



Former Cliffs-Dow Site

Project Status Update

City of Marquette

Commission Work Session

March 27, 2017

Presented by: Richard Baron, Special Counsel to City of Marquette

Project Status Update Meeting Outline

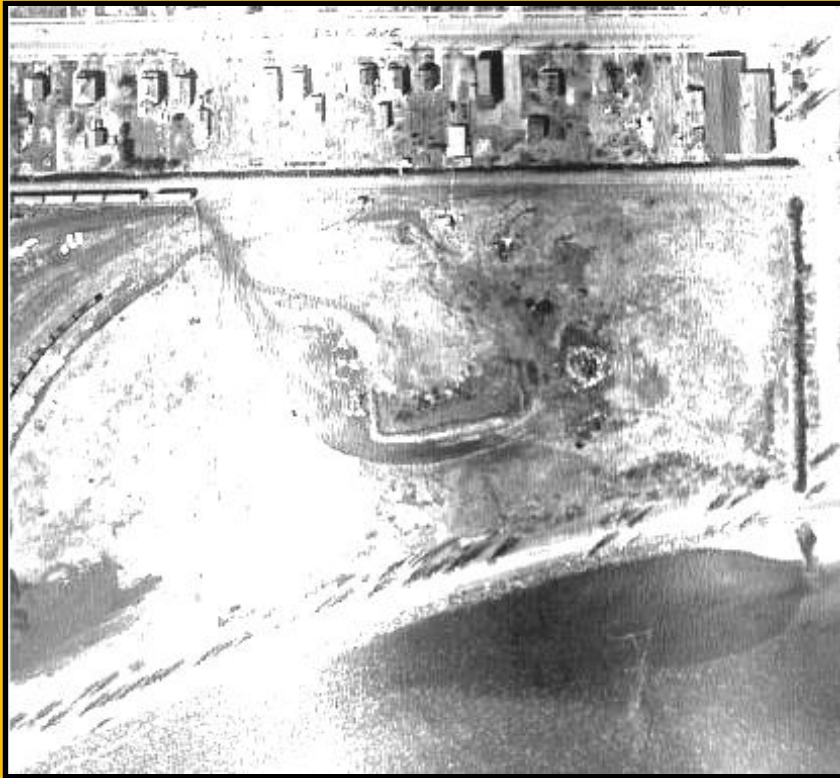
1. Cliffs-Dow Operational History
2. Cliffs-Dow Post-Operations Property Activities
3. City's Acquisition of Cliffs-Dow Property
4. MDEQ's Request for Environmental Response Activities
5. Environmental Response Activities Performed
6. Response Activity Results - GSI Pathway
7. GSI and the Mixing Zone Explained
8. Request for MZ-Based GSI Criteria
9. Commission Discussion

