BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

CITI DEVELOPMENT, LLC,	)	
	)	
Petitioner,	)	
	)	
vs.	)	PCB No. 21-110
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	(Variance – Land)
	)	
	)	
Respondent.	)	

NOTICE OF FILING

To: Mr. Don Brown
Clerk of the Board
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph Suite 11-500
Chicago, Illinois 60601
(VIA ELECTRONIC MAIL)

Carol Webb
Hearing Officer
Illinois Pollution Control Board
1021 N. Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276
(VIA ELECTRONIC MAIL)

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Pollution Control Board **RESPONSE TO MOTION TO DISMISS AND MOTION FOR LEAVE TO FILE SECOND AMENDED PETITION FOR VARIANCE**, a copy of which is herewith served upon you.

Respectfully submitted,

CTI DEVELOPMENT, LLC
Petitioner,

DATE: October 6, 2021

By: /s/ Jennifer M. Martin
One of Its Attorneys

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CERTIFICATE OF SERVICE

I, Jennifer M. Martin, the undersigned, hereby certifies that the attached **RESPONSE TO MOTION TO DISMISS AND MOTION FOR LEAVE TO FILE SECOND AMENDED PETITION FOR VARIANCE** was served via electronic mail upon the following:

Mr. Don Brown
Clerk of the Board
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph Suite 11-500
Chicago, Illinois 60601

Carol Webb
Hearing Officer
Illinois Pollution Control Board
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That my email address is Jennifer.Martin@heplerbroom.com.

That the number of pages in the email transmission is 401 total pages.

That the email transmission took place before 5:00 p.m. on the date of October 6, 2021.

/s/ Jennifer M. Martin

Date: October 6, 2021

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PROTECTION AGENCY,	)	
	)	
Respondent.	)	

RESPONSE TO MOTION TO DISMISS AND MOTION FOR LEAVE TO FILE SECOND AMENDED PETITION FOR VARIANCE

NOW COMES Petitioner, CTI DEVELOPMENT, LLC ("CTI"), by and through its undersigned counsel, pursuant to 35 Ill. Adm. Code §§ 101.500 and 104.226, and hereby files its Response to the Illinois Environmental Protection Agency's ("Illinois EPA's") Motion to Dismiss and also moves the Illinois Pollution Control Board ("Board") for leave to file a Second Amended Petition for Variance.

On May 11, 2021, CTI filed a Petition for Variance in this proceeding. CTI requested a one-year variance from the requirement in 35 Ill. Adm. Code § 845.7220(a)(4) to obtain a construction permit for closure of the West Ash Complex. On July 29, 2021, CTI filed a Motion for Leave to File Amended Petition for Variance ("Amended Petition"). The Board granted the Motion for Leave on August 26, 2021 and the Amended Petition was filed *instanter*. In the Amended Petition, CTI requested a three-year variance from the requirements in 35 Ill. Adm. Code §§ 845.200(a)(4) and 845.720(b)(2) to obtain a construction permit for closure of the West Ash Complex.

I. Response to Motion to Dismiss

On September 22, 2021, Illinois EPA filed a Motion to Dismiss the Amended Petition ("Motion to Dismiss"). In its motion, Illinois EPA argued that the relief requested by CTI was permanent, not temporary relief, and thus was an improper variance request. *See*, *generally*, Motion to Dismiss. As Illinois EPA noted, CTI does not disagree with the regulatory language and established precedent that states a variance is a temporary exemption from a rule, regulation, requirement, or order of the Board. Amended Petition at 17; 35 Ill. Adm. Code § 104.2001(a)(1). However, as explained below, CTI disagrees with Illinois EPA that the requested relief is permanent relief.

CTI seeks relief from the regulatory requirements in 35 Ill. Adm. Code §§ 845.200(a)(4) and 845.720(b)(2) to obtain a construction permit for closure of the West Ash Complex. The requested relief, if granted, would obviate the need for CTI to obtain a construction permit under Part 845 for closure of the West Ash Complex. However, as discussed in the Amended Petition, CTI already received approval from Illinois EPA for its closure plan, as well as obtained an NPDES permit that addresses dewatering of the West Ash Complex, which is the first step in the closure process. Therefore, the requested relief is not permanent relief from obtaining a permit for dewatering or approval of the closure plan.

Additionally, the requested relief in the Amended Petition would not be permanent relief from all requirements of Part 845. For example, CTI is still subject to the requirement to obtain an operating permit for the West Ash Complex and, once closure is complete, must follow the post-closure care requirements under Part 845. *See* 35 Ill. Adm. Code §§ 845.230 and 845.780.

Further, the requested relief is not permanent relief because, even if the Amended Petition is granted, there is still a scenario where CTI would be required to obtain a construction permit for closure. If the Amended Petition is granted, CTI would have three years to complete closure of the West Ash Complex pursuant to its Illinois EPA-approved closure plan. However, even with the variance relief, if CTI is unable to complete closure within this timeframe, *i.e.*, by July 30, 2024, CTI would then be required to obtain a construction permit for closure.

Lastly, for the same reasons discussed above, any relief from Section 22.59(b)(2) of the Illinois Environmental Protection Act ("Act"), 415 ILCS 5/22.59(b)(2), is also temporary and not permanent relief. In its Motion to Dismiss, Illinois EPA acknowledged that the Board has authority to grant temporary relief from statutory provisions through a variance proceeding. Motion to Dismiss at 5. Additionally, Illinois EPA acknowledged that, in proceedings involving variance relief from regulations that are substantively identical to statutory provisions, variance relief from the overlying statutory provision is not necessary. *Id*. at 7-8. As such, the requested relief in the Amended Petition is proper and Illinois EPA's Motion to Dismiss should be denied.

II. Motion for Leave to File Second Amended Petition

CTI seeks leave to file a Second Amended Petition for Variance in this proceeding. In conjunction with discussions with Illinois EPA, CTI has determined that additional requested relief must be added to its Amended Petition for Variance in order to address a related regulatory provision. Addressing this additional provision will make CTI's variance request more comprehensive.

In its Amended Petition, CTI seeks relief from the regulatory requirements in 35 Ill. Adm. Code §§ 845.200(a)(4) and 845.720(b)(2) to obtain a construction permit for closure of the West Ash Complex. Sections 845.200(a)(4) and 845.720(b)(2) state that "[e]xcept as provided in Section 22.59(e) of the Act, no person may close a CCR surface impoundment without obtaining a construction permit for closure issued by the Agency under this Part." 35 Ill. Adm. Code §§

845.200(a)(4) and 845.720(b)(2). CTI has not sought relief from the related statutory provision in Section 22.59(b)(2) of the Act because, as discussed above, requesting relief from the overlying statutory requirement is unnecessary.

CTI now seeks leave to amend its petition to add a request for relief from 35 Ill. Adm. Code § 845.220(e). Section 845.220(e) provides that "[o]wners or operators of CCR surface impoundments who submitted a closure plan to the Agency before May 1, 2019, and who complete closure before July 30, 2021, shall not be required to obtain a construction permit for closure under subsection (d)." 35 Ill. Adm. Code § 845.220(e). If this Motion for Leave is granted and the Second Amended Petition is filed, CTI would be seeking a three-year extension of the deadline in Section 845.220(e) to close the West Ash Complex. (As discussed in the Amended Petition, CTI has already met the requirement to submit a closure plan to Illinois EPA by May 1, 2019.) The three-year extension is in line with the three-year relief requested in the Amended Petition. CTI plans to complete closure of the West Ash Complex within three years pursuant to the Illinois EPA-approved closure plan. Per the requested relief, if closure is completed within this timeframe, CTI would not be required to obtain a construction permit for closure under Part 845 for the West Ash Complex.

This additional requested relief is temporary for the same reasons discussed above concerning the relief requested in the Amended Petition. Moreover, while the provision in Section 845.220(e) is substantively identical to Section 22.59(e) of the Act, CTI is not requesting relief from Section 22.59(e) since requesting relief from an overlying statutory requirement is unnecessary. *See* Motion to Dismiss at 5 (citing Amended Petition at 18). If CTI is allowed to amend its petition and the petition is ultimately granted, CTI would be afforded comprehensive relief from the provisions at issue.

The requested relief in the Second Amended Petition for Variance does not differ substantively from the relief requested in the initial Petition or Amended Petition. Pursuant to 35 Ill. Adm. Code § 104.226, a petitioner may amend a petition for variance prior to the close of hearing by filing a motion under 35 Ill. Adm. Code 101 Subpart E. As such, CTI respectfully requests leave to file a Second Amended Petition for Variance in this matter. A Second Amended Petition for Variance is attached hereto as Exhibit 1.

WHEREFORE, for the above reasons, Petitioner CTI DEVELOPMENT, LLC respectfully requests that the Illinois Pollution Control Board deny the Illinois Environmental Protection Agency's Motion to Dismiss and grant CTI DEVELOPMENT, LLC leave to file, *instanter*, the attached Second Amended Petition for Variance.

Respectfully submitted.

CTI DEVELOPMENT, LLC
Petitioner,

DATE: October 6, 2021

By: /s/ Jennifer M. Martin
One of Its Attorneys

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Exhibit 1

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

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	)	
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	)	
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	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	(Variance – Land)
	)	
	)	
Respondent.	)	

SECOND AMENDED PETITION FOR VARIANCE

NOW COMES Petitioner, CTI DEVELOPMENT, LLC ("CTI"), by and through its undersigned counsel, pursuant to Section 35(a) of the Illinois Environmental Protection Act ("Act"), 415 ILCS 5/35(a) and 35 Ill. Adm. Code 104.100 *et seq.*, and hereby petitions the Illinois Pollution Control Board ("Board") for a three-year variance from the requirements set forth in 35 Ill. Adm. Code §§ 845.200(a)(4), 845.720(b)(2), and 845.220(e) to obtain a construction permit for closure of the West Ash Complex. CTI requests a variance pursuant to the terms and conditions outlined in this Amended Petition for Variance ("Amended Petition").

I. INTRODUCTION

CTI is seeking a three-year variance from the requirement in 35 Ill. Adm. Code Part 845 to obtain a construction permit for closure of coal combustion residual ("CCR") surface impoundments. Neither CTI nor the former owner of the Wood River Power Station were able to begin dewatering of the CCR surface impoundments, which is the first step of the closure process, until a modified NPDES permit was issued. The request for modification of the NPDES permit, which was submitted by the former owner, had been pending for three years by the time CTI acquired the facility in August 2019. Upon acquiring the facility, CTI immediately took steps to move the closure process forward. CTI took steps to ensure that closure responsibility would be transferred to CTI and CTI met with the Illinois Environmental Protection Agency ("Illinois EPA" or "Agency") to discuss closure. Upon issuance of the modified permit in April 2020, CTI immediately began dewatering of the CCR surface impoundments. However, CTI was unable to complete closure of the CCR surface impoundments by July 30, 2021 as set forth in 415 ILCS 5/22.59(e) and 35 Ill. Adm. Code § 845.220(e). Therefore, CTI is requesting a variance from the requirements in the Board's rules to obtain a construction permit for closure.

II. REGULATION FROM WHICH VARIANCE IS SOUGHT

A. Request for Variance from 35 Ill. Adm. Code §§ 845.200(a)(4), 845.720(b)(2), and 845.220(e)

On April 15, 2021, the Board adopted 35 Ill. Adm. Code Part 845, which contains rules governing coal combustion residuals ("CCR") surface impoundments in Illinois. *In the Matter of: Standards for the Disposal of Coal Combustion Residuals in Surface Impoundments: Proposed New 35 Ill. Adm. Code 845*, PCB R 20-19 (Ill.Pol.Control.Bd. Apr. 15, 2021). The requirements in Part 845 became effective on April 21, 2021. 45 ILL. REG. 5884 (May 7, 2021).

As discussed below, CTI owns the Wood River Power Station in Alton, Illinois. The West Ash Complex is located at the Wood River Power Station and is comprised of West Ash Ponds 1, 2W, and 2E, which are inactive CCR surface impoundments ("West Ash Complex"). The West Ash Complex is in the process of being closed. Therefore, the West Ash Complex is subject to the requirements of 35 Ill. Adm. Code Part 845.

CTI seeks a variance from the regulatory requirement in Part 845 to obtain a construction permit for closure of the West Ash Complex. Section 845.220(e) of the Board's regulations states:

> (e) *Owners and operators of CCR surface impoundments who submitted a closure plan to the Agency before May 1, 2019, and who complete closure*

> *before July 30, 2021, shall not be required to obtain a construction permit for closure under subsection (d).* [415 ILCS 5/22.59(e)]

35 Ill. Adm. Code § 845.220(e).

Section 845.200(a)(4) of the Board's regulations states:

(a) Permit Requirements

***

> (4) Except as provided in Section 22.59(e) of the Act, no person may close a CCR surface impoundment without obtaining a construction permit for closure issued by the Agency under this Part.

35 Ill. Adm. Code § 845.200 (a)(4).

Section 845.720(b)(2) of the Board's regulations includes the identical regulatory requirement:

> (2) Except as otherwise provided in Section 22.59 of the Act, the owner or operator of a CCR surface impoundment must not close a CCR surface impoundment without a construction permit issued under this Part.

35 Ill. Adm. Code § 845.720(b)(2).

B. <u>Relevant Statutory and Regulatory Provisions</u>

Section 22.59(b)(2) of the Act provides as follows:

(b) No person shall:

> (2) construct, install, modify, operate, or close any CCR surface impoundment without a permit granted by the Agency, or so as to violate any conditions imposed by such permit, any provision of this Section or any regulations or standards adopted by the Board under this Section; or …

415 ILCS 5/22.59(b)(2).

As noted above, the regulatory requirement to obtain a construction permit for closure of a CCR surface impoundment is also set forth in Sections 845.200(a)(4) and 845.720(b)(2) of the Board's regulations. 35 Ill. Adm. Code §§ 845.200(a)(4) and 845.720(b)(2).

Section 22.59(e) of the Act outlines an exception to the requirement that closure of a CCR surface impoundment requires a permit granted by the Agency. Section 22.59(e) provides:

> (e) Owners or operators of CCR surface impoundments who have submitted a closure plan to the Agency before May 1, 2019, and who have completed closure prior to 24 months after the effective date of this amendatory Act of the 101st General Assembly shall not be required to obtain a construction permit for the surface impoundment closure under this Section.

415 ILCS 5/22.59(e).

With the adoption of the Part 845 rules, the exception created by Section 22.59(e) of the Act was clarified in Section 845.220(e) with the inclusion of a specific date (July 30, 2021) by which closure must be completed:

> Owners or operators of CCR surface impoundments who submitted a closure plan to the Agency before May 1, 2019, and who complete closure before <u>July 30, 2021</u>, shall not be required to obtain a construction permit for closure under subsection (d). [415 ILCS 5/22.59(e)]

35 Ill. Adm. Code § 845.220(e) (emphasis added).

CTI is requesting a variance from the requirements in 35 Ill. Adm. Code §§ 845.200(a)(4), 845.720(b)(2), and 845.220(e) to obtain a construction permit for closure of the West Ash Complex if closure is not completed before July 30, 2021, based on the exception set forth in Section 22.59(e) of the Act and 35 Ill. Adm Code § 845.220(e). As explained further below, a closure plan for the West Ash Complex was submitted to the Illinois Environmental Protection Agency and approved prior to May 1, 2019; however, CTI was unable to begin implementation of the closure plan until April 15, 2020 due to a nearly four-year delay in issuance of the NPDES permit modification that would allow for pond dewatering, one of the first steps in the closure process. A three-year variance from the requirement to obtain a construction permit for closure, as set forth in 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2), will allow CTI to complete the closure activities in the Illinois EPA-approved Closure Plan and pursuant to its NPDES permit. Denial of variance relief in this instance would impose an arbitrary and unreasonable hardship on CTI.

C. Stay

Pursuant to Section 104.200(b) of the Board's rules, if a petition for variance from a rule or regulation is filed within 20 days after the effective date of such rule or regulation, the operation of such rule or regulation shall be stayed pending the disposition of the petition. 35 Ill. Adm. Code § 104.200(b)(2). Part 845 became effective on April 21, 2021. 45 ILL. REG. 5884 (May 7, 2021). CTI filed its initial Petition for Variance in this proceeding, seeking a variance from Section 845.200(a)(4) of the Board's regulations, on May 11, 2021, which was within 20 days of the effective date of the regulation as to which the variance is being sought – 35 Ill. Adm. Code § 845.200(a)(4). Petition for Variance, *CTI Development, LLC v. Illinois Environmental Protection Agency*, PCB 21-110 (Ill.Pol.Control.Bd. May 11, 2021). As such, the automatic stay provision in Section 104.200(b) is applicable here. This Second Amended Petition for Variance requests relief from the same requirement as in the initial Petition, though it now includes a request for relief from the identical regulatory requirement at 35 Ill. Adm. Code § 845.720(b)(2) and the similar requirement at 35 Ill. Adm. Code § 845.220(e).

II. DESCRIPTION OF CTI'S ACTIVITY

The West Ash Complex, made up of West Ash Ponds 1, 2W, and 2E, is part of the Wood River Power Station. In 2015 and 2016, Dynegy Midwest Generation, LLC ("Dynegy"), the former owner of the Wood River Power Station, submitted to Illinois EPA notices of intent to close the ponds included in the West Ash Complex. On June 9, 2016, Dynegy submitted a request to Illinois EPA for a modification to its NPDES permit due to the cessation of operation of the Wood River Power Station and to accommodate the dewatering of the West Ash Complex that would be required for closure.

In October 2016, Dynegy submitted to Illinois EPA a "*Closure and Post-Closure Care Plan for the Wood River West Ash Complex, Parts I and II*." The Closure and Post-Closure Care Plan is attached as <u>Attachment 1</u>. An Addenda to the Closure Plan dated April 28, 2017 and a Revision to the Addenda dated May 18, 2017 were submitted by Dynegy to Illinois EPA (collectively "Closure Plan"). On May 25, 2017, Illinois EPA approved the Closure Plan. *See* May 25, 2017 letter from Illinois EPA to Dynegy attached hereto as <u>Attachment 2</u>. Per the Closure Plan, the West Ash Complex will be closed by first dewatering the ponds and then constructing an alternative geomembrane cover system which will include a geomembrane, geocomposite drainage layer, protective soil cover, and an erosion layer. Closure activities will also include construction of a stormwater management system. After closure activities are complete, post-closure activities, which include groundwater monitoring and maintenance of the final cover system, will be conducted for 30 years. The closure and post-closure activities will be conducted in accordance with 40 CFR §§ 257.102 and 257.104. The Closure Plan projected that closure activities could be completed in 3-5 years and estimated a completion date of November 18, 2020.

Despite approval of the Closure Plan, Dynegy was unable to begin closure of the West Ash Complex until Illinois EPA approved the 2016 NPDES permit modification request. The permit modification request was filed with Illinois EPA in June 2016, and the draft NPDES permit modification went out to public notice in September 2018. A public hearing on the draft NPDES permit modification was held in April 2019 in Alton, Illinois.

On August 30, 2019, Dynegy transferred ownership of its Wood River Power Station to CTI. In September 2019, Dynegy notified Illinois EPA that ownership of the Wood River Power Station had been transferred to CTI. Upon transfer of ownership, CTI immediately began the planning and administrative work needed for closure of the West Ash Complex. CTI met with the Illinois EPA on October 15, 2019 to discuss the Closure Plan, the transfer of the facility's NPDES permit, and the potential applicability of Section 22.59(e) to the closure of the West Ash Complex. CTI submitted a letter to Illinois EPA on November 11, 2019 documenting the transfer of ownership of the Wood River Power Station. The November 11, 2019 letter is attached as Attachment 3.

On December 4, 2019, Illinois EPA acknowledged receipt of CTI's letter. December 4, 2019 letter from Illinois EPA to CTI attached hereto as Attachment 4. In the December 4, 2019 letter, Illinois EPA acknowledged the change in ownership and transfer of closure responsibility to CTI, including that CTI may close the West Ash Complex utilizing the Illinois EPA-approved Closure Plan. *Id*. Illinois EPA also acknowledged that Section 22.59(e) of the Act was applicable to the West Ash Complex. *Id*.

On April 15, 2020, Illinois EPA issued modified NPDES Permit No. IL0000701, which allowed for pond dewatering of the West Ash Complex. The modified NPDES Permit is attached hereto as Attachment 5. Immediately following the issuance of the modified NPDES Permit, CTI began dewatering the West Ash Complex.

The modified NPDES permit was issued nearly four years after Dynegy's initial request to modify the NPDES permit. CTI could not begin closure of the West Ash Complex until the modified NPDES Permit was issued since the facility was restricted by the requirements in the prior NPDES permit. The modified NPDES permit was revised to allow dewatering of the West Ash Complex, which is one of the first steps of closure outlined in the Illinois EPA-approved Closure Plan. After the modified NPDES Permit was issued in April 2020, CTI began dewatering the West Ash Complex.

CTI is currently in the process of closing the West Ash Complex by continuing to dewater the ponds and move material in construction of the subgrade. To date, CTI has moved approximately 260,000 cubic yards of material for subgrade, with approximately 125,000 cubic yards left to complete the subgrade. The subgrade must be completed prior to installation of the synthetic liner and final soil cover. However, CTI will be unable to fully close the West Ash Complex before the July 30, 2021 timeframe referenced in Section 22.59(e) of the Act and 35 Ill. Adm. Code § 845.220(e). CTI was unable to complete closure of the West Ash Complex by July 30, 2021 due to the unanticipated and significant delay in issuance of the modified NPDES Permit. If it does not complete closure of the West Ash Complex by July 30, 2021, CTI is required to obtain a construction permit for closure. CTI seeks a three-year variance from the requirement to obtain a construction permit for closure under Part 845 so that it can complete the closure activities in the Illinois EPA-approved Closure Plan and pursuant to its NPDES permit.

A. <u>Location of and Areas Affected</u>

The West Ash Complex is comprised of West Ash Pond 1, West Ash Pond 2E, and West Ash Pond 2W, and is part of the Wood River Power Station. The Wood River Power Station is located at #1 Chessen Lane in Alton, Illinois (Madison County). The Wood River Power Station is no longer operational. The facility ceased operation on June 1, 2016.

Immediately South and Southwest of the facility is the Mississippi River (across Berm Highway). Immediately East of the facility is the Wood River. A privately-owned parking lot and former smelting facility is located North and Northwest of the facility, respectively.

B. <u>Location of Points of Discharge and Identification of Receiving Waterway or Land</u>

The Wood River Power Station is no longer operational and has been demolished. Points of discharge and receiving waterways are identified in the modified and renewed NPDES Permit No. IL IL0000701 issued on April 15, 2020 and May 5, 2021, respectively. *See* <u>Attachment 5</u> and <u>Attachment 6</u> attached hereto.

C. <u>Prior Variances</u>

Neither CTI nor Dynegy, the prior owner of the Wood River Power Station, have been issued a prior variance regarding the relief that is similar to what is requested in this Amended Petition.

D. <u>Environmental Permits</u>

On April 15, 2020, Illinois EPA issued modified NPDES Permit No. IL0000701, which allowed for dewatering of the West Ash Complex. The modified NPDES Permit is attached hereto as <u>Attachment 5</u>. On May 5, 2021, Illinois EPA issued to CTI renewed NPDES Permit No. IL0000701. The renewed NPDES Permit is attached hereto as <u>Attachment 6</u>.

E. <u>Persons Employed and Age of Facility</u>

No persons are currently employed at the Wood River Power Station as the facility is no longer operational and has been demolished. The Wood River Power Station had operated since 1954. The West Ash Complex was commissioned in 1997. Demolition of the Wood River Power Station was completed in July 2021.

F. Nature and Amount of Materials Used and Description of Activity

The West Ash Complex is located at the Wood River Power Station. The Wood River Power Station is no longer operational. As such, there are no ongoing processes at the Power Station. The facility ceased operation on June 1, 2016 and demolition was completed in July 2021.

The ash ponds comprising the West Ash Complex are inactive CCR surface impoundments separated by splitter dikes. West Ash Pond 2E contains a geomembrane liner system and West Ash Ponds 1 and 2W are unlined. The amount of CCR being left in place in the West Ash Complex is approximately 950,000 cubic yards of CCR. The West Ash Complex will be closed by leaving the CCR in place and using an alternative geomembrane cover system. After closure activities are completed, post-closure activities, which include groundwater monitoring and maintenance of the final cover system, will occur.

Per the Closure Plan, closure activities will include, but are not limited to, relocating and/or reshaping the existing CCR within the West Ash Complex to achieve acceptable grades for closure, as well as constructing a final cover system. Removal of free water may be required prior to the relocation and grading of CCR and fill materials.

The final cover system will comply with the applicable design requirements of the federal CCR Rule, 40 CFR Part 257, including establishment of a vegetative cover to minimize long-term erosion. The final cover system will be installed on all three ponds in the West Ash Complex and will consist of, from bottom to top, a 40-mil linear low-density polyethylene (LLDPE) geomembrane membrane, a geocomposite drainage layer, and a minimum 18-inch protective cover soil layer. An erosion layer consisting of no less than 6 inches of earthen material capable of sustaining plant growth will be placed on top of the protective cover soil layer.

G. Pollution Control Equipment

The Wood River Power Station is no longer operational. There is no relevant pollution control equipment for the closure of the West Ash Complex.

H. Nature and Amount of Emissions, Discharges, or Releases of Constituent in Question

The Wood River Power Station is no longer operational and has been demolished. Wastewater will be generated from unwatering and dewatering the West Ash Complex as part of the closure process, and will be discharged in accordance with renewed NPDES Permit No. IL0000701 issued to CTI on May 5, 2021. *See* Attachment 6.

III. COMPLIANCE WITH 35 ILL. ADM. CODE §§ 845.200(a)(4), 845.720(b)(2), AND 845.220(e) IMPOSES AN ARBITRARY AND UNREASONABLE HARDSHIP ON CTI

A. Compliance Cannot be Achieved by Required Compliance Date

Section 845.200(a)(4) of the Board's rules provides, in pertinent part: "[e]xcept as provided in Section 22.59(e) of the Act, no person may close a CCR surface impoundment without obtaining a construction permit for closure issued by the Agency under this Part." 35 Ill. Adm. Code § 845.200(a)(4). Section 845.720(b)(2) of the Board's rules sets forth the identical requirement: "[e]xcept as otherwise provided in Section 22.59 of the Act, the owner or operator of a CCR surface impoundment must not close a CCR surface impoundment without a construction permit issued under this Part." 35 Ill. Adm. Code § 845.720(b)(2).

Section 22.59(e) of the Act and Section 845.220(e) of the Board's regulations provide that owners or operators of CCR surface impoundments who have submitted a closure plan to the Agency before May 1, 2019, and who have completed closure prior to 24 months after the effective date of this amendatory Act of the 101st General Assembly (i.e., July 30, 2021) shall not be required to obtain a construction permit for the surface impoundment closure under this Section. 415 ILCS 5/22.59(e); 35 Ill. Adm. Code § 845.220(e). The effective date of the statute referenced – the Coal Ash Pollution Prevention Act – was July 30, 2019. Final Order, PCB R 20-19, at 8 ("The Coal Ash Pollution Prevent Act (Public Act 101-171, eff. July 30, 2019) added Section 22.59 of the Act.").

A Closure Plan, and subsequent Addenda, for closure of the West Ash Complex were submitted to Illinois EPA in 2016 and 2017. Illinois EPA approved the Closure Plan on May 25, 2017. Attachment 2. Therefore, consistent with Section 22.59(e) of the Act and 35 Ill. Adm. Code § 845.220(e), a Closure Plan was submitted to Illinois EPA before May 1, 2019. In the December 4, 2019 letter from Illinois EPA to CTI, Illinois EPA acknowledged that CTI may close the West Ash Complex utilizing the approved Closure Plan. Attachment 4.

However, CTI will be unable to complete closure of the West Ash Complex prior to the July 30, 2021 deadline set forth in 35 Ill. Adm. Code § 845.220(e), and implied in 35 Ill. Adm. Code §§ 845.200(a)(4) and 845.720(b)(2). As described in more detail above, CTI was unable to begin dewatering of the West Ash Complex until the modified NPDES Permit was issued by Illinois EPA. After the modified NPDES Permit was issued in April 2020, CTI began dewatering of the West Ash Complex, which is the first step in the closure process. As explained above, CTI is currently in the process of closing the West Ash Complex, but was unable to fully close it before July 30, 2021. CTI was unable to complete closure of the West Ash Complex by July 30, 2021 due to the unanticipated and significant delay in issuance of the modified NPDES Permit.

B. Efforts Necessary to Achieve Immediate Compliance and Possible Compliance Alternatives

In order to meet the July 30, 2021 deadline to complete closure under 35 Ill. Adm. Code §§ 845.200(e), CTI would need to complete the subgrade and install the synthetic liner and the final soil cover. As explained in the original and Amended Petition for Variance, it is not possible with any amount of man-power or capital to complete this work by July 30, 2021. Therefore, immediate compliance with 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) is not possible.

If CTI is unable to obtain a variance from the requirement in 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2), CTI would be required to obtain a construction permit to complete the closure activities that are already in process at the West Ash Complex. Requiring CTI to go through the construction permit process under Part 845 would halt the current closure work underway and cause significant delays to the closure of the West Ash Complex.

The requirements to obtain a construction permit for closure under Part 845 are burdensome for a facility that already has a permit for closure and an Illinois EPA-approved closure plan. CTI has an Illinois EPA-approved Closure Plan for the West Ash Complex. CTI was issued a modified NPDES Permit to allow for dewatering of the West Ash Complex, and the NPDES Permit modification went through the public comment and public hearing process.

The costs of obtaining a construction permit for closure under 35 Ill. Adm. Code Part 845 would exceed approximately $150,000.00. In addition to incurring additional costs, CTI would be required to stop the closure work in progress in order to go through the construction permit application process under Part 845. Obtaining a construction permit for the closure of the West Ash Complex would put CTI at square one of the Part 845 closure process, and would significantly delay the closure of the West Ash Complex. CTI would need to submit a closure plan for approval pursuant to the Part 845 regulations and would then need to go through the construction permit application process.

C. <u>Immediate Compliance with Regulation Would Impose an Arbitrary and Unreasonable Hardship</u>

As explained in the original and Amended Petition for Variance, immediate compliance with the requirements in 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) was not possible by July 30, 2021. If the relief requested in this Amended Petition for Variance is not granted, CTI would be required to obtain a construction permit for closure per 35 Ill. Adm. Code §§ 845.200(a)(4) and 845.720(b)(2). As explained above, CTI already obtained a permit for dewatering of the West Ash Complex from Illinois EPA. CTI has a modified and renewed NPDES Permit, which authorizes CTI to dewater the West Ash Complex. CTI also has an Illinois EPA-approved Closure Plan, and has commenced closure activities under the approved Closure Plan.

Requiring CTI to go through the construction permit process under Part 845 would mean a halt to ongoing closure activities at the West Ash Complex and a restart of the entire closure process. This would not only be costly, as referenced above, but would be redundant and burdensome for a facility that already has Illinois EPA-issued permits for closure and an approved closure plan. Given the circumstances described herein, immediate compliance with 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) would impose an arbitrary and unreasonable hardship upon CTI.

IV. COMPLIANCE PLAN

A. Proposed Equipment or Method of Control to Achieve Full Compliance

To achieve compliance with 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) in the time requested by this Amended Petition, CTI would complete all the measures outlined in the Illinois EPA-approved Closure Plan by July 30, 2024. If CTI is unable to fully implement the Illinois EPA-approved Closure Plan by July 30, 2024, it will submit an application for a construction permit to Illinois EPA, as required by 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2).

B. Time Schedule for Implementation of Control Program

CTI would complete the measures outlined in the Closure Plan by July 30, 2024. Below is an estimated timeline for major closure activity phases.

Year 1

- Obtain construction permit for obtaining and placement of soil to cover synthetic liner
- Continue construction activities; including pumping to remove surface water, dewatering of the CCR, relocating and/or reshaping the existing CCR, construction of drainage structures and construction of the final cover system

Years 2-3

- Complete construction activities; including pumping to remove surface water, dewatering of the CCR, relocating and/or reshaping the existing CCR, construction of drainage structures and construction of the final cover system
- Complete construction of the final cover system
- Establish final cover vegetation
- Perform final grading and contouring of the storm water management system

The above time schedule is consistent with the timeline for closure in the Illinois EPA-approved Closure Plan. The timeline for closure in the Closure Plan was over a 3-5 year staged schedule. In the Closure Plan, the first stage of the schedule ("Years 1-2") included acquiring applicable permits for construction activities and beginning the construction activities outlined above (i.e., begin pumping to remove surface water, dewatering of the CCR, relocating and/or reshaping the existing CCR and construction of drainage structures).

To date, CTI has completed the first year of closure work outlined in the 3-5 year closure timeline provided in the Closure Plan. CTI has begun pumping to remove surface water, dewatering of the CCR, relocation and/or reshaping the existing CCR, and construction of drainage structures. The closure work outlined in the time schedule above reflects the remaining work that needs to be completed for closure of the West Ash Complex. CTI estimates that the remaining work will take approximately three years to complete.

C. Estimated Costs to Achieve Compliance

The estimated total cost to complete the measures outlined in the Closure Plan by July 30, 2024 is approximately $2,600,000.00.

V. ENVIRONMENTAL IMPACT

A. Nature and Amount of Emissions, Discharges, or Releases

The Wood River Power Station is no longer operational and has been demolished. Wastewater will be generated from unwatering and dewatering the West Ash Complex as part of the closure process, and will be discharged in accordance with renewed NPDES Permit No. IL0000701.

B. Impact on Human Health and Environment

Granting CTI's requested variance will not cause a detrimental impact on human health or the environment. The Wood River Power Station is no longer operational and has been demolished and, as such, CCR is no longer being generated at the facility.

The closure of the West Ash Complex pursuant to the Illinois EPA-approved Closure Plan will be protective of human health and the environment. *See* Illinois EPA's Responsiveness Summary regarding the April 2019 public hearing on the NPDES permit modification, attached hereto as Attachment 7. In its Responsiveness Summary, Illinois EPA addresses the impact on human health and the environment from the closure of the West Ash Complex, and determined that closure of the West Ash Complex will not cause an exceedance of the surface water quality standards. Additionally, Illinois EPA determined that Class I: Potable Resource Groundwater standards in downgradient wells will be met in the future.

Moreover, granting CTI's requested variance would mean that CTI will complete closure of the West Ash Complex by July 30, 2024. If CTI is unable to fully implement the Illinois EPA-approved Closure Plan by July 30, 2024, it will submit an application for a construction permit to Illinois EPA, as required by 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2). If CTI's requested variance is not granted, CTI would have to halt its current closure efforts and completion of closure of the West Ash Complex would be significantly delayed.

C. Measures to Minimize Impact of Discharge of Contaminants

CTI will be closing the West Ash Complex pursuant to the terms of the Illinois EPA-approved Closure Plan, and effluent will be discharged in accordance with renewed NPDES Permit No. IL0000701924.

VII. SUPPORTING DOCUMENTS OR LEGAL AUTHORITIES

A. Authority for Variance

A variance is a temporary exemption from any specified rule, regulation, requirement or order of the Board, which may be granted by the Board upon adequate proof that compliance the rule, regulation, requirement or order of the Board would impose an arbitrary or unreasonable hardship. 35 Ill. Adm. Code § 104.200(a)(1). Specifically, Section 35(a) of the Act states:

> The Board may grant individual variances beyond the limitations prescribed in this Act, whenever it is found, upon presentation of adequate proof, that compliance with any rule or regulation, requirement or order of the Board would impose an arbitrary or unreasonable hardship. However, the Board is not required to find that an arbitrary or unreasonable hardship exists exclusively because the regulatory standard is under review and the costs of compliance are substantial and certain. In granting or denying a variance the Board shall file and publish a written opinion stating the facts and reasons leading to its decision.

415 ILCS 5/35(a). As set forth below, the Board has authority to grant the relief requested by CTI in this proceeding.

1. CTI is requesting temporary variance relief from regulatory requirements.

CTI is requesting a variance from similar regulations in the Part 845 Rules – specifically, 35 Ill. Adm. Code §§§ 845.220(e), 845.200(a)(4) and 845.720(b)(2). The authority to request a variance from a regulatory provision is clearly established in the Act, Board's rules, and Board precedent. 415 ILCS 5/25(a); 35 Ill. Adm. Code 104.200(a)(1); *e.g., Exelon Generation, LLC v. Illinois Environmental Protection Agency*, PCB No. 16-106, at 1-2 (Ill.Pol.Control.Bd. Sep. 8, 2016).

Granting variance relief from 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) will allow CTI to complete closure of the West Ash Complex in accordance with the Illinois EPA-approved Closure Plan for the West Ash Complex.

2. CTI does not require variance relief from a statutory provision.

The regulations that are the basis of CTI's request for variance relief – 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) – are based on statutory requirements set forth in Sections 22.59(b)(2) and (e) of the Act. However, in matters involving variance relief from regulations that are substantively identical to statutory provisions, the Board has generally held that variance relief from the overlying statutory provision is unnecessary. *City of Eldorado v. EPA*, PCB No. 78-280 (Ill.Pol.Control.Bd. Mar. 1, 1979) (granting relief from prohibition against issuing a water pollution permit without proof that a facility is being constructed or operated in compliance with the Act and Board regulations; dismissed petition for relief from Sections 12 and 39 of the Act as unnecessary); *Reichhold Chemicals v, IEPA*, PCB No. 77-174 (Ill.Pol.Control.Bd. May 11, 1978) (in granting variance from Rule 404 water quality standards, the Board dismissed the request for variance relief from Sections 12(a), 12(f) and 39 as unnecessary); *Illini Beef Packers v. EPA*, PCB No. 76-117 (Ill.Pol.Control.Bd. Sept. 29, 1977) (granting variance relief from Section 9(a) and Board regulation prohibiting air pollution to allow installation of control equipment, but denying variance from Section 9(b) and Board regulation requiring air permits as unnecessary). There are no Board decisions holding that a petition for variance relief from a Board regulation must also include a request for relief from the overlying statutory provision.

For the above reasons, CTI does not require relief from Sections 22.59(b)(2) and (e) of the Act. The Board's grant of authority under Section 35 of the Act includes granting a variance from a Board regulation when it is found, upon presentation of adequate proof, that "compliance with any rule or regulation, requirement or order of the Board would impose an arbitrary or unreasonable hardship." 415 ILCS 5/35(a). In this case, as explained above, compliance with the permitting requirement set forth in 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) would impose an arbitrary and unreasonable hardship on CTI.

As explained above, the Closure Plan for the West Ash Complex was submitted to Illinois EPA in October 2016 and approved by Illinois EPA in May 2017, but could not be implemented until a modified NPDES permit was issued by Illinois EPA in April 2020. The unanticipated delay in issuance of the NPDES permit meant that the closure process for the West Ash Complex was delayed and CTI had no ability to complete closure by July 31, 2021.

3. The Board has authority to grant variance relief from the overlying statutory provision, if it deems such relief is necessary.

Prior Board decisions have established that the Board has authority to grant variance relief from statutory requirements. *See e.g., W.R. Grace & Co. – Conn. v. IEPA*, PCB No. 96-193 (Ill.Pol.Control.Bd. Feb. 6, 1997) (granting variance relief from Section 9(b) of the Act); *City of Rock Island v. IEPA,* PCB No. 78-143 (Ill.Pol.Control.Bd. Dec. 14, 1978) (granting variance relief from Sections 12(a), 12(d) and 21(e) of the Act); *IBS, Inc. v. IEPA*, PCB 87-143 (Ill.Pol.Control.Bd. Oct. 1, 1987) (granting a provisional variance from Section 9(b) of the Act). As explained above, variance relief is not needed from the overlying statutory provisions at Sections 22.59(b)(2) and (e). However, the Board has authority to grant variance relief from Sections 22.59(b)(2) and (e) of the Act if it deems such relief is necessary.

B. <u>Other Supporting Documents or Authority</u>

Citations to supporting documents or legal authorities used as a basis for CTI’s variance request are included throughout this Amended Petition. Supporting documents and legal authorities, other than Board decisions, reported state and federal court decisions, or state and federal regulations and statutes, or other than publicly available documents in which website links are included, are attached as attachments to this Amended Petition.

VIII. COPY OF MATERIAL PORTION OF PERMIT

On April 15, 2020, Illinois EPA issued modified NPDES Permit No. IL0000701, which allowed for pond dewatering of the West Ash Complex. The modified NPDES Permit is attached hereto as Attachment 5. On May 5, 2021, Illinois EPA issued to CTI renewed NPDES Permit No. IL0000701. The renewed NPDES Permit is attached hereto as Attachment 6.

IX. CONDITIONS FOR VARIANCE

The requirement in 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) imposes an arbitrary and unreasonable hardship on CTI. Accordingly, a variance from Sections 845.220(e), 845.200(a)(4) and 845.720(b)(2) is warranted to allow CTI to complete closure under the Illinois EPA-approved Closure Plan. CTI requests a three-year variance from Section 845.220(e), 845.200(a)(4) and 845.720(b)(2). CTI proposes to continue diligently pursuing completing closure of the West Ash Complex pursuant to the Illinois EPA-approved Closure Plan.

CTI recommends the following variance conditions should the Board grant its variance request:

a. CTI will complete closure of the West Ash Complex by July 30, 2024, in accordance with the Illinois EPA-approved Closure Plan.

b. CTI will provide semi-annual reports to the Board, by January 31 and July 31 of each year, describing its progress as to closure of the West Ash Complex.

c. If CTI is unable to complete closure of the West Ash Complex by July 30, 2024, it will submit a construction permit application to Illinois EPA.

X. TERM OF VARIANCE

CTI proposes a three-year variance, or from July 30, 2021 through July 30, 2024, from 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2).

XI. CONSISTENCY WITH FEDERAL LAW

Under Title IX of the Act, the Board is responsible for granting variances when a petitioner demonstrates that immediate compliance with the Board regulations would impose an arbitrary or unreasonable hardship on the petitioner. 415 ILCS 5/35(a). The Board may grant a variance, however, only to the extent consistent with applicable federal law. *See id*. Section 104.208(d) of the Board's rules states the following with regard to consistency with federal law for all petitions for variances from the Board's land regulations:

> All petitions for variances from Title V of the Act or from 35 Ill. Adm. Code Subtitle G, Ch. I "Waste Disposal" must indicate whether the Board may grant the requested relief consistent with RCRA (42 USC 6902 et seq.) and the federal regulations adopted under RCRA (40 CFR 256 through 258, 260 through 268, 273, 279, and 280).

35 Ill. Adm. Code 104.208(d). The variance requested would be consistent with 40 CFR Part 257, the federal CCR rules. The Illinois EPA-approved Closure Plan, under which CTI would be closing the West Ash Complex, was also drafted to comply with the requirements of the federal CCR Rules. *See* Closure Plan, Attachment 1. Illinois EPA approved the Closure Plan on May 25, 2017. Attachment 2.

XII. AFFIDAVIT

An affidavit verifying the facts included in this Second Amended Petition for Variance is attached hereto as Attachment 8.[1]

XIII. HEARING REQUEST

CTI requests that a hearing be held on this Second Amended Petition for Variance.

[1] CTI will supplement this Second Amended Petition with a notarized affidavit.

IX. CONCLUSION

It is an arbitrary and unreasonable hardship to require CTI to comply with the requirement in 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2) to obtain a construction permit to close the West Ash Complex by July 30, 2021. A three-year variance from Sections 845.220(e), 845.200(a)(4) and 845.720(b)(2) will allow CTI to complete closure of the West Ash Complex in accordance with its NPDES permit and Illinois EPA-approved Closure Plan.

WHEREFORE, Petitioner CTI DEVELOPMENT, LLC respectfully requests that the Illinois Pollution Control Board grant a three-year variance, until July 30, 2024, from 35 Ill. Adm. Code §§ 845.220(e), 845.200(a)(4) and 845.720(b)(2).

Respectfully submitted.

CTI DEVELOPMENT, LLC
Petitioner,

DATE: October 6, 2021

By: /s/ Jennifer M. Martin
One of Its Attorneys

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Attachment 1	Closure and Post-Closure Care Plan (October 2016)
Attachment 2	Letter from Illinois EPA to Dynegy (May 25, 2017)
Attachment 3	Letter from CTI Development, LLC to Illinois EPA (November 11, 2019)
Attachment 4	Letter from Illinois EPA to CTI Development, LLC (December 4, 2019)
Attachment 5	Modified NPDES Permit No. IL0000701 (modified Apr. 15, 2020)
Attachment 6	Renewed NPDES Permit No. IL0000701 (issued May 5, 2021)
Attachment 7	Illinois EPA Responsiveness Summary (Apr. 15, 2020)
Attachment 8	Affidavit of Jesse Froh

ATTACHMENT 1

AECOM

Submitted to
Dynegy Midwest Generation, LLC
Wood River Power Station
#1 Chessen Lane
Alton, IL 62002

Submitted by
AECOM
1001 Highlands Plaza Drive West, Suite 300
St. Louis, MO 63110
October 2016

Attachment 1

Closure and Post-Closure Care Plan for the Wood River West Ash Complex at

Dynegy Midwest Generation, LLC
Wood River Power Station
#1 Chessen Lane
Alton, IL 62002

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Executive Summary of Closure Plan and Post-Closure Care Plan

The Wood River West Ash Complex is comprised of West Ash Pond 1, West Ash Pond 2E and West Ash Pond 2W at the Wood River Power Station, located in Alton in Madison County, Illinois. In November 2015, in accordance with 40 CFR Part 257, Subpart D, Dynegy Midwest Generation, LLC submitted to the Illinois Environmental Protection Agency (IEPA) a notice of intent to close the inactive West Ash Pond 2W. A notice of intent to close the West Ash Pond 1 was submitted by August 2016 and a notice of intent to close the West Ash Pond 2E was submitted October 2016.

West Ash Pond 1, West Ash Pond 2E, and West Ash Pond 2W are inactive Coal Combustion Residuals (CCR) surface impoundments separated by splitter dikes. West Ash Pond 2E contains a geomembrane liner system and West Ash Ponds 1 and 2W are unlined. The Wood River West Ash Complex will be closed by leaving CCR in place and using an alternative geomembrane cover system. This design will control the potential for water infiltration into the closed CCR unit and will allow drainage of surface water off of the cover system.

After closure activities are complete, post-closure activities, which include groundwater monitoring and maintenance of the final cover system, will occur. The closure and post-closure care activities will be in accordance with 40 CFR §257.102 and §257.104, respectively.

This document contains a closure plan and a post-closure care plan prepared in accordance with the outline approved by the IEPA on February 23, 2016. Closure construction activities may begin upon approval of this closure and post-closure care plan by the IEPA. The closure activities are estimated to be completed by November 18, 2020.

1 Closure Plan

Following approval by the IEPA and acquisition of required permits, closure activities for the Wood River West Ash Complex will be performed according to this plan. The location of the Wood River West Ash Complex and the individual impoundments are shown on Figure G-100 and Figure G-101.

1.1 Description of Proposed Closure Activities

Closure of the Wood River West Ash Complex will occur over a multi-year construction period and is estimated to be completed no later than November 18, 2020. Closure construction activities will include, but are not limited to, relocating and/or reshaping the existing CCR within the West Ash Complex to achieve acceptable grades for closure and constructing a cover system that complies with 40 CFR Part 257, Subpart D (CCR Rule). Removal of free water may be required prior to the relocation and grading of CCR and fill materials. As part of the reshaping of the CCR, fly ash mined from West Ash Pond 1 may be placed as crown fill material in West Ash Ponds 2W and 2E. The remaining coal in the coal pile will also be used to supplement the fill volume. In addition, CCR (primarily bottom ash) from the Primary East Ash Pond may be beneficially used as crown fill, and soil from a borrow source will be used to supplement the fill volume if necessary in order to reach final grades in preparation for the cap system for the West Ash Complex. Portions of the dike around West Ash Pond 1 will be cut down and the excess soils will be used as capping material in the West Ash Complex. The final cover system will comply with the applicable design requirements of the CCR Rule, including establishment of a vegetative cover to minimize long-term erosion.

Stormwater runoff from the final cover system will be collected and managed. A stormwater management system will be constructed to convey stormwater runoff from the cover system to interior drainage channels and will be routed through culvert pipes to the existing Pond 3. See Figures C-101 and C-102.

An existing transmission tower is located on the dike between the West Ash Ponds 1 and 2W. The transmission tower will remain in place and the area surrounding this transmission tower will be closed in place with a final cover system in compliance with the CCR Rule. See Figures C-101 and C-102.

1.2 Engineering Plans and Specifications for the Proposed Closure Activities

The engineering plans and design specifications for the final cover system and closure activities will meet the requirements of the CCR Rule for closure by leaving CCR in place.

1.2.1 Final Cover System

The final cover system will be constructed in direct contact with the graded CCR material. The final cover system design will meet the requirements of the CCR Rule such that the permeability shall be less than or equal to the permeability of the existing bottom liner or subsoils present below the CCR material, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less. This will be achieved for the West Ash Complex through construction of a an alternate geomembrane cover system. The requirement for the final cover system to be less permeable than the bottom layer allows water in the pore space of the CCR to drain into the foundation soils and not accumulate in the closed CCR impoundments. The bottom liner system for Pond 2E consists of a geomembrane. Ponds 1 and 2W are unlined. The closure design achieves the requirements of the low permeability layer and a protective layer to limit accumulation of water in the CCR impoundments. The geomembrane cover system will be installed over Ponds 1, 2W, and 2E and consist of, from bottom to top, a 40-mil LLDPE geomembrane membrane, a geocomposite drainage layer, and a minimum 18-inch protective cover soil layer. An erosion layer consisting of no less than 6-inches of earthen material capable of sustaining native plant growth will be placed on top of the protective cover soil layer. Details of the final cover system can be found on Figure C-106. Final cover system sections can be found on Figures C-103 through C-105.

1.2.2 Final Slope Design

The geometry of the final cover will provide a series of mounded surfaces for stormwater runoff control. The final cover will have a minimum planar slope of 2%, generally ranging from 2% to 2.75%, and will be graded to convey stormwater runoff to drainage channels. The drainage channels have slopes between 0.5% and 1.0% and will be lined with turf reinforced mats (TRM) where required to reduce the potential for erosion.

The crest elevation of West Ash Pond 1 will be lowered; however, the exterior slope grades will remain unchanged. The interior slopes will be 3H:1V and the top of the berm will be lowered as shown on Figure C-103. The exterior slopes and crest elevation of West Ash Ponds 2E and 2W will remain unchanged. Some limited areas of the West Ash Pond 2W cover system will have a 3H:1V slope near the western edge of the West Ash Complex as shown on Figure C-104.

Grading plans for the Wood River West Ash Complex can be found on Figures C-100 through C-102. The key design elements, including cover permeability, final cover slope and drainage channel slopes, will control the post-closure infiltration into the CCR material left in-place and preclude the probability of future impoundment of water at the units.

1.2.3 Summary of Slope Stability Evaluations

Based on the preliminary geotechnical analysis attached in Appendix C, the final slope of the perimeter berms and cover will meet the stability requirements of the CCR Rule to prevent sloughing or movement of the final cover system. The design allows for settlement as well as incidental, localized settling and subsidence.

1.3 Proposed Timeline for Implementation and Completion of Proposed Closure Activities

Closure of the Wood River West Ash Complex is estimated to be completed no later than November 18, 2020. Closure may commence following IEPA approval of this closure plan and in receipt of applicable permits for closure construction activities. Closure activities are scheduled to begin in 2016. The construction schedule includes time for construction activities such as; mobilization of contractors and setup of construction support facilities, installation of stormwater management system, site maintenance during construction activities, and seasonal shutdowns and demobilization of contractors and construction support personnel.

Estimated timing for major activity phases during each year are as follows:

- <u>Years 1 – 2</u>
  - Acquire applicable permits for construction activities
  - Begin construction activities; possibly including pumping to remove surface water, dewatering of the CCR, relocating and/or reshaping the existing CCR and construction of drainage structures
- <u>Years 2 – 5</u>
  - Continue construction activities; possibly including pumping to remove surface water, dewatering of the CCR, relocating and/or reshaping the existing CCR, construction of drainage structures and construction of the final cover system
- <u>Years 3 – 5</u>
  - Complete construction activities; possibly including pumping to remove surface water, dewatering of the CCR, relocating and/or reshaping the existing CCR, construction of drainage structures and construction of the final cover system
  - Complete construction of final cover system
  - Establish final cover vegetation
  - Perform final grading and contouring of the storm water management system
  - Perform regulatory compliance follow-up with state agency

1.4 Description of the Construction Quality Assurance Program for Proposed Closure Activities

The Construction Quality Assurance (CQA) Plan describes the CQA program for the closure of the Wood River West Ash Complex. The CQA Plan contains procedures for inspecting, monitoring, testing, and sampling to confirm compliance with the project plans and specifications. The site-specific CQA Plan is attached in Appendix E.

Key elements of the CQA Plan include:

- Establishment of several key project personnel roles and responsibilities, including a CQA consultant to serve as an on-site representative, to perform field tests and provide written documentation that the final cover system is constructed in accordance with the applicable plans and specifications. The CQA consultant team will include a CQA Officer who is an Illinois-licensed Professional Engineer and who will supervise inspections and testing, certify on-site activities, and review and approve weekly construction reports.
- Regularly scheduled safety and construction progress meetings.
- Standards and inspection and testing procedures for the following materials: earth cover and CCR materials, aggregates, geosynthetics, piping, concrete and grout.
- Specifications for surveying to verify that thickness and grade tolerances of construction components are in accordance with plans and specifications.
- Compilation of project documentation including plans, specifications, schedules, and inspection and testing logs in weekly summary reports certified by the CQA Officer. Additional progress reports at regular intervals are detailed in the CQA Plan.

1.5 Summary of Groundwater Monitoring Plan

The proposed groundwater monitoring plan, which has been developed based on the data presented in the Natural Resource Technology (NRT) Hydrogeologic Characterization Report (Appendix A), is provided in Appendix B. Groundwater will be monitored to evaluate post-closure groundwater quality and trends and demonstrate compliance with groundwater quality standards for Class I: Potable Resource Groundwater throughout the post-closure care period. The proposed groundwater monitoring system is designed to enable detection and measurement of CCR constituents if they should enter the groundwater from the Wood River West Ash Complex.

The proposed groundwater monitoring well network consists of a sufficient number of wells, installed at appropriate locations and depths, to monitor post-closure compliance with groundwater quality standards. The well network consists of 11 existing monitoring wells, seven of which will be used for groundwater quality monitoring and an additional four for monitoring of groundwater elevations. In addition to field parameters, seven of these monitoring wells (two upgradient, one background, and four downgradient) will be used for compliance sampling and analytical testing for the following parameters: inorganic totals for chloride, fluoride, sulfate, Total Dissolved Solids (TDS), and Radium 226/228; and metal totals for antimony, arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, lead, lithium, mercury, molybdenum, selenium, and thallium. The locations of the proposed groundwater monitoring wells can be found on Figure 5 of the Natural Resource Technology (NRT) report in Appendix B.

Specifications for each monitoring well will meet IEPA design and construction requirements. Monitoring wells will be inspected during each groundwater sampling event. Maintenance will be performed as needed to assure that the monitoring wells provide representative groundwater samples.

Statistical analysis of the laboratory analytical data will be reported to IEPA with the annual report for the facility. Compliance with applicable groundwater quality standards will be achieved when there are no statistically significant increasing trends detected at the downgradient boundaries that are attributed to the Wood River West Ash Ponds 1, 2E, and 2W. Details of the proposed groundwater monitoring plan can be found in the attached NRT report in Appendix B.

The monitoring well network as proposed also meets USEPA CFR Part 257 requirements for monitoring the Uppermost Aquifer, which is the Primary Sand Unit that underlies the entire Wood River Power Station. The proposed USEPA CCR network consists of the same three upgradient/background wells and four downgradient wells as the proposed IEPA monitoring well network. Groundwater samples will be collected and analyzed for all Appendix III and IV parameters as listed in the CCR Rule. Reporting requirements will be in accordance with the CCR Rule.

1.6 Professional Certification and Seal

CCR Unit: Dynegy Midwest Generation, LLC; Wood River Power Station; Wood River West Ash Complex

I, Victor Modeer, PE, D.GE., being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this Closure Plan dated October 2016 has been prepared in accordance with the accepted practice of engineering.

Victor A. Modeer Jr

Printed Name

10/27/16

Date

VICTOR ALBERT MODEER JR.
062-043112
REGISTERED
PROFESSIONAL
ENGINEER
OF
ILLINOIS

11/30/2017

2 Environmental Impacts of Proposed Closure Activities

The information referenced in this section was derived from various reports prepared by NRT, including the Hydrogeologic Site Characterization Report, Groundwater Monitoring Plan, Hydrostatic Modeling Report, and the Groundwater Management Zone Application. An Illinois licensed Professional Geologist signed the attached documents prepared by NRT (Appendix A – D and F).

2.1 Summary of Pre-Closure Groundwater Conditions

Sampling and analysis of groundwater from monitoring wells at the Wood River West Ash Ponds 1, 2E, and 2W has been conducted quarterly or semi-annually since 1995. Parameters that have been detected in groundwater in downgradient monitoring wells at concentrations exceeding the Class I groundwater quality standards include boron, manganese, TDS, and pH, with exceedances of manganese, TDS, and pH attributable to anthropogenic sources or naturally occurring geochemical variability. Boron is the only primary indicator of the presence of CCR leachate constituents in groundwater for this site. Hydrogeological site characterization and groundwater quality data are discussed in detail in the NRT Hydrogeologic Site Characterization Report attached as Appendix A.

2.2 Summary of Modeled Post-Closure Groundwater Conditions

The Hydrologic Evaluation of Landfill Performance (HELP) model was used to calculate the time for groundwater beneath each of the three CCR units to reach hydrostatic equilibrium. Hydrostatic model results, discussed in detail in the NRT Hydrostatic Modeling Report attached as Appendix C, indicate equilibrium for the geomembrane cover system at West Ash Pond 1 and West Ash Pond 2W will be reached approximately ten years after installation of the final cover design meeting CCR Rule requirements. The NRT report indicates equilibrium for the West Ash Pond 2E is not reached within the 100-year simulation. However, hydraulic head for the geomembrane cover system meeting CCR Rule requirements at West Ash Pond 2E is expected to keep decreasing beyond the 100-year simulation duration following cap completion, with heads decreasing from current 120 inches average head to less than 60 inches, as a result of the basal composite/synthetic liner system already in place.

A groundwater flow and transport model, Groundwater Model Report, included in Appendix D, was prepared for the entire West Ash Complex. The Groundwater Model Report indicates the following:

- Under baseline conditions with no cover on any of the three West Ash Complex impoundments, the primary CCR indicator, boron, is predicted to reach peak concentrations in approximately 300 years before starting to decrease.
- The CCR plume extent with a geomembrane cover system at West Ash Complex is predicted to begin contracting after one year.
- Based on the maximum modeled plume extents, under both baseline conditions and the planned cover closure scenario, no potable or non-potable water supply wells are predicted to show exceedances of groundwater quality standards related to CCR leachate. The only known wells (excluding monitoring wells and piezometers) that exist in the vicinity of the West Ash Complex, or within the area of actual or modeled Class I groundwater exceedances, are pressure relief wells along the adjacent levee.

Closure in place of the Wood River Ash Complex, as proposed, will result in a reduction of leachate production, decreasing boron concentrations along with other CCR leachate parameters, and contraction of the groundwater contaminant plume. The current horizontal extent of the parameters of concern related to CCR leachate (boron) that exceed Class I groundwater standards is within the Wood River Power Station's property with the possible exception of a narrow strip along the Great River Road (i.e., Route 143) that is not owned by Dynegy Midwest Generation, LLC (DMG). DMG owns the property both north and south of the Great River Road extending to the banks of the Mississippi River. The modeled boron plume exceeding the Class I standard extends southward and southeastward towards the Mississippi River, but within the Wood River Power Station's property.

2.3 Anticipated Effects of the Closed Impoundment on Nearby Surface Waters

Groundwater flow in the Primary Sand Unit that underlies the Wood River Ash Complex is predominantly south and southeast towards the Mississippi River. Groundwater in the Primary Sand Unit discharges via base flow to the Mississippi River during base stage and low river levels. During spring flooding and high Mississippi River stages groundwater flow is northerly. After flood levels subside, the flow direction reverts to more normal conditions and groundwater again discharges to the river.

Impacts of groundwater with elevated concentrations of CCR constituents, principally boron, from beneath the closed Wood River Ash Complex on the Mississippi River will be negligible.

3 Post-Closure Care Plan

Following closure of West Ash Complex, post-closure care will be performed according to this plan. The closed impoundments will be monitored and maintained for a post-closure period that is anticipated to continue for 30 years. The post-closure period may extend beyond 30 years if additional groundwater monitoring is required to assess groundwater constituents as compared to background levels.

3.1 Description of Post-Closure Care Activities

Throughout the post-closure care period, periodic, typically annual, visual inspections of the final cover system for evidence of settlement, subsidence, erosion, or other damage that may affect the integrity of the final cover system will be performed. Noted damage will be repaired in order to maintain the effectiveness of the final cover system. Repair activities may include, but are not limited to replacing cover soil and repairing drainage channels that have been eroded, filling in depressions with soil, and reseeding areas of failed vegetation.

Groundwater samples will be collected and analyzed for inorganic chemical parameters that are indicator constituents for CCR leachate. In addition, each groundwater sampling event will measure field parameters and groundwater levels. The proposed groundwater monitoring plan will monitor and evaluate groundwater quality to demonstrate compliance with the groundwater quality standards for Class II: General Resource Groundwater.

The end of the post-closure period will be documented in accordance with the CCR Rule. Post-closure documentation will be maintained for at least five years in accordance with the CCR Rule.

3.2 Description of the Planned Use of the Property during the Post-Closure Care Period

Following closure, a notation will be recorded on the deed to the property or on some instrument that is normally examined during a title search to identify that the land has been used as a CCR impoundment. The notation will provide notice that use of the land is restricted to activities that will not disturb the integrity of the final cover system or groundwater monitoring system.

The Wood River Power Station will not continue to be used as a power generating facility after closure of the Wood River West Ash Complex. Activity on and around the final cover and stormwater systems for the closed impoundments will include ongoing post-closure inspection, maintenance and monitoring activities. Planned post-closure use of the property will not disturb or damage the integrity of the final cover system or groundwater monitoring system.

3.3 Stormwater Management

The key design elements of the stormwater management system, including cover permeability, final cover slope and drainage channel slopes will minimize post-closure infiltration of liquids into the CCR left in-place and will preclude the probability of future impoundment of water at the impoundments. The stormwater management system is designed for a 25-year, 24-hour storm event and will be constructed during closure and grading of the final cover system. Stormwater management features and erosion controls will be integrated with reshaping of the CCR surface and placement of the cover system to promote positive surface drainage and minimize erosion.

Stormwater from the finished cover system on the Wood River West Ash Complex will drain through a series of drainage channels on the cover system, through culverts and eventually draining into the existing Pond 3. The drainage channels on the cover system will be earthen channels lined with grass and TRM where required. The culverts are sized to be 24-inch diameter pipes to pass the 25-year storm without ponding of water on the cover system, and to pass the 100-year storm with minimum ponding while attenuating the discharge into Pond 3. There will be no permanent storage of storm or surface water upstream of Pond 3. The external embankments of Pond 3 will be raised to increase freeboard for preventing overtopping of stormwater during the design storm. See Figure C-100. Details of drainage channels are provided on Figure C-106.

3.4 Professional Certification and Seal

CCR Unit: Dynegy Midwest Generation, LLC; Wood River Power Station; Wood River West Ash Complex

I, Victor Modeer, PE, D.GE., being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this Post-Closure Care Plan dated October 2016 has been prepared in accordance with the accepted practice of engineering.

Victor A Modeer Jr

Printed Name

10/27/16

Date

VICTOR ALBERT MODEER JR
062-043112
REGISTERED
PROFESSIONAL
ENGINEER
OF
ILLINOIS

11/30/2017

Figures

DYNEGY MIDWEST GENERATION, LLC

WOOD RIVER POWER STATION

ALTON, ILLINOIS

PERMIT DRAWINGS

FOR CLOSURE OF THE WOOD RIVER WEST ASH COMPLEX

STATE MAP
NOT TO SCALE

LOCATION MAP
NOT TO SCALE

DRAWINGS LIST

SHEET NO.	DRAWING NO.	DRAWING TITLE
1	G-100	COVER SHEET AND LOCATION MAP
2	G-101	EXISTING CONDITIONS
3	C-100	OVERALL GRADING PLAN
4	C-101	GRADING PLAN
5	C-102	GRADING PLAN
6	C-103	SECTION A
7	C-104	SECTIONS B AND C
8	C-105	SECTIONS D AND E
9	C-106	DETAILS

PRELIMINARY
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NO.	DESCRIPTION	DATE

AECOM PROJECT NO:	60501530
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DESIGNED BY:	LEH
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PLOT DATE:	10/27/2015
SCALE:	AS SHOWN
ACAD VER:	2015

SHEET TITLE

COVER SHEET AND LOCATION MAP

G-100

SHEET 1 OF 9

AECOM

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AECOM PROJECT NO:	60501530
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DESIGNED BY:	MJC
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DATE CREATED:	4/25/2016
PLOT DATE:	10/27/2016
SCALE:	1" = 200'
ACAD VER:	2015

SHEET TITLE

EXISTING CONDITIONS

G-101

SHEET 2 OF 9

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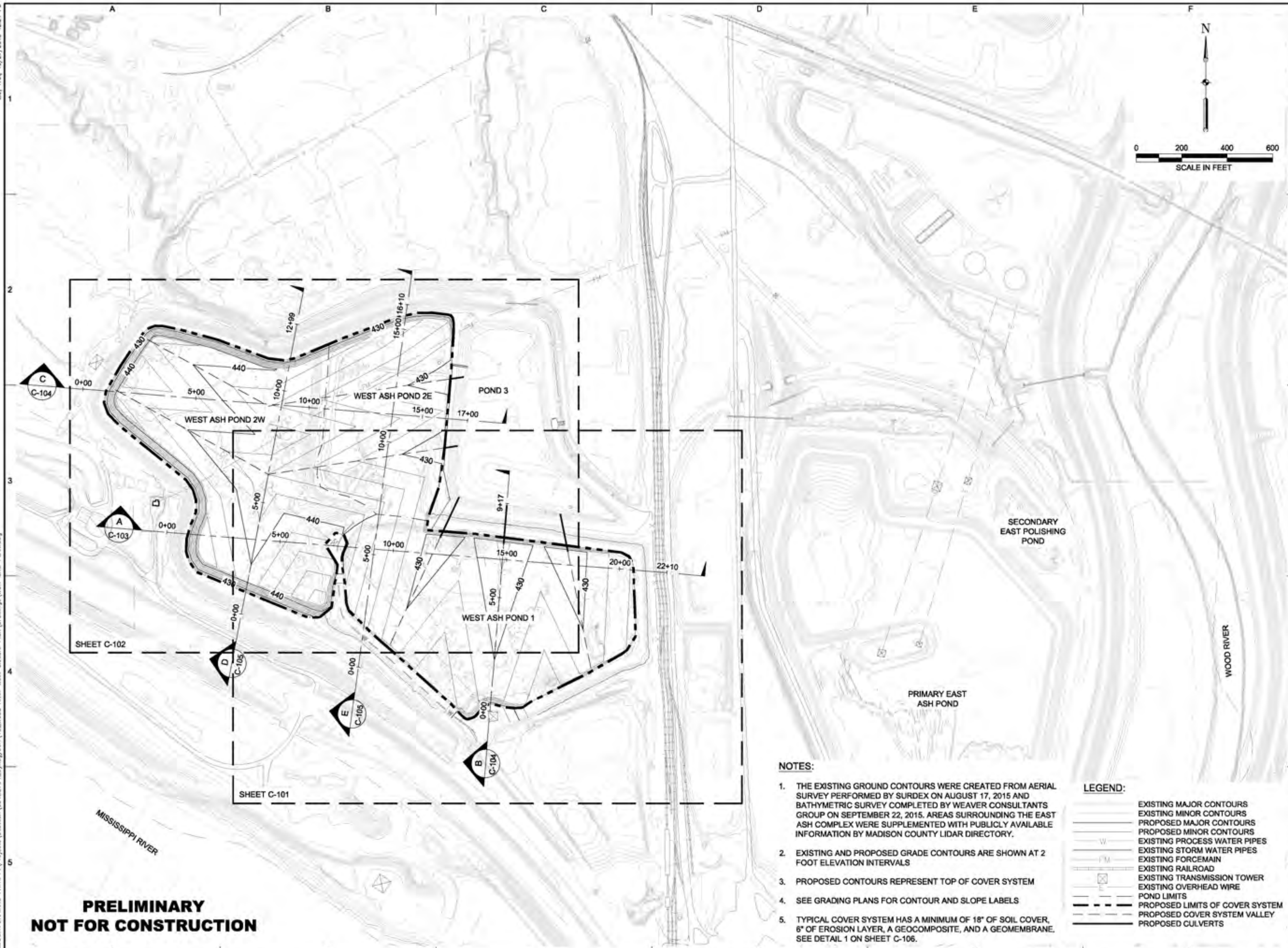
ALTON, IL

PERMIT DRAWINGS FOR CLOSURE OF THE WOOD RIVER WEST ASH COMPLEX



NOTES:

1. THE EXISTING GROUND CONTOURS WERE CREATED FROM AERIAL SURVEY PERFORMED BY SURDEX ON AUGUST 17, 2015 AND BATHYMETRIC SURVEY COMPLETED BY WEAVER CONSULTANTS GROUP ON SEPTEMBER 22, 2015. AREAS SURROUNDING THE EAST ASH COMPLEX WERE SUPPLEMENTED WITH PUBLICLY AVAILABLE INFORMATION BY MADISON COUNTY LIDAR DIRECTORY.
2. EXISTING AND PROPOSED GRADE CONTOURS ARE SHOWN AT 2 FOOT ELEVATION INTERVALS
3. PROPOSED CONTOURS REPRESENT TOP OF COVER SYSTEM
4. SEE GRADING PLANS FOR CONTOUR AND SLOPE LABELS
5. TYPICAL COVER SYSTEM HAS A MINIMUM OF 18" OF SOIL COVER, 6" OF EROSION LAYER, A GEOCOMPOSITE, AND A GEOMEMBRANE. SEE DETAIL 1 ON SHEET C-106.

LEGEND:

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- EXISTING PROCESS WATER PIPES
- EXISTING STORM WATER PIPES
- EXISTING FORCEMAIN
- EXISTING RAILROAD
- EXISTING TRANSMISSION TOWER
- EXISTING OVERHEAD WIRE
- POND LIMITS
- PROPOSED LIMITS OF COVER SYSTEM
- PROPOSED COVER SYSTEM VALLEY
- PROPOSED CULVERTS

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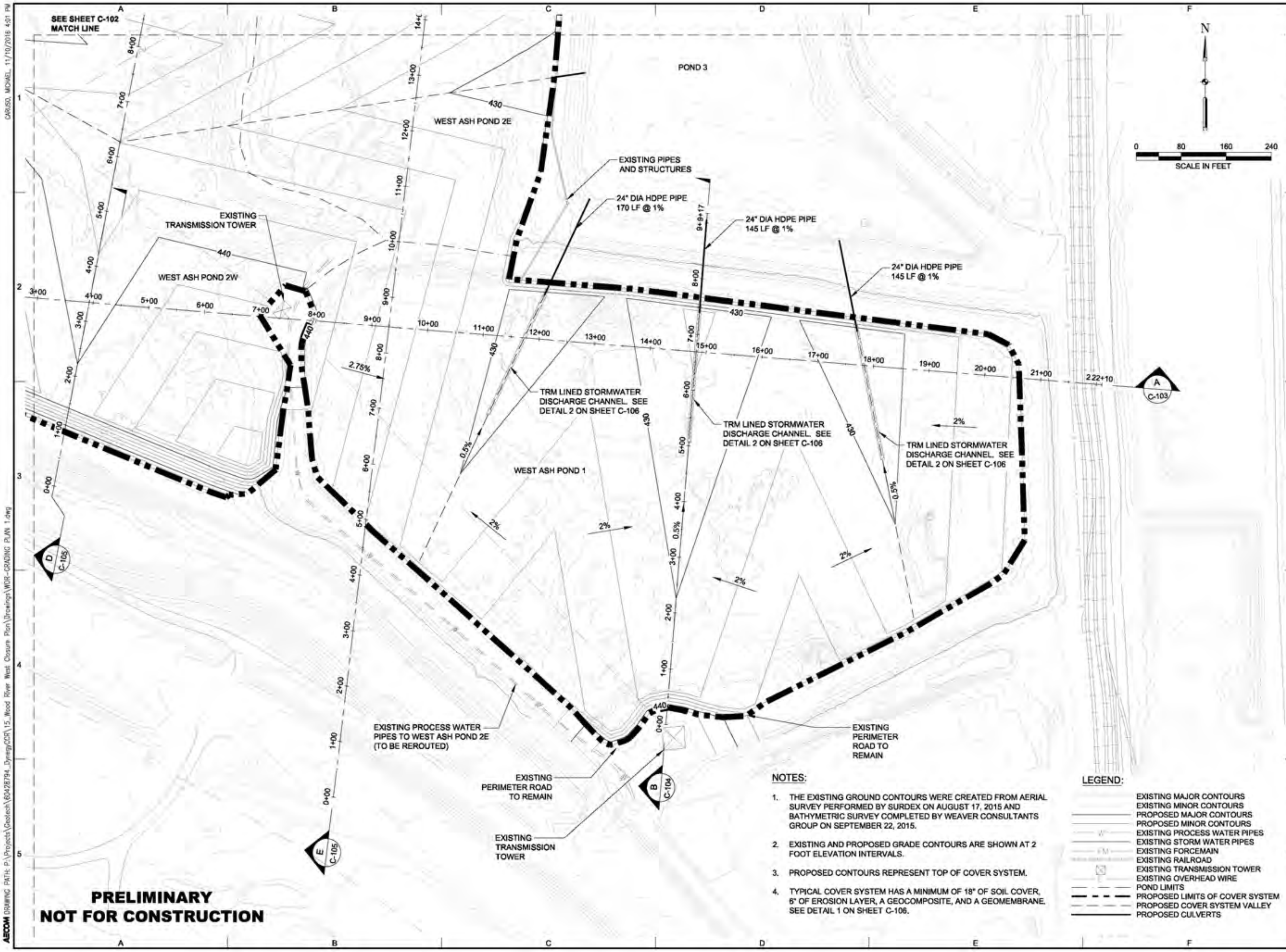
SHEET TITLE

OVERALL GRADING PLAN

C-100

SHEET 2 OF 9



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3. PROPOSED CONTOURS REPRESENT TOP OF COVER SYSTEM.
4. TYPICAL COVER SYSTEM HAS A MINIMUM OF 18" OF SOIL COVER, 6" OF EROSION LAYER, A GEOCOMPOSITE, AND A GEOMEMBRANE. SEE DETAIL 1 ON SHEET C-106.

LEGEND:

- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- PROPOSED MAJOR CONTOURS
- PROPOSED MINOR CONTOURS
- EXISTING PROCESS WATER PIPES
- EXISTING STORM WATER PIPES
- EXISTING FORCEMAIN
- EXISTING RAILROAD
- EXISTING TRANSMISSION TOWER
- EXISTING OVERHEAD WIRE
- POND LIMITS
- PROPOSED LIMITS OF COVER SYSTEM
- PROPOSED COVER SYSTEM VALLEY
- PROPOSED CULVERTS

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ALTON, IL

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AECOM PROJECT NO:	60501530
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DATE CREATED:	10/13/2015
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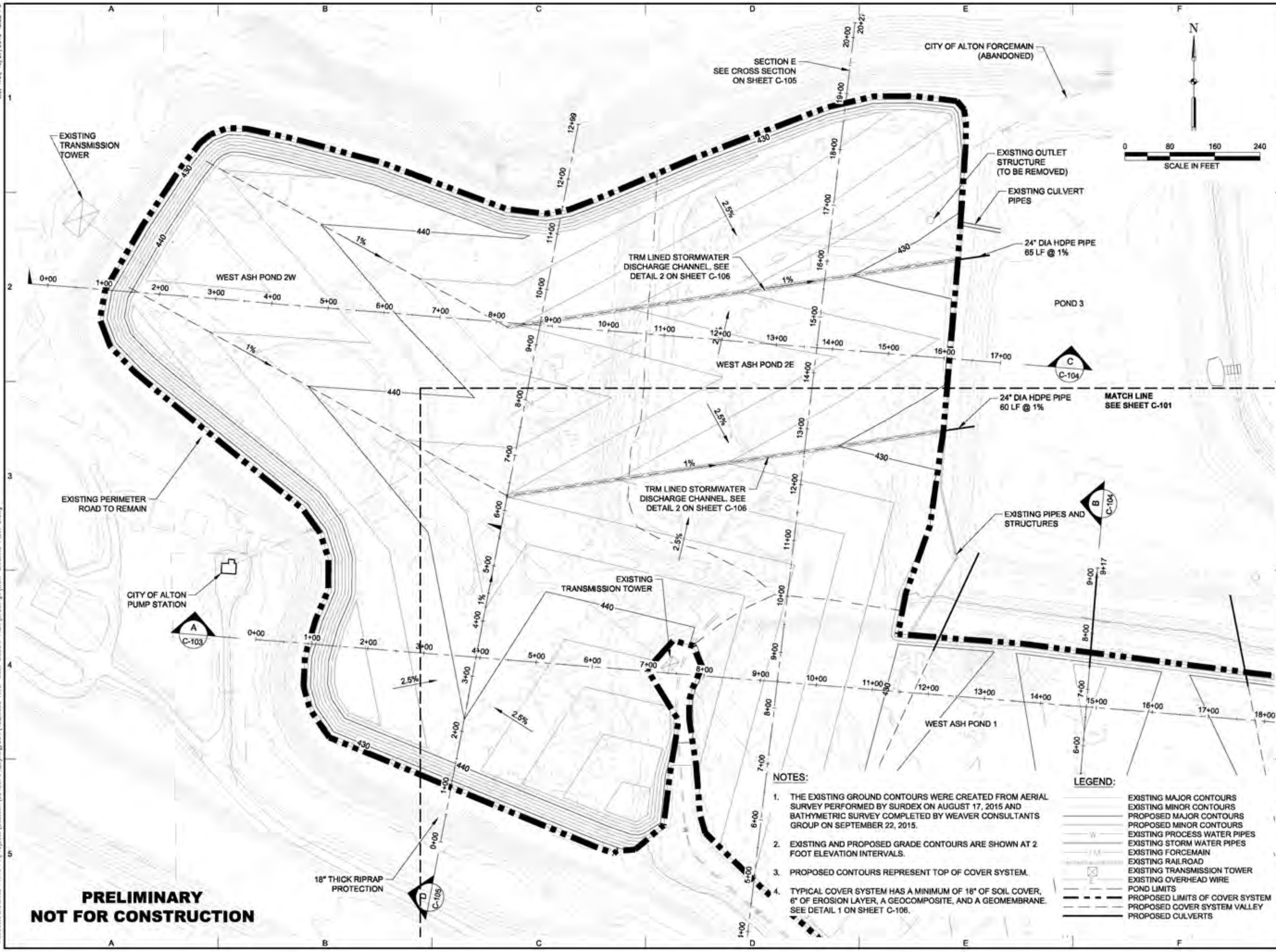
SHEET TITLE

GRADING PLAN

C-101

SHEET 3 OF 9



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NOTES:

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4. TYPICAL COVER SYSTEM HAS A MINIMUM OF 18" OF SOIL COVER, 6" OF EROSION LAYER, A GEOCOMPOSITE, AND A GEOMEMBRANE. SEE DETAIL 1 ON SHEET C-106.

LEGEND:

EXISTING MAJOR CONTOURS
EXISTING MINOR CONTOURS
PROPOSED MAJOR CONTOURS
PROPOSED MINOR CONTOURS
EXISTING PROCESS WATER PIPES
EXISTING STORM WATER PIPES
EXISTING FORCEMAIN
EXISTING RAILROAD
EXISTING TRANSMISSION TOWER
EXISTING OVERHEAD WIRE
POND LIMITS
PROPOSED LIMITS OF COVER SYSTEM
PROPOSED COVER SYSTEM VALLEY
PROPOSED CULVERTS

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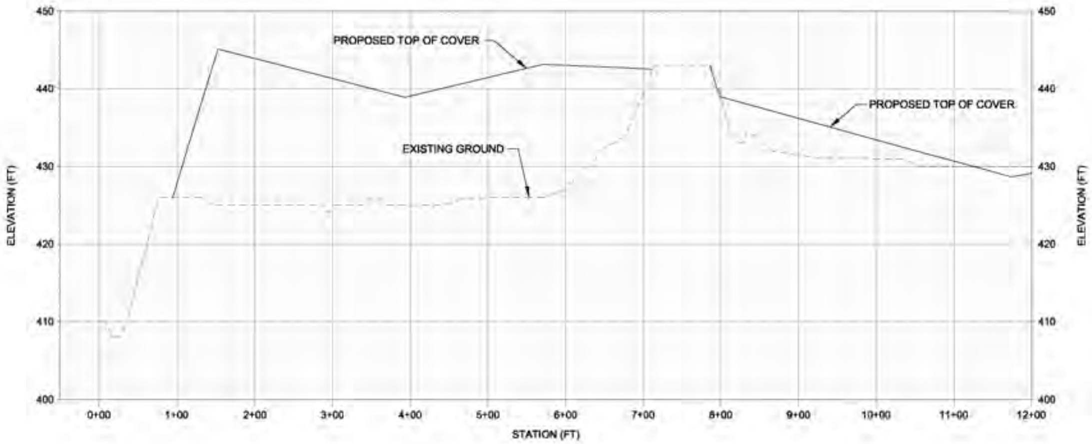
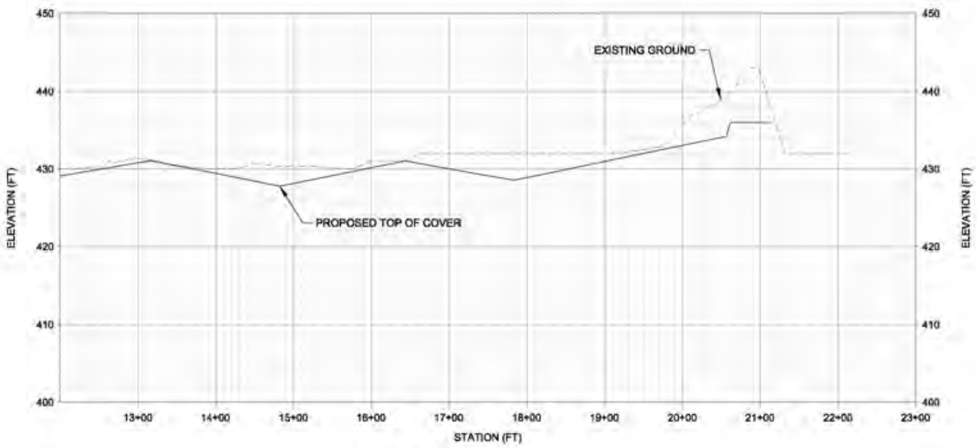
SHEET TITLE

GRADING PLAN

C-102

SHEET 4 OF 9





A SECTION A
C-100
HORIZONTAL SCALE 1" = 80'
VERTICAL SCALE 1" = 8'

NOTES:

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2. EXISTING GRADE ELEVATOINS REFLECT TOP OF ASH WITHIN THE WOOD RIVER WEST ASH COMPLEX AND EXISTING GROUND SURFACE ELEVATIONS OUTSIDE WOOD RIVER WEST ASH COMPLEX.
3. PROPOSED GRADE ELEVATIONS REFLECT TOP OF COVER SYSTEM WITHIN WOOD RIVER WEST ASH COMPLEX AND PROPOSED GROUND SURFACE ELEVATIONS OUTSIDE WOOD RIVER WEST ASH COMPLEX.

