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:** Havana 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.
		East Ash Pond Complex - Cell 3
	1.2	Identification number of the CCR surface impoundment (if one has been assigned by the Agency).
		CCR Unit ID 701
	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 of the East Ash Pond complex (Tract 2 identified in the legal description). Due to the nature of how the four (4) cells (three CCR units and the stormwater pond) have been laid out, all within the same exterior embankment, no surveyed boundaries of each cell has ever been undertaken, only the entire East Ash Pond complex.
	1.4	State the purpose for which the CCR surface impoundment is being used.
		Cell 3 was used to store and dispose of commingled material consisting of bottom ash, fly ash, and spray dryer absorber (SDA) waste. The maximum storage capacity at the top of the embankment is 488 acre-feet (~787,307 cubic yards).
	1.5	How long has the CCR surface impoundment been in operation?
		Cell 3 was constructed in 2003
	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.			
		Matanzas Lake Watershed (Hydrologic Unit Code 071300031002) - see Attachment 1.7			
	1.8	Size in acres of the watershed within which the CCR surface impoundment is located.			
		Drainage Area - 22,395.5 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. *See Attachment 2.1 to Form CCR 2E.*
		☑	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 Havana Power Station, Havana, 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 prepared by The Orin Group, LLC, and stamped by Illinois Professional Land Surveyor, Michal G. Shackleford, on January 19, 2012. The legal description obtained from this survey is presented as an attachment to this Technical Memorandum (TM). Additionally, the survey document is also attached to this TM.

The East Ash Pond complex consist of three (3) CCR units identified as Cells 1 through 3 and a stormwater pond (identified as Cell 4) which is not a CCR unit.

LEGAL DESCRIPTION

The following is the legal description of the entire facility boundary encompassing both the former power generating station and the East Ash Pond complex. The East Ash Pond complex consists of three (3) CCR units identified as Cells 1 through 3 and a stormwater pond sometimes identified as Cell 4 which is not a CCR unit. Specifically, Tract 2 contains the three (3) CCR cells and the stormwater pond.

Tract 1:

The Northwest Quarter of the Northeast Quarter, part of the Northeast Quarter of the Northeast Quarter, part of the Northeast Quarter of the Northwest Quarter, and part of the Northwest Quarter of the Northwest Quarter, Section 14, part of the Southeast Quarter of the Southeast Quarter, part of the Southwest Quarter of the Southeast Quarter, part of the Southeast Quarter of the Southwest Quarter, part of the Northeast Quarter of the Southeast Quarter, part of the Northwest Quarter of the Southeast Quarter, part of the Southeast Quarter of the Northeast Quarter, and part of the Southwest Quarter of the Northeast Quarter, Section 11, part of the Northwest Quarter of the Southwest Quarter, and part of the Southwest Quarter of the Northwest Quarter, Section 12, Township 21 North, Range 9 West, Third Principal Meridian, Town of Havana, Mason County, Illinois being more particularly described as follows: Commencing at the Northeast corner of said Section 14; thence South 89 degrees 46 minutes 51 seconds West, 690.41 feet to the Point of Beginning; thence South 15 degrees 08 minutes 03 seconds West,1,119.54 feet; thence South 19 degrees 02 minutes 48 seconds West, 100.00 feet; thence South 16degrees 10 minutes 48 seconds West, 50.00 feet; thence South 13 degrees 18 minutes 48 seconds West,100.10 feet; thence South 16 degrees 10 minutes 48 seconds West, 12.54 feet; thence South 89 degrees32 minutes 18 seconds West, 1,785.38 feet; thence South 89 degrees 32 minutes 18 seconds West,1,293.94 feet at a meander corner lying North 89 degrees 32 minutes 18 seconds East, 1.00 feet from the Southeast bank of the Illinois River; thence North 35 degrees 09 minutes 48 seconds East along a meander line, 359.78 feet; thence North 44 degrees 55 minutes 15 seconds East along a meander line,414.68 feet; thence North 48 degrees 15 minutes 41 seconds East along a meander line, 341.66 feet; thence North 43 degrees 17 minutes 43 seconds East along a meander line, 599.81 feet; thence North 30degrees 22 minutes 15 seconds East along a meander line, 99.62 feet; thence North 33 degrees 00minutes 29 seconds East along a meander line, 2,537.92 feet; thence North 34 degrees 40 minutes 00seconds East along a meander line, 1,603.18 feet to a meander corner lying North 85 degrees 16 minutes00 seconds East, 75.00 feet from the Southeast bank of the Illinois River; thence North 85 degrees 16minutes 00 seconds East, 327.51 feet; thence South 39 degrees 54 minutes 05 seconds East, 473.32feet; thence South 39 degrees 54 minutes 05 seconds East, 357.84 feet; thence South 24 degrees 55minutes 00 seconds West, 195.33 feet; thence 869.90 feet along the arc of a curve to the left having a radius of 4,770.00 feet and a long chord subtended bearing South 20 degrees 18 minutes 49 seconds West, 869.08 feet; thence South 16 degrees 33 minutes 00 seconds West, 1,903.06 feet to the Point of Beginning, together with all land lying between the Center of the Illinois River and the subject meander line.

Tract 2:

Part of the Southeast Quarter of the Southeast Quarter, and part of the Northeast Quarter of the Southeast Quarter, Section 11, the Northeast Quarter of the Southwest Quarter, the Southeast Quarter of the Southwest Quarter, the Southwest Quarter of the Southwest Quarter, part of the Northwest Quarter of the Southwest Quarter, part of the Southeast Quarter of the Northwest Quarter, and part of the Southwest Quarter of the Northwest Quarter, Section 12, Township 21 North, Range 9 West, Third Principal Meridian, Town of Havana, Mason County, Illinois being more particularly described as follows: Commencing at the West Quarter corner of said Section 12; thence North 87 degrees 52 minutes 07seconds East, 252.00 feet to the Point of Beginning; thence North 24 degrees 55 minutes 00 seconds East, 112.28 feet; thence North 87 degrees 52 minutes 07 seconds East, 1,066.47 feet; thence North 49degrees 00 minutes 58 seconds East, 329.59 feet; thence North 17 degrees 50 minutes 52 seconds East,1,125.31 feet; thence North 87 degrees 38 minutes 32 seconds East, 479.13 feet; thence South 00degrees 52 minutes 48 seconds West, 260.71 feet; thence North 87 degrees 52 minutes 40 seconds East, 303.00 feet; thence North 00 degrees 52 minutes 48 seconds East, 261.96 feet; thence North 87degrees 38 minutes 32 seconds East, 22.50 feet; thence South 01 degrees 07 minutes 20 seconds West,1,363.66 feet; thence South 01 degrees 07 minutes 23 seconds West, 2,733.52 feet; thence South

89degrees 14 minutes 34 seconds West, 2,687.82 feet; thence South 89 degrees 49 minutes 16 seconds West, 606.73 feet; thence North 16 degrees 33 minutes 00 seconds East, 1,879.28 feet; thence 857.84 feet along the arc of a curve to the right having a radius of 5,690.00 feet and long chord subtended bearing North 20 degrees 18 minutes 49 seconds East, 857.03 feet; thence North 24 degrees 55 minutes 00 seconds East, 73.60 feet to the Point of Beginning.

The Orin Group, LLC.

10 Northwest Avenue, Suite 200,
Tallmadge, Ohio 44278
Phone 330-630-3937 Fax 866-486-2388
www.theoringroup.com

ALTA/ACSM Land Title Survey

DYNEGY PROJECT

Havana
15260 State Route 78, Havana, IL 62644
Mason

To: Dynegy Midwest Generation, LLC; Credit Suisse AG, Cayman Islands Branch, as Administrative Agent and Collateral Trustee, its successors and/or assigns, as their interests may appear; Chicago Title Insurance Company; The Orin Group, LLC;

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 2, 3, 4, 6(b), 7(a), 7(b)(1), 7(c), 8, 9, 11(a) , 13, 16, 17, 18, and 19 of Table A thereof. The field work was completed on August 27, 2011.

BY:
MICHAEL G. SHACKELFORD
Registration No. 3146 (Exp. 11-30-2012)
In the State of Illinois
Date of Survey: September 16, 2011
Date of Last Revision: January 19, 2012
Ref. No. 20110569-06

MICHAEL G. SHACKELFORD 3146 PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS FRANKFORT, IL.

Survey Performed By:
JOSEPH A. SCHUDT & ASSOCIATES
IL Professional Design Firm No. 184-001172
19350 South Harlem Avenue
Frankfort, IL 60423
Phone: 708-720-1000
Fax: 708-720-1065
Email: survey@jaseng.com

Commitment Legal Description

That part of fractional Section 11 and the West Half of Section 12 described as follows to wit: Beginning on the South line of said Section 11 at a point on the centerline of the Illinois River, thence East along the said South line approximately 2500 feet to the West right of way line of State Route 78, thence North 16 degrees 24 minutes East along said right of way line 1932 feet, thence Northerly along a curve on said Westerly right of way line 877.2 feet, thence North 24 degrees 32 minutes East along said right of way line 163.7 feet; thence North 40 degrees 12 minutes West approximately 365 feet to the West line of said Section 12, thence continuing along the last described course 468.94 feet to a point, thence South 85 degrees 16 minutes West approximately 600 feet to the centerline of said River, thence Southerly along the said centerline to the Place of Beginning, thence above described tract of land is shown on a plat of survey and recorded in Book 4 on Page 48 in the Mason County Recorder's Office; All that part of Section 11 lying East of Illinois Route 78, EXCEPT Hancock Cemetery and Neteler Cemetery;

The Fractional Northeast Quarter (extending Westward to the middle of the Illinois River) of the Northwest Quarter of Section 14 and the North Half of the Northeast Quarter of Section 14, EXCEPT that part thereof lying East of the West right of way line of State Issue Route No. 78;

All that part of the Southwest Quarter lying East of said Route 78 and the Northwest Quarter of Section 12 which lies Southerly and Easterly of a line described as beginning at a point on the East right of way line of Illinois Route 78 and the South right of way line of the C&IM Railroad spur track, said point being 252 feet East of the Northwest corner of the Southwest Quarter of said Section 12, thence North 87 degrees 52 minutes 07 seconds East along said South R.O.W. line 1111.95 feet to the Northeast corner of the Northwest Quarter of the Southwest Quarter of said Section 12, thence North 87 degrees 36 minutes 57 seconds East a distance of 257.54 feet of the East R.O.W. line of the said C&IM Railroad spur track, thence North 17 degrees 50 minutes 52 seconds East along said East R.O.W. line 1450.95 feet to the North line of the Southeast Quarter of the Northwest Quarter of said Section 12; thence East along said North line to the Northeast corner of the said Southeast Quarter of the Northwest Quarter, together with the right of way of the Chicago and Illinois Midland Railroad lying Northerly and Westerly of a line described as beginning at a point on the East right of way line of Illinois Route 78 and the South right of way line of the C&IM Railroad spur track, said point being 252 feet East of the Northwest corner of the Southwest Quarter of said Section 12, thence North 87 degrees 52 minutes 07 seconds East along said South R.O.W. line 1111.95 feet to the Northeast corner of the Northwest Quarter of the Southwest Quarter of said Section 12, thence North 87 degrees 36 minutes 57 seconds East, a distance of 257.54 feet to the East R.O.W. line of the said C&IM Railroad spur track, thence North 17 degrees 50 minutes 52 seconds East along said East R.O.W. line 1450.95 feet to the North line of the Southeast Quarter of the Northwest Quarter of said Section 12;

EXCEPT
therefrom the following tract of land in the said Southeast Quarter of the Northwest Quarter described as: Commencing at an iron pin found marking the Northeast corner of the Southeast Quarter of the Northwest Quarter of the aforesaid Section 12; thence South 87 degrees 36 minutes 32 seconds West along the North line of said Quarter Quarter Section Line, 22.6 feet to its intersection with the West R.O.W. line of a Township Road, the true Point of Beginning; thence South 0 degrees 52 minutes 48 seconds West along said R.O.W. line 261.96 feet to a fence post; thence South 87 degrees 32 minutes 40 seconds West 303.00 feet; thence North 0 degrees 52 minutes 48 seconds East, 260.72 feet to the North line of said Quarter Quarter Section; thence North 87 degrees 36 minutes 32 seconds East 303.07 feet to the true Point of Beginning; All of the above described real estate being situated in Township 21 North, Range 9 West of the Third Principal Meridian, Mason County, State of Illinois.

ALSO DESCRIBED AS:

New Measured Legal Description:

