

August 1, 2025

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Subject: Reply to Hunsberger Rebuttal Report Comments and Deposition Statements
City, Water, Light and Power Coal Combustion Residual Impoundments
Springfield, IL

Introduction

This report was prepared to (1) respond to comments¹ made by Mr. Brad Hunsberger of Andrews Engineering (Andrews) pertaining to statements I made during my March 5, 2025 deposition; and (2) highlight problems with statements made by Mr. Hunsberger during his June 20, 2025 deposition. After considering Mr. Hunsberger's rebuttal comments and deposition I continue to recommend that waste be excavated from the site and be either beneficially reused or disposed in a secure facility. My qualifications for making these observations and recommendations were discussed in my initial report.²

CWLP has notified IEPA of their intent to initiate closure of the Lakeside and Dallman CCR impoundments under the requirements of 35 Illinois Administrative Code Section 845.750, Closure with a Final Cover System,³ yet the overarching problem with this site remains that the CWLP impoundments were constructed in a location that is very poorly suited for a permanent waste disposal facility. The proposed cap-in-place remedy for the Lakeside and Dallman Ash Ponds does not meet the Illinois performance standard for CCR closures,⁴ which requires the facility to take measures, such as engineering controls that will control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste as well as post-closure releases to groundwater from the sides and bottom of the unit. Closing the impoundments by capping them in place fails to meet the performance standard because waste located at or below the potentiometric surface would continue to be in regular contact with groundwater. Infiltration of groundwater into the waste will enable continued the release of

¹ Andrews Engineering (2025), Response to Sierra Club Witness – Discovery Report and Deposition – Mark Hutson, Dated May 2025

² Geo-hydro, Inc. (2025), Review of Closure Permit Application and Other Pertinent Materials, City, Water, Light and Power Coal Combustion Residual Impoundments, Springfield, IL, January 5, 2025

³ Andrews Engineering (2022), Final Closure Plan for Coal Combustion Residuals Surface Impoundments, contained in Attach. 13 to CWLP Closure Construction Permit Application, Feb 2022

⁴ 35 Ill. Admin. Code Section 845.750(a)(1)

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soluble contaminants into the groundwater. In addition, the units were constructed on the Sugar Creek floodplain and are potentially subject to damage during future flood events.

There are few options that will be permanently effective at containing the CCR waste and eliminating potential release of contaminants into the environment. For example, some alternative closure options might solidify the waste or otherwise reduce released contaminant concentrations to some extent for as long as one or more systems are implemented, operated and/or maintained. However, there is still no indication that CWLP (or their consultants) have seriously evaluated closure options other than cap-in-place.

Responses to Hunsberger Rebuttal Report Comments

Comment 1:

In this comment Mr. Hunsberger points out that the listing of publications that I have prepared does not list CCR-related documents.

As is indicated in the summary of my qualifications provided in my initial report,⁵ the majority of my work over the past 18 years of my career has been related to storage and disposal of coal ash at facilities across the country. I will also point out that the vast majority of this work has been performed under contracts in support of potential or pending legal actions that contain clear confidentiality requirements.

Comment 2:

In this comment Mr. Hunsberger indicates that because I do not consider myself a modeler that I cannot have an understanding of how groundwater modeling is performed.

I note that Mr. Hunsberger did not question my actual comments on the modeling, but rather questioned how I could understand what has been done since I do not consider myself a modeler. I have managed groundwater modeling personnel and projects with groundwater modeling components since 1994. I have taken multiple continuing education classes in groundwater modeling at the Colorado School of Mines. On the Midwest Generation Site I was involved in planning the three-dimensional numeric groundwater flow (MODFLOW) and contaminant transport (MT3DMS) modeling, I provided peer review of the modelling process, and personally prepared the entire text of the Groundwater Impact Assessment document.

Comment 3:

Mr. Hunsberger objects to inclusion of a table in my report that presents a summary of CCR units that are proposed to be closed by removal or those where actual removal is reported to have occurred.

⁵ Geo-hydro, Inc. (2025), Review of Closure Permit Application and Other Pertinent Materials, City, Water, Light and Power Coal Combustion Residual Impoundments, Springfield, IL, January 5, 2025

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The table was provided for the purpose of illuminating the fact that closure by removal can be technically feasible, economically reasonable, and is in fact being used at many locations. It was unnecessary to include sites where other closure options were selected to illustrate this point. My report clearly stated that I did not compile the information personally as it was compiled by Earthjustice.

