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REV. 0

FINAL AUDIT REPORT OF REMEDIAL ACTION CONSTRUCTION AT THE UMTRA PROJECT GRAND JUNCTION, COLORADO, PROCESSING SITE

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Prepared for
U.S. Department of Energy
UMTRA Project Office
Albuquerque, New Mexico

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DISCLAIMER

EXECUTIVE SUMMARY

This final audit report (FAR) for remedial action at the Grand Junction, Colorado, Uranium Mill Tailings Remedial Action (UMTRA) Project processing site consists of a summary of the radiological surveillances/audits, the quality assurance (QA) in-process surveillances, and the QA final close-out inspection performed by the U.S. Department of Energy (DOE) and Technical Assistance Contractor (TAC). The FAR also summarizes other surveillances performed by the U.S. Nuclear Regulatory Commission (NRC).

A total of five radiological surveillances and one radiological audit, focusing primarily on the processing site, was performed at the Grand Junction site. The surveillances were performed 28-31 May 1991 (DOE, 1991a); 9-12 December 1991 (DOE, 1991b); 13-16 April 1992 (DOE, 1992a); 14-17 September 1992 (DOE, 1992b); and 15-18 March 1993 (DOE, 1993a). The radiological audit was performed on 9-11 August 1993 (DOE, 1993b). The audit and surveillances resulted in one finding and 52 observations. All outstanding issues were satisfactorily closed out on 9 February 1994. The radiological surveillances and audit are discussed in Section 2.0 of this report.

A total of nine QA in-process surveillances were performed at the Grand Junction UMTRA Project site. These were performed 9-10 April 1991 (DOE, 1991c); 22-23 July 1991 (DOE, 1991d); 10-11 December 1991 (DOE, 1991e); 30-31 March 1992 (DOE, 1992c); 29-30 June 1992 (DOE, 1992d); 21-23 September 1992 (DOE 1992e); 5-7 April 1993 (DOE, 1993c); 12-14 July 1993 (DOE, 1993d); and 1-3 November 1993 (DOE, 1993e). Those in-process QA surveillances resulted in 72 observations relating to the processing site. All outstanding issues were satisfactorily closed out on 2 February 1994. The QA in-process surveillances are discussed in Section 3.0 of this report.

The DOE/TAC Grand Junction preliminary remedial action close-out inspection was conducted 29-30 June 1994 (DOE, 1994). That inspection covered the processing site and the incomplete Cheney disposal cell. A portion of the disposal cell remains open to accept vicinity property materials. The preliminary close-out inspection resulted in three processing site-related observations requiring response from MK-Ferguson. These observations were closed out after DOE reviewed the MK-Ferguson response on 28 December 1994. The preliminary close-out inspection is discussed in Section 4.0 of this report.

The NRC performed a total of three on-site construction reviews (OSCRs) at the Grand Junction site. The OSCRs covered both the processing and disposal sites. They were performed on 19 June 1991; 16 June 1992; and 4 August 1993. The OSCRs resulted in general site-related observations, none of which required a response from MK-Ferguson. The OSCRs were considered closed out at the exit meetings and are discussed in Section 5.0 of this report.

To summarize, a total of one finding and 127 observations were noted during DOE/TAC audit and surveillance activities. The NRC noted general site-related observations during the OSCRs. Follow-up to responses required from MK-Ferguson for the DOE/TAC finding and observations indicated that all issues related to the Grand Junction processing site

were resolved and closed out to the DOE's satisfaction. The NRC OSCRs resulted in no issues related to the Grand Junction processing site requiring a response from MK-Ferguson.

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LIST OF ACRONYMS

Acronym	Definition
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FAR	final audit report
HP	health physics
NRC	U.S. Nuclear Regulatory Commission
OSCR	on-site construction review
QA	quality assurance
QA/QC	quality assurance/quality control
RAC	Remedial Action Contractor
RAIP	remedial action inspection plan
RAP	remedial action plan
TAC	Technical Assistance Contractor
UMTRA	Uranium Mill Tailings Remedial Action
UMTRCA	Uranium Mill Tailings Radiation Control Act

1.0 INTRODUCTION

This final audit report (FAR) of remedial action activities performed at the Grand Junction processing site provides the Technical Assistance Contractor's (TAC) independent assessment of remedial action compliance with approved plans, specifications, standards, and 40 CFR Part 192. The Grand Junction Cheney disposal cell is currently scheduled for completion by the end of fiscal year 1998. The cell may be left open until all Grand Junction area vicinity properties have been identified and remediated or until the cell capacity is reached. MK-Ferguson directed remedial action construction at the Grand Junction processing site. A FAR for the Cheney disposal cell will be completed after the disposal cell is closed.

1.1 RADIOLOGICAL SURVEILLANCES

The TAC performed radiological surveillances and an audit for the U.S. Department of Energy (DOE) at the Grand Junction site to independently assess whether the quality of remedial action work was sufficient to meet U.S. Environmental Protection Agency (EPA) standards and other site-specific health physics requirements. Radiological surveillances complemented quality assurance (QA) surveillances and provided assurance that the remedial action tasks complied with relevant specifications and standards. Radiological surveillances were conducted one to two times per construction season. Section 2.0 documents the results of the surveillances and follow-up actions, and Table 1.1 shows a summary list of the surveillances.

