Form CCR 2E	Illinois Environmental Protection Agency CCR Surface Impoundment Permit Application Form CCR 2E – Initial Operating Permit for Existing or Inactive CCR Surface Impoundments That Have Not Completed an Agency-approved Closure Before July 30, 2021

Bureau of Water ID Number:

CCR Permit Number:

Facility Name:

Wood River Power Station

For IEPA Use Only

SECTION 1: CONSTRUCTION HISTORY (35 Ill. Adm. Code 845.220 AND 35 Ill. Adm. Code 845.230)

Construction History	1.1	CCR surface impoundment name.
		West Ash Pond System - Pond 1
	1.2	Identification number of the CCR surface impoundment (if one has been assigned by the Agency).
	1.3	Description of the boundaries of the CCR surface impoundment (35 Ill. Adm. Code 845.210(c)).
		See Attachment 1.3 for the legal boundary description of the Primary East Ash Pond and the West Ash Pond System which consists of Pond 1, Pond 2E, and Pond 2W.
	1.4	State the purpose for which the CCR surface impoundment is being used.
		The Primary East Ash Pond and the West Ash Pond System were used to store and dispose of commingled material consisting of bottom ash, fly ash, and spray dryer absorber (SDA) waste. These CCR units no longer is receive CCR materials.
	1.5	How long has the CCR surface impoundment been in operation?
		See Attachment 1.5 for dates of construction and periods of operation.
	1.6	List the types of CCR that have been placed in the CCR surface impoundment.
		Commingled materials consisting of bottom ash, fly ash, and spray dryer absorber (SDA) waste (see Item 1.4 above).

Construction History (Continued)	1.7	List name of the watershed within which the CCR surface impoundment is located.	
		Upper Mississippi-Salt Watershed (Hydrologic Unit Code 071100090402) - see Attachment 1.7	
	1.8	Size in acres of the watershed within which the CCR surface impoundment is located.	
		Subdrainage Area - ~22,927 acres (US Geological Survey, 2016) - see Attachment 1.8	
	1.9	Check the corresponding box to indicate that you have attached the following:	
	1.9.1	☑	Description of the physical and engineering properties of the foundation and abutment materials on which the CCR surface impoundment is constructed.
	1.9.2	☑	Description of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR surface impoundment.
	1.9.3	☑	Describe the method of site preparation and construction of each zone of the CCR surface impoundment.
	1.9.4	☑	A listing of the approximate dates of construction of each successive stage of construction of the CCR surface impoundment.
	1.9.5	☑	Drawing satisfying the requirements of 35 Ill. Adm. Code 845.220(a)(1)(F).
	1.9.6	☑	Description of the type, purpose, and location of existing instrumentation.
	1.9.7	☑	Area capacity curves for the CCR Impoundment.
	1.9.8	☑	Description of each spillway and diversion design features and capacities and provide the calculations used in their determination.
	1.9.9	☑	Construction specifications and provisions for surveillance, maintenance, and repair of the CCR surface impoundment.
	1.10.1	Is there any record or knowledge of structural instability of the CCR surface impoundment?	
		☐ Yes	☑ No
	1.10.2	If you answered yes to Item 1.10.1, provide detailed explanation of the structural instability.	
		N/A	

SECTION 2: ANALYSIS OF CHEMICAL CONSTITUENTS (35 Ill. Adm. Code 845.230(d)(2)(B))

Constituents	2.1	Check the corresponding boxes to indicate you have attached the following:	
		☑	An analysis of the chemical constituents found within the CCR to be placed in the CCR surface impoundment.
		☑	An analysis of the chemical constituents of all waste streams, chemical additives and sorbent materials entering or contained in the CCR surface impoundment.

SECTION 3: DEMONSTRATIONS AND CERTIFICATIONS (35 Ill. Adm. Code 845.230(d)(2)(D))

Demonstrations

3.1	Indicate whether you have attached a demonstration that the CCR surface impoundment, as built, meets, or an explanation of how the CCR surface impoundments fails to meet, the location standards in the following sections:				
3.1.1	35 Ill. Adm. Code 845.300 (Placement Above the Uppermost Aquifer)	☑	Demonstration	☑	Explanation
3.1.2	35 Ill. Adm. Code 845.310 (Wetlands)	☑	Demonstration	☑	Explanation
3.1.3	35 Ill. Adm. Code 845.320 (Fault Areas)	☑	Demonstration	☑	Explanation
3.1.4	35 Ill. Adm. Code 845.330 (Seismic Impact Zones)	☑	Demonstration	☑	Explanation
3.1.5	35 Ill. Adm. Code 845.340 (Unstable Areas and Floodplains)	☑	Demonstration	☑	Explanation

SECTION 4: ATTACHMENTS

Attachments

4.1		Check the corresponding boxes to indicate that you have attached the following:
4.1.1	☑	Evidence that the permanent markers required by 35 Ill. Adm. Code 845.130 have been installed.
4.1.2	☑	Documentation that the CCR surface impoundment, if not incised, will be operated and maintained with one of the forms of slope protection specified in 35 Ill. Adm. Code 845.430.
4.1.3	☑	Initial Emergency Action Plan and accompanying certification required by 35 Ill. Adm. Code 845.520(e).
4.1.4	☑	Fugitive dust control plan and accompanying certification required by 35 Ill. Adm. Code 845.500(b)(7).
4.1.5	☑	Preliminary written closure plan as specified in 35 Ill. Adm. Code 845.720(a).
4.1.6	☑	Initial written post-closure care plan as specified in 35 Ill. Adm. Code 845.780(d), if applicable.
4.1.7	☑	A certification as specified in 35 Ill. Adm. Code 845.400(h), or a statement that the CCR surface impoundment does not have a liner than meets the requirements of 35 Ill. Adm. Code 845.400(b) or (c).
4.1.8	☑	History of known exceedances of the groundwater protection standards in 35 Ill. Adm. Code 845.600, and any corrective action taken to remediate the groundwater.
4.1.9	☑	Safety and health plan, as required by 35 Ill. Adm. Code 845.530.
4.1.10	☑	For CCR surface impoundments required to close under 35 Ill. Adm. Code 845.700, the proposed closure priority categorization required by 35 Ill. Adm. Code 845.700(g).

SECTION 5: GROUNDWATER MONITORING

Groundwater

5.1		Check the corresponding boxes to indicate you have attached the following groundwater monitoring information:
5.1.1	☑	A hydrogeologic site characterization meeting the requirements of 35 Ill. Adm. Code 845.620.
5.1.2	☑	Design and construction plans of a groundwater monitoring system meeting the requirements of 35 Ill. Adm. Code 845.630.

	5.1.3	☑	A groundwater sampling and analysis program that includes section of the statistical procedures to be used for evaluating groundwater monitoring data, required by 35 Ill. Adm. Code 845.640.
	5.1.4	☑	Proposed groundwater monitoring program that includes a minimum of eight independent samples for each background and downgradient well, required by 35 Ill. Adm. Code 845.650(b).
SECTION 6: CERTIFICATIONS			
Certifications	6.1	Check the corresponding boxes to indicate you have attached the following certifications:	
	6.1.1	☑	A certification that the owner or operator meets the financial assurance requirements of Subpart I, as required by 35 Ill. Adm. Code 845.230(d)(2)(N).
	6.1.2	☑	Hazard potential classification assessment and accompanying certifications required by 35 Ill. Adm. Code 845.440(a)(2).
	6.1.3	☑	Structural stability assessment and accompanying certification, required by 35 Ill. Adm. Code 845.450(c).
	6.1.4	☑	Safety factor assessment and accompanying certification, as required by 35 Ill. Adm. Code 845.460(b).
	6.1.5	☑	Inflow design flood control system plan and accompanying certification, as required by 35 Ill. Adm. Code 845.510(c)(3).

ATTACHMENT 1.3
Legal Description and Plant Survey

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 1 – Construction History (35 IAC 845.220 and 35 IAC 8945.230)
Item No.: 1.3 - Description of the boundaries of the CCR impoundment (35 IAC 845.210 (c))

NOTES

This attachment describes the items required under Section 1, Item 1.3.

Item 1.3 requires the submission of the legal description of the facility boundary. The legal description provided here was obtained from the ALTA/ACSM Land Title Survey (Policy Number 1284-540001537-BE) prepared by the Chicago Title Insurance Company. The legal description obtained from this report is presented as an attachment to this Technical Memorandum (TM). Additionally, the facility boundary survey map[1] is attached to this TM.

[1] IngenAE, *Wood River Property Exhibit, Drawing No. 1*, December 11, 2017.

LEGAL DESCRIPTION

The following is the legal description of the entire facility boundary encompassing both the East Ash Pond and the West Ash Pond complex.

All that part of the Northeast Quarter of fractional Section 30 lying Northeasterly of the middle thread of the Mississippi River:

All that part of the Northwest Quarter of fractional Section 29 lying Northeasterly of the middle thread of the Mississippi River and West of a line described as beginning at the North line of the said Northeast Quarter at a point 1268 feet East of the Northwest corner thereof; thence South 16 degrees 12 minutes West in the middle thread of the Mississippi River.

That part of the Southwest Quarter of Section 20 described as follow, to wit: Beginning at the Quarter Section corner between Sections 19 and 20; thence East on the Quarter Section line to the center of Wood River; thence Southerly and down the center of the old Channel to Wood River and following the meanderings thereof to the Quarter Section line dividing the Southeast and Southwest Quarter of said Section 20; thence South on the said Quarter Section line to the Quarter Section corner between Section 20 and 29; thence West on the Section line between Sections 20 and 29, 4.055 links more or less, to the place of beginning containing 125.75 acres, more or less; excepting therefrom a tract of land conveyed by Lena Feldwisch, a widow, et al to Harry L. Meyer and Caroline K Meyer, husband and wife by Warranty Deed dated February 25, 1944 and recorded in Book 900 Page 453 of the Recorder's Office of Madison County, Illinois.

All that part of the West Half of fractional Section 19 described as follows, to-wit: Beginning at a concrete monument at the center of said Fractional Section 19; thence North 0 degrees 55 minutes West along the East line of said half section a distance of 1637.08 feet to a point which is approximately 1067 feet Southerly from the North line of said Fractional Section 19; thence South 89 degrees 59 minutes West parallel to the North line of said Fractional Section a distance of1592.0 feet to a point in the East property line of the Alton Boxboard Company being also on the Southerly prolongation of what is known as the Power House Line where the center line of a sanitary sewer easement to the City of Alton, Illinois intersects the same; thence South 1 degree 00 minutes East 1171.32 feet along said line to its intersection with the Northeasterly right-of-way of Federal Aid Route #155 as conveyed by American Smelting and Refining Company to the State of Illinois for the use of its Department of Public Works and Building by warranty deed dated March 25, 1969 and recorded in Book 2622 at Page 569 of the Records in the Recorder's Office of Madison County, Illinois; thence Southeasterly along said right-of-way line a distance of 1814.45 feet to the North-South center line of said fractional Section 19; thence North O degrees 55 minutes West along said line 384.28 feet to the point of beginning

EXCEPTING THEREFROM that part conveyed to Wood River Drainage and Levee District by Quit Claim Deed recorded September 16, 1986 in book 3385 page 1729, being more particularly described as follows:

That part of Section 19, Township 5 North, Range 9 West of the Third Principal Meridian, Madison County, Illinois described as beginning at a concrete monument set at the center of said Section 19; thence South O degrees 51 minutes East along the North and South center line of said Section being also the West line of the City of Alton Pumping Station Tract a distance of 150.00 feet to the Southwest corner thereof; thence South 89 degrees 56 minutes East along the South line of said tract a distance of 82.00 feet to the West line of the City of Alton roadway Easement; thence South 0 degrees 51 minutes East along said West line a distance of 95.00 feet; thence South 89 degrees 56 minutes East a distance of 45.00 feet; thence South 0 degrees 51 minutes East a distance of 150.00 feet to the intersection with the Northeasterly right of way line of Illinois Federal Aid Route 155; thence North 62 degrees 03 minutes West along said right of way line a distance of 144.91 feet to the intersection with the North and South center line of said Section 19; thence South 0 degrees 51 minutes East along said line a distance of 57.06 feet to the Northeasterly right of way line of said Federal Aid Route #155; thence North 62 degrees 03 minutes West along said right of way line a distance of 1814.45 feet the West property line of Illinois

Power Company; thence North 0 degrees 53 minutes West along said property line a distance of 775.18 feet; thence South 42 degrees 38 minutes East a distance of 502.17 feet; thence South 53 degrees 39 minutes East a distance of 357.18 feet; thence South 62 degrees 03 minutes East a distance of 1263.70 feet; thence South O degrees 04 minutes West a distance of 68.02 feet to the North line of said pumping station tract; thence North 89 degrees 56 minutes West along said North line a distance of 135.00 feet to the point of beginning.

That part of Northeast Quarter of Section 19 described as follows, to-wit: Commencing at a stone at the Northeast corner of said Quarter section; thence South 89 degrees 59 minutes West a distance of 1082.65 feet; thence South 0 degrees 55 minutes East a distance of 262.92 feet to the intersection with the Southwesterly right-of-way line of the Illinois Terminal Railroad and point of beginning; thence North 69 degrees 01 minutes West along said right-of-way line a distance of 71.13 feet; thence South 0 degrees 55 minutes East along the East line of a tract of land described in a Special Warranty Deed dated June 25, 1969 and recorded in Book 2631 Page 505 of the Records in the Recorder's Office of Madison County, Illinois, a distance of 781.17 feet; thence South 60 degrees 52 minutes West along the Southeasterly line of a tract of land described in the aforesaid Special Warranty Deed, a distance of 1716.40 feet to the North-South center line of said Fractional Section 19; thence South O degrees 55 minutes East along said center line 849.86 feet to the center of said Fractional Section 19; thence East along the South line of said Northeast Quarter; a distance of 1576.8 feet; thence North O degrees 55 minutes West along the East line of a tract conveyed by Quit Claim Deed dated May 26, 1924 and recorded in Book 532 Page 320 of the Records in the Recorder's Office of Madison Couty, Illinois, a distance of 2441.1 feet to the point of beginning;

That part of the Northeast Quarter of Fractional Section 19 described as follows, to-wit:
Beginning 10 feet South of the Northeast corner of Section 19; thence South along section line between Section 19 and 20, a distance of 40.80 chains to the Southeast corner of the Northeast Quarter of said Section; thence West on Quarter Section line 16.41 chains; thence North parallel with the East line of said quarter section 40.80 chains; thence East parallel with the North line of said quarter section and 10 feet south thereof 16.41 chain to the place of beginning; excepting so much thereof as is included in the right-of-way of the St. Louis, Chicago and St. Paul Railroad Company, now the Alton and Eastern Railroad and the Illinois Terminal Railroad right-of-way; also except therefrom a tract of land conveyed by Katherine E Feldwisch, et al to Thomas W. Gregory, Trustee by Warranty Deed dated August 8, 1926 and recorded in Book 579 Page 380 of the Recorder's Office of Madison County, Illinois; Also except therefrom a tract of land conveyed by Katherine E Feldwisch, a widow and others to Alton Light & Power Company, an Illinois Corporation by Warranty Deed dated August 13, 1930 and recorded in Book 649 Page 415 of the Recorder's Office of Madison Couty, Illinois; Also excepting therefrom a tract of land conveyed by Lena Feldwisch, a widow, et al to Western Cartridge Company, a Delaware Corporation, by Warranty Deed dated October 24, 1941, and recorded in Book 841 Page 250 of the Recorder's Office of Madison County, Illinois;

That part of the Northwest Quarter of Section 20 described as follows, to-wit: Bounded on the West by the Section line between Sections 19 and 20 on the East by the center of the old channel of Wood River, on the North by the section line and on the South by a fence as it formerly stood on the North side of a lane on the 22nd day of July 1864, the Southwest corner of said tract being at a stone set at the West end of the said lane on the Section line 12.50 chains more or less, North from the Southwest corner of said Quarter sections; from which is in an Easterly direction on the line of the fence, on the Northside of said lane, at a distance of 11.00 chains, more or less, another stone is set on said South boundary, which boundary line runs from said last named stone with the direction of the line between the two stones to the center of the old Channel of Wood River, excepting therefrom a tract of land conveyed by Leonard Elble and wife to Charles A Caldwell by Warranty Deed dated January 29, 1917 and recorded in Book 423 Page 29 of the Recorder's Office of Madison County, Illinois; excepting the right-of-way of the St. Louis, Chicago and St. Paul Railroad Company and the Illinois Terminal Railroad right-of-way;

That part of the Northwest Quarter of Section 20 described as beginning at Southwest corner of said Northwest Quarter; thence North along the section line between Section 19 and 20, 12.20 chains, more or less to a stone set at the Southwest corner of a tract of land conveyed by Richard M Benbow, et al to

Jacob Serring by deed recorded in Book 82 Page 60 and Book 80 and 331 in the Recorder's Office of Madison County, Illinois, being also the Southwest corner of the tract of land conveyed by Lena Feldwisch et al to Illinois Power Company by deed dated October 10, 1946 and recorded October 15, 1946 in the Recorder's Office of Madison County, Illinois in Deed Book 994 Page 453; thence running a little North of East along and with the direction of the South boundary line of said Serring land (being also the South boundary line of the land conveyed by Lena Feldwisch et al to Illinois Power Company as aforesaid) 12.50 chains, more or less to the center of the old channel of Wood River; thence running down said stream with the meanders of the old channel of Wood River a distance of 80 feet, more or less to a point 896.88 feet East of the West line of said Section 20, being the Northwest corner of a tract of land conveyed by Anna Barbara Elble, et al to Illinois Power Company by deed dated November 4, 1949, recorded November 10, 1949 in the Recorder's Office of Madison County, Illinois in Deed Book 1162 Page 585; thence South 0 degrees 55 minutes East parallel with the West line of said Section 20, a distance of 859 feet, more or less to a point in the South line of said Quarter section being the Southwest corner of said tract of land conveyed to Illinois Power Company by Anna Barbara Elble, et al as foresaid; thence West along the South line of said Quarter Section 896.88 feet, more or less to the place of beginning.

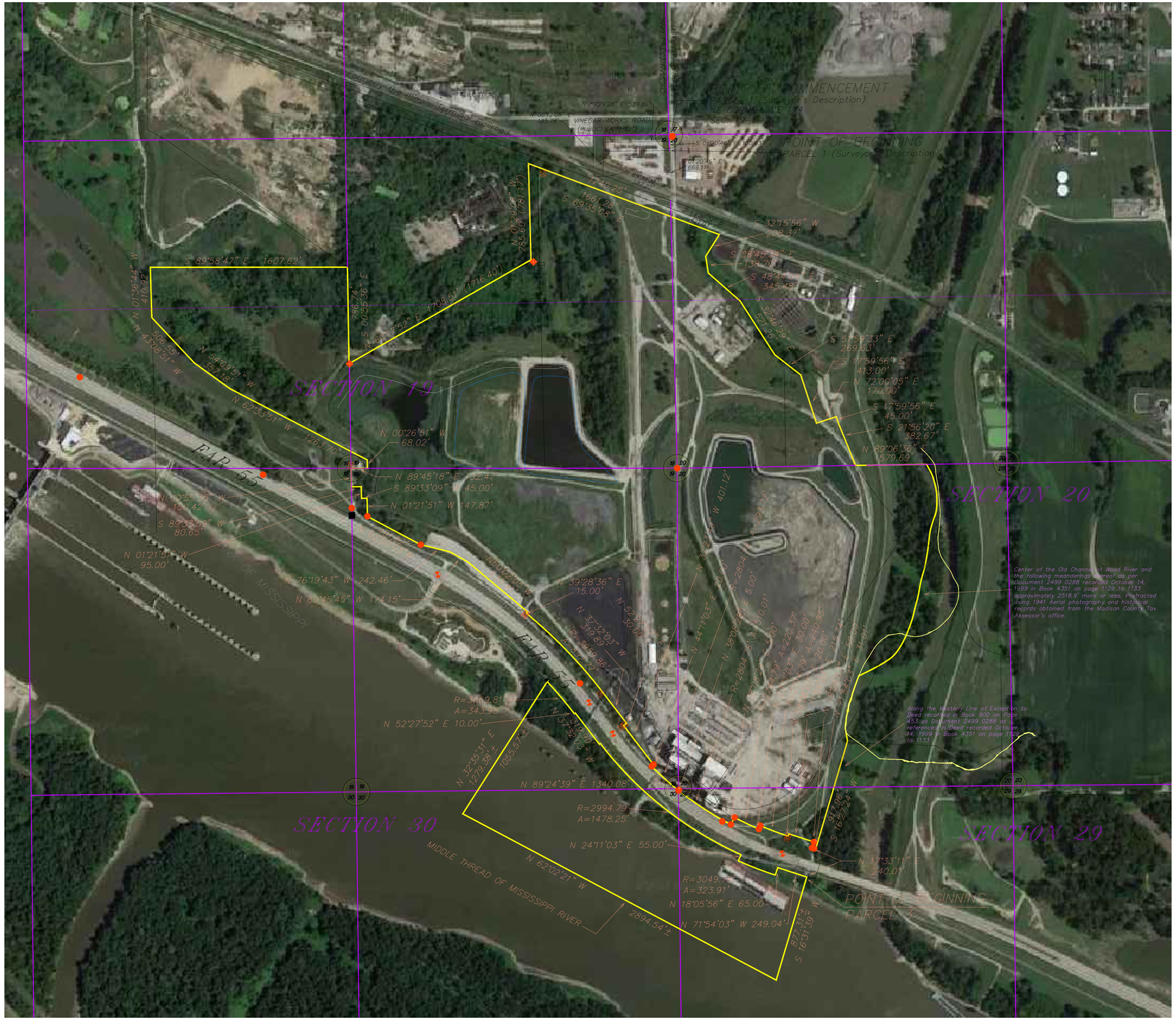
That part of the Northwest Quarter of Section 20 described as commencing at a point in the South line of said Quarter section a distance of 896.88 feet North 89 degrees 7 minutes East from a stone set in the Southwest corner of said quarter section; thence North 89 degrees 7 minutes East along the South line of said Quarter section a distance of 570.62 feet to the Westerly right-of-way line of the Wood River Drainage and Levee District; thence North 21 degrees 53 minutes West along the Westerly right-of-way line a distance of 379.38 feet; thence North 17 degrees 52 minutes West a distance of 45 feet; thence South 72 degrees 8 minutes West a distance of 170 feet; thence North 17 degrees 52 minutes West a distance of 413 feet, more or less, to the center of old Channel of Wood River; thence Northwesterly along said center of old Channel of Wood river a distance of 180 feet, more or less, to a point 896.88 feet East of the West Line of said Section 20; thence South 0 degrees 55 minutes East parallel with the West line of said Section 20, a distance of 859 feet, more or less to the point of beginning;

All the above described real estate located in Town ship 5 North, Range 9 West of the Third Principal Meridian, Madison County, Illinois.

