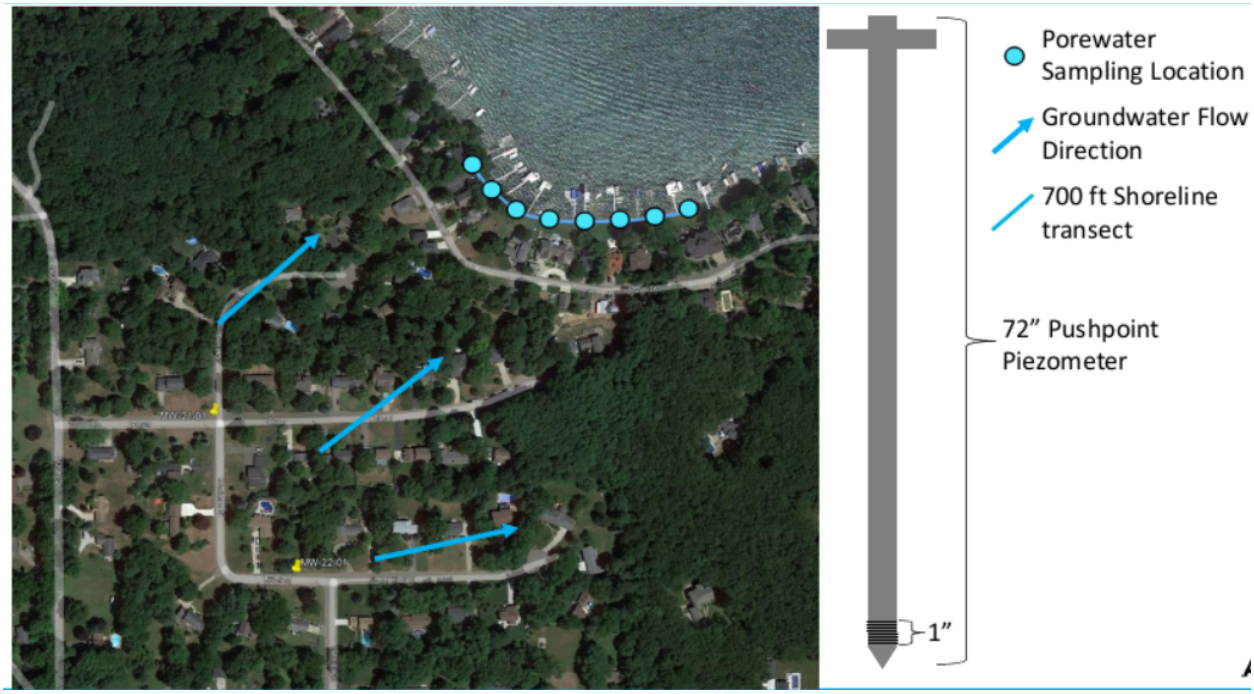
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Gull Lake Quality Organization Annual Meeting
June 11, 2024
PFAS Monitoring Around Gull Lake from EGLE Remediation and Redevelopment Division

- Ongoing groundwater monitoring in the area
  - EGLE RRD has completed 4 quarterly groundwater monitoring events and 1 semi-annual groundwater monitoring events since 2022.
    - 714 samples from 169 number of wells since 2018.
    - Another two rounds of semi annual sampling will be conducted this year.
  - Figures 1 – 4 show the results from the most recent groundwater monitoring events.
    - Take-away is that the results continue to be consistent over time.
  - Figures 5 – 7 show the extent of PFAS in the shallow and deep aquifers.

- Planned pore water study along Idlewild Drive, northeast of Delmar (pending access)
  - What is pore water?
    - Water contained in the pores in soil and rock. When sampled near a water body, one can determine if the groundwater within the pores contains a contaminant of concern that will get into the surface water body.
  - Why do we care about pore water?
    - The object of study is to determine if PFAS in shallow groundwater is venting/discharging to Gull Lake in the study area.
  - How will the data be collected?
    - Collect discrete pore water samples from 1 foot and 5 feet below ground surface at each sample location.
    - Analyze for PFAS, Hardness, Nitrite, Nitrate, Ammonia, Dissolved Organic Carbon, and collect Water Quality Parameters.



- EPA set maximum contaminant levels (MCLs) for six PFAS compounds on April 10, 2024.

Compound	Final MCL	Final MCL (enforceable levels)
PFOA	Zero	4.0 ppt
PFOS	Zero	4.0 ppt
PFHxS	10 ppt	10 ppt
PFNA	10 ppt	10 ppt
HFPO-DA (commonly known as GenX Chemicals)	10 ppt	10 ppt
Mixtures containing two or more of PFHxS, PFNA, HFPO-DA, and PFBS	1 (unitless) Hazard Index	1 (unitless) Hazard Index

ppt – parts per trillion, also expressed as ng/L.

- EGLEs current MCLs for PFAS set in August 2020

Compound	Drinking Water MCL
PFOA	8 ppt
PFOS	16 ppt
PFHxS	51 ppt
PFNA	6 ppt
HFPO-DA (commonly known as GenX Chemicals)	370 ppt
PFHxA	400,000 ppt
PFBS	420 ppt

ppt – parts per trillion, also expressed as ng/L.

