



**Department of Energy**

Washington, DC 20585

QA: QA

**JUL 17 2002**

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U.S. DEPARTMENT OF ENERGY (DOE) OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT (OCRWM) OFFICE OF QUALITY ASSURANCE (OQA) AUDIT USGS-ARC-02-11 OF THE U.S. GEOLOGICAL SURVEY (USGS) SUPPORT OF THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT (YMP) AT DENVER, COLORADO

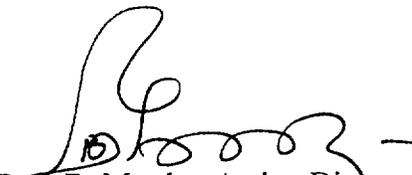
Enclosed is the Report of Compliance Audit USGS-ARC-02-11 conducted by representatives of the OQA at the USGS facility in Denver, Colorado, on June 17-21, 2002.

The audit team determined that the USGS is satisfactorily implementing the applicable portions of OCRWM Quality Assurance Program described in DOE/RW-0333P, Revision 11, *Quality Assurance Requirements and Description*, and applicable implementing procedures.

During the course of the audit, the audit team identified two quality observations (QO), which were determined to be isolated, required only remedial action, and were corrected during the audit. Briefly, the QOs indicated: (1) the need to identify long-term augmented federal staff personnel on YMP related quality activities in the USGS organizational chart, and (2) the need to update a controlled document manual.

This audit activity is considered completed and closed as of the date of this letter. Response to this audit report or recommendation is not required.

If you have any questions, please contact either James Blaylock at (702) 794-1420 or Marilyn A. Kavchak at (702) 794-5423.



Ram B. Murthy, Acting Director  
Office of Quality Assurance

OQA:JB-1440

Enclosure:  
Audit Report USGS-ARC-02-11



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wm-11

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QA: QA -

**U. S. DEPARTMENT OF ENERGY  
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT  
OFFICE OF QUALITY ASSURANCE**

**AUDIT REPORT USGS-ARC-02-11**

**OF**

**U. S. GEOLOGICAL SURVEY**

**AT**

**DENVER, COLORADO**

**JUNE 17-21, 2002**

Prepared by: Marilyn Kavchak Date: 7-2-02  
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**Audit Team Leader**  
**Navarro Quality Services**

Approved by: Ram B. Murthy Date: 7/18/02  
**Ram B. Murthy**  
**Acting Director**  
**Office of Quality Assurance**

**ENCLOSURE**

## 1.0 EXECUTIVE SUMMARY

As a result of Quality Assurance (QA) Audit USGS-ARC-02-11, the audit team determined that the U. S. Geological Survey (USGS) located in Denver, Colorado is satisfactorily and effectively implementing the applicable portions of the U.S. Department of Energy (DOE), Office of Civilian Radioactive Waste Management (OCRWM) QA Program in accordance with DOE/RW-0333P, Revision 11, *Quality Assurance Requirements and Description* (QARD), OCRWM program procedures and USGS implementing procedures.

Two Quality Observations (QO) were identified in the areas of Organization and Document Control. Both conditions were corrected during the audit. Briefly, the QOs indicated (1) the need to identify all long-term augmented Federal staff working on Yucca Mountain Project (YMP) related quality activities on the USGS organizational chart; and (2) the need to update a controlled document manual. A recommendation also resulted from this audit as documented in Section 6.0 of this report for USGS management consideration.

In addition, the effectiveness of corrective actions related to seven previously identified Deficiency Reports (DR) and one QO was evaluated with satisfactory results. The details are described in paragraph 5.5.5.

## 2.0 SCOPE

Auditors representing the DOE's Office of Quality Assurance (OQA) conducted a compliance-based audit to evaluate USGS's implementation of the OCRWM QA Program as described in the QARD and applicable implementing procedures at the USGS facility. An observer representing the DOE OQA observed the audit process.

The audit team, through interviews of cognizant personnel, reviews of documentation, and evaluation of procedures, assessed implementation, adequacy, and effectiveness of USGS implementation of the QA Program.

The audit team also reviewed DR USGS-01-D-105 identified in last year's OQA audit of USGS in addition to recently closed OCRWM deficiency documents of USGS activities to verify completion of corrective actions.