Cliffs-Dow Operational History

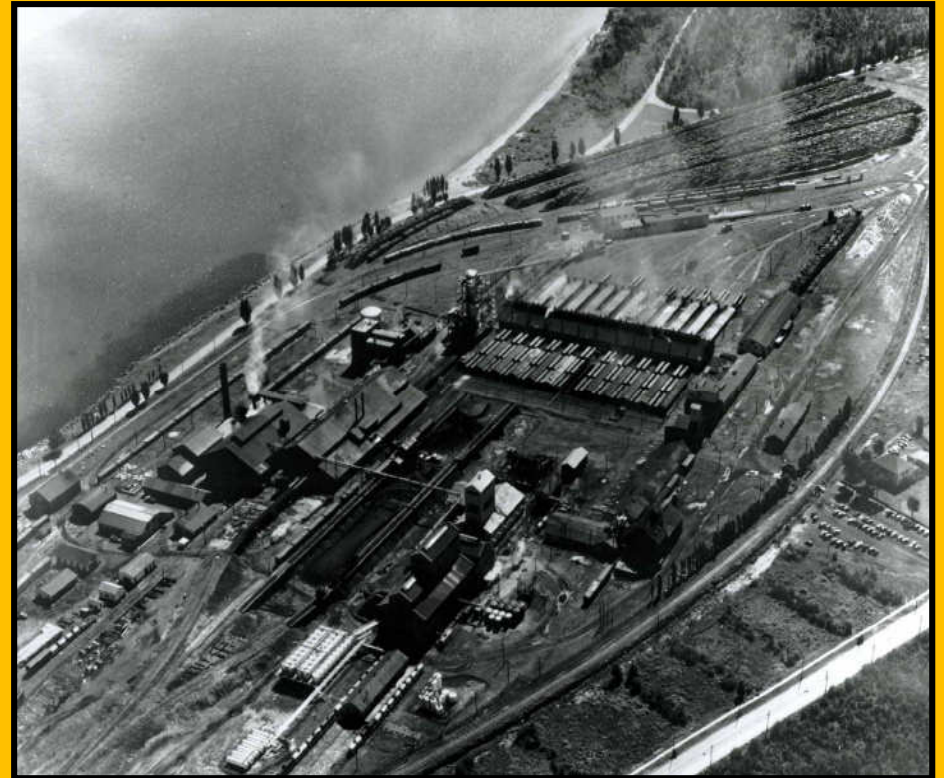
- **1902** Cleveland-Cliffs Iron Company Develops Property
- **1902 - 1930** Pig Iron Produced on Property
- **1935** Cliffs-Dow Chemical Company Created
- **1935 - 1968** Cliffs-Dow Produces Wood Chemicals
- **1968** Cliffs-Dow Company shares sold to Georgia-Pacific and E.L. Bruce
- **1969** Site Operations Cease

Cliffs-Dow Historical Aerial Photos

circa 1950's



North 9-acre Parcel
Discharge into Lake Superior



Central 46-acre Parcel
Discharge into Lake Superior

Post-Operations Property Activities

- 1969 - Property sold to C&W Corporation
- Ownership of property passed through several parties from 1969 to 1997
- Owners dismantled and removed most of the structures for scrap metal.
- Property sat idle until City's acquisition in 1997
- Photo circa 1993



City's Acquisition of Property

- City of Marquette purchased ~77-acre property in October 1997 with the intent of securing control over redevelopment options for the valuable property
- Historic Environmental Reports indicated soil and groundwater contamination at the site
- In 1999, MDEQ requested more assessment and outlined City's obligations as owner
- A portion of the northern 9-acres (1998) and southern 23-acres (1999) were sold by the City
- Approximately 46 acres remain
- In 2000, City initiated assessment of the property as Responsible Party
- In April 2009, MDEQ requested City complete Environmental Response Activities to address GSI Concerns



