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Management
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DOE/EMNV--0010

Underground Test Area Calendar Year 2018 Quality Assurance Report Nevada National Security Site, Nevada

Revision No.: 0

September 2019

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UNDERGROUND TEST AREA
CALENDAR YEAR 2018
QUALITY ASSURANCE REPORT
NEVADA NATIONAL SECURITY SITE, NEVADA

U.S. Department of Energy,
Environmental Management Nevada Program
Las Vegas, Nevada

Revision No.: 0

September 2019

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List of Acronyms and Abbreviations

AD	Absolute difference
AIMS	Assessment and Issue Management System
ALS	ALS Laboratory Group
ARS	ARS International, LLC
BHI	Borehole Index
BLM	Bureau of Land Management
BMP	Best management practice
C	Carbon
CADD	Corrective action decision document
CAIP	Corrective action investigation plan
CAP	Corrective action plan
CAU	Corrective action unit
Cl	Chlorine
COPC	Contaminant of potential concern
CR	Closure report
CSTI	Controlled Software Tracking Inventory
CY	Calendar year
DD	Documentation Package Developer
DER	Duplicate error ratio
DIC	Dissolved inorganic carbon
DIIP	Data/Information Implementation Plan
DOC	Dissolved organic carbon
DOE	U.S. Department of Energy
DRI	Desert Research Institute
EDC	Electronic data capture
EDD	Electronic data deliverable

List of Acronyms and Abbreviations *(Continued)*

EM	Environmental Management
EPS	Environmental Program Services
ESH&Q	Environmental, Safety, Health, and Quality
FFACO	*Federal Facility Agreement and Consent Order*
FMP	Fluid Management Plan
FY	Fiscal year
GEL	General Engineering Laboratory
GPS	Global Positioning System
^{3}H	Tritium
HASP	Health and Safety Plan
He	Helium
HNO_3	Nitric acid
I	Iodine
ISPID	Integrated Sampling Plan identifier
LANL	Los Alamos National Laboratory
LCA	Lower carbonate aquifer
LCS	Laboratory control sample
LLNL	Lawrence Livermore National Laboratory
MAPEP	Mixed Analyte Performance Evaluation Program
MCL	Maximum contaminant level
MDA	Minimum detectable activity
MDL	Method detection limit
M&O	Management and operating
MSTS	Mission Support and Test Services
N/A	Not applicable
NARA	National Archives Records Administration

List of Acronyms and Abbreviations (Continued)

ND	Absolute normalized difference
NDEP	Nevada Division of Environmental Protection
NELAC	National Environmental Laboratory Accreditation Conference
NNSA/NFO	U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office
NNSS	Nevada National Security Site
NSSAB	Nevada Site-Specific Advisory Board
NTTR	Nevada Test and Training Range
OA	Oversight assessment
OAA	Operational awareness activity
OBS	Observation
OFI	Opportunity for improvement
PC	Personal computer
pCi/L	Picocuries per liter
PEP	Performance evaluation program
PER	Preemptive review
PIRDy	Public Involvement Resource Database
POC	Point of contact
PT	Proficiency testing
Pu	Plutonium
QA	Quality assurance
QAP	Quality Assurance Plan
QC	Quality control
QSL	Qualified Supplier List
RBMS	Requirements-Based Management System
REOP	Real Estate/Operations Permit
RM/SM	Rainier Mesa/Shoshone Mountain

List of Acronyms and Abbreviations (Continued)

ROTC	Record of Technical Change
RPD	Relative percent difference
S	Sulfur
SBMS	Standards-Based Management System
SDS	Safety Data Sheet
SDWA	*Safe Drinking Water Act*
SME	Subject matter expert
SQL	Structured query language
Sr	Strontium
SSHASP	Site-Specific Health and Safety Plan
Tc	Technetium
TDR	Technical Data Repository
TIC	Total inorganic carbon
TR	Technical reviewer
TREDS	Technical Research, Engineering, and Development Services
U	Uranium
UCDB	UGTA Chemistry Database
UGTA	Underground Test Area
UIDMS	UGTA Information/Data Management System
USAF	U.S. Air Force
USGS	U.S. Geological Survey
WSS	Well Site Surveillance
YF/CM	Yucca Flat/Climax Mine
$\delta^{2}H$	Delta deuterium
$\delta^{13}C$	Delta carbon-13
$\delta^{18}O$	Delta oxygen-18

1.0 Introduction

This report is required by the Underground Test Area (UGTA) Activity Quality Assurance Plan (QAP) (NNSA/NFO, 2015; DOE/EMNV, 2018d) and identifies the UGTA quality assurance (QA) activities for calendar year (CY) 2018 (January 1, 2018, through December 31, 2018).

UGTA organizations—U.S. Department of Energy (DOE) Environmental Management (EM) Nevada Program; Desert Research Institute (DRI); Lawrence Livermore National Laboratory (LLNL); Los Alamos National Laboratory (LANL); Mission Support and Test Services (MSTS); Navarro Research and Engineering, Inc. (Navarro); and the U.S. Geological Survey (USGS)—conduct QA activities throughout the CY. The activities include conducting oversight assessments (OAs) for UGTA Activity QAP compliance, identifying findings and completing corrective actions, evaluating laboratory performance, reviewing technical work, and publishing documents.

UGTA Activity participants conducted 16 assessments on topics including safe operations, UGTA Activity QAP compliance, sample collection, and creating and maintaining records. These assessments are summarized in Section 2.0. Corrective actions associated with quality-related issues are presented in Appendix A.

UGTA Activity use of laboratories not certified by the State of Nevada is identified and justified in Section 3.0.

Laboratory performance for laboratories not certified by the State of Nevada may be evaluated based on four approaches: (1) established performance evaluation programs (PEPs), (2) interlaboratory comparisons, (3) blind samples, or (4) data evaluation. Results of the laboratory performance evaluations are summarized in Section 4.0.

Contract managers, corrective action unit (CAU) leads, preemptive review (PER) committee members, and topical committee members are listed by name and organization in Section 5.0. Other activities that affected UGTA quality are discussed in Section 6.0.

UGTA QA program conclusions are provided in Section 7.0, and references are listed in Section 8.0.

2.0 Assessments and Corrective Action Tracking

2.1 Assessments

The UGTA Activity participants conduct management and independent assessments. Management assessments are conducted by the responsible managers or a designee to identify process improvements or efficiencies (not regulatory compliance). Independent assessments are conducted by personnel independent of the work being done and may be compliance-driven. Causal analyses are independent assessments that evaluate the underlying causes of issues or events. EM Nevada Program personnel conduct OAs and operational awareness activities (OAAs). OAs are analyses or reviews of contractor programs, processes, or products. OAAs are day-to-day documented oversight activities. Sixteen assessments were conducted on UGTA participants in CY2018 (Table 2-1). The 16 assessments resulted in 8 findings, 36 opportunities for improvements (OFIs), 10 observations (OBSs), and 9 best management practices (BMPs).

2.2 Corrective Action Tracking

UGTA participants provide UGTA-related issues, assessment plans, assessment reports, corrective actions, and related closure documentation to Navarro for tracking and summarization. Items (e.g., findings, OFIs, OBSs, and BMPs) may be identified during an assessment, outside an assessment, or as a result of an event. Assessments and items are tracked in the Navarro Assessment and Issue Management System (AIMS). The open corrective actions for 2018 are presented in Table A-1, and the closed corrective actions in Table A-2. Corrective actions presented in Tables A-1 and A-2 are associated with quality-related issues. Issues associated with health and safety, operations (e.g., schedules/delays, find and fix instrumentation issues), and classification are not presented.

Not all issues are found during UGTA assessments; therefore, some corrective actions in Tables A-1 and A-2 are not associated with UGTA assessments. UGTA corrective actions are discussed during the monthly contract managers meeting. At the end of CY2018, 7 corrective actions remained open (Table A-1), and 80 had been closed (Table A-2).

