Nevada
Environmental
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Project

DOE/NV--1391

National Nuclear Security Administration

Post-Closure Inspection Report for the Tonopah Test Range, Nevada

For Calendar Year 2009

Controlled Copy No.:_____

Revision: 0

May 2010

Environmental Restoration
Project

U.S. Department of Energy
National Nuclear Security Administration
Nevada Site Office

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DOE/NV--1391

POST-CLOSURE INSPECTION REPORT FOR THE TONOPAH TEST RANGE, NEVADA

FOR CALENDAR YEAR 2009

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

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POST-CLOSURE INSPECTION REPORT FOR THE TONOPAH TEST RANGE, NEVADA

FOR CALENDAR YEAR 2009

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Attachment D. Field Notes
Attachment E. Photographs
Attachment F. Post-Closure Vegetation Monitoring Report

ACRONYMS AND ABBREVIATIONS

CADD	Corrective Action Decision Document
CAS	Corrective Action Site
CAU	Corrective Action Unit
CR	Closure Report
DOE/NV	U.S. Department of Energy, Nevada Operations Office
NDEP	Nevada Division of Environmental Protection
NNSA/NSO	U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office
TTR	Tonopah Test Range

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EXECUTIVE SUMMARY

This report provides the results of the annual post-closure inspections conducted at the closed Corrective Action Unit (CAU) sites located on the Tonopah Test Range (TTR), Nevada. This report covers calendar year 2009 and includes inspection and repair activities completed at the following seven CAUs:

- CAU 400: Bomblet Pit and Five Points Landfill (TTR)
- CAU 407: Roller Coaster RadSafe Area (TTR)
- CAU 424: Area 3 Landfill Complexes (TTR)
- CAU 426: Cactus Spring Waste Trenches (TTR)
- CAU 453: Area 9 UXO Landfill (TTR)
- CAU 484: Surface Debris, Waste Sites, and Burn Area (TTR)
- CAU 487: Thunderwell Site (TTR)

The annual post-closure inspections were conducted May 5–6, 2009. All inspections were conducted according to the post-closure plans in the approved Closure Reports. The post-closure inspection plan for each CAU is included in Attachment B, with the exception of CAU 400. CAU 400 does not require post-closure inspections, but inspections of the vegetation and fencing are conducted as a best management practice. The inspection checklists for each site inspection are included in Attachment C, the field notes are included in Attachment D, and the site photographs are included in Attachment E. Vegetation monitoring of CAU 400, CAU 404, CAU 407, and CAU 426 was performed in June 2009, and the vegetation monitoring report is included in Attachment F.

Maintenance was performed at CAU 453. Animal burrows observed during the annual inspection were backfilled, and a depression was restored to grade on June 25, 2009. Post-closure site inspections should continue as scheduled.

Vegetation survey inspections have been conducted annually at CAUs 400, 404, 407, and 426. Discontinuation of vegetation surveys is recommended at the CAU 400 Bomblet Pit and CAU 426, which have been successfully revegetated. Discontinuation of vegetation surveys is also recommended at CAU 404, which has been changed to an administrative closure with no inspections required. Vegetation monitoring at the CAU 400 Five Points Landfill and CAU 407 should continue.

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1.0 INTRODUCTION

1.1 SCOPE AND OBJECTIVES

This report includes inspection results, maintenance and repair activities, and recommendations for calendar year 2009 for seven Corrective Action Units (CAUs) on the Tonopah Test Range (TTR), Nevada. The CAUs are shown in Figure 1 of Attachment A. The CAUs and Corrective Action Sites (CASs) in this report include the following:

- **CAU 400: Bomblet Pit and Five Points Landfill (TTR)**
  CAS TA-19-001-05PT: Ordnance Disposal Pit
  CAS TA-55-001-TAB2: Ordnance Disposal Pit
- **CAU 407: Roller Coaster RadSafe Area (TTR)**
  CAS TA-23-001-TARC: Roller Coaster RadSafe Area
- **CAU 424: Area 3 Landfill Complexes (TTR)**
  CAS 03-08-001-A301: Landfill Cell A3-1
  CAS 03-08-002-A302: Landfill Cell A3-2
  CAS 03-08-002-A303: Landfill Cell A3-3
  CAS 03-08-002-A304: Landfill Cell A3-4
  CAS 03-08-002-A305: Landfill Cell A3-5
  CAS 03-08-002-A306: Landfill Cell A3-6
  CAS 03-08-002-A308: Landfill Cell A3-8
- **CAU 426: Cactus Spring Waste Trenches (TTR)**
  CAS RG-08-001-RGCS: Waste Trenches
- **CAU 453: Area 9 UXO Landfill (TTR)**
  CAS 09-55-001-0952: Area 9 Landfill
- **CAU 484: Surface Debris, Waste Sites, and Burn Area (TTR)**
  CAS RG-52-007-TAML: Davis Gun Penetrator Test
- **CAU 487: Thunderwell Site (TTR)**
  CAS RG-26-001-RGRV: Thunderwell Site

CAU-specific inspection requirements are included in Attachment B. Inspections consist of the following activities to evaluate and document the condition of the units:

- Inspections and photographs to document current conditions and note variances from previous inspections
- Inspection of fencing, signs, monuments, and/or markers to determine if repairs and/or maintenance are needed
- Inspection of soil covers for indications of subsidence, erosion, or unauthorized use
- Vegetation survey to quantify the condition of vegetative covers
- Subsidence survey to indicate any cover subsidence
- Preparation and submittal of an annual report

This Post-Closure Inspection Report includes the following sections and attachments:

- Section 1.0: Introduction

- Section 2.0: Post-Closure Inspections
- Section 3.0: Summary
- Section 4.0: References
- Attachment A: Figures
- Attachment B: Post-Closure Inspection Plans
- Attachment C: Post-Closure Inspection Checklists
- Attachment D: Field Notes
- Attachment E: Photographs
- Attachment F: Post-Closure Vegetation Monitoring Report
- Library Distribution List

2.0 POST-CLOSURE INSPECTIONS

Post-closure site inspections of TTR CAUs for the period January 2009 through December 2009 were conducted on May 5 and May 6, 2009. Copies of post-closure inspection plans as previously published in the applicable Closure Report (CR) for each CAU are included in Attachment B. Copies of the site inspection checklists are included in Attachment C, field notes are included in Attachment D, and site photographs are included in Attachment E.

2.1 CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL (TTR)

2.1.1 Introduction

There are no post-closure requirements for CAU 400, Bomblet Pit and Five Points Landfill (TTR); however, the sites were vegetated in 1997 under the *Tonopah Test Range Closure Sites Revegetation Plan* (U.S. Department of Energy, Nevada Operations Office [DOE/NV], 1997), and fencing was installed at the Bomblet Pit (CAS TA-55-001-TAB2, Ordnance Disposal Pit) and Five Points Landfill (CAS TA-19-001-05PT, Ordnance Disposal Pit). Fencing is required for a minimum of 5 years to allow plants to become established. Vegetation monitoring was conducted in June 2009, and the results are included in Attachment F.

2.1.2 CAU 400 Inspection Results

Bomblet Pit (CAS TA-55-001-TAB2, Ordnance Disposal Pit): The Bomblet Pit is shown in Figure 2 of Attachment A. The annual inspection was conducted on May 5, 2009. The fence, signs, cover, and vegetation were in good condition. Small animal burrows were noted that were recommended to be backfilled as a best management practice. No other issues or concerns were noted.

Five Points Landfill (CAS TA-19-001-05PT, Ordnance Disposal Pit): The Five Points Landfill is shown in Figure 3 of Attachment A. The annual inspection was conducted on May 5, 2009. Signs and fencing were in good condition, and the vegetation appeared to be healthy. Small animal burrows were noted that were recommended to be backfilled as a best management practice. No other issues or concerns were noted.

2.1.3 CAU 400 Maintenance and Repairs

Small animal burrows were backfilled as a best management practice on June 25, 2009.

2.1.4 CAU 400 Conclusions and Recommendations

The Bomblet Pit and Five Points Landfill were observed to be in good condition. Site inspections should continue as scheduled. Vegetation at the Five Points Landfill is viable and persistent and meets revegetation standards in the area that was not flooded; however, the area that was flooded is still recovering, and vegetation monitoring of this site should continue. Vegetation at the Bomblet Pit exceeded revegetation standards, and removal of fencing and discontinuation of vegetation monitoring is recommended.

2.2 CAU 407: ROLLER COASTER RADSAFE AREA (TTR)

2.2.1 Introduction

CAU 407, Roller Coaster RadSafe Area (TTR), consists of one CAS (CAS TA-23-001-TARC, Roller Coaster RadSafe Area). Post-closure requirements are described in the CR (DOE/NV, 2001a). Inspections are conducted according to the post-closure plan (Attachment B). The site is shown in Figure 4 of Attachment A. In addition to inspections, vegetation monitoring was conducted in June 2009, and the results are included in Attachment F.

2.2.2 CAU 407 Inspection Results

The annual inspection was conducted on May 5, 2009. Signs, fencing, and cover were in good condition, and maintenance and repairs were not recommended. Vegetation is becoming established on the cover. No issues or concerns were noted.

2.2.3 CAU 407 Maintenance and Repairs

Maintenance and repairs were not required.

2.2.4 CAU 407 Conclusions and Recommendations

The site was in good condition. The site inspections should continue as scheduled, and the health of the vegetation and integrity of the cover should continue to be monitored until the site has stabilized.

2.3 CAU 424: AREA 3 LANDFILL COMPLEXES (TTR)

2.3.1 Introduction

CAU 424, Area 3 Landfill Complexes (TTR), consists of eight CASs. Seven CASs (CAS 03-08-001-A301, Landfill Cell A3-1; CAS 03-08-002-A302, Landfill Cell A3-2; CAS 03-08-002-A303, Landfill Cell A3-3; CAS 03-08-002-A304, Landfill Cell A3-4; CAS 03-08-002-A305, Landfill Cell A3-5; CAS 03-08-002-A306, Landfill Cell A3-6; and CAS 03-08-002-A308, Landfill Cell A3-8) require post-closure inspections. Post-closure requirements are described in the CR (DOE/NV, 1999a). Inspections are conducted according to the post-closure plan (Attachment B). The landfill locations are shown in Figure 5 of Attachment A.

2.3.2 CAU 424 Inspection Results

The annual inspection was conducted on May 6, 2009.

Landfill Cell A3-1 (CAS 03-08-001-A301): All signs, survey markers, and monuments were in good condition. Vegetation is established throughout the site, and no cracking, erosion, or subsidence of the cover was noted. No issues or concerns were noted.

Landfill Cell A3-2 (CAS 03-08-002-A302): The concrete monuments and landfill cover were in good condition. All signs and brass survey markers were legible and intact. No signs of erosion, subsidence, or evidence of unauthorized use were noted. No issues or concerns were noted.

Landfill Cell A3-3 (CAS 03-08-002-A303): All monuments, brass survey markers, and warning signs were in good condition. No subsidence, cracking, or erosion was noted. No issues or concerns were noted.

Landfill Cell A3-4 (CAS 03-08-002-A304): The overall condition of the site was good, and vegetation was established throughout the site. All monuments, the brass survey marker, and warning signs were in good condition. No issues or concerns were noted.

Landfill Cell A3-5 (CAS 03-08-002-A305): All monuments and attached warning signs and brass survey markers were in good condition. No evidence of subsidence, cracking, or erosion was noted, and sparse vegetation was present. No issues or concerns were noted.

Landfill Cell A3-6 (CAS 03-08-002-A306): All monuments and attached warning signs and brass survey markers were in good condition. No evidence of subsidence, cracking, or erosion was noted. No issues or concerns were noted.

Landfill Cell A3-8 (CAS 03-08-002-A308): Brass markers were in good condition. No erosion, subsidence, or evidence of unauthorized use was noted. No issues or concerns were noted.

2.3.3 CAU 424 Maintenance and Repairs

Maintenance and repairs were not required.

2.3.4 CAU 424 Conclusions and Recommendations

All CASs were in good condition. The site inspections should continue as scheduled.

2.4 CAU 426: CACTUS SPRING WASTE TRENCHES (TTR)

2.4.1 Introduction

CAU 426, Cactus Spring Waste Trenches (TTR), consists of one CAS (CAS RG-08-001-RGCS, Waste Trenches). Post-closure requirements are described in the CR (DOE/NV, 1998). Inspections are conducted according to the post-closure plan (Attachment B). The site is shown in Figure 6 of Attachment A. In addition to site inspections, vegetation monitoring was conducted in June 2009, and the results are included in Attachment F.

2.4.2 CAU 426 Inspection Results

The annual inspection was conducted on May 5, 2009. The signs and fencing were in good condition. No erosion, subsidence, or evidence of unauthorized use was noted. Vegetation was well established and healthy throughout the site. No issues or concerns were noted.

2.4.3 CAU 426 Maintenance and Repairs

Maintenance and repairs were not required.

2.4.4 CAU 426 Conclusions and Recommendations

The site was observed to be in good condition. Site inspections should continue as scheduled. Revegetation standards were achieved again in 2009, and discontinuation of vegetation monitoring is recommended.

2.5 CAU 453: AREA 9 UXO LANDFILL (TTR)

2.5.1 Introduction

CAU 453, Area 9 UXO Landfill (TTR), consists of one CAS (CAS 09-55-001-0952, Area 9 Landfill). Post-closure requirements are described in the CR (DOE/NV, 1999b). Inspections are conducted according to the post-closure plan (Attachment B). The site is shown in Figure 7 of Attachment A.

2.5.2 CAU 453 Inspection Results

The annual inspection was conducted on May 6, 2009. The fence, signs, and monuments were in excellent condition. There was evidence of animal burrowing and a large depression that required follow-up action.

2.5.3 CAU 453 Maintenance and Repairs

Animal burrows observed during the annual inspection were backfilled, and the depression was restored to grade on June 25, 2009.

2.5.4 CAU 453 Conclusions and Recommendations

Inspections should continue as scheduled.

2.6 CAU 484: SURFACE DEBRIS, WASTE SITES, AND BURN AREA (TTR)

2.6.1 Introduction

CAU 484, Surface Debris, Waste Sites, and Burn Area (TTR), consists of six CASs. One CAS (CAS RG-52-007-TAML, Davis Gun Penetrator Test) requires post-closure inspections. Post-closure requirements are described in the CR (U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office [NNSA/NSO], 2007). Inspections are conducted according to the post-closure plan (Attachment B). The site is shown in Figure 8 of Attachment A.

2.6.2 CAU 484 Inspection Results

The annual inspection was conducted on May 6, 2009. Signs and covers were in good condition. No issues or concerns were noted.

2.6.3 CAU 484 Maintenance and Repairs

Maintenance and repairs were not required.

2.6.4 CAU 484 Conclusions and Recommendations

The site was in good condition. Site inspections should continue as scheduled.

2.7 CAU 487: THUNDERWELL SITE (TTR)

2.7.1 Introduction

CAU 487, Thunderwell Site (TTR), consists of one CAS (CAS RG-26-001-RGRV, Thunderwell Site). Post-closure requirements are described in the Corrective Action Decision Document (CADD)/CR (DOE/NV, 2001b) and Record of Technical Change (NNSA/NSO, 2004). Inspections are conducted according to the post-closure plan (Attachment B). The site is shown in Figure 9 of Attachment A.

2.7.2 CAU 487 Inspection Results

The annual inspection was conducted on May 6, 2009. All warning signs were in place, intact, and legible, and the monuments were in good condition. No issues or concerns were noted.

2.7.3 CAU 487 Maintenance and Repairs

Maintenance and repairs were not required.

2.7.4 CAU 487 Conclusions and Recommendations

The site was in good condition. Site inspections should continue as scheduled.

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3.0 SUMMARY

3.1 CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL (TTR)

The sites were in good condition. No maintenance or repairs were required. Site inspections should continue as scheduled. An ecological specialist should continue to evaluate vegetation conditions at the Five Points Landfill, especially in the area that experienced flooding. The Bomblet Pit site has been successfully revegetated; therefore, removal of fencing and discontinuation of vegetation monitoring is recommended.

3.2 CAU 407: ROLLER COASTER RADSAFE AREA (TTR)

The site was in good condition. No maintenance or repairs were required. Site inspections should continue as scheduled, and an ecological specialist should continue to evaluate vegetation conditions.

3.3 CAU 424: AREA 3 LANDFILL COMPLEXES (TTR)

The sites were in good condition. No maintenance or repairs were required. Site inspections should continue as scheduled.

3.4 CAU 426: CACTUS SPRING WASTE TRENCHES (TTR)

The site was in good condition. No maintenance or repairs were required. Site inspections should continue as scheduled. Discontinuation of vegetation monitoring is recommended.

3.5 CAU 453: AREA 9 UXO LANDFILL (TTR)

Animal burrows observed during the annual inspection were backfilled, and the depression was restored to grade on June 25, 2009. Site inspections should continue as scheduled.

3.6 CAU 484: SURFACE DEBRIS, WASTE SITES, AND BURN AREA (TTR)

The sites were in good condition. No maintenance or repairs were required. Site inspections should continue as scheduled.

3.7 CAU 487: THUNDERWELL SITE (TTR)

The site was in good condition. No maintenance or repairs were required. Site inspections should continue as scheduled.

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4.0 REFERENCES

DOE/NV, see U.S. Department of Energy, Nevada Operations Office.

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

U.S. Department of Energy, National Nuclear Security Administration Nevada Site Office. 2004. *Record of Technical Change No. 2 for the Final Corrective Action Decision Document/Closure Report for Corrective Action Unit 487: Thunderwell Site, Tonopah Test Range, Nevada,* Revision 0, November 2001. Las Vegas, NV.

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U.S. Department of Energy, Nevada Operations Office. 1997. *Tonopah Test Range Closure Sites Revegetation Plan*, DOE/NV/11718-115 UC-702. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1998. *Closure Report for Corrective Action Unit 426: Cactus Spring Waste Trenches, Tonopah Test Range, Nevada,* DOE/NV/11718-226 UC-702. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1999a. *Closure Report for Corrective Action Unit 424: Area 3 Landfill Complexes, Tonopah Test Range, Nevada*, DOE/NV/11718--283. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 1999b. *Closure Report for Corrective Action Unit 453: Area 9 UXO Landfill, Tonopah Test Range, Nevada*, DOE/NV/11718--284. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2001a. *Closure Report for Corrective Action Unit 407: Roller Coaster RadSafe Area, Tonopah Test Range, Nevada*, DOE/NV--694-REV-1. Las Vegas, NV.

U.S. Department of Energy, Nevada Operations Office. 2001b. *Corrective Action Decision Document/Closure Report for Corrective Action Unit 487: Thunderwell Site, Tonopah Test Range, Nevada*, DOE/NV--761. Las Vegas, NV.

