

# **POWERTON GENERATING STATION GROUNDWATER CORRECTIVE ACTION PLAN**

ID No. W1978010008-01  
ID No. W1978010008-03

**July 2026**

Ash Surge Basin  
Metal Cleaning Basin

## Safety First Moment - Summer Tips



**Beach:** Only swim at beaches that have a lifeguard. Never go in the water if lightning or thunder are present or in background. Make sure inexperienced swimmers are accompanied and wearing life jackets.



**Camping:** Share your travel plans and location with family and friends in the case of an emergency. Be sure to pack water, nutritious snacks and meals, and a first aid kit. Plan ahead for any potential dangers.



**Grilling:** Never grill indoors and be sure to have others keep a safe distance away from the grill. Use long-handled tools and never leave an in-use grill unattended.



**Mosquitoes:** Use insect repellents when outdoors. Avoid going outdoors at dusk and dawn when mosquitoes are the most active. Avoid tall grass and underbrush and inspect yourself carefully for any insects or ticks.

**\* Source: [redcross.org](https://www.redcross.org)**

# Listserv Sign-up Reminder

If you would like to receive a summary of this meeting or be added to the Illinois Environmental Protection Agency's listserv, visit the sign in table to provide your contact information.



- Purpose/Regulatory Basis
- Powerton Generating Station
- Groundwater Monitoring and the Corrective Action Process
- Groundwater Corrective Action Plan, Including Results from Groundwater Contaminant Transport Modeling
- Question & Answer Session

- Groundwater monitoring is actively being performed under the Illinois CCR Rules (35 IAC 845) and Operating Permit 2024-CO-100029
- Today's meeting presents draft plans regarding a specific aspect of the Illinois Coal Combustion Residuals (CCR) Rules
- Proposed Groundwater Corrective Action pursuant to 35 IAC 845.670
  - Ash Surge Basin
  - Metal Cleaning Basin

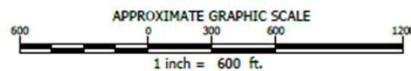
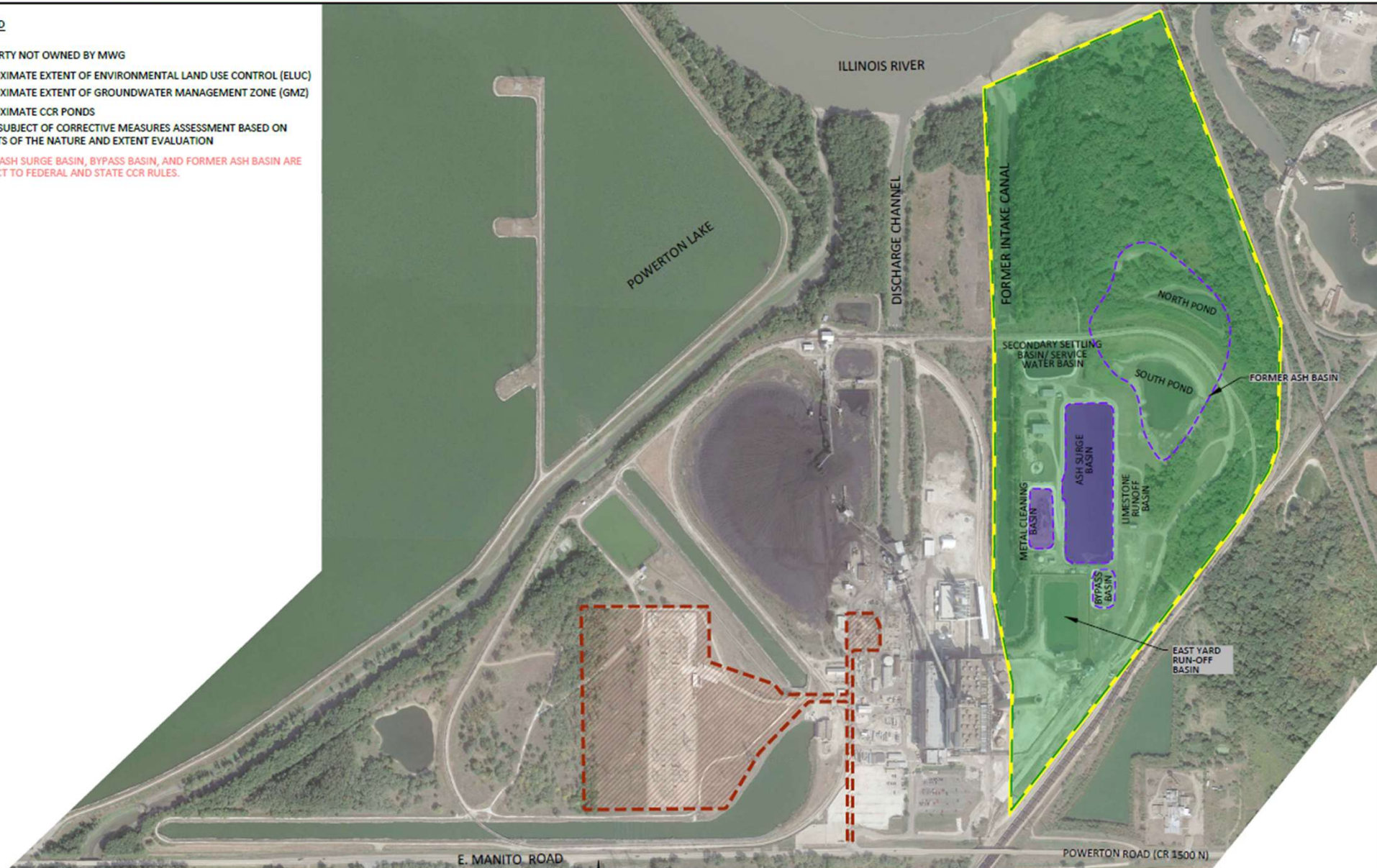


# Powerton Generating Station

## LEGEND

-  PROPERTY NOT OWNED BY MWG
-  APPROXIMATE EXTENT OF ENVIRONMENTAL LAND USE CONTROL (ELUC)
-  APPROXIMATE EXTENT OF GROUNDWATER MANAGEMENT ZONE (GMZ)
-  APPROXIMATE CCR PONDS
-  POND SUBJECT OF CORRECTIVE MEASURES ASSESSMENT BASED ON RESULTS OF THE NATURE AND EXTENT EVALUATION

NOTE: ASH SURGE BASIN, BYPASS BASIN, AND FORMER ASH BASIN ARE SUBJECT TO FEDERAL AND STATE CCR RULES.



PREPARED FOR:  
MIDWEST GENERATION, LLC

## SITE LAYOUT MAP - POWERTON STATION

13082 E. MANITO ROAD  
PEKIN, IL

THIS DOCUMENT, AND THE DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF WEAVER CONSULTANTS GROUP, AND IS NOT TO BE USED IN WHOLE OR IN PART, WITHOUT THE WRITTEN AUTHORIZATION OF WEAVER CONSULTANTS GROUP.