EXCEPT THAT PART THEREOF conveyed to Green Investment Group, Inc., an Illinois Corporation by Special Warranty Deed recorded October 23, 2007 as Document 2008R49573, more particularly described as follows:

A tract of land being part of the Northeast Quarter of Section 19, Town ship 5 North, Range 9 West of the Third Principal Meridian, City of Alton, Madison County, Illinois, described as follows:

Commencing at the Northeast corner of said Section 19; thence along the East line of said Section 19, South 01 degree 00 minutes 25 seconds east (assumed bearing) 150.00 feet to the point of beginning of the herein described tract; thence continuing along said East line South 01 degree 00 minutes 25 seconds east 407.25 feet to the Northerly right of way line of the Norfolk and Western Railway Company; thence along said Northerly right of way line North 69 degrees 17 minutes 07 seconds West 580.10 feet to an old concrete monument found marking the Southeast corner of a tract of land conveyed to Thomas W. Gregory, trustee as recorded in Deed Book 579 on page 380, of the Madison County records; thence along the East line of said Thomas W. Gregory trustee tract North 00 degrees 15 minutes 49 seconds West 195.88 feet to the Southwest corner of a tract of land conveyed to Western Cartridge Company as recorded in deed Book 841 page 250 of the Madison County Records; thence along the South line of said Western Cartridge Company tract North 89 degrees 20 minutes 45 seconds east 536.38 feet to the point of beginning. Situated in Madison County, Illinois



N

0' 800' 2400'

400' 1200'

Legend

- Found Iron Monument
- Found Stone
- Found Right-of-Way Monument

Notes

The East Property line protracted based upon material provided by client, material provided by the United States Corps of Engineers, researched and documentation and obtained from the Madison County Recorder's and Tax Assessor's records. It appears the current channel alignment is based upon work performed by the Corps of Engineers to excecute plans relating to the Wood River Drainage and Levee District dated August 6, 1947. The "old" channel as depicted hereon as called out in the current deed is based on the prior alignment of the channel as underlayed from the 1941 Aerial Photography provided by the United States Corps of Engineers which was matched the property boundary alignment as protracted on the current Madison County Tax Assessor's original map. The remaining configuration of said East Line is as per previous ALTA surveys provided by the client.

The South Line of the property boundary protracted hereon is based upon material provided by the Illinois Department of Transportation on an Existing Right-of-Way Survey the field work which was completed in October, 2015 and staked in May, 2016.

The remaining configuration of the property bounday as protracted heron is as per previous ALTA surveys provided by the client.

IngenAE
514 Earth City Plaza
Earth City, MO 63045
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Submissions / Revisions:		Date:
1		
2		
3		
4		
5		
6		
7		
8		
9		
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11		
12		
13		

Project Name & Location:

Wood River Power Station

Drawing Name:

Wood River

Property Exhibit

Date:	Project No.
12-11-17	
Type:	Drawing No.
Drawn By: MTZ	1
Approved By:	OF 1
Scale: 1" = 400'	

ATTACHMENT 1.5
Dates of Operation

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 1 – Construction History (35 IAC 845.220 and 35 IAC 8945.230)
Item No.: 1.5 – Dates of Construction and Operations

NOTES

This attachment describes the items required under Section 1, Item 1.5.

Item 1.5 requires the identification of the dates of construction and years of operation for the CCR units. Table 3 of AECOM's History of Construction report presents the dates of construction for the Primary East Ash Pond, and the West Ash Pond System.

Table 3. Approximate dates of construction of each successive stage of construction.

Date	Event
Late 1970's	Construction of historical Pond A (which includes West Ash Pond 1, West Ash Pond 2W, and West Ash Pond 2E exterior perimeter dike)
1993	Construction of West Ash Pond 1 (berm raise and interior dike)
1999	Construction of West Ash Pond 2E
2005	Construction of Primary East Ash Pond
2015	Grouting of former storm sewer force main under the West Ash Pond 2W and West Ash Pond 2E

Wood River Power Station ceased operation in June 2016. The Primary East Ash Pond received CCR materials until June 2016. The West Ash Pond System received CCR materials until 2005. The Primary East Ash Pond operated for approximately 11 years. The West Ash Pond System has operated between 17 to 23 years.

A copy of AECOM's Construction History report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

ATTACHMENT 1.7
Watershed Identification

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 1 – Construction History (35 IAC 845.220 and 35 IAC 8945.230)
Item No.: 1.7 – Name of watershed within which the West Ash Pond System – Pond 1 is located

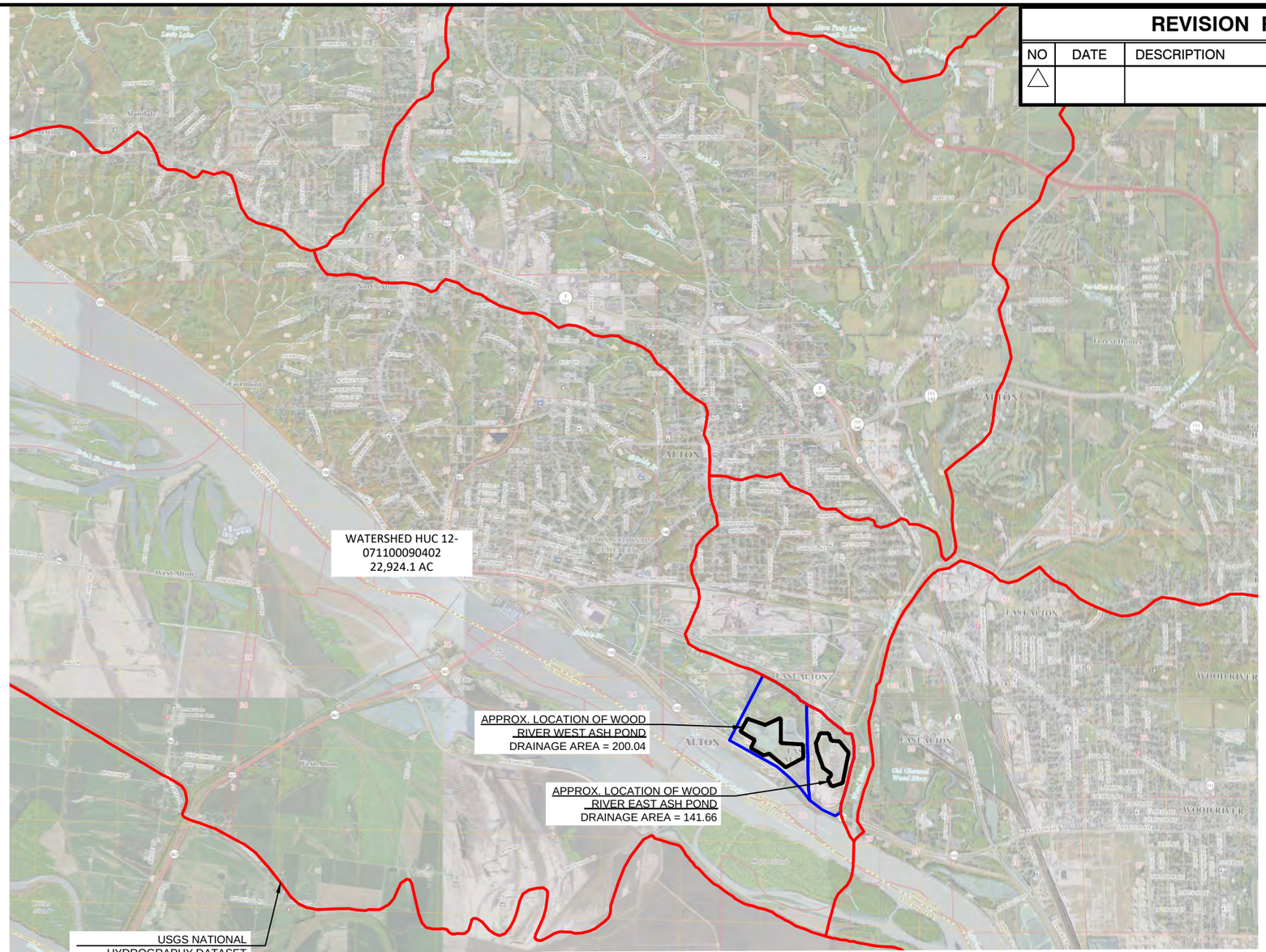
NOTES

This attachment describes the items required under Section 1, Item 1.7.

Item 1.7 requires the name of the watershed within which West Ash Pond System – Pond 1 is located. Based upon the USGS watershed website (Science in Your Watershed: Locate Your Stream Site by 12-digit HUC in 07110009 Peruque-Piasa (usgs.gov)), the Wood River Power Station is located within the Portage Des Sioux – Mississippi River – City of Alton Watershed (HUC 071100090402). A watershed boundary map is presented as an attachment to this TM.

REVISION RECORD		
NO	DATE	DESCRIPTION
△		

NORTH



NOTES:

1. MAPS SHOWN ARE USGS 7.5 MINUTE SERIES QUADRANGLE MAPS, DATED 2021.
2. WATERSHED BOUNDARIES WERE TAKEN FROM THE USGS NATIONAL HYDROGRAPHY DATA SET ON 9/28/2021.
3. 50' CONTOURS WERE TAKEN FROM ILLINOIS HEIGHT MODERNIZATION (ILHMP): LIDAR DATA, DATED 2017.

SCALE IN FEET

0 5,000 10,000

ATON LLC
2275 CASSENS DRIVE
SUITE 118
FENTON, MO 63026
PHONE: 636.349.0202
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WOOD RIVER STATION WATERSHED
DRAINAGE AREA MAP
ALTON, ILLINOIS

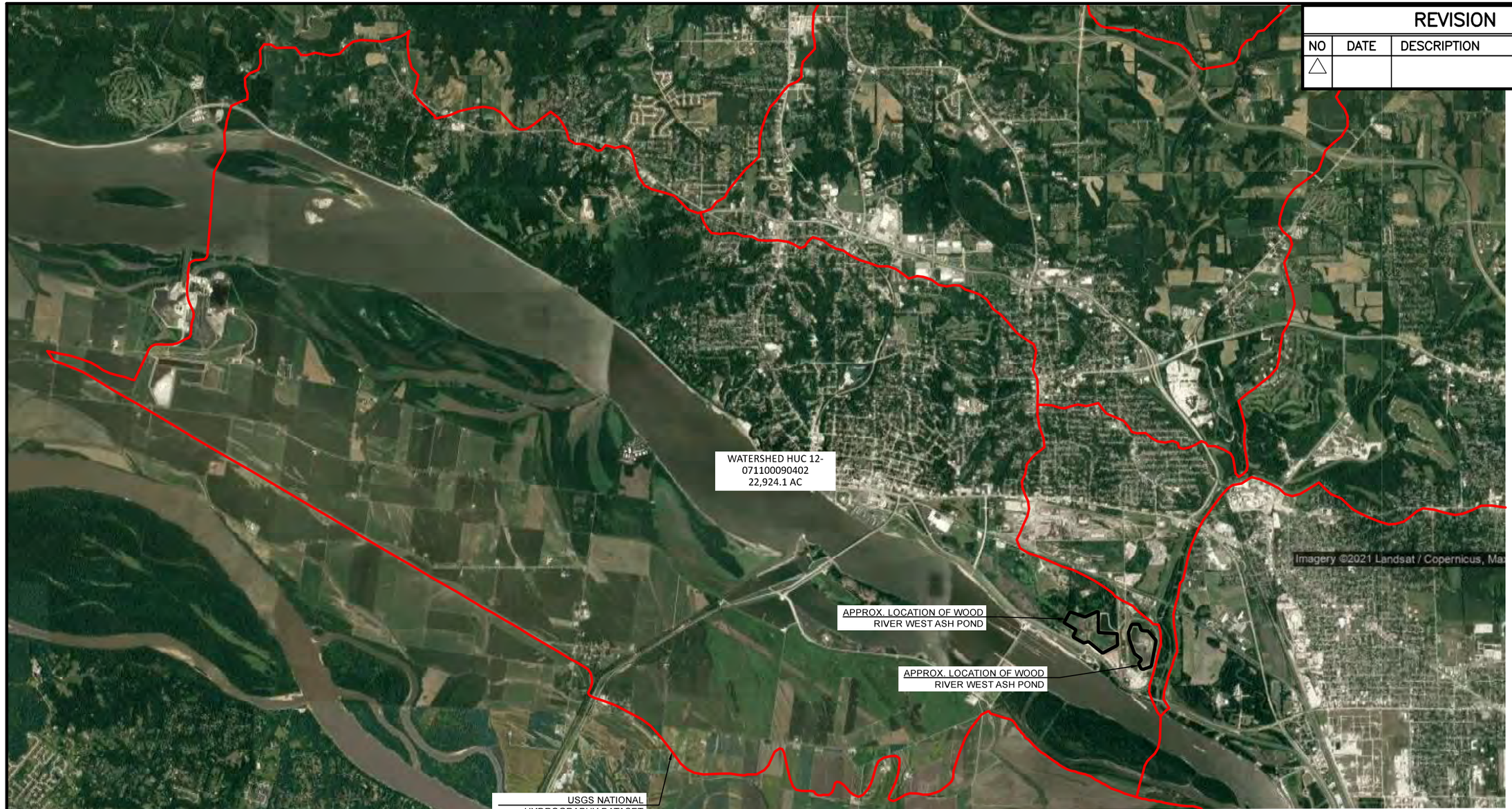
DRAWN BY: ZAC CHKD BY: JSF DWG SCALE: 1"=5,000'

PROJECT NO: 21-078 FIGURE NO: 1

LAST EDIT DATE: 2021-10-19

REVISION RECORD		
NO	DATE	DESCRIPTION
△		

NORTH



NOTES:

1. MAPS SHOWN ARE USGS 7.5 MINUTE SERIES QUADRANGLE MAPS, DATED 2021. THE FOLLOWING ILLINOIS QUADRANGLE MAPS ARE SHOWN; BATH, BIGGS, DUNCAN MILLS, HAVANA, KILBOURNE, AND TOPEKA.
2. WATERSHED BOUNDARIES WERE TAKEN FROM THE USGS NATIONAL HYDROGRAPHY DATA SET ON 9/28/2021.
3. 50' CONTOURS WERE TAKEN FROM ILLINOIS HEIGHT MODERNIZATION (ILHMP): LIDAR DATA, DATED 2017.

SCALE IN FEET

0 5,000 10,000

ATON

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WOOD RIVER STATION WATERSHED DRAINAGE AREA MAP ALTON, ILLINOIS

DRAWN BY: ZAC CHKD BY: JSF DWG SCALE: 1"=5,000'

PROJECT NO: 21-078 FIGURE NO: 1

LAST EDIT DATE: 2021-10-19

ATTACHMENT 1.8
Watershed Acreage

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 1 – Construction History (35 IAC 845.220 and 35 IAC 8945.230)
Item No.: 1.8 –Watershed acreage

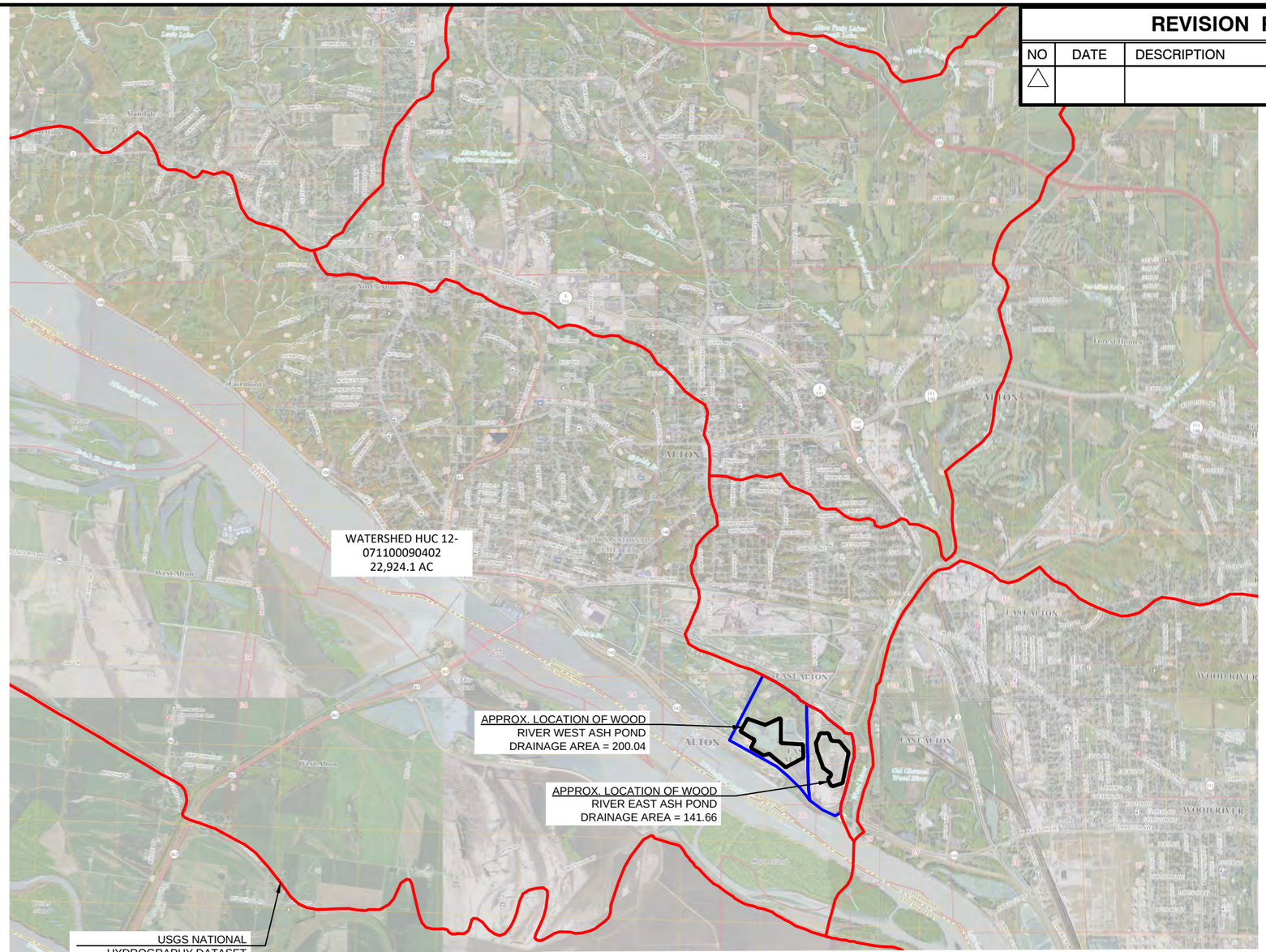
NOTES

This attachment describes the items required under Section 1, Item 1.8.