1.2 QUALITY ASSURANCE IN-PROCESS SURVEILLANCES

Under the DOE's direction, the TAC QA Department performed QA in-process surveillances at the Grand Junction site to verify that the procedures and systems required by the respective QA programs were implemented during remedial action. The QA in-process surveillances were performed three times a year for each organization or subcontractor conducting work in support of the UMTRA Project. Section 3.0 documents the results of QA in-process surveillances and follow-up actions at the Grand Junction processing site, and Table 1.1 shows a summary list of the QA in-process surveillances.

1.3 REMEDIAL ACTION CLOSE-OUT INSPECTION

After completion of remedial action, the remedial action close-out inspection was conducted at the Grand Junction site to verify that the site was constructed in compliance with the approved remedial action plan (RAP), construction plans, and specifications. Section 4.0 documents the results of the remedial action close-out inspection, and Table 1.1 provides a summary.

Table 1.1 Summary of audits and surveillances

Type/date of activity	Number of comments	Number of issues or findings	Number of observations	Date closed
DOE/TAC Radiological Surveillances/Audits				
28-31 May 1991	-	-	11	18 Oct. 1991
9-12 December 1991	-	-	6	5 Oct. 1992
13-16 April 1992	-	-	5	6 Oct. 1992
14-17 September 1992	-	-	7	14 Jun. 1993
15-18 March 1993	-	-	7	14 Jun. 1993
9-11 August 1993	-	1	16	9 Feb. 1994
DOE/TAC QA In-Process Surveillances				
9-10 April 1991	-	-	1	18 July 1991
22-23 July 1991	-	-	10	4 Oct. 1991
10-11 December 1991	-	-	9	8 Jan. 1992
30-31 March 1992	-	-	10	2 May 1992
29-30 June 1992	-	-	10	9 Nov. 1992
21-23 September 1992	-	-	7	15 Jan. 1993
5-7 April 1993	-	-	4	1 Sept. 1993
12-14 July 1993	-	-	10	20 Oct. 1993
1-3 November 1993	-	-	11	2 Feb. 1994
DOE/TAC Remedial Action Close-out Inspections				
29-30 June 1994	-	-	3	28 Dec. 1994
Other Audits/Surveillences				
NRC				
19 June 1991	-	-	-	19 Jun. 1991
16 June 1992	-	-	-	16 Jun. 1992
4 August 1993	-	-	-	4 Aug. 1993

1.4 OTHER QUALITY ASSURANCE AUDITS/SURVEILLANCES

Section 5.0 documents audits or surveillances conducted at the Grand Junction site by the U.S. Nuclear Regulatory Commission (NRC). A summary list of these activities is provided in Table 1.1.

1.5 AUDIT PROCEDURES

Criteria and procedures for conducting UMTRA Project audits and surveillances are provided in the "UMTRA Project Audit/Surveillance Program Plan," (DOE, 1988).

1.6 GENERAL STANDARDS

In 1978, the U.S. Congress passed Public Law 95-604 (PL 95-604), the Uranium Mill Tailings Radiation Control Act (UMTRCA) of 1978, which declared uranium mill tailings to be a potential health hazard to the public and required that certain sites be designated for remedial action. The Grand Junction site was included as one of twenty-four sites. The EPA was directed to promulgate radiological and nonradiological standards for decontamination of the sites. The DOE was authorized to initiate and manage the remedial actions. The NRC was charged with concurring in the remedial actions and licensing the disposal sites. The standards that apply to all UMTRA Project sites, as promulgated by the EPA, are given in Subparts A and B of 40 CFR Part 192:

- The standards in Subpart A are directed at controlling the stabilization of radioactive materials at the designated disposal sites and are addressed by the engineering design specifications developed by the DOE UMTRA Project Office for the disposal sites.

- The standards in Subpart B define the conditions under which a site was adequately cleaned up.

The processing site will be evaluated to determine whether ground water restoration is required, in accordance with Subpart B of the ground water protection standards (60 FR 2854, 11 January 1995). Ground water restoration, if determined necessary, will be accomplished under the UMTRA Ground Water Project.

2.0 RADIOLOGICAL SURVEILLANCES

The TAC performed five comprehensive site radiological surveillances and one radiological audit for the DOE UMTRA Project Office at the Grand Junction, Colorado, processing site. The audit and surveillances were performed to independently assess whether the quality of remedial action work was sufficient to comply with EPA standards and DOE Orders. The TAC's radiological surveillances and audits included, but were not limited to, a comprehensive review of the Remedial Action Contractor's (RAC) radiological/health physics (HP) procedures and measurements, instrument calibration records, data management, personnel monitoring, and operational performance of the contractors and subcontractors responsible for HP remedial action work at the former uranium ore processing sites and the uranium tailings disposal cells.

