



Midwest Generation LLC.

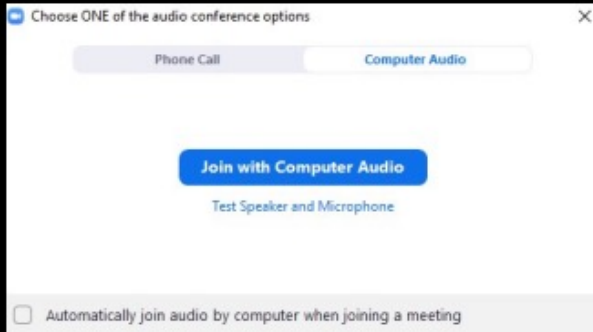
Joliet 29 – Ash Pond 2 ID No. W1970450047-02

Proposed Closure Construction Project

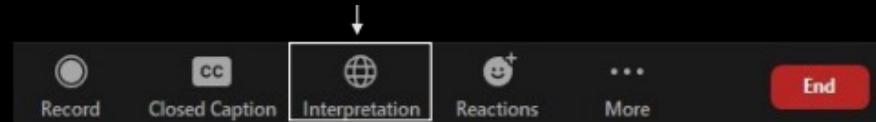
December 2021

Instrucciones Para la Audiencia Para Interpretación en Zoom

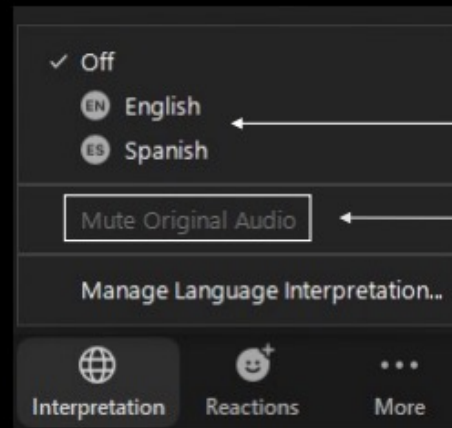
1. Seleccione unirse a la llamada con el audio de la computadora.



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 "Chat"

Click the 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
- Joliet Generating Station Background
- 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, Pond 2 is permitted as part of the Station's wastewater treatment system by the Illinois EPA under the NPDES permitting program.

What is a CCR? What is a CCR surface impoundment?

