MWG
Midwest Generation, LLC
Powerton Generation Station
13082 E. Manito Rd.
Pekin, IL 61554

February 5, 2024

Via overnight and electronic mail

Mr. Mark Liska
Illinois EPA, Bureau of Water
1021 North Grand Avenue East
Springfield, IL 62702

Re: ***Powerton Generation Station***
Log No. 2021-100029
Bureau ID# W179801008
MWG Response to Permit to Operate a Coal Combustion Residual Impoundment Review Letter

Dear Mr. Liska:

Midwest Generation, LLC ("MWG") received the subject letter, dated October 11, 2023, from the Illinois Environmental Protection Agency's ("IEPA" or the "Agency") via email on November 16, 2023. MWG has no record of ever receiving the copy that appears to have been mailed to our corporate office in New Jersey and only received the letter upon questioning IEPA during its site visit to Powerton Generating Station ("Powerton Station" or "Powerton") on November 15, 2023. MWG reiterates its May 17, 2022 request that correspondence regarding Powerton Station be addressed to:

Powerton Generating Station
Attn: Plant Manager
13082 E. Manito Road
Pekin, IL 61544

A copy of MWG's request is included in Attachment 1. Additionally, MWG requests that the Agency send correspondence via email to midwestgeneration@nrg.com.

MWG appreciates the Agency's comments and agreement to meet in person in February 2024 to discuss Powerton CCR surface impoundment ("CCRSI") permitting. In preparation for our scheduled meeting, below are responses to the Agency's comments and/or questions. We can use this letter as a basis for an agenda for our meeting. While the first sentence of the Agency's review letter references the operating permit application submitted for Powerton Station's Ash Surge Basin ("ASB"), Ash Bypass Basin ("ABB"), and Former Ash Basin ("FAB"), many of the Agency's comments pose questions that are addressed in other permit applications submitted:

- An operating permit application for the Metal Cleaning Basin ("MCB") was submitted on March 31, 2022 ("MCB operating application").
- A retrofit construction permit application for the ABB was submitted on July 18, 2022 ("ABB retrofit application").

- A closure construction permit application for the FAB was submitted on October 28, 2022 ("FAB closure application").
- A retrofit construction permit application for the MCB was submitted on July 19, 2023 ("MCB retrofit application").
- A retrofit construction permit application for the ASB was submitted on July 27, 2023 ("ASB retrofit app").

As appropriate, MWG also identifies the information in the other permit applications that answer the Agency's questions or claims of lack of information.

MWG reiterates its request that the Agency focus its efforts on issuance of a retrofit construction permit for the Ash Bypass Basin. MWG undertook significant efforts to submit the ABB retrofit application to the Agency over a year in advance of the regulatory due date. The primary purpose of the early submittal was to give the Agency sufficient time to review and grant the permit such that Powerton Station could complete its compliance project ahead of the state and federal October 15, 2024 deadline, see 35 IAC 845.700(d)(2)(D) and 40 CFR 257.103(f)(1)(vi). MWG communicated to the Agency the importance of the issuance of the ABB Retrofit Construction Permit to meet this deadline both before and after the application was submitted, including submitting a priority list of the permit applications, as requested by the Agency (see Attachment 1). Rather than issue a permit with conditions that MWG could have worked through with the Agency which would have allowed a timely completion the retrofit project, the Agency instead sent a letter of demands, many of which are unrelated to the Part 845 requirements. This action further delays MWG's receipt of the Ash Bypass Basin Retrofit Construction Permit that it seeks without any recourse.

The Agency's actions may force Powerton Station to cease operation on October 15, 2024. This would cause ripple effects throughout the Tazewell County community and Illinois economy. As MWG recently presented to the Illinois Pollution Control Board (the "Board"), the total regional employment impact of Powerton is over 440 jobs, and the total of the Powerton Station's economic impact for its region is over $186 million, including hundreds of thousands of dollars of tax revenues (see Attachment 2). If the Illinois Legislature intended for all coal fired power plants in Illinois to cease generation immediately, that intention could have been reflected in the Climate and Equity Jobs Act ("CEJA"), Public Act 102-0662, signed into law on September 15, 2021. It was not. Instead, CEJA allows for power plants such as Powerton Station to operate until January 1, 2030. Separately, yet as important, MWG notified the Agency that Powerton Station will comply with federal Effluent Limit Guidelines given at 40 CFR 423 by ceasing burning of coal at the EGUs no later than December 31, 2028. The Board promulgated the Illinois CCR rule ("Part 845"), four years ago, two years before CEJA, and to comply with the various applicable laws, MWG submitted the ABB permit application long before it was due. Here, the lack of issuance of a construction permit by the Agency means that Powerton Station must cease operation on or before October 15, 2024 – less than 9 months from today, unless it obtains some sort of regulatory relief from both IEPA and USEPA. The remaining steps to completion of the ABB retrofit include Agency issuance of a draft permit, public comment period, Agency consideration of public comments, Agency issuance of a final permit, and MWG engineering, contracting, and construction. It is likely not feasible to complete this remaining work in time to meet the state and federal deadline of October 15, 2024.

MWG met with USEPA to begin discussions around potential relief from the federal regulatory deadline so that Powerton Station can continue to operate while awaiting the ABB construction permit. MWG will be prepared to discuss a path toward state relief of this deadline with the Agency during our upcoming meeting.

For ease of review, MWG numbered the Agency's feedback below, and the numbered IEPA letter is presented as Attachment 3. Numbers given in responses below correspond to the numbers in Attachment 3. These responses may be updated as needed after our meeting in February. Please add this Response with the Attachments to the ASB/ABB and FAB operating permit application record.

MWG looks forward to discussing CCRSI permitting for Powerton Station with the Agency. If you have any questions or need additional information, please contact me at sharene.shealey@nrg.com.

Sincerely,

Sharene Shealey
Director, Environmental

Todd Mundorf
Powerton Station Plant Manager

Cc *(via electronic mail)*:

David Bacher
Jill Buckley
Walter Stone
Cecilia DeRobertis, USEPA
Lauren Hunt, IEPA
Darin LeCrone, IEPA
EPA.CCR.Part845.Coordinator@Illinois.gov

MIDWEST GENERATION LLC'S RESPONSES

1) Midwest Generation, LLC ("MWG") routinely trains its employees regarding the surface impoundments and other plant operations. The appropriate portions of the surface impoundment training have been incorporated into the Safety and Health Plan ("SHP"). See Attachment 4.

2) The SHP has been updated to include a requirement for annual training. See Attachment 4.

3) Section 9.0 of the ASB, ABB and FAB Application for Initial Operating Permit ("Application") submitted on October 30, 2021 presents in detail the information requested in this comment. Section 9.0 references specific regulatory citations as provided in Section 845.230(d)(2)(I) regarding what needs to be included in this part of the Application. Section 9.1 provides a detailed description of the site geology and hydrogeology as required under Section 845.230(d)(2)(I)(i), which in turn references Section 845.630. Section 9.2 presents the groundwater monitoring system design and construction plans as required under Section 845.230(d)(2)(I)(ii) which in turn references Section 845.640. Section 9.3 presents a groundwater sampling and analysis program as required under Section 845.230(d)(2)(I)(iii) which in turn references Section 845.650. It is noted that in Section 9.3.8 a proposed statistical evaluation plan as required under Section 845.640(f) is specified as Attachment 9-5 of the Application submittal.

Sections 845.660, 845.670 and 845.680 referenced in this comment deal with an Assessment of Corrective Measures, Corrective Action Plan and Implementation of Corrective Action Plan, respectively. These are not part of Groundwater Monitoring Program requirements set forth for the Initial Operating Permit Application requirements in 845.230. MWG requests clarification from the Agency regarding the applicability of these sections to an application for an operating permit and to the development of the groundwater monitoring program.

4) MWG understands the noted concern highlighted by IEPA in this comment relative to potential Illinois River flow reversal impacts on selected upgradient monitoring wells. Attachment 5 of this response letter provides revised water levels tables included in the Operating Permit applications for the ABB/ASB, FAB, and MCB for monitoring wells associated with the CCRSIs, which have been updated through the end of further quarter 2023 along with Illinois River gage height data from the U.S. Geologic Survey (USGS) Kingston Mine gage, which is the nearest river gage to the Powerton Station.[1] Water levels from monitoring wells that exhibited an elevation lower than the stream gage height level for the corresponding water level measuring event are bolded. None of the upgradient monitoring wells used for background data statistical evaluations displayed water levels lower than the Illinois River gage height during any of the sampling events. There were several downgradient monitoring wells (e.g., MW-04, MW-05) which did have lower water level elevations than the stream gage height at a specific time. But that is not relevant to the statistical prediction limits because the data from those wells are not used for the calculation of statistical prediction limits. Because only upgradient well data are used for those purposes, the proposed statistical prediction limits and proposed Groundwater Protection Standards (GWPSs) presented in the Application are based on valid and representative data.

Relative your description regarding well MW-19 being screened in black fill sand, MWG disagrees with this interpretation. A review of the soil boring and well construction log for MW-19 (see Attachment 9-2 of Application) shows that the well is "screened" within a fine to medium grained brown sand. The top of the sensing zone for the well (i.e., top of sand pack) is 30 feet below ground surface (bgs) with a bentonite

[1] MWG also included water level tables for the monitoring wells associated with the Metal Cleaning basin ("MCB"), even thought that impoundment was not included in the application that is the subject of the Agency's letter.

grout seal extending from 30 feet bgs to approximately 1 foot bgs. That grout seal isolates any potential near surface impacts from migrating down along the borehole annulus and affecting the water quality being monitored by the screened interval. Because of the isolation created by the seal, the groundwater sampled from this well is representative of existing groundwater quality at that location. While the near surface layers do not interact or impact the groundwater samples collected 30 feet below, if the Agency is describing the near surface layer in MW-19 as a black, fine to coarse silty sand, the Agency cannot make a presumption that the material is CCR. There is no indication of any cinders or other ash-type fill materials in the log, and as shown in the other logs in Attachment 9-2, when observed the boring log will identify CCR. Therefore, the assumption that based strictly on the descriptive feature of "black" that this is reflective of CCR fill material is not supported.

In any case, only select parameters from MW-19 were used to pool with other upgradient well data based on statistical variance evaluations as discussed in Attachment 9-6 of the Application. The statistical basis for use of this select parameter data is discussed in that Attachment.

5) A SHP and Emergency Action Plan ("EAP") were completed in accordance with 35 Ill. Adm. Code 845.530 and 35 Ill. Adm. Code 845.520 and included as part of the initial operating permit application as required by 35 Ill. Adm. Code 845.230(d)(2)(S) and 35 Ill. Adm. Code 845.230(d)(2)(G), respectively. The plans submitted comply with requirements and identify potential hazards that could arise when the surface impoundments are actively used.

When MWG is granted a construction permit and awards a contract to execute the permitted closure or retrofit construction, the contractor will be responsible for the overall construction site safety and safety of all personnel, including compliance with current health and safety standards, conducting safety training in accordance with MWG's safety requirements and CCR health and safety plan. MWG identified this requirement in Attachments 5 – 1, Construction Plans and Specifications of its Applications for Construction Permits submitted to the Agency.

Minor modifications to the SHP were made in response to Comments 1 and 2, included as Attachment 4.

6) The proposed waste boundary wells are the designated "downgradient" monitoring wells in the Application.

7) The Agency's comment on pH is inapplicable here. As stated in Tables 9-10 and 9-11 of the Application, the proposed pH GWPSs for the ABB/ASB and the FAB defaulted to the Section 845.600(a)(1) standard for pH (6.5-9.0). In any case, it is commonly accepted that pH has an upper and a lower bound range. When completing a statistical prediction limit evaluation for pH, both an upper and a lower prediction limit can and are calculated. If the designated background well has a lower pH prediction limit than 6.5, which is the Section 845.600(a)(2) lower pH limit, the lower background value should become lower pH limit proposed GWPS. This is consistent with the intent of Section 845.600(a)(2).

8) The CCRSIs in question for this operating permit application are the FAB, ASB, and the ABB. These surface impoundments are located east of the main generating station and coal pile and are located on the east side of the Powerton property. The Illinois River is located north of the Powerton property and north of the CCRSIs, and Lost Creek, a tributary to the Illinois River, travels along the east side of the CCRSIs and then flows north of the FAB towards the river. The land between the generating station/existing surface impoundments and the Illinois River consists of a low land marsh. This land is classified as Freshwater Forested/Shrub wetlands that are dominated by trees, shrubs, and persistent emergents, which also include woody vegetation that is 18 feet tall or taller. This type of wetland also has seasonal surface water, especially during the growing seasons. This land is not suitable for construction because of the wetland classification.

The groundwater present at the site exists within two different layers in the subsurface, which are a shallow silt layer and a deeper sand layer. These two different layers are discussed in Section 9 of the Application. Groundwater flow in the shallow silt layer is from the east to the west towards the former intake channel. Groundwater flow in the deeper sand layer is from south to north towards the Illinois River. Generally, the groundwater is not impeded at the site by known structures around the surface impoundments or by the surface impoundments themselves. The cross sections in Figures 9-2 through 9-7 of the Application show that the surface impoundments extend into the upper fill layer of the site and groundwater flow is below the base of the surface impoundments. An exception to this is the Service Water Basin ("SWB"), which extends into the groundwater in the upper silt layer. The SWB is not a CCRSI. It is lined with a high-density polyethylene ("HDPE") geomembrane liner and there is no hydraulic connection between the water present in the SWB and the upper silt layer groundwater. The presence of the SWB does not impede the flow of groundwater because the characteristics of the site soils allow for adequate flow of groundwater around and beneath the SWB.

Lost Creek flows parallel to the east side of the FAB and continues north until it reaches the river and does not come in contact with the FAB or any other surface impoundment or structure.

9) Sections 845.600 through 845.640 do not include a specific requirement for field monitoring parameters or field procedures generally, and there is no requirement to use the noted EQASOP-GW4 procedures. Similarly, the federal CCR rules do not require the use of EQASOP-GW4. EQASOP-GW4 was issued by USEPA Region 1, a different USEPA Region than where Powerton is located. Sections 9.3.2 and 9.3.3 of the Application detail the sampling procedures being used. These are industry-standard, low-flow sampling procedures and provide representative data for the proposed sampling program. Notably, all inorganic samples collected for CCR monitoring purposes are <u>not</u> field filtered and are analyzed for total recoverable metals pursuant to Section 845.640(i). This is specified in Section 9.3.3 of the Application, which states: "An unfiltered groundwater sample shall be collected directly from the water tubing after it is disconnected from the flow-through cell."

10) It is possible to distinguish between the ABB and ASB and the CCR that was used to construct the current layout because both basins have always had a liner. As noted in Section 1.7.2.1 of the Application, the ASB was originally constructed (circa 1978) with a Hypalon® geomembrane liner along the interior slopes and a Poz-O-Pac® liner along the base. Similarly, per Section 1.7.2.2 of the Application, the ABB was originally constructed (circa 1980) with the same liner system. Both Hypalon® geomembrane liners were replaced with the current high-density polyethylene (HPDE) geomembrane liners in the ABB and the ASB in 2011 and 2013, respectively. When both basins were re-lined in the early 2010s, no major modifications were made to the basin's original construction beyond replacing the original liners. Therefore, the current HDPE geomembrane liners in the ABB and ASB represent the waste boundaries for the basins. In other words, the HDPE geomembrane liners distinguish where CCR has been historically placed within the basins from where CCR was used to construct the basin's dikes and/or build up the area.

MWG will consider the Agency's recommendations for closure by removal (35 Ill. Adm. Code 845.740) and closure in-place (35 Ill. Adm. Code 845.750) when developing the final proposed closure designs for the ABB and the ASB. However, to date, MWG has not submitted a closure construction permit application for either basin. MWG has submitted a retrofit construction permit application for each basin; the permit application for retrofitting the ABB was submitted on July 18, 2022, and the permit application for retrofitting the ASB on July 27, 2023. The preliminary written closure plans included with the operating and retrofit permit applications for both basins are based on MWG's plans for closing the ***<u>retrofitted</u>*** basins.

Because the performance standard for removing CCR when retrofitting an existing CCR surface impoundment under the Illinois CCR Rule (35 Ill. Adm. Code 845.770) is similar to the performance standard for closing the impoundment by removal of CCR (35 Ill. Adm. Code 845.740), MWG would like to take this opportunity to emphasize to IEPA that the CCR required to be removed under 35 Ill. Adm. Code 845.770(a)(1) during retrofit construction only pertains to CCR that was placed within the basins (i.e., within the lined areas). CCR within the structural fill used to construct the basins' dikes and CCR within the foundation soils supporting the basins are not parts of the CCR surface impoundments, regardless of whether the CCR qualifies as beneficial use of CCR under Section 3.135 of the Act and 35 Ill. Adm. Code 845.150. Therefore, the CCR in the basins' dikes and in the basins' foundation soils is not regulated under the Illinois CCR Rule.

The plain language of the Illinois Environmental Act shows that a CCR surface impoundment is the area bounded by the dikes of either natural or man-made materials and does not include the dikes themselves. The Act states, "a *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 unit treats, stores, or disposes of CCR." 415 ILCS 5/3.143. While "depression," "man-made excavation," and "diked area" are not defined in the Act or the Illinois CCR Rule, "dike" is defined in the rule as "…an embankment, berm, or ridge of either natural or man-made materials used to prevent the movement of liquids, sludges, solids, or other materials." 35 Ill. Adm. Code 845.120. Because "dike" means the embankment, berm, or ridge, a "diked area" is the area bounded by the embankments, berms, or ridges, but those structures are not included in the area. The annual structural stability assessment required for an existing CCR surface impoundment by the Illinois CCR Rule support this distinction between the CCR surface impoundment and the dikes because the assessment treats the dikes differently than the CCR surface impoundment. The language in that section states that the "dikes" must be "mechanically compacted to a density sufficient to withstand the range of loading conditions *in the CCR surface impoundment*;" thus, the dikes clearly are not part of the CCR surface impoundment. 35 Ill. Adm. Code 845.450(a)(3). (emphasis added).

Defining a CCR surface impoundment as the area bounded by the dikes (but excluding those structures) is logical, because the definition is contingent upon the ability to accumulate liquid. As USEPA explained when it first promulgated Part 257 Subpart D, on which the Illinois CCR Rule is based, the risks associated with CCR surface impoundments are from the hydraulic head created by the water impounded with the CCR that promotes leaching of contaminants. 80 Fed. Reg. at 21328, 21342, 21357. In its May 2023 Proposed Rule for legacy CCR surface impoundments and CCR management units, USEPA again emphasized the importance of the accumulation of liquid to the definition of a CCR surface impoundment, stating: "Units that contain liquid present different risks than those that do not, and the applicable requirements should differentiate among them accordingly on that basis." Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments, 88 Fed. Reg. 31982 ("Legacy Rule"), p. 31993 (May 18, 2023). USEPA repeats that the key is that impounded water creates a "hydraulic head" in an operating impoundment that "allows for continual leaching of contaminants from the CCR and drives the resulting leachate…potentially into the underlying aquifer." *Id*. at 32011. Conversely, in its May 2023 proposal to regulate CCR management units ("CCRMUs"), USEPA specifically distinguishes CCRMUs from CCRSIs by stating that "CCRMUs do not contain sufficient liquids to create a hydraulic head or to otherwise cause the conditions that might lead to a structural failure…" *Id.* at 32017. Because of the absence of the risk from a hydraulic head, USEPA concluded that many of the existing requirements in Part 257 Subpart D applicable to CCRSIs are not necessary for CCRMUs. *Id*.

USEPA's decision in its May 2023 proposal to distinguish CCRMUs from CCRSIs – and therefore regulate them differently – further supports that the dikes are *not* a part of the CCRSI definition. USEPA proposed to define a CCRMU as "any area of land on which any non-containerized accumulation of CCR is received, placed, or otherwise managed at any time, that is not a CCR unit." *Id*. at 32034. USEPA also excluded CCRMUs from the definition of "CCR unit" in its proposal, further creating a distinction between CCR surface impoundments (that accumulate liquids) and CCRMUs (that do not accumulate liquids). *Id*. Under this proposed definition, USEPA explained that CCRMUs would include "…areas where the solid waste management of CCR on the ground has occurred, such as structural fill sites, [and] CCR placed below currently regulated CCR units." *Id* at 32018. Finally, USEPA stated that CCRMUs "remain exempt under existing federal CCR regulations," demonstrating that the agency considered CCRSIs and CCRMUs as separate features. *Id.* at 32013. Therefore, in the context of the ABB and ASB, the boundary where the CCRMU ends (currently *not* regulated) and a CCRSI begins (currently regulated) is the HDPE geomembrane liner in each basin. Accordingly, the dikes (i.e., structural fill sites) in which the ABB and ASB sit and the CCR in the foundation soils below the basins' liners are CCRMUs and are *not* part of the regulated CCRSIs.

11) Section 4.6 of the operating permit application text will be revised to include the Illinois River flood zone elevation of 456.9 feet amsl and the elevations of the tops of the embankments of the surface impoundments. A comparison discussion will also be included in this section.

12) The Agency's request appears to be regarding closure by removal of the ASB, ABB or the FAB. As discussed in MWG's response to Agency Comment No. 10, MWG has submitted an application to *retrofit* the ASB and ABB, so the specific requirements for closure of those CCRSIs are inapplicable. In any case, as discussed in MWG's response to Agency Comment No. 10, CCR within the embankments and foundation soils for the ABB and ASB can be distinguished from CCR historically placed within the basins because both basins have always had a liner. As detailed in MWG's Response No. 10, CCR outside of the basins' HDPE geomembrane liners are not regulated by the Illinois CCR Rule and are not currently regulated by the Federal CCR Rule. This CCR meets the USEPA's proposed definition of a CCR management unit provided in USEPA's May 2023 proposed rule for regulating legacy CCR surface impoundments and CCR management units. Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments, 88 Fed. Reg. 31982 ("Legacy Rule"), p. 31993 (May 18, 2023). Please refer to MWG's response to Comment No. 10 for more details.

With respect to providing metals analytical characterization of CCR below the FAB and its embankments for its closure, the Illinois CCR Rule does *not* require CCR found in those areas to be chemically characterized. The rule only requires "an analysis of the chemical constituents found within the CCR *to be placed in* the CCR surface impoundment," not CCR placed outside of the CCR surface impoundment. 35 Ill. Adm. Code 845.230(a)(15) and 845.230(d)(2)(B). (emphasis added).

13) The text of the Application will be revised in accordance with the material in the borings referenced in this comment.

14) The Agency's comment is unclear. Powerton Station has almost exclusively burned Powder River Basin ("PRB") coal since the early 1990s, so that the parent coal source has been consistent for more than 30 years. Powerton also routinely removed ash from the ASB and ABB as part of normal plant operations, as MWG stated in both of the preliminary retrofit plans for the basins, dated May 21, 2021.

Ash analysis for ash from the ASB and FAB was provided in the Application. As stated in Application Section 2.0, the ABB was empty of ash at the time of preparation of the Application, and remains empty of ash, and so a specific sample from the ABB was not provided. That said, both the ASB and ABB are used as overflow basins for the effluent from the dewatering bins, with either one or the other basin in service at any given time. Since MWG began operating the Station in 1999, the ash placed in both the ASB or ABB was the same, meaning that the chemical characteristics of the CCR was identical.

The Agency's statement that, "MWG ***must*** provide sample results and rationale that complies with SW846 Compendium," (emphasis added) is not supported by Part 845. While SW846 is incorporated by reference in Section 845.150, its use is not required by Part 845. While the rules may incorporate analytical methods by reference, the Illinois rules dictate where each method should be used in the substantive section. *In the Matter of: SDWA Update, USEPA Amendments (January 1, 2013 through June 30, 2013)*, R 14-8, slip op. at 24-25 (Jan. 23, 2014). In fact, USEPA states in SW846 that the use of the method is not mandatory, unless "explicitly specified in a regulation." USEPA SW-846 Update V, (July 2014), Chapter 2, at 1. In any case, MWG followed the SW846 protocol for analyzing the CCR. *See* Attachment 2-1 of the Application.

For the CCR analysis provided, two composite samples were assembled for analysis to provide the chemical characteristics of the CCR from the FAB and the ABB/ASB, respectively. The composite was created by collecting CCR from multiple locations across each surface impoundment, combining the CCR, mixing the CCR, and placing the CCR in laboratory supplied containers for transport for laboratory analysis. MWG prepared the following standard operating procedure ("SOP") as a common method for collection of CCR samples at each of its Stations.

1) The key for a representative sample will be to make sure we get a good cross-section of the pond contents as coarser materials will settle first and finer materials further out. So, for the sampling, divide the pond into quadrants. The first quadrant being at the inflow and the last quadrant being at the outflow.

2) If possible, reduce the water volume in the pond to make the ash accessible for direct sample collection. Use a clean shovel and get about one quart of ash material from two separate areas within each quadrant getting one to two feet in depth (this will yield about 8 quarts total of material). Try to keep as similar amount of ash as possible from each quadrant being placed into the bucket (try not to skew with too much sample from a specific quadrant).

3) Place all the ash from the four quadrants into a clean 5-gallon bucket and mix as thoroughly as possible. If necessary, you can spill the contents from the bucket onto a plastic sheet to mix the material.

4) Transfer the mixed/composited sample into laboratory prepared containers. Complete the chain-of-custody and have the lab pick-up the samples or package and ship on ice via overnight delivery. If samples are to be collected and shipped on a Friday, coordinate with the lab to make sure someone is there on Saturday to receive the shipment and log in the samples.

The lab analyzes the CCR using methods described in the analytical packages including SW846, which are included as Attachment 2 of the Application. MWG's procedure follows the USEPA guidance for quality assurance for collecting data, which included 1) identifying the problem, which was collecting CCR from the surface impoundments for laboratory analysis; 2) identifying goals and information inputs, which was a successful sample collection, laboratory analysis, and the identifying the necessary CCRSI's to be sampled and if any variability occurred within the CCR placement in the SI; 3) defining the boundaries of the sampling which was the extent of the CCRSI's 4) identifying the appropriate analytical procedure based

on the parameters in 845.600 being provided to the laboratory; and 5) MWG preparing a routine procedure that can be followed for a specific operation, analysis, or action. By developing the SOP, MWG may reproduce the sampling events even if there are changes in the personnel performing them, which ensures "conformance with organizational practices, reduction in the frequency of errors, and improved data comparability and defensibility." USEPA SW-846 Update V, (July 2014), Chapter 1, at 9.

Regarding any CCR in embankments, please see response to Comment 12.

15) MWG does not place fly ash into the ASB or ABB. As described in the CCR Fugitive Dust Control Plan included in the Application, fly ash is dry handled at Powerton and those operations are permitted under the Agency's Clean Air Act Permitting Program. The CCR sampling and analysis of the bottom ash in the ASB and ABB was done in accordance with 35 Ill. Adm. Code 845.230(a)(15). No specific procedure is required by 845.230(a)(15). Instead, MWG developed a procedure to adequately characterize the CCR within each surface impoundment. Refer to Response No. 14 for a description of the sampling procedure, but in general, CCR was collected from multiple locations in each surface impoundment, the CCR mixed together, placed in laboratory provided containers, and sent for laboratory analysis.

Also, as stated in Response No. 14, Powerton Station has burned PRB coal since MWG began operating the station in 1999 and routinely removed ash from the ASB and ABB as part of normal plant operations.

16) The bases for establishing the bottom of the ASB at elevation 452 feet amsl and the bottom of the ABB is at an approximate elevation of 458 feet amsl are provided in Attachment 1-2 and Attachment 1-4 of the Application, respectively. These attachments provide the as-built construction plans for the work performed in the early 2010s to replace each basin's original liner with their current HDPE geomembrane liners. Drawing D2113C020-03 ("Liner Subgrade Preparation") in Attachment 1-2 establishes the approximate bottom elevation of the ASB at 452 feet amsl. Drawing D1965C020-02 ("Liner Subgrade Preparation") in Attachment 1-4 establishes the approximate bottom elevation of the ABB at 458 feet amsl.

17) Under Part 845, an initial operation permit application is not required to include corrective actions. Instead, corrective measures should be addressed in a separate construction permit application, as specified in Section 845.220(c).

Interim corrective measures are mentioned five times in the whole of Part 845: once in Section 845.220(c), which is specific to corrective action construction permits and four times in Section 845.680, which is specific to implementation of the corrective action plan resulting from issuance of a permit application submitted in accordance with Section 845.220(c).

Additionally, the tie between the uppermost aquifer location standard and need for corrective action is unclear. CCRSI which fail to meet this standard do not require corrective action but instead are required to close as specified in Section 845.350. At Powerton Station, the ASB, ABB, and MCB each meet the location standard; the FAB does not. The FAB closure application was submitted October 28, 2022.

18) The base of the ASB is at elevation 452 ft amsl and the 100-year flood elevation is 456.9 ft amsl according to the FEMA Flood Insurance Map provided as Attachment 4-3 in the Powerton Station Operating Permit Application. If the base of the ASB is contacted by flood waters, the 60-mil HDPE geomembrane liner in the base of the ASB will prevent the interaction of flood waters with water inside the basin.

The base of the ABB was originally constructed at an approximate elevation of 458 ft amsl and after it was relined in 2011 the base remains at approximately elevation 458 ft amsl. The base of the ABB is above the 100-year flood elevation obtained from the FEMA Flood insurance Map, but if the base of the basin was

inundated by flood waters, the current 60-mil HDPE geomembrane liner present in the base will prevent the interaction of flood waters with water inside the basin.

Failure to comply with the Uppermost Aquifer location restriction requires closure of the CCRSI that is not in compliance, as stated in Section 845.350. As stated above, the FAB closure application was submitted to the Agency on October 28, 2022.

19) Section 4.2, Wetlands Location Restrictions, accurately states that the ASB and ABB are not located within wetlands and that those basins meet the location restriction standard, thus no demonstration is required for either basin pursuant to Section 845.310(a). Section 4.2 also accurately states the FAB is located within a wetland and that this basin does not meet the location restriction standard and will be closed accordingly. The FAB is an inactive impoundment and has not been used since the 1970's. MWG is waiting for a closure permit from Illinois EPA to close the FAB as required under Part 845. Because the FAB is in a wetland, MWG will also review jurisdictional authority and regulatory requirements of the Army Corp of Engineers to address construction activity in this area.

20) See Response Nos. 17 and 19. MWG agrees that the wetland must be accounted for during closure construction for the FAB and MWG will coordinate with the Army Corp of Engineers in relation to the wetland.

21) Due to the age of the FAB and the lack of use since the 1970's, a substantial amount of vegetation has naturally grown over the area. Trees, shrubs, and grasses have grown over the entire area encompassed by the FAB and will minimize the potential for erosion.

The Inflow Design Flood Control System Plan evaluated the Former Ash Basin's ability to manage direct precipitation and stormwater run-on from the 1,000-year, 24-hour storm event pursuant to 845.510(c). The evaluation concluded that water entering the FAB during the inflow design flood event would not overtop the embankments that create the FAB's north and south portions. Therefore, an additional flood control system for the FAB is not needed nor required by Part 845.

22) The Powerton Station currently has a facility wide Emergency Action Plan ("EAP") that addresses weather/natural disaster emergencies, flooding emergencies, a fire emergency, a spill/release emergency, medical emergency, active shooter, water rescue, an explosion, and the OSHA requirements, including those contained within 29 CFR 1910.38. MWG's EAPs for the ASB, ABB, and FAB attached to its Application comply with Section 845.520, including 845.520(b)(1). However, in response to the Agency's comment, MWG will update the EAP for the ASB and ABB to include weather emergencies that could occur during the operation and maintenance of the CCRSIs, and the updated EAP will be submitted separately. Any other instance not covered in the CCRSIs Emergency Action Plan would be dealt with in accordance with the station's existing Emergency Plan.

Both 29 Ill. Admin. Code 430 and 29 Ill. Adm. Code are inapplicable and not required by Part 845. Title 29 Ill. Admin. Code 430 applies to hazardous and extremely hazardous chemicals. CCR is neither per 40 CFR 302.4 and Appendices A and B of 40 CFR 355, and it is excluded as a hazardous waste per 40 CFR 261.4(b)(4)(i). While MWG complies with 29 IAC 620, because it is inapplicable and not required by Part 845 there is no need to include it in a CCRSI EAP.

The Emergency Action Plan for the FAB has not been updated since it is an inactive CCRSI and personnel are not actively involved in operating and maintaining it. In any case, any emergency that would arise for the FAB is already covered by the station's existing EAP.

23) Water does not continually flow in the creek along the east side of the site, thus the surface water elevations cannot be monitored. As discussed in Response 4 above, Illinois River water levels from the nearest stream gage (Kingston Mine) were obtained for each CCR sampling or water level measuring event to date and compared to water levels from each of the monitoring wells (see Attachment 5). None of the upgradient monitoring wells used for background data statistical evaluations displayed water levels lower than the Illinois River gage height during any of the events. There were several downgradient monitoring wells (e.g., MW-04, MW-05) which did have lower water level elevations than the stream gage height at a specific time. But that is not relevant to the statistical prediction limits because the data from those wells are not used for the calculation of statistical prediction limits. Because only upgradient well data are used for those purposes, the proposed statistical prediction limits and proposed Groundwater Protection Standards (GWPSs) presented in the Application are based on valid and representative data. MWG is collecting the river gage water level at the Kingston Mine river gage for each round of monthly groundwater level measurements, and will include the information on the groundwater flow maps.

24) The Agency's comment is contrary to its testimony at the Part 845 rulemaking. In the Agency's Response to MWG's Question no. 64 in its First Supplement to IEPA's Pre-Filed Answers in the Matter of: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed New 35 Ill. Adm. Code 845 (Electronic Filing 8/5/20), the Agency indicated that if sufficient regional and local geologic information is available to adequately define the subsurface geology to a depth of 100 feet for general Operating Permit Application purposes, site specific exploration to that depth is not required.

Section 9.1.1 of the Application provides a detailed regional and local stratigraphy for the area. The information notes that "…the stratigraphy in the area consists of approximately 100 to 125 feet of unconsolidated deposits consisting mainly of alluvial sands and gravels with some interspersed clays/silty clays. The unconsolidated deposits are underlain by alternating layers of limestone, shale and coal of the Carbondale Formation." This information was collected from not just literature sources, but also from 55 publicly available local well logs in the vicinity of the Powerton Station. This level of detail is sufficient to meet the general needs of the Initial Operating Permit application (see additional discussion relative to Comment No. 54 below and Attachment 8).

The Agency comment further states that the vertical and horizontal extent of groundwater impacts in the aquifer must be defined and that if impacts extend to the base of the sand and gravel unit, additional investigation must extend into the bedrock aquifer. This appears to place the cart before the horse. The requirements for a nature and extent of impacts evaluation are specified under Section 845.650(d). This requirement is triggered by a confirmed exceedance of an established GWPS. At this time, MWG has "proposed" GWPSs for each constituent noted in Section 845.600(a), however, until these are agreed upon and approved by the Agency in the form of an Operating Permit, the requirement for an expanded nature of impacts evaluation is premature as it is uncertain for which, if any, constituents such an investigation would be necessary. This is further underscored by some of the Agency comments regarding the selection of upgradient wells and their associated background datasets.

25) The Agency appears to have misunderstood the purpose of including a description of the ELUC which is recorded on the deed for the property. MWG did not assert that the existing Powerton ELUC constitutes compliance with Part 845, and there is no attempt at circumvention. Information regarding the ELUC was provided in Section 9.1.2 of the Application for informational purposes to satisfy the requirements for a hydrogeologic site characterization per Section 845.620((b)(4) and (17), which request identification of nearby pumping wells and associated uses of the groundwater and groundwater classification under 35 IAC

620, respectively. Also, the Bureau of Water requested a copy of the Powerton ELUC and was provided such via email on October 12, 2018. Another copy of the recorded ELUC is included as Attachment 6.

26) This is a multi-faceted comment regarding the established monitoring network wells with respect to which units are being monitored by which wells and the potential need for additional monitoring wells and/or clustered well locations. Response to this comment will be most efficiently addressed in direct discussions with the Agency during the upcoming meeting in February 2024. MWG will be prepared to discuss these items in detail and based on any agreements reached during that meeting, appropriate modifications to the monitoring programs may be made. As the Agency is well aware, MWG voluntarily began groundwater monitoring around the CCR surface impoundments in 2010 at IEPA's request, five years prior to the Federal CCR Rule being promulgated and about 10 years prior to the State CCR Rule becoming effective. The locations and distribution of most of the wells currently being used as part of CCR monitoring were previously reviewed by IEPA and approved as part of the MWG voluntary actions.

27) This information was provided to the Agency within the Application submittal. Specifically, Section 9.3.7 of the Application discusses analytical laboratory quality assurance and field quality control separately. The only item not specified is the number of field duplicates per sampling event. This is set at one duplicate per 20 investigative samples.

28) See Response No. 26 above.

29) This comment has two main bullets. Relative to the first bullet, as stated repeatedly in the groundwater reports submitted and in the Application, the data used for CCR monitoring purposes and associated statistical background calculations is from "***unfiltered***" samples yielding total recoverable metals results (see response to Comment No. 9 above). As requested, analytical packages for total recoverable metals that have not been provided to the Agency via the required 60-day reports, will be provided to the Agency. This would include any applicable data collected as part of Federal CCR Rule compliance that was generated prior to the State Rule becoming effective. These data packages are also available to the Agency via MWG's publicly available Federal CCR Compliance website.

The second bullet has three separate sub-bullets. The first two sub-bullets address various reporting requirements that are addressed in Section 9.3.8 of the Application. However, the second sub-bullet goes further to state that specific discussion must be provided as to how these submittals would comply with SW846 and established USEPA guidance including types of media to be analyzed and details of assessments to be completed. As stated in MWG's Response to Agency Comment No. 14, SW846 is not required by Part 845. *See supra* No. 14.

Relative to the third sub-bullet, source characterization, outside of the existing groundwater data from the vicinity of the impoundments, included collection of ash samples from the ASB and FAB. No sample was collected from the ABB as it did not contain any ash at the time of sampling, however, any ash that would be sent to the ABB is the same as that within the ASB. *See supra* No. 14. Section 845.230(d)(2)(B) requires an analysis of the chemical constituents found within the CCR to be placed in the CCR surface impoundment. It does not provide any directive or requirement for specific sampling protocols, including any requirement to comply with USEPA sampling guidance. In any case, MWG's SOP for collecting the CCR followed USEPA guidance. *See supra*, No. 14. The data from the samples from the ASB and FAB are representative of the current chemical conditions of these "source" areas. The remainder of the Agency's comment on mass transport equation, volume, total depth and groundwater appear to be regarding the construction permit applications and inapplicable to the Application.

30) Construction permit applications have been submitted to retrofit the ABB and ASB. These details will

be addressed in the closure plans submitted with the closure construction permit applications. The preliminary closure plans submitted as part of the operating permit application propose closure by removal at the time of closure, but the immediate plans for the basins are to retrofit.

Also, the groundwater sampling proposed in the preliminary closure plan is to sample the existing onsite monitoring wells that are part of the ASB's monitoring well network and comparing those results to the ultimately approved groundwater protection standards.

31) See Response No. 30.

32) The closure plan for the FAB included in the initial operating permit application was a preliminary closure plan as required by Section 845.230(a)(14). The FAB closure permit application submitted to the Agency on October 28, 2022 addresses this comment. It includes a final closure plan as required by Section 845.220(d)(2) and the final plan differs from the preliminary plan in that the final plan proposes to remove CCR from the northern portion of the FAB and consolidate it into the southern portion, which will be closed with a final cover system. As envisioned by Part 845, MWG made this change to the closure plan in response to comments received during the public meetings held in accordance with Section 845.240. Please see Section 7.2 and Attachment 7-1 of the FAB closure construction application for the closure plan, and Attachment 11.0 for the public meeting general summary.

33) MWG will execute the post closure care following the Agency's issuance of a closure construction permit.

34) MWG seeks clarification from the Agency, as it seems that this comment supposes a hypothetical that has yet to occur. MWG cannot determine whether the compliance determinations required by Section 845.650(d) have been met because the Agency has yet to approve the proposed groundwater monitoring network and groundwater protection standards.

- Section 845.650(d) requires an owner or operator who becomes aware of a confirmed exceedance of a groundwater protection standard in Section 845.600 to characterize the nature and extent of the release; then
- Section 845.650(e) allows an alternative source demonstration within 60 days of the detected exceedance; or
- Section 845.660 requires an owner or operator to initiate an assessment of corrective measures within 90 days of an exceedance of a constituent listed in Section 845.600.

The steps listed above are required for confirmed exceedances of the groundwater protection standards. In this case, the Agency has yet to approve Powerton Station's proposed groundwater monitoring program, submitted to the Agency in the initial operating permit applications required by Section 845.230(d)(2)(I).

Per 35 Ill. Admin. Code Part 845, Agency approval of the groundwater monitoring program is required prior to determination of any exceedances. Specifically, Section 845.610(b)(3)(A) requires that owners and operators (emphasis added):

> Conduct groundwater monitoring under a monitoring program **approved** by the Agency under this Subpart;

Similarly, Section 845.610(c) points to Agency approval of the groundwater monitoring program (emphasis added):

> **Once the groundwater monitoring system and the groundwater monitoring program have been established at the CCR surface impoundment as required by this Subpart**, the owner or operator must conduct groundwater monitoring and, if necessary, corrective action throughout the active life of the post-closure care period of the CCR surface impoundment or the time period specified in Section 845.740(b) when closure is by removal.

Accordingly, exceedances of any groundwater protection standards cannot exist absent Agency approval of the groundwater monitoring program and the proposed groundwater protection standards. While the federal CCR rule is self-implementing, 35 Ill. Admin. Code Part 845 is not and requires various Agency approvals before owners or operators of CCR surface impoundments can proceed.

Without the Agency's approval of the groundwater monitoring program, including the monitoring well locations, the groundwater protection standards cannot be established.

35) See Response No. 34. Here again, MWG seeks clarification from the Agency. MWG agrees that the "Initial Operating Permit Application and Permit do not cover a construction permit for corrective action," and has not applied for a corrective action construction permit. MWG disagrees that "A plan for interim corrective measures must be stated in the initial operation permit materials." Section 845.230(a) lists seventeen discrete items that must be included in the initial application, none of which include interim corrective measures. In fact, the word "interim" appears a total of five times in the whole of Part 845: once in section 845.220(c), in the context of corrective action construction permits, and four times in Section 845.680, in the context of implementation of an Agency approved corrective action plan.

MWG's position is that corrective action cannot be triggered under the Part 845 regulations absent Agency approval of the GWPS. Once the groundwater monitoring system and GWPS are approved by the Agency, MWG will evaluate the need for additional actions based on monitored data as required by Part 845.

36) Any required modifications which may be needed based on the results of the upcoming meeting in February 2024 will be made. *See also* Response No. 4.

37) See response to Comments Nos. 14 and 29.

38) Table 9-1 is a monthly summary of local precipitation data. Including gage data from Kingston Mine on this table does not seem appropriate. The gage data has been included on the monitoring well water level data tables provided in Attachment 5. The applicable water level data table (Table 9-2 and 9-3, ABB/ASB and FAB, respectively) used in the Application have been modified to include this information and the revised tables are included in Attachment 5. *See also* Response Nos. 4 and 23 above.

39) As noted in Response No. 38 above, Table 9-2 will be modified to include Illinois River gage readings from the Kingston Mine gage for each water level measurement event. If necessary, any potential resulting changes to flow directions summarized in Table 9-3 will be made. *See also* Response Nos. 4 and 23 above.

40) In Section 9.1.2 of the Application, it is noted that the slug test data was obtained from the Hydrogeologic Assessment Report - Powerton Station, February 2011 by Patrick Engineering submitted to the Agency by MWG. The raw slug test data were not included in the Application since the Agency already has a copy of the referenced hydrogeologic characterization report and presumably has reviewed that report (and the associated raw slug test data) as it was used as the basis for developing the initial groundwater monitoring network for the basins in 2011 which was agreed upon by the Agency. Another copy of the raw slug test data from that report is provided as Attachment 7 to this letter.

41) MWG Table 9-4 is similar to Table 9-3 except it is specifically for the ABB/ASB. If necessary, any potential resulting changes to flow directions summarized in Table 9-3 will be made. See also response to Comments Nos. 4 and 23 above.

42) If necessary, any modifications that may be needed based on the outcome of our meeting in February 2024 will be made. *See also* Response 4, 23, and 26 above.

43) If necessary, any modifications that may be needed based on the outcome of our meeting in February 2024 will be made. *See also* Response 4, 23, and 26 above.

44) If necessary, any modifications that may be needed based on the outcome of our meeting in February 2024 will be made. *See also* Response 4, 23, and 26 above.

45) If necessary, any modifications that may be needed based on the outcome of our meeting in February 2024 will be made. *See also* Response 4, 23, and 26 above.

46) See responses to Comments Nos. 10 and 12 regarding ash in the embankments. MWG requests further clarification on how this relates to Figures 1-1, 1-2, and 1-3. *See also* Response No. 14 regarding SW846.

47) The supporting text in Section 9.1.2 of the Application discusses which wells are screened within which units (silt/clay vs. sand/gravel). Figure 9-1 will be modified to highlight this information as well.

48) The hydrograph in Figure 9-8 will be modified to discern the wells screened between the hydrostatic units. There is no need to modify Figure 9-9, as all of these wells are screened only within the sand and gravel unit.

49) MWG does not understand the Agency's comment, including what modifications the Agency would like on the referenced maps in Figures 9-10 through 9-17. Each map is labeled whether it is for the silt/clay unit or for the sand/gravel unit and the water levels posted on each map are only for that specific unit.

50) As discussed in Response No. 23 above, water levels will be obtained from the Kingston Mine gage with each round of water level measurements from monitoring wells. The water level will be posted on the flow maps (Figures 9-10 through 9-17). This practice will continue for all new maps generated from this point forward to assist in evaluating surface water-groundwater interaction. *See also* Response Nos. 4 and 23 above.

The last part of this comment is unclear, and we need clarification from the Agency. It states "…surface water groundwater interaction and potential for releases of groundwater directly to surface water." Since this site is within a discharge area with the Illinois River being a regional hydrologic boundary, groundwater is directly released (discharged) to surface water as part of natural flow system conditions.

51) MWG understands the intent of this comment, however, a GMZ was granted by the Agency for the Part 620 groundwater standards in 2013 and is an important detail for identification of nearby pumping wells and associated uses of the groundwater and groundwater classification under 35 IAC 620, respectively.

52) The History of Construction in Attachment 1 of the Initial Operating Permit application for the Powerton Station dated October 29, 2021 and received by IEPA on November 2, 2021 were the drawings for the ASB and the ABB. The drawings consist of plan and section views for the ASB and the ABB, including descriptions of the physical properties engineering properties of the foundation and abutment of the units. The section views show the elevation of the bases of the ASB and the ABB. The title block on each drawing was labeled with the basin name and 'waste water treatment facility' because the ASB and ABB are part of Powerton Station's larger waste water treatment system. Additionally, a description of the

physical and engineering properties of the foundational materials is in Sections 1.6.1 and 1.6.2 of the Application.

Because of the age of the unit, drawings for the construction of the FAB do not exist and could not be submitted.

Drawings for the Metal Cleaning Basin were included as Attachment 1 to the MCB operating application, submitted on March 31, 2022, which is not the subject of your letter.

53) This comment was addressed in the EAP as well as Response No. 5. According to Attachment 4-3 submitted in the Application, the ASB and ABB are not with the FEMA Flood Zone AE or X. The FAB is shown in Attachment 4-3 as being within the flood plain, which is applicable to the northern portion of the FAB. The railroad berm that bisects and extends to the east side of the FAB is at elevation 460-461 feet amsl, which would prevent flood waters from reaching the southern portion of the FAB. *See also* Response No. 22.

54) The requested location figure is Figure 5 from the groundwater modeling report that was included in support of the FAB closure application, submitted on October 28, 2022. Both the previously provided Figure 5 and Table 9-1 from the Application with the borehole stratigraphy used are provided in Attachment 8.

55) All the additional information requested in this comment was provided in the Application. Figure 9-1 provides a site map with all the well locations on it. The groundwater elevation tables (Tables 9-2 and 9-3) provide the surveyed top of casing elevations from which water levels are measured. Attachment 9-2 of the Application provides the boring logs for the on-site monitoring wells.

56) Attachment 9-3 includes groundwater monitoring data from a totally separate monitoring program being performed under a Compliance Commitment Agreement (CCA) that is in place for this site. The text in Section 9.1.2 states:

> "There is quarterly groundwater quality data associated with the subject ABB/ASB and FAB surface impoundments dating back to December 2010. However, the parameter list was slightly different from that specified in Section 845.600 and included analysis of dissolved inorganic parameters rather than total inorganic parameters. That historical water quality data is provided in Attachment 9-3."

This data was included in the Application ***strictly for completeness purposes*** for the hydrogeologic site characterization per Section 845.620. This data was not used in any way in the statistical evaluations and calculations of proposed prediction limits or proposed GWPSs. As stated in the statistical evaluation, only CCR sampling data which is for total recoverable metals (i.e., not field filtered) was used for CCR compliance purposes and the associated statistical calculations. Please refer to Response No. 9 above for further discussion on CCR sampling protocols.

57) MWG is requesting Agency clarification of this comment. Section 845.640(f)(1) states that the owner or operator of a CCR surface impoundment must select one of the statistical methods specified in subsections (f)(1) A through E. Attachment 9-5 of the Application clearly defines at the beginning of Section 2.0 that the proposed statistical approach to be used for this site is the statistical prediction interval procedure allowed for in Section 845.640(f)(1)(C).

The first part of the Agency comment states: "Trend or prediction limits cannot be used when Statistically Significant Increases (SSIs) are being calculated for each specific constituent." It is unclear what is intended. The purpose of calculating statistical prediction limits based on background data, as allowed for

in Section 845.640(f)(1)(C), is to assist in identifying potential SSIs in downgradient monitoring wells. It is an integral part of the selected data evaluation procedure.

The Agency comment goes on to state: "MWG must choose SSIs and a mean or median value for the background wells/35 Ill. Admin. Code 845.600(a)(1) GWPS or trend/prediction limit and comparison of each individual constituent value from each sampling event must be compared to the trend/prediction limit/35 Ill. Admin. Code 845.600(a)(1) GWPS, whichever is higher." There appears to be a typographical error as this does not make any sense. If the Agency is saying that MWG must use estimation of compliance well means or medians for defining SSIs, then the agency is directing MWG to use statistical methods defined under Part 845.640(f)(1)(A) or (B), respectively and barring the use of statistical prediction interval procedure under Section 845.640(f)(1)(C) or even (D) or (E). This would be at odds with the regulation which clearly allows for the regulated entity to choose which statistical method to use for their site.

Relative to the approach to developing the proposed GWPSs for the basins, Section 3.0 of the statistical approach defined in Attachment 9-5 states:

> "Site specific Groundwater Protection Standards (GWPSs) will be developed in accordance with Section 845.600(a)(2) as follows:
>
> - If the constituent has an established State standard listed in Section 845.600(a)(1) and the standard is greater than the calculated background upper prediction limit, then the standard will serve as the GWPS. If the background upper prediction limit is greater than the standard, the upper prediction limit will serve as the GWPS.
> - If the constituent does not have an established standard (i.e., calcium and turbidity) then the calculated upper prediction limit will serve as the GWPS."

This method of developing proposed GWPSs is appropriate and consistent with the regulation.

58) An outlier analysis should be performed as part of the data analysis and is appropriately included in Attachment 9-6 of the Application which discusses the results of the background data statistical analysis. Understanding the potential for an outlier to be within a specific dataset is important in the overall understanding the analytical results and selecting appropriate background datasets. In its section on "Outliers in Background," the Unified Guidance states that outliers should not be removed without an explanation for their presence. *See* Unified Guidance, Section 5.2.3, page 5-5. Per the Unified Guidance, MWG did not remove outliers from any of the datasets used in the statistical evaluations. However, MWG included an outlier analysis to evaluate the data for the overall statistical analysis and assist in making further determinations in the statistical analysis.

However, MWG did not remove any of the outliers based upon the analysis. As stated in the USEPA Unified Guidance (Section 5.2.3 Outliers in Background, Page 5-5):

> "In groundwater data collection and testing, background conditions may not be static over time. Caution should be observed in removing observations which may signal a change in natural groundwater quality. Even when conditions have not changed, an apparently extreme measurement may represent nothing more than a portion of the background distribution that has yet to be observed. This is particularly true if the background data set contains fewer than 20 samples."

The approach taken in evaluating outliers as part of background dataset evaluations provided in Attachment 9-6 of the Application is consistent and in compliance with the Unified Guidance and standard accepted data evaluation protocols.

59) See Responses Nos. 4, 23, and 25 above. The statistical calculations and procedures as defined in Attachments 9-5 and 9-6 meet the requirements of Part 845. There is no specific requirement in the regulation that specifies the use of EPA QA/G-9S, data Quality Assessment: Statistical Methods for Practitioners as guidance. Methods proposed and used are based primarily on the USEPA Unified Guidance.

60) See Responses Nos. 9 and 58 above.

61) Attachment 18 refers to the 2021 Inflow Design Flood Control System Plan for the ASB, ABB, and FAB prepared by Sargent & Lundy in accordance with Section 845.510(c). Appendix A to this plan is the 2016 Inflow Design Flood Control System Plan for the ASB and ABB prepared by Geosyntec Consultants in accordance with 40 CFR 257.82(c). Appendix B to this plan is the 2018 Inflow Design Flood Control System Plan for the Former Ash Basin prepared by Geosyntec Consultants in accordance with 40 CFR 257.82(c). These appendices are provided here in Attachments 9 and 10, respectively.

Presumably, "FEMA Flood Insurance Map Zone" refers to the base flood and floodplain for the Illinois River shown on the Federal Emergency Management Agency's Flood Insurance Rate Map (FIRM) that includes the Station site. However, Section 845.510, "Hydrologic and Hydraulic Capacity Requirements for CCR Surface Impoundments," requires evaluation of the peak discharge of the "inflow design flood" into a CCR surface impoundment, not the "base flood" or "floodplain" of a waterway (i.e., river, creek, etc.). Specifically, Section 845.510(a) states:

1) The inflow design flood control system must adequately manage flow into the CCR surface impoundment during and following the peak discharge of the inflow design flood specified.
2) The inflow design flood control system must adequately manage flow from the CCR surface impoundment to collect and control the peak discharge resulting from the inflow design flood specified.
3) The inflow design flood, at a minimum, is:
    A) For a Class 1 CCR surface impoundment…the probable maximum flood.
    B) For a Class 2 CCR surface impoundment…the 1000-year flood.
    C) For an incised CCR surface impoundment, the 25-year flood.

Section 845.120 of the Illinois CCR Rule defines "inflow design flood" as "the flood hydrograph that is used in the design or modification of the CCR surface impoundment and its appurtenant works." Section 845.120 also defines "flood hydrograph" as "a graph showing, for a given point on a stream, the discharge height, or other characteristic of a flood as a function of time." These terms should not be confused with the base flood and floodplain information shown on FEMA's FIRMs for waterways. Section 845.340(c)(1) defines "base flood" as "a flood that has a 1 percent or greater chance of recurring in any year or a flood of a magnitude equaled or exceeded once in 100 years on average within the time of historical river level records." Meanwhile, Section 845.340(c)(2) defines "floodplain" as "the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, which are inundated by the base flood." Based on these definitions, it is clear that "inflow design flood" for a CCR surface impoundment is different from the "base flood" or "floodplain" of a waterway.

To develop the inflow design flood hydrograph for a CCR surface impoundment under the Illinois CCR Rule, it is appropriate to consider the USEPA's basis and intended application of its hydraulic and hydrologic capacity requirements for CCR surface impoundments under 40 CFR 257.82. This is appropriate because the Illinois CCR Rule is based on the Federal CCR Rule and, per the Illinois Environmental Protection Act, the final regulations for CCR surface impoundments adopted by the Illinois Pollution Control Board were to be "at least as protective and comprehensive as…Subpart D of 40 CFR 257

governing CCR surface impoundments." 415 ILCS 5/22.59. Therefore, the requirements for inflow design flood control systems in CCR surface impoundments specified in Section 845.510 are based on, and considered by the Illinois Pollution Control Board to be at least as protective and comprehensive as, the corresponding federal regulations specified in 40 CFR 257.82.

In the preamble to the April 2015 final rule for 40 CFR Part 257 Subpart D, USEPA states "To meet the performance standard [for inflow design flood control systems in 40 CFR Part 257 Subpart D], the CCR surface impoundment must be designed to have adequate [hydrologic and hydraulic] capacity to ensure that rainfall and watershed characteristics have been accounted for, the hydraulic ratings of all intake structures are adequate and free of obstruction, operating freeboard is adequate, all spillways and decant structures have adequate capacity, and all downstream hydraulic structures have adequate capacity." 80 FR 21391. Per this paragraph, the design inputs necessary for evaluating a CCR surface impoundment's hydrologic and hydraulic capacity are rainfall and watershed characteristics. Per USEPA's guidelines for preparing an inflow design flood control system plan, these design inputs should be documented using "references, and drawings regarding the identification of the design storm for the catchment area affecting the CCR surface impoundment and the CCR surface impoundment itself, a characterization of the rainfall abstractions, including but not limited to depression storage and infiltration in the upstream catchment area affecting the CCR surface impoundment." USEPA also states that "an appropriate run-off model and an appropriate run-on or run-off routing model" should be selected and the basis for that selection documented in the inflow design flood control system plan. 80 FR 21392.

Based on the preceding basis and intended application of 40 CFR 257.82, which, in turn, is the basis for Section 845.510, the inflow design flood hydrograph for a CCR surface impoundment should be developed by (1) identifying the design storm for the catchment area affecting the CCR surface impoundment, (2) characterizing rainfall abstractions in the upstream catchment area affecting the CCR surface impoundment, and (3) developing and using appropriate run-off, run-on routing, and/or run-off routing models. The design storm event is defined by the inflow design flood specified by Section 845.510(a)(3). For example, the 1000-year storm event is applied over the upstream catchment area for a Class 2 CCR surface impoundment (as determined in accordance with 35 Ill. Adm. Code 845.440) to develop the 1000-year flood into the impoundment. The upstream catchment area for a CCR surface impoundment is the land area that drains into the CCR surface impoundment, which is defined by the local topography. Using these two inputs (design storm event and local topography), the flow into a CCR surface impoundment during and following the peak discharge of the inflow design flood can be calculated.

The catchment areas for the ASB and ABB are shown in the 2016 inflow design flood control system plan prepared by Geosyntec Consultants in accordance with 40 CFR 257.82(c). The catchment areas for the FAB's North Pond and South Pond are shown in the 2018 inflow design flood control system plan prepared by Geosyntec Consultants in accordance with 40 CFR 257.82(c). As shown in both plans, the catchment areas for the ASB, ABB, and FAB's North Pond are principally limited to the basins' storage areas because these basins are diked on all sides, and these dikes prevent run-off during and following the design storm event from flowing into these basins. Meanwhile, the catchment area for the FAB's South Pond includes land south of the pond because the South Pond is incised on its southern end, which allows for run-off from this area to enter the South Pond during and following the design storm event.

Notably, the identified catchment areas for the ASB, ABB, and FAB do not include the Illinois River. In fact, all three basins are upstream of the Illinois River. In other words, run-off from the land around these basins drains away from the basins and into the Illinois River. Therefore, the inflow design floods for the ASB, ABB, and FAB, as defined under Section 845.120, should not include the Illinois River.

