



WURTSMITH AIR FORCE BASE – PUBLIC MEETING

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Remediation and Redevelopment Division (MDEQ)

April 25, 2017



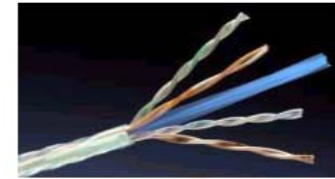
PFAS Use in Different Industries



**Semiconductor
Manufacturing**



**Non-stick Coatings for
Cookware and Small
Electrical Appliances**



**Data
Wire & Cabling**



**Low Permeable
Automotive Fuel Hose**



Electronics



**Chemical and Pharma
Processing Valves,
Lined Piping, Tanks**



**Aerospace Materials -
Hydraulic Tubing
Wire & Cabling**

- <http://fluorocouncil.com/PDFs/Industrial-Reliance-on-FluoroTechnology.pdf>
- OECD (2013) Synthesis Paper on Per- and Polyfluorinated Chemicals (PFCs) (https://www.oecd.org/env/ehs/risk-management/PFC_FINAL-Web.pdf)

PFAS Use in Different Industries



**Protective Health
Care Garments**



**Architectural
Coatings**



**Protective Finishes on
Apparel and Textiles**



Industrial Firefighting



Paint

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PFASs at Wurtsmith

- The primary source of PFASs at Wurtsmith are attributed to AFFF* use.
- Prior to the invention of AFFF, Protein Foam was widely used – but not as effective.
- The Fluorine and Carbon bond is a very strong chemical bond, which makes PFASs resistant to heat, oxidation and reduction.
- PFASs stay in the environment for a very long time (i.e. very difficult to remediate and remove).

* - Aqueous Film Forming Foam

Why AFFF?

1967 – USS Forrestal fire
Protein Foam



134 sailors **died**, 161 sailors **injured**

1978 – DC-10 Crash LAX
3M AFFF



196 lives **saved** out of 200

Terminology Evolution: PFCs vs. PFASs

- The terminology of these compounds has evolved:

PFCs (Perfluorinated Compounds) - Used by Regulators and DOD

PFASs (Poly-and Perfluoroalkyl Substances) - Used by Industry and Academia

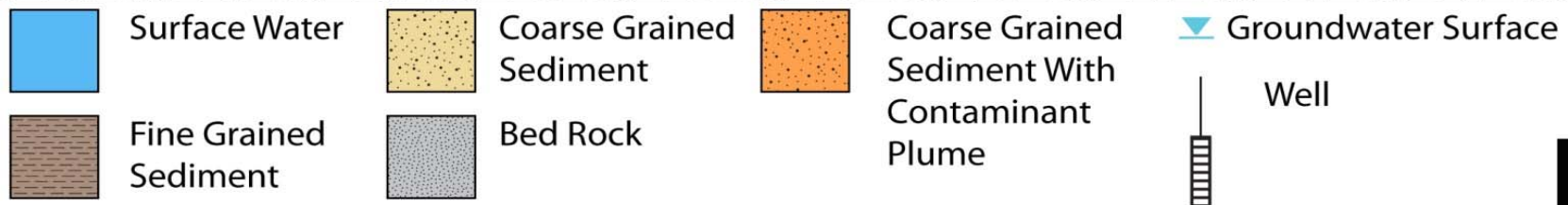
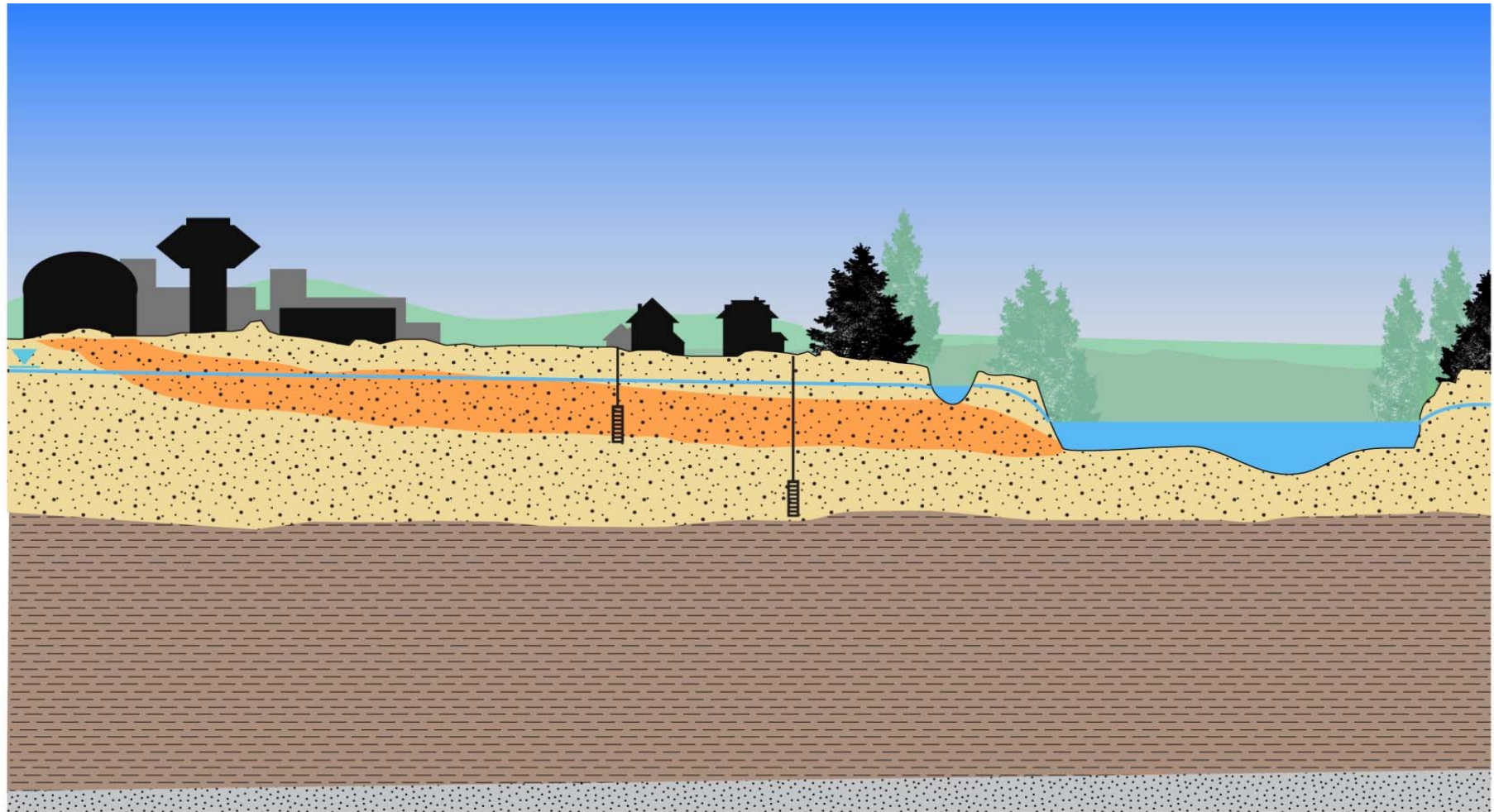


