

United States Department of Energy



Comments and Responses on the Draft Surveillance and Maintenance Plan For the Green River, Utah, Disposal Site

November 1992



Uranium Mill Tailings Remedial Action Project

COMMENTS AND RESPONSES
ON THE DRAFT
SURVEILLANCE AND MAINTENANCE PLAN
FOR THE GREEN RIVER, UTAH,
DISPOSAL SITE

NOVEMBER 1992

The following U.S. Nuclear Regulatory Commission comments are based on the April 1990 Draft Surveillance and Maintenance Plan for the Green River, Utah, Disposal Site. The responses are based on the September 1992 Final Long-term Surveillance and Maintenance Plan for the Green River, Utah, Disposal Site.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 5, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: GENERAL

1. Once the NRC rule making is complete, the general license will contain a condition that requires care for the site in accordance with the provisions of the surveillance and maintenance plan (S&MP). Therefore, the provisions of the S&MP will become license conditions.

Because of the eventual incorporation of the S&MP provisions into the license, care should be taken to consider the site specific conditions when making wholesale references to requirements in the DOE generic guidance document. References should be specific, direct, and qualified if necessary. When revising the draft S&MP, DOE should review all references to the generic document to insure that all referenced requirements are appropriate for and consistent with the S&MP. Deviations from the generic procedures in the Guidance Document should be justified.

In addition, although it may be appropriate for this early draft to be written in terms of proposed or present conditions, the final form of the S&MP should be written in terms of post-licensing conditions.

SECTION 2

Response: Page 1-1

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

Section 1.1 of the final LTSP states that the general license requires that the disposal cell be cared for in accordance with the provisions of the Green River LTSP.

All references to the September 1992 Guidance for Implementing the UMTRA Project Long-term Surveillance Program (Guidance Document) are specific and appropriate, with no deviations.

Some of the key activities in the UMTRA Project licensing process have not been completed. Therefore, this final version was written based on current available

information. An update to this final LSTP will be prepared when final documentation is available.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 5, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 5, Section 2.1, first paragraph

2. DOE states that "The surveyed legal description of the Green River disposal site is provided on Figure 2.2". However, Figure 2.2 provides no legal description of the site. A legal description is provided on the last un-numbered figure in the S&MP. DOE should correct this discrepancy.

SECTION 2

Response: Page 2-2

By: Teri Monaghan Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

The discrepancy was corrected in the final LTSP. The legal description can be found in Section 2.1.2, and is also labeled on the topographic map, Attachment 2 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 5, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 5, Section 2.1, second paragraph.

3. DOE states that the State of Utah will transfer title of the six-acre permanent disposal site over to the federal government upon completion of remedial action. Since this transfer should be complete prior to the submittal of the final S&MP, DOE should provide the appropriate documentation to demonstrate completion of this transfer.

SECTION 2

Response: Page 2-2

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

Title transfer is still pending. Once the appropriate documentation is available to demonstrate completion of this title transfer, it will be provided for inclusion in Attachment 3 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 5, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 10, Section 2.3

4. DOE states that eight boundary monuments and three survey monuments will define the eleven corners of the legal boundaries of the unfenced, irregular shaped permanent disposal site. However, DOE's Guidance Document states on page 11 that three survey monuments are the minimum established. DOE should provide the basis for determining that the minimum number of survey monuments was sufficient to define the site boundary.

SECTION 2

Response: Page 4-1

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged. The survey monuments were not intended to define the site boundary solely. They, in conjunction with the eight boundary monuments, define the site boundary sufficiently, as depicted on the topographic map, Attachment 2 of the LTSP. The minimum number of survey monuments were sufficient to establish permanent horizontal control as referenced to the nearby USGS triangulation station, Boyd, and to meet third-order survey standards.

Plans for Implementation:

None.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 6, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 26

5. The interim concentration limits for Gross Alpha in the final TER is 24.5 pCi/l, not 195 pCi/l. DOE should modify the S&MP to show the correct value.

SECTION 2

Response: Page 5-9

By: Kathy Monks

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

Table 5.2 was revised to show the correct MCL value for net gross alpha in the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 6, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 27

6. In the RAP DOE committed to the monitoring of the moisture content of the radon barrier, residual radioactive material, and the buffer layer in order to estimate water flux. There is no discussion in the S&MP of monitoring the soil moisture as previously committed in the final RAP. The neutron access tubes have already been installed. The effort to provide additional monitoring of soil moisture is minimal in comparison to other monitoring requirements.