Table 2-1
Assessments Conducted on EM Nevada Program Participants
(Page 1 of 2)

Asmt. No.	Completion Date	Assessing Organization	Assessed Organization	Asmt. Type	Title	Findings	OFI	OBS	BMP
A-788	01/24/2018	Navarro	Navarro	Surveillance	ER-5-5 surveillance 01/24/2018	0	0	1	2
A-789	01/30/2018	Navarro	Navarro	Surveillance	ER-5-3-2 Surveillance 01/30/2018	0	2	1	0
A-802	02/22/2018	Navarro	Navarro	Causal Analysis	Causal analysis of issue I-2339: ER-20-12 sample numbers appear to have been swapped between piezometer zones	2	1	0	0
A-822	03/15/2018	Navarro	Navarro	Causal Analysis	Causal analysis of issue I-2308: "Obtaining NDEP verbal approval on FMP strategy letters"	0	0	0	0
A-1021	03/20/2018	LLNL	LLNL	Causal Analysis	LLNL PEP Issues 2016 Assessment	0	0	0	0
A-1015	03/28/2018	MSTS	MSTS	Management	UGTA Project Well Sampling Operations	0	0	0	0
A-839	05/23/2018	Navarro	DRI	Independent	DRI implementation of UGTA QAP	2	3	0	2
A-701	06/29/2018	Navarro	Navarro	Management	Creating complete, streamlined and parsimonious Documentation Packages	0	1	1	0
A-709	07/05/2018	Navarro	Navarro	Management	Rainier Mesa Peer Review	0	5	0	4
A-840	07/10/2018	Navarro	LANL	Independent	LANL implementation of UGTA QAP	1	3	1	0

Table 2-1
Assessments Conducted on EM Nevada Program Participants
(Page 2 of 2)

Asmt. No.	Completion Date	Assessing Organization	Assessed Organization	Asmt. Type	Title	Findings	OFI	OBS	BMP
A-886	07/19/2018	DRI	DRI	Management	DRI Training Management Assessment	0	2	0	1
A-683	08/03/2018	Navarro	Navarro	Management	Implementation of the UGTA Well Site Surveillance Program	0	6	0	0
A-879	08/15/2018	Navarro	Navarro	Causal Analysis	A-879 Causal Analysis of Issue I-2467	2	0	1	0
A-942	09/28/2018	Navarro	Navarro	Independent	NDEP File Share and related processes	1	4	2	0
A-950	10/18/2018	Navarro	Navarro	Causal Analysis	Causal Analysis for I-2584, Trailer Hitch	0	2	3	0
A-955	11/02/2018	Navarro	Navarro	Causal Analysis	Causal Analysis for I-2508, Prevention of e-tape probe loss at ER-EC-6	0	6	0	0
					Totals	8	35	10	9

FMP = Fluid Management Plan
NDEP = Nevada Division of Environmental Protection

3.0 Noncertified Laboratory Use

This section identifies and justifies analyses performed during CY2018 by laboratories not certified by the NDEP Bureau of Safe Drinking Water. Required analyses associated with each UGTA CAU are described within the associated *Federal Facility Agreement and Consent Order* (FFACO) (1996, as amended) regulatory planning documents. These documents include the corrective action investigation plan (CAIP), the corrective action decision document (CADD)/corrective action plan (CAP), and the closure report (CR). The required analyses within these documents are consistent with the *Nevada National Security Site* (NNSS) *Integrated Groundwater Sampling Plan* (DOE/EMNV, 2018a).

The NNSS Integrated Groundwater Sampling Plan was developed by a committee of technical representatives from each UGTA organization. This committee combined information from previous investigations, an understanding of the NNSS inventory radionuclides' relative mobility, previous sampling and analysis data, and modeling results to develop an analyte list that is CAU-dependent and location type-dependent. Wells are identified as characterization, source/plume, early detection, distal, community, or inactive. The sampling plan identifies the analyses performed by commercial laboratories certified by NDEP Bureau of Safe Drinking Water; however, analyses by noncertified laboratories are routinely added to support characterization, model evaluation activities, and/or QA.

Table 3-1 lists the analyses performed by the noncertified labs (DRI, LLNL, and USGS) for characterization and source/plume locations. The Frenchman Flat CAU is in the closure stage, so commercial laboratories are used for all analyses. LLNL data may occasionally be used for corroborative purposes or for technical investigations (e.g., noble gas studies). In some cases, the commercial laboratory and/or LLNL may analyze for low-level tritium (^{3}H). Low-level ^{3}H measurements may be performed to confirm lack of contaminant migration in these distal areas.

Samples analyzed by noncertified laboratories during CY2018 are presented in Table 3-3. The purpose of the analyses performed by DRI, LLNL, and USGS along with justification for using a noncertified laboratory are presented in Table 3-3. Characterization and source/plume samples were analyzed as described in Table 3-1 unless otherwise noted in Table 3-3. Two early detection locations (PM-3_p1 and PM-3_p2) and one location not included in the sampling plan (ER-EC-6_m2_a1) were

Table 3-1
Source/Plume and Characterization Location Analyses by Noncertified Laboratories

CAU	Characterization		Source/Plume
Central and Western Pahute Mesa (CAUs 101 and 102)	LLNL: • ^{14}C and ^{36}Cl • $\delta^{2}H$ and $\delta^{18}O$ • TIC and $\delta^{13}C$ • Noble gases • ^{3}H (low level) if ^{3}H is <300 pCi/L • ^{99}Tc, ^{129}I, and Pu if ^{3}H is >5,000 pCi/L	• DRI: DOC $\delta^{13}C$ and DOC ^{14}C if ^{3}H is <5,000 pCi/L • USGS: $^{34/32}S$ if ^{3}H is <200,000 pCi/L	LLNL: ^{14}C, ^{36}Cl, ^{99}Tc, ^{129}I
Rainier Mesa/Shoshone Mountain (RM/SM) (CAU 99)		None	
Yucca Flat/Climax Mine (YF/CM) (CAU 97)			

Source: DOE/EMNV, 2018a

C = Carbon
Cl = Chlorine
DOC = Dissolved organic carbon
I = Iodine
pCi/L = Picocuries per liter
Pu = Plutonium
S = Sulfur
Sr = Strontium
Tc = Technetium
TIC = Total inorganic carbon
U = Uranium
$\delta^{2}H$ = Delta deuterium
$\delta^{13}C$ = Delta carbon-13
$\delta^{18}O$ = Delta oxygen-18

Table 3-2
Analyses Performed by Noncertified Laboratories

Location	ISPID	Type [a]	Date	^{3}H (low level)	^{14}C	^{36}Cl	$\delta^{2}H$ / $\delta^{18}O$	TIC / $\delta^{13}C$	Noble gases	$^{34/32}S$	DOC $\delta^{13}C$ /DOC ^{14}C
Central and Western Pahute Mesa (CAUs 101 and 102)											
ER-20-4	ER-20-4_m1	C	21-Jun-18	X	X	X	X	X	X	X	X
ER-EC-4	ER-EC-4_m2-3	C	19-Jul-18	X	X	X	X	X	X	X	X
ER-EC-6	ER-EC-6_m2_a1	O	13-Jul-18	X	X	X	X	X	--	X	X
PM-3	PM-3_p1	E	07-Jun-18	X	X	X	X	X	X	X	X
PM-3	PM-3_p2	E	14-Jun-18	X	X	X	X	X	X	X	X
RM/SM (CAU 99)											
TW-1	TW-1_m1	D	18-Apr-18	X	--	--	--	--	--	--	--
YF/CM (CAU 97)											
ER-3-3	ER-3-3_m1	C	24-Oct-18	X	X	X	X	X	X	--	--
ER-6-1-1	ER-6-1-1_p1	C	14-Mar-18	X	X	X	X	X	X	--	--
ER-7-1	ER-7-1_m1	C	30-Oct-18	X	X	X	X	X	X	--	--
UE-10j	UE-10j_m3	C [b]	04-Jan-18	X	X	X	X	X	X	--	--
WW-3	WW-3_m1	C	08-Nov-18	--	X	X	X	X	--	--	--

ISPID = Integrated Sampling Plan identifier

[a] C = Characterization; E = Early Detection; D = Distal; O = Other.
[b] Type listed in Rev. 0 version of Sampling Plan (NNSA/NFO, 2014), which was in place at time of sampling.

Table 3-3
Justification for Noncertified Laboratory Analyses
(Page 1 of 2)

Analyte	Purpose	Justification for Use of Laboratory Other Than Commercial
Lawrence Livermore National Laboratory		
^{3}H (Low-Level)	^{3}H is the only contaminant of concern identified in the sampling plan. Low-level measurements provide early detection of contaminant plumes, support groundwater velocity calculations, and provide estimates of the contribution of recent recharge to the aquifer where ^{3}H presence is not test-related. Also, measurements may be used to corroborate commercial laboratory results.	LLNL uses a helium (He) ingrowth method with a mass spectrometer by which the ^{3}H concentration is determined based on the production of its radiogenic daughter (^{3}He). Commercial labs use a sample preconcentration method followed by liquid scintillation counting. LLNL achieves a slightly lower method detection limit (MDL) (~1 versus ~4 pCi/L), but more importantly, confidence in the low-level result is gained by using the two very different methods. Low-level ^{3}H is measured only when ^{3}H is less than 300 pCi/L (i.e., the detection limit for standard ^{3}H analyses).
^{14}C	Identified as a contaminant of potential concern (COPC) for all CAUs in the sampling plan, and analyzed to evaluate extent and trends in contamination resulting from underground nuclear testing (i.e., evaluate contaminant transport). Also used for evaluating groundwater flow paths, estimating groundwater travel times/velocities, and assessing local recharge extent in areas where no test-related ^{14}C is present.	LLNL provides specialized analyses that measure this analyte at much lower levels (MDL is less than 0.05 pCi/L) than the commercial laboratory (MDL is ~500 pCi/L). Also, commercial laboratories cannot generally measure ^{14}C in NNSS groundwater samples because samples with ^{14}C above the commercial laboratory's MDL also have high ^{3}H (~10^{7} pCi/L), and the high ^{3}H results in spectral interferences. Therefore, commercial laboratories are useful for verifying nondetects below the 2,000-pCi/L maximum contaminant level (MCL), but LLNL analyses are necessary to meet other sampling objectives. Also, the low-level measurement provides confidence in results and in any exceedances reported by the commercial laboratory.
^{36}Cl	Identified as a COPC for all CAUs in the sampling plan, and analyzed to evaluate extent and trends in contamination resulting from underground nuclear testing. Also used for evaluating groundwater flow paths and estimating groundwater travel times/velocities, and used in chloride mass balance calculations.	LLNL provides specialized analyses that measure this analyte at much lower levels (<0.004 pCi/L) than commercial laboratory (4 pCi/L). LLNL can measure natural ^{36}Cl levels. Most NNSS sampling locations have ^{36}Cl activities below the commercial laboratory MDL. No samples exceed the 700-pCi/L MCL. Therefore, commercial laboratories are useful for verifying concentrations below the MCL and can be used to evaluate trends in a small number of NNSS locations. LLNL's lower detection capability is required for evaluating trends in the majority of NNSS locations and for meeting other sampling objectives. Also, the low-level measurement provides confidence in results and in any exceedances reported by the commercial laboratory.

