

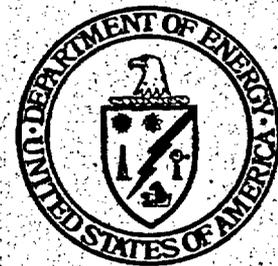
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# 1991 Annual Prelicensing Inspection of the Burrell, Pennsylvania, UMTRA Vicinity Property Disposal Site

September 1992

U. S. Department of Energy  
Albuquerque Field Office  
Grand Junction Projects Office  
Grand Junction, Colorado



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**1991 Annual Prelicensing Inspection of the  
Burrell, Pennsylvania,  
UMTRA Vicinity Property Disposal Site**

**September 1992**

**Prepared for  
U.S. Department of Energy**

**Prepared by  
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U.S. Department of Energy  
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## Plate

*(in pocket in back)*

Plate 1. Inspection Drawing for Burrell, Pennsylvania	
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# 1.0 Introduction

## 1.1 Purpose

The purpose of this report is to present the results of the U.S. Department of Energy's (DOE's) Uranium Mill Tailings Remedial Action (UMTRA) Project Office annual poststabilization, prelicensing inspection of the Burrell, Pennsylvania, Vicinity Property disposal site. This inspection was conducted on September 25 and 26, 1991, by M. P. Plessinger, Chief Inspector, C. S. Goodknight, C. A. Jones, and D. L. Scheuerman, Assistant Inspectors, of Chem-Nuclear Geotech, Inc., operating contractor at the DOE Grand Junction Projects Office (GJPO). Also in attendance were J. P. Winston and R. V. Woods of the Pennsylvania Department of Environmental Resources.

The procedures and specifications for this Annual Prelicensing Inspection are based on guidance provided in *Guidance for UMTRA Project Surveillance and Maintenance* (DOE, 1986) and the *Burrell, Pennsylvania, Vicinity Properties Surveillance and Maintenance Plan* (DOE, 1988). The results of the recent, poststabilization groundwater quality sampling will be provided by the UMTRA Project Office in a separate annual report.

## 1.2 Site Description

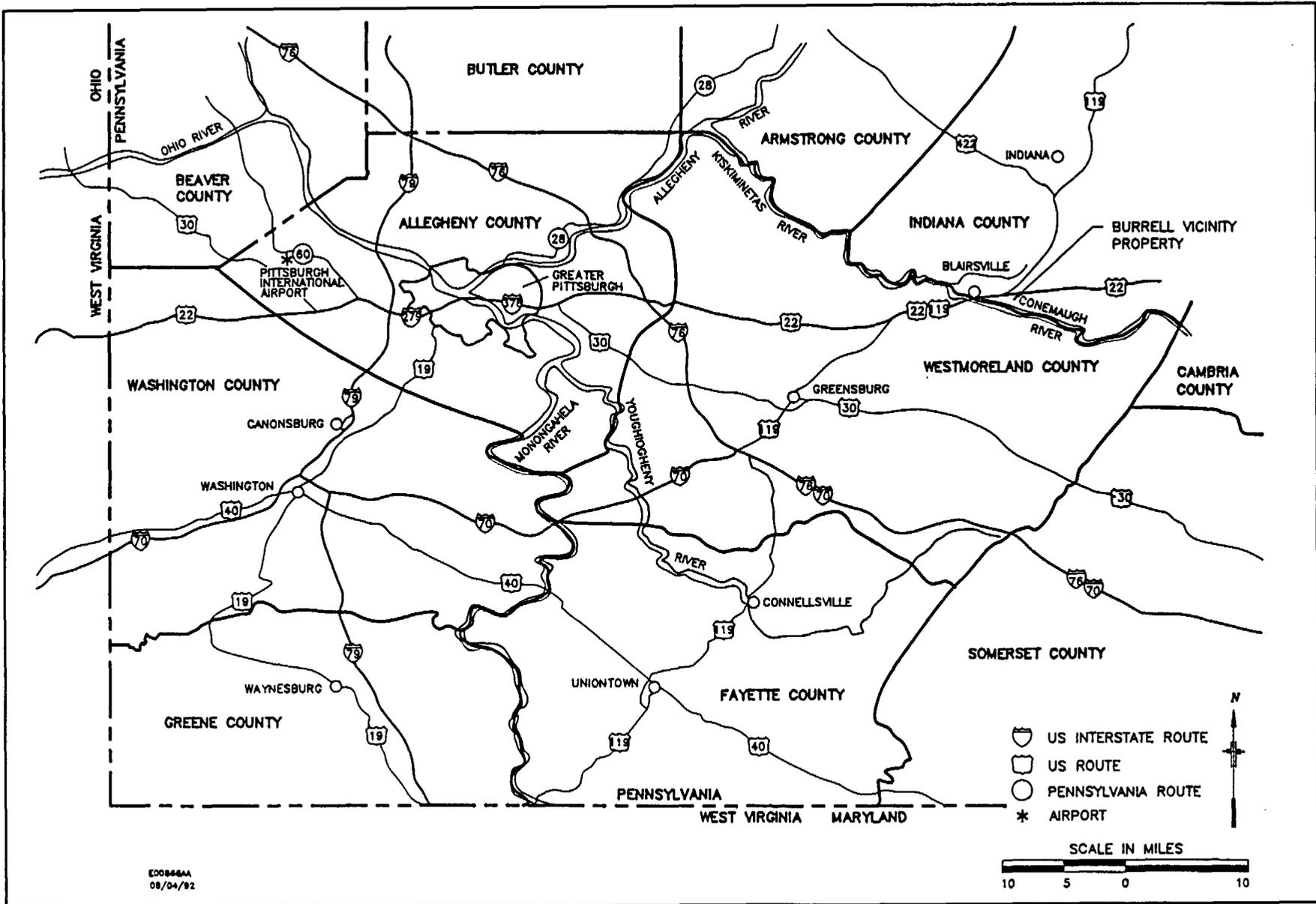
The Burrell Vicinity Property is an inactive landfill 1 mile east of the Borough of Blairsville, Indiana County, in southwestern Pennsylvania, approximately 40 miles east of downtown Pittsburgh (Figure 1-1). The property is bordered on the south by the Conemaugh River and to the north by the Conrail railroad tracks (Figure 1-2).

The terrain at the Burrell Vicinity Property is heavily vegetated with trees, shrubs, and grasses. Annual precipitation at nearby Pittsburgh averages 36.30 inches. The elevation of the site is from approximately 930 feet above sea level, at the Conemaugh River, to about 1,005 feet on top of the tailings embankment. The property covers approximately 72 acres (DOE, 1988) and the area of the riprap disposal cell is about 5 acres.

## 1.3 Site History

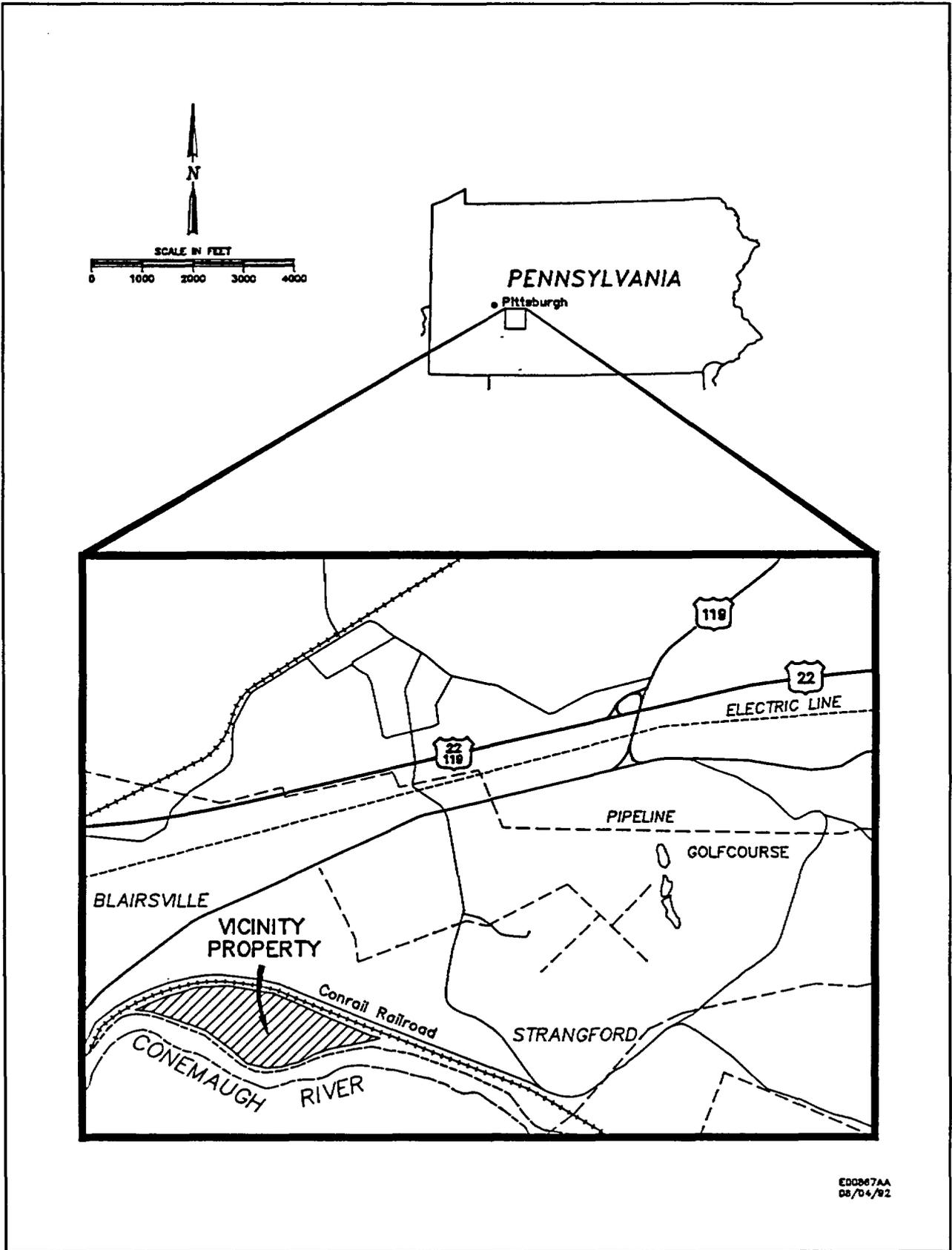
The Burrell site was owned and operated by the Pennsylvania Railroad as a railroad landfill during 1956 and 1957 (DOE, 1988). A total of 86,000 wet tons of tailings and radioactively contaminated materials removed from the Canonsburg UMTRA Project Site was disposed of at the Burrell Vicinity Property. The radioactively contaminated materials were brought in by railcar and dumped into the disposal pit. The disposal site was closed in July 1987.

The Burrell site is currently in poststabilization, prelicensing status. The site is expected to remain in this status until licensed by the U.S. Nuclear Regulatory Commission under provisions of U.S. Code of Federal Regulations, 10 CFR 40, for long-term surveillance and maintenance. An annual prelicensing inspection was conducted in 1990 by the contractor to the GJPO as part of the Long-Term Surveillance and Maintenance Program. Observations from the 1990 inspection are referenced herein where appropriate.



