



# 2006 Annual Inspection of the Monticello Mill Tailings (USDOE) and Monticello Radioactively Contaminated Properties Sites

December 2006



U.S. Department  
of Energy

## Office of Legacy Management

# **2006 Annual Inspection of the Monticello Mill Tailings (USDOE) and Monticello Radioactively Contaminated Properties Sites**

## **Summary**

Annual inspections of the U.S. Department of Energy (DOE) Monticello Mill Tailings Site (MMTS) and the Monticello Vicinity Properties (MVP) (the Monticello NPL sites) were conducted September 27-29, 2006. DOE conducts annual inspections of these sites to verify that on-site staff effectively implement daily surveillance and maintenance activities, and that possible deficiencies are promptly recognized and corrected. The inspections focus on (1) the DOE repository and associated support facilities, (2) City-owned and private properties where land and/or water use restrictions have been applied, (3) streets and utility corridors where buried radiologically contaminated soil remains, and (4) record keeping of the operation, maintenance, and surveillance activities conducted throughout the year.

### **Repository Findings**

Generally, the repository is well maintained and managed. Inspection findings include several minor repair or maintenance items that will be attended to by on-site personnel.

In response to recent damage to shrubs by a species of vole, DOE is evaluating the feasibility of installing raptor perches to increase predation, allowing managed grazing of the cover to decrease vole habitat, and planting of live shrubs. Vole-damaged areas will be seeded with desirable seed mixes over fall and winter 2006.

### **City Property Findings**

There was no violation of any land or water use restriction evident during the annual inspection conducted in 2006.

Corrective actions taken in 2005 to mitigate erosion damage (rills and gullies) noted in previous inspections were observed during the 2006 inspection to remain intact and effective. The riparian habitat along Montezuma Creek and the restored wetlands habitat remained healthy, and desirable vegetation is well established on the mill site.

Inspection findings that may require City action are

- An erosional cut where the “Christensen drainage” empties into Dam 2. The riprap in the drainage channel may stabilize future down cutting.
- A deer trail cuts into the diversion ditch that routes runoff into Deer Draw near the southeast corner of the millsite. This cut may eventually deepen and allow runoff water to overflow the ditch and erode the lower slope.
- Sediment from an adjacent feedlot (Blue Mountain Meats) continues to fill the diversion ditch along the north boundary of the millsite.
- Other ditches/drains on the millsite require periodic maintenance.
- Piled riprap within the rocked drainage between Dam 2 and Montezuma Creek should be re-distributed.

- A portion of the rock-armored channel of North Draw at the former haul road crossing has been washed out.
- Several fence posts on property MP-00391 (supplemental standards property) are undermined by surface runoff.

### **Private Property Findings**

There was no violation of any land or water use restriction evident during the annual inspection conducted in 2006. The new residence on a supplemental standards property was constructed in compliance with the land use and water use restrictions.

Contact with the State Engineer's office confirmed that all local water drilling complied with the water use restriction.

### **City Streets and Utility Corridor Findings**

No unplanned or unmonitored excavations were evident during the 2006 annual inspection. There were no significant erosion features on the embankment of Highway 191 at the Montezuma Creek crossing (supplemental standards apply).

### **Records Findings**

Required record keeping by the on-site LM representatives is adequate and up-to-date. Recently completed DOE-LM documents that have replaced the *Monticello Health and Safety Project Plan* and *Quality Assurance Project Plan* were not available at the site. The LM representative will be added to the distribution list to receive current copies and future updates of the replacement documents (*U.S. DOE Office of Legacy Management Project Safety Plan*, and the *Legacy Management CERCLA Sites Quality Assurance Project Plan*). A site-specific section for the Monticello NPL Sites will be developed and included in the current LM CERCLA QAPP. The Information Repository will be updated on a semi-annual basis (April and October) to ensure timely and up-to-date records collection.

## 1.0 Introduction

Intermittently between the early 1940's and 1960, various operators at the mill and ore buying station in Monticello, Utah, processed uranium and vanadium ores. Approximately 2.5 million cubic yards of low-level radioactive mill tailings and contaminated soils remained on the site as a result. Some tailings were used for construction purposes in Monticello and also dispersed to nearby properties by wind and water transport. Liquids in the impounded tailings on the mill site infiltrated to ground water, contaminating the shallow alluvial aquifer.

Two National Priorities List (NPL) sites were established to address the mill-related contamination: the Monticello Mill Tailings Site (MMTS) and the Monticello Vicinity Properties (MVP). The location of the Monticello NPL sites is shown in Figure 1. The U.S. Department of Energy (DOE), in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as implemented through a Federal Facilities Agreement (FFA), completed remediation of soil contamination at the MMTS and MVP in August 1999. In some locations, radiologically contaminated material was left in place in compliance with supplemental standards as codified at Title 40 *Code of Federal Regulations* Part 192.21. These locations are commonly referred to as supplemental standards properties and occur on City and private property and beneath street and utility corridors at some locations in Monticello (see Figure 2). Deletion of the MVP from the NPL became effective February 28, 2000. Many of the properties composing the MMTS have also been deleted; however, MMTS properties that overlie contaminated ground water are not yet eligible for deletion.

### 1.1 Long-Term Maintenance and Surveillance

Contaminated material removed during MMTS and MVP remedial actions was placed in a lined, on-site permanent disposal cell located on DOE property about one mile south of the former mill area (see Figure 1 for repository location). The repository cover was seeded and planted in April and May 2000 after its closure in October 1999. In 2000, DOE transferred approximately 380 acres of property, including the former mill area, to the City of Monticello with certain re-use conditions (see Figure 3 for affected properties and re-use conditions). Restoration of the former mill site to a public park was completed in July 2001, with the exception of seeding, which was completed September 2001. Long-term stewardship of the Monticello NPL sites began under the DOE Long-Term Surveillance and Maintenance Program, October 1, 2001, and continues under the DOE Office of Legacy Management (LM) as of December 2003, to ensure that the remedies remain protective of human health and the environment.

DOE is responsible for all operation and maintenance activities within the boundary of the repository (see Figure 4). The City of Monticello is responsible for maintenance and repair of the properties transferred to the City from DOE (shown in Figure 3). DOE inspects these City properties to ensure that land and ground water use restrictions tied to the land transfer are effective and that the City maintains the properties so that the protectiveness of the DOE remedial actions is not compromised. A draft maintenance plan for the millsite area, prepared by DOE, awaits City approval. DOE inspects other City and private properties to ensure that existing controls to prevent dispersal of supplemental standards material and exposure to contaminated ground water are effective, and that surveillance and monitoring activities are adequate.

## 1.2 Purpose and Scope

Two LM representatives stationed in Monticello perform daily surveillance, maintenance, and operation of the site. DOE conducts annual inspections to independently verify that these activities, as prescribed in *Long-Term Surveillance and Maintenance Plan for the Monticello NPL Sites* (DOE-LM/1288-2006), are effectively implemented throughout the year. The annual inspections confirm the integrity of visible features (fences, monuments, drainage channels, dams, ponds, and buildings), verify that institutional controls are effective, confirm that changing site conditions do not adversely affect site integrity, and ensure that possible deficiencies are promptly recognized and corrected. This report presents the findings of the annual inspection of the MMTS and MVP conducted September 25-27, 2006, and includes recommendations for further action by DOE or the City.

Annual inspections focus on (1) the DOE repository that includes the permanent disposal cell, disposal cell leachate collection/detection system, Pond 4, the temporary storage facility for radiologically contaminated material, and other support features, (2) City-owned and private properties where land and/or water use restrictions have been applied, (3) streets and utility corridors where DOE provides radiological control at City and Utah Department of Transportation (UDOT) excavations, and (4) administrative record keeping for daily operation, maintenance, and surveillance activities conducted by on-site staff.

### 1.2.1 Repository Inspections

Inspection items for the repository are:

- Integrity of constructed features and support facilities (fences, drainage channels, roads).
- Grounds-keeping.
- Integrity of disposal cell cover and health of plant community.
- Operation and maintenance of the disposal cell leachate management system including Pond 4 (engineered pond for leachate retention and solar evaporation).
- Operation and maintenance of the temporary storage facility (TSF).

### 1.2.2 City and Private Property Inspections

Inspection items for these properties include:

- Evidence of soil removal from supplemental standards areas.
- Evidence of overnight camping in specified supplemental standard areas.
- Recreational use of City property transferred from DOE.
- Evidence of alluvial ground water use for human consumption on specified properties.
- Evidence of habitable structures constructed in supplemental standards areas.
- Compliance with a special zoning ordinance affecting City property MP-00211 and private property MS-00176.

In addition to inspecting for compliance with these controls, the former mill site area is inspected for significant erosion and the condition of riparian habitat along Montezuma Creek and at the constructed wetlands (Wetlands 1, 2, and 3; see Figure 5). City properties where supplemental standards have been applied are also inspected to confirm that the City maintains erosion control features and that supplemental standards material has not eroded onto non-supplemental standards properties.

### **1.2.3 City Streets and Utility Corridor Inspections**

Highways, streets, and utility corridors in the city are supplemental standards properties. To manage and control possible dispersal and exposure to these materials, DOE, through the on-site LM representatives, provides

- Radiological control for all street and utility corridor excavations in Monticello.
- Radiological control for all UDOT excavations on Highways 191 and 491 in Monticello.
- Radiological control of eroded soil from the Highway 191 embankment at Montezuma Creek.

Annual inspections confirm the LM site representative reports that the controls are effective, that any excavation then in progress is appropriately monitored, and that any significant erosion at the Highway 191 embankment at Montezuma Creek is appropriately monitored.

### **1.2.4 Administrative & Record Keeping Inspection**

Annual site inspections of the Monticello NPL sites include a review of the record keeping performed by the on-site LM representatives, to ensure proper documentation of routine day-to-day activities. Such documentation includes radiological monitoring results, periodic surveillance results, operational information for the repository leachate management system, management of the TSF, maintenance and repairs. In addition, the information repository at the LM field office may be reviewed to ensure the information is complete and up to date.

### **1.2.5 Site Inspection Team for 2006**

The following personnel from S.M. Stoller, the LM Contractor at the DOE office in Grand Junction, Colorado, conducted the inspection:

Tim Bartlett (Chief Inspector; Site Manager/Hydrogeologist)  
Marilyn Kastens (Assistant Inspector; Soil Scientist)  
Farlie Pearl (Assistant Inspector; Quality Assurance Specialist)

The following support personnel from S.M. Stoller were present during the inspection:

Joe Slade (LM on-site representative, lead)  
Todd Moon (LM on-site representative)

The following personnel observed the inspection and provided oversight:

Art Kleinrath—U.S. Department of Energy  
Paul Mushovic—U.S. Environmental Protection Agency  
Christine Wilson—U.S. Environmental Protection Agency  
David Bird—Utah Department of Environmental Quality

Copies of inspection checklists completed for the various property categories during the inspection are provided in Appendix A. Section 11 provides reproductions of photographs of selected features taken during the inspection. The following report sections summarize inspection findings for individual inspection items of each property category.

