

# Annual Inspection of the Grand Junction, Colorado, Site

## 1.1 Inspection Summary

The Grand Junction, Colorado, Site was inspected on March 8, 2017. Physical and institutional controls enacted at the site continue to be effective in preventing exposure to contamination remaining on the property. Two minor maintenance needs were identified; however, no cause for a follow-up inspection was identified.

The site was contaminated during uranium milling and uranium oxide procurement activities conducted by the federal government between 1943 and 1974. The U.S. Department of Energy (DOE) remediated the property between 1986 and 2001. Remediation involved decontaminating or demolishing contaminated buildings and removing contaminated soil. Contaminated materials were disposed of at the Uranium Mill Tailings Radiation Control Act Title I Grand Junction, Colorado, Disposal Site south of Grand Junction. Some contaminated materials were left in place and later remediated under a state-approved covenant for deferred remediation.

DOE transferred approximately 8 acres of the site in 2001 to the U.S. Department of the Army (occupied by an engineering unit of the U.S. Army Reserve). The remainder of the facility was transferred to the nonprofit Riverview Technology Corporation (RTC) in 2001, following approval of the covenant for deferred remediation. RTC leases several buildings to DOE so the agency can conduct ongoing operations.

DOE remains responsible for ensuring that contamination left on its former property is controlled to prevent exposure to the public and the environment. Two types of contamination remain:

- In groundwater and surface water within the site perimeter
- As radium foil sealed below ground in a decommissioned calibration borehole

The site transfer agreement between DOE and RTC stipulated that contamination beneath Building 12A (the former computer and storage facility) and Building 20 (the analytical chemistry laboratory) would be remediated when DOE vacated and demolished those buildings. Demolition of 12A and associated remediation of the concrete slab and soil beneath the building were completed in 2014, and this area of the site is no longer part of the annual inspection requirements. DOE concluded operations in the laboratory in December 2003, and demolition of the building and remediation of underlying contaminated materials occurred in 2006. Groundwater and surface water are being remediated by natural flushing of the alluvial aquifer. DOE will provide stewardship oversight of the decommissioned calibration borehole in perpetuity.

## 1.2 Inspection Requirements

Requirements for the long-term surveillance and maintenance (LTS&M) of the site are specified in the *Long-Term Surveillance and Maintenance Plan for the Grand Junction, Colorado, Site* (DOE 2006).

### **1.3 Institutional Controls**

Institutional controls at the site consist of warning signs around the surface water locations (North Pond, South Pond, and wetlands) to prevent use, an information/warning plaque over the decommissioned borehole that contains radium foil, locks on groundwater monitoring wells, and deed restrictions that prohibit unauthorized excavations that could expose contaminated groundwater under the former DOE facility. Verification of these institutional controls is part of the annual inspection, and the results are included in this report.

### **1.4 Inspection Results**

This report presents the results of the annual DOE Office of Legacy Management (LM) inspection of the Grand Junction, Colorado, Site. S. Woods of Navarro Research and Engineering, Inc. (Navarro), the Legacy Management Support contractor at Grand Junction, conducted the inspection. W. Frazier and P. Robinson of LM, M. Cosby and J. Doebele of the Colorado Department of Public Health and Environment, and S. Campbell and S. Ficklin of Navarro attended the inspection.

The purposes of the annual inspection are to confirm the integrity of visible features at the site, to identify changes in conditions that might affect site protectiveness, and to determine the need, if any, for maintenance, additional inspections, or monitoring.

The annual inspection addresses only those portions of the site with remaining contaminated media that must be monitored and maintained to ensure continued protection of human health and the environment. Features discussed in this report are shown on the attached drawing. Photographs to support specific observations are identified in the text and on the drawing by photograph location (PL) numbers.

#### **1.4.1 Site Surveillance Features**

Figure 1 shows the locations of site surveillance features. Inspection results and recommended maintenance activities associated with site surveillance features are included in the following subsections.

##### **1.4.1.1 Monument**

A National Geodetic Survey monument near the former north gate establishes elevation control for the site (PL-1).