62) See Responses Nos. 1, 2, and 5. Additionally, the Agency's statement that the SHP must include, "…safety data sheets for *all* chemicals found on site" is wrong. Section 845.530(b) does not require Safety Data Sheets ("SDS") for all on-site chemicals be included in the SHP. Moreover, the Agency's request is technically impractical. Powerton Station has approximately 3,370 active chemicals onsite, the vast majority of which are not related to the CCR handling operation or processes. Adding 3,370 multi-page SDSs to the SHP would make the plan unmanageable and practically inaccessible. Instead, per Section 845.530(b), SDSs for bottom ash, fly ash, and Agency approved NPDES chemical additives used in the CCRSIs have been added to the plan.

Powerton Station uses an electronic system for management of SDS and Powerton employees can access the electronic system at any time from any location.

63) This has been addressed in the updated SHP, Attachment 4.

List of Attachments

Attachment No.	Description
1	Agency Correspondence
2	Economic Impacts of Midwest Generation Generating Stations in Illinois
3	Numbered IEPA Permit Review Letter
4	Revised Safety and Health Plan
5	Revised Water Level Tables, to include Kingston Mine Illinois River Guage
6	Powerton Generating Station ELUC
7	Resubmittal of 2011 Raw Slug Test Data, Hydrogeologic Assessment Report
8	Borehole Stratigraphy & Resubmittal of Figure 5 from FAB Closure Application Groundwater Modeling Report
9	Appendix A to the 2016 Inflow Design Flood Control System Plan for the Ash Surge Basin and Bypass Basin
10	Appendix B to the 2018 Inflow Design Flood Control System Plan for the Former Ash Basin

Attachment 1

Agency Correspondence

From: Shealey, Sharene
To: Dunaway, Lynn
Cc: Hunt, Lauren; Zimmer, Amy; Shaw, Melinda
Subject: RE: Address
Date: Tuesday, May 17, 2022 1:54:00 PM

Hi Lynn,
Yes, please send Powerton correspondence to Joe at Powerton. If it's not too much trouble, for the other stations I'd like to use Joliet Station. I've been slowly transitioning to using Joliet as my home base:
Joliet Generating Station
Attn: Sharene Shealey
1800 Channahon Road
Joliet, IL 60436
Thanks,
Sharene

From: Dunaway, Lynn <LYNN.DUNAWAY@Illinois.gov>
Sent: Tuesday, May 17, 2022 1:33 PM
To: Shealey, Sharene <Sharene.Shealey@nrg.com>
Cc: Hunt, Lauren <Lauren.Hunt@Illinois.gov>; Zimmer, Amy <AMY.ZIMMER@Illinois.gov>; Shaw, Melinda <Melinda.Shaw@illinois.gov>
Subject: Address

Hi Sharene,
I have a question. For mailing Part 845 correspondence should we use the following address for all of the stations expect Powerton?
Will County Generating Station
Attn: Sharene Shealey
529 East 135th Street,
Romeoville, IL 60446
For Powerton should we send Part 845 correspondence to you or to Joe Kotas?
Thanks,
Lynn

From: Buckley, Jill
To: LeCrone, Darin; Dunaway, Lynn
Cc: Shealey, Sharene
Subject: Midwest Generation CCR Construction Permit Priority List
Date: Tuesday, October 25, 2022 2:33:32 PM
Attachments: image001.png

Darin,

Thank you again for meeting with us last Tuesday to discuss the statuses of the operating and retrofit construction permit applications for Powerton's Bypass Basin. Given the number of permit applications currently under review by the Agency and the work involved in reviewing those applications, we certainly appreciate the time you took last week to answer our questions and the continued opportunity to meet with the Agency to discuss the CCR surface impoundments at Midwest Generation's facilities.

As discussed during last Tuesday's meeting, we have several projects for which we will need construction permits from the Agency by certain dates to ensure we meet deadlines promulgated by the Federal CCR Rule (40 CFR Part 257 Subpart D). To ensure our continued compliance with both the Federal CCR Rule and the Illinois CCR Rule, we have prepared, for your consideration, the following list of pending and forthcoming permit applications for all of our CCR surface impoundments listed in order of priority. Please note that our priorities for regulatory compliance may change based on future U.S. EPA rulemaking, guidance, *etc*. Should our priorities change, we intend to follow up with you at the appropriate time.

MWG's top two priorities are retrofitting Powerton's Bypass Basin and closing Powerton's Former Ash Basin per the reasons noted below:

1. **Retrofit Powerton Bypass Basin** (Application Submitted)
    a. Retrofitting the Bypass Basin is MWG's top priority so that MWG can continue operating the Powerton Generating Station.
    b. Federal CCR Rule Deadline per 40 CFR 257.103(f)(1): **October 15, 2024**
    c. To meet this deadline, the final construction permit must be issued by **December 31, 2023**

2. **Close Powerton Former Ash Basin** (Application to be Submitted by End of October 2022)
    a. Closing the inactive Former Ash Basin is another top priority for MWG so that MWG can remain in compliance with the timeframes for completing closure promulgated by 40 CFR 257.102(f).
    b. Original Federal CCR Rule Deadline per 40 CFR 257.102(f)(1)(ii): **April 17, 2023**
    c. Recognizing the permitting process will not be completed by April 17, 2023, MWG intends to extend the closure timeframe by two years pursuant to 40 CFR 257.102(f)(2)(ii)(A).
    d. New Federal CCR Rule Deadline per 40 CFR 257.102(f)(2)(ii)(A): **April 17, 2025**
    e. To meet this deadline, the final construction permit must be issued by **December 31, 2023**

Another high priority for MWG is closing Waukegan's West Ash Pond in accordance with Adjusted Standard AS 2021-003 per the reason noted below:

3. **Close Waukegan West Ash Pond** (Application Submitted)
    a. Closing the West Ash Pond and repurposing it as a stormwater pond is another high priority for MWG so that MWG can remain in compliance with the Federal CCR Rule's alternate closure criteria promulgated by 40 CFR 257.103(f)(1).
    b. Federal CCR Rule Deadline per 40 CFR 257.103(f)(1): **October 15, 2024**
    c. To meet this deadline, the final construction permit must be issued by **February 28, 2024**

Our priorities for the remaining CCR surface impoundments at are our facilities are as follows:

4. **Joliet 29 Pond 2** (Application Submitted)
5. **Powerton Metal Cleaning Basin** (Application to be Submitted 2Q2023)
6. **Waukegan East Ash Pond** (Application Submitted)
7. **Joliet 9 Lincoln Stone Quarry** (Application Submitted)
8. **Will County Ponds 1N and 1S** (Application to be Submitted 2Q2023)
9. **Will County Ponds 2S, and 3S** (Application to be Submitted 2Q2023)
10. **Powerton Ash Surge Basin** (Application to be Submitted 2Q2023)

Please reach out to Sharene or myself if you have questions or need anything further.

Thanks,
Jill

Jill Buckley
Environmental Manager
NRG Energy
724-448-9732
Jill.Buckley@nrg.com

Attachment 2

Economic Impacts of Midwest Generation Generating Stations in Illinois

NORTHERN ILLINOIS UNIVERSITY
Center for
Governmental Studies
Outreach, Engagement, and Regional Development

Economic Impacts of Midwest Generation Generating Stations In Illinois

April 2021

Prepared by

Brian Richard, Ph.D.

The Center for Governmental Studies (CGS) at Northern Illinois University conducted an analysis of the estimated economic impact of Midwest Generation's four power generation facilities in Illinois. Economic impact analysis is a widely used approach to evaluating the economic value of an activity, power generation facilities in this case. The facilities include the Powerton Generating Station in Pekin, the Waukegan Generating Station, in Waukegan, the Joliet 29 Generating Station, in Joliet, and the Will County Generating Station in Romeoville. The statewide combined impacts of the facilities will be presented, along with more focused analyses for each of the host regions. The regional impact sections include local property tax revenues paid by each facility.

The economic activity of an industry is linked with other industries in the region through employee expenditures and supplier relationships. Employment and payroll figures only illustrate a portion of the importance of an industry or individual facility to the local economy. The study will focus on the direct, indirect and induced impacts which result from the operations of the generating stations. These impacts are more fully described in the methodology section at the end of this report.

Four metrics are used to describe the economic impacts of the generating stations. *Employment* measures the number of full and part-time jobs created because of the facilities' operations. *Labor income* is the pay and benefits associated with those jobs. *Value-added* represents the difference between the value of goods and services purchased as production inputs and the value of goods and services produced. Value added is a measure of the total economic impact of the project, similar to Gross State Product. Finally, *total output* is the value of production at the generating stations as well as all of the other firms in the region that are impacted through the multiplier effects.

Methodology:

To understand the full effect that a firm or industry has on the economy, including its relationship to other sectors, input-output economic analysis is employed. Input-output analysis is founded on the principle that industries are interdependent. One industry purchases inputs from other industries and households (i.e. labor) then sells outputs to other industries, households, and government. Additional induced impacts occur when workers involved in direct and indirect activities spend their wages on consumer goods produced or sold in the region and local economy. Therefore, economic activity in one sector impacts other sectors.

Direct Activity: The direct economic activity associated with the generation facilities is the spending by the facility itself in the course of its operations. This includes the purchase of goods and services and the paying of its employees.

Indirect Activity: The indirect economic activity of the operations refers to additional jobs and payroll created in the surrounding economy as a result of the purchase of inputs by the generating facilities. This might be goods such as fuel or services such as equipment repair, accounting and legal services.

Induced Activity: The induced economic activity is the additional activity that results from the generating facility employees spending their income in the local economy.

Multipliers

Input-output analysis generates estimates of indirect economic impacts commonly referred to as "multiplier effects." Multiplier effects measure the impacts on output, income, and employment that result from an increase in final demand. A unit increase in final demand (an additional dollar of output or employee compensation, or one additional job in the sector) results in a total increase in output, income, or employment in the economy equal to its multiplier. That is, multipliers estimate the amount of direct, indirect, and induced effects on income or employment that result from each additional dollar of output, additional job, and additional dollar of employee compensation in a sector. This study will estimate the direct and indirect impacts in terms of employment and personal income**.**

The input-output economic analysis conducted in this study used the IMPLAN input-output economic modeling application. IMPLAN is an economic software that incorporates over 90 data sources of economic data. The data sources include the U.S. Bureau of Economic Analysis, the U.S. Department of Agriculture, the U.S. Bureau of Labor Statistics, and the U.S. Census Bureau. The IMPLAN modeling system is an interactive, computer-based modeling system capable of producing input-output accounts and input-output models for any region in the United States as small as a single county. The system consists of regional data bases and software that allow users to develop these models for the purposes of describing the structure of regional economies and/or predictive analyses, especially those associated with estimating the economic impacts of a quantifiable change in regional production.

Statewide Impacts of Midwest Generation Generating Stations

Across the four sites in this analysis, Midwest Generation employed 303 people in 2020, of which 270 jobs were held by Illinois residents. The two counties with the most residents employed were Will County and Tazewell County. Powerton Coal Generating Station has the largest employment size of the four sites and is located in Pekin near Peoria in Tazewell County. The Will County Generating Station and Joliet Generating Station are located about 10 miles from each other in Will County. The jobs at Midwest Generation are well-paying, with an average employee compensation (including benefits) of more than $169,000 in 2020.

Table 1. Midwest Generation Employment Levels, 2020

Generating Station	Employees
Joliet	54
Powerton	113
Waukegan	83
Will County	53
Total	303

Source: Midwest Generation.

Across Illinois, the operations of the four generating stations created a total of more than 1,300 jobs. According to the IMPLAN model, the employment multiplier is 4.7, meaning that for every 10 people employed at the generating stations, another 37 jobs are supported across Illinois through the indirect and induced effects.

The statewide income associated with these 1,300 jobs is over $112 million. For every $1,000 earned by employees, the IMPLAN model calculates that another $1,300 in labor income is generated through the indirect and induced effects.

The total economic impact of the four Midwest Generation facilities is over $555 million, as measured by total output. This represents in the value of production at the generating stations and the revenues of suppliers and local businesses where Midwest Generation employees purchase goods and services. These impacts are spread across the state but are primarily focused in the local regions where the plants operate and the employees live.

Table 2. Statewide Impacts of Midwest Generation Generating Stations

Impact Type	Employment	Labor Income*	Value Added	Output
Direct	303	$51,228,531	$170,103,091	$377,422,194
Indirect	488	$34,048,046	$56,214,473	$99,100,796
Induced	514	$27,025,444	$47,996,919	$78,931,779
Total	1,305	$112,302,021	$274,314,483	$555,454,769
Multiplier	4.7	2.3	1.6	1.5

*Labor income impacts have been adjusted for the commuting patterns of Midwest Generation employees by removing employees that live outside of Illinois from the analysis.
Source: IMPLAN, 2020.

The next sections estimate the impacts in the local regions. It should be noted that the total of the three regional impact estimates are less than the statewide totals. This is due to the fact that some of the impacts occur outside of the regions that are analyzed, but still in Illinois.

For example, 10 employees of the Powerton Generating Station live outside of the region used for the analysis, but still within Illinois. Thus, those employees spending their incomes in their local economy creates impacts in Illinois, but not in the region of analysis for Powerton.

Powerton Generating Station

The Powerton Generating Station is located in Pekin, IL (population 32,255), the second-largest city in the Peoria metropolitan area. It has a maximum capacity of 892.8 megawatts and the current operating units have been in operation since 1972.[1]

Powerton Coal Generating Station employed 113 people in 2020, of which 84% lived in Mason, Peoria, or Tazewell Counties. An additional 7% of employees commuted from the counties of Fulton and Woodford. These five counties comprise the local region for this analysis. The remaining 9% of employees came from several counties each representing less than 3% of the total. On average, employees at Powerton Coal Generating Station earned $174,111 in 2020, for a total of approximately $19.7 million in total labor income.

The employment multiplier of Powerton Generating Station is significant, due to the high earnings and productivity for these jobs. For every 10 people employed at the site, the IMPLAN model calculates that another 29 jobs are supported in the region. Thus, the total regional employment impact of Powerton is over 440 jobs.

For every $1,000 earned by employees, another $700 is earned by employees of firms supported through the multiplier effects according to the IMPLAN model. The total income earned by workers in the region as a result of the generating station is about $32.9 million. The total impact of the Powerton Generating Station in the region is about $186.3 million.

Table 3. Economic Impacts of Powerton Generating Station

Impact Type	Employment	Labor Income*	Value Added	Output
Direct	113	$19,674,554	$62,283,498	$140,700,555
Indirect	191	$7,156,825	$11,212,938	$26,964,982
Induced	138	$6,086,385	$10,631,594	$18,655,218
Total	442	$32,917,764	$84,128,030	$186,320,755
Multiplier	3.9	1.7	1.4	1.3

*Labor income impacts have been adjusted for the commuting patterns of Powerton employees by removing employees that live outside of the region from the analysis.

Source: IMPLAN, 2020

[1] U.S. Energy Information Administration, Form EIA-860, 2018. https://www.eia.gov/electricity/archive/capacity/xls/existing_gen_units_2018.xlsx

Local Tax Revenue Estimates

The Powerton Generating Station generates significant local tax property revenues. The property taxes on the facility itself totaled over $800,000 in 2019. The majority of these property taxes directly funded local school districts (Table 4).

Table 4. 2019 Powerton Generating Station Property Taxes.

Taxing Body	2019 Tax Paid
Grade School 108	$348,793
High School 303	$232,823
Tazewell County	$54,377
Community College 514	$49,152
Pekin Park Dist	$53,194
Powerton Fire	$30,300
Cincinnati Rd & Br	$19,748
Cincinnati Township	$18,497
Imperial Valley	$2,055
Total	$808,939

Source: Tazewell County Assessments Office, 2020.

Joliet Generating Station & Will County Generating Station

Will County Generating Station is located in Romeoville, IL. The operating generating unit has operated since 1962, with a maximum capacity of 598.4 megawatts.[2] Joliet Generating Station began operation in 1965 and was converted from coal to natural gas in 2016[3]. It has a total generating capacity of 1,320 megawatts. The facilities are located about 12 miles from each other. Thus, the regional impacts of the Joliet and Will County Generating Stations are combined.

Joliet Generating Station employed 54 people in 2020, and Will County Generating Station employed 53. The two sites are within 12 miles and have overlapping laborshed regions. Five jobs are held by commuters from Indiana, and about 90% of the jobs in Illinois are concentrated in the counties of Will, Kendall, Cook, and DuPage. On average, employees at these two sites earned $163,120 in total pay and benefits.

The employment impacts of the Joliet Generating Station are significant, due to the high earnings and productivity for these jobs. For every 10 people employed directly at the site, the IMPLAN model calculates that another 31 jobs are supported in the region. The total regional employment impact of the two facilities is nearly 440 jobs.

For every $1,000 earned by employees, another $1,300 is earned by employees of industries supported through the multiplier effects according to the IMPLAN model. The total income earned by

[2] U.S. Energy Information Administration, Form EIA-860, 2018.
[3] https://www.theherald-news.com/2016/12/20/nrg-announces-completion-of-joliet-project/aw10gq7/

workers in the region as a result of the generating station is about $39.8 million. The total impact of the Joliet and Will County Generating Stations in the region is just over $200 million.

Table 5. Economic Impacts of Joliet and Will County Generating Stations

Impact Type	Employment	Labor Income*	Value Added	Output
Direct	107	$17,453,807	$62,732,574	$141,361,607
Indirect	157	$12,765,478	$19,785,436	$32,337,426
Induced	171	$9,626,420	$16,696,414	$26,446,478
Total	435	$39,845,705	$99,214,424	$200,145,512
Multiplier	4.1	2.3	1.6	1.4

*Labor income impacts have been adjusted for the commuting patterns of Midwest Generation employees by removing employees that live outside of the region from the analysis.
Source: IMPLAN, 2020

Local Tax Revenue Estimates

The Joliet and Will County Generating Stations generate significant local tax property revenues. The property taxes on the combined facilities themselves totaled nearly $1 million in 2019. The majority of these property taxes directly funded local school districts. Joliet Generating Station property taxes are detailed in Table 6 and Will County Generating Station in Table 7.

Table 6. 2019 Joliet Generating Station Property Taxes.

Taxing Body	2019 Tax Paid
High School Dist 204	$228,564
School District 84	$214,335
Will County	$52,578
Rockdale Fire Dist	$49,572
Joliet Park District	$37,467
Comm College Dist 525	$26,442
Joliet Twp Town Funds	$15,948
Forest Preserve	$13,158
Joliet Twp Road Funds	$12,060
Total	$650,124

Source: Will County Supervisor of Assessments, 2020.

Table 7. 2019 Will County Generating Station Property Taxes.

Taxing Body	2019 Tax Paid
School District 365-U	$243,233
Lockport Fire Dist	$36,587
Will County	$19,674
Lockport Park Dist	$14,377
Comm College Dist 525	$9,894
White Oak Library Dis	$9,053
forest Preserve	$4,924
Lockpt Twp Town Funds	$4,439
Lockpt Twp Road Funds	$3,708
Romeo Mosq Abatement	$357
Total	$346,246

Source: Will County Supervisor of Assessments, 2020.

Waukegan Generating Station

Waukegan Generating Station is located in Waukegan, IL. The operating generating units have been in operation since 1958, with a maximum capacity of 355.3 megawatts.[4] The plant employed 83 people in 2020, of which 28 jobs were held by Wisconsin residents and 55 jobs were held by Illinois residents. Of the jobs in Illinois, 45 were in the counties of Lake, Cook, and McHenry, and the other 10 jobs were divided across several counties each with 3 jobs or less. The average employee at Waukegan Generating Station earned $169,881 in 2020.

The employment impacts of the Waukegan Generating Station are significant, due to the high earnings and productivity for these jobs. For every 10 people employed directly at the site, the IMPLAN model calculates that another 26 jobs are supported in the region. The total regional employment impact of the facility is nearly 300 jobs.

For every $1,000 earned by employees, IMPLAN calculates that another $1,000 is earned by employees of industries in Illinois supported through the multiplier effects. The total income earned by workers in the region as a result of the generating station is about $28.6 million. The total impact of the Waukegan Generating Stations in the region is about $160.6 million.

Table 8. Economic Impacts of Waukegan Generating Station

Impact Type	Employment	Labor Income*	Value Added	Output
Direct	83	$14,100,170	$56,727,352	$123,455,930
Indirect	139	$10,155,539	$15,010,417	$25,222,740
Induced	77	$4,354,254	$7,592,928	$11,942,266
Total	299	$28,609,963	$79,330,698	$160,620,936
Multiplier	3.6	2.0	1.4	1.3

*Labor income impacts have been adjusted for the commuting patterns of Midwest Generation employees by removing employees that live outside of the region from the analysis.

Source: IMPLAN, 2020

[4] U.S. Energy Information Administration, Form EIA-860, 2018.

Local Tax Revenue Estimates

The Waukegan Generating Station generates significant local property tax revenues. The property taxes on the facility itself totaled over $560,000 in 2019. The majority of these property taxes directly funded the local school district (Table 9).

Table 9. 2019 Waukegan Generating Station Property Taxes.

Taxing Body	2019 Tax Paid
Waukegan Comm Unit School Dist #60	$316,023
City of Waukegan	$131,114
Waukegan Park Dist	$40,963
County of Lake	$27,239
Township of Waukegan	$15,998
College of Lake County #532	$12,849
Forest Preserve	$8,205
North Shore Water Reclamation District	$6,983
Road And Bridge-Waukegan	$1,353
Total	$560,727

Source: Lake County Assessments Office, 2020.

Summary

The four Midwest Generation generating stations contribute significantly to the Illinois economy. Including the multiplier effects, they are responsible for over 1,300 jobs with total income of more than $112 million. The overall impact of the facilities on the output of Illinois companies is about $555 million for 2020.

These economic impacts are focused in three regions of the state. The Powerton Generating Station is located in Pekin, near Peoria in central Illinois. The economic impacts of this facility generate over 440 jobs with total associated income of nearly $33 million. The total output at firms in the region, including the generating station, resulting from the generating station operations is about $186 million. Midwest Generation pays over $800,000 in property taxes, primarily funding education.

The Joliet and Will County Generating Stations are located within a few miles of each other near Joliet. Together, the facilities are responsible for nearly 440 jobs in the region. These jobs have a total payroll of about $40 million. More than $200 million in output at firms in the region results from the operations of the facilities. Midwest Generation pays nearly $1 million in property taxes, about ¾ of which supports education.

Finally, Waukegan Generating Station is located in the northeast corner of the state. The economic impacts of the plant create about 300 jobs with an associated payroll of nearly $28.6 million. Firms in the region have over $160 million in output because of its operations. Property taxes total over $560,000.

This report presents the details of the economic value of the Midwest Generation generating stations in Illinois. The conclusions were reached to a reasonable degree of certainty based on the best available data and economic modeling.

Brian W. Richard, Ph.D.
Center for Governmental Studies
Northern Illinois University

About CGS

The Center for Governmental Studies (CGS) at Northern Illinois University began in 1969. CGS provides expertise that helps decision-makers create and implement innovative solutions to public issues faced by communities, regions, states and the nation. The staff of more than 30 academic researchers and practitioners has specialties in economics, public administration, education, planning, and organizational management practices. CGS is funded by State appropriations, but most of its support is earned through grants and contracts from federal, state and local government agencies, as well as private non-profit and for profit entities. CGS is part of NIU's Division of Outreach, Engagement, and Regional Development.

The CGS staff is especially knowledgeable about the people, economy and institutions of Illinois and the unique challenges they face. The Center has worked on projects with many public and private entities and staff members are active participants in many community and professional organizations. Our services offer communities an unbiased, outside perspective that is useful in economic and community development.

Attachment 3

Numbered IEPA Permit Review Letter

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397
JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

217/782-0610

OCT 11 2023

Dale Green
Midwest Generation, LLC
804 Carnegie Center
Princeton, NJ

Re: Powerton Generating Station
Log No. 2021-100029
Bureau ID # W1798010008
Permit to Operate a Coal Combustion Residual Impoundment
Review Letter

Mr. Green:

Illinois EPA received your Application for Operating Permit and the supporting documents concerning the above project on November 2, 2021. The application and supporting information, as submitted, are undergoing review by the Illinois EPA, and based upon that review, the following items are offered for your consideration and appropriate action:

Safety and Health Plan (35 IAC 845.540)

1. The Safety and Health Plan addresses the training and safety requirements for contractors, it does not specifically address the training requirements for employees.

2. The Safety and Health Plan indicates that contractors will have a pre-mobilization meeting and a site safety orientation. The Plan does not address the requirement for an annual review of the initial training in accordance with 35 Illinois Administrative Code (IAC) 845.530(e).

Groundwater Monitoring

3. - Midwest Generation (MWG) must develop and submit a groundwater monitoring program that is compliant with 35 Ill. Admin. Code 845.630, 845.640, 845.650, 845.660, 845.670 and 845.680 for review and approval by the Agency.

4. - Upgradient or background wells must be proven to be consistently upgradient or not downgradient of the CCRSIs during any time of year in which the analytical data is being used to create a GWPS. The upgradient or downgradient wells must also be as close to the CCR surface impoundments without being in CCR or CCR similar material while still adhering to 35 Ill. Admin. Code 845.630(a). At this time the data publicly available suggests groundwater flow may change

depending on the surface water levels in the Illinois River and inundation of the flood plains. MW-01 is screened in gravel and sand and flow reversals from Illinois River flooding are more likely given the hydraulic properties of the soils logged in the well column, only data from when the area is not flooded with a potential change in groundwater direction can be used to evaluate the GWPS. MW-09 is not screened in CCR material, however, groundwater flow changes must be evaluated to eliminate any analytical data collected after a groundwater flow change that may have caused the well to be downgradient. MW-19 is screened in black fill sand which is a likely CCR material and does not seem suitable for evaluation of GWPS background. Additionally, cross-sections depict groundwater elevation that are likely directly responsive to surface water elevations.

5. - The Safety Plan and Emergency Action Plan must either be updated for Construction or the Construction Application must include a separate Safety Plan and Emergency Action Plan for the purpose of use during Construction that complies with all applicable sections and subsections of 35 Ill. Admin. Code 845.520 and 845.30 and 29 CFR 1926.

6. - The waste boundary wells must be defined clearly. No mention of which wells are designated as waste boundary wells are provided.

7. - Low pH does not have a GWPS other than 6.5 in accordance with 35 Ill. Admin. Code 845.600(a)(2). Low pH at a background well must be evaluated for impacts on the CCRSIs if it is upgradient from the CCRSI.

8. - Description of any structures that may or may not impede groundwater flow between the Illinois River and tributaries and the CCRSIs. Description of any structures that impede groundwater flow at any other location onsite to an offsite location.

9. - Field monitoring parameters and field procedures must be conducted in accordance with EQASOP-GW4, Low Stress Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells and all inorganic constituents collected must be collected as total recoverable metals pursuant to 35 Ill. Admin. Code 845.640(i).

10. - It is likely that MWG or a former owner built up the land surrounding the Ash Surge Basin, Ash Bypass Basin, and Former Ash Basin with local fill materials including CCR and possibly native materials to construct the current configuration of waterways and CCRSIs at Powerton. Due to the inability to distinguish between the CCRSIs and CCR that was used to construct the current layout, it is expected that MWG will not be able to establish a waste boundary, complete closure by removal or a final cover without additional corrective measures to address the CCR constituents or complete an HHRA and ERA proving that they are not contributing to pollution of the Illinois River and groundwater quality without an approach to closure that takes all of the CCR contamination into account. It is the position of the Agency that under 35 Ill. Admin. Code 845 Subpart F that that will be required to occur eventually. The Agency advises MWG to address all of the concerns together as a general corrective action and closure option is likely to cost less than a piecemeal approach.

11. - MWG must amend text to include the elevations of the tops of the embankments and comparison to the Illinois River flood zone AE which is elevation 456.9-feet amsl.

12. - The Agency is aware that there is CCR within the embankments and likely the foundation of the Bypass Basin, Ash Surge Basin and Former Ash Basin. For MWG to state that they have completed closure by removal pursuant to 35 Ill. Admin. Code 845.740 at the Bypass Basin and Former Ash Basin in total or in part, CCR and contaminated subsoils underlying the liner must be removed in accordance with Section 845.740(a). MWG must provide investigative results including analytical data exhibiting the total depth of contaminated subsoils and add a section for chemical properties of the embankment and foundation fill materials. Then, MWG must provide adequate metals analytical characterization of the CCR within and below the embankments or beneath the Ash Surge Basin, Ash Bypass Basin, and Former Ash Basin.

13. - Section 1.6: The KPRG Geotechnical Summary Letter, dated October 13, 2005, shows that bottom ash and slag make up the majority of the embankment fill materials at the Ash Surge Basin (PS-GT-7 and PS-GT-8), Ash Bypass Basin (PS-GT-8), and Former Ash Basin (PS-GT-7). MWG must amend the text regarding the physical properties of the foundation materials to include that the geotechnical borings around the Ash Surge Basin, Ash Bypass Basin, and Former Ash Basin consisted mostly of bottom ash and slag.

14. - Section 2.0: Section 2.0 should not be confused with the comment from Section 1.5 about chemical constituents of the fill materials. Section 2.0 is meant to address the CCR that lies within the CCRSIs currently. Additionally, the Agency expects that the parent coal sources changed over the years. Thus, the CCR that makes up embankments and CCR that was placed in the ponds varies between horizontal and vertical locations. MWG must provide sample results and rationale that complies with SW846 Compendium. One sample from the CCR is not sufficient to meet the requirements of SW846.

15. - Section 2 and Attachment 2: The volume of ash—fly ash and bottom ash—at Powerton Station cannot be adequately characterized by one solid sample analysis per CCRSI, if the coal was sourced from more than one location over the course of the operation of the coal combustion units. MWG must provide justification for the sampling rationale utilized to characterize the CCR in each pond. The rationale must comply with Chapter 9 of the SW846 Compendium as it is published by the USEPA.

16. - Section 4.1, Attachment 4-1, Uppermost Aquifer and Figures 9-10 to 9-17: The bottom of the Ash Surge Basin seems to extend to at least elevation 452-feet amsl and the Bypass Basin bottom seems to be above elevation 460 feet. However, the basis for this depiction is not provided in the documents that MWG has submitted for the permit application. The bottom of the Ash Surge Basin and the Bypass Basin must be provided. The bottom of the Former Ash Basin intersects the groundwater table and it has surface water standing in it most of the time. The clay seam at Powerton is not continuous and does not provide a confining unit between the sand fill and the sand and gravel underlying the sand fill and/or clay seam. The potentiometric surface and surface water levels in the Illinois River have risen to 452-feet amsl multiple times in the last 10 years at Powerton Station. The potentiometric surface maps must be updated and be consistent between flow maps. Additionally, according to the FEMA Flood Insurance maps, the flood zone that encompasses the Former Ash Basin is elevation 456.9 feet amsl. Currently flow maps are segregated and inconsistent with each other between the figures presented depending on basin.

17. The Uppermost Aquifer section of the permit application must address groundwater corrective action measures in this section or be referred to in this section and included in a separate section of the permit application. Interim corrective action would be included in this permit application. Groundwater corrective action construction must be included in the construction permit application.

18. - Section 4.1 and Attachment 4-1, 4-2, Uppermost Aquifer: The bottom of the Ash Basin and Bypass Basin are not above the water table when accounting for the interaction that will occur when the flood plain is inundated according to the FEMA Flood Insurance Maps. The Former Ash Basin lies within the flood plain according to the FEMA Flood Insurance Maps. The bottom of the Former Ash Basin is recognized to be below the groundwater table. This section must recognize these facts and refer to groundwater corrective action that will mitigate the groundwater plume and prevent offsite transport of the plume to the Illinois River.

19. - Section 4.2, and Attachment 4-1, 4-2, Wetlands Location Restriction: The US Fish and Wildlife Service Wetlands Mapper shows Freshwater Forested/Shrub Wetlands and Freshwater Emergent Wetlands in an around the CCRSIs at the Powerton Generating Station. This section of the Permit Application must be updated to appropriately address the wetlands that exist here.

20. - Section 4.2 and Attachment 4-2, Wetlands: The Former Ash Basin lies within a US Fish and Wildlife Service mapped wetland. However, there are no corrective actions mentioned to ensure that 35 Ill. Admin. Code 845.310 is adhered to. The wetland must be accounted for in the construction and corrective actions.

21. - Section 4.6 and Attachment 4-3 Flood Plain: The Former Ash Basin is in the flood plain that has been inundated multiple times within the last 10 years according to the USGS staff gage USGS 05568500 in the Illinois River at Kingston Mines, Illinois. A flood control system should be in place to prevent a release of the CCR due to inundation of the Former Ash Basin during a flood.

22. - Section 7.0, 7.1, 7.2 and 7.3 and Attachment 7-1 and 7-2: MWG must amend the Emergency Action Plans to address the weather emergencies, flooding emergencies, and other potential emergencies that could occur during operation and maintenance of the CCRSIs pursuant to 35 Ill. Admin. Code 845.520(b)(1), 29 CFR 1910.38, and 29 Ill. Admin. Code 430 and 620.

23. - Section 9 and Attachment 9: Surface water elevations in creek along the east side of the CCRSIs must be monitored during sampling events at the site. A staff gage must be installed in the western drainage ditch or MWG must use the USGS staff gage at Kingston Mines, Illinois (USGS 05568500). Pursuant to 35 Ill. Admin. Code 845.630(b)(2) flooding and influence from the Illinois River must be determined and reported on as follows:

    - During annual groundwater monitoring and corrective action reporting, fluctuations and groundwater flow direction changes must be discussed in context with how the Illinois River may have impacted the groundwater analytical results.

    - Indications of upgradient wells becoming downgradient wells temporarily must be discussed.

- In instances that analytical results are suspected to result from groundwater flow changes, the results cannot be used to determine an alternative GWPS.

24. - Section 9.1: MWG admits to not having drilled any boring to 100 feet below ground surface (bgs) and that the sand and gravel is most likely sitting directly on top of the bedrock. MWG also exhibits that the Former Ash Basin intersects the sand and gravel unit. First, MWG must determine the thickness of the sand and gravel unit. Then MWG must determine the extent of the groundwater contamination in the sand and gravel unit vertically and horizontally. If the sand and gravel unit are contaminated to the bottom of the unit, then MWG must investigate the surficial bedrock to determine the nature and extent of the contamination from the CCR.

25. - Section 9.1.2: MWG states that there is an ELUC for the Ash Basin, Bypass Basin and Former Ash Basin on page 17. However, an ELUC cannot be issued by Bureau of Water. MWG must not use an ELUC to circumvent any corrective action required by 35 Ill. Admin. Code 845.

26. - Section 9.1, 9.2 and 9.3 and Attachment 9-2: MWG must monitor the hydrostratigraphic units and evaluate the multiunit groundwater monitoring system to determine impacts of flooding from the Illinois River. The Agency reviews the boring logs and well construction in Attachment 9-2 and determined the following wells are associated with the following units:

  - Fill: MW-8 (cross gradient), MW-18 (cross-gradient) and possibly MW-19 (upgradient, may have overlying CCR above screen, so not acceptable as an upgradient/background well).

  - Clay/silty clay unit: MW-6 (downgradient), MW-10 (cross gradient), MW-12 (cross gradient), MW-14 (cross gradient), MW-15 (cross gradient), and MW-17 (cross gradient)

  - Sand and gravel unit: MW-01 (cross gradient), MW-2 (downgradient), MW-3 (downgradient), MW-4 (downgradient), MW-5 (downgradient), MW-7 (cross gradient), MW-9 (upgradient), MW-10 (cross gradient), MW-13 (cross gradient), and MW-16 (upgradient)

    - Given the aforementioned wells and associated lithologic units, MWG must install and monitor additional wells as follows:

      - Fill unit: Upgradient well. Must be installed upgradient of all CCR operations present and past (see comment on background/upgradient wells below). Two downgradient wells must be installed downgradient of the FAB to gauge groundwater fluctuations due to temporal and seasonal changes including Illinois River elevation surges.

- Clay silty clay unit: pgradient well. Must be installed upgradient of all CCR operations present and pa t (see comment on background upgradient wells below).

- Sand and gravel unit: pgradient well. Must be installed upgradient of all CCR operations present and past (see comment on background upgradient wells below).

- Vertical gradient and extent of contamination investigation: At least one location of vertical gradient nested wells must be installed to determine the vertical extent of the groundwater contamination. The vertical gradient wells must be installed north of the Ash Surge Basin. Drilling of initial borehole must include soil classification to a depth of 100-feet pursuant to 35 Ill. Admin. Code 845.620(b)(13).

- Well installation must be conducted pursuant to 77 Ill. Admin. Code 920.170. isolation casing must be installed where appropriate to prevent cross contamination during drilling and well installation.

- The upgradient or background monitoring wells chosen for each CCRSI must comply with Section 845.630(a). The upgradient or background monitoring wells must be as close to the upgradient side of the CCRSI that the background well is meant to monitor with the following conditions:

    - Must not be in similar source material to CCR.

    - Must be as close to the CCRSI and as far away from similar source material to adequately characterize the Section 845.600(a) constituents that are already present prior to entering the CCRSI groundwater.

    - If the background monitoring well is not hydraulically connected, the geochemical conditions must be similar to those onsite to ensure similar monitoring conditions.

27. - Section 9.3.7: Field and laboratory QA QC must differentiate between QA measures and QC measures. QA measures refer to using a separate laboratory to ensure that the laboratory results are accurate. QC measures are internal measures such as duplicates, equipment blanks, field blanks, etc. MWG must specify the number or percentage of each type of QC samples that will be collected during each sample event. MWG must also specify the number or percentage of QA samples that will be collected and analyzed during each event.

28. - Section 9.4: See previous comments on background well selection and annual reporting. MWG must amend the text accordingly.

29. - Section 9.4 and Attachment 9-5 and 9-6: MWG must update for previous comments on the groundwater monitoring system. For the Agency to complete a review of the Statistical Approach and Statistical Evaluation Summary, MWG must provide the following documents for the Agency to complete a review of the permit application:

    - Background data inputs must be demonstrated to be total metals and not include any dissolved data. Laboratory data packages and analytical results utilized to determine background must be singled out in a separate attachment to the appropriate document, likely the Statistical Approach.

    - Details of how and when 35 Ill. Admin. Code 845.650, 845.660, 845.670 and 845.680 must be provided in the permit application. Details must include the following:

        - Time constraints on submittals and investigations for the purpose of meeting the technical requirements of 35 Ill. Admin. Code 845 Subpart F.

        - Types of submittals and environmental data to be collected and analyzed including, but not limited to, Human Health Risk Assessments, Ecological Risk Assessments, Planning documents, Alternative Source Demonstrations, Hydrogeologic Characterization and how those submittals will comply with SW846 and established USEPA guidance specific to the submittal including types of media to be analyzed and details of assessments to be completed.

        - Source characterization must be provided with the any representation of the mass transport equation. Details of the source characterization must comply with USEPA sampling guidance and provide an adequate characterization of the source based on the volume, total depth and interaction with groundwater.

30. - Section 10.1 and Attachment 10-1: Closure by removal must include confirmation analytical sampling of the surface of the excavation prior to filling or repurposing to ensure that the contaminated subsoils have been removed pursuant to 35 Ill. Admin. Code 845.740(a). The Ash Surge Basin is depicted as not extending below the water table on Cross-Section A'-A" and several other cross sections in the permit application. Thus, it is unlikely that "groundwater seepage" could be sampled at the bottom of the excavation after removal. Confirmation sampling must include sampling of the soil at the bottom and sides of the excavation. Analyses must include screening for metals listed in 35 Ill. Admin. Code 845.600 using Synthetic Precipitation Leaching Procedure (SPLP). SPLP analytical results must be compared to Section 845.600 numerical values unless MWG has performed an Alternative Source Demonstration to exhibit that a specific constituent has a natural source. MWG must propose a confirmation sampling plan for the Agency's review and approval.

31. - Section 10.2 and Attachment 10-2: Closure by removal must include confirmation analytical sampling of the surface of the excavation prior to filling or repurposing to ensure that the contaminated subsoils have been removed pursuant to 35 Ill. Admin. Code 845.740(a). The Ash Bypass Basin is depicted as not extending below the water table on Cross-Section A'-

A". Thus, it is unlikely that "groundwater seepage" could be sampled at the bottom of the excavation after removal. Confirmation sampling must include sampling of the soil at the bottom and sides of the excavation. Analyses must include screening for metals listed in 35 Ill. Admin. Code 845.600 using Synthetic Precipitation Leaching Procedure (SPLP). SPLP analytical results must be compared to Section 845.600 numerical values unless MWG has performed an Alternative Source Demonstration to exhibit that a specific constituent has a natural source. MWG must propose a confirmation sampling plan for the Agency's review and approval.

32. - Section 10.3 and Attachment 10-3: Closure by removal must include confirmation analytical sampling of the surface of the excavation prior to filling or repurposing to ensure that the contaminated subsoils have been removed pursuant to 35 Ill. Admin. Code 845.740(a). It is not clear from the cross sections in the permit application figures that the Former Ash Basin will be inundated with groundwater seepage at the end of the excavation. It is likely if it is the right time of year. However, in the event that there is exposed excavated areas that are not inundated with groundwater seepage, then sampling of the soil must occur. Confirmation sampling must include sampling of the soil at the bottom and sides of the excavation. Analyses must include screening for metals listed in 35 Ill. Admin. Code 845.600 using Synthetic Precipitation Leaching Procedure (SPLP). SPLP analytical results must be compared to Section 845.600 numerical values unless MWG has performed an Alternative Source Demonstration to exhibit that a specific constituent has a natural source. MWG must propose a confirmation sampling plan for the Agency's review and approval. Closure with a final cover in situations where the CCR remains partially saturated for any portion of the year must include groundwater corrective action to mitigate groundwater contamination from being transported to human or ecological receptors pursuant to Part 845 Subpart F.

33. - Section 11.1 and 11.2: The Agency concurs as long as the confirmation sampling plan is approved and implemented.

34. - Section 11.3 and Attachment 11: Post Closure Care Plan must include a detailed description of the implementation of 35 Ill. Admin. Code 845.650(d), 845.650(e), 845.660 and 845.670 if the compliance determinations required by 35 Ill. Admin. Code 845.650(d) are not met.

35. - Section 11.3 and Attachment 11: the Initial Operating Permit Application and Permit do not cover a construction permit for corrective action. A separate construction permit application must be completed pursuant to applicable sections of 35 Ill. Admin. Code 845.220(c). A plan for interim corrective measures must be stated in initial operating permit application materials. Interim measures pursuant to 35 Ill. Admin. Code 845.680(a)(3) must be implemented during the implementation of 35 Ill. Admin. Code 845.650(d), 845.660, and 845.670 as needed and in coordination with the Agency.

36. - Section 13: MWG must amend text to reflect previous comments on background and upgradient well designations.

37. - Table 2-1 and 2-2: see previous comments on adequate characterization of the CCR within the CCRSIs.

38. - Table 9-1: see previous comments on requirements of 35 Ill. Admin. Code 845.620(b)(2) and include staff gage readings to Table 9-1 or provide staff gage data in a separate table and discussion.

39. - Table 9-2 and 9-3: MWG must update groundwater flow for temporary groundwater directional changes due to Illinois River flooding.

40. - Table 9-4: Data used to calculate the hydraulic conductivities must be provided in the permit for review by the Agency.

41. - Table 9-4: Update Table 9-4 to include impacts from Illinois River.

42. - Table 9-4: MWG must update for well designations and new wells installed in accordance with previous comments on the multi-unit groundwater monitoring system.

43. - Table 9-5: MWG must update for well designations and new wells installed in accordance with previous comments on the multi-unit groundwater monitoring system.

44. - Table 9-6: MWG must update for well designations and new wells installed in accordance with previous comments on the multi-unit groundwater monitoring system.

45. - Table 9-10 and 9-11: The Agency does not approve these Proposed GWPS. MWG must complete multiunit well installations and monitoring as described above.

46. - Figure 1-1, 1-2 and 1-3: Ash was used as fill around the Ash Surge Basin, and Bypass Basin as documented by the KPRG Geotechnical Summary Letter dated October 13, 2005. No other documentation has been submitted showing that this material has been removed. No borings have been completed to determine the bottom of ash in any of the CCRSIs. As-builts and topography do not replace the requirement for environmental data in accordance with SW846.

47. - Figure 9-1: MWG must update the Monitoring well map with designations of wells installed in separate units or provide multiple maps for the monitoring well network in each unit.

48. - Figure 9-8 and 9-9: MWG must update the hydrograph of groundwater elevations to discern between the hydrostatic units in accordance with the aforementioned comments on the multi-unit groundwater monitoring system.

49. - Figures 9-10 through 9-17: MWG must update the figures with groundwater elevations and well designations to discern between hydrostatic units in accordance with the aforementioned comments on the multi-unit groundwater monitoring system.

50. - Figures 9-10 to 9-17: Surface water elevation data from the Illinois River must be accounted for and interpreted on potentiometric surface maps for the purpose of depicting the surface

water groundwater interaction and potential for releases of groundwater directly to surface water.

51. - Figure 9-18: MWG must update Figure 9-18 to state what constituents outside of the required constituents for 35 Ill. Admin. Code 845.600 are remaining from the previously approved GMZ. The Agency will not be granting any GMZs under 35 Ill. Admin. Code 845.

52. - Attachment 1: The History of Construction drawings provided are of the Metal Cleaning Basin Plan, not as-builts. The details plans are of the Ash Surge Basin and water treatment facility, but not the Bypass Basin or Former Ash Basin. No details are provided showing where the bottom of the original Ash Surge Basin, Bypass Basin and Former Ash Basin was confirmed to be. Bottom of the CCR used as fill or placed originally for the purpose of disposal or processing must be confirmed.

53. - Attachment 7-1 and 7-2: MWG must update the Emergency Action Plan to comply with 29 CFR 1910, 29 Ill. Admin. Code 430, and 29 Ill. Admin. Code 620. The Ash Basin, Bypass Basin and Former Ash Basin are within FEMA Flood Zone AE and/or X. Regular flooding is a possibility according to available data from the USGS staff gage at Kingston Mines, Illinois. MWG must update the EAP to include flooding as a potential safety emergency.

54. - Attachment 9-1: Well location map must be provided and any available elevation data associated with the specific wells presented must be provided for review of Attachment 9-1.

55. - Attachment 9-2: Boring log location map must be provided and any available elevation data must be included for review to be conducted.

56. - Attachment 9-3: Groundwater analytical data presented to satisfy the history of known exceedances must be total metals collected either to satisfy the federal requirement for groundwater sampling at the site since 2015 or another source in which MWG can demonstrate that the data represents total recoverable metals analytical results and not dissolved. The historic exceedances at Powerton submitted under the Compliance Commitment Agreement (CCA) have not been total recoverable metals. Filtered metals must not be used for analysis of any statistics or characterization of the historic groundwater results. If CCA analytical data is provided, then MWG must demonstrate that the metals collected and analyzed are total by providing field purge and sample collection documentation, laboratory reports and chains of custody stating that total recoverable metals were collected and analyzed. The documentation must also show that the samples were not filtered at any point during the field collection and laboratory analysis. The Agency cannot review or accept groundwater analytical data that is not documented as total recoverable metals for any documents or statistical evaluations to support the permit application or permit required documents for any portion of 35 Ill. Admin. Code 845.

57. - Attachment 9-5: MWG must revise the GWPS to adhere to the 35 Ill. Admin. Code 845.640(f)(1). Trend or prediction limits cannot be used when Statistically Significant Increases (SSIs) are being calculated for each specific constituent. MWG must choose SSIs and a mean or median value for the background wells/35 Ill. Admin. Code 845.600(a)(1)

GWPS or trend/prediction limit and comparison of each individual constituent value from each sampling event must be compared to the trend/prediction limit/35 Ill. Admin. Code 845.600(a)(1) GWPS, whichever is higher.

58. - Attachment 9-5, Section 2.1: Outlier analysis cannot be performed on any data set that has less than 32 samples that have been verified as sampled pursuant to 35 Ill. Admin. Code 845.640 criteria and groundwater flow direction in the same direction for all samples collected.

59. - Attachment 9-6: MWG must revise the GWPS to adhere to the additional guidance provided to MWG on background wells and verify that the GWPS statistics were conducted in accordance with EPA QA/G-9S, Data Quality Assessment: Statistical Methods for Practitioners.

60. - Attachment 9-6: Outlier testing must only be conducted after verification that the sample analytical data set is homogeneous and consists of all total recoverable metals data. The Agency cannot review this section due to the lack of verification at this time.

61. - Attachment 18: Consideration of the FEMA Flood Insurance Map Zone that encompasses one or more of the CCRSIs must be considered in the assessment of flood design. The Appendix A and Appendix B which contain the details of the design are not included in the permit application. Additionally, the permit application Attachment 18 does not recognize flood zone as an input. The Agency cannot complete a review of the permit application without the materials used to come to the conclusions presented.

62. - Attachment 19: Section 1.1 that the work will occur in accordance with the US Department of Labor Occupational Safety and Health Act (OSHA). However, OSHA regulations apply to the facility. MWG must amend the Safety Plan to adhere to 29 CFR 1910, specifically including the following but not limited to:

    - Safety data sheets for all chemicals found on site. (i.e. diesel fuel, hydraulic fluid, CCR leachate, coal, fly ash, gasoline, etc.)

63. - Hazard identification and mitigation measures for all tasks associated with the operation and maintenance of the CCRSIs. (i.e. excavation equipment proper use, institutional controls, engineering controls, personal protective equipment, etc.; is the team working in Level D, when do upgrades occur?)

Should you have any questions or comments regarding the above, please contact Mark E. Liska at 217/524-3262 or at the above address.

As Illinois EPA completes our technical review of the operating permit application, we will communicate any further concerns that we identify with you.

Sincerely,

Darin E. LeCrone, P.E.
Manager, Permit Section
Division of Water Pollution Control

DEL:MEL:2021-100029 Initial Review.docx

cc: ✓ Hydrogeologic Compliance Unit/Groundwater Section
Peoria Region
Records Unit

Attachment 4

Revised Safety and Health Plan

1.0 **SAFETY REQUIREMENTS**

1.1 The entire performance of the Work shall comply with the standards authorized by the latest issue of the U.S. Department of Labor Occupational Safety and Health Act (OSHA), as well as state and local jurisdictional requirements.

A. This Safety and Health Plan (SAP) addresses the requirements of 35 Ill. Adm. Code 845.530 regarding the operation of Midwest Generation's coal combustion residuals (CCR) surface impoundments.

B. Midwest Generation complies with all applicable OSHA regulations as part of operating their generating stations. Health and Safety plans currently exist for the operation of the generating stations and will be complied with, as necessary, for work not associated with the CCR surface impoundments.

1.2 CONTRACTORS SAFETY MANUAL

A. The Contractor shall have on file with the Midwest Generation corporate safety office a copy of the most current Safety and Industrial Hygiene Manual. As a minimum, this Manual must address the following items when applicable to their trade: OSHA Compliance, Accident Investigation, Corrective Action, First Aid Treatment, Inspections and Reporting of Deficiencies, Material Handling and Rigging, Performance and Accountability, Personal Safety Equipment, Safety Guidelines, Safety Meetings, Training, Housekeeping, Hearing Protection, Respiratory Protection, Fire Prevention, Grounding Program, Confined Space Entry, Hazard Communication, Fall Protection, Working on or near water and Trenching and Shoring.

B. The Contractor's superintendent or other responsible person must have a copy of the Contractor's most current Safety and Industrial Hygiene Manual available at the job site.

1.3 PRE-MOBILIZATION MEETING

A. The Contractor shall meet with the Purchasers Representative(s) for a pre-mobilization meeting. The pre-mobilization meeting will include a review of safety requirements, job hazard identification, a job specific safety plan (to be developed by the Contractor and provided to Midwest Generation), submittal requirements for health & safety records, and scope and schedule. Hazard identification and assessment will include all chemical constituents found present in the analyses of the CCR and/or other waste streams within the impoundment(s). Recommendations within the NIOSH Pocket Guide to Chemical Hazards will be reviewed and considered. Applicable safety data sheets will be provided, as necessary.

B. Prior to the start of the work at the job site, Contractor shall contact Purchaser's Representative to arrange to receive Purchasers site safety orientation. This session will last approximately 2 hours. The Contractor will be provided with information on the potential hazardous constituents of the CCR.

C. The Contractor is required to receive the Purchasers site safety orientation on an annual basis.

D. Contractor shall provide his employees with orientation in all Contractor, and job specific safety requirements related to their work area. Contractor shall provide Purchaser with completed training documents showing date of training and each employees' craft related training as it relates to OSHA requirements. (i.e., competent person, scaffold builder, fork truck and crane operators)

E. The Contractor Shall provide proof of training for all on site personnel in the following:
   - HAZWOPER 29 CFR 1910.120/29 CFR 1926.65
   - OSHA 10 Hour or 30 Hour Voluntary Compliance Training for Construction
   - Hazard Communication 29 CFR 1910.1200
   - Contractor's Safety Plan

F. A Competent Person shall be identified by name for Excavations, Fall Protection, etc. if applicable.

1.4 FITNESS FOR DUTY

A. The Contractor/Sub-Contractor/Supplier is required to have a drug and alcohol screening program for all employees assigned to work on Purchaser's property. The program must provide screening for pre-access testing, "for cause" testing and random testing. The Contractor/Sub-Contractor/Supplier shall certify that their employees have passed the appropriate screening test in accordance with their programs.

B. Personnel covered by this program shall be denied access to, or may be required to leave the Purchaser's location if there are reasonable grounds to believe that the individual is:
   1. Under the influence of using, possessing, buying, selling, or otherwise exchanging (whether or not for profit) controlled substances or drug paraphernalia.
   2. Under the influence of consuming, possessing, buying, selling, or otherwise exchanging (whether or not for profit) alcoholic beverages.

1.5 PERSONNEL PROTECTIVE EQUIPMENT (PPE)

A. Prior to starting work, the contractor shall perform a Hazard assessment for PPE
   1. The Contractor will conduct a walk-through survey of each work area to identify sources of work hazards. Each survey will be documented in which it will identify the work area surveyed, the relevant task, the person conducting the survey, findings of potential hazards, control measures, and date of the survey.
   2. The Contractor will conduct, review, and update the hazard assessment for PPE whenever:
      - The scope of work changes
      - New equipment or process is installed
      - There has been an accident
      - Whenever a supervisor or employee requests it

- Or at least every year
- Any new PPE requirements that are developed will be added into the Contractors written safety program.

B. Head Protection/Hard Hats: Hard hats shall be worn in all work areas.
   1. Hard hats must not be more than 5 years old, and the harness shall not be more than 1 year old.
   2. Hard hats must be worn with brim forward.
   3. Hard hats must be assigned and used in accordance with ANSI/ISEA Z89.1-2014(R2019).
   4. Hard Hats must be cleaned and maintained in accordance with the manufacturer's instruction.

C. Eye Protection: Eye protection shall be worn in all work areas.
   1. At a minimum, ANSI Z87-1-2020 compliant Safety Glasses shall be worn.
   2. Goggles and face shields shall be used for splash hazards.
   3. Fogging potential shall be considered for humid conditions and appropriate anti-fog materials may be used.
   4. Detachable side protectors (e.g., clip-on or slide on side shields) that meet OSHA Rule 29 CFR Part 1910.133 and ANSI Z87.1 specifications are also acceptable to wear with prescription glasses. Prescription glasses used with detachable side shields must conform to ANSI Z87.1
   5. Employees must keep eyewear in clean condition and fit for use at all times.

D. Protection Foot Wear
   1. All foot wear must be compliant with ASTM F2413-18: Performance Requirements For Protective (Safety) Toe Cap Footwear
   2. For work on or near the CCR impoundments, consideration shall be given to traction and slip issues.
   3. Safety shoes must be maintained and cleaned in accordance with the manufacturer's guidelines.
   4. Boot covers or Rubber boots shall be used in all areas that do or may contain CCR. These covers or boots must be cleaned or disposed of prior to leaving the work area.

E. Hand Protection
   1. Employers shall base the selection of the appropriate hand protection on an evaluation of the performance characteristics of the hand protection relative to the task(s) to be performed, conditions present, duration of use, and the hazards and potential hazards identified.
   2. Impervious disposable gloves shall be used when working with CCR. Leather, Cotton or other readily absorbable gloves shall not be used.

F. Personal Flotation Devices
   1. When working with 10 feet of the water in the impoundments the following shall apply:
      a. All personnel shall wear a Coast Guard Approved PFD

- Type I: Off-Shore Life Jacket; effective for all waters or where rescue may be delayed.
- Type II: Near-Shore Buoyant Vest; intended for calm, inland water or where there is a good chance of quick rescue.
- Type III: Flotation aid; good for calm, inland water, or where there is a good chance of rescue.
- Type IV: PFD's are throwable devices. They are used to aid persons who have fallen into the water.
- Type V: Flotation aids such as boardsailing vests, deck suits, work vests, and inflatable PFD's marked for commercial use.

2. Serviceable condition: A PFD is considered to be in serviceable condition only if the following conditions are met.
   a. No PFD may exhibit deterioration that could diminish the performance of the PFD, including:

      1. Metal or plastic hardware used to secure the PFD on the wearer that is broken, deformed, or weakened by corrosion;

      2. Webbings or straps used to secure the PFD on the wearer that are ripped, torn, or which have become separated from an attachment point on the PFD; or

      3. Any other rotted or deteriorated structural component that fails when tugged;

      4. Rips, tears, or open seams in fabric or coatings, that are large enough to allow the loss of buoyant material;

      5. Buoyant material that has become hardened, non-resilient, permanently compressed, waterlogged, oil-soaked, or which shows evidence of fungus or mildew; or

      6. Loss of buoyant material or buoyant material that is not securely held in position.

1.6 EXISTING PLANT FACILITIES

A. Contractor shall be aware that Work may be performed in and around operating equipment.

B. The Contractor shall give proper notices, make all necessary arrangements, and perform all other services required to avoid damage to all utilities, including gas mains, water pipes, sewer pipes, electric cables, fire hydrants, lamp posts, etc., for which Purchaser could be held liable.

C. The Contractor shall barricade or cover any opening created during the course of work for excavations, or grating removal. Barricades shall be a "hard" barrier such as cable or pipe and clamp, safety barrier tape is unacceptable. In addition, any openings creating a fall hazard of 4 feet or more must have a permit authorized before the barrier can be removed. See section 11.4 below for permit requirements.

D. Housekeeping, walkways and tripping hazards: All equipment and material must be kept in an orderly manner. Aisles exits stairways and emergency equipment must never be obstructed. Hoses and welding cables must be tied above walkways so as to not pose as a trip hazard. Barricades, signs and notifications provided by the contractor when required. The owner and contractor will conduct periodic housekeeping audits to assure compliance.

E. Contractor's personnel shall observe all safety, warning, equipment identification instructional signs and tags. Do not remove any tag without prior consent of Purchaser's Representative.

F. When work has been completed, and Contractor decides equipment is ready to be returned to service, Contractor employees shall have all of their employees (working party members) sign off the permit. Contractor shall notify Purchaser's Representative in whose name the outage is being held.

1.7 WELDING, CUTTING and BURNING PERMITS

A. Contractor shall not start welding or cutting operations without a "Welding and Cutting Permit". Permits shall be obtained from Purchaser and posted in accordance with Station site-specific Safety Training requirements.

