WM-68

U.S. Department of Energy
Grand Junction Office
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JUN 13 2003

Susan M. Frant, Chief
U.S. Nuclear Regulatory Commission
Fuel Cycle Facilities Branch, NMSS
Mail Stop: T8A33
Washington, D.C. 20555-0001

Subject: Transmittal of the *Draft Ground Water Compliance Action Plan for the Green River, Utah, UMTRA Project Site* for Review

Dear Ms. Frant:

Enclosed are two copies of the *Draft Ground Water Compliance Action Plan for the Green River, Utah, UMTRA Project Site* (GCAP) for your review and concurrence. This document presents the proposed compliance strategy for ground water cleanup for both Subparts A and B of 40 CFR 192 at the Green River, Utah, former uranium processing site. The U.S. Department of Energy (DOE) has incorporated comments from the State of Utah Division of Radiation Control on the *Final Site Observational Work Plan for the Green River, Utah, UMTRA Project Site* into the GCAP, thereby addressing their open issues and providing a path forward for compliance at the Green River site. In conjunction with institutional controls for the site, DOE is currently working with the State of Utah Division of Water Rights to implement ICs similar to those in place at the Monticello, Utah, uranium mill tailings site.

Please contact me at 970/248-7612 if you have any questions.

Sincerely,

Donald R. Metzler
Program Manager

Enclosures

cc w/o enclosures:
M. Layton, NRC - Washington, D.C.
W. Von Till, NRC - Washington, D.C.
R. Herbert, State of Utah DRC
W. Sinclair, State of Utah DRC
C. Bahrke, Stoller
R. Heydenburg, Stoller
S. Marutzky, Stoller
File Project GWGRN 1.9 (Thru K. Sutton)

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GJO–2003–444–TAC
GJO–GWGRN 1.9

UMTRA
Ground Water Project

Draft Ground Water Compliance Action Plan for the Green River, Utah, UMTRA Project Site

June 2003

Prepared by the
U.S. Department of Energy
Grand Junction Office

Work Performed Under DOE Contract No. DE–AC13–02GJ79491 for the U.S. Department of Energy
Approved for public release; distribution is unlimited.

GJO-2003-444-TAC
GJO–GWGRN 1.9

UMTRA Ground Water Project

Draft Ground Water Compliance Action Plan for the Green River, Utah, UMTRA Project Site

June 2003

Prepared by
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Grand Junction, Colorado

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1.0 Introduction

This Ground Water Compliance Action Plan (GCAP) presents the proposed compliance strategy for ground water cleanup at the Green River, Utah, former uranium processing site (Figure 1). It is based on U.S. Department of Energy (DOE) evaluation of information included in the Site Observational Work Plan (SOWP) (DOE 2002). This GCAP serves as a stand-alone modification to the Remedial Action Plan (RAP) (DOE 1991) and Modification No. 2 to the RAP (DOE 1998a) to address ground water restoration and compliance with the U.S. Environmental Protection Agency (EPA) ground water protection standards for the Uranium Mill Tailings Remedial Action (UMTRA) Project Title I sites. The GCAP will be the U.S. Nuclear Regulatory Commission (NRC) concurrence document for compliance with ground water cleanup standards codified in Subpart B of 40 CFR 192 for the Green River processing site. Since residual radioactive material (RRM) is stabilized in a disposal cell onsite, the proposed compliance strategy will also be applicable to Subpart A of 40 CFR 192 which prescribes initial disposal cell performance monitoring. The Long-Term Surveillance Plan (LTSP) for the Green River site (DOE 1998b) will be revised to reflect the proposed compliance strategy and monitoring plan for the entire site, and will need NRC concurrence before implementation of the strategy.

National Environmental Policy Act (NEPA) issues and environmental concerns are addressed in the Environmental Assessment (EA) (in progress), which will be made available to public officials and stakeholders for their review and comment.

2.0 Ground Water Compliance

The proposed compliance strategy for the Green River site is based on the compliance strategy selection framework following the steps presented in the Programmatic Environmental Impact Statement (PEIS) (DOE 1996) (Figure 2). DOE's goal is to implement a cost-effective ground water compliance strategy at the Green River site that is protective of human health and the environment and returns contaminated ground water to its maximum beneficial use. After evaluating existing site information and following the decision framework in the PEIS, DOE proposes the compliance strategy of no further remediation and application of alternate concentration limits (ACL) for constituents with concentrations that exceed maximum concentration limits (MCL) or applicable benchmarks for ground water in the Cedar Mountain Formation, and no further remediation with the application of supplemental standards based on limited yield (sustained continuous flow of less than 150 gallons per day) for ground water in the Browns Wash alluvium. The compliance strategy will be implemented in conjunction with ground water and surface water monitoring to observe the effectiveness of the strategy, and institutional controls (IC) to provide adequate restriction of nearby land use and ground water withdrawals. Updated risk assessments demonstrate the proposed strategy will be protective of human health and the environment (DOE 2002).