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ATTACHMENT A
FIGURES

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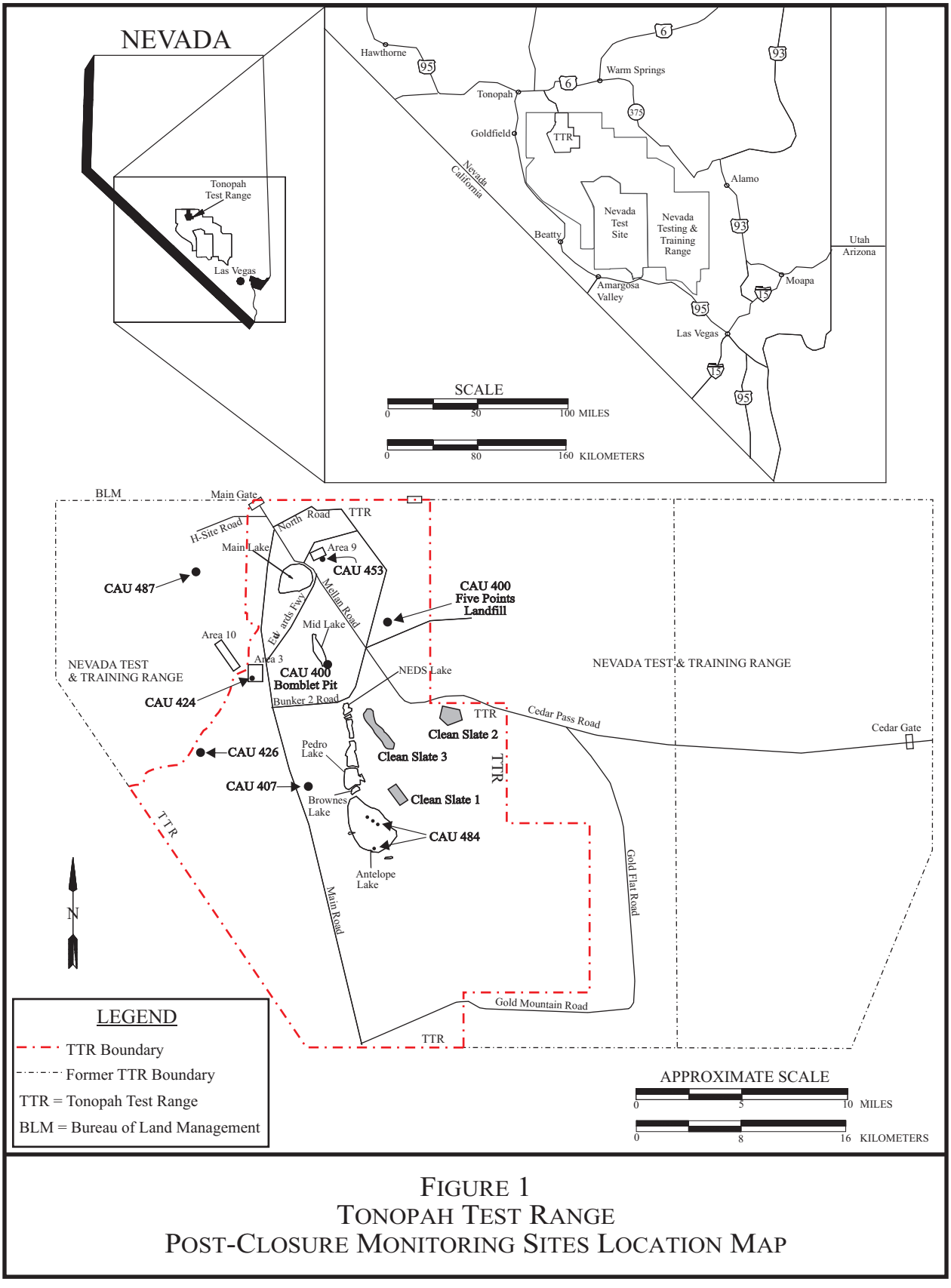

