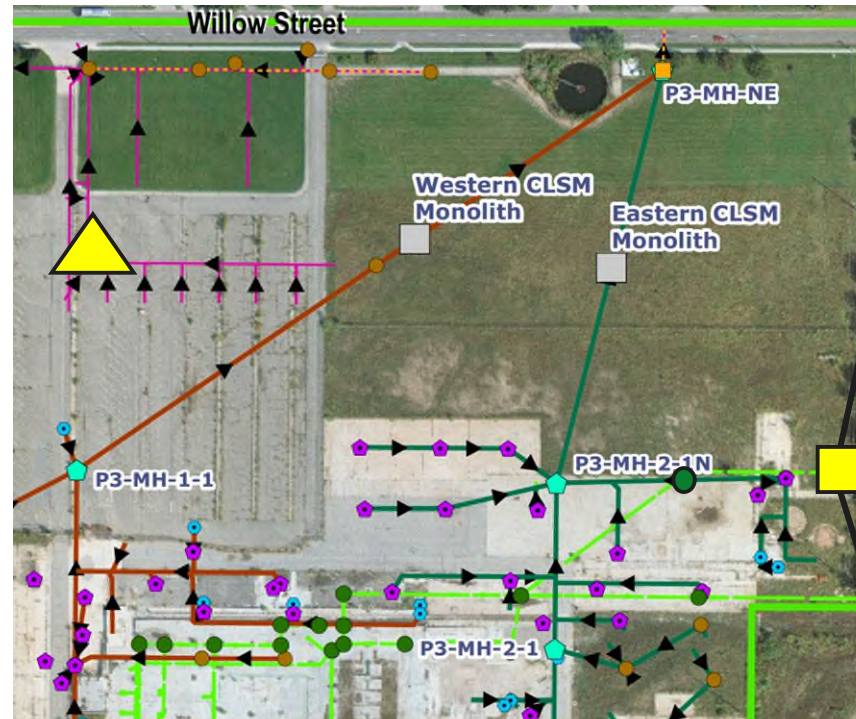
- Filled manholes with concrete to mitigate movement of PFOS impacts to discharge offsite
  - 5 storm sewer manholes filled
  - 1 sanitary sewer manhole filled
- Also capped 22 catch basins to minimize stormwater infiltration into plugged pipes
- Structures resampled in December 2020. Results will be presented in separate report during Q1 2021



# Remediation of PFAS Impacts

## Plant 3 Sewer Modifications

- Worked completed in November 2020.
- Filled one manhole in NW parking lot and capped associated catch basins
- Bulkheaded pipe entering sanitary vault, along east side of Plant 3, to mitigate potential for offsite discharge
- All structures resampled for PFAS in December 2020. Results will be presented in separate report during Q1 2021