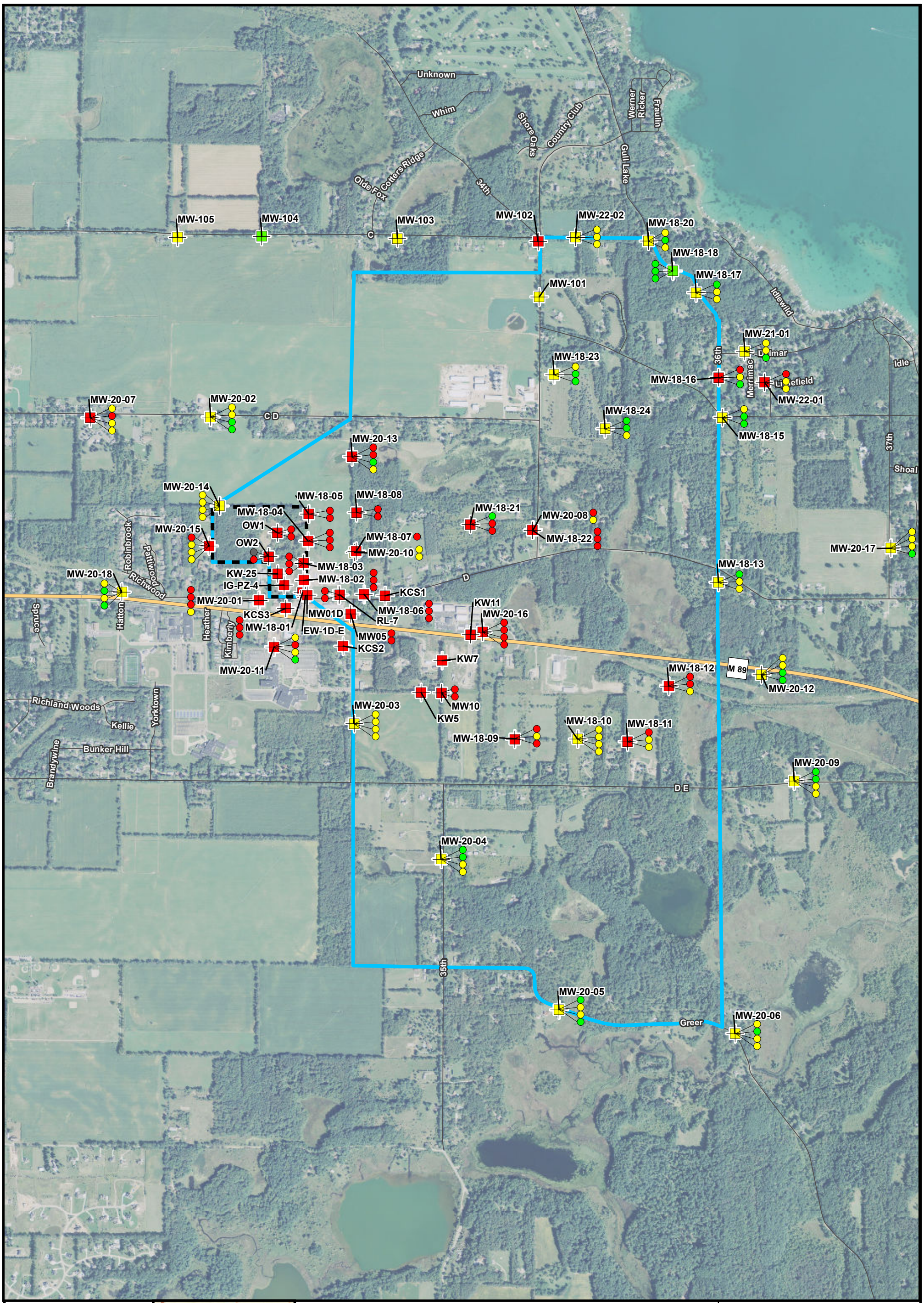
- What does that mean for Michigan?
  - This does not change things for us…yet. In order to use the federal MCLs in the state the legislature will need to promulgate them as our State MCLs within the Safe Drinking Water Act and then the MCLs can be promulgated as our Part 201 Cleanup Criteria to be applied to environmental contamination sites.
- What does that mean for the N 34th Street Facility and associated study area?
  - This process takes a bit of time, but once officially adopted there may be the need for some additional evaluation/investigation by EGLE and/or MDHHS.