FIGURE 1
TONOPAH TEST RANGE
POST-CLOSURE MONITORING SITES LOCATION MAP

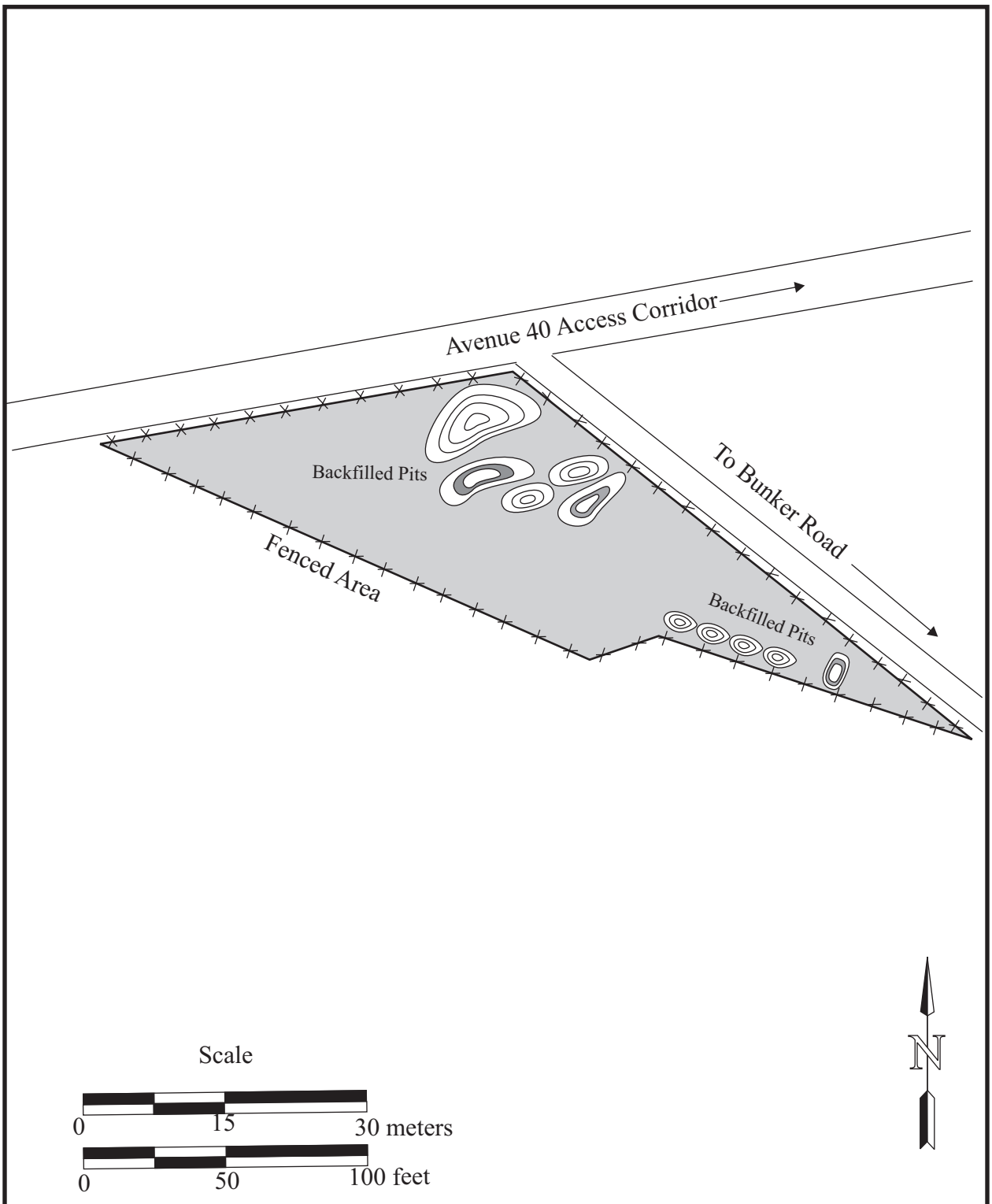

FIGURE 2
CAU 400 BOMBLET PIT LOCATION MAP

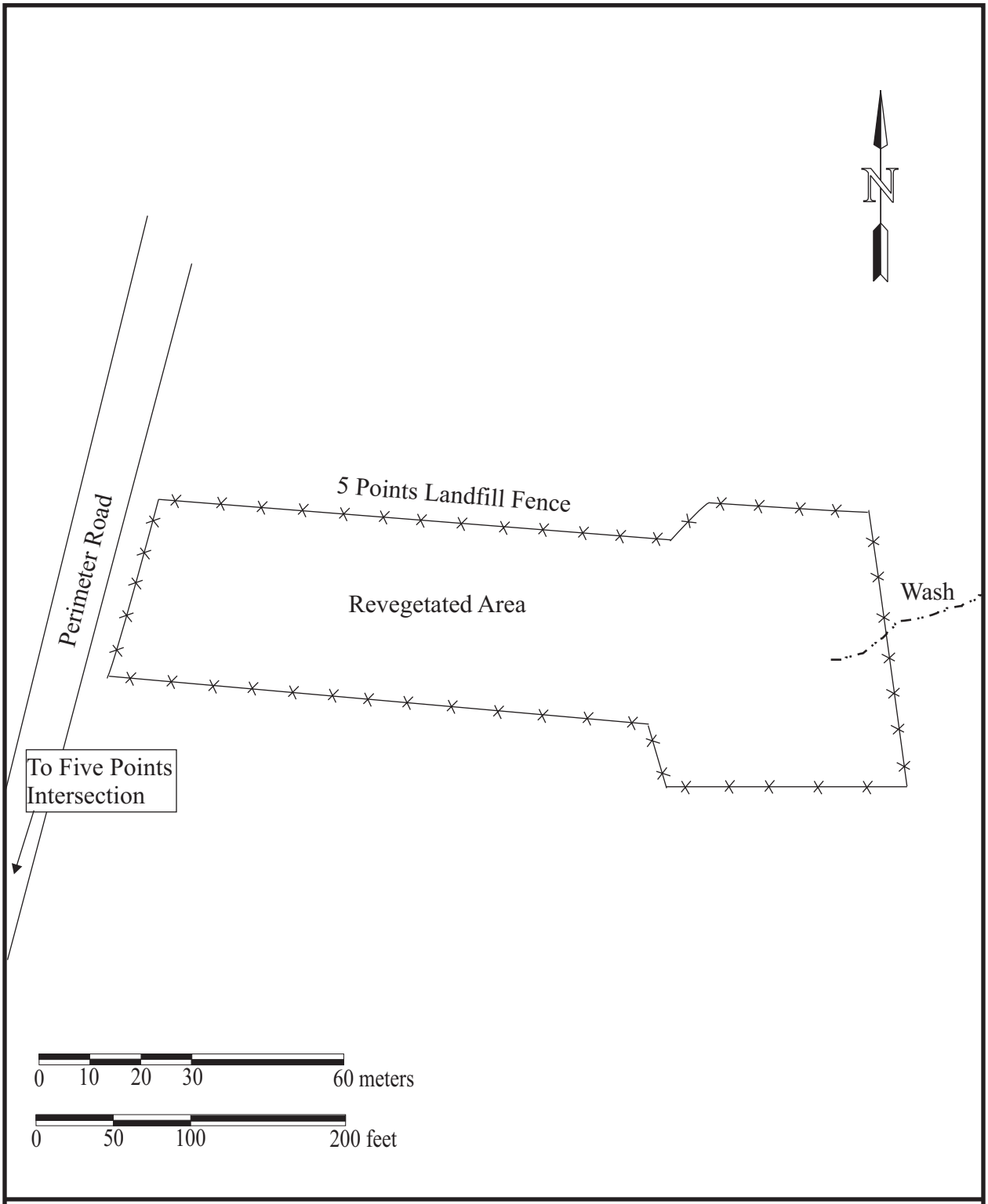

FIGURE 3
CAU 400 FIVE POINTS LANDFILL LOCATION MAP

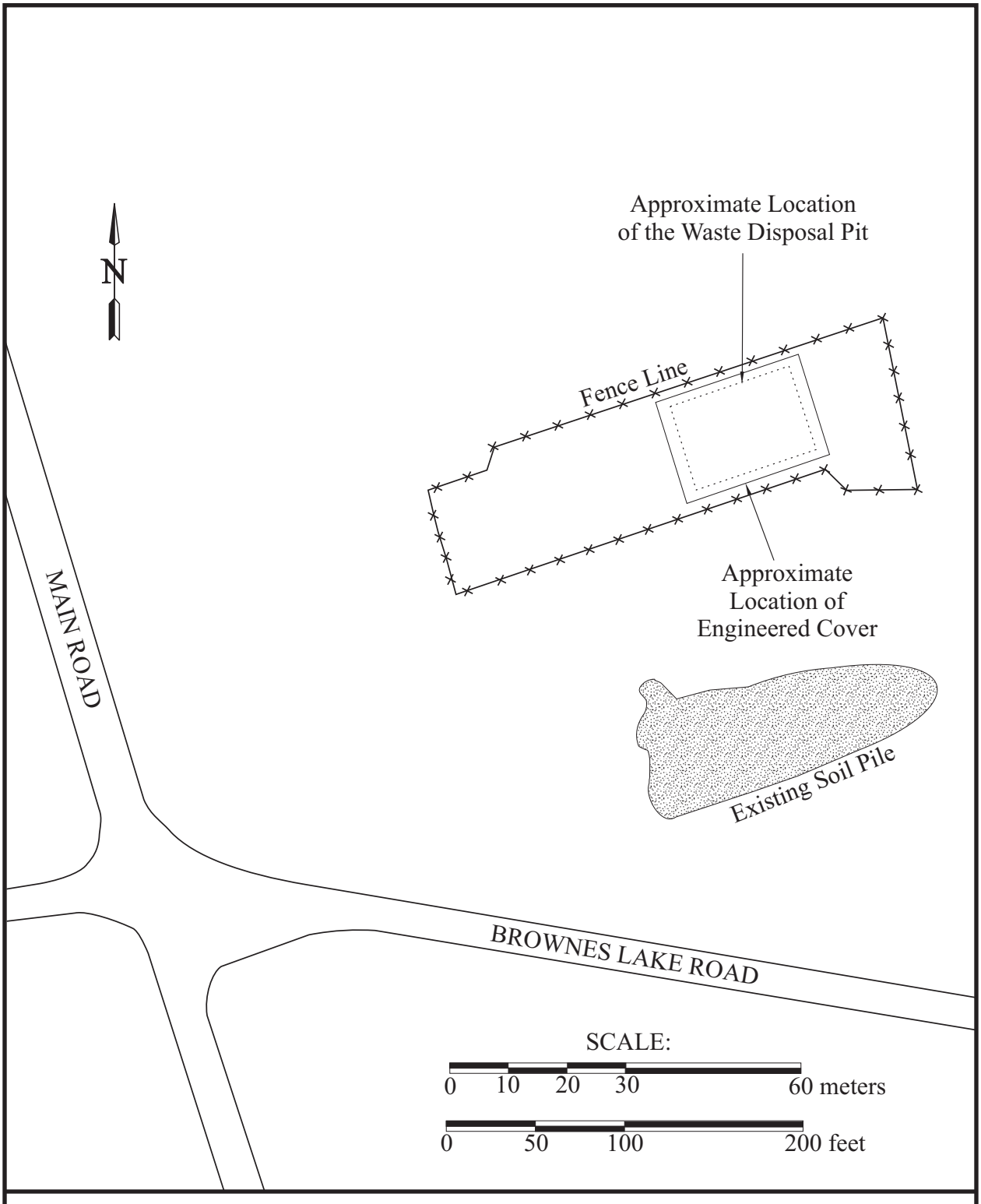

FIGURE 4
CAU 407 ROLLER COASTER RADSAFE AREA LOCATION MAP

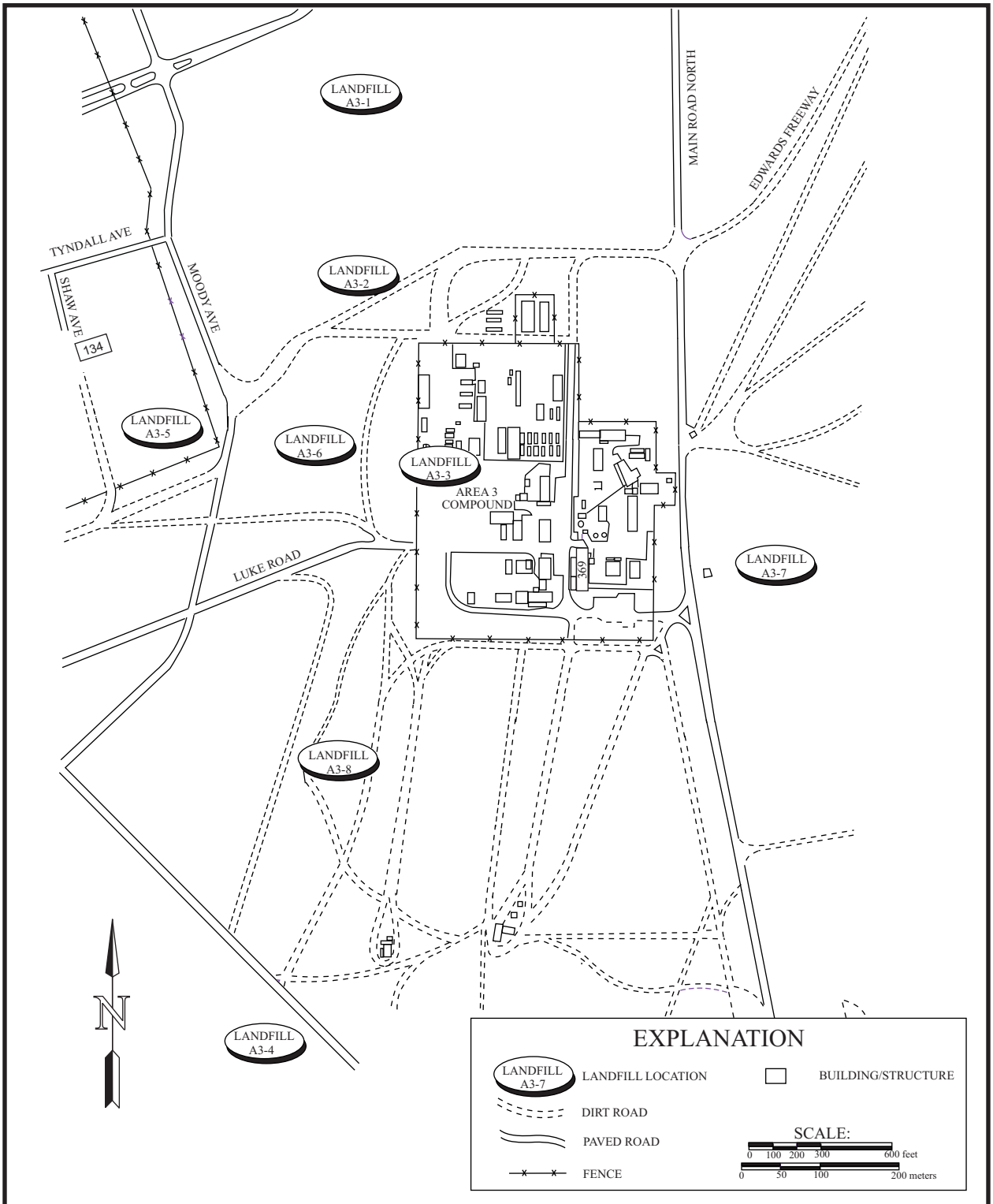

FIGURE 5
CAU 424 AREA 3 LANDFILL COMPLEXES LOCATION MAP

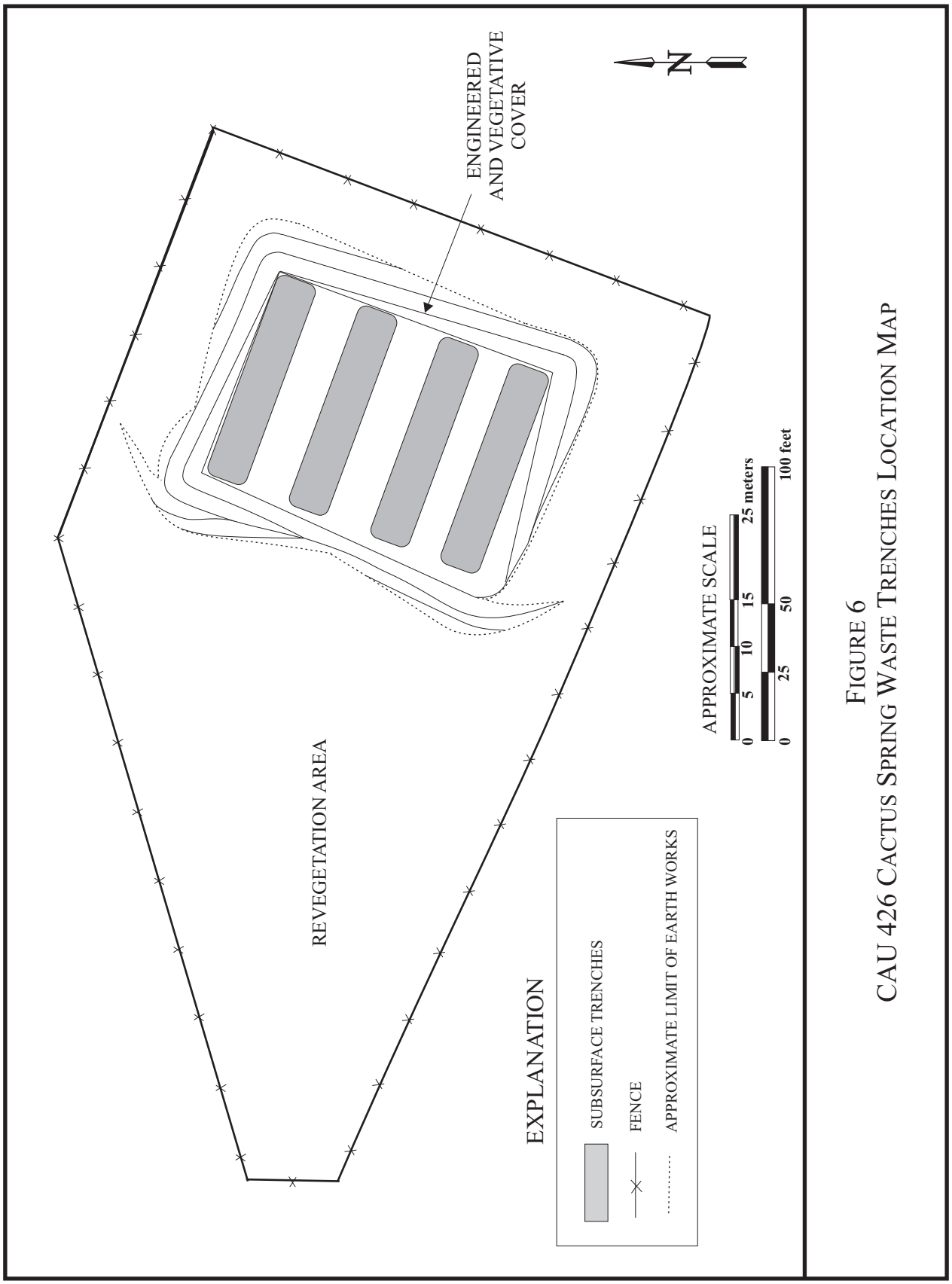

FIGURE 6
CAU 426 CACTUS SPRING WASTE TRENCHES LOCATION MAP

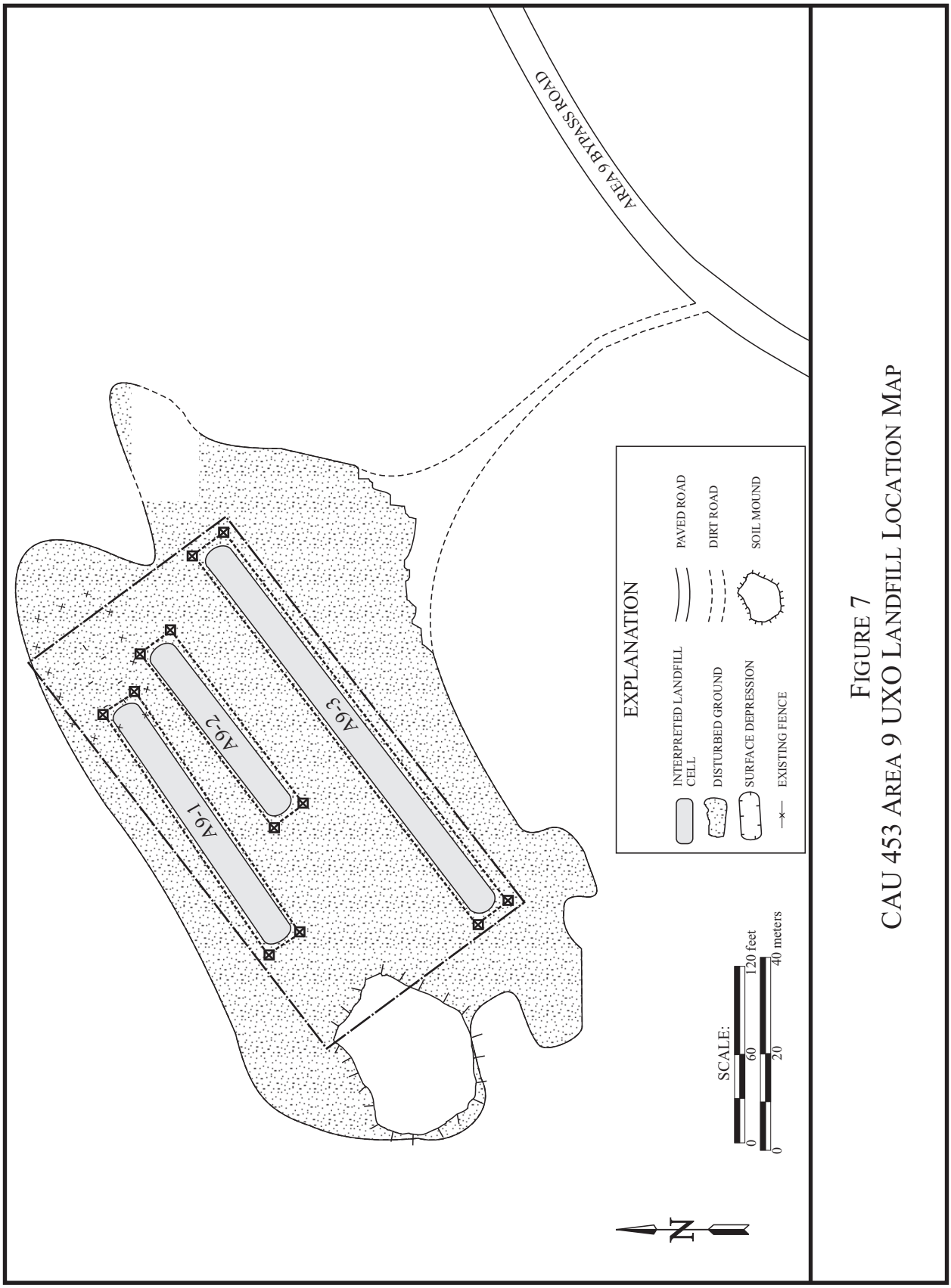

FIGURE 7
CAU 453 AREA 9 UXO LANDFILL LOCATION MAP

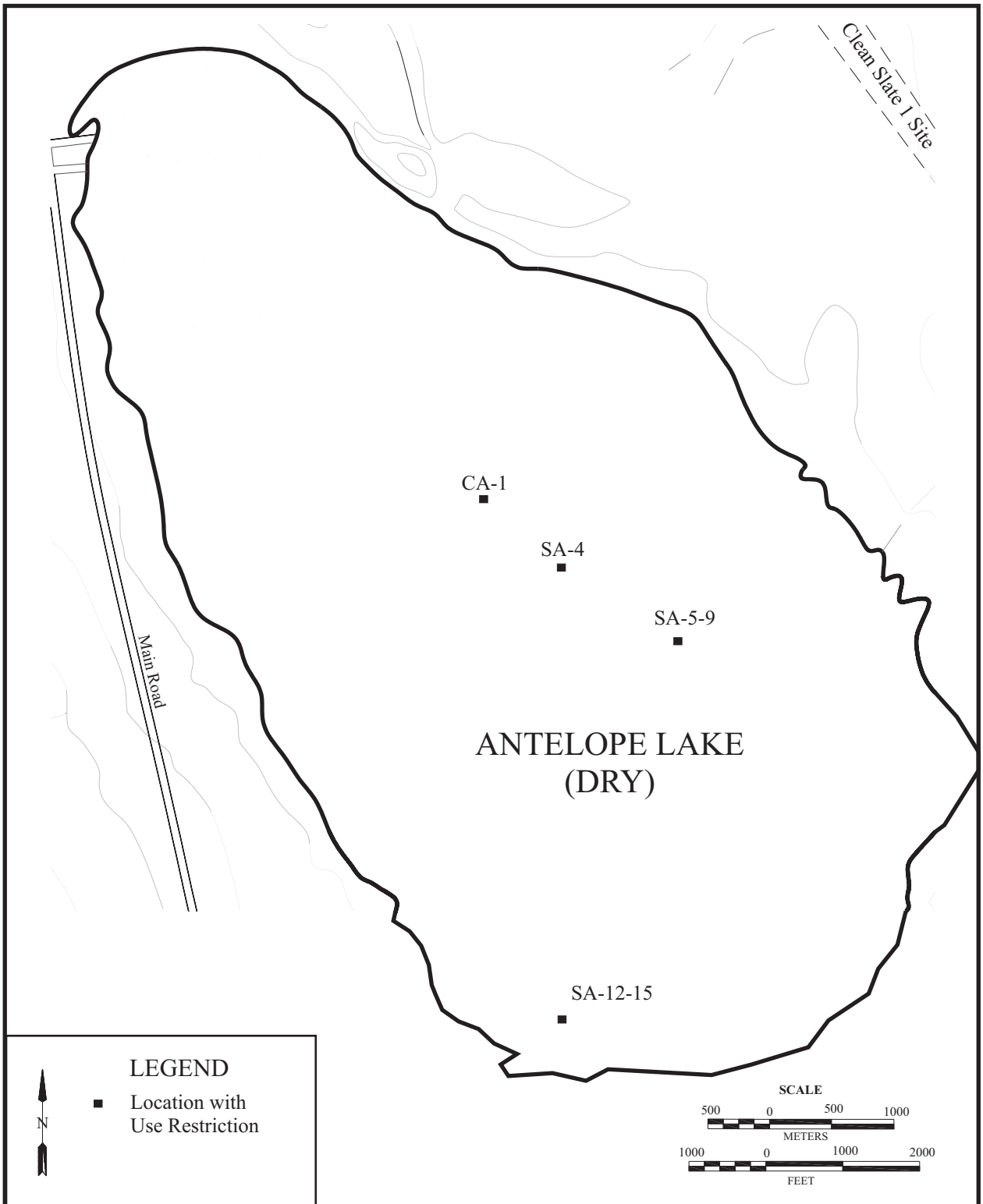

FIGURE 8
CAU 484 SURFACE DEBRIS, WASTE SITES, AND BURN AREA (TTR)
LOCATION MAP

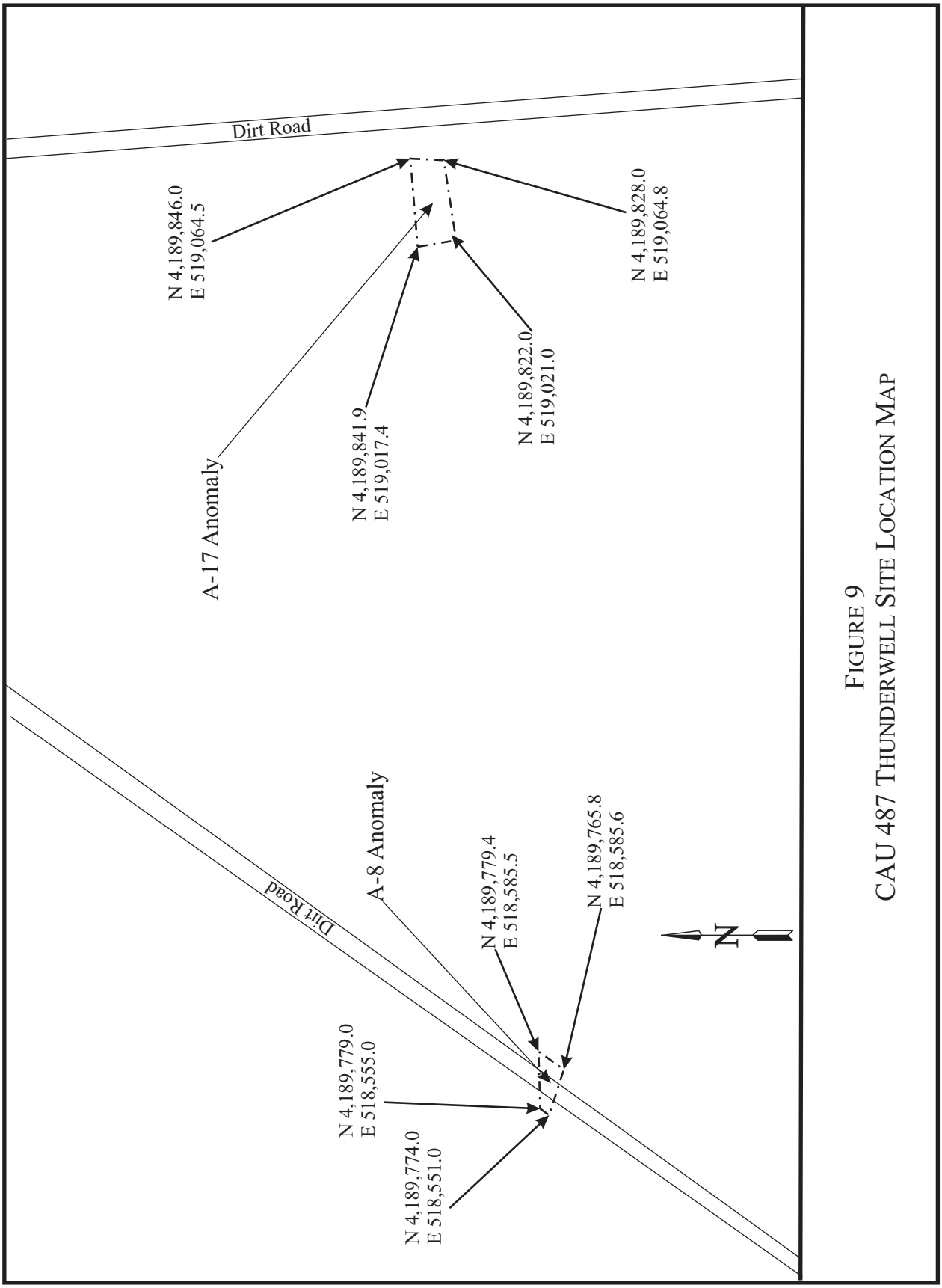

FIGURE 9
CAU 487 THUNDERWELL SITE LOCATION MAP

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ATTACHMENT B
POST-CLOSURE INSPECTION PLANS

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CAU 407: ROLLER COASTER RADSAFE POST-CLOSURE INSPECTION PLAN

The following text appeared in the published and approved CAU 407 CR, *Closure Report for Corrective Action Unit 407: Roller Coaster RADSAFE Area, Tonopah Test Range, Nevada*, Revision 1, December 2001, DOE/NV--694-REV-1. Las Vegas, Nevada

INSPECTIONS

Inspections consist of visually inspecting the cover for signs of erosion, animal burrows, cracks, water ponding, vegetation, and inspecting the fencing and postings. Inspections will be performed twice during the first six months after construction of the cover has been completed. After completion of the quarterly inspections, the cover systems will be inspected and monitored semiannually (twice per year) for the next two years. The frequency after the second year will be determined by NDEP, based on the results of the previous inspections. Any identified maintenance and repair requirements will be remedied within 90 working days of discovery and documented in writing at the time of repair.

Results of all inspections in a given year will be addressed in a single annual report. The annual report will include the following information:

- Discussion of observations.
- Inspection checklist and maintenance record.
- Conclusions and recommendations.

A copy of each annual report will be submitted to the NDEP. A copy of the inspection checklist is provided in Attachment B.

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CAU 424: AREA 3 LANDFILL COMPLEXES POST-CLOSURE INSPECTION PLAN

The following text appeared in the published and approved CAU 424 CR, *Closure Report for Corrective Action Unit 424: Area 3 Landfill Complexes, Tonopah Test Range, Nevada,* Revision 0, July 1999, DOE/NV/11718--283. Las Vegas, Nevada

Post-closure inspection of the Area 3 Landfill sites is intended to determine:

- If maintenance repairs to the landfill soil covers are needed.
- If maintenance and repairs to the landfill markers and warning signs are needed.
- If modifications to the Use Restriction administrative controls are needed.
- If termination of post-closure inspection can be proposed in the future.

POST-CLOSURE INSPECTION

The inspection will consist of biannual (twice per year) visual inspections of:

- The soil cover for indications of subsidence, erosion, unauthorized use, etc.
- The landfill markers and warning signs, to verify they are in-place, intact, and readable.
- The inspections will be documented on a checklist and with photography, if needed.

If damage to the soil covers, landfill markers, or warning signs is noted, then maintenance will be performed and may include placement and compaction of additional backfill, and repair or replacement of markers and signs. Additional nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remedied within 90 days of discovery and documented in writing at the time of repair.

ANNUAL REPORTING

An annual report will be prepared that will provide the observations and describe modifications and/or repairs made to the cover and cover area. The annual post-closure inspection report will be prepared and submitted to NDEP following the second inspection of each year that post-closure inspection is conducted. The annual reports will include the following information:

- Discussion of observations.
- Inspection checklist and maintenance record.
- Conclusions and recommendations.

DURATION

The biannual inspections will be performed for five years after the completion of closure activities, and will be documented on inspection forms.

Completion of post-closure inspection of CAU 424 may be proposed by DOE/NV to the NDEP after two consecutive years of visual inspections have not indicated recurrence of subsidence. Completion of post-closure monitoring may be proposed by DOE/NV to the NDEP within five years after the completion of closure activities.

CAU 426: CACTUS SPRING WASTE TRENCHES POST-CLOSURE INSPECTION PLAN

The following text appeared in the published and approved CAU 426 CR, *Closure Report for Corrective Action Unit 426: Cactus Spring Waste Trenches, Tonopah Test Range, Nevada*, Revision 0, August 1998, DOE/NV/11718-226 UC-702. Las Vegas, Nevada

Post-Closure of the covers is intended to determine:

- If maintenance repairs to the perimeter fence are required.
- If remedial action is necessary to establish a vegetative cover.
- If maintenance and repairs to the engineered cover is required.
- When a cessation to post-closure monitoring can be proposed.

POST-CLOSURE MONITORING

The monitoring will consist of biannual (twice per year) visual inspections of:

- The cover for condition (subsidence, significant erosion, unauthorized excavation, etc.) and plant development.
- The fence and signs to determine if repairs are required.

Additional, nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remediated within 90 days of discovery and documented in writing at the time of repair. Additional revegetation work would be conducted during the next revegetation window (October to February).

Intrusion into or sampling of the trench contents is not proposed during the post-closure monitoring period.

Monitoring of the vegetative cover will be conducted during the first, third, and fifth year after revegetation. Monitoring during the first year will determine if germination of seeded plant species has occurred. By the third year, plant establishment will be evaluated. By the fifth year, the objective of determining if burrowing animals have moved onto the site and to what depth they might be expected to penetrate the cover. The erosion condition of the soil will be evaluated using a qualitative erosion condition classification developed by the Bureau of Land Management. Information gathered will be compared to natural conditions and will be used in assessing whether or not remedial action is necessary so that a viable vegetative cover is established.

ANNUAL REPORTING

An annual report will be prepared that will provide the observations and describe modifications and/or repairs made to the cover and cover area. The annual report will be prepared following

the second inspection of each year that post-closure monitoring is conducted. The annual reports will include the following information:

- Discussion of observations.
- Inspection checklist and maintenance record.
- Conclusions and recommendations.

A copy of each annual report will be submitted to the NDEP.

DURATION

The biannual inspections will be performed for five years after the planting of the vegetative covers, and will be documented on inspection forms.

Completion of post-closure monitoring of CAU 426 may be proposed after two consecutive years of visual inspections have not indicated the need to revegetate or provide maintenance to the vegetative covers. Completion of post-closure monitoring may be proposed within five years after the original revegetation of the site and include the removal of the fence since the plants will have attained a maturity to not be significantly affected by the grazing of wild horses.

CAU 453: AREA 9 UXO LANDFILL POST-CLOSURE INSPECTION PLAN

The following text appeared in the published and approved CAU 453 CR, *Closure Report for Corrective Action Unit 453: Area 9 UXO-Landfill, Tonopah Test Range, Nevada*, Revision 0, July 1999, DOE/NV/11718--284. Las Vegas, Nevada

Post-Closure of the covers is intended to determine:

- If maintenance and repairs to the cell soil covers are needed.
- If maintenance and repairs to the perimeter fence, warning signs, and monuments are needed.
- If modifications to the administrative Use Restrictions are needed.
- If termination of post-closure inspection can be proposed in the future.

POST-CLOSURE INSPECTION

The inspection will consist of biannual (once per year) visual inspections of:

- The cell soil cover, for indications of subsidence, erosion, unauthorized use, etc.
- The perimeter fence, warning signs, and monuments, for signs of wear disturbance, etc.

The inspections will be documented on a checklist and with photography, if needed. Repairs to the cell soil covers (placement and compaction of additional fill), perimeter fence, warning signs, and monuments (repair, reposition, and/or replacement) may be required. Additional, nonscheduled inspections may be required after severe weather events such as heavy rainfall, flash flooding, and high winds. Any identified maintenance and repair requirements will be remediated within 90 days of discovery and documented in writing at the time of repair.

ANNUAL REPORTING

An annual post-closure inspection report will be prepared that will provide the observations and describe modifications and/or repairs made to the cover and cover area. The annual report will be prepared and submitted to NDEP following the second inspection of each year that post-closure inspection is conducted. The annual reports will include the following information:

- Discussion of observations.
- Inspection checklist and maintenance record.
- Conclusions and recommendations.

DURATION

The biannual inspections will be performed for five years after the completion of closure activities, and will be documented on inspection forms.

Completion of post-closure inspection of CAU 453 may be proposed by DOE/NV to NDEP within five years after the completion of closure activities. Completion of post-closure inspection may also be proposed by DOE/NV to NDEP if two consecutive years of visual inspections do not indicate the recurrence of subsidence depressions.

CAU 484: SURFACE DEBRIS, WASTE SITES, AND BURN AREA POST-CLOSURE INSPECTION PLAN

The following text appeared in the published and approved CAU 484 CR, *Closure Report for Corrective Action Unit 484: Surface Debris, Waste Sites, and Burn Area, Tonopah Test Range, Nevada*, Revision 0, September 2007, DOE/NV--1226. Las Vegas, Nevada

Results of all inspections in a given year will be documented in the annual combined post-closure report for the TTR. This report will include a discussion of inspections and observations, and copies of the site inspection checklists. This report will be submitted to the NDEP annually or as otherwise agreed to with the NDEP.