PFASs

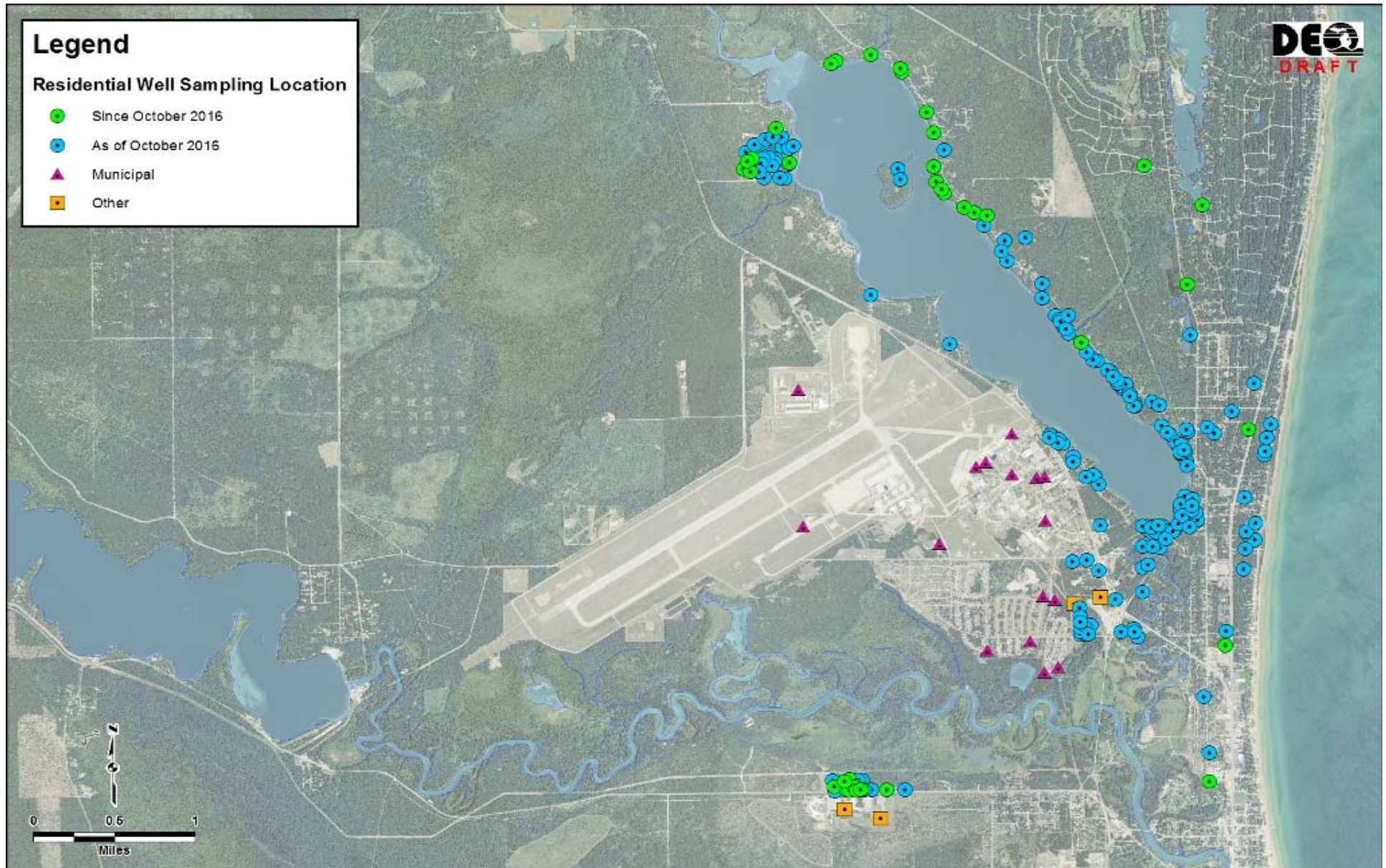
Former Wurtsmith Air Force Base



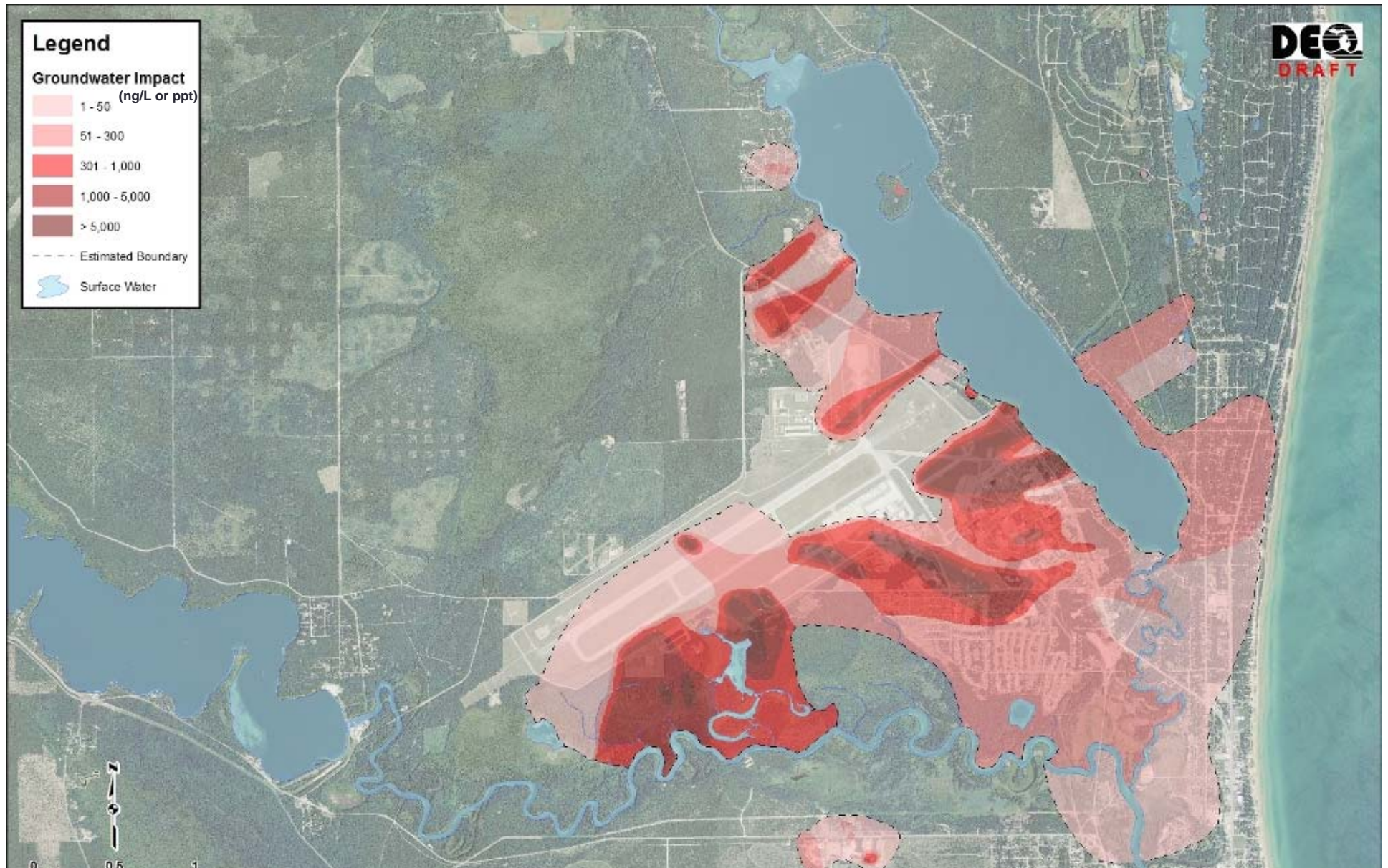