Additional Resources:

- MPART: PFAS Geographic Information System: PFAS Sites, surface waters sampled, public water supplies sampled, and fish sampled. (https://www.michigan.gov/egle/maps-data/mpart-pfas-gis)
- RIDE Mapper: Part 201 Facilities and 213 Sites, Brownfield Site, restrictions, and ordinances (connects to the RIDE database to search site files). (https://www.michigan.gov/egle/maps-data/ride-mapper)
- RIDE: Part 201 Facilities and 213 Sites with associated site files (Note: not all files have been entered yet – goal is 2030). (https://www.michigan.gov/egle/maps-data/ride)

Speaker: Erica Bays, NFA Specialist
EGLE RRD Compliance and Enforcement
269-350-0080 or BaysE@Michigan.gov

Site Contact: Rachel Golota, Project Manager
EGLE RRD Kalamazoo District
269-370-2404 or GolotaR@Michigan.gov



AECOM

Drawn: DP Date: 8/30/2022

Approved: JB Date: 8/30/2022

Project #: 60582450

Legend

Monitoring Well

- Non-Detect for Part 201 PFAS Compounds
- Detection below Part 201 PFAS Criteria, but no Exceedance
- One or more Part 201 PFAS Criteria Exceeded
- Production Plated Plastics
- Study Area

N

0 0.2 0.4 Miles

QUARTER 1 SAMPLING
PFAS HEAT MAP

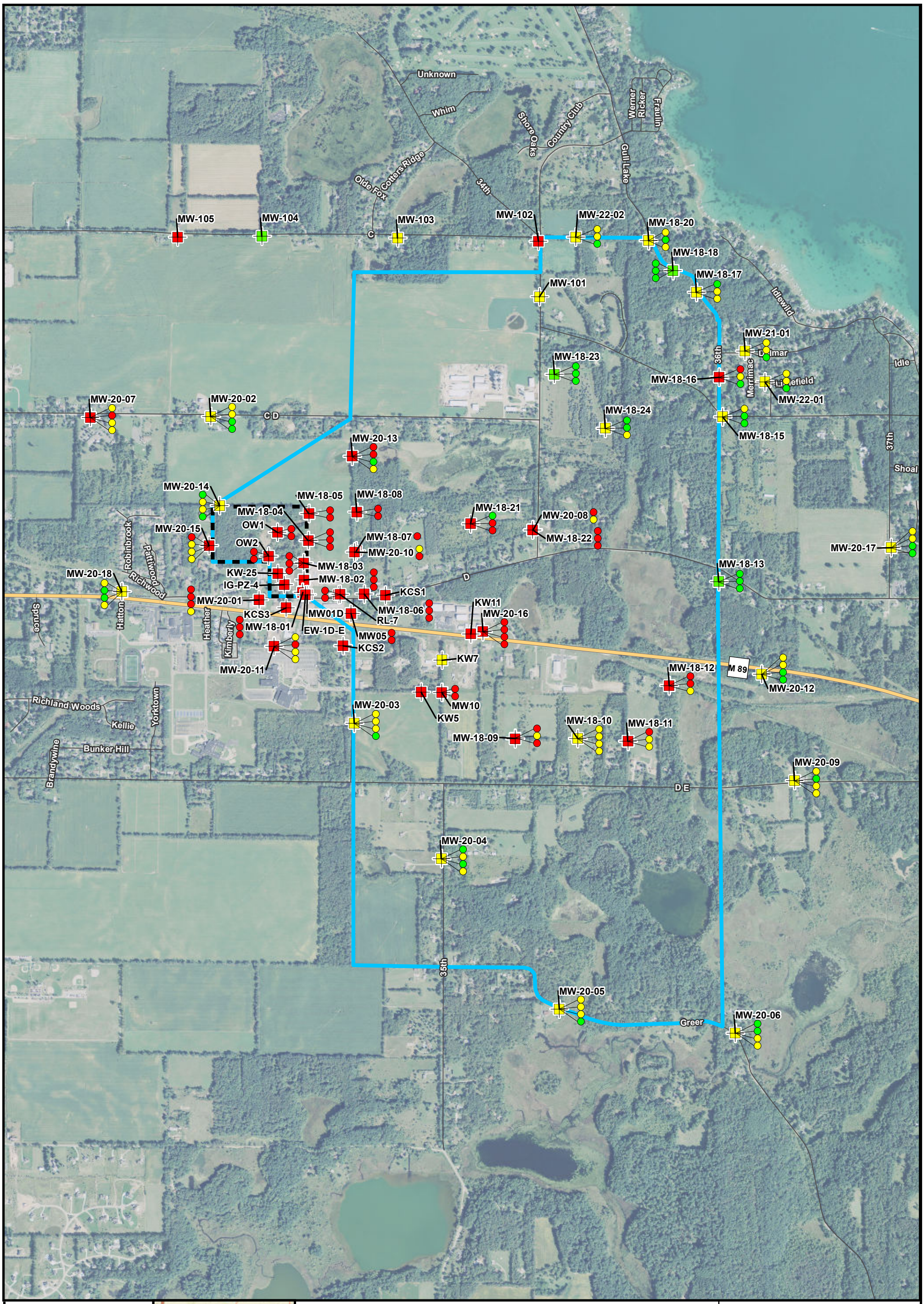
Figure 1

DRAFT

RICHLAND, MI

Document Path: L:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\GIS_Data\GIS\Richland\MXDs\First_Quarter_Sampling_PFAS.mxd

Aerial imagery: 2014 NAIP Imagery



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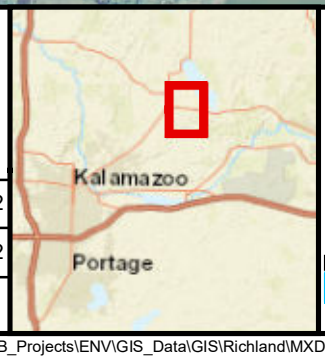
Project #: 60582450



