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RMRS Rocky Mountain Remediation Services, L.L.C.
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Assessment Report

Assessment No. 95-002 (RMRS)
Revision 1

Assessment of the Adequacy of Ryan's Pit Soil Sample Analysis Data

This revision is a total rewrite and the revision bars are omitted. The purpose of this rewrite is to provide clarification of original Report 95-002. This report supersedes Report 95-002.

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REVIEWED FOR CLASSIFICATION
By
Date 9/30/96

ADMIN RECORD
BZ-A-000460

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1. EXECUTIVE SUMMARY

This report provides the results of an independent assessment of the acceptability of Ryan's Pit soil sample data for supporting closure requirements established in the project Data Quality Objectives (DQOs). The fieldwork for the assessment was conducted between October 23, 1995, and January 25, 1996. Issuance of this report was postponed to meet higher priority assessment request.

The primary functional areas reviewed during the evaluation included:

- Soil sample analysis methodology
- Program Documents (implementing plans and procedures)

Five improvement items, which were documented during the assessment, are briefly described below. For a complete description of each improvement item, refer to the body of the report.

- Project management should document in the Ryan's Pit final report an explanation of the requirements for metals analysis in the SAP and of the analyses ultimately performed on the soil samples. In addition, project management should establish a process for revising SAPs to coincide with changes in the field. This process should include justification for the revision and receive the reviews and approvals comparable with those applied to the original SAP, prior to the execution of the changes.

- Field duplicates should be documented according to Procedure 4-B29-ER-OPS-FO14, *Field Data Management*, Revision 3, and sent as blind samples to the laboratory.

- The RMRS project management should ensure that all parties involved in a project, including the sampling team and project management, fully understand the end uses of sample data as well as the specific requirements of approved SAPs.

- Project management should perform a review of the chain-of-custody documents prior to shipping the sample to the lab to ensure the correct type and quantities of analyses are specified.

- Until program and project documentation can be reviewed and revised to account for changes in organizational responsibilities, RMRS project management should ensure that project planning meetings fully address project requirements and expectations and specifically assign and document organizational responsibilities.

In summary, the analysis of Ryan's Pit soil samples provided data that is usable for making environmental decisions regarding the project Data Quality Objectives. However, noted weaknesses in the management of the Ryan's Pit sample data could complicate the traceability and defensibility of the data. These weaknesses result from unclear organizational responsibilities and interfaces.

The assessment team recommends that internal ER readiness reviews consider this assessment and past ER project surveillances and program assessments for lessons learned to help prevent similar problems in future remediation projects.

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2. PURPOSE

2.1 Subject

Adequacy of Ryan's Pit Soil Sample Analysis Data

2.2 Objective

The objective of this assessment was to determine the acceptability of Ryan's Pit soil samples data for supporting closure requirements established in the project Data Quality Objectives.

2.3 Scope

2.3.1 Assessment Category and Characteristics

This assessment was a routine scheduled assessment performed according to Procedure 2-B52-ADM -02.01, *Independent Assessment*, Revision 1.

2.3.2 Assessment Functional and Programmatic Areas

This assessment examined the following activities and functions:

- Soil sample analysis methodology
- Program Documents (implementing plans and procedures).

2.3.3 Physical Boundaries

Conduct of this assessment was restricted to Data Management in Building 080, and locations providing storage for laboratory and Ryan's Pit project documentation.

3. CONDUCT OF THE ASSESSMENT

3.1 Assessment Schedule

Entrance Meeting	October 23, 1995
Start of Fieldwork	October 23, 1995
End of Fieldwork	January 25, 1996
Exit Meeting	February 20, 1996

3.2 Previous Assessment Activities in This Subject Area

Ryan's Pit Soil Sample Analyses has not been evaluated by RMRS Quality Assurance assessment group.

3.3 Independent Verification of Previously Identified Deficiencies

3.3.1 Deficiencies Verified Complete by the Assessment Team

None

3.3.2 Deficiencies Reopened by the Assessment Team

None

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3.4 Assessment Methodology/Performance Criteria

3.4.1 Assessment Methodology

The following evaluation methods were used during the performance of this assessment:

- Personnel interviews
- Record and document reviews
- Facility tours

3.4.2 Assessment Performance Criteria

The following assessment performance criteria were used to determine compliance and effectiveness:

- Soil sample analysis data was delivered to end users as required by appropriate procedures and in a form that facilitates project decision-making.

