Oscoda Area and Former Wurtsmith Air Force Base PFAS Update Meeting

The Webinar will Begin Shortly

November 3, 2021

MPART

Webinar Housekeeping

All lines are muted during the webinar.

We are recording this webinar

How to ask a question in Zoom

Submit your questions using the "**Q/A**" box in at the bottom of your screen.

Click the "hand" icon at the bottom of your screen.

Type #2 to raise your hand.

#2

Welcome

Abigail Hendershott, MPART Executive Director
Michigan PFAS Action Response Team
616-888-0528
HendershottA@Michigan.gov

Introductions, Logistics and Agenda

- Introductions – Abigail Hendershott, MPART Executive Director
- Agenda:
  - Michigan Department of Environment, Great Lakes, and Energy (EGLE) Update
  - Michigan Department of Health and Human Services (MDHHS) Update
  - Michigan Department of Natural Resources (DNR) Update
  - Comments, Questions, and Answers
  - Meeting Conclusion

*** This meeting is being recorded.***

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Former Wurtsmith Air Force Base

Beth Place, Project Manager
Remediation and Redevelopment Division
517-899-7924| placeb1@michigan.gov

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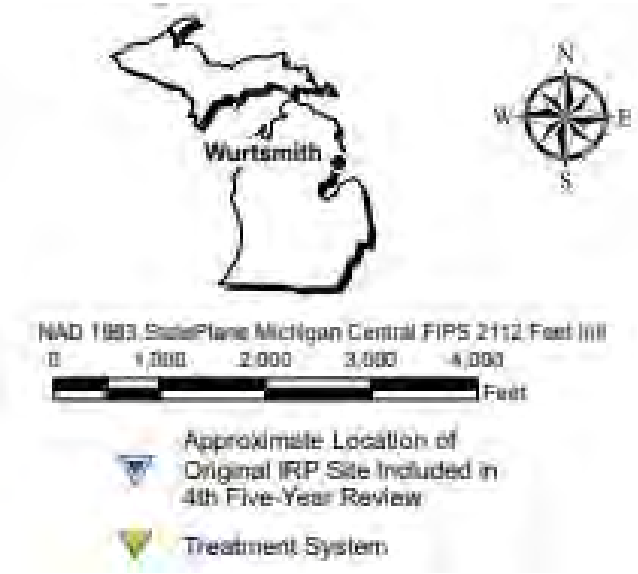
Former Wurtsmith Air Force Base

- 1923 Established
- 1993 Officially closed under the Base Realignment and Closure decision, 1991
- Most Acreage has been transferred for reuse.
- Air Force is the lead
- Comprehensive Environmental Response, and Liability Act (CERCLA)

Source: Bay West 4th Five Year Review Work Plan, 2019, https://www.afcec.af.mil/Home/BRAC/Wurtsmith.aspx

Wurtsmith

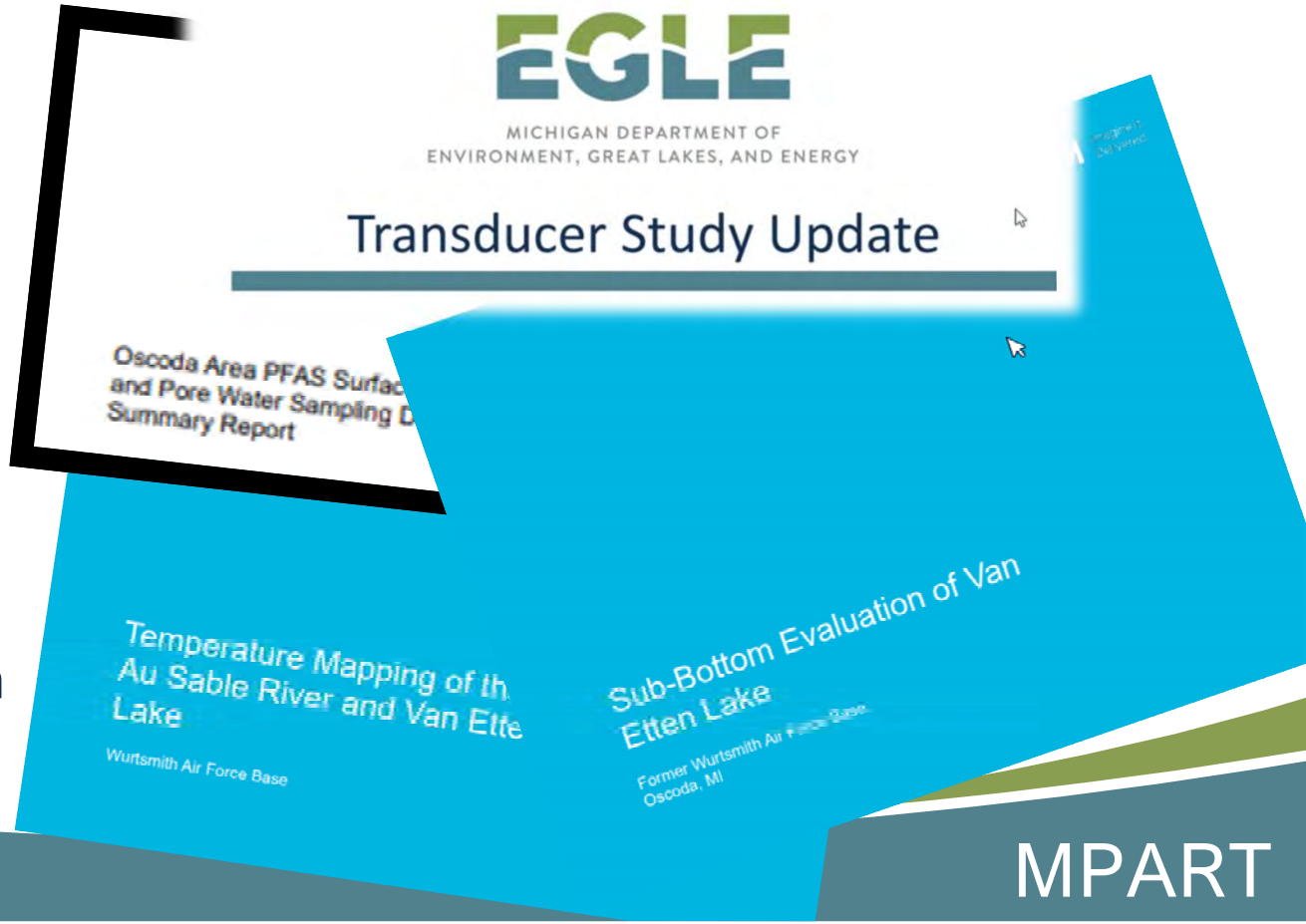
'Historical' Environmental Response



Source: Bay West 4th Five Year Review Work Plan, 2019

EGLE PFAS Response

- Groundwater
- Surface Water
- Soil
- Fish
- Wildlife
- Residential Wells
- Research
- Michigan.gov/Wurtsmith



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Past Air Force PFAS Response

Preliminary Assessment

Site Inspections

Removal Actions

- FT02 Pump and Treatment System (PTS)
- Central Treatment System (Arrow PTS and Benzene PTS)
- Mission Street PTS

Source: Bay West 4th Five Year Review Work Plan, 2019

Current Air Force PFAS Response

- **Remedial Investigation**
- Van Etten Lake @ Ratliff Park Interim Remedial Action
- FT002 at Clarks Marsh Interim Remedial Action
- FT002 Soil Removal

