

## 13.0 Naturita, Colorado, Disposal Site

### 13.1 Compliance Summary

The Naturita, Colorado, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Disposal Site (site) was inspected on June 17, 2019. No changes were observed on the disposal cell or in the associated drainage features. Inspectors identified several minor maintenance needs but found no cause for a follow-up inspection.

Groundwater monitoring is not required and was discontinued in 2014. The site-specific U.S. Department of Energy (DOE) Long-Term Surveillance Plan (LTSP) (DOE 2019b) was revised to exclude the groundwater monitoring requirement. The revised LTSP was sent to the U.S. Nuclear Regulatory Commission (NRC) in September 2019 and finalized in December 2019.

### 13.2 Compliance Requirements

Requirements for the long-term surveillance and maintenance of the site are specified in the LTSP in accordance with procedures established to comply with the requirements of the NRC general license at Title 10 *Code of Federal Regulations* Section 40.27 (10 CFR 40.27).

Table 13-1 lists these requirements.

*Table 13-1. License Requirements for the Naturita, Colorado, Disposal Site*

<b>Requirement</b>	<b>LTSP</b>	<b>This Report</b>	<b>10 CFR 40.27</b>
Annual Inspection and Report	Sections 3.0 and 6.2	Section 13.4	(b)(3)
Follow-Up Inspections	Section 3.4	Section 13.5	(b)(4)
Maintenance and Repair	Section 4.0	Section 13.6	(b)(5)
Groundwater Monitoring	Section 2.6	Section 13.7	(b)(2)
Corrective Action	Section 5.0	Section 13.8	--

### 13.3 Institutional Controls

The 26.65-acre site, identified by the property boundary shown in Figure 13-1, is owned by the United States and was accepted under the NRC general license in 1999. DOE is the licensee, and in accordance with the requirements for UMTRCA Title I sites, is responsible for the custody and long-term care of the site. Institutional controls (ICs) at the site include federal ownership of the property, administrative controls, and the following physical ICs that are inspected annually: the disposal cell and associated drainage features, entrance gate and sign, perimeter fence and signs, site markers, survey and boundary monuments, and wellhead protectors.

## 13.4 Inspection Results

The site, 13 miles northwest of Naturita, Colorado, was inspected on June 17, 2019. The inspection was conducted by A. Kuhlman and C. Wentz of the Office of Legacy Management Support (LMS) contractor. A. Denny (Office of Legacy Management [LM] site manager), J. Doebele (Colorado Department of Public Health and Environment), K. Meadows (LMS), K. Speights and A. Renteria (both of LM) attended the inspection. The purposes of the inspection were to confirm the integrity of visible features at the site, identify changes in conditions that might affect conformance with the LTSP, and evaluate the need, if any, for maintenance or additional inspection and monitoring.

### 13.4.1 Site Surveillance Features

Figure 13-1 shows the locations of site features in black, including site surveillance features and inspection areas. Site features that are present but not required to be inspected are shown in italic font. Observations from previous inspections that are currently monitored are shown in blue text, and new observations identified during the 2019 annual inspection are shown in red. Inspection results and recommended maintenance activities associated with site surveillance features are described in the following subsections. Photographs to support specific observations are identified in the text and in Figure 13-1 by photograph location (PL) numbers. The photographs and photograph log are presented in Section 13.10.

#### *13.4.1.1 Site Access, Entrance Gate, and Entrance Sign*

Access to the site is from Colorado Highway 141 to Montrose County Road EE22, which borders the northeast side of the site. Entrance to the site is through a locked steel gate directly off County Road EE22. The entrance gate was locked and functional. The entrance sign, next to the entrance gate, has bullet damage but remains legible. The website listed on the entrance sign has faded and was replaced following the inspection. No other maintenance needs were identified.

#### *13.4.1.2 Perimeter Fence and Signs*

A barbed-wire perimeter fence encloses the site. Three aging wooden stiles identified in the 2018 inspection (DOE 2019a) were replaced with two pedestrian gates following the 2019 inspection (PL-1). A large bush growing in the western perimeter fence line was removed to prevent damage to the fence (PL-2). Inspectors identified a loose fence strand and a detached fence bracket; both were repaired following the inspection.

