LMS/CNT/S16102

Postclosure Inspection and Monitoring Report for Surface Corrective Action Unit 417 at the Central Nevada Test Area, Nevada, Site

March 2018

Approved for public release; further dissemination unlimited

U.S. DEPARTMENT OF ENERGY | Legacy Management

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Abbreviations

bgs	below ground surface
CAU	Corrective Action Unit
CMP	Central Mud Pit
CNTA	Central Nevada Test Area
DOE	U.S. Department of Energy
FFACO	Federal Facility Agreement and Consent Order
ft	feet
LM	Office of Legacy Management
NDEP	Nevada Division of Environmental Protection
ROTC	Record of Technical Change

Executive Summary

This report documents the biennial postclosure site inspections conducted in July 2016 at the surface Corrective Action Unit (CAU) 417 at the Central Nevada Test Area, Nevada, site. The UC-1, UC-3, and UC-4 sites are inspected every 2 years, in accordance with the Post-Closure Monitoring Plan provided in the CAU 417 Closure Report published in 2001.

The UC-1 Central Mud Pit (CMP) was in good condition during the 2016 inspection. One minor crack on the cover was repaired during the inspection. No other new fractures or extensions of existing fractures were observed, and no issues with the fence, gate, monument, or signs were identified. The vegetation on the cover continued to look healthy. No other issues were identified, and no additional maintenance or repair activities are recommended at this time.

The inspection of UC-3 indicated that the site is in excellent condition. One monument was tipped over and was returned to a standing position during the inspection. All other monuments and signs were in good condition. No other issues were identified, and no additional maintenance or repair activities are recommended at this time.

The inspection of UC-4 indicated that the site was in excellent condition. No new fractures or extension of existing fractures were observed, and no issues with the fence, monuments, or signs were identified. No issues were identified, and no maintenance or repair activities are recommended at this time.

The last biennial report was published in 2015. It was determined after the 2015 report was issued that sufficient subsidence, soil moisture, and vegetation survey data exist to verify that the covers on the UC-1 CMP and UC-4 Mud Pit C are performing as designed. LM proposed to delete the requirements for continued monitoring of soil moisture and subsidence at the UC-1 CMP cover and subsidence at the UC-4 Mud Pit C. Data supporting that decision are presented in the February 25, 2015, letter of agreement for the *Path Forward for Future Post Closure Inspection and Monitoring of Surface Corrective Action Unit (CAU) 417 at the Central Nevada Test Area, Nevada* (NDEP 2015). Nevada Division of Environmental Protection approved the path forward recommendations and approved a June 2015 Record of Technical Change to the Closure Report (Appendix A).

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1.0 Introduction

This report presents results of the biennial postclosure site inspection conducted by the U.S. Department of Energy (DOE) Office of Legacy Management (LM) at the surface Corrective Action Unit (CAU) 417 at the Central Nevada Test Area (CNTA), Nevada, site. The report has been prepared in accordance with the Post-Closure Monitoring Plan contained in the CAU 417 Closure Report (NNSA/NV 2001) and a Federal Facility Agreement and Consent Order (FFACO) (FFACO 1996). Responsibility for environmental site restoration of the CNTA was transferred from the DOE, National Nuclear Security Administration, Nevada Field Office to LM on October 1, 2006. This report summarizes investigation activities associated with CAU 417 that LM conducted from July 2014 through July 2016. A postclosure inspection was conducted in 2016 to document the physical condition of the CAU 417 soil covers, monuments, signs, fencing, and use-restricted areas.

1.1 Purpose

The purpose of the postclosure inspection at CAU 417 is to determine if:

- The UC-1 Central Mud Pit (CMP) or UC-4 Mud Pit C covers, fences, or diversion channels need maintenance or repairs.
- Vegetation on the UC-1 CMP cover is healthy.
- The aboveground monuments or warning signs at UC-1, UC-3, and UC-4 need maintenance or repairs.
- The administrative controls need modifications.

1.2 Site Location and Background

The CNTA is approximately 14 miles north of U.S. Highway 6 and approximately 68 miles northeast of Tonopah in Nye County, Nevada (Figure 1). Three emplacement boreholes, UC-1, UC-3, and UC-4, were drilled at the CNTA for underground nuclear weapons testing. On January 19, 1968, the Faultless underground nuclear test was conducted in borehole UC-1 at a depth of 3199 feet (ft). The other two emplacement boreholes (UC-3 and UC-4) were not used, and no further testing was conducted at the CNTA. Boreholes UC-1, UC-3, and UC-4 are located on three separate land withdrawals that range in size from approximately 1 to 1.5 square miles (Figure 2). All three land withdrawals are accessible to the public.

1.3 Geologic Setting

The underground nuclear test triggered numerous small earthquakes and aftershocks that resulted in surface subsidence and surface rupture along preexisting faults, creating a subsidence graben (also referred to as a down-dropped fault block) at the UC-1 site. The southeast bounding graben fault has a maximum surface displacement of 15 ft and dips beneath the southeastern corner of the UC-1 CMP (see UC-1 site detail in Figure 2). The formation of this fault scarp disrupted normal drainage patterns, so flood diversion channels were constructed to protect the cover and prevent infiltration along the fault scarp (NNSA/NV 2001).

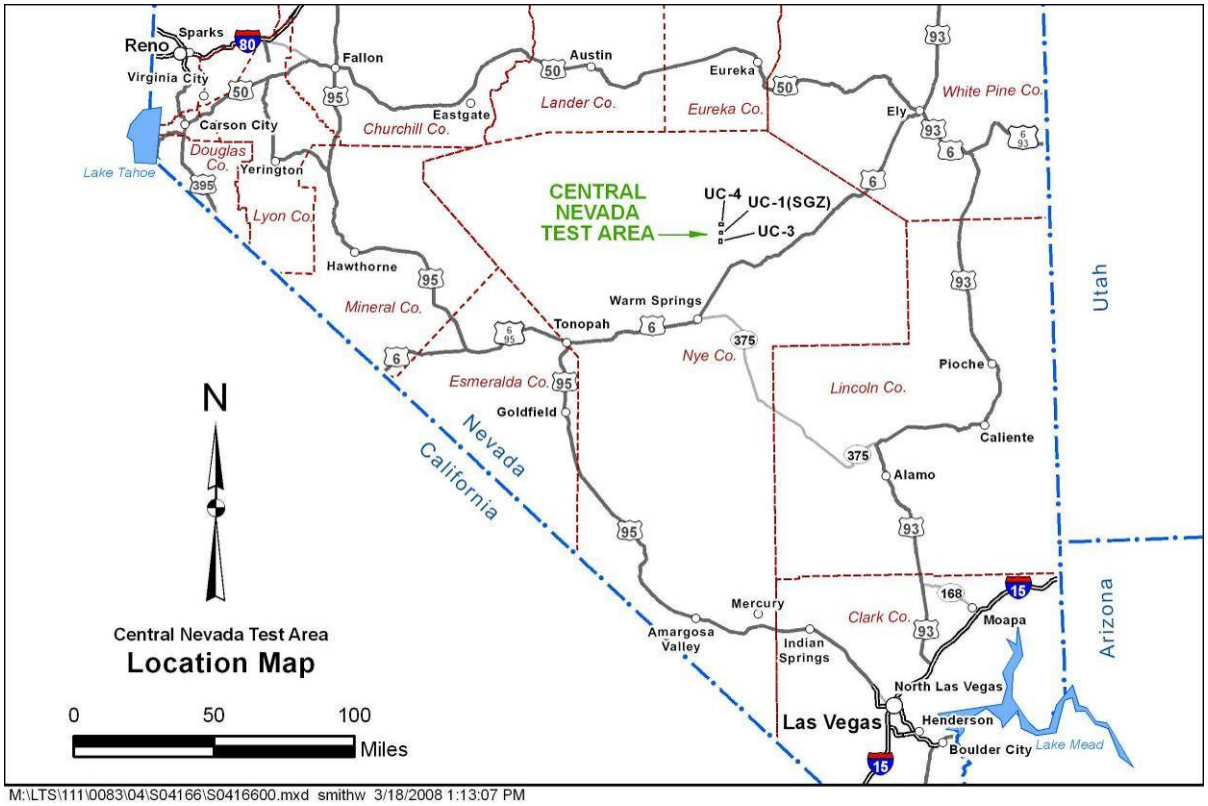

Figure 1. CNTA Location Map

The depth to water at the UC-1 CMP is approximately 275 ft below ground surface (bgs) based on measurements obtained from well UC-1-P-1SRC[1] prior to and after its recompletion in June 2009 (Figure 2). Water levels measured before the recompletion of UC-1-P-1S had been suspect because difficulties were encountered during the well's drilling and construction in 1968. Historically, the reported depth to water of 550 ft at the CMP was based on measurements obtained from well HTH-2. Well HTH-2 is outside the down-dropped fault block, nearly 1500 ft southwest of the CMP. Well UC-1-P-1SRC is inside the down-drop graben block, less than 200 ft west of the CMP. The differing depths to water inside and outside the graben block (northwest and southeast of the southeast bounding fault) were confirmed by the 2009 drilling program. Wells MV-4 and MV-5 were drilled through the southeast graben fault and were dual completions with a piezometer inside the graben and a well outside the graben. The depth to water of the piezometers is consistent with that of well UC-1-P-1SRC, approximately 275 ft bgs. The depth to water of the wells outside the graben is consistent with that of well HTH-2, approximately 550 ft bgs. Well HTH-1RC (outside the graben block) was also recompleted in 2009 with two piezometers (upper and lower alluvial aquifer) and a well (upper volcanic section). The depth to water of both HTH-1RC piezometers is approximately 550 ft bgs.

[1] "RC" in a well name indicates that the well has been recompleted.

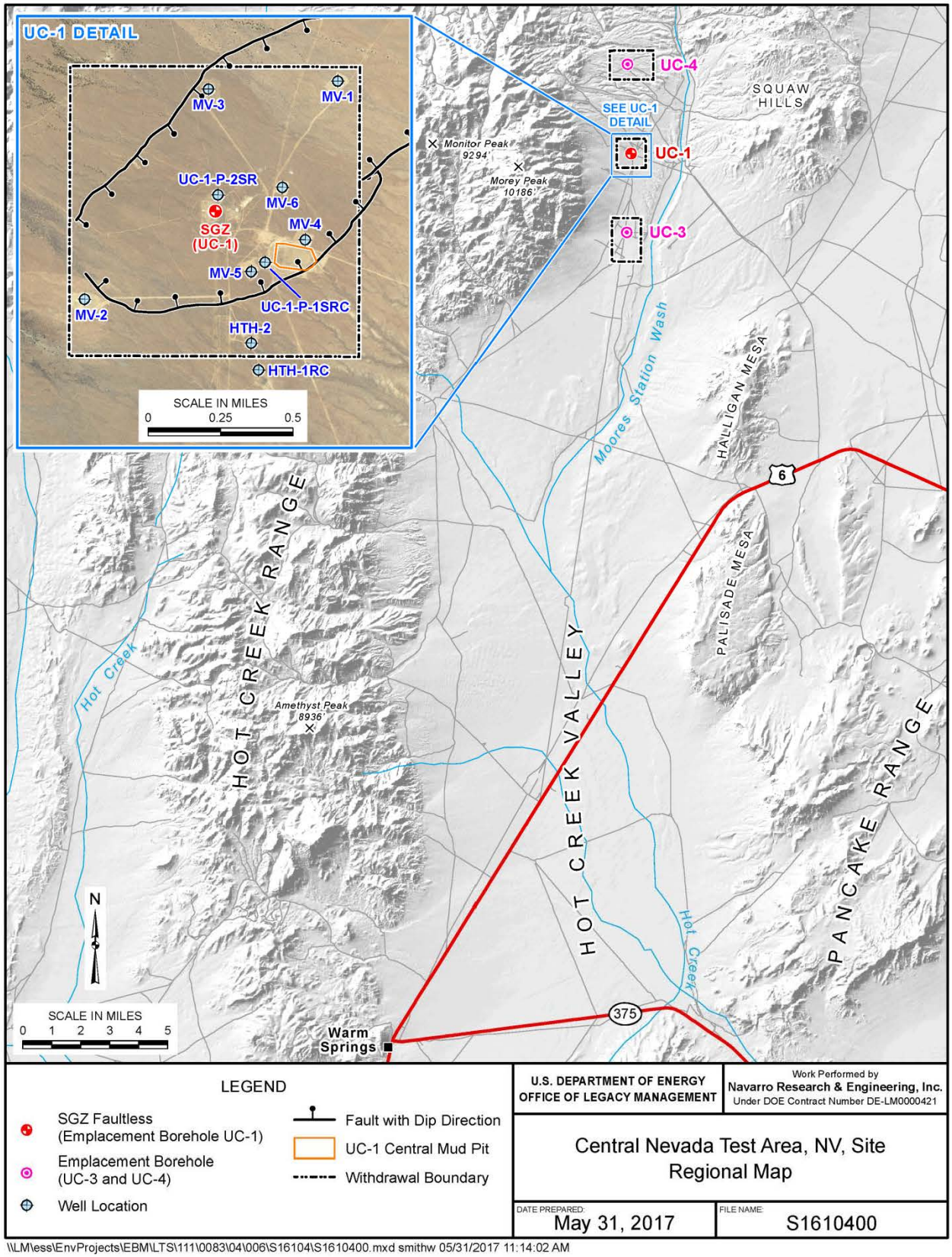

Figure 2. Surface Map of CAU 417 at the CNTA

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2.0 Postclosure Monitoring Requirements

The postclosure monitoring requirements were established in the Closure Report for CAU 417 (NNSA/NV 2001). These requirements have been modified over the years through negotiations with the Nevada Division of Environmental Protection (NDEP). Modifications were documented through three separate Records of Technical Change (ROTCs) to the Closure Report, which were approved by NDEP in 2003, 2011, and 2015.

The last biennial report was published in 2015. It was determined after the 2015 report was issued that sufficient subsidence, soil moisture, and vegetation survey data exist to verify that the covers on the UC-1 CMP and UC-4 Mud Pit C are performing as designed. LM proposed to delete the requirements for continued monitoring of soil moisture and subsidence at the UC-1 CMP cover and subsidence at the UC-4 Mud Pit C. Data supporting that decision are presented in the February 25, 2015, letter of agreement for the *Path Forward for Future Post Closure Inspection and Monitoring of Surface Corrective Action Unit (CAU) 417 at the Central Nevada Test Area, Nevada* (NDEP 2015). NDEP approved the path forward recommendations and approved a June 2015 ROTC to the Closure Report (Appendix A).

2.1 Site Inspections

Site inspections are conducted biennially at the site. Each site inspection is documented on an inspection checklist, with site photographs and, if applicable, field notes. The biennial postclosure site inspection consists of the following:

- Inspecting the UC-1 CMP cover and UC-4 Mud Pit C cover and fencing. This includes walking the entire perimeter of the fence and documenting the condition of the barbed wire and chicken-wire fencing, warning signs, and entrance gate.
- Inspecting all aboveground monuments, attached warning signs, and affixed survey pins placed at the UC-1, UC-3, and UC-4 sites for signs of wear, disturbance, vandalism, and other damage. Damaged monuments and attached signs are repaired during site inspections or, if necessary, later in the calendar year.
- Documenting any changes to the covers or fenced areas, including but not limited to the presence of trash and debris inside the fenced areas, erosion features on the covers or diversion channels, and any change in the health and stability of the UC-1 CMP cover vegetation.

2.2 Maintenance and Repair

If a site inspection detects that either the UC-1 CMP cover or the UC-4 Mud Pit C cover require major repairs or if any other problems in critical areas are noted, then issues will be evaluated and reported to NDEP within 60 days of detection (in compliance with the FFACO). The following guidelines apply to CAU 417 maintenance and repairs:

- Cracks, settling features, erosion rills, and animal burrows more than 6 inches deep that extend 3 ft or more and that do not compromise the UC-1 CMP or UC-4 Mud Pit C covers will be evaluated and repaired within 90 days of detection
- Noncritical cracks, settling features, erosion rills, and animal burrows less than 6 inches deep that extend less than 3 ft will be repaired during the site inspection visit

- Damage to the fencing surrounding the UC-1 CMP cover or the UC-4 Mud Pit C cover, warning signs, or monuments will be evaluated and repaired within 90 days of detection
- Major damage to use-restriction warning signs or monuments will be evaluated and repaired during subsequent site inspections
- Reports from the public of detrimental conditions at the site will be responded to within 90 days

All repair work will preserve the original as-built design and will be documented in the biennial postclosure inspection report.

2.3 Reporting Requirements

All inspection and maintenance activities conducted during the biennial monitoring period are documented and included in the biennial Postclosure Inspection Report. The biennial reporting will continue through the year 2020. LM submits the report to NDEP and includes the following information:

- A brief narrative and discussion of all postclosure inspection activities and observations
- Copies of all completed inspection checklists and maintenance records
- Specific recommendations for nonstandard maintenance or changes in postclosure requirements

All closure and postclosure monitoring documentation is maintained in project files and is available upon request.

3.0 Site Inspections, Surveys, and Maintenance

This section contains the results of the inspections that were done during the biennial monitoring period at the CNTA. It also includes a description of any maintenance that was performed.

3.1 Biennial Site Inspection Results

The biennial inspections of the three sites were performed on July 27, 2016. Copies of the inspection checklists and photographs are included in Appendix B. The following sections summarize the inspection results.

3.1.1 UC-1 Inspection

The locks, fencing, and signs associated with the CMP were in good condition. One minor crack on the cover was repaired during the inspection. No issues that affected the integrity of the cover, including new cracks, fractures, or extensions of existing cracks and fractures, were noted. The vegetation on the cover continued to look healthy and stable. All signs and monuments at Mud Pits A and E (Figure 3) were in good condition. No additional maintenance or repairs are recommended. Photographs 1 through 3 in Appendix B show the condition of the UC-1 site at the time of the inspection.

3.1.2 UC-3 Inspection

The site was in good condition (Figure 4). One monument was found tipped over and was returned to a standing position during the inspection. No other issues with the monuments or signs were identified at the time of the inspections, and no additional maintenance or repairs are recommended. Photographs 4 through 6 in Appendix B show the condition of the UC-3 site at the time of the inspection.

3.1.3 UC-4 Inspection

The Mud Pit C fence, signs, and monuments were in good condition at the time of the inspections. No erosion rills were identified, and previously identified rills showed no further signs of activity. No new erosion concerns were apparent at the time of the inspections. No issues that affected the integrity of the cover, including new cracks or fractures or extensions of existing cracks and fractures, were noted. All signs and monuments at Mud Pits A, B, and D were in excellent condition, and no issues were identified with Area S or Area X (Figure 5). No maintenance or repairs are recommended. Photographs 7 through 11 in Appendix B show the condition of the UC-4 site at the time of the inspection.

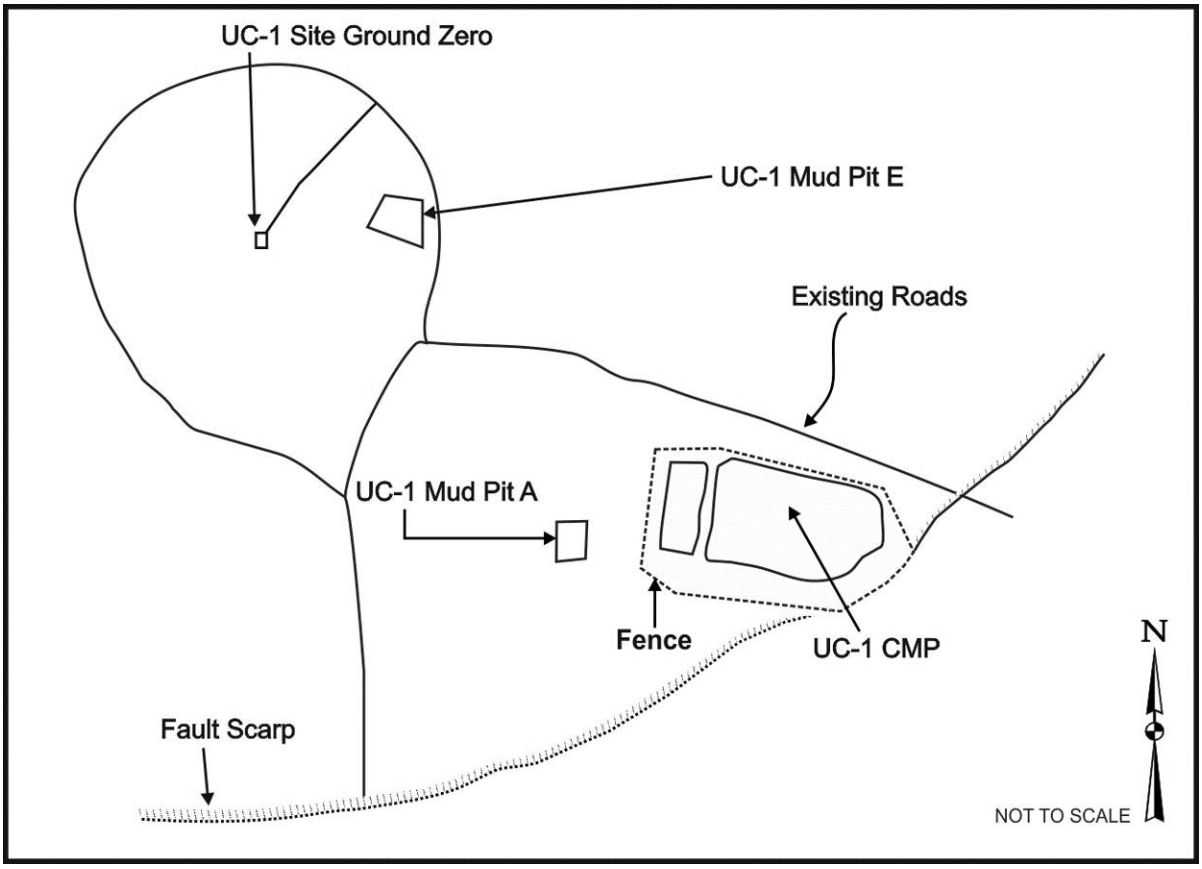

Figure 3. Location of UC-1 Significant Features

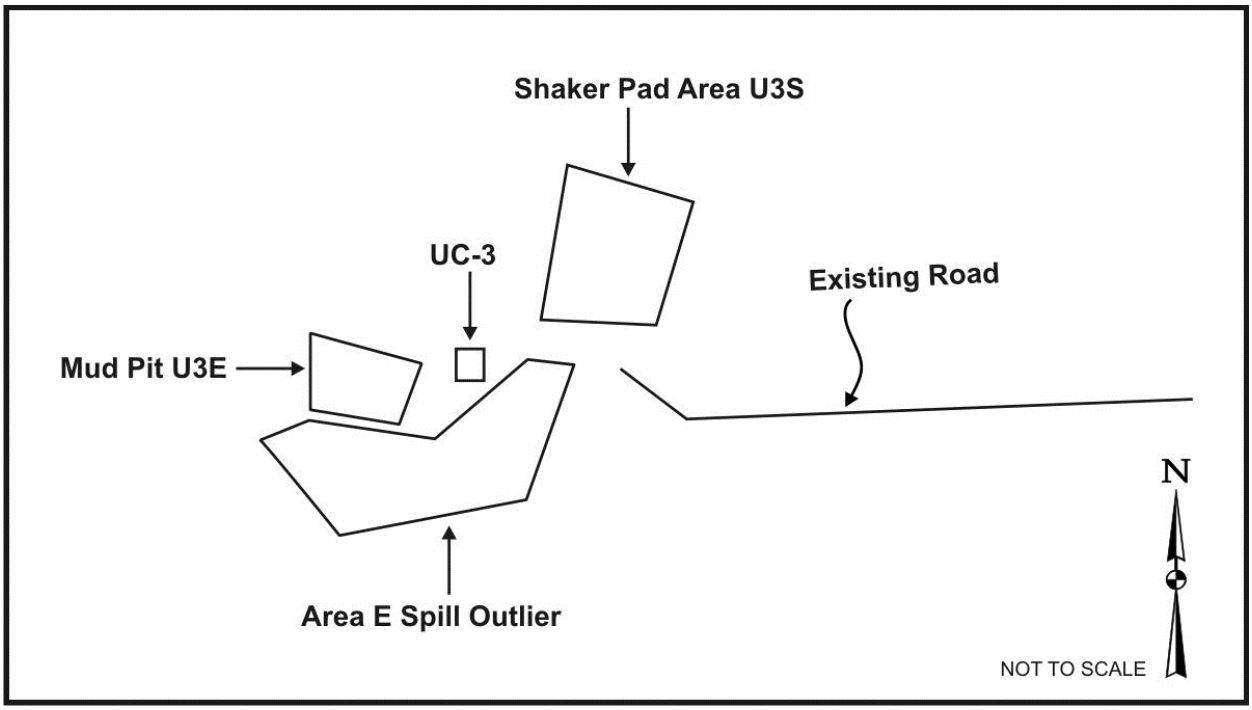

Figure 4. Location of UC-3 Significant Features

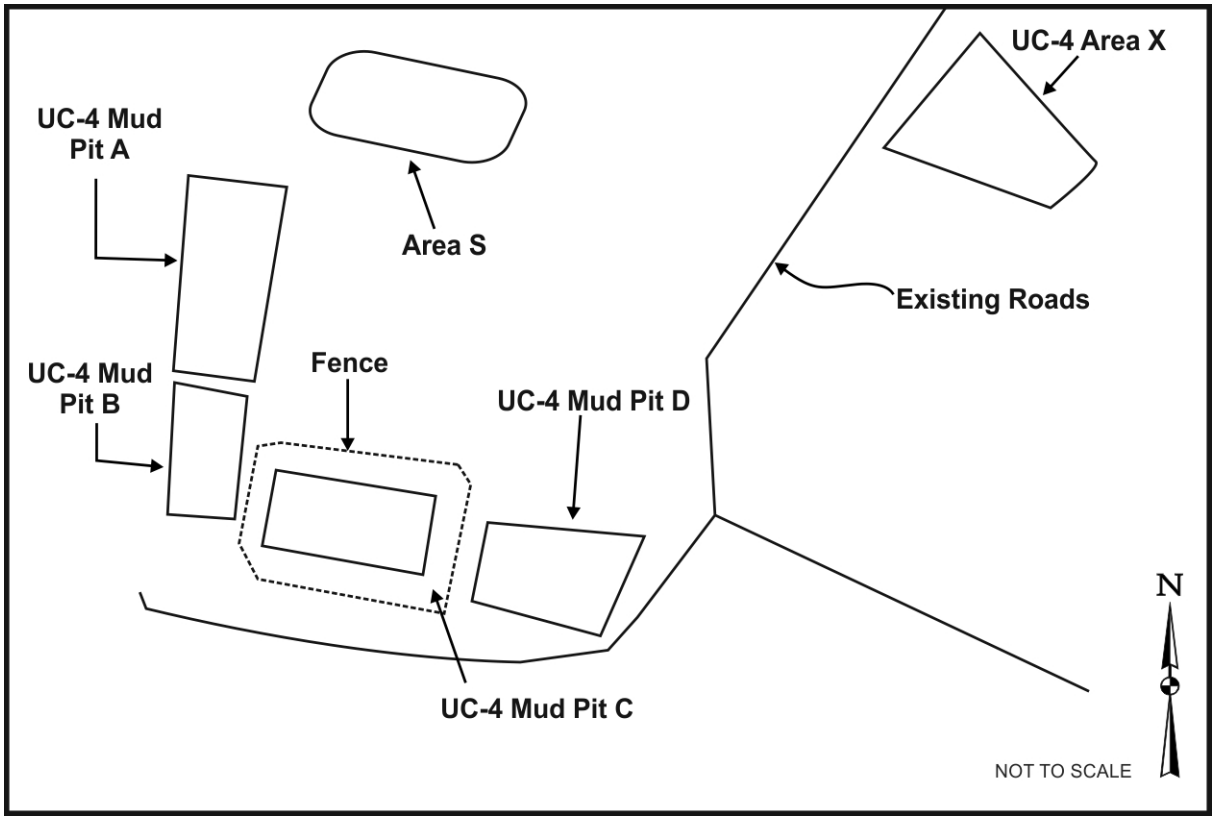

Figure 5. Location of UC-4 Significant Features

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4.0 Summary, Conclusions, and Recommendations

This section contains the summary, conclusions, and recommendations for the biennial monitoring period at CAU 417 at the CNTA.

4.1 Summary

The UC-1 CMP was in good condition during the 2016 inspection. One minor crack on the cover was repaired during the inspection. No other new fractures or extensions of existing fractures were observed, and no issues with the fence, gate, monument, or signs were identified. The vegetation on the cover continued to look healthy. No other issues were identified, and no additional maintenance or repair activities are recommended at this time.

The inspection of UC-3 indicated that the site is in excellent condition. One monument was found tipped over and was returned to a standing position during the inspection. All other monuments and signs were in good condition. No other issues were identified, and no additional maintenance or repair activities are recommended at this time.

The inspection of UC-4 indicated that the site was in excellent condition. No new fractures or extension of existing fractures were observed, and no issues with the fence, monuments, or signs were identified. No issues were identified, and no maintenance or repair activities are recommended at this time.

4.2 Conclusions

The following conclusions are based on the 2016 biennial inspection:

- Minor repairs were made to a crack on the cover of UC-1 CMP and one monument was returned to standing position at UC-3. Both issues were corrected during the inspection.
- No significant concerns were noted for the UC-1, UC-3, or UC-4 sites, and no further maintenance or repairs are recommended at this time.

4.3 Recommendations

The following recommendations are based on the 2016 inspection:

- Continue site inspections biennially, as scheduled, to observe the condition of the covers, fence, vegetation, signs, and monuments, with the next report to be produced in 2019
- Continue the biennial reporting through the year 2020, in accordance with the 2015 ROTC
- Continue to respond within 90 days to any reports from the public about detrimental conditions at the site

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5.0 References

FFACO (Federal Facility Agreement and Consent Order), 1996 (as amended). Agreed to by the State of Nevada, the U.S. Department of Energy, and the U.S. Department of Defense.

NDEP (Nevada Division of Environmental Protection), 2015. Letter of Agreement for the *Path Forward for Future Post Closure Inspection and Monitoring of Surface Corrective Action Unit (CAU) 417 at the Central Nevada Test Area, Nevada.*, March.

NNSA/NV (U.S. Department of Energy, National Nuclear Security Administration Nevada Operations Office), 2001. *Closure Report for Corrective Action Unit 417: Central Nevada Test Area Surface, Nevada*, DOE/NV-743, Rev. 1, Las Vegas, Nevada.

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Appendix A

Record of Technical Change

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National Nuclear Security Administration

Department of Energy
National Nuclear Security Administration
Nevada Field Office
P.O. Box 98518
Las Vegas, NV 89193-8518

JUN 2 2015

Christine Andres, Chief
Bureau of Federal Facilities
Division of Environmental Protection
2030 East Flamingo Road, Suite 230
Las Vegas, NV 89119-0818

SUBMITTAL OF THE RECORD OF TECHNICAL CHANGE (ROTC) NUMBER DOE/NV--743 ROTC 3 FOR THE FINAL CLOSURE REPORT, REVISION 1, FOR CORRECTIVE ACTION UNIT 417: CENTRAL NEVADA TEST AREA – SURFACE, NEVADA, NOVEMBER 2001

Enclosed for your records is one uncontrolled copy of the Record of Technical Change DOE/NV—743 ROTC 3 for the subject document.

Please direct comments and questions to Mark Kautsky, Office of Legacy Management, at (970) 248-6018.

Robert F. Boehlecke, Manager
Environmental Management Operations

EMO:11306.CD

Enclosures:
As stated

cc w/o encl. via e-mail:
Mark McLane, NDEP
Mark Kautsky, DOE/LM
J. T. Fraher, DTRA/CXTS
FFACO Group, NFO
NFO Read File

RECORD OF TECHNICAL CHANGE

Technical Change No. DOE/NV--743 ROTC 3 Page 1 of 1

Activity Name Central Nevada Test Area – ROTC for CAU 417 Closure Report Date April 29, 2015

The following technical changes (including justification) are requested by:

Mark Kautsky (Name)

Site Manager, Department of Energy/Office of Legacy Management (Title)

Description of Change:

Page 50, Section 5.1.3, The following sentences shall be added to the end of the first paragraph: As per the February 2015 Path Forward letter (dated February 25, 2015), the following was decided:

- Remove requirements for continued monitoring of soil moisture and subsidence from the UC-1 CMP and UC-4 Mud Pit. (The fences and engineered soil covers provide additional controls that prevent any inadvertent intrusions to the underlying drilling mud; these engineering controls will remain in place.)
- Continue visual inspections at all the sites and provide photographs of selected sites to document the health and stability of the vegetation at the UC-1 CMP cover.
- Prepare a brief report every 2 years to document the inspections. This requirement is in accordance with ROTC DOE/NV—743 ROTC 2 dated March 23, 2011, that changed the reporting schedule to every other year for the next 10 years, starting in 2010 (first report in 2012) and ending in 2020.

Justification:

The change was made in mutual agreement with NDEP and is based on soil moisture data from the UC-1 Central Mud Pit and subsidence data from the UC-1 Central Mud Pit and UC-4 Mud Pit collected over the past 14 years.

The task time will be unchanged.

Applicable Activity-Specific Document(s):

Closure Report for Corrective Action Unit 417: Central Nevada Test Area, Surface, Nevada, Revision: 1

Approved By: Mark Kautsky DOE-LM Site Manager Date 5-13-2015

Mark McKamey NDEP Date 5-18-2015

Appendix B

Inspection Checklists and Photographs, 2016

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CAU 417: CNTA UC-1 CENTRAL MUD PIT COVER, POST-CLOSURE INSPECTION CHECKLIST

Date of Last Inspection: July 14, 2014	Reason for Last Inspection: Scheduled Biennial Inspection
Responsible Agency: DOE-LM	Project Manager: Rick Findlay
Inspection Date: July 27, 2016	
Inspector (name, title, organization): Rick Findlay, Project Manager, Navarro	
Assistant Inspector (name, title, organization): Jeff Price, Sample Lead, Navarro	

A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is made. Attach the additional pages and number all pages upon completion of the inspection.
3. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, may take the form of sketches, measurements, annotated site maps.
4. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to inspect the entire surface and all features specifically described in this checklist.
5. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
6. This unit will be inspected every two years with formal reporting to the Nevada Division of Environmental Protection to be done within a reasonable amount of time after completion of the inspection. The report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			Not Applicable

C. SITE INSPECTION (To be completed during inspection)	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: None)		X	
c. Were gates locked?	X		

CAU 417: CNTA UC-1 CENTRAL MUD PIT COVER, POST-CLOSURE MONITORING CHECKLIST

	YES	NO	EXPLANATION
3. Waste Unit cover.			
a. Is there evidence of settling?	X		A minor crack on the cover was repaired
b. Is there cracking?	X		A minor crack on the cover was repaired
c. Is there evidence of erosion around the cap (wind or water)?		X	
d. Is there evidence of animal burrowing?		X	
e. Have the site markers been disturbed by man or natural processes?		X	
f. Do natural processes threaten to integrity of any cover or site marker?		X	
g. Other?		X	
4. Vegetative cover.			
a. Is perimeter fence or mesh fencing damaged?		X	
b. Is there evidence of horses or rabbits on site?		X	
c. Is organic mulch and/or plants adequate to prevent erosion?	X		
d. Are weedy annual plants present? If yes, are they a problem?		X	
e. Are seeded plant species found on site?	X		
f. Is there evidence of plant mortality?		X	
5. Photo Documentation			
a. Has a photo log been prepared?	X		
c. Number of photos exposed (28 digital photos)			

D. FIELD CONCLUSIONS			
1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:			
2. Are more frequent inspections required?		X	
3. Are existing maintenance/repair actions satisfactory?	X		
4. Is other maintenance/repair necessary?		X	
5. Is current status/condition of vegetative cover satisfactory?	X		

6. Rationale for field conclusions: The site was in good condition, with the cover observed as having only minor cracks.

E. CERTIFICATION

I have conducted an inspection of the UC-1 Central Mud Pit Cover, CAU 417, at the Central Nevada Test Area in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature: Rick Pilling	Printed Name: Rick Findlay
Title: Project Manager	Date: July 27, 2016

CAU 417: CNTA UC-3, POST-CLOSURE INSPECTION CHECKLIST

Date of Last Inspection: July 14, 2014	Reason for Last Inspection: Scheduled Biennial Inspection
Responsible Agency: DOE-LM	Project Manager: Rick Findlay
Inspection Date: July 27, 2016	
Inspector (name, title, organization): Rick Findlay, Project Manager, Navarro	
Assistant Inspector (name, title, organization): Jeff Price, Sample Lead, Navarro	

A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is made. Attach the additional pages and number all pages upon completion of the inspection.
3. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, annotated site maps.
4. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to inspect the entire surface and all features specifically described in this checklist.
5. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
6. This unit will be inspected every two years with formal reporting to the Nevada Division of Environmental Protection to be done within a reasonable amount of time after completion of the inspection. The report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			Not Applicable

C. SITE INSPECTION (To be completed during inspection)	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?	X		Concrete monument was tipped over and returned to a standing position.
b. Have any signs been damaged or removed? (Number of signs replaced: 0)		X	
c. Were gates locked?			Not Applicable – No gate at the site.

CAU 417: CNTA UC-3, POST-CLOSURE INSPECTION CHECKLIST

D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:			
2. Are more frequent inspections required?		X	
3. Are existing maintenance/repair actions satisfactory?	X		
4. Is other maintenance/repair necessary?		X	
5. Is current status/condition of unit satisfactory?	X		

6. Rationale for field conclusions: Concrete monument was returned to standing position. Site was in good condition.

E. CERTIFICATION

I have conducted an inspection of UC-3, CAU 417, at the Central Nevada Test Area in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature: Rick Findley	Printed Name: Rick Findley
Title: Project Manager	Date: July 27, 2016

CAU 417: CNTA UC-4 MUD PIT C COVER, POST-CLOSURE INSPECTION CHECKLIST

Date of Last Inspection: July 14, 2014	Reason for Last Inspection: Scheduled Biennial Inspection
Responsible Agency: DOE-LM	Project Manager: Rick Findlay
Inspection Date: July 27, 2016	
Inspector (name, title, organization): Rick Findlay, Project Manager, Navarro	
Assistant Inspector (name, title, organization): Jeff Price, Sample Lead, Navarro	

A. GENERAL INSTRUCTIONS

1. All checklist items must be completed and detailed comments made to document the results of the site inspection. The completed checklist is part of the field record of the inspection. Additional pages should be used as necessary to ensure that a complete record is made. Attach the additional pages and number all pages upon completion of the inspection.
3. Any checklist line item marked by an inspector in a SHADED BOX, must be fully explained or an appropriate reference to previous reports provided. The purpose of this requirement is to provide a written explanation of inspector observations and the inspector's rationale for conclusions and recommendations. Explanations are to be placed on additional attachments and cross-referenced appropriately. Explanations, in addition to narrative, will take the form of sketches, measurements, annotated site maps.
4. The site inspection is a walking inspection of the entire site including the perimeter and sufficient transects to be able to inspect the entire surface and all features specifically described in this checklist.
5. A standard set of color 35 mm photographs (or equivalent) is required. In addition, all anomalous features or new features (such as changes in adjacent area land use) are to be photographed. A photo log entry will be made for each photograph taken.
6. This unit will be inspected every two years with formal reporting to the Nevada Division of Environmental Protection to be done within a reasonable amount of time after completion of the inspection. The report will include an executive summary, this inspection checklist with field notes and photo log attached, and recommendations and conclusions.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	X		
2. Previous inspection reports reviewed.	X		
a. Were anomalies or trends detected on previous inspections?		X	
b. Was maintenance performed?		X	
3. Site maintenance and repair records reviewed.	X		
a. Has site repair resulted in a change from as-built conditions?		X	
b. Are revised as-builts available that reflect repair changes?			Not Applicable

C. SITE INSPECTION (To be completed during inspection)	YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.			
a. Have there been any changes in use of adjacent area?		X	
b. Are there any new roads or trails?		X	
c. Has there been a change in the position of nearby washes?		X	
d. Has there been lateral excursion or erosion/deposition of nearby washes?		X	
e. Are there new drainage channels?		X	
f. Change in surrounding vegetation?		X	
2. Security fence, signs.			
a. Displacement of fences, site markers, boundary markers, or monuments?		X	
b. Have any signs been damaged or removed? (Number of signs replaced: 0)		X	
c. Were gates locked?	X		

CAU 417: CNTA UC-4 MUD PIT C COVER, POST-CLOSURE INSPECTION CHECKLIST

3. Waste Unit cover.	YES	NO	EXPLANATION
a. Is there evidence of settling?		X	
b. Is there cracking?		X	
c. Is there evidence of erosion around the cap (wind or water)?		X	
d. Is there evidence of animal burrowing?		X	
e. Have the site markers been disturbed by man or natural processes?		X	
f. Is there vegetation on the cover?	X		Sparsely spread out over the entire cap/cover. See site photographs for details.
g. Do natural processes threaten to integrity of any cover or site marker?		X	
h. Other?		X	
4. Photo Documentation			
a. Has a photo log been prepared?	X		
c. Number of photos exposed (29 digital photos)			

D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)		X	
Person/Agency to whom report made:			
2. Are more frequent inspections required?		X	
3. Are existing maintenance/repair actions satisfactory?	X		
4. Is other maintenance/repair necessary?		X	
5. Is current status/condition of vegetative cover satisfactory?	X		

6. Rationale for field conclusions: Site in good condition – no erosion rills, gate and fence in good condition, and no signs were down.

E. CERTIFICATION

I have conducted an inspection of the UC-4 Mud Pit C Cover, CAU 417, at the Central Nevada Test Area in accordance with the Post-Closure Inspection Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

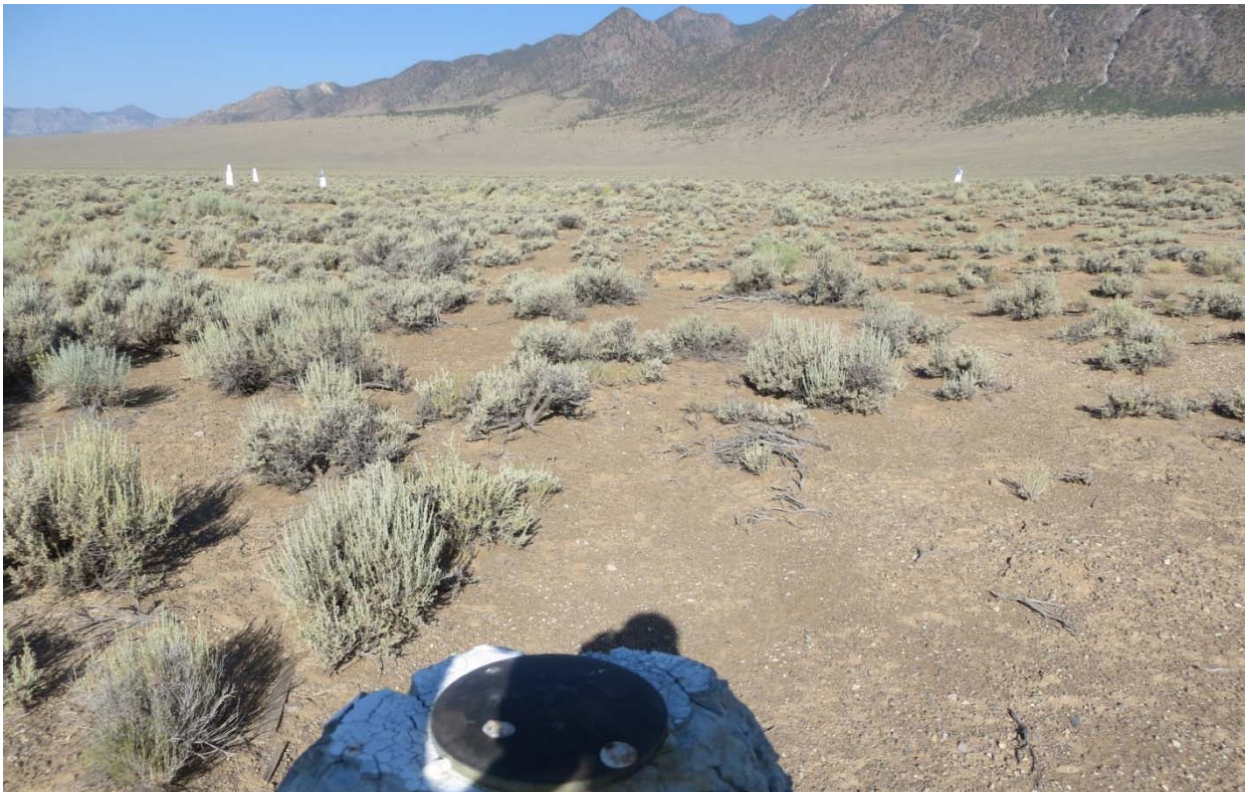
Chief Inspector's Signature: Rick Fridley	Printed Name: Rick Fridley
Title: Project Manager	Date: July 27, 2016

Photograph 1. UC-1 CMP, view from entrance gate on north fence line, looking southeast

Photograph 2. UC-1 Mud Pit E, view from western monument, looking northeast

Photograph 3. UC-1 Mud Pit A, view of northwest monument, looking southeast

Photograph 4. UC-3 Area E Spill Outlier, view from northeast monument, looking southwest



Photograph 5. UC-3 Mud Pit U3E, view from northeastern monument, looking west

Photograph 6. UC-3 Shaker Pad Area U3S, view from northwest monument, looking southeast

Photograph 7. UC-4 Area X, view from north monument, looking southwest

Photograph 8. UC-4 Mud Pit D, view from south monument, looking northwest

Photograph 9. UC-4 Mud Pit C, view from northeast corner of mud pit cover, looking west

Photograph 10. UC-4 Mud Pit B, view from northeast monument, looking southwest

Photograph 11. UC-4 Mud Pit A, view from northwest monument, looking south

Appendix C

NDEP Correspondence and Record of Review

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NEVADA DIVISION OF
ENVIRONMENTAL
PROTECTION

STATE OF NEVADA
Department of Conservation & Natural Resources
Brian Sandoval, Governor
Bradley Crowell, Director
Greg Lovato, Administrator

September 26, 2017

Mr. Mark Kautsky
Site Manager
U. S. Department of Energy
Office of Legacy Management
2597 Legacy Way
Grand Junction, CO 81503

RE: Submittal of Draft Post-Closure Inspection and Monitoring Report for Surface Corrective Action Unit 417 at the Central Nevada Test Area, Nevada Site
Federal Facility Agreement and Consent Order (FFACO)

Dear Mr. Kautsky,

The Nevada Division of Environmental Protection, Bureau of Federal Facilities (NDEP) staff has received and reviewed the above-referenced report on the post-closure inspection and monitoring activities conducted at the Central Nevada Test Area during calendar years 2015 and 2016. The report was received in this office on August 23, 2017. While this annual report was prepared in accordance with the FFACO and the Closure Report for Corrective Action Unit 417, pursuant to Subpart XXV.1 of the FFACO, the NDEP has the following comment:

1. Section 3.1 and the cover sheet for Appendix B both state that the inspection checklists are included in Appendix B. However, they are missing and should be included in the final report.

The NDEP concurs with the recommendations stated in Section 4.3 of the report. Please address any questions regarding this matter to Chris Andres at (702) 486-2850 ext. 232 or Mark McLane at ext. 226.

Sincerely,

Mark McLane FOR

Christine D. Andres
Chief
Bureau of Federal Facilities

ec: EM Records, Las Vegas, NV
R. Findley, Navarro, Grand Junction, CO
W. R. Wilborn, EM Nevada, Las Vegas, NV
R. F. Boehlecke, EM Nevada, Las Vegas, NV
NSTec Correspondence Management, Las Vegas, NV
Navarro Central Files
Mark McLane, NDEP

cc: EM Records, Las Vegas, NV
FFACO Group, EM Nevada, Las Vegas, NV
Jeffrey Fraher, DTRA/CXTS, Kirtland AFB, NM
J. B. Chapman, DRI, Las Vegas, NV
K. Karp, Navarro, Grand Junction, CO

Record of Review

Due Date	Review No.	Project	Type of Review
	1	1-104-1-04-613	Draft Report Technical Review - NDEP

Document Title and\or Number and Revision
Postclosure Inspection and Monitoring Report for Surface Corrective Action Unit 417 at the Central Nevada Test Area, Nevada, Site
LMS/CNT/S16102

Author
Mark Kautsky

Author's Organization	Author's Phone
Department of Energy Office of Legacy Management	(970) 248-6018

Reviewer
Mark McLane

Reviewer's Organization	Reviewer's Phone
Nevada Division of Environmental Protection	(702) 486-2850

Reviewers' Recommendation

- ☐ Release Without Comment
- ☐ Consider Comments
- ☒ Resolve Comments and Reroute for Review

Refer to the NDEP letter dated September 26, 2017

Signature of Reviewer and Date

- ☒ Comments Have Been Addressed

Mark Kautsky
2017.12.06 16:01:33 -07'00'

Signature of Author and Date

- ☒ Comment Resolution Satisfactory
- ☐ Comment Resolution Unsatisfactory

Mark McLane 12/7/17

Signature of Reviewer and Date

Item No.	Reviewer's Comments and Recommendation	Reqd. (Y/N)	Item No.	Author's Response (if required)
1	Section 3.1 and the cover sheet for Appendix B both state that the inspection checklists are included in Appendix B. However, they are missing and should be included in the final report.	Y	1	The inspection checklists were added to Appendix B as requested.

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