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TECHNICAL MEMORANDUM

August 11, 2020
File No. 129778-039

TO: Evergy Kansas Central, Inc. (f/k/a Westar Energy, Inc.)
Jared Morrison – Director, Water and Waste Programs

FROM: Haley & Aldrich, Inc.
Steven F. Putrich, P.E., Principal Consultant
Mark Nicholls, P.G., Hydrogeologist

SUBJECT: Groundwater Monitoring Concentrations Evaluation and Certification
40 CFR 257.102 (c) Closure by Removal of CCR
Tecumseh Energy Center
Bottom Ash Settling Area

Evergy Kansas Central, Inc. (Evergy) operates the Tecumseh Energy Center (TEC) Bottom Ash Settling Area (BASA), which is an existing coal combustion residuals (CCR) management unit. The TEC BASA is subject to the U.S. Environmental Protection Agency Federal CCR Rule Title 40 Code of Federal Regulations (CFR) §§ 257 and 261 (Rule) effective October 19, 2015, including subsequent rulemaking revisions. The CCR Rule establishes requirements for the operation, maintenance, and closure of CCR landfills and surface impoundments. This document addresses the groundwater requirements for closure by removal of CCR at the TEC BASA in accordance with § 257.102(c) and serves as certification that the unit has met the groundwater requirements for closure of a CCR surface impoundment. This unit has not been required to enter corrective measures, remedies, or corrective actions under 40 CFR §§ 257.96 through 257.98 due to releases to groundwater.

Under § 257.102(c) of the Rule, the criteria that must be met for closure of a surface impoundment is stated as:

> *An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to §257.95(h) for constituents listed in Appendix IV to this part.*

The following sections describe how the closure activities by Evergy have met these two criteria.

TEC BASA CCR Removal

On October 9, 2018, Evergy initiated closure of the CCR unit by removing the CCR waste material from the unit in accordance with the closure plan titled "Closure Plan, Tecumseh Energy Center, Bottom Ash Settling Area" (Closure Plan). Black and Veatch prepared documentation that all CCR was removed from the unit on September 5, 2019, and that final construction, grading, and vegetation work was completed in accordance with the Closure Plan on July 31, 2020. Haley & Aldrich, Inc. (Haley & Aldrich) has reviewed this documentation.

Groundwater Monitoring Concentration Analysis

DEVELOPMENT OF GROUNDWATER PROTECTION STANDARDS

For detected Appendix IV constituents, groundwater protection standards (GWPS) were set equal to the highest value of the maximum contaminant level (MCL), regional screening level (RSL), or background concentration. Per the *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009,* background concentrations were updated based on statistical evaluation of analytical results collected through September 2018 (interwell evaluation) or through June 2019 (intrawell evaluation).

Background data for interwell evaluation were composed of upgradient well data. For interwell evaluation, background concentrations from the upgradient monitoring well (MW-7) were compared to the MCLs and RSLs for the detected Appendix IV constituents (arsenic, barium, cadmium, cobalt, fluoride, lithium, molybdenum, and radium 226 and 228 combined) to establish the appropriate GWPS. Radium 226 and 228 combined is considered to be a detected constituent when the analytical result is greater than the minimum detectable concentration for the groundwater sample.

Intrawell evaluation background data were composed of the well's own historical data. Intrawell evaluation was completed for constituents at designated monitoring wells that had a successful alternate source demonstration; therefore, intrawell background concentrations from MW-9 (arsenic and cobalt) and MW-10 (arsenic) were compared to the respective MCLs and RSLs to establish the appropriate GWPS. Background concentrations for the identified constituents were higher than the respective MCL or RSL values. Consequently, the GWPSs for arsenic (MW-9 and MW-10) and cobalt (MW-9) were established based on intrawell background concentrations. Detected Appendix IV constituents and their corresponding GWPSs are summarized in Table I.

STATISTICAL EVALUATION OF APPENDIX IV CONSTITUENTS

The Rule provides four specific options for statistical evaluation of groundwater quality data collected at a CCR unit (40 CFR § 257.93(f) (1-4)). The statistical method used for these evaluations, tolerance limit (TL), is outlined in the document *Selection of Statistical Procedures Certification, Tecumseh Energy Center, Bottom Ash Settling Area* and was certified by Haley & Aldrich on January 14, 2019.

GWPS AND APPENDIX IV CONCENTRATIONS EVALUATION

The TEC BASA CCR management unit has been operating in an assessment monitoring program. In accordance with the surface impoundment closure criteria set forth in § 257.102(c) of the CCR Rule, groundwater monitoring concentrations for closure by removal of a surface impoundment must not exceed the GWPS established pursuant to 40 CFR §257.95(h) for constituents listed in Appendix IV. The results from two consecutive sampling events, October 2019 and December 2019, were used to document that detected Appendix IV constituents do not exceed GWPSs. During the December 2019 sampling event, downgradient monitoring well MW-9 was identified as being dry. The monitoring well was unable to be sampled; therefore, statistical evaluation was not completed for MW-9 for the December 2019 sampling event. Well MW-9 was re-confirmed to be dry in March 2020.