B. Contractor shall use non-asbestos, fire retardant blankets as required to protect Purchaser's equipment, cable trays, coal transport and storage areas, etc. and to cover gratings (for personnel safety) when welding, grinding and flame cutting processes are used overhead or in such close proximity as to pose a hazard.

C. Contractor shall supply appropriate portable fire extinguishers in welding and cutting areas.

D. Contractor shall furnish a designated “Fire-watch” employee to monitor the area above to the sides and below the cutting and burning area. The fire-watch is to extinguish fires started by sparks from the acts of cutting or welding. The fire-watch employee is to continue monitoring on the job 30 minutes after cutting or burning has been completed.

1.8 SAFETY DATA SHEETS

A. Midwest Generation uses an electronic SDS management system that is accessible by employees of the station as needed. The relevant SDS’s for the CCR surface impoundments are included in Attachment 1. Additional SDS’s can be accessed, as needed, through the electronic management system.

B. The Contractor shall make Safety Data Sheets (SDS's) readily available to the Purchaser for those substances which are furnished by and under the control of the Contractor. These are to be available at the time of delivery of the substance to the Purchaser’s Premises.

C. It is the responsibility of the Contractor to train their employees on SDS's.

D. Midwest Generation uses an electronic SDS management system that is accessible by employees of the station as needed. This electronic system will be used to comply with 1.8(A).

1.9 CHEMICALS, SOLVENTS AND GASES

A. Contractor shall comply with all federal, state and local regulations and codes pertaining to handling and storage of flammable liquids and gases.

B. Cleaning agents, solvents, or other substances brought by Contractor onto any of Purchaser's properties by Contractor shall be stored, handled and used in accordance with applicable standards.

C. Contractor shall ensure that liquids or solids will not be poured (disposed of) into Purchaser's drain, sewer systems, lake (where applicable), or onto ground. Contractor shall be liable for any damage and cleanup of improperly disposed liquids or solids.

D. The Contractor is to provide the Purchaser with the name and quantity of usage of any listed Section 313 Toxic Chemical of the Emergency Planning and Community Right-to-Know Act of 1986 (40CFR372).

E. Signage must be posted detailing the presence of and hazards of CCR.

1.10 DISTURBANCE OF DUST

Contractor's work practices shall minimize dust generated while working with CCR. A fugitive dust mitigation plan shall be submitted to the facility prior to activities beginning.

1.11 FALL PROTECTION

Mandatory fall protection is required when working near and area where a fall hazard of **4** feet or more exits.

1.12 BARRIERS AND WARNING SYSTEMS

A. Warning and barricade systems shall be used to divert personnel from a work area. All warning barriers shall be tagged with yellow “Caution Cards”. The caution card shall state the hazard, the date erected and a contact name, company and phone number. There are 2 levels of barricade systems. The barricade systems shall be taken down immediately when the hazard has been removed or at the end of the work shift.

B. A conditional warning is designated with ‘Yellow” safety warning tape. This is used to warn workers of a hazard such as wet floors, welding and cutting in an area, or other hazards that with an awareness and proper PPE can be approached.

C. An Unconditional warning is designated with “Red” safety warning tape. This is used to worn workers of a hazard such as a crane lift or overhead work. Red safety tape barriers cannot be access or removed until permission is granted from the person responsible for installing it.

D. Fire and Evacuation warning sirens. Each plant has a siren for fire notification and evacuation notification. The response location and procedure will be addressed in the pre-mobilization meeting and plant site-specific orientation. The station’s Emergency Warning system is an electronic siren-toned system. The designated siren-tone alarms and the related emergency conditions are listed below:

1) **FIRE**: HI-LO siren-tone for approx. 60 seconds (Fires, explosions, releases, etc.)
2) **Evacuation**: Steady siren-tone for approx. 60 seconds
3) **Natural Disaster**: (Tornado, Etc.) WAIL (SLOW) siren-tone for approx. 60 seconds

E. A CCR health hazard sign is posted at the CCR Basins. The sign lists health hazard statements, PPE requirements, and precautionary measures.

1.13 For Contractor's and subcontractor's employees, visitors and any other individuals: Smoking is prohibited on the work site.

1.14 The Contractor is expected to pre-arrange medical emergency services for on-site and off-site treatment. This includes, but is not limited to, first aid and confined space rescue.

1.15 WORKING ON OR NEAR WATER:

A. Life jackets and work vests shall be inspected before and after each use.

B. Ring buoys or Class IV rescue device with at least 90 feet of line shall be provided and readily available for employee rescue operations.

C. The distance from ring buoys to each worker shall not exceed 200 feet.

D. At least one lifesaving skiff shall be immediately available at locations where employees are working over water and/or the local coast guard shall be notified when working in navigable waterways.

E. Under no circumstances will team members enter water bodies without protective clothing (e.g.; waders, wet suit)

F. At least one person should remain on shore as a lookout if other methods of rescue are not available.

1.16 EXCAVATIONS

A. A Competent person shall determine the proper slope or identify engineering controls for all excavations in the CCR area.

B. An inspection of the banks shall be made and documented at least daily to determine any impact of the excavation.

C. Excavation equipment shall be operated in accordance with the Contractor's Health and Safety Plan and the manufacturer's recommendations.

1.17 Employees will follow the corporate Job Safety Analysis Program when performing operation and maintenance duties at the CCR surface impoundments. Job Safety Analyses (JSAs) will be performed to provide a step-by-step analysis to identify existing and/or potential hazards and to eliminate or control those hazards.

2.0 **CONTRACTOR'S FACILITIES**

2.1 Temporary chemical toilet accommodations shall be furnished and maintained by Contractor for the use of his employees. Location shall be as directed by Purchaser's Representative. Use of Purchaser's toilet facilities by Contractor's employees is not permitted.

2.2 Contractor shall provide his own storage vessels, coolers, ice, water containers, etc., as required for his own drinking water use. Contractor shall supply a trash can with each drinking water container to receive used paper cups. Contractor shall maintain drinking water container, supply suitable water cups and dispose of trash as required. Open drinking cups and containers in the plant areas are not permitted.

2.3 Each Contractor is expected to pre-arrange medical emergency services for on-site and off-site treatment. This includes, but is not limited to, first aid and confined space rescue.

2.4 FIRE PROTECTION FACILITIES

A. Contractor shall provide his own temporary fire protection facilities for the equipment and materials furnished by him or by Purchaser and for his temporary construction buildings and structures. This equipment shall be maintained and inspected in accordance with applicable NFPA codes.

B. Furnish a suitable quantity and type of portable fire extinguishers and equipment, to meet OSHA and applicable codes.

2.5 Purchaser will not furnish any additional illumination of aisles, passages in the buildings, floodlighting of outdoor areas or lighting inside equipment other than that which is existing. Any additional lighting required by the Contractor shall be provided by the Contractor.

2.6 Contractor shall provide and maintain suitably located distribution centers with fused switching equipment and Ground Fault Interruption protection. The equipment supplied shall comply with OSHA regulations and standards.

2.7 Contractor shall supply all adapters and equipment required to connect to station air, water, and electrical systems. All air hoses shall be safety clipped together.

2.8 Any heating facilities required for the performance of the Work shall be furnished, maintained, and removed by Contractor. Open fires WILL NOT BE PERMITTED at any time. Heating equipment shall be as approved by Purchaser's Representative.

3.0 **CONTRACTOR'S TOOLS AND EQUIPMENT**

3.1 TOOLS AND EQUIPMENT

A. Contractor shall maintain, inspect and store tools and equipment for safe and proper use. This includes guards, shields, safety switches and electrical cords.

B. Contractor shall provide hoisting equipment as required to perform the Work. Provide all the necessary guards, signals, and safety devices required for its safe operation. Construction and operation of hoisting equipment shall comply with all applicable requirements of ANSI A10.5, the AGC Manual of Accident Prevention in Construction, and to all applicable federal, state, and local codes. Hoisting equipment shall not be used to transport personnel.

3.2 RIGGING

A. Contractor shall design, furnish, and maintain rigging required for the Work. All rigging plans must be designed by an Illinois licensed structural engineer.

B. Purchaser reserves the right to examine Contractor's design calculations, engineering data, plans, and procedures. Contractor shall submit any documentation requested by the Purchaser for the purpose of this review, including, but not limited to, calculations, diagrams and documents associated with computer-aided analyses and programs. If requested information is considered proprietary by Contractor, Contractor shall allow the Purchaser to review the information at Contractor's offices with the understanding that no copies of proprietary information will be given to the Purchaser. Purchaser's review and approval of submitted information is for general detail only and will not relieve the Contractor of responsibility for meeting all requirements and for accuracy.

C. Lifting and rigging areas shall have the target area and corresponding personnel access landings barricaded with "red" safety tape or hard barriers. No one is allowed under the load or in the target area during lifts.

D. All cranes, hoists, or derricks shall be operated in compliance with existing State and Federal regulations or orders. Cranes and hoists shall be inspected in accordance with OSHA and ANSI requirements. Cranes and hoists shall not be operated near high voltage lines or equipment until a safe operating clearance plan has been established.

4.0 TRAINING PROGRAM

A. All Midwest Generation employees, contract workers, and third-party contractors must complete a training program before they are allowed to perform work on Midwest Generation property. The training program informs employees, contract workers, and third-party contractors of the hazards associated with the CCR surface impoundments. Training will be given at the start of employment (employees) or before commencing work (contract workers and third-party contractors). Refresher training will be provided on an annual basis.

B. The training program consists of the following components to ensure employees, contract workers, and third-party contractors understand and are able to respond effectively:

1. Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment,
2. Communications and alarm systems,
3. Response to fires or explosions,
4. Response to a spill or release,
    - Spills and releases to the ground
    - Spills and releases to water
    - Catastrophic releases
5. Contractor training;
    - OSHA 29 CFR 1910.120 – Employees are trained to first responder awareness level
    - 29 CFR 1926.65 – Contract workers and third-party contractors must be trained by their employers prior to working at Midwest Generation stations
    - OSHA 10- or 30-hour construction safety training – Contractors must provide qualified personnel as appropriate along with specialized training documentation
6. Information about chemical hazards and hazardous materials
    - Surface impoundments contain CCR such as bottom ash and slag
    - CCR may be present in water or as respirable dust
    - CCR may contain heavy metals, such as arsenic, barium, cadmium, chromium, lead, mercury, and selenium
    - CCR exposure routes are skin contact and inhalation
    - Prolonged exposure potentially can cause illness
7. Use of engineering controls, administrative controls, and personal protective equipment (PPE
    - Engineering Controls – Suppress dust and availability of eye wash stations and safety showers
    - Administrative Controls – Housekeeping, respiratory protection, and use of PPE

C. This Safety and Health Plan along with the training program will be reviewed and updated on annual basis, as needed.

ATTACHMENT 1

Lafarge Fly Ash and Bottom Ash (Ash)

Safety Data Sheet

According To Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules And Regulations
Revision Date: 04/21/2015 Date of issue: 12/18/2014 Supersedes Date: 03/01/2014 Version: 1.0

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: Lafarge Fly Ash and Bottom Ash (Ash)

Synonyms: Coal Fly Ash, Class F Fly Ash, Class C Fly Ash, Type CI Fly Ash, Type CH Fly Ash, Type F Fly Ash, Lignite Coal Fly Ash, Subbituminous Coal Fly Ash, Anthracite Coal Fly Ash, Bituminous Coal Fly Ash, Bottom Ash, Ash

1.2. Intended Use of the Product

Fly Ash and Bottom Ash are used as a supplementary cementitious or pozzolanic material for cement, concrete and concrete products. It is also used in soil stabilization and as filler in asphalt and other products that are widely used in construction.

1.3. Name, Address, and Telephone of the Responsible Party

Company

Lafarge North America Inc.
8700 West Bryn Mawr Avenue, Suite 300
Chicago, IL 60631
Information: 773-372-1000 (9am to 5pm CST)
email: SDSinfo@Lafarge.com
Website: www.lafarge-na.com

1.4. Emergency Telephone Number

Emergency Number : 1-800-451-8346 (3E Hotline)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

Classification (GHS-US)

Eye Irrit. 2B H320
Carc. 1A H350
STOT RE 1 H372
Full text of H-phrases: see section 16

2.2. Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US) :

GHS08

Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) :
H320 - Causes eye irritation.
H350 - May cause cancer (Inhalation).
H372 - Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements (GHS-US) :
P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe dust.
P264 - Wash hands, forearms, and exposed areas thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P280 - Wear eye protection, protective clothing, protective gloves, and respiratory protection.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P313 - If exposed or concerned: Get medical advice/attention.
P337+P313 - If eye irritation persists: Get medical advice/attention.
P405 - Store locked up.
P501 - Dispose of contents/container in accordance with local, regional, national, territorial, provincial, and international regulations.

2.3. Other Hazards

Exposure may aggravate those with pre-existing eye, skin, or respiratory conditions. Individuals with lung disease (e.g. bronchitis, emphysema, COPD, pulmonary disease) can be aggravated by exposure.

2.4. Unknown Acute Toxicity (GHS-US) No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Not applicable

3.2. Mixture

Name	Product Identifier	% (w/w)	Classification (GHS-US)
Ashes, residues	(CAS No) 68131-74-8	< 100	Eye Irrit. 2B, H320
Quartz	(CAS No) 14808-60-7	0 - 10	Carc. 1A, H350 STOT SE 3, H335 STOT RE 1, H372

Fly ash and bottom ash are byproducts from the combustion of coal. Trace amounts of chemicals may be detected during chemical analysis. For example the chemicals identified can include carbon and complex silicates or oxides of aluminum (Al), calcium (Ca), magnesium (Mg), sodium (Na), sulfur (S), potassium (K), titanium (Ti), iron (Fe) and phosphorus (P). Chemical identity: MxOySiO2 (M = Al, Ca, Mg and other minor metal, with bound silica (SiO2)). Chemical analysis of fly ash and bottom ash also indicate the presence of trace amounts of metals, such as: Arsenic (As), Barium (Ba), Beryllium (Be), Cobalt (Co), Lead (Pb), and Manganese (Mn).

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First Aid Measures

General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

Inhalation: When symptoms occur: go into open air and ventilate suspected area. If exposed or concerned: Get medical advice/attention.

Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation develops or persists.

Eye Contact: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention.

Ingestion: Rinse mouth. Do NOT induce vomiting. Get medical advice and attention if you feel unwell.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

General: Causes damage to organs through prolonged or repeated exposure.

Inhalation: May cause respiratory irritation. This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a seriously disabling and fatal lung disease.

Skin Contact: Ash may cause dry skin, discomfort, and irritation. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Eye Contact: Causes eye irritation. Symptoms may include: Redness, pain, swelling, itching, burning, tearing, and blurred vision.

Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: Causes damage to organs through prolonged or repeated exposure. May cause cancer by inhalation.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If you feel unwell, seek medical advice (show the label where possible).

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use a heavy water stream. Use of heavy stream of water may spread fire.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Non-combustible.

Explosion Hazard: Product is not explosive.

Reactivity: Hazardous reactions will not occur under normal conditions.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Do not allow run-off from fire fighting to enter drains or water sources. Do not breathe fumes or vapors from fire.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Hazardous Combustion Products: None.

Reference to Other Sections

Refer to section 9 for flammability properties.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Avoid all contact with skin, eyes, or clothing. Do not breathe dust.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protection equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Ventilate area.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Material for Containment and Cleaning Up

For Containment: Place spilled material into a container. Avoid actions that cause dust to become airborne. Avoid inhalation of dust. Wear appropriate protective equipment as described in Section 8. Do not wash product down sewage and drainage systems or into bodies of water (e.g. streams).

Methods for Cleaning Up: Clear up spills immediately and dispose of waste safely.

6.4. Reference to Other Sections

See heading 8, Exposure Controls and Personal Protection. Concerning disposal elimination after cleaning, see item 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Cutting, crushing or grinding cement clinker, hardened cement, concrete or other crystalline silica-bearing materials will release respirable crystalline silica. Use all appropriate measures of dust control or suppression, and Personal Protective Equipment (PPE) described in Section 8 below.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Wash hands and forearms thoroughly after handling. Do not eat, drink or smoke when using this product.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Ensure all national/local regulations are observed. Avoid creating or spreading dust.

Storage Conditions: Store in a dry, cool and well-ventilated place. Keep container closed when not in use.

Incompatible Materials: Strong acids. Strong bases. Strong oxidizers.

Storage Area: Store locked up.

7.3. Specific End Use(s)

Fly Ash and Bottom Ash are used as a supplementary cementitious or pozzolanic material for cement, concrete and concrete products. It is also used in soil stabilization and as filler in asphalt and other products that are widely used in construction.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established Exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), NIOSH (REL), OSHA (PEL), Canadian provincial governments, or the Mexican government.

Quartz (14808-60-7)		
Mexico	OEL TWA (mg/m³)	0.1 mg/m³ (respirable fraction)
USA ACGIH	ACGIH TWA (mg/m³)	0.025 mg/m³ (respirable fraction)
USA OSHA	OSHA PEL (STEL) (mg/m³)	250 mppcf/%SiO_2+5, 10mg/m^3/%SiO_2+2

USA NIOSH	NIOSH REL (TWA) (mg/m³)	0.05 mg/m³ (respirable dust)
USA IDLH	US IDLH (mg/m³)	50 mg/m³ (respirable dust)
Alberta	OEL TWA (mg/m³)	0.025 mg/m³ (respirable particulate)
British Columbia	OEL TWA (mg/m³)	0.025 mg/m³ (respirable)
Manitoba	OEL TWA (mg/m³)	0.025 mg/m³ (respirable fraction)
New Brunswick	OEL TWA (mg/m³)	0.1 mg/m³ (respirable fraction)
Newfoundland & Labrador	OEL TWA (mg/m³)	0.025 mg/m³ (respirable fraction)
Nova Scotia	OEL TWA (mg/m³)	0.025 mg/m³ (respirable fraction)
Nunavut	OEL TWA (mg/m³)	0.1 mg/m³ (respirable mass)
Northwest Territories	OEL TWA (mg/m³)	0.1 mg/m³ (respirable mass)
Ontario	OEL TWA (mg/m³)	0.10 mg/m³ (designated substances regulation-respirable)
Prince Edward Island	OEL TWA (mg/m³)	0.025 mg/m³ (respirable fraction)
Québec	VEMP (mg/m³)	0.1 mg/m³ (respirable dust)
Saskatchewan	OEL TWA (mg/m³)	0.05 mg/m³ (respirable fraction)
Yukon	OEL TWA (mg/m³)	300 particle/mL

8.2. Exposure Controls

Appropriate Engineering Controls: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits. Power equipment should be equipped with proper dust collection devices.

Personal Protective Equipment: Protective goggles. Gloves. Protective clothing. Dust formation: dust mask.

Materials for Protective Clothing: Chemically resistant materials and fabrics.

Hand Protection: Wear chemically resistant protective gloves.

Eye Protection: Chemical safety goggles.

Skin and Body Protection: Wear suitable protective clothing.

Respiratory Protection: If exposure limits are exceeded or irritation is experienced, NIOSH approved respiratory protection should be worn.

Other Information: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	:	Solid
Appearance	:	Gray/black or brown/tan powder which may contain solidified masses
Odor	:	None
Odor Threshold	:	Not available
pH	:	4 - 12
Evaporation Rate	:	Not available
Melting Point	:	Not available
Freezing Point	:	Not available
Boiling Point	:	> 1000 °C (1832 °F)
Flash Point	:	Not available
Auto-ignition Temperature	:	Not available
Decomposition Temperature	:	Not available
Flammability (solid, gas)	:	Not available
Lower Flammable Limit	:	Not available
Upper Flammable Limit	:	Not available
Vapor Pressure	:	Not available
Relative Vapor Density at 20 °C	:	Not available

Relative Density	:	Not available
Specific Gravity	:	2 - 2.9
Solubility	:	Water: < 5 % (Slightly)
Partition Coefficient: N-Octanol/Water	:	Not available
Viscosity	:	Not available
Explosion Data – Sensitivity to Mechanical Impact	:	Not expected to present an explosion hazard due to mechanical impact.
Explosion Data – Sensitivity to Static Discharge	:	Not expected to present an explosion hazard due to static discharge.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity: Hazardous reactions will not occur under normal conditions.

10.2. Chemical Stability: Not available

10.3. Possibility of Hazardous Reactions: Not available

10.4. Conditions to Avoid: Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible Materials: Strong acids. Strong bases. Strong oxidizers.

10.6. Hazardous Decomposition Products: None.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects - Product

Acute Toxicity: Not classified

LD50 and LC50 Data: Not available

Skin Corrosion/Irritation: Not classified

pH: 4 - 12

Serious Eye Damage/Irritation: Causes eye irritation.

pH: 4 - 12

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Teratogenicity: Not classified.

Carcinogenicity: May cause cancer.

Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs through prolonged or repeated exposure.

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: May cause respiratory irritation. This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a seriously disabling and fatal lung disease.

Symptoms/Injuries After Skin Contact: Ash may cause dry skin, discomfort, and irritation. Dust may cause irritation in skin folds or by contact in combination with tight clothing.

Symptoms/Injuries After Eye Contact: Causes eye irritation. Symptoms may include: Redness, pain, swelling, itching, burning, tearing, and blurred vision.

Symptoms/Injuries After Ingestion: Ingestion is likely to be harmful or have adverse effects.

Chronic Symptoms: Causes damage to organs through prolonged or repeated exposure. May cause cancer by inhalation.

11.2. Information on Toxicological Effects - Ingredient(s)

LD50 and LC50 Data:

Quartz (14808-60-7)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 5000 mg/kg

Ashes, residues (68131-74-8)	
LD50 Oral Rat	> 2000 mg/kg

Quartz (14808-60-7)	
IARC Group	1
National Toxicology Program (NTP) Status	Known Human Carcinogens.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity No additional information available

Persistence and Degradability

Lafarge Fly Ash and Bottom Ash (Ash)	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

Lafarge Fly Ash and Bottom Ash (Ash)	
Bioaccumulative Potential	Not established.

12.4. Mobility in Soil Not available

12.5. Other Adverse Effects

Other Information: Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Sewage Disposal Recommendations: Do not empty into drains. Do not dispose of waste into sewer.

Waste Disposal Recommendations: Dispose of waste material in accordance with all local, regional, state, national, provincial, territorial and international regulations.

SECTION 14: TRANSPORT INFORMATION

14.1. In Accordance with DOT Not regulated for transport

14.2. In Accordance with IMDG Not regulated for transport

14.3. In Accordance with IATA Not regulated for transport

14.4. In Accordance with TDG Not regulated for transport

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Lafarge Fly Ash and Bottom Ash (Ash)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard

Quartz (14808-60-7)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

Ashes, residues (68131-74-8)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

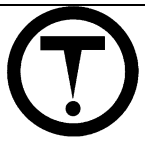
15.2. US State Regulations

Quartz (14808-60-7)	
U.S. - California - Proposition 65 - Carcinogens List	WARNING: This product contains chemicals known to the State of California to cause cancer.

Quartz (14808-60-7)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

15.3. Canadian Regulations

Lafarge Fly Ash and Bottom Ash (Ash)	
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects



Quartz (14808-60-7)	
Listed on the Canadian DSL (Domestic Substances List) Listed on the Canadian IDL (Ingredient Disclosure List)	
IDL Concentration 1 %	
WHMIS Classification	Class D Division 2 Subdivision A - Very toxic material causing other toxic effects

Ashes, residues (68131-74-8)	
Listed on the Canadian DSL (Domestic Substances List)	
WHMIS Classification	Class D Division 2 Subdivision B - Toxic material causing other toxic effects

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Revision Date : 04/21/2015

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

Carc. 1A	Carcinogenicity Category 1A
Eye Irrit. 2B	Serious eye damage/eye irritation Category 2B
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H320	Causes eye irritation
H335	May cause respiratory irritation
H350	May cause cancer
H372	Causes damage to organs through prolonged or repeated exposure

Party Responsible for the Preparation of This Document

Lafarge North America Inc.

+1 773-372-1000 (9am to 5pm CST)

An electronic version of this SDS is available at: www.lafarge-na.com under the Sustainability and Products sections. Please direct any inquiries regarding the content of this SDS to SDSinfo@Lafarge.com.

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NO WARRANTY IS MADE, EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE.

North America GHS US 2012 & WHMIS 2

Aluminum Sulfate Solution

SDS No. 011
21 Aug 2020

Safety Data Sheet

IDENTIFICATION

Product Identifier

Product Name **Aluminum Sulfate Solution**

Other means of identification

SDS # USALCO-002

UN/ID No UN3264

Synonyms ALUM.

Manufacturer

USALCO, LLC
2601 Cannery Ave
Baltimore, MD 21226

Recommended use of the chemical and restrictions on use

Recommended Use Water treatment coagulant, flocculent, alumina source for catalyst, pH control in papermaking/water treatment.

Emergency Telephone Number

Company Phone Number 410-918-2230
Emergency Telephone (24 hr) 800-282-5322

2. HAZARDS IDENTIFICATION

Appearance Colorless to clear amber or clear light green liquid **Physical State** Liquid **Odor** Negligible

Classification

Corrosive to Metal. 1	H290
Eye Dam. 1	H318
Aquatic Acute 3	H402

Signal Word
Warning

Hazard Statements
May be harmful if swallowed
Causes eye irritation
May be corrosive to metals

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves, and eye protection. Keep only in original container

Precautionary Statements - Response
If swallowed: Call a poison center or doctor if you feel unwell.
Rinse mouth.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, get medical attention.

Precautionary Statements - Storage
Store in corrosive resistant container or container with a resistant inner liner

Precautionary Statements – Disposal
Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): May be D002 under §261.22(a)(2) due to the rate of corrosion of metal.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms ALUM.
Chemical Family Inorganic Salt.

Chemical Name	CAS No	Weight-%
Water	7732-18-5	>50
Aluminum Sulfate	10043-01-3	<50

4. FIRST-AID MEASURES

First Aid Measures

Eye Contact If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor/physician if irritation continues.

Skin Contact Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.

Inhalation If adverse effects occur, remove to fresh air and observe. If not breathing, give artificial respiration. Seek immediate medical attention/advice.

Ingestion If a large amount is swallowed, get medical attention immediately.

Most important symptoms and effects

Symptoms Causes serious eye damage. May cause skin irritation.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Aluminum Sulfate will not burn. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Small Fire Move containers from fire area if you can do it without risk. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Large Fire Same procedures as for small fires.

Specific Hazards Arising from the Chemical
Negligible fire hazard.

Hazardous Decomposition Products Oxides of sulfur.

Sensitivity to Mechanical Impact Not sensitive.

Sensitivity to Static Discharge Not sensitive.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Do not release runoff from fire control methods to sewers or waterways.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protection recommended in Section 8. Keep unnecessary people away, isolate hazard area and deny entry.

Environmental Precautions Do not release into sewers or waterways. For spills in excess of allowable limits (RQ) notify the National Response Center (800) 424-8802; refer to SARA Title III, Section 313 40 CFR 372, and CERCLA 40 CFR 302 for detailed instructions concerning reporting requirements. Notify Local Emergency Planning Committee (LEPC) and State Emergency Response Commission (SERC) for a release greater than or equal to Reportable Quantities (RQ). Refer to U.S. SARA Section 304. See Section 12 for additional Ecological Information.

Methods and material for containment and clean up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Small Spills: Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Avoid contact with skin, eyes or clothing. Handle in accordance with good industrial hygiene and safety practice. Wash face, hands and any exposed skin thoroughly after handling. Store and handle in accordance with all current regulations and standards.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed and store in a cool, dry and well-ventilated place. Store with acids. See original container for storage recommendations. Store away from incompatible materials.

Incompatible Materials Alkalis, metals. Alkalis (bases): Violent reaction. Metals: May be corrosive in the presence of moisture.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines No exposure limits noted for product.
Exposure Limits for aluminum metal
NIOSH REL - TWA 10 mg/m3 (total) TWA 5 mg/m3 (resp)
OSHA PEL - TWA 15 mg/m3 (total) TWA 5 mg/m3 (resp)

Appropriate engineering controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits. Ensure adequate ventilation, especially in confined areas. Maintain eye wash fountain and quick-drench facilities in work area.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear chemical tight goggles and full face shield.

Skin and Body Protection Wear appropriate chemical resistant clothing including chemical resistant gloves.

Respiratory Protection	Seek professional advice prior to respirator selection and use. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. WARNING!: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
General Hygiene Considerations	Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Colorless to clear amber or clear light green liquid
Odor	Negligible
Odor threshold	Not determined
pH	2.0-2.4
Relative density; (specific gravity)	±1.3 @15.5 °C
Melting point/freezing point	-13° C / 9° F
Initial boiling point and boiling range	Not relevant
Decomposition temperature	±1,400° F
Viscosity	5-25 centipoise
Auto-ignition temperature	Not flammable
Evaporation rate;	Similar to water
Flammability (solid, gas)	Not flammable
Flash point	Will not burn
Upper/lower flammability or explosive limits	Will not burn
Partition coefficient: n-octanol/water	Not relevant
Solubility	Soluble in water
Vapor density	Similar to water
Vapor pressure	Similar to water

10. STABILITY AND REACTIVITY

Reactivity
Not reactive under normal conditions.

Chemical Stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to Avoid
Protect from freezing. Keep separated from incompatible substances.

Incompatible Materials
Alkalis, metals. Alkalis (bases): Violent reaction. Metals: May be corrosive in the presence of moisture.

Hazardous Decomposition Products
Thermal oxidative decomposition of Aluminum Sulfate occurs at temperatures greater than 1400°F and can produce sulfur oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Eye Contact Causes serious eye damage.
Skin Contact May cause skin irritation.
Inhalation Avoid breathing vapors or mists.
Ingestion Do not taste or swallow. May be harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Aluminum Sulfate 10043-01-3	= 1930 mg/kg (Rat)	-	-
Water 7732-18-5	> 90 mL/kg (Rat)	-	-

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Carcinogenicity This product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.

Numerical measures of toxicity
Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Aluminum Sulfate 10043-01-3		100: 96 h Carassius auratus mg/L LC50 37: 96 h Gambusia affinis mg/L LC50 static		136: 15 min Daphnia magna mg/L EC50

Persistence/Degradability
Not determined

Bioaccumulation
Not determined

Mobility
Not determined

Other Adverse Effects
Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number
EPA Hazardous Waste Code: D002 (Corrosive) if the pH is <2. May be D002 per 40CFR261.22(a)(2) due to the rate of corrosion of steel. The U.S. EPA has not published waste codes for this products components.

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances. Information also applies to TDG, ADR and RID.

DOT

UN/ID No	UN3264
Proper Shipping Name	Corrosive liquid, acidic, inorganic, n.o.s., (Aluminum Sulfate)
Hazard Class	8
Packing Group	III
Reportable Quantity (RQ)	5000 lb

IATA

UN/ID No	UN3264
Proper Shipping Name	Corrosive liquid, acidic, inorganic, n.o.s., (Aluminum Sulfate)
Hazard Class	8
Packing Group	III

IMDG

UN/ID No	UN3264
Proper Shipping Name	Corrosive liquid, acidic, inorganic, n.o.s., (Aluminum Sulfate)
Hazard Class	8
Packing Group	III

15. REGULATORY INFORMATION

International Inventories
Not determined

US Federal Regulations

Aluminum sulfate (10043-01-3) is listed on the United States TSCA (Toxic Substances Control Act) inventory

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Aluminum Sulfate 10043-01-3	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Aluminum Sulfate 10043-01-3 (<50)	5000 lb			X

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Aluminum Sulfate 10043-01-3	X	X	X

16. OTHER INFORMATION

	Health Hazards	Flammability	Instability	Special Hazards
NFPA	1	0	0	Not determined

Issue Date 20-Sep-2011
Revision Date: 6-June-2017; 21-Aug-2020

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Safety Data Sheet

1 – PRODUCT IDENTIFICATION

PRODUCT NAME:.....CAPTIFLOC AEF 330 PWG
PRODUCT NUMBER: CAPTIFLOCAEF330PWG
DESCRIPTION:..... Polymer
OTHER MEANS OF INDENTIFATICATION:..... Viscous liquid, milky with an aliphatic.
RECOMMENDED USE:..... Processing aid for industrial applications.
RESTRICTIONS ON USE:..... Use only as directed.

COMPANY:..... CHEMTRON CORPORATION
3500 Harry S. Truman Blvd
St. Charles, MO 63301
636-940-5445 (Mon-Fri., 8:00-4:00)
www.chemtroncorporation.com
EMERGENCY PHONE: .....(800) 424-9300 (CHEMTREC)
REVISION DATE:.....MARCH 3, 2017

Certified to NSF/ANSI 60

2 – HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:..... Spills produce extremely slippery surfaces.

CLASSIFICATION 29 CFR 1910.1200: ..... This product is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard.

GHS SIGNAL WORD:.....None
GHS HAZARD STATEMENTS:..... None
GHS PRECAUTIONARY STATEMENTS:..... None

3 – COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENT	PERCENT	CAS NUMBER	Hazard Information
Distillates (petroleum, hydrotreated light	20-45	64742-47-8	Asp. Tox 1; H304
Poly(oxy-1, 2-ethanediyl), a-tridecyl-w-hydroxy, branched	<3	69011-36-5	Acute Tox 4; H302. Eye Dam 1; H318

The exact percent by weight of the ingredients in this formulation is proprietary.

Safety Data Sheet

4 – FIRST-AID MEASURES

BREATHING (INHALATION):.. Move to fresh air. No hazards which require special first aid measures.
SWALLOWING (INGESTION):. Rinse mouth with water. Do NOT induce vomiting. Call a physician or poison control centre immediately.
EYES: ..... Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention immediately.
SKIN (DERMAL): ..... Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. In case of persistent skin irritation, consult a physician.
ACUTE SYMPTOMS:..... None under normal use.
DELAYED EFFECTS: ..... None under normal use.
IMMEDIATE OR SPECIAL TREATMENT: ..... None reasonably forseeable.

5 – FIRE-FIGHTING MEASURES

FLASHPOINT:..... Does not flash.
EXTINGUISHING MEDIA:..... Water, water spray, foam, carbon dioxide (CO2), dry powder.
SPECIAL FIRE FIGHTING PROCEDURES: ..... Carbon oxides (COx), nitrogen oxides (NOx). Hydrogen chloride, Hydrogen cyanide (hydrocyanic acid) may be produced in the event of combustion in an oxygen deficient atmosphere.

6 – ACCIDENTAL RELEASE MEASURES

SPILL PROCEDURES:.....Small spills: Do not flush with water. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.
Large spills: Do not flish with water. Dam up. Clean up promptly by scoop or vacuum.
Residues: Soak up wih inert absorbent material. After cleaning, flush away traces with water.
PERSONAL PRECAUTIONS:.... Do not touch or walk through spilled material. Spills produce extremely slippery surfaces.

7 – HANDLING and STORAGE

STORAGE: ..... Keep away from heat and sources of ignition. Freezing will affect the physical condition and may damage the material. Incompatible with oxidizing agents.
HANDLING:..... Avoid contact with skin and eyes. Renders surfaces extremely slippery when spilled. When using, do not eat, drink or smoke.

Safety Data Sheet

8 – EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS: ..... Do not allow uncontrolled discarge of product into the environment.

INGREDIENT	SOURCE & PARAMETER	EXPOSURE LIMIT
Distillates (petroleum) hydrotreated light	ACGIH	200 mg/m3 8 hr

PROTECTIVE CLOTHING: ..... Chemical goggles, face shield, always wear eye protection when working with any chemical. Impervious gloves, clean body covering, rubber apron, rubber boots

ADDITIONAL MEASURES:..... Ensure adequate ventilation, especially in confined areas. Use local exhaust if misting occurs. Natural ventilation is adequate in absence of mists.

9 – PHYSICAL / CHEMICAL PROPERITES

APPEARANCE: ..... Viscous liquid, milky.
ODOR: ..... Aliphatic.
BOILING POINT: .....> 100 (C)
VAPOR PRESSURE:.....2.3 kPa @ 20 (C)
VAPOR DENSITY (AIR=1): .....0.804 g/litre @ 20 (C)
SPECIFIC GRAVITY: 1.0-1.1
pH: .....5-8 @ 5 g/L
SOLUBILITY IN WATER: ..... Completely miscible in water.
FLAMMABILITY: ..... Not Flamable
EVAPORATION RATE:..... No data available.
MELTING POINT/FREEZING POINT: .....< 5 C

10 – STABILITY and REACTIVITY

REACTIVITY: ..... Stable under recommender storage conditions.
STABILITY:..... Stable under recommended storage conditions.
HAZARDOUS POLYMERIZATION: ..... None known.
INCOMPATIBILITY:..... Oxidizing agents.
HAZARDOUS REACTIONS: ..... Protect from frost, heat and sunlight.
HAZARDOUS DECOMP: ..... Thermal decompostion may produce, nitrogen oxides (NOx), carbon oxides (COx). Ammonia, Hydrogen, cyanide (hydrocyanic acid).

Safety Data Sheet

11 – TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE: ..... Skin and/or eye contact. Ingestion. Inhalation.
TOXICOLOGICAL CHARACTERISTICS: ..... The results of testing on rabbits showed this material to be non toxic even at high dose levels.
DELAYED EFFECTS: ..... No know effects.
IMMEDIATE EFFECTS: ..... May cause serious eye irritation.
CHRONIC EFFECTS: ..... Not Known.
LISTED CARCINOGEN: ..... Not carcinogenicity.

INGREDIENTS	DATA
Distillates (petroleum), hydrotreated light	Oral LD50 rat 5000 mg/kg
	Dermal LD50 rabbit 5000 mg/kg
	LC0 Inhalation 4 hours rat 4951 mg/m3
Poly(oxy-1, 2-ethanediyl), a-tridecyl-w-hydroxy-, branched	Inhalation LC50 rat 4951 mg/m3
	Oral LD50 rat 500-2000 mg/kg
	Dermal LD50 rabbit 2000 mg/kg

12 – ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE AND DISTRIBUTION:

PRODUCT	DATA
Distillates (petroleum), hydrotreated light	LC0 oncorhynchus mykiss 96 hrs >1000 mg/L
	EC0 daphnia magna 48 hrs >1000 mg/L
Poly(oxy-1, 2-ethanediyl), a-tridecyl-w-hydroxy-, branched	IC0 pseudokirchneriella subcapitata 72 hrs >1000 mg/L
	LC50 cyprinus carpio 96 hrs 1-10 mg/L
	EC50 daphnia 48 hrs 1-10 mg/L
	IC50 desmodesmus subspicatus 72 hrs 1-10 mg/L

PERSISTENCE AND DEGRADABILITY: ..... Not readily biodegradable.
BIOACCUMULATIVE POTENTIAL: ..... This product is not expected to bioaccumulate.
MOBILITY IN SOIL:..... No data available.
OTHER ADVERSE EFFECTS: .. None.

13 –DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: ..... Dispose of in accordance with all local, state, and federal regulations.

Safety Data Sheet

14 – TRANSPORTATION INFORMATION

PROPER SHIPPING NAME:..... Not Regulated

15 - REGULATIONS

Contents of this MSDS comply with the OSHA Hazard Communication Standard 29CFR 1910.1200

EPA SRA Title III Chemical Listings:

TSCA STATUS: ..... All ingredients listed or exempt.
SECTION 311/312: ..... Not Hazardous.
US EPA CERLA: ..... None Hazardous

16 – OTHER INFORMATION

NFPA HAZARD RANKING

HEALTH	FIRE	REACTIVITY	SPECIAL
0	1	0	

HMIS HAZARD RANKING

HEALTH	FIRE	REACTIVITY	PPE
0	1	0	

Key or legend to abbreviations and acroynyms used:
Acute Tox. 4 – Acute Toxicity Category Code 4
Asp. Tox 1 – Aspiration hazard Category Code 1
Eye Dam 1 – Serious eye damage/eye irritation Category Code 1

Hazard Statements:
H302 – Harmful if swallowed
H304 – May be fatal if swallowed and enters airways
H318 – Causes serious eye damage

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Material Safety Data Sheet

Dober Chemical Corp.
14461 S. Waverly
Midlothian, IL 60445

Product Name: PWR-FLOC CP-7

I. Identification

Revision Date: 9/24/02

Emergency Telephone: 800/323-4983
Information Telephone: 708/388-7700

Chemical Family: Cationic Acrylamide Copolymer Powder
DOT Hazard Class: N/A
DOT Shipping Name: N/A

II. Hazardous Ingredients

Material	%	TWA/Ceiling	CAS#

This product is not hazardous under Federal Regulation 29 CFR 1910.1200.

III. Physical Data

pH: 2.5 – 4.5 @ 5g/l
Melting Point: NA
Vapor Pressure (mmHg): NA
Solubility in Water: 10%
Evaporation Rate: N/A
Appearance and Odor: White granular solid, no odor

IV. Fire and Explosion Hazard Data

Flash Point (Test Method): NA
Flammable Limits in Air (% by volume): Lower= N/A **Upper=** N/A
Extinguishing Media: Water fog, foam, CO_2, dry chemical.
Special Firefighting Procedures: Wear self-contained breathing apparatus. Cool exposed containers with water spray. Aqueous solutions or powders that become wet render surfaces extremely slippery.
Unusual Fire and Explosion Hazards: N/A

Denotes a toxic chemical subject to SARA Title III Section 313 reporting requirements as specified in 40 CFR 372.

V. Reactivity Data

Stability: Stable: XXX **Unstable:**
Conditions to Avoid: N/A
Incompatibility (materials to avoid): Oxidizing agents.
Hazardous Combustion or Decomposition Products: Hydrogen chloride gas, nitrogen oxides and carbon dioxides.
Hazardous Polymerization: May Occur: Will Not Occur: XXX

VI. Health Hazard Data

Toxicity: Product has very low acute toxicity.

Ecotoxicity: Any aquatic toxicity is highly mitigated by hydrolysis as well as the presence of dissolved organic carbon and suspended matter present in natural waters. Tests show that the synergistic effect of hydrolysis and irreversible absorption onto suspended matter and dissolved organics (such as humic and other organic acids) present in natural waters, reduces the toxicity to aquatic organisms by a factor or over 100.

Ingredients Listed as Carcinogenic in NTP, IARC, or OSHA (specify): None

Acute Effects Of Overexposure

Eye Contact: Irritant.

Skin Contact: Irritant.

Inhalation: Not expected to be toxic by inhalation.

Ingestion: See Emergency and First Aid Procedures.

Principal Routes of Absorption: Skin contact, inhalation, eye.

Emergency and First Aid Procedures

Eyes: Rinse thoroughly with plenty of water. In case of persistent eye irritation, get medical attention.
Skin: Wash with water and soap as a precaution. In case of skin irritation, get medical attention.
Inhalation: Move to fresh air. If irritation persists, get medical attention.
Ingestion: No hazards which require special first aid measures.

VII. Spill or Leak Procedures

Steps to be Taken if Material is Released or Spilled: Avoid contaminating water. Do not flush with water. Clean up promptly by scoop or vacuum. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water.

Waste Disposal Method: In accordance with federal, state, and local guidelines.

Persistance/Degradability: Abiotic degradability (hydrolysis) >70% in 28 days.

Environmental Fate: The product has a half-life of less than 12 hours in natural pH environments and so degrades almost totally due to hydrolysis. The degradation products are practically non-toxic to aquatic organisms and present no danger to the natural environment.

Bioaccumulation: This product is not expected to bioaccumulate.

VIII. Special Protection Information

Ventilation Requirements: General exhaust is sufficient when material is used as intended. Use local exhaust if dusting occurs.

Recommended Personal Protective Equipment

Respiratory: Dust safety masks are recommended where concentration of total dust is more than 15 mg/m3.

Eyes: Safety glasses with side shields. Do not wear contact lenses.

Gloves: Impervious.

Other Clothing and Equipment: Other protective clothing depending on degree of exposure. Eyewash and safety shower recommended.

IX. Special Precautions

Precautions to be Taken in Handling and Storing: For good industrial hygiene, avoid contact with skin and eyes, avoid forming dust/mist. Wash hands before breaks and at the end of the work day. Keep in a dry, cool place (0-35˚F).

Other Precautions: For industrial use only.

X. HMIS Ratings:

Health	**1**
Flammability	**0**
Reactivity	**0**
Personal Protection	

All information, recommendations, and suggestions appearing herein concerning this compound are based upon data obtained from the raw material manufacturers and/or recognized technical sources; however, Dober Chemical Corp. makes no warranty, representation, or guarantee as to the accuracy, sufficiency or completeness of the material set forth herein. It is the user's responsibility to determine the safety, toxicity and suitability of his own use, handling and disposal of the product. Since actual use by others is beyond our control, Dober Chemical makes no warranty, express or implied, as to the effects of such use, the results to be obtained or the safety and toxicity of the product. The data in this MSDS relate only to the specific product designated herein and do not relate to use in combination with any other material or in any process.

Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name • **Sodium Hydroxide Solution - 50%**

Synonyms • Solutions of Caustic; Solutions of Caustic Soda; Solutions of Lye; Solutions of Sodium hydrate

CAS Number • 1310-73-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant identified use(s) • Neutralizing agent, industrial cleaning, pulp and bleaching, soap manufacturing

1.3 Details of the supplier of the safety data sheet

Manufacturer • Westlake Vinyls Company, LP
P.O. Box 228
36045 Highway 30 Geismar, LA 70734
United States
www.westlake.com

Telephone (General) • 225-673-0651

1.4 Emergency telephone number

Manufacturer • (800) 424-9300 - Chemtrec - Transportation emergency

Section 2: Hazards Identification

HMIS Rating:	Health: 3	Fire: 0	Reactivity: 1	PPE: X

EU/EEC
According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP • Skin Corrosion 1A - H314

DSD/DPD • Corrosive (C)
R35

2.2 Label Elements

CLP

DANGER

Hazard statements
- H314 - Causes severe skin burns and eye damage.

Precautionary statements

Prevention
- P260 - Do not breathe mist/vapours/spray.
  P264 - Wash thoroughly after handling.
  P280 - Wear protective gloves/protective clothing/eye protection/face protection.

Response
- P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
  P310 - Immediately call a POISON CENTER or doctor/physician.
  P363 - Wash contaminated clothing before reuse.
  P321 - Specific treatment, see supplemental first aid information.
  P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

Storage/Disposal
- P405 - Store locked up.
  P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases
- R35 - Causes severe burns.

Safety phrases
- S36 - Wear suitable protective clothing.
  S37 - Wear suitable gloves.
  S39 - Wear eye/face protection.
  S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

2.3 Other Hazards

CLP
- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD
- This product is considered dangerous according to the European Directive 67/548/EEC.

Canada
According to WHMIS

2.1 Classification of the substance or mixture

WHMIS • Corrosive - E

2.2 Label elements

WHMIS

- Corrosive – E

2.3 Other hazards

WHMIS • In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances

Composition				
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**
Sodium hydroxide	**CAS:**1310-73-2 **EC Number:**215-185-5 **EU Index:**011-002-00-6	50%	NDA	**EU DSD/DPD:** Annex VI, Table 3.2: C R35 **EU CLP:** Annex VI, Table 3.1: Skin Corr. 1A, H314 **OSHA HCS 2012:** Skin Corr. 1B; Eye Dam. 1

3.2 Mixtures

- Material does not meet the criteria of a mixture in accordance with Regulation (EC) No 1272/2008.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation • Administer oxygen if breathing is difficult. Do not use mouth-to-mouth method if victim inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Give artificial respiration if victim is not breathing. Move victim to fresh air.

Skin • For minor skin contact, avoid spreading material on unaffected skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing and shoes.

Eye • In case of contact with substance, immediately flush eyes with running water for at least 20 minutes.

Ingestion • If swallowed, rinse mouth with water (only if the person is conscious) Do NOT induce vomiting. Do not use mouth-to-mouth method if victim ingested the substance. Obtain medical attention immediately if ingested.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician • All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media • In case of fire use media as appropriate for surrounding fire.

Unsuitable Extinguishing Media
- No data available

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- In contact with moisture or water sufficient heat may be generated to ignite adjacent combustible materials.
  Sodium hydroxide solutions can react violently when in contact with chlorinated hydrocarbons and metals such as aluminum, zinc or materials galvanized with zinc with resultant generation of hydrogen.

Hazardous Combustion Products
- Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive fumes.

5.3 Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
  Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
  Wear positive pressure self-contained breathing apparatus (SCBA).
  SMALL FIRES: Move containers from fire area if you can do it without risk.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions
- Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate enclosed areas.

Emergency Procedures
- Keep unauthorized personnel away. Stay upwind. Do not get water inside container.

6.2 Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures
- Absorb with earth, sand or other non-combustible material.
  Transfer the spilled material to caustic resistant containers labeled: CORROSIVE
  With careful handling, dilute acid, preferable acetic acid, may be used to neutralize final traces of caustic.
  Flush the cleaned area with water.
  LARGE SPILLS: Dike far ahead of liquid spill for later disposal.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling
- Handle and open container with care. Use only with adequate ventilation. Use caution when combining with water; DO NOT add water to corrosive liquid, ALWAYS add corrosive liquid to water while stirring to prevent release of heat, steam and fumes. Wear appropriate personal protective equipment, avoid direct contact. Do not breathe mist, vapours and/or spray. Do not get in eyes, on skin, or on clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage
- Keep container tightly closed. Store in a cool/low-temperature, well-ventilated place. Store separate from the normal work area and away from materials that react with sodium hydroxide. Use corrosion resistant structural materials and lighting and ventilation systems in the storage area.

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines				
	Result	**ACGIH**	**NIOSH**	**OSHA**
Sodium hydroxide (1310-73-2)	TWAs	Not established	Not established	2 mg/m3 TWA
	Ceilings	2 mg/m3 Ceiling	2 mg/m3 Ceiling	Not established

8.2 Exposure controls

Engineering Measures/Controls
- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal Protective Equipment

Respiratory
- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

Eye/Face
- Wear eye/face protection - Chemical goggles, - Full face shield.

Skin/Body
- Wear appropriate gloves. Wear protective clothing

Environmental Exposure Controls
- Follow best practice for site management and disposal of waste.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene
NIOSH = National Institute of Occupational Safety and Health
OSHA = Occupational Safety and Health Administration
TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Liquid	Appearance/Description	Colorless to gray, syrupy liquid with a mild, pungent odor.
Color	Colorless to gray.	Odor	Mild, slightly pungent.
Odor Threshold	Data lacking		
General Properties			
Boiling Point	148 C(298.4 F)	Melting Point	Data lacking
Decomposition Temperature	Data lacking	pH	14
Specific Gravity/Relative Density	1.49 Water=1 @ 65.6 C(150.08 F)	Water Solubility	Soluble
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	19 mmHg (torr) @ 65.5 F(18.6111 C)	Vapor Density	Data lacking
Evaporation Rate	Data lacking	Volatiles (Vol.)	50 %
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Not relevant.		

Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Incompatible materials. Excess heat.

10.5 Incompatible materials

- This product reacts with water generating heat. This product reacts violently or explosively with chlorinated hydrocarbons. It attacks leather and wool resulting in destruction of those materials and possible chemical exposure to the individual. Caustic solutions can generate hydrogen gas on contact with aluminum, zinc or materials galvanized with zinc.

10.6 Hazardous decomposition products

- No data available.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Sodium Hydroxide Solution - 50% 1310-73-2								
Test Type	**Dosage**	**Route**	**Species**	**Duration**	**Results**	**Test Class**	**Target Organs**	**Comments**
Irritation	= 1 %	Eye	Rabbit	NDA	NDA	Severe irritation, reversible	NDA	NDA
Irritation	= 500 mg	Skin	Rabbit	24 Hour(s)	NDA	Severe irritation, reversible	NDA	NDA

GHS Properties	Classification
Acute toxicity	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met
Aspiration Hazard	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met
Carcinogenicity	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met
Germ Cell Mutagenicity	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met
Skin corrosion/Irritation	**EU/CLP**•Skin Corrosion 1A **OSHA HCS 2012**•Skin Corrosion 1B
Skin sensitization	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met
STOT-RE	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met

STOT-SE	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met
Toxicity for Reproduction	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met
Respiratory sensitization	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Classification criteria not met
Serious eye damage/Irritation	**EU/CLP**•Classification criteria not met **OSHA HCS 2012**•Serious Eye Damage 1

Route(s) of entry/exposure
- Inhalation, Skin, Eye, Ingestion

Potential Health Effects

Inhalation

Acute (Immediate)
- May cause corrosive burns - irreversible damage.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.

Skin

Acute (Immediate)
- Causes severe skin burns and eye damage.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials will cause dermatitis.

Eye

Acute (Immediate)
- Causes serious eye damage.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

Ingestion

Acute (Immediate)
- May cause irreversible damage to mucous membranes.

Chronic (Delayed)
- Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal distrubances.