Item 1.8 requires the acreage of the watershed within which the Primary East Ash Pond and the West Ash Pond complex are located. Based upon the USGS watershed website (Science in Your Watershed: Locate Your Stream Site by 12-digit HUC in 071100090402 City of Alton-Mississippi River (usgs.gov)), the Wood River Power Station is located within the Upper Mississippi-Salt Watershed (HUC 0711200090402). The sub-watershed within which the facility is located has an approximate acreage of 22,927 acres. A sub-watershed boundary map is presented as an attachment to this TM.

REVISION RECORD		
NO	DATE	DESCRIPTION
△		

NORTH



NOTES:

1. MAPS SHOWN ARE USGS 7.5 MINUTE SERIES QUADRANGLE MAPS, DATED 2021.
2. WATERSHED BOUNDARIES WERE TAKEN FROM THE USGS NATIONAL HYDROGRAPHY DATA SET ON 9/28/2021.
3. 50' CONTOURS WERE TAKEN FROM ILLINOIS HEIGHT MODERNIZATION (ILHMP): LIDAR DATA, DATED 2017.

SCALE IN FEET

0 5,000 10,000

ATON LLC
2275 CASSENS DRIVE
SUITE 118
FENTON, MO 63026
PHONE: 636.349.0202
WEBSITE: ATONENV.COM

WOOD RIVER STATION WATERSHED
DRAINAGE AREA MAP
ALTON, ILLINOIS

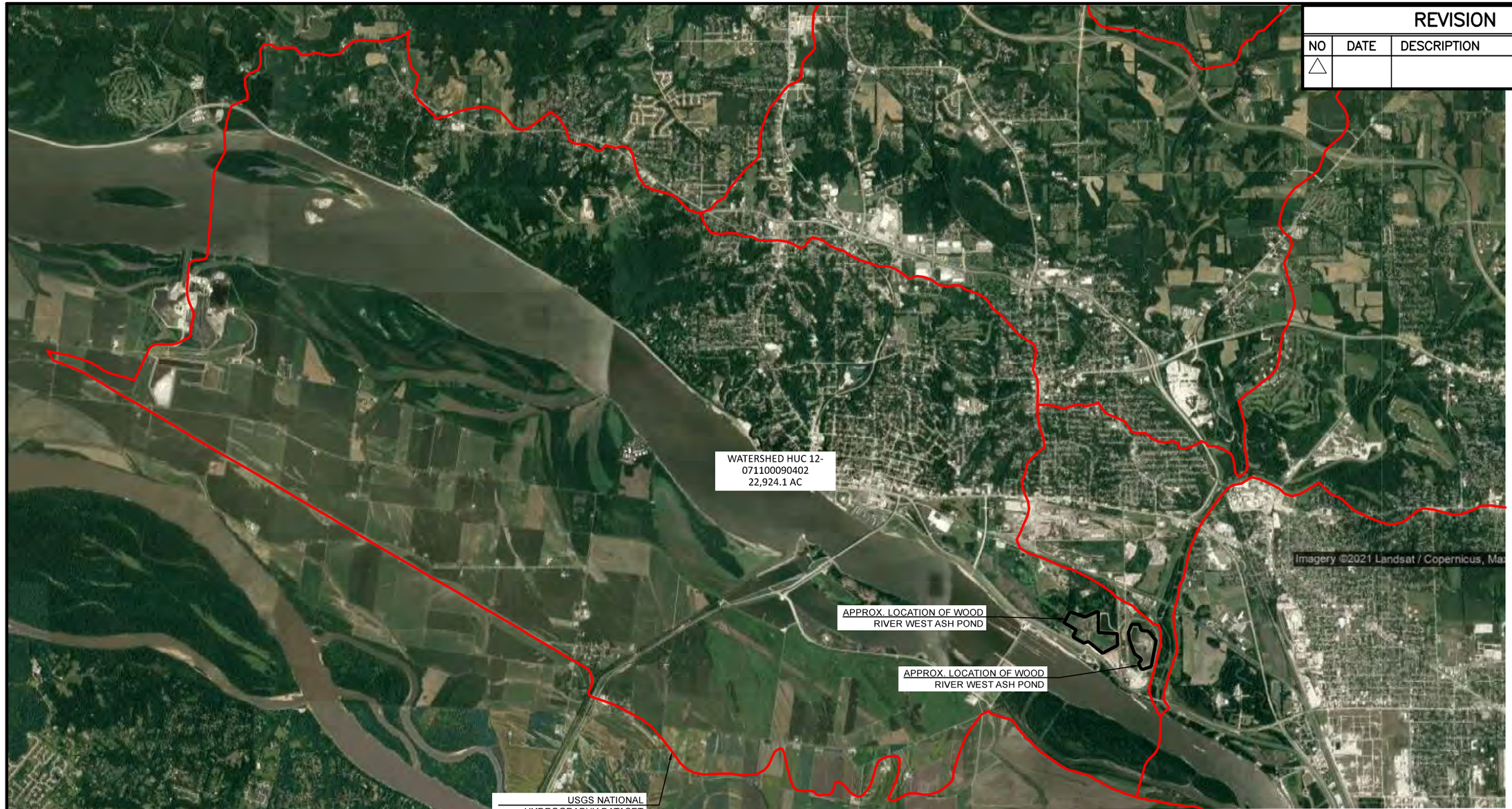
DRAWN BY: ZAC CHKD BY: JSF DWG SCALE: 1"=5,000'

PROJECT NO: 21-078 FIGURE NO: 1

LAST EDIT DATE: 2021-10-19

REVISION RECORD		
NO	DATE	DESCRIPTION
△		

NORTH



NOTES:

1. MAPS SHOWN ARE USGS 7.5 MINUTE SERIES QUADRANGLE MAPS, DATED 2021. THE FOLLOWING ILLINOIS QUADRANGLE MAPS ARE SHOWN; BATH, BIGGS, DUNCAN MILLS, HAVANA, KILBOURNE, AND TOPEKA.
2. WATERSHED BOUNDARIES WERE TAKEN FROM THE USGS NATIONAL HYDROGRAPHY DATA SET ON 9/28/2021.
3. 50' CONTOURS WERE TAKEN FROM ILLINOIS HEIGHT MODERNIZATION (ILHMP): LIDAR DATA, DATED 2017.

SCALE IN FEET

0 5,000 10,000

ATON

ATON LLC
2275 CASSENS DRIVE
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WEBSITE: ATONENV.COM

WOOD RIVER STATION WATERSHED DRAINAGE AREA MAP ALTON, ILLINOIS

DRAWN BY: ZAC CHKD BY: JSF DWG SCALE: 1"=5,000'

PROJECT NO: 21-078 FIGURE NO: 1

LAST EDIT DATE: 2021-10-19

ATTACHMENT 1.9
Construction History

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 1 – Construction History (35 IAC 845.220 and 35 IAC 8945.230)
Item No.: 1.9 – Miscellaneous Documents Relating to the Construction History

NOTES

This attachment describes the items required under Section 1, Item 1.9.

Item 1.9.1 – A description of the physical and engineering properties of the foundation and abutment materials for both the Primary East Ash Pond and the West Ash Pond System is described in AECOM, *History of Construction, Wood River Power Station,* October 2016 (Pages 3 and 4). A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 1.9.2 – A description of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of both the Primary East Ash Pond and the West Ash Pond System is described in AECOM, *History of Construction, Wood River Power Station,* October 2016 (Pages 4 and 5). A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 1.9.3 – A description of the method of site preparation and construction for both the Primary East Ash Pond and the West Ash Pond System is described in AECOM, *History of Construction, Wood River Power Station,* October 2016 (Page 8). A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 1.9.4 – A description of the approximate dates of construction of each successive stage of construction of both the Primary East Ash Pond and the West Ash Pond System is described in AECOM, *History of Construction, Wood River Power Station,* October 2016 (Pages 4 and 5). A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 1.9.5 – Drawings which satisfy the requirements of 35 IAC 845.220(a)(1)(F) may be found in Appendix B of AECOM, *History of Construction, Wood River Power Station*, October 2016. Specifically the Table 4 on page 6 identifies which drawings are associated with either the Primary East Ash Pond or the West Ash Pond System in Appendix B. A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 1.9.6 – A description of the type, purpose, and location of existing instrumentation is found in AECOM, *History of Construction, Wood River Power Station,* October 2016 (pages 6 and 7). The only existing instrumentation are open-standpipe piezometers (14) which were installed in 2015 around both the Primary East Ash Pond and the West Ash Pond System. A location map showing the 14 piezometers is presented in Appendix C of the referenced report. A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 1.9.7 – Area-capacity curves for the Primary East Ash Pond is found in Appendix C of the AECOM, *CCR Certification Report: Initial Structural Stability Assessment, Initial Safety Factor Assessment, and Initial Inflow Design Flood Control System Plan for Primary East Ash Pond*, October 2016. A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 1.9.8 – A description of of each spillway and diversion design features and capacities for both the Primary East Ash Pond and the West Ash Pond System are found in AECOM, *History of Construction, Wood River Power Station,* October 2016 (Pages 7 and 8), A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 1.9.9 – A description of the construction specifications and provisions for surveillance, maintenance, and repair of the Primary East Ash Pond and the West Ash Pond System are found in AECOM, *History of Construction, Wood River Power Station,* October 2016 (Page 8, Appendices D through F). A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

ATTACHMENT 2.1
Analysis of Chemical Constitutents

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 2 – Analysis of Chemical Constituents (35 IAC 845(d)(2))
Item No.: 2.1 – Chemical Analyses Documentation

NOTES

This attachment describes the items required under Section 2, Item 2.1.

Item 2.1 requires the submission of chemical analyses of the materials placed within the Primary East Ash Pond and the West Ash Pond System. Attached are Safety Data Sheets (SDSs) for the Fly Ash and Bottom Ash and two (2) sets of chemical analyses for the Sprayer Dryer Additive as an attachment to this TM.

DYNEGY

Safety Data Sheet

Section 1
Identification of the Substance and of the Supplier

1.1 Product Identifier

Product Name/Identification:	ASTM Bottom Ash
Synonyms:	Ash; Ashes; Ash residues; Ashes, residues, bottom; Bottom ash; Bottom ash residues; Coal Fly Ash; Pozzolan; Waste solids.
Formula:	UVCB Substance

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advices Against

Relevant Identified Uses:	Component of wallboard, concrete, roofing material, bricks, cement kiln feed.
Uses Advised Against:	None known.

1.3 Details of the Supplier of the SDS

Manufacturer/Supplier:	Dynegy, Inc.
Street Address:	601 Travis Street, Suite 1400
City, State and Zip Code:	Houston, TX 77002
Customer Service Telephone:	800-633-4704

Section 2
Hazards Identification

2.1 Classification of the Substance

GHS Classification(s) according to OSHA Hazard Communication Standard (29 CFR 1910.1200):

- Eye Irritant, Category 2A
- STOT-SE, Category 3 (Respiratory Irritation)
- Carcinogen, Category 1A
- STOT-RE, Category 1 (Lungs)
- Toxic to Reproduction, Category 2

2.2 Label Elements

Labelling according to 29 CFR 1910.1200 Appendices A, B and C*	
Hazard Pictogram(s):	
Signal word:	**DANGER**
Hazard Statement(s):	*Causes serious eye irritation.* *May cause respiratory irritation.* *May cause damage to lungs after repeated/prolonged exposure via inhalation.* *May cause cancer of the lung.* *Suspected of damaging fertility or the unborn child.*
Precautionary Statement(s):	*Obtain special instructions before use.* *Do not handle until all safety precautions have been read and understood.* *Avoid breathing dust.* *Wash thoroughly after handling.* *Do not eat drink or smoke when using this product.* *Wear protective gloves/protective clothing/eye protection/face protection.* *Use outdoors or in a well-ventilated area.* *If exposed or concerned: Get medical advice/attention.* *Store in a secure area.* *Dispose of product in accordance with local/national regulations.*

** Fly ash and other coal combustion products (CCPs) are UVCB substances (unknown or variable composition or biological). Various CCPs, noted as ashes/ash residuals; Ashes, residues, bottom; Bottom ash; Bottom ash residues; Waste solids, ashes under TSCA are defined as: "The residuum from the burning of a combination of carbonaceous materials. The following elements may be present as oxides: aluminum, calcium, iron, magnesium, nickel, phosphorus, potassium, silicon, sulfur, titanium, and vanadium." Ashes including fly ash and fluidized bed combustion ash are identified by CAS number 68131-74-8. The exact composition of the ash is dependent on the fuel source and flue additives composed of many constituents. The classification of the final substance is dependent on the presence of specific identified oxides as well as other trace elements.*

2.3 Other Hazards

Listed Carcinogens:

-Respirable Crystalline Silica

IARC: [Yes] **NTP:** [Yes] **OSHA:** [Yes] **Other:** **(ACGIH)** [Yes]

Section 3
Composition/Information on Ingredients

Substance	*CAS No.*	*Percentage (%)*	*GHS Classification*
Crystalline Silica	*14808-60-7*	*20 - 40%*	*Repeat Dose STOT, Category 1* *Carcinogen, Category 1A*
Silica, crystalline respirable (RCS)	*14808-60-7*	*See Footnote 1*	*Repeat Dose STOT, Category 1* *Carcinogen. Category 1A*
Aluminosilicates[2]	*Various, see Footnote 2*	*10 - 60%*	*Single Exposure STOT, Category 3*
Calcium oxide (CaO)	*1305-78-8*	*10 - 30%*	*Skin Irritant, Category 2* *Eye Irritant, Category 1* *Single Exposure STOT, Category 3*
Iron oxide	*1309-37-1*	*1 - 10%*	*Not Classified*
Manganese dioxide (MnO_2)	*1313-13-9*	*<2%*	*Skin Irritant, Category 2* *Eye Irritant, Category 2B*
Magnesium oxide	*1309-48-4*	*2 - 10%*	*Not Classified*
Phosphorus pentoxide (P_2O_5)	*1314-56-3*	*≤2%*	*Skin Irritant, Category 2* *Eye Irritant, Category 2B*
Sodium oxide	*1313-59-3*	*1 - 10%*	*Not Classified*
Potassium oxide (K_2O)	*12136-45-7*	*≤1%*	*Skin Irritant Category 2* *Eye Irritant Category 2B*
Titanium dioxide (TiO_2)	*13463-67-7*	*<3%*	*Not Classified*
Bromide salt (calcium)	*7789-41-5*	*See Footnote 3*	*Toxic to Reproduction Category 2*

[1]*The percentage of respirable crystalline silica has not been determined. Therefore, a GHS classification of Carcinogen 1A has been assigned.*

[2]*Aluminosilicates (CAS# 1327-36-2) may be in the form of mullite (CAS# 1302-93-8); aluminosilicate glass; pozzolans (CAS# 71243-67-9); or calcium aluminosilicates such as tricalcium aluminate (C3A), or calcium sulfoaluminate (C4A3S). The form is dependent on the source of the coal and or the process used to create the CCP. Pulverized coal combustion would be more likely to create high levels of pozzolans. Aluminosilicates may have inclusions of calcium, titanium, iron, potassium, phosphorus, magnesium and other metal oxides.*

[3]*Analytical data are not available to demonstrate that the concentration of bromide salt is <0.1%; therefore, a GHS classification of Toxic to Reproduction Category 2 has been assigned.*

Section 4
First Aid Measures

4.1 Description of First Aid Measures

Inhalation:	If product is inhaled and irritation of the nose or coughing occurs, remove person to fresh air. Get medical advice/attention if respiratory symptoms persist.
Skin Contact:	If skin exposure occurs, wash with soap and water.
Eye Contact:	If product gets into the eye, rinse copiously with water for several minutes. Remove contact lenses, if present and easy to do. Seek medical attention/advice if irritation occurs or persists.
Ingestion:	No specific first aid measures are required.

4.2 Most Important Health Effects, Both Acute and Delayed

Acute Effects: Direct exposure may cause respiratory irritation, eye irritation and skin irritation. The product dust can dry and irritate the skin and cause dermatitis and can irritate eyes and skin through mechanical abrasion.

Chronic Effects: Chronic exposure may cause lung damage from repeated exposure. Prolonged inhalation of respirable crystalline silica above certain concentrations may cause lung diseases, including silicosis and lung cancer. Repeated exposure to dusts containing inorganic bromide salts may affect fertility and/or result in effects to the unborn child.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

Seek first aid or call a doctor or Poison Control Center if contact with eyes occurs and irritation remains after rinsing. Get medical advice if inhalation occurs and respiratory symptoms persist.

Section 5
Firefighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media:	Product is not flammable. Use extinguishing media appropriate for surrounding fire.
Unsuitable Extinguishing Media:	Not applicable, the product is not flammable.

5.2 Special Hazards Arising from the Substance or Mixture

Hazardous Combustion Products:	None known.

5.3 Advice for Firefighters

Special Protective Equipment and Precautions for Firefighters:	As with any fire, wear self-contained breathing apparatus (NIOSH approved or equivalent) and full protective gear.

Section 6
Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Personal precautions/Protective Equipment:	See Section 8.2.2 Individual Protective Measures. For concentrations exceeding Occupational Exposure Levels (OELs), use a self-contained breathing apparatus (SCBA).
Emergency procedures:	Use scooping, water spraying/flushing/misting or ventilated vacuum cleaning systems to clean up spills. Do not use pressurized air.

6.2 Environmental Precautions

Environmental precautions:	Prevent contamination of drains or waterways and dispose according to local and national regulations.

6.3 Methods and Material for Containment and Cleaning Up

Methods and materials for containment and cleaning up:	Do not use brooms or compressed air to clean surfaces. Use dust collection vacuum and extraction systems. Large spills of dry product should be removed by a vacuum system. Dampened material should be removed by mechanical means and recycled or disposed of according to local and national regulations.

See Sections 8 and 13 for additional information on exposure controls and disposal.

Section 7
Handling and Storage

7.1 Precautions for Safe Handling

Practice good housekeeping. Use adequate exhaust ventilation, dust collection and/or water mist to maintain airborne dust concentrations below permissible exposure limits (note: respirable crystalline silica dust may be in the air without a visible dust cloud).

Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain and test ventilation and dust collection equipment. In cases of insufficient ventilation, wear a NIOSH approved respirator for silica dust when handling or disposing dust from this product. Avoid contact with skin and eyes. Wash or vacuum clothing that has become dusty. Avoid eating, smoking, or drinking while handling the material.

7.2 Conditions for Safe Storage, Including any Incompatibilities

Minimize dust produced during loading and unloading.

Section 8
Exposure Controls/Personal Protection

8.1 Control Parameters

OCCUPATIONAL EXPOSURE LIMITS					
SUBSTANCE		**OSHA PEL TWA (mg/m^3)**	**NIOSH REL TWA (mg/m^3)**	**ACGIH TLV TWA (mg/m^3)**	**CA - OSHA PEL (mg/m^3)**
Calcium oxide		5	2	2	2
Particulates Not Otherwise Regulated	Total	15	15	10	10
	Respirable	5	5	3	5
Respirable Crystalline Silica	Respirable	0.05	0.05	0.025	0.05
Manganese dioxide (as manganese compounds)	Total	5 (Ceiling)	1 3 (STEL)	0.1	0.2
	Respirable	-	-	0.02	-

8.2 Exposure Controls

8.2.1 Engineering Controls

Provide ventilation to maintain the ambient workplace atmosphere below the occupational exposure limit(s). Use general and local exhaust ventilation and dust collection systems as necessary to minimize exposure.

8.2.2 Personal Protective Equipment (PPE)

Respiratory protection:	Wear a NIOSH approved particulate respirator if exposure to airborne particulates is unavoidable and where occupational exposure limits may be exceeded. If airborne exposures are anticipated to exceed applicable PELs or TLVs, a self-contained breathing apparatus or airline respirator is recommended.
Eye and face protection:	If eye contact is possible, wear protective glasses with side shields. Avoid contact lenses.
Hand and skin protection:	Wear gloves and protective clothing. Wash hands with soap and water after contact with material.

Section 9
Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Property: Value	Property: Value
Appearance (physical state, color, etc.): Fine tan/ gray particulate	**Upper/lower flammability or explosive limits:** Not applicable
Odor: Odorless[1]	**Vapor Pressure (Pa):** Not applicable
Odor threshold: Not applicable	**Vapor Density:** Not applicable
pH (25 °C) (in water): 8 - 11	**Specific gravity or relative density:** 2.2 – 2.9
Melting point/freezing point (°C): Not applicable	**Water Solubility:** Slight
Initial boiling point and boiling range (°C): Not applicable	**Partition coefficient: n-octane/water:** Not determined
Flash point (°C): Not determined	**Auto ignition temperature (°C):** Not applicable
Evaporation rate: Not applicable	**Decomposition temperature (°C):** Not determined
Flammability (solid, gas): Not combustible	**Viscosity:** Not applicable

[1] The use of urea or aqueous ammonia injected into the flue gas to reduce nitrogen oxides (NOx) emissions may result in the presence of ammonium sulfate or ammonium bisulfate in the ash at less than 0.1%. When ash containing these substances becomes wet under high pH (>9), free ammonia gas may be released resulting in objectionable/nuisance ammonia odor and potential exposure to ammonia gas especially in confined spaces.