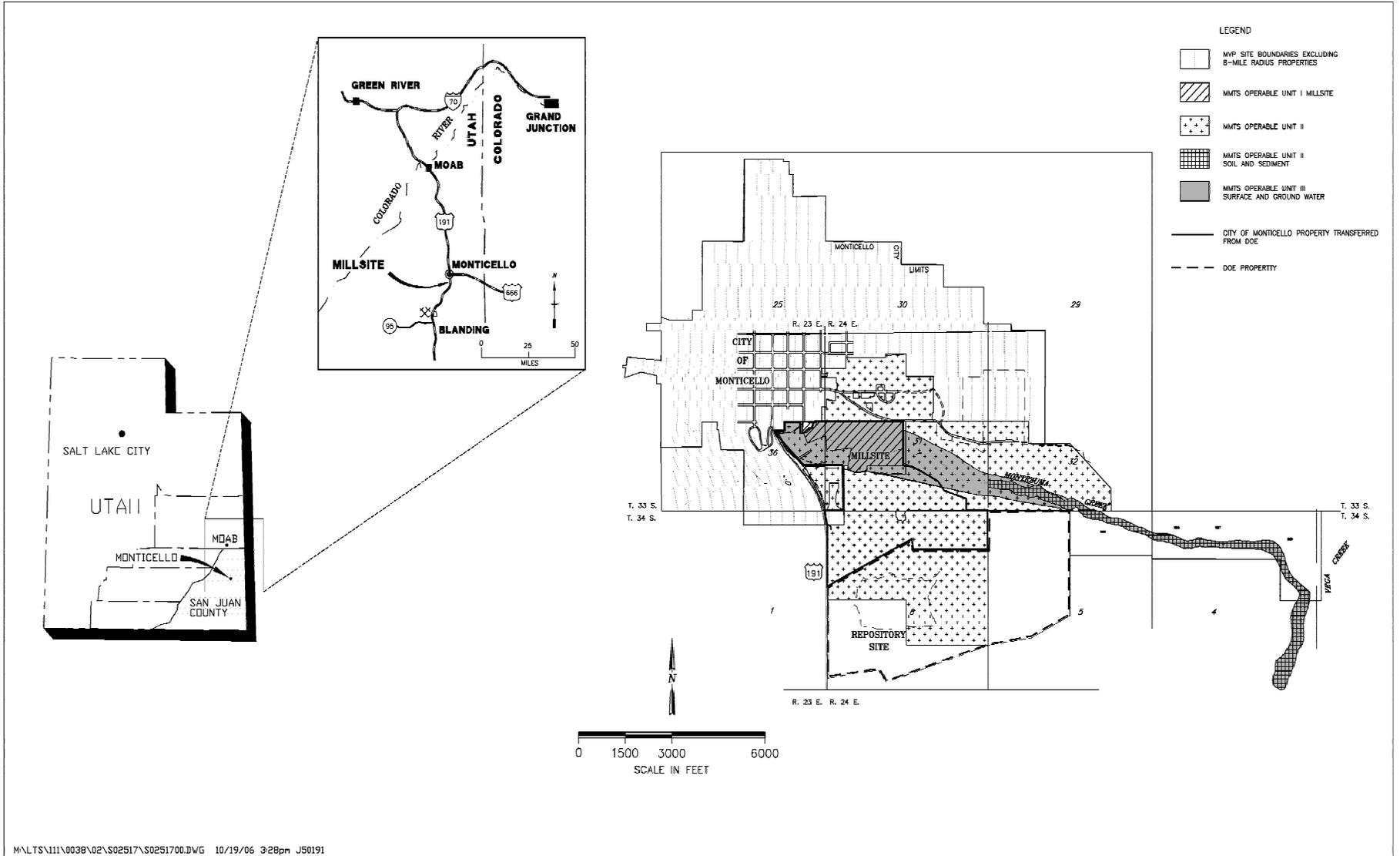


Figure 1. Location and Features of Monticello MMTS and MVP Sites

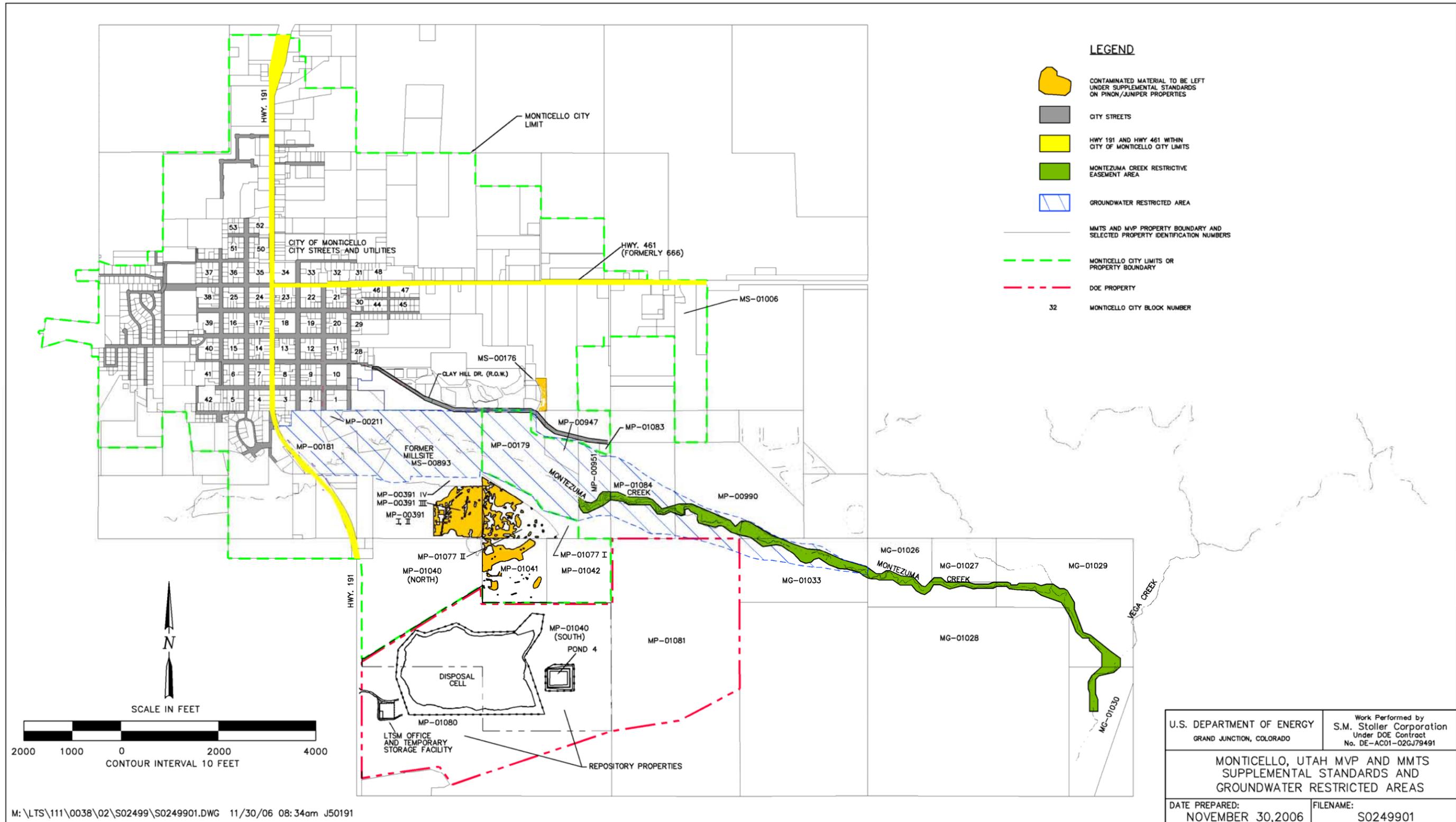


Figure 2. MMTS and MVP Supplemental Standards and Ground Water Restricted Areas

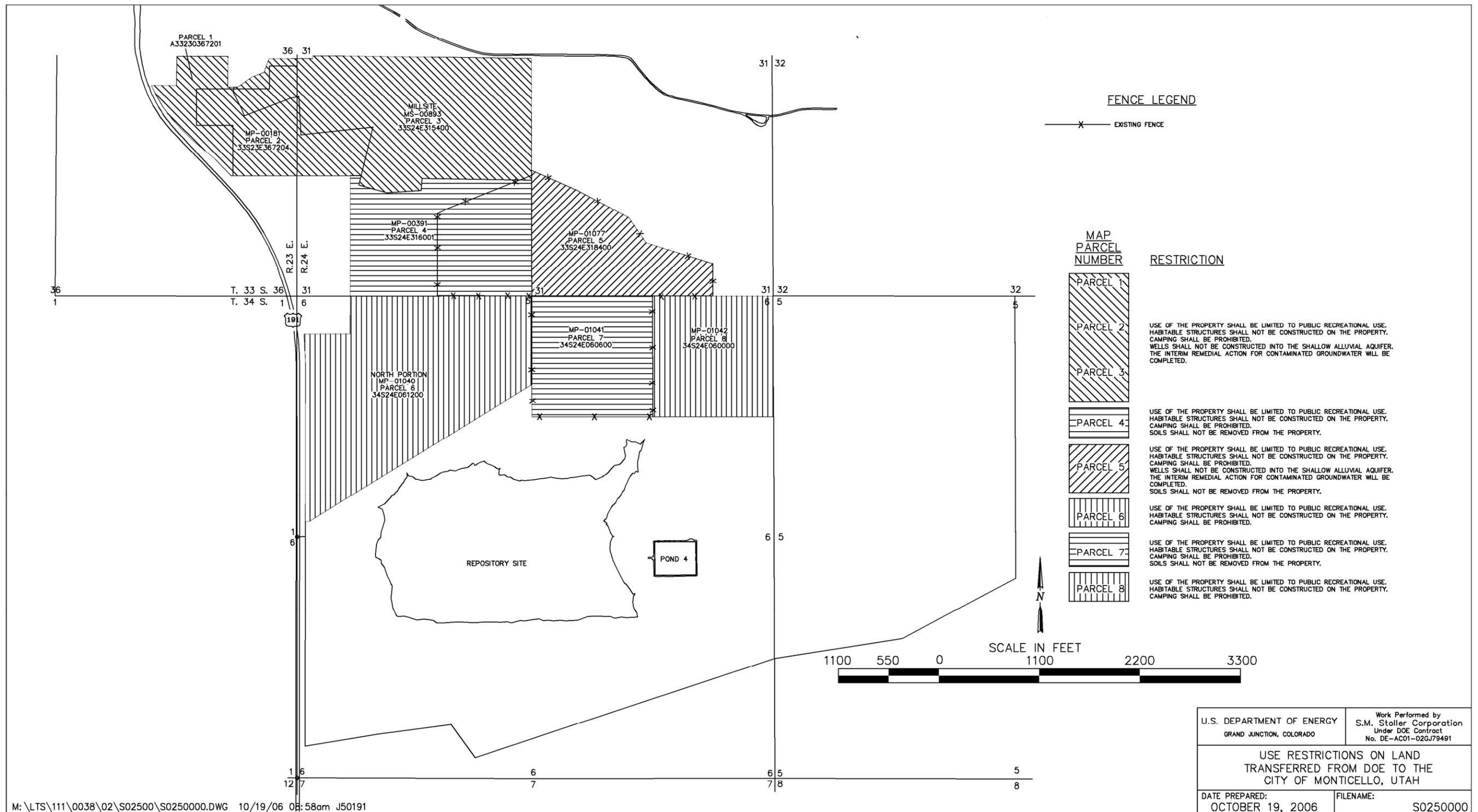


Figure 3. Use Restrictions on Land Transferred from DOE to City of Monticello, Utah

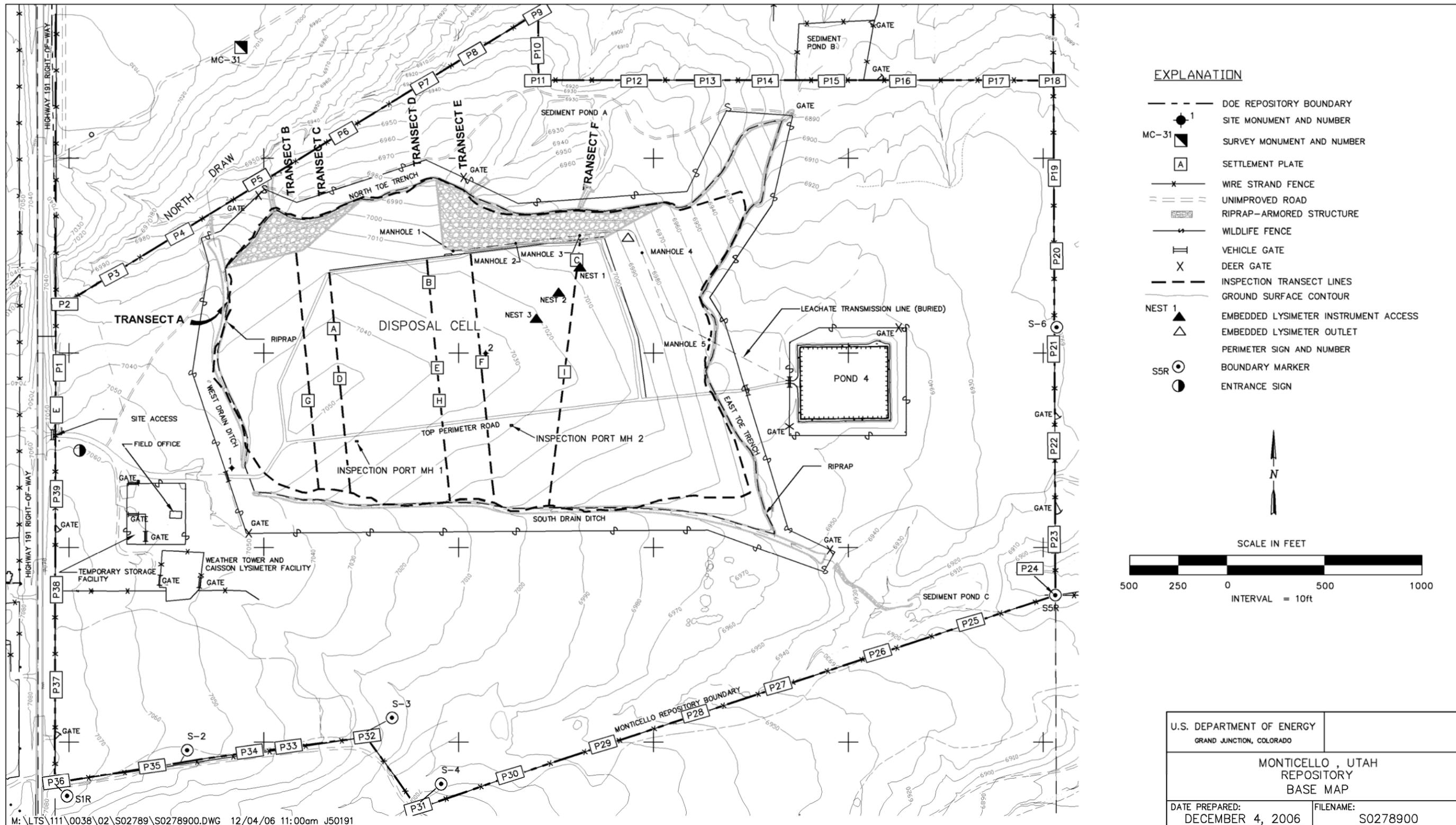


Figure 4. Monticello, Utah Repository Base Map

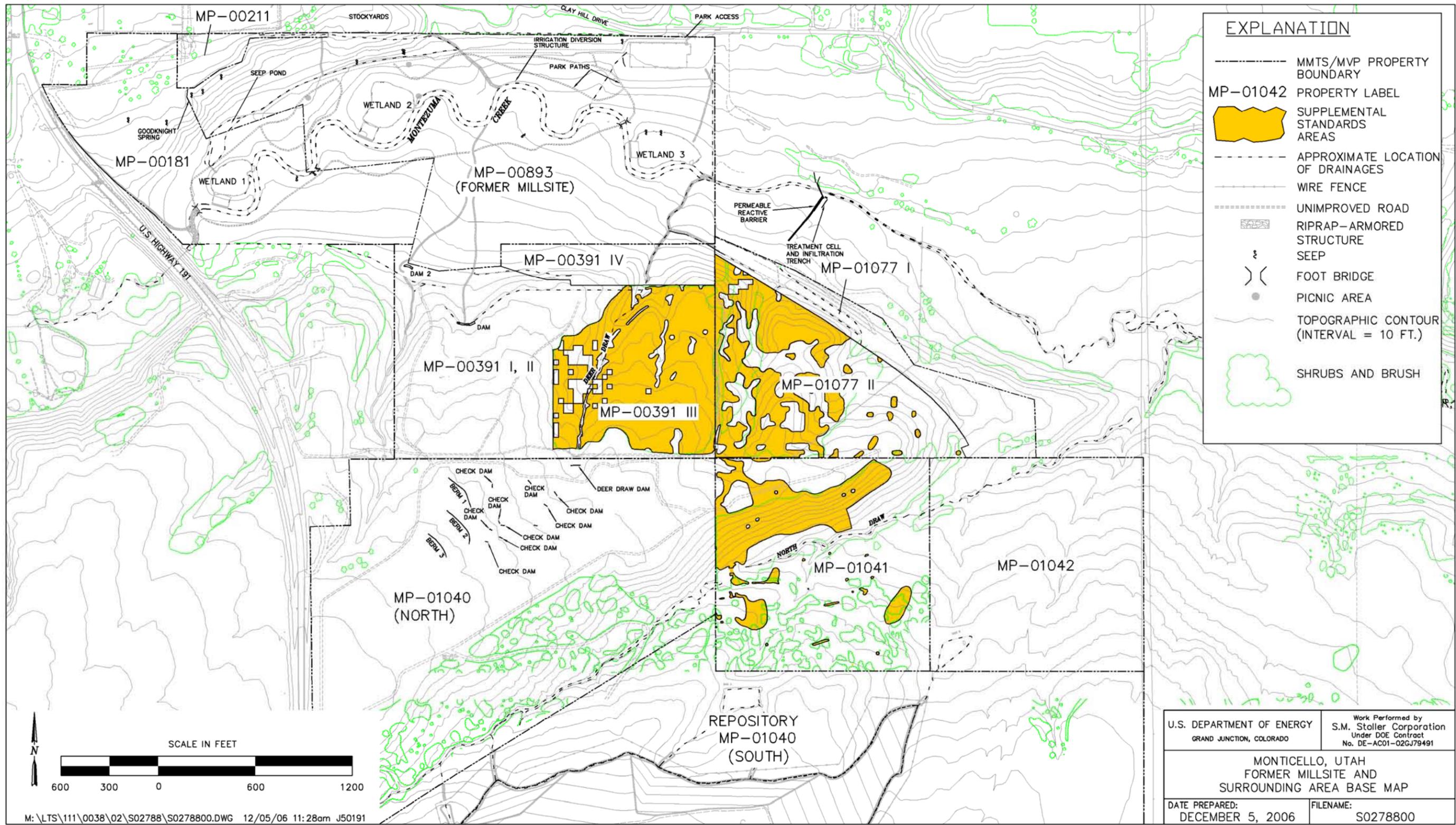


Figure 5. Monticello, Utah Former Millsite and Surrounding Area Base Map

## 2.0 Repository Inspection Results

The repository is on DOE-owned property located approximately one mile south of Monticello, Utah, on U.S. Highway 191. The repository includes the permanent disposal cell and associated leachate management system (including Pond 4), the TSF, various fences for access control, postings, site markers, and the LM field office. The main entrance gate and office is locked at night. Findings of the 2006 annual inspection are summarized in Figure 6 and described in the following sections.

### 2.1 Repository Perimeter Features

#### Perimeter Fence and Gates

A conventional barbed wire stock fence delineates the repository boundary (approximately) and also discourages human trespass and prevents livestock entry to the facility. With the exception of the site entrance gate at Highway 191, gates in the perimeter fence do not have locks. These field gates do not provide access to the disposal cell or the TSF. An interior fence and locked gates restrict access to these features.

The condition of the perimeter fence and gates is acceptable; no section of the fence and no gates required repair. No action other than scheduled surveillance is required.

#### Fence Signage

The LM representative will repair or replace perimeter sign P34.

#### Perimeter Boundary Markers

Marker S-2 was not located.

The LM representative will locate marker during the next monthly surveillance.

#### Erosion/Gullies

The LM representative will monitor the gully between signs E and P1 and at P27. Gully repair may be required if fence integrity becomes threatened.

#### Vegetation

Road travel along outer sections of the south fence is impeded by tumbleweed growth.

The LM representative will remove excessive tumbleweed growth in this area.

#### 2.1.1 Sediment Ponds

Runoff within the repository boundary collects at Sediment Ponds A, B, and C where excess sediment is retained. Each pond has a standpipe with gravel filter at the base to remove sediment while allowing water to pass with only temporary impoundment. Each pond has a rock spillway to control possible overflow.

#### Standpipes, Spillways, Pond Interiors

Shallow standing water was observed in Sediment Ponds A and B owing to a recent period of storms. The standing water level was below the gravel filter at the base of the respective standpipes. There was no evidence of water reaching the spillways and each spillway was intact. The lid on the standpipe in Sediment Pond C had been adjusted from a slightly ajar condition noted in 2005.

### Berms

Gullies were noted on the south side of Sediment Pond A and the southeast side of Sediment Pond B. Baseline photographs of the gullies were taken in 2004. A comparison of a baseline photograph (PL-1) to a 2006 photograph (PL-2) demonstrates that the gullies at Sediment Pond A are stable. A comparison of a baseline photograph (PL-3) to a 2006 photograph (PL-4) demonstrates that the gullies at Sediment Pond B are stable. Subsequent annual inspections will note the condition of these gullies. Berm repair is not needed at this time.