Legend

Monitoring Well

- Non-Detect for Part 201 PFAS Compounds
- Detection below Part 201 PFAS Criteria, but no Exceedance
- One or more Part 201 PFAS Criteria Exceeded
- Production Plated Plastics
- Study Area

0 0.2 0.4 Miles

N

QUARTER 2 SAMPLING
PFAS HEAT MAP

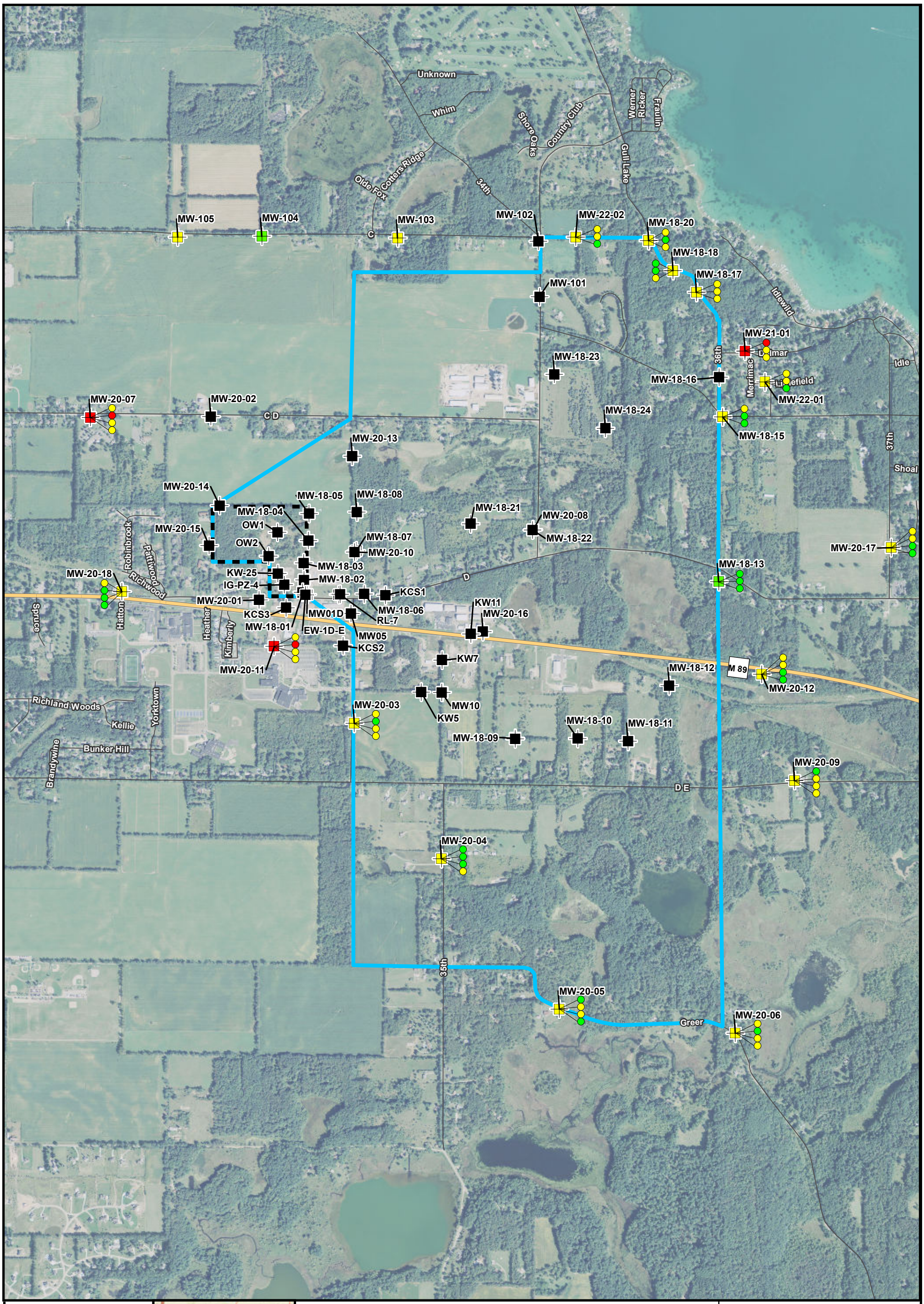
Figure 2

DRAFT

RICHLAND, MI

Document Path: L:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\GIS_Data\GIS\Richland\MXDs\Second_Quarter_Sampling_PFAS.mxd

Aerial imagery: 2014 NAIP Imagery



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Drawn: DP Date: 1/31/2023

Approved: JB Date: 1/31/2023

Project #: 60582450

Legend

Monitoring Well

- Non-Detect for Part 201 PFAS Compounds
- Detection below Part 201 PFAS Criteria, but no Exceedance
- One or more Part 201 PFAS Criteria Exceeded
- Not Sampled