- The process of planning for, obtaining, and analyzing soil samples and processing the resulting data to support decisions regarding closure of Ryan's Pit was performed according to appropriate procedures and practices.

4. RESULTS

The analysis of Ryan's Pit soil samples provided data that is usable for making environmental decisions regarding the project Data Quality Objectives. However, noted weaknesses in the management of the Ryan's Pit sample data could complicate the traceability and defensibility of the data. These weaknesses result from unclear organizational responsibilities and interfaces.

4.1 Soil Sample Analysis Methodology

The analytical data packages indicate that results were reported for some analytes not requested in the SAP. Also, for some analytes the analytical method used did not provide a detection limit low enough to satisfy the CLP requirements specified in the SAP. Specifically, the SAP requested analysis for "TCLP metals". This request refers to analysis for arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. The laboratory performed analysis on a larger list of analytes that contains these elements but which uses a different analytical method than specified in the SAP and which may not provide a detection limit low enough to satisfy the CLP requirements. Interviews with project management indicated that during discussions between project management, laboratory, and APO personnel the requirements for metals analysis were discussed. Analysis for total metals by ICP may have been suggested because that method covers a broader range of analytes and is cheaper to perform than TCLP metals analysis by CLP protocol. These undocumented discussions may have been interpreted as a consensus to perform total metals analysis by ICP. Subsequently, Sampling and Analysis Request Forms were prepared by the APO for the Ryan's Pit soil samples specifying total metals analysis by ICP. These forms were not reviewed or approved by the project management.

Two potential problems exist with analysis for total metals by ICP. First, the method analyzes for more analytes than specified in the SAP. If the analysis detects one of these other contaminants with a concentration high enough to warrant consideration for clean-up, then project management has exposed both Kaiser-Hill and RMRS to potentially increased liability and responsibility for clean-up.

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The second potential problem with the analysis for total metals by ICP is that the method does not always provide a detection limit low enough to satisfy CLP contract required detection limits (CRDLs) specified in the SAP. This deviation from the SAP should not effect the usability of the Ryan's Pit sample data, as established clean-up concentrations for contaminants of interest are significantly higher (often two or three orders of magnitude) than the CRDLs and the actual detection limits achieved by the analyses.

Not withstanding the concerns noted above, samples were reanalyzed through methods specified in the SAP and will be reported in the final report of Ryan's Pit Remediation. In the final analysis, the minimum number of method types were revealed for the soil samples.

4.1.1 Deficiencies

The assessment team did not identify any deficiencies in this area.

4.1.2 Improvement Items

The assessment team identified the following improvement items in this area:

- Project management should document in the Ryan's Pit final report an explanation of the requirements for metals analysis in the SAP and of the analyses ultimately performed on the soil samples. In addition, project management should establish a process for revising SAPs to coincide with changes in the field. This process should include justification for the revision and receive the reviews and approvals comparable with those applied to the original SAP, prior to the execution of the changes.

- One sample was identified as a field duplicate on the Chain-of-Custody (COC) form. Field duplicates should be documented according to Procedure 4-B29-ER-OPS-FO14, *Field Data Management*, Revision 3, and sent as blind samples to the laboratory.

- RMRS project management should ensure that all parties involved in a project, including the sampling team and project management, fully understand the end uses of sample data as well as the specific requirements of approved SAPs.

- Project management should perform a review of the chain-of-custody documents prior to shipping the sample to the lab to ensure the correct type and quantities of analyses are specified.

4.2 Program Documents

Documents in the form of plans and procedures describing the data quality objectives and the sampling and analysis process to support decisions regarding the clean-up and closure of Ryan's Pit were reviewed. In general, adequate documentation is available to describe the specific processes of soil sampling, handling, analysis and data preparation appropriate for the Ryan's Pit project. However, the plans and procedures used do not take into account the organizational structure changes since the transition to the Integrating Management Contractor (IMC). Consequently, the specific inter-relationships and responsibilities of the Building 881 Laboratories, the APO, RMRS Data Management, and RMRS project management are not clearly defined.

For the Ryan's Pit project, this situation was not compensated for either by formal or documented discussion among the affected organizations to ensure responsibilities were understood and properly assumed, or by modifying program documents.