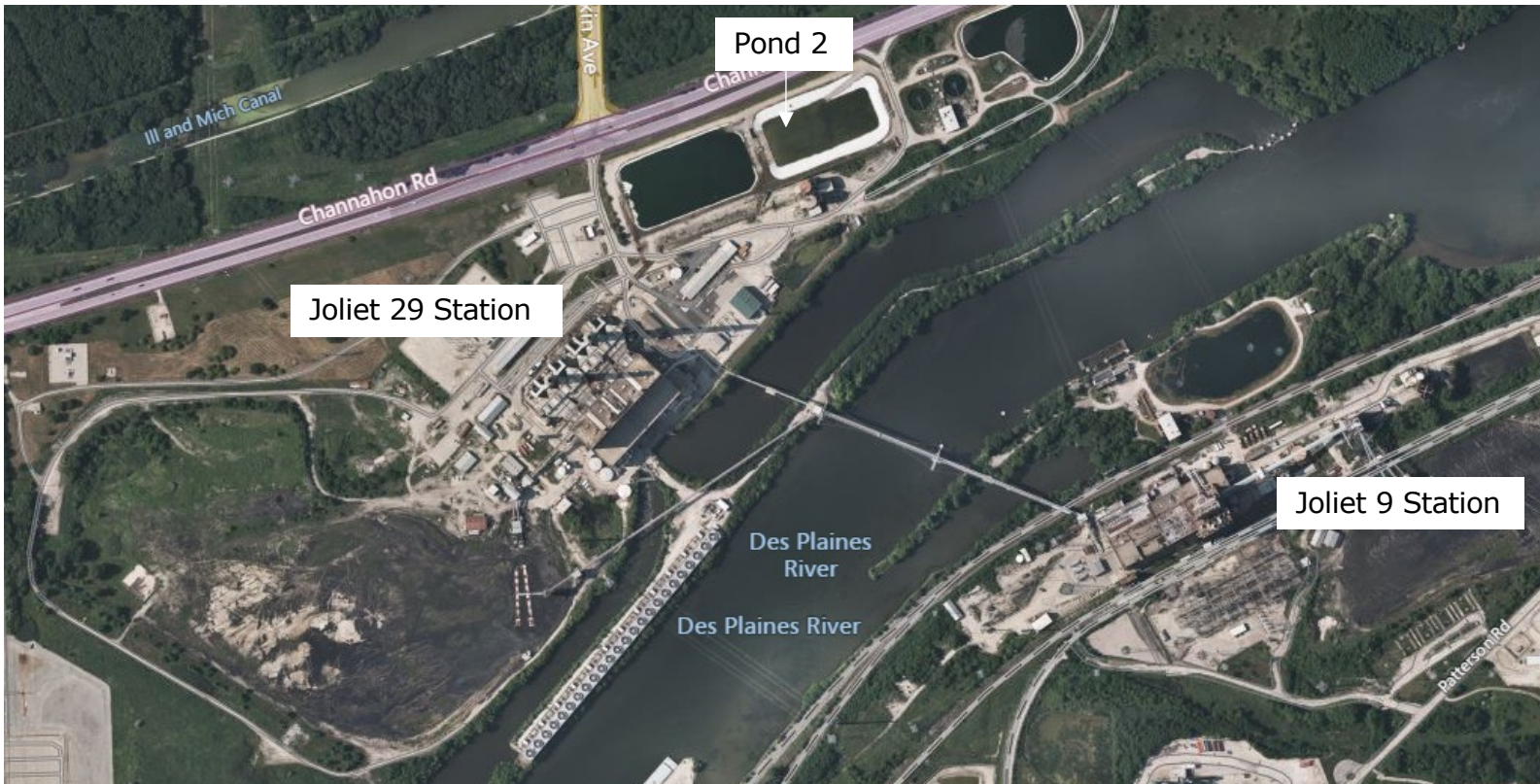
The Illinois Coal Ash Rules define both CCR and CCR surface impoundments:

"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 Joliet 29 Pond 2, the Station's only CCR surface impoundment.

The Illinois EPA Bureau of Water treats Joliet Generating Station as two separate facilities – Joliet 29 and Joliet 9