Conceptual Contaminant Migration



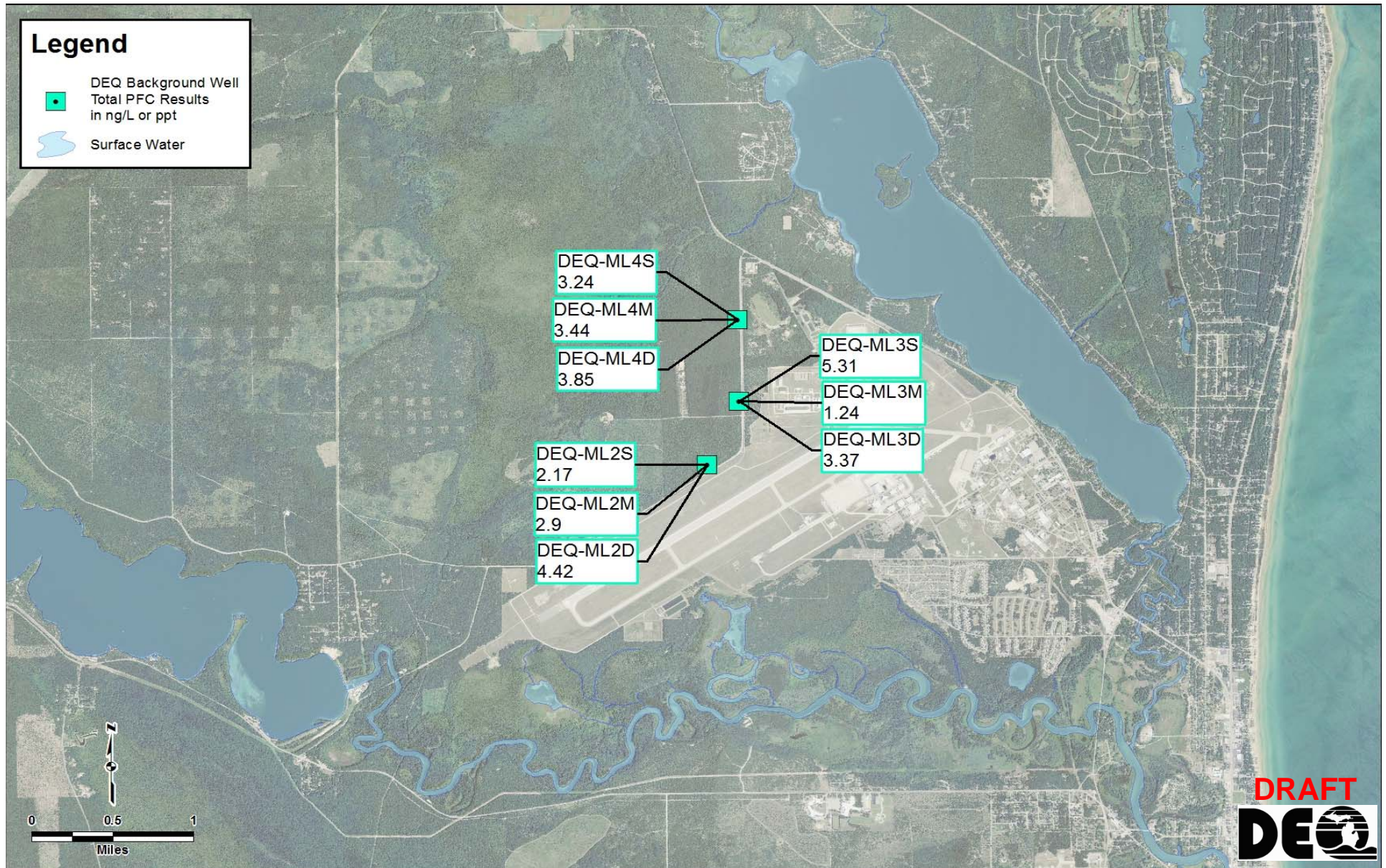
Drinking Water Sampling – June 2016



