Beatty Low Level Radioactive Waste Site

Action Plan

May 19, 2016

Nevada Division of Public and Behavioral Health

Radiation Control Program

Ver. 3.5.4

Contents

1.0 INTRODUCTION AND PURPOSE

The Nevada Division of Public and Behavioral Health, Radiation Control Program (RCP) and Nevada Division of Environmental Protection (NDEP) have developed this action plan for the Beatty Low Level Radioactive Waste (LLRW) Site (Site). This action plan describes the overall process and an anticipated schedule for development and implementation of a protective and permanent closure solution for the Site.

2.0 SITE DESCRIPTION

The Site is located 11 miles south of Beatty, Nevada. The Town of Beatty is an unincorporated community located in Nye County, Nevada. Beatty is located in general proximity of the Nevada National Security Site (NNSS), the Nevada Testing and Training Range (NTTR) and the Site.

The Site property is located on a 28 acre portion of an 80 acre property owned by the State of Nevada. The Site is located adjacent to a 40+ acre active commercial hazardous waste disposal facility operated by US Ecology of Nevada. Nuclear Engineering Company performed disposal operations of mixed waste and LLRW at the Site between 1962 and 1992. The Site operated under Radioactive Materials Licenses from the Atomic Energy Commission (AEC) and the U.S. Nuclear Regulatory Commission under Atomic Energy Act of 1952. In 1972, some of the regulatory oversight and management of the Site were transferred to the Nevada RCP from the AEC. The Site was closed on December 31, 1992 in accordance with a Site Stabilization and Closure plan approved by the RCP. The plan was reviewed by the NRC and the US Environmental Protection Agency (EPA) from 1988-1991. The Site is currently managed by the Division of State Lands and licensed by the RCP under the provisions of NRS 459, which includes relevant portions of 10 CFR part 61.

Additional information on the site operation and closure is provided in the following documents:

1. Site Stabilization and Closure Plan for LLRW Management Facility, US Ecology Nevada, Inc., Beatty Nevada (maintained at State Lands and RCP)
2. Historic documentation of site management during active operational period (~90 boxes - maintained at RCP)
3. US Environmental Protection Agency's guidance for conducting an Engineering Evaluation/Cost Analysis (EE/CA) https://semspub.epa.gov/work/11/175656.pdf
4. Site repair history: 2002, 2007, 2011 & 2015 (copies of information supplied to TAG 4/2016)

5. 10-18-2015 Industrial fire & investigation http://dps.nv.gov/uploadedFiles/dpsnvgov/content/media/SFM-BeattyIncidentReport.pdf

6. NRC NUREG CR-7028 :Engineered Covers for Waste Containment: Changes in Engineering Properties and Implications for Long-Term Performance Assessment http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr7028/

7. Field Hydrology of Landfill Final Covers with Composite Barrier Layers; by: William H. Albright; Craig H. Benson; and Preecha Apiwantragoon http://www.dri.edu/images/stories/research/programs/acap/acap-publications/dri-acap-Albrightetal-Composite-Barrier-Layers-2013.pdf

8. Post-construction Changes in the Hydraulic Properties of Water Balance Cover Soils, by: C. H. Benson; A. Sawangsuriya; B. Trzebiatowski3 and W. H. Albright http://www.dri.edu/images/stories/research/programs/acap/acap-publications/4.pdf

3.0 FIRE INCIDENT, INITIAL INVESTIGATION AND INTERIM RESPONSE

On October 18, 2015, infiltrating rainwater came into contact with metallic sodium waste in Trench 14 of the Site and caused a fire. The fire consisted of a deflagration (*combustion that propagates through a gas or across the surface of an explosive at subsonic speeds*) and a subsequent release of sodium hydroxide. A description of the incident and initial investigation into the immediate cause of the fire is presented in the December 30, 2015 report prepared by the Nevada Department of Public Safety (DPS). The report can be found at http://dps.nv.gov/uploadedFiles/dpsnvgov/content/media/SFM-BeattyIncidentReport.pdf

Since October 18, RCP has participated in two Site investigation visits: 1.) the first on October 21, 2015 with the site manager of US Ecology Nevada (USEN), Nye County Sheriff and Nye County Fire/Hazmat, Nevada Division of Environmental Protection (NDEP), State Fire Marshal (SFM) and the RCP; 2.) The second on November 5, 2015 with NRC cap experts, Department of Energy (DOE) representative, SFM, RCP, United States Geological Survey (USGS) hydrologist, USEN staff, and Nye County representatives.

In October 2015, RCP contracted with USEN to place protective barriers on the following areas: Trench 14, the deflagration crater and the subsidence; and a sinkhole located at Trench 20. The barriers consisted of an 80 ml liner, 6 ml liner, under support of the liners (plastic barriers and metal bars), and sandbags to hold the liners in place.

