Annual Inspection Report
Jeffrey Energy Center
Fly Ash Landfill

Prepared for:

Westar Energy

Jeffrey Energy Center

St. Marys, Kansas

Prepared by:

CB&I Environmental & Infrastructure, Inc.

Janurary 2017

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§257.84(b)(1)(ii) stipulates: *"(b) Annual inspections by a qualified professional engineer. (1) Existing and new CCR landfills and any lateral expansion of a CCR landfill must be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards. The inspection must, at a minimum, include:* *(ii) A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit."*	Section 4.0

USEPA CCR Rule Criteria 40 CFR §257.84	Jeffrey Energy Center (JEC) Annual Inspection Report
§257.84(b)(2)(i) stipulates: *"(2) Inspection report. The qualified professional engineer must prepare a report following each inspection that addresses the following:* *(i) Any changes in geometry of the structure since the previous annual inspection;"*	Section 5.1
§257.84(b)(2)(ii) stipulates: *"(ii) The approximate volume of CCR contained in the unit at the time of the inspection;"*	Section 5.2
§257.84(b)(2)(iii) stipulates: *"(iii) Any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit;"*	Section 5.3
§257.84(b)(2)(iv) stipulates: *"(iv) Any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection."*	Section 5.4

USEPA CCR Rule Criteria 40 CFR §257.84	Jeffrey Energy Center (JEC) Annual Inspection Report
§257.84(b)(4) stipulates: *(4) Frequency of inspections. The owner or operator of the CCR unit must conduct the inspection required by paragraphs (b)(1) and (2) of this section on an annual basis. The date of completing the initial inspection report is the basis for establishing the deadline to complete the first subsequent inspection. Any required inspection may be conducted prior to the required deadline provided the owner or operator places the completed inspection report into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing subsequent inspection reports is based on the date of completing the previous inspection report. For purposes of this section, the owner or operator has completed an inspection when the inspection report has been placed in the facility's operating record as required by §257.105(g)(9).*	Section 1.0
§257.84(b)(5) stipulates: *"(5) If a deficiency or release is identified during an inspection, the owner or operator must remedy the deficiency or release as soon as feasible and prepare documentation detailing the corrective measures taken."*	Section 6.0
§257.84(c) stipulates: *"(c) The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in §257.105(g), the notification requirements specified in §257.106(g), and the internet requirements specified in §257.107(g)."*	Sections 7.0

1.0 INTRODUCTION

CB&I Environmental and Infrastructure, Inc. (CB&I) has prepared the following Annual Inspection Report (Report) at the request of Westar Energy (Westar) for the Fly Ash Landfill (Landfill) located at the Jeffrey Energy Center (JEC) in St. Mary's, Kansas. JEC is a coal-fired and natural gas fired power plant that has been in operation since 1980. The Fly Ash Landfill has been deemed to be a regulated coal combustion residual (CCR) unit by the United States Environmental Protection Agency (USEPA), through the Disposal of Coal Combustion Residuals from Electric Utilities Final Rule (CCR Rule) Title 40 Code of Federal Regulations (CFR) Part §257 and §261.

In support of compliance to the CCR Rule, Mr. Richard Southorn (a qualified professional engineer with CB&I) conducted an on-site inspection of the Fly Ash Landfill on November 29th 2016. Prior to inspection, CB&I personnel reviewed the relevant portions of the facility's operating record and first annual inspection report in relation to this Report, under the direct supervision of Mr. Southorn. This Report meets the requirements set forth within 40 CFR §257.84(b)(1) and (b)(2) based the review of available information and visual observation, to evaluate if the design, construction, operation, and maintenance of the Landfill is consistent with good engineering standards. The annual landfill inspection has been conducted and completed in compliance with the frequency of inspection timeframe set forth in §257.84(b)(4).

2.0 JEC LANDFILL OVERVIEW

Westar owns and operates an industrial landfill at JEC near St Marys, Pottawatomie County, Kansas. JEC is located approximately 4.5 miles north of Belvue, Kansas and approximately 4.5 miles west of Highway 63 and resides in Sections 1, 2, 11, and 12, Township 9 South, Range 11 East and Sections 6 and 7, Township 9 South, Range 12 East. The location of the Fly Ash Landfill is depicted in **Figure 1.**

The Fly Ash Landfill is located within the JEC boundary. The Fly Ash Landfill is comprised of Fly Ash Area 1, which is approximately 98.8 acres and the proposed Fly Ash Area 2 which is approximately 59.5 acres and not yet constructed. This Report reflects the complete inspection of Fly Ash Area 1. Existing site topography is depicted in **Figure 2**.