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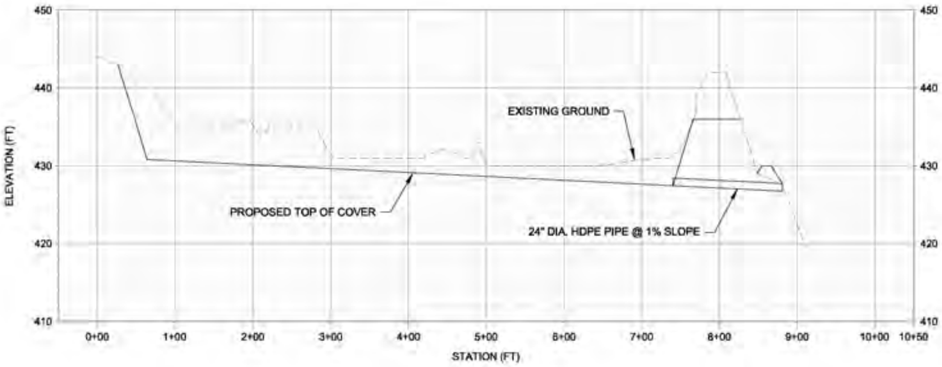
SHEET TITLE

SECTION A

C-103
SHEET 5 OF 9



B / C-100 **SECTION B**
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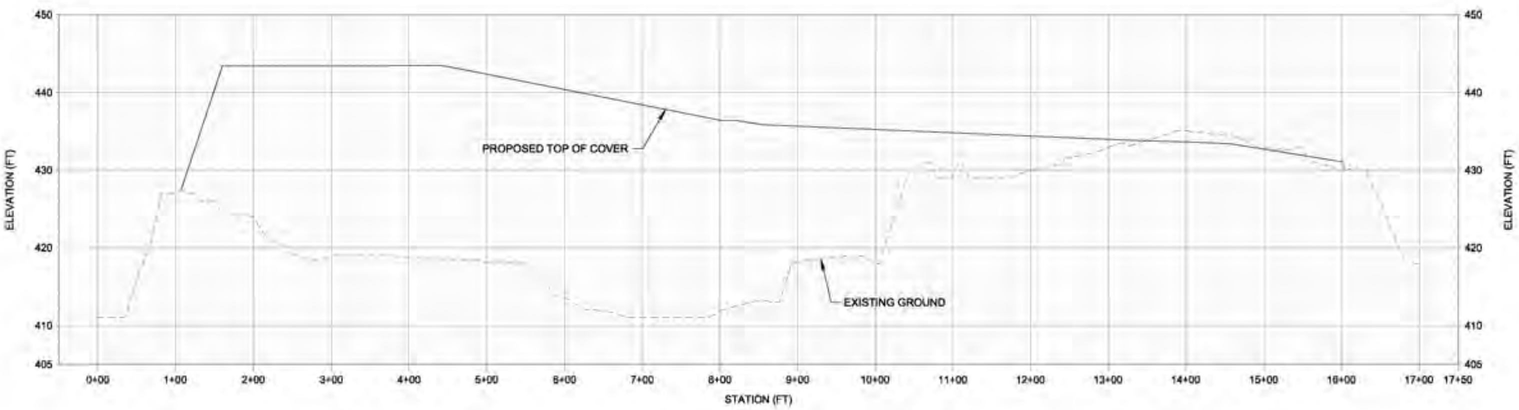

C / C-100 **SECTION C**
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VERTICAL SCALE 1" = 8'

NOTES:

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ALTON, IL

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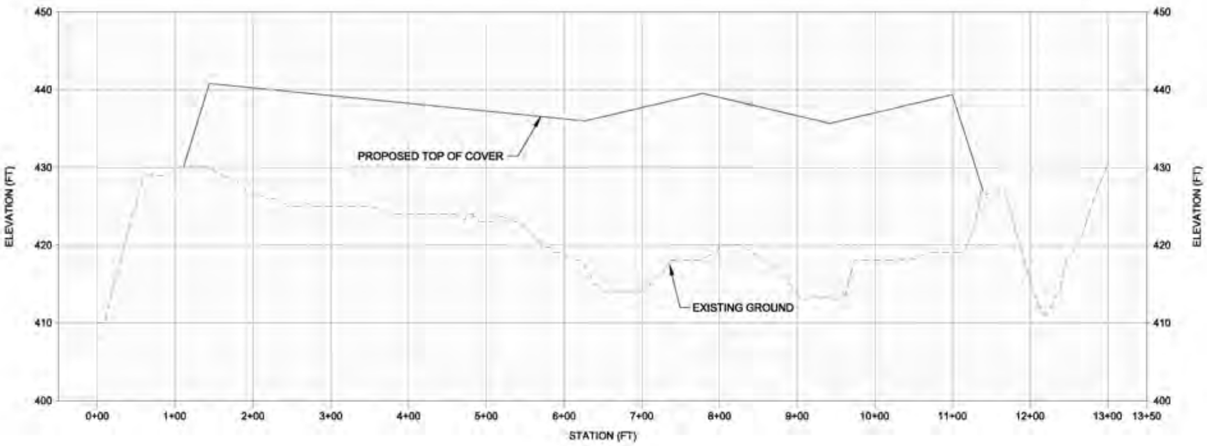
SHEET TITLE

SECTIONS B AND C

C-104

SHEET 6 OF 9



D / C-100 SECTION D
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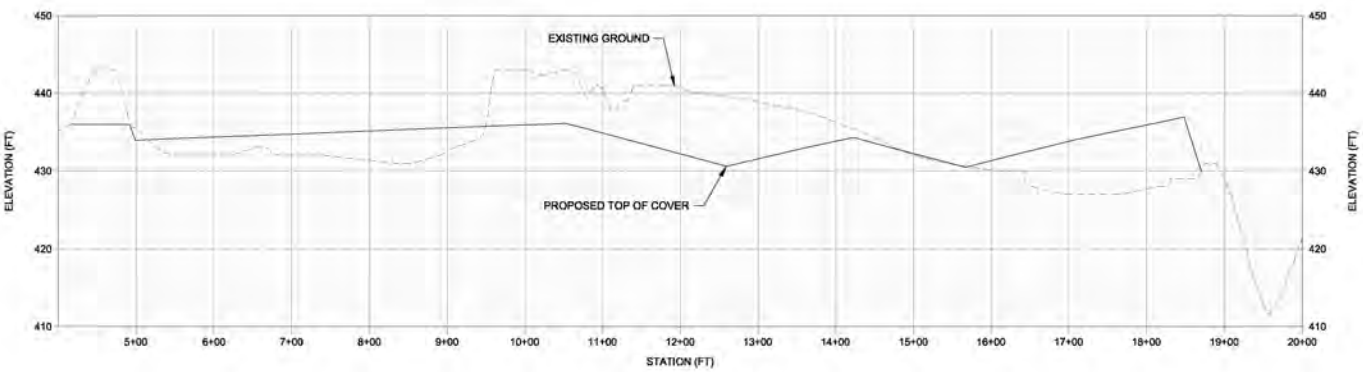

E / C-100 SECTION E
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VERTICAL SCALE 1" = 8'

NOTES:

1. THE EXISTING GROUND ELEVATIONS SHOWN ARE FROM AERIAL SURVEY PERFORMED BY SURDEX ON AUGUST 17, 2015 AND BATHYMETRIC SURVEY COMPLETED BY WEAVER CONSULTANTS GROUP ON SEPTEMBER 22, 2015.
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3. PROPOSED GRADE ELEVATIONS REFLECT TOP OF COVER SYSTEM WITHIN WOOD RIVER WEST ASH COMPLEX AND PROPOSED GROUND SURFACE ELEVATIONS OUTSIDE WOOD RIVER WEST ASH COMPLEX.

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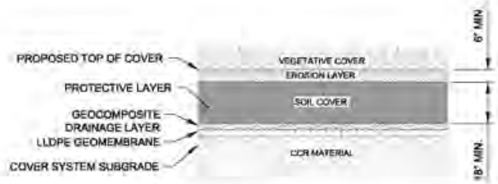
SHEET TITLE

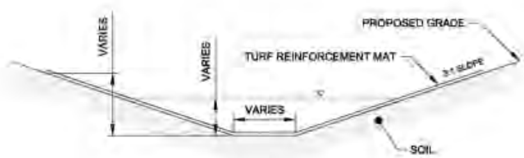
SECTIONS D AND E

C-105

SHEET 7 OF 9



1 COVER SYSTEM - GEOMEMBRANE
NOT TO SCALE



2 TRM LINED STORMWATER DISCHARGE CHANNEL
NOT TO SCALE

PRELIMINARY
NOT FOR CONSTRUCTION

AECOM
1001 Highlands Plaza
Drive West, Suite 300
St. Louis, Mo. 63110-1337
314.429.0100 (phone)
314.429.0462 (fax)

DYNEGY MIDWEST GENERATION, LLC
1500 East Port Plaza Drive
Collinsville, IL 62234

WOOD RIVER POWER STATION
ALTON, IL

PERMIT DRAWINGS FOR CLOSURE OF THE WOOD RIVER WEST ASH COMPLEX

ISSUED FOR BIDDING DATE BY

ISSUED FOR CONSTRUCTION DATE BY

REVISIONS

NO.	DESCRIPTION	DATE

AECOM PROJECT NO:	60501536
DRAWN BY:	LEH
DESIGNED BY:	LEH
CHECKED BY:	RHH
DATE CREATED:	10/13/2015
PLOT DATE:	10/27/2016
SCALE:	AS SHOWN
ACAD VER:	2015

SHEET TITLE

DETAILS

C-106
8

Appendices

Appendix A. Hydrogeologic Site Characterization Report

SMARTER SOLUTIONS

EXCEPTIONAL SERVICE

VALUE

HYDROGEOLOGIC SITE CHARACTERIZATION REPORT

West Ash Pond Complex
Wood River Power Station
Alton, Illinois

FINAL

October 19, 2016

NATURAL RESOURCE TECHNOLOGY

ENVIRONMENTAL CONSULTANTS

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HYDROGEOLOGIC SITE CHARACTERIZATION REPORT

WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

Project No. 2376

Prepared For:

Dynegy Operating Company
1500 Eastport Plaza Drive
Collinsville, IL 62234

Prepared By:

Natural Resource Technology, Inc.
234 W. Florida Street, Fifth Floor
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FINAL
October 19, 2016

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1 INTRODUCTION

1.1 Overview

This Hydrogeologic Site Characterization Report was prepared by Natural Resource Technology, Inc. (NRT) in support of a Closure Plan for impoundments located at the Wood River Power Station (WRPS) which is owned by Dynegy Midwest Generation, LLC (DMG). This report and the Closure Plan will apply specifically to Coal Combustion Residuals (CCR) surface impoundments associated with the Wood River West Ash Pond Complex which includes the following components:

- West Ash Pond 1
- West Ash Pond 2E
- West Ash Pond 2W

In November 2015, in accordance with 40 CFR Part 257, Subpart D, DMG submitted to the Illinois Environmental Protection Agency (IEPA) a notice of intent to close the inactive West Ash Pond 2W. The notice of intent to close the West Ash Pond 2E and West Ash Pond 1 will be submitted by May 17, 2017. Another CCR unit, the Wood River East Ash Pond Complex is not the subject of this closure plan. However, information from previous investigations at this unit are incorporated herein to provide a more complete analysis of the site conditions.

Numerous hydrogeologic investigations have been performed concerning the CCR Units (Multi-Units) located at WRPS. The information presented in this site characterization report includes recent data collected to comply with the Federal CCR Rule (40 CFR Part 257) as well as comprehensive data collection and evaluations from prior hydrogeologic investigation reports (recent to oldest), including, but not limited to, the following:

- ***AECOM December 31, 2015, 30% Design Data Package for Dynegy Wood River Energy Complex West Ash Pond and East Pond CCR Units.*** A geotechnical program consisting of installation of auger borings, CPT soundings and piezometers to obtain information for compliance with requirements of the federal CCR rule.
- ***Kelron/NRT, August 26, 2009, Assessment of Potential for Groundwater Impact on Identified Water Wells, Dynegy Midwest Generation, Inc., Wood River Power Station, East Alton, Illinois.*** An assessment of the potential for impact to water quality in water wells within 2,500 feet of the WRPS property boundary, identified in the June 3, 2009 Water Well Survey report.
- ***Kelron/NRT, June 3, 2009, Water Well Survey, Dynegy Midwest Generation, Inc., Wood River Power Station, East Alton, Illinois.*** A survey to identify wells located within 2,500 feet of the WRPS property boundary.

- ***NRT, May 3, 2006, Transport Model Investigation for the New East Ash Pond, Dynegy Midwest Generation, Inc., Wood River Power Station, Alton, Illinois.*** Calibration of a groundwater flow and transport model to match conditions observed at the New East Ash Pond and utilization of the model to predict the effects of the New East Ash Pond on groundwater quality in the future.

- ***Kelron, December 17, 2004, Hydrogeologic Investigation for the Proposed New East Ash Pond, Dynegy Midwest Generation, Inc., Wood River Power Station, Illinois.*** An investigation to characterize the hydrogeology and groundwater quality at the location of the New East Ash Pond and former Old East Ash Pond and to collect input data for groundwater flow and transport modelling.

- ***NRT, August 2000, Investigation of Closure Options for the West Ash Impoundment, Dynegy Midwest Generation, Inc., Wood River Power Station, Madison County, Illinois.*** An investigation to characterize hydrogeology and groundwater quality at the Wood River West Ash Impoundment and evaluate the effectiveness of closure alternatives for protecting groundwater quality.

- ***Kelron, November 29, 1995, Groundwater Investigation Report, Wood River Ash Pond Expansion, Illinois Power Company.*** An investigation to characterize hydrogeology and groundwater quality near a proposed ash pond expansion near the existing West Ash Pond Complex including analysis of the groundwater monitoring network designed and installed for the ash pond expansion.

- ***Illinois State Water Survey (ISWS), May 1984, Groundwater Monitoring at the Wood River Power Station's Ash Disposal Ponds and Renovated Ash Disposal Area, Illinois Power Company.*** An investigation to design and implement a groundwater monitoring program for determining the impact of ash disposal practices on the local groundwater system. This report includes results from both the West and East Ash Pond Complexes.

In conjunction with this report, a Groundwater Monitoring Plan and a Groundwater Management Zone Application are being prepared to support the closure of the West Ash Pond Complex. In addition, the groundwater flow and transport models were updated to evaluate the effect of various ash pond closure scenarios on groundwater quality and to predict the fate and transport of CCR leachate components. Modeling has also been conducted to enable estimation of the time required for hydrostatic equilibrium of groundwater to be achieved beneath the West Ash Pond Complex.

1.2 Site Location and Background

The West Ash Pond Complex is comprised of West Ash Pond 1, West Ash Pond 2E and West Ash Pond 2W at the WRPS, located in Alton in Madison County, Illinois. The power plant and the West and East Ash Pond Complexes are situated on the east bank of the Mississippi River, about six river miles upstream from the confluence of the Mississippi and Missouri Rivers. The Wood River, a perennial stream that discharges into the Mississippi River, lies on eastern edge of the site.

The West Ash Pond Complex is located within Section 19 Township 5 North and Range 9 West. The cities of Alton, East Alton, and Wood River are within 2 miles of the impoundments. The WRPS is located in an area of heavy industrial activity. Metal refining, vinegar production, cardboard manufacturing, and sewage treatment occur within ½ mile of the plant. The site location is shown on Figure 1. The WRPS property is bordered on the south by the State Route 143 and the Mississippi River, the east by the Wood River, the north by vacant/abandoned industrial property and railroad tracks, and the west by vacant land/water retention ponds of the Mississippi River levee system operated by the Army Corps of Engineers.

Electrical generation at WRPS was shut down in June 2016, and the plant is closing its ash impoundments. This report includes closure of the West Ash Pond Complex, which consists of 3 inactive impoundments (Figure 2):

- West Ash Pond 1 (22 acres, inactive)
- West Ash Pond 2W (19 acres, inactive)
- West Ash Pond 2E (11.5 acres, inactive)

Pond 3 is also shown on Figure 2 and was used as a polishing pond when the complex was used for ash handling prior to 2006. It is not part of the West Ash Pond Complex. West Ash Pond 2E was constructed with a geomembrane liner system and West Ash Ponds 1 and 2W are unlined. The West Ash Pond Complex will be closed by leaving CCR in place and using an alternative geomembrane cover system. This design will control the potential for water infiltration into the closed CCR unit and will allow drainage of surface water off of the cover system (AECOM, 2016). All impoundments of the West Ash Pond Complex have been extensively evaluated during previous hydrogeologic investigations, groundwater quality assessments, and modeling.

1.3 Site History

WRPS began operation in 1949 and ash from the first coal fired unit was disposed of in the Old East Ash Pond (OEAP). The OEAP was located on the eastern edge of the site along the Wood River and was utilized for approximately 30 years until the West Ash Pond Complex was constructed in 1978. The West Ash Pond Complex was reworked several times, and individual ponds were renamed as shown below. This report references the pond designations used from 1997 to 1999, which is consistent with nomenclature used in documents and figures prepared in response to 40 CFR 257.

<table>
<tr><th colspan="5">West Ash Pond Complex Designation</th><th>Period When Designations Were Used</th></tr>
<tr><td>Pond 1</td><td>Pond 2W</td><td>Pond 2E</td><td colspan="2">Pond 3</td><td>← 1997-1999
<u>(used in this report)</u></td></tr>
<tr><td>Pond 1</td><td colspan="2">Pond 2</td><td>Pond 3</td><td>Pond 4</td><td>← 1993-1996</td></tr>
</table>

In addition to nomenclature changes, several modifications to the West Ash Pond Complex and its operation have been made following construction including the following:

- The primary pond was subdivided into two ponds (ponds 1 and 2) in 1993. At that time, the berm surrounding new pond 1 was raised. From 1993 to 1997 sluice water passed through the four ponds before discharge at the NPDES permitted outfall.
- During a plant shutdown in 1997, DMG began reconstruction of the ponds. All ash was removed from ponds 3 and 4, and a new double-lined pond (Ash Pond 3, previously called New Ash Pond #2) with leachate collection was constructed in their place.
- In 1998 DMG began mining ash from pond 2. After removing all ash from the eastern half of the pond, a new pond (Ash Pond 2E, also called New Ash Pond #1) with a composite clay/synthetic liner was constructed.
- Beginning in 1999 all fly ash was managed through a dry handling system. The dry ash was sold as cement additive and bottom ash was sluiced to the lined ponds (ponds 2E and 3) where the ash settled and the sluice water discharged via the NPDES permitted outfall.
- Ash was handled through the west pond complex until 2006-2007, at which time it was redirected to the New East Ash Pond (also called the Primary East Ash Pond) following its construction.
- Ash from ponds 1 (Old Ash Pond #1) and 2W (Old Ash Pond #2) has been mined periodically since closure in 2006.

2 GEOLOGY AND HYDROGEOLOGY

Significant site investigation and characterization has been completed at WRPS. The initial site investigation was completed in 1984 and has been supplemented by additional activities to characterize the geology, hydrogeology and groundwater quality. Additional investigations have been conducted at both the West and East Ash Pond Complexes and include groundwater monitoring, in addition to groundwater flow and transport modeling. The most recent investigation completed in 2015 by AECOM obtained geotechnical information to comply with the Federal CCR Rule. The most recent groundwater report (NRT, January 2016) summarized groundwater monitoring completed in 2015 and compared groundwater results to projections from the modeling completed at closure. While all data sources listed in Subsection 1.2 were reviewed, this report focuses on the results of more recent investigations where the data is the most complete.

2.1 Regional Geology

The WRPS and associated ash complexes are situated in the northern end of an area of extensive alluvial deposits known as the American Bottoms. The geology of this area was described by Bergstrom and Walker (1987) and is summarized here. Alluvial and glacial sediments fill the Mississippi River valley in this area commonly to depths of 100 feet but can extend to more than 140 feet. The sediments generally coarsen downward; the contact between the alluvium and glacial sediments is typically indistinguishable in the Wood River area. Very coarse sediments generally occur near the base of these valley-fill materials and these layers form a highly productive aquifer.

The sand and gravel in the Alton/Wood River area is overlain by low-permeability alluvial silt and clay and is underlain in places by low-permeability clay. Bedrock in the region consists of Pennsylvanian and Mississippian age shale, sandstone and limestone. The bedrock formations yield relatively little water compared to the overlying sand and gravel formation.

2.2 Site Geology

The geology has been extensively evaluated since the first borings and monitoring wells were installed in 1982. The geology at WRPS consists of the following units (beginning at the ground surface):

- Fill (consisting of clay, sand, and silt mixtures) and coal ash: primarily occurs within the impoundments, impoundment berms and the Wood River and Mississippi River levees
- Upper silty clay unit: Clay and silty clay alluvial deposits of the Mississippi River and Wood River

- Inter-sand unit: a thin (generally 5 feet or less) silty sand/ sand unit above the lower silty clay unit that is continuous across most of the site and may intersect the primary sand unit in the northern portion of the site
- Lower silty clay unit: Clay and silty clay alluvial deposits of the Mississippi River and Wood River
- Primary sand unit: Sand and gravel deposits that are highly variable, well to poorly sorted, with intermittent layers of clay and silt. This unit is the uppermost aquifer unit
- Silt and sandy silt, and silty clay diamicton only observed at depth near the east side of the New (Primary) East Ash Pond (NEAP)
- The bedrock at the WRPS may be the Mississippian-age St. Geneieve limestone, which dips gently to the east; elevation of the bedrock surface at the WRPS is estimated at approximately 300 feet above mean sea level (Hampton and O'Hearn, 1984).

For the purposes of this report, the silty clay units are combined because they are compositionally and hydraulically similar. The silt, sandy silt, and clay diamicton are not discussed further because they are only encountered on a limited portion of the site. A description of the units and their occurrence near the West Ash Pond Complex are included below. Boring locations of existing wells and recent AECOM boring/piezometer locations are shown on Figure 3. Boring logs are included in Appendix A and cross-sections depicting the geology are included in Figures 4 and 5. Laboratory reports for recent grain size analysis and hydraulic conductivity tests are included in Appendices B1 and B2, respectively.

2.2.1 Fill and Coal Ash

The thickest accumulations of coal ash at the West Ash Pond Complex occur in Pond 1 with a maximum depth of approximately 26 feet at boring WOR-B026. Ash thickness in Pond 2W ranged from 11 ft in boring WOR-B024 to 18.5 feet in WOR-B024. Within most areas of Pond 1 and Pond 2W the base of the coal ash (top of the silty clay unit) is at a fairly uniform elevation of approximately 407 feet (this is consistent with construction details in previous reports). No borings were advanced in Pond 2E because it is a lined unit; however, it is estimated that the maximum ash thickness is less than 25 feet (calculated from ground surface at 440 ft minus the liner elevation at 415 ft). Borings installed near or through berms did not indicate ash fill, with the exception of WOR-B018 which encountered 14 feet of ash fill at depth. The boring log for this location indicates that ash fill lies directly on top of the primary sand. However, based on the grain size analysis (81% fines) and cone penetrometer test (CPT) in the interval below the ash fill, it is likely that the silty clay unit underlies the ash at this location.

2.2.2 Silty Clay Units

The silty clay units are composed of layers and lenses of clay, silty clay, and silt with varying amounts of sand, but is predominantly clay and silty clay. Visual descriptions included on boring logs indicate both fat and lean clays. Across most of the site the silty clay unit is split into an upper and lower unit. The units are separated by the inter-sand unit which occurs at an elevation between approximately 408-418 feet. The presence and thickness of the inter-sand unit is discussed in detail below in subsection 2.2.3.

The upper silty clay unit and portions of the inter-sand were removed during impoundment construction in the vicinity of the West Ash Pond Complex, such that the CCR is in contact with the inter-sand unit (i.e. WOR-B015) or the lower silty clay (i.e. WOR-B016, B021, B024, B025, B026). In areas where both the upper silty clay unit and the inter-sand were removed, the lower silty clay unit separates the CCR of the West Ash Pond Complex impoundments from the primary sand unit and acts as a barrier to downward migrating leachate from Pond 1 and Pond 2W. In addition to the silty clay unit, Pond 2E and Pond 3 have designed liners consisting of polyethylene membrane and compacted clay which further limit the vertical migration of leachate. At the East Ash Pond complex where the upper silty clay unit is thin or absent (either naturally, or it was removed during construction, i.e. southeast portion of the NEAP), the potential exists for leachate to migrate into the inter-sand layer. In locations where the upper silty clay has been removed, the remaining thickness of the lower silty clay unit separates the ash fill from the primary sand unit.

The total thickness of the silty clay unit beneath West Ash Pond Complex ranges from less than 5 feet in the southeast corner of Pond 1 and the northwest section of Pond 2W (where the inter-sand layer was removed during filling), to greater than 20 feet beneath Pond 2E. Under the East Ash Pond Complex the minimum clay thickness is less than 5 feet in the southeast corner of the NEAP near Well 40M, and increases to the north up to 40 ft thick near Well 38. The thickness of the lower clay unit is shown in Figure 6. Based on the lateral extent and thickness of the unit, it appears clay and silt alluvial sediments were deposited in a historical channel of the Mississippi or Wood River which trends east-west across the center of the ash pond complex. The thickness of the silty clay unit decreases to the north and the south of the ash pond complex as the base of the unit approaches the ground surface.

Field testing of former Monitoring Wells 10 and 11, which were screened entirely within the silty clay unit, indicated a geometric mean horizontal hydraulic conductivity of 2.4×10^{-5} cm/s (NRT, 2000). Laboratory tests of vertical hydraulic conductivity on clay samples ranged from 1.7×10^{-8} cm/s (Kelron, 2004) to 1.2×10^{-6} cm/s (AECOM, 2015). Hydraulic conductivity values are summarized in Table 1. These low values are indicative of a confining layer.

2.2.3 Inter-Sand Unit

The inter-sand unit occurs between the upper and lower silty clay units beneath most portions of the site at an elevation between approximately 408 and 418 feet. The inter-sand unit is composed of heterogeneous fine to medium-grained sand and silty sand that ranges from well to poorly sorted. The inter-sand unit was encountered in borings located along the historical drainage channel shown in the clay thickness map (Figure 6). The top of the inter-sand unit is deepest at the center of the clay valley and rises to the south and to the north. Some historical borings (i.e. Wells 21, 22, 28, 30, in the northern portion of the site indicate that the inter-sand unit may intersect the primary sand unit, and no upper silty clay unit is present. However, interpretations from historical borings (prior to 2000) are difficult because soil was not continuously sampled. The maximum thickness of the inter-sand unit is 5 feet beneath the northwest corner of the NEAP at WOR-B002, and monitoring well 20. The inter-sand unit thins to the south to 1 foot in the southeast corner of the NEAP and may intersect the primary sand to the north where borings indicate the top of the primary sand unit rises to an elevation similar to that of the inter-sand (Wells 21 and 22).

There are no monitoring wells present onsite that are screened exclusively in the inter-sand unit, and no field hydraulic conductivities have been measured. However, based on the visual characterization (silty sand, fine sand) it is expected to be less than that of the primary sand unit. The hydraulic conductivity (estimated from literature values) in this unit is expected to be in the range of 10^{-4} to 10^{-3} cm/sec. (Fetter, 2001).

2.2.4 Primary Sand Unit

The primary sand unit is the uppermost aquifer of the American Bottoms area, and has been extensively developed for water supply. The estimated thickness of the permeable valley fill at WRPS is approximately 120 feet to 140 feet and the sand and gravel constitutes 80 to 100 feet of this thickness. According to the Illinois State Geological Survey (ISGS), the upper 80 feet of the valley fill has been extensively reworked due to river flooding events (Bergstrom and Walker, 1956). Below this depth, the deposits are glacial outwash and older alluvium. Large boulders are encountered below 80 feet, which can sometimes limit drill penetration and are likely remnants of older Illinoian till.

The top of the primary sand unit is mapped on Figure 7 and illustrates the former river channel which trends east-west across the site. The top of the primary sand ranges in elevation from approximately 420 ft in the northern portion of the WRPS property, to approximately 375 ft in a former channel located in the center of the West Ash Pond Complex. The top of the sand unit is near the surface (<5 feet below ground surface [bgs]) in the northern portion of the WRPS property (Wells 21 and 22) and is up to 60 feet deep in the center of the historical channel (Well 38).

Field testing of monitoring wells screened entirely within the sand and gravel unit indicate high horizontal hydraulic conductivities of 10^{-1} to 10^{-3} cm/sec (NRT, 2000 & Kelron, 2004), the geometric mean of all wells tested is 5.7×10^{-2} cm/sec (Kelron, 2004). A summary of the hydraulic conductivities measured in monitoring wells is included in Table 2. Hydraulic conductivity within the primary sand unit is variable within the stated range, but there is no correlation of hydraulic conductivity to elevation or depth within the sand unit (Kelron, 2004).

2.3 Hydrogeology

Monitoring wells were initially installed in 1982 around both the East and West Ash Pond Complexes. The number and location of monitored wells has been modified as knowledge of the site has increased and facility operations have changed. A summary of the current well network and construction details is included in Table 3. Since initial installations in 1982, the hydrogeology of the site had been characterized and described through multiple investigations and computer flow modeling. This section discusses information collected since 1995, including the existing well network and piezometers installed by AECOM in 2015 as well as appropriate historical data.

2.3.1 Groundwater Occurrence and Elevations

Groundwater is present at depth in the primary sand unit and, during periods of high river stage, it is also present in the inter-sand layer when groundwater elevations exceed approximately 410 ft. Measured groundwater elevations typically range from about 399 ft during low water conditions in Well 2 near the Mississippi River, to 432 ft in upgradient wells to the north. However, water elevations generally fluctuate between 402 and 414 feet. The Mississippi River and Wood River stages strongly influence and control the elevations in the groundwater.

A summary of groundwater elevations from 2010-2015 for existing wells is included in Table 4 and hydrographs for representative well locations are included in Appendix C. Table 5 summarizes water elevations from piezometers located within and adjacent to the West and East Ash Pond Complex

Water levels are elevated within the impoundments relative to groundwater elevations measured both outside and below the impoundment in the primary sand unit. Within the impoundment, measurements collected from L1 and AECOM piezometers P002, P003, P004, P005, P016, P025, and P026 indicate the CCR porewater elevation ranges between 418 and 431 (Table 5). Table 5 also includes elevations from piezometers P006, P008, P015, P020, P021 and P024 which are screened below the impoundments in the primary sand unit. Groundwater elevations in the primary sand unit are generally 10- 20 feet lower than those measured within the impoundment.

2.3.2 Groundwater Flow

Potentiometric maps prepared from elevation data measured in monitoring wells reveal groundwater flow directions are variable and significantly influenced by the Mississippi River stage. During base stage or low river levels, groundwater flow occurs in both a southwesterly direction toward the Mississippi River and southeasterly toward the Wood River. The horizontal gradient between well 29 and 2, as measured in 2015, is 0.001 feet/feet (ft/ft). A representative potentiometric map is shown in Figure 8

During spring flooding and high Mississippi River stages, groundwater flow is northerly, with either an easterly or westerly component. After flood levels subside, the flow direction reverts to more normal conditions and groundwater again discharges to the rivers. The flooding and high river stages only occur periodically and the dominant flow direction during any given year is toward the rivers. Horizontal gradients during flood events are high near the river, on the order of 0.003 ft/ft, although gradients can be aerially variable due to the transience of the system during flood stage. A potentiometric map of groundwater flow during high water level conditions is shown on Figure 9.

2.3.3 Vertical Groundwater Gradients

Nested monitoring wells were historically present at six locations (Wells 02/01, 04/03, 32/05, 08/07, 11/10, 13/12) and currently there are two sets of nested wells (Wells 39S/39M, 40S/40M) at WRPS. Wells 13, located adjacent to 12 on the northeast corner of the west ash complex, and 11, located on the northeast corner of the Old East Ash Pond, were screened in the silty clay, and historical elevations measured when both wells were present indicate general downward flow of water from the silty clay into the primary sand unit. Near the rivers, calculated gradients are flat, to upward (I.e. upward in wells 01/02, 40S/40M). A summary of representative historical and current vertical gradients is included in Table 6.

2.3.4 Water Well Assessment

According to database records of the ISGS, ISWS, and Illinois Environmental Protection Agency (Illinois EPA), there are 42 water wells within a 2,500 feet radius of the WRPS property boundary. Ten wells are designated as industrial/commercial wells used for dewatering or pressure relief of levees. The operational status of these wells is unknown, although information on the well logs suggests some may have been plugged. Five wells are community water supply wells operated by East Alton and the remaining 27 wells are industrial/commercial wells of unknown operational status. (NRT, 2009)

In addition to the above sources of water well information provided by State agencies, information was obtained from DMG personnel and the Olin Corporation. DMG does not own or operate any water wells on the WRPS property. Olin Corporation owns and operates wells on it's property east of the Wood River.

The results of the water well survey are provided in Appendix D. Based on all of the well information acquired from the listed sources, water supply wells within at least 2,500 feet of the WRPS property boundary are shown on Figure 2 in Appendix D. The current status of some of these wells (i.e., operational, abandoned, or sealed) is not known.

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

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

3 GROUNDWATER QUALITY

3.1 Summary of Groundwater Monitoring Activities

Groundwater sampling at the West Ash Pond Complex was initiated in 1984; however, consistent data collection began in 1996. The following discussion presents an analysis of data collected from 2010 to 2015. Groundwater data from the East Ash Pond Complex is not included in this report.

Currently, groundwater monitoring is completed in accordance with the Closure Work Plan (CWP) (NRT, 2000) approved by the Illinois EPA on December 13, 2000. As called for by the 2000 CWP, DMG is required to sample groundwater quarterly, submit the results quarterly to the Illinois EPA, and provide an annual data assessment. However, some modifications to the 2000 CWP proposed in the "2005 Closure Work Plan Annual Report" and cover letter were approved by the Illinois EPA in a letter to DMG dated June 15, 2006. Modifications approved by the Illinois EPA include, reduction of monitoring frequency from quarterly to semiannually and semiannual submittals of data discs to Illinois EPA

The current monitoring program for groundwater consists groundwater samples collected from 12 monitoring wells and analyzed forfollowing parameters:

Laboratory Parameters		
Boron	Manganese (total)	Sulfate
Total Dissolved Solids (TDS)		
Field Parameters		
pH	Depth to Water (ft below mp)	
Specific Conductance	Groundwater Elevation (ft)	
Temperature		

Groundwater monitoring results are reported to the Illinois EPA annually in accordance with the approved Closure Work Plan with the most recent data and analysis submitted in a report titled '*2015 Closure Work Plan Annual Report*' dated January 20, 2016.

Additional groundwater monitoring was initiated in November 2015 at 7 existing well locations to comply with the 40 CFR 279 CCR rule. Sampling is conducted at 3 background wells and 4 downgradient wells for an expanded list of parameters, including the following:

Metals (totals)			
Antimony	Boron	Cobalt	Molybdenum
Arsenic	Cadmium	Lead	Selenium
Barium	Calcium	Lithium	Thallium
Beryllium	Chromium	Mercury	
Inorganics (totals)			
Fluoride	Chloride	Sulfate	Total Dissolved Solids
Field			
pH	Dissolved Oxygen	Specific Conductivity	Turbidity
Oxidation/Reduction Potential	Temperature		

Data for the expanded parameter list for the federal CCR sampling will be reported in accordance with the groundwater monitoring plan.

3.2 Groundwater Monitoring Results and Analysis

Analytical results from January 2010 through December 2015, are summarized in Appendix E. Statistics showing the minimum and maximum concentrations detected in the groundwater samples is included for each well in Table 6. Also, a comparison of groundwater data from wells to the Groundwater Quality Standards for Class I: Potable Groundwater is shown. The well locations are shown on Figure 3.

Parameters that have been detected in groundwater at concentrations exceeding the Class I groundwater quality standards include the following: boron, manganese, pH, and total dissolved solids (total filterable residue). A summary of recent exceedances is included below for parameters of concern. A statistical summary for the monitored inorganic groundwater quality parameters is provided in Table 7. Table 8 provides a summary of exceedances for 2010 through 2015, and are representative and consistent with historical data collected prior to 2010. Time-series graphs for each of the groundwater parameters at the 12 monitoring wells are included in Appendix F covering 2006 through 2015. Each of the parameters is discussed below.

Boron

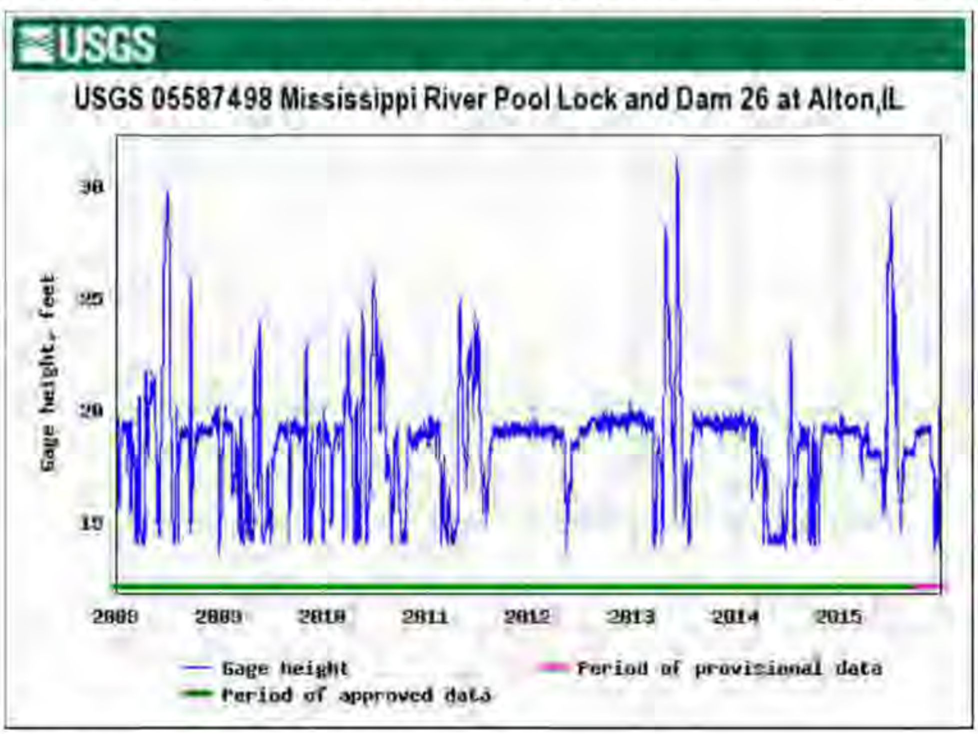
Boron exceeded the 2 mg/L standard at three of the 12 monitoring wells from 2013 through 2015. In 2012 only two wells exceeded the standard. Well 02 had boron concentrations of 2.50 and 3.45 mg/L, and Well 34 had a boron concentration of 5.95 mg/L in the 2nd Quarter that rose to 7.49 m/L in the 4th Quarter. Wells 02 and 34 are located to the south and downgradient of the West Ash Pond Complex. Well 12 had boron concentrations of 2.21 and 2.05 mg/L during the 2nd and 4th Quarters of 2015, respectively. Well 12 is located to the east and downgradient of the West Ash Pond Complex.

Annual median boron concentrations have decreased since the unlined ponds were removed from service (prior to 1998) in eight of the eleven downgradient monitoring wells (Table 9) currently monitored, while concentrations have increased only in wells 02, 12, and 34. The median boron concentration at Well 02 has ranged from 4.60 mg/L one year after the final unlined pond was removed from service to 2.10 mg/L in 2008, but increased to 2.98 mg/L in 2015. The concentrations have decreased from the peak concentration observed shortly after removing the unlined ponds from service, although the concentration trend has been slightly upward from 2012 to 2015.

The median boron concentration at Well 12 was 1.80 mg/L in 2011 and below the Class I Standard, but increased slightly from 2012 through 2015, beginning at 2.04 in 2012 to 2.13 mg/L in 2015. Annual median boron concentrations at Well 34 increased from 0.88 and 1.37 mg/L in 2011 and 2012, respectively, to 4.15, 3.99, and 6.72 mg/L in years 2013-2015, respectively. Based on Mann-Kendall trend analysis results, monitoring wells with a statistically significant upward Sen Slope trend are 02, 12, and 34 (Table 7). The monitoring wells with a statistically significant downward trend are 20 and 31.

The recent increases in boron (and other coal indicator parameters) may be attributed to several factors.

Mississippi River Stage: Unusually stable southerly groundwater flow directions prevailed from 2012 through 2015. Groundwater flow is generally southerly for two-thirds of the year, with flow reversals—caused by high water in the Mississippi River—for one-third of the year. Observed river stage data indicate fewer periods of high river stage and corresponding groundwater flow reversals since 2012 than prior to 2012 (see figure below). As a result, groundwater from beneath the West Ash Pond Complex is flowing south, and east toward Wells 02, 12 and 34 for longer periods than historically observed.



NATURAL RESOURCE TECHNOLOGY

Levee Drainage Improvements: Factors that may have also disrupted groundwater flow direction and quality is significant construction activities which were conducted during 2014 and 2015 off-site between the West Ash Pond Complex and the Mississippi River levee by the Southwestern Illinois Flood Prevention District Council. Work completed during this time period included new relief well installations, existing relief well conversions and upgrades, drainage weirs for out letting water, blanket drain installation, placement of rip rap, and installation of new piping systems to handle groundwater from relief wells.

Ash Reuse/Recycling: Large amounts of ash were removed from Pond 1 in 2015 for beneficial reuse, possibly creating temporary ponding and increased infiltration within the ash excavations. The increased infiltration would result in increased mobilization of boron and other ash indicator parameters.

The observed increase in boron concentrations in these wells results from one, or a combination of the above factors.

Sulfate

Sulfate, like boron, is a primary indicator of coal ash leachate, and exceeded the 400 mg/L standard at wells 02 and 25 prior to removing the unlined impoundments from service in 1998. No wells have exceeded the sulfate standard for 18 consecutive years, from 1999 through 2015, with the exception of Well 02 in 2004. Since then, or for eleven consecutive years, sulfate concentrations have remained below the standard.

Sulfate concentrations in groundwater at the 11 downgradient wells ranged from below the detection limit of 5 mg/L to 307 mg/L during 2010- 2015. Sulfate concentrations indicate a statistically significant downward Sen Slope trend at Well 31 and background Well 36. Concentrations at Wells 02 and 34 indicate statistically significant upward trends (Table 7) consistent with trends in boron concentrations. However, although these concentrations are increasing, they remain below the Class I standard (400 mg/L). The sulfate concentration at Well 02 had a median concentration of 213 mg/L. Although the six year statistically significant trend at this well is upward, concentrations at Well 02 in 2014 and 2015 were below the peak measured during the same time period of 298 mg/L in 2013. Sulfate concentrations over the past six years at Well 34 are well below the Class I standard, with a median of 10 mg/L and a maximum concentration of 47 mg/L. The highest median sulfate concentration, 240 mg/L, was encountered at Well 25. This well is downgradient of and impacted by recharge through the off-site slag pile.

Manganese

Median manganese concentrations exceeded the Class I standard of 0.15 mg/L at 6 of the 12 monitoring wells in 2015 (Table 9), compared to 7 of the 12 monitoring wells in 2014. As in prior years, background

Monitoring Well 36 had one of the higher manganese concentrations during 2015, with a concentration of 3.19 mg/L in the 2nd Quarter. Only Monitoring Wells 04 and 34 had similarly high concentrations, ranging from 4.96 to 6.70 mg/L in 2015.Mann-Kendall analyses of manganese concentrations indicate statistically significant upward trends at downgradient Monitoring Wells 02, 04, 23, and 28.

The occurrence of elevated manganese concentrations in groundwater at the West Ash Pond Complex is primarily associated with natural geochemical factors and, only secondarily related to the impoundments. Manganese concentrations are generally highest (greater than 2 mg/L) in wells 04, 34, and 36, which are located nearest to the Mississippi River and where sulfate, and typically boron, concentrations are low, indicating the primary source of manganese in these wells is not related to the West Ash Pond Complex.

Concentrations of manganese generally decrease with distance from the river. Elevated manganese concentrations in groundwater, which do not correlate to elevated boron and sulfate, are indicative of both off-site sources located north of the West Ash Pond Complex and naturally occurring conditions unrelated to the ash ponds. EPRI research on the occurrence and distribution of manganese in groundwater at the West Ash Pond Complex System was presented previously in the 2003 and 2004 Closure Work Plan Annual Reports (Kelron, 2003 and 2004).

Total Dissolved Solids

TDS concentrations regularly exceed the Class I standard of 1,200 mg/L at Wells 25 and 31 located adjacent to the off-site slag pile. TDS reflects concentrations of major ions in groundwater. At Wells 25 and 31 the highest median TDS concentrations and the greatest statistical variability (as measured by standard deviation on Table 7) reflect elevated chloride concentrations (>500 mg/L) in the leachate from the slag pile. The highest observed TDS concentrations at Wells 25 and 31 in 2015 were 1,320 and 2,240 mg/L, respectively.

TDS concentration trends in wells other than 25 and 31 generally mirror those of sulfate, which is the major inorganic parameter related to the ash impoundments. The median concentrations of TDS in other wells ranged from 510 mg/L to 936 mg/L between January 2010 to December 2015 (Table 7).

pH

From 2010-2015, Wells 20 and 23 had median pH values lower than 6.5 Standard Units (S.U.) (Table 7). pH values measured in Wells 28, 31, and 34 were also below 6.5 S.U. at least once during the last 6 years. With the exception of well 34 all of these wells are located north and generally upgradient of the ash complex. The cause of frequent pH exceptions in wells 20 and 23 is not clear. However, these two wells are upgradient of the East and West Ash Pond Complexes near other wells (Wells 21 and 22) that also exhibited relatively low 2010-2015 median concentrations of boron (0.29 mg/L to 0.38 mg/L in 2015 [Table 7]). Measured

The lack of correlation between pH and the ash indicator parameter boron suggests that the low pH values observed at this facility are either naturally occurring or due to influences other than the East and West Ash Pond Complexes. This conclusion is supported by pH measurements from leachate well L1. This leachate well has yielded ash pore water samples on several occasions and pH values from those samples ranged from 6.9 to 8.3 S.U., with a median of 7.68 S.U. (Appendix A, 1998 Closure Work Plan Report). pH values from this well suggest that the ash leachate is neutral to alkaline and is therefore not the source of acidity causing low pH values in groundwater.

The pH concentrations as measured in the field exhibit significant upward trends at Wells 04, 22, 28, 31, and 34. Although these trends are upward, the pH measured at all monitoring wells remains near neutral and is below the maximum Class 1 groundwater standard of 9.0.

4 CONCLUSIONS

Based on extensive investigation and monitoring since 1984, the site has been well characterized and a detailed site conceptual model has been developed. In conjunction with the hydrogeologic investigation, a groundwater model has also been developed to predict the effect of various ash pond closure scenarios on groundwater quality. The groundwater model report is being submitted under separate cover.

WRPS and the West and East Ash Pond Complexes are located on top of river deposits which consist of three major geologic units:

- Silty Clay Unit
- Inter-sand Unit
- Primary Sand Unit

The ash fill lies on top of the silty clay unit, or the inter-sand unit in places where the upper silty clay was either not deposited, or removed during construction of the ash ponds. With the exception of the southeast portion of the NEAP, the ash fill is underlain by silty clay of variable thickness.

Groundwater is encountered in the primary sand unit, and occasionally in the inter-sand unit when Mississippi River water levels are high. The groundwater elevations are significantly influenced by the Mississippi and Wood Rivers, flowing toward the rivers during normal river stages and away from the rivers during flood events when river water recharges the groundwater. Based on hydraulic conductivities and vertical gradients, horizontal groundwater flow in the silty clay is negligible. Groundwater flow occurs in the primarily in the primary sand unit and occasionally in the inter-sand unit during river flooding events.

Water levels within the West Ash Pond Complex are elevated and generally 10-15 feet above groundwater outside of the impoundments. Groundwater quality effects from the West Ash Pond Complex occur within the primary sand unit where the silty clay is not present or possibly through the silty clay unit where it is thin. Groundwater in the inter-sand unit may be impacted during periods of high groundwater elevations when it becomes saturated.

Exceedances of Class I groundwater quality standards are present in monitoring wells at various locations around the West Ash Pond Complex for boron, manganese, and total dissolved solids. Measurements of pH collected from groundwater wells located immediately north of the West and East Ash Pond Complexes are also frequently below the Class I lower limit (6.5 S.U.) The exceedances of Class I groundwater quality standards for manganese, TDS and pH are attributable to either naturally occurring geochemical variability, or non-CCR sources and are not associated with the West Ash Pond Complex.

In general boron concentrations are declining, with the exception of wells 02, 12, and 34 which have shown recent increases. However, concentration increases at these wells remain below the peak concentrations measured following ash handling operational changes in 2000, and in 2006 when the impoundment stopped operation following the construction of the primary east ash pond. Increasing trends measured at these wells are attributed to one or a combination of the following factors:

- Less frequent recharge of groundwater from high Mississippi and Wood River stages
- Increased surface water ponding and infiltration within the impoundments resulting from ash excavations and recycling
- Construction of levee drainage and flood prevention improvements between the West Ash Pond Complex and the Mississippi River

Given the current groundwater data and site information, groundwater quality is expected to improve following closure, as capping will reduce the infiltration of water and leachate generation from the West Ash Pond Complex. Because CCR will remain in the West Ash Pond Complex, a groundwater monitoring plan and groundwater management zone application are being submitted with this closure plan. These documents will enable monitoring of improvements in groundwater quality until the Class 1 groundwater quality standards are achieved.

5 REFERENCES

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FIGURES

SITE LOCATION MAP

HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

DRAWN BY/DATE:
SDS 7/15/16
REVIEWED BY/DATE:
NRK 7/15/16
APPROVED BY/DATE:
SJC 7/28/16

PROJECT NO: 2376

FIGURE NO: 1

NATURAL RESOURCE TECHNOLOGY

* = Primary East Ash Pond is not included in the Closure Plan

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

- CCR MONITORED MULTI-UNIT
- CCR UNIT
- ADDITIONAL CCR MONITORED UNIT
- PROPERTY BOUNDARY (BASED ON 1997 SURVEY DATA)

DRAWN BY/DATE: SDS 7/15/16
REVIEWED BY/DATE: NRK 7/15/16
APPROVED BY/DATE: SJC 7/28/16

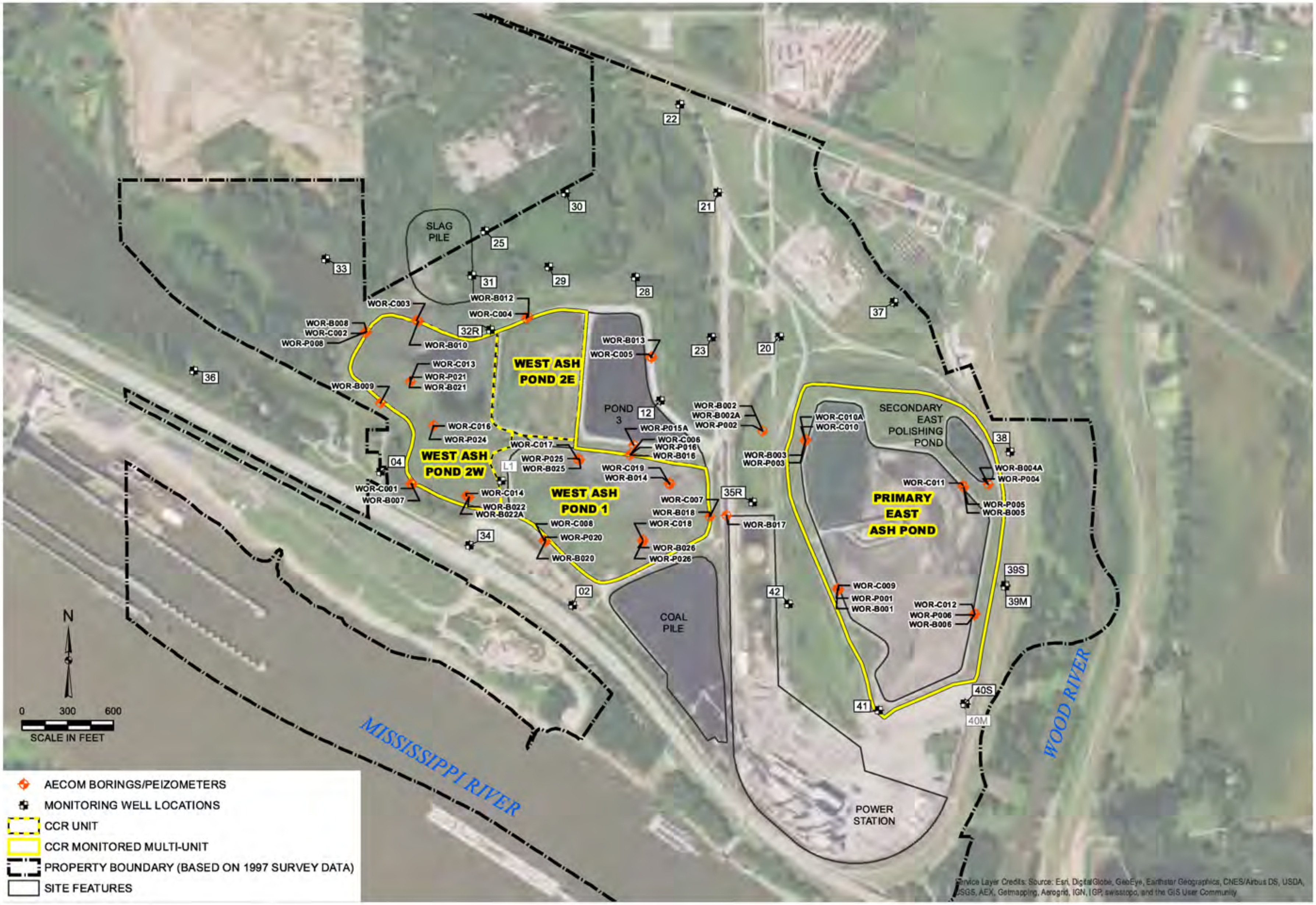
OVERVIEW OF ASH POND SYSTEM

HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

PROJECT NO: 2376

FIGURE NO: 2

NATURAL RESOURCE TECHNOLOGY



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REVIEWED BY/DATE: NRK 7/15/16
APPROVED BY/DATE: SJC 7/28/16

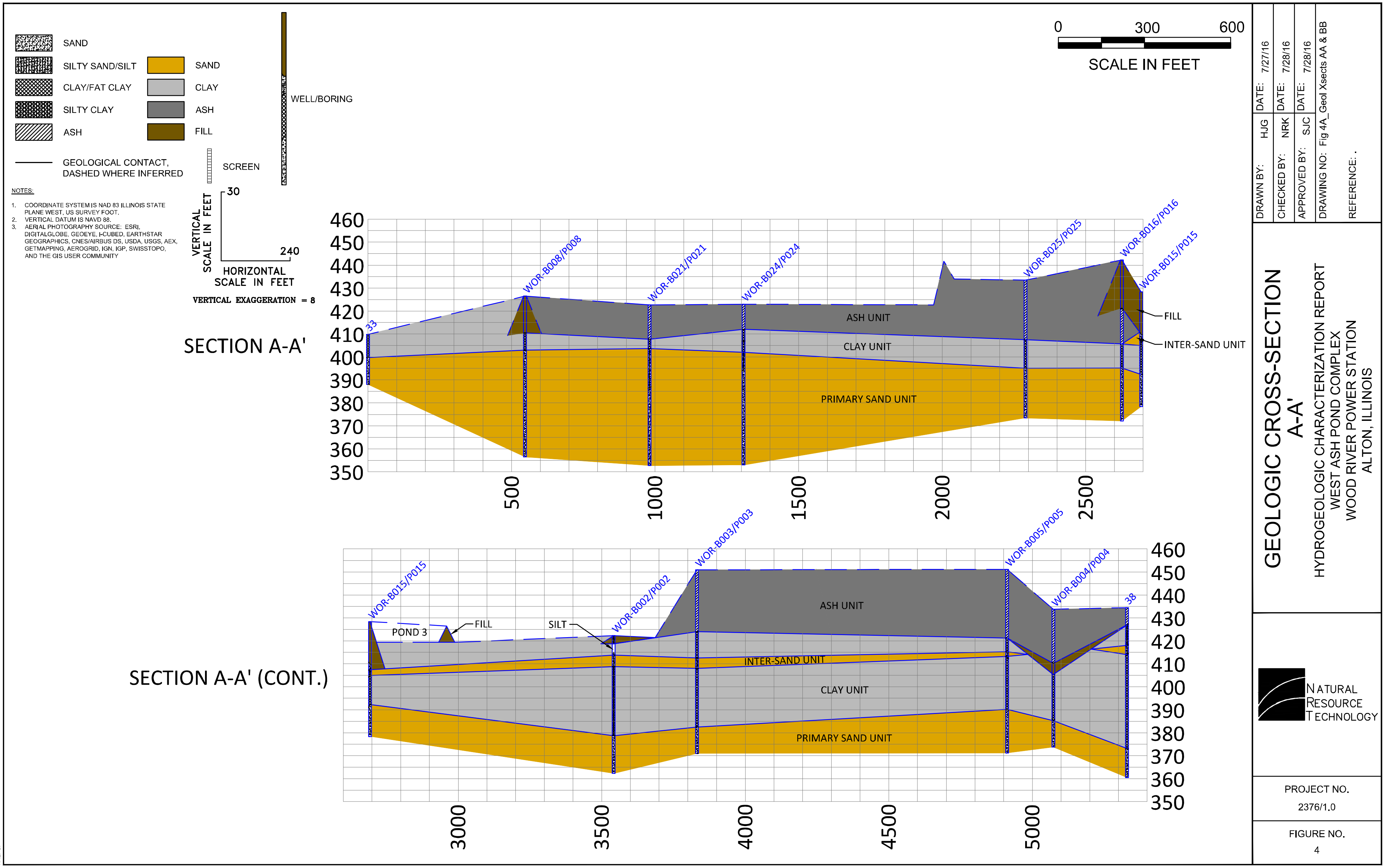
BORING AND MONITORING WELL LOCATION MAP

HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

PROJECT NO: 2376

FIGURE NO: 3

NATURAL RESOURCE TECHNOLOGY



SAND
SILTY SAND/SILT
CLAY/FAT CLAY
SILTY CLAY
ASH
SAND
CLAY
ASH
FILL
WELL/BORING
GEOLOGICAL CONTACT, DASHED WHERE INFERRED
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: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, AND THE GIS USER COMMUNITY
30
240
VERTICAL SCALE IN FEET
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION = 8
0
300
600
SCALE IN FEET
SECTION A-A'
33
WOR-B008/P008
WOR-B021/P021
WOR-B024/P024
WOR-B025/P025
WOR-B016/P016
WOR-B015/P015
ASH UNIT
CLAY UNIT
PRIMARY SAND UNIT
FILL
INTER-SAND UNIT
460
450
440
430
420
410
400
390
380
370
360
350
500
1000
1500
2000
2500
SECTION A-A' (CONT.)
WOR-B015/P015
POND 3
FILL
SILT
WOR-B002/P002
WOR-B003/P003
WOR-B005/P005
WOR-B004/P004
38
ASH UNIT
INTER-SAND UNIT
CLAY UNIT
PRIMARY SAND UNIT
3000
3500
4000
4500
5000
DRAWN BY: HJG DATE: 7/27/16
CHECKED BY: NRK DATE: 7/28/16
APPROVED BY: SJC DATE: 7/28/16
DRAWING NO: Fig 4A_Geol Xsects AA & BB
REFERENCE: .
GEOLOGIC CROSS-SECTION A-A'
HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS
NATURAL RESOURCE TECHNOLOGY
PROJECT NO.
2376/1.0
FIGURE NO.
4

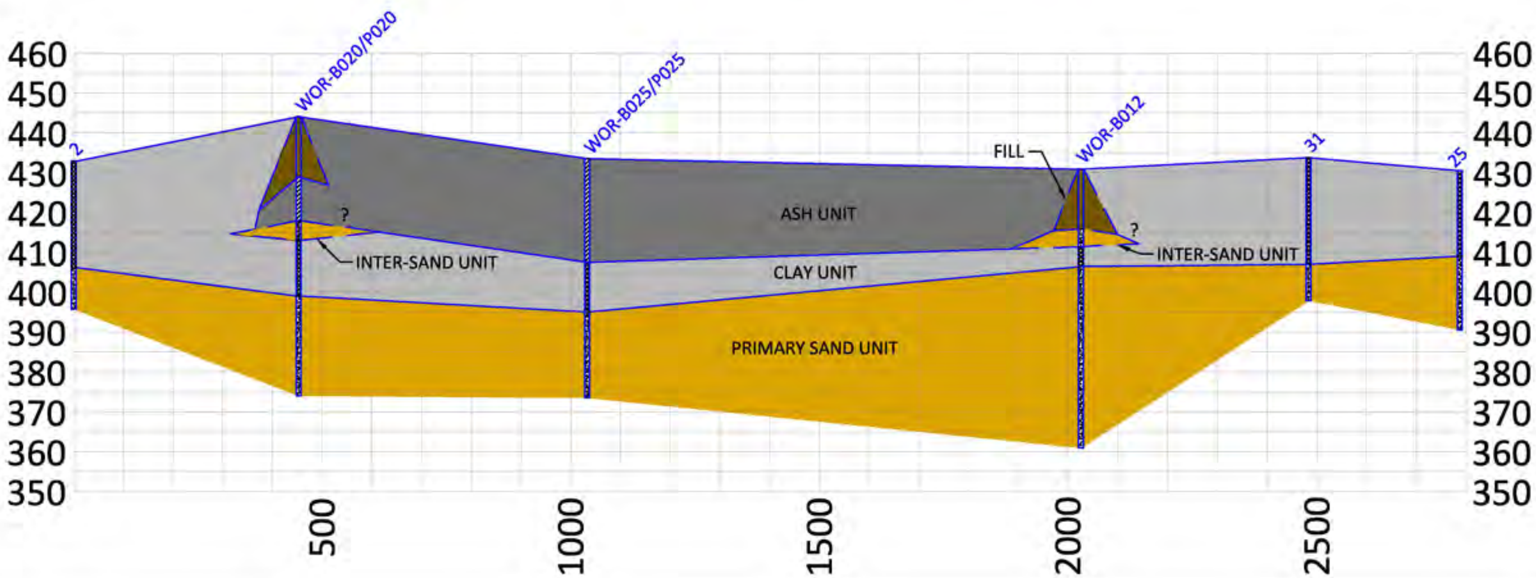
SAND
SILTY SAND/SILT
CLAY/FAT CLAY
SILTY CLAY
ASH
SAND
CLAY
ASH
FILL
GEOLOGICAL CONTACT, DASHED WHERE INFERRED
SCREEN
WELL/BORING

NOTES:

1. COORDINATE SYSTEM IS NAD 83 ILLINOIS STATE PLANE WEST, US SURVEY FOOT.
2. VERTICAL DATUM IS NAVD 88.
3. AERIAL PHOTOGRAPHY SOURCE: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, AND THE GIS USER COMMUNITY

VERTICAL SCALE IN FEET 30
HORIZONTAL SCALE IN FEET 240
VERTICAL EXAGGERATION = 8

SECTION B-B'



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CHECKED BY: NRK DATE: 7/28/16
APPROVED BY: SJC DATE: 7/28/16
DRAWING NO: Fig 4A_Geol Xsects AA & BB
REFERENCE: .

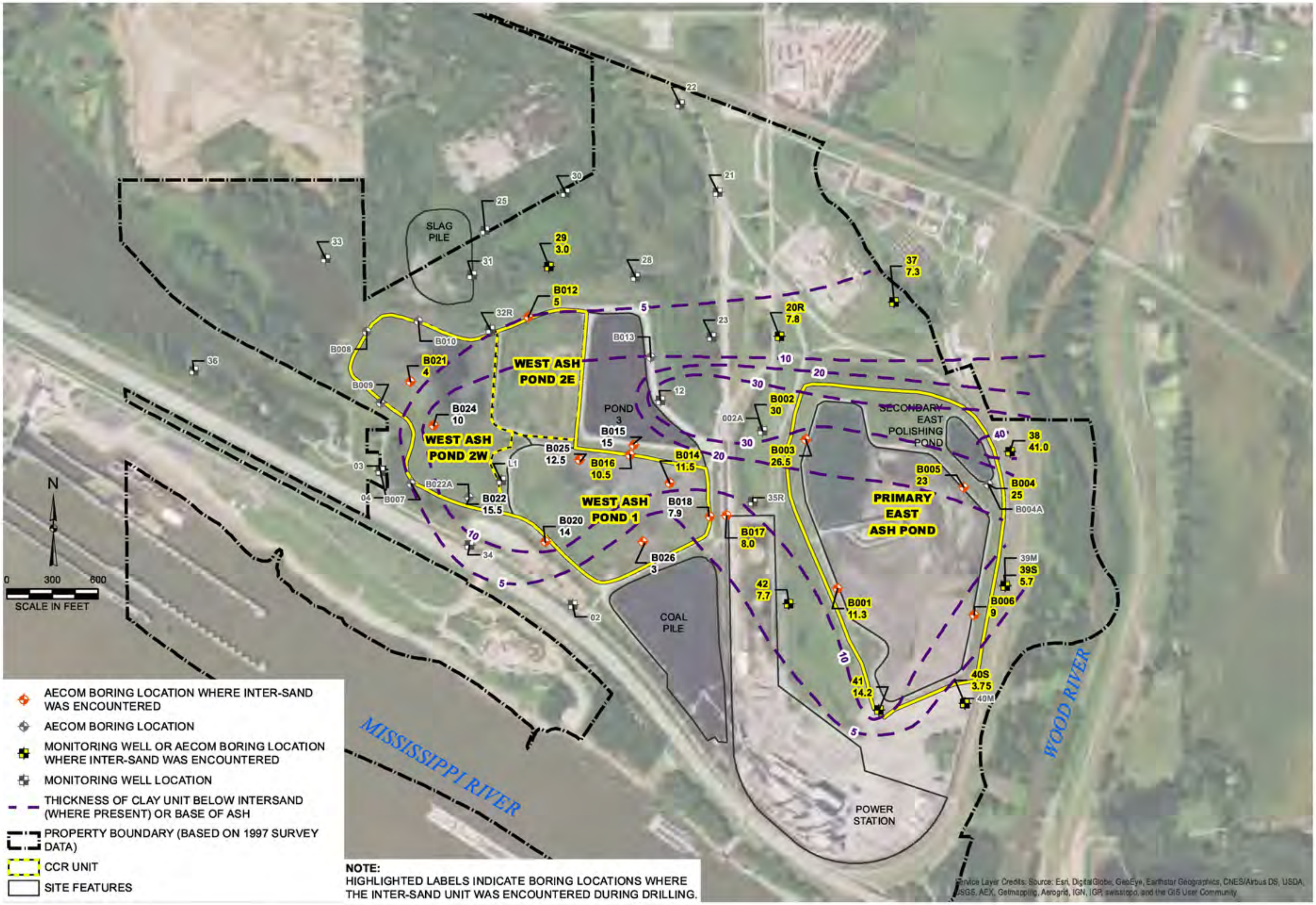
GEOLOGIC CROSS-SECTION B-B'

HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

NATURAL RESOURCE TECHNOLOGY

PROJECT NO.
2376/1.0

FIGURE NO.
5



DRAWN BY/DATE: SDS 7/15/16
REVIEWED BY/DATE: NRK 7/15/16
APPROVED BY/DATE: SJC 7/28/16

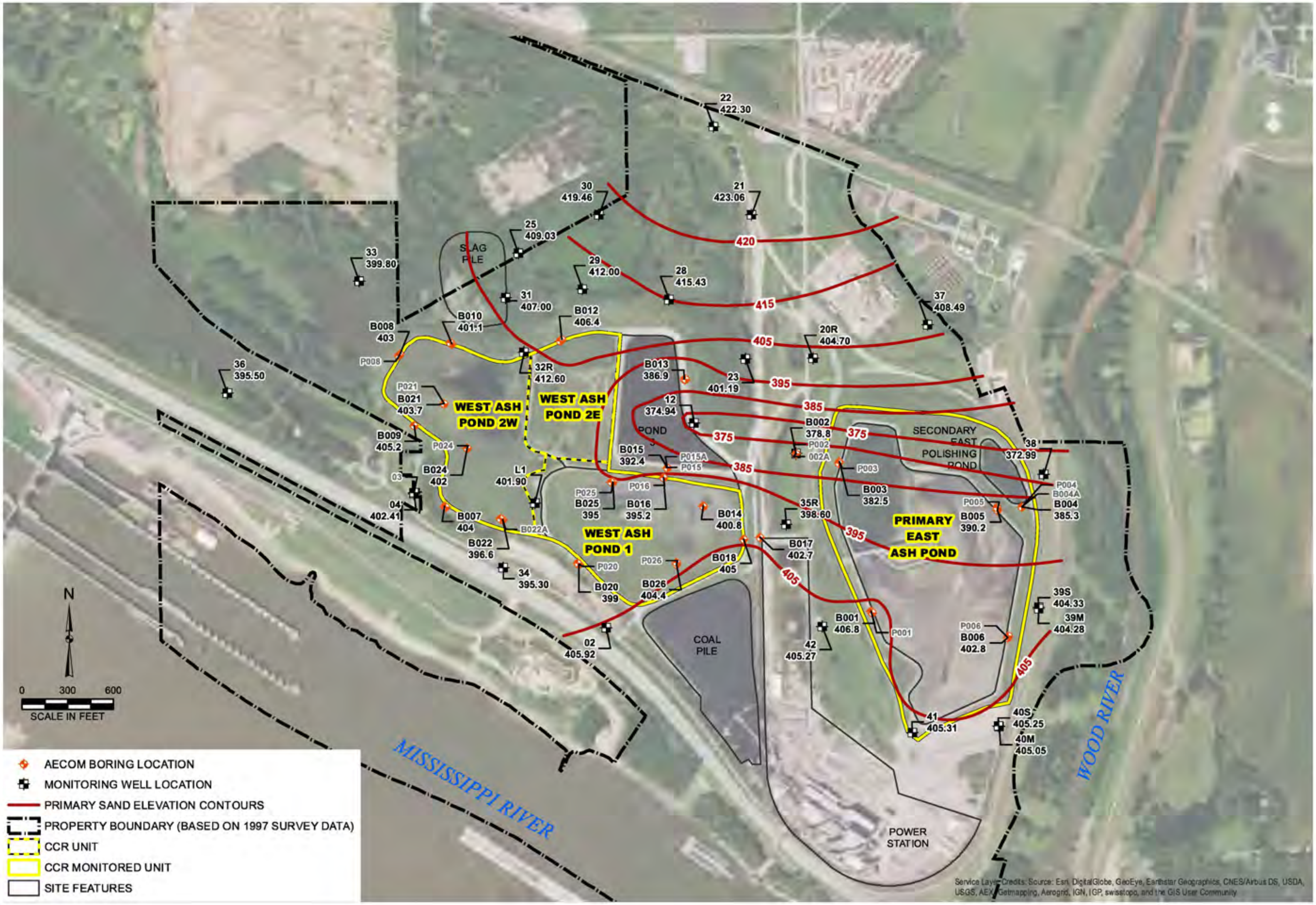
CLAY THICKNESS BELOW ASH COMPLEX OR INTER-SAND UNIT

HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

PROJECT NO: 2376

FIGURE NO: 6

NATURAL RESOURCE TECHNOLOGY



DRAWN BY/DATE: SDS 6/28/16
REVIEWED BY/DATE: NRK 7/15/16
APPROVED BY/DATE: SJC 7/28/16

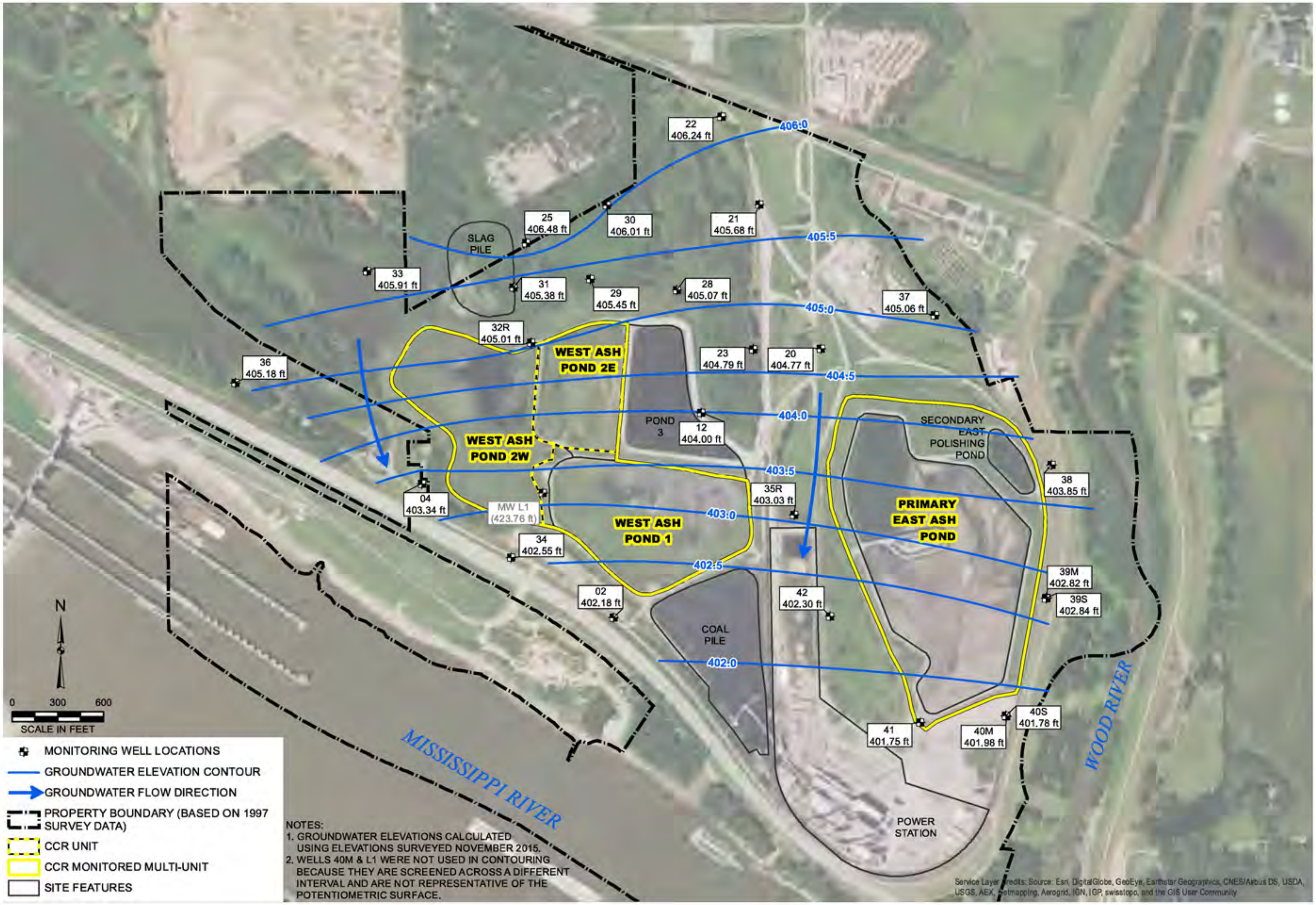
TOP OF PRIMARY SAND ELEVATION CONTOURS

HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

PROJECT NO: 2376

FIGURE NO: 7

NATURAL RESOURCE TECHNOLOGY



DRAWN BY/DATE: SDS 7/15/16
REVIEWED BY/DATE: NRK 7/15/16
APPROVED BY/DATE: SJC 7/28/16

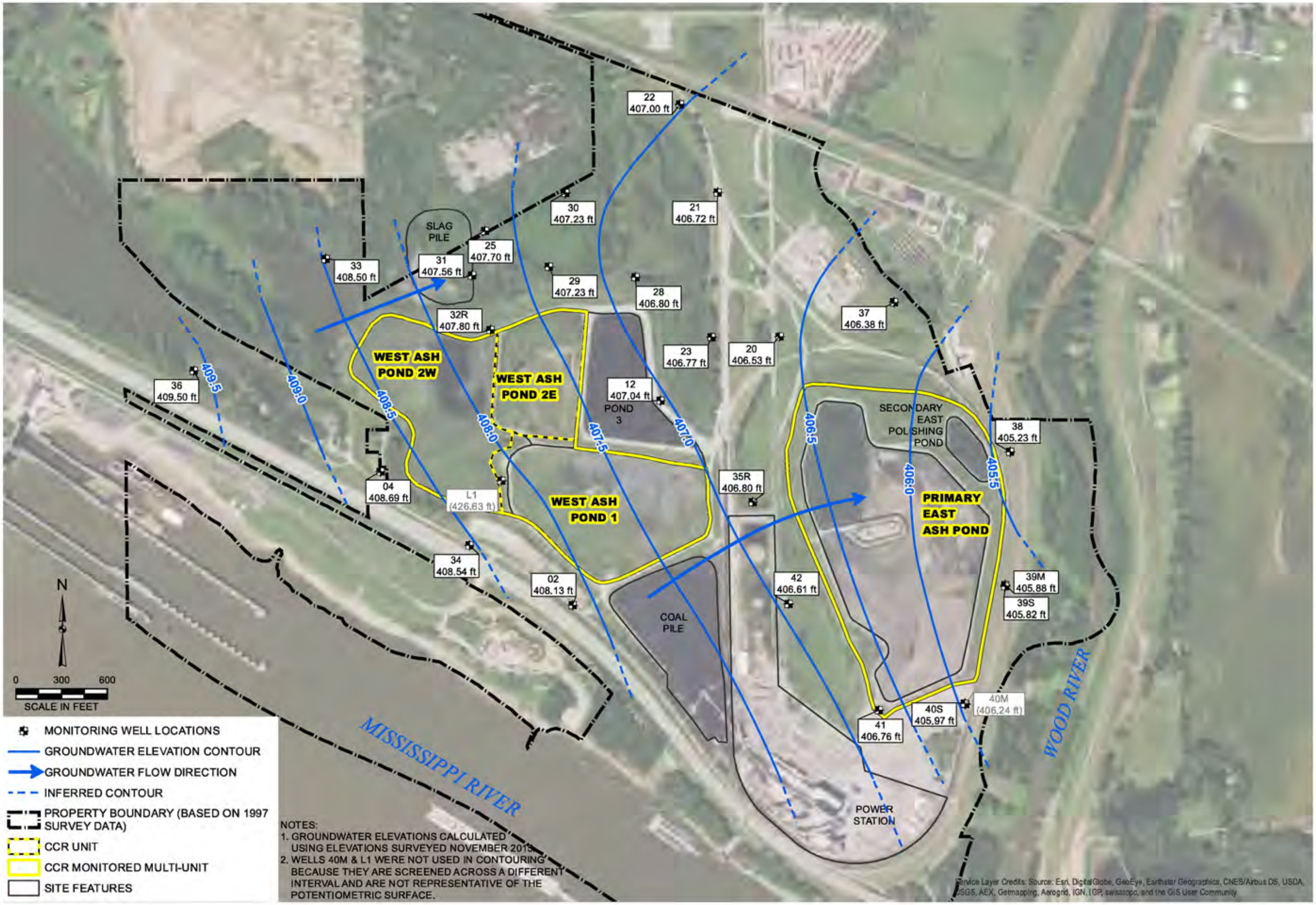
POTENTIOMETRIC SURFACE NOVEMBER 3-5, 2015

HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

PROJECT NO: 2376

FIGURE NO: 8

NATURAL RESOURCE TECHNOLOGY



DRAWN BY/DATE: SDS 7/15/16
REVIEWED BY/DATE: NRK 7/15/16
APPROVED BY/DATE: SJC 7/28/16

POTENTIOMETRIC SURFACE
MAY 21, 2015

HYDROGEOLOGIC CHARACTERIZATION REPORT
WEST ASH POND COMPLEX
WOOD RIVER POWER STATION
ALTON, ILLINOIS

PROJECT NO: 2376

FIGURE NO: 9

NATURAL RESOURCE TECHNOLOGY

TABLES

Table 1
Summary of Hydraulic Conductivity Test Results in the Clay Unit
Hydrogeologic Characterization Report
Wood River Power Station

Boring/Well	Test Type[1]	Soil Type Description	Laboratory Vertical Hydraulic Conductivity cm/s	Laboratory Vertical Hydraulic Conductivity ft/day	Field Horizontal Hydraulic Conductivity cm/s	Field Horizontal Hydraulic Conductivity ft/day
10	a.	Silty Clay			2.3E-05	6.4E-02
11	a.	Silty Clay			2.6E-05	7.4E-02
13	b.	Silty Clay	3.0E-07	8.5E-04		
B-5-04-3	c.	Lean Clay	1.7E-08	4.8E-05		
B-5-04-6	c.	Sandy Lean Clay	1.2E-07	3.4E-04		
B-5-04-8	c.	Lean Clay	2.4E-08	6.8E-05		
WOR-B001	d.	Fat Clay	2.9E-07	8.2E-04		
WOR-B004	d.	Lean Clay	4.6E-07	1.3E-03		
WOR-B014	d.	Silt	1.2E-07	3.4E-04		
WOR-B022	d.	Silt w/ Sand, Lean Clay	1.2E-06	3.4E-03		
		Minimum Hydraulic Conductivity	1.7E-08	4.8E-05	2.3E-05	6.4E-02
		Maximum Hydraulic Conductivity	1.2E-06	3.4E-03	2.6E-05	7.4E-02
		Geometric Mean Hydraulic Conductivity	**1.1E-07**	**3.2E-04**	**2.4E-05**	**6.9E-02**