In November 2015, RCP contracted with USEN to remove the protective barriers and complete interim repairs. The interim repairs included packing ejected material and 11 partial and

complete barrels into over pack barrels (*larger barrels used to contain damaged smaller barrels*). The over pack barrels and contents were then placed back in to the crater, and the crater was filled with sand and fill dirt. The water barrier was replaced, and then additional soil was placed to the top of the area to create a mound to settle over time. Riprap (*a layer of stones, chunks of concrete or similar material placed on an embankment slope to prevent erosion*) was added to the fence line to prevent erosion. The area of subsidence was ripped (*rear forks of the grater to disturb the area*) and manipulated to force filling of the cracks. Then soil was added to the natural level, the barrier was placed and soil added to mound the area for settlement. The sinkhole at Trench 20 was treated in the same manner as the subsidence. There were cracks along trench 21 that were ripped and graded, but no materials were added. Additionally, RCP contracted with USEN to collect materials released during the incident by scraping the areas where material landed. This material amounted to 275,000 pounds and consisted of soil mixed with sodium hydroxide. Approval to dispose of these collected materials at the USEN commercial hazardous waste facility was obtained from NDEP and USEN. Once approval was granted USEN, USEN disposed of these materials in the hazardous waste facility.

In January 2015, RCP contracted with USEN to repair two additional cracks and subsidence locations on Trench 7 and 22 by re-grading the area and adding soil material to the surface where rainwater was pooling. These additional steps are intended to prevent additional infiltration of rainwater while a long term closure plan is developed and implemented.

4.0 ACTION PLAN SUMMARY

In conjunction with the NDEP, RCP has developed an overall plan and process for the evaluation, selection, and execution of a long term remediation solution for the Site. The RCP will refine the scope, objectives and plan schedule with technical assistance from a larger Technical Advisory Group (TAG). The RCP will work with the Nevada Division of State Purchasing to solicit Request for Proposals (RFP) from qualified environmental engineering firms to evaluate the protectiveness, engineering feasibility and cost of alternative remediation solutions. The RCP, in conjunction with the TAG, will then select and justify a preferred remediation solution and request public comment. After addressing public comments, RCP and the TAG will select a remediation solution and then contract with qualified engineering firms to complete final design and oversee construction of a permanent solution.

4.1 Site Inventory

To develop a long term plan for the Site, an inventory of available information about the types of wastes historically disposed of and where they were placed is needed. This inventory will

help to determine whether targeted excavation, treatment, additional investigation or capping is advised. This information will be evaluated by the TAG.

The RCP completed a review of approximately 90 boxes of Site disposal records to identify the volume and types of materials deposited and determine management practices employed at the Site. The RCP has prepared a detailed summary of the materials and Site disposal practices. The NRC and the DOE have also reviewed the inventory data. The inventory was completed in January 2016 and a summary is available upon request from the RCP.

4.2 Technical Advisory Group

To ensure that the RCP receives necessary technical input throughout the closure development and implementation process, the RCP will chair a Technical Advisory Group (TAG). The TAG will consist of approximately 10-15 members and will include participation from the following:

- NDEP (3 members – Mike Leigh, P.E., Supervisor, NDEP Bureau of Waste Management Permits Branch, Paul Eckert, P.E., Permit Writer, NDEP Bureau of Waste Management, and Michael Friend, P.E., Project Manager, NDEP Bureau of Industrial Site Cleanup)
- USGS - Brian Andraski, Ph.D., Research Hydrologist
- DRI – Bill Albright, Ph.D., Emeritus Hydrogeology
- RCP (3 members – Jon Bakkedahl, Radiation Control Supervisor, Cynthia Pacheco, Radiation Control Specialist III, John Follette, Radiation Control Specialist III.)
- US NRC –Duncan White, Senior Health Physicist, Nuclear Regulatory Commission (NRC), Office of Nuclear Materials Safety and Safeguards (NMSS); Hans Arlt, Senior Systems Performance Analyst, NRC Performance Assessment Branch, Uranium Mill Tailings Remedial Action (UMTRA) Program; Binesh Tharakan, Regional State Agreement Officer, NRC Region IV
- US DOE - Doug Tonkay, Director, Office of Disposal Operations, Environmental Management, U.S. Department of Energy
- Selected Technical Advisors

To date, the RCP has received informal technical input from the NRC, United States Geological Survey (USGS), Desert Research Institute (DRI), and several private engineering companies on: 1) costs to analyze the Site conditions; 2) perform surface/subsurface investigation and compaction; and 3) engineering design considerations for a cap and cap construction.

The RCP will convene the TAG on a quarterly basis or more often as needed to provide review and input on the content of contract scopes, assist in selection of contractors, and to review

and provide technical comments on contractor work products. The RCP will create agendas and prepare TAG meeting summaries.

