

2002 Annual Compliance Report Rifle, Colorado, Disposal Site

Compliance Summary

The site, inspected on August 6, 2002, was in good condition. A steel fence and gate were installed across the access road to discourage trespassing, and there was no evidence of trespass beyond the gate at the time of the inspection. A missing perimeter sign was replaced, and the entrance sign had been vandalized and will be replaced in 2003. Continued erosion at the outlet of the toe ditch and in three arroyos south of the disposal cell was evident; however, rocks placed above these areas have been dropping into the eroding channel and are gradually forming an armor layer to inhibit or prevent erosion. Vegetation in reclaimed areas was stressed due to drought conditions. The water level elevation in the cell is being drawn down as required by the Long-Term Surveillance Plan and currently is at an acceptable elevation; however, the solar-powered pump was not operating at the time of the inspection. The pump was repaired the next day and normal pumping operations resumed. No other maintenance was necessary, and there was no requirement for a follow-up or contingency inspection.

Compliance Requirements

Requirements for the long-term surveillance and maintenance of the Rifle, Colorado, Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I disposal site are specified in the *Long-Term Surveillance Plan for the Estes Gulch Disposal Site near Rifle, Colorado* (DOE/AL/62350–235, Rev. 1, U.S. Department of Energy [DOE], Albuquerque Operations Office, November 1997) and in procedures established by the DOE Grand Junction Office to comply with requirements of Title 10 *Code of Federal Regulations* Part 40.27 (10 CFR 40.27). These requirements are listed in Table 14–1.

Table 14–1. License Requirements for the Rifle, Colorado, Disposal Site

Requirement	Long-Term Surveillance Plan	This Report
Annual Inspection and Report	Section 3.0	Section 1.0
Follow-up or Contingency Inspections	Section 3.4	Section 2.0
Routine Maintenance and Repairs	Section 4.0	Section 3.0
Ground Water Monitoring	Section 2.6 and Appendix	Section 4.0
Corrective Action	Section 5.0	Section 5.0

Compliance Review

1.0 Annual Inspection and Report

The site, north of Rifle, Colorado, was inspected on August 6, 2002. Results of the inspection are described below. Features and photograph locations (PLs) mentioned in this report are shown on Figure 14–1. Numbers in the left margin of this report refer to items summarized in the Executive Summary table.

1.1 Specific Site Surveillance Features

14A **Access Road, Gates, Fence, and Signs**—The site is reached by driving north on an improved gravel road from State Highway 13. In 2002, a steel fence and swinging gate (PL-1) were installed where the access road passes through a road cut to limit access to the site and prevent vandalism to the cell dewatering pumping system and evaporation pond. The gate was locked and there was no evidence of trespass beyond the gate.

The site entrance gate consists of a pair of tubular metal gates hinged to galvanized steel posts. A chain and padlock secures the two gates.

A conventional barbed wire stock fence is situated about half way between the southern edge of the toe ditch and the southern boundary of the site. The fence extends to the edge of steep-sided arroyos that bound the site on the east and west. Previous fence improvements continue to successfully prevent cattle from entering and grazing near the cell. There was evidence of wildlife (elk and deer) grazing in the revegetated areas adjacent to the disposal cell.

The entrance sign was damaged from a shotgun blast and is barely legible. This sign will be replaced in 2003. Perimeter signs P5 and P19 had new bullet holes but were legible. Perimeter sign P11 was missing and was replaced at the time of the inspection. Vandalism to the signs apparently was done prior to installation of the locked gate on the access road.

Markers and Monuments—Two granite site markers, one just inside and left of the entrance gate and the other on the disposal cell, were undisturbed and in good condition.

There are three survey monuments and 15 boundary monuments at this site. Boundary monuments are set at corners along an irregular site boundary. The site boundary has 20 corners; however, monuments were set at only 15 of the corners because of the rough terrain. Consequently, boundary monument locations BM-8, BM-9, BM-13, BM-17, and BM-20 were only marked with wooden lath, and were not included as part of the annual inspection. All survey and boundary monuments that were inspected were found to be in good condition. Some of the monuments on the north and east side of the cell were not visited during this inspection.