[1] Test types:

a. Slug test analyzed with Hvorslev (1951) solution, Hampton and O'Hearn (1984)
b. Falling head permeameter test, Hampton and O'Hearn (1984)
c. Falling head permeameter test, Kelron Environmental (2004)
d. Falling head permeameter test, AECOM (2015)

Table 2
Summary of Hydraulic Conductivity Test Resultsin the Primary Sand
Hydrogeologic Characterization Report
Wood River Power Station

Well	Test Type[1]	Formation	Field Hydraulic Conductivity	
			cm/s	ft/d
Sand Units				
1	a.	Sand	2.5E-02	72
2	a.	Sand	2.0E-03	6
3	a.	Sand	7.8E-04	2
4	a.	Sand	1.8E-03	5
5	a.	Sand	8.1E-03	23
6	a.	Sand	1.2E-03	3
7	a.	Sand	4.2E-04	1
8	a.	Sand	4.2E-03	12
9	a.	Sand	3.2E-03	9
12	a.	Sand	2.3E-02	66
14	a.	Sand	3.5E-02	98
20	b.	Sand	1.3E-02	37
21	b.	Sand	2.1E-02	60
22	b.	Sand	2.3E-02	64
23	b.	Silty Clay (top) / Sand (bottom)	8.1E-03	23
24	b.	Sand	8.1E-03	23
25	b.	Sand	2.1E-03	6
32	c.	Sand	9.0E-02	255
33	c.	Sand	2.6E-02	74
34	c.	Sand	1.1E-03	3
37	d.	Sand	1.1E-01	306
38	d.	Sand	2.7E-02	75
39S	d.	Sand	5.5E-02	155
39M	d.	Sand	1.8E-01	510
40S	d.	Sand	9.5E-03	27
40M	d.	Sand	2.1E-01	587
41	d.	Sand	6.2E-02	175
42	d.	Sand	3.3E-02	95
	Minimum Hydraulic Conductivity		4.2E-04	1
	Maximum Hydraulic Conductivity		2.1E-01	587
	Geometric Mean Hydraulic Conductivity		**5.7E-02**	**33**

1. Test types:

a. nitrogen gas slug, analyzed using method of Hvorslev (1951), performed by Hampton and O'Hearn (1984)

b. PVC slug, analyzed using method of Bower & Rice (1976), performed by Kelron Environmental (1995)

c. PVC slug, analyzed using method of Bower & Rice (1976), performed by STMI (this report)

d. PVC slug and air slug, analyzed using Bower and Rice, 1976, performed by Kelron Environmental (2004)

Table 3
Summary of Existing Monitoring Well Network and AECOM Borings
Hydrogeologic Characterization Report
Wood River Power Station

Boring/Well ID	Ground Surface at Time of Install	Measuring Point Elevation (2015)	Top of Screen Elevation	Bottom of Screen Elevation	Screen length	Total Boring Depth
2	432.9	435.0	397.7	395.7	2	395.7
4	417.4	419.6	396.4	394.4	2	391.4
12	426.9	428.8	370.9	368.9	2	368.9
20R	425.2	427.2	406.3	386.7	20	385.2
21	433.1	434.8	414.0	393.6	20	390.1
22	433.3	435.0	410.0	394.8	15	390.8
23	431.2	432.3	413.2	392.8	20	391.2
25	430.5	432.2	412.4	392.0	20	390.5
28	420.4	422.6	400.0	385.0	15	384.4
29	428.0	429.9	407.6	392.6	15	392.0
30	430.5	432.3	410.1	395.1	15	394.5
31	433.8	435.8	413.4	398.4	15	397.8
32R	427.1	429.0	410.1	400.1	10	393.1
33	409.8	411.8	399.8	389.8	10	
34	429.3	430.2	394.3	389.3	5	
35R	422.6	424.7	399.6	394.6	5	394.6
36	413.5	416.3	393.5	388.5	5	
37	429.29	432.44	405.4	400.3	5	398.3
38	434.49	437.09	367.7	362.7	5	360.5
39S	437.33	440.08	401.1	396.1	5	393.9
39M	437.28	440.03	369.9	364.9	5	362.8
40S	441.25	444.55	404.7	399.7	5	397.7
40M	441.05	444.20	388.1	383.0	5	381.1
41	448.11	450.96	401.9	396.8	5	394.1
42	422.97	425.72	402.7	397.6	5	395.0
L1	433.9	437.49	416.9	411.9	5	
L2	435.99	439.41	431.3	421.2	10	
L3	441.80	444.26	432.1	422.1	10	
L4	448.29	450.84	430.7	420.6	10	420.3
AECOM Borings and Piezometers						
B001/P001	451.8	451.78	436.8	426.8	10.0	371.1
B002/P002	422.3	425.35	407.3	397.3	10.0	362.3
B003/P003	451.0	451.05	416.0	406.0	10.0	371
B004/P004	433.8	436.60	418.8	408.8	10.0	373.8
B005/P005	451.2	451.24	421.2	411.2	10.0	371.2
B006/P006	451.3	451.32	401.3	391.3	10.0	371.3
B007	426.5	NA	NA	NA	NA	356.5
B008/P008	426.5	426.48	406.5	396.5	10.0	356.5
B009	426.2	NA	NA	NA	NA	356.2
B010	426.1	NA	NA	NA	NA	356.1
B012	430.9	NA	NA	NA	NA	360.9
B013	427.9	NA	NA	NA	NA	357.9
B014	431.8	NA	NA	NA	NA	361.8
B015/P015	428.4	428.45	393.4	383.4	10.0	378.4
B016/P016	442.2	442.23	422.2	412.2	10.0	372.2
B017	431.7	NA	NA	NA	NA	361.7
B018	443.9	NA	NA	NA	NA	373.9
B020/P020	444.0	444.05	404.5	394.5	10.0	374
B021/P021	422.7	425.33	408.7	393.7	15.0	352.7
B022	430.6	NA	NA	NA	NA	380.6
B024/P024	423.0	425.46	408.0	393.0	15.0	353
B025/P025	433.5	435.98	418.5	408.5	10.0	373.5
B026/P026	431.4	433.81	415.4	405.4	10.0	402.9

Table 4
Summary of Groundwater Elevations (2010-2015)
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Month-Year	02	04	12	20	21	22	23	25	28	29	30	31
March-10	406.4	407.1	407.42	406.78	408.52	408.84	407.9	408.89	408.02	403.32	408.71	408.24
June-10	414.36	411.93	413.61	412.6	413.41	413.36	413.52	412.88	413.12	412.87	413.06	412.59
September-10	413.47	411.74	412.33	410.78	411.62	411.7	411.89	411.59	411.54	411.64	411.63	411.62
November-10	406.7	407.26	408.07	407.41	409.22	409.58	408.55	409.56	408.75	408.88	409.35	408.78
March-11	412.76	411.24	409.51	406.56	407.01	406.84	408.24	407.8	407.8	408.07	407.48	408.51
June-11	418.78	414.38	416.68	415.82	416.21	415.86	416.56	415.04	415.79	415.38	415.4	414.96
September-11	405.73	405.68	407.53	407.36	409.28	409.68	408.3	409.25	408.5	408.59	409.17	408.12
November-11	403.01	403.23	405.03	404.79	406.86	407.29	405.86	407.21	406.04	406.17	406.81	405.82
March-12	408.16	408.92	407.01	405.19	406.33	406.5	406.48	407.29	406.53	406.94	406.82	407.45
June-12	404.6	405.38	405.73	404.69	406.44	406.8	405.93	407.13	406.27	406.62	406.92	406.62
August-12	400.55		402.77	402.28	406.04	404.78	401.65	404.9	403.75	404.17	404.66	404.22
November-12		404.06	402.1	401.11	402.98	403.46	402.36	404.21	402.79	403.37	403.68	403.7
February-13	401.8	404.41	402.64	401.59	403.43	403.66	402.81	404.31	403.16	403.61	403.85	397.57
May-13	417.9	415.13	415.32	413.1	412.11	411.02	413.98	403.81	413.14	412.96	411.77	413.07
August-13	404.19	407.36	407.06	406.96	409.1	409.57	407.99	409.27	408.37	408.61	403.24	407.39
November-13	401.95	404.27	403.51	402.76	404.63	405.09	403.95	405.37	404.32	404.72	405.06	404.81
February-14	403.71	406.46	403.47	401.96	403.55	403.94	403.34	405	403.63	404.2	404.27	405.26
May-14	409.78	410.8	408.58	406.83	407.54	407.53	408.01	408.41	408.03	408.41	408.07	408.63
September-14	406.62	409.2	407.07	405.8	407.46	407.83	404.11	408.18	407.31	407.74	407.96	408.01
November-14	403.98	405.7	405.91	405.75	407.75	408.18	406.85	407.88	407.15	407.43	407.94	407.27
March-15	402.75	405.24	404.27	403.43	405.28	405.67	404.62	405.88	405.06	405.46	405.69	405.53
May-15	408.91	410.13	407.83	406.12	407.44	407.69	407.41	408.08	407.49	407.85	407.86	408.22
September-15	405.71	406.95	408.24	408.09	410.33	410.9	409.18	410.36	409.6	410.76	410.44	409.32
Nnvember-15	402.18	403.21	404	404.77	405.68	406.24	404.79	406.48	405.07	405.45	406.01	405.38

Month-Year	32R	33	34	35R	36	37	38	39M	39S	40M	40S	41	42	L1R
March-10	407.98		406.04	406.74	407.77	407.77	406.91	406.27	406.32	405.56	405.79	405.57	406.15	415.3
June-10	412.82		413.67	414.33	412.65	413.61	414.12	414.54	414.55	414.89	414.89	414.95	414.62	429.2
September-10	411.89		413.17	413.07	412.27	411.97	412.76	413.13	413.13	413.41	413.54	413.52	413.42	428.94
November-10	408.42	408.77	406.82	407.43	408.28	408.18	407.55	400.74	400.57	406.65	406.78	406.5	406.86	426.78
March-11	409.16	409.28	412.73	410.31	411.23	407.49	409.07	409.77	409.52	411.14	410.68	411.81	411.02	430.1
June-11	415.27	412.44	416.76	418.14		417.29	417.79	418.42	418.38	418.82	418.91	419.18	418.79	430.05
September-11	407.7	407.81	405.45	406.86	406.75	408.52	407.54	406.67	406.73	405.9	406.09	405.8	406.3	426.13
November-11	405.36	405.79	402.68	404.13	404.75	406.14	405.1	403.93	404.03	402.85	402.8	402.74	403.4	425.48
March-12	407.52		408.53	406.98	408.59	406.09	406.14	405.95	405.83	406.44	406.18	406.85	406.81	429.53
June-12	406.32	407.12	404.54	405.06	406.86	405.24	404.88	404.48	404.52	404.12	404.16	404.2	404.67	426.3
August-12	403.72	405.29	401.04	401.66	404.39	403.22	402.5	401.53	401.58	400.34	400.65	400.26	401.01	424.18
November-12	403.27	405.25	401.35	401.24	404.35		401.43	400.43	400.41	399.79				423.75
February-13	403.53	405.2	402.55	401.88	404.79		402.03	401.04		400.75				426.86
May-13	413.78		416.55	416.77		414.35	416.3	417.19	417.25	417.82	417.72	418.39	417.82	430.05
August-13	407.74		404.63	406	406.91	408.02	406.79	405.8	405.89	404.61	403.23	404.35	405.24	427.63
November-13	404.44	405.83	402.64	402.65	405.72		403.01	401.93	401.93	401.11			401.8	425.68
February-14	404.63	406.34	429.11	403.11	406.6	402.89	402.3	401.6	401.14	401.83	401.34	401.34	401.11	426.59
May-14	408.84		410.44	408.94	410.33	407.34	407.79	407.97	407.93	408.56	408.45	409.03	409.1	428.92
September-14	407.85		408.27	406.34	406.46	406.79	406.34	405.83	405.78	405.68	405.67	405.79	405.87	428.03
November-14	406.78		404.33	405.3	406.37	406.88	405.74	404.79	404.85	403.82	403.88	403.81	404.57	428.94
March-15	405.25	406.54	404.16	403.13	406.06	404.63	403.61	402.48	402.48	401.69	401.63	401.76	402.32	
May-15	408.33	409.12	410.23	407.66	410.33	407.02	406.09	406.65	406.58	406.98	406.77	407.58	407.36	429.09
September-15	408.74	408.97	406.61	407.22	407.58	408.84	407.74	407	407.04	406.12	406.34	405.96	406.49	428.47
Nnvember-15	404.975	405.91	401.64	403.03	405.18	405.06	403.83	402.82	402.84	401.98	401.78	401.75	402.3	423.76

Table 5
Summary of Groundwater Elevations (AECOM Piezometers)
Hydrogeologic Characterization Report
Wood River Power Station

Date	WOR-P001	WOR-P002	WOR-P003	WOR-P004	WOR-P005	WOR-P006	WOR-P008	WOR-P015	WOR-P016	WOR-P020	WOR-P021	WOR-P024	WOR-P025	WOR-P026
10/29/2015	-	418.8	421.5	421.6	422.3	401.9	404.7	403.2	424.6	403.6	403.7	402.8	425.5	423.8
11/19/2015	-	421.8	421.7	421.8	422.0	403.3	407.5	405.1	426.0	406.0	406.9	406.6	427.8	426.9
12/14/2015	-	421.8	422.4	423.3	422.4	407.7	409.3	408.2	428.1	408.9	408.7	409.1	428.9	428.3
1/12/2016	-	420.6	423.2	425.2	423.1	415.5	411.3	414.0	430.0	414.5	411.5	412.2	431.1	431.0

(shaded) Well screened at elevation within impoundment fill

Notes: 1. Water Surface Elevations from 10/29/15 updated to consider the PVC riser length for the open standpipe piezometers with sitckup cover

Table 6
Summary of Vertical Gradients
Hydrogeologic Characterization Report
Wood River Power Station

	Well ID	Screen Elev. (ft)[1]	Formation	Vertical Gradient Range[2] Min	Median	Max
Historical Well Nests (gradients measured prior to August, 2000)						
Shallow Well	02	385.3	Primary Sand	0.000	0.029	0.101
Deep Well	01	397.2	Primary Sand			
Shallow Well	04	384.3	Primary Sand	-0.183	-0.026	0.105
Deep Well	03	395.7	Primary Sand			
Shallow Well	32	405.1	Primary Sand	0.181	0.206	0.235
Deep Well	05	392.7	Primary Sand			
Shallow Well	08	402.9	Primary Sand	-0.008	0.000	0.030
Deep Well	07	389.6	Primary Sand			
Shallow Well	11	408.1	Clay Unit	0.185	0.204	0.385
Deep Well	10	381.6	Clay Unit			
Shallow Well	13	391.3	Clay Unit	-0.058	0.346	0.465
Deep Well	12	369.9	Primary Sand			
Current Well Nests (2010-2015)						
Shallow Well	39S	398.6	Primary Sand	-0.460	0.000	0.100
Deep Well	39M	367.4	Primary Sand			
Shallow Well	40S	402	Primary Sand	-1.380	-0.010	0.310
Deep Well	40M	385.6	Primary Sand			

1. Center of screen
2. Based on dates when both wells were sampled, **negative** vaues indicate upward gradients while **positive** indicate downward gradients

Table 7
Statistical Summary of Groundwater Monitoring Parameters: January 2010 to December 2015
Hydrogeologic Characterization Report
Wood River Power Station

BORON (dissolved - mg/L)

Monitoring Well Number	Number of Data Points	Mean	Median	Maximum	Minimum	Standard Deviation	Percent Non-Detects	Sen Slope Trend
02	11	2.67	2.56	3.45	2.20	0.41	0	**0.17** **
04	12	0.38	0.36	0.49	0.32	0.05	0	0.00
12	12	1.99	2.03	2.32	1.30	0.28	0	**0.08** **
20	24	0.30	0.30	0.47	0.19	0.07	0	**-0.03** **
21	12	0.33	0.34	0.41	0.23	0.06	0	0.02
22	12	0.29	0.29	0.33	0.26	0.03	0	0.00
23	12	0.39	0.38	0.55	0.30	0.07	0	0.01
25*	12	0.60	0.60	0.83	0.39	0.12	0	-0.03
28	12	1.26	1.03	2.30	0.76	0.53	0	-0.08
31*	13	1.02	0.99	1.20	0.80	0.13	0	**-0.05** **
34	12	3.04	1.37	7.49	0.80	2.75	0	**0.99** **
36[Bck Well]	10	0.11	0.12	0.16	0.08	0.03	0	0.01

MANGANESE (dissolved - mg/L)

Monitoring Well Number	Number of Data Points	Mean	Median	Maximum	Minimum	Standard Deviation	Percent Non-Detects	Sen Slope Trend
02	11	1.13	1.07	1.98	0.77	0.35	0	**0.12** **
04	12	6.11	6.05	8.70	4.91	1.00	0	-0.03
12	12	0.48	0.46	0.64	0.31	0.10	0	**0.05** **
20	24	0.019	0.005	0.12	0.003	0.03	63	0.00
21	12	0.039	0.005	0.35	0.003	0.10	58	0.00
22	12	0.018	0.005	0.15	0.003	0.04	83	0.00
23	12	0.26	0.098	1.01	0.006	0.31	0	**0.05** **
25*	12	0.18	0.07	0.81	0.008	0.28	0	-0.01
28	12	1.32	1.25	3.54	0.26	0.94	0	**0.26** **
31*	13	0.08	0.05	0.41	0.010	0.10	0	-0.01
34	12	5.44	5.65	7.75	3.20	1.28	0	0.23
36[Bck Well]	10	2.73	2.60	3.34	2.20	0.37	0	0.00

SULFATE (dissolved - mg/L)

Monitoring Well Number	Number of Data Points	Mean	Median	Maximum	Minimum	Standard Deviation	Percent Non-Detects	Sen Slope Trend
02	11	213	213	298	140	48	0	**13.6** **
04	12	13	10	47	5.0	11	67	0.0
12	12	43	38	74	16	20	0	4.3
20	24	107	99	180	56	38	0	-7.0
21	12	128	117	236	74	41	0	-6.2
22	12	73	76	99	46	14	0	-3.7
23	12	161	154	219	123	29	0	4.9
25*	12	218	240	307	89	79	0	-14.3
28	12	178	179	285	68	59	0	7.2
31*	13	190	169	270	118	50	0	**-28.9** **
34	12	14	10	47	5.0	12.4	42	**1.1** **
36[Bck Well]	10	13	10	33	10.0	7.2	60	**-0.2** **

Notes: Sen Slope Trend is in milligrams per Liter per year; negative value (-) is downward trend; positive value is upward trend.
Significant trend based on Mann-Kendall test is indicated as bold with**.
Sample results below the method detection limit (MDL) for that parameter have been replaced by the detection limit.

* Wells within influence of off-site slag pile.

(shaded) Wells with groundwater exceeding Class 1 groundwater standard for the given parameter in 2015.

TOTAL DISSOLVED SOLIDS (mg/L)

Monitoring Well Number	Number of Data Points	Mean	Median	Maximum	Minimum	Standard Deviation	Percent Non-Detects	Sen Slope Trend
02	11	935	936	1,020	862	50	0	-1.3
04	12	898	918	1,000	740	86	0	**-36** **
12	12	493	497	570	436	37	0	-2.0
20	24	490	459	730	310	107	0	6
21	12	542	545	630	438	55	0	-1.4
22	12	510	510	628	408	61	0	-8
23	12	653	656	760	552	54	0	5.6
25*	12	1,299	1,365	1,710	690	355	0	-73
28	12	716	757	858	490	109	0	-11.1
31*	13	2,966	2,240	6,000	1,620	1,455	0	**-546** **
34	12	817	815	1,050	670	113	0	14
36 Bck Well	10	554	543	768	430	102	0	**-33** **

pH (Field / Standard Units)

Monitoring Well Number	Number of Data Points	Mean	Median	Maximum	Minimum	Standard Deviation	Sen Slope Trend
02	11	6.88	6.87	7.19	6.60	0.17	0.05
04	12	6.75	6.72	7.01	6.48	0.19	**0.08** **
12	12	6.87	6.94	7.21	6.54	0.19	0.04
20	24	6.46	6.42	7.14	6.12	0.29	0.00
21	12	6.85	6.90	7.32	6.44	0.24	0.04
22	12	6.91	6.96	7.08	6.53	0.15	**0.05** **
23	12	6.34	6.31	6.94	6.00	0.29	0.02
25*	12	6.86	6.82	7.46	6.54	0.25	0.06
28	12	6.80	6.84	6.99	6.39	0.19	**0.08** **
31*	13	6.75	6.86	7.39	6.10	0.41	**0.14** **
34	12	6.79	6.82	7.05	6.48	0.17	**0.06** **
36 Bck Well	10	6.97	6.95	7.32	6.65	0.19	0.03

Notes: Sen Slope Trend is in Standard Units per year; negative value (-) is downward trend; positive value is upward trend.
Significant trend based on Mann-Kendall test is indicated as bold with**.
Sample results below the method detection limit (MDL) for that parameter have been replaced by the detection limit.

* Wells within influence of off-site slag pile.

[shaded box] Wells with groundwater exceeding Class 1 groundwater standard for the given parameter in 2015.

Table 8
Summary of Exceedances of Class I Groundwater Standards 2010 to 2015
Hydrogeologic Characterization Report
Wood River Power Station

Parameters Submitted to the IEPA for Routine Groundwater Monitoring	Class 1 Standard	unit	Number of exceedances of Class 1 Groundwater Standards between January 2010 and December 2015 (and year of last exceedance)[2] — Current Monitoring Wells Monitored Semi-Annually for Reporting to the IEPA: 02	04	12	20	21	22	23	25*	28	31*	34	36[bck]
	Number of Samples		11	12	12	24	12	12	12	12	12	13	12	10
Boron	2.0	mg/L	**11 (2015)**	0	**6 (2015)**	0	0	0	0	0	2 (2013)	0	**5 (2015)**	0
Manganese	0.15	mg/L	**11 (2015)**	**12 (2015)**	**12 (2015)**	0	1 (2013)	0	5 (2014)	2 (2013)	**12 (2015)**	1 (2010)	**12 (2015)**	**10 (2015)**
pH[1]	6.50 / 9.00	Std.	0	1 (2012)	0	**16 (2015)**	2 (2012)	0	**10 (2015)**	0	1 (2010)	4 (2012)	1 (2012)	0
Sulfate	400	mg/L	0	0	0	0	0	0	0	0	0	0	0	0
Total Dissolved Solids	1,200	mg/L	0	0	0	0	0	0	0	**7 (2015)**	0	**13 (2015)**	0	0
Groundwater Elevation	no Class 1 Standard													

bck Background monitoring wells.
bold indicates exceedances in in 2015
1 All pH exceedances are below the lower standard of 6.50 Standard Units.
2 Parameters with exceedances of Class I groundwater standards in 2015 are highlighted for each monitoring well.
* Wells are within influence of off-site slag pile.

Table 9
Annual Median Boron, Sulfate, , and Manganese Concentrations
Hydrogeologic Characterization Report
Wood River Power Station

										Median Boron Concentration (mg/L)[1]											
Well[2]	Position	In Service[3]	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	% Change[4]
02	Downgradient - S	2.45	3.85	4.60	3.35	4.45	3.60	2.70	2.40	2.30	2.60	2.70	2.10	2.45	2.30	2.45	2.30	2.73	3.06	2.98	21%
04	Downgradient - SW	0.63	0.58	0.57	0.60	0.55	0.54	0.47	0.45	0.48	0.46	0.46	0.42	0.34	0.35	0.44	0.40	0.33	0.35	0.42	-33%
12	Downgradient - E	1.80	1.60	1.50	1.50	1.40	1.40	1.40	1.60	1.70	2.30	2.20	1.85	2.00	1.65	1.80	2.04	2.20	2.12	2.13	18%
20	Downgradient - E	1.00	0.60	0.55	0.55	0.63	0.49	0.31	0.34	0.32	0.28	0.28	0.46	0.37	0.30	0.37	0.35	0.30	0.23	0.22	-78%
21	Downgradient - NE	0.49	0.42	0.55	1.10	1.85	0.88	0.55	0.68	0.40	0.41	0.39	0.26	0.31	0.26	0.33	0.35	0.37	0.28	0.37	-25%
22	Downgradient - N	0.42	0.23	0.28	0.26	0.32	0.36	0.27	0.28	0.30	0.26	0.28	0.30	0.28	0.28	0.31	0.28	0.29	0.31	0.30	-29%
23	Downgradient - E	2.40	1.45	1.50	2.05	1.02	0.83	0.53	0.48	0.50	0.51	0.57	0.39	0.36	0.33	0.40	0.38	0.40	0.49	0.35	-85%
25*	Downgradient - N	1.10	1.60	1.30	0.55	1.90	1.01	0.61	1.25	0.47	0.40	1.00	0.83	0.97	0.69	0.76	0.48	0.60	0.57	0.51	-53%
28	Downgradient - N	3.65	3.10	3.15	3.15	3.45	2.85	2.65	2.90	2.00	2.55	2.80	2.55	2.75	1.55	1.55	1.00	1.43	1.06	0.96	-74%
31*	Downgradient - N	2.50	1.30	1.20	1.25	1.65	2.05	1.85	1.70	1.25	1.15	1.55	1.30	1.30	1.10	1.20	0.99	0.99	0.93	0.85	-66%
34	Downgradient - S	0.24	0.28	0.12	0.22	0.32	0.38	0.59	0.69	1.38	4.70	2.18	1.15	1.30	1.13	0.88	1.37	4.15	3.99	6.72	2700%
36	Background - W			0.11	0.12	0.10	0.09	0.09	0.09	0.11	0.17	0.12	0.11	0.09	0.08	0.09	0.12	0.13	0.12	0.13	

										Median Sulfate Concentration (mg/L)[1]											
Well[2]	Position	In Service[3]	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	% Change[4]
02	Downgradient - S	360	305	280	335	330	350	390	405	370	300	280	160	225	160	185	220	293	204	221	-39%
04	Downgradient - SW	62	50	20	19	17	11	35	13	5.1	12	22	13	11	11	26	<7.5	10	<10.0	<10.0	-84%
12	Downgradient - E	96	175	190	155	145	115	91	74	72	96	74	77	51	28	33	51	54	51	44	-55%
20	Downgradient - E	130	95	105	88	72	90	57	78	65	55	58	130	103	87	100	156	125	83	71	-45%
21	Downgradient - NE	120	145	180	275	205	145	99	87	58	50	43	83	131	120	155	120	177	92	106	-12%
22	Downgradient - N	78	53	64	74	68	110	97	70	90	68	48	59.5	63	84.5	71	69	69	88	54	-31%
23	Downgradient - E	200	155	145	195	235	225	210	225	220	160	125	215	170	155	145	154	158	200	153	-24%
25*	Downgradient - N	220	235	240	195	180	260	225	180	185	160	126	120	245	275	240	231	206	186	172	-22%
28	Downgradient - N	180	200	195	190	180	165	135	170	140	180	72	195	205	155	124	149	232	244	164	-9%
31*	Downgradient - N	175	165	175	150	185	215	190	165	160	175	170	185	215	260	230	223	164	145	133.5	-24%
34	Downgradient - S	22	43	12	8	28	7	20	24	22	17	8.7	19	8	6	8	11	20	29	<10.0	-55%
36	Background - W			43	37	45	15	23	24	29	26	9.2	14	12	11	33	11	<10	<10.0	<10.0	

										Median Manganese Concentration (mg/L)[1]											
Well[2]	Position	In Service[3]	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	% Change[4]
02	Downgradient - S	0.735	0.570	0.735	0.905	0.950	0.960	0.995	0.990	1.10	0.890	0.865	0.870	1.15	0.885	0.900	0.770	1.26	1.13	1.67	127%
04	Downgradient - SW	11.50	9.10	8.30	8.20	7.65	7.30	7.20	8.20	7.20	6.65	8.05	6.70	6.50	7.05	5.75	5.89	6.62	5.52	5.82	-49%
12	Downgradient - E	0.660	0.760	0.690	0.675	0.650	0.585	0.570	0.525	0.500	0.415	0.560	0.430	0.370	0.365	0.385	0.485	0.450	0.543	0.600	-9%
20	Downgradient - E	<0.03	0.001	<0.005	0.006	0.009	0.008	0.005	0.009	<0.005	0.007	<0.005	<0.005	0.005	<0.005	<0.005	0.015	0.028	0.005	0.007	-77%
21	Downgradient - NE	<0.03	0.002	0.017	0.290	0.190	0.046	0.104	0.065	0.029	0.088	0.071	<0.005	0.022	<0.005	<0.005	0.007	0.179	0.009	0.029	-3%
22	Downgradient - N	<0.03	<0.005	<0.005	0.010	0.010	0.005	0.043	0.122	<0.005	<0.005	0.318	0.006	0.005	<0.005	<0.005	<0.005	0.078	0.010	<0.005	
23	Downgradient - E	0.261	0.120	0.059	0.310	0.550	0.123	0.270	0.081	0.040	0.205	0.455	0.065	0.010	0.025	0.042	0.244	0.400	0.760	0.066	-75%
25*	Downgradient - N	0.170	0.175	0.055	0.022	0.240	0.007	0.012	0.150	0.006	0.045	1.13	0.830	1.24	0.087	0.410	0.059	0.410	0.085	0.046	-73%
28	Downgradient - N	0.225	0.595	0.525	1.25	1.04	0.920	1.30	1.40	0.995	1.75	1.75	1.25	1.20	0.465	0.680	1.51	1.14	2.47	1.68	647%
31*	Downgradient - N	0.458	0.250	0.150	0.135	0.205	0.170	0.180	0.104	0.155	0.053	0.335	0.365	0.185	0.253	0.091	0.047	0.050	0.048	0.044	-90%
34	Downgradient - S	5.72	9.50	4.40	5.10	5.30	5.10	6.15	5.90	5.45	5.00	5.15	5.90	4.85	4.65	5.10	5.30	5.25	6.50	5.83	2%
36	Background - W			3.75	3.15	3.00	2.70	2.45	2.50	2.35	2.15	2.00	2.55	2.25	2.40	3.20	2.97	2.52	2.58	2.86	

										Median pH (S.U.)[5]											
Well[2]	Position	In Service[3]	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	% Change[4]
02	Downgradient - S	6.90	7.15	6.93	7.09	7.13	6.77	6.45	6.61	7.00	6.63	6.36	6.64	6.85	6.75	6.81	6.60	7.00	7.10	6.89	0%
04	Downgradient - SW	6.70	6.64	7.50	7.18	7.10	6.65	6.54	6.53	7.32	6.67	6.25	6.46	6.84	6.64	6.56	6.62	6.81	6.93	6.95	4%
12	Downgradient - E	7.11	6.84	7.35	7.39	6.94	6.70	6.52	6.54	7.66	6.95	6.60	6.63	6.93	6.86	6.71	6.85	6.75	7.09	6.96	-2%
20	Downgradient - E	6.78	6.46	6.28	6.51	6.56	6.39	6.06	6.59	7.16	6.52	6.51	6.38	6.35	6.25	6.34	6.54	6.64	6.52	6.25	-8%
21	Downgradient - NE	7.03	7.13	6.81	6.77	6.94	6.81	6.69	6.79	7.22	6.94	6.56	6.89	7.13	6.81	6.67	6.59	7.16	6.99	6.86	-2%
22	Downgradient - N	7.14	6.99	6.97	6.86	6.98	6.78	6.55	6.71	7.29	6.70	6.44	6.66	6.94	6.68	6.90	6.93	7.01	7.03	6.93	-3%
23	Downgradient - E	6.67	6.50	6.20	6.44	6.54	6.18	6.14	6.09	6.59	6.31	6.26	6.18	6.33	6.14	6.15	6.39	6.59	6.63	6.15	-8%
25*	Downgradient - N	6.98	6.57	6.66	6.71	6.73	6.64	6.65	6.57	7.50	6.86	6.38	6.49	6.86	6.76	6.62	6.76	7.24	6.99	6.83	-2%
28	Downgradient - N	7.16	6.97	6.88	6.88	6.86	6.77	6.42	6.86	7.45	6.78	6.47	6.61	6.98	6.52	6.63	6.89	6.95	6.96	6.83	-5%
31*	Downgradient - N	6.77	6.62	6.62	6.77	6.49	6.69	6.56	6.78	7.42	6.87	6.21	6.43	6.88	6.36	6.38	6.56	7.27	6.82	7.00	3%
34	Downgradient - S	6.72	6.47	7.89	7.40	7.26	6.69	6.46	6.51	7.34	6.58	6.42	6.55	6.93	6.72	6.62	6.69	6.93	6.88	6.94	3%
36	Background - W			7.77	7.52	7.13	6.85	6.65	6.72	7.53	6.78	6.68	6.68	7.05	6.89	6.87	6.87	7.32	6.95	7.04	

Notes:
1. Shading indicates median concentration greater than Class I standard; 0.15 mg/L for manganese. Blank indicates no samples taken during that year.
2. * indicates wells within influence area of slag pile.
3. All unlined ponds removed from service as of January 1998.
4. Difference based on change in median concentration from In Service (before 1998) to current year; not calculated if both values were below the pre-1998 detection limits.
5. pH limits include lower limit 6.5 and upper limit 9.0 S.U.

APPENDIX A

BORING LOGS AND WELL CONSTRUCTION DETAILS

APPENDIX A1

AECOM LOGS

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B001

Date(s) Drilled	09/09/2015 12:00 AM to 09/09/2015 12:00 AM	Logged By	C.Dicke	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	80.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	451.08 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 801420.9 E 2306193.3 (ft NAD83)	Groundwater Level(s)	First encountered at 22.5 ft bgs (perched) and 47.5 ft on 9/9/2015 22.5 ft on 9/10/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
451.1	0.0												
450.4	0.7				Crushed LIMESTONE GRAVEL (8")								
449.8	1.3	SS-1	38 50/5"	100	Soft, moist, brown, lean CLAY (CL) trace gravel [FILL]					0.25 - -			
					Very dense, moist, dark brown to black, poorly-graded fine SAND (SP) [BOTTOM ASH]								
		SS-2	12 20 21	45	becomes dense								
445.1	6.0	SS-3	4 6 12	78	Medium dense, moist, dartk brown to black, sandy SILT (ML), trace coal fragments [FLY ASH]								*%G=8 %S=25 %M=52 %C=15*
		SS-4	12 15 12	50									
		SS-5	10 11 13	22									
		SS-6	4 4 2	78	becomes loose								*%G=0 %S=25 %F=75*
													Driller noted a change near 22.5 ft bgs
428.6	22.5				Loose, wet, dark gray SILT (ML) with sand [FILL]								
427.1	24.0	SS-7	1 7 8	78	Medium dense, moist, dark gray with brown grains, poorly-graded medium to coarse SAND (SP), trace silt [BOTTOM ASH]								
		SS-8	13 14 12	50	becomes fine sand with silt (SP-SM)								

Elevation scale: 450, 445, 440, 435, 430, 425. Depth scale: 0, 5, 10, 15, 20, 25, 30.

AECOM

Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30														
420															
418.1	33.0						Hard, moist to dry, dark gray with brown staining, lean CLAY (CL) trace sand and root fragments [POSSIBLE FILL]								*Driller noted a change near 32-33 ft bgs*
			SS-9	8 11 13	89							4.0 4.5+ 4.5+			
	35														
415															
413.1	38.0						Stiff to very stiff, moist, gray, fat CLAY (CH) trace organics and fine sand seams [ALLUVIUM]								
			SS-10	3 2 4	100							1.75 2.0 2.0			
	40														
410			ST-1		88		becomes stiff	30 29.3 34.1	119.8 113.0	82	60	1.25			*%G=0 %S=0 %M=58 %C=42 UU=19.8 psi, k=2.9E-07*
			SS-11	4 6 8	100							1.25 1.25 -			
406.8	44.3						Medium dense, moist to wet, brown, poorly-graded SAND (SP), trace silt [ALLUVIUM]								
	45														
405															
			SS-12	4 4 5	100		becomes loose, wet								*Water on rods at 47.5 ft bgs %G=0 %S=97 %F=4%*
	50														*Switched to wash rotary at 50 ft bgs*
400															
			SS-13	7 17 17	78		becomes dense								
	55														
395															
			SS-14	7 8 10	72		becomes medium dense								
	60														
390															
			SS-15	10 29 20	100		becomes dense, gray 4" coarse sand layer at 64.5' bgs								
	65														

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B001

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
385														
		SS-16	12 17 18	78										
380	70													
		SS-17	8 7 7	80		becomes medium dense								%G=1 %S=98 %F=1
375	75													
		SS-18	8 9 10	44										
371.1	80.0					End of Boring at 80 ft								
370	80													
365	85													
360	90													
355	95													
	100													

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B002

Date(s) Drilled	09/15/2015 12:00 AM to 09/15/2015 12:00 AM	Logged By	N.Sanna	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	60.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	422.3 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802453.5 E 2305700 (ft NAD83)	Groundwater Level(s)	First encountered at 9.5 ft on 9/15/2015 Measured 3 ft bgs on 10/29/2015 and 0.5 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)	MATERIAL DESCRIPTION	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	0				422.3		0.0								
					422.1	TOPSOIL (2")	0.2								
420		SS-1	2 1 2	89		Very loose, moist, gray SILTY SAND (SM) [FILL]									
					418.8		3.5								
	5	SS-2	1 1 2	100		Very loose, moist, brown SILT (ML) with sand, trace roots [Possible Ash Fill]									
415		ST-1		100		becomes stiff		25.0		31	8	2.0 1.6 1.7	0.28 0.28 0.3		*GUS sampler used %G=0 %S=1 %M=88 %C=11*
					413.8		8.5								
	10	SS-3	1 1 1	100		Very loose, wet, gray and brown SILTY SAND (SM) [Possible Ash Fill]									
410					408.8		13.5								
	15	SS-4	WOH/12" 2	100		Very soft to soft, wet, gray with brown mottling, SILTY CLAY (CL-ML)									
405					403.8		18.5								
	20	SS-5	WOH/6" 1 2	100		Soft, wet, gray fat CLAY (CH) [ALLUVIUM]				80	44				
400															
	25	SS-6	WOH/18"	100		becomes very soft						0.5 0.25 0.25			
395		SS-7	WOH/18"	100											
	30														

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B002

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30												
390													
		SS-8	WOH/18"	100									
	35	ST-2		96		60.8 62.7	101.1 100.3 101.1	86	52	0.5 0.5 0.6	0.18 0.28 0.31		%G=0 %S=0 %M=29 %C=71 UU=12.3 psi
385													
		SS-9	WOH/12" 1	100	becomes with trace sand								
	40												
380													
378.8	43.5	SS-10	7 6 5	100	Medium dense, wet, gray, poorly-graded, fine to medium SAND (SP) [ALLUVIUM]								Switched to wash rotary at 43.5 ft bgs %G=0 %S=98 %F=2
	45												
375													
		SS-11	5 5 10	72	becomes with trace organics								%G=0 %S=95 %F=5
	50												
370													
		SS-12	8 12 14	67									
	55												
365													
		SS-13	11 12 14	33	becomes with well-rounded gravel without organics								
362.3	60.0				becomes with trace gravel End of Boring at 60 ft								
360													
	65												

AECOM

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B002A

Sheet 1 of 1

Date(s) Drilled	09/21/2015 12:00 AM to 09/22/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	30.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	422.3 ft NAVD88
Borehole Backfill	Well WOR-P002 Installed	Sampling Method(s)	Shelby Tube (ST)	Hammer Data	Automatic Hammer
Boring Location	N 802453.4 E 2305700.5 (ft NAD83)	Groundwater Level(s)	First encountered at 9.5 ft on 9/15/2015 Measured 3 ft bgs on 10/29/2015 and 0.5 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	SAMPLES: Type Number	SAMPLES: Sampling Resist. OR Core RQD (%)	SAMPLES: Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	0					422.3 / 0.0								
						422.1 / 0.2 Offset boring to WOR-B002. Augered to 13 ft bgs without sampling. Based on visual observation of auger cuttings, soils appear to be similar to WOR-B002.								
420														
						418.8 / 3.5								
	5													
415														
						413.8 / 8.5								
	10													
410														
						408.8 / 13.5								
		ST-1		92										
	15													
405														
						403.8 / 18.5								
		ST-2		67										
	20													
400														
	25													
395														
	30					392.3 / 30.0								

End of Boring at 30 ft

AECOM

Report: 12/29/15 GEO_SOIL K:\PROJECTS\D\DYNEGY\60428794_WOODRIVER\DOCS\LOGS\DYNEGY_WOOD RIVER REV0.GPJ DYNEGY LIBRARY.GLB

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B003

Date(s) Drilled	09/09/2015 12:00 AM to 09/10/2015 12:00 AM	Logged By	C.Dicke	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	80.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	451.0 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802400.4 E 2305984.4 (ft NAD83)	Groundwater Level(s)	First Encountered at 38 ft on 9/10/2015 Measured 29.5 on 10/29/2015 and 29.4 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Type / Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)	MATERIAL DESCRIPTION	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	0				451.0		0.0								
					450.3	Crushed LIMESTONE GRAVEL (8")	0.7								
450					449.7	Dry to moist, brown lean CLAY (CL) [FILL]	1.3								
		SS-1	40 50/4"	100		Very dense, moist, black, poorly-graded SAND (SP) trace silt, trace gravel [BOTTOM ASH]									
					447.5		3.5								
		SS-2	7 10 12	94		Medium dense, gray SILT (ML) with sand [FLY ASH] 2" wet sand layer									
	5														
445		SS-3	5 9 11	83	444.0	3" coarse sand layer	7.0								
						Medium dense, moist, brown, poorly-graded fine to medium SAND (SP), trace silt [FILL]									
					441.8		9.2								
		SS-4	8 15 19	89		Dense, moist to dry, black to dark gray, poorly-graded SAND (SP) with silt, trace coal fragments [BOTTOM ASH]									
	10														
440															
					437.5		13.5								
		SS-5	10 10 13	78		Medium dense, moist to dry, gray silty SAND (SM) [FLY ASH]									%G=12 %S=35 %F=54
	15														
435															
		SS-6	11 22 20	56		becomes dense									
	20														
430		ST-1		0											GUS sampler used
		SS-7	2 2 3	56		becomes loose									%G=3 %S=24 %F=74 Water inside augers at 24.5' bgs on 9/10 @ 0900
	25														
425															
		ST-2		96	424.0		27.0								GUS sampler used
						Very stiff, moist, dark gray, lean CLAY (CL) with trace organics, with to trace fine sand seams interbedded									
		SS-8	3 3 6	89								2.25 2.75 2.75			
	30														

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
420	30													
		SS-9	WOH 2 3	100		becomes medium stiff with interbedded fine sand seams, trace organics [ALLUVIUM]					0.5 0.7 0.5	0.4 0.45 0.4		
415	35	ST-3		100			27.3 27.8	122.5 122.0 121.3	28	8	1.0			%G=0 %S=7 %M=65 %C=28 SG=2.60, Organic Content = 2.6%
						412.5 / 38.5								Water on rods near 38 ft bgs
		SS-10	1 2 2	100		Soft to medium stiff, wet, gray with brown oxidation staining, SILTY CLAY (CL-ML) to SILT (ML), trace sand [ALLUVIUM]					0.5 0.5 0.5	0.4 0.4 0.35		
410	40													
						408.0 / 43.0								
		SS-11	WOH/12" 1	100		Soft, moist, gray fat CLAY (CH) with interbedded fine sand seams [ALLUVIUM]					0.0 0.0 0.0	0.15 0.2 0.15		
405	45	ST-4		88			56.7		94	64	0.5	0.4		%G=0 %S=0 %M=44 %C=56 UU = 7.1 psi
		SS-12	WOH 2 2	100		becomes without sand seams					0.25 0.25 0.25	0.2 0.3 0.15		
400	50													
		SS-13	WOH 1 2	100							0.25 0.25 0.25	0.3 0.35 0.3		
395	55													
		SS-14	WOH/12" 2	100		becomes dark gray with trace organics 1" silt layer 1" silt layer					0.25 0.25 0.0	0.2 0.2 0.15		
390	60													Switched to washed rotary at 60 ft bgs
		SS-15	WOH 1 2	89		becomes interbedded with dark gray clay seams interbedded	58.7		85	57	0.25 0.25 0.0	0.3 0.35 0.3		%G=0 %S=1 %M=32 %C=67
	65													

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
385														
382.5	68.5	SS-16	12 12 14	78		Medium dense, wet, gray, poorly-graded fine to medium SAND (SP), trace silt [ALLUVIUM]								
380	70													
		SS-17	14 15 17	56		becomes dense								%G=0 %S=94 %F=6
375	75													
		SS-18	13 19 29											
371.0	80.0					End of Boring at 80 ft								
370	80													
365	85													
360	90													
355	95													
	100													

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B004

Date(s) Drilled	09/15/2015 12:00 AM to 09/15/2015 12:00 AM	Logged By	N.Sanna	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	60.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	433.8 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802104.7 E 2307178.8 (ft NAD83)	Groundwater Level(s)	First Encountered at 8 ft on 9/15/2015 Measured at 12.2 ft bgs on 10/29/2015 and 12 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	SAMPLES Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	0					433.8 / 0.0								
						433.4 5" TOPSOIL 0.4								
						Medium dense, moist, gray SILTY SAND (SM) [ASH]								
		SS-1	4 8 9	56										
430		SS-2	4 3 3	89		becomes loose 3" brown silt layer								
	5													
		ST-1		100			57.0		NP	NP	<0.5 <0.5			%G=0 %S=33 %M=63 %C=4 GUS sampler used
425		SS-3	WOH/18"	100		becomes very loose, wet 4" coal layer								
	10													
						420.3 / 13.5								
420		SS-4	WOH/12" 1	100		Very loose, wet, gray SILT (ML) with sand [FILL - POSSIBLE ASH FILL]	28.8							%G=0 %S=18 %M=53 %C=17 Organic Content=1.4%
	15													
415		SS-5	WOH/12" 1	100		becomes gray and brown								
	20													
						410.3 / 23.5								
410		SS-6	WOH/18"	100		Very soft, wet, gray and brown SILTY CLAY (CL-ML) with sand [POSSIBLE FILL]								
	25													
						405.3 / 28.5								
405		SS-7	WOH/6" 1 2	100		Medium stiff to stiff, wet, gray lean CLAY (CL) [ALLUVIUM]					1.0 1.25 1.0			
	30													

AECOM

Log of Boring WOR-B004

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30	ST-2		83		becomes stiff	51.1 46.3	106.4 106.3	45	29	1.5 1.75 1.6			*%G=0 %S=1 %M=69 %C=30 k=4.6E-07, Organic Content = 3.8%*
400	35	SS-8	WOH/12" 1	100		becomes very soft								
395	40	SS-9	WOH/18"	100			43.8		44	22				
390	45	SS-10	WOH/12" 1	100		become with light gray mottling and trace organics								
385.3	48.5													
385	50	SS-11	3 2 3	100		Loose, wet, gray, SILTY SAND (SM) [ALLUVIUM]								*%G=0 %S=55 %F=45*
380	55	SS-12	3 3 8	100		becomes medium dense								*%G=0 %S=77 %F=23*
375		SS-13	4 7 7	6		becomes with trace coal fragments and organics								
373.8	60 (60.0)					End of Boring at 60 ft								
370	65													

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Project: Dynegy	**Log of Boring WOR-B004A**
Project Location: Wood River Power Station, Alton, IL	Sheet 1 of 1
Project Number: 60440115	

Date(s) Drilled	09/21/2015 12:00 AM to 09/21/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	30.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	433.8 ft NAVD88
Borehole Backfill	Well WOR-P004 Installed	Sampling Method(s)	Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802104.7 E 2307178.8 (ft NAD83)	Groundwater Level(s)	8 ft on 9/15/2015 12.5 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Samples: Type	Samples: Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	Elevation (feet)	MATERIAL DESCRIPTION	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	0						433.8		0.0								
							433.4	Offset boring to WOR-B004. Augered to 21 ft bgs without sampling. Based on visual observation of auger cuttings, soils appear to be similar to WOR-B004.	0.4								
430	5																
425	10																
							420.3		13.5								
420	15																
415	20																
			ST-1		96												*GUS sampler used*
							410.3		23.5								
410			ST-2		100												*GUS sampler used*
	25																
							405.3		28.5								
405	30						403.8		30.0								

End of Boring at 30 ft

AECOM

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B005

Date(s) Drilled	09/10/2015 12:00 AM to 09/11/2015 12:00 AM	Logged By	C.Dicke	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	80.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	451.2 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802087.1 E 2307018.7 (ft NAD83)	Groundwater Level(s)	First Encountered at 30 ft on 9/11/2015 Measured 29 ft bgs on 10/29/2015 and 29.2 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	SAMPLES: Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
451.2	0.0				Crushed LIMESTONE GRAVEL (10")								
450.4	0.8				Dry to moist, brown, lean CLAY (CL) trace sand [FILL]								
450.0	1.3	SS-1	4 50/2"	63	Very dense, dry, black, poorly-graded SAND (SP) with silt, trace coal fragments as gravel [BOTTOM ASH]								
		SS-2	20 37 24	78	becomes dense								
445.2	6.0	SS-3	6 7 8	83	Medium dense, dark gray SILTY SAND (SM) trace coal fragments as coarse sand and fine gravel [BOTTOM ASH]	22.9							%G=7 %S=36 %M=45 %C=12
		SS-4	6 17 20	89	becomes dense, dry to moist								
		SS-5	10 15 14	78	becomes medium dense, moist								
		SS-6	7 8 9	94									
431.2	20.0				Very loose, moist to wet dark gray SILT (ML) with sand [FLY ASH]								
		SS-7	WOH 1 1	44	becomes very loose, moist to wet								
		ST-1		92		64.2		NP	NP				*GUS sampler used %G=0 %S=4 %M=93 %C=3*
		ST-2		0									*GUS sampler used Stopped @ 25 ft bgs on 9/10/15 @ 1600, Started 9/11/15 at 0815 Driller noted harder drilling at 27'-28' bgs, possible cobble*
		SS-8	3 5 4	94									
421.2	30.0												

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Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
420	30	ST-3		100	Very soft, wet, gray lean CLAY (CL) with sand [ALLUVIUM]	25.4 26.8 26.9	115.1 117.9 118.9	30	10	0.0			*Water on rods at 30'* *GUS sampler used* *%G=0 %S=17* *%M=74 %C=9*
		SS-9	WOH 2 3	100	becomes gray with brown mottling					0.0 0.0 0.0			
416.5	34.8				Very soft, wet, brown with gray mottling and oxidation staining, SILTY CLAY (CL-ML) with sand [ALLUVIUM]								*Switched to washed rotary at 35'*
415	35												
		SS-10	2 1 1	100	becomes brown with oxidation staining			23	7	0.0 0.0 0.0	0.15 0.1 0.1		*%G=0 %S=26* *%F=74*
410	40												
407.7	43.5	SS-11	WOH/12" 3	100	Very soft, wet, gray, lean CLAY (CL) with interbedded silt seams [ALLUVIUM] becomes stiff, moist to wet					0.0 0.0 1.0	0.15 0.1 0.15		
405	45												
		SS-12	WOH/12" 2	100	becomes soft to medium stiff, without silt seams					0.25 0.5 0.5	0.5 0.45 0.3		
400	50	ST-4		0									*Shelby tube was discarded due to low recovery*
		SS-13	2 1 2	100	becomes moist, dark gray, with trace organics					0.5 0.5 0.5	0.55 0.6 0.45		
395	55	ST-5		92		47.2 45	109.6 112.8 109.0	47	27	- - 0.5	- - 0.55		*%G=0 %S=2* *%M=61 %C=37*
		SS-14	2 2 4	100						0.25 0.5 0.5			
390	60												
390.2	61.0				Medium dense, wet, gray, SILTY SAND (SM) [ALLUVIUM]								
		SS-15	6 10 16	78									*%G=0 %S=63* *%F=37*
	65												

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B005

Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Material Description	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	Remarks
	70	SS	SS-16	8 12 16	56									
	75	SS	SS-17	15 32 35	89	becomes dense								
371.2	80.0	SS	SS-18	12 13 12	67	becomes medium dense, poorly-graded SAND (SP), trace silt								*%G=0 %S=93 %F=7*
						End of Boring at 80 ft								

Elevation scale: 385, 380, 375, 370, 365, 360, 355. Depth scale: 70, 75, 80, 85, 90, 95, 100.

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Date(s) Drilled	09/14/2015 12:00 AM to 09/14/2015 12:00 AM	Logged By	N.Sanna	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	80.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	451.3 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 801250.9 E 2307088.8 (ft NAD83)	Groundwater Level(s)	First Encountered at 47.5 ft on 9/14/2015 Measured 49.4 ft bgs on 10/29/2015 and 48.1 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
451.3	0.0				Crushed LIMESTONE GRAVEL								
449.5	1.8	SS-1	18 50/4"	80	Very dense, moist, gray, sandy SILT (ML), trace gravel [FLY ASH]								
		SS-2	8 13 16	67	becomes medium dense								
		SS-3	4 4 11	61									*%G=8 %S=20 %F=72*
		SS-4	11 14 15	89									
		SS-5	6 9 9	61									
432.8	18.5	SS-6	1 1 1		Very loose, moist, gray with black streaks SILT (ML) with sand [FLY ASH]								
430.3	21.0	ST-1		96	Dense, moist, dark brown SILTY SAND (SM), trace gravel [POSSIBLE FILL]					2.8 3.5 2.8	0.22 0.25		*GUS sampler used*
		SS-7	18 13 21	78	becomes gray, with gravel								
424.3	27.0				Hard, moist, dark gray lean CLAY (CL), trace sand [ALLUVIUM]								
		SS-8	5 7 10	100						>4.5 4.5			

Project: Dynegy	Log of Boring WOR-B006
Project Location: Wood River Power Station, Alton, IL	Sheet 2 of 3
Project Number: 60440115	

Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
420	30	ST	ST-2		67		becomes very stiff	22.5 22.1	124.5	43	22	2.75 2.75 3.0	0.72 0.72 0.8		%G=0 %S=1 %M=65 %C=32
	35	SS	SS-9	3 3 5	100										
415															
412.8	38.5	SS	SS-10	4 6 6	67		Medium dense, moist, gray, poorly-graded fine SAND (SP) [ALLUVIUM]								
410	40														
	45	SS	SS-11	2 2 3	94		becomes loose, with brown mottling								%G=0 %S=9 %F=91
405															
	50	SS	SS-12	4 7 11	94		becomes medium dense, wet, fine to coarse sand								Switched to wash rotary at 50' bgs
400															
	55	SS	SS-13	9 8 10	61		becomes gray								%G=0 %S=95 %F=5
395															
	60	SS	SS-14	10 12 14	61		becomes fine to medium sand								
390															
	65	SS	SS-15	8 11 15	61										

Elevation (feet)	Depth (feet)	Type / Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
385														
	70	SS-16	6 10 17	56										
380														
	75	SS-17	11 17 20	56		becomes dense								
375														
	80	SS-18	8 10 14	56		becomes medium dense								
371.3	80.0					End of Boring at 80 ft								
370														
	85													
365														
	90													
360														
	95													
355														
	100													

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Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B007

Date(s) Drilled	09/15/2015 12:00 AM to 09/15/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	426.5 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802111.4 E 2303395 (ft NAD83)	Groundwater Level(s)	23 ft on 9/15/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
426.5	0.0				Very stiff to hard, moist, gray lean CLAY (CL) [FILL]								
425		SS-1	6 7 9	83						4.5 4.0 4.0			
	5	ST-1		71									
420		SS-2	4 7 8	78	becomes stiff with silt lenses					2.0 2.0 2.0			
	10	ST-2		50									
415		SS-3	6 5 9	78	becomes very stiff					4.0 4.5 4.0			
	15	SS-4	5 5 9	94						4.0 4.5 4.5			
410.5	16.0												
410		SS-5	4 5 9	72	Very stiff, moist, gray with brown mottling, lean CLAY (CL) [ALLUVIUM]					4.0 4.0 2.5			
	20	SS-6	4 4 8	78						4.0 4.0 4.0			
405		ST-3		71									
404.0	22.5				Loose, wet, gray, poorly-graded medium SAND (SP), trace clay lenses interbedded [ALLUVIUM] ▽								
	25	SS-7	4 5 9	100									
400		SS-8	4 2 6	72									
	30	SS-9	6 6 6	89	becomes medium dense with fine sand								

Elevation (feet)	Depth (feet)	Type / Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
395	30													
		SS-10	4 4 8	89		becomes with wood fragments								
390	35													
		SS-11	5 6 8	78										
385	40													
		SS-12	4 5 7	72		becomes with trace wood fragments								
380	45													
						378.0 — 48.5								
		SS-13	2 2 2	61		Soft to medium stiff, moist, dark gray CLAY (CL-CH) [ALLUVIUM]					0.5 1.0 0.75			
375	50													
						373.0 — 53.5								
		SS-14	2 3 2	50		Loose, wet, gray, poorly-graded medium SAND (SP) [ALLUVIUM]								
370	55													
		SS-15	5 6 7	50		becomes medium dense								
365	60													
		SS-16	9 11 12	67		becomes with trace coarse sand								
	65													

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Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
360															
			SS-17	5 5 8	39		becomes medium to coarse sand								
356.5	70						70.0 End of Boring at 70 ft								
355															
	75														
350															
	80														
345															
	85														
340															
	90														
335															
	95														
330															
	100														

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B008

Date(s) Drilled	09/11/2015 12:00 AM to 09/14/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	426.5 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 803106.7 E 2303105.1 (ft NAD83)	Groundwater Level(s)	First Encountered at 23 ft on 9/11/2015 Measured 21.8 ft bgs on 10/29/2015 and 19 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Type / Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
426.5	0				426.5 / 0.0 Very stiff, moist, dark brown, lean CLAY (CL), trace gravel [FILL]								
425		SS-1	3 4 5	83						3.5 4.0 3.5			
		SS-2	7 8 10	0									
420	5	ST-1		46									
		SS-3	3 4 5	83	becomes stiff					1.5 2.5 1.5			
415	10	SS-4	3 5 9	100	becomes very stiff, gray					3.0 2.0 2.5			
		ST-2		75									
410	15	SS-5	4 5 5	89	410.5 / 16.0 Very stiff, moist, gray, lean CLAY (CL) [ALLUVIUM]					3.25 3.0 3.0			
		ST-3		75									
405	20												
		SS-6	2 3 2		403.0 / 23.5 Loose, wet, gray, poorly-graded medium SAND (SP) [ALLUVIUM]								
400	25	SS-7	3 4 8		becomes medium dense, brown								
	30	SS-8	3 6 11										

Elevation (feet)	Depth (feet)	Type / Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30													
395														
	35	SS-9	6 8 8	61										
390														
	40	SS-10	5 5 7	50										
385														
	45	SS-11	9 9 12	89										
380														
	50	SS-12	8 9 10	44										
375														
	55	SS-13	6 7 7	61		becomes with trace coarse sand								
370														
	60	SS-14	5 6 5	39		becomes with trace fine gravel and coarse sand								
365														
	65	SS-15	8 8 12	50		becomes with gravel								

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B008

Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
360															
		SS	SS-16	14 16 19			becomes dense								
356.5	70						70.0 End of Boring at 70 ft								
355															
	75														
350															
	80														
345															
	85														
340															
	90														
335															
	95														
330															
	100														

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Project: Dynegy	**Log of Boring WOR-B009**
Project Location: Wood River Power Station, Alton, IL	Sheet 1 of 3
Project Number: 60440115	

Date(s) Drilled	**09/14/2015 12:00 AM to 09/15/2015 12:00 AM**	Logged By	**B. Clayton**	Checked By	**V. Gautam**
Drilling Method	**Hollow Stem Auger / Mud Rotary**	Drill Bit Size/Type	**3 1/4" ID HSA, 3 3/8" Tricone**	Borehole Depth	**70.0 ft**
Drill Rig Type	**CME-550 ATV**	Drilling Contractor	**Terracon**	Surface Elevation	**426.2 ft NAVD88**
Borehole Backfill	**Cement Grout**	Sampling Method(s)	**2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)**	Hammer Data	**Automatic Hammer**
Boring Location	**N 802638.5 E 2303193.6 (ft NAD83)**	Groundwater Level(s)	**21 ft on 9/14/2015**		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Material Description (Elevation / Depth)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
426.2	0				426.2 / 0.0 Very stiff, moist, gray, lean CLAY (CL) [FILL]								
425		SS-1	6 7 8	67						3.5 3.5 3.0			
		ST-1		96									
420	5	SS-2	5 7 8	100	becomes with root fibers					2.5 2.5 2.0			
		ST-2		94		16.2	130.6	32	17				%G=0 %S=6 %M=73 %C=21
415	10	SS-3	7 9 10	89	becomes hard without root fibers					4.5 4.5 4.5			
		SS-4	7 8 11	78	becomes very stiff					3.5 3.5 3.5			
410	15	SS-5	6 6 9	83						3.5 3.0 3.5			
407.7	18.5	SS-6	3 3 4	72	407.7 / 18.5 Stiff, moist, gray lean CLAY (CL) [ALLUVIUM]					1.5 1.5 1.75			
405.2	21.0	SS-7	4 4 4	50	405.2 / 21.0 Loose, wet, brown, poorly-graded medium SAND (SP) [ALLUVIUM]								
		SS-8	4 4 5	89	becomes with fine-grained sand								
400	25	SS-9	4 6 6	100	becomes medium dense, trace fine-grained sand								
	30	SS-10	3 4 4	100	becomes loose								

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30													
395		SS-11	6 10 12	61		becomes medium dense								
		SS-12	3 5 7	56										
390	35													
		SS-13	6 8 9	50										
385	40													
		SS-14	11 13 15	56		becomes gray								
380	45													
		SS-15	9 9 10	67										
375	50													
		SS-16	4 6 8	67										
370	55													
		SS-17	6 8 9	61		becomes with trace coarse sand								
365	60													
		SS-18	10 10 6	50										
	65													

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B009

Elevation (feet)	Depth (feet)	SAMPLES: Type Number	SAMPLES: Sampling Resist. OR Core RQD (%)	SAMPLES: Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
360														
		SS-19	10 12 12	50										
	70					356.2 / 70.0								
						End of Boring at 70 ft								
355														
	75													
350														
	80													
345														
	85													
340														
	90													
335														
	95													
330														
	100													

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Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B010

Date(s) Drilled	09/11/2015 12:00 AM to 09/11/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	426.1 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 803174.2 E 2303445.3 (ft NAD83)	Groundwater Level(s)	28 ft on 9/11/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
426.1	0.0				Stiff, moist, brown fat CLAY (CH), trace sand [FILL]								
425		SS-1	6 6 9	56									
	5	SS-2	5 8 10	89	becomes very stiff								
420		ST-1		83	becomes gray			58	39	3.5 3.75			ST-1 Upper Portion %G=0 %S=2 %M=59 %C=39
419.1	7.0				Very stiff, moist, dark brown to gray lean CLAY (CL) with sand [FILL]	17.2	130.3	29	15	4.25			ST-1 Lower Portion %G=0 %S=24 %M=50 %C=26
	10	ST-2		88	becomes hard	15.9	131.9 122.9	29 43	11 27	4.5 4.5 4.5			ST-2 Upper Portion %G=0 %S=19 %M=63 %C=18; ST-2 Lower Portion %G=0 %S=14 %M=65 %C=21
415		SS-3	6 5 6	78	becomes stiff								
413.1	13.0				Very stiff, moist, brown lean CLAY (CL), trace to with silty fine sand lenses interbedded [ALLUVIUM]								
	15	ST-3		83						3.0 3.0 3.0			
410		SS-4	8 8 7	72									
		ST-4		71	becomes stiff					2.0 2.0 2.5			
406.1	20.0				Stiff, moist, dark gray fat CLAY (CH) [ALLUVIUM]								
405		SS-5	3 3 4	100		41.6		73	39				
		ST-5		58									
401.1	25.0				Very loose, moist, gray, poorly-graded medium SAND (SP)								
400													
		SS-6	1 1 2	17	becomes wet								
	30												

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Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30													
395		SS-7	12 9 9	50		becomes medium dense								
		SS-8	6 6 6	61			16.9		NP	NP				%G=0 %S=91 %F=9
	35													
390														
		SS-9	6 6 9	50										
	40													
385														
		SS-10	13 16 17	56		becomes dense								
	45													
380														
		SS-11	7 8 9	44		becomes medium dense			NP	NP				%G=2 %S=95 %F=2
	50													
375														
		SS-12	5 7 8	50										
	55													
370														
		SS-13	5 6 8	11		becomes with gravel								
	60													
365														
		SS-14	8 5 6	50		becomes with coarse sand			NP	NP				%G=6 %S=91 %F=4
	65													

Elevation (feet)	Depth (feet)	Samples: Type / Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
360														
		SS-15	7 8 9	61										
356.1	70.0					End of Boring at 70 ft								
355														
	75													
350														
	80													
345														
	85													
340														
	90													
335														
	95													
330														
	100													

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B012

Date(s) Drilled	09/10/2015 12:00 AM to 09/10/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	430.9 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 803201.5 E 2304163.2 (ft NAD83)	Groundwater Level(s)	18.5 ft on 9/10/2015		

Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
430.9	0						430.9 / 0.0 Very stiff, moist, brown lean CLAY (CL) [FILL]								
430		SS	SS-1	3 8 10	44			18.8		32	16				%G=0 %S=5 %M=68 %C=27
		SS	SS-2	5 3 7	33										
425	5	SS	SS-3	4 4 5	17		becomes stiff, gray					1.75			
		SS	SS-4	4 5 8	72		becomes very stiff with wood fragments					2.25 2.5 2.0			
420	10	SS	SS-5	3 4 6	100			22.6		42	20	2.5 2.5 2.5			%G=0 %S=25 %M=45 %C=30
		SS	SS-6	5 5 7	61		becomes stiff with sand					1.5 1.5 1.75			
415	15						415.9 / 15.0 Loose, moist, brown, poorly-graded fine grained SAND (SP) [POSSIBLE FILL]								
		SS	SS-7	4 4 5	67										
		SS	SS-8	3 3 3	56		▽ (groundwater)								
410	20						411.4 / 19.5 Medium stiff, moist, gray lean CLAY (CL) with sand seams [ALLUVIUM]								
		ST	ST-1		96			28.2 34.7 40.5	115.4 113.0	NP	NP				%G=0 %S=3 %M=88 %C=10
		SS	SS-9	0 5 9	89							1.0 0.5 0.5			
405	25						406.4 / 24.5 Medium dense, wet, brown, poorly-graded medium SAND (SP) [ALLUVIUM]								
		SS	SS-10	3 3 3	100		becomes loose								
	30														

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Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30													
400		SS-11	10 10 12	61		becomes medium dense								
	35	SS-12	10 10 10	50										
395														
	40	SS-13	7 9 10	44										
390														
	45	SS-14	8 9 9	50		becomes gray								
385														
	50	SS-15	11 11 10	50										
380														
	55	SS-16	7 8 9	44										
375														
	60	SS-17	12 15 18	50		becomes dense								
370														
	65	SS-18	1 2 1	61		Organic clay layer from 64 to 65 ft bgs								

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
365		SS-19	4 4 8	44		becomes medium dense								
		SS-20	7 7 8	72										
360.9	70.0					End of Boring at 70 ft								

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Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B013

Date(s) Drilled	**09/09/2015 12:00 AM to 09/09/2015 12:00 AM**	Logged By	**B. Clayton**	Checked By	**V. Gautam**
Drilling Method	**Hollow Stem Auger / Mud Rotary**	Drill Bit Size/Type	**3 1/4" ID HSA, 3 3/8" Tricone**	Borehole Depth	**70.0 ft**
Drill Rig Type	**CME-550 ATV**	Drilling Contractor	**Terracon**	Surface Elevation	**427.9 ft NAVD88**
Borehole Backfill	**Cement Grout**	Sampling Method(s)	**2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)**	Hammer Data	**Automatic Hammer**
Boring Location	**N 802940.4 E 2304969.1 (ft NAD83)**	Groundwater Level(s)	**16 ft on 9/9/2015**		

Elevation (feet)	Depth (feet)	SAMPLES Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
427.9	0					427.9 / 0.0 Stiff, moist, brown sandy lean CLAY (CL) [FILL]								
		SS-1	3 6 10	67							2.0 2.5 2.25			
425														
		SS-2	3 8 7	89		becomes very stiff to hard, gray, trace sand	20.4		38	19	2.5 3.0 3.0			%G=2 %S=7 %M=58 %C=34
	5													
		SS-3	6 6 7	94							4.0 4.0 4.25			
420														
		SS-4	3 5 10	78							2.5 2.5 2.5			
	10													
415														
		SS-5	2 2 3	67		becomes stiff					1.5 1.5 2.0			
	15													
411.9	16.0					411.9 / 16.0 Soft, wet, brown and gray lean CLAY (CL) [POSSIBLE FILL]								
		SS-6	1 1 2	83										
410														
		ST-1		88			28.9	117.5	44	26				%G=0 %S=1 %M=81 %C=18
	20													
406.9	21.0					406.9 / 21.0 Soft, moist, gray, fat CLAY (CH) [ALLUVIUM]								
		SS-7	1 1 2	100							0.75 0.75 1.0			
405														
		SS-8	1 2 1	100							<0.5	0.3		
	25													
		SS-9	0 1 1	100										
400														
		SS-10	1 1 1	61			44.5		58	30				%G=0 %S=2 %M=58 %C=40
	30													

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30													
396.9	31.0	SS-11	2 1 2	100		Very loose, wet, gray, sandy SILT (ML)								%G=0 %S=14 %F=86
395														
	35	SS-12	1 1 2	78										
		SS-13	1 1 1	100										
390														
389.4	38.5	SS-14	0 1 1	100		Soft, moist to wet, gray, lean CLAY (CL)						0.3		
	40													
386.9	41.0	SS-15	1 1 1	44		Very loose, wet, gray poorly-graded medium SAND (SP) [ALLUVIUM]								%G=0 %S=93 %F=7
385														
	45													
380														
		SS-16	6 7 7	56		becomes medium dense								
	50													
375														
		SS-17	3 3 3	50		becomes loose								
	55													
370														
		SS-18	6 7 9	67		becomes medium dense with coarse sand								%G=0 %S=96 %F=4
	60													
365														
		SS-19	9 10 11	72		becomes trace gravel								
	65													

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B013

Elevation (feet)	Depth (feet)	SAMPLES: Type Number	SAMPLES: Sampling Resist. OR Core RQD (%)	SAMPLES: Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet) / Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
360		SS-20	9 12 16	50		becomes trace to with gravel	357.9 / 70.0								
	70					End of Boring at 70 ft									
355	75														
350	80														
345	85														
340	90														
335	95														
330	100														

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B014

Date(s) Drilled	08/26/2015 12:00 AM to 08/26/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	431.8 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST)	Hammer Data	Automatic Hammer
Boring Location	N 802115.2 E 2305092.8 (ft NAD83)	Groundwater Level(s)	6 ft on 8/26/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
431.8	0.0				Very loose, moist, black, SILT (ML) with sand [FLY ASH]								
		SS-1	WOH/18"	11									
	6				becomes loose to very loose, wet								
		SS-2	2 3 1	56									
		SS-3	1 1 1	44									
		SS-4	WOH/18"	89									
		SS-5	1 1 1	72									
		SS-6	1 1 0	83									
		SS-7	0 1 0	61									
412.3	19.5				Very loose to loose, moist, gray SILT (ML) [ALLUVIUM]								
		SS-8	WOH/18"	56		51.4		NP	NP				
		SS-9	2 1 2	78									
		ST-1		12						<0.50	0.325		
					becomes elastic SILT (MH)								
		ST-2		100		72.1 68.1 68.7	98.4 98.7	74	35	<0.50	0.325		*%G=1 %S=19 %M=45 %C=35*

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Elevation (feet)	Depth (feet)	Type / Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
400.8	31.0					Loose, wet, gray SILTY SAND (SM) [ALLUVIUM]								
		SS-10	2 3 3	67										%G=0 %S=74 %F=26
						becomes dense, poorly-graded medium SAND								
		SS-11	15 16 24	67										
						becomes medium dense								
		SS-12	9 9 10	78										
		SS-13	6 9 14	89										
385.8	46.0					Medium dense, wet, gray, poorly-graded fine SAND (Sm) with silt								
		SS-14	8 11 14	89										%G=0 %S=93 %F=7
						becomes medium dense								
		SS-15	10 16 12	56										
						becomes dense								
		SS-16	12 20 26	67										
		SS-17	9 24 26	89										
		SS-18	13 21 23	100										
		SS-19	8 10 7	78										%G=1 %S=93 %F=6
		SS-20	6 6 8	33										
		SS-21	9 9 10	67										

Elevation scale: 400, 395, 390, 385, 380, 375, 370. Depth scale: 30, 35, 40, 45, 50, 55, 60, 65.

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
365		SS-22	8 11 10	50		becomes with fine gravel								
		SS-23	6 7 9	56										
361.8	70					70.0 End of Boring at 70 ft								
360														
	75													
355														
	80													
350														
	85													
345														
	90													
340														
	95													
335														
	100													

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Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B015

Date(s) Drilled	09/03/2015 12:00 AM to 09/04/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	50.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	428.4 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802361.9 E 2304856 (ft NAD83)	Groundwater Level(s)	18.5 ft on 9/3/2015 Measured 25.3 ft bgs on 10/29/2015 and 23.3 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Type / Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Material Description (Elevation / Depth, feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	Remarks
428.4	0				Very stiff, gray and brown, lean CLAY (CL) with sand [FILL]								
		SS-1	3 4 6	44						2.5 2.5 2.5			
425		SS-2	3 3 4	100						2.0 2.0 2.0			
	5	SS-3	6 7 7	56						3.5 3.5 3.0			
420		SS-4	6 9 8	39	becomes hard, brown, without sand					4.5 4.0 4.5			
	10	SS-5	6 7 9	56	becomes gray					4.0 4.5 4.5			
415		SS-6	8 8 10	100	becomes dark gray, with root fibers								
	15	SS-7	3 3 5	100	becomes stiff, gray and brown					1.5 1.5 1.5			
409.9	18.5	SS-8	3 2 2	33	Very loose, wet, gray, poorly-graded medium SAND (SP) [POSSIBLE FILL]								
407.4	21.0	SS-9	1 1 1	89	Very loose, wet, gray SILT (ML) with root fibers								
404.9	23.5	SS-10	WOH/6" 1 1	100	Soft to very soft, moist, gray fat CLAY (CH) [ALLUVIUM]					<0.5	0.05		
	25	SS-11	1 1 2	100							0.1		
400		ST-1		100		73.9 82.6 72.6	92.3 93.2 93.9	103	71				*%G=0 %S=1 %M=63 %C=36 GUS sampler used*
	30												

AECOM

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B015

Depth (feet)	SAMPLES: Type Number	SAMPLES: Sampling Resist. OR Core RQD (%)	SAMPLES: Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
30	ST-1		100					71				
	SS-12	1 1 2	100							0.15		
	SS-13	WOH/18"	100	becomes with trace shell fragments						0.2		
35												
				392.4 / 36.0								
	SS-14	8 9 9	44	Medium dense, wet, gray, poorly-graded medium SAND (SP) [ALLUVIUM]								
	SS-15	12 14 16	39	becomes dense with fine sand								
40												
	SS-16	8 8 8	33	becomes medium dense								
	SS-17	6 5 6	72									
45												
	SS-18	7 9 13	100									
	SS-19	10 10 11	67									
50				378.4 / 50.0 End of Boring at 50 ft								
55												
60												
65												

Elevation (feet) scale: 395, 390, 385, 380, 375, 370, 365

AECOM

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B015A

Date(s) Drilled	09/23/2015 12:00 AM to 09/23/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	30.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	428.4 ft NAVD88
Borehole Backfill	Well WOR-P015 Installed	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST)	Hammer Data	Automatic Hammer
Boring Location	N 802361.9 E 2304856 (ft NAD83)	Groundwater Level(s)	18.5 ft on 9/3/2015 Measured 25.3 ft bgs on 10/29/2015 and 23.3 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Material Description (Elevation / Depth)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
428.4	0.0				Offset boring to WOR-B015. Augered to 13 ft bgs without sampling. Based on visual observation of auger cuttings, soils appear to be similar to WOR-B015.								
	13–15	ST-1		79		21.6	127.7 125.2	39	23				%G=0 %S=10 %M=63 %C=26
	15–17	ST-2		58		18.9 21.4	127.9 125.8	34	16				%G=0 %S=10 %M=63 %C=26
409.9	18.5 ▽												
407.4	21.0												
404.9	23.5												
	25–27	ST-3		100									
	27–29	ST-4		96									
398.4	30.0				End of Boring at 30 ft								

Elevation scale: 425, 420, 415, 410, 405, 400. Depth scale: 0, 5, 10, 15, 20, 25, 30.

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Project: Dynegy	**Log of Boring WOR-B016**
Project Location: Wood River Power Station, Alton, IL	
Project Number: 60440115	Sheet 1 of 3

Date(s) Drilled	09/02/2015 12:00 AM to 09/03/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	442.2 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802298.6 E 2304833.3 (ft NAD83)	Groundwater Level(s)	21 ft on 9/2/2015 Measured 17.7ft bgs on 10/29/2015 and 16.2 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	SAMPLES Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
442.2	0					442.2 / 0.0 Stiff to very stiff, moist to dry, brown lean CLAY (CL) [FILL]								
440		SS-1	6 9 8	50										
	5	SS-2	9 7 14	78					31	11				*%G=0 %S=14 %F=86*
435		SS-3	10 11 19	72										
	10	SS-4	13 15 18	89		becomes hard and gray								
430		SS-5	8 8 12	61		becomes very stiff								
	15	SS-6	7 8 7	44										
425		SS-7	3 3 2	78		becomes medium stiff					1.5 1.5 1.5			
	20	SS-8	1 1 1	67		becomes soft								
421.2	21.0					421.2 / 21.0 ▽								
420		SS-9	WOH/18"	89		Very loose, moist to wet, gray SILT (ML) [FLY ASH]								
		ST-1		4										*GUS sampler used*
	25	ST-2		100										*GUS sampler used*
415														
	30	SS-10	WOH/18"	33										

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Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30												
410		SS-11	WOH/18"	78	becomes with trace sand	39.0		NP	NP				%G=0 %S=0 %F=95 Organic Content = 2.8%
	35	SS-12	WOH/18"	100									
405.7	36.5	SS-13	1 2 2	89	Medium stiff, moist, gray fat CLAY (CL) [ALLUVIUM]					1.0 1.0 0.75			
405													
	40	ST-3		96									
400		SS-14	0 1 2	100									
	45	SS-15	2 1 2	100		68.8		86	59				
395.2	47.0	SS-16	11 12 15	100	Medium dense, wet, gray, poorly-graded SAND (SP) [ALLUVIUM]					0.75 0.75 -			
395													
	50	SS-17	10 11 13	61									
390		SS-18	13 14 15	50									
	55	SS-19	10 13 14	11									
385		SS-20	15 21 33	72	becomes very dense								
	60	SS-21	18 19 23	67	becomes dense								
380		SS-22	9 17 18	72									
	65	SS-23	16 19 22	89									

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B016

Elevation (feet)	Depth (feet)	SAMPLES Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
375		SS-24	12 17 22	89										
		SS-25	12 15 15	89										
	70					372.2 — 70.0								
						End of Boring at 70 ft								
370														
	75													
365														
	80													
360														
	85													
355														
	90													
350														
	95													
345														
	100													

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Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B017

Date(s) Drilled	09/16/2015 12:00 AM to 09/16/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	431.7 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 801904.6 E 2305465.1 (ft NAD83)	Groundwater Level(s)	16 ft on 9/16/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
431.7	0				431.7 / 0.0 Very stiff, moist, gray lean CLAY (CL) [FILL]								
430		SS-1	2 2 3	39						2.0 2.5 2.0			
		SS-2	2 3 4	44	becomes stiff					0.75 1.25 1.75			
	5				becomes moist to dry								
425		SS-3	3 2 4	39						3.0 3.5 3.0			
		SS-4	3 4 5	33						2.5 2.0 2.0			
	10												
420		ST-1		46									
		SS-5	3 4 4	94	becomes stiff, moist					1.0 1.5 1.0			
	15				∇								
415		ST-2		92									
414.2	17.5				414.2 / 17.5 Very loose, wet, brown, poorly-graded medium SAND (SP) [POSSIBLE FILL]								
		SS-6	2 1 1	100									
	20												
410.7	21.0				410.7 / 21.0 Soft moist, gray lean CLAY (CL) [ALLUVIUM]								
410		SS-7	1 1 1	100									
		ST-3		100						0.5 0.5 0.5			
	25												
405		SS-8	1 2 2	100	becomes medium stiff					1.0 0.75 1.0			
402.7	29.0				402.7 / 29.0 Medium dense, wet, gray, poorly-graded fine SAND (SP) with silt [ALLUVIUM]								
		SS-9	6 7 9	89									
	30												

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B017

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30													
400														
	35	SS-10	9 9 12	44										
395														
	40	SS-11	12 12 18	56		becomes fine to medium sand								
390														
	45	SS-12	7 13 13	72										
385														
	50	SS-13	16 16 17	78		becomes dense								
380														
	55	SS-14	12 13 16	67		becomes medium dense								
375														
	60	SS-15	15 16 13	78		becomes medium sand, trace fine sand								
370														
	65	SS-16	10 13 16											

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Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B017

Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
365															
		SS	SS-17	23 25 18	61		becomes dense with coarse sand and gravel								
361.7	70.0						End of Boring at 70 ft								
360															
	75														
355															
	80														
350															
	85														
345															
	90														
340															
	95														
335															
	100														

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Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B018

Date(s) Drilled	09/04/2015 12:00 AM to 09/04/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	443.9 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 801895.2 E 2305355.3 (ft NAD83)	Groundwater Level(s)	17 ft on 9/4/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
443.9	0				443.9 / 0.0 Loose, moist, brown, poorly-graded fine SAND (SP), trace to with clay [FILL]								
		SS-1	6 5 5	61				30	9				%G=0 %S=4 %F=96
440		SS-2	9 6 9	28	becomes medium dense								
	5	SS-3	9 14 23	61	becomes dense								
435		SS-4	13 14 20	50									
	10	SS-5	9 12 15	39	becomes medium dense			NP	NP				%G=0 %S=57 %F=43
430		SS-6	13 15 15	61									
	15	SS-7	11 12 12	33									
426.9	17.0				426.9 / 17.0 Medium dense, wet, gray, poorly-graded medium SAND (SP) with gravel and coal, with layers of bottom ash interbedded [ASH]								
425		SS-8	4 5 4	28									
	20	SS-9	1 1 2	67		21.1							%G=16 %S=46 %M=28 %C=9
420		SS-10	WOH/18"	11									
	25	SS-11	6 6 9	22	wood railroad tie								
415		SS-12	3 4 4	6									
	30												

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30														
412.9	31.0														
		SS	SS-13	1 1 1	100		Very loose, wet, brown and gray, poorly graded fine to medium SAND (SP) [ALLUVIUM]	27.4							%G=0 %S=19 %F=81
410		SS	SS-14	2 2 3	22		becomes loose								
	35														
		SS	SS-15	5 5 6	22		becomes medium dense								
405		SS	SS-16	4 3 3	28		becomes loose								%G=0 %S=83 %F=17
	40														
		SS	SS-17	6 9 8	72		becomes medium dense								
400		SS	SS-18	6 7 8	61										
	45														
		SS	SS-19	6 7 11	50		becomes light gray with clay								
395		SS	SS-20	9 11 15	56										
	50														
		SS	SS-21	9 6 11	61										
390		SS	SS-22	9 11 16	33										
	55														
		SS	SS-23	9 11 16	89										%G=0 %S=94 %F=6
385		SS	SS-24	8 12 10	72										
	60														
		SS	SS-25	10 15 16	89		becomes dense								
380		SS	SS-26	11 12 14	56		becomes medium dense								
	65														

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B018

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
		SS-27	14 22 25	72		becomes dense								
375		SS-28	16 15 16	67										
373.9	70					373.9 — 70.0 End of Boring at 70 ft								

Elevation scale: 375, 370, 365, 360, 355, 350, 345. Depth scale: 70, 75, 80, 85, 90, 95, 100.