Section 10
Stability and Reactivity

10.1 Reactivity:	The material is an inert, inorganic material primarily composed of elemental oxides.
10.2 Chemical stability:	The material is stable under normal use conditions.
10.3 Possibility of hazardous reactions:	The material is a relatively stable, inert material; however, when ash containing ammonia becomes wet under high pH (>9), free ammonia gas may be released resulting in an objectionable/nuisance ammonia odor and potential exposure to ammonia gas especially in confined spaces. Polymerization will not occur.
10.4 Conditions to avoid:	Product can become airborne in moderate winds. Dry material should be stored in silos. Materials stored out of doors should be covered or maintained in a damp condition.
10.5 Incompatible materials:	None known.
10. 6 Hazardous decomposition products:	None known.

Section 11
Toxicological Information

11.1 Information on Toxicological Effects

Endpoint	Data
Acute oral toxicity	LD50 > 2000 mg/kg
Acute dermal toxicity	LD50 > 2000 mg/kg
Acute inhalation toxicity	LD50 > 5.0 mg/L
Skin corrosion/irritation	Does not meet the classification criteria but may cause slight skin irritation. Product dust can dry the skin which can result in irritation.
Eye damage/irritation	Causes serious eye irritation. Positive scores for conjunctiva irritation and chemosis in 2/3 animals based on average of 24, 48 and 72-hour scores with irritation clearing within 21 days; no corneal or iritis effects observed.
Respiratory/skin sensitization	Not a respiratory or dermal sensitizer.
Germ cell mutagenicity	Not mutagenic in in-vitro and in-vivo assays with or without metabolic activation.
Carcinogenicity	Not available. Respirable crystalline silica has been identified as a carcinogen by OSHA, NTP, ACGIH and IARC.
Reproductive toxicity	No developmental toxicity was observed in available animal studies. Reproductive studies on CCPs showed either no reproductive effects, or some effects on male and female reproductive organs and parameters but without a clear dose response. Inorganic bromide salts have been shown to have adverse effects on reproductive parameters in some animal studies.
STOT-SE	CCPs when present as a nuisance dust may result in respiratory irritation.
STOT-RE	In a 180-day inhalation study with fly ash dust, no effects were observed at the highest dose tested. NOEC = 4.2 mg/m^3; it is not possible to assess the level at which toxicologically significant effects may occur. Repeated inhalation exposures to high levels of respirable crystalline silica may result in lung damage (i.e., silicosis).
Aspiration Hazard	Not applicable based product form.

Section 12
Ecological Information

12.1 Toxicity

Fly Ash (CAS# 68131-74-8)	
Toxicity to Fish	LC50 > 100 mg/L
Toxicity to Aquatic Invertebrates	Data indicates that the test substance is not toxic to *Daphnia magna* (EC50 undetermined)
Toxicity to Aquatic Algae and Plants	EC50 = 10 mg/L
Calcium oxide CAS# 1305-78-8	
Toxicity to Fish	LC50 = 50.6 mg/L The findings were closely related to the pH of the test solutions; therefore, pH is considered to be the main reason for the effects.
Toxicity to Aquatic Invertebrates	EC50 = 49.1 mg/L The findings were closely related to the pH of the test solutions; therefore, pH is considered to be the main reason for the effects.
Toxicity to Aquatic Algae and Plants	NOEC =48 mg/L @ 72 hours based on $Ca(OH)_2$ The initial pH of the test medium was not directly related to the biologically relevant effects. The formation of precipitates is likely the result of the reaction between CO_2 dissolved in the medium.

12.2 Persistence and Degradability

Not relevant for inorganic materials.

12.3 Bioaccumulative Potential

This material does not contain any compounds that would bioaccumulate up the food chain.

12.4 Mobility in Soil

No data available.

12.5 Results of PBT and vPvB Assessment

This material does not contain any compounds classified as “persistent, bioaccumulative or toxic” nor as “very persistent/very bioaccumulative”.

12.6 Other Adverse Effects

None known.

Section 13
Disposal Considerations

See Sections 7 and 8 above for safe handling and use, including appropriate industrial hygiene practices.

Dispose of all waste product and containers in accordance with federal, state and local regulations.

Section 14
Transport Information

Regulatory entity: U.S. DOT	Shipping Name:	Not Regulated
	Hazard Class:	Not Regulated
	ID Number:	Not Regulated
	Packing Group:	Not Regulated

Section 15
Regulatory Information

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Mixture

- TSCA Inventory Status

  All components are listed on the TSCA Inventory.

- California Proposition 65

  The following substances are known to the State of California to be carcinogens and/or reproductive toxicants:

  - Respirable crystalline silica
  - Titanium dioxide

- State Right-to-Know (RTK)

Component	CAS	MA[1,2]	NJ[3,4]	PA[5]	RI[6]
Ammonium bisulfate	7803-63-6	No	Yes	No	No
Ammonium sulfate	7783-20-2	Yes	No	Yes	No
Calcium oxide	1305-78-8	Yes	Yes	Yes	No
Iron oxide	1309-37-1	Yes	Yes	Yes	No
Magnesium oxide	1309-48-4	No	Yes	No	No
Phosphorus pentoxide (or phosphorus oxide)	1314-56-3	Yes	Yes	Yes	No
Potassium oxide	12136-45-7	No	Yes	No	No
Silica-crystalline (SiO_2), quartz	14808-60-7	Yes	Yes	Yes	No
Sodium oxide	1313-59-3	No	Yes	No	No
Titanium dioxide	13463-67-7	Yes	Yes	Yes	Yes

[1] Massachusetts Department of Public Health, no date
[2] 189th General Court of The Commonwealth of Massachusetts, no date
[3] New Jersey Department of Health and Senior Services, 2010a
[4] New Jersey Department of Health, 2010b
[5] Pennsylvania Code, 1986
[6] Rhode Island Department of Labor and Training, no date

Section 16
Other Information, Including Date of Preparation or Last Revision

16.1 Indication of Changes

Date of preparation or last revision: February 23, 2018

16.2 Abbreviations and Acronyms

- ACGIH: American Conference of Industrial Hygienists
- CA: California
- CAS: Chemical Abstract Services
- CCP: Coal Combustion Product
- CFR: Code of Federal Regulations
- EPA: Environmental Protection Agency
- GHS: Globally Harmonized System of Classification and Labelling
- IARC: International Agency for Research on Cancer
- LC50: Concentration resulting in the mortality of 50 % of an animal population
- LD50: Dose resulting in the mortality of 50 % of an animal population
- MA: Massachusetts
- NA: Not Applicable
- NJ: New Jersey
- NOEC: No observed effect concentration
- NIOSH: National Institute of Occupational Safety and Health
- NOx: Nitrogen oxides
- NTP: US National Toxicology Program
- OEL: Occupational Exposure Limit
- OSHA: Occupational Safety and Health Administration
- PA: Pennsylvania
- PBT: Persistent, Toxic and Bioaccumulative
- PEL: Permissible exposure limit
- PPE: Personal Protective Equipment
- REL: Recommended exposure limit
- RI: Rhode Island
- RCS: Respirable Crystalline Silica
- RTK: Right-to-Know
- SCBA: Self-contained breathing apparatus
- SDS: Safety Data Sheet
- STEL: Short-term exposure limit
- STOT-RE: Specific target organ toxicity-repeated exposure
- STOT-SE: Specific target organ toxicity-single exposure
- TLV: Threshold limit value
- TSCA: Toxic Substances Control Act
- TWA: Time-weighted average
- UEL: Upper explosive limit
- UVCB: Unknown or Variable Composition/Biological
- U.S.: United States
- U.S. DOT: United States of Department of Transportation

16.3 Other Hazards

Hazardous Materials Identification System (HMIS) Degree of hazard (0= low, 4 = extreme)							
Health:	2*	**Flammability:**	0	**Physical Hazards:**	0	**Personal protection:****	

** Chronic Health Effects*
****** Appropriate personal protection is defined by the activity to be performed.*
See Section 8 for additional information.

DISCLAIMER:

This SDS has been prepared in accordance with the Hazard Communication Rule 29 CFR 1910.1200. Information herein is based on data considered to be accurate as of date prepared. No warranty or representation, express or implied, is made as to the accuracy or completeness of this data and safety information. No responsibility can be assumed for any damage or injury resulting from abnormal use, failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

DYNEGY

Safety Data Sheet

Section 1
Identification of the Substance and of the Supplier

1.1 Product Identifier

Product Name/Identification:	ASTM Class C Fly Ash
Synonyms:	Coal Fly Ash, Pozzolan
Formula:	UVCB Substance

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advices Against

Relevant Identified Uses:	Component of wallboard, concrete, roofing material, bricks, cement kiln feed.
Uses Advised Against:	None known.

1.3 Details of the Supplier of the SDS

Manufacturer/Supplier:	Dynegy, Inc.
Street Address:	601 Travis Street, Suite 1400
City, State and Zip Code:	Houston, TX 77002
Customer Service Telephone:	800-633-4704

Section 2
Hazards Identification

2.1 Classification of the Substance

GHS Classification(s) according to OSHA Hazard Communication Standard (29 CFR 1910.1200):

- Eye Irritant, Category 2A
- STOT-SE, Category 3 (Respiratory Irritation)
- Carcinogen, Category 1A
- STOT-RE, Category 1 (Lungs)
- Toxic to Reproduction, Category 2

2.2 Label Elements

Labelling according to 29 CFR 1910.1200 Appendices A, B and C*	
Hazard Pictogram(s):	
Signal word:	**DANGER**
Hazard Statement(s):	*Causes serious eye irritation.* *May cause damage to lungs after repeated/prolonged exposure via inhalation.* *May cause respiratory irritation.* *May cause cancer of the lung.* *Suspected of damaging fertility or the unborn child.*
Precautionary Statement(s):	*Obtain special instructions before use.* *Do not handle until all safety precautions have been read and understood.* *Avoid breathing dust.* *Wear protective gloves/protective clothing/eye protection/face protection.* *Wash thoroughly after handling.* *Do not eat drink or smoke when using this product.* *Use outdoors or in a well-ventilated area.* *If exposed or concerned: Get medical advice/attention.* *Store in a secure area.* *Dispose of product in accordance with local/national regulations.*

** Fly ash and other coal combustion products (CCPs) are UVCB substances (unknown or variable composition or biological). Various CCPs, noted as ashes/ash residuals; Ashes, residues, bottom; Bottom ash; Bottom ash residues; Waste solids, ashes under TSCA are defined as: "The residuum from the burning of a combination of carbonaceous materials. The following elements may be present as oxides: aluminum, calcium, iron, magnesium, nickel, phosphorus, potassium, silicon, sulfur, titanium, and vanadium." Ashes including fly ash and fluidized bed combustion ash are identified by CAS number 68131-74-8. The exact composition of the ash is dependent on the fuel source and flue additives composed of many constituents. The*

classification of the final substance is dependent on the presence of specific identified oxides as well as other trace elements.

2.3 Other Hazards

Listed Carcinogens:

-Respirable Crystalline Silica

IARC: [Yes] **NTP:** [Yes] **OSHA:** [Yes] **Other:** **(ACGIH)** [Yes]

Section 3
Composition/Information on Ingredients

Substance	*CAS No.*	*Percentage (%)*	*GHS Classification*
Crystalline Silica	*14808-60-7*	*30 - 60%*	*Repeat Dose STOT, Category 1* *Carcinogen, Category 1A*
Silica, crystalline respirable (RCS)	*14808-60-7*	*See Footnote 1*	*Repeat Dose STOT, Category 1* *Carcinogen, Category 1A*
Aluminosilicates	*71243-67-9* *1327-36-2*	*30 - 60%*	*Single Exposure STOT, Category 3*
Iron oxide	*1309-37-1*	*1 - 10%*	*Not Classified*
Calcium oxide (CaO)	*1305-78-8*	*20 - 30%*	*Skin Irritant, Category 2* *Eye Irritant, Category 1* *Single Exposure STOT, Category 3*
Magnesium oxide	*1309-48-4*	*2 - 10%*	*Not Classified*
Phosphorus pentoxide (P_2O_5)	*1314-56-3*	*≤2%*	*Skin Irritant, Category 2* *Eye Irritant, Category 2B*
Sodium oxide	*1313-59-3*	*1-8%*	*Not Classified*
Potassium oxide (K_2O)	*12136-45-7*	*≤1%*	*Skin Irritant, Category 2* *Eye Irritant, Category 2B*
Titanium dioxide (TiO_2)	*13463-67-7*	*<3%*	*Not Classified*
Bromide salt (calcium)	*7789-41-5*	*See Footnote 2*	*Toxic to Reproduction, Category 2*

Footnote 1: The percentage of respirable crystalline silica has not been determined. Therefore, a GHS classification of Carcinogen, Category 1A has been assigned.

Footnote 2: Analytical data are not available to demonstrate that the concentration of bromide salt is <0.1%; therefore, a GHS classification of Toxic to Reproduction, Category 2 has been assigned.

Section 4
First Aid Measures

4.1 Description of First Aid Measures

Inhalation:	If product is inhaled and irritation of the nose or coughing occurs, remove person to fresh air. Get medical advice/attention if respiratory symptoms persist.
Skin Contact:	If skin exposure occurs, wash with soap and water.
Eye Contact:	If product gets into the eye, rinse copiously with water for several minutes. Remove contact lenses, if present and easy to do. Seek medical attention/advice if irritation occurs or persists.
Ingestion:	No specific first aid measures are required.

4.2 Most Important Health Effects, Both Acute and Delayed

Acute Effects: Direct exposure may cause respiratory irritation, eye irritation and skin irritation. The product dust can dry and irritate the skin and cause dermatitis and can irritate eyes and skin through mechanical abrasion.

Chronic Effects: Chronic exposure may cause lung damage from repeated exposure. Prolonged inhalation of respirable crystalline silica above certain concentrations may cause lung diseases, including silicosis and lung cancer. Repeated exposure to dusts containing inorganic bromide salts may affect fertility and/or result in effects to the unborn child.

4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed

Seek first aid or call a doctor or Poison Control Center if contact with eyes occurs and irritation remains after rinsing. Get medical advice if inhalation occurs and respiratory symptoms persist.

Section 5
Firefighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media:	Product is not flammable. Use extinguishing media appropriate for surrounding fire.
Unsuitable Extinguishing Media:	Not applicable, the product is not flammable.

5.2 Special Hazards Arising from the Substance or Mixture

Hazardous Combustion Products:	None known.

5.3 Advice for Firefighters

Special Protective Equipment and Precautions for Firefighters:	As with any fire, wear self-contained breathing apparatus (NIOSH approved or equivalent) and full protective gear.

Section 6
Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

Personal precautions/Protective Equipment:	See Section 8.2.2 Individual Protective Measures. For concentrations exceeding Occupational Exposure Levels (OELs), use a self-contained breathing apparatus (SCBA).
Emergency procedures:	Use scooping, water spraying/flushing/misting or ventilated vacuum cleaning systems to clean up spills. Do not use pressurized air.

6.2 Environmental Precautions

Environmental precautions:	Prevent contamination of drains or waterways and dispose according to local and national regulations.

6.3 Methods and Material for Containment and Cleaning Up

Methods and materials for containment and cleaning up:	Do not use brooms or compressed air to clean surfaces. Use dust collection vacuum and extraction systems. Large spills of dry product should be removed by a vacuum system. Dampened material should be removed by mechanical means and recycled or disposed of according to local and national regulations.

See Sections 8 and 13 for additional information on exposure controls and disposal.

Section 7
Handling and Storage

7.1 Precautions for Safe Handling

Practice good housekeeping. Use adequate exhaust ventilation, dust collection and/or water mist to maintain airborne dust concentrations below permissible exposure limits (note: respirable crystalline silica dust may be in the air without a visible dust cloud).

Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain and test ventilation and dust collection equipment. In cases of insufficient ventilation, wear a NIOSH approved respirator for silica dust when handling or disposing dust from this product. Avoid contact with skin and eyes. Wash or vacuum clothing that has become dusty. Avoid eating, smoking, or drinking while handling the material.

7.2 Conditions for Safe Storage, Including any Incompatibilities

Minimize dust produced during loading and unloading.

Section 8
Exposure Controls/Personal Protection

8.1 Control Parameters

OCCUPATIONAL EXPOSURE LIMITS					
SUBSTANCE		**OSHA PEL TWA (mg/m^3)**	**NIOSH REL TWA (mg/m^3)**	**ACGIH TLV TWA (mg/m^3)**	**CA - OSHA PEL (mg/m^3)**
Calcium oxide		5	2	2	2
Particulates Not Otherwise Regulated	Total	15	15	10	10
	Respirable	5	5	3	5
Respirable Crystalline Silica	Respirable Crystalline Silica	0.05	0.05	0.025	0.05
Titanium dioxide	Total	15	2.4 (fine) 0.3 (ultrafine)	10	10
Manganese dioxide (as manganese compounds)	Total	5 (Ceiling)	1 3 (STEL)	0.1	0.2
	Respirable	-	-	0.02	-

8.2 Exposure Controls

8.2.1 Engineering Controls

Provide ventilation to maintain the ambient workplace atmosphere below the occupational exposure limit(s). Use general and local exhaust ventilation and dust collection systems as necessary to minimize exposure.

8.2.2 Personal Protective Equipment (PPE)

Respiratory protection:	Wear a NIOSH approved particulate respirator if exposure to airborne particulates is unavoidable and where occupational exposure limits may be exceeded. If airborne exposures are anticipated to exceed applicable PELs or TLVs, a self-contained breathing apparatus or airline respirator is recommended.
Eye and face protection:	If eye contact is possible, wear protective glasses with side shields. Avoid contact lenses.
Hand and skin protection:	Wear gloves and protective clothing. Wash hands with soap and water after contact with material.

Section 9
Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Property: Value	Property: Value
Appearance (physical state, color, etc.): Fine tan/ gray particulate	**Upper/lower flammability or explosive limits:** Not applicable
Odor: Odorless[1]	**Vapor Pressure (Pa):** Not applicable
Odor threshold: Not applicable	**Vapor Density:** Not applicable
pH (25 °C) (in water): Not Determined	**Specific gravity or relative density:** 2.2 – 2.9
Melting point/freezing point (°C): Not applicable	**Water Solubility:** Slight
Initial boiling point/boiling range (°C): NA	**Partition coefficient: n-octane/water:** NA
Flash point (°C): Not determined	**Auto ignition temperature (°C):** Not applicable
Evaporation rate: Not applicable	**Decomposition temperature (°C):** Not determined
Flammability (solid, gas): Not combustible	**Viscosity:** Not applicable

[1] The use of urea or aqueous ammonia injected into the flue gas to reduce nitrogen oxides (NOx) emissions may result in the presence of ammonium sulfate or ammonium bisulfate in the ash at less than 0.1%. When ash containing these substances becomes wet under high pH (>9), free ammonia gas may be released resulting in objectionable/nuisance ammonia odor and potential exposure to ammonia gas especially in confined spaces.

Section 10
Stability and Reactivity

10.1 Reactivity:	The material is an inert, inorganic material primarily composed of elemental oxides.
10.2 Chemical stability:	The material is stable under normal use conditions.
10.3 Possibility of hazardous reactions:	The material is a relatively stable, inert material; however, when ash containing ammonia becomes wet under high pH (>9), free ammonia gas may be released resulting in an objectionable/nuisance ammonia odor and potential exposure to ammonia gas especially in confined spaces. Polymerization will not occur.
10.4 Conditions to avoid:	Product can become airborne in moderate winds. Dry material should be stored in silos. Materials stored out of doors should be covered or maintained in a damp condition.
10.5 Incompatible materials:	None known.
10. 6 Hazardous decomposition products:	None known.

Section 11
Toxicological Information

11.1 Information on Toxicological Effects

Endpoint	Data
Acute oral toxicity	LD50 > 2000 mg/kg
Acute dermal toxicity	LD50 > 2000 mg/kg
Acute inhalation toxicity	LD50 > 5.0 mg/L
Skin corrosion/irritation	Does not meet the classification criteria but may cause slight skin irritation. Product dust can dry the skin which can result in irritation.
Eye damage/irritation	Causes serious eye irritation. Positive scores for conjunctiva irritation and chemosis in 2/3 animals based on average of 24, 48 and 72-hour scores with irritation clearing within 21 days; No corneal or iritis effects observed.
Respiratory/skin sensitization	Not a respiratory or dermal sensitizer.
Germ cell mutagenicity	Not mutagenic in in-vitro and in-vivo assays with or without metabolic activation.
Carcinogenicity	Not available. Respirable crystalline silica has been identified as a carcinogen by OSHA, NTP, ACGIH and IARC.
Reproductive toxicity	No developmental toxicity was observed in available animal studies. Reproductive studies on CCPs showed either no reproductive effects, or some effects on male and female reproductive organs and parameters but without a clear dose response. Inorganic bromide salts have been shown to have adverse effects on reproductive parameters in some animal studies.
STOT-SE	CCPs when present as a nuisance dust may result in respiratory irritation.
STOT-RE	In a 180-day inhalation study with fly ash dust, no effects were observed at the highest dose tested. NOEC = 4.2 mg/m^3; it is not possible to assess the level at which toxicologically significant effects may occur. Repeated inhalation exposures to high levels of respirable crystalline silica may result in lung damage (i.e., silicosis).
Aspiration Hazard	Not applicable based product form.