Section 12 - Ecological Information

12.1 Toxicity

Sodium Hydroxide Solution - 50%			1310-73-2		
Dosage	**Species**	**Duration**	**Results**	**Exposure Conditions**	**Comments**
144 to 276 mg/L	**Fish:** Poecilia reticulata (Guppy)	96 Hour(s)	LC50	NDA	NDA
= 125 mg/L	**Fish:** Gambusia affinis (Western mosquito fish)	96 Hour(s)	LC50	NDA	NDA

12.2 Persistence and degradability
- Material data lacking.

12.3 Bioaccumulative potential
- Material data lacking.

12.4 Mobility in Soil
- Material data lacking.

12.5 Results of PBT and vPvB assessment
- PBT and vPvB assessment has not been carried out.

12.6 Other adverse effects
- No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste
- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN1824	Sodium hydroxide solution	8	II	NDA
TDG	UN1824	SODIUM HYDROXIDE SOLUTION	8	II	NDA
IMO/IMDG	UN1824	SODIUM HYDROXIDE SOLUTION	8	II	NDA
IATA/ICAO	UN1824	Sodium hydroxide solution	8	II	NDA

14.6 Special precautions for user
- None specified.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
- Data lacking.

Section 15 - Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications
- Acute

Inventory						
Component	**CAS**	**Australia AICS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**
Sodium hydroxide	1310-73-2	Yes	Yes	No	Yes	Yes

Inventory (Con't.)						
Component	**CAS**	**EU ELNICS**	**Japan ENCS**	**Korea KECL**	**New Zealand**	**Philippines PICCS**
Sodium hydroxide	1310-73-2	No	Yes	Yes	Yes	Yes

Inventory (Con't.)		
Component	**CAS**	**TSCA**
Sodium hydroxide	1310-73-2	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

•Sodium hydroxide	1310-73-2	E (including 0.04% in aqueous solution, 0.08%, 0.4% in aqueous solution, 2%, 2.5%, 4% in aqueous solution, 5%, 10%, 16%, 20%, 40%, 50% in aqueous solution, 8.7N)

Canada - WHMIS - Ingredient Disclosure List

•Sodium hydroxide	1310-73-2	1 %

Environment

Canada - CEPA - Priority Substances List

•Sodium hydroxide	1310-73-2	Not Listed

Europe

Other

EU - Hazardous Substances Restricted or Prohibited in Electrical Equipment (2011/65/EU) (RoHS)

•Sodium hydroxide	1310-73-2	Not Listed

EU - Inventory of Cosmetic Ingredients Directive (INCI) (76/768/EEC) - Other Ingredients

•Sodium hydroxide	1310-73-2	Buffering; Denaturant

Japan

Environment

Japan - Pollutant Release Transfer Register (PRTR) - Class 1 Substances

•Sodium hydroxide	1310-73-2	Not Listed

Japan - Pollutant Release Transfer Register (PRTR) - Class 2 Substances

•Sodium hydroxide	1310-73-2	Not Listed

Inventory - Japan - Industrial Safety and Health Law Substances (ISHL)

•Sodium hydroxide	1310-73-2	Not Listed

Other Agency Information

Other

CONEG - Model Toxics in Packaging Legislation

•Sodium hydroxide	1310-73-2	Not Listed

United States

Labor

U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

•Sodium hydroxide	1310-73-2	Not Listed

Environment

U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - CAA (Clean Air Act) - Class I Ozone Depletors

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - CAA (Clean Air Act) - Class II Ozone Depletors

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

•Sodium hydroxide	1310-73-2	1000 lb final RQ; 454 kg final RQ

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - TSCA (Toxic Substances Control Act) - Section 12(b) - Export Notification

•Sodium hydroxide	1310-73-2	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - California - Proposition 65 - Developmental Toxicity

•Sodium hydroxide	1310-73-2	Not Listed

U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
•Sodium hydroxide	1310-73-2	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
•Sodium hydroxide	1310-73-2	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
•Sodium hydroxide	1310-73-2	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
•Sodium hydroxide	1310-73-2	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Last Revision Date	• 24/July/2020
Preparation Date	• 05/May/2015
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Key to abbreviations

NDA = No data available

Attachment 5

Revised Water Level Tables, to include Kingston Mine Illinois River Guage

Revised FAB Water Level Data Tables

Table 9-3 (revised). Groundwater Elevations for FAB Wells- Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-01 up-gradient	11/16/2015	465.24	26.04	439.20	4.38	431.55
	2/22/2016	465.24	21.90	443.34	7.97	435.14
	5/16/2016	465.24	21.83	443.41	14.53	441.7
	8/15/2016	465.24	23.89	441.35	7.11	434.28
	11/14/2016	465.24	23.38	441.86	6.35	433.52
	2/13/2017	465.24	21.71	443.53	N/A	N/A
	5/1/2017	465.24	18.87	446.37	17.09	444.26
	6/20/2017	465.24	21.54	443.70	11.93	439.1
	8/25/2017	465.24	24.70	440.54	3.86	431.03
	11/8/2017	465.24	24.92	440.32	6.89	434.06
	5/17/2018	465.24	22.66	442.58	9.93	437.1
	8/8/2018	465.24	26.05	439.19	2.13	429.3
	10/30/2018	465.24	24.69	440.55	4.21	431.38
	2/25/2019	465.24	19.44	445.80	16.74	443.91
	4/29/2019	465.24	20.15	445.09	14.04	441.21
	8/26/2019	465.24	23.85	441.39	3.61	430.78
	2/24/2020	465.24	20.71	444.53	12.84	440.01
	4/27/2020	465.24	20.90	444.34	12.64	439.81
	12/7/2020	465.24	25.69	439.55	2.97	430.14
	2/22/2021	465.24	25.18	440.06	6.21	433.38
	4/7/2021	465.24	22.20	443.04	10.23	437.4
	5/10/2021	465.24	23.41	441.83	10.71	437.88
	6/2/2021	465.24	22.00	443.24	10.7	437.87
	6/28/2021	465.24	23.18	442.06	12.11	439.28
	7/19/2021	465.24	20.43	444.81	15.06	442.23
	8/23/2021	465.24	24.42	440.82	3.49	430.66
	9/30/2021	465.24	26.89	438.35	2.49	429.66
	10/27/2021	465.24	24.53	440.71	13.08	440.25
	11/29/2021	465.24	23.31	441.93	5.17	432.34
	12/30/2021	465.24	24.31	440.93	6.68	433.85
	1/6/2022	465.24	24.86	440.38	6.45	433.62
	2/7/2022	465.24	25.57	439.67	4.4	431.57
	3/1/2022	465.24	21.96	443.28	16.04	443.21
	4/22/2022	465.24	20.03	445.21	N/A	N/A
	5/24/2022	465.24	21.37	443.87	11.42	438.59
	6/6/2022	465.24	22.13	443.11	8.21	435.38
	7/25/2022	465.24	25.48	439.76	5.36	432.53
	8/29/2022	465.24	27.53	437.71	2.55	429.72
	9/28/2022	465.24	28.58	436.66	2.37	429.54
	10/26/2022	465.24	29.75	435.49	4.36	431.53
	11/14/2022	465.24	29.58	435.66	3.2	430.37
	12/28/2022	465.24	26.63	438.61	N/A	N/A
	1/24/2023	465.24	27.91	437.33	7.29	434.46
	2/20/2023	465.24	26.94	438.30	7.6	434.77
	3/28/2023	465.24	21.74	443.50	14.9	442.07
	4/25/2023	465.24	22.22	443.02	9.4	436.57
	5/15/2023	465.24	23.91	441.33	8.78	435.95
	6/26/2023	465.24	28.66	436.58	2.42	429.59
	7/25/2023	465.24	28.06	437.18	3.67	430.84
	8/28/2023	465.24	28.85	436.39	3.26	430.43
	9/27/2023	465.24	29.42	435.82	3.35	430.52
	10/27/2023	465.24	29.16	436.08	3.98	431.15
	11/6/2023	465.24	29.23	436.01	3.65	430.82
	12/21/2023	465.24	29.21	436.03	6.12	433.29

Table 9-3 (revised). Groundwater Elevations for FAB Wells- Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-02 down-gradient	6/20/2017	462.60	22.04	440.56	11.93	439.1
	8/23/2017	462.60	28.42	434.18	3.86	431.03
	11/7/2017	462.60	26.08	436.52	6.89	434.06
	5/17/2018	462.60	23.26	439.34	9.93	437.1
	8/7/2018	462.60	29.70	432.90	2.13	429.3
	10/30/2018	462.60	26.77	435.83	4.21	431.38
	2/25/2019	462.60	17.02	445.58	16.74	443.91
	4/29/2019	462.60	19.26	443.34	14.04	441.21
	8/26/2019	462.60	27.45	435.15	3.61	430.78
	2/24/2020	462.60	20.35	442.25	12.84	440.01
	4/27/2020	462.60	20.51	442.09	12.64	439.81
	12/7/2020	462.60	28.71	433.89	2.97	430.14
	2/22/2021	462.60	25.90	436.70	6.21	433.38
	4/7/2021	462.60	21.95	440.65	10.23	437.4
	5/10/2021	462.60	23.01	439.59	10.71	437.88
	6/2/2021	462.60	21.74	440.86	10.7	437.87
	6/28/2021	462.60	22.24	440.36	12.11	439.28
	7/19/2021	462.60	18.66	443.94	15.06	442.23
	8/23/2021	462.60	27.95	434.65	3.49	430.66
	9/30/2021	462.60	30.44	432.16	2.49	429.66
	10/27/2021	462.60	22.74	439.86	13.08	**440.25**
	11/29/2021	462.60	25.57	437.03	5.17	432.34
	12/30/2021	462.60	25.11	437.49	6.68	433.85
	1/6/2022	462.60	24.96	437.64	6.45	433.62
	2/7/2022	462.60	27.47	435.13	4.4	431.57
	3/1/2022	462.60	18.06	444.54	16.04	443.21
	4/22/2022	462.60	18.63	443.97	N/A	N/A
	5/24/2022	462.60	21.44	441.16	11.42	438.59
	6/6/2022	462.60	21.14	441.46	8.21	435.38
	7/25/2022	462.60	29.28	433.32	5.36	432.53
	8/29/2022	462.60	30.28	432.32	2.55	429.72
	9/28/2022	462.60	31.81	430.79	2.37	429.54
	10/26/2022	462.60	32.84	429.76	4.36	**431.53**
	11/14/2022	462.60	32.03	430.57	3.2	430.37
	12/28/2022	462.60	29.35	433.25	N/A	N/A
	1/24/2023	462.60	28.25	434.35	7.29	**434.46**
	2/20/2023	462.60	27.12	435.48	7.6	434.77
	3/28/2023	462.60	19.46	443.14	14.9	442.07
	4/25/2023	462.60	22.50	440.10	9.4	436.57
	5/15/2023	462.60	24.26	438.34	8.78	435.95
	6/26/2023	462.60	31.12	431.48	2.42	429.59
	7/25/2023	462.60	30.16	432.44	3.67	430.84
	8/28/2023	462.60	31.25	431.35	3.26	430.43
	9/27/2023	462.60	31.46	431.14	3.35	430.52
	10/27/2023	462.60	30.02	432.58	3.98	431.15
	11/6/2023	462.60	30.52	432.08	3.65	430.82
	12/21/2023	462.60	30.44	432.16	6.12	**433.29**

Table 9-3 (revised). Groundwater Elevations for FAB Wells- Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-03 down- gradient	6/20/2017	462.48	22.31	440.17	11.93	439.1
	8/23/2017	462.48	28.18	434.30	3.86	431.03
	11/7/2017	462.48	25.38	437.10	6.89	434.06
	5/17/2018	462.48	22.62	439.86	9.93	437.1
	8/7/2018	462.48	29.17	433.31	2.13	429.3
	10/30/2018	462.48	24.71	437.77	4.21	431.38
	2/25/2019	462.48	17.20	445.28	16.74	443.91
	4/29/2019	462.48	18.85	443.63	14.04	441.21
	8/26/2019	462.48	27.65	434.83	3.61	430.78
	2/24/2020	462.48	20.18	442.30	12.84	440.01
	4/27/2020	462.48	20.43	442.05	12.64	439.81
	12/7/2020	462.48	28.61	433.87	2.97	430.14
	2/22/2021	462.48	23.48	439.00	6.21	433.38
	4/7/2021	462.48	21.73	440.75	10.23	437.4
	5/10/2021	462.48	22.98	439.50	10.71	437.88
	6/2/2021	462.48	21.53	440.95	10.7	437.87
	6/28/2021	462.48	21.98	440.50	12.11	439.28
	7/19/2021	462.48	18.35	444.13	15.06	442.23
	8/23/2021	462.48	27.85	434.63	3.49	430.66
	9/30/2021	462.48	30.32	432.16	2.49	429.66
	10/27/2021	462.48	22.34	440.14	13.08	**440.25**
	11/29/2021	462.48	22.86	439.62	5.17	432.34
	12/30/2021	462.48	23.14	439.34	6.68	433.85
	1/6/2022	462.48	23.13	439.34	6.45	433.62
	2/7/2022	462.48	24.08	438.40	4.4	431.57
	3/1/2022	462.48	18.92	443.56	16.04	443.21
	4/22/2022	462.48	17.98	444.50	N/A	N/A
	5/24/2022	462.48	21.14	441.34	11.42	438.59
	6/6/2022	462.48	22.50	439.98	8.21	435.38
	7/25/2022	462.48	29.11	433.37	5.36	432.53
	8/29/2022	462.48	30.31	432.17	2.55	429.72
	9/28/2022	462.48	32.27	430.21	2.37	429.54
	10/26/2022	462.48	33.83	428.65	4.36	**431.53**
	11/14/2022	462.48	33.51	428.97	3.2	**430.37**
	12/28/2022	462.48	30.21	432.27	N/A	N/A
	1/24/2023	462.48	30.19	432.29	7.29	**434.46**
	2/20/2023	462.48	28.45	434.03	7.6	**434.77**
	3/28/2023	462.48	19.55	442.93	14.9	442.07
	4/25/2023	462.48	22.15	440.33	9.4	436.57
	5/15/2023	462.48	23.46	439.02	8.78	435.95
	6/26/2023	462.48	31.47	431.01	2.42	429.59
	7/25/2023	462.48	30.42	432.06	3.67	430.84
	8/28/2023	462.48	31.29	431.19	3.26	430.43
	9/27/2023	462.48	32.32	430.16	3.35	**430.52**
	10/27/2023	462.48	31.72	430.76	3.98	**431.15**
	11/6/2023	462.48	31.45	431.03	3.65	430.82
	12/21/2023	462.48	31.50	430.98	6.12	**433.29**

Table 9-3 (revised). Groundwater Elevations for FAB Wells- Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-04 down-gradient	6/20/2017	460.57	22.15	438.42	11.93	**439.1**
	8/28/2017	460.57	28.49	432.08	3.86	431.03
	11/7/2017	460.57	25.62	434.95	6.89	434.06
	5/17/2018	460.57	24.13	436.44	9.93	**437.1**
	8/7/2018	460.57	29.23	431.34	2.13	429.3
	10/30/2018	460.57	26.58	433.99	4.21	431.38
	2/25/2019	460.57	15.45	445.12	16.74	443.91
	4/29/2019	460.57	15.88	444.69	14.04	441.21
	8/26/2019	460.57	27.35	433.22	3.61	430.78
	2/24/2020	460.57	19.81	440.76	12.84	440.01
	4/27/2020	460.57	19.76	440.81	12.64	439.81
	12/7/2020	460.57	28.50	432.07	2.97	430.14
	2/22/2021	460.57	26.44	434.13	6.21	433.38
	4/7/2021	460.57	21.90	438.67	10.23	437.4
	5/10/2021	460.57	23.92	436.65	10.71	**437.88**
	6/2/2021	460.57	21.41	439.16	10.7	437.87
	6/28/2021	460.57	22.40	438.17	12.11	**439.28**
	7/19/2021	460.57	17.22	443.35	15.06	442.23
	8/23/2021	460.57	27.81	432.76	3.49	430.66
	9/30/2021	460.57	30.01	430.56	2.49	429.66
	10/27/2021	460.57	22.29	438.28	13.08	**440.25**
	11/29/2021	460.57	25.83	434.74	5.17	432.34
	12/30/2021	460.57	25.79	434.78	6.68	433.85
	1/6/2022	460.57	25.30	435.27	6.45	433.62
	2/7/2022	460.57	27.95	432.62	4.4	431.57
	3/1/2022	460.57	16.63	443.94	16.04	443.21
	4/22/2022	460.57	16.81	443.76	N/A	N/A
	5/24/2022	460.57	20.89	439.68	11.42	438.59
	6/6/2022	460.57	22.89	437.68	8.21	435.38
	7/25/2022	460.57	29.18	431.39	5.36	**432.53**
	8/29/2022	460.57	29.71	430.86	2.55	429.72
	9/28/2022	460.57	31.42	429.15	2.37	**429.54**
	10/26/2022	460.57	32.38	428.19	4.36	**431.53**
	11/14/2022	460.57	32.80	427.77	3.2	**430.37**
	12/28/2022	460.57	29.21	431.36	N/A	N/A
	1/24/2023	460.57	27.79	432.78	7.29	**434.46**
	2/20/2023	460.57	26.46	434.11	7.6	**434.77**
	3/28/2023	460.57	17.49	443.08	14.9	442.07
	4/25/2023	460.57	22.01	438.56	9.4	436.57
	5/15/2023	460.57	24.29	436.28	8.78	435.95
	6/26/2023	460.57	30.13	430.44	2.42	429.59
	7/25/2023	460.57	29.88	430.69	3.67	**430.84**
	8/28/2023	460.57	30.60	429.97	3.26	**430.43**
	9/27/2023	460.57	30.90	429.67	3.35	**430.52**
	10/27/2023	460.57	28.72	431.85	3.98	431.15
	11/6/2023	460.57	29.99	430.58	3.65	**430.82**
	12/21/2023	460.57	30.02	430.55	6.12	**433.29**

Table 9-3 (revised). Groundwater Elevations for FAB Wells- Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-05 down-gradient	11/16/2015	458.58	26.39	432.19	4.38	431.55
	2/22/2016	458.66	21.12	437.54	7.97	435.14
	5/16/2016	458.66	16.58	442.08	14.53	441.7
	8/15/2016	458.66	23.59	435.07	7.11	434.28
	11/14/2016	458.66	22.72	435.94	6.35	433.52
	2/13/2017	458.66	19.13	439.53	N/A	N/A
	5/1/2017	458.66	13.09	445.57	17.09	444.26
	6/20/2017	458.66	19.43	439.15	11.93	439.1
	8/28/2017	458.66	25.38	433.20	3.86	431.03
	11/7/2017	458.66	22.91	435.67	6.89	434.06
	5/17/2018	458.66	21.54	437.04	9.93	**437.1**
	8/7/2018	458.66	26.17	432.41	2.13	429.3
	10/30/2018	458.66	23.97	434.61	4.21	431.38
	2/25/2019	458.66	13.21	445.45	16.74	443.91
	4/29/2019	458.66	15.40	443.26	14.04	441.21
	8/26/2019	458.66	24.35	434.31	3.61	430.78
	2/24/2020	458.66	17.25	441.41	12.84	440.01
	4/27/2020	458.66	17.41	441.25	12.64	439.81
	12/7/2020	458.66	25.65	433.01	2.97	430.14
	2/22/2021	458.66	23.82	434.84	6.21	433.38
	4/7/2021	458.66	19.40	439.26	10.23	437.4
	5/10/2021	458.66	21.38	437.28	10.71	**437.88**
	6/2/2021	458.66	18.99	439.67	10.7	437.87
	6/28/2021	458.66	22.20	436.46	12.11	**439.28**
	7/19/2021	458.66	14.98	443.68	15.06	442.23
	8/23/2021	458.66	24.85	433.81	3.49	430.66
	9/30/2021	458.66	26.98	431.68	2.49	429.66
	10/27/2021	458.66	20.00	438.66	13.08	**440.25**
	11/29/2021	458.66	23.13	435.53	5.17	432.34
	12/30/2021	458.66	23.20	435.46	6.68	433.85
	1/6/2022	458.66	22.80	435.86	6.45	433.62
	2/7/2022	458.66	25.22	433.44	4.4	431.57
	3/1/2022	458.66	14.52	444.14	16.04	443.21
	4/22/2022	458.66	14.59	444.07	N/A	N/A
	5/24/2022	458.66	18.32	440.34	11.42	438.59
	6/6/2022	458.66	17.06	441.60	8.21	435.38
	7/25/2022	458.66	26.02	432.64	5.36	432.53
	8/29/2022	458.66	26.70	431.96	2.55	429.72
	9/28/2022	458.66	28.10	430.56	2.37	429.54
	10/26/2022	458.66	28.96	429.70	4.36	**431.53**
	11/14/2022	458.66	28.44	430.22	3.2	**430.37**
	12/28/2022	458.66	26.04	432.62	N/A	N/A
	1/24/2023	458.66	24.93	433.73	7.29	**434.46**
	2/20/2023	458.66	23.72	434.94	7.6	434.77
	3/28/2023	458.66	16.49	442.17	14.9	442.07
	4/25/2023	458.66	19.50	439.16	9.4	436.57
	5/15/2023	458.66	21.71	436.95	8.78	435.95
	6/26/2023	458.66	27.11	431.55	2.42	429.59
	7/25/2023	458.66	26.76	431.90	3.67	430.84
	8/28/2023	458.66	27.46	431.20	3.26	430.43
	9/27/2023	458.66	27.73	430.93	3.35	430.52
	10/27/2023	458.66	26.00	432.66	3.98	431.15
	11/6/2023	458.66	26.98	431.68	3.65	430.82
	12/21/2023	458.66	26.91	431.75	6.12	**433.29**

Table 9-3 (revised). Groundwater Elevations for FAB Wells- Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-10 up-gradient	6/22/2017	457.31	13.46	443.85	N/A	N/A
	8/24/2017	457.31	16.39	440.92	3.79	430.96
	11/9/2017	457.31	16.86	440.45	6.7	433.87
	5/16/2018	457.31	14.88	442.43	9.67	436.84
	8/8/2018	457.31	17.88	439.43	2.13	429.3
	10/30/2018	457.31	17.04	440.27	4.21	431.38
	2/25/2019	457.31	11.28	446.03	16.74	443.91
	4/29/2019	457.31	11.88	445.43	14.04	441.21
	8/26/2019	457.31	15.89	441.42	3.61	430.78
	2/24/2020	457.31	12.64	444.67	12.84	440.01
	4/27/2020	457.31	12.75	444.56	12.64	439.81
	12/7/2020	457.31	17.80	439.51	2.97	430.14
	2/22/2021	457.31	17.25	440.06	6.21	433.38
	4/7/2021	457.31	14.21	443.10	10.23	437.4
	5/10/2021	457.31	15.58	441.73	10.71	437.88
	6/2/2021	457.31	13.98	443.33	10.7	437.87
	6/28/2021	457.31	15.28	442.03	12.11	439.28
	7/19/2021	457.31	12.30	445.01	15.06	442.23
	8/23/2021	457.31	16.61	440.70	3.49	430.66
	9/30/2021	457.31	18.67	438.64	2.49	429.66
	10/25/2021	457.31	16.23	441.08	10.56	437.73
	11/29/2021	457.31	15.52	441.79	5.17	432.34
	12/30/2021	457.31	16.50	440.81	6.68	433.85
	1/6/2022	457.31	16.82	440.49	6.45	433.62
	2/7/2022	457.31	17.70	439.61	4.4	431.57
	3/1/2022	457.31	13.77	443.54	16.04	443.21
	4/22/2022	457.31	11.80	445.51	N/A	N/A
	5/24/2022	457.31	13.20	444.11	11.42	438.59
	6/6/2022	457.31	14.07	443.24	8.21	435.38
	7/25/2022	457.31	17.53	439.78	5.36	432.53
	8/29/2022	457.31	19.08	438.23	2.55	429.72
	9/28/2022	457.31	20.16	437.15	2.37	429.54
	10/26/2022	457.31	21.23	436.08	4.36	431.53
	11/14/2022	457.31	21.06	436.25	3.2	430.37
	12/28/2022	457.31	18.71	438.60	N/A	N/A
	1/24/2023	457.31	19.50	437.81	7.29	434.46
	2/20/2023	457.31	18.65	438.66	7.6	434.77
	3/28/2023	457.31	13.66	443.65	14.9	442.07
	4/25/2023	457.31	14.14	443.17	9.4	436.57
	5/15/2023	457.31	15.90	441.41	8.78	435.95
	6/26/2023	457.31	20.10	437.21	2.42	429.59
	7/25/2023	457.31	19.69	437.62	3.67	430.84
	8/28/2023	457.31	20.38	436.93	3.26	430.43
	9/28/2023	457.31	20.93	436.38	3.35	430.52
	10/27/2023	457.31	20.67	436.64	3.98	431.15
	11/6/2023	457.31	20.81	436.50	3.65	430.82
	12/21/2023	457.31	20.80	436.51	6.12	433.29

Notes: Elevations are in feet above mean sea level and Depths are in feet below top of casing.
* - Data obtained from USGS Kingston Mine Gage
MSL - Mean Sea Level
TOC - Top of Casing
BOLD- River elevation above groundwater elevation

Revised ABB/ASB Water Level Data Tables

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-01 up-gradient	11/16/2015	465.24	26.04	439.20	4.38	431.55
	2/22/2016	465.24	21.90	443.34	7.97	435.14
	5/16/2016	465.24	21.83	443.41	14.53	441.7
	8/15/2016	465.24	23.89	441.35	7.11	434.28
	11/14/2016	465.24	23.38	441.86	6.35	433.52
	2/13/2017	465.24	21.71	443.53	N/A	N/A
	5/1/2017	465.24	18.87	446.37	17.09	444.26
	6/20/2017	465.24	21.54	443.70	11.93	439.1
	8/25/2017	465.24	24.70	440.54	3.86	431.03
	11/8/2017	465.24	24.92	440.32	6.89	434.06
	5/17/2018	465.24	22.66	442.58	9.93	437.1
	8/8/2018	465.24	26.05	439.19	2.13	429.3
	10/30/2018	465.24	24.69	440.55	4.21	431.38
	4/29/2019	465.24	20.15	445.09	14.04	441.21
	11/11/2019	465.24	19.49	445.75	15.92	443.09
	4/27/2020	465.24	20.90	444.34	12.64	439.81
	12/7/2020	465.24	25.69	439.55	2.97	430.14
	2/22/2021	465.24	25.18	440.06	6.21	433.38
	4/7/2021	465.24	22.20	443.04	10.23	437.4
	5/10/2021	465.24	23.41	441.83	10.71	437.88
	6/2/2021	465.24	22.00	443.24	10.7	437.87
	6/28/2021	465.24	23.18	442.06	12.11	439.28
	7/19/2021	465.24	20.43	444.81	15.06	442.23
	8/23/2021	465.24	24.42	440.82	3.49	430.66
	9/30/2021	465.24	26.89	438.35	2.49	429.66
	10/27/2021	465.24	24.53	440.71	13.08	440.25
	11/29/2021	465.24	23.31	441.93	5.17	432.34
	12/30/2021	465.24	24.31	440.93	6.68	433.85
	1/6/2022	465.24	24.86	440.38	6.45	433.62
	2/7/2022	465.24	25.57	439.67	4.4	431.57
	3/1/2022	465.24	21.96	443.28	16.04	443.21
	4/22/2022	465.24	20.03	445.21	N/A	N/A
	5/24/2022	465.24	21.37	443.87	11.42	438.59
	6/6/2022	465.24	22.13	443.11	8.21	435.38
	7/25/2022	465.24	25.48	439.76	5.36	432.53
	8/29/2022	465.24	27.53	437.71	2.55	429.72
	9/28/2022	465.24	28.58	436.66	2.37	429.54
	10/26/2022	465.24	29.75	435.49	4.36	431.53
	11/14/2022	465.24	29.58	435.66	3.2	430.37
	12/28/2022	465.24	26.63	438.61	N/A	N/A
	1/24/2023	465.24	27.91	437.33	7.29	434.46
	2/20/2023	465.24	26.94	438.30	7.6	434.77
	3/28/2023	465.24	21.74	443.50	14.9	442.07
	4/25/2023	465.24	22.22	443.02	9.4	436.57
	5/15/2023	465.24	23.91	441.33	8.78	435.95
	6/26/2023	465.24	28.66	436.58	2.42	429.59
	7/25/2023	465.24	28.06	437.18	3.67	430.84
	8/28/2023	465.24	28.85	436.39	3.26	430.43
	9/28/2023	465.24	29.42	435.82	3.35	430.52
	10/27/2023	465.24	29.16	436.08	3.98	431.15
	11/6/2023	465.24	29.23	436.01	3.65	430.82
	12/21/2023	465.24	29.21	436.03	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-08 down-gradient	11/16/2015	471.75	26.06	445.69	4.38	431.55
	2/22/2016	471.75	23.99	447.76	7.97	435.14
	5/16/2016	471.75	25.48	446.27	14.53	441.7
	8/15/2016	471.75	23.61	448.14	7.11	434.28
	11/14/2016	471.75	24.31	447.44	6.35	433.52
	2/13/2017	471.75	23.97	447.78	N/A	N/A
	5/1/2017	471.75	23.28	448.47	17.09	444.26
	6/20/2017	471.75	23.31	448.44	11.93	439.1
	8/29/2017	471.75	24.52	447.23	3.86	431.03
	11/8/2017	471.75	25.27	446.48	6.89	434.06
	5/17/2018	471.75	24.36	447.39	9.93	437.1
	8/8/2018	471.75	24.04	447.71	2.13	429.3
	10/31/2018	471.75	24.92	446.83	4.21	431.38
	4/29/2019	471.75	24.28	447.47	14.04	441.21
	11/11/2019	471.75	24.24	447.51	15.92	443.09
	4/27/2020	471.75	24.50	447.25	12.64	439.81
	12/7/2020	471.75	25.35	446.40	2.97	430.14
	2/22/2021	471.75	24.70	447.05	6.21	433.38
	4/7/2021	471.75	24.88	446.87	10.23	437.4
	5/10/2021	471.75	24.75	447.00	10.71	437.88
	6/2/2021	471.75	24.25	447.50	10.7	437.87
	6/28/2021	471.75	24.79	446.96	12.11	439.28
	7/19/2021	471.75	24.33	447.42	15.06	442.23
	8/23/2021	471.75	24.85	446.90	3.49	430.66
	9/30/2021	471.75	25.28	446.47	2.49	429.66
	10/25/2021	471.75	25.30	446.45	13.08	440.25
	11/29/2021	471.75	25.10	446.65	5.17	432.34
	12/30/2021	471.75	25.52	446.23	6.68	433.85
	1/6/2022	471.75	25.59	446.16	6.45	433.62
	2/7/2022	471.75	26.70	445.05	4.4	431.57
	3/1/2022	471.75	25.51	446.24	16.04	443.21
	4/22/2022	471.75	24.74	447.01	N/A	N/A
	5/24/2022	471.75	24.97	446.78	11.42	438.59
	6/6/2022	471.75	25.04	446.71	8.21	435.38
	7/25/2022	471.75	25.56	446.19	5.36	432.53
	8/29/2022	471.75	25.67	446.08	2.55	429.72
	9/28/2022	471.75	25.81	445.94	2.37	429.54
	10/26/2022	471.75	26.17	445.58	4.36	431.53
	11/14/2022	471.75	26.23	445.52	3.2	430.37
	12/28/2022	471.75	26.06	445.69	N/A	N/A
	1/24/2023	471.75	26.21	445.54	7.29	434.46
	2/20/2023	471.75	26.25	445.50	7.6	434.77
	3/28/2023	471.75	25.36	446.39	14.9	442.07
	4/25/2023	471.75	25.21	446.54	9.4	436.57
	5/15/2023	471.75	25.42	446.33	8.78	435.95
	6/26/2023	471.75	25.85	445.90	2.42	429.59
	7/25/2023	471.75	26.06	445.69	3.67	430.84
	8/28/2023	471.75	25.89	445.86	3.26	430.43
	9/28/2023	471.75	25.99	445.76	3.35	430.52
	10/27/2023	471.75	26.26	445.49	3.98	431.15
	11/6/2023	471.75	26.28	445.47	3.65	430.82
	12/21/2023	471.75	26.50	445.25	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-09 up-gradient	11/16/2015	469.14	26.07	443.07	4.38	431.55
	2/22/2016	469.14	22.83	446.31	7.97	435.14
	5/16/2016	469.14	23.06	446.08	14.53	441.7
	8/15/2016	469.14	24.50	444.64	7.11	434.28
	11/14/2016	469.14	24.33	444.81	6.35	433.52
	2/13/2017	469.14	23.43	445.71	N/A	N/A
	5/1/2017	469.14	20.77	448.37	17.09	444.26
	6/20/2017	469.14	22.15	446.99	11.93	439.1
	8/25/2017	469.14	24.79	444.35	3.86	431.03
	11/8/2017	469.14	25.74	443.40	6.89	434.06
	5/16/2018	469.14	23.89	445.25	9.93	437.1
	8/8/2018	469.14	25.49	443.65	2.13	429.3
	11/1/2018	469.14	26.02	443.12	4.21	431.38
	4/29/2019	469.14	21.30	447.84	14.04	441.21
	11/11/2019	469.14	21.31	447.83	15.92	443.09
	4/27/2020	469.14	21.80	447.34	12.64	439.81
	12/7/2020	469.14	26.19	442.95	2.97	430.14
	2/22/2021	469.14	26.08	443.06	6.21	433.38
	4/7/2021	469.14	23.75	445.39	10.23	437.4
	5/10/2021	469.14	24.55	444.59	10.71	437.88
	6/2/2021	469.14	23.31	445.83	10.7	437.87
	6/28/2021	469.14	24.18	444.96	12.11	439.28
	7/19/2021	469.14	22.20	446.94	15.06	442.23
	8/23/2021	469.14	24.75	444.39	3.49	430.66
	9/30/2021	469.14	26.28	442.86	2.49	429.66
	10/25/2021	469.14	25.42	443.72	13.08	440.25
	11/29/2021	469.14	24.50	444.64	5.17	432.34
	12/30/2021	469.14	25.35	443.79	6.68	433.85
	1/6/2022	469.14	28.11	441.03	6.45	433.62
	2/7/2022	469.14	26.15	442.99	4.4	431.57
	3/1/2022	469.14	23.88	445.26	16.04	443.21
	4/22/2022	469.14	21.75	447.39	N/A	N/A
	5/24/2022	469.14	22.40	446.74	11.42	438.59
	6/6/2022	469.14	22.95	446.19	8.21	435.38
	7/25/2022	469.14	25.51	443.63	5.36	432.53
	8/29/2022	469.14	26.56	442.58	2.55	429.72
	9/28/2022	469.14	27.52	441.62	2.37	429.54
	10/26/2022	469.14	28.38	440.76	4.36	431.53
	11/14/2022	469.14	28.44	440.70	3.2	430.37
	12/28/2022	469.14	27.96	441.18	N/A	N/A
	1/24/2023	469.14	27.93	441.21	7.29	434.46
	2/20/2023	469.14	27.62	441.52	7.6	434.77
	3/28/2023	469.14	24.05	445.09	14.9	442.07
	4/25/2023	469.14	23.76	445.38	9.4	436.57
	5/15/2023	469.14	24.90	444.24	8.78	435.95
	6/26/2023	469.14	27.40	441.74	2.42	429.59
	7/25/2023	469.14	27.55	441.59	3.67	430.84
	8/28/2023	469.14	28.00	441.14	3.26	430.43
	9/28/2023	469.14	28.64	440.50	3.35	430.52
	10/27/2023	469.14	28.85	440.29	3.98	431.15
	11/6/2023	469.14	28.98	440.16	3.65	430.82
	12/21/2023	469.14	29.12	440.02	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-11 down-gradient	11/16/2015	471.62	31.67	439.95	4.38	431.55
	2/22/2016	471.62	28.34	443.28	7.97	435.14
	5/16/2016	471.62	27.11	444.51	14.53	441.7
	8/15/2016	471.62	29.64	441.98	7.11	434.28
	11/14/2016	471.62	29.19	442.43	6.35	433.52
	2/13/2017	471.62	27.49	444.13	N/A	N/A
	5/1/2017	471.62	24.34	447.28	17.09	444.26
	6/20/2017	471.62	26.94	444.68	11.93	439.1
	8/29/2017	471.62	30.42	441.20	3.86	431.03
	11/9/2017	471.62	30.27	441.35	6.89	434.06
	5/16/2018	471.62	28.58	443.04	9.93	437.1
	8/9/2018	471.62	31.04	440.58	2.13	429.3
	11/1/2018	471.62	30.82	440.80	4.21	431.38
	4/29/2019	471.62	25.38	446.24	14.04	441.21
	11/11/2019	471.62	24.88	446.74	15.92	443.09
	4/27/2020	471.62	26.35	445.27	12.64	439.81
	12/7/2020	471.62	31.35	440.27	2.97	430.14
	2/22/2021	471.62	30.78	440.84	6.21	433.38
	4/7/2021	471.62	27.85	443.77	10.23	437.4
	5/10/2021	471.62	29.19	442.43	10.71	437.88
	6/2/2021	471.62	27.57	444.05	10.7	437.87
	6/28/2021	471.62	28.84	442.78	12.11	439.28
	7/19/2021	471.62	25.82	445.80	15.06	442.23
	8/23/2021	471.62	30.10	441.52	3.49	430.66
	9/30/2021	471.62	31.78	439.84	2.49	429.66
	10/25/2021	471.62	30.12	441.50	13.08	440.25
	11/29/2021	471.62	29.40	442.22	5.17	432.34
	12/30/2021	471.62	30.22	441.40	6.68	433.85
	1/6/2022	471.62	30.09	441.53	6.45	433.62
	2/7/2022	471.62	31.19	440.43	4.4	431.57
	3/1/2022	471.62	26.92	444.70	16.04	443.21
	4/22/2022	471.62	25.43	446.19	N/A	N/A
	5/24/2022	471.62	26.69	444.93	11.42	438.59
	6/6/2022	471.62	27.55	444.07	8.21	435.38
	7/25/2022	471.62	30.77	440.85	5.36	432.53
	8/29/2022	471.62	31.95	439.67	2.55	429.72
	9/28/2022	471.62	32.99	438.63	2.37	429.54
	10/26/2022	471.62	33.86	437.76	4.36	431.53
	11/14/2022	471.62	33.79	437.83	3.2	430.37
	12/28/2022	471.62	32.41	439.21	N/A	N/A
	1/24/2023	471.62	32.57	439.05	7.29	434.46
	2/20/2023	471.62	31.91	439.71	7.6	434.77
	3/28/2023	471.62	27.32	444.30	14.9	442.07
	4/25/2023	471.62	27.80	443.82	9.4	436.57
	5/15/2023	471.62	29.25	442.37	8.78	435.95
	6/26/2023	471.62	32.81	438.81	2.42	429.59
	7/25/2023	471.62	32.55	439.07	3.67	430.84
	8/28/2023	471.62	33.15	438.47	3.26	430.43
	9/28/2023	471.62	33.76	437.86	3.35	430.52
	10/27/2023	471.62	33.68	437.94	3.98	431.15
	11/6/2023	471.62	33.79	437.83	3.65	430.82
	12/21/2023	471.62	33.81	437.81	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-12 down-gradient	11/16/2015	473.38	24.48	448.90	4.38	431.55
	2/22/2016	473.38	21.41	451.97	7.97	435.14
	5/16/2016	473.38	22.94	450.44	14.53	441.7
	8/15/2016	473.38	23.85	449.53	7.11	434.28
	11/14/2016	473.38	23.89	449.49	6.35	433.52
	2/13/2017	473.38	21.93	451.45	N/A	N/A
	5/1/2017	473.38	22.26	451.12	17.09	444.26
	6/20/2017	473.38	22.76	450.62	11.93	439.1
	8/26/2017	473.38	23.92	449.46	3.86	431.03
	11/10/2017	473.38	24.29	449.09	6.89	434.06
	5/16/2018	473.38	22.46	450.92	9.93	437.1
	8/9/2018	473.38	23.78	449.60	2.13	429.3
	11/1/2018	473.38	23.74	449.64	4.21	431.38
	4/29/2019	473.38	22.05	451.33	14.04	441.21
	11/11/2019	473.38	22.85	450.53	15.92	443.09
	4/27/2020	473.38	21.44	451.94	12.64	439.81
	12/7/2020	473.38	22.70	450.68	2.97	430.14
	2/22/2021	473.38	21.00	452.38	6.21	433.38
	4/7/2021	473.38	21.91	451.47	10.23	437.4
	5/10/2021	473.38	22.50	450.88	10.71	437.88
	6/2/2021	473.38	22.60	450.78	10.7	437.87
	6/28/2021	473.38	22.95	450.43	12.11	439.28
	7/19/2021	473.38	22.99	450.39	15.06	442.23
	8/23/2021	473.38	23.48	449.90	3.49	430.66
	9/30/2021	473.38	23.87	449.51	2.49	429.66
	10/27/2021	473.38	23.90	449.48	13.08	440.25
	11/29/2021	473.38	23.33	450.05	5.17	432.34
	12/30/2021	473.38	22.95	450.43	6.68	433.85
	1/6/2022	473.38	22.77	450.61	6.45	433.62
	2/7/2022	473.38	22.03	451.35	4.4	431.57
	3/1/2022	473.38	21.74	451.64	16.04	443.21
	4/22/2022	473.38	22.03	451.35	N/A	N/A
	5/24/2022	473.38	22.36	451.02	11.42	438.59
	6/6/2022	473.38	22.65	450.73	8.21	435.38
	7/25/2022	473.38	23.29	450.09	5.36	432.53
	8/29/2022	473.38	23.84	449.54	2.55	429.72
	9/28/2022	473.38	24.13	449.25	2.37	429.54
	10/26/2022	473.38	24.28	449.10	4.36	431.53
	11/14/2022	473.38	24.15	449.23	3.2	430.37
	12/28/2022	473.38	22.41	450.97	N/A	N/A
	1/24/2023	473.38	21.68	451.70	7.29	434.46
	2/20/2023	473.38	21.36	452.02	7.6	434.77
	3/28/2023	473.38	21.07	452.31	14.9	442.07
	4/25/2023	473.38	21.53	451.85	9.4	436.57
	5/15/2023	473.38	21.88	451.50	8.78	435.95
	6/26/2023	473.38	22.87	450.51	2.42	429.59
	7/25/2023	473.38	22.99	450.39	3.67	430.84
	8/28/2023	473.38	23.12	450.26	3.26	430.43
	9/28/2023	473.38	23.50	449.88	3.35	430.52
	10/27/2023	473.38	23.88	449.50	3.98	431.15
	11/6/2023	473.38	23.88	449.50	3.65	430.82
	12/21/2023	473.38	22.72	450.66	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-15 down-gradient	11/16/2015	471.37	25.33	446.04	4.38	431.55
	2/22/2016	471.37	22.91	448.46	7.97	435.14
	5/16/2016	471.37	24.71	446.66	14.53	441.7
	8/15/2016	471.37	23.45	447.92	7.11	434.28
	11/14/2016	471.37	23.94	447.43	6.35	433.52
	2/13/2017	471.37	23.73	447.64	N/A	N/A
	5/1/2017	471.37	23.27	448.10	17.09	444.26
	6/20/2017	471.37	22.86	448.51	11.93	439.1
	8/29/2017	471.37	23.13	448.24	3.86	431.03
	11/10/2017	471.37	25.13	446.24	6.89	434.06
	5/17/2018	471.37	23.85	447.52	9.93	437.1
	8/9/2018	471.37	23.96	447.41	2.13	429.3
	10/31/2018	471.37	24.55	446.82	4.21	431.38
	4/29/2019	471.37	23.57	447.80	14.04	441.21
	11/11/2019	471.37	23.79	447.58	15.92	443.09
	4/27/2020	471.37	23.95	447.42	12.64	439.81
	12/7/2020	471.37	25.01	446.36	2.97	430.14
	2/22/2021	471.37	27.74	443.63	6.21	433.38
	4/7/2021	471.37	24.44	446.93	10.23	437.4
	5/10/2021	471.37	24.62	446.75	10.71	437.88
	6/2/2021	471.37	24.12	447.25	10.7	437.87
	6/28/2021	471.37	24.19	447.18	12.11	439.28
	7/19/2021	471.37	24.01	447.36	15.06	442.23
	8/23/2021	471.37	24.38	446.99	3.49	430.66
	9/30/2021	471.37	24.91	446.46	2.49	429.66
	10/25/2021	471.37	24.92	446.45	13.08	440.25
	11/29/2021	471.37	24.60	446.77	5.17	432.34
	12/30/2021	471.37	24.90	446.47	6.68	433.85
	1/6/2022	471.37	25.04	446.33	6.45	433.62
	2/7/2022	471.37	25.09	446.28	4.4	431.57
	3/1/2022	471.37	25.11	446.26	16.04	443.21
	4/22/2022	471.37	24.18	447.19	N/A	N/A
	5/24/2022	471.37	24.27	447.10	11.42	438.59
	6/6/2022	471.37	24.29	447.08	8.21	435.38
	7/25/2022	471.37	25.05	446.32	5.36	432.53
	8/29/2022	471.37	25.45	445.92	2.55	429.72
	9/28/2022	471.37	25.54	445.83	2.37	429.54
	10/26/2022	471.37	26.00	445.37	4.36	431.53
	11/14/2022	471.37	26.14	445.23	3.2	430.37
	12/28/2022	471.37	27.84	443.53	N/A	N/A
	1/24/2023	471.37	25.26	446.11	7.29	434.46
	2/20/2023	471.37	25.24	446.13	7.6	434.77
	3/28/2023	471.37	24.81	446.56	14.9	442.07
	4/25/2023	471.37	24.56	446.81	9.4	436.57
	5/15/2023	471.37	24.64	446.73	8.78	435.95
	6/26/2023	471.37	25.18	446.19	2.42	429.59
	7/25/2023	471.37	25.53	445.84	3.67	430.84
	8/28/2023	471.37	25.60	445.77	3.26	430.43
	9/28/2023	471.37	25.78	445.59	3.35	430.52
	10/27/2023	471.37	26.00	445.37	3.98	431.15
	11/6/2023	471.37	26.04	445.33	3.65	430.82
	12/21/2023	471.37	25.86	445.51	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-17 down-gradient	11/16/2015	467.75	26.92	440.83	4.38	431.55
	2/22/2016	467.75	19.86	447.89	7.97	435.14
	5/16/2016	467.75	20.42	447.33	14.53	441.7
	8/15/2016	467.75	21.61	446.14	7.11	434.28
	11/14/2016	467.75	21.39	446.36	6.35	433.52
	2/13/2017	467.75	19.66	448.09	N/A	N/A
	5/1/2017	467.75	18.78	448.97	17.09	444.26
	6/20/2017	467.75	19.42	448.33	11.93	439.1
	8/29/2017	467.75	22.68	445.07	3.86	431.03
	11/6/2017	467.75	24.66	443.09	6.89	434.06
	5/14/2018	467.75	19.79	447.96	9.93	437.1
	8/6/2018	467.75	21.03	446.72	2.13	429.3
	10/29/2018	467.75	21.98	445.77	4.21	431.38
	4/29/2019	467.75	18.75	449.00	14.04	441.21
	11/11/2019	467.75	19.60	448.15	15.92	443.09
	4/27/2020	467.75	19.15	448.60	12.64	439.81
	12/7/2020	467.75	24.12	443.63	2.97	430.14
	2/22/2021	467.75	20.22	447.53	6.21	433.38
	4/7/2021	467.75	19.69	448.06	10.23	437.4
	5/10/2021	467.75	20.00	447.75	10.71	437.88
	6/2/2021	467.75	19.65	448.10	10.7	437.87
	6/28/2021	467.75	19.98	447.77	12.11	439.28
	7/19/2021	467.75	19.57	448.18	15.06	442.23
	8/23/2021	467.75	20.15	447.60	3.49	430.66
	9/30/2021	467.75	23.25	444.50	2.49	429.66
	10/28/2021	467.75	23.35	444.40	13.08	440.25
	11/29/2021	467.75	20.64	447.11	5.17	432.34
	12/30/2021	467.75	22.61	445.14	6.68	433.85
	1/6/2022	467.75	23.19	444.56	6.45	433.62
	2/7/2022	467.75	22.03	445.72	4.4	431.57
	3/1/2022	467.75	19.97	447.78	16.04	443.21
	4/22/2022	467.75	19.36	448.39	N/A	N/A
	5/24/2022	467.75	19.38	448.37	11.42	438.59
	6/6/2022	467.75	19.45	448.30	8.21	435.38
	7/25/2022	467.75	20.39	447.36	5.36	432.53
	8/29/2022	467.75	23.75	444.00	2.55	429.72
	9/28/2022	467.75	25.38	442.37	2.37	429.54
	10/26/2022	467.75	27.49	440.26	4.36	431.53
	11/14/2022	467.75	27.73	440.02	3.2	430.37
	12/28/2022	467.75	27.47	440.28	N/A	N/A
	1/24/2023	467.75	23.08	444.67	7.29	434.46
	2/20/2023	467.75	20.29	447.46	7.6	434.77
	3/28/2023	467.75	19.43	448.32	14.9	442.07
	4/25/2023	467.75	19.31	448.44	9.4	436.57
	5/15/2023	467.75	19.60	448.15	8.78	435.95
	6/26/2023	467.75	20.42	447.33	2.42	429.59
	7/25/2023	467.75	21.26	446.49	3.67	430.84
	8/28/2023	467.75	21.13	446.62	3.26	430.43
	9/28/2023	467.75	23.65	444.10	3.35	430.52
	10/27/2023	467.75	24.26	443.49	3.98	431.15
	11/6/2023	467.75	24.42	443.33	3.65	430.82
	12/21/2023	467.75	24.85	442.90	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-18 down-gradient	11/16/2015	469.28	28.42	440.86	4.38	431.55
	2/22/2016	469.28	27.96	441.32	7.97	435.14
	5/16/2016	469.28	25.57	443.71	14.53	441.7
	8/15/2016	469.28	27.86	441.42	7.11	434.28
	11/14/2016	469.28	27.39	441.89	6.35	433.52
	2/13/2017	469.28	25.06	444.22	N/A	N/A
	5/1/2017	469.28	22.49	446.79	17.09	444.26
	6/20/2017	469.28	24.97	444.31	11.93	439.1
	8/28/2017	469.28	27.30	441.98	3.86	431.03
	11/6/2017	469.28	26.33	442.95	6.89	434.06
	5/14/2018	469.28	24.65	444.63	9.93	437.1
	8/6/2018	469.28	25.67	443.61	2.13	429.3
	10/29/2018	469.28	25.79	443.49	4.21	431.38
	4/29/2019	469.28	23.00	446.28	14.04	441.21
	11/11/2019	469.28	23.94	445.34	15.92	443.09
	4/27/2020	469.28	23.97	445.31	12.64	439.81
	12/7/2020	469.28	27.82	441.46	2.97	430.14
	2/22/2021	469.28	26.69	442.59	6.21	433.38
	4/7/2021	469.28	24.94	444.34	10.23	437.4
	5/10/2021	469.28	25.96	443.32	10.71	437.88
	6/2/2021	469.28	24.70	444.58	10.7	437.87
	6/28/2021	469.28	25.60	443.68	12.11	439.28
	7/19/2021	469.28	23.50	445.78	15.06	442.23
	8/23/2021	469.28	27.35	441.93	3.49	430.66
	9/30/2021	469.28	29.70	439.58	2.49	429.66
	10/25/2021	469.28	27.35	441.93	13.08	440.25
	11/29/2021	469.28	26.81	442.47	5.17	432.34
	12/30/2021	469.28	27.14	442.14	6.68	433.85
	1/6/2022	469.28	26.57	442.71	6.45	433.62
	2/7/2022	469.28	27.83	441.45	4.4	431.57
	3/1/2022	469.28	24.45	444.83	16.04	443.21
	4/22/2022	469.28	23.77	445.51	N/A	N/A
	5/24/2022	469.28	25.04	444.24	11.42	438.59
	6/6/2022	469.28	25.71	443.57	8.21	435.38
	7/25/2022	469.28	28.62	440.66	5.36	432.53
	8/29/2022	469.28	28.66	440.62	2.55	429.72
	9/28/2022	469.28	32.19	437.09	2.37	429.54
	10/26/2022	469.28	33.26	436.02	4.36	431.53
	11/14/2022	469.28	32.95	436.33	3.2	430.37
	12/28/2022	469.28	28.44	440.84	N/A	N/A
	1/24/2023	469.28	28.65	440.63	7.29	434.46
	2/20/2023	469.28	28.44	440.84	7.6	434.77
	3/28/2023	469.28	26.78	442.50	14.9	442.07
	4/25/2023	469.28	25.35	443.93	9.4	436.57
	5/15/2023	469.28	26.46	442.82	8.78	435.95
	6/26/2023	469.28	30.11	439.17	2.42	429.59
	7/25/2023	469.28	28.93	440.35	3.67	430.84
	8/28/2023	469.28	29.87	439.41	3.26	430.43
	9/28/2023	469.28	30.02	439.26	3.35	430.52
	10/27/2023	469.28	29.29	439.99	3.98	431.15
	11/6/2023	469.28	29.54	439.74	3.65	430.82

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
	12/21/2023	469.28	28.68	440.60	6.12	433.29
MW-19 up-gradient	11/14/2016	465.07	22.65	442.42	6.35	433.52
	2/13/2017	465.07	21.27	443.80	N/A	N/A
	5/1/2017	465.07	18.39	446.68	17.09	444.26
	6/20/2017	465.07	20.44	444.63	11.93	439.1
	8/28/2017	465.07	23.60	441.47	3.86	431.03
	11/9/2017	465.07	23.80	441.27	6.89	434.06
	5/14/2018	465.07	22.08	442.99	9.93	437.1
	8/6/2018	465.07	24.14	440.93	2.13	429.3
	10/29/2018	465.07	24.31	440.76	4.21	431.38
	4/29/2019	465.07	19.12	445.95	14.04	441.21
	11/11/2019	465.07	18.80	446.27	15.92	443.09
	4/27/2020	465.07	19.94	445.13	12.64	439.81
	12/7/2020	465.07	24.63	440.44	2.97	430.14
	2/22/2021	465.07	24.23	440.84	6.21	433.38
	4/7/2021	465.07	21.60	443.47	10.23	437.4
	5/10/2021	465.07	22.75	442.32	10.71	437.88
	6/2/2021	465.07	21.24	443.83	10.7	437.87
	6/28/2021	465.07	22.41	442.66	12.11	439.28
	7/19/2021	465.07	19.75	445.32	15.06	442.23
	8/23/2021	465.07	23.31	441.76	3.49	430.66
	9/30/2021	465.07	24.85	440.22	2.49	429.66
	10/27/2021	465.07	23.36	441.71	13.08	440.25
	11/29/2021	465.07	22.75	442.32	5.17	432.34
	12/30/2021	465.07	23.65	441.42	6.68	433.85
	1/6/2022	465.07	24.04	441.03	6.45	433.62
	2/7/2022	465.07	24.46	440.61	4.4	431.57
	3/1/2022	465.07	21.05	444.02	16.04	443.21
	4/22/2022	465.07	19.34	445.73	N/A	N/A
	5/24/2022	465.07	20.34	444.73	11.42	438.59
	6/6/2022	465.07	21.05	444.02	8.21	435.38
	7/25/2022	465.07	23.98	441.09	5.36	432.53
	8/29/2022	465.07	25.08	439.99	2.55	429.72
	9/28/2022	465.07	25.97	439.10	2.37	429.54
	10/26/2022	465.07	26.81	438.26	4.36	431.53
	11/14/2022	465.07	26.79	438.28	3.2	430.37
	12/28/2022	465.07	25.95	439.12	N/A	N/A
	1/24/2023	465.07	25.93	439.14	7.29	434.46
	2/20/2023	465.07	25.29	439.78	7.6	434.77
	3/28/2023	465.07	21.40	443.67	14.9	442.07
	4/25/2023	465.07	21.52	443.55	9.4	436.57
	5/15/2023	465.07	22.94	442.13	8.78	435.95
	6/26/2023	465.07	25.76	439.31	2.42	429.59
	7/25/2023	465.07	25.69	439.38	3.67	430.84
	8/28/2023	465.07	26.24	438.83	3.26	430.43
	9/28/2023	465.07	26.86	438.21	3.35	430.52
	10/27/2023	465.07	26.97	438.10	3.98	431.15
	11/6/2023	465.07	27.07	438.00	3.65	430.82
	12/21/2023	465.07	27.13	437.94	6.12	433.29

Notes: Elevations are in feet above mean sea level and Depths are in feet below top of casing.
* - Data obtained from USGS Kingston Mine Gage

Table 9-2 (revised). Groundwater Elevations for ABB/ASB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)

MSL - Mean Sea Level
TOC - Top of Casing
BOLD- River elevation above groundwater elevation

Revised MCB Water Level Data Tables

Table 9-2 (revised). Groundwater Elevations for MCB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-13 up-gradient	2/22/2021	470.94	31.94	439.00	6.21	433.38
	4/7/2021	470.94	28.58	442.36	10.23	437.40
	5/10/2021	470.94	30.74	440.20	10.71	437.88
	6/2/2021	470.94	28.43	442.51	10.70	437.87
	6/28/2021	470.94	30.23	440.71	12.11	439.28
	7/19/2021	470.94	29.98	440.96	15.06	**442.23**
	8/23/2021	470.94	31.85	439.09	3.49	430.66
	9/30/2021	470.94	33.20	437.74	2.49	429.66
	10/25/2021	470.94	31.55	439.39	10.56	437.73
	11/29/2021	470.94	30.95	439.99	5.17	432.34
	12/30/2021	470.94	31.70	439.24	6.68	433.85
	1/6/2022	470.94	31.19	439.75	6.45	433.62
	2/7/2022	470.94	32.89	438.05	4.40	431.57
	3/1/2022	470.94	26.21	444.73	16.04	443.21
	4/22/2022	470.94	25.62	445.32	N/A	N/A
	5/24/2022	470.94	27.32	443.62	11.42	438.59
	6/6/2022	470.94	28.61	442.33	8.21	435.38
	7/25/2022	470.94	32.37	438.57	5.36	432.53
	8/29/2022	470.94	33.22	437.72	2.55	429.72
	9/28/2022	470.94	33.22	437.72	2.37	429.54
	10/26/2022	470.94	33.25	437.69	4.36	431.53
	11/14/2022	470.94	32.18	438.76	3.20	430.37
	12/28/2022	470.94	33.20	437.74	N/A	N/A
	1/24/2023	470.94	33.03	437.91	7.29	434.46
	2/20/2023	470.94	32.21	438.73	7.60	434.77
	3/28/2023	470.94	27.18	443.76	14.90	442.07
	4/25/2023	470.94	28.48	442.46	9.40	436.57
	5/15/2023	470.94	30.50	440.44	8.78	435.95
	6/26/2023	470.94	33.63	437.31	2.42	429.59
	7/25/2023	470.94	33.15	437.79	3.67	430.84
	8/28/2023	470.94	33.62	437.32	3.26	430.43
	9/28/2023	470.94	33.24	437.70	3.35	430.52
	10/27/2023	470.94	33.48	437.46	3.98	431.15
	11/6/2023	470.94	33.25	437.69	3.65	430.82
	12/21/2023	470.94	33.20	437.74	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for MCB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-14 down-gradient	2/22/2021	470.79	25.43	445.36	6.21	433.38
	4/7/2021	470.79	24.46	446.33	10.23	437.40
	5/10/2021	470.79	24.86	445.93	10.71	437.88
	6/2/2021	470.79	24.20	446.59	10.70	437.87
	6/28/2021	470.79	24.45	446.34	12.11	439.28
	7/19/2021	470.79	24.04	446.75	15.06	442.23
	8/23/2021	470.79	24.58	446.21	3.49	430.66
	9/30/2021	470.79	25.35	445.44	2.49	429.66
	10/25/2021	470.79	25.41	445.38	13.08	440.25
	11/29/2021	470.79	24.68	446.11	5.17	432.34
	12/30/2021	470.79	25.05	445.74	6.68	433.85
	1/6/2022	470.90	22.02	448.88	6.45	433.62
	2/7/2022	470.90	25.64	445.26	4.40	431.57
	3/1/2022	470.90	25.36	445.54	16.04	443.21
	4/22/2022	470.90	23.82	447.08	N/A	N/A
	5/24/2022	470.90	24.08	446.82	11.42	438.59
	6/6/2022	470.90	24.10	446.80	8.21	435.38
	7/25/2022	470.90	25.07	445.83	5.36	432.53
	8/29/2022	470.90	28.30	442.60	2.55	429.72
	9/28/2022	470.90	30.29	440.61	2.37	429.54
	10/26/2022	470.90	31.23	439.67	4.36	431.53
	11/14/2022	470.90	31.58	439.32	3.20	430.37
	12/28/2022	470.90	32.05	438.85	N/A	N/A
	1/24/2023	470.90	31.48	439.42	7.29	434.46
	2/20/2023	470.90	30.91	439.99	7.60	434.77
	3/28/2023	470.90	25.14	445.76	14.90	442.07
	4/25/2023	470.90	24.56	446.34	9.40	436.57
	5/15/2023	470.90	24.41	446.49	8.78	435.95
	6/26/2023	470.90	25.18	445.72	2.42	429.59
	7/25/2023	470.90	25.61	445.29	3.67	430.84
	8/28/2023	470.90	29.02	441.88	3.26	430.43
	9/28/2023	470.90	31.94	438.96	3.35	430.52
	10/27/2023	470.90	31.18	439.72	3.98	431.15
	11/6/2023	470.90	31.26	439.64	3.65	430.82
	12/21/2023	470.90	31.63	439.27	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for MCB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-15 up-gradient	11/16/2015	471.37	25.33	446.04	4.38	431.55
	2/22/2016	471.37	22.91	448.46	7.97	435.14
	5/16/2016	471.37	24.71	446.66	14.53	441.70
	8/15/2016	471.37	23.45	447.92	7.11	434.28
	11/14/2016	471.37	23.94	447.43	6.35	433.52
	2/13/2017	471.37	23.73	447.64	N/A	N/A
	5/1/2017	471.37	23.27	448.10	17.09	444.26
	6/20/2017	471.37	22.86	448.51	11.93	439.10
	8/29/2017	471.37	23.13	448.24	3.86	431.03
	11/10/2017	471.37	25.13	446.24	6.89	434.06
	5/17/2018	471.37	23.85	447.52	9.93	437.10
	8/9/2018	471.37	23.96	447.41	2.13	429.30
	10/31/2018	471.37	24.55	446.82	4.21	431.38
	4/29/2019	471.37	23.57	447.80	14.04	441.21
	11/11/2019	471.37	23.79	447.58	15.92	443.09
	4/27/2020	471.37	23.95	447.42	12.64	439.81
	12/7/2020	471.37	25.01	446.36	2.97	430.14
	4/7/2021	471.37	24.44	446.93	10.23	437.40
	5/10/2021	471.37	24.62	446.75	10.71	437.88
	6/2/2021	471.37	24.12	447.25	10.70	437.87
	6/28/2021	471.37	24.19	447.18	12.11	439.28
	7/19/2021	471.37	24.01	447.36	15.06	442.23
	8/23/2021	471.37	24.38	446.99	3.49	430.66
	9/30/2021	471.37	24.91	446.46	2.49	429.66
	10/25/2021	471.37	24.92	446.45	13.08	440.25
	11/29/2021	471.37	24.60	446.77	5.17	432.34
	12/30/2021	471.37	24.90	446.47	6.68	433.85
	1/6/2022	471.37	25.04	446.33	6.45	433.62
	2/7/2022	471.37	25.09	446.28	4.40	431.57
	3/1/2022	471.37	25.11	446.26	16.04	443.21
	4/22/2022	471.37	24.18	447.19	N/A	N/A
	5/24/2022	471.37	24.27	447.10	11.42	438.59
	6/6/2022	471.37	24.29	447.08	8.21	435.38
	7/25/2022	471.37	25.05	446.32	5.36	432.53
	8/29/2022	471.37	25.45	445.92	2.55	429.72
	9/28/2022	471.37	25.54	445.83	2.37	429.54
	10/26/2022	471.37	26.00	445.37	4.36	431.53
	11/14/2022	471.37	26.14	445.23	3.20	430.37
	12/28/2022	471.37	27.84	443.53	N/A	N/A
	1/24/2023	471.37	25.26	446.11	7.29	434.46
	2/20/2023	471.37	25.24	446.13	7.60	434.77
	3/28/2023	471.37	24.81	446.56	14.90	442.07
	4/25/2023	471.37	24.56	446.81	9.40	436.57
	5/15/2023	471.37	24.64	446.73	8.78	435.95
	6/26/2023	471.37	25.18	446.19	2.42	429.59
	7/25/2023	471.37	25.53	445.84	3.67	430.84
	8/28/2023	471.37	25.60	445.77	3.26	430.43
	9/28/2023	471.37	25.78	445.59	3.35	430.52
	10/27/2023	471.37	26.00	445.37	3.98	431.15
	11/6/2023	471.37	26.04	445.33	3.65	430.82
	12/21/2023	471.37	25.86	445.51	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for MCB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-17 up-gradient	11/16/2015	467.75	26.92	440.83	4.38	431.55
	2/22/2016	467.75	19.86	447.89	7.97	435.14
	5/16/2016	467.75	20.42	447.33	14.53	441.70
	8/15/2016	467.75	21.61	446.14	7.11	434.28
	11/14/2016	467.75	21.39	446.36	6.35	433.52
	2/13/2017	467.75	19.66	448.09	N/A	N/A
	5/1/2017	467.75	18.78	448.97	17.09	444.26
	6/20/2017	467.75	19.42	448.33	11.93	439.10
	8/29/2017	467.75	22.68	445.07	3.86	431.03
	11/6/2017	467.75	24.66	443.09	6.89	434.06
	5/14/2018	467.75	19.79	447.96	9.93	437.10
	8/6/2018	467.75	21.03	446.72	2.13	429.30
	10/29/2018	467.75	21.98	445.77	4.21	431.38
	4/29/2019	467.75	18.75	449.00	14.04	441.21
	11/11/2019	467.75	19.60	448.15	15.92	443.09
	4/27/2020	467.75	19.15	448.60	12.64	439.81
	12/7/2020	467.75	24.12	443.63	2.97	430.14
	2/22/2021	467.75	20.22	447.53	6.21	433.38
	4/7/2021	467.75	19.69	448.06	10.23	437.40
	5/10/2021	467.75	20.00	447.75	10.71	437.88
	6/2/2021	467.75	19.65	448.10	10.70	437.87
	6/28/2021	467.75	19.98	447.77	12.11	439.28
	7/19/2021	467.75	19.57	448.18	15.06	442.23
	8/23/2021	467.75	20.15	447.60	3.49	430.66
	9/30/2021	467.75	23.25	444.50	2.49	429.66
	10/28/2021	467.75	23.35	444.40	13.08	440.25
	11/29/2021	467.75	20.64	447.11	5.17	432.34
	12/30/2021	467.75	22.61	445.14	6.68	433.85
	1/6/2022	467.75	23.19	444.56	6.45	433.62
	2/7/2022	467.75	22.03	445.72	4.40	431.57
	3/1/2022	467.75	19.97	447.78	16.04	443.21
	4/22/2022	467.75	19.36	448.39	N/A	N/A
	5/24/2022	467.75	19.38	448.37	11.42	438.59
	6/6/2022	467.75	19.45	448.30	8.21	435.38
	7/25/2022	467.75	20.39	447.36	5.36	432.53
	8/29/2022	467.75	23.75	444.00	2.55	429.72
	9/28/2022	467.75	25.38	442.37	2.37	429.54
	10/26/2022	467.75	27.49	440.26	4.36	431.53
	11/14/2022	467.75	27.73	440.02	3.20	430.37
	12/28/2022	467.75	27.47	440.28	N/A	N/A
	1/24/2023	467.75	23.08	444.67	7.29	434.46
	2/20/2023	467.75	20.29	447.46	7.60	434.77
	3/28/2023	467.75	19.43	448.32	14.90	442.07
	4/25/2023	467.75	19.31	448.44	9.40	436.57
	5/15/2023	467.75	19.60	448.15	8.78	435.95
	6/26/2023	467.75	20.42	447.33	2.42	429.59
	7/25/2023	467.75	21.26	446.49	3.67	430.84
	8/28/2023	467.75	21.13	446.62	3.26	430.43
	9/28/2023	467.75	23.65	444.10	3.35	430.52
	10/27/2023	467.75	24.26	443.49	3.98	431.15
	11/6/2023	467.75	24.42	443.33	3.65	430.82
	12/21/2023	467.75	24.85	442.90	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for MCB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-20 down-gradient	3/12/2021	468.95	27.35	441.60	12.03	439.20
	4/7/2021	468.95	26.64	442.31	10.23	437.40
	5/10/2021	468.95	28.54	440.41	10.71	437.88
	6/2/2021	468.95	26.16	442.79	10.70	437.87
	6/28/2021	468.95	28.01	440.94	12.11	439.28
	7/19/2021	468.95	24.48	444.47	15.06	442.23
	8/23/2021	468.95	28.94	440.01	3.49	430.66
	9/30/2021	468.95	30.82	438.13	2.49	429.66
	10/25/2021	468.95	29.42	439.53	10.56	437.73
	11/29/2021	468.95	28.56	440.39	5.17	432.34
	12/30/2021	468.95	29.54	439.41	6.68	433.85
	1/6/2022	468.95	29.96	438.99	6.45	433.62
	2/7/2022	468.95	30.51	438.44	4.40	431.57
	3/1/2022	468.95	25.72	443.23	16.04	443.21
	4/22/2022	468.95	24.39	444.56	N/A	N/A
	5/24/2022	468.95	25.23	443.72	11.42	438.59
	6/6/2022	468.95	26.10	442.85	8.21	435.38
	7/25/2022	468.95	29.72	439.23	5.36	432.53
	8/29/2022	468.95	31.02	437.93	2.55	429.72
	9/28/2022	468.95	32.00	436.95	2.37	429.54
	10/26/2022	468.95	32.52	436.43	4.36	431.53
	11/14/2022	468.95	32.52	436.43	3.20	430.37
	12/28/2022	468.95	32.55	436.40	N/A	N/A
	1/24/2023	468.95	32.56	436.39	7.29	434.46
	2/20/2023	468.95	32.90	436.05	7.60	434.77
	3/28/2023	468.95	26.46	442.49	14.90	442.07
	4/25/2023	468.95	26.43	442.52	9.40	436.57
	5/15/2023	468.95	28.14	440.81	8.78	435.95
	6/26/2023	468.95	31.24	437.71	2.42	429.59
	7/25/2023	468.95	31.34	437.61	3.67	430.84
	8/28/2023	468.95	31.94	437.01	3.26	430.43
	9/28/2023	468.95	32.50	436.45	3.35	430.52
	10/27/2023	468.95	32.52	436.43	3.98	431.15
	11/6/2023	468.95	32.51	436.44	3.65	430.82
	12/21/2023	468.95	32.52	436.43	6.12	433.29