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B020

Date(s) Drilled	09/08/2015 12:00 AM to 09/09/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	444.0 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 801731.3 E 2304276.8 (ft NAD83)	Groundwater Level(s)	15 ft on 9/8/2015 Measured 40.5 ft bgs on 10/29/2015 and 38 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	SAMPLES Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	0					444.0 / 0.0 Medium dense, moist, brown, poorly-graded fine to medium SAND (SP), trace silt [FILL]								
		SS-1	11 12 14	78										
440	5	SS-2	4 7 9	72			19.6							%G=0 %S=11 %M=55 %C=34
		SS-3	8 14 22	83		becomes dense								
435	10	SS-4	8 10 10	72		becomes with silt	22.7							%G=0 %S=13 %M=51 %C=36
430		SS-5	10 11 12	61		becomes gray								
	15					429.0 / 15.0 ▽ Very loose, wet, gray SILT(ML) with slag [FLY ASH]								
425		SS-6	1 WOH/12"	100			42.6							%G=0 %S=19 %M=66 %C=14
	20					424.0 / 20.0 Very loose, wet, gray poorly-graded medium-grained SAND (SP) [BOTTOM ASH]								
		SS-7	1 WOH/12"	89										
420		SS-8	2 1 2	100			42.9							%G=8 %S=62 %M=23 %C=7
	25													
						418.0 / 26.0 Very loose, wet, gray, SILTY SAND (SM) [POSSIBLE FILL]								
		SS-9	WOH/18"	89										
415		SS-10	1 1 1	100										
	30													

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Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30												
		SS-11	1 1 1	100									%G=1 %S=19 %F=81
410		SS-12	WOH/12" 1	100									
	35												
		SS-13	2 2 4	100									
407.0	37.0				Medium stiff, moist, gray, fat CLAY (CL) [ALLUVIUM]								
405		ST-1		100									GUS sampler used
	40												
400		ST-2		44		54.8 33.3	103.6	60	39				%G=0 %S=2 %M=49 %C=49
399.0	45.0				Medium dense, wet, light gray, poorly-graded fine to medium SAND (SP) [ALLUVIUM]								
395		SS-14	13 13 15	100		19.6							%G=0 %S=93 %F=7
	50												
390		SS-15	8 11 15	67	becomes with coarse sand								
	55												
385		SS-16	13 14 19	50	becomes dense								
	60												
380		SS-17	16 20 22	50									
	65												

Elevation (feet)	Depth (feet)	SAMPLES: Type Number	SAMPLES: Sampling Resist. OR Core RQD (%)	SAMPLES: Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Elevation (feet)	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
375		SS-18	8 8 11	61		becomes medium dense										
	70					End of Boring at 70 ft	374.0	70.0								
370	75															
365	80															
360	85															
355	90															
350	95															
345	100															

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B021

Date(s) Drilled	08/28/2015 12:00 AM to 08/28/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	422.7 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802779.5 E 2303390.7 (ft NAD83)	Groundwater Level(s)	Frist Encountered at 6 ft bgs and 19 ft on 8/28/2015 Measured 19 ft bgs on 10/29/2015 and 18.4 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
422.7	0.0				Very loose, moist to wet, gray sandy SILT (ML) [FLY ASH]								
420													
		SS-1	2 1 1	67									%G=0 %S=29 %M=63 %C=5
	5												
		SS-2	WOH/18"	78	becomes wet								
415													
		ST-1		0									
	10												
		ST-2		100									GUS sampler used
410													
		SS-3	WOH/18"	0									
407.7	15.0				Stiff, moist, gray lean CLAY (CL) [ALLUVIUM]								
		SS-4	3 5 6	89		26.9		47	23				%G=0 %S=0 %F=100
405													
		ST-3		0									
403.7	19.0				Loose, wet, gray SILTY SAND (SM) [ALLUVIUM]								
	20												
		SS-5	3 4 4	89									
400					6" clay layer								
		SS-6	4 5 5	100									%G=0 %S=56 %F=44
	25												
		SS-7	7 7 8	56	becomes medium dense								
395													
		SS-8	6 7 8										
	30												

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Elevation (feet)	MATERIAL DESCRIPTION	Depth (feet)	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30														
		SS-9	7 8 9	61											
390															
		SS-10	7 8 8	50											
	35														
					386.7		36.0								
		SS-11	3 4 5	67		Loose, wet, gray, poorly-graded SAND (SP) [ALLUVIUM]									*%G=1 %S=96 %F=3*
385															
		SS-12	5 4 4	72											
	40														
		SS-13	5 13 13	67											
380															
		SS-14	6 5 8	89											*%G=0 %S=97 %F=3*
	45														
		SS-15	3 3 5	61											
375															
		SS-16	3 6 7	56		becomes trace to with coal fragments as gravel									
	50														
		SS-17	5 6 6	67											
370						becomes medium to coarse sand									
		SS-18	6 6 10	44											
	55														
		SS-19	5 5 7	33											
365															
		SS-20	4 9 10	28											
	60														
		SS-21	15 12 11	50		becomes with fine gravel									
360															
		SS-22	10 15 16												
	65														

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
		SS-23	7 7 7	56										
355														
		SS-24	7 7 9											
352.7	70					70.0 End of Boring at 70 ft								
350														
	75													
345														
	80													
340														
	85													
335														
	90													
330														
	95													
325														
	100													

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B022

Date(s) Drilled	09/01/2015 12:00 AM to 09/01/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	50.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	430.6 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802021.8 E 2303775.5 (ft NAD83)	Groundwater Level(s)	6 ft on 9/1/2015		

Elevation (feet)	Depth (feet)	SAMPLES Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
430.6	0.0						Loose, moist, gray, SILT (ML) with sand [FLY ASH]								
			SS-1	4 5 5											
			SS-2	4 3 3	61		becomes wet with bottom ash								
			SS-3	1 3 1	83		becomes very loose								
			SS-4	WOH/6" 1 1	72										
			ST-1		42		becomes trace sand	122.7 113.5 65.0	85.7	NP	NP				*GUS sampler used %G=0 %S=6 %M=83 %C=11*
			ST-2		100			58.3 73.6 73.7 24.3 23 25	93.2 86.6 - 122.3 120.6 -	NP 39	NP 23				*GUS sampler used Upper: %G=0 %S=11 %F=89 Lower: %G=0 %S=4 %M=67 %C=30 SG=2.50, k=1.2E-06*
412.1	18.5						Stiff, moist, gray, lean CLAY (CL) [ALLUVIUM]								
			SS-5	4 5 5	89							2.0 2.0 1.75			
			SS-6	3 4 4	94		becomes with sand					2.0 2.0 2.0			
			SS-7	2 3 3	89							1.25 1.50 1.50			
			SS-8	2 3 2	100		becomes medium stiff to stiff					1.0 1.25 1.0			

Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
400	30														
			SS-9		100		becomes medium stiff	38.5		46	21	0.5 0.75 0.5			
396.6	34.0		SS-10	2 3 4	72		Loose, wet, dark gray, SILTY SAND (SM) [ALLUVIUM]								
395	35														
			SS-11	5 7 10	89		becomes medium dense								%G=0 %S=81 %F=19
			SS-12	4 8 9	56										
390	40						becomes interbedded with clay lenses								
			SS-13	6 9 12	67										
			SS-14	5 9 10	72										
385	45														
			SS-15	4 4 6	61										
			SS-16	5 5 7	72										
380.6	50.0						End of Boring at 50 ft								
380	50														
375	55														
370	60														
	65														

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AECOM

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B022A

Date(s) Drilled	09/01/2015 12:00 AM to 09/01/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	30.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	430.6 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802021.8 E 2303775.5 (ft NAD83)	Groundwater Level(s)	6 ft on 9/1/2015		

Elevation (feet)	Depth (feet)	Sample Type	Sample Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
430.6	0.0					Offset boring to WOR-B022. Augered to 8 ft bgs without sampling. Based on visual observation of auger cuttings, soils appear to be similar to WOR-B022.								
			ST-1		96									GUS sampler used
			ST-2		96									GUS sampler used
			ST-3		42									GUS sampler used
			ST-4		100									GUS sampler used
412.1	18.5													
400.6	30.0													

Elevation scale: 430, 425, 420, 415, 410, 405. Depth scale: 0, 5, 10, 15, 20, 25, 30.

End of Boring at 30 ft

Project: Dynegy	**Log of Boring WOR-B024**
Project Location: Wood River Power Station, Alton, IL	Sheet 1 of 3
Project Number: 60440115	

Date(s) Drilled	08/31/2015 12:00 AM to 08/31/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	70.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	423.0 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802489.4 E 2303542.5 (ft NAD83)	Groundwater Level(s)	21 ft on 8/31/2015 Measured 20.3 ft bgs on 10/29/2015 and 18.9 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	SAMPLES Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
423.0	0.0					Very loose, moist, gray, SILT (ML) with sand [ASH]								
420														
	5	SS-1	WOH/18"	0										
		SS-2	WOH/18"	100		becomes with trace sand								*%G=1 %S=9 %F=91*
415		ST-1		100										
	10	ST-2		100										
412.0	11.0					Stiff to medium stiff, moist, gray fat CLAY (CH) with rock fragments [FILL]								
410														
		SS-5	2 3 3	78			36.1		58	29	1.25 1.25 1.0			
	15													
407.0	16.0	SS-6	1 1 0	67		Stiff to medium stiff, moist, gray fat CLAY (CH) [ALLUVIUM]					1.0 1.0 1.25			
405														
		SS-7	1 1 1	89							0.5 0.5 0.75			
	20													
402.0	21.0 ▽	SS-8	3 2 3	78		Loose, wet, gray SILTY SAND (SM), trace organics [ALLUVIUM]								
400														
		SS-9	2 2 2	89			33.8							*%G=0 %S=64 %F=36 Organic Content = 2.8%*
	25													
		SS-10	3 2 2	56										
395														
394.5	28.5	SS-11	1 2 3	89		Loose, wet, gray poorly-graded medium grained SAND (SP) [ALLUVIUM]								
	30													

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Elevation (feet)	Depth (feet)	Type	Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30														
		SS	SS-12	4 4 5	44										
390															
		SS	SS-13	3 2 4	56										%G=0 %S=96 %F=4
	35														
387.0	36.0	SS	SS-14	2 2 2	100		Soft to medium stiff, gray fat CLAY (CH) [ALLUVIUM]					0.5 0.5 0.5			
385															
384.5	38.5	SS	SS-15	1 1 1	56		Very loose, wet, gray poorly-graded fine SAND (SP) [ALLUVIUM]								
	40														
		SS	SS-16	10 19 16	89		becomes dense, poorly-graded medium SAND								
380															
		SS	SS-17	8 8 9	94		becomes medium dense								
	45														
377.0	46.0	SS	SS-18	1 1 1	89		Soft, moist to wet, lean CLAY (CL)								
375															
	50														
372.0	51.0	SS	SS-19	10 12 10	89		Medium dense, wet, gray, poorly-graded fine SAND (SP) [ALLUVIUM]								
370															
		SS	SS-20	8 5 2	61		becomes loose, poorly-graded medium SAND								
	55														
		SS	SS-21	8 7 9	44		becomes medium dense								
365															
		SS	SS-22	7 8 8	56										
	60														
360															
		SS	SS-23	8 9 10	50		becomes interbedded with clay lenses								
	65														

Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
		SS-24	6 9 10	39										
355														
		SS-25	6 7 8	50										
	70					353.0 — 70.0 End of Boring at 70 ft								
350														
	75													
345														
	80													
340														
	85													
335														
	90													
330														
	95													
325														
	100													

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AECOM

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B025

Date(s) Drilled	09/02/2015 12:00 AM to 09/02/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	60.0 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	433.5 ft NAVD88
Borehole Backfill	Cement Grout	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 802267.5 E 2304498.5 (ft NAD83)	Groundwater Level(s)	6 ft on 9/2/2015 Measured 8 ft bgs on 10/29/2015 and 8.2 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	Samples: Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
433.5	0					433.5 / 0.0 Loose, moist, gray, SILT (SM) with sand [FLY ASH]								
430		SS-1	3 4 2	100										
	5													
		SS-2	WOH/18"	100		becomes very loose, wet								
425		ST-1		100										*GUS sampler used*
	10													
		SS-3	WOH/18"	100										
420		SS-4	WOH/18"	56										
	15													
		SS-5	WOH/6" 1 WOH/6"	72										
415		SS-6	WOH/18"	17										
	20													
		SS-7	WOH/18"	0										
410		SS-8	WOH/18"	100										
	25													
407.5	26.0	SS-9	WOH/12" 1	61		407.5 / 26.0 Very soft, moist, gray fat CLAY (CH) [ALLUVIUM]								
405		ST-2		0										
	30													

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Elevation (feet)	Depth (feet)	Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	Graphic Symbol	MATERIAL DESCRIPTION	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
	30													
		ST-3		83			64 66.6 63.3	- 99 99.8	94	56	0.35			%G=0 %S=0 %M=15 %C=85
400		SS-10	WOH/6" 0 WOH/6"	100										
	35													
		SS-11	1 2 2	100		becomes soft to medium stiff, lean to fat CLAY (CL-CH)					0.5 0.5 0.75			%G=0 %S=0 %F=100
395						395.0 — 38.5								
		SS-12	5 9 12	67		Medium dense, wet, gray poorly-graded SAND (SP) [ALLUVIUM]								
	40													
		SS-13	12 15 21	44		becomes dense								
390		SS-14	9 15 16	72										%G=1 %S=90 %F=9
	45													
		SS-15	19 21 24	67										
385		SS-16	8 8 8	61		becomes medium dense								%G=0 %S=93 %F=7
	50													
380		SS-17	6 10 7	78										
	55													
375		SS-18	2 2 4	50		becomes loose								
	60					373.5 — 60.0 End of Boring at 60 ft								
370														
	65													

Project: Dynegy

Project Location: Wood River Power Station, Alton, IL

Project Number: 60440115

Log of Boring WOR-B026

Sheet 1 of 1

Date(s) Drilled	09/16/2015 12:00 AM to 09/16/2015 12:00 AM	Logged By	B. Clayton	Checked By	V. Gautam
Drilling Method	Hollow Stem Auger / Mud Rotary	Drill Bit Size/Type	3 1/4" ID HSA, 3 3/8" Tricone	Borehole Depth	28.5 ft
Drill Rig Type	CME-550 ATV	Drilling Contractor	Terracon	Surface Elevation	431.4 ft NAVD88
Borehole Backfill	Well WOR-P026 Installed	Sampling Method(s)	2" ID Split Spoon (SS), Shelby Tube (ST), Gregory Undisturbed Sampler (GUS)	Hammer Data	Automatic Hammer
Boring Location	N 801728.8 E 2304914.5 (ft NAD83)	Groundwater Level(s)	5 ft on 9/16/2015 Measured 7.6 ft bgs on 10/29/2015 and 6.9 ft on 11/19/2015		

Elevation (feet)	Depth (feet)	SAMPLES Type Number	Sampling Resist. OR Core RQD (%)	Recovery (%)	MATERIAL DESCRIPTION (Elevation (feet) / Depth (feet))	Natural Moisture Content (%)	Total Unit Weight (pcf)	Liquid Limit	Plasticity Index	Pocket Pen. Su (ksf)	Torvane Su (ksf)	TXUU (ksf)	REMARKS
431.4	0.0				Loose, moist, dark gray SILT (ML) [FLY ASH]								
		SS-1	2 6 3	72									
		SS-2	WOH/18"	100	becomes very loose								
	5				becomes wet (groundwater ▽)								
424.9	6.5	ST-1		75	Very loose, wet, light gray, poorly-graded medium SAND (SP) [BOTTOM ASH]								
		SS-3	1 1 1	89									
		SS-4	1 1 1	94									
417.9	13.5	SS-5	1 1 1	100	Very loose, wet, dark gray SILT (ML) [FLY ASH]								
		SS-6	WOH/6" 1 WOH/6"	100									
		SS-7	1 1 1	100									
		ST-2		92									
407.4	24.0	SS-8	1 2 3	100	Medium stiff, moist, gray lean to fat CLAY (CL-CH) [ALLUVIUM]					1.0 1.0 1.0			
		SS-9	3 5 8	89									
404.4	27.0				Medium dense, wet, brown, poorly-graded medium SAND (SP)								
402.9	28.5				End of Boring at 28.5 ft								

Elevation scale: 430, 425, 420, 415, 410, 405. Depth scale: 0, 5, 10, 15, 20, 25, 30.

APPENDIX A2

HISTORICAL BORING LOGS

B-1: Illinois State Water Survey: 1982 Boring and Piezometer Logs (Hampton and O'Hearn, 1984)

RECORD OF SUBSURFACE EXPLORATION

PROJECT Illinois Power - Wood River Power Plant Monitoring Wells

JOB NO. 82-1344

BORING M-7

SHEET 1 OF 2

DEPTH (ft)	SAMPLE NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)	SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL, Classification) Soil Classification System Unified; Surface Elevation —	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf SV△ QP/2□ QU/2○ 0 ½ 1 1½ 2 2½; PL NMC LL 0 50 100; Rock Quality Designation 0 50 100
5	1	SS	24/15	1	Gray Fine Sand and Fly Ash, FILL	2-3-4		
10	2	SS	24/19			1/12-2		
15	3	SS	24/20		Fly Ash with Clay Seams and Fine to Medium Sand, FILL	3-8-7		
20	4	SS	24/24			13-8-9		
25	5	SS	24/18		Grayish Brown Fine SAND, Trace Silty Clay, and Fly Ash, Fill	6-2-1		
30	6	SS	24/16		Gray CLAY	3-4-6		
35	7	SS	24/21			3-5-6		

DRILLING METHOD Hollow Augers

DATE DRILLED 12-20-82

DRILLED BY Bignall

LOGGED BY Hileman

PIEZOMETER See Sketch

GROUNDWATER LEVELS

Encountered at 40.0 Feet

___ Hours after completion ___ Feet

___ after completion ___ Feet

___ after completion ___ Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.

John Mathes & Associates, Inc.

RECORD OF SUBSURFACE EXPLORATION

PROJECT Illinois Power - Wood River Power Plant Monitoring Wells
JOB NO. 82-1344
BORING M-7
SHEET 2 OF 2

DEPTH (ft)	SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED / RECOVERED (in)	SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL Classification) Soil Classification System Unified; Surface Elevation —	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf / PL NMC LL / Rock Quality Designation
					Gray CLAY	2-2-5		
40	8	SS	24/24					
45	9	SS	24/16		Brown to Gray Fine to Medium SAND Trace Silt and Clay	12-11-16		
50	10	SS	24/14		Brown Fine to Medium SAND, Trace Coarse Sand	10-11-15		
55								
60	11	SS	42/20			10-12-14		
					TOB			
65					REMARKS: 1. Two-foot Long Split-spoon Used Entire Boring, Blow Counts Shown For First 18 Inches.			
70								

DRILLING METHOD Hollow Augers
DATE DRILLED 12-20-82
DRILLED BY Bignall
LOGGED BY Hileman
PIEZOMETER See Sketch

GROUNDWATER LEVELS

Encountered at ____ Feet
____ Hours after completion ____ Feet
____ after completion ____ Feet
____ after completion ____ Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.

John Mathes & Associates, Inc.

RECORD OF SUBSURFACE EXPLORATION

PROJECT Illinois Power - Wood River Power Plant Monitoring Wells

JOB NO. 82-1344

BORING M-8

SHEET 1 OF 1

DEPTH (ft)	SAMPLE NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)	SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL, Classification) Soil Classification System Unified Surface Elevation —	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf SV△ QP/▢ QU/○ 0 ½ 1 1½ 2 2½ / PL NMC LL 0 50 100 / Rock Quality Designation 0 50 100
				1				
40								
	1	SS	24/24	2	Gray CLAY, Trace Silt	1-2-3		
45	2	SS	24/24	3	Brown Fine to Medium SAND	4-13-16		
					TOB			
50								
55								
60								
65					REMARKS: 1. Drilled Down to 41' Took First Sample. 2. Two-foot Long Split-spoon Used Entire Boring, Blow Counts for First 18 Inches. 3. Ten Inches Blow-in, Drove Split-spoon, Washed Out, Drilled Down to 47'.			
70								

DRILLING METHOD Hollow Augers

DATE DRILLED 12-21-82

DRILLED BY Bignall

LOGGED BY Hileman

PIEZOMETER See Sketch

GROUNDWATER LEVELS

Encountered at 34.1 Feet

___ Hours after completion ___ Feet

___ after completion ___ Feet

___ after completion ___ Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.

John Mathes & Associates, Inc.

RECORD OF SUBSURFACE EXPLORATION

PROJECT Illinois Power - Wood River Power Plant Monitoring Wells
BORING M-9
SHEET 1 OF 1
JOB NO. 82-1344

DEPTH (ft)	SAMPLE NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)	SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL. Classification) Soil Classification System Unified Surface Elevation —	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf SV△ QP/2□ QU/2○ 0 ½ 1 1½ 2 2½; PL + NMC • LL x 0 50 100; Rock Quality Designation 0 50 100
5	1	SS	18/16		Gray to Brown CLAY, Trace Sand	2-2-2		
10	2	SS	18/16			2-3-3		
15	3	SS	18/17		Gray CLAY	2-4-6		
20	4	SS	18/14			1-1-2		
25	5	SS	18/18		Gray Silty CLAY, Trace Sand	2-2-3		
30	6	SS	18/14			WH-1-1		
					Brown Fine to Medium SAND			
35	7	SS	18/9		TOB	12-17-17		

DRILLING METHOD Hollow Augers
DATE DRILLED 12-20-82
DRILLED BY Roberts
LOGGED BY Schaefer
PIEZOMETER See Sketch

GROUNDWATER LEVELS
Encountered at 19.3 Feet
___ Hours after completion ___ Feet
___ after completion ___ Feet
___ after completion ___ Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.

mathes

John Mathes & Associates, Inc.

RECORD OF SUBSURFACE EXPLORATION

PROJECT Illinois Power - Wood River Power Plant Monitoring Wells

JOB NO. 82-1344

BORING M-10

SHEET 1 OF 2

DEPTH (ft)	SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED / RECOVERED (in)	SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL. Classification) Soil Classification System Unified; Surface Elevation —	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf: SV□ QP/2□ QU/2○ 0 ½ 1 1½ 2 2½; PL NMC LL 0 50 100; Rock Quality Designation 0 50 100
				1				
5	1	SS	18/16		Gray to Brown Silty CLAY	3-5-8		
10	2	SS	18/18		Gray Clayey SILT, Trace Fine Sand	4-7-10		
15	3	SS	18/18		Gray Silty CLAY	2-3-3		
20	4	SS	18/18	2	Trace Fine Sand	1/12-2		
25	5	SS	18/6		Brown Fine SAND, Trace Clay	1-1-2		
30	6	SS	18/18		Gray Silty CLAY, Trace Fine Sand	1-2-2		
35	7	SS	18/18		Gray CLAY, Trace Silt	WH-1-2		

DRILLING METHOD Hollow Augers

DATE DRILLED 12-21-82

DRILLED BY Roberts

LOGGED BY Schaefer

PIEZOMETER See Sketch

GROUNDWATER LEVELS

Encountered at 13.3 Feet

___ Hours after completion ___ Feet

___ after completion ___ Feet

___ after completion ___ Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.

John Mathes & Associates, Inc.

RECORD OF SUBSURFACE EXPLORATION

PROJECT: Illinois Power - Wood River Power Plant Monitoring Wells
BORING: M-10
SHEET 2 OF 2
JOB NO. 82-1344

DEPTH (ft)	SAMPLE NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)	SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL, Classification) Soil Classification System: Unified; Surface Elevation: —	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf (SV Δ, QP/2 □, QU/2 ○: 0 ½ 1 1½ 2 2½); PL + NMC • LL x (0 50 100); Rock Quality Designation (0 50 100)
					Gray CLAY, Trace Silt			
40	8	SS	18/18			WH-1-2		
45	9	SS	18/18			WH-WH-2		
50	10	SS	18/18			WH-1-2		
55	11	SS	18/18		TOB	WH-WH-3		
60								
65								
70								

REMARKS:

1. Approx. 6" Fly Ash at Surface
2. Pulled SS, 18" Blow-in, Added Water, Continued Drilling.

DRILLING METHOD: Hollow Augers
DATE DRILLED: 12-21-82
DRILLED BY: Roberts
LOGGED BY: Schaefer
PIEZOMETER: See Sketch

GROUNDWATER LEVELS

Encountered at ______ Feet
____ Hours after completion ____ Feet
____ after completion ____ Feet
____ after completion ____ Feet

NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.

John Mathes & Associates, Inc.

RECORD OF SUBSURFACE EXPLORATION

PROJECT Illinois Power - Wood River Power Plant Monitoring Wells
JOB NO. 82-1344

BORING M-11
SHEET 1 OF 1

DEPTH (ft)	SAMPLE NUMBER	INTERVAL AND TYPE	ADVANCED / RECOVERED (in)	SEE REMARK #	DESCRIPTION OF MATERIALS (Color Modifier MATERIAL, Classification) Soil Classification System Unified Surface Elevation —	BLOWS (per 6 in)	DRY UNIT WEIGHT (pcf)	Shear Strength, tsf SV△ QP/2□ QU/2○ 0 ½ 1 1½ 2 2½ / PL NMC LL 0 50 100 / Rock Quality Designation 0 50 100
				1				
5								
10								
15								
					Gray Silty CLAY			
20	1	SS	18/14			1-1-4		
					Gray Fine SAND			
	2	SS	18/16			1-1-0		
25								
	3	SS	18/18		- with Gray Clay	1-1-2		
30					TOB			
					REMARKS:			
					1. Drilled Down to 19', Took First Sample.			
35								

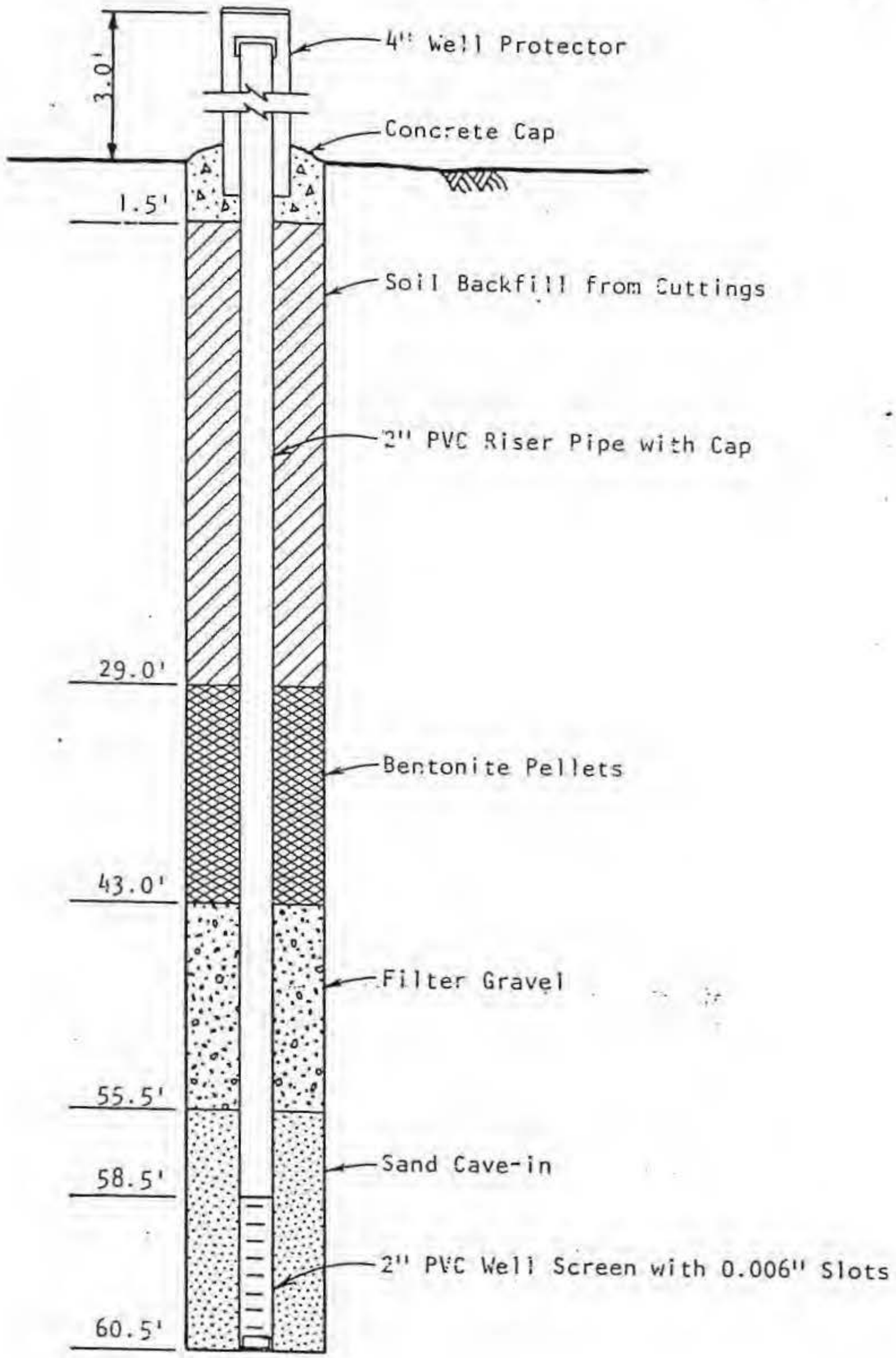
DRILLING METHOD Hollow Auger
DATE DRILLED 12-22-82
DRILLED BY Roberts
LOGGED BY Schaefer
PIEZOMETER See Sketch

GROUNDWATER LEVELS

Encountered at — Feet
___ Hours after completion ___ Feet
___ after completion ___ Feet
___ after completion ___ Feet

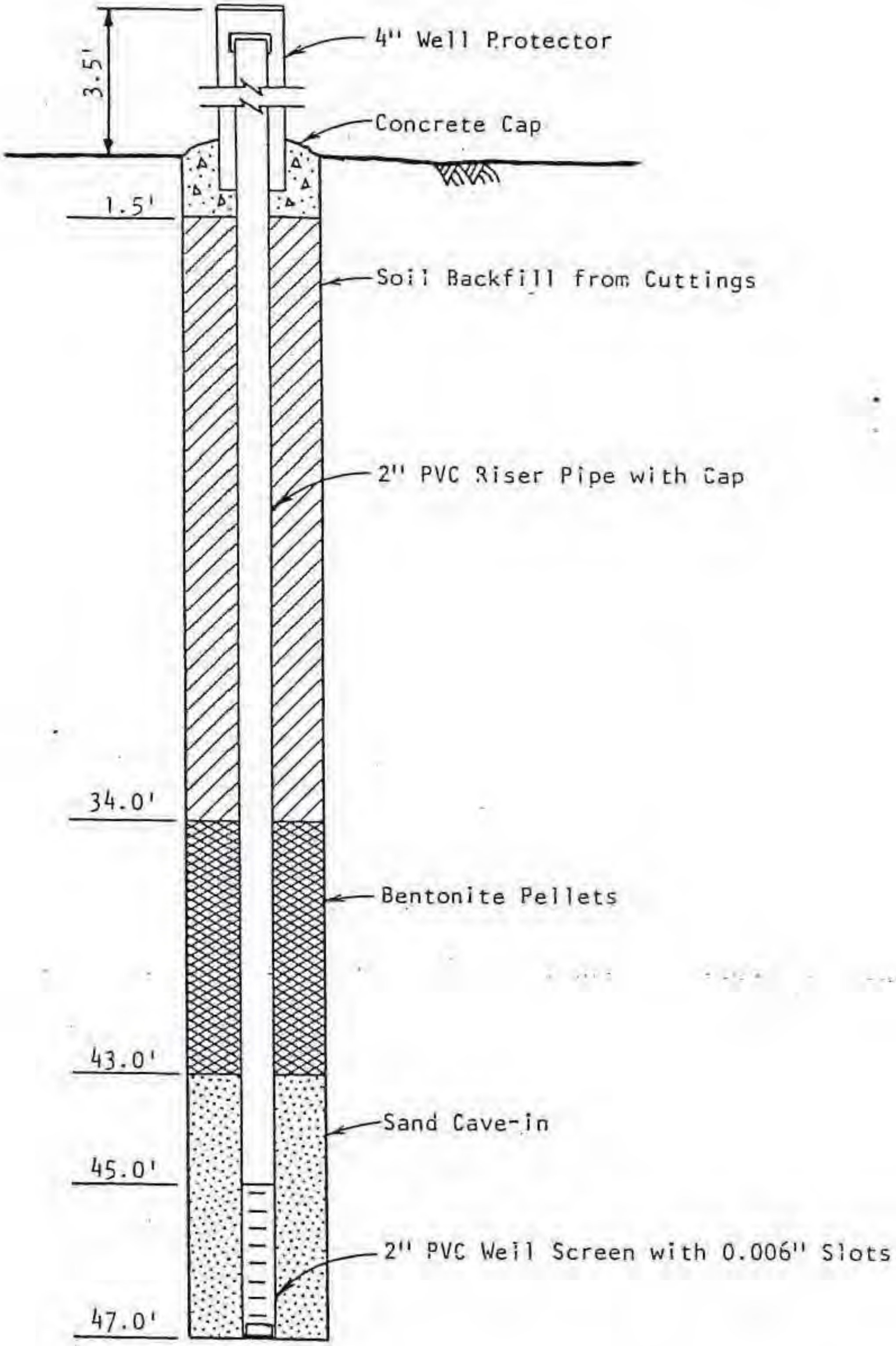
NOTE: Refer to the attached GENERAL NOTES and NOTATION USED ON RECORDS OF SUBSURFACE EXPLORATION for abbreviations, explanations, and qualifications relative to this log.

John Mathes & Associates, Inc.



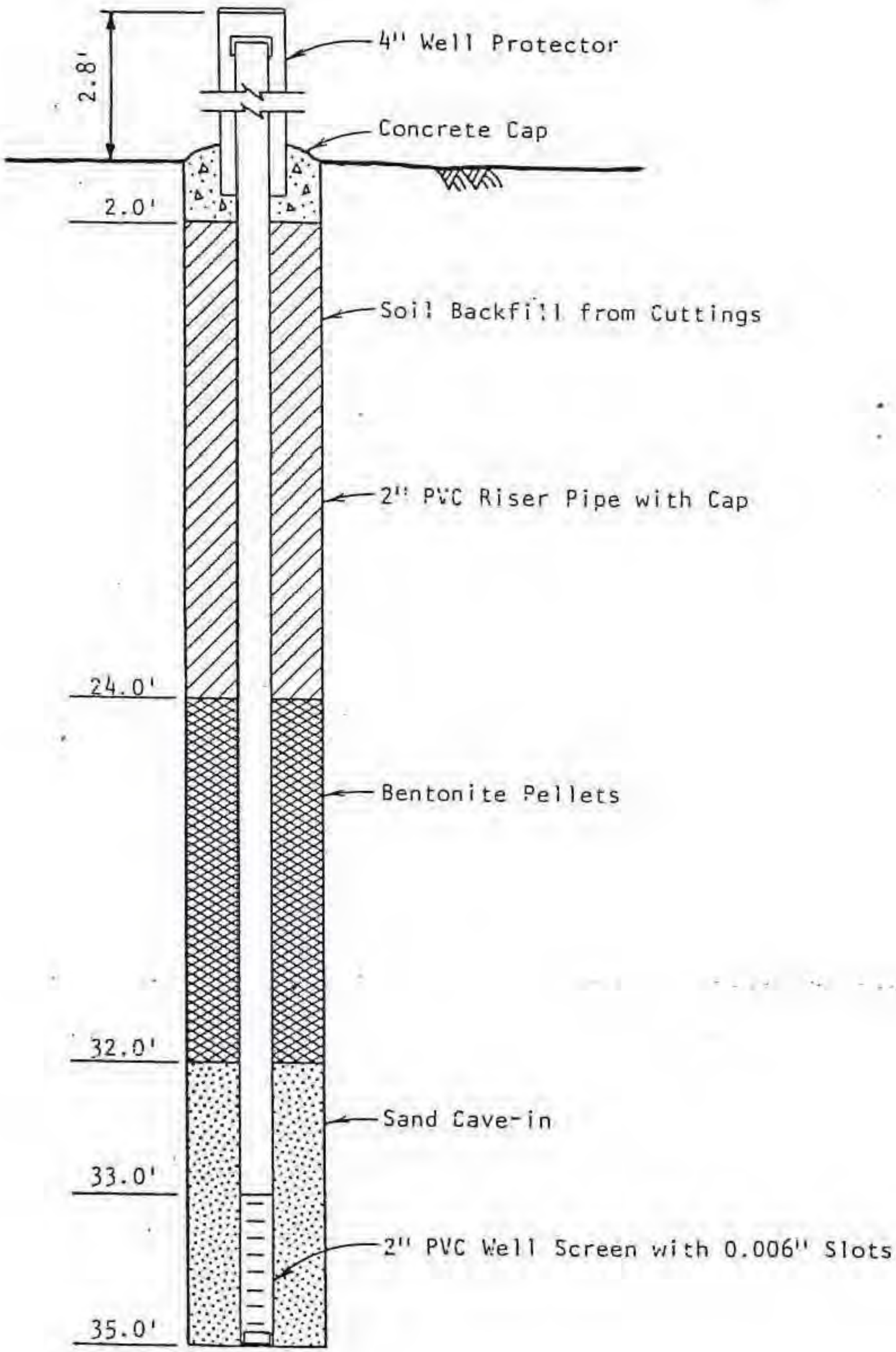
PIEZOMETER M-7

John Mathes & Associates, Inc.



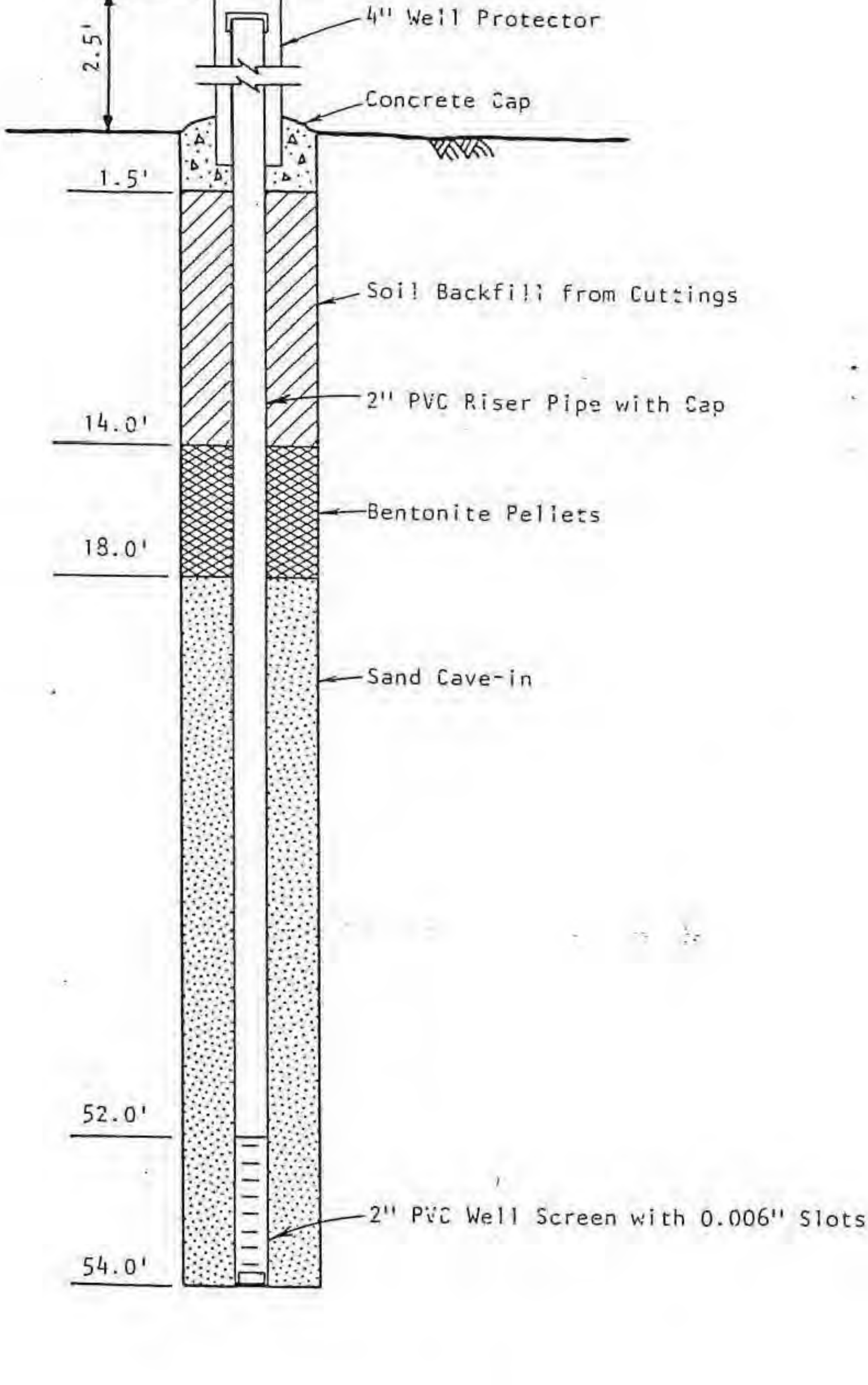
PIEZOMETER M-8

John Mathes & Associates, Inc.



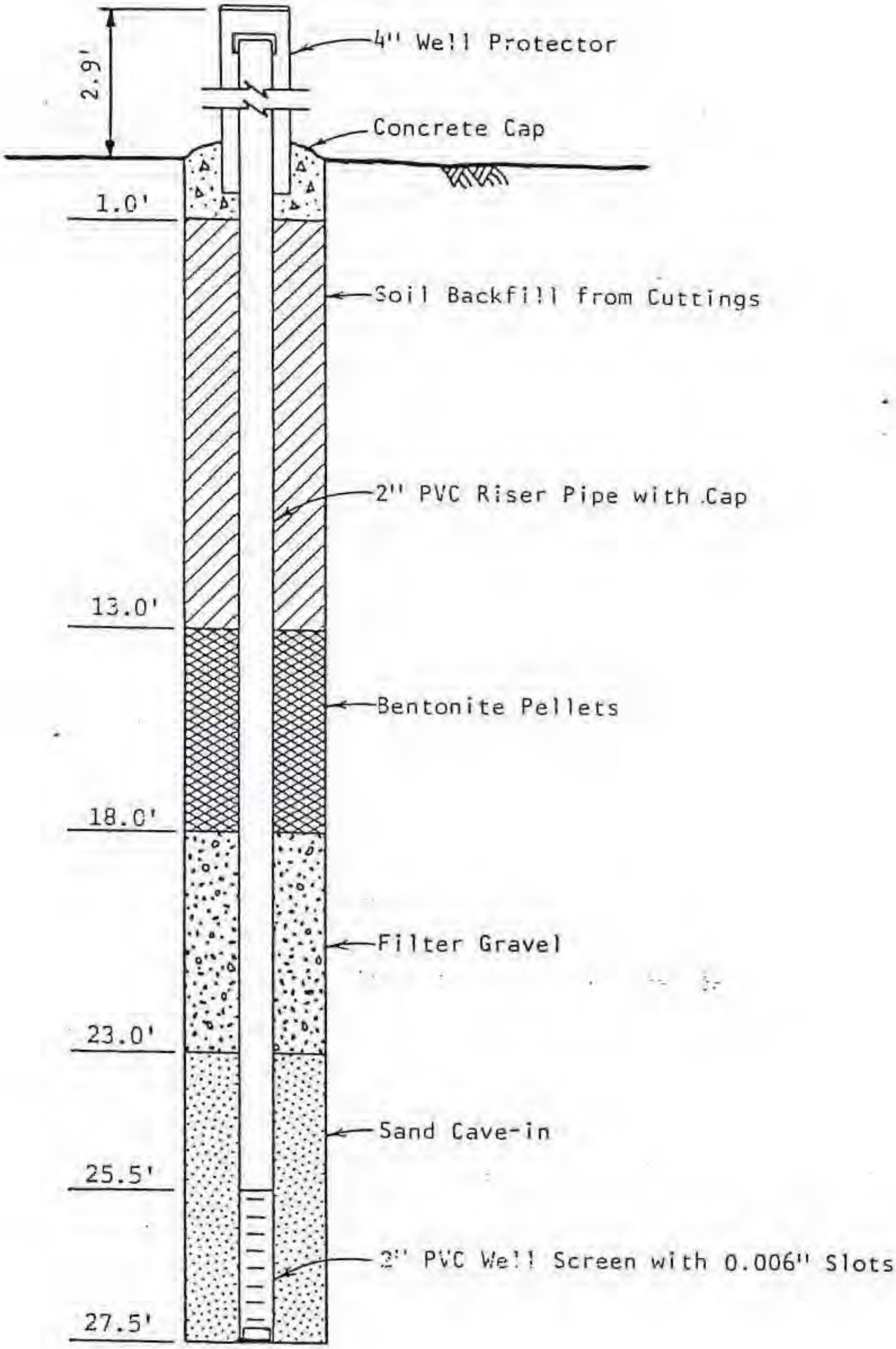
PIEZOMETER M-9

John Mathes & Associates, Inc.



PIEZOMETER M-10

John Mathes & Associates, Inc.



PIEZOMETER M-11

John Mathes & Associates, Inc.

B-2: Kelron Environmental: 1994-1995 Boring and Well Logs (Kelron, 1995)

KELRON environmental

Geologic Field Observations

Serial No.: ______ Borehole, Monitoring Well, or Test Pit No. B-20

(Record this location on the Group List) Group List Number ______

Location Type: ☒ Borehole ☐ Test Pit ☐ Other 8.25" OD/4.25" ID Auger Page 1 of 1

Site Name Illinois Power Company - Wood River Project No. 940100 Phase.Task ______

Date 11-15-94 Start Time 1115 Logged by (print name) Stu Cravens

Depth (feet)	Sample No.	Sampler Type	Sample Depth (feet)		Sample Recovery (inches)	Field Description of Material, Comments, and Observations	Pocket Penetrometer	USCS Symbol	Air Monitoring		
			Top	Bottom					Borehole	Breathing Zone	Sample
0						Silty clay loam, organic					
0.5						Silty CLAY, med to dk br, dry to moist		CL			
	1	SS	10	12	15	*(7/8/8/10); SAND w/ silt, fine gr, lt brown, moist		SP-SM			
	2	SS	20	22	16	*(9/12/9/11)					
20						SILT, dk brown		ML			
20.5						SAND, fine gr, med brown		SP			
21						med gr, wet					
	3	SS	25	27		*(8/8/8/9);					
25						SAND, fine to med gr,					
	4	SS	30	32	24	*(6/3/4/9)					
31						SAND w/ silt, fine gr, brown-grey		SP-SM			
	5	SS	35	36	12	*(9/13)					
40						END BOREHOLE					

Drilling Fluids ☐ None

Type water

Amount Lost all

Source IP Wood River Hydrant

Groundwater Measurements ☐ Groundwater Not Encountered			
Date	11/15/94		
Time	1230		
Depth (feet)	22.6'		

Comments Whitney and Associates, Inc.; Driller - Steve Winslow, Asst - Scott Osmulski
ATV Auger Rig, CME-450. *Split-Spoon Blow Counts: 24", 2" diam. 140# hammer

Geologist's Signature [signature] Date 11/15/94 Reviewer ______ Date ______

KELRON environmental

Geologic Field Observations

Serial No. ______ Borehole, Monitoring Well, or Test Pit No. B-26

(Record this location on the Group List) Group List Number ______

Location Type: ☒ Borehole ☐ Test Pit ☐ Other 8.25" OD/4.25" ID Auger Page 1 of 1

Site Name Illinois Power Company - Wood River Project No. 950100 Phase.Task ______

Date 06-02-95 Start Time 1135 Logged By (print name) Stu Cravens

Depth (feet)	Sample No.	Sampler Type	Sample Depth (feet) Top	Sample Depth (feet) Bottom	Sample Recovery (inches)	Field Description of Material, Comments, and Observations	Pocket Penetrometer	USCS Symbol	Air Monitoring Borehole	Air Monitoring Breathing Zone	Air Monitoring Sample
0						Silty clay loam, organic					
1						Silty CLAY, med br, moist		CL			
	1	SS	5	7	16	*(2/2/3/2)					
5						Silty CLAY, dk br, saturated					
6						lt br to lt gray					
	2	SS	10	12	19	*(2/3/2/3) Silty CLAY					
	3	SS	15	17	22	*(2/2/3/3)					
15						Silty CLAY, med br, saturated					
16						CLAY, med gray, very moist					
	4	SS	20	22	24	*(2/3/3/4) CLAY, same as above					
31						END BOREHOLE					

Drilling Fluids ☐ None

Type water

Amount Lost all

Source East Alton Municipal

Groundwater Measurements	☐ Groundwater Not Encountered		
Date	6/2/95		
Time	1445		
Depth (feet)	+0.15'(als)		

Comments Whitney and Associates, Inc.; Driller - Tim Fehl, Asst - James Bowman

ATV Auger Rig, CME-450. *Split-Spoon Blow Counts; 24", 2" diam, 140# hammer

Geologist's Signature ______ Date 6/2/95 Reviewer ______ Date ______

KELRON environmental

Geologic Field Observations

Serial No. ______ Borehole, Monitoring Well, or Test Pit No. B-27

(Record this location on the Group List) Group List Number ______

Location Type: ☒ Borehole ☐ Test Pit ☐ Other 8.25" OD/4.25" ID Auger Page 1 of 1

Site Name Illinois Power Company - Wood River Project No. 950100 Phase.Task ______

Date 06-02-95 Start Time 0945 Logged by (print name) Stu Cravens

Depth (feet)	Sample No.	Sampler Type	Sample Depth (feet) Top	Sample Depth (feet) Bottom	Sample Recovery (inches)	Field Description of Material, Comments, and Observations	Pocket Penetrometer	USCS Symbol	Air Monitoring Borehole	Air Monitoring Breathing Zone	Air Monitoring Sample
0						Silty clay loam, organic					
1						Silty CLAY, med br, very moist		CL			
	1	SS	5	7	24	*(3/4/5/7)					
5						Silty CLAY, lt br to lt gray, moist					
	2	SS	10	12	24	*(7/8/9/16)					
10						Silty CLAY, dk br					
11						SAND, med gr, lt br, very moist		SP			
	3	SS	15	17	20	*(not recorded)					
15						SAND, med to crse grain, saturated					
32						END BOREHOLE					

Drilling Fluids ☐ None

Type water

Amount Lost all

Source East Alton Municipal

Groundwater Measurements ☐ Groundwater Not Encountered

Date	6/2/95		
Time	1120		
Depth (feet)	9.7'		

Comments Whitney and Associates, Inc.; Driller - Tim Fehl, Asst - James Bowman

ATV Auger Rig, CME-450. *Split-Spoon Blow Counts: 24", 2" diam, 140# hammer

Geologist's Signature ______ Date 6/2/95 Reviewer ______ Date ______

TELEPHONE
309 673-2131

TESTS
DESIGN
REPORTS
ANALYSIS
INSPECTION
CONSULTATION
INVESTIGATIONS

WHITNEY & ASSOCIATES
INCORPORATED
2405 West Nebraska Avenue
PEORIA, ILLINOIS 61604

SPECIALISTS IN
SOILS - PORTLAND CEMENT CONCRETE
STEEL - BITUMINOUS CONCRETE
CONSTRUCTION MATERIALS
AGGREGATES - ASPHALT - POZ-O-PAC
SOILS AND GRAVEL SURVEYS
MATERIALS QUALITY CONTROL
SOIL MECHANICS AND
FOUNDATION ENGINEERING
DRILLING - CORING - TESTING

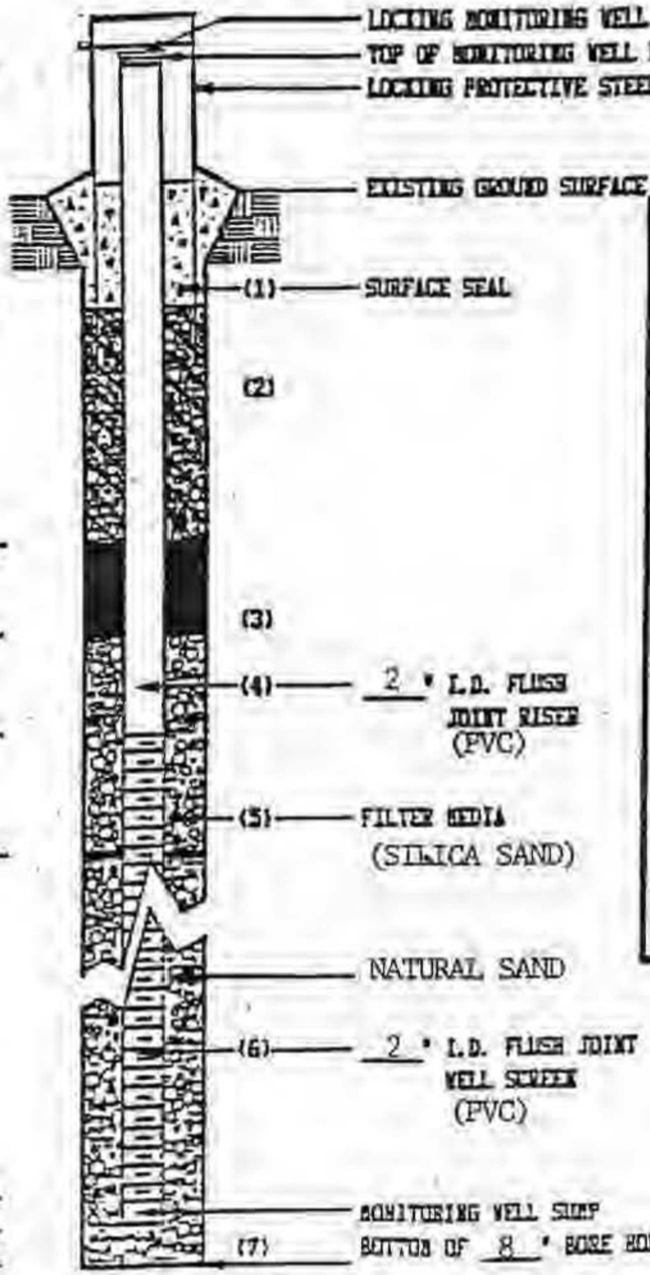
INSTALLED BY: Winslow

DATE: 11-28-94

TYPICAL MONITORING WELL DIAGRAM

PROJECT: Illinois Power - Wood River Station — MONITORING WELL NO. MW-20
LOCATION: Wood River, Illinois — INSTALLATION DATE: 11-16-94
MONITORING WELL LOCATION: See Environmental Engineer's Site Plan

ELEVATION	DEPTH
	(+) 2.4'
	0.0
	(-) 4.0'
	(-) 9.7'
	(-)13.5'
	(-)17.8'
	(-)22.0'
	(-)38.2'
	(-)39.0'
	(-)40.0'



1. SURFACE SEAL: Concrete Encasement
2. ANNULAR BACKFILL: Cement/ Bentonite Grout
3. LOWER SEAL: Bentonite Pellets
4. RISER TYPE: Schedule 40 PVC
5. FILTER MEDIA: 4.0 Flint Shot Silica Sand
6. SCREEN TYPE: Schedule 40 PVC
   SLOT SIZE: 0.010" LENGTH: 20.4'
7. BACKFILL TYPE: Natural Sand

BENCHMARK:

DRILLING METHOD: 4.25" I.D. Hollow Stem Augers

WATER LEVEL @ 24+ HOURS (-)21.0'

REMARKS:

TELEPHONE
309 673-2131

TESTS
DESIGN
REPORTS
ANALYSIS
INSPECTION
CONSULTATION
INVESTIGATIONS

WHITNEY & ASSOCIATES
INCORPORATED
2406 West Nebraska Avenue
PEORIA, ILLINOIS 61604

SPECIALISTS IN
SOILS - PORTLAND CEMENT CONCRETE
STEEL - BITUMINOUS CONCRETE
CONSTRUCTION MATERIALS
AGGREGATES - ASPHALT - POZ-O-PAC

SOILS AND GRAVEL SURVEYS
MATERIALS QUALITY CONTROL
SOIL MECHANICS AND
FOUNDATION ENGINEERING
DRILLING - CORING - TESTING

INSTALLED BY: Fehl

DATE: 6-30-95

TYPICAL MONITORING WELL DIAGRAM

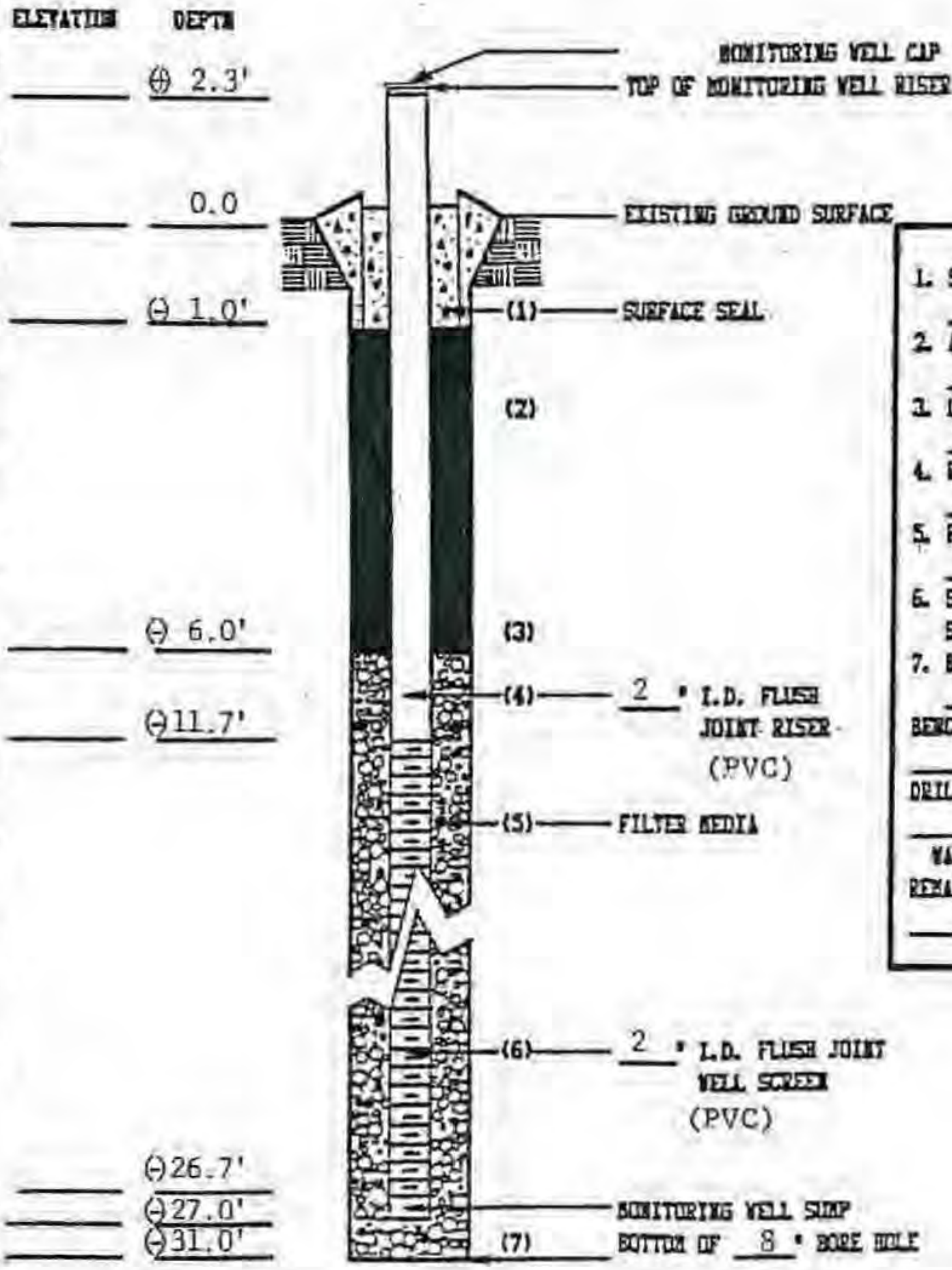
PROJECT: Illinois Power - Wood River Station

MONITORING WELL NO. TMW-26

LOCATION: Wood River, Illinois

INSTALLATION DATE: 6-02-95

MONITORING WELL LOCATION: See Environmental Engineer's Site Plan



1. SURFACE SEAL: Auger Cuttings
2. ANNULAR BACKFILL: Bentonite Pellets
3. LOWER SEAL: Bentonite Pellets
4. RISER TYPE: Schedule 40 PVC
5. FILTER MEDIA: #12 Flint Shot Silica Sand
6. SCREEN TYPE: Schedule 40 PVC
   SLOT SIZE: 0.006" LENGTH: 15.0'
7. BACKFILL TYPE: Natural Sand

BENCHMARK:

DRILLING METHOD: 4.25" I.D. Hollow Stem Auger

WATER LEVEL @ 3 HOURS (+)0.2'

REMARKS:

TELEPHONE
309 673-7131

TESTS
DESIGN
REPORTS
ANALYSIS
INSPECTION
CONSULTATION
INVESTIGATIONS

WHITNEY & ASSOCIATES
INCORPORATED
2406 West Nebraska Avenue
PEORIA, ILLINOIS 61604

SPECIALISTS IN
SOILS - PORTLAND CEMENT CONCRETE
STEEL - BITUMINOUS CONCRETE
CONSTRUCTION MATERIALS
AGGREGATES - ASPHALT - POZ-O-PAC

SOILS AND GRAVEL SURVEYS
MATERIALS QUALITY CONTROL
SOIL MECHANICS AND
FOUNDATION ENGINEERING
DRILLING - CORING - TESTING

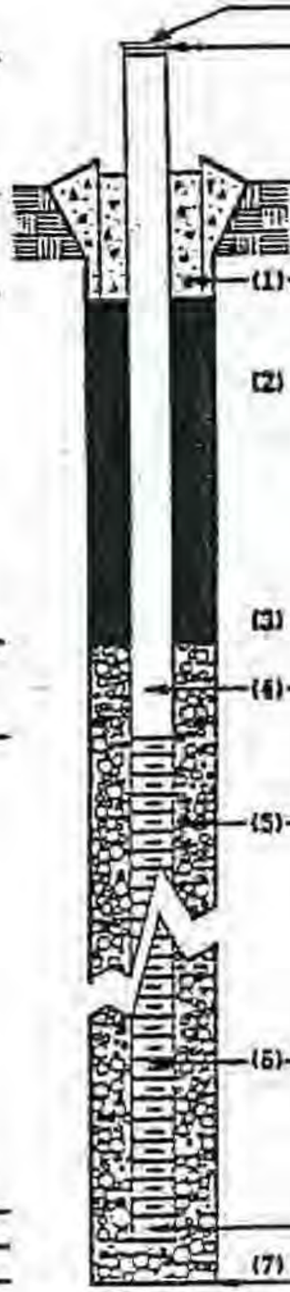
INSTALLED BY: Fehl

DATE: 6-30-95

TYPICAL MONITORING WELL DIAGRAM

PROJECT: Illinois Power - Wood River Station   MONITORING WELL NO.: TMW-27
LOCATION: Wood River, Illinois   INSTALLATION DATE: 6-02-95
MONITORING WELL LOCATION: See Environmental Engineer's Site Plan

ELEVATION	DEPTH	
	(+) 2.7'	MONITORING WELL CAP / TOP OF MONITORING WELL RISER
	0.0	EXISTING GROUND SURFACE
	(-) 1.0'	(1) SURFACE SEAL
		(2)
	(-) 9.6'	(3)
	(-)15.2'	(4) 2" I.D. FLUSH JOINT RISER (PVC)
		(5) FILTER MEDIA
		(6) 2" I.D. FLUSH JOINT WELL SCREEN (PVC)
	(-)30.2'	
	(-)30.5'	MONITORING WELL SUMP
	(-)32.0'	(7) BOTTOM OF 8" BORE HOLE



1. SURFACE SEAL: Auger Cuttings
2. ANNULAR BACKFILL: Bentonite Pellets
3. LOWER SEAL: Bentonite Pellets
4. RISER TYPE: Schedule 40 PVC
5. FILTER MEDIA: Natural Sand
6. SCREEN TYPE: Schedule 40 PVC
   SLOT SIZE: 0.006" LENGTH: 15.0'
7. BACKFILL TYPE: Natural Sand

BENCHMARK:

DRILLING METHOD: 4.25" I.D. Hollow Stem Auger

WATER LEVEL @ 1.5 HOURS (-)9.7'

REMARKS:

B-3: Natural Resource Technology: 1999 Boring and Well Log (NRT, 2000)

Project Name/No.	Boring No.	Start Date	Page
Illinois Power - Wood River Plant 135-1.4	35	1/5/99	1

Driller	Logged by:	End Date	Depth to Water
Boart-Longyear, Schofield, WI	Steve Mueller/STMI	1/5/99	~6 Feet

Boring Depth	Boring Diameter	Surface Elevation	Drill Method	Northing
28 Feet	8 Inches	Feet	4 1/4-in. ID HSA	
Well Depth	**Well Diameter**	**TOC Elev.**	**Sample Method**	**Easting**
28 Feet	2-in I.D.	Feet	2-ft. split-spoon	

Sample	Blows/6 inches	Sample Depth (ft)	Recovery (%)	Graphic Log	Classification	Description	Well Completion	Comments
		0			CL	SILTY CLAY, dark topsoil with marsh grass 0-1/2 ft., slightly plastic, soft, grayish brown, saturated below 6 ft.		
X	1, 1	5	100					7-ft by 6-in O.D. steel stick-up casing to 3 ft below grade.
X	1, 1	10	100					Bentonite chips 0-20 ft.
X	1, 1, 2, 2	15	100					Sch. 40 PVC* casing flush-threaded to 5-ft section of 0.01-in factory-slotted PVC screen.
					CL	CLAY, trace fine sand, medium plastic, soft, brownish gray, moist.		
X	1, 2, 3, 5	20	50					Fine silica sand 20-20.5 ft; Red Flint #30 silica sand pack 20.5-28 ft.
					ML	SILT, medium stiff, dark gray, saturated.		
X	1, 1, 1, 6	25	25		SP	SAND, well sorted/rounded, fine- to medium-grained, predominantly quartz, loose, gray (salt & pepper), saturated.		*For datalogger installation, a 4-ft section of 4-in ID casing (above ground) was coupled to 2-in ID casing (below ground) using a rubber boot and hose clamps.
		28				END OF BORING - 28.0 feet		
		30						

KELRON
Environmental

LOG OF BORING MW35R

New East Ash Pond: Replacement Well MW35R
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 19 NE/NE/SE

Date Started/Finished : 11/13/2008
Hole Diameter : 8.5 inches
Drilling Method : Hollow-Stem
Sampling Method : Split-Spoon
Drilling Company : Philip Services Corp.

Driller : Jerry Bignall
Geologist : Stuart Cravens (Kelron)
Land Surface Elevation: 422.56
Top of Casing Elevation 425.56
X,Y Coordinates : 509084, 801955

Depth in Feet	DESCRIPTION	Surf. Elev. 422.56	Samples	Recovery inches	Blow Count	Qp TSF	USCS	Well: MW35R Elev.: 425.56
0–15	SILTY CLAY, grayish brown. Replacement for Destroyed Well MW35 (drilled 1/5/99 / sealed 11/13/08); see boring log from MW35 for full description of lithology.	422, 417, 412					CL	Cover; Concrete; Bentonite Chips; Riser (Sch 40 PVC)
15–20	CLAY, trace fine sand, brownish gray	407					CL	
20–24	SILT, dark gray.	402					ML	Filter Pack (Fine Sand 20-20.5); Filter Pack (Crse Sand 20.5-28)
24–28	SAND, well sorted/rounded, fine to medium-grained, loose, gray, saturated.	397	1	14			SP	Screen (Sch 40 PVC); Sump
28	END BOREHOLE AT 28 FEET BLS							

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B-4: Shively Geotechnical: 2003 Boring Logs for Dynegy Rail Loop (Shively, 2003)

APPENDIX B: BORING LOGS

Boring Logs
General Notes
Notations used on Boring Logs
Unified Soil Classification

LOG OF BORING B - 01

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 433 Feet (Approximate)

Date Drilled: 3/27/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: HSA and Mud Rotary
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				SLAG and Base ROCK, FILL				
	2 11 11	17/18		Dark Gray Silty CLAY and Crushed LIMESTONE, FILL			3	
430	2 2 2	17/18	CL	Dark Gray-Brown Silty CLAY, Possible FILL		0.5 Qp	41	
5	1 4 5	17/18	SC	Brown Clayey SAND, Possible FILL		2.0 Qp	14	
425	3 3 4	18/18					13	Began Mud Rotary at 9.5 Feet
10								
420				-Dark Gray-Brown below 12.0 feet				
	3 4 4	15/18					15	
15								
415			CL	Dark Gray Silty CLAY				
	0 1 2	9/18					27	
20								
410			CH	Dark Gray-Brown CLAY				
	1 3 3	14/18				1.6 Qp	31	
25								
405			SP	Dark Gray-Brown Fine SAND				
	10 14 16	17/18						
30			SP					

(continued)

Notes:

GROUNDWATER
- First Observed During Drilling - N/A
- At Completion - N/A

Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 01 (Cont.)

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 433 Feet (Approximate)

Date Drilled: 3/27/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: HSA and Mud Rotary
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
400				Dark Gray-Brown Fine SAND *(continued)*				
35	9 15 19	15/18						
395				-Gray below 37.0 Feet				
40	9 11 13	14/18						
390				-Fine to Medium Grained below 42.0 Feet				
45	11 19 28	12/18						
				TD - 45.0 Feet				
385								
50								
380								
55								
375								
60								

Notes:

GROUNDWATER

First Observed During Drilling - N/A
At Completion - N/A

Piezometer Installed: No

Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 02

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 433 Feet (Approximate)

Date Drilled: 3/27/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: HSA and Mud Rotary
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				SLAG and Base ROCK, FILL				
	4 16 15	14/18		Dark Gray Silty CLAY and Crushed LIMESTONE, FILL			15	
430	4 7 9	18/18	SC	Gray-Brown Clayey SAND, FILL			6	
5			CL	Dark Gray-Brown Silty CLAY, FILL				
	2 5 5	15/18	SC	Gray-Brown Clayey SAND, FILL		0.8 Qp	24	
425	4 6 8	15/18		Gray-Brown Clayey SAND and Crushed LIMESTONE, FILL		1.3 Qp	11	
10								Began Mud Rotary at 9.5 Feet
420			SP	Dark Gray-Brown Clayey SAND, with Gravel, Possible FILL				
15	1 1 1	4/18					26	
415			CH	Dark Gray-Brown CLAY				
20	4 7 8	18/18				1.3 Qp	32	
410			SP	Gray Fine SAND				
25	6 12 18	15/18						
405				-Gray-Brown 27.0 to 42 Feet				
30	5 8 11	12/18	SP					

(continued)

Notes:

GROUNDWATER

▽ First Observed During Drilling - N/A
▼ At Completion - N/A

Piezometer Installed: No

Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 02 (Cont.)

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 433 Feet (Approximate)

Date Drilled: 3/27/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: HSA and Mud Rotary
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
				Gray Fine SAND *(continued)*				
400 / 35	7 7 12	12/18						
395 / 40	6 6 4	10/18						
390				-Dark Gray-Brown, Fine to Medium Grained below 42.0 Feet				
45	11 17 18	14/18						
				TD - 45.0 Feet				
385 / 50 / 380 / 55 / 375 / 60								

Notes:

GROUNDWATER
First Observed During Drilling - N/A
At Completion - N/A

Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 04

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 424 Feet (Approximate)

Date Drilled: 3/26/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
424 / 0			TOPSOIL				
	16/18	CL	Dark Gray-Brown Silty CLAY, Possible FILL		2.3 Qp	23	
		CL	Gray-Brown Silty CLAY				
420	12/24			95		26	
5							
	18/18					27	
415	22/24			94		29	LL = 42 PL = 18 PI = 24 G_s = 2.65
10							
		CH	Dark Gray CLAY				
410	18/18					34	
15							
405	18/18					60	
20			TD - 20.0 Feet				
400 / 25							
395 / 30							

Notes:

GROUNDWATER

▽ First Observed During Drilling - Dry

▼ At Completion - Not Recorded

Piezometer Installed: No

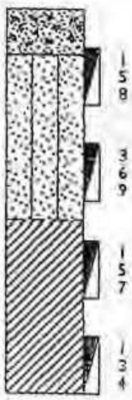
Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 05

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 433.5 Feet (Approximate)

Date Drilled: 3/26/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella



Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				Base ROCK, FILL				
	1 5 8	13/18	SM	Brown Silty SAND			23	
430				-Gray-Brown below 3.0 Feet				
5	3 6 9	15/18				3.0 Qp	21	
	1 5 7	13/18	CL	Gray Brown Silty CLAY, trace Sand		2.6 Qp	20	
425				-Very Dark Gray below 8.0 Feet				
10	1 3 4	15/18				2.5 Qp	20	
				TD - 10.0 Feet				
420								
15								
415								
20								
410								
25								
405								
30								

Notes:

GROUNDWATER
∇ First Observed During Drilling - Dry
▼ At Completion - Dry

Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

BORING LOG 2554GINTFILE.GPJ SHIVELY.GDT 4/21/03

LOG OF BORING B - 06

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 431.5 Feet (Approximate)

Date Drilled: 3/26/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				Base ROCK, FILL				
430	3 13 10	16/18					4	
				Dark Gray-Brown Silty CLAY, with Crushed Limestone, FILL				
	3 7 6	11/18	SM	Brown Silty SAND			24	
5 / 425	6 8 11	18/18	SP	Gray-Brown Fine SAND			12	
	5 8 11	15/18					8	
10				TD - 10.0 Feet				
420								
15								
415								
20								
410								
25								
405								
30								

Notes:

GROUNDWATER
- ▽ First Observed During Drilling - Dry
- ▼ At Completion - Dry

Piezometer Installed: No

Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 07

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 430 Feet (Approximate)

Date Drilled: 3/26/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
430—0				TOPSOIL				
	1 3 4	14/18	CL-CH	Dark Brown Silty CLAY		1.5 Qp	23	
425—5	1 3 5	15/18	SM	Brown Silty SAND			20	
	2 4 8	17/18	SP	Gray-Brown Fine SAND			6	
420—10	6 7 6	18/18					6	
				TD - 10.0 Feet				
415—15								
410—20								
405—25								
400—30								

Notes:

GROUNDWATER
First Observed During Drilling - Dry
At Completion - Dry

Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 08

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 432.0 Feet (Approximate)

Date Drilled: 1/16/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
				Gray FLYASH, FILL				
430	6 10 10	16/18					25	
5	5 11 17	15/18		-with Bottom Ash below 4.0 Feet		1.3 Qp	32	
425	15 25 22	17/18		Dark Gray BOTTOM ASH, with Flyash, FILL			15	
10	3 6 6	17/18	CL	Dark Gray Silty CLAY, trace Bottom Ash, FILL		4.5 Qp	17	
420			CL-ML	Brown Clayey SILT				
15	2 1 2	13/18				1.3 Qp	25	
415				-Gray-Brown below 17.0 feet				
20	1 2 3	18/18				0.8 Qp	27	
				TD - 20.0 Feet				
410								
25								
405								
30								

Notes:

GROUNDWATER

∇ First Observed During Drilling - Dry

▼ At Completion - Dry

Piezometer Installed: No

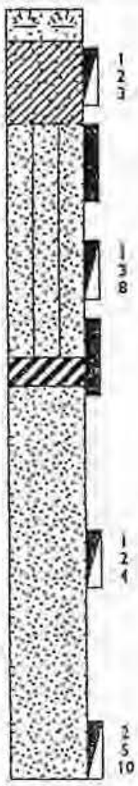
Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 09

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 424.5 Feet (Approximate)

Date Drilled: 3/26/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella



Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
	1 2 3	13/18	CL	Dark Brown Sandy CLAY		1.2 Qp	20	
420 / 5		7/24	SM	Gray-Brown Silty SAND			5	
	1 3 8	18/18				1.0 Qp	24	
415 / 10		20/24	CH	Dark Gray-Brown CLAY	84	0.8 Qp	37	
			SP	Gray-Brown Fine SAND				
410 / 15	1 2 4	13/18					3	
405 / 20	2 5 10	18/18					15	
				TD - 20.0 Feet				
400 / 25								
395 / 30								

Notes:

GROUNDWATER

▽ First Observed During Drilling - Dry
▼ At Completion - Not Recorded

Piezometer Installed: No

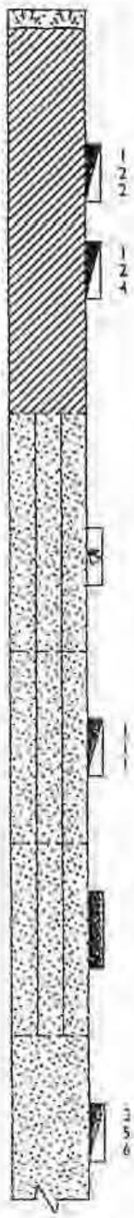
Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 10

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 423.5 Feet (Approximate)

Date Drilled: 3/28/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: HSA and Mud Rotary
Logged By: Meyer/Kinsella



Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
			CL	Dark Brown Silty CLAY				
420 / 5	1 2 2	16/18				0.75 Qp	26	
	1 2 4	15/18		-Gray-Brown below 5.5 Feet		1.3 Qp	23	
415 / 10			SM	Gray Fine SAND, with Silt				
410 / 15		18						Began Mud Rotary at 15.0 Feet
			SM	Dark Gray-Brown Silty SAND				
405 / 20		18/18						
			SM	Dark Gray Fine SAND, with Silt				
400 / 25		24			92		30	
			SP	Dark Gray Fine SAND				
395 / 30	3 5 6	13/18						

(continued)

Notes:

GROUNDWATER
▽ First Observed During Drilling - N/A
▼ At Completion - N/A

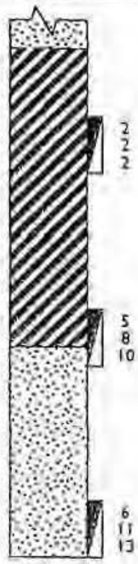
Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 10 (Cont.)

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 423.5 Feet (Approximate)

Date Drilled: 3/28/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: HSA and Mud Rotary
Logged By: Meyer/Kinsella



Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
			CH	Dark Gray CLAY				
390 / 35	2 2 2	16/18					33	
385 / 40	5 8 10	18/18					40	
			SP	Dark Gray Fine SAND				
				- Gray below 42.0 Feet				
380 / 45	6 11 13	10/18						
				TD - 45.0 Feet				

Depth scale: 390, 385, 380, 375, 370, 365 (elevation); 35, 40, 45, 50, 55, 60 (depth)

Notes:

GROUNDWATER

First Observed During Drilling - N/A
At Completion - N/A

Piezometer Installed: No

Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 12

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 428.0 Feet (Approximate)

Date Drilled: 1/17/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
	0-1-1	18/18		Gray FLYASH, FILL			69	
425				-with Organics 3.0 to 8.0 Feet				
5	0-0-1	9/18					56	
	0-0-1	15/18				0.4 Qp	35	
420		21/24			87	0.4 Qp	34	UU = 0.20 TSF
10				TD - 10.0 Feet				
415								
15								
410								
20								
405								
25								
400								
30								

Notes:

GROUNDWATER
- First Observed During Drilling - Dry
- At Completion - Dry
- 4 days After Completion - 4.5 Feet
- Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 13

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 449 Feet (Approximate)

Date Drilled: 1/16/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
	1 3 3	12/18		Gray FLYASH, FILL		1.2 Qp	26	
445 / 5	7 12 17	9/18					24	
		14/17		-trace Bottom Ash below 5.5 Feet			29	
440 / 10	3 4 4	12/18					34	
435 / 15	4 5 5	17/18				0.5 Qp	28	
430 / 20	2 5 6	NSD/18				1.8 Qp	37	
				TD - 15.0 Feet				
425 / 25								
420 / 30								

Notes:

GROUNDWATER
- First Observed During Drilling - Dry
- At Completion - Dry
- 1 days After Completion - Dry
- 5 days After Completion - dry

Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 14

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 448.5 Feet (Approximate)

Date Drilled: 1/17/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
				Gray FLYASH, FILL				
	6 9 10	13/18					22	
445 / 5	1 3 3	14/18					25	
		13/24			60		28	
440 / 10	1 3 4	14/18				1.6 Qp	38	
435 / 15	1 1 2	13/18				0.5 Qp	43	
				Dark Gray FLYASH and BOTTOM ASH, FILL				
430 / 20	0 1 6	17/18				0.5 Qp	40	
				TD - 20.0 Feet				
425 / 25								
420 / 30								

Notes:

GROUNDWATER
First Observed During Drilling - Dry
At Completion - Dry
4 days After Completion - Dry
Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 16

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 440 Feet (Approximate)

Date Drilled: 1/17/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
440 — 0				TOPSOIL				
				Gray FLYASH, trace Bottom Ash, FILL				
	1 2 2	14/18				1.7 Qp	30	
435 — 5	1 1 2	15/18				0.7 Qp	32	
	1 1 2	18/18				1.4 Qp	30	
		15/24			54		44	
430 — 10				TD - 10.0 Feet				
425 — 15								
420 — 20								
415 — 25								
410 — 30								

Notes:

GROUNDWATER

- First Observed During Drilling - Dry
- At Completion - Dry
- 4 days After Completion - Dry

Piezometer Installed: No

Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 17

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 440 Feet (Approximate)

Date Drilled: 1/17/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
440 - 0				TOPSOIL				
	1 1 3	18/18		Gray FLYASH, trace Boiler Slag, FILL		0.9 Qp	29	
435 - 5		22/24		Gray BOTTOM ASH and BOILER SLAG, trace Flyash, FILL	86		11	
	1 1 1	18/18		Gray FLYASH, FILL -with Bottom Ash 5.5 to 8.0 Feet		0.9 Qp	58	
430 - 10	6 6 5	18/18				2.4 Qp	45	
				TD - 10.0 Feet				
425 - 15								
420 - 20								
415 - 25								
410 - 30								

Notes:

GROUNDWATER

- ▽ First Observed During Drilling - 6.0 Feet
- ▼ At Completion - Dry
- ▽ 4 days After Completion - Dry

Piezometer Installed: No

Shively Geotechnical, Inc.