Standpipes—The three standpipes, MW-01, MW-02, and MW-03, are located on the south sideslope of the disposal cell. They were undisturbed and in excellent condition. Data loggers are installed in MW-02 and MW-03 to measure water level fluctuations. There is no data logger in MW-01 because it is too shallow and usually dry. The bottom of MW-01, at elevation 6,021.4 feet, is above the 6,016-foot water level elevation that constitutes the action level for pumping. Data loggers in standpipes MW-02 and MW-03 are downloaded every 30 days.

14B A solar-powered pump was installed in MW-02 in 2001 to lower the water level in the cell as specified by the Long-Term Surveillance Plan. Due to damage by freezing, the wellhead was insulated and repairs were made to the discharge pipe in January 2002. The solar collector was in excellent condition at the time of the inspection; however, the pump was not operating properly. Repairs were made to the pump the day after the site inspection.

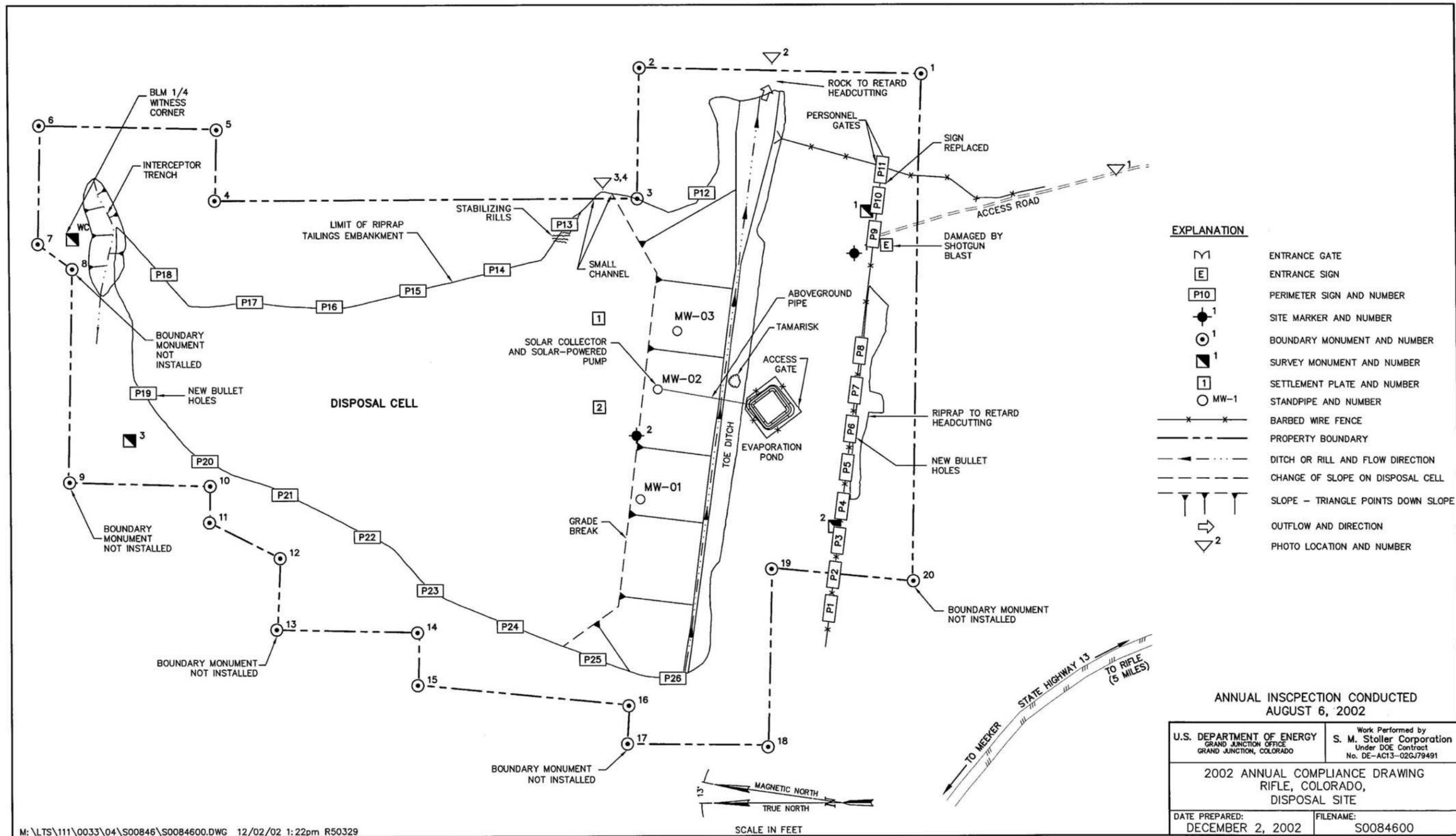


Figure 14-1. 2002 Annual Compliance Drawing for the Rifle, Colorado, Disposal Site

Evaporation Pond—An evaporation pond was constructed in 2001 to receive water pumped from standpipe MW-02. The above-ground polyethylene pipeline that conveys the water from the standpipe to the pond was in good condition. The lined pond, its surrounding security fence, and the locked fence gate also were in good condition.

Monitor Wells—Ground water monitoring is not required at the Rifle disposal site. The reclaimed sites of nine monitor wells decommissioned in 2001 were in good condition.

1.2 Transects

To ensure a thorough and efficient inspection, the site was divided into four areas referred to as transects: (1) the top of the disposal cell and interceptor trench; (2) the toe ditch and toe ditch outlet; (3) reclaimed areas; and (4) the outlying area.

