

April 20, 2015

Mr. Ken Kalman
Project Manager
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Re: Docket No. 70-925; License No. SNM-928
March 11, 2015 Trustee Presentation – Meeting Notes

Dear Mr. Kalman:

Attached please find meeting notes documenting a presentation provided to NRC and the Oklahoma Department of Environmental Quality (DEQ) the morning of March 11, 2015. The purpose of the presentation was to provide an overview of work completed, monies spent, and issues identified and resolved during the four years Environmental Properties Management LLC (EPM) has functioned as Trustee for the Cimarron Environmental Response Trust.

These notes were drafted by EPM and revised in accordance with your comments.

Sincerely,



Jeff Lux, P.E.
Project Manager

Attachment

cc: David Cates, DEQ
Gerald Schlapper, NRC Region IV

[Type text]

**Cimarron Environmental Response Trust
Trustee Presentation to
US Nuclear Regulatory Commission
Oklahoma Department of Environmental Quality
March 11, 2015**

Environmental Properties Management LLC, Trustee for the Cimarron Environmental Response Trust, presented an overview of the Cimarron site decommissioning project during a meeting conducted March 11, 2015, at NRC headquarters. A brief description of the topics covered during the presentation follows, and a copy of the presentation slides are attached to this meeting summary. Drawings and tables referenced in the notes can be found on the presentation slides.

Attendees included:

US NRC

Andrew Persinko
Michael Norato
Ken Kalman
Varughese Kurian
Lifeng Guo
Gerald Schlapper
Tom Nicholson
Bob Nelson
Mary Spencer
Bob Evans
Christina England
Reggie Augustus

ODEQ

David Cates
Mike Broderick
Pam Dizikes
Kate Deaton
Monty Elder
Paul Davis
Tad Dow
Brittany Downs

US DOJ

Alan Tennenbaum

EPM

Bill Halliburton
Jeff Lux

Decommissioning Project Organization

Following introductions, Mr. Halliburton described the organization of the Trustee and the entities retained for the decommissioning of the Cimarron site. Environmental Properties Management (EPM) is the Trustee, and is responsible as the licensee for the trust. EPM has retained Enercon Services to implement the radiation protection and quality assurance programs, as well as to provide field support for activities such as groundwater sampling. EPM has retained Burns & McDonnell Engineering Company to prepare financial reports, maintain a document management system, design the groundwater remediation system, and implement the sampling and analysis program for the site. EPM has retained Kurion, Inc. to perform treatability testing and design treatment systems for water generated during groundwater remediation.

EPM stated that monthly status teleconferences have been conducted for several years, so the information presented is not “new” information, but represents a compilation of the information discussed during those monthly calls.

Status at License Transfer

The previous licensee had proposed in-situ bioremediation for uranium exceeding 180 pCi/l (the decommissioning criterion for groundwater stipulated in the license); this dose-based concentration limit is referred to as the DCGL. Nitrate, fluoride, and Tc-99 had not been addressed in the groundwater remediation plan. Delineation of contaminants in groundwater had been limited to delineating the extent to which uranium exceeded the DCGL. A drawing showed the extent of uranium exceeding the DCGL (taken from the 2009 License Amendment Request).

In-situ bioremediation had been proposed due to its short duration and low life cycle cost. Concerns related to the permanence of in-situ bioremediation forced the abandonment of this technology. The licensee had not evaluated the extent of nitrate and fluoride in groundwater because the licensee intended to retain ownership of the site and restrict access to groundwater, and remediation of other contaminants in groundwater was not required to obtain license termination.

Overview of 2011

Administrative work completed in 2011 included the transfer of the special nuclear materials license, the establishment of administrative, federal, and state cost accounts, revision of the radiation protection and quality assurance program plans to reflect the change in licensee, and the establishment of a document management system and a public information website. EPM stated that “routine” administrative work, such as paying taxes and utilities, submitting quarterly financial statement, preparing budgets, conducting monthly status teleconferences with NRC and DEQ, and preparing and sending quarterly information updates are all ongoing, and continuing these activities will not be reported every year. Only those administrative activities that are unique to that year will be reported herein.

Decommissioning progress included the installation of 7 monitor wells in the floodplain, collection of groundwater samples from 52 wells (including the 29 annual environmental monitoring locations). Uranium was delineated to the DCGL for uranium and the 52 mg/l risk-based limit for nitrate. EPM submitted *Evaluation of Potential Alternative Groundwater Remediation Technologies* (EPAGRT) to NRC and DEQ, and prepared a plan to conduct hydrogeologic pilot tests to better define aquifer characteristics.

Drawings from the EPAGRT showed the extent of uranium exceeding the DCGL, nitrate exceeding 52 mg/l, and fluoride exceeding 4 mg/l. Another drawing showed the infrastructure that would be required to implement the combination of groundwater remediation technologies proposed in the EPAGRT.

