REQUEST FOR SUPPLEMENTAL INFORMATION

General Deficiencies

RSI-1

The decommissioning plan (DP) only vaguely mentions that license termination would be sought at the end of operation of the Groundwater treatment system and achievement of the derived concentration goal level (DCGL) for Groundwater. Under Title 10 of the *Code of Federal Regulations* (10 CFR) § 70.38(g)(4) and (5), the DP must include a description of the site, planned decommissioning activities, methods used to ensure protection of workers and environmental against radiation hazards during decommissioning, planned final radiation survey, updated detailed cost estimate, description of the physical security plan and material control and justification of any delays for completing the decommissioning later than 24 months after the plan approval so the U.S. Nuclear Regulatory Commission (NRC) has adequate information to approve the proposed DP. There is also a lack of clarity concerning the justification for the Commission to approve a request for an alternate schedule for completion of site decommissioning and license termination under 10 CFR § 70.38(i).

RSI-2

The DP does not provide specific information about the remediation and surveys that would be required for a license termination request for the facilities, piping, equipment, and soil disturbances associate with the construction, use, and ultimate decontamination of the proposed groundwater remediation system to allow unrestricted use in the Phase II operations, following license termination.

RSI-3

It is not clear from the DP when the licensee intends for its NRC license to be terminated (i.e., after Phase I or after Phase II). Although verbally discussed during periodic meetings, the actual documentation provided does not clearly state that Phase I operations, to remediate the Uranium in the Groundwater to meet the DCGL for the site, will be completed prior to initiating Phase 2 operations. There are multiple instances where the DP implies Phase II activities, including the use of biomass for denitrification, will be conducted in parallel with the Phase I activities.

RSI-4

Phase II operations, including the use of biomass for denitrification, are presumed to concentrate Technetium-99 in quantities requiring a byproduct material license under 10 CFR Part 30. The DP mentions disposal of this waste as licensed material. It is assumed that the licensee, following termination of its NRC license, would seek a byproduct material license under the state of Oklahoma's agreement state program to continue to possess, use, and dispose of this byproduct material.

Specific Deficiencies

Groundwater and Surface Water Characterization

RSI-5

The DP provides ambiguous and incomplete discussions on steps to be taken after groundwater is remediated to NRC criterion. For example, the DP states that if a "minimal probability" for resumption of corrective actions is determined halfway through the proposed 3-year post-remediation monitoring, the decommissioning of the treatment system infrastructure would be initiated. The DP further states that the infrastructure may be used after the groundwater meets the NRC criterion if NRC and Oklahoma agree on continued remediation. The NRC is unclear from the existing DP text on steps to complete license termination once the groundwater meets the NRC criterion or how decontamination of the infrastructure would be performed for license termination. Please include all steps that the licensee will perform for decommissioning to achieve license termination. If, in the future when groundwater achieves the NRC criterion, then the DP may be amended to include a revised schedule for termination if it is in the public's best interest.

RSI-6

The DP does not provide a listing of groundwater and surface water quality and elevations. Many figures and tables are based on data averaged over several years or a combination of data for individual sampling events, maximum values, or a statistical evaluation of the mean. Please provide a listing of groundwater and surface water quality and elevations, and available boring logs or reference to documents which has been submitted to NRC and contains a boring log. It is preferred that the quality and elevations be submitted in an electronic format (*e.g.,* excel spreadsheet) as well.

RSI-7

The DP provides an incomplete description of the onsite surface water hydrology. Please provide an elevation of a flood event which may occur during the expected life of the groundwater corrective actions and in the past. What measures have been undertaken to prevent overflow through the top of an alluvial well casing during a flooding event? In addition, if, as stated in the DP, the decommissioning activities were designed to prevent a potential adverse impact to the river if the groundwater were not "treated", please provide an estimate of the minimum dilution factor based on impacted groundwater fluxes and surface water flow. Please provide the above information for a complete description.

RSI-8

The DP provides an incomplete discussion on the unsaturated or vadose zone. In particular, the impacts to vadose zone in the alluvial aquifer during significant rain events, and the residual soil concentration in burial areas 1 and 3 as a potential source area for continuing groundwater contamination. Please include a discussion on the potential vadose zone as a source for groundwater contamination.