Section 12
Ecological Information

12.1 Toxicity

Fly Ash C (CAS# 68131-74-8)	
Toxicity to Fish	LC50 > 100 mg/L
Toxicity to Aquatic Invertebrates	Data indicates that the test substance is not toxic to *Daphnia magna* (EC50 undetermined).
Toxicity to Aquatic Algae and Plants	EC50 = 10 mg/L

Calcium oxide CAS# 1305-78-8	
Toxicity to Fish	LC50 = 50.6 mg/L The findings were closely related to the pH of the test solutions; therefore, pH is considered to be the main reason for the effects.
Toxicity to Aquatic Invertebrates	EC50 = 49.1 mg/L The findings were closely related to the pH of the test solutions; therefore, pH is considered to be the main reason for the effects.
Toxicity to Aquatic Algae and Plants	NOEC =48 mg/L @ 72 hours based on $Ca(OH)_2$ The initial pH of the test medium was not directly related to the biologically relevant effects. The formation of precipitates is likely the result of the reaction between CO_2 dissolved in the medium.

12.2 Persistence and Degradability

Not relevant for inorganic materials.

12.3 Bioaccumulative Potential

This material does not contain any compounds that would bioaccumulate up the food chain.

12.4 Mobility in Soil

No data available.

12.5 Results of PBT and vPvB Assessment

This material does not contain any compounds classified as “persistent, bioaccumulative or toxic” nor as “very persistent/very bioaccumulative”.

12.6 Other Adverse Effects

None known.

Section 13

Disposal Considerations

See Sections 7 and 8 above for safe handling and use, including appropriate industrial hygiene practices.

Dispose of all waste product and containers in accordance with federal, state and local regulations.

Section 14
Transport Information

Regulatory entity: U.S. DOT	Shipping Name:	Not Regulated
	Hazard Class:	Not Regulated
	ID Number:	Not Regulated
	Packing Group:	Not Regulated

Section 15
Regulatory Information

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Mixture

- TSCA Inventory Status

  All components are listed on the TSCA Inventory.

- California Proposition 65.

  The following substances are known to the State of California to be carcinogens and/or reproductive toxicants:

  - Respirable crystalline silica

- State Right-to-Know (RTK)

Component	CAS	MA[1,2]	NJ[3,4]	PA[5]	RI[6]
Ammonium bisulfate	7803-63-6	No	Yes	No	No
Ammonium sulfate	7783-20-2	Yes	No	Yes	No
Calcium oxide	1305-78-8	Yes	Yes	Yes	No
Iron oxide	1309-37-1	Yes	Yes	Yes	No
Magnesium oxide	1309-48-4	No	Yes	No	No
Manganese oxide-as manganese compounds	1313-13-9; Various	No	No	Yes	Yes
Phosphorus pentoxide (or phosphorus oxide)	1314-56-3	Yes	Yes	Yes	No
Potassium oxide	12136-45-7	No	Yes	No	No
Silica-crystalline (SiO2), quartz	14808-60-7	Yes	Yes	Yes	No
Sodium oxide	1313-59-3	No	Yes	No	No
Titanium dioxide	13463-67-7	Yes	Yes	Yes	Yes

[1] Massachusetts Department of Public Health, no date
[2] 189th General Court of The Commonwealth of Massachusetts, no date
[3] New Jersey Department of Health and Senior Services, 2010a
[4] New Jersey Department of Health, 2010b
[5] Pennsylvania Code, 1986
[6] Rhode Island Department of Labor and Training, no date

Section 16
Other Information, Including Date of Preparation or Last Revision

16.1 Indication of Changes

Date of preparation or last revision: February 23, 2018

16.2 Abbreviations and Acronyms

- ACGIH: American Conference of Industrial Hygienists
- CA: California
- CAS: Chemical Abstract Services
- CCP: Coal Combustion Product
- CFR: Code of Federal Regulations
- EPA: Environmental Protection Agency

- GHS: Globally Harmonized System of Classification and Labelling
- IARC: International Agency for Research on Cancer
- LC50: Concentration resulting in the mortality of 50 % of an animal population
- LD50: Dose resulting in the mortality of 50 % of an animal population
- MA: Massachusetts
- NA: Not Applicable
- NJ: New Jersey
- NOEC: No observed effect concentration
- NIOSH: National Institute of Occupational Safety and Health
- NOx: Nitrogen oxides
- NTP: US National Toxicology Program
- OEL: Occupational Exposure Limit
- OSHA: Occupational Safety and Health Administration
- PA: Pennsylvania
- PBT: Persistent, Toxic and Bioaccumulative
- PEL: Permissible exposure limit
- PPE: Personal Protective Equipment
- REL: Recommended exposure limit
- RI: Rhode Island
- RCS: Respirable Crystalline Silica
- RTK: Right-to-Know
- SCBA: Self-contained breathing apparatus
- SDS: Safety Data Sheet
- STEL: Short-term exposure limit
- STOT-RE: Specific target organ toxicity-repeated exposure
- STOT-SE: Specific target organ toxicity-single exposure
- TLV: Threshold limit value
- TSCA: Toxic Substances Control Act
- TWA: Time-weighted average
- UEL: Upper explosive limit
- UVCB: Unknown or Variable Composition/Biological
- U.S.: United States
- U.S. DOT: United States of Department of Transportation

16.3 Other Hazards

Hazardous Materials Identification System (HMIS) Degree of hazard (0= low, 4 = extreme)							
Health:	2*	**Flammability:**	0	**Physical Hazards:**	0	**Personal protection:****	

** Chronic Health Effects*
****** Appropriate personal protection is defined by the activity to be performed.*
See Section 8 for additional information.

DISCLAIMER:

This SDS has been prepared in accordance with the Hazard Communication Rule 29 CFR 1910.1200. Information herein is based on data considered to be accurate as of date prepared. No warranty or representation, express or implied, is made as to the accuracy or completeness of this data and safety information. No responsibility can be assumed for any damage or injury resulting from abnormal use, failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

February 06, 2014

Tim Arnold
Dynegy Midwest Generation, LLC
#1 Chessen Lane
Alton, IL 62002-2048
TEL: (618) 462-9251
FAX: (618) 462-4849

RE: TSS **WorkOrder:** 14011401

Dear Tim Arnold:

TEKLAB, INC received 1 sample on 1/31/2014 12:25:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com

Client: Dynegy Midwest Generation, LLC **Work Order:** 14011401

Client Project: TSS **Report Date:** 06-Feb-14

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
E -	Value above quantitation range	H -	Holding times exceeded
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	X -	Value exceeds Maximum Contaminant Level

Case Narrative

http://www.teklabinc.com/

Client: Dynegy Midwest Generation, LLC
Work Order: 14011401
Client Project: TSS
Report Date: 06-Feb-14

Cooler Receipt Temp: 4.8 °C

Locations and Accreditations

	Collinsville	Springfield	Kansas City	Collinsville Air
Address	5445 Horseshoe Lake Road	3920 Pintail Dr	8421 Nieman Road	5445 Horseshoe Lake Road
	Collinsville, IL 62234-7425	Springfield, IL 62711-9415	Lenexa, KS 66214	Collinsville, IL 62234-7425
Phone	(618) 344-1004	(217) 698-1004	(913) 541-1998	(618) 344-1004
Fax	(618) 344-1005	(217) 698-1005	(913) 541-1998	(618) 344-1005
Email	jhriley@teklabinc.com	KKlostermann@teklabinc.com	dthompson@teklabinc.com	EHurley@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2015	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2014	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2014	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2014	Springfield
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2014	Collinsville
Arkansas	ADEQ	88-0966		3/14/2014	Collinsville
Illinois	IDPH	17584		5/31/2015	Collinsville
Kentucky	UST	0073		1/31/2015	Collinsville
Missouri	MDNR	00930		5/31/2015	Collinsville
Oklahoma	ODEQ	9978		8/31/2014	Collinsville

Client: Dynegy Midwest Generation, LLC
Work Order: 14011401
Client Project: TSS
Report Date: 06-Feb-14
Lab ID: 14011401-001
Client Sample ID: Fly Ash 4/5 Comp-012814
Matrix: SOLID
Collection Date: 01/28/2014 14:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
SW-846 1311, 3010A, 6010B, METALS IN TCLP EXTRACT BY ICP								
Arsenic	NELAP	0.25		**< 0.25**	mg/L	1	02/05/2014 12:21	95784
Barium	NELAP	0.05		**0.338**	mg/L	1	02/05/2014 12:21	95784
Cadmium	NELAP	0.02		**< 0.02**	mg/L	1	02/05/2014 12:21	95784
Chromium	NELAP	0.1		**< 0.1**	mg/L	1	02/05/2014 12:21	95784
Lead	NELAP	0.4		**< 0.4**	mg/L	1	02/05/2014 12:21	95784
Selenium	NELAP	0.5		**< 0.5**	mg/L	1	02/05/2014 12:21	95784
Silver	NELAP	0.1		**< 0.1**	mg/L	1	02/05/2014 12:21	95784
SW-846 1311, 7470A IN TCLP EXTRACT								
Mercury	NELAP	0.0002		**< 0.0002**	mg/L	1	02/04/2014 14:12	95785

Receiving Check List

http://www.teklabinc.com/

Client: Dynegy Midwest Generation, LLC
Work Order: 14011401
Client Project: TSS
Report Date: 06-Feb-14

Carrier: Josh Cerar
Received By: SRH

Completed by: Emily E. Pohlman
On: 31-Jan-14

Reviewed by: Michael L. Austin
On: 31-Jan-14

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C	4.8
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice	☐
Chain of custody present?	Yes ☑	No ☐			
Chain of custody signed when relinquished and received?	Yes ☑	No ☐			
Chain of custody agrees with sample labels?	Yes ☑	No ☐			
Samples in proper container/bottle?	Yes ☑	No ☐			
Sample containers intact?	Yes ☑	No ☐			
Sufficient sample volume for indicated test?	Yes ☑	No ☐			
All samples received within holding time?	Yes ☑	No ☐			
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑		
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐			

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	NA ☑
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑

Any No responses must be detailed below or on the COC.

Print Form

Teklab Chain of Custody

Pg. 1 of 1 Workorder 1401401

5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618)344-1004 ~ Fax:(618)344-1005

Dynegy Woodriver Power Station

#1 Chessen Lane

ALton | IL | 62002

Project Name/Number TSS

Are the samples chilled? ○ Yes ○ No with: ○ Ice ○ Blue ice Preserved in ○ Lab ○ Field

Cooler Temp 4.8 ice Sampler

Comments

Contact D. Tim Arnold eMail tim.arnold@dynegy.com Phone 618-433-0110 Requested Due Date Billing/PO

Lab Use	Sample ID	Sample Date/Time	Preservative	Matrix	RCRA Metals, TCLP	Sulfur, total	Sulfite, total	Sulfate, total								
1401401 001	Fly Ash 4/5 Comp-012814	01/28/14 @ 1400	Unpres	Aqueous	☒	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
			Unpres	Aqueous	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Teklab, Inc. Courier Pick Up

Relinquished By *	Date/Time	Received By	Date/Time
David Neal	1/31/14 1200		1/31/14 1200
	1/31/14 1225	Stephanie Hayes	1/31/14 1225

* The individual signing this agreement on behalf of client acknowledges that they have read and understand the terms of this agreement and that they have the authority to sign on behalf of client.

February 13, 2014

Tim Arnold
Dynegy Midwest Generation, LLC
#1 Chessen Lane
Alton, IL 62002-2048
TEL: (618) 462-9251
FAX: (618) 462-4849

RE: TSS **WorkOrder:** 14020282

Dear Tim Arnold:

TEKLAB, INC received 1 sample on 1/31/2014 12:25:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Michael L. Austin
Project Manager
(618)344-1004 ex 16
MAustin@teklabinc.com

Client: Dynegy Midwest Generation, LLC **Work Order:** 14020282

Client Project: TSS **Report Date:** 13-Feb-14

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
E -	Value above quantitation range	H -	Holding times exceeded
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	X -	Value exceeds Maximum Contaminant Level

Case Narrative

http://www.teklabinc.com/

Client: Dynegy Midwest Generation, LLC
Work Order: 14020282
Client Project: TSS
Report Date: 13-Feb-14

Cooler Receipt Temp: °C

Additional analysis on WO#14011401 per Susan McVety. MLA 2/7/14

Locations and Accreditations

	Collinsville	Springfield	Kansas City	Collinsville Air
Address	5445 Horseshoe Lake Road	3920 Pintail Dr	8421 Nieman Road	5445 Horseshoe Lake Road
	Collinsville, IL 62234-7425	Springfield, IL 62711-9415	Lenexa, KS 66214	Collinsville, IL 62234-7425
Phone	(618) 344-1004	(217) 698-1004	(913) 541-1998	(618) 344-1004
Fax	(618) 344-1005	(217) 698-1005	(913) 541-1998	(618) 344-1005
Email	jhriley@teklabinc.com	KKlostermann@teklabinc.com	dthompson@teklabinc.com	EHurley@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2015	Collinsville
Kansas	KDHE	E-10374	NELAP	4/30/2014	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2014	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2014	Springfield
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2014	Collinsville
Arkansas	ADEQ	88-0966		3/14/2014	Collinsville
Illinois	IDPH	17584		5/31/2015	Collinsville
Kentucky	UST	0073		1/31/2015	Collinsville
Missouri	MDNR	00930		5/31/2015	Collinsville
Oklahoma	ODEQ	9978		8/31/2014	Collinsville

Laboratory Results

http://www.teklabinc.com/

Client: Dynegy Midwest Generation, LLC
Work Order: 14020282
Client Project: TSS
Report Date: 13-Feb-14
Lab ID: 14020282-001
Client Sample ID: Fly Ash 4/5 Comp 012814
Matrix: SOLID
Collection Date: 01/28/2014 14:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA SW846 3550C, 5035A, ASTM D2974								
Percent Moisture		0.1		**< 0.1**	%	1	02/07/2014 15:51	R186992
SW-846 9036 (TOTAL)								
Sulfate		100		**< 100**	mg/Kg-dry	1	02/13/2014 13:16	95945
SW-846 3050B, 6010B, METALS BY ICP								
Sulfur		463		**6450**	mg/Kg-dry	100	02/13/2014 10:22	95960

14020282

TEKLAB, INC
5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
TEL: (618) 344-1004
FAX: (618) 344-1005

CHAIN-OF-CUSTODY RECORD

WorkOrder: 14020282

Client:
Dynegy Midwest Generation, LLC
#1 Chessen Lane
Alton, IL 62002-2048

TEL: (618) 462-9251
FAX:
Project: TSS

07-Feb-14

					Requested Tests		
Sample ID	**ClientSampID**	**Matrix**	**Date Collected**	**Bottle**	**SW3550C_5035A_ASTM29**	**SW6010B**	**SW9036 High Range**
14020282-001	Fly Ash 4/5 Comp	Solid	1/28/2014 2:00:00 PM		A	A	A

Comments: Additional analysis on WO#14011401 per Susan McVety. MLA 2/7/14

	Date/Time		**Date/Time**
Relinquished by:		**Received by:**	2/7/14
Relinquished by:		**Received by:**	
Relinquished by:		**Received by:**	

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

Bottle Type: L-Liter V-Voa S-Soil Jar O-Orbo T-Tedlar B-Brass P-Plastic OT-Other

ATTACHMENT 3.1
Demonstrations and Certifications

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 3.1 – Location Restrictions

SUMMARY NOTES

This attachment describes the items required under Section 3.1 – Location Restrictions. See the attachments to this Technical Memorandum.

Item 3.1.1 – Placement Above the Uppermost Aquifer

The Illinois and federal CCR regulations require a minimum separation distance of 5 feet between the bottom of a CCR unit to the top of the uppermost aquifer. Based upon ATON's evaluation, a minimum separation distance of 4.3 feet was identified. This distance does not satisfy the Illinois CCR requirements. However, due to the presence of the liner system (a 60-mil HDPE geomembrane overlying an 18-inch-thich compacted clay liner), an equivalent time of travel distance, for only the compacted clay portion, is more than the 5-foot requirement.

There will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR surface impoundment and the uppermost aquifer due to normal fluctuations in groundwater elevations due to the presence of the liner system. Due to the complex geology along the Mississippi River, significant fluctuations of magnitudes on the order of 15 to 20 feet may occur between the seasonal low and high groundwater tables.

Item 3.1.2 – Wetlands

The CCR units have been inactive since the generating station ceased operations, and within the next year will be undergoing closure following Illinois CCR regulations. There are no wetlands located within the limits of the CCR Units, therefore the demonstrations/evaluations specified in the Illinois CCR regulations do not apply to this location restriction requirement.

Item 3.1.3 – Fault Areas

The nearest known mapped fault to the Wood River Power Station is the Wabash Valley Seismic Zone, which is located approximately 30 miles to the north of the facility. No known data or information are available regarding recent activity on this fault within the Quaternary period. The distance to the known mapped fault exceeds the 200-foot distance prescribed in the Illinois and federal CCR regulations. Based on the known available published geologic data and information reviewed, there are no identified active faults or fault damage zones mapped or reported within 200 feet of the facility. Therefore, the facility satisfies this location restriction criteria.

Item 3.1.4 – Seismic Impact Zones

Based upon ATON's evaluation to determine whether the facility is located within a Seismic Impact Zone, a peak ground acceleration of 0.2117g was determined. This acceleration value exceeds the Illinois CCR value of 0.07g. Accordingly, the facility is in a seismic impact zone and a demonstration that the structural components have been designed to resist the maximum horizontal acceleration in lithified earth material for the facility is required.

AECOM prepared a report on the Primary East Ash Pond which indicated a minimum factor of safety of 1.02 which satisfies the Illinois CCR regulations. However, the West Ash Pond System will require analysis for structural stability and this study will be undertaken.

Item 3.1.5 – Unstable Areas and Floodplains

The results of ATON's document review and evaluation indicate that the facility is not located in an area with poor foundation conditions, an area susceptible to mass movements, an area with karst terrain, or an area of greater than minimal flooding. Accordingly, the facility is not located in an unstable area and a demonstration that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR units to ensure that the integrity of the structural components of the CCR units will not be disrupted is not required

ATTACHMENT 3.1.1
Placement Above the Uppermost Aquifer

Technical Memorandum
Location Restriction Demonstration and Evaluation
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Section: 35 IAC 845.300 – Placement Above the Uppermost Aquifer

CTI Development, LLC (CTI) owns the facility identified as the former Wood River Generating Station located in Alton, Illinois. The facility has four (4) CCR units consisting of the Primary East Ash Pond, and the West Ash Pond System (Pond 1, Pond 2E, and Pond 2W). This demonstration/evaluation addresses the requirements of 35 IAC 845.300 and 40 CFR 257.60(a).

35 IAC 845.300 – Existing and new CCR surface impoundments, and all lateral expansions of CCR surface impoundments, must be constructed with a base that is located at least 1.52 meters (five feet) above the upper limit of the uppermost aquifer or must demonstrate that there will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR surface impoundment and the uppermost aquifer due to normal fluctuations in groundwater elevations (including the seasonal high water table).

40 CFR 257.60(a) – New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must be constructed with a base that is located no less than 1.52 meters (five feet) above the upper limit of the uppermost aquifer, or must demonstrate that there will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR unit and the uppermost aquifer due to normal fluctuations in groundwater elevations (including the seasonal high water table). The owner or operator must demonstrate by the dates specified in paragraph (c) of this section that the CCR unit meets the minimum requirements for placement above the uppermost aquifer.

DEMONSTRATION/EVALUATION

The "uppermost aquifer" is described/defined in the definitions section of 35 IAC 845.120 and 40 CFR 257.53. NRT evaluated groundwater conditions and prepared a report[1] describing the hydrogeologic conditions at both the Primary East Ash Pond and the West Ash Pond Systems.

Uppermost Limit of Upper Aquifer – Primary East Ash Pond

Based upon the boring logs, cross-sections, and original design drawings for the Primary Ash Pond, the Primary East Ash Pond was constructed with a liner system consisting of an 18-inch-thick compacted

[1] Natural Resource Technology, *Hydrogeologic Site Characterization Report*, October 19, 2016. This report has been posted to the two CCR websites.

clay liner[2] with an assumed permeability of $1x10^{-7}$ centimeters/second overlain by a 60-mil HDPE liner. The upper limit of the uppermost aquifer below this clay liner is approximately 410 feet at its deepest point.