2.1 RADIOLOGICAL AUDIT/SURVEILLANCE OBJECTIVES

The TAC radiological audit/surveillance program has evolved considerably since these audits/surveillances were first performed in 1991. The process involves a complete inventory of office and site radiological conditions at the time of the audit/surveillance. The findings, observations, and recommendations are used to identify site-specific and programmatic conditions. That information is then used to identify positive attributes and address deficiencies to improve the overall radiological controls at the site.

The discussion information used to determine compliance with applicable procedures and requirements is obtained from interviewing RAC field personnel, reviewing office activities, and touring field facilities. Reviewing applicable records and documentation provides additional verification of HP activities.

Radiological audits/surveillances have three distinct objectives. The first is to verify that remedial actions are meeting EPA or any other cleanup standards specified in the remedial action planning documents. The second is to evaluate the RAC's methods for preventing overexcavation and, thereby, avoiding increased quantities of material for disposal and potentially escalated remediation costs. The final objective is to review the RAC's general data management methods and procedures and to allow the exchange of ideas for technological improvements to the program.

Findings and observations presented in a radiological audit/surveillance may include but are not limited to the following criteria:

- Noncompliance with requirements of the site RAP, vicinity property management and implementation manual, engineering design, or directives from the UMTRA Project Office that are applicable to the site.

- Evidence that existing radiological measurement methods may result in residual contamination levels in excess of established limits (underexcavation).

- Evidence that existing radiological measurement methods may result in the removal of noncontaminated materials in excess of the limits (overexcavation). The soil contamination limits are those specified by EPA standards, including site-specific modifications agreed to by the NRC or mandated by UMTRA Project Office directives.

- Evidence that some aspects of the contractor's radiological survey plans and procedures, measurement techniques, or data management capabilities are insufficient to allow eventual certification of the site.

- Evidence that activities are not in compliance with applicable DOE Orders.

Observations are comments the auditors consider appropriate to document topics of concern to the UMTRA Project Office and to note improvements in techniques or procedures to noncritical areas. Comments on proficiency, favorable comparisons, or developmental activities may be included as observations.

2.2 SURVEILLANCE RESULTS

The information contained in this section was obtained from final surveillance reports and supporting documentation. If not obtained via a report or cover letter, the closure of a finding or observation was determined based on documented information from the members of the surveillance team, including follow-up site audits/surveillances.

2.2.1 Surveillance GRJ-S01

The TAC performed the first comprehensive site radiological surveillance (GRJ-S01) for the DOE in Grand Junction, Colorado, from 28-31 May 1991 (DOE, 1991a). TAC representatives included Doug Gonzales and Todd Culp. The UMTRA Project office was represented by Don Leske. On-site RAC personnel participating in the surveillance included Alan Erickson, Lyle Lauer, Garth Stowe, Scott Williams, Roger Geary, Joan Cosgrove, Kathy Pinnt, and Rosalind Black. The purpose of this surveillance included the collection of verification samples from several plots on the processing site (100 square meters in size), a review of the RAC's radiological procedures and measurements, instrument calibration, quality assurance/quality control (QA/QC), and data management/analysis. Eleven site-specific observations were identified, none of which impacted the RAC's ability to ensure compliance with EPA standards. The overall conclusion of the radiological surveillance was that the radiological aspects of the Grand Junction, Colorado, remedial action

program were being performed effectively according to written procedures and documentation requirements.

In a letter dated 16 October 1991 (Larson, 1991), the RAC's responses to the radiological surveillance were found to be acceptable, thereby recommending that this audit (surveillance) be closed. In a letter dated 18 October 1991 (Chernoff, 1991), the DOE considered this surveillance closed.

2.2.2 Surveillance GRJ-S02

The TAC performed the second comprehensive site radiological surveillance (GRJ-S02) for the DOE in Grand Junction, Colorado, from 9-12 December 1991 (DOE, 1991b). Representatives from the TAC included Daniel McCarthy, Bob Cornish, and Terry Kraus. The DOE was represented by Frank Bosiljevac. On-site RAC personnel participating in the surveillance included Charlie Bull, Garth Stowe, Scott Williams, and Kathy Pinnt. The purpose of this surveillance included review of the RAC's radiological procedures and measurements, instrument calibration, QA/QC, and data management/analysis. Six site-specific observations were identified, none of which impacted the RAC's ability to ensure compliance with EPA standards. The overall conclusion from the radiological surveillance was that the radiological aspects of the Grand Junction, Colorado, remedial action program were being performed effectively according to written procedures and documentation requirements.

In a memo dated 3 March 1992 (Miller, 1992), the RAC's responses to the radiological surveillance were found to be acceptable, thereby recommending this surveillance be closed. In a memo dated 5 October 1992 (from F. Bosiljevac to R.E. Lawrence), the DOE concurred with the TAC evaluation and considered this surveillance closed.

