



Midwest Generation LLC.

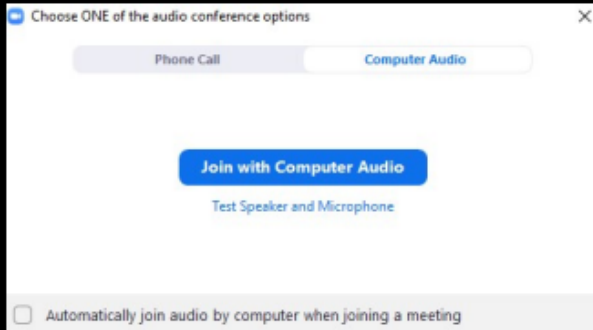
Waukegan – East & West Ash Ponds ID Nos. W0971900021-01 & -02

Proposed Closure Construction Project

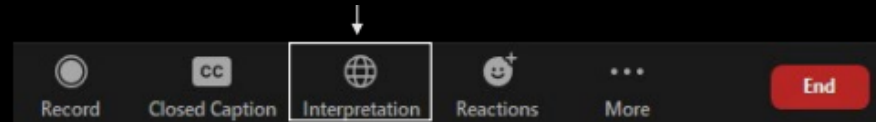
December 2021

Instrucciones Para la Audiencia Para Interpretación en Zoom

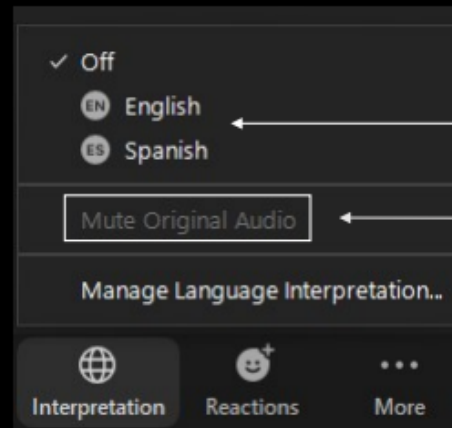
1. Seleccione unirse a la llamada con el audio de la computadora.



2. Seleccione el Globo "Interpretación" en la parte inferior izquierda de la pantalla.



3. Seleccione el idioma en que desea escuchar la interpretación.



Esta opción desactiva la voz del ponente, para que así el oyente solo escuche la interpretación.

COVID-19 PRECAUTIONS

- Holding this meeting virtually due to the COVID-19 pandemic
- Participants in Q and A portion will be following CDC protocols
 - Social Distancing
 - Wearing masks
 - Will pull down masks only to speak

In today's meeting, you can:

Enter questions in "Q&A" or "Chat"

Click the Q&A or chat icon on your screen and type your question.

Participate in a live Q&A session

Verbal questions will be taken. After our presentation, we will provide instructions for the live Q&A.

Sign up for a post-meeting summary and IEPA listserv

During the meeting, click the link that Midwest Generation, LLC has placed in the Chat to complete the Google form.

[Public Website: midwestgenerationllc.com](http://midwestgenerationllc.com)

- Illinois Coal Ash & Other Environmental Rules
- Waukegan Generating Station, West & East Ash Ponds
- Closure Alternatives Analysis and Groundwater Modeling
- Proposed Closure and Post-Closure Plan
- Question & Answer Session

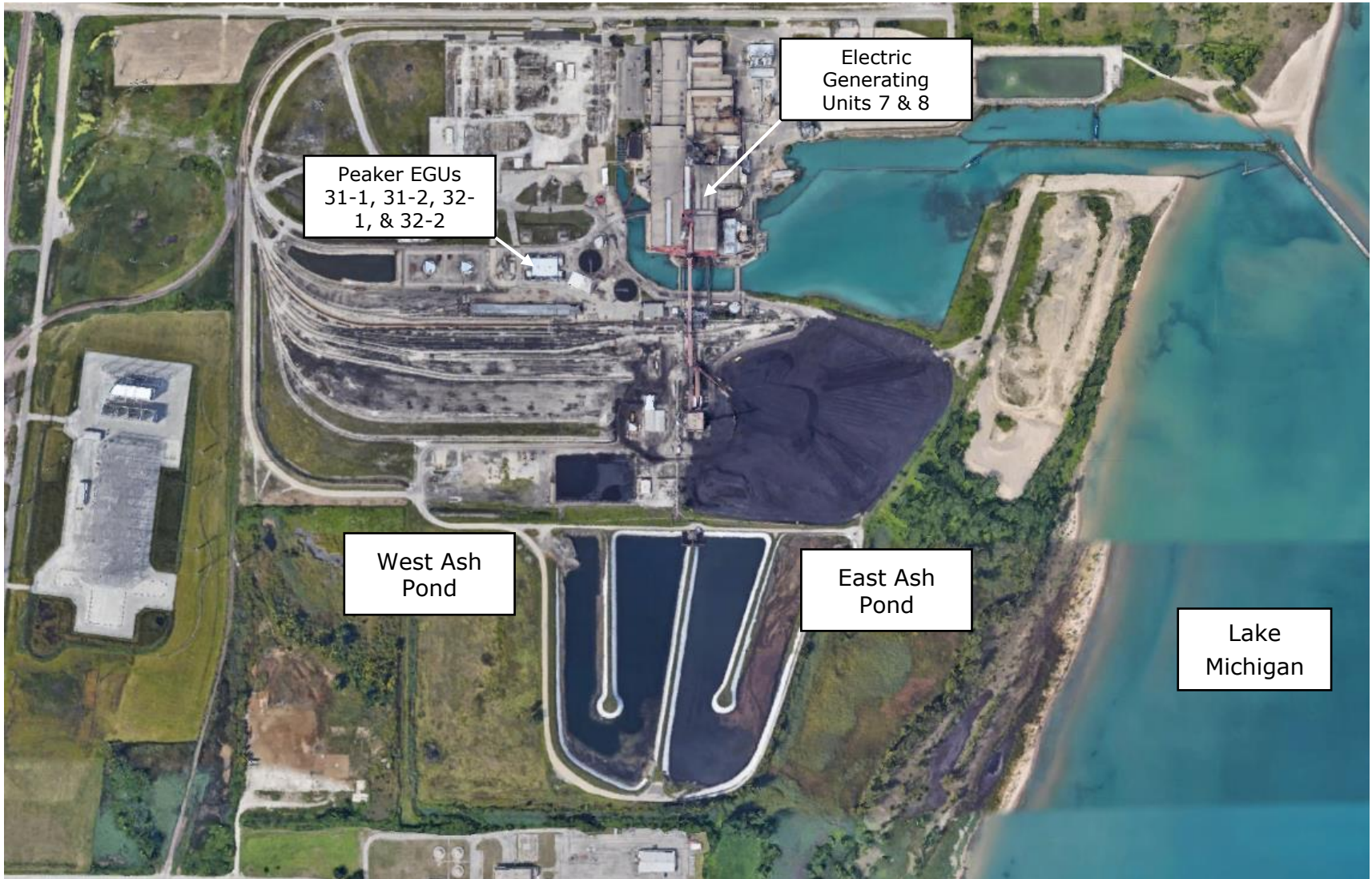
- In 2015, the US EPA finalized the Federal CCR Rules to regulate coal ash landfills and surface impoundments at power plants.
- In 2019, the state passed a law to regulate coal ash stored in CCR surface impoundments at power plants throughout Illinois.
 - The law required that the Illinois Environmental Protection Agency propose, and that the Illinois Pollution Control Board adopt, state regulations for storage and disposal of coal ash produced from electric generating facilities through a new permitting program.
 - As required by the law, the Illinois EPA and the Board undertook a public rulemaking process that resulted in the Board adopting regulations at 35 IAC Part 845 – Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments (the Illinois Coal Ash Rules) in April 2021.
- Additionally, the East and West Ash Ponds are permitted as part of the Station's wastewater treatment system by the Illinois EPA under the NPDES permitting program.

The Illinois Coal Ash Rules define both CCR and CCR surface impoundments:

"Coal combustion residuals" or "CCR" means fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.

"CCR surface impoundment" or "impoundment" means a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR.

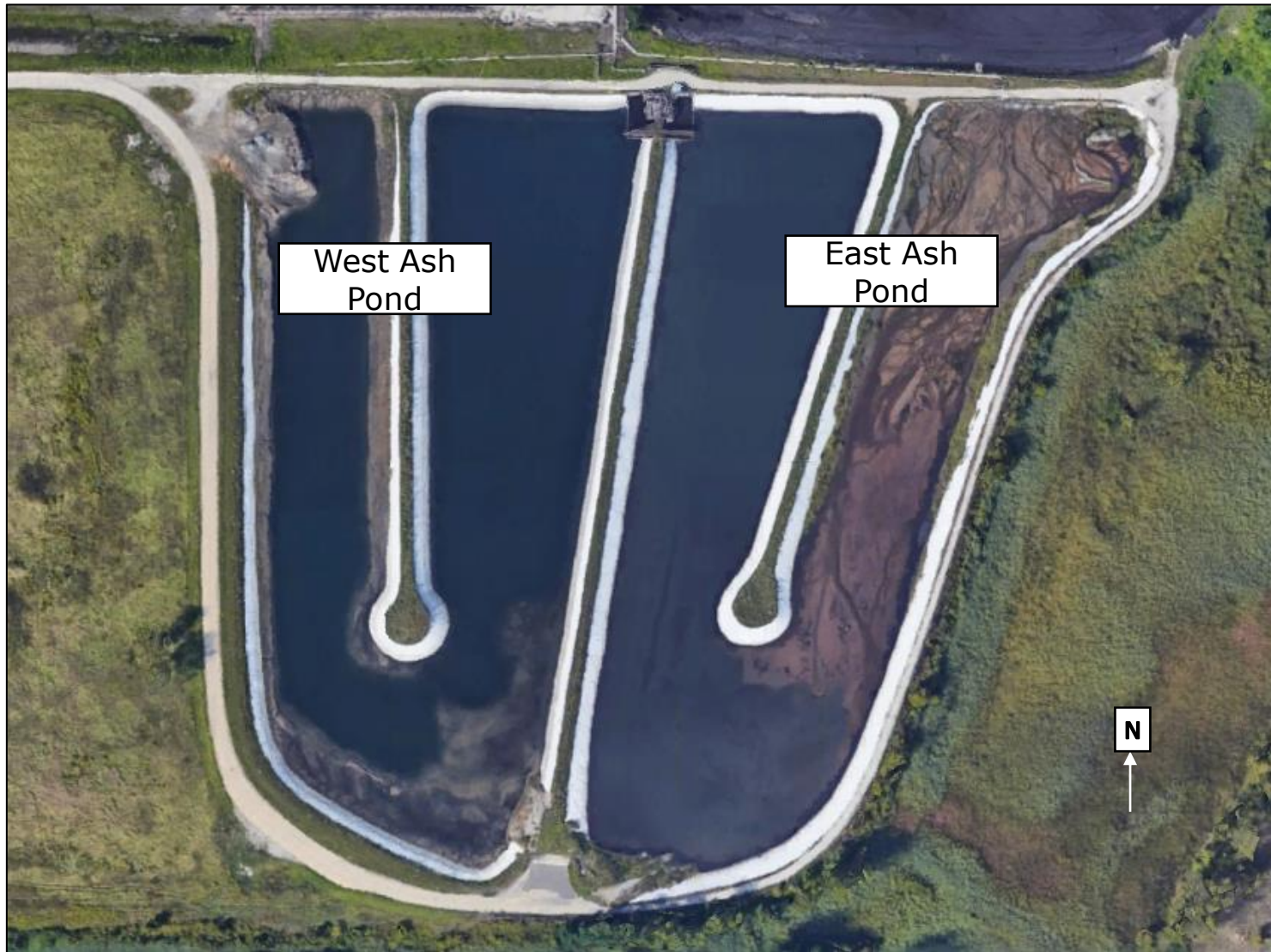
We're here today to present plans regarding a specific aspect of the Illinois Coal Ash Rules – the planned closure of Waukegan's East and West Ash Ponds.