Environmental Response Activities Performed

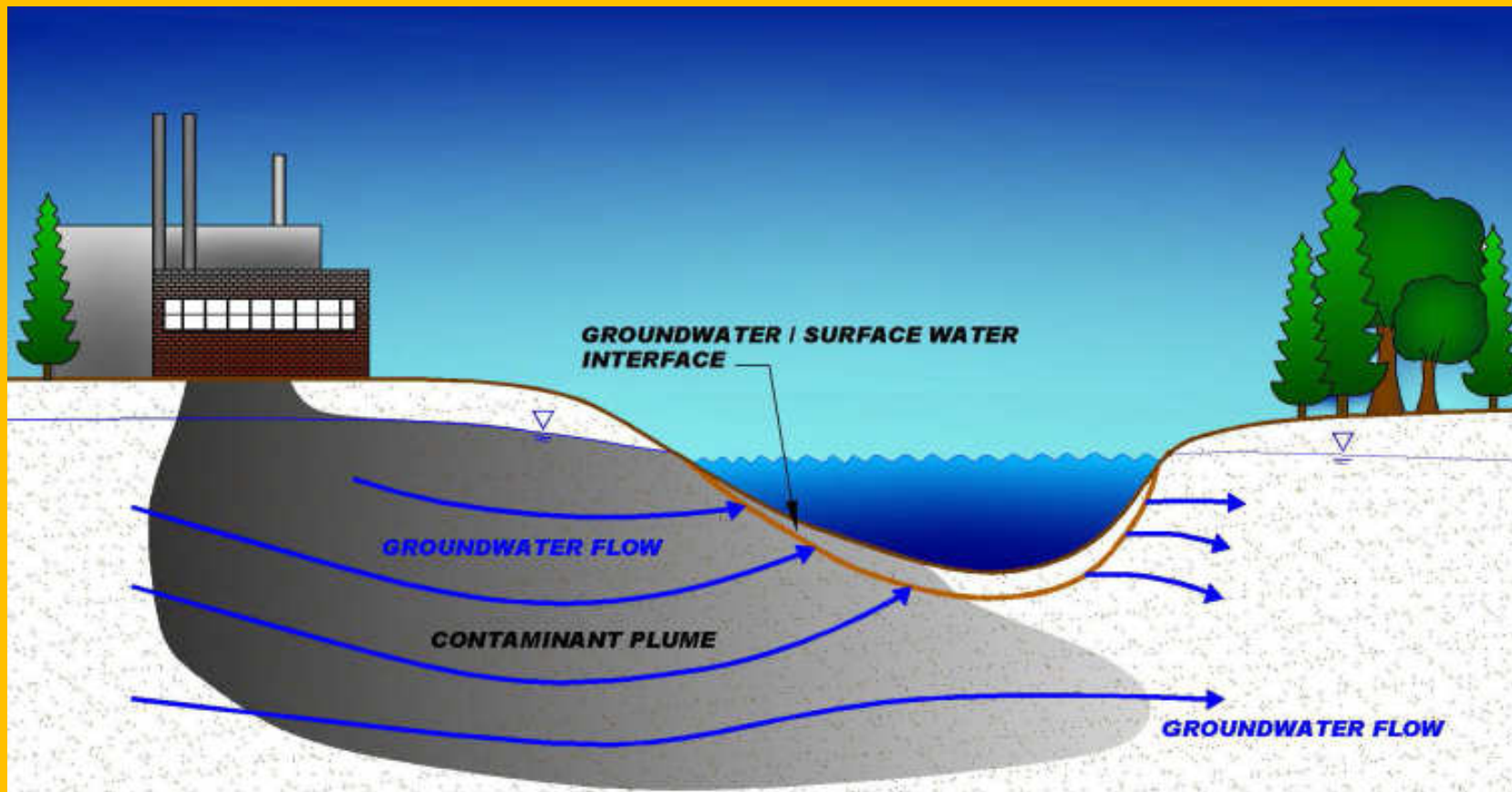
- August 2009 – Advanced 77 borings, Installed 39 nested wells
- September 2010 – Installed 10 additional monitoring wells
- October 2010 – Geophysical surveys to ID find source materials
- February 2011 – Test trenching completed to validate geophysical findings
- July 2011 - Limited source removal - 845 tons of buried tar materials
- March 2012 – Submitted a Remedial Alternatives Report
- October 2009 thru November 2016 – Groundwater monitoring
- April 2015 – Assessment work to support request for Mixing Zone (MZ)-based GSI Criteria
- October 2015 - Submitted preliminary request for MZ-based GSI Criteria to MDEQ
- February 2016 – Concluded MZ-based GSI Criteria may be applicable for site
- July 2016 – Submitted request to MDEQ RRD UP District Office for MZ-based GSI Criteria
- February 7, 2017 – MDEQ RRD UP District issues comments to request for MZ-based GSI Criteria
- March 3, 2017 – Meeting with MDEQ RRD UP District Staff to review comments

Response Activity Results – GSI Pathway

GSI Pathway Remains a Concern

- What is GSI?
 - GSI is defined as the location at which groundwater vents to a surface water body
 - The GSI pathway may be relevant if there is a hydraulic connection from the groundwater to the surface waters of the state
- What is a Mixing Zone?
 - A mixing zone is the portion of a surface water body in which venting groundwater is mixed with the receiving water.
- If generic GSI criteria are exceeded or reasonably expected to be exceeded at the GSI Interface, a person may request MDEQ approve a response activity that authorizes Mixing Zone-based GSI Criteria pursuant to Section 3109a of NREPA. (R 299.5716(7) and (8))