Remedial Investigation

Van Etten Lake Interim Remedial Action at Ken Ratliff Memorial Park

Figure 1: Site Location Map

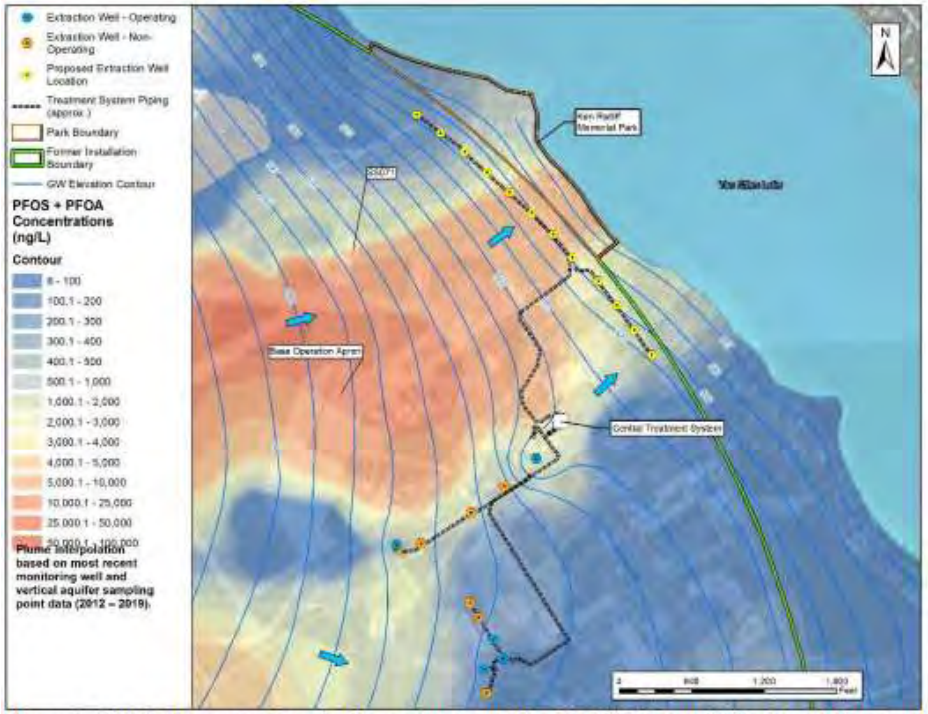
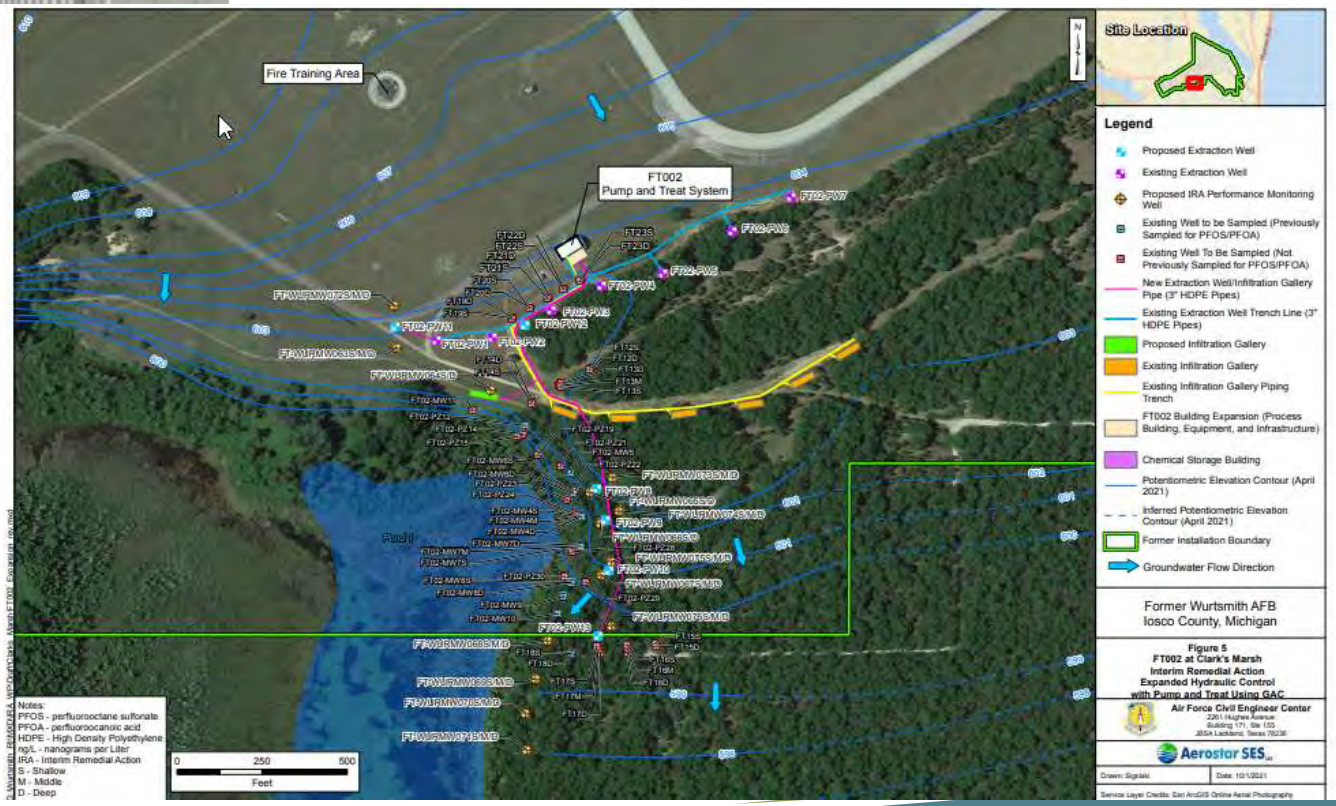


Figure 2: PFOS Concentrations in Groundwater at Ken Ratliff Memorial Park and Proposed Location of Hydraulic Control System for Alternatives 2 and 3

Source: AR#610451

FT002 Interim Remedial Action

Source: Air Force



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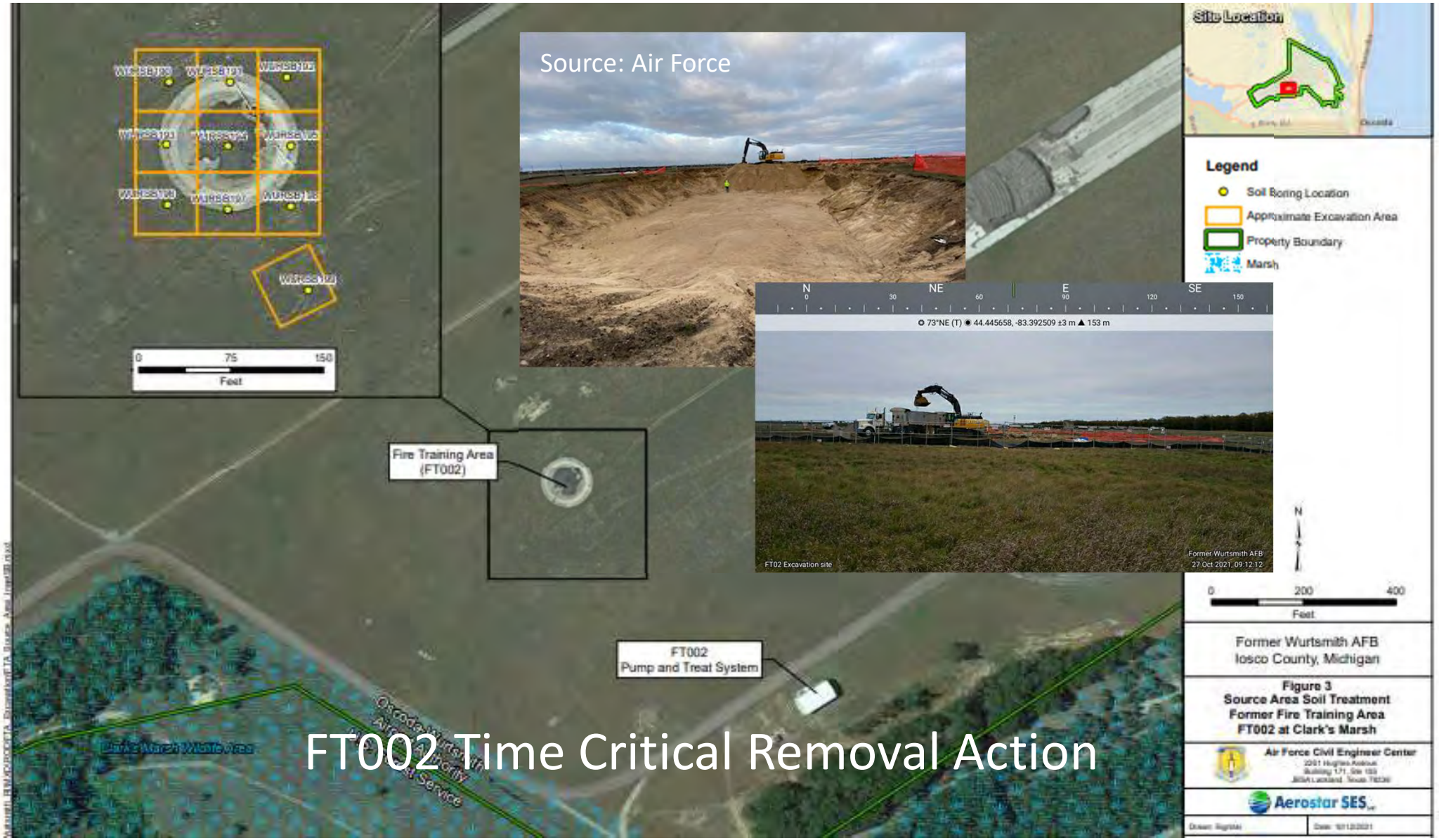
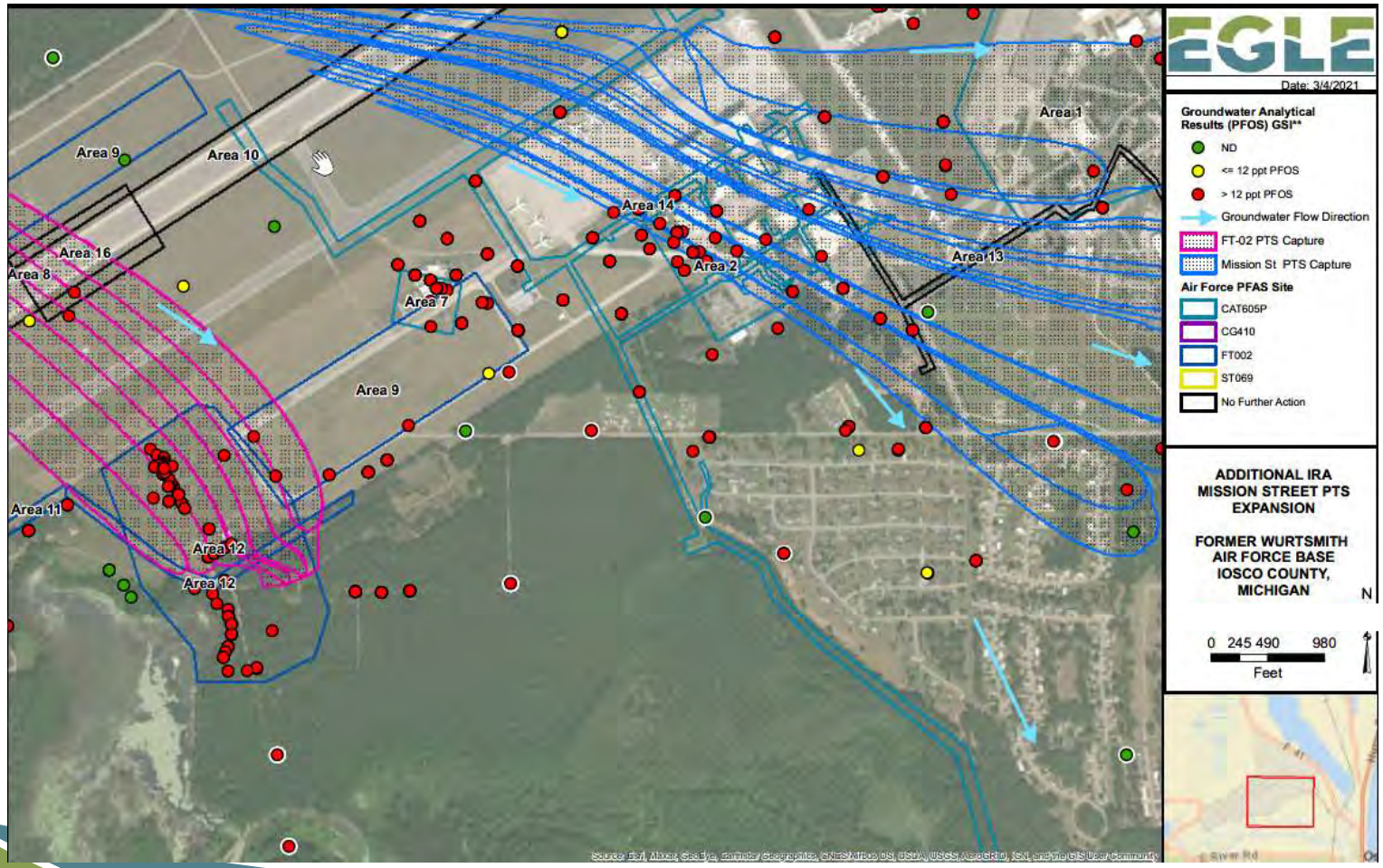