- Production Plated Plastics
- Study Area

N

0 0.2 0.4 Miles

QUARTER 3 SAMPLING
PFAS HEAT MAP

Figure 3

DRAFT

RICHLAND, MI

Document Path: L:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\GIS_Data\GIS\Richland\MXDs\Third_Quarter_Sampling_PFAS.mxd

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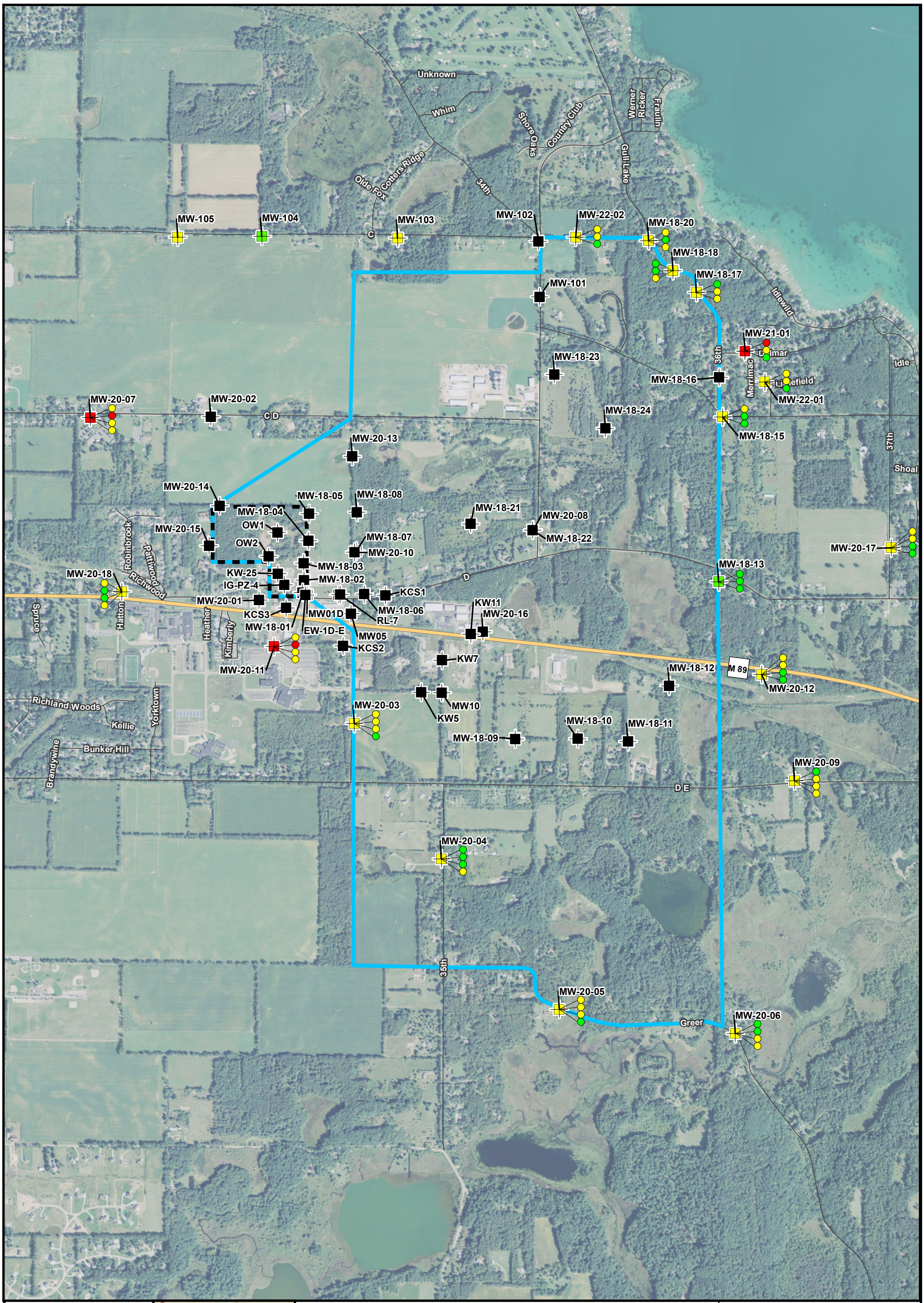

AECOM

Drawn: DP Date: 5/1/2023

Approved: JB Date: 5/1/2023

Project #: 60582450

Legend

Monitoring Well

- Non-Detect for Part 201 PFAS Compounds
- Detection below Part 201 PFAS Criteria, but no Exceedance
- One or more Part 201 PFAS Criteria Exceeded
- Not Sampled

Production Plated Plastics

Study Area

N

0 0.2 0.4 Miles

QUARTER 4 SAMPLING PFAS HEAT MAP

Figure 4

DRAFT

RICHLAND, MI

Document Path: L:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\GIS_Data\GIS\Richland\MXDs\Fourth_Quarter_Sampling_PFAS.mxd