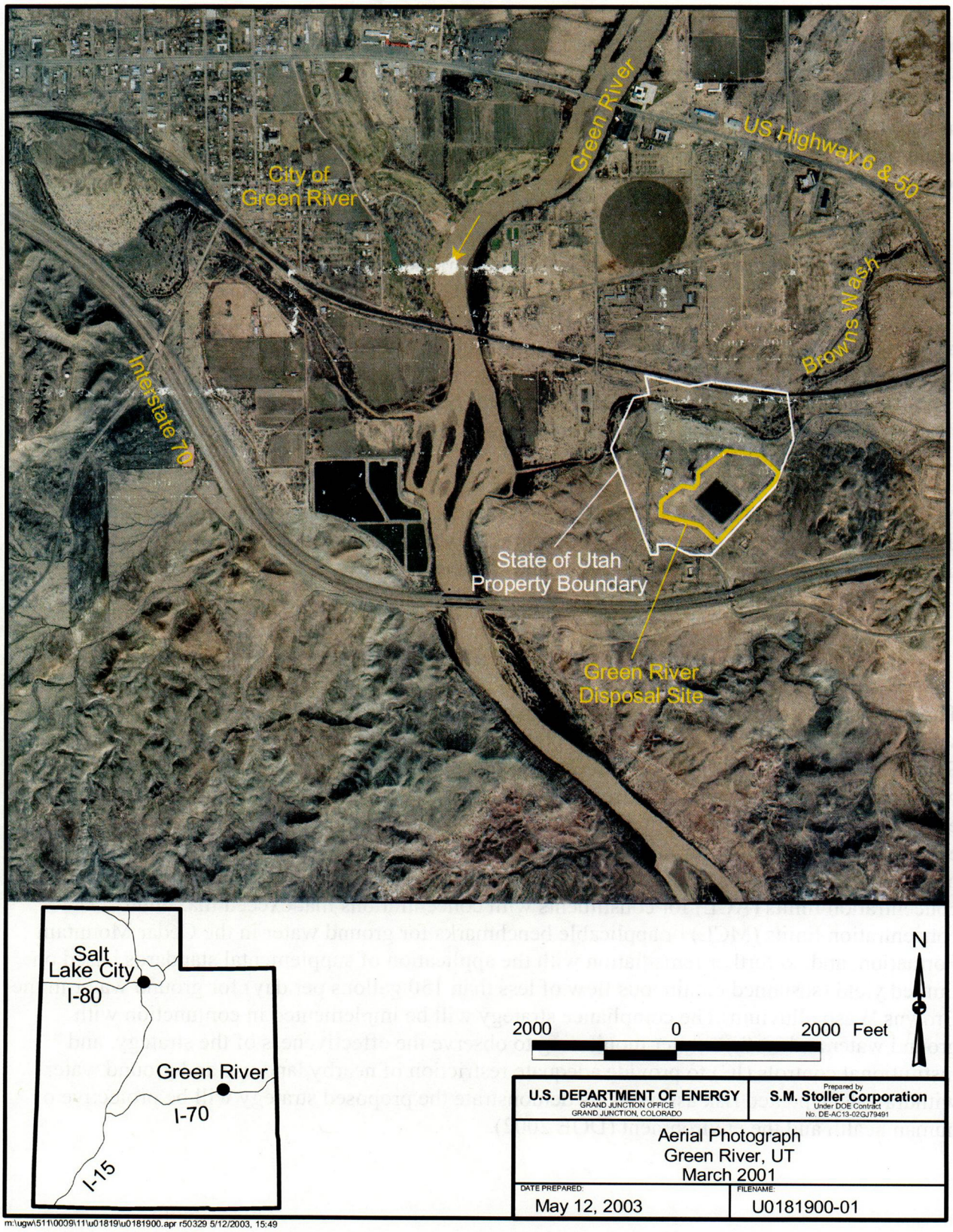

Figure 1. Aerial Photograph of the Green River Area—March 2001

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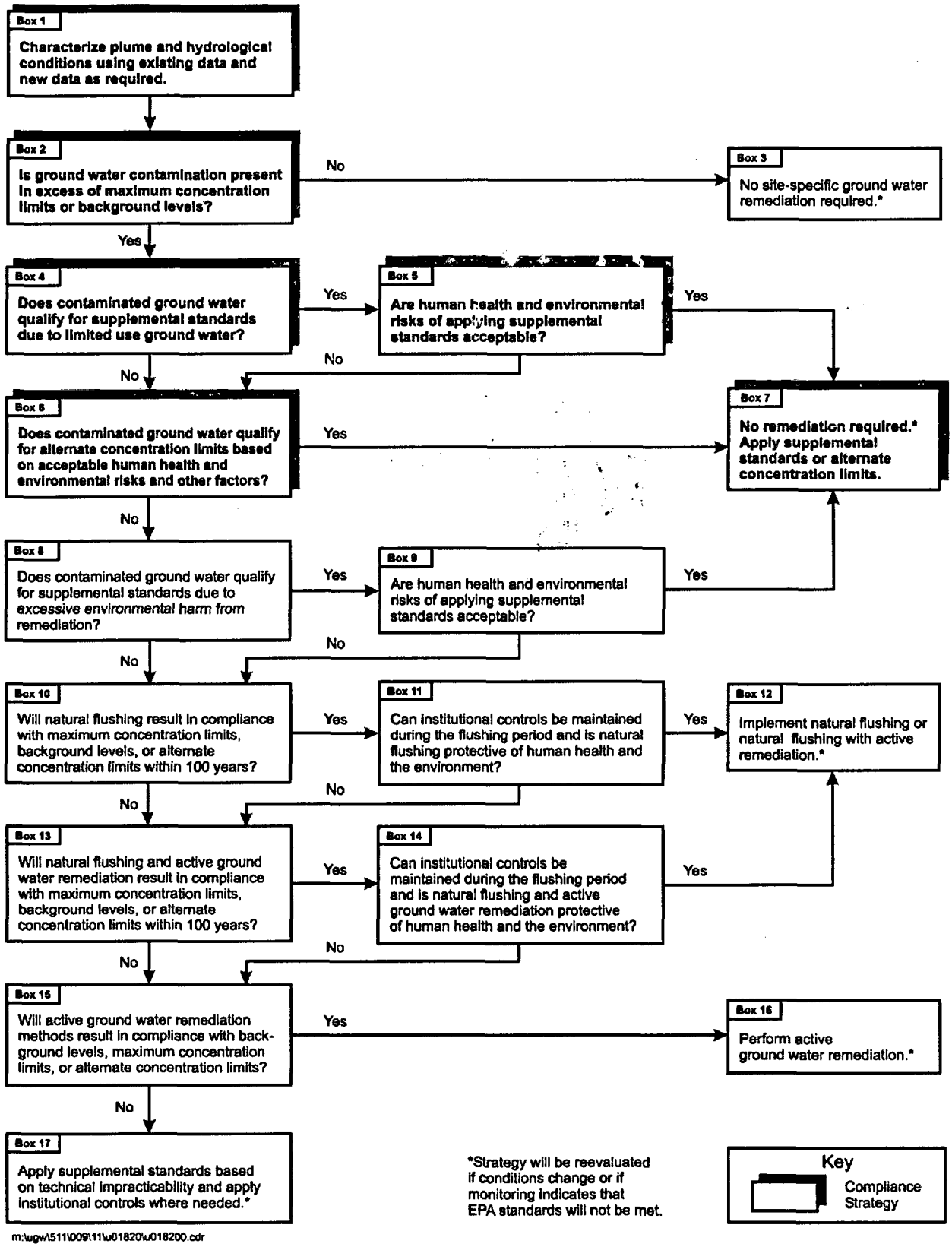