In accordance with the approved audit plan, the following QA Program Sections were evaluated:

1.0	Organization
2.0	Quality Assurance Program
4.0/7.0	Procurement Document Control/ Control of Purchased Items and Services

5.0	Implementing Documents
6.0	Document Control
12.0	Control of Measuring and Test Equipment
15.0	Nonconformances
16.0	Corrective Action
17.0	Quality Assurance Records
Supplement I	Software
Supplement II	Sample Control
Supplement III	Scientific Investigation
Supplement V	Control of the Electronic Management of Data
Appendix C	Monitored Geologic Repository (per QMP 4.01, Revision 10 and applicable QARD Sections)

The following QA Program Sections were not evaluated, as USGS is currently not implementing them:

3.0	Design Control
8.0	Identification and Control of Items
9.0	Control of Special Processes
10.0	Inspection
11.0	Test Control
13.0	Handling, Storage, and Shipping
14.0	Inspection, Test, and Operating Status
18.0	Audits
Supplement IV	Field Surveying
Appendix A	High-Level Waste Form Production
Appendix B	Storage and Transportation

### 3.0 AUDIT TEAM AND OBSERVERS

The following is a list of audit team members and their assigned areas of responsibility:

<u>Name/Title/Organization</u>	<u>QA Program Sections</u>
Marilyn A. Kavchak, Navarro Quality Services (NQS)/ Audit Team Leader, Las Vegas, NV	6.0, SI & SV
Robert A. Toro, NQS/Audit Team Leader in Training, Las Vegas, NV	1.0, 2.0 & 17.0
Patrick V. Auer, NQS/Auditor, Las Vegas, NV	4.0/7.0, 12.0, & App.C
John R. Doyle, NQS/Auditor, Las Vegas, NV	5.0, SII & III
James Blaylock, DOE OQA/Auditor, Las Vegas, NV	15.0 & 16.0

#### Observer

Albert C. Williams, DOE OQA, Las Vegas, NV

#### **4.0 AUDIT TEAM MEETINGS AND PERSONNEL CONTACTED**

The pre-audit meeting was held at the USGS facility in Denver, Colorado, on June 17, 2002. An Audit Team/Observer meeting was held daily to review audit progress. Daily debriefings were held, as appropriate, to apprise USGS management and staff of the progress of the audit and identify any conditions adverse to quality. The audit concluded with a post-audit meeting held on June 21, 2002, at the USGS facility. Personnel contacted during the audit, including those who attended the pre- and post-audit meetings, are listed in Attachment 1, "Personnel Contacted During the Audit."

#### **5.0 SUMMARY OF AUDIT RESULTS**

##### **5.1 Program Effectiveness**

Based on the objective evidence and the sample of information reviewed, the audit team concluded that overall USGS implementation of the OCRWM QA program is adequate and effective. Results for each QA program section evaluated are contained in Attachment 2, "Summary Table of Audit Results."

##### **5.2 Stop Work or Immediate Corrective Actions Taken**

There were no stop work orders or immediate corrective actions as a result of the audit.

##### **5.3 QA Program Implementation**

Audit team members visited the YMP Site on June 13, 2002. The purpose of the visit was to gather information regarding field implementation activities of selected quality program sections for evaluation during the audit.

Attachment 2, "Summary Table of Audit Results," provides results for each QA program section audited. Details of the audit, including the objective evidence reviewed, are documented in the audit checklist. The checklist is maintained as a QA record.

##### **5.4 Technical Audit Activities**

There were no technical activities evaluated during this audit.

##### **5.5 Summary of Deficiencies**

Two conditions adverse to quality (CAQ) were identified during the audit resulting in two QOs.

**5.5.1 Corrective Action Reports**

No Corrective Action Reports were generated during this audit.

**5.5.2 Deficiency Reports**

No DRs were issued during this audit.

**5.5.3 Deficiency Identification and Referrals**

No Deficiency Identification and Referrals (DIRs) resulted during this audit.

**5.5.4 Quality Observations**

Two QOs were identified during the audit. These deficiencies were isolated in nature and required only remedial action.

QO USGS (O)-02-O-050 was noted in the area of Organization (QARD Section 1.0). The current organizational chart for the USGS Yucca Mountain Project Branch did not identify all long-term augmented Federal staff personnel working on YMP-related quality activities.

QO USGS (O)-02-O-051 was identified in the area of Document Control (QARD Section 6.0). USGS Controlled Document Manual Holder #122 contained procedures that were superseded or that were not on controlled distribution and were not marked as required. This manual holder had not maintained the latest controlled procedures in accordance with the USGS controlled document distribution list.

Both conditions were corrected during the audit and are considered closed.

**5.5.5 Follow-up of Previously Identified Conditions Adverse to Quality**

Seven previously identified DRs and one QO were evaluated for effectiveness of corrective action with satisfactory results.

DR USGS-01-105 - This DR was identified in last year's OQA Audit USGS-ARC-01-11. It was generated to address the inadequate control of Measuring and Test Equipment (M&TE). Review of corrective action implementation for this deficiency was effective.