There are 25 perimeter signs positioned along the perimeter fence attached to steel posts set in concrete and set back 5 feet (PL-3). Several perimeter signs identified with “Uravan” as the site name were replaced with “Naturita” following the inspection. Perimeter sign P2 has bullet damage but remains legible. Erosion is occurring around the base of perimeter sign P22, but the perimeter sign is stable. Perimeter sign P18 was facing away from the disposal cell access road and was turned to face the road following the inspection. No other maintenance needs were identified.

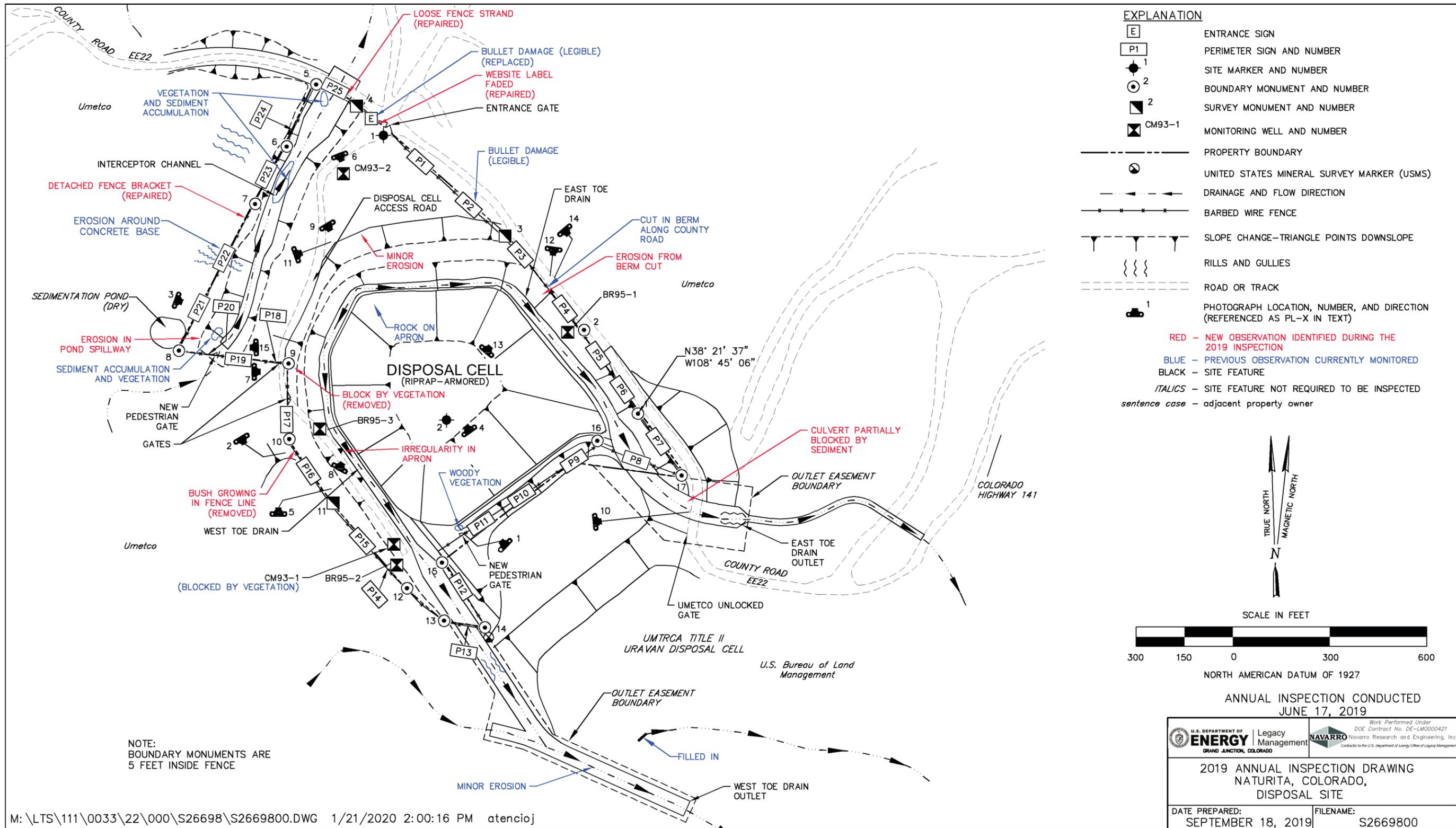


Figure 13-1. 2019 Annual Inspection Drawing for the Naturita, Colorado, Disposal Site

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### ***13.4.1.3 Site Markers***

The site has two granite site markers. Site marker SMK-1 (PL-4) is just inside the entrance gate, and site marker SMK-2 is on the top slope of the disposal cell. No maintenance needs were identified.