INSPECTIONS

Inspections will be performed semi-annually for the first year post-closure, after which they will be performed annually. Inspections will consist of visual observations to verify that the underground radioactive material area and UR warning signs are in place and readable and that the UR is maintained. The interior of each of the UR areas will also be inspected to confirm that there have been no disturbances. Any repairs or maintenance will be documented in writing at the time of the repair. A Post-Closure Inspection Checklist will be completed to document the results of the inspection and to describe repairs that were performed since the previous inspection.

MONITORING

No monitoring other than visual inspections will be required for CAU 484.

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CAU 487: THUNDERWELL SITE, POST-CLOSURE INSPECTION PLAN

The following text appeared in the published and approved Record of Technical Change Number 2 for the final *Corrective Action Decision Document/Closure Report for Corrective Action Unit 487: Thunderwell Site, Tonopah Test Range, Nevada,* Revision 0, November 2001, DOE/NV--761. Las Vegas, Nevada

The post-closure inspection of CAS RG-26-001-RGRV will consist of semi-annual (twice per year) visual inspections of the monument markers and postings to verify that they are in-place, intact, and readable. Visual inspections of the monuments and signage, and indications of ground disturbance within the Use Restriction area will be conducted. Observations and any modifications and/or repairs to the monuments or postings will be included in the annual *Post-Closure Inspection Report for the Tonopah Test Range, Nevada.*

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ATTACHMENT C
POST-CLOSURE INSPECTION CHECKLISTS

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Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL - **CAS TA-55-001-TAB2, ORDNANCE DISPOSAL PIT**

Inspection Date and Time: 5/5/09 1:10 PM	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/21/08	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: NSTec Environmental Restoration, Nevada Test Site, Mercury, Nevada	
Chief Inspector: Glenn Richardson	Title: Task Manager
Assistant Inspector: Mike Floyd	Title: Field Supervisor

A. GENERAL INSTRUCTIONS

- Complete all checklist items.
- If a SHADED BOX is checked, provide detailed information regarding what was found and/or appropriate references to other documents that have the information (e.g., Maintenance Order Form for CAS 05-16-01 dated 2/15/2008).
- All documentation must be legible and clear.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Have the previous inspection reports been reviewed?	✓		
2. Were anomalies or trends detected on previous inspections?		✓	
3. Were maintenance or repairs performed since last inspection?		✓	

C. SITE INSPECTION PREPARATION

Advance coordination with TTR Security is required for access to the site. Assemble the following, as needed, to conduct inspections:

a. TTR radio, pager, etc.
b. Camera (requires TTR Photo/sensitive equipment pass), digital storage drive, and extra batteries
c. Previous Post-Closure Report, Inspection Checklists, repair records, and as-built plans
d. Tape measure
e. Other miscellaneous support equipment

D. SITE INSPECTION

- ***The annual inspection is to document vegetation growth and inspect the integrity of the fence. The inspection can be conducted from outside the perimeter fence.*** The checklist should be completed during the site inspection.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. Information can take the form of written narrative, sketches, measurements, and annotated site maps, all of which should be placed on additional attachments (if needed) and cross-reference appropriately. Attach the additional pages and number all pages upon completion of the inspection. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

1. Site markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is the gate damaged?		✓	
b. Is the wire fence damaged?		✓	
c. Is the chicken wire fence damaged?		✓	
e. Have any posts been damaged or their anchoring weakened?		✓	

POST-CLOSURE INSPECTION CHECKLIST

CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL - CAS TA-55-001-TAB2, ORDNANCE DISPOSAL PIT

2. Waste Unit cover:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of human intrusion onto the site?		✓	
b. Is there evidence of horses or rabbits on site?		✓	
c. Are seeded plant species found on site?	✓		
d. Are weedy annual plants present?		✓	
If yes, are they a problem?			NA ✓
e. Is there evidence of plant mortality?		✓	

Photograph Instructions:

- ***A standard set of photographs is needed for the post-closure report. Take two photos from the approximate location where photos were taken the previous year (as found in the previous year's post-closure report).***
- Photographs should be taken to document maintenance/repair needs at the site. These will be used to plan maintenance/repair activities and are not intended for use in the post-closure annual report.
- Anomalous features or new features (such as changes in adjacent area land use) should be photographed.
- Other photographs are optional.
- A photograph log entry will be made for each photograph taken.

3. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have photographs been taken of the sites?	✓		
If yes, how many photos were taken?	9		{ 2 - Required { 7 - Additional
If yes, has a photographic log been prepared?	✓		An electronic photo log will be available on the ER Shared drive (CAU 400).

E. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Are more frequent inspections required?		✓	
2. Are existing maintenance/repair actions satisfactory?	✓		
3. Are maintenance/repair actions necessary?		✓	If "yes", describe in field conclusions/recommendations
4. Is there an imminent hazard to the integrity of the landfill cover?		✓	If "yes", describe below and the Task Manager must complete the "Follow-up Actions" (not part of checklist)

5. Field conclusions/recommendations: The barbed-wire fencing, chicken-wire (mesh) fencing, and gate were in great condition. The vegetation growth appeared to be in very good condition. There was some evidence of animal burrowing along the external perimeter of the barbed-wire fence. A follow-up corrective action is not required; however, backfilling the burrows is recommended as a best management practice

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL - **CAS TA-55-001-TAB2, ORDNANCE DISPOSAL PIT**

F. CERTIFICATION

I have conducted an inspection of CAS TA-55-001-TAB2, Ordnance Disposal Pit (Bomblet Pit), in accordance with the procedures of the Post-Closure Plan as recorded on this checklist, attached sheets, field notes, photographs, and photograph logs.

Chief Inspector's Signature: /s/: Glenn Richardson	Date: 5/5/09
Printed Name: Glenn Richardson	Title: Task Manager

Required Attachments:

- Field Notes (if any)
- Photos (or note File Location: S:\NTS\ER Share\ Photos\ TTR PCM Inspections\ 2009\05-05-2009)

Distribution: Original – Industrial Sites Project Manager
Copy – Task Manager

G. VERIFICATION

I have reviewed this checklist and attachments and have verified that it is complete.

Signature: /s/: Reed Poderis	Date: 6-14-09
Printed Name: Thomas A. Thiele (or designee)	

Distribution: Original – Task Manager

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL - CAS TA-19-001-05PT, ORDNANCE DISPOSAL PIT

Inspection Date and Time: 5/5/09 2:00 PM	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/21/08	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: NSTec Environmental Restoration, Nevada Test Site, Mercury, Nevada	
Chief Inspector: Glenn Richardson	Title: Task Manager
Assistant Inspector: Mike Floyd	Title: Field Supervisor

A. GENERAL INSTRUCTIONS

- Complete all checklist items.
- If a SHADED BOX is checked, provide detailed information regarding what was found and/or appropriate references to other documents that have the information (e.g., Maintenance Order Form for CAS 05-16-01 dated 2/15/2008).
- All documentation must be legible and clear.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Have the previous inspection reports been reviewed?	✓		
2. Were anomalies or trends detected on previous inspections?		✓	
3. Were maintenance or repairs performed since last inspection?		✓	

C. SITE INSPECTION PREPARATION

Advance coordination with TTR Security is required for access to the site. Assemble the following, as needed, to conduct inspections:

a. TTR radio, pager, etc.
b. Camera (requires TTR Photo/sensitive equipment pass), digital storage drive, and extra batteries
c. Previous Post-Closure Report, Inspection Checklists, repair records, and as-built plans
d. Tape measure
e. Other miscellaneous support equipment

D. SITE INSPECTION

- ***The annual inspection is to document vegetation growth and inspect the integrity of the fence. The inspection can be conducted from outside the perimeter fence.*** The checklist should be completed during the site inspection.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. Information can take the form of written narrative, sketches, measurements, and annotated site maps, all of which should be placed on additional attachments (if needed) and cross-reference appropriately. Attach the additional pages and number all pages upon completion of the inspection. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

1. Site markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is the barbed wire fence damaged?		✓	
b. Have any posts been damaged or their anchoring weakened?		✓	
2. Waste Unit cover:	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
a. Is there evidence of human intrusion onto the site?		✓	

POST-CLOSURE INSPECTION CHECKLIST

CAU 400: BOMBLET PIT AND FIVE POINTS LANDFILL - CAS TA-19-001-05PT, ORDNANCE DISPOSAL PIT

2. Waste Unit cover (continued):	YES	NO	EXPLANATION (required if shaded box is checked)
b. Is there evidence of horses or rabbits on site?		✓	
c. Are weedy annual plants present?		✓	
If yes, are they a problem?			NA ✓
d. Are seeded plant species found on site?	✓		
e. Is there evidence of plant mortality?		✓	

Photograph Instructions:

- ***A standard set of photographs is needed for the post-closure report. Take two photos from the approximate location where photos were taken the previous year (as found in the previous year's post-closure report).***
- Photographs should be taken to document maintenance/repair needs at the site. These will be used to plan maintenance/repair activities and are not intended for use in the post-closure annual report.
- Anomalous features or new features (such as changes in adjacent area land use) should be photographed.
- Other photographs are optional.
- A photograph log entry will be made for each photograph taken.

3. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have photographs been taken of the sites?	✓		
If yes, how many photos were taken?	9		2 - Required 7 - Additional
If yes, has a photographic log been prepared?	✓		An electronic photo log will be available on the ER Shared drive.

E. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Are more frequent inspections required?		✓	
2. Are existing maintenance/repair actions satisfactory?	✓		
3. Are maintenance/repair actions necessary?		✓	If "yes", describe in field conclusions/recommendations
4. Is there an imminent hazard to the integrity of the landfill cover?		✓	If "yes", describe below and the Task Manager must complete the "Follow-up Actions" (not part of checklist)

5. Field conclusions/recommendations: The barbed-wire fencing, chicken-wire (mesh) fencing, and gate were in great condition. The vegetation growth appeared to be in very good condition. Evidence of animal burrowing was noticed along the external perimeter of the barbed-wire fence. A follow-up corrective action is not required; however, backfilling the ~~burrowing~~ 5/5/09 - BR burrows is recommended as a best management practice.

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 400: BOMBLET PIT AND **FIVE POINTS LANDFILL - CAS TA-19-001-05PT, ORDNANCE DISPOSAL PIT**

F. CERTIFICATION

I have conducted an inspection of CAS TA-19-001-05PT, Ordnance Disposal Pit (Five Points Landfill), in accordance with the procedures of the Post-Closure Plan as recorded on this checklist, attached sheets, field notes, photographs, and photograph logs.

Chief Inspector's Signature: /s/: Glenn Richardson	Date: 5/5/09
Printed Name: Glenn Richardson	Title: Task Manager

Required Attachments:

- Field Notes (if any)
- Photos (or note File Location: S:\NTS\ER Share\Photos\TTR PCM Inspections\2009\05-05-2009)

Distribution: Original – Industrial Sites Project Manager
Copy – Task Manager

G. VERIFICATION

I have reviewed this checklist and attachments and have verified that it is complete.

Signature: /s/: Reed Poderis	Date: 6-14-09
Printed Name: Thomas A. Thiele (or designee)	

Distribution: Original – Task Manager

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 407: ROLLER COASTER RADSAFE AREA
CAS TA-23-001-TARC, ROLLER COASTER RADSAFE AREA

Inspection Date and Time: 5/5/09 3:05 PM	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/20/08	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: NSTec Environmental Restoration, Nevada Test Site, Mercury, Nevada	
Chief Inspector: Glenn Richardson	Title: Task Manager
Assistant Inspector: Mike Floyd	Title: Field Supervisor

A. GENERAL INSTRUCTIONS

- Complete all checklist items.
- If a SHADED BOX is checked, provide detailed information regarding what was found and/or appropriate references to other documents that have the information (e.g., Maintenance Order Form for CAS 05-16-01 dated 2/15/2008).
- All documentation must be legible and clear.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Has the Post-Closure Plan been reviewed?	✓		
2. Have the previous inspection reports been reviewed?	✓		
3. Were anomalies or trends detected on previous inspections?		✓	
4. Were maintenance or repairs performed since last inspection?	✓		Loose barbed wire on the southand northwest corner fence was tightened on 7/10/08.
a. If yes, has site repair resulted in a change from as-built conditions?		✓	NA
b. If yes (to 4a), are revised as-built plans available that reflect repair changes?			NA ✓

C. SITE INSPECTION PREPARATION

Advance coordination with TTR Security is required for access to the site. Assemble the following, as needed, to conduct inspections:

a. TTR radio, pager, etc.
b. Camera (requires TTR Photo/sensitive equipment pass), digital storage drive, and extra batteries
c. Previous Post-Closure Report, Inspection Checklists, repair records, and as-built plans
d. Tape measure
e. Other miscellaneous support equipment

D. SITE INSPECTION

- ***The site inspection is a walking inspection of the perimeter fencing, viewing the entire site. Inspections consist of visually inspecting the cover for signs of erosion, animal burrows, cracks, water ponding, vegetation, and inspecting the fencing and postings.*** The checklist should be completed during the site inspection.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. Information can take the form of written narrative, sketches, measurements, and annotated site maps, all of which should be placed on additional attachments (if needed) and cross-reference appropriately. Attach the additional pages and number all pages upon completion of the inspection. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

1. Site markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is the perimeter (barbed wire) fence damaged?		✓	

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 407: ROLLER COASTER RADSAFE AREA
CAS TA-23-001-TARC, ROLLER COASTER RADSAFE AREA

1. Site markers (continued):	YES	NO	EXPLANATION (required if shaded box is checked)
b. Is the mesh wire fence damaged?		✓	
c. Have any posts been damaged or their anchoring weakened?		✓	
d. Are the URMA signs damaged or missing?		✓	
e. Are the signs legible?	✓		
f. How many of the signs need to be replaced?	0		

2. Waste Unit cover:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) on or around the cap?		✓	
d. Is there evidence of ponding on the waste cover?		✓	
e. Is there evidence of human intrusion onto the site?		✓	
f. Is there evidence of animal burrowing?	✓		There was evidence of small animal burrows on the side slope of the cover.
g. Is there evidence of horses or rabbits on site?		✓	
h. Is organic mulch adequate to prevent erosion?	✓		
i. Are weedy annual plants present? (If yes, are they a problem?)		✓	
j. Are seeded plant species found on site?	✓		
k. Is there evidence of plant mortality?		✓	

Photograph Instructions:

- ***A standard set of photographs is needed for the post-closure report. Take two photos from the approximate location where photos were taken the previous year (as found in the previous year's post-closure report).***
- Photographs should be taken to document maintenance/repair needs at the site. These will be used to plan maintenance/repair activities and are not intended for use in the post-closure annual report.
- Anomalous features or new features (such as changes in adjacent area land use) should be photographed.
- Other photographs are optional.
- A photograph log entry will be made for each photograph taken.

3. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have photographs been taken of the sites?	✓		
If yes, how many photos were taken?	2		
If yes, has a photographic log been prepared?	✓		An electronic photo log will be available on the ER Shared drive (CAU 407).

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 407: ROLLER COASTER RADSAFE AREA
CAS TA-23-001-TARC, ROLLER COASTER RADSAFE AREA

E. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Are more frequent inspections required?		✓	
2. Are existing maintenance/repair actions satisfactory?	✓		
3. Are maintenance/repair actions necessary?		✓	If "yes", describe in field conclusions/recommendations
4. Is there an imminent hazard to the integrity of the landfill cover?		✓	If "yes", describe below and the Task Manager must complete the "Follow-up Actions" (not part of checklist)

5. Field conclusions/recommendations: The barbed-wire fencing is in excellent condition. The radiological postings are visible and intact. The vegetation appears to be maturing rapidly on the cover. There was some evidence of small animal burrows on the side slope of the waste unit cover, but the burrows were not deemed significant to warrant a corrective action.

F. CERTIFICATION

I have conducted an inspection of CAS TA-23-001-TARC, Roller Coaster RadSafe Area, in accordance with the procedures of the Post-Closure Plan as recorded on this checklist, attached sheets, field notes, photographs, and photograph logs.

Chief Inspector's Signature: /s/: Glenn Richardson Date: 5/5/09

Printed Name: Glenn Richardson Title: Task Manager

Required Attachments:

- Field Notes (if any)
- Photos (or note File Location: S:\NTS\ER Share\Photos\TTR PCM Inspections\2009\05-06-2009)

Distribution: Original – Industrial Sites Project Manager
Copy – Task Manager

G. VERIFICATION

I have reviewed this checklist and attachments and have verified that it is complete.

Signature: /s/: Reed Poderis Date: 6-14-09

Printed Name: Thomas A. Fhiele (or designee)

Distribution: Original – Task Manager

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 424: AREA 3 LANDFILL COMPLEX
- **CAS 03-08-001-A301, LANDFILL A3-1**
- **CAS 03-08-001-A302, LANDFILL A3-2**
- **CAS 03-08-001-A303, LANDFILL A3-3**
- **CAS 03-08-001-A304, LANDFILL A3-4**
- **CAS 03-08-001-A305, LANDFILL A3-5**
- **CAS 03-08-001-A306, LANDFILL A3-6**
- **CAS 03-08-001-A308, LANDFILL A3-8**

Inspection Date and Time: 5/6/09 2:33 PM	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/21/08	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: NSTec Environmental Restoration, Nevada Test Site, Mercury, Nevada	
Chief Inspector: Glenn Richardson	Title: Task Manager
Assistant Inspector: Mike Floyd	Title: Field Supervisor

A. GENERAL INSTRUCTIONS

- Complete all checklist items.
- If a SHADED BOX is checked, provide detailed information regarding what was found and/or appropriate references to other documents that have the information (e.g., Maintenance Order Form for CAS 05-16-01 dated 2/15/2008).
- All documentation must be legible and clear.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Has the Post-Closure Plan been reviewed?	✓		
2. Have the previous inspection reports been reviewed?	✓		
3. Were anomalies or trends detected on previous inspections?		✓	
4. Were maintenance or repairs performed since last inspection?		✓	
a. If yes, at which sites?	NA ✓		Another site walkdown with GPS was performed at Landfill A3-8 to verify four surface monuments were in place.
b. If yes, has site repair resulted in a change from as-built conditions?		✓	NA
c. If yes (to 4b), are revised as-built plans available that reflect repair changes?			NA ✓

C. SITE INSPECTION PREPARATION

Advance coordination with TTR Security is required for access to the site. Assemble the following, as needed, to conduct inspections:

a. TTR radio, pager, etc.
b. Camera (requires TTR Photo/sensitive equipment pass), digital storage drive, and extra batteries
c. Previous Post-Closure Report, Inspection Checklists, repair records, and as-built plans
d. Tape measure
e. Other miscellaneous support equipment

D. SITE INSPECTION

- ***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.*** The checklist should be completed during the site inspection.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. Information can take the form of written narrative, sketches, measurements, and annotated site maps, all of which should be placed on additional attachments (if needed) and cross-reference appropriately. Attach the additional pages and number all pages upon completion of the inspection. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 424: AREA 3 LANDFILL COMPLEX
- **CAS 03-08-001-A301, LANDFILL A3-1**
- **CAS 03-08-001-A302, LANDFILL A3-2**
- **CAS 03-08-001-A303, LANDFILL A3-3**
- **CAS 03-08-001-A304, LANDFILL A3-4**
- **CAS 03-08-001-A305, LANDFILL A3-5**
- **CAS 03-08-001-A306, LANDFILL A3-6**
- **CAS 03-08-001-A308, LANDFILL A3-8**

D. SITE INSPECTION (continued)

1. Site markers (Landfill A3-1):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the seven (7) boundary monuments been disturbed?		✓	
b. Are all boundary monuments in good condition?	✓		
c. Are all brass survey markers in good condition?	✓		
d. Are any of the warning signs damaged or missing?		✓	
e. Are all signs legible?	✓		
f. How many signs need to be replaced?	0		

2. Use-restricted area (Landfill A3-1):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) through or around the cover?		✓	
d. Is there evidence of animals burrowing into the cover?		✓	
e. Is there evidence of human intrusion into the cover?		✓	

3. Site markers (Landfill A3-2):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the four (4) boundary monuments been disturbed?		✓	
b. Are all boundary monuments in good condition?	✓		
c. Are all brass survey markers in good condition?	✓		
d. Are any of the warning signs damaged or missing?		✓	
e. Are all signs legible?	✓		
f. How many signs need to be replaced?	0		