FT002 Time Critical Removal Action



Other Updates

- LF30/31
- Additional Interim Remedial Action Request

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Oscoda Area Sites

Amanda Armbruster, Geologist
Remediation and Redevelopment Division
989-450-6377 | armbrustera@michigan.gov

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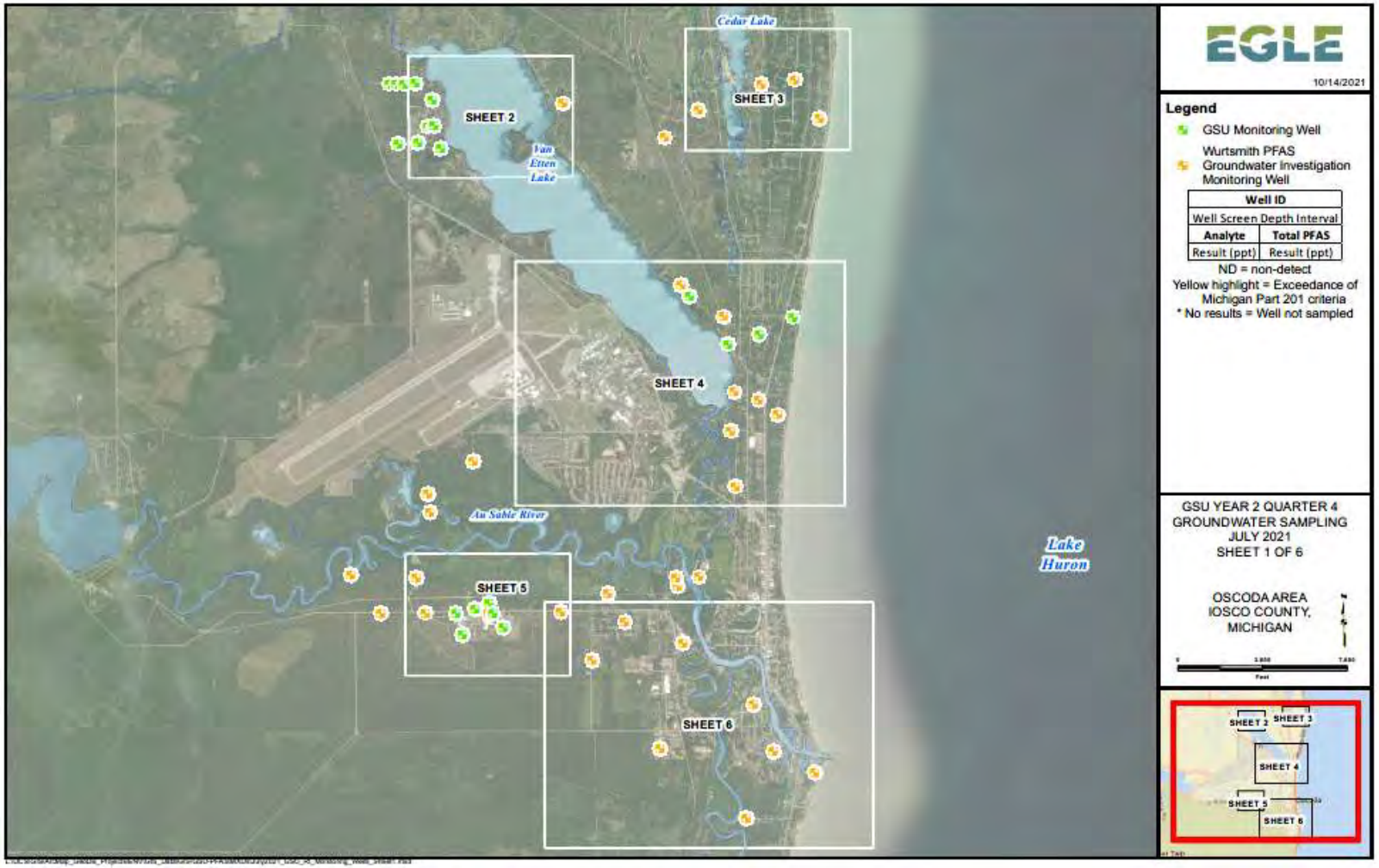
Oscoda Township & Au Sable Township