Table 3-3
Justification for Noncertified Laboratory Analyses
(Page 2 of 2)

Analyte	Purpose	Justification for Use of Laboratory Other Than Commercial
Lawrence Livermore National Laboratory (continued)		
Noble Gases	Provides information about groundwater sources, flow paths, and travel times. The composition of the dissolved noble gases (neon-xenon) is directly related to the temperature and altitude of the groundwater recharge location.	Noble gas analysis is highly specialized and cannot be performed by a commercial laboratory certified by the State of Nevada.
$\delta^{2}H$ and $\delta^{18}O$	Provides information about groundwater sources, flow paths, and groundwater mixing.	These are nonstandard analyses that require specialized instrumentation are not performed by a commercial laboratory certified by the State of Nevada.
$\delta^{13}C$ and TIC	Used for correcting ^{14}C measured values for reactions along the flow path to support groundwater age estimates. Also needed for calculating ^{14}C activities from measured values reported by the accelerator mass spectrometer.	$\delta^{13}C$ analyses cannot be performed by a commercial laboratory certified by the State of Nevada. TIC analysis is performed in support of the ^{14}C and $\delta^{13}C$ analysis and is best done using the same sample.
Desert Research Institute		
DOC and DOC ^{14}C	Used in estimating groundwater travel time/flow velocities. DOC ^{14}C is thought to be less influenced by reactive processes along the flow path and may therefore allow more straightforward interpretations than dissolved inorganic carbon (DIC)^{14}C.	The low detection limits required for DOC ^{14}C analyses cannot be achieved by a commercial laboratory certified by the State of Nevada.
U.S. Geological Survey		
$^{34}S/^{32}S$	Provides information about groundwater sources, flow paths, and groundwater mixing.	These are nonstandard analyses that are not performed by a commercial laboratory certified by the State of Nevada.

sampled for the Pahute Mesa characterization suite (Table 3-3) with the exception that noble gas samples were not collected at ER-EC-6_m2_a1. Representative noble gas samples cannot be collected using a bailer; therefore, the bailed samples from ER-EC-6_m2_a1 and WW-3 were not analyzed for noble gases. Although standard ^{3}H analysis is required for distal locations, a low-level ^{3}H sample was collected from TW-1 and analyzed by LLNL (Table 3-3). In addition, samples collected from two early detection locations (PM-3_p1 and PM-3_p2) were analyzed for the full characterization suite. Although most samples previously collected from these locations were bailed, samples were collected using a pump in 2018. Because pumped samples are generally considered more representative for geochemical parameters, the full characterization suite was analyzed.

4.0 Performance Evaluation Programs

UGTA water chemistry data were provided by General Engineering Laboratory (GEL); ALS Laboratory Group (ALS); ARS International, LLC (ARS); DRI; LLNL; and USGS. GEL, ALS, and ARS are commercial laboratories that use industry-standard chemistry methods to analyze samples. They are certified by the NDEP Bureau of Safe Drinking Water. The commercial laboratories participate in established proficiency testing (PT) programs. Commercial laboratory analysts' demonstrations of capability are performed for analytes that do not currently have a formal PT program. Analyses performed by DRI, LLNL, and USGS laboratories (Table 3-2) do not follow industry standard methods and do not generally have established PT programs. These analyses require interlaboratory comparisons, blind sample analyses, and/or data evaluations to assess laboratory performance.

4.1 Established PT Programs

The commercial laboratories participated in the following:

- RadCheM and MRaD, conducted by Environmental Resources Associates
- Mixed Analyte Performance Evaluation Program (MAPEP), conducted by the Radiological and Environmental Sciences Laboratory
- National Environmental Laboratory Accreditation Conference (NELAC) Fields of Testing for *Clean Water Act* and *Safe Drinking Water Act* (SDWA), conducted by NSI Lab Solutions
- WatR Pollution Proficiency Testing, conducted by Environmental Resources Associates
- Water Pollution Proficiency Testing, conducted by phenova Certified Reference Materials

There were no consecutive failed performance for any one analyte during this reporting period, and wherever there was one failed performance, remedial PTs were reported with acceptable results.

4.2 Demonstration of Capability

The analyst's ability to meet measurement quality objectives (e.g., for precision and bias) is demonstrated by one of the following:

- Acceptable performance of a blind sample (single- or double-blind to the analyst)
- At least four consecutive laboratory control samples (LCSs) with acceptable levels of precision and accuracy

If the above cannot be performed, an authentic sample can be analyzed and the results compared to those of another analyst. The results must be statistically indistinguishable between the two analysts. ^{14}C, ^{36}C, and low-level ^{3}H are the three radionuclides measurements performed by commercial laboratories that do not have formal performance criteria. As required for state certification, the commercial laboratory performance requirement for these radionuclides was met by demonstration of capability.

4.3 Interlaboratory Comparisons

Laboratory performance for LLNL low-level ^{3}H was assessed by comparing their reported results to the results reported by the commercial laboratory for four samples collected in 2018 (Table 4-1). Both laboratories reported ^{3}H as nondetects in wells UE-10j and ER-6-1-1. For PM-3, both laboratories detected a concentration above the minimum detectable activity (MDA). The ^{3}H activities were greater than five times the MDAs, allowing relative percent differences (RPDs) to be calculated to compare the results between the two laboratories (Table 4-1).

Absolute normalized difference (ND) and/or absolute difference (AD) comparisons were made to assess performance of stable isotope analyses. DRI and LLNL performed the analyses for waters taken from ER-20-4, ER-EC-4, ER-EC-6, and PM-3. Table 4-2 presents the results. All differences were within the duplicate acceptance criteria of ±2.

At the time of this report preparation, not all DIC $\delta^{13}C$ results were available for comparison. If the data become available, the comparison will be presented in the CY2019 annual QA report or CY2019 annual sampling report.

Table 4-1
Interlaboratory Comparison for Low-Level ^{3}H (pCi/L)

Sample (ISPID)	LLNL	Commercial Lab	RPD
UE-10j_m3	<1.0	<2.53 <2.22	--
ER-6-1-1_p1	<1.0	<3.21 <2.97	--
PM-3_p1	200.6 ± 14.3	206.6 ± 60.9 191.6 ± 56.6	2.9 4.6
PM-3_p2	544.7 ± 38.3	573.6 ± 168.8 580.3 ± 170.8	5.2 6.3

-- = Calculation does not apply. ^{3}H was not detected, preventing quantitative comparison.

Note: Values below the MDA are reported as "<" MDA value.

Table 4-2
Interlaboratory Comparison for Stable Isotopes

Sample (ISPID)	DRI	LLNL	ND [a]	DRI	LLNL[b]	AD [c]
	$\delta^{2}H$ (‰)			$\delta^{18}O$ (‰)		
ER-20-4_m1	-114 ± 1	-113.2 ± 0.6	0.69	-14.9 ± 0.2	-14.88	0.02
ER-EC-4_m2-3	-113 ± 1	-113.1 ± 0.1	0.1	-14.5 ± 0.2	-14.52	0.02
ER-EC-6_m2_a1	-115 ± 1	-114.1 ± 0.6	0.77	-15.1 ± 0.2	-15.11	0.01
PM-3_p1	-116 ± 1	-114.8 ± 0.4	1.11	-14.7 ± 0.2	-14.66	0.04
PM-3_p2	-116 ± 1	-115.2 ± 1.7	0.41	-14.7 ± 0.2	-14.7	0.00

[a] Acceptance criteria ± 2 ‰.
[b] No error was reported.
[c] AD was calculated instead of ND because measurement error was not reported.

4.4 Blind Samples

A blind sample is defined as a sample with a known or previously measured detectable quantity of analyte that is submitted to a laboratory in a manner consistent with a field sample. No blind samples were analyzed in CY2018.

4.5 Data Evaluation

In CY2018, analytical performance for USGS ^{34}S results were evaluated; appropriate standard operating procedures, quality control (QC) samples, sample collection, and analytical methodology were used. ER-20-4 ^{34}S data were flagged with a data evaluation code to indicate the sample sulfate concentrations were below procedure requirements and deviation from the procedure was therefore needed for the analysis.

