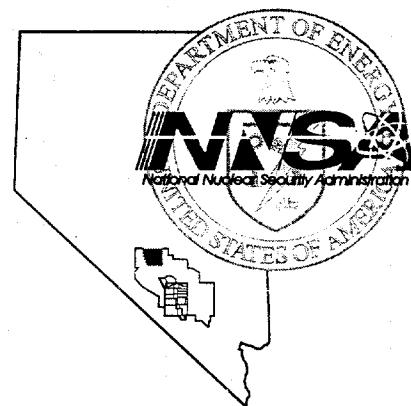


Nevada
Environmental
Restoration
Project

DOE/NV-801



Post-Closure Inspection Report for
Corrective Action Unit 426:
Cactus Spring Waste Trenches
Tonopah Test Range, Nevada
Calendar Year 2001

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Revision: 0

January 2002

Environmental Restoration
Division

U.S. Department of Energy
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**POST-CLOSURE INSPECTION REPORT FOR
CORRECTIVE ACTION UNIT 426:
CACTUS SPRING WASTE TRENCHES
TONOPAH TEST RANGE, NEVADA
CALENDAR YEAR 2001**

Prepared for
U. S. Department of Energy
National Nuclear Security Administration
Nevada Operations Office
Work Performed Under Contract No.
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**POST-CLOSURE INSPECTION REPORT FOR
CORRECTIVE ACTION UNIT 426:
CACTUS SPRING WASTE TRENCHES
TONOPAH TEST RANGE, NEVADA
CALENDAR YEAR 2001**

Approved by: Janet L. Appenzeller-Wing
Janet L. Appenzeller-Wing, Project Manager
Industrial Sites Project

Date: 1/28/02

Approved by: Runore C. Wycoff
Runore C. Wycoff, Division Director

Date: 1-28-02

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TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 INSPECTION RESULTS	1
2.1 May 16, 2001 Inspection	1
2.2 November 6, 2001 Inspection	3
3.0 CONCLUSIONS AND RECOMMENDATIONS	3

FIGURES

FIGURE 1 - CACTUS SPRING WASTE TRENCHES CAU 426 LOCATION MAP	2
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ATTACHMENTS

ATTACHMENT A - INSPECTION CHECKLISTS

ATTACHMENT B - FIELD NOTES

ATTACHMENT C - PHOTOGRAPH LOG AND PHOTOGRAPHS

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1.0 INTRODUCTION

Post-closure monitoring requirements for the Cactus Spring Waste Trenches (Corrective Action Unit [CAU] 426) (Figure 1) are described in Closure Report for Corrective Action Unit 426, Cactus Spring Waste Trenches, Tonopah Test Range, Nevada, report number DOE/NV--226, August 1998. The Closure Report (CR) was submitted to the Nevada Division of Environmental Protection (NDEP) on August 14, 1998. Permeability results of soils adjacent to the engineered cover and a request for closure of CAU 404 were transmitted to the NDEP on April 29, 1999. The CR (containing the Post-Closure Monitoring Plan) was approved by the NDEP on May 13, 1999.

As stated in Section 5.0 of the NDEP-approved CR, Post-Closure Monitoring Plan, site monitoring at CAU 426 consists of the following:

- Visual site inspections done twice a year to evaluate the condition of the cover and plant development.
- Verification that the site is secure and condition of the fence and posted warning signs.
- Notice of any subsidence, erosion, unauthorized excavation, etc., deficiencies that may compromise the integrity of the unit.
- Remedy of any deficiencies within 90 days of discovery.
- Preparation and submittal of an annual report.