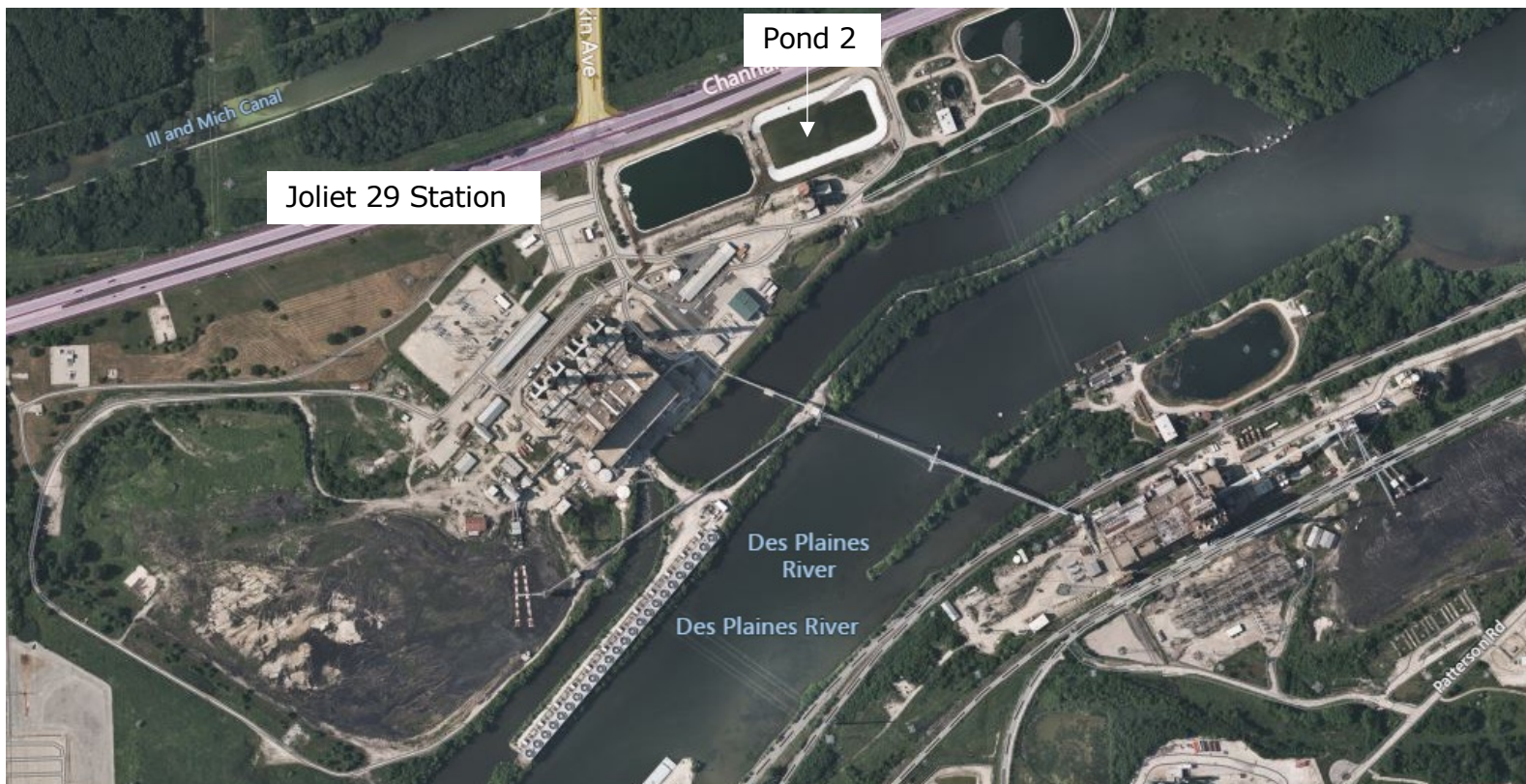
Joliet 29 Station (Units 7 & 8) is on the northern side of the Des Plaines River, Joliet 9 Station (Unit 6) is on the southern side of the river.



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- In 2016, the Electric Generating Units were permanently converted to use natural gas. The station no longer burns coal and no longer generates coal ash.
 - The gas conversion reduced both short-term and long-term emissions of multiple air pollutants.
- When the Electric Generating Units used coal, both Pond 1 and Pond 2 were used to temporarily store CCR. The only type of CCR stored in the Joliet 29 Station ponds was bottom ash which is the non-combustible residue that settles to the bottom of the power plant's boilers
 - MWG removed the ash from Joliet Pond 1, and it no longer stores bottom ash. Because it was emptied and ceased storing coal ash, Pond 1 is not subject to the Illinois Coal Ash Rules.



- Joliet 29 CCR was primarily disposed at the Lincoln Stone Quarry located at the Joliet 9 facility
 - Bottom ash was sluiced from Unit 7 & 8 via a pipe that crosses the river
 - When the sluice pipe was unavailable, bottom ash was stored in Pond 2 as a backup location
- Pond 2 was originally lined with a concrete-like material called Poz-o-pac. In 2008, the pond was lined with a High-Density Polyethylene (“HDPE”) liner (*i.e.* - thick and impermeable plastic)
- CCR was routinely removed from Pond 2 and disposed at the Lincoln Stone Quarry. In 2019 all remaining CCR was removed from the impoundment and the pond has not been in service since
- No CCR or wastewaters are currently directed to Pond 2

Pond 2 doesn't contain CCR, only the sand and limestone warning layer remain. The warning layer was used to “warn” operators of the liner during routine 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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- Consists of excavating existing warning layer (and possibly geomembrane liner) and disposing at a permitted landfill facility
 - Warning layer = 4,810 cubic yards of sand and limestone, that is in place to alert excavators of the existence of the liner
 - Liner = 70,000 square feet
- Onsite Landfill
 - No onsite landfill exists
 - Impractical to build
- Offsite Landfill
 - Excavation and hauling of warning layer would take approximately 7 days
 - No loading points currently in place for either rail or barge onsite