Disposal Cell and Interceptor Trench—Rock armor covers the 71-acre disposal cell. The rock was in excellent condition. There was no evidence of erosion, differential settlement, slumping, cracking, or other phenomenon that might affect cell integrity. Inspectors found no plant encroachment in rock-armored areas.

An interceptor trench was constructed upslope of the disposal cell to protect the cell from storm-water and snowmelt runoff. The trench diverts water to the arroyo west of the site. The trench was designed so that if erosion occurred below the outfall of the trench it would be halted by bedrock. Erosion is occurring, but currently is limited to the colluvial materials above the bedrock.

Toe Ditch and Toe Ditch Outlet—The toe ditch runs along the downslope (south) edge of the disposal cell. The toe ditch is armored with the same rock that protects the disposal cell. The toe ditch diverts surface runoff from the disposal cell off site to the east. Significant plant encroachment is not occurring in the toe ditch; however, a single tamarisk plant was growing in the toe ditch below MW-02. This plant was cut and the stalk treated with herbicide to prevent tamarisk from becoming established.

Minor erosion, anticipated in the design, has occurred in the channel at the outlet below the toe ditch (PL-2). Bedrock is now exposed at the outlet. Rock placed at the bottom of toe ditch outlet is dropping into the eroding channel and gradually forming an armor layer to inhibit erosion.

Reclaimed Areas—Disturbed areas around the edges and south of the disposal cell were reseeded in 1996. The vegetation, primarily grasses, was stressed and in dormant condition due to drought conditions. Limited cattle grazing occurred in the spring of 1998, but apparently not since then.

In the reclaimed area south of the disposal cell, there are three large arroyos. To prevent headward migration of these arroyos toward the disposal cell, a rock apron was placed between the stock fence and the head-cuts in these arroyos. As erosion has migrated into the rock apron, the rock has dropped into the arroyos to armor them from further erosion.