4. Use-restricted area (Landfill A3-2):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) through or around the cover?		✓	
d. Is there evidence of animals burrowing into the cover?		✓	
e. Is there evidence of human intrusion into the cover?		✓	

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 424: AREA 3 LANDFILL COMPLEX
- CAS 03-08-001-A301, LANDFILL A3-1
- CAS 03-08-001-A302, LANDFILL A3-2
- CAS 03-08-001-A303, LANDFILL A3-3
- CAS 03-08-001-A304, LANDFILL A3-4
- CAS 03-08-001-A305, LANDFILL A3-5
- CAS 03-08-001-A306, LANDFILL A3-6
- CAS 03-08-001-A308, LANDFILL A3-8

5. Site markers (Landfill A3-3, western 2 cells):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the three (3) boundary monuments been disturbed?		✓	
b. Are all boundary monuments in good condition?	✓		
c. Are all brass survey markers in good condition?	✓		
d. Are any of the warning signs damaged or missing?		✓	
e. Are all signs legible?	✓		
f. How many signs need to be replaced?	0		
g. Are all three (3) surface markers in good condition?	✓		

6. Use-restricted area (Landfill A3-3, western 2 cells):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) through or around the cover?		✓	
d. Is there evidence of animals burrowing into the cover?		✓	
e. Is there evidence of human intrusion into the cover?		✓	

7. Site markers (Landfill A3-3, eastern cell):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the three (3) boundary monuments been disturbed?		✓	
b. Are all brass survey markers in good condition?	✓		

8. Use-restricted area (Landfill A3-3, eastern cell):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) through or around the cover?		✓	
d. Is there evidence of animals burrowing into the cover?		✓	
e. Is there evidence of human intrusion into the cover?		✓	

9. Site markers (Landfill A3-4):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the five (5) boundary monuments been disturbed?		✓	
b. Are all boundary monuments in good condition?	✓		
c. Are all brass survey markers in good condition?	✓		

POST-CLOSURE INSPECTION CHECKLIST

CAU 424: AREA 3 LANDFILL COMPLEX
- **CAS 03-08-001-A301, LANDFILL A3-1**
- **CAS 03-08-001-A302, LANDFILL A3-2**
- **CAS 03-08-001-A303, LANDFILL A3-3**
- **CAS 03-08-001-A304, LANDFILL A3-4**
- **CAS 03-08-001-A305, LANDFILL A3-5**
- **CAS 03-08-001-A306, LANDFILL A3-6**
- **CAS 03-08-001-A308, LANDFILL A3-8**

9. Site markers (Landfill A3-4), continued:	YES	NO	EXPLANATION (required if shaded box is checked)
d. Are any of the warning signs damaged or missing?		✓	
e. Are all signs legible?	✓		
f. How many signs need to be replaced?	0		
g. Is the surface marker in good condition?	✓		

10. Use-restricted area (Landfill A3-4):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) through or around the cover?		✓	
d. Is there evidence of animals burrowing into the cover?		✓	
e. Is there evidence of human intrusion into the cover?		✓	

11. Site markers (Landfill A3-5):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the four (4) boundary monuments been disturbed?		✓	
b. Are all boundary monuments in good condition?	✓		
c. Are all brass survey markers in good condition?	✓		
d. Are any of the warning signs damaged or missing?		✓	
e. Are all signs legible?	✓		
f. How many signs need to be replaced?	0		

12. Use-restricted area (Landfill A3-5):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) through or around the cover?		✓	
d. Is there evidence of animals burrowing into the cover?		✓	
e. Is there evidence of human intrusion into the cover?		✓	

13. Site markers (Landfill A3-6):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any of the four (4) boundary monuments been disturbed?		✓	
b. Are all boundary monuments in good condition?	✓		

POST-CLOSURE INSPECTION CHECKLIST

CAU 424: AREA 3 LANDFILL COMPLEX
- CAS 03-08-001-A301, LANDFILL A3-1
- CAS 03-08-001-A302, LANDFILL A3-2
- CAS 03-08-001-A303, LANDFILL A3-3
- CAS 03-08-001-A304, LANDFILL A3-4
- CAS 03-08-001-A305, LANDFILL A3-5
- CAS 03-08-001-A306, LANDFILL A3-6
- CAS 03-08-001-A308, LANDFILL A3-8

13. Site markers (Landfill A3-6), continued:	YES	NO	EXPLANATION (required if shaded box is checked)
c. Are all brass survey markers in good condition?	✓		
d. Are any of the warning signs damaged or missing?		✓	
e. Are all signs legible?	✓		
f. How many signs need to be replaced?	0		

14. Use-restricted area (Landfill A3-6):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) through or around the cover?		✓	
d. Is there evidence of animals burrowing into the cover?		✓	
e. Is there evidence of human intrusion into the cover?		✓	

15. Site markers (Landfill A3-8):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are all four (4) surface markers in good condition?	✓		
b. Are all brass survey markers in good condition?	✓		
c. Are any of the warning signs damaged or missing?		✓	
d. Are all signs legible?	✓		
e. How many signs need to be replaced?	0		

16. Use-restricted area (Landfill A3-8):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) through or around the cover?		✓	
d. Is there evidence of animals burrowing into the cover?		✓	
e. Is there evidence of human intrusion into the cover?		✓	

Photograph Instructions:

- ***A standard set of photographs is required. Take a minimum of one photograph at each site from the approximate locations where photos were taken the previous year (as found in the previous year's post-closure report).***
- Photographs should be taken to document maintenance/repair needs at the site. These will be used to plan maintenance/repair activities and are not intended for use in the post-closure annual report.
- Anomalous features or new features (such as changes in adjacent area land use) should be photographed.
- Other photographs are optional.
- A photograph log entry will be made for each photograph taken.

POST-CLOSURE INSPECTION CHECKLIST

CAU 424: AREA 3 LANDFILL COMPLEX
- **CAS 03-08-001-A301, LANDFILL A3-1**
- **CAS 03-08-001-A302, LANDFILL A3-2**
- **CAS 03-08-001-A303, LANDFILL A3-3**
- **CAS 03-08-001-A304, LANDFILL A3-4**
- **CAS 03-08-001-A305, LANDFILL A3-5**
- **CAS 03-08-001-A306, LANDFILL A3-6**
- **CAS 03-08-001-A308, LANDFILL A3-8**

17. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have photographs been taken of the sites?	✓		
If yes, how many photos were taken?	14		
If yes, has a photographic log been prepared?	✓		Log number:

E. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Are more frequent inspections required?		✓	
2. Are existing maintenance/repair actions satisfactory?	✓		
3. Are maintenance/repair actions necessary?		✓	If "yes", describe in field conclusions/recommendations
4. Is there an imminent hazard to the integrity of the landfill cover?		✓	If "yes", describe below and the Task Manager must complete the "Follow-up Actions" (not part of checklist)

5. Field conclusions/recommendations: Overall site conditions at each Landfill A3 cell are ~~5/6/09~~ great. There was no evidence of settling or cracking at any Landfill A3 cell. All monuments (aboveground & surface) are intact and stable. The signage is visible and shows no evidence of fading or damage. There are no issues or concerns at any of the Landfill A3 sites. (A3-1, A3-2, A3-3, A3-4, A3-5, A3-6, and A3-8).

F. CERTIFICATION

I have conducted an inspection of CASs 03-08-001-A301 through A306 and A308, Landfills A3-1 through A3-6 and A3-8, in accordance with the procedures of the Post-Closure Plan as recorded on this checklist, attached sheets, field notes, photographs, and photograph logs.

Chief Inspector's Signature: /s/: Glenn Richardson Date: 5/6/09

Printed Name: Glenn Richardson Title: Task Manager

Required Attachments:
- Field Notes (if any)
- Photos (or note File Location: S:\NTS\ER Share\ Photos\TTR PCM Inspections\2009\05-06-2009)

Distribution: Original – Industrial Sites Project Manager
Copy – Task Manager

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 424: AREA 3 LANDFILL COMPLEX
- **CAS 03-08-001-A301, LANDFILL A3-1**
- **CAS 03-08-001-A302, LANDFILL A3-2**
- **CAS 03-08-001-A303, LANDFILL A3-3**
- **CAS 03-08-001-A304, LANDFILL A3-4**
- **CAS 03-08-001-A305, LANDFILL A3-5**
- **CAS 03-08-001-A306, LANDFILL A3-6**
- **CAS 03-08-001-A308, LANDFILL A3-8**

G. VERIFICATION

I have reviewed this checklist and attachments and have verified that it is complete.

Signature: /s/: Reed Poderis

Date: 6-14-09

Printed Name: Thomas A. Thiele (or designee)

Distribution: Original – Task Manager

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 426: CACTUS SPRING WASTE TRENCHES - CAS RG-008-001-RGCS, WASTE TRENCHES

Inspection Date and Time: 5/5/09 3:30 PM	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/20/08	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: NSTec Environmental Restoration, Nevada Test Site, Mercury, Nevada	
Chief Inspector: Glenn Richardson	Title: Task Manager
Assistant Inspector: Mike Floyd	Title: Field Supervisor

A. GENERAL INSTRUCTIONS

- Complete all checklist items.
- If a SHADED BOX is checked, provide detailed information regarding what was found and/or appropriate references to other documents that have the information (e.g., Maintenance Order Form for CAS 05-16-01 dated 2/15/2008).
- All documentation must be legible and clear.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Have the site as-built plans and site base map been reviewed?	✓		
2. Has the Post-Closure Plan been reviewed?	✓		
3. Have the previous inspection reports been reviewed?	✓		
4. Were anomalies or trends detected on previous inspections?		✓	
5. Were maintenance or repairs performed since last inspection?		✓	
a. If yes, has site repair resulted in a change from as-built conditions?		✓	NA
b. If yes (to 4a), are revised as-built plans available that reflect repair changes?			NA ✓

C. SITE INSPECTION PREPARATION

Advance coordination with TTR Security is required for access to the site. Assemble the following, as needed, to conduct inspections:

a. TTR radio, pager, etc.
b. Camera (requires TTR Photo/sensitive equipment pass), digital storage drive, and extra batteries
c. Previous Post-Closure Report, Inspection Checklists, repair records, and as-built plans
d. Tape measure
e. Key to gate
f. Other miscellaneous support equipment

D. SITE INSPECTION

- ***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.*** The checklist should be completed during the site inspection.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. Information can take the form of written narrative, sketches, measurements, and annotated site maps, all of which should be placed on additional attachments (if needed) and cross-reference appropriately. Attach the additional pages and number all pages upon completion of the inspection. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

POST-CLOSURE INSPECTION CHECKLIST

CAU 426: CACTUS SPRING WASTE TRENCHES - CAS RG-008-001-RGCS, WASTE TRENCHES

D. SITE INSPECTION (continued)

1. Site markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there damage to the gate?		✓	
b. Is the gate lock in place and functional?	✓		
c. Is the fence damaged?		✓	
d. Have any posts been damaged or their anchoring weakened?		✓	
e. Are "vegetation" signs damaged or missing (located on each corner and in middle of fence side)?		✓	
f. Are the signs legible?	✓		
g. How many of the signs need to be replaced?	0		

2. Use-restricted area:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?		✓	
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) on or near the use restriction boundary?		✓	
d. Is there vegetation (describe its condition)?	✓		Vegetation appears to be very mature.
e. Is remedial action needed to establish a vegetative cover?		✓	
f. Is there evidence of human intrusion onto the site?		✓	
g. Is there evidence of animal burrowing?		✓	

Photograph Instructions:

- ***A standard set of photographs is needed for the post-closure report. Take one photo from the approximate location where the photo was taken the previous year (as found in the previous year's post-closure report).***
- Photographs should be taken to document maintenance/repair needs at the site. These will be used to plan maintenance/repair activities and are not intended for use in the post-closure annual report.
- Anomalous features or new features (such as changes in adjacent area land use) should be photographed.
- Other photographs are optional.
- A photograph log entry will be made for each photograph taken.

3. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have photographs been taken of the sites?	✓		
If yes, how many photos were taken?	2		{1 Required {1 Additional
If yes, has a photographic log been prepared?	✓		

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 426: CACTUS SPRING WASTE TRENCHES - CAS RG-008-001-RGCS, WASTE TRENCHES

E. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Are more frequent inspections required?		✓	
2. Are existing maintenance/repair actions satisfactory?	✓		
3. Are maintenance/repair actions necessary?		✓	If "yes", describe in field conclusions/recommendations
4. Is there an imminent hazard to the integrity of the landfill cover?		✓	If "yes", describe below and the Task Manager must complete the "Follow-up Actions" (not part of checklist)

5. Field conclusions/recommendations: The fencing, signage, and gate were in great condition. The vegetation appeared to be at a sufficient maturity level. There was no evidence of human or animal intrusion. The site appears to be in excellent condition. There were no issues or concerns.

F. CERTIFICATION

I have conducted an inspection of CAS RG-008-001-RGCS, Waste Trenches, in accordance with the procedures of the Post-Closure Plan as recorded on this checklist, attached sheets, field notes, photographs, and photograph logs.

Chief Inspector's Signature: /s/: Glenn Richardson	Date: 5/5/09
Printed Name: Glenn Richardson	Title: Task Manager

Required Attachments:

- Field Notes (if any)
- Photos (or note File Location: S:\NTS\ER Share\Photos\TTR PCM Inspections\2009\05-05-2009)

Distribution: Original – Industrial Sites Project Manager
Copy – Task Manager

G. VERIFICATION

I have reviewed this checklist and attachments and have verified that it is complete.

Signature: /s/: Reed Poderis	Date: 6-14-09
Printed Name: Thomas A. Thiele (or designee)	

Distribution: Original – Task Manager

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 453: AREA 9 UXO LANDFILL - CAS 09-55-001-0952, AREA 9 LANDFILL

Inspection Date and Time: 5/6/09 1:52 PM	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/21/08	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: NSTec Environmental Restoration, Nevada Test Site, Mercury, Nevada	
Chief Inspector: Glenn Richardson	Title: Task Manager
Assistant Inspector: Mike Floyd	Title: Field Supervisor

A. GENERAL INSTRUCTIONS

- Complete all checklist items.
- If a SHADED BOX is checked, provide detailed information regarding what was found and/or appropriate references to other documents that have the information (e.g., Maintenance Order Form for CAS 05-16-01 dated 2/15/2008).
- All documentation must be legible and clear.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Has the Post-Closure Plan been reviewed?	✓		
2. Have the previous inspection reports been reviewed?	✓		
3. Were anomalies or trends detected on previous inspections?	✓		Large animal burrows were noticed during the last two annual inspections.
4. Were maintenance or repairs performed since last inspection?	✓		The animal burrows were backfilled with borrow fill on 8/1/08.

C. SITE INSPECTION PREPARATION

Advance coordination with TTR Security is required for access to the site. Assemble the following, as needed, to conduct inspections:

a. TTR radio, pager, etc.
b. Camera (requires TTR Photo/sensitive equipment pass), digital storage drive, and extra batteries
c. Previous Post-Closure Report, Inspection Checklists, repair records, and as-built plans
d. Tape measure
e. Other miscellaneous support equipment

D. SITE INSPECTION

- ***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.*** The checklist should be completed during the site inspection.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. Information can take the form of written narrative, sketches, measurements, and annotated site maps, all of which should be placed on additional attachments (if needed) and cross-reference appropriately. Attach the additional pages and number all pages upon completion of the inspection. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

1. Site markers:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is the gate damaged?		✓	
b. Is the gate lock in place and functional?	✓		
c. Is the fence damaged?		✓	

POST-CLOSURE INSPECTION CHECKLIST

CAU 453: AREA 9 UXO LANDFILL - CAS 09-55-001-0952, AREA 9 LANDFILL

1. Site markers (continued):	YES	NO	EXPLANATION (required if shaded box is checked)
d. Have any posts been damaged or their anchoring weakened?		✓	
e. Have boundary monuments been disturbed?		✓	
f. Are boundary monuments in good condition?	✓		
g. Are any of the use restriction warning signs damaged or missing?		✓	
h. Are all signs legible?	✓		
i. How many signs need to be replaced?	0		

2. Use-restricted area:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling?	✓		A large depression area was discovered in between Trench A9-3 and A9-2.
b. Is there cracking?		✓	
c. Is there evidence of erosion (wind or water) over trenches A9-1, A9-2, or A9-3?		✓	
d. Is there evidence of human intrusion onto the site?		✓	
e. Is there evidence of animal burrowing into trenches A9-1, A9-2, or A9-3?	✓		Large animal burrows were noticed on the NE corner of Trench A9-1 and A9-2.

Photograph Instructions:

- ***A standard set of photographs is needed for the post-closure report. Take one photo from the approximate location where the photo was taken the previous year (as found in the previous year's post-closure report).***
- Photographs should be taken to document maintenance/repair needs at the site. These will be used to plan maintenance/repair activities and are not intended for use in the post-closure annual report.
- Anomalous features or new features (such as changes in adjacent area land use) should be photographed.
- Other photographs are optional.
- A photograph log entry will be made for each photograph taken.

3. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have photographs been taken of the sites?	✓		
If yes, how many photos were taken?	12		
If yes, has a photographic log been prepared?	✓		

E. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Are more frequent inspections required?		✓	
2. Are existing maintenance/repair actions satisfactory?	✓		
3. Are maintenance/repair actions necessary?	✓		If "yes", describe in field conclusions/recommendations
4. Is there an imminent hazard to the integrity of the landfill cover?		✓	If "yes", describe below and the Task Manager must complete the "Follow-up Actions" (not part of checklist)

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 453: AREA 9 UXO LANDFILL - CAS 09-55-001-0952, AREA 9 LANDFILL

E. FIELD CONCLUSIONS (continued)

5. Field conclusions/recommendations: The use restriction signage, chain-link fencing, and aboveground monuments are in excellent condition. There was some evidence of animal burrowing on the landfill cover. A large depression area was also noticed near Trench A9-2 and A9-3. Follow-up corrective actions are necessary within 90 days to backfill the animal burrows and restore the depression area to its natural surface grade.

F. CERTIFICATION

I have conducted an inspection of CAS 09-55-001-0952, Area 9 Landfill, in accordance with the procedures of the Post-Closure Plan as recorded on this checklist, attached sheets, field notes, photographs, and photograph logs.

Chief Inspector's Signature: /s/: Glenn Richardson	Date: 5/6/09
Printed Name: Glenn Richardson	Title: Task Manager

Required Attachments:

- Field Notes (if any)
- Photos (or note File Location: S:\NTS\ER Share\Photos\TTR PCM Inspections\2009\05-06-2009)

Distribution: Original – Industrial Sites Project Manager
Copy – Task Manager

G. VERIFICATION

I have reviewed this checklist and attachments and have verified that it is complete.

