

2004 Annual Inspection Report for the Grand Junction, Colorado, UMTRCA Title I Processing Site

Summary

The Grand Junction, Colorado, Processing Site was inspected on February 19, 2004. The site is in excellent condition. There was no evidence of unapproved ground water extraction or other construction activities that would encounter contaminated ground water. Institutional controls were checked and found to be effective. No cause for a follow-up or contingency inspection was identified.

1.0 Introduction

This report presents the findings of the annual U.S. Department of Energy (DOE) inspection of the Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Processing Site at Grand Junction, Colorado.

M. R. Widdop of S.M. Stoller Corporation, the DOE Legacy Management (LM) Contractor at Grand Junction, conducted the inspection. J. F. Sink of DOE-LM, P. Oliver of the Colorado Department of Public Health and Environment (CDPHE), and T. K. Harbert of the city of Grand Junction Engineering Department also were present.

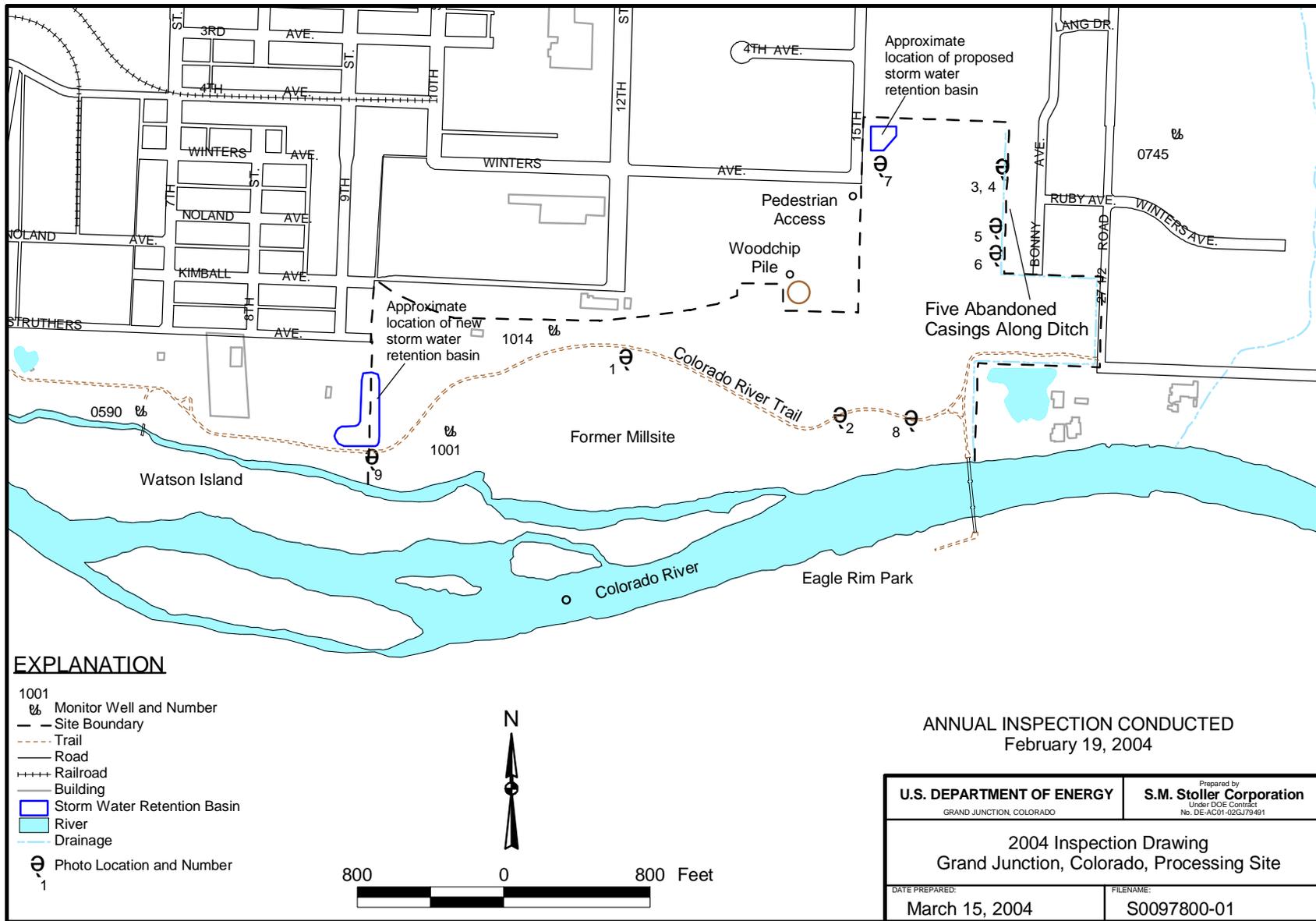
The purposes of the annual inspection were to confirm compliance with the *Ground Water Compliance Action Plan [GCAP] for the Grand Junction, Colorado, UMTRA Project Site* (GJO-99-90-TAR, April 1999), to verify that ground water had not been extracted or exposed without DOE approval, and to determine the need, if any, for additional inspections and monitoring.