### Outlet Works

Conditions are acceptable at each pond.

The LM representative will remove tumbleweed accumulation in the drainage channel of Sediment Pond B.

### Fencing

The fence surrounding Sediment Pond B (located on property MP-01042-VL), installed to discourage human trespass to the pond, is in working condition.

### South Drain Extension

The 2004 inspection noted that the portion of the south drain outside the inner fence was not effective. At the direction of DOE, the channel was reconfigured during September 2005 into a trapezoidal shape and widened at the top to capture runoff water originating south of the fence. The modification resulted in an acceptable condition as observed in the 2006 inspection.

## **2.2 Repository Interior Features**

### Wildlife Fence and Gates

The chain link fence surrounding the disposal cell is 8-feet high with double gates on the west and east boundaries for vehicle access. Five smaller chain link gates are installed in the corners of the wildlife fence and in the center of the north section of fence to allow entry and exit of wildlife (mule deer). All fences and gates are in working condition, with no evidence of vandalism or damage. Vehicle gates are locked except when the repository is occupied. The wildlife gates were open to allow entry of deer and carnivorous predators. Significant tumbleweed accumulation was noted along the south section of the inner fence (PL-5).

### Drainage Channels

During construction of the disposal cell, drainages along the southern and western edges of the repository were modified and rock armored to prevent deepening of the channels and erosion into the disposal cell. Deterioration of the rock material was noted in the 2001 inspection. Re-armoring with material of greater durability occurred in July 2002. The newly placed rock extends up the sides of the channels to maintain design capacity. At the time of the 2006 annual inspection, the condition of the south and west drainage channels was acceptable.

Erosion rills, generally 2 inches wide and 2 inches deep, but up to 12 inches wide by 6 inches deep are present on the north side of the south drain. The rills have stabilized due to plant growth since 2004. These features do not require action other than continued monitoring.

As noted in the 2001 inspection, the west drain eroded significantly where the slope becomes steeper immediately north of the wildlife fence. Erosion was repaired, and the rock-armored

channel was extended to North Draw, in September 2002. The channel extension has enough capacity and is constructed of adequately sized rocks to accommodate anticipated storm water discharge. At the time of the 2002 inspection, EPA was concerned that a grade change and a vehicle crossing constructed in the drainage channel (see Figure 6) would create hydraulic jumps that could result in channel scouring. It was agreed that no corrective action was required; however, the channel will be monitored to determine if scouring occurs. No scouring was observed during the 2006 inspection.

#### Toe Trenches

Rock-filled trenches were placed along the north and east toes of the disposal cell to prevent headward erosion into the disposal cell. Rock at the surface of both trenches is degrading, sediment has partially filled interstitial spaces of the rock, and vegetation is becoming established. No erosion is occurring near these trenches. Rock of greater durability has been stockpiled on site to overlay the trenches should erosion occur. Currently, there is no need for maintenance of these trenches. The condition of these trenches will be noted in subsequent inspections.

#### Roads

The dirt road bounding the top of the disposal cell cover is in working condition. The road was graded and water bars were installed during the summer of 2005 to control storm water runoff. The road to Pond 4 is in good condition.

#### Site Markers

Two granite site markers identify ownership, historic information, and content of the disposal cell. The markers are located immediately within the access gate to the disposal cell and near the top center of the disposal cell. Both markers are legible and undamaged.

#### Settlement Plates

Nine settlement plates, identified by the letters A through I, are located on the repository. The settlement plates and outer completions are intact and undamaged.

Data from elevation surveys of the settlement plates indicate no evidence of settling. Beginning in July 2006, elevation surveys will be conducted every five years. Settlement plate survey data are provided in Appendix B.

#### Monitoring Wells

There are no monitoring wells within the repository boundaries.

#### Manholes

There are five manholes within the repository boundary. Only Manholes 1 and 3, which enclose equipment for the disposal cell leachate collection and detection system, require routine entry. All manhole surface completions were in working condition. Inspection of manhole interiors is not an annual inspection item.

### **2.3 Disposal Cell Vegetated Cover**

Performance of the repository cover is in part dependent on water removal by managed plant growth. Water that infiltrates the thick, engineered soil layers of the cover during periods of plant dormancy is subsequently removed during the active growing season by evapotranspiration. This

water-balance cycle ultimately limits water infiltration into the underlying tailings. Success criteria for establishing vegetation on the disposal cell cover are outlined in *Methodology for Determining Revegetation Success at the Monticello, Utah, Repository* (DOE, April 2002 [GJO–2002–325–TAR]). The success by which the establishment of desirable plant growth on the repository cover has been achieved is evaluated quantitatively each year in August or September. Results of the latest analysis are presented in *2006 Revegetation Monitoring of the Monticello, Utah, Repository Cover* (DOE, December 2006 [DOE–LM/1386–2006]). The annual vegetation analysis, conducted by technical specialists, provides much greater detail concerning plant growth than is addressed in the annual site inspection. Repository zones for which vegetation success criteria apply are depicted in Figure 7.

### 2.3.1 Background Information

The top of the disposal cell was seeded with native grasses, forbs, and shrubs, and planted with sagebrush seedlings in late April/early May 2000. From 2001 to 2003, the vegetative cover was dominated by weedy species. By 2004 and 2005, plant cover and diversity had improved considerably, although most success criteria had not been met. Three primary concerns existed: (1) the cover continued to be dominated by cheatgrass (*Bromus tectorum*), an annual weedy species; (2) the density of shrubby vegetation was less than 10 percent of the success criterion for Zone A1 and only 25 percent of the success criterion for Zone B; and (3) the relative cover of forbs in Zones A1 and A2 did not meet success criteria and did not appear to be increasing over time. In response to the concerns about cheatgrass cover and shrub density, DOE over-seeded a native seed mix in April and July 2005 in Zone A1 and in the east portion of Zone B. The seed mix was composed of one grass species—bottlebrush squirreltail (*Elymus elymoides*), which is known to compete with cheatgrass—and several shrub species.

By September 2006, the percentage of cheatgrass cover was sharply reduced throughout the site, and the criteria for total desirable plant cover in all four zones were met for the first time. The additional success criteria relating to shrub density and relative cover by forb species have not been attained. Results of the 2006 monitoring will be summarized and compared to success criteria in a separate report that will be submitted to EPA and Utah Department of Environmental Quality (UDEQ). DOE will prepare a monitoring report annually until success criteria are met.

In summer 2006, an EPA-funded field study conducted by DOE contractor staff, evaluated likely causes of poor shrub establishment on the disposal cell. Vegetation, soil, and wildlife parameters on the cover and in nearby analog areas were compared. Results of this study, summarized in *Factors Affecting Shrub Establishment on the Monticello, Utah Disposal Cell Cover* (DOE, December 2006 [DOE–LM/1387–2006]) indicate that the more likely contributors to poor shrub establishment include lack of soil structure, factors affecting germination of rabbitbrush seed, and 2006 wildlife impacts.

### 2.3.2 2006 Inspection Results

Inspectors walked numerous traverses of the disposal cell cover during the 2006 annual inspection. Overall, the top of the disposal cell is in good condition. No settling, slumping, or significant erosion was observed. As in previous years, small erosion rills were observed adjacent to the gravel road on the north side of the repository (between Zones A1 and B). The rills were formed as a result of storm water running off the compacted surface of the road. Runoff water also flowed beneath the geofabric underlying the road surface on the north side of

the cell and washed out the fine-grained material. The road is now “spongy” in several locations, as the geofabric spans the underlying cobbles. No maintenance action is required for any of these features; however, subsequent inspections will note these conditions.

Numerous, small burrows and runways formed by voles were observed at many locations during the 2006 inspection. The vole population on the disposal cover increased dramatically in recent years, especially 2006, and voles are believed to have damaged many of the shrubs on the cell, thus contributing to the observed recent decline in shrub health. A summary of vole damage is included in *Factors Affecting Shrub Establishment on the Monticello, Utah Disposal Cell Cover*. In addition, shrub damage by voles was documented extensively in a separate report, *2006 Vole Damage Assessment of the Monticello, Utah Repository Cover* (DOE, December 2006 [DOE–LM/1385–2006]). DOE will monitor vole populations on the cover and develop possible response actions. Ground squirrels and burrows were observed in the area of the rock-armored slopes on the north side of the repository.

In Zone B, where 6 inches of soil was placed directly over riprap during cell construction, inspectors have noted and continue to note the presence of small holes in the surface where soil has “washed” through the underlying rock. These features do not present a problem but will continue to be monitored.

The five-to-one and ten-to-one side slopes of the repository are covered with rock armor. The side slopes are in excellent condition. No evidence of rock movement or degradation, settling, slumping, or erosion was observed. In areas adjacent to Zones A1 and A2, topsoil has eroded into the riprap interstices, and herbaceous and woody plants are establishing in these areas. Neither of these natural processes is a concern.

Spotty growth of Canada thistle noted north of Pond 4 toward perimeter signs P15 and P16 will be eradicated using a qualified subcontractor in Summer 2007.

## **2.4 Repository Telemetry System**

At the time of the 2006 inspection, radio transmission of monitoring data from the leachate management systems to the on-site computer system was not functional. This is a recurrent problem owing to the sensitivity of the electronic components to lightning. Damage to essential wiring by rodents is an additional suspected cause of system failure. All other components of the telemetry system were working properly at inspection time. The water level sensor in at least one of the disposal cell leak detection systems (LDS 2) has in the past provided false readings. Because of these problems, operation of the leachate management system relies on manual methods of pump operation and data recording. The LM representative indicated that all pumps and flow meters were in working order at the time. The LM representative also stated that currently no water is pumped from the disposal cell leak detection system and that approximately 12,000 gallons of water is pumped per week to Pond 4 from the disposal cell leachate detection and recovery system (LCRS 1 and LCRS 2, combined). Records of water production and maintenance on the system are maintained in an on-site computer. Leachate production rates are reported quarterly to DOE, EPA, and UDEQ.

## 2.5 Pond 4

Pond 4 is a lined solar evaporation pond that collects water pumped from the disposal cell leachate management system. Pond 4 is similarly equipped with a leachate management system. An 8-foot chain link fence surrounds the pond. Radiological contamination signs and a rope barrier delineate the crest of the pond within the security fence. Access to the pond is through a vehicle gate on the west side of the fence. One-way deer gates located at the northeast and southwest corners of the fence were replaced with chain link fence gates in 2005. These gates are locked shut. The vehicle gate is kept locked except when personnel are working at Pond 4.

### Access Road, Gate, Fence, Entrance and Perimeter Signs

Access road, gates, and fence are in working condition.

Warning signs on the perimeter of the facility are easily visible and adequately spaced.

The rope barrier was tight and warning signs were in place.

### Perimeter Berm

The entire interior of Pond 4 is visible from any location on the perimeter berm. The inspection team walked the entire crest of the berm. No holes or evidence of holes in the pond liner were observed. Several inches of standing water (from precipitation) covered about one-half of the floor area. Thin deposits of windblown sand and silt cover small areas of the pond floor.

Tamarisk growth in these deposits requires periodic eradication. This was last accomplished in 2005 by cutting the trunk and applying herbicide to the stump. No significant tamarisk was observed growing in Pond 4 during the 2006 inspection. No evidence of slumping or erosion of the berm was observed. The vegetative cover on the out slopes of the pond is well established.

Tripping hazards (rope, polypropylene pipes) noted on the crest of the berm during the 2005 inspection were absent during the 2006 inspection.

### Liner Anchors

Sandbags suspended from ropes anchored into the berm were installed during construction of Pond 4 to prevent billowing. Sandbags have since ruptured and ropes have deteriorated due constant exposure to the elements. As replacements, 14 gravel-filled polypropylene pipes, laid vertically and anchored to the berm with ropes, have been installed as of June 2006 (four pipes each on the north and south sides, three pipes each on the east and west sides). This method has proven effective since started in 2003, and will be implemented on an as-needed basis.

### Lifesaving Stations

Four lifesaving stations are positioned around the pond. These stations contain buoys, life jackets, and life ropes. Each enclosure and all contents were in working condition. However, faded identification signs on the exterior of the lifesaving stations require re-painting or replacement. Wasps were found inside the lifesaving station cabinets in previous inspections, but none were observed this year due to routine insecticide spraying. Each cabinet contained mouse poison. An LM on-site representative should routinely disinfect the cabinets in the event that the poison is not completely effective in controlling mouse infestation.

### Electrical Panel

The enclosure for the Pond 4 leachate management system controls is in working condition. The doors covering the panel were closed at the time of the inspection. The panel interior was free of debris and evidence of water damage, indicating that the enclosure is weatherproof.

## **2.6 Temporary Storage Facility (TSF)**

The TSF is a gravel-surfaced area enclosed by 8-foot high chain link fence. Within the enclosure is the three-sided concrete bin for temporary storage of radiologically contaminated material transferred from supplemental standards areas, steel drums and secondary containment vessels for temporary storage of mixed or suspected mixed waste, and a small shed for supplies.

The condition of all components of the TSF is acceptable. The movable bin cover, constructed in 2003, is in good working order. At the time of the inspection, the TSF held about 50 cubic yards of radiologically contaminated soil and debris, equivalent to 50 percent of bin capacity. Current operating procedures recommend a maximum operating capacity of 75 cubic yards of materials stored at the TSF. Preparations for a shipment in spring 2007 will be initiated.

A review of the Temporary Storage Facility Record Book verified compliance with LM procedures for operating the TSF. Training records for the LM representatives, and City employees who are required to access the TSF, were available and training was up to date. No compliance or maintenance issues with the TSF were identified during the 2006 inspection.