GSI and Mixing Zone



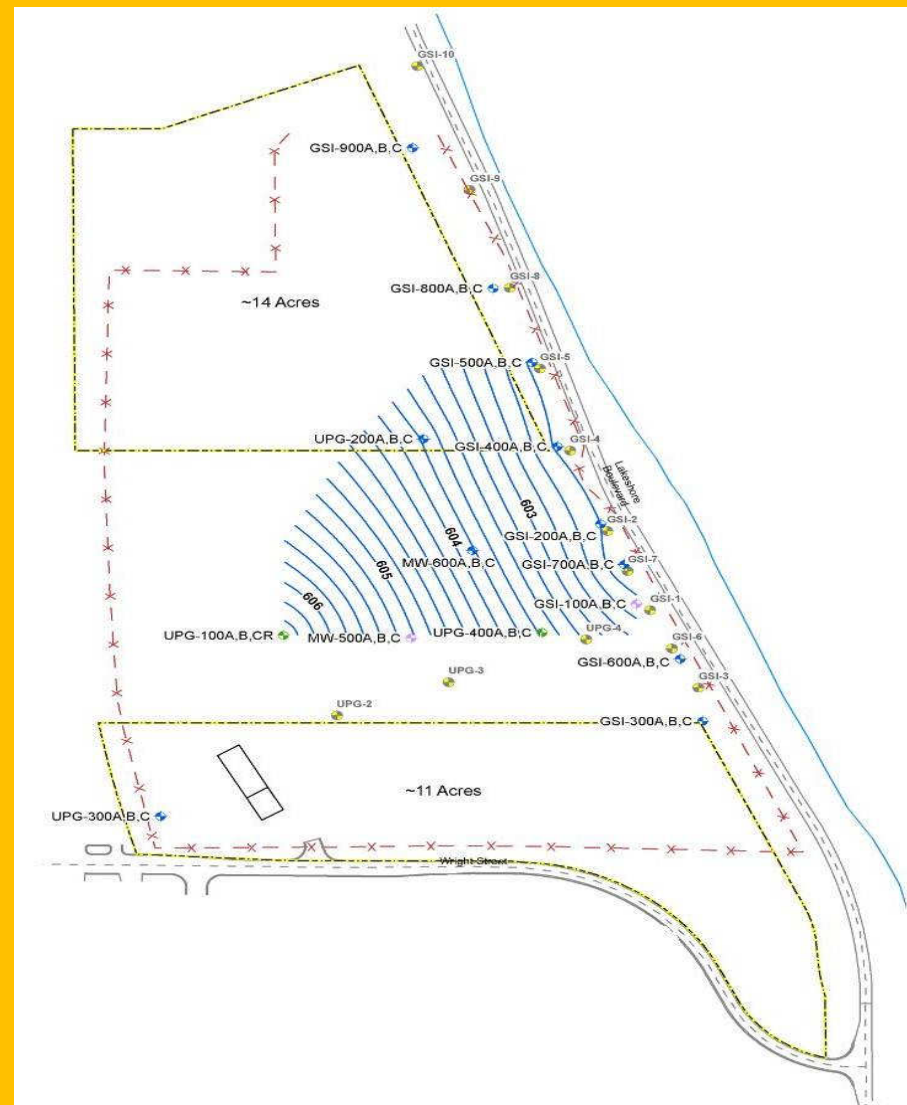
Request for MZ Determination

February 2014 Meeting

City, FBMJ, & TriMedia met with MDEQ following January 2014 sampling event

Initial pathways considered included:

- Split North and South Parcels
 - ~14-Acre North Parcel
 - ~11-Acre South Parcel
- Apply for Mixing-Zone Determination for North Parcel
- Apply for No Further Action for South Parcel
- MDEQ Suggests Applying for MZ for Entire Parcel