Figure 2. Compliance Strategy Decision Framework

2.1 Assessment of Environmental Data

Ground water in the vicinity of the Green River site occurs in the Browns Wash alluvium and in sandstone units of the Cedar Mountain Formation of Lower Cretaceous age. The Browns Wash alluvial aquifer is unconfined and is limited in lateral extent with minimal saturated thickness. The aquifer is classified as limited use on the basis of low yield. The middle sandstone unit of the Cedar Mountain Formation is the uppermost bedrock aquifer beneath and adjacent to the site, and contains ground water under confined to semi-confined conditions. Uncertainties in understanding and interpretation of the complex hydrogeology and ground water flow system in units of the Cedar Mountain Formation in the vicinity of the Green River site were discussed in Section 5.1 of the Final SOWP (DOE 2002). Evaluation of available data suggests that the Green River, just west of the site, is the hydrologic discharge sink for ground water in the region, and the ephemeral Browns Wash, which is a local extension of the Green River regional discharge, serves as the local hydrologic discharge sink for ground water in the Cedar Mountain Formation beneath the Green River site. This interpretation of the ground water flow system is supported by the following evidence. The pressure head distribution in the middle sandstone unit of the Cedar Mountain Formation shows the unit is unsaturated or not present south and west of the disposal cell, with increasing saturation to the north and east. This indicates a northward ground water flow direction towards Browns Wash. There is an overall upward hydraulic gradient in the sandstone aquifers of the Cedar Mountain Formation, indicative of a ground water discharge area. The structural configuration of the middle sandstone unit shows a dip to the north and northwest, with fractures and joints having a predominant northwest orientation. Although Browns Wash is an ephemeral stream that is normally dry and flows only during local precipitation events, there is evidence of ground water discharge along the stream in the vicinity of the site. Therefore, the ground water flow system in the Cedar Mountain Formation at the Green River site is seeking the path of least resistance to the closest discharge area, which is the Browns Wash area.

Ground water in the uppermost aquifers (Browns Wash alluvium and the middle sandstone unit of the Cedar Mountain Formation) beneath the Green River site has been contaminated by former uranium processing activities. Constituents of potential concern (COPC) include arsenic, manganese, nitrate, selenium, sodium, sulfate, and uranium (DOE 2002). Although there is residual site-related contamination in the Browns Wash alluvium, COPCs in ground water present low risk because of the limited lateral extent, minimal saturated thickness, and low ground water yield. Site-related ground water contamination in the middle sandstone unit of the Cedar Mountain Formation is not widespread or pervasive. The saturated portion of the middle sandstone unit is restricted south and west of the disposal cell limiting contamination generally to the area north and east of the disposal cell. Since the disposal cell is located onsite, minor seepage during the long-term may result in somewhat elevated concentrations of mill-related constituents in the immediate vicinity of the cell. These expected conditions would still be protective and meet the standards.

Ground water in the vicinity of the site is not a current source of drinking water. The Browns Wash aquifer is of insufficient yield to serve as a drinking water source. Background wells in the Cedar Mountain Formation display concentrations of sulfate and fluoride that exceed drinking water standards; sodium and chloride exceed recommended levels based on esthetic concerns. The Green River provides a ready source of potable water for the area and a fresh water source for wildlife. Because there is no current use of ground water as a drinking water source and no unacceptable risk to human health and the environment, there is no practical justification, nor

economic or risk-reduction benefit, to actively remediate the contaminated ground water in the vicinity of the site. However, protection of surface water is of importance as the portion of the Green River near the site and associated backwater areas in Browns Wash are potential habitat for several endangered fish. The compliance strategy proposed for the Green River site addresses this concern.

2.2 Subpart B Compliance

2.2.1 ACLs for the Cedar Mountain Formation

The proposed compliance strategy for ground water in the Cedar Mountain Formation is no further remediation with the application of ACLs. Table 1, explains the strategy that follows the decision framework in Figure 2.