Fly ash is transported to the active portion of the Fly Ash Landfill, where it is discharged and graded by dozers and compacted. Periodic dozing of the fly ash material will occur as needed, within the active area to maintain a relatively uniform grade. The fly ash will be wetted prior to the final cover placement and will form a hardened surface as it dries.

3.0 REVIEW OF AVAILABLE INFORMATION

Prior to the on-site inspection, Mr. Southorn reviewed the available information for the Fly Ash Landfill as provided by Westar:

- Kansas Department of Health and Environment – Bureau of Waste Management (KDHE-BWM) Industrial Landfill Permit No. 0359, October 15, 2015.
- Jeffrey Energy Center Weekly Inspection Reports, October 2015 through November 2016.
- Jeffrey Energy Center Annual Landfill Inspection – 2015, Blackstone Environmental, January 15, 2016.

Mr. Southorn verified the available information during the on-site inspection on November 29th 2016.

3.1 Summary of Weekly Inspection Reports

Based on a review of the weekly inspection reports, it was noted throughout this past year that sloughing has been observed along the south berm. Following the annual inspection, the areas of sloughing along the south berm were undergoing stabilization, as shown in Photograph 22. Additionally, it was noted that small animal burrows were observed throughout the year. These burrows are documented and monitored following an observation.

3.2 Summary of Previous Annual Inspection Report

Based on a review of the previous annual inspection report, it noted that there were two areas of shallow sloughing on the south berm. Following the annual inspection, stabilization of the sloughing areas are being performed. Photographs 12 and 13 depict the sloughing areas along the south berm. Photograph 22 depicts on-going repairs of the sloughing.

The active landfilling area is graded to ensure adequate drainage and all stormwater conveyance features are functioning as designed. It was concluded that the landfill procedures have not deviated from the operational plan for the landfill and that the layout and grading processes for Fly Ash Area 1 are consistent with the design.

4.0 INSPECTION SUMMARY

During the on-site inspection, Mr. Southorn focused on standard geotechnical signs of distress or malfunction such as slumping at the toe of slopes, tensile cracking, abnormal or excessive erosion on the side slopes or stormwater management facilities slope bulging, and groundwater/surface water seepage or ponding. These visual signs are potential indicators of structural weakness of the CCR Landfill.

4.1 Visual Signs of Distress or Malfunction

Based on observations noted during the 2015 annual inspection, areas of sloughing were being prepared for stabilization. Following the annual inspection, proper stabilization of the sloughing areas continue. Based on discussions on the date of inspection, it is CB&I's understanding that Westar intends to complete these repairs during the 2016/2017 construction season. Repairs will generally include regrading as necessary and the placement of riprap in sloughing areas to prevent future erosion that may result from seepage. This approach is appropriate to address the area of sloughing on the southern berm. Photographs 12 and 13 depict sloughing areas along the south berm. Photograph 22 depicts on-going repairs of the sloughing.

Slope appearance, slope stability, and overall site conditions were assessed in all other areas. Closed portions of the Fly Ash Area 1 Landfill outside of the slough areas exhibited well-established vegetative cover and do not present concern.

4.2 Review of Environmental Control Systems

Environmental control systems at the Fly Ash Area 1 are functioning as designed. It was noted that gaps in the perimeter berm surrounding the active landfill area have potential to allow stormwater to flow into the active area. Gaps in the perimeter berm were currently being filled to provide adequate protection to ensure stormwater does not flow onto the active area. The contact water management system is believed to be in good operating condition and functioning as intended.

5.0 CONCLUSIONS

Based on a review of the available facility information and on-site inspection, the following conclusions were developed:

5.1 Changes in Geometry

As of the date of this inspection, the Fly Ash Area 1 Landfill is actively accepting CCR material. Changes in geometry were evaluated by comparing topographic information from the 2015 Annual Landfill Inspection Report and the latest survey conducted in April 2016. Changes in geometry of the Fly Ash Area 1 Landfill since the previous annual inspection consist of CCR placement north of the southern berm. Minor grading has occurred in this area to promote positive drainage of stormwater.

5.2 CCR Volume

The total permitted disposal capacity for the Fly Ash Area 1 Landfill is 3,746,000 cubic yards (cy), as stated in the 2015 Annual Landfill Inspection Report. Based on the most recent survey, the remaining capacity was estimated at approximately 657,054 cy. The

volume of CCR material contained within the Fly Ash Area 1 Landfill is approximately 3,088,946 cy. As detailed in the 2015 Annual Report, the average fill rate for the Fly Ash Area Landfill is approximately 60,360 tons per year of CCR material. Based on the fill rate, it is estimated that the Fly Ash Area 1 Landfill has a remaining operational life of approximately 11 years.

5.3 Structural Weakness and Disrupting Conditions

Slough areas at the toe of slope on the southern berm need to be repaired, although the areas do not provide an imminent stability issue. No other signs of distress or malfunction indicate actual or potential structural weakness at the Fly Ash Area 1 Landfill.

5.4 Changes Affecting Stability and Operations

There have been no changes to the Landfill that pose a threat or concern to the stability of the landform. Landfill operations and maintenance have not deviated from the original designed plan.

6.0 RECOMMENDATIONS

Based on the on-site inspection performed on November 29th 2016, CB&I recommend the following actions:

- ❑ Continue repairs of sloughing areas as described in previous text (see Photographs 12, 13, and 22).
- ❑ Continue to stabilize filled in gaps along the perimeter berm to minimize stormwater flow onto active areas during large storm events as observed (see Photograph 23).
- ❑ Continue to monitor erosion controls, animal burrows, and vegetative cover on a weekly basis.
- ❑ Continue proper management of the active landfill areas.
- ❑ Continue to monitor all stormwater conveyance features for signs of erosion or malfunction on a weekly basis.

7.0 RECORDS RETENTION AND MAINTENANCE

7.1 Incorporation of Plan into Operating Record

§257.105(g) of 40 CFR Part §257 provides record keeping requirements to ensure that this Plan will be placed in the facility's operating record. Specifically, §257.105(g) stipulates:

> §257.105(g)*: "(g) Operating criteria. The owner or operator of a CCR unit subject to this subpart must place the following information, as it becomes available, in the facility's operating record: (9) The periodic inspection report as required by §257.84(b)(2)."*

This Report will be placed within the Facility Operating Record upon Westar's review and approval.

7.2 Notification Requirements

§257.106(g) of 40 CFR Part §257 provides guidelines for the notification of the availability of the initial and periodic plan. Specifically, §257.106(g) stipulates:

> §257.106(g): *(g) Operating criteria. The owner or operator of a CCR unit subject to this subpart must notify the State Director and/or appropriate Tribal authority when information has been placed in the operating record and on the owner or operator's publicly accessible internet site. The owner or operator must: (7) Provide notification of the availability of the periodic inspection reports specified under §257.105(g)(9)."*

The State Director and appropriate Tribal Authority will be notified upon placement of this Plan in the Facility Operating Record.

§257.107(g) of 40 CFR Part §257 provides publicly accessible Internet site requirements to ensure that this Plan is accessible through the Westar Energy webpage. Specifically, §257.107(g) stipulates:

> §257.107(g): *(g) Operating criteria. The owner or operator of a CCR unit subject to this subpart must place the following information on the owner or operator's CCR Web site: (7) The periodic inspection reports specified under §257.105(g)(9)."*

This Plan will be uploaded to Westar Energy's CCR Compliance reporting Website upon Westar's review and approval.

8.0 PROFESSIONAL ENGINEER CERTIFICATION

The undersigned registered professional engineer is familiar with the requirements of the CCR Rule and has visited and examined the Jeffrey Energy Center or has supervised examination of the Jeffrey Energy Center by appropriately qualified personnel. I hereby certify based on a review of available information within the facility's operating records and observations from my personal on-site inspection (including the photographs contained in **Appendix A**), that the Fly Ash Disposal Site does not exhibit any appearances of actual/potential structural weakness that would be disruptive to the normal operations of the Jeffery Energy Center CCR Unit. The unit is being operated and maintained consistent with recognized and generally accepted good engineering standards and practices. This certification was prepared as required by 40 CFR Part §257.84(b).

Name of Professional Engineer: Richard Southorn

Company: CB&I

Signature:

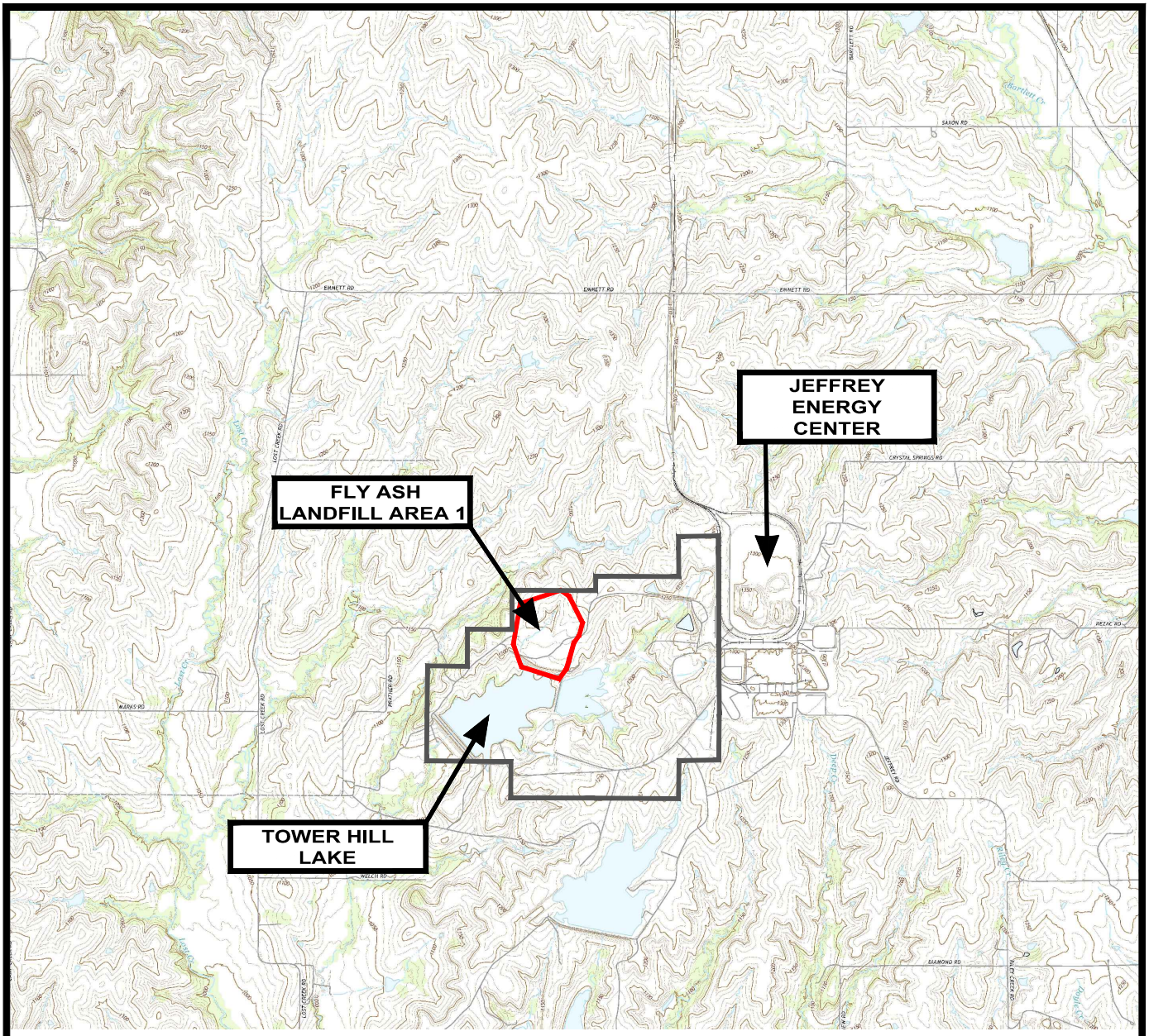
Date: 1/12/2017

PE Registration State: Kansas

PE Registration Number: PE25201

Professional Engineer Seal:

FIGURES



LEGEND

CCR UNIT BOUNDARY

KDHE-BWM INDUSTRIAL LANDFILL PERMIT NO. 0359 BOUNDARY

N

0 5000'

GRAPHIC SCALE

NOTES

1. AERIAL TOPO OBTAINED FROM USGS 7.5-MINUTE SERIES, EMMETT AND LACLEDE QUADRANGLE, KANSAS, 2014.
2. ALL BOUNDARIES ARE APPROXIMATE.

CB&I Environmental & Infrastructure, Inc.