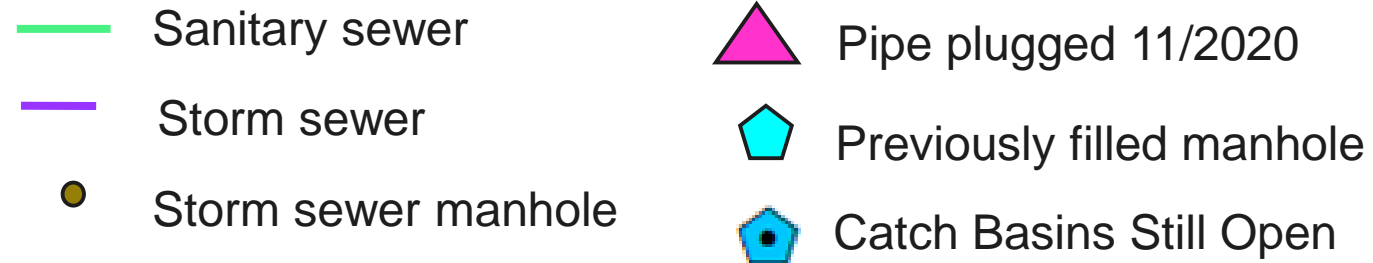
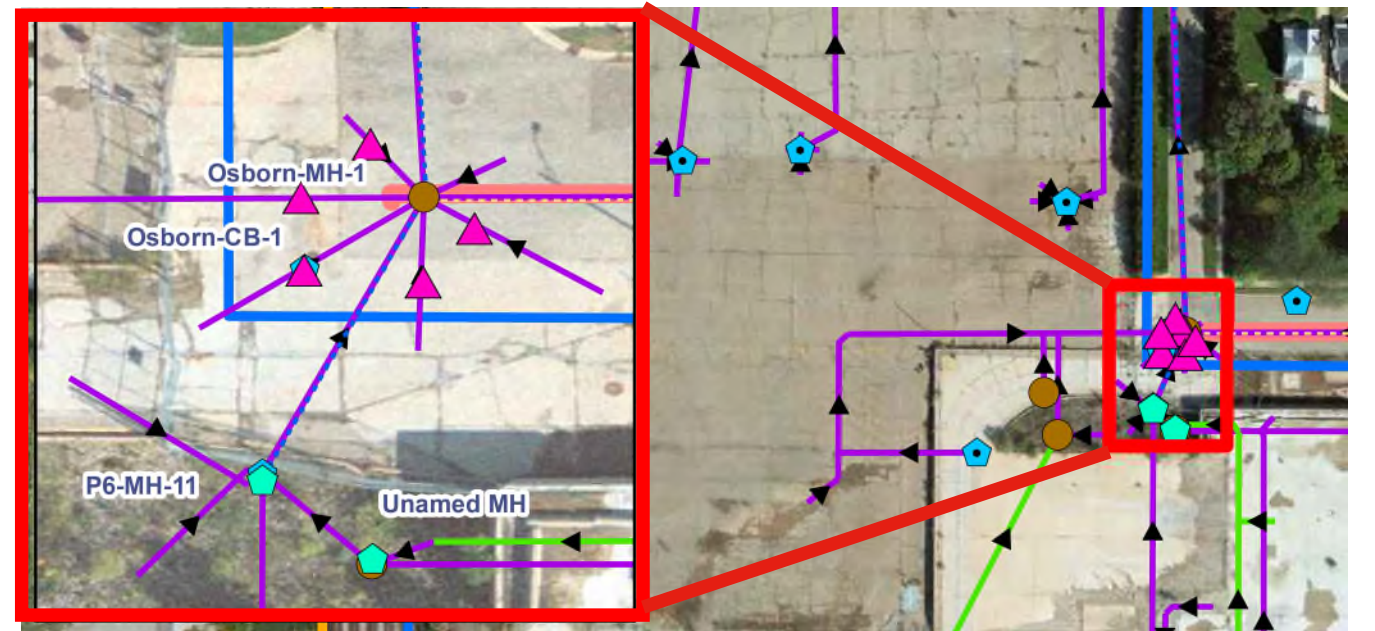