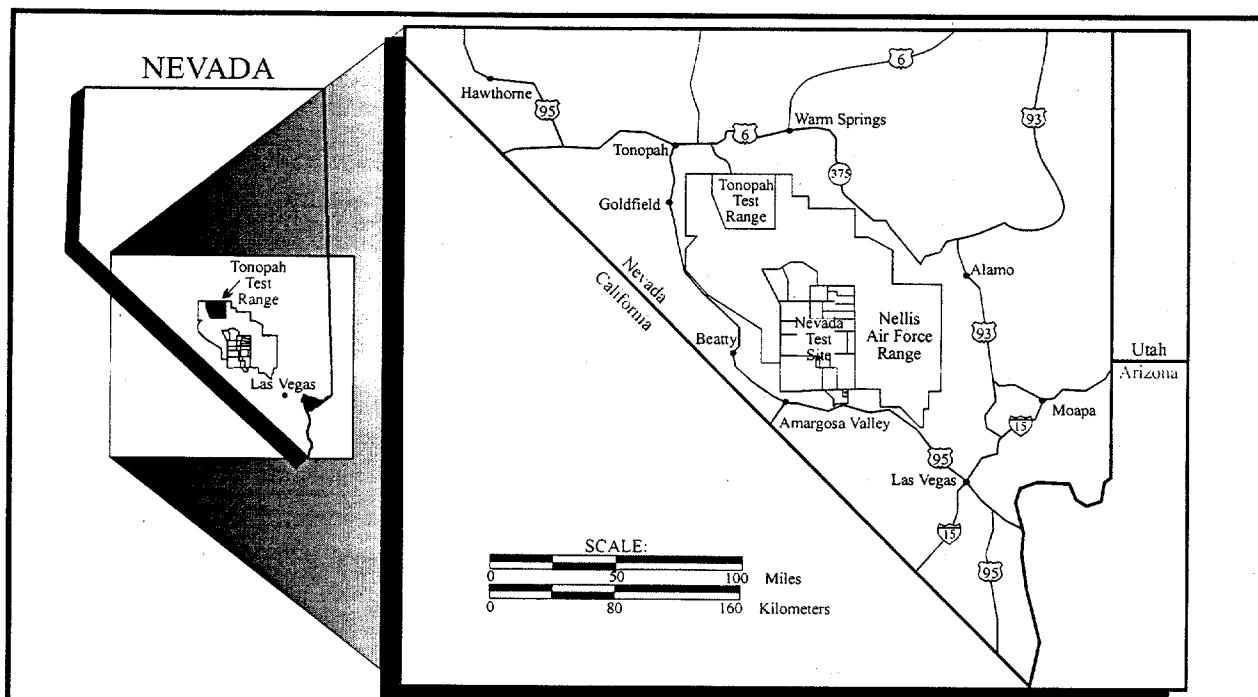
Site inspections were conducted on May 16, 2001, and November 6, 2001. All inspections were made after NDEP approval of the CR, and were conducted in accordance with the Post-Closure Monitoring Plan in the NDEP-approved CR.

This report includes copies of the inspection checklists, photographs, recommendations, and conclusions. The Post-Closure Inspection Checklists are found in Attachment A, a copy of the field notes is found in Attachment B, and copies of the inspection photographs are found in Attachment C.

2.0 INSPECTION RESULTS

2.1 May 16, 2001 Inspection

The first inspection was completed on May 16, 2001. The fence, gate, and posted warning signs were all in excellent condition. Numerous small mammal burrows were present along the base of the fence and at the southern and eastern toe of the cover. Burrows along the fence line were filled with soil using a shovel. The burrows have not effected the integrity of the cover. The vegetation present on the cover and in the staging area inside the fence appears very healthy with many native grasses and shrubs present. There is no evidence of erosion of the cover or staging area. The overall condition of the cover and staging area is excellent and no further maintenance or repairs are recommended.