Comment 4:

In this comment Mr. Hunsberger questions whether I know what a secure facility is.

During my deposition I indicated that a secure facility for disposing the CWLP waste should not be located on the floodplain below a dam and subject to potential damage or releases during a major flood event.⁶ The CWLP waste should be disposed in a facility located outside of the floodplain where berms will not be eroded by floodwaters. The importance of placing wastes outside of flood-prone areas is illustrated by the damaging floods that have occurred at various locations across the country, including a 300-year flood event that I witnessed in Colorado⁷ and three major flood events in Illinois that have occurred since 1993. The Illinois Association for Floodplain and Stormwater Management description of the 1996 flood in northern Illinois indicates that three dams in the region experienced complete failure and numerous other dams were overtopped, experiencing varying degrees of damage.⁸

An example of impacts that flooding has had on coal ash facilities located on the floodplain is the 2018 release of coal ash at the Duke Energy L.V. Sutton power plant in North Carolina. Flooding in the Cape Fear River caused the release of an estimated 2,000 cubic yards of waste from a coal ash impoundment.⁹

My testimony also indicated that a disposal facility should have a competent liner.¹⁰ More specifically, a liner that meets Illinois and/or federal regulatory requirements should be utilized. I note that the Liner Status Report for the CWLP CCR units indicates that

“While the vertical hydraulic conductivity is generally low, soils were not compacted beneath the impoundments except for sections where the dikes of the Dallman Ash Pond were built atop the existing creek bed. No composite liner or alternative composite liner as specified in 40 CFR Part 257.70 (b) or 40 CFR Part 257.70 9 (c)(1), was used to line the bottom of either ash pond.”¹¹

Not mentioned, but critical when considering permanent disposal of CCR, is maintaining long term separation between the waste and groundwater. Although the modeling conducted at the

⁶ Hutson Deposition, March 5, 2025, page 23, lines 20-22

⁷ <https://www.weather.gov/safety/flood-states-co>

⁸ <https://prepare.illinoisfloods.org/learn/climate-rainfall/historic-floods>

⁹ <https://www.washingtonpost.com/energy-environment/2018/09/21/dam-breach-reported-former-nc-coal-plant-raising-fears-that-toxic-coal-ash-may-pollute-cape-fear-river/>

¹⁰ Hutson Deposition, March 5, 2025, page 23, lines 20-22

¹¹ Andrews Engineering (2016), Liner Status Report for Coal Combustion Residuals Surface Impoundments, October 2016, p. 2

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site makes no effort to identify the expected post closure groundwater elevation or gradient across the impoundments, Andrews provided their estimated post-closure groundwater elevation on a drawing that was included in the groundwater modeling report.¹² Andrews estimated the post-closure groundwater elevation beneath the conceptualized Dallman impoundment to be approximately 528 feet. During his deposition, Mr. Hunsberger again verified that Andrews estimated that the post-closure groundwater elevation on all four sides of the Dallman impoundment is expected to generally be at 528 feet.¹³ The actual post-closure groundwater elevation will likely be higher to the southeast where higher head groundwater is known to be flowing onto the site. However, along the downgradient perimeter of the Dallman impoundment the Andrews estimate of post-closure groundwater elevation at 528 feet appears reasonable.

Until recently the actual elevation of the bottom of the CWLP impoundments had not been reliably known. However, CWLP responses¹⁴ to Illinois Environmental Protection Agency (IEPA) comments on the Operating and Construction Permit Application provided new details on the actual elevation of the pond bottoms. A total of eight borings (four through Dallman and four through Lakeside) were advanced through the waste contained in the impoundments to determine the bottom elevation and facilitate collection of porewater samples. The four borings advanced through the Dallman impoundment showed the pond bottom at elevations of 526.0, 523.0, 526.2, and 529.5 feet. Three of the four borings through the Dallman impoundment showed the pond bottom and disposed waste to be 2 to 5 feet below Andrews' estimated post-closure groundwater elevation, even after closure. This means that the bottom 2 to 5 feet of waste will be saturated with by groundwater that will flow through the waste.

In my opinion, the existing unlined impoundments, located on the floodplain of Sugar Creek, with waste reasonably expected to be submerged in groundwater even after closure in place, does not qualify as a secure facility.

Comment 5:

Mr. Hunsberger makes a long comment about my inclusion and consideration of the Federal Emergency Management Agency (FEMA) flood map of the CWLP site.