DR USGS-01-D-005 – This DR noted that M&TE was not uniquely identified, calibration documentation was incomplete, and the M&TE was not on the Master List. This DR was, in part, a subset of USGS-01-D-105 verified for closure during this audit.

DR USGS-01-D-032 – This DR addressed water samples to a vendor for which the Purchase Order (PO) only addressed organic sample testing. The PO was revised to include measurement of water samples; there have been no additional occurrences of this CAQ.

DR USGS-01-D-056 – This DR documented that adequate technical requirements were not included in a USGS PO. There have been no additional occurrences of this CAQ.

DR USGS-01-D-118 – This DR documented that software had not been qualified and baselined in accordance with AP-SI.1Q. No additional examples of this CAQ have been identified.

DR USGS-01-D-119 – This DR documented QA records that had not been submitted to the Records Processing Center. There are no additional occurrences that had not already been identified.

DR YMSCO-01-D-106 – Although this DR was issued and responded to by the Yucca Mountain Site Characterization Office, the issue dealt with self-assessments not being performed by DOE and USGS. USGS had a schedule for Fiscal Year 2002 and had completed six (6) self-assessments at the time of this audit.

QO USGS (B)-02-O-020 – This QO dealt with obliteration of information in a records package. There have been no additional examples of this CAQ.

## **6.0 RECOMMENDATION**

One recommendation was documented for USGS management consideration and entered into CIRS as #2821. It is recommended that USGS Technical Procedure, YMP-USGS-HP-189, Revision 1, be revised to clarify language regarding operator check versus calibration.

## **7.0 LIST OF ATTACHMENTS**

Attachment 1 “Personnel Contacted During the Audit”  
Attachment 2 “Summary Table of Audit Results”  
Attachment 3 “Acronyms/Abbreviations”

**ATTACHMENT 1**  
**Personnel Contacted During the Audit**

Name	Title/Organization	Pre-audit Meeting	Contacted During Audit	Post-audit Meeting
Tom Chaney	Chief, USGS/RQST	X	X	X
Michael Chornack	Team Chief, USGS/SST	X	X	X
Robert Craig	Chief, YMPB	X	X	X
John Earle	Hydrologist, USGS/SST		X	
Daniel Gillies	Operations Chief, YMPB	X		X
Joyce Golos	Administrative Officer, USGS/ASG	X		X
Valerie Hall	QA Specialist, EST/OST	X		
Barbara Hersh	QA Procurement Specialist, EST/ASG	X	X	
Robert Hommel	Calibration Laboratory Manager (NV Ops), EST/SST		X	
Dan Hudson	Hydrologist, USGS/Nevada Operations		X	
Anne Jhoon-Yen	Senior Records Management Specialist, EST/OST	X	X	X
Mark Kurzmack	Hydrologist, EST/SST	X	X	
Kate Larsen	Data Support QA Specialist, EST/OST	X	X	
Chris Lewis	QA Specialist, USGS/OST		X	
Jackie Losasso	Training Coordinator, EST/ASG	X	X	X
Brian Marshall	Hydrologist, USGS/Environmental Science Team		X	
Kelly McCurdy	Records Management Assistant, EST/OST	X		X
Patrick McKinley	Data Coordinator/Hydrologist, USGS	X	X	X
Cynthia Miller-Corbett	Quality Engineering/Hydrologist, USGS/RQST	X	X	
Richard Moscati	Geologist, USGS/Environmental Science Team		X	
Pamela Motyl	Quality Engineering Specialist, EST/RQST	X	X	X
Martha Mustard	Hydrologist, USGS/RQST	X	X	X
Thomas Oliver	Hydrologist, EST/Environmental Science Team		X	
James Paces	Geologist, USGS/Environmental Science Team		X	
Bruce Parks	Assistant Chief, YMPB	X	X	X
Zell Peterman	Team Chief, USGS/Environmental Science Team		X	
Kevin Scofield	Hydrochemist, EST/Environmental Science Team		X	
Patricia Sheaffer	QA Specialist Group Manager, EST/OST	X	X	
Donna Sinks	On-Site Representative, BSC/QA	X	X	X
Kenneth Skipper	Manager, Bureau of Reclamation/Engineering Geology	X	X	
Connie Sorrel	QA Specialist, EST/OST	X		
Thomas Strauss	Civil Engineer, Bureau of Reclamation/SST		X	
Pat Tucci	Hydrologist, USGS/SST		X	
Joseph Whelan	Geologist, USGS/Environmental Science Team		X	

Note: Acronyms shown on this table are defined in Attachment 3 of this report.