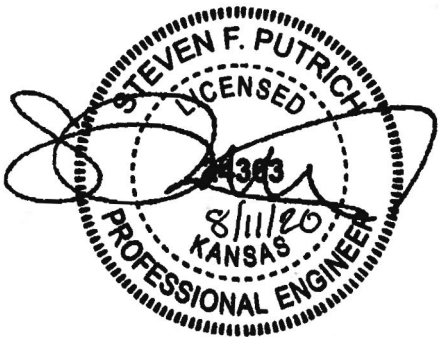
The sample concentrations from the downgradient wells for each of the detected Appendix IV constituents from the two most recent assessment monitoring sampling events were compared to their respective background GWPSs. Based on these evaluations, no Appendix IV constituents were observed above the established GWPS in the monitoring wells down gradient of the TEC BASA following the removal of CCR in September 2019. The detected Appendix IV constituent concentration values are provided in Table II. This evaluation demonstrates that the TEC BASA meets surface impoundment groundwater closure criteria prescribed by the Rule.

CERTIFICATION

As required by 40 CFR § 257.102(f)(3), I hereby certify that the groundwater monitoring concentrations at the TEC BASA do not exceed the groundwater protection standards established for the unit pursuant to 40 CFR § 257.95(h) for constituents listed in Appendix IV of 40 CFR § 257. The TEC BASA surface impoundment is closed in accordance with the Closure Plan and the requirements of 40 CFR § 257.102.

Attachments:

Table I – Detected Appendix IV GWPS
Table II – Summary of Analytical Results – September and December 2019 Semi-Annual Assessment Monitoring
Attachment 1 – Closure Plan, Tecumseh Energy Center, Bottom Ash Settling Area
Attachment 2 – Black & Veatch, TEC Bottom Ash Settling Area – Certification of CCR Removal



TABLES

TABLE I
DETECTED APPENDIX IV GWPS
EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
BOTTOM ASH SETTLING AREA
TECUMSEH, KANSAS

Well #	Background Value**	MCL	CFR §§ 257.95(h)(2)***	GWPS
CCR Appendix-IV Arsenic, Total (mg/L)				
MW-7 (upgradient)	0.0021	0.010	NA	NA
MW-10*	0.118	0.010	NA	0.118
MW-8		0.010	NA	0.010
MW-9*	0.198	0.010	NA	0.198
CCR Appendix-IV Barium, Total (mg/L)				
MW-7 (upgradient)	0.0953	2	NA	NA
MW-10		2	NA	2
MW-8		2	NA	2
MW-9		2	NA	2
CCR Appendix-IV Cadmium, Total (mg/L)				
MW-7 (upgradient)	0.0005	0.005	NA	NA
MW-10		0.005	NA	0.005
MW-8		0.005	NA	0.005
MW-9		0.005	NA	0.005
CCR Appendix-IV Cobalt, Total (mg/L)				
MW-7 (upgradient)	0.00217	NA	0.006	NA
MW-10		NA	0.006	0.006
MW-8		NA	0.006	0.006
MW-9*	0.0641	NA	0.006	0.064
CCR Appendix-IV Fluoride, Total (mg/L)				
MW-7 (upgradient)	0.371	4.0	NA	NA
MW-10		4.0	NA	4.0
MW-8		4.0	NA	4.0
MW-9		4.0	NA	4.0
CCR Appendix-IV Lithium, Total (mg/L)				
MW-7 (upgradient)	0.0295	NA	0.040	NA
MW-10		NA	0.040	0.040
MW-8		NA	0.040	0.040
MW-9		NA	0.040	0.040
CCR Appendix-IV Molybdenum, Total (mg/L)				
MW-7 (upgradient)	0.0138	NA	0.100	NA
MW-10		NA	0.100	0.100
MW-8		NA	0.100	0.100
MW-9		NA	0.100	0.100
CCR Appendix-IV Radium-226 & 228 Combined (pCi/L)				
MW-7 (upgradient)	5.9	5	NA	NA
MW-10		5	NA	5.9
MW-8		5	NA	5.9
MW-9		5	NA	5.9

Notes and Abbreviations:

** Denotes intrawell evaluation for the listed constituents. All other constituents are interwell evaluation.*

*** Background value for interwell evaluation based on data collected through September 2018 and for intrawell evaluation through June 2019.*

**** Values obtained from U.S. Environmental Protection Agency Federal CCR Rule Title 40 Code of Federal Regulations (CFR) §§ 257.95(h)(2) on June 10, 2020.*

CCR = Coal Combustion Residuals

GWPS = groundwater protection standard

MCL = maximum contaminant level

mg/L = milligrams per liter

NA = not applicable

pCi/L = picoCuries per liter

TABLE II
SUMMARY OF ANALYTICAL RESULTS - SEPTEMBER AND DECEMBER 2019
SEMI-ANNUAL ASSESSMENT MONITORING
EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER
BOTTOM ASH SETTLING AREA
TECUMSEH, KANSAS