Table 1. Compliance Strategy Selection Process for Ground Water in the Cedar Mountain Formation

Box from Figure 2	Action or Question	Result or Decision
1	Characterize plume and hydrological conditions.	See conceptual site model presented in Section 5.0 and contaminant screening presented in Section 6.0 of the SOWP. Move to Box 2.
2	Is ground water contamination present in excess of maximum concentration limits or background levels?	Arsenic, nitrate, selenium, sodium, sulfate, and uranium exceed the MCLs or appropriate benchmarks at one or more monitoring points. Move to Box 4.
4	Does contaminated ground water qualify for supplemental standards due to limited use ground water?	Ground water in the Cedar Mountain Formation is not classified as limited use. Move to Box 6.
6	Does contaminated ground water qualify for alternate concentration limits based on acceptable human health and environmental risks and other factors?	Yes. (1) a disposal cell is located above the contaminated area of the aquifer, (2) the State of Utah owns the surrounding land, (3) ICs can be implemented that would prevent use of contaminated water, and (4) outside the IC boundary at the point of exposure, ground water would be suitable for unrestricted use. Move to Box 7.
7	Compliance strategy	No remediation required. Apply alternate concentration limits.

EPA provided guidance for applying ACLs at UMTRCA Title I processing sites, particularly in instances where a disposal cell is present. As noted in the preamble to the final rule (60 FR 2854), "EPA has decided not to delete the ACL provision because it is clearly needed, if for no other reason than to deal with the possibilities of unavoidable minor seepage over the extremely long-term design life (1,000 years) of the disposal required ...". Minor seepage during long-term disposal may result in somewhat elevated concentrations of mill-related constituents though tailings did not contain appreciable moisture when disposed. Estimates are that the tailings were 15 to 25 percent saturated when placed in the cell (DOE 1991); no slimes were present. Therefore transient drainage should be minimal and probably confined to the immediate vicinity of the disposal cell. Although it is not clear if the contaminants detected in the Cedar Mountain Formation are a result of disposal cell seepage or if they pre-date cell construction, the fact that a cell exists at the site makes it unreasonable to expect that MCLs or background levels should be met. Constituents that require ACLs because concentrations exceed their respective UMTRA Project ground water standards are arsenic, nitrate, selenium, and uranium. Sulfate and

sodium levels also are elevated, although no health-based drinking water standards have been established for these constituents. Section 3.3 describes the ACL approach for the Green River site and presents proposed numerical limits for each constituent.

In establishing an ACL, two locations must be defined—the point of compliance (POC) and point of exposure (POE). The POC is defined as the site-specific locations in the uppermost aquifer where the ground water protection standard must be met. Several POC wells are located adjacent to the disposal cell and are currently being monitored for Subpart A compliance. In contrast, the POE is defined as the locations where humans, wildlife, or other environmental species could reasonably be exposed to hazardous constituents from the ground water (NRC 1996). In the ACL guidance for UMTRCA Title II sites, the NRC notes "The POE, in most situations, will be located at the down-gradient edge of the land that will be transferred to either the Federal government or the State where the site is located for long-term institutional control ...". In the case of the Green River site, the disposal site itself is currently owned by DOE, and the State of Utah owns the land surrounding the site. Thus, appropriate POE locations would be at the downgradient extent of State-owned land. Three POE wells in the Browns Wash alluvium will be monitored to detect any potential migration of site-related contamination from the site. In addition, POE monitoring locations will be established for surface water in Browns Wash and at the confluence with the Green River downstream from the site.

2.2.2 Supplemental Standards for the Browns Wash Alluvium

The proposed compliance strategy for the Browns Wash alluvium is no further remediation with application of supplemental standards. The strategy for the Browns Wash alluvium is explained in Table 2.

Table 2. Compliance Strategy Selection Process for Ground Water in the Browns Wash Alluvium

Box from Figure 2	Action or Question	Result or Decision
1	Characterize plume and hydrological conditions.	See conceptual site model presented in Section 5.0 and contaminant screening presented in Section 6.0 of the SOWP. Move to Box 2.
2	Is ground water contamination present in excess of maximum concentration limits or background levels?	Manganese, nitrate, selenium, sodium, sulfate, and uranium exceed the MCLs or appropriate benchmarks at one or more monitoring points. Move to Box 4.
4	Does contaminated ground water qualify for supplemental standards due to limited use ground water?	Yes. Ground water in the Browns Wash alluvium qualifies for limited use because the aquifer is not capable of a sustained yield of 150 gallons per day. Move to Box 5.
5	Are human health and environmental risks of applying supplemental standards acceptable?	Yes. The quantity of ground water available would not result in unacceptable exposures. Ground water currently does not discharge to the surface so all exposure pathways are incomplete. Move to Box 7.
7	Compliance strategy	No remediation required. Apply supplemental standards.

Ground water in Browns Wash alluvium qualifies for supplemental standards based on limited yield as demonstrated by observations of ground water availability in the alluvial aquifer system during recent field investigations (DOE 2002). Currently it appears that the ground water levels in Browns Wash alluvium are below the elevation of the wash itself; therefore, no ground water is discharging to the wash. However, the surface water monitoring to be performed in conjunction with ACLs for the Cedar Mountain Formation would also detect any contaminants

from discharge of Browns Wash alluvium, should water levels rise. This monitoring will satisfy the State of Utah concern that a supplemental standards strategy must address surface water conditions.

2.3 Subpart A Compliance

The Green River site also contains the disposal cell, which is regulated under Subpart A of 40 CFR 192. The long-term surveillance activities and ground water monitoring program for the disposal site are presented in the LTSP, which is the regulatory document required by NRC when the disposal site was licensed (DOE 1998b).

