



## Grand Haven Board of Light and Power

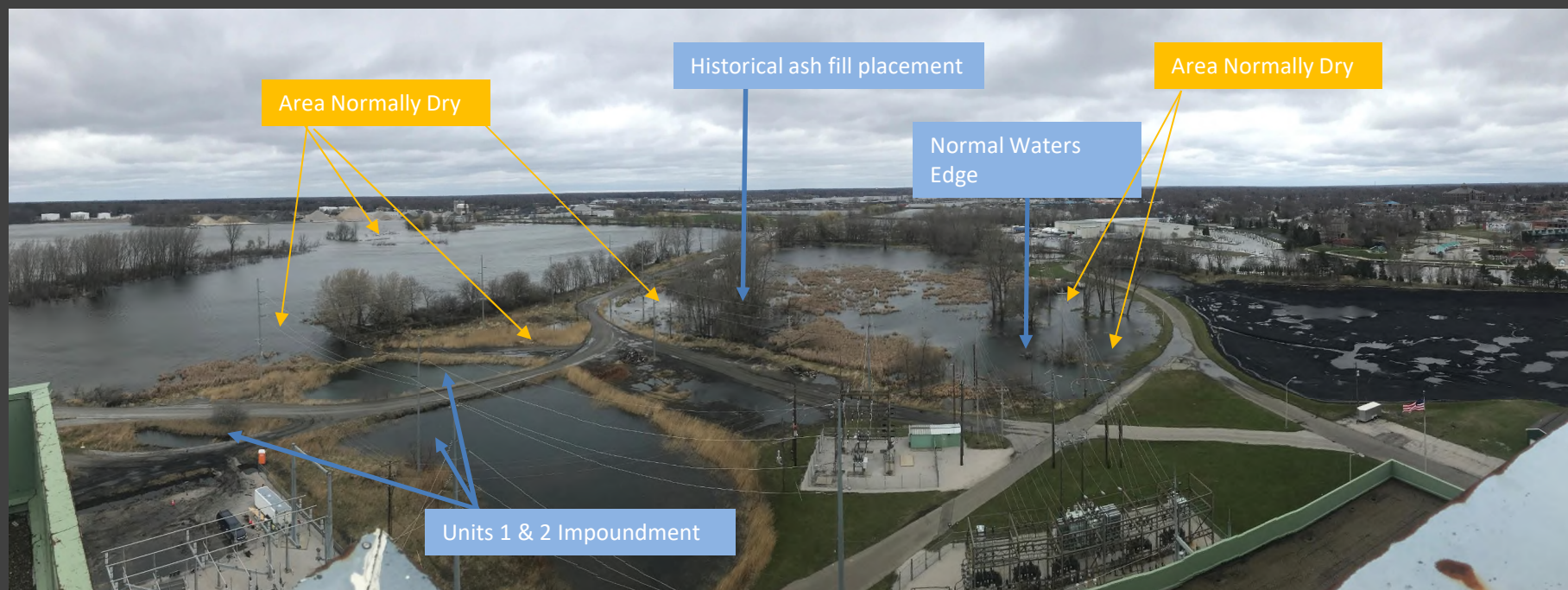
J.B. Sims Generating  
Station  
Coal Combustion Residuals  
Impoundments Closure  
Update: August 24, 2020



# AGENDA

1. Update of the JB Sims Site Conditions
2. Update on Closure Activities & Corrective Actions Taken since April 2020.
3. Status of the Surface Impoundment Unit 3 East and West CCR Closure
4. Evaluation of the Surface Impoundment for Unit 1/2
5. Recommendation for Steps Forward – Closure Strategy
6. Recommendation for Steps Forward - Compliance