Location	Upgradient			Downgradient			
	MW-7	TEC-MW-7	MW-8	TEC-MW-8	MW-9	MW-10	TEC-MW-10
Sample Name	MW-7	MW-07_120519	MW-8	MW-08_120519	MW-9	MW-10	MW-10_120519
Sample Date	10/10/2019	12/05/2019	10/10/2019	12/05/2019	10/10/2019	10/9/2019	12/05/2019
Boron, Total (mg/L)	**0.66**	**0.66**	**1.3**	**1.3**	**0.11**	**0.22**	**0.22**
Calcium, Total (mg/L)	**129**	**126**	**205**	**199**	**203**	**182**	**162**
Chloride (mg/L)	**172**	**197**	**216**	**220**	**206**	**222**	**228**
Fluoride (mg/L)	**0.34**	**0.22**	**0.25**	< 0.20	**0.32**	**0.41**	**0.35**
Sulfate (mg/L)	**375**	**418**	**648**	**654**	**19.3**	**98.6**	**175**
pH (su)	**7.2**	**6.9**	**7.2**	**7.0**	**7.8**	**6.9**	**6.8**
TDS (mg/L)	**1000**	**1080**	**1380**	**1330**	**1110**	**1260**	**1250**
Arsenic (mg/L)	**0.0016**	**0.0016**	**0.0024**	**0.0039**	**0.051**	**0.021**	**0.026**
Barium, Total (mg/L)	**0.053**	**0.053**	**0.064**	**0.077**	**0.85**	**0.36**	**0.30**
Cadmium, Total (mg/L)	<0.00050	< 0.00050	<0.00050	< 0.00050	<0.00050	<0.00050	< 0.00050
Cobalt, Total (mg/L)	<0.0010	**0.0018**	**0.0014**	**0.0025**	**0.016**	**0.002**	**0.0028**
Lithium, Total (mg/L)	**0.017**	**0.024**	**0.017**	**0.024**	<0.010	<0.010	< 0.010
Molybdenum, Total (mg/L)	**0.0110**	**0.010**	**0.039**	**0.046**	**0.0085**	**0.0041**	**0.0043**
Fluoride (mg/L)	**0.34**	**0.22**	**0.25**	< 0.20	**0.32**	**0.41**	**0.35**
Radium-226 & 228 Combined (pCi/L)	0.403 ± 0.611 (1.25)	0.666 ± 0.573 (0.873)	0.721 ± 0.842 (1.63)	0.569 ± 0.668 (1.06)	**1.67 ± 1.01 (1.17)**	**2.64 ± 1.15 (1.50)**	**1.60 ± 0.752 (1.11)**

Notes and Abbreviations:

Bold value: *Detection above laboratory reporting limit or minimum detectable concentration (MDC).*

Radiological results are presented as activity plus or minus uncertainty with MDC

Data presented in this table were verified against the laboratory and validation reports.

During the December 2019 sampling event, downgradient monitoring well MW-9 was identified as being dry. The monitoring well was unable to be sampled.

mg/L = milligrams per liter

pCi/L = picoCuries per liter

su = standard unit

TDS = total dissolved solids

ATTACHMENT 1

Closure Plan, Tecumseh Energy Center, Bottom Ash Settling Area

Closure Plan
Tecumseh Energy Center
Bottom Ash Settling Area

Prepared for:

Evergy Kansas Central, Inc.

Tecumseh Energy Center

Tecumseh, Kansas

Prepared by:

APTIM Environmental & Infrastructure, LLC

Revision 0 - October 2016

Revision 1 - July 20, 2020

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Plan Review/Amendment Log §257.102(b)(3)

Date of Review	Reviewer Name	Amendment Required (YES/NO)	Sections Amended and Reason
July 20, 2020	APTIM Environmental & Infrastructure, LLC	YES	Revised company name, corrected CCR unit name, revised closure plan to be closer in alignment with other Evergy closure plans. Note that no triggering event has necessitated this revision.

APTIM

1.0 INTRODUCTION

APTIM Environmental and Infrastructure, Inc. (APTIM) has revised the following Closure Plan (Plan) at the request of Evergy Kansas Central, Inc. (Evergy) for the Bottom Ash Settling Area (BASA) located at the Tecumseh Energy Center (TEC) in Tecumseh, Kansas. TEC is a closed coal-fired generating station that consisted of two operational coal-fired electric generating units owned and operated by Evergy. The BASA is comprised of two sub-units within a single embanked area: the North Pond and the South Pond. Both the North and South Ponds have been deemed to be regulated coal combustion residual units under the United States Environmental Protection Agency (USEPA) Disposal of Coal Combustion Residuals from Electric utilities Final Rule (CCR Rule) 40 CFR §257 and §261.

This Plan details the closure requirements outlined in §257.102 for CCR units closed by removal of CCR. The criteria for conducting the closure or retrofit of CCR units for the BASA are detailed in Section 2.0. Additionally, the following Plan details the necessary steps to close the BASA at any point in during the active life, based on recognized and good engineering practices.

2.0 REGULATORY OVERVIEW OF CCR CLOSURE PLAN REQUIREMENTS

On April 17, 2015, USEPA published the CCR Rule under Subtitle D of the Resource Conservation and Recovery Act (RCRA) as 40 CFR Part §257 and §261. The purpose of the CCR Rule is to regulate the management of CCR in regulated CCR units for landfill and surface impoundments. The BASA has been deemed to be a regulated CCR unit at TEC.

Section 257.102(b) of the CCR Rule requires owners or operators of CCR landfills and surface impoundments to prepare a Plan describing the closure of the unit and schedule for implementation of the Plan. The following citations from the CCR Rule are applicable for the BASA as discussed in this Plan:

§257.102(b)(1) stipulates:

(b) Written closure plan – (1) Content of the plan. The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section

- *(i) A narrative description that discusses how the CCR unit will be closed in accordance with this section.* (See Section 4.1)
- *(ii) If closure of the CCR unit will be accomplished through removal of CCR from the CCR unit, a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this section.* (See Section 4.1)
- *(iii) If closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system, designed and methods and procedures to be used to install the final cover will achieve performance standards specified in paragraph (d) of this section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system achieves the performance standards specified in paragraph (d) of this section.* (N/A)
- *(iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.* (See Section 3.4)
- *(v) An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life.* (N/A)
- *(vi) A schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure. When preparing the written closure plan, if the owner or operator of a CCR unit estimates that the time required to complete closure will exceed the timeframes specified in paragraph (f)(1) of this section, the written closure plan must include the site-specific information, factors and considerations that would support any time extension sought under paragraph (f)(2) of this section.* (See Section 5.0)

APTIM

An outline of the closure performance standards for closure of units where CCR will be removed is described in §257.102(c), which stipulates:

"An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have be removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to §257.95(h) for constituents listed in appendix IV to this part."