Table 9-2 (revised). Groundwater Elevations for MCB Wells - Midwest Generation, LLC, Powerton Station, Pekin, IL

Well ID	Date	Top of Casing Elevation (ft above MSL)	Depth to Groundwater (ft below TOC)	Groundwater Elevation (ft above MSL)	Illinois River Gage Reading* (ft above datum)	Illinois River Gage Reading* (ft above MSL)
MW-21 down-gradient	3/12/2021	468.17	27.52	440.65	12.03	439.20
	4/7/2021	468.17	27.51	440.66	10.23	437.40
	5/10/2021	468.17	29.24	438.93	10.71	437.88
	6/2/2021	468.17	27.22	440.95	10.70	437.87
	6/28/2021	468.17	29.78	438.39	12.11	**439.28**
	7/19/2021	468.17	24.42	443.75	15.06	442.23
	8/23/2021	468.17	31.01	437.16	3.49	430.66
	9/30/2021	468.17	32.13	436.04	2.49	429.66
	10/25/2021	468.17	30.65	437.52	10.56	**437.73**
	11/29/2021	468.17	30.11	438.06	5.17	432.34
	12/30/2021	468.17	30.96	437.21	6.68	433.85
	1/6/2022	468.17	28.40	439.77	6.45	433.62
	2/7/2022	468.17	30.92	437.25	4.40	431.57
	3/1/2022	468.17	24.59	443.58	16.04	443.21
	4/22/2022	468.17	24.27	443.90	N/A	N/A
	5/24/2022	468.17	26.13	442.04	11.42	438.59
	6/6/2022	468.17	27.55	440.62	8.21	435.38
	7/25/2022	468.17	31.32	436.85	5.36	432.53
	8/29/2022	468.17	31.96	436.21	2.55	429.72
	9/28/2022	468.17	32.49	435.68	2.37	429.54
	10/26/2022	468.17	32.57	435.60	4.36	431.53
	11/14/2022	468.17	32.85	435.32	3.20	430.37
	12/28/2022	468.17	32.59	435.58	N/A	N/A
	1/24/2023	468.17	32.26	435.91	7.29	434.46
	2/20/2023	468.17	31.48	436.69	7.60	434.77
	3/28/2023	468.17	26.02	442.15	14.90	442.07
	4/25/2023	468.17	26.86	441.31	9.40	436.57
	5/15/2023	468.17	29.29	438.88	8.78	435.95
	6/26/2023	468.17	32.12	436.05	2.42	429.59
	7/25/2023	468.17	31.80	436.37	3.67	430.84
	8/28/2023	468.17	32.12	436.05	3.26	430.43
	9/28/2023	468.17	32.52	435.65	3.35	430.52
	10/27/2023	468.17	32.56	435.61	3.98	431.15
	11/6/2023	468.17	32.55	435.62	3.65	430.82
	12/21/2023	468.17	32.82	435.35	6.12	433.29

Notes: Elevations are in feet above mean sea level and Depths are in feet below top of casing.
* - Data obtained from USGS Kingston Mine Gage
MSL - Mean Sea Level
TOC - Top of Casing
BOLD- River elevation above groundwater elevation

Attachment 6

Powerton Generating Station ELUC

11
CK

201300020371
Filed for Record in
TAZEWELL COUNTY, IL
CHRISTIE A WEBB
10-17-2013 At 10:45 am.
AGREEMENT 42.75
RHSP Surcharge 9.00

PREPARED BY:

Name: Christopher M. Foley

Address: Midwest Generation, LLC
500 West Madison Street
Suite 2640
Chicago, Illinois 60661

RETURN TO:

Name: Christopher M. Foley

Address: Midwest Generation, LLC
500 West Madison Street
Suite 2640
Chicago, Illinois 60661

THE ABOVE SPACE FOR RECORDER'S OFFICE

Environmental Land Use Control

THIS ENVIRONMENTAL LAND USE CONTROL ("ELUC"), is made this 16 day of October, 2013, by Midwest Generation, LLC, ("Property Owner") of that portion (as identified in Exhibit A) of the real property located at the common address of Powerton Station, 13082 E. Manito Road, Pekin, Illinois 61554 ("Property").

WHEREAS, 415 ILCS 5/58.17 and 35 Ill. Adm. Code 742 provide for the use of an ELUC as an institutional control in order to impose land use limitations or requirements related to environmental contamination so that persons conducting remediation can obtain a No Further Remediation determination from the Illinois Environmental Protection Agency ("IEPA"). The reason for an ELUC is to ensure protection of human health and the environment. The limitations and requirements contained herein are necessary in order to protect against exposure to contaminated groundwater that may be present on the property as a result of past industrial activities on or in the vicinity of the property. Under 35 Ill. Adm. Code 742, the use of risk-based, site-specific remediation objectives may require the use of an ELUC on real property, and the ELUC may apply to certain physical features (e.g., engineered barriers, monitoring wells, caps, etc.).

NOW, THEREFORE, the recitals set forth above are incorporated by reference as if fully set forth herein and the Property Owner agrees as follows:

Section One. Property Owner does hereby establish an ELUC on the real estate, situated in the County of Tazewell, State of Illinois and further described in Exhibit A attached hereto and incorporated herein by reference (the "Property").

Attached as Exhibit B are site maps that show the legal boundary of the Property, any physical features to which the ELUC applies, the horizontal and vertical extent of the contaminants of concern above the applicable remediation objectives for groundwater and the nature, location of the source, and direction of movement of the contaminants of concern, as required under 35 Ill. Adm. Code 742.

Section Two. Property Owner represents and warrants it is the current owner of the Property and has the authority to record this ELUC on the chain of title for the Property with the Office of the Recorder or Registrar of Titles in Tazewell County, Illinois.

Section Three. The Property Owner hereby agrees, for itself, and its heirs, grantees, successors, assigns, transferees and any other owner, occupant, lessee, possessor or user of the Property or the holder of any portion thereof or interest therein, that the groundwater under the Property shall not be used as a potable supply of water.

Section Four. This ELUC is binding on the Property Owner, its heirs, grantees, successors, assigns, transferees and any other owner, occupant, lessee, possessor or user of the Property or the holder of any portion thereof or interest therein. This ELUC shall apply in perpetuity against the Property and shall not be released until the IEPA determines there is no longer a need for this ELUC as an institutional control or until the IEPA, upon written request, issues a new no further remediation determination approving modification or removal of the limitation(s) or requirement(s); and until a release or modification of the land use limitation or requirement is filed on the chain of title for the Property.

Section Five. **Future Improvement of Property**: This ELUC does not limit Property Owner's or its successors' or assigns' ability to construct on or otherwise improve the Property or to allow others to use the Property. Property Owner reserves the right to remove contaminated groundwater from the Property and to dispose of it as is appropriate under applicable laws.

Section Six. The effective date of this ELUC shall be the date that it is officially recorded in the chain of title for the Property to which the ELUC applies.

WITNESS the following signatures:
Property Owner(s)

By: _____
Its: Vice President
Date: Oct 16, 2013

STATE OF ILLINOIS)
) SS:
COUNTY OF Will)

I, Kellie Ann Gage the undersigned, a Notary Public for said County and State, DO HEREBY CERTIFY, that John C Kennedy, personally known to me to be the Vice President of Midwest Generation, LLC, the Property Owner and personally known to me to be the same person whose name is subscribed to the foregoing instrument, appeared before me this day in person and severally acknowledged that in said capacity signed and delivered the said instrument as their free and voluntary act for the uses and purposes therein set forth.

Given under my hand and official seal, this 16th day of October, 2013.

Kellie Ann Gage
Notary Public

"OFFICIAL SEAL"
Kellie Ann Gage
Notary Public, State of Illinois
My Commission Expires 3/8/2015

PIN NO. 10-10-09-100-004 (Partial)

Exhibit A

The subject property is located in the City of Pekin, Tazewell County, State of Illinois, commonly known as Powerton Station, Pekin, Illinois and more particularly described as:

COMMON ADDRESS:

Powerton Station (portion)
13082 E. Manito Road
Pekin, Illinois 61554

LEGAL DESCRIPTION:

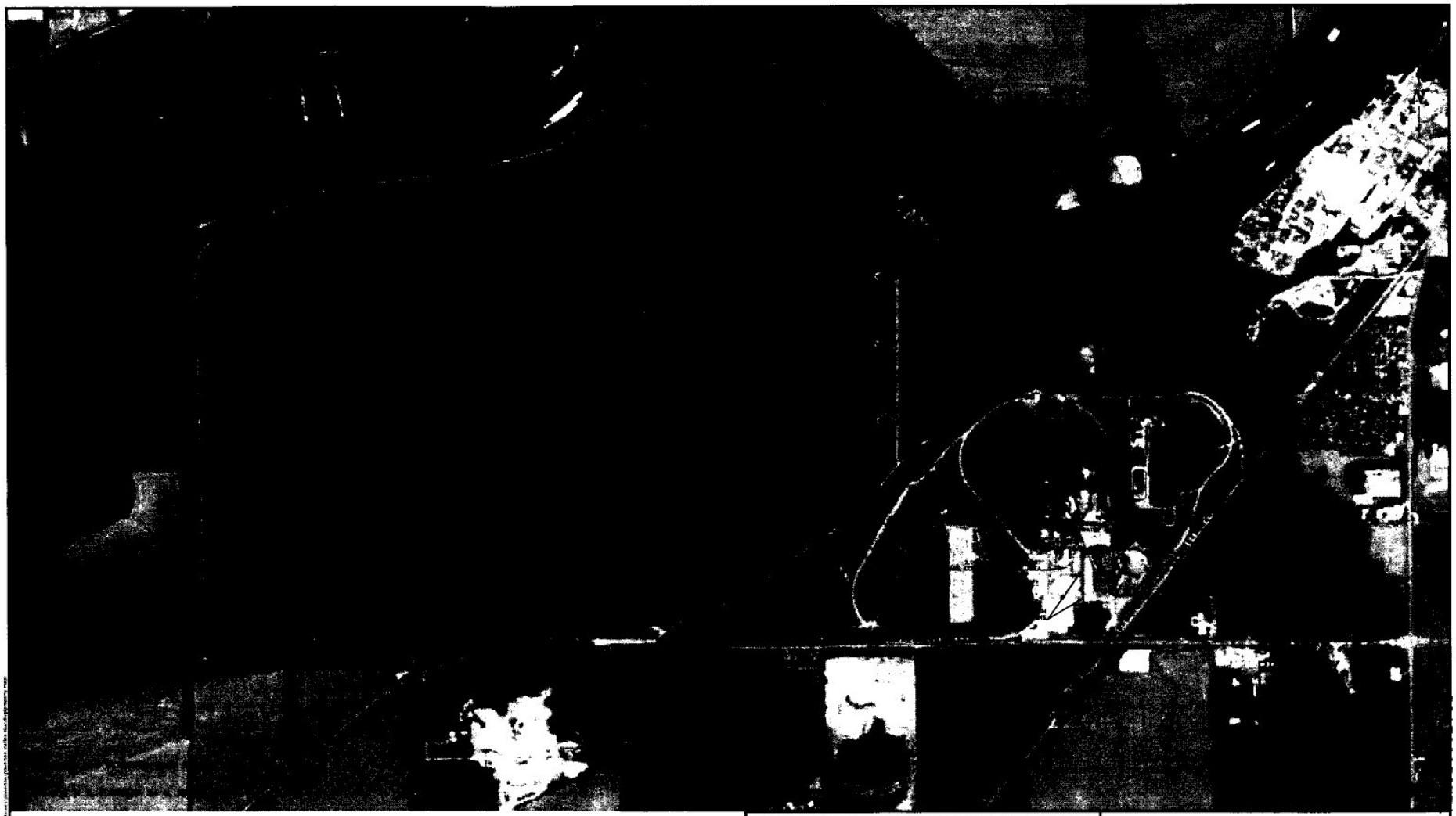
THAT PART OF SECTION 9, TOWNSHIP 24 NORTH, RANGE 5 WEST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS COMMENCING AT THE SOUTHWEST CORNER OF SAID SECTION 9; THENCE SOUTH 89 DEGREES 17 MINUTES 13 SECONDS EAST, ON THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 9, 1544.33 FEET; THENCE NORTH 0 DEGREES 42 MINUTES 47 SECONDS EAST, 375.88 FEET TO THE POINT OF BEGINNING; THENCE NORTH 37 DEGREES 01 MINUTES 18 SECONDS EAST, 2489.74 FEET, TO A PONT IN AN EXISTING FENCE LINE; THENCE NORTH 40 DEGREES 55 MINUTES 54 SECONDS EAST, 324.33 FEET, TO A POINT IN AN IN EXISTING FENCE LINE; THENCE EASTERLY AND NORTHERLY, ALONG SAID FENCE LINE, THE FOLLOWING 8 COURSES AND DISTANCES: NORTH 23 DEGREES 26 MINUTES 56 SECONDS EAST, 39.03 FEET; NORTH 18 DEGREES 06 MINUTES 44 SECONDS EAST, 80.30 FEET; NORTH 6 DEGREES 18 MINUTES 04 SECONDS EAST, 124.78 FEET; NORTH 0 DEGREES 15 MINUTES 35 SECONDS WEST, 102.19 FEET; NORTH 11 DEGREES 33 MINUTES 04 SECONDS WEST, 133.80 FEET; NORTH 11 DEGREES 24 MINUTES 35 SECONDS WEST, 137.42 FEET; THENCE NORTH 18 DEGREES 26 MINUTES 50 SECONDS WEST, 1392.41 FEET; THENCE NORTH 15 DEGREES 58 MINUTES 35 SECONDS WEST, 562.61 FEET, TO AN EXISTING FENCE CORNER; THENCE NORTH 20 DEGREES 08 MINUTES 15 SECONDS WEST, 473.86 FEET TO THE SOUTH BANK OF THE ILLINOIS RIVER; THENCE WESTERLY, ON SAID SOUTH BANK, THE FOLLOWING 8 COURSES AND DISTANCES: SOUTH 60 DEGREES 30 MINUTES 31 SECONDS WEST, 194.08 FEET; SOUTH 69 DEGREES 07 MINUTES 44 SECONDS WEST, 106.50 FEET; SOUTH 75 DEGREES 43 MINUTES 04 SECONDS WEST, 118.36 FEET; SOUTH 81 DEGREES 48 MINUTES 35 SECONDS WEST, 209.77 FEET; NORTH 61 DEGREES 47 MINUTES 39 SECONDS WEST, 102.07 FEET; SOUTH 72 DEGREES 38 MINUTES 55 SECONDS WEST, 59.95 FEET; SOUTH 43 DEGREES 51 MINUTES 46 SECONDS WEST, 131.79 FEET; SOUTH 35 DEGREES 54 MINUTES 01 SECONDS WEST, 284.63 FEET, TO THE CENTERLINE OF AN EXISTING INTAKE CHANNEL; THENCE SOUTH 2 DEGREES 49 MINUTES 17 SECONDS EAST, ON SAID

CENTERLINE, 306.67 FEET; THENCE SOUTH 0 DEGREES 52 MINUTES 34 SECONDS WEST, ON SAID CENTERLINE, 1389.66 FEET; THENCE SOUTH 0 DEGREES 15 MINUTES 46 SECONDS WEST, ON SAID CENTERLINE, 1505.09 FEET; THENCE SOUTH 7 DEGREES 37 MINUTES 30 SECONDS EAST, 527.97 FEET; THENCE SOUTH 0 DEGREES 50 MINUTES 08 SECONDS WEST, 931.74 FEET, TO THE POINT IN BEGINNING, ALL IN TAZEWELL COUNTY, ILLINOIS.

REAL ESTATE TAX INDEX OR PARCEL #

10-10-09-100-004 (Partial)

EXHIBIT B
Maps



0 1,200'
APPROXIMATE SCALE

ENVIRONMENTAL CONSULTATION & REMEDIATION

K P R G KPRG and Associates, Inc.

414 Plaza Drive, Suite 106 Westmont, Illinois 60559 Telephone 630-325-1300 Facsimile 630-325-1595

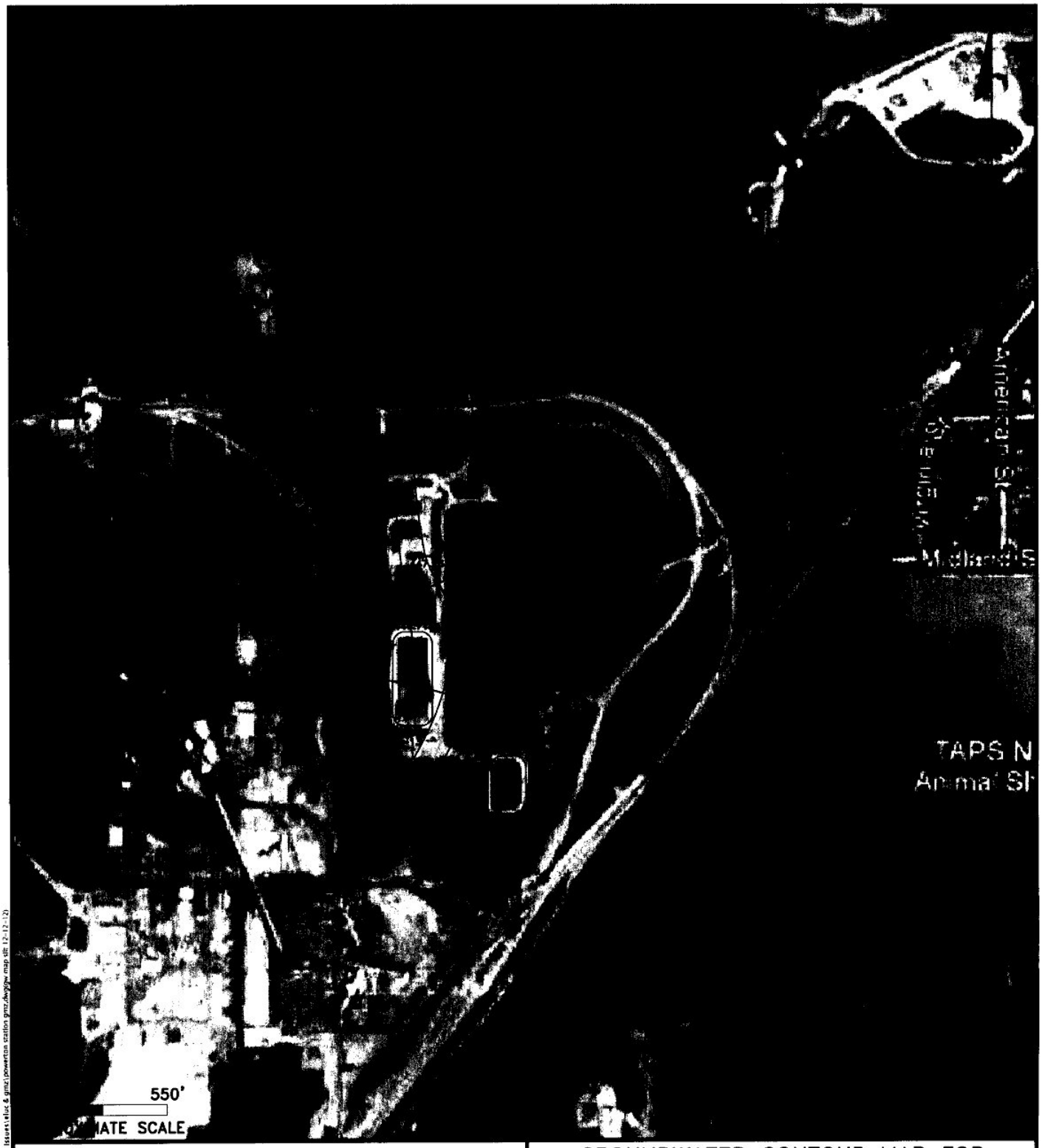
14665 West Lisbon Road, Suite 2B Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

PROPERTY MAP WITH BOUNDARY LINE

POWERTON STATION
PEKIN, ILLINOIS

Scale: 1" = 1,200' | Date: January 17, 2013

KPRG Project No. 18311.21 | EXHIBIT B-1



ENVIRONMENTAL CONSULTATION & REMEDIATION

K P R G

KPRG and Associates, Inc.

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

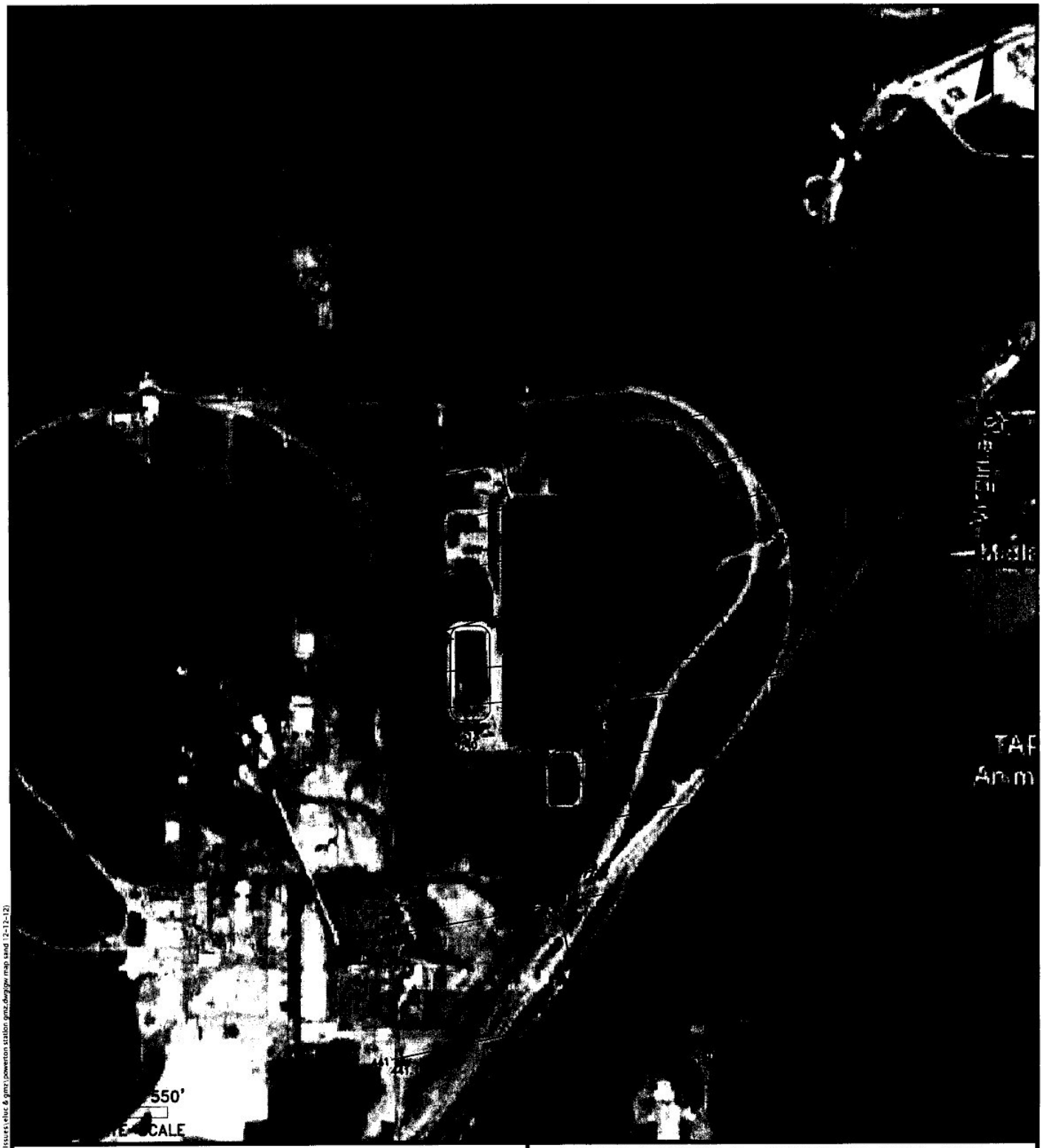
14665 West Lisbon Road, Suite 28 Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

GROUNDWATER CONTOUR MAP FOR SILT/CLAY UNIT 12/12/2012

POWERTON STATION
PEKIN, ILLINOIS

Scale: 1" = 550'	Date: January 17, 2013
KPRG Project No. 18311.21	EXHIBIT B-2

W:\c-d&p\projects\midwest generation\ash pond issues\stat & gmz\powerton station gmz.dwg\gw map alt 12-12-12)



ENVIRONMENTAL CONSULTATION & REMEDIATION

KPRG

KPRG and Associates, inc.

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

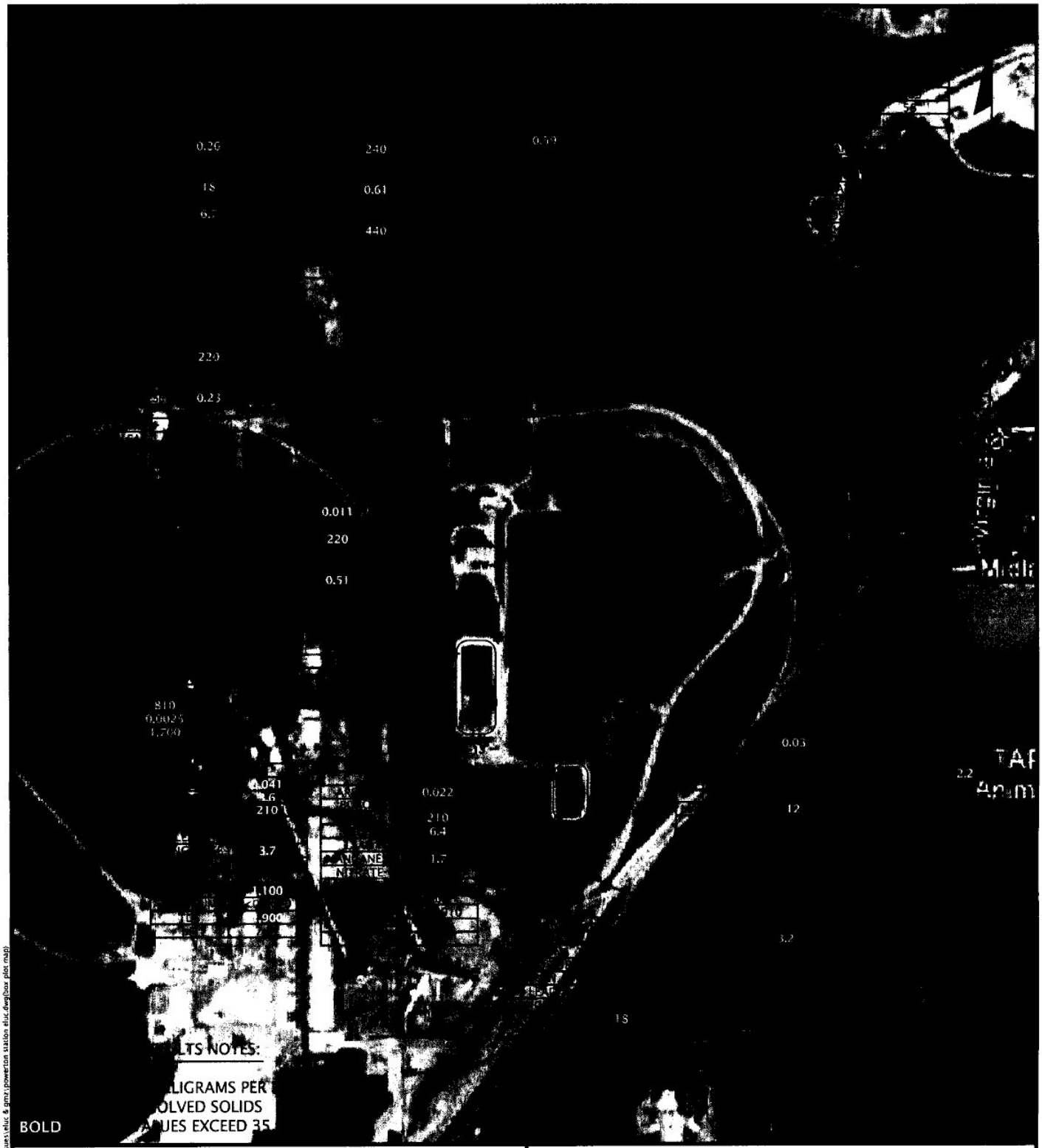
14665 West Lisbon Road, Suite 2B Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

GROUNDWATER CONTOUR MAP FOR GRAVELLY SAND UNIT 12/12/2012

POWERTON STATION
PEKIN, ILLINOIS

Scale: 1" = 550'	Date: January 17, 2013
KPRG Project No. 18311.21	EXHIBIT B-3

W:\c-d&s\projects\midwest generation\ash pond issues\elue & gmz\powerton station gmz.dwg\gw map sand (12-12-12)



ENVIRONMENTAL CONSULTATION & REMEDIATION

K P R G

KPRG and Associates, Inc.

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

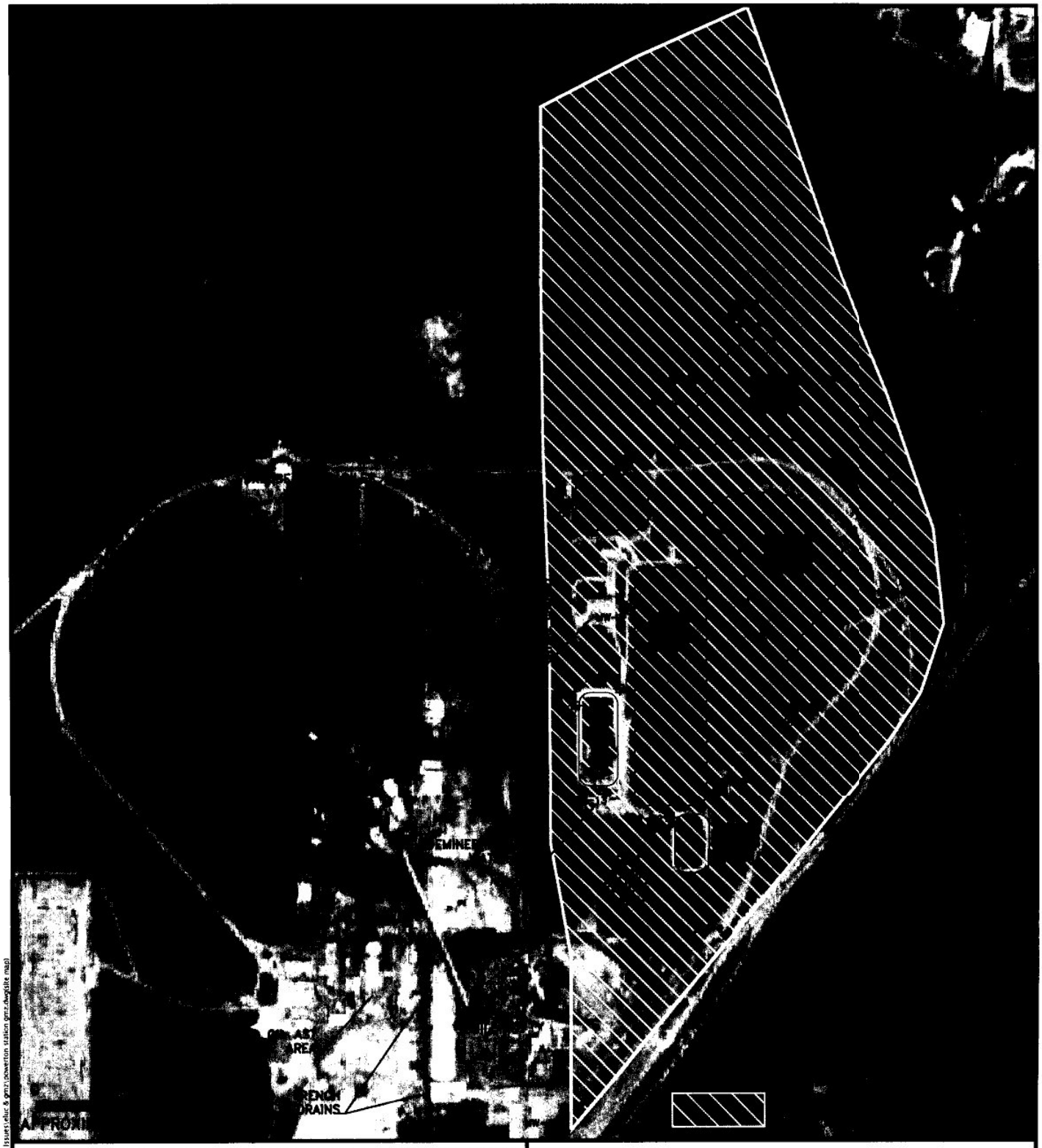
14665 West Lisbon Road, Suite 28 Brookfield, Wisconsin 53005 Telephone 262-781-0475 Facsimile 262-781-0478

AREAL DISTRIBUTION OF GROUNDWATER IMPACTS

POWERTON STATION
PEKIN, ILLINOIS

Scale: 1" = 550'	Date: January 17, 2013
KPRG Project No. 18311.21	EXHIBIT B-4

W:\c-rdsv\projects\midwest generation\ash pond issues\dwg & gmz\powerton station elec.dwg(box plot map)



ENVIRONMENTAL CONSULTATION & REMEDIATION

K P R G

KPRG and Associates, inc.

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

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

PROPOSED ELUC BOUNDARY

POWERTON STATION
PEKIN, ILLINOIS

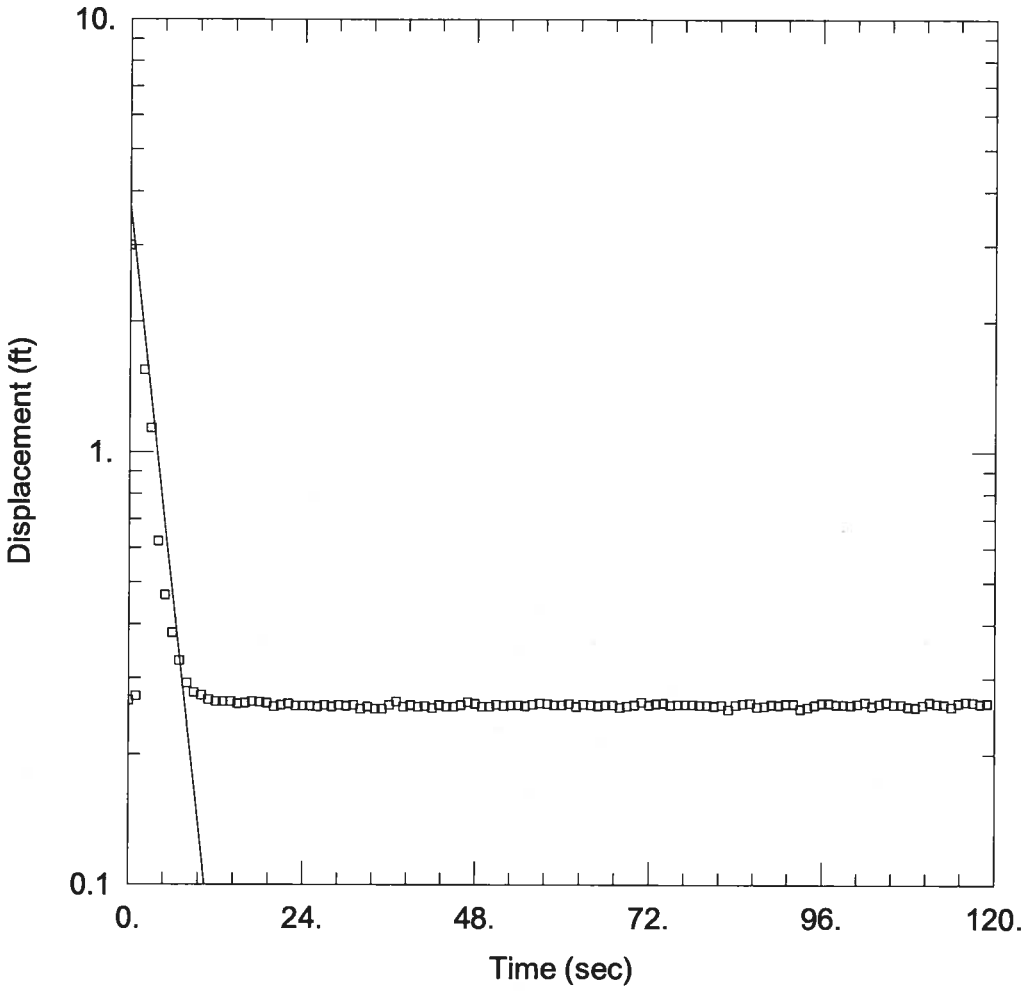
Scale: 1" = 550' | Date: January 17, 2013

KPRG Project No. 18311.21 | EXHIBIT B-5

W:\c-cdd\projects\midwest generation\ash pond issues\eluc & gmz\powerton station gmz\boylite map

Attachment 7

Resubmittal of 2011 Raw Slug Test Data from Hydrogeologic Assessment Report



WELL TEST ANALYSIS

Data Set: P:\...\Powerton mw-10 u2.aqt
Date: 02/18/11 Time: 09:11:28

PROJECT INFORMATION

Company: Patrick Engineering
Client: Midwest Generation
Project: 21053.070
Location: Powerton
Test Well: MW-10 (u2)
Test Date: 12/22/10

AQUIFER DATA

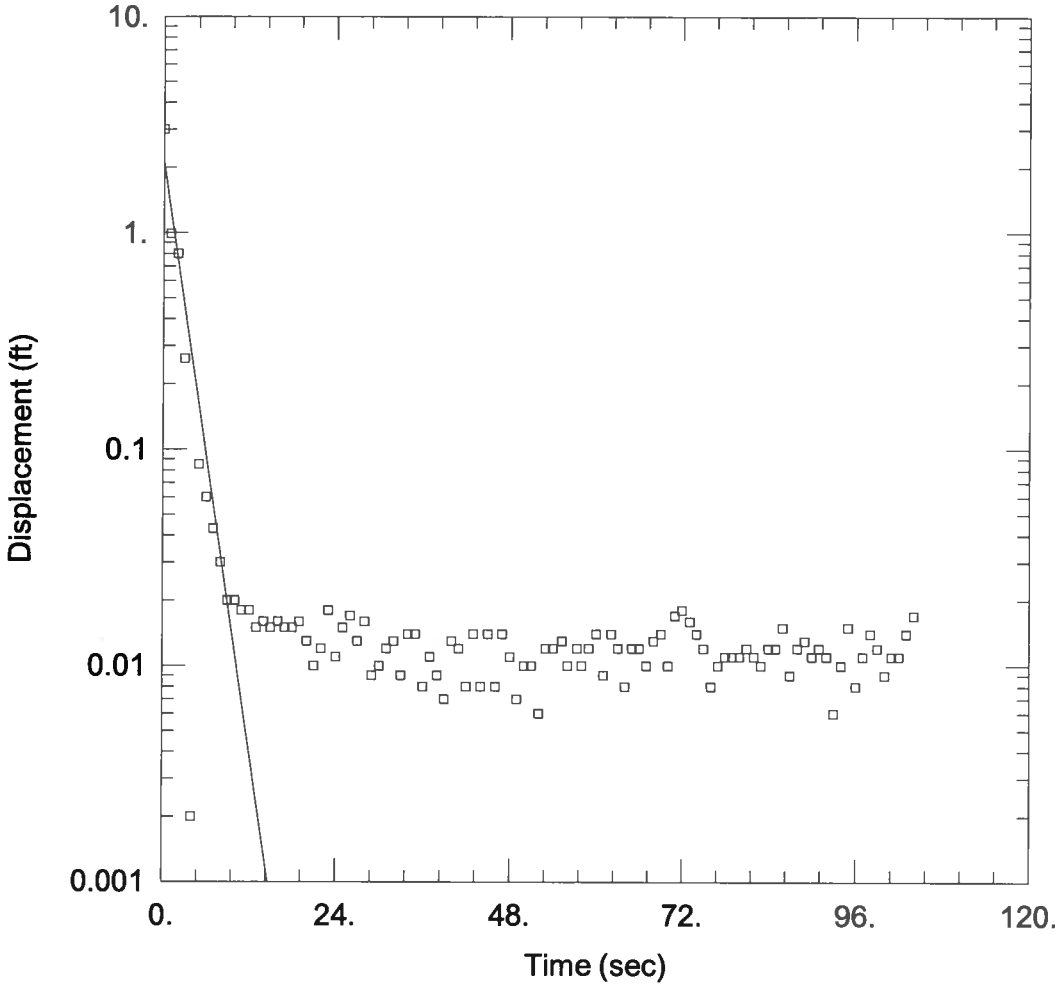
Saturated Thickness: 15.21 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-10 (u2))

Initial Displacement: 3. ft
Total Well Penetration Depth: 32.5 ft
Casing Radius: 0.2 ft
Static Water Column Height: 15.21 ft
Screen Length: 10. ft
Well Radius: 0.085 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.002264 ft/sec
y0 = 3.707 ft



WELL TEST ANALYSIS

Data Set: P:\...\Powerton mw-10 d1.aqt
Date: 02/18/11 Time: 09:11:49

PROJECT INFORMATION

Company: Patrick Engineering
Client: Midwest Generation
Project: 21053.070
Location: Powerton
Test Well: MW-10 (d1)
Test Date: 12/22/10

AQUIFER DATA

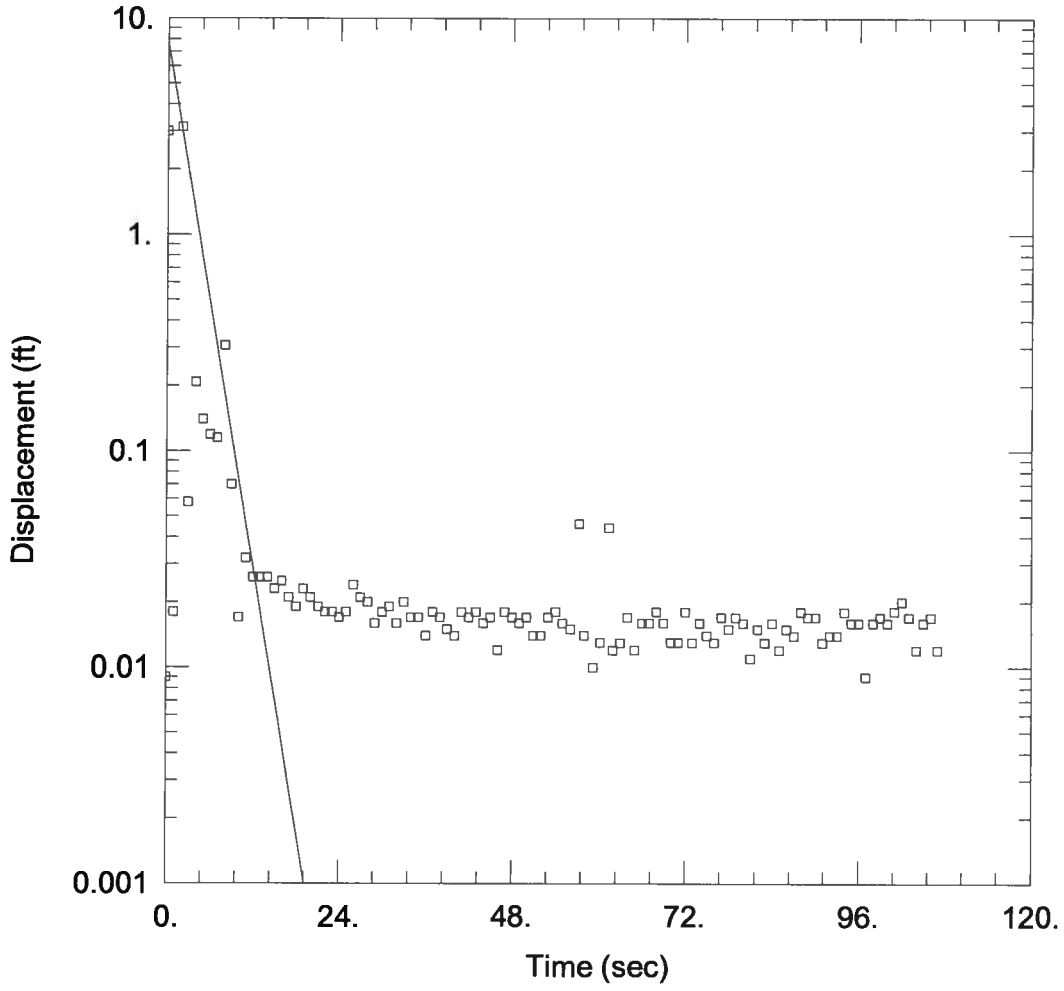
Saturated Thickness: 15.21 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-10 (d1))

Initial Displacement: 3. ft
Total Well Penetration Depth: 32.5 ft
Casing Radius: 0.2 ft
Static Water Column Height: 15.21 ft
Screen Length: 10. ft
Well Radius: 0.085 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.003455 ft/sec
y0 = 2.113 ft



WELL TEST ANALYSIS

Data Set: P:\...\Powerton mw-9 d2.aqt
Date: 02/18/11 Time: 09:12:26

PROJECT INFORMATION

Company: Patrick Engineering
Client: Midwest Generation
Project: 21053.070
Location: Powerton
Test Well: MW-9 (d2)
Test Date: 12/22/10

AQUIFER DATA

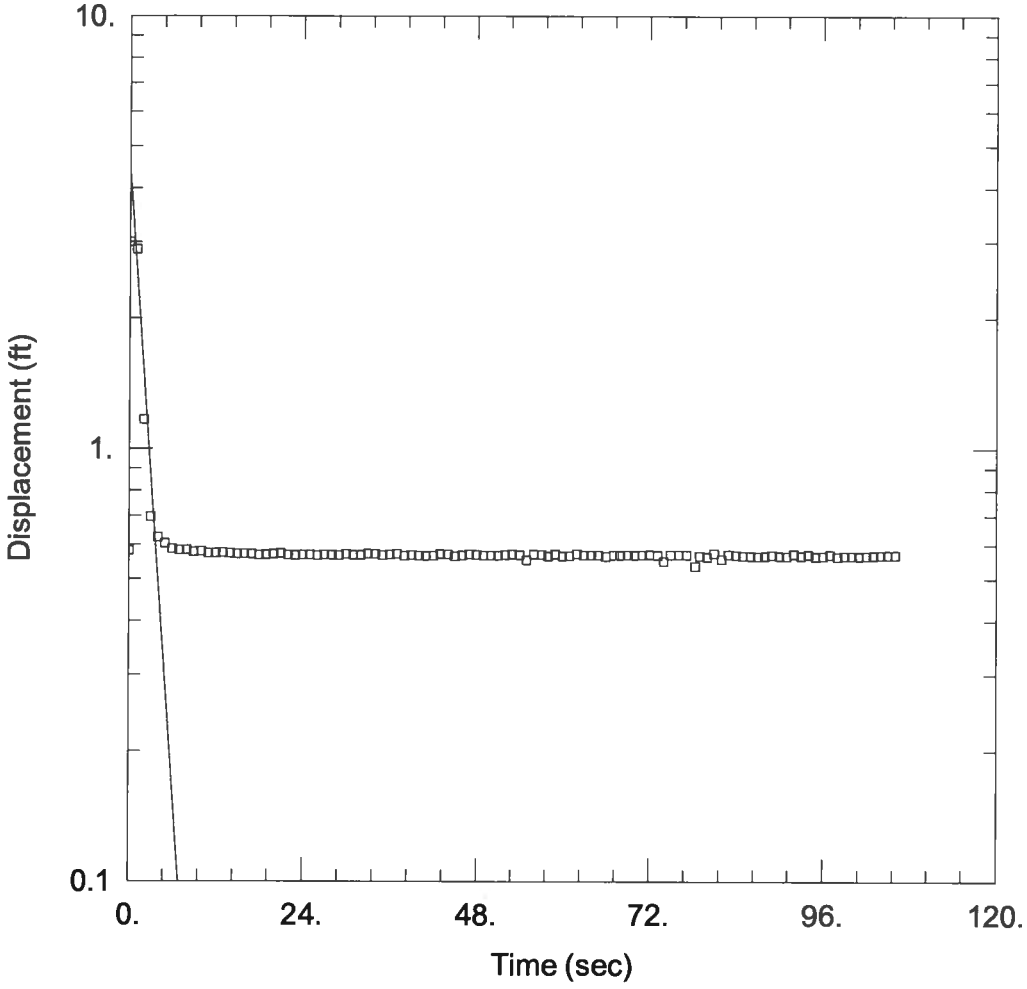
Saturated Thickness: 9.24 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-9 (d2))

Initial Displacement: 3. ft
Total Well Penetration Depth: 35.13 ft
Casing Radius: 0.2 ft
Static Water Column Height: 9.24 ft
Screen Length: 10. ft
Well Radius: 0.085 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.003352 ft/sec
y0 = 7.662 ft



WELL TEST ANALYSIS

Data Set: P:\...\Powerton mw-8 u1.aqt
Date: 02/18/11 Time: 09:12:44

PROJECT INFORMATION

Company: Patrick Engineering
Client: Midwest Generation
Project: 21053.070
Location: Powerton
Test Well: MW-8 (u1)
Test Date: 12/22/10

AQUIFER DATA

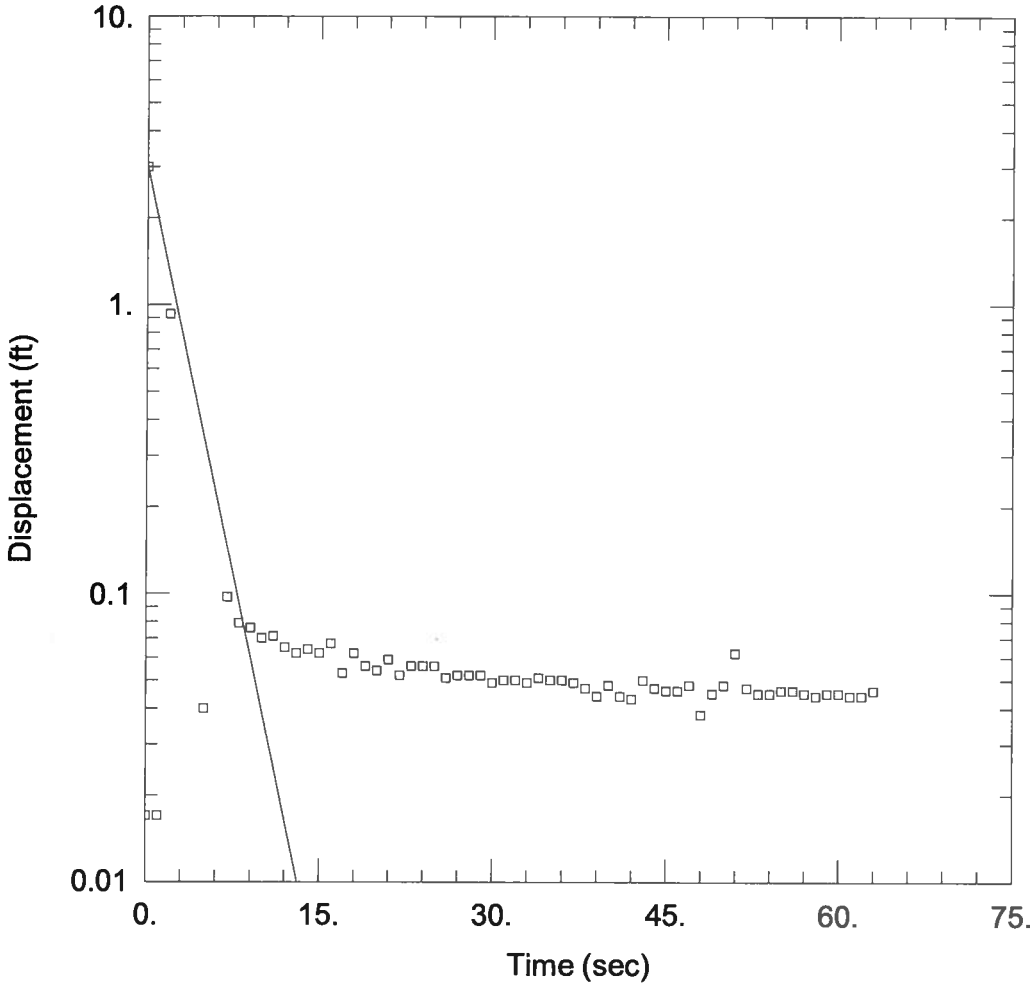
Saturated Thickness: 8.96 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-8 (U1))

Initial Displacement: 3. ft
Total Well Penetration Depth: 33.55 ft
Casing Radius: 0.2 ft
Static Water Column Height: 8.96 ft
Screen Length: 10. ft
Well Radius: 0.085 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.004003 ft/sec
y0 = 4.457 ft



WELL TEST ANALYSIS

Data Set: P:\...\Powerton mw-8 d1.aqt
Date: 02/18/11 Time: 09:13:04

PROJECT INFORMATION

Company: Patrick Engineering
Client: Midwest Generation
Project: 21053.070
Location: Powerton
Test Well: MW-8 (d1)
Test Date: 12/22/10

AQUIFER DATA

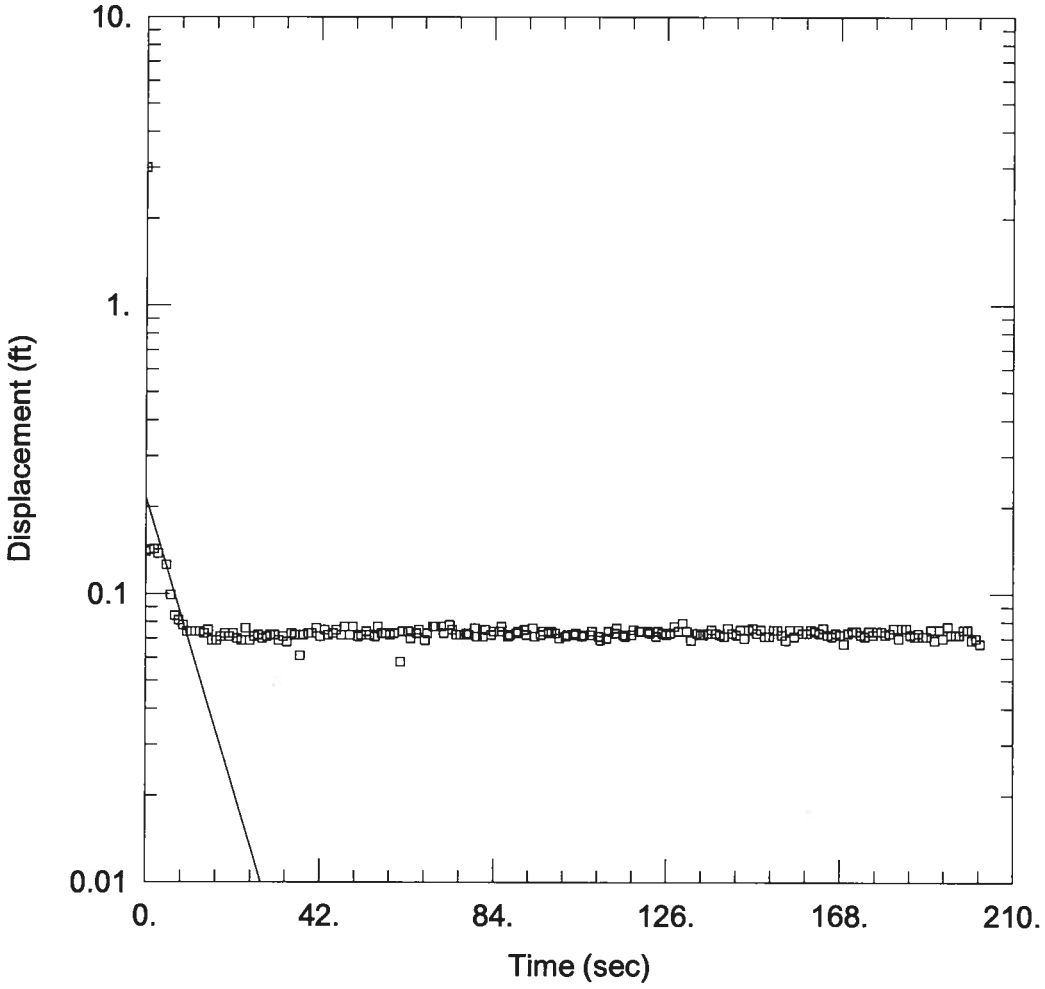
Saturated Thickness: 8.96 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-8 (d1))

Initial Displacement: 3. ft
Total Well Penetration Depth: 33.55 ft
Casing Radius: 0.2 ft
Static Water Column Height: 8.96 ft
Screen Length: 10. ft
Well Radius: 0.085 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.003207 ft/sec
y0 = 3.005 ft



WELL TEST ANALYSIS

Data Set: P:\...\Powerton mw-5 d1.aqt
Date: 02/18/11 Time: 09:13:29

PROJECT INFORMATION

Company: Patrick Engineering
Client: Midwest Generation
Project: 21053.070
Location: Powerton
Test Well: MW-5 (d1)
Test Date: 12/22/10

AQUIFER DATA

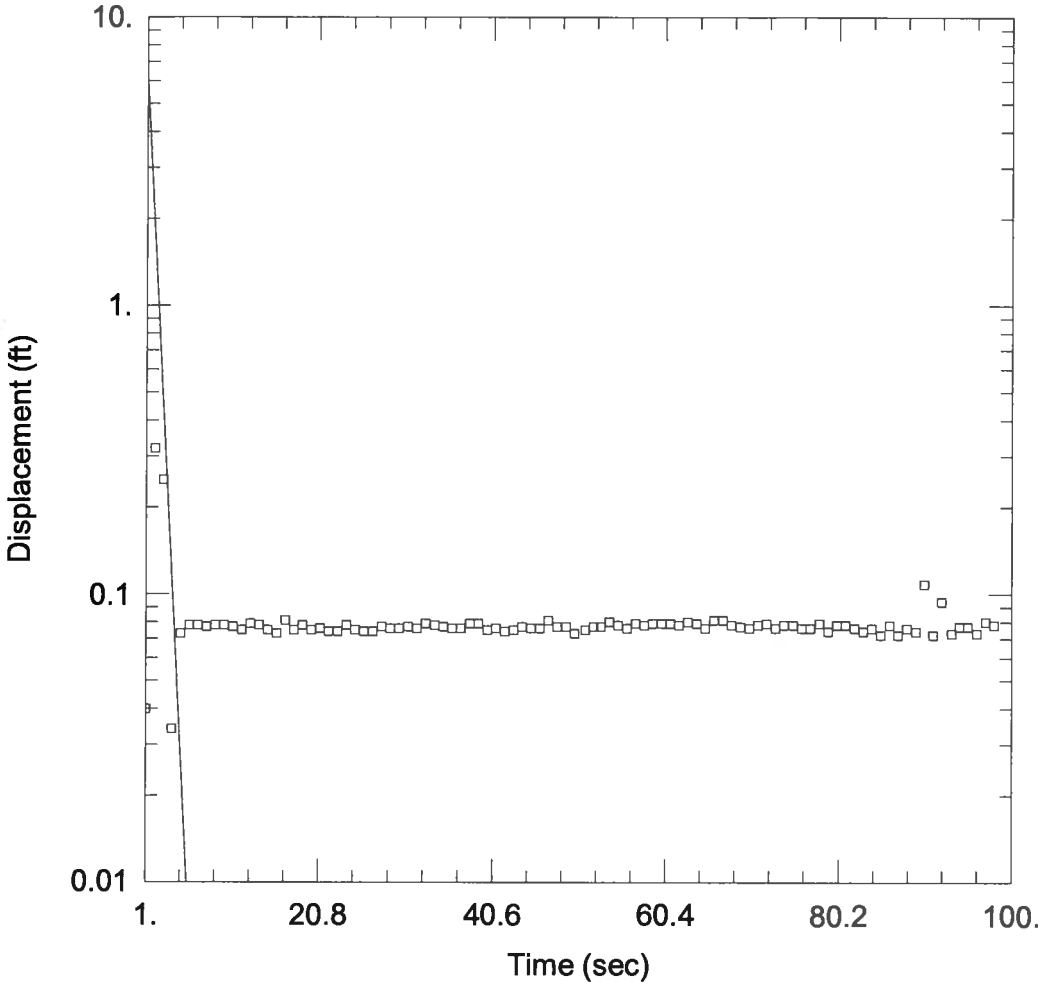
Saturated Thickness: 10.41 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-5 (d1))

Initial Displacement: 3. ft
Total Well Penetration Depth: 34.79 ft
Casing Radius: 0.2 ft
Static Water Column Height: 10.41 ft
Screen Length: 10. ft
Well Radius: 0.085 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0007405 ft/sec
y0 = 0.2171 ft



WELL TEST ANALYSIS

Data Set: P:\...\Powerton mw-2 d3.aqt
Date: 02/18/11 Time: 09:13:59

PROJECT INFORMATION

Company: Patrick Engineering
Client: Midwest Generation
Project: 21053.070
Location: Powerton
Test Well: MW-2 (d3)
Test Date: 12/22/10

AQUIFER DATA

Saturated Thickness: 9.86 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-2 (d3))

Initial Displacement: 3. ft
Total Well Penetration Depth: 37.11 ft
Casing Radius: 0.2 ft
Static Water Column Height: 9.86 ft
Screen Length: 10. ft
Well Radius: 0.085 ft
Gravel Pack Porosity: 0.