##### **1.4.1.2 Monitoring Wells**

DOE owns eight monitoring wells on the property to monitor the progress of natural flushing of contaminants from the alluvial aquifer. Wells 10-19N, 11-1S, 14-13NA, GJ01-02, and GJ84-04 are flush mounted and protected with standard monitoring well metal caps or manhole covers; well GJ84-04 is also protected by steel bollards. Wells 6-2N, 8-4S, and GJ01-01 (PL-2) have aboveground steel well casing protectors; steel bollards are in place as further protection for wells 6-2N and 8-4S. Following the inspection, monitoring well GJ01-01 was retaped with high visibility tape for improved visibility. No other maintenance needs were identified.

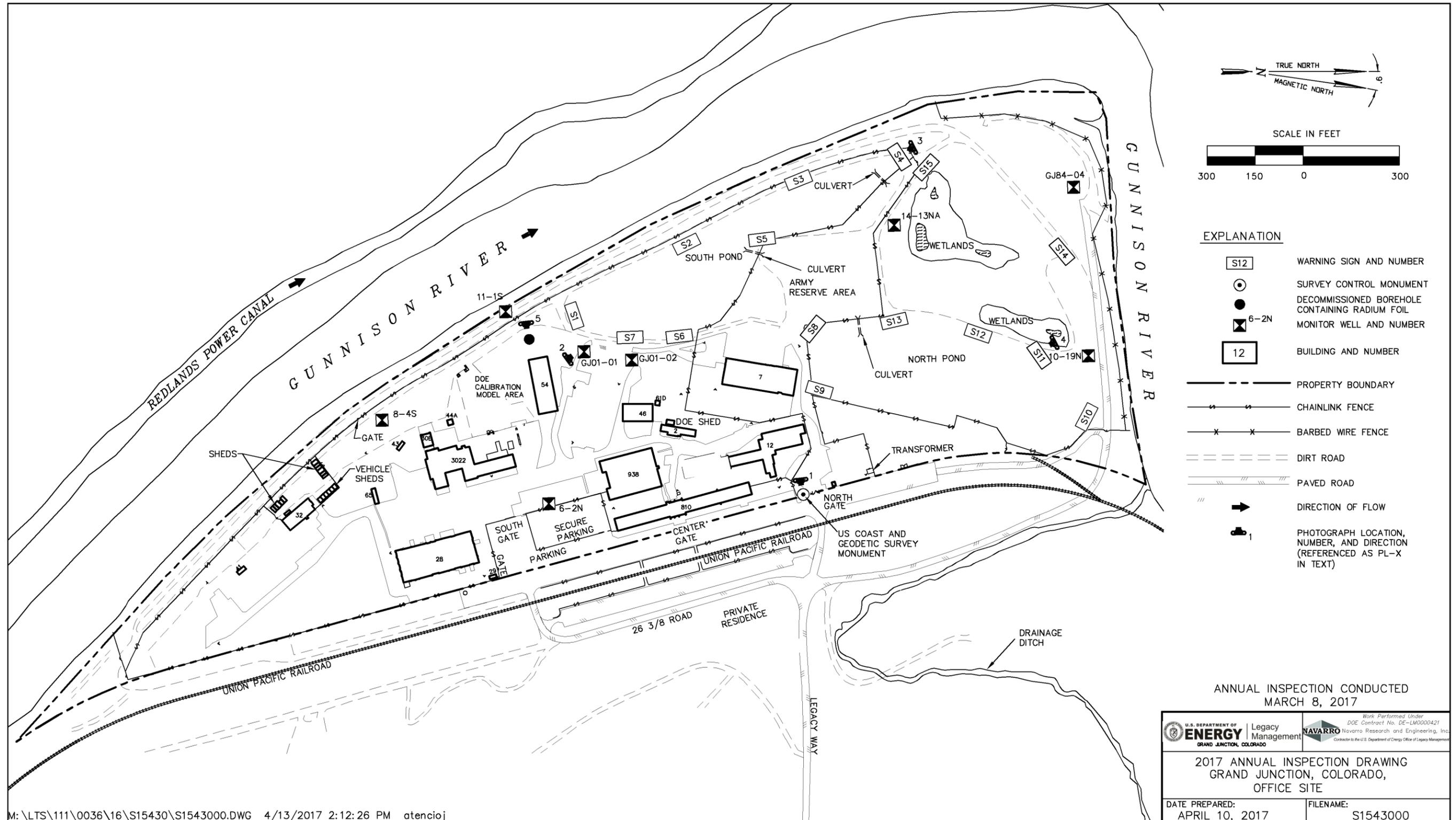


Figure 1. 2017 Annual Inspection Drawing for the Grand Junction Site

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### **1.4.1.3 Warning Signs**

Fifteen warning signs installed on galvanized steel posts are positioned around the surface water areas so the warning will be visible to a person approaching from any direction of reasonable access. All signs were undamaged and legible (PL-3 and PL-4).