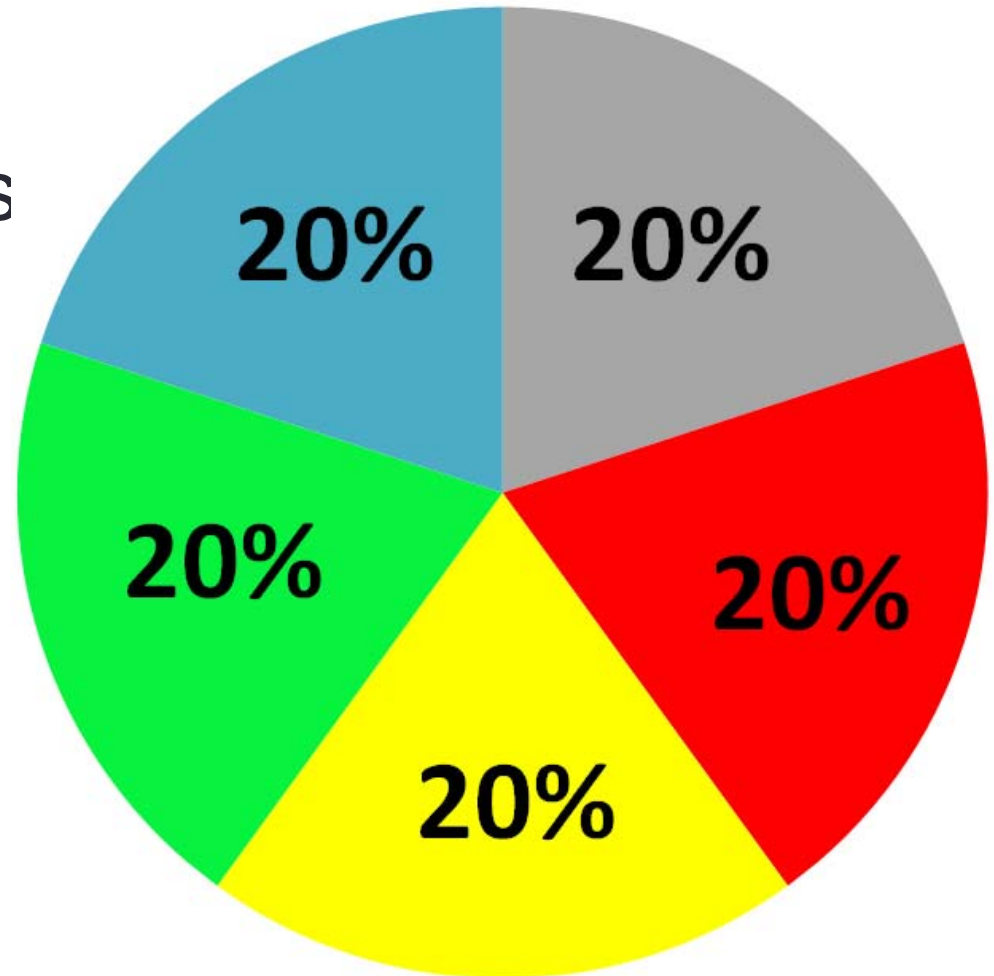
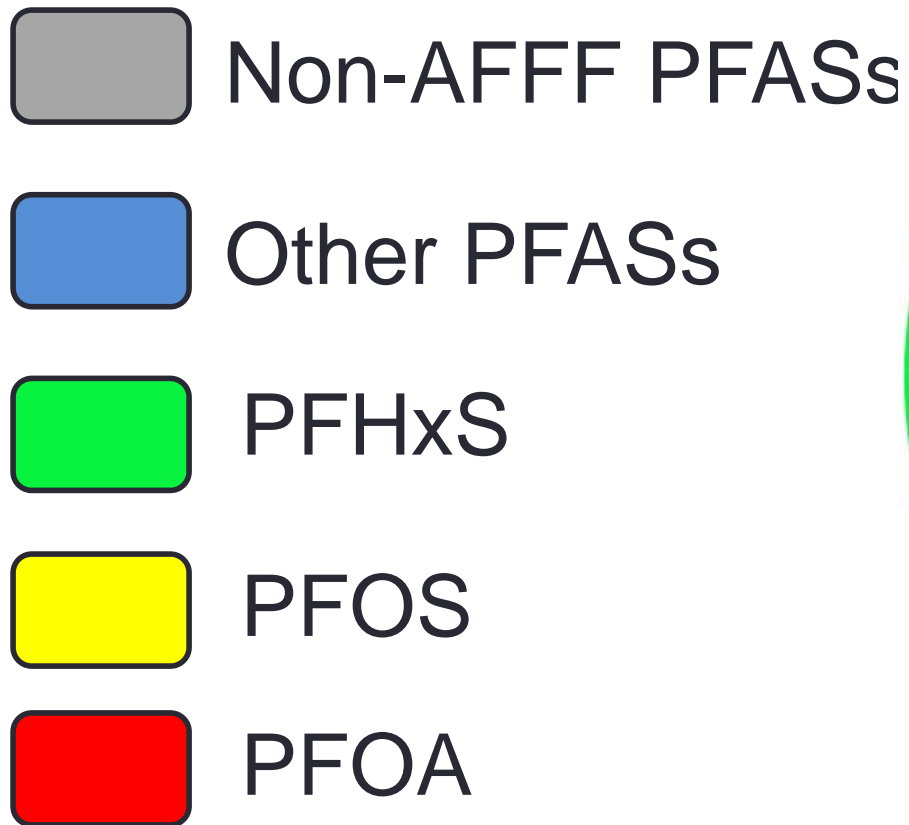
Approximate Extent of PFAS Contamination