Question? Click the chat icon at the bottom of your screen to type a question.

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- In June 2021, we announced the planned permanent retirement of Electric Generating Units 7 and 8 in June 2022.
- Waukegan Station will not burn coal, nor produce CCR, after Units 7 & 8 are retired.
- The ULSD-fired peaking units will continue to operate.



- The East and West Ash Ponds were originally built in the 1970's and lined with a synthetic rubber material called Hypalon®. The ponds were relined with a High-Density Polyethylene ("HDPE") liner (*i.e.*, - thick and impermeable plastic) in 2003 (East Ash Pond) and 2004 (West Ash Pond).
- Both the East and West Ash Ponds have been used to temporarily store CCR. The only type of CCR that is stored in these ponds is bottom ash, which is the non-combustible residue that settles to the bottom of the power plant's boilers.
- The East and West Ash Ponds at Waukegan operate "in parallel", meaning that only one of the two ponds is in-service at a time.
 - Currently, the East Ash Pond is in-service. The West Ash Pond is out-of-service (OOS) and will remain OOS until permitted by the Illinois EPA.
 - The West Ash Pond only contains a small amount of CCR and the sand and limestone warning layer. The warning layer was used to "warn" operators of the liner during periodic removal of ash from the Pond.

Evaluation of two closure methods, both allowed by regulation:

- Closure by Removal of CCR

An owner or operator may elect to close a CCR surface impoundment by removing all CCR and decontaminating all areas affected by releases of CCR from the CCR surface impoundment. CCR removal and decontamination of the CCR surface impoundment are complete when all CCR and CCR residues, containment system components such as the impoundment liner and contaminated subsoils, and CCR impoundment structures and ancillary equipment have been removed. Closure by removal must be completed before the completion of a groundwater corrective action under Subpart F. *(35 IAC Section 845.740(a))*

- Closure in Place

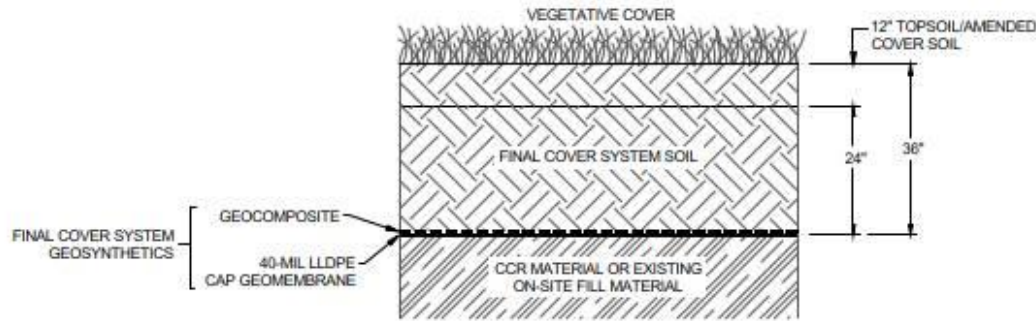
If a CCR surface impoundment is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and, at a minimum, meets the requirements of this subsection (c). The final cover system must consist of a low permeability layer and a final protective layer. The design of the final cover system must be included in the preliminary and final written closure plans required by Section 845.720 and the construction permit application for closure submitted to the Agency. *(35 IAC Section 845.750(c))*



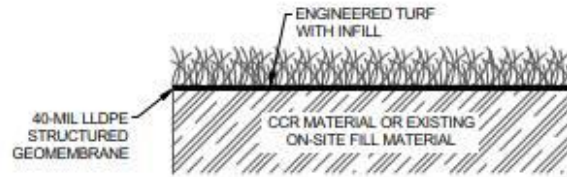
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Closure in-Place – Illinois EPA Prescribed Cover System and Alternative Cover System



1 TYPICAL FINAL COVER SYSTEM
16 NOT TO SCALE



2 TYPICAL FINAL COVER SYSTEM - ENGINEERED TURF
16 NOT TO SCALE

Overview

- Closure Alternatives Analysis performed in accordance with Illinois Administrative Code, Title 35: Environmental Protection, Subtitle G: Waste Disposal, Chapter I: Pollution Control Board, Subchapter j: Coal Combustion Waste Surface Impoundments, Part 845 Standard for the Disposal of Coal Combustion Residuals in Surface Impoundments Section 845.710 Closure Alternatives.

Objective

- Evaluate long- and short-term effectiveness and protectiveness of the closure method.
- Evaluate the effectiveness for controlling future releases.
- Evaluate the ease of implementation.
- Address comments and concerns of residents within the communities adjacent to the project.

Cost estimates for each alternative have been prepared as required by the rule.

West Pond

- Option 1 – Closure by Removal
- Option 2 – Closure in Place

East Pond

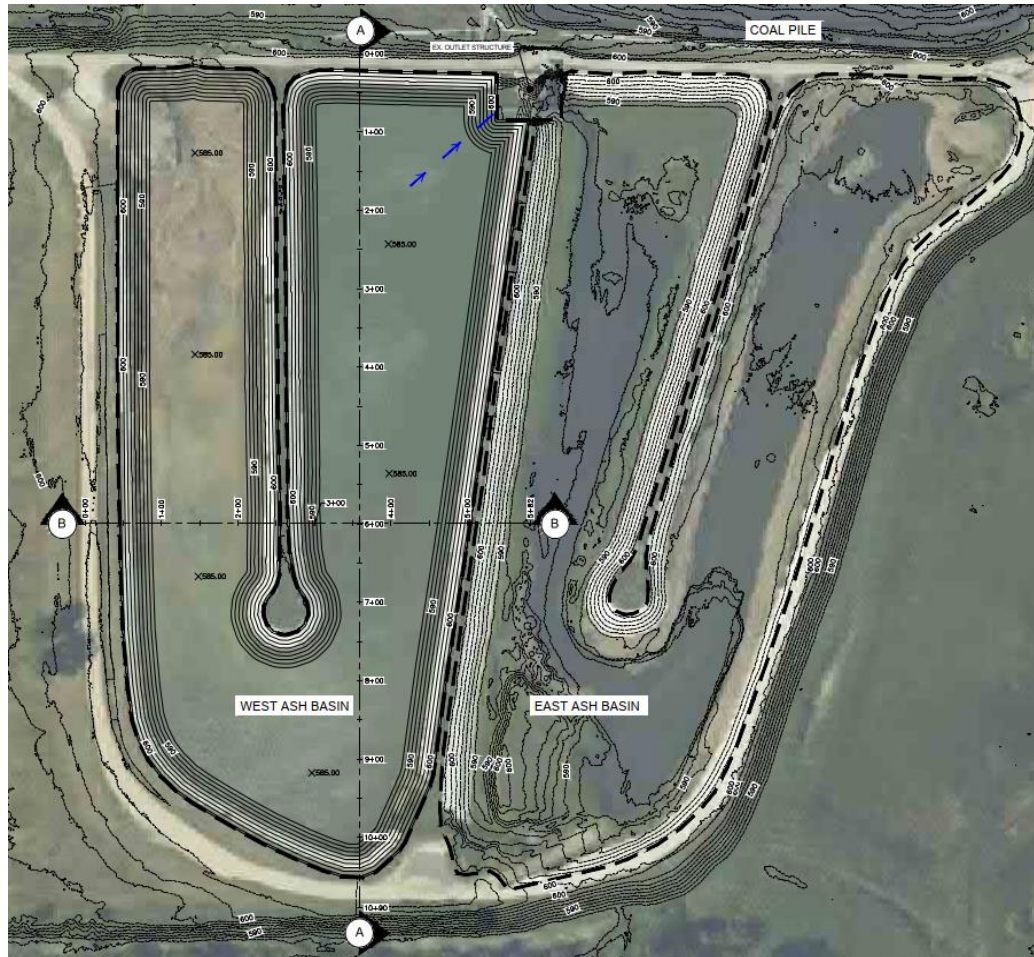
- Option 3 – Closure by Removal
- Option 4 – Closure in Place – Minimum Grading
- Option 5 – Closure in Place – Maximum Grading
- Option 6 – Closure in Place – Intermediate Grading



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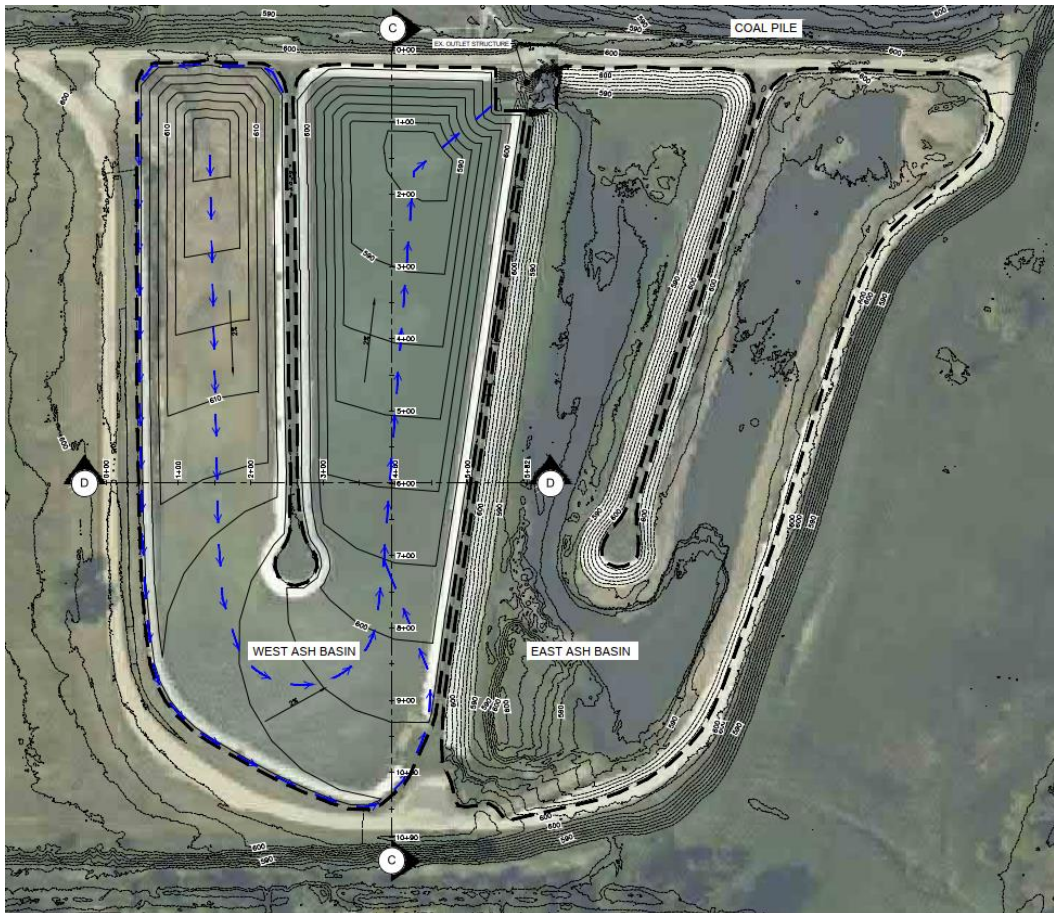
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- Option 1 - West Ash Pond Closure by Removal
 - Removal all material from pond and haul off site.
 - Clean and decontaminate existing liner system to remove all CCR.
 - Repurpose pond for stormwater management at the site.