ED084AA  
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Figure 1-1. Location of Burrell, Pennsylvania, Vicinity Property



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08/04/82

Figure 1-2. Vicinity of Burrell, Pennsylvania, Vicinity Property

## **1.4. Site Access**

The Burrell site can be accessed as follows:

Starting at the junction of U.S. Highways 22 and 119 where U.S. 119 turns north toward Indiana, Pennsylvania, proceed west on U.S. Highways 22 and 119 for 0.6 mile. Turn left (south) just beyond C. R. Motors and proceed on this road for 1.2 miles. At that point, make a sharp right turn onto an unpaved road that parallels the Conrail railroad tracks. Follow this unpaved road 0.6 mile, turn left at the grade crossing, and cross the railroad tracks to the main entrance gate, which is at the east end of the site. Additionally, there is a new personnel access gate at the west end of the site at the southwest corner of the security fence.

## 2.0 Annual Prelicensing Inspection

Methods used during the inspection and the results of the inspection are described under appropriate headings that follow. Supporting information is provided in Appendix A, Photo Log and Photographs; and Plate 1.

### 2.1 Methods

The inspection was conducted by walking several transects across the site and one transect around the perimeter on the property boundary. Outlying groundwater monitoring wells were also inspected. Also, some of the areas of dumped material north of the Conrail tracks were inspected. Monuments, site markers, monitoring wells, settlement plates, and other site features were inspected and photographed. The location of specific features discussed below are shown on the inspection drawing (Plate 1). Specific site surveillance features are listed in Table 2-1.

Equipment used during the inspection included 35-mm camera, 2-foot scale with north arrow for showing scale and orientation of photographs, measuring tapes, Brunton compass, and notebook and forms for recording observations and photographs. Photographs were taken without filtration on color-negative film (Kodacolor ISO 200). Photographs are identified in the text of this report, in Appendix A, and on Plate 1 by photo location (PL) number. A total of 70 inspection photographs are included in this report in Appendix A.

### 2.2 Transects

To ensure that the site was thoroughly and efficiently inspected, the site was divided into small manageable units referred to as transects. Transects are areas of various sizes and shapes. Within each transect, inspectors examined all as-built features, as well as other features of note or interest. Normally, the inspection of one transect is completed before proceeding to the next. Transects used during the inspection of the Burrell disposal site are shown on Figure 2-1 and listed in Table 2-2.

There are 10 monitoring wells at this site. Eight are located within the confines of the site and two are located north of the site boundary. Monitoring wells within the site boundary are inspected as part of a site transect; monitoring wells beyond the site boundary are inspected as an individual well or clusters of wells along with the immediate surrounding area and, as such, are not conventional transects.

### 2.3 Results

Results of the 1991 inspection are reported under two main headings—specific site surveillance features and transects. Although most specific features are within a transect, they are reported separately, by category, because (1) they are an important focus of the inspection and (2) reporting by category allows the performance of each kind of as-built feature to be evaluated separately as a group. Specific features are discussed first, followed by a description of the condition of each transect.

Observations may include reference to specific photographs provided in Appendix A. Photographs are identified in the text, in Appendix A, and on Plate 1 by PL number. When more than one photograph was taken from a specific photograph location, photographs are identified by a letter suffix, e.g., 3A, 3B.

Table 2-1. Specific Site Surveillance Features

Identifier	Feature	Photo Location
—	Entrance Sign	2
—	Perimeter Signs (15 total)	—
SMK-1	Site Marker 1	3
SM-100	Survey Monument 100	4
SM-102	Survey Monument 102	5
BM-2	Boundary Monument 2	6
BM-3	Boundary Monument 3	7
BM-4	Boundary Monument 4	8
BM-5	Boundary Monument 5	9
BM-6	Boundary Monument 6	10
BM-7	Boundary Monument 7	11
ECM-1	Erosion Control Marker 1	12
ECM-2	Erosion Control Marker 2	13
ECM-3	Erosion Control Marker 3	14
ECM-4	Erosion Control Marker 4	15
ECM-5	Erosion Control Marker 5	16
ECM-6	Erosion Control Marker 6	17
ECM-7	Erosion Control Marker 7	18
ECM-8	Erosion Control Marker 8	19
SP-1	Settlement Plate 1	20
SP-2	Settlement Plate 2	21
SP-3	Settlement Plate 3	22
SP-4	Settlement Plate 4	23
SP-5	Settlement Plate 5	24
SP-6	Settlement Plate 6	25
SP-7	Settlement Plate 7	26
SP-8	Settlement Plate 8	27
SP-9	Settlement Plate 9	28
SP-10	Settlement Plate 10	29
SP-11	Settlement Plate 11	30
SP-12	Settlement Plate 12	31
SP-13	Settlement Plate 13	32
SP-14	Settlement Plate 14	33
SP-15	Settlement Plate 15	34
SP-16	Settlement Plate 16	35
SP-17	Settlement Plate 17	36
SP-18	Settlement Plate 18	37
SP-19	Settlement Plate 19	38
SP-20	Settlement Plate 20	39
MW-420	Monitoring Well 420	40
MW-520	Monitoring Well 520	41
MW-421	Monitoring Well 421	42
MW-521	Monitoring Well 521	43
MW-422	Monitoring Well 422	45
MW-522	Monitoring Well 522	46
MW-423	Monitoring Well 423	47
MW-523	Monitoring Well 523	48
MW-424	Monitoring Well 424	49
MW-524	Monitoring Well 524	50

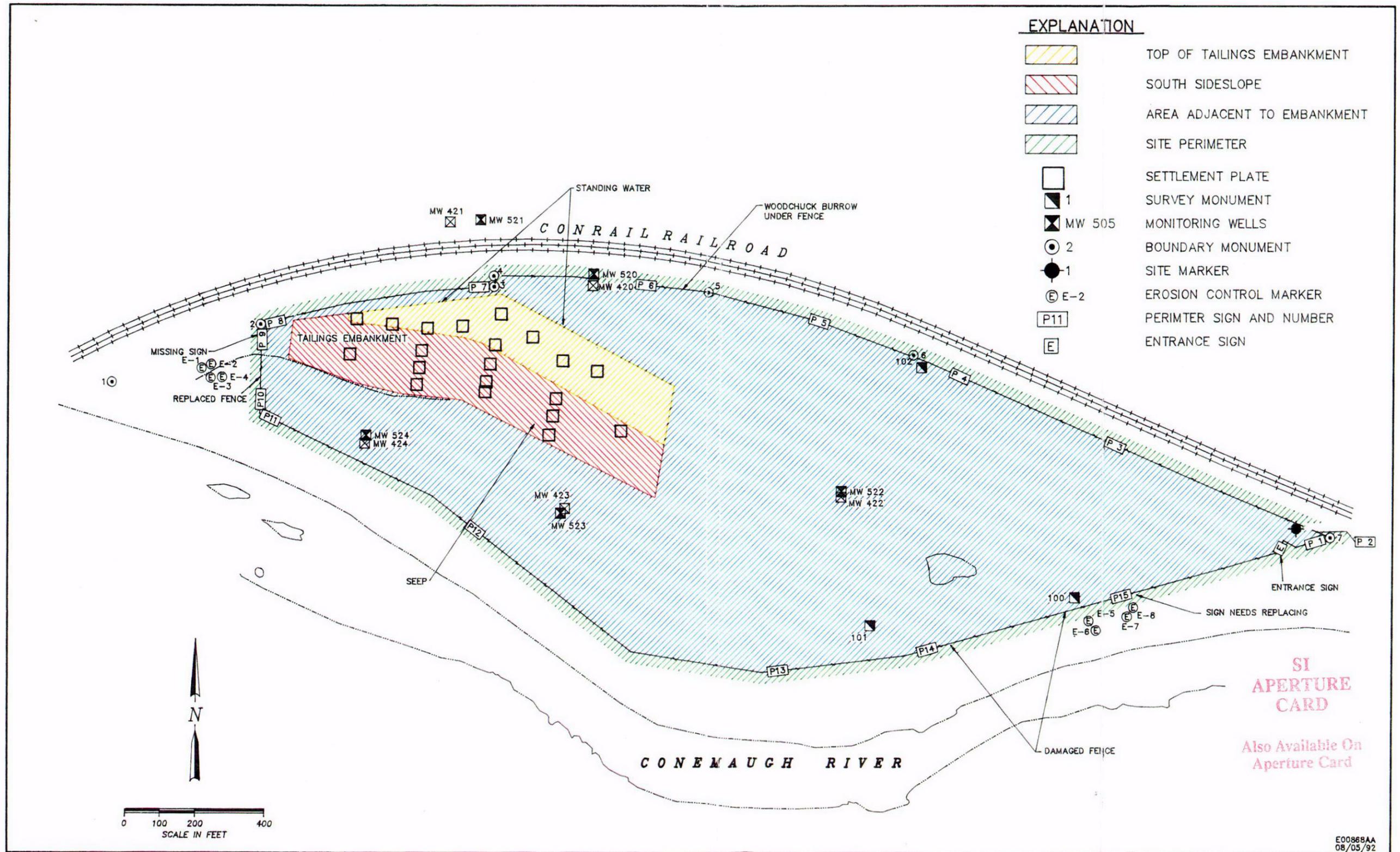


Figure 2-1. Transects for Burrell Vicinity Property

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**Table 2-2. Transects Used During the Inspection of the Burrell Vicinity Property Disposal Site**

<b>Transect</b>	<b>Explanation</b>
Top of Embankment	This transect also includes the small north, west, and east sideslopes.
South Sideslope	The south sideslope is the only major sideslope at this site.
Area Adjacent to Embankment	This transect represents the area between the toe of the tailings embankment and the site boundary.
Site Perimeter (boundary)	This transect includes survey and boundary monuments and the entrance and perimeter signs.
Monitoring Wells	This includes outlying monitoring wells, i.e., those not within the site boundary. This is not a transect in the conventional sense, but the area around each well or well cluster is also inspected.

### **2.3.1 Specific Site Surveillance Features**

Specific features are discussed in the order presented in Table 2-1.

#### **Entrance and Perimeter Signs**

The entrance sign is designated on Plate 1 and on Figure 2-1 by an "E." The perimeter signs are designated by a "P" followed by a number, such as P7. The perimeter signs were numbered because they are useful reference points for observations in addition to allowing the inspector to specify a particular sign requiring replacement, should that situation arise.

The entrance sign (PL-2) is in place but has been significantly defaced with bullet holes. However, it is still legible and therefore is not recommended for replacement at this time. The original site inspection drawing (Drawing No. CAN-VP200-10-0104) does not show the entrance sign location or the entrance gate (PL-1). This error will be corrected on the inspection drawing in this report (Plate 1).

Fifteen perimeter signs should be in place at this site, but sign P9 is missing (PL-59) and sign P15 (PL-60) is severely damaged from rifle and shotgun blasts. These two signs need replacing and will be so noted in the Conclusions section of this report. The locations of all signs are shown on Plate 1.

#### **Site Markers**

Only one site marker (SMK-1) exists at the Burrell Vicinity Property. SMK-1 (PL-3) is located at the official entrance to the site near the entrance gate. The site marker is in excellent condition and shows no sign of deterioration. According to the Guidance Document (DOE, 1986), each site is to have two site markers. The Burrell site does not have the marker that is ordinarily found on the crest of the tailings embankment and, as such, is out of UMTRA Project compliance.

#### **Survey Monuments and Boundary Monuments**

Three survey monuments and seven boundary monuments should be in place at the Burrell Vicinity Property. Survey monuments SM-100 and SM-102 and boundary monuments

BM-2 through BM-7 were inspected and photographed (PL-4 through PL-11). All inspected monuments are undisturbed and in good condition. Survey monument SM-101 and boundary monument BM-1 were not located. It may be necessary to have a survey crew reestablish the positions of these two monuments. It would also be prudent at that time to install or develop a reliable method of monument location for future site inspections to preclude the need for a resurvey to locate the monuments. The vegetative growth at the Burrell site warrants additional measures for monument location that would not be necessary at the sites located in the arid western United States.