Closure by removal would require offsite landfill space because onsite landfill space doesn't exist

- Minimizes long-term management needs associated with post-closure care
- Additional permits or approvals that may be required include:
 - Board approval to reuse the liner; and/or
 - Potential modification of existing third-party off-site landfill permit for new waste stream acceptance
- Requires at least 3 years of post closure care groundwater monitoring. No impacts to groundwater from Pond 2 have been observed

- Consists of leaving the warning layer and geomembrane liner in place and installing a final cover system
- Final cover system would require additional fill to account for final grades, a geomembrane low permeability layer, and a final protective layer
 - Additional fill needed to ensure proper slopes to direct stormwater to the pond discharge structure = 69,300 cubic yards
 - Time to deliver additional fill = approximately 93 days, based on 50 truckloads/day and 15 cubic yards/truck
- ClosureTurf
 - Final protective layer is replaced with engineered synthetic turf that is infilled with sand/small aggregate
 - Successfully used around the country and in Illinois to close CCR surface impoundments and landfills

With the conversion to natural gas, Joliet Station no longer produces CCR or CCR contact water, but still needs to manage wastewater.

Types of water Joliet Station still manages:

- Storm water – rainwater and snow melt is directed toward various ponds on site, including Pond 2
- Plant drains – various drains around the plant flow to the ponds
- Reverse Osmosis (RO) sand filter backwash – water for steam production is purified by media (sand) filtration & RO prior to use. The RO system & media filters are cleaned with water and that water is treated before discharge.

In May 2021, MWG requested an Adjusted Standard from the Board for some of the requirements of the Illinois Coal Ash Rule:

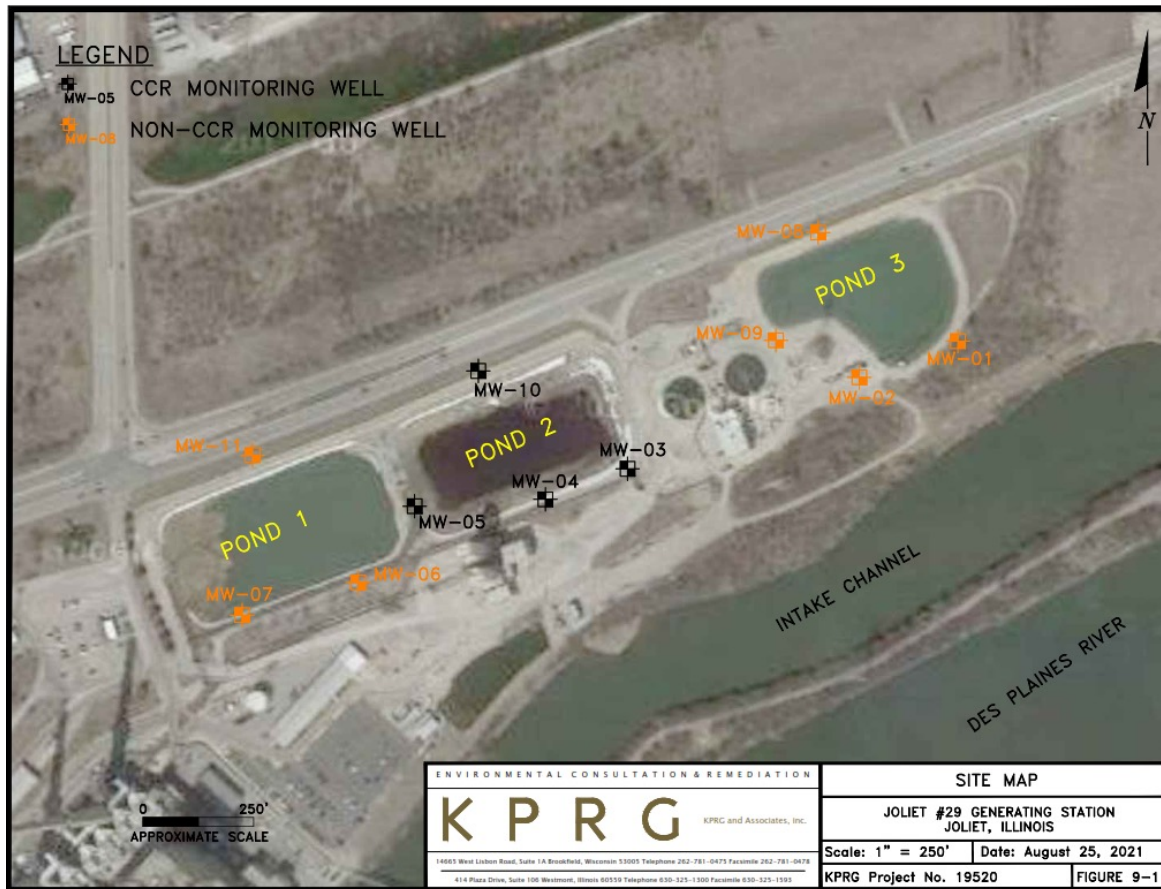
1. Finding of inapplicability of rules to Pond 1 and Pond 3 since they are not used to treat or store CCR
 - Illinois EPA's recommendation filed with the Board states that IEPA agrees that Ponds 1 and 3 are not CCR surface impoundments
2. The ability to reuse the liner system in Pond 2 for non-CCR wastewater
 - Although ash has been removed, 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 pond
- No Statistically Significant Increases of CCR constituents have been observed in the groundwater wells attributable to Pond 2



