

2011 5-Year Inspection and Site Status Report for the Grand Junction, Colorado, UMTRCA Title I Processing Site

Summary

The Grand Junction, Colorado, Processing Site was inspected on March 30, 2011. The site was in excellent condition. Construction of the Riverside Parkway through the site was completed since the last inspection in 2006. There was no evidence of unapproved groundwater extraction or exposure. Institutional controls were checked and found to be effective. No cause for a follow-up or contingency inspection was identified.

Surface and groundwater samples were collected in January 2011 and analyzed to monitor groundwater quality and determine if site-related contaminants affect water quality of the Colorado River. Sampling results were consistent with historical results, and concentrations of site-related constituents are not degrading the water quality of the river.

1.0 Introduction

This report presents the findings of the U.S. Department of Energy (DOE) 5-year inspection of the Uranium Mill Tailings Radiation Control Act (UMTRCA) Title I Processing Site at Grand Junction, Colorado.

R.K. Johnson and G.K. Baur of S.M. Stoller Corporation (Stoller), the DOE Legacy Management (LM) Contractor at Grand Junction, conducted the inspection on March 30, 2011. M. Cosby of the Colorado Department of Public Health and Environment (CDPHE) and B. Guillory of the City of Grand Junction Public Works and Planning Department attended the inspection.

Annual inspections were conducted through 2006. This was the first 5-year inspection. The purposes of the inspection were to confirm compliance with the *Ground Water Compliance Action Plan for the Grand Junction, Colorado, UMTRA Project Site* (GJO-99-90-TAR, April 1999), to verify that groundwater had not been extracted or exposed without DOE approval, and to determine the need, if any, for additional inspections and monitoring.

2.0 Institutional Controls

CDPHE transferred the former processing site to the City of Grand Junction. In the transfer agreement the City agreed not to use the groundwater from the site for any purpose, and not to construct wells or any means of exposing groundwater 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., groundwater shall not be used for residential purposes).