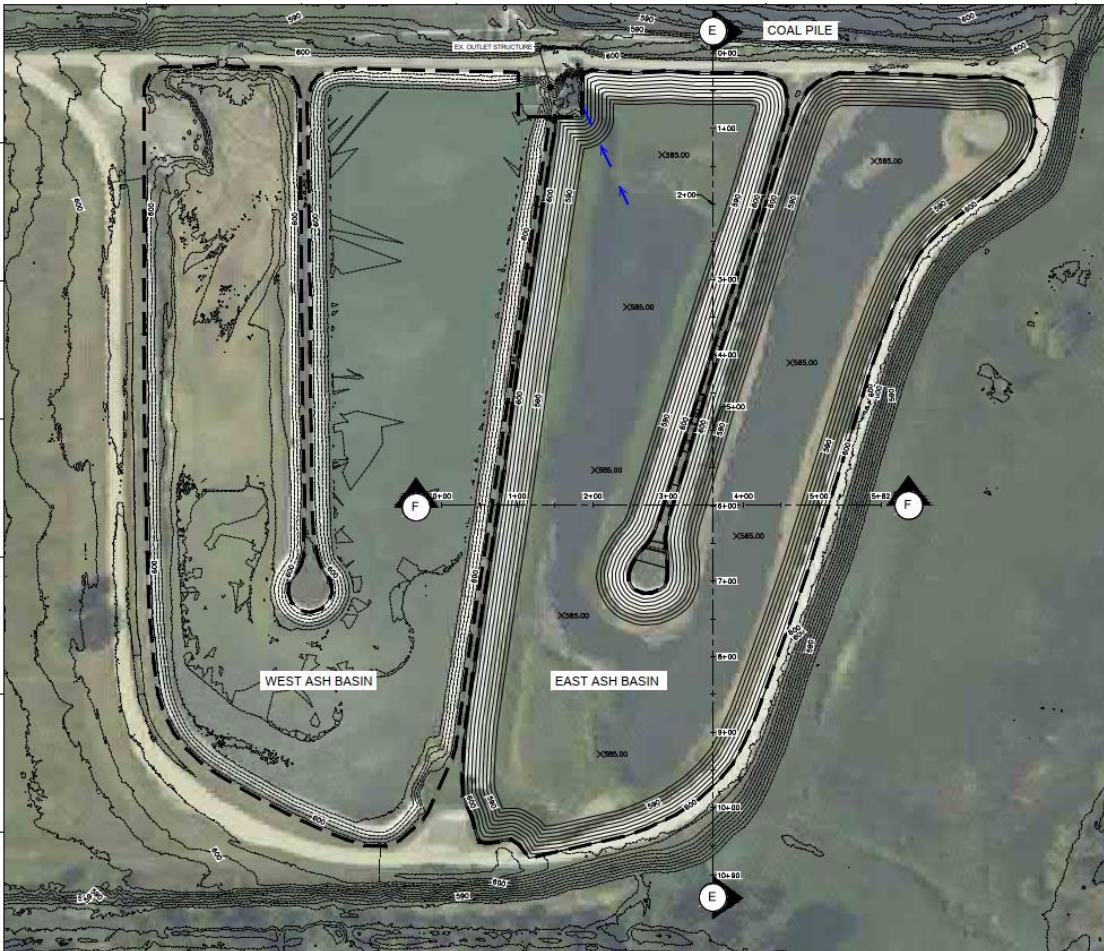
- Estimated Quantities:
 - Approximate Area = 10 Acres
 - Material to Remove = 22,500 CY
 - Proposed Fill = 0 CY

- Option 2 - West Ash Pond Closure in Place
 - Regrade remaining material.
 - Leave liner system in place.
 - Add soil fill to basin to achieve cap subgrade and construct new cap system.



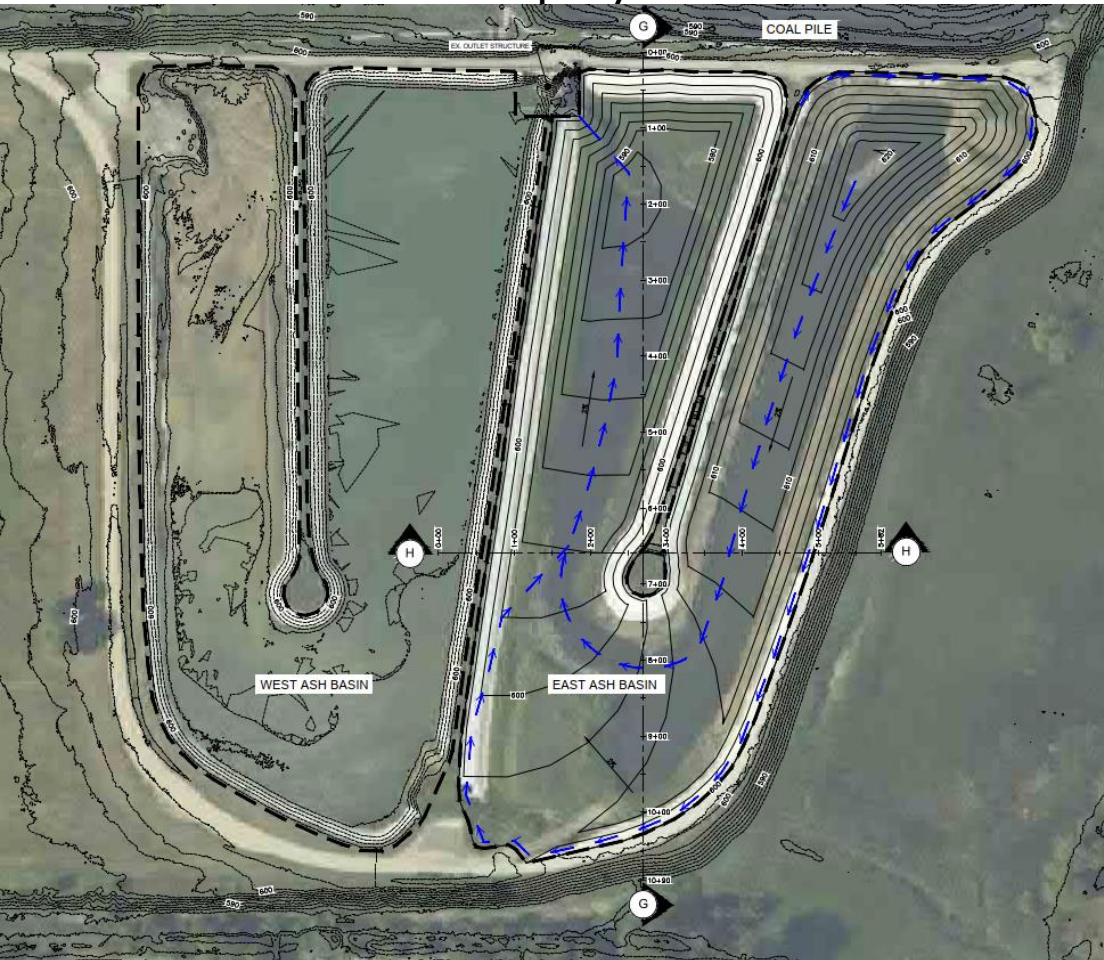
- Estimated Quantities:
 - Approximate Area = 10 Acres
 - CCR to Regrade = 5,000 CY
 - Subgrade Fill = 68,000 CY
 - This would require the construction of an IEPA approved cap system.

- Option 3 - East Ash Pond Closure by Removal
 - Removal all material from pond and haul off site.
 - Remove existing liner system and haul offsite.
 - Grade exposed base to manage stormwater.



- Estimated Quantities:
 - Approximate Area = 10 Acres
 - Est. CCR to Remove = 70,000 CY
 - Subgrade Fill = 0 CY

- Option 4 - East Ash Pond Closure in Place, Minimum Grading
 - Regrade CCR in pond.
 - Limit soil fill while maintaining drainage.
 - Install new cap system.