2.2.3 Surveillance GRJ-S03

The TAC performed the third comprehensive site radiological surveillance (GRJ-S03) for the DOE in Grand Junction, Colorado, from 13-16 April 1992 (DOE, 1992a). Representatives from the TAC included Daniel McCarthy and Terry Kraus. The DOE was represented by Frank Bosiljevac. On-site RAC personnel participating in the surveillance included Charlie Bull, Garth Stowe, Scott Williams, Ernest Couch, and Kathy Pinnt. The focus of this surveillance included review of the RAC's radiological procedures and measurements, instrument calibration, QA/QC, and data management/analysis. Five site-specific observations were identified, none of which impacted the ability of the RAC to ensure compliance with EPA standards. The overall conclusion from the radiological surveillance was that the radiological aspects of the Grand Junction, Colorado, remedial action program were being performed effectively according to written procedures and documentation requirements.

In a memo dated 6 October 1992 (Bosiljevac, 1992), the RAC's responses to the radiological surveillance were found to be acceptable by the TAC and the DOE UMTRA Project Office, thereby recommending closure of this surveillance.

2.2.4 Surveillance GRJ-S04

The TAC performed the fourth comprehensive site radiological surveillance (GRJ-S04) for the DOE in Grand Junction, Colorado, from 14-17 September 1992 (DOE, 1992b). Representatives from the TAC included Daniel McCarthy and Bob Cornish. The DOE was represented by Frank Bosiljevac. On-site RAC personnel participating in the surveillance included Charlie Bull, Garth Stowe, Scott Williams, and Carolyn Davis. The purpose of this surveillance included the review of the RAC's radiological procedures and measurements, instrument calibration, QA/QC, and data management/analysis. Six site-specific observations and one programmatic observation were identified. The overall conclusion from the radiological surveillance was that the radiological aspects of the Grand Junction, Colorado, remedial action program were being performed effectively according to written procedures and documentation requirements.

In a memo dated 28 May 1993 (Ulland, 1993b), the TAC found the RAC's responses to the radiological surveillance to be acceptable, thereby recommending closure of this surveillance. In a memo dated 14 June 1993 (Bosiljevac, 1993), the DOE concurred with the TAC's recommendation and closed out this radiological surveillance.

2.2.5 Surveillance GRJ-S05

The TAC performed the fifth comprehensive site radiological surveillance (GRJ-S05) for the DOE in Grand Junction, Colorado, from 15-18 March 1993 (DOE, 1993a). Representatives from the TAC included Mark Miller and Bill James. The DOE was represented by Bob Cornish. On-site RAC personnel participating in the surveillance included Garth Stowe, Victor Griffith, Cathy Crabb, Jim Smith, and Nancy Miller. The focus of this surveillance included the review of the RAC's radiological procedures and measurements, instrument calibration, QA/QC, and data management/analysis. Six site-specific observations and one programmatic observation were identified. The overall conclusion from the radiological surveillance was that the radiological aspects of the Grand Junction, Colorado, remedial action program were being performed adequately. However, some of the observations identified potential for improving certain aspects of verification sampling and confidence in analytical data quality.

In a memo dated 14 June 1993 (Ulland, 1993a), the TAC found RAC's responses to the radiological surveillance to be acceptable, with the exception of Observation GRJ-S05-O07, which discussed an opposed sodium-iodide crystal system bias problem. However, this item was later resolved during a subsequent radiological audit performed from 9-11 August 1993 (DOE, 1993b), thereby closing out this surveillance. For all practical purposes, Observation

GRJ-S05-007 was considered an open issue to be resolved by the next radiological surveillance, and the 14 June 1993 memo closed out this surveillance.

2.2.6 Audit GRJ-A06

The sixth radiological site visit was performed as a comprehensive site radiological audit (GRJ-A06). The TAC performed that audit for the DOE in Grand Junction, Colorado, from 9-11 August 1993 (DOE, 1993b). Representatives from the TAC included Jim Hylko and Bill James. The DOE was represented by Bob Cornish and Frank Bosiljevac. On-site RAC personnel participating in the audit included Garth Stowe, Catherine Crabb, and Roger Geary. The audit consisted of a review of the RAC's radiological procedures and measurements regarding access control, air sampling, respiratory protection, excavation control, contamination control, training, verification soil sampling, internal and external dosimetry, opposed sodium-iodide crystal system analytical performance, QA/QC, and data management/analysis. One programmatic finding, eleven site-specific observations, one good practice, and four programmatic observations were identified. The overall conclusion from the radiological surveillance was that the radiological aspects of the Grand Junction, Colorado, remedial action program were being performed adequately. One good practice showing professional judgment and conscientiousness was noted. However, some of the programmatic observations identify certain aspects requiring additional review.

In a memo dated 9 February 1994 (Ulland, 1994), the TAC found the RAC's responses to the radiological audit to be acceptable, except for observations GRJ-A06-004, -011, and -013 (part c). Observation GRJ-A06-004 noted inconsistencies between the instrument inventory form and various instrument/source data sheets. Observation GRJ-A06-011 recommended reviewing the location and structures of existing environmental monitoring stations to determine whether their ability to obtain representative samples was affected by adjacent obstructions. Observation GRJ-A06-013 was concerned with bioassay vendor laboratory capabilities, radon dose monitoring, and an evaluation of the need to continue bioassay and personnel external dosimetry programs. Supplemental information provided by the RAC provided justification for closing all outstanding audit items. These items were considered closed following remediation of the Grand Junction, Colorado, processing site.