TONOPAH TEST RANGE

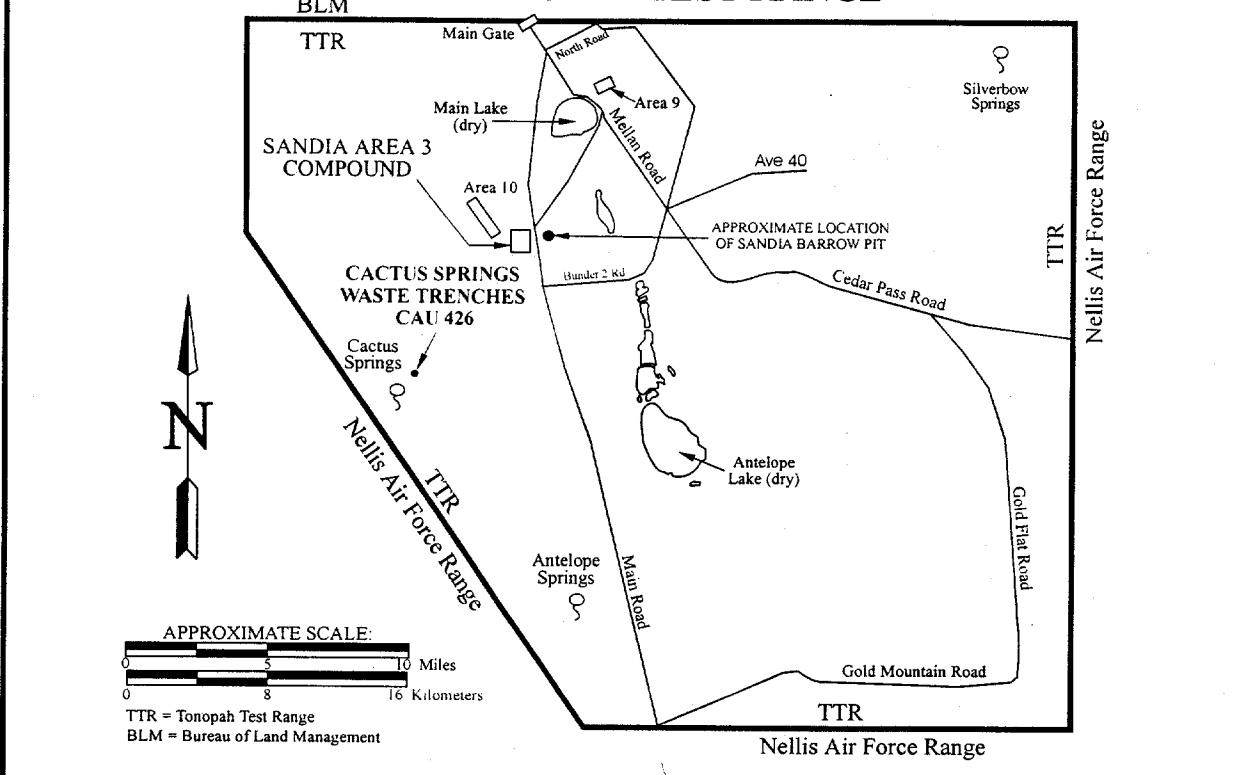


FIGURE 1
CACTUS SPRING WASTE TRENCHES
CAU 426 LOCATION MAP

2.2 November 6, 2001 Inspection

The second inspection was completed on November 6, 2001. The fence, gate, and posted warning signs were in excellent condition. No breaches through or under the bunny fencing were present. Small and shallow burrowing/scratchings (approximately 5 centimeters [2 inches]) to 16 centimeters [6 inches] in diameter and depth) were observed along the fence line but not on the cover. Burrows along the fence line were filled with soil. The vegetation on the cover and staging area was healthy with a good variety of native shrubs and grasses present. No noticeable erosion, settling, or cracking of the cover was observed. No further maintenance or repairs are recommended at this time.

3.0 CONCLUSIONS AND RECOMMENDATIONS

No evidence of erosion of the cover or staging area was observed in any of the inspections, indicating that the overland run-off is being properly diverted around the cover. Small mammals have burrowed under the fence in several areas but the presence of burrows in the area does not appear to have effected the integrity of the cover. The vegetation on the cover and staging area appears healthy and well established with a good diversity of native plant species. The overall condition of the vegetative cover is excellent.

Monitoring of the vegetation is recommended following the growing season (May/June) in the fifth year after revegetation (2002) as proposed in the CR. No modifications or repairs to the cover or a change in the inspection frequency, are recommended at this time.