In addition to the above, the Plan must ensure compliance with the closure recordkeeping requirements specified in §257.105(i), the closure notification requirements specified in §257.106(i), and the closure intent requirements specified in §257.107(i). A written certification is provided in Section 7.0 from a qualified professional engineer in the State of Kansas, to certify that this Plan meets the requirements of the CCR Rule.

3.0 TEC BASA OVERVIEW

3.1 Location, Topography, and Description

Bottom ash slurry was historically deposited within TEC's BASA. The closure of the BASA will be accomplished by the removal of the CCR from the unit. The following Plan was developed to satisfy the CCR Rule requirements for removal of CCR per §257.102(b)(1)(ii).

The location of the BASA is shown on **Figure 1**. The BASA was constructed in two phases, in 1968 and in 1980. The BASA was further excavated and an internal berm was constructed to separate the BASA into two approximately equal sized ponds (North and South Pond), which can be seen in **Figure 2**. The total surface area of the combined ponds in the BASA is approximately 1.8 acres, with the North and South Pond each having a surface area of approximately 0.8 acres and 1 acre, respectively.

There are no available drawings, construction records, or written operational records of the original construction. However, it appears that in the original construction on the east end of the BASA was incised into the sloping topography. The above-grade berms were constructed around the north, south, and west side slopes, using silty clay.

The interior slope of the North and South ponds is generally 1H:1V and a perimeter berm surrounds the North and South Ponds. The top elevation of the BASA varies between approximate 884 to 886 feet mean sea level (ft MSL). The north and west berms slope towards Tecumseh Creek. The perimeter berm prevents overland flow of stormwater into the North and South Pond of the BASA. Existing site topography is depicted in **Figure 2.**

3.2 Existing Solid Waste Regulatory Permits and Consents

Westar was granted an Industrial Landfill Permit (Number 322) at TEC by the Kansas Department of Health and Environment – Bureau of Waste Management (KDHE-BWM), in accordance with Kansas Statutes Annotated (KSA) 65-3407. KDHE modified the solid waste permit, per K.A.R. 28-29-6a, in response to the CCR Rule to include all on-site CCR waste materials management units as disposal areas under the existing solid waste permit for TEC. The current Industrial Landfill Permit modification was approved on October 15, 2015.

3.3 Bottom Ash Generation, Recycling, and Disposal

Bottom ash and process water was sent to either the north or south sub-unit until one or both were filled, then the CCR material was dewatered. The dewatered ash material was then either sold for beneficial reuse or landfilled at the TEC 322 Landfill. Generation and recycling rates at TEC varied over time.

3.4 Maximum Volume Estimate (§257.102(b)(1)(iv))

The maximum volume ever on site is unknown, however, APTIM expects the maximum amount of CCR ever in the unit would not have exceeded the unit capacity, which was estimated to be approximately 51,000 cubic yards (cy) based on a 2016 survey by Professional Engineering Consultants.

4.0 CLOSURE PLAN (§257.102(b)(1))

This Plan has been prepared in accordance with requirements of the CCR Rule and includes a written certification in Section 7.0 from a qualified Professional Engineer for the State of Kansas.

4.1 Narrative Description (§257.102(b)(1)(i) and (ii))

Closure will be accomplished through removal of CCR. The CCR material contained in the unit will be dewatered as necessary, removed, and either beneficially used or disposed in the on-site CCR landfill. CCR will be removed primarily by mechanical excavation using earth-moving equipment. CCR will be allowed to dewater by gravity drainage and evaporation. The impoundment will be decontaminated by removal of CCR and will be considered complete when constituent concentrations throughout the CCR unit, if detected, have been removed and/or groundwater monitoring concentrations do not exceed the groundwater protection standard for constituents listed in Appendix IV to 40 CFR 257. Following CCR removal, the BASA will be regraded for surface water drainage and the area will be vegetated.

5.0 CLOSURE ACTIVITY SCHEDULE (§257.102(b)(1)(vi))

The size of area and time of year closure construction takes place will vary, therefore closure construction schedules will vary. The schedule provided in this section is therefore a general estimation.

5.1 Commencement of Closure

Commencement of final closure has occurred if placement of waste in the BASA has ceased and any of the following actions or activities has been completed (40 CFR 257.102(e)(3)):

(i) Steps necessary to implement this Plan;

(ii) Submittal of a completed application for any required state or agency permit or permit modification; or

(iii) Steps necessary to comply with any state or other agency standards that are a prerequisite, or are otherwise applicable, to initiating or completing the closure.

5.2 Closure Schedule

The milestones and the associated timeframes in this section are initial estimates. Some of the activities associated with the milestones will overlap.