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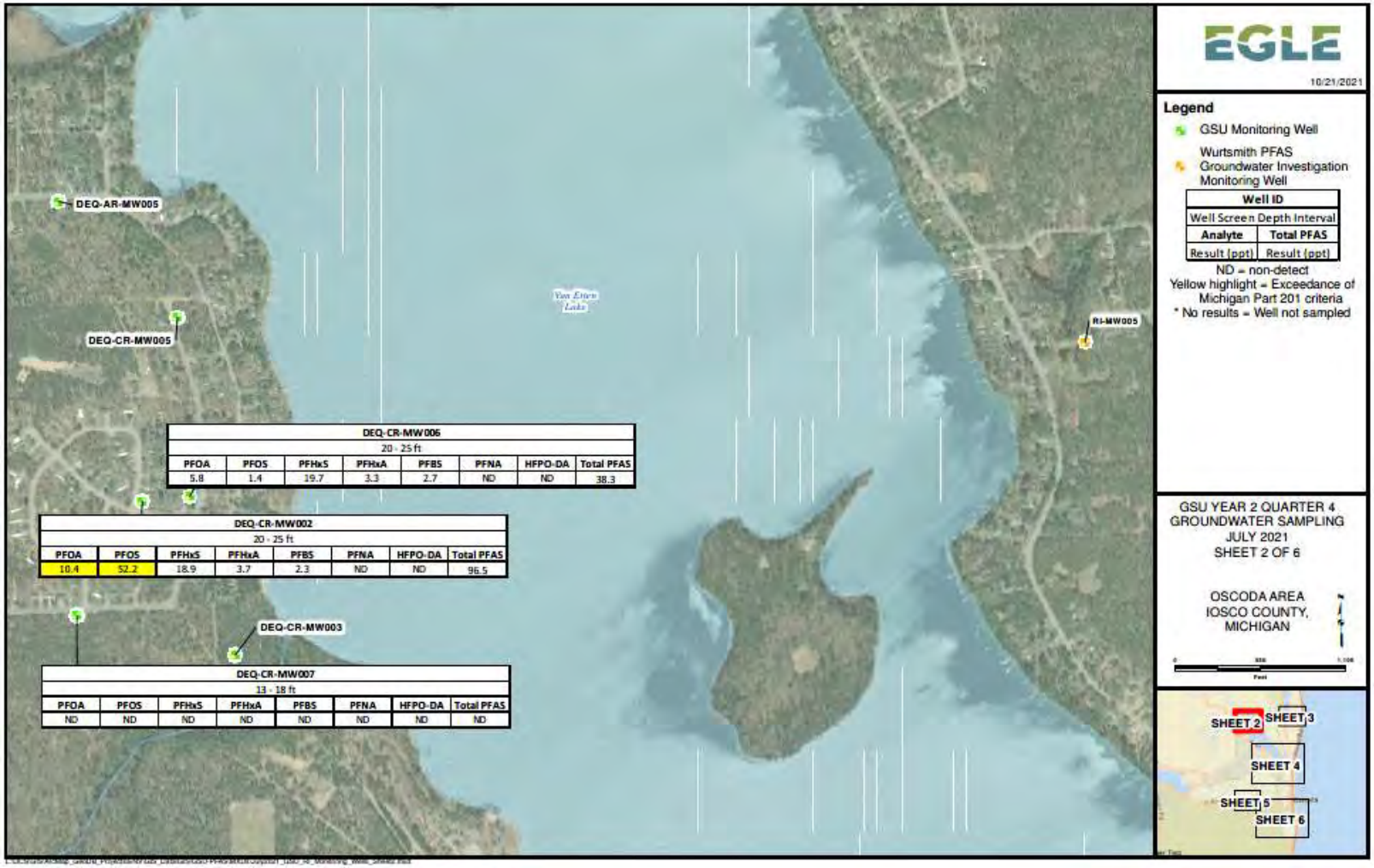
Colbath Road Area



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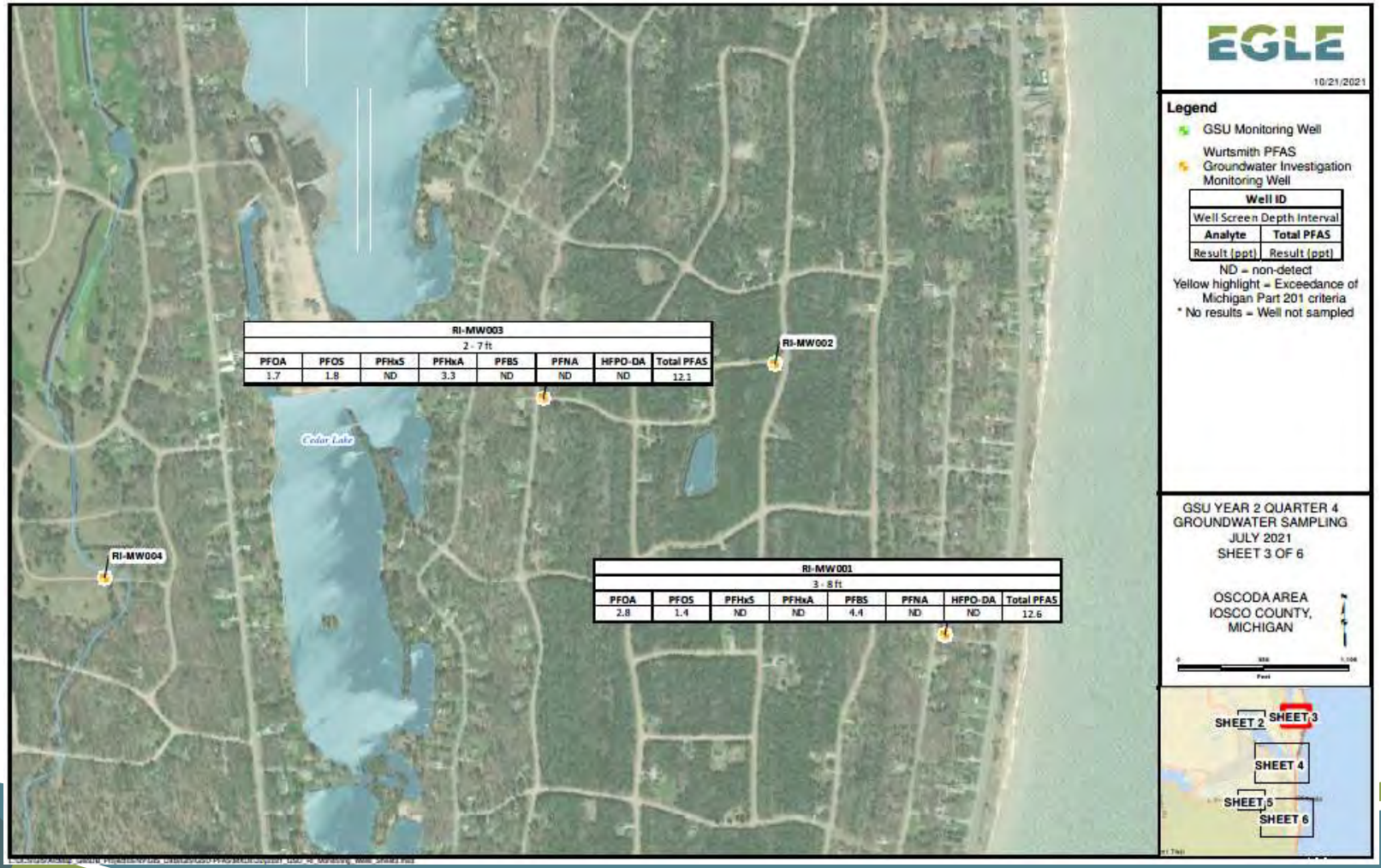
Cedar Lake Area



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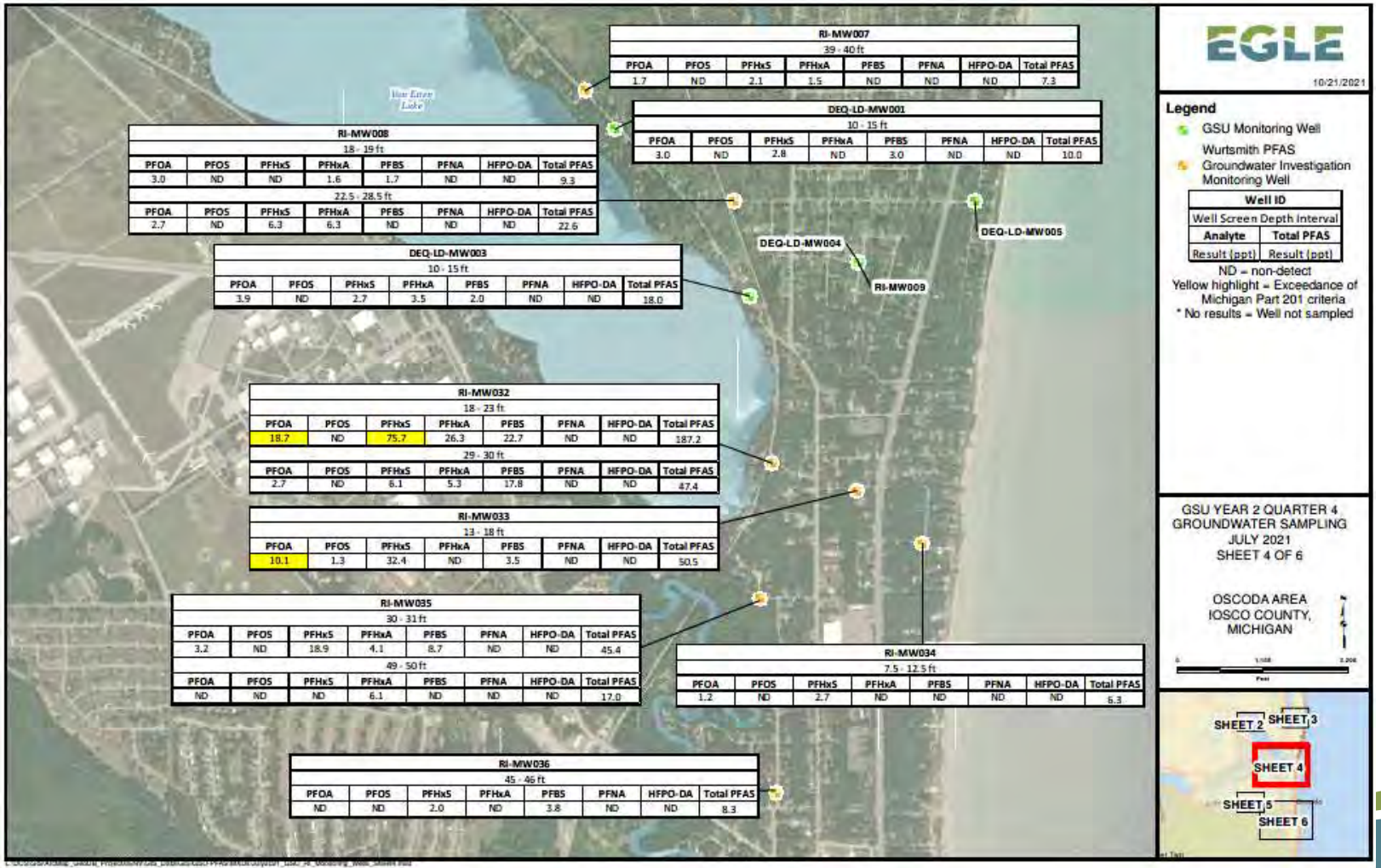
Loud Drive Area