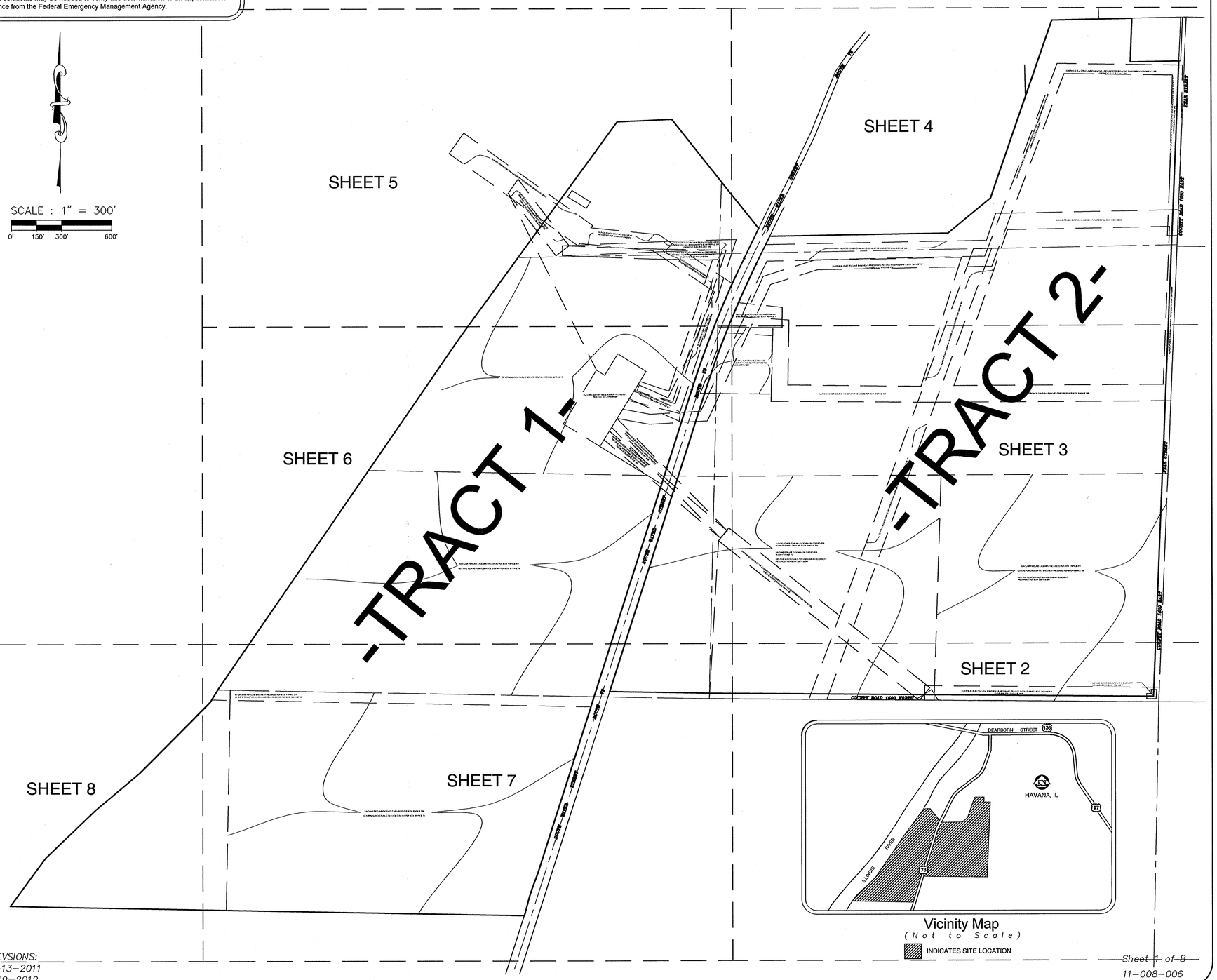
Tract 1:
The Northwest Quarter of the Northeast Quarter, part of the Northeast Quarter of the Northeast Quarter, part of the Northeast Quarter of the Northwest Quarter, and part of the Northwest Quarter of the Northwest Quarter, Section 14, part of the Southeast Quarter of the Southeast Quarter, part of the Southwest Quarter of the Southeast Quarter, part of the Southeast Quarter of the Southwest Quarter, part of the Northeast Quarter of the Southeast Quarter, part of the Northwest Quarter of the Southeast Quarter, part of the Southeast Quarter of the Northeast Quarter, and part of the Southwest Quarter of the Northeast Quarter, Section 15, part of the Northwest Quarter of the Southwest Quarter, and part of the Southwest Quarter of the Northwest Quarter, Section 12, Township 21 North, Range 9 West, Third Principal Meridian, Town of Havana, Mason County, Illinois being more particularly described as follows: Commencing at the Northeast corner of said Section 14; thence South 89 degrees 46 minutes 51 seconds West, 690.41 feet to the Point of Beginning; thence South 15 degrees 08 minutes 03 seconds West, 1,119.54 feet; thence South 19 degrees 52 minutes 48 seconds West, 100.00 feet; thence South 16 degrees 10 minutes 48 seconds West, 50.00 feet; thence South 13 degrees 18 minutes 48 seconds West, 100.10 feet; thence South 16 degrees 10 minutes 48 seconds West, 12.54 feet; thence South 89 degrees 32 minutes 18 seconds West, 1,785.39 feet; thence South 89 degrees 32 minutes 18 seconds West, 1,293.94 feet to a meander corner lying North 89 degrees 32 minutes 18 seconds East, 1.50 feet from the Southeast bank of the Illinois River; thence North 35 degrees 09 minutes 48 seconds East along a meander line, 309.78 feet; thence North 44 degrees 55 minutes 15 seconds East along a meander line, 414.68 feet; thence North 48 degrees 16 minutes 41 seconds East along a meander line, 341.66 feet; thence North 43 degrees 17 minutes 43 seconds East along a meander line, 599.81 feet; thence North 39 degrees 22 minutes 15 seconds East along a meander line, 754.62 feet; thence North 33 degrees 00 minutes 29 seconds East along a meander line, 2,537.92 feet; thence North 34 degrees 40 minutes 00 seconds East along a meander line, 1,603.18 feet to a meander corner lying North 85 degrees 16 minutes 00 seconds East, 75.00 feet from the Southeast bank of the Illinois River; thence North 85 degrees 16 minutes 00 seconds East, 327.51 feet; thence South 39 degrees 54 minutes 05 seconds East, 473.32 feet; thence South 39 degrees 54 minutes 05 seconds East, 357.84 feet; thence South 24 degrees 55 minutes 00 seconds West, 195.33 feet; thence 849.90 feet along the arc of a curve to the left having a radius of 4,770.00 feet and a long chord subtended bearing South 20 degrees 18 minutes 49 seconds West, 869.08 feet; thence South 16 degrees 33 minutes 00 seconds West, 1,903.06 feet to the Point of Beginning, together with all land lying between the Center of the Illinois River and the subject meander line.

Tract 2:
Part of the Southeast Quarter of the Southeast Quarter, and part of the Northeast Quarter of the Southeast Quarter, Section 11, the Northeast Quarter of the Southwest Quarter, the Southeast Quarter of the Southwest Quarter, the Southwest Quarter of the Southeast Quarter, part of the Northwest Quarter of the Southwest Quarter, part of the Southwest Quarter of the Northwest Quarter, and part of the Southwest Quarter of the Northwest Quarter, Section 12, Township 21 North, Range 9 West, Third Principal Meridian, Town of Havana, Mason County, Illinois being more particularly described as follows: Commencing at the West Quarter corner of said Section 12; thence North 87 degrees 52 minutes 07 seconds East, 252.00 feet to the Point of Beginning; thence North 24 degrees 55 minutes 00 seconds East, 112.28 feet; thence North 87 degrees 52 minutes 07 seconds East, 1,066.47 feet; thence North 49 degrees 00 minutes 58 seconds East, 329.59 feet; thence North 17 degrees 50 minutes 52 seconds East, 1,125.31 feet; thence North 87 degrees 36 minutes 32 seconds East, 479.13 feet;thence South 00 degrees 52 minutes 48 seconds West, 260.71 feet; thence North 87 degrees 52 minutes 40 seconds East, 303.00 feet; thence North 00 degrees 52 minutes 48 seconds East, 261.96 feet; thence North 87 degrees 36 minutes 32 seconds East, 22.60 feet; thence South 01 degrees 07 minutes 20 seconds West, 1,363.66 feet; thence South 01 degrees 07 minutes 23 seconds West, 2,733.52 feet;thence South 89 degrees 14 minutes 34 seconds West, 2,657.82 feet; thence South 89 degrees 49 minutes 16 seconds West, 606.73 feet; thence North 16 degrees 33 minutes 00 seconds East, 1,879.26 feet; thence 857.84 feet along the arc of a curve to the right having a radius of 5,650.00 feet and long chord subtended bearing North 20 degrees 18 minutes 49 seconds East, 857.03 feet; thence North 24 degrees 55 minutes 00 seconds East, 73.60 feet to the Point of Beginning.

THE ABOVE DESCRIPTION IS THE SAME PROPERTY AS DESCRIBED WITHIN CHICAGO TITLE INSURANCE COMMITMENT NUMBER 1245 450171458 PEO , BEARING AN EFFECTIVE DATE OF JULY 15, 2011.

FLOOD NOTE: By graphic plotting only, this property was found to be located within Flood Zone(s) A13-Shaded, B-Shaded and C-Unshaded of the Flood Insurance Rate Map, Community Pan No.1704630 075 B, which bears an effective date of February 1, 1984 and is partially in a Special Flood Hazard Area. No field surveying was performed to determine this zone and an elevation certificate may be needed to verify this determination or an application for a variance from the Federal Emergency Management Agency.

SCALE : 1" = 300'
0' 150' 300' 600'



REVISIONS:
10-13-2011
1-19-2012

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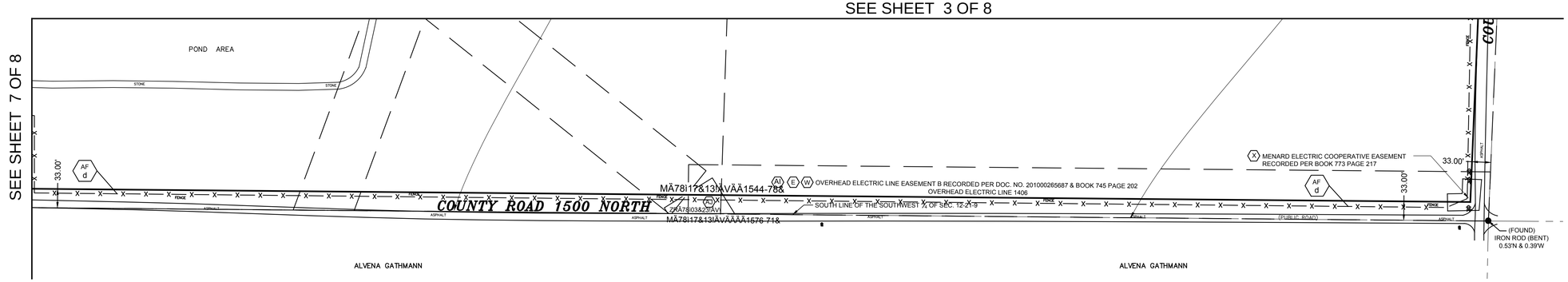
SCALE : 1" = 100'

0' 50' 100' 200'

SEE SHEET 3 OF 8

SEE SHEET 7 OF 8



Legend of Symbols & Abbreviations

- SANITARY SEWER MANHOLE
- SANITARY SEWER LINE
- WATER VALVE IN VAULT
- WATER VALVE
- WATER LINE
- FIRE HYDRANT
- STORM SEWER INLET
- STORM SEWER CATCH BASIN
- STORM SEWER MANHOLE
- STORM SEWER LINE
- POWER POLE
- TRANSFORMER BOX/PAD
- LIGHT
- FLOOD LIGHT
- TRAFFIC SIGNAL
- HAND HOLE
- TELEPHONE BOX/PEDESTAL
- GAS VALVE
- UNDERGROUND TELEPHONE CABLE
- UNDERGROUND ELECTRIC CABLE
- UNDERGROUND GAS LINE
- UNDERGROUND LIGHT CABLE
- OVERHEAD ELECTRIC LINE
- CONCRETE CURB & GUTTER
- DEPRESSED CURB
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- SIGN
- FENCE LINE
- RAILROAD TRACKS
- DECIDUOUS TREE
- EVERGREEN
- BUSH/HEDGE
- BOLLARD
- REGULAR PARKING SPACE
- HANDICAP PARKING SPACE
- SOIL BORING (SB)
- [253.00'] RECORD DISTANCE
- [N00°26'30"E] RECORD BEARING
- CORRESPONDING NOTES TO SCHEDULE B

Statement of Encroachments

AF 32

a: The chain link fence encroaches from 2.3 to 6.5 feet East of the West line of 1550 East Road into the 1550 East Road right of way.
b: The chain link fence encroaches from 0.0 to 2.3 feet East of the West line of 1550 East Road into the 1550 East Road right of way.
c: The edge of asphalt pavement encroaches from 0.0 to 20.1 feet West of the West line of 1550 East Road onto the subject property.
d: The chain link fence encroaches from 0.0 to 25.3 feet South of the North line of 1500 North Road into the 1500 North Road right of way.
f: The chain link fence encroaches from 0.0 to 14.8 feet North of the North property line on the adjacent property to the North.
h: The chain link fence encroaches from 7.2 to 8.1 feet East of the East property line into the Illinois State Highway 78 right of way.
k: The chain link fence encroaches from 0.0 to 4.2 feet East of the East property line in the Illinois State Highway 78 right of way.

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SEE SHEET 4 OF 8

SEE SHEET 6 OF 8

CENTRAL ILLINOIS PUBLIC SERVICE COMPANY EASEMENT RECORDED PER BOOK 267 PAGE 17 (L)

ILLINOIS POWER COMPANY EASEMENT RECORDED PER BOOK 303 PAGE 588 (R)(S)

POND AREA

POND AREA

POND AREA

CENTRAL ILLINOIS PUBLIC SERVICE COMPANY EASEMENT RECORDED PER BOOK 239 PAGE 417 (J)

ILLINOIS POWER COMPANY EASEMENT RECORDED PER BOOK 303 PAGE 588 (R)(S)

ILLINOIS POWER COMPANY EASEMENT RECORDED PER BOOK 135 PAGES 380 & 382, BOOK 148 PAGE 201 (N)(O)(P)

SINCLAIR PIPELINE EASEMENT RECORDED PER BOOK 174 PAGE 412 (G)

CENTRAL ILLINOIS PUBLIC SERVICE COMPANY EASEMENT RECORDED PER BOOK 239 PAGE 344 (H)

OVERHEAD ELECTRIC LINE EASEMENT B RECORDED PER DOC. NO. 201000265687 & BOOK 745 PAGE 202 (E)(W)(A135)

OVERHEAD ELECTRIC LINE 1606 & 1422

POND AREA

(G) SINCLAIR PIPELINE EASEMENT RECORDED PER BOOK 174 PAGE 412

ILLINOIS POWER COMPANY EASEMENT RECORDED PER BOOK 158 PAGE 459 (T)

CENTRAL ILLINOIS PUBLIC SERVICE COMPANY EASEMENT RECORDED PER BOOK 239 PAGE 344 (H)

ILLINOIS POWER COMPANY EASEMENT

AF C

AF C

PEAR STREET (PUBLIC ROAD) ZRA(R)68.12'A(M) RA'11:38:14'AVAAA1610-48&

RA'11:38:14'AVAAA1622-41&

COUNTY ROAD 1550 EAST (PUBLIC ROAD) ZRA(R)68.12'A(M) RA'11:38:14'AVAAA1610-48&

EAST LINE OF THE SOUTHWEST ¼ OF SEC. 12-21-9

SCALE : 1" = 100'

0' 50' 100' 200'

Legend of Symbols & Abbreviations

- SANITARY SEWER MANHOLE
- SANITARY SEWER LINE
- WATER VALVE IN VAULT
- WATER VALVE
- WATER LINE
- FIRE HYDRANT
- STORM SEWER INLET
- STORM SEWER CATCH BASIN
- STORM SEWER MANHOLE
- STORM SEWER LINE
- POWER POLE
- TRANSFORMER BOX/PAD
- LIGHT
- FLOOD LIGHT
- TRAFFIC SIGNAL
- HAND HOLE
- TELEPHONE BOX/PEDESTAL
- GAS VALVE
- UNDERGROUND TELEPHONE CABLE
- UNDERGROUND ELECTRIC CABLE
- UNDERGROUND GAS LINE
- UNDERGROUND LIGHT CABLE
- OVERHEAD ELECTRIC LINE
- CONCRETE CURB & GUTTER
- DEPRESSED CURB
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- SIGN
- FENCE LINE
- RAILROAD TRACKS
- DECIDUOUS TREE
- EVERGREEN
- BUSH/HEDGE
- BOLLARD
- REGULAR PARKING SPACE
- HANDICAP PARKING SPACE
- SOIL BORING (SB)
- [253.00'] RECORD DISTANCE
- [N00°20'30"E] RECORD BEARING
- CORRESPONDING NOTES TO SCHEDULE B

SEE SHEET 2 OF 8

The Orin Group, LLC.

