UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BLVD
ARLINGTON, TEXAS 76011-4511

August 23, 2013

MEMORANDUM TO: Docket File 040-09090

THROUGH: D. Blair Spitzberg, Ph.D., Chief ***/RA/***
Fuels Safety and Decommissioning Branch
Division of Nuclear Materials Safety

FROM: Robert J. Evans, Ph.D., P.E., C.H.P., Senior Health Physicist ***/RA/***
Fuels Safety and Decommissioning Branch
Division of Nuclear Materials Safety

SUBJECT: NRC OBSERVATIONAL SITE VISIT AT THE MAYBELL WEST, COLORADO DISPOSAL SITE

On August 6, 2013, a U.S. Nuclear Regulatory Commission (NRC) Region IV inspector conducted an observational site visit at the U.S. Department of Energy's (DOE) Maybell West Disposal Site in Moffat County, Colorado. This site visit was conducted in accordance with NRC guidance dated September 7, 2012 (ML12213A418). The purpose of the site visit was to observe DOE's routine, annual inspection of the facility. Enclosed to this memorandum is the NRC's trip report for this observational site visit.

In summary, the DOE representatives conducted the annual inspection in accordance with the guidance provided in the Long-Term Surveillance Plan dated February 2010. No significant regulatory issues or safety concerns were identified during the site visit.

CONTACT: Robert J. Evans, RIV/DNMS
817-200-1234

Docket: 040-09090

Enclosure:
NRC Trip Report

cc w/encl: Jason Nguyen, Site Manager
U.S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	040-09090
Report:	040-09090/13-001
Licensee:	U.S. Department of Energy
Facility:	Maybell West Disposal Site
Location:	Moffat County, Colorado
Date:	August 6, 2013
Inspector:	Robert J. Evans, Ph.D., P.E., C.H.P., Senior Health Physicist Fuels Safety and Decommissioning Branch Division of Nuclear Materials Safety
Approved by:	D. Blair Spitzberg, Ph.D., Chief Fuels Safety and Decommissioning Branch Division of Nuclear Materials Safety
Attachment:	Photographs Taken at the Maybell West Disposal Site

Enclosure

NRC Trip Report

1 Background

The Maybell West disposal cell was constructed to permanently dispose of waste material from a former heap leach pile. From 1975-1982, Umetco Minerals Corporation conducted heap leach operations at the site. During operations, a sulfuric acid solution was applied to an ore pile in an effort to extract uranium from the ore. To support site operations, holding ponds and an outdoor plant were constructed. After leaching operations were discontinued in 1982, liquid waste management continued until 1994. In 1991, the heap leach pile was regraded, and an interim cover was placed over the pile.

Reclamation of the Maybell West site occurred from 1995-2005. Approximately 2 million tons of leached low-grade ore was stabilized and covered at the site. In addition to the main cell, an ancillary cell was constructed at the site. This smaller cell contains waste materials from the evaporation ponds as well as other contaminated site debris.

The Maybell West disposal site is located approximately 4 miles northeast of the town of Maybell, Colorado, and approximately 0.75 miles west of the Maybell disposal site. There are several open pit mines in the vicinity of the site. In particular, Rob Pit is located immediately east of the site, and Johnson Pit is located southeast of the site.

The main disposal cell is approximately 60 acres in size, while the ancillary cell occupies 4.5 acres. The crest of the main cell is approximately 75 feet above the surrounding terrain. The Maybell West disposal site encompasses approximately 180 acres.

The main disposal cell cover is approximately 6.5-7.0 feet thick. The cover consists of a radon barrier, frost protection barrier, bedding material (to promote drainage of rainwater), and riprap cover. The ancillary cell cover consists of a minimum of 5.5 feet of cover material. The ancillary cell cover includes a radon barrier, frost protection layer, and erosion protection layer.

The main cell has a center channel that routes surface rainwater towards the eastern tip of the cell. From the eastern tip, rainwater is routed by an interconnected drainage channel into Rob Pit. An energy dissipating structure (also called launch rock basin) was constructed at the intersection of the two channels to protect the disposal cell from long-term erosion of the downstream drainage channel. Rock-armored aprons were installed around the base of the main cell to promote drainage of rainwater away from the cell. Disturbed areas of soil around the main cell were regraded and seeded with native grasses.