I use the FEMA map of the 100-year floodplain to illustrate that there certainly is the potential for flooding associated erosion and damage at the CWLP CCR impoundments. The referenced FEMA flood map is the same map that IEPA relied on in their comments on the Initial Operating Permit Application for this site.¹⁵ Mr. Hunsberger seems fixated on the 100-year flood event and whether the existing berms would be overtopped by floodwater, as if there were no potential for

¹² Andrews Engineering (2021), Closure Alternatives Assessment – Contaminant Transport Model, Figure 4, October 2021

¹³ Hunsberger Deposition, June 26, 2025, page 17, line 1

¹⁴ City Water, Light, and Power, 2024, Coal Combustion Residuals Surface Impoundment Operating and Construction Permit Application Review Letter, Response to Item 1.7.15, September 9, 2024

¹⁵ City Water, Light, and Power, 2024, Coal Combustion Residuals Surface Impoundment Operating and Construction Permit Application Review Letter, Items 1.1.2, 1.7.15, 1.7.16, 2.3.6, 2.3.7, 2.5.1, September 9, 2024

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damage unless the top of the berms were submerged. Water released from Lake Springfield during a flood event will cause high flow velocities immediately adjacent to the Lakeside Impoundment. I observed damage to a monitoring well from a typical high water event (not a major flood) during my site visit.

The discussion of flood damage in my report¹⁶ indicates that the berms around the Dallman Impoundment are not the locations of highest concern during severe flooding events. In my opinion, the area of highest concern during a major storm event would be along the south and west sides of the Lakeside Impoundment. During a major flood event, the combined flow of runoff from the cap and water overtopping the adjacent dam could flow down the planned drainage ditch and down the berm with significant erosive potential.

Mr. Hunsberger indicates that the Annual Consolidated Report submitted in January 2025 showed that there was sufficient capacity within the impoundment area to retain and control precipitation received during a 1,000 year storm. This is referring to current capacity, before the waste is graded and capped. There would be no capacity in the Dallman or Lakeside impoundments to retain precipitation following cap installation.

Mr. Hunsberger questions my observations of flooding caused by a 300-year storm. I was describing the raging flood waters that resulted from a 300-year storm, while Mr. Hunsberger seems to think that because the difference in inches of rainfall between the 100 and 300-year storms in Springfield is only 2.15 inches, the resulting difference in flooding intensity is minimal. The rainfall in a 100 or 300-year storm may be only 30% different, but the difference in floodwater velocity and erosive potential can be significant.

Mr. Hunsberger fails to consider that there are many factors other than the total amount of rainfall that affect flooding. For example, the water content of soils in the drainage, the duration of the rain event, how much of the drainage area is impacted by the storm, and the geometry of the drainage all impact the intensity of flooding that results from a storm. In the case of the Sugar Creek, the discharge from Lake Springfield is funneled through a dam spillway and narrow stream channel adjacent to the Lakeside impoundment berm that results in high velocity flow. Potential for a storm similar to the 1996 event that flooded large portions of northern Illinois¹⁷ must be acknowledged when considering whether the floodplain of Sugar Creek is an appropriate location for a permanent coal ash disposal facility.

Finally, it is clear that storms that used to be considered 100-year events are increasingly common and, of course, storms larger than the 100-year storm event must also be considered.

¹⁶ Geo-hydro, Inc. (2025), Review of Closure Permit Application and Other Pertinent Materials, City, Water, Light and Power Coal Combustion Residual Impoundments, Springfield, IL, January 5, 2025, pages 18 -19

¹⁷ <https://prepare.illinoisfloods.org/learn/climate-rainfall/historic-floods>

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Comment 6:

Mr. Hunsberger makes a long comment about groundwater quality suggesting that I somehow cherry pick the results to support my interpretations.

Mr. Hunsberger suggests that the indicator parameters arsenic, boron, sulfate, and TDS will be found at elevated concentration at all leaking CCR sites. In my experience this is not the case. I have worked with monitoring data from many sites and observed different parameters detected in highly variable concentrations. Monitoring at some sites show high arsenic, boron, sulfate and TDS, while at other sites one or more of these parameters may not be elevated. Examples of factors that influence the variability of chemical composition of CCR leachate include the source coal that was burned, the time period over which CCR has been in the unit, and the solid/liquid contact time. In some cases different sections of a single impoundment have been shown to contain different concentrations of various contaminants because of variation of the coal source or changes to plant processes that occurred over time.