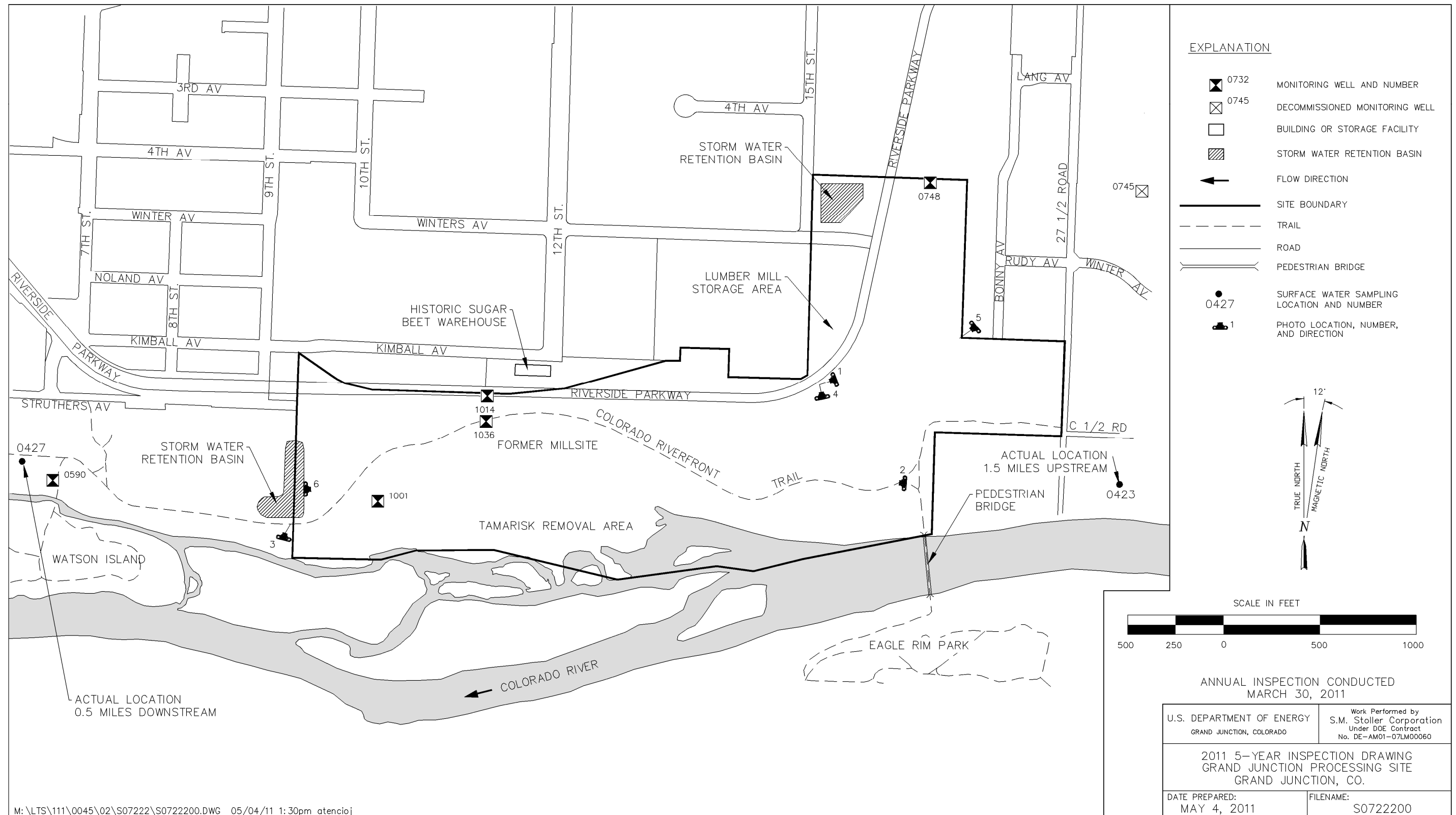


Figure 1. Grand Junction, Colorado, Processing Site

To verify the effectiveness of institutional controls, Stoller contacted the Grand Junction Public Works and Planning Department and reviewed the State Engineer's Office website on February 17, 2011 (see attachment). No construction has occurred without DOE approval and no wells have been permitted for the Colorado River alluvial aquifer in the vicinity of the site. This information was visually verified during the inspection. In accordance with the groundwater compliance action plan (GCAP) for the site, verification of institutional controls with the City and the State will occur every 5 years after the 2006 annual inspection until groundwater monitoring is no longer required at the site.

3.0 Inspection Results

Features discussed in this report are shown on Figure 1. Photographs supporting specific observations are identified in the text and on Figure 1 by photograph location (PL) numbers, and are provided at the end of the text.

Specific Site Surveillance Features

3.1.1 Site Access and Improvements

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. Access to the site is easily gained by using the public Colorado Riverfront Trail and a sidewalk along the Riverside Parkway. Improvements to the site include the Riverside Parkway (PL-1), the Colorado Riverfront Trail (PL-2), and runoff control structures including two storm water retention basins (PL-3). Also, a portion of the site is used by a private lumber company for lumber storage (PL-4). Most of the site is undeveloped (PL-5), and tamarisk removal activities were occurring along the southern portion of the site along the Colorado River (PL-6).

3.1.2 Signs, Site Markers, Survey Monuments, and Fences

No DOE signs, site markers, or survey monuments exist at the Grand Junction Processing Site. The site is open to public access, and DOE does not own and is not responsible for maintaining fences that border portions of the site.

3.1.3 Monitoring Wells

Since the last inspection in 2006, upgradient offsite well MW-0745 was decommissioned and replaced by upgradient background well MW-0748 located within the site institutional controls boundary. Also, well MW-1014, located within the bike path of Riverside Parkway, was flush mounted to prevent it from being an obstacle. However, sampling this well was considered to be unsafe due to traffic concerns, and a new flush-mounted well (MW-1036) was installed about 150 feet south of well MW-1014 and adjacent to the Colorado Riverfront Trail. Downgradient well MW-1001 is also located within the institutional controls boundary near the west end of the property. One other downgradient well (MW-0590) is west of the site on private property. All of the wells are completed in the unconfined Colorado River alluvial aquifer. The wells were sampled on January 7, 2011, at which time they were found to be secure and in good condition.