10 Northwest Avenue, Suite 200,
Tallmadge, Ohio 44278
Phone 330-630-3937 Fax 866-486-2388
www.theoringroup.com

Legend of Symbols & Abbreviations

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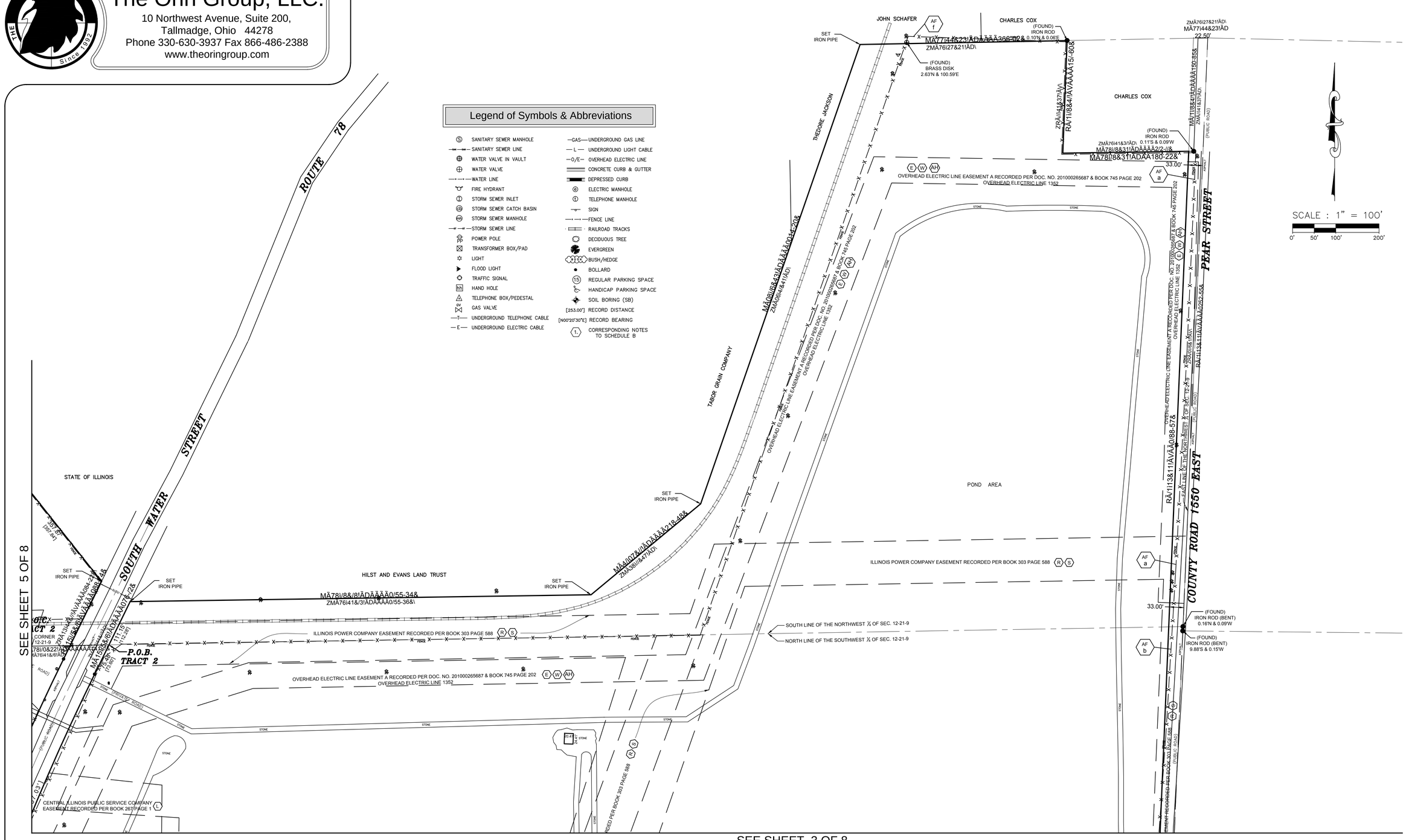

SEE SHEET 5 OF 8

SEE SHEET 3 OF 8

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Note Corresponding to Schedule B

C 5. Easement in favor of Illinois Power Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed in Book 1121, page 311 is plotted and shown on survey to the extent possible and practical.

D 6. Agreement by and between CCPS Transportation and Dynegy Midwest Generation, Inc. recorded November 22, 2004 in Book 985, page 164, and the terms, provisions and conditions contained therein is plotted and shown on survey to the extent possible and practical.

E 7. Amended and Restated Easement Agreement by and between Illinova Corporation, Dynegy Midwest Generation, Inc. and Illinois Power Company recorded July 12, 2010 as document no. 201000265687, and the terms, provisions and conditions contained therein is plotted and shown on survey to the extent possible and practical.

F 8. Easement in favor of Sinclair Pipe Line Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 174, page 341 is plotted and shown on survey to the extent possible and practical.

G 9. Easement in favor of Sinclair Pipe Line Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 174, page 412 is plotted and shown on survey to the extent possible and practical.

H 10. Easement in favor of Central Illinois Public *u* Service Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 239, page 344 is plotted and shown on survey to the extent possible and practical.

I 11. Easement in favor of Central Illinois Public Service Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 239, page 348 is plotted and shown on survey to the extent possible and practical.

J 12. Easement in favor of Central Illinois Public Service Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 239, page 417 is plotted and shown on survey to the extent possible and practical.

K 13. Easement in favor of Central Illinois Public Service Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 241, page 79 is plotted and shown on survey to the extent possible and practical.

L 14. Easement in favor of Central Illinois Public Service Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 267, page 1 is plotted and shown on survey to the extent possible and practical.

M 15. Easement in favor of Illinois Iowa Power Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 134, page 262 is not plotted or shown on survey. (Does not affect subject property.)

N 16. Easement in favor of Illinois Power Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 135, page 380 is plotted and shown on survey to the extent possible and practical.

O 17. Easement in favor of Illinois Power Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 135, page 382 is plotted and shown on survey to the extent possible and practical.

P 18. Easement in favor of Illinois Power Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 148, page 201 is plotted and shown on survey to the extent possible and practical.

R 19. Easement in favor of Illinois Power Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 148, page 521. Modification of Easement recorded in Book 303, page 588 is plotted and shown on survey to the extent possible and practical.

S 20. Easement in favor of Illinois Power Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 148, page 523. Modification of Easement recorded in Book 303, page 588 is plotted and shown on survey to the extent possible and practical.

T 21. Easement in favor of Illinois Power Company, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 158, page 459 is plotted and shown on survey to the extent possible and practical.

U 22. Subject to rights-of-ways and provisions as shown on Plat filed May 26, 1981 and recorded in Book 7, page 99 is not plotted or shown on survey (Document does not provide Right of way dimensions).

V 23. The following is provided for your information and is not a part of this Commitment/Policy.The following Environmental No Further Remediation Letter appear(s) of record, which include(s) a description of the land insured, or a part thereof: Book 716, page 54 Recorded Date: January 11, 1999 is plotted and shown on survey to the extent possible and practical.

W 24. Easement Reservations as shown in Quit Claim Deed dated October 1, 1999 and recorded October 8, 1999, in Book 745, page 202 is plotted and shown on survey to the extent possible and practical.

X 25. Easement in favor of Menard Electric Cooperative, and its/their respective successors and assigns, to install, operate and maintain all equipment necessary for the purpose of serving the land and other property, together with the right of access to said equipment, and the provisions relating thereto contained in the grant recorded/filed as Book 773, page 217 is plotted and shown on survey to the extent possible and practical.

Y 26. Rights of the public, the State of Illinois and the municipality in and to that part of the land, if any, taken or used for road purposes is plotted and shown on survey to the extent possible and practical.

Z 27. Rights of way for drainage tiles, ditches, feeders, laterals and underground pipes, if any is not plotted or shown on survey.

AA 28. Rights, if any, of the United States of America, the State of Illinois, the municipality and the public in and to that part of the land lying within the bed of the Illinois River; and the rights of other owners of land bordering on the river in respect to the water of said river is not plotted or shown on survey.

AB 29. Consequences of the meandering of the Illinois River is plotted and shown on survey to the extent possible and practical.

AF 32. Matters disclosed by ALTA Survey made by Sarko Engineering, Inc. dated June 28, 2004 and last revised July 8, 2004 as job no. 40050:
- a: The chain link fence encroaches from 2.3 to 6.5 feet East of the West line of 1550 East Road into the 1550 East Road right of way.
- b: The chain link fence encroaches from 0.0 to 2.3 feet East of the West line of 1550 East Road into the 1550 East Road right of way.
- c: The edge of asphalt pavement encroaches from 0.0 to 20.1 feet West of the West line of 1550 East Road onto the subject property.
- d: The chain link fence encroaches from 0.0 to 25.3 feet South of the North line of 1500 North Road into the 1500 North Road right of way.
- f: The chain link fence encroaches from 0.0 to 14.8 feet North of the North property line on the adjacent property to the North.
- h: The chain link fence encroaches from 7.2 to 8.1 feet East of the East property line into the Illinois State Highway 78 right of way.
- k: The chain link fence encroaches from 0.0 to 4.2 feet East of the East property line in the Illinois State Highway 78 right of way.

AG 33. Electric Switchyard Easement over, across and through the premises as disclosed by ALTA survey made by Sarko Engineering, Inc. dated June 28, 2004 and last revised July 8, 2004 as job no. 40050 is plotted and shown on survey to the extent possible and practical.

AH 34. Overhead Electric Transmission Line Easement "A" across the premises as disclosed by ALTA survey made by Sarko Engineering, Inc. dated June 28, 2004 and last revised July 8, 2004 as job no. 40050 is plotted and shown on survey to the extent possible and practical.

AI 35. Overhead Electric Transmission Line Easement "B" across the premises as disclosed by ALTA Survey made by Sarko Engineering, Inc. dated June 28, 2004 and last revised July 8, 2004 as job no. 40050 is plotted and shown on survey to the extent possible and practical.

AJ 36. Overhead Electric Transmission Line Easement "C" across the premises as disclosed by ALTA survey made by Sarko Engineering, Inc. dated June 28, 2004 and last revised July 8, 2004 as job no. 40050 is plotted and shown on survey to the extent possible and practical.

Legend of Symbols & Abbreviations

SANITARY SEWER MANHOLE	—GAS— UNDERGROUND GAS LINE
SANITARY SEWER LINE	— L — UNDERGROUND LIGHT CABLE
WATER VALVE IN VAULT	—O/E— OVERHEAD ELECTRIC LINE
WATER VALVE	CONCRETE CURB & GUTTER
WATER LINE	DEPRESSED CURB
FIRE HYDRANT	ELECTRIC MANHOLE
STORM SEWER INLET	TELEPHONE MANHOLE
STORM SEWER CATCH BASIN	SIGN
STORM SEWER MANHOLE	FENCE LINE
STORM SEWER LINE	RAILROAD TRACKS
POWER POLE	DECIDUOUS TREE
TRANSFORMER BOX/PAD	EVERGREEN
LIGHT	BUSH/HEDGE
FLOOD LIGHT	BOLLARD
TRAFFIC SIGNAL	REGULAR PARKING SPACE
HAND HOLE	HANDICAP PARKING SPACE
TELEPHONE BOX/PEDESTAL	SOIL BORING (SB)
GAS VALVE	[253.00'] RECORD DISTANCE
UNDERGROUND TELEPHONE CABLE	[N00°20'30"E] RECORD BEARING
UNDERGROUND ELECTRIC CABLE	CORRESPONDING NOTES TO SCHEDULE B

Miscellaneous Notes

1. Dimensions on the plat are expressed in feet and decimal parts thereof. Bearings are based upon Illinois State Plane Coordinates (NAD 83).
2. Information on survey based on Chicago Title Insurance Company, Commitment No. 1245 450171458 PEO with an effective date of July 15, 2011.
3. Property contains: East Property 9,304,553.23 sq. ft. (213.60 acres), West Property 8,976,307.51 sq. ft. (206.07 acres), Total Property 18,280,860.74 sq. ft. (419.67 acres), more or less.
4. Zoning: M–2 Heavy Industry District
5. There was no observable evidence of earth moving work, building construction or building additions within recent months.
6. There was no observable evidence of site used as a solid waste dump, or sump or sanitary landfill.
7. There was no observable evidence of changes in street right of way lines.
8. Parking count: 78 Regular Stalls, 0 Handicapped Stalls, 78 Total Stalls
9. There was no observable evidence of site used as a Cemetery.
10. All field measurements matched record dimensions within precision requirements of ALTA/ACSM specifications unless otherwise noted within [xxx.xx'].
11. The water boundary is subject to change due to the natural causes and it may/may not represent the actual location of the limit of the title.

Current Zoning Information

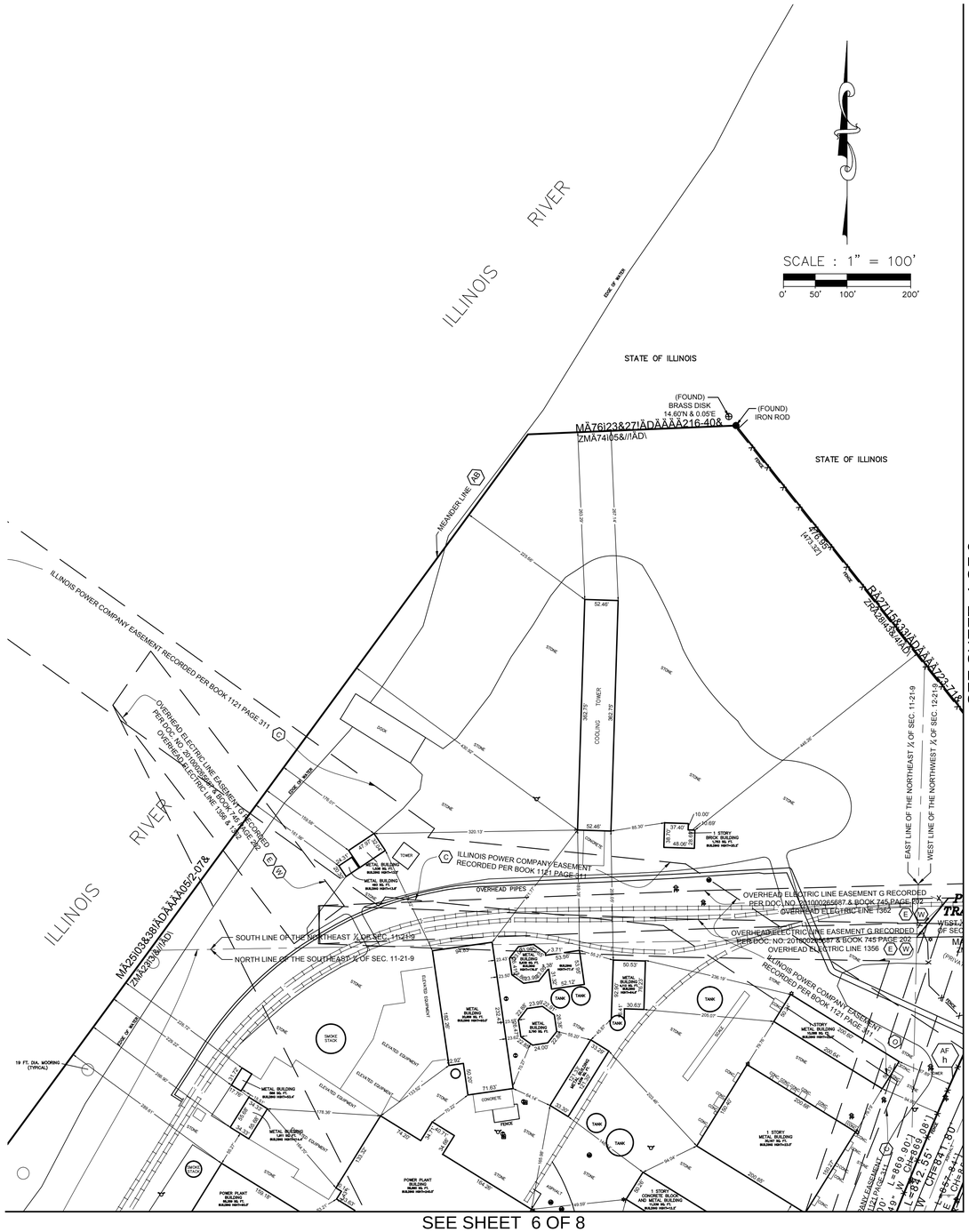
Village of Havana Zoning Ordinance
Mason County, Illinois

M-2 HEAVY INDUSTRIAL DISTRICT

Height: The maximum allowable building height in this district is 35.00 feet or 2 stories.