SECTION 2

Response: Page 5-13

By: Kathy Monks

Date: 10/30/92

Indirect monitoring was initially used at the Green River disposal cell to demonstrate that the net flux of moisture through the tailings, windblown materials, and buffer is near the design flux of 2×10^{-8} cm/s as stated in the RAP. However, indirect monitoring has been discontinued. Data collected and analyzed from the indirect monitoring network have shown that the combination of a low seepage flux and geochemical retardation by foundation materials underneath the disposal cell ensures that the proposed EPA groundwater protection standards will not be exceeded within the design life of the cell. Therefore, indirect monitoring as a screening mechanism is not necessary at the Green River disposal site.

Plans for Implementation:

Comment is addressed in Section 5.2.3 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 6, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 31, Section 4.0

7. In Section 4.0, DOE has stated that the procedures for conducting Phase I and II inspections are in the Guidance Document and that the procedures outlined in the S&MP are guidelines for conducting these inspections. DOE also indicated that a detailed, site-specific Phase I inspection plan, a site inspection check list, procedures for a Phase II inspection, and procedures for conducting contingency inspections will be established at some later date. These statements appear contradictory. Based on a lack of any site-specific data and the implication that what is in Section 4.0 will be changed, the NRC has only conducted a very cursory review of this section. NRC will conduct a detailed review of the final S&MP. However, DOE should note the following:

- NRC and the State of Utah should be provided with an up-to-date copy of the site file.
- While Phase II inspection plans must be tailored to the specific situation that would cause them to be initiated, it is possible to provide some information in the S&MP. At a minimum, the most likely situations or circumstances that may require a Phase II inspection at Green River should be discussed and general discussion of elements of the Phase II inspection plans should be provided.

SECTION 2

Response: Page Attachment 7 and 7-1 By: Teri Monaghan Date: 10/30/92

Comments are acknowledged.

Plans for Implementation:

GJPO will be provided with an up-to-date copy of the site file from the UMTRA Project Office. A site file index is included in the LTSP as Attachment 7. Individual items from the site file can be provided to the NRC upon request.

Phase II inspections, which now encompass follow-up and contingency inspections, are discussed in Section 7 of the LTSP. The protocols for these inspections are discussed in detail in the Guidance Document.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Date: June 6, 1990

Comment: Page 24, Figure 3.1

8. The new background wells are to be located near the upgradient toe of the disposal cell. The reason for locating them so close to the disposal cell is not clear. The NRC staff is concerned that these wells at the proposed locations may be impacted by the tailings due to the following circumstances: (a) The use of construction water might create a transient ground-water mound that pushed the leachate upgradient, and (b) surface runoff and other construction activities might spread the contaminants beyond the upgradient toe of the disposal cell. If the POC wells are found to be tainted during monitoring due to unforeseen circumstances, there is a good chance the new background wells at the proposed locations may also be tainted. DOE should consider relocating the new background wells further away from the disposal cell.

SECTION 2

Response: Page 5-10

By: Kathy Monks

Date: 10/30/92

The four new upgradient monitor wells (177 through 180) were installed approximately 75 meters (250 feet) southwest and southeast of the disposal cell. The placement of these upgradient wells has been optimized in the following ways. (1) the wells have been placed beyond the upgradient extent of potential seepage from the disposal cell, (2) the wells have been screened in the uppermost aquifer within the same formation and at approximately the same depths as the POC monitor wells, (3) the wells are of sufficient number to account for heterogeneity in background groundwater quality data, and (4) surface runoff is downslope away from the upgradient (background) monitor wells.

Plans for Implementation:

Comment is addressed in Section 5.2.1 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 7, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 28

9. Where possible, the S&M Plan should provide sufficient information to demonstrate that the proposed S&M monitoring will not impact the postponed groundwater cleanup and restoration. The Plan should, as a minimum, indicate that when the groundwater cleanup and restoration plans are developed, that the S&MP will be reviewed and modified as necessary to insure no impact.

SECTION 2

Response: Page 5-14, 5-18

By: Kathy Monks

Date: 10/30/92

The groundwater monitoring portion of the LTSP has been designed to provide the flexibility necessary to respond to new information. Monitoring data will be reviewed and analyzed, and recommendations will be presented in 5-year performance evaluation reports. These reports will provide the flexibility necessary to modify the LTSP if additional site characterization data such as that gathered during the groundwater remediation phase indicates a change in the groundwater quality.