2.0 Inspection Results

Features discussed in this report are shown on [Figure 1](#). Attached photographs that support specific observations are identified in the text and on Figure 1 by photograph location (PL) numbers.

2.1 Facility Access

The former processing site, historically known as the Climax millsite, is owned by the city of Grand Junction and is administered by the Parks and Recreation Department. Property development currently is limited to a concrete-paved riverfront trail constructed on a flood-control dike along the Colorado River and a storm water retention basin located along the west property boundary. Access to the site is easily gained by using the public riverfront trail. Pedestrian and bicycle access also is possible through openings in the fence for that purpose at the gate at 15th Street and Winters Avenue. The ground water sampling crews use a locked gate on the west side of the property at Struthers Avenue for access.



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Figure 1. Grand Junction, Colorado, Processing Site

2.2 Signs, Site Markers, Survey Monuments, and Fences

No DOE signs, site markers, or survey monuments exist at the Grand Junction Processing Site, and DOE is not responsible for maintaining the fences at the site. Inspectors found a survey monument on site that may be useful for tying the site map to established survey coordinates (PL-1).

A fence separating the city-owned property from adjacent private properties exists along the northern boundary of the site. A large pile of wood chips on an adjacent sawmill property is piled against the fence and may knock it down in the near future (PL-2). The fence is in poor repair at another location. However, there are no security issues, and these conditions do not pertain to the institutional control requirements at the site.

2.3 Monitor Wells

Two ground water monitor wells remain at the site and two off-site wells are located upstream (background) and downstream of the site on private property. The wells are completed in the unconfined Colorado River alluvial aquifer. The on-site wells were secure and in good condition. Annual sampling of the wells occurred in January 2004, at which time the two off-site wells also were secure and in good condition.

Inspectors found 5 abandoned casings in the drainage ditch along the east side of the northern portion of the site (PL-3 through PL-6). Several casings were locked and the open casing appeared to be filled with solid material. Stoller staff will investigate the history and status of these wells to ensure DOE has no ongoing liability.

3.0 Ground Water Monitoring

A shallow unconfined alluvial aquifer is contaminated with ammonia, iron, manganese, molybdenum, vanadium, and uranium as a result of historic processing operations. Elevated concentrations of uranium and selenium in the aquifer upstream of the site are thought to be naturally occurring and derived from the dark marine shales of the Mancos Shale formation that underlies most of the Grand Valley. The ground water is not used as a water supply for any purpose, and no actual risks exist at the site because no pathways for human use of ground water are complete (see "Institutional Controls" below).

The compliance strategy to meet EPA ground water protection standards, which was described in the GCAP, is no remediation and application of supplemental standards on the basis of limited use ground water (40 CFR 192.21[g]). In this situation, limited use ground water is defined as ground water in the uppermost aquifer that is not a current or potential source of drinking water because widespread, ambient contamination not due to activities involving residual radioactive materials from a designated processing site exists that cannot be cleaned up using treatment methods reasonably employed in public water systems (40 CFR 192.11[e][2]). Ground water in the alluvial aquifer is of limited use because of widespread, elevated concentrations of naturally occurring uranium and selenium.

Limited ground water monitoring is conducted to determine when concentrations of site-related constituents are at a level that allows certain uses of ground water to no longer be restricted. These uses, however, may be limited by the poor ambient quality of the ground water. Monitoring locations will include on-site monitor wells MW-1014 (the well with the highest contaminant levels) and MW-1001 (located directly downgradient of MW-1014), off-site and upgradient (background) well MW-0745, and off-site and downgradient monitor well MW-0590 (see Figure 1). Analytes will include ammonia (as NH₄), molybdenum, and uranium. Samples will be collected and analyzed annually for the first 5 years (through 2004) and every fifth year thereafter for 30 years. Results of sampling will be evaluated after the 2004 sampling event. If, after the first 5-year period, concentrations of target analytes are consistently below maximum concentration limits or baseline values, the analyte list or frequency of sampling may be modified. Sampling at 5-year intervals will continue until all analytes are below their respective maximum concentration limits or background values, or until the monitoring program is modified. Because monitoring is specified in the GCAP, DOE will obtain U.S. Nuclear Regulatory Commission concurrence for changes to the monitoring program.

4.0 Surface Water Monitoring

There are no surface water expressions of ground water on the property. Surface water samples are collected annually at two locations along the Colorado River. The upstream location, SW-0423, is approximately 1.5 miles (2.4 kilometers) east of the site, and the downstream location, SW-0427, is approximately 0.5 mile (0.8 kilometer) west of the site. Both locations were sampled in January 2004.

Analytes, sampling frequency, and evaluation are the same as for ground water sampling. Sample results from location SW-0423 will provide background values, and results from location SW-0427 will provide continuing verification that mill-related constituents in ground water are not affecting the water quality of the river.