### **1.4.1.4 Radium Foil Borehole**

DOE installed a 300-foot-deep cased borehole in the 1980s to calibrate depth measurement systems on borehole geophysical logging trucks. Two strips of radium-226 foil were placed around the casing at depths of 81 feet (29 picocuries per gram [pCi/g]) and 181 feet (3 pCi/g). During calibration, the instruments in the trucks would detect the gamma signal from the radium.

The borehole was decommissioned in place in 2000. DOE perforated the casing above and below each strip of foil and pressure-grouted the annulus with Portland cement to seal the foil in place. The borehole was filled with grout, and a metal plaque was mounted in concrete at ground level over the well. The metal plaque includes the borehole information and an engraved warning (PL-5). No maintenance needs were identified.

## **1.4.2 Inspection Areas**

To ensure a thorough and efficient inspection, the site is divided into two areas referred to as transects: (1) the area within the former DOE property boundary that is addressed in the LTS&M plan, and (2) the outlying area.

Specific site surveillance features, such as survey markers, warning signs, and monitoring wells, were observed within each transect. Each transect was inspected for evidence of erosion, excavation, vandalism, or other phenomenon that might indicate a loss of institutional control or diminished protectiveness.

### **1.4.2.1 Interior Portions of the Site**

This transect includes the surface water areas and other site surveillance features within the former DOE property boundary.

Most of the site surveillance features and surface water features are in areas not easily accessible by the public due to fencing. There were no signs of activity, development, or land use change (e.g., well installations or excavations that could expose groundwater) on the site that might degrade protectiveness.

### **1.4.2.2 Outlying Area**

A private residence has been established on the adjacent property east of the site. There is no alluvial groundwater development at the residence, and there were no signs of activity, development, or land use change in other areas adjacent to the site that might expose contaminated groundwater or impact the natural flushing of the aquifer.

## 1.5 Follow-Up or Contingency Inspections

DOE will conduct follow-up inspections if (1) the annual inspection or other site visit reveals a condition that requires a return to the site to further evaluate the condition or (2) a citizen or outside agency notifies DOE that conditions at or near the site are substantially changed.

No need for a follow-up inspection was identified.

## 1.6 Maintenance and Repairs

Two minor maintenance needs were identified during the inspection:

1. Well GJ01-01 needs to be re-taped with high visibility tape.
2. One test hole associated with recent tracer tests surrounding well GJ01-01 needs to be filled with bentonite.

Maintenance needs identified above have been addressed and resolved.

## 1.7 Environmental Monitoring

In accordance with the Record of Decision for the site, the contaminated groundwater is being remediated through natural flushing of the alluvial aquifer. This process is expected to be complete 50 to 80 years after contaminated soils have been remediated (except for the contamination left under Buildings 12A and 20, site remediation was completed in 2001). Sampling of groundwater at the site monitoring wells and of the surface water at North Pond, South Pond, the wetlands areas, and the Gunnison River occurs annually, usually in February. Monitoring results are included in an annual data validation report. The visible features of the monitoring wells are inspected for their condition and to confirm they are locked.

## 1.8 Corrective Action

No corrective action was required in 2017.

## 1.9 Reference

DOE (U.S. Department of Energy), 2006. *Long-Term Surveillance and Maintenance Plan for the Grand Junction, Colorado, Site*, DOE-LM/GJ1164-2006, June.

## 1.10 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	90	National Geodetic Survey Monument
PL-2	325	Monitoring Well GJ01-01
PL-3	155	South Pond Warning Sign S4
PL-4	155	North Pond Warning Sign S11
PL-5	85	Plaque at Decommissioned Borehole Containing Radium Foil



*PL-1. National Geodetic Survey Monument*



*PL-2. Monitoring Well GJ01-01*



*PL-3. South Pond Warning Sign S4*



*PL-4. North Pond Warning Sign S11*



*PL-5. Plaque at Decommissioned Borehole Containing Radium Foil*