DOE is currently monitoring ground water in four POC wells in the uppermost aquifer in the Cedar Mountain Formation (middle sandstone unit) adjacent to the disposal cell. Ground water samples are collected on a quarterly basis and analyzed for nitrate, uranium, and sulfate. Proposed concentration limits were established and are presented in Table 5.1 of the LTSP (DOE 1998b). At the end of 3 years (2001) sampling results were evaluated and a report submitted to NRC and the State of Utah (DOE 2001). The conclusion was reached that concentrations were within a reasonable range of compliance relative to MCLs and proposed concentration limits and were consistent with the preexisting levels of nitrate, uranium, and sulfate in ground water beneath and adjacent to the disposal cell. At that time, the investigation for Subpart B compliance was in the planning stages, and it was proposed that monitoring of the four POC wells continue on a quarterly basis until the investigation was complete and the site-wide compliance strategy and monitoring program were revised and approved.

It was also stated that insufficient data were available to confirm or deny the "harvest water leaching hypothesis" proposed in Modification No. 2 to the RAP and the LTSP (DOE 1998a and 1998b, respectively). Specifically, the harvest water leaching hypothesis was proposed as one of three possible explanations for elevated concentrations of nitrate in ground water in several POC wells adjacent to the disposal cell; the other two being transient drainage from the disposal cell or sources unrelated to uranium processing activities. The harvest water leaching hypothesis was explained as follows: (1) high concentrations of nitrate may be present in the vadose zone beneath and adjacent to the disposal cell; (2) water from precipitation running off the disposal cell cover collects in the toe drain along the northwest side of the cell; and (3) this water infiltrates the vadose zone and mobilizes nitrate, which migrates to the water table and into the ground water (DOE 1998a). Based on results of the investigation discussed in the SOWP (DOE 2002), it does not appear that the harvest water leaching hypothesis is valid because: (1) there is very little precipitation in the area to facilitate this activity—daily precipitation data from an onsite rain gage indicate an annual average of 2.78 inches during the past two years, with no obvious correlation with ground water elevations measured by dataloggers (Figure 3); (2) levels of nitrate appear to be anomalous (as discussed in Section 5.3.4.2 of the SOWP [DOE 2002] and in the 3-year evaluation report [DOE 2001]); and (3) there may be a component of transient drainage contributing some contamination to ground water in the uppermost aquifer since the bottom of the disposal cell is approximately 35 ft below grade and blasting during construction may have resulted in enhanced fracturing and subsequent pathway formation.

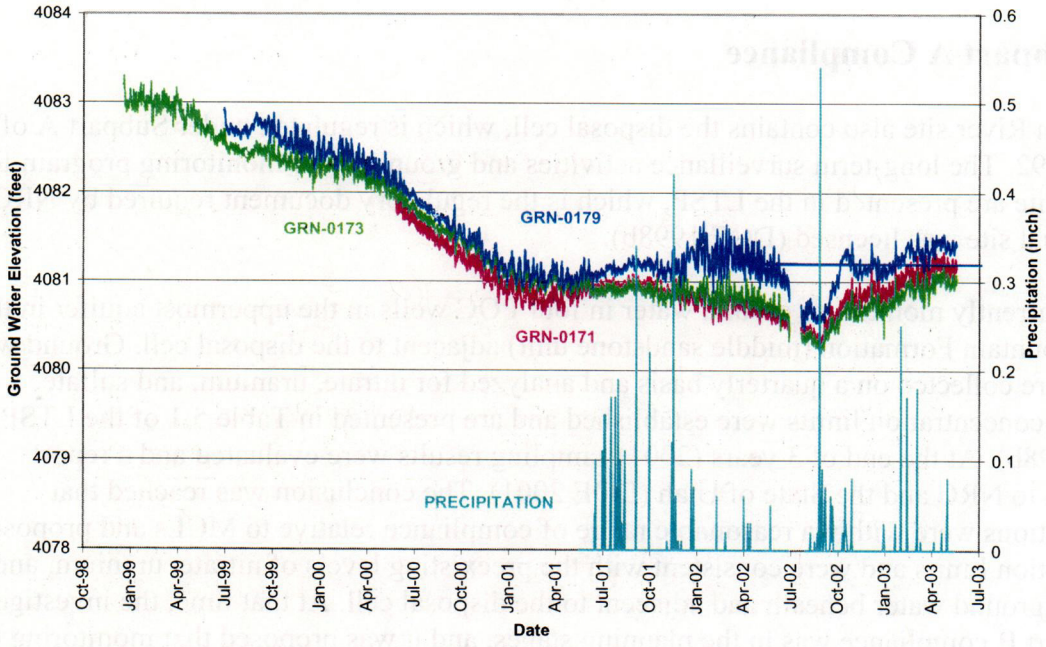

Figure 3. Ground Water Elevations and Daily Precipitation at the Green River Site

The discussion of the no further remediation compliance strategy with the application of ACLs for the Cedar Mountain Formation in Section 2.2.1 provides justification for the possible occurrence of contamination in ground water in the uppermost aquifer in this area and why the proposed compliance strategy and implementation thereof (including ongoing monitoring and ICs) is reasonable and protective of human health and the environment. This supports the objective of establishing a comprehensive site-wide compliance strategy for both Subparts A and B.

2.4 Human Health and Environmental Risk

The human health risk assessment update in the SOWP concluded that there is no unacceptable risk from site-related contaminants in ground water when implementing the proposed compliance strategy (DOE 2002).

The updated ecological risk assessment determined that there is little potential for site-related constituents to affect surface water or sediments (DOE 2002).

3.0 Implementation

ACLs and supplemental standards will be implemented in conjunction with ground water and surface water monitoring and ICs.

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3.1 Monitoring Program

Ground water and surface water will be monitored at select locations annually to observe the effectiveness of the proposed compliance strategy and ensure long-term protection of human health and the environment (Figure 4). A summary of the proposed monitoring locations is presented in Table 3.