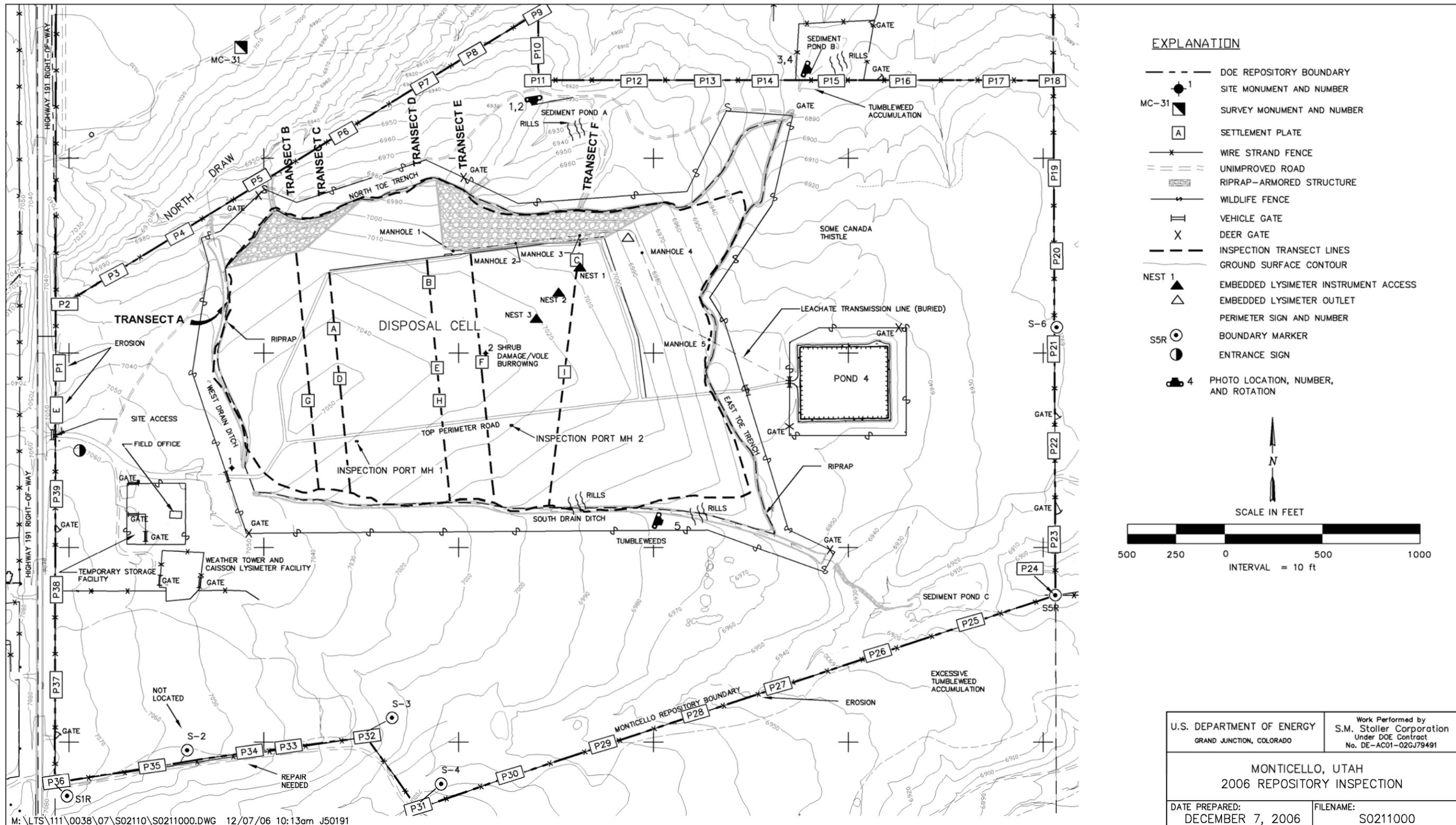
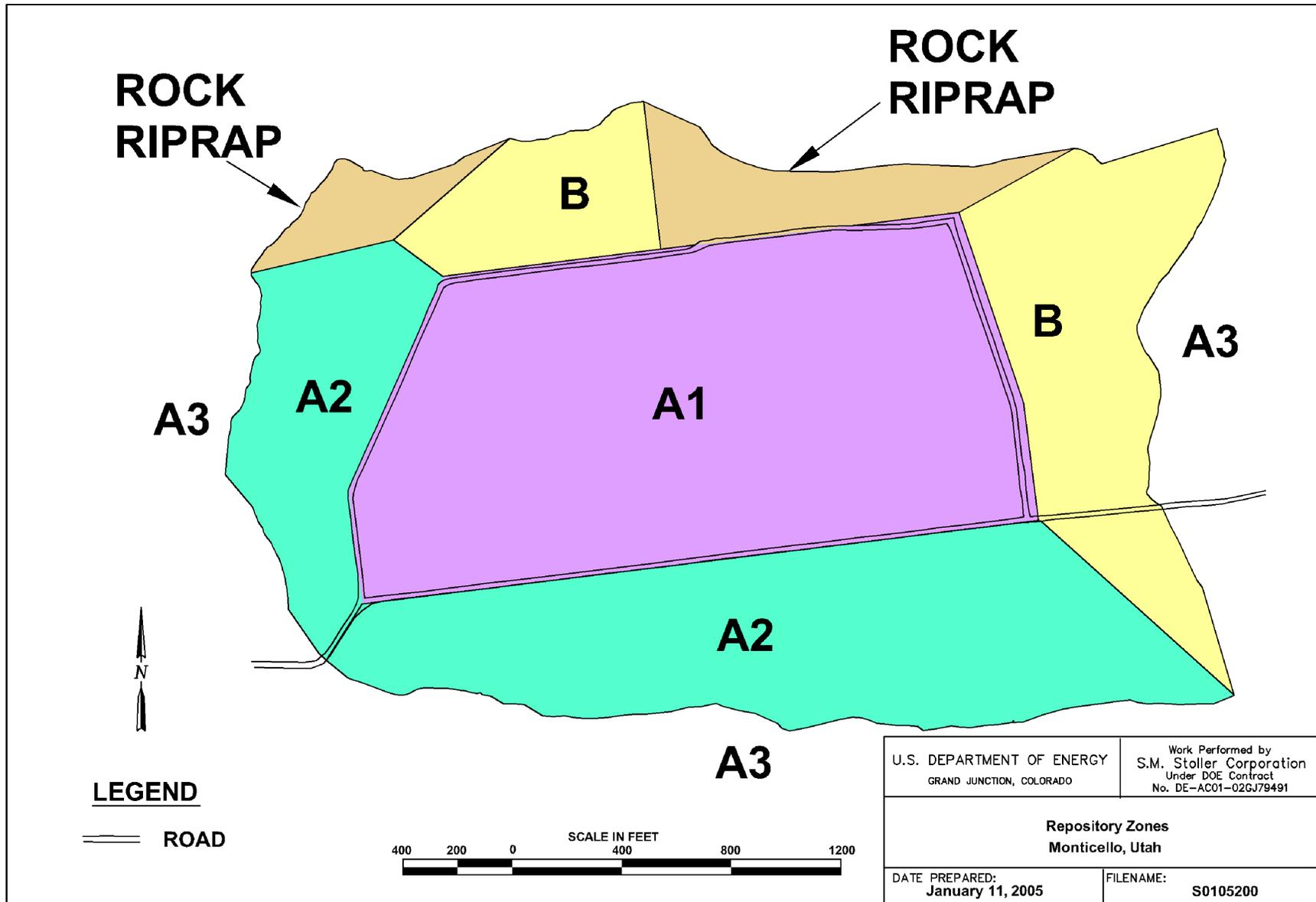


Figure 6. Inspection Findings: Monticello Repository



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Figure 7. Repository Vegetation Zones

## **3.0 City-Owned Property Inspection Results**

In addition to City-owned property MP-00211, inspection of City-owned properties includes those parcels transferred to the City in 2000. Inspection findings are described in the following subsections and are summarized for the respective properties in Figure 8.

### **3.1 Soil Removal or Erosion from Supplemental Standards Properties**

Supplemental standards for soil remediation have been applied to portions of properties MP-00391-VL, MP-01077-VL, MP-01041-VL (also known as “piñon/juniper” supplemental standards properties). DOE inspects these properties to confirm that supplemental standards material is not dispersed into remediated areas and that the City adequately maintains erosion control features.

#### **3.1.1 Soil Removal**

No evidence of soil removal by human activity was noted on any of these properties during the 2006 inspection.

#### **3.1.2 Boundary Fences**

The supplemental standards areas of these properties are enclosed by four-strand wire fencing to broadly delineate the areas of contamination and to discourage disturbance to soil and vegetation by human activity.

Undercutting of several fence posts by precipitation runoff was observed near the mouth of Deer Draw. All remaining fencing that encloses the supplemental standards areas of these properties was intact and functional during the 2006 inspection.

#### **3.1.3 Erosion Controls**

##### MP-01077-VL

A drainage ditch runs along the northwest edge of MP-01077 Phase I (former haul road) to intercept and divert runoff to a shallow catch basin. The ditch and basin are intended to prevent erosion and sedimentation of adjacent property MP-01079-VL to the north (K. Somerville property). In 2006, a runoff event (or events) over-filled and breached the basin (PL-6), depositing 6 to 12 inches of sediment in the basin. The sediment should be removed from this basin and the breach repaired. Maintenance of this property is the responsibility of the City.

Also on this property, a rock-armored drainage ditch, originally constructed adjacent to the former haul road, was washed out during one or more 2006 runoff events (PL-7). Sediment and rock were deposited in the North Draw drainage (where it formerly flowed beneath the haul road). This ditch needs to be maintained, or the overflow ditch on the pond upstream of the ditch needs to be rerouted so that runoff waters reenter North Draw before entering the washed-out ditch. Maintenance of this property is the responsibility of the City.

In 2005, straw bales were placed to control sediment movement in gullied areas along the former haul road. These controls were functioning as designed and were in excellent condition during the 2006 inspection (PL-8).

#### MP-01040 (north portion)-VL

The northern portion of this property is the former borrow area for topsoil used in site reconstruction activities. The site was re-graded and seeded in fall 2001. Numerous erosion issues were identified on the property during the 2002, 2003, and 2004 inspections. In response, DOE repaired erosion gullies and installed multiple erosion control structures (check dams and catch basins) in August and September 2003, and September 2005. Erosion control at these locations is designed to prevent the transport of supplemental standards material from properties MP-00391-VL, MP-01077-VL (Phase II), and to control run off, thereby preventing erosion of portions of the millsite. At the time of the 2006 inspection, the property was well vegetated, and no new erosion issues were noted.

## **3.2 Land Use**

City properties transferred from DOE are inspected to confirm certain land use conditions of the transfer are being met.

### **3.2.1 Construction of Habitable Structures**

Habitable structures are not allowed on properties MP-00391-VL, MP-01077-VL, MP-01040-VL (north), MP-01041-VL, MP-01042-VL, MS-00893-OT (former mill site), and MP-00181-OT.

No evidence of a habitable structure or construction activity was observed at these properties during the 2006 inspection.

### **3.2.2 Recreational Use**

City properties MP-00391-VL, MP-01077-VL, MP-01040-VL (north), MP-01041-VL, MP-01042-VL, MS-00893-OT (former mill site), and MP-00181-OT are to remain open for public day-use recreation only (recreational use of properties MS-00893-OT (former mill site) and adjacent MP-00181-OT are addressed in Section 3.3). Overnight camping is not permitted.

Fencing along the west side of the supplemental standards area of property MP-00391-VL (MP-00391 Phase III) is posted "No Hunting." No other evidence of access restriction was observed. Evidence of camping was not observed.

The City has stockpiled numerous scrap culverts in a northern area of property MP-01040-VL (north).

### **3.2.3 Shallow Ground Water Use**

Use of ground water from the shallow aquifer for domestic use is prohibited on City-owned properties MS-00893-OT (former mill site), MP-00181-OT, and MP-01077-VL.

No evidence of ground water use or water well drilling on these properties was observed during the 2006 annual inspection.

### **3.3 Former Millsite Inspection**

Properties MS-00893-OT and MP-00181-OT comprise the area generally known as the former millsite. These properties were remediated by DOE and later transferred to the City in 2000. The City then restored the millsite as a public park in accordance with an approved design. Seeding with native grasses, forbs, and shrubs was completed in fall 2001, resulting in a well-established plant community at present. Site restoration also included the construction of three backwater wetlands along Montezuma Creek, re-creating a meandering creek channel, and planting the creek channel with willows, to promote wetlands and riparian habitat for wildlife. DOE was responsible for ensuring establishment of the wetland and riparian areas. These areas were considered successfully restored in 2004. Walking paths and footbridges were installed to encourage public use.

During 2002, 2003, and 2004 inspections, EPA and DOE identified significant erosion in several areas of the former millsite. By October 2005, DOE completed all reparations and erosion controls, including numerous items of City responsibility. The work occurred both on the millsite and in peripheral drainages to the millsite and Montezuma Creek. The City of Monticello is now responsible for maintenance and repair, as needed, of the former millsite.

#### **3.3.1 Erosion and Erosion Control**

Inspectors noted that most of the erosion control structures constructed by DOE as of 2005 were intact and functioning as designed. Straw bales placed on the steep side slopes above Goodknight Spring were in excellent condition and had successfully rerouted runoff water to stable areas. Revegetation of the reconstructed rock-armored drainage ditches throughout the millsite property has been successful, as abundant grasses have established along the channels (PL-9 and PL-10).

The following maintenance or potential repair items were noted during the 2006 inspection:

- A small cut has formed where the north trending drainage empties into Dam 2 (PL-11), located immediately south of the former millsite. The riprap in the drainage channel will likely control future down cutting. However, the City may need to take action if the down cutting is not naturally controlled.
- A deer trail has formed a low spot in the side of a newly constructed diversion ditch that routes runoff into Deer Draw near the southeast portion of millsite on property MP-00391-Phase IV (PL-12). Potential exists for runoff water to overflow the ditch at this point and erode the side slope below it.
- Sediment from the stockyard north of the millsite continues to fill the reconstructed diversion ditch along the north boundary of the millsite (see Figure 8). Keeping the ditch clean is an on-going maintenance item that is the responsibility of the City.
- Other ditches on the millsite will need regular maintenance. Riprap within the rocked drainage between Dam 2 and Montezuma Creek has moved downstream and been

deposited in a small pile in the middle of the drainage (PL-10). The uneven distribution of rock increases the potential for “hydraulic jumps” in the channel during runoff events and may lead to increased erosion.

### **3.3.2 Constructed Wetlands & Montezuma Creek**

The banks of the creek channel showed no signs of excessive erosion, scouring, or re-channeling. In one area between Wetland 2 and Wetland 3, the creek has eroded into the shale outcrop against which the creek flows. In that same general area, the bedrock outcrop has been scoured where overland flow from precipitation collects and plunges off the outcrop to Montezuma Creek. Neither condition is of immediate concern.

Willow growth (desired) is well established along the banks of Montezuma Creek. Cattails, rushes, and sedges are the dominant plants in the constructed wetlands (desired). Several tamarisk plants were observed in and surrounding the wetlands area and will be eradicated. Open, flowing water was present in Wetland 1 and 2. No open water was present at Wetland 3 (very dense cattails) and outflow was minimal or none. The standing water (up to about 10 inches deep) in the wetland appeared stagnant.

During the 2005 annual inspection, DOE, EPA, and UDEQ determined that a recent accumulation of silt blocking the outflow from Wetland 3 should be removed. The silt had accumulated in a ponded area behind a rockwork creek crossing just downstream of the wetland outlet. The rock dam and two associated 6-inch culverts were removed in June 2005. To restore the water level in Wetland 3 to the design elevation, the silt deposit was removed in September 2005. The spoils from that activity remain piled at the location and should be moved and /or smoothed to restore a more desirable grade.

No new damage by humans to the wetlands or creek was noted during the 2006 inspection.

### **3.3.3 Restored Vegetation**

Inspectors noted that vegetation throughout the property was robust, healthy, and composed largely of desirable species at the time of the 2006 inspection.

### **3.3.4 Public Access/Use**

A chain link fence isolates an area of the property that apparently is used by the City as a scrap yard and excavation spoils dump. This area, in the northeast corner of the property (formerly the staging area for millsite remedial actions), is at the immediate entrance to the property. The public access sign (required under the National Park Service Land-to-Parks program) is not well maintained for easy visibility.

Inspectors noted little evidence of public use of the restored millsite. The walking path through the millsite property is eroded in places and needs to be recovered with gravel; in other areas, drainage features need to be properly installed, or the path needs to be relocated. Footbridges across Montezuma Creek are in workable condition. Picnic tables have yet to be installed at the designated locations.

### **3.4 City Property MP-00211-VL**

Property MP-00211-VL is City property adjoining the northern boundary of the former millsite. This property is not a supplemental standards property; however, in one area, uranium in soil exceeds the EPA Region III standard for residential use (uranium concentration  $\geq 230$  mg/kg). Monticello Zoning Ordinance 2003-2 was designated for this property to prevent construction of a habitable structure where uranium exceeds this standard. The ordinance designated the property to be within Overlay Zone OL-1 and requires DOE to conduct a radiological survey of any proposed footprint of a habitable structure and to notify the City of the results. If uranium concentrations do not exceed the standard, and the radium-226 standard is also achieved, a building permit may be issued.

City property MP-00211-VL was inspected for excavations or evidence of planned construction activities. No such evidence was noted during the 2006 inspection.