The U.S. Department of Energy (DOE) submitted the Long-Term Surveillance Plan (LTSP) for the Maybell West disposal site to the NRC in February 2010, and the NRC approved the LTSP by letter dated March 11, 2010. The DOE maintains institutional control of the Title II site under the provisions of 10 CFR 40.28. The LTSP provides the instructions for institutional control of the site. These controls include deed restrictions, site markers, survey monuments, boundary markers, gates, fences, and signs. The physical features of the site are inspected once per year by DOE staff.

Groundwater monitoring was performed intermittently from 1975-2005. These sample results indicate that site-related activities did not contribute contamination to the groundwater; therefore, further groundwater monitoring was not required.

2 Site Status

The DOE conducted the last annual inspection of the Maybell West disposal site during August 2012. The inspection concluded that the main disposal cell, ancillary cell, diversion channels, and drainage structures were in good condition and functioning as designed. One small depression was identified on top of the main cell. Several minor rills were identified in the area south of the main cell. One missing sign was replaced. Deep-rooted plants and noxious weeds were identified and treated with herbicide. No significant maintenance or contingency items were identified during the 2012 inspection.

3 Site Observations and Findings

To conduct the 2013 site inspection, the DOE and its contractors created an inspection checklist. The checklist included requirements for observation of the disposal cell, site perimeter, outlying areas, vegetation, and various site-specific features. The inspection staff included the DOE site manager and three contractors. The contractors had experience in project management, ecology, and geology. The DOE inspectors were accompanied by a representative from the State of Colorado.

The DOE inspectors checked the two disposal cells for evidence of erosion, settlement, slumping, displacement, and any other feature that would require maintenance or repair. The rock surfaces on the top and side slopes were found to be in excellent condition. Some minor vegetation was observed on the disposal cells, but this vegetation did not appear to impact the cell covers.

One slight depression was identified on top of the main cell during a previous inspection. This depression was estimated to be 25 feet by 10 feet by 1-foot deep. The depression did not appear to be significantly different from the size observed during the 2012 inspection. The DOE inspectors were not sure if the depression was the result of an inconsistency in cell construction or settlement of the cell contents.

Minor erosional features (rills) were previously identified in the area to the south of the main disposal cell. These rills were noted to be similar in size and scope as noted during the previous inspection, and the rills do not threaten the integrity of the disposal cells.

At the time of the observational site visit, the property was enclosed by a barbed-wire stock fence and locked gates. Other institutional controls in place included boundary monuments, survey monuments, site marker, and perimeter warning signs. These institutional controls were found to be in good condition, with minor exceptions.

The NRC inspector measured the ambient gamma exposure rates using a Ludlum Model 2401-S microRoentgen meter calibrated to cesium-137 (NRC No. 079765, calibration due date of 10/18/13). The background exposure rate ranged from 8-9 microRoentgens per hour (μR/hr). The exposure rates on top of the disposal cell ranged from 4-6 μR/hr, and the exposure rates around the disposal cell ranged from 10-25 μR/hr. Higher levels of background radiation were observed on the northern

boundary of the property, most likely due to mine wastes located outside of the property boundary. In summary, no residual radioactive contamination or naturally occurring radioactivity was identified on top or immediately adjacent to the disposal cell.

4 Conclusions

The NRC inspector concluded that the DOE inspectors conducted the site inspection in accordance with the requirements specified in the LTSP dated February 2010. The disposal cell appeared to be structurally intact, and the cover was in excellent condition. No threats to the integrity of the disposal cell were identified. The DOE inspectors stated that one slight depression continues to be observed on top of the main disposal cell, and that the DOE inspectors will continue to observe the depression during future inspections to ensure that it does not propagate in size.

5 Meeting Summary

The NRC inspector participated in planning meetings with the DOE site manager and site contractors prior to the site inspection. During this meeting, the participants discussed topics such as site status, inspection plan, and potential hazards.

6 Persons Contacted

C. Bahrke, Site Inspector, S. M. Stoller Corp.
M. Cosby, Environmental Protection Specialist, State of Colorado
S. Hall, Site Lead, S. M. Stoller Corp.
J. Nguyen, Site Manager, DOE
D. Ravelojaona, Environmental Compliance, S. M. Stoller Corp.

Figure 1: Site marker SMK-1 located at entrance of Maybell West disposal cell


Figure 2: Maybell West disposal cell as seen from entrance gate (looking northwest)

Figure 3: Center drainage channel on top of Maybell West disposal cell (looking east)

Figure 4: Ancillary cell, as seen from top of Maybell West disposal cell (looking south)