Setbacks in this district are:
Front Yard - Fifty (50) feet minimum.
Side Yard - Twenty (20) feet minimum..
Rear Yard - Twenty (20) feet minimum..
Street side yard - Fifty (50) feet minimum.

Bulk Restrictions:
There are no lot coverage restrictions in the district. The zoning code requires 1 stall per each employee on the maximum shift plus 1 stall per vehicle used in the enterprise.



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SCALE : 1" = 100'
0' 50' 100' 200'

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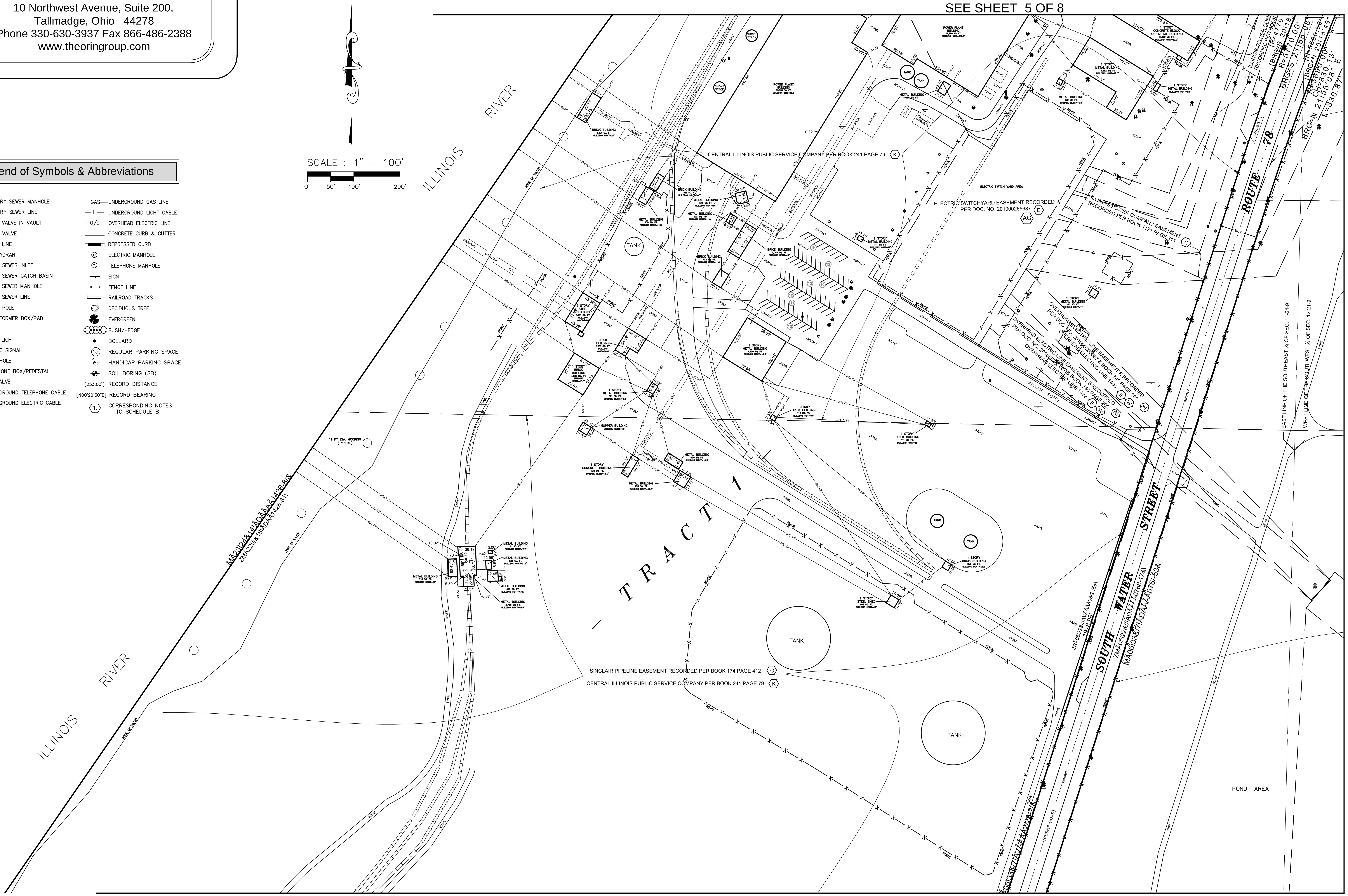
- SIGN
- FENCE LINE
- RAILROAD TRACKS
- DECIDUOUS TREE
- EVERGREEN
- BUSH/HEDGE
- BOLLARD
- (15) REGULAR PARKING SPACE
- HANDICAP PARKING SPACE
- SOIL BORING (SB)
- [253.00'] RECORD DISTANCE
- [N00°20'30"E] RECORD BEARING
- (1.) CORRESPONDING NOTES TO SCHEDULE B

SEE SHEET 5 OF 8



SEE SHEET 3 OF 8

SEE SHEET 7 OF 8

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SEE SHEET 6 OF 8

SEE SHEET 2 OF 8

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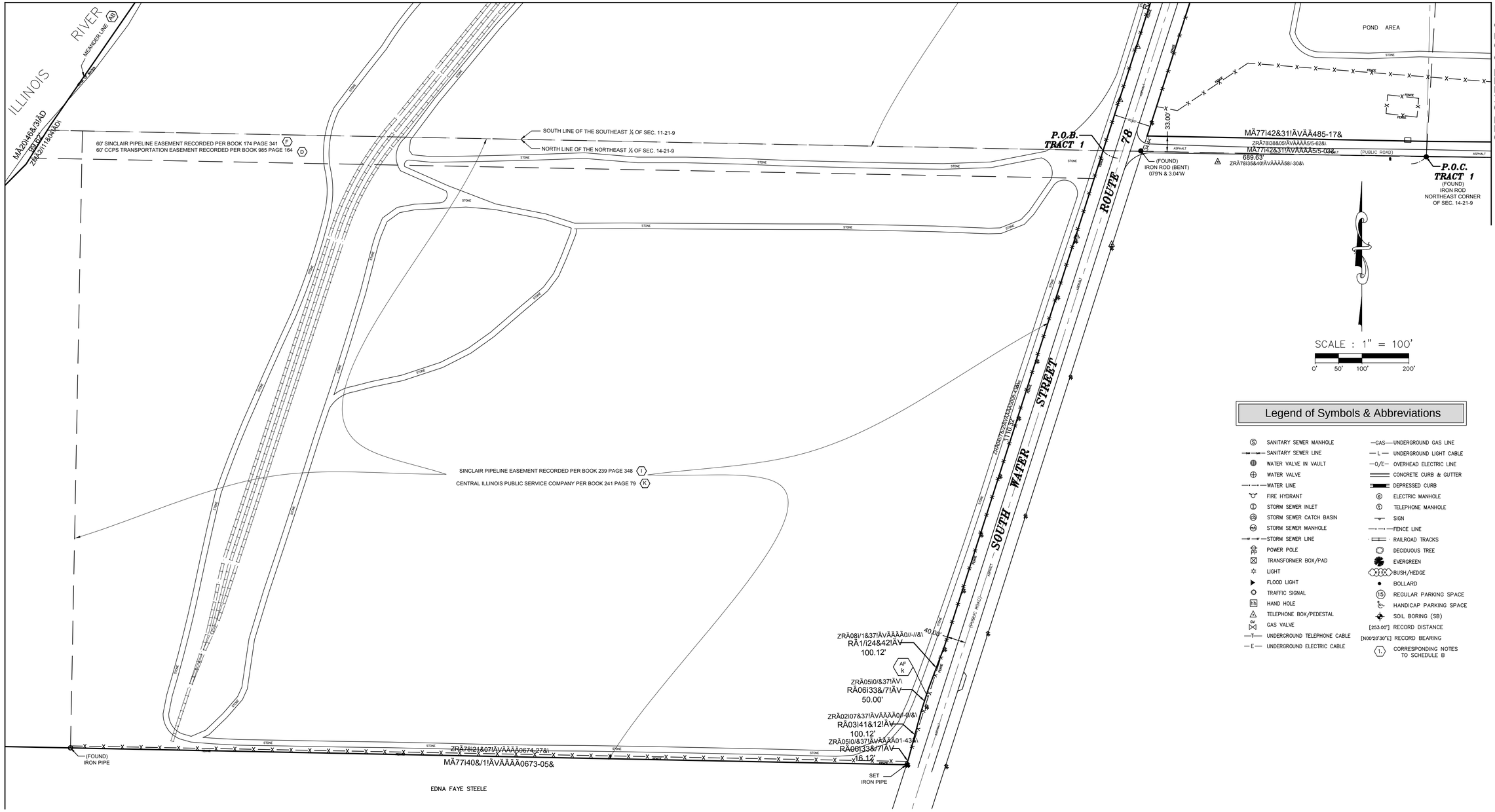

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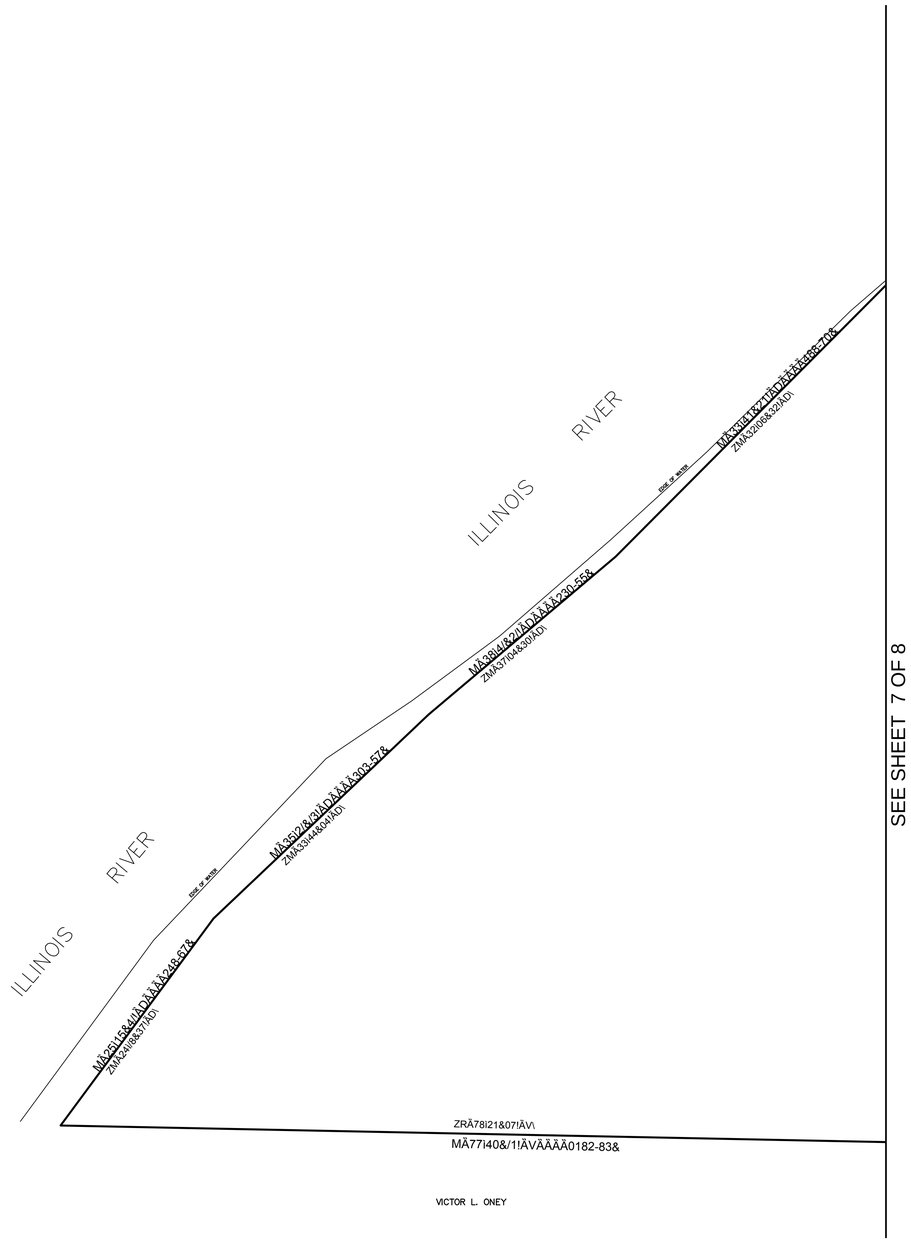
0' 50' 100' 200'



ATTACHMENT 1.7
Watershed Identification

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Havana Power Station, Havana, 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 EAP 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 EAP is located. Based upon the USGS watershed website (Science in Your Watershed - HUC 07130003 (usgs.gov)), the Havana Power Station is located within the Matanzas Lake Watershed (HUC 0713200031002). A watershed boundary map is presented as an attachment to this TM.

REVISION RECORD		
NO	DATE	DESCRIPTION
△		

NORTH

HAVANA POWER STATION
EAST ASH POND LOCATION

WATERSHED HUC
071300031002
22,395.5 AC

WATERSHED HUC
071300031001
17,928.8 AC

USGS NATIONAL
HYDROGRAPHY DATASET
WATERSHED BOUNDARY (TYP.)

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.

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

HAVANA INITIAL OPERATING PERMIT APPLICATION
IEPA CCR FORM 1 - ITEMS 1.7 AND 1.8
HAVANA, ILLINOIS

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

PROJECT NO: 21-078
LAST EDIT DATE: 2021-09-28

FIGURE NO: 1

ATTACHMENT 1.8
Watershed Acreage

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Havana Power Station, Havana, 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 EAP is located. Based upon the USGS watershed website (Science in Your Watershed - HUC 07130003 (usgs.gov)), the Havana Power Station is located within the Matanzas Lake Watershed (HUC 0713200031002) whose total acreage is 22,395.5 acres. The sub-watershed within which EAP is located has an approximate acreage of 508 acres. A sub-watershed boundary map is presented as an attachment to this TM.

REVISION RECORD		
NO	DATE	DESCRIPTION
△		

NORTH

HAVANA POWER STATION
EAST ASH POND LOCATION

APPROX. WATERSHED DRAINING TO
HAVANA POWER STATION = 507.6 AC.

WATERSHED HUC
071300031002
22,395.5 AC

WATERSHED HUC
071300031001
17,928.8 AC

USGS NATIONAL
HYDROGRAPHY DATASET
WATERSHED BOUNDARY (TYP.)