# 1. Update on Site Conditions

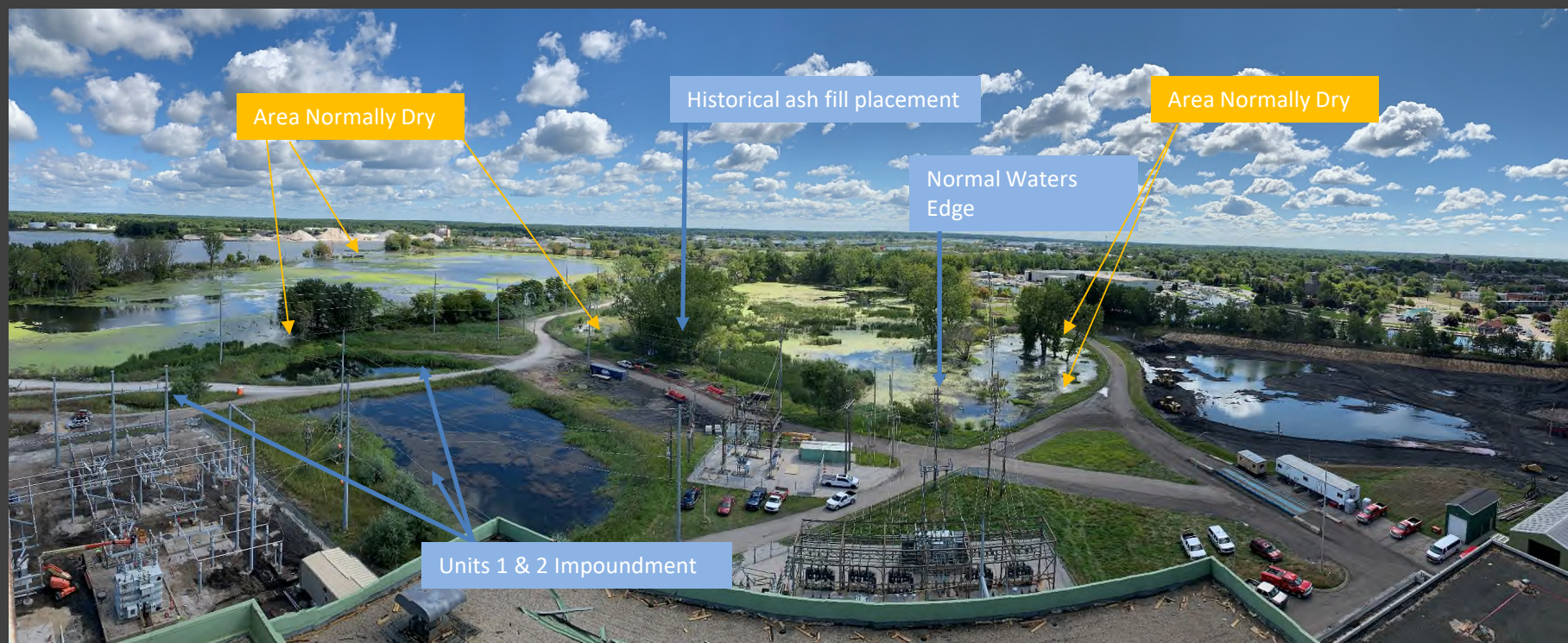


## Harbor Island – Flooding (4/14/2020)

(presented to EPA on 4/27/2020)

NOAA/National Weather Service – January 13, 2020.

- January 2013 through November 2019, Lake Michigan rose 6 feet including nearly 2 feet from January-July 2019.
- Current Lake Michigan level is near record high which was observed in summer and autumn of 1986.
- Homes are falling in the lake along the west shoreline.
- Strong winds and rain cause spikes in water level.



## Harbor Island – Conditions Today (8/18/2020)


### Island Still Flooded with High Waters.

- Areas normally dry still have standing water.
- City boat launch on north end of island has been abandoned until water levels drop.



## **2. Update on Closure Activities & Corrective Actions Taken since April 2020.**

# Closure Activities Taken

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1. Unit 3 Impoundment has stopped receiving waste.
  2. Outfall has been closed and no longer in service.
  3. Coal combustion residuals have been removed from West Unit 3 Impoundment.
  4. Work has begun on cleaning coal combustion residuals from East Unit 3 Impoundment.
  5. The Board will be working through Golder on appropriate quality control assurance that Unit 3 impoundment meets 'closed' requirements.
  6. Spillways and piping are being removed from center berm separating impoundments.

## Corrective Actions Taken – Increased Sampling to Include Surrounding Waters

- The Board notified the agency (EPA) in June that we believed it would be beneficial to test the waters surrounding the site to help in the development of a plan for addressing Unit 1/2 impoundment given the inability to remove CCR material from the unit due to high water conditions.
- Golder will provide that information in this presentation.