Missouri (314) 770-1001
Illinois (618) 398-1414

BORING LOG 2554GINTFILE.GPJ SHIVELY.GDT 4/21/03

LOG OF BORING B - 18

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 442.5 Feet (Approximate)

Date Drilled: 1/17/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				Base ROCK, FILL				
440	6 11 8	10/18		Brown Silty CLAY, with Sand, Crushed Limestone, FILL			5	
5	2 7 8	8/18		Gray BOTTOM ASH, with Flyash, FILL		3.2 Qp	16	
435	10 26 26	17/18				4.5+ Qp	19	
		23/24			78		20	
10				TD - 10.0 Feet				
430								
15								
425								
20								
420								
25								
415								
30								

Notes:

GROUNDWATER
- First Observed During Drilling - Dry
- At Completion - Dry
- 4 days After Completion - Dry

Piezometer Installed: No

Shively Geotechnical, Inc.

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Illinois (618) 398-1414

LOG OF BORING B - 19

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 440 Feet (Approximate)

Date Drilled: 1/17/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
440 — 0				Base ROCK, FILL				
		17/24		Gray FLYASH, FILL -with Crushed Limestone to 4.0 Feet	68		35	
435 — 5	1 1 2	16/18				0.3 Qp	43	
	1 2 2	14/18					43	
	▽							
430 — 10	2 1 2	17/18				0.5 Qp	46	
			SP	Gray-Brown Fine SAND				
425 — 15	4 8 11	16/18						
				TD - 15.0 Feet				
420 — 20								
415 — 25								
410 — 30								

Notes:

GROUNDWATER
▽ First Observed During Drilling - 8.5 Feet
▼ At Completion - Dry
▽ 4 days After Completion - Dry
Piezometer Installed: No

Shively Geotechnical, Inc.
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Illinois (618) 398-1414

LOG OF BORING B - 20

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 435 Feet (Approximate)

Date Drilled: 3/28/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
435 — 0				Brown Silty CLAY, trace Sand, Gravel, FILL				
	4 4 6	13/18				3.0 Qp	20	
	3 5 7	16/18	SP	Gray-Brown Fine to Medium SAND			8	
430 — 5								
	4 4 6	14/18					7	
	2 6 9	13/18		-Fine to Coarse Grained below 8.0 Feet			3	
425 — 10				TD - 10.0 Feet				
420 — 15								
415 — 20								
410 — 25								
405 — 30								

Notes:

GROUNDWATER

∇ First Observed During Drilling - NSD
∇ At Completion - NSD

Piezometer Installed: No

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Illinois (618) 398-1414

LOG OF BORING B - 21

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 440 Feet (Approximate)

Date Drilled: 3/11/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
440—0				Dark Gray FLYASH, FILL				
	0 2 7	13/18				0.9 Qp	29	
				-trace Bottom Ash 3.0 to 5.5 Feet				
435—5	2 2 8	10/18				1.2 Qp	43	
				-with Bottom Ash 5.5 to 8.0 feet				
	6 10 12	15/18				1.0 Qp	17	
430—10	∇ 1 1 1	17/18					60	
425—15	0 1 1	16/18					56	
			CL	Dark Gray-Brown Silty CLAY, Possible FILL				
420—20	2 3 4	16/18				1.6 Qp	27	
				TD - 20.0 Feet				
415—25								
410—30								

Notes:

GROUNDWATER

∇ First Observed During Drilling - 8.5 Feet
▼ At Completion - Dry

Piezometer Installed: No

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Illinois (618) 398-1414

LOG OF BORING B - 22

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 437.5 Feet (Approximate)

Date Drilled: 3/11/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
435	0 1 2	10/18		Very Dark Gray FLYASH, FILL -trace Bottom Ash to 5.5 Feet		2.1 Qp	42	
5		24/24			70	1.2 Qp	36	
430	1 3 1	8/18		-Dark Gray, with Boiler Slag 5.5 to 8.0 Feet		0.8 Qp	18	
10		24/24		-Gray below 8.0 Feet	60		58	
425 / 15	2 4 5	18/18				1.2 Qp	24	
420			CL	Dark Gray-Brown Silty CLAY				
20	1 1 3	18/18				1.9 Qp	28	
415			CH	Gray-Brown CLAY				
25	1 2 3	18/18				1.8 Qp	46	
				TD - 25.0 Feet				
410								
30								

Notes:

GROUNDWATER
- ∇ First Observed During Drilling - Dry
- ▼ At Completion - 18.5 Feet

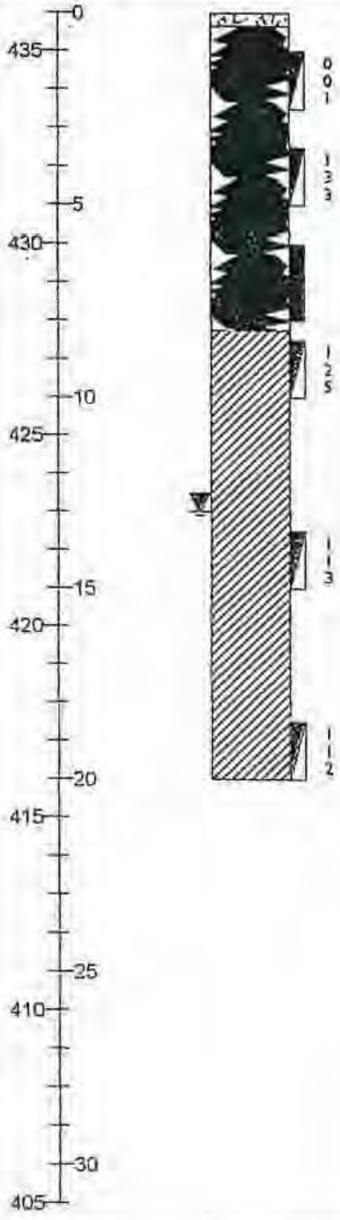
Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 23

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 436 Feet (Approximate)

Date Drilled: 3/11/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella



Elevation/ Depth (feet)	SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
436 / 0				TOPSOIL				
				Gray FLYASH, FILL				
	0-0-1	14/18					45	
	1-3-3	11/18					48	
		23/24			63		46	
			CL	Dark Gray-Brown Silty CLAY				
	1-2-5	15/18				1.4 Qp	22	
	1-1-3	18/18				0.5 Qp	27	
	1-1-2	17/18					25	
416 / 20				TD - 20.0 Feet				

Notes:

GROUNDWATER

▽ First Observed During Drilling - Dry
▼ At Completion - 13.0 Feet

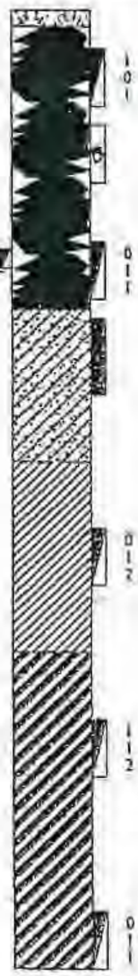
Piezometer Installed: No

Shively Geotechnical, Inc.
Missouri (314) 770-1001
Illinois (618) 398-1414

LOG OF BORING B - 24

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 428 Feet (Approximate)

Date Drilled: 3/11/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella



Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
	1 0 1	14/18		Dark Gray FLYASH, FILL			58	
425		7/18		-trace Bottom Ash 3.0 to 5.5 Feet			36	No Recovery in Shelby Tube, Pushed Split-Spoon Sampler
5	0 1 1	12/18		-with Bottom Ash below 5.5 Feet			25	
420		24/24	SC	Dark Gray-Brown Fine SAND, with Clay	108	0.5 Qp	25	CU
10								
415	0 1 2	16/18	CL	Dark Gray-Brown Silty CLAY			29	
15								
410	1 1 2	15/18	CH	Dark Gray CLAY		0.8 Qp	47	
20								
405	0 1 1	18/18					51	
25				TD - 25.0 Feet				
400								
30								

Notes:

GROUNDWATER

▽ First Observed During Drilling - Dry
▼ At Completion - 6.7 Feet

Piezometer Installed: No

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LOG OF BORING B - 25

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 428 Feet (Approximate)

Date Drilled: 3/11/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/Depth (feet) scale: 0, 425, 5, 420, 10, 415, 15, 410, 20, 405, 25, 400, 30

Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0-1-1	9/18		Dark Gray FLYASH, trace Bottom Ash, FILL		0.2 Qp	46	
0-1-1	16/18	CL	Dark Brown Silty CLAY, with Sand			25	
	24/24			110	0.4 Qp	22	
0-0-1	17/18	SM	Gray-Brown Silty SAND			30	
0-1-1	16/18	CL	Dark Gray Silty CLAY, with Sand		0.2 Qp	28	
0-1-2	17/18	CH	Dark Gray-Brown CLAY			51	
			TD - 20.0 Feet				

Notes:

GROUNDWATER

∇ First Observed During Drilling - Dry
▼ At Completion - 7.3 Feet

Piezometer Installed: No

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LOG OF BORING B - 26

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 424 Feet (Approximate)

Date Drilled: 3/13/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
0				TOPSOIL				
	1-5-9	11/18	CL	Dark Brown Silty CLAY -with Roots to 3.0 Feet		0.75 Qp	18	
420		14/24		-with Sand below 3.0 Feet	98	1.0 Qp	24	
5			SC	Dark Brown Clayey SAND				
	1-2-3	12/18				1.0 Qp	17	
			ML	Gray-Brown SILT, with Clay, Sand				
415 / 10		23/24			95	0.9 Qp	24	
			SM	Gray SAND, with Silt				
410 / 15	2-1-3	9/18					28	
			CL-CH	Dark Gray Silty CLAY				
405 / 20	0-1-2	16/18					35	
400	1-1-2	12/18					34	
25			SP	Gray Fine SAND TD - 25.0 Feet				
395 / 30								

Notes:

GROUNDWATER
- First Observed During Drilling - Dry
- At Completion - Dry

Piezometer Installed: No

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LOG OF BORING B - 27

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 424 Feet (Approximate)

Date Drilled: 3/13/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Graphic Log / Sampler Symbols and SPT Blows:

Elevation/ Depth (feet)	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
424 / 0			TOPSOIL				
	14/18	CL	Dark Gray Brown Silty CLAY		3.8 Qp	19	
420 / 5	13/18		-Dark Brown, trace Sand 3.0 to 5.5 Feet			25	
	21/24		-Gray-Brown below 5.5 Feet	96	1.2 Qp	25	
415	15/18	CH	Gray-Brown CLAY		1.2 Qp	29	
410 / 10 / 15	13/18	SC	Gray-Brown Fine SAND, with Clay		0.75 Qp	25	
405	14/18	SP	Gray-Brown Fine SAND			3	
20			TD - 20.0 Feet				

Depth scale: 0, 5, 10, 15, 20, 25, 30 feet; Elevation: 420, 415, 410, 405, 400, 395.

Notes:

GROUNDWATER
- ▽ First Observed During Drilling - Dry
- ▼ At Completion - Dry

Piezometer Installed: No

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LOG OF BORING B - 28

Project Name: Dynegy Rail Loop
Project Location: Wood River, Illinois
Project Number: SG9-2554
Elevation: 424 Feet (Approximate)

Date Drilled: 3/13/03
Drilling Contractor: Meyer Drilling, Inc.
Drilling Method: Hollow Stem Auger
Logged By: Meyer/Kinsella

Elevation/ Depth (feet)	Graphic Log Sampler Symbols and SPT Blows	Rec. (in./in.)	USCS	Description	DD (pcf)	UCS (tsf)	MC (%)	Remarks
424 / 0				TOPSOIL				
	1-2-4	17/18	CL	Dark Brown Silty CLAY		0.75 Qp	26	
420 / 5		15/24		-Dark Gray-Brown below 3.0 Feet	98	0.75 Qp	24	
	1-2-3	18/18				1.2 Qp	26	
415 / 10		18/24	SC	Gray-Brown Clayey SAND	103	0.5 Qp	17	
			SP	Gray-Brown Fine SAND				
410 / 15	4-8-10	16/18					3	
405 / 20	3-7-11	18/18					4	
400 / 25	5-8-10	17/18		-Fine to Medium Grained below 22.0 Feet			14	
				TD - 25.0 Feet				
395 / 30								

Notes:

GROUNDWATER
∇ First Observed During Drilling - Dry
▼ At Completion - Dry

Piezometer Installed: No

Shively Geotechnical, Inc.

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Illinois (618) 398-1414

KEY TO SYMBOLS

Strata Symbols

- Base Rock
- Fill
- USCS Low Plasticity Silty Clay
- USCS High Plasticity Clay
- USCS Poorly-graded Sand
- Topsoil
- USCS Silty Sand
- USCS Low to High Plasticity Clay
- Flyash
- Bottom Ash and/or Boiler Slag
- USCS Low Plasticity Clayey Silt
- USCS Low Plasticity Sandy Clay
- USCS Clayey Sand
- USCS Sandy Silt

Soil Samplers

- Split Spoon
- Shelby Tube
- Grab Sample

DD - Dry Density
Qp - Pocket Penetrometer
USCS - Unified Soil Classification System
USC - Unconfined Compressive Strength
MC - Moisture Content
LL - Liquid Limit
PL - Plastic Limit
PI - Plasticity Index
HYD - Hydromter Test Performed
CU - Consolidated Undrained Triaxial Test Performed
G_s - Specific Gravity
NSD - Non-supplied Data

GENERAL NOTES

The number of borings is based on topographic and geologic factors: the magnitude of loading; the size, shape, and value of the structure; consequences of failure, and other factors. The type and sequence of sampling is selected to reduce the possibility of undiscovered anomalies and increase drilling efficiency. Attempts are made to detect and/or identify occurrences during drilling and sampling such as encounter of water, boulders, gas, zones of lost circulation, relative ease or resistance of drilling progress, unusual sample recovery, variation in driving resistance, unusual odors, etc. However, lack of mention of such variations does not preclude their presence.

Although attempts are made to obtain stabilized groundwater levels, the levels shown on the Boring Logs may not have stabilized, particularly in more permeable cohesive soils. Consequently, the indicated groundwater levels may not represent present or future levels. Groundwater levels may vary significantly over time due to the effects of precipitation, infiltration, or other factors not evident at the times indicated.

Unless otherwise noted, soil classifications indicated on the Boring logs are based on visual observations and are not the result of classification tests. Although visual classifications are performed by experienced technicians or engineers, classifications so made may not be conclusive.

Generally, variations in texture less than one foot in thickness will be described as seams while thicker strata will be logged as individual strata. However, minor anomalies and changes of questionable lateral extent may appear only in the verbal description. The lines indicating changes in strata on the Boring Logs are approximate boundaries only as the actual material change may be between samples or may be a gradual transition. Changes in materials observed by field or laboratory personnel are indicated by solid single lines whereas estimated material changes between recovered samples are indicated by double solid lines.

Samples chosen for laboratory testing are selected in such a manner so as to determine selected physical characteristics of each material encountered. However, as samples are recovered only intermittently and only representative samples are tested, the results of such tests may not conclusively represent the characteristics of all subsurface materials present.

NOTATIONS USED ON BORING LOGS

Approximate Proportions

Trace	<15%
With	15-29%
Modifier	>30%

Clay or clayey may be used as a major material or modifier, regardless of relative proportion, if the clay content is sufficient to dominate the soil properties.

	Particle Size
Boulders	>12 inches
Cobbles	12 Inches - 3 Inches
Gravel	
Coarse	3 Inches - 3/4 Inch
Fine	3/4 Inch - No. 4 Sieve (4.75mm)
Sand	
Coarse	No. 4 - No. 10 Sieve (2.00mm)
Medium	No. 10 - No. 40 Sieve (0.42mm)
Fine	No. 40 - No. 200 Sieve (0.074mm)
Silt	No. 200 Sieve - 0.005 mm
Clay	<0.005 mm

SPT Blow Count

Number of impacts of a 140 pound hammer falling a distance of 30 inches to cause a standard split-barrel sampler, 1 3/8 inches I.D., to penetrate a distance of 6 inches. The number impacts for the first 6 inches of penetration is known as the seating drive. The sum of the impacts for the last 12 inches of penetration is the Standard Penetration Test Resistance or "N" value. For example, if Blows = 6-8-11, then "N" = 8+11 or 19.

Other Notations

50/3 - impacts to cause sampler to penetrate the indicated number of inches, 50 blows for 3 inches in this case
WR - Sampler penetrated under the static loading of the weight of the drill rod
WH - Sampler Penetrated under the static loading of the weight of the hammer and drill rod
X - No Blow Count

Laboratory Test Symbols

QP - Calibrated Penetrometer
QU - Unconfined Compressive Strength
LL - Liquid Limit
PL - Plastic Limit
MC - Natural Moisture Content

NOTATIONS USED ON BORING LOGS, (Cont.)

Drilling, Sampling, & Groundwater Level Symbols

AR - Auger Refusal
AS - Auger Sample
BS - Bag or Bulk Sample
DB - Drag Bit
DCI - Dry Cave-In
FA - Flight Auger
LS - Large 2 1/2 Inches Dia. Split-Barrel Sample
NC - NX Conventional Rock Core
NW - NX Wireline Rock Core
RB - Rotary Rock Bit
SR - Split-Barrel Refusal
SS - Standard 1 3/8 Inches Dia. Split-Barrel Sample
TOB - Termination of Boring
3T - Thin-Walled Tube Sample, 3 Inches Diameter
TR - Thin-Walled Tube Refusal
WB - Wash Bore
WCI - Wet Cave-In
WS - Wash Sample

Description Abbreviations

App - Apparent
Bk - Black
Bld - Boulder(s)
Br - Brown, Brownish
Calc - Calcareous
Cbl - Cobble(s)
Cl - Clay, Clayey
Co - Coarse
Conc - Concretion(s)
Dk - Dark
Fi - Fine
Frac - Fractured
Frag - Fragment(s)
Gr - Gray, Grayish
Grv - Gravel, Gravelly
Inb - Interbedded
Jt - Joint(s)
Lig - Lignite
Ls - Limestone
Lt - Light
Med - Medium
Mot - Mottled
Org - Organic(s)
Oxi - Oxidation, Oxidized
Pkt - Pocket(s)
Pt - Peat, Peaty
Rd - Red, Reddish
Rt - Root(s)
Sa - Sand, Sandy
Sh - Shale, Shaley
Si - Silt, Silty
Slk - Slickensided, Slickensides
Sm - Seam(s)
Sp - Spot(s)
Stn - Stain(s)
Stk - Streak(s)
Tr - Trace
v - Very
w/ - With
Yel - Yellow, Yellowish

Unified Soil Classification System

Coarse-Grained Soils

GW	-	Well-graded gravels, gravel-sand mixtures, little or no fines
GP	-	Poorly graded gravels, gravel-sand mixtures, little or no fines
GM	-	Silty gravels, gravel-sand-silt mixtures
GC	-	Clayey gravels, gravel-sand-clay mixtures
SW	-	Well-graded sands, gravelly sands, little or no fines
SP	-	Poorly graded sands, gravelly sands, little or no fines
SM	-	Silty sands, sand-silt mixtures
SC	-	Clayey sands, sand-clay mixtures

Fine-Grained Soils

ML	-	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
CL	-	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
OL	-	Organic silts and organic silty clays of low plasticity
MH	-	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
CH	-	Inorganic clays of high plasticity, fat clays
OH	-	Organic clays of medium to high plasticity, organic silts
PT	-	Peat and other highly organic soils

B-5: URS Corporation: 2004 Boring Logs for New East Ash Pond Design

LOG of BORING No. B-5-04-1

DATE 6/7/04 SURFACE ELEVATION, FT 436.0 DATUM NGVD LOCATION See Figure 1

DEPTH, ft	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
0			Grass and organic soil	435.8								Boring advanced using 4.25" I.D. Hollow stem augers
	3 3 5	89	Loose, moist, dark gray, fly ash FILL with gray silty clay	0.3								
	4 4 3	100	Becomes moist to wet									
5												
	WH WH WH	100	Becomes very loose and wet ∇									
	P	17										
10												Begin Mud Rotary drilling
	WH WH WH	50	Becomes very soft to very loose									
15				419.0								
			Medium stiff, wet, gray, low plastic sandy silty CLAY (CL-ML)	17.0								
	WH 1 2	100			1.3			23				
20												
												Drillers accidentally put a splitspoon on rods

Completion Depth: 65.0 Ft. Water Depth: 6 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

LOG of BORING No. B-5-04-1

DATE 6/7/04 SURFACE ELEVATION, FT 436.0 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
25	P	100	Becomes soft to medium stiff, tan/gray, sand grades out		0.8							
				408.0 / 28.0								
	WH WH 1	100	Medium stiff, wet, tan/gray, high plastic, Silty CLAY (CH)		1.8			36	79	25		
30												
	P	100			1.5							
35												Losing mud in hole: approximately 20 gallons
				398.0 / 38.0								
	5 6 7	100	Very soft, wet, gray, low plastic sandy CLAY (CL)	397.0 / 39.0								
40			Medium dense, wet, gray, fine grained SAND (SP)									
	11 16 13	83	Becomes medium grained					21				
45												
				389.0 / 47.0								
			Medium dense, wet, gray, fine grained silty SAND (SP-SM)									
	6 12 13	83										

Completion Depth: 65.0 Ft. Water Depth: 6 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

LOG of BORING No. B-5-04-1

DATE 6/7/04 SURFACE ELEVATION, FT 436.0 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
50														
				Medium dense, wet, gray, fine to medium grained SAND (SP)	384.0 / 52.0									
55		10 11 10	72											
60		3 4 5	100	Becomes loose										
				Medium dense, wet, gray, well graded SAND (SW)	373.0 / 63.0									
65		12 13 15	56											
				Bottom of boring at 65'	371.0 / 65.0									Approximately 30 to 40 gallons of mud lost
70														

Completion Depth: 65.0 Ft. Water Depth: 6 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After ____ hrs.

Project Name: Dynegy Wood River ft., After ____ hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

Figure No.

LOG of BORING No. B-5-04-2

Sheet 1 of 3

DATE 6/1/04 SURFACE ELEVATION, FT 436.0 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
0			Medium dense, moist, dark gray, fly ash FILL									Boring advanced using 4.25" I.D. Hollow stem augers
	3 6 6	67										
	P	100			2.0							
5												
	1 WH WH	100		429.5	0.8							
			Soft, moist, gray, low plastic clayey SILT to silty CLAY (CL-ML)	6.5								
	1 WH WH	0										
10												Begin Mud Rotary drilling
			Becomes very soft, plasticity increases									
15	1 WH WH	67			0.5							
	P	100			0.5			29				
20								28			1.2	
								27	28	15		
								27				
				414.0				25				
			Medium stiff, wet, gray, low plastic, clayey sandy SILT (ML) with some soft seams	22.0								
	1 1 WH	100			1.0							

Completion Depth: 60.0 Ft. Water Depth: N/A ft., After ATD hrs.

Project No.: 21561435.00000 ft., After ____ hrs.

Project Name: Dynegy Wood River ft., After ____ hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

8/10/04 WCCXS 21561435 DYNEGY.GPJ

URS

LOG of BORING No. B-5-04-2

DATE 6/1/04 SURFACE ELEVATION, FT 436.0 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
25														
		WH	100	Becomes very soft			0.5							
		WH		Becomes medium stiff, plasticity increases, sand grades out			0.75							
30		WH												
				Stiff, moist to wet, gray, high plastic, Silty CLAY (CH)	404.5 / 31.5									
		P	100				1.3			56				
										39				
35										43	84	19	1.3	
										56				
				Becomes moist, silt grades out										
		WH	100				1.0							
		WH												
40		WH												
		WH	100				1.3							
		WH												
45		WH												
		WH	100				1.3			55	74	26		
		WH												
		WH												

Completion Depth: 60.0 Ft. Water Depth: N/A ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

LOG of BORING No. B-5-04-2

DATE 6/1/04 SURFACE ELEVATION, FT 436.0 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
50														
55		WH WH 1	100	Becomes low plastic			1.8							
60		WOH 2 7	100		376.2 59.8		1.8							
				Medium dense, wet, gray, fine grained SAND (SP)	376.0 60.0									Approximately 5 gallons of mud lost
				Bottom of boring at 60'										
65														
70														

Completion Depth: 60.0 Ft. Water Depth: N/A ft., After ATD hrs.

Project No.: 21561435.00000 ft., After ___ hrs.

Project Name: Dynegy Wood River ft., After ___ hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

LOG of BORING No. B-5-04-3

DATE 6/4/04 SURFACE ELEVATION, FT 435.6 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
0				Grass and organic soil	435.4									Boring advanced using 4.25" I.D. Hollow stem augers
				Very loose, dry to moist, gray, fly ash FILL	0.3									
		1 1 1	100											
		WH WH 1	44	Becomes moist to wet										
5														
		WH 1 1	89	Becomes wet ∇										
		1 1 1	100											
10														Begin Mud Rotary drilling
		WH 2 1	100		420.6									
15				Stiff, moist, brown / gray, low plastic sandy silty CLAY (CL)	15.0									
		P	100				1.8							
20														
		P	100											
		WH 1 2	100	Becomes wet, brown/tan, low to medium plastic, sand grades out			1.5							

Completion Depth: 60.0 Ft. Water Depth: 6 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

LOG of BORING No. B-5-04-3

DATE 6/4/04 SURFACE ELEVATION, FT 435.6 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
25		P	100				1.5							Environmental Sample Shelby Tube
		P	100	Becomes medium stiff to stiff			1.0			52				
30										33 35 38	40	16	1.3	
		WH WH WH	100	Becomes stiff, low plastic			1.3							
35														
				Medium dense loose, wet, gray, fine grained silty SAND (SP / SM)	398.6 / 37.0									
		4 6 5	94							35				
40														
				Dense, wet, gray, medium grained SAND (SP)	392.6 / 43.0									
		10 15 17	89											
45														
		6 9 17	67	Becomes medium to coarse grained										

Completion Depth: 60.0 Ft. Water Depth: 6 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

LOG of BORING No. B-5-04-3

DATE 6/4/04 SURFACE ELEVATION, FT 435.6 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
50														
				Dense, wet, gray, well graded SAND (SW)	383.6 / 52.0									
		12 15 17	67											
55														
				Medium dense, wet, gray, fine grained SAND (SP)	378.6 / 57.0									
		9 11 14	67											
60				Bottom of boring at 60'	375.6 / 60.0									Approximately 25 gallons of mud lost
65														
70														

Completion Depth: 60.0 Ft. Water Depth: 6 ft., After ATD hrs.
Project No.: 21561435.00000 ft., After hrs.
Project Name: Dynegy Wood River ft., After hrs.
Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

Figure No.

LOG of BORING No. B-5-04-4

Sheet 1 of 3

DATE 6/7/04 SURFACE ELEVATION, FT 446.1 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
0				Medium dense, moist, gray, fly ash FILL										Boring advanced using 4.25" I.D. Hollow stem augers
		3 7 6	100											
		2 3 6	83	Becomes loose										
5														
		1 1 4	100	Becomes moist to wet										
		3 2 1	100	Becomes wet	∇									
10														Begin Mud Rotary drilling
		WH 1 WH	100											
15														
		P	75							50 49 54 59			1.2 2.0	
20														
		WR	100	Becomes very soft, with some coal fragments										

Completion Depth: 65.0 Ft. Water Depth: 9.5 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

8/10/04 WCCXS 21561435 DYNEGY.GPJ

URS

Figure No.

LOG of BORING No. B-5-04-4

DATE 6/7/04 SURFACE ELEVATION, FT 446.1 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
25														
				Very stiff, wet, gray / tan, low plastic sandy silty CLAY (CL)	419.1 27.0									
		1 4 5	100				3.5			20	28	19		
30														
		P	0											
35														
		1 1 1		Becomes moist, sand grades out			2.0							
40														
		P	100											
45				Loose to medium dense, wet, brown, fine grained silty SAND (SM)	401.1 45.0									
		5 4 12	72	Becomes medium dense, fine to medium grained										

Completion Depth: 65.0 Ft. Water Depth: 9.5 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

Figure No.

LOG of BORING No. B-5-04-4

DATE 6/7/04 SURFACE ELEVATION, FT 446.1 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
50														
55		11 15 12	89											
60		6 6 5	56											
					383.1 63.0									
65		9 11 30		Dense, wet, fine to coarse grained silty SAND (SW) with some soft, gray silty clay seams	381.1 65.0									
				Bottom of boring at 65'										Approximately 10 gallons of mud lost
70														

Completion Depth: 65.0 Ft. Water Depth: 9.5 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After ___ hrs.

Project Name: Dynegy Wood River ft., After ___ hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

Figure No.

LOG of BORING No. B-5-04-5

DATE 6/8/04 SURFACE ELEVATION, FT 443.9 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
0				Grass and organic soil	443.7									Boring advanced using 4.25" I.D. Hollow stem augers
		2 3 3	100	Loose, moist, gray, fly ash FILL	0.3									
5		2 3 2	89	∇										Rods are wet
		P	71							17 33				
10		1 3 8	94	Becomes medium dense										Begin Mud Rotary drilling
15		5 3 2	78	Becomes soft and wet										
20		1 2 3	94											
		1 WH WH	100											

Completion Depth: 70.0 Ft.
Water Depth: 5 ft., After ATD hrs.
ft., After ____ hrs.
ft., After ____ hrs.
Project No.: 21561435.00000
Project Name: Dynegy Wood River
Drilling Contractor: Harris Drilling Co.
Logged by: G. Jones

URS

LOG of BORING No. B-5-04-5

DATE 6/8/04 SURFACE ELEVATION, FT 443.9 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
25														
					416.9									
				Very stiff, moist, brown / gray, low plastic sandy silty CLAY (CL)	27.0									
		3 2 3	100				2.5			27				
30														
		P	0											
35														
					405.9									
				Loose, wet, brown, fine grained silty SAND (SM)	38.0									
		4 3 4	83		404.9									
				Very stiff, moist, brown, low to medium plastic sandy silty CLAY (CL)	39.0									
40					404.2									
				Loose, wet, brown, fine grained silty SAND (SM)	39.8									
		8 11 12	56	Becomes medium dense, fine to medium grained						26				
45														
					396.9									
				Medium dense, wet, fine to coarse grained SAND (SW)	47.0									
		7 9 14	72											

Completion Depth: 70.0 Ft. Water Depth: 5 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harris Drilling Co. Logged by: G. Jones

LOG of BORING No. B-5-04-5

DATE 6/8/04 SURFACE ELEVATION, FT 443.9 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
50														
				Medium dense, wet, gray, fine to medium grained silty SAND (SM)	391.9 / 52.0									
		9 10 11	89											
55														
		7 8 12	50	Becomes fine grained										
60														
		16 19 16	67	Becomes dense, fine to medium grained										
65														
				Dense, wet, fine to coarse grained silty SAND (SW)	376.9 / 67.0									
		15 20 17	61											
70				Bottom of boring at 70'	373.9 / 70.0									Approximately 70 gallons of mud lost

Completion Depth: 70.0 Ft. Water Depth: 5 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

Figure No.

LOG of BORING No. B-5-04-6

DATE 6/2/04 SURFACE ELEVATION, FT 441.6 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
0		1 5 5	100	Loose, moist, gray, fly ash FILL										Boring advanced using 4.25" I.D. Hollow stem augers
5		1 7 6	100											
		1 1 WH	100	Becomes wet										
10		P	71							40 38 41 37				Begin Mud Rotary drilling
15		WH WH 1	100											Rods are grinding
20		1 WH 3	89											
		1 2 3		Very stiff, moist, brown / tan, medium plastic silty CLAY (CL)	418.6 23.0		2.3			26	36	17		

Completion Depth: 60.0 Ft. Water Depth: ______ ft., After ______ hrs.

Project No.: 21561435.00000 ______ ft., After ______ hrs.

Project Name: Dynegy Wood River ______ ft., After ______ hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

8/10/04 WCCXS 21561435 DYNEGY.GPJ

URS

Figure No.

LOG of BORING No. B-5-04-6

DATE 6/2/04 SURFACE ELEVATION, FT 441.6 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
25		P	92											
					414.6									
				Medium, wet, tan / gray, fine grained silty SAND (SM)	27.0									
		5 7 5	100											
30														
					409.6									
				Soft to medium stiff, wet, tan / brown, silty CLAY (CH)	32.0									
		WH WH 3	100				0.5			39	57	15		
35														
		P	67											
					401.6									
40				Medium dense, wet, tan, fine grained silty SAND (SM)	40.0									
		15 8 18	94											
45														
					394.6									
				Medium dense, tan wet, well graded SAND (SW)	47.0									
		11 6 11	67											

Completion Depth: 60.0 Ft.

Project No.: 21561435.00000

Project Name: Dynegy Wood River

Drilling Contractor: Harriss Drilling Co.

Water Depth: ______ ft., After ______ hrs.

______ ft., After ______ hrs.

______ ft., After ______ hrs.

Logged by: G. Jones

8/10/04 WCCXS 21561435 DYNEGY.GPJ

URS

LOG of BORING No. B-5-04-6

DATE 6/2/04 SURFACE ELEVATION, FT 441.6 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
50														
		8 7 7	56	Becomes gray										
55														
					384.6									
				Medium dense, wet, gray, coarse grained SAND (SP)	57.0									
		12 12 13	50											
					381.6									
60				Bottom of boring at 60'	60.0									Approximately 50 to 60 gallons of mud lost
65														
70														

Completion Depth: 60.0 Ft.

Project No.: 21561435.00000

Project Name: Dynegy Wood River

Drilling Contractor: Harriss Drilling Co.

Water Depth: ____ ft., After ____ hrs.
____ ft., After ____ hrs.
____ ft., After ____ hrs.

Logged by: G. Jones

Figure No.

LOG of BORING No. B-5-04-7

DATE 6/1/04 SURFACE ELEVATION, FT 439.9 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
0			Soft, moist, dark gray, fly ash FILL									Boring advanced using 4.25" I.D. Hollow stem augers
	2 1 1	89										
	2 1 2	100	Becomes loose, black and gray bottom ash and fly ash FILL									
5												
	P	100						18 14 32 17			0.3 1.4	
	4 7 9	72	Becomes medium dense, bottom ash grades out									
10				429.4 10.5								
	7 11 9	72	With same bottom ash									
	4 8 13	89		425.9 14.0								
			Hard, dry, brown, low plastic, sandy Silty CLAY (CL)		>4.5							
15												Begin Mud Rotary drilling
	2 4 6	78	Becomes moist									
20												
				417.9 22.0								
			Very stiff, moist, gray, high plastic CLAY (CH)									
	P	100			2.5			25 26				

Completion Depth: 60.0 Ft. Water Depth: N/A ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

Figure No.

LOG of BORING No. B-5-04-7

DATE 6/1/04 SURFACE ELEVATION, FT 439.9 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
25										37 38	90	20	1.7	
					412.9									
				Loose, moist, brown and tan, fine grained silty SAND (SM)	27.0									
		2 2 3	83											
30														Stop drilling (6/1/04) Resume drilling (6/2/04)
					407.9									
				Stiff, wet, brown, medium plastic sandy silty CLAY (CL)	32.0									
		WH 2 2	83				1.5							
35														
		P	0											
40														
					397.9									
				Dense, wet, brown, fine grained silty SAND (SM) with gravel fragments	42.0									
		11 17 16	89											
45														
					392.9									
				Dense, wet, brown, well graded SAND (SW) with gravel fragments	47.0									
		13 18 13	94											

Completion Depth: 60.0 Ft. Water Depth: N/A ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

8/10/04 WCCXS 21561435 DYNEGY.GPJ

URS

LOG of BORING No. B-5-04-7

DATE 6/1/04 SURFACE ELEVATION, FT 439.9 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
50														
55		6 8 9	56	Becomes medium dense, gravel grades out										
		5 11 18	67		380.4									
60				Medium dense, wet, gray, coarse grained SAND (SP)	59.5									
				Bottom of boring at 60'	379.9 60.0									Approximately 50 gallons of mud lost
65														
70														

Completion Depth: 60.0 Ft. Water Depth: N/A ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

Figure No.

LOG of BORING No. B-5-04-8

DATE 6/3/04 SURFACE ELEVATION, FT 441.5 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
0				Medium dense, moist, gray, fly ash FILL										Boring advanced using 4.25" I.D. Hollow stem augers
		3 7 9	100											
5		2 3 2	100	Becomes loose										
		1 1 WH	100	Becomes very loose										
10		WH WH 1	100	Becomes wet ∇										Begin Mud Rotary drilling
15		P	75							59 60 53 59			1.5 1.4 3.1	
20		1 WH 1	100											
					418.5									
		1 1 2	100	Very stiff, wet, gray, medium plastic silty CLAY (CL)	23.0									

Completion Depth: 60.0 Ft. Water Depth: 9 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

Figure No.

LOG of BORING No. B-5-04-8

DATE 6/3/04 SURFACE ELEVATION, FT 441.5 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
25		P	100											
		WH WH WH	100	Becomes stiff, low plastic, with some sand			1.3			29				
30														
		P	100											
35														
		P	100											
				Dense, moist to wet, brown, fine grained silty SAND (SM)	404.5 37.0									
		13 15 16	100											
40														
		11 14 12	89	Becomes medium dense, wet										
45														
		10 11 11	89											

Completion Depth: 60.0 Ft. Water Depth: 9 ft., After ATD hrs.

Project No.: 21561435.00000 ft., After hrs.

Project Name: Dynegy Wood River ft., After hrs.

Drilling Contractor: Harriss Drilling Co. Logged by: G. Jones

URS

Figure No.

LOG of BORING No. B-5-04-8

DATE 6/3/04 SURFACE ELEVATION, FT 441.5 DATUM NGVD LOCATION See Figure 1

DEPTH, ft.	SAMPLES	SAMPLING RESISTANCE	RECOVERY, %	DESCRIPTION	STRATUM EL / DEPTH	SYMBOL	PP, TSF	PID, ppm	FIELD Qu, KSF	NMC, %	LL	PI	Qu, KSF	NOTES
50				Becomes gray										
					388.5 / 53.0									
		9 15 18	61	Dense, wet, gray, fine to medium grained SAND (SP)										
55														
		5 11 22	61	Becomes fine grained										
60				Bottom of boring at 60'	381.5 / 60.0									
65														
70														

Completion Depth: 60.0 Ft.

Project No.: 21561435.00000

Project Name: Dynegy Wood River

Drilling Contractor: Harriss Drilling Co.

Water Depth: 9 ft., After ATD hrs.

ft., After hrs.

ft., After hrs.

Logged by: G. Jones

URS

Appendix C

Boring and Well Completion Reports: 2004 Hydrogeologic Investigation

C-1: Boring/Well Construction Logs for 2004 Hydrogeologic Investigation

C-2: IEPA Well Completion Reports

C-1: Boring/Well Construction Logs for 2004 Hydrogeologic Investigation

KELRON
Environmental

LOG OF BORING L4

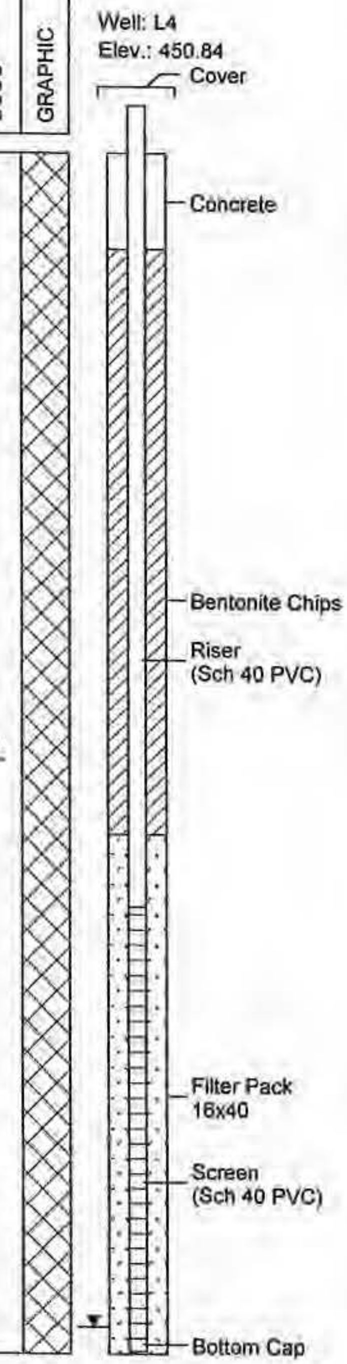
(Page 1 of 1)

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SE/SW/SW

Date Started/Finished	: 6/25/2004	Driller	: John McMullan
Hole Diameter	: 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow-Stem	Land Surface Elevation	: 448.29
Sampling Method	: Split-Spoon	Top of Casing Elevation	450.84
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 509914, 800602

Depth in Feet	DESCRIPTION	Surf. Elev. 448.29	Samples	Recovery inches	Blow Count	Qp TSF	USCS	GRAPHIC
0	FLYASH with intermittent layers of bottom ash	448						
5	SEE BORING LOG OF MONITORING WELL MW41 FOR FULL DESCRIPTION OF LITHOLOGY	443						
10		438						
15		433					FL	
20		428						
25		423						
28	END BOREHOLE AT 28 FEET BLS							
30								



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KELRON
Environmental

LOG OF BORING MW37

(Page 1 of 2)

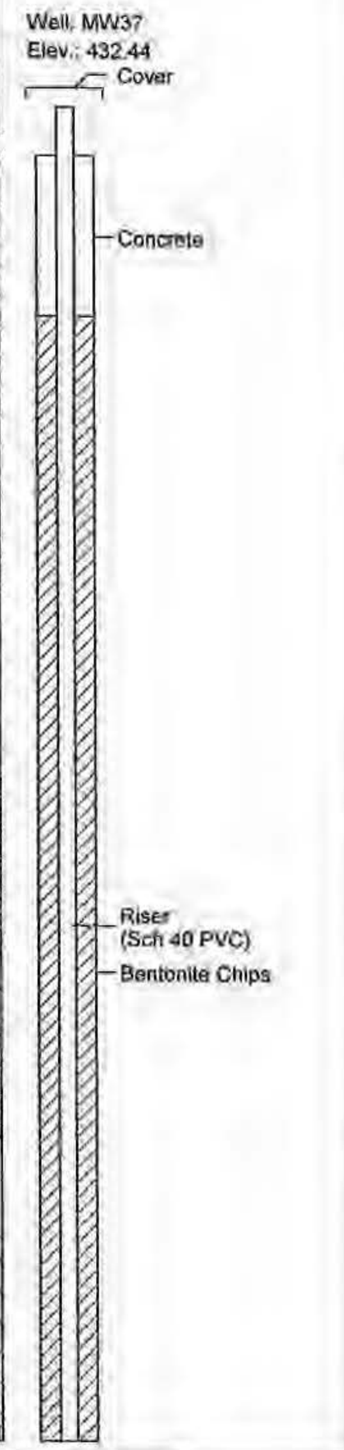
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 NE/SW/NW

Date Started/Finished	: 6/10/2004	Driller	: John McMullen
Hole Diameter	: 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow-Stem	Land Surface Elevation	: 429.29
Sampling Method	: Split-Spoon	Top of Casing Elevation	: 432.44
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510008, 603263

Depth in Feet	DESCRIPTION	Surf. Elev. 429.29	USCS
0	Silty CLAY, trace fine sand and gravel, roots; non-plastic, brown, moist (FILL) - brown-gray	429	CL
2	- low plasticity, mottled w/ red-brown Fe-oxidation	427	CL
4	- little fine sand, trace fine gravel	425	CL
	SAND, fine, poorly graded, light gray (FILL)		SP
6	Silty CLAY, little sand, trace gravel; low plasticity, light brown-gray (FILL) - trace wood, medium plasticity	423	CL
8	Clayey SAND with silt, fine, poorly graded; medium gray (FILL)	421	SC
10	Silty CLAY, trace fine sand and gravel; medium plasticity, tan to brown-gray (FILL)	419	CL
	SAND, trace silt and clay, fine grained, poorly graded, brown (FILL) - 1/2-inch shard of porcelain at 11.17 feet BLS		SP
12	Sandy SILT, some clay, low plasticity (FILL)	417	ML
14	Silty CLAY, little sand; low plasticity, brown-gray - medium plasticity, medium brown w/ red-brown Fe-oxidation mottling, wet - low plasticity, light gray, moist CLAY, medium to high plasticity, light brown-gray	415	CL
16			ML

Samples	Recovery inches	Blow Count	Qp TSF
1	19	1, 3, 5, 5	2.25
2	19	0, 3, 5, 8	3.5
3	20	2, 3, 4, 5	2.0
4	17	1, 2, 4, 4	1.5
5	17	0, 2, 3, 4	1.25
6	18	1, 4, 8, 10	3.25
7	22	2, 5, 3, 4	1.25
8	24	0, 0, 2, 3	0.75



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KELRON Environmental

LOG OF BORING MW37

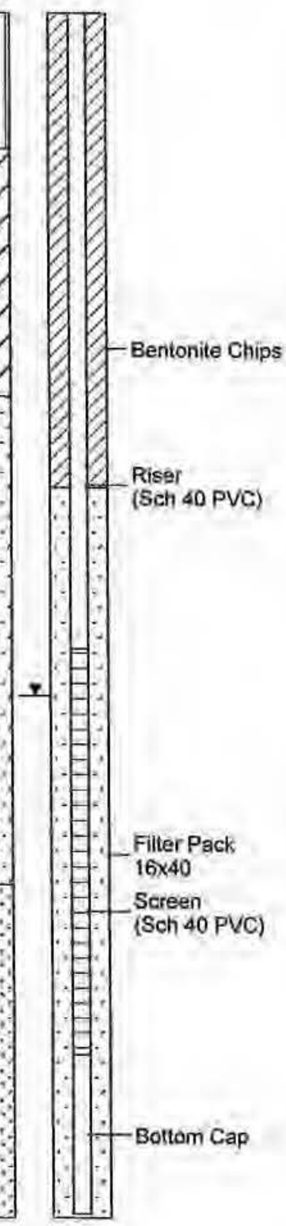
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 NE/SW/NW

Date Started/Finished	: 6/10/2004	Driller	: John McMullan
Hole Diameter	: 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow-Stem	Land Surface Elevation	: 429.29
Sampling Method	: Split-Spoon	Top of Casing Elevation	432.44
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510008, 803263

Depth in Feet	DESCRIPTION	Surf. Elev. 429.29	Samples	Recovery inches	Blow Count	Qp TSF	USCS
16	Clayey SILT, non-plastic, light brown - little sand, medium gray, wet	413	9	20	1, 1, 1, 1	0.75	ML
18	CLAY with silt, high plasticity, medium gray, wet - moist	411	10	24	0, 0, 1, 2	0.75	CH
20		409					
	SAND, fine to medium, well graded, brown, wet		11	18	2, 4, 7, 8	0.75	SW
22		407	12	19	2, 3, 6, 7		
24		405	13	18	2, 5, 11, 15		
26		403					
	SAND, fine, poorly graded		14	24			SP
28		401	15	24	1, 3, 6, 8		
30		399					
32	END BOREHOLE AT 31 FEET BLS						

Well: MW37
Elev.: 432.44



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KELRON Environmental

LOG OF BORING MW38

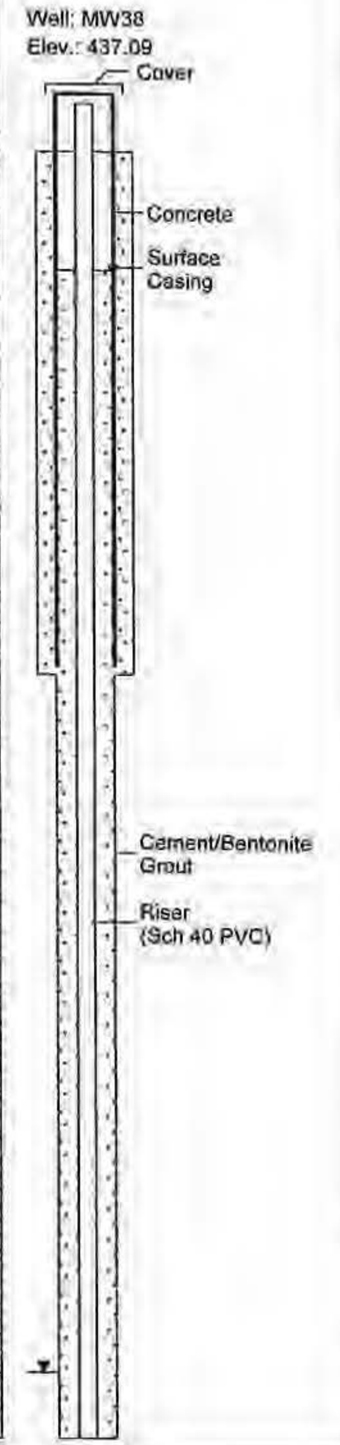
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 NW/NE/SW

Date Started/Finished	: 6/16 - 6/24/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow-Stem	Land Surface Elevation	: 434.49
Sampling Method	: Split-Spoon	Top of Casing Elevation	: 437.09
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510770, 802264

Depth in Feet	DESCRIPTION	Surf. Elev. 434.49	USCS
0	Silty CLAY, with sand, roots, brown, moist	434	
	FLYASH, trace coal, light gray, wet		FL
5	Note: Surface Casing = 10.75-inch O.D. PVC installed to 10 feet below grade.	429	
	Silty CLAY, with few wood, roots, organics; low plasticity, dark gray with black mottling, wet - no roots or wood, light-medium gray, moist - trace sand and gravel, few wood, olive gray		CL
10		424	
	Silty CLAY: high plasticity, medium gray, wet		CH
15		419	
	Silty SAND, with clay, fine sand; medium brown to gray		SM
	SILT to Sandy SILT, find sand; light gray		ML
	Silty CLAY, trace fine sand, light gray w/ brown mottling		CL
20	Silty SAND, fine; poorly graded, light brown	414	SM
	SAND, fine; poorly graded, medium brown grading to medium gray		SP
			CL
25			

Samples	Recovery inches	Blow Count	Qp TSF
1	24	2, 1, 1, 1	0.75
2	19	2, 0, 0, 0	<0.5
3	24	0, 0, 0, 0	<0.5
4	18	1, 0, 0, 0	<0.5
5	24	0, 3, 8, 8	1.75
6	22	0, 0, 0, 0	0.5
7	24	2, 2, 2, 2	2.0
8	18	0, 0, 0, 0	0.75



KELRON Environmental

LOG OF BORING MW38

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 NW/NE/SW

Date Started/Finished	: 6/18 - 6/24/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	Stuart Cravens (Kelron)
Drilling Method	: Hollow-Stem	Land Surface Elevation	: 434.49
Sampling Method	: Split-Spoon	Top of Casing Elevation	437.09
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510770, 802284

Well: MW38
Elev.: 437.09

Depth in Feet	DESCRIPTION	Surf. Elev. 434.49	Samples	Recovery inches	Blow Count	Qp TSF	USCS	GRAPHIC
25	Silty CLAY, with silt and fine sand; low to medium plasticity, medium gray, moist to wet	409					CL	
	SAND, fine; poorly graded, medium gray, wet						SP	
	CLAY, fat, high plasticity, medium gray, moist		9	21	0 1 2 2	1.5		
30		404						
	- olive gray - trace shells (1/2-inch intact shell at 34.58 feet)		10	24	1 2 2 3	1.0		
35		399						
	- no shells		11	24	0 0 0 0	1.0	CH	
40		394						
			12	24	0 0 0 0	1.0		
45		389						
			13	23	0 0 0 0	1.0		
50								

Cement/Bentonite Grout

Riser (Sch 40 PVC)

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Environmental

LOG OF BORING MW38

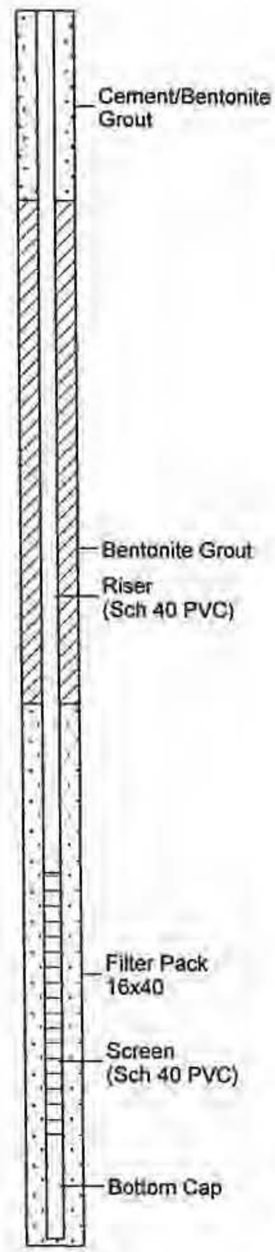
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 NW/NE/SW

Date Started/Finished	: 6/18 - 6/24/2004
Hole Diameter	: 12.5 / 8.5 inches
Drilling Method	: Hollow-Stem
Sampling Method	: Split-Spoon
Drilling Company	: Harriss Drilling Services, Inc.
Driller	: John McMullan
Geologist	: Stuart Cravens (Kelron)
Land Surface Elevation	: 434.49
Top of Casing Elevation	437.09
X,Y Coordinates	: 510770, 602284

Depth in Feet	DESCRIPTION	Surf Elev. 434.49	Samples	Recovery inches	Blow Count	Qp TSF	USCS
50		384					CH
	- dark gray grading to light gray		14	24	0 0 0 2	1.25	CH
55		379					CH
	- olive gray		15	24	0 0 1 2	1.25	CH
60		374					CH
	SAND, fine to medium; well graded, dark gray, wet						SW
			16	2			SW
65	- trace coarse sand	369	17	17	6 10 11 12		SW
70		364					SW
	- fine to coarse sand, trace fine gravel, medium gray		18	9	10 12 12 14		SW
	END BOREHOLE AT 74 FEET BLS						
75							

Well: MW38
Elev.: 437.09



KELRON Environmental	LOG OF BORING MW39
	(Page 1 of 5)

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 6/14 - 6/15/2004	Driller	: John McMullan
Hole Diameter	: 8.5 / 3.875 inch	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem / Rotary	Land Surface Elevation	: 437.3
Sampling Method	: Split-Spoon	X,Y Coordinates	: 510737, 801409
Drilling Company	: Harriss Drilling Services, Inc.		

Depth in Feet	DESCRIPTION	Surf. Elev. 437.3	USCS
0	Silty CLAY, trace gravel, roots, dk brown, moist	437	FL
	FLYASH, trace coal, light to medium gray, moist - dark gray, wet NO WELL INSTALLED SEE BORING LOGS FOR NESTED WELLS MW39S AND MW39M FOR WELL DIAGRAM AND CONSTRUCTION		FL
5	- moist	432	
	- wet		
	Silty CLAY, medium plasticity, light brown, moist CLAY, trace roots, light to medium gray with orange-brown mottling		CL
10	- dark gray	427	
	- 1/2 inch sandy clay seams at 12.42 and 13.25 feet Silty CLAY, dark gray		
	Clayey SAND (fine), poorly graded, moist		SC
	Silty CLAY, high plasticity, dark gray, 1/2 inch sand seam at 14.63 feet		CH
15	Clayey SAND (fine) with silt, poorly graded, medium gray	422	SC
	Silty CLAY w/ few wood (maxium size 3 by 10 mm), high organics, high plasticity, dark gray, moist - olive gray		CH
20	- with orange-brown mottling	417	
	Sandy CLAY		
	SAND (fine) with silt, medium gray, wet - light brown - light gray		SP-SM
25			

Samples	Recovery inches	Blow Count	Qp TSF
1	24	5, 5, 5, 4	1.25
2	6	2, 1, 1, 1	<0.5
3	18	0, 0, 1, 2	1.0
4	8	1, 1, 0, 0	<0.5
5	18	1, 1, 2, 4	<0.5
6	24	3, 4, 5, 5	3.0
7	24	1, 3, 3, 4	1.25
8	17	1, 2, 2, 2	1.0
9	13	2, 2, 3, 4	1.5
10	21	0, 2, 4, 5	1.5
11	22	2, 3, 5, 7	2.5
12	20	0, 3, 7, 11	2.5
13	19	4, 5	

KELRON Environmental

LOG OF BORING MW39

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 6/14 - 6/15/2004
Hole Diameter	: 8.5 / 3.875 inch
Drilling Method	: Hollow Stem / Rotary
Sampling Method	: Split-Spoon
Drilling Company	: Harriss Drilling Services, Inc.
Driller	: John McMullan
Geologist	: Stuart Cravens (Kelron)
Land Surface Elevation	: 437.3
X,Y Coordinates	: 510737, 801409

Depth in Feet	DESCRIPTION	Surf. Elev. 437.3	Samples	Recovery inches	Blow Count	Qp TSF	USCS
25		412	13	19	8, 9		SP-SM
			14	20	2, 2, 2, 2	1.0	
	Silty CLAY, trace leaves and wood, trace shells (<2 mm), high plasticity, olive gray, moist		15	24	0, 0, 4, 7	1.25	CH
30	Clayey SILT grading to SILT, trace fine sand, trace shells (<2 mm), light brown, wet	407	16	15	4, 6, 8, 8	0.75	ML
			17	17	6, 11, 14, 17		
	SAND (fine to medium), trace fine gravel, well graded, wet						SW
35	SAND (fine), few silt, poorly graded, medium gray, wet	402	18	15	6, 6, 8, 10		SP
			19	20	6, 8, 11, 13		
			20	19	6, 12, 13, 13		
40		397	21	17	7, 11, 13, 14		
			22	14	6, 9, 16, 21		
45		392					
	SAND (fine to medium, trace coarse), well graded		23	15	11, 13, 15, 15		SW
50							

KELRON Environmental

LOG OF BORING MW39

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished : 6/14 - 6/15/2004
Hole Diameter : 8.5 / 3.875 inch
Drilling Method : Hollow Stem / Rotary
Sampling Method : Split-Spoon
Drilling Company : Harriss Drilling Services, Inc.

Driller : John McMullan
Geologist : Stuart Cravens (Kelron)
Land Surface Elevation: 437.3
X,Y Coordinates : 510737, 801409

Depth in Feet	DESCRIPTION	Surf. Elev. 437.3	Samples	Recovery inches	Blow Count	Qp TSF	USCS	GRAPHIC
50	SAND (fine to medium, trace coarse), well graded	387						
			24	17	9 20 45 52			
55		382						
60		377						
			25	13	6 10 11 11		SW	
65		372						
	- fine to coarse, trace fine gravel, light gray		26	16	5 7 11 15			
70		367						
			27	14	8 12 15 20			
75								

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KELRON Environmental	LOG OF BORING MW39

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 6/14 - 6/15/2004	Driller	: John McMullan
Hole Diameter	: 8.5 / 3.875 inch	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem / Rotary	Land Surface Elevation	: 437.3
Sampling Method	: Split-Spoon	X,Y Coordinates	: 510737, 801409
Drilling Company	: Harriss Drilling Services, Inc.		

Depth in Feet	DESCRIPTION	Surf. Elev. 437.3	Samples	Recovery inches	Blow Count	Qp TSF	USCS	GRAPHIC
75	SAND (fine to medium, trace coarse), well graded	362						
80		357						
			28	16	9 20 22 24			
85		352						
							SW	
90		347						
			29	17	9 16 19 27			
95		342						
100								

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KELRON
Environmental

LOG OF BORING MW39

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 6/14 - 6/15/2004
Hole Diameter	: 8.5 / 3.875 inch
Drilling Method	: Hollow Stem / Rotary
Sampling Method	: Split-Spoon
Drilling Company	: Harriss Drilling Services, Inc.
Driller	: John McMullan
Geologist	: Stuart Cravens (Kelron)
Land Surface Elevation	: 437.3
X,Y Coordinates	: 510737, 801409

Depth in Feet	DESCRIPTION	Surf. Elev. 437.3	Samples	Recovery inches	Blow Count	Qp TSF	USCS	GRAPHIC
100		337					SW	
	Sandy SILT, fine to coarse sand, trace fine gravel, light gray, moist SILT, trace fine sand and gravel, light gray, moist		30	24	15 25 21 27	2.25	ML	
105		332						
110		327						
	Silty CLAY, trace sand and fine gravel (subangular to rounded), larger clasts are limestone and quartz, very hard, moist. Diamicton.						CL	
115		322						
120		317						
			31	24	12 22 29 38	>4.5		
	END BOREHOLE AT 124 FEET BLS							
125								

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Environmental

LOG OF BORING MW39M

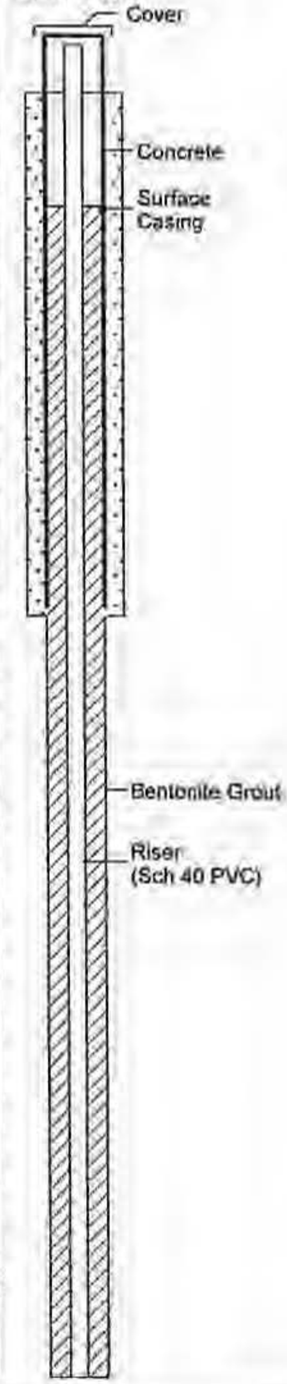
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 6/17/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem / Rotary	Land Surface Elevation	: 437.28
Sampling Method	: Split-Spoon	Top of Casing Elevation	440.03
Drilling Company	: Harris Drilling Services, Inc.	X,Y Coordinates	: 510736, 801410

Depth in Feet	DESCRIPTION	Surf. Elev. 437.28	Samples	Recovery inches	USCS
0	Silty CLAY, trace gravel, roots, dk brown, moist	437			FL
	FLYASH, trace coal, light to medium gray, moist		1	24	
	- dark gray, wet				
	WELL MW39M BLIND DRILLED BASED ON ADJACENT BORING MW39. SEE BORING MW39 FOR FULL LOG.		2	8	
5	- moist	432	3	18	FL
	Note: Surface Casing = 10.75-inch O.D. PVC installed to 10.0 feet below grade.		4	8	
	- wet				
	Silty CLAY, medium plasticity, light brown, moist		5	18	
10	CLAY, trace roots, light to medium gray with orange-brown mottling				
	- dark gray	427	6	24	CL
	- 1/2 inch sandy clay seams at 12.42 and 13.25 feet				
	Silty CLAY, dark gray		7	24	
	Clayey SAND (fine), poorly graded, moist				SC
15	Silty CLAY, high plasticity, dark gray; 1/2 inch sand seam at 14.63 feet				CH
	Clayey SAND (fine) with silt, poorly graded, medium gray	422	8	17	SC
	Silty CLAY w/ few wood (maxium size 3 by 10 mm), high organics, high plasticity, dark gray, moist		9	13	
	- olive gray		10	21	CH
20	- with orange-brown mottling	417			
			11	22	
	Sandy CLAY				
			12	20	
	SAND (fine) with silt, medium gray, wet				
	- light brown				
	- light gray		13	19	SP-SM
25					

GRAPHIC



KELRON Environmental

LOG OF BORING MW39M

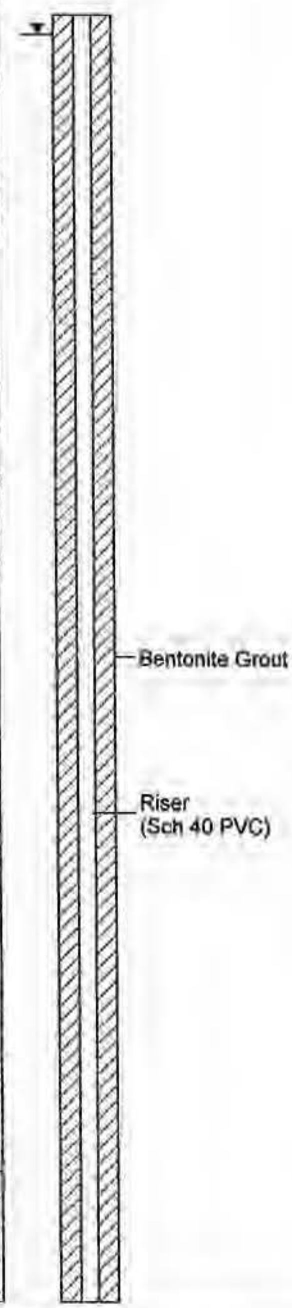
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 6/17/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem / Rotary	Land Surface Elevation	: 437.28
Sampling Method	: Split-Spoon	Top of Casing Elevation	: 440.03
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510738, 801412

Depth in Feet	DESCRIPTION	Surf. Elev. 437.28	Samples	Recovery inches	USCS
25		412	13	19	SP-SM
			14	20	
	Silty CLAY, trace leaves and wood, trace shells (<2 mm), high plasticity, olive gray, moist		15	24	CH
30	Clayey SILT grading to SILT, trace fine sand, trace shells (<2 mm), light brown, wet	407	16	15	ML
			17	17	
	SAND (fine to medium), trace fine gravel, well graded, wet				SW
35	SAND (fine), few silt, poorly graded, medium gray, wet	402	18	15	SP
			19	20	
			20	19	
40		397	21	17	
			22	14	
45		392			
	SAND (fine to medium, trace coarse), well graded		23	15	SW
50					

Well: MW39M
Elev.: 440.03



KELRON
Environmental

LOG OF BORING MW39M

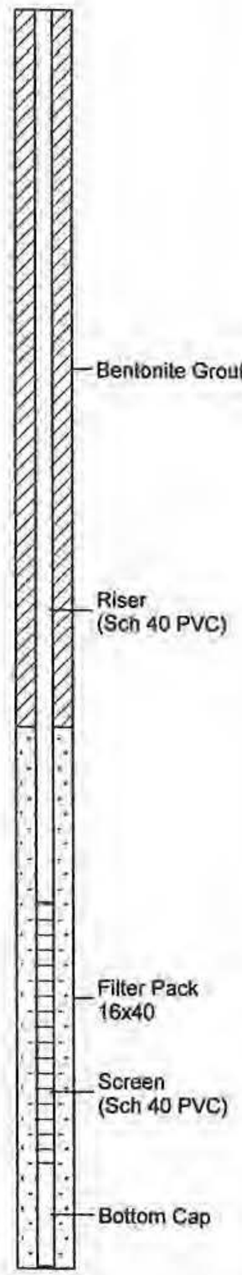
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 6/17/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem / Rotary	Land Surface Elevation	: 437.28
Sampling Method	: Split-Spoon	Top of Casing Elevation	440.03
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510738, 801412

Depth in Feet	DESCRIPTION	Surf. Elev. 437.28	Samples	Recovery inches	USCS	GRAPHIC
50		387				
			24	17		
55		382				
60		377				
			25	13	SW	
65		372				
	- fine to coarse, trace fine gravel, light gray					
			26	16		
70		367				
			27	14		
	END BOREHOLE AT 74.5 FEET BLS					
75						

Well: MW39M
Elev.: 440.03



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KELRON
Environmental

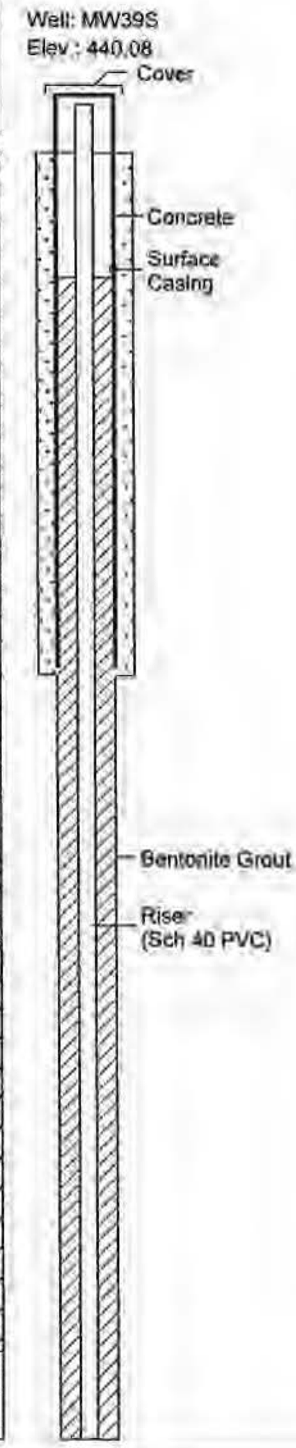
LOG OF BORING MW39S

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 8/18/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem / Rotary	Land Surface Elevation	: 437.33
Sampling Method	: Split-Spoon	Top of Casing Elevation	: 440.08
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510737, 801406

Depth in Feet	DESCRIPTION	Surf. Elev. 437.33	Samples	Recovery inches	USCS
0	Silty CLAY, trace gravel, roots, dk brown, moist	437			FL
	FLYASH, trace coal, light to medium gray, moist		1	24	
	- dark gray, wet				
	WELL MW39S BLIND DRILLED BASED ON ADJACENT BORING MW39. SEE BORING MW39 FOR FULL LOG.		2	6	
5	- moist	432	3	18	FL
	Note: Surface Casing = 10.75-inch O.D. PVC installed to 10.0 feet below grade.		4	8	
	- wet				
	Silty CLAY, medium plasticity, light brown, moist		5	16	
10	CLAY, trace roots, light to medium gray with orange-brown mottling				
	- dark gray	427	6	24	CL
	- 1/2 inch sandy clay seams at 12.42 and 13.25 feet		7	24	
	Silty CLAY, dark gray				
	Clayey SAND (fine), poorly graded, moist				SC
15	Silty CLAY, high plasticity, dark gray; 1/2 inch sand seam at 14.63 feet		8	17	CH
	Clayey SAND (fine) with silt, poorly graded, medium gray	422			SC
	Silty CLAY w/ few wood (maxium size 3 by 10 mm), high organics, high plasticity, dark gray, moist		9	13	
	- olive gray		10	21	CH
20	- with orange-brown mottling	417	11	22	
	Sandy CLAY		12	20	
	SAND (fine) with silt, medium gray, wet				
	- light brown				
25	- light gray		13	19	SP-SM



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KELRON
Environmental

LOG OF BORING MW39S

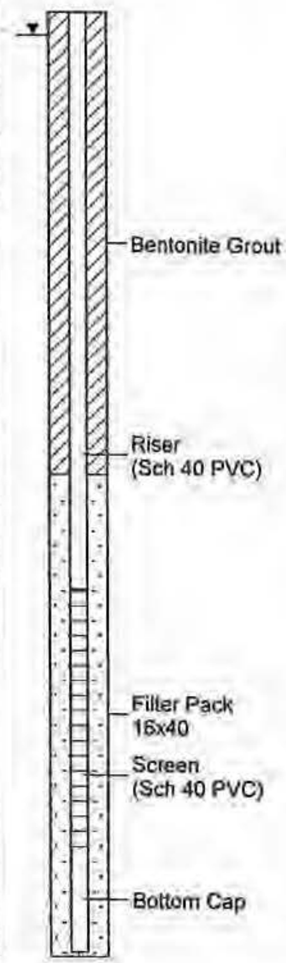
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SW/NE/SW

Date Started/Finished	: 6/18/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem / Rotary	Land Surface Elevation	: 437.33
Sampling Method	: Split-Spoon	Top of Casing Elevation	: 440.08
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510737, 801406

Depth in Feet	DESCRIPTION	Surf. Elev. 437.33	Samples	Recovery inches	USCS
25		412	13	19	SP-SM
			14	20	
	Silty CLAY, trace leaves and wood, trace shells (<2 mm), high plasticity, olive gray, moist		15	24	CH
30	Clayey SILT grading to SILT, trace fine sand, trace shells (<2 mm), light brown, wet	407	16	15	ML
			17	17	
	SAND (fine to medium), trace fine gravel, well graded, wet				SW
35	SAND (fine), few silt, poorly graded, medium gray, wet	402	18	16	SP
			19	20	
			20	19	
40		397	21	17	
			22	14	
	END BOREHOLE AT 43.4 FEET BLS				
45		392			
50					

Well: MW39S
Elev.: 440.08



KELRON
Environmental

LOG OF BORING MW40M

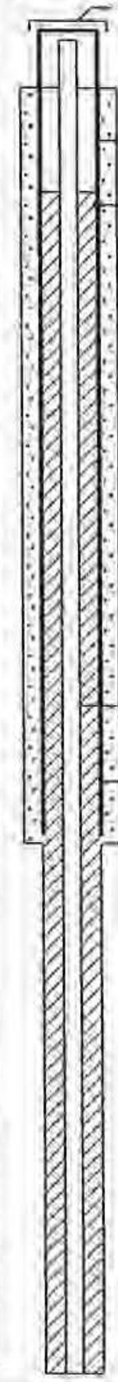
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SE/SW/SW

Date Started/Finished	: 6/10 - 6/14/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem	Land Surface Elevation	: 441.05
Sampling Method	: Split-Spoon	Top of Casing Elevation	444.20
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510477, 800833

Depth in Feet	DESCRIPTION	Surf. Elev. 441.05	USCS
0	FILL - Gravel (coarse), sand, clay, brown, dry	441	FL
	FLYASH, trace coal, medium to dark gray, moist		FL
	- wet		
5	- moist	436	
	- bottom ash with flyash seams		
	- flyash		
	- bottom ash with trace coal, moist to wet		
10	- flyash, wet	431	
	Note: Surface Casing = 10.75 inch O.D. PVC installed to 14.5 feet below grade.		
	Silty CLAY, few roots, low to medium plasticity, dark gray, moist		CL
15	SILT, dark gray, wet	426	ML
	SAND (fine to medium) with clay, well graded, brown, moist		SW
	Silty CLAY, low plasticity, light ray, moist		CL
	SAND (fine to medium) with clay, trace fine gravel, well graded, light brown, moist		SW
20	SAND (fine), poorly graded	421	SP
	- fine to coarse, well graded		SW
	- fine, poorly graded		SP
25			

Samples	Recovery inches	Qp TSF	Blow Count
1	21	0.5	7, 7, 8, 9
2	18	0.5	1, 3, 3, 4
3	22	1.0	1, 2, 3, 7
4	22	1.5	3, 10, 11, 11
5	24	1.75	8, 10, 9, 8
6	24	<0.5	1, 2, 1, 1
7	24	2.0	0, 0, 1, 4
8	21	>4.5	5, 7, 14, 15
9	18		3, 8, 11, 13
10	18		4, 9, 11, 14
11	19		5, 6, 10, 10
12	20		2, 6, 20, 31



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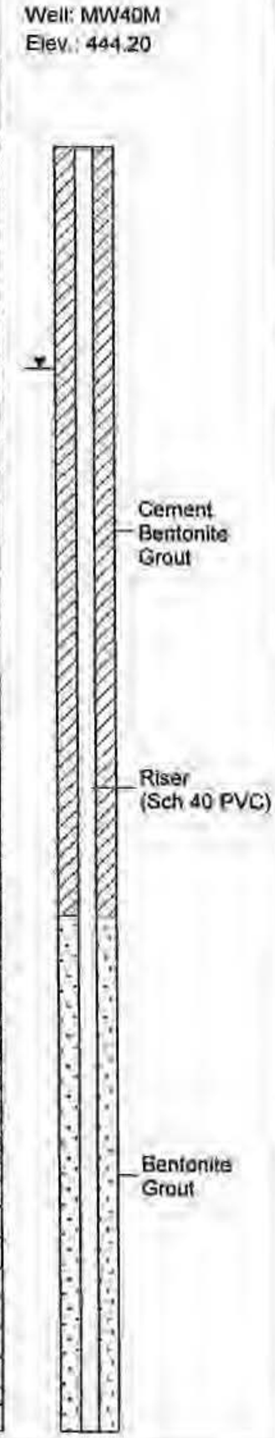
KELRON Environmental	LOG OF BORING MW40M
	(Page 2 of 3)

New East Ash Pond Hydrogeologic Investigation Wood River Power Station Dynegy Midwest Generation, Inc. Location: Twp 5N, Rng 9W, 20 SE/SW/SW	Date Started/Finished : 6/10 - 6/14/2004 Hole Diameter : 12.5 / 8.5 inches Drilling Method : Hollow Stem Sampling Method : Split-Spoon Drilling Company : Harris Drilling Services, Inc.	Driller : John McMullan Geologist : Stuart Cravens (Kelron) Land Surface Elevation : 441.05 Top of Casing Elevation : 444.20 X,Y Coordinates : 510477, 800533	

Depth in Feet	DESCRIPTION	Surf. Elev. 441.05	Samples	Recovery inches	Qp TSF	Blow Count	USCS
25		416					SP
30	- fine to medium, well graded, wet	411	13	19		2, 9, 19, 18	SW
	CLAY, Clayey SILT, and Silty CLAY in alternating layers		14	22	0.75	1, 1, 2, 2	CH-ML
35	- Clayey SILT at 34.75 to 35 feet has trace roots, black organics, non-plastic, olive gray	406	15	21	1.0	0, 1, 2, 3	
	SAND (fine), poorly graded, olive gray, wet		16	23		0, 0, 2, 4	SP
	Silty CLAY, non to high plasticity, olive gray, moist		17	24	1.0	0, 1, 1, 8	CL
40	SAND (fine to medium), trace coarse sand, well graded, olive gray, wet	401					SW
	SAND (fine), poorly graded		18	24	0.75	0, 1, 2, 4	SP
	Silty CLAY, high plasticity, moist						CH
	SAND (fine), poorly graded, medium gray, wet		19	24		0, 3, 4, 6	SP
45		396	20	24		1, 1, 2, 3	
	CLAY with silt, high plasticity, olive gray, moist		21	14	1.0	1, 1, 2, 4	CL
			22	0		0, 1, 3, 5	
50							SW



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KELRON
Environmental

LOG OF BORING MW40M

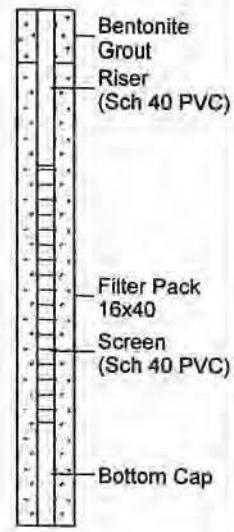
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SE/SW/SW

Date Started/Finished	: 6/10 - 6/14/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem	Land Surface Elevation	: 441.05
Sampling Method	: Split-Spoon	Top of Casing Elevation	444.20
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510477, 800633

Depth in Feet	DESCRIPTION	Surf. Elev. 441.05	Samples	Recovery inches	Qp TSF	Blow Count	USCS	GRAPHIC
50	SAND (fine to medium), well graded, dark gray, wet	391	23	5		3 4 6 6		
55		386	24	15		1 5 13 23	SW	
			25	13		3 6 18 23		
60	END BOREHOLE AT 60.0 FEET BLS	381						
65		376						
70		371						
75								

Well: MW40M
Elev.: 444.20



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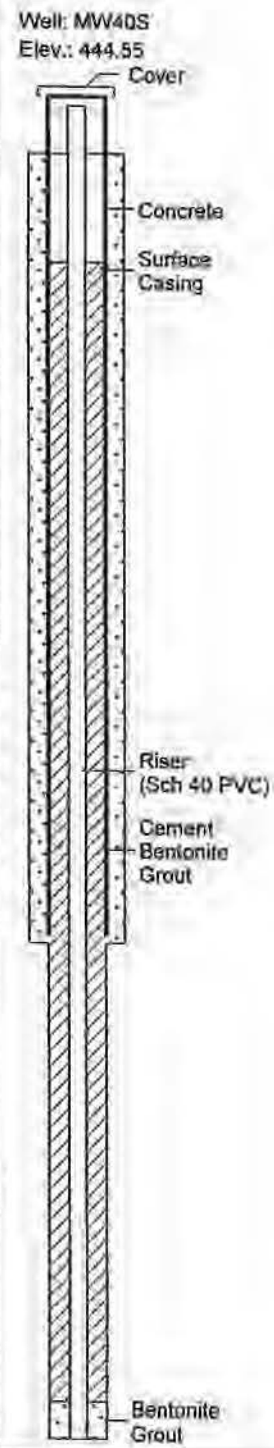
KELRON Environmental

LOG OF BORING MW40S

New East Ash Pond Hydrogeologic Investigation Wood River Power Station Dynegy Midwest Generation, Inc. Location: Twp 5N, Rng 9W, 20 SE/SW/SW	Date Started/Finished : 8/18 - 8/21/2004 Hole Diameter : 12.5 / 8.5 inches Drilling Method : Hollow Stem Sampling Method : Split-Spoon Drilling Company : Harriss Drilling Services, Inc.	Driller : John McMullan Geologist : Stuart Cravens (Kelron) Land Surface Elevation: 441.25 Top of Casing Elevation 444.55 X,Y Coordinates : 510473, 800637

