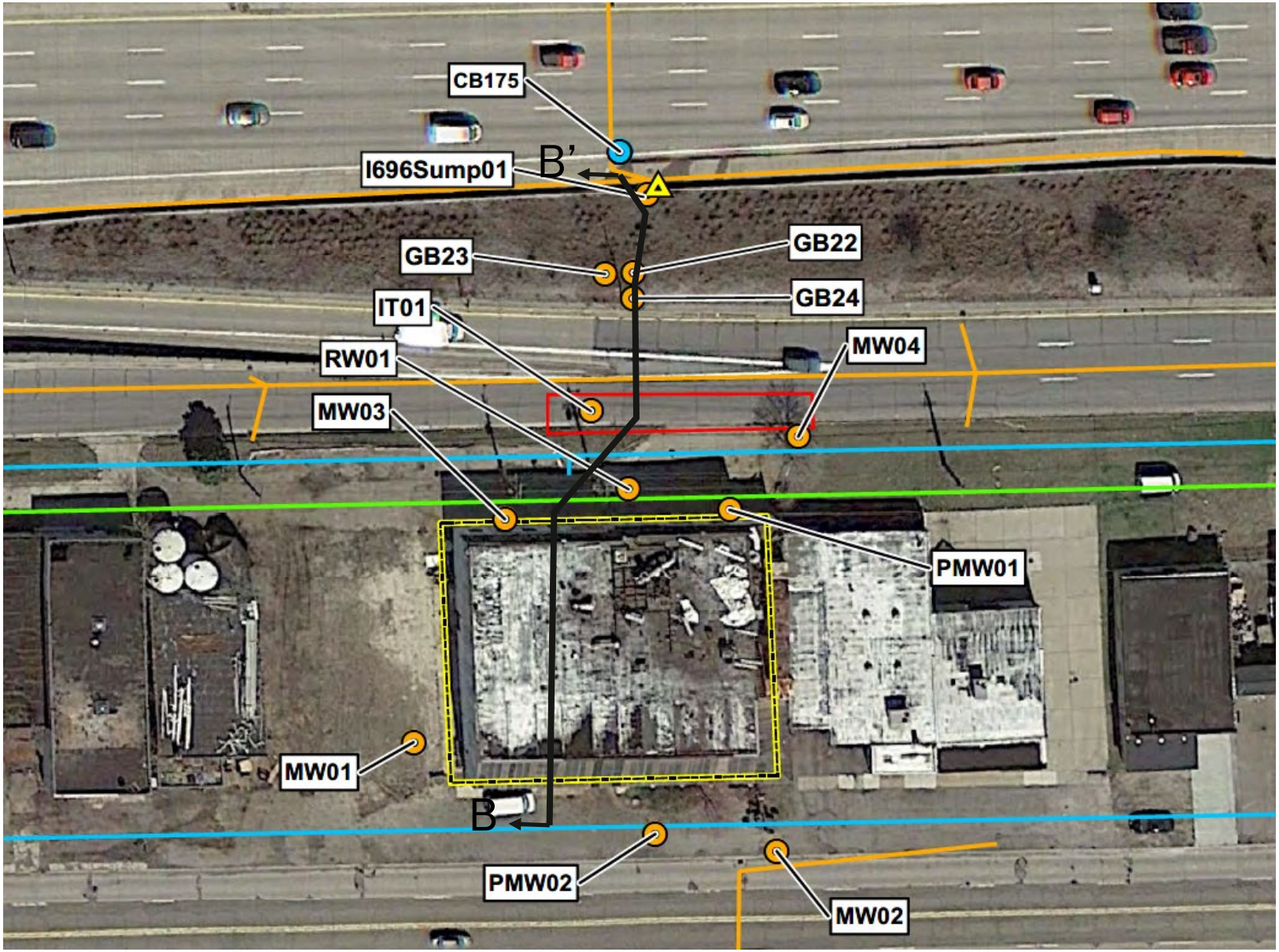
Public Update – August 11, 2020

Electro Plating Services Site, Madison Heights, Michigan

