Westar Energy.

# Emergency Action Plan Tecumseh Energy Center Area 1 Surface Impoundment

Prepared for: Westar Company Tecumseh Energy Center Tecumseh, Kansas

Prepared by: APTIM Environmental & Infrastructure, Inc.

March 2018



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# Plan Review/Amendment Log

Date of Review	Reviewer Name	Amendment Required (YES/NO)	Sections Amended and Reason



# **CCR Regulatory Requirements**

USEPA CCR Rule Criteria 40 CFR §257.6064	Tecumseh Energy Center (TEC) Surface Impoundment Emergency Action Plan
§257.73(a)(3)(i)(A) stipulates:	
(3) Emergency Action Plan (EAP) - (i) Development of the Plan. No later than April 17, 2017, the owner or operator of a CCR unit determined to be either a high hazard potential CCR surface impoundment or a significant hazard potential CCR surface impoundment under paragraph (a)(2) of this section must prepare and maintain a written EAP. At a minimum, the EAP must:	Section 3.1 and 3.3
(A) Define the events or circumstances involving the CCR unit that represent a safety emergency, along with a description of the procedures that will be followed to detect a safety emergency in a timely manner;	
§257.73(a)(3)(i)(B) stipulates:	
(3) Emergency Action Plan (EAP) - (i) Development of the Plan. No later than April 17, 2017, the owner or operator of a CCR unit determined to be either a high hazard potential CCR surface impoundment or a significant hazard potential CCR surface impoundment under paragraph (a)(2) of this section must prepare and maintain a written EAP. At a minimum, the EAP must:	Section 4.0
(B) Define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving the CCR unit;	



USEPA CCR Rule Criteria 40 CFR §257.6064	Tecumseh Energy Center (TEC) Surface Impoundment Emergency Action Plan	
§257.73(a)(3)(i)(C) stipulates:		
<ul> <li>(3) Emergency Action Plan (EAP) - (i) Development of the Plan. No later than April 17, 2017, the owner or operator of a CCR unit determined to be either a high hazard potential CCR surface impoundment or a significant hazard potential CCR surface impoundment under paragraph (a)(2) of this section must prepare and maintain a written EAP. At a minimum, the EAP must:</li> <li>(C) Provide contact information of emergency responders;</li> </ul>	Section 4.1	
§257.73(a)(3)(i)(D) stipulates:		
<ul> <li>(3) Emergency Action Plan (EAP) - (i) Development of the Plan. No later than April 17, 2017, the owner or operator of a CCR unit determined to be either a high hazard potential CCR surface impoundment or a significant hazard potential CCR surface impoundment under paragraph (a)(2) of this section must prepare and maintain a written EAP. At a minimum, the EAP must:</li> <li>(D) Include a map which delineates the downstream area which would be affected in the event of a CCR unit failure and a physical description of the CCR unit;</li> </ul>	Section 3.2	



USEPA CCR Rule C 40 CFR §257.60-	riteria 64	Tecumseh Energy Center (TEC) Surface Impoundment Emergency Action Plan
§257.73(a)(3)(i)(E) stipulates	S:	
(3) Emergency Action Plan Development of the Plan. April 17, 2017, the owner or CCR unit determined to be hazard potential CC impoundment or a signif potential CCR surface under paragraph (a)(2) of must prepare and maintain a At a minimum, the EAP mus	n (EAP) - (i) No later than operator of a either a high R surface icant hazard impoundment this section a written EAP. t:	Section 6.0
(E) Include provisions for an to-face meeting or exerce representatives of the owner of the CCR unit and the loc responders.	annual face- ise between er or operator al emergency	
§257.73(a)(3)(ii) stipulates:		
(3) Emergency Action Plan Amendment of the Plan.	n (EAP) - (ii)	Will Comply
(A) The owner or operator of subject to the requirements (a)(3)(i) of this section ma written EAP at any time revised plan is placed in operating record as §257.105(f)(6). The owner must amend the written E there is a change in condition substantially affect the EAP	of a CCR unit of paragraph y amend the provided the the facility's required by or operator AP whenever ns that would in effect.	
(B) The written EAP must be a minimum, every five years information required in (a)(3)(i) of this section is necessary, the EAP must be revised EAP placed in operating record as \$257.105(f)(6).	evaluated, at to ensure the paragraph accurate. As updated and a the facility's required by	