Table 1: Estimated Closure Schedule

Written Closure Plan	October 17,2016
Notification of Intent to Close Placed in Operating Record	October 19, 2018 [1]
Initiation of Closure / Coordinating with and obtaining necessary approvals and permits from other agencies	Year 1-2
Mobilization	Year 1
Dewater and remove CCR	Year 1 - 3
Year all closure activities for the CCR unit will be completed	Year 1-5 [2]

Notes:
1. Initiation of Closure may be extended for multiple two-year periods in accordance with 40 CFR 257.102(e)(2)(ii) and (iii).
2. Final closure of Surface Impoundments must be completed within five years of commencing closure unless a demonstration is placed in the operating record document (40 CFR 257.102(f)(2)).

6.0 AMENDMENT OF CCR CLOSURE PLAN (§257.102(b)(1))

The owner or operator may amend the initial or any subsequent written Plan developed pursuant to 40 CFR 257.102(b)(1) at any time.

The written closure must be amended at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written Plan. If a written Plan is revised after closure activities have commenced for a CCR unit, the current written Plan must be amended no later than 30 days following the triggering event.

A written certification from a qualified professional engineer that the initial and any amendment of the written Plan meets the requirements of §257.102(b) must be obtained.

Plan changes will be documented using the Revision History which prefaces this Plan. Substantial changes to this Plan will be certified by a Qualified Professional Engineer.

7.0 PROFESSIONAL ENGINEER CERTIFICATION (§257.102(b)(4))

The undersigned registered professional engineer is familiar with the requirements of CCR Rule requirements of §257.102 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 CCR Plan has been prepared in accordance with good engineering practice, including consideration of applicable industry standards and meets the requirements of §257.102, and that this Plan is adequate for TEC's facility. This certification was prepared as required by §257.102(b)(4).

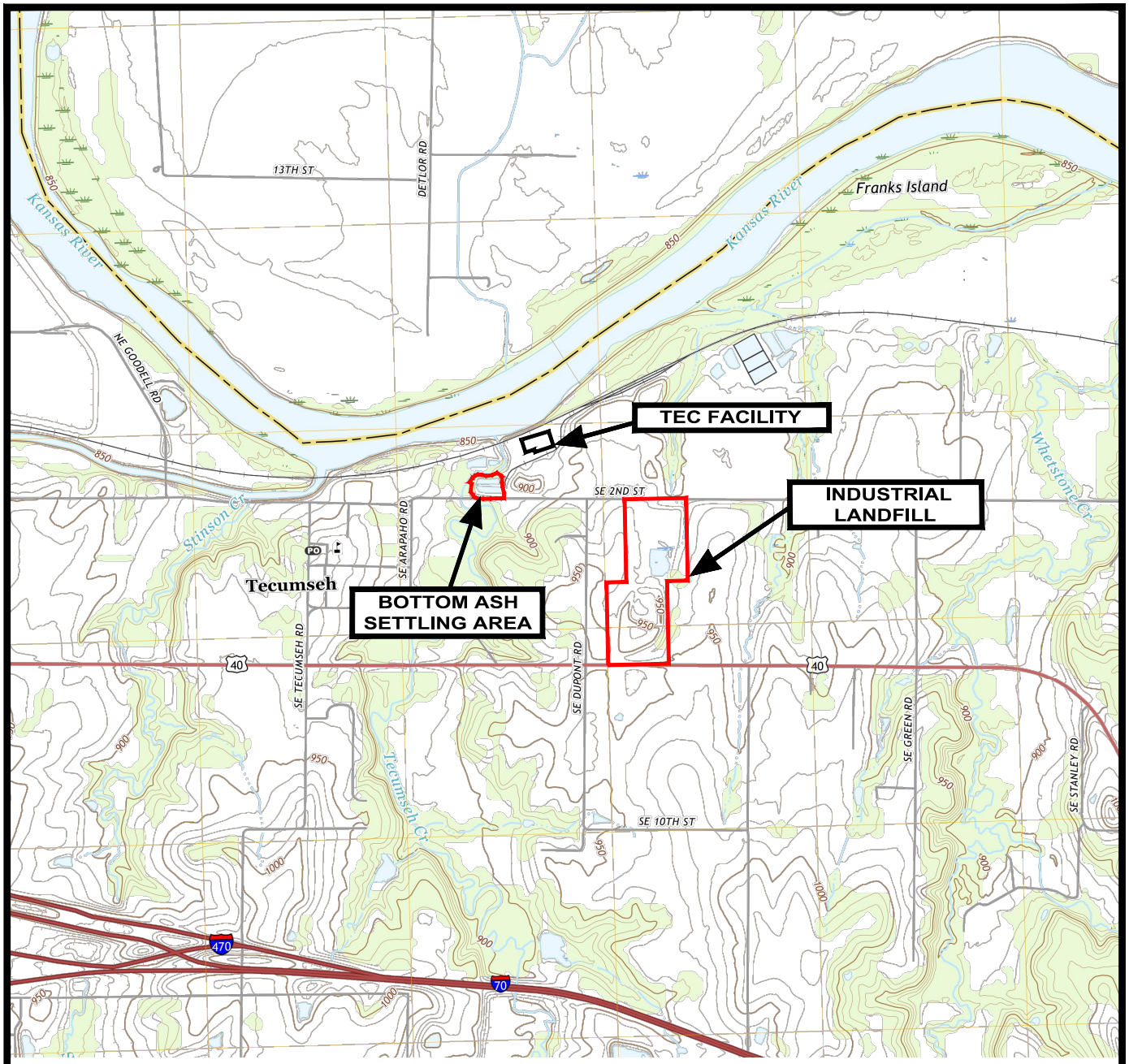
Name of Professional Engineer: Richard Southorn