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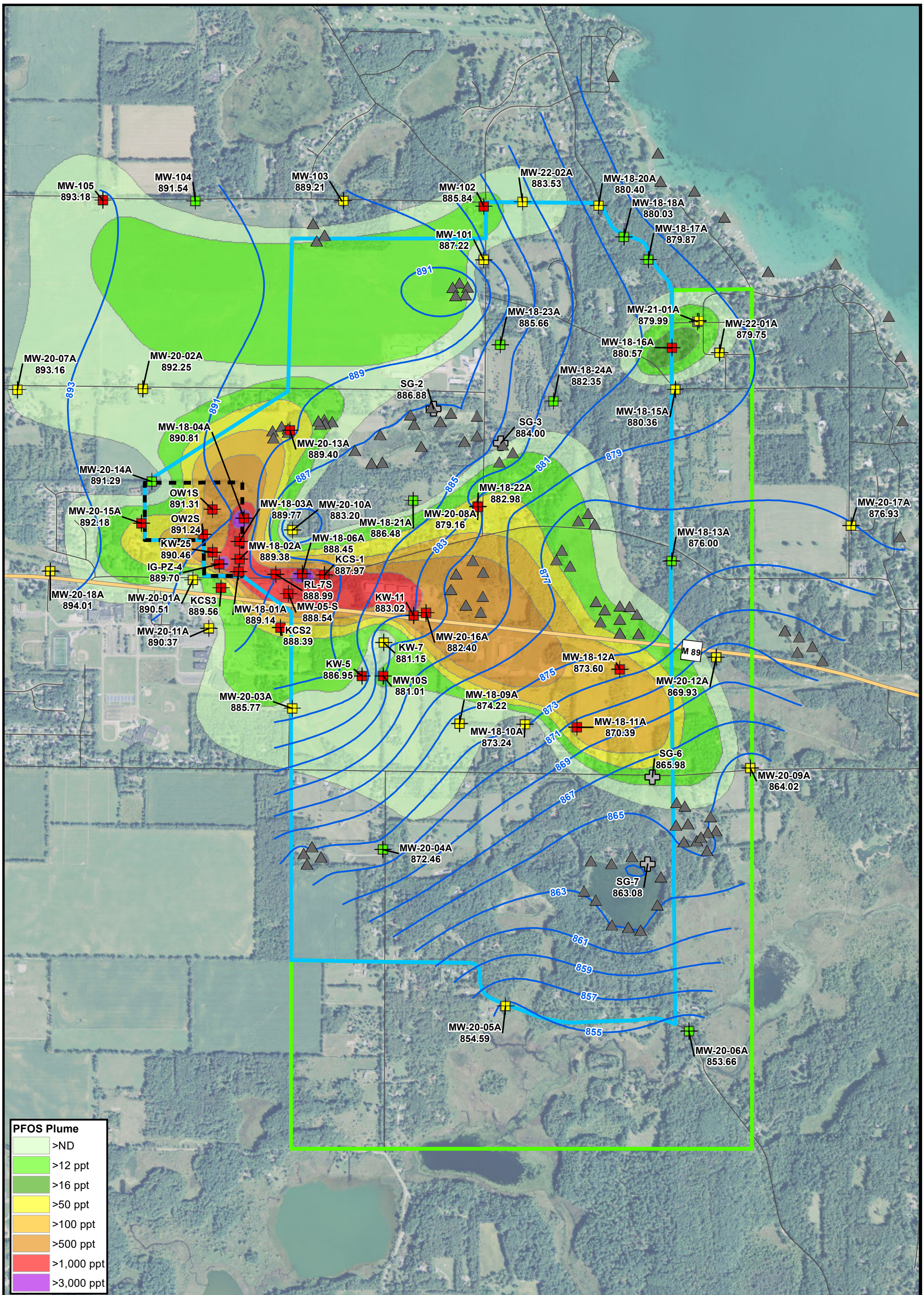

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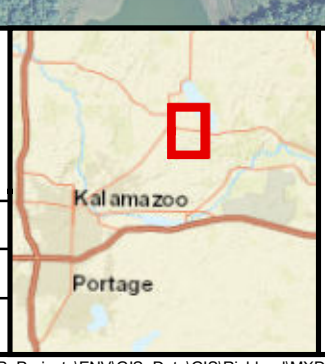
Approved: JB Date: 1/25/2024

Project #: 60582450



Legend

Monitoring Well

- Non-Detect for Part 201 PFAS Compounds
- Detection below Part 201 PFAS Criteria, but no Exceedance
- One or more Part 201 PFAS Criteria Exceeded
- Monitoring Well Not Included in Contour
- Staff Gauge
- Lake (Elevation Estimated)
- August 2022 Groundwater Contour (2' interval)
- Production Plated Plastics
- Study Area
- Buffer Zone