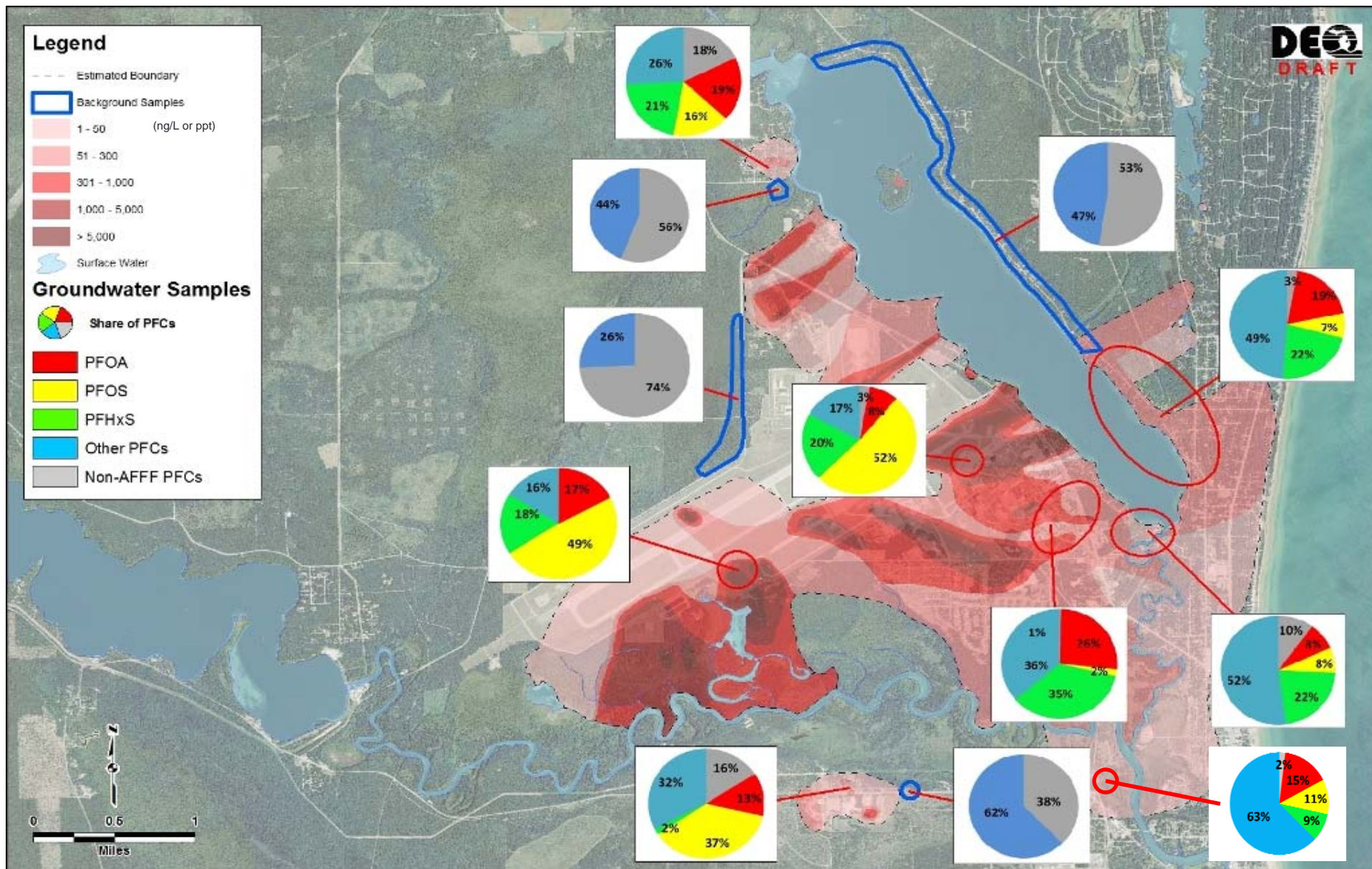
Background PFAS Concentrations



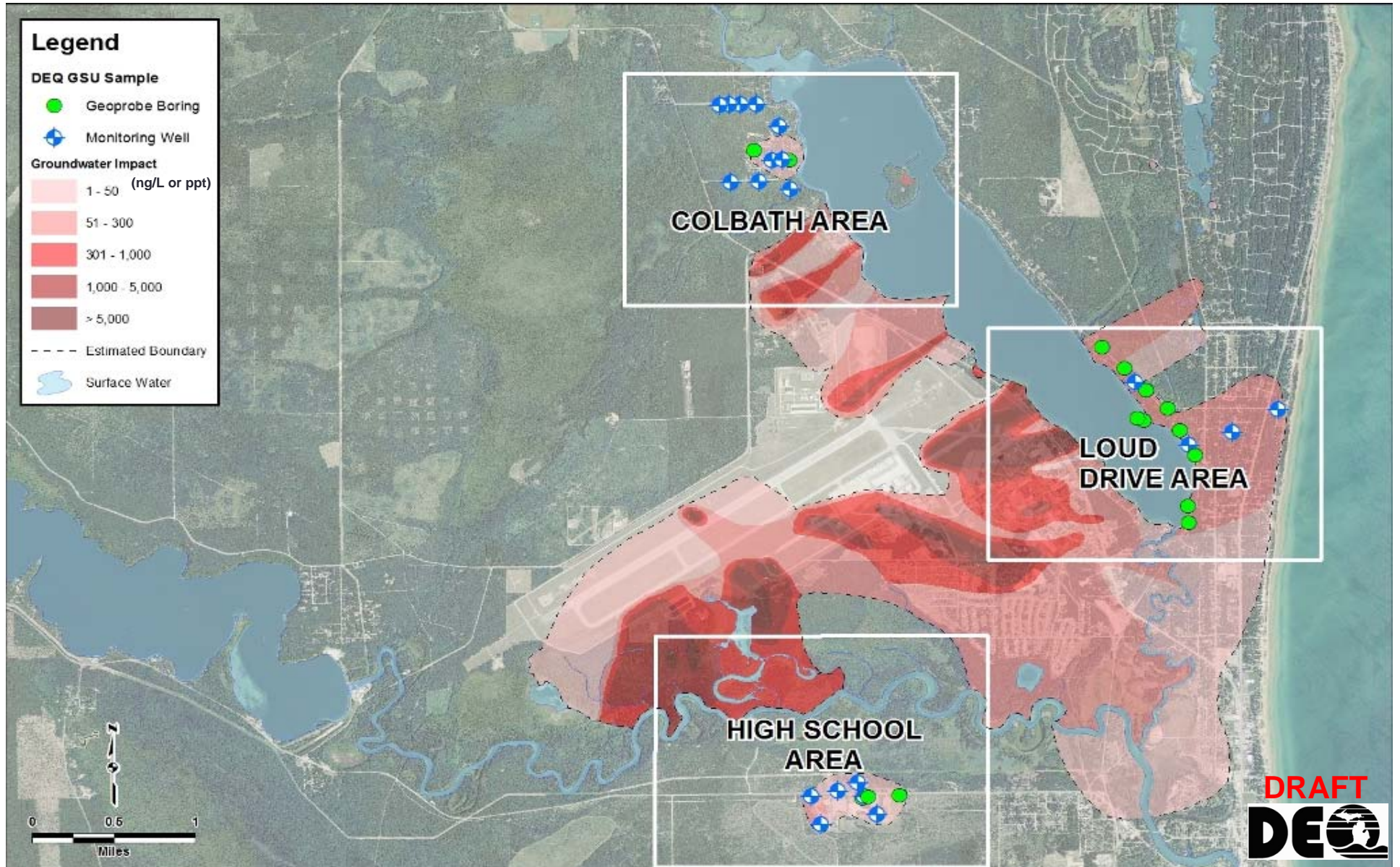