**Weaver Consultants Group**  
CHICAGO, ILLINOIS  
(312) 922-1000 [www.wcgrp.com](http://www.wcgrp.com)

DRAWN BY: JEB  
REVIEWED BY: AS  
DATE: 6/25/26  
FILE: 5053-300  
CAD: Powerton1902026.dwg  
**FIGURE 1**

## Metal Cleaning Basin (MCB)

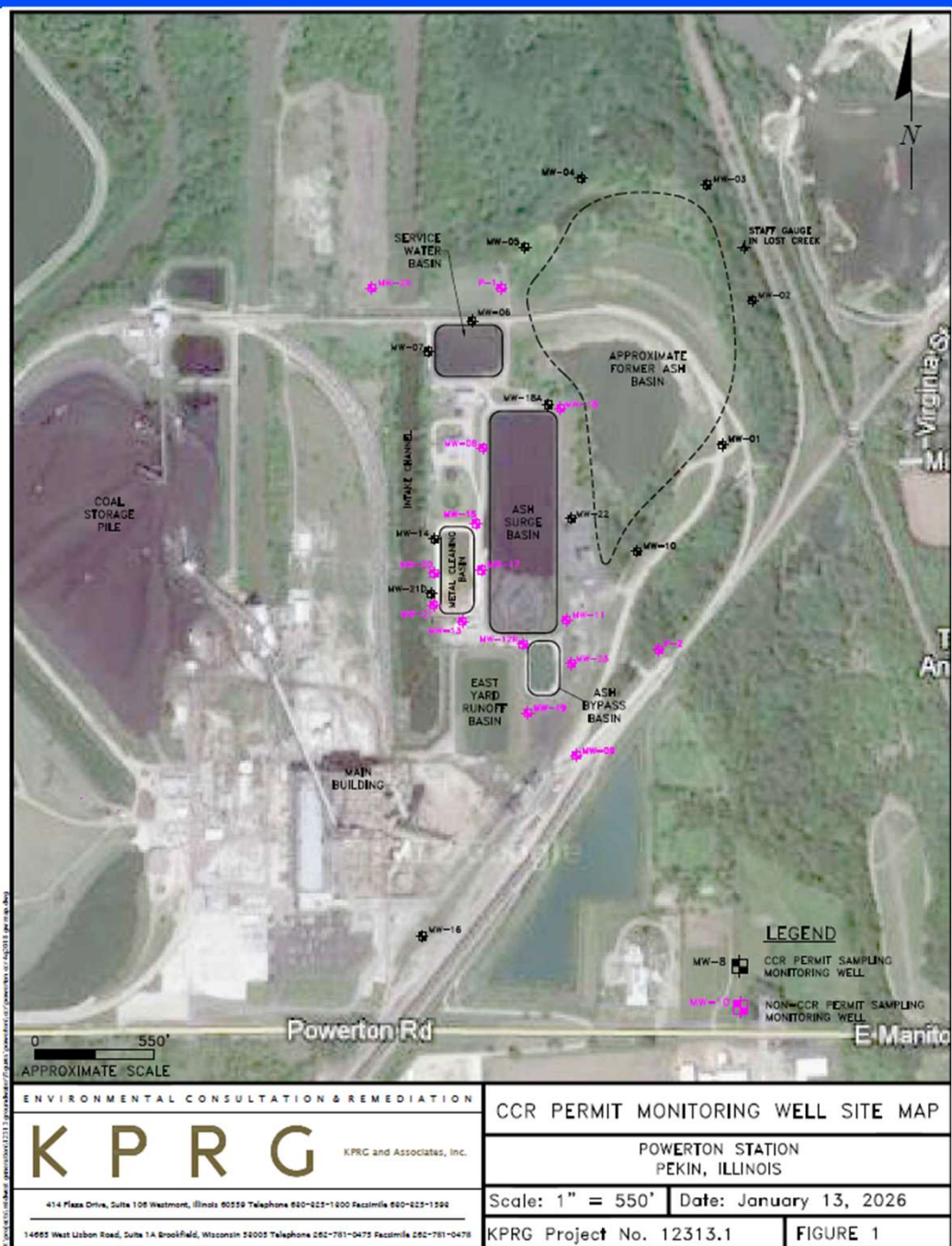
- Occasionally used to collect and treat boiler cleaning wash waters during boiler outages. Outside of outages, the MCB is also occasionally used to temporarily store ash from maintenance activities
- Approximately 2.3 acres and was originally built in 1978 with a Poz-o-Pac and Hypalon membrane liner
- Relined with a HDPE geomembrane liner in 2010
- Construction Permit Application to retrofit with composite liner and leachate collection system submitted July 2023 – under review by Illinois EPA

## Ash Surge Basin (ASB)

- Previously used as the primary settling basin for CCR and other process wastewaters
- Removed from service Oct 2024 (alternate capacity established)
- Approximately 8 acres, originally built in 1978 with a Poz-o-Pac (bottom) and Hypalon (sides) membrane liner
- Relined with a high-density polyethylene (HDPE) geomembrane liner in 2013
- Construction Permit Application to retrofit with composite liner and leachate collection system submitted July 2023 – under review by Illinois EPA

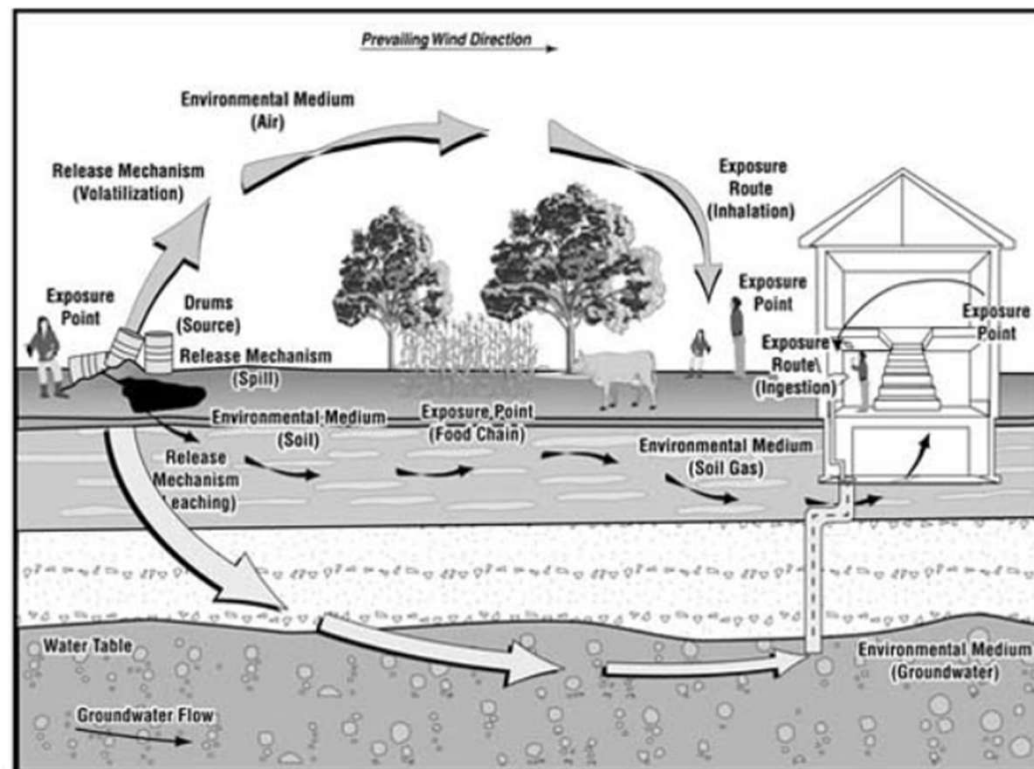
- Quarterly monitoring upgradient and downgradient of CCR units from two vertical zones for 20 CCR constituents listed in regulations
- Comparisons to groundwater protection standards (GWPS) established in the CCR Operating Permit
  - Greater of statistically-derived background and health-based standards from the IL CCR Rules
- Qtr. 4 2024: confirmed concentrations of sulfate, TDS, total arsenic, total cobalt, total molybdenum, total thallium, which triggered:
  - Nature & Extent Evaluation (Report submitted June 2025, Addendum May 2026)
  - Corrective Measures Assessment (CMA) (Report submitted August 2025)
  - Corrective Action Plan (CAP): due to Agency by August 2026, to be submitted in an Application for a Construction Permit - will include groundwater modeling to demonstrate how the corrective action will achieve compliance with GWPS.