### Erosion Control Markers

Eight erosion control markers (ECM) are installed at the Burrell site. All eight were located, inspected, and photographed (PL-12 through PL-19). In addition, measurements were taken at two of the ECM pairs and the results are presented in Table 2-3 along with the measurements taken during the previous inspection.

*Table 2-3. Distances to the Ordinary High Watermark (OHW) of the Conemaugh River*

ECM Pair	Distance to OHW (feet)			
	1990		1991	
5-6	14.0	9.5 ±1	or	13.5 ±1
7-8	22.45	18.0 ±1	or	22.0 ±1

Photograph PL-54 shows the act of measuring the distance to the "ordinary high watermark" at ECM pair 7 and 8 and demonstrates the subjective nature of this measurement. At least two breaks in grade could be interpreted as the OHW: one at the end of the tape and one at the intermediate point noted by the inspector wearing the hat. The same situation exists for the ECM 5 and 6 pair. Both measurements are reported in Table 2-3.

No measurements are recorded for ECM pair 1 and 2 and ECM pair 3 and 4. These ECM pairs were installed in such a way that it is unclear as to how a meaningful measurement would be obtained. Consequently, no entries for these ECM pairs are included in Table 2-3.

### Settlement Plates

Twenty settlement plates are located on the tailings embankment and are referred to as SP-1 through SP-20. Fifteen of the settlement plates are cased, similar to the cap-and-pin monitoring well system. The remaining five (SP-2, SP-6, SP-7, SP-17, and SP-18) are of a different construction and appear as a piece of rebar anchored in concrete. All 20 were inspected and photographed (PL-20 through PL-39). There was no evidence of tampering or disturbance and all casings were in good condition, although the locks and casings are quite rusty.

### Monitoring Wells

Ten monitoring wells were inspected and photographed (PL-40 through PL-43 and PL-45 through PL-50). In addition, PL-44 is a view of the MW-421/MW-521 well-pair area showing the heavy underbrush that was cleared earlier in the summer to enable access by the well samplers. Several monitoring wells were found unlocked, particularly MW-520, MW-521, MW-422, and MW-523. MW-520 and MW-422 were locked by the inspectors. MW-521 and

MW-523 could not be locked because of excessive rust in the locks. All locks were exceedingly rusty and the condition is expected to worsen with time. However, no evidence of tampering with the monitoring wells was discovered. Table 2-4 presents a list of all wells, locking systems, and legible padlock key numbers.

*Table 2-4. Inventory of Monitoring Wells*

Well Identifier	Locking System	Padlock Key Number
MW-420	Cap and Pin	Not Legible
MW-520	Cap and Pin	Not Legible
MW-421	Cap and Pin	Not Legible
MW-521	Cap and Pin	Not Legible
MW-422	Cap and Pin	Not Legible
MW-522	Cap and Pin	Not Legible
MW-423	Cap and Pin	Not Legible
MW-523	Cap and Pin	Not Legible
MW-424	Cap and Pin	3354
MW-524	Cap and Pin	Not Legible

### 2.3.2 Transects

Transects are listed in Table 2-2 and shown on Figure 2-1.

#### Top of Embankment

The top of the Burrell tailings embankment is riprap covered. Photographs taken at locations PL-51, PL-52, and PL-53 show a panorama view of the tailings embankment.

There has been significant vegetative encroachment on the crest of the embankment as shown in PL-53. Some of the vegetation is of an annual "weed" variety and probably does not represent a significant threat to site integrity. However, a large portion of the growth is shrubs and saplings that can develop significant root systems and could eventually compromise the radon barrier. Other than the vegetation, the embankment top is in excellent condition. There is no evidence of uneven settling, gully erosion, or animal burrowing.

#### South Sideslope

The overall condition of the south sideslope is similar to that of the embankment top. Vegetative encroachment is significant (PL-52), but otherwise the riprap cover is in excellent condition. PL-55B is a photograph of a seep area near the toe of the south sideslope. The same seep was inspected and photographed the previous year (1990 PL-101; DOE, 1990). This year the seep was damp mud and not visibly flowing. During the 1990 inspection, the seep was flowing significantly. Western Pennsylvania was experiencing a drought throughout the summer of 1991, which could account for the lack of moisture in the seep in the 1991 inspection.

The photograph taken at PL-55A shows the riparian vegetation growing in the slough that lies along the toe of the south sideslope. The slough contained less water than during the 1990 inspection, but the lack of moisture did not appear to have hindered plant growth.

### **Area Adjacent to Embankment**

The areas north, east, and west of the tailings embankment and within the site boundary are primarily grass covered. South of the embankment, beyond the slough at the toe of the south sideslope, is a wooded area containing a wide variety of shrubs, grasses, and deciduous trees.

Around the north toe of the embankment was a band of standing water. There was a significant rainfall the night before the inspection that could account for some of this water, but the presence of cattails (PL-56) is more indicative of a continuous presence of water. The cattails extend about 300 feet along the north toe of the embankment. It is not known whether this water will have any negative impact on the disposal site or if there is any relation between this standing water and the seeps noted in the discussion about the south sideslope.

The brush and grass growth at Burrell is great enough to warrant the mowing of monitoring well access roads to enable the well samplers reasonable access to the sampling points. PL-1, which shows the entrance gate, also shows the result of grass mowing that had been performed to enable well sampler access.

### **Site Perimeter**

During the previous inspection, a section of security fence was found missing. This section of fence was replaced by a subcontractor while the 1991 inspection was being performed. PL-58A and PL-58B show the fence before and during repair efforts. In addition to replacing the mesh, a personnel access gate was installed at the southwest corner of the perimeter fence to allow easier access to the erosion control markers and other features at the west end of the site property. All fence repairs were completed on September 26, 1991.

Evidence of burrowing animals (probably woodchucks) was noted (PL-57) along the perimeter fence and will continue to be monitored during future inspections. At present animal burrows pose no threat to site integrity.

Damage to the barbed-wire portion of the perimeter fence was noted at two places (PL-61 and PL-62) along the southern perimeter. In each case, the metal brackets that hold the barbed wire in place were bent or broken. Repairs are not recommended at this time but continued surveillance will be necessary. The positions of the damaged fence are noted on Plate 1.

### **2.3.3 Area Adjacent to the Site**

The area around the site was examined for signs of erosion, development, or other disturbance that may affect the site. A large amount of illegal dumping (PL-63, PL-64, and PL-65) has been occurring just north of the railroad tracks that border the northern perimeter of the site. This property is not part of the Burrell site; however, there is a concern that groundwater contamination could be introduced in areas such as shown in PL-63. The general groundwater gradient is toward the Conemaugh River; therefore, there is a possibility that contaminants would be transported under the Burrell Vicinity Property because the vicinity property lies between the dumping area and the river.

No other adjacent off-site activity was observed.

## **3.0 Conclusions and Recommendations**

### **3.1 Conclusions**

In general, the Burrell Vicinity Property is in good condition at this time; however, certain potentially troublesome aspects about the site are noted in the text of this report and shall be restated below under Observations and Recommendations. The finding of greatest significance from the previous year's inspection was the missing section of fence that was repaired.

### **3.2 Observations and Recommendations**

Several observations made at the Burrell Vicinity Property warrant careful continued monitoring:

1. The newly repaired/replaced fence section requires continued monitoring. The subcontractor who replaced the fence believes it was removed by deer hunters and, if so, it may be removed again.
2. The seeps near the toe of the south sideslope should continue to be monitored. It is not clear where the water is coming from or whether it presents a problem.
3. Standing water along the toe of the north sideslope has created cattail habitat. It appears that the drainage contouring in this area is not functioning well. It is speculated that this may be the source of the seep water along the south sideslope, but that is not known. Continued monitoring of the standing water is recommended. It is not known if this water presents a problem.
4. Evidence of animal burrowing under the north fence was noted. At present, it does not threaten the integrity of the site but does warrant continued monitoring.
5. Significant brush and sapling growth was noted on the crest and sideslopes of the tailings embankment. Some of the growing species are believed to be capable of developing root systems of sufficient size that could eventually damage the radon barrier. A growth mitigation effort is recommended.
6. A tremendous amount of illegal dumping is occurring north of the site boundary on the north side of the Conrail railroad tracks. The possibility of contaminant transport from these dumping areas to the Burrell Vicinity Property has never been investigated. However, the area is an obvious health and safety problem to site inspectors, well samplers, railroad personnel, and the general public. Continued monitoring, at a minimum, is recommended.
7. Because this area experiences deer and small game hunting, the perimeter signs at the property are subject to gunshot damage. Sign conditions will continue to be monitored during future inspections.
8. A survey crew should be retained to relocate and clearly mark the positions of survey monument SM-101 and boundary monument BM-1.
9. As noted in the text, several monitoring wells were found unlocked and not all were capable of being locked. It is unclear at this time if the inspectors should obtain replacement locks immediately or if the condition should merely be noted in the inspection report. Resolution of this issue is recommended.

### **3.3 Site Maintenance**

The following two maintenance activities are recommended at this time.

1. Two perimeter signs need replacing. Sign P9 is missing and sign P15 is obliterated by rifle and shotgun blasts. The positions of both signs are noted on the inspection drawing, Plate 1.
2. The saplings and brush growing on the tailings embankment should be destroyed before their root systems compromise the radon barrier.

### **3.4 Contingency Plans**

As indicated in the *Surveillance and Maintenance Plan* (DOE, 1988), the DOE shall establish notification procedures with the National Weather Service; Earthquake Information Center; and the Burrell Township Police. These agencies will contact the DOE should any unusual event come to their attention that might affect the security or integrity of the Burrell Vicinity Property.

## 4.0 References

DOE (U.S. Department of Energy), 1986. *Guidance for UMTRA Project Surveillance and Maintenance*, UMTRA-DOE/AL-350124.0000, DOE UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

\_\_\_\_\_, 1988. *Burrell, Pennsylvania, Vicinity Properties Surveillance and Maintenance Plan*, UMTRA-DOE/AL-350201.V200/800-R DOE UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

\_\_\_\_\_, 1990. *Annual Prelicensing Inspection of Burrell Uranium Mill Tailings Vicinity Property, Burrell, Pennsylvania*, DOE/ID/12584-83, Idaho Operations Office, Grand Junction Projects Office, Grand Junction, Colorado.

10 CFR 40.27. *Custody and Long-Term Care of Uranium and Thorium Mill Tailings Disposal Sites*, October 30, 1990.

**Appendix A**  
**Inspection Photo Log and Photographs**

# Inspection Photo Log

## Explanation

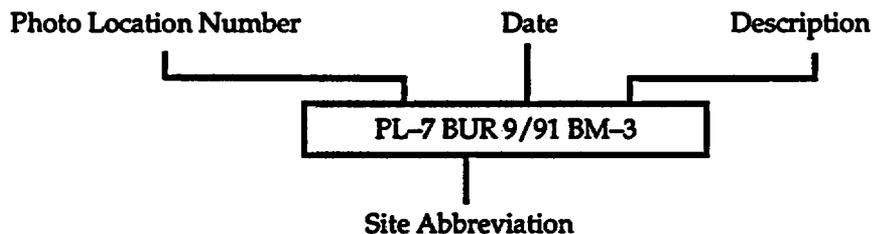
Photographs referred to in the text of this report, as well as a list of these photographs, are included in this appendix (Appendix A). Photographs are identified by photograph location (PL) number. PL numbers also appear on the inspection drawing (Plate 1).