### ***13.4.1.4 Survey and Boundary Monuments***

Three survey monuments and 14 boundary monuments delineate the property boundary. Boundary monuments BM-1 through BM-17 mark the property corners. Survey monuments SM-3, SM-4, and SM-11 represent boundary monuments BM-3, BM-4, and BM-11, respectively (PL-5). Boundary monument BM-9 was obstructed by woody vegetation, which was removed following the inspection. No other maintenance needs were identified.

### ***13.4.1.5 Monitoring Wells***

The site has five groundwater monitoring wells. The wellhead protectors were undamaged and locked (PL-6). Monitoring well CM93-1 remains completely surrounded by woody vegetation. Monitoring of the wells is not required, and the vegetation will be removed upon well abandonment. No immediate maintenance needs were identified.

## **13.4.2 Inspection Areas**

In accordance with the LTSP, the site is divided into three inspection areas to ensure a thorough and efficient inspection. The inspection areas are (1) the disposal cell, (2) the remainder of the site, and (3) the outlying area. Inspectors examined specific site surveillance features within each area and looked for evidence of erosion, settling, slumping, or other modifying processes that might affect the site's conformance with LTSP requirements.

### ***13.4.2.1 Disposal Cell***

The disposal cell, completed in 1998, occupies 10 acres (PL-7). The disposal cell is armored with riprap to control erosion. The riprap is rounded, with larger diameter rock on the side slopes than on the top slope. There was no evidence of settling, slumping, erosion, rock degradation, or other modifying processes that might affect the integrity of the disposal cell.

Irregularities in the riprap on the top slope of the disposal cell continue to be observed. The irregularities consist of slightly darker rock at differing angles than the rest of the top slope. The irregularities are not lower than surrounding areas and have not changed over time. They are believed to be a construction artifact. Another irregularity exists in the apron area on the west side of the disposal cell (PL-8) appearing to be old vehicle tracks. The irregularity does not present a hazard to the disposal cell or surrounding area. Inspectors will continue to monitor this area. A large boulder was observed on the northeast side of the disposal cell apron, a presumed result of erosion on the steep cliff above the disposal cell (PL-9). The apron around the boulder remains intact, and the boulder does not currently pose a hazard to the disposal cell. Inspectors will continue to monitor for potential impacts. A rabbitbrush plant (a deep-rooted woody species) growing at the base of the north side slope identified during the previous inspection was successfully treated with herbicide and was not apparent during the 2019 inspection. Additional

rabbitbrush plants growing on the south apron of the disposal cell were treated with herbicide in June before the inspection. Herbicide treatment of the rabbitbrush plants will continue. No other maintenance needs were identified.

#### ***13.4.2.2 Remainder of the Site***

Two riprap-armored toe drains (the west and east toe drains) collect water from the disposal cell side slopes and divert it to the southeast. The west toe drain outlet is south of the site in an easement. Soft bedrock is being eroded near the west toe drain outlet, but that erosion does not threaten the performance of the toe drain, and repairs are not necessary. The east toe drain outlet is southeast of the site in an easement. Water is conveyed to the east toe drain outlet through the east toe drain and five culverts under Montrose County Road EE22. Vegetation continues to grow in the accumulating sediment just outside of the culverts, potentially blocking storm water flow through the culverts (PL-10). The vegetation will be removed before the 2020 annual inspection. Erosion has exposed resistant bedrock near the east toe drain outlet but does not threaten the performance of the toe drain, and repairs are not necessary. Some sediment has accumulated in the upper end of the east and west toe drains, allowing scattered vegetation to grow, but this has not adversely affected the performance of the toe drains.

A riprap-armored interceptor channel, upgradient and northwest of the disposal cell, diverts storm water and snowmelt runoff to the northeast under County Road EE22. Some sediment has eroded from the offsite area upslope from perimeter signs P22 and P23 and is deposited in the channel. Sediment accumulation and associated vegetation have not adversely affected the performance of the interceptor channel. No new erosion was noted during the inspection.

An area south of monitoring well CM93-2 next to a large boulder upgradient of the disposal cell is beginning to show signs of erosion (PL-11). Rills leading in the boulder's direction are becoming apparent. The erosion does not present a hazard to the disposal cell or to any site features, so repairs are not warranted. Inspectors will continue to monitor this area for ongoing erosion.