Company: APTIM

Professional Engineer Seal:

APTIM

FIGURES



LEGEND

APPROXIMATE CCR UNIT BOUNDARY

N

0 2500'

GRAPHIC SCALE

NOTES

1. AERIAL TOPO OBTAINED FROM USGS 7.5-MINUTE SERIES, GRANTVILLE QUADRANGLE, KANSAS, 2018.
2. ALL BOUNDARIES ARE APPROXIMATE

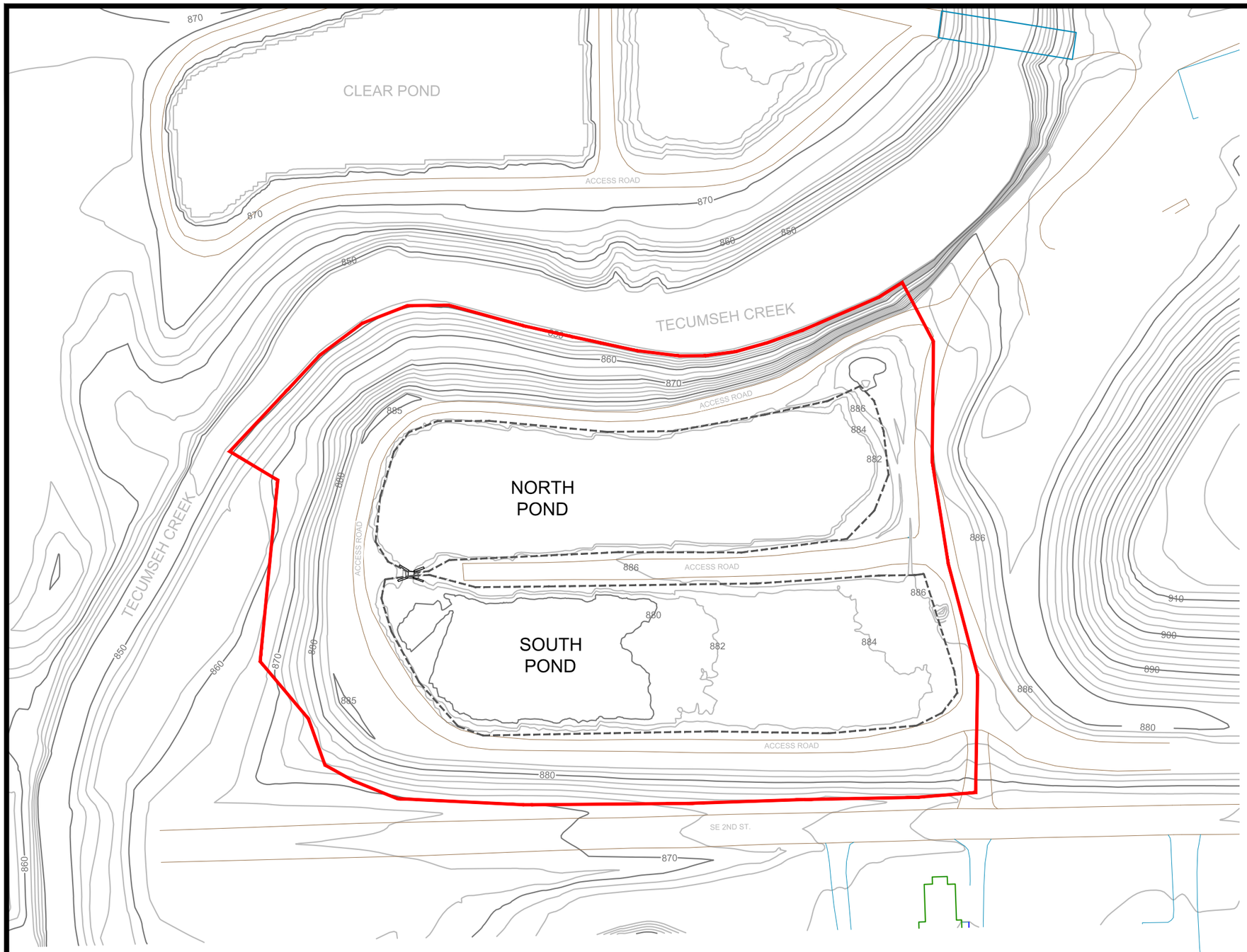
APTIM

APTIM Environmental & Infrastructure, LLC

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

FIGURE 1
BOTTOM ASH SETTLING AREA
SITE LOCATION PLAN

APPROVED BY: RDS	PROJ. NO.: –	DATE: JULY 2020



N

0 80'

GRAPHIC SCALE

LEGEND

APPROXIMATE CCR UNIT BOUNDARY

APPROXIMATE POND BOUNDARY

NOTES

1. CONTOURS DEVELOPED BY PROFESSIONAL ENGINEERING CONSULTANTS IN JUNE 2016. SOME SURFACE CONTOURS MAY NOT BE SHOWN DUE TO THE PRESENCE OF WATER.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.
3. THE PRIMARY LOCATION OF CCR IS WITHIN THE APPROXIMATE POND BOUNDARY.