4.0 Groundwater and Surface Water Monitoring

Groundwater Monitoring

4.1.1 Groundwater Monitoring Program

The 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 upgradient of the site are naturally occurring and derived from the dark marine shales of the Mancos Shale formation that underlie most of the Grand Valley. The groundwater 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 groundwater are complete (see Section 2.0, “Institutional Controls”).

The compliance strategy to meet EPA groundwater protection standards, which was described in the GCAP, is no remediation and application of supplemental standards on the basis of limited use groundwater (40 CFR 192.21[g]). In this situation, limited use groundwater is defined as groundwater 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]). Groundwater in the alluvial aquifer is of limited use because of widespread, elevated concentrations of naturally occurring uranium and selenium.

Limited groundwater monitoring is conducted to determine when concentrations of site-related constituents are at a level that allows certain uses of groundwater to no longer be restricted. These uses, however, may be limited by the poor ambient quality of the groundwater. Analytes include ammonia (total as N), molybdenum, and uranium. Samples were collected and analyzed annually through 2006 and, beginning in 2011, will be collected every fifth year for 30 years. 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.

4.1.2 Groundwater Monitoring Results

The ammonia concentration at upgradient replacement well MW-0748 was 14 milligrams per liter (mg/L), which is slightly higher than the concentration of 8.6 mg/L at downgradient well MW-0590. Onsite wells MW-1001 and MW-1036 had concentrations of 70 mg/L and 74 mg/L, respectively. These results are within historical concentrations and do not indicate an unusual change in contaminant concentration.

Molybdenum concentrations in the upgradient and downgradient wells remain below the maximum concentration limit of 0.1 mg/L established at 40 CFR 192. At onsite wells MW-1001 and MW-1036, the concentrations were 0.17 mg/L and 0.15 mg/L, respectively. These results are within historical concentrations and do not indicate an unusual change in contaminant concentration.

Uranium concentrations remained consistent with historical results, with all results exceeding the EPA groundwater standard of 0.044 mg/L (40 CFR 192). Upgradient well MW-0748 had the lowest concentration of 0.049 mg/L, while downgradient well MW-0590 had the next lowest concentration of 0.078 mg/L. Uranium concentrations at wells MW-1001 and MW-1036 were 0.38 mg/L and 2.3 mg/L, respectively. Figure 2 presents the time-concentration plot for uranium in groundwater.