**ATTACHMENT 2**  
**SUMMARY TABLE OF AUDIT RESULTS**

QARD Sections	Implementing Documents	Checklist Pages	Deficiencies/ DIRs	QO	REC	Program Adequacy	Procedure Compliance	Overall
1.0	DOE/RW-0333P R11 & YMP-USGS-QMP-1.01 R8	1 2-4	NA	QO NA	NA	SAT SAT	SAT SAT	SAT
2.0	AP-2.1Q R2 AP-2.2Q R1 AP-2.14Q R2 AP-2.17Q R1 AP-2.19Q R0, ICN1 AP-2.21Q R1, BSCN1 AP-2.23Q R0, ICN1	5-6 7-8 9-11 12-14 15 16-19 20-21	NA NA NA NI NA NA NI	NA NA NA NI NA NA NI	NA NA NA NI NA NA NI	SAT SAT SAT NI SAT SAT NI	SAT SAT SAT NI SAT SAT NI	SAT
4.0/7.0	YMP-USGS-QMP-4.01 R10 YMP-USGS-QMP-4.02 R8	22-24 25-27	NA	NA	NA	SAT SAT	SAT SAT	SAT
5.0	DOE/RW-0333P R11 YMP-USGS-QMP-5.01 R8 YMP-USGS-QMP-5.03 R11-M1	28-30 31-33 34-37	NA	NA	NA	SAT SAT SAT	SAT SAT SAT	SAT
6.0	AP-6.1Q R6, ICN4 AP-6.28Q R0, ICN1	38-40 41-43	NA	QO NA	NA	SAT SAT	SAT SAT	SAT
12.0	AP-12.1Q R0, ICN 2	44-50	NA	NA	REC	SAT	SAT	SAT
15.0	AP-15.2Q R0, ICN 2 AP-15.3Q R0	51-52 53-56	NA NI	NA NI	NA NI	SAT NI	SAT NI	SAT
16.0	AP-16.1Q R5 AP-16.4Q R2	57-59 60	NA NI	NA NI	NA NI	SAT NI	SAT NI	SAT
17.0	AP-17.1Q R2, ICN 2	61-63	NA	NA	NA	SAT	SAT	SAT
Supp. I	AP-SI.1Q R3, ICN3	64-67	NA	NA	NA	SAT	SAT	SAT
Supp. II	YAP-SII.4Q R2, ICN1 AP-SII.2Q R0, ICN1 YMP-USGS-QMP-8.01 R4-M1	68-71 72 73-75	NA	NA	NA	SAT SAT SAT	SAT SAT SAT	SAT
Supp. III	YMP-USGS-QMP-3.07 R6 AP-SIII.1Q R1, ICN1 AP-SIII.2Q R0, ICN3 AP-SIII.3Q R1, ICN1 AP-SIII.7Q R0 AP-SIII.9Q R0, ICN1 AP-3.11Q R3, ICN1 AP-3.15Q R3, ICN2	76-77 78-83 84 85-87 88-91 92 93-98 99-103	NA NA NA NA NA NI NI NA	NA NA NA NA NA NI NI NA	NA NA NA NA NA NI NI NA	SAT SAT SAT SAT SAT NI NI SAT	SAT SAT SAT SAT SAT NI NI SAT	SAT
Supp. V	AP-SV.1Q R0, ICN2	104-106	NA	NA	NA	SAT	SAT	SAT
App. C	QMP 4.01, R10 and applicable QARD Sections	107-108	NA	NA	NA	SAT	SAT	SAT

**Legend:** DR = Deficiency Report NA = Not Applicable NI = No Implementation QO = Quality Observation REC = Recommendation SAT = Satisfactory

### ATTACHMENT 3

#### ACRONYMS/ABBREVIATIONS

ASG	Administrative Services Group
BSC	Bechtel SAIC Company, LLC
CAQ	Condition Adverse to Quality
CIRS	Condition Issue/Identification Reporting/Resolution System
DIR	Deficiency Identification and Referral
DOE	U.S Department of Energy
DR	Deficiency Report
EST	Epsilon-Stoller Team
M&TE	Measuring and Test Equipment
NQS	Navarro Quality Services
OCRWM	Office of Civilian Radioactive Waste Management
OQA	Office of Quality Assurance
OST	Operational Support Team
PO	Purchase Order
QA	Quality Assurance
QARD	Quality Assurance Requirements and Description
RQST	Regulatory and Quality Support Team
SST	Scientific Synthesis Team
USGS	U. S. Geological Survey
YMP	Yucca Mountain Project
YMPB	Yucca Mountain Project Branch