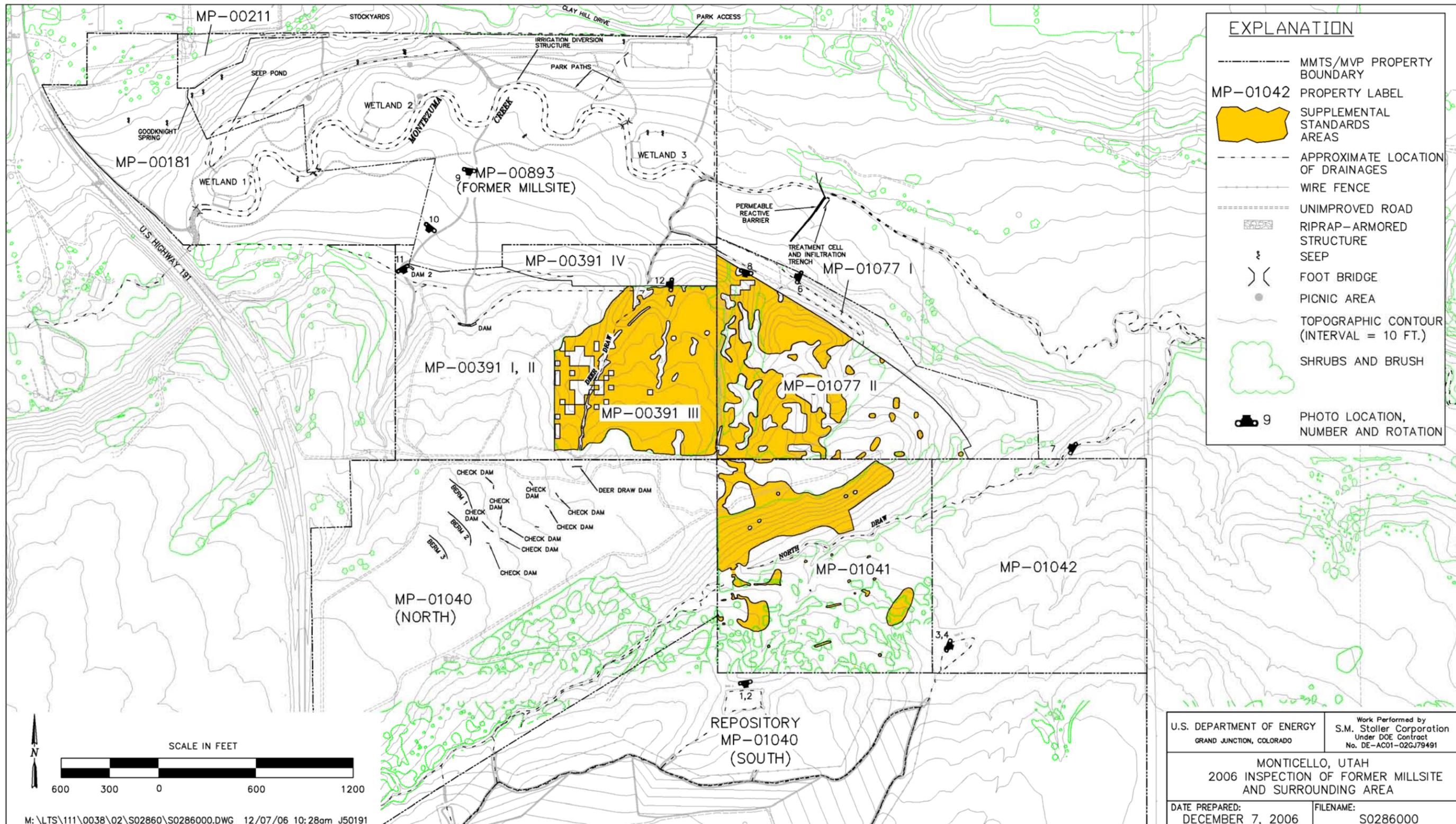


Figure 8. Inspection Findings: City-owned Properties

## **4.0 City Streets and Utilities Inspections**

Contamination soil remains in some places beneath streets and utility corridors. Supplemental standards have been applied to these areas. Known contamination is identified on radiological as-built drawings that are maintained by the on-site LM representatives at the LM Monticello field office. The LM on-site representative monitors all excavations of Monticello city streets and utilities for radiologically contaminated materials. If encountered, this material is transported to the TSF. Contamination remaining in the bottom and sides of excavations is not removed. Radiological as-built drawings of the streets and utility corridors are updated manually as new scanning results are obtained. The manually updated maps are updated electronically each year, most recently being completed in April 2006.

The manual updates were determined to be current and acceptable in content during the annual inspection. Throughout the course of the two-day inspection, city streets were inspected at random for un-monitored or un-planned excavations. None were identified. There were no on-going excavations or paving operations being conducted by the City at the time of the inspection.

### **4.1 Highways 191 and 491**

Contamination in soil remains in place at some locations within the Highways 191 and 491 rights-of-way, including the embankment of Highway 191 across Montezuma Creek. Supplemental standards have been applied to these areas. Areas of known contamination are identified on drawings that are maintained by the on-site LM representatives. All excavations of Highways 191 and 491 are monitored by the LM representative for radiologically contaminated material. Utah Department of Transportation (UDOT) has the option of returning any contaminated material to the excavation as backfill or having City workers, under direction of the on-site LM representative, haul the material to the TSF.

During the 2006 inspection, the chief inspector drove along Highway 491 from its intersection with Highway 191 eastward for 1.8 miles. This section of the highway comprises the entire length of Highway 491 to which supplemental standards were applied. There was no evidence of current or recent excavations.

The chief inspector also drove along Highway 191 from mile marker 71 to mile marker 73. This section of the highway comprises the entire length of Highway 191 to which supplemental standards were applied. There was no evidence of current or recent excavations.

## **5.0 Private Property MS-00176-VL**

Property MS-00176-VL is the only MVP private property to which supplemental standards have been applied. This property is inspected for evidence of erosion, soil removal, and construction of habitable structures. There was no evidence of either of these conditions during the 2006 inspection. Monitoring for evidence of soil removal or erosion of supplemental standards material is routinely conducted as a component of the Long-Term Surveillance and Maintenance (LTS&M) Plan.

A special zoning district for this property has been implemented by the City of Monticello and formalized with a zoning map overlay to ensure that habitable structures are not built on contaminated material. The property deed has been annotated to this effect. The LM on-site representative confirmed that ownership of MS-00176-VL has changed since the 2005 inspection and that the new owner (S. Randall) is aware of the land use restriction and has no intention of constructing a habitable structure on the property.

## 6.0 Montezuma Creek Restrictive Easement Properties

MMTS privately owned properties where supplemental standards have been applied are identified as MP-00951-VL, MP-00990-CS, MP-01084-VL, MG-01026-VL, MG-01027-VL, MG-01029-VL, MG-01030-VL, and MG-01033-VL. This group of properties is commonly referred to as OU II Soil and Sediment Properties. Portions of these properties are supplemental standards areas. Restrictive easements are in place to prohibit soil removal from or construction of habitable structures within the supplemental standards areas, which typically are in the floodplain within 50 to 100 feet of Montezuma Creek. The soil and sediment properties are inspected for evidence of erosion, soil removal, and construction of habitable structures.

With the exception of MP-01084-VL, there was no evidence of erosion or soil removal from the restricted areas of these properties. In 2002, the owner of property MP-01084-VL, which is used as a domestic elk ranch, breached and began to modify a small stock pond. In 2004, EPA, Utah Division of Natural Resources, and the property owner (B. Bowring) discussed the condition of the yet uncompleted pond. During the 2005 annual inspection, the property owner indicated to EPA of his intent to obtain a stream alteration permit and begin the process of legally completing the pond. This work is within the restricted area. The property owner is aware of and in cooperation with the restriction. The stream alteration was not completed at the time of the 2006 inspection. Following the 2006 inspection, EPA and UDEQ contacted D. Rasmussen (State Engineer's Office, Stream Alterations department) to inform of the status of the work. Through this office, the State will provide the landowner with specific instructions to complete the project, and will confirm the final result. No actions by the State Engineer's Office are otherwise anticipated at this time.

Since the 2005 inspection, a new residence has been built on property MP-00990-CS (L. Adams, landowner). The residence is not within the supplemental standards area but is within the GWRA (see below). In spring, LM representatives assisted Mr. Adams in delineating the restricted area of this property. Mr. Adams desires to cultivate a portion of the property that is in the restricted area. Cultivation is permitted in the restricted area so long as the soil is not moved outside of the area. Construction of the residence and current cultivation practices by Mr. Adams are compliant with the land use restriction.

## 7.0 Ground Water Restricted Area

Domestic use of ground water from the alluvial aquifer is prohibited within the designated ground water restricted area (GWRA), an institutional control for OU III that is administered by the State Engineer's Office. The GWRA is inspected during the annual inspection to confirm that no new water wells for domestic use have been installed into the alluvial aquifer. The LM on-site representative inspects the GWRA in April each year. The GWRA is shown in Figure 2. The State Engineer's Office is also contacted as part of the annual inspection to confirm that the GWRA policy and process remains in effect.

In the past year, the LM on-site representative confirmed that the new residence on property MP-00990-CS is supplied with municipal water for domestic use through a new water line. The location of the waterline was observed during the site inspection, at which time there was no evidence of a water supply well in the area.

A rotary drill rig was observed on a private property in a residential area during the 2006 inspection. The property location is clearly outside of the GWRA and in bedrock terrain (topographically above the valley alluvial fill). The location of the water well under construction, with respect to the GWRA, was discussed between the LM on-site representative and the well driller.

In October 2006 (after the inspection), the LM on-site representative contacted the Monticello Site Manager in Grand Junction to inform that Mr. L. Adams (property owner) had received a permit to drill a well on property MP-01083-MR. The GWRA includes a portion of this property. Based on the information provided with the water well application, the State Engineer's Office correctly granted the permit on the basis that the proposed location was not in the GWRA (also, a properly constructed bedrock well, as proposed in the application, is allowed in the restricted area). The Monticello Site Manager contacted the State Engineer's Office at a later date to confirm the GWRA policy, process, and results since the 2005 inspection.

No evidence ground water use within the restricted area was noted during the 2006 inspection. Contact with the State Engineer's Office confirmed effective management of the GWRA.

## 8.0 Operable Unit III

### Water Quality Monitoring

Operable Unit III water quality is monitored using an established network of ground water monitoring wells and surface water monitoring stations. All wells that are not actively monitored under the current plan were inspected during the 2006 inspection. Each currently inactive well is at the permeable reactive barrier (PRB). A corner of the concrete pad at well R2–M5 is cracked. This does not compromise the integrity of the well and so no repair is required. Well TW–06 is buried temporarily under excavation spoils. The well will be uncovered by hand digging in spring or summer 2007.

All active wells and surface water sites are inspected during monitoring events in April and October each year. All active wells are currently in good workable condition and are adequately labeled for identification. Each surface water-monitoring site is identified by a stamped metal tag fixed to a steel tee-post near the point of sample collection. All surface water site markers were located and legible during the 2006 inspection.

Several inactive monitoring wells were decommissioned since the 2005 inspection. A Utah-licensed well driller completed decommissioning by an approved method. DOE submitted the appropriate decommissioning forms to the Utah Division of Water Rights. The wells decommissioned in 2006 are identified as: 92–02, 92–04, 92–13, 31SW93–197–2, 31SW93–197–3, 31SW93–197–4, 31SW93–197–5, 31SW93–200–1, 31SW93–200–2, and 31SW93–200–3.

DOE transferred one inactive well (well 92–06) to Mr. D. Burtenshaw, the owner of the property on which the well is located. Mr. Burtenshaw was granted a water right from Utah Division of Water Rights prior to the transfer. DOE has no further responsibility for this well.

### Permeable Reactive Barrier (PRB) and Auxiliary Treatment Cell

The PRB and treatment cell comprise a ground water treatment system on private property (MP–01079–VL) east of the former millsite (see Figure 5 for location). These features are inspected each year to ensure that land use (ranching) is not adversely impacted. The area is inspected for evidence of boggy conditions and or other conditions that could interfere with farm machinery or livestock. The auxiliary treatment cell is enclosed by several sections of stock panel fencing to protect equipment from livestock. The condition of the area was acceptable as observed during the 2006 inspection.

## 9.0 Records Inspection

The following documents were reviewed as part of the 2006 annual inspection:

- *Monticello LTS&M Health and Safety Project Plan*: The DOE–LM *Project Safety Plan* has replaced the *Monticello LTS&M Health and Safety Project Plan*. Contractor document control procedures failed to recall the superseded Monticello plan and ensure the LM representative was included in the distribution for the replacement document.
- *Monticello LTS&M Quality Assurance Project Plan*: the LM *CERCLA Sites QAPP* replaced the *Monticello LTS&M QAPP*. Although the *Monticello LTS&M QAPP* has recently been recalled and the Monticello LM representative has been added to the distribution, a site-specific section for the Monticello NPL Sites has not been developed and included in the LM *CERCLA Sites QAPP*.
- Radiological as-built drawings: The inspector noted that the annual electronic update of the drawings was last completed on April 14, 2006. Drawings are properly marked, dated, and signed. Entries between January and May 9, 2006, were recorded on a working set of drawings dated April 22, 2003. These entries had not been transferred to the current as-built drawing set.
- Repository and Pond 4 Record Book: Site activities and routine surveillance requirements were adequately documented. Inspection checklists were complete and performed as scheduled.
- City Streets and Utilities Record Book: The inspector noted that logbook entries are traceable to the radiological as-built drawings and TSF transfers.
- Highways 191 and 491 (formerly 666) Record Book: Weekly and quarterly inspections were documented; however, there is little detail included in the inspection notes. An entry dated August 10, 2006, has contact information and agreements regarding the location for stockpile materials.
- MS–00176–VL Record Book: Property owner contacts and monthly inspections were performed and documented.
- Government-Owned Piñon and Juniper Properties Record Book: Documentation supports required surveillance/inspections frequencies are being met. Little detail is included in the inspection notes.
- OU II Montezuma Creek Soil and Sediment Properties Record Book: The spring and fall surveillance of Montezuma Creek restrictive easement areas was documented as prescribed.
- Temporary Storage Facility Record Book: Inspections, access logs, and materials transfer was well documented.
- Meteorological data was reviewed. Storm event criteria (2.8 inches of precipitation) were not evident.
- Settlement Plate Monitoring Records: The last annual survey was conducted in July 2006. The survey results are provided as Appendix B to this report, a copy of which will be added to the Information Repository with the next update in April 2007. It is noted that these surveys are now on a 5-year schedule and the next survey will occur in 2011.
- Training Records: Obsolete material was removed and the training record for a new city employee was added to the notebook. Training records of LTSM briefings were reviewed and found to be current with respect to a new employee. Management and updated

training reports is an ongoing matter of communication between the contractor's training group and the LM representatives.

- Agreements: The following agreements were verified through the on-site Information Repository records collection:
  - CERCLA Covenant Deferral for Transfer of Federal Property in Monticello UT
  - Cooperative Agreement DE-FC13-99GJ79485 with the City of Monticello
  - Memorandum of Understanding with UDOT
  - Zoning restrictions for MP-00211 and MS-00176
  - Deed restrictions applied to OU II soil and sediment properties

The LM representatives, as required by the LM Operating Procedures, routinely make backup copies of the record books. The backup copy of each book consists of a three-ring binder with photocopies of each completed page of the original book. At the time of the inspection, the backup copy of each book was in place and up to date.

The MMTS/MVP Information Repository and Administrative Records for the Monticello Mill Tailings Site/Monticello Vicinity Properties Project and the MMTS Operable Unit III were properly indexed and readily available to the public. The Monticello Mill Tailings Site/Monticello Vicinity Properties Information Repository is updated on an annual basis, with the last update occurring in July 2006. It is recommended that the records collection be updated on a semi-annual basis.

City zoning restriction for properties MS-00211 and MS-00176 and property deed restrictions for the OU II soil and sediment properties were not reviewed with the appropriate city staff or the county clerk during this inspection. Documentation completed in the various record books by the LM representative support active review of property ownership and communication with property owners concerning land use or ground water use restrictions.

## 10.0 Recommendations

### 10.1 Repository

1. An erosion gully near perimeter sign P1 has formed.

**Recommendation:** Monitor the condition of the fence and relocate the fence if it becomes irreparable.

2. Repository cover vegetation does not meet success criteria and rodents damage shrubs.

**Recommendation:** DOE will reseed the cover with grasses, forbs, and shrub seed mixes in fall and winter 2006. DOE will consider installing raptor perches in winter/spring 2007 to encourage predation on the vole population, and will consider livestock grazing in spring 2007 to eliminate favorable vole habitat (dead undergrowth).

3. The road on the repository cover is “spongy” in several locations.

**Recommendation:** DOE will continue monitoring the condition of the road on the repository and repair it if necessary.

4. Erosion rills and gullies exist near the south drainage channel.

**Recommendation:** DOE will continue to monitor the condition of these rills and gullies and repair as necessary.

5. A slope change exists in the vehicle crossing in the west drainage channel.

**Recommendation:** DOE will continue monitoring this location and repair the hydraulic jump if scouring is observed.

6. Rock in the north and east toe trench is degrading.

**Recommendation:** The condition of the toe trenches will be monitored. Should erosion occur, the trenches will be overlain with stockpiled rock.

7. Tamarisk and Canada thistle were noted in some locations.

**Recommendation:** The LM representative will cut tamarisk plants and apply herbicide to the stalks to prevent the species from proliferating. DOE will retain a subcontractor to eradicate Canada thistle in summer 2007.

8. Gullies were noted on the south side of Sediment Pond A and the southeast side of Sediment Pond B.

**Recommendation:** A comparison to 2004 baseline conditions indicates that the gullies are stable and repair is not needed at this time. Monitoring of these gullies will be conducted in subsequent annual inspections.

## 10.2 Pond 4

1. Mouse feces were present in one or more safety cabinets.

**Recommendation:** The cabinets will be cleaned of mouse feces and disinfected; precautions against Hantavirus will be taken during this maintenance activity.