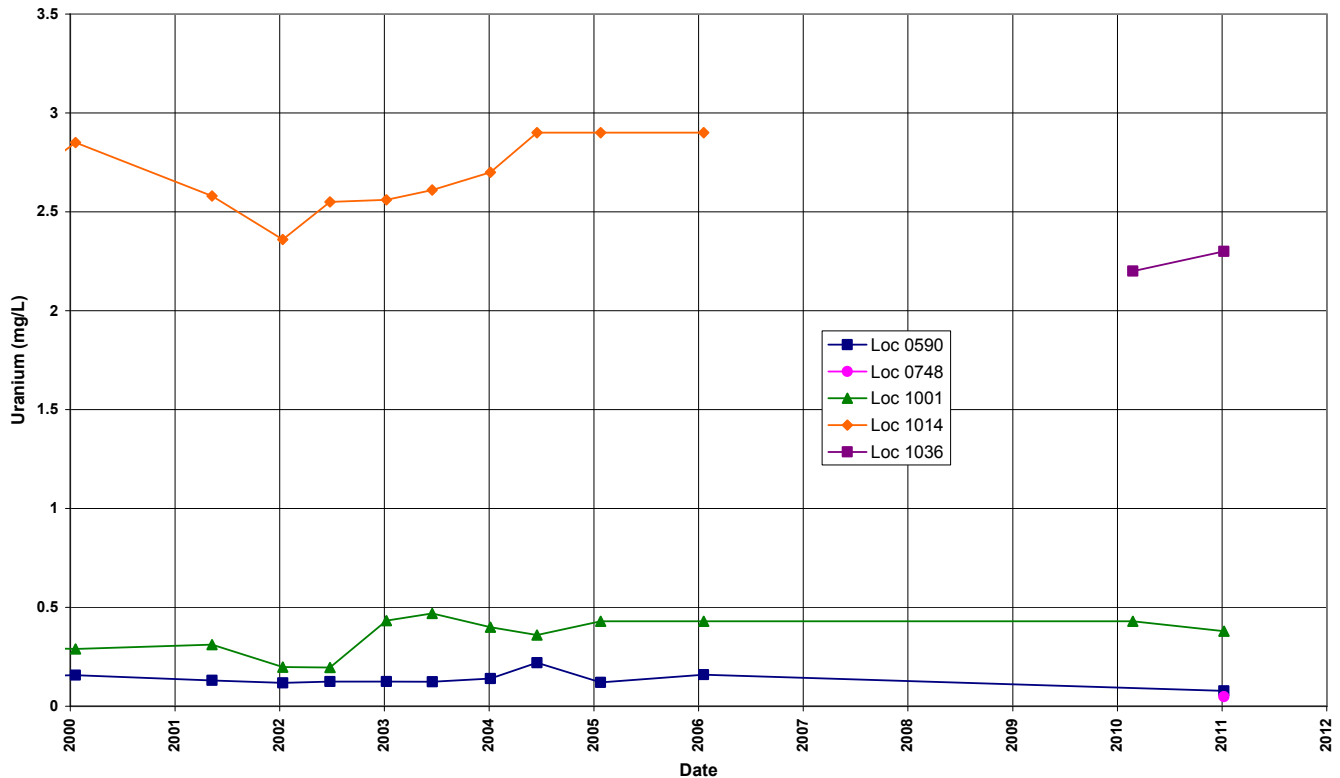


Figure 2. Uranium Concentrations in Ground Water

Surface Water Monitoring

4.1.3 Surface Water Monitoring Program

There are no surface water expressions of groundwater on the property. Surface water samples are collected at two locations along the Colorado River. The upstream location, SW-0423, is approximately 1.5 miles east of the site, and the downstream location, SW-0427, is approximately 0.8 mile west of the site. These surface locations were sampled at the same time that groundwater samples were collected.

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

4.1.4 Surface Water Monitoring Results

Ammonia concentrations at the surface water locations were below the detection limit, with the upgradient location having the slightly higher concentration of 0.12 mg/L. Therefore, there is no indication of site-related contamination affecting the ammonia concentration in the Colorado River.

Molybdenum concentrations are consistent with previous results and continue to be nearly identical at both the upgradient (0.0062 mg/L) and downgradient (0.0054 mg/L) locations. Site-related contamination is not affecting the molybdenum concentration in the river.

Uranium concentrations at the upgradient and downgradient locations are similar (0.0043 and 0.0036 mg/L, respectively). Figure 3 presents the time-concentration plot for uranium in surface water, and shows that site-related contamination is not causing uranium levels to increase in the river.