Signature: /s/: Reed Poderis	Date: 6-14-09
Printed Name: Thomas A. Thiele (or designee)	

Distribution: Original – Task Manager

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 484: SURFACE DEBRIS, WASTE SITES, AND BURN AREA
CAS RG-52-007-TAML, DAVIS GUN PENETRATOR TEST

Inspection Date and Time: 5/6/09 12:28 PM	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/20/08	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: NSTec Environmental Restoration, Nevada Test Site, Mercury, Nevada	
Chief Inspector: Glenn Richardson	Title: Task Manager
Assistant Inspector: Mike Floyd	Title: Field Supervisor

A. GENERAL INSTRUCTIONS

- Complete all checklist items.
- If a SHADED BOX is checked, provide detailed information regarding what was found and/or appropriate references to other documents that have the information (e.g., Maintenance Order Form for CAS 05-16-01 dated 2/15/2008).
- All documentation must be legible and clear.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Has the Post-Closure Plan been reviewed?	✓		
2. Have the previous inspection reports been reviewed?	✓		
3. Were anomalies or trends detected on previous inspections?		✓	
4. Were maintenance or repairs performed since last inspection?		✓	

C. SITE INSPECTION PREPARATION

Advance coordination with TTR Security is required for access to the site. Assemble the following, as needed, to conduct inspections:

a. TTR radio, pager, etc.
b. Camera (requires TTR Photo/sensitive equipment pass), digital storage drive, and extra batteries
c. Previous Post-Closure Report, Inspection Checklists, repair records, and as-built plans
d. Tape measure
e. Other miscellaneous support equipment

D. SITE INSPECTION

- ***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.*** The checklist should be completed during the site inspection.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. Information can take the form of written narrative, sketches, measurements, and annotated site maps, all of which should be placed on additional attachments (if needed) and cross-reference appropriately. Attach the additional pages and number all pages upon completion of the inspection. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

1. General vicinity and site conditions (CA-1):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are access roads in good condition? **(If no, see Note A)**	✓		
b. Is there evidence of testing activities in the vicinity of the cover? **(If yes, see Note B)**		✓	
c. Is the berm that surrounds the cover intact? **(If no, see Note C)**	✓		

POST-CLOSURE INSPECTION CHECKLIST

CAU 484: SURFACE DEBRIS, WASTE SITES, AND BURN AREA
CAS RG-52-007-TAML, DAVIS GUN PENETRATOR TEST

1. General vicinity and site conditions (CA-1), continued:	YES	NO	EXPLANATION (required if shaded box is checked)
d. Are there cracks or fissures (wider than 1-inch across) on, adjacent to, or otherwise approaching the cover? **(See Note D for more information)**		✓	
2. Site markers (CA-1):	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
a. Have any posts been damaged or their anchoring weakened?		✓	
b. Are any of the four (4) use restriction signs damaged or missing?		✓	
c. Are all use restriction signs legible?	✓		
d. How many use restriction signs need to be replaced?	0		
e. Are any of the four (4) URMA signs damaged or missing?		✓	
f. Are all URMA signs legible?	✓		
g. How many URMA signs need to be replaced?	0		
3. Use-restricted area (CA-1):	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
a. Is there evidence of settling, erosion (wind or water), or animal burrowing?		✓	
b. Is there evidence of human intrusion into the cover?		✓	
c. Is the cover still mounded such that it prevents ponding on the cover surface?	✓		
4. General vicinity and site conditions (SA-4):	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
a. Are access roads in good condition? **(If no, see Note A)**	✓		
b. Is there evidence of testing activities in the vicinity of the cover? **(If yes, see Note B)**		✓	
c. Is the berm that surrounds the cover intact? **(If no, see Note C)**	✓		
d. Are there cracks or fissures (wider than 1-inch across) on, adjacent to, or otherwise approaching the cover? **(See Note D for more information)**		✓	
5. Site markers (SA-4):	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
a. Have any posts been damaged or their anchoring weakened?		✓	
b. Are any of the four (4) use restriction signs damaged or missing?		✓	
c. Are all use restriction signs legible?	✓		
d. How many use restriction signs need to be replaced?	0		
e. Are any of the four (4) URMA signs damaged or missing?		✓	
f. Are all URMA signs legible?	✓		
g. How many URMA signs need to be replaced?	0		

POST-CLOSURE INSPECTION CHECKLIST

CAU 484: SURFACE DEBRIS, WASTE SITES, AND BURN AREA
CAS RG-52-007-TAML, DAVIS GUN PENETRATOR TEST

6. Use-restricted area (SA-4):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling, erosion (wind or water), or animal burrowing?		✓	
b. Is there evidence of human intrusion into the cover?		✓	
c. Is the cover still mounded such that it prevents ponding on the cover surface?	✓		
7. General vicinity and site conditions (SA-5-9):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are access roads in good condition? **(If no, see Note A)**	✓		
b. Is there evidence of testing activities in the vicinity of the cover? **(If yes, see Note B)**		✓	
c. Is the berm that surrounds the cover intact? **(If no, see Note C)**	✓		
d. Are there cracks or fissures (wider than 1-inch across) on, adjacent to, or otherwise approaching the cover? **(See Note D for more information)**		✓	
8. Site markers (SA-5-9):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any posts been damaged or their anchoring weakened?		✓	
b. Are any of the four (4) use restriction signs damaged or missing?		✓	
c. Are all use restriction signs legible?	✓		
d. How many use restriction signs need to be replaced?	0		
e. Are any of the four (4) URMA signs damaged or missing?		✓	
f. Are all URMA signs legible?	✓		
g. How many URMA signs need to be replaced?	0		
9. Use-restricted area (SA-5-9):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling, erosion (wind or water), or animal burrowing?		✓	
b. Is there evidence of human intrusion into the cover?		✓	
c. Is the cover still mounded such that it prevents ponding on the cover surface?	✓		
10. General vicinity and site conditions (SA-12-15):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Are access roads in good condition? **(If no, see Note A)**	✓		
b. Is there evidence of testing activities in the vicinity of the cover? **(If yes, see Note B)**		✓	
c. Is the berm that surrounds the cover intact? **(If no, see Note C)**	✓		
d. Are there cracks or fissures (wider than 1-inch across) on, adjacent to, or otherwise approaching the cover? **(See Note D for more information)**		✓	
11. Site markers (SA-12-15):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have any posts been damaged or their anchoring weakened?		✓	

POST-CLOSURE INSPECTION CHECKLIST

CAU 484: SURFACE DEBRIS, WASTE SITES, AND BURN AREA
CAS RG-52-007-TAML, DAVIS GUN PENETRATOR TEST

11. Site markers (SA-12-15), continued:	YES	NO	EXPLANATION (required if shaded box is checked)
b. Are any of the four (4) use restriction signs damaged or missing?		✓	
c. Are all use restriction signs legible?	✓		
d. How many use restriction signs need to be replaced?	0		
e. Are any of the four (4) URMA signs damaged or missing?		✓	
f. Are all URMA signs legible?	✓		
g. How many URMA signs need to be replaced?	0		

12. Use-restricted area (SA-12-15):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Is there evidence of settling, erosion (wind or water), or animal burrowing?		✓	
b. Is there evidence of human intrusion into the cover?		✓	
c. Is the cover still mounded such that it prevents ponding on the cover surface?	✓		

Photograph Instructions:

- Photographs should be taken to document maintenance/repair needs at the site. These will be used to plan maintenance/repair activities and are not intended for use in the post-closure annual report.
- Anomalous features or new features (such as changes in adjacent area land use) should be photographed.
- Other photographs are optional.
- A photograph log entry will be made for each photograph taken.

13. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have photographs been taken of the sites?	✓		
If yes, how many photos were taken?	8		
If yes, has a photographic log been prepared?	✓		

E. FIELD CONCLUSIONS	YES	NO	EXPLANATION (required if shaded box is checked)
1. Are more frequent inspections required?		✓	
2. Are existing maintenance/repair actions satisfactory?	✓		
3. Are maintenance/repair actions necessary?		✓	If "yes", describe in field conclusions/recommendations

4. Field conclusions/recommendations: The use restriction signage, radiological postings, and yellow anchored posts are in excellent condition for all four Davis Gun sites: CA-1, SA-4, SA-5-9, and SA-12-15. There was no evidence of settling or surface depressions on the soil cover. Also, there was no evidence of human or animal intrusion. There were no issues or concerns at any of the four sites.

POST-CLOSURE INSPECTION CHECKLIST

CAU 484: SURFACE DEBRIS, WASTE SITES, AND BURN AREA
CAS RG-52-007-TAML, DAVIS GUN PENETRATOR TEST

F. CERTIFICATION

I have conducted an inspection of CAS RG-52-007-TAML, Davis Gun Penetrator Test, in accordance with the procedures of the Post-Closure Plan as recorded on this checklist, attached sheets, field notes, photographs, and photograph logs.

Chief Inspector's Signature: /s/: Glenn Richardson	Date: 5/6/09
Printed Name: Glenn Richardson	Title: Task Manager

Required Attachments:

- Field Notes (if any)
- Photos (or note File Location: S:\NTS\ER Share\Photos\TTR PCM Inspections\2009\05-06-2009)

Distribution: Original – Industrial Sites Project Manager
Copy – Task Manager

G. VERIFICATION

I have reviewed this checklist and attachments and have verified that it is complete.

Signature: /s/: Reed Poderis	Date: 6-14-09
Printed Name: Thomas A. Thiele (or designee)	

Distribution: Original – Task Manager

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 487: THUNDERWELL SITE - CAS RG-26-001-RGRV, THUNDERWELL SITE

Inspection Date and Time: 5/6/09 10:45AM	Reason for Inspection: Annual
Date of Last Post-Closure Inspection: 5/21/08	Reason for Last Post-Closure Inspection: Annual
Responsible Entity: NSTec Environmental Restoration, Nevada Test Site, Mercury, Nevada	
Chief Inspector: Glenn Richardson	Title: Task Manager
Assistant Inspector: Mike Floyd	Title: Field Supervisor

A. GENERAL INSTRUCTIONS

- Complete all checklist items.
- If a SHADED BOX is checked, provide detailed information regarding what was found and/or appropriate references to other documents that have the information (e.g., Maintenance Order Form for CAS 05-16-01 dated 2/15/2008).
- All documentation must be legible and clear.

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION (required if shaded box is checked)
1. Has the Post-Closure Plan been reviewed?	✓		
2. Have the previous inspection reports been reviewed?	✓		
3. Were anomalies or trends detected on previous inspections?		✓	
4. Were maintenance or repairs performed since last inspection?		✓	

C. SITE INSPECTION PREPARATION

Advance coordination with TTR Security is required for access to the site. Assemble the following, as needed, to conduct inspections:

a. TTR radio, pager, etc.
b. Camera (requires TTR Photo/sensitive equipment pass), digital storage drive, and extra batteries
c. Previous Post-Closure Report, Inspection Checklists, repair records, and as-built plans
d. Tape measure
e. Other miscellaneous support equipment

D. SITE INSPECTION

- ***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.*** The checklist should be completed during the site inspection.
- If a shaded box is checked, add detailed comments to document the results of the site inspection. Information provided should be of sufficient detail to enable reconstruction of observations regarding field conditions. Information can take the form of written narrative, sketches, measurements, and annotated site maps, all of which should be placed on additional attachments (if needed) and cross-reference appropriately. Attach the additional pages and number all pages upon completion of the inspection. The completed checklist is part of the field record of the inspection.
- Field notes taken to assist in completion of this checklist will become part of the inspection record. No form is specified for field notes, and additional field notes are not required if the checklist and associated attachments adequately describe site conditions.

1. Site markers (A8 Anomalies Area):	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have boundary monuments been disturbed?		✓	
b. Are boundary monuments in good condition?	✓		
c. Are any of the use restriction warning signs damaged or missing?		✓	

Inspection Requirement: **Annual**

POST-CLOSURE INSPECTION CHECKLIST

CAU 487: THUNDERWELL SITE - CAS RG-26-001-RGRV, THUNDERWELL SITE

1. Site markers (A8 Anomalies Area):	YES	NO	EXPLANATION (required if shaded box is checked)
d. Are all signs legible?	✓		
e. How many signs need to be replaced?	0		
2. Use-restricted area (A8 Anomalies Area):	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
a. Is there evidence of human intrusion onto the site?		✓	
b. Is there evidence of large animal intrusion into the cover?		✓	
3. Site markers (A17 Anomalies Area):	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
a. Have boundary monuments been disturbed?		✓	
b. Are boundary monuments in good condition?	✓		
c. Are any of the use restriction warning signs damaged or missing?		✓	
d. Are all signs legible?	✓		
e. How many signs need to be replaced?	0		
4. Use-restricted area (A17 Anomalies):	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
a. Is there evidence of human intrusion onto the site?		✓	
b. Is there evidence of large animal intrusion into the cover?		✓	

Photograph Instructions:

- ***A standard set of photographs is needed for the post-closure report. Take two photos – one from each site – at the approximate locations where photos were taken the previous year (as found in the previous year's post-closure report).***
- Photographs should be taken to document maintenance/repair needs at the site. These will be used to plan maintenance/repair activities and are not intended for use in the post-closure annual report.
- Anomalous features or new features (such as changes in adjacent area land use) should be photographed.
- Other photographs are optional.
- A photograph log entry will be made for each photograph taken.

5. Photograph Documentation:	YES	NO	EXPLANATION (required if shaded box is checked)
a. Have photographs been taken of the sites?	✓		
If yes, how many photos were taken?	2		
If yes, has a photographic log been prepared?	✓		
E. FIELD CONCLUSIONS	**YES**	**NO**	**EXPLANATION (required if shaded box is checked)**
1. Are more frequent inspections required?		✓	
2. Are existing maintenance/repair actions satisfactory?	✓		
3. Are maintenance/repair actions necessary?		✓	If "yes", describe in field conclusions/recommendations

POST-CLOSURE INSPECTION CHECKLIST

CAU 487: THUNDERWELL SITE - CAS RG-26-001-RGRV, THUNDERWELL SITE

E. FIELD CONCLUSIONS (continued)

4. Field conclusions/recommendations: The use restriction signage is legible and intact on the aboveground monuments at both the A-8 and A-17 anomaly sites. There was no evidence of animal intrusion. The aboveground monuments are not damaged and remain sturdy. There are no issues at these sites warranting a follow-up corrective action.

F. CERTIFICATION

I have conducted an inspection of CAS RG-26-001-RGRV, Thunderwell Site, in accordance with the procedures of the Post-Closure Plan as recorded on this checklist, attached sheets, field notes, photographs, and photograph logs.

Chief Inspector's Signature: /s/: Glenn Richardson	Date: 5/6/09
Printed Name: Glenn Richardson	Title: Task Manager

Required Attachments:

- Field Notes (if any)
- Photos (or note File Location: S:\NTS\ER Share\Photos\TTR PCM Inspections\2009\05-06-2009

Distribution: Original – Industrial Sites Project Manager
Copy – Task Manager

G. VERIFICATION

I have reviewed this checklist and attachments and have verified that it is complete.

Signature: /s/: Reed Poderis	Date: 6-14-09
Printed Name: Thomas A. Thiele (or designee)	

Distribution: Original – Task Manager

ATTACHMENT D
FIELD NOTES

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MAY 5, 2009

TTR POST CLOSURE INSPECTIONS

CAU 400, 404, 407, 423, ~~415~~ 426, 427, 453, 484, 487

5/5/09

PERSONNEL: Glenn Richardson - P.M.

Mike FLOYD - F.S.

Kevin CABBLE - NNSA

TED IAFERATOS - NDEP

SCOPE - PERFORM TTR POST CLOSURE INSPECTIONS

EQUIP - CAMERA

WEATHER - Cool (70's) CLEAR, BREEZY (0-5 mph)

1310 - ARRIVE AT CAU 400 BOMBLET PIT, SOME ANIMAL BURROWING PRESENT. Collect 2 ea PHOTOS, 1 FROM SOUT LOOKING NORTH, 1 AT the GATE LOOKING South. NO ISSUES OR CONCERNS that will REQUIRE A Follow-up ACTION. AS A B.M.P. RECOMMEND BACK Filling ANIMAL BURROWS.

1345 - LEAVE CAU 400 BOMBLET PIT

1400 - ARRIVE AT CAU 400 5 POINTS LANDFILL, EAST END of Site FENCING Showing Some DAMAGE, RECOMMEND adding AS A B.M.P. MORE HAY BALES FOR EROSION CONTROL IN this AREA. Continue MONITORING. Collect 2 EA REQUIRED Photos, 1 FROM NEAR GATE LOOKING EAST, 1 FROM EAST END NEAR DAMAGED FENCE AREA.

1430 - LEAVE CAU 400, 5 POINTS LANDFILL.

1450 - ARRIVE AT CAU 404 ROLLER COASTER Sewage LAGOONS, 1 REQUIRED Photo Collected FROM GATE Looking EAST. USE RESTRICTION HAS Been CHANGED AT this Site (ADMINISTRATIVE) NO FURTHER INSPECTIONS OR MAINTANCE REQUIRED.

1500 - LEAVE CAU 404 ROLLER COASTER Sewage LAGOONS.

1505 - ARRIVE AT CAU 407 ROLLER COASTER RAD SURE Site.

SIGNATURE /s/: Michael Floyd

DATE 5/5/09

TTR Post Closure Inspections Cont. May 5, 2009

1505 cont- Continue Monitoring, 2 Photos collected, 1 From West End Looking East, 1 From South East Corner Looking South West (Required).

1520 - Leave Call 407 Roller Coaster Rad Safe Locations.

1530 - Arrive at Call 426 Cactus Springs Location, Collect 1 Required Photo From East Corner Looking West. Continue Monitoring.

1555 - Leave Call 426 Cactus Springs Location, Head to office.

1610 - Call in Progress of Inspections, Work on Inspection Check Lists.

1645 - Head to Chow hall, then to Tonopah

Work continued to Page ____

SIGNATURE /s/: Michael Floyd			DATE 5/5/09
DISCLOSED TO AND UNDERSTOOD BY (	DATE	WITNESS	DATE

PROJECT NO.

BOOK NO.

Work continued from Page____

MAY 6, 2009

TTR POST CLOSURE INSPECTIONS.

NSTec.

Glenn Richardson – P.M.

M.L. FLOYD – F.S.

Shannon Saurec – RCT.

Scope – Continue TTR Post Closure Inspections to Completion.

Safty – General Safty Rules Apply – Level "D" PPE.

EQUIP – Camera

Weather – Clear, Calm, Temps in 70°-80°

0700 – Report to housing to set-up meals for the Day.

07~~45~~ – Arrive at TTR office, Talk about Scope, Safty, (MLF 5/6/09) Work on Inspection Check Lists, Verify Photo's Collected 5-5-09. (MLF 5/6/09) Wait for RCT to Arrive.

0930 – RCT Arrives, Head to Housing to Set up meal for RCT. (MLF 5/6/09)

1030 – Head to CAU 487 Thunderwell, Set-up meal for RCT. (PRIOR TO ARRIVING)

1045 – Arrive at CAU 487 Thunderwell A-8 Anomaly, Collect 1 required photo looking North.

1055 – Arrive at CAU 487 Thunderwell A-17 Anomaly, Collect 1 Required Photo Looking South West. Notice at Both CAU 487, A-8/A-17 U.R. Warning Signs Beginning to Fade.

1105 – Leave CAU 487 Area, Head to Lunch (1 hr.)

1225 – Arrive at CAU 484, CA-1, Collect 1 Required Photo Looking EAST. This Location Had No Issues or Concerns.

Work continued to Page 197

SIGNATURE /s/: Michael Floyd

DATE

MAY 6, 2009

TTR Post Closure Inspections Cont.

1240 - Leave CAU 484, CA-1, While Driving to CAU 484 SA-4, Noticed Small Gaps in Berms.

1245 - Arrive at CAU 484, SA-4, Collect 1 Required Photo Looking South. There were No Issues or Concerns at this Location.

1250 - Leave CAU 484 - SA4 Location.

1255 - Arrive at CAU 484 SA-5-9, Collect 1 Required Photo Looking South West. There were No Issues or Concerns at This Location.

1305 - Arrive at CAU 484 SA-12-15, Collect 1 Required Photo Looking North West. There were No Issues or Concerns at this Location.

1310 - Leave CAU 484 Area, Head Back to CAU 407 Roller Coaster Rad Safe Site.

1325 - Arrive at CAU 407 Roller Coaster Rad Safe Site and Re-Collect Photos.

1335 - Leave CAU 407.

1350 - Arrive at CAU 453 UXO Landfill, Perform Site Walkdown and Discovered Large Animal Burrows and a Large Depression Area (Approx 3'W x 5'L x 18"D). Signs & Fence + Gate were Found to Be in good Condition, Gate was Locked.

1425 - Leave CAU 453, Head to CAU 424.

1435 - 1615 - Perform the Following Inspections and Collected Required Photo's For the Following Land Cell Cells: A-3-1, A-3-2, A-3-3, A-3-4, A-3-5, A-3-6, A-3-8. There were No Issues or Concerns at these Locations.

Work continued to Page 198

SIGNATURE /s/: Michael Floyd			DATE 5-6-09
DISCLOSED TO AND UNDERSTOOD BY	DATE	WITNESS	DATE

MAY 6 - 2005

TTR POST CLOSURE INSPECTIONS CONT.

1615 CONT - ALL REQUIRED TTR POST CLOSURE INSPECTIONS HAVE BEEN COMPLETED.

* NOTE: CAU 423 + CAU 427 NO LONGER REQUIRE INSPECTIONS OR MAINTENANCE DUE TO USE RESTRICTION BEING REMOVED.

1630 - CALL INTO RESOURCE MEETING TO PRESENT STATUS THAT ALL INSPECTION HAVE BEEN COMPLETED

1700 - HEAD TO CHOW HALL.