Sanitary sewer outfall

# Remediation of PFAS Impacts

## Plant 6 Sewer Modifications

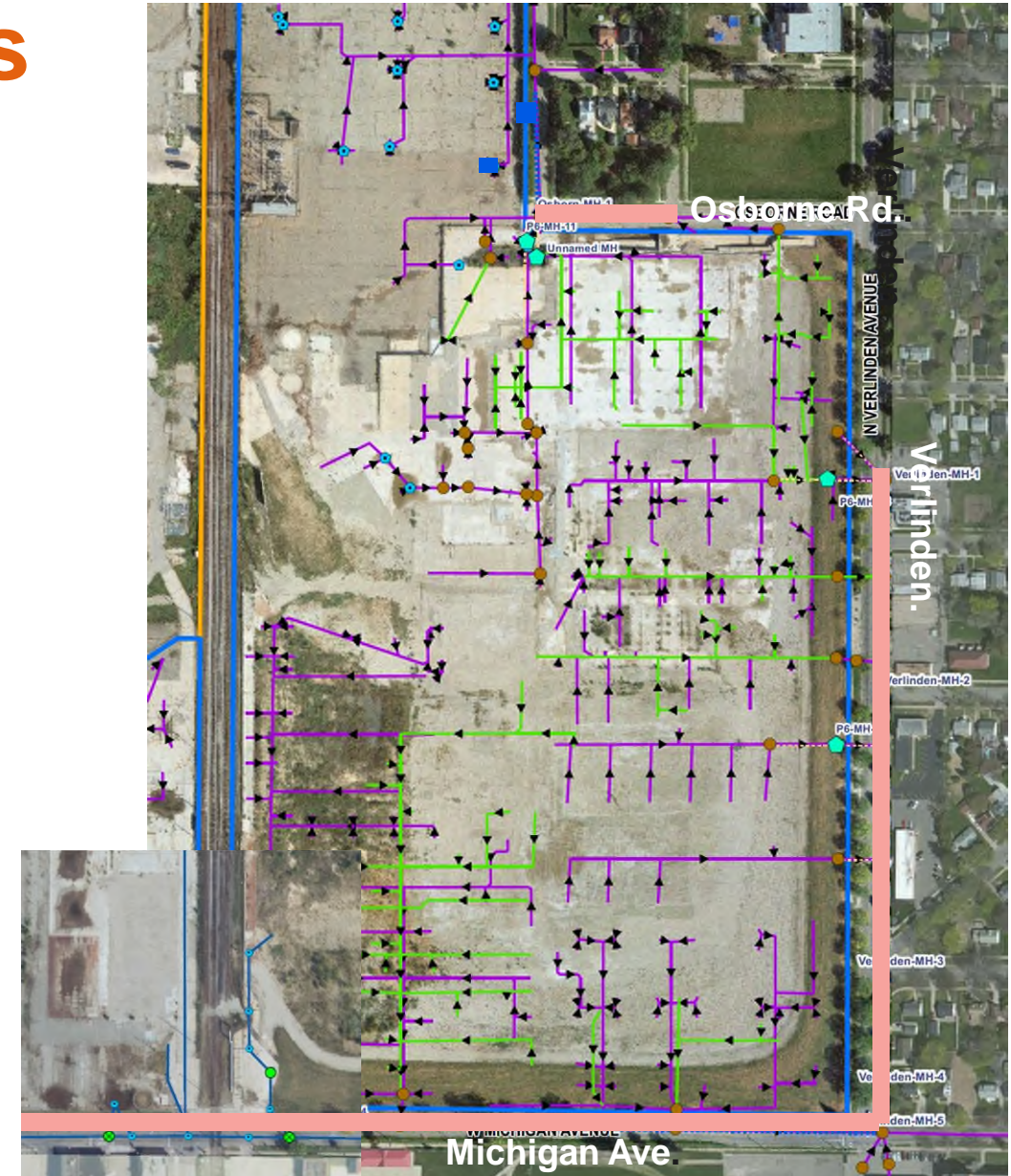
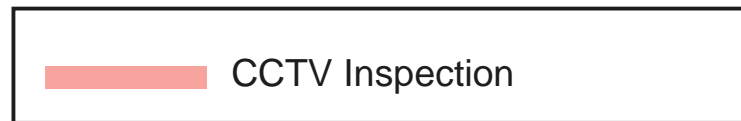
- Work completed in November 2020
- Plugged small diameter pipes entering the Osborne St. manhole from the site
- Maintained flow in sewer pipe along Stanley St. and Osborne St.



# Remediation of PFAS Impacts

## Plant 6 Activities Cont.

- Closed Circuit Television (CCTV) inspection of sewer along Verlinden, Michigan and Osborne completed in December 2020.
- Structures resampled in December 2020. Results will be presented in separate report during Q1 2021
- Propose next steps based on CCTV results and resampling of manholes – first quarter 2021