Depth in Feet	DESCRIPTION	Surf. Elev. 441.25	Samples	Recovery Inches	USCS
0	FILL - Gravel (coarse), sand, clay, brown, dry	441	1	21	FL
	FLYASH, trace coal, medium to dark gray, moist WELL MW40S DRILLED BASED ON ADJACENT BORING MW40M. SEE BORING MW40M FOR FULL LOG.		2	18	FL
5	- wet - moist - bottom ash with flyash seams	436	3	22	
	- flyash - bottom ash with trace coal, moist to wet		4	22	
			5	24	
10	- flyash, wet Note: Surface Casing = 10.75-inch O.D. PVC installed to 15.2 feet below grade.	431	6	24	
			7	24	
	Silty CLAY, few roots, low to medium plasticity, dark gray, moist				CL
	SILT, dark gray, wet				ML
15	SAND (fine to medium) with clay, well graded, brown, moist	426	8	21	SW
	Silty CLAY, low plasticity, light ray, moist				CL
	SAND (fine to medium) with clay, trace fine gravel, well graded, light brown, moist		9	18	SW
			10	18	
20	SAND (fine), poorly graded	421	11	10	SP
	- fine to coarse, well graded		12	20	SW
	- fine, poorly graded				SP
25					



KELRON
Environmental

LOG OF BORING MW40S

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

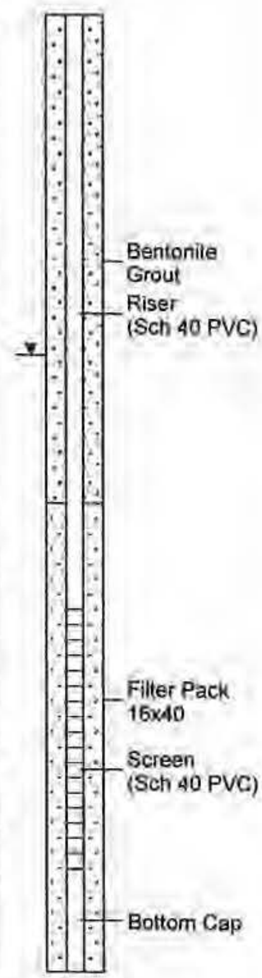
Location: Twp 5N, Rng 9W, 20 SE/SW/SW

Date Started/Finished	: 6/18 - 6/21/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow Stem	Land Surface Elevation	441.25
Sampling Method	: Split-Spoon	Top of Casing Elevation	444.55
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 510473, 800637

Depth in Feet	DESCRIPTION	Surf. Elev 441.25	Samples	Recovery inches	USCS
25		416			SP
30	- fine to medium, well graded, wet	411	13	19	SW
	CLAY, Clayey SILT, and Silty CLAY in alternating layers		14	22	CH-ML
35	- Clayey SILT at 34.75 to 35 feet has trace roots, black organics, non-plastic, olive gray	406	15	21	
	SAND (fine), poorly graded, olive gray, wet		16	23	SP
	Silty CLAY, non to highly plastic, olive gray, moist		17	24	CL
40	SAND (fine to medium), trace coarse sand, well graded, olive gray, wet	401			SW
	SAND (fine), poorly graded		18	24	SP
	Silty CLAY, high plasticity, moist				CH
	SAND (fine), poorly graded, medium gray, wet		19	24	SP
	END BOREHOLE AT 43.6 FEET BLS				
45		396			
50					

GRAPHIC

Well: MW40S
Elev.: 444.55



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KELRON
Environmental

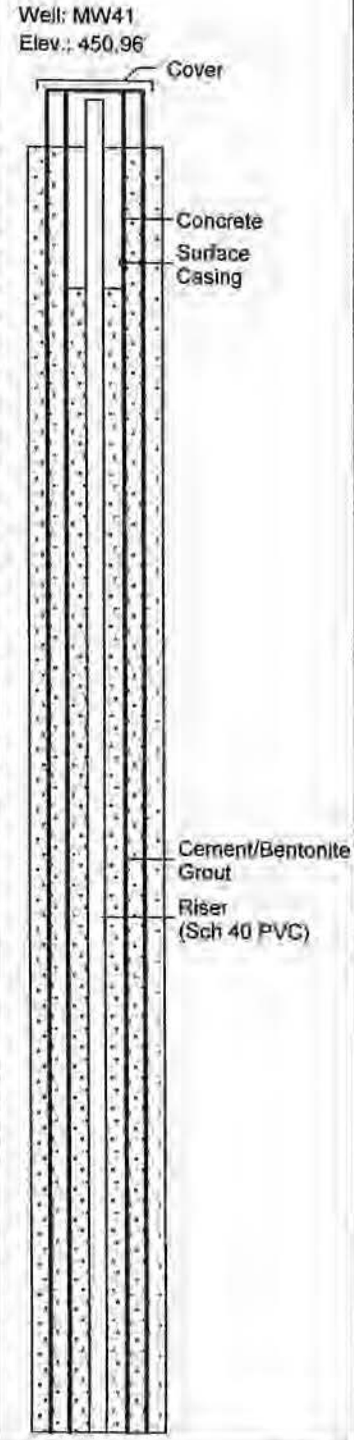
LOG OF BORING MW41

New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SE/SW/SW

Date Started/Finished	: 6/21 - 6/23/2004
Hole Diameter	: 12.5 / 8.5 inches
Drilling Method	: Hollow-Stem
Sampling Method	: Split-Spoon
Drilling Company	: Harriss Drilling Services, Inc.
Driller	: John McMullan
Geologist	: Stuart Cravens (Kelron)
Land Surface Elevation	: 448.11
Top of Casing Elevation	: 450.96
X,Y Coordinates	: 509810, 800592

Depth in Feet	DESCRIPTION	Surf. Elev. 448.11	Samples	Recovery inches	Blow Count	Qp TSF	USCS
0	FLYASH, medium gray, moist	448	1	20	2 3 5 8		
5	Note: Surface Casing = 10.75-inch O.D. PVC installed to 24.5 feet below grade. Cement-bentonite grout around surface casing extends to 30 feet below grade.	443					
	- wet		2	24	8 12 12 11	2.5	
10		438					FL
	- moist						
	- bottom ash, trace coal, wet		3	18	1 5 8 5	0.5	
15		433					
	- alternating layers of bottom ash and flyash, light to medium gray, moist to wet		4	21	7 9 7 7	1.0	
20							



KELRON Environmental

LOG OF BORING MW41

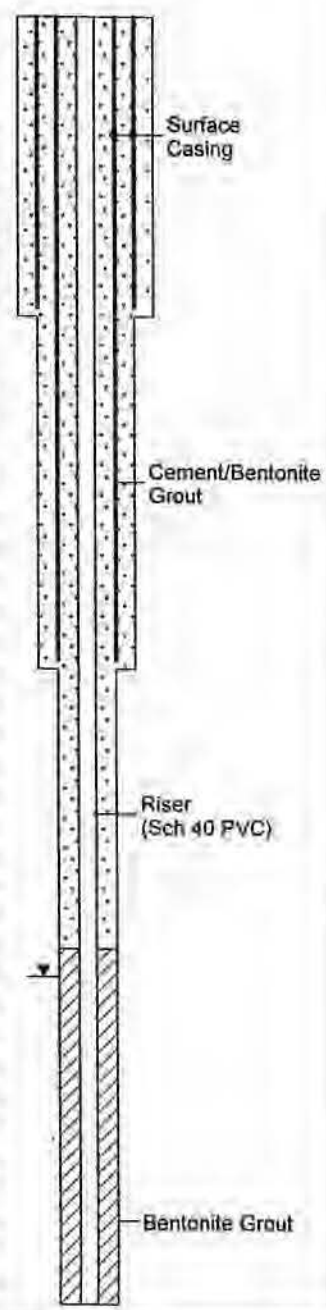
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SE/SW/SW

Date Started/Finished	: 6/21 - 6/23/2004	Driller	: John McMullan
Hole Diameter	: 12.5 / 8.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow-Stem	Land Surface Elevation	: 448.11
Sampling Method	: Split-Spoon	Top of Casing Elevation	: 450.96
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 509910, 800592

Depth in Feet	DESCRIPTION	Surf. Elev. 448.11	Samples	Recovery inches	Blow Count	Qp TSF	USCS
20		428					
			5	20	5 7 7 5	1.5	FL
			6	21	5 8 7 6	1.0	FL
25		423	7	22	6 13 13 8	1.5	FL
	- bottom ash, dark gray, wet						FL
			8	7			FL
	- flyash						FL
	CLAY, few roots, high plasticity, dark gray, wet		9	21	0 2 3 3	2.25	CH
30		418					CH
	Silty CLAY, high plasticity, light gray, moist						CH
	- dark gray		10	23	0 2 2 3	1.0	CH
35		413					CH
	CLAY, few silt, high plasticity, medium gray w/ intermittent brown mottling		11	24	1 3 3 5	1.75	CH
40							

Well: MW41
Elev.: 450.96



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KELRON
Environmental

LOG OF BORING MW41

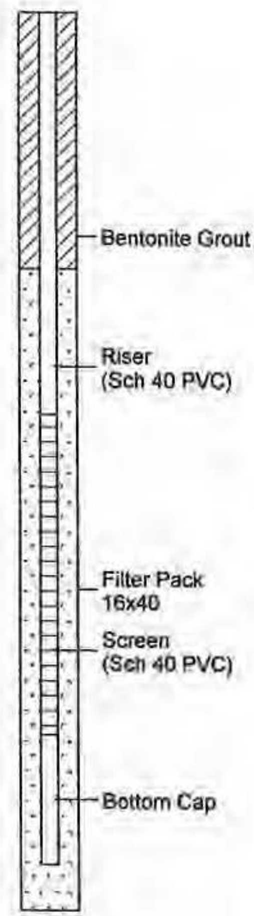
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 SE/SW/SW

Date Started/Finished	: 6/21 - 6/23/2004
Hole Diameter	: 12.5 / 8.5 inches
Drilling Method	: Hollow-Stem
Sampling Method	: Split-Spoon
Drilling Company	: Harriss Drilling Services, Inc.
Driller	: John McMullan
Geologist	: Stuart Cravens (Kelron)
Land Surface Elevation	: 448.11
Top of Casing Elevation	450.96
X,Y Coordinates	: 509910, 800592

Depth in Feet	DESCRIPTION	Surf. Elev. 448.11	Samples	Recovery inches	Blow Count	Qp TSF	USCS
40		408	12	24	2, 2, 2, 2	1.75	CH
	SILT, brown, wet				2		ML
	SAND (fine), few silt, poorly graded, light grading to medium brown, wet		13	24	12, 16, 17, 3	1.5	SP
45	CLAY, trace silt, medium gray, moist		14	24	8		CL
	SAND (fine to medium), trace coarse sand and fine gravel, well graded, light brown, wet - medium brown	403			12, 16		SW
			15	20	0, 6, 13, 15		
50		398					
	- medium brown-gray		16	15	8, 10, 8, 7		
	END BOREHOLE AT 54 FEET BLS						
55		393					
60							

Well: MW41
Elev.: 450.96



KELRON Environmental

LOG OF BORING MW42

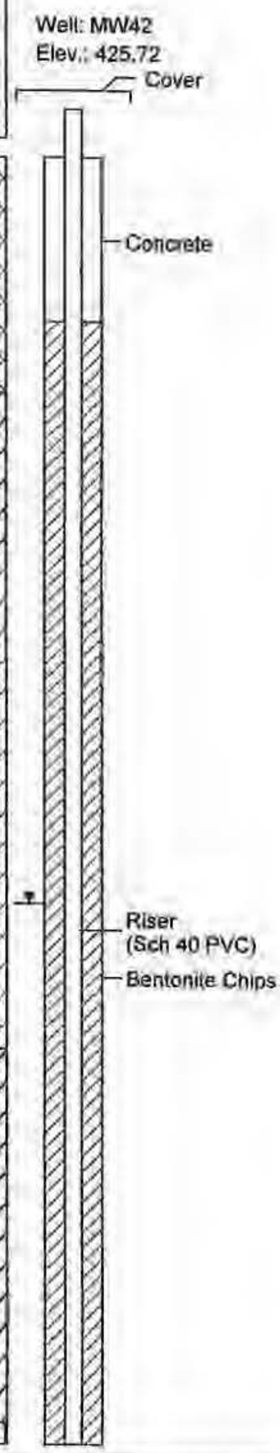
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 NW/SW/SW

Date Started/Finished	: 6/22/2004	Driller	: John McMullan
Hole Diameter	: 6.5 inches	Geologist	: Stuart Cravens (Kelron)
Drilling Method	: Hollow-Stem	Land Surface Elevation	: 422.97
Sampling Method	: Split-Spoon	Top of Casing Elevation	425.72
Drilling Company	: Harriss Drilling Services, Inc.	X,Y Coordinates	: 509319, 801288

Depth in Feet	DESCRIPTION	USCS
0	FILL - Silty CLAY with large white gravel, few sand, roots, dark brown, dry	FL
~2.8	CLAY with roots, high plasticity, medium brown with light gray mottling - light brown	CH
~4.6	Silty CLAY, trace fine sand, roots, low-medium plasticity, light brown, moist - no roots, black organics, with light gray mottling - 0.5-inch sand seam (fine to medium grain size), light brown, wet - 1.5-inch sand seam (fine to medium grain size)	CL
~10.5	CLAY, high plasticity, light gray with orange-brown mottling, moist - 1.5-inch clayey sand seam (fine), medium brown, wet	CH
~15.3		ML

Surf. Elev. 422.97	Samples	Recovery inches	Blow Count	Qp TSF
422	1	8	4, 5, 6, 6	
420	2	21	2, 4, 4, 4	1.5
418	3	16	1, 2, 3, 3	1.25
416	4	19	1, 2, 2, 3	1.0
414	5	18	0, 1, 2, 3	1.5
412	6	23	0, 1, 2, 2	1.5
410	7	22	0, 1, 1, 2	1.5
	8	20	0, 2	1.0



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KELRON Environmental

LOG OF BORING MW42

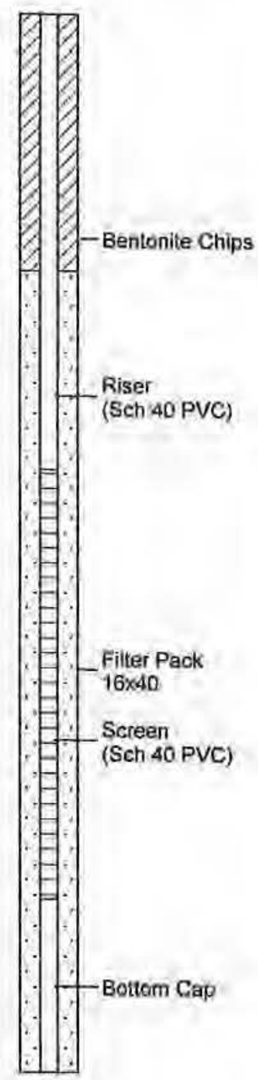
New East Ash Pond Hydrogeologic Investigation
Wood River Power Station
Dynegy Midwest Generation, Inc.

Location: Twp 5N, Rng 9W, 20 NW/SW/SW

Date Started/Finished	: 6/22/2004
Hole Diameter	: 8.5 inches
Drilling Method	: Hollow-Stem
Sampling Method	: Split-Spoon
Drilling Company	: Harriss Drilling Services, Inc.
Driller	: John McMullan
Geologist	: Stuart Cravens (Kelron)
Land Surface Elevation	: 422.97
Top of Casing Elevation	425.72
X,Y Coordinates	: 509319, 801288

Depth in Feet	DESCRIPTION	Surf. Elev. 422.97	Samples	Recovery Inches	Blow Count	Qp TSF	USCS
15	SILT, trace fine sand, non-plastic, light brown, wet - few fine sand	407	8	20	4, 6	1.0	ML
16–17	Clayey SILT, brown-gray		9	21	2, 3, 5, 5	<0.5	ML
17	Silty SAND (fine), medium brown						SM
17–19	SAND (fine to medium), well graded, medium brown	405					SW
19–28	SAND (fine) with silt, trace medium sand poorly graded, medium brown-gray	403	10	24	5, 8, 9, 9		SW-SM
21		401	11	22	3, 4, 5, 5		
23		399	12	24	3, 8, 15, 4		
25		397	13	24	2, 3, 4, 4		
27		395	14	24	2, 3, 3, 4		
28	END BOREHOLE AT 28 FEET BLS						
29							

Well: MW42
Elev.: 425.72



APPENDIX B

GRAIN SIZE ANALYSES AND LABORATORY HYDRAULIC CONDUCTIVITY TEST RESULTS

APPENDIX B1

GRAIN SIZE ANALYSES

SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	6.0-7.5
Project No.:	2015-485-004	Sample No.:	SS-3
Lab ID:	2015-485-004-001	Soil Color:	Gray

USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	8.00
#4 To #200	*Sand*	24.93
Finer Than #200	*Silt & Clay*	67.07

USCS Symbol:

cl, ASSUMED

USCS Classification:

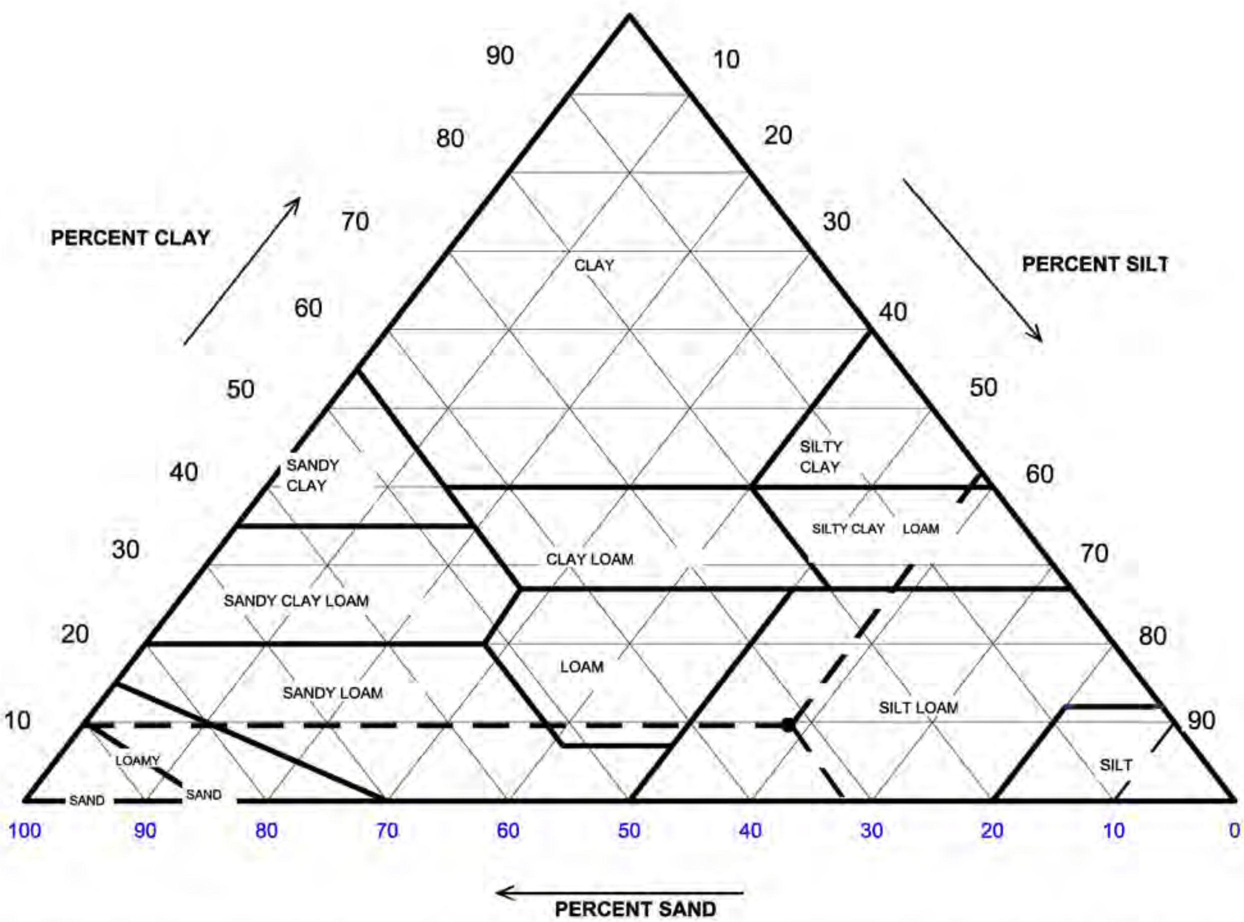
SANDY LEAN CLAY

 DCN: CT-S3A DATE: 3/18/13 REVISION: 11

544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999 • www.geotechnics.net

USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	6.0-7.5
Project No.:	2015-485-004	Sample No.:	SS-3
Lab ID:	2015-485-004-001	Soil Color:	Gray



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	11.02	**0.00**
2	88.98	*Sand*	28.53	**32.06**
0.05	60.45	*Silt*	51.91	**58.33**
0.002	8.55	*Clay*	8.55	**9.60**

USDA Classification: ***SILT LOAM***

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	6.0-7.5
Project No.:	2015-485-004	Sample No.:	SS-3
Lab ID:	2015-485-004-001	Soil Color:	Gray

Moisture Content of Passing 3/4" Materia		Water Content of Retained 3/4" Material	
Tare No.	1414	Tare No.	NA
Weight of Tare & Wet Sample (g)	590.10	Weight of Tare & Wet Sample (g)	NA
Weight of Tare & Dry Sample (g)	475.10	Weight of Tare & Dry Sample (g)	NA
Weight of Tare (g)	145.50	Weight of Tare (g)	NA
Weight of Water (g)	115.00	Weight of Water (g)	NA
Weight of Dry Sample (g)	329.60	Weight of Dry Sample (g)	NA
Moisture Content (%	**34.9**	**Moisture Content (%**	**NA**

Wet Weight of -3/4" Sample (g)	NA	Weight of the Dry Sample (g)	329.60
Dry Weight of -3/4" Sample (g)	94.81	Weight of - #200 Material (g)	221.06
Wet Weight of +3/4" Sample (g)	NA	Weight of + #200 Material (g)	108.54
Dry Weight of +3/4" Sample (g)	13.73		
Total Dry Weight of Sample (g)	NA		

Sieve Size	Sieve Opening	Weight of Soil Retained	Percent Retained	Accumulated Percent Retained		Percent Finer	Accumulated Percent Finer
	(mm)	(g)	(%)	(%)		(%)	(%)
12"	300	0.00	0.00	0.00		100.00	**100.00**
6"	150	0.00	0.00	0.00		100.00	**100.00**
3"	75	0.00	0.00	0.00		100.00	**100.00**
2"	50	0.00	0.00	0.00		100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00		100.00	**100.00**
1"	25.0	0.00	0.00	0.00		100.00	**100.00**
3/4"	19.0	13.73	4.17	4.17		95.83	**95.83**
1/2"	12.5	1.23	0.37	4.54		95.46	**95.46**
3/8"	9.50	4.76	1.44	5.98		94.02	**94.02**
#4	4.75	6.65	2.02	8.00		92.00	**92.00**
#10	2.00	9.94	3.02	11.02		88.98	**88.98**
#20	0.85	9.43	2.86	13.88		86.12	**86.12**
#40	0.425	8.99	2.73	16.60		83.40	**83.40**
#60	0.250	12.95	3.93	20.53		79.47	**79.47**
#140	0.106	25.18	7.64	28.17		71.83	**71.83**
#200	0.075	15.68	4.76	32.93		67.07	**67.07**
Pan	-	221.06	67.07	100.00		-	-

Tested By RAL Date 10/8/15 Checked By KC Date 10/12/15

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	6.0-7.5
Project No.:	2015-485-004	Sample No.:	SS-3
Lab ID:	2015-485-004-001	Soil Color:	Gray

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		41.5	22.5	6.18	35.3	76.4	0.01305	0.0284	**51.2**
5		34.5	22.5	6.18	28.3	61.3	0.01305	0.0190	**41.1**
16		26.5	22.5	6.18	20.3	43.9	0.01305	0.0113	**29.5**
30		22.5	22.5	6.18	16.3	35.3	0.01305	0.0085	**23.7**
60		19.0	22.4	6.22	12.8	27.6	0.01307	0.0061	**18.5**
250		13.5	22.5	6.18	7.3	15.8	0.01305	0.0031	**10.6**
1440		10.5	23	6.00	4.5	9.7	0.01297	0.0013	**6.5**

Soil Specimen Data		Other Corrections		
Tare No.	633			
Weight of Tare & Dry Material (g)	146.90	a - Factor	0.99	
Weight of Tare (g)	96.13			
Weight of Deflocculant (g)	5.0	Percent Finer than # 200	67.07	
Weight of Dry Material (g)	45.8			
		Specific Gravity	2.7	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/8/15 Checked By KC Date 10/12/15

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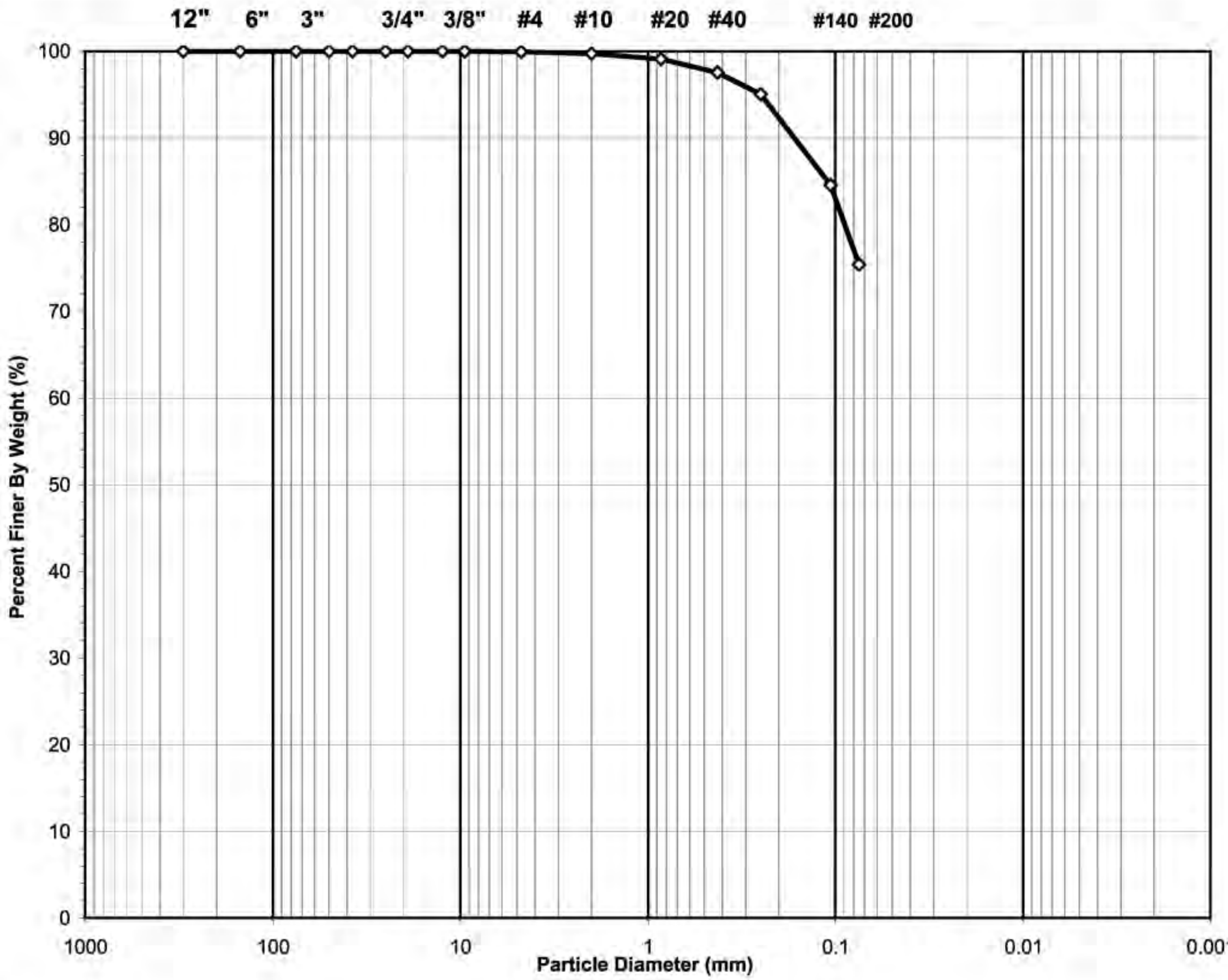
SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	18.5-20.0
Project No.:	2015-485-004	Sample No.:	SS-6
Lab ID:	2015-485-004-002	Soil Color:	Gray

	SIEVE ANALYSIS		HYDROMETER
USCS	gravel	sand	silt and clay



USCS Symbol:
ml, ASSUMED

USCS Classification:
SILT WITH SAND

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	18.5-20.0
Project No.:	2015-485-004	Sample No.:	SS-6
Lab ID:	2015-485-004-002	Soil Color:	Gray

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	1432	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	396.76	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	345.22	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.48	Weight of Tare (g):	NA
Weight of Water (g):	51.54	Weight of Water (g):	NA
Weight of Dry Sample (g):	199.74	Weight of Dry Sample (g):	NA
Moisture Content (%):	**25.8**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	199.74
Dry Weight of - 3/4" Sample (g):	49.1	Weight of - #200 Material (g):	150.60
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	49.14
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.20	0.10	0.10	99.90	**99.90**
#10	2.00	0.39	0.20	0.30	99.70	**99.70**
#20	0.850	1.22	0.61	0.91	99.09	**99.09**
#40	0.425	3.06	1.53	2.44	97.56	**97.56**
#60	0.250	4.95	2.48	4.92	95.08	**95.08**
#140	0.106	20.99	10.51	15.43	84.57	**84.57**
#200	0.075	18.33	9.18	24.60	75.40	**75.40**
Pan	-	150.60	75.40	100.00	-	**-**

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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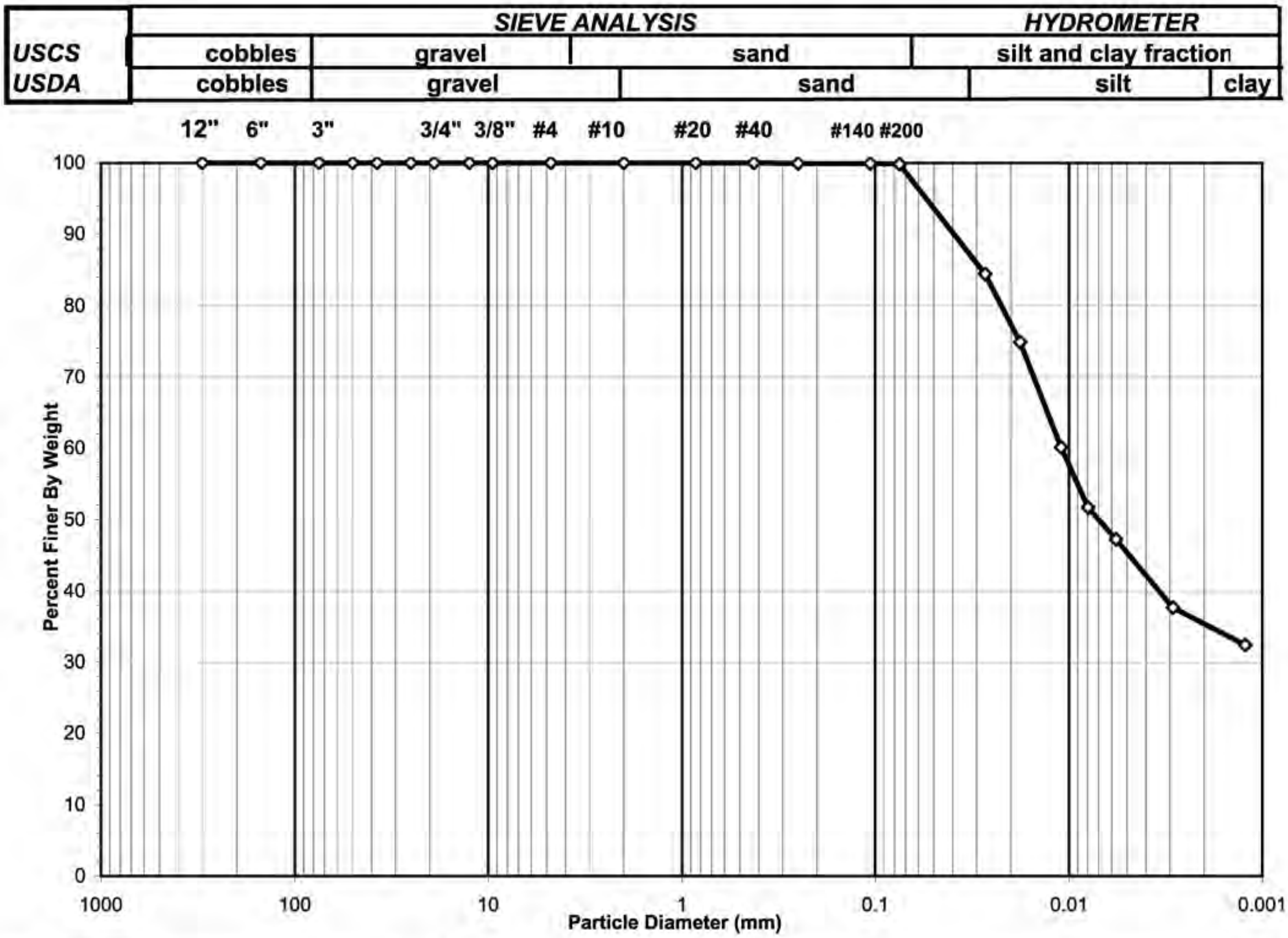
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	41.0-41.5
Project No.:	2015-485-004	Sample No.:	ST-1
Lab ID:	2015-485-004-003	Soil Color:	Brown / Gray



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	0.18
Finer Than #200	*Silt & Clay*	99.82

USCS Symbol:
CH, TESTED

USCS Classification:
FAT CLAY

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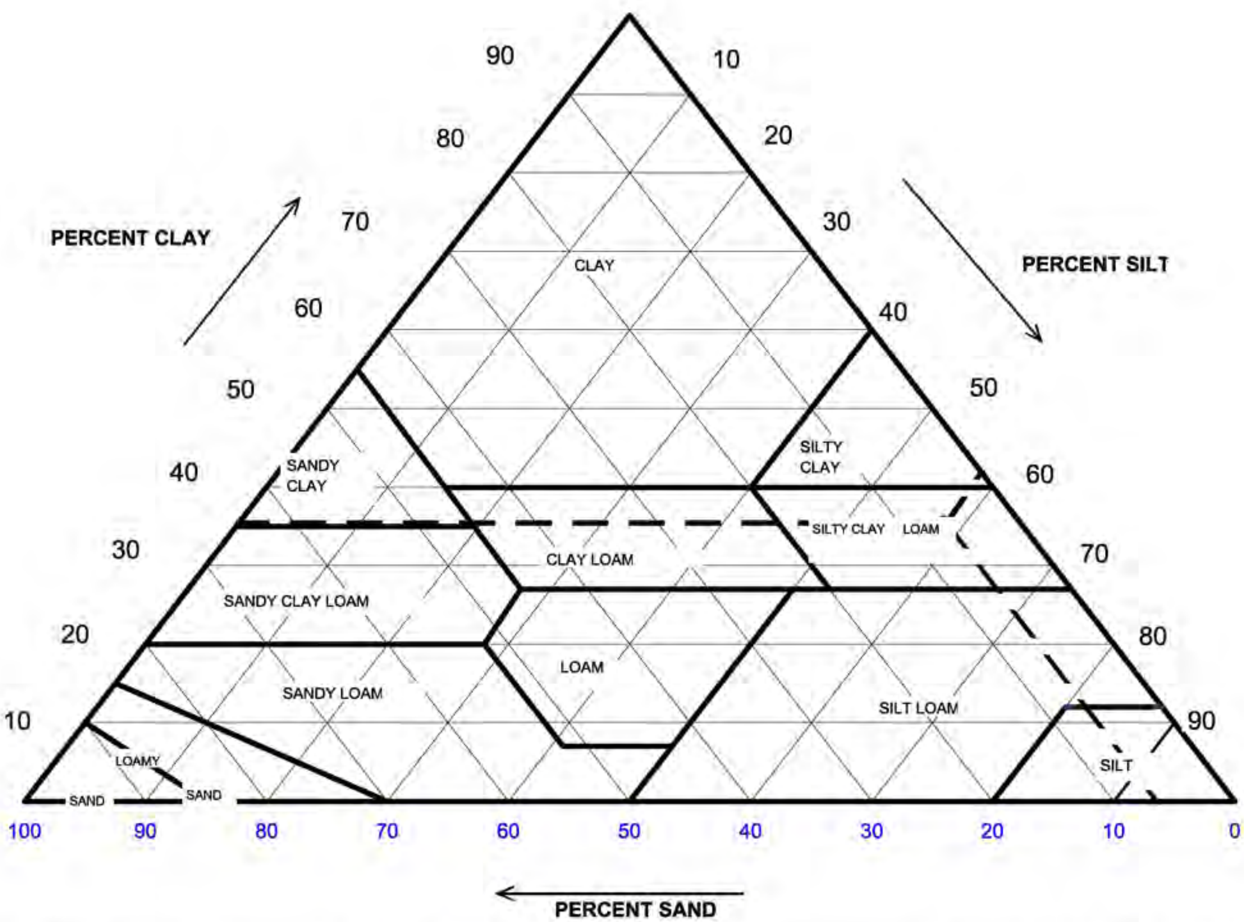
USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	41.0-41.5
Project No.:	2015-485-004	Sample No.:	ST-1
Lab ID:	2015-485-004-003	Soil Color:	Brown / Gray



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	0.00	**0.00**
2	100.00	*Sand*	6.33	**6.33**
0.05	93.67	*Silt*	58.28	**58.28**
0.002	35.39	*Clay*	35.39	**35.39**

USDA Classification: ***SILTY CLAY LOAM***

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	41.0-41.5
Project No.:	2015-485-004	Sample No.:	ST-1
Lab ID:	2015-485-004-003	Soil Color:	Brown / Gray

Moisture Content of Passing 3/4" Materia		Water Content of Retained 3/4" Material	
Tare No.	25	Tare No.	NA
Weight of Tare & Wet Sample (g)	808.14	Weight of Tare & Wet Sample (g)	NA
Weight of Tare & Dry Sample (g)	654.30	Weight of Tare & Dry Sample (g)	NA
Weight of Tare (g)	203.65	Weight of Tare (g)	NA
Weight of Water (g)	153.84	Weight of Water (g)	NA
Weight of Dry Sample (g)	450.65	Weight of Dry Sample (g)	NA
Moisture Content (%)	**34.1**	**Moisture Content (%)**	**NA**

Wet Weight of -3/4" Sample (g)	NA	Weight of the Dry Sample (g)	450.65
Dry Weight of -3/4" Sample (g)	0.80	Weight of - #200 Material (g)	449.85
Wet Weight of +3/4" Sample (g)	NA	Weight of + #200 Material (g)	0.80
Dry Weight of +3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g)	NA		

Sieve Size	Sieve Opening	Weight of Soil Retained	Percent Retained	Accumulated Percent Retained	Percent Finer	Accumulated Percent Finer
	(mm)	(g)	(%)	(%)	(%)	(%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.00	0.00	0.00	100.00	**100.00**
#20	0.85	0.05	0.01	0.01	99.99	**99.99**
#40	0.425	0.14	0.03	0.04	99.96	**99.96**
#60	0.250	0.08	0.02	0.06	99.94	**99.94**
#140	0.106	0.24	0.05	0.11	99.89	**99.89**
#200	0.075	0.29	0.06	0.18	99.82	**99.82**
Pan	-	449.85	99.82	100.00	-	-

Tested By RAL Date 10/7/15 Checked By KC Date 10/14/15

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	41.0-41.5
Project No.:	2015-485-004	Sample No.:	ST-1
Lab ID:	2015-485-004-003	Soil Color:	Brown / Gray

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		46.0	22.9	6.04	40.0	84.6	0.01299	0.0272	**84.4**
5		41.5	22.9	6.04	35.5	75.0	0.01299	0.0179	**74.9**
15		34.5	22.9	6.04	28.5	60.2	0.01299	0.0109	**60.1**
30		30.5	22.9	6.04	24.5	51.8	0.01299	0.0080	**51.7**
60		28.5	22.6	6.15	22.4	47.3	0.01303	0.0057	**47.2**
250		24.0	22.5	6.18	17.8	37.7	0.01305	0.0029	**37.6**
1440		21.5	22.5	6.18	15.4	32.5	0.01305	0.0012	**32.4**

Soil Specimen Data		**Other Corrections**		
Tare No.	1019			
Weight of Tare & Dry Material (g)	153.15	a - Factor	0.99	
Weight of Tare (g)	101.37			
Weight of Deflocculant (g)	5.0	Percent Finer than # 200	99.82	
Weight of Dry Material (g)	46.8			
		Specific Gravity	2.7	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	10/7/15	Checked By	KC	Date	10/14/15

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SIEVE ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	48.5-50.0
Project No.:	2015-485-004	Sample No.:	SS-12
Lab ID:	2015-485-004-004	Soil Color:	Brown

USCS Symbol:
SP

USCS Classification:
POORLY GRADED SAND

D60 =	**0.18**	**CC =**	**0.91**
D30 =	**0.13**	**CU =**	**1.61**
D10 =	**0.11**		

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	48.5-50.0
Project No.:	2015-485-004	Sample No.:	SS-12
Lab ID:	2015-485-004-004	Soil Color:	Brown

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	1435	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	491.90	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	423.80	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.48	Weight of Tare (g):	NA
Weight of Water (g):	68.10	Weight of Water (g):	NA
Weight of Dry Sample (g):	278.32	Weight of Dry Sample (g):	NA
Moisture Content (%):	**24.5**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	278.32
Dry Weight of - 3/4" Sample (g):	268.6	Weight of - #200 Material (g):	9.73
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	268.59
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.00	0.00	0.00	100.00	**100.00**
#20	0.850	0.10	0.04	0.04	99.96	**99.96**
#40	0.425	0.26	0.09	0.13	99.87	**99.87**
#60	0.250	9.84	3.54	3.66	96.34	**96.34**
#140	0.106	250.51	90.01	93.67	6.33	**6.33**
#200	0.075	7.88	2.83	96.50	3.50	**3.50**
Pan	-	9.73	3.50	100.00	-	**-**

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	73.5-75.0
Project No.:	2015-485-004	Sample No.:	SS-17
Lab ID:	2015-485-004-005	Soil Color:	Brownish Gray

USCS Symbol:

SP

USCS Classification:

POORLY GRADED SAND

D60 =	**0.71**	**CC =**	**1.64**
D30 =	**0.45**	**CU =**	**4.09**
D10 =	**0.17**		

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-1
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	73.5-75.0
Project No.:	2015-485-004	Sample No.:	SS-17
Lab ID:	2015-485-004-005	Soil Color:	Brownish Gray

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	1420	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	516.10	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	466.60	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.71	Weight of Tare (g):	NA
Weight of Water (g):	49.50	Weight of Water (g):	NA
Weight of Dry Sample (g):	321.89	Weight of Dry Sample (g):	NA
Moisture Content (%):	**15.4**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	321.89
Dry Weight of - 3/4" Sample (g):	319.4	Weight of - #200 Material (g):	2.51
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	319.38
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	3.62	1.12	1.12	98.88	**98.88**
#10	2.00	24.03	7.47	8.59	91.41	**91.41**
#20	0.850	64.66	20.09	28.68	71.32	**71.32**
#40	0.425	145.90	45.33	74.00	26.00	**26.00**
#60	0.250	34.97	10.86	84.87	15.13	**15.13**
#140	0.106	39.50	12.27	97.14	2.86	**2.86**
#200	0.075	6.70	2.08	99.22	0.78	**0.78**
Pan	-	2.51	0.78	100.00	-	-

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-2
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	35.4-35.9
Project No.:	2015-485-004	Sample No.:	ST-2
Lab ID:	2015-485-004-007	Soil Color:	Gray

USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	0.02
Finer Than #200	*Silt & Clay*	99.98

USCS Symbol:

CH, TESTED

USCS Classification:

FAT CLAY

 DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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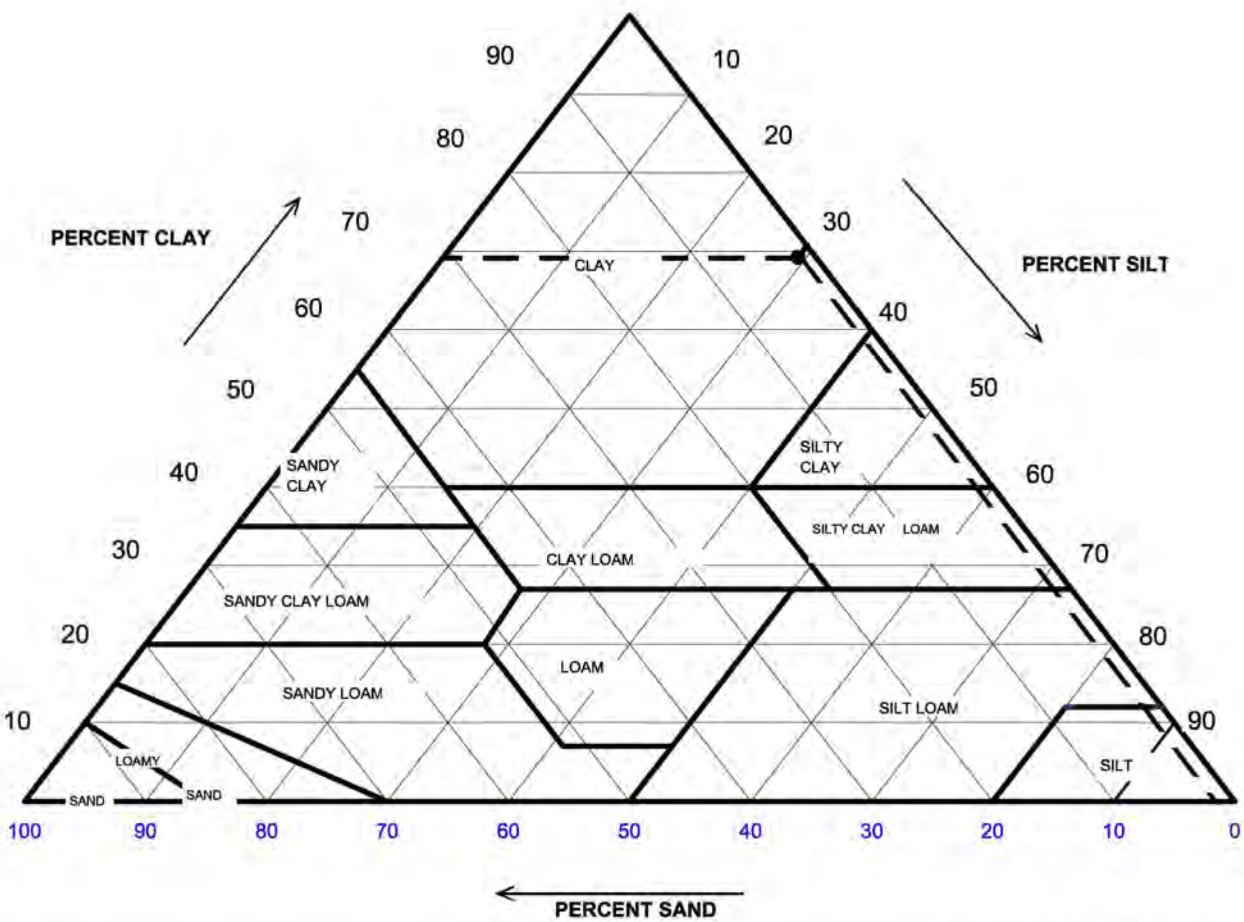
USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-2
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	35.4-35.9
Project No.:	2015-485-004	Sample No.:	ST-2
Lab ID:	2015-485-004-007	Soil Color:	Gray



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	0.00	**0.00**
2	100.00	*Sand*	1.49	**1.49**
0.05	98.51	*Silt*	29.34	**29.34**
0.002	69.17	*Clay*	69.17	**69.17**

USDA Classification: ***CLAY***

 DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-2
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	35.4-35.9
Project No.:	2015-485-004	Sample No.:	ST-2
Lab ID:	2015-485-004-007	Soil Color:	Gray

Moisture Content of Passing 3/4" Materia		Water Content of Retained 3/4" Material	
Tare No.	24	Tare No.	NA
Weight of Tare & Wet Sample (g)	925.25	Weight of Tare & Wet Sample (g)	NA
Weight of Tare & Dry Sample (g)	646.70	Weight of Tare & Dry Sample (g)	NA
Weight of Tare (g)	202.45	Weight of Tare (g)	NA
Weight of Water (g)	278.55	Weight of Water (g)	NA
Weight of Dry Sample (g)	444.25	Weight of Dry Sample (g)	NA
Moisture Content (%	**62.7**	**Moisture Content (%**	**NA**

Wet Weight of -3/4" Sample (g)	NA	Weight of the Dry Sample (g)	444.25
Dry Weight of -3/4" Sample (g)	0.11	Weight of - #200 Material (g)	444.14
Wet Weight of +3/4" Sample (g)	NA	Weight of + #200 Material (g)	0.11
Dry Weight of +3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g)	NA		

Sieve Size	Sieve Opening	Weight of Soil Retained	Percent Retained	Accumulated Percent Retained		Percent Finer	Accumulated Percent Finer
	(mm)	(g)	(%)	(%)		(%)	(%)
12"	300	0.00	0.00	0.00		100.00	**100.00**
6"	150	0.00	0.00	0.00		100.00	**100.00**
3"	75	0.00	0.00	0.00		100.00	**100.00**
2"	50	0.00	0.00	0.00		100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00		100.00	**100.00**
1"	25.0	0.00	0.00	0.00		100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00		100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00		100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00		100.00	**100.00**
#4	4.75	0.00	0.00	0.00		100.00	**100.00**
#10	2.00	0.00	0.00	0.00		100.00	**100.00**
#20	0.85	0.00	0.00	0.00		100.00	**100.00**
#40	0.425	0.00	0.00	0.00		100.00	**100.00**
#60	0.250	0.05	0.01	0.01		99.99	**99.99**
#140	0.106	0.04	0.01	0.02		99.98	**99.98**
#200	0.075	0.02	0.00	0.02		99.98	**99.98**
Pan	-	444.14	99.98	100.00		-	-

Tested By	HL	Date	9/29/15	Checked By	KC	Date	10/14/15

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-2
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	35.4-35.9
Project No.:	2015-485-004	Sample No.:	ST-2
Lab ID:	2015-485-004-007	Soil Color:	Gray

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		33.0	23.1	5.97	27.0	96.7	0.01296	0.0302	**96.7**
5		32.5	23.1	5.97	26.5	94.9	0.01296	0.0192	**94.9**
17		31.5	23.1	5.97	25.5	91.4	0.01296	0.0105	**91.3**
30		31.0	23.1	5.97	25.0	89.6	0.01296	0.0079	**89.5**
62		29.5	22.9	6.04	23.5	83.9	0.01299	0.0056	**83.9**
250		26.5	23	6.00	20.5	73.3	0.01297	0.0028	**73.3**
1440		23.5	23.4	5.86	17.6	63.1	0.01291	0.0012	**63.1**

Soil Specimen Data		Other Corrections		
Tare No.	925			
Weight of Tare & Dry Material (g)	132.42	a - Factor	0.99	
Weight of Tare (g)	99.75			
Weight of Deflocculant (g)	5.0	Percent Finer than # 200	99.98	
Weight of Dry Material (g)	27.7			
		Specific Gravity	2.7	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/29/15 Checked By KC Date 10/14/15

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SIEVE ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-2
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	43.5-45.0
Project No.:	2015-485-004	Sample No.:	SS-10
Lab ID:	2015-485-004-008	Soil Color:	Brownish Gray

USCS Symbol:
SP

USCS Classification:
POORLY GRADED SAND

D60	**=**	**0.18**	**CC**	**=**	**0.91**
D30	**=**	**0.13**	**CU**	**=**	**1.60**
D10	**=**	**0.11**			

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-2
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	43.5-45.0
Project No.:	2015-485-004	Sample No.:	SS-10
Lab ID:	2015-485-004-008	Soil Color:	Brownish Gray

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	1452	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	569.50	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	490.10	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	145.28	Weight of Tare (g):	NA
Weight of Water (g):	79.40	Weight of Water (g):	NA
Weight of Dry Sample (g):	344.82	Weight of Dry Sample (g):	NA
Moisture Content (%):	**23.0**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	344.82
Dry Weight of - 3/4" Sample (g):	338.8	Weight of - #200 Material (g):	6.01
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	338.81
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.16	0.05	0.05	99.95	**99.95**
#20	0.850	0.57	0.17	0.21	99.79	**99.79**
#40	0.425	2.29	0.66	0.88	99.12	**99.12**
#60	0.250	12.55	3.64	4.52	95.48	**95.48**
#140	0.106	313.90	91.03	95.55	4.45	**4.45**
#200	0.075	9.34	2.71	98.26	1.74	**1.74**
Pan	-	6.01	1.74	100.00	-	-

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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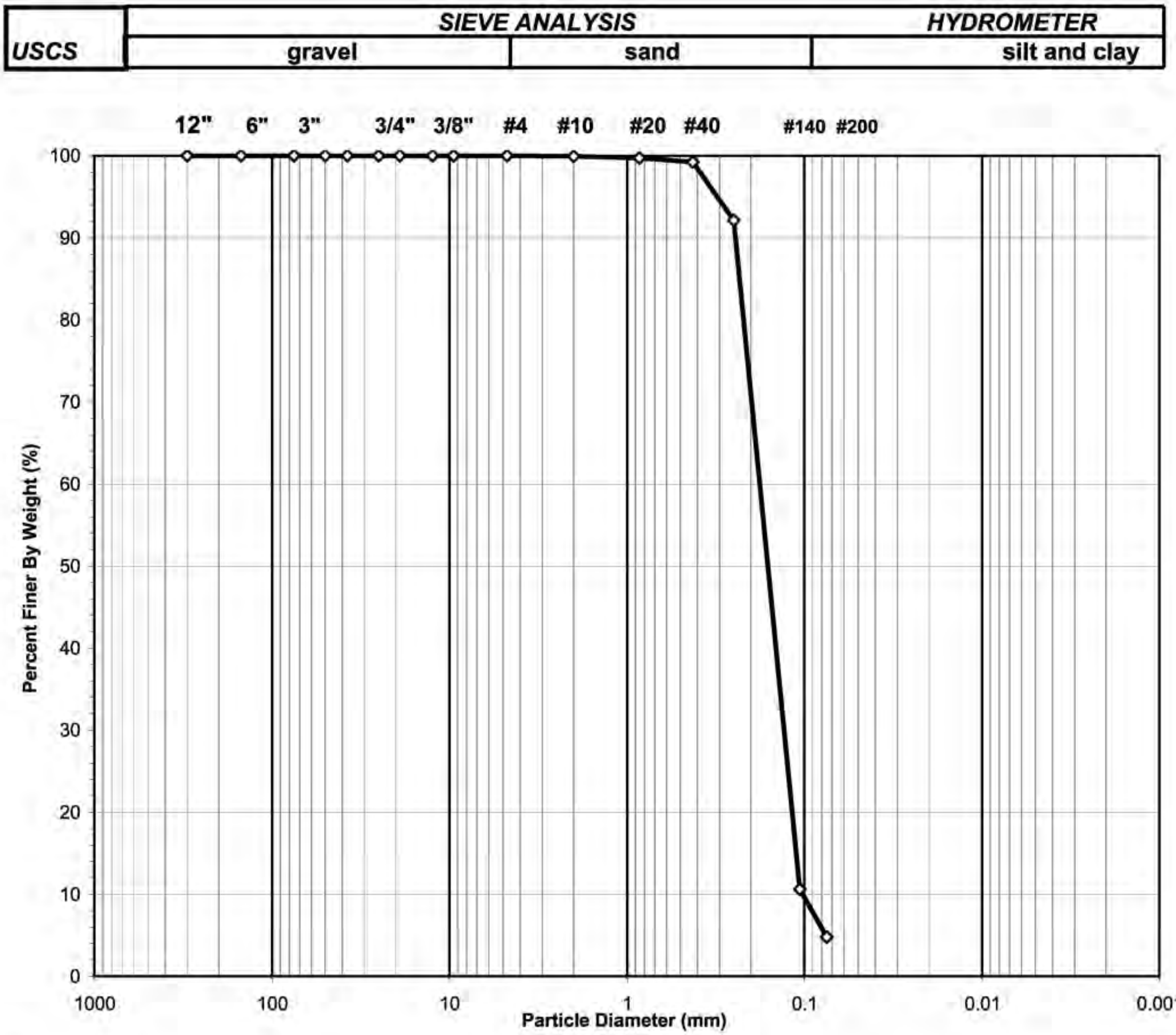
SIEVE ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-2
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	48.5-50.0
Project No.:	2015-485-004	Sample No.:	SS-11
Lab ID:	2015-485-004-009	Soil Color:	Brown / Gray



USCS Symbol:
SP

USCS Classification:
POORLY GRADED SAND

D60 =	**0.18**	**CC =**	**0.93**
D30 =	**0.13**	**CU =**	**1.75**
D10 =	**0.10**		

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-2
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	48.5-50.0
Project No.:	2015-485-004	Sample No.:	SS-11
Lab ID:	2015-485-004-009	Soil Color:	Brown / Gray

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	1441	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	618.80	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	509.50	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	143.96	Weight of Tare (g):	NA
Weight of Water (g):	109.30	Weight of Water (g):	NA
Weight of Dry Sample (g):	365.54	Weight of Dry Sample (g):	NA
Moisture Content (%):	**29.9**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	365.54
Dry Weight of - 3/4" Sample (g):	347.9	Weight of - #200 Material (g):	17.63
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	347.91
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.12	0.03	0.03	99.97	**99.97**
#10	2.00	0.26	0.07	0.10	99.90	**99.90**
#20	0.850	0.63	0.17	0.28	99.72	**99.72**
#40	0.425	1.90	0.52	0.80	99.20	**99.20**
#60	0.250	25.90	7.09	7.88	92.12	**92.12**
#140	0.106	297.80	81.47	89.35	10.65	**10.65**
#200	0.075	21.30	5.83	95.18	4.82	**4.82**
Pan	-	17.63	4.82	100.00	-	-

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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SIEVE ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	13.5-15.0
Project No.:	2015-485-004	Sample No.:	SS-5
Lab ID:	2015-485-004-010	Soil Color:	Gray

USCS Symbol:
ml, ASSUMED

USCS Classification:
SANDY SILT

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	13.5-15.0
Project No.:	2015-485-004	Sample No.:	SS-5
Lab ID:	2015-485-004-010	Soil Color:	Gray

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	1437	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	350.70	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	318.60	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.77	Weight of Tare (g):	NA
Weight of Water (g):	32.10	Weight of Water (g):	NA
Weight of Dry Sample (g):	173.83	Weight of Dry Sample (g):	NA
Moisture Content (%):	**18.5**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	173.83
Dry Weight of - 3/4" Sample (g):	80.7	Weight of - #200 Material (g):	93.13
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	80.70
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	6.05	3.48	3.48	96.52	**96.52**
#4	4.75	14.23	8.19	11.67	88.33	**88.33**
#10	2.00	10.50	6.04	17.71	82.29	**82.29**
#20	0.850	10.34	5.95	23.66	76.34	**76.34**
#40	0.425	12.12	6.97	30.63	69.37	**69.37**
#60	0.250	8.07	4.64	35.27	64.73	**64.73**
#140	0.106	12.58	7.24	42.51	57.49	**57.49**
#200	0.075	6.81	3.92	46.42	53.58	**53.58**
Pan	-	93.13	53.58	100.00	-	**-**

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	23.5-25.0
Project No.:	2015-485-004	Sample No.:	SS-7
Lab ID:	2015-485-004-011	Soil Color:	Dark Brown

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	23.5-25.0
Project No.:	2015-485-004	Sample No.:	SS-7
Lab ID:	2015-485-004-011	Soil Color:	Dark Brown

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	1429	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	226.40	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	211.66	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	144.86	Weight of Tare (g):	NA
Weight of Water (g):	14.74	Weight of Water (g):	NA
Weight of Dry Sample (g):	66.80	Weight of Dry Sample (g):	NA
Moisture Content (%):	**22.1**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	66.80
Dry Weight of - 3/4" Sample (g):	17.5	Weight of - #200 Material (g):	49.26
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	17.54
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	1.69	2.53	2.53	97.47	**97.47**
#10	2.00	2.24	3.35	5.88	94.12	**94.12**
#20	0.850	1.97	2.95	8.83	91.17	**91.17**
#40	0.425	1.23	1.84	10.67	89.33	**89.33**
#60	0.250	1.71	2.56	13.23	86.77	**86.77**
#140	0.106	5.73	8.58	21.81	78.19	**78.19**
#200	0.075	2.97	4.45	26.26	73.74	**73.74**
Pan	-	49.26	73.74	100.00	-	**-**

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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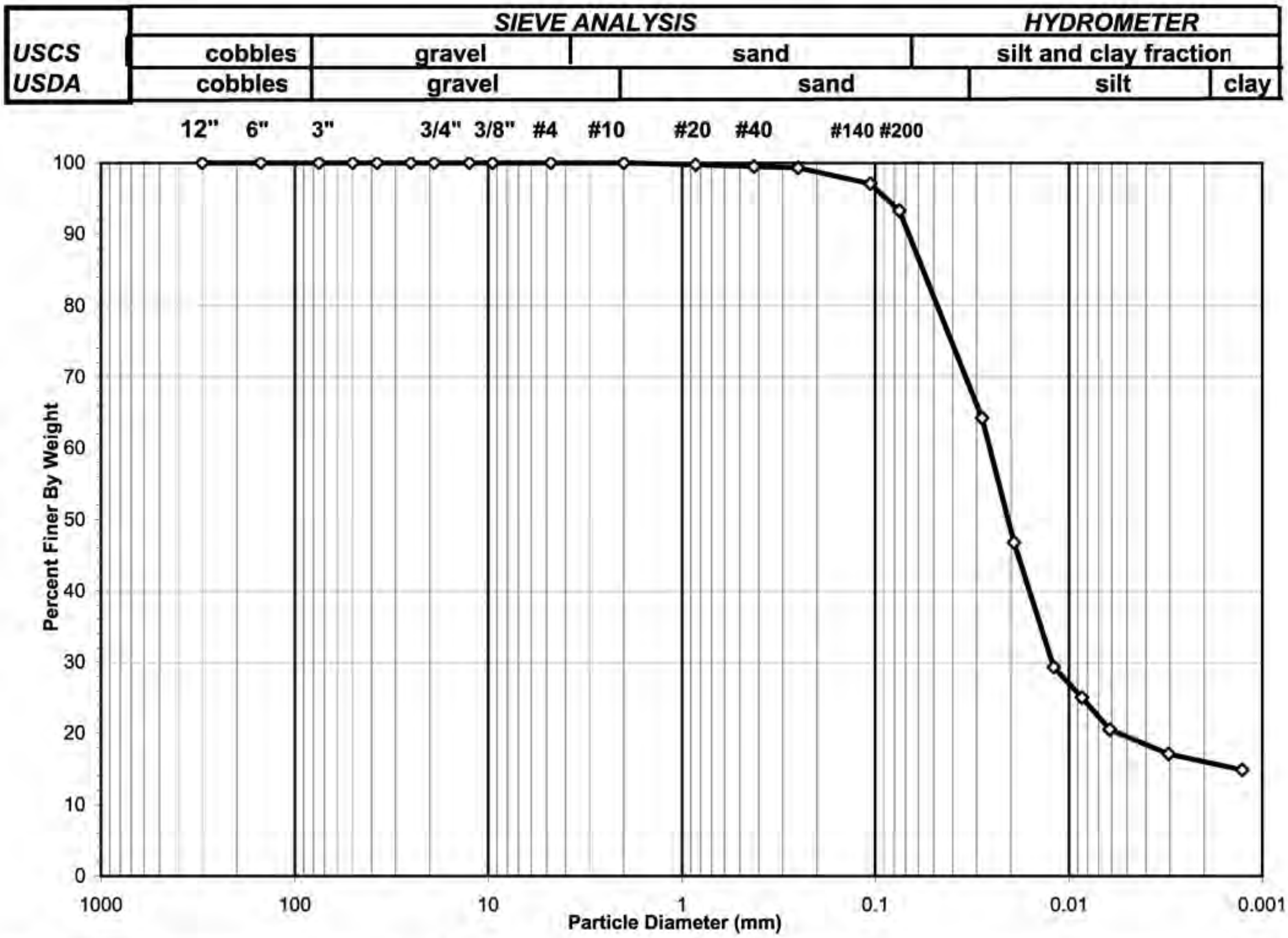
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	35.9-36.4
Project No.:	2015-485-004	Sample No.:	ST-3
Lab ID:	2015-485-004-012	Soil Color:	Brown



USCS Summary

Sieve Sizes (mm)		Percentage
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	6.72
Finer Than #200	*Silt & Clay*	93.28

USCS Symbol:

CL, TESTED

USCS Classification:

LEAN CLAY

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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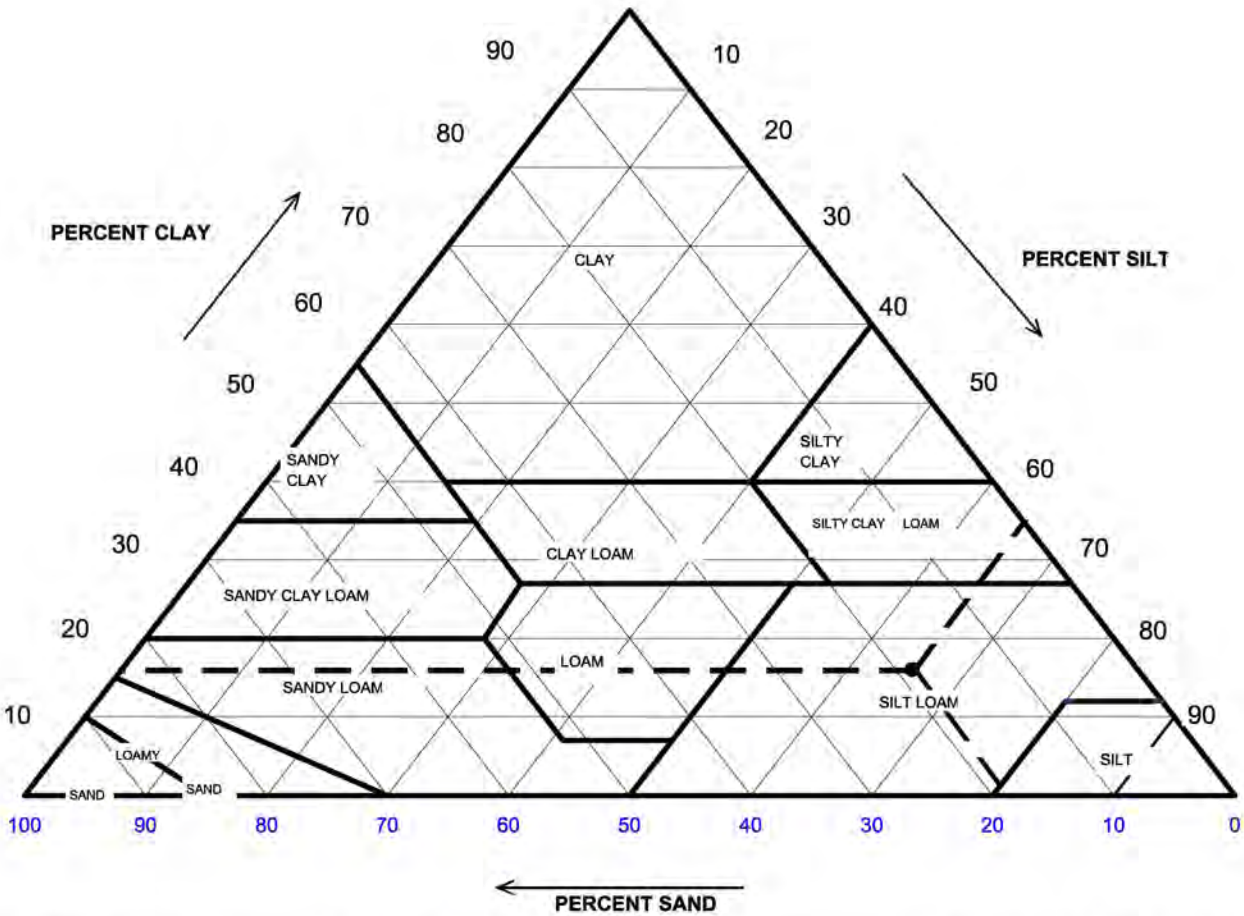
USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	35.9-36.4
Project No.:	2015-485-004	Sample No.:	ST-3
Lab ID:	2015-485-004-012	Soil Color:	Brown



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	0.04	**0.00**
2	99.96	*Sand*	18.65	**18.65**
0.05	81.31	*Silt*	65.29	**65.32**
0.002	16.02	*Clay*	16.02	**16.03**

USDA Classification: ***SILT LOAM***

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	35.9-36.4
Project No.:	2015-485-004	Sample No.:	ST-3
Lab ID:	2015-485-004-012	Soil Color:	Brown

Moisture Content of Passing 3/4" Materia		Water Content of Retained 3/4" Material	
Tare No.	8	Tare No.	NA
Weight of Tare & Wet Sample (g)	1008.46	Weight of Tare & Wet Sample (g)	NA
Weight of Tare & Dry Sample (g)	856.30	Weight of Tare & Dry Sample (g)	NA
Weight of Tare (g)	201.38	Weight of Tare (g)	NA
Weight of Water (g)	152.16	Weight of Water (g)	NA
Weight of Dry Sample (g)	654.92	Weight of Dry Sample (g)	NA
Moisture Content (%	**23.2**	**Moisture Content (%**	**NA**

Wet Weight of -3/4" Sample (g)	NA	Weight of the Dry Sample (g)	654.92
Dry Weight of -3/4" Sample (g)	44.00	Weight of - #200 Material (g)	610.92
Wet Weight of +3/4" Sample (g)	NA	Weight of + #200 Material (g)	44.00
Dry Weight of +3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g)	NA		

Sieve Size	Sieve Opening	Weight of Soil Retained	Percent Retained	Accumulated Percent Retained		Percent Finer	Accumulated Percent Finer
	(mm)	(g)	(%)	(%)		(%)	(%)
12"	300	0.00	0.00	0.00		100.00	**100.00**
6"	150	0.00	0.00	0.00		100.00	**100.00**
3"	75	0.00	0.00	0.00		100.00	**100.00**
2"	50	0.00	0.00	0.00		100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00		100.00	**100.00**
1"	25.0	0.00	0.00	0.00		100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00		100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00		100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00		100.00	**100.00**
#4	4.75	0.00	0.00	0.00		100.00	**100.00**
#10	2.00	0.26	0.04	0.04		99.96	**99.96**
#20	0.85	1.42	0.22	0.26		99.74	**99.74**
#40	0.425	1.54	0.24	0.49		99.51	**99.51**
#60	0.250	1.20	0.18	0.67		99.33	**99.33**
#140	0.106	14.85	2.27	2.94		97.06	**97.06**
#200	0.075	24.73	3.78	6.72		93.28	**93.28**
Pan	-	610.92	93.28	100.00		-	-

Tested By	RAL	Date	10/8/15	Checked By	KC	Date	10/14/15

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	35.9-36.4
Project No.:	2015-485-004	Sample No.:	ST-3
Lab ID:	2015-485-004-012	Soil Color:	Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		43.0	22.5	6.18	36.8	68.9	0.01305	0.0281	**64.3**
5		33.0	22.5	6.18	26.8	50.2	0.01305	0.0193	**46.8**
15		23.0	22.5	6.18	16.8	31.5	0.01305	0.0119	**29.4**
30		20.5	22.5	6.18	14.3	26.8	0.01305	0.0086	**25.0**
60		18.0	22.4	6.22	11.8	22.0	0.01307	0.0062	**20.6**
250		16.0	22.5	6.18	9.8	18.4	0.01305	0.0031	**17.1**
1440		14.5	23	6.00	8.5	15.9	0.01297	0.0013	**14.8**

Soil Specimen Data		Other Corrections		
Tare No.	963			
Weight of Tare & Dry Material (g)	158.72	a - Factor	0.99	
Weight of Tare (g)	100.81			
Weight of Deflocculant (g)	5.0	Percent Finer than # 200	93.28	
Weight of Dry Material (g)	52.9			
		Specific Gravity	2.7	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	10/8/15	Checked By	KC	Date	10/14/15

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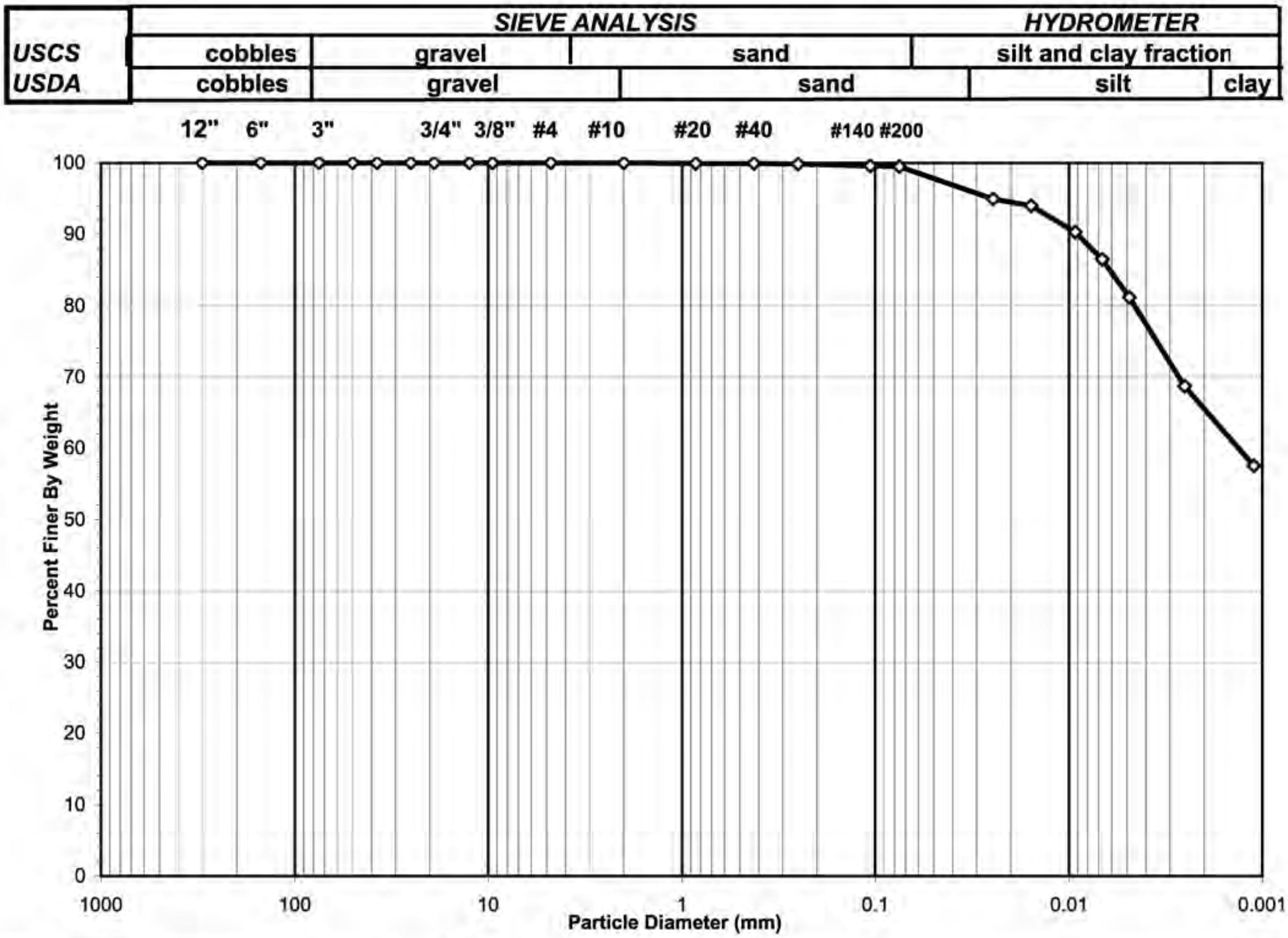
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	63.5-65.0
Project No.:	2015-485-004	Sample No.:	SS-15
Lab ID:	2015-485-004-013	Soil Color:	Brown / Gray



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	0.50
Finer Than #200	*Silt & Clay*	99.50

USCS Symbol:
CH, TESTED

USCS Classification:
FAT CLAY

 DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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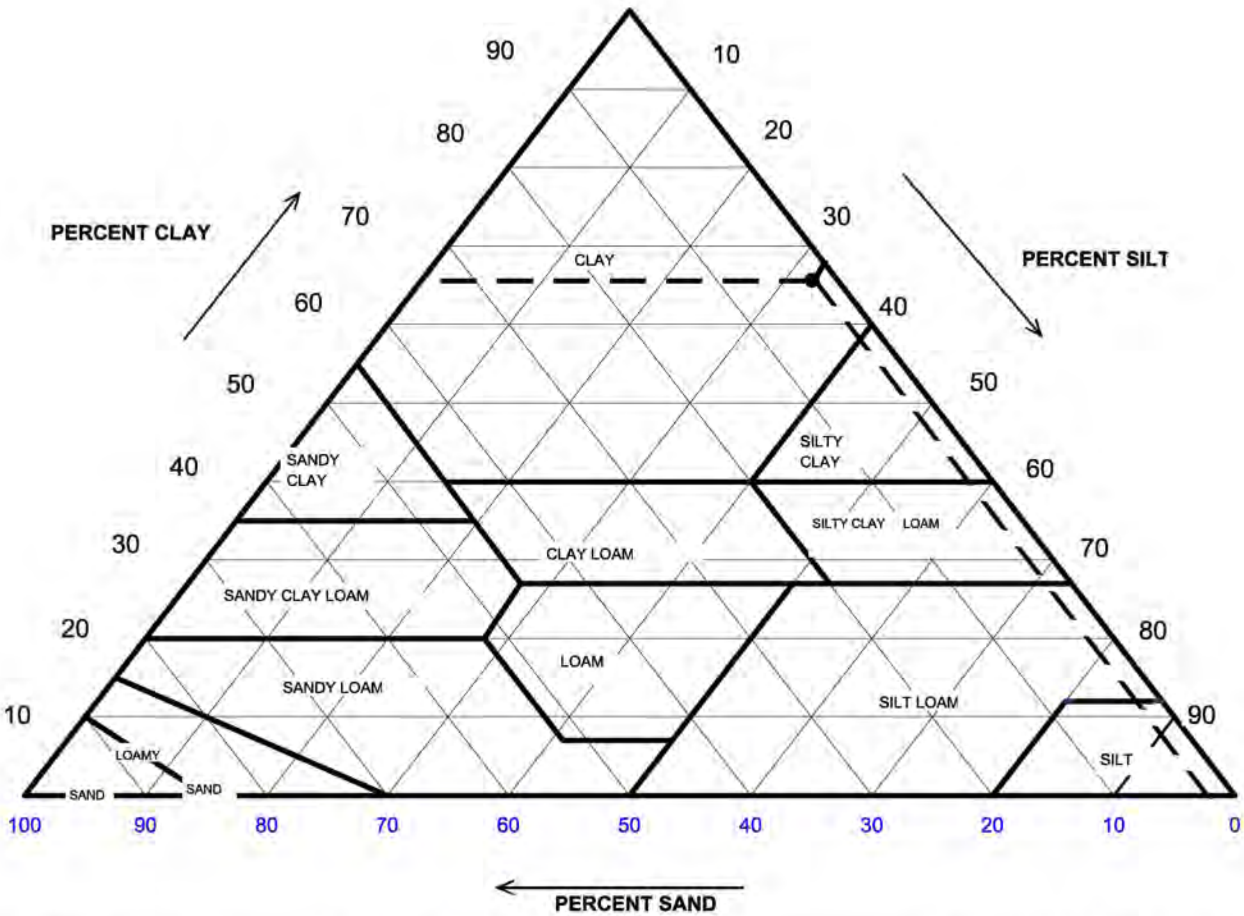
USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	63.5-65.0
Project No.:	2015-485-004	Sample No.:	SS-15
Lab ID:	2015-485-004-013	Soil Color:	Brown / Gray



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	0.04	**0.00**
2	99.96	*Sand*	2.12	**2.12**
0.05	97.84	*Silt*	32.25	**32.27**
0.002	65.59	*Clay*	65.59	**65.61**

USDA Classification: ***CLAY***

 DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	63.5-65.0
Project No.:	2015-485-004	Sample No.:	SS-15
Lab ID:	2015-485-004-013	Soil Color:	Brown / Gray

Moisture Content of Passing 3/4" Materia		Water Content of Retained 3/4" Material	
Tare No.	1427	Tare No.	NA
Weight of Tare & Wet Sample (g)	400.30	Weight of Tare & Wet Sample (g)	NA
Weight of Tare & Dry Sample (g)	309.37	Weight of Tare & Dry Sample (g)	NA
Weight of Tare (g)	145.62	Weight of Tare (g)	NA
Weight of Water (g)	90.93	Weight of Water (g)	NA
Weight of Dry Sample (g)	163.75	Weight of Dry Sample (g)	NA
Moisture Content (%)	**55.5**	**Moisture Content (%)**	**NA**

Wet Weight of -3/4" Sample (g)	NA	Weight of the Dry Sample (g)	163.75
Dry Weight of -3/4" Sample (g)	0.82	Weight of - #200 Material (g)	162.93
Wet Weight of +3/4" Sample (g)	NA	Weight of + #200 Material (g)	0.82
Dry Weight of +3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g)	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)		Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00		100.00	**100.00**
6"	150	0.00	0.00	0.00		100.00	**100.00**
3"	75	0.00	0.00	0.00		100.00	**100.00**
2"	50	0.00	0.00	0.00		100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00		100.00	**100.00**
1"	25.0	0.00	0.00	0.00		100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00		100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00		100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00		100.00	**100.00**
#4	4.75	0.00	0.00	0.00		100.00	**100.00**
#10	2.00	0.07	0.04	0.04		99.96	**99.96**
#20	0.85	0.11	0.07	0.11		99.89	**99.89**
#40	0.425	0.01	0.01	0.12		99.88	**99.88**
#60	0.250	0.10	0.06	0.18		99.82	**99.82**
#140	0.106	0.40	0.24	0.42		99.58	**99.58**
#200	0.075	0.13	0.08	0.50		99.50	**99.50**
Pan	-	162.93	99.50	100.00		-	-