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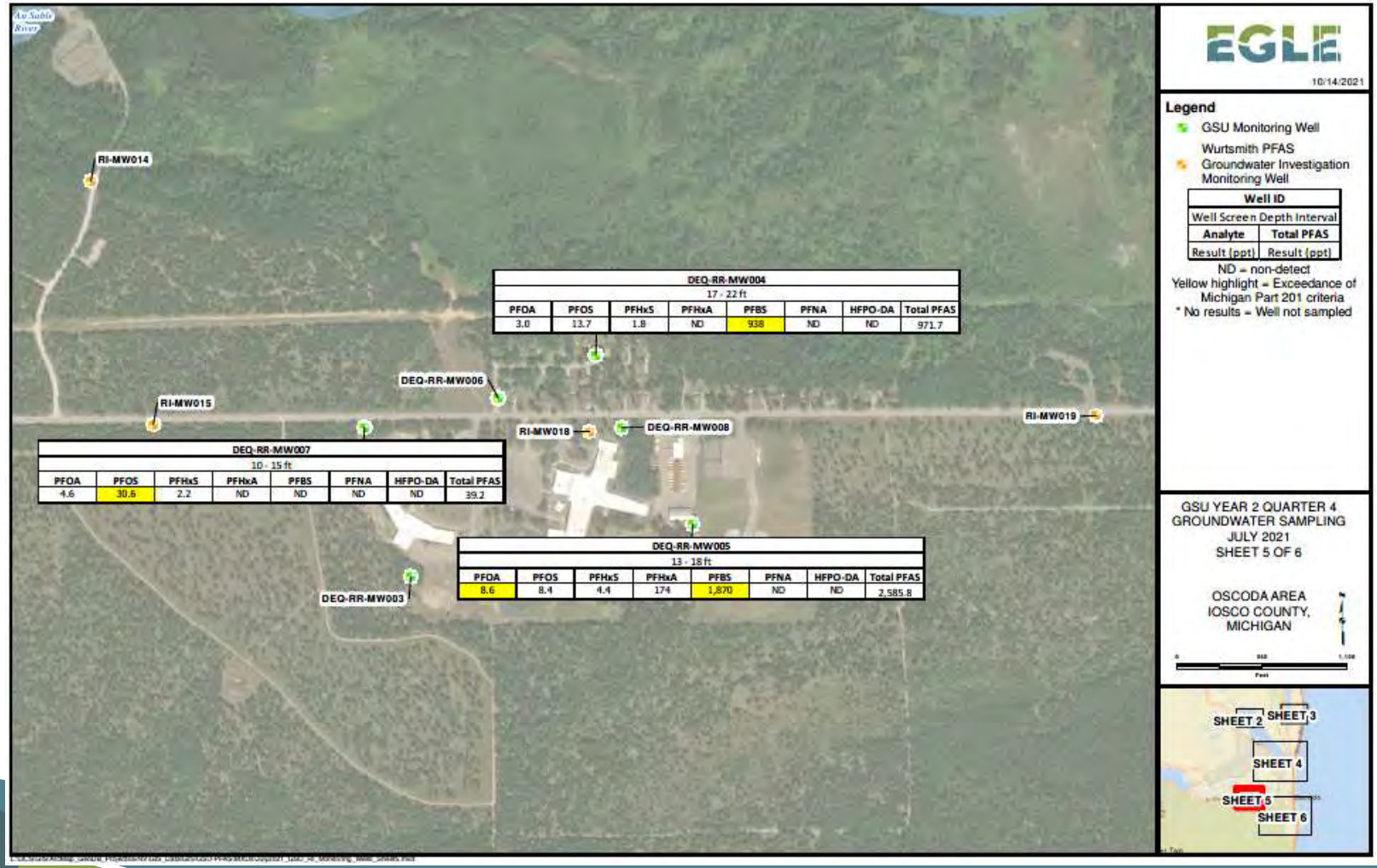
River Road Oscoda Schools Area



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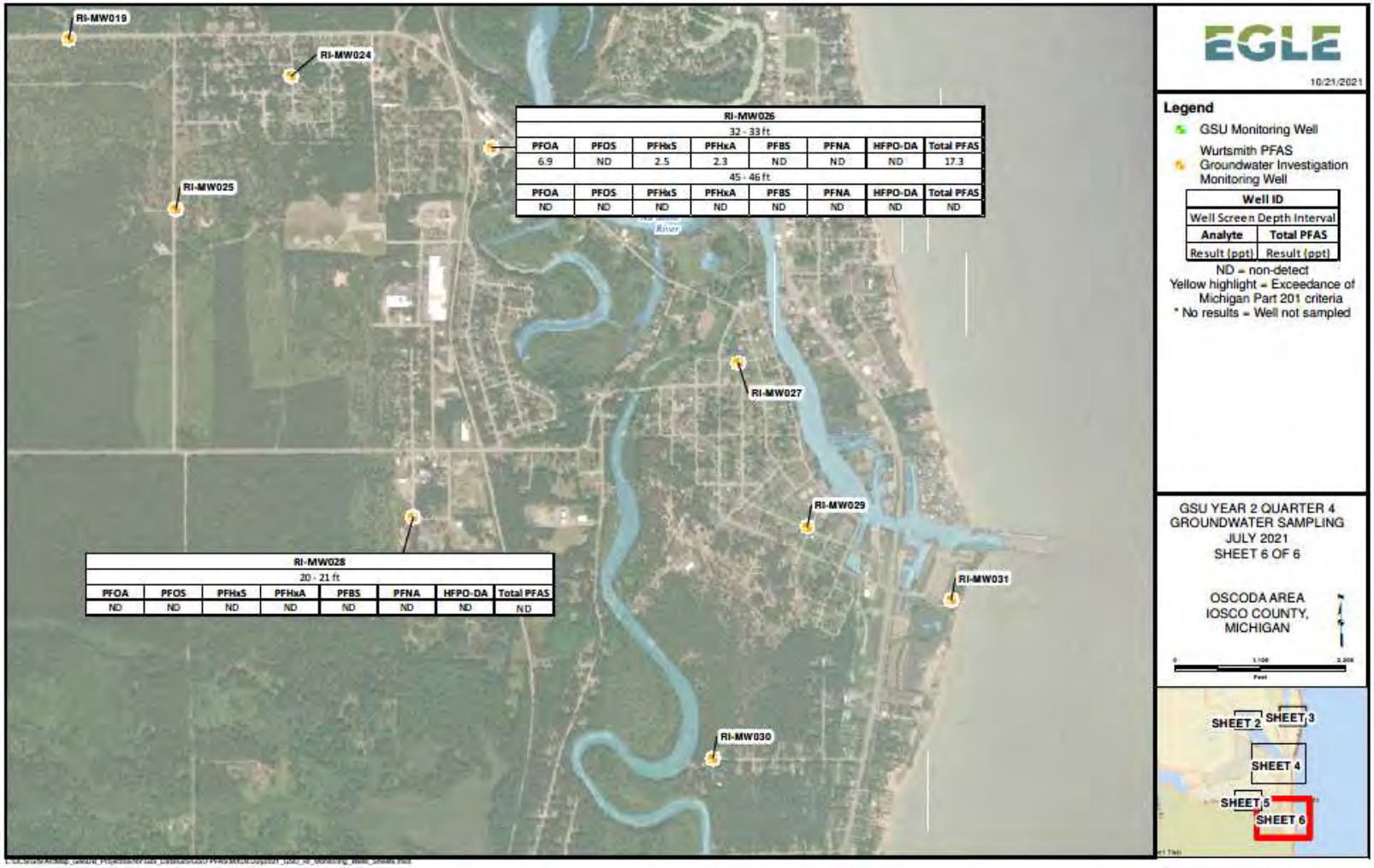
Au Sable Township Area