USEPA CCR Rule Criteria 40 CFR §257.6064	Tecumseh Energy Center (TEC) Surface Impoundment Emergency Action Plan
§257.73(a)(3)(iii) stipulates:	
(3) Emergency Action Plan (EAP) - (iii) Changes in hazard potential classification.	N/A
(A) If the owner or operator of a CCR unit determines during a periodic hazard potential assessment that the CCR unit is no longer classified as either a high hazard potential CCR surface impoundment, the owner or operator of the CCR unit is no longer subject to the requirement to prepare and maintain a written EAP beginning on the date the periodic hazard potential assessment documentation is placed in the facility's operating record as required by §257.105(f)(5).	
(B) If the owner or operator of a CCR unit classified as a low hazard potential CCR surface impoundment subsequently determines that the CCR unit is properly re-classified as either a high hazard potential CCR surface impoundment or a significant hazard potential CCR surface impoundment, then the owner or operator of the CCR unit must prepare a written EAP for the CCR unit as required by paragraph (a)(3)(i) of this section within six months of completing such periodic hazard potential assessment.	
§257.73(a)(3)(iv) stipulates:	
(iv) The owner or operator of the CCR unit must obtain a certification from a qualified professional engineer stating that the written EAP, and any subsequent amendment of the EAP meets the requirements of paragraph (a)(3) of this section.	Section 7.0



USEPA CCR Rule Criteria 40 CFR §257.6064	Tecumseh Energy Center (TEC) Surface Impoundment Emergency Action Plan
§257.73(a)(3)(v) stipulates:	
(v) Activation of the EAP. The EAP must be implemented once events or circumstances involving the CCR unit that represent a safety emergency are detected, including conditions identified during periodic structural stability assessments, annual inspections, and inspections by a qualified person.	Will be implemented



#### **1.0 INTRODUCTION**

On April 17, 2015, USEPA published the CCR Rule under Subtitle D of the Resource Conservation and Recovery Act (RCRA). The purpose of the CCR Rule is to regulate the management of CCR in regulated CCR units for landfill and surface impoundments. Section 257.73(a)(3)(i) of the CCR Rule requires the owner and operator of any CCR surface impoundment determined to be either a high hazard potential or significant hazard potential to prepare and maintain a written Emergency Action Plan (EAP) by April 17, 2017.

The following EAP will identify potential emergency conditions at the Area 1 Surface Impoundment and the procedures to be followed after the detection of an emergency. The plan includes notification lists, responsible persons, maps of the CCR surface impoundments, and response procedures. The following citations from the CCR Rule are applicable for the Area 1 Surface Impoundment as discussed in this EAP:

§257.73(a)(3)(i) stipulates:

(3) Emergency Action Plan (EAP) - (i) Development of the Plan. No later than April 17, 2017, the owner or operator of a CCR unit determined to be either a high hazard potential CCR surface impoundment or a significant hazard potential CCR surface impoundment under paragraph (a)(2) of this section must prepare and maintain a written EAP. At a minimum, the EAP must:

- (A) Define the events or circumstances involving the CCR unit that represent a safety emergency, along with a description of the procedures that will be followed to detect a safety emergency in a timely manner;
- (B) Define responsible persons, their respective responsibilities, and notification procedures in the event of a safety emergency involving the CCR unit;
- (C) Provide contact information of emergency responders;
- (D) Include a map which delineates the downstream area which would be affected in the event of a CCR unit failure and a physical description of the CCR unit; and
- (E) Include provisions for an annual face-to-face meeting or exercise between representatives of the owner or operator of the CCR unit and the local emergency responders.

A written certification is provided in Section 7.0 from a qualified professional engineer in the State of Kansas, to certify that this EAP meets the requirements of the CCR Rule.



#### 2.0 AREA 1 SURFACE IMPOUNDMENT OVERVIEW

#### 2.1 Location, Topography, and Description

The Area 1 Surface Impoundment at TEC is comprised of two ponds: the North and South Pond and located to the east of the generation station. TEC is located near Tecumseh, Shawnee County, Kansas and bounded to the south by SE 2<sup>nd</sup> Street, west by rural residential properties, south by Tecumseh Creek, and to the east by the TEC generation station. The Area 1 Surface Impoundment is also less than one-half mile north of the Kansas River. The location of the Area 1 Surface Impoundment is shown on **Figure 1**.