5.0 Key Personnel

The following tables identify participants, committee memberships, and responsibilities, along with any personnel changes that occurred during CY2018

5.1 EM Nevada Program

Bill Wilborn was the UGTA Activity Lead in CY2018. EM Nevada Program QA and technical points of contact (POCs) are Janis Romo and John Myers.

5.2 Contractor Change

There were no contractor changes in CY2018.

5.3 Contract Managers

Each organization assigns a contract manager responsible for managing the participants' tasks. There is a monthly contract managers meeting with EM Nevada Program. Table 5-1 lists each manager by organization. LANL changed Contract Manager from Kay Birdsell to Ed Kwicklis.

Table 5-1
Contract Managers by Organization

Name	Organization
Karl Pohlmann	DRI
Ed Kwicklis	LANL
Andrew Tompson	LLNL
Ken Rehfeldt	Navarro
Ken Ortego	MSTS
Jeff Sanders	USGS

Note: Bold text denotes changes.

5.4 CAU Leads and Science Advisors

Each UGTA CAU is assigned a lead who coordinates CAU-specific technical scope and priorities with other CAU leads, focuses PER committee reviews, and communicates progress. There are periodic CAU lead meetings with EM Nevada Program. Table 5-2 lists the CAU leads and their respective organizations. No changes were made to CAU leads in CY2018.

Table 5-2
CAU Leads

Name	CAU	Organization
Edward Kwicklis	YF/CM (CAU 97)	LANL
Brian Haight	Frenchman Flat (CAU 98)	Navarro
Andrew Tompson	RM/SM (CAU 99)	LLNL
Ken Rehfeldt	Central and Western Pahute Mesa (CAUs 101 and 102)	Navarro

In CY2018, Chuck Russell, DRI, took over all Science Advisor duties and now monitors all UGTA CAUs. The Science Advisor provides direct technical support to EM Nevada Program management.

5.5 Preemptive Review Committee Members

The CAU-specific PER committees provide internal technical review of ongoing work throughout the CAU life cycle. Table 5-3 lists the members in each CAU committee.

Table 5-3
PER Committee Membership
(Page 1 of 2)

Name	Organization
CAU 97, YF/CM	
Karl Pohlmann, **Chair**	DRI
Rebecca Frus	**USGS**
Andrew Tompson	LLNL
Britt Jacobson, ex-officio	NDEP
Jamie Walker, ex-officio	Nye County
Jeff Wurtz	Navarro

Table 5-3
PER Committee Membership
(Page 2 of 2)

Name	Organization
CAU 99, RM/SM	
Mavrik Zavarin, Chair	LLNL
Britt Jacobson, ex-officio	NDEP
Peter Martian	Navarro
John Klenke, ex-officio	Nye County
Jenny Chapman	DRI
CAUs 101 and 102, Central and Western Pahute Mesa	
Karl Pohlmann	DRI
Jenny Chapman	DRI
Andrew Tompson	LLNL
Mark McLane, ex-officio	NDEP
Sharad Kelkar	Navarro
Jamie Walker, ex-officio	Nye County
Wayne Belcher, Chair	USGS

Note: Bold text denotes changes.

5.6 Topical Committee Members

Topical committees may be formed on an ad hoc basis to address items such as non-CAU-specific issues, questions, concerns, and readiness. The committees may be disbanded when their scope is complete. Table 5-4 lists the current committees and membership.

Table 5-4
Topical Committee Membership
(Page 1 of 2)

Name	Organization
Modeling	
Clay Cooper	DRI
Edward Kwicklis	LANL
Andrew Tompson, Chair	LLNL
Sharad Kelkar	Navarro
Britt Jacobson	**NDEP**

Table 5-4
Topical Committee Membership
(Page 2 of 2)

Name	Organization
Well Purging and Sampling Methods	
Chuck Russell, Chair	DRI
Mavrik Zavarin	LLNL
Irene Farnham	Navarro
Jeff Wurtz	Navarro
Brian Haight	Navarro
Karl Pohlmann	DRI
Ken Ortego	MSTS
Rebecca Frus	**USGS**
Ted Redding	**MSTS**
Western Pahute Mesa Guidance	
Karl Pohlmann	DRI
Chuck Russell, Science Advisor	DRI
Edward Kwicklis	LANL
Mavrik Zavarin	LLNL
Mark McLane	NDEP
Tracie Jackson	**USGS**
Ken Rehfeldt	Navarro
Jeff Wurtz	Navarro

Note: Bold text denotes changes.

6.0 Other Activities

6.1 UGTA Activity QAP Record of Technical Change

As described in the CY2017 Annual Quality Assurance Report (DOE/EMNV, 2018e), a Record of Technical Change (ROTC) (DOE/EMNV, 2018d) was applied to the UGTA Activity QAP (NNSA/NFO, 2015). The changes resulted from an adequacy review completed in 2017 and include the following:

- Clarification on the use of non-State of Nevada certified laboratories
- Clarification on publicly released documents
- Change annual QA report to CY reporting period

6.2 RM/SM External Peer Review

The RM/SM flow and transport document (DOE/EMNV, 2018b) and the alternative modeling strategy were reviewed by an external peer review committee in the spring of 2018. Committee expertise included hydrogeology, transport modeling, regulatory implementation, and closure of complex groundwater sites. The committee concluded that the implementation of the alternative modeling strategy is both regulatorily and technically a sound course of action (Navarro, 2018). The committee also approved the flow and transport document and made additional recommendations to EM Nevada Program and NDEP. EM Nevada Program addressed these comments in an ROTC (DOE/EMNV, 2018c) to the flow and transport document, and performed additional parameter sensitivity modeling runs in an addendum to the flow and transport document (DOE/EMNV, 2019a).

6.3 YF/CM Preemptive Review

Five PER meetings were conducted in CY2018 for the YF/CM CAU to assess whether the model evaluation targets presented in the CADD/CAP (DOE/EMNV, 2017) were sufficiently addressed, and to advise whether the model refinements appropriately incorporated the knowledge and insights gained from the model evaluation activities. Each meeting consisted of technical presentations by the Model Evaluation Team with PER committee questions, followed by detailed technical discussions. The PER committee provided the Model Evaluation Team with comments, which were addressed during the ongoing model evaluation work to ensure that sufficient confidence in the models to be

used to support regulatory decisions, including developing a monitoring strategy, identifying use restriction boundaries, and ensuring probable compliance with the regulatory boundary objective to *verify that radionuclide contamination from the YF/CM CAU is contained within the Yucca Flat basin, thus not impacting the Frenchman Flat lower carbonate aquifer (LCA) or downgradient receptors*.

6.4 NNSS Integrated Groundwater Sampling Plan Revision

The NNSS Integrated Groundwater Sampling Plan was revised in CY2018 (DOE/EMNV, 2018a) to incorporate information gained in the four years since its implementation (NNSA/NFO, 2014). The sampling plan describes a comprehensive approach for collecting and analyzing groundwater that combines routine radiological monitoring performed by the DOE, National Nuclear Security Administration Nevada Field Office (NNSA/NFO) with that performed by EM Nevada Program's UGTA Activity. Its implementation was designed to meet both the NNSA/NFO and EM Nevada Program's radiological water monitoring objectives not already covered by a permit (compliance wells and NNSS public water system wells). The sampling plan (2018a) included the following changes:

- Several new locations were added, including the new wells in Pahute Mesa (ER-20-12) and Yucca Flat (ER-3-3 and ER-4-1), and other locations not previously included (e.g., ER-20-4, ER-EC-4, E Tunnel).
- Removed sampling in Frenchman Flat CAU because sampling requirements are presented in the CR for this CAU (NNSA/NFO, 2016).
- Recategorized several characterization wells to either source/plume or early detection wells because sufficient characterization data have been collected.
- Removed some locations either because sufficient data have been collected for characterization (e.g., U-3cn PS 2, U-4u PS 2A, UE-10j, WW-A); location is known to fall outside flow system (Ash B Piezometers 1 and 2); is too distal to require routine monitoring and is not on Bureau of Land Management (BLM) or public land (Army 1 WW); sampled groundwater is equivalent (ER-20-6-1 and ER-20-6-3) to another location in close proximity (ER-20-6-2); or cannot be sampled because of well issues (UE-12t-6).

Data resulting from implementation of the sampling plan are evaluated annually and presented in public released documents. The reports also summarizes QA/QC results, data verification and validation process, QC sample results, and nonconformances associated with the laboratory results.

6.5 Nevada Site-Specific Advisory Board - Stakeholder Involvement

The Nevada Site-Specific Advisory Board (NSSAB) is made up of appointed volunteers from communities near the NNSS and are chartered to provide recommendations, from a community perspective, to EM Nevada Program on environmental corrective actions, baseline prioritization, long-term monitoring, public outreach, and waste management and disposal activities. NSSAB members bring a variety of perspectives on issues of significant concern to the region. The board considers rural interests, environmental concerns, and local government viewpoints before making recommendations to EM Nevada Program. Work plan items in CY2018 associated with UGTA activities were as follows:

- Make recommendation(s) regarding the preferred path forward for the EM UGTA Core housed at the Mercury Core Library. In support of the work plan, board members received an extensive briefing on the Mercury Core Library and Data Center at the NNSS from the Core Library Manager. NSSAB also received a tour of the Mercury Core Library during which additional questions were addressed. Based on board discussion, the decision was made by EM Nevada Program to continue to house the EM Core at the Mercury Core Library due to its location and accessibility.