Table 3. Summary of Proposed Monitoring for the Green River Site

Location	Monitoring Purpose	Analytes	Frequency
Ground Water			
0171, 0173, 0181, 0813	Point of compliance wells for the disposal cell; middle sandstone unit of the Cedar Mountain Formation; ensure ACLs are not exceeded.	As, Na, NO_3, Se, SO_4, U	Annual for 5 years; reevaluate monitoring requirements at that time.
0188, 0189, 0192*	Point of exposure wells, potential discharge of ground water from middle sandstone unit of Cedar Mountain Formation into the Browns Wash alluvium.	As, Na, NO_3, Se, SO_4, U	Annual for 5 years; reevaluate monitoring requirements at that time.
0179	Best management practice monitoring for uranium; middle sandstone unit of the Cedar Mountain Formation; near disposal cell.	U	Annual for 5 years; reevaluate monitoring requirements at that time.
0194	Best management practice monitoring for leading edge of contamination in the Browns Wash alluvium.	Mn, Na, NO_3, NH_4, Se, SO_4, U	Annual for 5 years; reevaluate monitoring requirements at that time.
Surface Water			
0846, 0847	Point of exposure for critical surface water habitat; ensure no degradation of water quality resulting from ground water discharge.	As, Mn, Na, NH_4, NO_3, Se, SO_4, U	Annual for 5 years; reevaluate monitoring requirements at that time. Monitoring will occur during time of year when habitat is most critical.

Monitoring program will address both Subparts A and B of 40 CFR 192.
Monitor well 0181 is an offset replacement for monitor well 0172.
*Monitor well 0192 to be installed southeast of Browns Wash.

The proposed ground water monitoring network for the ACL compliance strategy for the middle sandstone unit of the Cedar Mountain Formation includes four POC wells along the northwest edge of the disposal cell (0171, 0173, 0181, and 0813) and three POE wells north of the disposal cell (0188, 0189, and 0192) in the Browns Wash alluvium. The POC wells will monitor potential discharge of contaminants from the disposal cell into the middle sandstone unit of the Cedar Mountain Formation. Since the conceptual model of the site indicates that contaminated ground water in the middle sandstone unit of the Cedar Mountain Formation from the disposal cell area would potentially discharge into the Browns Wash alluvial system, the POE wells would provide an indication of migration of contaminants along this pathway. Another well on the southeast side of the disposal cell (0179) will also be monitored as a best management practice because of elevated uranium concentrations in ground water in this area. Also, a well just west of Browns Wash (0194) will track potential migration of the residual uranium plume in the Browns Wash alluvium. Ground water in the underlying basal sandstone unit of the Cedar Mountain Formation has not been contaminated by site-related activities because there is a strong upward hydraulic gradient and it is hydrogeologically isolated from the middle sandstone unit. Therefore, no monitoring of ground water in the basal sandstone unit is planned.