4.3 Engineering Evaluation/Cost Analysis Development

As explained previously, the RCP plans to contract with qualified environmental engineering firms to perform an analysis of alternatives in accordance with applicable portions of the US Environmental Protection Agency's guidance for conducting an Engineering Evaluation/Cost Analysis (EE/CA). With input from the TAG, the RCP will prepare a Scope of Work (SOW) for this activity and obtain RFPs through the standard State Purchasing contracting procedures for professional services.

As part of the EE/CA bid process, RCP will arrange a bid walk for prospective engineering companies to tour the Site. Selected members of the TAG will assist RCP in the formal contractor selection process with State Purchasing.

After the selected contractor completes the draft EE/CA, TAG members will provide technical review comments that will be used by the contractor in development of a final EE/CA. The final EE/CA will contain a preferred alternative for final remediation of the Site.

4.4 Public Participation and Involvement

This section to be completed at a later date.

4.4.1 Conditions of Participation

4.4.2 Nye County Correspondence

4.4.3 Public and Media

4.5 Remediation Selection

After selecting a preferred remediation alternative in consultation with the TAG, the RCP will publish a description of the preferred alternative and request public comment. The RCP will publish notice of this preferred alternative and the opportunity for public comment on the RCP web page, in the Pahrump Valley Times and will provide written notice to interested representatives from the Town of Beatty and Nye County. Depending on level of public interest, the RCP may host a public meeting to take public comment on the preferred alternative. The RCP will then respond to public comments received and formally select an alternative in

consultation with the TAG. The RCP will document the alternative selected in a memorandum with the justification and post that document on the RCP website.

4.6 Remediation Design and Implementation

The RCP will prepare a SOW for the final remediation design and implementation with input from the TAG. Considerations for contractor selection will be developed as part of the contractor solicitation process. RFPs will be obtained by State Purchasing and selected members of the TAG will assist the RCP in the formal contractor selection process.

4.7 Engineering Design and Implementation

Under contract to the RCP, the selected contractor will complete the final engineering design. Review and input on the engineering design will be provided by the TAG to the RCP.

The site work will require unrestricted access to the site, an agreement with USEN that allows the contractor to safely perform their work while not impeding or disrupting the operations of USEN, and a designated staging area for equipment.

5.0 Timeline

The following is an initial timeline of activities through start of planning through completion construction activity. This timeline will be reviewed by the TAG and will be adjusted based on collective input from the TAG. On a quarterly basis, the RCP will post an updated summary of this timeline and progress on its website at http://dpbh.nv.gov/Reg/Low-Level-Waste/Low-Level-Waste_-_Home/.

January 31, 2016: RCP completed its review of Site records. The purpose of the review was to determine whether any other reactive materials were present and what type of mitigation alternatives could be available. The records were subsequently reviewed by the NRC and DOE

for materials related activities during their regulatory oversite as NRC and AEC and to identify any concerns they may have.

March 2016: Create a Technical Advisory Group (TAG) to assist in scoping out the elements of work and to assist in evaluating workflow process (This will be DPBH, RCP, NDEP and possibly a federal subject matter expert). Select members of the TAG (~10 participants) to be part of the contractor selection committee.

April – May 2016: Draft a Request for Proposal (RFP) and scope of work (SOW) for conducting a streamlined Engineering Evaluation/Cost Analysis (EE/CA). Work with division contracts to submit an RFP to state purchasing for a site visit, records review and analysis process for the site recommended repairs. Selection criteria for the contractor will be developed in consultation with the TAG.

May 2016: State Purchasing releases RFP and SOW for contract EE/CA. Schedule visit to the Site.

June-July 2016: Complete the site visit and go over the process for submitting the EE/CA proposal with the engineering companies. Allow time for the information to be reviewed and analyzed.

August 2016: Complete the bid process. TAG reviews the bids with criteria for selection.

September 2016: Select contractor with the TAG input and develop contract. If additional funds are needed to enter the contract, the RCP will prepare an Interim Finance Committee (IFC) work program for the Director/Administrator to request funds to conduct the EE/CA.

September - November 2016: Contractor reviews Site documentation and proposes work plan to complete the geotechnical and records investigation processes needed to complete the EE/CA.

November 2016: Complete the approved geotechnical and records investigation processes needed for EE/CA reviewed by TAG.

December 2016: Publish EE/CA and open up to public comment/stakeholders on preferred remediation method.

December 2016/January 2017: Depending on level of public interest, schedule and host a public meeting/workshop.

February 2017: Respond to public comment.

March 2017: Prepare a memo documenting the selected remediation method.

April 2017: Request and secure funds through Department to IFC for site repair by selected remediation method.

May 2017: Draft RFP and SOW for design/engineering/construction of the selected remediation method.

July 2017: State Purchasing releases the RFP and SOW to design/engineer/construct.

August – Sept 2017: Complete final selection of the contractor and award contract with input from select members of TAG.

Sept - Oct 2017: Design/engineering completed and reviewed by TAG.

October 2017- 2019: Implementation of approved design with construction, weather permitting.

6.0 Visual Timeline