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2021 Sediment PFAS Study Updates

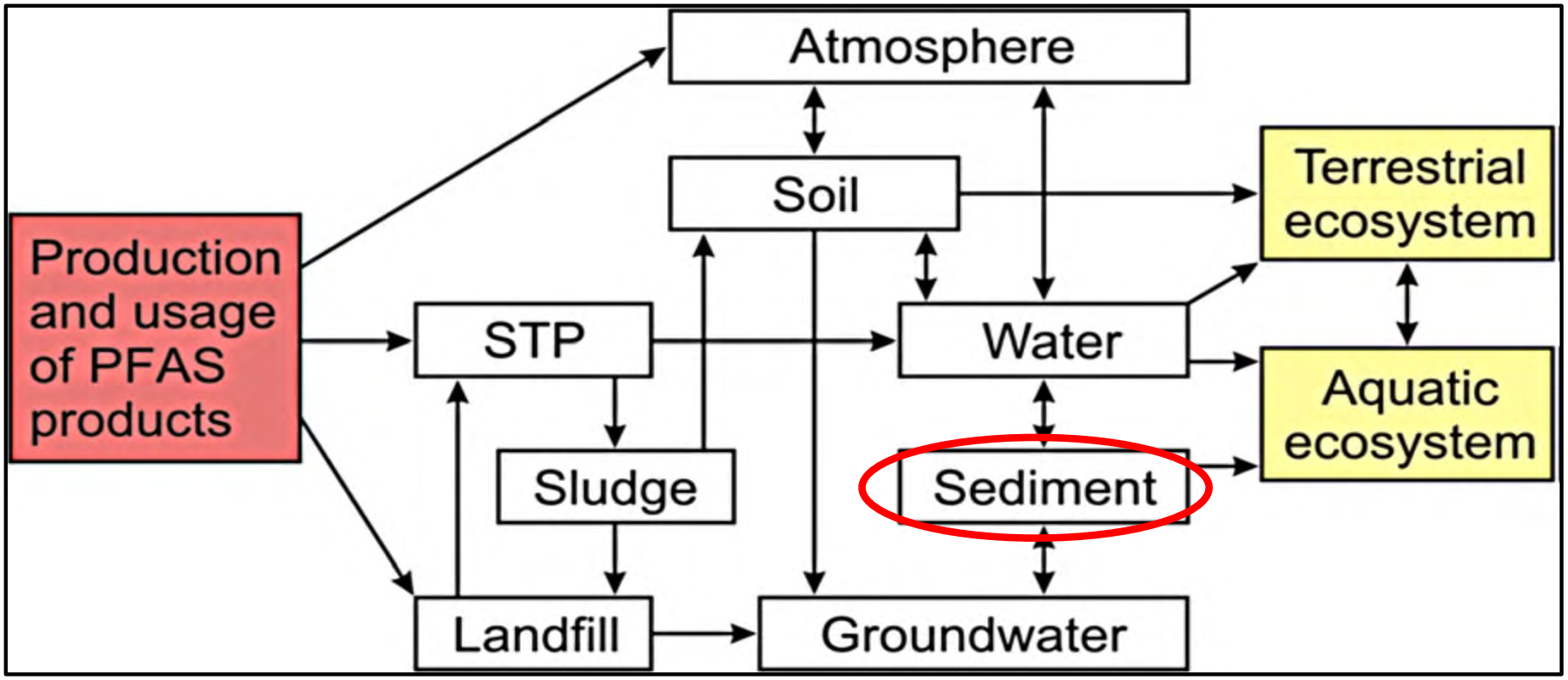
Lee Schoen
Aquatic Biologist
Water Resources Division

MPART

Outline

- Background on PFAS in sediment
- EGLE-WRD sediment study plans in 2021-2022

Background - PFAS in Sediment



Ahrens, et. al., 2014.

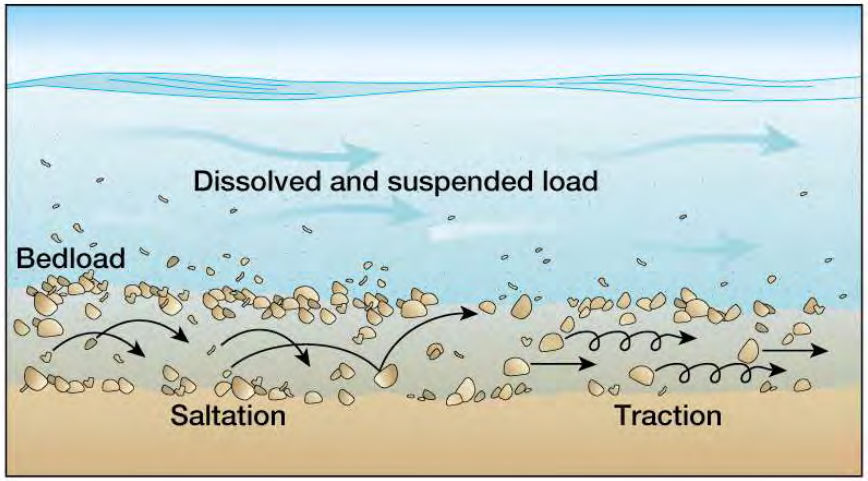
Background - PFAS in Sediment

- "Among the environmental media, the largest global reservoirs of PFASs are proposed to be oceans and sediment" (Ahrens et al., 2014)

- Sink or source?

Sink
- Chemical binding
- Physical burial

Source
- Transport
- Resuspension
- Physical/chemical weathering
- Dissolution
- Biological uptake



geologyin.com

Goal 1: Toxicity to sediment-dwelling aquatic life

Sediment Ecological Screening Values

Screening values, not standards

- Evaluate ecological risk, potential for impact
- Guide further testing

Referenced from:

- WRD-048: “Sediment Testing for Dredging Projects”
- EPA RCRA
- Primary Literature

Table 2. Aquatic Life and Wildlife Screening Guidelines

CHEMICAL	CONCENTRATION
Metals (mg/kg)	
Arsenic*	33.00
Cadmium*	4.98
Chromium	111.00
Copper*	149.00
Lead*	128.00
Mercury*	1.06
Nickel*	48.60
Selenium**	1.90
Zinc*	459.00
PAH (ug/kg)	
Anthracene*	845
Benz(a)anthracene*	1,050
Benzo(a)pyrene*	1,450
Chrysene*	1,290
Fluorene*	536
Fluranthene*	2,230
Naphthalene*	561
Phenanthrene*	1,170
Pyrene*	1,520
Total PAH*	22,800
Total PCB (mg/kg)	0.676
Dioxin/furans as 2,3,7,8 TCDD TEQ (ug/kg)***	0.00012

WRD-048

Study Plans for 2021

Goal 1: Toxicity of PFAS to sediment-dwelling aquatic life

- Potential for direct impacts on benthic communities?

Goal 2: Sediment as a source of PFAS to aquatic food webs

- Potential source to aquatic food webs?

Goal 1: Toxicity to sediment-dwelling aquatic life

Field-collected sediments (6 locations)

- Clark's Marsh
- Rogue River
- Fort Gratiot
- Huron River/Norton Creek
- Helmer Creek
- Pigeon River

*Each will have an upstream reference, for a total of 12 locations

Toxicity to Sediment-Dwelling Aquatic Life

Water Resources Division

EGLE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

Goal 1: Toxicity to sediment-dwelling aquatic life

- Surface water characterization
  - PFAS

- Sediment characterization
  - PFAS, plus analytes from WRD-048
  - pH, CEC, grain size, TOC, Mg and Ca

*CEC = Cation Exchange Capacity

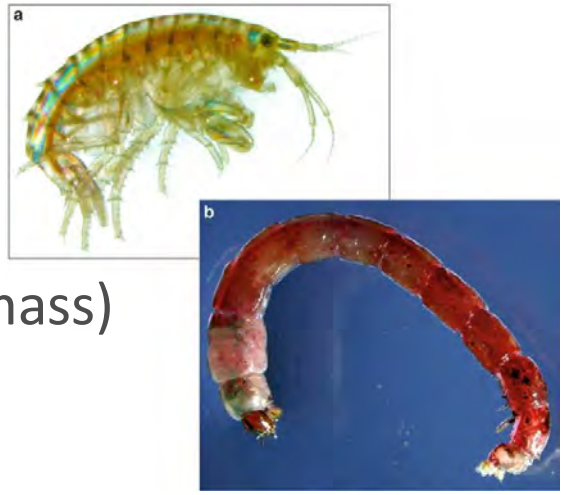
*TOC = Total Organic Carbon


SATURN


SATURN

Goal 1: Toxicity to sediment-dwelling aquatic life

- Toxicity Testing
  - 10-d Acute Toxicity, H. azteca
  - 28-d Chronic Toxicity, H. azteca (survival, growth, biomass)
  - 10-d Acute Toxicity, C. dilutus
  - 20-d Chronic Toxicity, C. dilutus (survival, growth, biomass)
  - 28-d biouptake toxicity test with L. variegatus (PFOS bioconcentration)