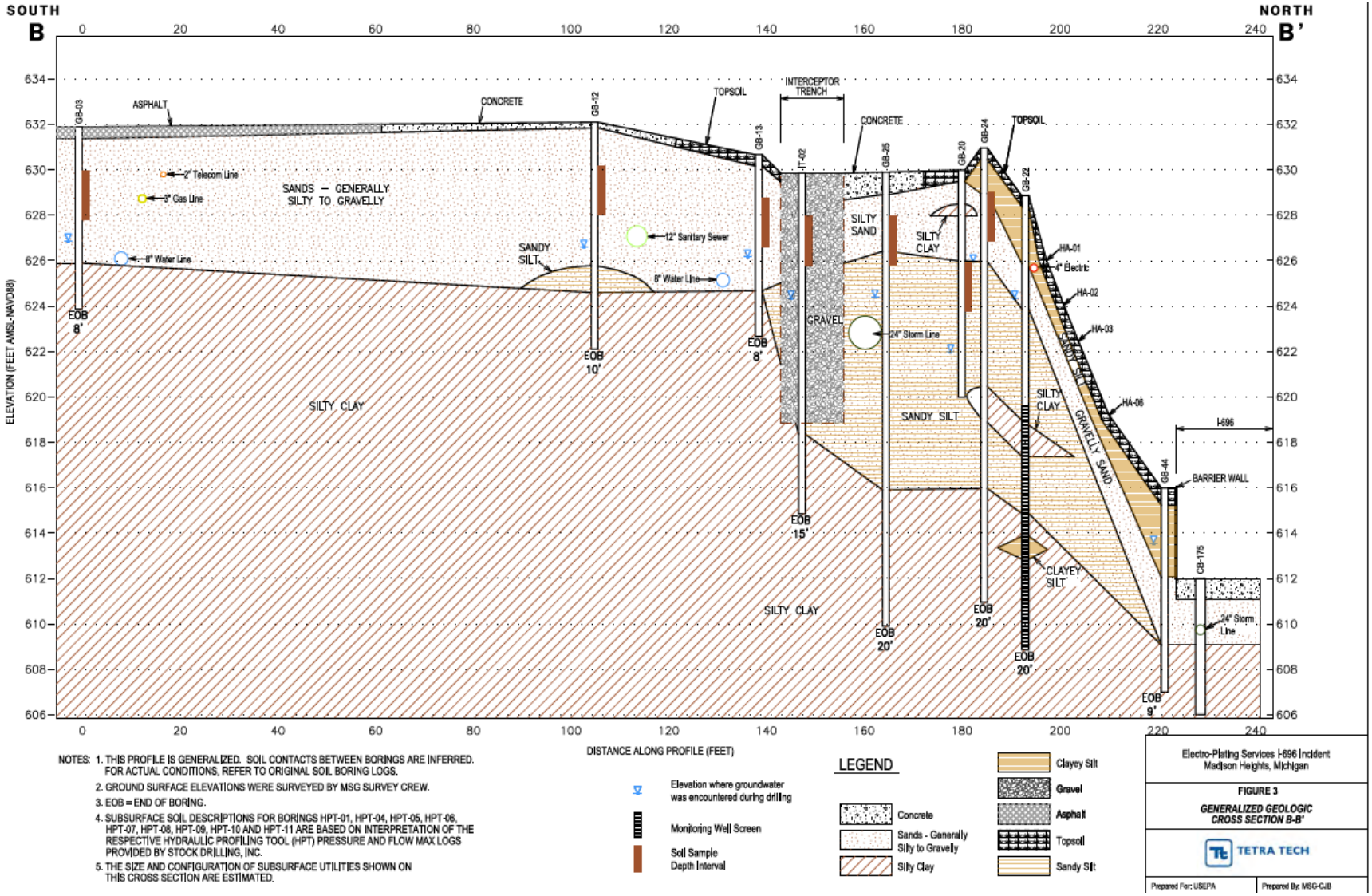
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
EPA
EMERGENCY RESPONSE