SIGNATURE /s/: Michael Floyd

DATE

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ATTACHMENT E
PHOTOGRAPHS

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PHOTOGRAPH LOG

PHOTOGRAPH	DATE	DESCRIPTION
1	05/05/2009	CAU 400 Bomblet Pit, looking south
2	05/05/2009	CAU 400 Bomblet Pit, looking northwest
3	05/05/2009	CAU 400 Five Points Landfill, looking east
4	05/05/2009	CAU 400 Five Points Landfill, looking west
5	05/06/2009	CAU 407, looking east
6	05/06/2009	CAU 407, looking west
7	05/06/2009	CAU 424, Landfill Cell A3-1, looking southeast
8	05/06/2009	CAU 424, Landfill Cell A3-2, looking north
9	05/06/2009	CAU 424, Landfill Cell A3-3, looking northwest
10	05/06/2009	CAU 424, Landfill Cell A3-4, looking north
11	05/06/2009	CAU 424, Landfill Cell A3-5, looking southeast
12	05/06/2009	CAU 424, Landfill Cell A3-6, looking south
13	05/06/2009	CAU 424, Landfill Cell A3-8, looking west
14	05/05/2009	CAU 426, looking west
15	05/06/2009	CAU 453, looking northwest
16	05/06/2009	CAU 484, CA1 anomaly, looking east
17	05/06/2009	CAU 484, SA4 anomaly, looking southwest
18	05/06/2009	CAU 484, SA5-9 anomaly, looking west
19	05/06/2009	CAU 484, SA12-15 anomaly, looking north
20	05/06/2009	CAU 487, A-8 anomaly, looking north
21	05/06/2009	CAU 487, A-17 anomaly, looking west

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Photograph 1: CAU 400 Bomblet Pit, looking south, 05/05/2009

Photograph 2: CAU 400 Bomblet Pit, looking northwest, 05/05/2009

Photograph 3: CAU 400 Five Points Landfill, looking east, 05/05/2009

Photograph 4: CAU 400 Five Points Landfill, looking west, 05/05/2009

Photograph 5: CAU 407, looking east, 05/06/2009

Photograph 6: CAU 407, looking west, 05/06/2009

Photograph 7: CAU 424, Landfill Cell A3-1, looking southeast, 05/06/2009

Photograph 8: CAU 424, Landfill Cell A3-2, looking north, 05/06/2009

Photograph 9: CAU 424, Landfill Cell A3-3, looking northwest, 05/06/2009

Photograph 10: CAU 424, Landfill Cell A3-4, looking north, 05/06/2009

Photograph 11: CAU 424, Landfill Cell A3-5, looking southeast, 05/06/2009

Photograph 12: CAU 424, Landfill Cell A3-6, looking south, 05/06/2009

Photograph 13: CAU 424, Landfill Cell A3-8, looking west, 05/06/2009

Photograph 14: CAU 426, looking west, 05/05/2009

Photograph 15: CAU 453, looking northwest, 05/06/2009

Photograph 16: CAU 484, CA1 anomaly, looking east, 05/06/2009

Photograph 17: CAU 484, SA4 anomaly, looking southwest, 05/06/2009

Photograph 18: CAU 484, SA5-9 anomaly, looking west, 05/06/2009

Photograph 19: CAU 484, SA12-15 anomaly, looking north, 05/06/2009

Photograph 20: CAU 487, A-8 anomaly, looking north, 05/06/2009

Photograph 21: CAU 487, A-17 anomaly, looking west, 05/06/2009

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ATTACHMENT F
POST-CLOSURE VEGETATION MONITORING REPORT

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POST-CLOSURE VEGETATION MONITORING REPORT FOR CORRECTIVE ACTION UNITS:

400, FIVE POINTS LANDFILL (TTR)

400, BOMBLET PIT (TTR)

404, ROLLER COASTER LAGOONS AND TRENCH (TTR)

407, ROLLER COASTER RADSAFE AREA (TTR)

426, CACTUS SPRING WASTE TRENCHES (TTR)

Field Work Completed
June 8–9, 2009

Report Prepared
by
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Ecological Services

September 2009

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1.0 INTRODUCTION

This report documents methods and results of monitoring conducted in June 2009 at Corrective Action Units (CAUs) 400, 404, 407, and 426 on the Tonopah Test Range (TTR). The status of vegetation is described and compared to adjacent undisturbed areas. Concerns and issues are identified, and remedial actions are recommended to ensure the cover is maintained.

In 1997, CAUs 400, 404, and 426 were seeded with a mix of native shrubs and grasses. Each site was mulched with straw that was crimped into the soil. The sites were protected from grazing animals (e.g., horses and rabbits) with 4-foot barbed wire fences and 2 feet of chicken wire along the base of the fences. In 2000, CAU 407 was revegetated using similar techniques.

Remedial revegetation has occurred at two sites. A flash flood swept through CAU 400, Five Points Landfill, in 2003. The fence was damaged, and much of the vegetation through the center of the site was lost. The fence was repaired, and the site was reseeded in 2004. The site flooded again in 2006, and much of the lower portions of the site were covered with several inches of sediment. No remedial action was taken. After CAU 407 was revegetated in 2000, cover repairs resulted in the loss of vegetation. In 2004, erosion channels on the cover were repaired, and the site was reseeded. An erosion blanket was used to minimize erosion.

Each site is monitored to document the success of reclamation and identify problems. The first year of monitoring determined if germination had occurred and included density estimates and photographic documentation. Subsequent monitoring evaluated plant establishment and long-term vegetation survival and compared plant cover and density with adjacent reference areas.

2.0 OBJECTIVES

The objective of monitoring is to document the success of revegetation and to identify issues to maintain integrity of the sites. The objective of revegetating a site is to accelerate the reestablishment of native plants and return the site to pre-disturbance conditions. Vegetation affords protection from wind and water erosion to maintain the integrity of the site. It also impedes establishment of noxious, weedy species and provides cover and food for wildlife.

3.0 METHODS

The sites were inspected on June 8–9, 2009. Plant cover and density estimates were made, wildlife usage was noted, and erosion conditions were evaluated. Plant cover was estimated using an optical point projection device. Sample points were taken at given intervals along a permanent linear transect. Cover was recorded by species. Plant density was estimated using 1-square meter (m^2) quadrats at given intervals along each transect. The total number of individual plants within each quadrat was recorded. The data were averaged over all quadrats.

Species richness was calculated from density data. The number of different plant species within each quadrat was averaged over all quadrats to determine the average number of different species present. This provides indication of the diversity or heterogeneity of the plant community.

Revegetation is considered successful when a pre-determined percentage of plant cover and density is achieved. These are typically a percentage of plant cover and density on an adjacent area that represents an undisturbed plant community. A typical percentage used to determine reclamation success is 70 percent. The time needed for reestablishment of a native plant

community on a disturbed location depends on factors such as degree of disturbance, soil types, climate conditions, precipitation amounts and patterns, and temperature extremes. Revegetation success is achieved after several consecutive years of meeting, or exceeding, success criteria.

Wildlife usage was determined from the presence of animal burrows or scat, browsing by animals, and the observation of animals. Erosion was measured using the modified Bureau of Land Management erosion condition classification. Pedestalling of soils, movement of surface litter, and rilling or gullying on the surface provided an objective characterization of erosion.

4.0 RESULTS

This section provides results of the 2009 survey.

4.1 CAU 400, FIVE POINTS LANDFILL

In 2009, six transects were sampled, two in the area that had not flooded, three in the area that was revegetated in 2004, and one in the reference area.

4.1.1 Vegetation Monitoring Results

4.1.1.1 Plant Cover

Plant cover on the staging area was over 11 percent (Table 1). Fourwing saltbush contributed to over 70 percent of total cover. Grasses (Indian ricegrass and James' galleta) contributed to less than 6 percent of total cover. Remaining plant cover included tansyaster and eggleaf fiddleleaf, forbs common to the native community. Composition of the cover on the reference area was similar with a few exceptions. In addition to fourwing saltbush, Greene's rabbitbrush contributed. Indian ricegrass made up more than half of total cover, and forb cover was about the same as on the staging area. The two forbs that contributed to cover on the reference area were Esteve's pincushion and prickly Russian thistle, an invasive weedy species. Plant cover on the reseeded area improved. Shrub cover was similar to the reference area, but only perennial species contributed. A single forb, prickly Russian thistle, made up 25 percent of total cover.

TABLE 1. PLANT COVER (%) ON CAU 400, FIVE POINTS LANDFILL, 2009

	Staging	Reseeded	Reference	Standard
Shrubs				1.75
Fourwing saltbush (*Atriplex canescens*)	8.13	2.50	1.67	
Greene's rabbitbrush (*Chrysothamnus greenei*)	0.00	0.00	0.83	
Grasses				4.08
Indian ricegrass (*Achnatherum hymenoides*)	0.63	0.00	5.83	
Forbs/Annuals				1.75
Eggleaf fiddleleav (*Nama pusillum*)	1.25	0.00	0.00	
Esteve's pincushion (*Chaenactis steviodes*)	0.00	0.00	1.67	
Western blazingstar (*Mentzelia albomarginatus*)	1.25	0.00	0.00	
Prickly Russian thistle (*Salsola iberica*)	0.00	0.83	0.83	
Total Plant Cover	**11.26**	**3.33**	**10.83**	**7.58**
Bare Ground	58.75	85.00	75.00	
Litter	30.00	11.67	14.17	

4.1.1.2 Plant Density

Total plant density on the staging areas was about two-thirds of the reference area (Table 2). Shrub density was about the same on the staging and reference areas. Two shrubs, fourwing saltbush and bud sagebrush, made up the shrub density on the staging area. Two species of grasses contributed to grass density, Indian ricegrass and James' galleta, but grass density on the staging area was only about 28 percent of the grass density on the reference area. Indian ricegrass was the only grass on the reference area. On the reseeded area, total density was less than 1 plant per m^2. All three life forms (shrubs, grasses, and forbs) were present in low densities.

There was a variety of forbs on the staging and reference areas. Difference in density was attributable to the abundance of Esteve's pincushion on the reference area. Esteve's pincushion was the most abundant forb on both areas, but there were almost four times as many individuals of this species on the reference area than the staging area. Forb density on the reseeded area was less than 1 percent. There were five species on the reseeded area and 12 and 14 species on the staging and reference areas, respectively.

TABLE 2. PLANT DENSITY (PLANTS PER M^2) ON CAU 400, FIVE POINTS LANDFILL, 2009

	Staging	Reseeded	Reference	Standard
Shrubs				
Bud sagebrush (*Picrothamnus desertorum*)	0.03	0.00	0.00	
Fourwing saltbush (*Atriplex canescens*)	0.83	0.03	0.17	
Greene's rabbitbrush (*Chrysothamnus greenei*)	0.00	0.00	0.57	
Winterfat (*Krascheninnikovia lanata*)	0.00	0.00	0.07	
Total Shrubs	**0.86**	**0.03**	**0.81**	**0.56**
Grasses				
Indian ricegrass (*Achnatherum hymenoides*)	0.28	0.13	1.17	
James' Galleta (*Pleuraphus jamesii*)	0.05	0.00	0.00	
Squirreltail (*Elymus elymoides*)	0.00	0.34	0.00	
Total Grasses	**0.33**	**0.47**	**1.17**	**0.82**
Forbs				
Cryptantha (*Cryptantha* species)	0.00	0.00	0.47	
Cushion cryptantha (*Cryptantha circumscissa*)	4.23	0.00	1.80	
Desert wollystar (*Eriastrum eremicum*)	0.48	0.00	0.87	
Eggleaf fiddleleaf (*Nama pusillum*)	2.73	0.00	2.67	
Esteve's pincushion (*Chaenactis steviodes*)	5.63	0.01	21.73	
Flatcrown buckwheat (*Eriogonum deflexum*)	4.08	0.00	0.1	
Hoary tansyaster (*Macheranthera canescens*)	0.60	0.00	0.33	
Lupine (*Lupinus* species)	0.00	0.00	0.37	
Nye gilia (*Aliciella nyensis*)	0.60	0.00	0.53	
Prickly Russian thistle (*Salsola iberica*)	0.88	0.22	0.67	
Ragweed (*Ambrosia* species)	0.23	0.03	0.07	
Saltlover (*Halogeton glomeratus*)	0.00	0.01	0.00	
Small wirelettuce (*Stephanomeria exigua*)	0.25	0.00	0.30	
Sowthistle desertdandelion (*Malacothrix sonchoides*)	0.00	0.00	0.03	
Western tansymustard (*Descurania pinnata*)	0.03	0.00	0.00	
Whitestem blazingstar (*Mentzelia albicaulis*)	2.00	0.02	2.13	
Total Forbs	**21.74**	**0.29**	**32.07**	**22.45**
Total Plant Density	**22.93**	**0.79**	**34.05**	**23.83**

4.1.1.3 Species Richness

There were about six different species found within each square meter area on the staging area (Table 3). This included shrubs, grasses, and forbs. There were two native shrub species encountered on the staging area, fourwing saltbush and bud sagebrush, along with two native grasses, Indian ricegrass and James' galleta. Bud sagebrush occurred on the staging area but not on the reference area, and two native shrubs, Greene's rabbitbrush and winterfat, occurred on the reference area but not on the staging area. Only one species of grass occurred on the reference area, Indian ricegrass. It also occurred on the staging area along with James' galleta. There were a total of 12 forbs found on the staging area. One species, western tansymustard, was only found on the staging area, whereas there were three forbs that were exclusive to the reference area.

Species richness on the reseeded area was low. On average, there was only one species per m^2 on the reseeded area compared to six on the staging area. The only shrub encountered was fourwing saltbush. Indian ricegrass was found on the site but was not as abundant as squirreltail, a grass that was very common in this area before it was flooded.

TABLE 3. SPECIES RICHNESS (SPECIES PER M^2) ON CAU 400, FIVE POINTS LANDFILL, 2009

	Staging	Reseeded	Reference	Standard
Shrubs	0.5	0.1	0.6	0.4
Grasses	0.3	0.3	0.7	0.5
Forbs/Annuals	5.1	0.7	3.4	2.4
Total Species	**5.9**	**1.1**	**4.7**	**3.3**

4.1.2 Revegetation Success

The area that did not experience flooding has successfully revegetated. Using 70 percent of plant cover, plant density, and species richness on the reference area as a standard for successful revegetation, plant cover and species richness exceeded the standard, and plant density was about 96 percent of the standard. Overall plant cover was 11.3 percent, which was almost one and a half times the standard of 7.6 percent. When considering success by life form, shrubs and forbs exceed the standard. Shrub cover was more than four times the standard, and forb cover was about 50 percent higher than the standard. Grass cover was about 17 percent of the standard. Shrub cover maintained at a relatively high level over the past 5 years, but grass cover declined the last 2 years. Growing conditions have not been optimal for the last several years, and grasses were most affected by the dry conditions. Forb growth corresponds to the timing and intensity of precipitation, and the fluctuations in forb cover over the last 5 years indicated such a response.

Of the three parameters used to evaluate revegetation success, plant density is the only one that did not exceed the standard. Shrub density exceeded the standard, but grass density was only 40 percent of the success standard, and forb density was slightly below the success standard. Shrub density has been relatively consistent over the last 5 years, whereas grass density declined.

4.1.3 Wildlife Use

Small mammal burrows were observed on the southeastern section of the site. Shrubs did not show signs of excessive browsing. There were no signs of large animals (horses and antelope).

4.1.4 Soil Erosion

There were no signs of heavy water movement through the channel that traverses the site. The silt in the lower areas has not shown significant change. Soil outside the lower areas appears to be stable and shows no signs of erosion.

4.1.5 Summary/Recommendations

The plant community is viable and persistent. Total cover exceeded the adjacent native community, and plant density, although less than in the native community, was within a few percent of meeting success standards. Species richness exceeded success standards, indicating the plant community has established on the site and is diverse and viable.

A concern for the non-flooded areas is the composition of plant cover and density. Over the last few years, the amount of precipitation received throughout the region has been low. Grasses have suffered from the dry conditions. There have been gradual declines in both grass cover and density over the last few years.

Another concern is the establishment of a plant community where water accumulates from floods or moderate precipitation events. When water does not infiltrate quickly, plant roots may be submerged for extended periods of time, resulting in plant mortality. Correcting the drainage issue would be labor intensive and costly. It is recommended that the flood areas continue to be monitored to document changes in the plant community and to identify and document conditions that may prohibit plant establishment and growth.

4.2 CAU 400, BOMBLET PIT

Two transects were sampled, one in the revegetated area and one in the reference area directly east of the site.

4.2.1 Vegetation Monitoring Results

4.2.1.1 Plant Cover

The 7.5-percent total plant cover this year was made up entirely of shrub cover (Table 4). On the staging area, shadscale saltbush accounted for all of the plant cover. On the reference area, there were three shrubs, shadscale saltbush, bud sagebrush, and winterfat, but like the staging area, no grasses or forbs contributed to plant cover.

TABLE 4. PLANT COVER (%) ON CAU 400, BOMBLET PIT, 2009

	Staging	Reference	Standard
Shrubs			8.8
Shadscale saltbush (*Atriplex confertifolia*)	7.50	5.00	
Bud sagebrush (*Picrothamnus desertorum*)	0.00	6.25	
Winterfat (*Krascheninnikovia lanata*)	0.00	1.25	
Grasses	0.00	0.00	0.00
Forbs/Annuals	0.00	0.00	0.00
Total Plant Cover	**7.5**	**12.5**	**8.8**
Bare Ground	82.5	66.25	
Litter	10.0	21.25	

4.2.1.2 Plant Density

Shrub density on the staging area was excellent (Table 5). The two most common species on the staging area, bud sagebrush and shadscale saltbush, were also on the reference area. There were several species of shrubs on both the staging area and the reference area, but there were no grasses on the staging area, and only Indian ricegrass was found on the reference area.

The absence of grasses was not unexpected. Grasses are not a major component of the native plant community (reference area), and although the density of grasses was higher shortly after the site was revegetated in 1997, grasses have not persisted.

Forb density was not high at the site. The only forb present on the staging area was common pepperweed, and the most common forb on the reference area was hoary tansyaster. Common pepperweed also occurred on the reference area, but at lower densities than the staging area.

TABLE 5. PLANT DENSITY (PLANTS PER M^2) ON CAU 400, BOMBLET PIT, 2009

	Staging	Reference	Standard
Shrubs			
Bud sagebrush (*Picrothamnus desertorum*)	1.60	3.00	
Fourwing saltbush (*Atriplex canescens*)	0.05	0.00	
Shadscale saltbush (*Atriplex confertifolia*)	3.30	0.65	
Winterfat (*Krascheninnikovia lanata*)	0.00	0.15	
Total Shrubs	**4.95**	**3.80**	**2.66**
Grasses			
Indian ricegrass (*Achnatherum hymenoides*)	0.00	0.30	
Total Grasses	**0.00**	**0.30**	**0.21**
Forbs			
Common pepperweed (*Lepedium densiflorum*)	0.40	0.15	
Hoary tansyaster (*Macheranthera canescens*)	0.00	0.45	
Total Forbs	**0.40**	**0.60**	**0.42**
Total Plant Density	**5.35**	**4.70**	**3.29**

4.2.1.3 Species Richness

Species richness was relatively low, including on the reference area (Table 6). On average there were only two species encountered within a square meter on the staging and reference areas. Shadscale saltbush and bud sagebrush were common to both the staging and reference areas. Fourwing saltbush was not found on the reference area but was occasionally found on the staging area. Grasses occurred previously on the staging area, but none were found this year. Indian ricegrass was the only grass found on the reference area.

TABLE 6. SPECIES RICHNESS (SPECIES PER M^2) ON CAU 400, BOMBLET PIT, 2009

	Staging	Reference	Standard
Shrubs	1.6	1.7	1.2
Grasses	0.0	0.2	0.1
Forbs/Annuals	0.4	0.4	0.3
Total Species	**2.0**	**2.3**	**1.6**

4.2.2 Revegetation Success

The site had low plant cover, low plant density, and poor species richness. However, this is typical of the native plant community in the area. Plant cover was about 85 percent of the success standard of 8.8 percent. Plant cover over the last three years has declined from a high of over 20 percent in 2007. Grasses have not made a significant contribution to plant cover, and forb cover was sporadic and opportunistic.

Plant density on the staging area exceeded the success standard by more than 2.0 plants per m^2. Shrubs have persisted through less than optimal growing conditions the last few years. Shadscale saltbush and bud sagebrush were the most commonly found species.

Species richness was similar to plant density. There were only 2.0 species per m^2, but the standard of 1.6 species per m^2 was exceeded. The native plant community did not have a rich forb or grass component. The absence of grasses did not indicate failure of revegetation efforts; rather the abundance of shrubs suggested that a stable plant community similar to the adjacent undisturbed plant community has established at the site.

4.2.3 Wildlife Use

The site is relatively flat and few small mammal burrows were present. The majority of small mammal activity was along the fence where soil accumulated and provided a burrowing medium. There was no evidence of excessive browsing.

4.2.4 Soil Erosion

There was no evidence of erosion at this site.

4.2.5 Summary/Recommendations

The goals of revegetation have been accomplished. Native plant species were established and contributed significantly to overall plant cover and density. Although plant cover was short of success standards, density and species richness exceeded success standards. Less than optimal growing conditions have been experienced for several years. Plant cover, density, and species richness has been higher in previous years when growing conditions were better. Many species have persisted the last few years during poor growing conditions, and when those conditions improve, species that have contributed to plant cover and density in the past may return.