Base of Unit – Primary East Ash Pond

ATON reviewed available information provided by the former owner including historic design drawings that provided information regarding the base of the Unit. As-built subgrade surveys were not available for the Primary East Ash Pond. The minimum separation distance between the uppermost limit of the aquifer and the base of the liner system is approximately 2.4 feet.

Conclusion – Primary East Ash Pond

Typically, a minimum separation distance of 2.4 feet is not acceptable under the Illinois CCR regulations. However, due to the presence of the liner system, an equivalent time of travel distance, for only the compacted clay portion, is more than the 5-foot requirement. There will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR surface impoundment and the uppermost aquifer due to normal fluctuations in groundwater elevations due to the presence of the liner system. Due to the complex geology along the Mississippi River, significant fluctuations of magnitudes on the order of 15 to 20 feet may occur between the seasonal low and high water tables.

Uppermost Limit of Upper Aquifer –West Ash Pond System

Based upon the boring logs, cross-sections, and the original design drawings for the West Ash Pond System indicates the System was constructed with a liner system consisting of an 18-inch-thick compacted clay liner[2] with an assumed permeability of $1x10^{-7}$ centimeters/second overlain by a 60-mil HDPE liner.

Base of Unit – West Ash Pond System

ATON reviewed available information provided by the former owner including historic design drawings that provided information regarding the base of the Unit. As-built subgrade surveys were not available for the West Ash Pond System. Based upon the historical design drawings and the cross-sections in the NRT report, the upper limit of the uppermost aquifer is approximately 404 feet at its shallowest point resulting in a minimum separation distance of 4 feet.

Conclusion – West Ash Pond System

Typically, a minimum separation distance of 4 feet is not acceptable under the Illinois CCR regulations. However, due to the presence of the liner system, an equivalent time of travel distance, for only the compacted clay portion, is more than the 5-foot requirement. There will not be an intermittent, recurring, or sustained hydraulic connection between any portion of the base of the CCR surface

[2] AECOM, History of Construction, Wood River Power Station, October 2016.

impoundment and the uppermost aquifer due to normal fluctuations in groundwater elevations due to the presence of the liner system. Due to the complex geology along the Mississippi River, significant fluctuations of magnitudes on the order of 2 to 5 feet may occur between the seasonal low and high water tables

PE CERTIFICATION

I, Adam Peetz, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared following the accepted practice of engineering for this time and region. I certify that the above-referenced CCR Units at Wood River Power Station meets the requirements of 35 IAC 845.300 and 40 CFR 257.60(a).

_____

Signature
Consulting Engineer

Print Name: Adam Peetz
Company: ATON LLC

SEAL

ATTACHMENT 3.1.2
Wetlands

Technical Memorandum
Location Restriction Demonstration and Evaluation
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Section: 35 IAC 845.310 – Wetlands

CTI Development, LLC (CTI) owns the facility identified as the former Wood River Generating Station located in Alton, Illinois. The facility has four (4) CCR units consisting of the Primary East Ash Pond, and the West Ash Pond System (Pond 1, Pond 2E, and Pond 2W). This demonstration/evaluation addresses the requirements of 35 IAC 845.310 and 40 CFR 257.61(a)

35 IAC 845.310 – New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in wetlands, as defined in §232.2 of this chapter, unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that the CCR unit meets the requirements of paragraphs (a)(1) through (a)(5) of this section.

40 CFR 257.61(a) – New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in wetlands, as defined in §232.2 of this chapter, unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that the CCR unit meets the requirements of paragraphs (a)(1) through (5) of this section.

DEMONSTRATION/EVALUATION

Wetlands are defined in 35 IAC 845.310 and 40 CFR 257.61(a). To determine if the Units are in wetlands, publicly available data (i.e., the U.S. Fish and Wildlife Service's (USFWS's) National Wetland Inventory (NWI) mapping[1]) was reviewed by ATON. A site-specific wetland study was conducted of the borrow area to the north of the Primary East Ash Pond by SCI Engineering, Inc.[2] in July 2017. No other site-specific wetland or stream delineation studies of the areas surrounding the Units have been conducted. An exception is a US Army Corp of Engineers study performed on the levee adjacent to the northwest of the facility.

NWI Mapping

The USFWS's NWI mapping does indicate substantial areas of potential wetlands (both freshwater emergent and forested/shrub wetlands) in the vicinity of the Units (see Figure 1 attached to this Technical Memorandum). No wetlands are located within the boundaries of the Primary East Ash Pond

[1] US Fish and Wildlife Service Website: https://www.fws.gov/wetlands/data/mapper.html
[2] SCI Engineering, Inc., *Wetland and Waterbody Delineation Summary Report*, Project No. 2008-3321.30, July 2017.

or the West Ash Pond System. Wood River is located to the east of the Primary East Ash Pond and the Mississippi River forms the southwestern and southern boundary to the entire facility.

Conclusion

The CCR Units have been inactive since the generating station ceased operations, and within the next year will be undergoing closure following Illinois CCR regulations. There are no wetlands located within the limits of the CCR Units, therefore the demonstrations/evaluations specified in the federal And Illinois CCR regulations do not apply to this location restriction requirement.

PE CERTIFICATION

I, Adam Peetz, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared following the accepted practice of engineering for this time and region. I certify that the above-referenced CCR Units at Wood River Power Station meets the requirements of 35 IAC 845.310 and 40 CFR 257.61(a).

_____

Signature
Consulting Engineer

Print Name: Adam Peetz
Company: ATON LLC

SEAL

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetland Map - Wood River Power Station,

National Wetlands Inventory Website: https://www.fws.gov/wetlands/data/mapper.html

October 25, 2021

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

ATTACHMENT 3.1.3
Fault Areas

Technical Memorandum
Location Restriction Demonstration and Evaluation
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Section: 35 IAC 845.320 – Fault Areas

CTI Development, LLC (CTI) owns the facility identified as the former Wood River Generating Station located in Alton, Illinois. The facility has four (4) CCR units consisting of the Primary East Ash Pond, and the West Ash Pond System (Pond 1, Pond 2E, and Pond 2W). This demonstration/evaluation addresses the requirements of 35 IAC 845.320 and 40 CFR 257.62(a).

35 IAC 845.320 - Existing and new CCR surface impoundments, and all lateral expansions of CCR surface impoundments, must not be located within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time unless the owner or operator demonstrates that an alternative setback distance of less than 60 meters (200 feet) will prevent damage to the structural integrity of the CCR surface impoundment.

40 CFR 257.62(a) – New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that an alternative setback distance of less than 60 meters (200 feet) will prevent damage to the structural integrity of the CCR unit.

DEMONSTRATION/EVALUATION

A review of available data from the U.S. Geologic Survey[1], the Illinois State Geological Survey, and other available information was completed for this demonstration. The nearest known mapped fault is the Wabash Valley Seismic Zone, which is located approximately 30 miles north. The timeframe of the most recent activity on these faults is currently not known. Based on the available published geologic data and information reviewed, there appear to be no active faults or fault damage zones that have had displacement in Holocene time reported or indicated within 200 feet of the Unit.

Earthquakes in Illinois appear to be associated with deeply buried Precambrian faults. Based on a review of publically available documents from the Illinois Geological Survey, there are no reported Holocene faults in the region near the Wood River Power Station. The Map Showing Major Structural Features of the Illinois Basin[2] does not depict any known faults within 200 feet of the facility. Similarly, the USGS

[1] US Geological Survey, Quaternary Fault and Fold Database of the Unuted States, Latest Earthquakes (usgs.gov), 2018
[2] Morse et. al, *Map Showing Major Structural Features of the Illinois Basin*. Illinois Basin Consortium, Gas Research Institute - 00/0068, Illinois Basin Consortium Study 4 Plate 1, 2000.

Quaternary Fault and Fold[1] do not show any Quaternary faults within 200 feet of the Unit. The USGS Database indicates that the facility is located approximately 30 miles north of the Wabash Valley liquefaction features.

The nearest known mapped fault is the Saint Genevieve Fault Zone, located approximately 60 miles south of the facility. There are no known available records indicating movement on the Saint Genevieve Fault Zone within the Quaternary period[3].

Conclusion

The nearest known mapped fault to the Wood River Power Station is the Wabash Valley Seismic Zone, which is located approximately 30 miles to the north of the facility. No known data or information are available regarding recent activity on this fault within the Quaternary period. The distance to the known mapped fault exceeds the 200-foot distance prescribed in the Illinois and federal CCR regulations. Based on the known available published geologic data and information reviewed, there are no identified active faults or fault damage zones mapped or reported within 200 feet of the facility. Therefore, the facility satisfies the location restriction criteria as presented in 35 IAC 845.320 and 40 CFR 257.62.

PE CERTIFICATION

I, Adam Peetz, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared following the accepted practice of engineering for this time and region. I certify that the above-referenced CCR Units at the Wood River Power Station meets the requirements of 35 IAC 845.320 and 40 CFR 257.62(a).

_____

Signature
Consulting Engineer

Print Name: Adam Peetz
Company: ATON LLC

SEAL

[3] Stephen Marshak et. al., *Shear velocity structure beneath the central United States: implications for the origin of the Illinois Basin and intraplate seismicity*, American Geophysical Union, Geochemistry, Geophysics, Geosystems: 17: 1020-1041.

ATTACHMENT 3.1.4
Seismic Impact Zones

Technical Memorandum
Location Restriction Demonstration and Evaluation
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Section: 35 IAC 845.330 – Seismic Impact Zones

CTI Development, LLC (CTI) owns the facility identified as the former Wood River Generating Station located in Alton, Illinois. The facility has four (4) CCR units consisting of the Primary East Ash Pond, and the West Ash Pond System (Pond 1, Pond 2E, and Pond 2W). This demonstration/evaluation addresses the requirements of 35 IAC 845.330 and 40 CFR 257.60

35 IAC 845.330 – Existing and new CCR surface impoundments, and all lateral expansions of CCR surface impoundments, must not be located in seismic impact zones unless the owner or operator demonstrates that all structural components, including liners, leachate collection and removal systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

40 CFR 257.63(a) – New CCR landfills, existing and new CCR surface impoundments, and all lateral expansions of CCR units must not be located in seismic impact zones unless the owner or operator demonstrates by the dates specified in paragraph (c) of this section that all structural components including liners, leachate collection and removal systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.

DEMONSTRATION/EVALUATION

The terms "Maximum Horizontal Acceleration in Lithified Earth Materials", "Seismic Impact Zone" and "Structural Components" are defined in 35 IAC 845.120 of the Illinois CCR regulations and 40 CFR 257.52 of the Federal CCR regulations.

Seismic Impact Zone

To determine if the facility is in a seismic impact zone, the 2014 U.S. Geological Survey (USGS) Hazard Map[1] was reviewed (the 2018 Hazard Map has not been released as of the date of this Technical Memorandum). The map displays the earthquake ground motions for a 2 percent probability of exceedance in 50 years, which are derived from seismic hazard curves calculated on a grid system of sites across the United States that describe the annual frequency of exceeding a set of ground motions. The 2014 USGS Hazard Map raw data was plotted relative to the site location and a peak ground acceleration was established (see attached calculations) and compared to the interactive website[2]**.** The

[1] US Geological Survey, 2014 Hazard Map Website: https://earthquake.usgs.gov/static/lfs/nshm/conterminous/2014/data/
[2] US Geological Survey, Interactive Website: https://earthquake.usgs.gov/hazards/interactive/

plotted and calculated data indicates that the maximum expected horizontal acceleration for a 2 percent probability of exceedance in 50 years is 0.2117g at the facility.

AECOM prepared a report[3] in which a factor of safety modeled the embankment stability under seismic loading as a horizontal force for the Primary East Ash Pond. A minimum factor of safety of 1 is required. The modelled results indicated a factor of safety varying from 1.02 to 1.92. This report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Conclusion

Based upon the evaluation to determine whether the facility is located within a Seismic Impact Zone, a peak ground acceleration of 0.2117g was determined. This acceleration value exceeds the value of 0.07g. Accordingly, the facility is in a seismic impact zone and a demonstration that the structural components have been designed to resist the maximum horizontal acceleration in lithified earth material for the facility will be required.

The AECOM report[3] on the Primary East Ash Pond indicates a minimum factor of safety of 1.02 which satisfies the federal and Illinois CCR regulations.

The West Ash Pond System will require analysis for structural stability and this study will be undertaken.

PE CERTIFICATION

I, Adam Peetz, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared following the accepted practice of engineering for this time and region. I certify that the above-referenced CCR Units at the Wood River Power Station meets the requirements of 35 IAC 845.330 and 40 CFR 257.63(a) with the exception as noted.

_____

Signature
Consulting Engineer

Print Name: Adam Peetz
Company: ATON LLC

[3] AECOM, *CCR Certification Report: Initial Structural Stability Assessment, Initial Safety Factor Assessment, and Initial Inflow Design Flood Control System Plan for Primary East Ash Pond*, October 2016.

ATON

PROJECT	Wood River IOP Application	**PROJECT NO.**	2021.118
	Bedrock Peak Ground Acceleration Calculation		
	Wood River Power Station	**PAGE**	1 **OF** 1

MADE BY	Ed Powell	**DATE**	10/27/2021	**CHECKED BY**	Barry Franz	**DATE**	10/27/2021

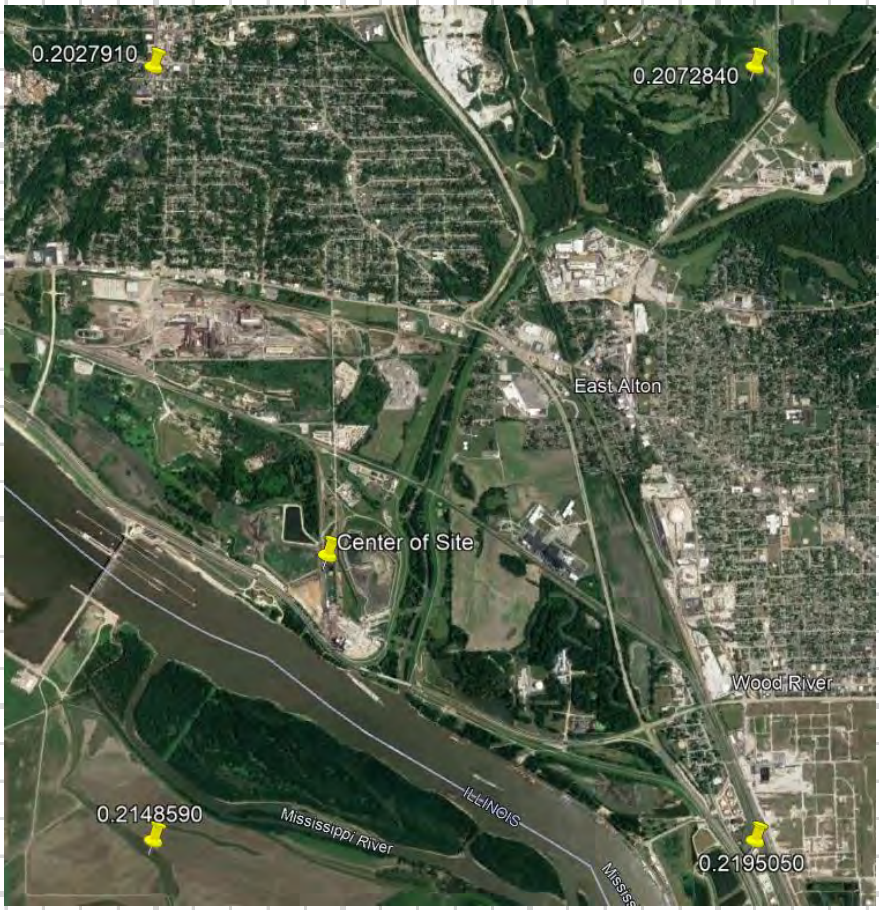
Objective:

Determination of bedrock peak ground acceleration at the Wood River Power Station in Alton, Illinois using USGS data.

Step 1:

Using the 2014 USGS gridded bedrock peak ground acceleration data, identify the four closet points in the USGS datasets values.

surrounding the Wood River Power Station, along with their peak ground acceleration



Step 2

Calculate the average bedrock ground acceleration based upon the four data points surrounding the Wood River Power Station.

Location	Latitude	Longitude	Bedrock PGA
Center of Facility	38.868	-90.136	
Point 1	38.900	-90.100	0.2072840
Point 2	38.850	-90.100	0.2195050
Point 3	38.850	-90.150	0.2148590
Point 4	38.900	-90.150	0.2027910
		Average	0.2111098

Notes:

1 Bedrock values are extracted from the USGS dataset of peak ground accelerations, representing a 2% probability of exceedance in 50 years, that are used in the USGS's 2014 National Seismic Hazard Map available at: https://earthquake.usgs.gov/static/lfs/nshm/conterminous/2014/data/

Hazard Curve

Earthquake Hazard and Probability Maps

Input

Edition

Conterminous U.S. 2014 (v4.0.x)

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

38.869

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

-90.135

2% in 50 years
(2,475 years)

5% in 50 years
(975 years)

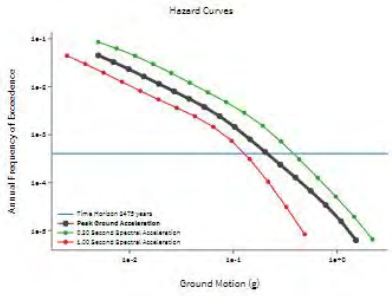
10% in 50 years
(475 years)

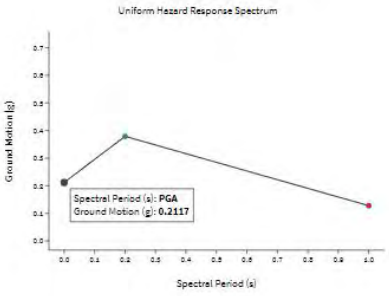
Choose location using a map

Site Class

760 m/s (B/C boundary)

Hazard Curve





View Raw Data

ATTACHMENT 3.1.5
Unstable Areas and Floodplains

Technical Memorandum
Location Restriction Demonstration and Evaluation
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Section: 35 IAC 845.340 – Unstable Areas and Floodplains

CTI Development, LLC (CTI) owns the facility identified as the former Wood River Power Station located in Alton, Illinois. The facility has four (4) CCR units consisting of the Primary East Ash Pond, and the West Ash Pond System (Pond 1, Pond 2E, and Pond 2W). This demonstration/evaluation addresses the requirements of 35 IAC 845.340 and 40 CFR 257.43(a) and 64(b).

35 IAC 845.340 – An existing or new CCR surface impoundment, or any lateral expansion of a CCR surface impoundment, must not be located in an unstable area unless the owner or operator demonstrates that recognized and generally accepted engineering practices have been incorporated into the design of the CCR surface impoundment to ensure that the integrity of the structural components of the CCR surface impoundment will not be disrupted

40 CFR 257.43(a) – An existing or new CCR landfill, existing or new CCR surface impoundment, or any lateral expansion of a CCR unit must not be located in an unstable area unless the owner or operator demonstrates by the dates specified in paragraph (d) of this section that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR unit to ensure that the integrity of the structural components of the CCR unit will not be disrupted.

§257.64(b): The owner or operator must consider all of the following factors, at a minimum, when determining whether an area is unstable:

(1) On-site or local soil conditions that may result in significant differential settling;
(2) On-site or local geologic or geomorphologic features; and
(3) On-site or local human-made features or events (both surface and subsurface).

DEMONSTRATION/EVALUATION

The terms "Structural Components", "Unstable Area" and "Areas Susceptible to Mass Movement" are defined in 35 IAC 845.120 and 40 CFR 257.53 of the Illinois and federal CCR regulations.

To determine if the CCR Units are located in an unstable area, publicly available information was reviewed from the U.S. Geological Survey (USGS), Illinois Department of Natural Resources, and Illinois State Geological Survey (ISGS). Existing test boring logs at the site were also reviewed to evaluate subsurface soil and groundwater conditions.

Site-specific soil conditions that can contribute to differential settlement typically include soft/loose foundation soils, unstable slopes, and foundation soils that are susceptible to liquefaction. Subsurface explorations logs including both boring logs and cone penetrometer logs show the facility as a whole is underlain by coarse-grained alluvial deposits that generally consist of silty SAND (SM) and poorly graded SAND (SP). The deepest explorations performed at the site extended to a depth of approximately 100 feet below the ground surface and did not encounter bedrock. ISGS bedrock topography data indicates that the site is located in a major bedrock valley (the Mississippi River Valley) and site-specific bedrock elevations were not available.