The disposal cell access road along the northwest side of the site descends through shale and sandstone units of the Salt Wash Member of the Morrison Formation. The road provides access to the disposal cell and monitoring wells on the west side of the site. Minor new rockfall was observed on the disposal cell access road. The access road remains passable. Inspectors will continue to monitor this area for ongoing erosion. No other maintenance needs were identified.

A cut in the berm and resulting erosion alongside County Road EE22 (between perimeter signs P3 and P4) has been observed since 2017 and appeared to have increased in size and depth (PL-12). Erosion in the steep cliff below the berm cut was observed (PL-13), but does not pose a current threat to the integrity of the disposal cell or site features. Following the inspection, the Montrose County maintenance crew repaired the berm cut (PL-14). Inspectors will continue to monitor this area for ongoing erosion. No other maintenance needs were identified.

#### ***13.4.2.3 Outlying Area***

The area beyond the site boundary for a distance of 0.25 mile was visually observed for erosion, changes in land use, or other phenomena that might affect the long-term integrity of the site. The area has been highly disturbed by mining, quarrying, reclamation, and road building.

Headcutting erosion was identified within the spillway channel below the sedimentation pond on the outlying area northwest of the site (PL-15). Inspectors will continue to monitor this area for ongoing erosion.

### **13.5 Follow-Up Inspections**

LM will conduct follow-up inspections if (1) a condition is identified during the annual inspection or other site visit that requires a return to the site to evaluate the condition or (2) LM is notified by a citizen or outside agency that conditions at the site are substantially changed. No need for a follow-up inspection was identified.

### **13.6 Maintenance and Repair**

Several maintenance items identified in the 2018 annual inspection (DOE 2019a) were completed in 2019, including:

- Removal of three pedestrian wooden stiles and installation of two pedestrian gates
- Repair of the berm cut by Montrose County

Inspectors documented minor maintenance needs that were completed in 2019 following the inspection, including:

- Repairs to the perimeter fence (tightened loose fence strand and repaired detached fence bracket)
- Treatment of vegetation growing in the disposal cell apron
- Replacing “Uravan” perimeter signs with “Naturita”
- Turning perimeter sign P18 to face the disposal cell access road
- Removal of the bush in the fence line between perimeter signs P16 and P17
- Replacing the entrance sign

Inspectors also documented minor maintenance needs that have not been addressed but will be before the 2020 inspection, including:

- Removing sedimentation or vegetation blocking the culverts

No other immediate maintenance needs were identified.

### **13.7 Groundwater Monitoring**

Groundwater monitoring was discontinued in 2014 because (1) the groundwater monitoring program demonstrated that transient drainage from the disposal cell is not impacting the uppermost aquifer and (2) site geology prevents impact to the uppermost aquifer. NRC concurrence with the change (discontinuation) of groundwater monitoring is documented in an April 15, 2014, letter from NRC to LM (Orlando 2014). The LTSP was revised to exclude the groundwater monitoring requirement and submitted to NRC for acceptance in 2018. The revised LTSP was finalized in December 2019 (DOE 2019b).

## 13.8 Corrective Action

Corrective action is taken to correct out-of-compliance or hazardous conditions that create a potential health and safety problem or that may affect the integrity of the disposal cell or compliance with 40 CFR 192. No need for corrective action was identified.

## 13.9 References

10 CFR 40.27. U.S. Nuclear Regulatory Commission, “General License for Custody and Long-Term Care of Residual Radioactive Material Disposal Sites,” *Code of Federal Regulations*.

40 CFR 192. U.S. Environmental Protection Agency, “Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings,” *Code of Federal Regulations*.

DOE (U.S. Department of Energy), 2019a. *2018 Annual Site Inspection and Monitoring Report for Uranium Mill Tailings Radiation Control Act Title I Disposal Sites*, LMS/S22053, March.

DOE (U.S. Department of Energy), 2019b. *Long-Term Surveillance Plan for the Naturita, Colorado Disposal site*, LMS/NAD/S13227, December.

Orlando, 2014. Dominick A. Orlando, Senior Project Manager, Materials Decommissioning Branch, U.S. Nuclear Regulatory Commission, letter (about U.S. Department of Energy proposal to terminate groundwater monitoring at the Naturita, Colorado, site) to Mark Kautsky, Office of Legacy Management, U.S. Department of Energy, April 15.