- Extent of groundwater impacts for sulfate, TDS, total cobalt, total molybdenum, and total thallium sufficiently defined
  - Total molybdenum below GWPS during subsequent monitoring events (Q4 2024 data a temporal/statistical anomaly)
  - Extent of groundwater impacts for total arsenic to northwest adequately defined relative to permitted units
- Laboratory Synthetic Precipitation Leaching Procedure (SPLP) testing on soil samples from berms surrounding basins exhibited concentrations below GWPS, indicating these soils are not a source
- Former Intake Canal Pore Water Sampling: no CCR parameter detections above GWPS
- Former Intake Canal Surface Water Sampling: no CCR parameter exceedances in comparison to Surface Water Quality Standards or GWPS

- Groundwater Exposure Pathway is incomplete: existing conditions pose no unacceptable threat to human health or the environment
- Environmental Land Use Control (ELUC)
- No potable wells impacted by the CCR units
- CCR Constituents not volatile
- Safety and Health Plan for Site Workers
  - Personal Protective Equipment (PPE)
  - Training



## Regulatory Overview

- 35 IAC 845.670: CAP is to be submitted to Agency as construction permit application
- CAP is based on results from CMA
- Identify selected remedy meeting required standards (listed on right)
- Include corrective action alternatives analysis
- Contain proposed schedule for implementation
- Include results from groundwater modeling

## Selected Remedy Must:

- Be protective of human health and the environment
- Attain the GWPS
- Control the source(s)
- Remove from environment as much impacted material as feasible, considering factors such as avoiding inappropriate disturbance of sensitive ecosystems
- Comply with standards for management of wastes
- Alternatives evaluated using factors listed in 35 IAC 845.670(e)

**Alternative 1 – Capping ASB Weir Wall**

**Alternative 2 – Basin Retrofit**

**Alternative 3 – Closure by Removal**

**Alternative 4 – Monitored Natural Attenuation**

**Alternative 5 – Hydraulic Containment/Barrier**

**Alternative 6 – Physical Containment**

**Alternative 7 – Permeable Reactive Barrier**

Importantly: CMA stated that CAP will likely be comprised of a combination of one or more of above possible alternatives.



DRAFT - Discard after review

| Evaluation Factors           |                                                                                                      | Corrective Action Alternatives Presented in Corrective Measures Assessment |                    |                        |                                   |                                   |                          |                                |
|------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|--------------------|------------------------|-----------------------------------|-----------------------------------|--------------------------|--------------------------------|
|                              |                                                                                                      | #1: Capping Ash Surge Basin Weir Wall                                      | #2: Basin Retrofit | #3: Closure by Removal | #4: Monitored Natural Attenuation | #5: Hydraulic Containment/Barrier | #6: Physical Containment | #7: Permeable Reactive Barrier |
| 35 IAC Section 845.670(e)(1) | Long- and short-term effectiveness and protectiveness, degree of certainty remedy will be successful | +                                                                          | ++                 | ++                     | +                                 | 0                                 | -                        | -                              |
| 35 IAC Section 845.670(e)(2) | Effectiveness in controlling source                                                                  | ++                                                                         | ++                 | ++                     | -                                 | -                                 | -                        | --                             |
| 35 IAC Section 845.670(e)(3) | Ease or difficulty of implementation                                                                 | ++                                                                         | +                  | +                      | ++                                | --                                | -                        | --                             |
| 35 IAC Section 845.670(e)(4) | Community concerns                                                                                   |                                                                            |                    |                        |                                   |                                   |                          |                                |

Notes:

+ = Positive

++ = Strongly Positive

0 = Neutral

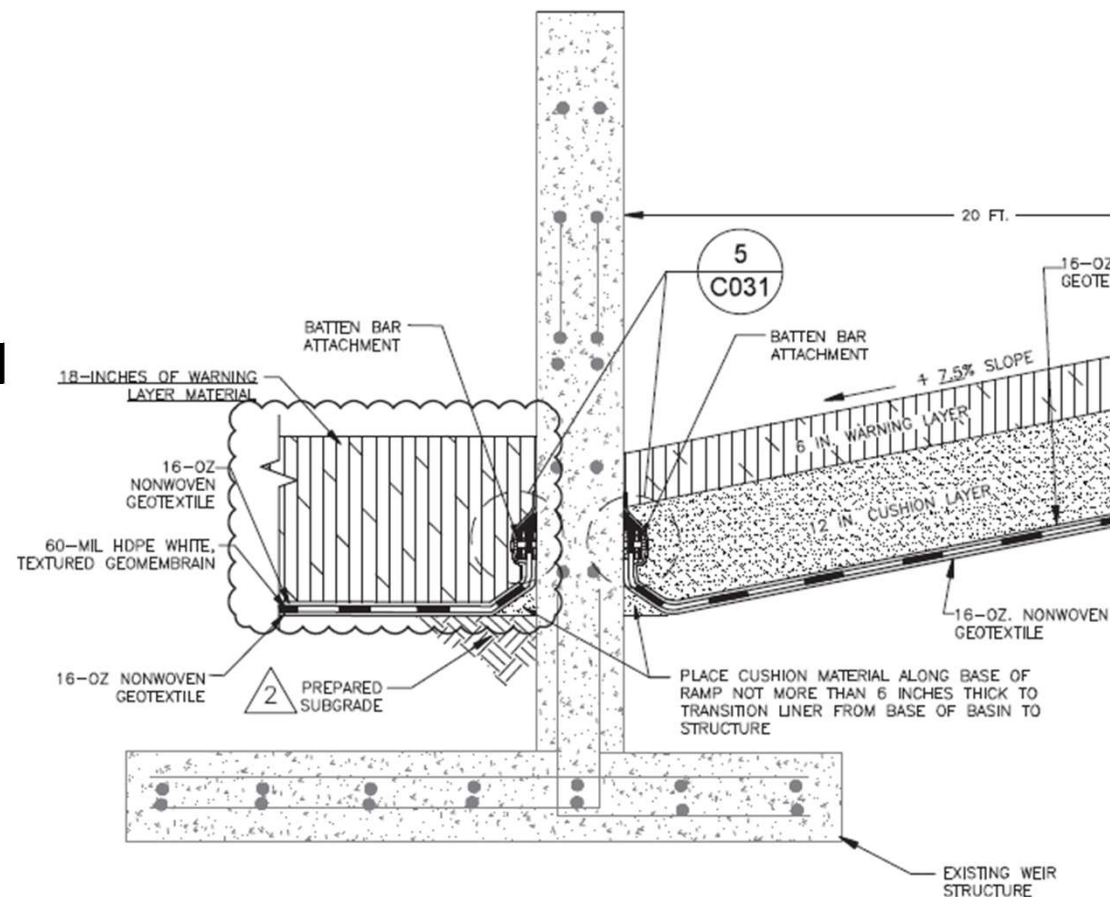
- = Negative

-- = Strongly Negative

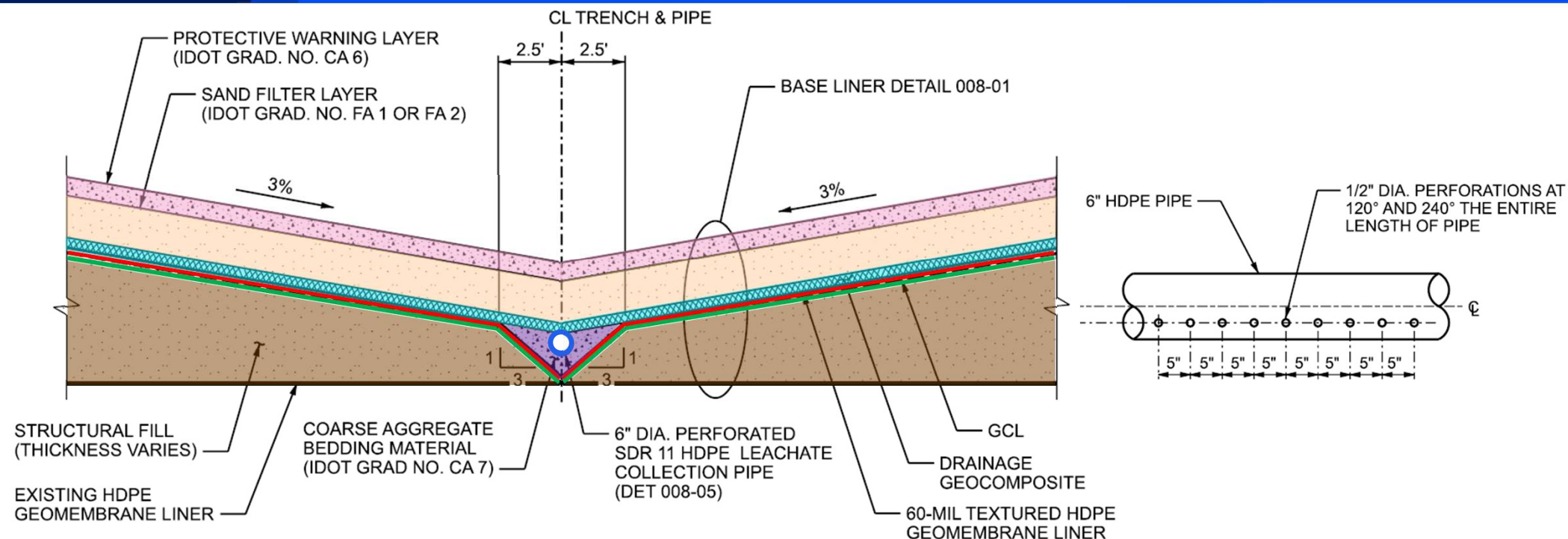
- Preliminary Selected Remedy is a combination of:
  - Alternative #1: Capping ASB Weir Wall
  - Alternative #2: Basin Retrofit
  - Alternative #4: Monitored Natural Attenuation



- Capping Ash Surge Basin Weir Wall
  - Removal of existing batten bar attachments
  - Weld new geomembrane liner section over top of weir wall
  - Anchor to exterior of weir wall