For liquefaction to occur, the soils must generally be coarse-grained and have a high level of saturation (i.e., below the groundwater table). As described in the above paragraph, coarse-grained soils are located below the CCR units. To determine if the coarse-grained soils located below the water table were susceptible to liquefaction, a liquefication analysis[1] was performed for the Primary East Ash Pond. The liquefaction analysis indicated that the factor of safety against liquefaction was generally above 1.2 and AECOM concluded that the soils are not susceptible to liquefaction.

Conditions associated with the potential for significant differential settlement due to liquefaction were not identified in the Primary East Ash Pond Area. As the soils underlying the West Ash Pond System are similar, it is ATON's opinion that liquefaction of these soils under similar loading conditions are also not susceptible to liquefaction.

Based on available US Geological Survey (USGS)[2], Illinois State Geological Survey (ISGS)[3] information, and verbal communication with Dynegy representatives familiar with the facility's history, karst topography or physiographic features such as sinkholes, vertical shafts, sinking streams, caves, large springs, or blind valleys do not exist at the facility. The facility does lie within an area known to have carbonate bedrock susceptible to the formation of karst features.

To evaluate the susceptibility of landslides, ATON reviewed readily available USGS[4] and ISGS[5] data. The USGS data indicates that the facility is in an area of moderate landslide susceptibility and low incidence, however more detailed ISGS data indicates that there has not been a documented landslide occurrence at or near the facility.

According to the USGS Karst Map[2], the Plant is in an area of carbonate rocks buried beneath more than 50 feet of glacially derived insoluble sediments, which generally prevents surface expressions of sinkholes. Based on the digital compilation of the same map, the carbonate rocks belong to the Mississippian-age Middle Valmeyeran Series. Similarly, the ISGS map of Karst Terrains and Carbonate Rocks of Illinois shows carbonate rock located at the Plant and additional ISGS data indicates that there

[1] AECOM, *CCR Certification Report: Initial Structural Stability Assessment, Initial Safety Factor Assessment, and Initial Inflow Design Flood Control System Plan for Primary East Ash Pond*, October 2016.
[2] USGS – Weary and Doctor, *Karst in the United States: A Digital Map Compilation and Database*, 2014.
[3] Illinois State Geological Survey – Weibel and Panno, *Karst Terrains and Carbonate Rocks of Illinois*, 1997.
[4] US Geological Survey, US Landslide Inventory Web Application: U.S. Landslide Inventory (arcgis.com)
[5] Illinois State Geological Survey – Killey, Hines, and DuMontelle, *Illinois Landslide Inventory Map*, 1984

are no known caves or sinkholes at the facility. Finally, Dynegy representatives familiar with the facility's history are not aware of any karst features that exist at or near any of the CCR Units. It is ATON's opinion that the CCR Units are not located in an area of karst terrain.

To evaluate the susceptibility of landslides, ATON reviewed the USGS Landslide Overview Map[6]. ATON also reviewed locations of past occurrences of landslides documented in the Illinois Landslide Inventory Map[7]. According to USGS Landslide Map, the Plant is in an area of moderate landslide susceptibility and low incidence. The map does not specifically indicate the characteristics of past landslides or that landslides have specifically occurred at the facility. A review of past landslide events documented in the Illinois Landslide Inventory Map[7] shows that there have not been any landslide occurrences at the facility and the closest landslide occurrences are approximately 3 miles north of the facility. Accordingly, ATON believes that the facility is not located in an area that has high susceptibility to landslides.

A review of the publicly available data collected by ISGS[8] indicates that there are no recorded mining activities within approximately 9,500 feet of the facility. Accordingly, there are no documented surface or subsurface anthropogenic activities that would be indicative of creating unstable foundation conditions at the facility.

The FEMA National Flood Hazard Layer (NFHL) Viewer[9] was used to determine the flood hazard designation of the facility. The NFHL Viewer indicates that the facility lies within a Zone C Designation (areas of minimal flooding).

CONCLUSION

The results of ATON's document review and evaluation indicate that the facility is not located in an area with poor foundation conditions, an area susceptible to mass movements, an area with karst terrain, or an area of greater than minimal flooding. Accordingly, the facility is not located in an unstable area and a demonstration that recognized and generally accepted good engineering practices have been incorporated into the design of the CCR units to ensure that the integrity of the structural components of the CCR units will not be disrupted is not required.

[6] US Geological Survey – Radbruch-Hall, Colton, Davies, Lucchitta, Skipp, and Varnes, *Landslide Overview Map of the Conterminous United States*, Profesdsional Paper 1183, 1997

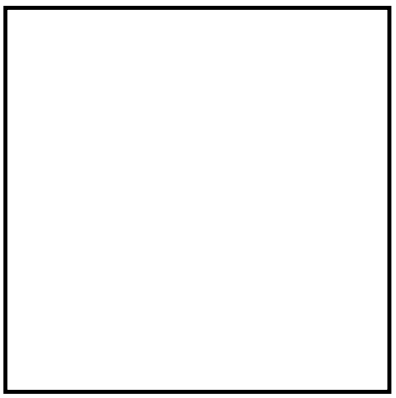
[7] US Geological Survey – Killey, Hines, DuMontelle and Braff, *Illinois Landslide Inventory Map*, Miscellaneous Field Studies Map 1691, 1984

[8] Illinois State Geological Survey, ILMines Website: ISGS ILMINES (arcgis.com)

[9] Department of Homeland Security, Federal Emergency Management Agency, National Flood Hazard Layer Viewer Website: FEMA's National Flood Hazard Layer (NFHL) Viewer (arcgis.com)

PE CERTIFICATION

I, Adam Peetz, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared following the accepted practice of engineering for this time and region. I certify that the above-referenced CCR Unit meets the requirements of 35 IAC 845.340 and 40 CFR 257.43(a) and 257.64(b).



_____

Signature
Consulting Engineer

Print Name: Adam Peetz
Company: ATON LLC

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 4 – Attachments
Item No.: 4.1 – Miscellaneous Documents Relating to Attachments

NOTES

This attachment describes the items required under Section 4 Item 1.4.

Item 4.1.1 – Evidence that permanent markers have been installed at the CCR units which comprise the Primary East Ash Pond and the West Ash Pond Complex (Pond 1, Pond 2E, and Pond 2W). Photographic evidence is attached to the end of this Technical Memorandum (TM).

Item 4.1.2 – Documentation that the CCR surface impoundment has been operated and maintained with forms of the slope protection specified in 35 IAC § 845.430. Details of the slope protection are described in AECOM, *CCR Certification Report: Initial Structural Stability Assessment, Initial Safety Factor Assessment, and Initial Inflow Design Flood Control System for Primary East Ash Pond at Wood River Power Station*, October 2016, and in the dam inspections conducted since 2015. The AECOM report and all the dam inspection reports since 2015 are available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/). Additional, dam inspection reports from 2010 are available upon request but are not posted on the two (2) CCR websites.

Item 4.1.3 – The Emergency Action Plan, prepared in 2017, was revised by Stantec in June 2017 (Revision No. 1) and certified by an Illinois-registered Professional Engineer. An updated Emergency Action Plan (Revision No. 2), with those changes certified by an Illinois-registered Professional Engineer, has recently been submitted to the Illinois Department of Natural Resources, Water Resources, Dam Safety Group, and the Illinois Environmental Protection Agency for approval. A draft copy of the revised EAP is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 4.1.4 – A Fugitive Dust Control Plan, was prepared in 2021 by ATON, LLC. This Plan had been certified by an Illinois-registered Professional Engineer that it meets 35 IAC § 845.500(b)(7). A copy of this plan is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 4.1.5 – A preliminary written closure plan, as specified by both 35 IAC § 845.720(a) and 40 CFR § 257.102(b), was prepared. A copy of this plan is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 4.1.6 – A initial written post-closure care plan, as specified by both 35 IAC § 845.780(d) and 40 CFR § 257.101, was prepared. A copy of this plan is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 4.1.7 – The primary East Ash Pond is underlain by an 18-inch thick clay layer overlain by a 60-mil HDPE liner. The clay liner consists of a mixture of low plastic fat clay and lean clay. The specifications indicate that the clay liner was to be installed with a permeability of no more than 1.1E-7 centimeters per second. The engineering properties of the clay liner as compacted are not reasonably and readily available. The physical and engineering properties of the clay liner are not reasonably and readily available.

The information on the Primary East Ash Pond liner was obtained from AECOM, *History of Construction, Wood River Power Station*, October 2016. A copy of this plan is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

Item 4.1.8 – CTI is unaware of any past or current impacts to an existing potable supply well or within the setback of such a well. Nor has Finch received any notices or letters concerning such a condition from the Illinois Environmental Protection Agency (IEPA), the Illinois State Geological Survey, or the Illinois Department of Public Health.

Groundwater monitoring has occurred at the facility since 2017. Groundwater Monitoring Reports have been submitted under the current USEPA CCR regulations for the years 2017, 2018, 2019, and 2020. Copies of these reports are available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

To date, no statistically significant levels (SSLs) have been identified per 40 CFR Part 257.

Item 4.1.9 – A health and safety plan meeting the requirements of 35 IAC § 845.530 was prepared by the CTI Development, LLC preferred remediation contractor, FB Remediation. The Plan was prepared by Mr. David Messer, Director of Health and Safety, who certified that this Plan meets 35 IAC § 845.530. The Plan will be fully implemented once a closure plan has been approved by Illinois EPA and closure construction commences. A copy of the health and safety plan is attached to this TM.

Item 4.1.10 – Based upon the criteria stated in 35 IAC 845.700(g), the Primary East Ash Pond, and the West Ash Pond System (Pond 1, Pond 2E, and Pond 2W) meets the classifications for the following Closure Prioritization.

Pond ID	Pond Description	Classification
W1190200004-01	West Ash Pond 1	Category 3
W1190200004-02	West Ash Pond 2E	Category 3
W1190200004-03	West Ash Pond 2W	Category 3
W1190200004-05	Primary East Ash Pond	Category 3

An evaluation supporting this hazard classification is presented below:

Category 1 Discussion – *Category 1 includes CCR surface impoundments that have impacted an existing potable water supply well or that have impacted groundwater quality within the setback of an existing potable water supply well.*

CTI is unaware of any past or current impacts to an existing potable supply well or within the setback of such a well. Nor has CTI received any notices or letters concerning such a condition from the Illinois Environmental Protection Agency (IEPA), the Illinois State Geological Survey, or the Illinois Department of Public Health.

In November 2009, a previous owner submitted to IEPA a report on the potential of the Wood River Station to pose a threat to groundwater use at off-site locations. IEPA (Illinois Environmental Protection Agency, *Letter of Concurrence* by Alan Keller, November 20, 2009) concurred with the report that Wood Station did not appear to pose a threat to groundwater use at off-site locations at that time.

In October 2016, a Groundwater Management Zone Application was prepared by Natural Resource Technology (Natural Resource Technology, *Groundwater Management Zone Application – West Ash Pond Complex, Wood River Power Station, Alton, IL*, Project 2376, October 19, 2016) and submitted to IEPA. IEPA granted the GMZ application in May 2017. The approval of a GMZ by IEPA (Illinois Environmental Protection Agency, Letter of Approval by William Buscher, May 27, 2017) in May 2017 allows exceedances in compliance with the approved GMZ until closure activities are completed as the Corrective Action.

In this application, under Section 2.2, Natural Resource Technology (NRT) states the following:

“The results of the water well survey, combined with the information contained within the annual groundwater monitoring reports, indicate that there are no water wells, potable or non-potable, that are likely to be impacted by groundwater from the West Ash Pond Complex except for non-potable wells located directly south of the WRPS. All other water wells, located to the northwest, north, northeast, east, and southeast, are either upgradient during most of the year (i.e., are not downgradient of the prevailing southerly direction of groundwater flow), and/or are located beyond groundwater to water discharge zone (i.e., Wood River). The potential for groundwater emanating from the West Ash Pond Complex to affect wells located anywhere but directly south of the WRPS is very low.

Based on existing monitoring well data, there are no known groundwater quality impacts on water wells directly to the south of WRPS along the Mississippi River. These water wells, some of which may no longer exist, are utilized for either dewatering for construction activities or pressure relief for the adjacent levee. All of these water wells are for non-potable, non-contact use only. Although groundwater in the vicinity of these water wells may be impacted by inorganic parameter concentrations of boron and manganese, there is no known exposure pathway for human ingestion or contact of groundwater at these well locations"

Based upon the information presented in NRT's GMZ Application and its approval by IEPA, there are no expected impacts to existing potable water supply wells or within the setback of an existing potable water supply wells. Also, groundwater monitoring has been maintained under the USEPA CCR Final Rule and will in the immediate future meet the recently promulgated Illinois CCR regulations. To date, the groundwater monitoring reports have followed the conditions and assumptions made in NRT's GMZ Application.

Therefore, the Primary East Pond and the West Ash Pond System do not meet the conditions of a Category 1 closure

Category 2 Discussion – *Category 2 includes CCR surface impoundments that are an imminent threat to human health or the environment or have been designated by the Agency under subsection (g)(5).*

CTI is unaware of any past or current impacts to an existing potable supply well or within the setback of such a well. Nor has Finch received any notices or letters concerning such a condition from the Illinois Environmental Protection Agency (IEPA), the Illinois State Geological Survey, or the Illinois Department of Public Health.

Groundwater monitoring has occurred at the facility since 2017. Groundwater Monitoring Reports have been submitted under the current USEPA CCR regulations for the years 2017, 2018, 2019, and 2020. Copies of these reports are available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

To date, no statistically significant levels (SSLs) have been identified per 40 CFR Part 257.

Category 3 Discussion

Section 845.700(g)(1)(C) – *Category 3 includes CCR surface impoundments located in areas of environmental justice concern, as determined by the Agency under subsection (g)(6).*

Based upon the Illinois EPA EJ start website (Illinois EPA EJ Start (arcgis.com)), both the Primary East Ash Pond and the West Ash Pond System lie within a facility boundary which intersects an environmental justice area as defined from the website. A drawing showing the facility boundary and the EJ area is attached to this TM.

Therefore, the Primary East Ash Pond and the West Ash Pond System meets the criteria for a **Category 3** closure schedule.

Item 4.1.1
Section 845.130

Below are photographs of the markers for the Primary East Ash Pond and the West Ash Pond System – Ponds 1, 2E, and 2W.

Primary East Ash Pond

West Ash Pond System – Pond 1

West Ash Pond System – Pond 2E

West Ash Pond System – Pond 2W

Item 4.1.9
Section 845.530

Section 1.0 – Company Information and Key Contacts

Company Name:	CTI Development		
Address:	1 Chessen Lane, Alton, Illinois 62002		
Site-Specific Safety Plan (SSSP) Approved by:		Dave Messer	**Approval Date:** 9/01/2021
Project Manager: William Anoskey		**Project Manager Phone #:** 269-591-9274	
Site Supervisor: Adam Freihaut		**Site Supervisor Cell Phone #:** 314-609-4989	
Site Safety Officer: TBD		**Site Safety Officer Cell Phone #:** TBD	
Construction Manager: Dennis Allread		**Construction Manager Phone #:** 269-317-3633	
Incident Reporting* (all incidents, near misses, and environmental incidents shall be reported ASAP and within 8 hours):		Dave Messer (Director of Safety) (859) 588-8396 Linda Denison (Environmental Manager) (614) 565-2297	

Section 2.0 – Detailed Work Scope (Derived from Contract)

Detailed Description of Work (per contract):	Closure of CCR Surface Impoundment

Section 3.0 – Work Location

1 Chessen Lane, Alton, Illinois 62002

Section 4.0 – Subcontractors Covered by this Site Specific Safety Plan (where applicable)

Subcontractor Name	Tasks/Role	Contact
FB Remediation LLC	Closure of Surface Impoundments	TBD
ATON, LLC	Environmental Compliance	Doug Ball
TBD		
TBD		

Section 5.0 – Qualified/Competent Persons (where applicable)

Some job tasks require involvement from specially qualified and designated personnel. A "qualified person" is defined as “one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.” A "competent person" is defined as "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them". By way of training and/or experience, a competent person is knowledgeable of applicable standards, is capable of identifying workplace hazards relating to the specific operation, and has the authority to correct them. Some standards add additional specific requirements which must be met by the competent person. This matrix identifies some of the job tasks that require a competent person, qualified person, or a registered engineer. This list is not all-inclusive and it is the responsibility of the contractor to identify and staff the job appropriately.

Work in Progress - to be Updated Later

Job Type	Qualification Type	N/A	Employee Name
Supervise Safety on the Job Site	Competent	☐	
Supervise Demolition Activities	Competent	☐	
First Aid/CPR Trained Personnel	Trained	☐	
Fall Protection Supervision/Inspection of Fall Protection Equipment	Competent	☐	
Fall Protection Plan Development/Anchors	Qualified	☐	
Ladder Inspections	Qualified	☐	
Supervise Scaffold Erection/Dismantlement	Competent	☐	
Scaffold Inspection	Competent	☐	
Supervise Trench/Excavation Activities	Competent	☐	
Approval of Sloping and Benching Systems	Qualified	☐	
Protective Systems for Excavations > 20 ft.	Registered Engineer	☐	
Heavy Equipment Operation	Qualified	☐	
Electrical Workers (working near/on energized parts)	Qualified	☐	
Crane Safety	Competent	☐	
Rigging Safety	Competent	☐	
Powder Actuated Tool Use	Qualified/ Licensed	☐	
Steel Erection Design	Qualified	☐	
Steel Erection Oversight	Competent	☐	
Falsework Design	Registered Engineer	☐	
Evaluate Potential Employee Exposures to Silica and Implement required Exposure Control Plan	Competent	☐	

Section 6.0 – *Minimum PPE that will be used

☐ Hard Hat	☐ Safety Vest	☐ Safety Glasses	☐ Steel Toe Shoes
☐ Leather Gloves	☐ Nitrile Gloves	☐ Ear Plugs	☐ Ear Muffs
☐ Face Shield	☐ Respirator (Type:___)	☐ Dust Mask	☐ Other:

*Additional required PPE should be identified in the control column of the task hazard analysis (Section 9.0)

Section 7.0 – Injury Reporting

All employees and subs will report all mishaps and close calls immediately to their supervisor. All injury accidents that require offsite care must be reported within 1 hour. An initial report must be submitted to the safety department within 8 hours. A detailed follow-up report including a company incident report, investigation findings, initial corrective actions, proposed and or completed corrective actions, and lessons learned shall be sent to the Director of Safety / Construction Manager within 24 hours.

Section 8.0 – Mishaps, Incident Report, Emergency Procedures, Hospital Identification, and Map

Note: Notify the Director of Safety (Dave Messer 859-588-8396) within 1 hour, when an employee leaves the site to be treated at a medical facility. A supervisor must accompany the injured employee at the medical facility, to gather as much information as possible as to the care being provided, any prescriptions being prescribed, and whether the employee will be returning to work or not.

