Nevada
Environmental
Management
Operations Activity

DOE/NV--1540

National Nuclear Security Administration

Underground Test Area Fiscal Year 2015 Annual Quality Assurance Report Nevada National Security Site, Nevada

Revision No.: 0

January 2016

UNCLASSIFIED

/s/ Joseph P. Johnston 01/04/2016

Joseph P. Johnston, Navarro CO Date

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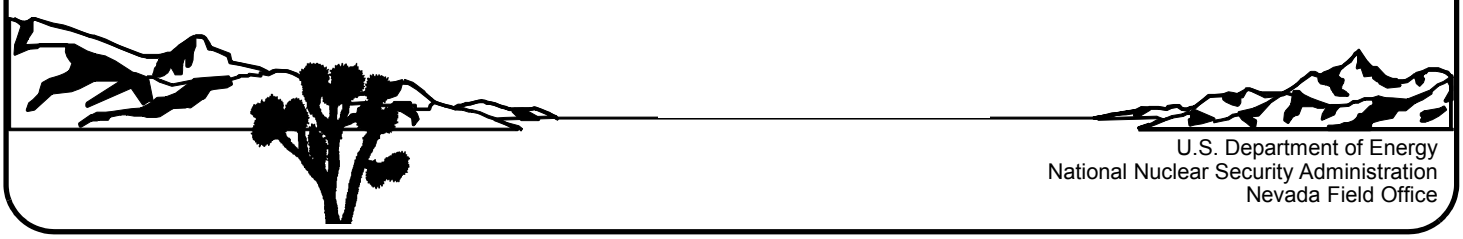

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UNDERGROUND TEST AREA
FISCAL YEAR 2015
ANNUAL QUALITY ASSURANCE REPORT
NEVADA NATIONAL SECURITY SITE, NEVADA

U.S. Department of Energy, National Nuclear Security Administration
Nevada Field Office
Las Vegas, Nevada

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UNDERGROUND TEST AREA
FISCAL YEAR 2015
ANNUAL QUALITY ASSURANCE REPORT
NEVADA NATIONAL SECURITY SITE, NEVADA

Approved by: /s/ Robert F. Boehlecke Date: 01/04/2016

for Bill R. Wilborn
Underground Test Area Activity Lead

Approved by: /s Robert F. Boehlecke Date: 01/04/2016

Robert F. Boehlecke
Environmental Management Operations Manager

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List of Acronyms and Abbreviations

A&E	Analysis and evaluation
AIMS	Assessment and Issue Management System
ALS	ALS Laboratory Group
AR	Activity ratio
ARS	American Radiation Services, Inc.
BMP	Best management practice
C	Carbon
°C	Degrees Celsius
CADD	Corrective action decision document
CAI	Corrective action investigation
CAIP	Corrective action investigation plan
CAP	Corrective action plan
CAU	Corrective action unit
CFR	*Code of Federal Regulations*
Cl	Chlorine
COC	Contaminant of concern
COPC	Contaminant of potential concern
CRAD	Criteria and review approach document
CV	Curriculum vitae
DC	Derivative classifier
DIC	Dissolved inorganic carbon
DOC	Dissolved organic carbon
DOE	U.S. Department of Energy
DRI	Desert Research Institute
ES	Electric submersible
ESH&Q	Environmental, Safety, Health, and Quality

List of Acronyms and Abbreviations (Continued)

FAWP	Field activity work package
FEHM	Finite Element Heat and Mass Transfer
FFACO	*Federal Facility Agreement and Consent Order*
FMP	Fluid management plan
FY	Fiscal year
^{2}H	Deuterium
^{3}H	Tritium
HASP	Health and safety plan
He	Helium
HFM	Hydrostratigraphic framework model
H&S	Health and safety
HVAC	Heating, ventilating, and air conditioning
I	Iodine
IT	Information Technology
ITS	Issues Tracking System
LANL	Los Alamos National Laboratory
LCS	Laboratory control sample
LLNL	Lawrence Livermore National Laboratory
MAPEP	Mixed Analyte Performance Evaluation Program
MCL	Minimum contaminant level
MDL	Minimum detection level
M&O	Management and operating
MSDS	Material Safety Data Sheet
N/A	Not applicable
NDEP	Nevada Division of Environmental Protection
NELAC	National Environmental Laboratory Accreditation Conference

List of Acronyms and Abbreviations (Continued)

N-I	Navarro-Intera, LLC
NIST	National Institute of Standards and Technology
NNSA/NFO	U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office
NNSS	Nevada National Security Site
NSTec	National Security Technologies, LLC
NTID	Nuclear Test Information Database
O	Oxygen
OAA	Operational awareness activity
OBS	Observation
OCC	Operations Command Center
OFI	Opportunity for improvement
pCi/L	Picocuries per liter
PEP	Performance evaluation program
PER	Preemptive review
PI	Principal investigator
POC	Point of contact
POD	Plan of the day
PPE	Personal protective equipment
ppm	Parts per million
Pu	Plutonium
QA	Quality assurance
QAP	Quality Assurance Plan
RCT	Radiological control technician
RM/SM	Rainier Mesa/Shoshone Mountain
ROTC	Record of Technical Change

List of Acronyms and Abbreviations (Continued)

RPD	Relative percent difference
S	Sulfur
SBMS	Standards-Based Management System
SD	Standard deviation
SDS	Safety Data Sheet
SME	Subject matter expert
SOP	Standard operating procedure
Sr	Strontium
TBD	To be determined
Tc	Technetium
TDR	Technical Data Repository
TIC	Total inorganic carbon
TSB	Tailgate safety briefing
U	Uranium
U of A	University of Arizona
UGTA	Underground Test Area
USGS	U.S. Geological Survey
YF/CM	Yucca Flat/Climax Mine
$\delta^{13}C$	Delta carbon-13
$\delta^{2}H$	Delta deuterium
$\delta^{18}O$	Delta oxygen-18

1.0 Introduction

This report is required by the Underground Test Area (UGTA) Quality Assurance Plan (QAP) and identifies the UGTA quality assurance (QA) activities from October 1, 2014, through September 30, 2015 (fiscal year [FY] 2015). All UGTA organizations—U.S. Department of Energy (DOE), National Nuclear Security Administration Nevada Field Office (NNSA/NFO); Desert Research Institute (DRI); Lawrence Livermore National Laboratory (LLNL); Los Alamos National Laboratory (LANL); National Security Technologies, LLC (NSTec); Navarro-Intera, LLC (N-I); Navarro Engineering and Research Inc (Navarro); and the U.S. Geological Survey (USGS)—conducted QA activities in FY 2015. The activities included conducting oversight assessments for QAP compliance, identifying findings and completing corrective actions, evaluating laboratory performance, and publishing documents.

UGTA Activity participants conducted 13 assessments on topics including safe operations, QAP compliance, and activity planning. These assessments are summarized in Section 2.0. Corrective actions tracked in FY 2015 are presented in Appendix A.

Section 3.0 explains the UGTA Activity use of non-Nevada certified laboratories.

Laboratory performance was evaluated based on four approaches: (1) established performance evaluation programs (PEPs), (2) interlaboratory comparisons, (3) blind samples, or (4) data review. The results of the laboratory performance evaluations are summarized in Section 4.0.

The UGTA Activity published a variety of publications in FY 2015. The titles, dates, and main authors are identified in Section 5.0.

The Contract Managers, Corrective Action Unit (CAU) Leads, Preemptive Review (PER) Committee members, and Topical Committee members are listed by name and organization in Section 6.0. Other activities that affected UGTA quality are discussed in Section 7.0.

Section 8.0 provides the FY 2015 UGTA QA program conclusions, and Section 9.0 lists the references not identified in Section 5.0.

2.0 Assessments and Corrective Action Tracking

2.1 Assessments

UGTA continued to conduct management and independent assessments in FY 2015. Management assessments are conducted by the responsible managers or a designee to identify process improvements or efficiencies. Independent assessments (also called oversight) are conducted by personnel independent of the work being done. Causal analyses are independent assessments that evaluate the underlying causes of an issue or event. NNSA/NFO conducts operational awareness activities (OAAs), also called surveillances, which are defined as an analysis or review of contractor programs, processes, or products in accordance with NFO Order 226.X, Rev. 1, *Line Oversight Program*. Assessments will continue throughout the UGTA Activity as part of normal operations.

2.2 UGTA QAP Implementation Assessments

NNSA/NFO continued to conduct QAP implementation assessments in FY 2015. The DRI assessment was conducted in December 2014 and LLNL in May 2015. These assessments close the QAP implementation plan. NNSA/NFO assessed each organization using Criteria and Review Approach Documents (CRADs) in accordance with NFO O 226.X, Rev. 1, *Line Oversight Program*. The CRADs incorporated the QAP sections (management, work processes, assessment and oversight, and corrective action). Each CRAD documents the objective, requirements, criteria, review approach, conclusions, records reviewed, personnel interviewed, work observed, results, and any issues identified. Each CRAD was further broken down in a checklist used by the assessors, where each item was addressed separately. The two assessments (A-357 and A-456 in Table 2-1) resulted in 10 findings, 5 opportunities for improvement (OFIs), and 2 observations (OBSs).