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/14/15

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	63.5-65.0
Project No.:	2015-485-004	Sample No.:	SS-15
Lab ID:	2015-485-004-013	Soil Color:	Brown / Gray

Elapsed Time (min)		R Measured	Temp. (°C)	Composite Correction	R Corrected	N (%)	K Factor	Diameter (mm)	N' (%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		57.5	20.7	6.83	50.7	95.4	0.01333	0.0247	**94.9**
5		57.0	20.7	6.83	50.2	94.5	0.01333	0.0157	**94.0**
15		55.0	20.7	6.83	48.2	90.7	0.01333	0.0093	**90.3**
30		53.0	20.7	6.83	46.2	87.0	0.01333	0.0067	**86.5**
60		50.0	21.1	6.68	43.3	81.6	0.01327	0.0049	**81.2**
250		43.0	22.1	6.33	36.7	69.1	0.01311	0.0025	**68.7**
1440		37.0	22.2	6.29	30.7	57.8	0.01310	0.0011	**57.5**

Soil Specimen Data		Other Corrections		
Tare No.	528			
Weight of Tare & Dry Material (g)	149.93	a - Factor	0.99	
Weight of Tare (g)	92.36			
Weight of Deflocculant (g)	5.0	Percent Finer than # 200	99.50	
Weight of Dry Material (g)	52.6			
		Specific Gravity	2.7	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/12/15 Checked By KC Date 10/14/15

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SIEVE ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	73.5-75.0
Project No.:	2015-485-004	Sample No.:	SS-17
Lab ID:	2015-485-004-014	Soil Color:	Brown / Gray

USCS Symbol:
sp-sm, ASSUMED

USCS Classification:
POORLY GRADED SAND WITH SILT

D60 =	0.19	CC =	0.89
D30 =	0.14	CU =	1.80
D10 =	0.11		

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-3
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	73.5-75.0
Project No.:	2015-485-004	Sample No.:	SS-17
Lab ID:	2015-485-004-014	Soil Color:	Brown / Gray

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	679	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	377.70	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	327.97	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	95.02	Weight of Tare (g):	NA
Weight of Water (g):	49.73	Weight of Water (g):	NA
Weight of Dry Sample (g):	232.95	Weight of Dry Sample (g):	NA
Moisture Content (%):	**21.3**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	232.95
Dry Weight of - 3/4" Sample (g):	218.3	Weight of - #200 Material (g):	14.70
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	218.25
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.11	0.05	0.05	99.95	**99.95**
#20	0.850	0.08	0.03	0.08	99.92	**99.92**
#40	0.425	1.02	0.44	0.52	99.48	**99.48**
#60	0.250	40.58	17.42	17.94	82.06	**82.06**
#140	0.106	170.19	73.06	91.00	9.00	**9.00**
#200	0.075	6.27	2.69	93.69	6.31	**6.31**
Pan	-	14.70	6.31	100.00	-	**-**

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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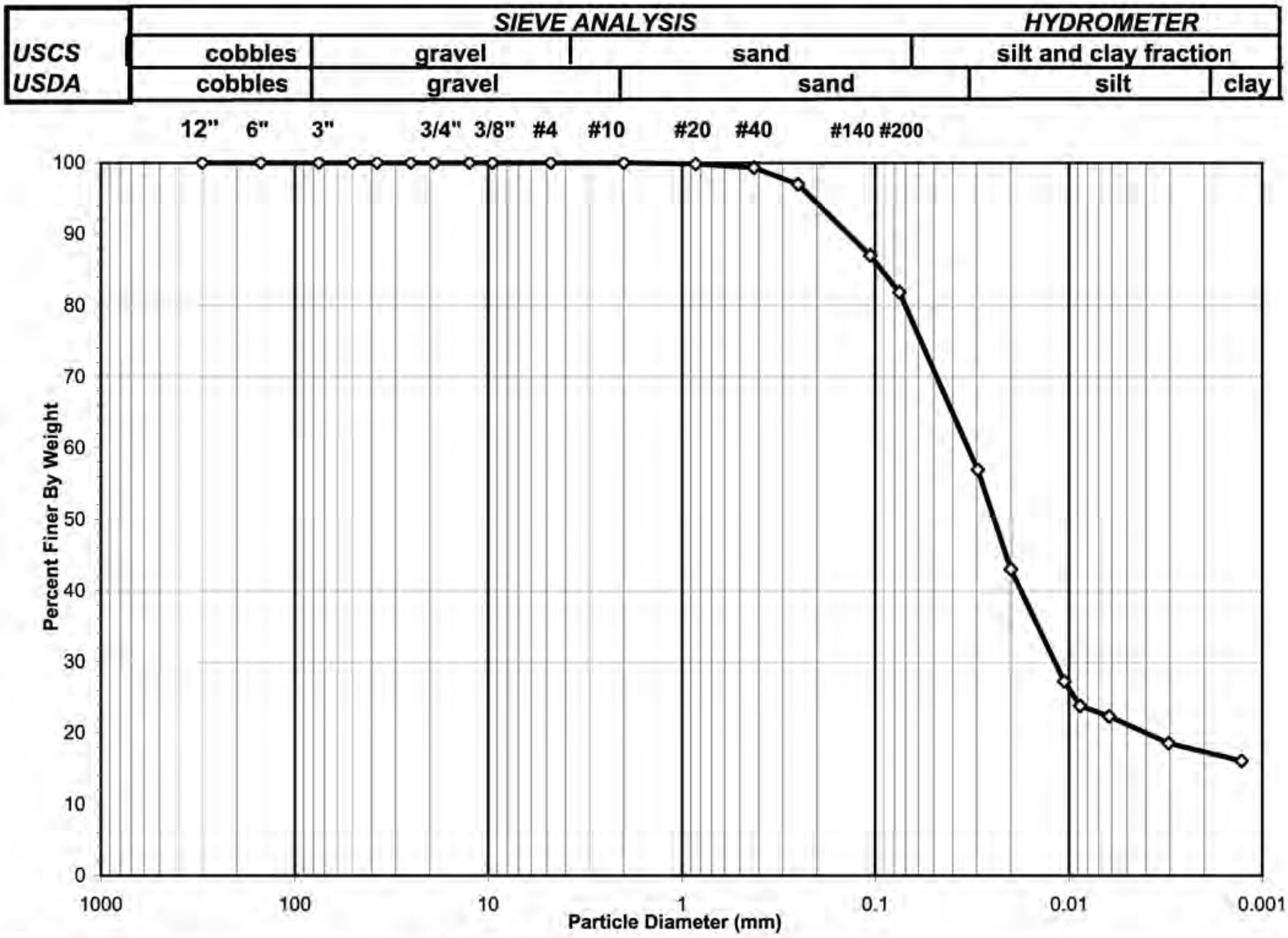
SIEVE AND HYDROMETER ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	13.5-15.0
Project No.:	2015-485-004	Sample No.:	SS-4
Lab ID:	2015-485-004-015	Soil Color:	Gray / Brown



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	18.17
Finer Than #200	*Silt & Clay*	81.83

USCS Symbol:
cl, ASSUMED

USCS Classification:
LEAN CLAY WITH SAND

 DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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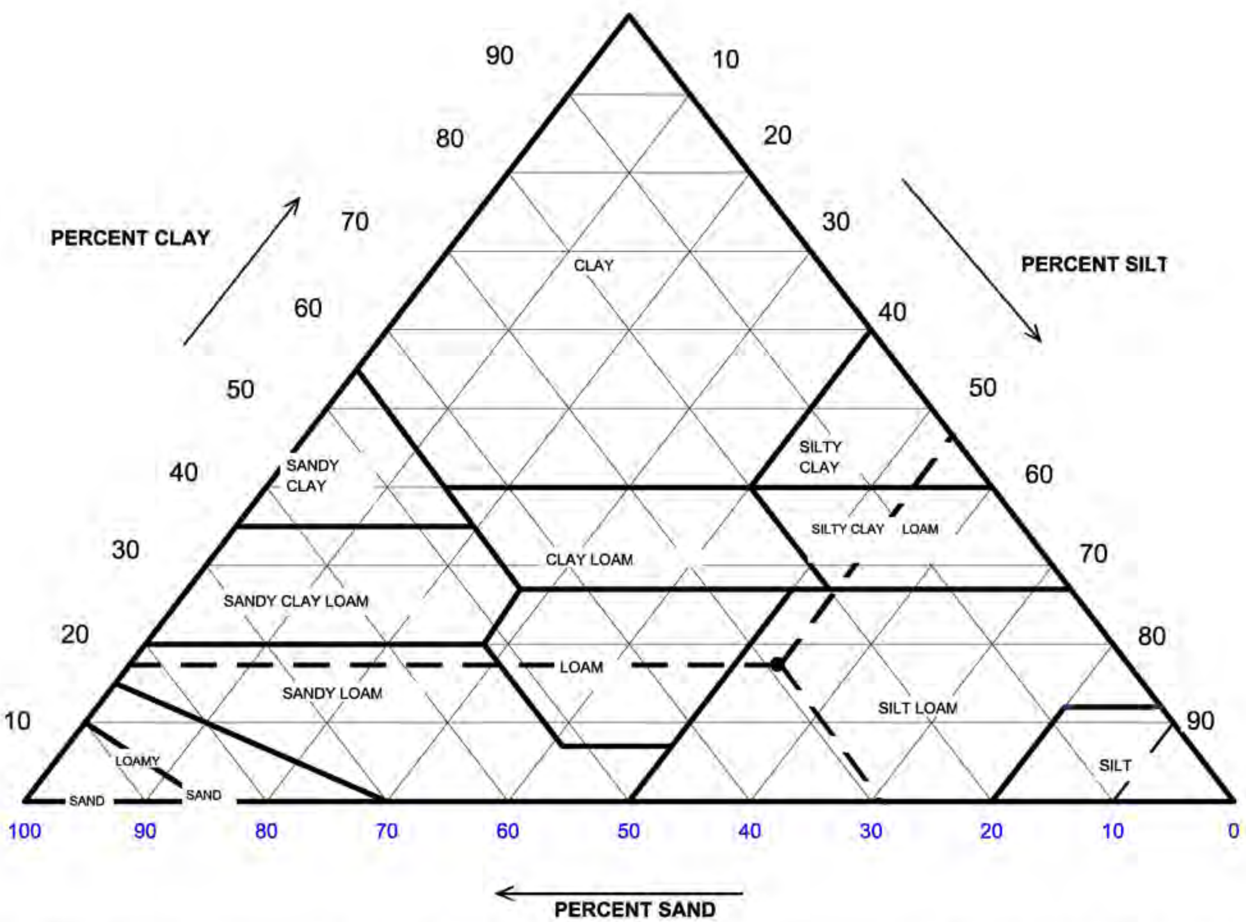
USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	13.5-15.0
Project No.:	2015-485-004	Sample No.:	SS-4
Lab ID:	2015-485-004-015	Soil Color:	Gray / Brown



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	0.00	**0.00**
2	100.00	*Sand*	29.02	**29.02**
0.05	70.98	*Silt*	53.63	**53.63**
0.002	17.35	*Clay*	17.35	**17.35**

USDA Classification: ***SILT LOAM***

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	13.5-15.0
Project No.:	2015-485-004	Sample No.:	SS-4
Lab ID:	2015-485-004-015	Soil Color:	Gray / Brown

Moisture Content of Passing 3/4" Materia		Water Content of Retained 3/4" Material	
Tare No.	2343	Tare No.	NA
Weight of Tare & Wet Sample (g)	497.30	Weight of Tare & Wet Sample (g)	NA
Weight of Tare & Dry Sample (g)	409.30	Weight of Tare & Dry Sample (g)	NA
Weight of Tare (g)	93.48	Weight of Tare (g)	NA
Weight of Water (g)	88.00	Weight of Water (g)	NA
Weight of Dry Sample (g)	315.82	Weight of Dry Sample (g)	NA
Moisture Content (%)	**27.9**	**Moisture Content (%)**	**NA**

Wet Weight of -3/4" Sample (g)	NA	Weight of the Dry Sample (g)	315.82
Dry Weight of -3/4" Sample (g)	57.40	Weight of - #200 Material (g)	258.42
Wet Weight of +3/4" Sample (g)	NA	Weight of + #200 Material (g)	57.40
Dry Weight of +3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g)	NA		

Sieve Size	Sieve Opening	Weight of Soil Retained	Percent Retained	Accumulated Percent Retained		Percent Finer	Accumulated Percent Finer
	(mm)	(g)	(%)	(%)		(%)	(%)
12"	300	0.00	0.00	0.00		100.00	**100.00**
6"	150	0.00	0.00	0.00		100.00	**100.00**
3"	75	0.00	0.00	0.00		100.00	**100.00**
2"	50	0.00	0.00	0.00		100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00		100.00	**100.00**
1"	25.0	0.00	0.00	0.00		100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00		100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00		100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00		100.00	**100.00**
#4	4.75	0.00	0.00	0.00		100.00	**100.00**
#10	2.00	0.00	0.00	0.00		100.00	**100.00**
#20	0.85	0.49	0.16	0.16		99.84	**99.84**
#40	0.425	1.75	0.55	0.71		99.29	**99.29**
#60	0.250	7.33	2.32	3.03		96.97	**96.97**
#140	0.106	31.42	9.95	12.98		87.02	**87.02**
#200	0.075	16.41	5.20	18.17		81.83	**81.83**
Pan	-	258.42	81.83	100.00		-	-

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/14/15

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	13.5-15.0
Project No.:	2015-485-004	Sample No.:	SS-4
Lab ID:	2015-485-004-015	Soil Color:	Gray / Brown

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		39.5	20.7	6.83	32.7	69.5	0.01333	0.0295	**56.9**
5		31.5	20.7	6.83	24.7	52.5	0.01333	0.0199	**43.0**
20		22.5	20.7	6.83	15.7	33.4	0.01333	0.0106	**27.3**
30		20.5	20.7	6.83	13.7	29.1	0.01333	0.0088	**23.8**
60		19.5	21.1	6.68	12.8	27.3	0.01327	0.0062	**22.3**
250		17.0	22.1	6.33	10.7	22.7	0.01311	0.0030	**18.6**
1440		15.5	22.2	6.29	9.2	19.6	0.01310	0.0013	**16.0**

Soil Specimen Data		Other Corrections		
Tare No.	644			
Weight of Tare & Dry Material (g)	151.17	a - Factor	0.99	
Weight of Tare (g)	99.66			
Weight of Deflocculant (g)	5.0	Percent Finer than # 200	81.83	
Weight of Dry Material (g)	46.5			
		Specific Gravity	2.7	Assumed

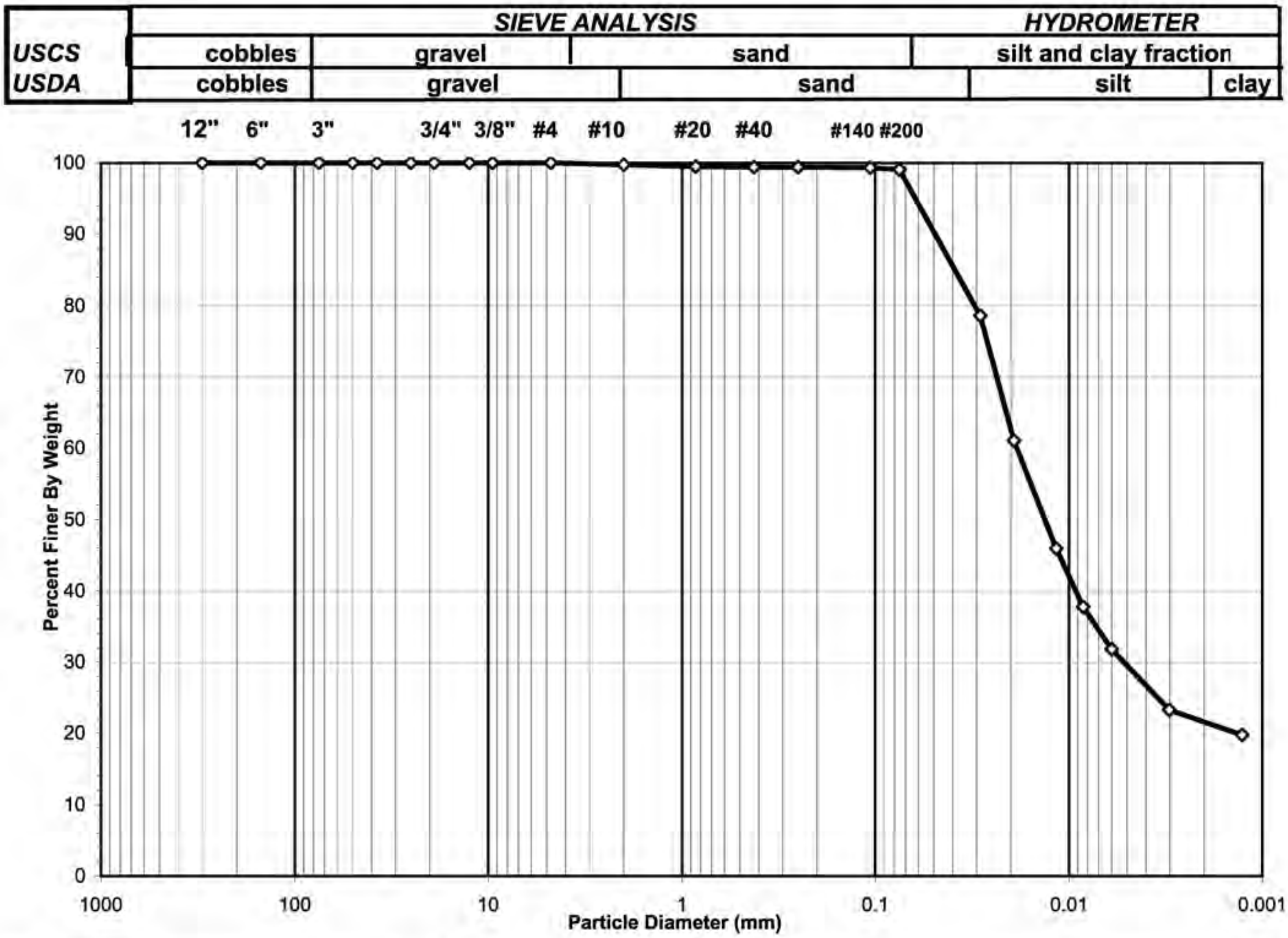
Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By	TO	Date	10/12/15	Checked By	KC	Date	10/14/15

SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	31.2-31.7
Project No.:	2015-485-004	Sample No.:	ST-2
Lab ID:	2015-485-004-016	Soil Color:	Gray



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.03
#4 To #200	*Sand*	0.88
Finer Than #200	*Silt & Clay*	99.09

USCS Symbol:

CL, TESTED

USCS Classification:

LEAN CLAY

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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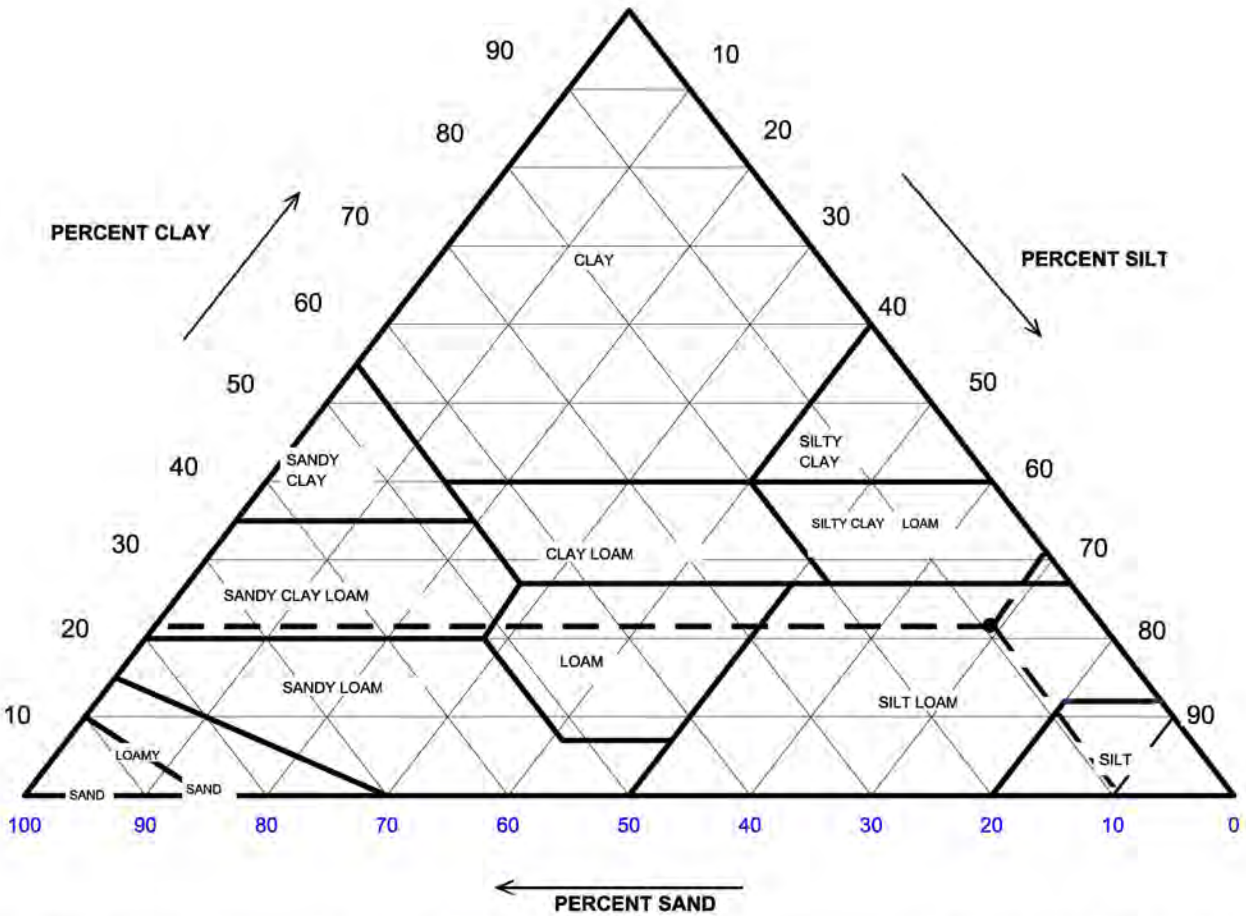
USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	31.2-31.7
Project No.:	2015-485-004	Sample No.:	ST-2
Lab ID:	2015-485-004-016	Soil Color:	Gray



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	0.23	**0.00**
2	99.77	*Sand*	9.31	**9.33**
0.05	90.46	*Silt*	68.88	**69.04**
0.002	21.58	*Clay*	21.58	**21.63**

USDA Classification: ***SILT LOAM***

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	31.2-31.7
Project No.:	2015-485-004	Sample No.:	ST-2
Lab ID:	2015-485-004-016	Soil Color:	Gray

Moisture Content of Passing 3/4" Materia		Water Content of Retained 3/4" Material	
Tare No.	1445	Tare No.	NA
Weight of Tare & Wet Sample (g)	741.60	Weight of Tare & Wet Sample (g)	NA
Weight of Tare & Dry Sample (g)	553.20	Weight of Tare & Dry Sample (g)	NA
Weight of Tare (g)	146.37	Weight of Tare (g)	NA
Weight of Water (g)	188.40	Weight of Water (g)	NA
Weight of Dry Sample (g)	406.83	Weight of Dry Sample (g)	NA
Moisture Content (%	**46.3**	**Moisture Content (%**	**NA**

Wet Weight of -3/4" Sample (g)	NA	Weight of the Dry Sample (g)	406.83
Dry Weight of -3/4" Sample (g)	3.71	Weight of - #200 Material (g)	403.12
Wet Weight of +3/4" Sample (g)	NA	Weight of + #200 Material (g)	3.71
Dry Weight of +3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g)	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)		Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00		100.00	**100.00**
6"	150	0.00	0.00	0.00		100.00	**100.00**
3"	75	0.00	0.00	0.00		100.00	**100.00**
2"	50	0.00	0.00	0.00		100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00		100.00	**100.00**
1"	25.0	0.00	0.00	0.00		100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00		100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00		100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00		100.00	**100.00**
#4	4.75	0.14	0.03	0.03		99.97	**99.97**
#10	2.00	0.79	0.19	0.23		99.77	**99.77**
#20	0.85	1.13	0.28	0.51		99.49	**99.49**
#40	0.425	0.32	0.08	0.59		99.41	**99.41**
#60	0.250	0.17	0.04	0.63		99.37	**99.37**
#140	0.106	0.35	0.09	0.71		99.29	**99.29**
#200	0.075	0.81	0.20	0.91		99.09	**99.09**
Pan	-	403.12	99.09	100.00		-	-

Tested By AMC Date 9/30/15 Checked By KC Date 10/14/15

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	31.2-31.7
Project No.:	2015-485-004	Sample No.:	ST-2
Lab ID:	2015-485-004-016	Soil Color:	Gray

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		39.5	23.4	5.86	33.6	79.3	0.01291	0.0286	**78.6**
5		32.0	23.4	5.86	26.1	61.6	0.01291	0.0192	**61.1**
15		25.5	23.4	5.86	19.6	46.3	0.01291	0.0116	**45.9**
30		22.0	23.4	5.86	16.1	38.1	0.01291	0.0084	**37.7**
60		19.5	23.3	5.89	13.6	32.1	0.01293	0.0060	**31.8**
250		16.0	22.9	6.04	10.0	23.5	0.01299	0.0030	**23.3**
1440		14.5	22.9	6.04	8.5	20.0	0.01299	0.0013	**19.8**

Soil Specimen Data		**Other Corrections**		
Tare No.	949			
Weight of Tare & Dry Material (g)	144.21	a - Factor	0.99	
Weight of Tare (g)	97.22			
Weight of Deflocculant (g)	5.0	Percent Finer than # 200	99.09	
Weight of Dry Material (g)	42.0			
		Specific Gravity	2.7	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 9/30/15 Checked By KC Date 10/14/15

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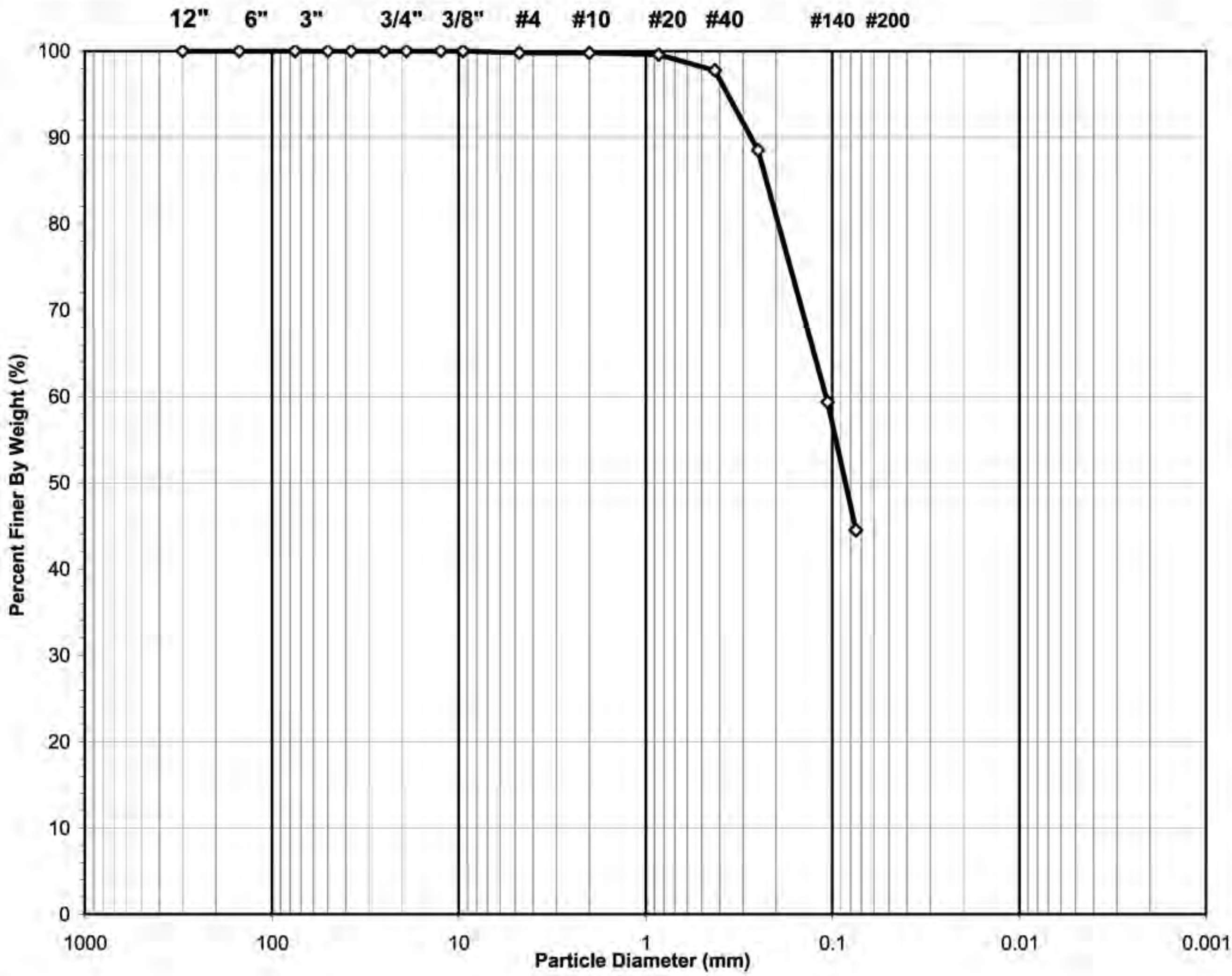
SIEVE ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	48.5-50.0
Project No.:	2015-485-004	Sample No.:	SS-11
Lab ID:	2015-485-004-018	Soil Color:	Gray

USCS	*SIEVE ANALYSIS*		*HYDROMETER*
	gravel	sand	silt and clay



USCS Symbol:
sm, ASSUMED

USCS Classification:
SILTY SAND

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	48.5-50.0
Project No.:	2015-485-004	Sample No.:	SS-11
Lab ID:	2015-485-004-018	Soil Color:	Gray

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	301	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	655.70	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	523.00	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	105.97	Weight of Tare (g):	NA
Weight of Water (g):	132.70	Weight of Water (g):	NA
Weight of Dry Sample (g):	417.03	Weight of Dry Sample (g):	NA
Moisture Content (%):	**31.8**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	417.03
Dry Weight of - 3/4" Sample (g):	231.4	Weight of - #200 Material (g):	185.64
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	231.39
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.88	0.21	0.21	99.79	**99.79**
#10	2.00	0.09	0.02	0.23	99.77	**99.77**
#20	0.850	0.90	0.22	0.45	99.55	**99.55**
#40	0.425	7.35	1.76	2.21	97.79	**97.79**
#60	0.250	38.63	9.26	11.47	88.53	**88.53**
#140	0.106	121.70	29.18	40.66	59.34	**59.34**
#200	0.075	61.84	14.83	55.49	44.51	**44.51**
Pan	-	185.64	44.51	100.00	-	-

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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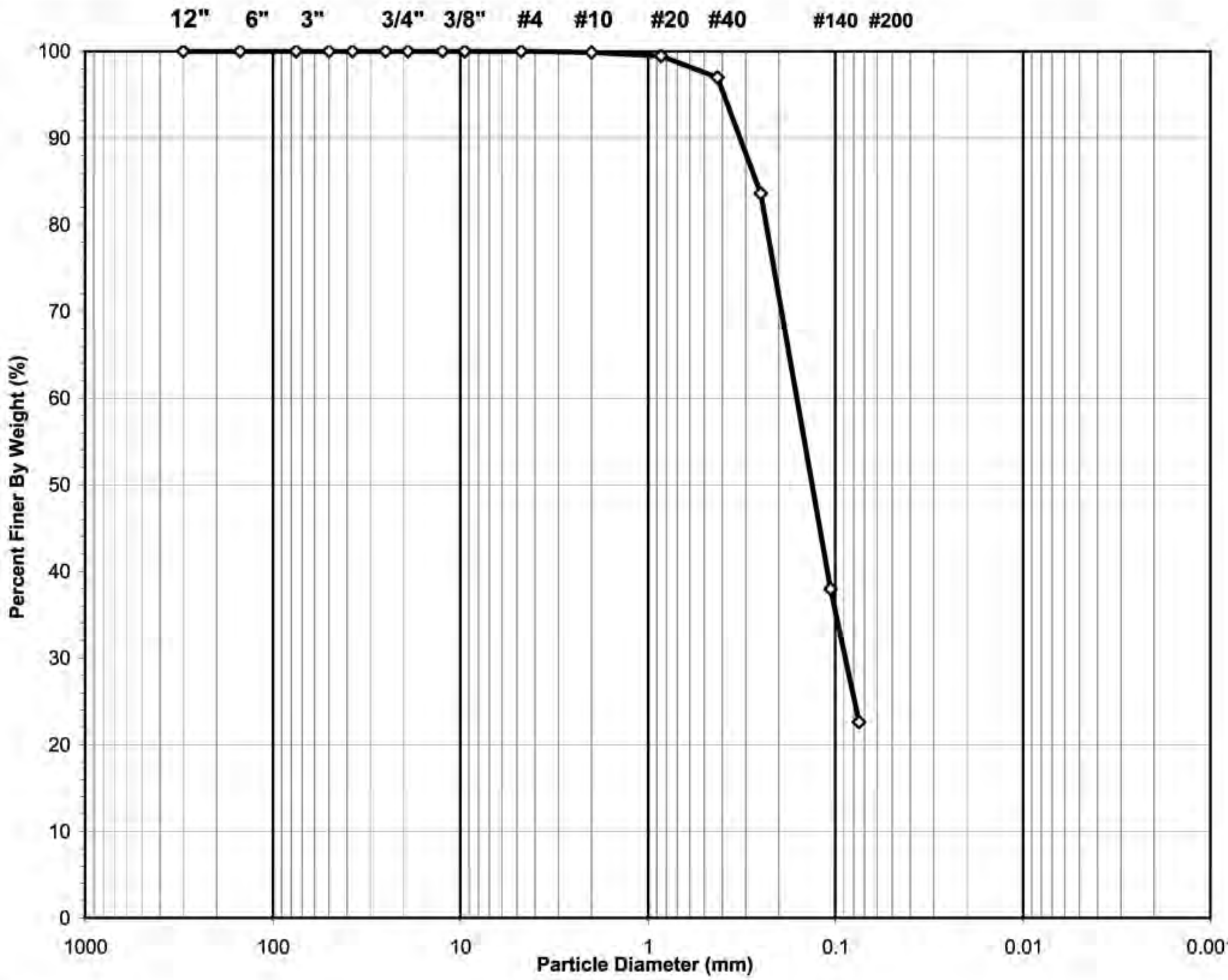
SIEVE ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	53.5-55.0
Project No.:	2015-485-004	Sample No.:	SS-12
Lab ID:	2015-485-004-019	Soil Color:	Gray

USCS	SIEVE ANALYSIS		HYDROMETER
	gravel	sand	silt and clay



USCS Symbol:
sm, ASSUMED

USCS Classification:
SILTY SAND

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-4
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	53.5-55.0
Project No.:	2015-485-004	Sample No.:	SS-12
Lab ID:	2015-485-004-019	Soil Color:	Gray

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	929	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	694.40	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	605.10	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	100.14	Weight of Tare (g):	NA
Weight of Water (g):	89.30	Weight of Water (g):	NA
Weight of Dry Sample (g):	504.96	Weight of Dry Sample (g):	NA
Moisture Content (%):	**17.7**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	504.96
Dry Weight of - 3/4" Sample (g):	390.6	Weight of - #200 Material (g):	114.38
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	390.58
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.57	0.11	0.11	99.89	**99.89**
#20	0.850	2.41	0.48	0.59	99.41	**99.41**
#40	0.425	12.04	2.38	2.97	97.03	**97.03**
#60	0.250	67.76	13.42	16.39	83.61	**83.61**
#140	0.106	230.47	45.64	62.03	37.97	**37.97**
#200	0.075	77.33	15.31	77.35	22.65	**22.65**
Pan	-	114.38	22.65	100.00	-	-

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

DCN: CT-S3C DATE 3/20/13 REVISION: 3

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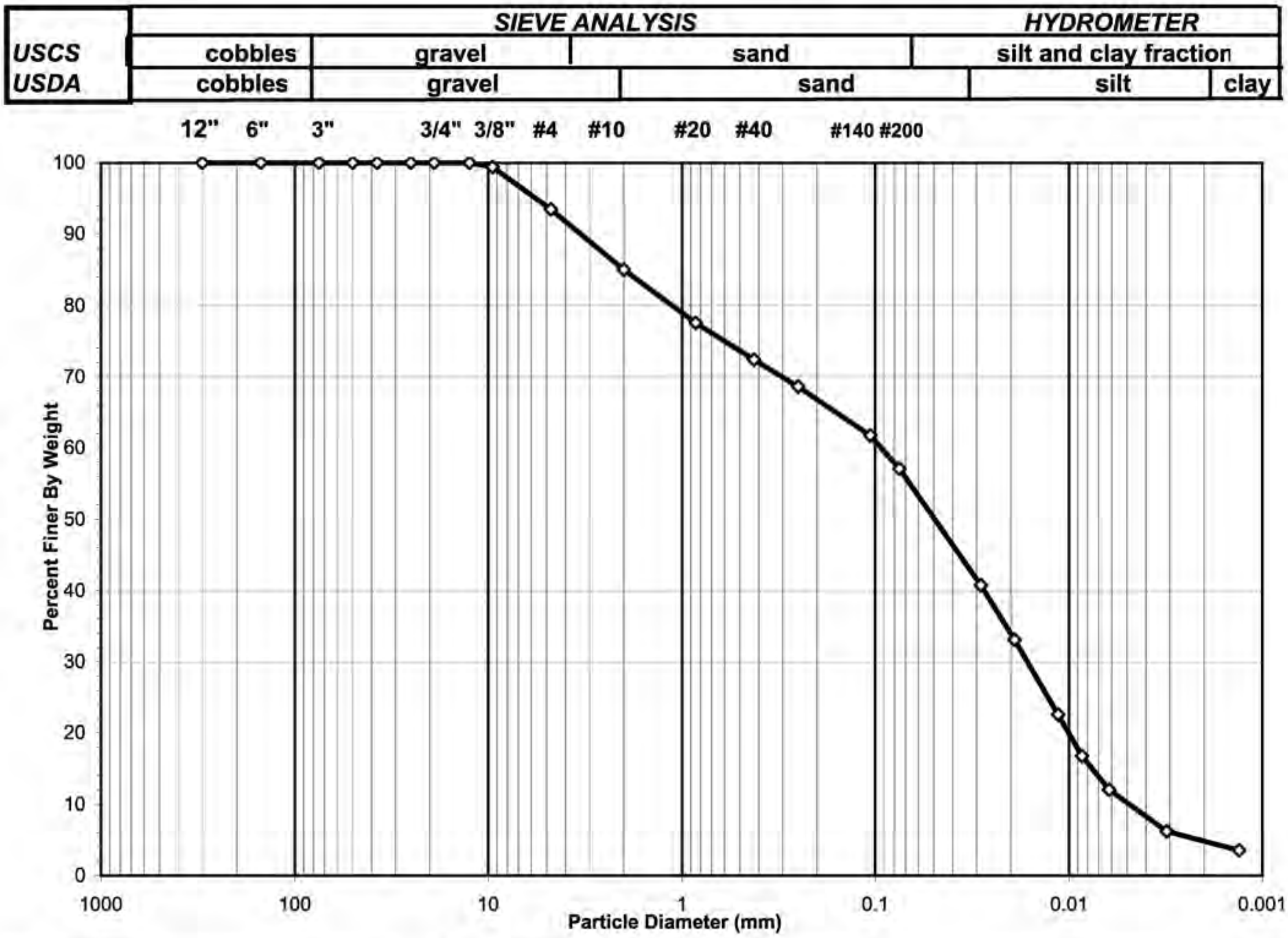
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-5
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	6.0-7.5
Project No.:	2015-485-004	Sample No.:	SS-3
Lab ID:	2015-485-004-020	Soil Color:	Gray



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	6.55
#4 To #200	*Sand*	36.36
Finer Than #200	*Silt & Clay*	57.09

USCS Symbol:

ml, ASSUMED

USCS Classification:

SANDY SILT

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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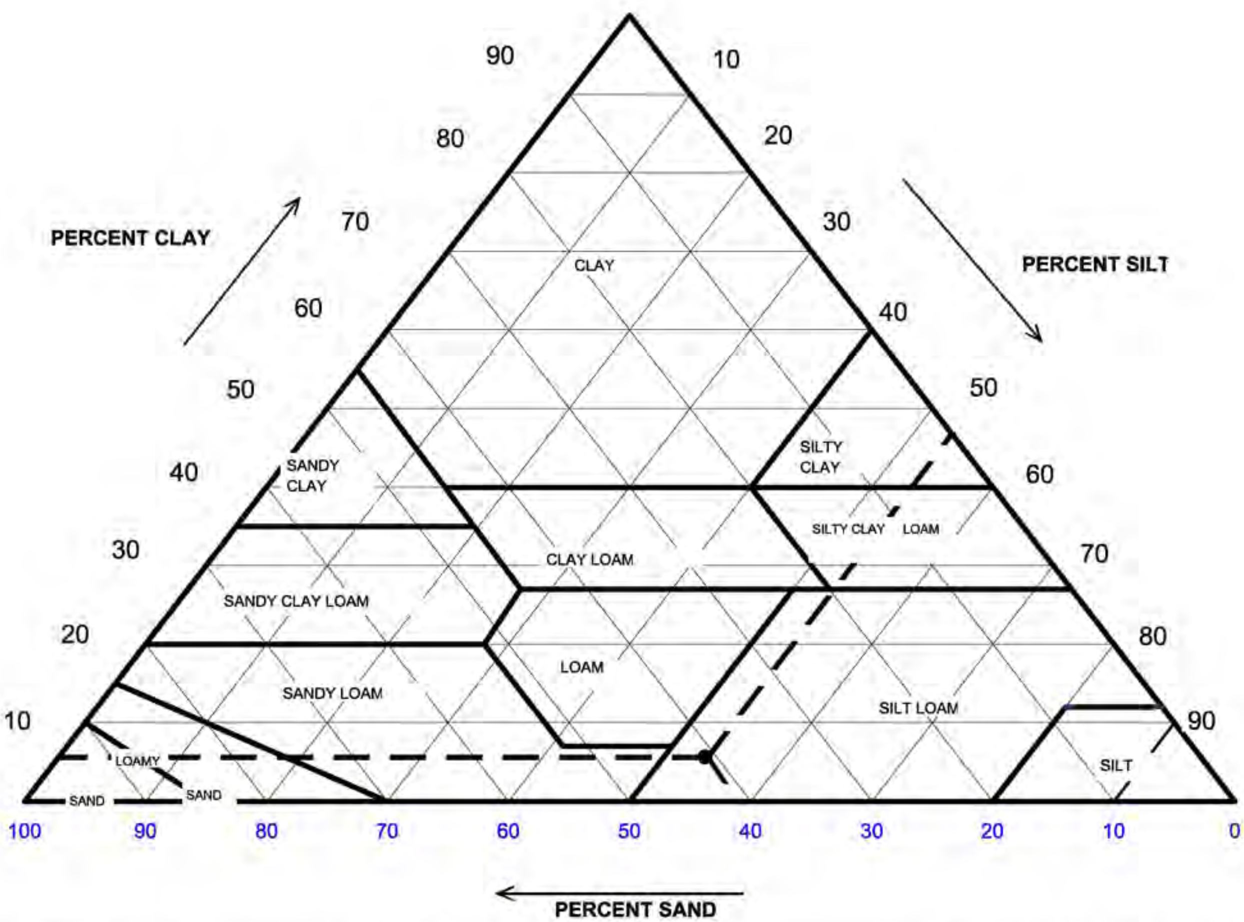
USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-5
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	6.0-7.5
Project No.:	2015-485-004	Sample No.:	SS-3
Lab ID:	2015-485-004-020	Soil Color:	Gray



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	14.99	**0.00**
2	85.01	*Sand*	34.80	**40.93**
0.05	50.21	*Silt*	45.40	**53.40**
0.002	4.82	*Clay*	4.82	**5.66**

USDA Classification: ***SILT LOAM***

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-5
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	6.0-7.5
Project No.:	2015-485-004	Sample No.:	SS-3
Lab ID:	2015-485-004-020	Soil Color:	Gray

Moisture Content of Passing 3/4" Materia		Water Content of Retained 3/4" Material	
Tare No.	889	Tare No.	NA
Weight of Tare & Wet Sample (g)	470.70	Weight of Tare & Wet Sample (g)	NA
Weight of Tare & Dry Sample (g)	399.92	Weight of Tare & Dry Sample (g)	NA
Weight of Tare (g)	100.62	Weight of Tare (g)	NA
Weight of Water (g)	70.78	Weight of Water (g)	NA
Weight of Dry Sample (g)	299.30	Weight of Dry Sample (g)	NA
Moisture Content (%	**23.6**	**Moisture Content (%**	**NA**

Wet Weight of -3/4" Sample (g)	NA	Weight of the Dry Sample (g)	299.30
Dry Weight of -3/4" Sample (g)	128.44	Weight of - #200 Material (g)	170.86
Wet Weight of +3/4" Sample (g)	NA	Weight of + #200 Material (g)	128.44
Dry Weight of +3/4" Sample (g)	0.00		
Total Dry Weight of Sample (g)	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.5	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	1.92	0.64	0.64	99.36	**99.36**
#4	4.75	17.69	5.91	6.55	93.45	**93.45**
#10	2.00	25.25	8.44	14.99	85.01	**85.01**
#20	0.85	22.24	7.43	22.42	77.58	**77.58**
#40	0.425	15.42	5.15	27.57	72.43	**72.43**
#60	0.250	11.29	3.77	31.34	68.66	**68.66**
#140	0.106	20.75	6.93	38.28	61.72	**61.72**
#200	0.075	13.88	4.64	42.91	57.09	**57.09**
Pan	-	170.86	57.09	100.00	-	-

Tested By	RAL	Date	10/8/15	Checked By	KC	Date	10/12/15

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-5
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	6.0-7.5
Project No.:	2015-485-004	Sample No.:	SS-3
Lab ID:	2015-485-004-020	Soil Color:	Gray

Elapsed Time		R Measured	Temp.	Composite Correction	R Corrected	N	K Factor	Diameter	N'
(min)			(°C)			(%)		(mm)	(%)
0		NA	NA	NA	NA	NA	NA	NA	NA
2		41.0	22.5	6.18	34.8	71.3	0.01305	0.0286	**40.7**
5		34.5	22.5	6.18	28.3	58.0	0.01305	0.0190	**33.1**
16		25.5	22.5	6.18	19.3	39.6	0.01305	0.0114	**22.6**
30		20.5	22.5	6.18	14.3	29.3	0.01305	0.0086	**16.7**
60		16.5	22.4	6.22	10.3	21.1	0.01307	0.0062	**12.0**
250		11.5	22.5	6.18	5.3	10.9	0.01305	0.0031	**6.2**
1440		9.0	23	6.00	3.0	6.1	0.01297	0.0013	**3.5**

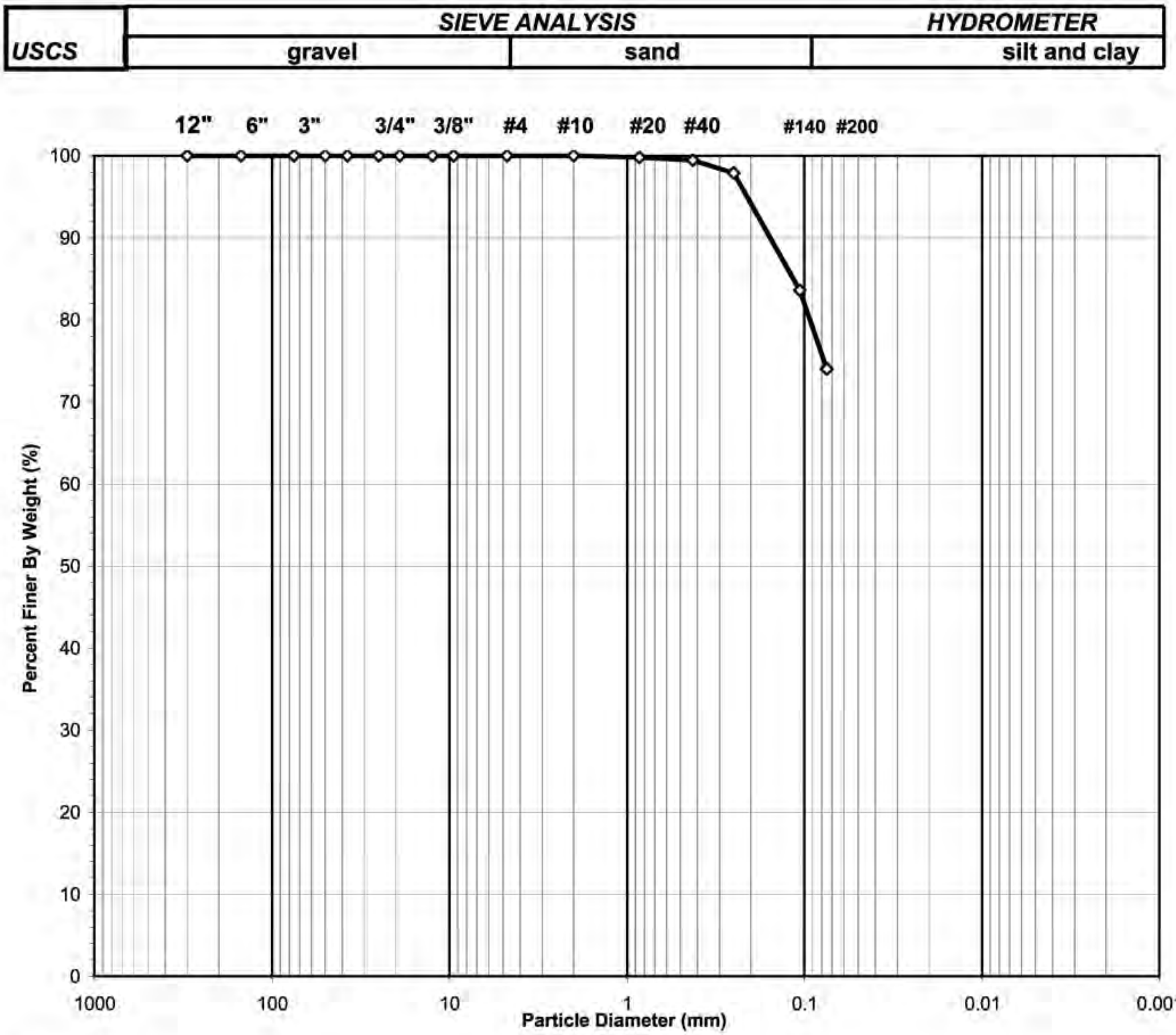
Soil Specimen Data		**Other Corrections**		
Tare No.	925			
Weight of Tare & Dry Material (g)	153.10	a - Factor	0.99	
Weight of Tare (g)	99.77			
Weight of Deflocculant (g)	5.0	Percent Finer than # 200	57.09	
Weight of Dry Material (g)	48.3			
		Specific Gravity	2.7	Assumed

Note: *Hydrometer test is performed on - # 200 sieve material.*

Tested By TO Date 10/8/15 Checked By KC Date 10/12/15

SIEVE ANALYSIS
ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-5
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	38.5-40.0
Project No.:	2015-485-004	Sample No.:	SS-10
Lab ID:	2015-485-004-021	Soil Color:	Brown



USCS Symbol:
CL-ML, TESTED

USCS Classification:
SILTY CLAY WITH SAND

Tested By	HL	Date	10/5/15	Checked By	KC	Date	10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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WASH SIEVE ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-5
Client Reference:	Dynegy-Wood River Pwr. Sta. 60440115	Depth (ft):	38.5-40.0
Project No.:	2015-485-004	Sample No.:	SS-10
Lab ID:	2015-485-004-021	Soil Color:	Brown

Moisture Content of Passing 3/4" Sample		Water Content of Retained 3/4" Sample	
Tare No.:	503	Tare No.:	NA
Wt. of Tare & Wet Sample (g):	659.90	Weight of Tare & Wet Sample (g):	NA
Wt. of Tare & Dry Sample (g):	544.20	Weight of Tare & Dry Sample (g):	NA
Weight of Tare (g):	93.31	Weight of Tare (g):	NA
Weight of Water (g):	115.70	Weight of Water (g):	NA
Weight of Dry Sample (g):	450.89	Weight of Dry Sample (g):	NA
Moisture Content (%):	**25.7**	**Moisture Content (%):**	**NA**

Wet Weight of -3/4" Sample (g):	NA	Weight of the Dry Sample (g):	450.89
Dry Weight of - 3/4" Sample (g):	117.0	Weight of - #200 Material (g):	333.94
Wet Weight of +3/4" Sample (g):	NA	Weight of + #200 Material (g):	116.95
Dry Weight of + 3/4" Sample (g):	0.00		
Total Dry Weight of Sample (g):	NA		

Sieve Size	Sieve Opening (mm)	Weight of Soil Retained (g)	Percent Retained (%)	Accumulated Percent Retained (%)	Percent Finer (%)	Accumulated Percent Finer (%)
12"	300	0.00	0.00	0.00	100.00	**100.00**
6"	150	0.00	0.00	0.00	100.00	**100.00**
3"	75	0.00	0.00	0.00	100.00	**100.00**
2"	50	0.00	0.00	0.00	100.00	**100.00**
1 1/2"	37.5	0.00	0.00	0.00	100.00	**100.00**
1"	25.0	0.00	0.00	0.00	100.00	**100.00**
3/4"	19.0	0.00	0.00	0.00	100.00	**100.00**
1/2"	12.50	0.00	0.00	0.00	100.00	**100.00**
3/8"	9.50	0.00	0.00	0.00	100.00	**100.00**
#4	4.75	0.00	0.00	0.00	100.00	**100.00**
#10	2.00	0.12	0.03	0.03	99.97	**99.97**
#20	0.850	0.77	0.17	0.20	99.80	**99.80**
#40	0.425	1.63	0.36	0.56	99.44	**99.44**
#60	0.250	6.85	1.52	2.08	97.92	**97.92**
#140	0.106	64.39	14.28	16.36	83.64	**83.64**
#200	0.075	43.19	9.58	25.94	74.06	**74.06**
Pan	-	333.94	74.06	100.00	-	**-**

Tested By HL Date 10/5/15 Checked By KC Date 10/12/15

 DCN: CT-S3C DATE 3/20/13 REVISION: 3

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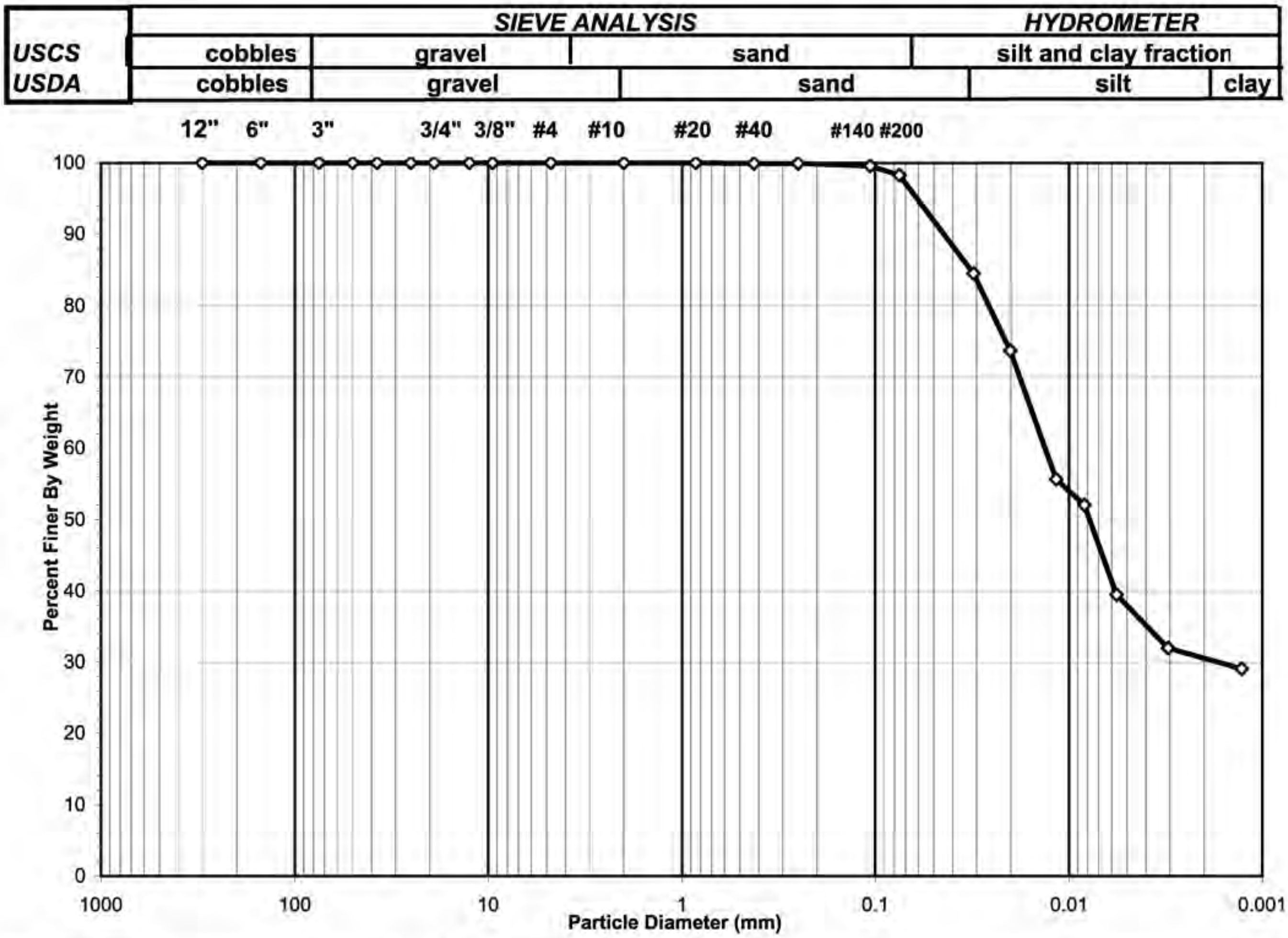
SIEVE AND HYDROMETER ANALYSIS

ASTM D 422-63 (2007)

Client:	AECOM	Boring No.:	B-5
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	55.0-55.5
Project No.:	2015-485-004	Sample No.:	ST-5
Lab ID:	2015-485-004-022	Soil Color:	Gray



USCS Summary		
Sieve Sizes (mm)		**Percentage**
Greater Than #4	*Gravel*	0.00
#4 To #200	*Sand*	1.68
Finer Than #200	*Silt & Clay*	98.32

USCS Symbol:

CL, TESTED

USCS Classification:

LEAN CLAY

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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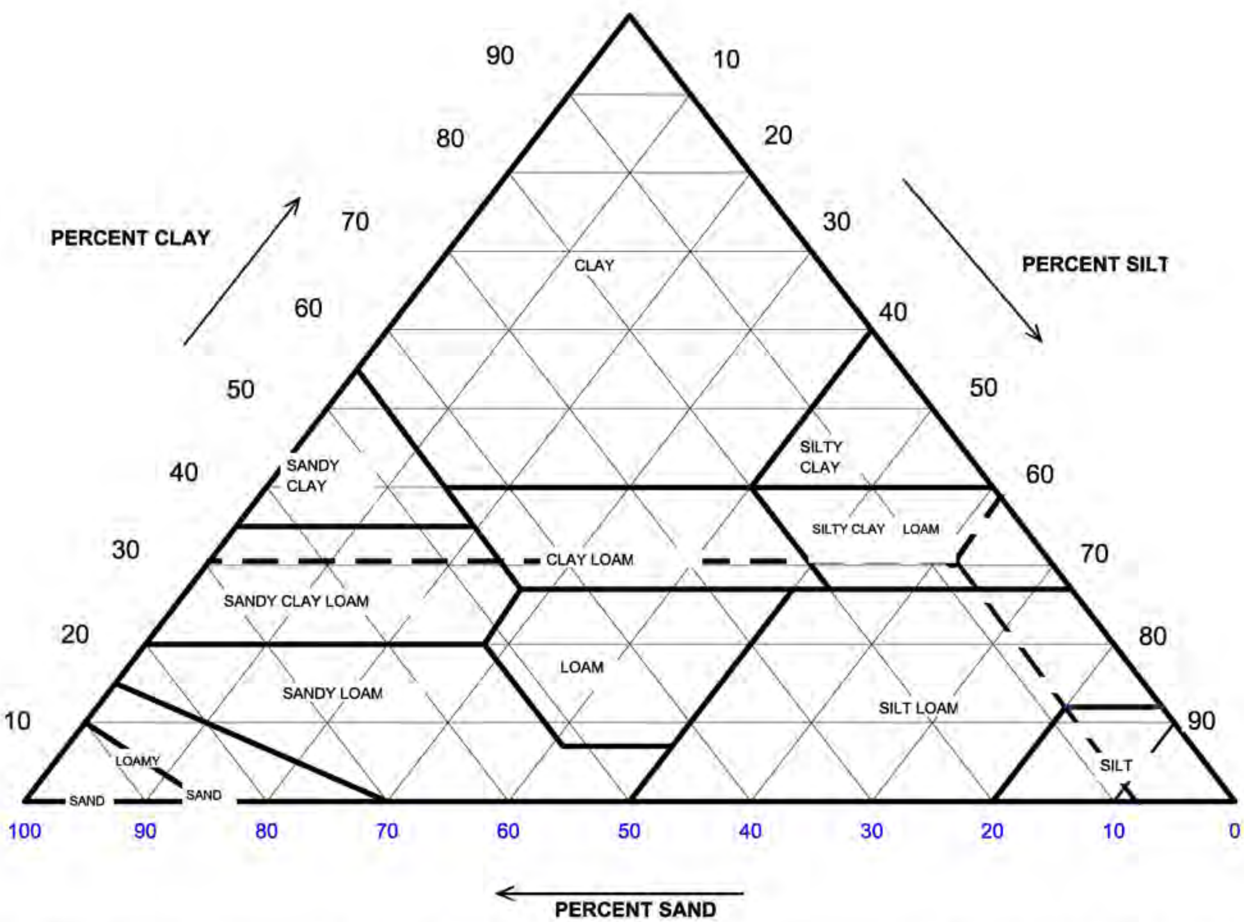
USDA CLASSIFICATION CHART

Client:	AECOM	Boring No.:	B-5
Client Reference:	Dynegy - Wood River Pwr. Sta. 60440115	Depth (ft):	55.0-55.5
Project No.:	2015-485-004	Sample No.:	ST-5
Lab ID:	2015-485-004-022	Soil Color:	Gray



Particle Size	Percent Finer	USDA SUMMARY	Actual Percentage	Corrected % of Minus 2.0 mm material for USDA Classificat.
(mm)	(%)		(%)	(%)
		Gravel	0.01	**0.00**
2	99.99	*Sand*	8.03	**8.03**
0.05	91.96	*Silt*	61.40	**61.41**
0.002	30.56	*Clay*	30.56	**30.56**

USDA Classification: ***SILTY CLAY LOAM***

DCN: CT-S3A DATE: 3/18/13 REVISION: 11

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ATTACHMENT 2

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217) 782-3397
Bruce Rauner, Governor   Alec Messina, Director

Attachment 2

May 25, 2017

Mr. Rick Diericx, Managing Director-Environmental
Dynegy Midwest Generation, LLC
1500 Eastport Plaza Drive
Collinsville, Illinois 62234-6135

Dear Mr. Diericx;

This transmittal responds to the Dynegy Midwest Generation, LLC (Dynegy) submissions regarding the closure and post-closure care plan for the Wood River West Ash Complex. The Illinois Environmental Protection Agency ("Agency") has reviewed Dynegy's Closure and Post-Closure Care Plan for the Wood River West Ash Complex, Parts I and II (Plan) dated November 28, 2016, Addenda to the Plan dated April 28, 2017 and the Revision to the Addenda dated May 18, 2017.

The Agency has reviewed the three documents referenced above as a whole, with later documents amending or clarifying only those specific parts addressed in those documents. The Agency approves the Plan as presented in these documents. The Agency also finds the closure and post-closure plan presented by Dynegy to be an adequate corrective action. Therefore, the groundwater management zone (GMZ) application presented in this Plan is approved pursuant to 35 Ill. Adm. Code 620.250. The Plan and GMZ described in the documents referenced above supersede and replace work plans and the GMZ previously approved by the Agency for the Wood River West Ash Complex.

Thank you for your attention to these matters. If you have any questions or concerns, please contact Lynn Dunaway of my staff or me at the letterhead address or 217/785-4787.

Sincerely,

William E. Buscher

William E. Buscher, P.G.
Supervisor, Hydogeology and Compliance Unit
Groundwater Section
Division of Public Water Supplies
Bureau of Water

CC: Lynn Dunaway
Darin LeCrone
Records

ATTACHMENT 3

Partners, LLC

Attachment 3

November 11, 2019

Mr. Lynn E. Dunaway
Environmental Protection Specialist
Groundwater Section
Bureau of Water
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, IL 62794-9276

Re: Wood River Power Station Site
Change of Ownership

Dear Mr. Dunaway:

Per our meeting on Tuesday, October 15th, 2019, this letter serves as notification that the Wood River Power Station Site located in East Alton Illinois was purchased and transferred from Dynegy Midwest Generation, LLC to CTI Development, LLC on August 30th, 2019. CTI Development, LLC is a subsidiary of Commercial Liability Partners (CLP), LLC.

ATON, LLC, an affiliate of Commercial Liability Partners, LLC, will serve as the Environmental and Engineering Consultant to CTI Development, LLC and CLP for the duration of this project.

As a result of the sale, Dynegy Midwest Generation, LLC has transferred to CTI Development, LLC the NPDES Permit, IL0000701, issued on July 31, 2015, and the associated Permit Modification Applications submitted on June 3, 2016 and October 23, 2017. CTI Development, LLC acknowledges all future responsibilities and compliance with the terms and conditions of the NPDES Permit, IL0000701.

Also, as result of the sale, Dynegy Midwest Generation, LLC has transferred to CTI Development, LLC the "*Closure and Post-Closure Care Plan for the Wood River West Ash Complex, Parts I and II*" (Plan) dated November 28, 2016, Addenda to the Plan dated April 28, 2017 and the Revision to the Addenda dated May 18, 2017. The Illinois Environmental Protection Agency (Agency) has reviewed the three documents and approved the Plan per a letter sent to Dynegy Midwest Generation, LLC on May 25, 2017. CTI Development, LLC acknowledges all future responsibilities and compliance with the terms and conditions of the Plan.

Please contact me at rfroh@commercialliabilitypartners.com, (314-227-8313) or twubker@commercialliabilitypartners.com (314-707-1587) should you have any questions regarding this transfer notification and ownership agreement.

Sincerely,

Ronald Froh
President & CEO
CTI Development, LLC

ATTACHMENT 4

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

December 4, 2019

Attachment 4

Mr. Ronald Froh
President & CEO
CTI Development, LLC
2275 Cassens Drive, Suite 118
Fenton, Missouri 63026

Dear Mr. Froh;

The Illinois Environmental Protection Agency ("Agency") is in receipt of a letter from CTI Development, LLC (CTI), a subsidiary of Commercial Liability Partners, LLC, confirming the purchase and transfer of the Dynegy Midwest Generation, LLC, Wood River Station to CTI as of August 30, 2019.

The Closure and Post-Closure Care Plan for the Wood River West Ash Complex, Parts I and II (Plan) dated November 28, 2016, Addenda to the Plan dated April 28, 2017, and the Revision to the Addenda dated May 18, 2017, were submitted by Dynegy, and approved by the Agency on May 25, 2017. A construction permit, pursuant to 35 Ill. Adm. Code, Part 309 is required prior to commencing closure of the West Ash Complex.

All of the CCR surface impoundments at the Wood River Station are subject to the requirements of Section 22.59 of the Illinois Environmental Protection Act (415 ILCS 55/1 et seq) ("Act"). Subsection 22.59(e) is applicable to the Agency-approved closure of the West Ash Complex. Please note that subsection 22.59(e) is not applicable to the East Ash Complex, because no closure plan was submitted before May 1, 2019. Therefore, CTI may close the West Ash Complex utilizing the approved closure plan, subject to the requirements and limitations of Section 22.59 of the Act.

Thank you for your attention to these matters. If you have any questions or concerns, please contact Lynn Dunaway of my staff or me at the letterhead address or 217/782-1020.

Sincerely,

William E. Buscher

William E. Buscher, P.G.
Supervisor, Hydogeology and Compliance Unit
Groundwater Section
Division of Public Water Supplies
Bureau of Water

CC: Lynn Dunaway
Darin LeCrone
Records

ATTACHMENT 5

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-3397

JB PRITZKER, GOVERNOR JOHN J. KIM, DIRECTOR

217/782-0610

April 15, 2020

Attachment 5

Mr. Ronald Froh
President & CEO
CTI Development
2275 Cassens Drive, Suite 118
Fenton, Missouri 63026

Re: CTI Development, LLC
Former Wood River Power Station Site
NPDES Permit No. IL0000701
BOW ID: W1190200004
Modification of NPDES Permit

Mr. Froh:

The Illinois Environmental Protection Agency has reviewed the request for modification of the above-referenced NPDES Permit and issued a public notice based on that request. The final decision of the Agency is to modify the Permit as follows:

1. Outfall 001: All discharges and sampling requirements have been removed.
2. Outfall 002: Units 1-5 Turbine Room and Boiler Room Drains were renamed Basement Bilge Water; Coal Pile Runoff was renamed Old Coal Pile Storage Runoff; Legacy Wastewater from Unwatering and Dewatering of the West Ash Pond was added as a contributory wastestream; Area Runoff remains; all other wastestreams were removed; TSS and Boron sampling was changed from 24-hour composite to grab; sample frequency was changed to when discharging; and flow was changed to intermittent.
3. Outfalls 003 and 004: All discharges and sampling requirements have been removed.
4. Outfall 005: Legacy Wastewater from Unwatering and Dewatering of the East Ash Pond was added as a contributory wastestream; Area Runoff remains; all other wastestreams have been removed; TSS and Boron sampling was changed from 24-hour composite to grab; sample frequency was changed to when discharging; and flow was changed to intermittent.
5. Special Conditions 3, 4, 10, 14, 15 and 16 were removed and the remaining conditions renumbered. The reference to outfall B01 was removed from Special Condition 2. The references to outfalls 003 and 004 were removed from renumbered Special Condition 10 and monitoring frequency was changed to annually. Renumbered Special Condition 4 was revised to reflect the new electronic reporting rule. New Special Condition 11 was added that allows the effluent limits and monitoring requirements on pages 2 and 3 of the permit, and the class K operator requirement to be suspended after the ash ponds have been closed and capped upon notice from the Agency. New Special Condition 12 was added.
6. Chromium (hexavalent) limit was removed from Outfall 005.

7. Added twice per month monitoring of arsenic and selenium at Outfalls 002 and 005 during unwatering and dewatering activities.
8. The name and address of the permittee was corrected, to reflect the change in ownership.

Enclosed is a copy of the modified Permit. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

Should you have questions concerning the Permit, please contact me at 217/782-0610.

Sincerely,

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

SAK:JML:17122901.docx

Attachments: Final Permit

cc: Records Unit
Billing
Compliance Assurance Section
Collinsville FOS
SWIMRPC
Missouri Dept. of Natural Resources

NPDES Permit No. IL0000701

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Modified (NPDES) Permit

Expiration Date: July 31, 2020

Issue Date: July 31, 2015
Effective Date: August 1, 2015
Modification Date: April 15, 2020

Name and Address of Permittee:

CTI Development, LLC
2275 Cassens Drive, Suite 118
Fenton, Missouri 63026

Facility Name and Address:

CTI Development, LLC
Wood River Site
#1 Chessen Lane
Alton, Illinois 60436
(Madison County)

Discharge Number and Name:

002 West Ash Pond
005 East Ash Pond

Receiving Waters:

Wood River Creek
Wood River Creek

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

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

DEL:JML:17122901.docx

NPDES Permit No. IL0000701

Effluent Limitations and Monitoring

From the modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	LOAD LIMITS lbs/day DAF (DMF) DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	CONCENTRATION LIMITS mg/l DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Outfall 002: West Ash Pond (Intermittent Discharge)						
Flow (MGD)	See Special Condition 1				1/Week when Discharging	
pH	See Special Condition 2		Shall be in the rage of 6.5 to 9.0 s.u.		1/Week when Discharging	Grab
Total Suspended Solids			30	50	1/Week when Discharging	Grab
Oil and Grease			15.0	20.0	2/Month when Discharging	Grab
Boron				15	2/Month when Discharging	Grab
Arsenic			Monitor Only		2/Month when Discharging	Grab
Selenium			Monitor Only		2/Month when Discharging	Grab
Mercury*			Monitor Only		1/Month when Discharging	Grab

This discharge consists of: Approximate Flow:

Discharge	Approximate Flow
Basement Bilge Water	Intermittent
Old Coal Pile storage Runoff	Intermittent
Legacy Wastewater from Unwatering and Dewatering of East and West Ash Ponds	Intermittent

* Mercury shall be monitored in accordance with USEPA Method 1631E and the digestion procedure described in Section 11.1.1.2 of 1631E. Compliance with the 12 ng/L (nanograms per liter) annual average concentration limit shall be determined on a rolling 12 month basis. The permittee shall report the monthly sample result each month. Beginning 12 months from August 1, 2015, the permittee shall report each month, the rolling 12 month annual average based on the preceding 12 months sample results.

Effluent Limitations and Monitoring

From the modification date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

PARAMETER	LOAD LIMITS lbs/day DAF (DMF) 30 DAY AVERAGE	DAILY MAXIMUM	CONCENTRATION LIMITS mg/l 30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

Outfall 005: East Ash Pond (Intermittent Discharge)

This discharge consists of:	Approximate Flow:
Area Runoff	Intermittent
Legacy Wastewater from Unwatering and Dewatering of East and West Ash Ponds	Intermittent

PARAMETER	LOAD LIMITS 30 DAY AVERAGE	LOAD LIMITS DAILY MAXIMUM	CONCENTRATION 30 DAY AVERAGE	CONCENTRATION DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				1/Week when Discharging	
pH	See Special Condition 2		Shall be in the range of 6.5 to 9.0 s.u.		1/Week when Discharging	Grab
Total Suspended Solids			30	50	1/Week when Discharging	Grab
Oil and Grease			15.0	20.0	2/Month when Discharging	Grab
Boron				15	2/Month when Discharging	Grab
Arsenic			Monitor Only		2/Month when Discharging	Grab
Selenium			Monitor Only		2/Month when Discharging	Grab
Mercury*			12 ng/L annual average		1/Month when Discharging	Grab

*Mercury shall be monitored in accordance with USEPA Method 1631E and the digestion procedure described in Section 11.1.1.2 of 1631E. Compliance with the 12 ng/L (nanograms per liter) annual average concentration limit shall be determined on a rolling 12 month basis. The permittee shall report the monthly sample result each month. Beginning 12 months from August 1, 2015, the permittee shall report each month, the rolling 12 month annual average based on the preceding 12 months sample results.

Special Conditions

SPECIAL CONDITION 1. Flow shall be measured in units of Million Gallons per Day (MGD) and reported as a monthly average and a daily maximum value on the monthly Discharge Monitoring Report.

SPECIAL CONDITION 2. For outfalls 002 and 005 the pH shall be in the range 6.5 to 9.0. The monthly minimum and monthly maximum values shall be reported on the DMR form.

SPECIAL CONDITION 3. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 4. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) electronic forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee is required to submit electronic DMRs (NetDMRs) instead of mailing paper DMRs to the IEPA unless a waiver has been granted by the Agency. More information, including registration information for the NetDMR program, can be obtained on the IEPA website, https://www2.illinois.gov/epa/topics-water-quality/surface-water/netdmr/Pages/quick-answer-guide.aspx.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 25th day of the following month, unless otherwise specified by the permitting authority.

Permittees that have been granted a waiver shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attention: Compliance Assurance Section, Mail Code # 19
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

SPECIAL CONDITION 5. In the event that the permittee must request a change in the use of water treatment additives, the permittee must request a change in this permit in accordance with Standard Conditions - - Attachment H.

SPECIAL CONDITION 6. If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

SPECIAL CONDITION 7. . The use or operation of this facility shall be by or under the supervision of a Certified Class K operator.

SPECIAL CONDITION 8. There shall be no discharge of polychlorinated biphenyl compounds.

SPECIAL CONDITION 9. The Agency has determined that the effluent limitations for outfalls 002 and 005 constitute BAT/BCT for storm water which is treated in the existing treatment facilities for purposes of this permit reissuance, and no pollution prevention plan will be required for such storm water. In addition to the chemical specific monitoring required elsewhere in this permit, the permittee shall conduct an annual inspection of the facility site to identify areas contributing to a storm water discharge associated with industrial activity, and determine whether any facility modifications have occurred which result in previously-treated storm water discharges no longer receiving treatment. If any such discharges are identified the permittee shall request a modification of this permit within 30 days after the inspection. Records of the annual inspection shall be retained by the permittee for the term of this permit and be made available to the Agency on request.

SPECIAL CONDITION 10. The Permittee shall monitor the effluent from outfalls 002 and 005 for the following parameters on an annual basis. This Permit may be modified with public notice to establish effluent limitations if appropriate, based on information obtained through sampling. The sample shall be a 24-hour effluent composite except as otherwise specifically provided below and the results shall be submitted to the address in special condition 6 in June and December. The parameters to be sampled and the minimum reporting limits to be attained are as follows:

STORET CODE	PARAMETER	Minimum reporting limit
01002	Arsenic	0.05 mg/L
01007	Barium	0.5 mg/L

Special Conditions

01027	Cadmium	0.001 mg/L
00940	Chloride (outfalls 002 and 005)	1.0 mg/L
01032	Chromium (hexavalent) (grab)	0.01 mg/L
01034	Chromium (total)	0.05 mg/L
01042	Copper	0.005 mg/L
00718	Cyanide (grab) (available*** or amendable to chlorination)	5.0 ug/L
00720	Cyanide (grab not to exceed 24 hours) (total)	5.0 ug/L
00951	Fluoride	0.1 mg/L
01045	Iron (total)	0.5 mg/L
01046	Iron (Dissolved)	0.5 mg/L
01051	Lead	0.05 mg/L
01055	Manganese	0.5 mg/L
71900	Mercury (grab)**	1.0 ng/L*
00630	Nitrate/Nitrite (outfalls 002 and 005)	1.0 mg/L
01067	Nickel	0.005 mg/L
00556	Oil (hexane soluble or equivalent) (Grab Sample only)	5.0 mg/L
32730	Phenols (grab)	0.005 mg/L
01147	Selenium	0.005 mg/L
01077	Silver (total)	0.003 mg/L
01092	Zinc	0.025 mg/L

Unless otherwise indicated, concentrations refer to the total amount of the constituent present in all phases, whether solid, suspended or dissolved, elemental or combined, including all oxidation states.

The mercury sampling requirements of this special condition do not apply to outfalls 002 and 005, unless the monitoring requirements on pages 2 and 5 have been suspended in accordance with special condition 11. In that case outfalls 002 and 005 may be grab sampled, and mercury shall be monitored as specified in this condition.

*1.0 ng/L = 1 part per trillion.
**Utilize USEPA Method 1631E and the digestion procedure described in Section 11.1.1.2 of 1631E.
***USEPA Method OIA-1677.

SPECIAL CONDITION 11. After the East and West Ash Ponds are closed and capped the permittee may request to suspend the Class K operator requirement (special condition 7) and the effluent limits and monitoring requirements on pages 2 and 3. The Agency will review the request upon receipt and provide a written response of our decision.

SPECIAL CONDITION 12. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

Attachment H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24-Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8-Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

(2) **Duty to reapply.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions.** This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62 and 40 CFR 122.63. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) **Property rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information.** The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry.** The permittee shall allow an authorized representative of the Agency or USEPA (including an authorized contractor acting as a representative of the Agency or USEPA), upon the presentation of credentials and other documents as may be required by law, to:
   (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records

must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records.**

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. Records related to the permittee's sewage sludge use and disposal activities shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503). This period may be extended by request of the Agency or USEPA at any time.

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement**. All applications, reports or information submitted to the Agency shall be signed and certified.

(a) **Application**. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation:

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

(b) **Reports**. All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a); and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

(c) **Changes of Authorization**. If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.

(d) **Certification**. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(12) **Reporting requirements.**

(a) **Planned changes**. The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source pursuant to 40 CFR 122.29 (b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements pursuant to 40 CFR 122.42 (a)(1).

(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

(b) **Anticipated noncompliance**. The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) **Transfers**. This permit is not transferable to any person except after notice to the Agency.

(d) **Compliance schedules**. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(e) **Monitoring reports**. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(f) **Twenty-four hour reporting**. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24-hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24-hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit.

(2) Any upset which exceeds any effluent limitation in the permit.

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit or any pollutant which may endanger health or the environment.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24-hours.

(g) **Other noncompliance**. The permittee shall report all instances of noncompliance not reported under paragraphs (12) (d), (e), or (f), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12) (f).

(h) **Other information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Bypass**.

(a) Definitions.

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(b) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (13)(c) and (13)(d).

(c) Notice.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (12)(f) (24-hour notice).

(d) Prohibition of bypass.

(1) Bypass is prohibited, and the Agency may take enforcement action against a permittee for bypass, unless:

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The permittee submitted notices as required under paragraph (13)(c).

(2) The Agency may approve an anticipated bypass, after considering its adverse effects, if the Agency determines that it will meet the three conditions listed above in paragraph (13)(d)(1).

(14) **Upset**.

(a) Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (14)(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

(c) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in paragraph (12)(f)(2) (24-hour notice).

(4) The permittee complied with any remedial measures required under paragraph (4).