Activities to Support MZ Determination

- April 2015 – Assessment work to support request for Mixing Zone (MZ)-based GSI Criteria
- October 2015 - Submitted preliminary request for MZ-based GSI Criteria to MDEQ
- February 2016 – Concluded MZ-based GSI Criteria may be applicable for site
- July 2016 – Submitted request to MDEQ RRD UP District Office for MZ-based GSI Criteria
- February 7, 2017 – MDEQ RRD UP District issues comments to request for MZ-based GSI Criteria
- March 3, 2017 – Meeting with MDEQ RRD UP District Staff to review comments
- Currently working to revise and submit MZ Determination Request, April 2017

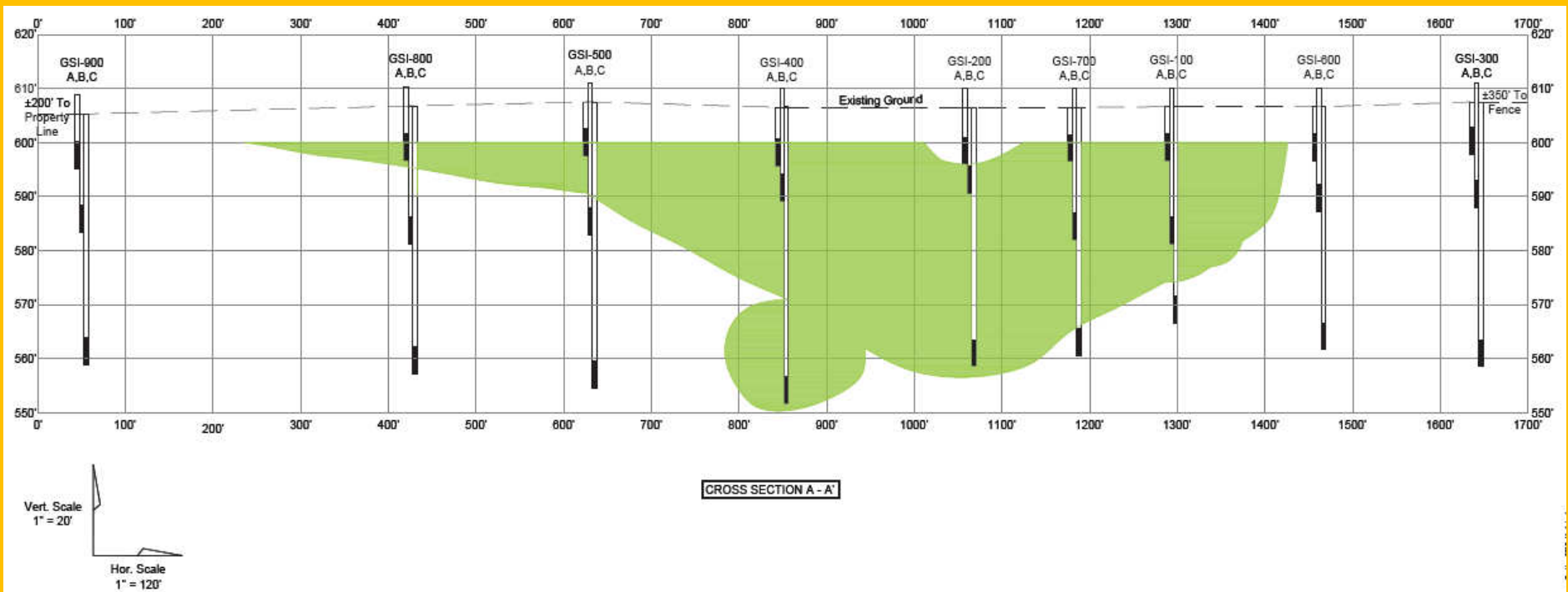
Preliminary Mixing Zone Data Interpretation