Electro-Plating Services I-696 Incident

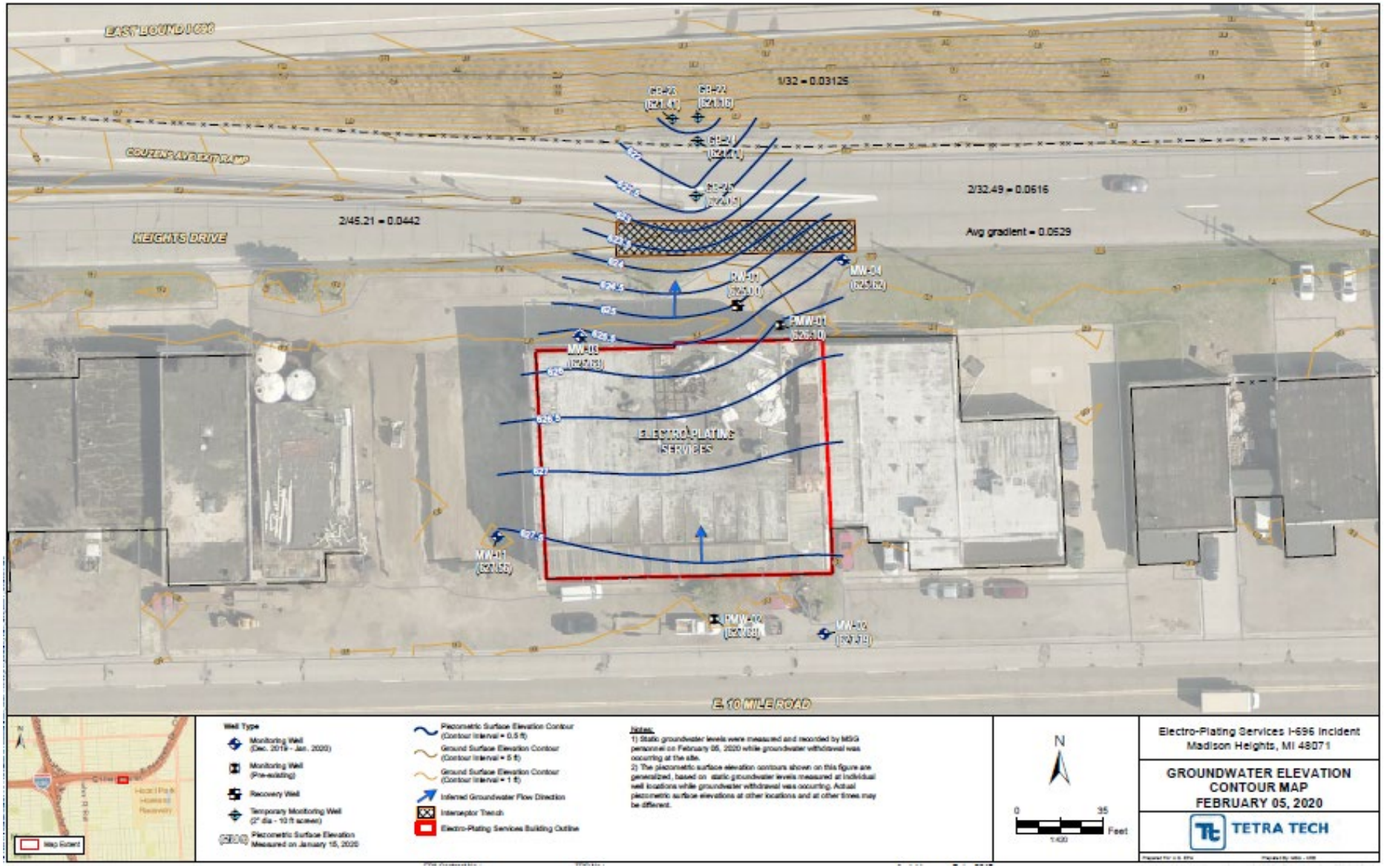
EPS – I696 Site



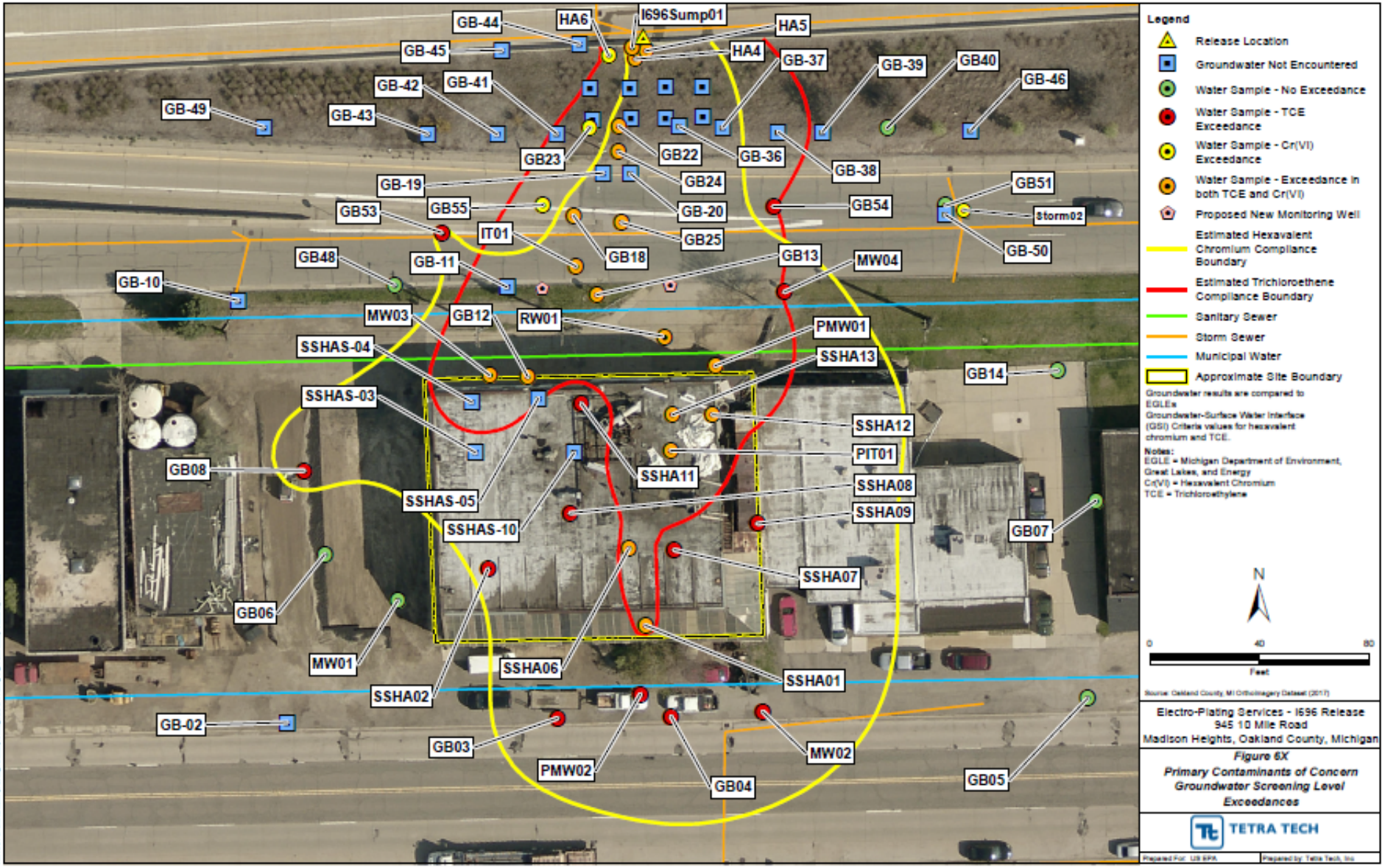
Elevation Profile – Cross Section



Groundwater Flow



Site Investigation



Response Actions

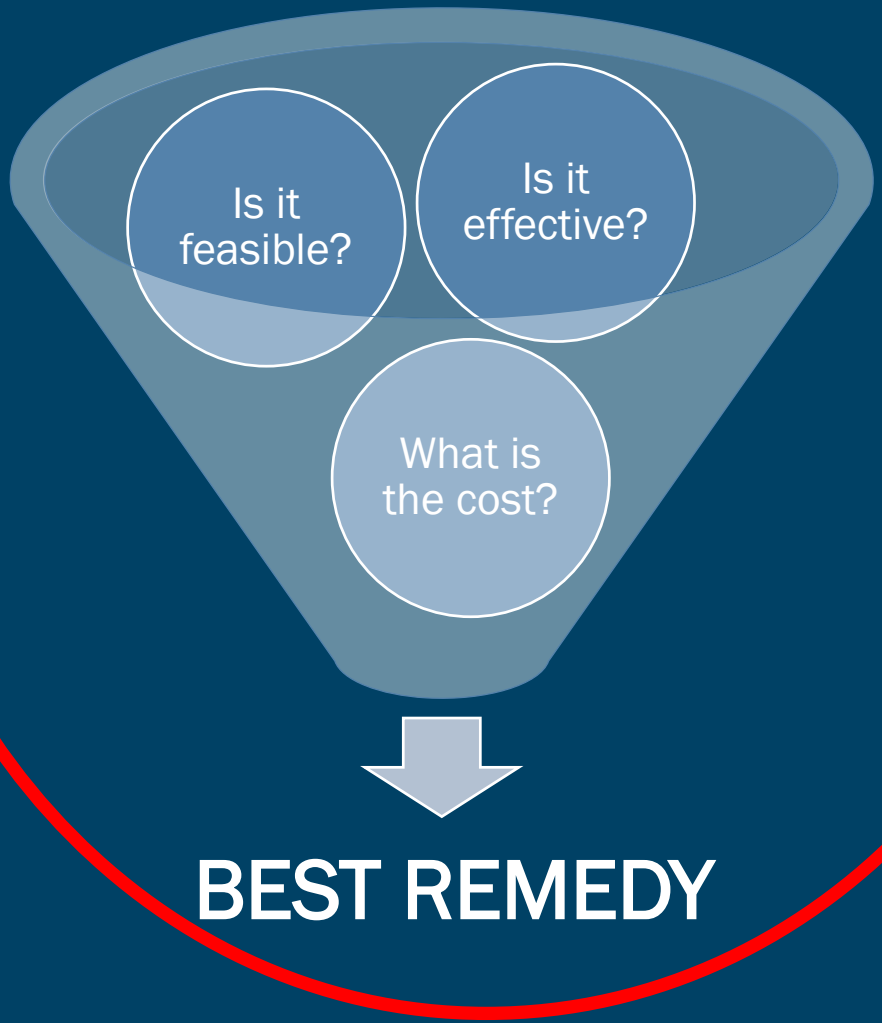
Site Operations

- Collection Systems:
  - Interceptor Trench
  - Basement Sump