- Annual review and prioritization of EM Nevada Program activities for the fiscal year (FY) 2020 budget submittal. Board members received a briefing on seven tasks relating to EM Nevada Program activities at the NNSS for FY2020. Three of these tasks related to UGTA CAUs: Central and Western Pahute Mesa (CAUs 101 and 102), RM/SM (CAU 99), and YF/CM (CAU 97). Based on the information provided in the briefing, NSSAB ranked the tasks from highest to the lowest priority. NSSAB's prioritizations are considered by EM Nevada Program when developing the budget submission to EM Headquarters.

- Make recommendation(s) regarding enhanced outreach based on the results of community feedback (i.e, community's level of interest and concern). NSSAB established an ad hoc committee that developed and analyzed a survey in order to better understand the level of interest and concern that communities near the NNSS have regarding EM Nevada Program activities. Based on these results, NSSAB provided recommendations for ways to enhance targeted community outreach in communities surrounding the NNSS. Many of these recommendations focused on groundwater activities.

7.0 Conclusion

During CY2018, UGTA Activity participants conducted 16 assessments on topics including safe operations, UGTA Activity QAP compliance, sample collection, and creating and maintaining records. These assessments resulted in 8 findings, 35 OFIs, 10 OBSs, and 9 BMPs. The UGTA Activity continued to conduct PERs and topical committee meetings to ensure quality technical work products.

The UGTA Activity focused on sampling with a significant number of analyses (11 discrete locations) performed by specialized (noncertified) laboratories. Confidence in the QA/QC of these laboratories was provided through data verification, data validation, and laboratory assessments. Consistency between multiple measurements from the same location and between multiple parameters is indicative of similar geochemical processes and, along with spatial trends in the data, ensures confidence in the results and data interpretations.

Other QA related activities include the following:

- UGTA Activity QAP ROTC to present changes resulting from a 2017 QAP adequacy review
- RM/SM external peer review
- YF/CM preemptive review
- NNSS Integrated Groundwater Sampling Plan revision

NSSAB also (1) recommended to continue to house the EM Core at the Mercury Core Library due to its location and accessibility; (2) ranked tasks related to UGTA CAUs Central and Western Pahute Mesa (CAUs 101 and 102), RM/SM (CAU 99), and YF/CM (CAU 97)—from highest to the lowest priority; and (3) recommended ways to enhance targeted community outreach on groundwater activities in communities surrounding the NNSS.

The third round of closure sampling for Frenchman Flat (DOE/EMNV, 2019b) was completed in accordance with the Frenchman Flat CR (NNSA/NFO, 2016).

8.0 References

DOE/EMNV, see U.S. Department of Energy Environmental Management Nevada Program.

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NNSA/NFO, see U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office.

U.S. Department of Energy Environmental Management Nevada Program. 2017. *Corrective Action Decision Document/Corrective Action Plan for Corrective Action Unit 97: Yucca Flat/Climax Mine Nevada National Security Site, Nevada,* Rev. 1, DOE/NV--1566-REV. 1. Las Vegas, NV.

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U.S. Department of Energy Environmental Management Nevada Program. 2019b. *CY2018 Annual Closure Monitoring Report for Corrective Action Unit 98, Frenchman Flat, Underground Test Area, Nevada National Security Site, Nevada (January 2018–December 2018),* Rev. 1, DOE/EMNV--0006. Las Vegas, NV.

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U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2015. *Underground Test Area Activity Quality Assurance Plan Nevada National Security Site, Nevada*, Rev. 2, DOE/NV--1450-Rev.2. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2016. *Underground Test Area (UGTA) Closure Report for Corrective Action Unit 98: Frenchman Flat, Nevada National Security Site, Nevada,* Rev. 1, DOE/NV--1538-Rev. 1. Las Vegas, NV.

Appendix A

Tracked Corrective Actions

Table A-1
Open Corrective Actions
(Page 1 of 2)

Asst No	Track	Issue Type	Owning Organization	Due Date	Description	Corrective Action
N/A	I-117	OFI	LLNL	02/06/2013	Underground test information was not always reported consistently between investigators or consistent with the UGTA Nuclear Test Information Database.	Two cavity radius papers have been written. The first paper was released as a classified report in June 2018: “Models for Calculation of Cavity Radius and Chimney Height from Underground Nuclear Detonations, Nevada National Security Site (U)” by S.F. Carle, A.F.B. Tomson, and M. Zavarin. The second report is anticipated to be unclassified and is coming out of derivative classification review at this time.
A-840	I-2476	OBS	LANL	11/09/2018	Although participant stated that the code was verified, no verification documentation was provided for a code used to merge multiple meteorological data files into an Excel spreadsheet. Verification documentation must be completed before the data are formally used in a technical report/product. Because the final product has not been produced, this does not qualify as a finding.	A records package for INFIL models is being prepared that will include a verification test for this code.
A-701	I-2481	OBS	Navarro	05/30/2019	Modify requirement statements within UGTA procedures that address software management to align with QA-1704.	Modeling code procedures were aligned with the Software Quality Assurance (QA-1704) procedure.
A-955	I-2614	OFI	Navarro	03/29/2019	Inspection of all current e-tapes.	Work was completed as suggested.
A-955	I-2615	OFI	Navarro	03/29/2019	Removal of e-tapes that display excessive ware.	Work was completed as suggested.

Table A-1
Open Corrective Actions
(Page 2 of 2)

Asst No	Track	Issue Type	Owning Organization	Due Date	Description	Corrective Action
A-955	I-2617	OFI	Navarro	03/29/2019	Create maintenance logs for all e-tapes.	Work was completed as suggested.
A-1005	I-2631	Event/Issue	Navarro	02/06/2019	Loss of data (model simulations) due to power failure.	As many model simulations were restarted as possible, and the approach to conduct the simulations was revised to minimize loss in case of a recurring power failure.

N/A = Not applicable

Table A-2
Closed Corrective Actions
(Page 1 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2098	Finding	Navarro	08/06/2018	Some historical data within the UGTA Chemistry Database (UCDB) have not been qualified and accepted.	Causal analysis conducted (A-755 and associated findings/OBS/OFIs). Borehole Index (BHI) issues fixed, and additional issue (I-2106) identified. UCDB user manual link fixed on SharePoint site. Historic data were flagged, and available references for database data were uploaded to the UCDB SharePoint site.
N/A	I-2106	Event/Issue	Navarro	06/28/2018	UCDB coordination with the BHI Location Names.	Locations in UCDB were paired with an existing name in BHI (where possible) to allow coordinates from the BHI to be related to entries in the UCDB. Locations not resolved were left null.
A-722	I-2153	Finding	LLNL	08/06/2018	Plutonium results for sample 112-0191414-1 (UG100374) were reported without a Validation Qualifier although the verification and validation documentation states that a duplicate associated with this batch did not meet duplicate error ratio (DER) criteria.	Extent on condition conducted. Developed a specific list of relevant qualification flags and reason codes, and Navarro and LLNL have come up with a consensus on applying codes to existing data in the database where this finding applies.
A-722	I-2154	OBS	LLNL	08/06/2018	With the exception of issues associated with blank samples, procedures/checklists did not have instructions on qualifying results when QC issues occur.	List of qualifiers and reason codes has been generated and distributed to UGTA analysts. Analytical SMEs will make initial determination if data need to be qualified. Analysts discuss specifics with UGTA analytical team to ensure correct qualifier and reason codes are selected.

Table A-2
Closed Corrective Actions
(Page 2 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-722	I-2155	OBS	LLNL	08/06/2018	Not all qualifiers associated with analytical issues are identified and defined.	SMEs will make initial determination if data need to be qualified. List of qualifiers and reason codes has been generated and distributed to UGTA analysts.
N/A	I-2184	Finding	Navarro	01/09/2018	Non-Navarro UGTA participants are no longer approved on the Qualified Supplier List (QSL).	The SharePoint site hosting the QSL was modified to provide notifications when a supplier's approved status is about to expire. USGS, LANL, and NSTec were reinstated on the QSL. Independent assessments were initiated for USGS (12/19/2017) and LANL (07/10/2018).
A-577	I-2238	OBS	Navarro	03/23/2018	BHI Desktop development.	A Desktop Instruction (QA-1700) was developed for the BHI.
A-755	I-2301	Finding	Navarro	07/03/2018	Data was uploaded without a QC flag to indicate associated level of quality. The data at the root of the concern (historical data) were uploaded with the expectation that a flag would be assigned, but when and how the data would be flagged was unknown and not assigned.	QC flag(s) were added to existing items in the database.
A-755	I-2302	Finding	Navarro	03/01/2018	SharePoint and Database ownership is not clearly defined or assigned.	Ownership for UGTA SharePoint sites and databases has been established.
A-755	I-2306	OFI	Navarro	06/28/2018	The electronic process for accepting data into UCDB should be used by all participants.	A Navarro computer tool to format data into an electronic data deliverable (EDD) format to populate the database is available for MSTS, DRI, and USGS use.