2.3 SUMMARY AND CONCLUSIONS

Five comprehensive site radiological surveillances and one radiological audit were conducted at the Grand Junction, Colorado, UMTRA Project processing site. The overall conclusion of the radiological surveillances and audit was that the HP aspects of the remedial action program at the processing site were organized and performed according to written procedures and documentation requirements. The final resolution of findings and observations in follow-up surveillances, audits, and correspondence confirmed that all issues involving the

radiological processing site operations have been resolved to the satisfaction of the DOE UMTRA Project Office.

3.0 QUALITY ASSURANCE IN-PROCESS SURVEILLANCES

The DOE and TAC performed nine QA in-process surveillances at the Grand Junction site. The QA in-process surveillances were performed to ensure that MK-Ferguson properly implemented approved construction plans and specifications. The QA in-process surveillances were conducted separately from the organizations performing the work and did not relieve MK-Ferguson of its own QC requirements. The QA in-process surveillances were conducted by a team consisting of at least one TAC lead auditor and one QA representative from the DOE.

The DOE/TAC surveillance reports included observations and recommendations. Observations were classified as comments the auditors considered appropriate for documenting topics of concern to the UMTRA Project Office and for noting improvements in techniques or procedures in noncritical areas. Comments on proficiency, favorable comparisons, and developmental activities were included as observations. Recommendations were made for observations that did not meet project requirements or when auditors believed a best management practice would improve work processes.

3.1 SURVEILLANCE OBJECTIVES

The in-process surveillances had three objectives. The first was to verify MK-Ferguson's compliance with the approved RAP for the Grand Junction site. The surveillance team accomplished this objective by reviewing the approved Grand Junction RAP and preparing checklists of key construction activities.

The second objective was to verify MK-Ferguson's compliance with approved plans and specifications. The surveillance team accomplished this by reviewing site documentation and monitoring construction activities using established checklists.

The third objective was to verify that the Remedial Action Inspection Plan (RAIP) was implemented. The surveillance team accomplished this objective by observing testing and inspection activities performed by MK-Ferguson's QC technicians in the field.

3.2 SURVEILLANCE RESULTS

A summary of results for the nine in-process surveillances performed at the Grand Junction site follows. The following summary includes results that pertain to the processing site.

3.2.1 Surveillance S173

This QA in-process surveillance conducted 9-10 April 1991 (DOE, 1991c), resulted in six observations. The surveillance team consisted of Frank Bolsiljevac and Milt Scoutaris from the DOE and Bob Bearden from the TAC. Only observation 6 was related to the processing site. Observation 6 noted that

drawing GRJ-PS-10-0212, Revision 0, was not included in the field construction drawing control copy. Similar problems were noted with other drawings. The surveillance team recommended that the *Subcontract Drawing and Specification Log* maintained by the MK-Ferguson Albuquerque Project Office should be periodically compared with controlled copies of field construction drawings to ensure that revisions are included and outdated drawings removed.

MK-Ferguson responded to the recommendation 26 June 1991. They stated that controlled copies of field office construction drawings would be compared monthly with the *Subcontract Drawing and Specification Log* by the QC department. They also stated that drawing GRJ-PS-10-0212, Revision 0, was placed back into the field construction drawing control copy set.

TAC reviewed the MK-Ferguson response and responded to DOE on 26 June 1991. TAC accepted MK-Ferguson's response and recommended to close out the surveillance. DOE responded to MK-Ferguson on 18 July 1991, stating that their response was adequate and that the surveillance was closed out.

3.2.2 Surveillance S183

This surveillance was conducted 22-23 July 1991 (DOE, 1991d). The surveillance consisted of Frank Bosiljevac from the DOE and Martin Alewine and Paul Pehrson from the TAC. The surveillance report included 16 observations. Ten observations related to the processing site. No observations related to the processing site required a response from MK-Ferguson.

The DOE notified MK-Ferguson on 4 October 1991, that MK-Ferguson had responded adequately to the surveillance concerns and that the surveillance was closed out.

3.2.3 Surveillance S189

This surveillance was conducted on 10-11 December 1991 (DOE, 1991e). The surveillance team consisted of Milt Scoutaris from the DOE and Martin Alewine and Paul Pehrson from the TAC. The surveillance report included 17 observations. Nine observations related to the processing site. No observations related to the processing site required a response from MK-Ferguson.

The DOE notified MK-Ferguson on 8 January 1992, that MK-Ferguson had responded adequately to the surveillance concerns and that the surveillance was closed out.

3.2.4 Surveillance S193

This surveillance was conducted 30-31 March 1992 (DOE, 1992c). The surveillance team consisted of Milt Scoutaris from the DOE and Paul Pehrson from the TAC. The surveillance report included 19 observations. Ten observations related to the processing site. Observation 19 was related to the

processing site and included a recommendation, but did not require a response from MK-Ferguson. This observation noted that a uniform logging system recording daily construction activities would benefit the project. The items recorded in the logging system would include yards hauled per day, cumulative yards hauled, moisture/density data, and gradations.