The Area 1 Surface Impoundment is approximately 4.0 acres with a perimeter berm surrounding the North and South Ponds. The interior slope of the North and South ponds varies from 1H:1V to a shallow slope along the eastern side slope. The top elevation of the Area 1 Surface Impoundment varies between approximate 884 to 886 feet mean sea level (ft MSL). The lowest point in the North and South Ponds is estimated to be 877 feet MSL, with the average water depth estimated to be 5 feet. The north and west berms slope towards Tecumseh Creek. The perimeter berm prevents overland flow of stormwater into the North and South Ponds. Existing site topography is depicted in **Figure 2**.

CCR depths vary within the North and South Ponds due to the continual deposit, dewatering, and dredging of CCR materials.

#### 2.2 Area 1 Surface Impoundment Operations

The North Pond and South Pond are separated by a stabilized berm. Process water, bottom ash slurry, and stormwater are pumped to the ponds from the Cinder Pit and the process facility. A diversion structure is utilized so that one pond can be filled while the other is dewatered and dredged of CCR material. A weir structure is positioned between the two ponds, allowing water to access the discharge pipe. As the ponds fill with contact water, a 12-inch pipe conveys water from both ponds to the clear pond across Tecumseh Creek. The existing site conditions can be seen in **Figure 2**.

#### 2.3 Hazard Potential Classification (§257.73(a)(2))

Hazard potential classifications are based on potential loss or damage to the following:

- Human life
- Economic loss
- Environmental damage
- Disruption of lifeline facilities

An Initial Hazard Potential Classification Assessment has been conducted per §257.73(a)(2) and has concluded that the Area 1 Surface Impoundment meets the classification of a Significant Hazard Potential CCR surface impoundment. A Significant Hazard Potential is defined as a diked surface impoundment where failure or mis-operation results in no probable loss of human life, but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. This classification is based on the proximity of the south berm to SE 2<sup>nd</sup> Street and the proximity of the north berm to Tecumseh Creek and the Kansas River.



#### 3.0 EMERGENCY PREVENTION AND RECOGNITION

#### 3.1 Emergency Definitions (§257.73(3)(a)(i)(A))

The main concern in an emergency involving the Area 1 Surface Impoundment would be berm failure as a result of heavy rainfall or failed drainage. Berm failure would result in material spilling out of the impoundment. As required by §257.73(a)(3)(i)(A), two types of safety emergencies are possible: Actual Failure and Potential Failure.

Actual Failure is when water and/or CCR material is being released from the Area 1 Surface Impoundment caused by an accident or failure of the Area 1 Surface Impoundment berm. Examples of this include seepage, erosion, or slope failure of a portion of the perimeter berm.

Potential Failure is when there is a potential for the release of water and/or CCR material from the Area 1 Surface Impoundment caused by an accident or failure of the Area 1 Surface Impoundment berms. During a Potential Failure it may be possible to take actions to prevent an Actual Failure. In a Potential Failure where Actual Failure is imminent or inevitable, time will be available to contact the appropriate parties based on the nature and severity of the incident as determined by the incident commander/designee.

#### 3.2 Area 1 Surface Impoundment Risks (§257.73(a)(3)(i)(D))

The remaining CCR material storage capacity within the Area 1 Surface Impoundment was calculated by determining the volume between the most recent survey, conducted in June 2016, and the minimum elevation of the perimeter berm. The remaining storage capacity within the Area 1 Surface Impoundment changes due to the continued cycling of the water between the North and South ponds. At the time of the 2016 annual inspection the approximate capacity of the ponds was 3,951 cubic yards (cy).

If the East or North berms were to break the material in the Area 1 Surface Impoundment would flow into Tecumseh Creek that discharges directly to the Kansas River. The Kansas River discharges to the Missouri and Mississippi Rivers. If the South berm were to break, the water would flow to the ditch on the north side of SE  $2^{nd}$  Street and potentially overtop the road. Material would flow from the roadside ditch to Tecumseh Creek and then the Kansas River. **Figure 3** depicts the affected downstream areas near the site, per §257.73(a)(3)(i)(D).

Failure of a berm would be quickly noticed due to the Area 1 Surface Impoundment being located so close to Tecumseh Creek and SE 2<sup>nd</sup> Street. Preventative measures to avoid berm failure are implemented and include visual inspections, as detailed below.

#### 3.3 Area 1 Surface Impoundment Surveillance (§257.73(3)(a)(i)(A))

Facility personnel conduct weekly visual inspections at the Area 1 Surface Impoundment. During inspections any signs of distress, malfunction, or disruption are noted and the issues are resolved as soon as possible. Additionally, annual inspections are conducted by a registered professional engineer in the state of Kansas. The Area 1 Surface Impoundment is inspected for significant signs of distress or malfunction that would indicate actual or potential structural weakness, in addition to potential to disrupt safety or operations at the Area 1 Surface Impoundment.