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.009237 ft/sec
y0 = 24.25 ft

Attachment 8

Borehole Stratigraphy & Resubmittal of Figure 5 from FAB Closure Application Groundwater Modeling Report

Attachment 9-1: Local Well Stratigraphy Information. Midwest Generation, LLC, Powerton Generating Station, Pekin, IL

Well Name/Identifier	From[1]	To[1]	Description	Lithology Group
	ft, bgs	ft, bgs		
121792196100	0	2	top soil	topsoil
121792196100	2	27	fine sand	sand
121792196100	27	95	medium to coarse gravel	coarse sand and/or gravel
121792196100	95	95	fine sand at	sand
121790013100	0	28	sand and gravel, dry	coarse sand and/or gravel
121790013100	28	60	sand and gravel, water	coarse sand and/or gravel
121790013000	0	2	topsoil	topsoil
121790013000	2	35	coarse sand and gravel	coarse sand and/or gravel
121790013000	35	56	coarse sand, test 1m., 36 sec.	coarse sand and/or gravel
121790013000	56	70	medium sand, test 3m., 20 sec.	coarse sand and/or gravel
121790013000	70	70	shale at	shale
121790012900	0	4	topsoil	topsoil
121790012900	4	21	dry sand and gravel	coarse sand and/or gravel
121790012900	21	44	coarse sand and gravel 1m., 40 s.	coarse sand and/or gravel
121790012900	44	66	med coarse sand and gravel, 2m., 10s.	coarse sand and/or gravel
121790012900	66	74	medium sand and gravel, 2m. 20s.	coarse sand and/or gravel
121790012900	74	74	clay, white at	clay and silt
121790012800	0	2	cinders and brick	FILL
121790012800	2	14	sand, medium	coarse sand and/or gravel
121790012800	14	18	sand, coarse	coarse sand and/or gravel
121790012800	18	19	coal	coal
121790012800	19	20	sand	sand
121790012800	20	39	sand, coarse, and gravel, 3m	coarse sand and/or gravel
121790012800	39	48	sand, coal, and boulders, 9m	coarse sand and/or gravel
121790012800	48	50	clay and rock	silt and clay
121790012800	50	55	sand, coarse, 3m	coarse sand and/or gravel
121790012800	55	63	sand, coarse, 2m	coarse sand and/or gravel
121790012800	63	66	sand, medium, 5m	coarse sand and/or gravel
121790012800	66	76	sand, 3m, 10s	coarse sand and/or gravel
121790012800	76	76	shale at	shale
121790025600	0	3	clay	clay
121790025600	3	15	sand & gravel	coarse sand and/or gravel
121790025600	15	19	gravel, coarse	coarse sand and/or gravel
121790025600	19	27	sand and gravel	coarse sand and/or gravel
121790025600	27	29	clay	clay
121790025600	29	33	gravel and small stones	coarse sand and/or gravel
121790025600	33	35	gravel	coarse sand and/or gravel
121790025600	35	42	sand, coarse	coarse sand and/or gravel
121790025600	42	51	sand, coarse	coarse sand and/or gravel
121790013800	0	3	soil	Topsoil
121790013800	3	82	sand and gravel	coarse sand and/or gravel
121790013300	0	3	soil, black	Topsoil
121790013300	3	5	sand, soil	coarse sand and/or gravel
121790013300	5	80	sand and gravel	coarse sand and/or gravel
121790013200	0	14	gravel, sand and clay	clay, sand, gravel
121790013200	14	18	sand and clay	clay, sand
121790013200	18	24	sand and gravel	coarse sand and/or gravel
121790013200	24	35	gravel and sand	coarse sand and/or gravel
121790013200	35	45	gravel	coarse sand and/or gravel
121790013200	45	59	gravel and sand	coarse sand and/or gravel
121790013200	59	61	shale	shale
121790052800	0	1	brown fill sand-some rocks	topsoil
121790052800	1	3	black sandy dirt	sand
121790052800	3	7	yellow sand-medium	coarse sand and/or gravel
121790052800	7	15	gray sand-medium	coarse sand and/or gravel
121790052800	15	28	gray sand & gravel	coarse sand and/or gravel
121790052800	28	49	gray sand & gravel-very coarse	coarse sand and/or gravel
121790052800	49	49	blue shale at	shale
121790050100	0	3	sandy loam	loam
121790050100	3	47	dirty sand & gravel	coarse sand and/or gravel
121790050100	47	81	yellow sand, trace gravel	coarse sand and/or gravel
121790048800	0	3	topsoil	topsoil
121790048800	3	8	yellow sand	sand
121790048800	8	20	gray silty clay	Silt and Clay
121790048800	20	21	brown clay	clay
121790048800	21	116	brown fine to med sand & gravel	coarse sand and/or gravel
121790048800	116	120	med to crs gravel, some coarse sand	coarse sand and/or gravel
121790048800	120	121	gray shale	shale

121790047700	0	3	brown sandy clay	clay, sand
121790047700	3	10	yellow clay - very sandy	clay, sand
121790047700	10	40	brown sand - coarse & clean	coarse sand and/or gravel
121790047700	40	47	brown sand - fine	sand
121790047700	47	58	dirty sand & yellow clay	clay, sand
121790047700	58	73	brown sand - fine to coarse	sand
121790047700	73	78	yellow sand - fine	sand
121790047700	78	87	fine to coarse sand - some pebbles	coarse sand and/or gravel
121790047700	87	93	fine to crs water sand-some pebbles	coarse sand and/or gravel
121790047700	93	96	med to coarse sand - some gravel	coarse sand and/or gravel
121790047700	96	101	fine to med sand-some rocks	coarse sand and/or gravel
121790047700	101	114	fine red sand	sand
121790047700	114	120	fine to coarse brown sand	sand
121790047700	120	127	f to crs sand with some fine gravel	coarse sand and/or gravel
121790047700	127	127	fine sand at	sand
121790012700	0	4	topsoil	topsoil
121790012700	4	15	sand, gravel, and clay	clay, sand, gravel
121790012700	15	32	sand, gravel, and boulders	coarse sand and/or gravel
121790012700	32	33	coal	coal
121790012700	33	36	hardpan	hardpan
121790012700	36	38	boulders	coarse sand and/or gravel
121790012700	38	40	sand and gravel, 2m. 15 s.	coarse sand and/or gravel
121790012700	40	48	coarse sand and gravel 1m. 40s.	coarse sand and/or gravel
121790012700	48	56	sand and gravel, 2 m., 15 s.	coarse sand and/or gravel
121790012700	56	58	sand 3m. 25 s.	sand
121790012700	58	66	sand, fine 5m, 20s	sand
121790012700	66	71	sand, 3m., 5s.	sand
121790012700	71	76	sand, 3m., 40 s.	sand
121790012700	76	76	shale at	shale
121790012600	0	18	muck	topsoil
121790012600	18	28	gravel, coarse and boulders	coarse sand and/or gravel
121790012600	28	36	sand, fine	sand
121790012600	36	36	shale at	shale
121790012500	0	85	sand & gravel	coarse sand and/or gravel
121790012500	85	85	shale at	shale
121790058500	0	4	topsoil	topsoil
121790058500	4	71	sand & gravel	coarse sand and/or gravel
121792462600	0	21	cinders black soil	cinders
121792462600	21	26	black & brown clay	clay
121792462600	26	39	fine sand w/soft clay mixed	clay, sand
121792462600	39	41	large gravel & coarse sand	coarse sand and/or gravel
121792462600	41	52	coarse sand & some small gravel	coarse sand and/or gravel
121792462600	52	79	coarse sand w/streaks of small gvl	coarse sand and/or gravel
121792462600	79	98	fine to coarse sand w/some small gvl	sand
121792462600	98	99	fine silty sand	sand
121792462600	99	103	dk gray shale & hd dk color limestone	shale
121792456600	0	4	loam-sandy	Loam
121792456600	4	15	sand -yellow	sand
121792456600	15	53	sand & gravel	coarse sand and/or gravel
121792456600	53	83	sand & gravel-coarse	coarse sand and/or gravel
121790041500	0	85	Sand	sand
121790041300	0	2	cindres, fill	FILL
121790041300	2	35	fine to coarse sand & gravel	sand
121790041300	35	74	f to crs, sand, fine to crs gravel bldrs	sand
121790041300	74	80	f to crs sand	sand
121790041300	80	93	f to crs sand, medium gravel	sand
121792453000	0	3	topsoil	topsoil
121792453000	3	22	lt. med gravel	coarse sand and/or gravel
121792453000	22	44	med-large gravel	coarse sand and/or gravel
121792453000	44	45	shale bedrock	shale
121792323500	0	4	topsoil	topsoil
121792323500	4	12	fine silty clay	Silt and clay
121792323500	12	48	medium sand	coarse sand and/or gravel
121792323500	48	93	medium to coarse gravel	coarse sand and/or gravel
121792323500	93	93	shale at	shale
121792489200	0	21	sand	sand
121792489200	21	38	sand & gravel	coarse sand and/or gravel
121792489200	38	56	sand medium	coarse sand and/or gravel
121792489200	56	61	sand coarse	coarse sand and/or gravel
121792489200	61	63	sand & gravel	coarse sand and/or gravel
121792489200	63	63	shale below	shale

121792486200	0	15	fine sand	sand
121792486200	15	20	gritty sand	sand
121792486200	20	30	fine to medium sand	sand
121792486200	30	35	medium-coarse sand with light gravel	coarse sand and/or gravel
121792486200	35	40	fine to medium sand	sand
121792486200	40	45	clay	clay
121792486200	45	60	light to medium sand	sand
121792486200	60	65	medium to coarse gravel	coarse sand and/or gravel
121792486200	65	88	fine sand	sand
121792486200	88	93	fine to medium sand	sand
121792486200	93	103	fine sand	sand
121792486200	103	108	coarse sand with big gravel	coarse sand and/or gravel
121792486200	108	113	medium to coarse sand with gravel	coarse sand and/or gravel
121792486200	113	118	medium to coarse sand	coarse sand and/or gravel
121792486200	118	120	medium to big gravel	coarse sand and/or gravel
121792485000	0	70	Sand	sand
121792377600	0	9	loam	Loam
121792377600	9	15	gravel very coarse	coarse sand and/or gravel
121792377600	15	60	sand & gravel	coarse sand and/or gravel
121792377600	60	85	sand & finer gravel	coarse sand and/or gravel
121792444600	0	2	topsoil	topsoil
121792444600	2	14	sand	sand
121792444600	14	75	sand & gravel	coarse sand and/or gravel
121792326500	0	2	loam sandy	Loam
121792326500	2	9	clay yellow sandy	clay, sand
121792326500	9	42	sand & gravel - coarse	coarse sand and/or gravel
121792326500	42	72	coarse sand	coarse sand and/or gravel
121792326500	72	82	sand & gravel	coarse sand and/or gravel
121792481400	0	2	topsoil	topsoil
121792481400	2	29	sand	sand
121792481400	29	70	sand & gravel	coarse sand and/or gravel
121792478800	0	21	cinders, black soil	cinders
121792478800	21	26	black & brown clay	clay
121792478800	26	39	fine sand clay mixed	clay, sand
121792478800	39	46	coarse sand gravel (boulders)	coarse sand and/or gravel
121792478800	46	48	black peat	Organic
121792478800	48	79	coarse sand gravel	coarse sand and/or gravel
121792478800	79	99	medium sand gravel	coarse sand and/or gravel
121792478800	99	104	gray shale	shale
121792477400	0	3	topsoil sandy	topsoil
121792477400	3	52	sand	sand
121792477400	52	70	sand & gravel	coarse sand and/or gravel
121792474300	0	4	topsoil	topsoil
121792474300	4	23	sand	sand
121792474300	23	60	sand & gravel	coarse sand and/or gravel
121792484700	0	4	topsoil	topsoil
121792484700	4	28	fine to medium sand & gravel	sand
121792484700	28	88	coarse gravel & rocks	coarse sand and/or gravel
121792481600	0	6	cinders	cinders
121792481600	6	42	coarse sand & gravel	coarse sand and/or gravel
121792481600	42	50	brown silty sand & fine gravel	coarse sand and/or gravel
121792481600	50	66	coarse sand & gravel	coarse sand and/or gravel
121792481600	66	99	fine to coarse sand	sand
121792481600	99	102	fine to coarse sand & gravel	coarse sand and/or gravel
121792481600	102	103	dark gray shale	shale
121792478000	0	3	topsoil	topsoil
121792478000	3	26	sand	sand
121792478000	26	70	sand & gravel	coarse sand and/or gravel
121792467500	0	4	topsoil	topsoil
121792467500	4	10	red clay with light gravel	clay, sand, gravel
121792467500	10	14	tan sandy hardpan	hardpan
121792467500	14	24	light medium gray with coarse sand	coarse sand and/or gravel
121792467500	24	29	light gravel, coarse sand	coarse sand and/or gravel
121792467500	29	38	light tan clay, coarse sand	clay, sand
121792467500	38	71	medium coarse gravel	coarse sand and/or gravel
121792467500	71	72	medium sand with light gravel at	coarse sand and/or gravel
121792313900	0	4	loam	loam
121792313900	4	82	sand & gravel	coarse sand and/or gravel
121792313900	82	82	brown clay below	clay

121792534000	0	2	loam	loam
121792534000	2	12	sand - yellow, fine	sand
121792534000	12	60	sand & gravel - coarse	coarse sand and/or gravel
121792534000	60	67	sand	sand
121792534000	67	70	sand & gravel	coarse sand and/or gravel
121792534000	70	70	boulders or bedrock at	shale
121792539500	0	10	sand, gravel, cinders	coarse sand and/or gravel
121792539500	10	14	sand, gravel, clay	clay, sand, gravel
121792539500	14	26	organic clay	clay
121792539500	26	34	organic silt	Silt and clay
121792539500	34	45	sand and gravel	coarse sand and/or gravel
121792539400	0	10	clay and gravel	clay, sand, gravel
121792539400	10	14	clayey silt	Silt and clay
121792539400	14	18	cinders	cinders
121792539400	18	28	organic silt and clay	Silt and clay
121792509100	0	12	black sand, gravel & cement fill	FILL
121792509100	12	25	brown sand & small gravel	coarse sand and/or gravel
121792509100	25	27	gray clay with gravel	clay, sand, gravel
121792509100	27	104	coarse sand & gravel	coarse sand and/or gravel
121792497500	0	4	topsoil	topsoil
121792497500	4	18	sand	sand
121792497500	18	26	clay	clay
121792497500	26	86	sand & gravel	coarse sand and/or gravel
121792497400	0	4	black topsoil, rock	topsoil
121792497400	4	15	medium sand	sand
121792497400	15	45	medium sand - rocks	coarse sand and/or gravel
121792501800	0	2	topsoil	topsoil
121792501800	2	4	brown clay	clay
121792501800	4	73	medium sand & gravel	coarse sand and/or gravel
121792501800	73	73	shale at	shale
121792538900	0	10	cinders, gravel, clay	FILL
121792538900	10	18	cinders and sand	sand
121792538900	18	32	organic silt	Silt and clay
121792538900	32	34	silty clay, sand	clay, sand
121792538900	34	40	gravel	coarse sand and/or gravel
121792538800	0	10	gravel, sand, cinders	coarse sand and/or gravel
121792538800	10	16	clay and gravel	clay, sand, gravel
121792538800	16	20	silt and clay	Silt and clay
121792538800	20	26	organic silt	Silt and clay
121792538800	26	33	silty clay	Silt and clay
121792538800	33	40	sand and gravel	coarse sand and/or gravel
121792538700	0	1	topsoil	topsoil
121792538700	1	16	clay & silt	Silt and clay
121792538700	16	20	sand	sand
121792538700	20	34	gravel	coarse sand and/or gravel
121792492400	0	17	sand	sand
121792492400	17	20	gravel	coarse sand and/or gravel
121792492400	20	27	sand fine	sand
121792492400	27	60	sand & gravel coarse	coarse sand and/or gravel
121792492400	60	85	blue-green shale below 60'	shale
121792539300	0	2	topsoil	topsoil
121792539300	2	17	clay and silt with gravel	clay, sand, gravel
121792539300	17	31	sand and gravel	coarse sand and/or gravel
121792539200	0	10	gravel, sand, silt, clay fill	clay, sand, gravel
121792539200	10	25	cinders	cinders
121792539200	25	28	organic clay	clay
121792539200	28	30	organic silt	silt and clay
121792539100	0	10	cinders, gravel, clay	FILL
121792539100	10	20	cinders, gravel, sand	coarse sand and/or gravel
121792539100	20	24	fine sand	sand
121792539100	24	28	silt	silt and clay
121792539100	28	30	silty clay	silt and clay
121792539000	0	10	cinders, gravel, clay	FILL
121792539000	10	20	gravel and clay	clay, sand, gravel
121792539000	20	30	organic silt	silt and clay
121792565200	0	10	topsoil	topsoil
121792565200	10	16	fine sand	sand
121792565200	16	26	med to coarse sand & gravel	coarse sand and/or gravel
121792565200	26	39	super coarse gravel	coarse sand and/or gravel
121792564300	0	2	cinders	cinders
121792564300	2	7	black and dark gray peaty clay	clay
121792564300	7	38	brown sandy clay	clay
121792564300	38	85	coarse sand & gravel	coarse sand and/or gravel
121792560500	0	15	med sand light gravel	coarse sand and/or gravel
121792560500	15	25	med gravel w/ rocks	coarse sand and/or gravel
121792560500	25	35	med sand - med gravel w/ rocks	coarse sand and/or gravel
121792560500	35	37	med sand - med gravel	coarse sand and/or gravel

121792366700	0	2	topsoil	topsoil
121792366700	2	15	sand	sand
121792366700	15	39	big gravel	coarse sand and/or gravel
121792366700	39	100	sand & gravel	coarse sand and/or gravel
121792354800	0	3	(ML) silt, some clay, little sand	topsoil
121792354800	3	6	(SP) sand, little gravel	coarse sand and/or gravel
121792354800	6	14	(SW) sand, little gravel	coarse sand and/or gravel
121792354800	14	30	(SP) sand ltl gvl, SW sand some gvl @30'	coarse sand and/or gravel
121792354800	30	44	sand	sand
121792355100	0	3	(ML) silt, some clay, little sand	topsoil
121792355100	3	6	(SP) sand fine gravel little gravel	coarse sand and/or gravel
121792355100	6	14	(SW) sand, little gravel	coarse sand and/or gravel
121792355100	14	30	(SP) sand, little gravel	coarse sand and/or gravel
121792355100	30	65	(SW) sand, some gravel	coarse sand and/or gravel
121792355100	65	69	(SP) sand, little gravel	coarse sand and/or gravel
121792355100	69	77	(SW) sand, some gravel	coarse sand and/or gravel
121792355100	77	103	(SP) sand, little gravel	coarse sand and/or gravel
121792355000	0	3	(ML) silt, some clay, little sand	clay, sand
121792355000	3	6	(SP) sand fine gravel little gravel	coarse sand and/or gravel
121792355000	6	14	(SW) sand, little gravel	coarse sand and/or gravel
121792355000	14	30	(SP) sand ltl gvl, SW sand some gvl @30'	coarse sand and/or gravel
121792355000	30	44	sand	sand
121792354900	0	3	(ML) silt, some clay, little sand	clay, sand
121792354900	3	6	(SP) sand, little gravel	coarse sand and/or gravel
121792354900	6	14	(SW) sand, little gravel	coarse sand and/or gravel
121792354900	14	30	(SP) sand, little gravel	coarse sand and/or gravel
121792354900	30	30	(SW) sand, some gravel at 30'	coarse sand and/or gravel
121792354900	30	44	sand	sand
121792378900	0	3	black cinder and gravel fill	FILL
121792378900	3	4.5	black silty sand	sand
121792378900	4.5	6.5	brown clayey sand	clay, sand
121792378900	6.5	35	brown fine to coarse sand, little fine to medium gravel, wet at 29'	coarse sand and/or gravel
121792378800	0	1	black to brown gravel, fill	FILL
121792378800	1	3	brown silty sand fill	FILL
121792378800	3	5.5	black silty sand , trace clay, topsoil	topsoil
121792378800	5.5	7.5	brown silty fine to coarse sand	sand
121792378800	7.5	50	brown fine to coarse sand, little fine to medium gravel, more sandy below 36'	sand
121792378700	0	1.5	black silty sand fill	FILL
121792378700	1.5	4	black grading brown silty sand	sand
121792378700	4	5.5	tan fine sand, clean	sand
121792378700	5.5	8.5	brown silty sand, cobbles at 8.5'	sand
121792378700	8.5	17.5	brown fine to coarse sand, little fine to medium gravel, dry, clay seam at 10.5' to 11.5'	coarse sand and/or gravel
121792378700	17.5	30	brown fine to coarse sand, trace of gravel, dry	coarse sand and/or gravel
121792379400	0	5.5	brown, stiff silt clay loam	loam
121792379400	5.5	14	brown, loose sandy loam	loam
121792379400	14	16.5	brown, medium silt clay loam	loam
121792379400	16.5	24	brown, loose, sand	sand
121792379400	24	61	brown, medium, sand and gravel	coarse sand and/or gravel
121792379400	61	65.5	light gray, hard, shale	shale
121792379300	0	4	brown stiff silt loam	loam
121792379300	4	14	brown and gray stiff, silt clay loam	loam
121792379300	14	14.5	brown and gray sand	sand
121792379300	14.5	19	dark gray, medium, wet silt clay loam	loam
121792379300	19	31.5	gray, loose, sand	sand
121792379300	31.5	58	brown, medium sand and gravel	coarse sand and/or gravel
121792379200	0	1.5	black grading brown clayey sand	clay, sand
121792379200	1.5	15	brown fine to coarse sand, little fine to medium gravel, dry	coarse sand and/or gravel
121792379100	0	1.5	black silty sand, fill, some gravel	clay, sand
121792379100	1.5	6	black grading down to brown silty sand	sand
121792379100	6	40	brown fine to coarse sand, little fine to medium gravel, water in 27.5'	coarse sand and/or gravel
121792379000	0	6.5	black silty sand disturbed, fill and topsoil, few sand seams 5'-6.5'	topsoil
121792379000	6.5	35	brown fine to coarse sand little fine to medium gravel, wet at 28'	coarse sand and/or gravel
121792361700	0	5	loam	loam
121792361700	5	14	sand & gravel	coarse sand and/or gravel
121792361700	14	34	sand & gravel - coarse	coarse sand and/or gravel
121792361700	34	39	gravel & rocks	coarse sand and/or gravel
121792361700	39	40	shale gray	shale
121792553800	0	8	cinders old burnt coal	FILL
121792553800	8	79	sand & gravel	coarse sand and/or gravel
121792552000	0	6	topsoil	topsoil
121792552000	6	32	sand & gravel-medium	coarse sand and/or gravel
121792552000	32	141	sand & gravel-coarse	coarse sand and/or gravel
121792552000	141	141	shale below	shale
121792538600	0	10	silty clay	silt and clay
121792538600	10	14	organic silt	silt and clay
121792538600	14	17	organic clay	clay
121792538600	17	21	silty clay	silt and clay
121792538600	21	29	sand & gravel	coarse sand and/or gravel
121792378600	0	1.5	black clayey silt topsoil	topsoil
121792378600	1.5	5.5	dark brown to brown clayey silt, more sandy with depth	clay, sand
121792378600	5.5	10	brown fine to coarse sand, trace of fine to medium gravel	coarse sand and/or gravel
121792356100	0	10	fill	FILL
121792356100	10	23	loam - soft	loam
121792356100	23	55	sand & gravel	coarse sand and/or gravel
121792356100	55	64	sand coarse fine gravel	coarse sand and/or gravel
121792356100	64	84	sand & gravel	coarse sand and/or gravel
121792365600	0	3	loam sandy	loam
121792365600	3	5	clay yellow sandy	clay, sand
121792365600	5	56	sand & gravel	coarse sand and/or gravel
121792365600	56	67	sand medium	coarse sand and/or gravel
121792365600	67	83	sand & gravel fine	coarse sand and/or gravel

121792538100	0	19	sand, gravel fill material	FILL
121792538100	19	31	coarse sand and fine gravel	coarse sand and/or gravel
121792373700	0	82	sand and gravel, red sand at bottom	coarse sand and/or gravel
121792373400	0	98	sand and gravel	coarse sand and/or gravel
121792333600	0	2	black dirt	topsoil
121792333600	2	9	brown sand	sand
121792333600	9	42	light to coarse gravel	coarse sand and/or gravel
121792538500	0	10	cinders, gravel, clay	FILL
121792538500	10	19	cinders	cinders
121792538500	19	26	silt and sand	sand
121792538500	26	29	clayey silt	silt and clay
121792538400	0	10	gravel, crushed rock, cinders	FILL
121792538400	10	17	cinders, sand, brick	Cinders
121792538400	17	19	clayey silt	silt and clay
121792538400	19	32	sand	sand
121792538300	0	1	topsoil	topsoil
121792538300	1	34	sand	sand
121792538200	0	2	topsoil	topsoil
121792538200	2	24	sand	sand
121792538200	24	34	gravel	coarse sand and/or gravel
121792439900	0	2	silty topsoil, little sand, trace clay & roots-medium dark brown	topsoil
121792439900	2	4	clayey silty fine sand, trace medium sand, rust brown-medium dense-moist	sand
121792439900	4	6	fine sand, trace gravel,medium coarse sand & silt-light brown-medium dense moist	sand
121792439900	6	8	fine to coarse sand, trace gravel & silt brown & slightly dark gray-medium densemoist	sand
121792439900	8	26.5	fine to coarse sand-moist @8' & saturated @19'-little gravel, trace silt-light brown & slightly gray-n	sand
121792439200	0	2	clayey, sandy. silty topsoil, trace roots, dark brown-loose-moist	topsoil
121792439200	2	4.4	sandy, silty & gravelly clay-brown-loosemoist	clay, sand
121792439200	4.4	6	clayey silty fine & coarse sand,trace gravel-brown & slightly gray-loose-moist to wet	sand
121792439200	6	13.5	gravelly, fine & coarse sand, trace siltbrown & slightly gray & dark gray-medium dense-moist	coarse sand and/or gravel
121792439200	13.5	19	fine & medium sand, trace gravel-brown & slightly gray-loose-moist	sand
121792439200	19	26.5	fine & medium sand, trace gravel-brown, light gray & dark gray-dense-wet	sand
121792438000	0	2	silty sandy topsoil-dark brown	topsoil
121792438000	2	6	gravelly, fine to medium sand, trace coarse sand & silt-light gray & slight gray-medium dense to d	coarse sand and/or gravel
121792438000	6	9	fine sand, trace silt & clay-dark brown loose, moist to wet	sand
121792438000	9	18	gravelly fine to coarse sand, trace silt, light brown & slight gray-medium dense to dense-saturated	coarse sand and/or gravel
121792438000	18	23	coarse sand, trace fine to medium sand & fine gravel-brown to light gray & dark gray-dense-satura	coarse sand and/or gravel
121792438000	23	45.5	gravelly fine to coarse sand, trace siltbrown & slight gray-medium dense to densesaturated	coarse sand and/or gravel
121792438000	45.5	50.25	clayey shale, gray & rust brown-extremely dense	shale
121792430400	0	2	topsoil	topsoil
121792430400	2	9	sandy soil	topsoil
121792430400	9	17	sand	sand
121792430400	17	68	sand & gravel	coarse sand and/or gravel
121792437700	0	2.5	clay, silty, brown, some organic material	silt and clay
121792437700	2.5	4.5	sand, light yellow brown, very fine grained, silty, poorly graded, subangular	sand
121792437700	4.5	6.5	sand, brown, fine to medium grained, silty, some clay, sand grains subangular	sand
121792437700	6.5	15	sand & gravel, brown,well graded, sand, fine to medium grained, silty some coarse gravel,subang	coarse sand and/or gravel
121792437700	15	31.5	sand, light yellow brown very fine grained to fine grained, subrounded silty in upper portion trace c	sand
121792440300	0	2	sandy, silty topsoil, trace clay & rootsdark brown	topsoil
121792440300	2	4	clayey silty fine to medium sand, little gravel, trace coarse sand, rust brown & slightly gray-mediun	clay, sand
121792440300	4	6	fine to coarse sand, trace gravel & silt brown & slighty gray-loose to medium moist	sand
121792440300	6	9	fine to medium sand & gravel-trace siltbrown & slightly gray-medium dense to dense-moist	sand
121792440300	9	13	gravelly fine to coarse sand trace silt & shale-light brown, slight gray & dark gray-very dense-mois	coarse sand and/or gravel
121792440300	13	18	fine to medium sand & gravel medium dense	coarse sand and/or gravel
121792440300	18	28	fine to coarse sand, trace gravel-brown & light gray-medium dense to dense-wetsaturated @25'	coarse sand and/or gravel
121792440300	28	36.5	Fine to medium sand, trace gravel & siltbrown & slight gray	sand
121792440300	36.5	43	fine sand, trace silt-brown-extremely dense-wet	sand
121792440300	43	54	fine to medium sand, gravelly @45'-trace silt-reddish brown & slightly gray-densesaturated	coarse sand and/or gravel
121792440300	54	60	clayey shale-gray-weathered	shale
121792440300	60	70	clayey shale;medium dark gray	shale
121792440000	0	2	clayey sandy silty topsoil, trade rootsdark brown	topsoil
121792440000	2	4	silty sand, little clay & gravel-medium dark brown to light gray-medium densedesiccated	sand
121792440000	4	6	silty clay, trace gravel & sand-brown & slightly gray-hard	silt and clay
121792440000	6	8	silty clay, atrace sand-brown ato medium dark gray-very stiff	silt and clay
121792440000	8	13	silty fine to medium sand & gravel-brown & dark gray-dense to very dense moist	coarse sand and/or gravel
121792440000	13	18	gravelly fine to coarse sand, trace siltbrown & slightly gray-loose to medium dense-moist	coarse sand and/or gravel
121792440000	18	28	fine to medium sand, trace gravel & siltbrown & slightly gray-medium dense to dense-wet-saturate	sand
121792440000	28	35	fine sand, trace gravel & silt-brown & slightly gray - very dense to extremely dense-wet	sand
121792440000	35	48.1	clayey shale-gray weathered-very dense	shale
121792343700	0	4	topsoil	topsoil
121792343700	4	37	sand	sand
121792343700	37	85	sand & gravel	coarse sand and/or gravel
121792341200	3	8	gravel brown	coarse sand and/or gravel
121792341200	8	40	gravel & big rocks	coarse sand and/or gravel
121792341200	40	42	gray clay & gravel	clay, sand, gravel
121792336400	0	2	topsoil	topsoil
121792336400	2	60	sand	sand
121792336400	60	70	sand & gravel	coarse sand and/or gravel

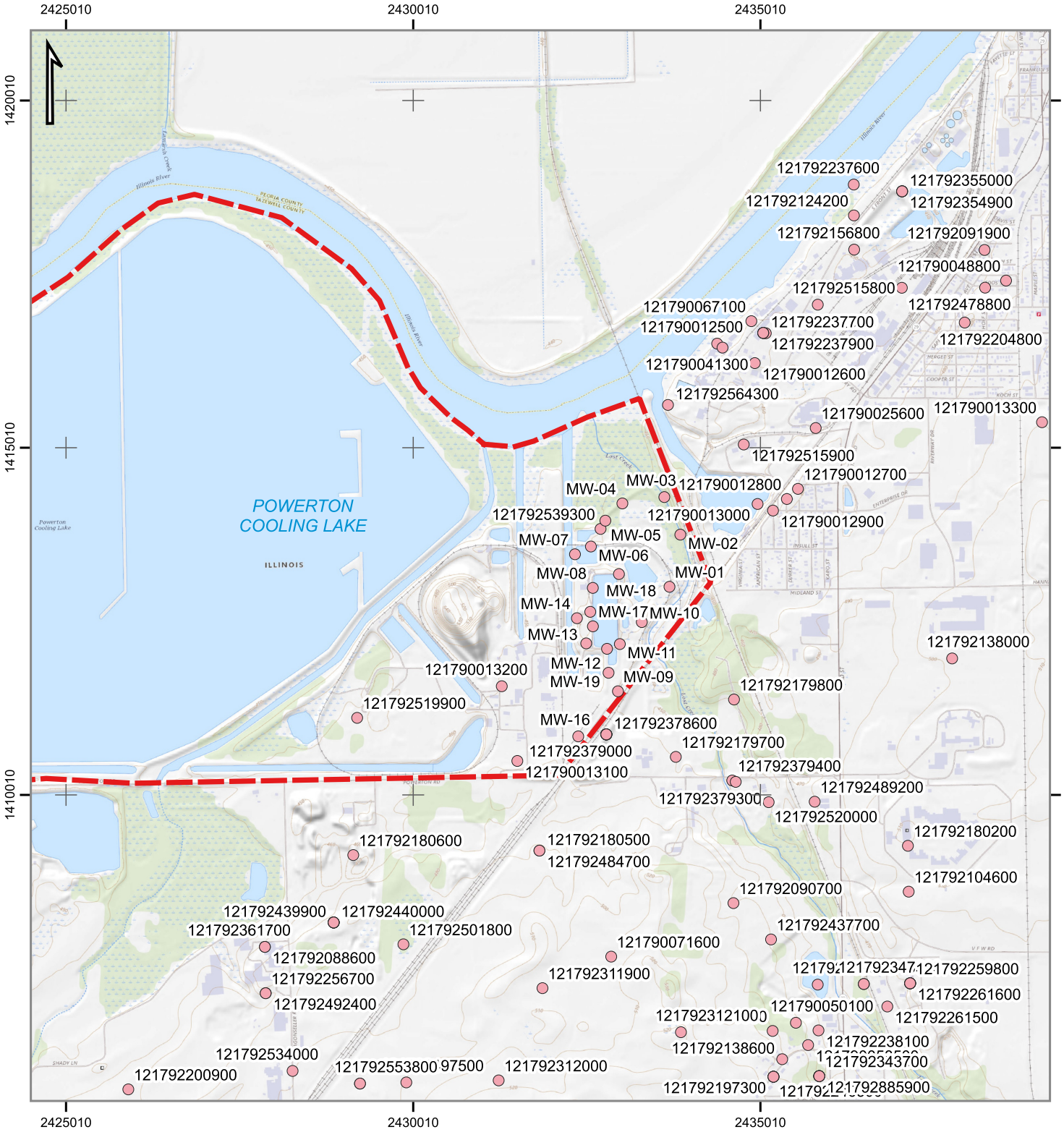
121792336600	0	4	black sandy topsoil	topsoil
121792336600	4	7	brown sandy clay	clay, sand
121792336600	7	35	brown sand - light gravel	coarse sand and/or gravel
121792336600	35	40	coarse brown sand light 3" gravel	coarse sand and/or gravel
121792336600	40	68	medium brown sand - light gravel	coarse sand and/or gravel
121792336600	68	110	medium brown sand - light coarse gravel	coarse sand and/or gravel
121792336600	110	112	gray clay	clay
121792347100	0	4	fill	Fill
121792347100	4	22	brown clay	clay
121792347100	22	44	sand & gravel	coarse sand and/or gravel
121792347100	44	47	gray clay	clay
121792347100	47	77	sand & gravel	coarse sand and/or gravel
121792517900	0	12	black sand, gravel & cement fill	Fill
121792517900	12	25	brown sand & small gravel	coarse sand and/or gravel
121792517900	25	27	gray clay with gravel	clay, sand, gravel
121792517900	27	104	coarse sand & gravel	coarse sand and/or gravel
121792516200	0	10	fine sand	sand
121792516200	10	25	medium gravel	coarse sand and/or gravel
121792516200	25	35	medium sand, light gravel	coarse sand and/or gravel
121792516200	35	50	fine sand, light gravel	coarse sand and/or gravel
121792516200	50	60	fine coarse sand	coarse sand and/or gravel
121792516200	60	65	fine sand, medium light gravel	coarse sand and/or gravel
121792516200	65	80	medium sand, light gravel	coarse sand and/or gravel
121792516200	80	95	medium fine sand, light gravel	coarse sand and/or gravel
121792516200	95	121	coarse sand medium gravel	coarse sand and/or gravel
121792515900	0	2	gravel	coarse sand and/or gravel
121792515900	2	4	loam	loam
121792515900	4	15	sand black, clay mix	clay, sand
121792515900	15	19	sand black, wood	sand
121792515900	19	26	clay black, gray mix	clay
121792515900	26	28	sand med to coarse loose	coarse sand and/or gravel
121792515900	28	35	sand fine to med	coarse sand and/or gravel
121792515900	35	40	sand med to coarse, some gravel	coarse sand and/or gravel
121792515900	40	48	sand fine to med, trace coarse	sand
121792515900	48	54	sand med to coarse	coarse sand and/or gravel
121792515900	54	59	sand coarse, fine gravel	coarse sand and/or gravel
121792515900	59	63	sand med to coarse	coarse sand and/or gravel
121792515900	63	66	sand med to crs, tr gry cl (backfilled)	coarse sand and/or gravel
121792515900	66	72	sand fine to med (backfilled)	sand
121792515900	72	72	gray shale at	shale
121792515800	0	9	fill	fill
121792515800	9	15	light brown clay	clay
121792515800	15	19	gray clay with gravel embedded	silt and clay
121792515800	19	21	coarse sand to coarse gravel	coarse sand and/or gravel
121792515800	21	32	sty brn med s to crs gvl (strk cl 22-23)	coarse sand and/or gravel
121792515800	32	52	med sand to coarse gvl (sty)	coarse sand and/or gravel
121792515800	52	93	fine sand to fine gravel	coarse sand and/or gravel
121792515800	93	100	soft and hard shale	shale
121792336500	0	4	topsoil	topsoil
121792336500	4	28	fine sand	sand
121792336500	28	54	medium sand	coarse sand and/or gravel
121792336500	54	103	medium gravel	coarse sand and/or gravel
121792336500	103	103	fine sand at	sand
121792520800	0	10	fine sand	sand
121792520800	10	15	light gravel with medium gravel	coarse sand and/or gravel
121792520800	15	20	medium gravel	coarse sand and/or gravel
121792520800	20	30	medium sand - light gravel	coarse sand and/or gravel
121792520800	30	35	light gravel	coarse sand and/or gravel
121792520800	35	38	medium sand - light gravel	coarse sand and/or gravel
121792520000	0	15	sandy black topsoil	topsoil
121792520000	15	50	sand & gravel	coarse sand and/or gravel
121792520000	50	68	gray clay	clay
121792519900	0	14	coarse sand & gravel	coarse sand and/or gravel
121792519900	14	56	coarse sand & gravel w/boulders	coarse sand and/or gravel
121792519900	56	58	shale	shale
121792577600	0	2	topsoil	topsoil
121792577600	2	42	fine to coarse gravel	coarse sand and/or gravel
121792312100	0	2	topsoil	topsoil
121792312100	2	8	fine sand	sand
121792312100	8	12	brown clay	clay
121792312100	12	25	fine sand	sand
121792312100	25	68	coarse sand	coarse sand and/or gravel
121792312100	68	73	fine gravel	coarse sand and/or gravel
121792312100	73	77	fine sand	sand
121792312100	77	103	fine gravel & medium gravel	coarse sand and/or gravel
121792312100	103	103	shale at	shale
121792200900	0	2	topsoil	topsoil
121792200900	2	20	coarse gravel	coarse sand and/or gravel
121792200900	20	47	medium to coarse gravel	coarse sand and/or gravel
121792200900	47	47	shale at	shale
121792104600	0	68	yellow sand	sand
121792104600	68	88	gray sand	sand

121792180900	0	5	top soil	topsoil
121792180900	5	43	sand	sand
121792180900	43	115	gravel	coarse sand and/or gravel
121792312000	0	2	topsoil	topsoil
121792312000	2	10	brown clay	clay
121792312000	10	25	fine sand	sand
121792312000	25	45	fine gravel	coarse sand and/or gravel
121792312000	45	83	medium gravel	coarse sand and/or gravel
121792312000	83	86	fine sand	sand
121792312000	86	108	medium to coarse gravel	coarse sand and/or gravel
121792311900	0	4	topsoil	topsoil
121792311900	4	28	fine sand	sand
121792311900	28	48	medium sand	coarse sand and/or gravel
121792311900	48	78	medium sand to coarse gravel	coarse sand and/or gravel
121792311900	78	106	medium gravel	coarse sand and/or gravel
121792311900	106	106	shale at	shale
121792311800	0	2	topsoil	topsoil
121792311800	2	12	brown clay	clay
121792311800	12	24	sand & gravel lenses	coarse sand and/or gravel
121792311800	24	55	sand & gravel	coarse sand and/or gravel
121792311800	55	60	gravel	coarse sand and/or gravel
121792307200	0	7	topsoil	topsoil
121792307200	7	87	sand	sand
121792307200	87	100	pea gravel	coarse sand and/or gravel
121792180200	0	2	top soil	topsoil
121792180200	2	13	fine sand	sand
121792180200	13	39	coarse gravel	coarse sand and/or gravel
121792180200	39	48	medium sand	coarse sand and/or gravel
121792180200	48	104	coarse gravel	coarse sand and/or gravel
121792180200	104	104	rocks	shale
121792179800	0	2	top soil	topsoil
121792179800	2	20	yellow fine sand	sand
121792179800	20	25	sand & gravel	coarse sand and/or gravel
121792179800	25	40	fine/medium sand	sand
121792179800	40	50	sand & gravel	coarse sand and/or gravel
121792179800	50	60	all fine sand	sand
121792179800	60	72	sand, pea gravel	coarse sand and/or gravel
121792179800	72	78	sand, stones	coarse sand and/or gravel
121792179800	78	79	shale	shale
121792179700	0	25	sand & gravel	coarse sand and/or gravel
121792179700	25	48	clay	clay
121792179700	48	67	rock	shale
121792261600	0	37	sand	sand
121792180800	0	4	top soil	topsoil
121792180800	4	40	sand	sand
121792180800	40	108	gravel	coarse sand and/or gravel
121792180700	0	10	sandy loam	loam
121792180700	10	48	sand & crs gvl	coarse sand and/or gravel
121792180700	48	50	coarse	coarse sand and/or gravel
121792180600	0	3	top soil	topsoil
121792180600	3	13	sand & gravel	coarse sand and/or gravel
121792180600	13	18	fine brown sand	sand
121792180600	18	28	brown sand & rocks	coarse sand and/or gravel
121792180600	28	31	fine/med brown sand	sand
121792180500	0	3	top soil	topsoil
121792180500	3	88	med sand to/crs gvl	coarse sand and/or gravel
121792180500	88	88	shale	shale
121792256700	0	10	dirty brown sand	sand
121792256700	10	16	brown sand, fine & clean	sand
121792256700	16	30	brown sand, fine-very coarse some gravel	coarse sand and/or gravel
121792256700	30	42	medium sand, coarse gravel	coarse sand and/or gravel
121792256700	42	53	fine red sand tr. med sand & few pebbles	sand
121792256700	53	56	red fine sand med-coarse sand w/pebbles	sand
121792256700	56	57	fine brown sand fine gravel w/rocks	sand
121792256700	57	61	fine brn sand, coarse sand w/fine gravel	coarse sand and/or gravel
121792091900	0	3	fill	fill
121792091900	3	9	fine to crs sand, some gravel	coarse sand and/or gravel
121792091900	9	22	fine sand to crs gravel	coarse sand and/or gravel
121792091900	22	28	fine sand to med gravel	coarse sand and/or gravel
121792091900	28	73	fine to crs sand with gvl seams	coarse sand and/or gravel
121792091900	73	81	fine sand to med gravel	coarse sand and/or gravel
121792091900	81	100	f to crs sand w/gravel seams	coarse sand and/or gravel
121792091900	100	105	fine sand to coarse gravel	coarse sand and/or gravel
121792090700	105	107	shale	shale
121792090700	0	6	sandy clay	clay, sand
121792090700	6	16	clay (yellow)	clay
121792090700	16	20	clay (blue-gravelly)	clay
121792090700	20	22	gravel & sand	coarse sand and/or gravel
121792090700	22	70	sand (brown-coarse)	coarse sand and/or gravel
121792088600	0	11	fine brown sand--dirty	sand
121792088600	11	29	fine to coarse brown sand-some rocks	sand
121792088600	29	32	coarse brown sand & gravel	coarse sand and/or gravel
121792088600	32	38	coarse brown water sand & gravel	coarse sand and/or gravel
121792088600	38	48	fine to coarse brown sand-some pebbles	coarse sand and/or gravel
121792088600	48	53	fine to med. sand-some pebbles	coarse sand and/or gravel
121792088600	53	54	brown & gray sand-some coal	sand
121792088600	54	54	cap rock & gray shale at	shale

121792261500	0	4	brown silt	silt and clay
121792261500	4	42	sand	sand
121792260000	0	4	silt & loam	loam
121792260000	4	40	sand	sand
121792259900	0	37	Sand	sand
121792259800	0	3	silt	silt and clay
121792259800	3	37	sand	sand
121792238000	0	2	top soil	topsoil
121792238000	2	25	fine sand	sand
121792238000	25	45	medium sand	coarse sand and/or gravel
121792238000	45	105	medium gravel	coarse sand and/or gravel
121792238000	105	105	rocks at	shale
121792237900	0	2	black & brown sandy topsoil	topsoil
121792237900	2	4	bricks & fill	fill
121792237900	4	7	black clayey sand	clay, sand
121792237900	7	16	sand & gravel	coarse sand and/or gravel
121792237900	16	23	coarse sand to small gravel	coarse sand and/or gravel
121792237900	23	45	coarse sand & gravel with boulders	coarse sand and/or gravel
121792237900	45	59	fine sand to coarse gravel with boulders	coarse sand and/or gravel
121792237900	59	95	f to crs s w/med to crs g layers & bldrs	coarse sand and/or gravel
121792237900	95	100	firm gray shale	shale
121792237800	0	16	fill	fill
121792237800	16	26	black & gray peaty clay with sand	clay, sand
121792237800	26	50	yellow & brown coarse sand & gravel	coarse sand and/or gravel
121792237800	50	61	fine sand & gravel	coarse sand and/or gravel
121792237800	61	83	fine sand, coarse gravel & boulders	coarse sand and/or gravel
121792237800	83	85	gray clay	clay
121792237700	0	4	parking lot gravel & fill	fill
121792237700	4	17	coarse s & g w/buff colored clay layers	dirty coarse sand and/or gravel
121792237700	17	47	yellow brown coarse s & g w/boulders	coarse sand and/or gravel
121792237700	47	81	f to med sd w/coarse gravel & sand	coarse sand and/or gravel
121792237700	81	85	firm gray shale	shale
121792246300	0	19	fine brown sand	sand
121792246300	19	52	brown sand & rock	coarse sand and/or gravel
121792246300	52	81	brown medium sand, not on shale	coarse sand and/or gravel
121792157500	0	7	top soil	topsoil
121792157500	7	42	fine/coarse gravel	coarse sand and/or gravel
121792157500	42	42	shale	shale
121792156800	0	105	sand & gravel	coarse sand and/or gravel
121792156800	105	108	black shale	shale
121792238100	0	4	top soil (black)	topsoil
121792238100	4	25	sand (brown) fine	sand
121792238100	25	39	sand (brown) medium	coarse sand and/or gravel
121792219300	0	3	top soil	topsoil
121792219300	3	5	clay	clay
121792219300	5	43	coarse sand & gravel	coarse sand and/or gravel
121792219300	43	49	blue clay	clay
121792219300	49	53	fine sand	sand
121792219300	53	80	coarse sand & gravel	coarse sand and/or gravel
121792219300	80	105	medium gravel	coarse sand and/or gravel
121792219300	105	136	fine to coarse sand	coarse sand and/or gravel
121792219300	136	136	shale at	shale
121792138700	0	3	sand and dirt	sand
121792138700	3	53	sand and gravel and rocks	coarse sand and/or gravel
121792138700	53	74	sand (brown) fine	sand
121792138700	74	84	sand (medium)	coarse sand and/or gravel
121792138700	84	88	sand, gravel and rocks	coarse sand and/or gravel
121792138600	0	5	topsoil	topsoil
121792138600	5	25	yellow fine sand	sand
121792138600	25	75	coarse gray sand	coarse sand and/or gravel
121792138000	0	3	topsoil	topsoil
121792138000	3	50	coarse gravel and rocks	coarse sand and/or gravel
121792138000	50	80	sand gravel and rocks	coarse sand and/or gravel
121792138000	80	108	rocks	shale
121792237600	0	1	top soil	topsoil
121792237600	1	10	brown sand	sand
121792237600	10	20	sand & gravel	coarse sand and/or gravel
121792237600	20	55	coarse gravel	coarse sand and/or gravel
121792237600	55	90	medium gravel & sand	coarse sand and/or gravel
121792237600	90	117	brown fine sand, some small gravel	sand
121792237600	117	118	coarse gravel	coarse sand and/or gravel
121792237600	118	120	gray shale	shale
121792154000	0	2	top soil	topsoil
121792154000	2	11	fine sand	sand
121792154000	11	99	medium/coarse gravel	coarse sand and/or gravel
121790072100	0	66	yellow sand	sand
121790072100	66	86	blue sand	sand
121790071600	0	4	black sandy loam	loam
121790071600	4	75	dirty yellow sand	sand
121790071600	75	112	sand trace gravel	coarse sand and/or gravel
121792285300	0	2	top soil	topsoil
121792285300	2	54	fine to coarse gravel	coarse sand and/or gravel
121792285300	54	60	clay	clay
121792285300	60	92	coarse sand to coarse gravel	coarse sand and/or gravel
121792285300	92	133	coarse sand to medium gravel	coarse sand and/or gravel
121792285300	133	133	shale at	shale