Plans for Implementation:

Comment is addressed in Sections 5.3 and 5.3.2 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 12, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Figure 2.3 - Final Site Plan

10. This figure in the report is illegible; please provide a legible and enlarged copy in the final report.

SECTION 2

Response: Page Attachment 2

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

This map was updated and enlarged as the final topographic map, Attachment 2 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 12, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 10, paragraph 1

11. The last sentence is not clear; a line seems to be missing. Please verify this.

SECTION 2

Response: Page 2-7

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

The sentence was edited to read clearly.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 12, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Section 2.3.3 Permanent Site Marker, Page 12

12. Site marker SMK-1 is set in a bed of concrete that extends to a depth of 36 inches below the ground surface. Section 2.6.3 of the DOE guidance document requires the site markers to be set in concrete that extends below the frost line. The frost depth at this site is 39 inches; therefore, the foundation of the site marker should be extended down to a depth of at least 39 inches. The same is true for marker SMK-2.

SECTION 2

Response: Page 4-1

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

The site markers were placed according to specifications given in Section 4.3 of the Guidance Document.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 12, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Figure 2.8 - Site Markers, page 16

13. The dimensions shown in the details for SMK-2 are inconsistent. Please verify the dimensional details of this sketch.

SECTION 2

Response: Page 4-5

By: Jim Crain

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

The figure, now Figure 4.4 of the LTSP, was revised.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 12, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Section 2.5 - Aerial Photography

14. This section indicates that an aerial photo of the site will be taken to document the final site conditions after remedial action at the site is completed. There are no plans for subsequent aerial photos of the site, say at intervals of 5 years or so. The General Draft Surveillance and Maintenance Guidance Document, July, 1988, prepared by the DOE subsequent to the guidance document of 1986 for UMTRA projects, requires aerial photos to be repeated at 5 years from start of surveillance (Summary Table and Section 5.1.1, Page 65). This would help in detecting any gradual change occurring at the site. The DOE should justify why only one set of aerial photos will be used to evaluate the gradual changes at the Green River site.

SECTION 2

Response: Page 3-3

By: Teri Monaghan Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

The section, now Section 3.3 of the LTSP, was revised according to the Guidance Document.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 19, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Section 1.1, Page 2, Second full paragraph starting with: "As a result of the Amendments Act..."

15. The only case where a "two-phased" approach to licensing occurs is when either SIP or SOS involves aquifer restoration. If the disposal site is relocated, then two phases are not necessary. The disposal site will be licensed upon proper stabilization and completion of remedial action. If the processing site requires additional time to complete aquifer restoration, the NRC completion concurrence would be conditional, until restoration is achieved.

SECTION 2

Response: Page NA

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged and understood.

Plans for Implementation:

None.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 19, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Section 1.2 Page 2

16. Add the underlined text:

- Disposal site ownership....

SECTION 2

Response: Page 2-2

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

The text was revised in Section 2.1.3 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah
Document: Surveillance and Maintenance Plan
Reviewer: Nuclear Regulatory Commission

Date: June 19, 1990

Comment: Section 2.1 Page 5

17. This section should refer to Attachment 7 as the legal description of the land (containing the disposal site) to be transferred from the State of Utah to DOE; i.e., clearly indicate what 6 acres are being transferred.

SECTION 2

Response: Page Attachment 3 By: Teri Monaghan Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

Once this information becomes available it will be added to Attachment 3 of the LTS², in accordance with the protocol outlined in the Guidance Document.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 19, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Chapter 2.0 Pages 5-9

18-a. The baseline data maps in the SMP do not appear to convey the information described in the DOE "Guidelines for UMTRA Project Surveillance and Maintenance" document (January 1986). For example, land ownership is not clearly indicated in the vicinity map, the site area map nor in the Attachment 7 map.

18-b. Furthermore, the site map scale is less than 1:200, as specified in the DOE generic guidance document.

18-c. Figure 2.3 is not legible.