Preliminary MZ Determination Relied on Interpolated Data

MDEQ requests revised groundwater plume boundaries for calculations

GSI Wells Cross Section A-A' Preliminary

GSI Submittal Interpolated VOCs > GSI



Revision of MZ Determination Request

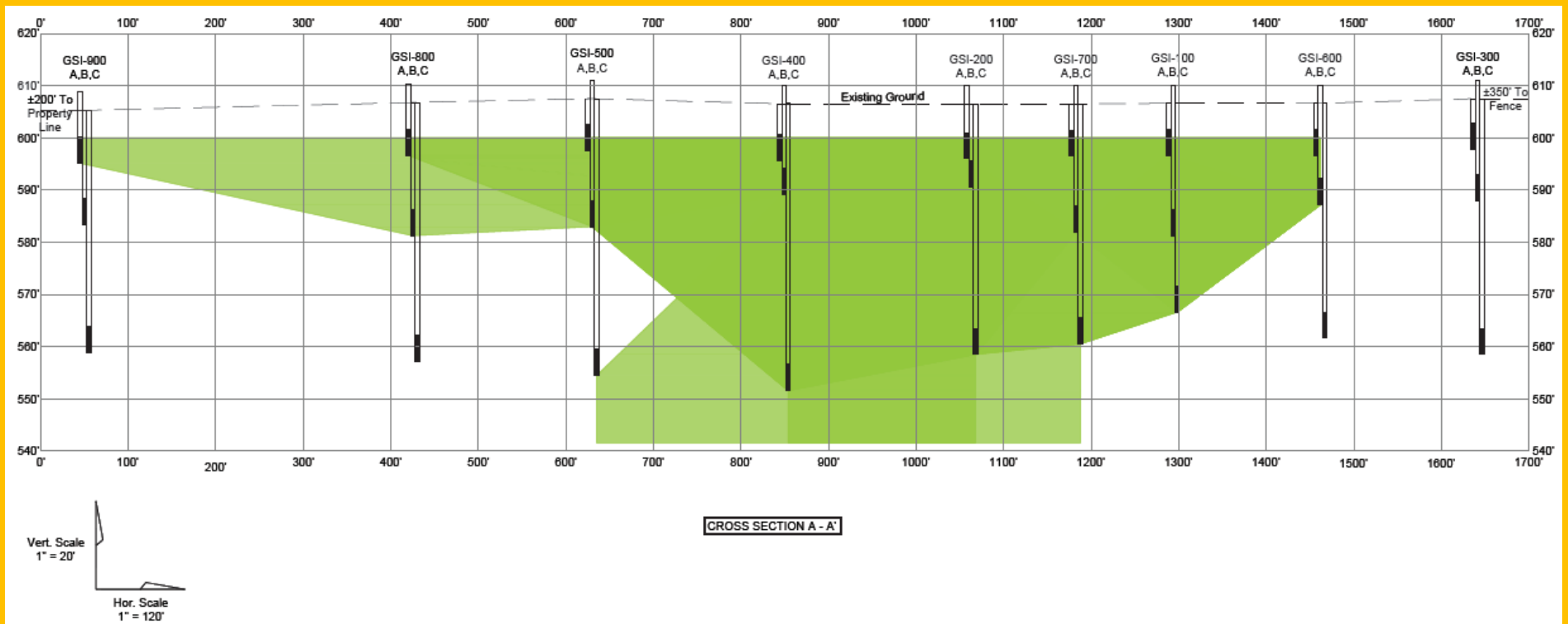
MDEQ requests additional information for MZ Determination:

Revise groundwater plume boundaries for calculations

GSI Wells Cross Section A-A'

Revised GSI Submittal

VOCs > GSI



MZ Determination Outcomes

- MZ-based GSI Criteria will be considered as compliance criteria
- Groundwater results must meet criteria
- Periodic monitoring will be required to demonstrate compliance with criteria
- If monitoring results meet MZ-based criteria, site will be in compliance with Part 201 Regulations
- If monitoring results do not meet MZ-based criteria, corrective actions may be necessary
- Demonstration of compliance may result in NFA from MDEQ

Commission Discussion

Presented by: Richard Baron, Special Counsel
to City of Marquette