## Delineation of Inactive Units 1 & 2 Impoundment: Sought EPA Clarification in April 2020

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- The Board asked for agency clarification that Rule 257 does not consider ash used as fill to be part of the legacy Unit 1 & 2 impoundment even if it is adjacent or contiguous to the impoundment.
  - Agency response (dated July 13, 2020) was *“To the extent that there is CCR or other solid waste remaining at the facility beyond what can or will be delineated as part of the units to be addressed under the CCR rules, other avenues for addressing that material and the related contamination and impacts may be needed”*
  - This response indicates to the Board that ash outside of the Units 1 & 2 impoundment used as historical fill on the Island would not be regulated under Rule 257 and fall under other regulations that provide ‘other avenues for addressing that material.’
- The Board believes that Unit 1/2 Impoundment has been delineated
  - Agency response was that they had not reached a position on the size of the Unit 1 & 2 impoundment. Photographic documentation suggest various methods of ash disposal beyond the proposed boundary that also held water.
  - Can EPA and EGLE provide the photograph and highlight the area that the agency and department are referencing so that the Board and Golder can evaluate?
  - The regulatory history recognizes that beneficial use of CCR before the date of the rule is not regulated by the rule 74 Fed Reg 21302 (2015)

## Closure Requirements: Sought EPA Clarification in April 2020

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- GHBLP asked for agency clarification of how to achieve maximum effective environmental protection for the inactive Units 1 & 2 impoundment given its physical circumstances.
  - An answer was not received on this item in the July 13, 2020 letter from EPA.
- The Board was prepared to close Units 1 & 2 Impoundment by removal in accordance with 40 CFR Part 257.
  - Plans were submitted to the Department of Environment, Great Lakes and Energy.
  - Wetland Permit Application was filed but was not granted.
  - Work was bid out and awarded by Board of Directors.
- Extraordinary high-water levels and flooding on the site do not allow work to be performed as originally planned.
- The Board implemented additional corrective actions with increase water sampling to include surrounding water bodies to determine impacts and identify if an alternative compliance strategy may exist due to inability to conduct work as previously planned.
- Golder has evaluated test results and have prepared suggested alternative strategies to regulate and monitor this site.
- Need to work collaboratively with both EPA and EGLE to determine an acceptable alternative compliance method in the absence of being able to perform work due to flood conditions.

# **3. Status of Unit 3 Closure**

# Status of the Unit 3 Closure

## UNIT 3 EAST AND WEST BOTTOM ASH PONDS

- Based on the response from the U.S. Environmental Protection Agency (EPA) on July 13, 2020:  
“EPA agrees that the Unit 3 impoundments meet the definition of “Existing CCR Surface Impoundment,” because they received CCR both before and after October 19, 2015.”
- Therefore the requirements in both the CCR Rule and Michigan Part 115 Statue apply
- The units have ceased receiving CCR and CCR containing wastes as of July 30, 2020
- A letter of notification of ceased CCR and implementation of closure is being drafted and will be available in the operatizing record and public website by August 28, 2020 (within 30 days after ceasing of CCR to the units)
- Site specific colorimetric testing baseline is complete and the revised Closure and CQA Plan will be submitted to Michigan Department of Environment, Great Lakes and Energy (EGLE) (Mr. Tim Unseld) by August 28, 2020
- CCR materials have been removed from the West impoundment and removal efforts are ongoing for the East impoundment
- Unit 3 East and West CCR Units were used primary for Bottom Ash and blow down waters from the plant. No Fly Ash was placed in Unit 3 CCR Units. This is important to remember for the Unit 1/2 Impoundment groundwater chemistry.

# Status of the Unit 3 Closure and Post-Closure

## TENTATIVE SCHEDULE

| Closure Component  | Start Date       | Estimated End Date |
|--|------------------|--------------------|
| Cessation of CCR and CCR containing wastes to the Unit 3 East and West Bottom Ash Impoundments | July 30, 2020    | July 30, 2020      |
| Notification of closure  | August 2020      | August 2020        |
| Removal of CCR and areas affected by releases of the CCR unit                                  | Ongoing          | December 2020      |
| Certified closure by removal report  | March/April 2021 | March/April 2021   |
| Post-Closure activities Commence   | ~January 2021    | January 2026       |