121792282400	0	2	top soil	topsoil
121792282400	2	13	fine sand	sand
121792282400	13	21	blue clay	clay
121792282400	21	62	fine to medium sand	sand
121792282400	62	107	fine to coarse sand & gravel	coarse sand and/or gravel
121792282400	107	107	fine sand at	sand
121792204800	0	13	misc. fill, gravel, cinders, bricks etc	fill
121792204800	13	17	black clayey gravel & sand	clay, sand, gravel
121792204800	17	25	black sand w/clay & other misc.	clay, sand, gravel
121792204800	25	50	loos crs sand to crs gravel & boulders	clay, sand, gravel
121792204800	50	60	med brn sand-crs gvl w/clay pckts & lyrs	coarse sand and/or gravel
121792204800	60	66	coarse sand to coarse gravel	coarse sand and/or gravel
121792204800	66	95	loose med s-sml gvl, occ bldrs & crs gvl	coarse sand and/or gravel
121792204800	95	96	dark gray lime	limestone
121792204800	96	100	dark gray shale	shale
121792197300	0	2	top soil	topsoil
121792197300	2	17	fine sand	sand
121792197300	17	42	coarse gravel	coarse sand and/or gravel
121792197300	42	61	medium sand	coarse sand and/or gravel
121792197300	61	85	coarse gravel	coarse sand and/or gravel
121792885900	0	16	sand (brown) fine	sand
121792885900	16	18	sand (brown) fine with rocks	sand
121792885900	18	26	sand (brown) medium	coarse sand and/or gravel
121792885900	26	30	sand (brown) medium with rocks	coarse sand and/or gravel
121792885900	30	40	sand (brown) medium	coarse sand and/or gravel
121792885900	40	71	sand (brown) medium with rocks	coarse sand and/or gravel
121792293000	0	4	topsoil	topsoil
121792293000	4	28	sand w/clay streaks	clay, sand
121792293000	28	58	medium sand	coarse sand and/or gravel
121792293000	58	105	big gravel	coarse sand and/or gravel
121790067100	0	6	fill	fill
121790067100	6	22	sand	sand
121790067100	22	25	silty clay	silt and clay
121790067100	25	100	sand & gravel	coarse sand and/or gravel
121790067100	100	100	hardpan at	shale
121792124200	0	4	brown sandy clay	clay, sand
121792124200	4	38	brown fine sand to crs gravel boulders	coarse sand and/or gravel
121792124200	38	62	brown fine sand to coarse gravel	coarse sand and/or gravel
121792124200	62	68	brown fine to coarse sand	coarse sand and/or gravel
121792124200	68	113	multi-colored medium to coarse sand	coarse sand and/or gravel
MW-01	0	10	FILL: Brown coarse to fine sand, dry	fill
MW-01	10	18.5	FILL: Trace coarse gravel	coarse sand and/or gravel
MW-01	18.5	28	SW: Brown coarse to medium sand, trace fine gravel, medium dense, saturated	coarse sand and/or gravel
MW-01	28	32.5	GP: Coarse to fine gravel, some coarse sand, medium dense, saturated	coarse sand and/or gravel
MW-02	0	1.5	FILL: Dark brown topsoil, silty clay, dry	topsoil
MW-02	1.5	14	FILL: Light brown coarse to fine sand, loose, dry	sand
MW-02	14	20	FILL: Some fine gravel	coarse sand and/or gravel
MW-02	20	23.5	FILL: Light brown fine to medium sand, well graded, medium dense	coarse sand and/or gravel
MW-02	23.5	35	GP: Gray coarse to fine gravel, coarse sand, trace fine sand and silt, poorly graded, medium dens	coarse sand and/or gravel
MW-03	0	0.5	Dark brown silty clay topsoil	topsoil
MW-03	0.5	9.5	FILL: Light brown coarse to medium sand, trace fine gravel, trace fine sand, very loose to loose	fill
MW-03	9.5	12	FILL: Some fine sand	sand
MW-03	12	19	FILL: Light brown medium to fine sand, loose	sand
MW-03	19	34	SW: Brown coarse sand, trace fine gravel, well graded, very loose	coarse sand and/or gravel
MW-04	0	8	FILL: Light Brown sand, medium to brown silty clay, fine gravel	fill
MW-04	8	15	FILL: Brown clayey silt	silt and clay
MW-04	15	16	FILL: Black clayey silt to silty clay	silt and clay
MW-04	16	20	SP: Light brown coarse to fine sand, fine gravel, loose	coarse sand and/or gravel
MW-04	20	32	GP: Brown coarse to fine gravel, trace coarse to medium sand, loose to medium dense, poorly gr	coarse sand and/or gravel
MW-04	32	34	GP: Coarse to fine gravel, trace silt	coarse sand and/or gravel
MW-05	0	6	FILL: Dark brown silty clay, black coal cinders, topsoil	topsoil
MW-05	6	7	FILL: Coarse gravel, red coal cinders	fill
MW-05	8	12	FILL: Gray Silty clay with coarse sand and fine gravel, medium stiff	clay, sand, gravel
MW-05	12	14	FILL: Trace black coal cinders, Trace coarse sand	Cinders
MW-05	14	17	FILL: Gray Clayey silt	silt and clay
MW-05	17	20	GP: Gray coarse to fine gravel, coarse to fine sand, poorly graded, medium dense	coarse sand and/or gravel
MW-05	20	25.5	GP: Coarse to fine gravel, trace coarse to fine sand, poorly graded, medium dense	coarse sand and/or gravel
MW-05	25.5	31	GP: Loose	coarse sand and/or gravel
MW-06	0	10	FILL: Gravel, Clay, coal cinders	fill
MW-06	10	14	FILL: Dary gray clayey silt, organics, very soft	silt and clay
MW-06	14	18	FILL: Black coal cinders, loose	Cinders
MW-06	18	27.5	OL: Olive gray and gray organic silt, trace clay, trace peat	silt and clay
MW-06	27.5	30	OL: Dark gray organic clay, trace fine sand	clay, sand
MW-07	0	10	FILL: Sand, gravel, black cinder, dry	FILL
MW-07	10	13.5	FILL: Sand, gravel, clay, black coal cinders	FILL
MW-07	13.5	20	OH: Dark gray organic clay, soft	clay
MW-07	20	26	OH: Dark gray organic clay, molted black, medium stiff	clay
MW-07	26	31	OL: Gray organic silt, trace shells, fibers, very soft	silt and clay
MW-07	31	33.5	OH: Dary gray organic clay, trace fine gravel	clay, sand, gravel
MW-07	33.5	36	GC: Gray clayey gravel, coarse sand, clay, silt	clay, sand, gravel
MW-07	36	40	GC: Medium dense	clay, sand, gravel
MW-07	40	45	GP: Coarse to fine gravel, coarse sand, poorly graded, medium dense	coarse sand and/or gravel
MW-08	0	10	FILL: Fine gravel, sand, clay, black cinders	FILL
MW-08	10	24.5	FILL: Black Cinders	cinders
MW-08	24.5	27.5	OH: Dark gray organic clay, soft	clay
MW-08	27.5	30	OL: Dark gray organic silt, medium to soft, low plasticity	silt and clay
MW-09	0	10	FILL: Black cinders, fine gravel, crushed rock	FILL
MW-09	10	17	FILL: Black cinderws, coarse to fine sand, brick, fine gravel	cinders
MW-09	17	19	CL: Brown clayey silt, trace fine sand, moist	silt and clay
MW-09	19	32.5	SW: Light brown fine to medium sand, loose, well graded	sand
MW-10	0	10	CL: Black and brown silty clay topsoil	Topsoil
MW-10	10	13.5	OL: Brown organic silt, some clay, trace peat, soft	silt and clay
MW-10	13.5	16	OL: Black organic clay, medium plasticity, medium stiff	clay
MW-10	16	21	CL: Brown and gray silty clay, trace to little coarse to fine sand, medium stiff	clay

MW-10	21	24.5	SP: Gray coarse to fine sand, trace fine gravel, silt, poorly graded, loose	sand
MW-10	24.5	30	GP: Brown and gray coarse to fine gravel, poorly graded, loose	coarse sand and/or gravel
MW-11	0	10	Cinders, gravel, sand, silt	Fill
MW-11	10	16	Black and brown clay, fine gravel, cinders, bricks, silt, coarse sand	Fill
MW-11	16	18.5	Brown and gray silty clay, trace fine gravel, trace fine sand, stiff	silt and clay
MW-11	18.5	26	Gray clayey silt, organics, very soft	silt and clay
MW-11	26	32.5	Dark gray silty clay, some organics	silt and clay
MW-11	32.5	36.5	Brown and gray coarse to fine gravel, coarse to fine sand	coarse sand and/or gravel
MW-11	36.5	40	Light brown fine sand, well graded	sand
MW-12	0	10	Black cinders, fine gravel, silty clay	fill
MW-12	10	18.5	Black cinders, fine gravel, silty clay	fill
MW-12	18.5	26	Gray silt, little to some coarse to fine sand, trace clay	silt and sand with clay
MW-12	26	32.5	Gray mottled black clayey silt with some organics, trace peat	silt and clay
MW-12	32.5	35	Dark brown and gray silty clay, trace coarse sand, trace organics	silt and clay
MW-13	0	10	Black cinders, sand, rock	fill
MW-13	10	17.5	Black cinders, medium sand	fill
MW-13	17.5	20	Gray/olive gray organic silt	silt
MW-13	20	22.5	Dark gray and black organic clay	clay
MW-13	22.5	26	Dark gray and black organic silt	silt
MW-13	26	30.5	Dark gray and black organic clay	clay
MW-13	30.5	34	Gray silty clay, some coarse to fine sand, trace fine gravel	clay with sand
MW-13	34	40	Brown coarse to fine gravel, trace coarse to medium sand, silt, medium dense	coarse sand and/or gravel
MW-14	0	10	Cinders, gravel, sand, silt	fill
MW-14	10	19.5	Brown fine gravel, some silty clay and coarse sand, black cinders	fill
MW-14	19.5	25	Gray organic silt, some fine sand	silt and sand
MW-14	25	29	Gray and mottled black organic silt, trace fine sand	silt and sand
MW-14	29	30	Gray and black organic clay	clay
MW-15	0	10	Black cinders, fine gravel, sand, silt	fill
MW-15	10	19.5	Black cinders, fine gravel, coarse sand, silt	fill
MW-15	19.5	23.5	Gray fine sand, trace medium sand	sand
MW-15	23.5	28	Gray silt, mottled black, some organics	silt
MW-15	28	30	Gray silty clay, some organics	silt and clay
MW-16	0	8.5	Fill	Fill
MW-16	8.5	35	Sand	Sand
MW-17	1	18	Silty Sand	Sand
MW-17	18	21	Silt, gray, laminated with Silty Sand	Silt and clay
MW-17	21	25	Silt, gray, laminiated with light brown silt, organics	Silt and clay
MW-17	25	26.5	Silty Sand, Black and dark gray, fine to medium	Sand
MW-17	26.5	30	Silt and Sand, gray and black	Sand
MW-18	0	2	Silty Clay	Silt and clay
MW-18	2	29	Silty Sand	Sand
MW-18	29	31.5	Clay	Silt and clay
MW-18	31.5	36	Clay	Silt and clay
MW-18	36	39	Clay	Silt and clay
MW-18	39	40	Silty Sand	Sand
MW-19	0	28.5	Silty Sand	Sand
MW-19	28.5	29	Sand	Sand
MW-19	29	41	Sand	Sand



LEGEND

- WELLS WITH BOREHOLE LITHOLOGY DATA
- SITE BOUNDARY

0 1,000 2,000 ft

FEET

Coordinate System:
NAD_1983_StatePlane_Illinois_West_FIPS_1202_Feet
Project File: Figure5_WellsWBoreholes.qgz

BAS GROUNDWATER CONSULTING

KPRG

CLIENT	MIDWEST GENERATION
SITE	POWERTON 13082 E MANITO ROAD, PEKIN, IL 61554
TITLE	**WELLS WITH BOREHOLE LITHOLOGY DATA**

SCALE AT ANSI A		DRAWN	DZF 10/27/2022
1:24,000		CHECKED	BAS 10/27/2022
BAS PROJECT No.	21141401	FIGURE:	**5**

Attachment 9

Appendix A to the 2016 Inflow Design Flood Control System Plan for the Ash Surge Basin and Bypass Basin

Geosyntec consultants

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INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN
ASH SURGE AND BYPASS BASINS
POWERTON STATION
OCTOBER 2016

Pursuant to Code of Federal Regulations Title 40, Part 257, Subpart D (40 CFR), herein referred to as the coal combustion residual (CCR) Rule, Section 257.82(c), Geosyntec Consultants (Geosyntec) prepared this Inflow Design Flood Control System Plan for the Ash Surge Basin and Bypass Basin (the Basins) at the Powerton Station (Site) in Pekin, Illinois (Figure 1). The Basins are owned and operated by Midwest Generation, LLC (Midwest Generation).

Section 257.82(c) of the CCR Rule requires that operators of every existing or new CCR surface impoundment design, construct, operate, and maintain an inflow design flood control system that adequately manages flow into the CCR unit during and following the peak discharge of the inflow design flood. The Preamble to the CCR Rule provides guidance on the documentation that should be provided for the inflow design flood control plan.

This inflow design flood control system plan for the Basins meets the requirements of §257.82(c). The inflow design flood control systems consist of outflow structures that maintain minimum operating freeboards for the Basins. Justification and documentation of the adequacy of the inflow design flood control systems are presented in the sections below.

The work presented in this report was performed under the direction of Ms. Jane Soule, P.E., of Geosyntec in accordance with §257.82(c). Mr. Robert White reviewed this plan in accordance with Geosyntec's senior review policy.

1. Basin Design

The Basins are located east of the old inlet canal and northeast of the main powerblock building. The Basins are operated to receive sluiced CCR and other process water from plant operations one basin at a time. Inflow from plant operations is discharged into the Basins through concrete inflow channels located along the southern boundary of the Ash Surge Basin and the northeastern boundary of the Bypass Basin. Average inflow through the Ash Surge or Bypass Basin is on the order of 7.3 million gallons per day (mgd).

Routine outflow from the Ash Surge Basin drains northward through a 48-inch diameter reinforced concrete pipe located at the bottom of the basin along its northern perimeter. This pipe connects to the sump located within the pump station located approximately 35 feet north of the Ash Surge Basin (Figure 2). The Site maintains three pumps at the pump station, including one backup pump. As indicated by historical sump water level data, the pump controls are managed so that the water level within the Ash Surge Basin is maintained between 463.5 feet and 465 feet MSL. From the pump station, discharged process water is pumped to the Service Water Basin located northwest of the Ash Surge Basin. The Ash Surge Basin also includes an emergency spillway along the eastern boundary that would discharge toward the Former Ash Basin (FAB). The spillway is constructed with two box culverts, each approximately 4.5 feet in width and approximately 1.5 feet in height that extend beneath the embankment crest. A concrete apron is located east of the box culvert and rip rap is located downstream of the apron. Topographic survey point data from the basin crest indicates a minimum crest elevation of the Basins of approximately 467.6 feet MSL[1] (Aero-Metric, 2008). Appendix A-1 includes available design drawings documenting the Ash Surge Basin emergency spillway.

Routine outflow from the Bypass Basin flows over a weir wall (top elevation at 465.5 feet MSL) within the basin into a 36-inch diameter reinforced concrete pipe. This pipe extends northward within the east embankment of the Bypass and Ash Surge Basins until it reaches the northeast corner of the Ash Surge Basin, where the pipe extends west to the pump station north of the Ash Surge Basin. From the pump station, discharged process water is pumped to the Secondary Holding Basin located northwest of the Ash Surge Basin. When in service, the operating water level within the Bypass Basin is maintained at the elevation of the top of the weir wall (465.5 feet MSL). The Bypass Basin also includes an emergency overflow pipe located along the northeastern corner of the basin. This emergency overflow pipe includes a 5-foot diameter corrugated metal pipe vertical riser (invert elevation 466.75 feet MSL) which connects to a 30-inch diameter concrete pipe that extends northward within the embankment between the Bypass and Ash Surge Basins and discharges onto the concrete apron on the southern slope of the Ash Surge Basin. Appendix A-2 includes available drawings documenting the Bypass Basin emergency overflow pipe.

2. Inflow Design Flood Control Plan Documentation

Because of the relatively small size and design of the Basins, some of the references and drawings recommended for inclusion in the Inflow Design Flood Control Plan by the Preamble to the CCR Rule (page 21392) are not applicable. Table 1 below provides a summary of this documentation.

[1] Mean Sea Level based on local plant vertical datum.

Table 1: Recommended Documentation

Documentation	Assessment
Identification of the design storm event for the catchment area and CCR unit	Identification of the design storm event is provided in Section 4 and Appendix B. A drawing of the Basins and catchment areas is presented in Figure 2.
Characterization of the rainfall abstractions, including, but not limited to, depression storage and infiltration in the upstream catchment area	Full capture of the design precipitation event was assumed, so rainfall abstractions were assumed to be zero, i.e., 100% of the volume from the design storm was assumed to be held within the Basins. Typical abstractions include mechanisms such as evaporation and infiltration.
Selection and basis of the appropriate run-off model or run-off and run-on routing model	A run-on model was not required because full capture within the limited catchment areas was assumed. No discharge from the design event is anticipated so a run-off model was not necessary to demonstrate compliance. Outflow is controlled through the pump station.
Identification and characterization of any intake or decant structures	Design features are provided in Section 1.
Appropriate characterization and capacity of spillways	The spillway (Ash Surge Basin) and emergency overflow pipe (Bypass Basin) are described in Section 1 and drawings of these structures are provided in Appendix A. Because outflow from these structures is not anticipated during the design event, capacity of these structures was not evaluated.
Characterization of downstream hydraulic structures	No outflow from the spillway (Ash Surge Basin) or emergency overflow pipe (Bypass Basin) is predicted from the design storm event and therefore downstream hydraulic structures were not evaluated.

3. Catchment Areas

The Basins are formed by embankments on all sides. Based on site topography, shown in Figure 2, the Basins' inflow from precipitation is limited to run-on from the embankment crests and precipitation falling directly into the basin. The catchment areas for the Basins are presented in Table 2 and shown in Figure 2.

4. Design Event

Because the Basins are classified as significant hazard potential surface impoundments (Geosyntec, 2016), the inflow design flood is defined as the 1,000-year flood. Because direct precipitation is collected within Basins and run-on is limited to the embankment crest areas, the inflow design is based on the 24-hour, 1,000-year precipitation event of 9.0 inches (NOAA,

2016), see Appendix B. Total inflow from the design event is calculated as the depth of precipitation multiplied by the catchment area[2].

5. Freeboard

As discussed in Section 1, the Basins are operated to maintain a minimum freeboard of approximately 2 feet for the Ash Surge Basin and 1.5 feet for the Bypass Basin under normal operating conditions. The maximum potential increase in water levels due to the design storm event, assuming basin outflows are limited to process water inflows (net zero), are based on the area-capacity curves for the Basins (see Appendix C) and are presented in Table 2. These estimated maximum water levels in the Basins are estimated to be below the invert level of the emergency spillway (Ash Surge Basin) or overflow pipe (Bypass Basin).

Table 2: Inflow Design Volumes and Basin Water Level Estimates

Value	Ash Surge Basin	Bypass Basin
Catchment Area (acres)	9.3	1.0
Operating Water Elevation (feet, MSL)	465.0	465.5
Design Event Inflow (acre-feet)	6.98	0.75
Increased Basin Water Elevation (feet)	0.9	1.0
Estimated Post-Event Water Elevation (feet, MSL)	465.9	466.5
Spillway or Overflow Pipe Invert Elevation (feet, MSL)	466.0	466.75

With full containment of the design event, the Basins maintain water level elevations below the spillway or overflow pipe invert elevation and a freeboard of greater than 1 foot. The inflow design system, as designed and constructed, meets the requirements of §257.82.

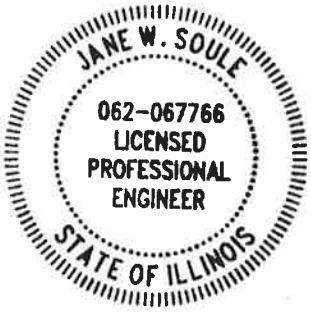
6. Plan Amendments and Revisions

In accordance with §257.82(c)(2) and (4), this Inflow Design Flood Control System Plan will be amended or revised whenever there is a change in conditions that would substantially affect the plan or every five years.

[2] Depression storage or infiltration of stormwater into the embankment crest and other rainfall abstractions are negligible and are not included in inflow volume calculations. Similarly, this calculation does not require the use of a run-on model for the precipitation falling on the embankment crest.

7. Limitations and Certification

This inflow design flood control system plan meets the requirements of §257.82(c) of the Code of Federal Regulations Title 40, Part 257, Subpart D, and was prepared in accordance with current practices and the standard of care exercised by scientists and engineers performing similar tasks in the field of civil engineering. The contents of this report are based solely on the observations of the conditions observed by Geosyntec personnel and information provided to Geosyntec by Midwest Generation. Consistent with applicable professional standards of care, our opinions and recommendations were based in part on data furnished by others, which was consistent with other information that we developed in the course of our performance of the scope of services. The information contained in this report is intended for use solely by Midwest Generation and their subconsultants.



Jane W. Soule, P.E.
Illinois Professional Engineer No. 062-067766
License Expires: 11/30/17

8. References

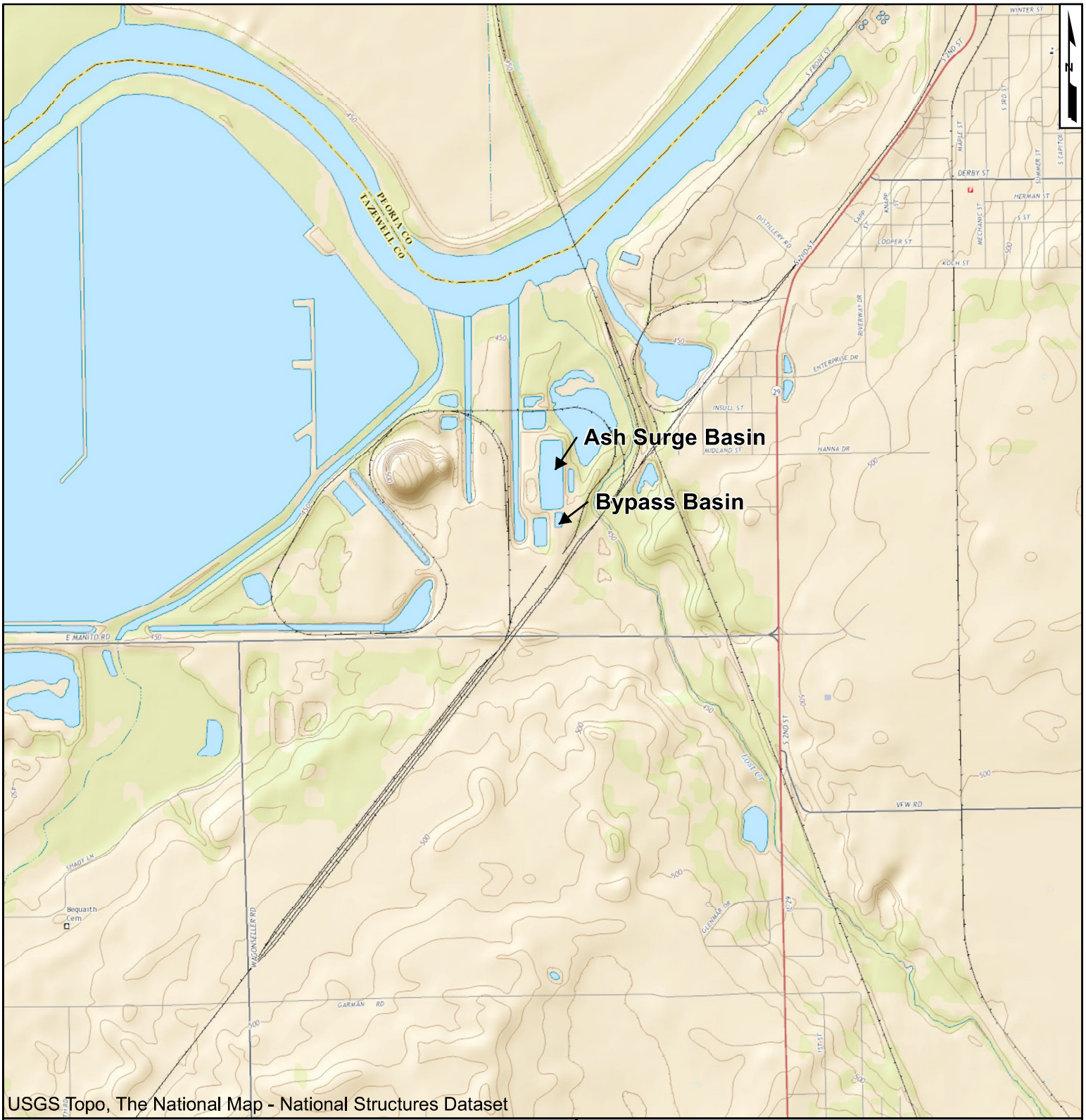
Aero-Metric (2008). Aerial topography dated 06-19-2008, Aero-Metric, Inc.

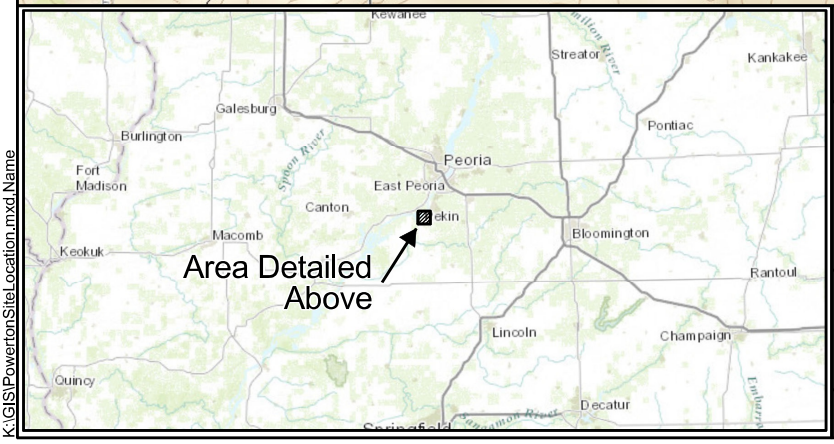
Geosyntec Consultants, 2016, Hazard Potential Classification Assessment, Ash Surge and Bypass Basins, Powerton Station, October 2016.

NOAA, 2016, NOAA Atlas 14 Point Precipitation Frequency Estimates: Illinois, available at: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

Attachments

Figure 1: Site Location
Figure 2: Basin Topography and Catchment Area
Appendix A: Outlet Structure Design Drawings
Appendix A-1: Ash Surge Basin Emergency Spillway
Appendix A-2: Bypass Basin Overflow Pipe
Appendix B: Design Storm Event Depth
Appendix C: Basin Area Capacity Curves





2,000 1,000 0 2,000 Feet

Site Location

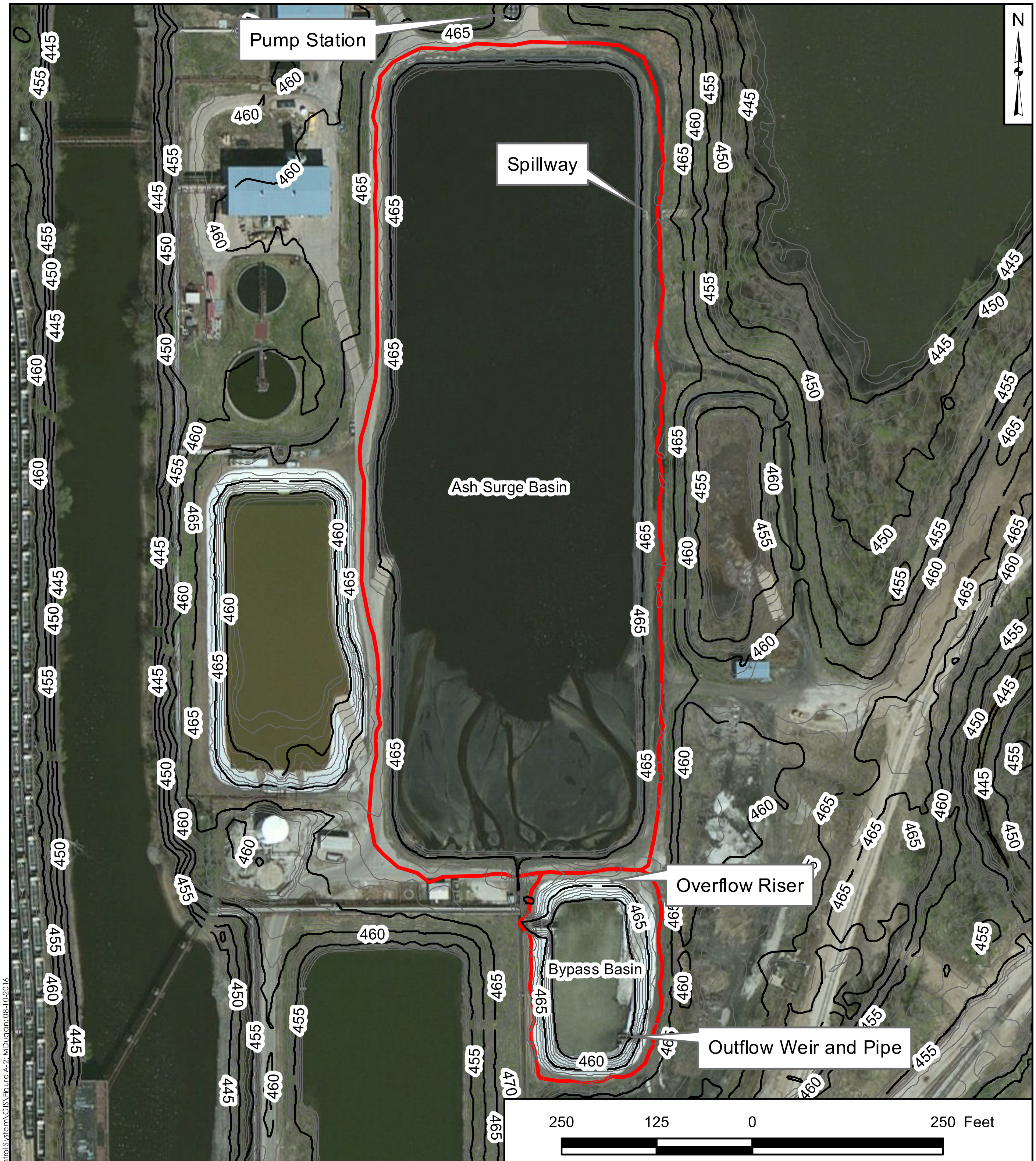
Ash Surge and Bypass Basins
Powerton Station
Pekin, Illinois

Geosyntec consultants

San Diego | October 2016

Figure 1

K:\GIS\PowertonSiteLocation.mxd Name



Topography: Aerometric, Inc. Project Number 1080611, Dated 6-19-2008.
Aerial Image: Esri Basemaps

Legend

- 5 Foot Elevation Contours
- 1 Foot Elevation Contours
- Catchment Area

Basin Topography and Catchment Areas

Ash Surge and Bypass Basins
Powerton Station
Pekin, Ilinois

Geosyntec consultants

San Diego | October 2016

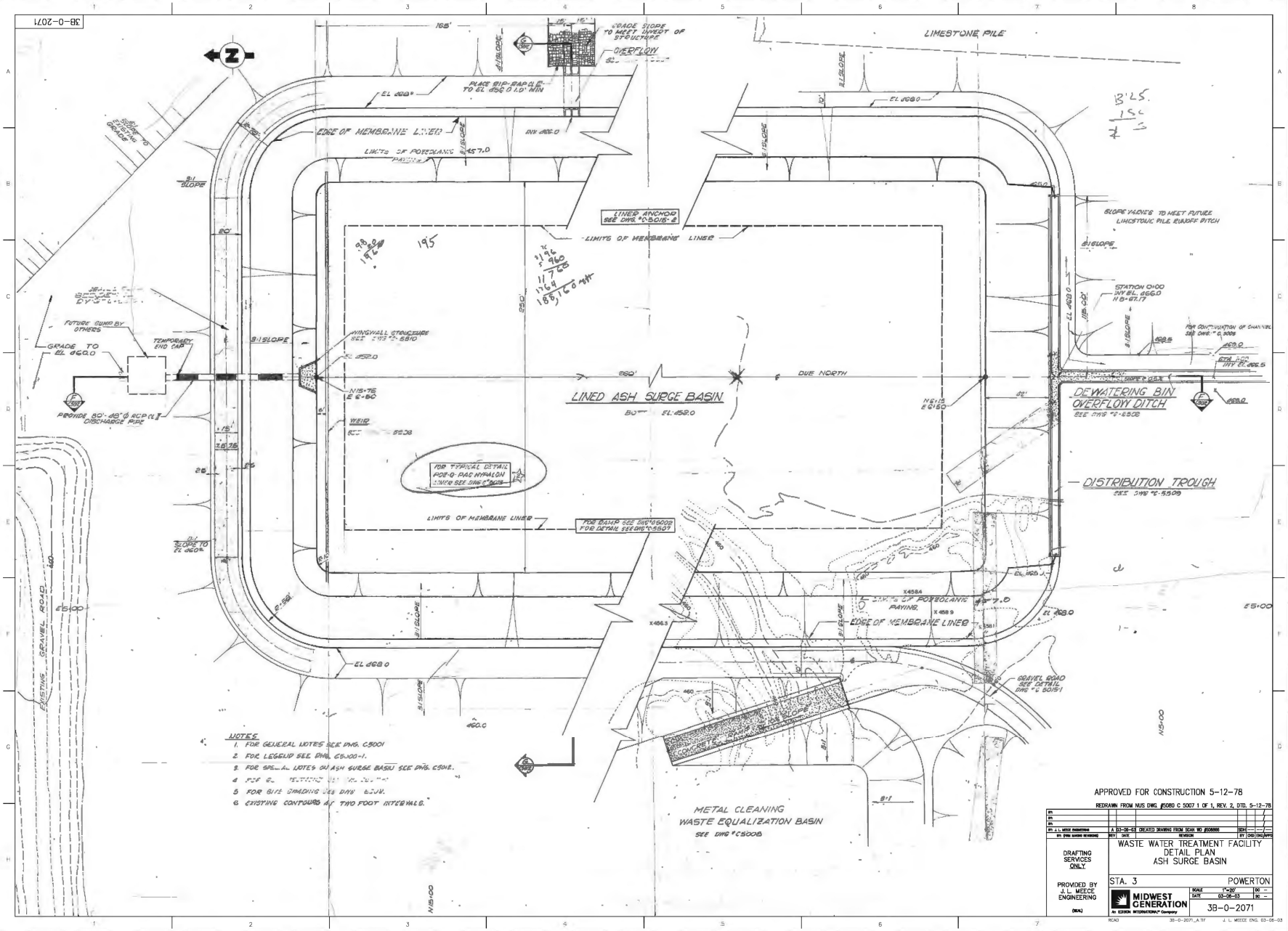
Figure **2**

Appendix A

Outlet Structure Design Drawings

Appendix A-1

Ash Surge Basin Emergency Spillway



APPROVED FOR CONSTRUCTION 5-12-78

REDRAWN FROM NUS DWG. #5080 C 5007 1 OF 1, REV. 2, DTD. 5-12-78

REV	DATE	REVISION	BY	CHD	ENG	APP'D
1	3-03-03	CREATED DRAWING FROM SCAN NO #5080				

DRAFTING SERVICES ONLY

PROVIDED BY J. L. MEECE ENGINEERING

WASTE WATER TREATMENT FACILITY
DETAIL PLAN
ASH SURGE BASIN

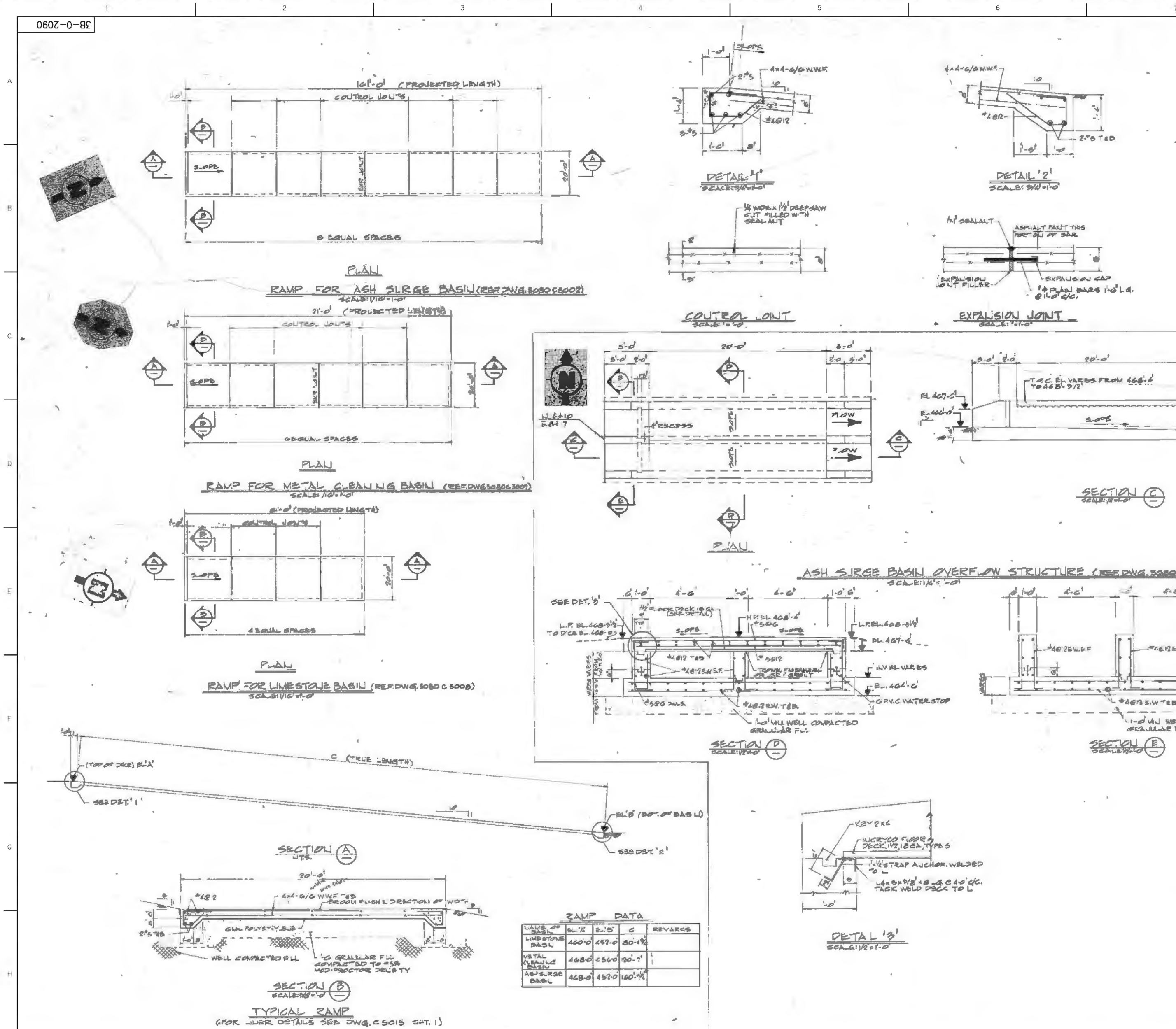
STA. 3 POWERTON

MIDWEST GENERATION
An EDISON INTERNATIONAL Company

SCALE 1"=20' DC –
DATE 03-06-03 BC –

3B-0-2071

RCAD 3B-0-2071_A.TIF J. L. MEECE ENG. 03-06-03



RAMP DATA

NAME OF BASIN	EL. 'A'	EL. 'B'	C	REMARKS
LIMESTONE BASIN	460'-0	452'-0	80'-1⅝	
METAL CLEANING BASIN	468'-0	456'-0	120'-7	
ASH SURGE BASIN	468'-0	452'-0	160'-1½	

APPROVED FOR CONSTRUCTION 4/19/78

REDRAWN FROM NUS DWG. #5080 C 5507 1 OF 1, REV. 1, DTD. 4-19-78

BY	REV	DATE	REVISION	BY	CKD	ENG/APPD
BY: J. L. MEECE ENGINEERING	A	03-06-03	CREATED DRAWING FROM SCAN WO #S08866	SDH	--	--/--

DRAFTING SERVICES ONLY

PROVIDED BY J. L. MEECE ENGINEERING

(SEAL)

WASTE WATER TREATMENT FACILITY
RAMPS & ASH SURGE BASIN
OVERFLOW STRUCTURE

STA. 3 POWERTON

MIDWEST GENERATION
An EDISON INTERNATIONAL Company

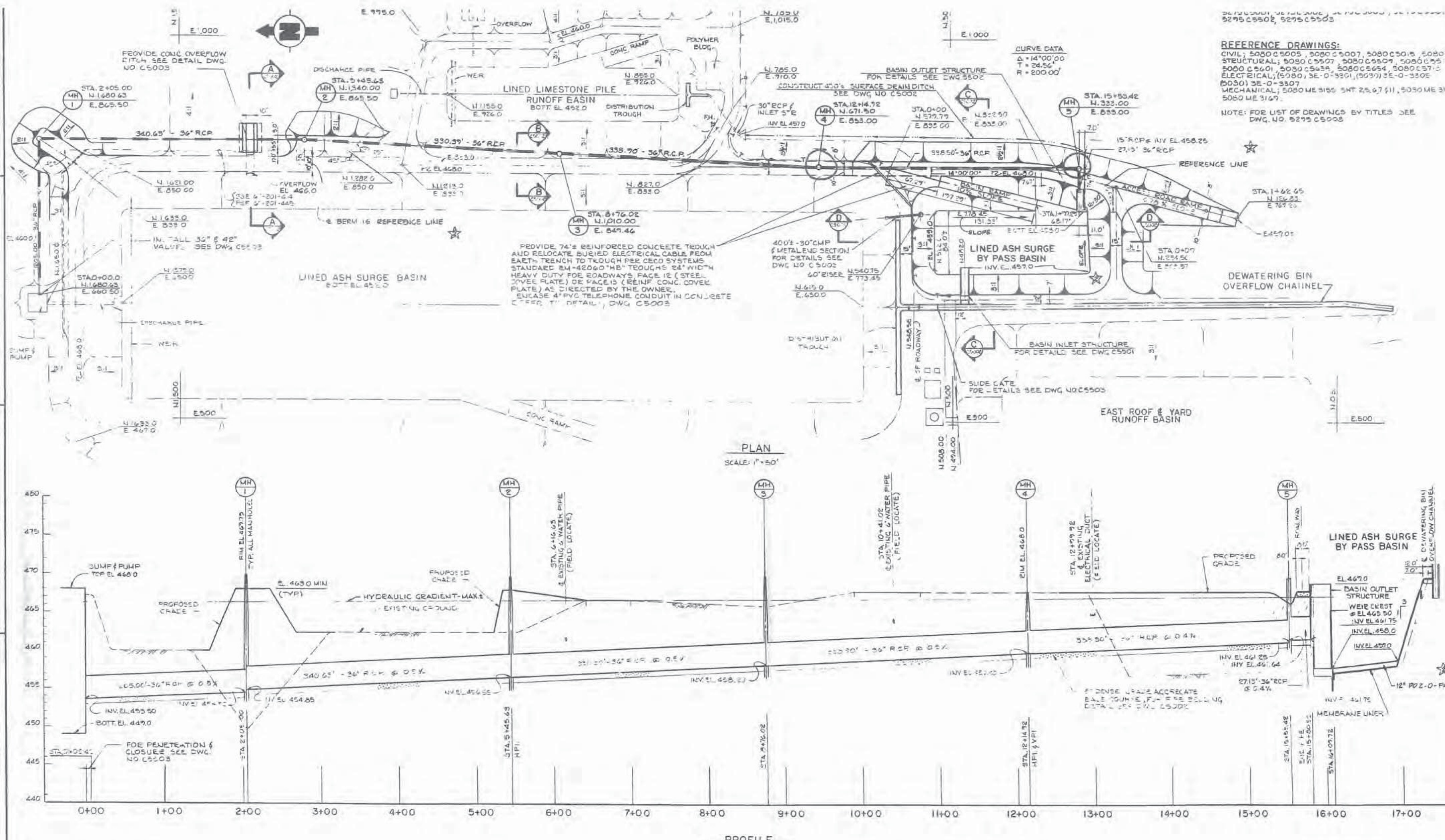
SCALE AS SHOWN | DC –
DATE 03-06-03 | SC –

3B-0-2090

RCAD 3B-0-2090_A.TIF J. L. MEECE ENG. 03-06-03

Appendix A-2

Bypass Basin Overflow Pipe



(a) REMOVED 9" SELECT FILL AND 9" GRAVEL BLANKET (TOTAL 1'-6") FROM BOTTOM BY-PASS BASIN, REPLACED WITH 12" POZ-O-PAC
(b) ADDED ELEV., SLOPE AND REFERENCE LINE NOTATIONS TO PLAN.

SPECIFICATION:

[illegible] SHALL CONFORM TO THE REQUIREMENTS OF [illegible] LOW-HEAD [illegible] AWWA [illegible]-74 [illegible]. THE PIPE SHALL BE FOR A 25-FOOT HYDROSTATIC HEAD [illegible] FEET OF EARTH COVER AND FOR AN H20 LIVE LOAD. JOINTS SHALL BE [illegible] GASKET TYPE BELL & SPIGOT. PIPE MAY UTILIZE STEEL JOINT [illegible] EXCEPT THAT A STEEL JOINT [illegible] IS REQUIRED TO CONNECT INTO THE [illegible] SUMP. THE RUBBER GASKET SHALL BE THE SOLE ELEMENT OF THE JOINT TO PROVIDE WATERTIGHTNESS. THE PIPE SHALL FORM A CONTINUOUS WATERTIGHT CONDUIT WITH A SMOOTH AND UNIFORM [illegible] AND SHALL PROVIDE FOR SLIGHT MOVEMENTS OF ANY PIPE UNIT IN THE [illegible] DUE TO EXPANSION, CONTRACTION, SETTLEMENT OR LATERAL [illegible] MENT.

2. OUTLET DRAIN PIPE (15 INCH)
[illegible] OUTLET DRAIN PIPE SHALL CONFORM TO THE REQUIREMENTS OF REINFORCED CONCRETE LOW-HEAD PRESSURE PIPE [illegible] AND/OR TO PRETENSIONED CONCRETE [illegible] TYPE, FOR WATER AND OTHER LIQUIDS AWWA C302-74. JOINTS SHALL BE RUBBER GASKET TYPE BELL & SPIGOT.

3. MANHOLES
MANHOLES SHALL BE THE SIZE AND AT THE LOCATIONS AND GRADES SHOWN ON THE CONTRACT DRAWINGS. MATERIAL FOR THE WALL SHALL BE EITHER CAST IN-PLACE REINFORCED CONCRETE OR PRECAST REINFORCED CONCRETE SECTIONS. PRECAST MANHOLES SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ANSI/ASTM C478-78 A STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE MANHOLE SECTIONS. JOINTS ARE TO BE SEALED WITH O-RING GASKETS. MANHOLES SHALL BE CONSTRUCTED FOR 15 FOOT HYDROSTATIC HEAD. THE COMPLETED CHANNEL THROUGH THE MANHOLE SHALL BE U-SHAPED TO A HEIGHT THREE FOURTHS THE DIAMETER. CAST FRAME (370LB±) AND COVER (115LB±) SHALL BE GRAY IRON ILLINOIS DOT STANDARD 1713-4 TYPE 1 (NEENAH CAT NO. R-1015, REF R-1712) OR EQUAL. CONTRACTOR TO SUBMIT VENDOR DRAWINGS FOR APPROVAL.

4. [illegible] SPECIFICATION SEE DWG NO [illegible]

MANHOLE SCHEDULE

MH NO	BY PASS STATION	EL TOP CONE	EL. 36 IN PIPE INV. IN	EL. 36 IN PIPE INV OUT	MH DEPTH (MIN.)	NOTES
–	0+00	–	455.50	–	–	EXIST PUMP SUMP
1	2+05	469.0	454.85	454.55	14.45'	HPI 4 = 90°
2	5+45.63	469.0	456.57	456.53	12.47'	HPI 4 = 02°27'
3	8+76.02	469.0	458.22	458.18	10.82'	STRAIGHT RUN
4	12+14.92	467.25	459.92	459.88	7.37'	HPI 4 = 2°27' USE GRADE RINGS REQ
5	15+53.42	469.0	461.64	461.25	7.75'	HPI 4 = 90°
–	15+80.55	–	–	461.75	–	OUTLET STRUCTURE

NOTE: MAX. HYDRAULIC GRADIENT EL. 467.25±

Peter D. Arrowsmith 2/6/80

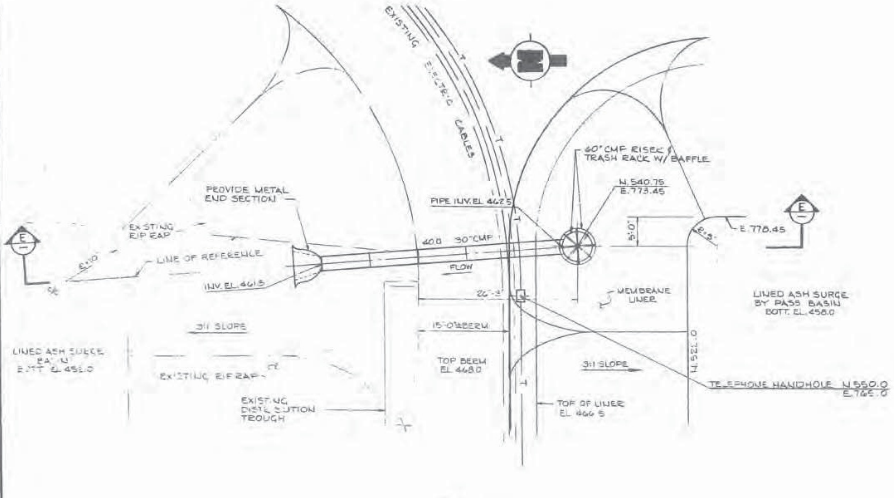
DRAWING STATUS
APPROVED FOR CONSTRUCTION
Date 6/26/80

DRAWN J. Teuc	
CHECKED	3/3/80
COG. ENGINEER	3/7/80
APPROVAL PROJ.	

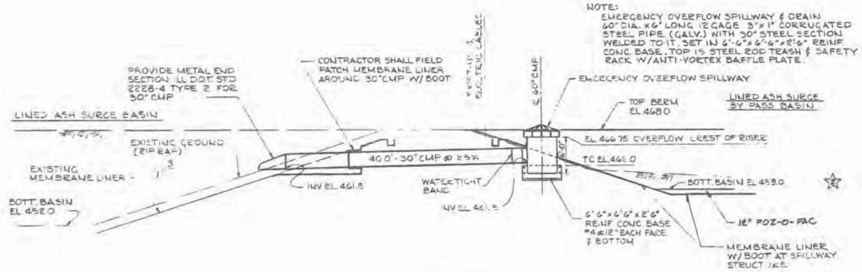
COMMONWEALTH EDISON COMPANY
WASTE WATER TREATMENT FACILITIES
POWERTON

ASH SURGE BASIN BY PASS
PLAN AND PROFILE

CECO CONTRACT: 802668
NUS CORPORATION, ROCKVILLE, MD.
DRAWING NO. 5295 C 5001
REV. 2
SCALE: AS SHOWN
SHEET 1 OF 1



PLAN



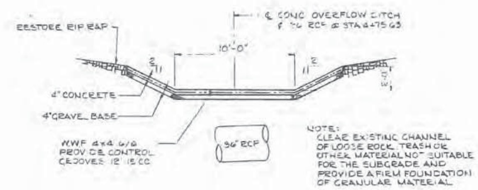
SECTION (E)

EMERGENCY OVERFLOW SPILLWAY

SCALE: 1/8"=1'-0"

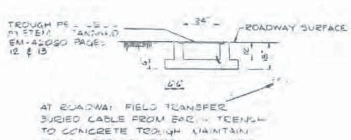
CONTRACT DRAWINGS		
DRAWING NO.	REV.	DRAWING TITLES
5295 C5001	1	PLAN & PROFILE
5295 C5002	1	DETAILS & SECTIONS
5295 C5003	1	MISCELLANEOUS DETAILS
5295 C5501	1	INLET STRUCTURE
5295 C5502	1	OUTLET STRUCTURE
5295 C5503	1	MISCELLANEOUS GATES
REFERENCE DRAWINGS		
5080 C5005	2	DETAIL PLAN - EAST ROOF & YARD RUNOFF BASIN
5080 C5007	2	DETAIL PLAN ASH SURGE BASIN
5080C5015	2	MISCELLANEOUS SECTIONS AND DETAILS, SHTS 1&2
5080C5121	1	BASIN END SECTION
5080C5507	1	RAMPS & ASH SURGE BASIN OVERFLOW STRUCTURE
5080C5509	1	ASH SURGE BASIN & LIMESTONE BASIN DISTRIBUTION TROUGH SECTION & DETAILS
5080C5511	2	DEWATERING BIN OVERFLOW CHANNEL SECTIONS & DETAILS
5080C5601	2	STANDARD DETAILS
5080C5638	2	ASH SURGE BASIN SUMP - CLARIFIER OVERFLOW SUMP
5080C5654	1	PIPE SUPPORTS FRAMING PLAN & SECTIONS COL NO 7473 (5)
5080C5715	1	ASH SURGE BASIN SUMP PLAT FORM SECTIONS & DETAILS
(5080) 3E-0-3301	2	ELECTRICAL AREA LAYOUT EAST RUNOFF BASIN - NORTH
(5080) 3E-0-3305	3	ELECTRICAL AREA LAYOUT LIMESTONE PILE RUNOFF BASIN
(5080) 3E-0-3307	2	ELECTRICAL AREA LAYOUT ASH SURGE BASIN AREA
5080 ME 3155 SHT 2	4	PIPING ARRANGEMENT YARD AREA
SHT 5	3	
SHT 6	3	
SHT 7	3	
SHT 11	3	
5080 ME 3162 SHT 1	3	PIPING ARRANGEMENT YARD DETAIL EAST ROOF & YARD RUNOFF BASIN
5080 ME 3169 SHT 1	1	PIPING ARRANGEMENT YARD DETAIL LIMESTONE PILE RUNOFF BASIN AND ASH SURGE BASIN SUMPS

NOTE:
FOR ELECTRICAL CABLE TROUGH SEE CECO SYSTEMS STANDARD EM-42060 "HB" TROUGHS 24" WIDTH HEAVY DUTY FOR ROADWAYS PAGE 12 (STEEL COVER PLATE) OR PAGE 13 (REINFORCED CONCRETE COVER PLATE).



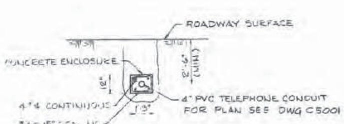
TYPICAL DETAIL
CONCRETE OVERFLOW DITCH

SCALE: 1/4"=1'-0"



DETAIL
ELECTRICAL CABLE TROUGH

SCALE: 3/4"=1'-0"



DETAIL
CONCRETE ENCLOSURE FOR TELEPHONE CONDUIT

SCALE: 3/8"=1'-0"

2 (a) REMOVED COMBINED SELECT AND GRAVEL BLANKET FROM BOTTOM OF BASIN AND ADDED 12" POZ-O-PAC, SEC E
(b) CHANGED BOTTOM EL. 458.0 TO 459.0

APPROVED FOR CONSTRUCTION

6/26/83

COMMONWEALTH EDISON COMPANY
WASTE WATER TREATMENT FACILITIES
POWERTON

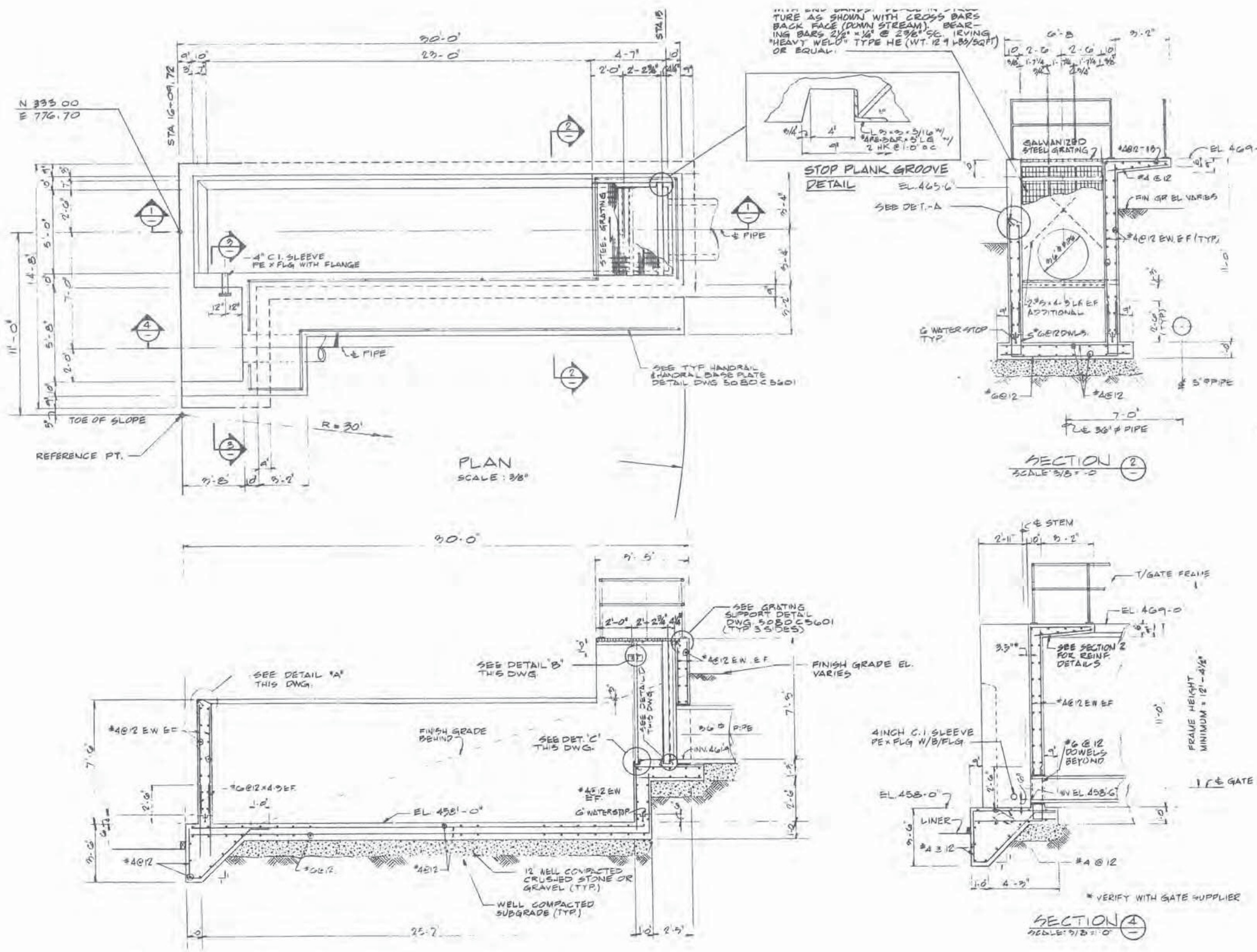
ASH SURGE BASIN BY PASS
MISCELLANEOUS DETAILS

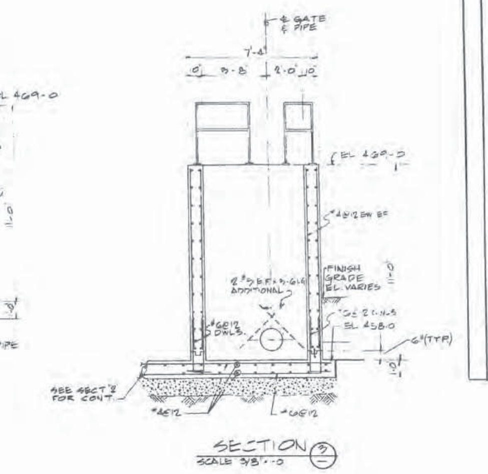
CECO CONTRACT: 802666

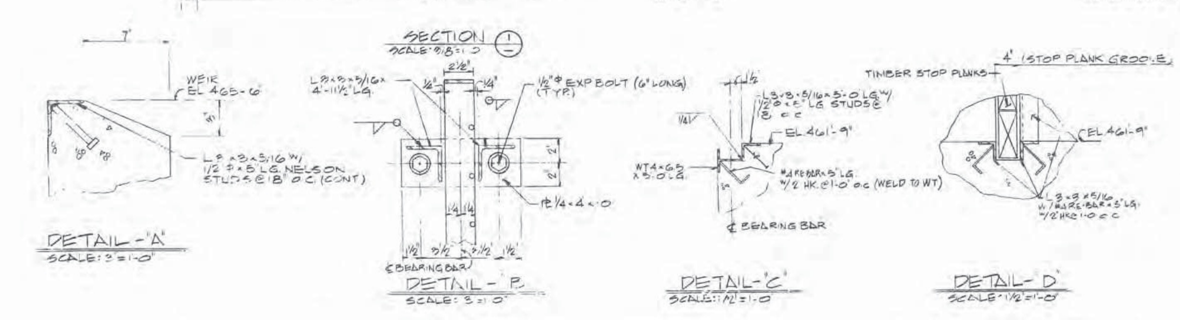
NUS CORPORATION ROCKVILLE, MD.