5.0 Institutional Controls

CDPHE transferred the former processing site to the city of Grand Junction. In the transfer agreement the city agrees “not to use the ground water from the site for any purpose, and not to construct wells or any means of exposing ground water on the property unless prior written approval is given by the Grantor [CDPHE] and the U.S. Department of Energy.” In addition, City of Grand Junction Ordinance 2432 stipulates that all locations within city limits shall be served by the city water treatment and distribution system (i.e., ground water shall not be used for residential purposes).

To verify the effectiveness of institutional controls, Stoller contacted the Grand Junction Parks and Recreation Department and the State Engineer’s Office on February 13, 2004. No construction has occurred without DOE approval and no wells have been permitted or installed for the Colorado River alluvial aquifer in the vicinity of the site.

DOE was contacted for approval of construction of a storm water retention basin in the northwest corner of the site (PL-7 and PL-8) and for comments on an environmental assessment of the impact of routing the Riverside Parkway through the processing site. DOE approved the construction and informed the recipient of both responses that CDPHE will direct management

of any ground water or tailings-contaminated materials they designate for control. CDPHE observed excavation of five trenches to determine the depth of backfill within the footprint of the storm water retention basin. Backfill depths ranged from 6 feet at the north end of the project area to 3 feet at the south end. Elevated gamma activity was observed in the bottom of one excavation that exposed clay, but the source of the activity (either naturally occurring or tailings contamination) could not be determined. The materials exposed in the remaining excavations had background levels of gamma activity.

Previously, DOE approved construction of another storm water retention basin on the west edge of the former processing site (PL-9). DOE will acquire as-built information from the city Engineering Department to update the site map.

6.0 Recommendations

1. Inspectors found 5 abandoned casings in the drainage ditch along the east side of the northern portion of the site (page 3).

Recommendation: Stoller will investigate the history and status of these wells to ensure DOE has no ongoing liability.

2. Exposure to contaminated ground water under the site needs to be prevented (page 4).

Recommendation: Continue to verify, on an annual basis, the effectiveness of institutional controls by contacting the Grand Junction Parks and Recreation Department and the State Engineer's Office to ensure that no construction has occurred without DOE approval and that no wells have been permitted or installed.

3. The storm water retention basin on the west edge of the former processing site is not accurately shown on the site map (page 5).

Recommendation: DOE will acquire as-built information from the city Engineering Department to update the site map.

7.0 Photographs

Photograph Location Number	Azimuth	Description
PL-1	45	Survey monument on former processing site.
PL-2	320	Wood chip pile against north fence.
PL-3	10	Monitor well in drainage on east property line.
PL-4	170	Monitor wells in drainage on east property line.
PL-5	120	Monitor well in drainage on east property line.
PL-6	120	Monitor well in drainage on east property line.
PL-7	330	Location of proposed storm water retention basin.
PL-8	345	Path of retention basin outflow and trench excavation site.
PL-9	350	Storm water retention basin on west property line.



GJT 2/2004. PL-1. Survey monument on former processing site.



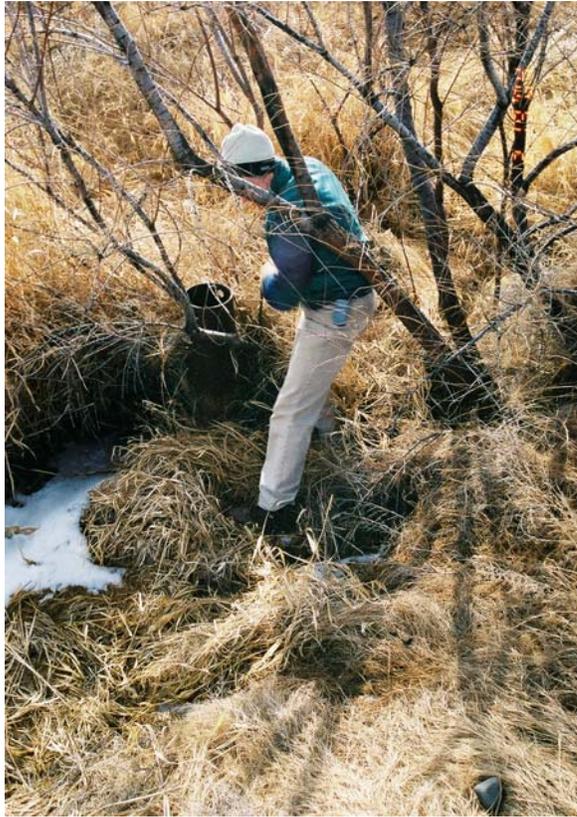
GJT 2/2004. PL-2. Wood chip pile against north fence.



GJT 2/2004. PL-3. Monitor well in drainage on east property line.



GJT 2/2004. PL-4. Monitor wells in drainage on east property line.



GJT 2/2004. PL-5. Monitor well in drainage on east property line.



GJT 2/2004. PL-6. Monitor well in drainage on east property line.



GJT 2/2004. PL-7. Location of proposed storm water retention basin.



GJT 2/2004. PL-8. Path of retention basin outflow and trench excavation site.



GJT 2/2004. PL-9. Storm water retention basin on west property line.