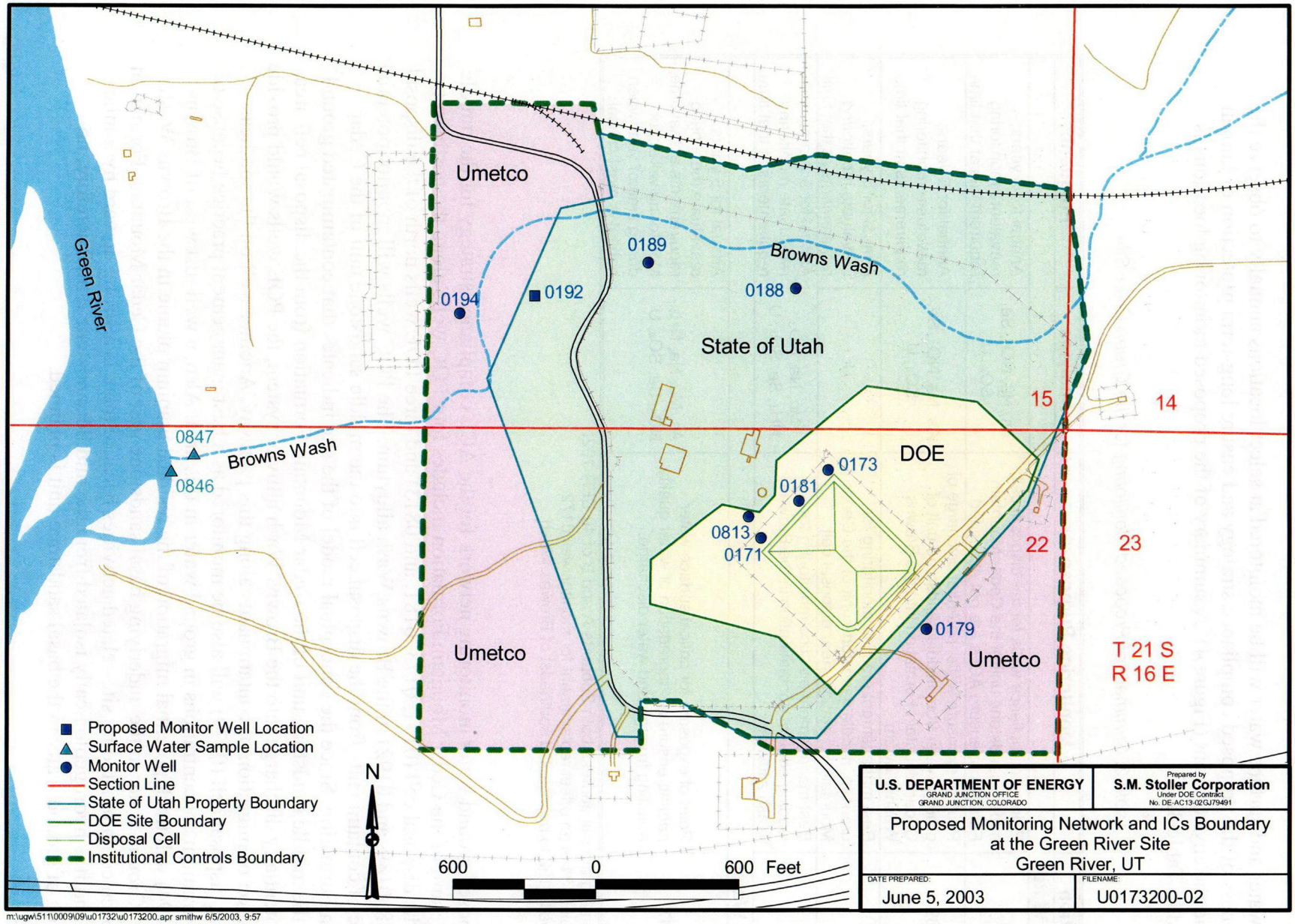

Figure 4. Proposed Monitoring Network and ICs Boundary at the Green River Site

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DOE will monitor surface water at two locations near the site to ensure that any contaminated ground water potentially discharging into the Browns Wash alluvium is not adversely affecting surface water habitats near the confluence of Browns Wash and the Green River. POE monitoring locations will be established at the confluence of Browns Wash and the Green River (0846) and in Browns Wash at the uppermost reach of the backwaters from the Green River (0847—this location will vary based on the stage of the river). Monitoring will be scheduled to coincide with the time of year during which this habitat is most critical to the endangered species.

After 5 years, DOE will reassess monitoring requirements and recommend modifications to NRC and the State of Utah as deemed necessary. Based on the current understanding of the site, it is anticipated that monitoring requirements may be satisfactorily completed within a 30-year timeframe.

Upon concurrence with the proposed monitoring program by the regulators, the remaining unneeded monitor wells in the vicinity of the Green River site should be decommissioned. This would provide protection of aquifers by removing access points, decrease maintenance costs, and limit further DOE liability. There are approximately 7 monitor wells in the Browns Wash alluvium and 18 monitor wells in the Cedar Mountain Formation that can be decommissioned.

3.2 Institutional Controls

DOE will establish ICs to provide long-term protection of human health and the environment. Appropriate and enforceable ICs will control and prevent access to potentially contaminated ground water in the vicinity of the Green River site.

DOE owns the disposal site and will maintain control over any and all activities on this property in perpetuity (Figure 5). The State of Utah owns the land surrounding the DOE property (Figure 5). ICs for contaminated ground water on property outside the DOE boundary can be secured from the State of Utah Division of Water Rights. This State office deals with both water quality concerns and water rights, and as such, can ensure that water quality is appropriate for any requested usage. DOE will apply to the State of Utah Division of Water Rights to establish restrictions within an area designated by DOE and the State as needing restricted access to ground water for domestic purposes. DOE will provide the State with information justifying the need for the restrictions including the constituents of potential concern, the levels of contamination present, and the associated potential risk of exposure. The application will have sufficient data to demonstrate understanding of the ground water system and contaminant movement. The State will conduct a public meeting to solicit comment and to address stakeholder concerns. Once any concerns have been addressed, the State will issue and maintain a policy specifying the ground water uses within the ICs boundary that will not be permitted. The policy will remain in effect until the ground water quality returns to acceptable levels.

As requested by the State of Utah, DOE will identify all parties holding surface and ground water rights along the flow path between the site and the Green River. Figure 5 shows the ownership of property surrounding the site. This information will be used to help establish an appropriate IC boundary. The proposed IC boundary will be determined in conjunction with the state and local entities that will be responsible for implementing, monitoring, and enforcing the ICs. The proposed ICs boundary is shown on Figure 4, and includes all of the state-owned property, along with portions of the Umetco Minerals property east and west of the state property. To facilitate the legal description of the ICs boundary on Umetco property, section lines are proposed to delineate the areas requiring restricted access to ground water. Access to the proposed ICs area for long-term monitoring and other UMTRA Project activities will be maintained by DOE as long as necessary. ICs monitoring and maintenance requirements will be specified in the revised LTSP.

3.3 ACLs and Compliance Assessment

Monitoring data from POC wells will be compared to ACLs established for the Cedar Mountain Formation to assess performance of the compliance strategy. Because of the temporal and spatial variability of contaminant concentrations, a somewhat different approach for application of ACLs is proposed for the Green River site than has been implemented at other UMTRA Ground Water Project sites. It is proposed that ACLs be established and compliance assessed by using averages of multiple wells rather than a single point.

Table 4 presents averages of arsenic, nitrate, sodium, sulfate, and selenium for compliance wells 0171, 0172, 0173, and 0813 over the last 5 years. Uranium averages also include well 0179 and are only computed for years in which data from that well are available. It can be seen that despite the variation between wells and fluctuations over time, average concentrations tend to be somewhat stable. By establishing ACLs and evaluating compliance using average values, it is more likely that exceedences of ACLs do represent real degradation of the aquifer. It is less likely that minor perturbations would prompt some sort of action. This overall compliance strategy suits the site-specific needs of the Green River site and should be adequately protective of human health and the environment. Numerical values proposed as ACLs are also included in Table 4.