If a Potential Risk is viewed during an inspection it is resolved as soon as possible. If failure is imminent during a Potential Failure or if failure has occurred, notification, and mitigation

procedures are a top priority particularly for a potentially hazardous situation. As required by §257.73(a)(3)(i)(A), in the event that it is imminent that a Potential Failure will result in and Actual Failure or that an Actual Failure is observed, the inspector should:

- Observe and identify the Potential/Actual Failure location, time, area condition, and if applicable the amount of material discharging, discharge direction, and movement;
- Determine if there are any injuries by accounting for TEC personnel, warn nearby TEC personnel of release, reroute traffic from SE 2<sup>nd</sup> Street, and provide First Aid, if capable, or Call 911;
- Stop Potential/Actual Failure at the source, <u>only</u> if it is safe to do so, by turning off the water pump, closing the weir, or rerouting water;
- Try to contain the Potential/Actual Failure, <u>only</u> if safe to do so, by using on-site soil, hay bales, a temporary pipeline, or other material; and
- Contact the supervisor or designated Incident Commander and control room to report all Potential/Actual Failure details.

#### 3.4 Area 1 Detection and Monitoring Devices

No instrumentation associated with the hydraulic structures, impoundment embankments, or slope performance has been installed at the Area 1 Surface Impoundment. Groundwater piezometers and monitoring wells have been installed on the crest of the berm surrounding the Area 1 Surface Impoundment.



#### 4.0 EMERGENCY NOTIFICATION PROCEDURES

#### 4.1 Notification Sequence (§257.73(a)(3)(i)(B) and (C))

Tables 1 and 2, shown below, provide the necessary notification lists during an emergency. Table 1 provides the contact information of necessary environmental coordinators and emergency response agencies, as required by \$257.73(a)(3)(i)(C). Table 2 provides contact information for residents within the affected area. Tables 1 and 2 apply to both an imminent Potential Failure and Actual Failure emergency condition.

Call Sequence	Person to Call and Agency	Telephone
1 <sup>st</sup>	TEC Operations Manager Cleo Roehrman	785-379-4327
2 <sup>nd</sup>	Director, Water and Waste Programs Jared Morrison	785-575-8273
3 <sup>rd</sup>	Environmental Services Environmental Compliance Analyst Brandon Griffin	785-575-8135
4 <sup>th</sup>	KDHE Representative	785-296-1600
5 <sup>th</sup>	Shawnee County Emergency Management	785-251-4152
6 <sup>th</sup>	Shawnee Heights Fire Department	785-379-0566
8 <sup>th</sup>	Shawnee County Sheriff's Office	785-251-2200
9 <sup>th</sup>	Kansas Board of Emergency Medical Services – Ambulance Service	785-296-7296
10 <sup>th</sup>	St. Francis Hospital & Medical Center	785-295-8000
11 <sup>th</sup>	Kansas Department of Health and Environment – Bureau of Water	785-296-5504
12 <sup>th</sup>	Kansas Commission of Emergency Planning and Response – Topeka, KS	785-274-1418
13 <sup>th</sup>	National Response Center (NRC)	800-424-8802
14 <sup>th</sup>	U.S. Army Corps of Engineers – Marquette, KS	785-546-2294

#### Table 1: Emergency Notification Phone List (§257.73(a)(3)(i)(C))



Residential Addresses to Contact				
5423 SE 2 <sup>nd</sup> Street				
5433 SE 2 <sup>nd</sup> Street				
5239 SE 2 <sup>nd</sup> Street				
5238 SE 2 <sup>nd</sup> Street				
5232 SE 2 <sup>nd</sup> Street				
5225 SE 2 <sup>nd</sup> Street				
5220 SE 2 <sup>nd</sup> Street				

#### **Table 2: Resident Notification List**

The appropriate parties will be notified by the Incident Commander/Supervisor based on the nature and severity of the incident and per ( $\frac{257.73(a)(3)(i)(B)}{i}$ ). Notification must be made within an hour for an imminent Potential Failure or Actual Failure.

#### 4.2 Communication with Designated Persons (§257.73(a)(3)(i)(B))

The primary modes of communication with the necessary persons are cell phones and landline telephones. If someone cannot be contacted for any reason, an alternate person performing the position will be contacted by cell phone or telephone. In the event that the telephone systems or cell phones are out of order or inoperable, notification of the appropriate agencies/businesses will be accomplished in the most expedient manner available. This includes the two-way radio system, the paging system, in-person communication, or overnight mail.