DRAWING NO. 5295 C 5003 REV. 2

SCALE: AS SHOWN







NOTES:

1. SEE NOTE NOS 1, 2, 4, 5 AND 6 ON DWG 5501.
2. CONTRACTOR SHALL FURNISH & INSTALL MEDIUM DUTY SLUICE GATE & ACCESSORIES AS MANUFACTURED BY ARMCO STEEL CORP. OR APPROVED EQUAL, CONFORMING TO FOLLOWING SPECS:
   a. GATE
      MODEL 20-10C
      QUANTITY REQD = 1
      OPENING SIZE = 15" DIA.
      FRAME TYPE = FLAT BACK
      MATERIAL COMBINATION = #2
      STEM DIA = 7/8"
   b. ACCESSORIES
      TYPE OF LIFT = H1-10
      FRAME HT = 12'-4 1/2" MINIMUM.
3. STEEL GRATING TO BE IRVING WELDED RECTANGULAR DESIGN TYPE IHB-2 WITH 1 1/4" x 1/4" MAIN BARS, AS MANUFACTURED BY IKG INDUSTRIES OR APPROVED EQUAL (GALVANIZED)
4. STOP PLANKS TO BE DOUGLAS FIR COMMERCIAL GRADE NO. 2 (WEST COAST)
   PROVIDE ONE SET OF 7 PLANKS 4" x 8" x 5'-5" LONG (DRESSED SIZE 3 1/2 x 7 1/4 x 5'-5")
   STOP PLANKS ARE INTERCHANGEABLE AT THREE LOCATIONS — SEE ALSO DWGS C5501 & C5503 (ONLY ONE SET REQUIRED UNLESS DIRECTED OTHERWISE BY OWNER)

CONTRACT DRAWINGS:
5295C 5001, 5002, 5003, 5501, 5502, 5503.

REFERENCE DRAWINGS:
CIVIL: 5080C 5005, 5007, 5015, 5121
STRUCTURAL: 5080C 5507, 5509, 5511, 5601, 5638, 5654, 5713.
ELECTRICAL: (CAR) 3E-0-3301, 3305, 3307
MECHANICAL: F 780 ME 3155 SHT 2, 5, 6, 7, & 11, F 62, 3169

NOTE: FOR LIST OF DRAWINGS BY TITLES SEE D. G NO. 5295C 5003.

APPROVED FOR CONSTRUCTION
2/19/80

COMMONWEALTH EDISON COMPANY
WASTE WATER TREATMENT FACILITIES
POWERTON
ASH SURGE BASIN BY PASS
BASIN OUTLET STRUCTURE
CECO CONTRACT 802666
NUS CORPORATION ROCKVILLE MD
5295C 5502
REV. 1
SCALE AS SHOWN

Appendix B

Design Storm Event Depth

NOAA Atlas 14, Volume 2, Version 3
Location name: Pekin, Illinois, US*
Latitude: 40.5434°, Longitude: -89.6779°
Elevation: 466 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.409** (0.375-0.447)	**0.487** (0.447-0.534)	**0.581** (0.533-0.636)	**0.654** (0.598-0.715)	**0.746** (0.679-0.814)	**0.816** (0.740-0.891)	**0.884** (0.797-0.964)	**0.953** (0.854-1.04)	**1.04** (0.928-1.14)	**1.11** (0.981-1.22)
10-min	**0.635** (0.582-0.695)	**0.760** (0.697-0.834)	**0.903** (0.828-0.989)	**1.01** (0.923-1.10)	**1.14** (1.04-1.25)	**1.24** (1.12-1.35)	**1.33** (1.20-1.45)	**1.42** (1.27-1.55)	**1.53** (1.36-1.68)	**1.62** (1.43-1.77)
15-min	**0.778** (0.714-0.852)	**0.929** (0.853-1.02)	**1.11** (1.02-1.21)	**1.24** (1.14-1.36)	**1.41** (1.28-1.54)	**1.53** (1.39-1.67)	**1.65** (1.49-1.80)	**1.77** (1.59-1.93)	**1.92** (1.70-2.10)	**2.02** (1.78-2.22)
30-min	**1.03** (0.944-1.13)	**1.24** (1.14-1.36)	**1.52** (1.39-1.66)	**1.73** (1.58-1.89)	**1.99** (1.81-2.17)	**2.19** (1.98-2.39)	**2.39** (2.15-2.60)	**2.58** (2.31-2.82)	**2.84** (2.52-3.11)	**3.03** (2.68-3.33)
60-min	**1.26** (1.15-1.38)	**1.53** (1.40-1.67)	**1.91** (1.75-2.09)	**2.19** (2.01-2.40)	**2.58** (2.35-2.82)	**2.88** (2.61-3.15)	**3.19** (2.88-3.48)	**3.50** (3.14-3.83)	**3.92** (3.49-4.30)	**4.26** (3.76-4.67)
2-hr	**1.48** (1.35-1.61)	**1.79** (1.64-1.97)	**2.25** (2.06-2.46)	**2.61** (2.38-2.85)	**3.10** (2.82-3.38)	**3.48** (3.15-3.80)	**3.88** (3.49-4.23)	**4.29** (3.84-4.68)	**4.85** (4.30-5.31)	**5.31** (4.67-5.82)
3-hr	**1.57** (1.45-1.72)	**1.91** (1.75-2.09)	**2.41** (2.21-2.64)	**2.80** (2.56-3.07)	**3.34** (3.04-3.65)	**3.78** (3.42-4.12)	**4.23** (3.81-4.61)	**4.70** (4.20-5.12)	**5.36** (4.74-5.84)	**5.90** (5.17-6.44)
6-hr	**1.86** (1.72-2.04)	**2.26** (2.08-2.48)	**2.85** (2.62-3.12)	**3.31** (3.04-3.62)	**3.96** (3.61-4.31)	**4.48** (4.06-4.87)	**5.03** (4.53-5.46)	**5.60** (5.00-6.08)	**6.41** (5.66-6.98)	**7.06** (6.18-7.71)
12-hr	**2.15** (1.98-2.34)	**2.60** (2.40-2.83)	**3.25** (3.00-3.54)	**3.76** (3.46-4.09)	**4.47** (4.09-4.85)	**5.04** (4.59-5.46)	**5.63** (5.10-6.10)	**6.24** (5.61-6.77)	**7.10** (6.32-7.71)	**7.80** (6.87-8.49)
24-hr	**2.46** (2.29-2.66)	**2.97** (2.76-3.22)	**3.73** (3.46-4.04)	**4.33** (4.01-4.69)	**5.16** (4.76-5.57)	**5.82** (5.35-6.29)	**6.50** (5.96-7.02)	**7.21** (6.59-7.79)	**8.20** (7.45-8.86)	**9.00** (8.13-9.73)
2-day	**2.86** (2.66-3.07)	**3.45** (3.22-3.71)	**4.30** (4.00-4.62)	**4.97** (4.61-5.33)	**5.87** (5.44-6.30)	**6.58** (6.08-7.06)	**7.31** (6.73-7.85)	**8.07** (7.40-8.68)	**9.12** (8.31-9.81)	**9.94** (9.03-10.7)
3-day	**3.03** (2.83-3.25)	**3.65** (3.41-3.92)	**4.54** (4.23-4.87)	**5.23** (4.87-5.61)	**6.16** (5.72-6.60)	**6.90** (6.39-7.39)	**7.64** (7.06-8.19)	**8.41** (7.75-9.02)	**9.46** (8.67-10.2)	**10.3** (9.39-11.1)
4-day	**3.20** (2.99-3.42)	**3.85** (3.60-4.13)	**4.78** (4.47-5.13)	**5.49** (5.13-5.88)	**6.46** (6.01-6.91)	**7.21** (6.70-7.72)	**7.97** (7.39-8.53)	**8.75** (8.09-9.37)	**9.80** (9.02-10.5)	**10.6** (9.75-11.4)
7-day	**3.75** (3.52-3.98)	**4.49** (4.23-4.79)	**5.50** (5.18-5.86)	**6.27** (5.90-6.67)	**7.27** (6.83-7.74)	**8.05** (7.54-8.56)	**8.82** (8.24-9.39)	**9.61** (8.96-10.2)	**10.6** (9.88-11.4)	**11.4** (10.6-12.2)
10-day	**4.25** (4.00-4.51)	**5.09** (4.80-5.42)	**6.19** (5.83-6.59)	**7.01** (6.59-7.45)	**8.09** (7.59-8.60)	**8.91** (8.35-9.47)	**9.73** (9.10-10.4)	**10.5** (9.84-11.2)	**11.6** (10.8-12.4)	**12.5** (11.6-13.3)
20-day	**5.73** (5.38-6.11)	**6.86** (6.46-7.32)	**8.27** (7.77-8.81)	**9.29** (8.72-9.89)	**10.6** (9.94-11.3)	**11.6** (10.9-12.4)	**12.6** (11.8-13.4)	**13.6** (12.6-14.4)	**14.8** (13.8-15.8)	**15.8** (14.6-16.8)
30-day	**7.10** (6.70-7.54)	**8.48** (8.00-9.00)	**10.1** (9.54-10.7)	**11.3** (10.6-12.0)	**12.8** (12.0-13.5)	**13.9** (13.0-14.7)	**15.0** (14.0-15.9)	**16.0** (15.0-17.0)	**17.4** (16.2-18.5)	**18.4** (17.1-19.6)
45-day	**8.91** (8.43-9.41)	**10.6** (10.0-11.2)	**12.5** (11.9-13.2)	**13.9** (13.1-14.7)	**15.6** (14.7-16.5)	**16.9** (15.9-17.8)	**18.1** (17.0-19.1)	**19.3** (18.1-20.3)	**20.8** (19.5-22.0)	**21.9** (20.5-23.1)
60-day	**10.6** (10.1-11.2)	**12.6** (12.0-13.3)	**14.9** (14.1-15.7)	**16.4** (15.5-17.3)	**18.4** (17.3-19.4)	**19.8** (18.7-20.9)	**21.1** (19.9-22.3)	**22.4** (21.1-23.7)	**24.1** (22.6-25.5)	**25.3** (23.7-26.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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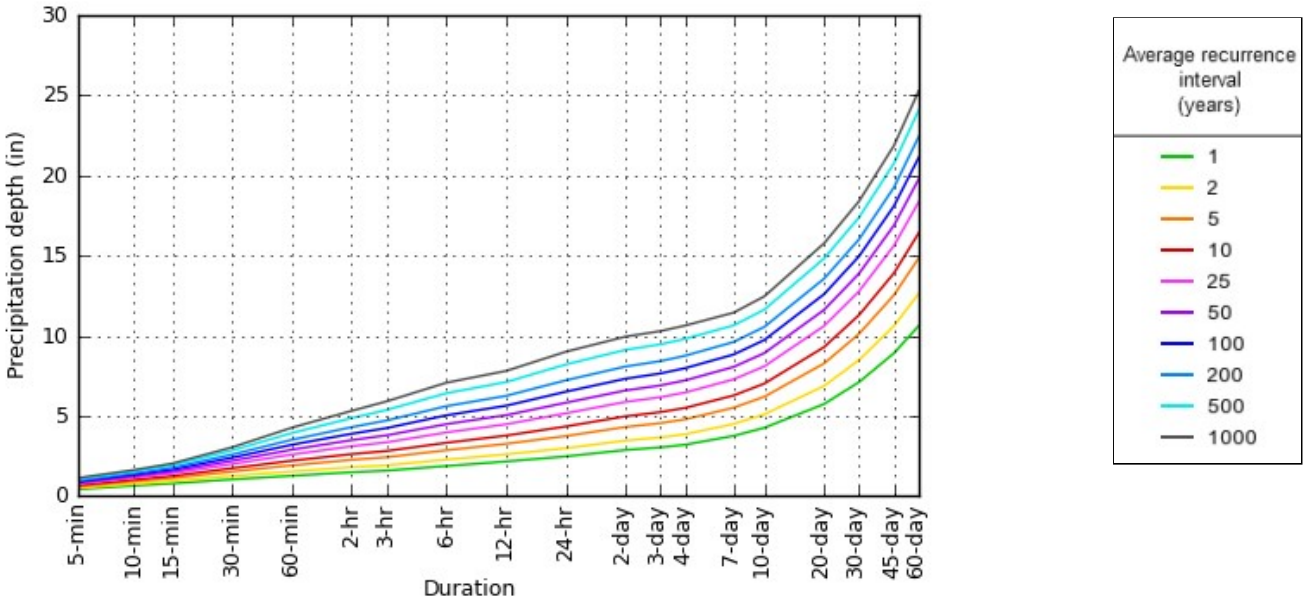
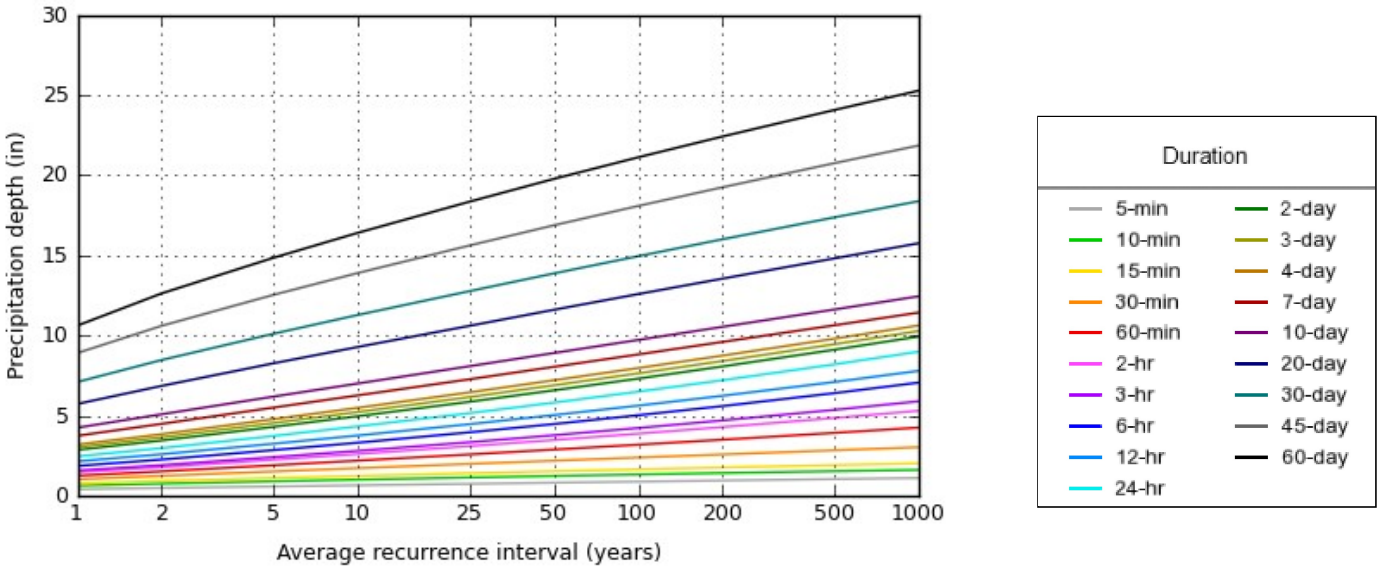
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 40.5434°, Longitude: -89.6779°





NOAA Atlas 14, Volume 2, Version 3

Created (GMT): Wed Jul 27 17:39:47 2016

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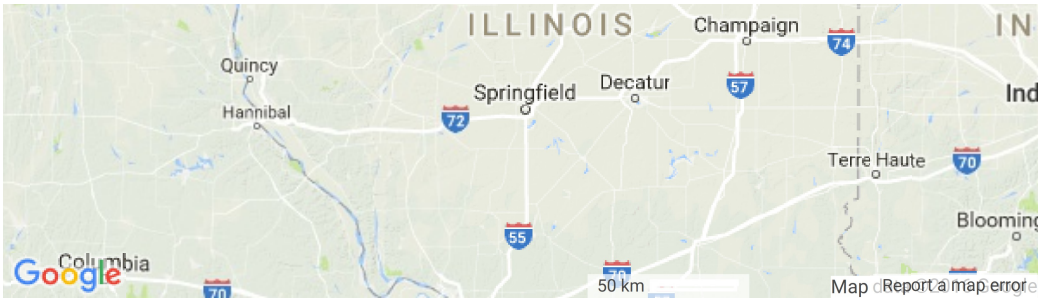
Maps & aerials

Small scale terrain



Large scale terrain

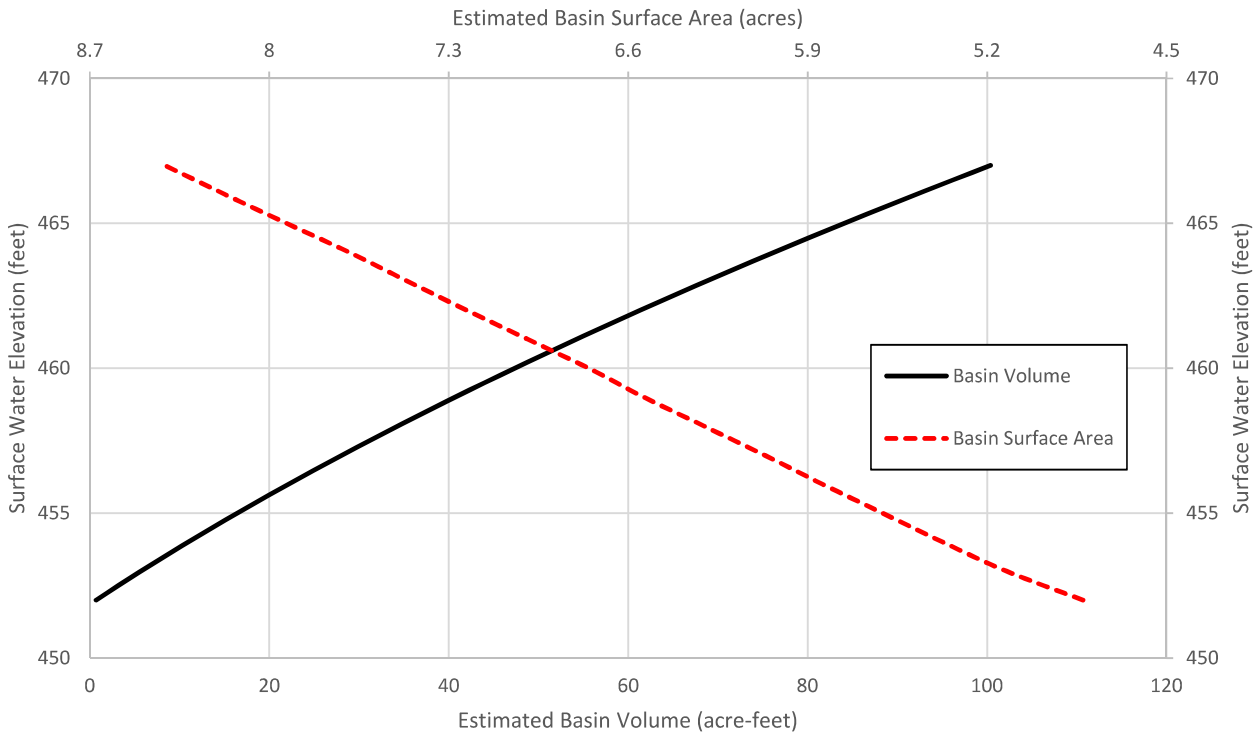
Large scale map

Large scale aerial

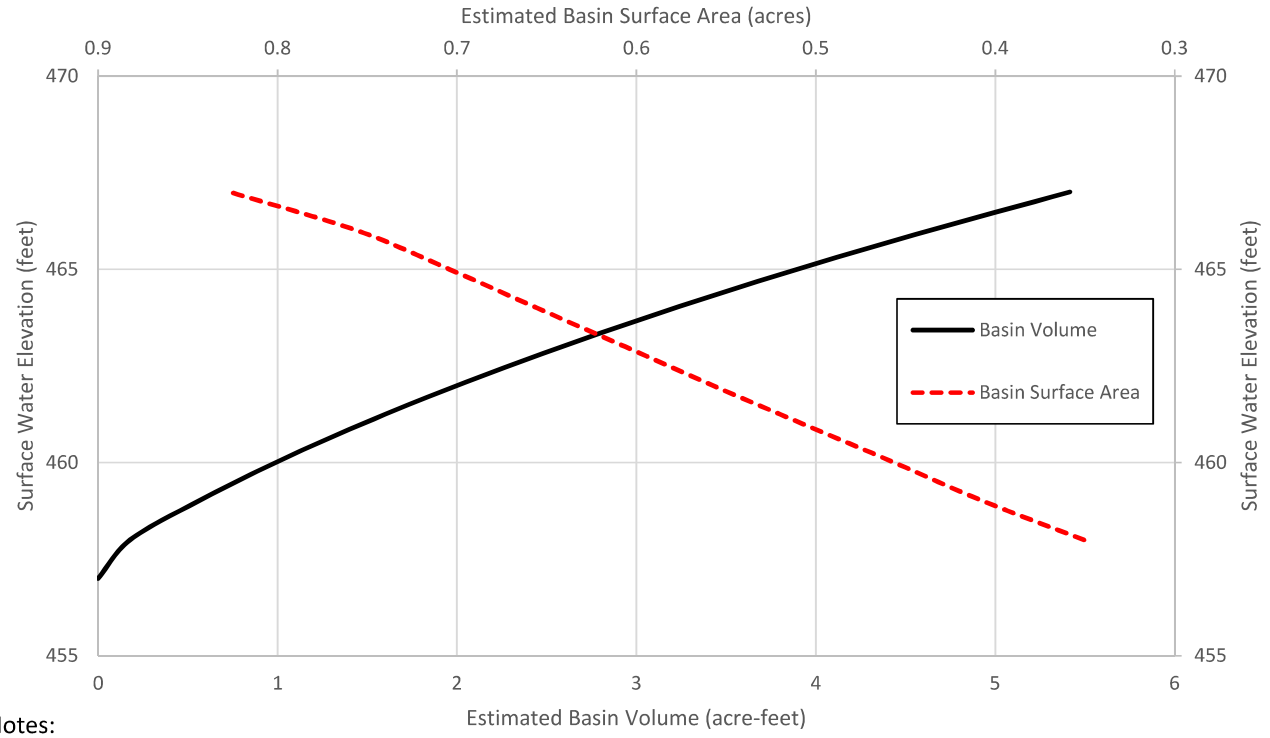
Appendix C

Basin Area Capacity Curves

Ash Surge Basin



Bypass Basin



Notes:
(1) Surface water elevations are NAD83.
(2) Basin volumes are estimated based on as-built information and 2008 site topography.

Geosyntec consultants OCTOBER 2016 SW0251-07	AREA-CAPACITY CURVES ASH SURGE & BYPASS BASINS POWERTON STATION PEKIN, ILLINOIS	**FIGURE C-1**

Attachment 10

Appendix B to the 2018 Inflow Design Flood Control System Plan for the Former Ash Basin

Geosyntec consultants

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PH 630.203.3340
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www.geosyntec.com

INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN
FORMER ASH BASIN
POWERTON STATION
MAY 2018

Pursuant to Code of Federal Regulations Title 40, Part 257, Subpart D (40 CFR), herein referred to as the coal combustion residual (CCR) Rule, Section 257.82(c), Geosyntec Consultants (Geosyntec) prepared this Inflow Design Flood Control System Plan for the Former Ash Basin (FAB) at the Powerton Station (Site) in Pekin, Illinois (Figure 1). The Basins are owned and operated by Midwest Generation, LLC (Midwest Generation).

Section 257.82(c) of the CCR Rule requires that operators of every inactive, existing or new CCR surface impoundment design, construct, operate, and maintain an inflow design flood control system that adequately manages flow into the CCR unit during and following the peak discharge of the inflow design flood. The Preamble to the CCR Rule provides guidance on the documentation that should be provided for the inflow design flood control plan.

The FAB has sufficient capacity to handle the flows into the CCR unit from the design storm with a freeboard of greater than one foot. Justification and documentation of the adequacy of the storage capacity of FAB is presented in the sections below. Compliance with the requirements of §257.82 (a)(1) and (2) are provided below:

> *§257.82 (a)(1): The inflow design flood control system must adequately manage flow into the CCR unit during and following the peak discharge of the inflow design flood specified in paragraph (a)(3) of this section.*
>
> FAB Demonstration: The FAB can manage all runon flows during and following the peak discharge of the inflow design flood because the volume of the inflow design flood is contained in the FAB.
>
> *§257.82 (a)(2): The inflow design flood control system must adequately manage flow from the CCR unit to collect and control the peak discharge resulting from the inflow design flood specified in paragraph (a)(3) of this section.*
>
> FAB Demonstration: The FAB has sufficient capacity to store the discharge resulting from the inflow design flood with a freeboard of greater than one foot; therefore, no discharge will occur during the peak discharge event.

The work presented in this report was performed under the direction of Mr. Jesse Varsho, P.E., of Geosyntec in accordance with §257.82(c). Mr. Mike Houlihan reviewed this plan in accordance with Geosyntec's senior review policy.

Inflow Design Flood Control System Plan
Former Ash Basin (FAB), Powerton Station
May 2018

1. Basin Design

The FAB is an inactive surface impoundment with an approximate surface area of 30 acres, located near the Illinois River. A rail road embankment built in 2010 divides the impoundment into North and South Pond as shown on Figure 1. Figure 2 shows existing topography of the FAB and the surrounding areas. Based on current operations at the Powerton station, there is no regular discharge of sluiced ash into the North and South Ponds of the FAB. Impacted water may enter the FAB during extreme events from an emergency overflow structure from the adjacent Ash Basin into South Pond of the FAB as shown on Figure 1. The water level in North and South Ponds fluctuates with the local ground water level, which is influenced by the elevation in the Illinois River

2. Inflow Design Flood Control Plan Documentation

Because of the relatively small size and design of the FAB, some of the references and recommended drawings for inclusion in the Inflow Design Flood Control Plan by the Preamble to the CCR Rule (page 21392) are not applicable. Table 1 below provides a summary of the documentation.

Table 1: Recommended Documentation

Documentation	Assessment
Identification of the design storm event for the catchment area and CCR unit	Identification of the design storm event is provided in Section 4 and Appendix A. A drawing of the FAB catchment areas is presented in Figure 2.
Characterization of the rainfall abstractions, including, but not limited to, depression storage and infiltration in the upstream catchment area	Full capture of the design precipitation event was assumed, so rainfall abstractions were assumed to be zero, i.e., 100% of the volume from the design storm was assumed to be held within the FAB.
Selection and basis of the appropriate run-off model or run-off and run-on routing model	A run-on model was not required because full capture within the limited catchment areas was assumed. No discharge from the design event is anticipated so a run-off model was not necessary to demonstrate compliance.
Identification and characterization of any intake or decant structures	No intake or decant structure exist for FAB.
Appropriate characterization and capacity of spillways	No spillway exists for FAB.
Characterization of downstream hydraulic structures	No outflow from the FAB is predicted from the design storm event and therefore downstream hydraulic structures are not required.

3. Catchment Areas

The drainage areas for the North and South Ponds of the FAB were delineated based on the available topographic data. The catchment areas for the North and South Pond are presented in Table 2 and shown in Figure 2.

4. Design Event

The FAB is classified as significant hazard potential surface impoundment (CEC, 2018), and hence the design event is defined as the 1,000-year storm. Total rainfall depth of 9 inches for a 1000-year, 24-hour duration storm was obtained from the National Oceanic and Atmospheric Agency (NOAA) Atlas 14 (Appendix A). Total inflow from the design event is calculated as the depth of precipitation multiplied by the catchment area[1].

5. Freeboard

The measured water level on June 23, 2017 in North and South Ponds of the FAB was 440.1 ft mean sea level (MSL[2]) and 441.7 ft, respectively (CEC, 2018). These elevations were assumed to be normal water level in the ponds of the FAB. The stage-storage curves for North and South Ponds were estimated based on available contour data (see Appendix B). The maximum potential increase in water levels due to the design storm event, based on the stage storage curves, are presented in Table 2. The estimated maximum water levels in the FAB are below the rim elevations of North and South Ponds of the FAB with freeboard values of 7.5 ft and 16.2 ft, respectively.

With full containment of the design event, the North and South Ponds of the FAB maintains water level elevations below rim elevation with a minimum of one foot of freeboard. The inflow design system, as designed and constructed, meets the requirements of §257.82.

[1] Depression storage or infiltration of stormwater into the embankment crest and other rainfall abstractions are negligible and are not included in inflow volume calculations. Similarly, this calculation does not require the use of a run-on model for the precipitation falling on the drainage areas since it is a conservative estimate of runoff with abstraction assumed zero.

[2] Based on North American Datum (NAD) 83 horizontal and vertical control datum.

Table 2: Inflow Design Volumes and Basin Water Level Estimates

Value	North Pond	South Pond
Catchment Area (acres)	18.5	19.6
Normal Water Elevation (feet, NAD83) *	440.1	441.9
Design Event Inflow (acre-feet)	13.9	14.7
Increased Basin Water Elevation (feet)	7.4	1.9
Estimated Post-Event Water Elevation (feet, NAD83)	447.5	443.8
Rim Elevation (feet, NAD83)	455.0	460.0
Freeboard (feet)	7.5	16.2

6. Plan Amendments and Revisions

In accordance with §257.82(c)(2) and (4), this Inflow Design Flood Control System Plan will be amended or revised whenever there is a change in conditions that would substantially affect the plan or every five years.

7. Limitations and Certification

This inflow design flood control system plan meets the requirements of §257.82(c) of the Code of Federal Regulations Title 40, Part 257, Subpart D, and was prepared in accordance with current practices and the standard of care exercised by scientists and engineers performing similar tasks in the field of civil engineering. The contents of this report are based solely on the observations of the conditions observed by Geosyntec personnel and information provided to Geosyntec by Midwest Generation. Consistent with applicable professional standards of care, our opinions and recommendations were based in part on data furnished by others, which was consistent with other information that we developed in the course of our performance of the scope of services. The information contained in this report is intended for use solely by Midwest Generation and their subconsultants.

Jesse Varsho

Jesse Varsho, P.E.
Illinois Professional Engineer No. 062.059069
License Expires: 11/30/2019

8. References

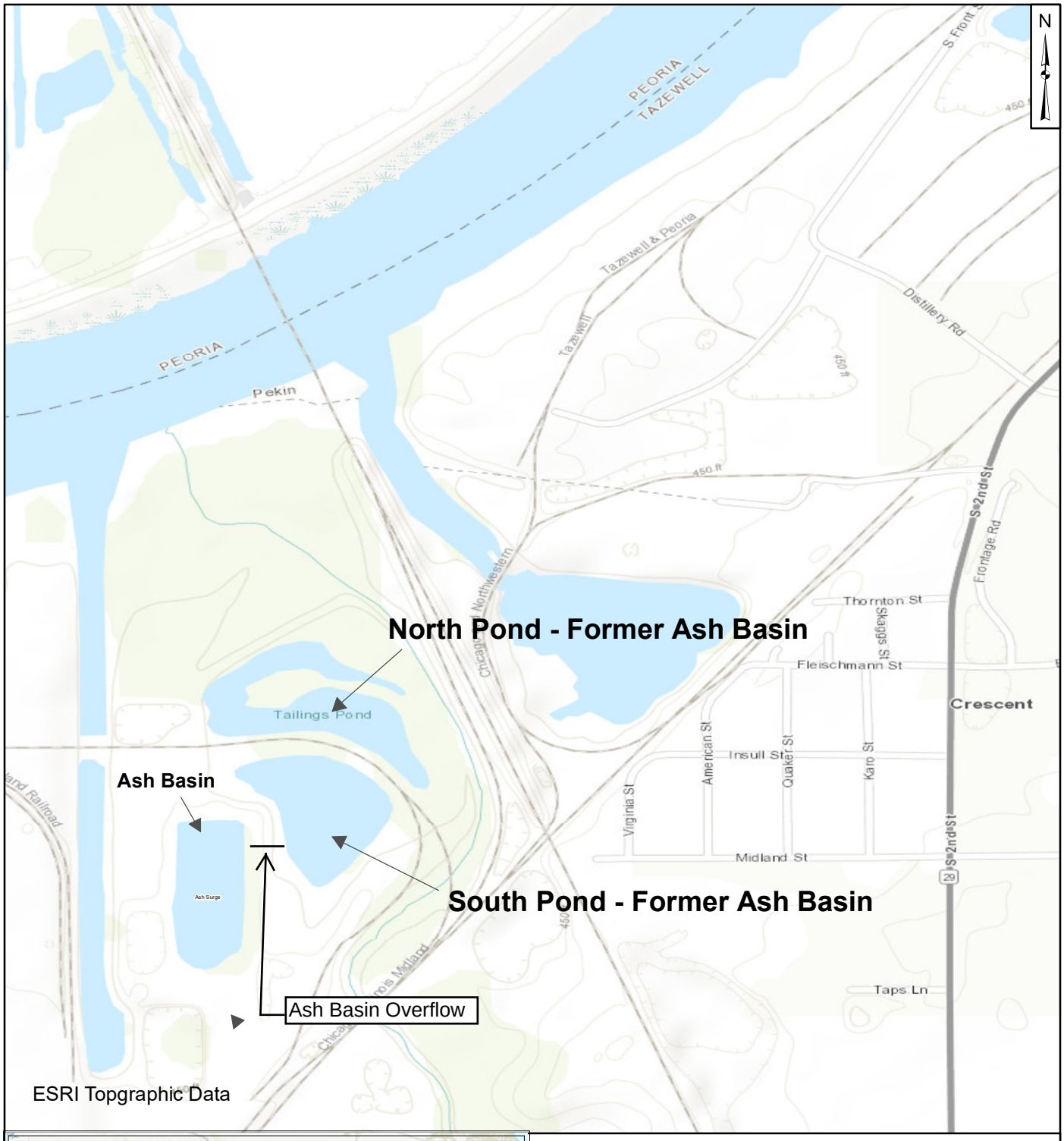
Aero-Metric 2008, Aerial topography dated 06-19-2008, Aero-Metric, Inc.

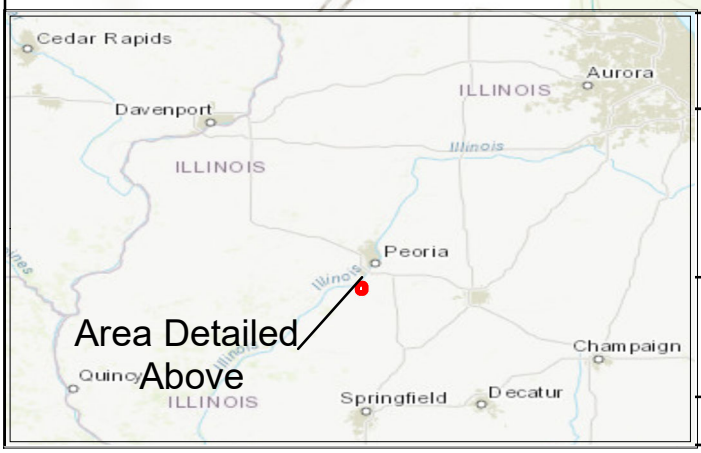
CEC 2018, Initial Hazard Potential Classification Assessment, Former Ash Basin, Powerton Station, April 2018.

NOAA, 2016, NOAA Atlas 14 Point Precipitation Frequency Estimates: Illinois, available at: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

Attachments

Figure 1: Site Location
Figure 2: Basin Topography and Catchment Area
Appendix A: Design Storm Event Depth
Appendix B: Basin Stage Storage Curve





1,250 625 0 1,250 Feet

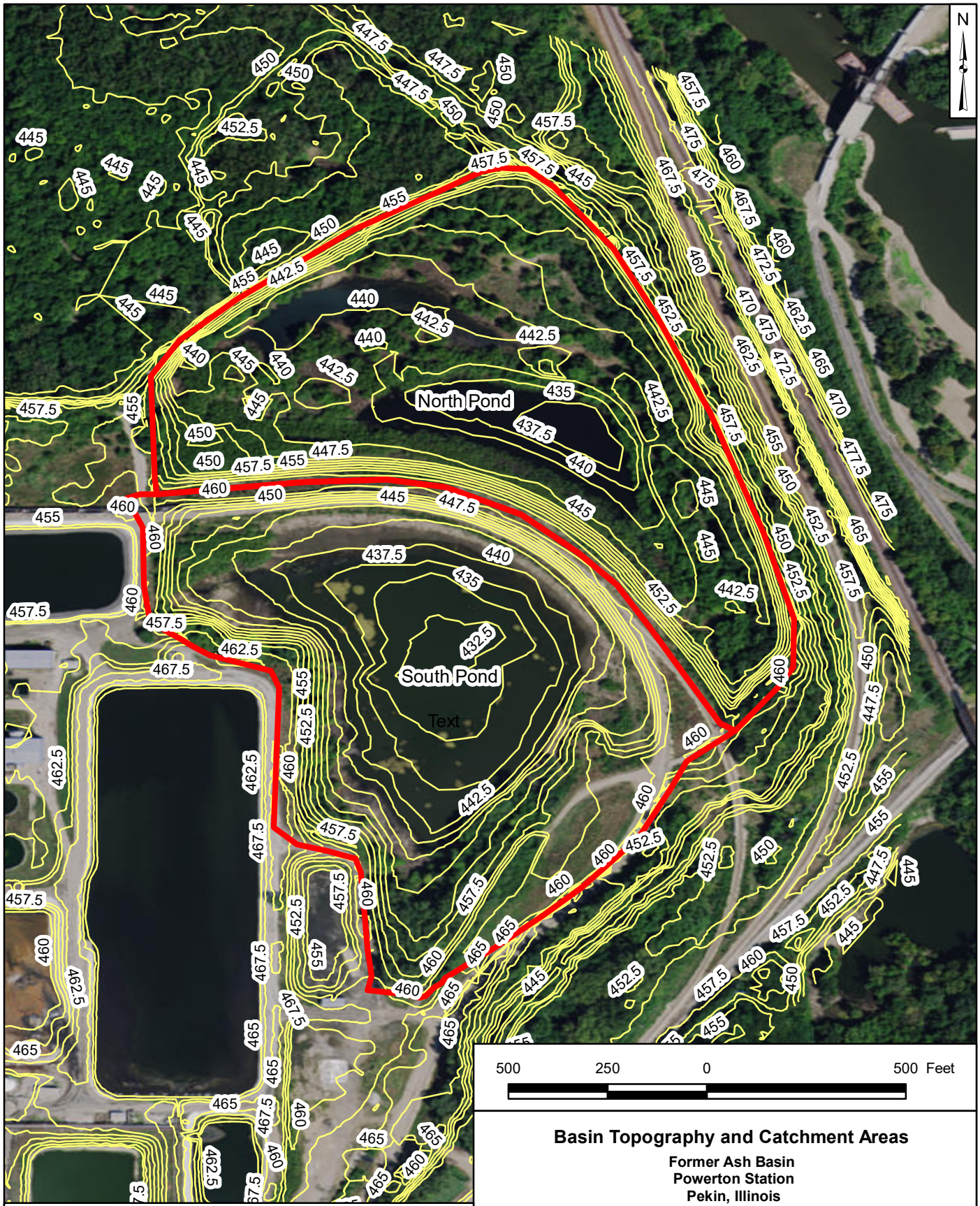
Site Location

Former Ash Basin
Pekin, Illinois

Geosyntec consultants

Oak Brook | May 21 2018

Figure 1



Legend

- CatchmentAreas
- Contours

Basin Topography and Catchment Areas

Former Ash Basin
Powerton Station
Pekin, Illinois

Geosyntec consultants

Oak Brook | May, 2018

Figure **2**

Appendix A

Design Storm Event Depth

NOAA Atlas 14, Volume 2, Version 3
Location name: Pekin, Illinois, US*
Latitude: 40.5434°, Longitude: -89.6779°
Elevation: 466 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.409** (0.375-0.447)	**0.487** (0.447-0.534)	**0.581** (0.533-0.636)	**0.654** (0.598-0.715)	**0.746** (0.679-0.814)	**0.816** (0.740-0.891)	**0.884** (0.797-0.964)	**0.953** (0.854-1.04)	**1.04** (0.928-1.14)	**1.11** (0.981-1.22)
10-min	**0.635** (0.582-0.695)	**0.760** (0.697-0.834)	**0.903** (0.828-0.989)	**1.01** (0.923-1.10)	**1.14** (1.04-1.25)	**1.24** (1.12-1.35)	**1.33** (1.20-1.45)	**1.42** (1.27-1.55)	**1.53** (1.36-1.68)	**1.62** (1.43-1.77)
15-min	**0.778** (0.714-0.852)	**0.929** (0.853-1.02)	**1.11** (1.02-1.21)	**1.24** (1.14-1.36)	**1.41** (1.28-1.54)	**1.53** (1.39-1.67)	**1.65** (1.49-1.80)	**1.77** (1.59-1.93)	**1.92** (1.70-2.10)	**2.02** (1.78-2.22)
30-min	**1.03** (0.944-1.13)	**1.24** (1.14-1.36)	**1.52** (1.39-1.66)	**1.73** (1.58-1.89)	**1.99** (1.81-2.17)	**2.19** (1.98-2.39)	**2.39** (2.15-2.60)	**2.58** (2.31-2.82)	**2.84** (2.52-3.11)	**3.03** (2.68-3.33)
60-min	**1.26** (1.15-1.38)	**1.53** (1.40-1.67)	**1.91** (1.75-2.09)	**2.19** (2.01-2.40)	**2.58** (2.35-2.82)	**2.88** (2.61-3.15)	**3.19** (2.88-3.48)	**3.50** (3.14-3.83)	**3.92** (3.49-4.30)	**4.26** (3.76-4.67)
2-hr	**1.48** (1.35-1.61)	**1.79** (1.64-1.97)	**2.25** (2.06-2.46)	**2.61** (2.38-2.85)	**3.10** (2.82-3.38)	**3.48** (3.15-3.80)	**3.88** (3.49-4.23)	**4.29** (3.84-4.68)	**4.85** (4.30-5.31)	**5.31** (4.67-5.82)
3-hr	**1.57** (1.45-1.72)	**1.91** (1.75-2.09)	**2.41** (2.21-2.64)	**2.80** (2.56-3.07)	**3.34** (3.04-3.65)	**3.78** (3.42-4.12)	**4.23** (3.81-4.61)	**4.70** (4.20-5.12)	**5.36** (4.74-5.84)	**5.90** (5.17-6.44)
6-hr	**1.86** (1.72-2.04)	**2.26** (2.08-2.48)	**2.85** (2.62-3.12)	**3.31** (3.04-3.62)	**3.96** (3.61-4.31)	**4.48** (4.06-4.87)	**5.03** (4.53-5.46)	**5.60** (5.00-6.08)	**6.41** (5.66-6.98)	**7.06** (6.18-7.71)
12-hr	**2.15** (1.98-2.34)	**2.60** (2.40-2.83)	**3.25** (3.00-3.54)	**3.76** (3.46-4.09)	**4.47** (4.09-4.85)	**5.04** (4.59-5.46)	**5.63** (5.10-6.10)	**6.24** (5.61-6.77)	**7.10** (6.32-7.71)	**7.80** (6.87-8.49)
24-hr	**2.46** (2.29-2.66)	**2.97** (2.76-3.22)	**3.73** (3.46-4.04)	**4.33** (4.01-4.69)	**5.16** (4.76-5.57)	**5.82** (5.35-6.29)	**6.50** (5.96-7.02)	**7.21** (6.59-7.79)	**8.20** (7.45-8.86)	**9.00** (8.13-9.73)
2-day	**2.86** (2.66-3.07)	**3.45** (3.22-3.71)	**4.30** (4.00-4.62)	**4.97** (4.61-5.33)	**5.87** (5.44-6.30)	**6.58** (6.08-7.06)	**7.31** (6.73-7.85)	**8.07** (7.40-8.68)	**9.12** (8.31-9.81)	**9.94** (9.03-10.7)
3-day	**3.03** (2.83-3.25)	**3.65** (3.41-3.92)	**4.54** (4.23-4.87)	**5.23** (4.87-5.61)	**6.16** (5.72-6.60)	**6.90** (6.39-7.39)	**7.64** (7.06-8.19)	**8.41** (7.75-9.02)	**9.46** (8.67-10.2)	**10.3** (9.39-11.1)
4-day	**3.20** (2.99-3.42)	**3.85** (3.60-4.13)	**4.78** (4.47-5.13)	**5.49** (5.13-5.88)	**6.46** (6.01-6.91)	**7.21** (6.70-7.72)	**7.97** (7.39-8.53)	**8.75** (8.09-9.37)	**9.80** (9.02-10.5)	**10.6** (9.75-11.4)
7-day	**3.75** (3.52-3.98)	**4.49** (4.23-4.79)	**5.50** (5.18-5.86)	**6.27** (5.90-6.67)	**7.27** (6.83-7.74)	**8.05** (7.54-8.56)	**8.82** (8.24-9.39)	**9.61** (8.96-10.2)	**10.6** (9.88-11.4)	**11.4** (10.6-12.2)
10-day	**4.25** (4.00-4.51)	**5.09** (4.80-5.42)	**6.19** (5.83-6.59)	**7.01** (6.59-7.45)	**8.09** (7.59-8.60)	**8.91** (8.35-9.47)	**9.73** (9.10-10.4)	**10.5** (9.84-11.2)	**11.6** (10.8-12.4)	**12.5** (11.6-13.3)
20-day	**5.73** (5.38-6.11)	**6.86** (6.46-7.32)	**8.27** (7.77-8.81)	**9.29** (8.72-9.89)	**10.6** (9.94-11.3)	**11.6** (10.9-12.4)	**12.6** (11.8-13.4)	**13.6** (12.6-14.4)	**14.8** (13.8-15.8)	**15.8** (14.6-16.8)
30-day	**7.10** (6.70-7.54)	**8.48** (8.00-9.00)	**10.1** (9.54-10.7)	**11.3** (10.6-12.0)	**12.8** (12.0-13.5)	**13.9** (13.0-14.7)	**15.0** (14.0-15.9)	**16.0** (15.0-17.0)	**17.4** (16.2-18.5)	**18.4** (17.1-19.6)
45-day	**8.91** (8.43-9.41)	**10.6** (10.0-11.2)	**12.5** (11.9-13.2)	**13.9** (13.1-14.7)	**15.6** (14.7-16.5)	**16.9** (15.9-17.8)	**18.1** (17.0-19.1)	**19.3** (18.1-20.3)	**20.8** (19.5-22.0)	**21.9** (20.5-23.1)
60-day	**10.6** (10.1-11.2)	**12.6** (12.0-13.3)	**14.9** (14.1-15.7)	**16.4** (15.5-17.3)	**18.4** (17.3-19.4)	**19.8** (18.7-20.9)	**21.1** (19.9-22.3)	**22.4** (21.1-23.7)	**24.1** (22.6-25.5)	**25.3** (23.7-26.8)

Design Event

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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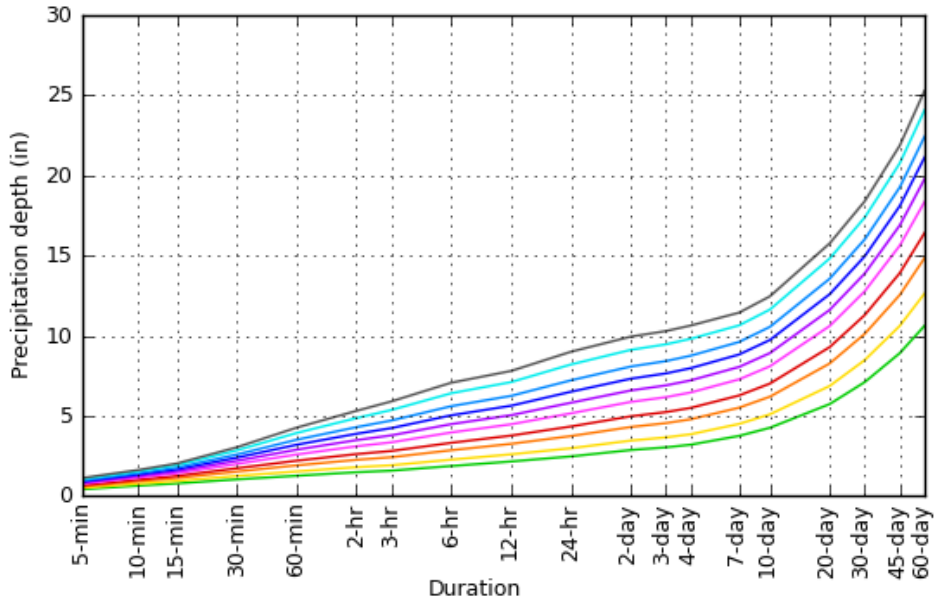
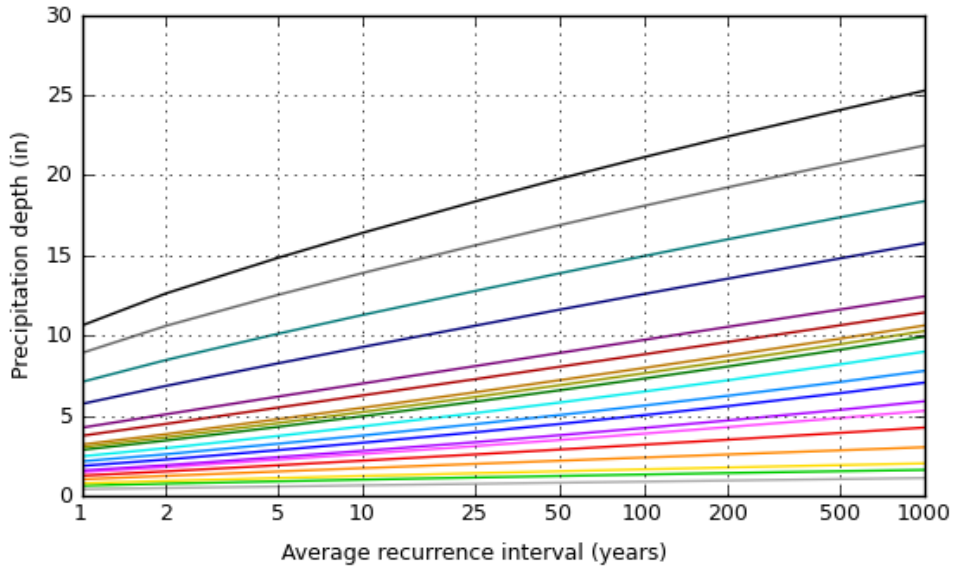
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 40.5434°, Longitude: -89.6779°





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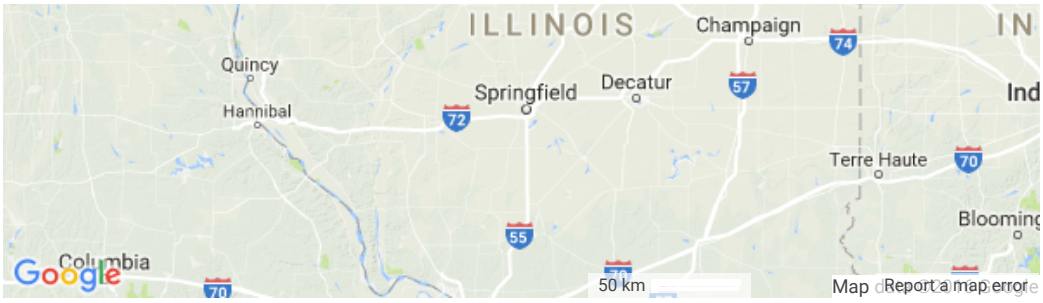
Maps & aerials

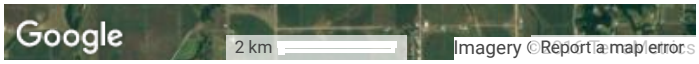
Small scale terrain



Large scale terrain

Large scale map

Large scale aerial



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Questions?: HDSC.Questions@noaa.gov

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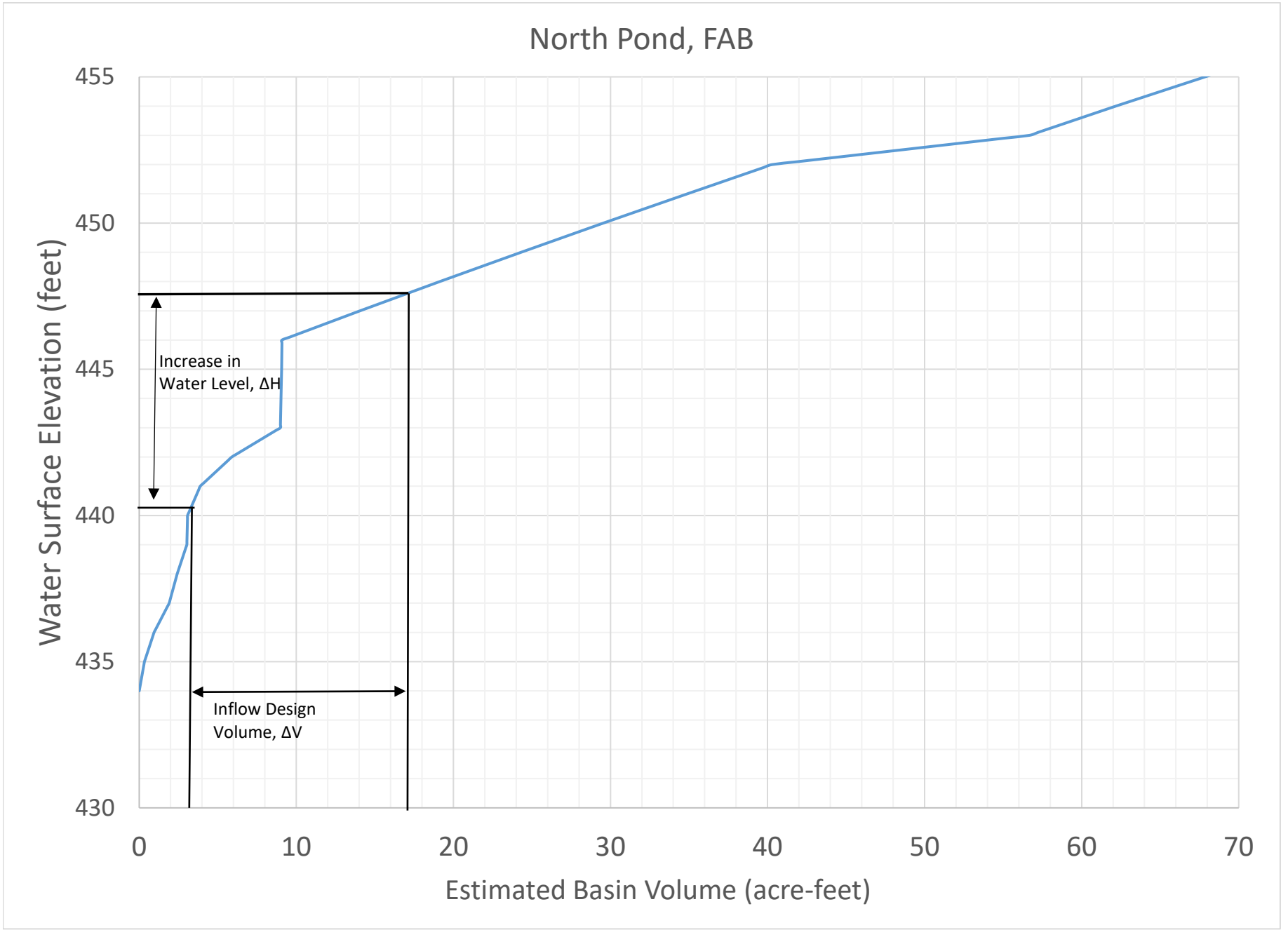
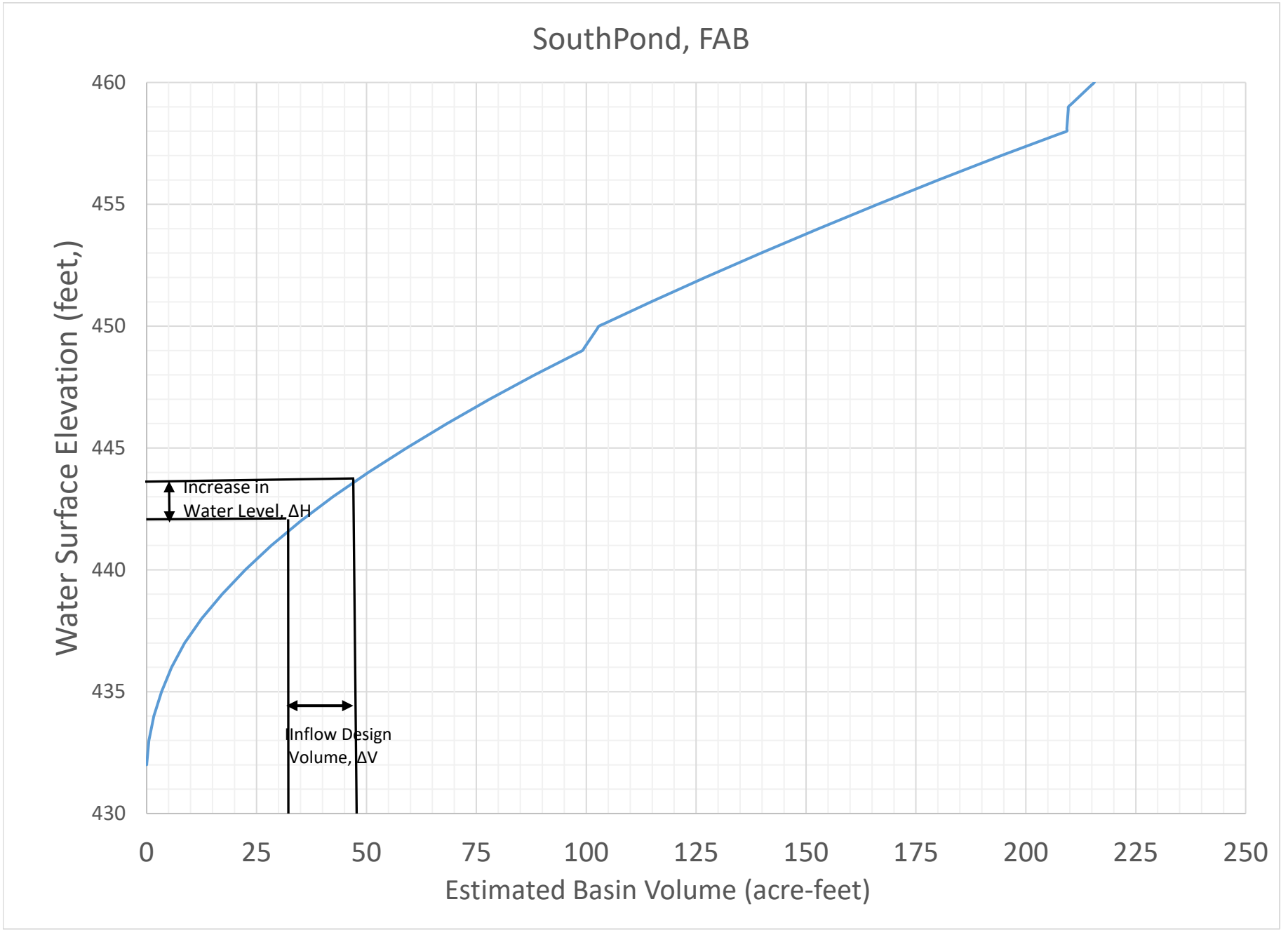
Appendix B

Basin Area Capacity Curves


North Pond, FAB
Water Surface Elevation (feet)
455
450
445
440
435
430
Increase in
Water Level, ΔH
Inflow Design
Volume, ΔV
0
10
20
30
40
50
60
70
Estimated Basin Volume (acre-feet)


SouthPond, FAB
Water Surface Elevation (feet,)
460
455
450
445
440
435
430
Increase in
Water Level, ΔH
Inflow Design
Volume, ΔV
0
25
50
75
100
125
150
175
200
225
250
Estimated Basin Volume (acre-feet)