  - I696 Embankment Sump
- Bypass System

- COVID-19 – Operations Continued through quarantine
- Minimized personnel working on-site / Rotating schedules
- START Contractors only on-site as needed
- I696-Sump pumped up to Interceptor Trench
- Frac Tank removed from I-696

EPA looked at a variety of technologies including:

- In-Situ (in-place) Treatment
- Groundwater collection and Conveyance
- Wastewater Treatment System
- Excavation/Containment
- A combination of more than one technology
- No further action



A total of 9 options were looked at before choosing In-Situ Treatment

What is In-Situ Treatment?

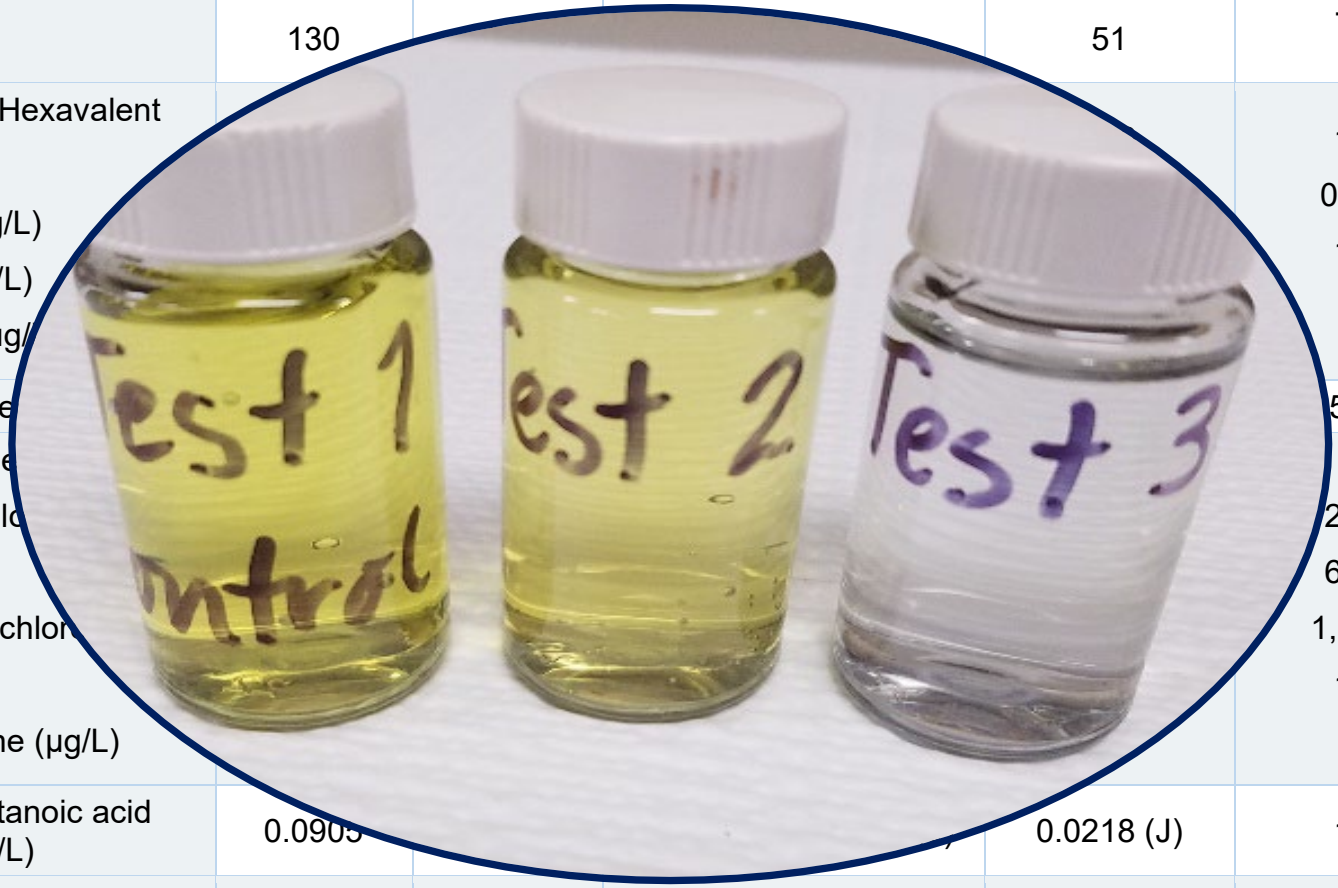
- In-situ treatment is the treatment of contamination in location where it is found in the environment, without removing the soil or groundwater from its location.
- Because the contaminated media (soil, groundwater, etc.) is treated In-Situ, the amount of waste produced is significantly reduced.
- This method is especially helpful when cleaning up high levels in levels of contamination.