2.3 Other Assessments

Numerous incidents regarding safety shifted the UGTA Activity focus in FY 2015 to drilling and vehicle safety. Additionally, the UGTA Health and Safety Plan was updated. Table 2-1 lists the 13 assessments for FY 2015. LANL, LLNL, and NSTec did not conduct management assessments in FY 2015. The NNSA/NFO Activity Lead has committed to ensuring that a management assessment

Table 2-1
UGTA Assessments

Date	Tracking Number	Reference #	Assessing Org.	Type	Scope	Result			
						Finding	OFI	OBS	Other
10/02/2014	A-345	OAA-14-AMEM-WRW-010-01-2014	NNSA/NFO	Surveillance	Walk Through of Well Site ER-20-8 and ER-20-8#2 Sampling Operations	1	0	0	0
12/05/2014	A-396	N/A	N-I	Surveillance	In-Process Field Activities at UGTA Well ER-20-7 and Well ER-EC-6	0	0	0	0
12/10/2014	A-357	OA-15-AMEM-36	NNSA/NFO	Oversight	NFO Oversight Assessment of DRI UGTA QAP Implementation	3	5	2	0
12/11/2015	A-397	N/A	N-I	Independent	Corrective Action Planning, Completeness, and Effectiveness	0	3	0	0
02/26/2015	A-400	N/A	N-I	Causal Analysis	Causal Analysis of Issue I-1401, "UGTA Well ER-20-5 #1, Wireline work performed in a contaminated well without appropriate controls"	7	6	10	0
03/10/2015	A-470	OAA-15-AMEM-WRW-03-10-2015	NNSA/NFO	Surveillance	Walk Through of ER-20-5 Well Cluster	0	0	0	0
04/22/2015	A-472	OAA-15-AMEM-WRW-04-22-2015	NNSA/NFO	Surveillance	Walk Through of ER-20-12 Road and Pad Survey	0	0	0	0
05/12/2015	A-411	N/A	Navarro	Surveillance	NNSS Field Activity Follow-up Surveillance	0	1	0	0
05/21/2015	A-456	OA-15-AMEM-037	NNSA/NFO	Oversight	NFO Assessment of LLNL UGTA QAP Compliance	7	0	0	0
06/11/2015	A-471	OAA-15-AMEM-WRW-06-11-2015	NNSA/NFO	Surveillance	Walk Through of Post-incident at ER-20-12 (water truck rollover)	0	0	0	0
09/28/2015	A-373	N/A	Navarro	Management	Rainier Mesa Flow and Transport Model Document – Effectiveness of Procedural Compliance to UGTA Processes	0	0	0	2 BMPs
09/30/2015	A-463	N/A	DRI	Management	Processing DOC C-14 Groundwater Samples	0	2	0	0
09/29/2015	A-464	N/A	USGS	Management	USGS Safety Management Assessment	1	0	0	0

BMP = Best management practice
C = Carbon
DOC = Dissolved organic carbon
N/A = Not applicable
NNSS = Nevada National Security Site

is an FY 2016 milestone for each participant. Including the NNSA/NFO oversight assessments, the 13 assessments listed in Table 2-1 resulted in 19 findings, 17 OFIs, 12 OBSs, and 2 BMPs.

2.4 Corrective Action Tracking

UGTA participants provide UGTA-related issues (including those identified outside of assessments), assessment plans, assessment reports, corrective actions, and related closure documentation to Navarro for tracking and summarization on the Navarro UGTA SharePoint site. Items (findings, OFIs, OBSs, and BMPs) may be identified during an assessment, outside an assessment, or as a results of an event.

The Navarro tracking database was upgraded in FY 2015. The new database (Assessment and Issue Management System [AIMS]) does not follow the old numbering system, so for those items issued before AIMS implementation, Tables A-1 and A-2 identify the legacy number.

Not all items are found during UGTA assessments or assigned to UGTA personnel (i.e., safety); therefore, there are corrective actions in Tables A-1 and A-2 not associated with UGTA assessments and "missing" corrective actions that were assigned to non-UGTA personnel. However, these issues are tracked outside of UGTA processes. UGTA corrective actions are statused during the monthly Contract Managers meeting.

In FY 2015, 130 corrective actions were tracked, and 91 were closed. The open corrective actions are presented in Table A-1, and the closed corrective actions in Table A-2. Some activities, identified in response to this report's data call, were received and entered after the fiscal year end.

3.0 Non-Certified Laboratory Use

This section identifies and justifies FY 2015 analyses performed by laboratories not certified by the Nevada Division of Environmental Protection (NDEP) Bureau of Safe Drinking Water. In FY 2015, sampling took place at the following CAUs, which are currently in the Corrective Action Investigation (CAI) stage of the UGTA corrective action strategy:

- Central and Western Pahute Mesa (CAUs 101 and 102)
- Rainier Mesa/Shoshone Mountain (RM/SM) (CAU 99)
- Yucca Flat/Climax Mine (YF/CM) (CAU 97)

The required analyses associated with the CAI stage are determined by the associated Corrective Action Investigation Plan (CAIP). In November 2014, a record of technical change (ROTC) was implemented for each CAIP that modified the required analyses. The analyses required by the CAIP were made consistent with those listed in the *Nevada National Security Site Integrated Groundwater Sampling Plan*. The sampling plan which is not a *Federal Facility Agreement and Consent Order* (FFACO) regulatory document was developed to make the analyses consistent between all UGTA CAUs. These analyses depend on the location type (Characterization, Source/Plume, Early Detection, Distal, Community, and Inactive) and are performed by a commercial laboratory certified by NDEP Bureau of Safe Drinking Water. The analyte list was developed by a committee comprised of technical representatives from each UGTA organization and was based on analytes used for previous investigations, an understanding of relative mobility of the NNSS inventory radionuclides, previous sampling and analysis data, and modeling results.

Other analyses that typically require a non-certified laboratory are performed for the UGTA Activity to support characterization and/or model evaluation activities. The purpose of these analyses along with justification for using a non-certified laboratory are presented in Table 3-1. As shown in this table, LLNL provides specialized laboratory analyses with much lower minimum detection levels (MDLs) than the commercial laboratory. The majority of the sample results for the radioisotopes are reported as nondetects by the commercial laboratory. While this is satisfactory for ensuring radionuclides do not exceed the minimum contaminant levels (MCLs), it is insufficient for quantitatively evaluating contaminant migration. Detection limits below those of the commercial laboratory are also required for other analytes (Table 3-1). In addition, confidence in the results is

Table 3-1
Justification for Non-certified Laboratory Analyses
(Page 1 of 3)

Analyte	Purpose	Justification for Use of Laboratory Other Than Commercial
Lawrence Livermore National Laboratory		
Low-Level ^{3}H	Currently, ^{3}H is the only COC identified in the NNSS Integrated Sampling Plan. Low-level measurements provide early detection of the contaminant plume and support groundwater velocity calculations. Also, these measurements provide estimates of the amount of recent recharge to the aquifer in those cases where the ^{3}H is not test related.	LLNL uses a helium 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 pre-concentration method followed by liquid scintillation counting. LLNL achieves a slightly lower MDL (~1 vs ~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 only measured when ^{3}H is less than 300 pCi/L.
^{14}C	Identified as a COPC for all CAUs in the NNSS Integrated 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 laboratory analyses that measure this analyte at much lower levels than the commercial laboratory without impacts from high ^{3}H activities. The commercial laboratory's MDL is 500 pCi/L, and the analysis cannot be performed in the presence of high ^{3}H activities. LLNL can measure natural ^{14}C levels (<0.05 pCi/L). NNSS groundwater samples with ^{14}C above the commercial laboratory's 500 pCi/L MDL also have high ^{3}H (~10^{7} pCi/L), and therefore commercial laboratories cannot measure ^{14}C in these samples. Therefore, commercial laboratories are useful for verifying non-detects below the 2,000 pCi/L MCL, and LLNL is required for the other sampling objectives.
^{36}Cl	Identified as a COPC for all CAUs in the NNSS Integrated 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 laboratory analyses that measure this analyte at much lower levels than the commercial laboratory. LLNL can measure natural ^{36}Cl levels (<0.004 pCi/L); the commercial laboratory's MDL is 4 pCi/L Only five NNSS sampling locations have ^{36}Cl activities above the commercial laboratory MDL (U-19v PS#1d, U-19ad PS1A, U-4u PS#2A, U-3cn PS#2, U-12t Main drift), and all sampling locations are within a test cavity or tunnel. 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, but LLNL lower detection capability is required for the other sampling objectives.
^{99}Tc	Identified as a COPC for all CAUs in the NNSS Integrated Sampling Plan, and analyzed to evaluate extent and trends in contamination resulting from underground nuclear testing (i.e., evaluate contaminant transport).	LLNL provides specialized laboratory analyses that measure this analyte at much lower levels (<0.001 pCi/L) than the commercial laboratory (10 pCi/L.). Only six NNSS sampling locations have reported ^{99}Tc above the commercial laboratory MDL (U-20n PS 1 DD-H, U-19ad PS1A, U-19bh, U-3cn PS#2, U-4u PS#2A, UE-20n #1), and most are in a test cavity. No samples exceed the 900 pCi/L MCL. The majority of the sample results are reported as non-detects by the commercial laboratory. Therefore, the LLNL lower detection capability is required for a quantitative trend evaluation for the majority of the NNSS sampling locations where ^{99}Tc may exist but at concentrations well below the commercial laboratory's MDL. Also, confidence in the results is gained by using the different methods by the two labs. This analysis is performed when ^{3}H is present above 5,000 pCi/L.

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

Analyte	Purpose	Justification for Use of Laboratory Other Than Commercial
Lawrence Livermore National Laboratory (continued)		
^{129}I	Identified as a COPC for all CAUs in the NNSS Integrated Sampling Plan, and analyzed to evaluate extent and trends in contamination resulting from underground nuclear testing (i.e., evaluate contaminant transport).	LLNL provides specialized laboratory analyses to measure this analyte at much lower levels (<0.001 pCi/L) than the commercial laboratory (1 pCi/L). Only four NNSS sampling locations have reported ^{129}I above the commercial laboratory MDL (ER-20-5-1, RNM-1, U-19ad PS1A, U-19v PS#1D), and most are in test cavities. The MCL is 1 pCi/L, which is the same as the MDL. The LLNL lower detection capability is required for a quantitative trend evaluation for the majority of the NNSS sampling locations where ^{129}I may exist but at concentrations well below the commercial laboratory's MDL. Also, the low-level measurement provides confidence in results and in any exceedances reported by the commercial laboratory. This analysis is performed when ^{3}H is present above 5,000 pCi/L.
Pu isotopes	Identified as a COPC for the Rainier Mesa/Shoshone Mountain CAU in the NNSS Integrated Sampling Plan, and analyzed to evaluate extent and trends in contamination resulting from underground nuclear testing (i.e., evaluate contaminant transport). Also used for identifying the underground nuclear test that is responsible for its presence.	Samples from the test cavity or other location where contamination is from one specific nuclear test may be considered classified information, and therefore samples should not be analyzed by a commercial laboratory. This decision has not been finalized. LLNL also determines whether the Pu is in colloidal or aqueous form.
$\delta^{13}C$ 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 analyzed for the same sample.
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. Noble gases are only measured when ^{3}H is less than 300 pCi/L.
$^{87}Sr/^{86}Sr$	Provides information about groundwater sources, flow paths, and groundwater mixing.	These are nonstandard analyses that require specialized instrumentation and are not 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.
$^{234}U/^{238}U$ AR	Provides information about groundwater sources, flow paths, and groundwater mixing. Isotopic U analyses also performed to distinguish between natural and test-related U sources in those cases that the U (30µg/L) MCL is exceeded.	These are nonstandard analyses that require specialized instrumentation and are not performed by a commercial laboratory certified by the State of Nevada.