## Specifications

All photographs were taken on Kodacolor 135 film, ISO 200, with a variable focal length (zoom) lens. Focal lengths vary between 35 mm and 105 mm. All photographs were exposed with daylight illumination and without filtration.

## Photograph Labels

Photographs in Appendix A are labeled as follows:



When more than one photograph was taken at a given photograph location, different photographs are identified by a letter suffix, e.g., 3A, 3B.

## Abbreviations

The following abbreviations are used in the photo log:

MW	Monitoring Well
SM	Survey Monument
BM	Boundary Monument
SMK	Site Marker
Az	Azimuth
ECM	Erosion Control Marker
SP	Settlement Plate
OHW	Ordinary High Watermark
NOAA	National Oceanic and Atmospheric Administration
WNW	West Northwest
S	South

# Inspection Photo Log

Site: Burrell

Date of Inspection: September 25, 1991  
September 26, 1991

Time of Day: From 2:30 p.m. to 6:00 p.m.  
From 8:00 a.m. to 3:00 p.m.

Weather Conditions: September 25, 1991: Overcast; ~55 °F; moisture on ground from overnight and morning rain. September 26, 1991: ~50 °F; overcast.

Photographer's Location No. <sup>a</sup>	Azimuth <sup>b</sup>	Photo Description/Remarks
1		Main entrance/gate.
2		Entrance sign; several bullet holes but still legible.
3		Site marker SMK-1.
4		Survey monument SM-100.
5		Survey monument SM-102; 24 feet from braced fence section.
6		Boundary monument BM-2.
7		Boundary monument BM-3.
8		Boundary monument BM-4.
9		Boundary monument BM-5; just beyond 9th fencepost east of sign P6.
10		Boundary monument BM-6; between signs P4 and P5 and between the 3rd and 4th fenceposts west of braced fence section opposite SM-102.
11		Boundary monument BM-7.
12		Erosion control marker ECM-1.
13		Erosion control marker ECM-2.
14		Erosion control marker ECM-3.
15		Erosion control marker ECM-4.
16		Erosion control marker ECM-5.
17		Erosion control marker ECM-6.
18		Erosion control marker ECM-7.
19		Erosion control marker ECM-8.
20		Settlement plate SP-1.
21		Settlement plate SP-2.
22		Settlement plate SP-3.
23		Settlement plate SP-4.
24		Settlement plate SP-5.
25		Settlement plate SP-6.
26		Settlement plate SP-7.
27		Settlement plate SP-8.
28		Settlement plate SP-9.
29		Settlement plate SP-10.
30		Settlement plate SP-11.
31		Settlement plate SP-12.
32		Settlement plate SP-13.
33		Settlement plate SP-14.
34		Settlement plate SP-15.
35		Settlement plate SP-16.
36		Settlement plate SP-17.
37		Settlement plate SP-18.
38		Settlement plate SP-19.
39		Settlement plate SP-20.
40		Monitoring well MW-420; key number not legible.
41		Monitoring well MW-520; key number not legible; lock found open; lock now closed.

<sup>a</sup>Photo location number. See Plate 1 for map of photo locations.

<sup>b</sup>Declination angle of 8° W.

# Inspection Photo Log

Site: Burrell

Date of Inspection: September 25, 1991  
September 26, 1991

Time of Day: From 2:30 p.m. to 6:00 p.m.  
From 8:00 a.m. to 3:00 p.m.

Weather Conditions: September 25, 1991: Overcast; ~55 °F; moisture on ground from overnight and morning rain. September 26, 1991: ~50 °F; overcast.

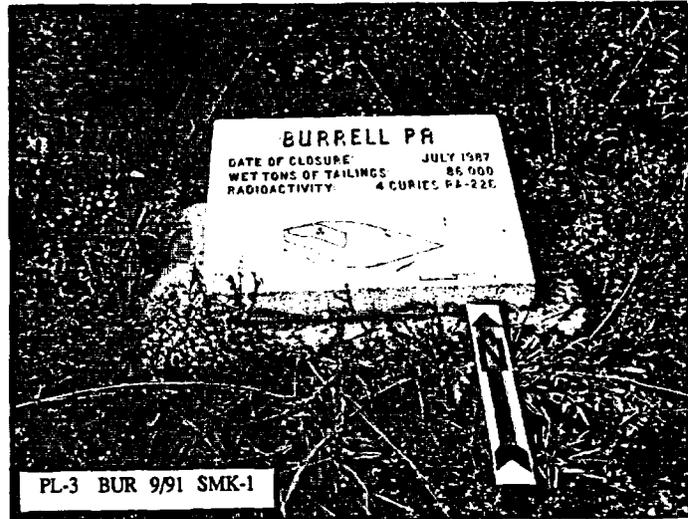
Photographer's Location No. <sup>a</sup>	Azimuth <sup>b</sup>	Photo Description/Remarks
42		Monitoring well MW-421; key number not legible.
43		Monitoring well MW-521; key number not legible; lock found open and could not be closed because of excessive rust.
44		MW-421/MW-521 area.
45		Monitoring well MW-422; key number not legible; lock found open; lock now closed.
46		Monitoring well MW-522; key number not legible.
47		Monitoring well MW-423; key number not legible.
48		Monitoring well MW-523; key number not legible; lock found open; unable to close lock.
49		Monitoring well MW-424; key number 3354.
50		Monitoring well MW-524; key number not legible.
51A	120	Panorama of site from across railroad tracks.
51B	170	Panorama of site from across railroad tracks.
51C	220	Panorama of site from across railroad tracks.
52	280	South sideslope of tailings embankment, view west; note vegetation.
53	300	Top of tailings embankment, view WNW; note vegetation.
54		ECM-7, 8 OHW measurement demonstrating subjective nature of measurement.
55A	270	Riparian vegetation in slough at toe of south sideslope, view west.
55B	140	Seep near toe of south sideslope; moist but no water visible. Previous year water was running.
56	315	Standing water, north toe of sideslope, view northwest.
57		Woodchuck hole at perimeter fence, just beyond 18th fencepost east of sign P6.
58A		Missing fence; area cleared of brush for installation of replacement fence.
58B		Fence repairs; near completion.
59		Sign P9 missing; there should be two signs at this corner.
60		Sign P15; damaged by rifle and shotgun blasts; needs replacing.
61		Fence damage; barbed-wire brackets bent.
62		Fence damage; barbed-wire brackets bent/broken.
63		Trash dump in drainage on north side of railroad tracks across from site.
64		Typical trash dumped on north side of railroad tracks across from site.
65		Typical trash dumped on north side of railroad tracks across from site.
66		NOAA device found on site; delivered to Post Office; shipping costs guaranteed by NOAA.

<sup>a</sup>Photo location number. See Plate 1 for map of photo locations.

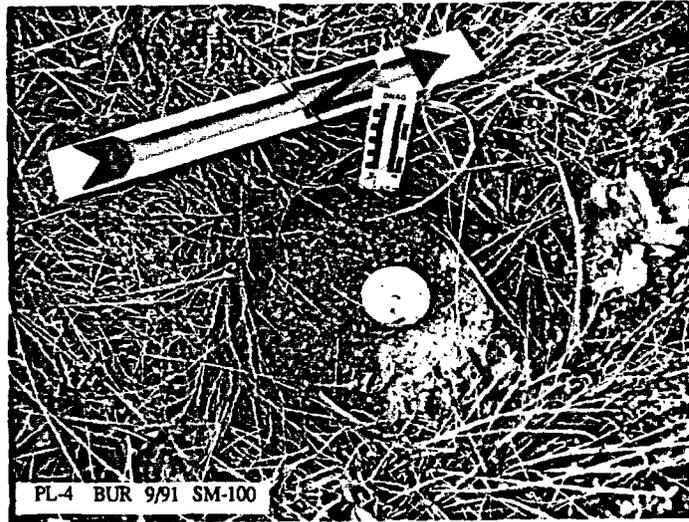
<sup>b</sup>Declination angle of 8° W.



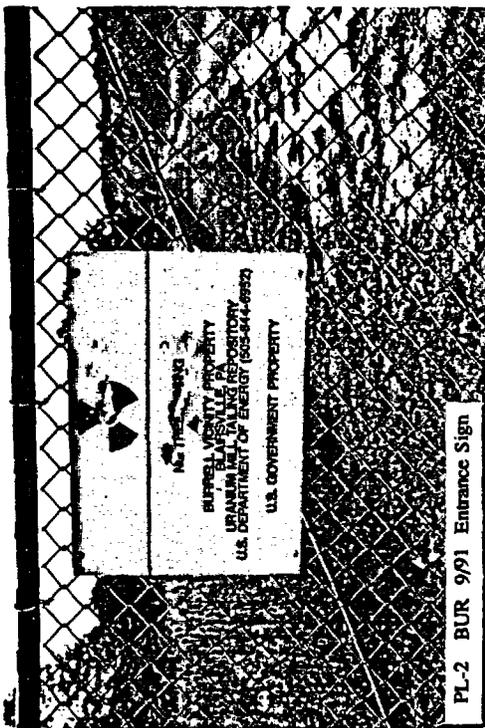
PL-1 BUR 9/91 Entrance Gate



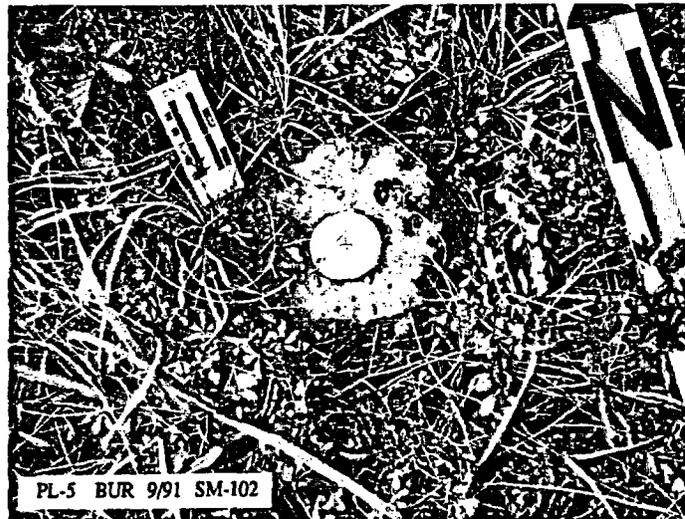
PL-3 BUR 9/91 SMK-1



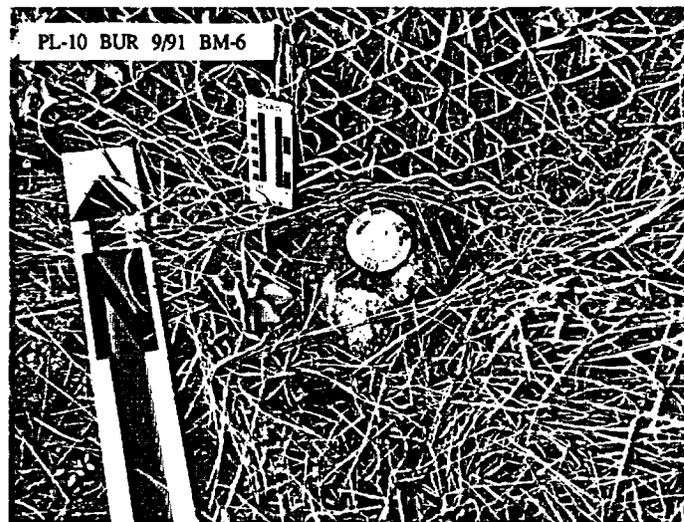
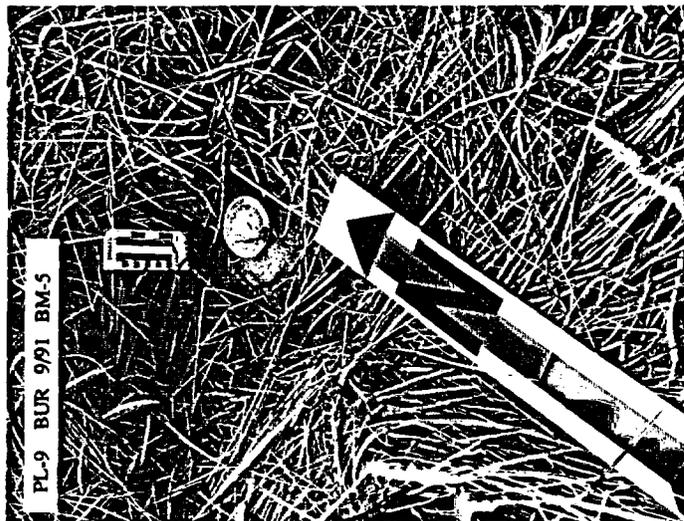
PL-4 BUR 9/91 SM-100