2. Sandbags attached to ropes that hold down the Pond 4 liner have deteriorated.

**Recommendation:** The on-site LM representatives will install gravel-filled polyethylene pipes on an as-needed basis to replace deteriorated sandbags.

3. The exterior sign on some safety cabinets is illegible due to weather fading.

**Recommendation:** The signs will be repaired or replaced by the on-site LM representatives.

## 10.3 Former Millsite and Surrounding City-owned Properties

1. The drainage ditch above the millsite access road (see Figure 8) needs to be maintained routinely.

**Recommendation:** The City of Monticello should monitor and maintain this ditch as noted in the maintenance plan.

2. Culverts in the ditch north of the millsite access road (see Figure 8) are susceptible to clogging.

**Recommendation:** The City of Monticello should monitor and maintain this ditch as noted in the maintenance plan.

3. The City's maintenance plan for the former millsite has not been completed.

**Recommendation:** The City should complete the plan and conduct all specified maintenance activities.

4. Sections of the walking paths at the former millsite are in disrepair.

**Recommendation:** The City should restore the walking paths to a useable condition and ensure that runoff control ditches and culverts are properly installed.

5. Undercutting by surface flow of several fence posts near the mouth of Deer Draw was observed.

**Recommendation:** The City should control/prevent and repair the undercutting.

6. A rock-armored ditch where the former haul road crossed North Draw has partially washed out (Figure 8).

**Recommendation:** The City of Monticello should repair this ditch.

7. The sediment catch basin near the northwest end of the former haul road on property MP-00171 Phase I has over filled (Figure 8).

**Recommendation:** The City of Monticello should remove sediment from the basin and repair the berm if needed.

## 10.4 Soil and Sediment Properties

1. The stream alteration (stock pond/irrigation pond) on MP-01084 (B. Bowring, owner) is not complete.

**Recommendation:** EPA and UDEQ continue to communicate with the State Engineer's Office (Stream Alteration department) regarding legal completion of this project. The State will provide the landowner with specific instructions to complete the project, and will confirm the final result. No actions by the State Engineer's Office are otherwise anticipated at this time.

## 10.5 Operable Unit III

There are no findings from the 2006 inspection that require follow-up action.

## 10.6 Records

1. DOE-LM documents that have replaced the *Monticello Health and Safety Project Plan* and *Quality Assurance Project Plan* were not available at the site.

**Recommendation:** Ensure the LM representative is added to the distribution list and receives current copies of the *U.S. Department of Energy Office of Legacy Management Project Safety Plan* and the *Legacy Management CERCLA Sites Quality Assurance Project Plan*.

2. Although the LM CERCLA Sites QAPP has superseded the Monticello LTS&M QAPP, a site-specific section for the Monticello NPL Sites has not been developed and included in the current LM CERCLA QAPP.

**Recommendation:** Develop the site-specific information for the Monticello NPL Sites and revise and reissue the LM CERCLA Sites QAPP with the updated information. Ensure the plan is provided to DOE, EPA, and UDEQ for review and comment as required by the FFA.

3. The Monticello Mill Tailings Site/Monticello Vicinity Properties Information Repository is updated on an annual basis, with the last update occurring in July 2006.

**Recommendation:** It is recommended that the Information Repository records collection be updated on a semi-annual basis (April and October) to ensure a timelier and up-to-date records collection.

## **10.7 Implementation of Recommendations**

Table 2 summarizes corrective actions that are recommended from the findings of the 2006 annual site inspection, and a proposed schedule and approach for implementing those actions.

Table 1. Action Items.

Finding/Action	Proposed Completion Date	Monitoring Frequency	Comment
Monitor the erosion gully and fence near perimeter sign P1 (see Figure 6).	On-going	During Annual Inspection or after a major precipitation event (per LTSM procedures)	Relocate the fence if erosion causes it to become irreparable.
Monitor vegetation on the repository cover.	August 2006	Annually	Prepare an annual repository cover report and submit to EPA and UDEQ by April 15 of each year.
Evaluate cause of low shrub density and shrub damage on the repository cover. Technical studies being conducted by DOE LM Environmental Sciences Laboratory, Grand Junction, CO.	On-going	Not Applicable	Recommendations to improve cover, if necessary, to be provided through DOE LM Environmental Sciences Laboratory, Grand Junction, CO.  Areas of extensive vole burrowing will be seeded with grass, forbs, and shrubs in fall/winter 2006.  Consider grazing the cover in spring 2007.
Monitor animal burrows on the repository cover.	On-going	Monthly (per LTSM procedures)	Install raptor perches spring 2007 to encourage raptor predation on rodents.
Monitor erosion rills and gullies on the south drainage channel of the repository.	On-going	Monthly and after a major precipitation event (per LTSM procedures)	Repair rills and gullies if necessary. These rills and gullies are not in critical areas.
Monitor vehicle crossing in the west drainage channel of the repository.	On-going	Quarterly and after a major precipitation event (per LTSM procedures)	Repair the hydraulic jump if scouring is observed.
Monitor the condition of repository toe trenches.	On-going	Quarterly and after a major precipitation event (per LTSM procedures)	Overlay degraded rock with stockpiled rock if erosion occurs.
<i>LM Project Safety Plan and the Legacy Management CERCLA Sites Quality Assurance Project Plan not available on site.</i>	June 2007	Not applicable	Documents are in preparation. LM representative to be added to distribution list to receive the final documents and all subsequent updates.
A site-specific section for the Monticello NPL Sites has not been developed and included in the current LM CERCLA QAPP.	January 2007	Not applicable	In preparation.
Information Repository records collection should be updated on a semi-annual basis to ensure a timelier and up-to-date records collection.	Updates to occur in April and October	Not applicable	Not applicable

Table 1 (continued). Action Items.

Finding/Action	Proposed Completion Date	Monitoring Frequency	Comment
Monitor sediment ponds and wetlands on the repository site and former millsite for tamarisk and other noxious weeds.	On-going	Quarterly	On-site personnel to cut and apply herbicide to tamarisk as necessary.  Retain subcontractor to eradicate Canada thistle in summer 2007.
Monitor gullies in Sediment Pond A and Sediment Pond B.	Next Annual Inspection	During Annual Inspection	Take photographs for comparative analysis and repair the gullies if necessary.
Pond 4 safety cabinet sanitation.	On-going	Monthly (per LTSM procedures)	The cabinets will be cleaned of mouse droppings and disinfected as necessary.
Pond 4 safety cabinet signs.	Summer 2007	Not applicable	LM representative to repair or replace faded signs.
Install polyethylene pipes to restrain Pond 4 liner.	On-going	Not applicable	LM representative will install gravel-filled polyethylene pipes on an as-needed basis to replace deteriorated sandbags.
DOE will assist the City of Monticello in completing the maintenance plan for the former millsite.	2007	Not applicable	DOE provided a draft maintenance plan to the City in 2005 that is not yet finalized.
Monitor the condition of the culvert on the former millsite access road.	On-going	Bi-annually	City maintenance item.
Monitor the runoff control ditch above the millsite access road.	On-going	Bi-annually	City maintenance item.
Monitor culverts in the runoff control ditch north of the millsite access road.	On-going	Bi-annually	City maintenance item.
Walking paths at the former millsite are in disrepair.	On-going	Not applicable	City maintenance item.
Monitor the repaired gully entering North Draw.	On-going	During Annual Inspection	City maintenance item.
Repair the gully at the former haul road crossing at North Draw.	City maintenance item.	During Annual Inspection	City maintenance item.
Remove sediment from catch basin near northwest end of former haul road on property MP-01070 Phase I.	City maintenance item.	Annually or following significant precipitation events.	City maintenance item.
Stream alteration project on property MP-01084 is not complete.	Next Annual Inspection	Not applicable	Appropriate actions by EPA, UDEQ, and State Engineer's Office have been implemented.

## 11.0 Photographs

Photographs were taken during the inspection. The location and orientation of the photographs listed below are identified in Figures 6 and 8.

Photograph Location Number	Azimuth (Clockwise from 0° North)	Description
PL-1	180	Sediment Pond A, south side of pond, 2004 baseline.
PL-2	180	Sediment Pond A, south side of pond, September 2006.
PL-3	180	Sediment Pond B, south side of pond, 2004 baseline.
PL-4	180	Sediment Pond B, south side of pond, September 2006.
PL-5	90	Tumbleweed accumulation along outside of inner fence at repository, south section of fence.
PL-6	290	Shallow catch basin on former haul road; note sediment accumulation and apparent overflow, September 2006.
PL-7	300	Washout of rock armoring in erosion control channel near downstream end of North Draw, September 2006.
PL-8	190	Straw bale erosion control in small drainage east of Deer Draw, bales placed in September 2005; September 2006 photo.
PL-9	190	Armored erosion control channel below Dam 2, former millsite area, September 2006.
PL-10	220	Armored erosion control channel below Dam 2, former millsite area, September 2006.
PL-11	150	Small erosion cut at inlet to Dam 2 catch basin, September 2006.
PL-12	280	Low spot (deer trail) on bank of diversion ditch along south side of former millsite, September 2006.



MNT 9/2006. PL-1. Sediment Pond A, south side of pond, 2004 baseline.



MNT 9/2006. PL-2. Sediment Pond A, south side of pond, September 2006.



MNT 9/2006. PL-3. Sediment Pond B, south side of pond, 2004 baseline.



MNT 9/2006. PL-4. Sediment Pond B, south side of pond, September 2006.



MNT 9/2006. PL-5. Tumbleweed accumulation along outside of inner fence at repository, south section of fence.



MNT 9/2006. PL-6. Shallow catch basin on former haul road; note sediment accumulation and apparent overflow, September 2006.



MNT 9/2006. PL-7. Washout of rock armoring in erosion control channel near downstream end of North Draw, September 2006.



MNT 9/2006. PL-8. Straw bale erosion control in small drainage east of Deer Draw, bales placed in September 2005; September 2006 photo.



MNT 9/2006. PL-9. Armored erosion control channel below Dam 2, former millsite area, September 2006.



MNT 9/2006. PL-10. Armored erosion control channel below Dam 2, former millsite area, September 2006.



MNT 9/2006. PL-11. Small erosion cut at inlet to Dam 2 catch basin, September 2006.



MNT 9/2006. PL-12. Low spot (deer trail) on bank of diversion ditch along south side of former millsite, September 2006.

**Appendix A**  
**Annual Inspection Checklists**

## **Checklist for 2006 MMTS Annual Inspection**



**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**II. Interviews (continued)**

**3. Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency UDEO \_\_\_\_\_ Date \_\_\_\_\_

Contact \_\_\_\_\_  
Name Title Phone No.

Report attached Summary \_\_\_\_\_

Agency City of Monticello \_\_\_\_\_ Date \_\_\_\_\_

Contact \_\_\_\_\_  
Name Title Phone No.

Report attached Summary \_\_\_\_\_

Agency \_\_\_\_\_ Date \_\_\_\_\_

Contact \_\_\_\_\_  
Name Title Phone No.

Report attached Summary \_\_\_\_\_

**4. Other interviews (optional)** (List name, contact information, and summarize public interviews)

Report attached Summary \_\_\_\_\_

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**III. MMTS OUs I, II, and III General Documents and Records Verified**

- |  |   |  |
|--|---|--|
| <b>1. General LTS&amp;M Documents</b>  |   |  |
| LTS&M Plan ( <i>Admin + Vols I, II, III, + IV</i> )                            | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| Radiological As-built drawings   | <input checked="" type="checkbox"/> Readily available | <input type="checkbox"/> Up to date <i>see note ①</i>            |
| Drawing updated annually   | <input checked="" type="checkbox"/> satisfactory      | <input type="checkbox"/> unsatisfactory                          |
| Documentation/recordkeeping requirements                                       | <input checked="" type="checkbox"/> satisfactory      | <input type="checkbox"/> unsatisfactory                          |
| Radiological scan information recorded   | <input checked="" type="checkbox"/> satisfactory      | <input type="checkbox"/> unsatisfactory                          |
| LM Sites Project Safety Plan   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date <i>see note ①</i>            |
| Contingency plan/emergency response plan                                       | <input type="checkbox"/> Up to date                   |  |
| LM CERCLA Site QA Plan   | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date <i>see note ①</i>            |
| Monticello Site Specific Section   | <input type="checkbox"/> Up to date                   |  |
| <b>2. LTS&amp;M Training Records</b>   | <input checked="" type="checkbox"/> Readily available | <input type="checkbox"/> Up to date <i>see note ①</i>            |
| On-site Employees  | <input checked="" type="checkbox"/> Up to date        |  |
| City Workers   | <input checked="" type="checkbox"/> Up to date        |  |
| UDOT Workers   | <input type="checkbox"/> Up to date                   | <input checked="" type="checkbox"/> N/A                          |
| <b>3. Administrative Record Collections</b>                                    |   |  |
| MMTS/MVP   | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| MGS OU III   | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>4. Information Repository</b>   | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>5. Agreements</b>   |   |  |
| Cooperative Agreement DE-FC13-99GJ79485  | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date <i>see note ①</i>            |
| Memorandum of Understanding (UDOT)   | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>6. Zoning Restrictions – Overlay Zone OL-1 (verify through City Office)</b> |   |  |
| Property MP-00211-VL   | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>7. Meteorological Monitoring Data</b>                                       | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>8. Repository Site Record Book</b>  | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>9. TSF Record Book</b>  | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>10. TSF Access/Security Logs</b>  | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>11. Monthly Repository Surveillance Checklists</b>                          | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>12. Quarterly Repository Surveillance Checklists</b>                        | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>13. Monthly Pond 4 Surveillance Checklists</b>                              | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>14. Repository LCRS and LDS Monitoring Records</b>                          | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>15. Pond 4 LCRS and LDS Monitoring Records</b>                              | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>16. Settlement Monument Records</b>   | <input type="checkbox"/> Readily available            | <input checked="" type="checkbox"/> Up to date <i>see note ②</i> |
| <b>17. City-Owned Properties Record Book</b>                                   | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |
| <b>18. Private Property Restricted Areas Record Book</b>                       | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date                   |

Remarks *Note 1 Summary <sup>included</sup> ~~found~~ with the MVP Annual Inspection Checklist. Items 7 and 11 thru 15 are included with Quarterly reports. #17 & #18 included in current P-I Record book. OUI Soil & Sediment record book and Repository and Former Millsite record book.*

*Note ② The survey was completed in July 06, however results were not available at the time of the review. Information was confirmed and retained by the Site Mgr. in Grand Jct. - To be included in the Annual Site Inspection report.*



**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**B. Repository Surface Cover**

1. Settlement (Low spots)       Settlement not evident       Location shown on site map  
     Areal extent \_\_\_\_\_      Depth \_\_\_\_\_
2. Cracks       Cracking not evident       Location shown on site map  
     Lengths \_\_\_\_\_      Widths \_\_\_\_\_      Depths \_\_\_\_\_
3. Erosion       Erosion not evident       Location shown on site map  
     Areal extent \_\_\_\_\_      Depth \_\_\_\_\_
4. Holes/Burrows/Biointrusion       Holes not evident       Location shown on site map  
     Areal extent See below      Depth \_\_\_\_\_
5. Vegetative Cover       Cover properly established       No signs of stress  
      Grass See below       Trees/Shrubs (Indicate size and locations on a diagram)
6. Alternative Cover (armored rock/rip-rap, etc.)       N/A  
      No evidence of slope instability       Slides       Location shown on site map  
      No evidence of material degradation       Location shown on site map  
     Material type \_\_\_\_\_      Areal extent \_\_\_\_\_
7. Bulges       Bulges not evident       Location shown on site map  
     Areal extent \_\_\_\_\_      Height \_\_\_\_\_
8. Wet Areas/Water Damage       Wet areas/water damage not evident  
      Wet areas       Location shown on site map      Areal extent \_\_\_\_\_  
      Ponding       Location shown on site map      Areal extent \_\_\_\_\_  
      Seeps       Location shown on site map      Areal extent \_\_\_\_\_  
      Soft subgrade       Location shown on site map      Areal extent \_\_\_\_\_
9. Slope Instability  
      No evidence of slope instability       Slides       Location shown on site map  
     Areal extent \_\_\_\_\_

Remarks

4. Vole burrowing on most of cover area.  
Some squirrel burrowing in rock -  
armored side slopes on north side

5. Shrub damage evident - Vole predation

Cover vegetation studies are on-going.  
Possible response actions considered:  
install raptor perches to enhance predation on voles;  
re-seeding shrub + grass species; controlled grazing;  
live shrub plantings.