## **4. Evaluation of the Surface Impoundment for Unit 1/2**

# Additional Evaluation of Inactive Surface Impoundment for Units 1 and 2

## DEFINITIONS

- Based on the response from the EPA on July 13, 2020:

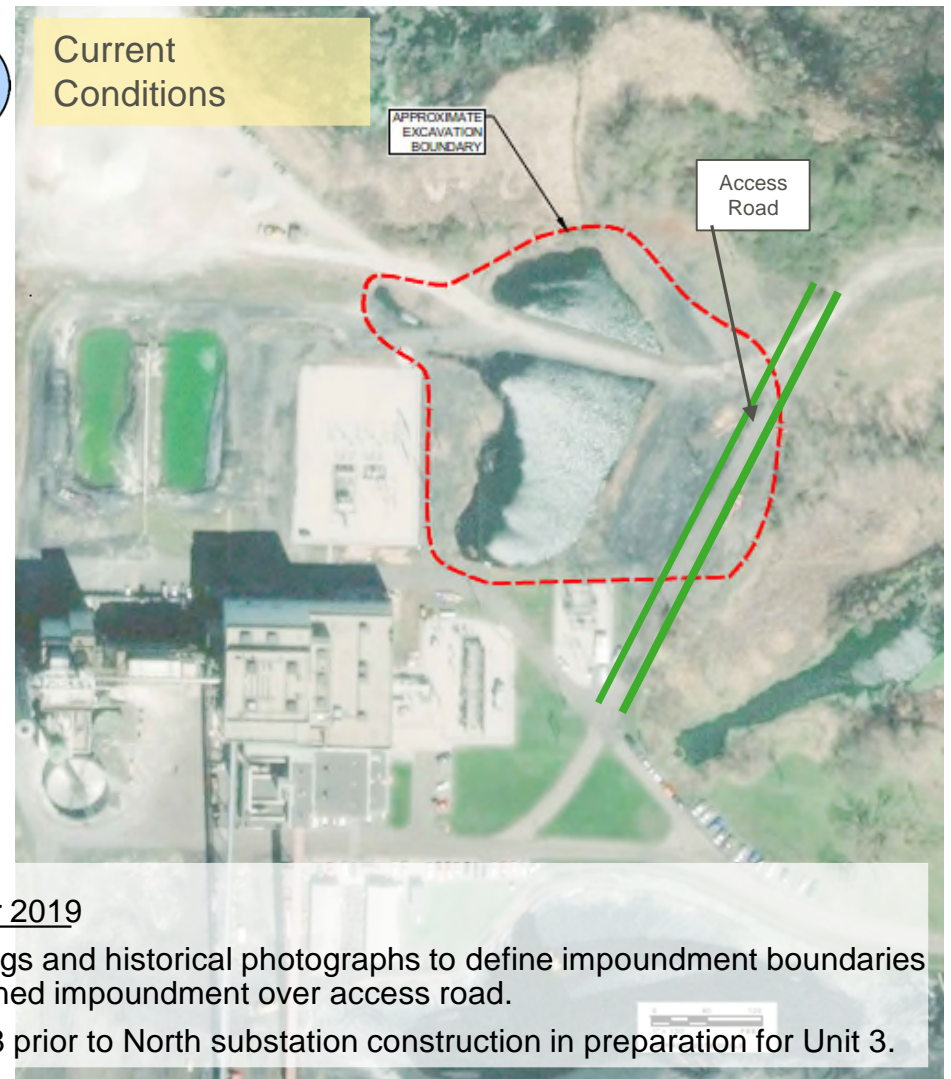
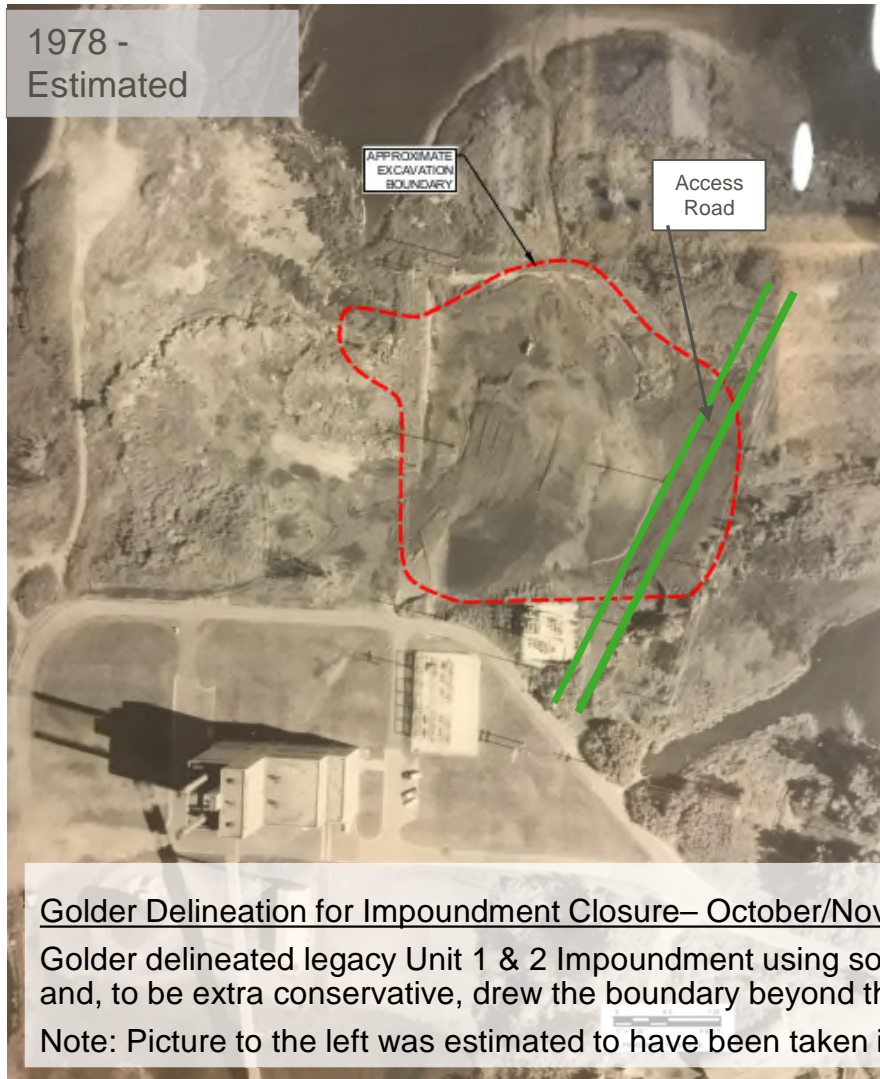
“The Units 1 & 2 impoundment meets the definition of “Inactive CCR Surface Impoundment,” because it no longer received CCR on or after October 19, 2015 and still contained both CCR and liquids on or after October 19, 2015. “