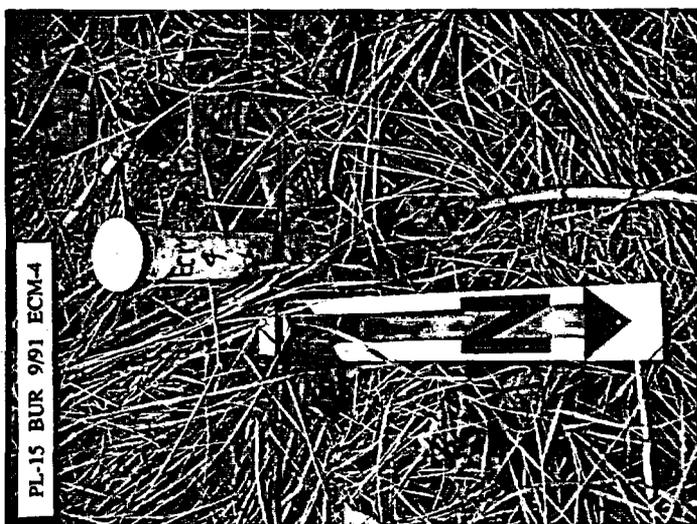
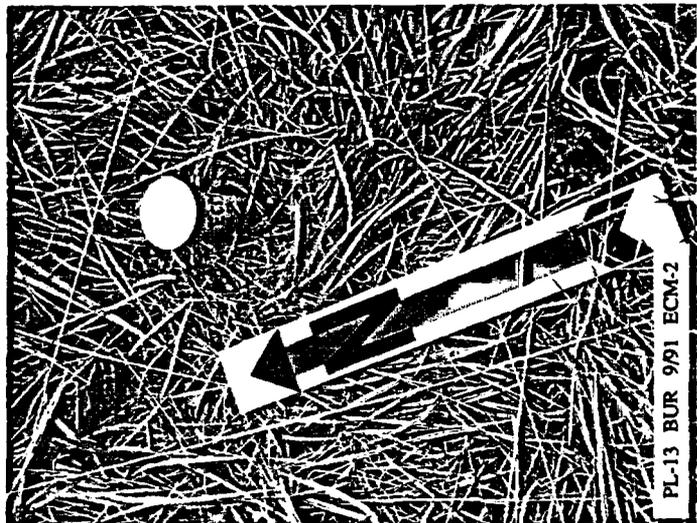
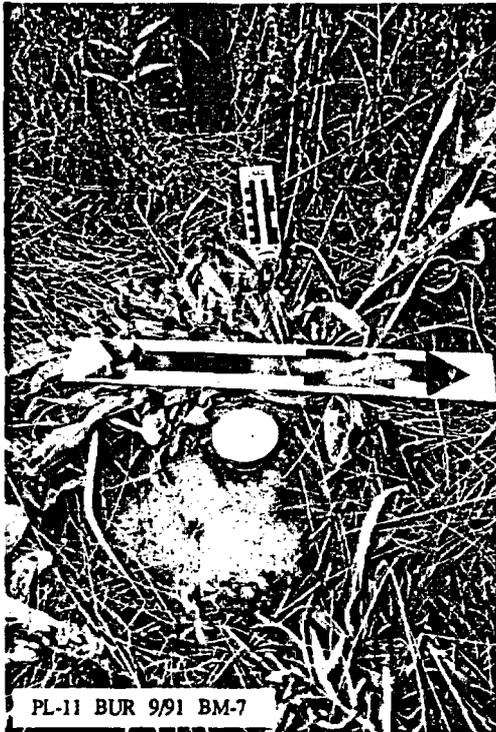


PL-2 BUR 9/91 Entrance Sign



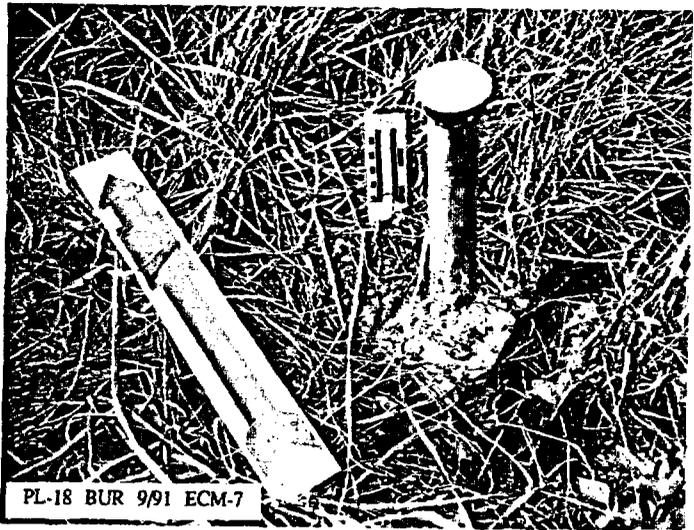
PL-5 BUR 9/91 SM-102



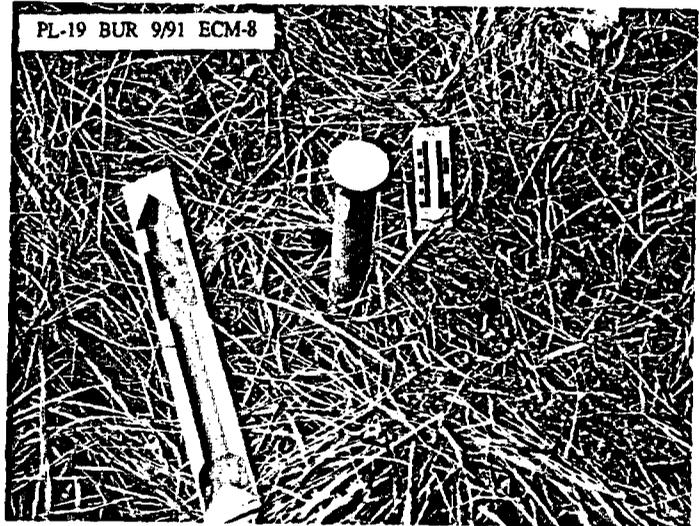




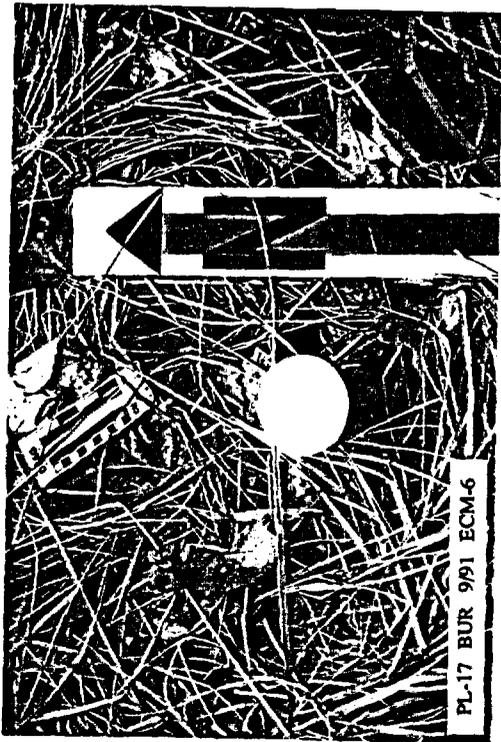
PL-16 BUR 991 ECM-5



PL-18 BUR 991 ECM-7



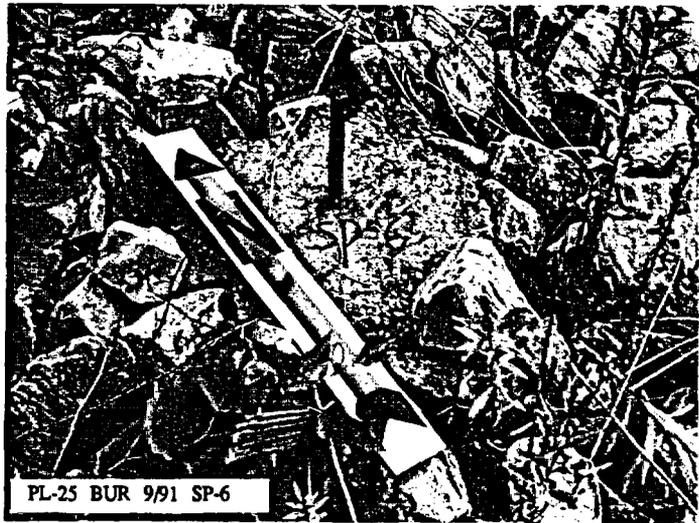
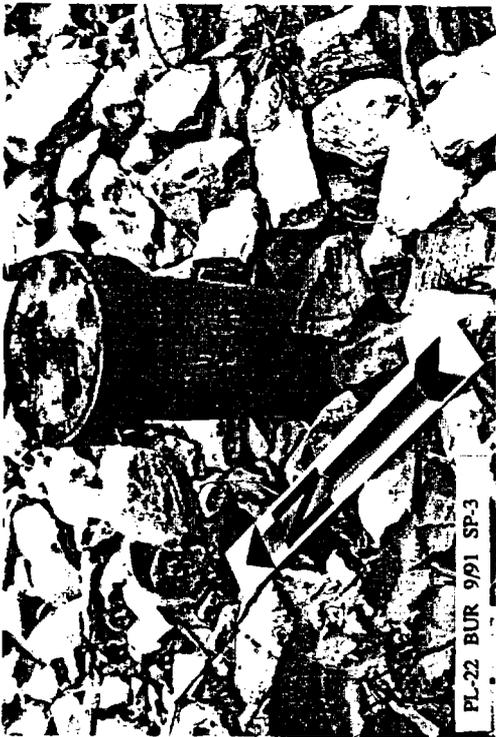
PL-19 BUR 991 ECM-8