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**C. Drainage and Toe Trenches**

- |   |  |  |
|---|--|--|
| 1. <b>Settlement</b>                                | <input checked="" type="checkbox"/> No evidence of settlement          | <input type="checkbox"/> Location shown on site map            |
| Areal extent _____                                  | Depth _____  |  |
| 2. <b>Material Degradation</b>                      | <input type="checkbox"/> No evidence of degradation                    | <input type="checkbox"/> Location shown on site map            |
| Material type _____                                 | Areal extent _____   | <i>see below</i>   |
| 3. <b>Erosion</b>                                   | <input type="checkbox"/> No evidence of erosion                        | <input checked="" type="checkbox"/> Location shown on site map |
| Areal extent _____                                  | Depth _____  | <i>see below</i>   |
| 4. <b>Siltation</b>                                 | <input type="checkbox"/> Siltation not evident                         | <input type="checkbox"/> Location shown on site map            |
| Areal extent _____                                  | Depth _____  | <i>see below</i>   |
| 5. <b>Undercutting</b>                              | <input checked="" type="checkbox"/> No evidence of undercutting        | <input type="checkbox"/> Location shown on site map            |
| Areal extent _____                                  | Depth _____  |  |
| 6. <b>Obstructions</b>                              | <input checked="" type="checkbox"/> No obstructions                    | <input type="checkbox"/> Location shown on site map            |
| Type _____  |  |  |
| Areal extent _____                                  | Size _____   |  |
| 7. <b>Excessive Vegetative Growth</b>               | <input checked="" type="checkbox"/> No evidence of excessive growth    | <input type="checkbox"/> Excessive vegetation                  |
| <input type="checkbox"/> Location shown on site map | <input type="checkbox"/> Vegetation in channels does not obstruct flow |  |
| Type _____  | Areal extent _____   |  |

Remarks

2. Rock in north + east toe trench is deteriorating

3. Rills along south drain ditch, north bank

4. Silt infilling at surface of north + east toe trenches.

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**D. Cover Penetrations**

**1. Manholes**

- Properly secured/locked       Good condition       Needs repair  
 Evidence of leakage into the manhole

**2. LCR Video Ports**

- Properly secured/locked       Good condition       Functional       Needs Repair  
 Evidence of leakage or penetration to the liner

**3. Lysimeter Facilities (within surface area of landfill)**

- Properly secured/locked       Functioning       Good condition       Needs Repair  
 Evidence of leakage (seepage at base)

**4. LCRS and LDS System**

*See below*

- Functioning       Good condition       Evidence of leakage at penetration  
 Needs O&M       Routinely sampled

**5. LCRS and LDS Pumps, Plumbing, and Electrical**

- Good condition       Needs O&M

**6. LCRS and LDS System Pipelines, Valves, Valve Boxes, and Other Appurtenances**

- Good condition       Needs O&M

**7. LCRS and LDS Parts and Equipment**

*See below*

- Readily available       Good condition       Requires upgrade       Needs to be provided

**8. Settlement Monuments**

- Located       Plates in Good condition

Surveyed in 2006 and every 5 years thereafter

**Remarks**

4. Radio telemetry non-functional — manual monitoring/operation procedures are in place.

7. Backup pump may be needed.



**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**F. Repository Site Perimeter**

1. Fencing General Condition:  Good     Gates secured     Repairs Needed  
 Location shown on site map add gate locations to site boundary fence
2. Signage  40 Signs verified - Location shown on site map     Signs and posts in good condition  
 Repairs/Replacements needed at Sign Number(s) P 34
3. Site Boundary Markers     Locations shown on site map     Marker(s) S-2 Not located
4. Erosion/Gullyng     None evident     Existing locations shown on site map  
 New erosion/gullyng identified    Location \_\_\_\_\_  
Areal extent Sign E to P1    Depth 2'     Other Significant Wash @ P27
5. Vegetative Growth  No evidence of excessive growth     Excessive growth build-up  
 Vegetation obstructs roads gates fencelines    Type of Growth Tumbleweeds  
 Location shown on site map     Other Canadian Thistle north of Pond 4 toward P15 and P16

Remarks

- ① EROSION - Rock fill at E to P1 needs continued monitoring & repair
- ② Tumbleweeds continue to build along fence line between P13 & P18 - much less of a problem this year than observation over the past 3 years. Some collection in the drainage to Sed. Pond B
- ③ Significant wash in the area of signs P25 - P28 required backtracking from P27 around Sed Pond C to get back to P28.

**G. Sedimentation Pond A**

1. Siltation     Siltation not evident     Location \_\_\_\_\_  
Areal extent \_\_\_\_\_    Depth \_\_\_\_\_
2. Erosion     Erosion not evident     Location South bank  
Areal extent \_\_\_\_\_    Depth \_\_\_\_\_
3. Outlet Works     Functioning     Need O&M
4. Dam     Functioning     Need O&M
5. Vegetative Growth     Vegetation does not impede flow     Location shown on site map  
Areal extent \_\_\_\_\_    Type \_\_\_\_\_

Remarks

Erosion Comparison photos #35 and #36 taken from base of dam looking at the South bank (compare with 2004 and 2005 photos)

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**H. Sedimentation Pond B**

1. Fencing General Condition:  Good       Gates secured       Repairs Needed

2. Siltation       Siltation not evident       Location \_\_\_\_\_  
Areal extent \_\_\_\_\_      Depth \_\_\_\_\_

3. Erosion       Erosion not evident       Location South east embankment  
Areal extent \_\_\_\_\_      Depth \_\_\_\_\_

4. Outlet Works       Functioning       Needs O&M

5. Dam       Functioning       Needs O&M

6. Vegetative Growth       Vegetation does not impede flow       Location shown on site map  
Areal extent P14 - P15      Type Jumbleweed build up in drainage and along fence line

Remarks  
Erosion comparison photos # 37, 38, 39 & 40 taken from base of dam looking at the south east embankment (compare with 2004 and 2005 photos)

**I. Sedimentation Pond C**

1. Siltation       Siltation not evident       Location \_\_\_\_\_  
Areal extent \_\_\_\_\_      Depth \_\_\_\_\_

2. Erosion       Erosion not evident       Location \_\_\_\_\_  
Areal extent \_\_\_\_\_      Depth \_\_\_\_\_

3. Outlet Works       Functioning       Need O&M

4. Dam       Functioning       Need O&M

5. Vegetative Growth       Vegetation does not impede flow       Location shown on site map  
Areal extent \_\_\_\_\_      Type \_\_\_\_\_

Remarks  
Pond dry

**J. General Repository Site Observations and Comments**

Some erosion and vegetation growth along west and north perimeter fencing precludes motorized (e.g. mule or 4 wheelers) travel in all areas. No significant deterioration since 2005. Prior erosion controls repairs remain effective. Studies are on-going to ensure healthy plant community on cover.

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**V. City-Owned Properties Access and Institutional Controls**

**General Site Conditions**

5. Roads  Roads adequate  Maintenance needed  Location shown on site map  N/A
6. Fencing  Not required  Good Condition  Gates Secured
7. Vandalism  No vandalism evident  Location shown on site map
8. Land use changes onsite None observed
9. Land use changes of adjoining property  No changes  Changes have occurred  
Type of change and impact to the site \_\_\_\_\_

**A. Institutional Controls**

**Implementation and enforcement at City-Owned covenant deferred Properties**

(MP-00181, MP-00893, MP-00391, MP-01077, MP-01040 (North Portion), MP-01041, and MP-01042)

ICs include the following:

Public Access      Recreational Day Use      No overnight camping      No habitable structures

ICs prohibiting soil removal are in effect for the following properties:

MP-00391      MP-01041      MP-01077

ICs prohibiting water wells in the shallow alluvial aquifer are in effect for the following properties:

MP-00181      MP-00893      MP-01077

No damage caused by man to wetland areas of MP-00181 and MP-00893

Site conditions imply ICs properly implemented  Yes  No

Site conditions imply ICs being fully enforced  Yes  No

Reporting is up-to-date  Yes  No

Requirements in the covenant deferral have been met  Yes  No

Requirements Ground Water Management Policy have been met  Yes  No

Violations have been reported  Yes  No  N/A

Adequacy  ICs are adequate  ICs are inadequate

Remarks Erosion control/drainage control in need of

repair by City on old haul road MP 0017:1 Ph I

**Implementation and Enforcement at property MP-00211-VL**

ICs include Overlay Zone (OL-1) restrictions that require radiological scanning of the footprint of new habitable structures applied through a special building permit. Radiological material is removed.

Site conditions imply ICs properly implemented  Yes  No

Site conditions imply ICs being fully enforced  Yes  No

Reporting is up-to-date  Yes  No

Specific zoning requirements (OL-1) have been met  Yes  No

Violations have been reported  Yes  No  N/A

Adequacy  ICs are adequate  ICs are inadequate

Other problems or suggestions:  Report attached  Drawing/map attached

Remarks \_\_\_\_\_

- See

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Mill Tailings (Operable Units I, II and III) NPL Site**

**VI. Land Use and Ground Water Use Restricted Properties**

**A. General Site Conditions**

1. Roads  Roads adequate  Maintenance needed  Location shown on site map  N/A
2. Erosion in contaminated areas  Not evident  Location shown on site map  
Areal extent \_\_\_\_\_ Depth \_\_\_\_\_
3. Fencing  Not required  Good Condition  Gates Secured
4. Land use changes onsite New residence on MP-00990
5. Land use changes of adjoining property  No changes  Changes have occurred  
Type of change and impact to the site \_\_\_\_\_

Remarks: Residence complies w/ restrictive easement and ground water restriction.

**B. Institutional Controls**

- Report attached  Drawing/map attached

**1. Implementation and Enforcement at Soil and Sediment Properties** These properties include:

MP-00951-VL      MP-00990-CS      MP-01084-VL      MG-01026-VL  
MG-01027-VL      MG-01029-VL      MG-01030-VL      MG-01033-VL

ICs that include deed restrictions prohibiting habitable structures within contaminated areas, and prohibiting removal of soil from contaminated areas.

- Site conditions imply ICs properly implemented  Yes  No
- Site conditions imply ICs being fully enforced  Yes  No
- Reporting is up-to-date  Yes  No
- Specific requirements in deed restrictions have been met  Yes  No
- Violations have been reported  Yes  No

Adequacy  ICs are adequate  ICs are inadequate

Remarks See #4 in above Sect A.

N/A

**2. Implementation and Enforcement of Ground Water Usage Restrictions**

ICs prohibit installation of water wells in the shallow alluvial aquifers at the following properties:

MP-00181      MP-00893      MP-00211      MP-00179      MP-00947  
MG-00951      MG-01084      MG-00990      MG-01033

- Site conditions imply ICs properly implemented  Yes  No
- Site conditions imply ICs being fully enforced  Yes  No
- Reporting is up-to-date  Yes  No
- State Engineers Office Contacted Annually  Yes  No
- Requirements in deed or decision documents have been met  Yes  No
- Violations have been reported  Yes  No

Adequacy  ICs are adequate  ICs are inadequate

Remarks See #4 in above Sect A.

N/A

## **Checklist for 2006 MVP Annual Inspection**

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Vicinity Properties Project NPL Site**

<b>I. Site Information</b>	
<b>Site name:</b> Monticello Vicinity Properties NPL Site	<b>Date of inspection:</b> <i>9/27-29/06</i>
<b>Location and Region:</b> Monticello, Utah: EPA Region 8	<b>EPA ID:</b> UTD 980667208
<b>Agency, office, or company leading the five-year review:</b> U.S. Department of Energy Office of Legacy Management	<b>Weather/temperature:</b> <i>Fair, 50-60°F</i>
<b>Remedy Includes:</b> Institutional controls that include: —Soil removal restrictions from City Streets and Utilities —Soil removal restrictions from Highways 191 and 491 Rights-of Way —Special Zoning (Overlay Zone OL-1) for property DOE ID No. MS-00176-VL <input type="checkbox"/> Other: _____	
<b>Attachments:</b> <input type="checkbox"/> Inspection team roster attached <i>in report</i> <input type="checkbox"/> Site map attached <i>in report</i>	
<b>II. Interviews (Check all that apply)</b>	
<b>1. LTSM Representative</b> Name: <u><i>Joe Slade</i></u> Title: <u>LM Representative - Lead</u> Date: <u><i>9/27/06</i></u>	Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. _____ Problems; suggestions: <input type="checkbox"/> Report attached <u><i>No problems identified.</i></u>
<b>2. LTSM Representative</b> Name: <u><i>Todd Moon</i></u> Title: <u>LM Representative</u> Date: <u><i>9/27/06</i></u>	Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone no. _____ Problems; suggestions: <input type="checkbox"/> Report attached <u><i>No problems identified.</i></u>

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Vicinity Properties Project NPL Site**

**II. Interviews (continued)**

**3. Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency UDEO \_\_\_\_\_ Date \_\_\_\_\_  
Contact \_\_\_\_\_  
Name \_\_\_\_\_ Title \_\_\_\_\_ Phone No. \_\_\_\_\_  
 Report attached Summary \_\_\_\_\_

Agency City of Monticello \_\_\_\_\_ Date \_\_\_\_\_  
Contact \_\_\_\_\_  
Name \_\_\_\_\_ Title \_\_\_\_\_ Phone No. \_\_\_\_\_  
 Report attached Summary \_\_\_\_\_

*N/A*

Agency \_\_\_\_\_ Date \_\_\_\_\_  
Contact \_\_\_\_\_  
Name \_\_\_\_\_ Title \_\_\_\_\_ Phone No. \_\_\_\_\_  
 Report attached Summary \_\_\_\_\_

**4. Other interviews (optional)** (List name, contact information, and summarize public interviews)

Report attached Summary \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Vicinity Properties Project NPL Site**

**III. MVP Documents and Records Verified**

**1. General LTSM Documents**

- |  |   |   |
|--|---|---|
| LTS&M Plan ( <i>Admin, + Vols I, II, III, + IV</i> ) | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date        |
| Radiological As-built drawings                       | <input checked="" type="checkbox"/> Readily available | <input type="checkbox"/> Up to date <i>see note 1</i> |
| Drawing updated annually                             | <input checked="" type="checkbox"/> satisfactory      | <input type="checkbox"/> unsatisfactory               |
| Documentation/recordkeeping requirements             | <input checked="" type="checkbox"/> satisfactory      | <input type="checkbox"/> unsatisfactory               |
| Radiological scan information recorded               | <input checked="" type="checkbox"/> satisfactory      | <input type="checkbox"/> unsatisfactory               |
| LM Sites Project Safety Plan                         | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date <i>see note 2</i> |
| Contingency plan/emergency response plan             | <input type="checkbox"/> Up to date                   |   |
| LM CERCLA Site QA Plan                               | <input type="checkbox"/> Readily available            | <input type="checkbox"/> Up to date <i>see note 3</i> |
| Monticello Site Specific Section                     | <input type="checkbox"/> Up to date                   |   |

**2. LTSM Training Records**

- |                   |   |   |
|-------------------|---|---|
| On-site Employees | <input checked="" type="checkbox"/> Readily available | <input type="checkbox"/> Up to date <i>see note 4</i> |
| City Workers      | <input checked="" type="checkbox"/> Yes               | <input type="checkbox"/> No                           |
| UDOT Workers      | <input checked="" type="checkbox"/> Yes               | <input type="checkbox"/> No                           |
|                   | <input type="checkbox"/> Yes                          | <input type="checkbox"/> No                           |

**3. Administrative Record Collections**

- |          |   |  |
|----------|---|--|
| MMTS/MVP | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date |
|----------|---|--|

**4. Information Repository**

- |  |   |  |
|--|---|--|
|  | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date |
|--|---|--|

**5. Agreements**

- |   |   |   |
|---|---|---|
| Cooperative Agreement DE-FC13-99GJ79485 | <input checked="" type="checkbox"/> Readily available | <input type="checkbox"/> Up to date <i>see note 5</i> |
| Memorandum of Understanding (UDOT)      | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date        |

**6. Zoning Restrictions – Overlay Zone OL-1 (verify through City Office)**

- |                      |   |  |
|----------------------|---|--|
| Property MS-00178-VL | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date |
|----------------------|---|--|

**7. Meteorological Monitoring Data**

- |                                       |   |  |
|---------------------------------------|---|--|
| Storm event surveillance criteria met | <input checked="" type="checkbox"/> Readily available | <input checked="" type="checkbox"/> Up to date |
|                                       | <input type="checkbox"/> Yes                          | <input checked="" type="checkbox"/> No         |

**8. Public Roads and Utilities Record Book**

- |  |  |   |
|--|--|---|
| Documentation/recordkeeping requirements met   | <input checked="" type="checkbox"/> satisfactory | <input type="checkbox"/> unsatisfactory   |
| Information readily traced to updated drawings   | <input checked="" type="checkbox"/> satisfactory | <input type="checkbox"/> unsatisfactory   |
| Radiological scan information for<br>(erode/excavated material) recorded                           | <input checked="" type="checkbox"/> satisfactory | <input type="checkbox"/> unsatisfactory   |
| Entries include TSF transfers  | <input checked="" type="checkbox"/> satisfactory | <input type="checkbox"/> unsatisfactory   |
| Entries include information on stockpiled material<br>and follow-up scan results, as applicable    | <input checked="" type="checkbox"/> satisfactory | <input type="checkbox"/> unsatisfactory <i>see note 6</i>   |
| Hwy 191/491 entries include information on scan<br>results and material returned to the excavation | <input checked="" type="checkbox"/> satisfactory | <input type="checkbox"/> unsatisfactory <i>see note 7</i>   |
| Storm event surveys documented   | <input type="checkbox"/> satisfactory            | <input type="checkbox"/> unsatisfactory <input checked="" type="checkbox"/> N/A <i>see note 8</i> |

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Vicinity Properties Project NPL Site**

**9. Private Property Restricted Areas Record Book (Property MS-00176-VL documentation)**

Annual inspections requirements	<input checked="" type="checkbox"/> satisfactory	<input type="checkbox"/> unsatisfactory
Monthly surveillance documented	<input checked="" type="checkbox"/> satisfactory	<input type="checkbox"/> unsatisfactory
Storm event surveillance documented	<input checked="" type="checkbox"/> satisfactory	<input type="checkbox"/> unsatisfactory <sup>W/A</sup> <i>see note 8</i>
Construction activities documented and drawing updated	<input type="checkbox"/> satisfactory	<input type="checkbox"/> unsatisfactory <input checked="" type="checkbox"/> N/A

Remarks ① As built - Entries recorded between Jan & May 2006 on a back-up set of as-built drawings dated 4/22/03 need to be transferred to the current (4/14/06) working set or both sets need to be submitted for the next annual update.