PFAS Fingerprinting



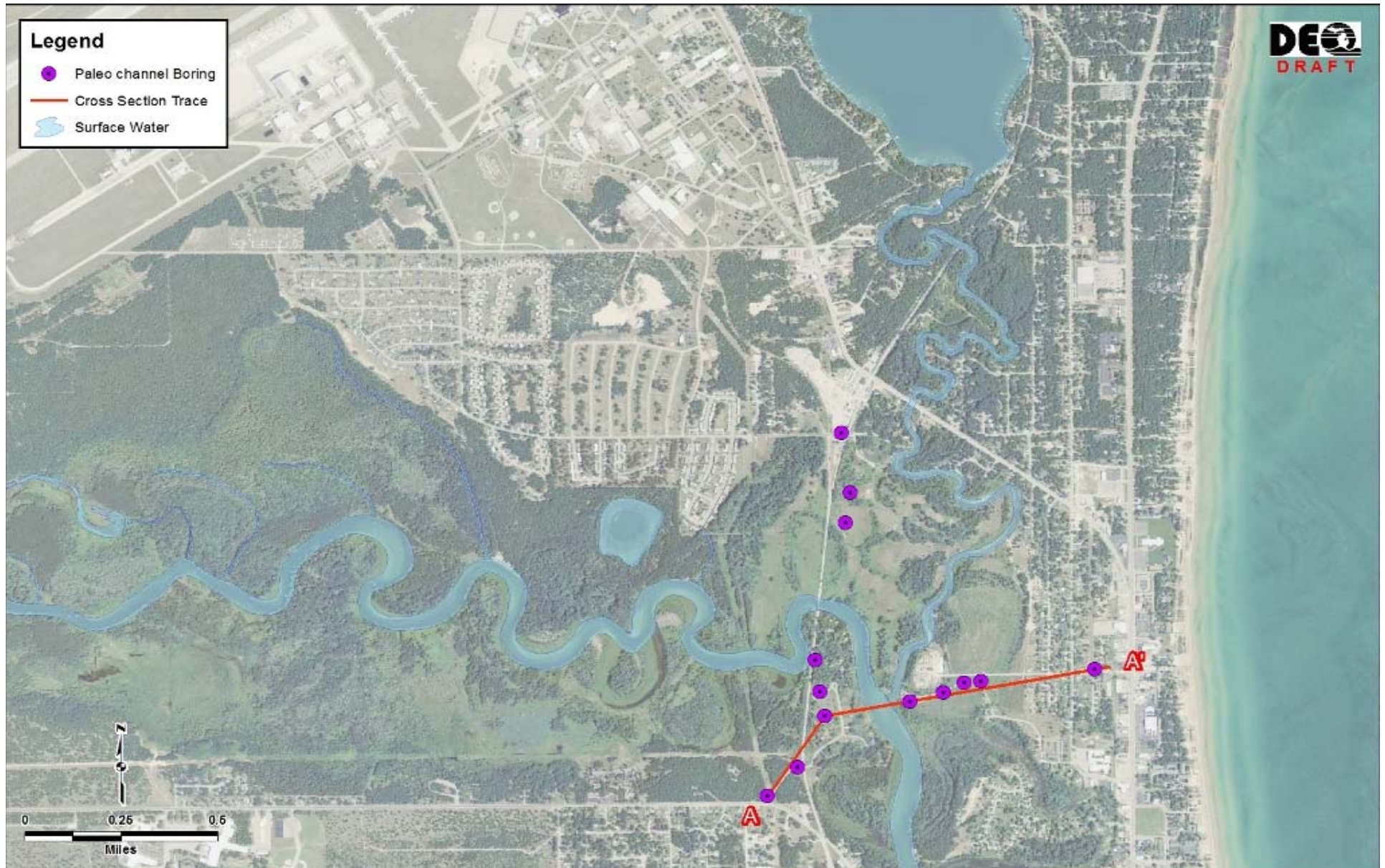
PFAS Fingerprinting - Groundwater