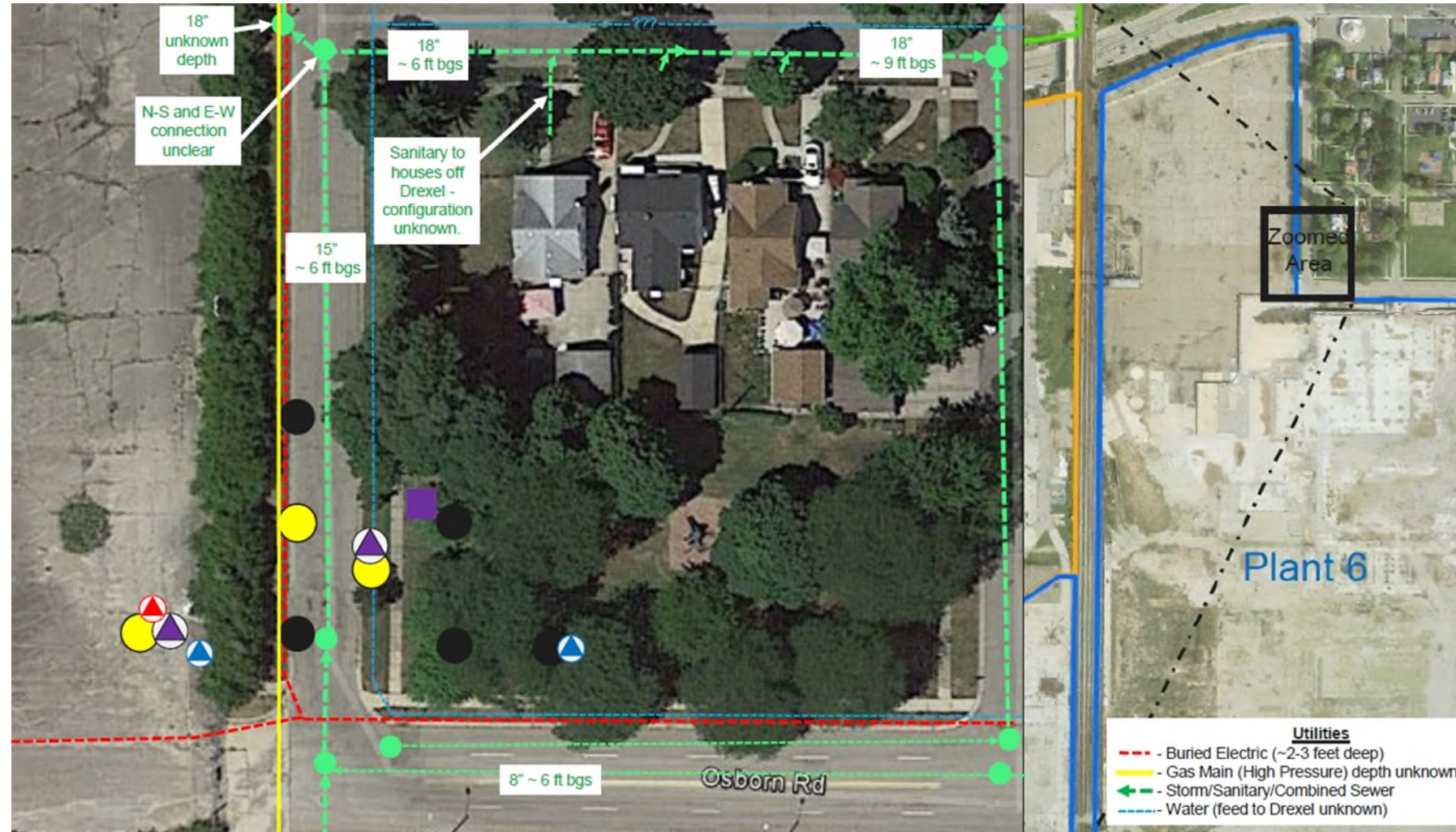


# Investigation of Soil Vapor

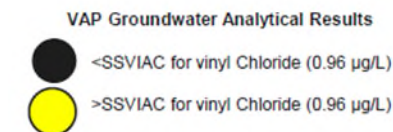
## Plant 6 VI Update

Additional monitoring wells and SVMP installed November 2020

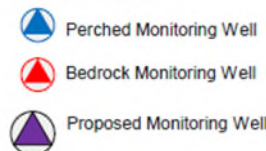
- Saturated sand encountered at SVMP location at 7' – one SVMP installed, groundwater sample collected from sand seam
- Results will be presented in separate report during Q1 2021



### Legend



### Monitoring Wells



■ Proposed Soil Vapor Monitoring Point  
Notes:

ft bgs – feet below ground surface (top of utility)  
SSVIAC – Site Specific Volatilization to Indoor Air Criteria  
µg/l – micrograms per liter  
VC – Vinyl Chloride