(d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(15). **Transfer of permits**. Permits may be transferred by modification or automatic transfer as described below:

(a) Transfers by modification. Except as provided in paragraph (b), a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued pursuant to 40 CFR 122.62 (b) (2), or a minor modification made pursuant to 40 CFR 122.63 (d), to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

ATTACHMENT 6

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 · (217) 782-3397

JB PRITZKER, GOVERNOR **JOHN J. KIM**, DIRECTOR

217/782-0610

May 5, 2021

Attachment 6

CTI Development, LLC
2275 Cassens Drive, Suite 118
Fenton, Missouri 63026

Re: CTI Development LLC
Wood River Power Station
NPDES Permit No. IL0000701
BOW ID# W1190200004
Final Permit

Gentlemen:

Attached is the final NPDES Permit for your discharge. The Permit as issued covers discharge limitations, monitoring, and reporting requirements. Failure to meet any portion of the Permit could result in civil and/or criminal penalties. The Illinois Environmental Protection Agency is ready and willing to assist you in interpreting any of the conditions of the Permit as they relate specifically to your discharge.

In response to your comment letter dated April 2, 2021, the Agency responses as the following:

1. Remove Basement Bilge Water from Outfall 002's list of discharge sources due to on-going demolition of the former power plant at the site.
2. The mercury limit has been corrected in the Public Notice Fact Sheet for the record.

Pursuant to the Final NPDES Electronic Reporting Rule, all permittees must report DMRs electronically unless a waiver has been granted by the Agency. The Agency utilizes NetDMR, a web based application, which allows the submittal of electronic Discharge Monitoring Reports instead of paper Discharge Monitoring Reports (DMRs). More information regarding NetDMR can be found on the Agency website, https://www2.illinois.gov/epa/topics/water-quality/surface-water/netdmr/Pages/quick-answer-guide.aspx. If your facility has received a waiver from the NetDMR program, a supply of preprinted paper DMR Forms will be sent to your facility. Additional information and instructions will accompany the preprinted DMRs. Please see the attachment regarding the electronic reporting rule.

The attached Permit is effective as of the date indicated on the first page of the Permit. Until the effective date of any re-issued Permit, the limitations and conditions of the previously-issued Permit remain in full effect. You have the right to appeal any condition of the Permit to the Illinois Pollution Control Board within a 35 day period following the issuance date.

Should you have questions concerning the Permit, please contact Shu-Mei Tsai at 217/782-0610.

Sincerely,

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

DEL:SMT:20081201.smt

Attachments: Final Permit

cc: Records Unit
Compliance Assurance Section
Collinsville FOS
Fiscal Services
SWIMRPC
Missouri Deperatment of Natural Resources

NPDES Permit No. IL0000701

Illinois Environmental Protection Agency

Division of Water Pollution Control

1021 North Grand Avenue East

Post Office Box 19276

Springfield, Illinois 62794-9276

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

Renewed (NPDES) Permit

Expiration Date: May 31, 2026

Issue Date: May 5, 2021
Effective Date: June 1, 2021

Name and Address of Permittee:	Facility Name and Address:
CTI Development, LLC 2275 Cassens Drive, Suite 118 Fenton, Missouri 63026	CTI Development, LLC Wood River Site #1 Chessen Lane Alton, Illinois 60436 (Madison County)

Discharge Number and Name:	Receiving Waters:
002 West Ash Pond	Wood River Creek
005 East Ash Pond	Wood River Creek

In compliance with the provisions of the Illinois Environmental Protection Act, Title 35 of Ill. Adm. Code, Subtitle C and/or Subtitle D, Chapter 1, and the Clean Water Act (CWA), the above-named permittee is hereby authorized to discharge at the above location to the above-named receiving stream in accordance with the standard conditions and attachments herein.

Permittee is not authorized to discharge after the above expiration date. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit the proper application as required by the Illinois Environmental Protection Agency (IEPA) not later than 180 days prior to the expiration date.

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

DEL:SMT:20081201.smt

NPDES Permit No. IL0000701

Effluent Limitations and Monitoring

From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall 002: West Ash Pond (Intermittent Discharge)

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/L			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE

This discharge consists of: Approximate Flow:

Old Coal Pile storage Runoff	Intermittent
Legacy Wastewater from Unwatering and Dewatering of East and West Ash Ponds	Intermittent

PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
Flow (MGD)	See Special Condition 1				1/Week when Discharging	Measured or Calculated
pH	See Special Condition 2		6.5 to 9.0 s.u.		1/Week when Discharging	Grab
Total Suspended Solids			30	50	1/Week when Discharging	Grab
Oil and Grease			15.0	20.0	2/Month when Discharging	Grab
Boron				15	2/Month when Discharging	Grab
Arsenic			Monitor Only		2/Month when Discharging	Grab
Selenium			Monitor Only		2/Month when Discharging	Grab
Mercury*			Monitor Only		1/Month when Discharging	Grab

* Mercury shall be monitored in accordance with USEPA Method 1631E and the digestion procedure described in Section 11.1.1.2 of 1631E. Compliance with the 12 ng/L (nanograms per liter) annual average concentration limit shall be determined on a rolling 12 month basis. The permittee shall report the monthly sample result each month. Beginning 12 months from the effective date, the permittee shall report each month, the rolling 12 month annual average based on the preceding 12 months sample results.

NPDES Permit No. IL0000701

Effluent Limitations and Monitoring

From the effective date of this permit until the expiration date, the effluent of the following discharge(s) shall be monitored and limited at all times as follows:

Outfall 005: East Ash Pond (Intermittent DIscharge)

	LOAD LIMITS lbs/day DAF (DMF)		CONCENTRATION LIMITS mg/L			
PARAMETER	30 DAY AVERAGE	DAILY MAXIMUM	30 DAY AVERAGE	DAILY MAXIMUM	SAMPLE FREQUENCY	SAMPLE TYPE
This discharge consists of:				Approximate Flow:		
Area Runoff				Intermittent		
Legacy Wastewater from Unwatering and Dewatering of East and West Ash Ponds				Intermittent		
Flow (MGD)	See Special Condition 1				1/Week when Discharging	Measured or Calculated
pH	See Special Condition 2		6.5 to 9.0 s.u.		1/Week when Discharging	Grab
Total Suspended Solids			30	50	1/Week when Discharging	Grab
Oil and Grease			15.0	20.0	2/Month when Discharging	Grab
Boron				15	2/Month when Discharging	Grab
Arsenic			Monitor Only		2/Month when Discharging	Grab
Selenium			Monitor Only		2/Month when Discharging	Grab
Mercury*			12 ng/L annual average		1/Month when Discharging	Grab

*Mercury shall be monitored in accordance with USEPA Method 1631E and the digestion procedure described in Section 11.1.1.2 of 1631E. Compliance with the 12 ng/L (nanograms per liter) annual average concentration limit shall be determined on a rolling 12 month basis. The permittee shall report the monthly sample result each month. Beginning 12 months from the effective date, the permittee shall report each month, the rolling 12 month annual average based on the preceding 12 months sample results.

NPDES Permit No. IL0000043

Special Conditions

SPECIAL CONDITION 1. Flow shall be measured or calculated in units of Million Gallons per Day (MGD) and reported as a monthly average and a daily maximum on the Discharge Monitoring Report. The monthly average shall consist of the summation of the daily flows divided by the number of days the facility discharged during that month.

SPECIAL CONDITION 2. The pH shall be in the range 6.5 to 9.0 from Outfalls 002, and 005. The monthly minimum and monthly maximum values shall be reported on the DMR form.

SPECIAL CONDITION 3. Samples taken in compliance with the effluent monitoring requirements shall be taken at a point representative of the discharge, but prior to entry into the receiving stream.

SPECIAL CONDITION 4. The Permittee shall record monitoring results on Discharge Monitoring Report (DMR) electronic forms using one such form for each outfall each month.

In the event that an outfall does not discharge during a monthly reporting period, the DMR Form shall be submitted with no discharge indicated.

The Permittee is required to submit electronic DMRs (NetDMRs) instead of mailing paper DMRs to the IEPA unless a waiver has been granted by the Agency. More information, including registration information for the NetDMR program, can be obtained on the IEPA website, https://www2.illinois.gov/epa/topics-water-quality/surface-water/netdmr/Pages/quick-answer-guide.aspx.

The completed Discharge Monitoring Report forms shall be submitted to IEPA no later than the 25th day of the following month, unless otherwise specified by the permitting authority.

Permittees that have been granted a waiver shall mail Discharge Monitoring Reports with an original signature to the IEPA at the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attention: Compliance Assurance Section, Mail Code # 19
1021 North Grand Avenue East
Post Office Box 19276
Springfield, Illinois 62794-9276

SPECIAL CONDITION 5. In the event that the permittee must request a change in the use of water treatment additives, the permittee must request a change in this permit in accordance with Standard Conditions - - Attachment H.

SPECIAL CONDITION 6. If an applicable effluent standard or limitation is promulgated under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the Clean Water Act and that effluent standard or limitation is more stringent than any effluent limitation in the permit or controls a pollutant not limited in the NPDES Permit, the Agency shall revise or modify the permit in accordance with the more stringent standard or prohibition and shall so notify the permittee.

SPECIAL CONDITION 7. The use or operation of this facility shall be by or under the supervision of a Certified Class K operator.

SPECIAL CONDITION 8. There shall be no discharge of polychlorinated biphenyl compounds.

SPECIAL CONDITION 9. The Agency has determined that the effluent limitations for outfalls 002 and 005 constitute BAT/BCT for storm water which is treated in the existing treatment facilities for purposes of this permit reissuance, and no pollution prevention plan will be required for such storm water. In addition to the chemical specific monitoring required elsewhere in this permit, the permittee shall conduct an annual inspection of the facility site to identify areas contributing to a storm water discharge associated with industrial activity, and determine whether any facility modifications have occurred which result in previously-treated storm water discharges no longer receiving treatment. If any such discharges are identified the permittee shall request a modification of this permit within 30 days after the inspection. Records of the annual inspection shall be retained by the permittee for the term of this permit and be made available to the Agency on request.

SPECIAL CONDITION 10. The Permittee shall monitor the effluent from outfalls 002 and 005 for the following parameters on an annual basis. This Permit may be modified with public notice to establish effluent limitations if appropriate, based on information obtained through sampling. The sample shall be a 24-hour effluent composite except as otherwise specifically provided below and the results shall be submitted to the address in special condition 6 in June and December. The parameters to be sampled and the minimum reporting limits to be attained are as follows:

STORET CODE	PARAMETER	Minimum reporting limit
01002	Arsenic	0.05 mg/L

Special Conditions

01007	Barium	0.5 mg/L
01027	Cadmium	0.001 mg/L
00940	Chloride (outfalls 002 and 005)	1.0 mg/L
01032	Chromium (hexavalent) (grab)	0.01 mg/L
01034	Chromium (total)	0.05 mg/L
01042	Copper	0.005 mg/L
00718	Cyanide (grab) (available*** or amendable to chlorination)	5.0 ug/L
00720	Cyanide (grab not to exceed 24 hours) (total)	5.0 ug/L
00951	Fluoride	0.1 mg/L
01045	Iron (total)	0.5 mg/L
01046	Iron (Dissolved)	0.5 mg/L
01051	Lead	0.05 mg/L
01055	Manganese	0.5 mg/L
71900	Mercury (grab)**	1.0 ng/L*
00630	Nitrate/Nitrite (outfalls 002 and 005)	1.0 mg/L
01067	Nickel	0.005 mg/L
00556	Oil (hexane soluble or equivalent) (Grab Sample only)	5.0 mg/L
32730	Phenols (grab)	0.005 mg/L
01147	Selenium	0.005 mg/L
01077	Silver (total)	0.003 mg/L
01092	Zinc	0.025 mg/L

Unless otherwise indicated, concentrations refer to the total amount of the constituent present in all phases, whether solid, suspended or dissolved, elemental or combined, including all oxidation states.

The mercury sampling requirements of this special condition do not apply to outfalls 002 and 005, unless the monitoring requirements on pages 2 and 5 have been suspended in accordance with special condition 11. In that case outfalls 002 and 005 may be grab sampled, and mercury shall be monitored as specified in this condition.

*1.0 ng/L = 1 part per trillion.
**Utilize USEPA Method 1631E and the digestion procedure described in Section 11.1.1.2 of 1631E.
***USEPA Method OIA-1677.

SPECIAL CONDITION 11. After the East and West Ash Ponds are closed and capped the permittee may request to suspend the Class K operator requirement (special condition 7) and the effluent limits and monitoring requirements on pages 2 and 3. The Agency will review the request upon receipt and provide a written response of our decision.

SPECIAL CONDITION 12. The effluent, alone or in combination with other sources, shall not cause a violation of any applicable water quality standard outlined in 35 Ill. Adm. Code 302.

Attachment H

Standard Conditions

Definitions

Act means the Illinois Environmental Protection Act, 415 ILCS 5 as Amended.

Agency means the Illinois Environmental Protection Agency.

Board means the Illinois Pollution Control Board.

Clean Water Act (formerly referred to as the Federal Water Pollution Control Act) means Pub. L 92-500, as amended. 33 U.S.C. 1251 et seq.

NPDES (National Pollutant Discharge Elimination System) means the national program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 402, 318 and 405 of the Clean Water Act.

USEPA means the United States Environmental Protection Agency.

Daily Discharge means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

Maximum Daily Discharge Limitation (daily maximum) means the highest allowable daily discharge.

Average Monthly Discharge Limitation (30 day average) means the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Discharge Limitation (7 day average) means the highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Best Management Practices (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Aliquot means a sample of specified volume used to make up a total composite sample.

Grab Sample means an individual sample of at least 100 milliliters collected at a randomly-selected time over a period not exceeding 15 minutes.

24-Hour Composite Sample means a combination of at least 8 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period.

8-Hour Composite Sample means a combination of at least 3 sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over an 8-hour period.

Flow Proportional Composite Sample means a combination of sample aliquots of at least 100 milliliters collected at periodic intervals such that either the time interval between each aliquot or the volume of each aliquot is proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot.

(1) **Duty to comply**. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action, permit termination, revocation and reissuance, modification, or for denial of a permit renewal application. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirements.

(2) **Duty to reapply**. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. If the permittee submits a proper application as required by the Agency no later than 180 days prior to the expiration date, this permit shall continue in full force and effect until the final Agency decision on the application has been made.

(3) **Need to halt or reduce activity not a defense**. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

(4) **Duty to mitigate**. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

(5) **Proper operation and maintenance**. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up, or auxiliary facilities, or similar systems only when necessary to achieve compliance with the conditions of the permit.

(6) **Permit actions**. This permit may be modified, revoked and reissued, or terminated for cause by the Agency pursuant to 40 CFR 122.62 and 40 CFR 122.63. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

(7) **Property rights**. This permit does not convey any property rights of any sort, or any exclusive privilege.

(8) **Duty to provide information**. The permittee shall furnish to the Agency within a reasonable time, any information which the Agency may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with the permit. The permittee shall also furnish to the Agency upon request, copies of records required to be kept by this permit.

(9) **Inspection and entry**. The permittee shall allow an authorized representative of the Agency or USEPA (including an authorized contractor acting as a representative of the Agency or USEPA), upon the presentation of credentials and other documents as may be required by law, to:
   (a) Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records

must be kept under the conditions of this permit;

(b) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

(c) Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and

(d) Sample or monitor at reasonable times, for the purpose of assuring permit compliance, or as otherwise authorized by the Act, any substances or parameters at any location.

(10) **Monitoring and records**.

(a) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

(b) The permittee shall retain records of all monitoring information, including all calibration and maintenance records, and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of this permit, measurement, report or application. Records related to the permittee's sewage sludge use and disposal activities shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503). This period may be extended by request of the Agency or USEPA at any time.

(c) Records of monitoring information shall include:

(1) The date, exact place, and time of sampling or measurements;

(2) The individual(s) who performed the sampling or measurements;

(3) The date(s) analyses were performed;

(4) The individual(s) who performed the analyses;

(5) The analytical techniques or methods used; and

(6) The results of such analyses.

(d) Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit. Where no test procedure under 40 CFR Part 136 has been approved, the permittee must submit to the Agency a test method for approval. The permittee shall calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to ensure accuracy of measurements.

(11) **Signatory requirement**. All applications, reports or information submitted to the Agency shall be signed and certified.

(a) **Application**. All permit applications shall be signed as follows:

(1) For a corporation: by a principal executive officer of at least the level of vice president or a person or position having overall responsibility for environmental matters for the corporation;

(2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or

(3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.

(b) **Reports**. All reports required by permits, or other information requested by the Agency shall be signed by a person described in paragraph (a) or by a duly authorized representative of that person. A person is a duly authorized representative only if:

(1) The authorization is made in writing by a person described in paragraph (a); and

(2) The authorization specifies either an individual or a position responsible for the overall operation of the facility, from which the discharge originates, such as a plant manager, superintendent or person of equivalent responsibility; and

(3) The written authorization is submitted to the Agency.

(c) **Changes of Authorization**. If an authorization under (b) is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of (b) must be submitted to the Agency prior to or together with any reports, information, or applications to be signed by an authorized representative.

(d) **Certification**. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

(12) **Reporting requirements**.

(a) **Planned changes**. The permittee shall give notice to the Agency as soon as possible of any planned physical alterations or additions to the permitted facility.
Notice is required when:

(1) The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source pursuant to 40 CFR 122.29 (b); or

(2) The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements pursuant to 40 CFR 122.42 (a)(1).

(3) The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

(b) **Anticipated noncompliance**. The permittee shall give advance notice to the Agency of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

(c) **Transfers**. This permit is not transferable to any person except after notice to the Agency.

(d) **Compliance schedules**. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each schedule date.

(e) **Monitoring reports**. Monitoring results shall be reported at the intervals specified elsewhere in this permit.

(1) Monitoring results must be reported on a Discharge Monitoring Report (DMR).

(2) If the permittee monitors any pollutant more frequently than required by the permit, using test procedures approved under 40 CFR 136 or as specified in the permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR.

(3) Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified by the Agency in the permit.

(f) **Twenty-four hour reporting**. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally within 24-hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and time; and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. The following shall be included as information which must be reported within 24-hours:

(1) Any unanticipated bypass which exceeds any effluent limitation in the permit.

(2) Any upset which exceeds any effluent limitation in the permit.

(3) Violation of a maximum daily discharge limitation for any of the pollutants listed by the Agency in the permit or any pollutant which may endanger health or the environment.

The Agency may waive the written report on a case-by-case basis if the oral report has been received within 24-hours.

(g) **Other noncompliance**. The permittee shall report all instances of noncompliance not reported under paragraphs (12) (d), (e), or (f), at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (12) (f).

(h) **Other information**. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or in any report to the Agency, it shall promptly submit such facts or information.

(13) **Bypass**.

(a) Definitions.

(1) Bypass means the intentional diversion of waste streams from any portion of a treatment facility.

(2) Severe property damage means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

(b) Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs (13)(c) and (13)(d).

(c) Notice.

(1) Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten days before the date of the bypass.

(2) Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in paragraph (12)(f) (24-hour notice).

(d) Prohibition of bypass.

(1) Bypass is prohibited, and the Agency may take enforcement action against a permittee for bypass, unless:

(i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The permittee submitted notices as required under paragraph (13)(c).

(2) The Agency may approve an anticipated bypass, after considering its adverse effects, if the Agency determines that it will meet the three conditions listed above in paragraph (13)(d)(1).

(14) **Upset**.

(a) Definition. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

(b) Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph (14)(c) are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

(c) Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

(1) An upset occurred and that the permittee can identify the cause(s) of the upset;

(2) The permitted facility was at the time being properly operated; and

(3) The permittee submitted notice of the upset as required in paragraph (12)(f)(2) (24-hour notice).

(4) The permittee complied with any remedial measures required under paragraph (4).

(d) Burden of proof. In any enforcement proceeding the permittee seeking to establish the occurrence of an upset has the burden of proof.

(15) **Transfer of permits**. Permits may be transferred by modification or automatic transfer as described below:

(a) Transfers by modification. Except as provided in paragraph (b), a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued pursuant to 40 CFR 122.62 (b) (2), or a minor modification made pursuant to 40 CFR 122.63 (d), to identify the new permittee and incorporate such other requirements as may be necessary under the Clean Water Act.

(b) Automatic transfers. As an alternative to transfers under paragraph (a), any NPDES permit may be automatically transferred to a new permittee if:

(1) The current permittee notifies the Agency at least 30 days in advance of the proposed transfer date;

(2) The notice includes a written agreement between the existing and new permittees containing a specified date for transfer of permit responsibility, coverage and liability between the existing and new permittees; and

(3) The Agency does not notify the existing permittee and the proposed new permittee of its intent to modify or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement.

(16) All manufacturing, commercial, mining, and silvicultural dischargers must notify the Agency as soon as they know or have reason to believe:

(a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant identified under Section 307 of the Clean Water Act which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(1) One hundred micrograms per liter (100 ug/l);

(2) Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6 dinitrophenol; and one milligram per liter (1 mg/l) for antimony.

(3) Five (5) times the maximum concentration value reported for that pollutant in the NPDES permit application; or

(4) The level established by the Agency in this permit.

(b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the NPDES permit application.

(17) All Publicly Owned Treatment Works (POTWs) must provide adequate notice to the Agency of the following:

(a) Any new introduction of pollutants into that POTW from an indirect discharge which would be subject to Sections 301 or 306 of the Clean Water Act if it were directly discharging those pollutants; and

(b) Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.

(c) For purposes of this paragraph, adequate notice shall include information on (i) the quality and quantity of effluent introduced into the POTW, and (ii) any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

(18) If the permit is issued to a publicly owned or publicly regulated treatment works, the permittee shall require any industrial user of such treatment works to comply with federal requirements concerning:

(a) User charges pursuant to Section 204 (b) of the Clean Water Act, and applicable regulations appearing in 40 CFR 35;

(b) Toxic pollutant effluent standards and pretreatment standards pursuant to Section 307 of the Clean Water Act; and

(c) Inspection, monitoring and entry pursuant to Section 308 of the Clean Water Act.

(19) If an applicable standard or limitation is promulgated under Section 301(b)(2)(C) and (D), 304(b)(2), or 307(a)(2) and that effluent standard or limitation is more stringent than any effluent limitation in the permit, or controls a pollutant not limited in the permit, the permit shall be promptly modified or revoked, and reissued to conform to that effluent standard or limitation.

(20) Any authorization to construct issued to the permittee pursuant to 35 Ill. Adm. Code 309.154 is hereby incorporated by reference as a condition of this permit.

(21) The permittee shall not make any false statement, representation or certification in any application, record, report, plan or other document submitted to the Agency or the USEPA, or required to be maintained under this permit.

(22) The Clean Water Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Clean Water Act is subject to a civil penalty not to exceed $25,000 per day of such violation. Any person who willfully or negligently violates permit conditions implementing Sections 301, 302, 306, 307, 308, 318 or 405 of the Clean Water Act is subject to a fine of not less than $2,500 nor more than $25,000 per day of violation, or by imprisonment for not more than one year, or both.
Additional penalties for violating these sections of the Clean Water Act are identified in 40 CFR 122.41 (a)(2) and (3).

(23) The Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both.

(24) The Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than 6 months per violation, or by both.

(25) Collected screening, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into waters of the State. The proper authorization for such disposal shall be obtained from the Agency and is incorporated as part hereof by reference.

(26) In case of conflict between these standard conditions and any other condition(s) included in this permit, the other condition(s) shall govern.

(27) The permittee shall comply with, in addition to the requirements of the permit, all applicable provisions of 35 Ill. Adm. Code, Subtitle C, Subtitle D, Subtitle E, and all applicable orders of the Board or any court with jurisdiction.

(28) The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit is held invalid, the remaining provisions of this permit shall continue in full force and effect.

ATTACHMENT 7

Attachment 7

CTI Development, L.L.C.

Former Wood River Power Station Site

National Pollutant Discharge Elimination System (NPDES) Permit

Responsiveness Summary

Regarding

April 30, 2019 Public Hearing

Illinois Environmental Protection Agency
Office of Community Relations
April 15, 2020

CTI Development, L.L.C.

National Pollutant Discharge Elimination System (NPDES) Permit
Responsiveness Summary

CTI Development, L.L.C.

National Pollutant Discharge Elimination System (NPDES) Permit---Responsiveness Summary

Table of Contents

Final April 15, 2020

Dynegy Midwest Generation, L.L.C.
Wood River Site
NPDES Permit
Permit Number IL0000701

ILLINOIS EPA DECISION

On April 15, 2020 the Illinois Environmental Protection Agency (Illinois EPA) modified a NPDES permit for Dynegy Midwest Generation, L.L.C., Wood River Site.

The following changes were made to the permit after the public notice of September 19, 2018:

1. Twice per month monitoring of arsenic and selenium was added to Outfalls 002 and 005.
2. The name and address of the permittee were changed from Dynegy Midwest Generation, LLC to CTI Development, LLC following a change in ownership of the site.

PRE-HEARING PUBLIC OUTREACH

The draft modified NPDES permit was public noticed on September 19, 2018 and placed on the Illinois EPA website. The hearing notice was posted on the website on March 13, 2019. These documents can be accessed on the Illinois EPA website at: https://www2.illinois.gov/epa/public-notices/npdes-notices/Pages/default.aspx (please enter "IL0000701" in the search box located above the "Posting Date").

The hearing notice was mailed or e-mailed to:

a) Madison county officials;
b) Municipal officials in Alton, Wood River, Roxana, Hartford, and East Alton;
c) State and federal representatives and senators;
d) Those requesting to be on the hearing officer's mailing list;
e) Those on the NPDES mailing list; and,
f) Those requesting a hearing or commenting on the draft NPDES permit public notice.

PUBLIC HEARING of April 30, 2019

Hearing Officer, Dean Studer, opened the hearing on April 30, 2019, at 6 p.m. at the RiverBend.com Community Center, 200 West Third Street, Alton, Illinois.

Comments were received from those in attendance.

Hearing Officer, Dean Studer, closed the hearing at approximately 7:10 p.m. on April 30, 2019.

Illinois EPA personnel were available before, during, and after the hearing to meet with attendees and to answer questions.

Approximately 35 persons representing local residents, environmental groups, and interested citizens participated in and/or attended the hearing. A court reporter prepared a transcript of the public hearing which was posted on the Illinois EPA website on May 15, 2019.

The hearing record remained open through May 30, 2019.

BACKGROUND OF PROJECT

Dynegy Midwest Generation, L.L.C.—Wood River Site

NPDES Permit Modification

On June 9, 2016, the Illinois EPA Bureau of Water received a request to modify the existing NPDES permit for the Dynegy Midwest Generation, L.L.C.—Wood River Site due to the cessation of electric generation and to accommodate the dewatering of the east and west coal ash ponds. An anti-degradation assessment was submitted to Illinois EPA on May 1, 2018. Illinois EPA drafted permit modifications and public-noticed those draft modifications on September 19, 2018.

The applicant is engaged in the maintenance of a former steam electric generating station (SIC 4911) which ceased operations on June 1, 2016. Wastewater is generated from legacy wastewaters from unwatering and dewatering of the east and west ash ponds, basement dewatering, and precipitation which contacts the site. Plant maintenance results in an intermittent discharge from the west ash pond at outfall 002 and an intermittent discharge from the east ash pond at outfall 005.

RESPONSES to COMMENTS, QUESTIONS and CONCERNS

Comments, Questions and Concerns in regular text
Illinois EPA responses in bold text

NPDES Permit and General Issues

1. The Wood River flows from this site directly into the Mississippi River to stream segment J-05, which is impaired for the uses of primary contact and fish consumption, with potential causes identified as fecal coliform, mercury, and PCBs. We are concerned about the impacts of the proposed discharge of coal ash-associated water and capping a coal ash pond in place next to the Mississippi River and Wood River. Both the Wood River and the Mississippi River are within the Community Water Supply Intake Zone 1 Protection Area for the Granite City/East St. Louis water supply intake[1].

   Response: The Wood River Station has been operating since 1954. The Granite City intake was installed in approximately 1970. Drinking water monitoring required by the 1986 amendments to the Safe Drinking Water Act has demonstrated consistently safe drinking water has been produced by the Granite City/East St. Louis water system. Vistra Energy provided information in their west pond closure plan which indicates that migration of contaminants through groundwater would have a negligible effect on surface water quality. Information provided by Vistra Energy showed no detection of Mercury or PCB's in the groundwater onsite. This further indicates that the Wood River Station is not the source of the impaired surface water.

2. We are concerned about the potential harm this site could continue to cause to the surrounding community, which has been affected by pollution from this facility since it began operating over 60 years ago. Nearly 64% of the 14,348 households in a 3-mile radius of this facility earn an annual income of less than $50,000. A total of 14,625 people in a 3-mile radius live below the poverty line[2]. The surrounding community has been disproportionately impacted by environmental degradation and pollution from this and other facilities, and most of these families are not prepared to deal with the health care costs associated with contaminated air, land and water. This vulnerable community needs strong enforcement of environmental protections to minimize additional harm and ensure future economic development opportunities.

   Response: The Illinois EPA considers the location of the source to be an area of Environmental Justice concern due to the percentage of low-income families in the community. The Illinois EPA is committed to enforcement of environmental laws and

[1] Illinois EPA Source Water Assessment Protection Program web mapping tool
[2] https://echo.epa.gov/detailed-facility-report?fid=110006402605

regulations applicable to the Dynegy Wood River site and throughout Illinois, which is reflected in the NPDES permit.

3. The public notice states that the unwatering of the ash ponds will take 60-90 days, and the dewatering of the ash ponds will take 80-120 days. The Antidegradation Assessment shows that the dewaters and potentially the unwaters contain elevated levels of arsenic, boron and selenium. Special Condition 10 only requires annual testing for a host of other pollutants including heavy metals found in coal ash. With annual testing, the unwatering and dewatering of the ponds is likely to be completed before any testing is done. We request that monitoring be conducted twice a month while the drawdown is underway for all the pollutants listed in Special Condition 10. This would be in line with the NPDES permit issued at the Meredosia Energy Center in October 2017.

   Response: The Antidegradation Assessment showed dewaters may contain total arsenic, total boron, and total selenium above water quality standards. However, water quality standards for these parameters are expected to be met in the receiving stream. To address the comment, twice per month Boron monitoring is required at outfalls 002 and 005. Twice per month monitoring of arsenic and selenium has been added to the permit to ensure water quality standards are met in the receiving stream for outfalls 002 and 005.

4. This facility has a recent history of violating their NPDES permit, with violations reported in 10 of the past 12 quarters in the USEPA's Enforcement and Compliance History Online (ECHO) database[3]. Two violations of their pH limit have been reported since April 2018. In 2016, it was reported that the facility discharged hexavalent chromium at 63% over their permitted level. The new discharges in the draft NPDES permit have high levels of pH and may require treatment, as noted in the Antidegradation Assessment (Page 11). Given this recent history of violations, Illinois EPA must take precautions to ensure that all discharges from the site will meet water quality standards and protect the surrounding community.

   Response: The June 2016 hexavalent chromium exceedance was during the last full month that the plant was in operation. Since plant shutdown, the facility has not had any additional hexavalent chromium permit limit exceedances. Since any wastestreams likely to contain hexavalent chromium have been eliminated, the facility does not expect to have any future hexavalent chromium violations.

   The pH violations reported in April and July of 2018 were due to operational issues with the carbon dioxide feed system in the secondary treatment ponds. These issues have since been addressed and pH will be maintained at levels to ensure compliance with permit limits.

5. What is the rationale for eliminating the composite sample requirements for TSS and boron? How can the daily maximum be assessed from a single grab sample?

   Response: The discharge of unwaters/dewaters will be intermittent and, therefore, will not always occur over a 24-hour period. Therefore, the facility will only be required to take grab samples of the discharge. Compliance with the daily maximum permit limit can be

[3] https://echo.epa.gov/detailed-facility-report?fid=110000402805

determined by comparing the daily maximum limit to the maximum value reported on the monthly discharge monitoring report.

6. Based on discharge monitoring reports (DMRs)[4] for the facility, the proposed discharges could lead to an increase in pollutant load. The Antidegradation Assessment should consider the actual increase in load compared to current operation of the ponds. Using DMRs filed to comply with the current NPDES permit, we can show that the pollution loading in the dewaters is over five times as concentrated as the typical discharge when the plant was in operation.

   The DMRs include the 24-hour composite daily maximum boron concentrations in mg/L and the average daily flow in million gallons per day (MGD). Multiplying these values together produces an overestimate[5] of the average daily mass boron discharge per day. Running these numbers for DMRs from Wood River between 2014 and 2018, we found an average mass discharge of 2.8 lbs/day of boron from Outfall 2 and 8.3 lbs/day of boron at Outfall 5 over the last 4 years. Therefore, over a typical 80-day period, the outfalls discharge a combined total load of 888 lbs of boron.

   The Antidegradation Assessment (Table 5) estimates that the proposed dewatering plan would discharge 5,196 lbs of boron over 80 days, which is over five times the typical boron load. The Antidegradation Assessment does include an estimate of the "Permitted Load," but it is not representative of the actual load that the plant was discharging, as we have estimated above. The Antidegradation Assessment calculates the "Permitted Load" using the unwater concentrations, but actual discharge concentrations from their outfalls as reported in the DMRs would be more appropriate to use and are far lower concentration than the unwater concentration.

   Response: In accordance with 35 Ill. Adm. Code 302.105(c)(2), the Agency is required to assess any proposed increase in pollutant loading that necessitates a new, renewed or modified NPDES permit. There is no increase in loading of the "unwaters," since the "unwaters" are already permitted to be discharged. The unwaters will be pumped to the Pond 3 or the Secondary East Polishing Pond before discharging via Outfall 002 or 005, respectively. There is a short-term temporary increase in loading with the discharge of the "dewaters." The antidegradation analysis was performed to address the increase in loading that would be discharged due to the discharge of the "dewaters". The "dewaters" are the waters contained in the pore spaces of the deposited ash in the Ash Ponds (1, 2E, 2W) and Primary East Fly Ash Pond. Additionally, after the ash ponds are closed there will be a significant decrease in the loading, as there will not be any discharge of surface water that has come into contact with the ash.

7. Concentrations of contaminants in unwater and dewater for the West Ash Pond are higher than estimated in the Antidegradation Assessment which made the assumption that all of the dewaters are mixed together before discharging. The draft NPDES permit contains a different assumption. It assumes that West Ash Pond dewaters will be directed to Pond 3 and East Ash Pond dewaters

[4] DMR reports downloaded from USEPA website with calculations by PRN: https://drive.google.com/a/prairierivers.org/file/d/1Kal2ZXYOvP4647t1sHNSIC5O_JXBuocX/view?usp=sharing

[5] Overestimate because the boron concentration is reported as a 24-hour composite daily maximum not a daily average

will be directed to the Secondary East Polishing Pond. The Illinois EPA should use average contaminant levels for the West Ash Pond dewater and unwater and average contaminant levels for the East Ash Pond dewater and unwater when evaluating the impact of the proposed changes.

Using the values reported in the Antidegradation Assessment (Table 4), the average concentration of contaminants in West Ash Pond dewaters will be 28.6 mg/L for boron and 0.208 mg/L for arsenic. Both these concentrations are above the chronic water quality standard for surface water discharges. Additionally, the unwaters will have a concentration of 8.6 mg/L of boron, which is also above the chronic water quality standard. These higher concentrations should be included in Illinois EPA's evaluation of the permit.

Response: The short-term temporary discharge of the "dewaters" will not be discharged at the concentrations from the sampling of the pore water in Table 4 of the Antidegradation Assessment. The "dewaters" will go through settling in Pond 3 or the Secondary East Polishing Pond before discharging via Outfall 002 or 005, respectively, where the contaminants that can settle out will be settled out and all contaminants will be mixed with stormwater runoff and water already in the settling ponds. Additionally, after the ash ponds are closed, there will be a significant decrease in the loading. There will not be any discharge of surface water that has come into contact with the ash.

6. The proposed NPDES permit states that the dewaters and unwaters will receive "additional treatment" by passing the discharges through Pond 3 and the Secondary East Polishing Pond (for the West Ash Pond and East Ash Pond, respectively). However, the water quality and volume of Pond 3 and the Secondary East Polishing Pond are not reported, so it's unclear how effectively the ponds will dilute the unwaters and dewaters before they are discharged from the outfalls. An analysis of their dilution effectiveness should be done before issuance of the permit. If, for example, the volume of unwater and dewater is of similar scale to the storage volume of the ponds, we should expect pond effluent to eventually share the same concentration as contaminants, especially if the season is dry. In the case of the West Ash Pond dewater and unwater waste stream, this would violate surface water quality standards when discharged in Wood River. The Illinois EPA should consider the capacity for dilution in Pond 3 and the Secondary East Polishing Pond before approving them as treatment systems.

Response: The secondary treatment ponds contain sufficient volume to settle TSS present in the unwaters and dewaters.

For the West Ash Pond, the "unwaters" are approximately 6 million gallons and the "dewaters" are approximately 3 million gallons. For the Primary East Ash Pond, the "unwaters" are approximately 12.9 million gallons and the "dewaters" are approximately 28.6 million gallons.

The proposed activities include discharge of the "unwaters" through their normal flow path through Outfalls 002 via Pond 3 and 005 via the Secondary East Polishing Pond. The "dewaters" from waters in the West Fly Ash Ponds [1, 2E, 2W] will discharge via Pond 3 (Outfall 002) and the "dewaters" from Primary East Fly Ash Pond will discharge via the Secondary East Polishing Pond (Outfall 005).

Pond 3 is approximately 41.3 million gallons, the Primary East Ash Pond is approximately 13.1 million gallons, and the Secondary East Ash Pond is approximately 3.9 million gallons. Dilution is available in the ponds (along with any precipitation) to ensure that water quality standards are met. If additional dilution is needed to meet the NPDES permit limits, the applicant can suspend the pumping of "unwaters" and "dewaters" until the effluent meets the NPDES permit limits.

9. Toxic metals in coal ash have been well documented as a health threat. Coal ash, coal slurry, and any coal product contain additional toxic substances. Coal has polycyclic aromatic hydrocarbons. Polycyclic aromatic hydrocarbons are known by the acronym, PAHs. PAHs are a collection of compounds that are carcinogenic and unfortunately are not monitored on a routine basis. PAHs currently exist under the radar of health threats from coal ash. Are any PAHs monitored or regulated in this permit? Please recognize and act on the fact that there is serious damage to health if the coal ash is not handled in a protective and safe manner.

   Response: The general characteristics of polycyclic aromatic hydrocarbons (PAHs) are high melting and boiling points (therefore they are solid), low vapor pressure, and very low aqueous solubility. Once PAHs are incorporated into sediments they are somewhat immobile because their non-polar structures inhibit them from dissolving in water. The low aqueous solubility of PAHs limits their mobility in water. Therefore, the unwaters and dewaters are not expected to contain elevated PAHs levels. PAHs levels were tested and reported on Form 2C and were all found to be below laboratory detection limits.

10. The time for the unwatering and dewatering could be completed in a period in which no testing is performed according to this permit. To this I object and would recommend twice monthly testing during the drawdown.

    Response: See response to number 3.

11. This plant was blatantly noncompliant of their previous NPDES permit. This trend must end with a new permit to ensure that future discharges from this site meet water quality standards and protect the health of our community.

    Response: See response to number 4.

12. The proposed use of Pond 3 and the secondary pond for additional treatment when there is no reporting of the volume of water quality for these ponds is unacceptable. I object to this as it could potentially lead to increased pollutant loading of the discharge water.

    Response: See response to numbers 7 and 8.

13. As these coal ash ponds are cleaned up, it offers a great learning opportunity for other communities who will go on to do the same. We need to collect realistic and useful data of the levels of contamination we are dealing with throughout this process. Special condition 10's

proposal of sampling for certain pollutants annually is simply not acceptable. These need to be monitored at least twice monthly. These samples also need to be taken in a composite manner, not as a grab sample as was recently proposed. This is the only way to get an accurate picture of the levels of contamination we are dealing with, which I hope is a goal and desire of the EPA as well.

Response: See response to number 3.

14. The Applicant, at best, is proposing a band-aid solution: discharging the toxic liquids and capping the ponds. If they proceed in this dewatering phase I would request that Illinois EPA monitor the liquid discharged daily for heavy metals and toxic chemicals.

Response: Elevated levels of heavy metals will be required to be monitored for twice per month. Also see response to number 3.

15. The Applicant's plant has been in operation for almost 60 years, and they've put coal ash in temporary ponds. Trying to do a little bit of research on how much is there; I was trying to figure out the cubic yards, and for one person, it takes about 6,000 pounds of coal to produce electricity for one year. But when you burn 6,000 pounds of coal, you get about 1,000 pounds of ash. Doing the math, the ponds, would probably fill up Busch Stadium, and it would begin oozing over center field. How deep are these ponds? I've talked to one individual who used to work there, and his guesstimates were anywhere from 10 feet to 20 feet, and that will have a lot to tell you how much is there. Does Illinois EPA know what the depth of the coal ash is in these ponds?

Response: The depth of the ponds does vary. At the deepest point there is a small area that is approximately 25 feet deep, but the majority of the west pond system has an average ash depth of 15 feet.

16. I am questioning the location of the coal ash pond monitoring sites and frequency of reporting, noting that monitoring is primarily around perimeters of the ponds and appears to exclude the middle areas of the ponds. From 1962-64, I served as an Officer on an Oceanographic - Hydrographic research vessel, out of Seattle, to conduct the first scientifically planned track lines to completely map the Pacific Ocean, from US West Coast to the Midway Islands, and south to the Equator and north to the Alaskan Archipelago, charting for water depth, oxygen content, salinity, gravity, and magnetic intensity. These track lines were over 10 miles apart and provided complete coverage throughout the area of responsibility. My point is that any monitoring or assessment of any body of water must be complete and appropriate to scale to be effective and accurate. Therefore, I ask the Illinois EPA to require enhanced and comprehensive sampling during the dewatering and unwatering processes of the Wood River coal ash ponds to ensure this process is done completely and correctly.

Response: Per the Antidegradation Assessment conducted by AMEC Foster Wheeler, dewatering samples were collected at a minimum of three locations per impoundment. Additional dewatering sampling attempts were made but these locations were found to be dry at depths of 10 feet from the surface and could not be sampled. For areas with open water, unwatering samples were collected at two locations per impoundment. The Illinois

EPA found the location and frequency of monitoring to be adequate to establish contaminant levels in unwaters and dewaters of the impoundments. Monitoring of the elevated levels of contaminants in the effluent will be required to be tested twice per month during the discharge of unwaters and dewaters. Also, see response to numbers 3 and 29.

17. The zip code the Applicant on the Public Notice/Fact Sheet and on Page 1 of the draft permit is incorrect. The correct zip code is 62002.

Response: Thank you for letting the Agency know. In addition, the name and address of the permittee has been revised to reflect the change in ownership of the facility.

18. The Applicant requests that Special Condition 12 be removed from the final permit because: (1) it is inconsistent with the Clean Water Act and the United States Environmental Protection Agency's (USEPA) implementing NPDES regulations; (2) it fails to provide the Applicant with fair notice of the standards with which it must comply; and, (3) it eviscerates the permit shield provision of Section 402(k) of the CWA.

Response: The Illinois EPA has considered the October 19, 2018, comment regarding Special Condition 12, along with the corresponding attachment and dated October 19, 2018, and finds Special Condition 12 compliant with the US Constitution, federal and state statutes and regulations, and controlling case law. Therefore, the Illinois EPA declines to change Special Condition 12.

In addition to the authorities cited by the Applicant, Illinois EPA considered the following cases:

Ohio Valley Envtl. Coal. v. Fola Coal Co., LLC, 845 F.3d 133, 138 (4th Cir. 2017);
Nat. Res. Def. Council v. Metro. Water Reclamation Dist. of Greater Chicago, 175 F. Supp. 3d 1041 (N.D. Ill. 2016);

Sierra Club v. ICG Hazard, LLC, 781 F.3d 281 (6th Cir. 2015);

Southern Appalachian Mountain Stewards v. A&G Coal Corp., 758 F.3d 560 (4th Cir. 2014);
Ohio Valley Environmental Coalition v. Marfolk Coal Co., 966 F. Supp. 2d 667 (S.D.W. Va. 2013);

Wisconsin Res. Prot. Council v. Flambeau Min. Co., 727 F.3d 700 (7th Cir. 2013); and

Piney Run Pres. Ass'n v. County Com'rs of Carroll County, MD, 268 F.3d 255 (4th Cir. 2001).

Anti-Degradation and Water Quality Standards Issues

19. To predict the average concentration of contaminants in the unwaters and dewaters, the Antidegradation Assessment simply averages all the values at test pits for which they took

measurements. This methodology might underestimate contaminant levels. It does not account for either the spatial distribution of the test pits or the representative volume of dewaters for each pit. For example, the method can also be skewed by repeated test pits in low concentration areas.

In fact, the vast majority of the pore water will have been deep in the ash and therefore have higher concentrations of contaminants. For the West Ash Pond, all of the pore water samples from test pits with greater than 4 feet of standing water had boron concentrations over 35 mg/L, while the drier test pits with less than 3 feet of standing water all had concentrations of 13 mg/L or less. That trend points to the majority of the water having a higher concentration of contaminants, meaning that these average estimates are likely too low.

Response: The short-term temporary discharge of the "dewaters" will not be discharged at the concentrations from the sampling of the pore water in Table 4 of the Antidegradation Assessment. The "dewaters" will go through settling in Pond 3 or the Secondary East Polishing Pond before discharging via Outfall 002 or 005, respectively, where the contaminants that can settle out will be settled out and all contaminants will be mixed with stormwater runoff and water already in the settling ponds. The permit also contains twice per month monitoring of boron, arsenic, selenium and once per month for mercury.

20. The Illinois EPA has made a finding that "this activity will benefit the community at large by...discontinuing the discharge of water that was been in contact with fly or bottom ash." However, the ash will likely continue to be saturated and therefore discharge water that is in contact with ash. For example, in the closure plan for the West Ash Pond (which did not go to public notice), we see that the base level of the ash in borings B021, B025 and B026 is around 407 feet. Stage data for the Mississippi River in the Groundwater Model Report (NRT, 2016) show monthly mean stages of the Mississippi are frequently higher than this base level of ash.

Recent groundwater monitoring shows elevated levels of arsenic, boron, lithium and molybdenum in the groundwater below the ash, which is migrating off site into Wood River and the Mississippi River. The latest CCR rule groundwater monitoring shows that Wood River is currently in violation of groundwater standards, with boron as high as 70 mg/L. To our knowledge, Illinois EPA has not issued a notice of violation or any fines to the Applicant for non-compliance at this site.

Response: The approved cover system for the west ash pond system has not yet been constructed. Therefore, no improvement in groundwater quality is expected yet. Public Act 101-171 requires that a public hearing will be required prior to approval of a closure plan for the east ash pond system. The west ash pond system closure plan included modeling which predicts that even with periodic contact between groundwater and the ash left in the impoundment, Class I Potable Resource Groundwater standards will be met within the property boundary. Further, migrating contaminants from the west ash pond system will have a negligible effect on surface water.

The antidegradation assessment was evaluating the NPDES discharges and not the potential groundwater discharges.

21. Illinois EPA should require that a new Antidegradation Assessment be completed. This assessment should mention all known contaminants.

Response: The antidegradation assessment done by Amec Foster Wheeler Environment & Infrastructure, Inc. for the former Dynegy Wood River Power Station was compliant with the Illinois Pollution Control Board's regulations as found at 35 Ill. Adm. Code 302.105. The antidegradation assessment included data for arsenic, barium, boron, cadmium, chromium, chromium (hexavalent), copper, iron, lead, manganese, mercury, nickel, selenium, silver, zinc, oil & grease, chloride, fluoride, sulfate, phenolics, nitrogen, TDS, TSS, available cyanide, ammonia, and pH.

22. Many coal ash ponds across Illinois will be unwatered and dewatered in the coming years due to pond closures. Given that, Illinois EPA should be cautious and collect the data necessary to learn from this permit modification. In 2017, Illinois EPA approved a NPDES permit for the dewatering and unwatering at Meredosia power station. In public comments, Prairie Rivers Network and partners called on the Illinois EPA to require that Ameren monitor the dewaters and unwaters twice a month, measuring the levels of the toxic contaminants they discharge into the Illinois River. Based on Discharge Monitoring Reports, the Meredosia power station must have undergone dewatering between April and June of 2018. The results of that monitoring is, frankly, disturbing. In May, arsenic in their discharge was measured at 80 milligrams per liter, over 200 times the acute surface water discharge standard and eight thousand times the drinking water standard. Other parameters like barium, boron, chromium, manganese and selenium all far exceeded standards as well. For the Wood River Site, the draft permit requires just annual sampling for these same toxic contaminants. This NPDES Permit MUST have sampling at least twice a month for the contaminants listed in Special Condition 10, and this should be the standard for dewatering and unwatering permits.

More frequent monitoring alone may not be enough. The results from Meredosia give me concern that more sampling will simply reveal a major problem long after it has occurred, and that this permit is not protective of surface water. A complete Antidegradation Assessment could help predict impact to the river, however, the Antidegradation Assessment included in the public notice fails to demonstrate that these calculations have been completed. The Antidegradation report submitted by the Applicant, only available to the public through FOIA, contains additional details, but also leaves many questions unanswered. I've already raised concerns in written comments. I ask that Illinois EPA produce a new Antidegradation Assessment that demonstrates that the river will be protected. This information should be in the public notice, not behind a FOIA.

Response: The Illinois EPA requested the laboratory results of the May (2018) DMR sampling results that reported arsenic at 80.3 mg/L from the Meredosia power station discharge. The laboratory results indicated that arsenic was actually reported from the laboratory at 80.3 micrograms/Liter (ug/L) and incorrectly reported as 80.3 mg/L. The actual result of 80.3 ug/L (0.0803 mg/L) is below the acute and chronic arsenic water quality standard. The company indicated that they have corrected the May DMR for arsenic. As part of our evaluation, the same issue has happened with barium, boron, chromium, manganese, and selenium. Barium, boron, chromium, manganese, and selenium were below the acute and chronic water quality standards. The laboratory reported the results

In ug/L and the Applicant reported these on their DMRs as mg/L. The Applicant will be asked to correct this also.

The public noticed antidegradation assessment noted the antidegradation report by Amec Foster Wheeler Environment & Infrastructure, Inc. titled "Antidegradation Assessment Wood River Site" dated March 14, 2018.

See also response number 3.

23. The antidegradation assessment as currently written is fraught with discrepancies compared with the Applicant's proposed activities, leaves a lot of questions unanswered, and overall is woefully incomplete. We need an assessment that is able to more clearly delineate the plan including the specific contaminants that will be dealt with and the dilution levels that we can expect to see.

    Response: The proposed activities include discharge of the "unwaters" through their normal path through Outfall 002 and 005 via Pond 3 and the Secondary East Polishing Pond, respectively. The "dewaters" from waters in the West Fly Ash Ponds [1, 2E, 2W] will discharge via Pond 3 (Outfall 002) and the "dewaters" from Primary East Fly Ash Pond will discharge via the Secondary East Polishing Pond (Outfall 005). Pond 3 is approximately 41.3 million gallons and the Primary East Ash Pond and the Secondary East Ash Pond are approximately 13.1 and 3.9 million gallons respectively. Dilution is available in the ponds (along with any precipitation) to ensure that water quality standards are met.

24. The antidegradation assessment in the public notice contained almost no detail regarding contaminant concentrations making it impossible to evaluate the impact of the proposed changes. It's been brought to my attention that the Illinois EPA's assessment does not even mention arsenic, boron, or other known contaminants. I do not believe that the magnitude of contamination now or in the event of groundwater leaching from flooding has clearly been determined. Illinois EPA accepted a cap justified by incomplete modeling that will leave ash to be continually rewet by groundwater. Therefore, I ask that a new antidegradation assessment should be completed.

    Response: The antidegradation assessment that was public noticed did not mention arsenic, boron, or other known contaminants, however, the antidegradation assessment mentions metals. The antidegradation assessment provided by the applicant includes monitoring for arsenic, boron, and other contaminants. The antidegradation assessment was evaluating the NPDES discharges and not the potential groundwater discharges. The Illinois Pollution Control Board's antidegradation regulations at 35 Ill. Adm. Code 302.105 require that any additional loading of pollutants in surface waters must be evaluated by the applicant in an antidegradation assessment. These regulations, however, do not require a similar assessment for groundwater. For additional information, please see response to numbers 26 and 27.

Coal Ash Closure Plans, Groundwater, and Other Issues Outside the Scope of the NPDES Permit

25. Illinois EPA should continue to monitor groundwater at the site.

Response: Groundwater monitoring is on-going during and after closure, and throughout the post closure care period which is required to be at least 30 years.

26. The Applicant is requesting a modification of the permit regarding their treatment of coal ash storage ponds. The coal ash ponds, as was repeatedly described, contain dangerous concentrations of such contaminants as arsenic, boron, lithium, molybdenum and sulfate, and pose a danger to human health. The coal ash ponds do not appear to be lined and groundwater data indicates that almost all of 22 of those sites leak harmful chemicals into the groundwater. The Applicant's plan, to discharge water from two ponds and to cap the East Ash pond in place, will not stop the ongoing flow of dangerous contamination into the groundwater. A coal ash pond located near the Mississippi River, which floods regularly (and currently) is not safe.

Response: Due to the extensive levee system, river flooding does not pose a significant hazard to either the west ash pond system or the east ash pond system. Due to the use of a synthetic and soil cover system, modeling for the west ash pond system predicts achievement of Class I: Potable Resource Groundwater standards within the property boundary. To date, Illinois EPA has not received a closure plan for the east ash pond system, therefore, the method of closure and any associated corrective actions have not been determined.

27. I am concerned about the high levels of toxic materials found in the groundwater in the test wells around the ash ponds, reported by Prairie Rivers Network (PRN) on the map (see Figure 1.) These contaminants are in groundwater both inside and outside the boundaries of the Applicant's plant. Even with the caps that the Applicant proposes to put on the ash ponds, the contaminants will continue to enter groundwater through the unlined bottoms of the ash pits. When the Mississippi River is high, it backs up Wood River and almost certainly induces a flow under and through the levees from both rivers into the ash pits where the water picks up contaminants. When the rivers subsequently fall, the flow of contaminated groundwater will be from the ash pits into both rivers.

Also, there is most likely a continuous flow of contaminated groundwater into the adjacent wetland where the Wood River Drainage and Levee District maintains a ditch and pumping station. Because the ditch is maintained as the low point in the drainage system by pumping, the groundwater drains to this point, particularly when the rivers are high. The water is then pumped directly into the Mississippi. The wetland and ditch are part of the attraction of this area for people, including me, who use the adjacent Illinois Esplanade Recreation Area, the National Great Rivers Museum, and the Alton Riverfront Recreation Area. The U.S. Army Corps of Engineers classifies these areas, including the Confluence Field Station, as high-density recreation use areas. One of the prime attractions has been the bald eagles that have nested in the past in the wetlands around the pumping ditch. The same area attracts water birds and people who come to see and photograph them. The discharge of contaminated water into the Mississippi River adjacent to the Confluence Field Station, either through groundwater or pumping from the Drainage District, interferes with plans that were first developed while I was at National Great Rivers Research and

Education Center to pump raw Mississippi River water, containing plankton, into outdoor channels and an indoor wet lab for a variety of research projects.

The request [to modify the Applicant's NPDES permit] should not be granted, instead closer examination of the dangers posed is necessary, and a clearly delineated plan to close the ponds safely needs to be produced, carefully monitored by Illinois EPA. I am echoing the sentiments of the gathering in objecting to [the Applicant's] current plan. Please hold companies who have reaped the financial profits responsible for complete and well-supervised remediation of coal ash pollution sources, which pose a serious public health risk.

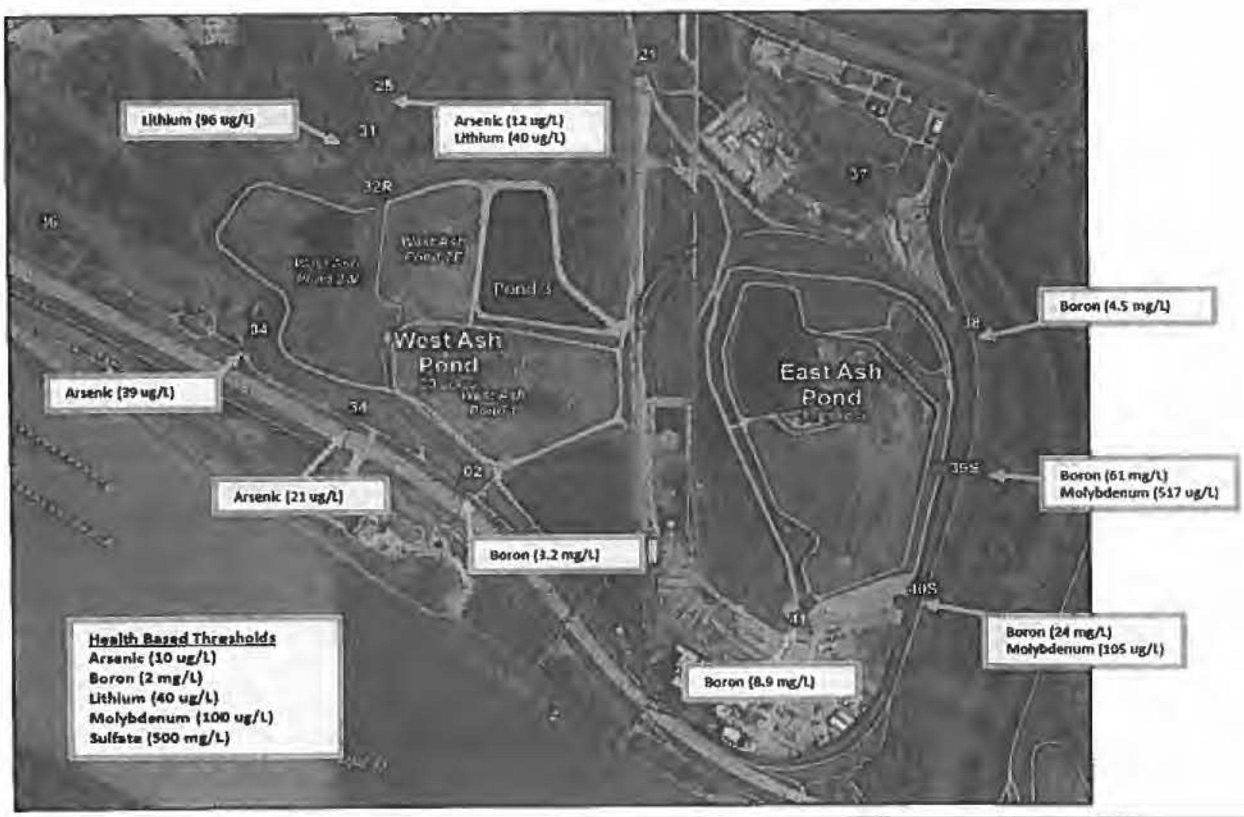

Figure 1. from Exhibit 16

Response: The cover system that is proposed will reduce the infiltration through the ponds to the maximum extent feasible. Even with the natural flow reversals, modeling for the west ash pond system predicts achievement of Class I: Potable Resource Groundwater standards in down gradient wells 25 years after closure completion. While this is a long period of time, it is shorter than the minimum required 30-year post closure care period. Groundwater monitoring is being conducted now and will continue throughout the post closure care period. Further, information was provided by the applicant demonstrating that contaminant migration through groundwater from the west ash pond system will not cause an exceedance of surface water quality standards.

28. When you walk across the Mississippi River at Lake Itasca you notice that at your feet are more minnows than you could count. The biological diversity of that area where the river begins is immense. And as an artist, traveling along the river, I really appreciate the beauty of the rushing water and the burnt riparian areas around it. So now the river comes down to us here. And instead of these little swimming minnows, we have boron and arsenic and molybdenum and all of these toxic chemicals that are in the river. And, as it's been mentioned before, at least 20 million people get their drinking water from these rivers from the groundwater. So, I am not a scientist, but having worked with a sponge in my hand, I know that when you fill up a sponge with too much water, it starts leaking out the bottom. So I'm sure that that's what's happening with the groundwater too. And if one were to take a sponge and just set it on the ground with no pond liner, whatever dirty stuff I've mopped up in the kitchen would be going into the ground below. And that's what's happening with these toxic chemicals.

Response: Following the same sponge analogy used by the commenter, a plastic cover will be put over the top of the sponge, thereby limiting the amount of water that can flow into the sponge and hence the amount of dirty water that can flow out of the sponge.

29. Coal ash contains many heavy metals that pose a threat to our drinking water and health such as mercury, arsenic and lead. These metals can lead to cancer, heart disease or cause neurological damage. The Applicant's coal ash ponds do not have the proper lining which allows these harmful toxins to seep into our groundwater and the Mississippi River. They plan to dewater these ponds and cap them, which still does not ensure protection of our groundwater. The Applicant's coal ash ponds also sit in a floodplain which is not a responsible location as flooding is inevitable, pollution will be as well. We need to hold the Applicant accountable for their actions as Wood River's groundwater is exceeding EPA thresholds. During this time of closure, we ask the Applicant and the EPA for support towards the communities who have been and will be affected downstream by this pollution.

Response: Please see response number 27.

30. I do not believe that the magnitude of contamination now or in the event of groundwater leaching from flooding has clearly been determined. Illinois EPA accepted a cap justified by incomplete modeling that will leave ash to be continually rewet by groundwater.

Response: Please see response number 27.

31. The risk and costs from liquified coal ash chemical contamination from the shuttered Wood River coal power plant to us and fellow residents is unacceptable. I am particularly concerned about the risks associated with unsafe groundwater levels and concurrent elevated levels of arsenic, boron, lithium, molybdenum, and sulfate to the Mississippi River and to our water supply.

Response: Please see response number 27.

32. We ask that Illinois EPA publish the closure plans so that they are easily accessible by the public and hold a public hearing to allow public participation and address questions and concerns of

surrounding community members, regarding the changes to the NPDES permit and the closure process.

Response: Since the approval of the west ash pond system closure plan, Illinois EPA has initiated a voluntary practice of posting closure plans on the Illinois EPA website. However, with the July 30, 2019, passage of the Coal Ash Pollution Prevention Act, Public Act 101-171, the owner of a coal combustion residual (CCR) surface impoundment must post all closure plans, permit applications, and supporting documentation, as well as any Illinois EPA approval of the plans or applications on its publicly available website. See 415 ILCS 5/22.59(i).

33. Illinois EPA should require the clean-up and containment to be done in a timely manner. My concern is the release of toxic chemicals in the local area and the Mississippi River because of flooding. Flooding will increase the contamination to many more locations that are south on the Mississippi, creating a bigger problem.

Response: Please see response number 27.

34. While addressing the coal ash contamination in Illinois, I believe we should put in place standards that permanently stop all coal ash dumps. We need to ensure the public access to information and an opportunity to participate in meaningful decisions, and evaluation of compliance in the sites that still need to be cleaned up. Polluters should be held accountable. This would require owners of coal ash dumps to have money set aside to cleanup and rehabilitate the land and waters that they have damaged. I believe it is EPA's job to ensure a safe environment for us all.

Response: 40 CFR Part 257 allows the operation of only properly constructed and lined CCR impoundments. Therefore, ash dumps, which are those CCR impoundments which are not properly constructed and lined, are being required to close. Even before the requirements imposed by 40 CFR Part 257 took effect, Illinois EPA oversaw the closure of more than a dozen ash impoundments. With the July 30, 2019, passage of the Coal Ash Pollution Prevention Act, Public Act 101-171, owners of CCR surface impoundments must post all closure plans, permit applications, and supporting documentation, as well as any Illinois EPA approval of the plans or applications on its publicly available website. 415 ILCS 5/22.59(i). Additionally, the Illinois Pollution Control Board must now adopt rules that specify meaningful public participation procedures for the issuance of CCR surface impoundment construction and operating permits, including, but not limited to, public notice of the submission of permit applications, an opportunity for the submission of public comments, an opportunity for a public hearing prior to permit issuance, and a summary and response of the comments prepared by the Illinois EPA. 415 ILCS 5/22.59(g)(6). Further, the Pollution Control Board must also adopt rules regarding financial assurance. 415 ILCS 5/22.59(g). The only acceptable forms of financial assurance are: a trust fund, a surety bond guaranteeing payment, a surety bond guaranteeing performance, or an irrevocable letter of credit. 415 ILCS 5/22.59(f). The Illinois EPA will continue its oversight of impoundment closures.

35. The Applicant should remove the accumulated, contaminated material in the ash ponds to a permanent dry site. Otherwise, they need to demonstrate, through much better sampling and groundwater flow measurements, that any other action would not leave a toxic legacy of contaminants that threaten adjacent sites.

Response: While removal and processing of ash for beneficial use may be practical in some instances, the benefits of removal must be balanced against increased air pollution from truck hauling, potential spills from trucks, dust and wear and tear on roads in the surrounding neighborhoods. In addition to those considerations, there must be a market for any processed material, or there must be a landfill willing to accept the large volume of waste, for which the local community in which the ash will be disposed, may have received none of the benefits. Response Number 27 provides further information regarding the selected closure method.

36. Please tighten the guidelines of this plan to clean up the coal ash ponds in Wood River to not only clean this up to the best of your ability but to also collect data that can be shared to do this clean up the best way and also to do it to set a precedent on how further coal ash ponds will be cleaned up in Illinois. Please consider also planting native plants to assist in the detoxification of our soil, and groundwater. Our region is currently suffering from a historic flood. I can only wonder how many toxins are leaching into the groundwater as I type.

Response: Groundwater quality at this site is being monitored and reported. The monitoring and reporting will continue for at least another 30 years. Monitoring data submitted to the Illinois EPA is available by submitting a Freedom of Information Act request at https://external.epa.illinois.gov/FOIA.

37. Because of where we are on the Mississippi, we're at the midpoint, the Illinois EPA has the opportunity to send clean water to the other half of the Mississippi River watershed, the southern half. And with this plan for the Wood River, the cleaner we can make that, the cleaner the rest of the river will be. And what a great model for the other areas in the state, as many as 25 plants that have these coal ash dumps, if we – if you can set a model for standards that will clean this water to maybe let those little fishes, not the boron, live in the water.

Response: Please see response number 27.

38. Prairie Rivers Network objects to the approved closure plan at this site. We would object to any closure plan that did not have public participation, public review, and we have significant concern with the groundwater model that was used to justify that plan. It left out a crucial pathway of contamination which is simply the groundwater itself. Only rainfall was allowed to be a contaminant transport pathway in that plan, and so you have a model that's not representing reality and is presenting a solution that it's essentially bias to support.

Response: Please see response number 27. Since the approval of the west ash pond system closure, Illinois EPA has initiated a voluntary posting of closure plans on its website. However, with the passage of Public Act 101-171 a formalized public participation

element will be added to CCR impoundment permitting, which would include modifications necessary to approve closure plans.

39. Illinois EPA must confirm that all the details provided by the Applicant in this closure plan are accurate and consistent, and that modeling takes into account the coal ash pond's location on the floodplain and the imminent threat to groundwater rise.

    Response: Please see response number 27. Further, it must be noted that the proposed capping system has not been put in place. Therefore, no improvement in groundwater quality would yet be expected.

40. The Applicant's closure plan ignores the fact that the Wood River ash ponds sit on a floodplain, where rising groundwater beneath the ponds has already caused monitoring to reveal high levels of contamination.

    Response: Please see response number 39.

41. Public comment and open dialogue are only useful and meaningful if they are accompanied by honesty and transparency. While this hearing is about the Applicant's NPDES permit, we didn't have a chance to speak to the Applicant's plan to cap the coal ash in place, and I'd like to start by speaking to that. Capping in place and leaving the contaminated waste within the pit on a floodplain will not stop rising groundwater from seeping through the unlined or poorly-lined coal ash ponds and allowing the toxic stew within to seep out. So it's likely that the arsenic that exceeds safe levels set by the USEPA by six times; boron that exceeds EPA health thresholds by 23 times; molybdenum that is nearly nine times safe levels; and sulfate that is nearly double EPA's health threshold will follow the groundwater as it recedes and find its way into the rivers and streams that supply drinking water, recreation, and critical habitat for diverse ecosystems.

    Response: Please see response numbers 27, 35, 36, 38, and 39.

42. Recently, I attended a workshop on ponds, bioswales and rain gardens. 80% of the runoff from an area can be captured in bioswales and rain gardens ponds, by using native plants. Chris Carl planted natives near three (3) superfund sites in Granite City. Using native plants, he successfully remediated an area. The University of Illinois then grew edible tomatoes on it. Native plants go down great distances into the soil, sequester the carbon, and draw up other pollutants. Pretty amazing! They stop most runoff, sequester carbon, and clean pollutants. Why aren't these natural remedies used at the Applicant's coal ash ponds? Bioremediation of Coal Ash Ponds use algae, fungi, planktonic bacteria and biofilm in use to clean coal sites. Some end products are used in agriculture. These techniques could reduce the cost of clean-up at Alton. The plan for remediation must be done now, with the greatest of care, with full disclosure, and an opportunity for public review. Our Mississippi Watershed depends on the integrity of this process.

    Response: The Applicant evaluated alternatives in the antidegradation assessment done by AMEC Foster Wheeler Environment & Infrastructure, Inc. for the Dynegy former Wood River Power. The ash ponds are required to be closed. The short-term temporary discharge of "dewaters" and "unwaters" do not allow for bioswales to be effective.

Additionally, once the final cover is on the ash ponds, the native vegetation will not be able to penetrate the cap to provide any additional benefit.

43. What I have learned in my research about this NPDES permit for the site leaves me with many concerns and objections. The first is capping these ponds after dewatering and unwatering will not protect the groundwater from toxins leaching through the soil. And that is not addressed in the permit.

Response: Please see response number 27.

44. I ask Illinois EPA require a process that permanently stops pollution from all ash ponds whether operating or closed; prohibits dumping coal ash where it will come into contact with groundwater; ensure public process for closure, for plant closures and permitting; and hold polluters accountable to clean up toxic sites at their own expense and rehab polluted sites at their own expense too.

Response: On July 30, 2019, Governor JB Pritzker signed the Coal Ash Pollution Prevention Act prohibiting coal ash discharge in the environment and requiring owners and operators of coal combustion residual surface impoundments to, *inter alia*, obtain Illinois EPA's approval for permitting and closure of CCR impoundments. 2019 Ill. Legis. Serv. P.A. 101-171 (West). Additionally, the Illinois Pollution Control Board must adopt rules that specify meaningful public participation procedures for the issuance of CCR surface impoundment construction and operating permits, including, but not limited to, public notice of the submission of permit applications, an opportunity for the submission of public comments, an opportunity for a public hearing prior to permit issuance, and a summary and response of the comments prepared by the Illinois EPA. 415 ILCS 5/22.59(g)(6). Further, the Pollution Control Board must adopt rules regarding financial assurance. 415 ILCS 5/22.59(g). The only acceptable forms of financial assurance are: a trust fund, a surety bond guaranteeing payment, a surety bond guaranteeing performance, or an irrevocable letter of credit. 415 ILCS 5/22.59(f).

45. I would propose the Illinois EPA use the Wood River site as a learning laboratory to create a plan to address 85 coal ash containment areas we have throughout the state of Illinois. Business as usual of sacrificing areas simply does not work any longer. We can and will do better. Safe drinking water, rivers and groundwater, we don't know what we've got until it's gone. Water unites us. Water is sacred for life. Let's us pledge to care for it for our own lives and also for those who come after us.

Response: The State of Illinois has a long-standing policy to restore, protect, and enhance the environment, including the purity of the air, land, and waters, including Illinois' groundwater. On July 30, 2019, Governor JB Pritzker signed the Coal Ash Pollution Prevention Act prohibiting coal ash discharges in the environment and requiring owners and operators of coal combustion residual surface impoundments to, *inter alia*, obtain Illinois EPA's approval for permitting and closure of CCR impoundments. 2019 Ill. Legis. Serv. P.A. 101-171 (West). The Coal Ash Pollution Prevention Act, one of the nation's first

of its kind, protects Illinois' groundwater and rivers from the toxic chemicals that can harm Illinois residents.

46. I did read the notice for tonight's hearing and what you're soliciting comments about. And I saw Wood River Creek mentioned in there as, you know, not being a creek of any, you know, real biological habitat significance. And you got to ask why that is. How did it get to be that way? For me, only full remediation and complete removal of the coal ash is acceptable. I think that the Applicant hasn't been held accountable for removing the heavy metals, and that's why we're not just counting on the Illinois EPA, but we're wanting you to do your job. And I am angry that capping isn't addressed in this, in this hearing. It's not sufficient to throw a cap over the top of it, and that's not going to protect the groundwater. So only full remediation is the, ultimately the acceptable outcome here in removing all the ash.

Response: Please see response number 27.

47. It has been demonstrated that there's a clear fingerprint of coal ash contamination to the groundwater at Wood River. And now that groundwater is unsafe with dangerously elevated concentrations of arsenic, boron, lithium, molybdenum, and sulfate. Groundwater testing has revealed arsenic in concentrations nearly six times safe levels; boron, the concentrations as high as 23 times the health threshold and nearly 35 times Illinois groundwater standard; molybdenum, the concentrations nearly nine times safe levels; and sulfate, the concentration 72 percent over the health threshold and more than double Illinois standards. What is going on here? Where was the Illinois EPA during the years when this situation was allowed to get this bad? And now the Applicant has submitted a plan to close all the ash ponds in place. I am aghast that the Illinois EPA would even consider allowing such a plan. A plan that would ensure the continued serious contamination of our groundwater and the water going into Wood River and the Mississippi, which provides drinking water, habitat, and recreational opportunities to thousands of area residents and thousands more downstream. What is going on? How is it that the public was not allowed to participate in the closure plan process? I object to the closure plan. It is dangerous to the public, and it is the job of the Illinois EPA to protect us from exactly this sort of industry recklessness. Again, I ask, what is going on here? And so the second reason I am here is to ask that this closure plan, as it is now, be stopped based on the fact that the modeling associated with it was clearly incomplete and inadequate. The plan does not solve the serious contamination problem but would allow it to get even worse. Moving forward with this plan is simply not acceptable.

Response: Please see response number 27.

48. It would seem to me that you all have a challenge here. And I'm challenging you to consider maybe making this project here in Wood River a model that could be used in other locations. I don't know. I've heard about the Duke power plant project, you know, the coal ash issue that they have there, and that there has been some success in cleaning. So I'm just challenging you to look to where success has taken place and maybe make this one a model that can be used for the state of Illinois.

Response: See response number 45.

SELECT TERMS, ACRONYMS and INITIALS

Agency, or Illinois EPA	Illinois Environmental Protection Agency
Applicant	Dynegy Midwest Generation, L.L.C./Vistra
CCR	Coal combustion residual
CFR	Codified Federal Regulations
Dewaters	Waters contained in the pore spaces of the deposited ash in the ash ponds
DMR	Discharge Monitoring Report
ILCS	Illinois Compiled Statutes
mg/L	Milligrams per Liter
NPDES	National Pollutant Discharge Elimination System
PAH	Polycyclic Aromatic Hydrocarbon
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
ug/L	Micrograms per Liter
Unwaters	Waters above the ash in the ash ponds

DISTRIBUTION OF RESPONSIVENESS SUMMARY

An announcement that a modified NPDES permit and the accompanying responsiveness summary are available on the Illinois EPA website was mailed or e-mailed to all who registered at the hearing and to all who submitted written or electronic comments. Printed copies of this responsiveness summary are available from Barb Lieberoff, Illinois EPA, Office of Community Relations, 217-524-3038, email: barb.lieberoff@illinois.gov

WHO CAN ANSWER YOUR QUESTIONS

Illinois EPA NPDES Permits:

Illinois EPA Technical Decisions:........... Darin LeCrone 217-782-0610
Antidegradation Assessment .... Scott Twait.............217-558-2012
Stream Characterization .... Scott Twait.............217-558-2012
Groundwater Issues.............................. Lynn Dunaway........217-782-1020
Legal Issues.. Rex Gradeless........217-782-5544
Public hearing of Mach 26, 2019........... Office of Community Relations.... 217-524-3038

The public notice, the hearing notice, the hearing transcript, the final modified permit, and the responsiveness summary are available on the Illinois EPA website (please enter "IL0000701" in the search box immediately above "Posting Date"): https://www2.illinois.gov/epa/public-notices/Pages/NPDES-individual-notices.aspx.

ATTACHMENT 8

Attachment 8

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

CITI DEVELOPMENT, LLC,	)	
	)	
Petitioner,	)	
	)	
vs.	)	PCB No. 21-110
	)	
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY,	)	(Variance – Land)
	)	
Respondent.	)	

AFFIDAVIT OF JESSE FROH

My name is Jesse Froh. I am an adult citizen of the Puerto Rico over twenty-one years of age. I am of sound mind, have personal knowledge of the matters set forth in this affidavit, and am competent to give this affidavit.

1. I am the Vice President for CTI Development LLC.

2. The West Ash Complex is located at the former Wood River Power Station at #1 Chessen Lane in Alton, Illinois (Madison County).

3. The Wood River Power Station operated since 1954.

4. The West Ash Complex is made up of West Ash Ponds 1, 2W, and 2E.

5. The West Ash Complex was commissioned in 1997.

6. The Wood River Power Station is no longer operational and has been demolished. Demolition was completed in July 2021.

7. There are no ongoing processes at the Power Station and thus no emissions or discharges associated with the facility.

8. The ash ponds comprising the West Ash Complex are inactive CCR surface impoundments separated by splitter dikes. West Ash Pond 2E contains a geomembrane liner

system and West Ash Ponds 1 and 2W are unlined. The amount of CCR being left in place in the West Ash Complex is approximately 950,000 cubic yards of CCR.

9. There is no relevant pollution control equipment for closure of the West Ash Complex.

10. No persons are currently employed at the Wood River Power Station.

11. The Wood River Power Station ceased operation on June 1, 2016.

12. Immediately South and Southwest of the facility is the Mississippi River (across Berm Highway). Immediately East of the facility is the Wood River. A privately-owned parking lot and former smelting facility is located North and Northwest of the facility, respectively.

13. In 2015 and 2016, Dynegy Midwest Generation, LLC ("Dynegy") submitted to the Illinois Environmental Protection Agency ("Illinois EPA") notices of intent to close the ponds included in the West Ash Complex.

14. On June 9, 2016, Dynegy submitted a request to Illinois EPA for modification to its NPDES permit to dewater the West Ash Complex. Dewatering the ash ponds is the first step in the closure process.

15. In October 2016, April 2017, and May 2017, Dynegy submitted a Closure Plan, Addenda to the Closure Plan, and Revision to the Addenda, to the Illinois EPA (collectively "Closure Plan").

16. Illinois EPA approved the Closure Plan on May 25, 2017.

17. Neither Dynegy nor CTI were unable to begin dewatering of the West Ash Complex until Illinois EPA issued a modified NPDES permit.

18. The draft NPDES permit modification went out to public notice in September 2018 and a public hearing was held in April 2019.

19. Dynegy transferred ownership of the Wood River Power Station to CTI Development on August 30, 2019.

20. In September 2019, Dynegy notified Illinois EPA that ownership of the Wood River Power Station had been transferred to CTI.

21. Upon transfer of ownership, CTI began planning and administrative work necessary for moving the closure process forward.

22. CTI met with Illinois EPA on October 15, 2019 to discuss closure of the West Ash Complex.

23. CTI submitted a letter to Illinois EPA on November 11, 2019 documenting the transfer of ownership of the Wood River Power Station.

24. On December 4, 2019, Illinois EPA sent a letter to CTI, acknowledging the change in ownership and transfer of closure responsibility to CTI.

25. On April 15, 2020, Illinois EPA issued modified NPDES Permit No. IL0000701.

26. Immediately following the issuance of the modified NPDES permit, CTI began dewatering of the West Ash Complex.

27. CTI is currently in the process of closing the West Ash Complex by continuing to dewater the ponds and move material in construction of the subgrade.

28. To date, CTI has moved approximately 260,000 cubic yards of material for subgrade, with approximately 125,000 cubic yards left to complete the subgrade. The subgrade must be completed prior to installation of the synthetic liner and final soil cover.

29. CTI will be unable to fully close the West Ash Complex before July 30, 2021 due to the unanticipated and significant delay in issuance of the modified NPDES Permit.

30. On May 5, 2021, Illinois EPA issued to CTI renewed NPDES Permit No. IL0000701.

31. To CTI's knowledge, neither CTI nor Dynegy, the prior owner of the Wood River Power Station, have been issued a prior variance regarding the relief that is similar to what is requested in the Amended Petition.

32. The West Ash Complex will be closed by leaving the CCR in place and using an alternative geomembrane cover system.

33. After closure activities are completed, post-closure activities, which include groundwater monitoring and maintenance of the final cover system, will occur over the 30-year post-closure period.

34. Per the Closure Plan, closure activities will include, but are not limited to, relocating and/or reshaping the existing CCR within the West Ash Complex to achieve acceptable grades for closure, as well as constructing a final cover system.

35. Removal of free water may be required prior to the relocation and grading of CCR and fill materials.

36. The final cover system will comply with the applicable design requirements of the federal CCR Rule, 40 CFR Part 257, including establishment of a vegetative cover to minimize long-term erosion.

37. The final cover system will be installed on all three ponds in the West Ash Complex and will consist of, from bottom to top, a 40-mil linear low-density polyethylene

(LLDPE) geomembrane membrane, a geocomposite drainage layer, and a minimum 18-inch protective cover soil layer.

38. An erosion layer consisting of no less than 6 inches of earthen material capable of sustaining plant growth will be placed on top of the protective cover soil layer.

39. Wastewater will be generated from unwatering and dewatering the West Ash Complex as part of the closure process, and will be discharged in accordance with NPDES Permit No. IL0000701.

40. In order to meet the July 30, 2021 deadline, CTI would need to complete the subgrade and install the synthetic liner and the final soil cover. It is not possible with any amount of man-power or capital to complete this work by July 30, 2021.

41. The costs of obtaining a construction permit for closure under 35 Ill. Adm. Code Part 845 would exceed approximately $150,000.00.

42. Obtaining a construction permit for the closure of the West Ash Complex under Part 845 would significantly delay the closure of the West Ash Complex.

43. CTI can complete the measures outlined in the Closure Plan by July 30, 2024.

44. CTI has begun pumping to remove surface water, dewatering of the CCR, relocation and/or reshaping the existing CCR, and construction of drainage structures.

45. The estimated total cost to complete the measures outlined in the Closure Plan by July 30, 2024 is approximately $2,600,000.00.

____

Jesse Froh

Dated: __7/29/2021______

County of

State of Missouri

Before me, the undersigned Notary Public in and for the State ____________appeared Jesse Froh, who is known to me, and who being by me duly sworn, did state that the forgoing Affidavit is true and correct based on his personal knowledge and the records of CTI Development LLC.

____

Notary Public

My commission expires on: