

# Tecumseh Energy Center Bottom Ash Settling Area – History of Construction.

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**KANSAS DEPARTMENT OF HEALTH AND  
ENVIRONMENT PERMIT #322**

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**Plan Review/Amendment Log**

Date of Review	Reviewer Name	Sections Amended and Reason	Version

<p><b>USEPA CCR Rule Criteria</b></p> <p><b>40 CFR 257.73</b></p>	<p><b>Jeffrey Energy Center (JEC)</b></p> <p><b>History of Construction</b></p>
<p><b>§257.73(c)(1)(i) stipulates:</b></p> <p><b>(i) The name and address of the person(s) owning or operating the CCR unit; the name associated with the CCR unit; and the identification number of the CCR unit if one has been assigned by the state.</b></p>	<p><b>Section 3.1</b></p>
<p><b>§257.73(c)(1)(ii) stipulates:</b></p> <p><b>(i) The location of the CCR unit identified on the most recent U.S. Geological Survey (USGS) 7 1/2 minute or 15 minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.</b></p>	<p><b>Section 3.2</b></p>
<p><b>§257.73(c)(1)(iii) stipulates:</b></p> <p><b>(ii) A statement of the purpose for which the CCR unit is being used.</b></p>	<p><b>Section 3.3</b></p>
<p><b>§257.73(c)(1)(iv) stipulates:</b></p> <p><b>(iv) The name and size in acres of the watershed within which the CCR unit is located.</b></p>	<p><b>Section 3.4</b></p>
<p><b>§257.73(c)(1)(v) stipulates:</b></p> <p><b>(v) A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed.</b></p>	<p><b>Section 3.5</b></p>

<p><b>USEPA CCR Rule Criteria</b></p> <p><b>40 CFR 257.73</b></p>	<p><b>Jeffrey Energy Center (JEC)</b></p> <p><b>History of Construction</b></p>
<p><b>§257.73(c)(1)(vi) stipulates:</b></p> <p><b>(vi) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR unit; the method of site preparation and construction of each zone of the CCR unit; and the approximate dates of construction of each successive stage of construction of the CCR unit.</b></p>	<p><b>Section 3.6</b></p>
<p><b>§257.73(c)(1)(vii) stipulates:</b></p> <p><b>(vii) At a scale that details engineering structures and appurtenances relevant to the design, construction, operation, and maintenance of the CCR unit, detailed dimensional drawings of the CCR unit, including a plan view and cross sections of the length and width of the CCR unit, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the normal operating pool surface elevation and the maximum pool surface elevation following peak discharge from the inflow design flood, the expected maximum depth of CCR within the CCR surface impoundment, and any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation.</b></p>	<p><b>Section 3.7</b></p>

USEPA CCR Rule Criteria 40 CFR 257.73	Jeffrey Energy Center (JEC) History of Construction
<p>§257.73(c)(1)(viii) stipulates:</p> <p>(viii) A description of the type, purpose, and location of existing instrumentation.</p>	<p>Section 3.8</p>
<p>§257.73(c)(1)(ix) stipulates:</p> <p>(ix) Area-capacity curves for the CCR unit.</p>	<p>Section 3.9</p>
<p>§257.73(c)(1)(x) stipulates:</p> <p>(x) A description of each spillway and diversion design features and capacities and calculations used in their determination.</p>	<p>Section 3.10</p>
<p>§257.73(c)(1)(xi) stipulates:</p> <p>(xi) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit.</p>	<p>Section 3.11</p>
<p>§257.73(c)(1)(xii) stipulates:</p> <p>(xii) Any record or knowledge of structural instability of the CCR unit.</p>	<p>Section 3.12</p>

## 1.0 INTRODUCTION

Westar Energy, Inc. has prepared the following History of Construction Report (Report) for the Bottom Ash Settling Area Surface Impoundment (BASA) located at the Tecumseh Energy Center (TEC) in Tecumseh, Kansas. TEC is a coal-fired power plant that has been in operations since 1925.

The Bottom Ash Area Surface Impoundment has been deemed to be a regulated coal combustion residuals (CCR) unit by the United States Environmental Protection Agency (USEPA), through the Disposal of Coal Combustion Residuals from Electric Utilities Final Rule (CCR Rule) 40 CFR §257 and §261

CCR regulations set forth within Title 40 Code of Federal Regulations (CFR) Part §257.73, provide guidelines for the content compiled into the history of construction report. Specifically, §257.73 stipulates the following:

*“§257.73(c)(1) No later than October 17, 2016, the owner or operator of the CCR unit must compile a history of construction, which shall contain, to the extent feasible, the information specified in paragraphs (c)(1)(i) through (xi) of this section.”*

This report provides the information and documentation available for the CCR Surface Impoundment to the best of Westar’s ability. This Plan will be placed within the Facility Operations Plan prior to October 17, 2016, in accordance with 40 CFR Part §257.73(c)(1).

## 2.0 TEC BOTTOM ASH SETTLING AREA SURFACE IMPOUNDMENT OVERVIEW

### 2.1 Site Location and Topography

Westar owns and operates a surface impoundment system at TEC in Tecumseh, Shawnee County, Kansas. TEC is located approximately 6.5 miles east of Topeka, Kansas and approximately 2 miles north of Highway 70 and resides in Sections 31, Township 11 South, and Range 17 East. The location of the surface impoundment is depicted as Area 1 in **Figure 1**.

The Area 1 is located due west of the TEC power plant. Area 1 is comprised of two ponds: the North Pond is the northernmost pond and the South Pond is the southernmost pond. The Area 1 is approximately 4.3 acres.

A perimeter berm surrounds the North and South Ponds. The top elevation of Area 1 varies between approximate 884 to 886 ft. mean sea level (MSL), as depicted in **Figure 2**.

The berm slopes down towards Tecumseh Creek and is stabilized along the north, west, and south. The perimeter berm prevents overland flow of stormwater into the Surface Impoundments. Existing site topography is depicted in **Figure 2**.

## 2.2 Existing Regulatory Permits and Consents

Westar has been granted an Industrial Landfill Permit at TEC by the Kansas Department of Health and Environment – Bureau of Waste Management (KDHE-BWM) Permit No. 0322, in accordance with Kansas Statutes Annotated (K.S.A.) 65-3407. The KDHE modified the solid waste permit, per K.A.R. 28-29-6a, in response to the CCR Rule to include CCR waste management units as disposal areas to be covered by the existing solid waste permit. This Permit enables the Site to continue safe disposal of the CCR generated on-site at TEC to be properly disposed of within the Area 1.

Westar has also been granted a Kansas Water Pollution Control Permit and Authorization to Discharge under the National Pollutant Discharge Elimination System (NPDES) Permit No. I-KS72-BO01 from the KDHE. The NPDES Permit covers outfall locations at TEC and allows the discharge of non-contact stormwater into the Kansas River and surrounding streams in accordance with effluent limitations and monitoring requirements.

## 3.0 HISTORY OF CONSTRUCTION (§257.73(c)(1))

In accordance with §257.73(c)(1), the history of construction has been complied to the best of Westar's ability and presented in the following subsections.

### 3.1 §257.73(c)(1)(i)

*(i) The name and address of the person(s) owning or operating the CCR unit; the name associated with the CCR unit; and the identification number of the CCR unit if one has been assigned by the state.*

Owner/Operator:

Westar Energy, Inc.  
818 S. Kansas Ave  
Topeka, KS 66612

CCR Unit Name:

Bottom Ash Settling Area

Kansas State Solid Waste Disposal Permit:

Permit #322

### 3.2 §257.73(c)(1)(ii)

*(ii) The location of the CCR unit identified on the most recent U.S. Geological Survey (USGS) 7 1/2 minute or 15 minute topographic quadrangle map, or a topographic map of equivalent scale if a USGS map is not available.*

See Figure 1

### 3.3 §257.73(c)(1)(iii)

*(iii) A statement of the purpose for which the CCR unit is being used.*

TEC operates an active surface impoundment on site for the collection, processing, and subsequent removal of bottom ash. Bottom ash is periodically dewatered and excavated for either beneficial use or disposal.

### 3.4 §257.73(c)(1)(iv)

*(iv) The name and size in acres of the watershed within which the CCR unit is located.*

The Middle Kansas - 10270102 8-Digit Hydrologic Unit Code (HUC) sub-basin is comprised of 1,395,573 acres in north central Kansas and includes the counties of Marshall, Nemaha, Pottawatomie, Jackson, Geary, Riley, Wabaunsee, Shawnee, Jefferson, and Douglas.

### 3.5 §257.73(c)(1)(v)

*(v) A description of the physical and engineering properties of the foundation and abutment materials on which the CCR unit is constructed.*

The bottom ash settling area was primarily constructed by excavation from existing grades, although some fill was used to establish the crest of the berm surrounding the surface impoundment.

Detailed sub-surface information can be found in the Evaluation of Bottom Ash Staging Area Slope Stability, section 2.0. This report was completed by Golder Associates Inc. at the request of Westar Energy, Inc. to meet the requirements of 40 CFR §257.73(e). The report is available on Westar's public CCR website: <https://www.westarenergy.com/content/about-us/rates-regulations/ccr-rule>

### 3.6 §257.73(c)(1)(vi)

*(vi) A statement of the type, size, range, and physical and engineering properties of the materials used in constructing each zone or stage of the CCR unit; the method of site preparation and construction of each zone of the CCR unit; and the approximate dates of construction of each successive stage of construction of the CCR unit.*

The bottom ash settling area was primarily constructed by excavation from existing grades, although some fill was used to establish the crest of the berm surrounding the surface impoundment.

Details of the limited construction information Westar has can be found in the Evaluation of Bottom Ash Staging Area Slope Stability, section 1.2. This report was completed by Golder Associates Inc. at the request of Westar Energy, Inc. to meet the requirements of 40 CFR §257.73(e). The report is available on Westar's public CCR website:

<https://www.westarenergy.com/content/about-us/rates-regulations/ccr-rule>

### 3.7 §257.73(c)(1)(vii)

*(vii) At a scale that details engineering structures and appurtenances relevant to the design, construction, operation, and maintenance of the CCR unit, detailed dimensional drawings of the CCR unit, including a plan view and cross sections of the length and width of the CCR unit, showing all zones, foundation improvements, drainage provisions, spillways, diversion ditches, outlets, instrument locations, and slope protection, in addition to the normal operating pool surface elevation and the maximum pool surface elevation following peak discharge from the inflow design flood, the expected maximum depth of CCR within the CCR surface impoundment, and any identifiable natural or manmade features that could adversely affect operation of the CCR unit due to malfunction or mis-operation.*

See Figures 2-4

### 3.8 §257.73(c)(1)(viii)

*(viii) A description of the type, purpose, and location of existing instrumentation.*

Currently no instrumentation exists for the BASA.

### **3.9 §257.73(c)(1)(ix)**

*(ix) Area-capacity curves for the CCR unit.*

Detailed information can be found in the Inflow Design Flood Control System Plan, Appendix C. This report was completed by CB&I at the request of Westar Energy, Inc. to meet the requirements of 40 CFR §257.82(a). The report is available on Westar's public CCR website:

<https://www.westarenergy.com/content/about-us/rates-regulations/ccr-rule>

### **3.10 §257.73(c)(1)(x)**

*(x) A description of each spillway and diversion design features and capacities and calculations used in their determination.*

Detailed information can be found in the Inflow Design Flood Control System Plan. This report was completed by CB&I at the request of Westar Energy, Inc. to meet the requirements of 40 CFR §257.82(a). The report is available on Westar's public CCR website:

<https://www.westarenergy.com/content/about-us/rates-regulations/ccr-rule>

### **3.11 §257.73(c)(1)(xi)**

*(xi) The construction specifications and provisions for surveillance, maintenance, and repair of the CCR unit.*

Please see Appendix A – Westar Energy Tecumseh Energy Center Industrial Landfill Operation Plan

### **3.12 §257.73(c)(1)(xii)**

*(xii) Any record or knowledge of structural instability of the CCR unit.*

There are no records or knowledge of structural instability of the CCR unit.

## 4.0 RECORDS RETENTION AND MAINTENANCE (§257.73(g))

### 4.1 Incorporation of Plan into Operating Record

§257.105(f) of 40 CFR Part 257 provides record keeping requirements to ensure that the Plan must be placed in the facility's operating record.

§257.105(f) stipulates: *“(f) Design 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:”*

Specifically, §257.105(f)(9) stipulates: *“(9) The history of construction, and any revisions of it, as required by § 257.73(c), except that these files must be maintained until the CCR unit completes closure of the unit in accordance with § 257.102.”*

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

### 4.2 Notification Requirements

§257.106(f) of 40 CFR Part 257 provides guidelines for the notification of the availability of the initial and periodic plan.

*(f) Design 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:*

Specifically, §257.106(f)(8) stipulates: *“(8) Provide notification of the availability of the history of construction, and any revision of it, specified under § 257.105(f)(9).”*

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

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

*(f) Design 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:*  
Specifically, §257.107(f)(8) stipulates: *“(8) The history of construction, and any revisions of it, specified under § 257.105(f)(9).”*

This Plan will be uploaded to Westar's CCR compliance reporting website upon Westar's review and approval.



#### **4.3 Plan Amendments (§257.73(c)(3))**

This Report has been completed in accordance with §257.73(c)(1) to provide a history of construction. This Report will continue to undergo review as the Bottom Ash Landfill Area 1 continues phased construction activities. The amended Report will be reviewed and amended as needed by Westar and will be placed in JEC's facility operating record as required per §257.73(c)(2). The amended Report will supersede and replace any prior versions. Availability of the amended Report will be noticed to the State Director per §257.106(f) and posted to the publicly accessible internet site per §257.107(f).

A record of Report reviews/assessments is provided on the first page of this document, immediately following the Table of Contents.

History of Constructions



Name of Person Completing Report: Brandon Griffin  
Title: Environmental Compliance Analyst  
Company: Westar Energy  
Signature: *Brandon Griffin*  
Date: 10/05/2016

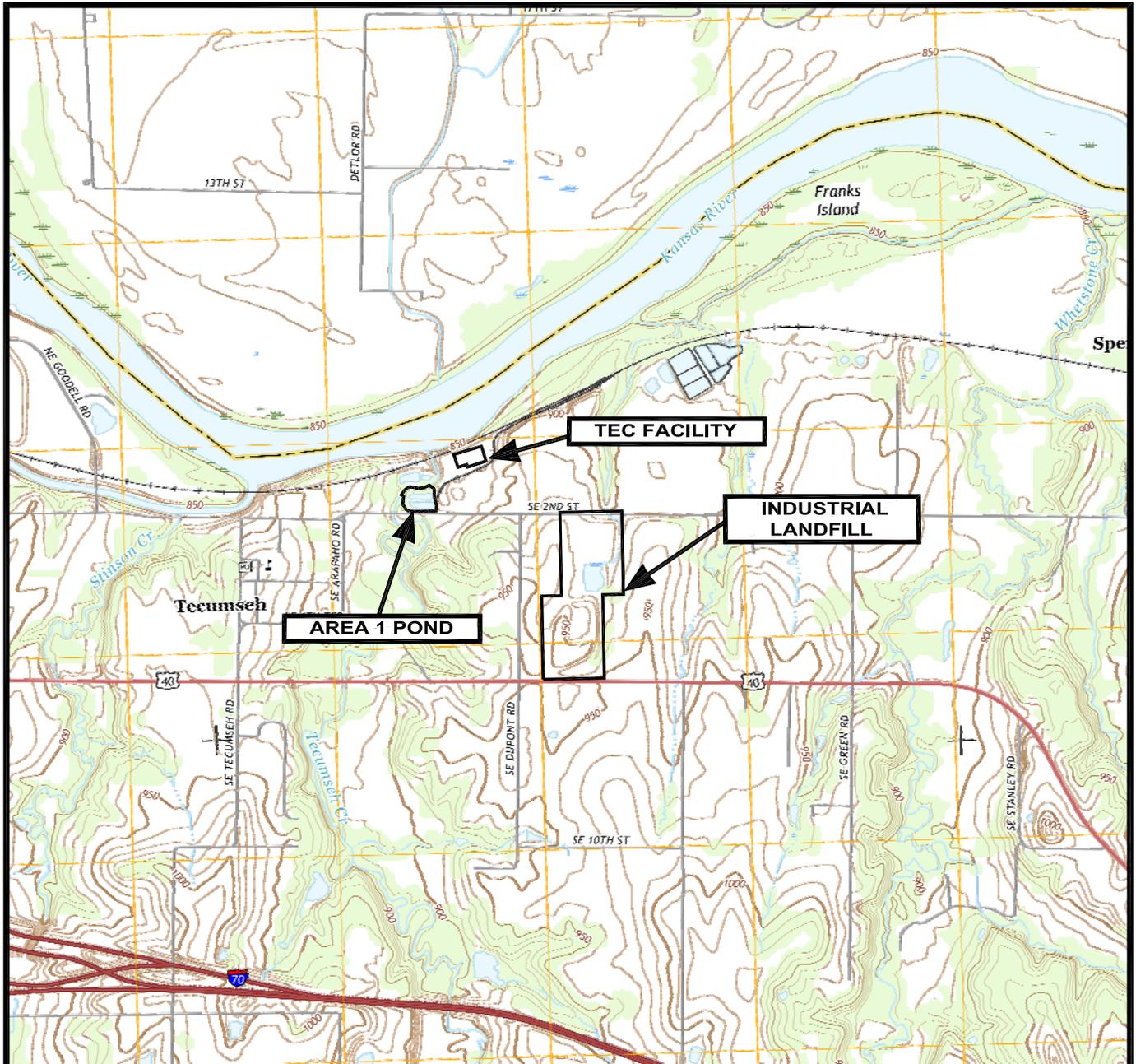
# Figures

Figure 1 - Bottom Ash Area Surface Impoundment,  
Site Location Plan

Figure 2 - Bottom Ash Area Surface Impoundment,  
Existing Site Topography

Figure 3 - Bottom Ash Area Surface Impoundment,  
Inflow Design Flood Control System

Figure 4 - Bottom Ash Area Surface Impoundment,  
Subcatchment Areas



**LEGEND**

— APPROXIMATE CCR UNIT BOUNDARY

**NOTES**

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



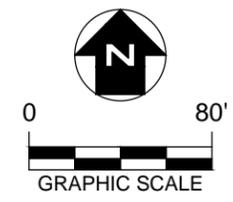
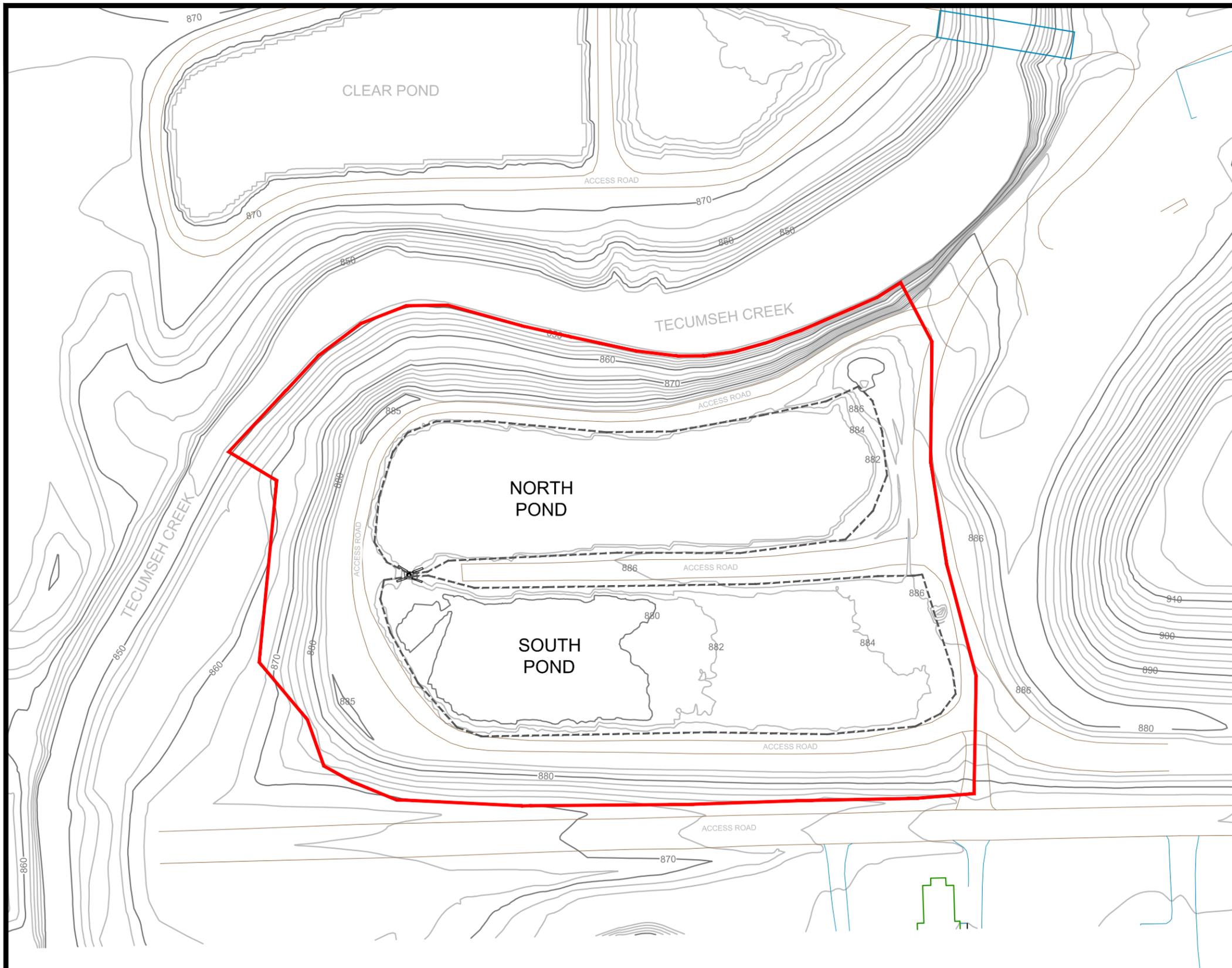
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**TECUMSEH ENERGY CENTER  
5636 SE 2nd ST., TECUMSEH, KS**

**FIGURE 1  
AREA 1 SURFACE IMPOUNDMENT  
SITE LOCATION PLAN**

APPROVED BY: MMS    PROJ. NO.: 631214397    DATE: OCTOBER 2016



**LEGEND**

- APPROXIMATE CCR UNIT BOUNDARY (AREA 1)
- APPROXIMATE POND BOUNDARY

**NOTES**

1. EXISTING CONTOURS DEVELOPED BY PROFESSIONAL ENGINEERING CONSULTANTS IN JUNE 2016.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
3. CCR BOUNDARY IS APPROX. 4.3 ACRES.

REV. NO.	DATE	DESCRIPTION



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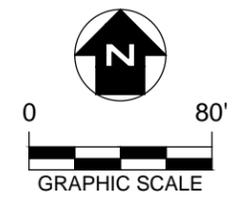
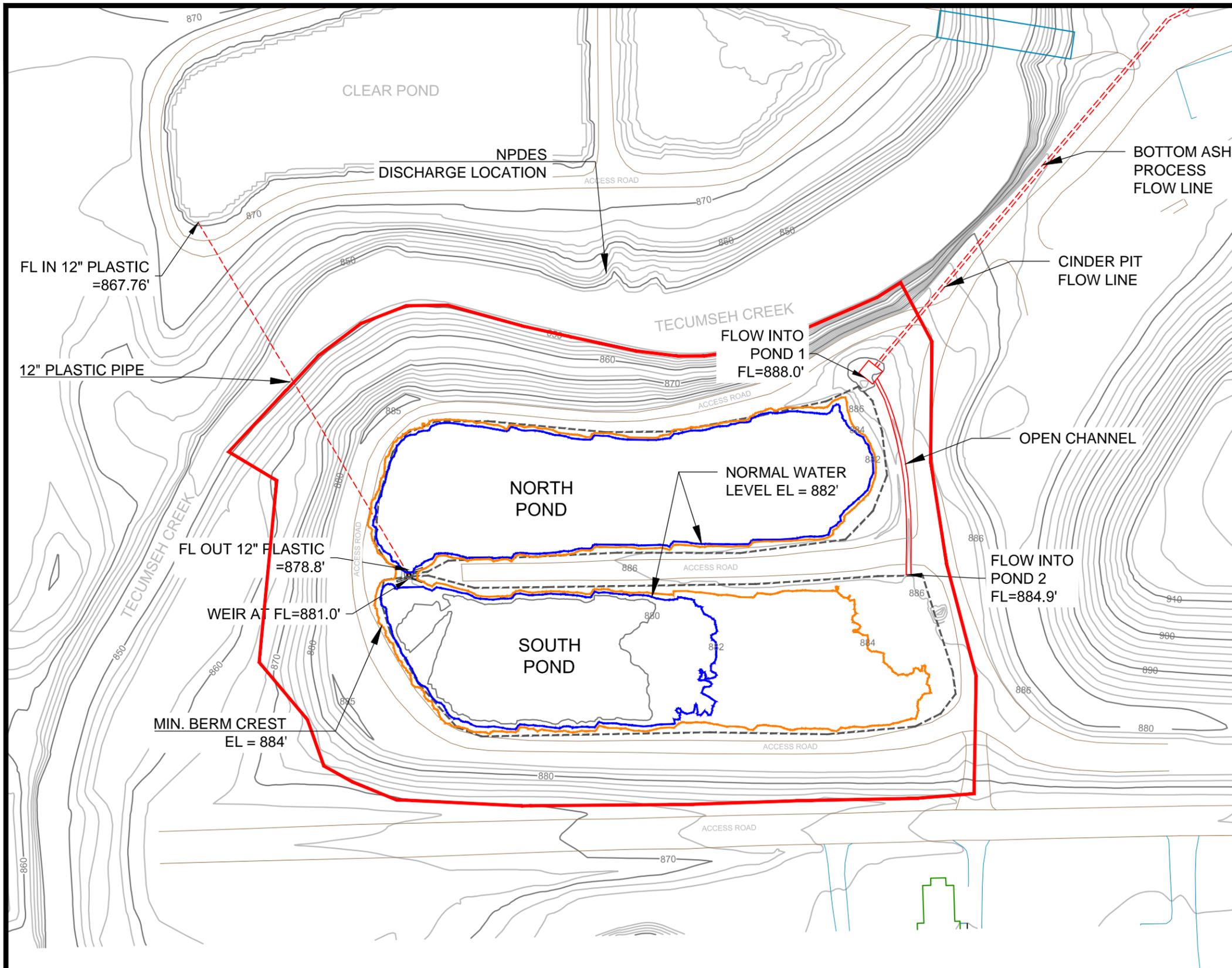
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5636 SE 2nd ST., TECUMSEH, KANSAS**

**FIGURE 2  
AREA 1 SURFACE IMPOUNDMENT  
EXISTING SITE TOPOGRAPHY**

DRAWN BY: SJL APPROVED BY: MMS PROJ. NO.: 631214397 DATE: OCTOBER 2016

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**LEGEND**

- APPROXIMATE CCR UNIT BOUNDARY
- - - APPROXIMATE POND BOUNDARY
- MINIMUM CREST OF PERIMETER BERM
- NORMAL WATER LEVEL
- - - STORMWATER CONVEYANCE FEATURES

**NOTES**

1. EXISTING CONTOURS DEVELOPED BY PROFESSIONAL ENGINEERING CONSULTANTS IN JUNE 2016.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
3. CCR BOUNDARY IS APPROX. 4.3 ACRES.

REV. NO.	DATE	DESCRIPTION



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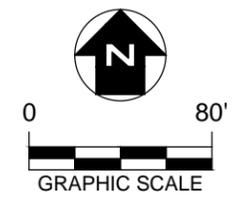
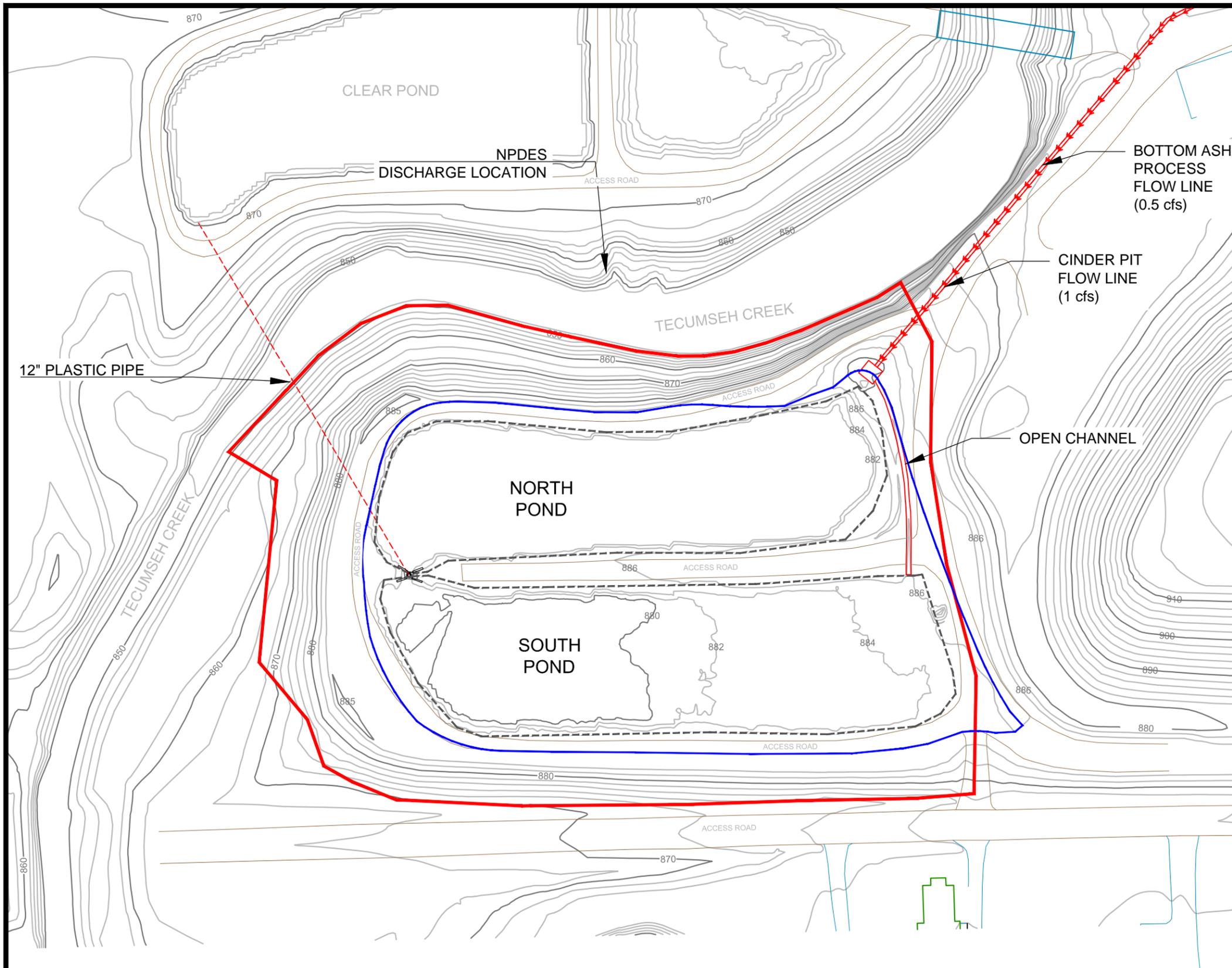
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**FIGURE 3**  
**AREA 1 SURFACE IMPOUNDMENT**  
**INFLOW DESIGN FLOOD CONTROL SYSTEM**

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**LEGEND**

- CCR UNIT BOUNDARY (AREA 1)
- POND BOUNDARY
- SUBCATCHMENT AREA
- ←←← FLOW INTO SURFACE IMPOUNDMENT

**NOTES**

1. EXISTING CONTOURS DEVELOPED BY PROFESSIONAL ENGINEERING CONSULTANTS IN JUNE 2016.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
3. CCR BOUNDARY IS APPROX. 4.3 ACRES.

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**5636 SE 2nd ST., TECUMSEH, KANSAS**

**FIGURE 4**  
**AREA 1 SURFACE IMPOUNDMENT**  
**SUBCATCHMENT AREAS**

DRAWN BY:	SJL	APPROVED BY:	MMS	PROJ. NO.:	631214397	DATE:	OCTOBER 2016
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# Appendix A

WESTAR ENERGY TECUMSEH  
ENERGY CENTER  
INDUSTRIAL LANDFILL

TECUMSEH, KANSAS

OPERATIONS PLAN

KDHE PERMIT #322

February 2016  
(Updated and Revised)

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**Tecumseh Energy Center Industrial Landfill**

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## 1.1 Introduction

This updated Operations Plan supersedes the existing plan on file with KDHE.

Westar Energy currently operates the Tecumseh Energy Center (TEC), located in Tecumseh, Kansas, which consists of two operational coal-fired electric generating units. Coal is used as the primary fuel for TEC. Coal Combustion Residuals (CCR) associated with burning coal include bottom ash, economizer ash, and fly ash. CCR, along with minor amounts of other miscellaneous waste, are currently placed in an on-site active combustion byproduct landfill (the landfill) located on TEC property. This combustion byproduct landfill is permitted under Kansas Department of Health and Environment (KDHE), Bureau of Waste Management (BWM), Permit No. 322. Figure 1 is a vicinity map showing the approximate location of the active combustion byproduct landfill on the TEC facility.

The landfill is divided into three phases: Phase 1 (the northernmost phase); Phase 2 (the southernmost phase); and Phase 3 (located between Phases 1 and 2). CCR has been placed in all three phases to date. In general, waste will be disposed of in Phase 2 first, followed by Phase 1 and, ultimately, Phase 3. The proposed final contours for the final completed landfill are on file with KDHE. All contact water from the landfill will be managed using internal (i.e., within the landfill) collection areas.

The capacity of the landfill is to be updated and confirmed following the completion and approval of permit engineering drawings per the 2015 permit special condition. The lifespan will vary according to the operating capacity of TEC, waste generation rates, and the amount of CCR that is recycled or used by others.

In addition to the landfill, TEC operates an active surface impoundment on site for the collection, processing, and subsequent removal of bottom ash. Bottom ash is periodically dewatered and excavated for either beneficial use or disposal. All permanent storage or disposal of bottom ash is at the landfill.

This Operations Plan addresses the following areas:

1. Site description,
2. Summary of waste landfilled,
3. Landfill operations,
4. CCR Surface Impoundment Operations
5. Tonnage Records
6. Fugitive Dust Control Plan
7. Stormwater Run-on/Run-off Control Plan
8. Annual Professional Engineer Inspection

This operating plan may be amended if operational conditions warrant changes to show compliance to applicable regulations. All updates and amendments will be submitted to KDHE for review and approval prior to the implementation of operational changes. Westar manages a publicly available website as required by Federal CCR regulation. This site is

available from Westar's main site at [www.westarenergy.com](http://www.westarenergy.com).

## 1.2 Site Description

Figure 1 is a vicinity map showing the approximate location of the combustion byproduct landfill and surface impoundment on the TEC facility.

## 1.3 Waste Landfilled

The wastes landfilled at this site are predominantly fly ash, economizer ash, and bottom ash from the combustion of coal at TEC. Variable amounts of these materials are beneficially used by others as recycled material with the remaining volumes disposed at the TEC landfill.

Other approved industrial waste streams may also be placed in the landfill. Prior to placing other industrial waste streams in the landfill, Westar will perform SPLP analysis of the material and submit a request for approval to KDHE. These materials will be produced by the station on an infrequent basis during maintenance activities and will be limited in quantity. In general, the aggregate volume of these other industrial waste streams is estimated at less than 5% of the total volume of waste landfilled. Specific industrial waste streams that have been SPLP tested and approved for disposal by KDHE at the TEC facility include:

1. Coal rejects.
2. Clean rubble and soil fill.
3. Cooling tower basin sediments.
4. Straight-line clarifier sediments and polymers.

Each of the approved CCR and industrial waste streams is described below:

**Fly/Economizer ash** is a major byproduct from coal combustion and is characterized by low specific gravity, and lack of plasticity. The fly ash is classified as Type C fly ash, pozzolanic material. Class C fly ash usually has cementitious properties in addition to pozzolanic properties due to free lime.

**Bottom ash** refers to the portion of the non-combustible residues of combustion that is heavy and does not escape the combustion process as fly ash. Bottom ash ranges in size from fine sand to fine gravel.

**FGD material** refers to the solid material removed from the wet limestone, forced-oxidation FGD system. FGD gypsum is light tan in color, has a powdery consistency, and is a relatively free draining material that can be readily dewatered to a minimum solids content of 90%. The fully oxidized FGD by-product may contain small amounts of fly ash.

**Coal mill rejects** are defined as the small portion of the coal received that is not suitable

for combustion. The amount generated at TEC is minor. Over the life of the landfill, the total volume of coal mill rejects should amount to significantly less than 1% of the total landfill capacity.

**Clean rubble** as defined by Kansas statute and having a diameter of 8 inches or less.

**Cooling tower basin sediments** are generated from maintenance operations at the cooling tower. During operation, circulating water in the cooling tower basins may drop sediment that accumulates. Periodic cleanout of the sediment is required for proper operation. This maintenance operation is not routine and occurs approximately every 18 months.

**Straight Line Clarifier sediments and polymers** are the clarifier sediments from incoming water treatment through the use of a non-toxic polymer. Approximately every 12 months the clarifiers must be cleaned of accrued material. This material consists of water sediment and minor amounts of original polymer. This material will be disposed in the landfill as the clarifiers are cleaned.

#### **1.4 Landfill Operations**

The landfill is an existing operating facility permitted under KDHE Permit No. 322. Landfill operation will consist of the following tasks:

1. Waste transportation,
2. Waste placement and compaction,
3. Waste cover

The landfill will typically operate a 5 day/ 8 hour-per-day schedule, but extended hours may occur during heavy load periods. There is 24-hour security at TEC, which includes the landfill.

During heavy rains or heavy snowfalls, the landfill will not operate, and combustion byproducts will be temporarily stored in the bottom ash surface impoundment or dry fly ash silos.

The combustion byproduct landfill for TEC is not a public landfill and is located on TEC property. Only approved materials generated at TEC, coal rejects, clean rubble and other minor waste streams identified herein and approved by KDHE will be placed in the landfill. No hazardous materials will be placed in the landfill. Westar will conduct periodic inspections to ensure the landfill is operated in accordance with the approved Operations Plan but waste will not be logged or screened daily. Signage will be placed at the entrance(s) of the landfill detailing allowed waste streams.

#### **Waste Transportation**

CCR is transferred by trucks to the landfill areas for permanent disposal. Trailers will be

loaded to minimize loss of material during transportation.

Bottom ash is sluiced to the bottom ash surface impoundment. The material is dewatered in place once the impoundment is at capacity. After dewatering has occurred, the material will either be loaded onto trucks to be taken for beneficial use or moved into the dry landfill.

The fly ash is collected from the air quality control system and stored in dry on-site silos. Dry fly ash in excess of the fly ash sold is loaded on trucks for transport to the landfill for disposal.

Materials to be landfilled will be transported to the landfill via the existing plant haul roads.

### **Waste Placement and Compaction**

CCR disposed of in the landfill will be placed and compacted to maintain stability, manage drainage, and to minimize dust generation and truck access problems. Trucks will transport the waste to the active landfill area and unload the byproducts at the active working surface. Initially the material will be placed in staging piles. Once a significant quantity of material is staged the material will be spread in lifts approximately 1.5'-2' thick with at least two passes of the bulldozer used for spreading. The bulldozer will compact each lift to ensure a stable waste mass. The fly ash has cementing properties and sets up with moisture resulting in a stable fill.

Contact water will always be diverted interior to the designated low area within the phase for collection and management. Contact water management plans will be confirmed as part of the run-on/run-off control plan required to be completed by October 17, 2016.

Salvaging from the landfill is allowed only from designated reclaim piles. As reuse markets dictate, CCR materials may be stored in piles within the landfill and made available for reclaim and transfer off-site for beneficial use. There is no salvaging of fly ash once it has been placed and compacted within the landfill.

### **Waste Cover**

The combustion byproducts are soil-like materials. Since combustion byproducts make up most of the waste volume, no daily cover is required at the end of each day to control odors and/or prevent animals from digging in the byproduct or provide disease vector control. The combustion byproduct is not flammable.

No intermediate cover will be placed on the landfill.

The final cap to be placed on the slopes and top of landfill will be per the approved site closure plan. This plan will be finalized and made available on the CCR website as required by 40 CFR 257.107(i).

## **1.5 Surface Impoundment Operations**

Bottom ash is transported to the site's CCR surface impoundment as a slurry. The impoundment is divided into a north and south processing area. In general, each settling area progressively fills from where the slurry enters the pond to the opposite end. Therefore, by alternating settling ponds, the bottom ash that accumulates in the ponds can be dewatered to facilitate excavation of the bottom ash. Operations are managed such that the bottom ash slurry is allowed to fill to a certain depth in the surface impoundment before switching flow to the other pond. The plant has placed a physical marker for bottom ash accumulation in each pond that once reached indicates the need to switch ponds. Overflow water leaving the impoundment contains only insignificant or de minimus amounts of CCR and is discharged through a NPDES permitted outfall.

Once a processing area has been indicated full and inflow has been diverted, the area is dewatered with the use of pumps. The discharge water is transferred to the inlet of the now active alternate processing area for settling.

Bottom ash is then excavated from the dewatered pond and loaded into trucks for transport to the landfill for permanent disposal/ storage or off-site for beneficial use.

## **1.6 Tonnage Records**

Annual volumes of CCR transported to the landfill will be reported to KDHE as a condition of the annual permit renewal. Amounts landfilled are determined by estimating total generated CCR based on coal burned by the facility. The facility tracks CCR amounts that leave for beneficial use. The remaining amount generated is reported as disposed of in the facility dry landfill.

Other industrial waste streams as approved by KDHE and stated in this plan account for less than 5% of the total material disposed and are not individually tracked.

## **1.7 Federal CCR Rule Compliance**

The Federal CCR Rule as published in 40 CFR 257 places compliance requirements on the active Landfill #322 and the TEC surface impoundment. These requirements are phased in over a period of years beginning on October 16, 2015 and ending on October 17, 2018. The requirements for all Westar facilities are detailed in a chart included as Attachment 1 to this FOP. In addition, several of the requirements are detailed in the subsequent sections.

### **1.7.1 Stormwater Run-on/Run-off Control Plan**

The stormwater run-on/run-off control plan will be completed and posted on Westar's CCR website per the Federal CCR Rule requirements

### **1.7.2 Fugitive Dust Control Plan**

Fugitive Dust is controlled at TEC as detailed in the Fugitive Dust Control Plan. This plan is available on Westar's CCR website as required.  
(<https://www.westarenergy.com/content/about-us/rates-regulations/ccr-rule>)

### **1.7.3 Seven (7) Day CCR Unit Inspection**

The Federal CCR Rule requires inspections of each active CCR Unit by a qualified individual at least once every 7 days. Inspections are completed as required per the checklist included in Attachment 2. Completed inspections are maintained electronically in the facility's operating record.

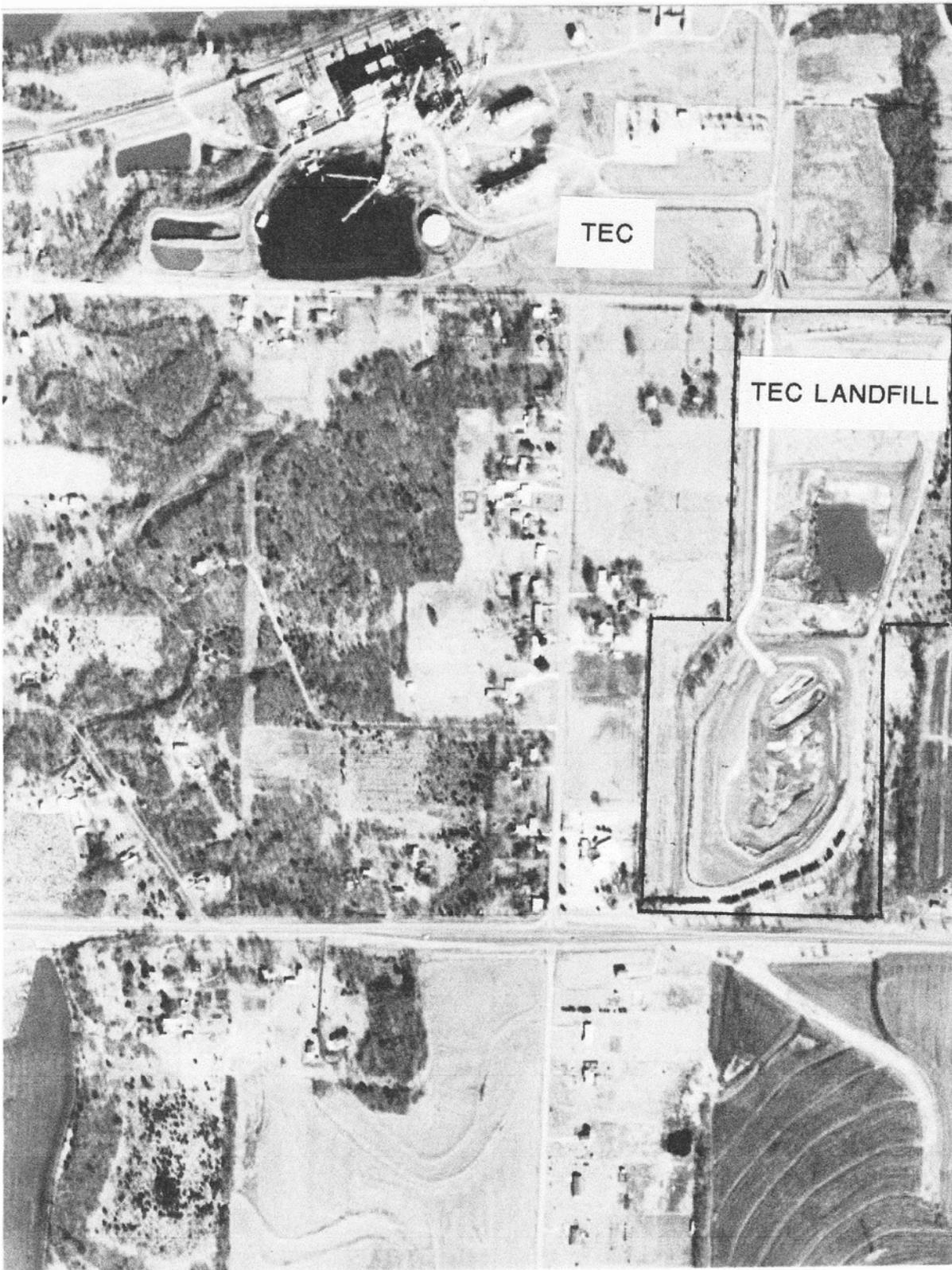
Qualified inspectors are identified and trained by the Director, Water and Waste Programs or his designee. Each qualified inspector is knowledgeable on both the facilities operations and the applicable requirements. Inspections are performed electronically on mobile devices.

### **1.7.4 Professional Engineering Inspection**

The Federal CCR Rule requires an annual inspection of applicable CCR units by a registered Professional Engineer. Westar will complete and make available the inspection on the public CCR website as required.

### **1.7.5 Groundwater Monitoring**

Groundwater at the site is currently monitored per KDHE requirements. Groundwater monitoring as required under the Federal CCR rule is under development. The groundwater monitoring network planning documents will be submitted to KDHE for review and the required network will be installed and operational by October 17, 2017.



**FIGURE 1**  
**SITE LOCATION**

# **Attachment 1**

Federal CCR Rule Requirements Chart

Federal CCR Compliance Requirements

Regulated Unit Name	Wester Designated Status	7-Day Inspections	30-Day Instrumentation Monitoring	Dust Control Plan	Inactive S.I. Closure Notification	Install S.I. Marker	Initial Annual PE LF & S.I. inspection	S.I. Liner Documentation	S.I. History of Construction	S.I. Initial Hazard Potential Classification	S.I. Initial Structural Stability Assessment	S.I. Initial Safety Factor Assessment	LF Run On/ R Off Control Plan	S.I. H&H Capacity	Closure Plan	Post-Closure Plan	Inactive S.I. Closure 1st Progress Report (13 mos)	Emergency Action Plans	GW Sampling and Analysis Plan	GW Statistical Analysis Plan	GW Monitoring Well Install and Background Samples	GW Statistical Analyses and Program Certification	Inactive S.I. Closure 2nd Progress Report (w/ 12 mos of 1st) (1/17/18)	Initial Annual Groundwater Report	Inactive Ponds Closed	Siting Criteria - 5-foot GW Separation	Siting Criteria - Wetland	Siting Criteria - Fault Offset	Siting Criteria - Seismic Impact Zone	Siting Criteria - Unstable Area
Compliance Date		10/19/15	10/19/15	10/19/15	12/17/15	12/17/15	01/19/16	10/17/16	10/17/16	10/17/16	10/17/16	10/17/16	10/17/16	10/17/16	10/17/16	10/17/16	-1/17/17	04/17/17	10/17/17	10/17/17	10/17/17	10/17/17	-1/17/18	01/31/18	04/17/18	10/17/18	10/17/18	10/17/18	10/17/18	10/17/18
<b>Jeffrey Energy Center</b>																														
Bottom Ash Area 1 Impoundment	Active	X	X	X	N/A	X	X	X	X	X	X	X	N/A	X	X	X	N/A	X	X	X	X	X	N/A	X	N/A	X	X	X	X	X
Bottom Ash Pond	Inactive	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	N/A	N/A	N/A	N/A	N/A
Bottom Ash Area 1 Landfill	Active	X	X	X	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	X	N/A	N/A	X	X	X	X	N/A	X	N/A	N/A	N/A	N/A	N/A	X
Fly Ash Area 1 Landfill	Active	X	X	X	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	X	N/A	N/A	X	X	X	X	N/A	X	N/A	N/A	N/A	N/A	N/A	X
FGD Landfill	Active	X	X	X	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	X	N/A	N/A	X	X	X	X	N/A	X	N/A	X	X	X	X	X
<b>Lawrence Energy Center</b>																														
Ash Landfill 847	Active	X	X	X	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	X	N/A	N/A	X	X	X	X	N/A	X	N/A	X	X	X	X	X
Ash Pond 2	Inactive	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	N/A	N/A	N/A	N/A	N/A
Ash Pond 3	Inactive	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	N/A	N/A	N/A	N/A	N/A
Ash Pond 4	Inactive	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	N/A	N/A	N/A	N/A	N/A
<b>Tecumseh Energy Center</b>																														
Ash Landfill 322	Active	X	X	X	N/A	N/A	X	N/A	N/A	N/A	N/A	N/A	X	N/A	X	X	N/A	N/A	X	X	X	X	N/A	X	N/A	X	X	X	X	X
Bottom Ash Impoundment	Active	X	X	X	N/A	X	X	X	X	X	X	X	N/A	X	X	X	N/A	X	X	X	X	X	N/A	X	N/A	X	X	X	X	X

## **Attachment 2**

Seven (7) Day CCR Unit Inspection

## Seven (7) Day CCR Unit Inspection

### CCR Surface Impoundment Weekly Inspections:

1. Are the pond levels at a concerning height?
2. Does the vegetation on slopes need maintained?
3. Are there apparent cracks or scrapes on the crest or slopes? If yes, are they:
4. Are there apparent depressions or sinkholes on the crest or slopes?
5. Are any spillways or drainage structures clogged?
6. Is there any apparent sloughing or bulging on slopes?
7. Is there any major erosion or slope deterioration?
8. Are there any animal burrows?
9. Is there any visible seepage through berms?
10. Are there signs of piping or other internal erosion?
11. Do any outlet discharges of hydraulic structures which pass underneath the base of the surface impoundment or through the dike of the CCR unit have abnormal discoloration or discharge of debris or sediment?
12. Were any other observations made that raise concern?

### CCR Landfill Weekly Inspections:

1. Does the vegetation on slopes need maintained?
2. Are there apparent cracks or scrapes on the crest or slopes?
3. Are there apparent depressions or sinkholes on the crest or slopes?
4. Are any spillways or drainage structures clogged?
5. Is there any apparent sloughing or bulging on slopes?
6. Is there any major erosion or slope deterioration?
7. Are there any areas where run-on controls are not functioning properly?
8. Are there any areas where run-off controls are not functioning properly?
9. Are there any concerns with the leachate collection system?
10. Were any other observations made that raise concern?