REV. NO.	DATE	DESCRIPTION

evergy

APTIM Environmental & Infrastructure, LLC

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

FIGURE 2
BOTTOM ASH SETTLING AREA
SITE TOPOGRAPHY

DRAWN BY:	ORC	APPROVED BY:	RDS	PROJ. NO.:	–	DATE:	JULY 2020

T:\AutoCAD\Projects\Westar Energy\Tecumseh\Surface Impoundment\2020 Closure Plan\Figure 2 - Site Topography.dwg, 7/20/2020 6:04:27 PM, AutoCAD PDF (High Quality Print).pc3

ATTACHMENT 2

Black & Veatch, TEC Bottom Ash Settling Area
Certification of CCR Removal

Black & Veatch
11401 Lamar Avenue, Overland Park, KS 66211
P +1 913 458-6505 E birkj@bv.com

August 7, 2020

Jared Morrison
Director, Water and Waste Programs
Evergy Kansas Central, Inc. (f/k/a Westar Energy, Inc)
818 South Kansas Avenue
Topeka, KS 66612

Subject: TEC Bottom Ash Settling Area – Certification of CCR Removal

Evergy Kansas Central, Inc. (f/k/a Westar Energy, Inc) (Evergy) operates the Tecumseh Energy Center (TEC) located at 5530 SE 2nd St., Tecumseh, Kansas 67357. TEC is no longer operational and generation units are being decommissioned. The Bottom Ash Settling Area (BASA), a CCR Rule Surface Impoundment, was used as a clarifying pond within the pond system used to manage the process water for the power plant.

Per 40 CFR 257.102(e)(3)(iii), Evergy initiated the closure of the bottom ash settling area per the Notification of Closure Initiation, Tecumseh Bottom Ash Settling Area (Permit No. 322) dated October 9, 2018. In accordance with the most current CCR closure plan and KDHE permit No. 0322 approved by the Kansas Department of Health and Environment, the CCR material was to be removed from the impoundment area.

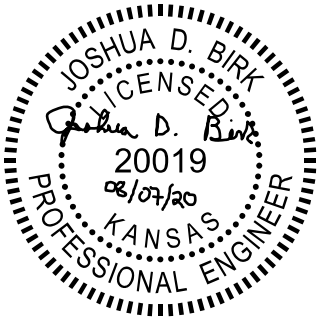
Black & Veatch was retained to observe the excavation of the stored CCR material and to visually verify all CCR material was removed in accordance with the document titled "Closure Plan, Tecumseh Energy Center, Bottom Ash Settling Area" dated July 20, 2020 (Closure Plan). CCR removal was planned with in the boundary of the CCR Removal Limits indicated on Drawing 1. This drawing indicates pre-existing CCR unit surface contours as surveyed by Clarkson Construction Co, Inc. Planned side slope excavation, and planned base excavation was completed at approximately 1:1 grades down to elevation 864 ft unless clay was encountered, in which case excavation was terminated. Excavation at the base of the unit (below the planned 864 ft NGVD), then proceeded down to the top of clay; if clay was not encountered before elevation 864 ft NGVD, excavation continued until in-situ clay or soil was located, and excavation was terminated. Black & Veatch then observed test pits excavated approximately four feet deep in multiple locations to determine removal of CCR and impacted soils. A constructed clay liner is not known to have been constructed for this unit. Drawing 2 is provided to indicate the final contours and the location of the Top of Clay/Bottom of Excavation as surveyed by Clarkson Construction Co. Inc., and as observed and certified by Black & Veatch, Inc. for both the side slope and base excavation areas. Embankments, the perimeter road and surrounding surface and subsurface areas were removed, regraded, or left in place in accordance with the state-approved solid waste Permit No. 322. In accordance with the EPA final CCR rule, Evergy has removed all CCR from the Bottom Ash Settling Area and removed all equipment, structures and impacted soils. The excavated CCR waste material was hauled to the on-site industrial landfill (KDHE Permit No. 0322).

The unit capacity of this surface impoundment was reported in the Closure Plan to be approximately 51,000 cubic yards; approximately 54,750 cubic yards was reported by Clarkson Construction Co, Inc. as removed and disposed. Evergy has removed the CCR from this impoundment per the CCR removal requirements of §257.102(c) Closure by Removal of CCR, and the unit has been re-graded and vegetated in accordance with the Closure Plan. Documentation of

satisfactory site grading and vegetation in accordance with the unit closure plan was completed July 31, 2020. Related documentation is presented in Attachments 1, 2, and 3.

PROFESSIONAL ENGINEER CERTIFICATION

The undersigned engineer is familiar with the requirements for closure by removal in accordance with §257.102 and has observed the removal of CCR materials from Tecumseh Energy Center Bottom Ash Settling Area in accordance with the current Closure Plan and within the time allowed by 40 CFR 257.102(f)ii (five years).



08/07/2020
Joshua Birk, P.E.
Kansas 20019

Attachments:
1 Figures
2 Photographic Documentation
3 Excavation and Final Grades (Drawings No. 1 and 2)