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

HAVANA POWER STATION WATERSHED
IEPA CCR FORM 1 - ITEMS 1.7 AND 1.8
HAVANA, ILLINOIS

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

PROJECT NO: 21-078
LAST EDIT DATE: 2021-09-28

FIGURE NO: 1

ATTACHMENT 1.9
Construction History

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Havana Power Station, Havana, 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 the EAP is described in AECOM, *History of Construction, Havana Power Station, East Ash Pond*, October 2016 (Pages 2 and 3). 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 EAP is described in AECOM, *History of Construction, Havana Power Station, East Ash Pond*, 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 1.9.3 – A description of the method of site preparation and construction for the EAP is described in AECOM, *History of Construction, Havana Power Station, East Ash Pond*, October 2016 (Page 9). 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 the EAP is described in AECOM, *History of Construction, Havana Power Station, East Ash Pond*, 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 1.9.5 – Drawings which satisfy the requirements of 35 IAC 845.220(a)(1)(F) may be found in Appendix B of AECOM, *History of Construction, Havana Power Station, East Ash Pond*, October 2016. Specifically the following drawings are for Cell 1: CE-HAV1-C164, C166-167, and C169-1 to 169-4 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, Havana Power Station, East Ash Pond*, October 2016 (page 5). A

staff guage (to measure the surface water level) is present in Cell 3 but is no longer operational. 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 EAP is found in AECOM, *History of Construction, Havana Power Station, East Ash Pond*, October 2016 (Figure 3 on Page 6), and a more detailed explanation in AECOM, *Hydrologic and Hydraulic Summary Report, Havana Power Station, East Ash Pond*, October 7, 2016. Copies of these reports are 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 is found in AECOM, *History of Construction, Havana Power Station, East Ash Pond*, October 2016 (Pages 8 and 9), and a more detailed explanation in AECOM, *Hydrologic and Hydraulic Summary Report, Havana Power Station, East Ash Pond*, October 7, 2016. Copies of these reports are 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 EAP is found in AECOM, *History of Construction, Havana Power Station, East Ash Pond*, October 2016 (Page 9, Appendix D). 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 Havana Power Station, Havana, 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 EAP. Attached are Safety Data Sheets (SDSs) for the Fly Ash and Bottom Ash and five (5) 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 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.

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.

HEADWATERS RESOURCES

ASTM C618 / AASHTO M295 Testing of
Havana SDA

Sample Type:	**Monthly**	**Report Date:**	**8/15/2016**
Sample Date:	**7/1 - 7/29/16**	**MTRF ID:**	**1971HA**
Sample ID:	**SDA Ash**		

Chemical Analysis			**ASTM / AASHTO Limits** Class F	Class C	**ASTM Test** Method
Silicon Dioxide (SiO2)	7.93	%			
Aluminum Oxide (Al2O3)	4.71	%			
Iron Oxide (Fe2O3)	1.36	%			
Sum of Constituents	14.00	%	70.0% min	50.0% min	D4326
Sulfur Trioxide (SO3)	41.12	%	5.0% max	5.0% max	D4326
Calcium Oxide (CaO)	39.08	%			D4326
Magnesium Oxide (MgO)	1.97	%			
Sodium Oxide (Na2O)	1.03	%			
Potassium Oxide (K2O)	0.22	%			
Available Lime	0.66	%			C25

Headwaters Resources certifies that pursuant to current ASTM C618 protocol for testing, the test data listed herein was generated by applicable ASTM methods.

Doug Rhodes, CET
Facility Manager

AASHTO R18

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2650 Old State Highway 113
Taylorsville, Georgia 30178
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HEADWATERS RESOURCES

ASTM C618 / AASHTO M295 Testing of
Havana SDA Waste Ash

Sample Type: **Report Date: 9/27/2016**

Sample Date: 8/2016 **MTRF ID: 2414HA**

Sample ID:

Chemical Analysis			ASTM / AASHTO Limits Class F	ASTM / AASHTO Limits Class C	ASTM Test Method
Silicon Dioxide (SiO2)	7.66	%			
Aluminum Oxide (Al2O3)	4.82	%			
Iron Oxide (Fe2O3)	1.25	%			
Sum of Constituents	13.73	%	70.0% min	50.0% min	D4326
Sulfur Trioxide (SO3)	40.61	%	5.0% max	5.0% max	D4326
Calcium Oxide (CaO)	40.74	%			D4326
Available CaO	1.24	%			C25

Headwaters Resources certifies that pursuant to current ASTM C618 protocol for testing, the test data listed herein was generated by applicable ASTM methods.

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ASTM C618 / AASHTO M295 Testing of Havana SDA

Sample Date: 9/1 - 9/30/16
Report Date: 10/17/2016
Sample Type: Monthly
MTRF ID: 2573HA
Sample ID: Waste Lime Ash

Chemical Analysis	Results	ASTM Limit Class F/C	AASHTO Limit Class F/C
Silicon Dioxide (SiO2)	8.80 %		
Aluminum Oxide (Al2O3)	5.27 %		
Iron Oxide (Fe2O3)	1.44 %		
Sulfur Trioxide (SO3)	38.71 %	5.0 max	5.0 max
Calcium Oxide (CaO)	39.47 %		
Magnesium Oxide (MgO)	1.87 %		
Sodium Oxide (Na2O)	0.68 %		
Potassium Oxide (K2O)	0.19 %		
Available Lime (CaO)	0.80 %		

Headwaters Resources certifies that pursuant to current ASTM C618 protocol for testing, the test data listed herein was generated by applicable ASTM methods.

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HEADWATERS RESOURCES

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Taylorsville, GA 30178
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ASTM C618 / AASHTO M295 Testing of Havana SDA Waste Ash

Sample Date: 10/3 - 10/31/16 **Report Date:** 11/16/2016

Sample Type: Monthly **MTRF ID:** 2842HA

Sample ID:

Chemical Analysis	Results	ASTM Limit Class F/C	AASHTO Limit Class F/C
Silicon Dioxide (SiO2)	10.75 %		
Aluminum Oxide (Al2O3)	6.03 %		
Iron Oxide (Fe2O3)	1.72 %		
Sulfur Trioxide (SO3)	36.28 %	5.0 max	5.0 max
Calcium Oxide (CaO)	38.12 %		
Magnesium Oxide (MgO)	2.18 %		
Sodium Oxide (Na2O)	0.87 %		
Potassium Oxide (K2O)	0.23 %		
Available Lime (CaO)	0.30 %		

Headwaters Resources certifies that pursuant to current ASTM C618 protocol for testing, the test data listed herein was generated by applicable ASTM methods.

Doug Rhodes, CET
Facility Manager

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HEADWATERS RESOURCES

Materials Testing & Research Facility
2650 Old State Hwy 113
Taylorsville, GA 30178
770-684-0102

ASTM C618 / AASHTO M295 Testing of Havana SDA Waste

Sample Date: 11/1 - 11/30/16 **Report Date:** 12/12/2016

Sample Type: Monthly **MTRF ID:** 3127HA

Sample ID:

Chemical Analysis	Results		ASTM Limit Class F/C	AASHTO Limit Class F/C
Silicon Dioxide (SiO2)	7.42	%		
Aluminum Oxide (Al2O3)	4.67	%		
Iron Oxide (Fe2O3)	1.27	%		
Sum (SiO2+Al2O3+Fe2O3)	13.36	%	70.0/50.0 min	70.0/50.0 min
Sulfur Trioxide (SO3)	41.68	%	5.0 max	5.0 max
Calcium Oxide (CaO)	38.89	%		
Magnesium Oxide (MgO)	1.86	%		
Sodium Oxide (Na2O)	0.76	%		
Potassium Oxide (K2O)	0.17	%		
Available Lime (CaO)	0.92	%		

Headwaters Resources certifies that pursuant to current ASTM C618 protocol for testing, the test data listed herein was generated by applicable ASTM methods.

Doug Rhodes, CET
Facility Manager

AASHTO R18

ATTACHMENT 3.1
Demonstrations and Certifications

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Havana Power Station, Havana, IL

Date: October 29, 2021
Attachment: IEPA Form CCR 2E
Section: 3 – Demonstrations and Certifications (35 IAC 845(d)(2)(D)
Item No.: 3.1 – Demonstration and/or explanation that EAP, as built, meets, or fails to meet, the location standards.

NOTES

This attachment describes the items required under Section 3, Item 3.1.

Item 3.1 requires either a demonstration or an explanation that meets or fails to meet the five (5) conditions associated with the Location Restriction Standards in 35 IAC 845.230(d)(2)(D). The five conditions are discussed below.

Item 3.1.1 – The East Ash Pond complex (EAPc) including all three (3) CCR units (Cells 1 through 3) and the stormwater pond (cell 4 – not a CCR unit), as built, meets, or fails to meet the location restriction standard for placement above the uppermost aquifer. Based upon the Haley & Aldrich (H&A) demonstration (Haley & Aldrick, *Location Restriction Demonstration – Placement Above Uppermost Aquifer, East Ash Pond, Havana Power Station, Havana, Illinois*, October 16, 2018), EAPc fails to meet the placement above the uppermost aquifer. 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 3.1.2 – The EAPc, as built, is or is not located within a wetland. Based upon the H&A demonstration (Haley & Aldrick, *Location Restriction Demonstration – Wetland Areas, East Ash Pond, Havana Power Station, Havana, Illinois*, October 16, 2018), the EAPc is not located within a wetland. 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 3.1.3 – The EAPc, as built, is or is not located within 200 feet of an active fault or fault damage zone. Based upon the H&A demonstration (Haley & Aldrick, *Location Restriction Demonstration – Fault Areas, East Ash Pond, Havana Power Station, Havana, Illinois*, October 16, 2018), the EAPc is not located within 200 feet of an active fault or fault damage zone. 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 3.1.4 – – The EAPc, as built, is or is not located within a seismic impact zone. Based upon the H&A demonstration (Haley & Aldrick, *Location Restriction Demonstration – Seismic Impact Zone, East Ash Pond, Havana Power Station, Havana, Illinois*, October 16, 2018), the EAPc is not located within a seismic impact

zone. 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 3.1.5 – The EAPc, as built, is or is not located within an unstable area. Based upon the H&A demonstration (Haley & Aldrick, *Location Restriction Demonstration – Fault Areas, East Ash Pond, Havana Power Station, Havana, Illinois*, October 16, 2018), the EAPc is not located within an unstable area including an area with the potential for significant differential settlement due to liquefaction, is in an area with a high landslide susceptibility and low incidence, although detailed Illinois State Geologic Survey indicates there has not been a documented landslide occurrence at or near EAP, and there are no documented surface or subsurface anthropogenic activities indicative of creating an unstable impoundment foundation. A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

A review of the FEMA National Flood Hazard Layer Viewer (https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-84.71554006408678,39.809102592455126,-84.56190313171393,39.8750045445158) indicates that the location of the EAPc is located within a Zone X floodway as defined by FEMA. The two (2) FIRM maps (17125C0112D and 17125C0125D) and two (2) FIRMETE maps (associated with their respective FIRM maps) are attached to this TM.

Haley & Aldrick prepared an evaluation document (Haley & Aldrick, *Location Restriction Evaluation – East Ash Pond, Havana Power Station, Havana, Illinois*, October 12, 2018) incorporating all five Location Restrictions. Based upon completion of this evaluation Haley & Aldrich concluded that the EAPc was found to satisfy four (4) of the five (5) location restriction criteria. A copy of this report is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or flood plain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or flood plain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

In the State of Illinois, any portion of a stream or watercourse that lies within the **floodway fringe** of a studied (AE) stream may have a state regulated floodway. The FIRM may not depict these state regulated floodways.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the model computed widths listed in the Floodway Data table in the Flood Insurance Study report.

Multiple **topographic sources** may have been used in the delineation of Special Flood Hazard Areas. See Flood Insurance Study report for details on source resolution and geographic extent.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services, NOAA, N/NGS12
National Geodetic Survey SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey. Digital orthoimagery with a spatial resolution of 0.5 meter ground sample distance were photogrammetrically compiled from aerial photography acquired during the leaf-off period of spring 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The Special Flood Hazard Areas and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

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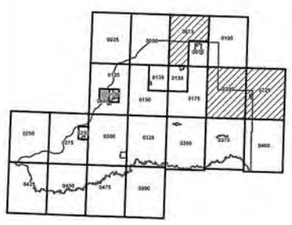
If you have **questions about this map**, how to order products or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

PANEL INDEX



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

A — A	Cross section line
23 — 23	Transect line
45° 02' 08", 93° 02' 12"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4992000 N	1000-meter Universal Transverse Mercator grid values, zone 16
1565000 FT	5000-foot grid tick: Illinois State Plane West Coordinate System, 3601 zone (FIPSZONE 1202) Transverse Mercator
DX5510	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
JANUARY 6, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0112D

FIRM
FLOOD INSURANCE RATE MAP
MASON COUNTY, ILLINOIS
AND INCORPORATED AREAS

PANEL 112 OF 500
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAVANA, CITY OF	170465	0112	D
MASON COUNTY	170463	0112	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
17125C0112D
EFFECTIVE DATE
JANUARY 6, 2012

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or flood plain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or flood plain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

In the State of Illinois, any portion of a stream or watercourse that lies within the **floodway fringe** of a studied (AE) stream may have a state regulated floodway. The FIRM may not depict these state regulated floodways.

Floodways restricted by anthropogenic features such as bridges and culverts are drawn to reflect natural conditions and may not agree with the model computed widths listed in the Floodway Data table in the Flood Insurance Study report.

Multiple **topographic sources** may have been used in the delineation of Special Flood Hazard Areas. See Flood Insurance Study report for details on source resolution and geographic extent.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services, NOAA, N/NGS12
National Geodetic Survey SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the United States Geological Survey. Digital orthoimagery with a spatial resolution of 0.5 meter ground sample distance were photogrammetrically compiled from aerial photography acquired during the leaf-off period of spring 2005.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The Special Flood Hazard Areas and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

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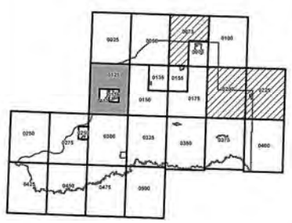
PANEL INDEX



Panel Not Printed

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4991000 N — 1000-meter Universal Transverse Mercator grid values, zone 16
- 1565000 FT — 5000-foot grid ticks: Illinois State Plane West Coordinate System, 3601 zone (FIPSZONE 1202) Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
JANUARY 6, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'

1000 0 2000 4000 FEET
300 0 600 1200 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0125D

FIRM
FLOOD INSURANCE RATE MAP
MASON COUNTY, ILLINOIS
AND INCORPORATED AREAS

PANEL 125 OF 500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HAVANA, CITY OF	170465	0125	D
MASON COUNTY	170463	0125	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
17125C0125D
EFFECTIVE DATE
JANUARY 6, 2012

Federal Emergency Management Agency

National Flood Hazard Layer FIRMette

FEMA

90°4'22"W 40°17'16"N

90°3'45"W 40°16'48"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/29/2021 at 4:32 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

National Flood Hazard Layer FIRMette

FEMA

90°4'47"W 40°16'52"N

90°4'9"W 40°16'25"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
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OTHER FEATURES
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- Digital Data Available
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This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

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Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Havana Power Station, Havana, 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 three (3) CCR units (Cells 1 through 3) and the stormwater pond (identified as Cell 4) which comprise the East Ash Pond complex (EAPc). 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, *Initial Stability Assessment for East Ash Pond at Havana 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/).