The DOE notified MK-Ferguson on 6 May 1992, that they had responded adequately to all surveillance concerns and that the surveillance was closed-out.

3.2.5 Surveillance S204

This surveillance was conducted 29-30 June 1992 (DOE, 1992d). The surveillance team consisted of Milt Scoutaris of the DOE and George Hauquitz and Paul Pehrson of the TAC. The surveillance report included 17 observations. Ten observations related to the processing site. Observations 9 and 12 included recommendations that did not require responses.

Observation 9 noted an incorrectly calculated gradation analysis. The recommendation suggested paying additional attention to the review process so that incorrect calculations or data could be corrected in a timely manner. This recommendation also stated that the date should be indicated next to the reviewer's signature on the gradation analysis form. This practice should also be extended to all other forms that required a reviewer's signature.

Observation 12 noted that scales within the 300 to 2600 gram range did not have affixed labels indicating their calibration status. The recommendation stated that labels should be attached to these scales indicating their calibration status.

The DOE notified MK-Ferguson on 9 November 1992 that MK-Ferguson had responded adequately to all surveillance concerns and that the surveillance was closed out.

3.2.6 Surveillance S210

This surveillance was conducted 21-23 September 1992 (DOE, 1992e). The surveillance team consisted of Milt Scoutaris of the DOE and Paul Pehrson of the TAC. The surveillance report included 15 observations. Seven observations related to the processing site. No observations that related to the processing site required a response from MK-Ferguson.

The DOE notified MK-Ferguson on 15 January 1993 that MK-Ferguson had responded adequately to all surveillance concerns and that the surveillance was closed out.

3.2.7 Surveillance S225

This surveillance was conducted from 5-7 April 1993 (DOE, 1993c). The surveillance team consisted of Frank Bosiljevac of the DOE and Marty Alewine of the TAC. The surveillance report included 11 observations, 4 of which related to the processing site. Observation 11 included a recommendation that required a response. The observation noted that a test summary sheet was needed to make verifying test frequencies easier. The report recommended that the MK-Ferguson office develop a summary sheet to list testing frequencies that would be used at all UMTRA Project sites.

MK-Ferguson responded to observation 11 on 11 June 1993 by developing a computer-generated test frequency chart that was distributed to all active UMTRA Project sites except Grand Junction and Falls City, which were near completion at the time.

The DOE notified MK-Ferguson on 1 September 1993 that MK-Ferguson had responded adequately to all surveillance concerns and that the surveillance was closed out.

3.2.8 Surveillance QS93035

This surveillance was conducted 12-14 July 1993 (DOE, 1993d). The surveillance team consisted of Milt Scoutaris of the DOE and Paul Pehrson of the TAC. The surveillance report contained 15 observations, 10 of which related to the processing site. Observation 8 included a recommendation that required a response. The observation noted that some records requiring "reviewed by" signatures were not annotated as such. It was also noted that some logs for tracking the frequency of tests were not identified by project name or number and that the review of these logs was not documented.

The report recommended that the QC supervisor institute a program for reviewing logbooks. The program would require that the reviewer sign and date the logbooks and that logbook reviews would take place at least every 3 months.

MK-Ferguson responded to observation 8 on 15 September 1993. They stated that they issued an Inner Office Correspondence memo to each QC supervisor mandating that logbooks be reviewed monthly and/or when completed. They also referred to the MK-Ferguson QA/QC work procedure, Section No. 6, paragraphs 3.1 and 5.5, to address the "reviewed by" signature requirement. Section 6 defines what constitutes a quality assurance record.

The DOE notified MK-Ferguson on 20 October 1993, that MK-Ferguson had responded adequately to all surveillance concerns and that the surveillance was closed out.

3.2.9 Surveillance QS93061

This surveillance was conducted 1-3 November 1993 (DOE, 1993e). The surveillance team consisted of Milt Scoutaris of the DOE and Paul Pehrson of the TAC. The surveillance report contained 20 observations, 11 of which related to the processing site. Observations 14 and 15 included recommendations. Observation 14 did not require a response. Observation 15 required a response.

Observation 14 noted that test and inspection records contained the minimum required information specified in the RAIP. However, the report recommended that as a best management practice, screen sizes that fail to meet the specified criteria be flagged by an asterisk or highlighted on the record forms. The report also recommended that the "percentage passing" and "required percentage passing" columns be reversed on the gradation summary sheet forms.

Observation 15 noted that training records were not available on site for the review of personnel qualification for health and safety and air monitoring. The report requested that MK-Ferguson submit a summary of qualifications for health and safety personnel assigned to the Grand Junction project.

MK-Ferguson responded to observation 15 on 6 January 1994, by sending the MK-Ferguson subcontractors' personnel records for asbestos training and qualification to the TAC.