PL-17 BUR 991 ECM-6



PL-20 BUR 991 SP-1









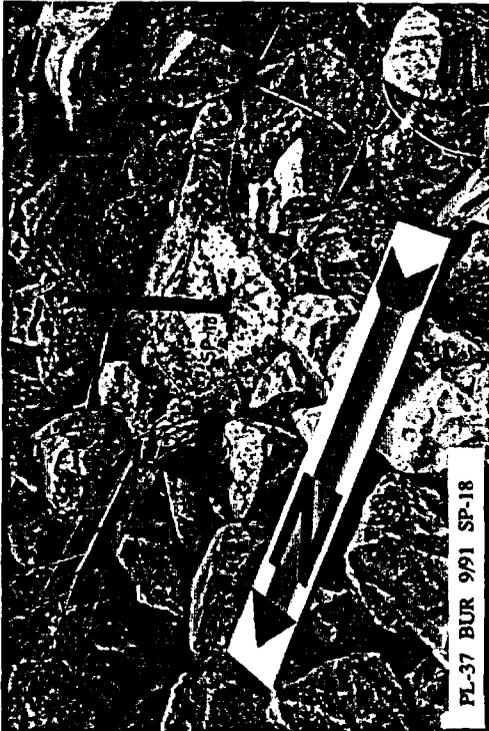
PL-36 BUR 9/91 SP-17



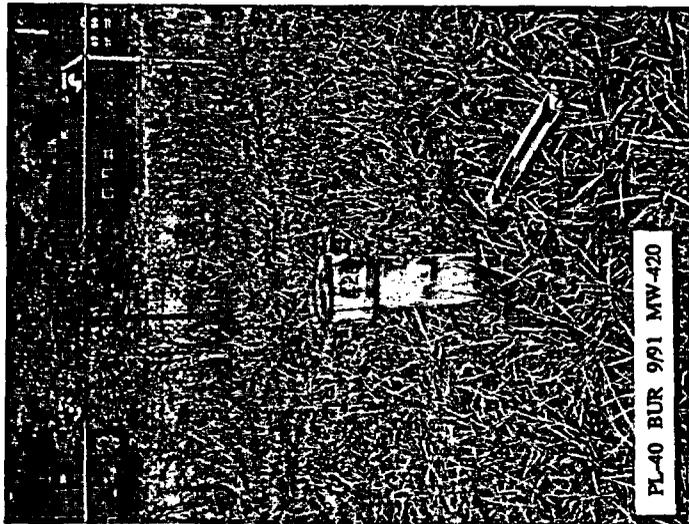
PL-38 BUR 9/91 SP-19



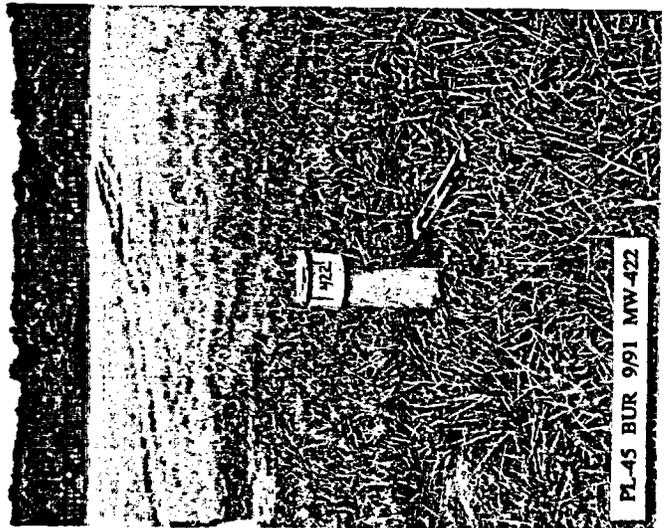
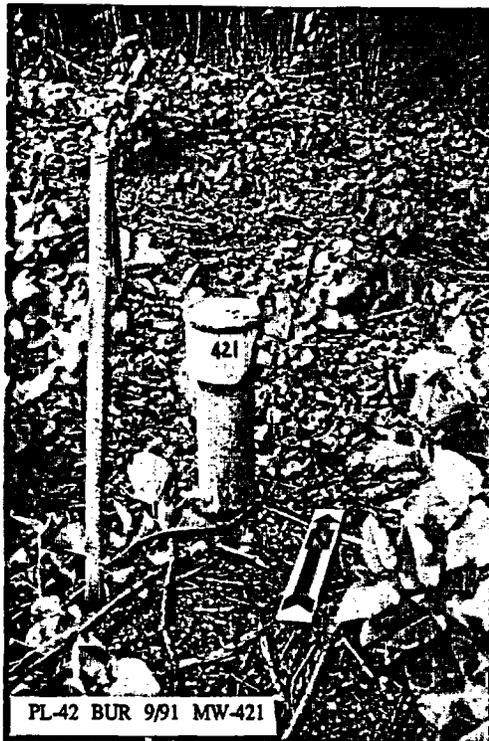
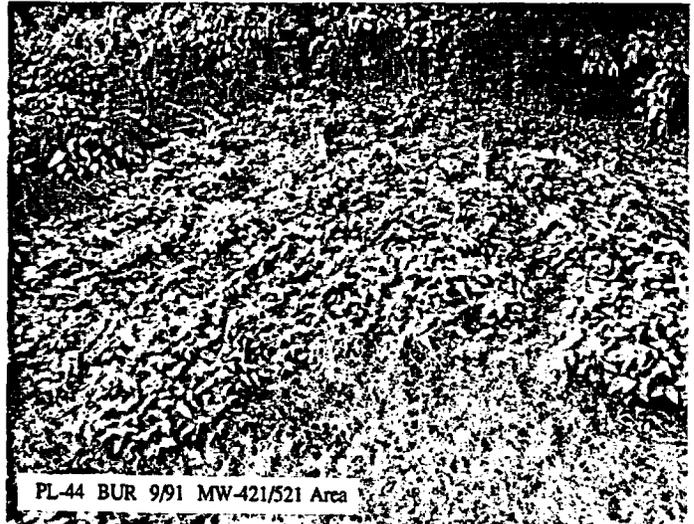
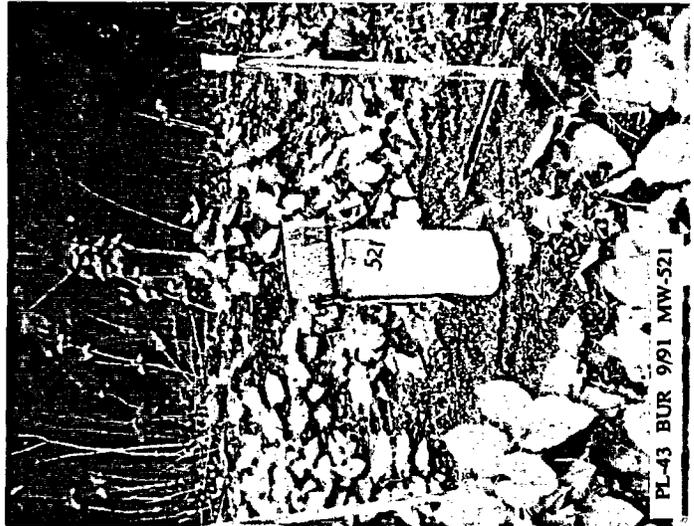
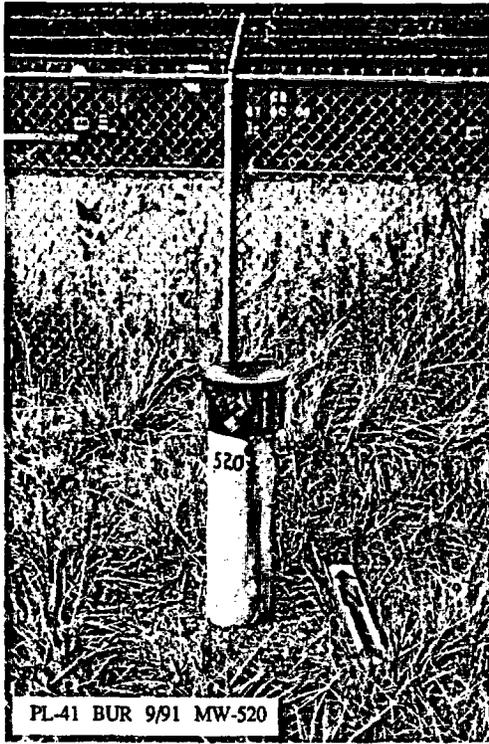
PL-39 BUR 9/91 SP-20

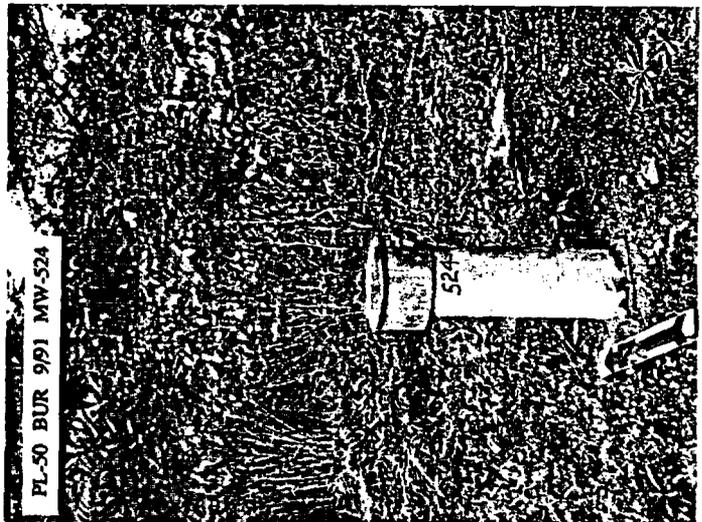
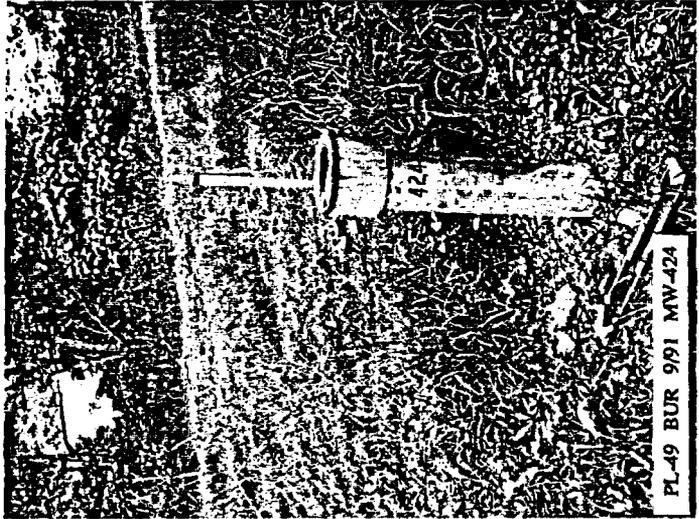
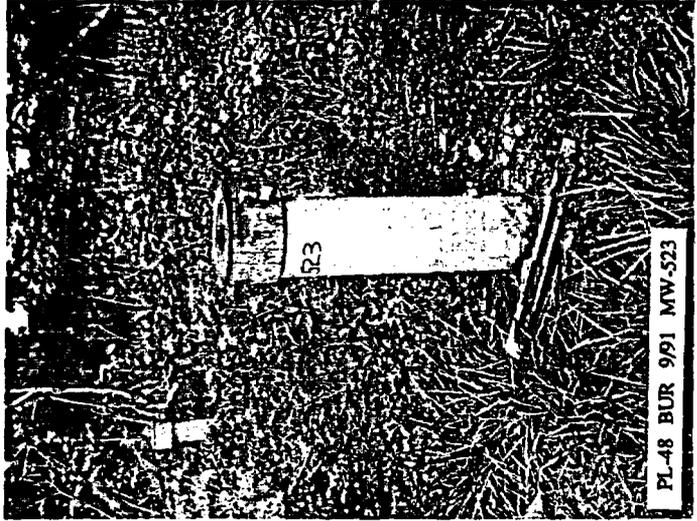
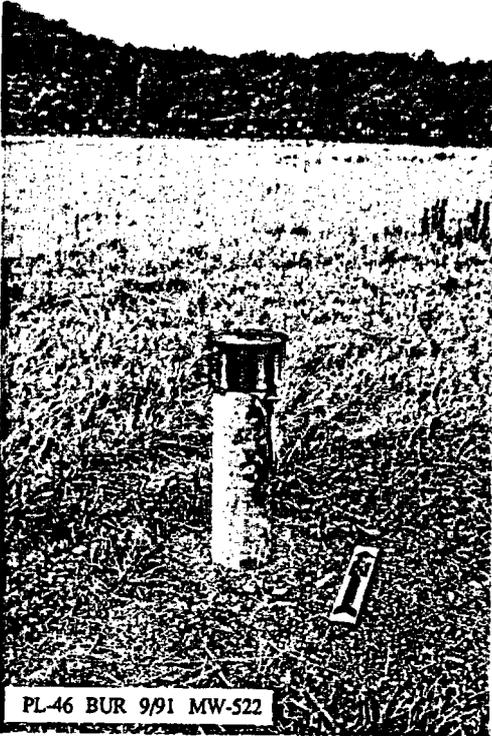