## 13.10 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	315	New Pedestrian Gate on Disposal Cell
PL-2	150	Vegetation Growing in Fence Line
PL-3	110	Perimeter Sign P21
PL-4	325	Site Marker SMK-1
PL-5	—	Survey Monument SM-11
PL-6	160	Monitoring Well CM93-2
PL-7	90	Disposal Cell
PL-8	30	Area of Irregularity on Disposal Cell Apron and Interface with Disposal Cell Access Road
PL-9	150	Boulder on Disposal Cell Apron
PL-10	85	Culvert Inlet Partially Blocked by Sediment
PL-11	70	Erosion Along Cliff Edge Above Disposal Cell
PL-12	189	Berm Cut off County Road EE22 (Repaired Following Inspection)
PL-13	40	Erosion Along Cliff from Cut in County Road EE22 Berm
PL-14	142	Berm Cut Repaired by Montrose County
PL-15	270	Sedimentation Pond Spillway Area

**Note:**

— = Photograph taken vertically from above.



*PL-1. New Pedestrian Gate on Disposal Cell*



*PL-2. Vegetation Growing in Fence Line*



*PL-3. Perimeter Sign P21*



*PL-4. Site Marker SMK-1*



*PL-5. Survey Monument SM-11*



*PL-6. Monitoring Well CM93-2*



*PL-7. Disposal Cell*



*PL-8. Area of Irregularity on Disposal Cell Apron and Interface with Disposal Cell Access Road*



*PL-9. Boulder on Disposal Cell Apron*



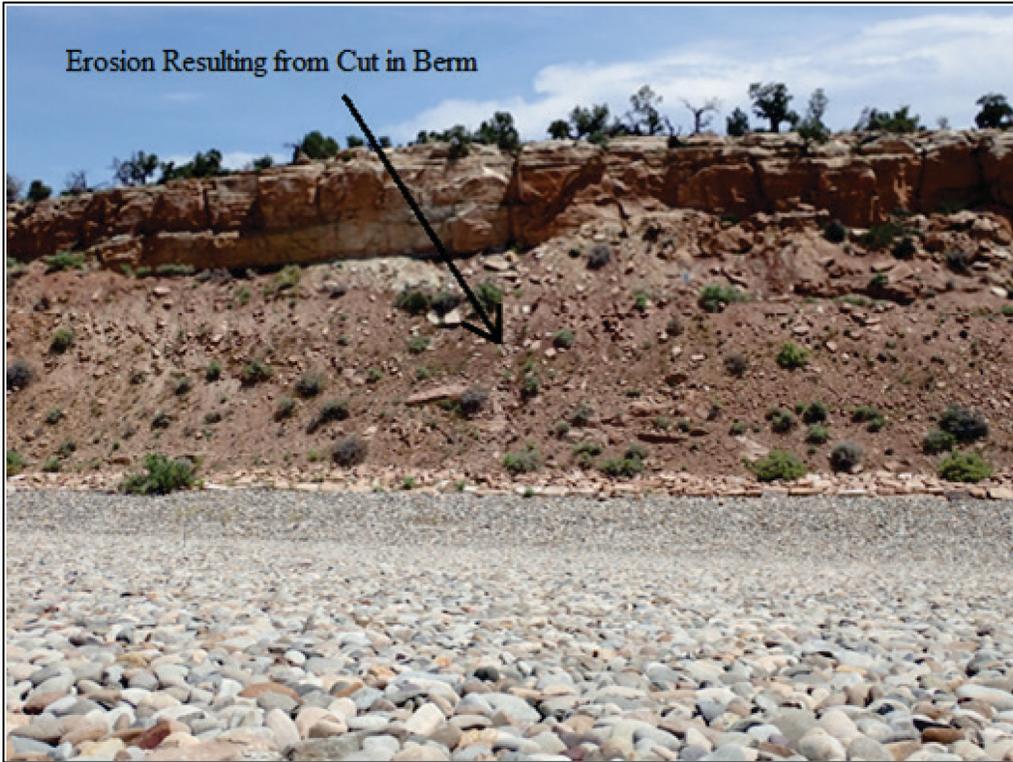
*PL-10. Culvert Inlet Partially Blocked by Sediment*