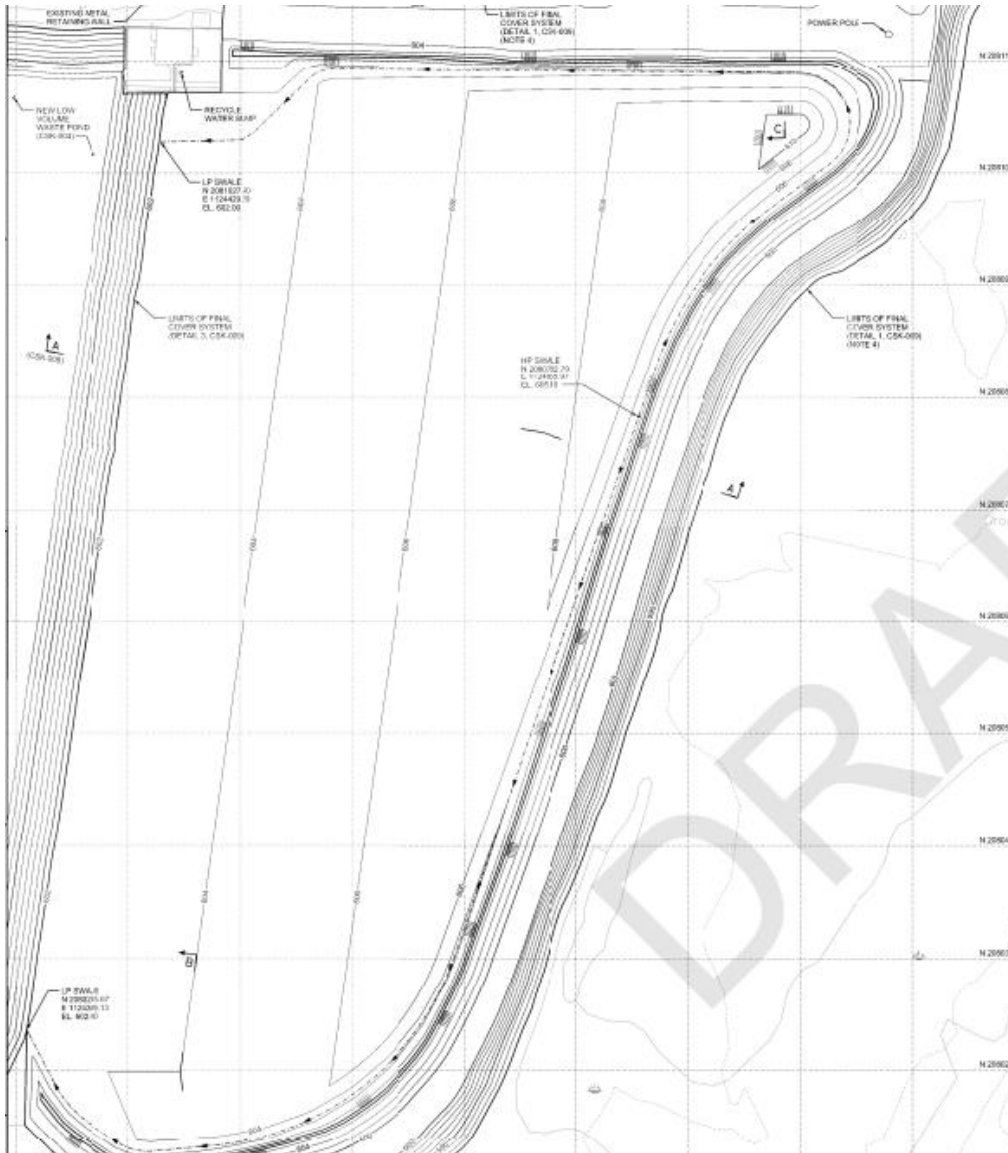


- Estimated Quantities:
 - Approximate Area = 10 Acres
 - CCR to Regrade = 0 CY
 - Subgrade Fill = 106,000 CY
 - This would require the construction of an IEPA approved cap system.

- Option 5 - East Ash Pond Closure in Place, Maximum Grading
 - Regrade remaining CCR in pond.
 - Add soil fill to maximize slopes and height.
 - Install new cap system.



- Estimated Quantities:
 - Approximate Area = 10 Acres
 - Subgrade Fill = 368,000 CY
 - This would require the construction of an IEPA approved cap system.



- Option 6 - East Ash Pond Close In Place, Intermediate Grading
 - Regrade remaining CCR in pond.
 - Add soil fill to achieve grades for drainage.
 - Install new cap system.

- Estimated Quantities:
 - Approximate Area = 10 Acres
 - Subgrade Fill = 260,000 CY
 - This would require the construction of an IEPA approved cap system.

With the announcement that coal-fired operations will cease at Waukegan Station in 2022, the Station will no longer produce CCR or CCR contact water, but the Station will still need to manage storm water – water from rain and snow melt – since it will remain an industrial facility.

In May 2021 and amended in September 2021, MWG requested an Adjusted Standard (AS) from the IPCB for the ability to reuse the liner system in the West Pond for non-CCR wastewater.

- Although ash has been removed from the West Ash Pond, the IL CCR rule requires the removal of the containment system components, impoundment structures, and ancillary equipment. MWG believes that these can be decontaminated and reused.



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- Groundwater quality and flow conditions are monitored quarterly via a groundwater monitoring well network installed around the ponds.
- No Statistically Significant Increases of CCR constituents have been observed in the groundwater wells that are attributable to the East or West Ash Ponds.
- Illinois EPA recently informed Waukegan leaders that “Continued groundwater monitoring indicated a source other than East or West Ponds.”



To comply with the Illinois Coal Ash Rule, MWG conducted groundwater modeling of the groundwater concentrations. The purpose of the groundwater modeling was to provide a platform from which to be able to compare the relative effectiveness of various closure and/or corrective action alternatives relative to groundwater quality on a short term and long-term basis for the CCR unit.

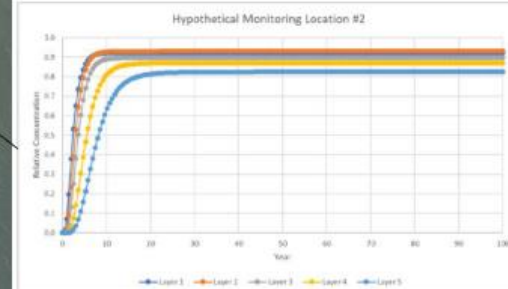
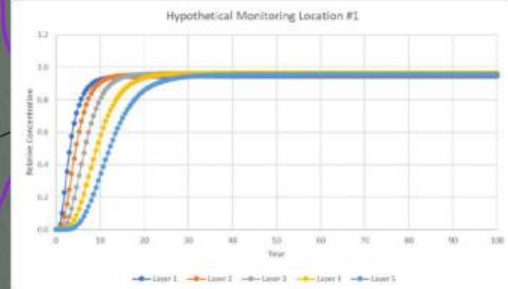
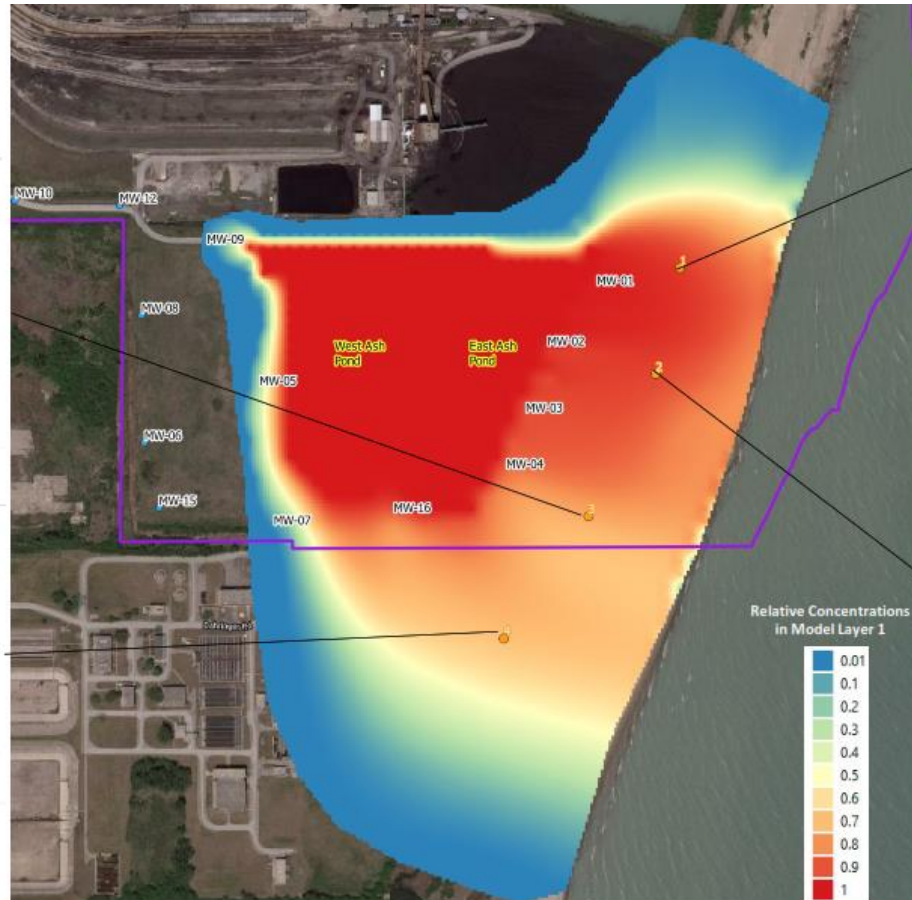
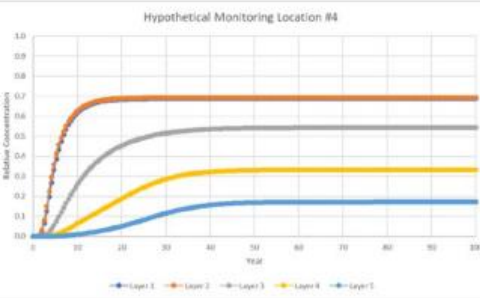
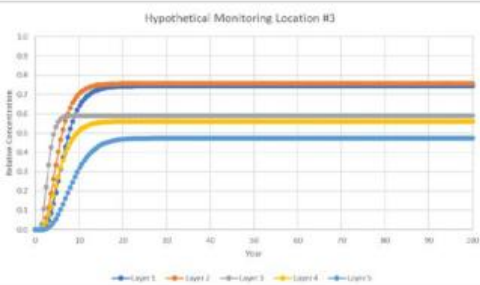
To accomplish this, the model establishes a theoretical source of contamination (i.e., not an actual source) in the pond and allowed to distribute itself over time until an equilibrium (stable) condition is observed by the model (worst case distribution of impacts).

This model looks at theoretical, potential contamination from the CCR unit – it assumes the pond has ash and water and that the liner is compromised or non-existent.

Once equilibrium is established, engineering alternatives can be overlain and the model is then run over a time sequence to evaluate the change/improvement in water quality associated with the proposed alternative.

Assumes a hypothetical constant source at both East and West Ash Ponds:

- Starting Conditions: Defined a surrogate source of "1" beneath Ash Ponds, forward run for 100 years with advection and dispersion



Four groundwater modeling scenarios were run:

1. Closure by removal of both East Ash Pond and West Ash Pond;
2. Closure by removal of the East Ash Pond, Closure in Place of the West Ash Pond;
3. Closure in place of both East Ash Pond and West Ash Pond; and
4. Closure in place of the East Ash Pond and Closure by removal & repurposing of the West Ash Pond for stormwater.