Item 4.1.3 – The Emergency Action Plan, previously in place before 2017, was revised by Stantec in April 2017 (Revision No. 1) and certified by an Illinois-registered Professional Engineer. An updated Emergency Action Plan (Revision No. 2), with these 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, previously in place since 2015, was prepared by AECOM (AECOM, *CCR Fugitive Dust Control Plan for Havana Power Station*, October 2015). This Plan had been certified by an Illinois-registered Professional Engineer. An updated Fugitive Dust Control Plan (identified as Revision No. 1) has been prepared with changes made to meet 35 IAC § 845.500(b)(7) and certified by an Illinois-registered Professional Engineer. 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 – AECOM prepared a liner design criteria report (AECOM, *CCR Certification Report: Liner Design Criteria Evaluation for East Ash Pond at Havana Power Station*, October 2016) for the East Ash Pond complex. The report indicated the following for the three (3) CCR units (Cells 1 through 4) and the stormwater pond (identified as Cell 4):

- Cell 1 and the stormwater pond were lined with 3-feet of compacted clay.
- Cells 2 and 3 were constructed of 1-foot of compacted clay underlying a 45-mil polypropylene geomembrane liner.

This liner criteria evaluation indicates that the East Ash Pond complex does not meet the requirements for either 35 IAC § 845.400 or 40 CFR § 257.71(a)(1). 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 – Finch 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 EAPc's Owner's (Finch 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 EAPc meets the classification for a **Category 2** Closure Prioritization. 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.*

Finch 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. See the response to Item 4.1.8 above. Therefore, the EAPc does 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).*

Based upon the Haley & Aldrich CCR Rule Location Restrictions Evaluation Memorandum, the EAPc, in its most restrictive location, has the base of the deepest cell to be less than 5 feet (1.52 meters) above the upper limit of the uppermost aquifer. This condition thus fails the separation criteria defined in 40 CFR § 257.60(a)) and 35 IAC § 845.700(g)(5)(B) which refers to §845.300(a). Therefore, the EAPc fails this criterion and represents a threat to human health and the environment. Therefore, the EAPc meets the conditions of a Category 2 closure.

Item 4.1.1
Section 845.130

There are three (3) CCR units (Cells 1 through 3) and a stormwater pond (identified as Cell 4) that comprises the East Ash Pond complex. Below are photographs of the markers at each cell location.

Cell 1

Cell 2

Cell 3

Stormwater Pond (identified as Cell 4)

Item 4.1.9
Section 845.530

Section 1.0 – Company Information and Key Contacts

Company Name:	Finch Development LLC		
Address:	15260 North State Road 78, Havana, Illinois 62644		
Site-Specific Safety Plan (SSSP) Approved by:		David Messer	Approval Date:8/31/2021
Project Manager: TBD		**Project Manager Phone #**: TBD	
Site Supervisor: TBD		**Site Supervisor Cell Phone #**: TBD	
Site Safety Officer: TBD		**Site Safety Officer Cell Phone #**: TBD	
Construction Manager: TBD		**Construction Manager Phone #**: TBD	
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

15260 N. State Road 78, Havana, Illinois 62644

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

Subcontractor Name	Tasks/Role	Contact
FB Remediation LLC	Closure of Surface Impoundment	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.

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	☐	
Power 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)

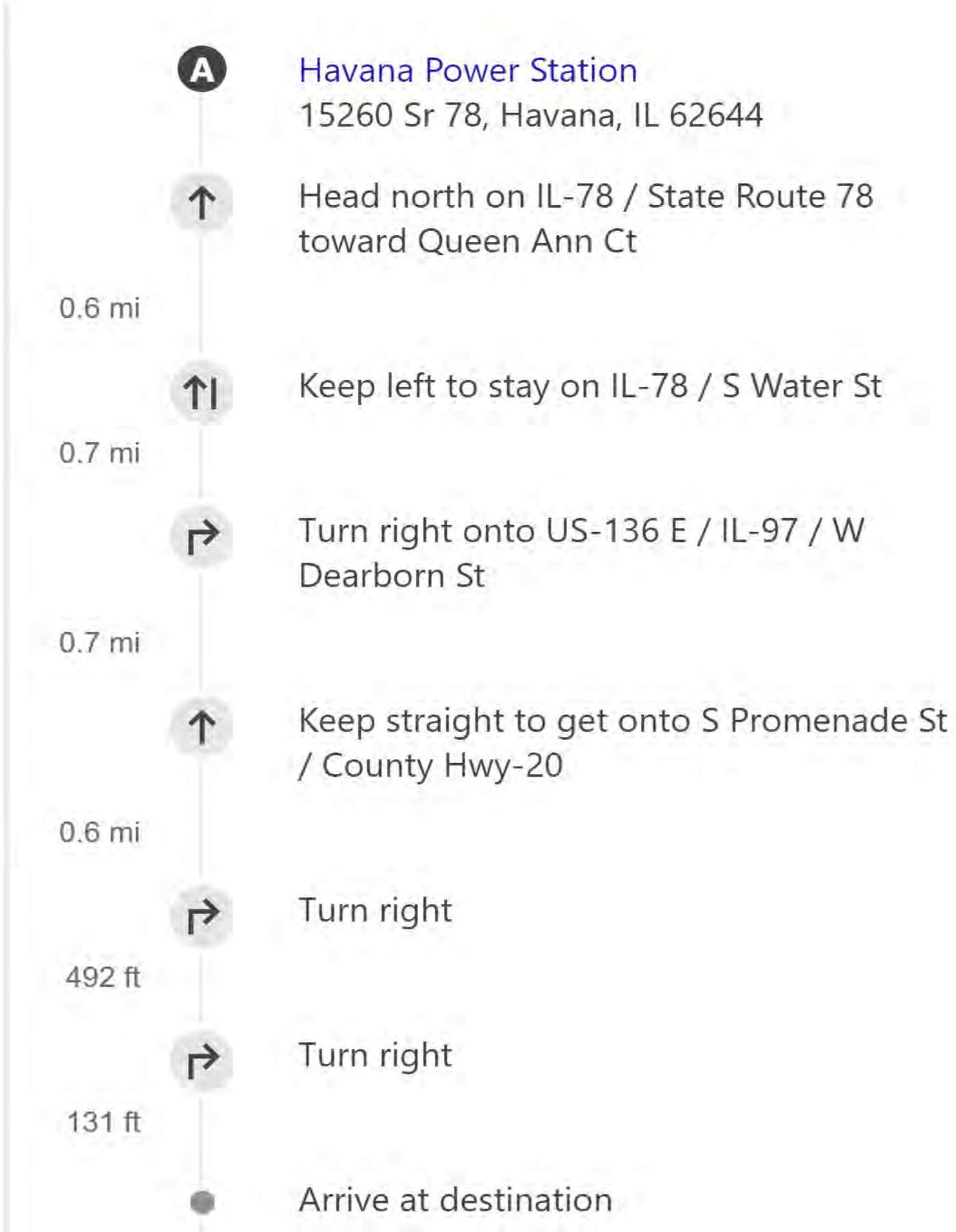
Section 7.0 – Injury Reporting

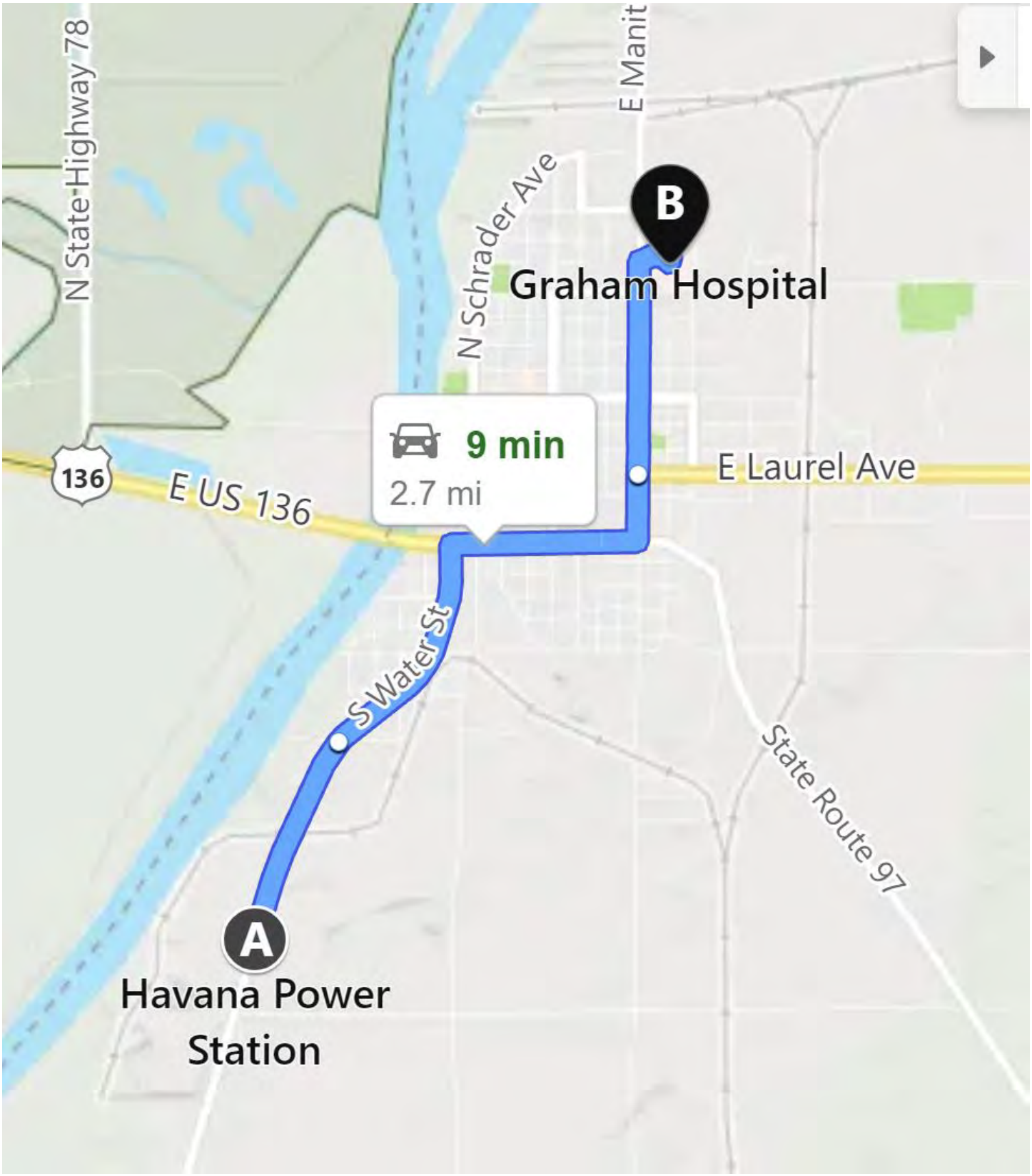
All employees and subs will report all mishaps and close calls immediately to their supervisor. All injury accidents that require offsite care must be reported within 1 hour. An initial report must be submitted to the safety department within 8 hours. A detailed follow-up report including a company incident 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.

Directions to Hospital





- **Graham Hospital – (309) 649-6867**
- **Fire Department- 911**
- **Graham Police Department- 911**
- **Illinois Environmental Protection Agency- (217) 782-3397**
- **Illinois OSHA- (312) 793-7308**

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 per 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: Electrical Cutovers and Work on Electrical Equipment

HAZARDS	CONTROLS
Contact with energized parts	• All workers working on energized equipment will wear Arc-Flash protective clothing per NFPA 70E. The PPE will consist of flame retardant clothing or flash suits, eye, face, hand, head, and foot protection as necessary. A flash boundary will be established and only trained and authorized individuals will be allowed in the flash boundary. • Keep all covers and barriers guarding live parts in place except when required to be removed for testing. • Place grounding jumpers adequate to clear fault currents on equipment where practical.

HAZARDS	CONTROLS
Inadvertent start-up of electrical equipment	• Review Lock-out/Tag-out (LOTO) procedures with workers before starting work. • De-energize electrical equipment and apply approved red locks and tags per company Lockout/Tag-out procedure. • All employees are instructed to verify lockouts are in place and equipment is de-energized before beginning any work.

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

HAZARDS	CONTROLS
Slips, trips, and falls	• Maintain three points of contact when entering and exiting vehicles • Know your surrounding at all times (ice, snow, slippery conditions)
Lawn Mower Rollover Hazards	• Always read manufactures 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).
Operating pickup truck or car on site	• Always move over for heavy equipment if it is safe to do so. • Maintain good communications at all times with equipment operators and let them know where you are and what your intentions are. • Always back into a parking spot and use headlights when moving on site.
Exceeding posted speed limit on-site	• Always maintain posted speed limit on-site to eliminate fugitive dust and be able to maintain control of the vehicle you are operating.
Pedestrian and Vehicle traffic entering the work area	• Communicate with other employees where you will be operating. Maintain eye contact with other operators and pedestrians within your work zone.
Flying debris from the use of a lawnmower	• Wear safety glasses at all times when operating the mower. Do not allow any other workers in the area that you are cutting in.

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.

HAZARDS	CONTROLS
	• 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.
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. • Maintain a safe operating speed when driving through parking areas, and maintain eye contact with pedestrians within your operating area.
Struck by Vehicles.	• Signs shall be used to slow/control vehicular traffic. • All employees are required to wear high-visibility shirts or vests. • Only trained and authorized employees will operate the equipment.

Task: Drone Operator

HAZARDS	CONTROLS
Setting up targets Operating Drone	• Know your surroundings before laying out ground targets. • Let operators know where you are going to set targets and the area of operating the drone. • Know where powerlines are located. • Document and communicate any changing conditions.

Task: Operating Heavy Equipment

HAZARDS	CONTROLS
Slips, trips, falls	• Maintain three points of contact at all times when entering and exiting equipment. • Know your surroundings (ground conditions). • Know the hazards associated with changing weather conditions (rain, sleet, snow, ice) enter these conditions on the JSEA. • Watch where you are walking. • Do not run or rush.
Crushing Hazards (Pinch Points) Work Zone Hazards	• Do not place hands or feet in areas of possible crushing hazards. • Maintain a safe speed, at all times while operating equipment. • Maintain eye contact with pedestrians walking in your work zone. • Always look well into your work zone for hazards (objects sticking out of the coal ash piles). • Always maintain good communications with the operator (loader, excavator) that is loading your haul truck. • Maintain a clean windshield and mirrors throughout the workday. • When approaching an intersection, slow down and come to a complete stop. Only proceed when confident no other traffic is approaching. • Report and document any changing conditions within the work zone.
Water Truck Operator	• Maintain good communications with other operators. • Maintain a safe speed while dumping water • When filling a truck with water, maintain three points of contact when climbing on a truck. • Always watch for changing conditions (slippery surfaces, ice accumulations). • Water in the tank will move back and forth when stopping and moving forward, slow down much before stopping.

Task: Demolition

HAZARDS	CONTROLS
Asbestos and Lead	• Asbestos and lead reports will be reviewed and all hazardous materials will be identified before the start of any demolition work. • Asbestos and lead work plans will be submitted detailing work procedures, controls, and PPE for all work that may disturb asbestos and lead-containing materials.
Fire	• All utilities shall be located, shut off, capped, or otherwise controlled. • Fire extinguishers shall be available on-site and Emergency Services numbers shall be posted.
Contact with energized utilities	• Review demo plan and verify all utilities have been de-energized before any demolition work. • Follow Lock-out/Tag-out (LOTO) procedures as described in the company LOTO program.