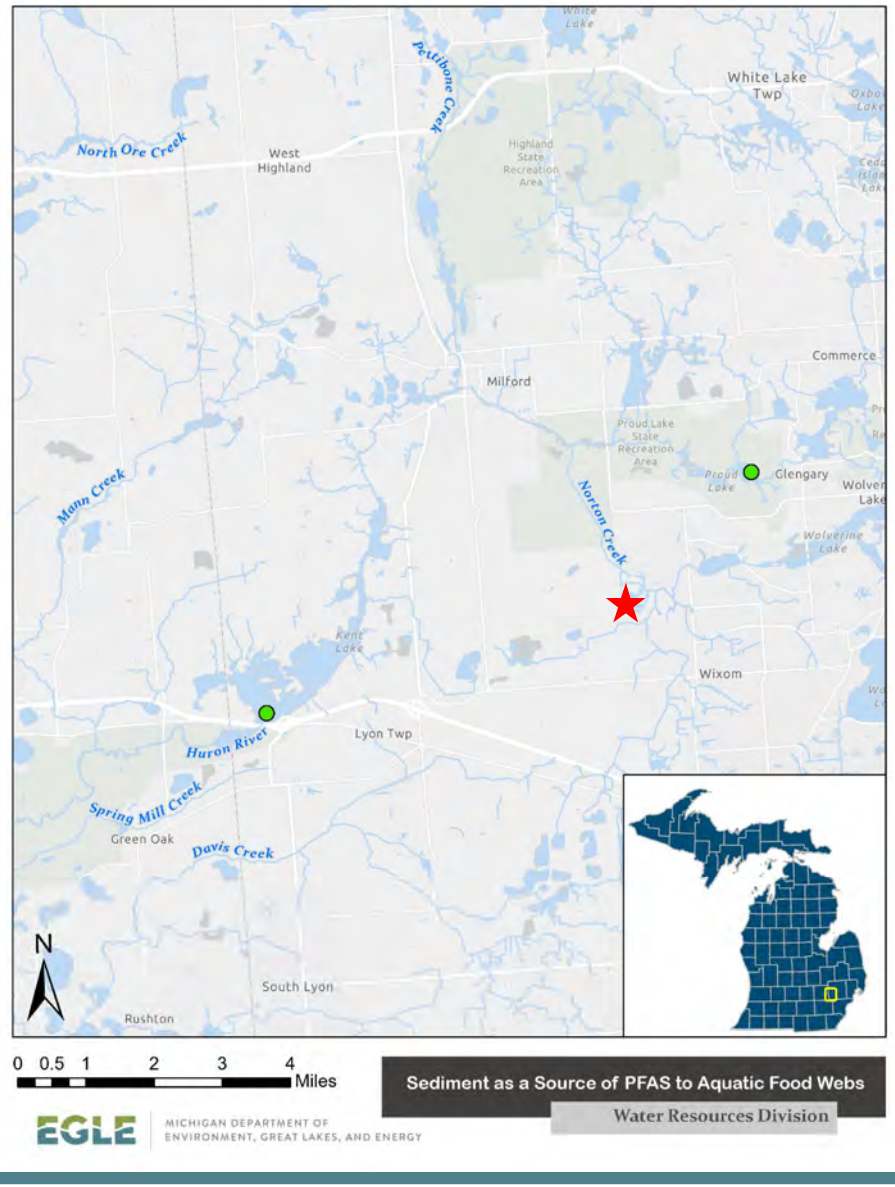
Lotufo, et al., 2014

Goal 2: Sediment as a source of PFAS to aquatic food webs

Study Area – Huron River Watershed

- Kent Lake (investigative area)
- Proud Lake (upstream reference area)

Huron River Water Trail


White Lake
Pettibone Creek
White Lake Twp
North Ore Creek
West Highland
Highland State Recreation Area
Commerce
Milford
Proud Lake State Recreation Area
Proud Lake
Glengary
Wolver Lake
Mann Creek
Norton Creek
Wolverine Lake
Kent Lake
Wixom
Huron River
Lyon Twp
Spring Mill Creek
Green Oak
Davis Creek
N
South Lyon
Rushton
0 0.5 1 2 3 4
Miles
Sediment as a Source of PFAS to Aquatic Food Webs
Water Resources Division
EGLE
MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

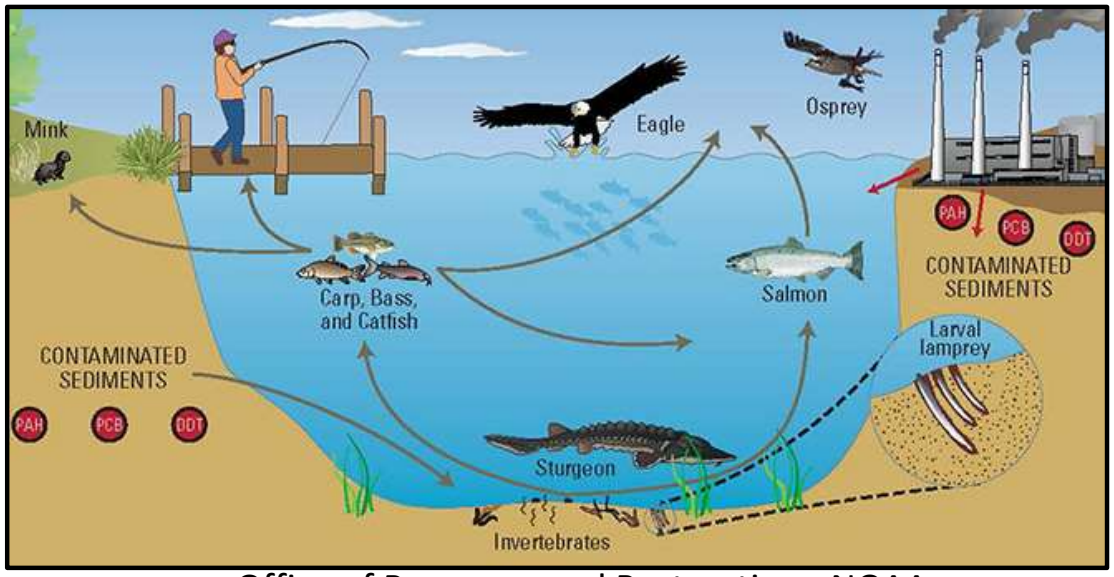
Goal 2: Sediment as a source of PFAS to aquatic food webs

- Surface water characterization
  - PFAS
- Sediment characterization
  - PFAS, plus analytes from WRD-048
  - pH, CEC, grain size, TOC, Mg and Ca
- Macroinvertebrates, prey fish, predator fish
  - Composite samples of most abundance taxa
  - PFAS

Wisconsin DNR

Goal 2: Sediment as a source of PFAS to aquatic food webs

- Biota-sediment accumulation factors (BSAFs)
- Biomagnification factors (BMFs)
- Fate and transport modeling within Huron River



Office of Response and Restoration - NOAA

Study Plans for 2021-2022

Goal 1: Toxicity of PFAS to sediment-dwelling aquatic life

- Potential for direct impacts on benthic communities?

Goal 2: Sediment as a source of PFAS to aquatic food webs

- Potential source to aquatic food webs?

Field work ongoing, continuing into Fall 2021

PFAS and Health

Puneet Vij, Ph.D.