② LM Sites Project Safety Plan - the Monticello LTRM Project Safety Plan has been replaced with the LM Sites PSP, however the Monticello PSP has not been recalled and the LM Rep. has not been added to the distribution for the LM PSP. Correct <sup>on 11/1/06</sup> with acceptance of the LTRM Plan for the Monticello NPL Sites issued thru Document Production Group

③ LM CERCLA Sites QA Plan - Monticello LTRM QA Plan <sup>W/A</sup> recalled and replaced by the LM CERCLA Sites QA Plan on 10/2/06. The LTRM Rep was added to the distribution list on ~~11/1/06~~ 11/1/06. The Monticello Site Specific Section has not been prepared.

④ Training Records - City workers currently excavate and transport materials from City Streets + Highways. No UDOT workers are trained at this time nor have they been since 2001. Maintenance of training status reports on site was not current. During the review current status reports were received from the Training Group. Maintenance of these reports is an on-going problem with regard to retraction of outdated material or acquisition of reports when new employees receive training.

⑤ Cooperative Agreement expired on 6/27/05. DOE is currently working <sup>with the City</sup> on renewing and updating the Agreement. Note: Attachments to the agreement (several LTRM Plans that will become obsolete when the LTRM Plan for the Monticello <sup>NPL</sup> Sites is issued) will need to be updated.

⑥ An entry in the Highways 191 and 491 Record book dated 8/10/06 has contact information and agreements reached regarding the location for stockpile material.

⑦ Information on stockpiled material scans or material returned to Highway excavators was not observed in the review of the record books. Not much activity occurred this year.

⑧ Meteorological monitoring data is submitted monthly to the Site Manager and included with inspection checklists in the quarterly FFA reports. Data reviewed did not identify storm event criteria (2.8 inches) for precipitation had been reached

**Annual Inspection/Five-Year Review Site Inspection Checklist  
for the Monticello Vicinity Properties Project NPL Site**

**IV. Institutional Controls (ICs)**

**Implementation and Enforcement at City Streets and Utilities and Highways 191 and 491 Rights-of-Way**

ICs include radiological scanning of all excavations, radiological scanning of eroded material, and removal of radioactive material.

**1. Roads under Construction**

- LTSM Representative aware of all excavations     Location shown on site map  
 Radiological scanning conducted

**2. Erosion**     Not evident     Location shown on site map  
 Areal extent \_\_\_\_\_    Depth \_\_\_\_\_

- Site conditions imply ICs are properly implemented     Yes     No  
 Site conditions imply ICs are being fully enforced     Yes     No  
 Reporting is up-to-date     Yes     No  
 Reports are verified by the lead agency     Yes     No     N/A  
 Specific requirements in Cooperative Agreement with the City have been met     Yes     No  
 Specific requirements in the MOU with UDOT have been met     Yes     No  
 Violations have been reported     Yes     No     N/A  
 Adequacy     ICs are adequate     ICs are inadequate  
 Other problems or suggestions:     Report attached     Drawing/map attached

Remarks \_\_\_\_\_  
 \_\_\_\_\_  
 No excavations in progress  
 No significant erosion of Highway 191 embankment at Montezuma Creek.  
 \_\_\_\_\_  
 \_\_\_\_\_

**Implementation and Enforcement at property MS-00176-VL**

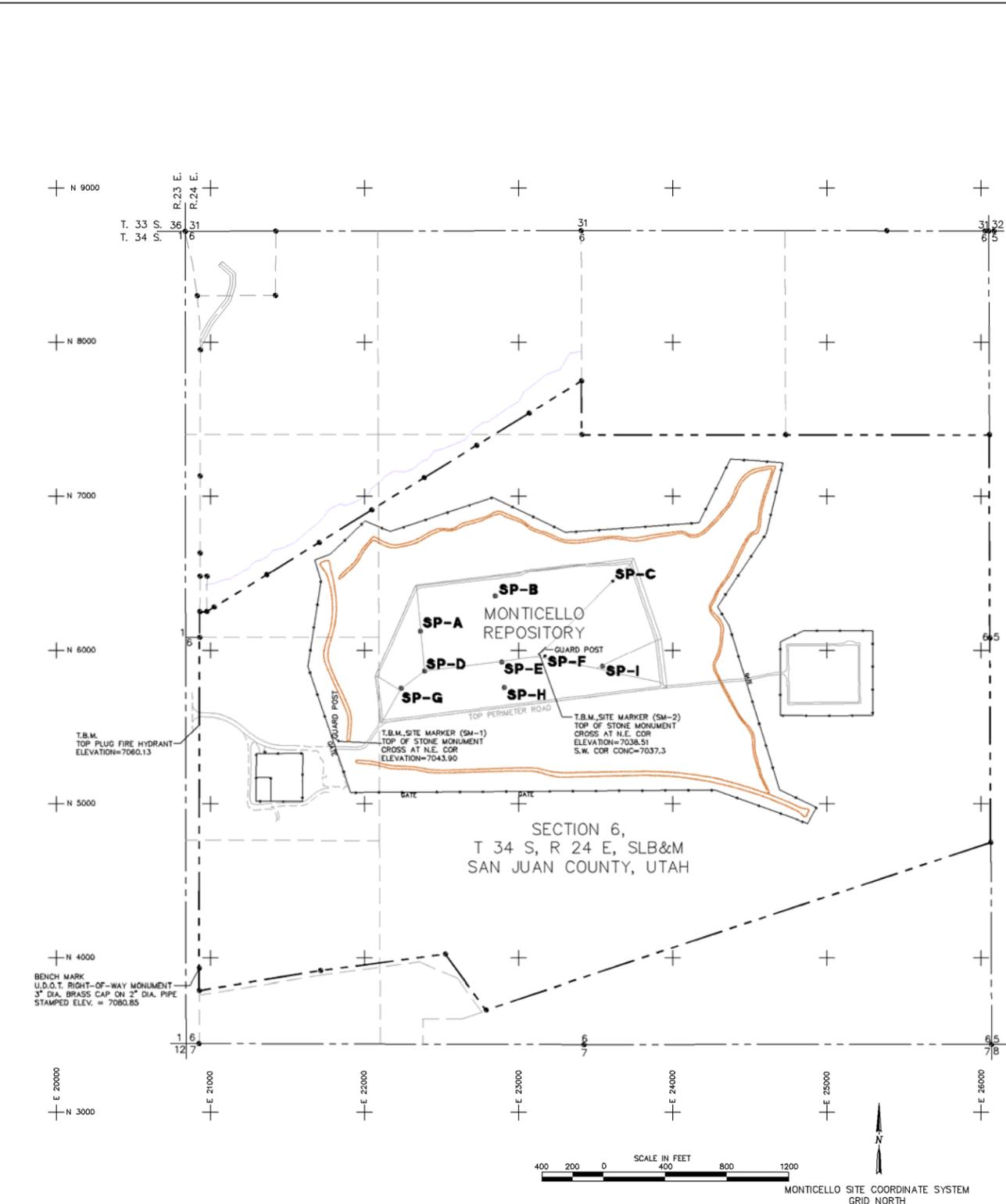
ICs include Overlay Zone (OL-1) restrictions that require radiological scanning of the footprint of new habitable structures applied through a special building permit. Radiological material is removed.

- Site conditions imply ICs properly implemented     Yes     No  
 Site conditions imply ICs being fully enforced     Yes     No  
 Reporting is up-to-date     Yes     No  
 Specific zoning requirements (OL-1) have been met     Yes     No  
 Violations have been reported     Yes     No     N/A  
 Adequacy     ICs are adequate     ICs are inadequate  
 Other problems or suggestions:     Report attached     Drawing/map attached

Remarks \_\_\_\_\_  
 \_\_\_\_\_  
 Ownership of 176 has changed in past year.  
 New owner (S. Randall) is aware of use restriction.  
 \_\_\_\_\_  
 \_\_\_\_\_

## **Appendix B**

### **Settlement Plate Survey Data**



**QUARTERLY SETTLEMENT PLATE ELEVATION DATA**

SETTLEMENT PLATE I.D.	COORDINATES		QUARTER 1		QUARTER 2		QUARTER 3		QUARTER 4		QUARTER 5		QUARTER 6		QUARTER 7		QUARTER 8		QUARTER 9	
	NORTH (Y)	EAST (X)	NOV. 8, 2000	ELEV. DIFF.	MAR. 14, 2001	ELEV. DIFF.	MAY 8, 2001	ELEV. DIFF.	AUGUST 8, 2001	ELEV. DIFF.	DEC. 19, 2001	ELEV. DIFF.	FEB. 5, 2002	ELEV. DIFF.	MAY 13-14, 2002	ELEV. DIFF.	AUGUST 16, 2002	ELEV. DIFF.	NOV. 13, 2002	
SP-A	6,126.2	22,362.8	7042.50	ZERO	7042.50	-0.04	7042.46	-0.02	7042.44	ZERO	7042.44	ZERO	7042.44	ZERO	7042.44	+0.01	7042.45	-0.02	7042.43	
SP-B	6,355.8	22,848.4	7022.11	ZERO	7022.11	-0.01	7022.10	-0.03	7022.07	ZERO	7022.07	+0.01	7022.08	-0.01	7022.07	+0.01	7022.08	-0.03	7022.05	
SP-C	6,450.9	23,609.5	7008.42	ZERO	7008.42	-0.01	7008.41	-0.03	7008.38	ZERO	7008.38	ZERO	7008.38	ZERO	7008.37	+0.01	7008.38	-0.03	7008.35	
SP-D	5,865.4	22,388.7	7053.90	-0.05	7053.85	ZERO	7053.85	-0.02	7053.83	ZERO	7053.83	-0.01	7053.82	ZERO	7053.82	ZERO	7053.82	-0.05	7053.77	
SP-E	5,924.3	22,889.9	7040.25	-0.02	7040.23	-0.01	7040.22	-0.02	7040.20	-0.01	7040.19	-0.01	7040.18	+0.01	7040.19	+0.01	7040.20	-0.04	7040.16	
SP-F	5,963.6	23,171.2	7035.80	-0.03	7035.77	ZERO	7035.77	-0.03	7035.74	ZERO	7035.74	ZERO	7035.74	ZERO	7035.74	+0.01	7035.75	-0.03	7035.72	
SP-G	5,751.6	22,238.2	7054.22	-0.03	7054.19	ZERO	7054.19	-0.01	7054.18	ZERO	7054.18	-0.01	7054.17	+0.01	7054.18	ZERO	7054.18	-0.03	7054.15	
SP-H	5,758.3	22,906.4	7033.54	ZERO	7033.54	-0.01	7033.53	-0.02	7033.51	ZERO	7033.51	ZERO	7033.51	ZERO	7033.51	+0.02	7033.53	-0.05	7033.48	
SP-I	5,895.5	23,543.8	7022.12	-0.02	7022.10	ZERO	7022.10	-0.04	7022.06	+0.2	7022.08	-0.01	7022.07	+0.01	7022.08	ZERO	7022.08	-0.03	7022.05	

SETTLEMENT PLATE I.D.	COORDINATES		QUARTER 10		QUARTER 11		QUARTER 12		QUARTER 13		QUARTER 14		QUARTER 15	
	NORTH (Y)	EAST (X)	MAR. 25, 2003	ELEV. DIFF.	JUNE 5, 2003	ELEV. DIFF.	AUGUST 21, 2003	ELEV. DIFF.	NOV. 7, 2003	ELEV. DIFF.	JULY 16, 2004	ELEV. DIFF.	JUNE 29, 2005	
SP-A	6,126.2	22,362.8	-0.02	7042.41	ZERO	7042.41	-0.01	7042.40	+0.02	7042.42	ZERO	7042.42	-0.05	7042.37
SP-B	6,355.8	22,848.4	ZERO	7022.05	-0.02	7022.03	+0.03	7022.06	-0.02	7022.04	-0.01	7022.05	-0.02	7022.03
SP-C	6,450.9	23,609.5	ZERO	7008.35	-0.03	7008.32	+0.04	7008.36	-0.03	7008.33	+0.03	7008.36	-0.02	7008.34
SP-D	5,865.4	22,388.7	+0.01	7053.78	-0.04	7053.74	+0.02	7053.78	+0.01	7053.77	-0.01	7053.78	-0.04	7053.72
SP-E	5,924.3	22,889.9	-0.01	7040.15	-0.03	7040.12	+0.03	7040.15	7FR0	7040.15	7FR0	7040.15	-0.03	7040.12
SP-F	5,963.6	23,171.2	-0.02	7035.70	-0.01	7035.69	+0.01	7035.70	-0.01	7035.69	+0.01	7035.70	-0.03	7035.67
SP-G	5,751.6	22,238.2	ZERO	7054.15	-0.02	7054.13	+0.01	7054.14	+0.01	7054.15	ZERO	7054.15	-0.02	7054.13
SP-H	5,758.3	22,906.4	-0.01	7033.47	-0.01	7033.46	+0.01	7033.47	+0.01	7033.48	ZERO	7033.48	-0.01	7033.47
SP-I	5,895.5	23,543.8	-0.01	7022.04	-0.03	7022.01	+0.04	7022.05	-0.01	7022.04	+0.01	7022.05	-0.02	7022.03

**5 YEAR SETTLEMENT PLATE ELEVATION DATA**

SETTLEMENT PLATE I.D.	COORDINATES		YEAR 2000		YEAR 2006	
	NORTH (Y)	EAST (X)	NOV. 8, 2000	ELEV. DIFF.	JUNE 22, 2006	
SP-A	6,126.2	22,362.8	7042.50	0.10	7042.40	
SP-B	6,355.8	22,848.4	7022.11	0.07	7022.04	
SP-C	6,450.9	23,609.5	7008.42	0.07	7008.35	
SP-D	5,865.4	22,388.7	7053.90	0.18	7053.72	
SP-E	5,924.3	22,889.9	7040.25	0.09	7040.16	
SP-F	5,963.6	23,171.2	7035.80	0.09	7035.71	
SP-G	5,751.6	22,238.2	7054.22	0.09	7054.13	
SP-H	5,758.3	22,906.4	7033.54	0.03	7033.51	
SP-I	5,895.5	23,543.8	7022.12	0.10	7022.02	