Issues and decisions that arose as a result of the work performed in 2011 included:

1. Confirmatory sampling of subsurface soil in Subarea F was needed to demonstrate that all soil complies with decommissioning criteria for unrestricted release.
2. Confirmatory survey of rubble in Subareas F and G was needed to demonstrate that all rubble complies with decommissioning criteria for unrestricted release.
3. A decision was needed to determine if treatment for uranium would be required if the influent to the treatment plant was less than both the DCGL and the risk-based criterion of < 110 ug/l.

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4. A decision was needed to determine if treatment would be required for nitrate.
5. Additional aquifer testing, groundwater flow model revision, and treatability testing would be required to be able to prepare a groundwater remediation design.

A chart showed the beginning balance, budget, expenditures, income, and ending balance for 2011 by account and for the entire Cimarron Trust. It was explained that the charts presenting financial information for each year do not include the \$3,600,000 Standby Trust that was created when the previous licensee's Letter of Credit was called in. That Trust is completely separate from the Cimarron Environmental Response Trust, and is not monitored or controlled by EPM. The NRC is the sole beneficiary of that trust. Discussions were held regarding the eventual disposition of that Trust should the remediation of the site be completed before the Trust accounts are expended.

Overview of 2012

Administrative work completed in 2012 included a decision by the NRC and DEQ to pursue the disposition of two parcels representing approximately 140 acres of the site. EPM proposed the disposition of three parcels, but the agencies elected to retain one of the three until groundwater remediation is complete. It was resolved that ownership of property in Section 7 of T16N R3W and Section 13 of T16N R4W had been retained by Tronox. An easement for electrical utilities crossing property west of Highway 74 was executed. Sundance Energy expressed interest in drilling on Trust property; negotiations resulted in relocation of wells to off-site locations.

Decommissioning progress included the performance of aquifer pump tests, additional delineation of contaminants in the floodplain as well as Burial Area #1, and the collection of confirmatory soil samples in Subarea F. NRC inspection of rubble in Subarea F resulted in the release of that rubble for unrestricted use. A conceptual groundwater remediation plan was developed during discussions with NRC and DEQ, combining parts from different alternatives evaluated in the EPAGRT. An application for a permit to discharge treated water to the Cimarron River was submitted to DEQ, and a vendor was selected to perform treatability tests and design water treatment systems.

Issues and decisions that arose as a result of the work performed in 2012 included:

1. The rights associated with land and mineral rights ownership required definition, due to plans for development of oil and gas resources underlying Trust property.
2. Aquifer tests revealed the need for significantly higher flows from the floodplain to remediate groundwater.
3. Whether final status surveys would be required for irrigation areas, on which water would be applied for nitrate treatment needed to be determined.
4. Although the Water Quality division of DEQ would permit discharge of water containing uranium or nitrate at concentrations above their MCL, it was not certain that the Land Protection division would authorize a groundwater remediation plan that involved doing this.
5. The appropriateness of the OPDES permit application, in light of other decisions being made, became questionable.

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6. The need to re-configure the licensed area, so that all “released” property underlain by impacted groundwater, led to questions about the feasibility of licensing non-contiguous areas.
7. Draft regulations indicated that a material control and accountability program would be required, and this would have to be part of the decommissioning plan.

A chart showed the beginning balance, budget, expenditures, income, and ending balance for 2012 by account and for the entire Cimarron Trust.

Overview of 2013

Administrative work completed in 2013 included drafting and revising a *Purchase and Sale Agreement* for each of the two properties planned for sale, drafting sale proposals for submittal to all agencies identified in the Trust agreement, monitoring a seismic survey, following up on mineral rights issues, and finalizing the allocation of outside income to the Trust accounts.

Decommissioning progress included obtaining agreement that remediation will not be required for Tc-99, as it does not exceed its NRC-stipulated concentration anywhere on site. Aquifer testing (slug testing) was performed in Burial Area #1 to better define hydraulic characteristics of low-permeability material, and a report on the hydrogeologic pilot tests was submitted to NRC and DEQ. A release of titanium tetrachloride from chemical testing in the 1980s was identified. Numerous groundwater samples were collected. Based on this data, uranium was delineated to the DCGL in Burial Area #1, and nitrate was delineated to 52 mg/l in the floodplain. Drawings showing the extent of uranium exceeding the DCGL and nitrate exceeding 52 mg/l were presented.

Treatability testing was performed in two separate phases (runs). The first run determined that cations present in the very hard water plugged the resin, preventing it from being able to remove uranium to its capacity. The second run demonstrated that uranium could be effectively removed if the cation-plugging was prevented, and the test for groundwater from Burial Area #1 yielded a “saturation” concentration of approximately 16 g uranium per kilogram of resin in the spent resin.

Issues and decisions that arose as a result of the work performed in 2013 included:

1. DEQ ruled that treated water containing even low (post-treatment) concentrations of uranium could not be disposed of by land application (irrigation).
2. Final status surveys would be required for any area on which treated water containing even low (post-treatment) concentrations of uranium was land applied.
3. It was determined that spent resin would contain sufficient uranium to exceed DOT limits for transportation of “fissile exempt” material.
4. NRC requested the EPM evaluate the potential to send spent resin to a uranium recovery facility to recover the uranium rather than dispose of it at a license disposal facility.
5. It was determined that elimination of cation interference would be required to treat groundwater for uranium.
6. It was determined that the 1,200 gram possession limit for U-235 is a significant obstacle to the timely remediation of groundwater.