WESTAR ENERGY
25905 JEFFREY RD., ST. MARYS, KS

FIGURE 1
FLY ASH AREA 1
SITE LOCATION PLAN

APPROVED BY:	RDS	PROJ. NO.:	631214397	DATE:	JANUARY 2017

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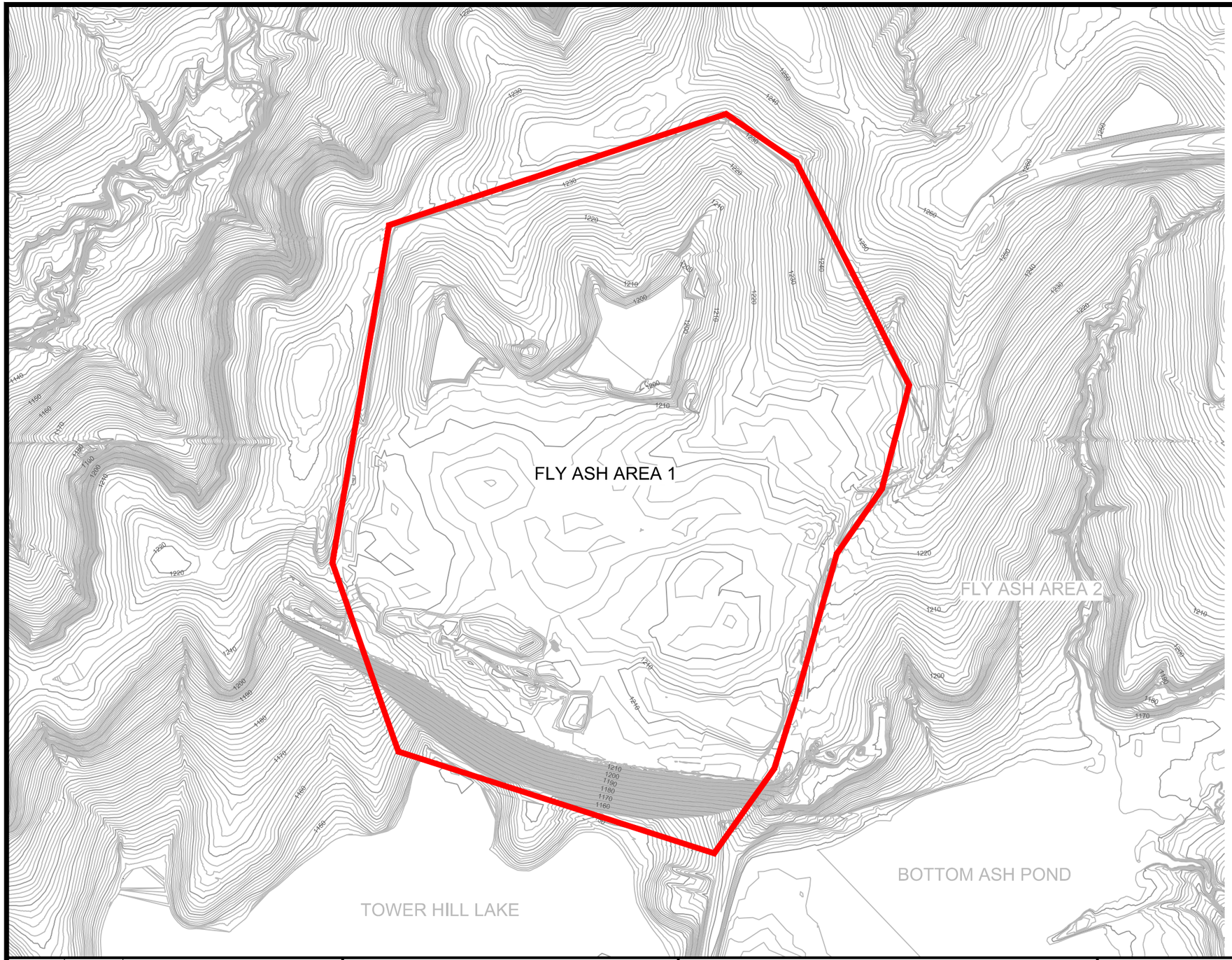

N

0 400'

GRAPHIC SCALE

LEGEND

CCR UNIT BOUNDARY

NOTES

1. EXISTING CONTOURS DEVELOPED BY PEC IN APRIL 2016.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
3. FLY ASH AREA 1 BOUNDARY IS APPROX. 98.8 ACRES.
4. ALL BOUNDARIES ARE APPROXIMATE.
5. REFER TO APPENDIX A FOR PHOTOGRAPHIC DOCUMENTATION.