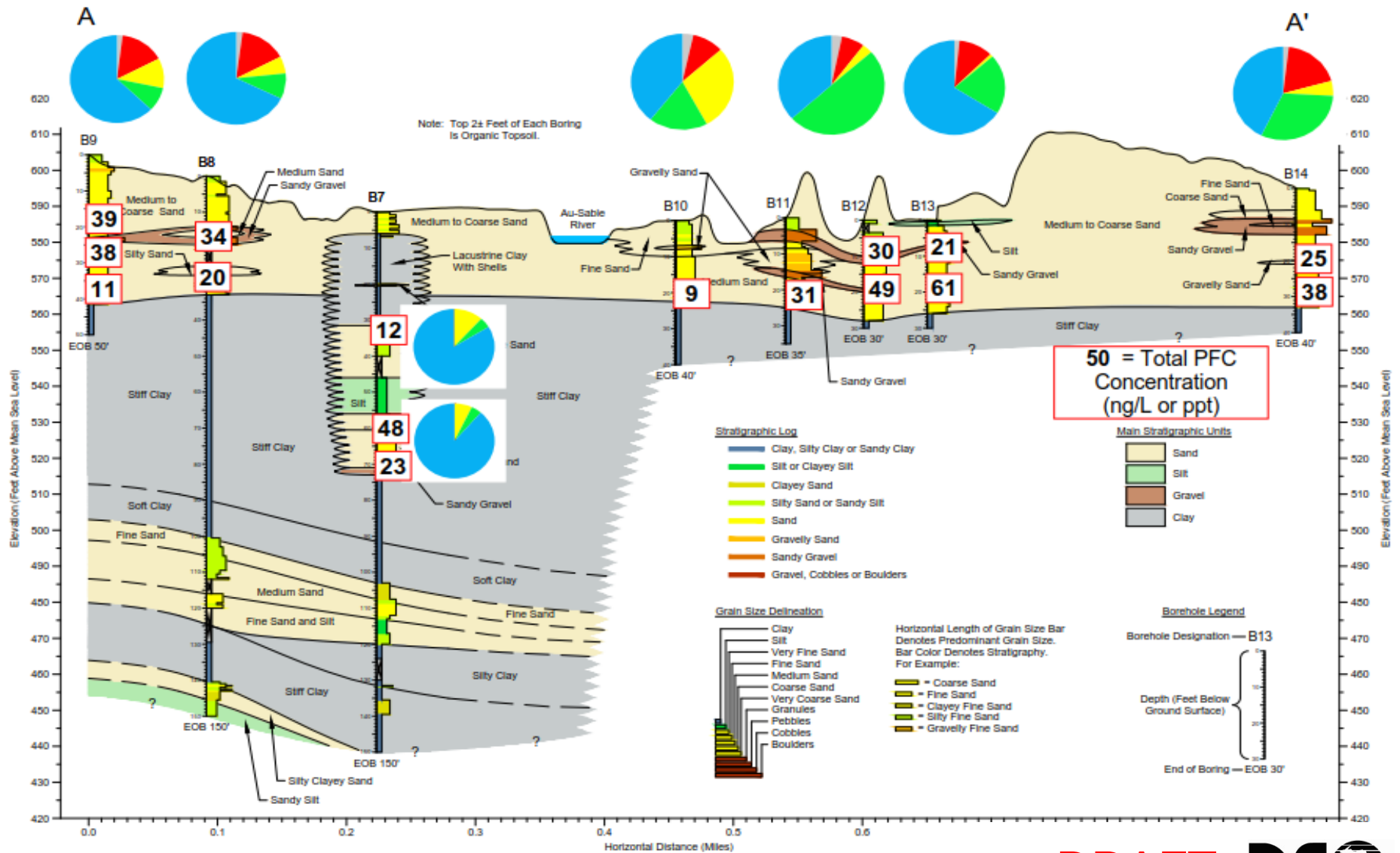
MDEQ Geological Services Unit – Field Investigation



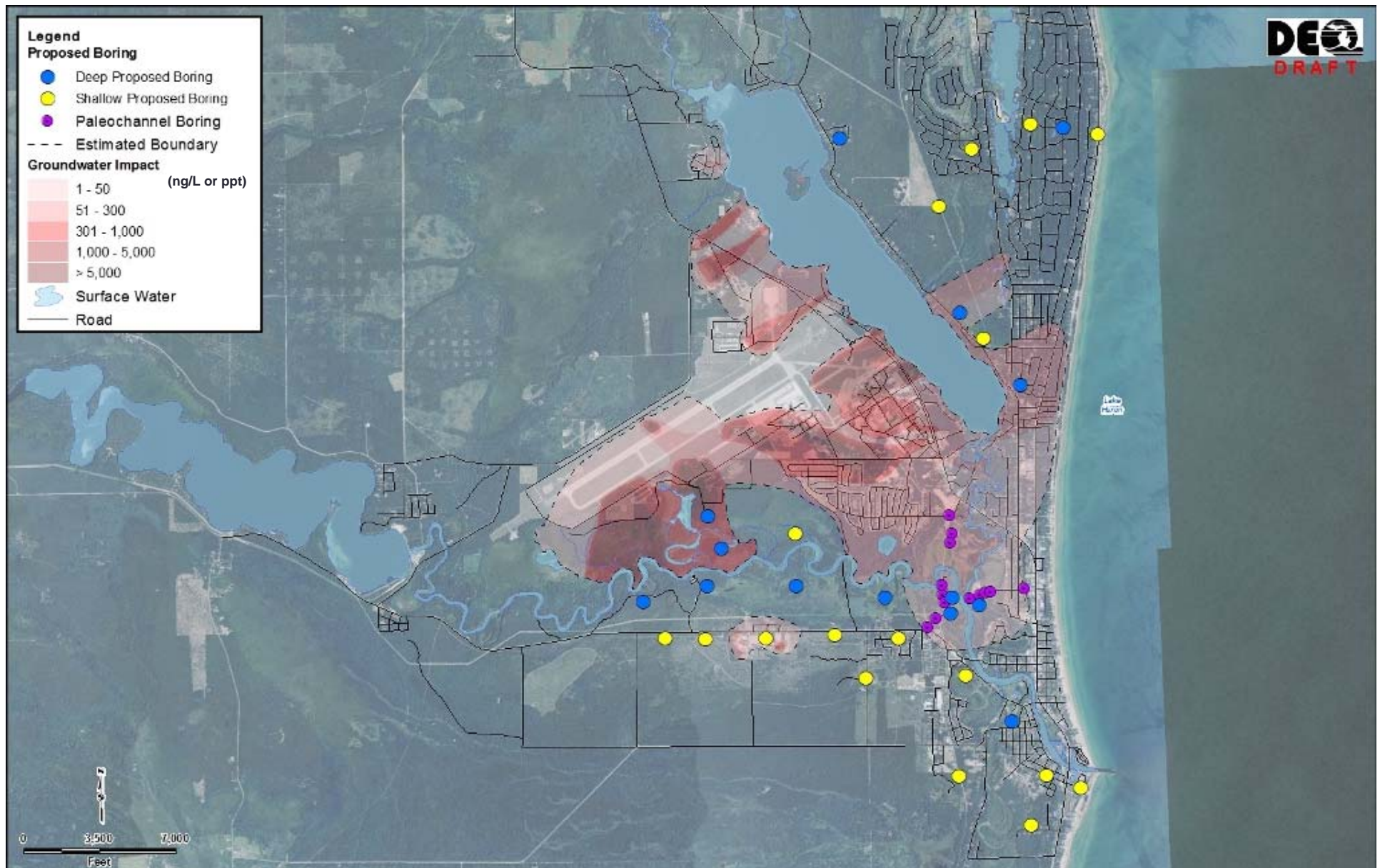
MDEQ – Paleo Channel Investigation



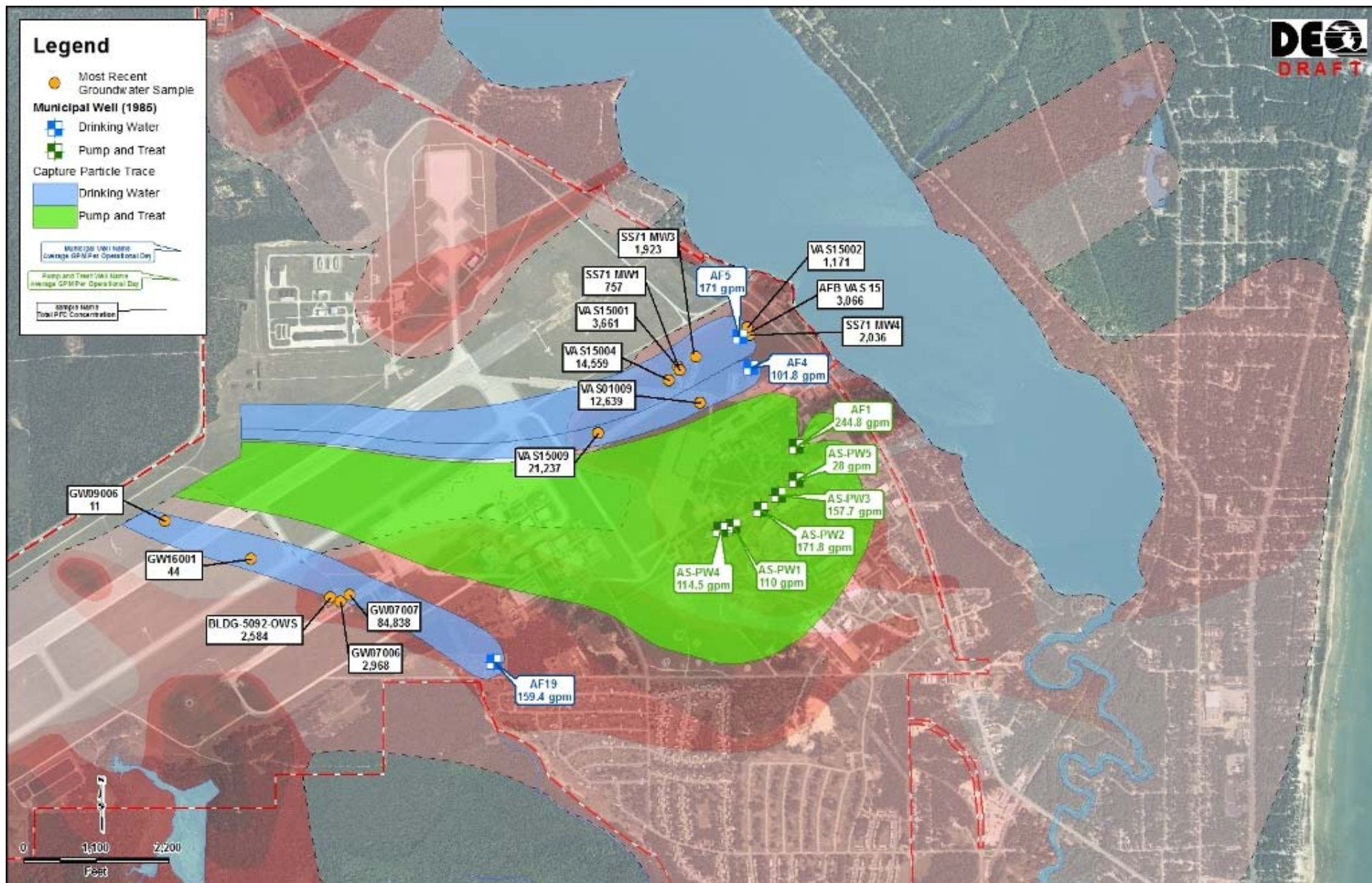
MDEQ – Paleo Channel Investigation



MDEQ Plume Delineation RI Work Plan



1985 P&T Capture Areas



Questions?

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