Other evidence exists that indicates some program documents were not rigorously reviewed by project management to ensure that the needs of the project were being meet. For example, the SAP specifies three procedures that had been superseded for up to 13 months.

4.2.1 Deficiencies

The assessment team did not identify any deficiencies in this area.

4.2.2 Improvement Items

The assessment team identified the following improvement item in this area:

- Procedures used by RMRS project management do not reflect current organizational responsibilities and interfaces, program and project documentation should be reviewed and revised to account for the changes. In the meantime, these organizations should ensure that planning meetings fully address project requirements and expectations and specifically assign and document organizational responsibilities.

5. REPORT REVIEW AND APPROVAL

Prepared By: Jack R Massie — 9-26-96
J. R. Massie, Lead Assessor
RMRS ESH&Q
Date

Reviewed By: John R Bennett — 9.26.96
J. R. Bennett, Program Manager
RMRS QA/TQM
Date

Approved By: Juan M. Hernandez — Sep 26, 96
J. M. Hernandez, Manager
RMRS Quality Assurance
Date

APPENDIX A

DOCUMENTS REVIEWED

The following documents were reviewed to determine compliance with applicable requirements:

- Environmental Management Department Procedures Manual, Field Operations, Procedure 4-B29-ER-OPS-FO14, *Field Data Management*, Revision 3, dated October 27, 1994
- Rocky Flats Environmental Technology Site, *Data Management Plan for the Environmental Restoration Program*, dated April 1995
- Rocky Flats Environmental Technology Site, *General Radiochemistry and Routine Analytical Services Protocol (GRRASP)*, Version 3.0, dated February 1994
- Rocky Flats Environmental Technology Site, *Sampling and Analysis Plan for the Remediation of Ryan's Pit, Operable Unit 2*, dated August 28, 1995
- USEPA, *Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 1*, dated July 1992
- USEPA-CLP, *Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration, Document Number OLMO1.0 (Revision OLMO1.9)*, dated July 1993
- USEPA-CLP, *Statement of Work for Inorganics Analysis, Multi-Media, Multi-Concentration, Document Number ILMO3.0*, dated 1993

APPENDIX B

ASSESSMENT TEAM MEMBERS AND PERSONNEL CONTACTED

Assessment Team Members

The following personnel conducted this assessment:

	Name	Assessment Group
Lead Assessor:	E. A. Larson *	RMRS ESH&Q
Lead Assessor:	J. R. Massie	RMRS ESH&Q

* J. R. Massie replaced E. A. Larson in the development and issuance of this assessment report.

Personnel Contacted

The following personnel provided significant contributions to the conduct of the assessment:

Name	Organization	Participation *
J. R. Bray	RMRS, Accelerated Actions	2, 4
E. A. Brovsky	K-H, Analytical Services	3
G. D. DiGregorio	RMRS, ESH&Q	3
T. H. Elmont	K-H, Analytical Services	1
C. E. Gies	K-H, Analytical Services	1, 3
P. C. Gomez	K-H, Performance Assurance	1, 3
K. M. Hagglund	K-H, Analytical Services	1, 3
N. K. Harward	K-H, Analytical Services	1
R. Z. Houk	RMRS, Accelerated Actions	2
M. W. Hume	K-H, Analytical Services	1
V. Ideker	K-H, Analytical Projects Office	3
L. B. Johnson	K-H, Analytical Projects Office	3
L. Martin	RMRS, Data Management	2
R. D. Plappert	K-H, Program Oversight	3
T. M. Prochazka	RMRS, ESH&Q	1
E. M. Simmons	K-H, Analytical Services	4
N. C. Stoner	K-H, Analytical Services	1
A. M. Tyson	RMRS, Accelerated Actions	3

* 1 Entrance Meeting
2 Evaluation Contributor
3 Formal Exit Meeting
4 Informal Exit Meeting conducted in person or by telephone

APPENDIX C

DEFINITIONS

The following definitions are samples and may be deleted.

DEFICIENCY	An identified item or process that does not or will not meet an applicable requirement, standard, or policy. Examples of these requirements are found in, but are not limited to, existing and pending Federal or State regulations or statutes, DOE orders, contractor, or Site operational procedures, administrative instructions, legally enforceable agreements, consensus or industry standards.
IMPROVEMENT ITEMS	A technical opinion from a reviewer which is not definitive, quantifiable, or tied to an applicable requirement.