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ATTACHMENT A
INSPECTION CHECKLISTS

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CAU 426: CACTUS SPRING WASTE TRENCHES, POST-CLOSURE MONITORING CHECKLIST

Date of Last Inspection: 21 Nov 2000

Reason for Last Inspection: 2nd Annual inspection for year 2000

Responsible Agency: BN-ER DOE-NV

Project Manager: Wayne Johnson BN-ER

Inspection Date: 16 May 2001

Inspector (name, title, organization): Brad Johnson, Task Manager, BN-ER

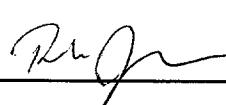
Assistant Inspector (name, title, organization): Kevin Cobble, Task Manager, DOE-NV

A. GENERAL INSTRUCTIONS

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

B. PREPARATION (To be completed prior to site visit)		YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.		/		
2. Previous inspection reports reviewed.		/		
a. Were anomalies or trends detected on previous inspections?			/	
b. Was maintenance performed?			/	
3. Site maintenance and repair records reviewed.		/	✓	NA
a. Has site repair resulted in a change from as-built conditions?			✓	NA
b. Are revised as-builts available that reflect repair changes?			✓	NA
C. SITE INSPECTION (To be completed during inspection)		YES	NO	EXPLANATION
1. Adjacent off-site features within watershed areas.				
a. Have there been any changes in use of adjacent area?			✓	
b. Are there any new roads or trails?			✓	
c. Has there been a change in the position of nearby washes?			✓	
d. Has there been lateral excursion or erosion/deposition of nearby washes?			✓	
e. Are there new drainage channels?			✓	
f. Change in surrounding vegetation?			✓	
2. Security fence, signs.				
a. Displacement of fences, site markers, boundary markers, or monuments?			✓	
b. Have any signs been damaged or removed? (Number of signs replaced: <u>0</u>)			✓	
c. Were gates locked?			✓	No locks present.

CUA 426: CACTUS SPRING WASTE TRENCHES, POST-CLOSURE MONITORING CHECKLIST

	YES	NO	EXPLANATION
3. Waste Unit cover.		/	
a. Is there evidence of settling?		/	
b. Is there cracking?		/	
c. Is there evidence of erosion around the cap (wind or water)?		/	
d. Is there evidence of animal burrowing?	/		Minor along margin of cap
e. Have the site markers been disturbed by man or natural processes?		/	
f. Do natural processes threaten to integrity of any cover or site marker?		/	
g. Other?			NA
4. Vegetative cover.		/	
a. Is perimeter fence or mesh fencing damaged?		/	
b. Is there evidence of horses or rabbits on site?	/		
c. Is organic mulch and/or plants adequate to prevent erosion?	/		
d. Are weedy annual plants present? If yes, are they a problem?	/		Minor Not a problem
e. Are seeded plant species found on site?	/		
f. Is there evidence of plant mortality?		/	
5. Photo Documentation		/	
a. Has a photo log been prepared?		/	
c. Number of photos exposed (5)			
D. FIELD CONCLUSIONS			
1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)		/	
Person/Agency to whom report made:			
2. Are more frequent inspections required?		/	
3. Are existing maintenance/repair actions satisfactory?	/		
4. Is other maintenance/repair necessary?		/	
5. Is current status/condition of vegetative cover satisfactory?	/		
6. Rationale for field conclusions: No change since previous inspection			
E. CERTIFICATION			
I have conducted an inspection of the Cactus Spring Waste Trenches, CAU 426, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.			
Chief Inspector's Signature: 	Printed Name: Brian Johnson		
Title: Task Manager	Date: 16 May 2001		

CAU 426: CACTUS SPRING WASTE TRENCHES, POST-CLOSURE MONITORING CHECKLIST

 Date of Last Inspection: 16 May 2000 2001 KBL Reason for Last Inspection: Semi Annual Inspection

 Responsible Agency: BN-ER DOE - NJ

Project Manager:

 Inspection Date: 11 November 2001

 Inspector (name, title, organization): Kevin Campbell, Technical Lead BN-ER

 Assistant Inspector (name, title, organization): N/A
A. GENERAL INSTRUCTIONS

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

B. PREPARATION (To be completed prior to site visit)	YES	NO	EXPLANATION
1. Site as-built plans and site base map reviewed.	✓		
2. Previous inspection reports reviewed.	✓		
a. Were anomalies or trends detected on previous inspections?		✓	
b. Was maintenance performed?		✓	
3. Site maintenance and repair records reviewed.		✓	<i>N/A</i>
a. Has site repair resulted in a change from as-built conditions?		✓	<i>N/A</i>
b. Are revised as-builts available that reflect repair changes?		✓	<i>N/A</i>

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

CUA 426: CACTUS SPRING WASTE TRENCHES, POST-CLOSURE MONITORING CHECKLIST

3. Waste Unit cover.

- a. Is there evidence of settling?
- b. Is there cracking?
- c. Is there evidence of erosion around the cap (wind or water)?
- d. Is there evidence of animal burrowing?
- e. Have the site markers been disturbed by man or natural processes?
- f. Do natural processes threaten to integrity of any cover or site marker?
- g. Other?

YES	NO	EXPLANATION
	✓	
	✓	
	✓	
✓		Minor small burrows along fence at toe of cover
	✓	
	✓	
		N/A

4. Vegetative cover.

- a. Is perimeter fence or mesh fencing damaged?
- b. Is there evidence of horses or rabbits on site?
- c. Is organic mulch and/or plants adequate to prevent erosion?
- d. Are weedy annual plants present? If yes, are they a problem?
- e. Are seeded plant species found on site?
- f. Is there evidence of plant mortality?

	✓	
✓		rabbit burrows inside fence
✓		
✓		
✓		
✓		
	✓	

5. Photo Documentation

- a. Has a photo log been prepared?
- c. Number of photos exposed (5)

✓		
---	--	--

D. FIELD CONCLUSIONS

1. Is there an imminent hazard to the integrity of the unit? (Immediate report required)

	✓	
--	---	--

Person/Agency to whom report made:

2. Are more frequent inspections required?		✓	
3. Are existing maintenance/repair actions satisfactory?	✓		
4. Is other maintenance/repair necessary?		✓	
5. Is current status/condition of vegetative cover satisfactory?	✓		

6. Rationale for field conclusions:

*Cover, fence, signs, gate in excellent condition. Vegetation very healthy.
Small natural burrows along fence were back-filled by hand.*

E. CERTIFICATION

I have conducted an inspection of the Cactus Spring Waste Trenches, CAU 426, at the TTR in accordance with the Post-Closure Monitoring Plan (see Closure Report) as recorded on this checklist, attached sheets, field notes, photo logs, and photographs.

Chief Inspector's Signature: <i>Kevin B. Campbell</i>	Printed Name: <i>Kevin Campbell</i>
Title: <i>Technical Lead BN-ER</i>	Date: <i>6 November 2001</i>

ATTACHMENT B

FIELD NOTES

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16 TITLE

Work continued from Page PA

PROJECT NO.

BOOK NO.

16 May 01

~ 1430 - Bomblet Pit

- Walked the fence line to visually inspect the site. The fenced area was well covered with vegetation and was in good condition. Numerous adult & half bomblets were present adjacent to the fence on the exterior of the site. Several bomblets were also present within the fenced area.

10 ~ 1500 - Roller Coaster Sewage Lagoons

- Walked the exterior fence line of site. The site was in good condition and well covered with vegetation. Two posted fence signs were down.
- A large burrow was present on the east side of the cap margin and a large animal appeared to be present in the burrow at the time of inspection. Two pieces of red-clay pipe were present on the south east margin of the fenced area near the base of the cap slope. The pipe appeared to extend underground. No notable signs of erosion were observed.

~ 1545 - Cactus Springs Waste Trenches.