HAZARDS	CONTROLS
Cutting/Welding Operations	• During welding/cutting operations, proper welding gloves and a full-face, and UV-ray protective shield shall be worn to prevent injuries to the operator. • When practical, the object to be welded, cut, or heated will be moved to a designated safe location away from flammable liquids and other combustibles. If the object cannot be moved, positive means will be taken to confine the heat, sparks, and slag. • A 20 lb., ABC dry chemical extinguisher (or equivalent) will be immediately available in the work area and must be maintained in a state of readiness for instant use. • Garbage and trash shall not be allowed to accumulate on the premises, as they may be ignited by sparks or slag. • When welding is being performed on a higher level where there is an exposure to workers below, the area directly below the welding shall be cleared and marked as a "Do Not Enter Zone", to protect any workers passing underneath from being hit by sparks or slag. • A fire watch shall be maintained at least 30 minutes after the hot work is completed. • Welding/cutting operations shall be performed by trained, certified workers.
Eye injury from projectiles	• All workers performing demolition activities will wear safety glasses and a face shield as required.
Cuts, scraps, and punctures	• All workers will wear leather glove protection and appropriate clothing during demolition activities.
Inhalation of dust.	• Water will be used to minimize dust generation. • All workers will wear an air-purifying respirator or dust mask as necessary during demolition.
Exposure to silica dust	• Employees shall wear hard hats, high-impact safety glasses, heavy-duty gloves, and earplugs. If any visible dust is present, an appropriate respirator as determined by an exposure analysis will be required. • Use watering to keep down the dust, and have dust masks available for workers who might request them. • Develop written exposure control (if applicable). Must contain the following information: - A description of the tasks in the workplace that involve exposure to respirable crystalline silica. - A description of the engineering controls, work, practices, and respiratory protection used to limit employee exposure to respirable crystalline silica for each task. - A description of the housekeeping measures used to limit employee exposure. - A description of the procedures used to restrict access to work areas, when necessary, to minimize the number of employees exposed to respirable crystalline silica and their level of exposure, including exposures generated by others.

HAZARDS	CONTROLS
	- Designate a competent person. • Follow Table 1 - **Specified Exposure Control Methods When Working With Materials Containing Crystalline Silica**. • Train all employees with potential exposure to silica, in the exposure control plan contents, and in the following topics: Health hazards associated with exposure to respirable silica; Specific tasks that could result in exposure; Specific control measures including engineering, work practices and respirators and; contents of the standard. Use watering to keep down the dust, and have dust masks available for workers who might request them. • Use watering to keep down the dust, and have dust masks available for workers who might request them. • Alert other trades working downwind from the operation and, if possible, try to complete your operation when it will impact as few workers as possible.
Collapse of structure	• The Competent Person shall survey the integrity of the structure before the start of demolition operations. • All required permits shall be obtained. • Before the start of the demolition, abatement of all asbestos or lead, by a licensed removal company, will be completed. • Systematically proceed with demolition, working from the top of the structure downwards. • Any worker signaling the operator shall be in plain sight of the operator at all times. • All workers shall remain at least 8-10 feet from the equipment used to perform the demolition. Only workers necessary to the operation shall be permitted in the work zone during this operation. • Barrels and Danger tape will be used to demarcate the demolition zone. • Debris removal will not begin until the removal can be safely performed without exposure to structural collapse or falling debris. • Structural framing members shall not be removed until all stories above them have been demolished and removed. • Workers shall be instructed to possess a heightened awareness of their surroundings during the demolition and removal of debris.
Burns, fire from a gas torch (used to heat joints)	• Ensure regulator and hose connections are sound and well maintained. • Point gas torch away from personnel when lighting and when alight. • Do not leave the torch unattended when the gas torch is alight. • Have a monthly inspected and annually serviced fully charged fire extinguisher in the immediate work area. • Crew members must be familiar with the location of the nearest extinguishers and trained in their use. • Maintain fire watch for 30 minutes after torch activities.

HAZARDS	CONTROLS
Struck by machinery	• Wear high visibility vest. • Check for oncoming vehicles or plants before moving. • Remain alert to vehicle and plant movements around you. • Do not walk behind reversing plant. • Remain clear of paver and trucks if your presence is not required. • Do not walk between reversing trucks and the paver. • Remain in the operator's view. • Do not rely on operators to see you, remain vigilant. • Do not use a mobile phone when operating equipment.

"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-hour 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

- 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.

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 Finch Development 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

ATTACHMENT 5.1
Groundwater Monitoring

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Cells 1, 2, and 3 East Ash Pond Complex
Former Havana Power Station, Havana, IL

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

NOTES

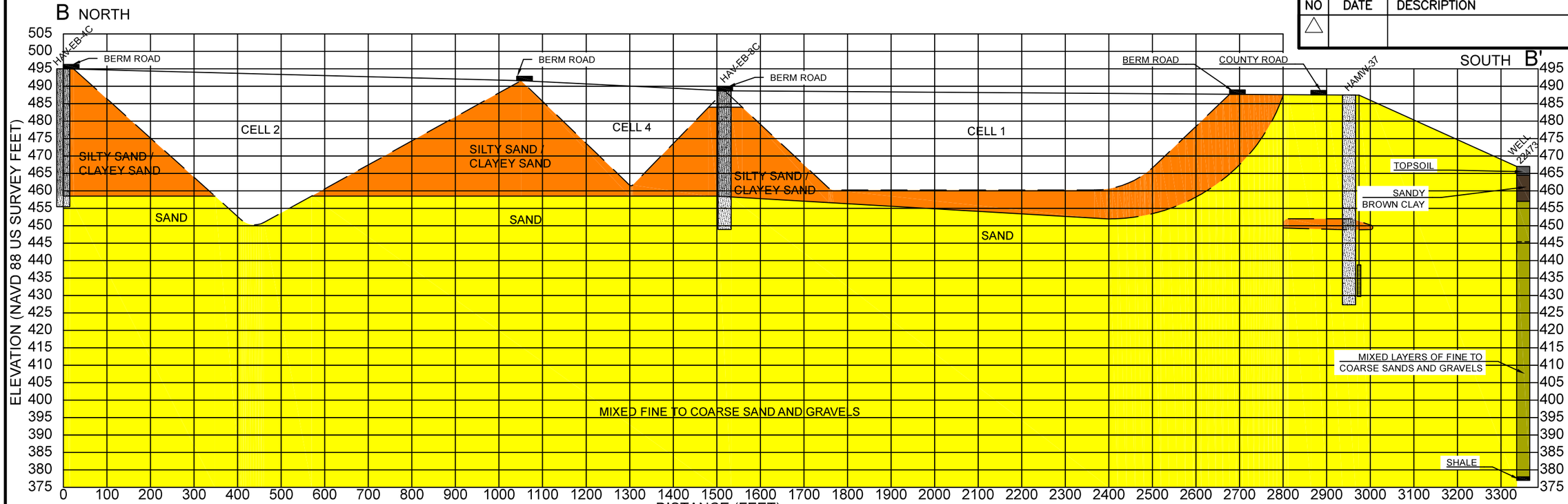
This attachment describes the items required under Section 5.1.

Item 5.1 requires the submission of groundwater monitoring information including hydrogeological characterization and details of the groundwater monitoring program. The CCR units at the Site include the impoundments of the East Ash Pond complex that consists of three (3) CCR units (Cells 1, 2, and 3) and a non-CCR unit (Cell 4) that is utilized in stormwater management and is regulated by an NPDES Permit. The Site 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 three CCR units (Cells 1, 2, and 3). The most comprehensive site assessment for the former Havana Power Station including the East Ash Pond complex is provided in the document entitled *Hydrogelogic Monitoring Plan* by Natural Resource Technology (NRT) (October 17, 2017) that is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/). An updated cross-section extending to nearly 100 feet below ground surface (bgs), as listed as a requirement to 35 Ill. Adm Code 845.620, is provided in a separate figure showing both the cross-section lithology and locations of wells. This cross-section modification is attached to this Technical Memorandum as is the additional soil boring log information used to create the revised cross-section.

The *Hydrogeologic Monitoring Plan* (NRT, October 27, 2017A) also 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, B) details the statistical procedures incorporated into the monitoring plan as adopted by the new owners, Finch Development LLC, and this *Statistical Analysis Plan* is available on the federal CCR website (https://ccrhavana.com/) and the Illinois CCR website (https://illinois.ccrhavana.com/).

The *2020 Annual Groundwater Monitoring and Corrective Action Assessment Report* (Aton) is provided in the website addresses, and the results of the 2020 annual report show that there were no Statistically Significant Levels of Appendix IV constituents. The requirement of 35 Ill. Adm. Code 845.650(b) to include a minimum of eight independent samples for each background and downgradient well is provided in the monitoring report.

REVISION RECORD		
NO	DATE	DESCRIPTION
△		



LEGEND

- GEOLOGICAL CONTACT. DASHED WHERE INFERRED
- SAND
- SILTY SAND/CLAYEY SAND
- SAND
- SILTY SAND/CLAYEY SAND
- SCREEN

NOTES:

1. COORDINATE SYSTEM IS NAD 83 ILLINOIS STATE PLANE WEST, US SURVEY FOOT.
2. VERTICAL DATUM IS NAVD 88.
3. AERIAL PHOTOGRAPHY SOURCE: GOOGLE EARTH
4. THIS FIGURE WAS RECREATED FROM AN ORIGINAL FIGURE PREPARED BY NATURAL RESOURCE TECHNOLOGY, DATED SEPTEMBER 2017. PROFILES, ALIGNMENTS, AND WELL LOCATIONS ARE APPROXIMATE.
5. WELL 22473 HAS BEEN ADDED TO THE FIGURE. WELL 22473 INFORMATION PROVIDED BY ATON IN AUGUST 2021.

PROFILE VERTICAL SCALE IN FEET: 30

PROFILE HORIZONTAL SCALE IN FEET: 240

VERTICAL EXAGERATION = 8

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

HAVANA HYDROGEOLOGIC MONITORING PLAN
HAVANA-DYNEGY 2285
HAVANA, ILLINOIS
GEOLOGIC CROSS SECTION B-B'

DRAWN BY: ZAC CHKD BY: JSF DWG SCALE: -

PROJECT NO: 21-078
LAST EDIT DATE: 2021-08-30

FIGURE NO: 1

DMG
CS880641

ILLINOIS POWER

SPECIFICATIONS FOR A NEW ASH DISPOSAL FACILITY

EAST - POND 1
HAVANA POWER PLANT

W.O. 25408

PHASE 1
MAY, 1991

APPROVED FOR CONSTRUCTION
Released By: David M. Hoskins
Approved By: G.T. Justice

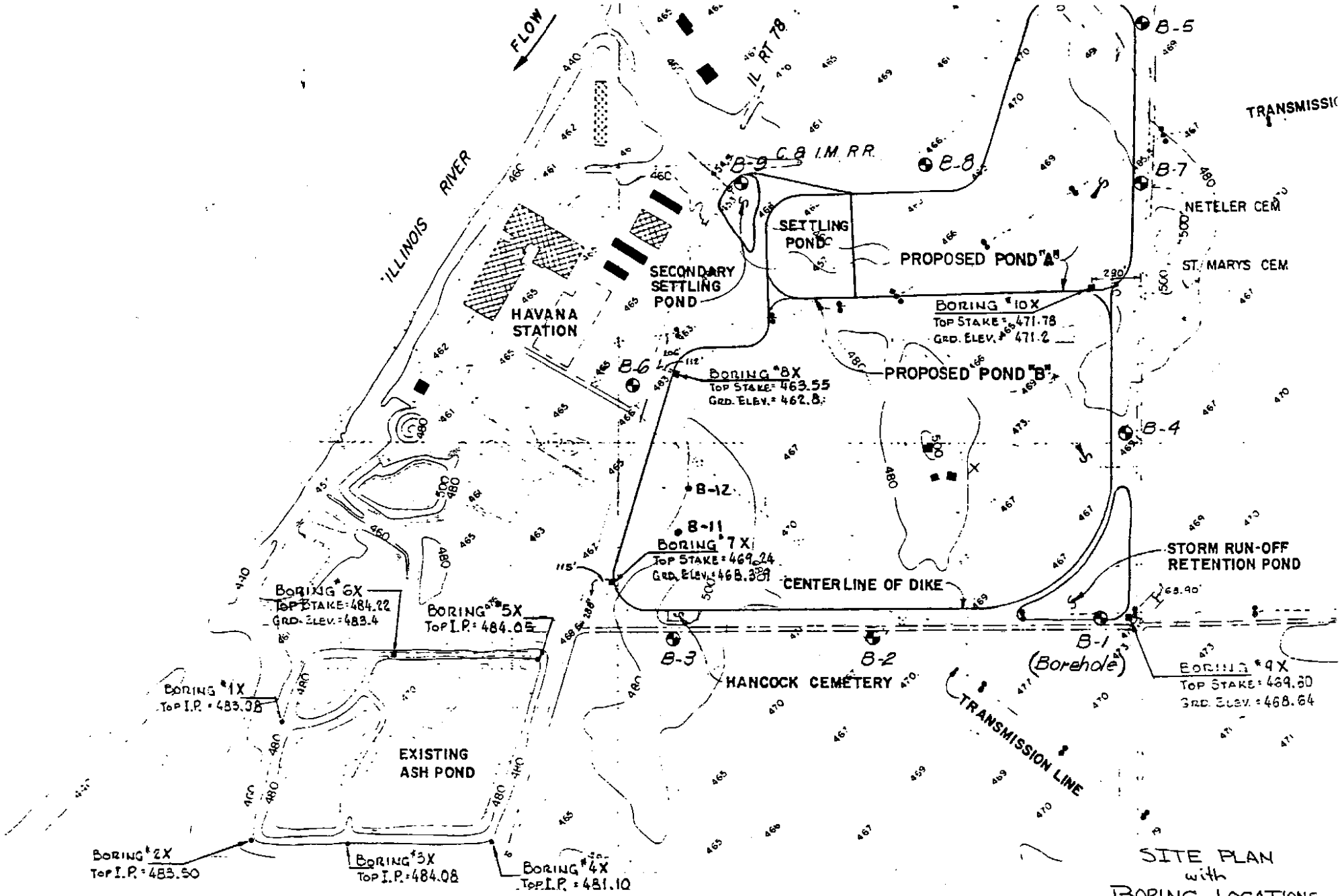
Civil/Structural Engineering
Illinois Power Company
500 S. 27th Street
Decatur, Illinois 62525

J1203

SECTION IX

Soil Borings

The following soil borings are provided as general information concerning the project. Any interpretation and use of the information is at the user's risk.



SITE PLAN
with
BORING LOCATIONS

SKS shaffer·krimmel·silver & ASSOCIATES, INC. CONSULTING ENGINEERS

2900 N. Broadway • P.O. Box 2233 • Decatur, Illinois, 62526 • 217/877-2100

TEST BORING LOG

PROJECT Borrow Area
Havana Power Station
Havana, Illinois

PROJECT NO. I8-73593-267

DATE September 10, 1987

WEATHER Cloudy, Warm

DEPTH TO WATER 17.5' during drilling

DEPTH TO WATER _____ @ _____ HRS.