Table 3-1
Justification for Non-certified Laboratory Analyses
(Page 3 of 3)

Analyte	Purpose	Justification for Use of Laboratory Other Than Commercial
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 DIC ^{14}C.	The required 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.

AR = Activity ratio
Cl = Chlorine
COC = Contaminant of concern
COPC = Contaminant of potential concern
DIC = Dissolved inorganic carbon
He = Helium
I = Iodine
Pu = Plutonium
S = Sulfur
Sr = Strontium
Tc = Technetium
TIC = Total inorganic carbon
U = Uranium
$\delta^{13}C$ = Delta carbon-13
$\delta^{2}H$ = Delta deuterium
$\delta^{18}O$ = Delta oxygen-18
µg/L = Micrograms per liter

gained by using different methods by the two labs. Other analytes require specialized methodology and cannot be analyzed by a commercial laboratory certified by NDEP.

Several radioisotopes are only analyzed when tritium (^{3}H) is present above 5,000 picocuries per liter (pCi/L). This criterion is based on these radioisotopes not being present in NNSS groundwater samples without the simultaneous presence of high ^{3}H. Sampling locations, location types, and the associated analyses performed at a non-certified laboratory are presented in Table 3-2. The majority of the sampling locations are in the Pahute Mesa CAUs (101 and 102). In addition, the analyte list for the Pahute Mesa wells is more extensive than for the other CAUs; these analyses support a large characterization effort for this CAU.

Table 3-2
Non-Certified Laboratory Samples and Analytes

CAU	Location	Sample Date	^{3}H[a]	^{14}C	^{36}Cl	^{99}Tc	^{129}I	Pu	$\delta^{13}C$ and TIC	Noble Gases	$^{87}Sr/^{86}Sr$	$\delta^{2}H$ and $\delta^{18}O$	$^{234}U/^{238}U$ AR	DOC and $DO^{14}C$	$^{34}S/^{32}S$
Characterization Sampling Location															
101/102	ER-20-7	11/21/2014	--	X	X	X	X	X	X	X	X	X	X	--	--
	ER-20-8	03/08/2015	--	X	X	X	X	X	X	X	X	X	X	X	--
	ER-20-8-2	10/07/2014 10/16/2014	--	X	X	X	X	X	X	X	X	X	X	X	X
97	ER-12-3	05/01/2015	X	X	X	--	--	--	X	X	--	X	--	--	--
	ER-12-4	05/09/2015	X	X	X	--	--	--	X	X	--	X	--	--	--
99	ER-2-1	03/26/2015	--	X	X	--	--	--	X	X	--	X	--	--	--
	WW-3	05/12/2014	X	X	X	--	--	--	X	X	--	X	--	--	--
Source/Plume Sampling Location															
101/102	ER-20-5-1	04/02/2015	--	X	X	X	X	X	--	--	--	--	--	--	--
	ER-20-5-3	03/13/2015	--	X	X	X	X	X	--	--	--	--	--	--	--
Early Detection Sampling Location															
101/102	ER-20-1	02/24/2015	--	X	X	X	X	X	--	--	--	--	X	X	X
	ER-EC-6[b]	12/19/2014 01/13/2015	X	X	X	X	X	X	--	--	--	--	X	X	X
99	WW-2	06/12/2015	X	X	X	--	--	--	--	--	--	--	--	--	--
Inactive Sampling Location															
97	UE-6e	07/02/2014	X	--	--	--	--	--	--	--	--	--	--	--	--

[a] Low-level measurement performed when ^{3}H is less than 300 pCi/L.
[b] ER-EC-6_m4 was sampled on 12/19/2014, and ER-EC-6_m2 was sampled on 01/13/2015.

X = Analysis performed.
-- = Analysis not performed.

4.0 Performance Evaluation Programs

UGTA water chemistry data were provided by ALS Laboratory Group (ALS); American Radiation Services, Inc. (ARS); DRI; LLNL; and USGS. ALS and ARS are commercial laboratories that use industry standard chemistry methods to analyze samples, and both are certified by the NDEP Bureau of Safe Drinking Water. ARS and ALS participate in established PEPs that were not available for ^{14}C and ^{36}Cl, so analysts' demonstrations of capability were performed. Analyses performed by DRI, LLNL, and USGS laboratories (Table 3-2) do not follow industry standard methods and do not have established PEPs. These analyses require interlaboratory comparisons, blind sample analyses, and/or data evaluations to evaluate laboratory performance.

4.1 Established PEPs

ALS and ARS participated in the following PEPs:

- RadCheM and MRaD (trademarked programs), 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,* conducted by NSI Lab Solutions

Laboratory results were within acceptable limits in this years performance programs. PEP reports are business proprietary information and can be provided as needed.

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 bias

If the above cannot be performed, than 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.

4.3 Interlaboratory Comparisons

Laboratory performance for LLNL low-level ^{3}H was assessed by comparing reported results for well ER-EC-6 commensurate samples to the data provided by ARS. The relative percent difference (RPD) was within the established acceptance criteria (±25%) for the ER-EC-6_m4 sample. No ^{3}H was detected in the ER-EC-6_m2 sample by either laboratory. The results for other low-level ^{3}H samples collected in FY 2015 (Table 4-1) have not yet been reported.

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

Sample	LLNL	ARS	RPD[a]
ER-EC-6_m2	<0.6 <0.5	<2.35 <2.33	--
ER-EC-6_m4	4.2 ± 0.3	5.18 ± 2.2 4.42 ± 2.0	13

[a] Calculated using the average when duplicate analyses are reported.

-- Calculation does not apply.

Note: Values below the MDL are reported as "< MDL."

Commercial laboratory and LLNL detection limit differences precluded an interlaboratory comparison of ^{14}C, ^{36}Cl, and ^{129}I. To evaluate LLNL ^{14}C and $\delta^{13}C$ performance, an ER-EC-14 sample was also submitted to the National Science Foundation-Arizona Accelerator Mass Spectrometry Laboratory at the University of Arizona (U of A). The LLNL $\delta^{13}C$ value was well within the ± 1 ‰ acceptance criteria. The LLNL ^{14}C concentration was 130 percent greater than that of U of A. This large percent difference is attributed to a leak in the extraction lines associated with the analytical procedure. This line has subsequently been rebuilt, and ^{14}C data generated using this leaking extraction line have been flagged as having a high uncertainty with a positive bias (Table 4-3).

Table 4-2
ER-EC-14 Interlaboratory Comparison for $\delta^{13}C$ and ^{14}C

LLNL	U of A	Difference [a]
$\delta^{13}C$ (‰)		
-2.6	-3.2 -2.3	0.2
^{14}C (pmc)		
31.3	6.64 6.61	130

[a] Calculated using the average of U of A duplicate values.

4.4 Blind Samples

A blind sample is defined as samples with a known or previously measured detectable quantity of analyte that is submitted to a laboratory in a manner consistent with a field sample. A series of blind samples was provided by DRI to LLNL for analysis. This sample series was collected by DRI from the same location at the same time. Samples from this series have also been analyzed by the University of Nevada, Reno 15 times between 2004 and 2012. The δ^2H and $\delta^{18}O$ and standard deviations (SDs) reported by DRI are -108.9 ‰ (SD = 0.4) and -14.3 ‰ (SD = 0.1), respectively. The values reported by LLNL are shown in Table 4-3. These values are well within the acceptability criteria for δ^2H (± 2 ‰) and $\delta^{18}O$ (± 0.2 ‰).

Table 4-3
Blind Sample Comparison for δ^2H and $\delta^{18}O$ (‰)

Sample	δ^2H		$\delta^{18}O$	
	LLNL	Difference	LLNL	Difference
C-22	-108.8	0.1	-14.2	0.1
C-24	-108.5	0.4	-14.1	0.2
C-25a	-108.3	0.6	-14.2	0.1
C-25b	-108.7	0.2	--	--
C-26	-108.9	0.0	-14.2	0.1
C-27	-108.2	0.7	-14.2	0.1

-- Not analyzed.

Note: Difference between LLNL result and mean of 15 DRI measurements between 2004 and 2012.

4.5 Data Evaluation

Commercial laboratory ^{14}C, ^{36}Cl, USGS ^{34}S, and LLNL ^{36}Cl data were evaluated. The data evaluations concluded that appropriate standard operating procedures (SOPs), quality control samples, sample collection, and analytical methodology were used.

5.0 Published Documents (Public Released) with List of Authors

5.1 Publications by UGTA Activity

Navarro-Intera, LLC. 2015. *Evaluation of PM-3 Chemistry Data and Possible Interpretations of ^{3}H Observations,* N-I/28091-092. February. Las Vegas, NV.

Navarro. 2015. *Pahute Mesa Well Development and Testing Analyses for Wells ER-EC-14 and EREC-15, Nevada National Security Site, Nye County, Nevada*, N/0002653. June. Las Vegas, NV.

Navarro. 2015. *Underground Test Area Activity Sampling Technologies Evaluation Report, Nevada National Security Site, Nye County, Nevada,* N/0002653-008. Las Vegas, NV.

Navarro. 2015. *Underground Test Area (UGTA) Activity Health and Safety Plan*, Rev. 3. May. Las Vegas, NV.

Navarro-Intera, LLC. 2014. *Background Information for the Nevada National Security Site Integrated Sampling Plan*, Rev. 0, N-I/28091-095. December. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2014. *Nevada National Security Site Integrated Groundwater Sampling Plan*, Rev. 0, DOE/NV--1525. October. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2015. *Underground Test Area Fiscal Year 2014 Annual Quality Assurance Report Nevada National Security Site, Nevada*, Rev. 0, DOE/NV-1531. Las Vegas, NV.

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. 2015. *Underground Test Area (UGTA) Closure Report for Corrective Action Unit 98: Frenchman Flat Nevada National Security Site, Nevada*, Rev. 1, DOE/NV--1538. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2015. *United States Nuclear Tests July 1945 through September 1992*, DOE/NV--209-REV. 16. September. Las Vegas, NV.

5.2 Other Publications by UGTA Authors

Chapman, J.B., B. Lyles, C. Cooper, R. Hershey, and J. Healey. 2015. *Handbook: Collecting Groundwater Samples from Monitoring Wells in Frenchman Flat, CAU 98*, DOE/NV/0000939-23; Publication No. 45261. Las Vegas, NV: Desert Research Institute.

Cronkite-Ratcliff, C., and G.A. Phelps. 2014. *Stochastic Modeling of Lava-Flow Aquifer System*: Open-File Report 2014-1179. Prepared in cooperation with the U.S. Department of Energy. Reston, VA: U.S. Geological Survey.

Daniels, J.I., J.B. Chapman, and K.F. Pohlmann. 2015. *Approximating Dose and Risk for Contaminants in Groundwater from the Underground Nuclear Test Areas of the Nevada National Security Site (NNSS)*, Publication No. 45262. Las Vegas, NV: Desert Research Institute.

Kelkar, S., G. WoldeGabriel, and K. Rehfeldt. 2015. "Lessons Learned from the Pioneering Hot Dry Rock Project at Fenton Hill, USA." In *Geothermics*. doi.org/10.1016/j.geothermics.2015.08.008

Lyles, B., G. McCurdy, S. Campbell, and J. Healey. 2015. *2014 Annual Timber Mountain Environmental Monitoring Station*, DOE/NV/0000939-24. Las Vegas, NV: Desert Research Institute.

Phillips, J.D., B.L. Burton, E. Curry-Elrod, and S. Drellack. 2014. *A Ground-Based Magnetic Survey of Frenchman Flat, Nevada National Security Site and Nevada Test and Training Range, Nevada—Data Release and Preliminary Interpretation,* Open-File Report 2014–1187. Denver, CO: U.S. Geological Survey.

Pickman, L. 2014. *Characterization of Fracture Network at Western Pahute Mesa and Investigation of Transport Behavior Using a CTRW Approach*. Student World Water Forum, Reno, NV. 21 November.

Pickman, L., R. Parashar, and D.M. Reeves. 2014. *Use of CTRW for Prediction of Radionuclide Migration in Fractured Tuff.* AGU 2014, San Francisco, CA. 15–19 December.

Sweetkind, D.S., and S.C. Bova. 2015. *Field-Based Description of Rhyolite Lava Flows of the Calico Hills Formation, Nevada National Security Site, Nevada,* Scientific Investigations Report 2015–5022. Denver, CO: U.S. Geological Survey.

Wills, C., ed. 2015. *Nevada National Security Site Environmental Report 2014*, DOE/NV/25946--2566. Prepared for the U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. Las Vegas, NV: National Security Technologies, LLC.

Wood, D.B. 2007. *Digitally Available Interval-Specific Rock-Sample Data Compiled from Historical Records, Nevada National Security Site and Vicinity, Nye County, Nevada* (Version 2.1, August 2015), U.S. Geological Survey Data Series 297. 20 p. http://dx.doi.org/10.3133/ds297

Zavarin, M., P. Zhao, C. Joseph, J. Begg, M. Boggs, Z. Dai, and A.B. Kersting. 2015. *Hydrothermal Alteration of Glass from Underground Nuclear Tests: Formation and Transport of Pu-Clay Colloids at the Nevada National Security Site*, LLNL-TR-671402, 27 May. Livermore, CA: Lawrence Livermore National Laboratory.

5.3 Devils Hole Annual Workshop (May 6–7, 2015)

The following were presented by UGTA participants at the 2015 Jim Deacon Memorial Devils Hole Annual Workshop, held at the Ash Meadows National Wildlife Refuge, Nevada:

Martian, P. "Development and Application of Streamtube Models for Assessing Pahute Mesa Detonations for Fast Radionuclide Transport to Oasis Valley," poster.

Martian, P. "Ranking of Pahute Mesa Detonations for Contaminant Boundary Contribution and Fast Radionuclide Transport," poster.

Marutzky, S., and J. Wurtz. "Nevada National Security Site Environmental Remediation Groundwater Sampling Technologies Study."

Wilborn, W., and I. Farnham. "Site-wide Integrated Water Monitoring – Defining and Implementing Sampling Objectives to Support Site Closure," poster.

Wurtz, J. "Proposed Underground Test Area Activity Hydrogeologic Investigation Well ER-20-12 to Evaluate Tritium Contaminated Groundwater in the Area of Western Pahute Mesa, Nye County Nevada."

5.4 Waste Management Symposia (March 14–19, 2015)

The NNSS was a "featured site" at the FY 2015 Waste Management Symposia in Phoenix, Arizona, and was the subject of numerous papers and panel discussions. The following were presented by UGTA participants:

Andres, C. "The State of Nevada Regulator's Perspective on Approach and Progress of the Underground Test Area Activity at the NNSS."

Andrews, R. "Approach To Quantify Potential Contaminant Transport from Underground Nuclear Testing; Yucca Flat, Nevada National Security Site, Nye County, Nevada."

Bangerter, R. "Groundwater Program Overview."

DeNovio, N. "NNSS Environmental Remediation Large-Scale Multi-Well Aquifer Tests Used to Define Flow Systems."

DeNovio, N. "NNSS Environmental Remediation Using EPA's Model Evaluation Guidance to Move to Closure."

Farnham, I. "Efficiencies and Consolidation of Groundwater Sampling at the NNSS."

Farnham, I. "Site-Wide Integrated Water Monitoring—Defining and Implementing Sampling Objectives to Support Site Closure."

Hruska, D. "Nevada Site Specific Advisory Board Communicating Process to Stakeholders on Groundwater at the NNSS."

Marble, J. "Advanced Simulation Capability for Environmental Management."

Marutzky, S. "Creating a Successful Closure Strategy for Regulatory Approval."

Pawloski, G. "The Underground Test Area Sub-Project of the Nevada Test Site: Building Confidence in Groundwater Flow and Transport Models at Pahute Mesa through Focused Characterization Studies."

Russell, C. "Evolution of the Community Environmental Monitoring Program CEMP."

Wilborn, W., and S. Marutzky. "NNSS Groundwater Characterization Process."

6.0 Key Personnel

The following changes in committee memberships and responsibilities occurred in FY 2015.

6.1 Participant Changes

The N-I contract was re-bid in FY 2015 and awarded to Navarro in February. Ken Rehfeldt was installed as the Navarro Contract Manager for UGTA. This contract transition resulted in numerous personnel changes. Jeff Sanders was named the Contract Manager for USGS.

6.2 NNSA/NFO Changes

Kevin Cabble was assigned to assist the NNSA/NFO Federal UGTA Activity Lead with QA duties.

6.3 Contract Managers

Each organization assigns a Contract Manager responsible for managing the participant's tasks. There is a monthly Contract Managers meeting with NNSA/NFO. Table 6-1 lists each manager by organization.

Table 6-1
Contract Managers by Organization

Name	Organization
Karl Pohlmann	DRI
Kay Birdsell	LANL
Andrew Tompson	LLNL
Ken Rehfeldt	**Navarro**
Ken Ortego	NSTec
Jeff Sanders	**USGS**

Note: Bold text denotes changes.

6.4 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 is a monthly CAU Lead meeting with NNSA/NFO. The Frenchman Flat CAU transitioned into the closure stage and no longer has a CAU Lead. Table 6-2 lists the CAU Leads and their respective organizations.

Table 6-2
CAU Leads by Organization and CAU

Name	Organization	CAU
Andrew Tompson	LLNL	Rainier Mesa/Shoshone Mountain
Nicole DeNovio	**Golder and Associates**	**Central and Western Pahute Mesa**
Edward Kwicklis	LANL	Yucca Flat/Climax Mine

Note: Bold text denotes changes.

Chuck Russell (DRI) and Irene Farnham (Navarro) remain the Science Advisors.

6.5 Preemptive Review Committee Members

The CAU-specific PER Committees provide internal technical review of ongoing work throughout the CAU life cycle. Table 6-3 lists the members in each CAU committee. The Frenchman Flat committee was disbanded when the CAU transitioned into the closure stage.

6.6 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 6-4 lists the current committees and membership.

Table 6-3
PER Committee Membership

Name	Organization
CAU 97, Yucca Flat/Climax Mine	
Nicole DeNovio	Golder and Associates
Andrew Tompson	LLNL
Joe Fenelon, Chair	**USGS**
Britt Jacobson, ex-officio	NDEP
Sig Drellack	**NSTec**
Barry Lester	**Navarro**
Karl Pohlmann	**DRI**
Irene Farnham, Science Advisor	Navarro
Keith Halford	USGS
CAU 99, Rainier Mesa/Shoshone Mountain	
Chuck Russell, Science Advisor	DRI
Kay Birdsell	LANL
Dave Finnegan	LANL
Mavrik Zavarin, Chair	LLNL
Britt Jacobson, ex-officio	NDEP
Barry Lester	**Navarro**
Jenny Chapman	**DRI**
Margaret Townsend	NSTec
Joe Fenelon	USGS
CAUs 101 and 102, Central and Western Pahute Mesa	
Karl Pohlmann	DRI
Chuck Russell, Science Advisor	DRI
Jenny Chapman	**DRI**
Kay Birdsell	**LANL**
Tim Rose	LLNL
Andrew Tompson	LLNL
Mark McLane, ex-officio	NDEP
Sig Drellack	**NSTec**
Barry Lester	**Navarro**
Wayne Belcher, Chair	USGS

Note: Bold text denotes changes in membership.

Table 6-4
Topical Committee Membership

Name	Organization
Modeling	
Clay Cooper	DRI
Edward Kwicklis	LANL
Andrew Tompson, Chair	LLNL
Barry Lester	**Navarro**
Keith Halford	USGS
Well Purging and Sampling Methods	
Chuck Russell, Chair	DRI
Mavrik Zavarin	LLNL
Jeff Wurtz	Navarro
Sam Marutzky	**Navarro**
Karl Pohlmann	**DRI**
Ken Ortego	NSTec
Terry Sonnenburg	NSTec
Robert Graves	USGS
Western Pahute Mesa Guidance	
Karl Pohlmann, Chair	**DRI**
Chuck Russell, Science Advisor	DRI
Edward Kwicklis	LANL
Mavrik Zavarin	LLNL
Mark McLane	NDEP
Irene Farnham, Science Advisor	Navarro
Jeff Wurtz	Navarro
Sig Drellack	NSTec
Ken Ortego	NSTec
Joe Fenelon	USGS

Note: Bold text denotes changes in membership.

7.0 Other Activities

7.1 QAP Revision

Based on recommended changes to the QAP identified during the NNSA/NFO implementation assessments, NNSA/NFO delayed the biennial QAP review until all the assessments are complete. The assessments identified QAP sections needing clarification, updating, and revision. The following are examples of changes made:

- Added clarification on Technical Document Repository use as a records system.
- Deleted Technical Working Group.
- Updated definition of contaminant boundary and references.
- Added water-level measurement requirements and the use of UGTA forms.
- Updated the required contents of the annual QA report.

Revision 2 of the QAP was issued in June 2015.

7.2 Sampling Technologies

The Well Purging and Sampling methods committee evaluated several sampling methods to identify cost-effective alternatives for sampling wells with multiple completions. Their report was issued in September 2015 and determined the following:

- Characterization and source/plume wells require large sample volumes and purging capability. A jack pump or electric submersible (ES) pump should be used dependent on borehole diameter.

- Early detection and Distal/Community wells are sampled for ^{3}H only, and ambient flow is preferred, so a depth-discrete bailer, jack, or ES pump can be used.

- Depth-discrete bailer sampling may be used for screening in early detection and distal wells where the objective is to determine the presence or absence of ^{3}H.

- Temperature and electrical conductivity water-quality parameters provide the best indicators for when to sample for ^{3}H.

7.3 NV-209, Rev. 16

UGTA participants assisted in updating *United States Nuclear Tests July 1945 through September 1992*, the definitive source related to nuclear weapons testing by the United States. The document, commonly referred to as NV-209, was revised to add data declassified subsequent to Revision 15, correct discrepancies, and clarify radionuclide release information. The UGTA Activity uses this reference in practically every document produced.

8.0 Conclusion

In FY 2015, the UGTA Activity focused on completing the Frenchman Flat CAU Closure Report and responding to the YF/CM Peer Review comments. The N-I to Navarro contract transition in February did cause disruptions to both personnel and scheduling.

NNSA/NFO Management is aware that the number of assessments decreased by 50 percent and has committed to ensuring management assessments become required milestones.

9.0 References Not Included in Section 5.0

Federal Facility Agreement and Consent Order. 1996 (as amended March 2010). Agreed to by the State of Nevada; U.S. Department of Energy, Environmental Management; U.S. Department of Defense; and U.S. Department of Energy, Legacy Management. Appendix VI, which contains the Underground Test Area Strategy, was last modified June 2014, Revision No. 5.

U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2014. *Line Oversight (LO) Program*, NFO Order 226.X, Rev. 1. Las Vegas, NV.

U.S. Department of Energy, National Nuclear Security Administration Nevada Field Office. 2014. *Nevada National Security Site Integrated Groundwater Sampling Plan,* Rev. 0, DOE/NV--1525. Las Vegas, NV.

Appendix A

Corrective Actions Tracked FY 2015

Table A-1
Open Corrective Actions
(Page 1 of 12)

Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
N/A	0.988	I-103	Cations and Trace Elements Data Verification and Validation	Finding	LLNL	02/27/2015	QAP compliance for cation and trace element analyses not documented in procedure or process.	SOP will be revised, and a checklist added for data verification and validation.
N/A	0.985	I-117	Inconsistently Reported Data and Outdated Database	OFI	LLNL	09/30/2016	Underground test information was not always reported consistently between investigators or consistent with the UGTA Nuclear Test Information Database (NTID). The NTID is not being kept current with updated information.	FY 2015 task will update NTID with data from recently released reports.
A-296	664.1	I-856	SOPs Do Not Yet Fully Implement the Analytical Laboratory QA Provisions of the QAP	Finding	LLNL	02/27/2015	SOPs for some analytes do not yet fully implement various LCS requirements.	SOPs have been revised to include LCS requirements and are awaiting signature and re-release.

Table A-1
Open Corrective Actions
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Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
A-296	664.3	I-858	Some LCSs Are Not Independent of the NIST Standards Used for Calibration	Finding	LLNL	02/27/2015	For ^{99}Tc, ^{36}Cl, anions, ^{18}O & ^{2}H, and trace elements, LCSs are not independent of the NIST standards used for calibration.	A series of in-house water standards (that have been calibrated against NIST standards) have been developed and are analyzed with unknown samples and used as calibration standards. This is complete except for ^{36}Cl.
A-301	669.2	I-875	The TDR Does Not Have Hardware and Software Long-Term Archival Issues Documented	Finding	N-I	04/29/2016	TDR software and hardware needs evaluation not documented.	SBMS procedural consolidation and program workflow improvements has caused a delay in resolving this finding. This issue has been extended until April 29, 2016.

Table A-1
Open Corrective Actions
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Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
A-301	669.7	I-880	Implementing Documents Are Not Approved	Finding	N-I	04/29/2016	TDR implementing documents; UGTA Sub-Project Information/Data Management Plan (Rev. 0, January 2012) and N-I UGTA Sub-Project Information/Data Management Plan (Rev. 0 01/21/2012) are not approved.	SBMS procedural consolidation and program workflow improvements has caused a delay in resolving this finding. This issue has been extended until April 29, 2016.
A-314	684.1	I-898	Record Management	OFI	NSTec	N/A	The delay between record generation and formal records management presents an unnecessary risk.	OFI, Tracking only.
A-339	N/A	I-1394	Documentation Issue with Data Package	Finding	LANL	02/06/2015	The data package was structured such that the independent analyst was not able to rerun the simulations without significant help from the original analyst who generated the data package.	Fix package and evaluate data package completion process.

Table A-1
Open Corrective Actions
(Page 4 of 12)

Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
A-352	N/A	I-1396	Incomplete Field Activity Worksheets	Finding	DRI	06/01/2015	Some information fields on some of the field activity worksheets have been left blank. According to the QAP, these fields must be filled in or crossed out and initialed/dated.	PI will review all field documentation to ensure that they are correctly and completely filled out.
A-352	N/A	I-1397	Sample Identification Numbers Not Consistently Recorded	Finding	DRI	06/01/2015	Sample identification numbers for precipitation samples are not consistently recorded in the field logbook and/or field worksheet, though the fact that samples were collected is noted.	PI will review all field documentation to ensure that they are correctly and completely filled out.
A-400	N/A	I-1417	N-I Has Not Established a Formal Protocol or Procedure Identifying Who Has Authority To Release Personnel Following an Off-normal Event	OBS	Navarro	10/19/2015	Depending on the nature of an event, it may be necessary to involve Radiation Control, Health and Safety, Industrial Hygiene, Security, line management, or others in the release of personnel determination.	Revised protocols will be developed and communicated to ensure implementation of appropriate Roles and Responsibilities.

Table A-1
Open Corrective Actions
(Page 5 of 12)

Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
A-400	N/A	I-1418	Radiation Services Manager Not a Mandatory Signatory on UGTA Work Packages	OBS	Navarro	10/15/2015	A radiation expert should review all work packages to determine whether radiation controls are needed.	Revise work authorization process to require review by Radiation Services.
A-400	N/A	I-1427	Evaluate the Need for Improved Security and Access Controls at Well Sites	OFI	Navarro	09/30/2015	Wells routinely do not have locks or tamper evident seals on them that discourage (and facilitate detection of) unauthorized access.	Evaluation of well heads is completed and in review.
N/A	N/A	I-1452	Integration of Field Staff to Support UGTA Drilling	Event/Issue	Navarro	09/01/2015	N-I has experienced the loss of some UGTA senior field staff members.	Strategy letter provides recommendations after consultation between Closure Support, UGTA management, UGTA field staff, and Navarro Functional Leads for drilling operations shift schedules, daily work shifts, identified resources and crew assignments, and cross-training needs.

Table A-1
Open Corrective Actions
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Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
N/A	N/A	I-1504	Data Files Not Saved in Data Package	Finding	Navarro	11/16/2015	Data package UGTA-4-301 (UGTA-4-301_LVCF087 143_YF_FlowModel_ Uncertainty Analyses) does not contain all of the input and output files associated with the Yucca Flat uncertainty analysis.	1. Determine the extent of the issue. 2. Identify possible solutions/process improvements. 3. Determine whether modifications to the current process/procedure are required and revise as necessary. 4. Communicate new process to UGTA users.
N/A	N/A	I-1546	Well UE-7nS Planning and Coordination	Event/Issue	Navarro	08/07/2015	Navarro did not involve the Navarro Geology Interpretation Lead early in the planning process to mitigate problems with pumping.	The Closure Support Manager, UGTA Manager, and the Geologic Interpretation Lead will meet to document the development of a communication strategy that will define the interactions between closure support staff and the SME to better define requirements with roles of responsibility up front.

Table A-1
Open Corrective Actions
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Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
A-456	N/A	I-1557	Training Records	Finding	LLNL	11/02/2015	Training records were not available to verify required procedural training.	LLNL maintains and attaches a "Read, Sign, and Authorization" list to each SOP used in chemical analysis laboratories to identify individuals authorized to perform the specific analyses. The Contract Manager maintains CVs of all authorized individuals. LLNL-UGTA Management SOP to be developed.
A-456	N/A	I-1558	Chain-of-Custody	Finding	LLNL	9/30/2015	LLNL chain of custody is maintained from receipt through analysis, but not through disposal.	Develop and implement database for sample tracking. A laptop and software will be present in the sample library to ensure sample tracking.
A-456	N/A	I-1559	Sample Cooler Temperature	Finding	LLNL	12/31/2015	LLNL does not document the sample cooler temperature upon arrival.	All individuals authorized in the sample analysis workflow will read and sign SOP-UGTA-109 "Management of Samples and Records."

Table A-1
Open Corrective Actions
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Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
A-456	N/A	I-1560	Records	Finding	LLNL	11/30/2015	LLNL does not maintain or submit their records to a storage and retrieval system that is consistent with the UGTA QAP requirements except for documents that go through the Information Management system and are assigned LLNL document numbers.	In a proposed Management SOP, LLNL-UGTA will define the types of records produced by LLNL that will be subject to the UGTA QAP requirements. Depending on their type, these records will either be entered into the LLNL Information Management system, added to the UGTA TDR, or both if applicable.

Table A-1
Open Corrective Actions
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Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
A-456	N/A	I-1561	Document Control and Management Processes	Finding	LLNL	12/31/2015	LLNL does not develop, maintain, or document management processes associated with UGTA other than analytical procedures, nor do they use institutionalized process available (i.e., records management, training, issue tracking, document control). LLNL does not have a system for distributing controlled documents to ensure personnel are supplied with the most current version of the document. LLNL received Controlled Copy 19 of the UGTA QAP but was not able to locate the actual document.	An LLNL-UGTA Management SOP will be developed to identify and document processes for (1) managing, controlling, storing, protecting, or transferring institutional records; (2) summarizing technical SOPs; (3) tracking issues; and (4) documenting workforce training and authorizations.

Table A-1
Open Corrective Actions
(Page 10 of 12)

Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
A-456	N/A	I-1562	Information Protection	Finding	LLNL	12/31/2015	LLNL uploads data into the UGTA database (SharePoint) without documentation/marking/ identification of a DC review.	LLNL will clarify requirements for executing and documenting a DC review, and will describe these in an upcoming Management SOP. LLNL has formulated and implemented a process to (1) define records and non-records, (2) properly define how DC review will be performed, and (3) define how records can or will be stored.
A-456	N/A	I-1563	Effective Corrective Actions	Finding	LLNL	11/02/2015	LLNL corrective actions do not appear to be effective. Two deficiencies with implemented corrective actions still exist. Four LLNL UGTA issues have been open over a year and are overdue.	Take advantage and use the LLNL Issues Tracking System (ITS) to manage current and future corrective actions and issues.

Table A-1
Open Corrective Actions
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Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
N/A	N/A	I-1567	Tritium Contaminated Water Splashed Outside of Casing	Event/Issue	Navarro	10/30/2015	While releasing pressure from the bailer at a depth of 5 feet below the well casing, the pressure release caused ^{3}H-contaminated muddy water to splash up and out of the well casing. A small amount of the muddy water splashed onto the RCT.	Work was stopped, and a fact-finding meeting was convened. Causal Analysis to be conducted.
N/A	N/A	I-1601	UGTA Technician Eye Exposure to De-foaming Chemical	Event/Issue	Navarro	10/30/2015	UGTA Field Technician working in Bldg. 6-909 was splashed in the eyes by a defoaming agent.	Work was stopped, and a fact-finding meeting was convened. Causal Analysis to be conducted.
N/A	N/A	I-1606	Lack of DC Review of UGTA Document	Finding	Navarro	01/15/2016	A report, was distributed via email to the UGTA RM/SM PER committee. The document was not reviewed by a DC before this distribution.	UGTA will review classification review processes with the Navarro Classification Officer. Staff and Management will be reminded of the requirement to obtain a DC review of all material before it is released.

Table A-1
Open Corrective Actions
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Asst Number	Legacy Number	Track	Title	Issue Type	Owning Organization	Due Date	Deficient Condition	Corrective Actions
N/A	N/A	I-1610	Missing SDSs and Labels at Building 6-909	Finding	Navarro	11/13/2015	SDS/MSDS binders at Bldg. 6-909 are incomplete when compared to the chemicals in the facility.	An SDS for Defoamer-7 was uploaded into the SDS database, and is now available both electronically and in hard copy within the Bldg. 06-909 binder. Preventative action TBD.
N/A	N/A	I-1611	Missing or Insufficient Labeling on Chemical Containers	Finding	Navarro	11/18/2015	Labels on chemical bottles are not present or sufficient to relate the contents to a specific SDS/MSDS.	Unlabeled containers within the UGTA lab trailer were labeled. Preventative action TBD.
N/A	N/A	I-1620	Century Wireline	Event/Issue	Navarro	10/16/2015	Pawls (lever that engages cogwheel) on the Century wireline unit have been failing due to wear.	Purchase new Pawls and repair unit.

CV = Curriculum vitae
DC = Derivative classifier
^{2}H = Deuterium
IT = Information Technology
MSDS = Material Safety Data Sheet
NIST = National Institute of Standards and Technology
O = Oxygen
PI = Principal investigator
RCT = Radiological control technician
SDS = Safety Data Sheet
SME = Subject matter expert
TBD = To be determined
TDR = Technical Data Repository

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	0.1006	I-10	Measuring and Test Equipment	Fining	LLNL	04/14/2015	Requirement for implementation not documented in a procedure or process.	LLNL will contribute to or maintain a SharePoint site with needed information.
N/A	0.1304	I-49	Yucca Flat Model Document - Table Errors	Finding	Navarro	07/10/2015	Errors were identified in two tables in Appendices of the Phase I Flow and Transport Model Document for CAU 97: YF/CM: Table C-3 titled "Initial RST Fractions for Detonations in the Unsaturated Zone, Saturated Alluvial/ Volcanic Aquifer System and Saturated LCA Models" has several incorrect values in the column labeled "Unsaturated Zone" within the "Uniform-Concentration inventory Fraction" group of columns.	Table C-3 was reformatted and checked for accuracy. LANL reviewed Table D-2 and provided correct data. Large tables transferred into FrameMaker will be checked. Changes were made after the Peer Review comments were resolved.
N/A	0.1336	I-56	Use of Uncontrolled Form	Finding	N-I	01/08/2015	Vehicle Inspection form does not comply with 29 CFR 1926.	Personnel were given the correct controlled form, and the correct form was associated with the active FAWPs.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	0.1342	I-57	Noncompliance with 29 CFR 1926.601(b)(14)	Finding	N-I	01/15/2015	Vehicle Inspection Checklist/Log sheet is not controlled via SBMS, nor is it complaint with the Motor Vehicle daily inspection requirements stated in 29 CFR 1926.601(b)(14).	FAWP modified to meet requirements. Updated form.
N/A	0.1367	N/A	Incident of Security Concern	Finding	N-I	10/09/2014	Incident of security concern.	Formal inquiry conducted.
N/A	0.988	I-103	Cations and Trace Elements Data Verification and Validation	Finding	LLNL	08/13/2015	QAP compliance for cation and trace element analyses not documented in procedure or process.	SOP revised, and a checklist added for data verification and validation.
N/A	0.993	I-108	I129 Data Verification and Validation	Finding	LLNL	08/28/2015	QAP compliance for iodine analysis not documented in a procedure or process.	SOP revised, and a checklist developed for data verification and validation.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-267	631.1	I-778	Uncontrolled Technical Basis Documents	OFI	Navarro	06/15/2015	A significant number of unpublished drafts, short communications, and emails were referenced within a draft FFACO deliverable.	The references for the FFACO document were entered and verified into the TDR. Draft and personal communications were packaged as one entry with the appropriate metadata.
A-288	654.5	I-843	Water Sample Results Not Entered into Geochemistry Database	Finding	N-I	10/17/2014	The Geochem Database does not contain the most recent analytical results.	A new process was developed for updating the database so that data are accessible as soon as they are validated. A streamlined process using electronic deliverables was also developed for non-Navarro data.
A-296	664.2	I-857	Analyses of Anions and Trace Elements Do Not Include Required Matrix Spikes	Finding	LLNL	03/17/2015	SOP-UGTA-120, Determination of Inorganic Anions by Ion Chromatography, Revision 4; and SOP-UGTA-134, Sample Analysis by Quadrupole ICPMS, Revision 1 matrix spike requirements not implemented.	LLNL purchased a 1,000-ppm chloride standard for matrix spikes. Matrix spike samples were analyzed with the next set of unknowns.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-296	664.4	I-859	Laboratory Performance for Noble Gases Analysis Undergoes No Performance Evaluation Program or Equivalent	Finding	LLNL	04/08/2015	A PEP sample or equivalent is not conducted on noble gases analysis.	Data Evaluation was used to meet the Performance Evaluation requirement.
A-296	664.5	I-860	Data Evaluations as PEP Equivalents Do Not Meet Documentation Requirements	Finding	LLNL	04/08/2015	Data documentation does not meet records requirements.	Data packages meeting records requirements were submitted to the TDR.
A-333	703.1	I-928	No Formal Process for Distributing Controlled Documents and Ensuring Only Current Versions Are in Use	Finding	LANL	12/22/2014	No formal process for distributing controlled documents or ensuring only current versions are in use.	The “Procedures for Archiving and Documenting SFT-developed and SFT-modified Software” was converted to controlled document in accordance with LANL’s Document Control Procedure (P1020-2). Future UGTA procedures will be formally developed as controlled documents.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-333	703.2	I-929	LANL Records Transferred without Approval	Finding	LANL	12/22/2014	Approval for records transfer not evident.	LANL Records Management approved transfer, and a process for dual storage was developed.
A-333	703.3	I-930	Management Assessment Requirement	OBS	LANL	10/20/2014	LANL UGTA Assessment No. 710 was ongoing during the NNSA/NFO assessment.	No further action required by LANL.
A-333	703.4	I-931	Derivative Classification Review Documentation	BMP	LANL	10/20/2014	LANL has added a section with a signature block on the UGTA forms indicating a derivative classification review.	No further action required by LANL.
A-336	707.1	I-932	Improve End-of-Day Coordination with M&O	OFI	N-I	03/23/2015	A short post-job briefing would be beneficial to ensure coordination before contractors depart well sites.	No further action required by Navarro.
A-336	707.2	I-933	Evaluate the Use of In-line Monitoring for Trending and Comparison to Other Samples	OFI	N-I	10/20/2014	Evaluate the use of in-line monitoring for trending and comparison to other samples.	No further action required by Navarro.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-336	707.3	I-934	Clarify Well Zone Naming Convention	OFI	N-I	05/04/2015	There have been a number of naming convention changes that are not reflected in the FAWP.	N/A
A-336	707.4	I-935	Evaluate Use of Auto-Sampler and Investigate Newer Equipment	OFI	N-I	10/20/2014	Evaluate the use of the auto-sampler and investigate newer equipment.	No further action required by Navarro.
A-336	707.5	I-936	Evaluate the Use of Telemetry for Remote Monitoring	OFI	N-I	01/16/2015	Telemetry could be easily modified to include parameters other than water-level measurements.	Proof-of-concept completed at four well sites.
A-336	707.6	I-937	Increase Supervision/ Management Presence at UGTA Well Sites	OFI	N-I	10/20/2014	It was suggested that more visits by supervision/ management were beneficial to get a better perspective and understanding of the work. N-I and NNSA/NFO are planning more visits to the field as a result of this recommendation.	N/A
A-336	707.7	I-938	Evaluate Efficiencies for Jack-Lift Pumps	OFI	Navarro	04/27/2015	Evaluate efficiencies for jack-lift pumps.	Included in Sampling Technologies Report.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-336	707.8	I-939	Have Other Work Organized If Delays Are Experienced in Planned Fieldwork	BMP	N-I	10/01/2014	N-I substituted groundwater sampling by bailing at ER-20-8 #2 when the work at ER-20-8 was delayed.	No further action required by Navarro.
A-339	710.2	I-1395	Software Verification	BMP	LANL	01/08/2015	Recommendation (1) the FEHM verification example included in this data package (using DPDP-PTRK) be made a standard verification test case for FEHM and that (2) an additional case verifying DPDP-MPTR be generated and also included as a standard verification test case.	No further action required by LANL.
A-343	714.1	I-942	Update/Revise Existing Execution Plan and Project Health and Safety Plan	OFI	M&O	05/27/2015	The UGTA HASP is out of date.	UGTA HASP, Rev. 3 issued May 2015.
A-345	716.1	I-943	Three Heavy Equipment Items Did Not Have Plastic Liners	Finding	N-I	08/20/2015	Three heavy equipment items did not have containment liners to avoid any fluid leaks reaching the ground surface.	Liners placed and Navarro Site Supervisor will request and ensure equipment is placed on liners.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	EI-FY14-295	I-1240	Geochemistry Database	Finding	Navarro	04/21/2015	Historic quality control processes did not ensure data transfer/ transcription was error free.	Extent of condition conducted. Values were corrected in the Geochemistry database, and the corrections were added in an ROTC to the document.
N/A	EI-FY14-342	I-1289	Potential Use of Multiple Versions of USGS Program	Finding	N-I	05/07/2015	Commercial off-the-shelf software was not authorized or controlled through the IT department, resulting in multiple versions.	Performed a network scan to determine user, computer ID, application version, and location information for software. Placed software under IT control.
N/A	EI-FY14-353	I-1298	UGTA HASP Document Modification Annual Review Requirement	Event/Issue	Navarro	05/13/2015	N/A	UGTA HASP, Rev. 3 issued May 2015.
N/A	EI-FY14-357	I-1302	N-I Operational Pause June 19, 2014	Event/Issue	N-I	08/24/2015	Response to NNSS isopropyl alcohol incident.	Multiple actions to evaluate Navarro chemical storage, use, and procurement completed.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	EI-FY14-363	I-1308	NNSS Building 6-909 Air Conditioning and Heating Issues	Event/Issue	Navarro	07/27/2015	N/A	Continue to evaluate the function of the HVAC in Bay 1 & 2 as part of monthly building inspections. Worked with the M&O contractor to expedite HVAC replacement.
N/A	EI-FY14-383	I-1328	8/4/2014 NNSS Rain Event Accountability Issue	Event/Issue	N-I	08/19/2015	N/A	UGTA personnel and management worked well with OCC to cope with conditions presented by heavy rainfall. No further action required.
N/A	EI-FY14-388	I-1333	Analytical Data Switched on Laboratory Report	Event/Issue	N-I	08/19/2015	Analytical data provided from two zones in Well PM-3 were switched. Well locations are not shown on chain of custody forms.	This affected the PM-3 Data Evaluation report. The geochemical section was rewritten.
N/A	EI-FY14-393	I-1338	Well ER-20-8 Incorrect Packer Design	Event/Issue	N-I	08/20/2015	N/A	NSTec worked with the vendor to get the packer refabricated. N-I substituted work to collect depth discrete bailer samples from the shallow piezometer at Well ER-20-8.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	EI-FY14-399	I-1344	Frenchman Flat Chemistry Data Package Completeness	Event/Issue	N-I	01/07/2015	Final calculations of reported values did not have the same values as the letter reports.	Corrected spreadsheet was provided. Laboratory now includes calculations in record packages.
N/A	EI-FY14-401	I-1346	EZ-UP Shade Canopy Incident	Find & Fix	N-I	01/06/2015	N/A	The shade canvas was removed from the frame structure to prevent any further blowing around of the damaged shade.
N/A	EI-FY14-402	I-1347	Near Miss to Injury at ER-20-8 #2	Event/Issue	N-I	01/06/2015	EM-NVSO-NST-NTS-2014-0019 Occurrence report. Pump fell from crane.	Immediately suspended all work on the site and advised personnel not to move or alter the position of equipment until the situation could be evaluated.
N/A	N/A	I-1363	Exemplary Work	BMP	N-I	08/25/2015	Personnel exhibited detailed and strong work ethic during ER-20-7 sampling.	N/A
N/A	N/A	I-1371	ER-20-11 Stairs Inspection/Repair	Event/Issue	N-I	08/25/2015	Trailer stairs sloping downward.	Stairs were welded and returned to service.
N/A	N/A	I-1372	ER-20-11 - Gravel	Find & Fix	N-I	08/25/2015	Gravel on trailer floor identified as slipping hazard and housekeeping issue.	Floors were swept.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	N/A	I-1373	ER-20-11 - Fire Extinguisher	Find & Fix	N-I	08/25/2015	Fire extinguisher out of date.	The expired fire extinguisher was replaced.
N/A	N/A	I-1374	Building 6-909: Bay 1 Air Conditioner	Event/Issue	N-I	08/25/2015	Air conditioner not working.	NSTec repaired units.
N/A	N/A	I-1375	Building 6-909: Office Air Conditioner & Heater	Event/Issue	N-I	08/25/2015	Air conditioner not working.	NSTec repaired units.
N/A	N/A	I-1376	Building 6-909: Bay 2, Bay Door	Event/Issue	N-I	08/25/2015	Bay door does not close.	NSTec adjusted bay door.
N/A	N/A	I-1377	Building 6-909: Weeds In the Yard	Event/Issue	N-I	08/25/2015	N/A	Navarro will continue to monitor and remove weeds.
N/A	6/15/2015	I-1381	Building 6-909: Outside Lights/Tripped Breaker	Event/Issue	Navarro	07/27/2015	The outside lights in front of the building do not work and the #6 breaker will not reset.	NSTec repaired breaker.
N/A	EI-FY14-357	I-1382	N-I Operational Pause June 19, 2014; Follow-on Actions	Event/Issue	Navarro	05/04/2015	Follow-on actions from operational pause caused by NNSS isopropyl alcohol incident.	Additional actions identified and completed for chemical storage, use, and procurement.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-339	N/A	I-1395	Software Verification	BMP	LANL	01/08/2015	Recommended that the FEHM verification example using DPDP-PTRK be made a standard verification test case for FEHM.	No further action required.
N/A	N/A	I-1401	UGTA Well ER-20-5 #1, Wireline Work Performed in a Contaminated Well without Appropriate Controls	Finding	Navarro	08/03/2015	Work planned for ER-20-5 #3 was conducted at ER-20-5 #1 with controls established for ER-20-5 #3.	See Assessment A-400 and associated issues for preventive actions.
A-400	N/A	I-1407	Expired or Outdated Field Activity Work Packages	Finding	Navarro	08/03/2015	FAWPs were not kept current or revised.	UGTA work authorization procedures and documents were revised.
N/A	N/A	I-1408	Outdated Template Used for UGTA FAWP	Event/Issue	Navarro	05/13/2015	Outdated template used for UGTA FAWP.	Template updated and standardized.
N/A	N/A	I-1409	Expired ER-EC-6 Sampling Report Template	Event/Issue	Navarro	05/18/2015	Outdated template used for sampling report.	Template updated and standardized.
A-400	N/A	I-1410	Planning Documentation Not Maintained in a Location Available and Known to Field Personnel	Finding	Navarro	05/20/2015	Although present, the FAWP's presence and location were not known to the Site Supervisor.	The field supervisor ensures a hardcopy of the FAWP is in the site trailer.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-400	N/A	I-1411	Personnel Did Not Follow Work Authorization Documents	Finding	Navarro	05/13/2015	Downhole work conducted at the ER-20-5 site was conducted without an approved RWP and without an RCT present as required by the FAWP.	POD identifies work scope/location and appropriate authorization. POD is present at work site. The POD is reviewed by the Site Supervisor during the Daily TSB.
A-400	N/A	I-1412	Document Control Is Inadequate for Work Control Documents	Finding	Navarro	08/03/2015	FAWPs were not controlled under the SBMS document control and periodic review processes.	All FAWPs are listed on the POD Work Control Package worksheet for daily review and verified to be current. UGTA work authorization documents are reviewed, integrated with other work authorization processes, and revised to provide long-term consistency for workers.
A-400	N/A	I-1413	UGTA Field Personnel and Support Groups Are Not Sufficiently Involved in UGTA Work Planning	Finding	Navarro	04/21/2015	UGTA field personnel have little or no part in the FAWP preparation or review process.	FAWPs has been assigned to the Site Supervisors. FAWPs are reviewed by Closure Support Lead, UGTA Project Manager, H&S, QA, and NSTec. Approvals added to FAWP Cover Sheet.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-400	N/A	I-1414	Field Activity Work Packages Did Not Contain Required Content	Finding	Navarro	07/22/2015	Multiple recent FAWP did not use the required cover sheet. The cover sheet used did not indicate dates beyond which work was no longer authorized (i.e., expiration date).	Required cover sheet is now used.
A-400	N/A	I-1415	Records Not Submitted to Central Files within Prescribed Timeframe	Finding	Navarro	07/22/2015	No evidence of 2009 FAWP submitted to Central Files.	A schedule developed to ensure timely submittal of all required project records.
A-400	N/A	I-1416	The Operations Command Center (OCC) Was Not Notified of the Event at ER-20-5 #1 in a Timely Manner	OBS	Navarro	04/20/2015	The OCC was not notified of the event at ER-20-5 #1 in a timely manner.	The interface with OCC will be reinforced to ensure timely notification and response.
A-400	N/A	I-1419	Field Personnel Are Not Required To Have Written Copy of the Plan of the Day (POD)	OBS	Navarro	05/13/2015	Field personnel are not required to have written copy of the POD.	Site Supervisors ensure POD present at site.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-400	N/A	I-1420	No Documented Processes for "On Call" Responsibilities when Friday/Saturday/Sunday Work Is Being Performed in the Field	OBS	Navarro	04/20/2015	No documented processes for "on call" responsibilities when Friday/Saturday/Sunday work is being performed in the field.	On-call list has been added to POD for weekend work.
A-400	N/A	I-1421	Inconsistent Site Supervisor Training Requirements	OBS	Navarro	09/29/2015	Inconsistent Site Supervisor Training Requirements.	Evaluation of Site Supervisor training requirements (including currency) completed and implemented through the Training department.
A-400	N/A	I-1423	UGTA Readiness Determinations Are Not Consistently Being Conducted	OBS	Navarro	08/31/2015	UGTA readiness determinations are not consistently being conducted.	The readiness determination process was reviewed and revised, and changes were integrated into both the work control process and Site Supervisor training.
A-400	N/A	I-1424	Less Than Adequate Formality of Work Assignments	OBS	Navarro	06/01/2015	Field personnel received work assignments verbally without written instructions beyond those contained in an FAWP.	Developed a forecast schedule with a two-month look ahead. The Site Supervisor ensures a copy of the POD is at the job site and is reviewed during the Daily TSB.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-400	N/A	I-1425	Add Additional Formality to the Plan of the Day Briefing. Emphasize Authorization of Work, Site Supervisor Responsibilities, Questioning Attitude, etc.	OFI	N-I	04/02/2015	N/A	POD identifies work scope/location and appropriate authorization. POD is present at work site. The is reviewed by the Site Supervisor during the Daily TSB.
A-400	N/A	I-1426	Conduct a Review of Postings/Signage at Well Locations	OFI	Navarro	06/11/2015	N/A	Review conducted by ESH&Q.
A-400	N/A	I-1428	Evaluate Inconsistencies between the UGTA Health and Safety Plan (HASP), the Fluid Management Plan (FMP) and Field Activity Work Packages (FAWPs)	OFI	Navarro	08/31/2015	N/A	Organizational changes implemented after March 2015 include the addition of the Closure Support Organization responsible for integrating workers and support organizations into the work planning process for UGTA field activities.
A-357	N/A	I-1433	Document Control Distribution Process	Finding	DRI	06/30/2015	UGTA QAP requirements related to document control not implemented.	Expanded within the Work Processes section (specifically Section 5.4.1) of the DRI QAP.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-357	N/A	I-1434	DRI Does Not Maintain an Annual Assessment Schedule	Finding	DRI	06/30/2015	Annual assessment schedule not maintained for all functional areas.	Assessment schedule requirement removed from procedures.
A-357	N/A	I-1435	DRI Does Not Conduct Continuous Improvement and Trending Evaluations on a Consistent Basis	Finding	DRI	06/30/2015	Continuous improvement and trending evaluations not conducted on a consistent basis.	Trending: Guidance documents pertinent to trending were reviewed. Trend analysis tied to corrective actions in the Standard Practice Procedure. Continuous Improvement removed from Procedure 2.0 because the processes involved in continuous improvement are not specific to issues management.
A-357	N/A	I-1436	DRI Records Do Not Consistently Conform to UGTA QAP Section 1.7	OBS	DRI	02/23/2015	Inconsistent correction and end of page initial and dating.	Identified in DRI self-assessment, track to closure through issue number I-1396.
A-357	N/A	I-1437	Chloride Sample Labels and Preservation Method	OBS	DRI	03/17/2015	Chloride sample labels may need to identify 4 °C as the preservation method and the holding time needs to be identified and documented.	Tracked internally by DRI.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-357	N/A	I-1438	Preliminary Hazards Analyses Are Not Consistently Attached to Field Activity Work Record Packages	OFI	DRI	03/17/2015	Preliminary Hazards Analyses are not consistently attached to field activity work.	Tracked internally by DRI.
A-357	N/A	I-1439	DRI Training Database	OFI	DRI	03/17/2015	Training database identifies and tracks training but data entry is time consuming and the reporting capabilities are limited. Also one DOE computer-based training posted on the DRI intranet was not the most current.	Tracked internally by DRI.
A-357	N/A	I-1440	DRI May Want To Assess the Effectiveness of 13-UGTA-QA-1 Corrective Actions	OFI	DRI	03/17/2015	N/A	Tracked internally by DRI.
A-357	N/A	I-1441	DRI Could Improve Measuring and Test Equipment Calibration and Preventive Maintenance Documentation	OFI	DRI	03/17/2015	N/A	Tracked internally by DRI.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
A-357	N/A	I-1442	Logging Documentation	OFI	DRI	03/17/2015	Documentation process from the field notebook to an electronic copy is bulky.	Tracked internally by DRI.
N/A	N/A	I-1443	Medical Services Deployed at UGTA Area 20 Site	Event/Issue	N-I	08/26/2015	N/A	Personnel in pain; the Site Supervisor made the appropriate notifications, and the individual was transported.
N/A	N/A	I-1453	Pahute Mesa Source Term Schedule Recovery	Event/Issue	Navarro	09/22/2015	Progress on Source Term A&E is behind.	Participants determined more realistic schedule before development of multi-year task plans.
N/A	N/A	I-1454	UGTA Geochemistry Data Flow/A&E	Event/Issue	Navarro	08/03/2015	Evaluation of the geochemistry data has been impacted by the delay of verification and validation of laboratory analytical data and migration of data into the Chemistry database.	Determined additional resources needed.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	N/A	I-1455	Response to UGTA Yucca Flat Peer Review Recommendations	OFI	Navarro	09/01/2015	The Peer Review Committee recommended several data collection and analysis tasks be performed as the project moves forward to CADD/CAP.	Path forward for addressing the peer review recommendations presented 07/30/2015 and incorporated into FY 2016 task plans.
N/A	N/A	I-1456	UGTA Rainier Mesa Flow and Transport Comment Response	Event/Issue	Navarro	09/21/2015	Assess the impact of the revised HFM and conceptual model on the individual sub-CAU and CAU models.	Completed RM/SM Supplemental Analysis Scope for Phase I Flow and Transport Model, and provided a presentation to NNSA/NFO.
A-400	N/A	I-1458	Less Than Adequate Assessments of UGTA Work Control and Authorization	OBS	Navarro	04/27/2015	No assessments have focused on UGTA work control and authorization.	An assessment of work control added to assessment schedule for FY 2016.
N/A	N/A	I-1477	UGTA Should Use the Soils Group as a Resource To Benchmark and Provide Best Practices for Work Controls for UGTA Fieldwork	OFI	Navarro	04/06/2015	UGTA should use the soils group as a resource to benchmark and provide best practices for work controls for UGTA fieldwork.	Closure Support organization works with and liaises between UGTA and the Environmental Remediation group. Provides a mechanism for best practices from both organizations to be better shared.