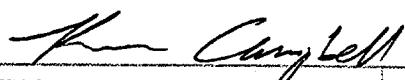
- Walked the exterior fence line to visually inspect the site. The site and fencing were in good condition and well covered with vegetation. No signs of erosion were observed. The exterior of the east margin of the site contained a large quantity of tumbleweeds.

Work continued from Page 24~~1410 Start Area 3 Septic Waste systems (CAU 427) inspection~~~~Using metal detector to locate buried corner markers~~~~All signs (4 total) in excellent condition.~~~~No vegetation as area is heavily trafficed.~~~~5 No significant erosion features.~~~~Site in good condition.~~~~Located below grade markers at west end of 3 septic fields and east~~~~We were unable to locate markers for Pre 1965-leachfield~~~~1455 Completed Area 3 Septic Waste Systems (CAU 427) inspection.~~~~10 1500 Heading to Cactus (CAU 426)~~~~1513 Arrive at Cactus~~~~Fence sign gate in excellent condition.~~~~Small mammal burrows at base of fence~~~~Vegetation very healthy, no significant erosion features~~~~15 Cover looks in excellent condition~~~~Depart Cactus for Area 3.~~~~Test Line~~

10

5

SIGNATURE



DATE

11/6/101

DISCLOSED TO AND UNDERSTOOD BY

DATE

WITNESS

DATE

ATTACHMENT C
PHOTOGRAPH LOG AND PHOTOGRAPHS

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PHOTOGRAPH LOG

PHOTO NUMBER	DATE	DESCRIPTION
1	05/16/2001	View of the cover and staging area looking east. Vegetation is very healthy inside fenced area.
2	05/16/2001	View of the east end of cover looking west. Vegetation is very healthy at the base of the cover and on the cover.
3	05/16/2001	View to the north of southern side of cover from inside fence.
4	05/16/2001	View to the northeast of the cover of west and south sides of cover.
5	11/06/2001	View to the east of gate and fenced area. Vegetation inside fenced area is well established and healthy; it is as dense as vegetation outside the fence in undisturbed area.
6	11/06/2001	View to the east of staging area and cover from inside the fence.
7	11/06/2001	View to the south of east edge of cover from inside the fence.
8	11/06/2001	View to the west of east edge of cover from inside the fence. Vegetation is well established, healthy and as dense as undisturbed areas outside the fence.