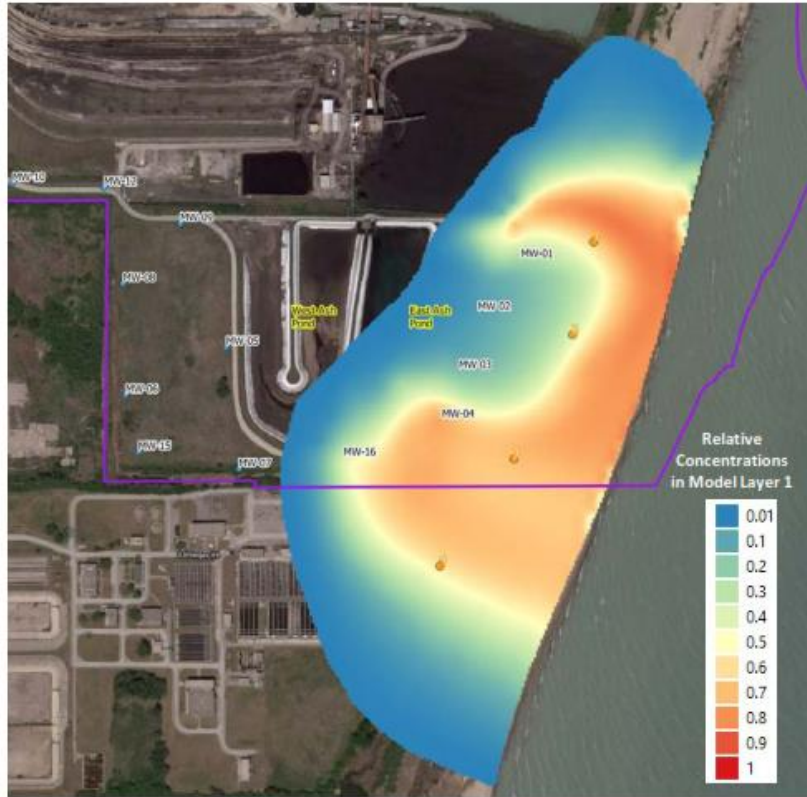


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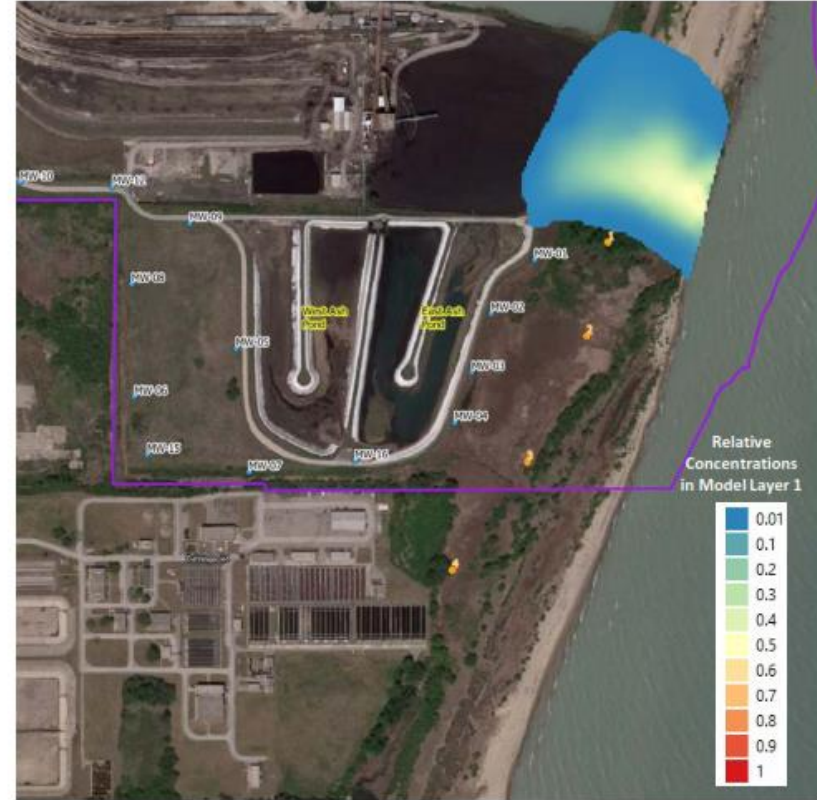
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Corresponds to Closure by Removal of both East and West Ash Ponds:

5 YEAR, Model Layer 1, Scenario 1



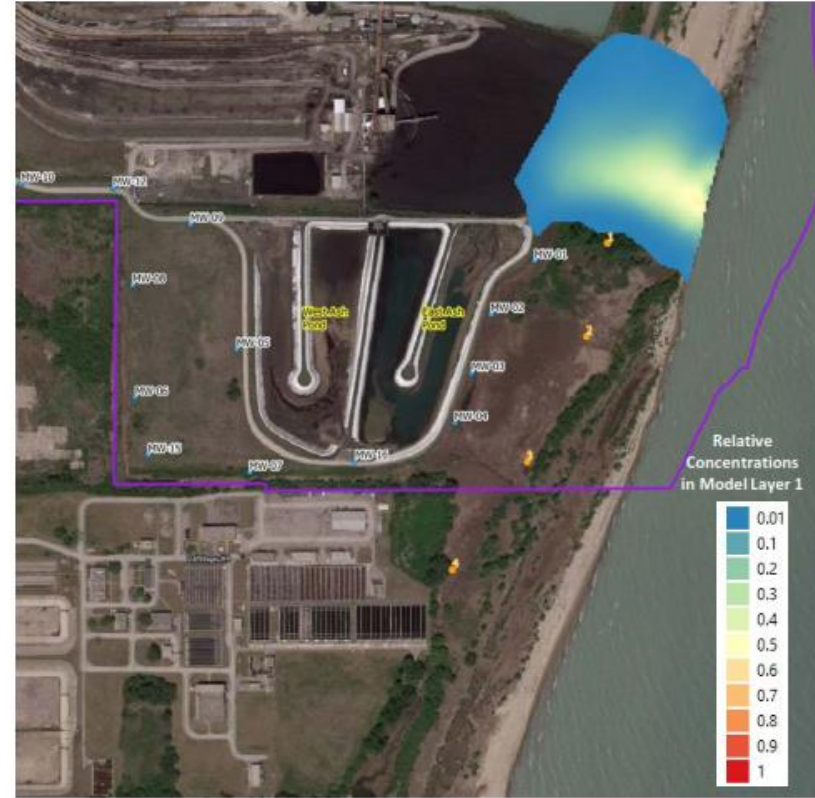
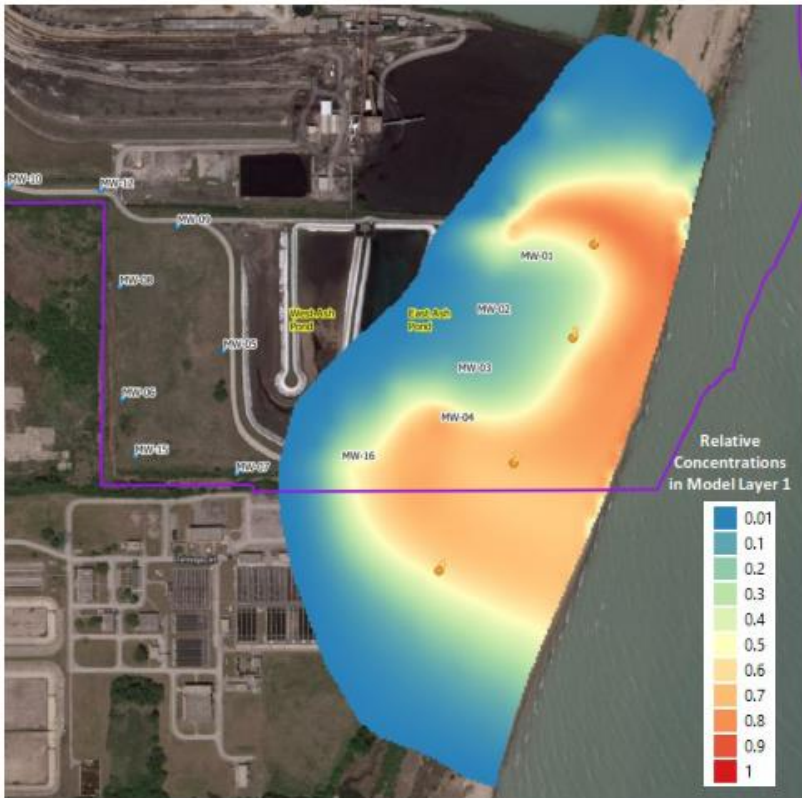
25 YEAR, Model Layer 1, Scenario 1



Corresponds to Closure by Removal of East Ash Pond and Closure in Place of West Ash Pond:

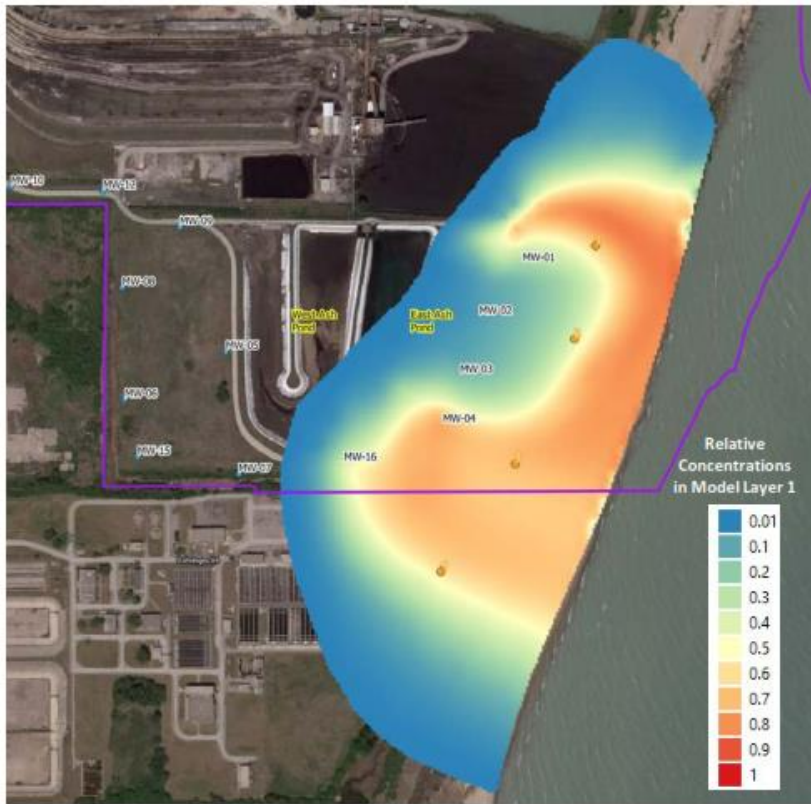
5 YEAR, Model Layer 1, Scenario 2

25 YEAR, Model Layer 1, Scenario 2

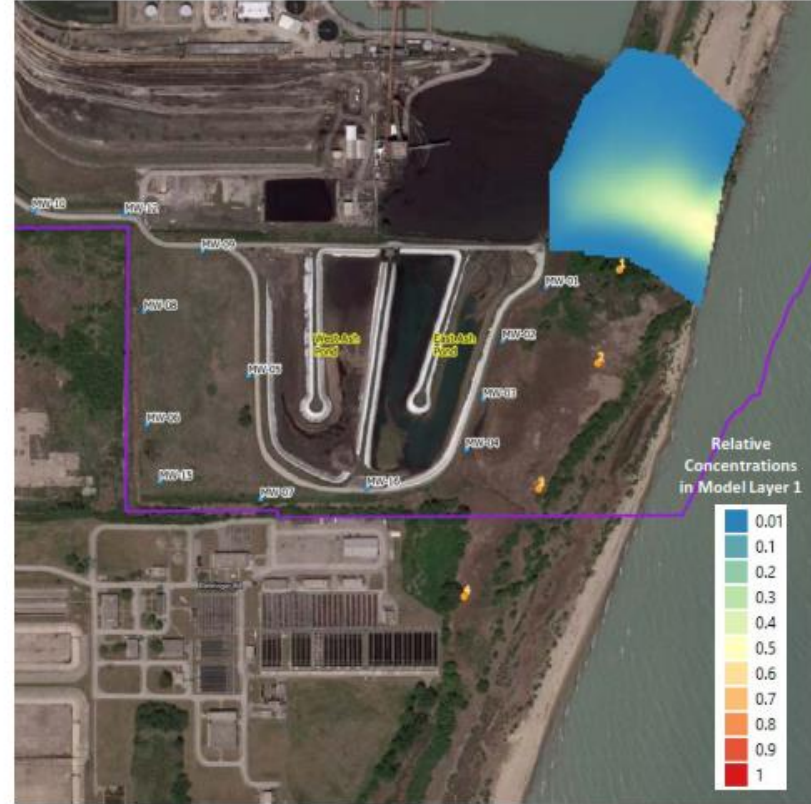


Corresponds to Closure in Place of both East and West Ash Ponds:

5 YEAR, Model Layer 1, Scenario 3

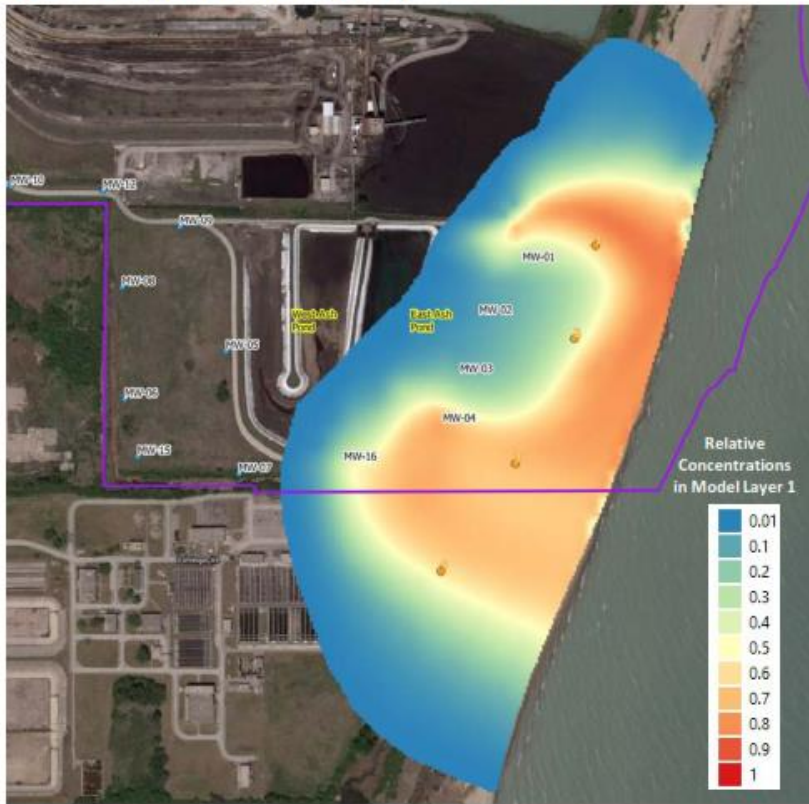


25 YEAR, Model Layer 1, Scenario 3

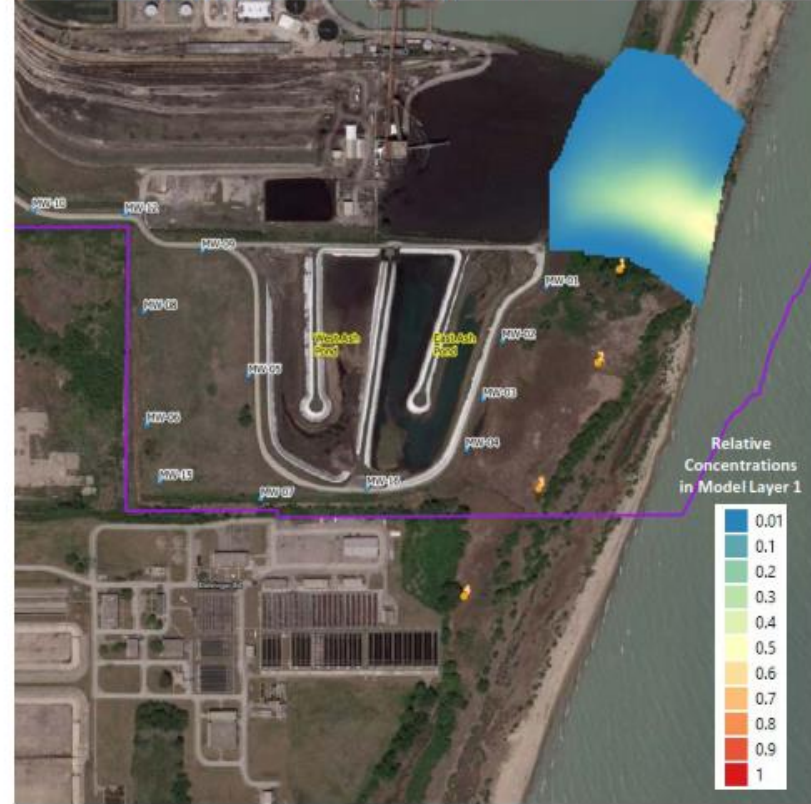


Corresponds to Closure by Removal of West Ash Pond (and repurpose) and Close in Place of East Ash Pond:

5 YEAR, Model Layer 1, Scenario 4

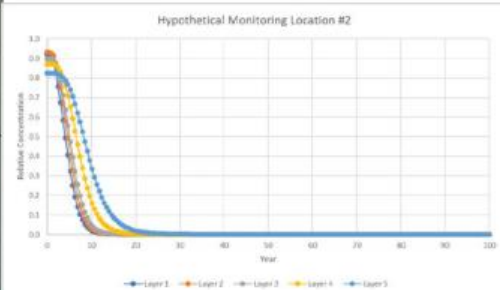
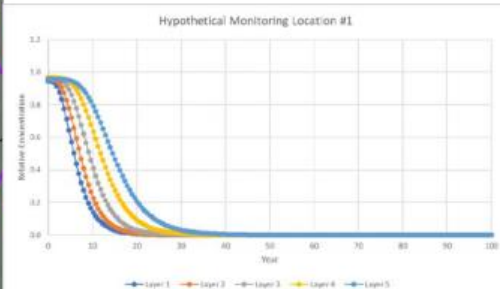
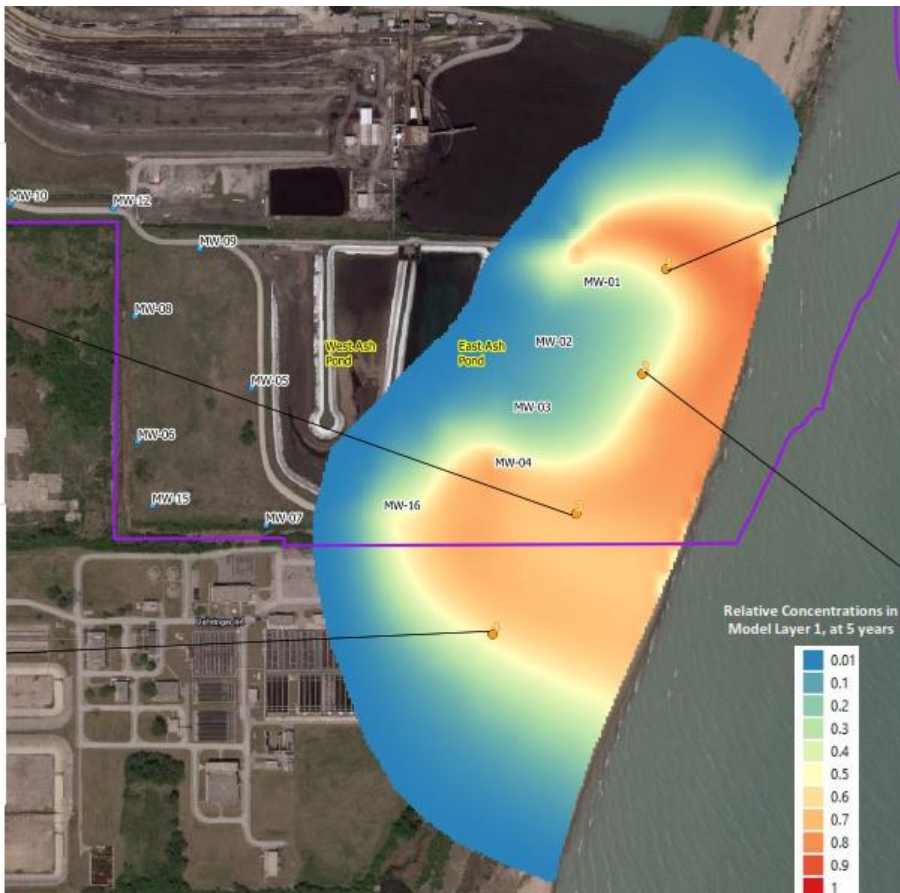
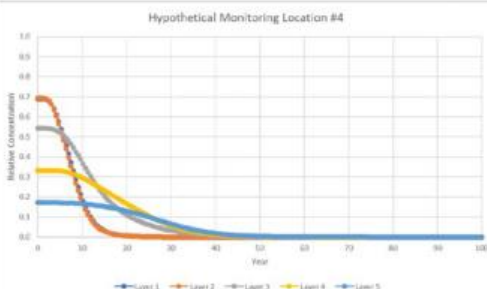
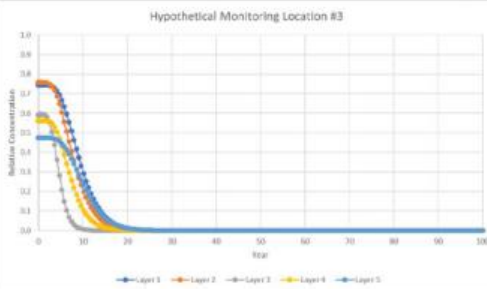


25 YEAR, Model Layer 1, Scenario 4



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- Starting Conditions: Constant source distribution at 100 years



Closure by removal for both ash ponds, closure in place for both ash ponds were analyzed. The different closure options were evaluated based on effectiveness/protectiveness, and ease of implementation.

- Option 1 “Closure by Removal – West Ash Basin” – preferred closure option, protective of groundwater, structurally stable, provides infrastructure necessary for continued site operations.
- Option 2 “Closure in Place – West Ash Basin” - not preferred because of the station’s desire to decontaminate and reuse the liner, repurposing the pond to treat stormwater runoff.
- Option 3 “Closure by Removal – East Ash Basin” – not preferred due to CCR hauling through community. Transport by barge is not practically feasible with existing site infrastructure. Transport by rail is not practically feasible for loading and shared use of rail lines with commuter trains.
- Options 4-6 “Closure in Place – East Ash Basin variations” – equivalently protective for groundwater as closure by removal once capping system is in place, structurally stable to prevent future release, reduce traffic through the surrounding community.
- Option 6 “Closure in Place – Intermediate Grading” – preferred alternative, protective of groundwater, structurally stable, provides best grading for future use of the area.

Closure in Place with Alternate Final Cover (ClosureTurf).

- Isolates CCR from stormwater, protecting surface waters.
- Proven closure method at other surface impoundments in US, including in IL.
- Long term reliability in minimizing risk to human health and the environment.
- Closure construction could be completed in less than a year.
- Closure by removal more challenging – no space to build onsite landfill, increased ash handling.