FOR Illinois Power Company
Decatur, Illinois

BORING NO. 7-X SHT. 1 OF 2

LOCATION As Per I.P. Co. Plan *

SURFACE ELEV. 467.9

* Offset 22' W of Stake

S		N	Q_u	W	PPR	DESCRIPTION & UNIFIED SOIL CLASSIFICATION	
						Brown, dry, medium dense clayey fine sand	SC
1		20					
	5'					moist dense	
2		34					
3		15				medium dense	
	10'						
4		9				loose	
	11.0						
						Brown, moist, medium dense, fine sand	SP
5		24					
	15'						
6		22				fine to medium sand	
						water encountered	
7		17					
	20'						
	19.5						
8		16				Brown, saturated, medium dense, fine to coarse sand, trace gravel	
9		46				dense, little gravel	
	25'						
10		27				medium dense	
	26.0						
						Continued on Sheet 2	

N — BLOWS/FOOT, 140 LB. HAMMER, 30" DROP, 2" O.D. SAMPLER
Q_u — UNCONFINED COMPRESSIVE STRENGTH, TONS per SQUARE FOOT
S — SAMPLE NUMBER
W — WATER CONTENT, % DRY WEIGHT
PPR — POCKET PENETROMETER READING, TONS per SQUARE FOOT
ST — THIN-WALLED TUBE SAMPLE
LL — LIQUID LIMIT
PL — PLASTIC LIMIT
PI — PLASTICITY INDEX
γ^{pcf} — UNIT DRY WEIGHT, LBS. per CUBIC FOOT

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TEST BORING LOG

PROJECT
PROJECT NO. I8-73593-267
DATE
WEATHER
OEPTH TO WATER @ HRS.
DEPTH TO WATER @ HRS.

FOR
BORING NO. 7-X SHT. 2 OF 2
LOCATION
SURFACE ELEV. 467.9

S		N	Q_u	W	PPR	DESCRIPTION & UNIFIED SOIL CLASSIFICATION	
	26.0					Continued from Sheet 1	
11		32				Brown, saturated, medium dense, fine to coarse sand, little gravel	SP
						dense	
30'	29.5						
12		32				Brown, saturated, dense, fine to medium sand	
						medium dense	
35'							
13		19					
40'	39.5						
14		19				Brown, saturated, medium dense, fine to coarse sand, little gravel	
						very dense	
45'							
15		50					
50'							
16	51.0	44				dense	
						Borehole backfilled with Volclay grout	

N — BLOWS/FOOT, 140 LB. HAMMER, 30" DROP, 2" O.D. SAMPLER
Q_u — UNCONFINED COMPRESSIVE STRENGTH, TONS per SQUARE FOOT
S — SAMPLE NUMBER
W — WATER CONTENT, % DRY WEIGHT
PPR — POCKET PENETROMETER READING, TONS per SQUARE FOOT
ST — THIN-WALLED TUBE SAMPLE
LL — LIQUID LIMIT
PL — PLASTIC LIMIT
PI — PLASTICITY INDEX
γ_d — UNIT DRY WEIGHT, LBS. per CUBIC FOOT

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TEST BORING LOG

Borrow Area
Havana Power Station
PROJECT Havana, Illinois
PROJECT NO. I8-73593-267
DATE September 9, 1987
WEATHER Sunny, Warm
DEPTH TO WATER 18.0' @ 0 HRS.
DEPTH TO WATER _____ @ _____ HRS.

Illinois Power Company
FOR Decatur, Illinois
BORING NO. 8-X SHT. 1 OF 2
LOCATION As Per I.P. Co. Plan *
SURFACE ELEV. 462.8

S		N	Q_u	W	PPR	DESCRIPTION & UNIFIED SOIL CLASSIFICATION	
1		10				Brown, moist, loose, clayey fine sand	SC
5'							
2		8					
3		7					
10'							
4	10.0	5				Brown, moist, loose, fine sand	SP
5		7					
15'							
6		7				fine to medium sand	
						water encountered	
7		11				saturated	
20'							
8		9					
9		23				medium dense	
25'							
10	26.0	25					
						Continued on Sheet 2	

N — BLOWS/FOOT, 140 LB. HAMMER, 30" DROP, 2" O.D. SAMPLER
Q_u — UNCONFINED COMPRESSIVE STRENGTH, TONS per SQUARE FOOT
S — SAMPLE NUMBER
W — WATER CONTENT, % DRY WEIGHT
PPR — POCKET PENETROMETER READING, TONS per SQUARE FOOT
ST — THIN-WALLED TUBE SAMPLE
LL — LIQUID LIMIT
PL — PLASTIC LIMIT
PI — PLASTICITY INDEX
γ_d — UNIT DRY WEIGHT, LBS. per CUBIC FOOT

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TEST BORING LOG

PROJECT _____

PROJECT NO. I8-73593-267

DATE _____

WEATHER _____

DEPTH TO WATER _____ @ _____ HRS.

DEPTH TO WATER _____ @ _____ HRS.

FOR _____

BORING NO. 8-X SHT. 2 OF 2

LOCATION _____

SURFACE ELEV. 462.8

S		N	Q_u	W	PPR	DESCRIPTION & UNIFIED SOIL CLASSIFICATION	
	26.0					Continued from Sheet 1	
	27.0					Brown, saturated, medium dense, fine to medium sand	SP
11		31				Brown, saturated, dense, fine to coarse sand, trace gravel	
30'							
12		38					
35'							
13		29					
40'							
14		34					
45'	44.5						
15		34				Brown, saturated, dense, fine to coarse sand with gravel	SW
50'							
16	51.0	34				Borehole backfilled with Volclay grout	

N — BLOWS/FOOT, 140 LB. HAMMER, 30" DROP, 2" O.D. SAMPLER — Q_u — UNCONFINED COMPRESSIVE STRENGTH, TONS per SQUARE FOOT

S — SAMPLE NUMBER — W — WATER CONTENT, % DRY WEIGHT — PPR — POCKET PENETROMETER READING, TONS per SQUARE FOOT

ST — THIN-WALLED TUBE SAMPLE — LL — LIQUID LIMIT — PL — PLASTIC LIMIT — PI — PLASTICITY INDEX

γ_d — UNIT DRY WEIGHT, LBS. per CUBIC FOOT

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TEST BORING LOG

Borrow Area
Havana Power Station
PROJECT Havana, Illinois

Illinois Power Company
FOR Decatur, Illinois

PROJECT NO. I8-73593-267
DATE September 9, 1987
WEATHER Sunny, Warm
DEPTH TO WATER 10.0' @ 0 HRS.
DEPTH TO WATER _____ @ _____ HRS.

BORING NO. 9-X SHT. 1 OF 2
LOCATION As Per I.P. Co. Plan *
SURFACE ELEV. 468.6
* Offset 8' S of Stake

S		N	Q_u	W	PPR	DESCRIPTION & UNIFIED SOIL CLASSIFICATION	
1		9				Brown, moist, loose, clayey fine sand	SC
	5'						
2		12					
3		7				watered encountered	
	10'						
4		3				saturated	
	12.0						
5		16				Brown, saturated, medium dense, fine to medium sand	SP
	15'						
6		19					
7		27				trace gravel	
	20'						
8		26					
9		32					
	25'						
10		24					
	26.0					Continued on Sheet 2	

N — BLOWS/FOOT, 140 LB. HAMMER, 30" DROP, 2" O.D. SAMPLER — Q_u — UNCONFINED COMPRESSIVE STRENGTH, TONS per SQUARE FOOT
S — SAMPLE NUMBER — W — WATER CONTENT, % DRY WEIGHT — PPR — POCKET PENETROMETER READING, TONS per SQUARE FOOT
ST — THIN-WALLED TUBE SAMPLE — LL — LIQUID LIMIT — PL — PLASTIC LIMIT — PI — PLASTICITY INDEX
γ_d — UNIT DRY WEIGHT, LBS. per CUBIC FOOT

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TEST BORING LOG

PROJECT
PROJECT NO. I8-73593-267
DATE
WEATHER
DEPTH TO WATER @ HRS.
DEPTH TO WATER @ HRS.

FOR
BORING NO. 9-X SHT. 2 OF 2
LOCATION
SURFACE ELEV. 468.6

S		N	Q_u	W	PPR	DESCRIPTION & UNIFIED SOIL CLASSIFICATION	
	26.0					Continued from Sheet 1	
11		18				Brown, saturated, medium dense, fine to medium sand, trace gravel	SP
12		23				gray	
13		43				dense	
14		50				very dense	
15		36				dense	
16	51.0	38					
						Borehole backfilled with Volclay grout	

30' 35' 40' 45' 50'

N — BLOWS/FOOT, 140 LB. HAMMER, 30" DROP, 2" O.D. SAMPLER
S — SAMPLE NUMBER
ST — THIN-WALLED TUBE SAMPLE
W — WATER CONTENT, % DRY WEIGHT
LL — LIQUID LIMIT
Q_u — UNCONFINED COMPRESSIVE STRENGTH, TONS per SQUARE FOOT
PPR — POCKET PENETROMETER READING, TONS per SQUARE FOOT
PL — PLASTIC LIMIT
PI — PLASTICITY INDEX
γ_d — UNIT DRY WEIGHT, LBS. per CUBIC FOOT

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TEST BORING LOG

Borrow Area
Havana Power Station

PROJECT Havana, Illinois
PROJECT NO. I8-73593-267
DATE September 10, 1987
WEATHER Cloudy, Warm
DEPTH TO WATER 18.0' @ 0 HRS.
DEPTH TO WATER _____ @ _____ HRS.

Illinois Power Company
FOR Decatur, Illinois
BORING NO. 10-X SHT. 1 OF 2
LOCATION As Per I.P. Co. Plan *
SURFACE ELEV. 479.8
* Offset 5' W of Stake

S		N	Q_u	W	PPR	DESCRIPTION & UNIFIED SOIL CLASSIFICATION	
1		14				Brown, moist, medium dense, clayey fine sand	SC
	5'						
2		15					
3		11					
	10'						
	9.5						
4		6				Brown, moist, loose, fine sand	SP
5		24				medium dense	
	15'						
6		21					
	17.0						
7		11				Brown, saturated, medium dense, fine to medium sand, water encountered	
	20'						
8		19					
9		18					
	25'					fine to coarse sand	
10		25					
	26.0					Continued on Sheet 2	

N — BLOWS/FOOT, 140 LB. HAMMER, 30" DROP, 2" O.D. SAMPLER
Q_u — UNCONFINED COMPRESSIVE STRENGTH, TONS per SQUARE FOOT
S — SAMPLE NUMBER
W — WATER CONTENT, % DRY WEIGHT
PPR — POCKET PENETROMETER READING, TONS per SQUARE FOOT
ST — THIN-WALLED TUBE SAMPLE
LL — LIQUID LIMIT
PL — PLASTIC LIMIT
PI — PLASTICITY INDEX
γ_d — UNIT DRY WEIGHT, LBS. per CUBIC FOOT

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TEST BORING LOG

PROJECT
PROJECT NO. I8-73593-267
DATE
WEATHER
DEPTH TO WATER @ HRS.
DEPTH TO WATER @ HRS.

FOR
BORING NO. 10-X SHT. 2 OF 2
LOCATION
SURFACE ELEV. 479.8

S		N	Q_u	W	PPR	DESCRIPTION & UNIFIED SOIL CLASSIFICATION	
						Continued from Sheet 1	
	26.0					Brown, saturated, medium dense, fine to coarse sand	SP
	27.0						
11		16				Brown, saturated, medium dense, fine sand	
	29.5						
30' 12		12				Brown, saturated, medium dense, clayey fine sand	SC
	34.5						
35' 13		24				Brown, saturated, medium dense, fine to coarse sand, trace gravel	SP
40' 14		29					
45' 15		34				dense	
50' 16		35					
	51.0					Borehole backfilled with Volclay grout	

N — BLOWS/FOOT, 140 LB. HAMMER, 30" DROP, 2" O.D. SAMPLER
S — SAMPLE NUMBER
ST — THIN-WALLED TUBE SAMPLE
Q_u — UNCONFINED COMPRESSIVE STRENGTH, TONS per SQUARE FOOT
W — WATER CONTENT, % DRY WEIGHT
PPR — POCKET PENETROMETER READING, TONS per SQUARE FOOT
LL — LIQUID LIMIT
PL — PLASTIC LIMIT
PI — PLASTICITY INDEX
γ^{pcf} — UNIT DRY WEIGHT, LBS. per CUBIC FOOT

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TEST BORING LOGS

PROJECT Illinois Power Company
PROJECT NO. I8-73593-67
FOR Illinois Power Company
DATE February 29, 1988
WEATHER Fair, Cool
DEPTH TO WATER Dry @ ø HRS.
DEPTH TO WATER BF @ ø HRS.

BORING NO. 11
LOCATION Havana Power Station Borrow Area
SURFACE ELEV. 503.0

S	DEPTH; FT. FROM	TO	SAMPLE DESCRIPTION
1	0	1.0	Dark brown, moist, loose sand, clay loam, trace root fiber
2	1.0	7.5	Brown, moist, loose, fine to medium sand
3	7.5	17.0	Brown, slightly moist, loose, fine sand
4	17.0	35+	Brown, moist, loose, fine sand

DATE March 3, 1988
WEATHER Fair, Cool
DEPTH TO WATER Dry @ ø HRS.
DEPTH TO WATER BF @ ø HRS.

BORING NO. 12
LOCATION Havana Power Station Borrow Area
SURFACE ELEV. 493.5

S	DEPTH; FT. FROM	TO	SAMPLE DESCRIPTION
1	0	0.5	Dark brown, moist, loose sand, clay loam, trace root fiber
2	0.5	15.0	Brown, moist, loose, fine to medium sand
3	15.0	35+	Brown, slightly moist, loose fine sand

ATTACHMENT 6.1
Certifications

Technical Memorandum
CCR Residual Surface Impoundment Permit Application
Former Havana Power Station, Havana, 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(d)(2)(N) 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). 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 6.1.3 – AECOM prepared the initial structural stability assessment (AECOM, *CCR Rule Report: Initial Structural Stability Assessment for East Ash Pond at Havana 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 the following in the report: "*Based on the assessment and its results, the design, construction, operation, and maintenance of the East Ash Pond were found to be consistent with recognized and generally accepted good engineering practices, and meets the standards in 257.73(d)(1)(i)-(vii), except as noted herein*." These standards are approximately equivalent to 35 IAC § 845.450(c).

Item 6.1.4 – AECOM prepared the initial safety factor assessment (AECOM, *CCR Rule Report: Initial Safety Factor Assessment, System Plan for East Ash Pond at Havana 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 East Ash Pond complex meets the requirements of 40 CFR § 257.73(e)(1) which also meets the requirements of 35 IAC § 845.460(b).

Item 6.1.5 – AECOM prepared the initial inflow design flood control system evaluation (AECOM, *CCR Rule Report: Initial Inflow Design Flood Control., System Plan for East Ash Pond at Havana 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 the following which meets the requirements of 35 IAC § 845.510(c)(3):

> *The handling of discharge was evaluated by reviewing design drawings, operational and maintenance procedures, conditions observed in the field by AECOM, and the inflow design flood control system plan developed per §257.82(a).*
>
> *Based on this evaluation, outflow from the East Ash Pond is ultimately routed through a NPDES-permitted discharge into the Illinois River through the primary spillway structure during normal operating conditions and during PMF conditions. Hydrologic and hydraulic analyses performed as part of the initial inflow design flood control system plan found that the East Ash Pond adequately manages outflow during the PMF, as overtopping of the East Ash Pond embankments is not expected.*
>
> *Therefore, discharge of pollutants in violation of the NPDES permit is not expected as discharge is routed and controlled through the existing spillway system and NPDES-permitted outfall during both normal and IDF conditions. Based on this evaluation, the East Ash Pond meets the requirements in §257.82(b).*