Toxicologist

517-582-4104 I VijP@Michigan.gov

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Associated Human Health Outcomes PFOA and/or PFOS

- Reduced fertility
- High blood pressure or pre-eclampsia in pregnant women
- Small decreases in infant birth weight
- Higher cholesterol
  - Especially total cholesterol and LDL cholesterol

Associated Human Health Outcomes PFOA and/or PFOS, continued

- Thyroid disease
- Liver damage
- Decreased immune system response to vaccines
- Developing certain types of cancer
  - In particular, kidney and testicular cancers*

* PFOA only

MDHHS Comparison Values

- MDHHS Comparison Values are the lowest of:
  - MDHHS Public Health Drinking Water Screening Level
  - MPART Health-Based Value or Maximum Contaminant Level (MCL)

- Both the MDHHS screening levels and the MCL were set to protect everyone
  - including those most at risk of harm to their health: fetuses and breastfed babies

MDHHS Comparison Values

PFAS	Comparison Values
PFOS	8 ppt [A]
PFOA	8 ppt [B]
PFNA	6 ppt [B]
PFHxS	51 ppt [B]
PFBS	420 ppt [B]
PFHxA	400,000 ppt [B]
GenX	370 ppt [B]

A. MDHHS Public Health Drinking Water Screening Level
B. MPART Health-Based Value or Maximum Contaminant Level (MCL)

Round 2: Resampling Effort Summary

	MDHHS Resampling Effort (Round 2)
Sampling Season	Summer 2021
# Wells Sampled	280
# Non-Detect	147
# Detect below all CVs	114
# Detect at or above one or more CV	19
Range PFOA + PFOS	2.0 to 66.9 ppt
Range Total PFAS	2.0 to 140.8 ppt

Fish, Wildlife and Deer

Consumption Guidelines for Fish

Clark's Marsh

Type of Fish Tested	Chemical Causing MI Serving Recommendation	Size of Fish	Recommended MI Servings Per Month
Bluegill	PFOS	Any	Do Not Eat
Sunfish	PFOS	Any	Do Not Eat
All Other Species	PFOS	Any	Do Not Eat

Au Sable River

Type of Fish	Chemical Causing MI Serving Recommendation	Size of Fish	Recommended MI Servings per Month
Bluegill	PFOS	Any	**Do Not Eat**
Brown Trout	PCBs	Any	6 Per Year[2x]
Carp	PCBs	Any	Limited
Chinook Salmon	PCBs	Any	6 Per Year[2x]
Coho Salmon	PCBs	Any	6 Per Year[2x]
Largemouth Bass	PFOS	Any	**Do Not Eat**
Rainbow Trout	PCBs	Any	6 Per Year[2x]
Rock Bass	PFOS	Any	**Do Not Eat**
Smallmouth Bass	PFOS	Any	**Do Not Eat**
Steelhead	PCBs	Any	6 Per Year[2x]
Suckers	PFOS	Any	**Do Not Eat**
Sunfish	PFOS	Any	**Do Not Eat**
Walleye	Dioxins	Any	6 Per Year[2x]
All Other Species	PFOS	Any	**Do Not Eat**

Van Etten Lake

Type of Fish	Chemical Causing MI Serving Recommendation	Size of Fish	Recommended MI Servings Per Month
Black Crappie, White Crappie	**PFOS**	any	**4**
Largemouth Bass, Smallmouth Bass	Mercury, PFOS	**<16"**	**2**
	Mercury	**>16"**	**1**
Northern Pike	Mercury	<26"	**2**
		>26"	**1**
Rock Bass	Mercury	<8"	**8**
	Mercury, PFOS	8"-10"	**4**
	Mercury	>10"	**2**
Suckers	Mercury, PFOS	<14"	**8**
	Mercury	**14"-18"**	**4**
	Mercury	**>18"**	**2**
Yellow Perch	PFOS	<10"	**2**
	Mercury, PFOS	>10"	**2**

Deer Report Recommendations/Wildlife

- "Do Not Eat" advisory changed from within 5 miles of Clark's Marsh to within 3 miles
  - There is a relationship between amount of PFOS in liver samples and the collection location distance from Clark's Marsh
  - Deer living closer to the marsh have more PFOS in their liver
- MDHHS continues to recommend not eating kidneys or liver from any deer
- MDHHS advisory against eating resident aquatic or semi-aquatic wildlife is still in effect

Avoid Foam

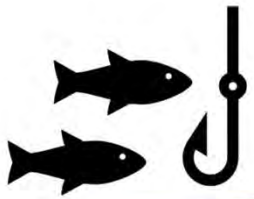
- Foam may have high amounts of PFAS
- Rinse off foam after contact
- Bathe or shower after the day's outdoor activities
- Recreational use of **water** is *not a concern*

- Incidental swallowing of **foam** with high levels of PFAS *is a concern*
- Do not allow pets to drink foamy water
- Rinse pets with fresh water after contact with foam

MDHHS Exposure Assessment

- Designing exposure assessment
  - What are the average PFAS blood levels of people who live OR recreate in the Oscoda area?
- Participants would:
  - Give a small blood sample to be tested for PFAS
  - Take a short survey looking into ways they could potentially be exposed to PFAS
- Working with the Community Advisory Team (CAT)





Additional Resources

- Michigan PFAS Action Response Team (MPART) www.michigan.gov/pfasresponse
- More info about ESF guidelines → www.michigan.gov/EatSafeFish
- Agency for Toxic Substances and Disease Registry (ATSDR) https://www.atsdr.cdc.gov/pfas/

DNR Update

Tammy Newcomb, Ph.D.

Senior Water Policy Advisor

517-284-5832 I NewcombT@Michigan.gov

Comments, Questions, and Answers

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How to ask a question in Zoom

Submit your questions using the "**Q/A**" box in at the bottom of your screen.

Click the "hand" icon at the bottom of your screen.

Type #2 to raise your hand.

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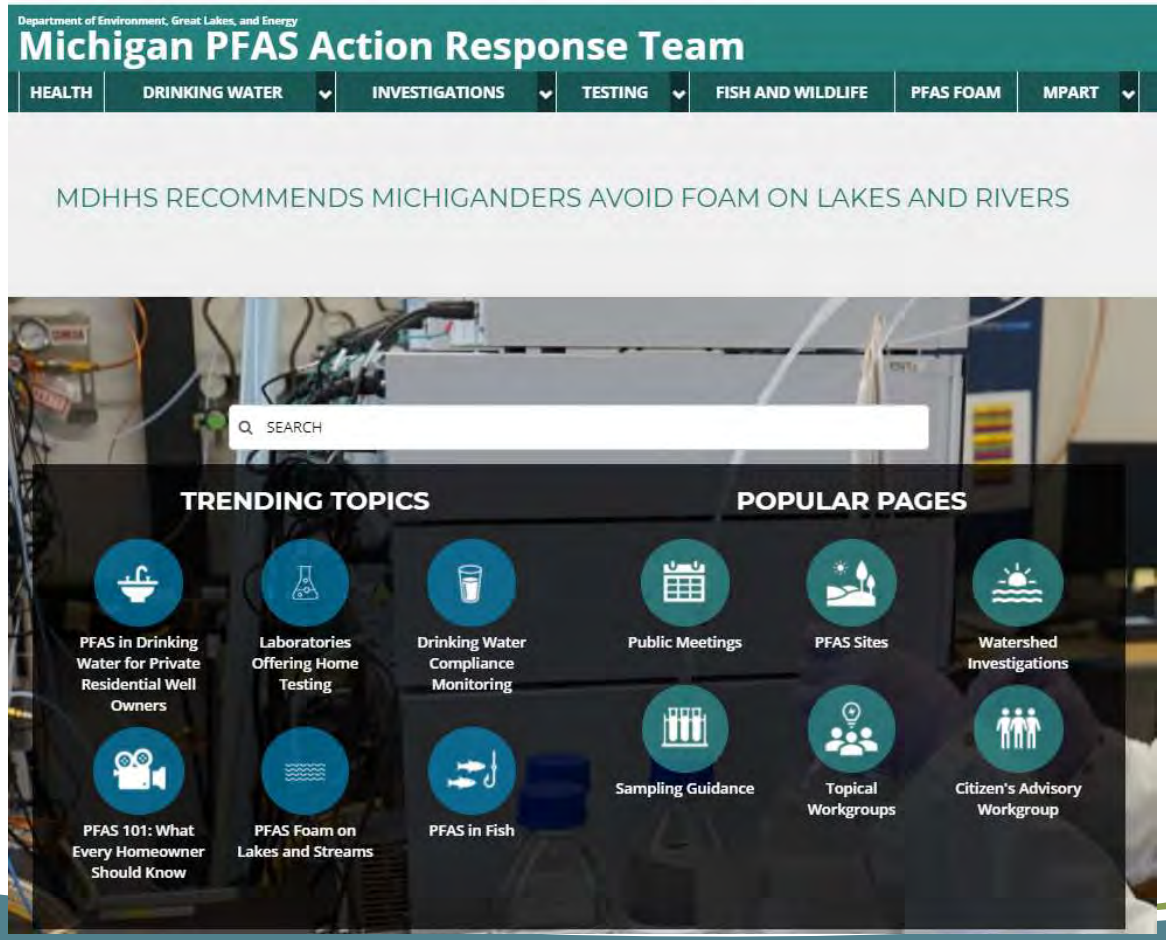
Restoration Advisory Board (RAB) Meeting

- Wednesday, November 17, 5:00 – 8:00 pm

Michigan.gov/PFASResponse website



SAVE THE DATE: DECEMBER 6- 10TH

Great Lakes VIRTUAL PFAS SUMMIT

EGLE - 2021 Great Lakes PFAS Summit (michigan.gov)

MICHIGAN PFAS ACTION RESPONSE TEAM (MPART)

Michigan.gov/PFASResponse

Thank you!

We will post a recording and closed-captioned copy of tonight's conversation on our website in the next few days.

MPART