Attachment 1: Figures

Attachment 1:
Figures

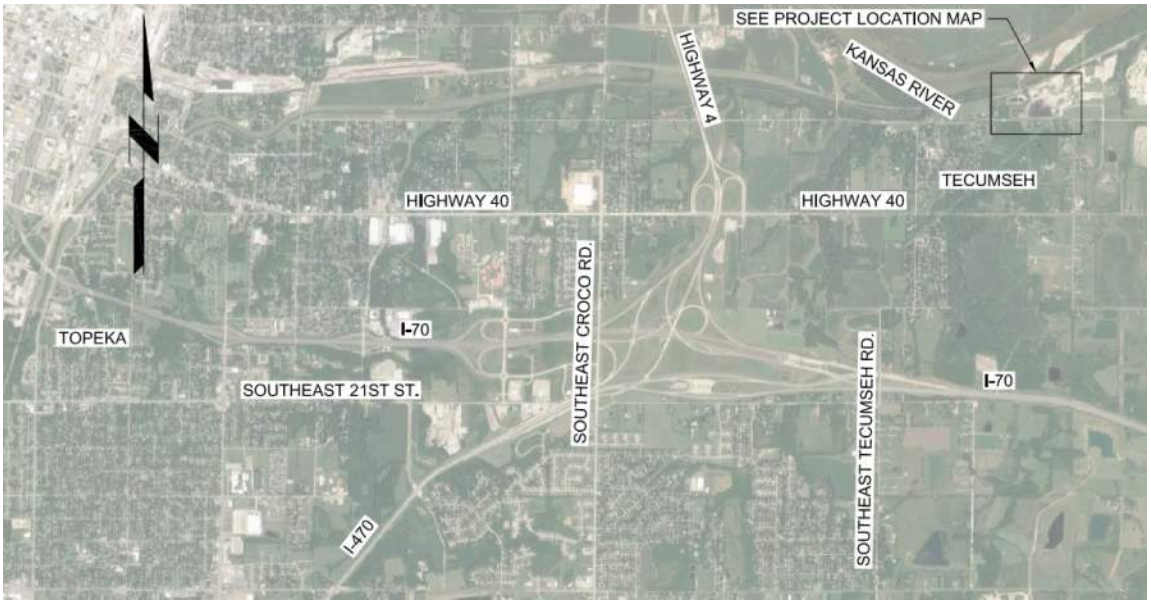


Figure 1
TEC VICINITY MAP
Not to scale

Figure 2
PROJECT LOCATION MAP

Attachment 2: Photographic Documentation

Attachment 2:
Photographic Documentation

	TEC – BASA	Photo No: 20190905-1
DESCRIPTION: Looking northwest from the southeast corner of the site along SE 2nd Street. Image of area after all CCR material has been removed. Black &Veatch personnel walked the entire unit and verified visually the CCR was removed. 05 SEP 2019		
	TEC – BASA	Photo No: 20200729 - 2
DESCRIPTION: Looking west from the southeast corner of the site along SE 2nd Street. Image of area after vegetation has been established. Black &Veatch personnel walked the entire unit and verified visually the grading and vegetation is satisfactory. The last remaining erosion control was removed on July 31, 2020. 29 JUL 2020		

Attachment 3: Excavation and Final Grades (Drawings No. 1 and 2)

NOTES:

1. ALL SLOPES ARE TO BE SEEDED WITH EROSION CONTROL BLANKET AS REQUIRED.
2. THE SURFACE SHOWN FOR THE CCR REMOVAL WAS COMPLETED ON SEPTEMBER 10, 2019 AND WAS PROVIDED BY CLARKSON CONSTRUCTION CO, INC. THE TOTAL AMOUNT OF CCR MATERIAL REMOVED WAS 54,750 CUBIC YARDS.
3. EXCAVATION AT THE BASE OF THE UNIT PROCEEDED DOWN TO THE TOP OF CLAY; IF CLAY WAS NOT ENCOUNTERED BEFORE ELEVATION 864 FT NGVD, EXCAVATION CONTINUED UNTIL IN-SITU CLAY OR SOIL WAS LOCATED, AND EXCAVATION WAS TERMINATED. BLACK & VEATCH THEN OBSERVED TEST PITS EXCAVATED APPROXIMATELY FOUR FEET DEEP IN MULTIPLE LOCATIONS TO DETERMINE REMOVAL OF CCR AND IMPACTED SOILS.

30' 15' 0 30' 60'
1"=30'

CONFORMS TO CONSTRUCTION RECORDS
DATE OF ISSUE 07/31/2020

Rev.	Description	Date	Apr.
16			
15			
14			
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Date: 02/10/2020
Designed by: JJH
Drawn by: MJF
Check by: JDB
Submitted by: CNH
File Name:

evergy.

BLACK & VEATCH
building a world of difference.™

EVERGY KANSAS CENTRAL, INC.
TECUMSEH ENERGY CENTER

CCR EXCAVATION PLAN - PHASE 1

DRAWING NO.
1

NOTES:

1. ALL SLOPES ARE TO BE SEEDED WITH EROSION CONTROL BLANKET.
2. CONTRACTOR TO ADJUST GRADES AS REQUIRED TO BALANCE SITE CUT AND FILL WITHOUT IMPORTING FILL. MINIMUM 2% SLOPE SHALL BE MAINTAINED.
3. THE SURFACE SHOWN FOR THE FINAL GRADES WAS COMPLETED ON OCTOBER 8, 2019 AND WAS PROVIDED BY CLARKSON CONSTRUCTION CO, INC.
4. BLACK & VEATCH DOCUMENTED SATISFACTORY SITE GRADING AND VEGETATION IN ACCORDANCE WITH UNIT CLOSURE PLAN COMPLETED ON JULY 31, 2020.

30' 15' 0 30' 60'
1"=30'

CONFORMS TO
CONSTRUCTION RECORDS
DATE OF ISSUE 07/31/2020

Rev.	Description	Date	Apr.
16			
15			
14			
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evergy.

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TECUMSEH ENERGY CENTER

FINAL GRADING PLAN - PHASE 2

DRAWING NO.
2