N

0 0.15 0.3 Miles

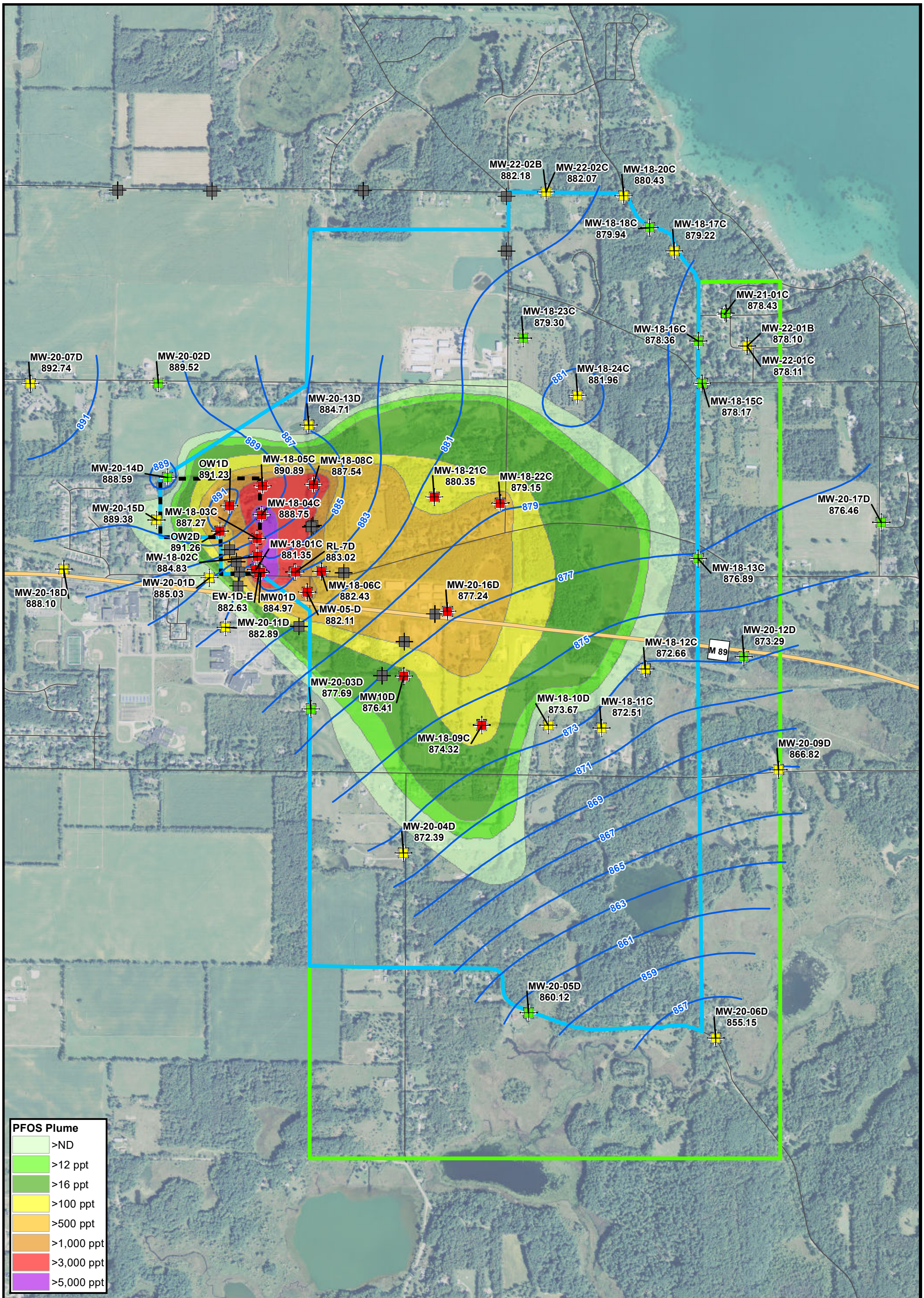
SHALLOW GROUNDWATER CONTOURS
AUGUST 2022 ELEVATIONS USING ESTIMATED LAKE ELEVATIONS

DRAFT
Figure 5

RICHLAND, MI

Document Path: L:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\GIS_Data\GIS\Richland\MXDs\Aug2022_Shallow_GW_Contours_Rev2_PFOS.mxd

Aerial imagery: 2014 NAIP Imagery



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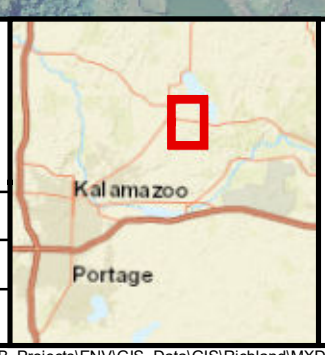
Approved: JB Date: 1/25/2024

Project #: 60582450



Legend

Monitoring Well

- Non-Detect for Part 201 PFAS Compounds
- Detection below Part 201 PFAS Criteria, but no Exceedance
- One or more Part 201 PFAS Criteria Exceeded
- Monitoring Well Not Included in Contour

- August 2022 Groundwater Contour (2' interval)
- Production Plated Plastics
- Study Area
- Buffer Zone

N

0 0.15 0.3 Miles

DEEP GROUNDWATER CONTOURS
AUGUST 2022 ELEVATIONS

DRAFT
Figure 6

RICHLAND, MI

Document Path: L:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\GIS_Data\GIS\Richland\MXDs\Aug2022_Deep_GW_Contours_PFOS.mxd