The DOE notified MK-Ferguson on 2 February 1994, that MK-Ferguson had responded adequately to all surveillance concerns and that the surveillance was closed-out.

3.3 SURVEILLANCE SUMMARY AND CONCLUSIONS

Nine QA in-process surveillances were conducted at the Grand Junction site from April 1991 to November 1993. These surveillances resulted in 72 observations related to the processing site. Twelve of these observations suggested recommendations. Four of the 12 recommendations required a response from the RAC (MK-Ferguson). All outstanding items were resolved between the RAC and the DOE/TAC, and all of the QA in-process surveillances were closed.

4.0 REMEDIAL ACTION CLOSE-OUT INSPECTION

The DOE/TAC conducted a preliminary remedial action close-out inspection at the Grand Junction site to ensure that remedial action was performed according to approved construction plans and specifications.

The inspection was conducted 29-30 June 1994 (DOE, 1994). It consisted of an in-depth walk-through and inspection of the processing and disposal sites. The disposal cell was left open to allow the additional placement of vicinity property materials. Only activities that involved the processing site are discussed in this report.

The DOE/TAC inspection team included Frank Bosiljevac and Milt Scoutaris of the DOE UMTRA Project Office and Malu Gawthrop and Paul Pehrson of the TAC.

4.1 REMEDIAL ACTION CLOSE-OUT INSPECTION OBJECTIVES

The objective of the preliminary remedial action close-out inspection was to determine the degree of completion of the Grand Junction UMTRA Project Remedial Action site in accordance with the approved site construction plans and specifications. Specific site reference documents used included the latest editions of the Grand Junction RAP, RAIP, design specifications, and MK-Ferguson's final walk-over items from their punch list.

4.2 REMEDIAL ACTION CLOSE-OUT INSPECTION RESULTS

Items at the processing site that were the focus of the inspection team included site grading, seeding, mulching, and fencing. These items were discussed in the preliminary remedial action close-out inspection report, number QA94128 (DOE, 1994).

Site grading at the processing site appeared to meet the final grading plan. Milt Scoutaris reviewed the grading specifications and found the specification for particle size distribution to be ambiguous. Milt requested that grading size requirements in other future site specifications be more specific.

It was noted that on Revision 3 of the site grading plans, the flood control embankment in the southwest corner of the processing site was deleted. This embankment tied the processing site grading to a Corps of Engineers flood control embankment. MK-Ferguson explained that the Corps of Engineers was responsible for building the embankment, in accordance with instructions from the Grand Junction DOE Site Manager, and that the MK-Ferguson embankment was only temporary. Frank Bosiljevac was concerned that the temporary structure, which was 5 to 6 feet below the grade of the Corps of Engineers' embankment, might lead to a liability from flooding. He wanted to see the temporary embankment built up to the level of the Corps of Engineers' embankment. Frank stated that he would discuss this matter with the DOE site manager back at the project office.

The backfill material used to construct the embankment between the wetland area of the processing site and the rest of the site did not appear to be sufficiently resistant to erosion. The inspection team was concerned that the embankment was not a reliable structure because sufficient vegetation or other erosion protection material was not available on the south face of the embankment.

The chain-link fencing on the west side of the processing site, south of the intersection of Struthers and 9th, was missing four steel posts. The chain-link fencing was stretched across the opening and was continuous.

The irrigation of the seeding appeared to be inadequate. Large areas seemed to lack sufficient moisture to germinate any seeds. The inspection team identified two small areas of growth in the wetland area. No other growth was seen during the inspection. Mulch from the north side of the flood control embankment had washed off by irrigation or rain water and had lodged in the flap-valves of the drainage pipes. MK-Ferguson was asked to have the debris removed from the flap-valves.

One monitor well on the northeast side of the processing site by the transmission line was missing a cap. It was not known whether the monitoring well had been abandoned or vandalized.

MK-Ferguson was required to respond to the chain-link fencing, seeding and mulching, and monitoring well items of the report. These were items 2.7, 2.8, and 2.9 respectively. MK-Ferguson responded with the following actions:

- Upgrading the chain-link fence where additional posts were needed.
- Removing debris lodged in the flap valve.
- Stating that the monitoring well was a TAC responsibility.

The TAC reviewed MK-Ferguson's response and on 21 December 1994 recommended that the DOE close out the preliminary remedial action close-out inspection report. The DOE concurred with the TAC's review and closed out this report on 28 December 1994. Those items noted in the preliminary report that relate to the Cheney disposal cell site will be inspected for completion at a final remedial action close-out inspection, which will follow the placement of remaining vicinity property materials and the subsequent Cheney disposal cell closure.

4.3 SUMMARY AND CONCLUSIONS

The preliminary remedial action close-out inspection conducted 29-30 June 1994 (DOE, 1994) covered the processing site and the Cheney disposal site. The disposal cell was left open to allow the additional placement of vicinity property materials. The follow-up to the preliminary close-out inspection closed any remedial action issues and outstanding items between the RAC and

DOE/TAC that involved the processing site. Any other outstanding items noted in the preliminary report that related to the disposal site would be resolved at a final remedial action close-out inspection following the placement of remaining vicinity property materials and subsequent Cheney disposal cell closure.