Why did we choose In-Situ Treatment?

- Treatment of the Chemicals of Concern
  - Hexavalent Chromium
  - Trichloroethylene (TCE)
  - Cyanide
- Reduction of PFAS/PFOS
- Long Term benefits

Treatability Study

Analyte	EP-RW-01-012120	Test 1 Control	Test 2 I-3+EHC Plus (2 wt.%)	Test 3 I-3+EHC Plus (5 wt.%)	Remediation Goal
pH (SU)	6.83	8.36	7.01	6.98	---
ORP (mV)	130			51	
Chromium, Hexavalent (µg/L)					11
Mercury (µg/L)					0.20
Arsenic (µg/L)					10
Selenium (µg/					5
Cyanide, Fre					5.2
Trichloroethe					
cis-1,2-Dichlo					200
(µg/L)					620
trans-1,2-Dichlor					1,500
(µg/L)					13
Chloroethene (µg/L)					
Perfluorooctanoic acid (PFOA) (µg/L)	0.0905			0.0218 (J)	12
Perfluorooctane sulfonate (PFOS) (µg/L)	**20.2 (J)**	**3.47 (J)**	**0.617 (J) / 0.558 (J)**	**0.467 (J)**	0.012



How to Implement In-Situ Treatment

Permeable Reactive Barrier

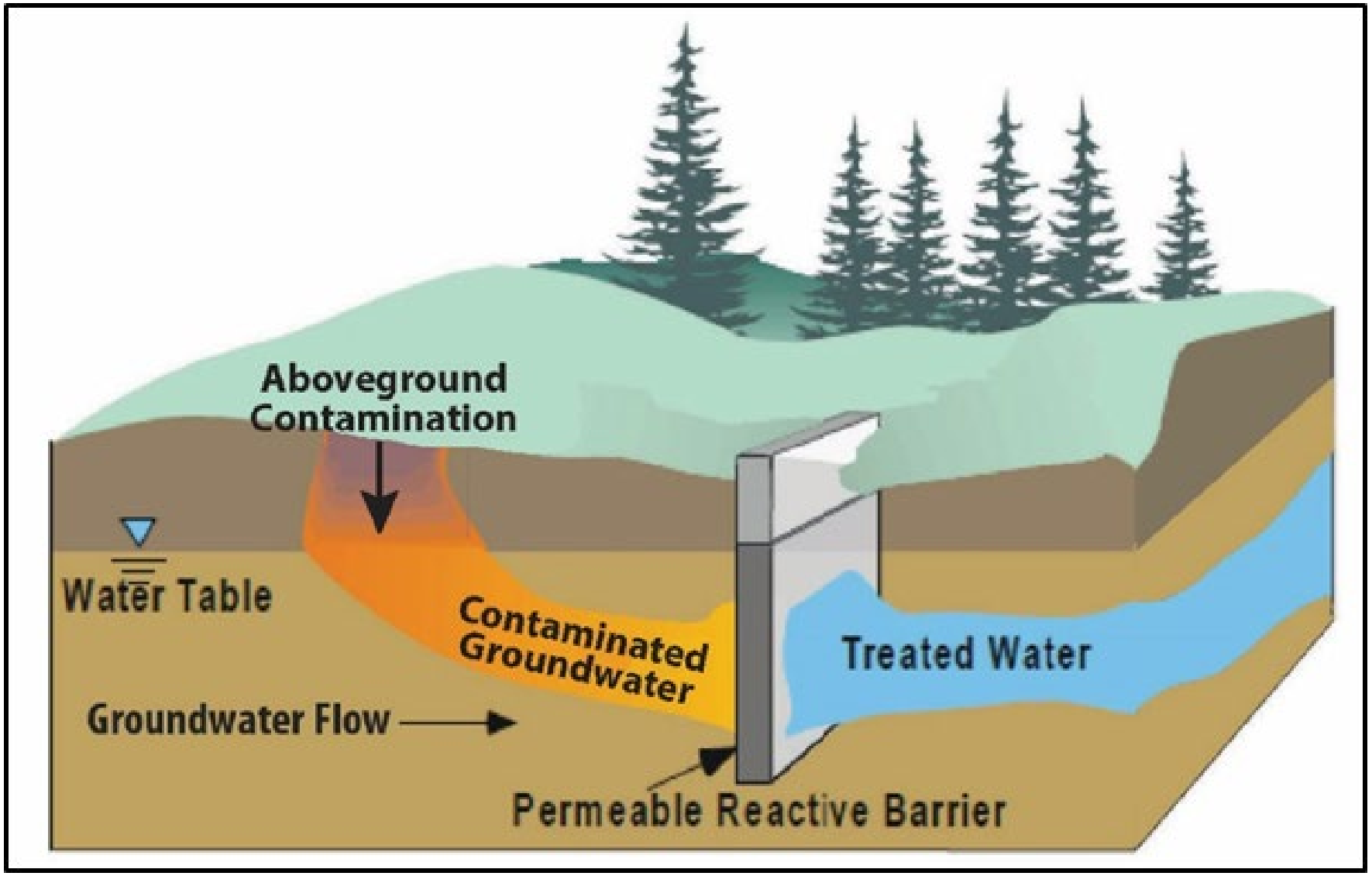
- A permeable reactive barrier (PRB) is an In-Situ treatment zone established within a contaminated groundwater unit through the application of reactive products.
- The reactive materials interact with the plume of contaminants as it passively migrates through the PRB, removing or degrading contaminants with treated groundwater migrating out of the PRB.
- The primary removal mechanisms include:

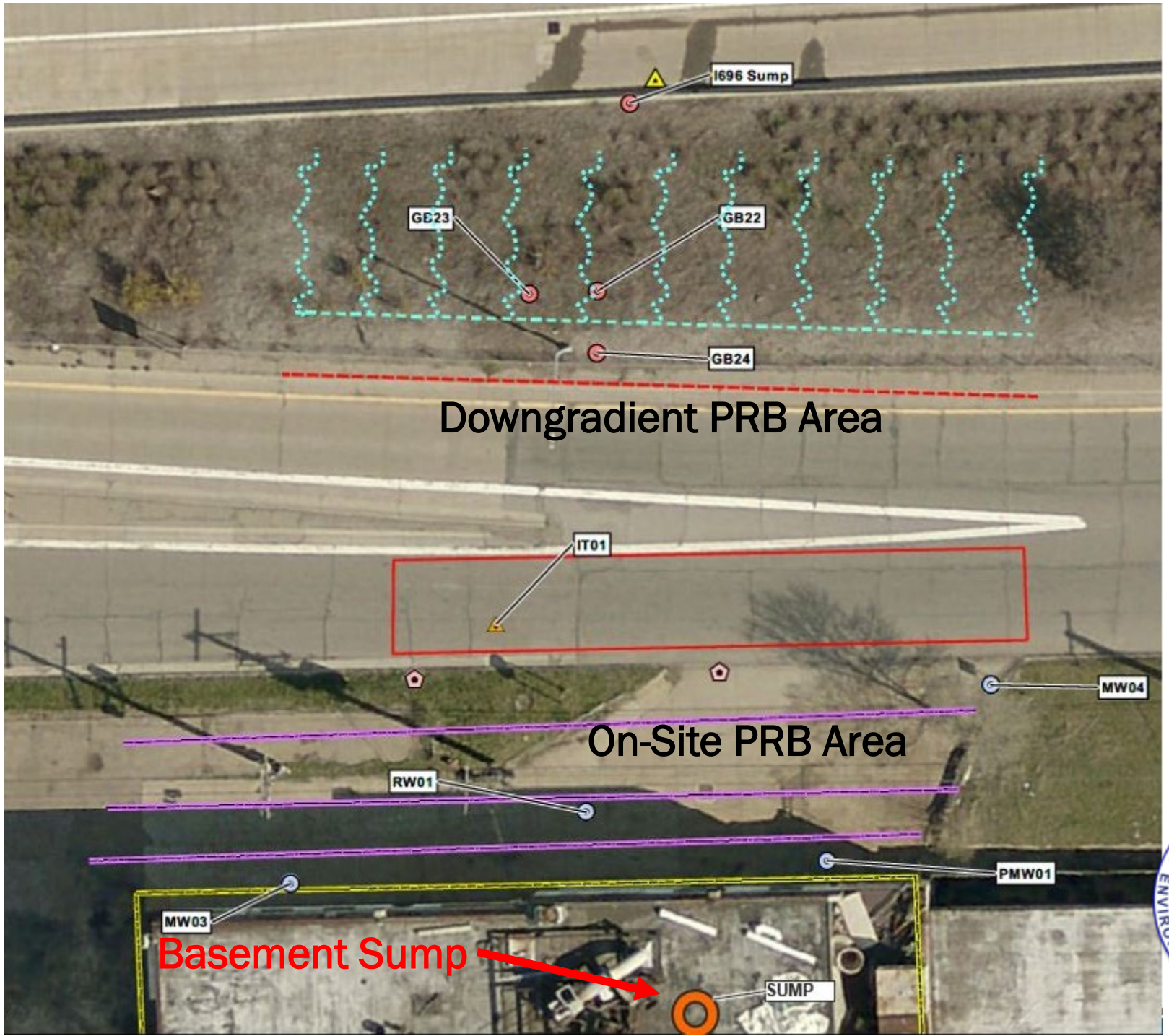
  (1) sorption and precipitation,

  (2) chemical reaction, and

  (3) biological oxidation or reduction, depending on the target contaminants.

Conceptual example design




I696 Sump
GB23
GB22
GB24
Downgradient PRB Area
IT01
MW04
On-Site PRB Area
RW01
PMW01
MW03
Basement Sump
SUMP

Pilot Study

Injection of the treatment reagents under pressure

Gravity fed reagents along the embankment into Permanent Monitoring Wells

CONTINUED OPERATIONS & ADDITIONAL ACTIONS TO BE TAKEN

Continued Operations and Additional Actions

	Volume (Gallons) (8/11)
Total Liquid Currently On-Site	10,469
Total Liquid Taken Off-Site for Disposal	307,576
Total Volume Liquid Collected On-Site	318,045

- Lining of Sanitary & Storm Sewers – Cured In Place Pipe
  - Repair damaged underground wastewater and stormwater sewer pipes without excavation
  - Repair 2 manholes


MADISON HEIGHTS 10 MILE
1659 -> 1658
Circular 12inch Vitrified Clay Pip
204.90


MADISON HEIGHTS 10 MILE
1659 -> 1658
Circular 12inch Reinforced Concret
204.70

Schedule of Site Activities:

ESTIMATED TIMELINE	DESCRIPTION
Week of July 13	Pilot Study
Week of July 27	Lining of Sanitary & Storm Sewer
	Removal of By-Pass System
September	Full-Scale Injection
Late December (TBD)	Remove Interceptor Trench / Restore Service Drive*
	Remove I-696 Sump / Restore*
	Demobilization of EPA / Transfer Site to EGLE
*Weather dependent / Subject to change	

EPA Estimated Costs

- Costs to date: ~$2.2M
- Future Costs: ~ $2M
  - In-Situ Treatment
  - Continued Operations

Annual Operation & Maintenance Costs (O&M)
*To be conducted by EGLE

- **Estimated IST O&M Costs:** **$63,600**
  - Quarterly GW Monitoring: $48,500*
  - 3-5 year Maintenance: $45,300**
    - $15,100 Annualized
  - 5-10 year Maintenance: $238-330,000***

* Base Annual Cost
** 3-years initial app
***Every 5-10 years – may be required if no source removal

INFORMATION UPDATES

- EPA - Website
  - https://www.epa.gov/mi/electro-plating-services-i696-release-site

- EGLE - Website
  - https://www.michigan.gov/egle/0,9429,7-135-3312_4118-515339--,00.html