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1



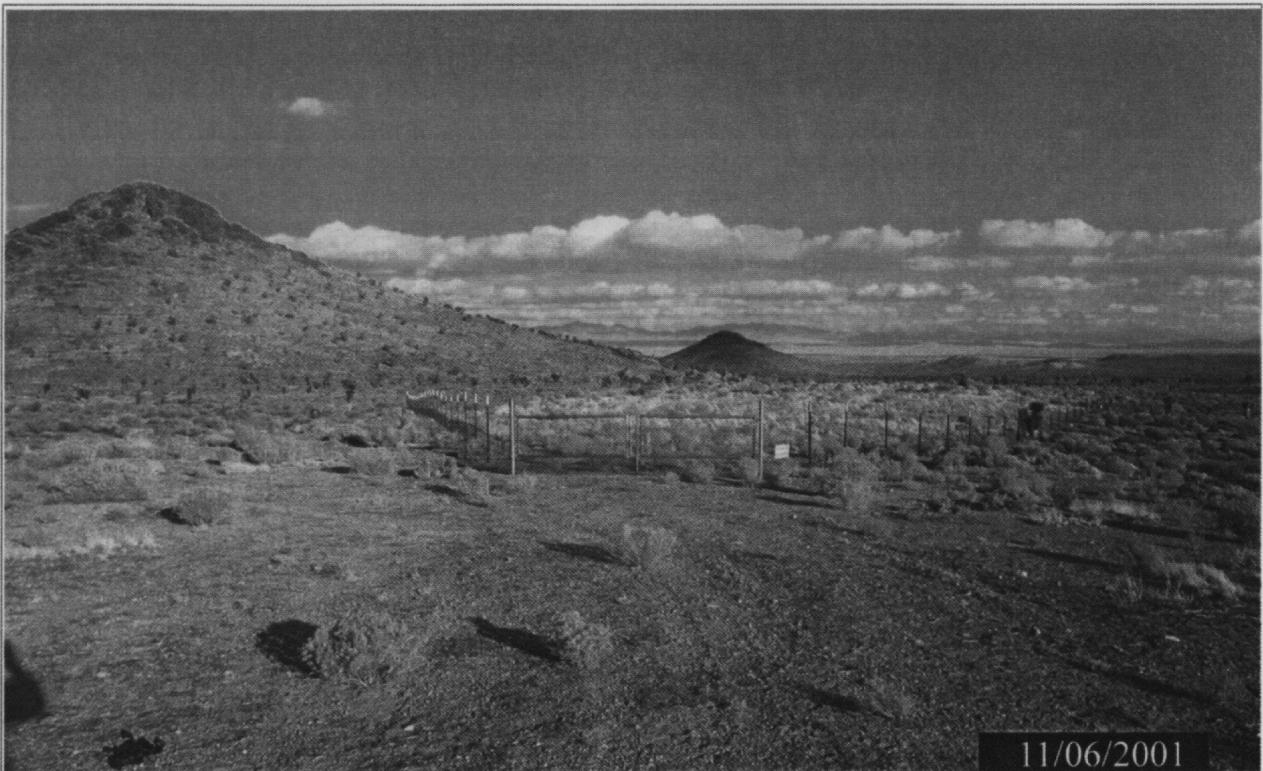
2



3



4



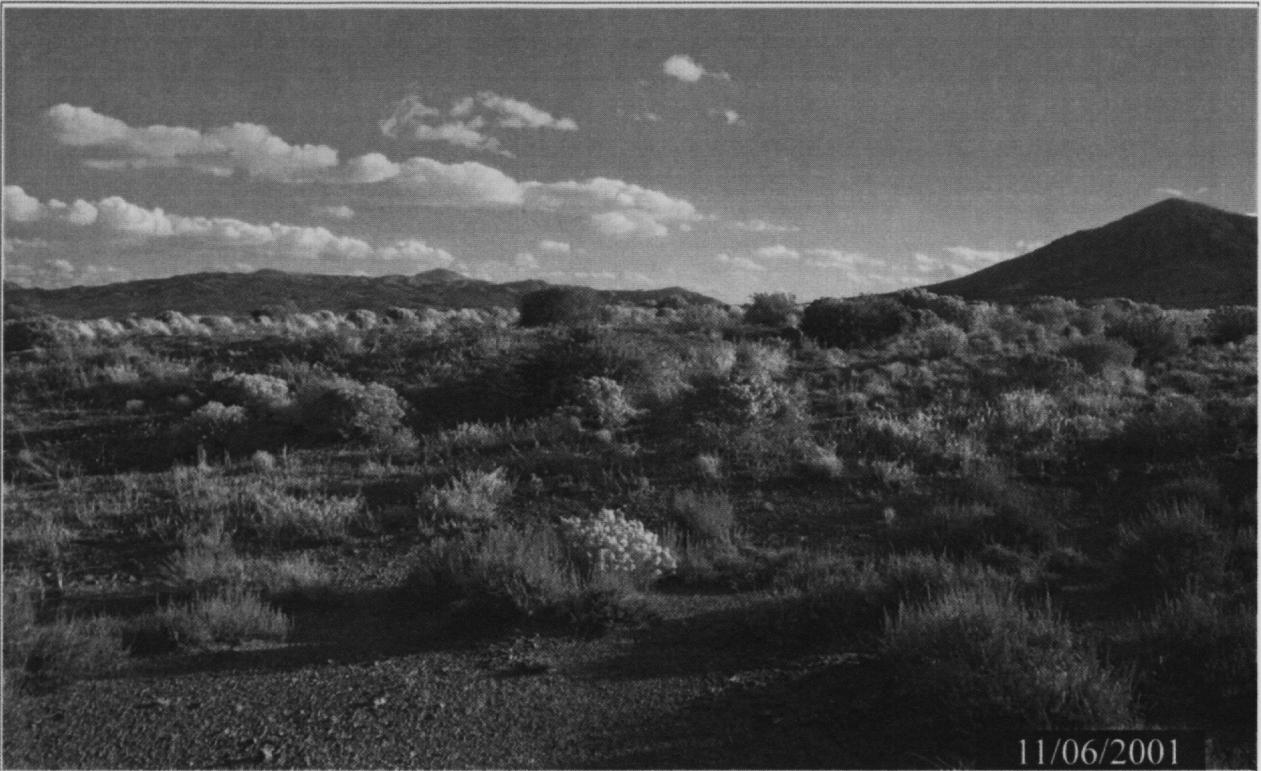