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.

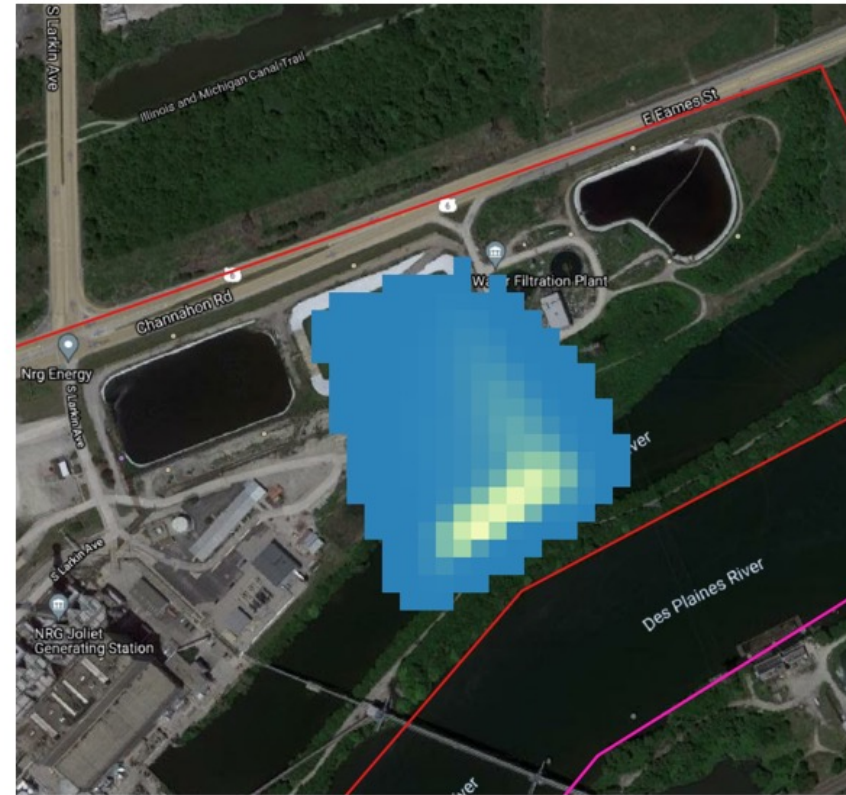
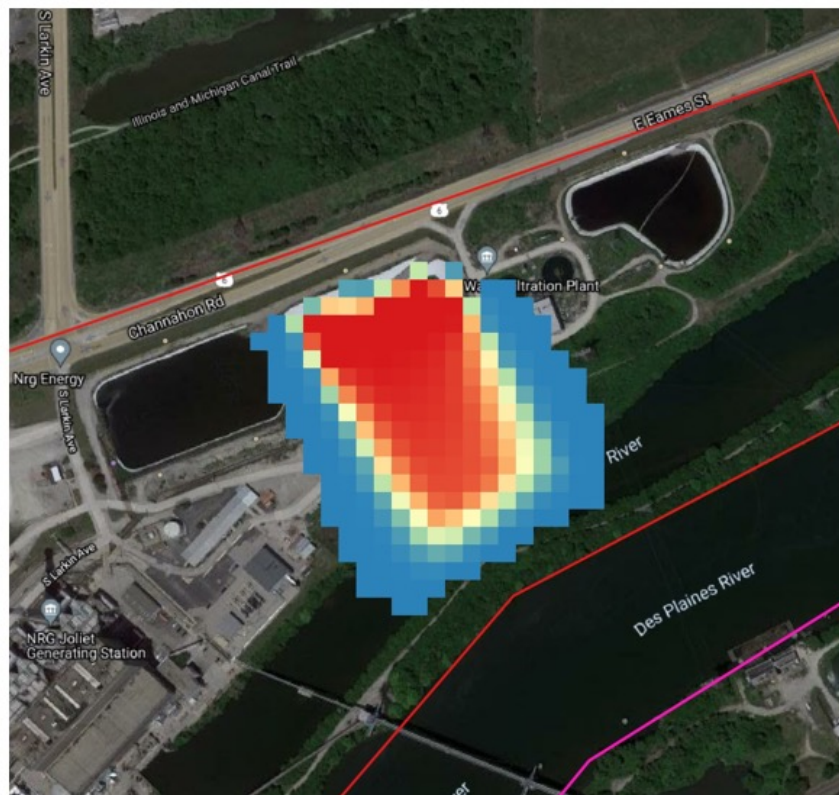
To accomplish this, the model establishes a theoretical source of contamination (i.e., not an actual source) in the pond and allowed to distribute itself over time until an equilibrium (stable) condition is observed by the model (worst case distribution of impacts).