Table 4. Average Concentrations of COPCs in Compliance Wells

Constituent	Date Sampled					Proposed ACL
	9/98	9/99	9/00	9/01	3/02	
As	0.037	0.048	0.041	0.040	0.033	0.075
NO_3	538	488	314	599	512	650
Na	2,125	1,960	2,175	2,302	2,147	2,500
SO_4	4,795	4,625	4,942	5,727	5,235	6,000
Se	0.097	0.106	0.074	0.126	0.115	0.18
	12/97	**6/01**	**12/01**	**7/02**		
U	0.037	0.050	0.053	0.057		0.075

Concentrations in mg/L.

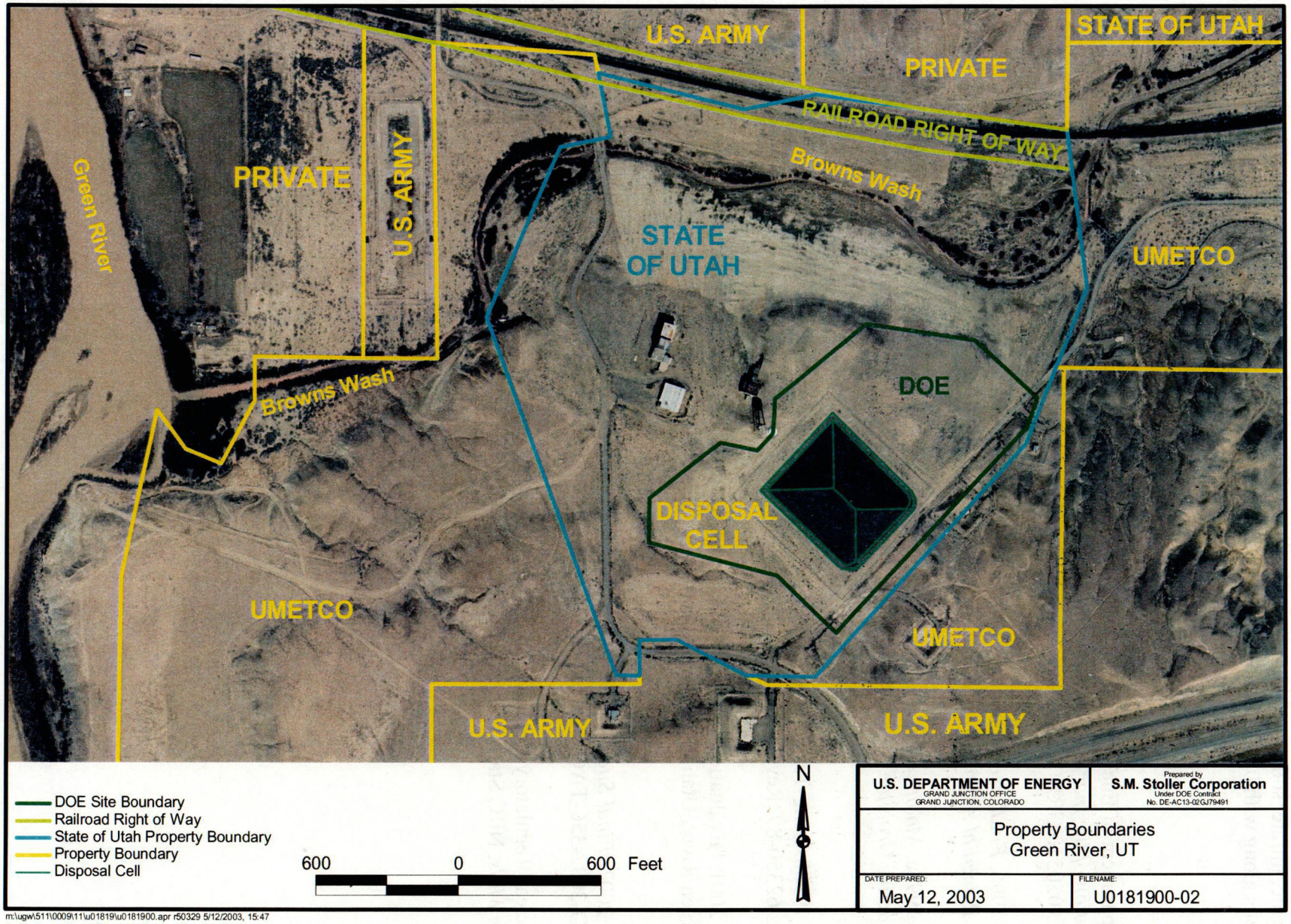

Figure 5. Property Ownership Near the Green River Site

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Wells from which ground water constituent concentrations are to be averaged for compliance with arsenic, nitrate, sodium, sulfate, and selenium ACLs are 0171, 0173, 0181, and 0813. Those same wells along with 0179 should be averaged for comparison to the uranium ACL.

4.0 References

U.S. Department of Energy (DOE), 1991. *Remedial Action Plan and Final Design for Stabilization of the Inactive Uranium Mill Tailings at Green River, Utah*, Final, UMTRA-DOE/AL-050510.GRN0, March.

———, 1996. *Final Programmatic Environmental Impact Statement for the Uranium Mill Tailings Remedial Action Ground Water Project*, DOE/EIS-0198, October.

———, 1998a. *Modification No. 2 to the Remedial Action Plan and Site Design for Stabilization of the Inactive Uranium Mill Tailings Site at Green River, Utah*, Final, DOE/AL/62350-050510, March.

———, 1998b. *Long-Term Surveillance Plan for the Green River, Utah Disposal Site*, DOE/AL/62350-89, Rev. 2, July.

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———, 2002. *Final Site Observational Work Plan for the Green River, Utah, UMTRA Project Site*, GJO-2002-356-TAC, September.

U.S. Nuclear Regulatory Commission (NRC), 1996. *Alternate Concentration Limits for Title II Uranium Mills*, NRC Staff Technical Position, January.