14C

Rills noted during previous inspections in the vicinity of perimeter sign P13 appeared to be stable. However, the runoff collected by the rills travels downhill along the interface between the riprap and the adjacent reclaimed soil area. A small channel that currently averages about 1 foot wide and less than 1 foot deep has formed and has exposed some of the gravel bedding material (PL-3 and PL-4). The scoured channel extends approximately from perimeter sign P13 to boundary monument BM-3. This feature is not threatening the integrity of the disposal cell at this time, but DOE will continue to monitor it during subsequent site inspections.

The reclaimed area south of the disposal cell was disturbed by the construction of the evaporation pond. This area will be reclaimed again after the evaporation pond is decommissioned.

Outlying Area—The area beyond the site for a distance of 0.25 mile was visually inspected for signs of erosion, development, or other disturbance. The primary land use in the area is grazing and wildlife habitat. Inspectors observed no activity or development that might affect the site or the long-term performance of the disposal cell.

14D

Revegetated land managed by the U.S. Bureau of Land Management (BLM) directly south of the disposal cell was inspected. During construction of the cell, DOE was granted a Temporary Withdrawal Permit by BLM to use this area for topsoil storage. DOE seeded this area along with other reclaimed areas. Cheat grass, an undesirable range species, became the predominant vegetation in this area and DOE reseeded the area in 1999 at the request of BLM. The next two annual inspections indicated the dominance of cheat grass and Russian thistle over the seeded species in the reseeded area. All plants were dormant at the time of the 2002 inspection due to drought conditions. It is unlikely that BLM will close the Temporary Withdrawal permit until revegetation of this area with desirable species is successful.

2.0 Follow-Up or Contingency Inspections

No follow-up or contingency inspections were required in 2002.

3.0 Routine Maintenance and Repairs

In 2002, DOE insulated the wellhead, repaired the discharge pipe, repaired the malfunctioning pump in standpipe MW-02, and replaced a missing perimeter sign.

4.0 Ground Water Monitoring

Monitoring of ground water quality is not required at this site because ground water in the uppermost aquifer is of limited use and because the disposal cell is geologically isolated from the first useable aquifer by approximately 3,800 feet of low-permeability siltstones, shales, and sandstones.

DOE does, however, monitor water levels in the disposal cell at standpipes MW-02 and MW-03. Monitoring is conducted to ensure that water within the disposal cell does not rise above an elevation of 6,018 feet. The disposal cell was constructed against a berm or earthen embankment at the southern (downslope) end. A liner extends part way up on the inside of the

berm to an elevation of 6,020 feet. If water in the disposal cell were to rise above this elevation, it would overflow the liner and saturate the berm. Therefore, the Long-Term Surveillance Plan established an action level for pumping of 6,016 feet.

When average water levels (as calculated using linear regression) in MW-02 approached the action level in August 2001, DOE installed a pump in this standpipe, constructed an evaporation pond, and began pumping from the standpipe to the pond. Since then, a total of 488,000 gallons of water have been extracted from the disposal cell, and water levels have slowly decreased as shown by datalogger measurements (Figure 14-2). The discharge rate from the solar-powered pump is approximately 5 gallons per minute during periods of operation. The oscillation in the datalogger trace for MW-02 in Figure 14-2 represents drawdown in the standpipe during pumping, and recovery of the water level when pumping ceases. The minor irregularities in the datalogger lines shown on the graph (most obvious in MW-03) are related to variations in atmospheric pressure (as shown during the period of measurement from April through June 2002), with elevated atmospheric pressure causing depressed water levels. The increase in elevations in late May 2002 for MW-02 is a result of a resurvey of the measuring point and adjustment of the datalogger readings.

DOE intends to remove enough water from the disposal cell to lower water levels in the standpipes to below the 6,014-foot elevation. At that time, pumping will be stopped, and water levels will be monitored to ensure they remain at or below that elevation. If water levels again rise, pumping will resume. DOE will monitor water levels with dataloggers and will adjust the frequency of downloading and manual water level checks on the basis of water level trends.

5.0 Corrective Action

Corrective action is action 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.

