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

August 23, 2013

MEMORANDUM TO: Docket File WM-00069

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, 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 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 April 2008. No significant regulatory issues or safety concerns were identified during the site visit.

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

Docket: WM-00069

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. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

DISTRIBUTION w/encl:
Anton Vegel, D:DNMS
Roberto Torres, DD:DNMS
Blair Spitzberg, C:FSDB
Robert Evans, FSDB
Linda Gersey, FSDB
James Shepherd, FSME/DWMEP/DURLD
Dominick Orlando, FSME/DWMEP/DURLD

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RIV:DNMS/FSDB	C:FSDB		
RJEvans	DBSpitzberg		
/RA/	***/RA/***		
08/16/2013	08/16/2013		

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U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket:	WM-00069
Report:	WM-00069/13-001
Licensee:	U.S. Department of Energy
Facility:	Maybell 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 Disposal Site

Enclosure

NRC Trip Report

1 Background

The Maybell disposal site was constructed for permanent disposal of tailings and other waste materials from the former Union Carbide Corporation (later known as Umetco) mill. The mill processed uranium ore extracted from local mines from 1957-1964.

The U.S. Department of Energy (DOE) began constructing the disposal cell in 1995. The existing tailings material was reshaped but left in place. During reclamation, DOE added mill debris, contaminated soil, and vicinity property material on top of the tailings material. The DOE completed the construction of the cell in 1998.

The Maybell disposal cell is located approximately 5 miles northeast of the town of Maybell, Colorado. The Maybell West heap leach disposal cell is located approximately 0.75 miles west of the Maybell disposal cell. There are several open pit mines in the vicinity of the site. In particular, Rob Pit is located immediately west of the cell, and Johnson Pit is located south of the cell.

The disposal cell contains approximately 3.5 million cubic yards of waste material. The cell is approximately 66 acres in size. The pentagon-shaped cell measures approximately 1,600 feet by 2,400 feet. The crest is approximately 30 feet above the surrounding terrain. The Maybell disposal site encompasses approximately 250 acres.

The disposal cell cover is approximately 7-feet thick and consists of a radon barrier, frost-protection layer, bedding material (to promote drainage of rainwater), and riprap cover. A rock apron is located at the base of the cell to promote drainage away from the cell. Diversion channels and swales were constructed around the cell for erosion protection and to channel rainwater away from the cell. Disturbed areas of soil around the cell were regraded and seeded with native grasses.

The DOE submitted the Long-Term Surveillance Plan (LTSP) for the Maybell disposal site to the NRC in July 1999, and the NRC approved the LTSP by letter dated August 26, 1999. The DOE maintains institutional control of the Title I site under the provisions of 10 CFR 40.27. The LTSP provides 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.

The DOE submitted an updated LTSP to the NRC in April 2008. The DOE revised the LTSP to correct errors in the property boundary. The DOE discovered that the physical boundaries did not agree with the legal description of the property due to an inaccurate land survey. As of August 2013, DOE had not resurveyed the property and updated the site boundary monuments; although, DOE plans to conduct the survey in the near future.

The groundwater in the area is designated as limited use meaning that it is not a current or future potential source of drinking water. The local groundwater is contaminated with naturally occurring radioactive materials and other chemicals that exceed the maximum concentration limits established by the U.S. Environmental Protection Agency. The LTSP does not require groundwater remediation.

2 Site Status

The revised LTSP lists two possible site-specific concerns involving site erosion and seeps for the Maybell disposal site. The DOE inspectors previously identified erosion in the southeastern portion of the property, near a drainage ditch. Repairs were conducted in 2000-2002 which included the addition of rock armor in the area of the erosion. The LTSP specifically requires the DOE inspectors to monitor the erosion in this area.

The second concern involves the potential for seepage from the disposal cell in the eastern and southeastern slopes of the cell. Wet tailings material was encountered in this area of the cell during construction, and the DOE is aware that this moisture may seep out of the cell. The LTSP specifically requires the DOE inspectors to look for evidence of seepage in the eastern and southeastern slopes of the cell.

The LTSP also requires the DOE inspectors to conduct vegetation monitoring on an annual basis, in part, to ensure that deep-rooted plants do not proliferate the site. In addition, the NRC and DOE are currently discussing the option of allowing a local rancher to use the property for grazing of cattle. At the time of the August 2013 site inspection, the NRC and DOE continue to discuss the option of allowing cattle to graze on the site property.

The DOE conducted the last annual inspection of the Maybell disposal cell during August 2012. The inspection concluded that the disposal cell, diversion channels, and drainage structures were in good condition and functioning as designed. No deep-rooted plants were identified. One perimeter sign was missing, and the fence was damaged in two locations. No significant maintenance or contingency items were identified during the 2012 inspection.

3 Site Observations and Findings

To conduct the 2013 site inspection, DOE and its contractors created an inspection checklist. The checklist included requirements for observation of the disposal cell cover, 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 disposal cell 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 cell, but this vegetation did not appear to impact the cell cover. No deep-rooted plants were observed on or around the disposal cell. Two slight depressions were noted on top of the cell during 2008, but these depressions have not been identified during subsequent site inspections. These depressions were attributed to inconsistencies in cell construction and not settlement.

The DOE inspectors observed the two specific concerns mentioned in the 2008 LTSP-erosion and seeps. Some minor rills and other signs of erosion were observed, but the DOE inspectors concluded that the erosion appeared consistent with 2012 observations.

No seeps were identified in the eastern or southeastern portions of the disposal cell. Standing water was observed in the eastern apron of the disposal cell, but the DOE inspectors noted that the water appeared to be standing rainwater versus tailings seepage. As noted below, the NRC inspector conducted a radiological survey during the observational site visit. The ambient gamma radiation levels measured in the eastern and southeastern areas were indistinguishable from background levels, suggesting that the standing water appeared to be rainwater and not seepage from the cell.

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 at the site included boundary monuments, survey monuments, site markers, and perimeter warning signs. These institutional controls were found to be in place and in good condition, with minor exceptions. The DOE inspectors acknowledged that a missing perimeter sign, identified during the 2012 inspection, still had not been replaced. Further, the boundary monuments had not been updated since the survey error had been reported in the 2008 LTSP. The DOE inspectors stated that they would attempt to correct these problems in the near future.

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 8-10 microRoentgens per hour (μR/hr). The exposure rates on top of the disposal cell ranged from 6-8 μR/hr, and the exposure rates around the disposal cell ranged from 8-10 μR/hr. In summary, no residual radioactive contamination or naturally occurring radioactivity was identified on top or 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 April 2008. 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 missing sign and several incorrectly placed boundary monuments will be corrected in the near future.

5 Meeting Summary

The NRC inspector participated in planning meetings with the DOE site manager and site contractor 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-2 located at crest of the Maybell disposal cell


Figure 2: Top of Maybell disposal cell (looking north)

Figure 3: Diversion channel (left) and top of cell (right); southwest side of cell

Figure 4: Vegetation near standing water in apron at eastern tip of cell