PL-37 BUR 9/91 SP-18



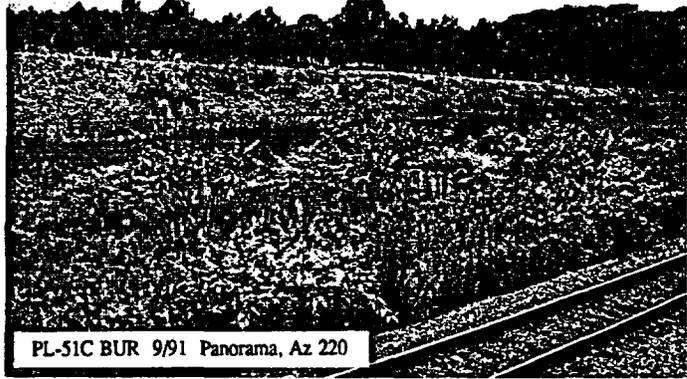
PL-40 BUR 9/91 MW-420







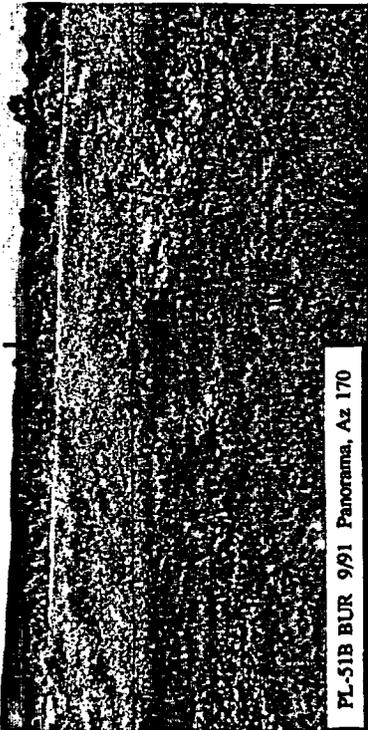
PL-51A BUR 9/91 Panorama, Az 120



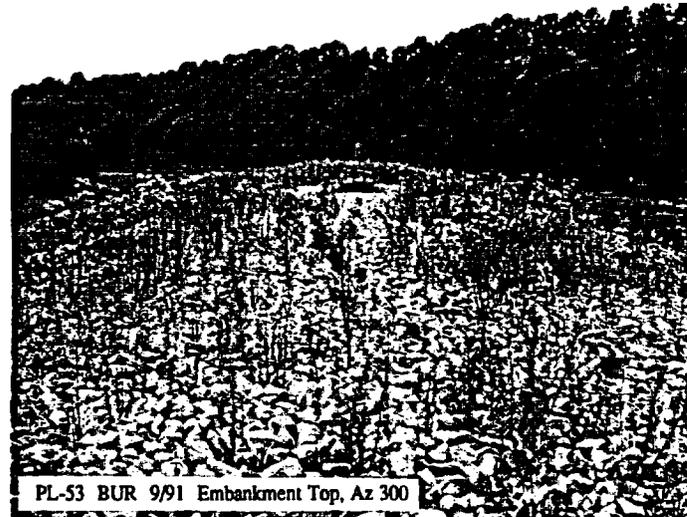
PL-51C BUR 9/91 Panorama, Az 220



PL-52 BUR 9/91 S Sideslope, Az 280



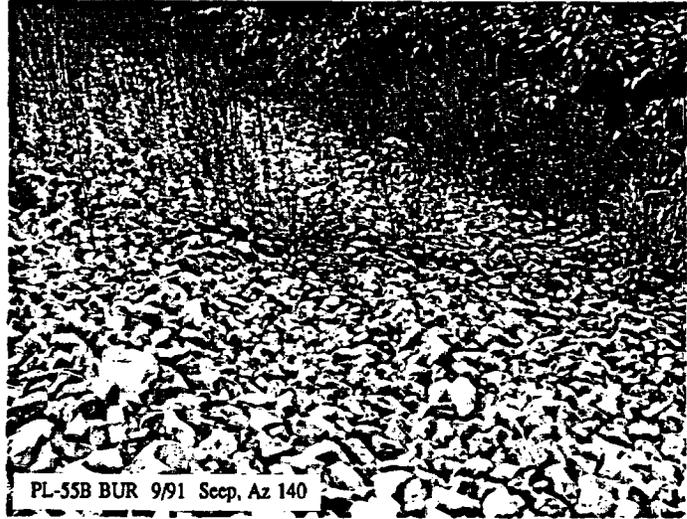
PL-51B BUR 9/91 Panorama, Az 170



PL-53 BUR 9/91 Embankment Top, Az 300



PL-54 BUR 9/91 OHW Measurement



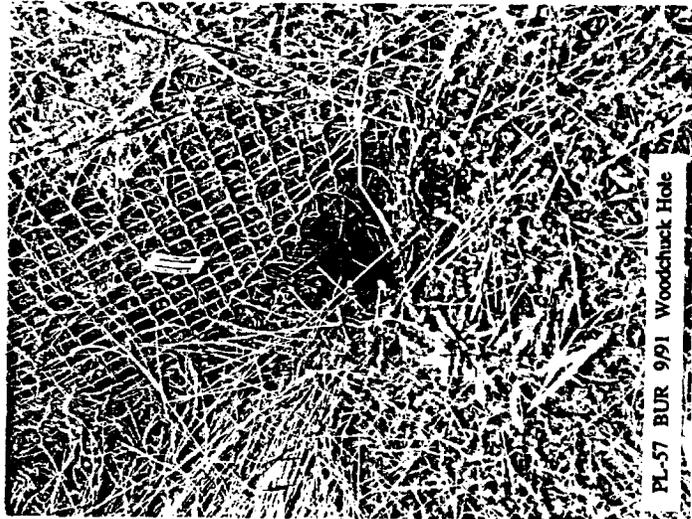
PL-55B BUR 9/91 Scrp, Az 140



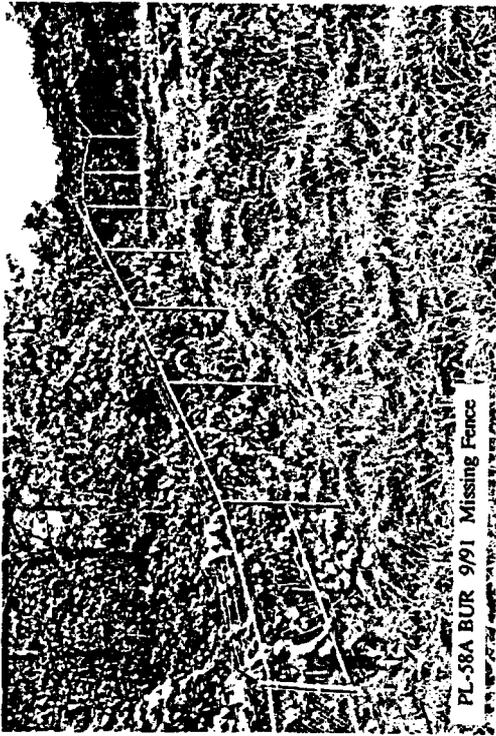
PL-55A BUR 9/91 Vegetation, Az 270



PL-56 BUR 9/91 Standing Water, Az 315



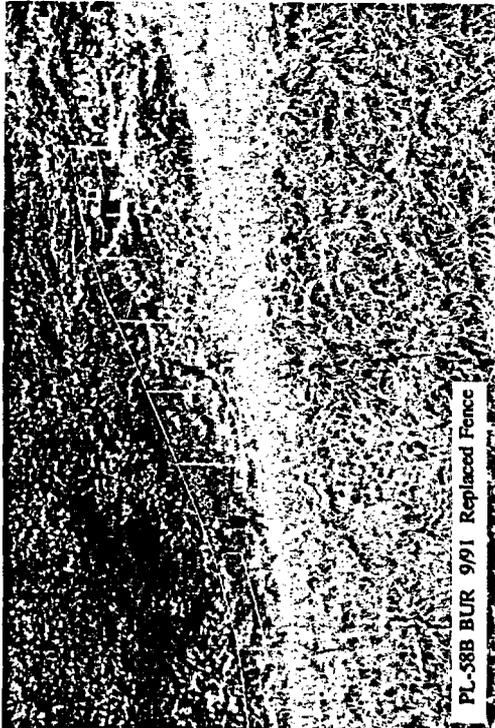
PL-57 BUR 9/91 Woodchuck Hole



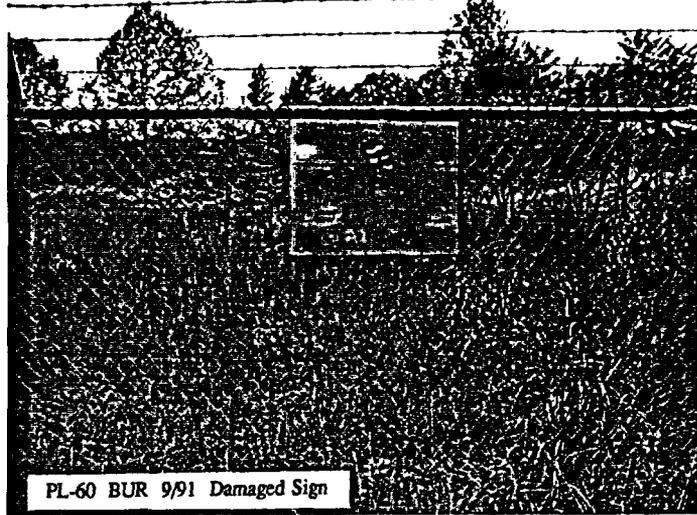
PL-58A BUR 9/91 Missing Fence



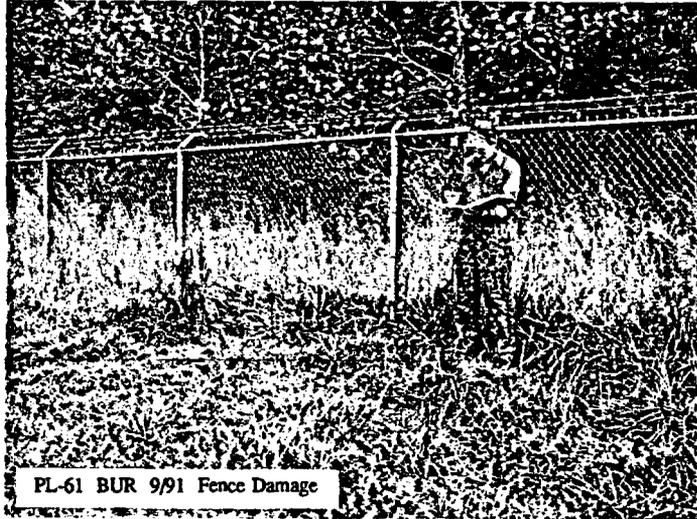
PL-59 BUR 9/91 Missing Sign



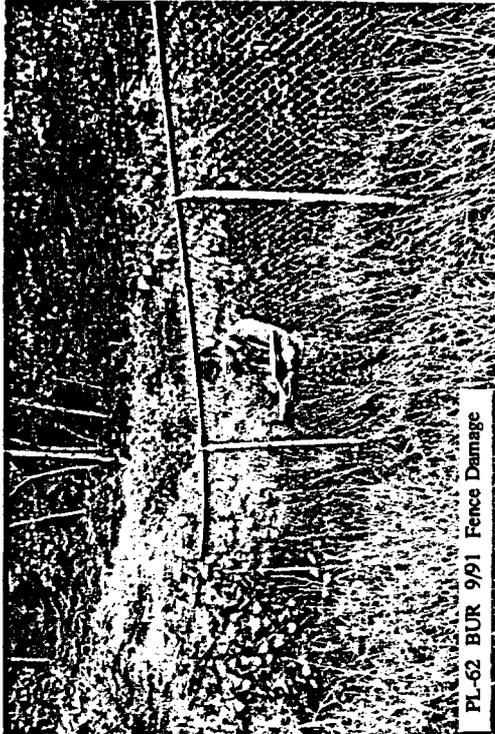
PL-58B BUR 9/91 Replaced Fence



PL-60 BUR 9/91 Damaged Sign



PL-61 BUR 9/91 Fence Damage



PL-62 BUR 9/91 Fence Damage



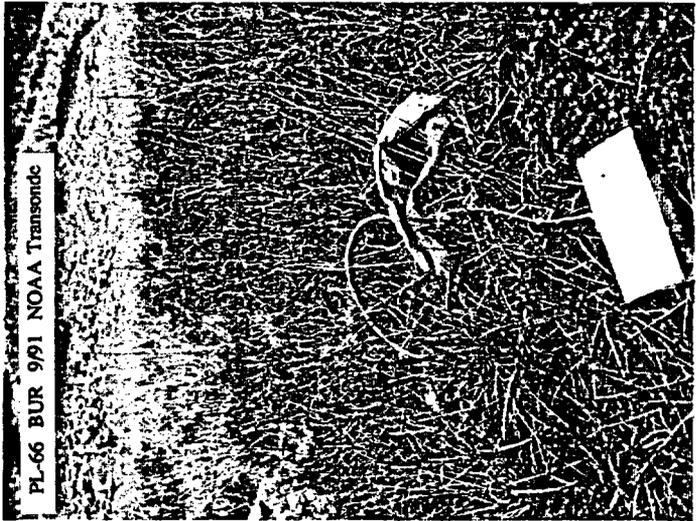
PL-64 BUR 9/91 Typical Trash



PL-65 BUR 9/91 Typical Trash



PL-63 BUR 9/91 Trash Dump



PL-66 BUR 9/91 NOAA Transponder

**Appendix B**  
**Résumés of Inspectors**

# Mark P. Plessinger

## Fields of Competence

Hazardous waste site remediation technologies; feasibility studies under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); underground storage tank site remediation; environmental regulatory considerations; nuclear engineering and radioactive waste handling; heat transfer/fluid mechanics experimental research.

## Experience Summary

Ten years of varied professional experience including four years of CERCLA remedial investigation/feasibility study-related work. Underground storage tank site remedial actions, transuranic radioactive and mixed-waste handling studies, management of design group performing feasibility studies and site remedial action designs. Also experienced with nuclear reactor operations and experimental research in nuclear reactor thermal hydraulics.

## Credentials

B.S., Mechanical Engineering, Colorado State University, Fort Collins, Colorado

M.S., Mechanical Engineering, University of Idaho, Moscow, Idaho

Registered Professional Engineer, Colorado and Idaho

Member, American Society of Mechanical Engineers

Member, American Nuclear Society

Author or co-author of six technical publications.

## Employment History

1989–Present Chem-Nuclear Geotech, Inc., Grand Junction, Colorado

1981–1989 EG&G Idaho, Inc., Idaho National Engineering Laboratory, Idaho Falls, Idaho

## Key Projects

Managerial responsibility for a feasibility study under CERCLA for a federal facility in Texas. The site has a variety of hazardous waste problems including soil and groundwater contamination.

Managerial responsibility for a feasibility study under CERCLA for a U. S. Air Force base in Illinois. The site had a variety of hazardous waste problems.

Primary author of a feasibility study under CERCLA for a U. S. Air Force base in Massachusetts. The site had a variety of hazardous waste problems, including groundwater contamination, fuel spill areas, and landfills.

Design oversight for a number of underground storage tank removals at federal facilities in Colorado and Hawaii.

Conducted studies for the characterization of transuranic (TRU) and mixed radioactive wastes to determine waste volumes and packaging requirements to enable final waste disposal.

Numerous experiments and several publications related to nuclear reactor thermal hydraulics and associated instrumentation.

# Craig S. Goodknight

## Fields of Competence

- Mineral resource assessment
- Geologic and geohydrologic characterization of hazardous and/or radiologic sites
- Environmental Assessment/Environmental Impact Statement process
- Geologic mapping
- Project management
- CERCLA RI/FS process

## Experience Summary

Eighteen years of varied professional experience including 7 years in uranium exploration and uranium resource evaluation, 2 years of supervision and planning for conducting UMTRA assessment and verification surveys, 3 years of evaluation and management of geologic and mineral resources on Federal lands, and 6 years of radiologic and hazardous waste site (CERCLA RI/FS-related) investigations and geologic feasibility and characterization studies.

## Credentials

B.S., Geology, University of Tulsa (1971)

M.S., Geology, University of New Mexico (1973)

Member, Geological Society of America

Member, Association of Engineering Geologists

Member, Rocky Mountain Association of Geologists

## Employment History

1990–Present Principal Scientist/Geologist, Chem-Nuclear Geotech, Inc.

1986–90 Principal Scientist and Project Manager, UNC Geotech

1977–86 Geologist and Department Supervisor, Bendix Field Engineering Corp.

1974–77 District Geologist, U.S. Bureau of Land Management, Utah and Colorado

## Key Projects

Project Manager for characterization of two Operable Units of the Denver Radium (Superfund) site, which contained radium and thorium contamination commingled with base metals.

Principal Investigator for evaluation of areas favorable for uranium deposits in Colorado, New Mexico, Wyoming, and Nevada for the DOE Uranium Resource Evaluation (NURE) Program; numerous (NURE) publications resulted from this work.