# Evaluation of Plant 2 PCB Impacts

## Next Steps to address the Plant 2 PCB Area:

1. Revise Plant 2 PCB workplan (1Q 2021):
  - Include a summary of the additional investigation activities completed to define PCB DRC areas
  - Provide a scope for cleaning and filling the “concrete vault” located at Plant 2
2. Upon approval of the Toxic Substances Control Act (TSCA) PCB summary and work plan, proceed with cleaning and filling of the concrete vault
3. DRC for Plant 2 PCB area will be updated based on the additional data collected to define the low occupancy areas with and without a cap
  - Existing cover is adequate for the low occupancy area that requires a cap

# Monitoring Well Abandonment

The following wells were abandoned in December 2020 per EGLE Approval

- Shallow Monitoring wells

Plant 2	Plant 3	Plant 6
MW-02(2)	MW-01(03)	MWBP-10-UST1-4
MW-03(2)	MW-02(03)	MWBP-10A-UST1-4
MW-12-17	MW-03(03)	MWBP-12A-UST1-4
	MW-04(03)	MWBP-12-UST5-6
	UNK-09	MWBP-13A-UST1-4

- Each well was pressure grouted from the bottom up using Type 1 Portland Cement.
- Casing cut 1-foot below grade and hole filled with like material
- Weathered bedrock well TW-14-01
  - Monitoring well was pressure grouted from the bottom up using bentonite grout
  - Upper 25-feet of well was over drilled
  - The upper 25-feet of casing was removed, and the borehole abandoned with cement/bentonite grout up to grade

# Quarterly Groundwater Monitoring – 4Q 2020

- Completed 4Q groundwater monitoring in accordance with the October 2019 revised Interim Groundwater Monitoring Program (IGMP) approved by EGLE
- 4Q event was completed in December 2020
- Sampled a total of 88 wells for one or more of the following constituents of concern (COCs): per- and polyfluoroalkyl substance (PFAS), semi volatile organic compounds (SVOCs), volatile organic compounds (VOCs) and 1,4-dioxane. This included;
  - 47 wells sampled and analyzed for PFAS;
  - 41 wells sampled and analyzed for 1,4-dioxane, including 26 wells sampled as part of the biosparge system performance monitoring.
  - 5 wells sampled and analyzed for VOCs;
  - Groundwater elevations were collected from a total of 109 wells.
- Results are expected in 1Q 2021 and will be included in the comprehensive 2020 Annual Groundwater Monitoring Report, which is expected to be submitted in 2Q 2021.

# Work in Progress and Near-Term Milestones Anticipated During the 1Q 2021

Activity	Schedule
<b>Remediation of 1,4-Dioxane in the Weathered Bedrock</b>	
<b>Plants 2 &amp; 3 Biosparge System Operation</b>	<b>Ongoing</b>
<b>Biosparge Construction Completion Report</b>	<b>January 2021</b>
<b>Biosparge Performance Summary Report</b>	<b>February/March 2021</b>
<b>Remediation and Investigation of PFAS</b>	
<b>Plant 6 Perimeter Well Installation &amp; Sampling</b>	<b>January/February 2021</b>
<b>Plant 6 Off-site Investigation Scope of Work</b>	<b>February 2021</b>
<b>Storm sewer Sampling/CCTV Summary Report</b>	<b>February 2021</b>
<b>Plants 2, 3 &amp; 6 Additional Storm Sewer Modifications Work Plan/Completion Report</b>	<b>March 2021</b>
<b>Other investigations and Sampling</b>	
<b>Plants 2 &amp; 6 VI Investigation Summary Memo</b>	<b>January 2021</b>
<b>Plant 2 PCB (TSCA) Work Plan</b>	<b>January 2021</b>
<b>Well Abandonment Summary Memo</b>	<b>February 2021</b>
<b>Plants 2 &amp; 3 Soils Corrective Measures Field Work</b>	<b>February/March 2021</b>
<b>1Q 2021 Quarterly Groundwater Monitoring and Gauging</b>	<b>March 2021</b>