The Long-Term Surveillance Plan establishes that corrective action will be taken if the water level in the disposal cell reaches 6016 feet in elevation. Corrective action was taken late in 2001 with the installation of the evaporation pond and subsequent dewatering of the cell. This action has lowered the water level to an acceptable elevation and precludes the disposal cell liner from overtopping.

6.0 Photographs

Table 14-2. Photographs Taken at the Rifle, Colorado, Disposal Site

Photograph Location Number	Azimuth	Description
PL-1	335	New fence and gate across access road.
PL-2	275	Erosion at toe ditch outlet.
PL-3	305	Developing channel near perimeter sign P13; upslope view.
PL-4	180	Developing channel near perimeter sign P13; downslope view.

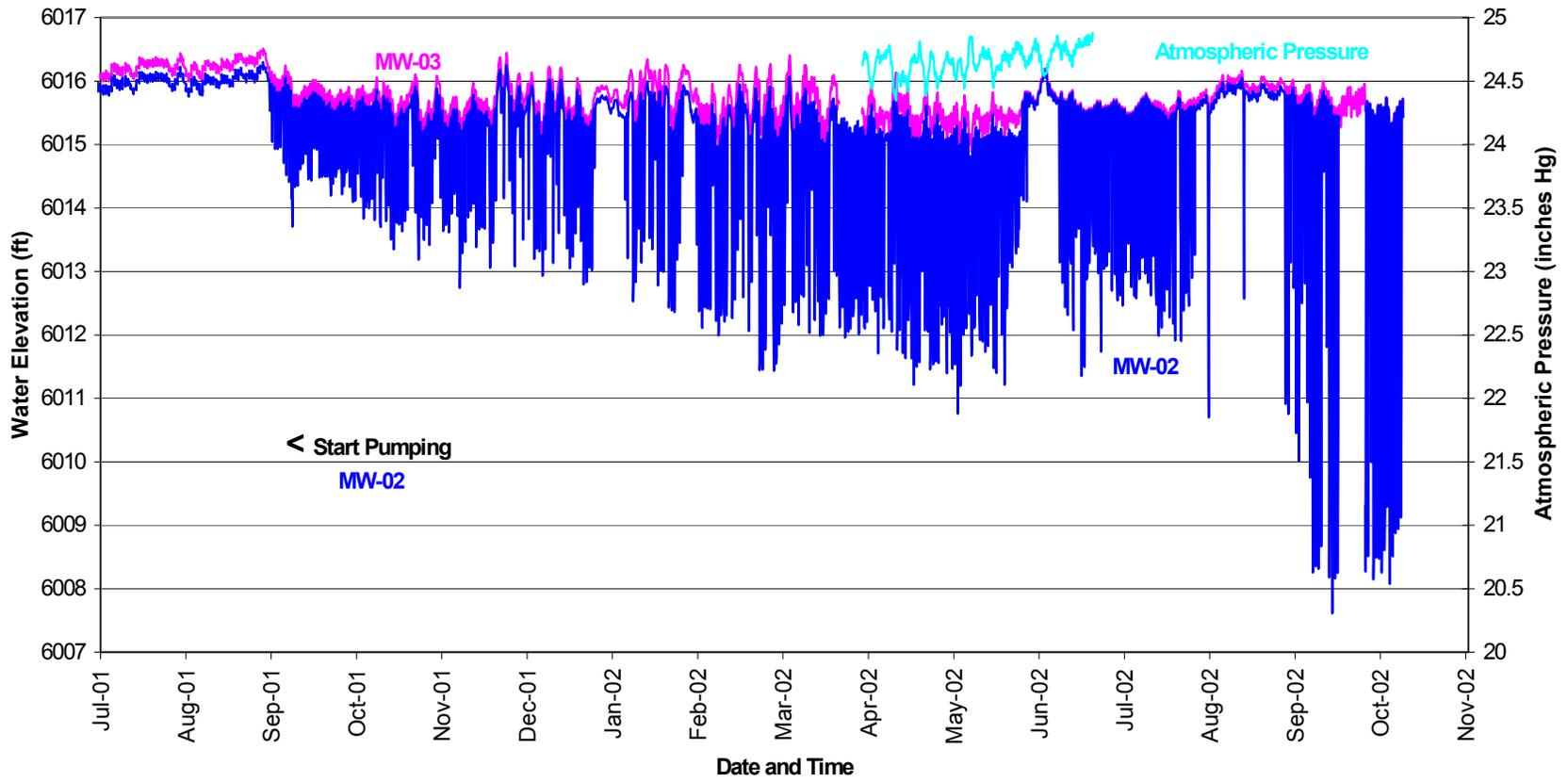


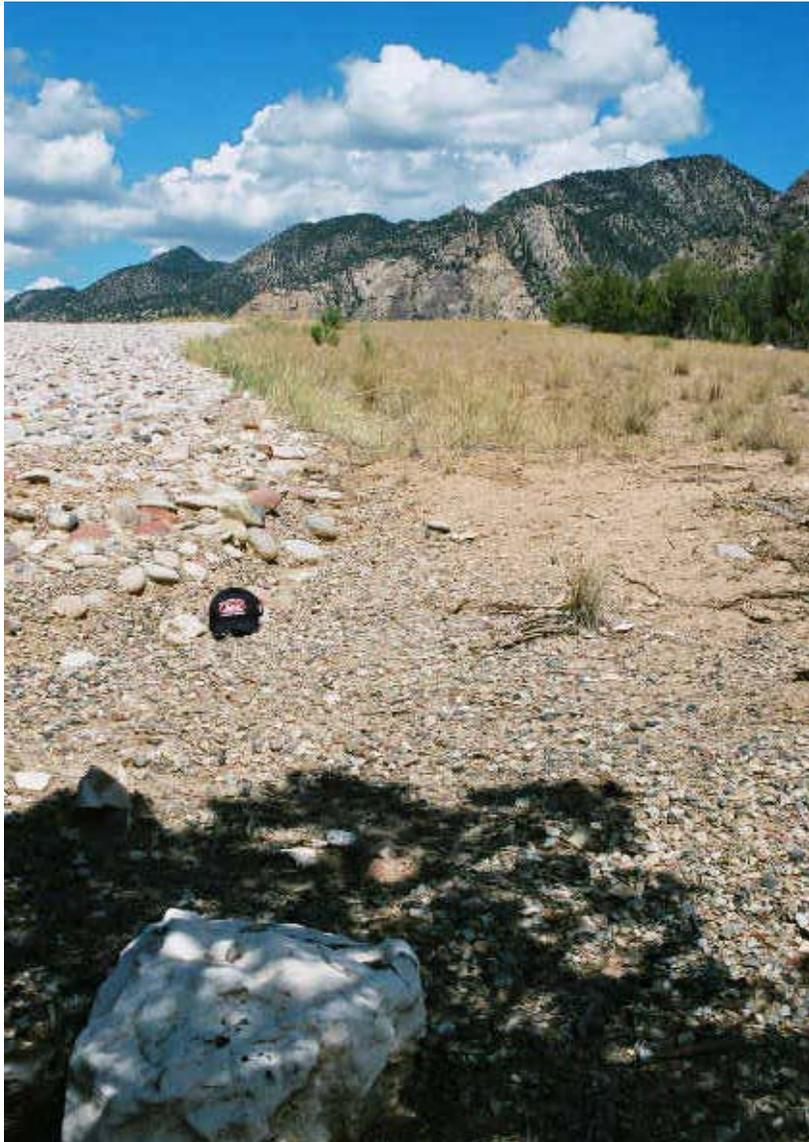
Figure 14-2. Water Levels in Standpipes MW-02 and MW-03 at the Rifle, Colorado, Disposal Site



PL-1. New fence and gate across access road.



PL-2. Erosion at toe ditch outlet.



PL-3. Developing channel near perimeter sign P13; upslope view.



PL-4. Developing channel near perimeter sign P13; downslope view.

End of current section