SECTION 2

Response: Page Attachment 2 By: Teri Monaghan Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

- a. Land ownership will be added to the topographic map once ownership documentation is finalized.
- b. The map scale was revised as specified to 1:200.
- c. Figure 2.3 was revised as the topographic map, Attachment 2 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 19, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Section 2.3.2 Page 12

19. This claims that there are eleven Model A-1 boundary monuments. The Attachment 7 map indicates only 8, as well as does Table 2.1. It appears that the survey monuments also serve as boundary monuments, but A-1 and RT-1 markers are different. This needs to be clarified in the final SMP.

SECTION 2

Response: Page 4.1

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for implementation:

The number of boundary monuments and survey monuments was clarified in Sections 4.1 and 4.2, as well as on the topographic map, Attachment 2 of the LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah
Document: Surveillance and Maintenance Plan
Reviewer: Nuclear Regulatory Commission

Date: June 19, 1990

Comment: Section 3.3 Page 25-27

20-a. The two-year quarterly sampling program should also investigate the existence of other hazardous constituents because of the limited background ground-water quality data upon which it was based.

20-b. The statistical procedures should be consistent with EPA interim guidance on statistical analysis of ground-water monitoring data at RCRA facilities (April 1989).

SECTION 2

Response: Page 5-7, 5-18 By: Kathy Monks Date: 10/30/92

a. Additional sampling was conducted, over a 2-year post-remedial period, to characterize background groundwater quality. These additional data were used to revise concentration limits for the designated hazardous constituents. During site characterization, described in detail in the Green River RAP (DOE, 1991), background groundwater quality was analyzed for hazardous constituents listed in Appendix IX to 40 CFR 264, plus additional constituents listed in the modifications to Table A in 40 CFR 192 (at 52 FR 36000; Sept. 24, 1987). Methylene chloride was temporarily on the list due to a single detection in 1989. However, in 1990 and 1991, no methylene chloride was detected in any groundwater samples screened for organics. Therefore, methylene chloride is not considered a hazardous constituent and additional monitoring for methylene chloride is not required. The revised concentration limits reflect the natural variability of background groundwater quality in the Cedar Mountain Formation. Additional information concerning the recalculation of background groundwater quality and the revised DOE concentration limits is available in the final Completion Report, Volume 3, Appendix K (MK-F, 1991).

b. Comment acknowledged. The evaluation of data, including determinations of trends or exceedances, are made using statistical methods described in the EPA's "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities - Interim Final Guidance" (EPA, 1989).

Plans for Implementation:

Comments 20-a and 20-b are addressed in Sections 5.1.3 and 5.3.2, respectively, of the Green River LTSP.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 19, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Section 4.2.2 Page 32

21. The S&MP indicates that the UMTRA site files will be held in the DOE Albuquerque office, but that the S&M inspections will be conducted by the Grand Junction office. If this is the case, it seems more appropriate for the GRJPO to have the site files or a copy of the files.

SECTION 2

Response: Page NA

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

GJPO will be provided with a copy of the site file in accordance with the Guidance Document.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 19, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Section 5.0 Custodial Maintenance, Page 37

22. The S&MP states that "It is anticipated that activities described above (custodial maintenance) could be conducted without the need for an annual inspection." NRC regulations, however, require, at a minimum, an annual inspection of the site to confirm integrity and to determine any need for maintenance and monitoring.

SECTION 2

Response: Page 6-1

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

Section 6.0 of the final LTSP states that annual inspections will be conducted.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 24, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 19

23. A phase II inspection should be conducted long before gullies become 7 feet deep at the apron. We suggest that the need for a phase II inspection be determined when any gully of about 2-3 feet in depth occurs within about 200 feet of the apron.

SECTION 2

Response: Page 7-1

By: Meredith Day

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

In the final LTSP, specified critical values are not used to limit contingency inspections or corrective actions. Instead, site inspection photographs, measurements, and reports will quantify site conditions, such as gullies. Progressive changes over time will be judged by inspectors to determine when and if corrective action is necessary.

UMTRA DOCUMENT REVIEW FORM

SECTION 1

Site: Green River, Utah

Date: June 24, 1990

Document: Surveillance and Maintenance Plan

Reviewer: Nuclear Regulatory Commission

Comment: Page 32

24. Gullies should be included in the field inspection, along with any other signs of erosion.

SECTION 2

Response: Page 6-4

By: Teri Monaghan

Date: 10/30/92

Comment acknowledged.

Plans for Implementation:

Gullies were included in the site inspection, as stated in Section 6.4 of the LTSP.