Table A-2
Closed Corrective Actions
(Page 3 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-755	I-2307	OFI	Navarro	6/28/2018	Database owners/administrators need a better understanding of the UGTA participants' use and needs for the UCDB.	This topic was discussed with participant during an UGTA data integration meeting.
N/A	I-2321	Event/Issue	Navarro	04/04/2018	Clarity needed on management and operating (M&O) calibration sticker protocols.	M&O equipment calibration protocols are the responsibility of the M&O onsite supervisor. This information is then verbally passed along to other field supervisors at the beginning of field events.
A-788	I-2322	OBS	Navarro	03/16/2018	Out-of-date office procedure at field location.	The outdated procedure was removed the day it was discovered. SharePoint Alerts were set up on the RBMS SharePoint site to inform the field crew when key field procedures are revised.
N/A	I-2326	Event/Issue	Navarro	03/05/2018	Laboratory data package documentation states that shipping container was missing custody seals.	The laboratory verified that all the individual sample containers were received and had custody tape in place, and were undisturbed. It appears that this was inaccurately documented by the laboratory.

Table A-2
Closed Corrective Actions
(Page 4 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2328	NCR	Navarro	02/14/2018	Discovered preserved bottles without preservative.	Site personnel incorporated onsite nitric acid ampoules into sample bottles to achieve the required pH. Preserved bottles were inspected; six bottles without preservative were noted and removed from circulation. The laboratory will ensure that all personnel assisting future sample analysis that require preservatives are properly trained in accordance with NCR# 14608.
A-789	I-2330	OBS	Navarro	05/22/2018	The Electronic Data Capture (EDC) user manual needs to be updated and clarified. It has not been updated since 2016, and changes have been made to the user interface.	An operator aid was developed and approved by the application owner before releasing to the respective users.
A-789	I-2331	OFI	Navarro	05/23/2018	The last training on the EDC was over a year ago. The database has changed, and refresher training may be helpful to field personnel. Suggest this training be conducted either after the user manual update.	EDC training was given at NNSS in conjunction with the final publication of the EDC Operator aid.
A-789	I-2332	OFI	Navarro	02/27/2018	The text size is too small when using the field laptop. Suggest larger laptop, standalone monitor, magnification screen, etc.	A monitor that magnifies the EDC was acquired.

Table A-2
Closed Corrective Actions
(Page 5 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2339	Finding	Navarro	05/21/2018	Samples were not handled in a way that prevented their misidentification. Samples collected from ER-20-12_p4 (08/31/2016) were misidentified as ER-20-12_p2 (08/30/2016) samples, and vice versa.	Sample results were qualified with an “R” (reject). An impact assessment was performed to determine if the erroneously reported analytical results have been used in any quality affecting or technical product. No impact was reported. Prior to this issue, many samples have been collected and have never been misidentified. This was a one-time occurrence
A-799	I-2341	OBS	USGS	09/27/2018	USGS uses published methods and articles to conduct sulfur analyses and data reduction. These references are over 100 pages and contain multiple options and details for other isotopes, but are detailed enough to use as procedures when combined with the USGS Sample Management Plan. However, the UGTA specific reporting format, sample identification numbering convention, Excel spreadsheet, and data summary development are not contained in the published methods/articles. Data summary reviews are documented by email but are not part of the record (they remain on the email server). An UGTA-specific sulfur procedure would document the processes and forms from sample delivery to data review and submittal.	A formal procedure (USGS-QW-SULFUR ISOTOPE-01, Rev. No: 1) has been written to address the observation. The procedure has been reviewed and incorporated into the office files and procedures planning archive.

Table A-2
Closed Corrective Actions
(Page 6 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-799	I-2342	OFI	USGS	09/27/2018	USGS should consider incorporating Navarro's electronic data document format to upload UGTA data directly into the UGTA Chemistry Database managed by Navarro.	A formal procedure (USGS-QW-SULFUR ISOTOPE-01, Rev. No: 1) has been written to address the observation. In this procedure, a template is now used to report results in a layout appropriate for upload by Navarro Analytical Services.
A-799	I-2343	OFI	USGS	09/27/2018	USGS should also consider mandating formal records management training for all USGS staff in the absence of a Records Manager.	In addition to all USGS personnel completing annual federal records training, three USGS personnel attended an instructor-led National Archives Records Administration (NARA) course 17-18 May 2018 and serve as SMEs.
A-765	I-2344	Finding	Navarro	06/05/2018	Field equipment inspections and maintenance are not consistently performed or documented. There was no evidence that the wireline units and generator inspections were documented, and maintenance is not documented.	UGTA management completed a Conduct of Operations discussion with field personnel. Specific to UGTA equipment, there are new daily safety equipment inspection checklists for typical standard groundwater sampling equipment (filled out daily), a setup bailer/tripod checklist (when bailer used), and a trailer towing list (when towing). New logs/checklists have been reviewed and developed for use.

Table A-2
Closed Corrective Actions
(Page 7 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2346	Finding	Navarro	04/26/2018	Navarro personnel were performing routine depth-to-water-level measurements using the e-tape set up at WW C-1. While reeling the e-tape up, the e-tape broke off and fell back into the pump string being measured. The e-tape was not operated in a manner that would minimized damage. (See causal analysis A-805 for more details.)	Work was paused at the wellhead; equipment secured; and photos taken of the location on e-tape where it broke off. Desktop instruction DI-FO-14, "Water-Level and Flow Monitoring Operations," was revised, and training was provided to Navarro employees that perform water level measurements using the e-tape to clearly identify the signs to stop and the accountability of individual workers.
A-802	I-2350	Finding	Navarro	03/06/2018	The sample handling procedure in effect at the time the work was performed (OI-SM-2) required samples to be collected, then afterwards the sample event to be documented. However, the UGTA Sample Collection Logs documented sampling events that had not yet been performed.	The procedure (OI-SM-2) was revised to allow documentation of field activities prior to their completion. This item would not be a finding under the revised procedure.
A-802	I-2351	Finding	Navarro	05/03/2018	Inaccurate quality-affecting record.	The record was corrected, and the Closure Support Manager reviewed the procedural requirements with field staff to ensure checks are properly performed.
A-802	I-2352	OFI	Navarro	03/26/2018	Place samples into secure storage the same day the samples are collected.	It was determined to be acceptable to store samples at the collection site (accessible only to Navarro field crew) overnight if necessary.

Table A-2
Closed Corrective Actions
(Page 8 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-805	I-2359	OBS	Navarro	06/05/2018	During the fact-finding for issue I-2346, (A-805), it was determined that a damaged sheave wheel was used to perform the work. Although the damaged wheel did not contribute to the incident, there was a general consensus during the fact-finding that the wheel should not have been used given its condition.	The equipment in question that generated this OBS was red-tagged and pulled from use.
A-805	I-2360	OFI	Navarro	06/11/2018	A lesson learned should be generated on the lack of communication on the part of Navarro personnel leading to the root and contributing causes of issue I-2346; this lesson learned should be presented to all Navarro personnel trained and/or involved in measuring water levels.	Lessons learned OE-949, Water Level Probe in WW C-1, was completed.
N/A	I-2366	Finding	Navarro	07/02/2018	A gross alpha value was found to be incorrect in the UGTA Chemistry Database for a 2000 WW-8 sample. Upon evaluating the checkprint for this record, it was clear that the value did not match the source data (REF_ID 603). Because it was neither crossed out with red nor highlighted yellow, the value was ignored in the subsequent checkprints.	Errors associated with REF_ID 603 were corrected in database.
N/A	I-2411	Finding	Navarro	06/25/2018	Incorrect project documentation presented at job site ER-16-1.	The TSB was performed to the correct work package, and the work was executed.

Table A-2
Closed Corrective Actions
(Page 9 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-839	I-2428	Finding	DRI	10/02/2018	The files for "DRI-NR-2017-PM_Fault_Stress_Permeability" contains data files with data hand entered from hard-copy sources such as Gibson, R.G. 1987. "Analysis of Borehole elongation in Yucca Flat and Pahute Mesa, Nevada Test Site, Nevada, Using the Digital Downhole Surveyor." However, no documentation was found that documented the verification of the manually transferred data. Note: No extent of condition was performed during the assessment. This may not be an isolated occurrence.	Performed a review to ensure that data transcription and transfer procedures are included in the task's Data/Information Implementation Plan (DIIP); that all task personnel review, understand, and implement the DIIP; and that the draft data documentation package is reviewed to confirm that proper documentation is included.
A-839	I-2429	Finding	DRI	10/02/2018	DRI has some software codes developed for limited uses (such as pre-processor code written in FORTRAN) that do not have associated documentation regarding how the software was verified. Note: No extent of condition was performed during the assessment. This may not be an isolated occurrence.	Performed a review to ensure that verification procedures for computer codes of various degrees of complexity are included in the task's DIIP; that all task personnel review, understand, and implement the DIIP; and that the draft data documentation package is reviewed to confirm that documentation of verification is consistent with the complexity of the code.

