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## TECHNICAL MEMORANDUM

September 27, 2022  
File No. 129778-043

**TO:** Evergy Kansas Central, Inc.  
Jared Morrison – Director, Water and Waste Programs

**FROM:** Haley & Aldrich, Inc.  
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**SUBJECT:** Semi-Annual Remedy Selection Progress Report Pursuant to 40 CFR § 257.97(a)  
Lawrence Energy Center  
Area 2 Pond, Area 3 Pond, and Area 4 Pond (inactive)

Evergy Kansas Central, Inc. (Evergy) has implemented the U.S. Environmental Protection Agency (USEPA) Federal Coal Combustion Residuals (CCR) Rule (Code of Federal Regulations Title 40 [40 CFR] §§257 and 261) effective October 19, 2015, along with subsequent revisions for the inactive CCR surface impoundments referred to as Area 2 Pond, Area 3 Pond, and Area 4 Pond (inactive units; collectively, inactive Ash Ponds) at the Lawrence Energy Center located in Lawrence, Kansas. Section 40 CFR §257.97(a) of the CCR Rule requires that the owner or operator of a CCR management unit which has completed a Corrective Measures Assessment (CMA) for groundwater to prepare a semi-annual report describing the progress in selecting and designing the remedy. This semi-annual remedy selection progress report is comprised of activities during the period of March 2022 through August 2022.

The CMA was initiated for the inactive Ash Ponds on October 12, 2020, in response to statistically significant levels (SSL) of Appendix IV constituents (arsenic, lithium, and molybdenum) exceeding Groundwater Protection Standards (GWPS). Pursuant to 40 CFR §257.96(a), a demonstration of need for a 60-day extension for the CMA was completed on January 11, 2021. The CMA report was completed and placed in the facility operating record and posted to Evergy's CCR public website on March 11, 2021. Based on the results of the CMA, Evergy must, as soon as feasible in accordance with the CCR Rule, select a remedy that meets the standards listed in 40 CFR §257.97(b). A summary of the progress in selecting a remedy in compliance with the CCR Rule is provided below.

## SUMMARY OF ACTIONS COMPLETED

The following actions have been completed during this reporting period (March 2022 through August 2022):

- Continued nature and extent (N&E) investigation of the Appendix IV constituents (arsenic, lithium, and molybdenum) in exceedance of the CCR Unit's GWPS pursuant to 40 CFR §257.95(g). This N&E investigation included the sampling in March 2022 for the off-site N&E wells that were installed in June 2021.
- Continued evaluations of stated in-situ groundwater remedy options listed in the CMA. Also, the evaluation of monitored natural attenuation (MNA) as a viable groundwater treatment (in addition to source control through the closure by removal efforts) focused on Phase I and Phase II assessments described in the USEPA MNA technical guidance (USEPA, 2015<sup>1</sup>) which aims to provide demonstrations that the groundwater plume is not expanding (Phase I) and that the mechanism and rate of the attenuation process is sufficient to reduce contaminant concentrations to required levels (Phase II) specific to arsenic and molybdenum. Haley & Aldrich, Inc. continues to consider lines of evidence that provide support to geochemical processes associated with precipitation and attenuation of SSL constituents and has updated the CMA groundwater model in the ongoing enhanced evaluation of groundwater remedies considered in the CMA. Potential biogeochemical enhancement for arsenic and molybdenum attenuation is also being evaluated.

## PLANNED ACTIVITIES

Anticipated activities for the upcoming semi-annual corrective measures selection progress period (September 2022 through February 2023) include the following (subject to change):

- Continue Assessment Monitoring: Collect groundwater samples in September 2022 and March 2023 from the CCR well network. The groundwater data will be evaluated for SSLs compared to GWPS. Any new constituent that exceeds GWPS will be considered in selection of the final remedy.
- Continued efforts to evaluate N&E:
  - Evaluate the groundwater analytical data collected during the September 2022 semi-annual sampling event that will include the N&E monitoring wells; and
  - Continue development of remaining geochemical evaluations.
- Continue evaluation of regulatory requirements listed under 40 CFR §257.97 in support of selecting a remedy, including updated timelines and required demonstration elements.
- Continued evaluations of in-situ remediation and MNA as a potential remedy selection along with considerations of the other groundwater remedy options listed in the CMA. The evaluations of MNA as a groundwater treatment (in addition to source control through the closure by removal efforts) focused on Phase I and Phase II of the USEPA MNA technical

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<sup>1</sup> USEPA, 2015. *Use of Monitored Natural Attenuation for Inorganic Contaminates in Groundwater at Superfund Sites*. Office of Solid Waste and Emergency Response. August.

guidance which provide demonstrations that the groundwater plume is not expanding (Phase I) and that the mechanism and rate of the attenuation process is sufficient to reduce contaminant concentrations to required levels (Phase II) specific to arsenic and molybdenum. Further evaluations for lithium are being completed. Evaluation of potential biogeochemical enhancement for arsenic and molybdenum attenuation, which may be used as a MNA enhancement measure, will continue.

- Phase I evaluations have demonstrated groundwater plumes exhibiting generally stable or decreasing temporal concentration trends with few exceptions dependent of the location within the defined plume. Groundwater plumes are anticipated to recede due to recently completed source control measures (closure by removal of ash ponds and surrounding berms) at the site. This evaluation will continue to be updated as new data are generated to monitor plume stability and trending based on upcoming semi-annual monitoring event results.
- Geochemical speciation and reaction path modelling of arsenic and molybdenum will be continued. Modelling results are being further developed to be used as lines of evidence that represent geochemical natural attenuation mechanisms for these constituents. Further evaluation of potential enhancements to MNA options will be considered as well. For in-situ remediation options, further evaluation of geochemistry, reducing conditions, and potential pilot study evaluations are being further considered.
- Continue to perform an engineering review of the potential CMA alternatives in pursuit of the corrective measures remedy selection. For these reviews, emphasis will be placed on understanding and reacting to impacts of newly gathered analytical results, identifying, and researching applicability of emerging technologies and their impacts on the CMA and selection of remedy process.
- Progress towards selecting a remedy that meets the standards of 40 CFR §257.97(b), including the development of a final report which also contains a schedule for implementing and completing remedial activities as required by 40 CFR §257.97(d).
- Evaluation of the potential corrective action groundwater monitoring program meeting the requirements of 40 CFR §257.98(a)(1).
- Plans for a public meeting to be held in Lawrence, Kansas to discuss the results of the CMA in accordance with 40 CFR §257.96(e).
- Provide a semi-annual progress report that summarizes Evergy's progress and status regarding a selection of remedy.