RSI-9

The DP does not provide a complete discussion on spills that may impact groundwater. The DP focuses on identified releases from piping and leakage through the uranium plant but does not address any other potential spills. However, it should be noted that before the license is terminated, 10 CFR 70.51(a) requires records maintained for 10 CFR 70.25(g) (including records of spills) to be forward to the NRC. It appears that at least two spills have occurred at the site which has not been discussed in the DP. The spills include a 100 lb. UF6 release (the facility was under Atomic Energy Commission oversight at that time), a "dielectric" release for which impacted soils were disposed of off-site and hydraulic oil during the drilling of well 1403. It is unknown if those spills merit a listing in the required records. However, please provide a summary of spills in your records required by 10 CFR 70.51(a) and state if the spill had a potential for impacts to groundwater. If the records contain no spills, please include this fact in the DP plan.

RSI-10

The DP does not include a discussion on the potential impact of a fault, which bisects the site, on groundwater flow and the migration of constituents of concern. The fault is depicted as an "interpretive" fault on Figure 2-5. Please provide a discussion on the potential impacts of that fault.

RSI-11

Several documents submitted to the NRC and referenced in the DP or its attachments are not found in the Agencywide Documents Access and Management System (ADAMS). In addition, several documents as listed in Sections 3.5.1 and 3.5.2 have dates which differ from the date for the likely document in ADAMS. A similar discrepancy in dates is noted for the reference which provides calculations deriving the mass concentration equivalent of 201 ug/L to the 180 pCi/L criterion in Appendix K Basis of Design (*e.g.,* Footnote 4 on PDF page 84 of 197) and the document in ADAMS with the same title. Unfortunately, the document in ADAMS estimates a mass concentration of 214 ug/L is equivalent to the NRC criterion rather than 201 ug/L.) Please provide the ADAMS Accession number to the references listed in the DP to ensure that the document being referenced in the DP is that document in ADAMS.

Specific Documents:

Sections 3.5.1

- December 12, 2002, Well 1319 Area Groundwater Assessment Work Plan, Cimarron Corporation
    - ADAMS Date: December 13, 2002

- November 5, 2005, Refined Conceptual Site Model, ENSR International
    - Not in ADAMS but may have been revised by subsequent revision

- October 19, 2006, Conceptual Site Model (Revision- 01), ENSR International
    - ADAMS Date: October 18, 2006

- October 23, 2006, Groundwater Flow Modeling Report, ENSR International
    - ADAMS Date: October 30, 2006

- March 15, 2013, Hydrogeological Pilot Test Report, Burns & McDonnell Engineering Company, Inc.
    - ADAMS Date: February 28, 2013

- January 6, 2014, Groundwater Flow Modeling Report, Burns & McDonnell Engineering Company, Inc.
    - ADAMS Date: January 31, 2014

- July 5, 2016, Distribution Coefficient Determination for the Cimarron Site, EPM
    - ADAMS Date: July 12, 2016

- March 28, 2018, 1206 Drainage Sediment Assessment and Remedial Alternative Evaluation, Burns & McDonnell Engineering Company, Inc.
    - ADAMS Date: April 2, 2018

Section 3.5.2

- October 22, 2003, Draft Work Plan – In Situ Bioremediation Treatment of Uranium in Groundwater in Burial Area #1, ARCADIS
    - ADAMS Date: October 24, 2003

- August 31, 2007, letter requesting that NRC provide closure on Well 1319 Area groundwater remediation
    - Not in ADAMS under this docket; however, a subsequent letter from NRC references it and it may be in ADAMS not assigned to this docket

- June 2, 2008, Groundwater Decommissioning Plan, ARCADIS
    - ADAMS Date: June 1, 2008

- June 30, 2011, Evaluation of Potential Alternative Groundwater Remediation Technologies, Environmental Properties Management LLC
    - ADAMS Date: July 6, 2011

- March 19, 2014, Treatability Study Report, Clean Harbors
    - ADAMS Date: March 13, 2014

- June 1, 2018, Pilot Test Report, Burns & McDonnell Engineering Company, Inc.
    - ADAMS Date: June 19, 2018

- November 2018, Cimarron Facility Decommissioning Plan – Rev 1, Environmental Properties Management LLC
    - ADAMS Date: October 31, 2018

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- Lux, Jeff, 2016. Distribution Coefficient Determination for the Cimarron Site. Environmental Properties Management, July 5.
    - ADAMS Date: July 20, 2016

Appendix M

- Appendix A Reference 3.5, Appendix B References 3.5 and 3.8
    - Not included with submittal