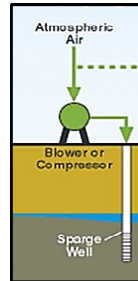
# Appendix

# BIOSPARGING TREATMENT OF 1,4-DIOXANE

Lansing Industrial Land, Lansing and Lansing Township, Michigan,

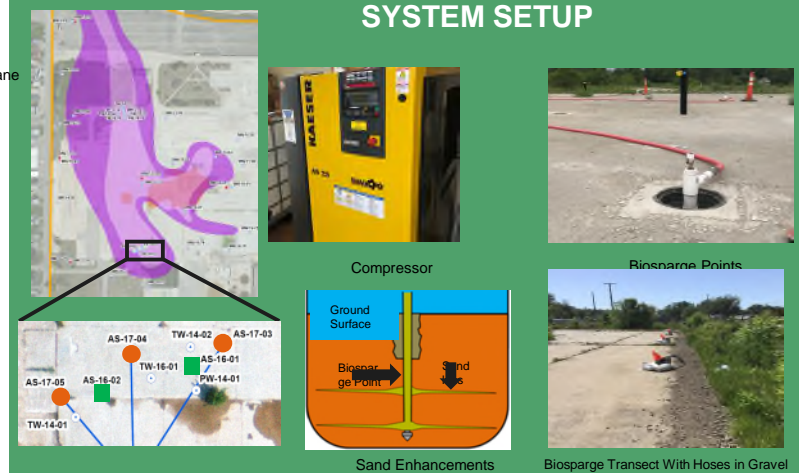
## WHAT IS BIOSPARGING?

- 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



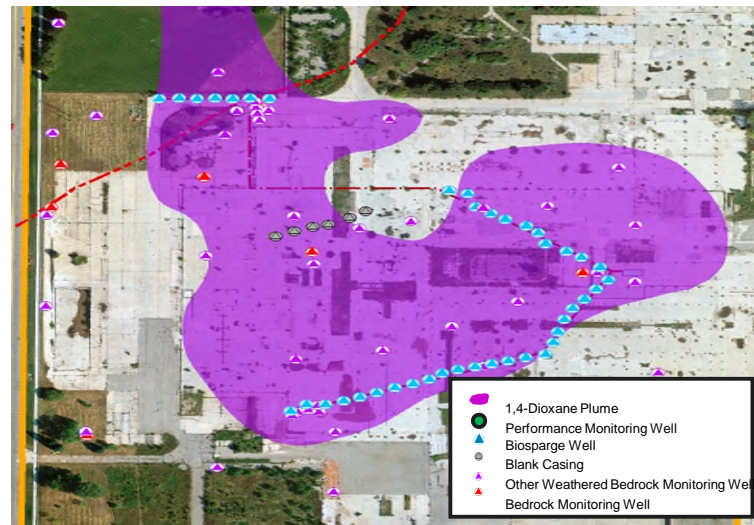
Propane

## 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

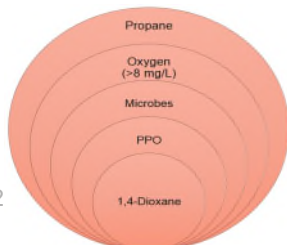
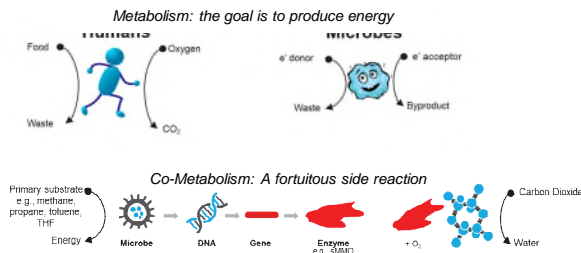
- 5 transects with 48 air sparge wells across Plants 2 and 4
- Nearly 5 miles of air hose and an air/propane injection network
- Groundwater flows from northwest to southeast and is cleaned by each transect
- Tubing installed above grade to save on costs and to accommodate future development
- Network of monitoring wells to track treatment progress
- Initial results showing up to a 97% reduction in 1,4-dioxane in just one year



## 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:



Plant 2 Biosparge Unit and Nutrient Injection Tanks