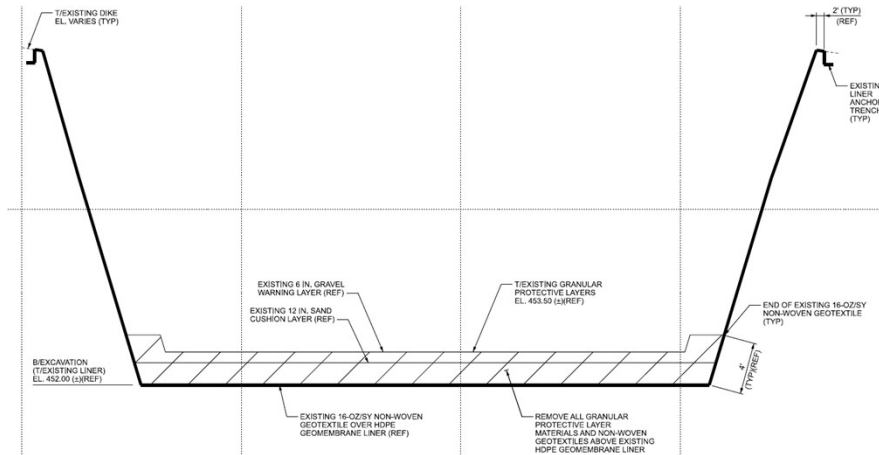


# Preliminary Selected Remedy: Retrofitted Liner/Leachate Collection System Design

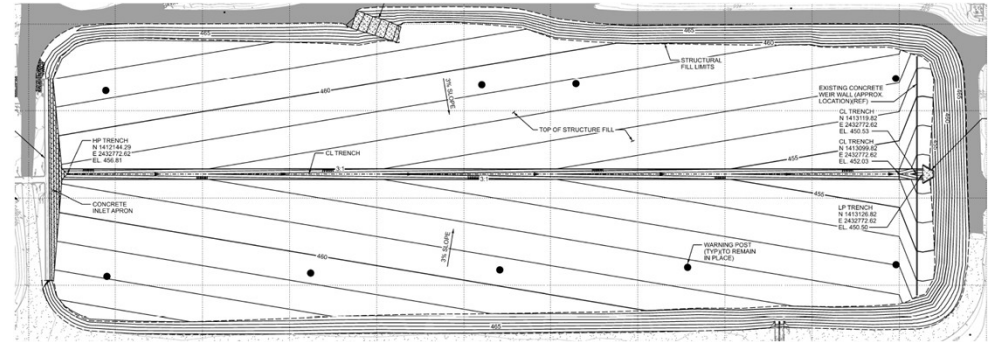


| Component                                   | Layer / Feature                     | Description                                                         | Reference(s)                   |
|---------------------------------------------|-------------------------------------|---------------------------------------------------------------------|--------------------------------|
| Basin Floor                                 | Structural Fill                     | Fill material to establish 3% slope for LCRS                        | 845.420(a)(3)                  |
| Composite Liner System                      | Geosynthetic Clay Liner (GCL)       | Bottom component of new composite liner system                      | 845.410(a) & (b)<br>845.400(c) |
|                                             | 60-mil HDPE Geomembrane Liner       | Top component of new composite liner system                         | 845.410(a) & (b)<br>845.400(c) |
| Leachate Collection & Removal System (LCRS) | Drainage Geocomposite               | Directs leachate to leachate collection pipe                        | 845.420(a)(4)(B)               |
|                                             | Perf. HDPE Leachate Collection Pipe | Collects and directs leachate to discharge pipe or sump pump        | 845.420(a)(7)                  |
|                                             | Coarse Aggregate Bedding Material   | Prevents finer particles from clogging the leachate collection pipe | 845.420(a)(6)                  |
|                                             | Sand Filter Layer                   | Limits intrusion of finer CCR particles into LCRS                   | 845.420(a)(2)                  |
|                                             | Protective Warning Layer            | Protects liner and LCRS components                                  | 845.420(a)(8)                  |

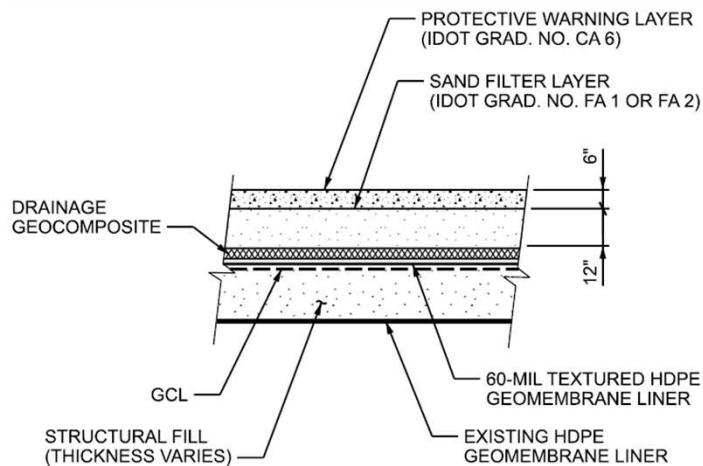
### 1. Material Removal & Decontamination



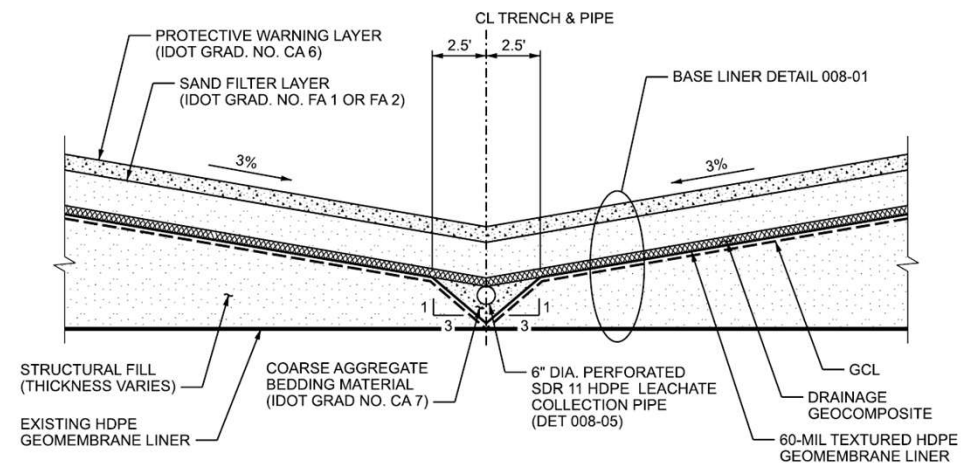
### 2. Place Structural Fill



### 3. Install New Composite Liner



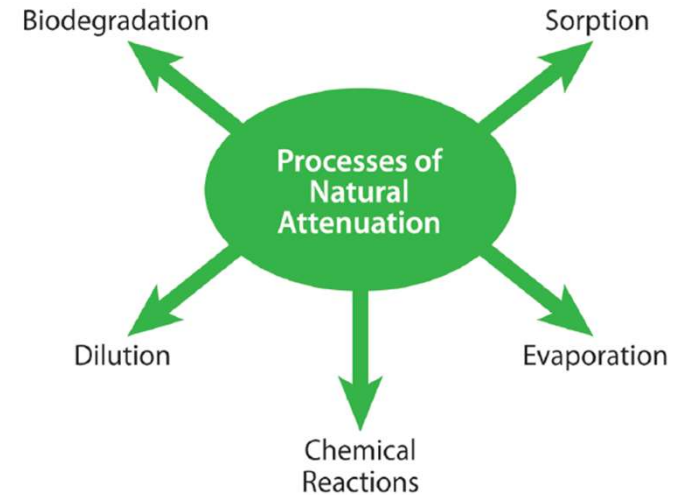
### 4. Install New Leachate Collection System



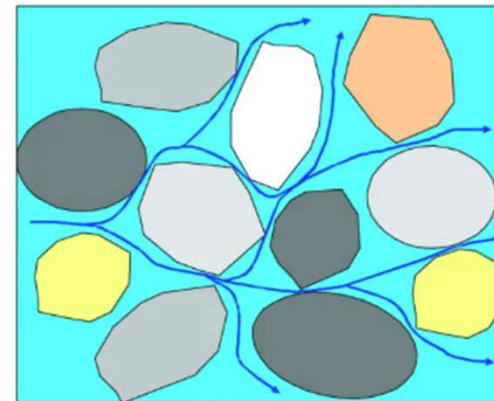
TYPICAL SECTION AT LEACHATE COLLECTION TRENCH

- Monitored Natural Attenuation (MNA)

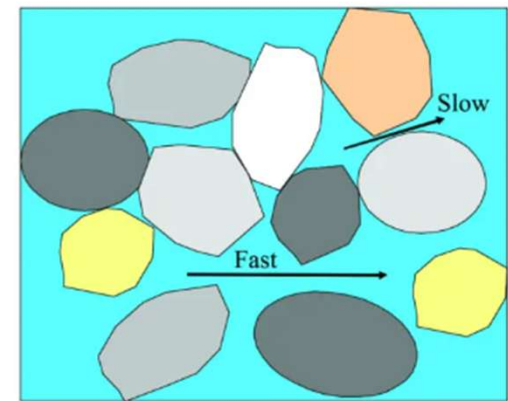
- Retrofit composite liners effectively stop seepage (i.e., source)
- Stable/downward trends
- Relies on natural groundwater processes
- Tracked with on-going groundwater monitoring
- Groundwater monitoring required during operation phase and post-closure



Dispersion of contaminant at the scale of individual grains in an aquifer



Tortuous routes among grains; some routes are short, some are long.



Differences in pore sizes between grains means some flow will be faster.

The combination of grain-scale dispersion means that some molecules of contaminant will move ahead faster than others, and some will move sideways, resulting in expansion of the plume.