7. Questions regarding the duration of the license were raised, including whether the site would remain under license until termination of the Trust (since NRC will still be a beneficiary until all remediation work is complete). During the meeting, questions regarding the disposition of the Standby Trust funds were raised, but not resolved.

A chart showed the beginning balance, budget, expenditures, income, and ending balance for 2013 by account and for the entire Cimarron Trust.

Overview of 2014

Administrative work completed in 2014 included establishing the reporting of oil & gas-related income, execution of the Standby Trust and subsequent transfer of funds, reallocation of the budget to provide for the 2014 design investigation, the auction and sale of the 2 properties, and the execution of an easement for a saltwater pipeline.

Decommissioning progress included the submittal of revised groundwater flow models, analysis of spent resins, obtaining agreement on a background concentration value for nitrate in Sandstone A, and conducting tests to blend resin with dense particulate material to evaluate reducing the concentration of U-235 while minimizing volume increase.

In addition, two conceptual groundwater remediation plans (a non-phased approach and a phased approach) were presented to NRC and DEQ in April 2014. It was determined that additional groundwater assessment would be required to delineate uranium and nitrate to the safe drinking water standards (maximum contaminant level, or MCL). The groundwater assessment field work was completed in 2014, and alternatives for pre-treatment of water for uranium removal and for removal of nitrate from groundwater were evaluated. Due to the resignation of the water treatment vendor, requests for proposals were prepared, and a new vendor was selected to continue treatability testing and treatment system design.

Drawings showed the location of groundwater extraction components, with demonstration that at specified pumping rates, all contaminants within the plumes (as defined for the April presentation) would be captured for treatment.

Issues and decisions that arose as a result of the work performed in 2013 included:

1. DEQ determined that discharge of nitrate to the Cimarron River without treatment would not be approved unless water contained nitrate concentrations below the MCL.
2. Groundwater remediation will continue until uranium, nitrate, and fluoride concentrations are below their MCLs, with one exception – nitrate in Sandstone A will be remediated to less than the “mean plus two sigma” background concentration of 22.9 mg/l.
3. In-situ biological immobilization may be considered after uranium concentrations are below the DCGL, to reduce uranium concentrations to less than the MCL, if research shows rebound will not occur to concentrations above the DCGL.
4. Disposal of cation resin containing low levels of uranium, even at concentrations equal to background soils, cannot be disposed of in an Oklahoma landfill, because the uranium is enriched.

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5. The significantly larger area requiring remediation (due to the need to treat to the MCL) will require re-evaluation of remediation areas, flow rates, and sequencing of groundwater extraction.
6. Groundwater in Sandstone C exceeds the MCL in some areas; it must be demonstrated that this is not enriched (i.e., naturally occurring) uranium, or remediation will be required.
7. Uranium exceeding the MCL in the process building area and Burial Area #2 required delineation.
8. The need to reduce U-235 concentrations to less than the fissile exempt limit to be able to transport spent resin for disposal was identified.
9. The vendor that conducted treatability testing to prepare the treatment process design, resigned from the project, due primarily to the increasing technical complexity of the project.

A chart showed the beginning balance, budget, expenditures, income, and ending balance for 2014 by account and for the entire Cimarron Trust.

Path Forward - 2015

Administrative work will include the transfer of distributions from the Anadarko Litigation Trust to the Administrative, Federal, and State accounts, contracting with a selected vendor for treatability testing and water treatment system design, closing the sale of two portions of the property, and obtaining approval of the 2015 budget.

Drawings showed the extent of uranium, nitrate, and fluoride exceeding their MCLs site-wide, based on the 2014 design investigation, as well as a preliminary layout of groundwater remediation components.

Site decommissioning plans for 2015 include the collection of groundwater samples from over 200 monitor wells to finalize delineation of plumes and development of the groundwater remediation plan. A report on the 2014 design investigation should be submitted by the end of the first quarter 2015. Treatability tests should be completed by the end of the second quarter 2015. A meeting with NRC and DEQ to present the conceptual remedial design may be conducted during the first half of June 2015. The Trust will fund participation in DOE research on in-situ biological immobilization upon approval by DEQ. A license amendment request containing a groundwater remediation plan will be submitted to NRC and DEQ by year end.

Decisions needed to complete this work include:

1. Approval of the 2015 budget by NRC and DEQ.
2. Agreement between NRC and DEQ that the State account will fund groundwater remediation after achieving DCGLs to attain MCLs. This is reflected in the budget as the State account will fund research on in-situ biological immobilization.
3. Comments on proposal by EPM to change the possession limit for U-235 to a concentration limit.
4. Finalize the remediation criteria for nitrate.
5. Approval of funding in-situ biological immobilization research by DEQ.

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A chart showed the beginning balance, proposed budget, and distributions received from the Anadarko Litigation Trust for 2015 by account and for the entire Cimarron Trust.