- The term ‘Inactive CCR Surface Impoundment’ is not defined in the EGLE Part 115 Statute
- This leads to potential Groundwater Surface Water Interface (GSI) compliance under Michigan Part 201 and Part 31 – “Request for Calculation of Mixing Zone Based GSI Criteria”

# Additional Evaluation of the Inactive Surface Impoundment for the former Units 1 and 2

## ADDITIONAL INFORMATION

- The inactive surface impoundment for Unit 1/2 when active and/or in use was one surface impoundment for the Power Plant Units 1 and 2. The individual ponds are separated by a road and hydraulically connected with an open culvert.
- Golder has defined the boundary of the inactive surface impoundment based on aerial photographs and historical construction information, excluding areas where ash was beneficially used for island fill over 40 years ago. Delineation of the Inactive Surface Impoundment for the former Units 1 and 2 was completed and submitted to EGLE on October 14, 2019, with a revision based on EGLE comments submitted on November 19, 2019.
- Preliminary review of the groundwater analytical data indicates that the elevated concentrations of some constituents of concern (COCs) are not the result of the active or inactive surface impoundments. They are likely from alternate sources.



#### Golder Delineation for Impoundment Closure– October/November 2019

Golder delineated legacy Unit 1 & 2 Impoundment using soil borings and historical photographs to define impoundment boundaries and, to be extra conservative, drew the boundary beyond the defined impoundment over access road.

Note: Picture to the left was estimated to have been taken in 1978 prior to North substation construction in preparation for Unit 3.