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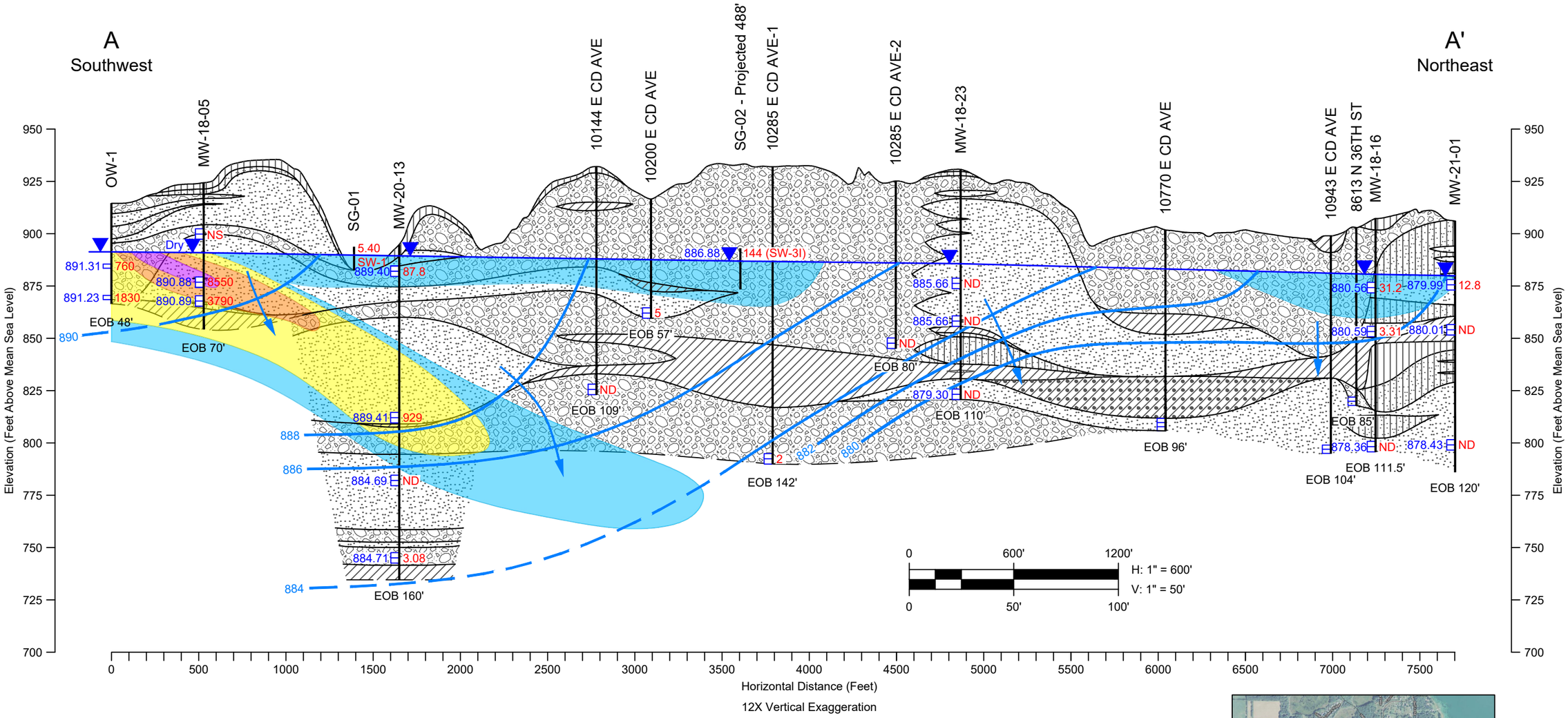


Borehole Legend

Borehole Designation → MW-18-05

Water Table - August 2022

Screen Interval → 890.88 8550 ← Total PFAS (ppt)
Water Level (feet AMSL) — Most Recent Sampling
August 1, 2022 — Event for Each Sample

End of Boring → EOB 70'

Groundwater Flow

880 — Groundwater Contour - August 2022
2 Foot Contour Interval

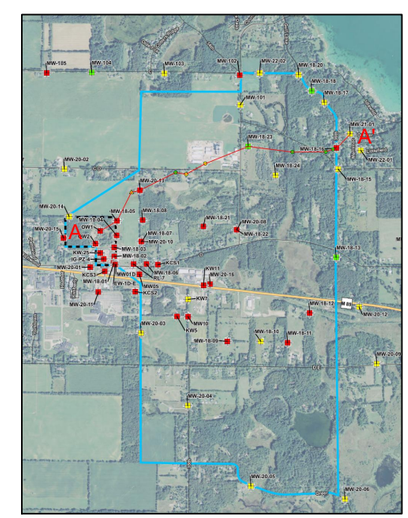
Groundwater Flow Direction

Inferred PFAS Plume

- >12 ppt
- >500 ppt
- >4,000 ppt
- >8,000 ppt

Main Stratigraphic Units

- Clay, Silty Clay or Sandy Clay
- Gravelly Clay
- Silt or Sandy Silt
- Silty Sand
- Sand
- Gravelly Sand or Sandy Gravel



Index Map

GEOLOGIC CROSS SECTION A - A'

RICHLAND PFAS EVALUATION
RICHLAND, MICHIGAN

Project No.: 60627149 Date: 2024-01-25

Figure: 7

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