Conducted a study for U.S. Environmental Protection Agency (EPA) Regions III and IV which identified areas that have potential for high indoor radon concentrations based on screening of NURE data and geologic characteristics.

Supervisor of the Bendix Field Engineering Radiologic Support Department that assessed or characterized uranium mill tailings contamination at properties in Grand Junction, Colorado; Edgemont, South Dakota; and Monticello, Utah. Department responsibilities also included verification surveys that confirmed that the tailings-related contamination had been removed to EPA standards.

Conducted geologic investigations/characterizations for hazardous waste sites in Colorado, Texas, and Ohio and for support in geophysical detection of tunnels constructed by the North Koreans along the Demilitarized Zone in South Korea.

# Charles A. Jones

## Fields of Competence

- Geologic site characterization
- Regulatory compliance
- Mineral resource assessment
- Environmental impact analysis
- NEPA compliance

## Experience Summary

Five years experience in uranium exploration and uranium resource evaluation. Nine years experience in management of site characterization studies at proposed high-level waste disposal sites.

Two years experience in implementation and management of surveillance and maintenance activities at DOE disposal sites.

## Credentials

B.A., Geology, University of California, Berkeley, California

Ph.D., Geology, University of Oregon, Eugene, Oregon

Geological Society of America

Society of Economic Paleontologists and Mineralogists

Sigma Xi

## Employment History

1990–Present Program Manager, Chem-Nuclear Geotech, Inc.

1986–90 Program/Project Manager, UNC Geotech

1975–86 Geologist and Program/Project Manager, Bendix Field Engineering Corporation

1972–75 Assistant Professor, Chadron State College, Chadron, Nebraska

## Key Projects

DOE National Uranium Resource Evaluation (NURE) program: uranium resource evaluation in Texas and Utah; publications in uranium resource evaluation; managed field operations at five district offices.

DOE Office of Nuclear Waste Isolation (ONWI): managed geochemical and mineralogical research projects, isotopic dating of host rock and formation waters, and established sample archival system in support of site characterization projects in Texas and Washington.

DOE Long-Term Surveillance and Maintenance (LTSM) Program: responsible for implementation and management of new surveillance and maintenance program for long-term custody of remote DOE disposal sites, primarily those decontaminated and stabilized by DOE remedial action programs and projects.

# David L. Scheuerman

## Fields of Competence

Hazardous waste remediation, uranium mill and tailings decommissioning, environmental restoration, project development and management of contract operator, project scheduling, construction procedures with associated Quality Assurance inspections, fiscal management and resource maximization, structure and foundation design, and public relations.

## Experience Summary

Twenty-three years of professional experience including 6 years of managing environmental restoration, 4 years of uranium mine technical and economic/financial feasibility studies, 8 years of structural and foundation design, and 5 years of national and international security.

## Credentials

B.S., Civil Engineering, University of Wyoming, Laramie, Wyoming  
Graduate Studies, Business Administration, University of Tennessee, Knoxville, Tennessee

## Employment History

1990–Present Chem-Nuclear Geotech, Inc., Grand Junction, Colorado  
1971–1990 Tennessee Valley Authority, Chattanooga, Tennessee, and Casper, Wyoming  
1966–1971 United States Air Force, U.S. and International Locations

## Key Projects

Project Manager for the Monticello Remedial Action Project (MRAP), Utah. The former millsite with associated buried tailings, materials, and equipment will be environmentally restored.

Project Manager for the Long-Term Surveillance and Maintenance (LTSM) Program, Grand Junction, Colorado. Perform constructibility inspections and associated maintenance activities.

Project Manager for the Edgemont Mill Decommissioning, South Dakota. Managed contract operator to excavate and transport 4.5 million tons of radioactive waste to an engineered disposal site. Coordinated on-site logistics for contract agreements with DOE (GJPO and Chem-Nuclear), the U.S. Environmental Protection Agency, the city of Edgemont, and the State of South Dakota.

Project Manager for the Marquez Uranium Mine, New Mexico. Evaluated feasibility of contract operator proposed mine plan. Coordinated plan and budget approvals and prepared a technical and economic/financial feasibility study.

Designed new electrical transmission line right-of-way locations working with property owners and governmental agencies. Prepared and conducted public meetings discussing all aspects of the design. Designed and drafted structural details for various transmission line and substation structures with supporting foundations.

**THIS PAGE IS AN  
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FIGURE,**

**THAT CAN BE VIEWED AT THE  
RECORD TITLED:**

**DRAWING NO. E0086900, "PLATE ONE  
GREEN RIVER, UTAH INSPECTION  
DRAWING, 1991 PRELICENSING  
INSPECTION".**

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DOCUMENT/REPORT NO.  
E0086900.**

**D-01**