Table A-2
Closed Corrective Actions
(Page 10 of 24)

Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-839	I-2430	OFI	DRI	07/05/2018	When a dataset contains data obtained from multiple sources, more detail should be provided to link specific data values to the specific source from whence they were obtained. For example: Data sources: Borehole construction dimensions: TRW (1994); Permeability data: Beckman (1997); Dissolved oxygen data: Cooper (2014).	Performed a review to ensure that data transcription and transfer procedures are included in the task's DIIP; that all task personnel review, understand, and implement the DIIP; and that the draft data documentation package is reviewed to confirm that proper documentation is included.
A-839	I-2431	OFI	DRI	07/05/2018	DRI is currently retaining hard copies of records that have been scanned into electronic files. Consideration should be taken to keeping only those records difficult to read/analyze in electronic format (well logging data).	Retention of hard copy records is being evaluated on a case-by-case basis.
A-839	I-2432	OFI	DRI	07/05/2018	DRI's electronic files are maintained on three different servers, which can cause confusion, as folder names are similar on each server. A file plan listing the folders on each server and their purpose could be helpful.	Locations of data packages were streamlined, and documentation of data package locations was updated.
A-839	I-2433	BMP	DRI	06/27/2018	DRI includes a read-me file for each data package that serves as a records roadmap that facilitates retrieval of the records.	Not required.
A-839	I-2434	BMP	DRI	06/27/2018	DRI has established a naming convention for its files that are loaded into the UGTA Information/Data Management System (UIDMS).	Not required.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2466	NCR	Navarro	07/17/2018	ARS is now providing sample bottles to Navarro. The following problems have been reported: (1) did not receive an SDS with the bottles (nitric acid present). (2) HNO_3 was written on the lid, and electrical tape was around the cap; some caps were loose. (3) The HNO_3 bottles used at ER-20-4 had yellowing on the lid where acid may be leaking/evaporating and strong odor when retrieving from our Ziploc bags to fill.	Analytical Services Manager interacted with Navarro's ARS contact via email. Interaction is considered adequate to correct the issue.
A-879	I-2467	Finding	Navarro	11/15/2018	When UGTA water samples are preserved in the field, nitric acid is added, but the acid lot number is not recorded. There are no fields in the EDC for this information but a comments field is available. A note is added to the Chain of Custody form stating that a nitric acid ampoule was added to sample(s), but no information is available on sampling documentation to trace the acid back to the procurement, quality, and/or certificate of analysis.	Navarro has procurement steps that ensure traceability on the nitrous acid. The certificate of analysis and lot numbers are requested by the particular lab of interest.
N/A	I-2468	OBS	Navarro	07/19/2018	Laboratories providing sampling supplies to Navarro are required to send Certificates of Cleanliness and preservation SDS with the supplies, as applicable. Sample bottle sets have been received without these documents.	Analytical Services Manager contacted Laboratory POCs requesting the certificates.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-840	I-2475	Finding	LANL	10/16/2018	There is no written procedure for the management, control, and transfer of information/data. Processes exist and are being followed; however, the processes have not been documented in an approved procedure or instruction. There is no formalized, documented procedure for data and documentation packages being saved to the TDR and access-controlled shared drive.	A procedure was written to outline how to create, locally store, and transfer data packages for the simulations performed at LANL. These directions are in agreement with the UGTA QAP and LANL records retention, and have been approved by the LANL Contract Manager.
A-840	I-2477	OFI	LANL	10/16/2018	The source information for Earthvision is maintained in a web file that references the downloaded data location. However, there is nothing in the data folder pointing back to the source information's web file. Recommend adding a read-me file to the data folder in order to provide two-way traceability.	The permission setting of the local drives where UGTA data are saved has been updated to allow for access only to UGTA personnel at LANL.
A-840	I-2478	OFI	LANL	10/16/2018	All Subsurface Flow and Transport personnel have access to the Shared drive. LANL may want to limit access to those working on UGTA products. This may assist in file and space management.	A read-me file was added to the folder with EarthVision files that includes the location where source data were downloaded from to allow for easy two-way traceability.
A-840	I-2479	OFI	LANL	10/16/2018	UGTA personnel should consult with LANL records subject matter experts regarding the shared drive status as to records retention and end-of-contract/project disposition per P1020-1, Laboratory Records Management.	LANL records retention group (SI-RMS) was contacted to confirm that the local storage of UGTA files will continue for 75 years, which is in compliance with the UGTA QAP.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-701	I-2480	OFI	Navarro	12/20/2018	Submit an RBMS change for procedure DI-MO-02; Page 2 of 8, Section 2.1 Change the second paragraph to: The DD must ensure that adequate detail is provided to allow review of all data, calculations, and codes used to generate the final results by a technical reviewer (TR) (i.e., Modeler or Data Analyst knowledgeable in the procedure but not involved in developing the documentation package). The DD must ensure that the documentation package contains all the necessary files and no extraneous files.	RBMS procedure DI-MO-02 was revised.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2487	Event/Issue	Navarro	08/02/2018	The current practice of reporting alkalinity is not providing the data-user with the most accurate measure of alkalinity. It is recommended that the procedure (desktop) change from picking the titration volumes closest to pH 8.3 and 4.5 to the max change of delta pH/delta titrator digit near pH 8.3 and pH 4.5. The intent is to report the value that falls on the inflection (pivot) point because that is the precise point at which the buffer is consumed. Additionally, the field titration sheet N-336 and the sample collection log may need to be updated to clearly distinguish that the chemical symbols are being used to denote bicarbonate and carbonate, these symbols are not used as the units of measure. The desktop needs to be reviewed thoroughly and perhaps revised, and form N-336 still contains the SBMS procedure.	Modified text in the *Field Alkalinity Measurements* section within Desktop Instruction DI-FO-15 and Form N-336 to change the method for field personnel to select the Titrator Digit nearest pH 8.3 and 4.5. The actual process of conducting the titration did not change, only the selection method of endpoints near 8.3 and 4.5. The modifications were agreed upon between Closure Support Manager, UGTA Project Manager, and Analytical Services Manager on 07/26/2018.
N/A	I-2488	Event/Issue	Navarro	08/01/2018	To avoid confusion while this issue is being thoroughly investigated, it is recommended that access to technical information within the UCDB should be conducted manually offline through the Database Owner/SME and online database access to participants should be temporarily turned off.	The initial description for this issue confused efforts to resolve, a better description of this issue has been incorporated within Event/Issue I-2499. This issue will be resolved in accordance with the description within I-2499.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2495	Event/Issue	Navarro	09/25/2018	Recent events such as severe thunderstorms, lightning alerts, flash floods, and potential for wildland fires prompted a request to review the current process (in HASP) for responding to these events in remote locations of the NNSS and NTTR.	ESH&Q and Closure Support Managers revised requirement (s) within the HASP; RBMS Hazard Analysis and Safety Documentation, document HS-1301, attachment A-4.14.
N/A	I-2499	Event/Issue	Navarro	09/26/2018	A malfunction in the UGTA Chemistry SharePoint query tool was identified that limited viewing of results to the first 200 lines of output. There is currently an option to output the query to a spreadsheet that provides access to the full query results. The technical adequacy of the data in the UCDB has not been compromised. The data query tool will remain available while the investigation into the malfunction proceeds. Prior implementing corrective actions, results from an investigation of the UGTA Chemistry SharePoint query tool will decided: The amount of effort involved to fix the tool; should the existing tool be replaced with a different tool; provide access to raw data without use of the tool. **This issue supersedes I-2488.**	Leave query tool online, and create a work-around with explicit instructions for users to follow, allowing queries to be executed with the desired results.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2500	Event/Issue	Navarro	11/15/2018	USAF has notified DOE of their intentions to make the EC South an active, live fire range. Range access may be reduced or eliminated, causing schedule conflicts and a reduction in critical data.	A meeting with the USAF was held. The USAF explained their plans for the EC South Range and that unescorted access to the range will soon require a DOE L or Q clearance. UGTA assigned a “cleared” individual to lead groundwater sampling activities on the EC South, which allowed the planned sampling work to proceed uninterrupted.
A-886	I-2501	BMP	DRI	08/06/2018	Ongoing development of a matrix of training requirements and their governing directives and/or other sources for each position supporting the TREDS program and UGTA Activity is a worthy effort that ensures that training requirements are up to date and appropriate for the work.	Not required.
A-886	I-2502	OFI	DRI	08/13/2018	Consider merging the UGTA-specific Read-and-Sign training with the TREDS Training Database so that all training records for each employees are maintained together in a single location.	The OFI was evaluated and found to be impracticable. There is no impact on data quality under the current system.
A-886	I-2503	OFI	DRI	08/13/2018	Project Manager should work more closely with the Principal Investigator to ensure that there are no training requirements listed in Site-Specific Health and Safety Plans (SSHASPs) that are not needed for the task.	SSHASPs were evaluated and revised as needed.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
N/A	I-2506	Event/Issue	Navarro	09/14/2018	While UGTA field staff were verifying the use of all updated field forms, they noticed that Form N-435 Tritium Tracking Log is no longer listed in RBMS. Some research into the Desktop DI-FO-08 (Fluid Collection) shows that specific text under "General Information" discussing the use of this form is no longer present, and the reference to form N-435 is also missing.	Desktop DI-FO-08 (Fluid Collection) was revised to include the missing text and add the form N-435 back into the RBMS forms.