11/06/2001

5

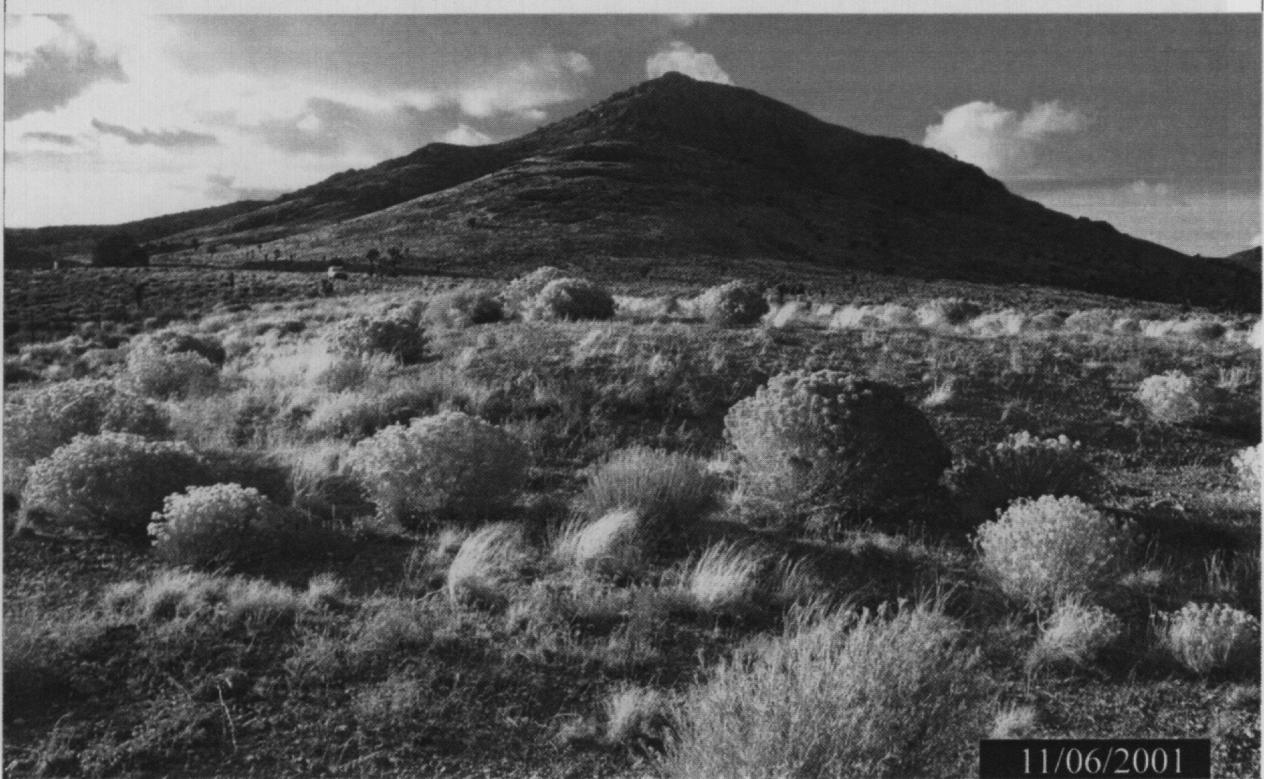


11/06/2001

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