REV. NO.	DATE	DESCRIPTION

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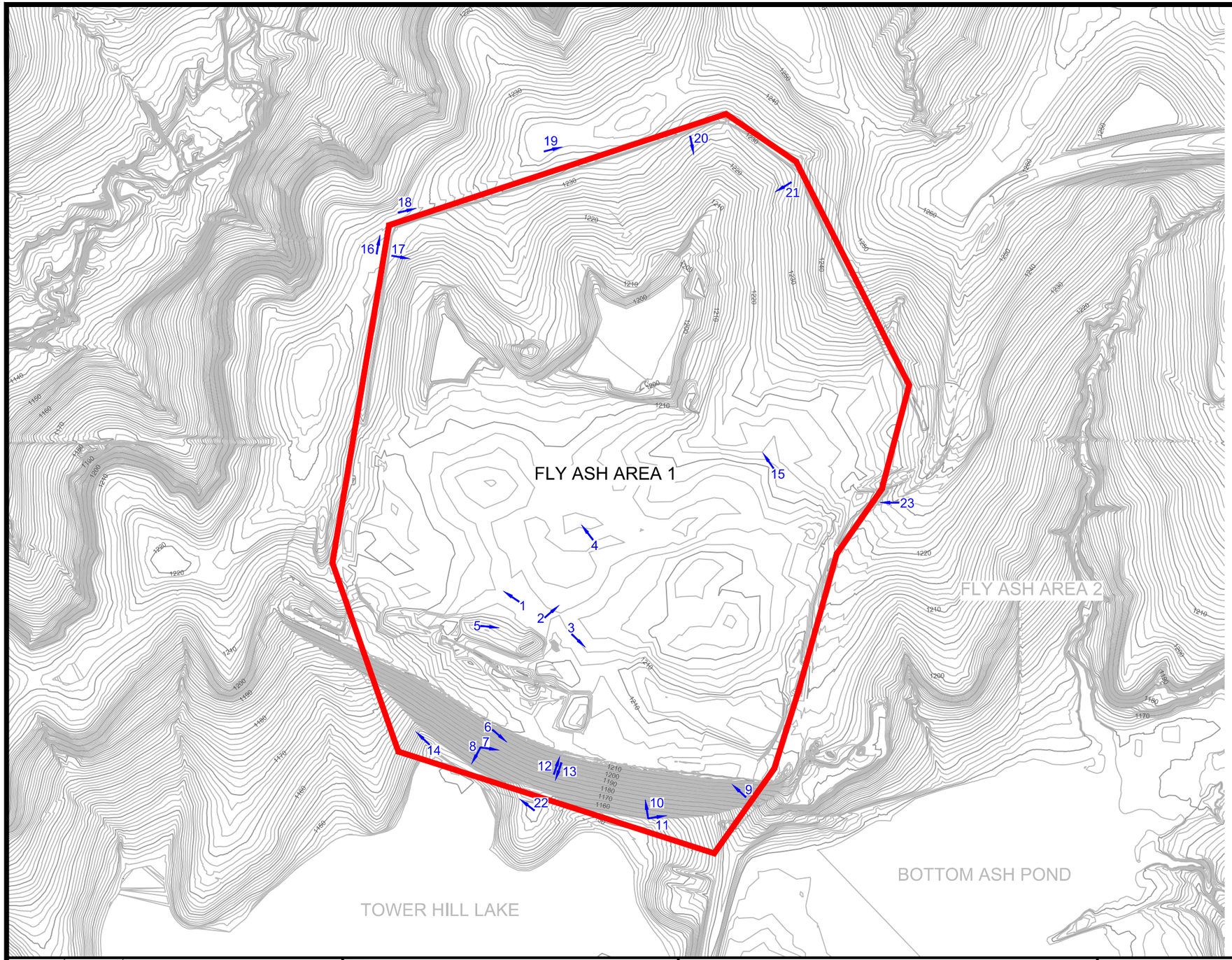
FIGURE 2
FLY ASH AREA 1
EXISTING SITE TOPOGRAPHY

DRAWN BY:	APPROVED BY:	PROJ. NO.:	DATE:
SJL	RDS	631214397	JANUARY 2017



N

0 400'

GRAPHIC SCALE

LEGEND

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CB&I Environmental & Infrastructure, Inc.