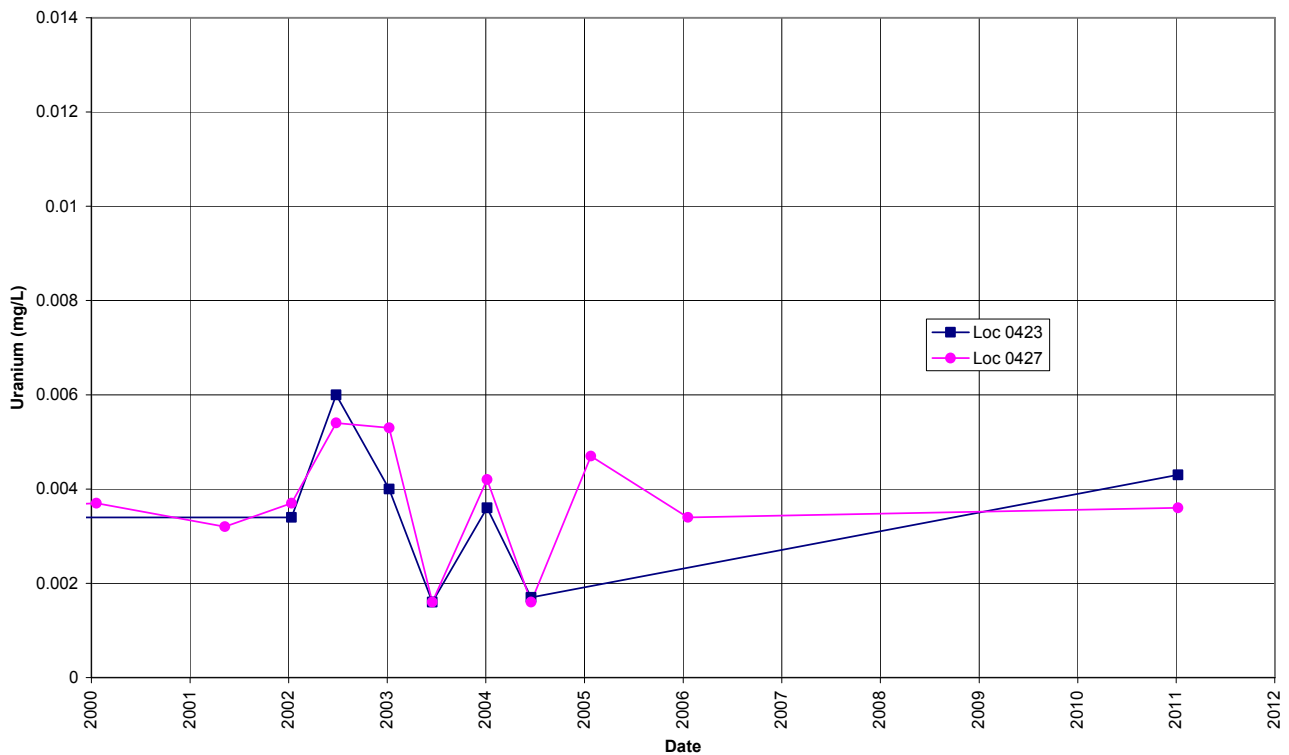


Figure 3. Uranium Concentrations in Surface Water

5.0 Recommendations

No maintenance items or other concerns were identified during the inspection.

6.0 Photographs

Photograph Location Number	Azimuth	Photograph Description
PL-1	250	North edge of institutional control boundary.
PL-2	275	Institutional control area along the Colorado Riverfront Trail.
PL-3	15	Storm water retention basin on the west side of the institutional control area.
PL-4	350	Lumber mill storage area and concrete fence within the institutional control boundary.
PL-5	230	Northeast portion of the institutional control area.
PL-6	90	View east of the institutional control area showing piles of cut tamarisk shrubs.



GJT 3/2011. PL-1. North edge of institutional control boundary.



GJT 3/2011. PL-2. Institutional control area along the Colorado Riverfront Trail.



GJT 3/2011. PL-3. Storm water retention basin on the west side of the institutional control area.



GJT 3/2011. PL-4. Lumber mill storage area and concrete fence within the institutional control boundary.



GJT 3/2011. PL-5. Northeast portion of the institutional control area.



GJT 3/2011. PL-6. View east of the institutional control area showing piles of cut tamarisk shrubs.

ATTACHMENT 1

Land Management Project

Meeting/Teleconference Record

Date: February 17, 2011

To: Gary Baur, Site Lead

From: Cheri Bahrke

Subject: Verification of ICs for the Grand Junction, CO, Processing Site

Persons Present/Contacted:

Name	Company/Agency	Telephone Number/Extension
Trent Prall	City of Grand Junction, Public Works	256-4047
Cheri Bahrke	Stoller	6038

Issue/Concern:

At the request of Gary Baur, I contacted Trent Prall, of the City of Grand Junction Public Works Department, to determine if any work at the former processing site had been conducted that could create a potential pathway for contamination at the site.

Because Mr. Prall is a new contact, I inquired if he was aware of the restrictions at the site. He said he was and that no activities have been conducted since installing the sewer line at the site. He stated that the Downtown Development Authority is going to reopen the Master Plan for Las Colonias Park (the former site). He reiterated that DOE would be part of any discussions about development at the site.

I also reviewed the State Engineer's website for well permitting to determine if any well permits have been granted for the area of interest. There were no entries for the former millsite. The website was current as of 2/1/2011.

Follow-up Action Required: This will be filed in the real property files along with the quitclaim deed conveying the property to the City of Grand Junction that includes the institutional controls.

Affect Scope/Schedule or Budget: YES __ NO X

Explain:

CC: Real Property Working File GJT 1435.05