To comply with the Illinois CCR Rule and support the Draft Corrective Action Plan, modeling of the groundwater concentrations was performed. The purpose of the groundwater modeling is to demonstrate the effectiveness of the proposed draft remedy relative to achieving GWPS.

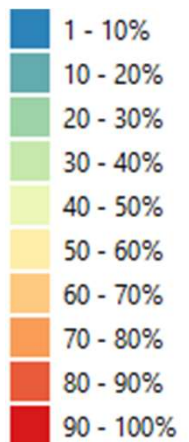
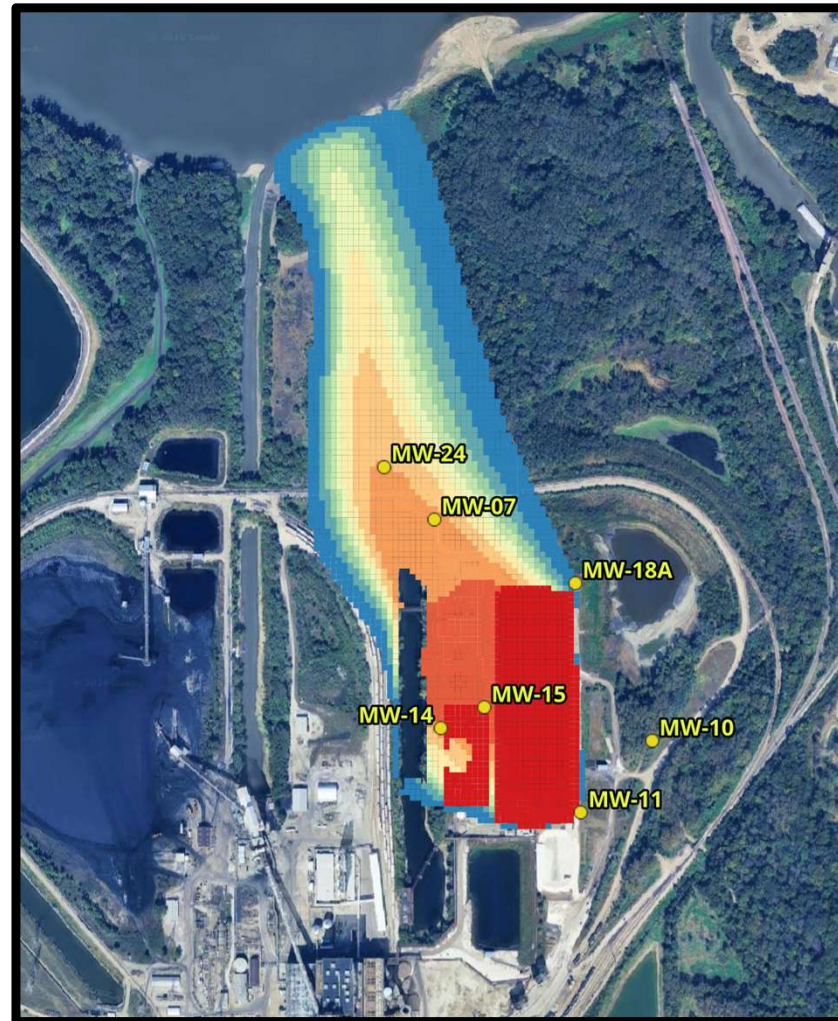
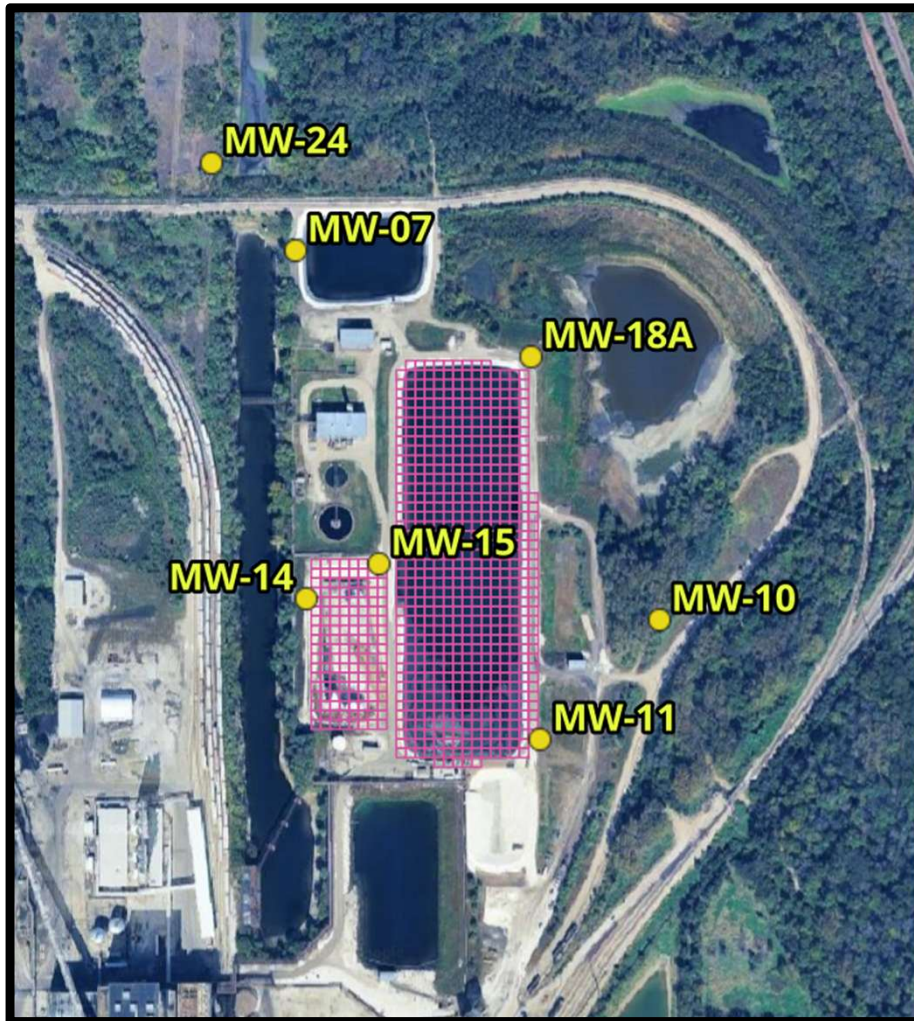
To accomplish this, the model establishes a conservative, **WORST-CASE** theoretical source of contamination (i.e., not an actual source) from the units, which established hypothetical baseline conditions.

The model evaluates theoretical, potential contamination emanating from the CCR units – it conservatively assumes the ponds have ash and water and that the (existing) liner is compromised/non-existent since the upgraded liners were installed approximately 15 years ago.

After establishing the above baseline conditions, the groundwater remedy can be overlain and the model is then run over an extended time sequence to evaluate the change/improvement in groundwater quality resulting from the remedy.