In the case of CWLP, arsenic is a CCR contaminant that is noted to be particularly high.¹⁸ Mr. Hunsberger indicates that since boron, chloride, sulfate and TDS are not all highly elevated in well AP-4, the use of AP-4 as a background well is appropriate. This observation is inaccurate because the well contains anomalously high concentrations of arsenic and is located downgradient of the Lakeside impoundment that has now been shown to contain porewater that also contains high arsenic.¹⁹

Mr. Hunsberger indicates that use of AP-4 as a background well is appropriate because both State and Federal rules allow the use of wells that are not hydraulically upgradient. While it is correct that these rules make provisions for use of wells not located physically upgradient of the unit when appropriate, to be used wells must:

“Accurately represent the quality of background groundwater that has not been affected by leakage for a CCR surface impoundment.”²⁰

Mr. Hunsberger indicates that EPA’s and IEPA’s review of the data from AP-4 and approval of its use proves that it is appropriate. I would be disappointed if the regulators who approved this use are fully aware of the following problems with its use. Utilization of AP-4 as a background well remains inappropriate for the following reasons:

- Westward flow of groundwater from the southeast corner of the property toward Sugar Creek indicates that monitoring well AP-4 is actually located downgradient of the Lakeside Ash Pond.²¹

¹⁸ Andrews Engineering (2025), Annual Groundwater Monitoring and Corrective Action Report, Year Ending December 31, 2024, January 2025, Table 1

¹⁹ CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit, Application Review Letter, Supplemental Response, dated October 30, 2024

²⁰ Section 845.630(a)(1)

²¹ Mr. Hunsberger verified that well AP-4 is located directly downgradient of the Lakeside impoundment during his June 26, 2025 deposition at page 72, line 22 through page 74, line 4

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- The total arsenic concentrations detected in Lakeside waste porewater ranged from 0.453 mg/l (453 ug/l) to 0.0139 mg/l (13.9 ug/l). Arsenic is much higher in portions of the Lakeside impoundment (located upgradient of AP-4) than was detected elsewhere on the site.²²
- The boring log for well AP-4 shows that the borehole was advanced through approximately 10-feet of black fly ash.²³

Mr. Hunsberger claims that ash-related contaminants cannot migrate into the well because the ten feet of black fly ash identified in the AP-4 boring log is separated from the well screen by a bentonite seal and low hydraulic conductivity soils.²⁴ This rationale simply assumes that the soils between the fly ash and the well screen are of sufficiently low hydraulic conductivity to preclude vertical flow. It also ignores the fact that the location, orientation, and thickness of fly ash located outside of the Lakeside impoundment berms have never been characterized. Mr. Hunsberger simply assumes that the ash located outside of the berms is all located above the well screen with no supporting characterization of the depth or extent of ash buried outside of the Lakeside berms.

Further, Mr. Hunsberger claims that boron is the most likely indicator constituent for CCR because of differences in chemistry between wells located north and west of the impoundment. He indicates that since wells containing arsenic generally do not contain elevated boron, the arsenic must be from upgradient sources or natural variation. Of course, the source upgradient of well AP-4 is the Lakeside Impoundment that is known to contain porewater containing elevated arsenic. Invoking natural variation to explain away arsenic contamination in a well that is located downgradient of an impoundment that contains porewater with high arsenic and that penetrates 10-feet of ash located outside of the impoundment is both inappropriate and misleading.

Comment 8:

Mr. Hunsberger takes issue with my opinion that capping waste in place is not an appropriate closure technique when groundwater is flowing through the waste.

I was asked whether I agreed with the concept that closure by removal and closure in place can be equally protective depending on the specifics of the facility.²⁵ I said it is highly dependent on the specifics of the facility and the hydrogeologic setting. When pressed, I said that closure in place is not appropriate when groundwater is flowing through the waste. In his comment, Mr. Hunsberger argues that groundwater is not flowing through the waste; he is describing current

²² CWLP (2024), Coal Combustion Residuals Surface Impoundment Operating and Construction Permit, Application Review Letter, Supplemental Response, dated October 30, 2024

²³ Andrews Engineering (2021), Hydrogeologic Report, Groundwater Monitoring Program and Statistical Procedures, October 2021, Appendix A

²⁴ Hunsberger Deposition, June 26, 2025, page 69, line 21 through page 70, line 7

²⁵ Hutson Deposition, March 5, 2025, page 80, line 5

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impoundment conditions, not the future closed impoundment. My response correctly indicates that it is inappropriate to close a CCR impoundment in place when, like at CWLP, groundwater would be flowing through waste. One need only compare Andrews' estimated post-closure groundwater elevation to the newly determined bottom of waste elevations in the impoundments to see that groundwater would be left to flow through waste if the facility is simply capped in place.