Work in Progress - to be Updated Later

Directions to Hospital

From: **1 Chessen Ln Alton, IL 62002-2048**

To: **1 Memorial Dr., Alton, IL 62002**

9 MIN | 3.028 MILES

Start out going north on Chessen Ln toward Vinegar Works Rd. 0.65 miles

Turn left onto E Broadway. 0.77 miles

Turn right onto Main St. 0.85 miles

- *Main St is 0.1 miles past Sering Ave*
- *If you reach Lampert St you've gone about 0.1 miles too far*

Turn left onto Brown St. 0.64 miles

- *Brown St is just past Benbow Ave*
- *If you reach Edwards St you've gone a little too far*

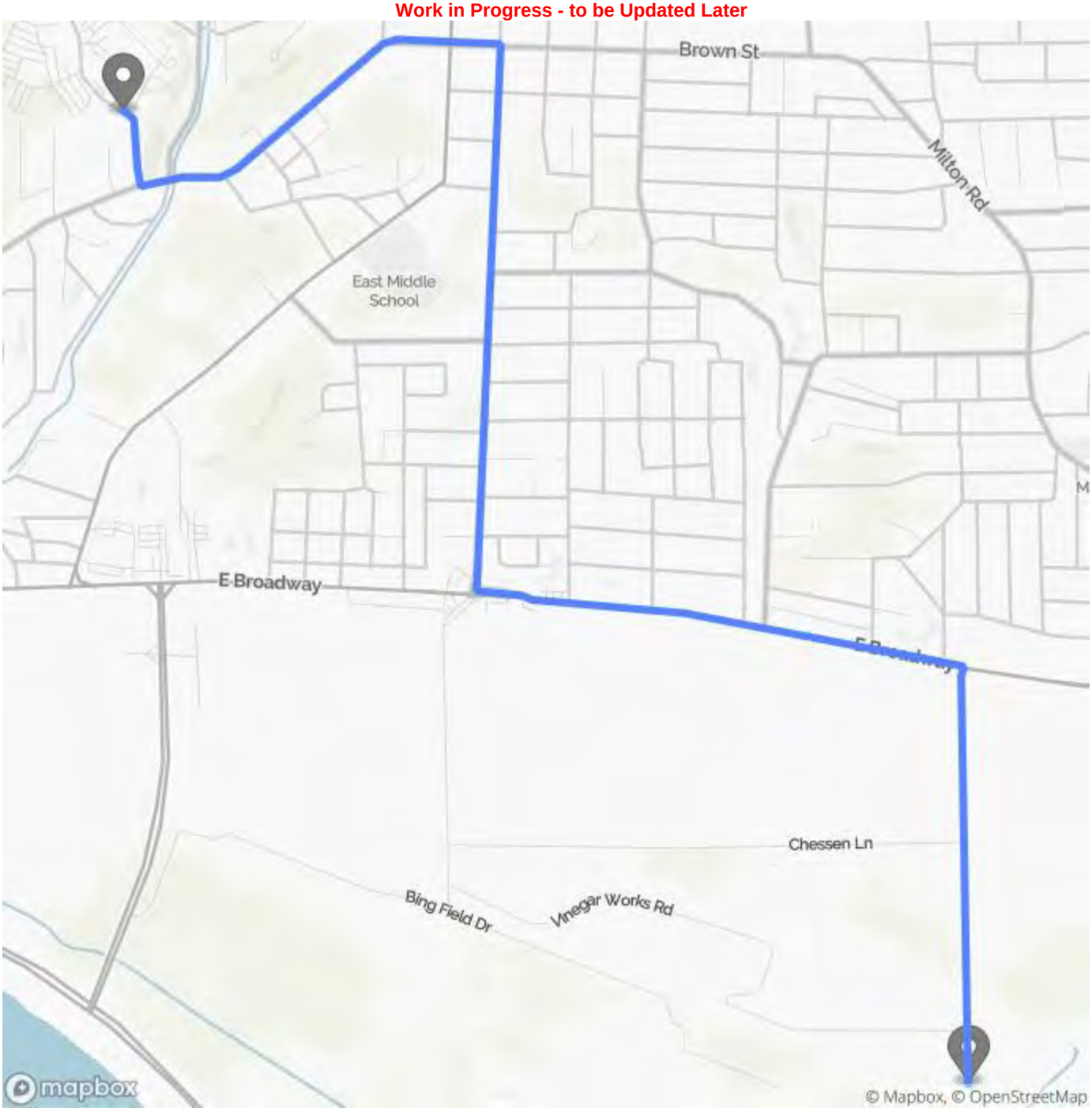
Turn right onto Memorial Dr. 0.12 miles

- *Memorial Dr is just past Rock Springs Dr*
- *If you reach Avon Pl you've gone a little too far*

Alton Memorial Hospital, 1 Memorial Dr, Alton, IL, 1 MEMORIAL DR. 0.00 miles

- *If you reach Glenhaven Dr you've gone about 0.3 miles too far*

Work in Progress - to be Updated Later



Work in Progress - to be Updated Later

Section 9.0 – Task-Specific Hazard Analysis

The preferred format for this section of the SSSP is to use the standard 3 column hazard analysis like the example below.

JOB SAFETY ANALYSIS (JSA) FORM

Site/Project:		
Name of Contractor/Subcontractor:	Date:	Weather:
Task/Activity:		

Check applicable anticipated or potential hazards:

- ☐ Demolition
- ☐ Underground tank removal/disposal/high vapours
- ☐ Excavation
- ☐ Activities in or near traffic areas
- ☐ Concrete cutting / coring
- ☐ Mobile heavy equipment activity (excavators, dump trucks, vacuum and hydrovac trucks)
- ☐ Pile driving / Shoring
- ☐ Work affecting integrity of critical controls
- ☐ Welding, cutting, grinding
- ☐ Hydroblasting / sandblasting
- ☐ Radiography / X-ray testing
- ☐ Pressure testing
- ☐ Other: _____ (Includes clearing brush/trees, reactive chemical handling, working in proximity to deep water, etc.)

CRITICAL PROCEDURES:
*Where work involves any of the following hazards, applicable **Critical Checklists** must be incorporated into the JSA*

- ☐ Work at heights above 1.5 m (5 ft- includes excavations)
- ☐ Confined Space Entry (includes tank cleaning)
- ☐ Electrical/Mechanical Lockout (live, isolation, lock out/tag out)
- ☐ Heavy Equipment Lifting (cranes, boom trucks, excavators)
- ☐ Drilling/borehole/excavations (sub-surface clearance, locates)
- ☐ Entry into excavations/trenches > 1.2 m (4 ft) deep
- ☐ Hot Work (in a potentially explosive atmosphere)

Ensure that all hazards identified are addressed in JSA below

Sequence of Basic Job Steps *(Order in which the work will be carried out and brief details of how tasks will be performed)*	Potential Hazards *(Examples: underground services, hazardous zone area, impacted soil, overhead power lines, adjacent works, etc)*	Safety Controls to Reduce or Eliminate Hazard *(Describe the precautions that will be taken)*
1.		
2.		
3.		

How to complete the hazard analysis

Step 1 – define the job (list scope)

Step 2 – List all basic job tasks in column 1, the hazards associated with them, and the required controls. They should line up. Each task performed should have the hazards identified and the controls that will be implemented to control potential injuries and/or exposures. There are some examples of potential tasks that may be associated with your work below. Use them if they apply for columns #2, # 3 in the form, above; **but review the example information provided below and modify before submitting**. Be sure to list the hazards rather than the injuries, accidents, or other results of a hazard. For example:

Hazard: A potential danger. Poor housekeeping, objects on the floor.

Accident: An unintended event that may result in injury, loss, or damage. Tripping on the objects is an accident.

Injury: Result of an accident, such as a sprained ankle suffered from tripping on the objects left in the work area and falling.

Task: Hand Operated Power Tool Use

HAZARDS	CONTROLS
Shock	• Ensure tool casing is free from cracks and is properly grounded. • Use tool connected to GFCI if cord powered. • Wear insulated gloves. • Ensure the tool is unplugged before changing any part of the tool.
Hand lacerations	• Wear appropriate gloves (e.g., leather gloves) when changing out/handling blades, where applicable. • Ensure the tool is unplugged before changing any part of the tool. • Check that the guard is in working condition and the proper position, if applicable.
Eye and other physical injuries	• Always wear safety glasses/goggles; wear hearing protection where applicable. • Don't wear loose clothing. • Ensure that the material being operated on is secured. • Make sure the blade or bit is not binding as it goes into the work. If blade or bit is binding, cease operation of the tool and evaluate reasons for binding.

Task: Ladder Use

HAZARDS	CONTROLS
Falls from ladders	• Select proper ladder. • Do not use a light household ladder for a heavy construction job. • Do not exceed ladder duty rating. • Inspect the ladder before use. Insure ladder is clean and free of defects before use. • Maintain a 4:1 slope ratio with straight ladders. • Use 3 point contact while climbing. • Extend ladder 36" if climbing onto another surface. • Do not use the top step of the stepladder and the top 3 rungs of a straight ladder. • Secure all extension ladders from movement. • Ensure the ladder is not placed on a loose object or uneven footing. • To prevent slipping, equip the ladder with non-slip points or safety shoes, if practical. If not, secure the ladder firmly by lashing it with rope or by other means. • Do not lean ladders against moveable objects or window sashes. • Fasten a board securely across the top of the ladder to give a bearing on each side of the window. • See that a helper stands guard in dangerous circumstances, as when a ladder is in front of a door. If there is a danger of a person or vehicle bumping into the ladder, have a helper stand guard or rope off the space with caution tape around the ladder.

HAZARDS	CONTROLS
	• Remove any oil or grease from the soles of your shoes before using the ladder. • Do not overreach and do not push or pull if it will cause the ladder to move. If you are far away from something you have to reach, take time to move the ladder closer. • Do not straddle the space between the ladder and another object.

Task: Elevated Work Platform Use (e.g. scissor lifts, boom lifts, JLG's, etc.)

HAZARDS	CONTROLS
Lift failure/tip over	• All elevated work platforms must be used following OSHA and the manufacturer's use instructions. • Personnel must be trained, qualified, and approved to operate all elevated platforms and boom lifts. • Inspect lift before use. • Do not use left on unstable ground or angles over the lifts cap. Look for Drop-offs, holes, or unstable surfaces such as loose/soft dirt.
Falls	• Fall protection must be used following the manufacturers' recommendations on all elevated platforms and boom lifts.
Damaged/broken equipment	• Elevated work platforms must be used and inspected following the manufacturer's instruction for each specific model and type of elevated work platform being used. • All elevated work platforms (e.g. scissors lifts, aerial platforms, etc.) and boom lifts must be inspected by the assigned qualified /competent person before acceptance for use at the laboratory. • Elevated work platforms and boom lifts must be inspected by a trained and qualified operator before each use. • Document the inspection on the work platform inspection tag. • If the elevated work platform or boom lift does not pass inspection, remove the inspection tag, and replace it with a red "Do Not Use" tag, and remove it from service.

Task: Heavy Equipment Operation

Hazards	Controls
Slips, Trips, Falls	• Maintain three points of contact when entering and exiting equipment
Crushing Hazards/Pinch Points	• Do not place hands or feet in areas of possible crushing hazards
Others entering the work area	• Keep a watchful eye out for others entering your work area
Traveling on Narrow Roads	• Always communicate where you are with other operators
Changing Conditions	• Always document and communicate any changing conditions to the site.

Work in Progress - to be Updated Later

Task: Water Truck Operator

Hazards	Controls
Fugitive Dust	• Always maintain the posted speed limit or below to minimize dust
Other equipment sharing roadway	• Communicate with other operators what your intentions are.
Changing Conditions (Ice, Snow)	• Communicate changing conditions to others and check your vehicle for slippery conditions (steps, ladders)
Water moving back and forth in the tank	• Maintain a slow speed and reduce speed well before a stop to minimize water in the tank possibly moving the vehicle in a forward motion.
Slips, Trips, Falls	• Maintain three points of contact when entering and exiting the vehicle at all times.

Task: Excavation Activities

HAZARDS	CONTROLS
Risk of Injury to bystanders	• The work area should be delineated off from Un-Authorized personnel & signs posted. • All personnel must use caution when working around excavation equipment and open excavations. • Assigned PPE (e.g., safety eyewear, earplugs, etc.) shall be worn by adjacent personnel, as required by their proximity to the work task.
Risk of hitting underground utilities	• Review all area underground utility drawings with the construction manager and utility company. • Have the area of excavation surveyed with ground-penetrating radar and Electro-magnetic RF instrument before the commencement of digging. • Use hand excavation techniques around all known utilities. • Ensure all areas to be excavated have been cleared of potential utilities.
Inhalation hazards from dust from excavation activities	• Wear appropriate PPE to protect from dust. This is usually a half-face air-purifying respirator with dust cartridges.
Risk of exposure to physical hazards from moving machinery	• Personnel on the ground should keep away from the work area and backhoe/excavator unless they are required for the task. • Do not approach heavy equipment without eye contact/acknowledgment from the backhoe/excavator operator. • Use standard hand signals when noise levels inhibit auditory communication. • Ensure that all heavy machinery has audible backup signals. • NEVER work alone when operating heavy machinery. • Avoid moving parts of machinery. Keep fingers, hands, and arms away from the backhoe bucket and other pinch points. • Wear leather gloves when using hands for activities other than sampling, hard hats, safety glasses, and work boots.
Noise	• Wear ANSI-approved safety earplugs or muffs when working close enough to backhoe that you have to speak louder than your normal voice to someone standing next to you.

HAZARDS	CONTROLS
Cave in	• Ensure all activities are supervised by a trained and appointed competent person. • Ensure excavation is properly sloped or shoring is used if employees are to enter.

Task: Working in Roads and Parking Lots

HAZARDS	CONTROLS
Possible pedestrian or vehicle traffic in the work area	• Secure work area to keep unauthorized personnel out of work area. • Schedule work in such a manner as to limit exposure to people and property.
Struck by Vehicles.	• Signs shall be used to slow/control vehicular traffic. • Signal/traffic/flagman personnel will wear reflective vests. • Only trained and authorized employees will work in the roadway.

Task: Use of Lawn Mower/Side by Side/Company Vehicle (Pick-up Truck, Car) On-Site

HAZARDS	CONTROLS
Slips, Trips, Falls Lawn Mower Rollover Hazards Operating Company Vehicle Onsite Exceeding the site speed limit Pedestrian and Vehicle traffic entering the work area. Flying debris from lawn Mower	• Maintain three points of contact when entering and exiting vehicles. • Always read manufacturers' recommendations when mowing on a slope. • Know what hazards are in the path of the mower (hidden stumps, fence posts, rocks, trash). • Always wear the appropriate PPE while operating the mower (eye protection, hearing protection) • Never exceed the posted site speed limit. This allows for better dust control and being able to control your equipment better. • Communicate with other operators where you will be working. Always watch for other vehicles and other workers entering your work area. • Do not allow any other workers to enter the area that is being mowed, due to flying debris. Always wear the recommended PPE.

Task: Drone Operator

Hazard	Controls
Setting up Targets	• Know your surroundings before laying out ground targets (uneven surface, holes)
Other workers in your work area	• Communicate where you will be operating with other workers
Powerlines	• Check to see where powerlines are located before flying the drone
Changing Conditions	• Document and communicate any changing conditions (weather, low flying aircraft)
Animals, Insects, Snakes	• Always be watchful of animals, insects, and snakes in your work area.

"CCR fugitive dust" *means solid airborne particulate matter that contains or is derived from CCR, emitted from any source other than a stack or chimney*. The site shall have a plan in place to reduce or eliminate all fugitive dust caused by excavation and hauling tasks. The site shall have a water truck(s) in place to lay down water on all roadways and access and exit points to where materials are moved and or dumped. In the event the water truck(s) are down for routine maintenance or are inoperable due to a mechanical issue, all activities that may create fugitive dust will stop immediately and resume once the water truck(s) are back in service. Fugitive dust conditions will be monitored by all personnel on-site and will be communicated with the site supervisor.

Employee Safety Training:

- All employees will attend the 40 hours hazwopper online training through 360 Training and will have the 8-hour refresher. All employees will attend hazcom training, Stormwater Pollution Prevention Plan (SWPPP) training, and will be required to attend the New Hire Safety Orientation. All training shall be documented and kept on file in the site office. The Director of Safety shall also have a record of all employee training. Any other safety-related training will be at the discretion of the site supervisor and or the Director of Safety.

Task: Equipment Operator Training

- All new hire equipment operators are to attend one week of training with a competent operator before he/she can operate any machinery on site. Training will begin on day one with skills training and then will operate the machinery while in close view of a competent operator. Before the operator can be “turned loose” by themselves, they must be deemed a safe and competent operator and shall have all training documented and filed on site. The employee and trainer will both sign the training papers. All operators will be re-certified as competent operators on an annual basis.

Work in Progress - to be Updated Later

Section 10.0 – Personnel Acknowledgement

By signing below, the undersigned acknowledges that he/she has read and reviewed the SSSP. The undersigned also acknowledges that he/she has been instructed in the contents of this document and understands the information about the specified work, and will comply with the provisions contained therein.

Personnel Acknowledgement			
Print Name	**Signature**	**Company**	**Date**

Sample Blank JHA- Any completed task hazard assessment for tasks not identified in the initial SSSP submittal shall be submitted for ATON/CLP review before the start of the work.

LOCATION	HAZARD ANALYSIS COMPLETED BY:	DATE:

WORK ACTIVITY (Description/Location):

EMPLOYEE	POSITION	EMPLOYEE	POSITION

REQUIRED PERSONAL PROTECTIVE EQUIPMENT (Erase what does not apply)				
Gloves	Safety Glasses	Dust Mask	Fall Protection	Arc rated Clothing
Hard Hat	Reflective Vest	Goggles	Insulated tools	HRC _____
Safety Boots	Hearing Protection	Face Shield	Voltage rated Gloves	Other:

JOB STEPS	POTENTIAL HAZARDS	CONTROLS

AREA HAZARDS	ACTIONS TO MITIGATE HAZARDS

Item 4.1.10
Section 845.700

Illinois EPA EJ Start

Data Sources & Definitions | Disclaimer | Illinois EPA EJ Site

Find address or place

ATTACHMENT 5.1
Groundwater Monitoring

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Primary East Ash Pond and West Ash Pond Complex
Former Wood River Power Station, Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 5 – Groundwater Monitoring
Item No.: 5.1 – Support for sub-items

NOTES

This attachment describes the items required under Section 5.1.

Item 5.1 requires the submission of groundwater monitoring information including hydrogeological characterization and details of the groundwater monitoring program. There are four(4) CCR units at the Former Wood River Power Station (Site) including the Primary East Ash Pond and three (3) CCR units of the West Ash Pond Complex: Pond 1, Pond 2E, and Pond 2W. A fourth pond (Pond 3) is found within the West Ash Pond Complex, but it is utilized in stormwater management and is regulated by an NPDES Permit. The Site, as a whole, has been characterized by previous site assessments which ultimately led to the installation of monitoring wells that are now included in the monitoring and reporting program for the Site that encompasses the four (4) CCR units. The most comprehensive site assessment for the Former Wood River Power Station is provided in the document entitled *Hydrogeologic Site Characterization Report* by Natural Resource Technology (NRT) (October 19, 2016) that is included as Appendix A in the *Closure and Post-Closure Care Plan for the Wood River West Ash Complex* (AECOM, October 2016) that is available on the federal CCR website (https://ccrwoodriver.com/) and the Illinois CCR website (https://illinois.ccrwoodriver.com/).

The *Groundwater Monitoring Plan* (NRT, October 19, 2016) describes the groundwater monitoring network and sampling plan as requested in 35 Ill. Adm Code 845.630. NRT's *Statistical Analysis Plan* (October 17, 2017) details the statistical procedures incorporated into the monitoring plan as adopted by the new owners, Finch Development, LLC. The above-mentioned reports as well as prior groundwater monitoring reports are available on the federal CCR website (https://ccrwoodriver.com/) and the Illinois CCR website (https://illinois.ccrwoodriver.com/).

ATTACHMENT 6.1
Certifications

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Wood River Power Station, East Alton, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 6 – Certifications
Item No.: 6.1 – Attachments for sub-items 6.1.1 to 6.1.5.

NOTES

This attachment describes the items required under Section 6, Item 6.1.

Item 6.1.1 – A certification prepared and signed by the Owner that they meet the financial assurance requirements of 35 IAC 845.230 and is included in the separate Financial Assurance Forms package included as part of this Initial Operating Permit Application.

Item 6.1.2 – Stantec prepared the initial hazard potential classification (Stantec Consulting Services Inc., Documentation of Initial Hazard Potential Classification Assessment, October 2016) for the Primary East Ash Pond. A copy of this report is available on the federal CCR website (https://ccrwoodriver.com/) and the Illinois CCR website (https://illinois.ccrwoodriver.com/).

Stantec's opinion was "Results from the existing breach analysis indicate that potential breach impacts from the Primary East Ash Pond will be confined to structures on the Wood River Power Station property that are not permanently occupied. Therefore, it is Stantec's opinion that a breach from these impoundments does not present a probable threat to human life. However, a breach from this impoundment has the potential to release stored CCR material and cause environmental damage. Therefore, the impoundment fits the definition for a significant hazard potential CCR surface impoundment."

A similar study has yet to be undertaken for the West Ash Pond System and will be undertaken shortly.

Item 6.1.3 – AECOM prepared the initial structural stability assessment (AECOM, *CCR Rule Report: Initial Structural Stability Assessment, Initial Safety Factor Assessment, and Initial Inflow Design Flood Control System Plan for Primary East Ash Pond at Wood River Power Station*, October 2016). A copy of this report is available on the federal CCR website (https://ccrwoodriver.com/) and the Illinois CCR website (https://illinois.ccrwoodriver.com/).

Based on this evaluation, AECOM believes that the Primary East Ash Pond meets the requirements presented in the Illinois and federal CCR regulations.

A similar study has yet to be undertaken for the West Ash Pond System and will be conducted shortly.

Item 6.1.4 – AECOM prepared the initial safety factor assessment (AECOM, *CCR Rule Report: Initial Structural Stability Assessment, Initial Safety Factor Assessment, and Initial Inflow Design Flood Control System Plan for Primary East Ash Pond at Wood River Power Station*, October 2016). A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

AECOM stated in this evaluation that the Primary East Ash Pond meets Illinois and federal CCR requirements.

A similar study has yet to be undertaken for the West Ash Pond System and will be conducted shortly.

Item 6.1.5 – AECOM prepared the initial inflow design flood control system evaluation (AECOM *CCR Rule Report: Initial Structural Stability Assessment, Initial Safety Factor Assessment, and Initial Inflow Design Flood Control System Plan for Primary East Ash Pond at Wood River Power Station*, October 2016). A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

AECOM stated in this evaluation that the Primary East Ash Pond meets Illinois and federal CCR requirements.

A similar study has yet to be undertaken for the West Ash Pond System and will be conducted shortly.