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.

Hypothetical "Source" remains beneath Pond 2

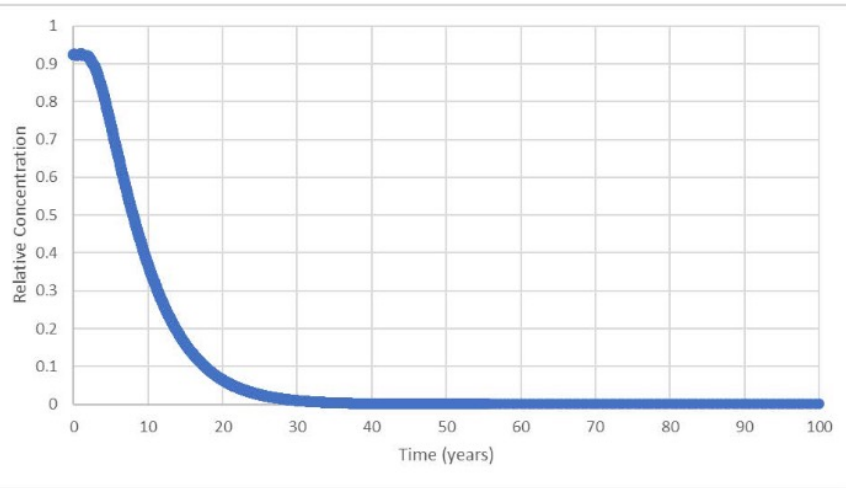
Source Removal Alternative



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- ❑ 100-year concentration distribution used as initial concentrations
- ❑ No source beneath Pond 2
- ❑ Seasonal fluctuations in recharge



The modeling shows at a point near the river, the initial “source” concentrations are reduced by nearly 100% within 30 years, when a point of relative equilibrium is reached.

The closure by removal and closure in place (ClosureTurf) options were evaluated based on effectiveness/protectiveness, ease of implementation, and addressing the concerns of the community.

- Closure in place:
 - Requires 69,300 cubic yards of fill to direct stormwater to the discharge structure
 - 93 days to complete
 - 30 years of post closure care monitoring
- Closure by removal without Adjusted Standard:
 - Excavation, transportation, disposal of approximately 4,800 cubic yards of warning layer
 - Excavation, transportation, disposal of an additional 70,000 linear feet of liner material
 - Approximately 100 days to complete
 - 3 years of post-closure care monitoring
- Closure by removal with Adjusted Standard:
 - Same excavation, transportation, disposal of the 4,800 cubic yards of warning layer described. No disposal of the liner material. Same 3 years of post-closure monitoring.
 - Approximately 7 days to complete

For Pond 2, MWG will propose closure by removal & repurposing the liner for Plant Wastewater

- Consists of excavating existing warning layer and relocating to a permitted landfill facility and thoroughly cleaning the liner for reuse
- Minimizes long-term management needs associated with post-closure care
- The anticipated post-closure care period for Pond 2 is 3 years after closure is complete
- The proposed end use of the pond will be repurposing into a low volume wastewater pond

No impacts to groundwater from Pond 2 have been observed



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Appendix – Closure Alternatives Analysis Summary

| | Closure by Removal for Pond Re-use: All CCR removed | Closure-in-Place with a ClosureTurf Final Cover System: Majority of CCR removed, only de minimus amounts remain in warning layer |
|---|--|---|
| Magnitude of existing risk reduction | Risk reduced to non-existent | Risk reduced to minimal/non-existent |
| Likelihood of future CCR releases | Likelihood of future releases non-existent | Likelihood of future releases minimal |
| Long-term management required | Groundwater monitoring required for a minimum of 3 years | Inspections of the final cover and groundwater monitoring required for a minimum of 30 years. |
| Short-term risks to the community during closure activities | Minimal/non-existent - 7 days of truck traffic to haul warning layer offsite. Trucks would not travel through residential areas. | Minimal - 3-4 months of truck traffic to deliver fill material. Trucks would not travel through residential areas. |
| Time to complete closure, post-closure or 845.740(b) groundwater monitoring | Closure: 1-2 weeks Post Closure Groundwater Monitoring: 3+ years | Closure: 5 months Post Closure Groundwater Monitoring: 30+ years |
| Potential threat to human health and environment | Minimal/non-existent - all CCR removed | Minimal/non-existent – de minimus amount of CCR remaining in the warning layer will be capped to prevent contact with humans and stormwater |

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|--|--|--|
| Long-term reliability of engineering/institutional controls | Not applicable because no engineering/institutional controls necessary. | Geomembrane final cover systems have effectively been used throughout the country for decades; Closure Turf has been effectively used for over 10 years |
| Potential for future corrective action | Not required | Minimal to nonexistent |
| The extent containment reduces further releases | No releases have been observed; no further releases possible because all CCR removed | No releases have been observed; final cover system prevents contacts of de minimus amount of remaining CCR from contacting stormwater which reduces likelihood of future releases. |
| Extent of the use of treatment technologies | Not applicable, no treatment technologies used | Not applicable, no treatment technologies used |
| Degree of difficulty associated with constructing technology | Excavation and hauling of material are routine construction activities - not difficult | Filling, grading, and compacting clean soil are routine construction activities; installation of the ClosureTurf system is not difficult, but a certified company required - not difficult |
| Expected operational reliability of the technologies | Not applicable, no technologies used | Very reliable - ClosureTurf has operated reliably at the other installations around the country. |

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|--|---|---|
| Need to coordinate with and obtain necessary approvals and permits from other agencies | Requires approval from the Illinois EPA. | Requires approval from the Illinois EPA. |
| Availability of necessary equipment and specialists | Specialists not required for excavation/hauling; specialists required to repair the geomembrane liner if needed | Specialists (certified by manufacturer) needed for installation of ClosureTurf |
| Available capacity and location of needed treatment, storage, and disposal services | Need to confirm final disposal location of warning layer (and geomembrane liner, if needed) - not expected to be a concern | Not applicable |
| Degree to which community concerns are addressed | Truck traffic - not through residential areas Groundwater impacts - none have been observed to date, none expected in the future | Truck traffic - not through residential areas Groundwater impacts - none have been observed to date, none expected in the future |
| Assessment of Impacts to Waters in the State | No impacts to Des Plaines River | No impacts to Des Plaines River |