# Theoretical Modeling Baseline Simulation

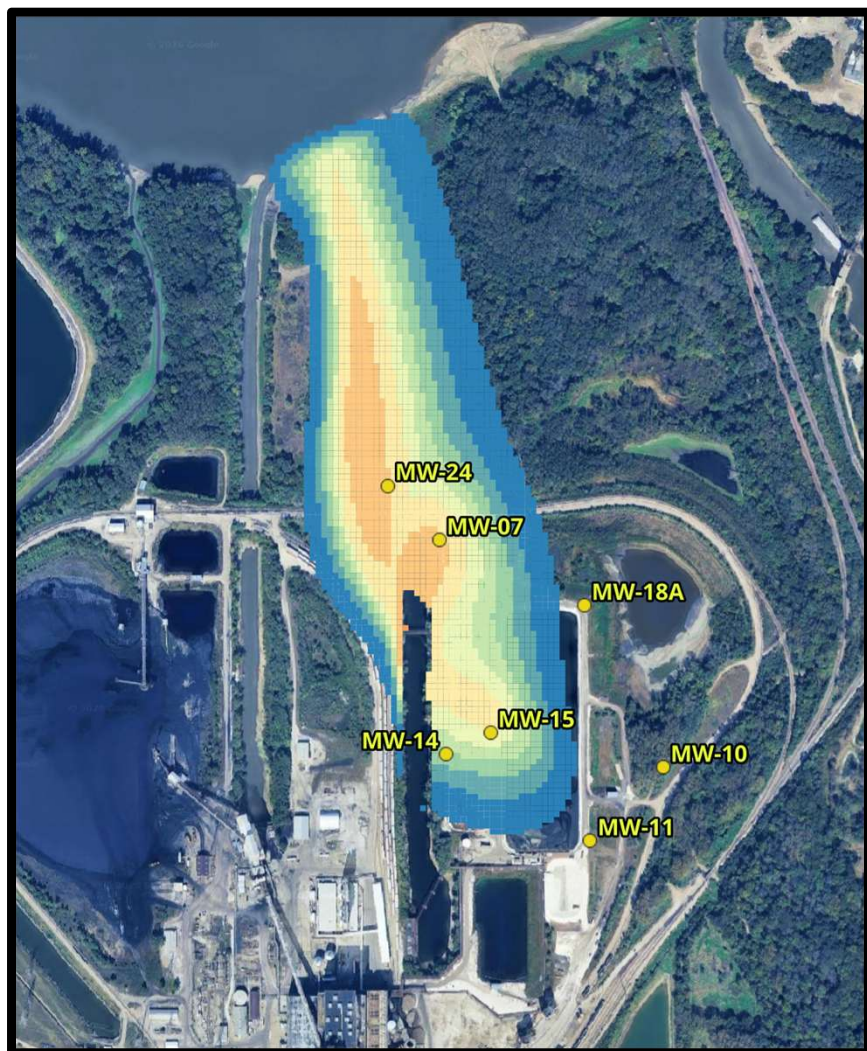
- Hypothetical source beneath MCB and ASB
- Hypothetical starting point (for modeling only)



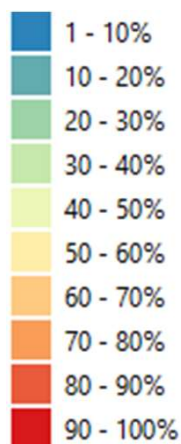
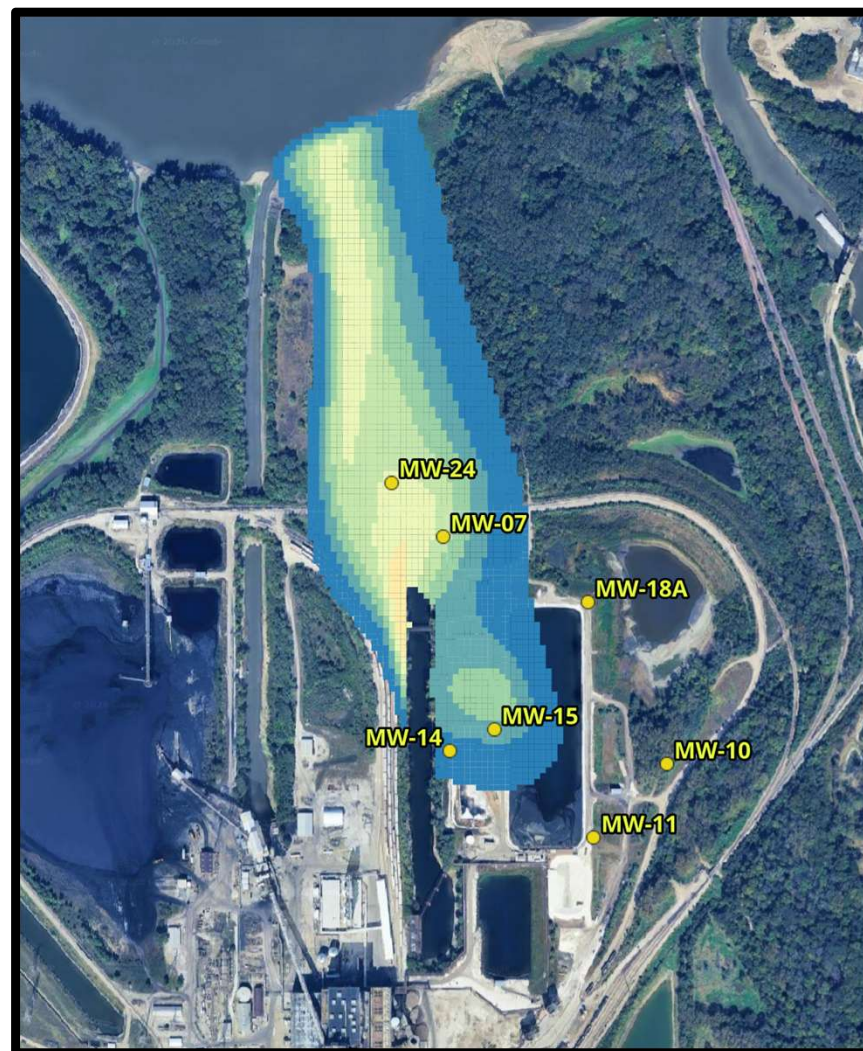