5.0 OTHER AUDITS AND CONSTRUCTION REVIEWS

The NRC conducted three OSCRs to ensure that approved construction plans, specifications, and the RAIP were being implemented. These OSCRs were independent of the contractor performing the work and did not relieve the contractor from any required inspection or checking responsibilities. The NRC OSCRs were conducted 19 June 1991; 16 June 1992; and 4-5 August 1993.

The NRC OSCRs involved 1- to 2-day visits, during which materials and records were examined and construction activities observed.

5.1 ON-SITE CONSTRUCTION REVIEW OBJECTIVES

The NRC OSCRs had three distinct objectives. The first was to assess the effectiveness of construction and the QC program to ensure compliance with the RAP and EPA standards. The second was to verify compliance with approved plans and specifications. That objective was accomplished by reviewing documentation and observing construction activities as they were performed. The final objective was to verify that the approved RAIP for the Grand Junction site was implemented. That was accomplished by witnessing the performance of testing and inspection activities in the field.

5.2 U.S. NUCLEAR REGULATORY COMMISSION ON-SITE CONSTRUCTION REVIEW RESULTS

5.2.1 19 June 1991

Daniel Gillen and Daniel Rom of the NRC performed an OSCR of the Grand Junction site on 19 June 1991 (Gillen and Rom 1991). They visited the processing site and observed the loading and hauling of vicinity property materials. The materials were loaded into dump trucks with track hoes and transferred to the train loading station for transport to the disposal site. The NRC staff commented on the substantial amount of non-soil matter, particularly concrete, within the vicinity property material. The DOE informed the NRC staff that all large concrete material would be broken into smaller pieces before placement into the disposal cell. The NRC staff was concerned that the amount of coarse material could preclude performing in-place density tests on much of the compacted soil at the disposal site.

The NRC staff additionally examined the on-site, lined, ground water retention pond and a "reported" wetland zone near the river. The NRC was reviewing a request to apply supplemental standards to the reported wetland area at the time of the OSCR. The DOE told the NRC that the Corps of Engineers had conducted an independent study that concluded the reported wetland zone near the river was wetlands. The DOE said they would forward a copy of this report to the NRC.

The NRC staff and RAC staff discussed the results of this OSCR during an exit meeting held with RAC representatives T. Mayer and W. Hayes. The NRC stated that no major issues requiring a response were identified and that based on observations of site activities, records, and management and other personnel, remedial action at the Grand Junction site was progressing acceptably. The date of the exit meeting is considered the OSCR close-out date for this report.

5.2.2 16 June 1992

D. Rom, T. Johnson, and M. Al-Hussaini performed an OSCR on 16 June 1992 (Surmeier, 1992). They were not able to enter the processing site property because they did not have the 24-hour health and safety training that was an OSHA requirement applicable to UMTRA Project sites. They observed processing site activities from Orchard Mesa on the south bank of the Colorado River. Paul Oliver from the state of Colorado showed the NRC staff portions of the river frontage that he understood were wetlands. Paul informed the NRC staff that he would provide them with written information that identified the wetland areas.

The NRC and RAC staff discussed the results of this OSCR during an exit meeting. The NRC staff discussed its concern about its unexpected refused entry to the processing site. There were no issues associated with the processing site that required a response from the RAC. The date of the exit meeting is considered the OSCR close-out date for this report.

5.2.3 4 August 1993

D. Rom and T. Johnson performed an OSCR on 4 August 1993 (Holonich, 1993). They examined the processing site and confirmed that the site was substantially cleared of tailings and vicinity property materials. They observed that minor excavation work was still underway on the banks of the Colorado River and that the transfer station was no longer operational. RAC staff identified the wetland areas to the NRC from Orchard Mesa.

The NRC and RAC staff discussed the results of this OSCR during an exit meeting. There were no open issues associated with the processing site that required a response from the RAC. The date of the exit meeting is considered the OSCR close-out date for this report.

5.3 ON-SITE CONSTRUCTION REVIEW SUMMARY AND CONCLUSIONS

Three OSCRs were performed by NRC staff between 19 June 1991, and 4 August 1993. None of the OSCRs resulted in observations at the processing site that required a response from MK-Ferguson.

6.0 SUMMARY AND CONCLUSIONS

Six radiological surveillances, nine QA in-process surveillances, and one preliminary remedial action close-out inspection were conducted by the DOE/TAC staff during remedial action construction activities at the Grand Junction, Colorado, UMTRA Project processing site. The NRC conducted three OSCRs at the Grand Junction, Colorado, UMTRA Project processing site. A total of one finding and 127 observations were noted during DOE/TAC audit and surveillance activities. General observations were noted by the NRC during the OSCRs. Follow-up to responses required from MK-Ferguson for the finding and observations indicated that all issues related to the Grand Junction processing site were resolved and closed out to the satisfaction of the DOE UMTRA Project Office.

7.0 LIST OF CONTRIBUTORS

The following individuals contributed to the preparation of this report.

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