#### 4.3 Notification of Residents (§257.73(a)(3)(i)(B))

The Incident Commander at TEC will determine who to notify, including an affected residents, in the case of an imminent or actual failure. The Shawnee County Sheriff has Code RED, an emergency notification phone contact system, which can be activated to assist with any necessary notifications to residents.

#### 4.4 Notification of Emergency Response Personnel (§257.73(a)(3)(i)(B))

The designated Incident Commander/Supervisor will ensure the required notifications are made. By calling 911 the dispatcher to send out notifications to the appropriate emergency response personnel needed for the particular incident.



#### **5.0 EMERGENCY OPERATIONS AND REPAIRS**

Emergency operations and repairs may be made to prevent or reduce the impact of a release of water and/or CCR material. It should be anticipated that this work may need to be performed during poor conditions and will require numerous resources. The primary methods of mitigating potential impact include regulating the water flow, minimizing the potential for flooding within the residential area, and coordinating emergency responders and repairs.

#### 5.1 Response for Repairs

Assistance can be requested from county and state emergency management offices to assist with the incident repairs and for recommendations to Westar concerning the equipment and materials needed to mitigate the incident.



#### 6.0 ANNUAL FACE-TO-FACE MEETING (§257.73(a)(3)(i)(E))

Per 257.73(a)(3)(i)(E), an annual face-to-face meeting will be held with local emergency responders, whether or not an incident has occurred in the previous year. If an incident occurred the annual meeting date will be moved to discuss the incident as soon as possible after it occurs. If no incidents have occurred within the year, the annual meeting will be held to discuss the Area 1 Surface Impoundment, the EAP, and the role the local emergency responders would play in assisting the facility. The possible risks the Area 1 Surface Impoundment poses will be explained, as well as the preventative measures the plant is taking to avoid a Potential Failure. Documentation of the annual face-to-face meeting will be placed in the operating record for the Area 1 Surface Impoundment.



#### 7.0 PROFESSIONAL ENGINEER CERTIFICATION (§257.73(a)(3)(iv))

The undersigned registered professional engineer is familiar with the requirements of  $\S257.73(a)(3)(i)$  of the CCR Rule and has visited and examined TEC or has supervised examination of TEC by appropriately qualified personnel. The undersigned registered professional engineer attests that this EAP has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and meets the requirements of  $\S257.73(a)(3)(i)$ , and that this EAP is adequate for TEC's facility. This certification was prepared as required by  $\S257.73(a)(3)(iv)$ .

Name of Professional Engineer:	Richard Southorn
Company:	APTIM
Signature:	- 758-
Date:	3/20/18
PE Registration State:	Kansas
PE Registration Number:	PE25201
Professional Engineer Seal:	
25201 BOTOMAL ENGINE	N A



# FIGURES

- Figure 1 Area 1 Surface Impoundment, Site Map
- Figure 2 Area 1 Surface Impoundment, Existing Site Conditions
- Figure 3 Area 1 Surface Impoundment, Area Affected Downstream





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**AREA 1 SURFACE IMPOUNDMENT** SITE LOCATION PLAN PROJ. NO .: 631226111 DATE: MARCH 2018 APPROVED BY: RDS





### LEGEND

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

# NOTES

- 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. 4.0 ACRES.

# TECUMSEH ENERGY CENTER 5636 SE 2nd ST., TECUMSEH, KANSAS

#### FIGURE 2 AREA 1 SURFACE IMPOUNDMENT EXISTING SITE CONDITIONS

ROVED BY: MMS	PROJ. NO.:	631226111	DATE:	MARCH 201





### LEGEND

 CCR UNIT BOUNDARY
 POND BOUNDARY
APPROXIMATE AREA AFFECTED

## NOTES

- 1. EXISTING CONTOURS DEVELOPED BY PROFESSIONAL ENGINEERING CONSULTANTS IN JUNE 2016.
- 2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
- 3. ALL BOUNDARIES SHOWN ARE APPROXIMATE.

## TECUMSEH ENERGY CENTER 5636 SE 2nd ST., TECUMSEH, KANSAS

#### FIGURE 3 AREA 1 SURFACE IMPOUNDMENT AREA AFFECTED DOWNSTREAM

ROVED	ΒY

RDS PROJ. NO .:

631226111 DATE:

MARCH 201