# SITE WIDE MAP



## LEGEND

- DETECTION MONITORING WELL WITH GROUNDWATER ELEVATION
- ASSESSMENT MONITORING WELL WITH GROUNDWATER ELEVATION
- PIEZOMETER WITH GROUNDWATER ELEVATION
- STAFF GAUGE WITH WATER ELEVATION
- LIMIT OF UNITS 1/2 ASH PLACEMENT AFTER 1981
- UNIT 3 LIMITS OF ASH PLACEMENT
- MULTIUNIT NETWORK BOUNDARY
- GROUNDWATER CONTOURS
- FLOW DIRECTION
- Approximate Locations of surface water samples

## GROUNDWATER CONTOUR MAP

JUNE 17, 2020

# Laboratory Analysis

## PIPER DIAGRAMS FOR GW, SW AND IMPOUNDMENT COMPARISON

- The surface water and surface impoundments are not statistically similar
- Monitoring well MW-5 does appear to trending similar to the surface impoundments, which is expected since monitoring well MW-5 is located within the delineation of the inactive surface impoundment.

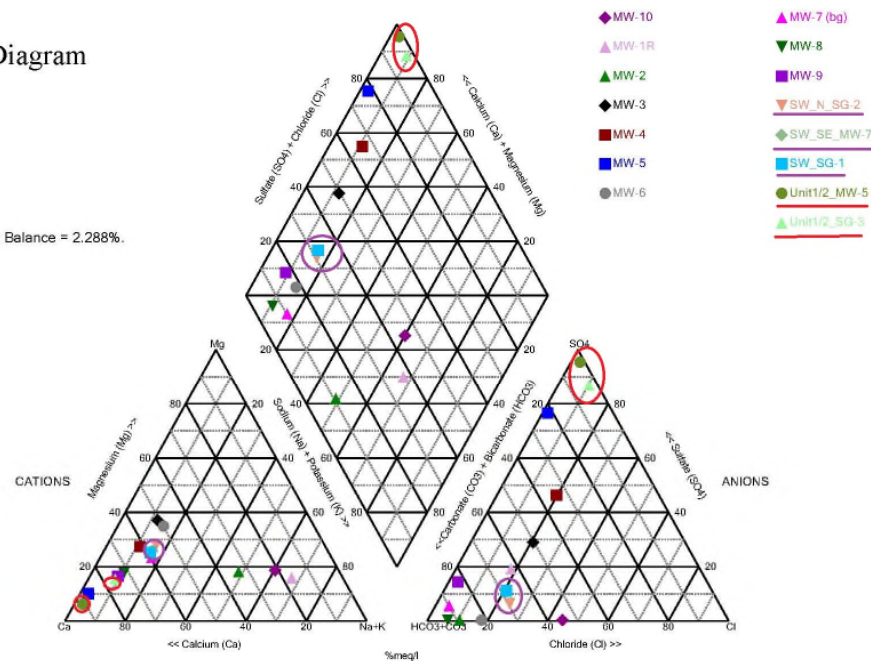
### Notes

- MW- are groundwater samples
- SW- are surface water samples
- Unit - are surface impoundment samples

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Piper Diagram  
6/17/2020

Cation-Anion Balance = 2.288%.