A-683	I-2515	OFI	Navarro	10/09/2018	Modifications to the Form N-436 are needed to add a field for Vegetation as well as clarify readability of certain fields to ensure closure reporting such as Frenchman Flat requirements can be easily captured by the form and documented.	Form N-436 was revised as needed.
A-683	I-2516	OFI	Navarro	10/18/2018	Schedule a meeting with EM Nevada in FY19 to address Plan adjustments as needed based on new Closure needs, ISP, etc.	Meeting with EM Nevada was held to address needed Plan adjustments.
A-683	I-2517	OFI	Navarro	10/18/2018	Improve process for obtaining photos, PIRDy approval, and SharePoint entry, and add to the WSS Manual; same with GPS data. Photos are not submitted to the TDR. This will necessitate a manual revision.	Revised manual; verified PIRDy review for photographs included and instructions for upload and metadata completion.
A-683	I-2519	OFI	Navarro	09/17/2018	Add the Well Site Surveillance (WSS) Plan to the WSS SharePoint page for reference.	The WSS Plan has been added to the WSS Inventory Resources SharePoint page.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-683	I-2520	OFI	Navarro	10/18/2018	Clarify list of required wells for inspection and ISPIDs under the Plan, as the REOP and the Integrated Sampling Plan wells have changed since the WSS Plan was developed.	A meeting with EM Nevada provided clarification from the client that no adjustments are required at this time to the WSS 2016 Plan inspection list. The client did agree that the WSS Inspection list has and will continue to be supplemented with other well sites on an as needed basis (i.e., wells listed in the Integrated Sampling Plan that are not part of the REOP list). However, this does not require a change to the Plan.
A-683	I-2521	OFI	Navarro	10/25/2018	The Well Site Surveillance SharePoint Site needs end user queries and reports; the links on SharePoint site used to “query” specific wells with issues (i.e., missing ISPIDs) are missing information; End User needs additional training in using SharePoint Also identified issues between well names and Borehole Index.	Additional SharePoint user training was provided to better manipulate/create unique data views and create links on the home page. Additionally, query specific links that were not functioning correctly and were missing relevant data columns and not listing all wells were fixed.
A-682	I-2526	Finding	Navarro	12/10/2018	Modifications to an in-house develop software application were not formally tested, verified, and validated prior to production use on quality-affecting data. The EDC database was designed on desktop PCs when the targeted operating environment was laptops. When tested on laptops, it was found that the resolution and memory capabilities were not conducive to optimal performance.	A software qualification package was compiled that contains documentation of (1) testing and independent confirmation; (2) test cases for verification/validation and name of verifier; (3) input files, parameters, and settings required to run tests. Software qualification package was submitted to the Controlled Software Tracking Inventory (CSTI) database.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-682	I-2527	OFI	Navarro	09/11/2018	Relocate the container “labels” button from the sample collection log form to Chain of Custody form.	The Chain of Custody form obtains all of the information that controls how to process the information provided within the sample collection log form. This improvement stream lines the workflow. The container “labels” button was transferred to the Chain of Custody form.
A-682	I-2528	OFI	Navarro	09/11/2018	Limit drop-down menus to contain only pertinent parameters to the field activities being performed. Some container types pertain to particular projects, limiting drop-down menu options simplifies choice selection for users.	Drop-down menus were limited to pertinent parameters only.
A-682	I-2529	OFI	Navarro	09/11/2018	Presently, the laptops are performing at a slow pace within the field; this improvement will investigate the use of a new form implemented within new machines utilizing a portable version of the Microsoft Structured Query Language server, MS SQL express.	Determined that Functionality issue was caused by both laptop and the absence of an SQL server lite application installed within laptops. Analytical Services Manager has commented that the functionality issue no longer exists and performance has greatly improved.
A-682	I-2530	Finding	Navarro	11/30/2018	The software documentation supporting in-house development of the EDC database is incomplete and not in compliance with RBMS procedure QA-1704.	Documentation of the EDC database development and testing was completed in compliance with RBMS procedure QA-1704.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-879	I-2551	Finding	Navarro	11/19/2018	When UGTA water samples are preserved in the field, nitric acid is added, but no information is available to trace the acid back to the procurement, quality, and/or certificate of analysis. There are no fields in the EDC for this information but a comments field is available. Recommendation: revise DI-FO-08, Fluid Sample Collection and Field Filtration section 2.8.2 to include the preservation lot number on the Chain of Custody.	DI-FO-08, Fluid Sample Collection and Field Filtration, Section 2.8.2 was revised to include the preservation lot number in Chain of Custody comments section.
A-879	I-2552	OBS	Navarro	09/10/2018	Certificate of Cleanliness review.	Analytical Services will ensure certificates of cleanliness are included with each bottle delivery and will notify Closure Manager if bottles should not be used. Certificates of cleanliness are also posted on the Analytical Services SharePoint site.
A-709	I-2556	OFI	Navarro	09/27/2018	The peer review field trip should be three days instead of two. The days are long and exhausting for the review panel. A half-day meeting after the trip to review what was seen and reinforce its significance, and how the features are linked to the model.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-709	I-2557	OFI	Navarro	09/27/2018	Peer reviewer questions should be improved to clarify their meaning. It was clear that not all reviewers had the same interpretation of the questions. A suggestion may be to hold a session part way through the peer review (after the panel has had a chance to review the report) and review the questions. That would provide the reviewers with an opportunity to ask questions and seek clarification. One reviewer commented that the nature of the questions kept the panel focused on the regulatory closure issue.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.
A-709	I-2558	OFI	Navarro	09/27/2018	Provide more opportunities for interaction between the Peer Review Panel and modeling team. This might take the form of a webinar or teleconference where the panel can interact with the team. We could go as far as schedule a mid-review meeting to allow the peer review panel a chance to raise questions. Need to streamline the approval process for the presentations. Otherwise, there is too much time between request and presentation.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-709	I-2559	OFI	Navarro	09/27/2018	Better explain the schedule and report expectations to the panel. The report requirements were not clearly understood by the panel members until late in the process. Panel members commented that the schedule was tight and suggested getting the report to the reviewers earlier, with more time to review. The Peer Review Panel Report would have been easier to read if they had spelled out and enumerated their recommendations. A process for the panel to document differing opinions should have been defined.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.
A-709	I-2560	OFI	Navarro	09/27/2018	The EM Nevada or EPS contractor should pick the chair. The self-selection process for the chair does not allow EM to focus the panel with a strong chair position. Need to ask during panel selection if the member would be willing to serve as chair if selected. The number of panel members should be selected on need and expertise required. Having a panel member with previous knowledge of the EM operations on the site as positive.It did not unfairly bias any opinions, but allowed for rapid knowledge transfer when internal questions arose. The interview process for selecting panel members was beneficial and helped to identify panel members with a focus on FFACO closure requirements and not just scientific curiosity.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-709	I-2561	BMP	Navarro	09/17/2018	Having the field trip ahead of time, with a gap before the report was beneficial. A long week with field trip and presentations, etc. can be exhausting for the reviewers. The break was a good idea but presented some challenges as noted by the Peer Review Panel comments.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.
A-709	I-2562	BMP	Navarro	09/17/2018	Both reviewers found the weekly conference calls to be valuable for answering questions. The panel members thought that holding the calls at a regularly scheduled time was helpful. The field trip was a good idea and helpful to introduce the Peer Review Panel to the Team. The frequent interactions between the project and the panel were a positive aspect that helped the panel stay focused on the goals of the review.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.
A-709	I-2563	BMP	Navarro	09/17/2018	Having the regulator position was an excellent idea. This helped keep the science community grounded with regard to what is important to closure and moving forward in the FFACO process.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.
A-709	I-2564	BMP	Navarro	09/17/2018	The closeout presentation was valuable because it allowed DOE and NDEP to ask questions of the panel. The clarification did provide some additional information not included in the report.	An UGTA external peer review is not planned for several years, so these observations were documented in OE-952; Lessons Learned from the Rainier Mesa External Peer Review to benefit other EM organizations.

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Asst No	Track	Issue Type	Owning Organization	Closure Date	Description	Corrective Action
A-942	I-2573	Finding	Navarro	12/06/2018	Formalize “NDEP File Exchange Administrator Desktop” and control in RBMS.	The procedure was revised and entered into Navarro's RBMS system.
A-950	I-2605	OBS	Navarro	10/30/2018	Remove and tagged out the adjustable hitch until it can be fitted with a locking pin for the ball mount.	This type of hitch was replaced with a standard hitch with locking pin.
N/A	I-2611	Event/Issue	Navarro	12/17/2018	ARS Lab sent HNO_3 (nitric acid) bottles to Navarro that did not meet expectations for labeling again; this follows an assessment that was performed this past fiscal year.	Bottles without labels or HNO_3 lot numbers were removed from the inventory and placed in the holding area in Building 310 for disposal by Waste Management staff. The subsequent bottle order received by Navarro from the laboratory indicated they have put a labeling process in place that is adequate for bottle receipt by Closure Support and UGTA.