The site is characterized by a stable plant community similar to the adjacent native plant community. Per discussions during a site visit in May 2009 with representatives from the State of Nevada, the U.S. Department of Energy, and National Security Technologies, it was determined that the fence could be removed, monitoring would no longer be required, and this would be the final reporting year for this site.

4.3 CAU 404, ROLLER COASTER LAGOONS AND TRENCH

Three transects on the staging area, three on the cover, and three on the reference area were sampled. The reference area is northwest of the site.

4.3.1 Vegetation Monitoring Results

4.3.1.1 Plant Cover

Three shrubs accounted for over 96 percent of total cover on the staging area (Table 7). Shadscale saltbush had the highest cover, followed by bud sagebrush and fourwing saltbush. Only one grass, Indian ricegrass, contributed to plant cover on the staging area. There were no forbs present. Plant cover on the cover was not as high as the staging area but higher than the reference area and was an equal mix of shrubs and grasses. Shadscale saltbush was the only shrub, and James' galleta was the only grass. Bud sagebrush and shadscale saltbush made up about 80 percent of total plant cover on the reference area, and two grasses, James' galleta and low woollygrass, made up about 13 percent of total cover.

TABLE 7. PLANT COVER (%) ON CAU 404, 2009

	Staging	Cover	Reference	Standard
Shrubs				4.67
Bud sagebrush (*Picrothamnus desertorum*)	1.67	0.00	3.89	
Fourwing saltbush (*Atriplex canescens*)	0.56	0.00	0.00	
Shadscale saltbush (*Atriplex confertifolia*)	12.78	5.83	2.78	
Grasses				0.78
Indian ricegrass (*Achnatherum hymenoides*)	0.56	0.00	0.00	
James' galleta (*Pleuraphus jamesii*)	0.00	5.83	0.56	
Low woollygrass (*Dasyochloa pullchella*)	0.00	0.00	0.56	
Forbs/Annuals				0.39
Desert globemallow (*Sphaeralcea grosularifolia*)	0.00	0.00	0.56	
Total Plant Cover	**15.57**	**11.66**	**8.35**	**5.84**
Bare Ground	67.78	80.00	73.33	
Litter	16.67	8.33	18.33	

4.3.1.2 Plant Density

Density on the staging area was about 5 plants per m^2 (Table 8). Two shrubs, bud sagebrush and shadscale saltbush; one grass, James' galleta; and one forb, desert globemallow, were found on the staging area. Shrubs accounted for about 98 percent, grasses accounted for 2 percent, and forbs accounted for less than 1 percent of total density.

Plant density on the cover had a better balance of shrubs and grasses. Total density was 6.6 plants per m^2. Shrub density was 3.6 plants per m^2, and grass density was 3.0 plants per m^2. Shrubs made up about 54 percent, grasses made up 45 percent, and forbs made up less than 1 percent of total density. Three shrubs made up the shrub density, bud sagebrush, fourwing saltbush, and shadscale saltbush. The main grass was James' galleta with a few squirreltail plants. The only forb encountered was hoary tansyaster.

Plant density on the reference area was 10.5 plants per m^2, which was almost double the density on the staging area and cover. About 55 percent of the density, however, was from forbs. Shrubs made up 34 percent, and grasses made up 11 percent. Common shrubs on the reference area were bud sagebrush, shadscale saltbush, winterfat, and yellow rabbitbrush. There were three grasses present, Indian ricegrass, James' galleta, and low woollygrass. The three forbs encountered on the reference area were buckwheat, desert globemallow, and Esteve's pincushion. Esteve's pincushion accounted for 97 percent of forb density.

TABLE 8. PLANT DENSITY (PLANTS PER M^2) ON CAU 404, 2009

	Staging	Cover	Reference	Standard
Shrubs				
Bud sagebrush (*Picrothamnus desertorum*)	0.90	0.60	2.50	
Fourwing saltbush (*Atriplex canescens*)	0.00	0.30	0.00	
Shadscale saltbush (*Atriplex confertifolia*)	4.10	2.70	0.80	
Winterfat (*Krascheninnikovia lanata*)	0.00	0.00	0.20	
Yellow rabbitbrush (*Chrysothamnus viscidiflorus*)	0.00	0.00	0.04	
Total Shrubs	**5.00**	**3.60**	**3.54**	**2.46**
Grasses				
Indian ricegrass (*Achnatherum hymenoides*)	0.00	0.00	0.20	
James' Galleta (*Pleuraphus jamesii*)	0.10	2.90	0.70	
Low woollygrass (*Dasyochloa pullchella*)	0.00	0.00	0.30	
Squirreltail (*Elymus elymoides*)	0.00	0.10	0.00	
Total Grasses	**0.10**	**3.00**	**1.20**	**0.86**
Forbs				
Buckwheat (*Eriogonum* species)	0.00	0.00	0.10	
Desert globemallow (*Sphaeralcea ambigua*)	0.02	0.00	0.10	
Esteve's pincushion (*Chaenactis steviodes*)	0.00	0.00	5.60	
Hoary tansyaster (*Macheranthera canescens*)	0.00	0.05	0.00	
Total Forbs	**0.02**	**0.05**	**5.80**	**4.12**
Total Plant Density	**5.12**	**6.65**	**10.54**	**7.44**

4.3.1.3 Species Richness

Species richness was comparable for the staging area and cover. Species richness for shrubs on the reference area was higher (Table 9).

TABLE 9. SPECIES RICHNESS (SPECIES PER M^2) ON CAU 404, 2009

	Staging	Cover	Reference	Standard
Shrubs	1.4	1.3	1.9	1.3
Grasses	0.04	0.8	0.4	0.3
Forbs/Annuals	0.02	0.1	1.1	0.8
Total Species	**1.5**	**2.2**	**3.4**	**2.4**

4.3.2 Revegetation Success

Total plant cover exceeded standards for both the staging area and cover. For the staging area, shrub cover exceeded the standard, but grass cover was only about 70 percent of the standard. For the cover, the standards for shrubs and grasses were exceeded.

The same pattern was true for density. Shrub density on the staging area and cover exceeded the standard. Grass density on the staging area was only 12 percent of the standard. However, on the cover, grass density was more than three times the standard. Forb density was near zero for both the staging area and cover, so the standard was not attained.

On the staging area, species richness was about 60 percent of the standard due to the absence of grasses and forbs. Species richness on the cover was about 90 percent of the standard. Shrubs and grasses exceeded the standard, but forbs were only 12 percent of the standard.

4.3.3 Wildlife Use

There were no signs of heavy use of plants by small mammals. The fence has protected the site from large grazing animals such as horses and antelope. The slopes of the cover are the most heavily used portion of the site, where small mammals have constructed numerous burrows.

4.3.4 Soil Erosion

There were no serious erosion issues at the site. During heavy precipitation, water moved down the site access road and onto the revegetated area, creating a few small erosion channels.

4.3.5 Summary/Recommendations

Overall plant cover on the staging area and cover exceeded standards. Density of perennial species (shrubs and grasses) also exceeded standards. The decline in species richness over the past few years is a concern. Species richness has also declined on the reference area, but the native plant community may be more tolerant and able to recover from less favorable growing conditions. The invasion of weedy species is not a concern at this site. The native plant community has established on both the staging area and cover. Cover and density may improve over time, and the revegetated areas will more closely resemble adjacent areas.

Per discussions during a site visit in May 2009 with representatives from the State of Nevada, the U.S. Department of Energy, and National Security Technologies, it was determined that the fence could be removed, annual monitoring would no longer be required, and this would be the final reporting year for this site.

4.4 CAU 407, ROLLER COASTER RADSAFE AREA

Three transects were sampled in 2009.

4.4.1 Vegetation Monitoring Results

4.4.1.1 Plant Cover

Shrub cover was over 9 percent and included shadscale saltbush and fourwing saltbust. Grass cover included Indian ricegrass (Table 10). No forbs were encountered.

TABLE 10. PLANT COVER (%) ON CAU 407, 2009

	Staging	Reference	Standard
Shrubs			4.67
Bud sagebrush (*Picrothamnus desertorum*)	0.00	3.89	
Fourwing saltbush (*Atriplex canescens*)	0.83	0.00	
Shadscale saltbush (*Atriplex confertifolia*)	8.33	2.78	
Grasses			0.78
Indian ricegrass (*Achnatherum hymenoides*)	0.83	0.00	
James' galleta (*Pleuraphus jamesii*)	0.00	0.56	
Low woollygrass (*Dasyochloa pullchella*)	0.00	0.56	
Forbs/Annuals			0.39
Desert globemallow (*Sphaeralcea grosularifolia*)	0.00	0.56	
Total Plant Cover	**9.99**	**8.35**	**5.84**
Bare Ground	50.83	73.33	
Litter	39.17	18.33	

4.4.1.2 Plant Density

Density has declined over the past 5 years but was still over 18 plants per m^2 (Table 11). The reference area density was 11 plants per m^2. Shadscale saltbush was the most common species. The only grass was squirreltail. Three annual forbs were found, saltlover (an invasive weed) and hoary tansyaster and mountain pepperweed (two common native forbs).

TABLE 11. PLANT DENSITY (PLANTS PER M^2) ON CAU 407, 2009

	Staging	Reference	Standard
Shrubs			
Bud sagebrush (*Picrothamnus desertorum*)	0.33	2.50	
Fourwing saltbush (*Atriplex canescens*)	1.67	0.00	
Shadscale saltbush (*Atriplex confertifolia*)	11.60	0.80	
Winterfat (*Krascheninnikovia lanata*)	0.00	0.20	
Yellow rabbitbrush (*Chrysothamnus viscidiflorus*)	0.00	0.04	
Total Shrubs	**13.60**	**3.54**	**2.46**
Grasses			
Indian ricegrass (*Achnatherum hymenoides*)	0.00	0.20	
James' Galleta (*Pleuraphus jamesii*)	0.00	0.70	
Low woollygrass (*Dasyochloa pullchella*)	0.00	0.30	
Squirreltail (*Elymus elymoides*)	0.33	0.00	
Total Grasses	**0.33**	**1.20**	**0.86**
Forbs			
Buckwheat (*Eriogonum* species)	0.00	0.10	
Desert globemallow (*Sphaeralcea ambigua*)	0.00	0.10	
Esteve's pincushion (*Chaenactis steviodes*)	0.00	5.60	
Hoary tansyaster (*Macheranthera canescens*)	0.33	0.00	
Mountain pepperweed (*Lepedium montanum*)	0.33	0.00	
Saltlover (*Halogeton glomeratus*)	4.07	0.00	
Total Forbs	**4.73**	**5.80**	**4.12**
Total Plant Density	**18.66**	**10.54**	**7.44**

4.4.1.3 Species Richness

Species richness was lower than success standards (Table 12). As species become established, species richness should increase.

TABLE 12. SPECIES RICHNESS (SPECIES PER M^2) ON CAU 407, 2009

	Staging	Reference	Standard
Shrubs	1.1	1.9	1.3
Grasses	0.1	0.4	0.3
Forbs/Annuals	0.5	1.1	0.8
Total Species	**1.7**	**3.4**	**2.4**

4.4.2 Revegetation Success

Plant cover exceeded the standard and was made up of 92 percent shrubs and 8 percent grass. Shrub and grass cover exceeded standards. Plant density exceeded the standard. Shrubs and forbs exceeded the standards, but grasses were only about 38 percent of the standard.

4.4.3 Wildlife Use

Burrows were present on the side slopes of the cover. The burrows appeared to be shallow, and the soil moved to the surface appeared to be fill material used in the construction of the cover.

4.4.4 Soil Erosion

The soil on the cover and side slopes appeared stable and compacted.

4.4.5 Summary/Recommendations

Plant density was higher than on the reference area even after declines in density over the last 4 years. Plant cover was also good. There was no evidence that water is moving off the cover and creating erosion gullies on the side slopes. Some burrowing was evident along the edges of the cover; however, the volume and characteristics of excavated soil suggested the burrows were shallow. The site should continue to be monitored to document establishment of a viable plant community and identify remedial revegetation. The occurrence and abundance of saltlover should also be monitored and corrective actions taken if necessary to control the invasive weed.

4.5 CAU 426, CACTUS SPRING WASTE TRENCHES

For sampling purposes the site consists of a staging area and a cover that are sampled separately. A single transect was sampled in each area as well as in a reference area north of the site.

4.5.1 Vegetation Monitoring Results

4.5.1.1 Plant Cover

Plant cover on the staging area represented a mix of native shrubs and grasses. Two shrubs, fourwing saltbush and Nevada jointfir, and one grass, squirreltail, made up 88 percent of total plant cover. A single forb, hoary tansyaster, made up the rest of the plant cover (Table 13). In contrast, shrubs made up all the plant cover on the cover. Grasses and forbs did not contribute to plant cover. Like on the staging area, fourwing saltbush and Nevada jointfir made up all of the plant cover. There was a similar situation on the reference area. Three shrubs, no grasses, and one forb made up the plant cover on the reference area.

TABLE 13. PLANT COVER (%) ON CAU 426, 2009

	Staging	Cover	Reference	Standard
Shrubs				7.00
Black sagebrush (*Artemisia nova*)	0.00	0.00	7.50	
Fourwing saltbush (*Atriplex canescens*)	3.75	15.00	0.00	
Nevada jointfir (*Ephedra nevadensis*)	2.50	3.33	1.25	
Shadscale saltbush (*Atriplex confertifolia*)	0.00	0.00	1.25	
Grasses				0.00
Squirreltail (*Elymus elymoides*)	2.50	0.00	0.00	
Forbs/Annuals				0.88
Esteve's pincushion (*Chaenactis steveiodes*)	0.00	0.00	1.25	
Hoary tansyaster (*Macheranthera canescens*)	1.25	0.00	0.00	
Total Plant Cover	**10.00**	**18.33**	**11.25**	**7.88**
Bare Ground	72.50	78.33	78.75	
Litter	17.50	3.33	10.00	

4.5.1.2 Plant Density

The most common shrub on the staging area was Nevada jointfir (Table 14). James' galleta was the most common grass. There were nine forbs on the staging area, including redstem stork's bill, birdnest buckwheat, and fleshcolor pincushion. Of note was the presence of saltlover, an invasive weed. Density on the cover was similar with fewer forbs. There were four shrubs, three grasses, two perennial species, and one invasive weed. Forb density on the cover was lower than the staging area. The most common species was birdnest buckwheat.

Density on the reference area was lower than the staging area but higher than the cover. Black sagebrush and bud sagebrush were the most common shrubs. Nevada jointfir, shadscale saltbush, and yellow rabbitbrush also occurred. Grass density was higher on the reference area than on the staging area or cover. James' galleta accounted for 99 percent of the grasses. On average, there were 2 forbs per m^2 on the reference area. There were a total of five species, but the most common were redstem stork's bill, Esteve's pincushion, and birdnest buckwheat.

TABLE 14. PLANT DENSITY (PLANTS PER M^2) ON CAU 426, 2009

	Staging	Cover	Reference	Standard
Shrubs				0.88
Black sagebrush (*Artemisia nova*)	0.00	0.00	0.85	
Bud sagebrush (*Picrothamnus desertorum*)	0.00	0.00	0.20	
Fourwing saltbush (*Atriplex canescens*)	0.00	0.06	0.00	
Nevada jointfir (*Ephedra nevadensis*)	0.50	1.13	0.05	
Rubber rabbitbrush (*Ericameria nauseosus*)	0.05	0.19	0.00	
Shadscale saltbush (*Atriplex confertifolia*)	0.01	0.00	0.10	
Yellow rabbitbrush (*Chrysothamnus viscidiflorus*)	0.00	0.06	0.05	
Total Shrubs	**0.56**	**1.44**	**1.25**	**0.88**
Grasses				2.53
Cheatgrass (*Bromus tectorum*)	0.00	0.06	0.00	
Indian ricegrass (*Achnatherum hymenoides*)	0.05	0.00	0.05	
James' Galleta (*Pleuraphus jamesii*)	0.35	0.13	3.55	
Squirreltail (*Elymus elymoides*)	0.05	0.06	0.00	
Total Grasses	**0.45**	**0.25**	**3.60**	**2.53**
Forbs				1.01
Birdnest buckwheat (*Eriogonum nidularium*)	2.50	1.06	0.40	
Cryptantha (*Cryptantha* species)	1.75	0.00	0.00	
Cushion cryptantha (*Cryptantha circumscissa)*	1.05	0.13	0.00	
Esteve's pincushion (*Chaenactis steviodes*)	0.00	0.38	0.60	
Evening primrose (*Oenothera* species)	0.00	0.00	0.00	
Fleshcolor pincushion (*Chaenactis xantiana*)	2.35	0.00	0.00	
Hoary tansyaster (*Macheranthera canescens*)	0.20	0.75	0.05	
Lambsquarters (*Chenopodium alba*)	0.10	0.00	0.00	
Redstem stork's bill (*Erodium cicutarium*)	8.35	0.00	0.80	
Roundleaf oxytheca (*Oxytheca perfoliata*)	0.00	0.00	0.10	
Saltlover (*Halogeton glomeratus*)	0.90	0.00	0.00	
Wishbone-bush (*Mirabilis laevis* var. *villosa*)	0.05	0.00	0.00	
Total Forbs	**17.25**	**2.32**	**1.95**	**1.01**
Total Invasive Weeds	**0.90**	**0.06**	**0.00**	**0.00**
Total Plant Density	**19.16**	**4.07**	**6.80**	**4.42**

4.5.1.3 Species Richness

Species richness on the staging area was higher than the cover and reference area (Table 15). The average number of shrub species per m^2 was 0.5, less than the cover or reference area. The species richness for grasses was about same as the cover and reference area. On average, there were 0.9 shrubs per m^2 on the cover, the highest of the three areas. Overall, there was an excellent mix of shrubs, grasses, and forbs on the staging area and cover.

TABLE 15. SPECIES RICHNESS (SPECIES PER M^2) ON CAU 426, 2009

	Staging	Cover	Reference	Standard
Shrubs	0.5	0.9	0.8	0.6
Grasses	0.3	0.3	0.4	0.3
Forbs/Annuals	4.0	1.2	0.9	0.6
Total Species	**4.8**	**2.4**	**2.1**	**1.5**

4.5.2 Revegetation Success

Plant cover on the staging area and the cover exceeded success standards. Shrub cover on the staging area was less than the standard. There were no grasses on the reference area, so the 3 percent cover on the staging area compensates for the lower shrub cover. There was one shrub on the staging area, hoary tansyaster, which contributed to plant cover, as did the one forb, Esteve's pincushion, on the reference area. There was no grass or forb cover on the cover, but the 15 percent cover from fourwing saltbush exceeded the standards. Overall, the amount of cover on both the staging area and the cover exceeded success standards.

Density on the staging area was almost four times the standard. The 16.35 forbs per m^2 accounted for almost 90 percent of the total density. Shrub density was 75 percent of the success standard, and grass density was less than 20 percent of the standard. Shrub density has been relatively constant over the last 5 years. Grass density has experienced a decline over the last 5 years on the staging area. Squirreltail and Indian ricegrass were common in previous years but have declined. There were still remnants of these grasses, and they may return with improved growing conditions.

Total plant density on the cover exceeded the success standard. Shrub density was almost double the standard. There was a good mix of shrubs, including fourwing saltbush, Nevada jointfir, rubber rabbitbrush, and yellow rabbitbrush. Grass density was similar to the staging area, low and below the success standard. There were three species of grasses on the cover that occurred infrequently, accounting for only 6 percent of the total plant density.

4.5.3 Wildlife Use

The vegetation showed signs of normal browsing by small mammals. Small mammal burrows were scattered over the site but not in obvious concentrations. There were no small mammal burrows around the cover.

4.5.4 Soil Erosion

There was no evidence of erosion. The area directly west of the site has no permanent vegetation, and a high intensity and long duration precipitation event may cause some surface erosion.

4.5.5 Summary/Recommendations

Based on total plant cover and total plant density, revegetation success standards were exceeded for both the staging area and the cover. The plant community on the staging area was composed of native shrubs, grasses, and forbs. On the cover, four shrub species made up over 18 percent cover and a density of 4.0 plants per m^2; both values exceeded the success standards.

A concern at this site is the presence of saltlover and cheatgrass, both invasive weeds. If native perennial species decline, these invasive species may dominate the site.

Per discussions during a site visit in May 2009 with representatives from the State of Nevada, the U.S. Department of Energy, and National Security Technologies, it was determined that the fence could be removed, monitoring would no longer be required, and this would be the final reporting year for the site. Periodic site evaluation may be needed in the event the nearby Cactus Springs is more heavily used, primarily by wild horses.

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