Based on site specific conditions, the Closure in Place scenario provides both short- and long-term protection to groundwater and surface water resources along with ensuring overall protection to the public health, welfare and safety.

For the West Ash Pond, MWG will propose closure by removal & repurposing the liner for Plant stormwater.

- Waukegan Station is an industrial site and will be required to manage stormwater. Repurposing the West Ash Pond will allow Waukegan Station to manage stormwater.
- Most of the ash has already been removed from the West Ash Pond.
 - A small amount of ash and the sand and limestone warning layer remain in the West Ash Pond. The warning layer was used to “warn” operators of the liner during routine removal of ash from the Pond. These would be removed, and the liner cleaned.

Based on site specific conditions, the Closure by Removal scenario provide both short- and long-term protection to groundwater and surface water resources along with ensuring overall protection to the public health, welfare and safety.

The required post-closure care period for closure in place is at least 30 years or until contaminant concentrations are below the state standards. The required post-closure care period for closure by removal is at least 3 years or until contaminant concentrations are below the state standards.

- Because the groundwater monitoring wells that are upgradient and downgradient of the East Ash Pond are also upgradient and downgradient of the West Ash Pond, the current CCR monitoring well network will remain active for at least 30 years.

In this design, the West Ash Basin liner will be reused, and the pond will be repurposed to treat area stormwater runoff. The East Ash Basin will be closed with a final cover system and be an area of passive open space.



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Public Website:
midwestgenerationllc.com

Appendix 1 – CCR Rule Groundwater Monitoring Well Network



ENVIRONMENTAL CONSULTATION & REMEDIATION

K P R G

KPRG and Associates, inc.

14665 West Lisbon Road, Suite 2B Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1593

CCR MONITORING WELL SITE MAP

**WAUKEGAN STATION
WAUKEGAN, ILLINOIS**

Scale: 1" = 550' Date: January 2, 2018

KPRG Project No. 12313.2

FIGURE 1

Appendix 2 – Illinois EPA Waukegan Station Part 845 Presentation filed with IPCB October 18, 2021

Filing can be found at:

<https://pcb.illinois.gov/documents/dsweb/Get/Document-104773>



BUREAU OF WATER WAUKEGAN POWER STATION: PART 845 - CCR SURFACE IMPOUNDMENTS

Darin LeCrone, P.E.

Manager, Permit Section

Division of Water Pollution Control

CCR STATUTE AND REGULATIONS

- On July 30, 2019, Governor Pritzker signed Public Act 101-171 which directed the Illinois Pollution Control Board (IPCB) to adopt rules for a coal combustion residuals (CCR) surface impoundment permitting program. This amendment to the Act requires additional protections and closure requirements for CCR Surface Impoundments (also known as coal ash ponds) at electric utilities and independent power producers.
- Final Rule – 35 Ill. Adm. Code 845 - adopted by the Board in April 2021.
- There are 23 site locations - the Illinois EPA recognizes 72 CCR surface impoundments at power generating facilities, based on best available information.

CCR PERMITTING TIMELINE

- The rule requires all facilities to submit **initial operating permit** applications to the Illinois EPA by **October 31, 2021**.
- **Closure construction permit** applications in EJ areas are due **February 2022**.

WAUKEGAN POWER STATION – COAL ASH PONDS

- IEPA recognizes 3 CCR Surface Impoundments subject to Part 845: East Pond, West Pond & Old Pond.
- NRG acknowledges East Pond & West Pond are subject to 40 CFR Part 257 and Ill. Adm. Code Part 845.
- NRG disputes that Old Pond is subject to Part 845.

WAUKEGAN POWER STATION – GROUNDWATER STANDARDS

- In 2012, IEPA issued a violation notice (VN) to NRG Waukegan for exceedances of Class I groundwater standards. Continued groundwater monitoring indicated a source other than East or West Ponds.
- Additional groundwater monitoring conducted indicates exceedances of Groundwater Protection Standards.
- IEPA will evaluate the adequacy of the facility's groundwater monitoring system and data during the review of the application for the Initial Operating Permit.
- Exceedances of groundwater protection standards under Part 845 requires an Alternative Source Demonstration or corrective action.

PERMITTING - PUBLIC PARTICIPATION

- **Initial Operating Permit:** Requires a 45-day public notice period with opportunity to submit written comments and request a public hearing.
- **Construction Permit:** Requires a 45-day public notice period with opportunity to submit written comments and request a public hearing. Facility will be required to hold 2 public meetings to outline their chosen closure method and discuss closure alternatives. The meetings must be held at least 30 days prior to submittal of a construction permit application.
- At least 30 days prior to the public meetings, the applicant must post on their publicly available website, all documentation relied upon in making their tentative application.
- If located in an area with significant non-English speaking residents, the notifications must be made in both English and the appropriate non-English language, and translation services must be provided at the meetings.
- Within 14 days after the public meetings, the applicant must distribute a general summary of the issues raised by the public, as well as a response to those issues.

WAUKEGAN POWER STATION – AGENCY DECISION

- The Agency will provide notice of its final permitting decision, along with responses to comments received during the public notice, and public hearing (if applicable).
- Notice of the final decision will be made to the applicant, to any person who provides comments or an email address to the Agency during the public notice or hearing process, and to any person on the Agency's listserv for the facility.
- Such a notice will briefly describe any significant changes or revisions made to the permit.

WAUKEGAN POWER STATION – NRG ADJUSTED STANDARD REQUESTS

- NRG filed an adjusted standard (AS) petition with Illinois Pollution Control Board on 5/11/21
- Petition was filed timely resulting in an automatic stay of Part 845 provisions for which relief sought
- NRG seeks inapplicability of Part 845 relative to Old Pond
- Initial petition sought reuse of existing HDPE liner in East Pond for low volume waste streams unrelated to coal ash

WAUKEGAN POWER STATION – NRG ADJUSTED STANDARD REQUESTS CONT.

- NRG filed an amended adjusted standard petition with the Board on 9/17/21
- The amended petition still seeks inapplicability of Part 845 relative to Old Pond
- Amended petition seeks reuse of existing HDPE liner in West Pond for low volume waste streams (not ash related)
- Amended petition states that East Pond will be closed in place

WAUKEGAN POWER STATION – NRG ADJUSTED STANDARD REQUESTS CONT.

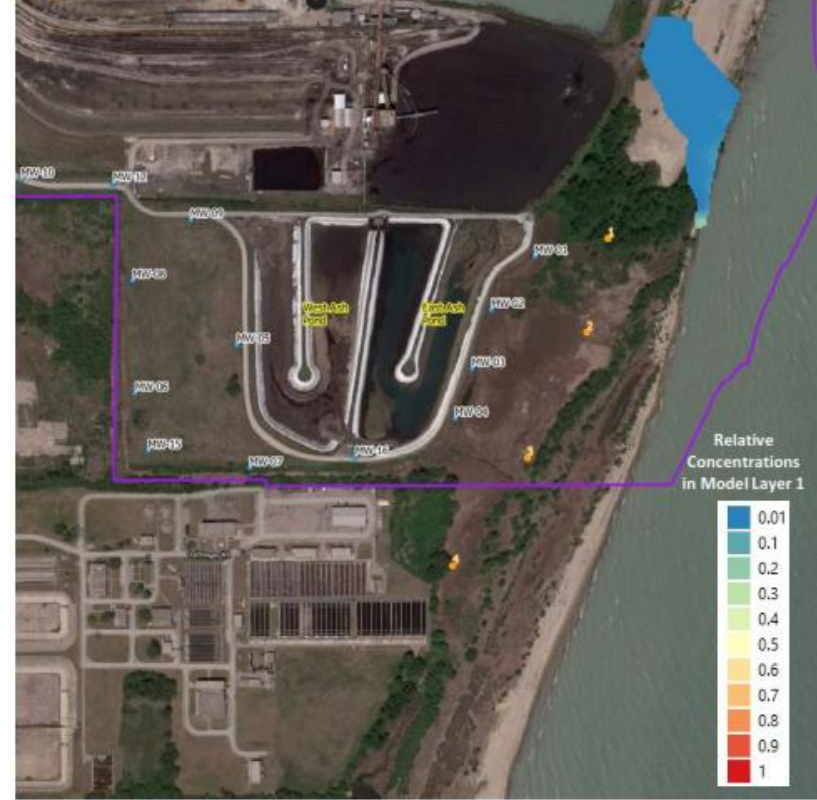
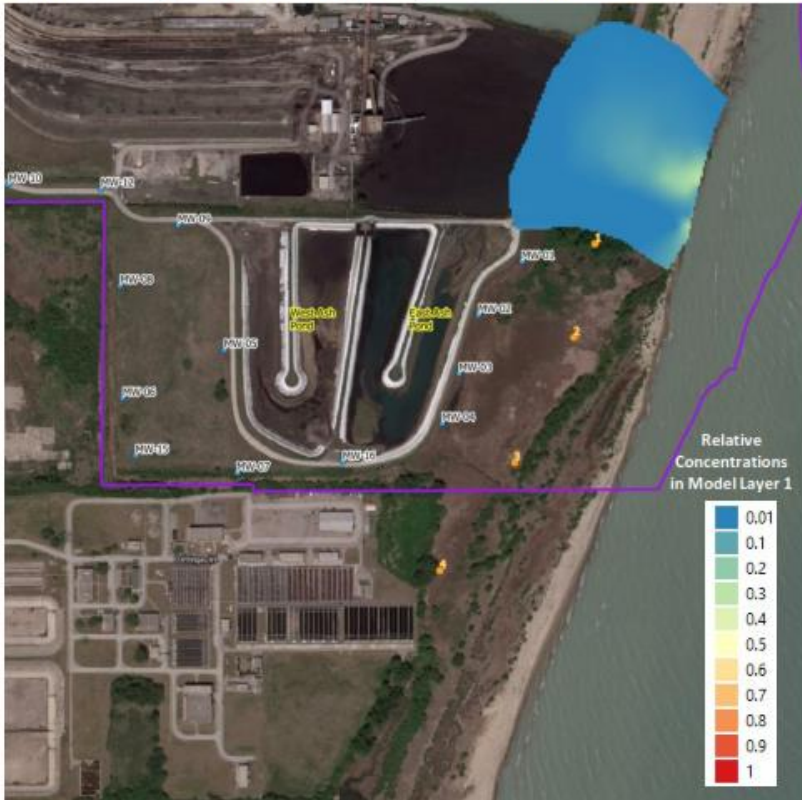
- The Agency intends to file Adjusted Standard recommendation with the Board for the Old Pond applicability petition by 1/31/22
- The Agency intends to file the Adjusted Standard recommendation with the Board for the West Pond liner petition as a separate recommendation
- The Adjusted Standard petitions will not affect the due date of the initial operating permit application.
- Depending on the Board's final decisions on the adjusted standard petition, the date of closure construction permit applications may be changed
- Station closure scheduled for June 2022