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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	N/A	I-1478	Printer and Scanner Issues in the Field	Event/Issue	Navarro	09/25/2015	Printer and scanner issues in the field.	The system administrator configured a new Organizational Unit in Active Directory to allow users to install printer drivers.
A-411	N/A	I-1511	Incorporate Sample Collection Procedures into SBMS	OFI	Navarro	09/02/2015	Sampling Instructions and Parameters for USGS are contained in NAV-UGTA-050115, but have not been incorporated into SBMS.	This OFI was deferred until after SBMS consolidation.
N/A	N/A	I-1523	UGTA Weekly Vehicle Inspections	Event/Issue	Navarro	09/25/2015	UGTA personnel have not been completing weekly inspection on vehicles.	The Closure Support Manager sent email to all UGTA field staff that they are responsible for weekly inspections of UGTA vehicles.
N/A	N/A	I-1529	Navarro Employee Sustains Burn on Right Hand	Event/Issue	Navarro	07/06/2015	Employee was reaching to unhook battery charger cables from the generator when the employee's right hand made contact with the generator muffler.	Site Supervisor and employees were reminded to wear proper PPE when performing similar activities (i.e., using charger cables/working around generators) even though task seemed minor in nature.

Table A-2
Closed Corrective Actions
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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	N/A	I-1530	Printed Forms in UGTA Vehicle Binders and UGTA Trailers Are Outdated	Event/Issue	Navarro	07/06/2015	Printed forms in UGTA vehicle binders and UGTA trailers are outdated.	Logbooks updated with Navarro form.
N/A	N/A	I-1531	Broken Spring on Wireline Trailer	Event/Issue	Navarro	07/28/2015	Broken spring on wireline trailer.	The trailer was red-tagged out of service until repaired.
N/A	N/A	I-1545	Oasis Valley Well Sampling	Event/Issue	Navarro	08/03/2015	Responsibility and frequency of sampling should be evaluated in light of current model predictions and public expectations.	The NNSA/NFO client agreed that updated sampling would be sufficient.
N/A	N/A	I-1549	Disposal of Decontamination Fluids	Event/Issue	Navarro	09/29/2015	During the UGTA Pre-field briefing, the Waste Ops Manager noted that the direction for disposal of decontamination fluids down the well was incorrect.	Updated the FAWP for the post-shot sampling. Communication strategy also documented.

Table A-2
Closed Corrective Actions
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Asst Number	Legacy Tracking Number	Track	Title	Issue Type	Owning Organization	Closure Date	Deficient Condition	Corrective Actions
N/A	N/A	I-1555	Federal Technical Lead Should Not Be Approving FAWPs	Event/Issue	Navarro	09/22/2015	The NNSA/NFO EM Operations Manager would not sign the FAWP ROTC because federal technical POCs should be providing oversight of the program including health and safety but not approval.	The Requirement is currently listed in the UGTA H&S Plan, Rev. 3, May 2015. NNSA/NFO agreed that UGTA Activity Lead does not need to sign FAWPs.
N/A	N/A	I-1582	Hybervit Lead Test Kits for UGTA Drilling Are No Longer Available	Event/Issue	Navarro	09/22/2015	Hybervit lead test kits for UGTA drilling are no longer available.	New equipment procured and desktop procedure developed.
N/A	N/A	I-1609	Pre Job Trailer Hitch Inspection	Find & Fix	Navarro	09/08/2015	During the pre-job trailer inspection, the trailer hitch sleeve was installed incorrectly.	Trailer hitch sleeve was properly installed.

A&E = Analysis and evaluation
°C = Celsius
CADD = Corrective action decision document
CAP = Corrective action plan
ESH&Q = Environmental, Safety, Health, and Quality
FAWP = Field activity work package
FEHM = Finite Element Heat and Mass Transfer
FFACO = *Federal Facility Agreement and Consent Order*
HASP = Health and safety plan
HFM = Hydrostratigraphic framework model
H&S = Health and safety
HVAC = Heating, ventilating, and air conditioning
M&O = Management and operating
OCC = Operations Command Center
POC = Point of contact
PPE = Personal protective equipment
ppm = Parts per million
SBMS = Standards-Based Management System
TSB = Tailgate safety briefing