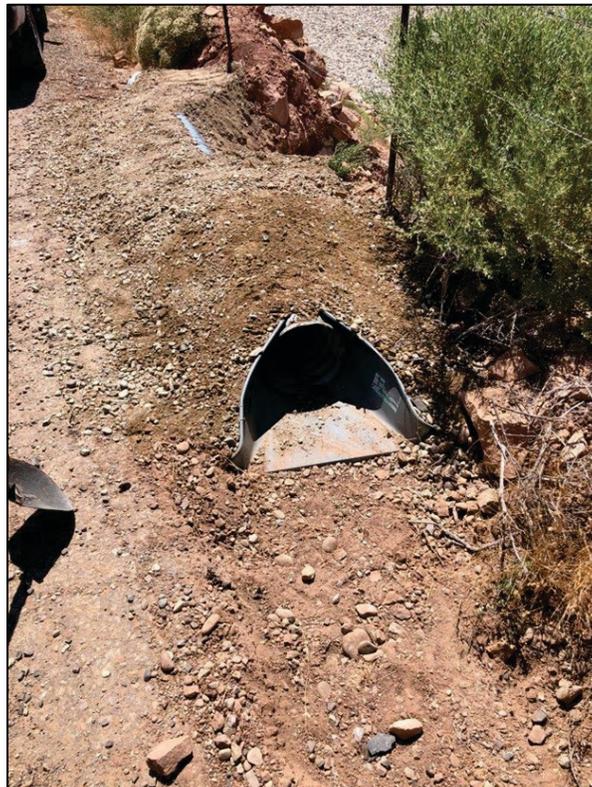
*PL-11. Erosion Along Cliff Edge Above Disposal Cell*



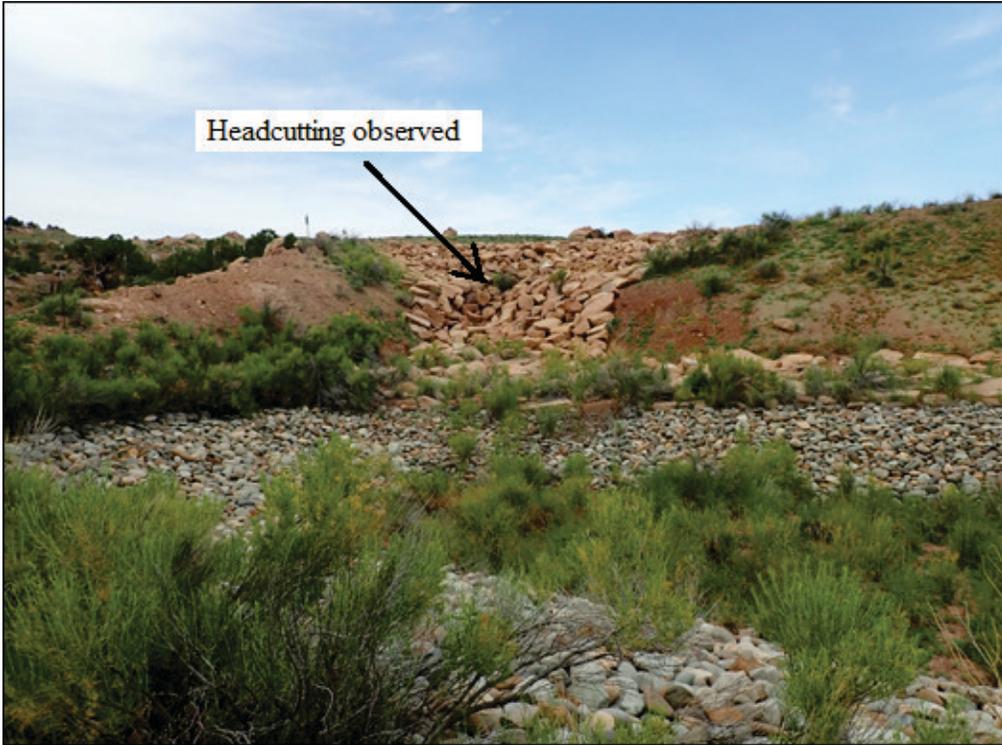
*PL-12. Berm Cut off County Road EE22 (Repaired Following Inspection)*



*PL-13. Erosion Along Cliff from Cut in County Road EE22 Berm*



*PL-14. Berm Cut Repaired by Montrose County*



*PL-15. Sedimentation Pond Spillway Area*