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FIGURE 3
FLY ASH AREA 1
PHOTO LOG PLAN VIEW

DRAWN BY:	SJL	APPROVED BY:	RDS	PROJ. NO.:	631214397	DATE:	JANUARY 2017

T:\AutoCAD\Projects\Westar Energy\Jeffrey\Compliance Reports\Annual Inspection Photo Log Plan.dwg, 1/6/2017 3:37:29 PM, DWG To PDF.pc3

APPENDIX A

Annual Inspection Photo Log

Photograph No. 1 **Date:** November 29, 2016 **Direction:** Northwest	
Description: Observing active fly ash area operations and maintenance. No evidence of ponding or airborne dust.	

Photograph No. 2 **Date:** November 29, 2016 **Direction:** East	
Description: Observing active fly ash area operations and maintenance. No evidence of ponding or airborne dust.	

Photograph No. 3 **Date:** November 29, 2016 **Direction:** Southeast	
Description: Recently graded area in foreground. Small piles in background are fly ash piles that are older and not yet graded.	

Photograph No. 4 **Date:** November 29, 2016 **Direction:** Northwest	
Description: Observing active fly ash area operations and maintenance. No evidence of ponding or airborne dust.	

Photograph No. 5 **Date:** November 29, 2016 **Direction:** West	
Description: Standing on older fly ash with active, graded area in background. No evidence of ponding or airborne dust.	

Photograph No. 6 **Date:** November 29, 2016 **Direction:** East	
Description: Observing landfill side slope. Vegetation is well-established and maintained. No evidence of erosion or malfunction at this location.	

Photograph No. 7 **Date:** November 29, 2016 **Direction:** East	
Description: Observing landfill side slope. Vegetation is well-established and maintained. No evidence of erosion or malfunction at this location.	

Photograph No. 8 **Date:** November 29, 2016 **Direction:** South	
Description: Observing landfill side slope with healthy vegetation growing towards Tower Hill Lake. No evidence of sloughing or erosion at this location.	

Photograph No. 9 **Date:** November 29, 2016 **Direction:** Northwest	
Description: Observing landfill up slope. Vegetation is well-established and maintained. No evidence of erosion or malfunction at this location.	

Photograph No. 10 **Date:** November 29, 2016 **Direction:** North	
Description: Observing erosion gullies on landfill side slope that will need repair.	

Photograph No. 11 **Date:** November 29, 2016 **Direction:** Northeast	
Description: Observing landfill up slope. Vegetation is well-established and maintained. No evidence of erosion or malfunction.	

Photograph No. 12 **Date:** November 29, 2016 **Direction:** South	
Description: Observing an area of sloughing erosion. This area will be repaired and stabilized by placing riprap where groundwater daylights on side slope.	

Photograph No. 13 **Date:** November 29, 2016 **Direction:** North	
Description: Observing the area of sloughing erosion from an upslope view. This area requires repair and stabilization.	

Photograph No. 14 **Date:** November 29, 2016 **Direction:** Northwest	
Description: Observing monitor wells between the landfill and Tower Hill Lake.	

Photograph No. 15 **Date:** November 29, 2016 **Direction:** Northwest	
Description: Observing the designated economizer ash disposal area. No dust present, despite windy conditions.	

Photograph No. 16 **Date:** November 29, 2016 **Direction:** Northeast	
Description: Observing the stormwater diversion berm section.	

Photograph No. 17 **Date:** November 29, 2016 **Direction:** East	
Description: Observing the active fly ash disposal area.	

Photograph No. 18 **Date:** November 29, 2016 **Direction:** Northeast	
Description: Observing the stormwater diversion berm section.	

Photograph No. 19 **Date:** November 29, 2016 **Direction:** Northeast	
Description: Observing the outside of the stormwater diversion berm section. Vegetation is well-established and maintained. No evidence of erosion or malfunction.	

Photograph No. 20 **Date:** November 29, 2016 **Direction:** South	
Description: Overview of Fly Ash Area 1 and Tower Hill Lake.	

Photograph No. 21 **Date:** November 29, 2016 **Direction:** Southwest	
Description: Overview of Fly Ash Area 1 and Tower Hill Lake.	

Photograph No. 22 **Date:** December 27 – 30, 2016 **Direction:** Northwest	
Description: Overview of sloughing repairs along south berm.	

Photograph No. 23 **Date:** December 27 – 30, 2016 **Direction:** West	
Description: Observing filling of the perimeter berm gaps along eastern border.	