Comment 9:

Mr. Hunsberger indicates that once the CCR impoundments are dewatered that groundwater heads will be at or below the bottom of the ponds and that artesian heads measured on the site just east of the Dallman impoundment are caused by leakage from the impoundments.

As I have previously stated, one need only compare Andrews' estimated post-closure groundwater elevation to the newly determined bottom of waste elevations to see that groundwater would be left to flow through waste if the facility is simply capped in place.

The artesian²⁶ conditions measured on the property likely reflect the high head conditions measured on the southeast corner of the site being transmitted through the basal sand layer. Mr. Hunsberger argues that the artesian heads that have been measured on the adjacent portions of the property are the result of excessive leakage from the facility and that leakage has charged the lower sediments. This could be possible, but if correct it would provide a clear indication that the sediments that form the bottom and sides of the CWLP impoundments provide minimal containment of water and soluble ash contaminants and that porewater inside the impoundments is in direct communication with the basal sand layer. Lack of containment of water and soluble contaminants is inappropriate for a permanent waste disposal facility.

Comment 10:

Mr. Hunsberger indicates that under Illinois Administrative Code Part 807 clay liners were designed to leak and my recollection of the policy is erroneous.

Minimizing the ability of leachate (contaminants) to flow from a unit was what is reflected in the regulations and was what was discussed during my time at IEPA. The ability of some clay-rich subsurface soils to remove some contaminants from migrating porewater or groundwater was generally considered as secondary to maintaining a low hydraulic conductivity liner.

Mr. Hunsberger did not provide documentation or references indicating that the Illinois rules were designed to allow clay lined facilities to leak. However, in order to follow-up with Mr. Hunsberger's line of thought that liners were designed to leak under Part 807, I reviewed Part 807 and found that this section does not contain the words liner or attenuation. There are no

²⁶ Groundwater is considered "artesian" when the head measured in lower hydrogeologic units is higher than heads measured in shallower units. Artesian head can drive upward vertical groundwater flow.

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requirements for a minimum cation-exchange capacity or coefficient of attenuation. Permeability and ion-exchange data are only identified as data that must be submitted unless waived by the agency.²⁷ Part 811.306 does contain requirements for liners beneath new landfills including a requirement of a maximum hydraulic conductivity of 1×10^{-7} cm/sec. If there ever was consideration of specifying a minimum cation-exchange capacity or coefficient of attenuation for waste unit liners, these considerations were not carried through to the final rules.

The composition of the contaminants migrating through liner materials is also of critical importance. For instance, Mr. Hunsberger erroneously indicates that boron should be detected in elevated concentrations from all leaking CCR disposal sites.²⁸ In practice, boron is considered a conservative parameter, meaning that it is generally transported with little to no removal by interaction with soils.

Comment 11:

In this comment Mr. Hunsberger seems to be concerned because I used the word lenses to describe the discontinuous nature of the alluvial sediments that underlie the site.

Fluvial sediments like the sediments that underlie the CWLP impoundments typically consist of sediment layers that vary widely in both composition and thickness. Layers that are thin, change composition, or are completely missing between locations are appropriately described as lenses rather than continuous layers.

In his comment Mr. Hunsberger indicates that:

“the upper cohesive deposit or lower cohesive deposit **are largely present** [*emphasis added*] beneath and adjacent to the impoundments”, and

“For the **vast majority** [*emphasis added*] of the site, the Sugar Creek bed rested on the top of the lower cohesive soil.”

It is known that the fine grained sediments are missing in locations above the former creek bed and that the composition and thickness of the basal sand layer varies between locations. These are sedimentary lenses, not continuous layers of homogenous materials that extend all across the site.

Comment 12:

Mr. Hunsberger comments that I erroneously indicated that upgradient monitoring well AP-5 measures head in the basal sand unit.

Given the highly variable nature of the fluvial sediments that underlie the site, the composition and thickness of the basal sand can vary widely between locations. AP-5 monitors head and

²⁷ Illinois Part 807, Section 807.316. a. 6

²⁸ See Hunsberger Comment No. 6

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water quality in hydrologically equivalent sediments that overlie the shale bedrock, just like the other monitoring wells that are described as monitoring the basal sand.

I will also note the following paragraph from the Groundwater Monitoring Program²⁹ document.

*“Monitoring well AP-5 is located in an upgradient position, southeast of the CCR surface impoundments and in a topographically slightly higher position. The well screen elevation is approximately 554.44 to 563.78 feet MSL. **The screened section of AP-5 is also located at the top of the Pennsylvanian shale and screened across the basal sand at this location.**[emphasis added] This well monitors the upgradient groundwater quality of the uppermost aquifer at this location.”*

Mr. Hunsberger’s comment ignores the facts that AP-5 monitors groundwater quality in the equivalent sediments overlying bedrock and that Groundwater Monitoring Program documents indicate that the well is screened across the basal sand unit.

Comment 13:

In this comment Mr. Hunsberger indicates that the spillway discharges due north, not in the direction of the impoundments. He also seems to believe that during flood conditions water discharged from the spillway will immediately lose velocity after being discharged into Sugar Creek.

One of the things that I noticed during my site visit was that the dam spillway does indeed discharge to the northwest, but a bedrock outcrop located just below spillway will divert flow to the northeast, toward the berms along the western side of the Lakeside impoundment. Under flood conditions, the velocity of water flowing along the berms will indeed be lower than the velocity of water falling through the spillway, but the water velocity can still be sufficient to cause damage. During the same site visit I witnessed a steel well casing at the base of the berm that had been bent over during flooding. Protective metal well casings are not bent by debris in gently flowing water.

Rebuttal Comments on Hunsberger Deposition

Hunsberger Deposition Comment 1, p. 17, line 24:

In this portion of his deposition Mr. Hunsberger admits that there is always a component of horizontal flow, but the overall groundwater movement is downward. If the cap-in-place remedy were constructed at the CWLP sites, there would be a decrease in infiltration, lowered heads within the impoundment, and an associated reduction in the vertical flux of groundwater from the facility. Under these conditions horizontal groundwater flow into and out of the waste will become increasingly important to contaminant transport. The groundwater modeling conducted

²⁹ CWLP, Coal Combustion Residuals Surface Impoundments, Groundwater Monitoring Program, p.8, CWLP - 008652

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to date fails to investigate horizontal flow into and out of the disposed waste if a cap were installed.

Hunsberger Deposition Comment 2, p. 42, line 23:

In this portion of his deposition Mr. Hunsberger describes the source of contamination being cut-off once the leachate head within the impoundment is reduced. This argument ignores the fact that Andrews has estimated that the groundwater elevation around and beneath the conceptualized Dallman impoundment would be approximately 528 feet after closure.³⁰ The actual post-closure groundwater elevation will likely be higher to the southeast where higher head groundwater is known to be flowing onto the site. However, along the downgradient perimeter of the Dallman impoundment the Andrews estimate of post-closure groundwater elevation at 528 feet appears reasonable.

Three of the four borings through the Dallman impoundment showed the pond bottom and disposed waste to be 2 to 5 feet below Andrews' estimated post-closure groundwater elevation, even after closure.³¹ This means that the bottom 2 to 5 feet of waste will be saturated with by groundwater that will flow through the waste. This condition is hardly an indication that the CCR contaminant source is effectively cut off.

Capping of the waste is proposed as a method to prevent precipitation from infiltrating into the ash. Infiltration of precipitation is, however, only one way that water can enter the ash. Wherever the bottom of the ponds is located below the elevation of the water table, groundwater will continue to flow through the ash and generate leachate. The industry has been aware for two decades that leachate that is generated in this manner will flow laterally out of the impoundment and can have an adverse impact on water quality downgradient of the ash. Research conducted by the Electric Power Research Institute (EPRI) identified this problem in a paper (Attachment A) published in 2001.³² In fact, EPRI stated that contaminant concentrations actually increased downgradient of an impoundment that had been dewatered and capped in place. The observed increase in contaminant concentration appears related to multiple factors including infiltration of clean precipitation being reduced by the cap, thus reducing dilution of leachate, as well as an increase in waste/groundwater contact time of caused by significantly reducing the hydraulic gradient. Mr. Hunsberger seems to not recognize the potential impact that leaving saturated CCR in contact with groundwater can have on water quality.

Hunsberger Deposition Comment 3, p. 50, line 6:

Mr. Hunsberger theorizes that in the event that CWLP chooses to completely dewater the waste contained in the impoundments, the waste would compact sufficiently to preclude subsequent interaction with groundwater. Dewatering the waste in place will reduce the porosity to some

³⁰ Hunsberger Deposition, June 26, 2025, page 43, line 8

³¹ Also see response to Hunsberger comment #4, above.

³² EPRI (2001), Evaluation and Modeling of Cap Alternatives at Three Unlined Coal Ash Impoundments, provided in Attachment A and available at <https://www.epri.com/research/products/1005165>

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extent, but has never been shown to reduce the hydraulic conductivity enough to preclude re-wetting and interaction of groundwater with the waste. If this were actually the case there would be no need for processes such as in-situ chemical stabilization of ash that are being utilized at many locations including at the Duke Energy Gibson Station in Indiana where in-situ stabilization is being utilized to facilitate closure of the North Ash Pond.³³ At this site in-situ stabilization will be used to stabilize materials in the deepest portions of the impoundment where the closure plan includes leaving waste in potential contact with groundwater.

Hunsberger Deposition Comment 4, p. 54, line 15:

In relation to the groundwater elevation around and beneath the impoundments following closure Mr. Hunsberger acknowledged that, “we’re not really going to know, you know, until the entire thing is capped and—and done.” This appears to be an admission that the groundwater modelling conducted in support of the CWLP closure plan does not investigate if/how capping the waste would change the elevation of groundwater outside of the impoundments. CWLP is requesting authorization to close the impoundments in place without really knowing if the plan will work or if it will instead exacerbate the existing problem.

Hunsberger Deposition Comment 5, p. 82, line 10:

Mr. Hunsberger indicates that post-closure groundwater elevation beneath the impoundments will return to original conditions. He indicates that because there was no indication of water problems during construction of the Dallman impoundment that the original groundwater elevations will return.

Unfortunately, this scenario is extremely unlikely to occur. Examination of the 1976 topographic map³⁴ of the site shows that the original channel of Sugar creek meandered across the Dallman Impoundment to the east side where it turned south, flowing to the southeast corner of the Dallman impoundment. At the southeast corner of the Dallman Impoundment the original stream channel turned back to the north and meandered across the property that lies adjacent to Dallman.

Construction of the Dallman impoundment included re-routing the Sugar Creek channel to the west and north around the planned CCR impoundment. The previously existing channel was backfilled with various materials. The drawing indicates that over excavation and recompaction of fill materials was only conducted where a dike was to be constructed over the existing channel.

The original stream channel migrating across the location of both the Dallman impoundment and the adjacent property represents a linear groundwater discharge system that removed water from beneath the properties. Once the channel was moved, groundwater flowing from high head areas

³³ Duke Energy (2023), Closure Plan, Amendment One, Gibson Station, North Ash Pond, North Settling Basin, March 7, 2023, p. 2


³⁴ Andrews Engineering (2021), Closure Alternatives Assessment – Contaminant Transport Model, Figure 4, October 2021

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on the southeast and east sides of the site was no longer removed by discharging into the original channel. Rather, water that had previously discharged to the original creek channel remained in the subsurface until reaching the new channel on the opposite side of the site. The elevation of groundwater beneath the Dallman impoundment would have readjusted upward to a higher elevation since the local discharge area had been moved to the opposite side of the impoundment. Simply assuming that the hydrogeologic flow system will return to its previous condition without considering the relocation of the local groundwater discharge areas is incorrect. The previously existing groundwater flow system beneath the impoundments no longer exists because the groundwater drain which previously depressed water elevation beneath the impoundments has been relocated to the opposite side of the site.

Concluding Remarks

I recommend that the Illinois Pollution Control Board require that CWLP update the groundwater monitoring system at their ash ponds to address the inappropriate inclusion of an impacted downgradient well in the monitoring system and direct that closure of the impoundments be done in a manner that will meet the EPA Performance Standard for CCR site closures. I continue to see no responsible choice other than to recommend that the wastes either be excavated and beneficially reused or disposed in a properly located and constructed disposal facility. I reserve the right to supplement this report and/or my opinions as new or additional information is brought to light in the future.



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Illinois Licensed Professional Geologist No. 196.001465



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Attachment A

**Evaluation and Modeling of Cap Alternatives at Three Unlined Coal Ash
Impoundments**

EPRI (2001)