Analysis Run 7/17/2020 11:25 AM

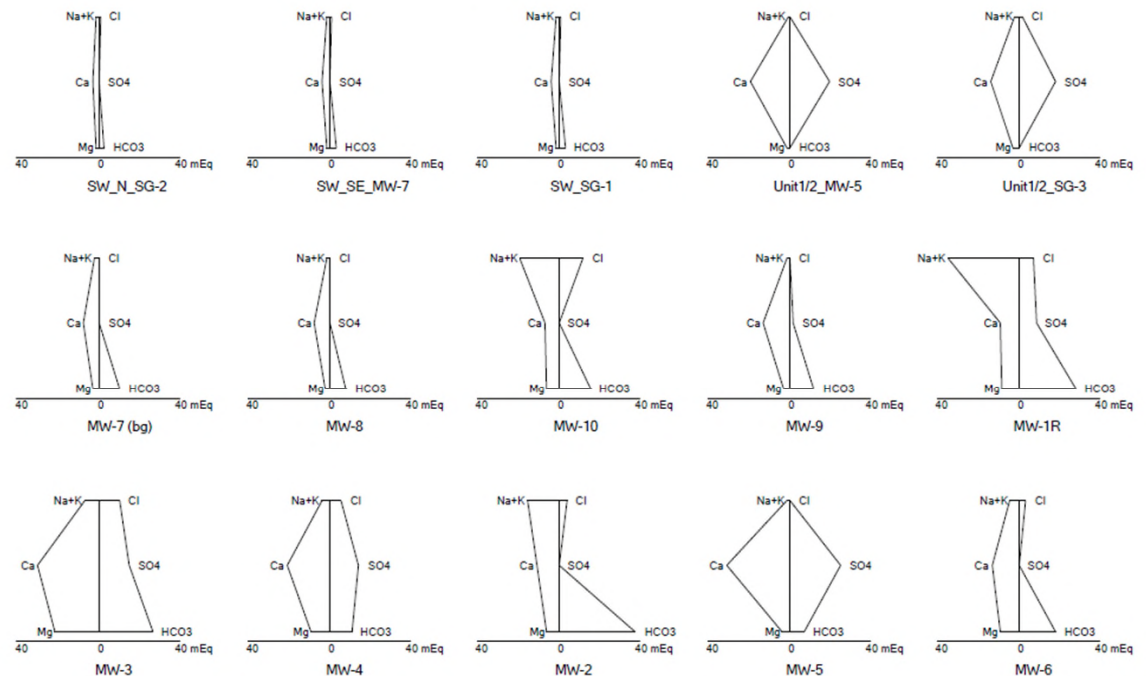
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

# Laboratory Analysis

## STIFF DIAGRAMS FOR GW, SW AND IMPOUNDMENT COMPARISON

- The surface water and surface impoundments are not statistically similar
- MW-7 and MW-8 are statistically similar to the surface water locations, which indicates that both MW-7 and MW-8 are appropriate background wells
- Monitoring well MW-5 does appear to be similar to the surface impoundments, which is expected since monitoring well MW-5 is located within the delineation of the inactive surface impoundment.
- The remaining wells appear to indicate a source other than the surface impoundments

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### Notes

- SW - are surface water samples
- Unit - are surface impoundment samples
- MW - are groundwater samples

Stiff Diagram - 6/17/2020 Analysis Run 7/17/2020 11:26 AM  
Grand Haven BLP Client: Golder Associates Data: DT-Grand Haven BLP

## RESPONSE ACTIVITY PLAN PREPARATION: GSI COMPLIANCE

- Site mixing zone determination (MZD) accounts for presence and impracticability of adequately distinguishing between effects of Surface Impoundment for Unit 1/2 and ubiquitous older and underlying CCR and MSW (e.g., boron at MW-7).
- No COCs at JB Sims or in background wells have been measured in groundwater (GW) at concentrations > Part 31 final acute values (FAVs).
- 25% of 95% exceedance drought flow in Grand River >>> GW flux across GSI, i.e. determine adequate dilution factor under low water conditions in the Grand River.
- Prepare Contingency and GSI Response Activity Plans per 324.20120[e][11,12].
- Golder recommends the following steps for the MZD:
  - Provide horizontal extent of the GSI under a normal hydraulic gradient.
  - Conduct additional testing of GW quality closer to the Grand River (e.g., MW-9 is closer than MW-2) by either installing additional MWs (may need to be manually installed) or vertically profile for COC concentrations.
  - Conduct site specific slug tests in the GSI monitor wells to calculate hydraulic conductivity (“K”) and rate of GW flux across the GSI into the Grand River. Currently, literature examples as contained in the MW network certification report provide approximate K values.

# 5. Recommendations for Steps Forward

## CLOSURE STRATEGY

- Closure by removal of ash for Unit 3 Impoundment with lines of evidence documented
- Complete a GSI mixing zone analysis and request
- Removing ash from Unit 1/2 may be impracticable due to high water levels, possible increase in groundwater disturbance, and surrounding wetlands
- Closure by capping and leaving ash in place for the inactive surface impoundment for former Unit 1/2
- Develop a post-closure monitoring plan
  - Prepare as a response activity plan under Part 201
  - A post-closure monitoring plan would include monitoring of the cap and groundwater focusing on the GSI interface

# 6. Recommendations for Steps Forward

## COMPLIANCE STRATEGY

Discussion.



**GOLDER**