# Implementation of Remedy Scenario

- 5-year modeled distribution



- 10-year modeled distribution





# Implementation of Remedy Scenario

- 25-year modeled distribution



- 50-year modeled distribution

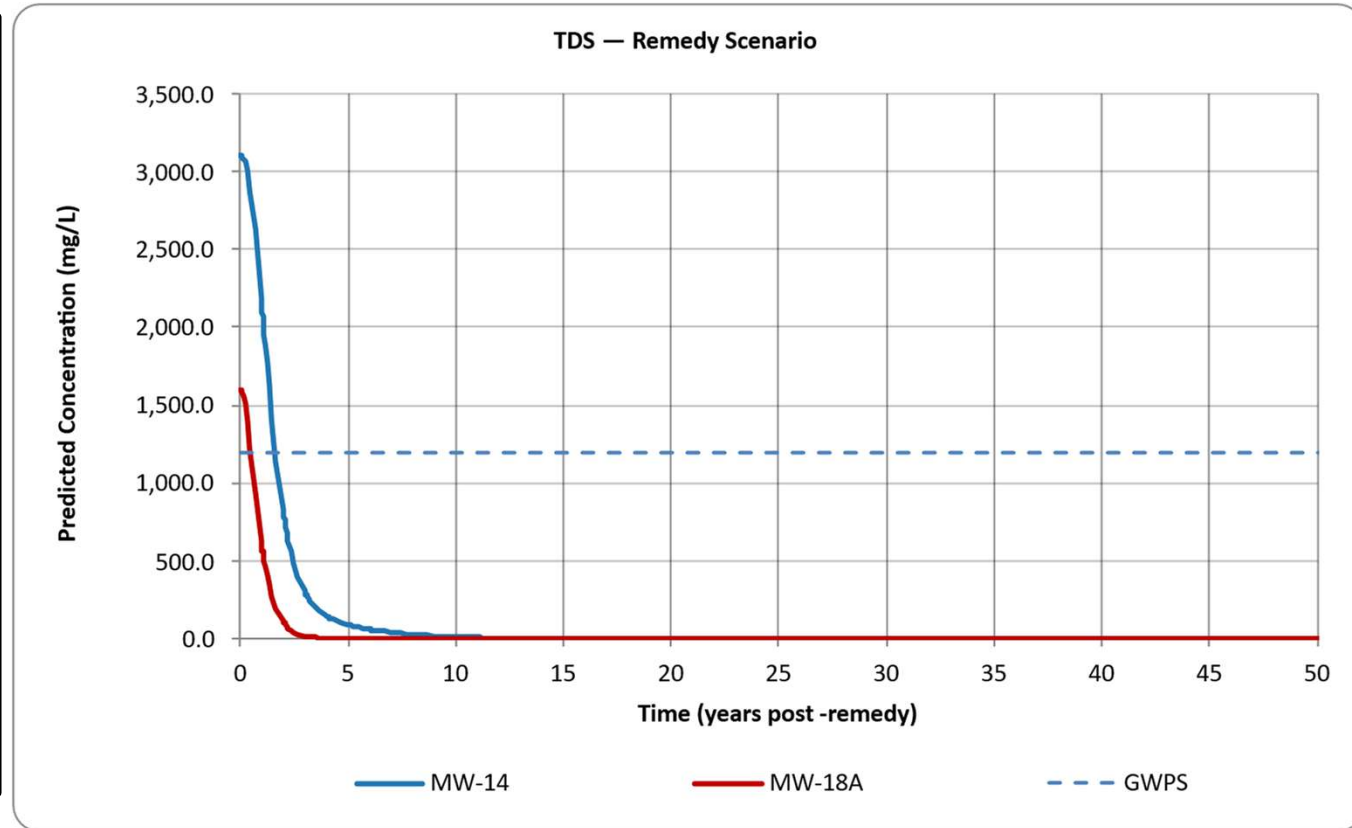




- Well Locations



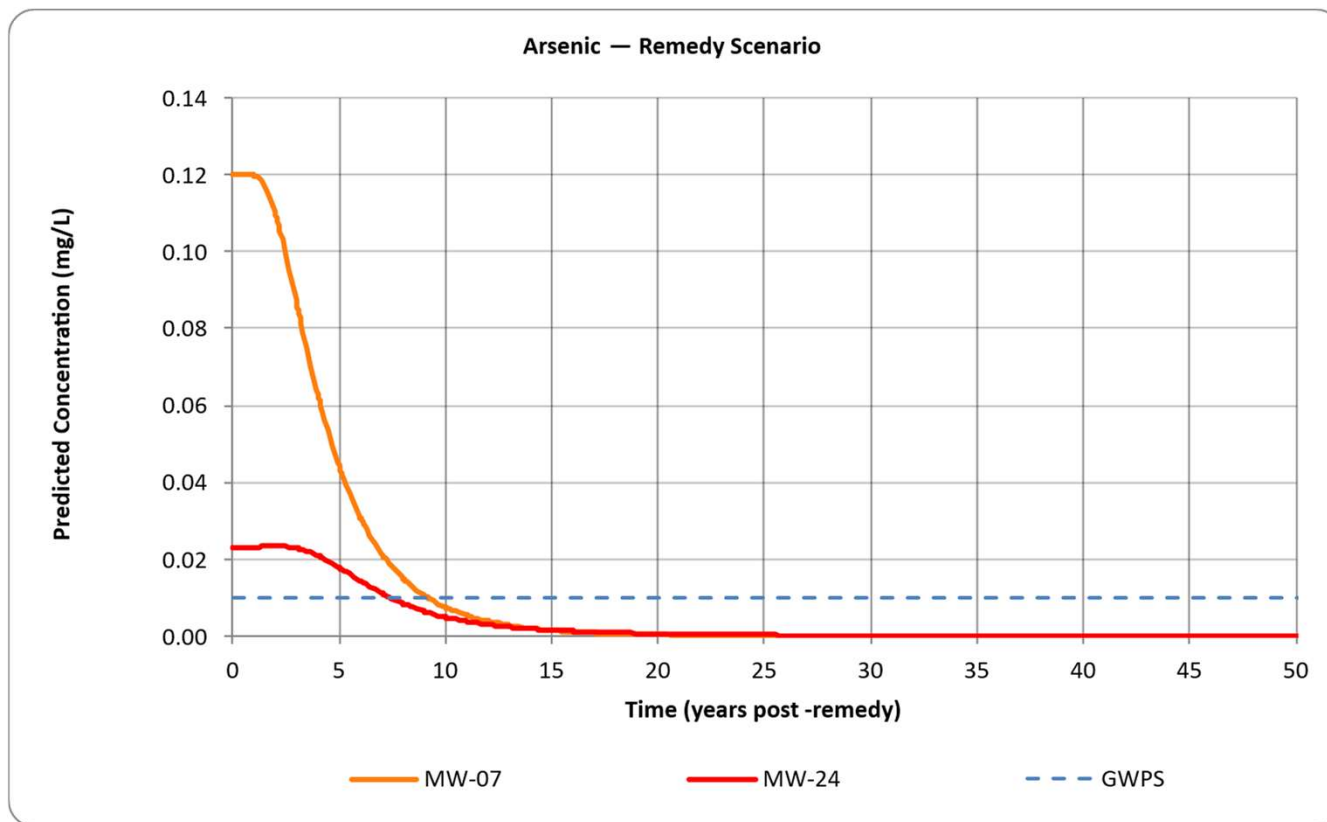
- TDS Concentration vs. Time



- Well Locations



- Arsenic (total) Concentration Vs. Time





- MWG estimates that after receipt of a construction permit from Illinois EPA, it will take approximately 7-8 months to retrofit the Metal Cleaning Basin and approximately an additional 12-13 months to retrofit the Ash Surge Basin. More detailed planning level schedules are included the CAP.
- Once retrofitted, the Metal Cleaning Basin may be used to treat boiler wash waters and/or for temporary storage of ash and the Ash Surge Basin may be used to store CCR remaining in the decant water from the Station's hydrobins.
- Groundwater monitoring will continue during the operating life and required post-closure care period for the retrofitted units.

# Public Website: midwestgenerationllc.com