Appendix 3 – Additional Groundwater Modeling

Corresponds to Closure by Removal of both East and West Ash Ponds

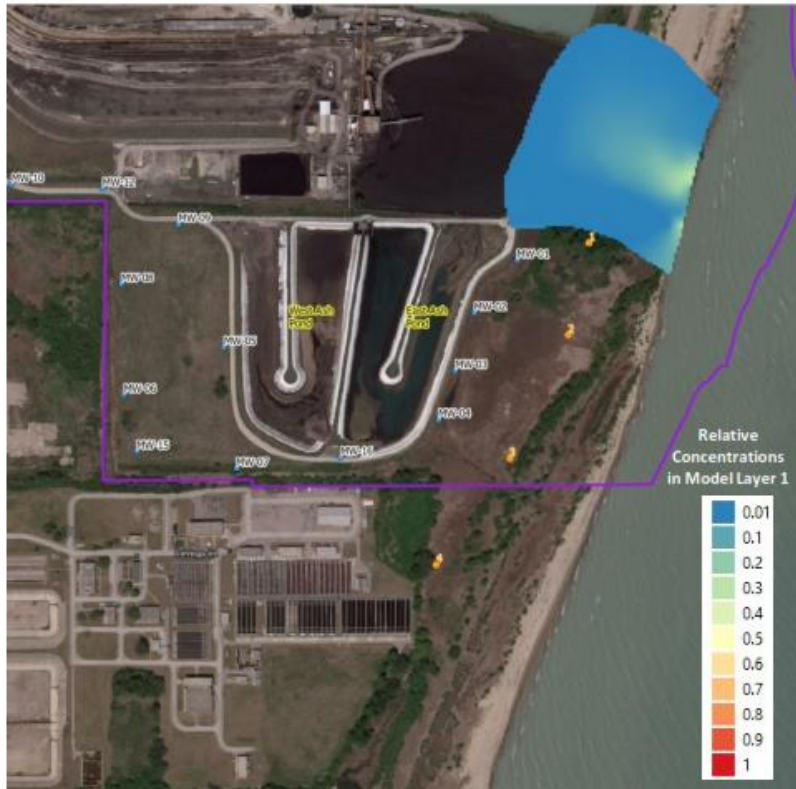
50 YEAR, Model Layer 1, Scenario 1

100 YEAR, Model Layer 1, Scenario 1

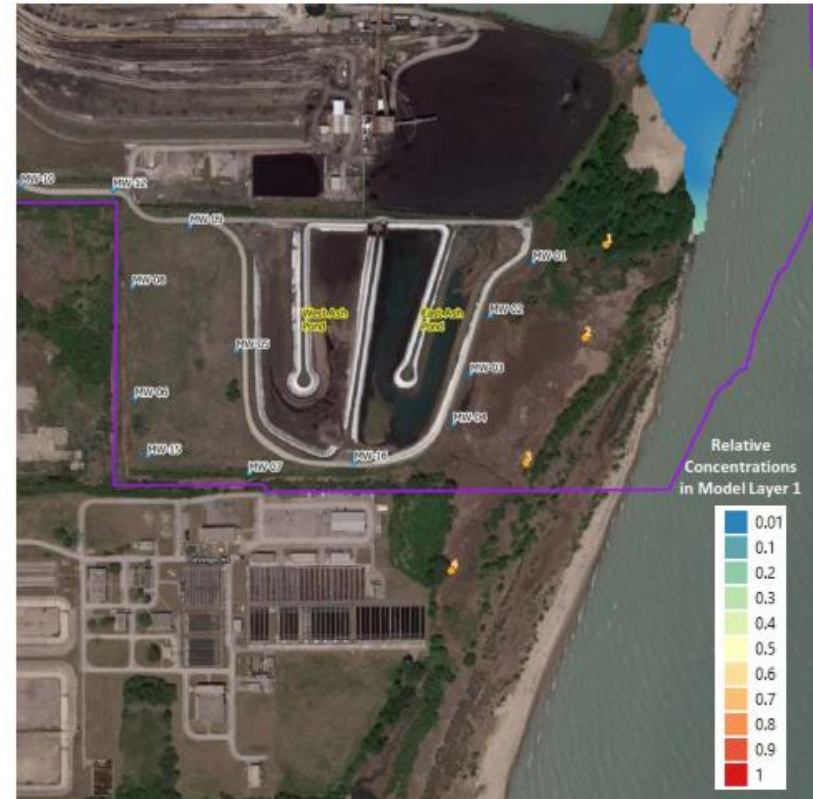


Corresponds to Closure by Removal of East Ash Pond and Closure in Place of West Ash Pond

50 YEAR, Model Layer 1, Scenario 2

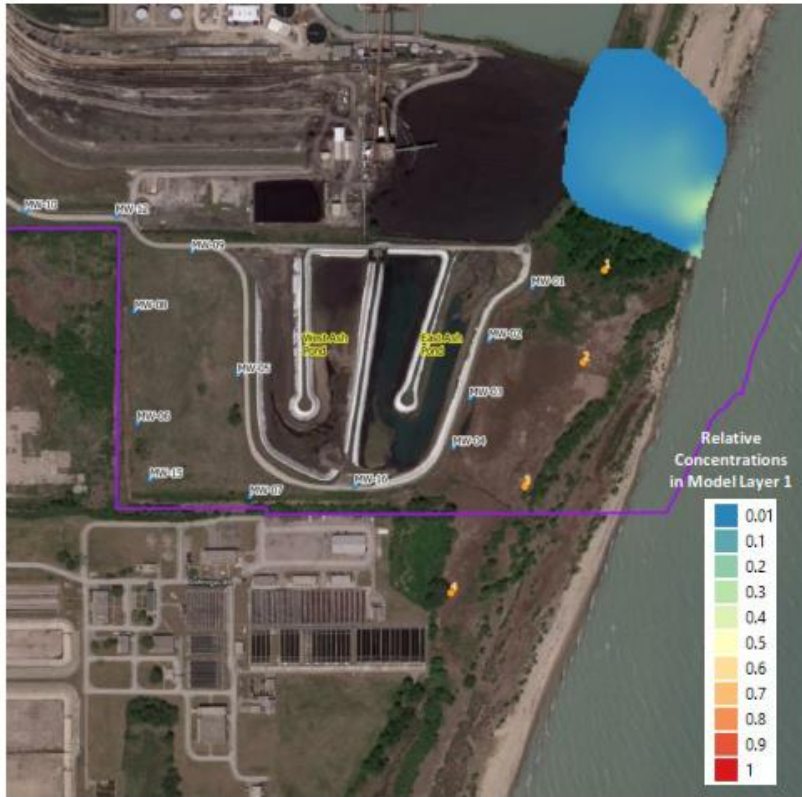


100 YEAR, Model Layer 1, Scenario 2

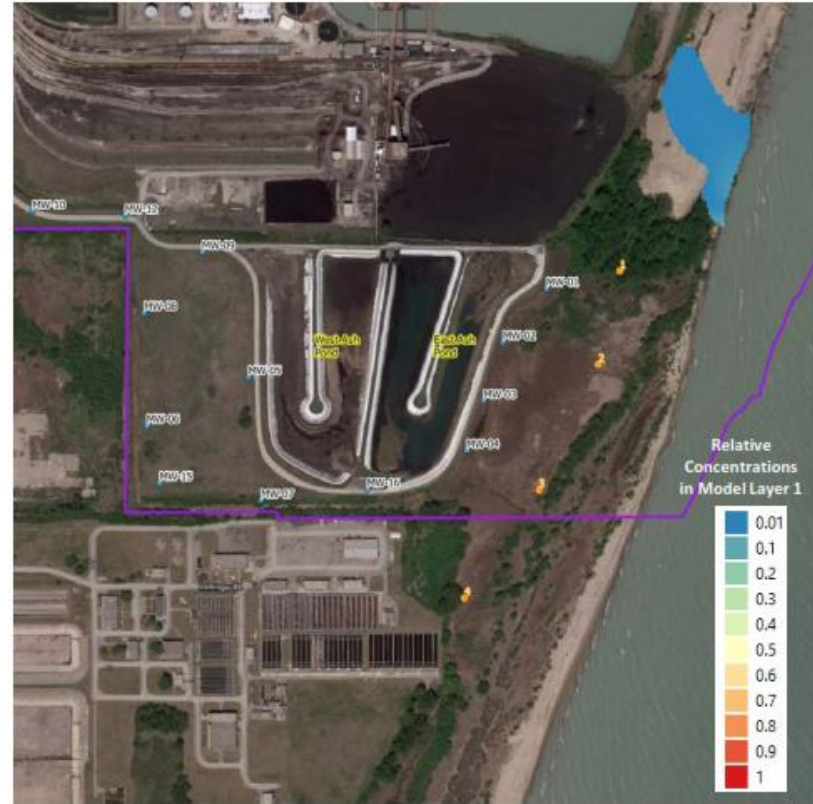


Corresponds to Closure in Place of both East and West Ash Ponds

50 YEAR, Model Layer 1, Scenario 3

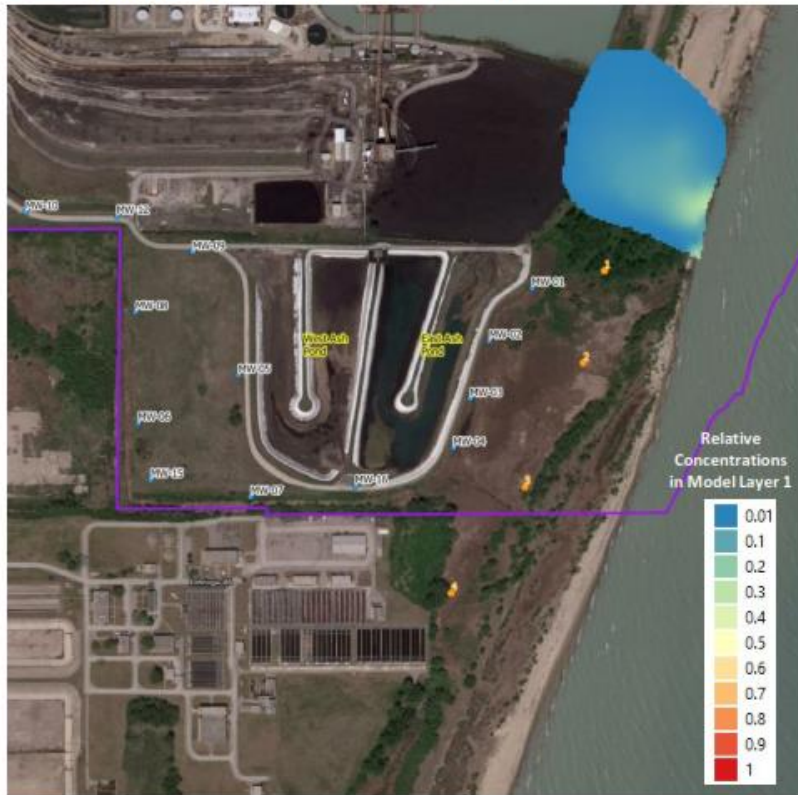


100 YEAR, Model Layer 1, Scenario 3



Corresponds to Closure by Removal of West Ash Pond (and repurpose) and Close in Place of East Ash Pond

50 YEAR, Model Layer 1, Scenario 4



100 YEAR, Model Layer 1, Scenario 4

